

Natural Resource Inventory Data Visualization and Reporting



Lifeline AI 2000 User Guide: NIVMA Report Reviewer
Version 1.0 For Microsoft® Access 2000



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User's Guide Overview

This manual provides users of Lifeline AI 2000 software applications, loaded with their data, the ability to navigate the various screens to produce the results they want to see. To get started, follow the installation and set-up instructions. Step-by-step instructions on how to view and print the standard reports, or export the underlying datasets are provided. Next, the instructions you need to create your own scenarios, and then view the data graphically, or in spreadsheet form for export, will let you explore relationships in the data to answer your questions as they arise in your day-to-day business.

User Guides with instructions specific to your application(s) follows in appendices since every Lifeline application is unique. Reports and outputs are described in detail for your customized application starting on page 13

Introduction

Why Lifeline AI?

Lifeline AI (Adaptive Inventory) is for woodlands managers and forest planners who need to implement certification programs for sustainable forest management (SFM). The Lifeline AI system is a forest, land, productivity and silviculture inventory management system that lets you integrate and summarize information across your various forest inventory programs to produce the information needed for SFM. Unlike activity based forest reporting systems and forest simulation models, our systems focus on your current inventory allowing you to:

- Consolidate the inventory
- Explore your land base
- Develop indicators
- Define management scenarios
- Visualize actual results

Lifeline AI helps forestry companies make better decisions by making their data more accessible and easy to use. Applications are initially custom-loaded by the Lifeline developers with your natural resource inventory data into a unique database design. You can have large datasets such as Growth and Yield, Vegetation Inventory, etc., loaded into a Lifeline Application modified to suit your needs. Each application puts large natural resource datasets at your

fingertips to quickly produce standard reports and custom datasets for exporting to other software. You get the freedom to explore your data using scenarios you create, and visualize relationships within the data never before possible.

What is Lifeline AI?

Lifeline AI applications are built as single-user, personal computer programs in Microsoft® Access 2000. You provide the Lifeline developers with your inventory data; customized loading puts your data into our unique normalized, relational database design. You direct the standard and specialized reports you need, and we build them into your software. Lifeline AI gives you the flexibility to explore your data and output data in several formats for exporting to other programs.

The software program was designed for ease-of-use by non-Access 2000 users; simply point and click to proceed through the program features.

- Get fast canned reports in View Standard Reports
- See your results in both standard and customized graphs
- Export your data into other programs for more analyses
- Understand loaded data from the dictionary available from any window
- Get help contact information in “About Lifeline 2000”

Each application can be maintained within your company by an in-house software Administrator trained by the Lifeline developers. An Administrator can append new data as your monitoring continues, update and create new standard reports, and modify the data dictionary and definitions with protocol updates. For more information on application administration, please contact your Lifeline developer.

Installation

Please ensure that your computer meets the following minimum requirements before running the Lifeline applications:

- Access 2000 and Windows operating system
- 500 MHz, Pentium-class processor
- 300 MB free disk space on your hard drive after loading program
- 128 MB of random access memory (RAM)
- colour printer that prints in letter and legal size is required; tabloid size may be required for some customizations

To install and run an application on your computer:

- database applications are received as zipped files on CD
- use an appropriate program such as WinZip or PKZip to unzip
- create a folder “Lifeline” on same directory on your hard drive
- install into the folder; the application should run problem-free
- ensure date settings for your computer are the format yyyy/MM/dd (go to Settings - Control Panel – Regional Settings – Date to change format)
- run “Compact and Repair Database” from the Tools – Database Utilities menu in Access 2000 at the end of each session to prevent files from growing too large

Please contact Mishtu Banerjee (mishtu_banerjee@telus.net) or Steve Monai (stevem@spatialmapping.com) if you have any questions, comments, suggestions, or problems.

View Standard Reports

Generate standard reports from pre-defined sets of queries. The standard report feature was designed to provide fast results from very large datasets where each report includes a number of queries and would take a long time to run. You can generate these reports by selecting from a list of variables from within each report type. You can select all the values of a variable, or pick and choose any number of values to be included in your report. You can select more than one variable with any number of values. Datasets similar to the reports can be viewed in spreadsheet format and exported to other programs for further analyses.

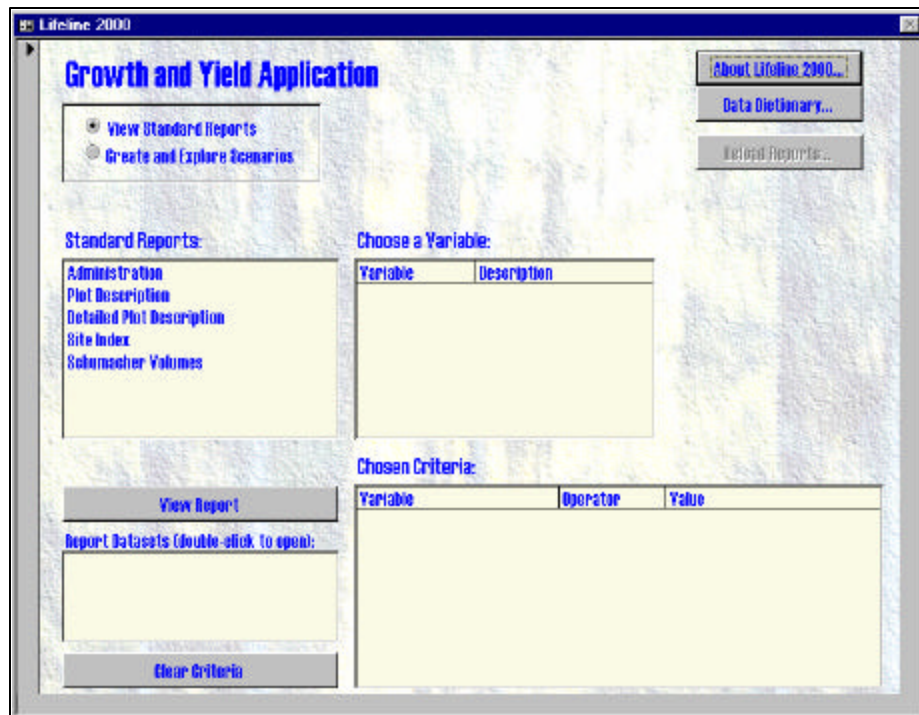


Figure 1: View Standard Reports window after selecting from opening screen. Example is from a Growth and Yield application. Toggle between viewing and create/explore scenarios using buttons in top left-hand box. The Data Dictionary is always available from either window. Reload Reports is not available to users; see your software program administrator.

How to Use View Standard Reports

From the opening screen, choose the report type, and then filter the dataset for the variables and their values you want in your report:

- select View Standard Reports
 - single-click on a selection from Standard Reports list

This returns a list of variables with descriptions for the selected report; only one report can be selected at a time.

The screenshot shows two side-by-side panels. The left panel, titled 'Standard Reports:', contains a list of report types: Administration, Plot Description (highlighted in yellow), Detailed Plot Description, Site Index, and Schumacher Volumes. The right panel, titled 'Choose a Variable:', contains a table with two columns: 'Variable' and 'Description'. The table lists: Plot Name (Unique, Stable Plot Identifie), Meas Date, Meas No, Tree Species, and Live/Dead.

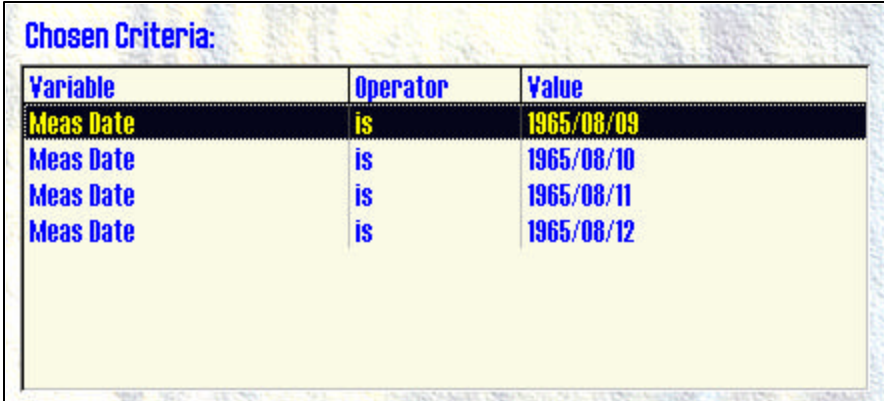
- single-click on a Variable in the list to select

This displays a list of values for the chosen variable.

The screenshot shows two side-by-side panels. The left panel, titled 'Choose a Variable:', contains a table with two columns: 'Variable' and 'Description'. The table lists: Plot Name (Unique, Stable Plot Identifie), Meas Date (highlighted in yellow), Meas No, Tree Species, and Live/Dead. The right panel, titled 'Choose a value:', contains a list of dates: Meas Date, 1965/08/04, 1965/08/05, 1965/08/06, 1965/08/09, 1965/08/10, 1965/08/11, and 1965/08/12. The list has a scrollbar on the right side.

- double-click on a value or values to select

The selected values are displayed in the Chosen Criteria window. The Variable and the values chosen show your selections. Operator is the relationship between the two; "is" means equal to. Other operators such as "less than", "greater than", etc., could be used.



Variable	Operator	Value
Meas Date	is	1965/08/09
Meas Date	is	1965/08/10
Meas Date	is	1965/08/11
Meas Date	is	1965/08/12

To delete selected values from the criteria:

- double-click on the value in the Chosen Criteria window to delete from your selection,
- or*
- highlight and use delete key on keyboard,
- or*
- single-click on Clear Criteria to delete all your selections



To view and print the standard report:

- single-click on View Report to view your report



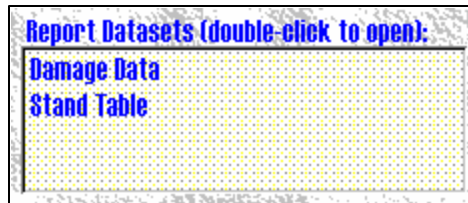
Figure 2 is one example of the Standard Reports that can be produced. Reports are in print preview. You may have to go to Page Setup and change page orientation, margins, and size from Access 2000 File menu the first time you print a report.

<i>Detailed Plot Description</i>										
<i>Plot Name:</i> 47001 G000001										
<i>Plot#:</i> 1										
<i>Measure Date:</i> 1991/09/10										
<i>Damage Code Summary:</i>										
<i>Species</i>	<i>Live / Dead</i>	<i>Damage Code & Definition</i>		<i># Stems</i>	<i>% of Total Stems</i>	<i>Stems/ha</i>				
FD	LIVE	DS	Stem Disease (Canker or Rust)	2	1.96	20				
		V	Problem Vegetation	1	0.98	10				
W	LIVE	DS	Stem Disease (Canker or Rust)	1	0.98	10				
<i>Stand Table: Basal area/ha</i>										
<i>Species</i>	<i>Live / Dead</i>	<i>Height Classes (Height < 1.3 m)</i>		<i>Diameter Classes (Height >= 1.3 m)</i>						
		<i>0.0 - <0.3 m</i>	<i>0.3 - <1.3 m</i>	<i>0.0 - <2.0 cm</i>	<i>2.0 - <4.0 cm</i>	<i>4.0 - <7.5 cm</i>	<i>7.5 - <12.5 cm</i>	<i>12.5 - <17.5 cm</i>	<i>17.5 - <22.5 cm</i>	<i>22.5+ cm</i>
AT	LIVE					0.069				
FD	LIVE					1.263	1.827	1.347	0.977	1.099
PL	LIVE				0.007					0.948
W	LIVE					0.129				

Figure 2. Example of a custom designed Standard Report from a Growth and Yield Application.

To export the data as a spreadsheet to another program:

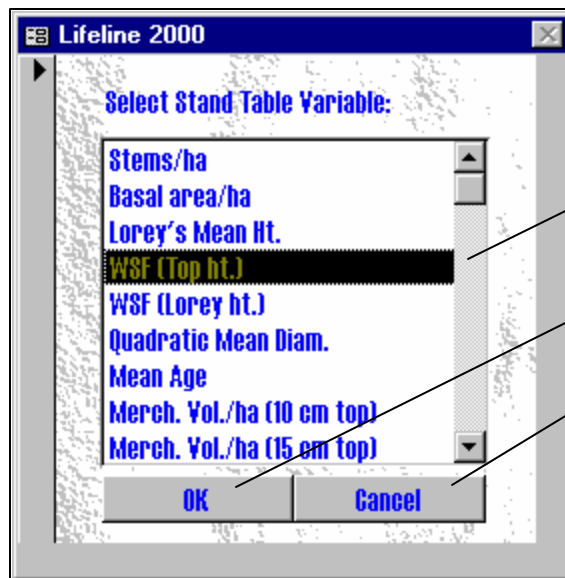
- double-click on the dataset in the Report Datasets window to open



In this example there are two choices. This can vary from one to many.

Continue by using the Access 2000 File Menu to export data to another program such as Microsoft Excel. The spreadsheet format allows you to explore and analyze the data in other software tools. Variable names used in the spreadsheet view are defined in the Data Dictionary available on screen.

Standard Reports can also be customized to change the appearance of a report type to the extent of changing what variables appear in the columns. In those cases, a pop-up box appears after View Report or Report Datasets are selected.



A box appears after selecting "View Report".

Single-click to select.

Click O.K.

Click Cancel to return to previous screen.

If you have completed your session, close the program by clicking the Access 2000 close button or Close from the File menu.

To continue, clear criteria and view a new report, or switch to Create and Explore for analyses. When you toggle from View Standard Reports to Create and Explore, the criteria you had chosen will not be saved.

How to Use the Data Dictionary

The Data Dictionary assists you by:

- Helping you understand each type of measurement in the loaded dataset.
- Allowing updates by your software program Administrator.
- Providing you with a complete description of the measure plus reference documentation.
- Identifying measure types as categorical, integer, numerical or text.
- Providing allowable codes and their definition for categorical types (Figure 3).
- Providing units and valid range of measures for integer and numerical types.
- Displaying descriptions for text types.

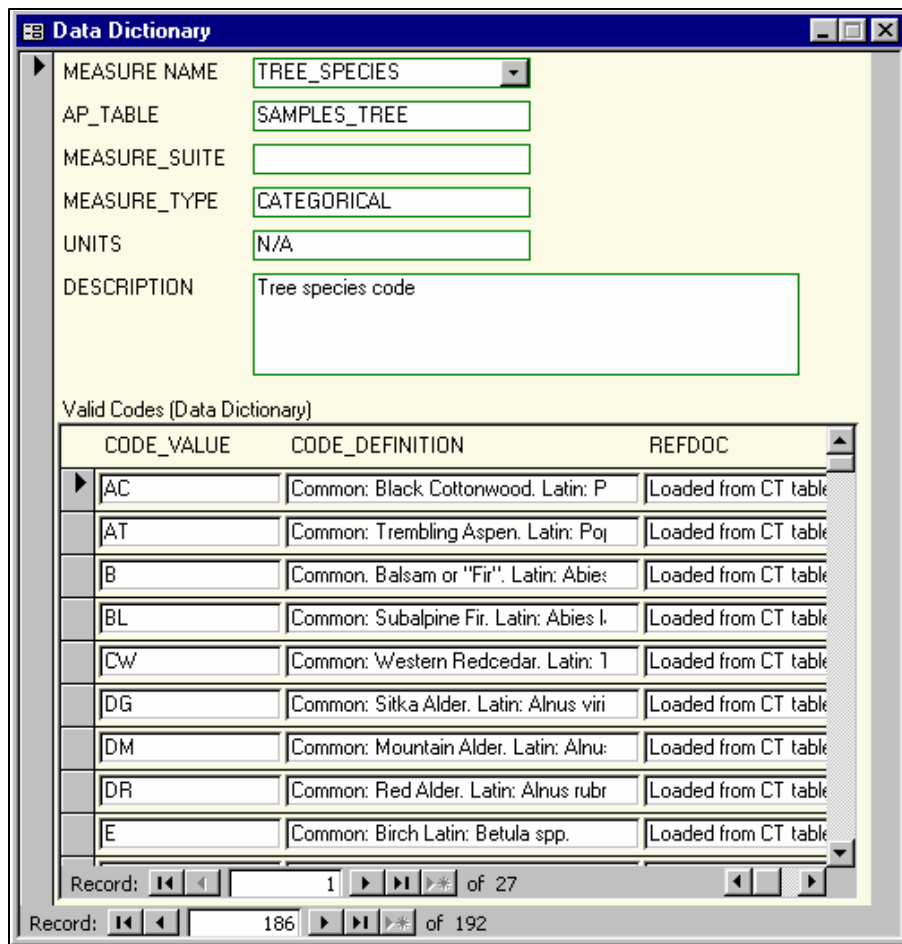


Figure 3: The Data Dictionary provides a description of each measure name in the data set that was loaded. Categorical data displays the measure type and a description followed by a table with the valid codes, code definition, and the reference document they come from where applicable as shown for the Measure TREE_SPECIES.

Steps for using the Data Dictionary:

- single-click Data Dictionary to open



- pick a measure name from the drop-down list
- or
- type into the measure name box

This automatically takes you to the closest name in the list

Don't know the measure name used? Find it from the description!

- using the mouse, click into the Description box
- from the Access 2000 menu bar, select Edit/Find
- click on Find tab (Caution: do not use Replace tab)
- pick "Any Part of Field" for the Match
- enter text to search by as in Figure 4.
- click Find Next; continue until you find the measure you are looking for

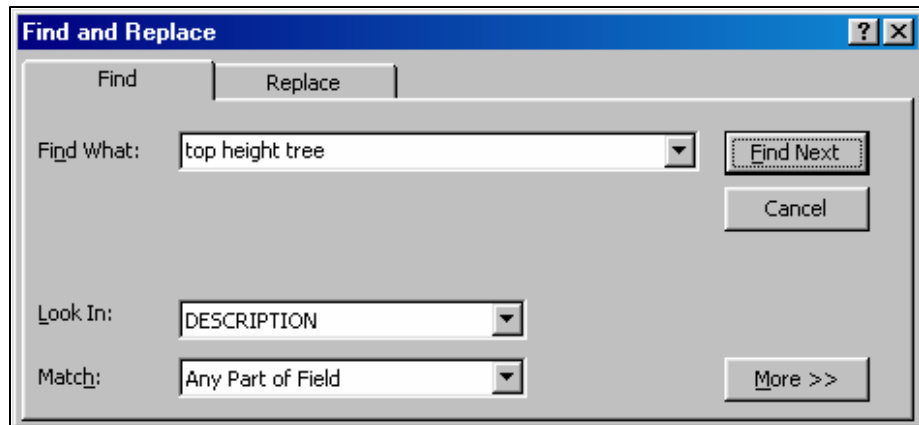
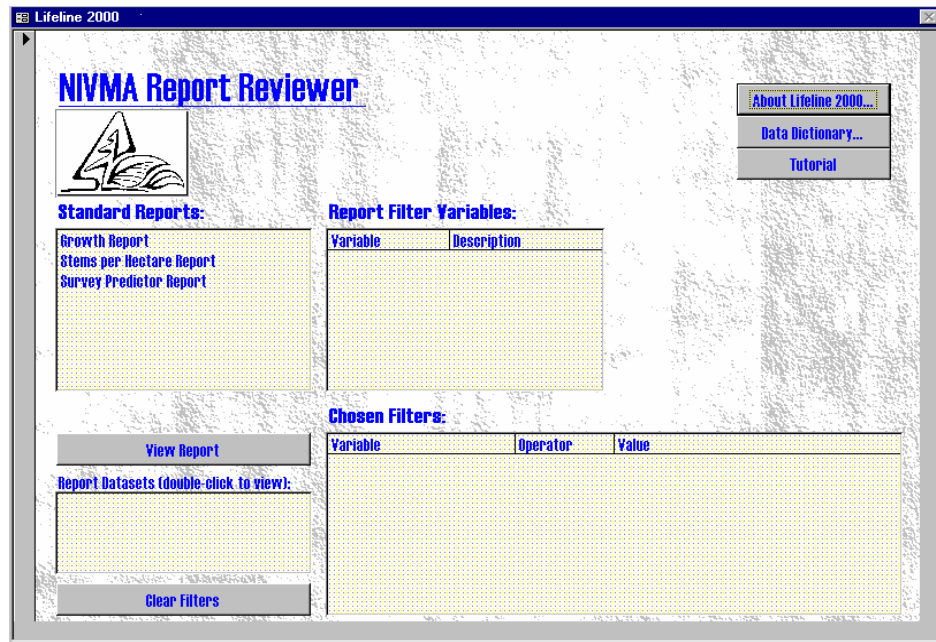


Figure 4: Access 2000 pop-up box for searching the descriptions in the data dictionary that have top height tree anywhere in the Lifeline AI 2000 Description. Use to find a measure name when you don't know what was used in the dataset. Make sure to select for a search to match on "any part of the field".

Appendix 1.

Lifeline 2000

NIVMA Report Reviewer



User's Guide

April 2003

NIVMA Report Reviewer

The NIVMA Report Reviewer is a custom application built in LifeLine 2000. While every custom application has the same basic functionality, as described in the previous sections, there are also differences. This section deals with the specific reports and features unique to the NIVMA Report Reviewer application.

NIVMA Report Reviewer Application

LifeLine 2000 – NIVMA Report Reviewer has been linked with data from NIVMA’s TRENDS and USSM protocols. These data have been organized into a common format, so the user may view both TRENDS and USSM data. **CAUTION: DO NOT COMBINE THE TRENDS AND USSM, OR THE RANDOM AND NON-RANDOM DATA IN THE SAME SUMMARY, AS THE RESULTS COULD BE MISLEADING.** We suggest you run similar scenarios using both datasets and compare. However, if results differ this does not mean that both or either are incorrect.

Note – the data dictionary included with the NIVMA Report Reviewer includes descriptions of measure names from the Reports but does not include protocol code descriptions. It is recommended that you have –the appropriate field manual handy when selecting specific code values for a report. The TRENDS© 2002 Field Manual is available on the web at:

www.nivma.bc.ca

The Data

The current dataset contains variables from USSM and TRENDS databases concerned with repeatedly measured trees. All sources of data can be found on the CD distributed to members in March 2002.

- TRENDS 2001 SnapshotAll 20020227 A97.mdb
- USSM 2000 Snapshot All.mdb
- ACT98V31_USSM

You may discover that some of your TRENDS installations are not in the Report Reviewer even though the data is the TRENDS Snapshot. The TRENDS dataset was reduced by removing all installations with more than one treatment record of; site preparation, artificial regeneration or stand tending, plus more than one plant community type or site series. Also, installations in any year that had fewer than four quadrants of small tree description data were excluded for that report. For example, there were 6,920 plot/year/quadrant combinations and 270 installations/year combinations were not used.

The USSM dataset was similarly reduced to remove installations that did not have the information required to make the tree and survey reports in this software. ACT98V31_USSM used was identical to the one distributed on CD since 2000.

The Software

The current software you have received from Harmeny Systems Ltd contains:

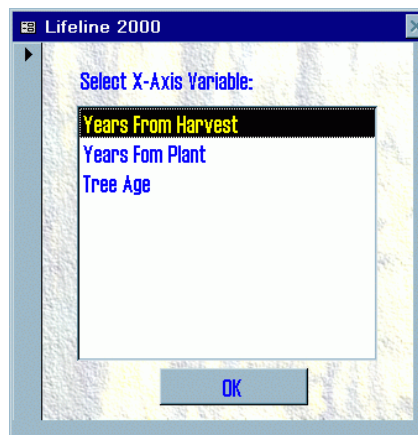
- Three standard reports: Growth Report, Stems Per Hectare Report , and Survey Predictor Report.
- This tutorial, which can be launched from inside the application (press “Tutorial” button that is below the “Data Dictionary” button).

The three standard reports have been designed so they may be used together to explore and understand NIVMA data. Where possible, each report has similar selection criteria and common format.

Description of Standard Report Types

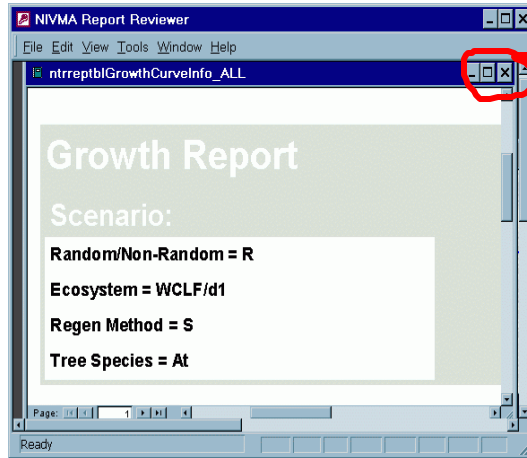
Growth Report



- The Growth Report can be customized by thirteen variables: Programme, Random/Non-Random, Agency, EcoArea/Zone, EcoPhase/Subzone, Ecosystem, PlotName, Province, Regen Method, SitePrep, StandTend, Stocktype Label, Tree Species.
- Two variables: Programme, and Random/Non-Random are at the top of the list to emphasize their importance. First of all, the USSM and TRENDS data are based on different protocols and sampling design. Secondly, Random versus Non-random located plots have different interpretations when summarized statistically. All USSM data are non-random. (See Caution on page 14). The remaining variables are listed alphabetically.
- The Growth Report can be customized to change the time variable used. A pop-up box appears after selecting View Report. Make your choice. (How? See page 10)

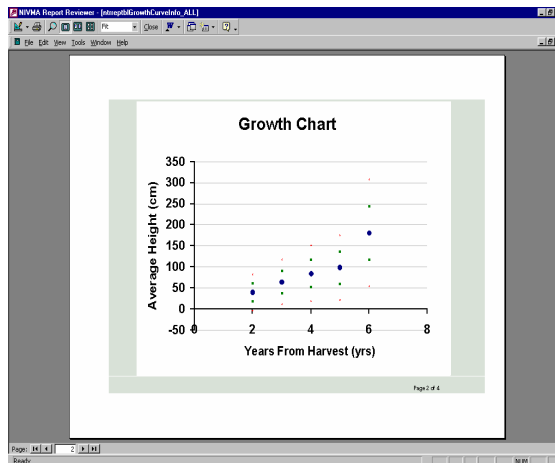


- Years From Harvest was calculated by counting growing seasons after the harvest date. Pick this if you are looking at natural regeneration from seed or suckers.
- Years Fom Plant counts the seasons of above ground growth from the date of planting.
- Tree Age is the total age of a tree including its stock age at time of planting.

- The report shows the summarized data in several pages.
- Page one lists the scenario you have chosen.



- Click on the maximize page button  to make report fill your screen.
- Use the page navigation buttons  to move through the pages of each report.
- Page two is a graphical representation of this scenario as a height over age curve.



- The mean and standard deviation are calculated for each selected plot and year for height data. These numbers are averaged, and plotted on the graphs.
- The large blue dot represents the mean height across all plots.
- The green squares represent one standard deviation above and below the mean height, across all plots (you would expect most of your data in this range).
- The red “stars” represent two standard deviations above and below the mean height, across all plots (you would find it unusual if your data falls outside this range).

- From page three to the end of the Growth Report, data are summarized for individual plots that fell within the scenario you have chosen.

The screenshot shows the NIVMA Report Reviewer application window. The title bar reads 'NIVMA Report Reviewer' and the menu bar includes 'File', 'Edit', 'View', 'Tools', 'Window', and 'Help'. The main content area displays a table with the following columns: Programme, Agency Plot Name, Tree Species, Regen Method, Measure Year, Yrs From Harvest, Yrs From Plant, Tree Age, Avg HT, SD HT, Min HT, Max HT, and Count. The data is organized under a 'TRENDIS' header. There are three rows of data:

Programme	Agency Plot Name	Tree Species	Regen Method	Measure Year	Yrs From Harvest	Yrs From Plant	Tree Age	Avg HT	SD HT	Min HT	Max HT	Count
ANC	ANC/1999/1094/1	At	S	2001	2		46.42	27.35	3	119	36	
MWW	MWW/1996/25/5	At	S	1998	3		48.97	19.71	18	96	36	
			S	1999	4		76.64	22.78	34	117	36	

The status bar at the bottom left shows 'Ready'.

To print report:

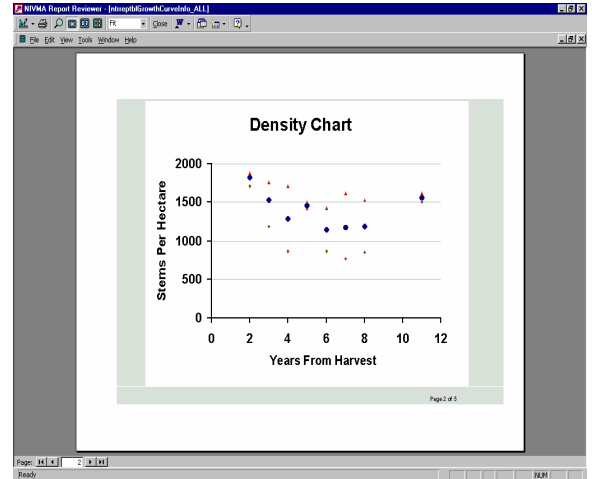
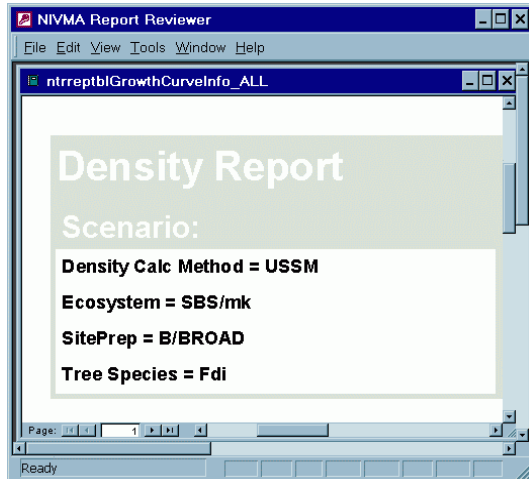
- From menu bar, select File, then Print.
- “All” will print entire report including plot summaries.
- “Pages” From: 1 To: 2 will print the scenario list and graph.
- Pop-up box appears; click OK.

NOTE:

- Before running another scenario, ensure the report window has been closed. If you change a scenario and click the View Report button without having closed the window first, the window will maximize itself with the previous scenario run.
- Data errors will become apparent in this section. The Growth Report is a good tool for checking your data for errors.
- Use the Report Datasets (How? See page 9) to look at the underlying data for errors. Corrections can be sent to NIVMA at steward@nivma.bc.ca.

Stems per Hectare Report

- Stems per Hectare Report can be customized by twelve variables: Programme, Random/Non-Random, Density Calc Method, Agency, EcoArea/Zone, EcoPhase/Subzone, Ecosystem, PlotName, Province, SitePrep, StandTend, Tree Species.
- Three variables: Programme, Random/Non-Random, and Density Calc Method are at the top of the list, to emphasize their importance. The rationale for Programme and Random/Non-Random is the same as for the Growth Report.
- Density Calc Method makes you pick between tallies of total stems per hectare (sph), or the BC protocol for counting “well-spaced” trees. The Small-tree (total sph) and Well-spaced methods apply to TRENDS data. The USSM method applies to USSM data that approximates well-spaced, since it uses the survival plot data.
- The format for the Stems per Hectare Report is similar to the Growth Report; page one lists your chosen scenario, page two is a graphical representation of the scenario, and the remaining pages summarize the data for individual plots that fell within your chosen scenario.
- The average stems per hectare are calculated for each selected plot, year, and species combination. These numbers are averaged, and plotted on the graphs.

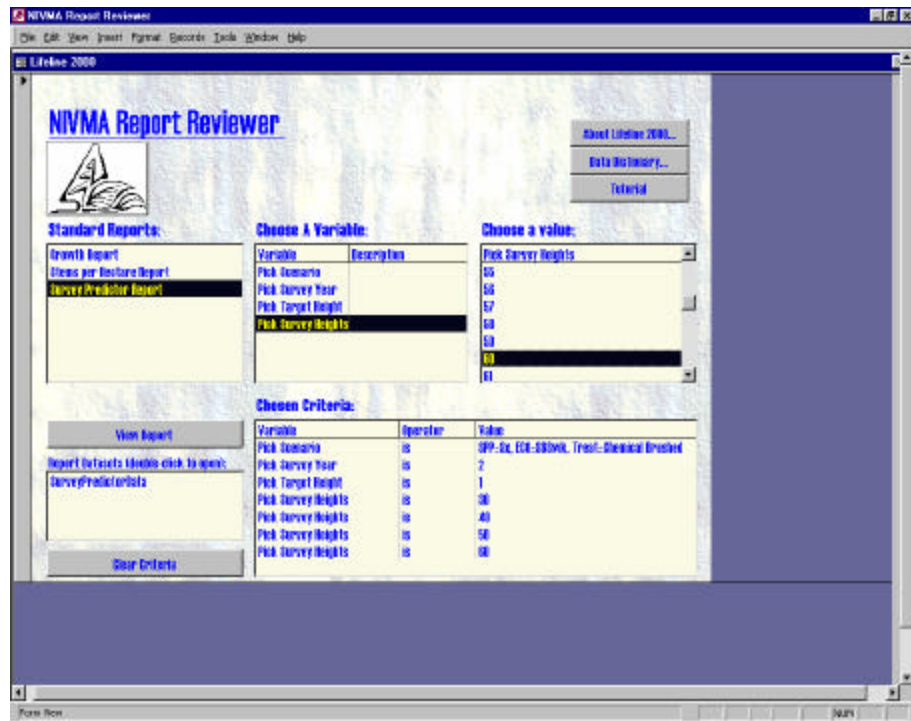


- The large blue dot represents the mean stems per hectare across all plots.
- The two tone brown/green triangles represent the maximum stems per hectare across plots.
- The two tone brown/green diamonds represent the minimum stems per hectare across plots.

Programme	Agency	Plot Name	Measure Year	Yrs From Harvest	Density Method	Tree Species	Stems per Hectare
USSM							
	RUS-S	EJ4605001/1	1990	3	USSM	Fdi	1437
							1437
			1991	4	USSM	Fdi	862
							862
			1993	6	USSM	Fdi	862
							862
			1994	7	USSM	Fdi	812
							812

Survey Predictor Report

- This report presents actuarial information generated in LifeLine ACT98 in a tabular fashion that can be used to make comparisons between NIVMA data and operational survey data, as well as comparisons with the other two reports. Currently, fifteen scenarios are loaded. Each Scenario is a combination of Species, Ecosystem and Treatment information. All data used originates from the USSM program, as the TRENDS data is still young with respect to conducting actuarial analysis.
- Survey Predictor Report can be customized by making selections from four variables: Pick Scenario, Pick Survey Year, Pick Target Height, Pick Survey Heights.
- **Unlike the previous reports, at least one selection must be made from each variable.** This is illustrated with an example for Spruce in the SBSwk that received chemical brushing treatments (corresponding to USSM Stand Tending codes of ACBW and CBW).
- From Pick Scenario, select a single scenario.
- From Pick Survey Year, pick the value 2 – representing 2nd year surveys.
- From Pick Target Height, pick one or more target heights (from 1 to 3 m).
- From Pick Survey Heights, pick one or more heights that would reflect values found in your operational surveys (from 1 to 150 cm).



- The resulting actuarial analysis indicates that for a 1 m target, a 30 cm seedling in this scenario has little chance (11 %) of reaching the target in 5 years, whereas a 60 cm seedling has a very good chance (90 %) of reaching the target in 5 years.

NIVMA Report Reviewer

File Edit View Tools Window Help

SurveyYear 2

Likelihood of Reaching Target Height / Mortality (%)

Target Height(m)	Survey Height(cm)	In 5 Years	In 7 Years	In 10 Years	In 15 Years	In > 15 Years	Mortality	# Plots	# Trees In Scenario	# Trees In Actuary
1	30	11	43	89	89	89	11	27	875	257
1	40	17	56	92	92	92	8	27	875	257
1	50	50	87	99	99	99	1	27	875	257
1	60	90	99	100	100	100	0	27	875	257

Ready

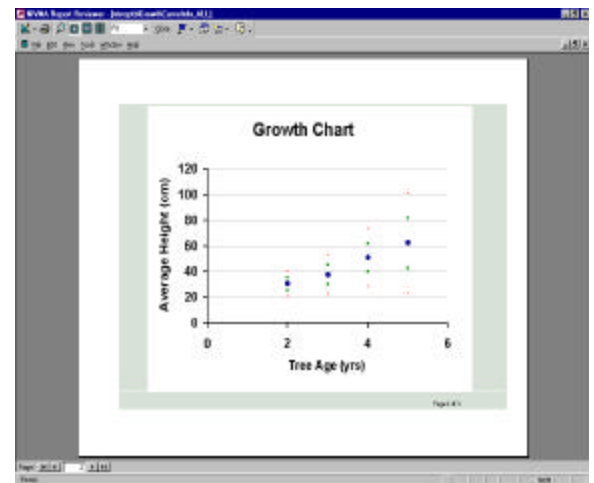
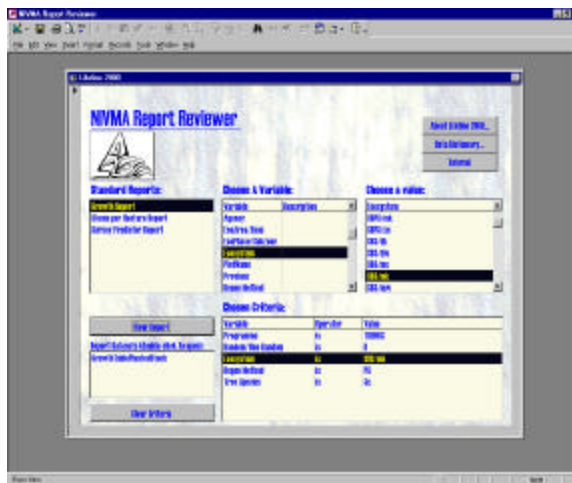
- The table displays the number of USSM plots and trees that were in the scenario.
- The number of trees that were used to calculate the percent likelihood and mortality results from the actuary analysis is also listed as # Trees in Actuary.
- These numbers provide you with some measure of confidence in the results generated.
- Percent mortality may be over-estimated as it represents the trees that died expressed as a fraction of the trees measured at year 2 (SurveyYear) that made the target height.

Suggestions for Exploring Data with the NIVMA Report Reviewer

- Look at the same scenario using all three reports, so you begin to understand the relationship between the reports.
- Take a telescope/microscope view. Begin with very general scenarios about a species, or a broad ecotype, then zoom down into treatment details or particular agencies, or even selected plots. Observe how results change as you “zoom in” and “zoom out”.
- Look at many scenarios, to get an over-view of the extent of NIVMA’s data.
- Don’t limit yourself to viewing the reports in the tools. Every time you do a scenario, an exportable data set is created. Export it using Report Datasets to a spreadsheet program and analyze further.
- Take a systematic survey approach (“the matrix”) where you sequentially change only one item in a scenario (for example change only species, or change only ecosystem, or change only treatments, etc.).

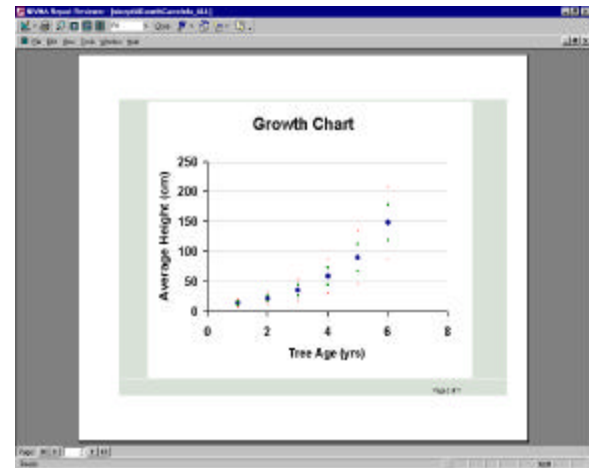
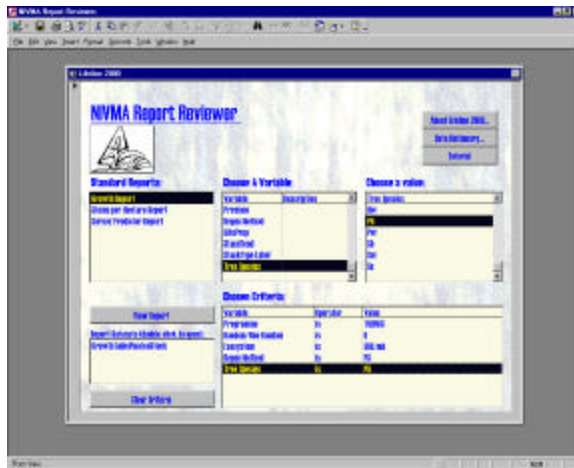
The following example shows a systematic approach that can be used:

1. Standard Reports: Growth Report.
2. Choose a Variable: Programme, Choose a Value: TRENDS.
3. Choose a Variable: Random/Non-Random, Choose a Value: R.
4. Choose a Variable: Ecosystem, Choose a Value: SBSmk.
5. Choose a Variable: Regen Method, Choose a Value: PS.
6. Choose a Variable: Tree Species, Choose a Value: Sx.
7. Click View Report, choose Tree Age. Click OK.



At this point you may want to compare the growth report of Sx to Pli. Print your spruce report (all or just the graph), then:

1. CLOSE the report window.
2. Select Choose a Variable: Tree Species, Choose a Value: Pli and double click.
3. You will notice that both species appear in the “Chosen Criteria”.
4. To remove the Sx, double click on: Tree Species is Sx in Chosen Criteria.
5. Click View Report, choose Tree Age. Click OK.



Use the results from the Report Reviewer to better manage your silviculture programs in terms of tree performance and costs.

- The results can be used as a baseline reference for your operations in similar ecosystems, or
- This approach to summarizing the monitoring data can be used to set standards for performance expectations.
- Look at the Growth Report closer and see: in the spruce scenario there are only four installations and only two of these have a tree age greater than 2-years; we see that the range in heights for 3-4 year-old seedlings is 38-50 cm; how does this compare with your current surveys taken two years after planting?
- In the pine scenario there are 18 installations and most have trees that are 3-years old; the range in heights for 3-4 year-old seedlings is 40 to 60 cm.
- Click on the “Growth Table Planted Stock” button under Report Databases and get the spreadsheet with more info on these installations such as site prep treatments and stock types used; export to MS Excel or other software for further summary.
- Take a look at the same scenarios in the older USSM data; how do the results compare?
- Check out the results from the Survey Predictor Report; are your seedlings tracking towards reaching free-to-grow in the timeframe you planned? What treatment regimes are getting your seedlings on track? Do you need to do some stand tending, or modify your establishment regimes? You know your own costs for treatments; what’s most economical in the long term?