SOFTWARE RELEASE NOTICE

1. SRN Number: **PA-SRN-238**

2. Project Title: **General use package for high-level waste, low-level waste, and decommissioning projects** | Project No. **General use**

3. SRN Title: **STELLA, Version 6.0.1**

4. Originator/Requestor: **Oleg Povetko** | Date: **2/27/2001**

5. Summary of Actions

- ■ Release of new software
- □ Release of modified software:
  - □ Enhancements made
  - □ Corrections made
- □ Change of access software
- ☒ Software Retirement

6. Persons Authorized Access

Name	Read Only/Read-Write	Addition/Change/Delete
Oleg Povetko	**Read Only**	**Addition**
Michael Smith	**Read Only**	**Addition**
Plus other CNWRA staff	**Read Only**	**Addition**

7. Element Manager Approval: Gordon Wittmeyer Date: ~~3/6/2001~~ 5/4/2001 GW

8. Remarks: Gordon Wittmeyer 1/21/2004 (Signature for retirement) (mes) 1/21/04

CNWRA Form TOP-6 (05/98)

SOFTWARE SUMMARY FORM

01. Summary Date: February 27, 2001	02. Summary prepared by (Name and phone) Oleg Povetko (210) 522-5258	03. Summary Action: Installation testing for STELLA version 6.0.1 code
04. Software Date: 2000	05. Short Title: STELLA	
06. Software Title: STELLA version 6.0.1		07. Internal Software ID: None

08. Software Type: ☐ Automated Data System ✔ Computer Program ☐ Subroutine/Module	09. Processing Mode: ✔ Interactive ☐ Batch ☐ Combination	10. Application Area a. General: ✔ Scientific/Engineering ☐ Auxiliary Analyses ☐ Total System PA ☐ Subsystem PA ☐ Other b. Specific:
11. Submitting Organization and Address: CNWRA/SwRI 6220 Culebra Road San Antonio, TX 78228		12. Technical Contact(s) and Phone: Oleg Povetko (CNWRA) (210) 522-5258

13. Software Application: STELLA is a modeling environment controlled by a graphical use interface for simulating of various dynamic processes.

14. Computer Platform : Windows-based personal computer	15. Computer Operating System: Windows NT, Windows 95 to Windows 2000.	16. Programming Language(s): N/A	17. Number of Source Program Statements: N/A
18. Computer Memory Requirements: Minimum 4 Mbytes	19. Tape Drives: N/A	20. Disk Units: Minimum 20 Mbytes	21. Graphics: Windows-based Minimum VGA graphics card

22. Other Operational Requirements
None

23. Software Availability: ✔ Available ☐ Limited ☐ In-House ONLY	24. Documentation Availability: ☐ Available ☐ Preliminary ☐ In-House ONLY

25. Oleg Povetko 5/3/2001

Software Developer: High Performance Systems Hanover, NH Date: N/A

CNWRA Form TOP-4-1 (05/98)

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES
DESIGN VERIFICATION REPORT FOR CNWRA SOFTWARE

ACQUIRED CODE - NOT TO BE MODIFIED[1]

Software Title/Name: Stella

Version: 6.0.1

Demonstration workstation: PCs

Operating System: Windows NT, 95, 2000

Developer: High Performance Systems

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1. Output: TOP-018, Section 5.5.4

Software designed so that individual runs are uniquely identified by Date, Time, Name of software and version?

Yes: ☐ No: ☐ N/A: ☒

Date and time of run: _____

Name and version: _____

Notes: Acquired code that is not to be modified is accepted as is. ✓

2. Medium and Header Documentation: TOP-018, Section 5.5.6

The physical labeling of software medium (tapes, disks, etc.) contain required information?

Yes: ☒ No: ☐ N/A: ☐

Program Name: Stella

Module/Name/Title: N/A

Module Revision: 6.0.1

File Type (ASCII, OBJ, EXE): Exe.

Recording Date: Copies made for QA Records Rev 2/13/2001 2/15/2001 ✓

Operating System of Supporting Hardware: Windows NT, 95, 2000

Notes: Acquired code that is not to be modified may not have all above elements.

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[1] See TOP-018, Table 1 for criteria.

3. User's Manual: TOP-018, Section 5.5.5

a) Is there a Users' Manual for the software?

Yes: ☐ No: ☑ N/A: ☐

User's Manual Version and Date: N/A

Notes:

b) Are there basic instructions for the use of the software?

Yes: ☑ No: ☐ N/A: ☐

Location of Instruction: Controlled By Oleg Pensko - In Room 128, Bldg 189 currently.

Notes: Help Files on The CD

4. Acceptance Testing: TOP-018, Section 5.6

a) Has installation testing been conducted for each intended computer platform and operating system?

Yes: ☒ **No:** ☐ N/A: ☐

Platform(s): P.C. - "Paladin" in Room A128, Bldg 189.

Operating System(s): Windows NT and Windows 95

Location of Test Results: QA Records Room

Notes: Installation Test on diskette, 2/15/2001

5. Configuration Control: TOP-018, Section 5.7

a) Is the Software Summary Form completed and signed?

Yes: ☑ No: ☐ N/A: ☐

Software Summary Form Approval Date: 3 May 2001

Notes:

b) Is a software technical description prepared, documenting the essential mathematical and numerical basis?

Yes: ☐ No: ☑ N/A: ☐

Location Technical Description:

Notes:

c) Is the source code available (or, is the executable code available in the case of (acquired/commercial codes)?

Yes: ☒ No: ☐ N/A: ☐

Location of Source Code: QA Records Room

Notes: Executable only available.

6. Configuration Control, continued: TOP-018, Section 5.7

Have all the script/make files and executable files been submitted to the Software Custodian?

Yes: ☒ No: ☐ N/A: ☐

Location of Script/Make Files: QA Records Room

Notes: Some examples have been provided in this folder

7. Software Release: TOP-018, Section 5.9

Upon acceptance of the software as verified above, has a Software release Notice, Form TOP-6 been issued?

Yes: ☒ No: ☐ N/A: ☐

Version number on software (1.0 for 1st issue): 6.0.1

Version number on SRN: 238

Notes:

8. Software Validation: TOP-018, Section 5.10

a) Has a Software Validation Test Plan (SVTP) been prepared for the range of application of the software?

Yes: ☐ No: ☐ N/A: ☒

Version/Date of SVTP: _____

Date reviewed and approved via QAP-002: _____

Notes:

b) Has a Software Validation Test Report (SVTR) been prepared that documents the results of the validation cases, interpretation of the results, and determination if the software has been validated?

Yes: ☐ No: ☐ N/A: ☒

Version/Date of SVTR: _____

Date reviewed and approved via QAP-002: _____

Notes:

Additional Remarks:

High Performance Systems
Hanover, NH

CNWRA Software Developer/Date

5/3/2001

CNWRA Software Custodian/Date

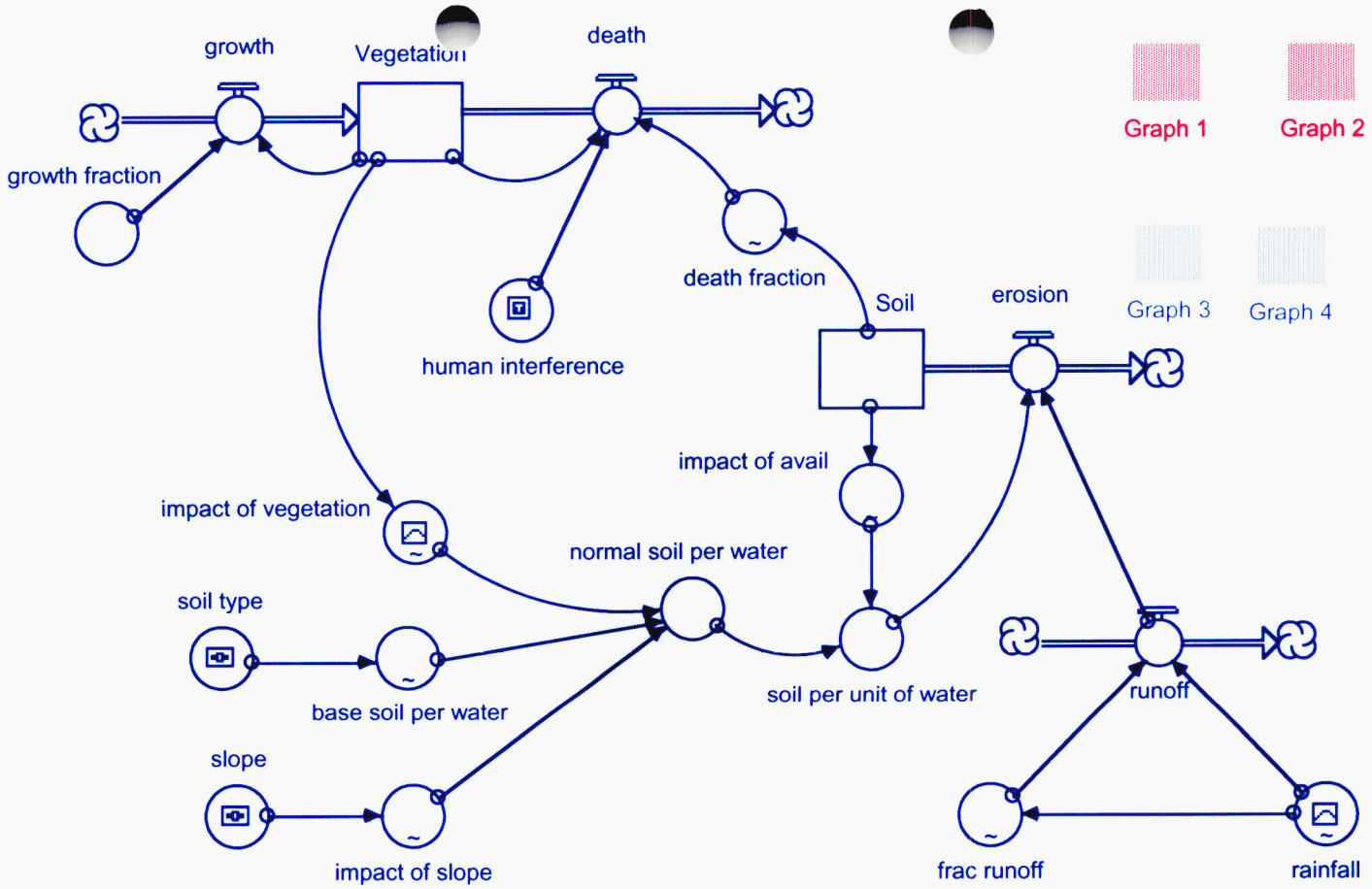
TO: Bruce Mabrito
FROM: Oleg Povetko
SUBJECT: TOP-018 for STELLA
DATE: February 15, 2001

STELLA version 6.0.1 code was designed for model model building and simulations with highly interactive user interface. It was acquired from High Performance Systems, Inc., 45 Lyme Road, Suite 300, Hanover, NH 03755-1221. Phones: (800) 332-1202, (603) 643-9636. Fax: (603) 643-9502. E-mails for technical and general support: support@hps-inc.com ; for workshop info: workshops@hps-inc.com .

The sample problem included the following:

Input file:	Description:
Soilloss1.stm	Model of an upper soil loss due to erosion. Parameters included soil type, slope type, rainfall, runoff, amount of soil per unit of water volume, vegetation growth and death fractions, human interference in vegetation growth and others. Parameters were entered as constants, as analytical expressions or in graphical form, all in arbitrary units. Based on visual inspection of output plots and tables, variation of input parameters produced reasonable changes in output. The file Soilloss1.stm contains input and output data, some input and output data were stored as separate image and text files on the attached diskette: Diagram_soilloss1.pct, Interface_soilloss1.pct, Graph_1.pct, Graph_2.pct, Equations_soilloss1.txt.

Attached:
1 cdrom, STELLA version 6.0.1 Research software
1 diskette, installation test results



From test run:

STELLA 6.0.1 IN: SOILLOSS1.STM
STELLA 6.0.1 OUT: DIAGRAM_SOILLOSS1.PCT
OR
SOILLOSS1.STM

Soil(t) = Soil(t - dt) + (- erosion) * dt
INIT Soil = 300
OUTFLOWS:
erosion = runoff*soil_per_unit_of_water
Vegetation(t) = Vegetation(t - dt) + (growth - death) * dt
INIT Vegetation = 250
INFLOWS:
growth = Vegetation*growth_fraction
OUTFLOWS:
death = Vegetation*death_fraction+PULSE(Vegetation*.3,6,1000)*human_interference
UNATTACHED:
runoff = rainfall*frac_runoff
growth_fraction = .3
human_interference = 1
normal_soil_per_water = base_soil_per_water*impact_of_slope*impact_of_vegetation
slope = 20
soil_per_unit_of_water = impact_of_avail*normal_soil_per_water
soil_type = 5
base_soil_per_water = GRAPH(soil_type)
(1.00, 0.0546), (2.00, 0.262), (3.00, 0.42), (4.00, 0.588), (5.00, 1.00), (6.00, 1.28), (7.00, 1.50), (8.00, 1.60), (9.00, 1.73), (10.0, 1.90)
death_fraction = GRAPH(Soil)
(0.00, 1.11), (30.0, 1.06), (60.0, 1.03), (90.0, 0.98), (120, 0.93), (150, 0.83), (180, 0.75), (210, 0.67), (240 0.58), (270, 0.45), (300, 0.3)
frac_runoff = GRAPH(rainfall)
(0.00, 0.00), (1.00, 0.08), (2.00, 0.14), (3.00, 0.235), (4.00, 0.345), (5.00, 0.45), (6.00, 0.575), (7.00, 0.72), (8.00, 0.78), (9.00, 0.8), (10.0, 0.795)
impact_of_avail = GRAPH(Soil/INIT(Soil))
(0.00, 0.09), (0.1, 0.65), (0.2, 0.795), (0.3, 0.885), (0.4, 0.955), (0.5, 1.00), (0.6, 1.00), (0.7, 1.00), (0.8, 1.00), (0.9, 1.00), (1, 1.00)
impact_of_slope = GRAPH(slope)
(0.00, 0.025), (4.00, 0.26), (8.00, 0.41), (12.0, 0.62), (16.0, 0.76), (20.0, 1.00), (24.0, 1.15), (28.0, 1.35), (32.0, 1.53), (36.0, 1.78), (40.0, 2.00)
impact_of_vegetation = GRAPH(Vegetation)
(0.00, 2.63), (50.0, 2.38), (100, 1.95), (150, 1.65), (200, 1.38), (250, 1.20), (300, 0.9), (350, 0.6), (400, 0.3), (450, 0.00), (500, 0.00)
rainfall = GRAPH(COUNTER(1,12))
(1.00, 7.85), (1.92, 6.95), (2.83, 6.30), (3.75, 5.25), (4.67, 4.00), (5.58, 4.05), (6.50, 4.65), (7.42, 4.25), (8.33, 1.30), (9.25, 2.05), (10.2, 0.85), (11.1, 1.90), (12.0, 1.90)

From test run:

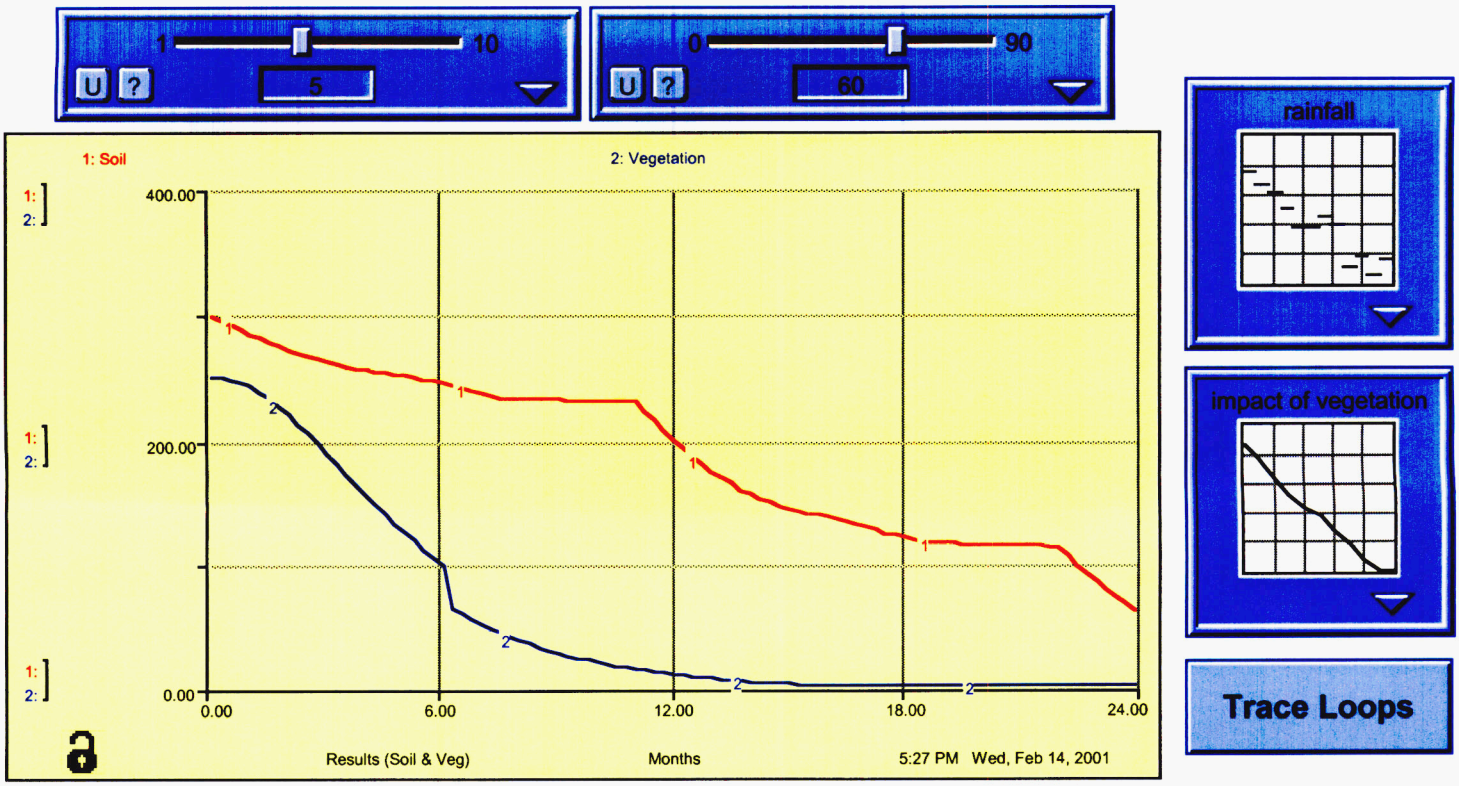
STELLA 6.0.1 IN: SOILLOSS1.STM
STELLA 6.0.1 OUT: EQUATIONS_SOILOSS1.TXT
02
SOILLOSS1.STM

By clicking on this switch, you can see the result of a one-time 30% decrease in the stock of Vegetation in month 6.

Here you have the opportunity to experiment with soil type, slope of the land and human interference by changing the values of the sliders to the left. Simply move the sliders to change the values. You can also modify rainfall trends and impact of vegetation which are represented by graphical input

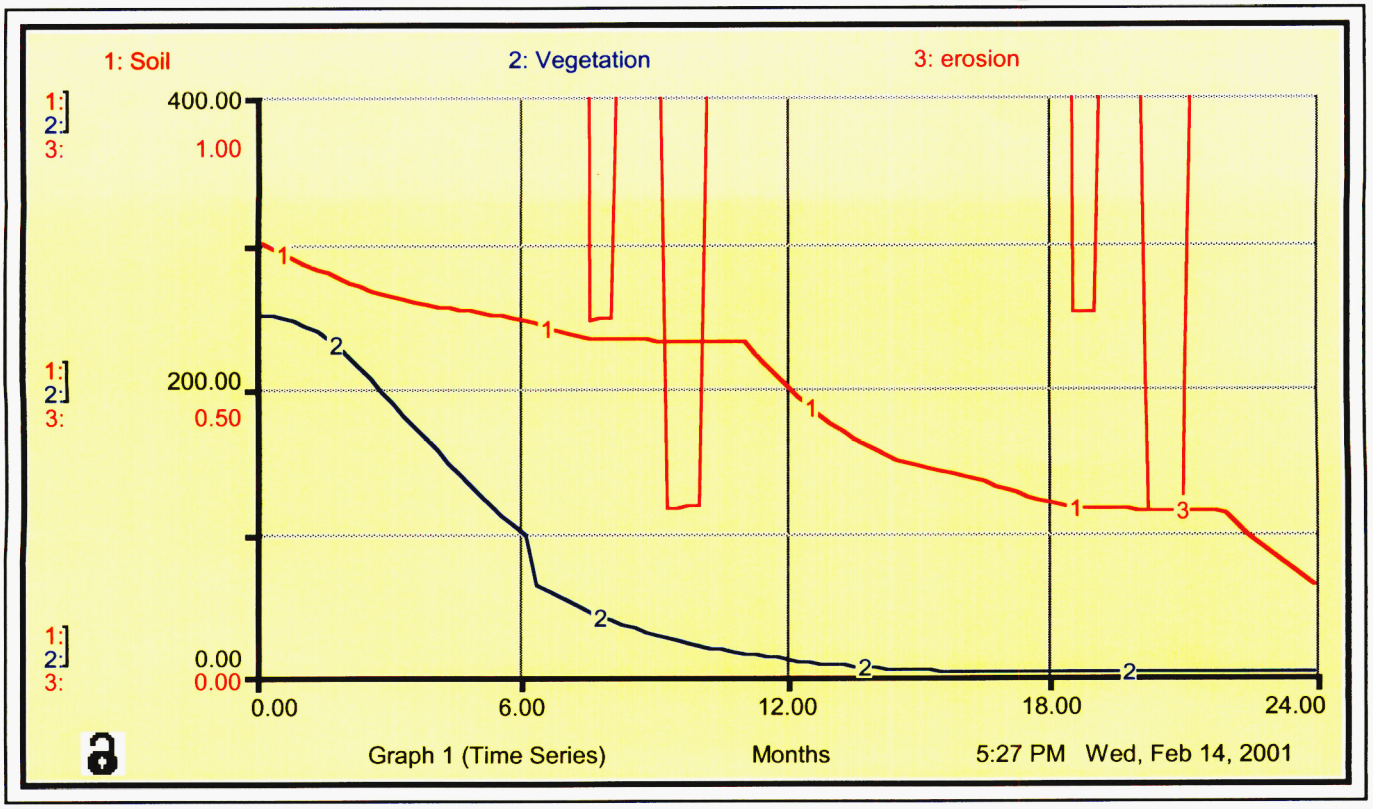
soil type

slope



From test run:

STELLA 6.0.1 IN: SOILLOSS1.STM
STELLA 6.0.1 OUT: ~~DAT~~ INTERFACE_SOILOSS1.PCT
02
SOILLOSS1.STM



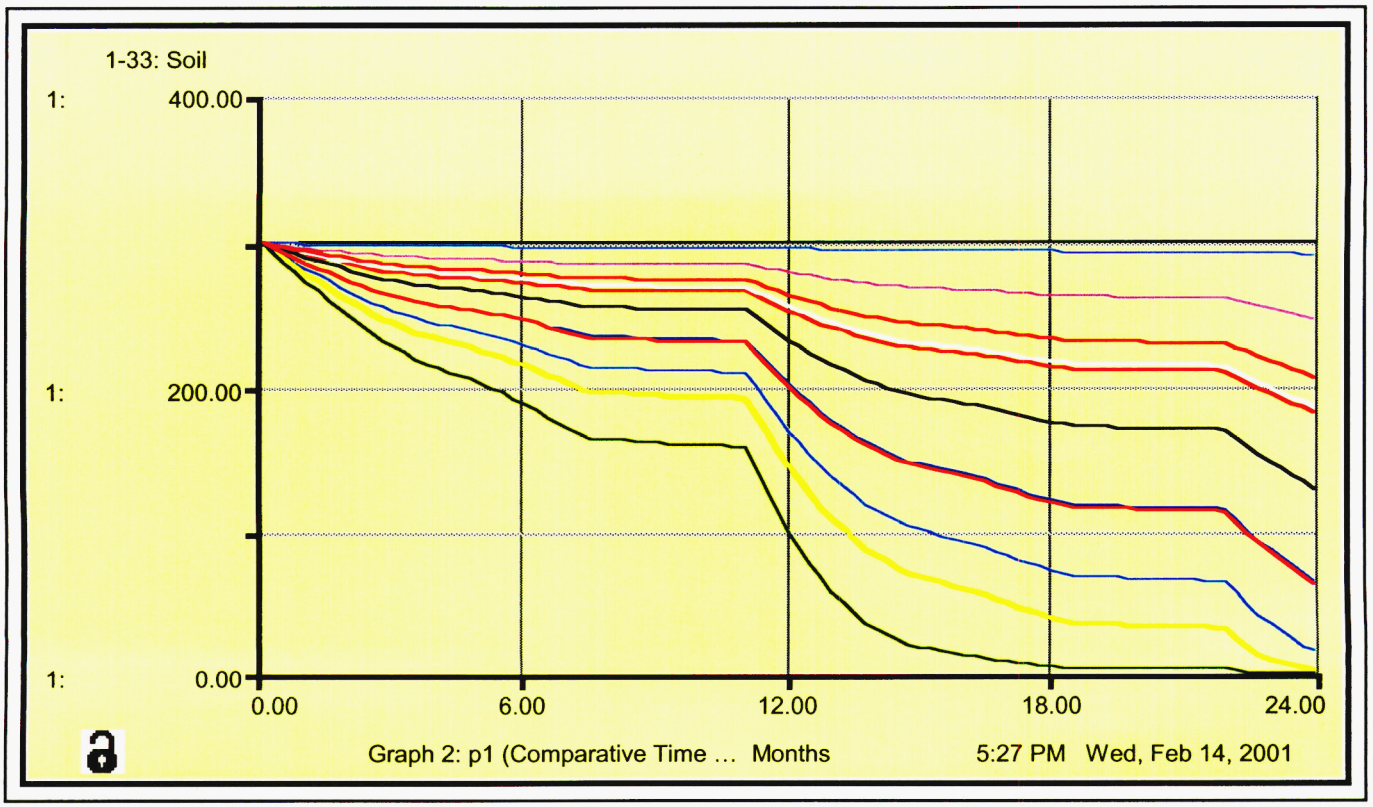
From test run:

STELLA 6.0.1 IN: SOILLOSS1.STM

STELLA 6.0.1 OUT: GRAPH1.PCT

02

SOILLOSS1.STM



From test run:

STELLA 6.0.1 IN: SOILCOSS1.STM

STELLA 6.0.1 OUT: GRAPH2.PCT

02SOILCOSS1.STM