


# SOFTWARE RELEASE NOTICE

|  |                      |                                    |
|--|----------------------|------------------------------------|
| 01. SRN Number: <b>GHGC-SRN-220</b>  |                      |                                    |
| 02. Project Title:<br><b>General use package</b>   |                      | Project No.:<br><b>20-1402-861</b> |
| 03. SRN Title: <b>KINEROS2 Version 00_04 or (1.4)</b>  |                      |                                    |
| 04. Originator/Requestor: <b>Randy Fedors</b>  |                      | Date: <b>5/10/2000</b>             |
| 05. Summary of Actions <ul style="list-style-type: none"> <li><input type="checkbox"/> Release of new software</li> <li><input checked="" type="checkbox"/> Release of modified software:             <ul style="list-style-type: none"> <li><input type="checkbox"/> Enhancements made</li> <li><input checked="" type="checkbox"/> Corrections made</li> </ul> </li> <li><input type="checkbox"/> Change of access software</li> <li><input type="checkbox"/> Software Retirement</li> </ul> |                      |                                    |
| 06. Persons Authorized Access  |                      |                                    |
| Name   | Read Only/Read-Write | Addition/Change/Delete             |
| <b>Randy Fedors</b>  | <b>RO</b>            | <b>Addition</b>                    |
| <b>David Farrell</b>   | <b>RO</b>            | <b>Addition</b>                    |
| <b>Jim Winterle</b>  | <b>RO</b>            | <b>Addition</b>                    |
| <b>Walter Illman</b>   | <b>RO</b>            | <b>Addition</b>                    |
| <b>Debra Hughson</b>   | <b>RO</b>            | <b>Addition</b>                    |
| 07. Element Manager Approval: <b>English Percy</b>    |                      | Date: <b>5/12/2000</b>             |
| 08. Remarks:<br><b>KINEROS2 versions 99_04 and 00_03 were also used. These are intermediate versions obtained from the U.S. Department of Agriculture. Version 00_04 is being put under TOP-018 control as a version change to KINEROS2 Version 1.0.</b>   |                      |                                    |

## SOFTWARE SUMMARY FORM

|  |   |  |   |
|--|---|--|---|
| 01. Summary Date:<br><b>5/10/2000</b>  | 02. Summary prepared by (Name and phone)<br><b>Randy Fedors (210) 522-6818</b>  | 03. Summary Action:<br><b>Version Update</b>   |   |
| 04. Software Date:<br><b>4/10/2000</b>   | 05. Short Title: <b>KINEROS2</b>  |  |   |
| 06. Software Title: <b>KINEROS2 Version 00_04 or (1.4)</b>   |   | 07. Internal Software ID:<br><b>None</b>   |   |
| 08. Software Type:<br><br><input type="checkbox"/> Automated Data System<br><br><input checked="" type="checkbox"/> Computer Program<br><br><input type="checkbox"/> Subroutine/Module   | 09. Processing Mode:<br><br><input type="checkbox"/> Interactive<br><br><input checked="" type="checkbox"/> Batch<br><br><input type="checkbox"/> Combination | 10. Application Area<br><br>a. General:<br><input checked="" type="checkbox"/> Scientific/Engineering <input type="checkbox"/> Auxiliary Analyses<br><input type="checkbox"/> Total System PA<br><input type="checkbox"/> Subsystem PA <input type="checkbox"/> Other<br><br>b. Specific: <b>Surface water and sediment transport model with 2-layer infiltration.</b> |   |
| 11. Submitting Organization and Address:<br><br>CNWRA/SwRI<br>6220 Culebra Road<br>San Antonio, TX 78228   |   | 12. Technical Contact(s) and Phone:<br><br><b>Randy Fedors (210) 522-6818</b>  |   |
| 13. Software Application:<br><b>KINEROS2 uses a command line executable with an input control, parameter, and precipitation files. KINEROS2 routes surface water and sediment using a kinematic equation formulation solved by finite difference and linked to a 2-layer infiltration approximation.</b> |   |  |   |
| 14. Computer Platform<br><b>DOS or<br/>DOS emulator</b>  | 15. Computer Operating System: <b>DOS</b>   | 16. Programming Language(s): <b>FORTRAN</b>  | 17. Number of Source Program Statements: <b>N/A</b> |
| 18. Computer Memory Requirements: <b>Unknown</b>   | 19. Tape Drives: <b>N/A</b>   | 20. Disk Units: <b>N/A</b>   | 21. Graphics: <b>NONE</b>                           |
| 22. Other Operational Requirements:<br><b>None. Acquired software; not to be modified.</b>   |   |  |   |
| 23. Software Availability:<br><input checked="" type="checkbox"/> Available <input type="checkbox"/> Limited <input type="checkbox"/> In-House ONLY  |   | 24. Documentation Availability:<br><input checked="" type="checkbox"/> Available <input type="checkbox"/> Preliminary <input type="checkbox"/> In-House ONLY<br>Same as for KINEROS2 Version 1.0   |   |
| 25. <i>NOTE: This is an acquired code and. CNWRA Software Custodian is trying for this.</i><br>Software Custodian: <i>[Signature]</i> Date: <b>5/10/2000</b>   |   |  |   |

# CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

## DESIGN VERIFICATION REPORT FOR CNWRA SOFTWARE: KINEROS2, Version 00\_04 or (1.4)

Date: May 15, 2000

1. This Design Verification Report is prepared by Randy Folck and Randy Fedors in accordance with TOP-018, Development and Control of Scientific and Engineering Software, section 5.8.

Full Title of CNWRA scientific and engineering software: KINEROS2 Version: 00\_04 or 1.4  
Software Category (See TOP-018, Table 1): Acquired, not to be modified  
Demonstration workstation: PC  
Operating System: DOS

2. Software Requirements Description and any changes thereto follow QAP-002 requirements?  
YES NO N/A

Notes: Acquired code, not to be modified

3. The Element Manager has approved the software Development Plan (SDP) and any changes?  
YES NO N/A

Notes: Acquired code, not to be modified

#### 4. Design and Development

- Module-level testing is documented either in scientific notebooks or in Software Change Reports?  
YES NO N/A

Notes: Acquired code, not to be modified

5. Is the CNWRA scientific and engineering software developed in accordance with the conventions described in the SDP?  
YES NO N/A

Notes: Acquired code, not to be modified

# CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

**6. Is the CNWRA software documented internally?**

YES

NO

N/A

Notes: Acquired code, not to be modified

**Does the primary program header contain the following information?**

**A. Program title, Developed for (Customer), Office/Division/Date/Customer Contact/Telephone number, Software Developer, Telephone number, titles of Associated Documentation/Designator, and the Disclaimer Notice?**

YES

NO

N/A

**B. Source code module header information provides Program Name, Client Name, Contract Reference, Revision number?**

YES

NO

N/A

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

YES

NO

N/A

Notes: Acquired code, not to be modified, name and version displayed only

**8. The physical labeling on the software or the referenced list has Program Name/Title, Module/Name/Title, Module Revision, File Type (i.e. ASCII, OBJ, EXE), Recording Date and Operating System of the Supporting Hardware?**

YES

NO

N/A

Notes:

**9. Users' Manual**

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

YES

NO

N/A

If no, explain:

**Are there basic instructions for the use of the software?**

YES

NO

N/A

Notes: Contained in User's Manual, see Version 1.0 folder

# CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

## 10. Acceptance Testing

Does the acceptance testing demonstrate whether or not requirements in the SRD have been fulfilled?

YES

NO

N/A

Notes: Acquired code, not to be modified

Has acceptance testing been conducted for each intended computer platform and operating system?

YES

NO

N/A

Notes: Acquired code, not to be modified

Have installation tests been performed on the target platform?

YES

NO

N/A

Notes: Output files located on diskette

## 11. Configuration Control

Is the Software Summary Form completed and signed?

YES

NO

N/A

If no, explain:

12. Is a software technical description prepared, documenting the essential mathematical and numerical basis?

YES

NO

N/A

If no, explain: See User's Manual in Version 1.0 folder

## CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

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

YES

NO *Folder*  
*5/15/00*

N/A

Notes:

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

YES

NO

N/A

Notes:

*R. Feltus* *5/15/00*  
\_\_\_\_\_  
CNWRA Software Developer Date

*Randy Feltus* *5/15/00*  
\_\_\_\_\_  
CNWRA Software Custodian Date

Attachments/

*Shane Mahesh* *5/16/2000*  
*CNWRA QA*

Original to: Software Folder  
cc: CNWRA Software Developer  
Cognizant EM

TO: Bruce Mabrito  
FROM: R. Fedors  
SUBJECT: TOP-018 for KINEROS2 version 00\_4  
DATE: May 10, 2000

*R Fedors* 5/10/00

KINEROS2 is a widely distributed, off-the-shelf program for surface water modeling. It is a KINematic runoff and EROSION model for event-based modeling of interception, infiltration, surface runoff, and erosion from small watersheds due to precipitation. Watersheds are divided into assemblages of planes and channels for which a rain event and subsequent runoff is routed through the watershed. KINEROS2 version 1.0 is currently under TOP-018 control at CNWRA.

KINEROS2 version 00\_4 was the latest version released by the U.S. Department of Agriculture (USDA), Agricultural Research Service. The output file indicates that this is also known as version 1.4, however, the USDA refers to this version as 00\_4 in routine communications made necessary because of code errors found during our simulations. Two significant changes were made since the version 1.0 release: (i) bugs in the algorithm for saturation-induced run-off generation and for routing flow over the vee-shaped channel microtopography were corrected, and (ii) additional output data and documentation of input files, output file, and version number were included in the output file. The documentation for version 00\_4 is the same as was used for version 1.0 (documentation is contained in the TOP-018 folder for KINEROS2 version 1.0).

Other intermediate versions were used for simulations of flow at Upper Split Wash. As new versions were obtained from the USDA (Tucson office, C. Unkrich), a sampling of old simulations were re-run using the new version to confirm that results did not change (except where expected because of bug fixes). Versions 99\_04 and 00\_03 were the primary intermediate versions used during the period June 1999 to March 2000. Version 00\_04 was the final version used for results presented in a report completed May 2000. Scientific notebooks contain the version numbers used for each simulation, and the sampling of simulations that were re-run to confirm results.

The program is labeled kin00\_4.exe. Only the compiled (executable) version of the code was provided by the USDA, hence no modifications are possible. To run the code, type the executable name (kin00\_4) followed by the name of the control file. On the attached floppy diskette the primary input file or control file is labeled kin2.fil. This file contains control flags for the simulation and the names of the other input files: (i) the precipitation event; and (ii) the geometry information for the planes and channels. The name of the output file is also contained in the control file.

The installation test was successfully completed and the results compared exactly with the output forwarded by the authors of the code (untitled.out). The executable, input files, output files (both the forwarded output file and the output file done as an installation test) are contained on the diskette put into the TOP-018 folder.