# Research and Development and the Wallingford Procedure

## The HRL Perspective

### by Dr. Roland K. Price

Since its introduction in 1982 the Wallingford Procedure has helped to bring out significant changes in the way urban storm drainage and analysis is done in the UK. These include among others,

* widespread access by engineers to a micro-based tool for design and analysis,
* increased understanding of the physical phenomena occuring in sewer flows,
* opportunity to assess performance of a sewer system for events rarer than design events,
* ability to compare predicted and observed hydrometric data for a system and so to deduce deficiences in system and model data,
* possibility of exploring a wide variety of improvement options for existing systems.

Three points can be made about research and development in the light of experience over the past decade.

1. There is a need to consolidate advances in engineering practice which uses software such as WASSP.

2. New computer technology and software techniques should be adopted to improve both user-friendliness of the modelling packages and the robustness of their predictions.

3. New research into modelling applications in drainage should be built upon existing practice where possible.

HRL has been exploring the development of four new packages for drainage:

WALLRUS - an international replacement for WASSP.

SPIDA - a simulation model for looped networks.

MOSQITO - a model for pollution run-off from sewered catchments.

RIBAMAN - a river basin management package.

HRL is also developing an interactive graphics "network modelling system", NEMOSYS, to front end new software such as WALLRUS. This system enables the user to view the plan layout of the network, long sections and cross-sections on the screen and to view and edit data rapidly.

Recently HRL has announced that it is marketing its packaged software under the name Wallingford Software. This step has been taken to assure customers that the company is endeavouring to improve and provide the best possible service at reasonable cost.

## SESSION 1 - DISCUSSION

D. Haddon, John Taylor & Sons.
   Mainframe and Micro-WASSP are both currently "frozen". Does
   this mean that there will be no more versions - what about
   software errors? Will mainframe versions of other software,
   such as Mosqito, become available in the future?

Dr. R. Price, H.R.Ltd.
   H.R. will continue to debug and support with help and
   technical advice - but there will be no new enhancements.
   The needs of mainframe users have recently been assessed by
   H.R. A version of mainframe WALLRUS will be investigated
   with a view to release in about 12 months. However, this may
   only include the main processing part of WALLRUS, so that
   the user would use a mix of micro - for pre-processing (e.g.
   data assembly), and mainframe for major processing. Although
   this could provide the ideal way forward it is recognised
   that this may not be acceptable to all mainframe users.

D. Haddon.
   We have experienced problems with more flow coming out of
   on-line tanks than goes in. Will this problem be rectified?

A. Brown, H.R.Ltd.
   Problems can occur when the hydraulic gradient in the
   overflow pipe comes above the soffit level of the overflow
   orifice. The problemcan be overcome by using an oversize
   pipeas the first pipe in the overflow branch, with any
   restriction then being modelled beyond this first pipe. Any
   user having a problem of this type can receive advice from
   H.R.

D. Haddon.
   Would a better User Manual be preferable to an expert system
   to give users advice?

Dr. R. Price.
   The value of detailed User Manuals is questionable - do
   users really read them? There is evidence from the many
   questions received at H.R. that users do not read the
   existing manuals thoroughly. All availble information could
   go into a manual but it would have to be large, and would
   require a complex indexing system. An expert system would be
   much easier to use.      ·    ────────

K. MacGregor, Hydroscan Ltd.
   In monitoring a system in Singapore, rainfall intensities in
   excess of 150 mm/hr were experienced. What is the likely
   effect of using such intensities in WALLRUS or WASSP?

Dr. R Price.
   With such large intensities, rainfall recording errors would
   be high, particularly with regard to areal effects.
   Providing the model properly represents both paved and
   pervious areas the answers should be reasonable, but
   accuracy will not be high.
   The WALLRUS SCS surface run-off model is applicable to this
   situation. There is widespread experience of using this run-
   off model worldwide. If the sewer network is looped it will
   require SPIDA for modelling.