HEC-FDA 1.4

Overview of Key Changes and Transition from Previous Versions

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Requirements for Migrating to FDA 1.4

- HEC-FDA 1.4 has been certified for National use in accordance with EC 1105-2-412 Assuring Quality of Planning Models.
  - HQUSACE HEC-FDA 1.4 certification memorandum dated 2 Dec 15 (issued 17 June 15)
  - Flood Risk Management Planning Center of Expertise (FRM-PCX) HEC-FDA 1.4 certification memorandum dated 26 Aug 15
- All feasibility studies, including Continuing Authorities Program studies (CAP), and general reevaluation studies using FDA must migrate to HEC-FDA 1.4 unless the Tentatively Selected Plan (TSP) milestone (or equivalent milestone) has been completed as of 30 November 2015.
- All other studies/projects may continue to use the version of HEC-FDA that was certified at the time of the decision to release the draft feasibility report for public review.

Requirements for Migrating to FDA 1.4

- If migration to HEC-FDA 1.4 presents an undue burden to small-scale feasibility studies and Continuing Authority Program (CAP) studies, permission to use HEC-FDA 1.2.5a may be granted by the FRM-PCX on a study by study basis.
- Requests for continued use HEC-FDA 1.2.5a on a study should be coordinated through the home MSC Regional Economist in accordance with the FRM-PCX memo dated 26 Aug 15.
- For more information, contact your MSC Regional Economist or

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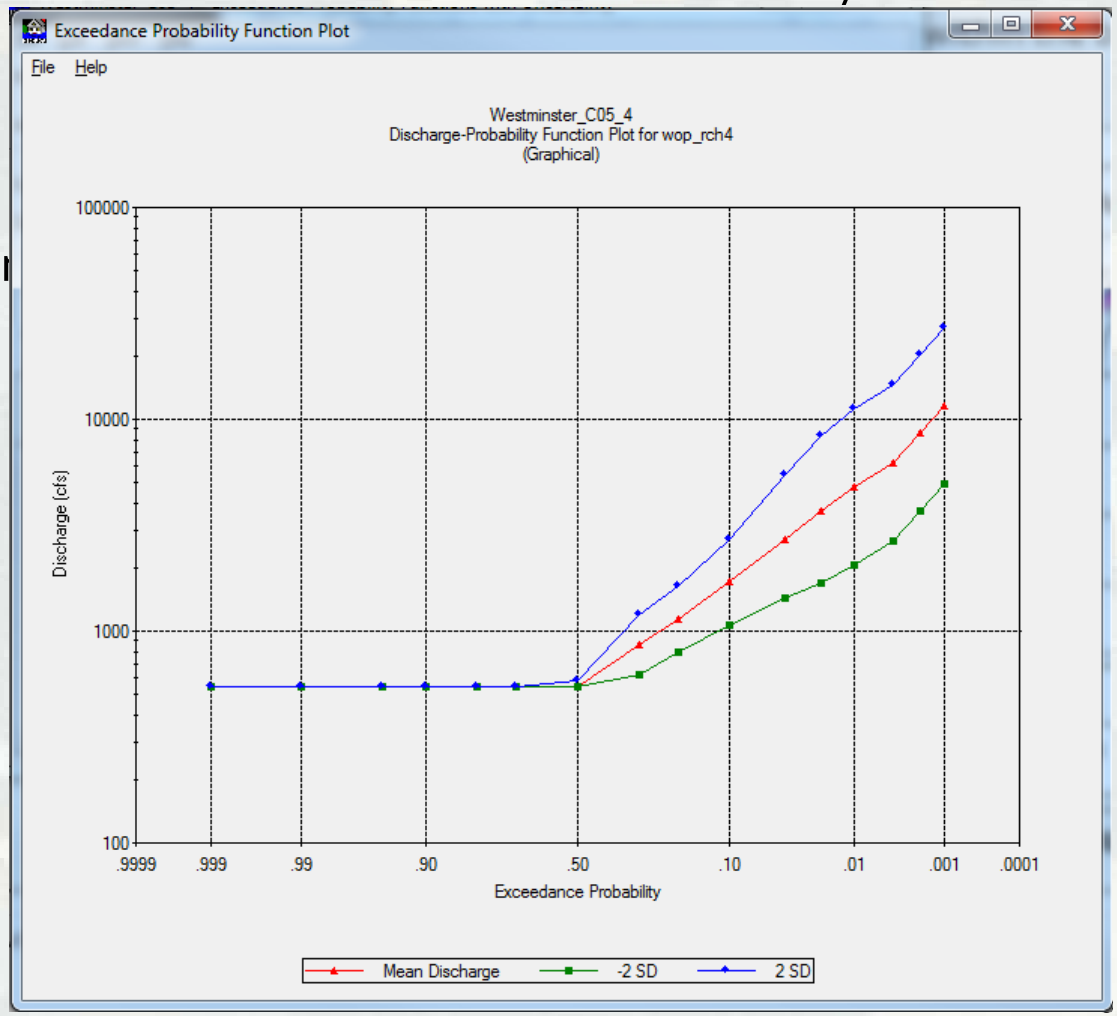
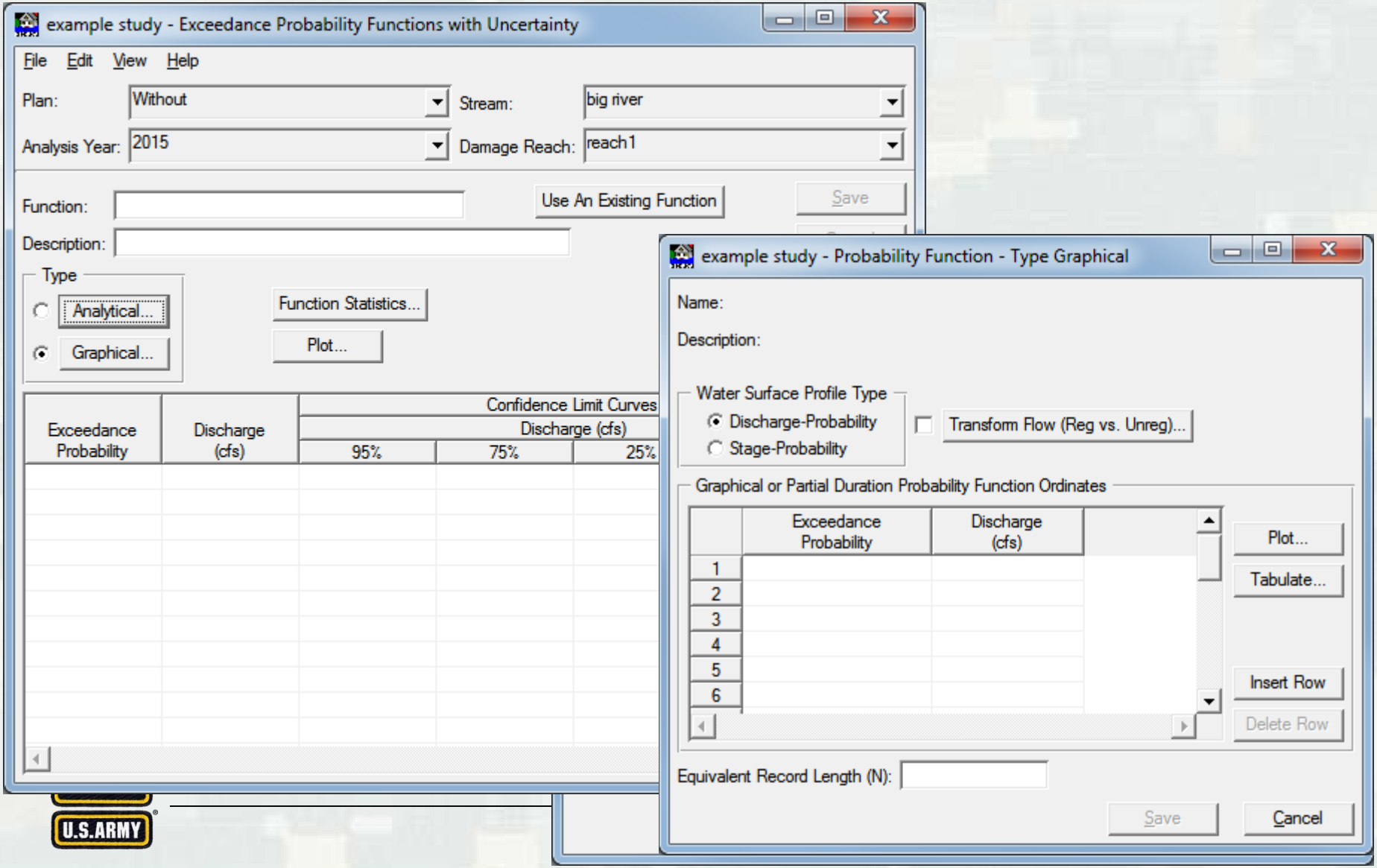
Why the New Version?

- Intermediate step in transition to version with a Windows friendly interface (version 2.0)
- Repair known issues
- Improve computation of u



Graphical Frequency Curves



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The Use of Graphical Frequency Curves

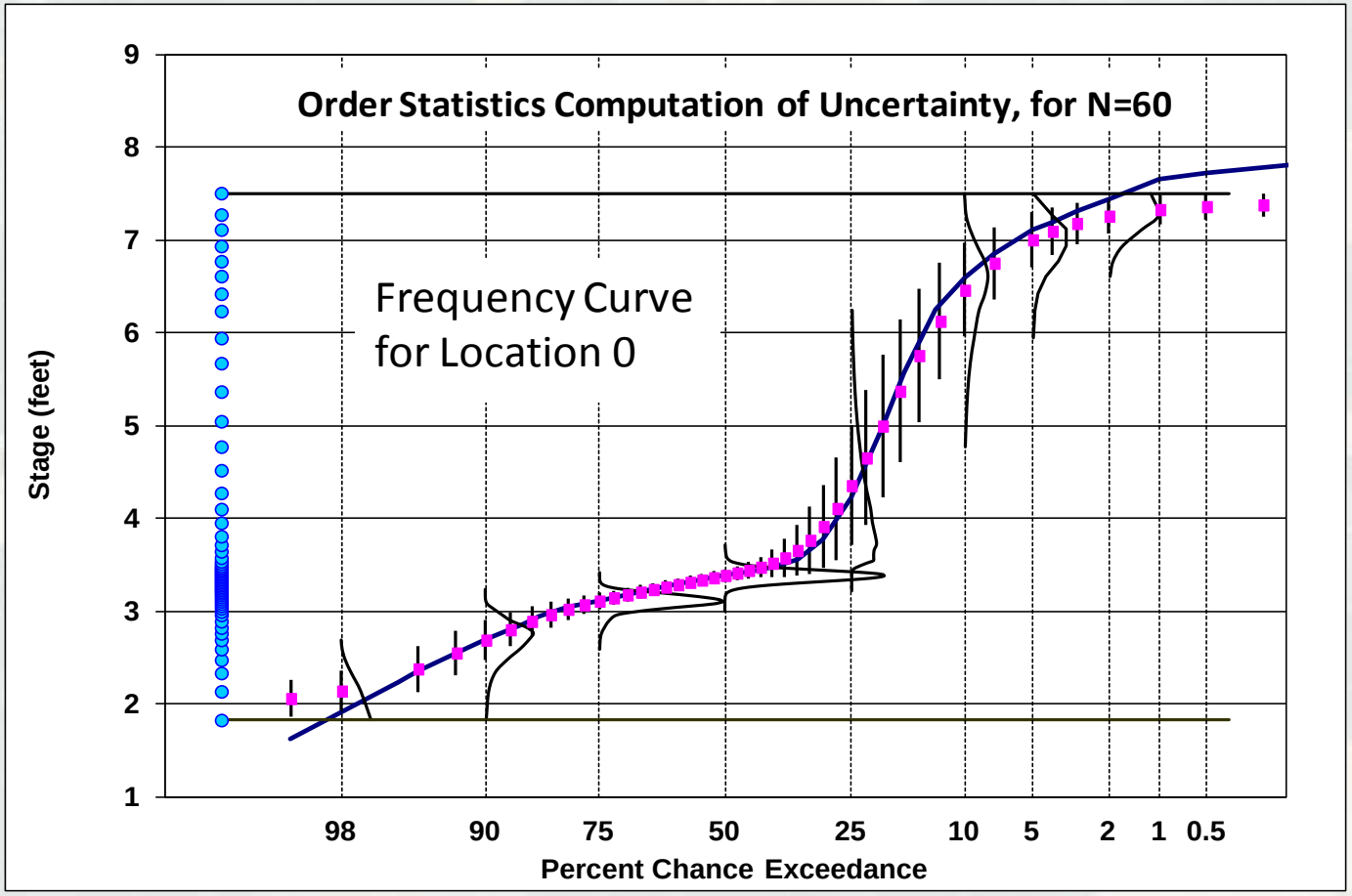
- Option of last resort
- Unavoidable difficulties in computing uncertainty about graphical frequency curves
- Alternative methods include the use of:
  - analytical frequency curves
  - analytical frequency curves + transform flow function

Graphical Curves: the General Approach

- ETL 1110-2-537, titled "Uncertainty Estimates for Non-analytic Frequency Curves"
- Basic approach uses ordered statistics method, which is limited by the historical record
- Often flows exceeding those observed in the historical record are the most relevant to the analysis and decision making

The Strength of this Approach

- The strength of the ordered events approach is that within the bounds of the historical record it produces "good" estimates of uncertainty.



Limitations of this Approach

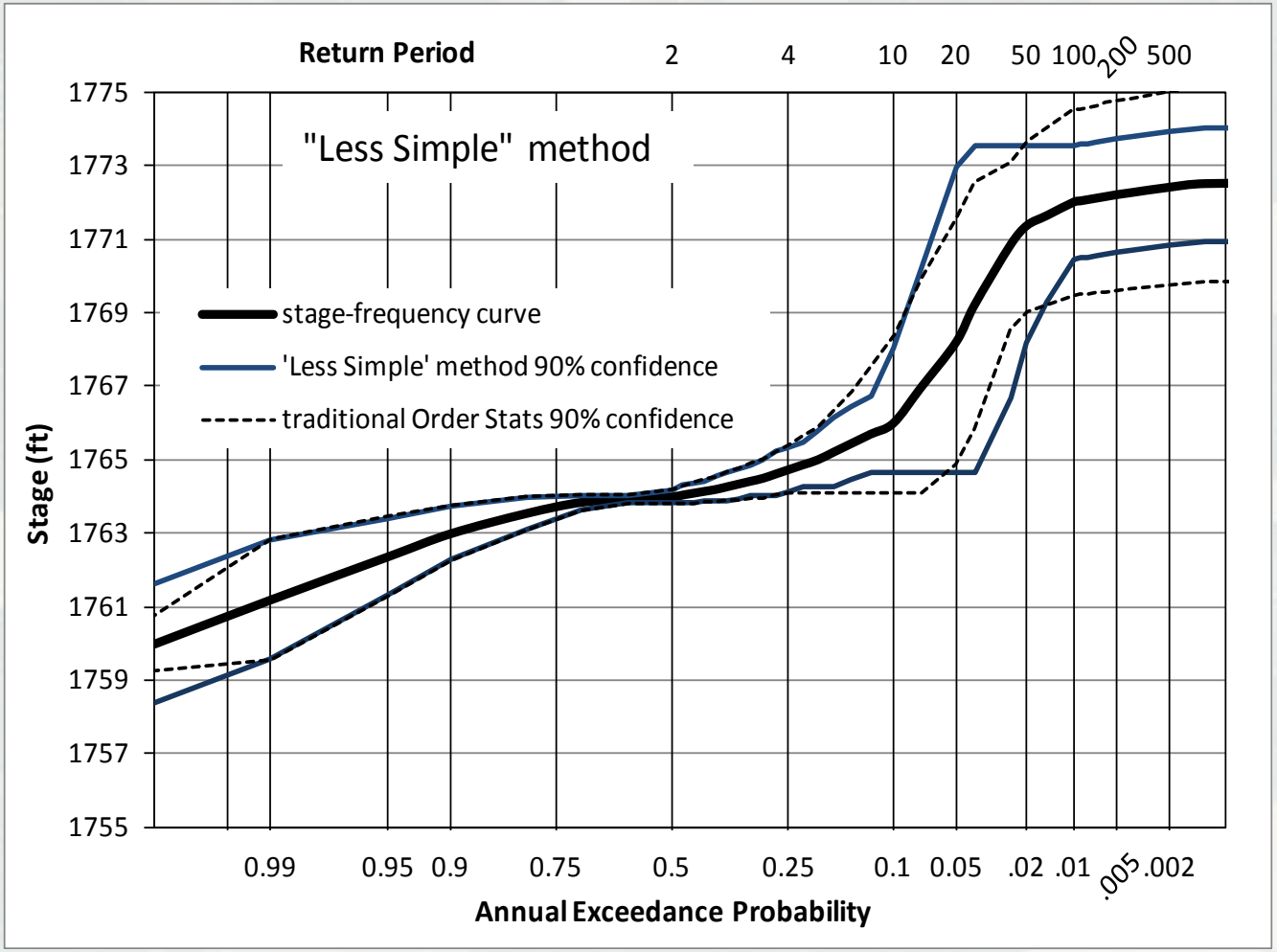
- Strength: It provides a good guide for what uncertainty about a graphical flow/stage frequency curve should look like but…
- Limitation: It needs to be paired with an approach that will allow it us to extrapolate beyond the bounds of our observed data

Implementation in Previous Versions of FDA

- Occasionally produced inconsistent results based on the length of period of record
- In a few cases:
  - a longer period of record resulted in less uncertainty
  - a shorter period of record resulted in more uncertainty

Implementation in Version 1.4

- Near exact match to variance estimated using ordered statistics approach



The Impact on Results

- The polarity of the change in EAD resulting from the new method can not be generalized
  - If the curve is "flat" across the range of damaging events the uncertainty is likely to be overestimated in 1.2.5a. The most probable expectation is a decrease in EAD in version 1.4
  - If the curve is "steep" across the range of damaging events the uncertainty is likely to be underestimated in 1.2.5a. The most probable expectation is an increase in EAD in version 1.4
  - Of course many curves will be both "flat" and "steep" across the range of damaging events, "flat" and "steep" are also relative terms.

Questions?

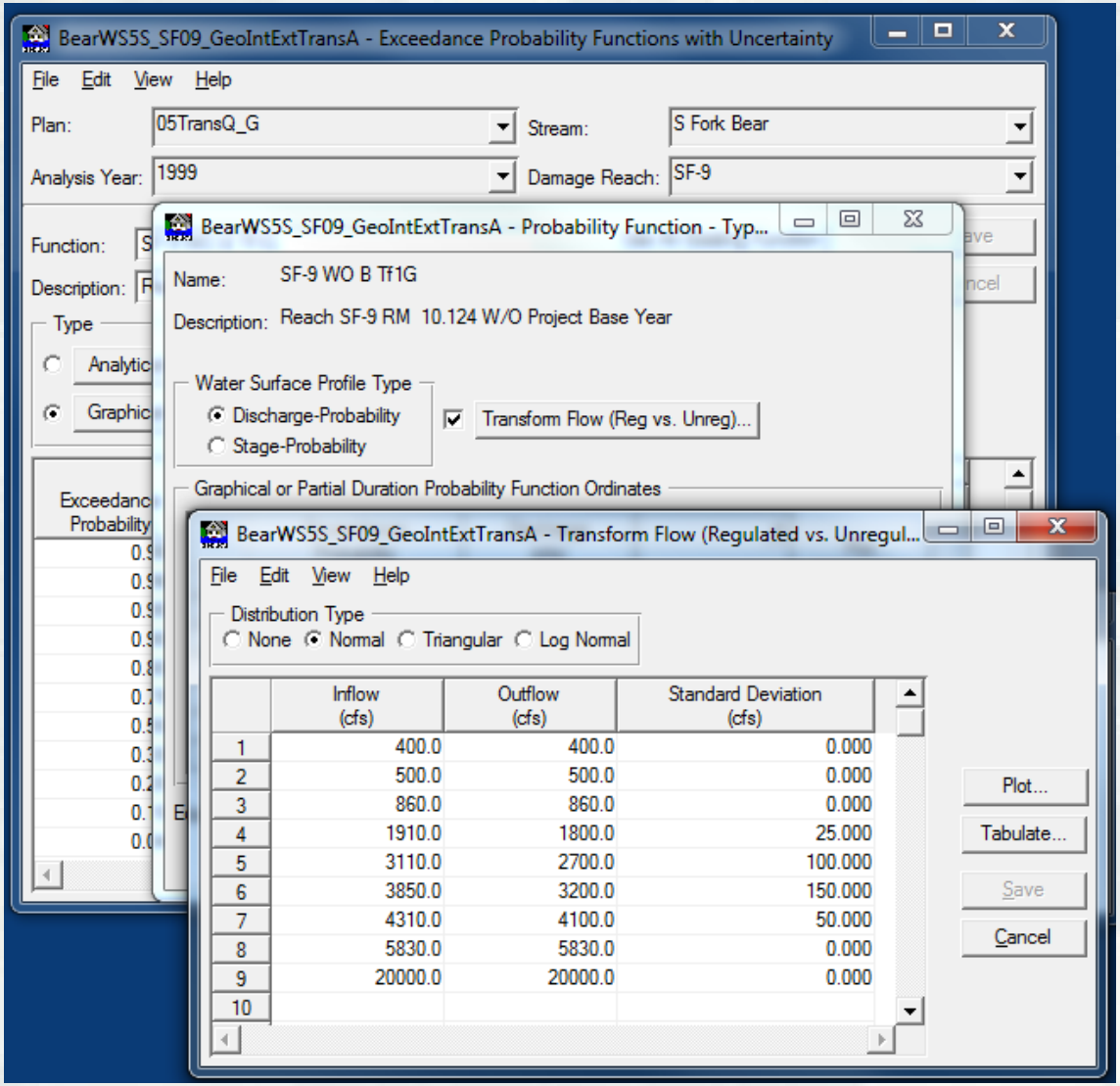
Live Demonstration

- Importing a 1.2.5a study into version 1.4
- Documentation, Frequently Asked Questions (FAQs), Training and other information on HEC website: http://www.hec.usace.army.mil/software/hec-fda/

Known Issue 1: Transform Flow Relationship

- Problem
  - If you have a graphical probability function with a transform flow function in version 1.4, you cannot edit the data.
  - (You can edit it if you use an analytical probability function).
- Solution
  - Export the data using the Economics->Export
  - Edit the data in Excel, save as tab delimited text file
  - Import edited file using Economics->Import->ASCII Tab Delimited

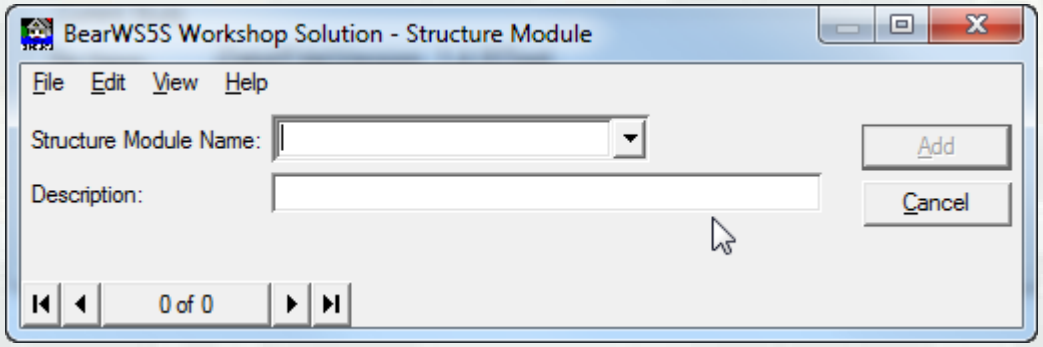
Known Issue 1: Symptoms

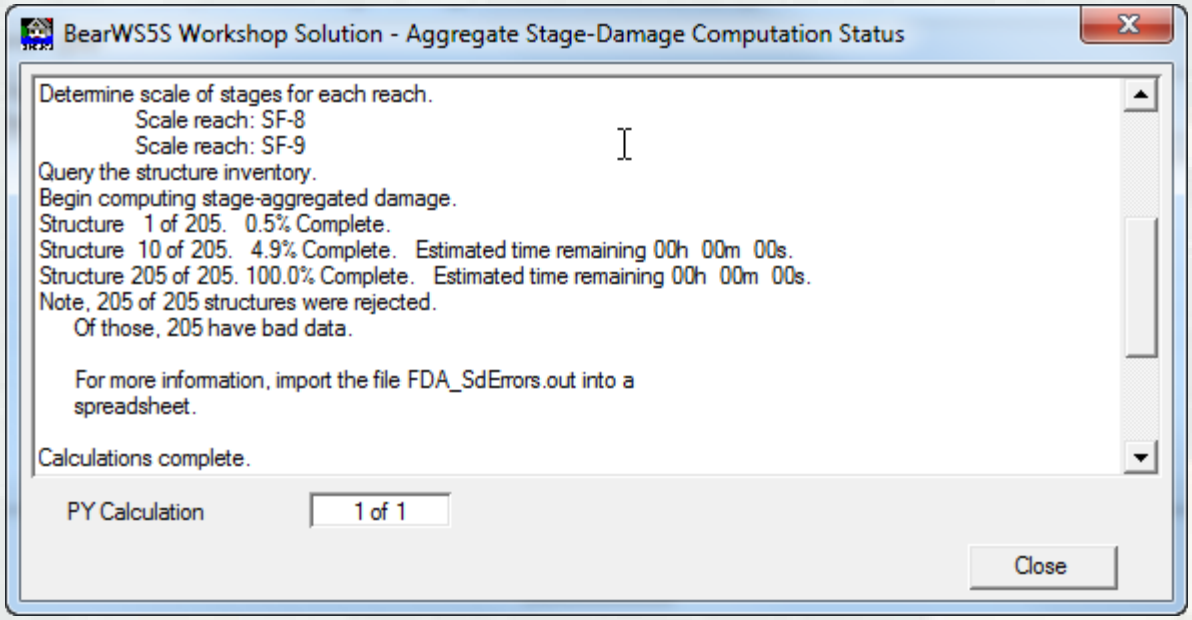


Known Issue 2: Importing a Version 1.2.5a Study in to Version 1.4

- Problem
  - After importing, if you delete a plan, all of the structure modules will be deleted.
- Solution
  - Don't delete a plan in version 1.4 if you've imported a study from version 1.2.5a.
  - If you do delete a plan, contact HEC to help you reconstruct your structure modules. It helps to have the original version 1.2.5a data.

Known Issue 2: Symptoms

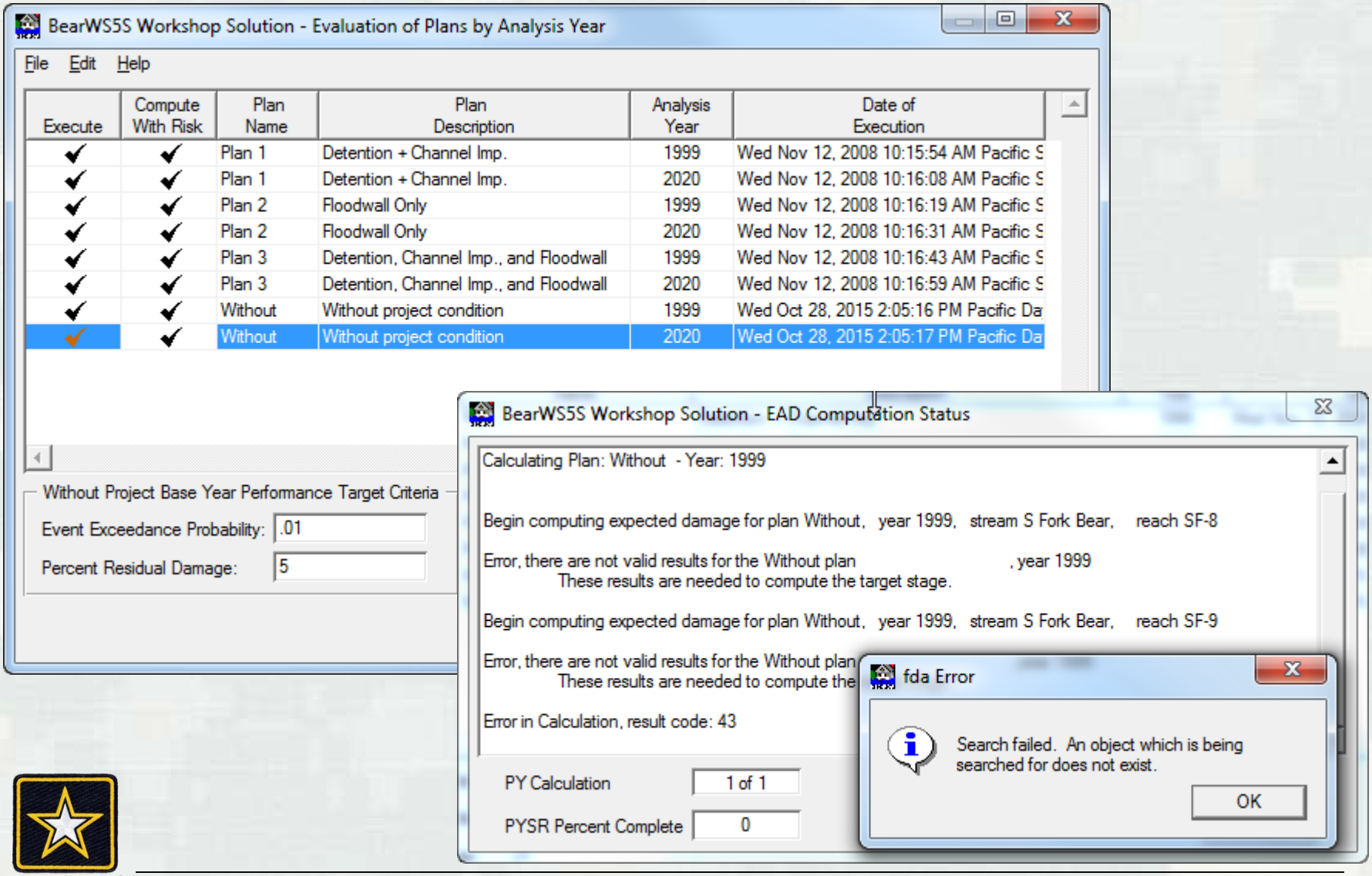




Known Issue: Definition of Without Project Plan

- Problem
  - Occasionally, the internal pointer to the "Without" plan is set to undefined.
  - Indications of this are:
    - The Without plan is not the first plan in a list of plans
    - When trying to compute EAD for the without plan, FDA issues a message saying the Without plan has not been computed.
- Solution
  - In the file "study.dbf", edit the field STY_WOPLAN so that it contains the internal ID for the "Without" plan
    - In 1.4, it is usually 2
    - Need to edit the file using dBASE or MS Access
  - Contact HEC and they will edit your database as described above.

Known Issue: Without Plan Symptoms



Questions?

For questions regarding transition:

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