MEMORANDUM FOR RECORD **23 January 2025**

Subject: FDA 2.0.1 QA/QC and Certification Review Recommendation

I. Changes Submitted

The following changes were submitted to the HEC-FDA codebase following release of HEC-FDA Version 2.0. The codebase inclusive of these changes is to be labeled Version 2.0.1.

Issue	Description
Price Index Broken	The price index is a study property modified by the user that acts as a global price update for all structure, content, vehicle, and other values to the price level represented by the user specified price index. The price index was not being used in the aggregated stage-damage compute due to the data not being passed from the user interface to the computational engine. The connection between the user interface and computational engine for the price index has been resolved in Version 2.0.1, and users can now update structure inventory values using the price index found under study properties.
Software Stalls When Opening Large Study	Studies with very many frequency functions could not be opened due to the quantity of data processing procedures taking place upon opening a study data set. Calculation of uncertainty about frequency curves was taking place for all curves upon opening the software. In Version 2.0.1, calculation of uncertainty about a frequency curve happens as the user launches the frequency curve editor. The only changes to the user experience or workflow from this change is the ability to open a study with many frequency functions and automated display of uncertainty upon launching the frequency function editor.
Unhandled Exception Upon Changing Projection File	Users encountered an unhandled exception upon attempting to change the study projection file. Version 2.0.1 includes a fix so that users can successfully replace study projection files without incident. Previously selected projection files that are replaced are copied to an archive folder within the Study Projection subdirectory of the study data set directory.
Graphical Frequency UI Radio Button appears unchecked on opening.	In some cases, the radio button indicating flow or stage for a graphical frequency curve was rendering on screen with neither option checked. The button will now reflect the user's saved or immediate choices as intended.

II. Quality Control:

All changes were tested on a complete workshop dataset, as well as user datasets for user reports as appropriate by the programmer of record. All changes were run through the automated testing suite, with changed lines of code enumerated, and made available for code review. The resulting package was tested by a team member uninvolved with the changes to confirm user facing behavior matches stated developer expectations and that no other unintended changes were produced.

All changes were reviewed line by line by an HEC-FDA team member uninvolved in making the code changes. The reviewer digitally signed their approval of each bug fix, assuring:

- The automated testing system ran all intended tests.
- All tests pass.
- User facing behavior matches the developer's stated expectation.
- Code changes are technically reasonable.
- Code changes adhere to the standards of the contributing guidelines.

The record of the review is recorded in the associated pull requests on the HEC-FDA GitHub Repository, along with detailed records of all changes and any discussions which took place during the review process. The review process of the changes to the codebase for Version 2.0.1 resulted in no major findings or revisions required to the work originally submitted.

III. Certification Review Recommendation:

Based on the technical implications of the changes made, results from the quality control tests, The HEC-FDA Development team recommends extending current HEC-FDA 2.0 certification to include HEC-FDA 2.0.1.

The changes made in this patch version do not change results, model logic, or significantly change the behavior of the user interface beyond patching unintended behavior in the UI that previously required tedious workarounds from the field or prevented project progress completely.

IV. Quality Assurance

The signature below assures that the developer responsible for these changes and the reviewer validating the changes completed the quality control as described above. The signature below also assures that the recommendation with respect to certification has been duly considered and that the recommendation is consistent with existing USACE policy and guidance.

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