

UPPER RIO GRANDE WATER OPERATIONS MODEL (URGWOM)

DATABASE AND MODEL TESTING QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) PLAN

- 1) URGWOM Databases – methods to provide reasonable assurance that data used in URGWOM will match data from original source. The Hydrologic Engineering Center – Data Storage System (HEC-DSS), which resides on a Bureau of Reclamation computer located at the Corps of Engineers, Albuquerque District Office, serves as the current URGWOM database.
 - a) Transfer of data from data source to HEC-DSS database; data described in the following meta files are collected from the source agency and imported into the HEC-DSS database. Days with missing or incomplete records were estimated using methods described in the meta data files.
 - metadata.agriculture.dss
 - metadata.diversions.dss
 - metadata.ettool.dss
 - metadata.localinflow.dss
 - metadata.reservoir.dss
 - metadata.rivleak.dss
 - metadata.sjaccount.dss
 - metadata.stage.dss
 - metadata.streams.dss
 - metadata.wastewater.dss
 - b) Coefficient/constants are not in the database but were developed using input from the database. (See the URGWOM Physical Model documentation for a discussion of data review and evaluation).
 - c) Transfer of data from HEC-DSS to model (input file) is controlled by DMIs (data management interface). The DMI QA/QC is undertaken to ensure that the HEC-DSS data are the same data as used as input data. The current URGWOM DMIs were written to provide access to HEC-DSS files.
 - i) QA/QC for missing data is “built into” models; models will not function properly if model input data are missing.
 - ii) HEC-DSS data and input file data will be plotted and compared to reconcile differences between HEC-DSS and input file. Comparison will be conducted by visually comparing the plots to look for differences.

- 2) Operations Model Testing– defines the process of moving from a developmental model to a production mode. The URGWOM Technical Team will oversee this process.
 - a) Recommended system requirements.
 - i) PC or UNIX hardware
 - ii) Appropriate software license from CADSWES.
 - b) Recommended RiverWare training.
 - i) Simulation modeling training or equivalent experience.
 - ii) Rule-based simulation modeling training or equivalent experience.
 - c) Ensure consistent test scenarios by using these items:
 - i) Consistent model coefficients and constants (to verify that parameters described in documentation are in the model);
 - ii) Common beginning and ending simulation times and input data;
 - iii) A common database or common data in different database;
 - iv) Common DMIs or DMIs that transfer common data from a database to model input.
 - d) Identification of URGWOM testers – ensure testers understand function of operations model and how it interacts with other URGWOM models through the use of a tutorial.
 - i) URGWOM Cooperators testing would begin when testing by URGWOM Technical Team is complete, estimated to be December, 2002; testing output files and models due back to Technical Team by June, 2003. The URGWOM Cooperators are the six Federal agencies signatory to this QA/QC Plan and the five other URGWOM Memorandum of Understanding signatories.
 - ii) Testing by Rio Grande basin interests would begin when URGWOM Cooperators have completed testing and review, which is estimated to be September, 2003. Testing output files and models are due back to Technical Team by December, 2003.
 - iii) Testing by entities outside of basin without direct involvement in basin operation issues - to be performed based upon budget of funding agencies.
 - e) Test scenarios – identify specific test scenarios and run models to ensure results of archived versions can be duplicated and that operations model duplicates the simulated system.
 - f) All testers will return model with “saved” output files. URGWOM Technical Team will check testers’ model and output files and evaluate results.

- 3) Deviation from Approved QA/QC Plan. Any deviation from this approved QA/QC Plan would be subject to the review and approval of the Steering Committee. Deviations from this approved QA/QC Plan must be consistent with the purpose of the Memorandum of Understanding for the Development of an Upper Rio Grande Water Operations Model for Enhanced System Management.

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