Baseline Hydrologic Models

Batch Peer Review Plan for Columbia-Pacific Northwest Region

Bureau of Reclamation

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Originating office: Bureau of Reclamation, Columbia-Pacific Northwest Region, Regional Office, 1150 N Curtis Rd., Boise, ID, 83706

Reclamation roles:

Director or delegated manager: Lorri Gray, Regional Director, Columbia-Pacific Northwest Region, Bureau of Reclamation

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Definitions:

Model(s): computer program designed to simulate natural and man-made hydrologic systems. Includes RiverWare, MODFLOW, CE-QUAL-W2, MODSIM, GFLOW, GSFlow, VIC, PRMS, or any other previously used software for hydrologic modeling purposes.

Baseline or Current Conditions (hereafter Baseline): geographic specific models designed to represent the system as it exists prior to any proposed changes.

Calibration: the process of defining assumptions, inputs, and operating criteria to cause the model to calculate output that represents Baseline conditions.

System: the geographic specific location and processes being analyzed.

Metrics: the model output values that will be used to gage the calibration quality of the model (ex: reservoir elevation, flow at a river gage, groundwater elevation, water temperature at a river gage, etc.).

Model developer: person or persons responsible for constructing the model, synthesizing inputs, and/or developing model-specific code.

Subject and Purpose: Baseline Models are developed to represent hydrologic systems and processes that exist prior to any proposed changes. The Baseline output serves as a comparison for any scenario output that represents a change. It is important that these models accurately represent Baseline conditions to the extent possible given that they are simplified representations

of real-world conditions. The purpose of this Peer Review Plan is to disclose how Baseline Models are reviewed.

Impact of Dissemination: Reclamation has determined that Baseline models meet the definition of Influential Scientific Information, as defined by the Office of Management and Budget Final Information Quality Bulletin for Peer Review (70 FR 2664-2677) and Reclamation Manual Peer Review of Scientific Information and Assessments Policy (CMP P14).

Peer Review Scope: Baseline Models are reviewed to ensure they are producing output that accurately represents the system (1) prior to any changes, while considering model limitations related to model inputs and assumptions and (2) given that they are simplified representations of real world conditions and may not represent every behavior in a system. The output metrics that are reviewed are dependent on the type of model that is being developed.

Quality assurance peer reviewers are asked to review the models and output with the following questions in mind:

1. Are the calibration metrics appropriate for reviewing the Baseline Model?
2. Does the model accurately represent the chosen metrics for calibration?
3. Were the appropriate input data and assumptions used to develop the Baseline Model?

Information supporting model development and calibration will be provided with the model for review. This information may be formal documentation of the model.

Timing of Review: Baseline Model reviews will be sufficient for Baseline model support of scenario studies, except in cases where scenario development prompts modifications to Baseline Models. If that occurs, those modifications to the Baseline Model may be reviewed along with the scenario model application under a separate peer review plan or may go through a similar peer review as outlined in this plan. This Baseline Model review plan will be reviewed and reposted every two years.

Peer Reviewers: Peer reviewers for quality assurance of Baseline Models will be selected based on the type of model being developed and the geographic location of the model. Reviewer selection is based on a balance of expertise, independence, and absence of conflicts of interest following Reclamation guidelines (CMP P14). Reviewers should be familiar with the platform used (i.e. RiverWare or CE-QUAL-W2) and/or the real-time operators of the system being modeled. Reviewers meet the following requirements:

- They were not the model developer.
- They have unique knowledge of the model software and how it is to be applied, or functionality of the hydrologic or reservoir system being simulated by the model.
- They can be internal Reclamation staff if they meet the above two requirements; however external reviewers can also be used if it is determined they better meet the above requirements.

Methodology of Review: Peer reviewers will review the model inputs, assumptions, operating criteria, and output to ensure the Baseline model accurately reflects the system prior to any changes. The review may occur at the end of model development or throughout the development process. The review may take the form of meetings, data review, or documentation review where the reviewers and project leads directly communicate peer-review findings and responses to the model developers. Metrics that are reviewed will depend on the study.

Documentation of Peer Review: Any document recording model development or scenario analysis will refer to this programmatic process and briefly describe the details of the quality assurance review for the specific Baseline Model being used in the analysis. Subsequent scenario analysis documents that utilize a Baseline Model will be subject to peer-review requirements, as necessary.

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