

Peer Review Plan for Revised Pasco Basin Groundwater Model and Documentation

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Originating office: Bureau of Reclamation, Columbia-Pacific Northwest Region, Ephrata Field Office, 32 C Street NW, Ephrata, WA 98823

Reclamation roles:

Sponsor: Marc Maynard, Ephrata Field Office Manager, Bureau of Reclamation

Project Manager: Jennifer McConnell, Project Manager, Ephrata Field Office

Peer Review Lead: Brandon House, Civil Engineer – Hydrologic, Technical Service Center, Bureau of Reclamation

Peer Review Coordinator: Michael Poulos, Columbia-Pacific Northwest Region, Bureau of Reclamation

SUBJECT AND PURPOSE

The Bureau of Reclamation's (Reclamation) Technical Service Center (TSC) is working with the Ephrata Field Office (EFO) and the Washington State Department of Ecology (DOE) to develop a groundwater management plan for the Pasco Basin. The plan is being developed based on the findings of a 2016 U.S. Geological Survey (USGS) study that indicated approximately 6.8 million acre-feet of extractable groundwater exists within the basin as a result of surface water irrigation from Reclamation's Columbia Basin Project (CBP). Reclamation and DOE entered into a memorandum of understanding (MOU) in 2022 that prescribes the groundwater management plan's development and implementation. The planning effort will use a groundwater model of the basin originally developed by USGS that has been revised by TSC to evaluate alternatives. TSC collaborated with EFO and the Columbia-Pacific Northwest Regional Office staff to develop a scope of work describing all model revisions. Upon revision and re-calibration of the model, it will be used for running scenarios and evaluating the alternatives to support groundwater management

The revised model will be used to perform evaluations including, but not be limited to, whether there would be any increase in the amount of available groundwater in the Pasco Basin Subarea with the implementation of other projects in the CBP. This will include estimating return flows into the Columbia River based on the model, estimating possible levels of groundwater passively flowing back into project infrastructure that may be used by downstream users, and estimating the rate of withdrawal or yield the shallow aquifers can support on a long-term basis (rate of withdrawal or yield based on groundwater recharge rates into different areas and layers).

It has been determined by Reclamation the modified model is Influential Scientific Information per Reclamation's Peer Review Policy (CMP P14) and although third-party external review is not required, the above MOU specifies external peer review(s) of the model and simulation of groundwater management scenarios.

REVIEW SCOPE OF WORK

The peer reviewer selected is to provide comments based solely on the scientific information being reviewed, and not on any agency decision or policy. The reviewer will be provided with a technical report detailing the groundwater model revisions made by the TSC. The report will include a detailed summary of the specific changes made, why they were made, and how they were made. It will also describe any unanticipated issues discovered during the revision process and calibration. The report will include relevant graphics, calibration targets used, data relied on, and sensitivity analyses. The reviewer will also be provided the overall study scope of work, the original USGS model report and files, and access to all data, data processing tools (e.g., spreadsheets and computer scripts), model input and output files, model calibration and sensitivity results. The model review will include executing the model with the provided input files to verify output files duplication.

Prior to initiating the review, there will be a kickoff meeting between the reviewer, Reclamation, and DOE to review scope and to define criteria for success and metrics (assumptions, standard for review, acceptable calibration, sensitivity results, goodness of fit, etc.).

The review should address the below questions. If there is a concern or suggested improvement, recommendations should be provided on actions that could be taken to alleviate those concerns related to each of the following:

1. Are the definitions, methods, and results understandable and technically sound?
2. Are the data and processing methods technically sound?
3. Are data and methods (e.g., calibration) appropriately applied?
4. Are assumptions and uncertainties appropriately characterized?
5. Is the revised model suitable for evaluation of study alternatives/scenarios (e.g., quantifying decreases in spring flows in areas that there may be habitat concerns, etc)?
6. Are there any additional issues, concerns, or suggestions with this work?

Timing of Review

The tentative schedule is for providing the model and documentation to the reviewer during the 4th quarter of fiscal year 2023 or the first quarter of fiscal year 2024, based on reviewer availability. The review is to be completed within 90 days of receipt. Review comments will be addressed within 30 days of receipt of comments. The reviewer is encouraged to request check-in meetings with Reclamation and/or DOE on model review and before review comments are addressed as needed.

Methodology of Review

The peer reviewer will be provided technical reports and access to any necessary data sources, data processing tools, model files, and model post-processing tools. It is anticipated the reviewer will rely on this additional information as needed and there are no related specific review requests. After receiving reviewer comments, Reclamation will address the reviewer comments and concerns. A Peer Review Report will be compiled that includes the reviewer's name, credentials, their individual comments and Reclamation's responses and actions to satisfy reviewer concerns, if applicable.

Number of Peer Reviewers

It is anticipated that 1 peer reviewer will be utilized.

Reviewer Selection Process

The peer reviewer will be a subject matter expert in groundwater hydrology and groundwater modeling—preferably with experience with the computer scripting language Python.

Materials Privileged

The peer reviewer will receive access to pre-decisional draft versions of technical reports, data, processing tools, model files, and post-processing tools for the purpose of informing Reclamation regarding the technical merits of the model and potential improvements. Prior to receiving access to potentially privileged materials, the peer reviewer must attest via signed statement to any conflicts of interest that would prevent them from performing this review and agree by signing a non-disclosure agreement to not disclose any materials provided to them without the express written consent from Reclamation. Reclamation reserves all rights and privileges with respect to draft materials provided to and received from the peer reviewer.

Delivery of Findings

A report of the reviewer’s findings will be provided to the TSC Peer Review Lead, Brandon House, by the end of the review period. At a minimum, the report will include a brief response to each of the questions cited under “Peer Review Scope”, description of findings, and recommendations in a comment matrix (template to be provided by Reclamation). The report will be provided digitally to the TSC Peer Review Lead.

Response to Peer Review

At the conclusion of receiving peer review comments, the TSC Peer Review Lead will meet with DOE before submitting a final Peer Review Report to Reclamation’s public peer review agenda website (<http://www.usbr.gov/main/qoi/peeragenda.html>), which will summarize the findings of the peer review by listing the comments provided by the peer reviewer, Reclamation’s response to the comments, actions Reclamation will undertake regarding the comments, and reasons Reclamation believes those actions will satisfy any key concerns or recommendations.

AGENCY CONTACT

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