Revised Gualala River Model Development Report: Further Calibration for North Fork Gualala River

The State Water Resources Control Board's Division of Water Rights has begun developing new hydrologic surface water supply models for several watersheds, including the Gualala River watershed, under a contract with Paradigm Environmental, Inc. The streamflow outputs from these models will be used in conjunction with watershed-specific demand datasets to inform supply and demand analyses and to support water management decision making.

Public Review and Comment

On September 30, 2025, the Supply & Demand Assessment Program (SDA Program) published a draft model development report for the Gualala River model and solicited public review and comments on the draft report.

During the public comment period, the SDA Program received a comment expressing concerns about the general applicability of the model, particularly in the North Fork of the Gualala River. The Gualala model had been calibrated using stream discharge measured at a USGS gauge at the outlet of the South Fork of the Gualala River and, as described in the draft model development report, the model had much better performance in the South Fork in comparison to the North Fork.

Revision to Model and Model Development Report

To improve model performance in the North Fork, additional calibration of the model using a gauge at the outlet of the North Fork River would be required. A USGS gauge at the outlet of North Fork Gualala River has an incomplete data set and for that reason was not initially used for model calibration. SDA Program staff understand that this gauge is operated for low flow measurements only and that the gauge is not suitable for measuring flows above 400 cubic feet per second (cfs), which generally happen during the wet season between December and May. According to communications with staff of the North Coast Regional Water Quality Control Board, the California Department of Fish and Wildlife, and the USGS California Water Science Center, the gauge at the outlet of the North Fork River has been regularly maintained and inspected, and flow data observed at this gauge that are above 5 cfs and below 400 cfs can be used for model calibration.

SDA Program staff directed Paradigm to develop a secondary set of model parameters for the North Fork Gualala River to facilitate further calibration. The final model

development report describes how the model was further calibrated using the gauge at the outlet of the North Fork River over the period of 10/01/2017–09/30/2022 (see Section 6.3.2 of the model report). In the calibration of this secondary group for the North Fork, parameters related to soil type, hydraulic conductivity, and subsurface flows were further adjusted to better capture hydrological processes in the North Fork River (see Section 6.2). The model was then validated using the gauge at the outlet of the North Fork River over the period of 10/01/2004–09/30/2017 (see Section 7.3.2 of the model report).

Adjusting the Gualala River model in the North Fork River substantially improved the overall model performance over both calibration and validation, and the model generally showed good performance at the North Fork River (see Sections 6 and 7).