
MEMORANDUM

TO: YSGA BOARD OF DIRECTORS

FROM: YSGA EXECUTIVE OFFICER

SUBJECT: SURFACE WATER AND GROUNDWATER MODELING

DATE: JUNE 15, 2018

CC: YSGA WORKING GROUP

BACKGROUND

Sustainable groundwater management and policy decisions must be based on knowledge of the past and present behavior of the surface and groundwater system, the likely response to future changes and management actions, and the understanding of the uncertainty in those responses. Models provide an important framework that brings together conceptual understanding, data, and science in a hydrologically and geologically consistent manner. Constructing and calibrating the model improves understanding of the critical processes that influence sustainability indicators within the subbasin. In addition, models can estimate and reasonably bound future groundwater conditions, support decision-making about monitoring networks and management actions, and allow the exploration of alternative management approaches. (DWR's Modeling BMP, 2016).

GSP REGULATIONS

The use of models for developing a GSP is highly recommended, but not required. The use of a model will depend on the individual characteristics and complexity of the basin setting, the presence or absence of undesirable results, and the presence or absence of interconnected surface water systems. If a numerical groundwater and surface water model is not used to assess the depletions of interconnected surface water, the GSP must use and describe an equally effective method, tool, or analytical model to identify the location, quantity, and timing of depletions of interconnected surface water (GSP Regs § 354.28).

YOLO SUBBASIN GSP PLANNING PROCESS

As discussed in the Yolo Subbasin GSP: Water Budget Memo, the YSGA has chosen to work with the Stockholm Environment Institute (SEI) to develop the Yolo Subbasin Water Budget. SEI's Water Evaluation and Planning model (WEAP) simulates all processes in the hydrologic cycle and has been coupled with MODFLOW to more accurately simulate the groundwater system. MODFLOW is the USGS modular finite-difference flow model that is widely used by hydrogeologists around the world to simulate the flow of groundwater through aquifers.

The model and participatory workshops will also be used to evaluate candidate sustainable management criteria and projects and management actions to assess how suggested measures may perform as tools for achieving basin-wide sustainability. The water budget simulations for future conditions will consider projected changes in climate, land use, and population for 50 years from present.

YSGA staff plan to work closely with DWR and The Nature Conservancy for determining the best model and representation of groundwater-surface water interaction in the Yolo Subbasin

Cost Estimate: Embedded in the Water Budget, HCM, Monitoring Network Update, and Stakeholder Communication and Engagement tasks.

Schedule: January 2018 – March 2020

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