Water Available for Groundwater Replenishment (WC 10729 (c)) – SGMA Discussion Paper

Department of Water Resources - Sustainable Groundwater Management Program

July 21, 2015

1.0 Purpose

The purpose of this paper is to identify issues related to developing a report on water available for groundwater replenishment required under WC 10729 (c). Relevant sections from the SGMA legislation are provided, followed by a summary of recent outreach, potential options and questions to consider.

2.0 Background

In 2014, new legislation passed that provides a statewide framework for sustainable groundwater management in California (SB1168, AB1739, and AB1319). This legislation, referred to as the Sustainable Groundwater Management Act (or SGMA), is consistent with California's preferred bottom-up approach by leaving groundwater management to the locals (through groundwater sustainability agencies, or GSAs). As part of the SGMA legislation, WC 10729 (c) states: *The department shall prepare and publish a report by December 31, 2016, on its Internet Web site that presents the department's best estimate, based on available information, of* ***water available for replenishment of groundwater*** *in the state.*

The SGMA legislation does not provide additional details about the meaning and intent for this report. There are many possible policy-dependent options to consider and several alternative technical methods that could be applied to address this requirement. Policy considerations include defining water available for replenishment based on existing water management infrastructure and operations criteria, or based on potentially new future water management strategies including new conjunctive management projects, new surface storage, increased water conservation, a Delta WaterFix and EcoRestore, etc. Technically there are many options to consider ranging from a water rights analysis of available surplus water under recent hydrological conditions to a vulnerability assessment and tradeoff analysis of water available for groundwater recharge. Such options could consider future population growth, land use changes and alternative climate scenarios. These options must be weighed against the relative short time frame with which to complete this requirement.

3.0 Initial Outreach and Discussion

DWR has begun outreach with several policy and technical experts to consider the various options to address the requirement of WC 10729 (c), as well as the purposes and value of the report. Below is a highlight of some of the advice provided.

- Address both opportunities for additional water supplies as well as obstacles
    - The obstacles should include those threats to the reliability of existing water supplies including regulatory, climate change, legal issues
    - Opportunities include potential reoperation of the SWP and CVP, new conveyance, new surface storage, conservation, stormwater capture at the local level, watershed treatment, and recycled water. Opportunities could be identified both at the larger water project level (e.g. State Water Project and Central Valley Project) as well as the local watershed level (e.g. water resources planning efforts completed or underway by local agencies)
- Include uncertainty in potential outcomes and provide range of estimates
- Recognize the value of surface storage
- Need something beyond a SWP/CVP delivery reliability report
- Quantitative information in the report may be less valuable than qualitative information
- Value in organizing the report by general groundwater areas in California that would benefit from various water sources
- Consider regional variation in capability to capture water for replenishment
- Develop economic/feasibility guidance
- Link to the full range of issues addressed in the Governor's Water Action Plan

4.0 Options for Addressing WC 10729(c)

The figure summarizes alternative ways of estimating water available for replenishment. These options are distinguished from each other by the geographic applicability from local agency to statewide, consideration of hydrologic and other uncertainties, and the flexibility in considering alternative water management strategies. There are a few technical options for performing the required analysis, but each option has pros and cons described in the table.

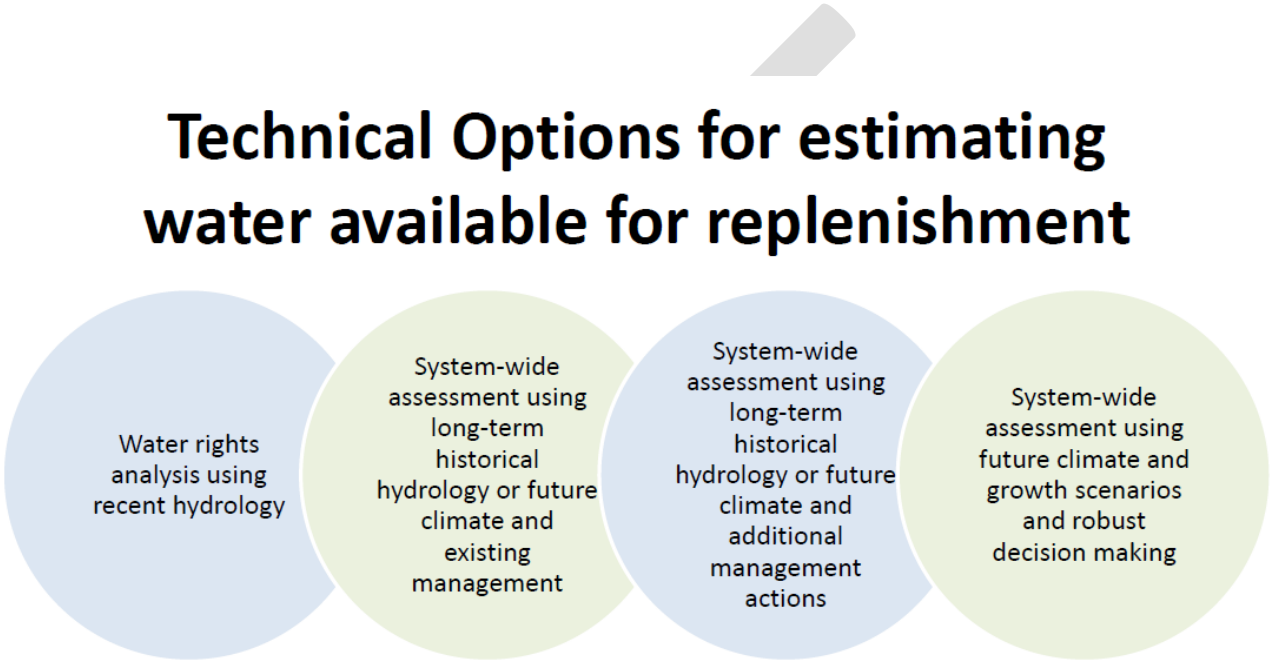

Table – Pros and Cons of Technical Options

Option	Examples	Pros	Cons
Water rights analysis using recent hydrology	Watershed based method for surplus water analysis (Water Board)	• Applicable across any watershed • Method is straightforward where historical data exists	• Generally limited to using recent hydrology unless detailed model exists • Limited ability to evaluate new management strategies or stressors like climate change
System-wide assessment using long-term historical hydrology or future climate and existing management	• CALSIM/C2VSIM studies • SWP Delivery Reliability Report	• Captures supply reliability for SWP/CVP service areas • Additional modeling with C2VSIM would allow assessment of surface water – groundwater interaction	• Does not easily include local water management options • Does not includes areas outside SWP/CVP service areas
System-wide assessment using long-term historical hydrology or future climate and additional management actions	• Surface Storage Investigations	• Captures supply variability for SWP/CVP service areas • Captures new statewide storage options and Delta Conveyance • Additional modeling with C2VSIM would allow assessment of surface water – groundwater interaction	• Does not easily include local water management options • Does not includes areas outside SWP/CVP service areas
System-wide assessment using future climate and growth scenarios and robust decision making	• BDCP EIR/EIS	• Captures supply variability for SWP/CVP service areas • Captures new statewide storage options and Delta Conveyance • Includes robust description of future climate variability	• Does not easily include local water management options • Does not includes areas outside SWP/CVP service areas
	• Water Plan Update 2013 • USBR Sacramento San Joaquin Basin Study	• More easily captures local management options • Includes robust description of future climate variability and future growth • Allows screening level surface water – groundwater interaction	• Does not includes areas outside the Central Valley • Less detail for SWP/CVP operations
Other Options	IRWMP Inventory	• Allows narrative discussion of management strategies	• Generally does not allow quantification of water available for groundwater replenishment

5.0 Considerations

There are several issues to consider when determining the appropriate approach to estimate water available for groundwater replenishment.

- Geographic scale: How localized does assessment of water available for groundwater replenishment need to be (water district vs. sub basin)? Should the focus be on SGMA High and Medium priority basins?
- Outreach: Given the short lead time to complete this requirement there is limited ability to interact with local water managers.
- No Single Approach: A hybrid of the approaches described in Section 4.0 will be needed to estimate water available for groundwater replenishment for watersheds statewide.
- Management Strategies: How important is consideration of new/future water management strategies in assessment of water available for groundwater replenishment (e.g. WaterFix/EcoRestore, new statewide storage, local conservation, local recycling etc.)?
- Capturing uncertainties: How important is consideration of future climate change, population growth, and regulatory changes (high / medium / low)? What other important uncertainties should be captured?
- Project operations: How important is quantification of SWP and CVP operations with respect to water available for replenishment (high / medium / low)?