SOLANO SUBBASIN GROUNDWATER SUSTAINABILITY PLAN SUMMARY

Overview of SGMA and the GSP

The Sustainable Groundwater Management Act (SGMA) encourages groundwater management at the local level. Local entities are responsible for forming Groundwater Sustainability Agencies (GSAs) to develop and implement Groundwater Sustainability Plans (GSPs) to guide sustainable management of groundwater basins or subbasins identified as high or medium priority by the State. Five GSAs in the Solano Subbasin organized to form the Solano Collaborative to develop a single GSP for the Subbasin: Solano Subbasin GSA, Solano Irrigation District GSA, City of Vacaville GSA, Northern Delta GSA, and Sacramento County GSA. The Solano Collaborative together with five other GSAs have adopted the Solano Subbasin Groundwater Sustainability Plan.

The GSP includes a detailed road map for maintaining sustainability in the Solano Subbasin. The GSP development process included:

- Characterizing geologic and groundwater conditions
- Developing historical and future water budgets and estimating sustainable yield
- Defining sustainable management criteria for avoiding undesirable results (significant and unreasonable adverse impacts) related to the following sustainability indicators:
    - chronic lowering of groundwater levels
    - reduction in groundwater storage
    - water quality degradation
    - land subsidence
    - depletion of interconnected surface water
- Identifying projects and management actions to maintain sustainability and avoid undesirable results.

Groundwater Conditions

The characterization of groundwater conditions in the Subbasin suggest the Subbasin is currently sustainable and anticipated to remain sustainable under projected future conditions. There are two primary aquifer zones in the Solano Subbasin, the Alluvial Aquifer/Upper Tehama Zone and the Basal Tehama Zone. Most of the groundwater pumping in the Subbasin occurs from the shallower Alluvial Aquifer/Upper Tehama Zone. The Basal Tehama Zone is utilized locally by the City of Vacaville and is generally found at great depths.

Groundwater levels reflecting the amount (storage) and movement of water in the groundwater system exhibit stable long-term trends, although an area in the northwestern portion of the Subbasin (Northwest Focus Area) was identified to have recent localized lowered groundwater levels. Continued monitoring of groundwater levels will be important to evaluate future hydrologic and climatic influences.

Groundwater quality in the Subbasin is generally suitable for all beneficial uses, most notably for drinking water uses that typically have the most restrictive standards for water quality. Some localized areas of poor groundwater quality conditions exist as a result of natural constituent concentrations or from groundwater contamination (e.g., plumes), but such impacted areas and actions to address these conditions are overseen by other regulatory programs and entities. Key groundwater quality

constituents of interest identified in the Subbasin include total dissolved solids, nitrate, arsenic, boron, chromium-6, and chloride.

Land subsidence data indicate only very minor amounts of subsidence have occurred in the Subbasin with no documentation of inelastic (irreversible) land subsidence related to groundwater pumping. Historical land subsidence related to oxidation of peat deposits has occurred in the Delta area of the Subbasin. No significant impacts to surface infrastructure in the Subbasin have been noted as a result of land subsidence and the magnitude of seasonal (elastic) fluctuations in the ground surface elevation occurring in association with seasonal changes in groundwater conditions is greater than the rate of long-term subsidence.

Interconnected surface waters in the Subbasin are most common in the Delta area of the Subbasin where groundwater is very shallow. Fewer interconnected surface water features exist in the northern parts of the Subbasin where water levels are somewhat deeper. Many natural surface water features have been intensely modified over time and are used for conveyance of surface water deliveries or irrigation return flows. Interconnection between groundwater and surface water along Putah Creek includes reaches of gaining and losing conditions that change over time. Streamflows in Putah Creek are maintained by the Solano County Water Agency in a manner designed to support beneficial users along the Creek following the flow schedule outlined in the Putah Creek Accord. The GSP identified a benefit to more data for understanding surface water and groundwater interactions. The Subbasin plans to address this with the installation of six new monitoring wells located near key surface water features in the Subbasin and consideration of additional monitoring improvements.

Seawater intrusion potential does not exist in the area because the Subbasin does not have coastline; however, Delta areas of the Subbasin are tidally influenced but there is no historical indication of higher salinity water intrusion from the Delta.

Water Budget

Primary sources of water supplies within the Subbasin consist of surface water supplies from the Solano Project, State Water Project, and local diversions and groundwater. Although these water supplies vary by year depending on water demands and allocations, the Solano Project, which provides a considerable fraction of the surface water supply, has been a highly reliable supply since the project was completed in the late 1950s. Historical groundwater pumping has averaged about 180,000 acre-feet per year. It is anticipated that future land use in the Subbasin will consist of increased urban acreage, overall decreased area of agricultural land, with minimal changes in the area of native vegetation. Although the overall agricultural area is anticipated to decrease in the future, the crop composition is anticipated to include a greater fraction of permanent crop types. Based on evaluations conducted using a hydrologic model developed for the Subbasin (the Solano Integrated Hydrological Model), it is not anticipated that any beneficial users of water in the Subbasin will be significantly and unreasonably adversely affected by groundwater management under any of the projected future conditions evaluated, including under climate change scenarios. The sustainable yield of the Subbasin is estimated to be 190,000 acre-feet per year, approximately equal to the projected volume of groundwater pumping under a 2070 future climate change scenario.

Sustainability Criteria and Monitoring

Each sustainability indicator was evaluated for the Subbasin and assigned minimum thresholds (MTs) and measurable objectives (MOs) to avoid undesirable results and ensure continued sustainable

groundwater management. MOs and MTs are metrics assigned for sustainability indicators at selected Representative Monitoring Sites (RMS) across the Subbasin. MTs represent values at which undesirable results may be occurring the Subbasin; MTs were set to avoid significant and unreasonable adverse impacts on beneficial users throughout the Subbasin, including drinking water users, agricultural users, and environmental users. MOs represent the long-term target for conditions in the Solano Subbasin. The RMS network in the Subbasin consists of wells, streamflow gages, and land subsidence monitoring stations that are spatially distributed across the Subbasin. Supplemental monitoring of Subbasin conditions will incorporate data from a broad network of monitoring conducted by the GSAs and other monitoring programs. Data associated with groundwater conditions and the six sustainability indicators will be maintained in a Data Management System for ongoing tracking, assessment, and reporting on groundwater conditions. Annual GSP reports will be submitted including information on groundwater levels, groundwater pumping, water use, changes in groundwater storage, and status of any projects and management actions being implemented. A more detailed report (Five-Year GSP Update) is required every five years.

GSP Implementation

Implementation of the GSP will involve regular monitoring and reporting on conditions in the Subbasin and performing management actions indicated in the GSP. Several potential projects focused on enhanced groundwater recharge in the northwestern part of the Subbasin are also noted for consideration as part of GSP implementation. GSAs have the authority to charge fees to fund the costs of GSP implementation. Additional funding for GSP implementation may also include grants, bonds, bank loans, or other financing sources. As GSP implementation proceeds, the GSAs will continue to evaluate fees and funding mechanisms available for use in implementing the GSP. SGMA requires that the Solano Subbasin meet the sustainability goal developed in the GSP within 20 years of implementation (by 2042) and maintains sustainability beyond that time. Based on analyses conducted during GSP development, the Solano Subbasin anticipates maintaining a sustainable condition without substantial intervention by the GSAs. However, the northwestern area of the Subbasin is an area of focused interest for tracking conditions, especially groundwater levels, to ensure undesirable results are avoided. The GSP identifies projects and management actions that may be implemented to maintain sustainability throughout the Subbasin should they be needed or desired.

Contact
Solano Collaborative
810 Vaca Valley Parkway
Vacaville, CA 95688
Tel: 707.451.6090 | Fax: 707.451.6099