### 4.7.1 Shallow/Vulnerable Well Protection Program

The concept of a shallow/vulnerable well protection program has been discussed at numerous GSPWG meetings and public meetings. The purpose of the program would be to provide relief to users of shallow wells in the SASb impacted by declines in groundwater levels in the vicinity of their wells due to groundwater management activities and/or climate change. Based on best available information, an analysis has been performed (**Appendix 3-A: Shallow Well Protection Technical Memorandum**) which indicates that the incidence of such impacts is projected to be very low over the GSP planning horizon. However, uncertainty in measured and modeled groundwater elevations, the number of shallow/vulnerable wells in the SASb, well completion data, and well retirement age requires additional coordination, monitoring, and data collection to ensure ongoing protection of shallow and vulnerable wells. The creation of a shallow well protection program is intended to address the relatively rare cases where such impacts may occur.

The development, implementation and funding of a shallow/vulnerable well protection program would be consistent with historical action in the SASb; a well protection program was previously developed by SCGA, as part of the Zone 40 Water Supply Master Plan and SCWA developed and implemented a similar program in the Vineyard area of the SASb. The new program would by developed with knowledge of the details of these previous efforts.

The Sacramento County Environmental Management Wells Program (Wells Program) is the entity with responsibility for oversight of well construction, modification, repair, inactivation, or destruction of wells in Sacramento County. Any water supply or monitoring well that is constructed in Sacramento County must first obtain a permit from the Wells Program. Therefore, the development of a shallow well protection program will be done in close coordination with the Wells Program.

An incremental approach to a well protection program is favored by the GSAs, with early emphasis on information gathering, outreach, program development and engagement. This includes formation of a domestic well advisory group (DWAG) comprised of local well owners and agency representatives, increased coordination, improved risk assessment based on additional data collection through a volunteer well monitoring network to assess groundwater depths, revision of well completion data, and early contributions to a well rehabilitation fund to address mitigation needs. After the first two years (Phase I), an assessment will be made regarding future direction of the program (Phase II).

The SASb well protection program is organized around three core tasks: (1) stakeholder engagement and outreach, (2) coordination with and analysis of data from a volunteer well monitoring program, and (3) a well impact mitigation fund. Tasks 1 and 2 aim to acquire and integrate new information into well protection planning over time, and Task 3 provides a set-aside for reasonable financial protection to wells that may be impacted by drops in groundwater levels.

***Task 1 – Stakeholder coordination and outreach***:
The SASb GSAs will assist in the formation of a “domestic well advisory group” (DWAG) with representatives from the GSAs and local community members. The DWAG will meet bi-annually to coordinate community outreach, engage with stakeholders on well construction standards (e.g., Sacramento County Wells Program), support the volunteer monitoring effort (task 2 below), and support further development of the well protection program. A critical

objective of the DWAG is to assist in the definition of the scope and administrative details of the mitigation element of the well protection program.

***Task 2 – Volunteer Monitoring Program (VMP)***:
Interest exists within the SASb agricultural-residential community to develop and participate in a volunteer well monitoring program. Data properly collected at individual wellheads is valuable data for identifying vulnerable wells and ascertaining if wells may be impacted by declining groundwater levels. Monitoring hundreds of wells in a single GSP is infeasible for the GSP[1], but by involving many residents in a volunteer monitoring process, the VMP can improve the spatial and temporal resolution of groundwater level information and well completion data. These improved data will in turn improve the accuracy of future well impact analysis, inform preventative rehabilitation (e.g., lowering pumps before wells are impacted), and empower local well owners to better understand local groundwater conditions.

- Administration of the VMP includes outreach, communication, and training. It is assumed that activities will be coordinated by community representatives that also participate in the DWAG (task 1 above).
- Instrumentation (e.g., sensors) and administration (e.g., program support and training) needs will be assessed by the DWAG.
- Groundwater level data collection will take place at the scale of the individual participants. It is assumed that data interpretation will occur at the group level.
- Solutions to automatically collect, transform, visualize, and report data collected by the VMP may be explored by the GSP working group during the first two years of GSP implementation (i.e., Phase I – see next section).
- Using the DWR OSWCR database as a starting point, a well inventory for the basin will be developed. Processes will be developed by which residents can refine their well's location in the well inventory, and input key information.

***Task 3 – Well impact mitigation fund***: In addition to increased monitoring, data collection, and coordination, modeled well impact estimates will be used to assess the risk to shallow/vulnerable wells in the SASb and to assess the need for a fund – built up over time – to mitigate wells directly impacted by declining groundwater levels. The need and amount of the fund will be informed by the best available estimates of the number of wells that may be impacted if MTs are reached, and the value attributable to those wells. Importantly, if a well is impacted, data collected by the VMP will help determine the likely cause. Eligibility conditions that define the well impacts that are covered by the fund will be scoped by the GSAs, in coordination with the DWAG, and may include factors such as well age, construction status, and the nature of the problem with the well. Throughout implementation, the size of the fund will be adjusted in accordance with the best available information on well vulnerability.

**Timing**

The timing of Tasks 1, 2 and 3 in GSP implementation will proceed in two phases:

***Phase I***: For the first two years of GSP implementation (2022-2023), additional effort is placed on establishing agency-community relationships, building a volunteer monitoring network, and improving well completion data (Tasks 1 and 2). A well rehabilitation fund will be progressively

[1] For scale and reference, the CA-DWR monitors around two thousand wells per year across the entire state as part of their ambient groundwater level monitoring.

built, commensurate in amount to current estimates of vulnerable wells. Data collected in this phase will inform the need, scope and structure of a rehabilitation fund (Task 3).

***Phase II***: By the third year of GSP implementation (2024), the GSP will re-assess and adjust startup efforts to focus on program maintenance and will determine the appropriate scope of a rehabilitation fund (Task 3). These activities will continue as appropriate throughout the implementation period.

**Details of Program**

The administrative and policy questions to be resolved in the development of a Shallow Wells Protection Program during the Phase I period include, but are not limited to:

1) Who should be covered by a Shallow Well Protection Program?
   - Domestic well owners
   - Agricultural irrigation well owners
   - Other private wells (industrial, commercial, institutional)

2) What area should be covered?
   - Only outside the boundaries of municipal water suppliers
   - Outside the distribution system of municipal water suppliers
   - Within water supplier service areas

3) What services should be covered?
   - Emergency water supply (water truck)
   - Pump lowering
   - Pump replacement
   - Well deepening
   - Drilling of a replacement well

4) Is the full cost of services covered?

5) What conditions in the groundwater basin are covered?
   - Regional decline in water levels
   - Local decline in water levels, i.e., influenced by a neighboring well

6) Is a Water Well Drillers Report necessary to cover a well in the program?

7) Is there a well age limitation, i.e., when is a well past its useful life?

8) Is a well that is in disrepair eligible, i.e., if a well goes dry due to silting, casing failure, etc.?

9) Should well owners be required to register in advance and provide information on their well to be a candidate for assistance under the program? How shall renters that may have little information on their well be treated?

10) Should the program be proactive or reactive, i.e., identify wells at greatest risk and take early actions? A hybrid approach?

11) How should the program be funded?

- SGMA implementation fees by each GSA
- Development fees
- Grant funding

12) Should the program be funded/operated by each GSA or jointly under a governance structure approved by the SASb GSAs?

The timeline for development of the GSP will not allow the above questions to be fully addressed or for the development of administrative and policy details of the Shallow Well Protection Program. This management action is the commitment to develop and fund the program described above in the early years of GSP implementation.