

Corning Subbasin Groundwater Sustainability Plan – Overview of Sustainable Management Criteria (SMC)

Date: July 29, 2020

Prepared for: Corning Subbasin Advisory Board (CSAB)

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Purpose: SMC Primer for the August 5, 2020 CSAB Meeting

INTRODUCTION TO SMC

The Groundwater Sustainability Agencies (GSAs), with input from the Corning Subbasin Advisory Board (CSAB) are responsible for developing sustainable management criteria (SMC) for the Corning Subbasin (Subbasin) Groundwater Sustainability Plan (GSP). Developing SMC is one of the most important aspects of the GSP as it allows the GSAs to define the metrics used to assess progress towards sustainable management of the groundwater resources in the Subbasin.

Generally, the development of SMC follows a structured approach:

1. Identify the Subbasin's Sustainability Goal
2. Assess which of the six sustainability indicators are applicable
3. Develop draft descriptions of what is significant and unreasonable (narrative description)
4. Set minimum thresholds at each representative monitoring point to reflect what locally is significant and unreasonable (numerical metric)
5. Set measurable objectives with a safety factor on minimum thresholds
6. Establish undesirable results for each sustainability indicator
7. Develop interim milestones to achieve sustainability

This document provides some context to this important GSP aspect, including definition of terminology and SGMA requirements.

IDENTIFY THE SUSTAINABILITY GOAL

Per Section §354.24 of the Sustainable Groundwater Management Act (SGMA) regulations, the GSP must include a sustainability goal for the Subbasin that culminates in the absence of undesirable results within 20 years of the applicable statutory deadline (i.e. in 2042 for the Corning Subbasin).

The Sustainability Goal for the Subbasin needs to consider the following three parts:

- A narrative description of the sustainability goal;
- A discussion of the measures that will be implemented to ensure the Subbasin will be operated within sustainable yield, and;
- An explanation of how the sustainability goal is likely to be achieved

The first part provides for a general roadmap of what the GSAs' intent is in managing this Subbasin for sustainability. The other two parts provide specificity and will be developed at a later time in the GSP development, by including projects and actions and a timeline for implementation.

The following are possible examples of a draft description of the Sustainability Goal:

- *The goal of this GSP is to manage the groundwater resources of the Subbasin for **long-term community, financial, and environmental benefits** to the Subbasin's residents and businesses.*
- *This GSP will ensure **long-term viability of water supplies** while maintaining the **unique cultural, community, and business aspects** of the Subbasin.*
- *Glenn County WAC Statement: It is the desire of the people of Glenn County that **sufficient and affordable water of good quality be available on a sustainable basis to meet the needs of agricultural, industrial, recreational, environmental, residential, and municipal users within the county, both now and in the future.***

A Sustainability Goal should be developed with the following in mind:

- What do you want to protect?
- What type of operational flexibility of water resources is required?

SMC TERMINOLOGY AND DEFINITIONS

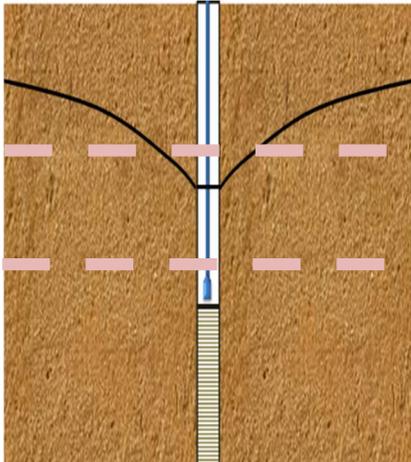
Measurable objectives, minimum thresholds, and undesirable results are the specific criteria used to assess groundwater sustainability in the Subbasin. These criteria need to be defined for each of the applicable sustainability indicators for the Subbasin.



Seawater intrusion is likely not applicable for the Corning Subbasin and will be reviewing with the CSAB.

BRIEF TERMINOLOGY REVIEW

- **Minimum Threshold:** Quantitative value reflecting what is significant and unreasonable. The line we don't want to cross. They are used to define undesirable results.
- **Measurable Objective:** Goal that we want to strive for.
- **Undesirable Result:** A combination of Minimum Threshold exceedances that cause significant and unreasonable effects. This is what defines sustainability.



Measurable Objective

Minimum Threshold

DEVELOPING SMC

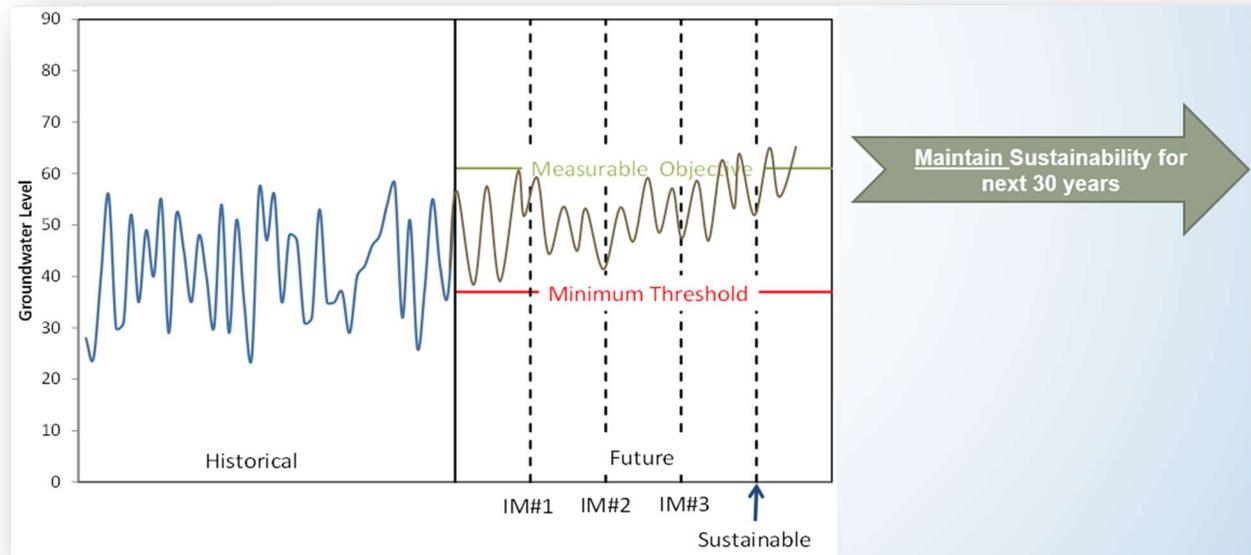
Developing SMCs is an iterative process between the GSAs and beneficial users of groundwater in the Subbasin, by considering the following:

- ▶ How does this undesirable result affect beneficial uses and users of groundwater?
- ▶ How does this undesirable result affect land uses and property interests?
- ▶ Does the undesirable result adequately characterize conditions that are significant and unreasonable?

There are multiple opportunities for modification and adjustment of SMC based on stakeholder feedback during GSP development. The general approach we propose for developing initial SMC for each of the applicable sustainability indicators is provided below:

1. Provide a proposed statement of what are considered **significant and unreasonable** basin conditions related to each sustainability indicator. These qualitative statements describe conditions that must be avoided in order to reach the Subbasin’s sustainability goal and are relied upon to guide development of the various SMC. The GSP’s narrative statement of significant and unreasonable conditions should clearly say what the stakeholders do not want to see happen in the Subbasin. For example, for the lowering of groundwater levels sustainability indicator, the significant and unreasonable conditions may be defined as: “causing domestic water supply wells to go dry” or “causing significant financial burden to local agricultural interests due to increased pumping costs”.
2. Provide proposed **representative monitoring points** where minimum thresholds, measurable objectives, and interim milestones will be set. SMC do not have to be defined at every feasible location in the Subbasin; a subset of locations may be selected, provided these locations have adequate spatial coverage to meet the expectations established by DWR in SGMA Best Management Practice documents and are representative of nearby monitoring locations.
3. Provide proposed **minimum thresholds** or quantitative values that are used to define an undesirable result for each sustainability indicator. Historical data are needed to establish minimum thresholds.
4. Provide proposed **measurable objectives** that reflect desired groundwater conditions in the Subbasin. The measurable objective is the safety factor that allows for operational flexibility. Although this metric is not enforceable, it must be achievable. The GSP must demonstrate how projects and management actions will achieve these objectives by 2042.
5. Provide a proposed statement of what would be considered **undesirable results** for each sustainability indicator. This SMC focuses on how significant and unreasonable conditions may occur based on a combination of minimum threshold exceedances. For example, the minimum threshold can be exceeded a certain number of times in representative monitoring points, after which undesirable results occur and would cause significant and unreasonable conditions in the basin. The GSA must demonstrate that undesirable results are not occurring after 20 years of GSP implementation and will not occur for a further 30 years after that.
6. Provide proposed **interim milestones** for each sustainability indicator that demonstrate to DWR what an expected path to meeting measurable objectives looks like. Interim milestones are required every five years after GSP implementation through 2042. Interim milestones are best determined using the integrated hydrologic model to account for changing climatic conditions and implementation of future projects and management actions.

The graphic below provides a summary to illustrate the process of combining minimum thresholds, interim milestones, and measurable objectives at a single well.



Proposed SMC for each sustainability indicator will be presented to CSAB members and stakeholders and revisions will be made based on public input. Below are some initial considerations based on our experience in developing GSPs for other basins.



Chronic lowering of groundwater levels: The guiding principle should be that groundwater elevations should not drop to a level below which groundwater users cannot meet their demand, as this would be an obvious significant and unreasonable condition.



Reduction in groundwater storage: This is a sustainability indicator that can be developed after all other applicable sustainability indicators are addressed. Our experience indicates that if minimum thresholds are met for all the other indicators, reduction in basin storage metrics will be met as a result from the combined effects of meeting those thresholds. The groundwater model will be used for this purpose. The metric for measuring reduction of storage is the annual volume of groundwater pumping.



Depletion of interconnected surface water: This sustainability indicator requires identification of whether groundwater is connected to surface water and whether there are groundwater dependent ecosystems (GDEs) within the subbasin that could be impacted by lowered groundwater elevations. Groundwater in the Corning Subbasin is connected to surface water on the Sacramento River as well as potentially some of its tributaries.

The metric for assessing this sustainability indicator is the volume or rate of surface water depletion. However, groundwater levels near surface water bodies may be used as a proxy if surface water depletions from groundwater pumping cannot be directly measured.



Degraded water quality: The intent of this sustainability indicator is in effect a “do no harm” indicator. This means that implementation of the GSP through projects and management actions cannot degrade water quality in the Subbasin. In the Sacramento Valley, the Irrigated Lands Regulatory Program and CV-SALTS programs aim to reduce and prevent water quality impacts that may be due to agricultural operations. Monitoring data from these programs will be reviewed and specifically incorporated into SMC, taking into account water quality thresholds for the beneficial uses of the Subbasin (i.e., agricultural irrigation versus drinking water use). We recommend that the GSAs follow the lead of other local water quality regulatory agencies and not to become a water quality regulatory agency themselves.



Land subsidence: In the *2017 GPS Survey of the Sacramento Valley Subsidence Network*, DWR reported observed subsidence of less than one foot in the Corning Subbasin near Orland that was attributed to the severe drought of 2012-2016. This indicates subsidence is a potentially important sustainability indicator in the Subbasin. The subsidence data will be reviewed together with the Subbasin’s hydrogeology, and historical groundwater levels and trends, in order to define the subsidence SMC.

ACHIEVING SUSTAINABILITY IN THE SUBBASIN

The fundamental principle of SGMA is that groundwater sustainability is achieved by avoiding undesirable results for all applicable sustainability indicators. Sustainability is proven with field measurements of groundwater conditions, not model results. The GSAs do not have to necessarily meet measurable objectives to manage the Subbasin sustainably, but they do need to keep conditions from being worse than minimum thresholds. Significant and unreasonable conditions may be avoided through the implementation of specific projects and management actions. Appropriate projects and management actions will be determined during GSP development with significant input from the GSAs. Groundwater impacts from selected projects and management actions will be evaluated using the integrated hydrologic model. At this juncture, adjustments to SMC may be needed and/or projects and management actions changed to ensure undesirable results do not occur. Following GSP submittal in January 2022, the Subbasin has twenty years to reach sustainable conditions in 2042, after which sustainability must be maintained for an additional 30 years through 2072. There are opportunities for SMC to be re-evaluated in the GSP’s five-year updates, or more frequently if needed. SMC revision may be necessary in the future as new data become available that change understanding of the Subbasin.