Vina Groundwater Sustainability Agency
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Rock Creek Reclamation District

Public Notice:
Comments Sought on the Draft Sustainable Management Criteria Chapter, Monitoring Networks Chapter and Groundwater Dependent Ecosystems Section

Drafts Available: https://www.vinagsa.org/sustainable-management-criteria

The Vina Groundwater Sustainability Agency (GSA) and the Rock Creek Reclamation District GSA are working to develop a single Groundwater Sustainability Plan (GSP) for the Vina Subbasin. The GSP has several sections as required by the Sustainable Groundwater Management Act (SGMA) and GSP Regulations. The Basin Setting section (available in draft form and currently under revision), describes characteristics of the groundwater system, groundwater conditions, and estimates of water use (water budgets) in the subbasin. Two draft chapters, the Sustainable Management Criteria and Monitoring Networks, and the section on Groundwater Dependent Ecosystems are available for a 30 day public comment period that will end on **June 18, 2021**. Information on how to submit comments can be found at the end of this notice.

Sustainable Management Criteria

The Sustainable Management Criteria (SMC) chapter defines what "sustainable groundwater management" is and looks like in the subbasin relative to six Sustainability Indicators (see figure). The GSP Regulations include several requirements under "Sustainable Management Criteria" in Subarticle 3 of Article 5. These include:

- Sustainability Goal
- Undesirable Results
- Minimum Thresholds
- Measurable Objectives

This draft SMC chapter released for public review and comment describes each of these components including quantitative definitions of the groundwater conditions that would result in "undesirable results" and therefore must be avoided through action (described in a forthcoming section of the GSP: Projects and Management Actions.) A key principle of SGMA is *local* management of groundwater resources which means local GSAs, with meaningful stakeholder input, decide and define what "significant and unreasonable" conditions are related to each of the six indicators. Besides identifying when basin conditions are "significant and unreasonable" for groundwater users, the SMC chapter identifies the operating level for the basin, called

the Measureable Objective. The Measureable Objective is set at a significantly higher level than the Minimum Threshold. This provides a margin of operational flexibility and protection. Therefore, public review and input of this draft is crucial in successful development of this GSP. An overview of concepts related to SMC development is include in the attached slides.

Establishing Sustainable Management Criteria

SGMA is meant to establish sustainability on a long term basis, at a regional level in the subbasin. In the Vina subbasin, this largely centers on managing groundwater levels to avoid undesirable results to groundwater users and to achieve a sustainable yield. Chronic lowering of groundwater levels could reach levels that impact water supply reliability for rural residential uses reliant on domestic wells, irrigated agriculture dependent on wells, and the municipal water supply for the City of Chico. In addition, declining groundwater levels can lead to significant reductions in groundwater storage, degraded water quality, land subsidence, and increased surface water depletion and ecosystem impacts (to groundwater dependent ecosystems). Although the six indicators will each be addressed individually in the chapter (noting that seawater intrusion is not applicable to the region due to our distance from the Pacific Ocean), the tie to groundwater level conditions for several of them is evident. Domestic wells tend to be shallower than irrigation or municipal wells and are typically most vulnerable to declines in groundwater levels. Therefore, analysis of domestic well depths in the subbasin is the basis for establishing Minimum Thresholds for lowering groundwater levels. This means dewatered domestic wells is the indicator of an "undesirable result." The task then becomes to identify what depth in a representative monitoring well would be protective of the vast majority of active domestic wells that meet current standards. When a well is installed, the well driller is required to submit a well completion report, or well log, to the California Department of Water Resources. A well log provides information on the characteristics of the well (ex. date the well was drilled, general well location, depth of the well, type of materials encountered during drilling). A database of submitted well logs dating back to the early 1900s is available to evaluate the current well infrastructure. However, it has limitations. What the database does not provide is a clean dataset of the specific location and depth of active domestic wells.

Two approaches using Available Domestic Well Data

The draft Chapter utilizes two different approaches using the domestic well dataset relative to representative monitoring wells to establish and estimate Minimum Thresholds. One approach, using polygons, is used in the Vina North management area and a second approach, using a 3 mile radius, is used in the Vina Chico and Vina South management areas. Although the objective is the same -*avoid declines in groundwater levels such that domestic wells are dewatered*- the method for establishing the Minimum Threshold level is different. Section 3.3 describes the two methods. The intent for the final GSP is to use a consistent approach in establishing the Minimum Thresholds throughout the subbasin. The public is encouraged to provide input on which approach is preferred.

Measureable Objectives

The SMC not only identifies what we want to avoid, but identifies where we want groundwater levels to operate, called the Measureable Objective. The Measurable Objective is based on historically observed groundwater conditions using monitoring data, not modeling, at each representative monitoring well. The Measurable Objective is set sufficiently higher than the Minimum Threshold.

Public Comment Focus Areas

Decisions defining Undesirable Results, the Minimum Threshold and Measurable Objective levels is a local GSA decision. We are especially seeking public input on these management "knobs" for the Declining Groundwater Level SMC:

- the acceptability of the proposed Measurable Objective levels
- Minimum Threshold levels and approach, and
- What *number* of monitoring sites hitting their Minimum Threshold, for *how many consecutive years* constitutes an undesirable result?

These also directly affect the SMC for Groundwater Storage and Land Subsidence.

For Interconnected Surface Water SMC, available data and current understanding is described then followed by a framework for future assessment of both surface water and groundwater. The purpose of the framework is to define the data and efforts needed to refine the Minimum Threshold and Measurable Objectives in the future, given the data gaps we have now. We seek public input and comment on this approach as well.

Draft Documents for Review

In addition to the draft SMC Chapter, several other supporting documents are included in this public review draft due to their relevance to the SMC content. This includes the Monitoring Networks Chapter which was originally included with the Basin Setting documents last summer but has since been revised and now also includes the description of the Representative Monitoring network which are the wells for which SMC are set. Also included in Appendix 3-3 is a description of Groundwater Dependent Ecosystems in the Vina Subbasin and maps showing their distribution. This information will likely be included in the Basin Setting Chapter in the final GSP but is released for public review now since the SMC Chapter refers to this work.

Next Steps

This chapter is available for public review and comment for **30 days ending on June 18, 2021**. Comments can be emailed to VinaGSA@gmail.com or by mail to Butte County Department of Water and Resource Conservation (308 Nelson Ave Oroville, CA 95965 Attn: Christina Buck). See directions for submitting comments below.

Public comments will be compiled for review and discussion by the GSA Boards. The GSA Boards will take public input, and advisory committee recommendations into consideration when

making final decisions about approaches and thresholds established in the SMC chapter. See directions for submitting comments described below.

Directions for submitting public comments:

1. Access the draft documents online:

   https://www.vinagsa.org/sustainable-management-criteria
2. Download the PDF chapter files
3. Download the comment tracking sheet (Excel table) and rename it with your name or entity abbreviation
4. Compile your comments in the Excel table. Please reference your comment to the report section with line numbers to facilitate tracking of comments.
5. **Please submit comments by June 18, 2021**.

   Email (preferred): VinaGSA@gmail.com

   Or by Mail:
   Department of Water & Resource Conservation, Attn: Christina Buck
   308 Nelson Ave. Oroville, CA 95965

You can send your comments in a few ways:

- Fill out the comment tracking sheet **in Excel with your comments/suggested edits/questions** and email it by June 18, 2021.
- You can also record your comments in Word or other document-based software taking care to ***refer any comments/edits/questions in the text to the numbered line references in the draft Chapters or figure numbers***

Contact Christina Buck with questions. cbuck@buttecounty.net; 530-552-3593

OVERVIEW OF SUSTAINABLE MANAGEMENT CRITERIA

GROUNDWATER SUSTAINABILITY PLAN DEVELOPMENT

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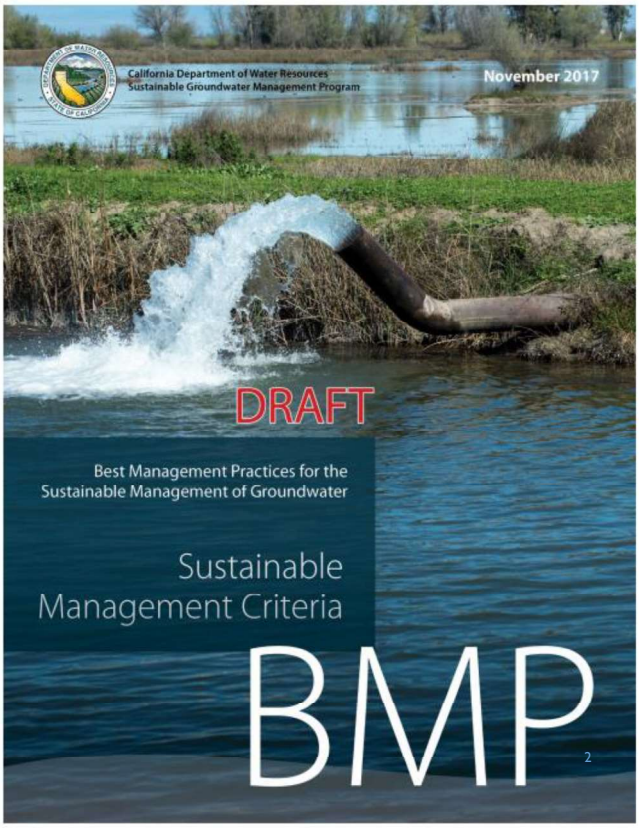
Butte County Water & Resource Conservation

- Content and examples from BMP on Sustainable Management Criteria
- https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/BMP-6-Sustainable-Management-Criteria-DRAFT_ay_19.pdf



GROUNDWATER SUSTAINABILITY PLANS

1. Administrative Information
- §354.4. General Information
- §354.6. Agency Information
- §354.8. Description of Plan Area
- §354.10. Notice & Communication

2. Basin Setting
- §354.14. Hydrogeologic Conceptual Model
- §354.16. Groundwater Conditions
- §354.18. Water Budget
- §354.20. Management Areas

3. Sustainable Management Criteria
- §354.24. Sustainability Goal
- §354.26. Undesirable Results
- §354.28. Minimum Thresholds
- §354.30. Measurable Objectives

4. Monitoring Networks
- §354.34. Monitoring Network
- §354.36. Representative Monitoring
- §354.38. Assessment & Improvement
- §354.40. Reporting Monitoring Data to the Department

5. Projects and Management Actions
- §354.44. Projects & Management Actions

SUSTAINABLE MANAGEMENT CRITERIA CHAPTER

- Draft Sustainable Management Criteria Chapter
  - 30 day public comment period
  - Complete Chapter with description of the methodology
  - "Initial" Minimum Thresholds and Measurable Objectives
  - Emphasis on seeking input on where to set Minimum Thresholds and Measurable Objectives, and the Undesirable Results Statements

    → Key Management Decisions, not a Scientific Decision

PROCESS AND ANTICIPATED TIMELINE

- May: Draft Sustainable Management Criteria Chapter Released for Public Comment Period
- June: Stakeholder Advisory Committee reviews Draft Chapter and received public comments. Provide recommendation to Vina GSA Board
- July: Vina GSA Board and Rock Creek RD GSA Board- decision making regarding components of the Sustainable Management Criteria
  - Undesirable Results Statements
  - Minimum Thresholds and Measurable Objectives
- The Draft Chapter is revised accordingly for inclusion in the Groundwater Sustainability Plan
- Sustainable Management Criteria Chapter not completely final until the entire Groundwater Sustainability Plan is adopted at the end of 2021

SUSTAINABLE MANAGEMENT CRITERIA (SMC)

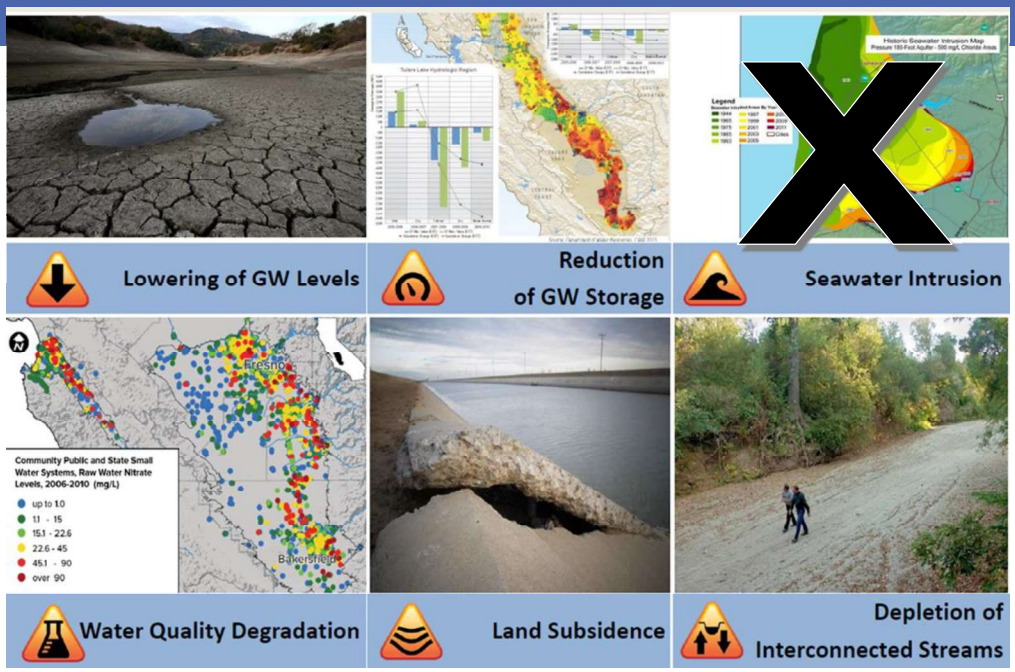
Includes

- Sustainability Goal (qualitative)
- Undesirable Results (quantitative)
- Minimum Thresholds (quantitative)
- Measurable Objectives (quantitative)

Defines what SUSTAINABILITY is and looks like in the subbasin

What's considered "significant and unreasonable" is left for the local GSAs and stakeholders to decide.

SUSTAINABILITY INDICATORS



SIGNIFICANT AND UNREASONABLE

- Define what constitutes significant and unreasonable conditions

Sustainability Indicators	Lowering GW Levels	Reduction of Storage	Seawater Intrusion	Degraded Quality	Land Subsidence	Surface Water Depletion

- For example
  - Basin wide loss of domestic well pumping capacity due to lowering of groundwater levels
  - Localized inelastic land subsidence near critical infrastructure (ie. canal)

REPRESENTATIVE MONITORING

- How do you know if the Significant and Unreasonable conditions are occurring?

MA = Management Area

• = Monitoring Site

○ = *Representative Monitoring Site used for Seawater Intrusion*

○ – *Representative Monitoring Site used for Groundwater Level*

MINIMUM THRESHOLD (MT)

- Need to QUANTIFY what significant and unreasonable conditions are
- Compare measured condition to a standard (i.e. established Minimum Threshold)
- When the standard is exceeded → Undesirable Result

Must describe:

- Justification for the MT must be supported by information from basin setting, data, or modeling
- The relationship of MTs set for each sustainability indicator
- How MTs have been set to avoid interfering with another basin's ability to achieve sustainability goals
- How MT may affect interests of beneficial uses/users of groundwater
- How state/fed/local standards relate
- How each MT will be quantitatively measured

MINIMUM THRESHOLD

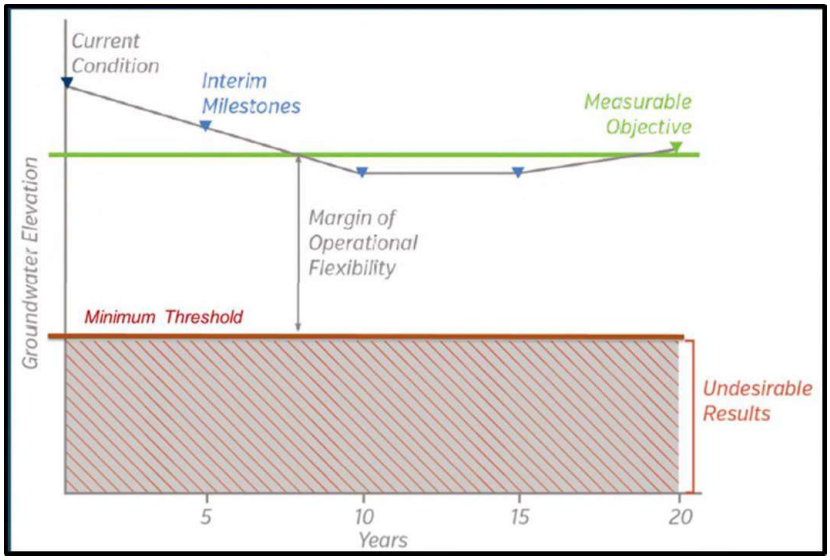
- What do we measure?

Sustainability Indicators	Lowering GW Levels	Reduction of Storage	Seawater Intrusion	Degraded Quality	Land Subsidence	Surface Water Depletion
Metric(s) Defined in GSP Regulations	• Groundwater Elevation	• Total Volume	X • Chloride concentration isocontour	• Migration of Plumes • Number of supply wells • Volume • Location of isocontour	• Rate and Extent of Land Subsidence	• Volume or rate of surface water depletion

* Groundwater level as a proxy

MINIMUM THRESHOLD EXAMPLE: GROUNDWATER LEVELS

Lowering GW Levels



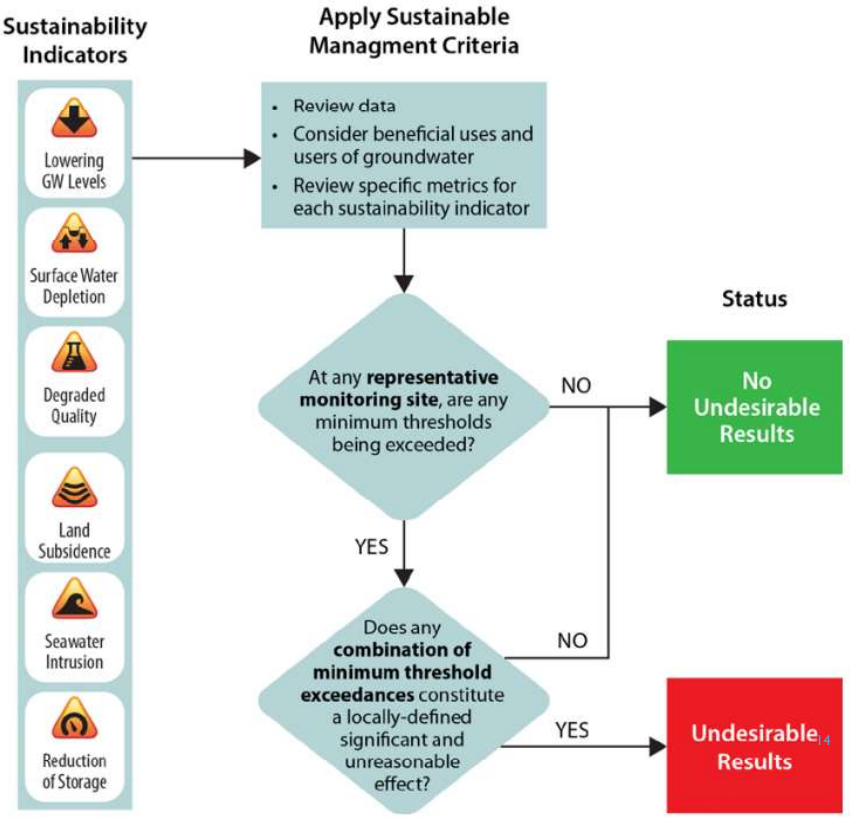
UNDESIRABLE RESULTS (UR)

- Under what conditions is an Undesirable Result triggered?
- Quantified by Minimum Threshold (MT) exceedances:
  - Must specify the criteria/circumstances of MT exceedances that results in an UR
- Describe three components:
  1. Criteria defining when and where MT exceedances cause URs

     Ex. UR occurs when two representative monitoring wells have periodic minimum threshold exceedances over a several year period
  2. The cause (factors leading to UR)
  3. Describe the effects of the UR on beneficial uses and users of groundwater

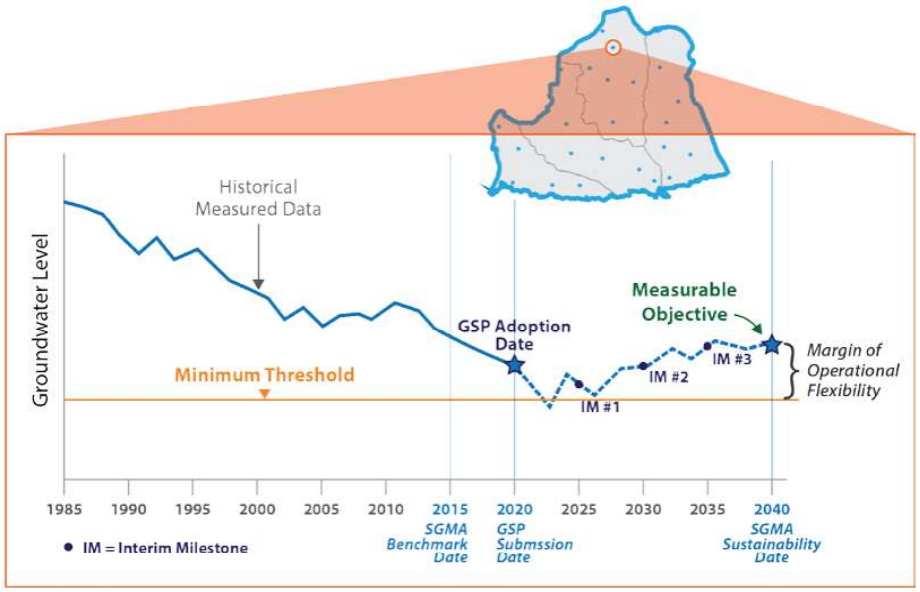
UNDESIRABLE RESULTS FLOW CHART

Sustainability is demonstrated by the avoidance of Undesirables Results for the six sustainability indicators



MEASURABLE OBJECTIVE & INTERIM MILESTONES

Lowering GW Levels

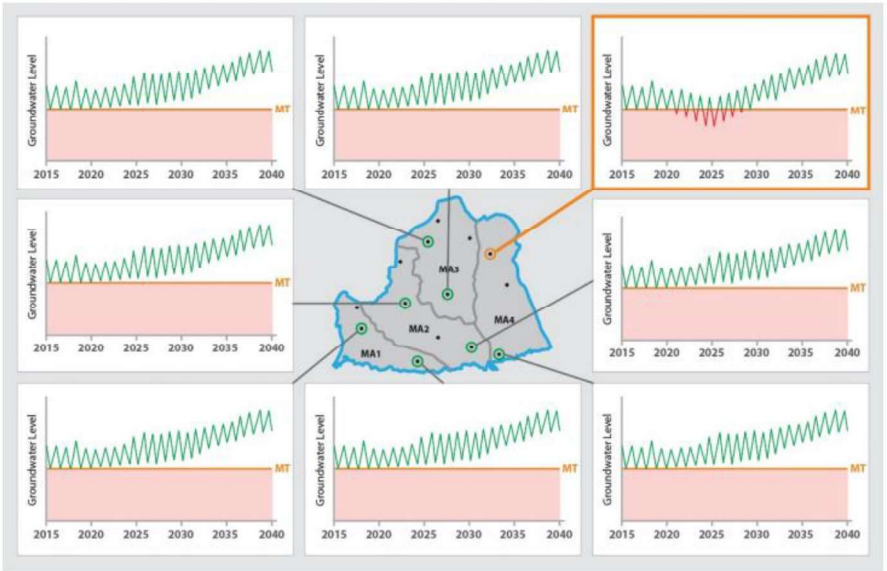


EXAMPLE: SUSTAINABLE MANAGEMENT

Scenario 1 – Minimum Threshold Exceedances without an Undesirable Result

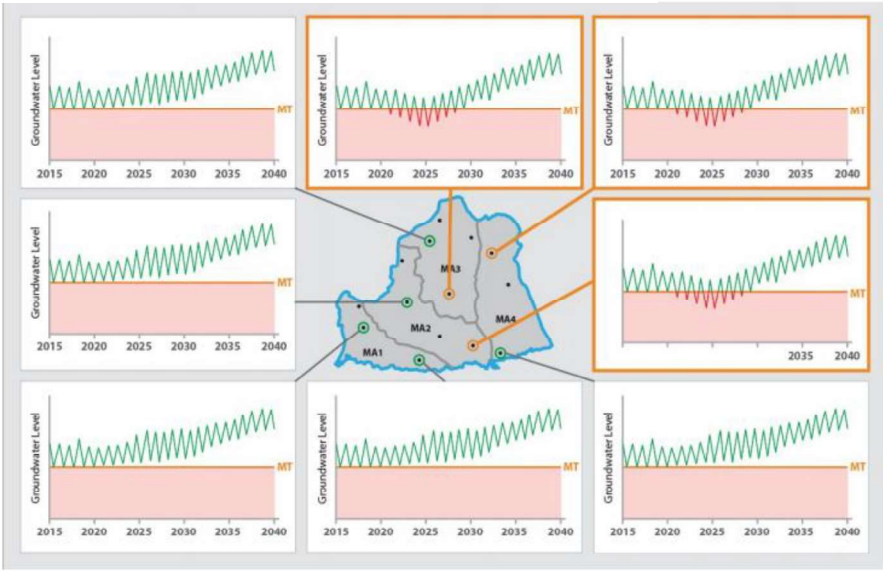
Ex. GSA defined criteria:

Minimum threshold exceedances at three or more representative monitoring sites constitutes an Undesirable Result



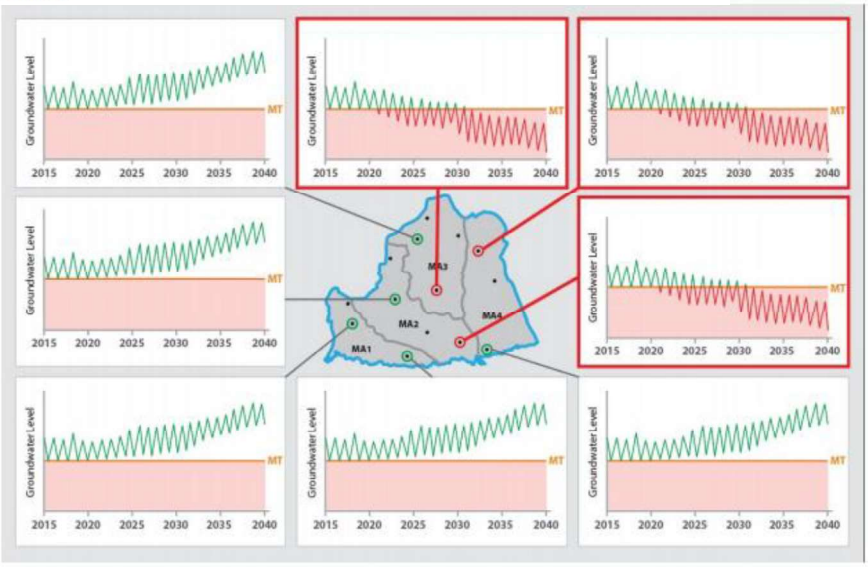
EXAMPLE: SUSTAINABLE MANAGEMENT

Scenario 2 – Minimum Threshold Exceedances with Undesirable Results Eliminated Within 20 Years



EXAMPLE: NOT SUSTAINABLE MANAGEMENT

Scenario 3 – Minimum Threshold Exceedances with Undesirable Results Not Eliminated Within 20 Years



SUSTAINABILITY DEFINED

Sustainability is **demonstrated** by the avoidance of Undesirables Results for the six sustainability indicators

SUSTAINABILITY GOAL

- Sums it all up in a statement
- Description of
  - objective for management of the basin
  - measures that will be taken to manage the basin (projects and management actions)
  - how those measures will lead to sustainability

If No Undesirable Results Occurring Then Basin operating within its Sustainable Yield And Sustainability Goal is being Achieved

MINIMUM THRESHOLD

LOWERING OF GROUNDWATER LEVELS

- WHERE? Developed **uniquely** for each Representative Monitoring Site
- WHY? Potential Significant and Unreasonable Conditions
  - Dewatering of domestic wells
  - Increased pumping costs
  - Impacts to groundwater dependent ecosystems
- WHAT? Supporting Information
  - Depths of nearby domestic wells
  - Historically observed groundwater levels
- HOW? Approach
  - Dewatered Domestic wells is the "indicator" of "undesirable result"
  - Objective: identify the threshold that is protective of active domestic wells that meet current standards

MINIMUM THRESHOLDS

Minimum Thresholds – Level where "undesirable result" occurs for groundwater users

- Minimum Threshold for Chronic Lowering of Groundwater Levels set where domestic wells would be dewatered

Methodology

- Minimum Threshold set for each Representative Monitoring Site
- Use available well data within 3 mile radius OR polygon of monitoring site
- Identify the depth of the shallowest active domestic wells to set the Threshold
- Acknowledge uncertainty of the location and depths of **active** domestic wells
- Refine the well data used to establish the threshold

- Undesirable Result is reached when a certain number/percent of Representative Monitoring Sites reach their Minimum Threshold. This is the point of failure of groundwater sustainability (Management Decision)

DEFINING UNDESIRABLE RESULTS

1. Undesirable Results Statement (narrative)

2. Quantitative definition of significant and unreasonable impacts

   - Ex. Undesirable Result is reached when measured fall groundwater levels at 2 Representative Monitoring Sites fall below Minimum Threshold for 2 consecutive years

This defines the point of failure of groundwater sustainability (Management Decision)

Seek public comment/input on the management "knobs"

- What number or percent of monitoring sites?
- For how many consecutive years?

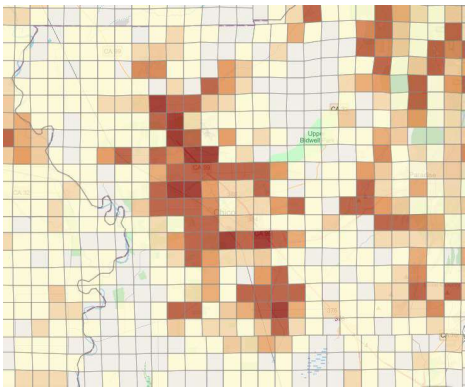
MINIMUM THRESHOLDS

What well data we have to work with:

- Database of information from ALL available well completion reports dating back to early 1900s
- Data is from the Department of Water Resources
- Well characteristics: well depth, date drilled, location specific to a one mile by one mile section

What we do not have:

- A clean dataset of the location and depth of ACTIVE domestic wells



DWR Well Completion Report Map Application

MEASURABLE OBJECTIVES (OPERATIONAL LEVEL)

Lowering GW Levels

Proposed Measurable Objectives

- Specific to each monitoring site: account for basin variability
- Proposed to be set based on projected groundwater elevations in 2030.

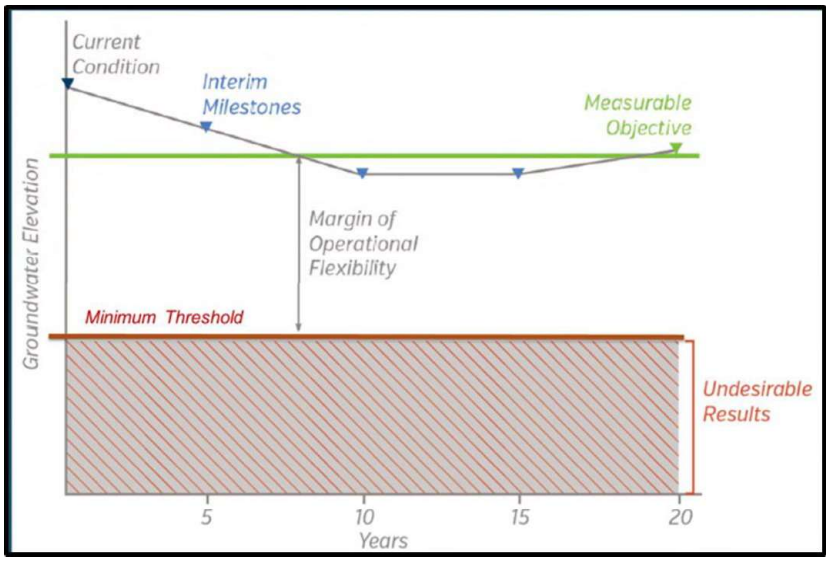
Considerations

- Allows for some decline from current conditions.
- Could be adjusted to higher groundwater levels if there is sufficient Project and Management Actions

The Measurable Objective is the primary driver for GSP implementation. It's the "desired state" the GSA is managing to.

MINIMUM THRESHOLDS AND MEASUREABLE OBJECTIVES

Lowering GW Levels



- The **Draft** Chapter will specify and describe an MT and MO for each monitoring site
- The narrative will describe the methodology and the rational
- Objective: Seek public comment/input on the proposed MT and MO levels for discussion and decision-making by the GSA boards in July

RECAP: DEFINING "UNDESIRABLE RESULTS"

- Sustainable groundwater management is defined as the management and use of groundwater that can be maintained without causing an Undesirable Result.

  Undesirable results as defined in SGMA are:

  - Persistent lowering of groundwater levels
  - Significant and unreasonable reductions in groundwater storage
  - Significant and unreasonable saltwater intrusion
  - Significant and unreasonable degradation of water quality
  - Significant and unreasonable land subsidence
  - Surface water depletion having significant and unreasonable effects on beneficial uses
- What is considered "significant and unreasonable" is left for the local GSAs and stakeholders to decide.

RECAP: SUSTAINABILITY DEFINED

Sustainability is **demonstrated** by the avoidance of Undesirables Results for the six sustainability indicators

If	No Undesirable Results Occurring	Then	Basin operating within its Sustainable Yield	And	Sustainability Goal is being Achieved