

**Sustainable Management Criteria Briefing**  
**TSb Technical Committee Meeting**  
**January 21, 2021**

*This briefing is to help inform your input to development of Sustainable Management Criteria. Proposed draft sustainability goals for the Tracy Subbasin are provided below but need to be locally defined. Please review, comment and edit freely. Information regarding five of the sustainability indicators is provided for consideration including proposed draft undesirable results, criteria used to develop minimum thresholds, and measurable objectives. We look forward to your thoughts. All are just for non-Delta areas. Text below in italics general background and thoughts, none-italic text is potential language to be incorporated into GSP.*

**Sustainability Goals**

“To provide reliable and sustainable groundwater resources for existing and future needs of all beneficial users in the Subbasin through continued local adaptive management of the available surface and groundwater resources.

It is the intent of the GSAs that use of groundwater is not hindered by contamination, and that demand on groundwater does not compromise its quality.”

**Chronic Lowering of Groundwater Levels**

*Other Subbasins – Many other Subbasins are using historic groundwater levels and modeling results to set MT and MOs and defining why these are protective of beneficial uses.*

*TSb Approach – identification of most sensitive beneficial users (GDEs and domestic wells) and then selection of MT and MOs based on these users. Limitations are included as to responsibilities of GSAs to protection of domestic well owners from local well impacts, wells not constructed to adequate depths and database information.*

Undesirable Results - The criteria used to define significant and undesirable results by chronic lowering of groundwater levels are:

- Domestic and irrigation wells go dry (cost to construct new wells)
- Increased costs to pump groundwater (including power, lowering or replacement of pumps, and new motors)
- Surface water is depleted such that creeks go dry with related impacts to riparian habitats and related species, or fishery resources (in periods other than severe climate conditions)
- Groundwater supported vegetation die or cannot repopulate (reduction or elimination of GDEs)
- Groundwater quality is degraded by increasing the salt content (connate marine water intrudes freshwater aquifers)
- Groundwater quality becomes unusable because contaminants spread vertically and horizontally (contaminants from the large and known plumes spread and degrade water quality so that it cannot be used without treatment)

Minimum Thresholds set based on:

- The minimum depths of domestic wells (*refer to Figure 3-13*) to maintain groundwater levels 20 feet above the bottom of the well to allow for submergence of a pump and to allow continued use of the wells. No wells in the Subbasin were reported to have gone dry during the 2012 to 2016 drought. All wells do fail at some point due to corrosion of the casing or plugging of the well screens which are not related to groundwater levels. These selection criteria for minimum thresholds may be modified if the minimum well depth well was found to be:
  - Less than the static groundwater level, current or historic groundwater levels during the drought years, 2012 to 2016.
  - Less than 40 feet because state and local ordinances require a 20-foot minimum sanitary seal depth for domestic wells and allowance for 20 feet for pump submergence.
- Rooting zone depths of GDEs was established at a conservative maximum level of 20 feet bgs, that would allow mature vegetation to survive.

Measurable Objectives - MO set at average spring historical groundwater levels.

#### **Reduction of Groundwater in Storage**

*Other Subbasins – MTs and MOs established to track lowering of groundwater levels and indicator of basin changes in storage and application of modeling*

*TSb Approach - similar*

#### **Degraded Water Quality –**

*Other Subbasins - MTs and MOs being set at residential or irrigation wells (mostly CASGEM designated wells), using primary or secondary drinking water standards. TDS ranging from 500 to 1,000 mg/L.*

*DWR provided some guidance and said can set MTs to establish “a number of wells”*

*TSb Approach – Use just public water supply wells. Different approach as TDS over recommended MCL of 500 mg/L already (average 722 mg/L in just public supply wells). No need to track nitrate as below MCL. Boron average below Notification Level but map showing elevated levels above MCL.*

Undesirable Results - Undesirable results, that were determined to be significant and unreasonable for degraded water quality are:

- Occurrences of large-scale groundwater contamination being to spread and degraded water requiring treatment prior to use
- Concentrations in public supply wells above the primary or secondary MCLs (TDS exceeding the secondary MCL of 500 or 1,000 mg/L, nitrate greater than 10 mg/L)

- Degraded of water quality that leads to reduced crop production (boron exceeding 2.0 mg/L)
- Pumping of groundwater or reduction of storage increases brackish water contributions from marine sediments and makes the salinity of the groundwater unusable without treatment, (TDS exceeding 1,000 mg/L)
- Implementation of projects and management actions that increase concentrations of elements that make the groundwater unusable

Minimum Threshold - Salinity (as represented by TDS) and boron are relatively high in the Subbasin and are the only water quality constituents for which minimum thresholds are established in the Tracy Subbasin. The minimum threshold metric for degraded groundwater quality shall be when the number of wells with exceedances of TDS or boron above the MCL or Notification Levels increases by more than 25 percent in public water systems wells.

Concentrations shall be obtained and evaluated from the SWRCB GAMA database website. This approach was taken rather than using an MCL or Notification Level because most of the groundwater in the Subbasin already exceeds the secondary recommended MCL (500 mg/L) and Notification Level. Using a percent rather than a specific number of wells allows for new wells to be constructed without affecting threshold.

### **Land Subsidence**

*Other Subbasins – some designating groundwater levels in wells, other surveys of benchmarks, reliance on satellite-based, extensometers, plate boundary stations. Delta-Mendota using benchmark surveys.*

*TSb Approach – Use satellite-based rates. Set MTs not to exceed annual historic rates. Use combination of groundwater levels in wells, other surveys of benchmarks, plate boundary stations to verify data if rates increase. Noting Delta-Mendota UR, MT and MOs subbasin thresholds due to interfingering.*

*Is it simpler to use groundwater levels below Corcoran clay and not exceed historic low levels?*

### **Surface Water Depletion**

*Other Subbasins – Establishing wells near rivers, near gaging stations, few near tributaries. Most basins identify as data gap.*

*TSb Approach – Use wells near rivers along with gaging stations. Inland wells to establish gradients. Have to have set for Lower aquifer as Corcoran clay does not extend fully beneath Delta. Waiting for model results to assess significance of potential increase above historic.*