UPDATES ON SUBBASINS

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OUTLINE

- Status of GSPs

- Sustainability Goals

- Monitoring Networks

- Draft Minimum Thresholds and Measurable Objectives

STATUS OF GSPS

- Madera Joint GSP – Chapters One and Two have been released; July 2019 release date for complete draft

- Comment form available at maderacountywater.com

- Public Comments for Madera Joint GSP at MaderaGSPComments@maderacounty.com

- GSPs for Chowchilla and Delta Mendota are coming out in late July/early August

ADVISORY COMMITTEE TO COUNTY GSAS

- Met twice in May
- Discussing allocations and alternatives
- Will meet again June 20, 2019 at 2 p.m.

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SUSTAINABILITY GOALS

1. Goal description

- Implement a package of projects and management actions to balance groundwater system inflows with outflows
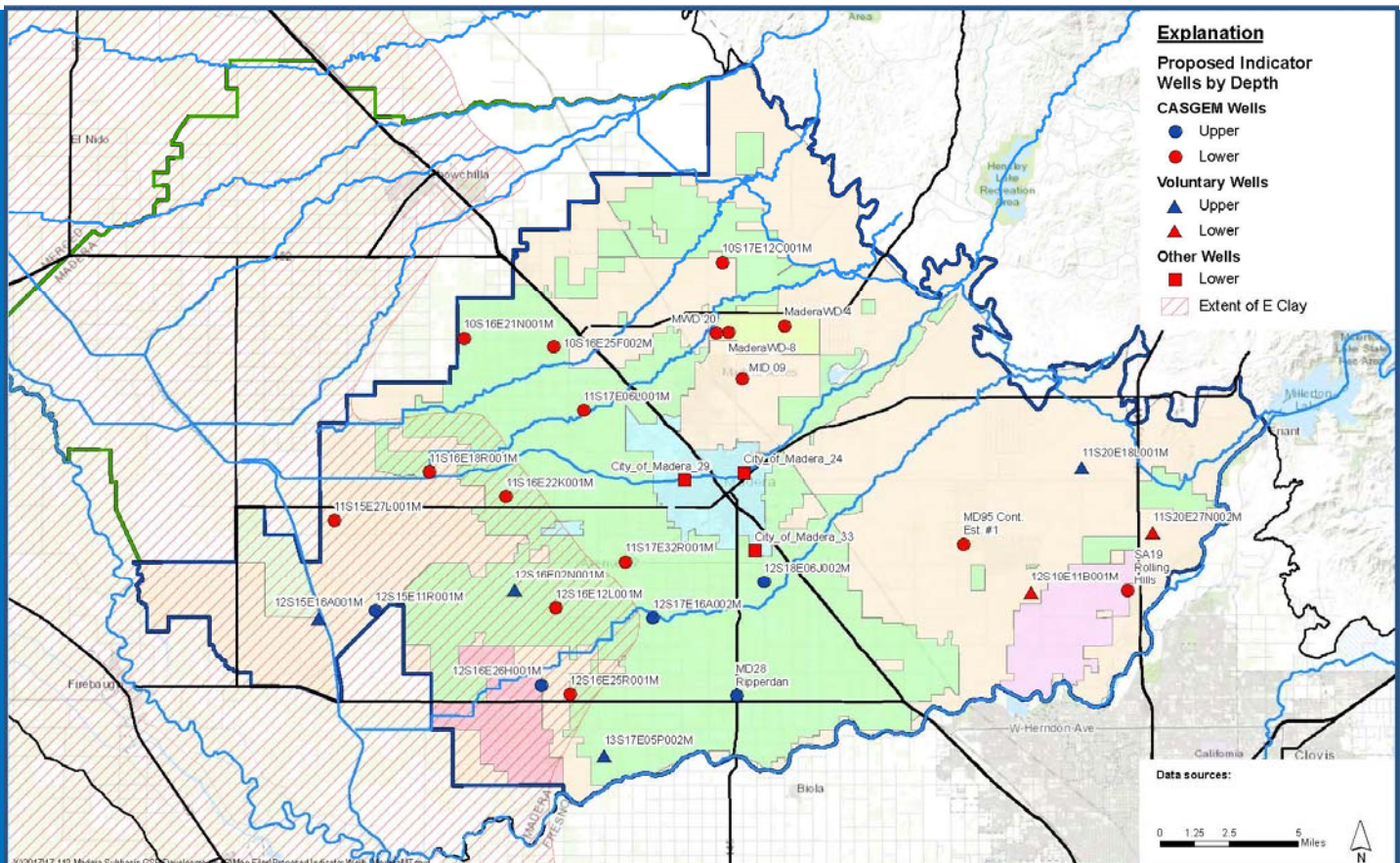 - No economic, social, and environmental undesirable results

2. Discussion of measures
  - Recharge projects,
  - Projects that replace groundwater use with surface water use (in lieu) and
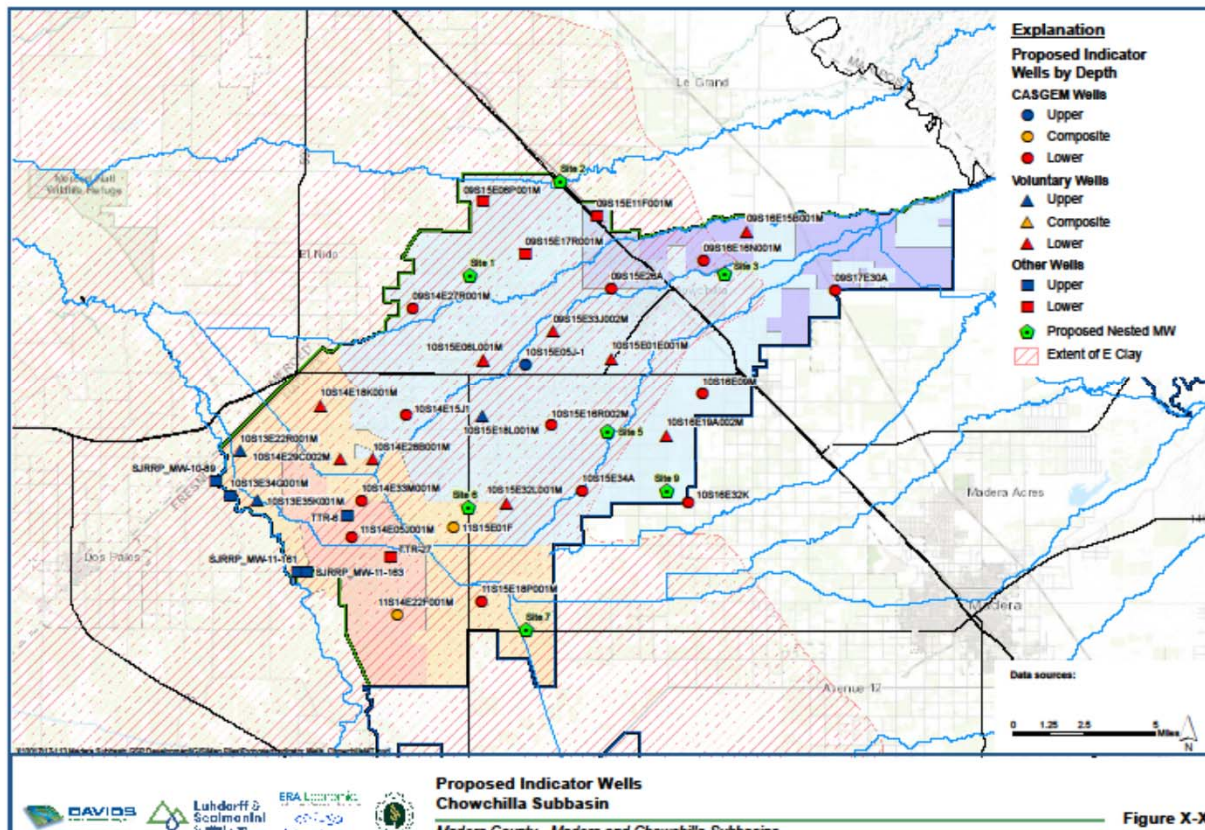 - Management actions that reduce demand

3. Explanation of how the goal will be achieved in 20 years
  - Increase recharge
  - Decrease groundwater extraction
    - Use more surface water
    - Reduce crop consumptive use

MONITORING NETWORK – MADERA

MONITORING NETWORK - CHOWCHILLA

Proposed Indicator Wells
Chowchilla Subbasin

Figure X-X

MINIMUM THRESHOLDS: METRICS

Figure 2. Minimum Threshold Metrics

DRAFT PRELIMINARY ANALYSIS AND RESULTS TO BE REFINED AS GROUNDWATER SUSTAINABILITY PLAN DEVELOPMENT PROCEEDS

DEFINITION OF UNDESIRABLE RESULTS

- Define for each sustainability indicator
- Exceedance of Minimum Threshold to yield undesirable result will be defined by:
  - Two consecutive fall measurements below Minimum Threshold
  - 30 percent of wells below Minimum Threshold

DRAFT PRELIMINARY ANALYSIS AND RESULTS TO BE REFINED AS GROUNDWATER SUSTAINABILITY PLAN DEVELOPMENT PROCEEDS
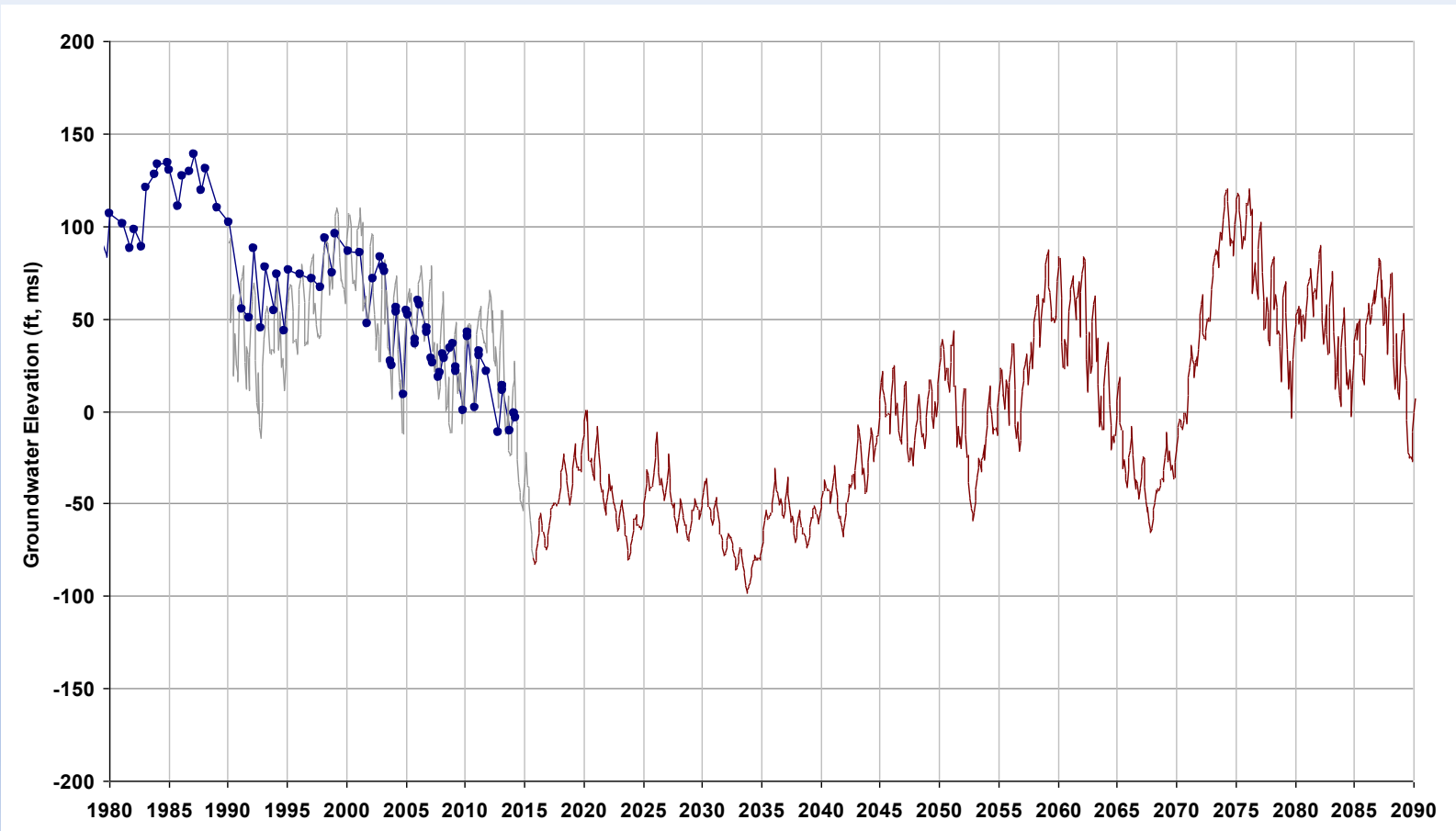
SETTING MINIMUM THRESHOLDS FOR GROUNDWATER LEVELS

- Existing beneficial uses
  - Drinking water (private wells, small community, etc.)
  - Irrigation
  - Environment
- Human right to water (AB 685)
- Importance of agriculture to County economy

- GSAs recognize inter-connection of these factors

- GSAs need time to transition and complete projects and actions – the time required will result in lower groundwater levels during implementation

- Discussing mitigation for impacts can address concerns of lowered groundwater levels during implementation

DRAFT PRELIMINARY ANALYSIS AND RESULTS TO BE REFINED AS GROUNDWATER SUSTAINABILITY PLAN DEVELOPMENT PROCEEDS
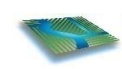
METHOD USED FOR GROUNDWATER LEVEL MINIMUM THRESHOLDS

- Using the groundwater model:
  - Prepare hydrographs of expected future conditions at various wells…with planned projects and actions
  - Use "average" hydrology for 2020 through 2040
    - Removes extreme impacts from starting wet or dry
  - Use 1965-2015 to represent 2041 through 2090

- Follow steps and adjustments for each representative monitoring well
  - Create artifical '10-year drought'
  - Check against lowest point during implementation and sustainability
  - Evaluate potential impact to drinking wells and develop mitigation

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Step 1: plot measured and modeled results

Step 2: Show 'implementation' and 'sustainability' periods
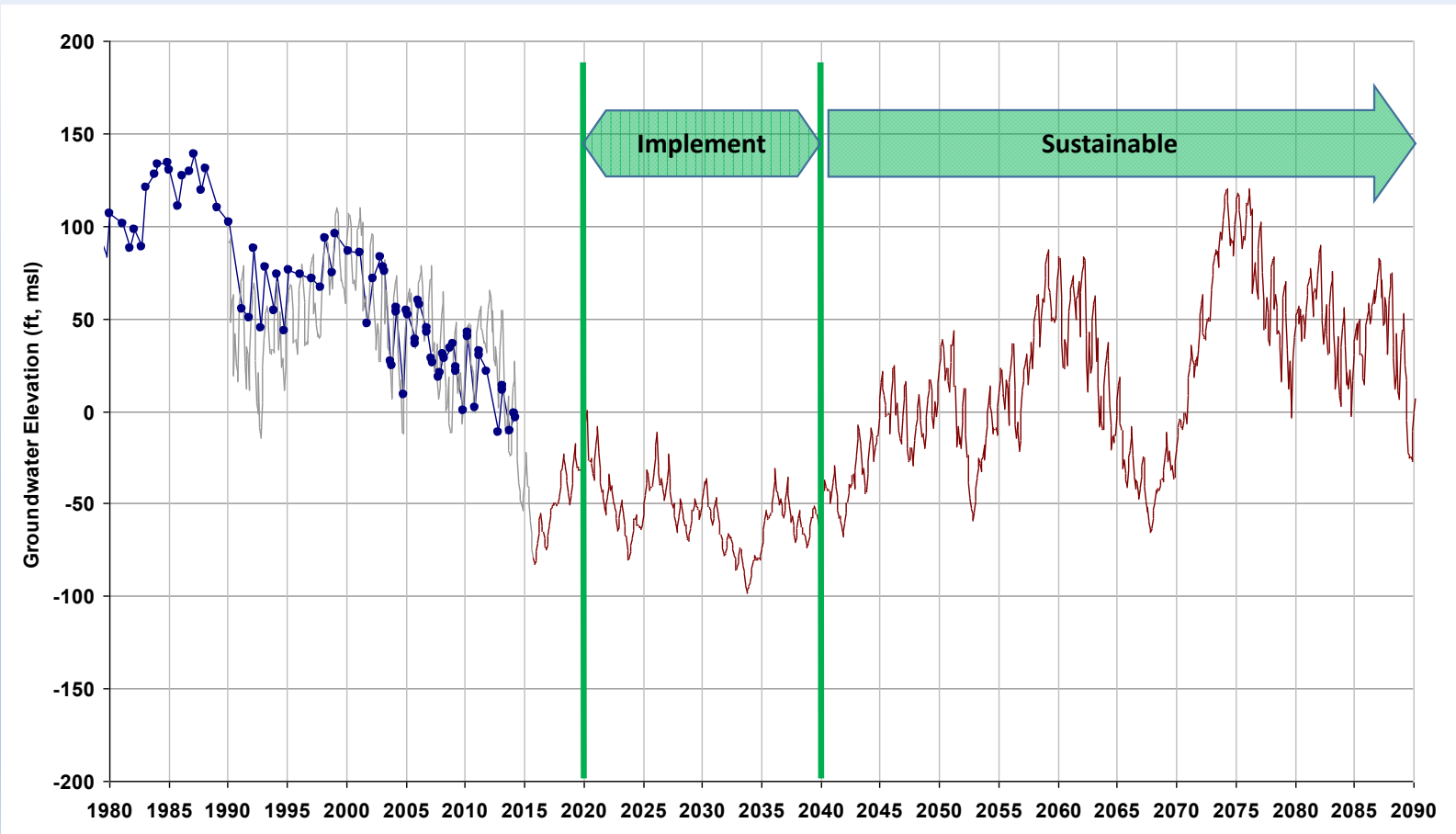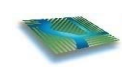
Step 3: Extend 2060's drought

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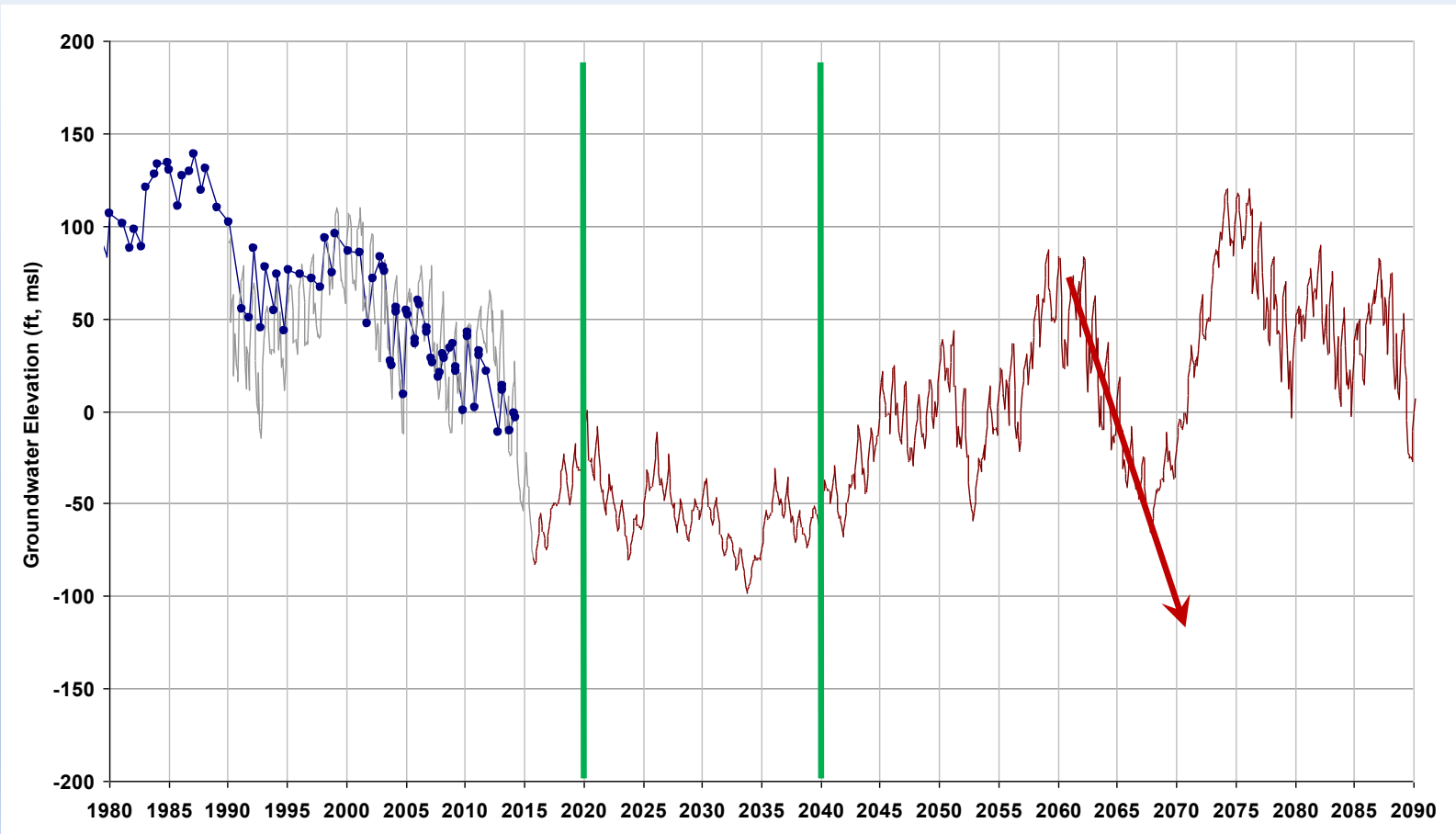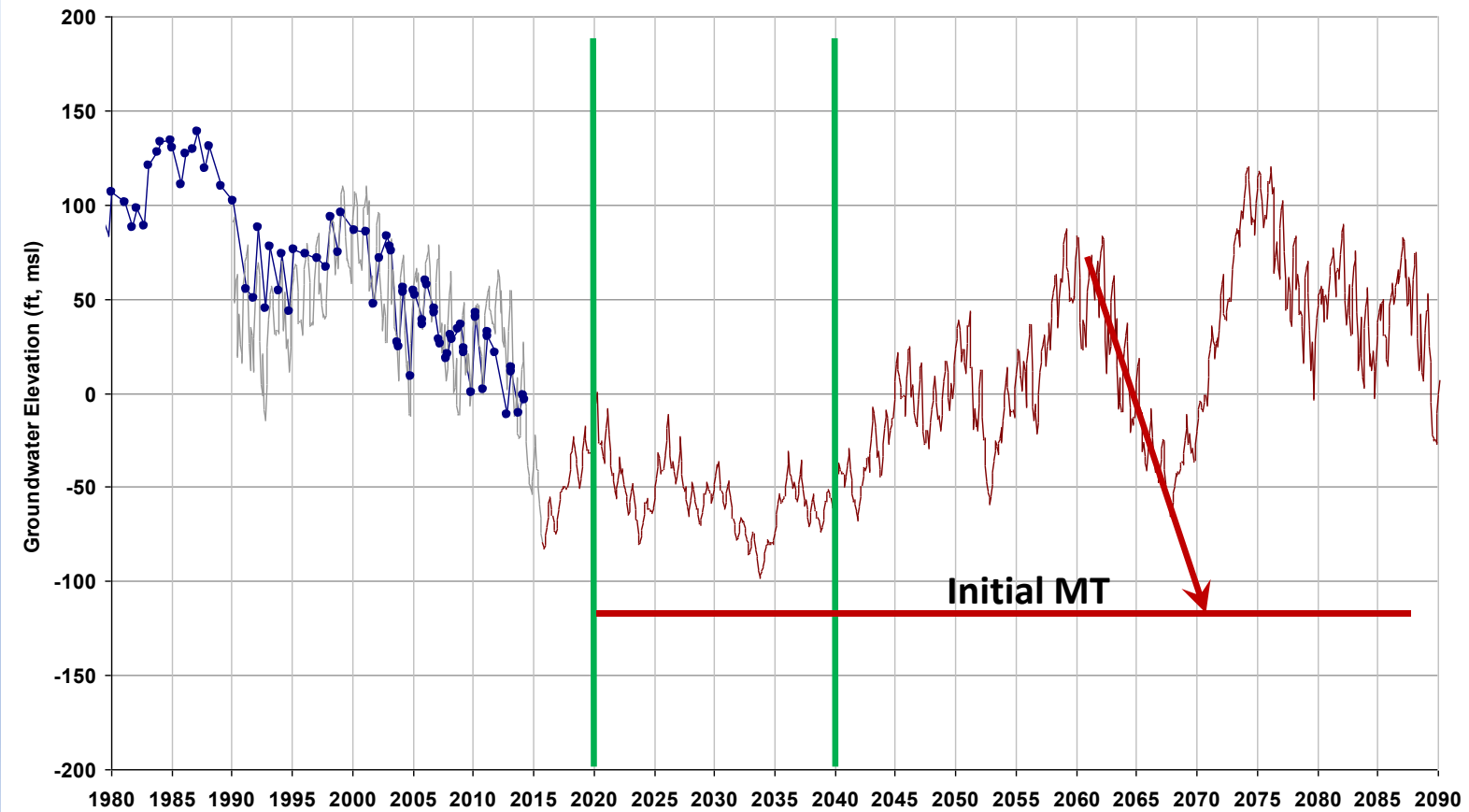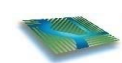# Step 4: Draw initial Minimum Threshold (MT) level at base of extended drought

Step 5: Check if below lowest point during implementation and sustainability periods; adjust downward if necessary

Step 6: Assess local drinking water well information for potential impact; plan for mitigation where Minimum Threshold is lower

DRAFT PRELIMINARY ANALYSIS AND RESULTS TO BE REFINED AS GROUNDWATER SUSTAINABILITY PLAN DEVELOPMENT PROCEEDS

Step 6: Assess local drinking water well information for potential impact; plan for mitigation where Minimum Threshold is lower
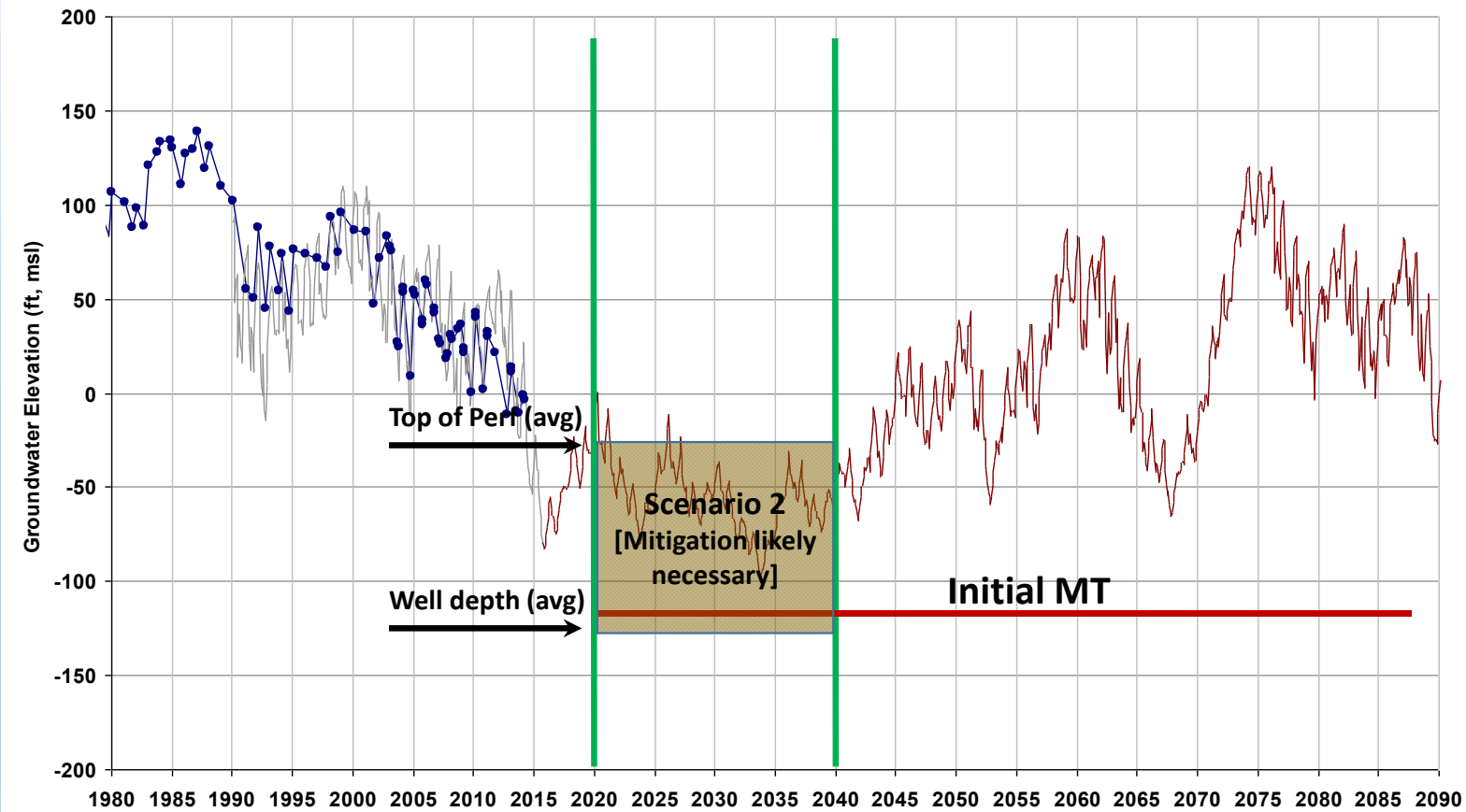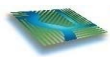
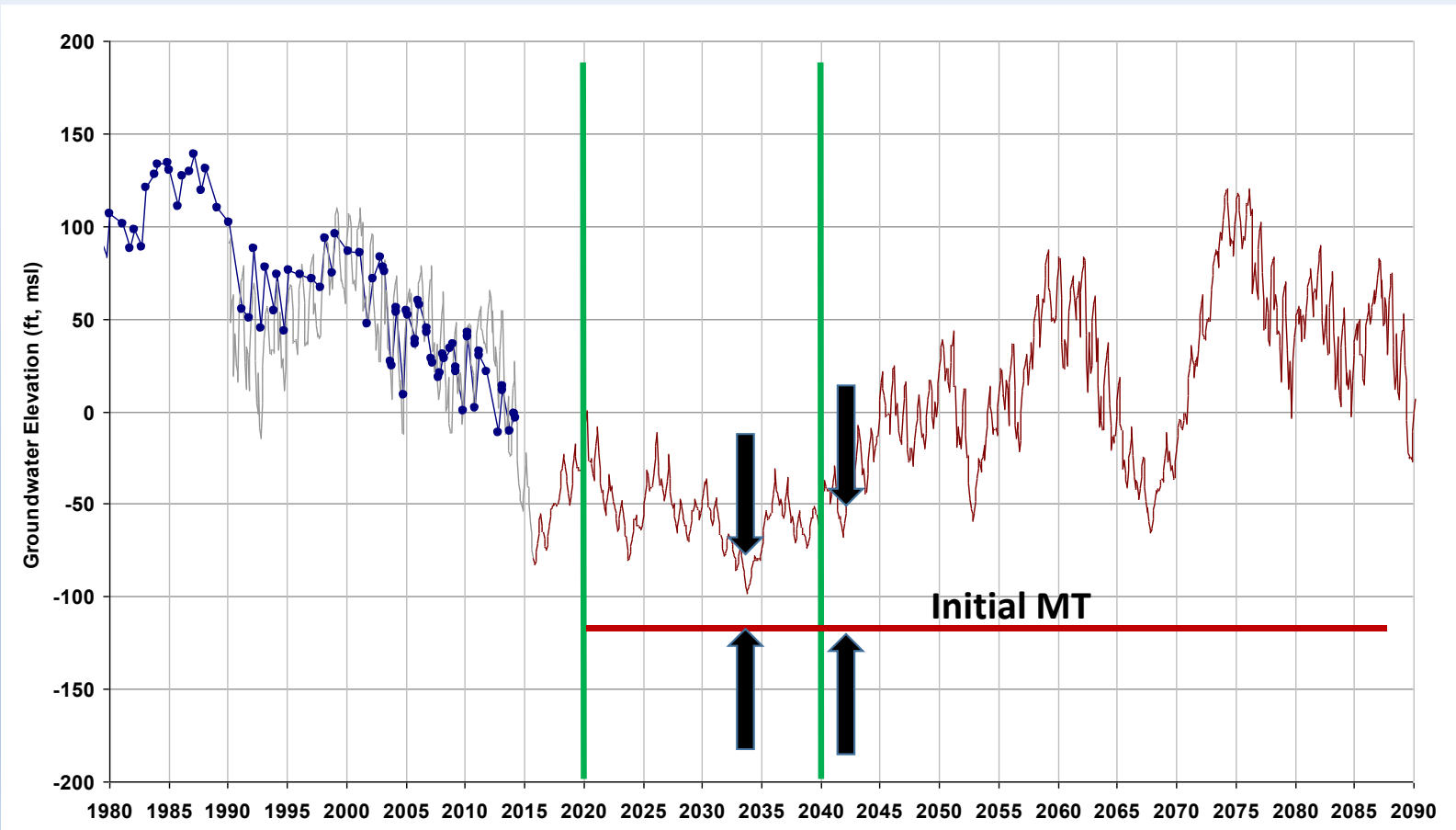DRAFT PRELIMINARY ANALYSIS AND RESULTS TO BE REFINED AS GROUNDWATER SUSTAINABILITY PLAN DEVELOPMENT PROCEEDS

Step 7: If subsidence is a concern in area, adjust Minimum Threshold upward to match most recent low point (primarily for wells below Corcoran Clay)
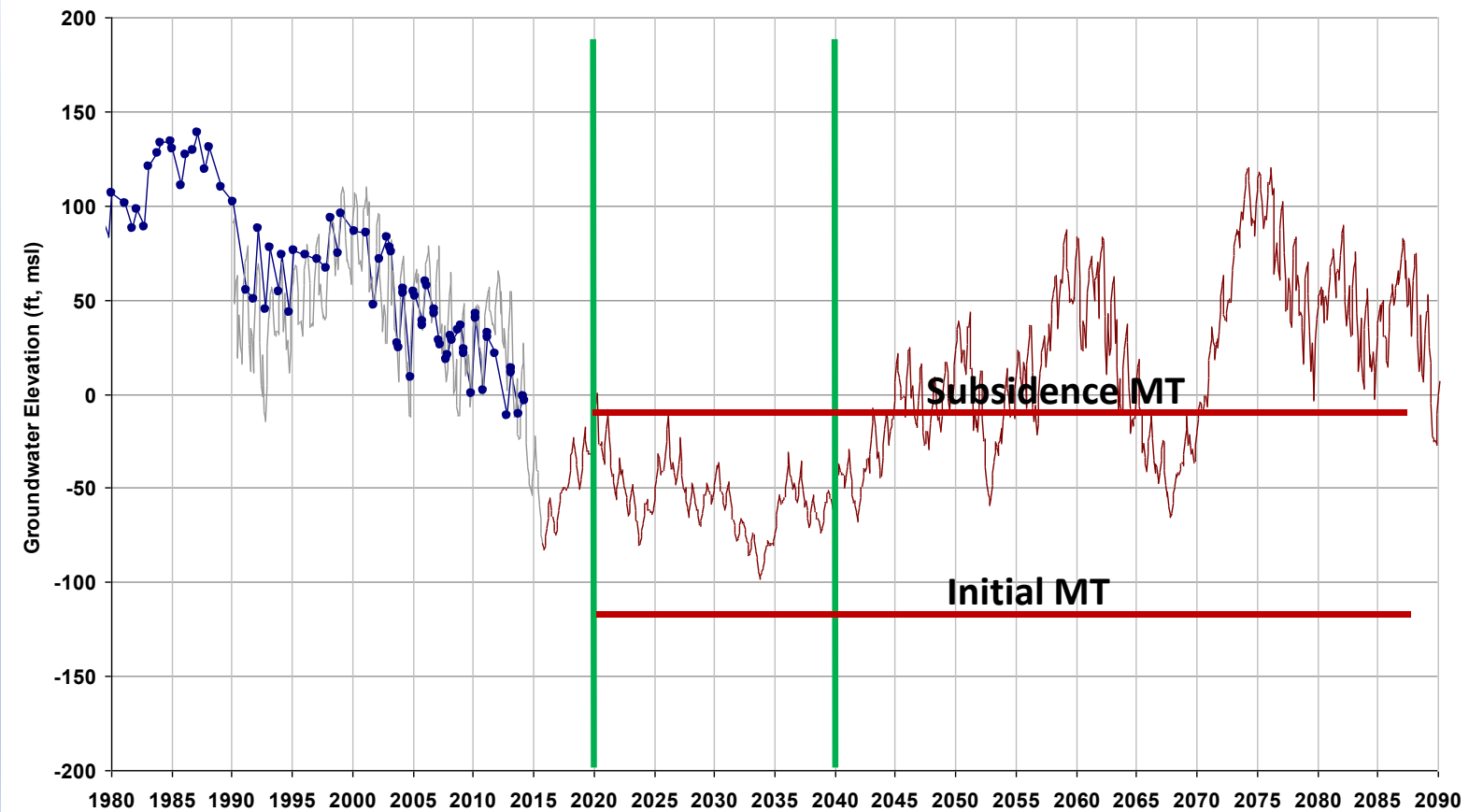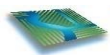
THE GSAS ARE DISCUSSING A MITIGATION PROGRAM FOR IMPACTED DRINKING WATER WELLS

- Details developed during first year of implementation

- Possible mitigation actions
  - Replace/lower existing well
  - Connect to community water system

- Possible types of support
  - Low interest loans
  - Grants

- Likely will require well owners to sign up for program

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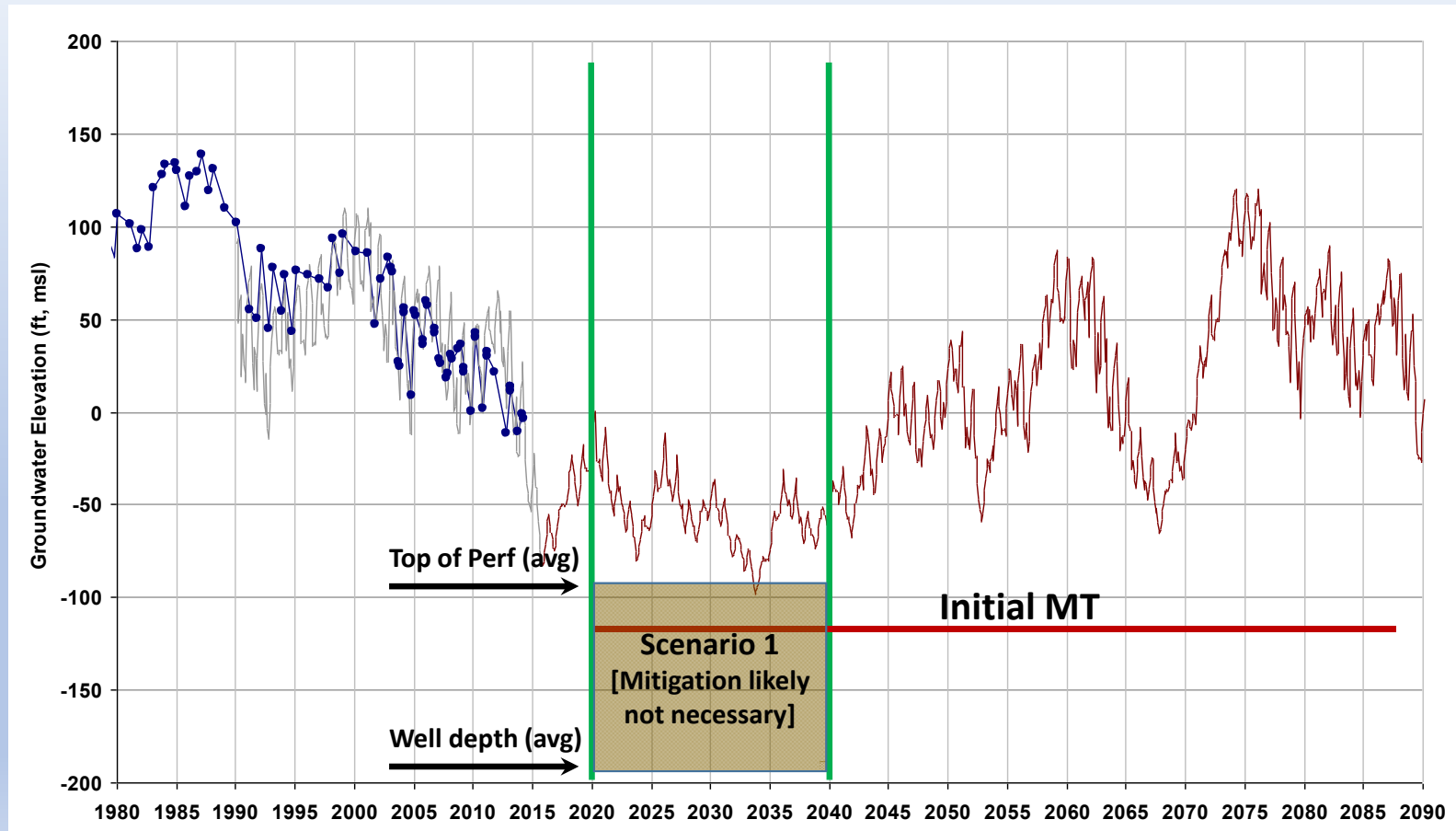# SETTING MINIMUM THRESHOLD FOR REDUCTION IN GROUNDWATER STORAGE

- The proposed Minimum Threshold is no long-term reduction in groundwater storage volume during the sustainability period

- Reduction in groundwater storage volume will be quantified based on measured groundwater levels in monitoring network wells

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SETTING MINIMUM THRESHOLDS FOR LAND SUBSIDENCE

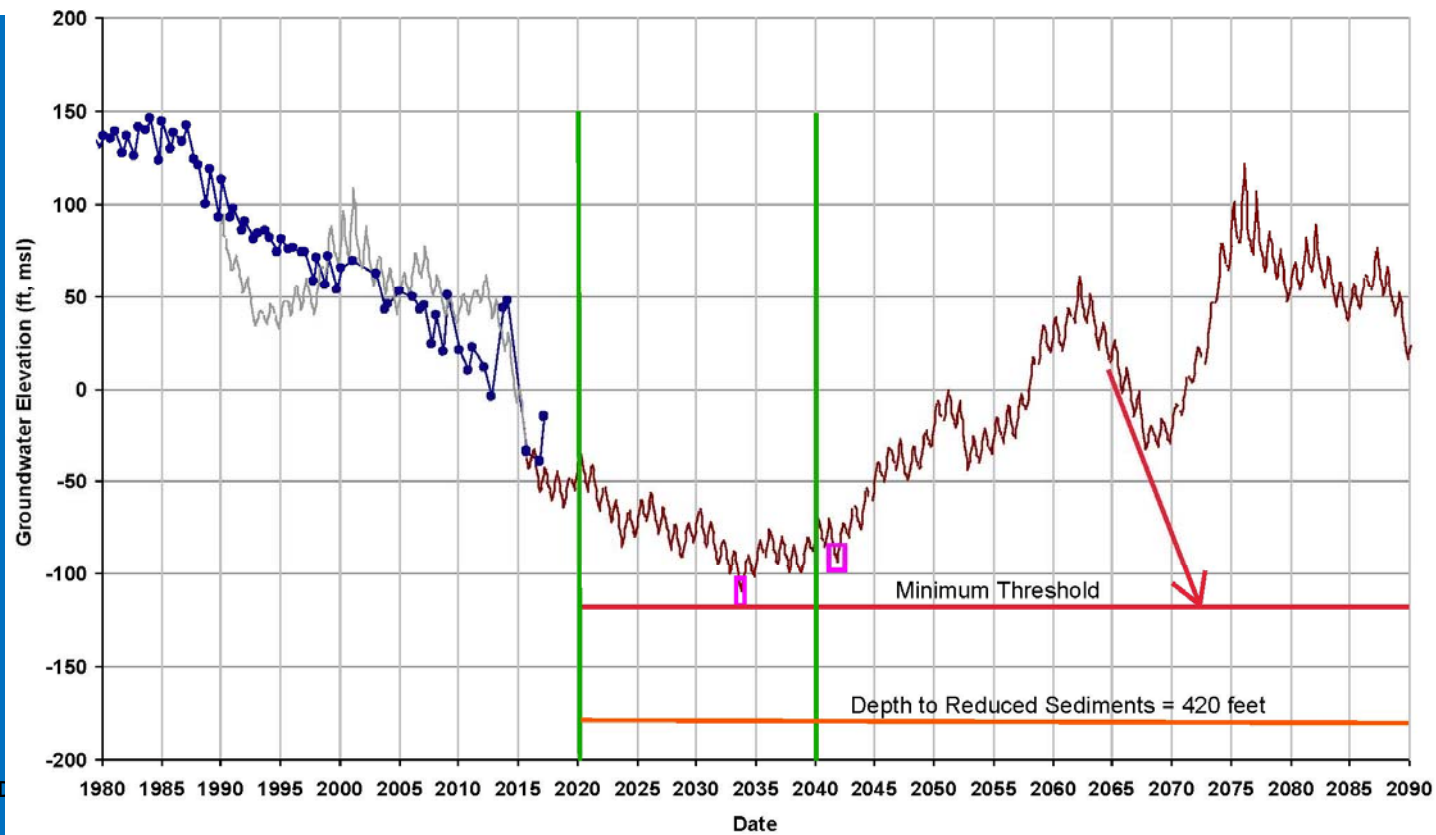1) Implement groundwater level Minimum Threshold methodology to set initial Minimum Threshold;

2) Evaluate ongoing benchmark (and other) subsidence surveys during the Implementation Period and conduct adaptive management (modify Minimum Thresholds to account for subsidence if warranted).

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SETTING MINIMUM THRESHOLDS FOR GROUNDWATER QUALITY

- MCL = Maximum Contaminant Level
- Applicable drinking water standards (e.g., MCL) will serve as Minimum Thresholds for key constituents (e.g., nitrate, arsenic, Total Dissolved Solids (TDS)):
- MCLs are standards set by U.S. EPA and the State for drinking water quality
- MCLs are allowable limits for public water systems under Safe Drinking Water Act
- Setting GW level MTs above depth of reduced sediments helps reduce likelihood of arsenic exceedances

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SETTING MINIMUM THRESHOLDS FOR GW QUALITY: ARSENIC - DEPTH TO REDUCED SEDIMENTS

SETTING MINIMUM THRESHOLDS FOR GROUNDWATER QUALITY: NITRATE AND TDS

1) Nitrate concentrations may be trending upward over time unrelated to GSP implementation actions;

2) Focus on impacts from GSP projects and management actions;

3) Coordinate with Central Valley RWQCB Salt and Nitrate Control Program and Irrigated Lands Program - work with others to develop plan during Implementation Period;

4) Develop plans for monitoring water quality impacts related to individual projects as part of project design process, utilizing existing monitoring to the extent possible.

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SETTING MINIMUM THRESHOLDS FOR SURFACE WATER DEPLETION

1) Surface water depletion a function of surface water levels/flow and groundwater levels;

2) GW levels far below subbasin streams except portions of San Joaquin River (SJR);

3) Available data indicate GW levels below SJR channel bottom are relatively shallow in some places but still disconnected as of 2015;
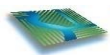
4) MTs will not be set for surface water depletion

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EVALUATION OF GROUNDWATER DEPENDENT ECOSYSTEMS

1) Certain vegetation is dependent on shallow depths to groundwater;

2) Rooting depth for vegetation species present in shallow GW areas being evaluated;

3) GW levels within 30 feet of ground surface are a consideration for initial screening of potential GDEs;

4) Occur in small areas (generally less than 10 acres) of south and west Madera Subbasin boundary possibly also in far eastern shallow bedrock area

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Measurable Objectives

1) GW Levels – Average of modeled monthly GW levels from 2040 to 2090 (see next slide);

2) GW Storage – Use GW level Measurable Objectives to calculate storage volume;

3) Land Subsidence – Use GW level Measurable Objectives;

4) GW Quality – Current constituent concentrations

5) Surface Water Depletion – Not required;

Measurable Objective: GW Levels
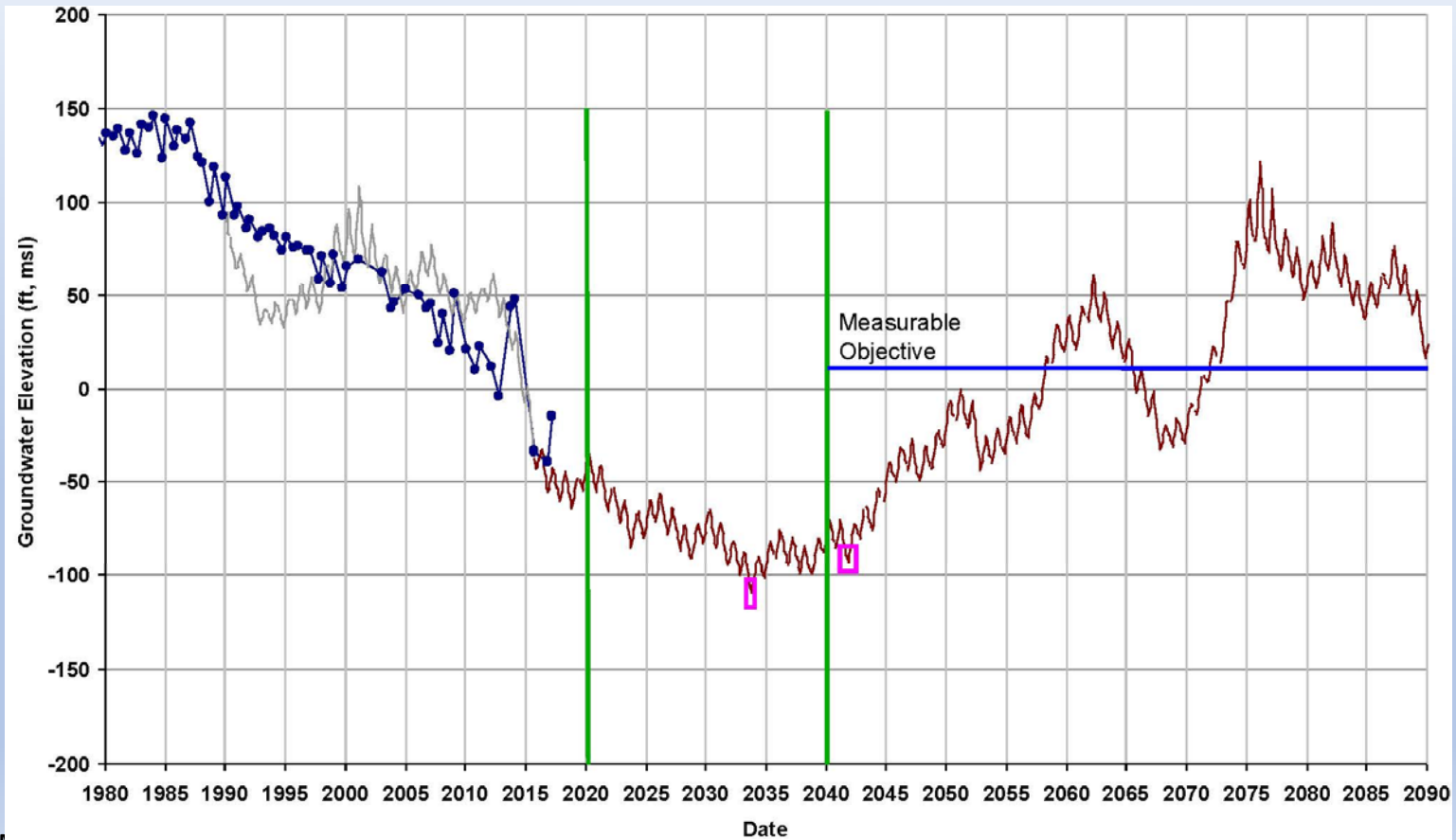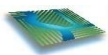
Interim Milestones

1) GW Levels – Modeled GW levels during Implementation Period (see next slide);

2) GW Storage – Use GW levels as basis for calculating storage volumes;

3) Land Subsidence – Same as Subsidence Minimum Thresholds;

4) GW Quality – Current constituent concentrations;

5) Surface Water Depletion – Not required;

Interim Milestones: GW Levels
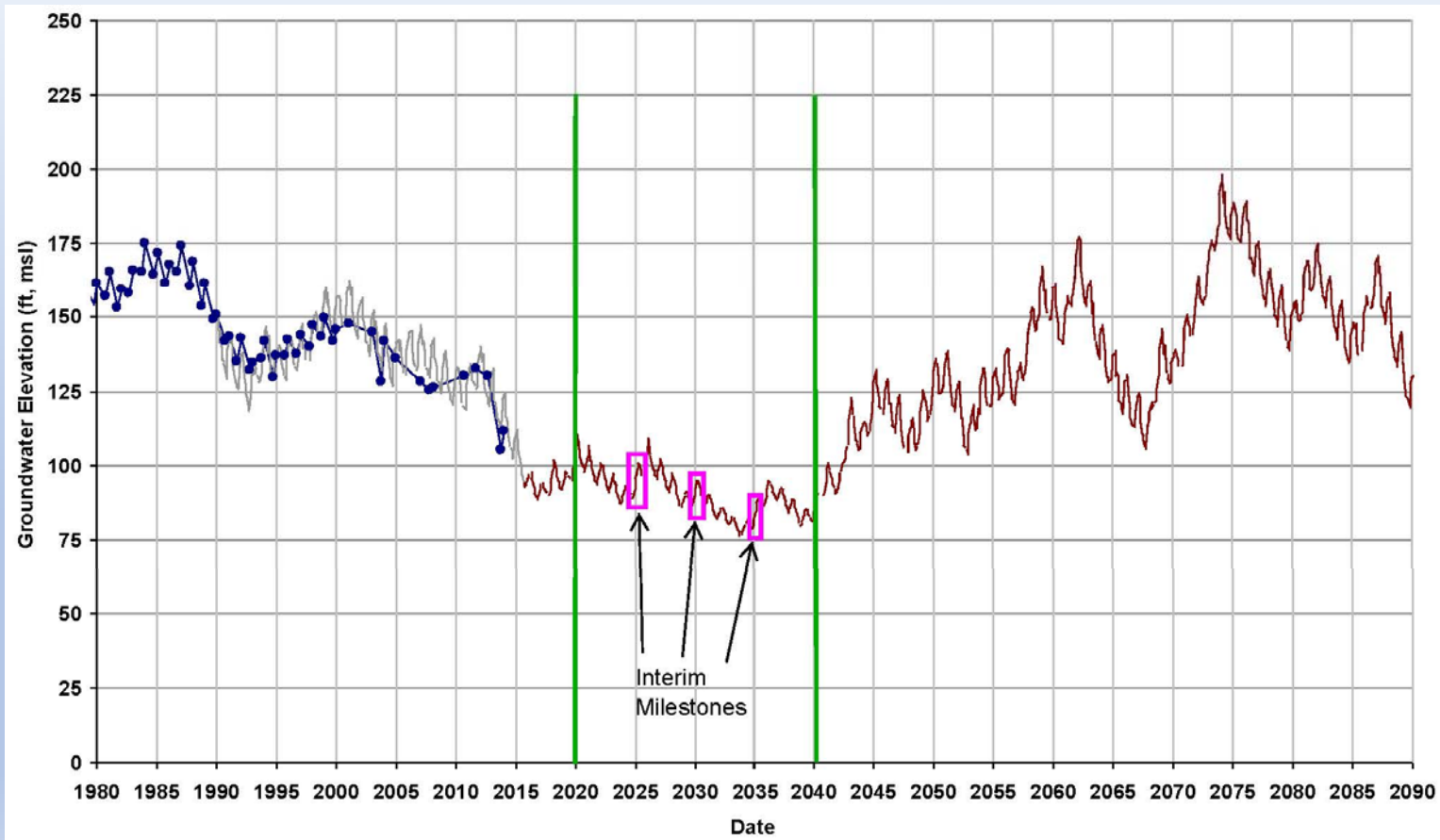
Interim Milestones, Minimum Threshold, and Measurable Objective for GW Levels

QUESTIONS/FEEDBACK

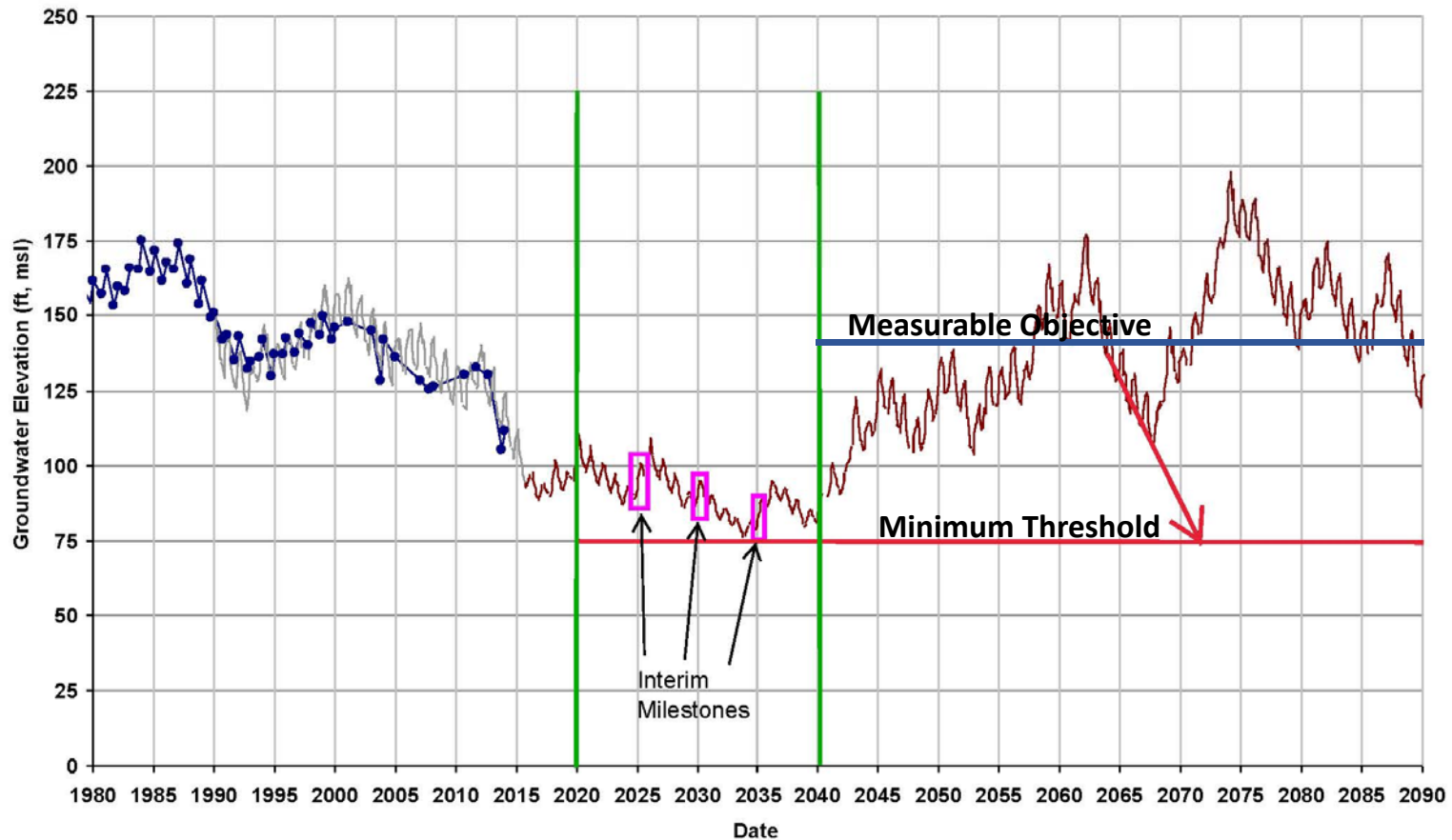**DRAFT PRELIMINARY ANALYSIS AND RESULTS TO BE REFINED AS GROUNDWATER SUSTAINABILITY PLAN DEVELOPMENT PROCEEDS**