

# Revised Sustainable Management Criteria

Santa Ynez Basin - EMA

May 13, 2021

Presented by  
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# Topics of Discussion

1. Review sustainable management criteria analysis approach
2. Representativeness of wells
3. Updated well impact analysis
4. Considerations for setting MTs and need for guidance from Committee
5. Relationship between MTs and Management Actions
6. Adjustments / permanence of MTs
7. Potential Management Actions and Projects

# Review sustainable management criteria analysis approach

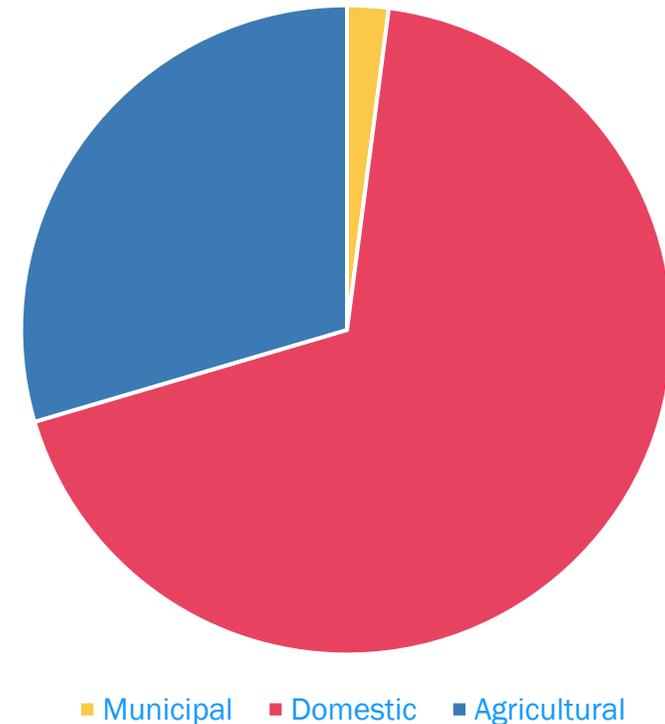
- Purpose is to provide direction to staff on SMCs to be included in the draft GSP
  - Well impact analysis was based on all known wells from DWR, federal and local agencies
  - Considered 1,403 well logs
  - Review of data yielded 487 wells with required construction information used to represent EMA
  - Provides snapshot of all wells within EMA
  - May include abandoned wells

Summary of Well Completion Report Data

Well Type	Number of Wells within EMA
Well located by DWR	88
Well location determined by parcel number	167
Well located manually	471
Well location unavailable (log incomplete or non-existent)	388
Well log irrelevant (duplicates, destruction, shallow monitoring wells)	289
Total	1,403

# Review sustainable management criteria analysis approach

- Wells included in well impact analysis
  - The 487 wells include
    - 10 municipal wells
    - 333 domestic wells
    - 144 agricultural wells
  - These 487 wells provide a reasonable basis for this analysis

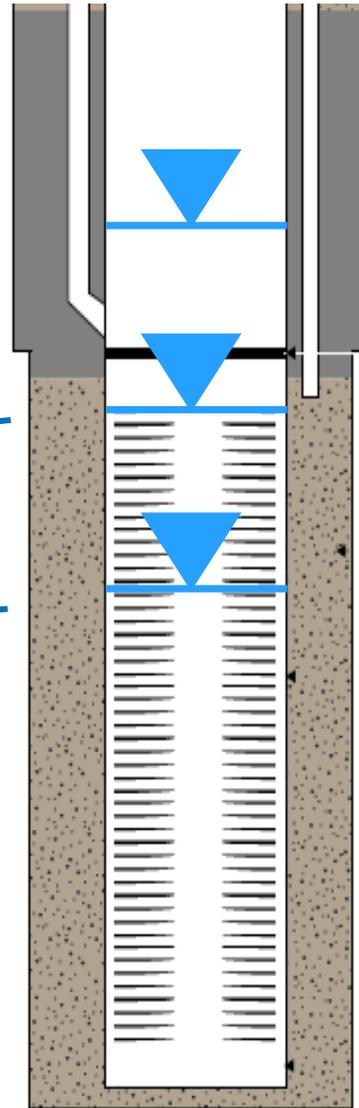


# Typical Well Diagram

Water level above top of screen

Water level at top of screen

Water level below top of screen



Static and pumping groundwater levels below the top of screen cause problems including:

- reduction of efficiency and
- reduction of production capacity

Pumping water levels are deeper than static water levels

# Representativeness of wells

## Two sets of wells

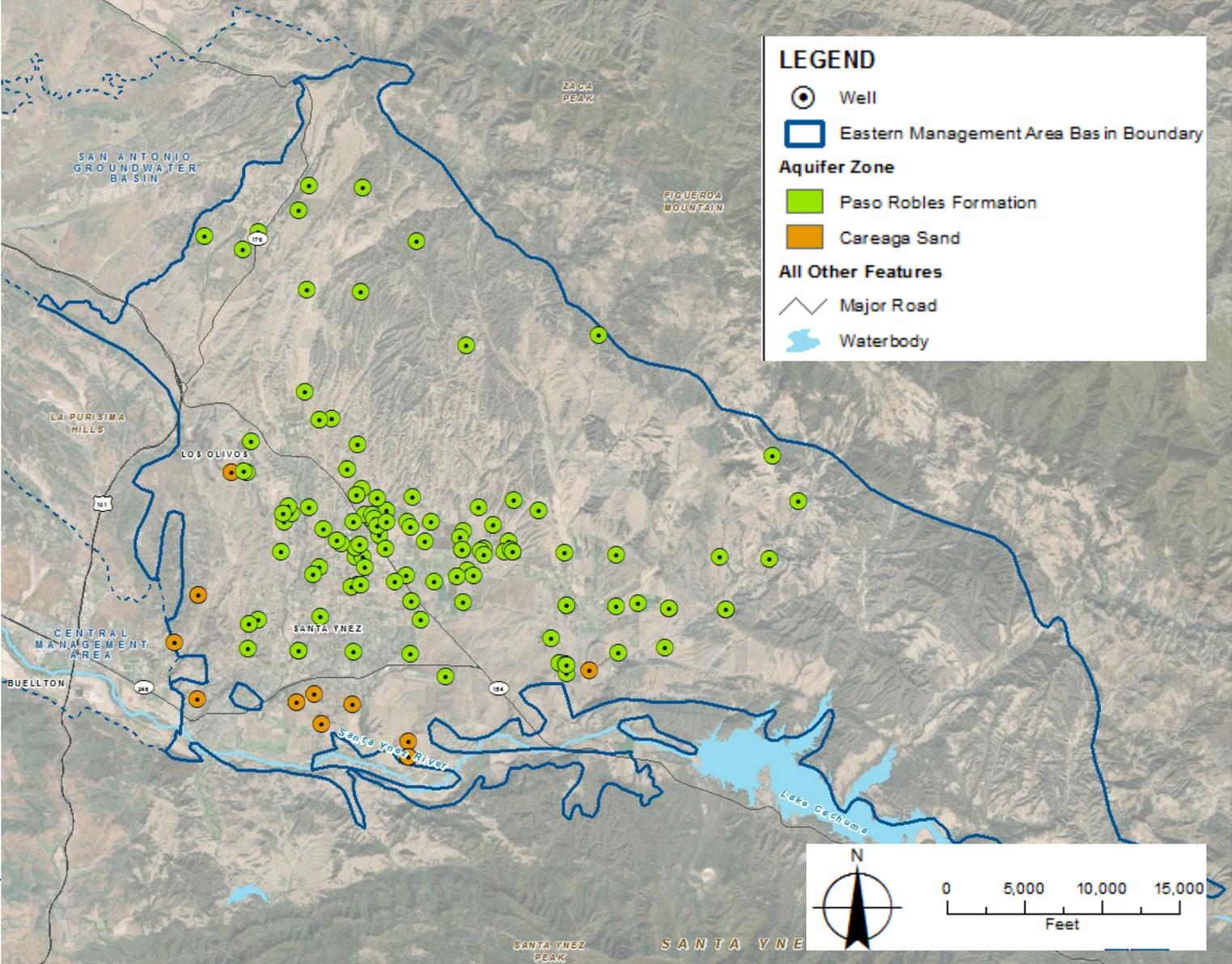
### Well impact analysis wells

- Criteria for inclusion: all known wells that have construction data, including recent wells
- 487 total wells in both principal aquifers

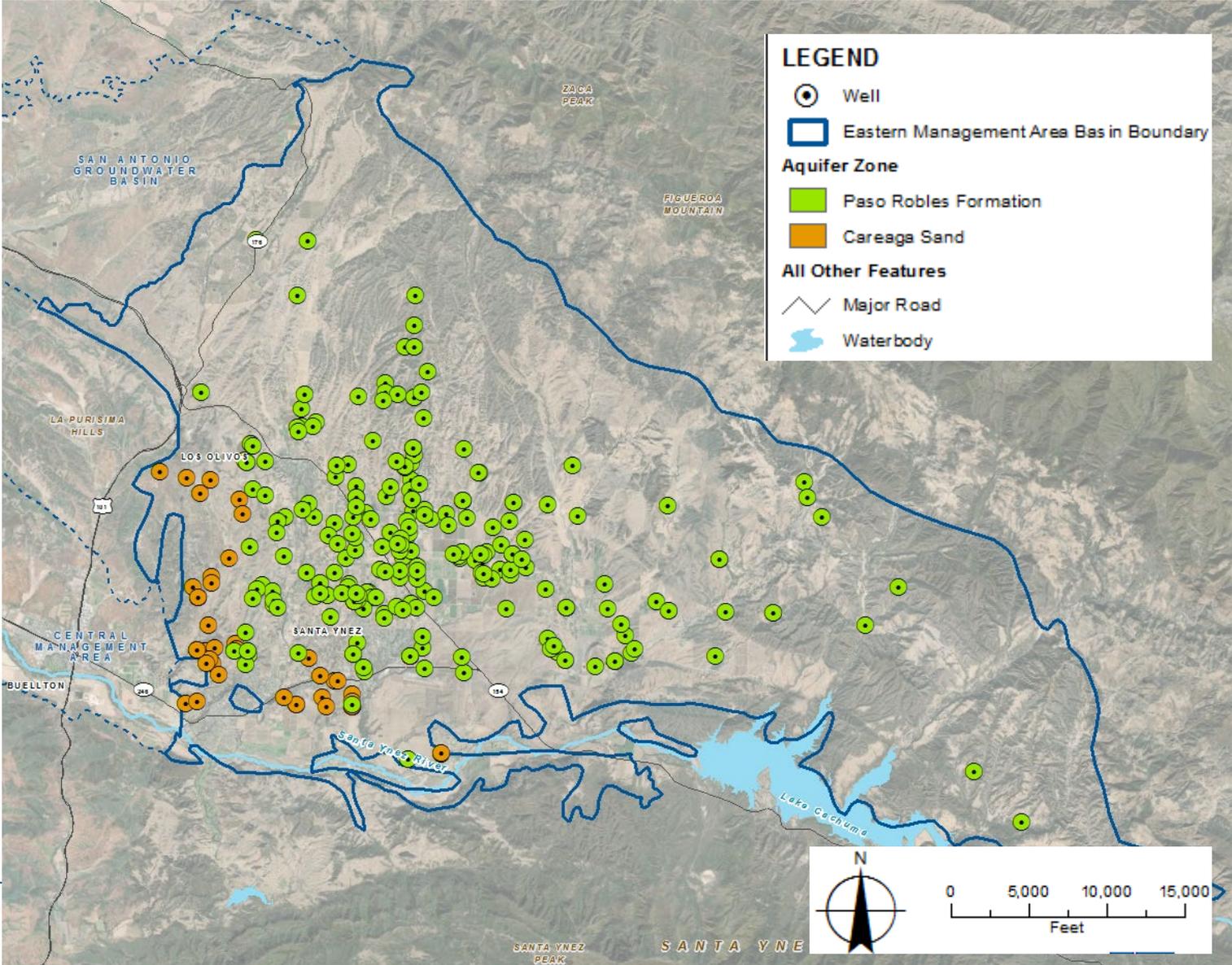
### Representative water level monitoring wells

- Criteria for inclusion: wells represent a single aquifer and current and historical water levels
- 24 total wells in both principal aquifers
- More wells are needed

# Well Impact Analysis Wells - Agricultural



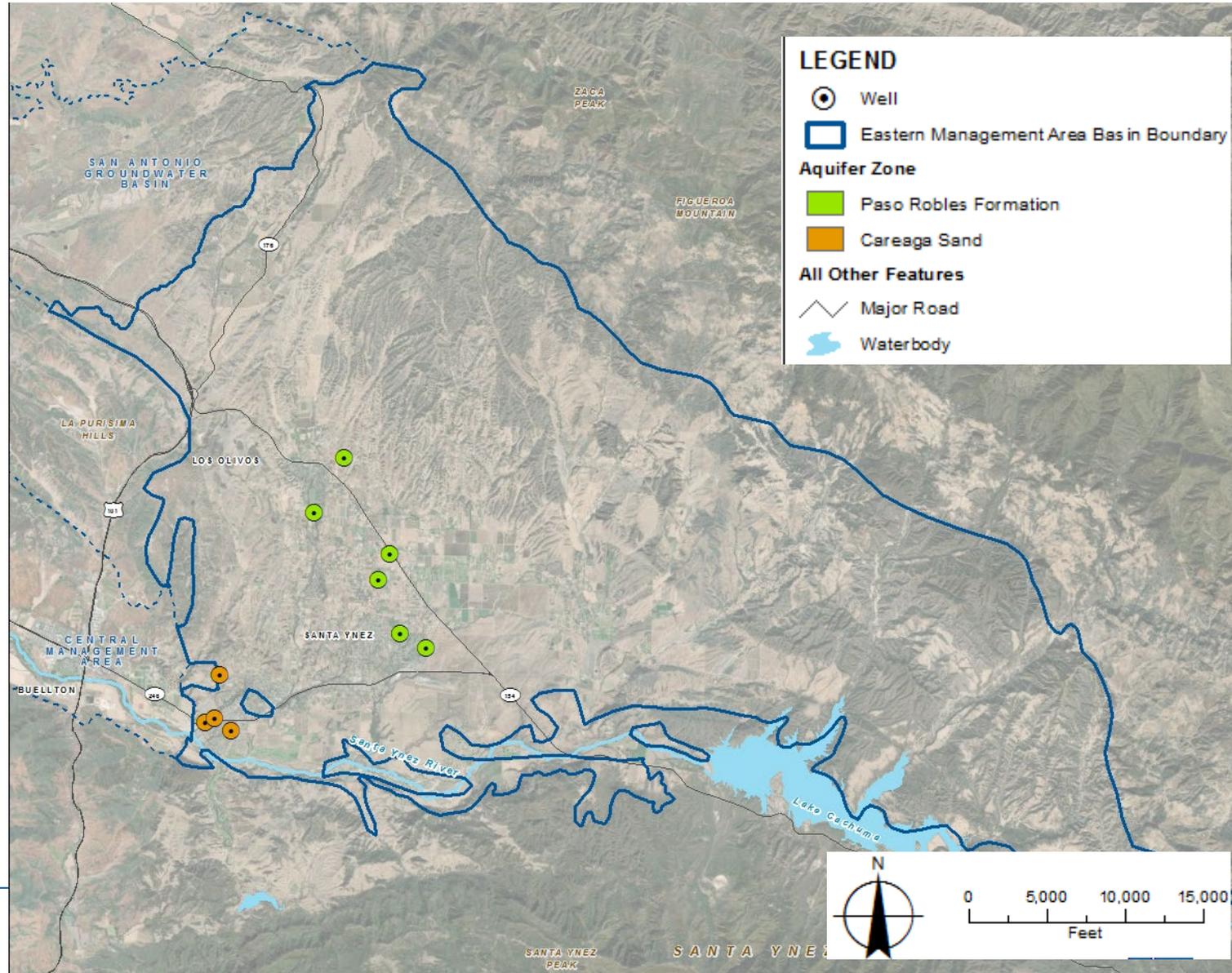
# Well Impact Analysis - Domestic



# Well Impact Analysis - Municipal

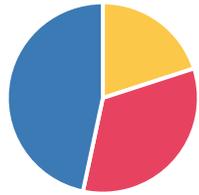
Included Solvang  
(Population 5,771)

ID No. 1  
(Population 6,737)



# Distribution of Representative Wells

## Paso Robles Formation

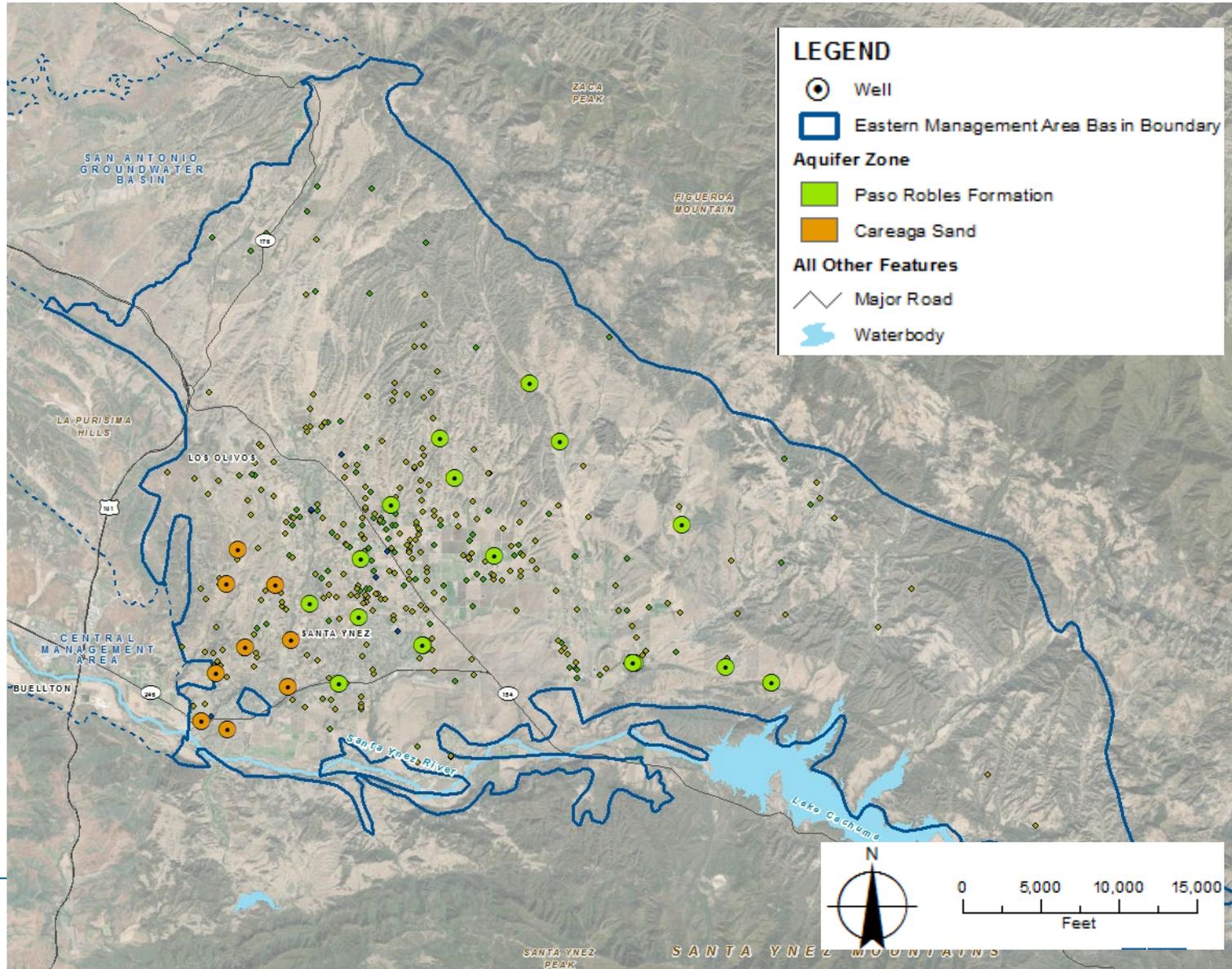


■ Municipal ■ Domestic ■ Agricultural

## Careaga Sand



■ Municipal ■ Domestic ■ Agricultural



15 Paso wells  
 3 municipal  
 5 domestic  
 7 agricultural

9 Careaga wells  
 4 municipal  
 2 domestic  
 3 agricultural

Total of 24 wells  
 7 municipal  
 7 domestic  
 10 agricultural

# Representative Wells

## Paso Robles Formation

Well ID	Well Use	Well Depth (feet)	Ground Elevation (ft NAVD 88)	Reference Point Elevation (ft NAVD 88)	First Date Measured	Last Date Measured	Years
6N/29W-07L01	Agricultural	-	868	871	1960	2021	61
6N/29W-08P01	Domestic	-	915	915	1934	2021	87
6N/29W-08P02	Domestic	-	896	897	1966	2021	55
6N/30W-07G05	Municipal	158	604	607	1962	2021	59
6N/30W-07G06	Municipal	563	602	604	1962	2021	59
6N/30W-11G04	Agricultural	400	681	683	2010	2021	11
6N/31W-01P03	Municipal	490	633	635	1967	2021	54
6N/31W-02K01	Domestic	-	619	621	1942	2021	79
6N/31W-13D01	Domestic	152	625	627	1941	2021	80
7N/30W-16B01	Agricultural	-	1,066	1,069	1950	2021	71
7N/30W-19H01	Agricultural	-	920	1,106	1954	2021	67
7N/30W-29D01	Agricultural	-	917	919	1905	2021	116
7N/30W-30M01	Agricultural	-	806	808	1905	2021	116
7N/30W-33M01	Agricultural	349	764	765	1954	2021	67
7N/31W-36L02	Domestic	-	722	724	1942	2021	79

# Representative Wells

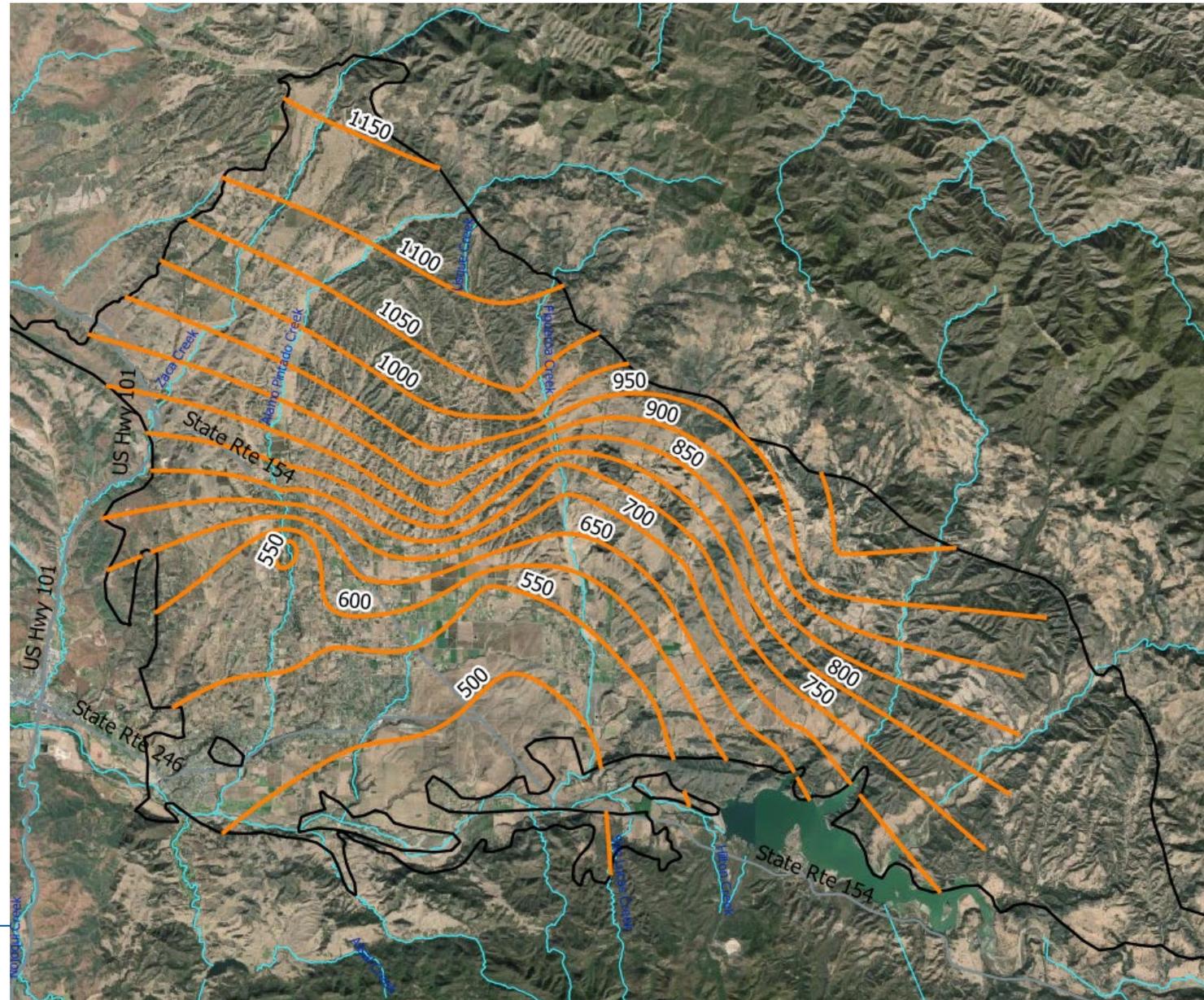
## Careaga Sand

Well ID	Well Use	Well Depth (feet)	Ground Elevation (feet NAVD 88)	Reference Point Elevation (feet NAVD 88)	First Date Measured	Last Date Measured	Years
7N/31W-34M02	Agricultural	-	671	673	2014	2021	8
6N/31W-03A01	Domestic	-	739	740	1963	2021	58
6N/31W-04A01	Domestic	259	601	603	1956	2021	65
6N/31W-09Q02	Municipal	550	757	755	2011	2021	11
6N/31W-10F01	Agricultural	265	556	557	1966	2021	55
6N/31W-11D04	Agricultural	447	565	561	1955	2021	66
6N/31W-16N07	Municipal	145	479	480	2011	2021	11
6N/31W-xxxx	Municipal	329	503	506	2011	2021	11
HCA	Municipal	490	398	398	2011	2021	11

# Groundwater Elevation Contours - Paso Formation 2018

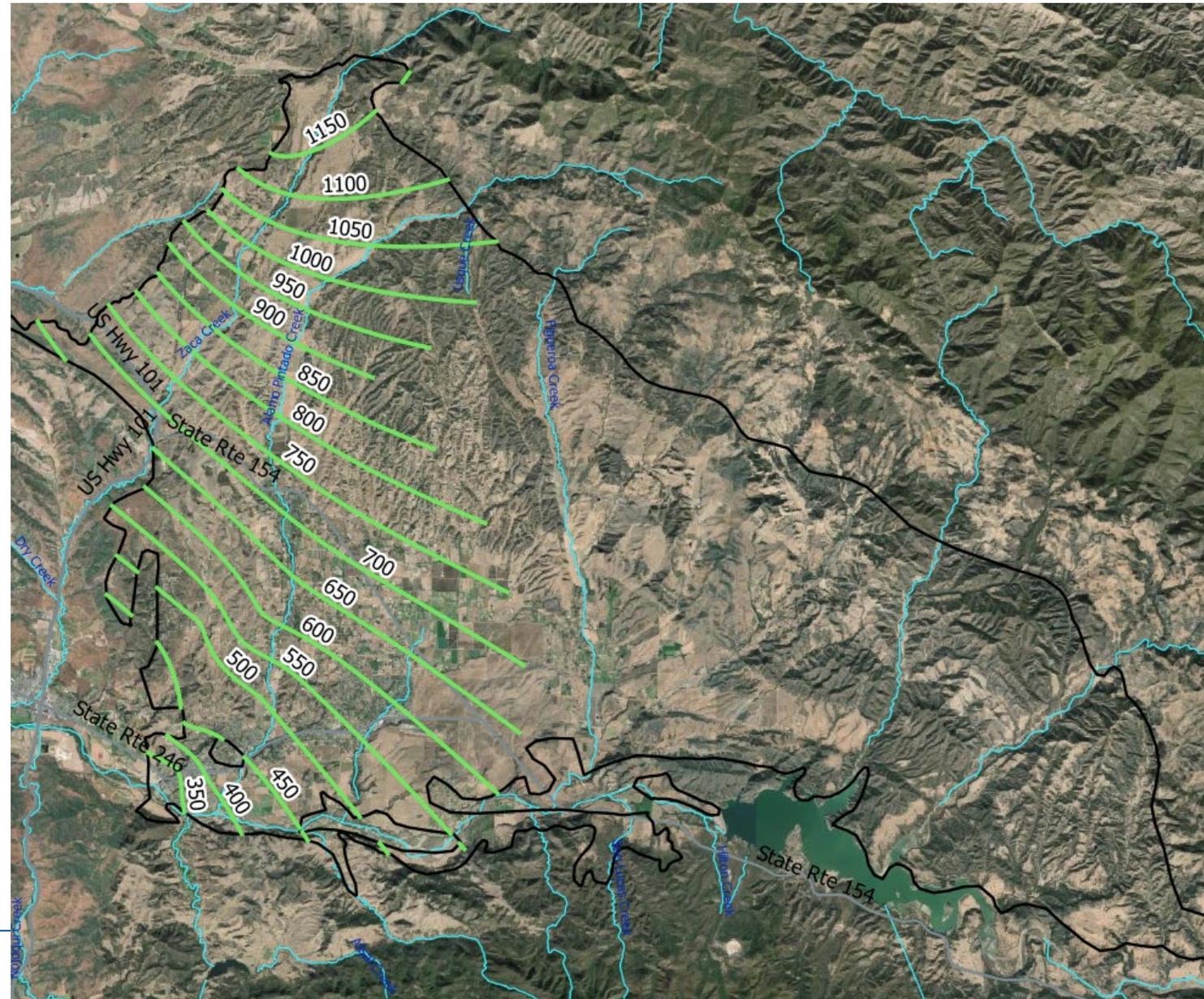
Groundwater contours from active water level monitoring network for spring 2018 were created

These were compared to impact analysis wells in the Paso Robles Formation



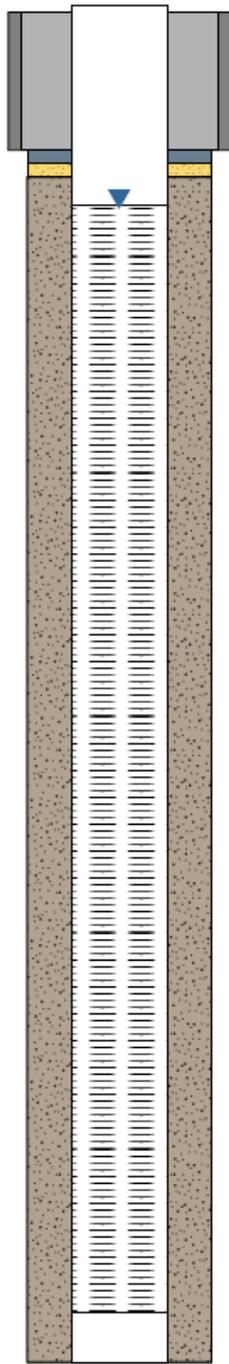
# Groundwater Elevation Contours – Careaga Sand 2018

Likewise, groundwater contours from Careaga Sand water level monitoring network were compared to impact analysis wells in the Careaga Sand

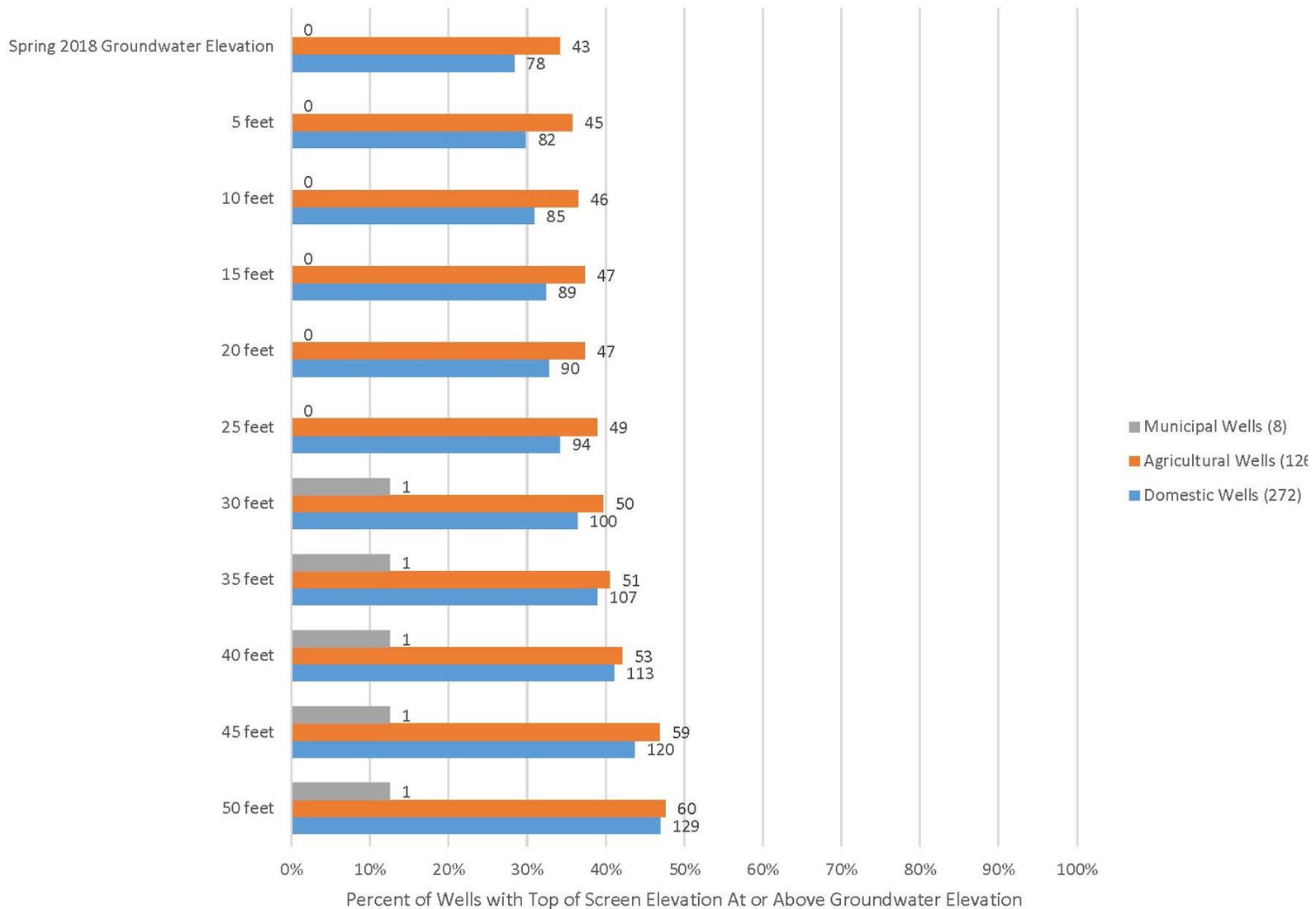


# Well Impact Evaluation

## Paso Robles Formation Spring 2018

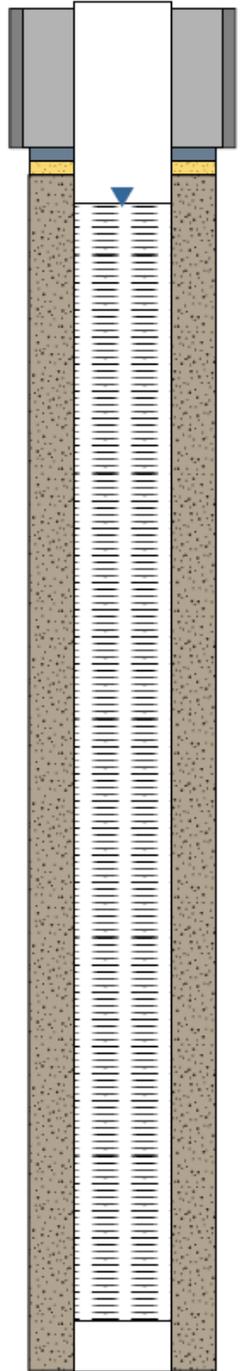


Well Impact Evaluation - Paso Robles Formation

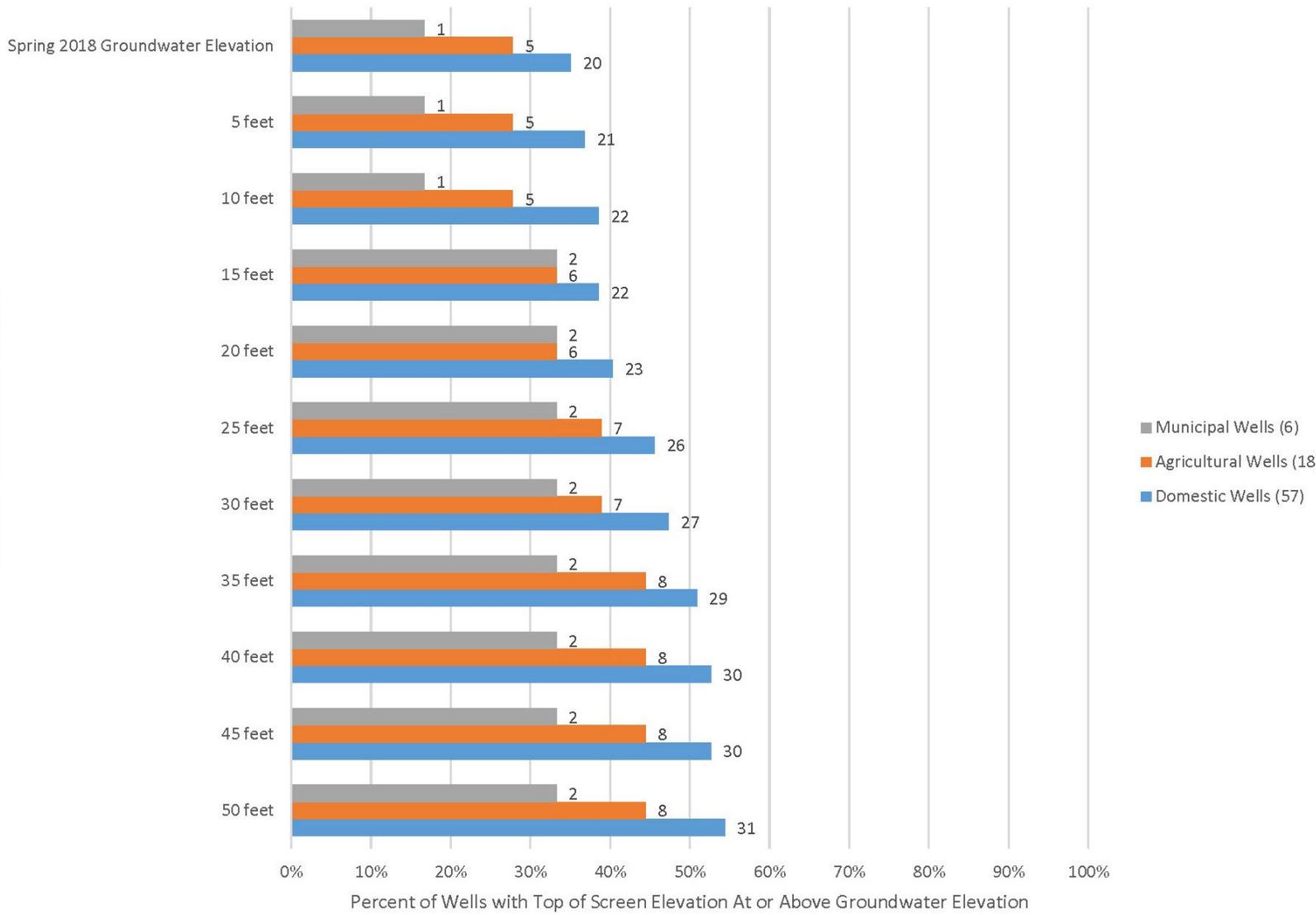


# Well Impact Evaluation

## Careaga Sand Spring 2018



Well Impact Evaluation - Careaga Sand



# Considerations for Setting the MTs

- Water levels that consistently decline below the top of screen can lead to undesirable results including depletion of supply.
- A substantial number of agricultural and domestic wells have static water levels below the top of screen.
- Domestic wells often more sensitive to water level decline because they are shallower.
- Municipal wells may warrant additional protections due to populations served.

## Potential undesirable results occur when:

- **Water levels fall below minimum thresholds after average and above average rainfall periods.**
- **Observed in more than 50% of representative wells.**
- **Confirmed by two consecutive years.**
- **Significant number of existing agricultural, municipal, and domestic wells are unable to produce usual historical quantities of water.**

## Can different well types have different MTs?

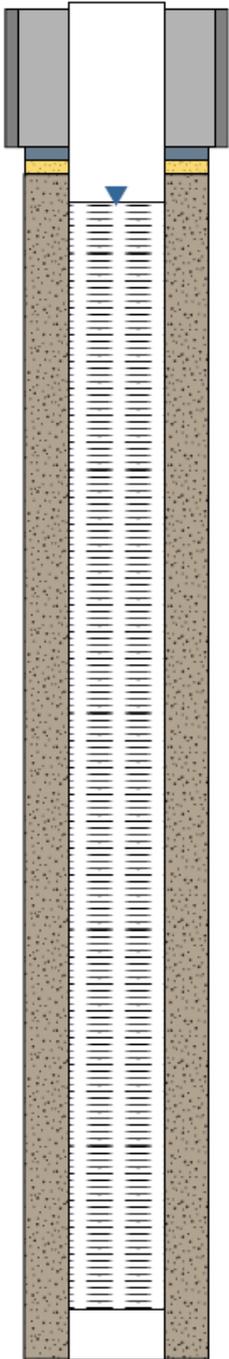
- Not advisable
- **MTs should be set with a common methodology for each representative well in each principal aquifer relative to spring 2018 levels.**

## Can MTs be adjusted once they are established?

- **The MTs and MOs can be adjusted by the GSA during implementation as addendums to the GSP.**
- **The addition of representative wells or incorporation of additional information about the representative wells can be relied upon to adaptively manage the EMA.**

# Well Impact Evaluation

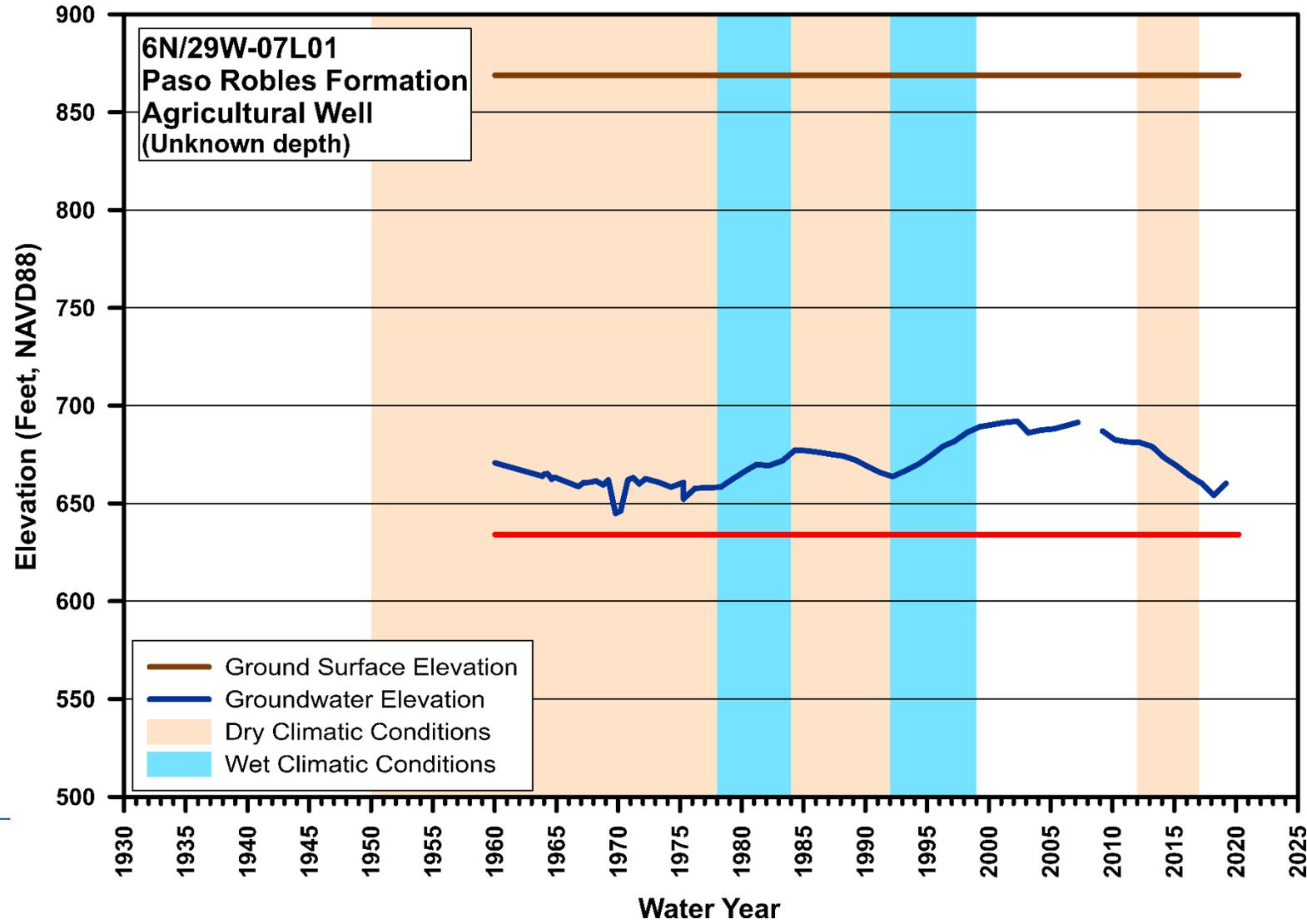
## Paso Robles Formation Spring 2018



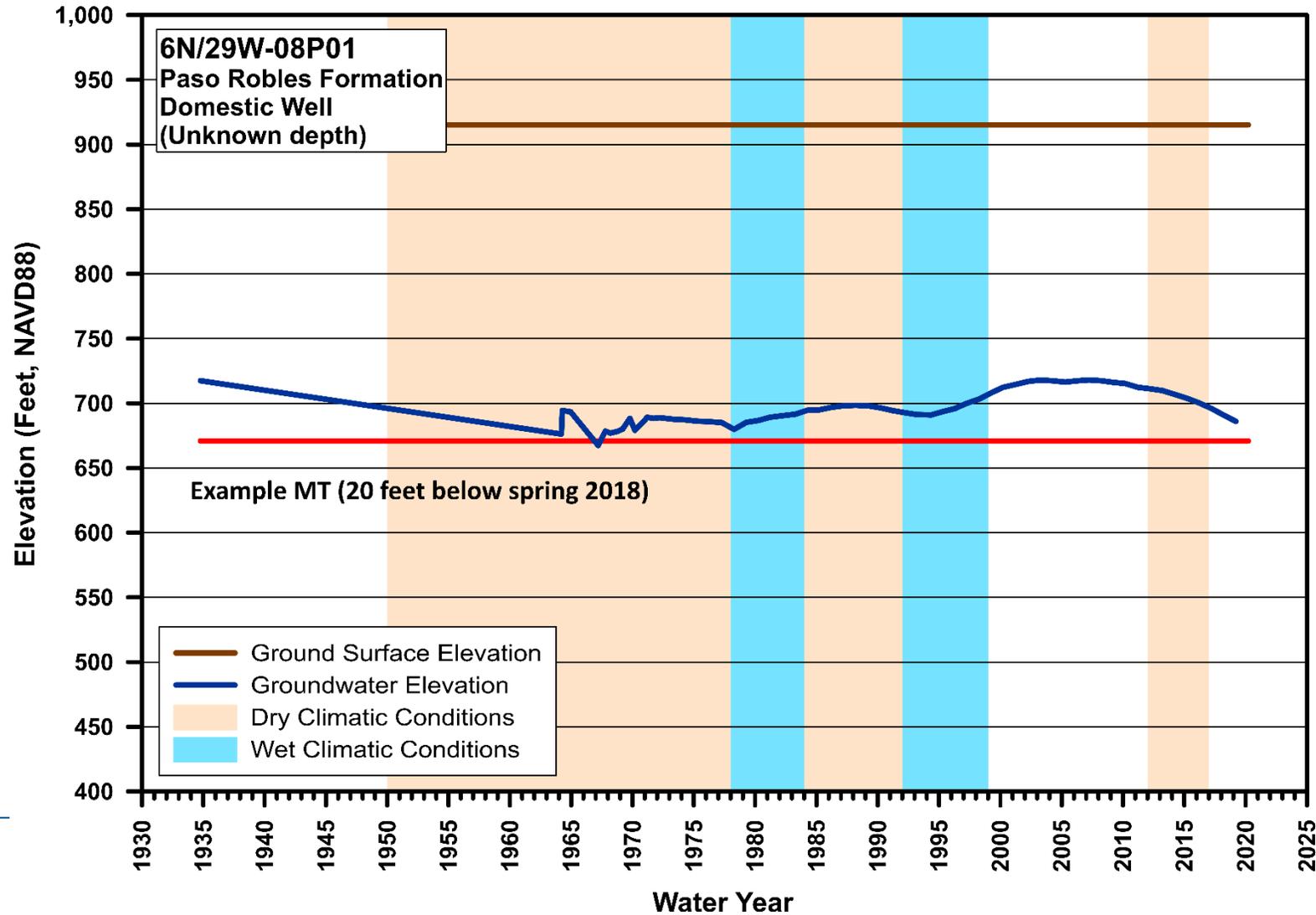
Well Impact Evaluation - Paso Robles Formation



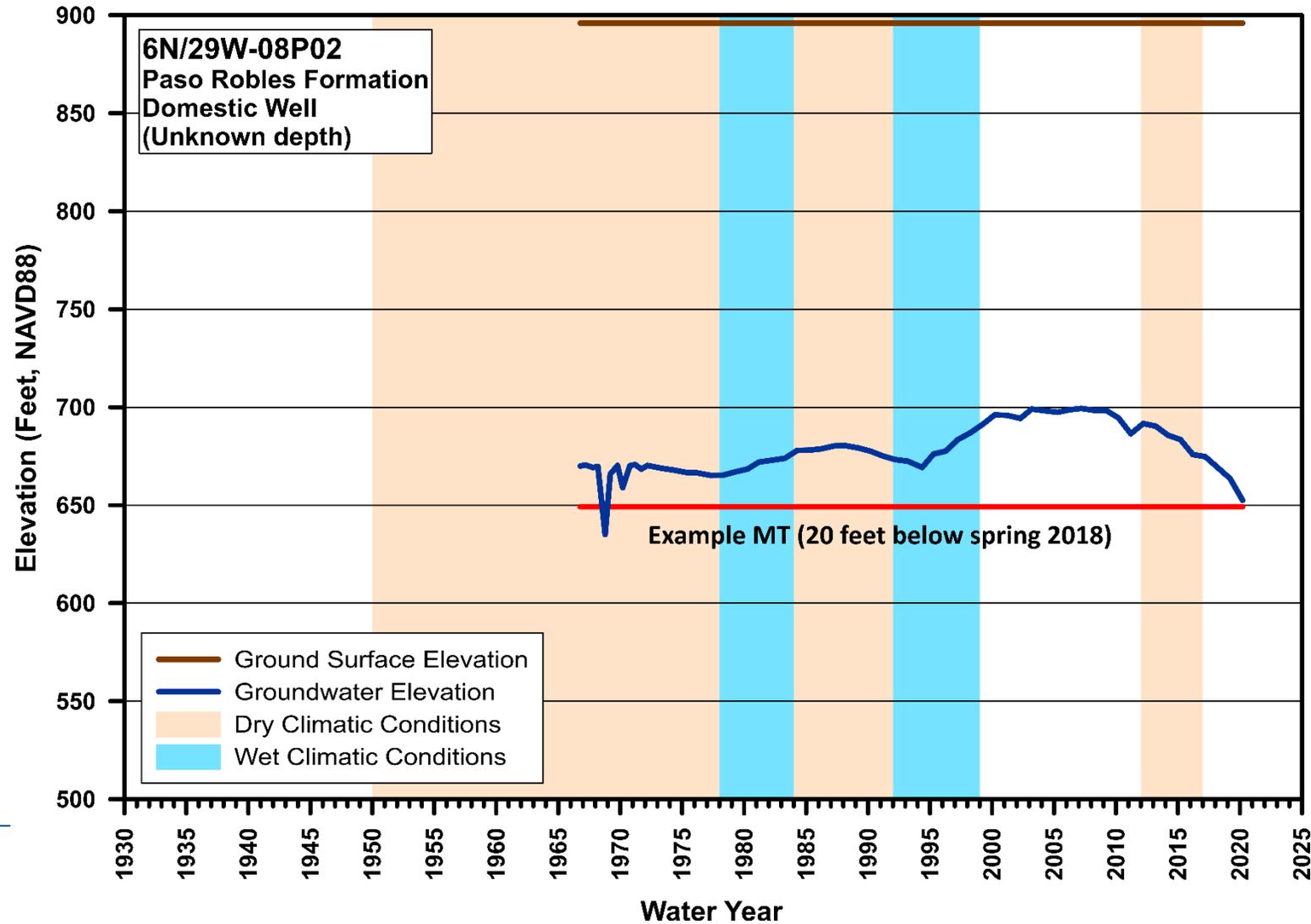
# Representative Groundwater Hydrographs – Paso Robles Formation



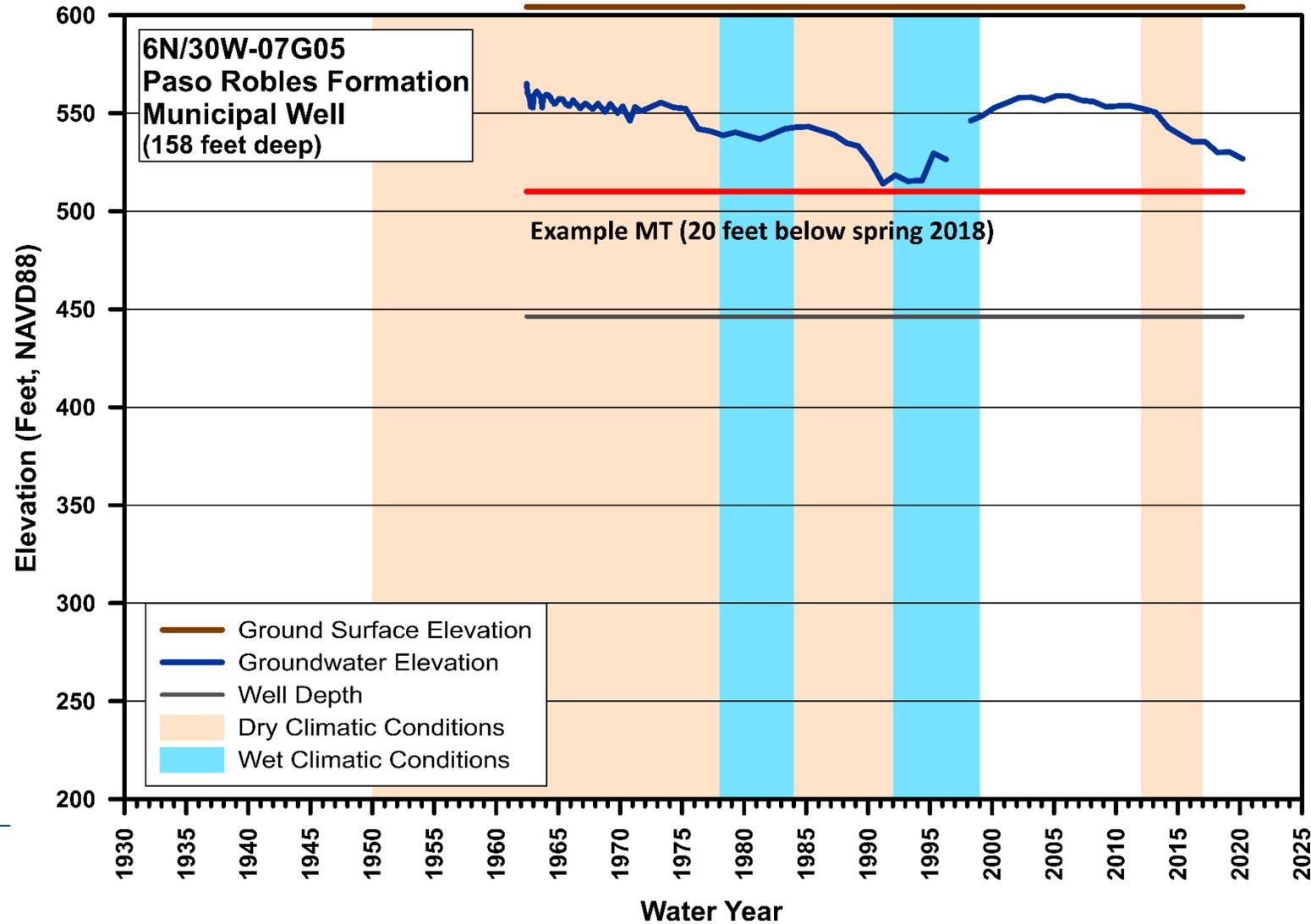
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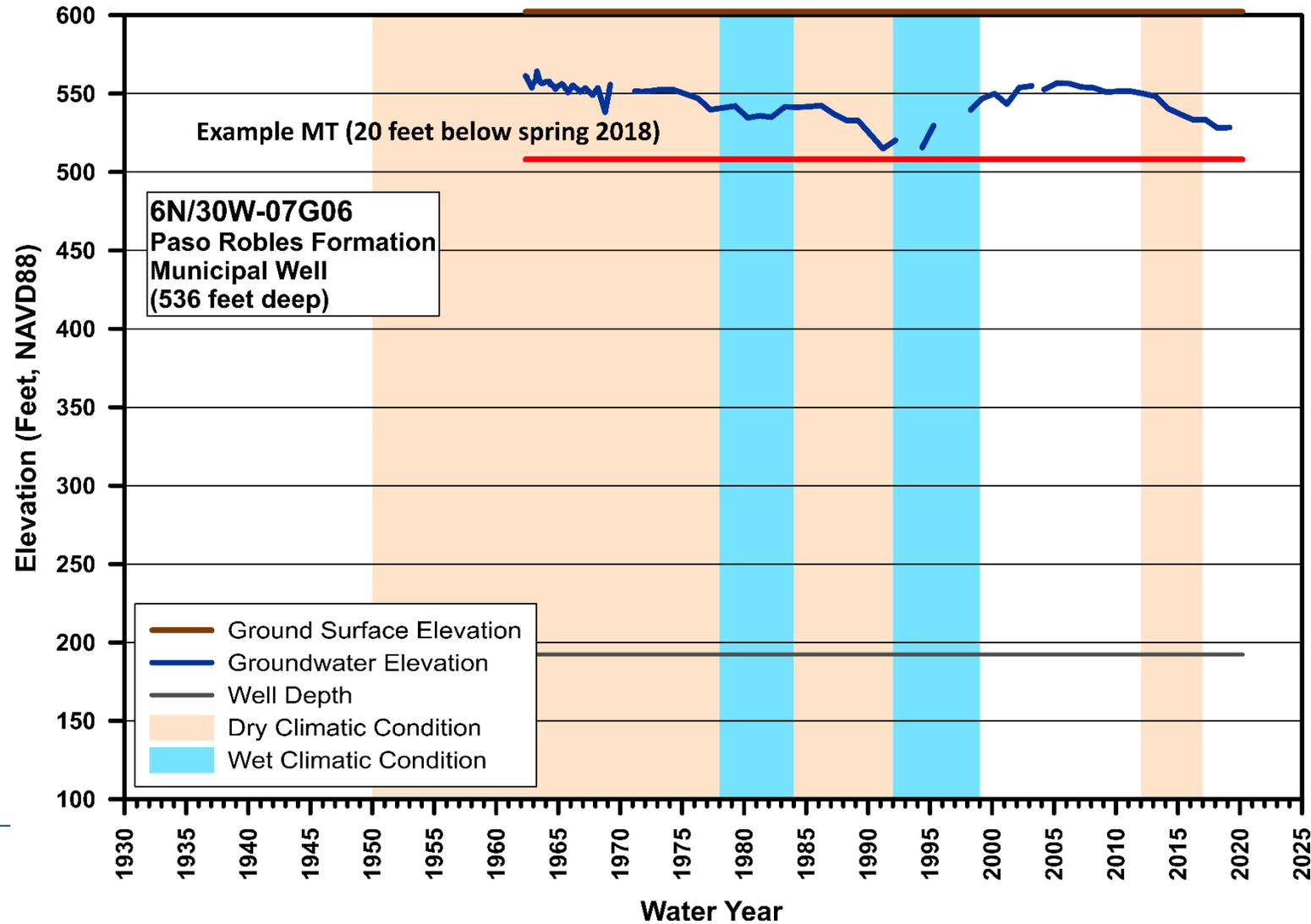
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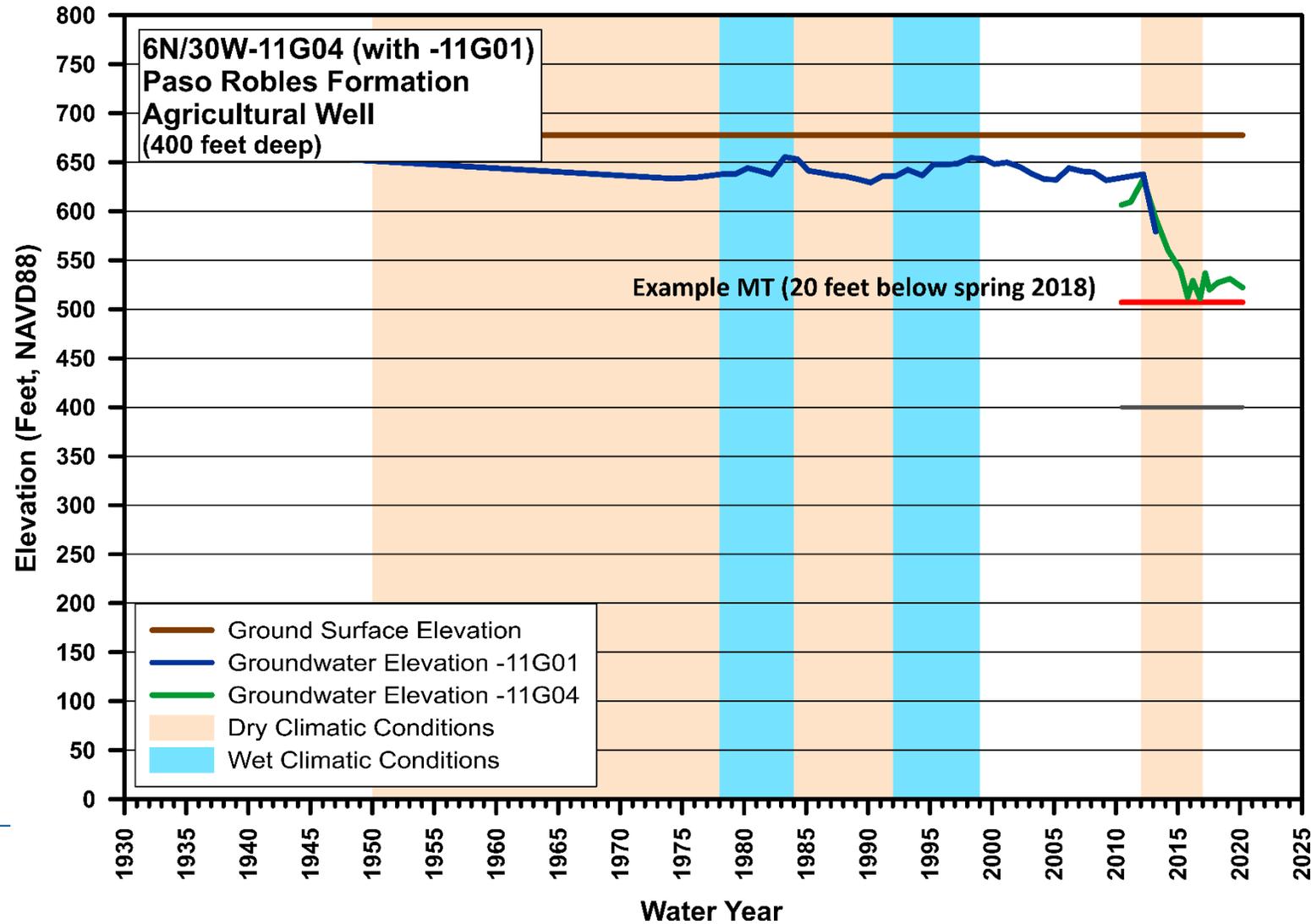
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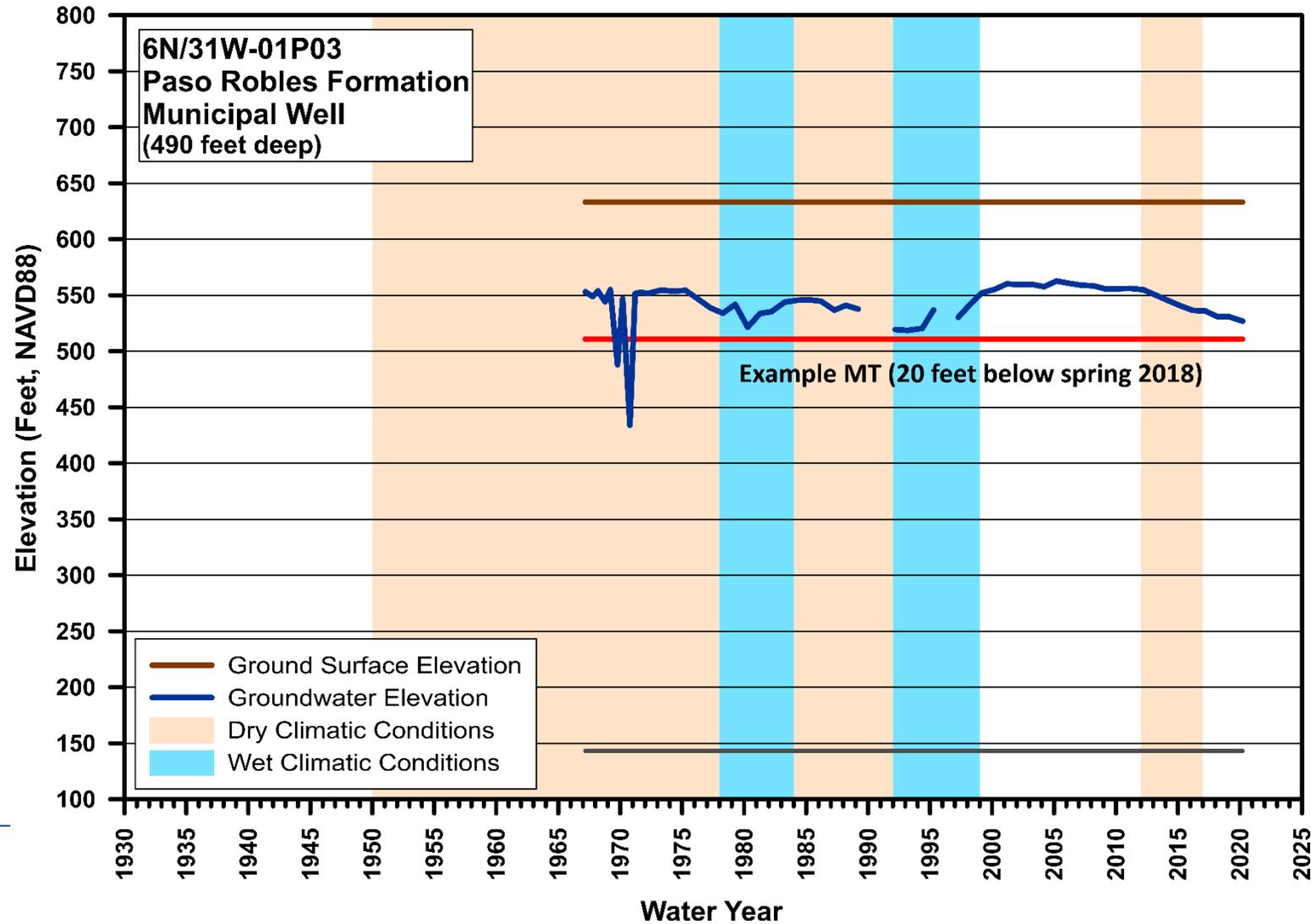
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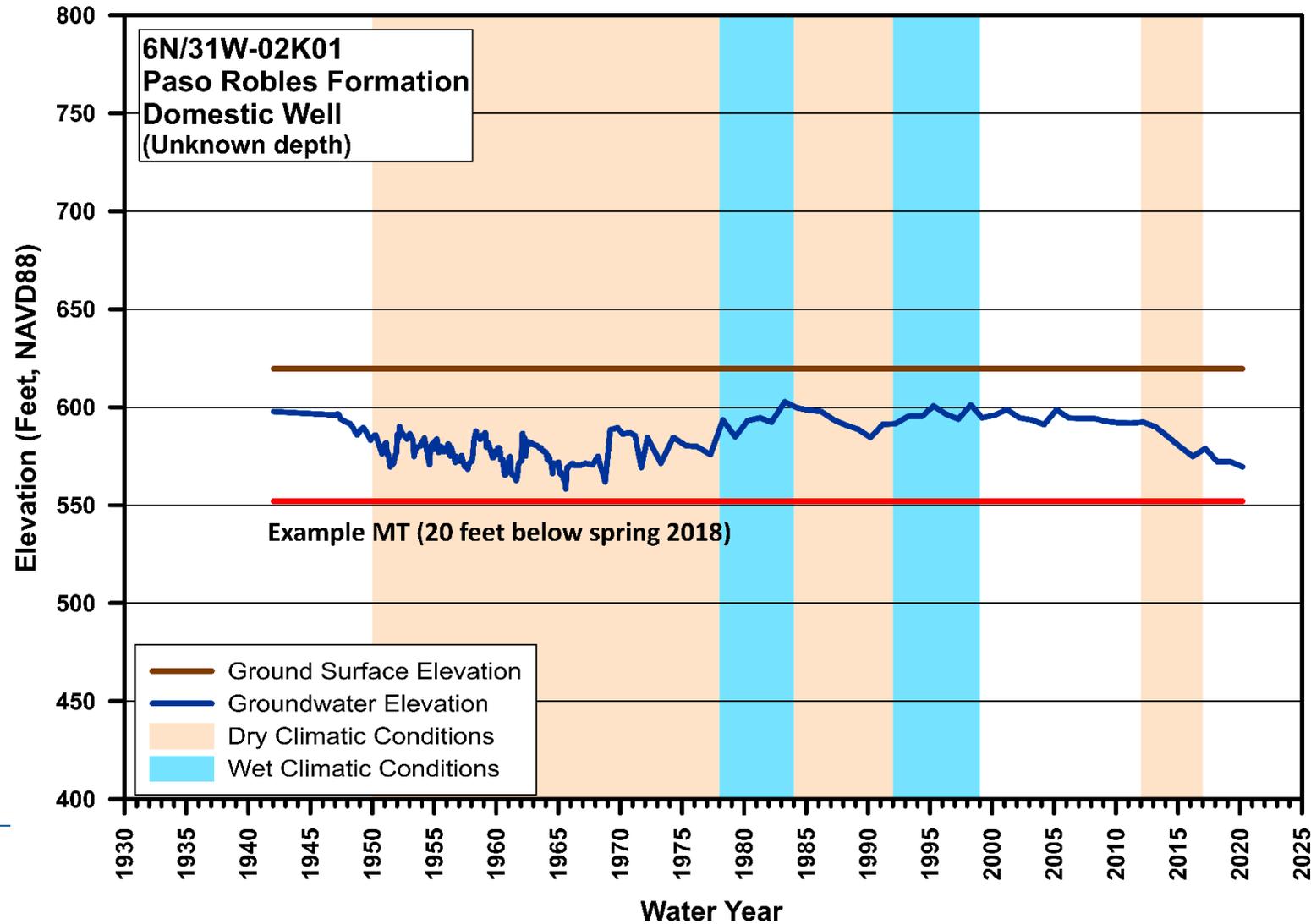
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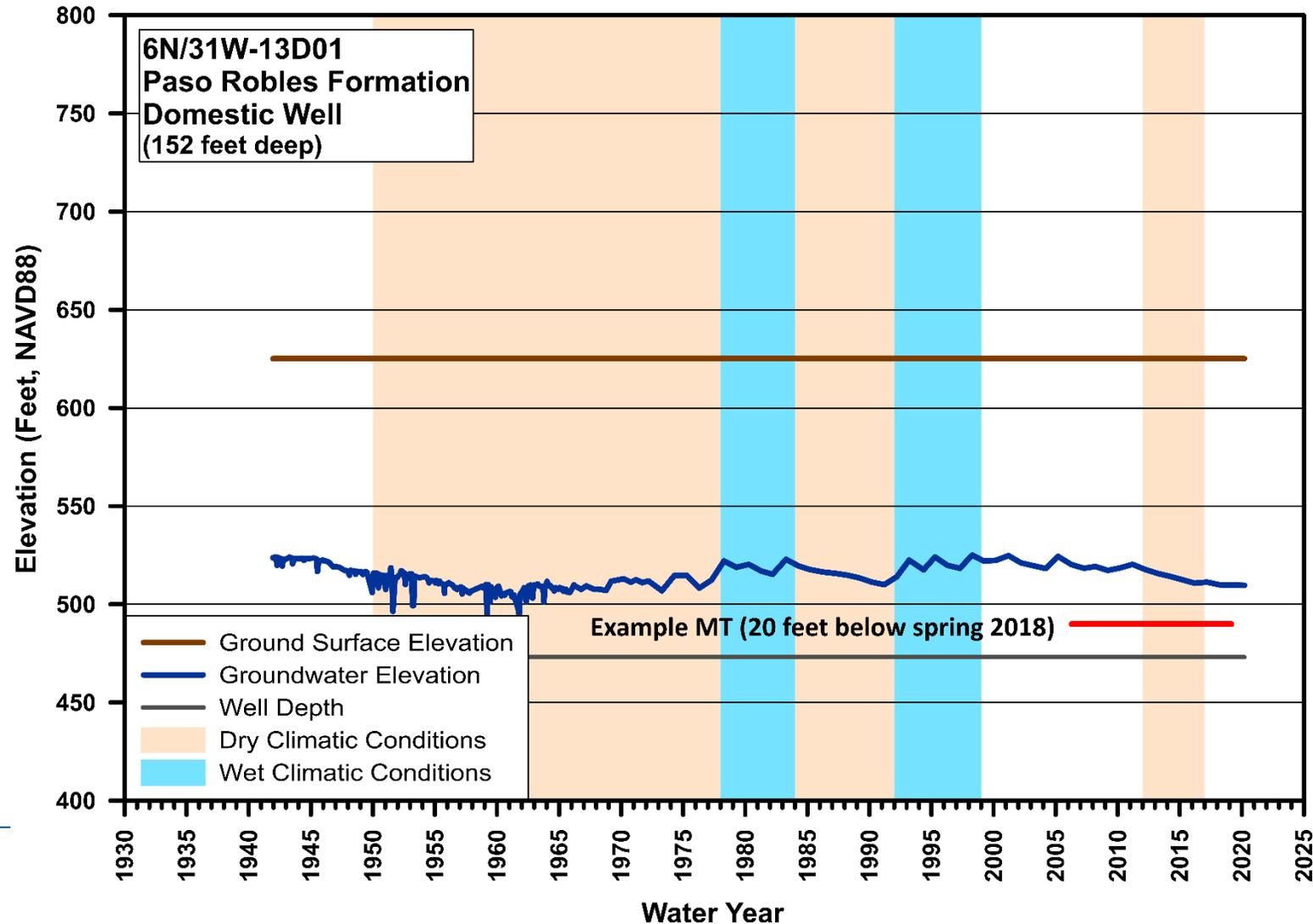
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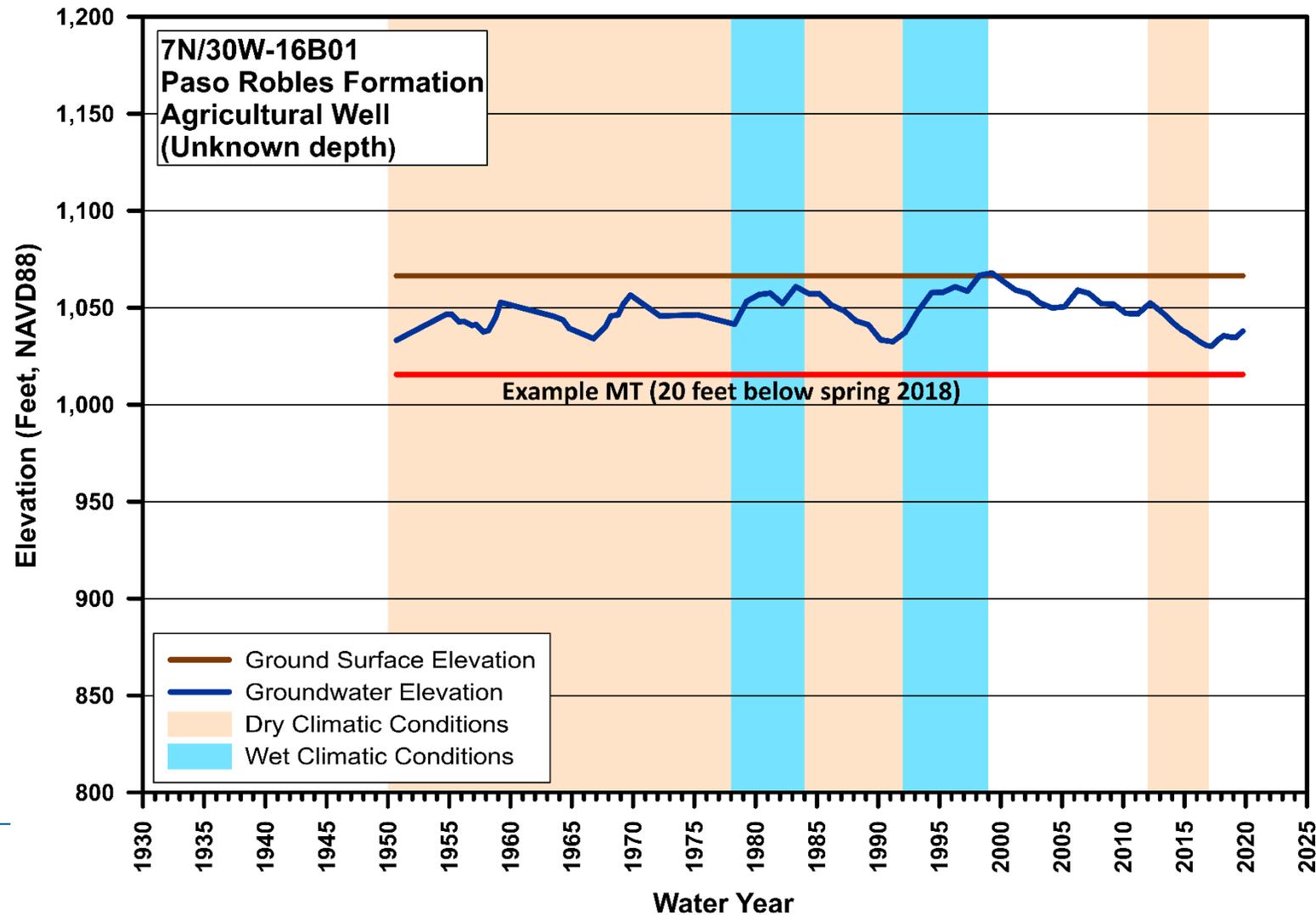
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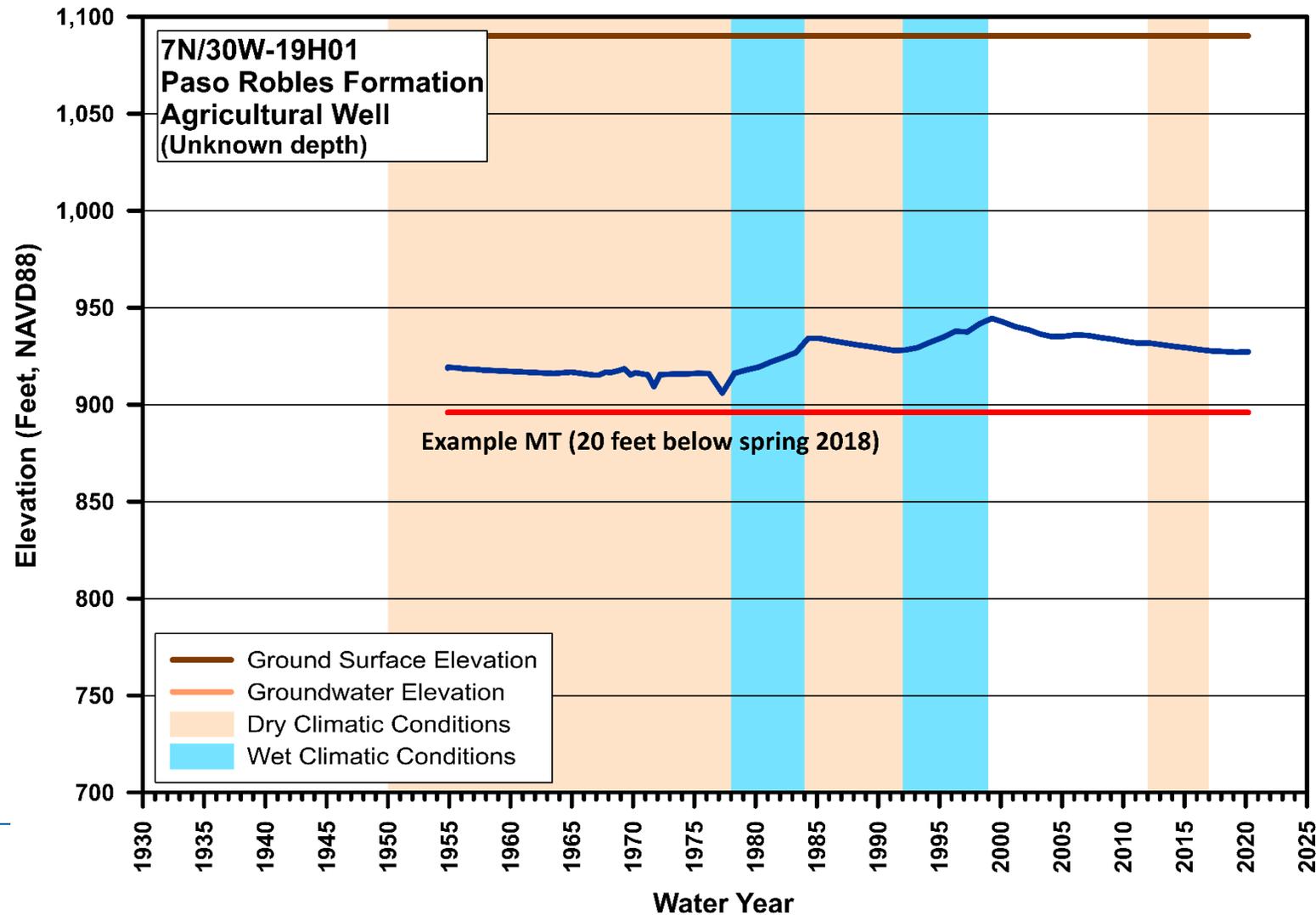
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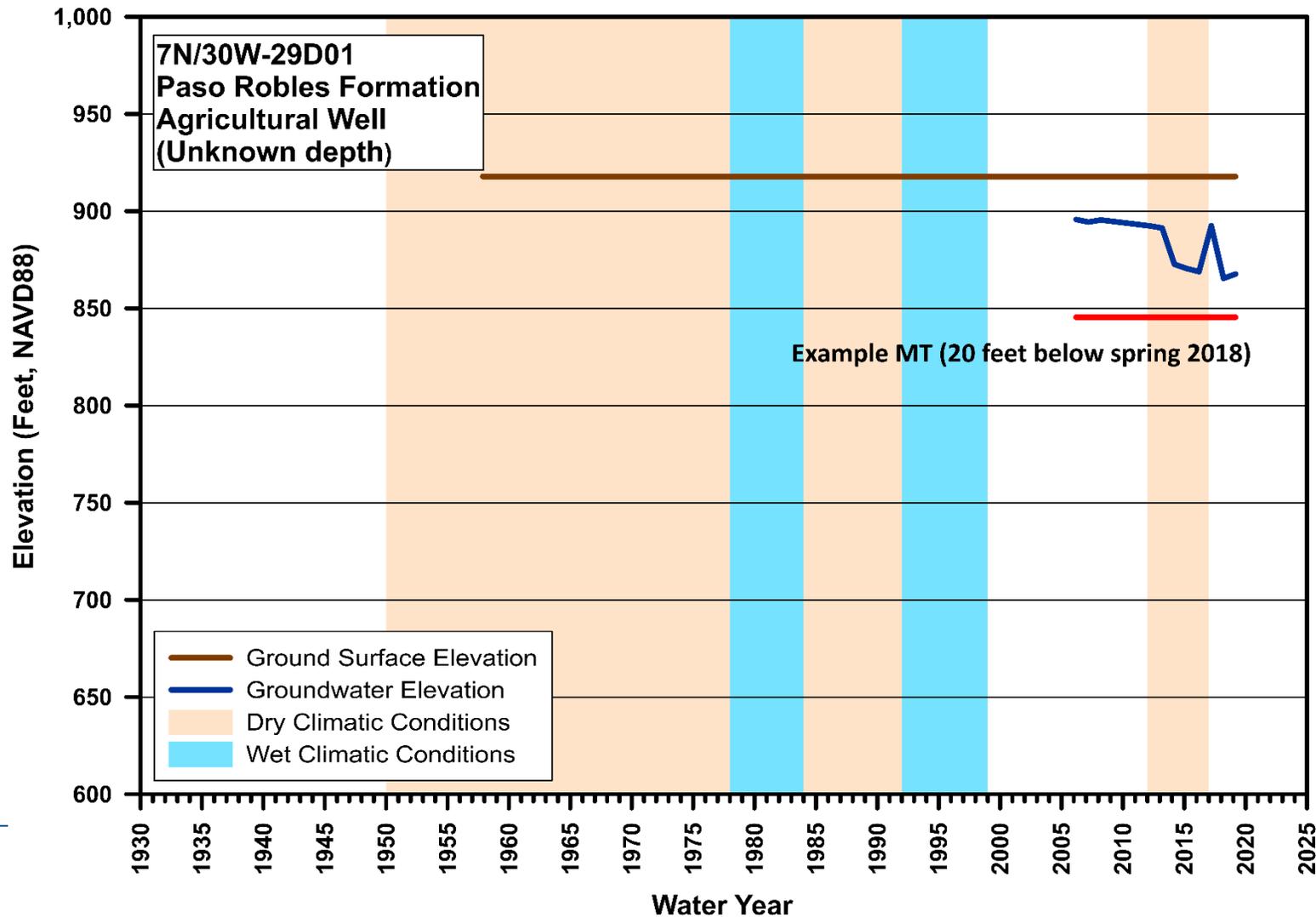
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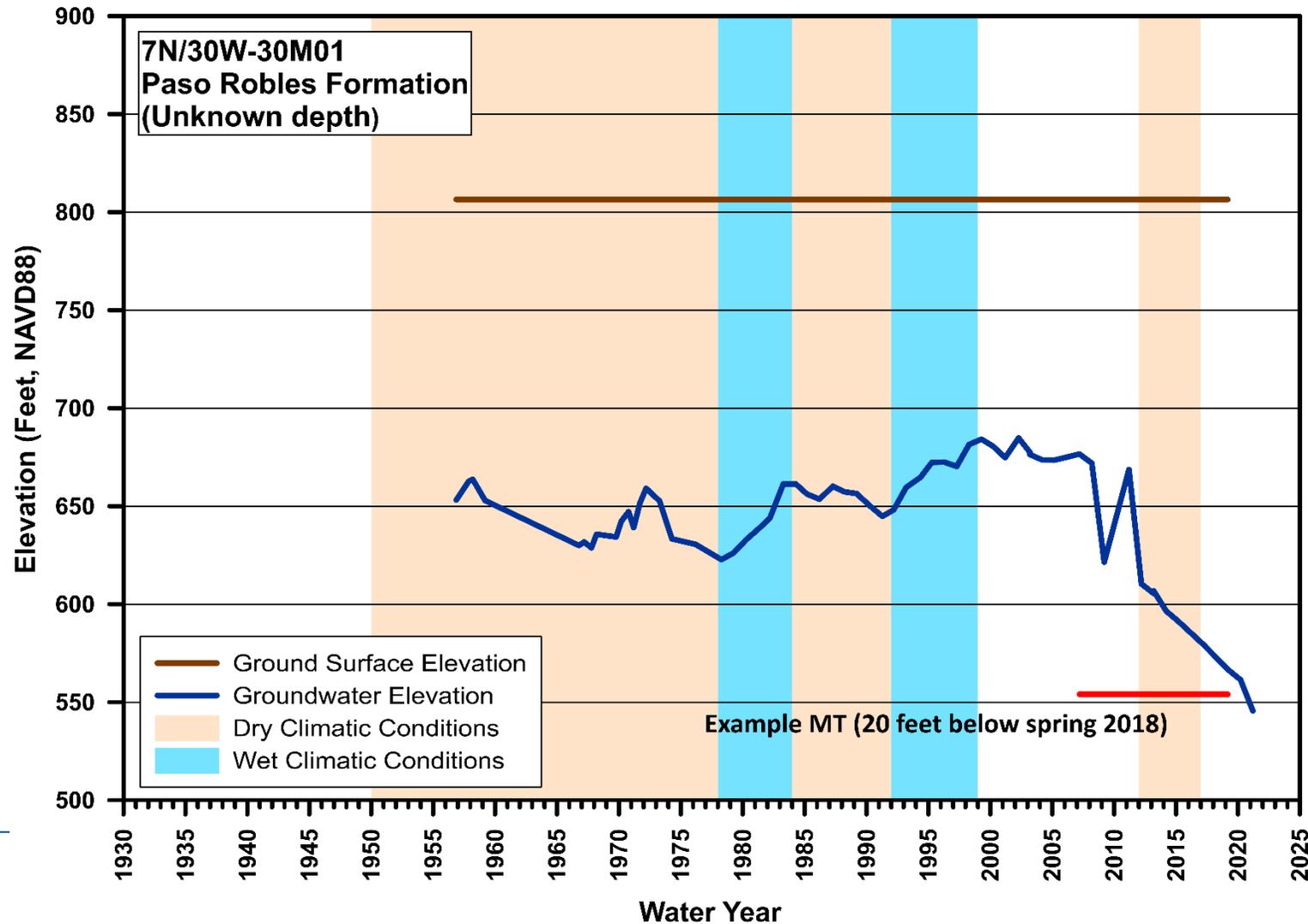
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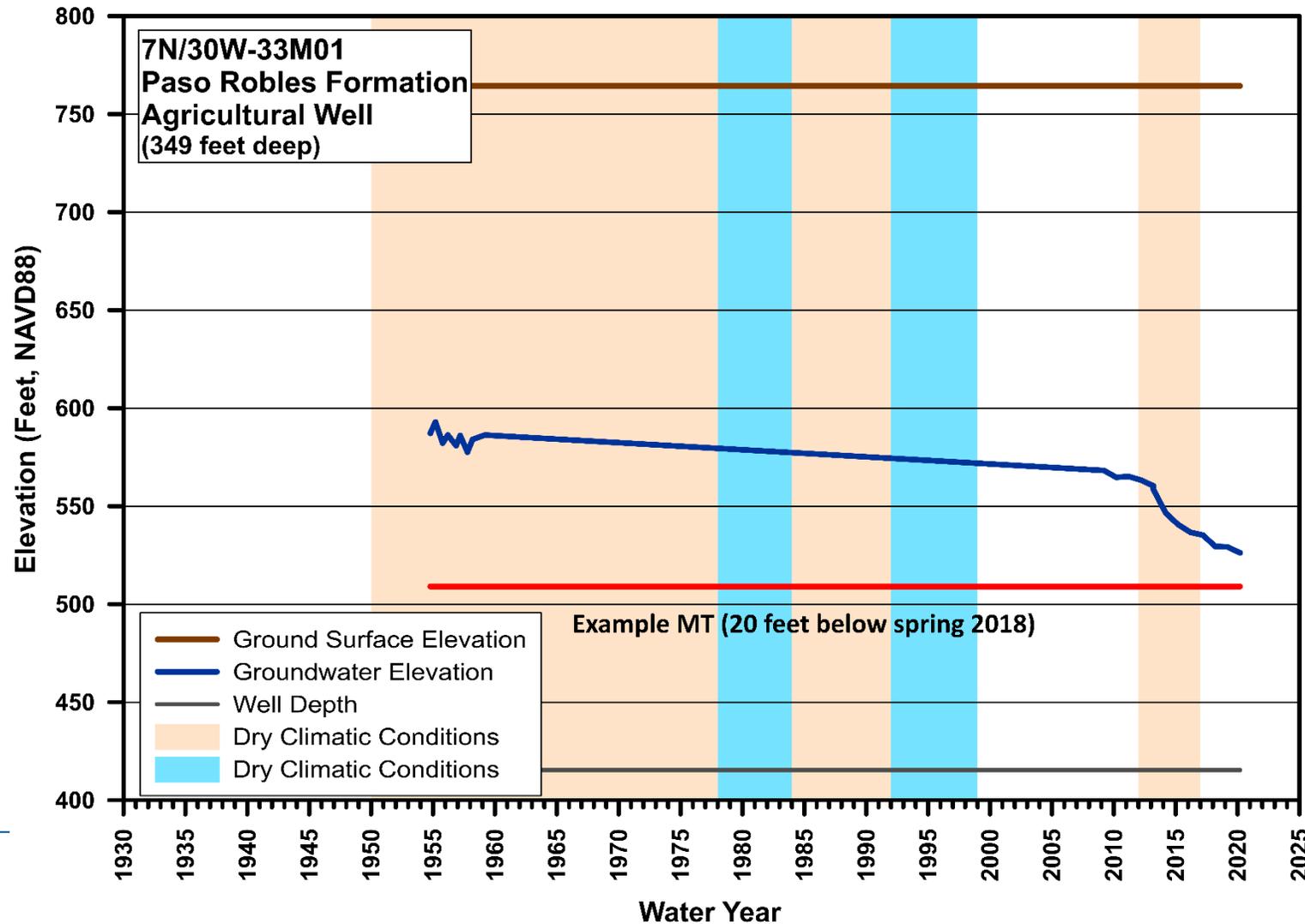
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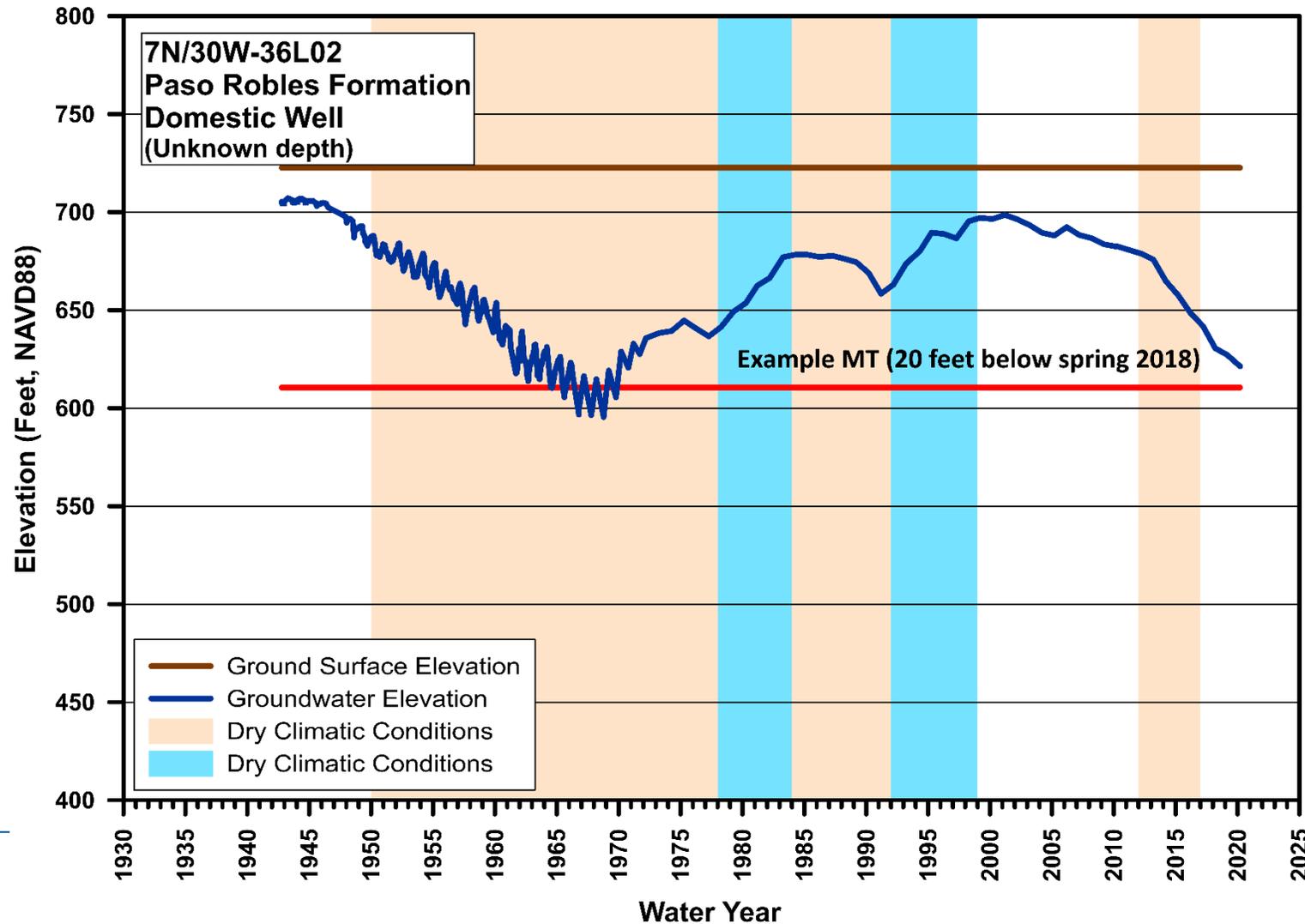
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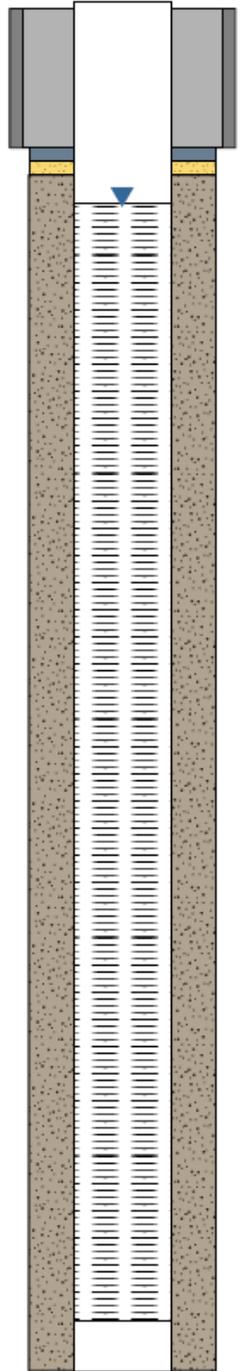


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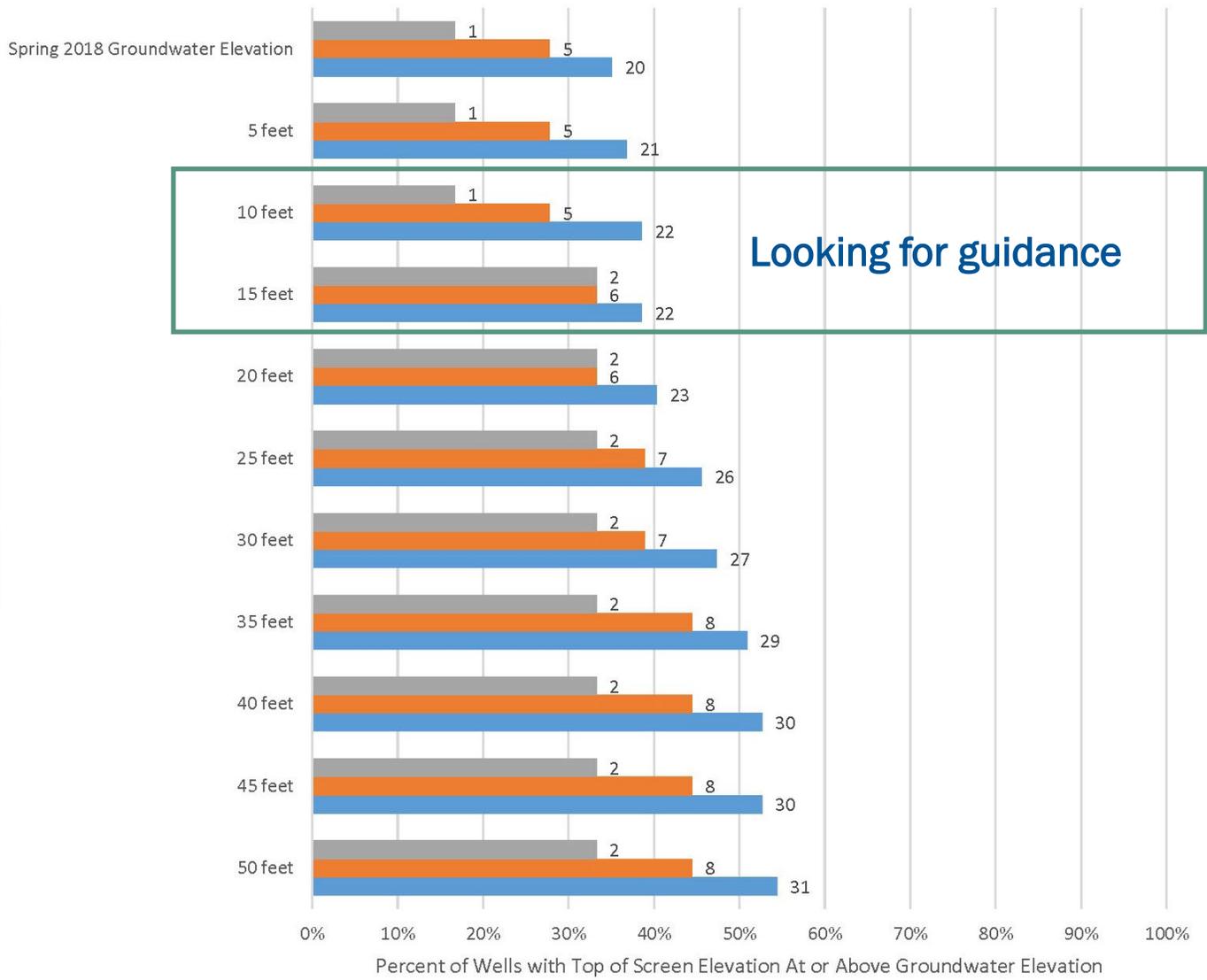


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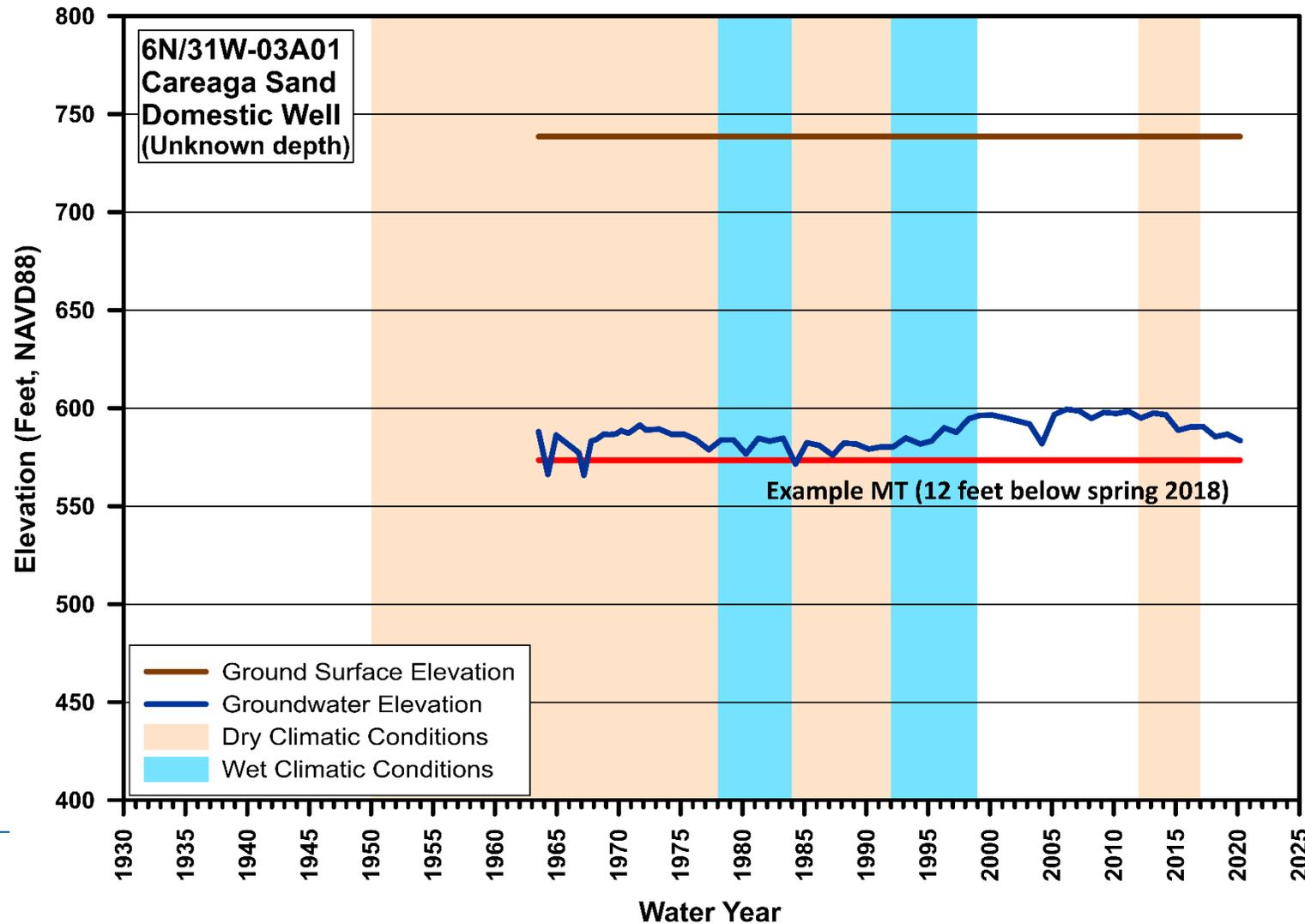
## Careaga Sand Spring 2018



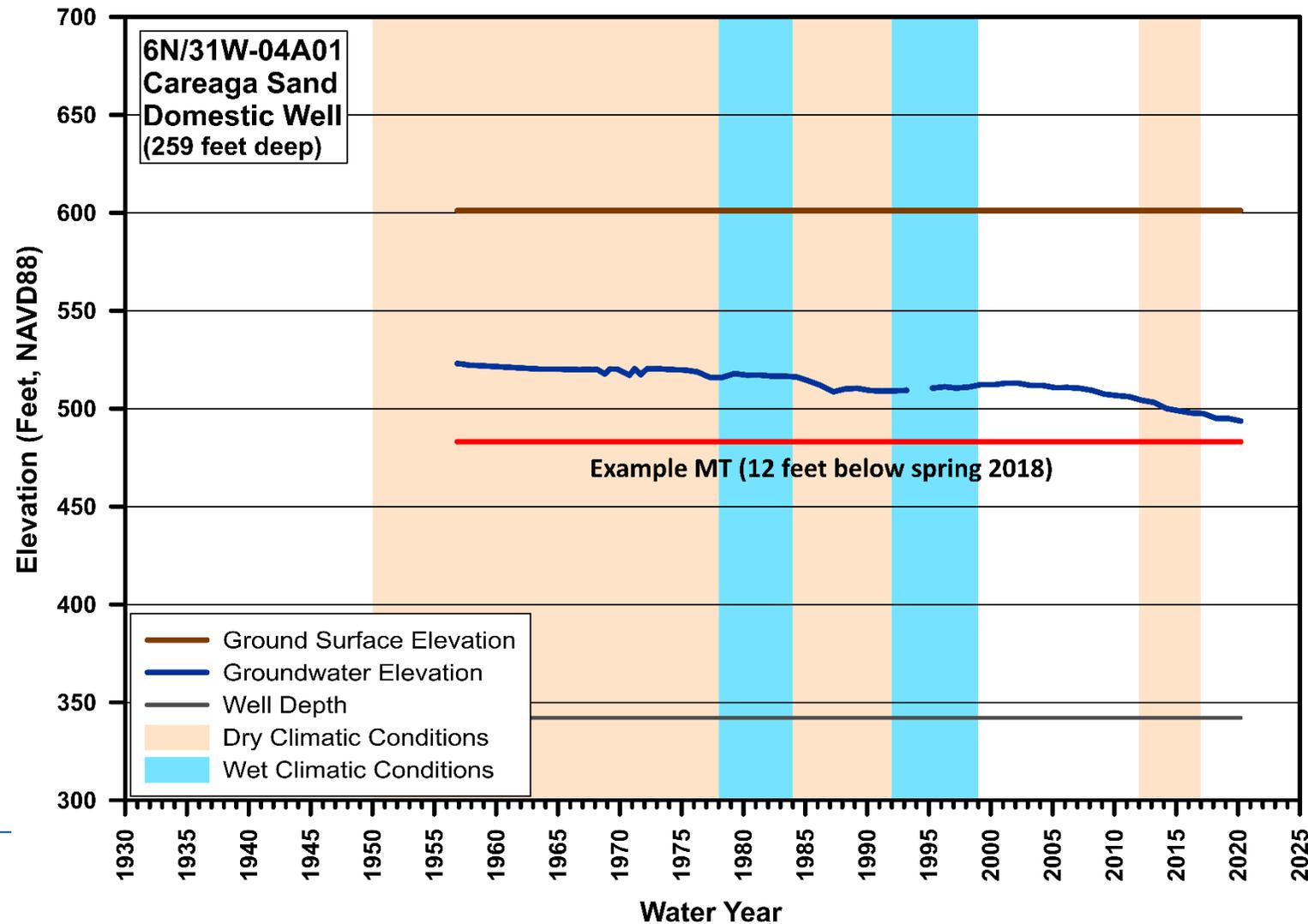
Well Impact Evaluation - Careaga Sand



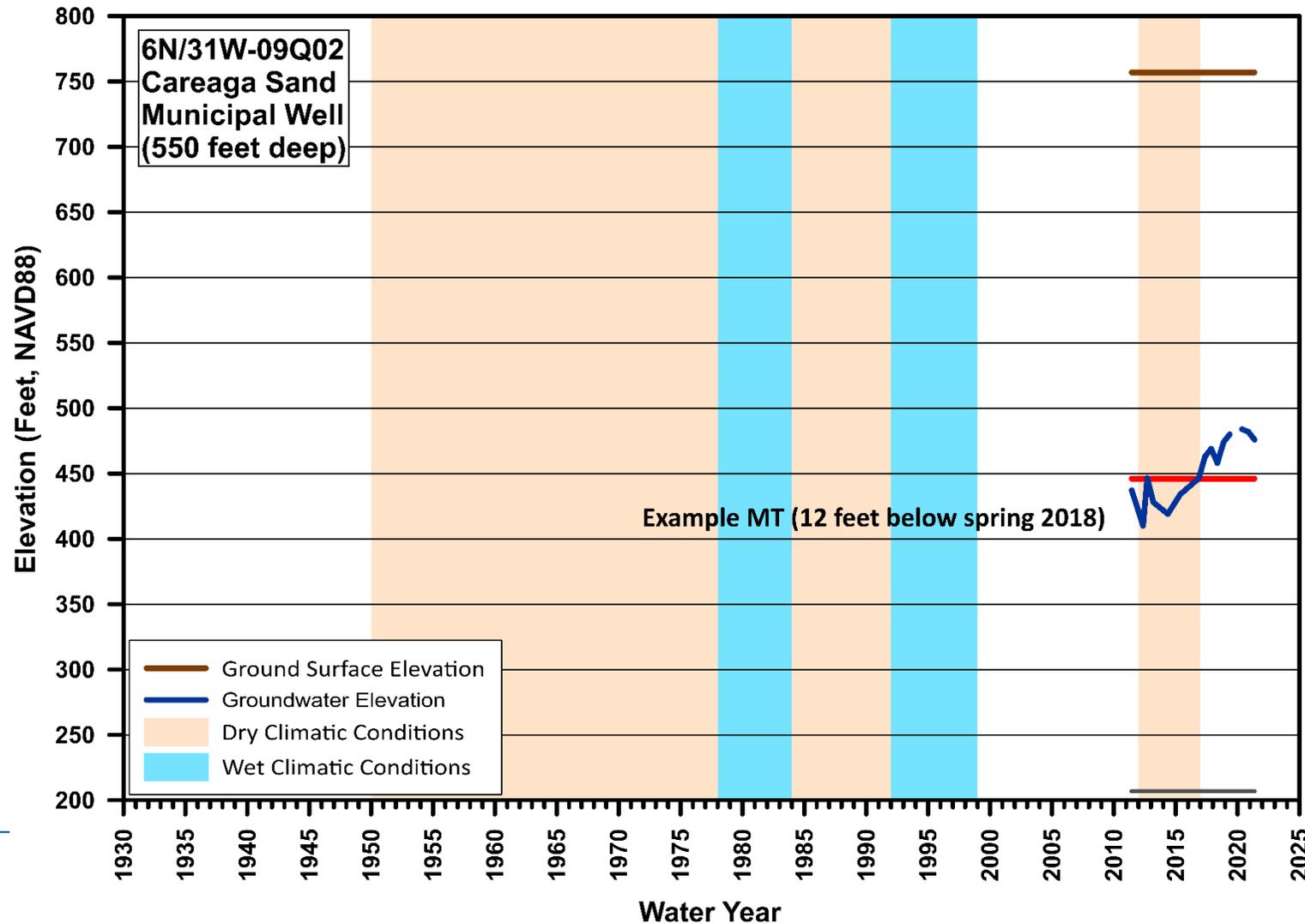
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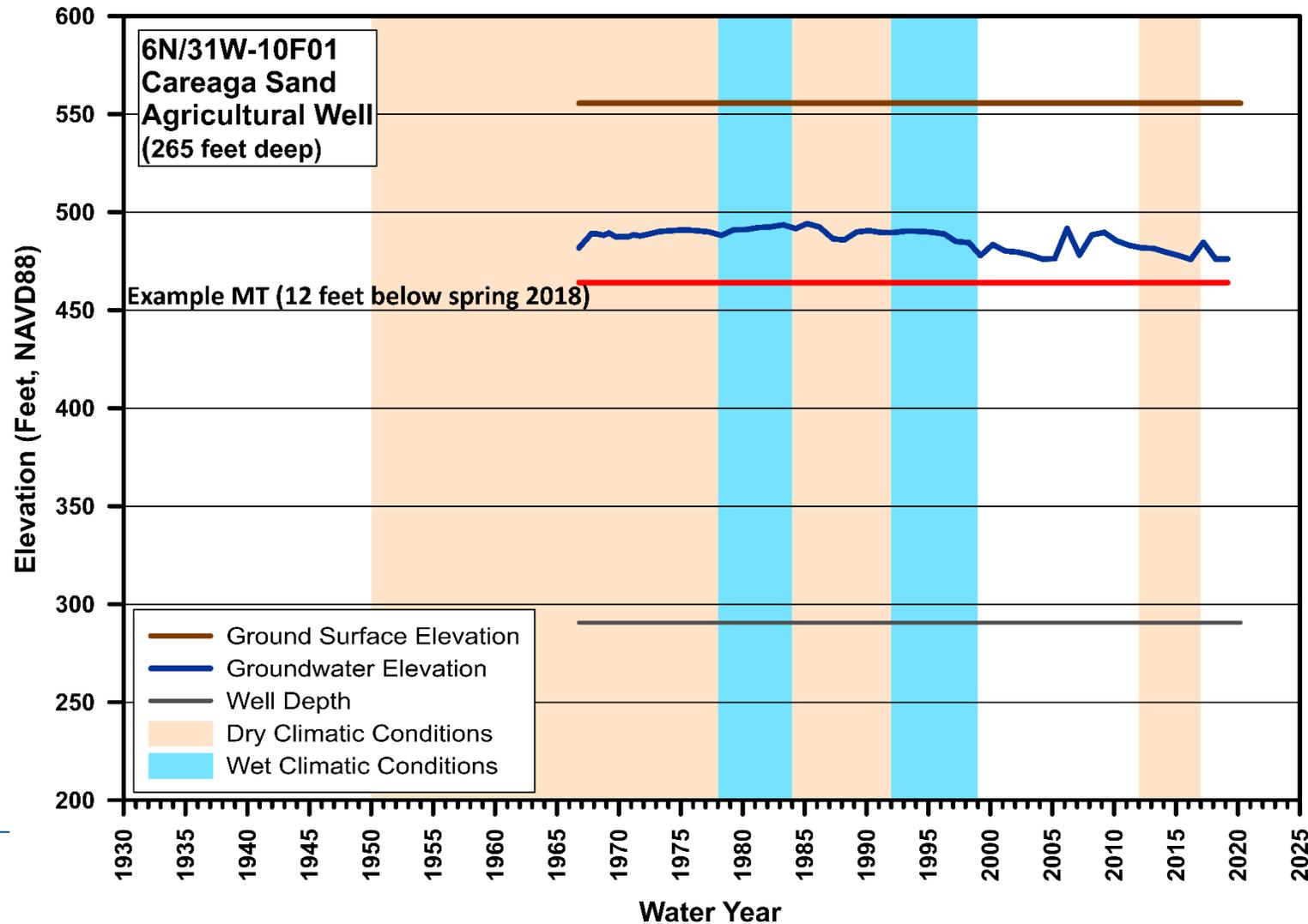
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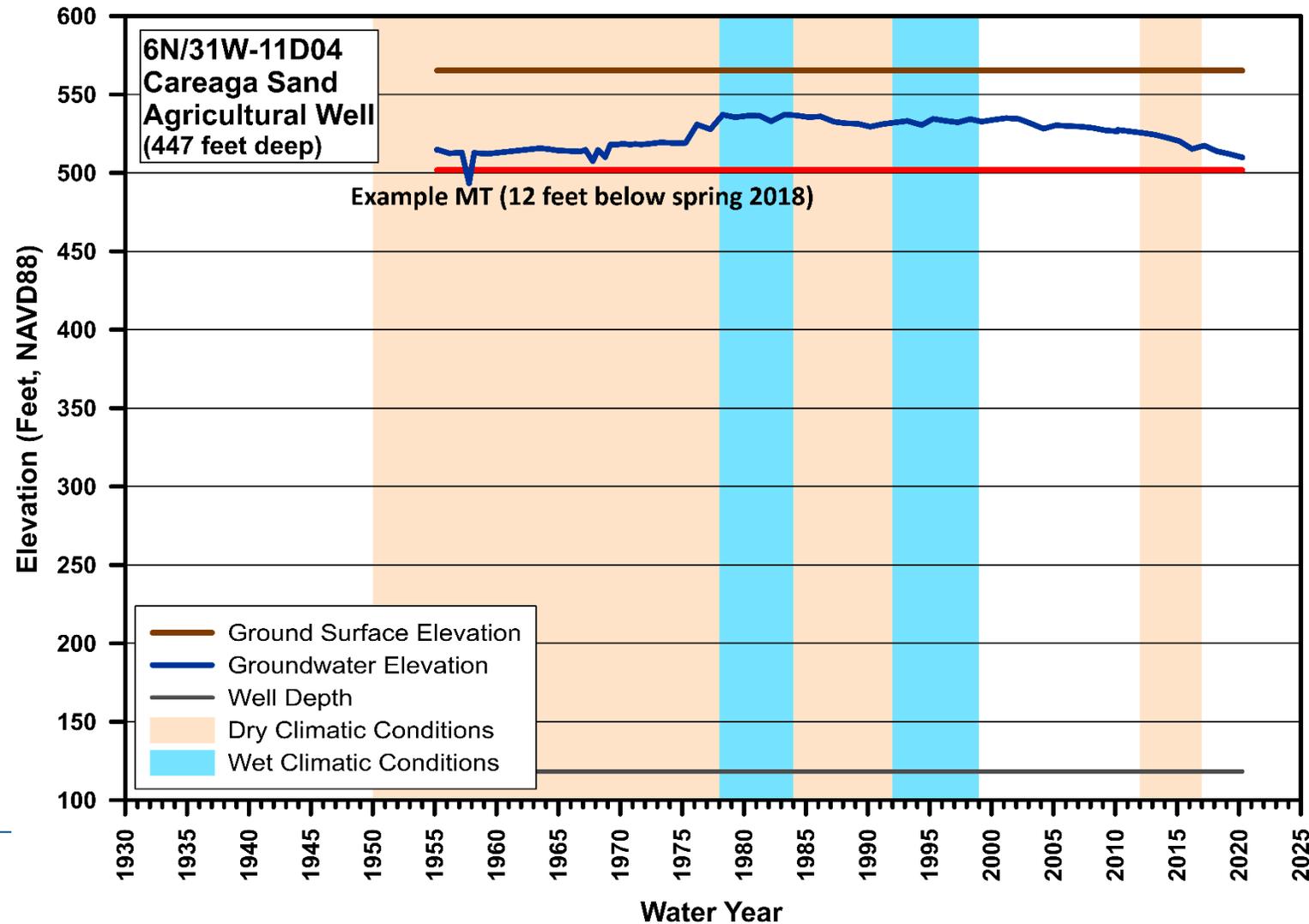
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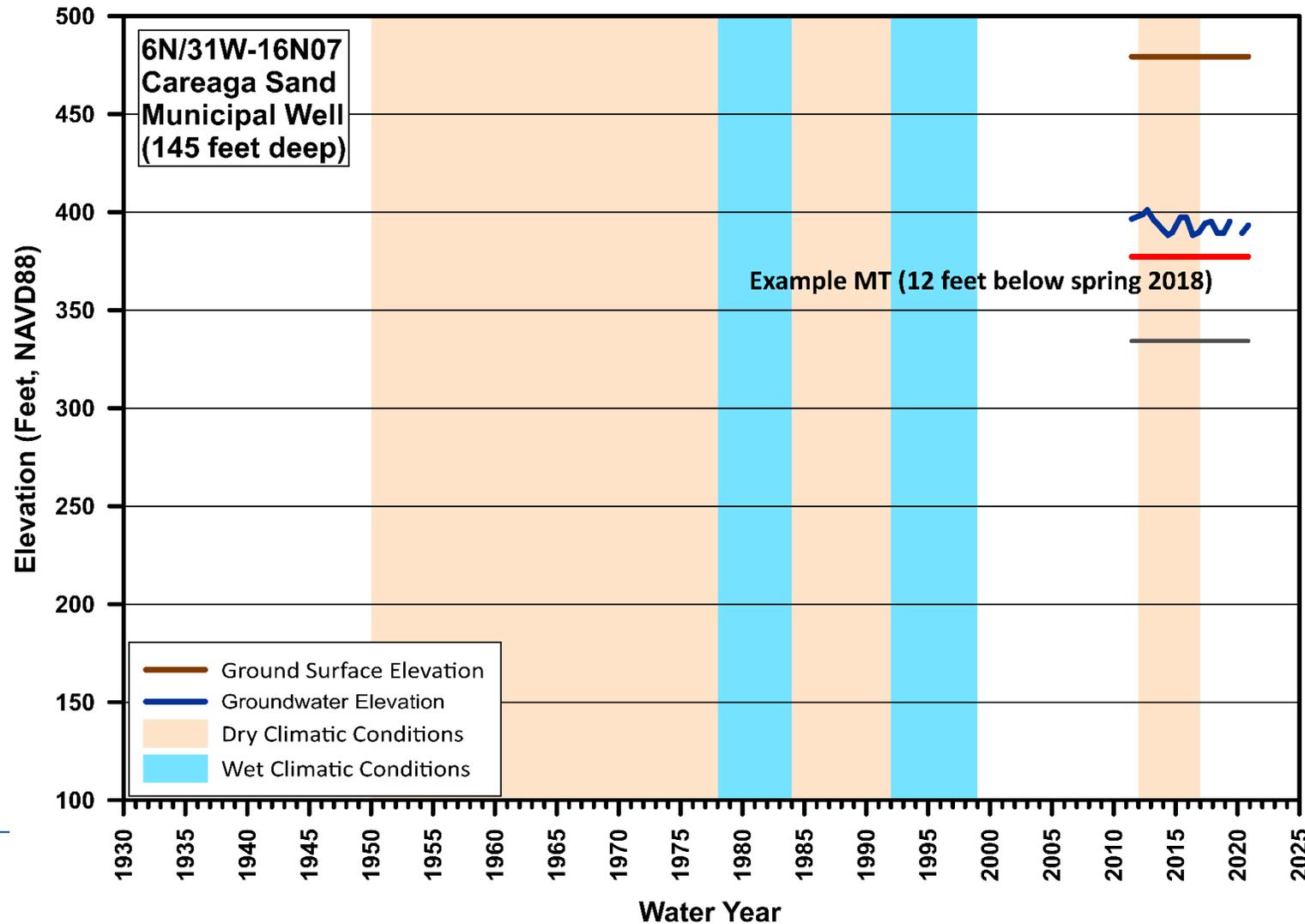
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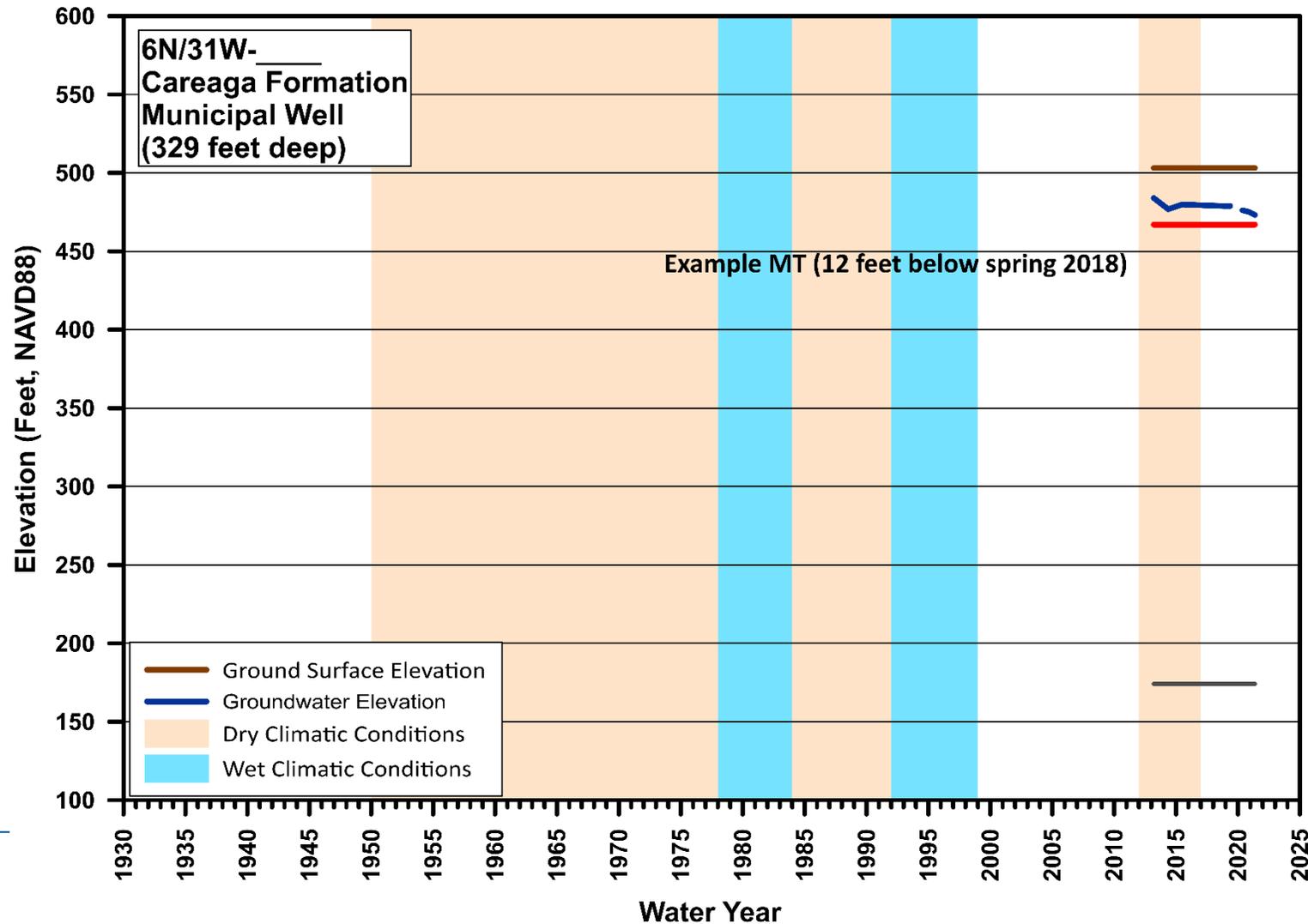
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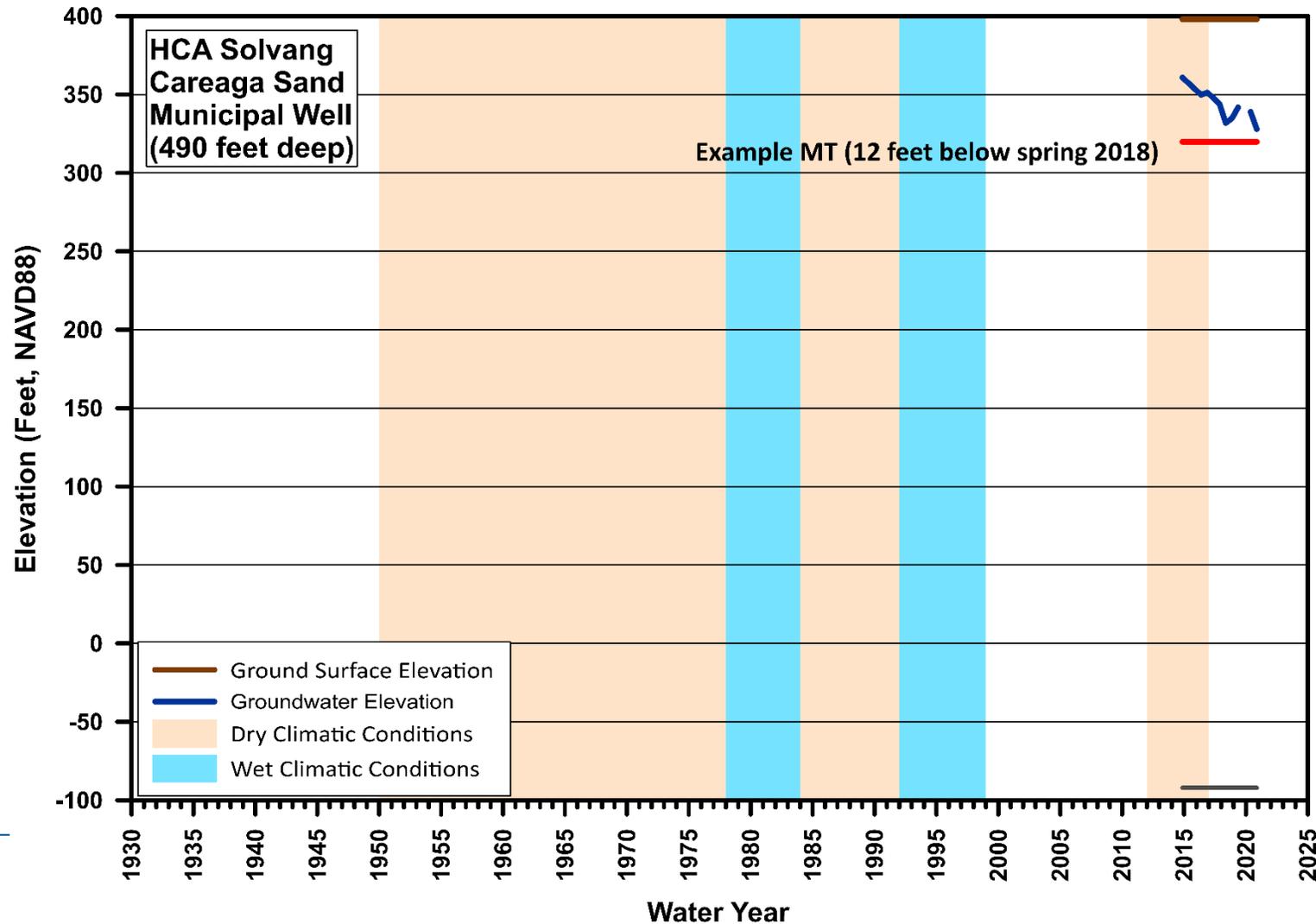
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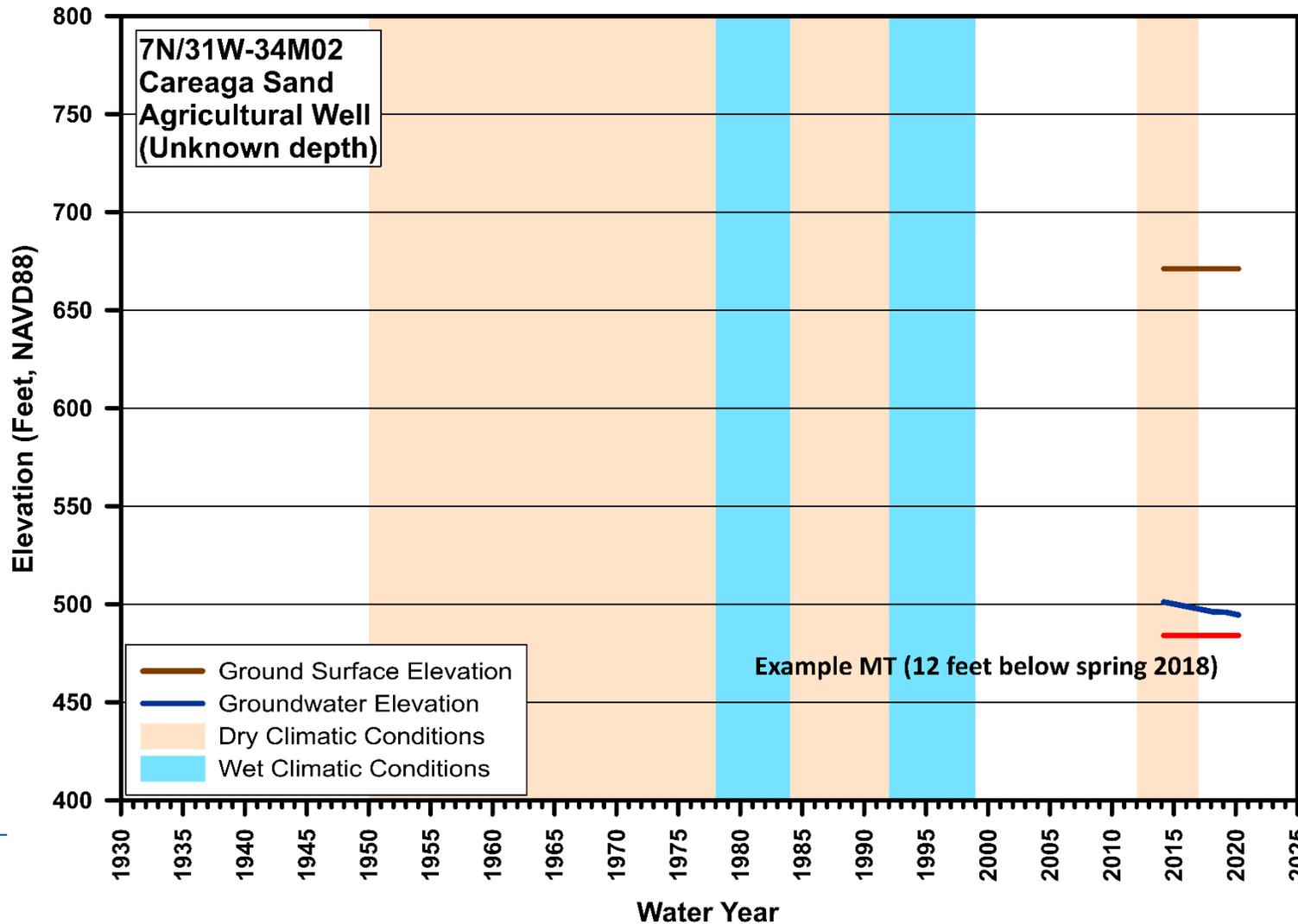
# Representative Groundwater Hydrographs – Careaga Sand



# Representative Groundwater Hydrographs – Careaga Sand



# Representative Groundwater Hydrographs – Careaga Sand



# Relationship between MT and Management Actions

1. Early management actions would be initiated upon submittal of the GSP
  - Initiate actions to reduce likelihood of reaching trigger levels or MTs
2. Trigger Levels above MT
  - Recommend trigger levels above the MT so that evaluation and actions can be taken before the MT is reached

## Examples:

- Trigger level set 5 feet above MT
    - Triggers evaluation and actions presented on the next slide
3. MT exceeded
    - Projects and management actions must be initiated to avoid undesirable results

# Potential Management Actions and Projects

## Objectives:

- **Maintain viable economy while addressing storage deficit and avoiding undesirable results within the next 20 years**
- **Avoid impacts to interconnected surface water and associated GDEs**
- **Start with management actions right away after submittal of the GSP that allow groundwater users to adapt over time**

# Potential Management Actions and Projects

## Process:

1. Identify list of management actions and projects
2. Evaluate benefits and costs
3. Select subset of preferred management actions and projects and prioritize them
4. Develop implementation plan and schedule

# Potential Management Actions and Projects

## 1. Address Data Gaps in Priority Areas:

- Identify existing wells or install new wells that can be included in monitoring program in NW area of EMA \*
- Perform video surveys in representative wells to confirm well construction \*
- Install shallow piezometers in Alamo Pintado and Zanja de Cota Creek GDE area \*
- Review/update water use factors

## 2. Metering program to improve estimates of actual water use

- Identify funding (SB County, NRCS)
- Create incentives to install meters in all wells
- Develop plan for installation, reporting, calibration

## 3. Promote Water Efficiency Program

- Work with RCD to perform Irrigation Audits
- GSA will promote water conservation program for residents and businesses
- Provide incentives for soil moisture, soil amendments and irrigation monitoring systems
- Spray to drip conversion incentives

\* Funding available through DWR

# Potential Management Actions and Projects

4. Well registration program outside of SYRWCD
  - Where is pumping and how much?
  
5. Develop demand management program (if needed)
  - Develop plan with stakeholder input for funding, tracking, monitoring, and management
  - Incentive payments for reducing water use
  - Voluntary fallowing
  - Develop water credit program under GSA management
  
6. Cloud seeding

# Next Steps

- Preparation and release of draft Sustainable Management Criteria Section of GSP
- Preparation and release of draft Monitoring Networks Section of GSP
- Discuss potential Management Actions and Projects (next meeting)

**Thank you!**

**Jeff Barry and  
Tim Nicely**

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Photo Credit: Jeremy Ball, Courtesy of Longoria Wines