Sustainable Management Criteria Summary

Santa Ynez Basin- EMA

April 15, 2021

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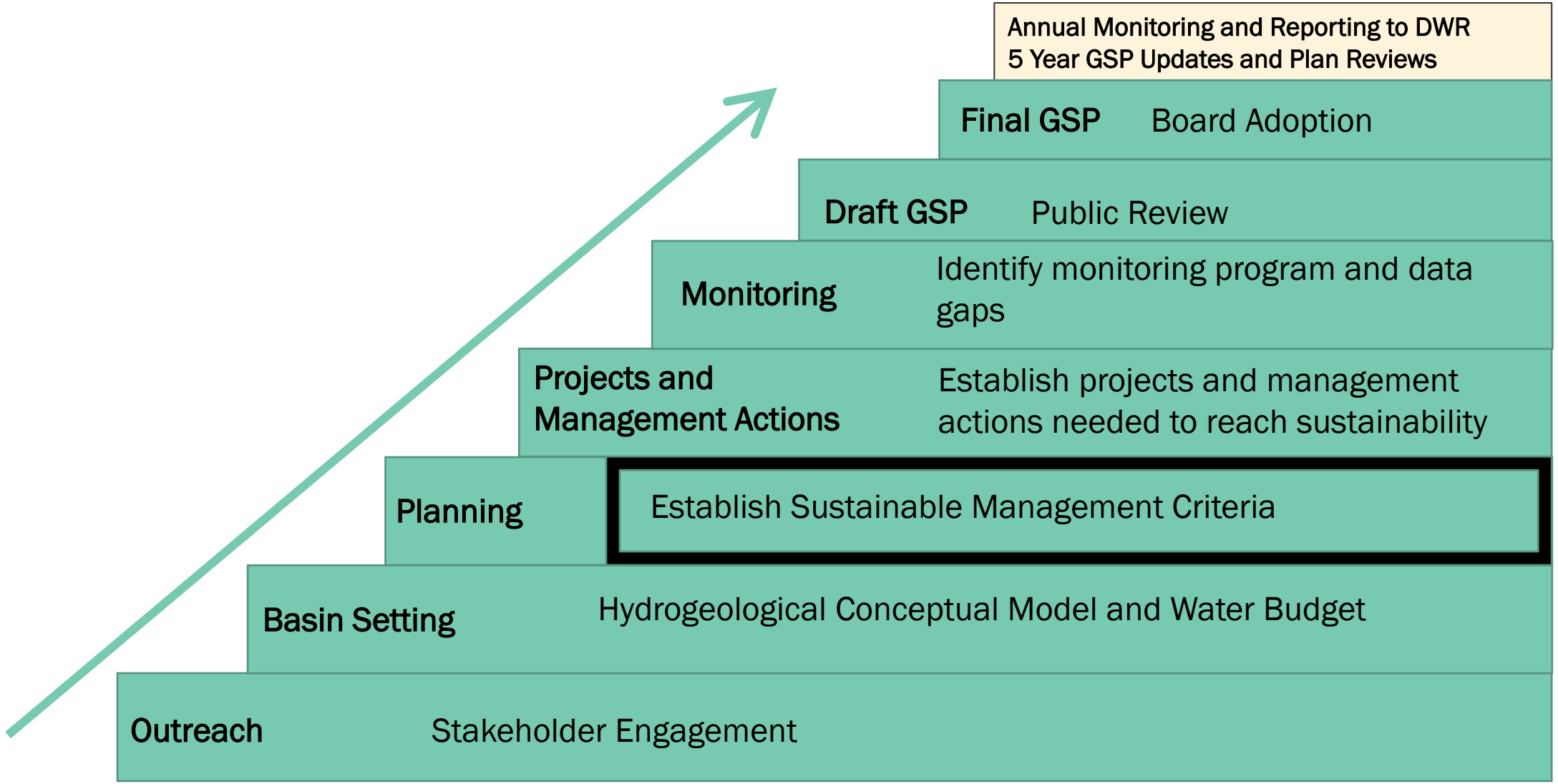
and Nate Page

GSI Water Solutions, Inc.

EMA
Santa Ynez River Valley Groundwater Basin
Eastern Management Area
Groundwater Sustainability Agency

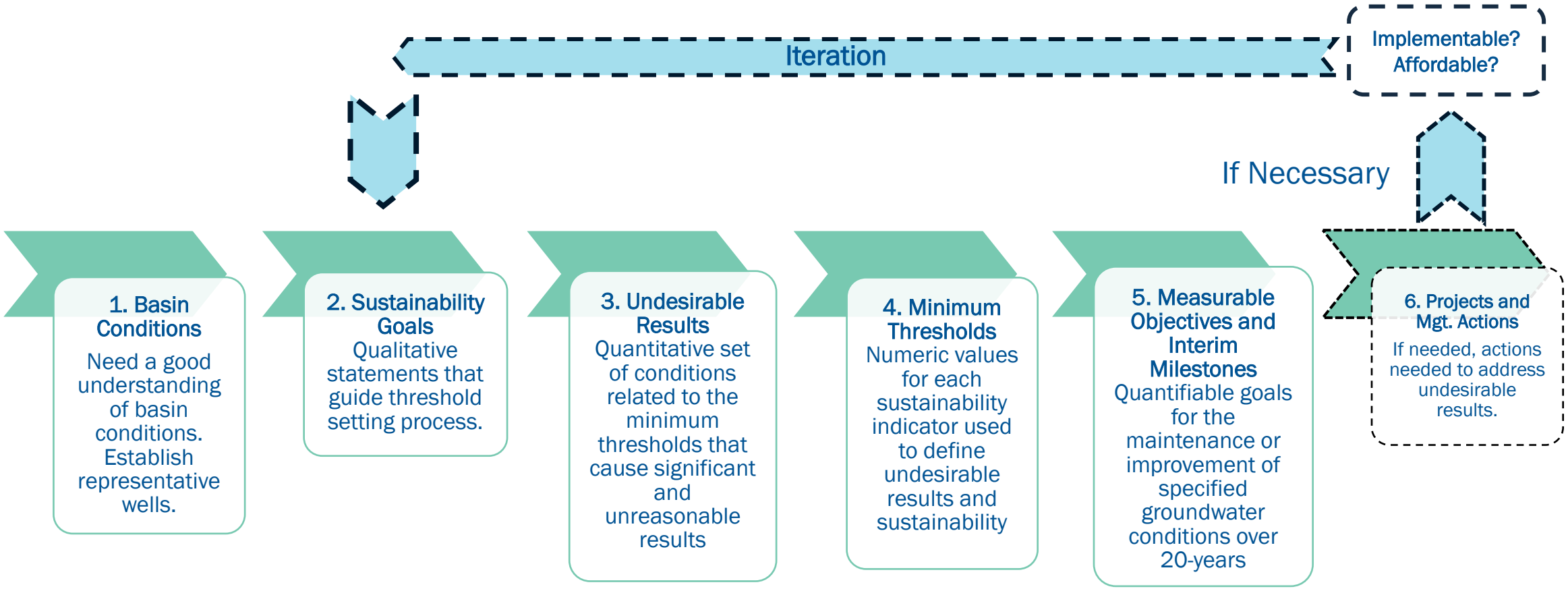
Activities Leading to an Accepted GSP



Topics of Discussion

- Review process for setting sustainable management criteria
- Selection of “Representative Wells”
- Summary of Sustainable Management Criteria for:
  - Chronic decline in groundwater levels
  - Chronic reduction of groundwater in storage
  - Degradation of groundwater quality
  - Depletion of interconnected surface water and impacts to GDEs
  - Subsidence

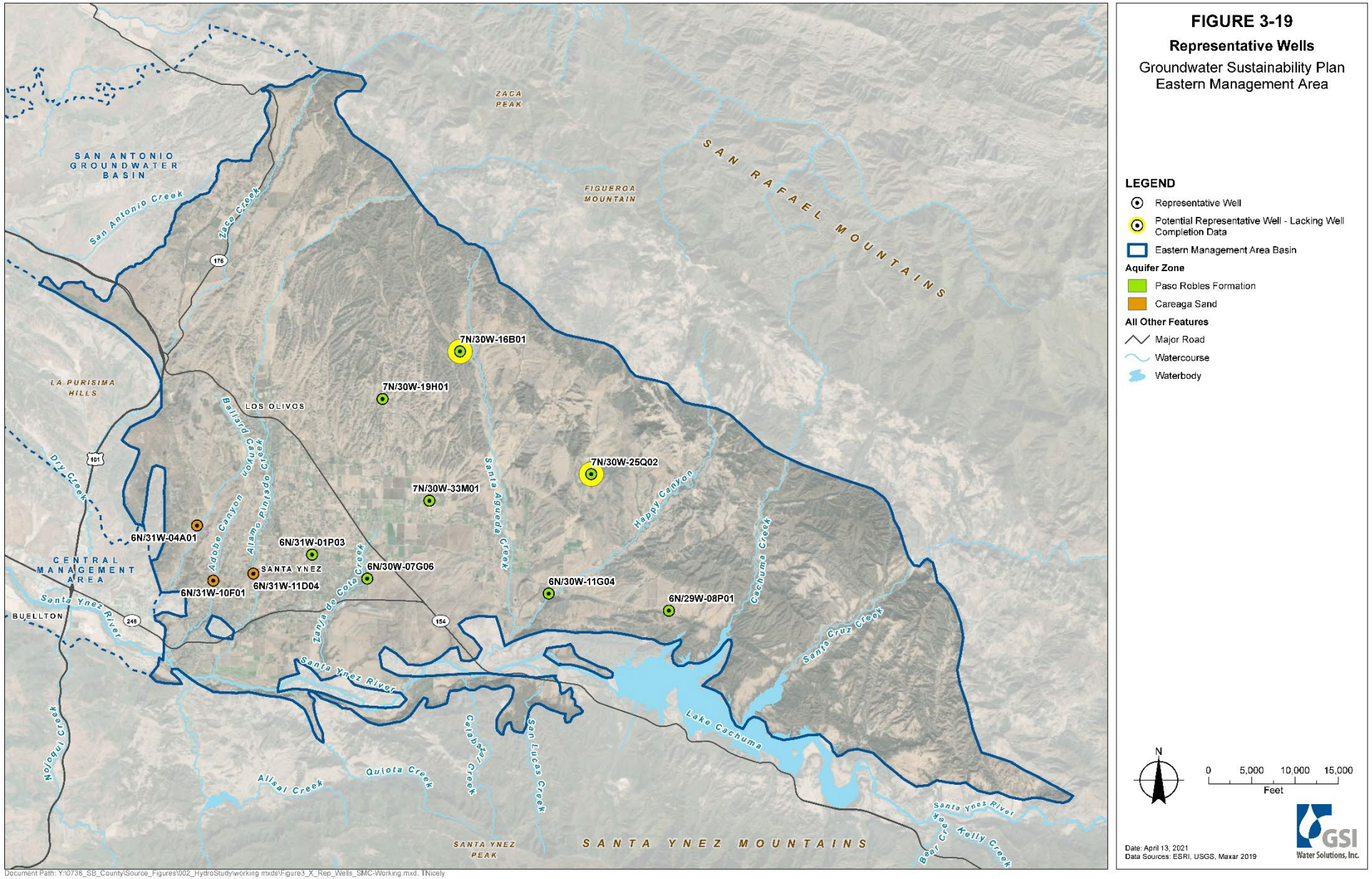
Sustainable Management Criteria (SMC) Development Process ( )



How were Representative Monitoring Wells Selected?

- Representative of groundwater conditions in different parts of the basin
- We know well construction and which aquifer they are completed in (Paso Formation or Careaga Sand)
- Long history of water level data
- Ideally not pumping wells (sometimes unavoidable)
- Used for long term monitoring and setting sustainability thresholds

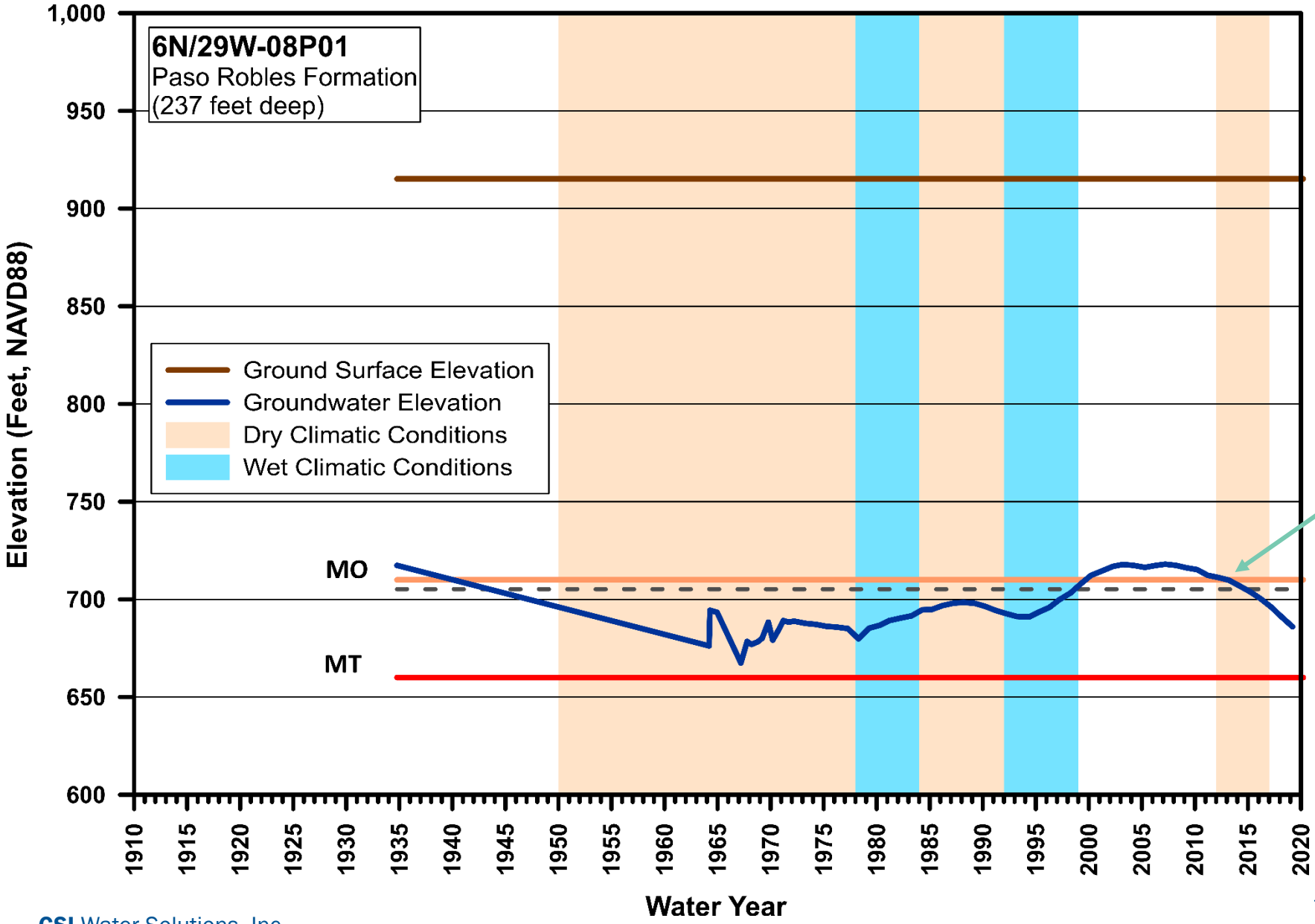
Representative Monitoring Wells



Sustainable Management Criteria Summary

Chronic Water Level Decline

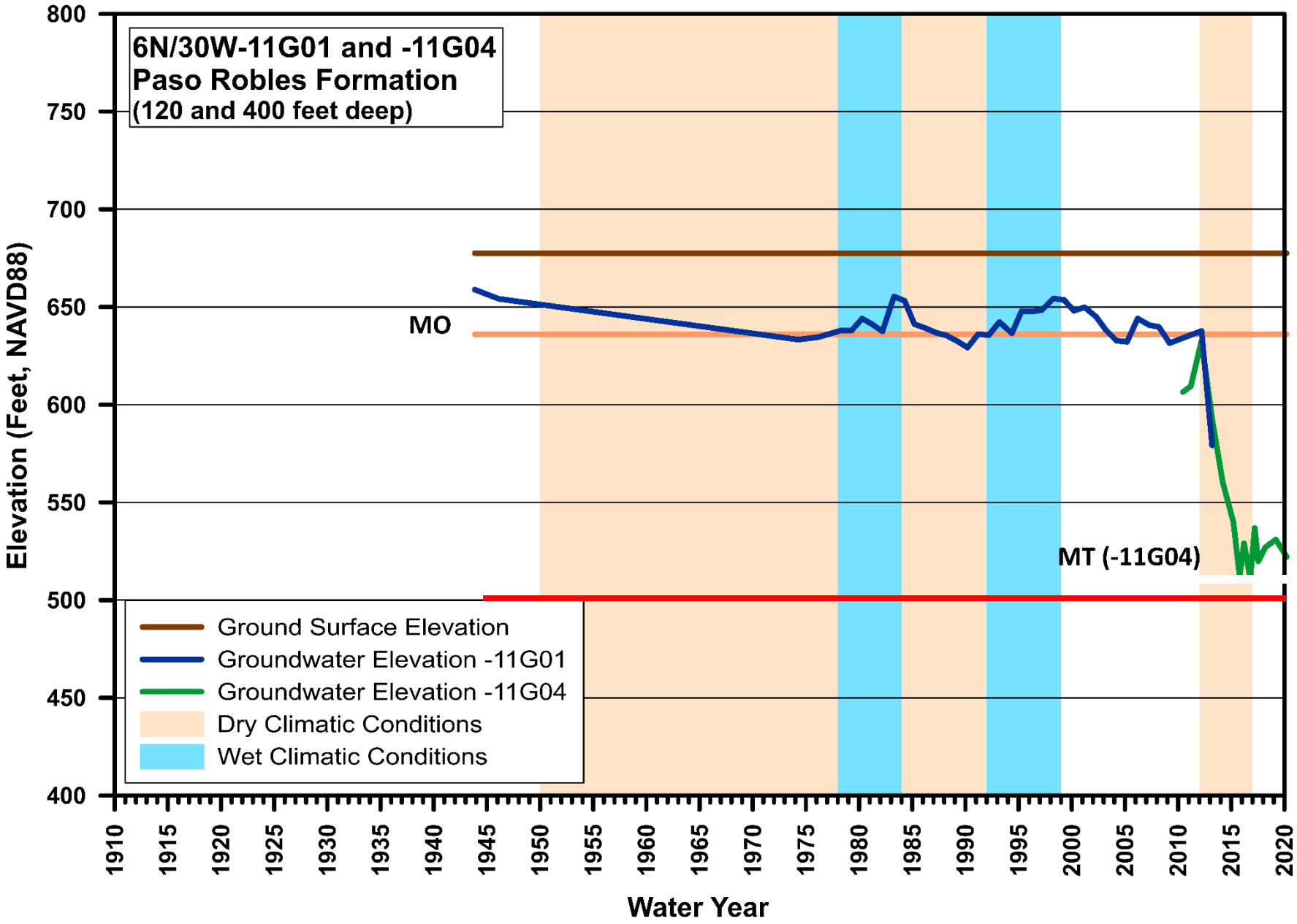
Potential Undesirable	Minimum Threshold	Measurable Objective	Interim Milestones
• Water levels fall below minimum thresholds after average and above average rainfall periods. • Observed in more than 50% of representative wells. • Confirmed by two consecutive years. • Significant number of existing agricultural, municipal, and domestic wells are unable to produce usual historical quantities of water.	10 feet below lowest historical water levels.	Water level prior to most recent drought (March 2011)	No interim milestones proposed because there are no undesirable results.



March 2011

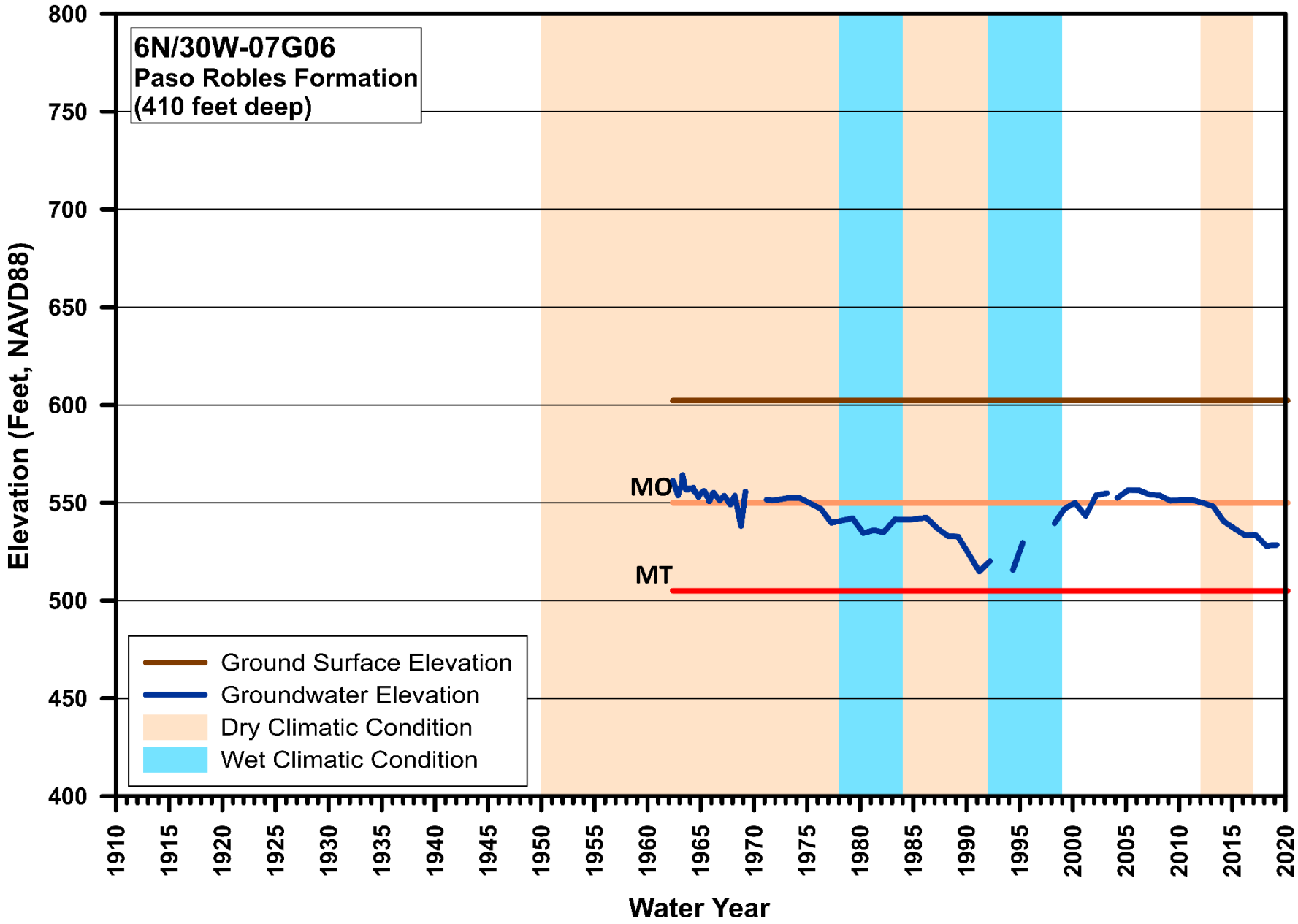
Measurable Objective: 710 feet

Minimum Threshold: 660 feet



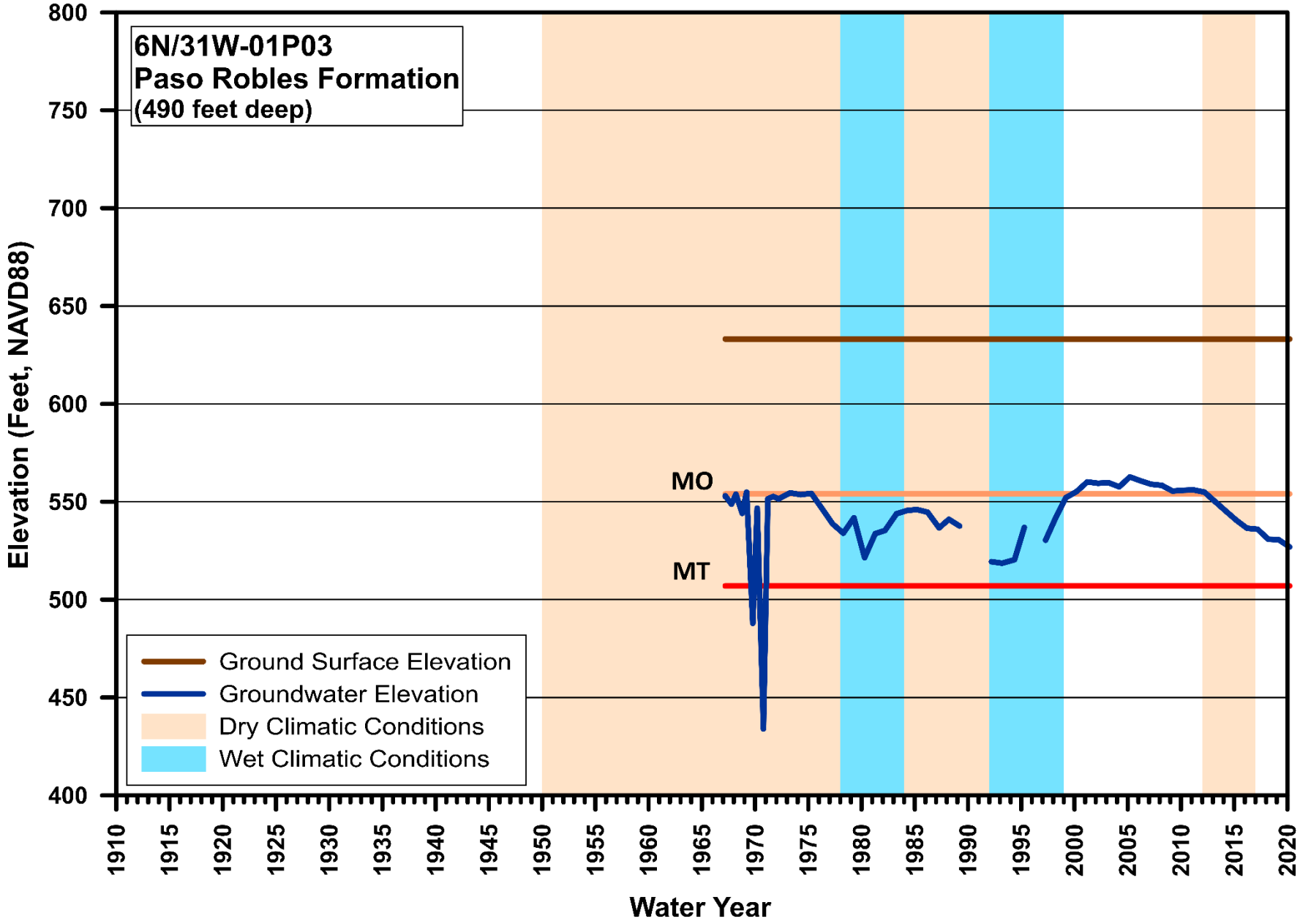
Measurable Objective: 640 feet

Minimum Threshold: 500 feet



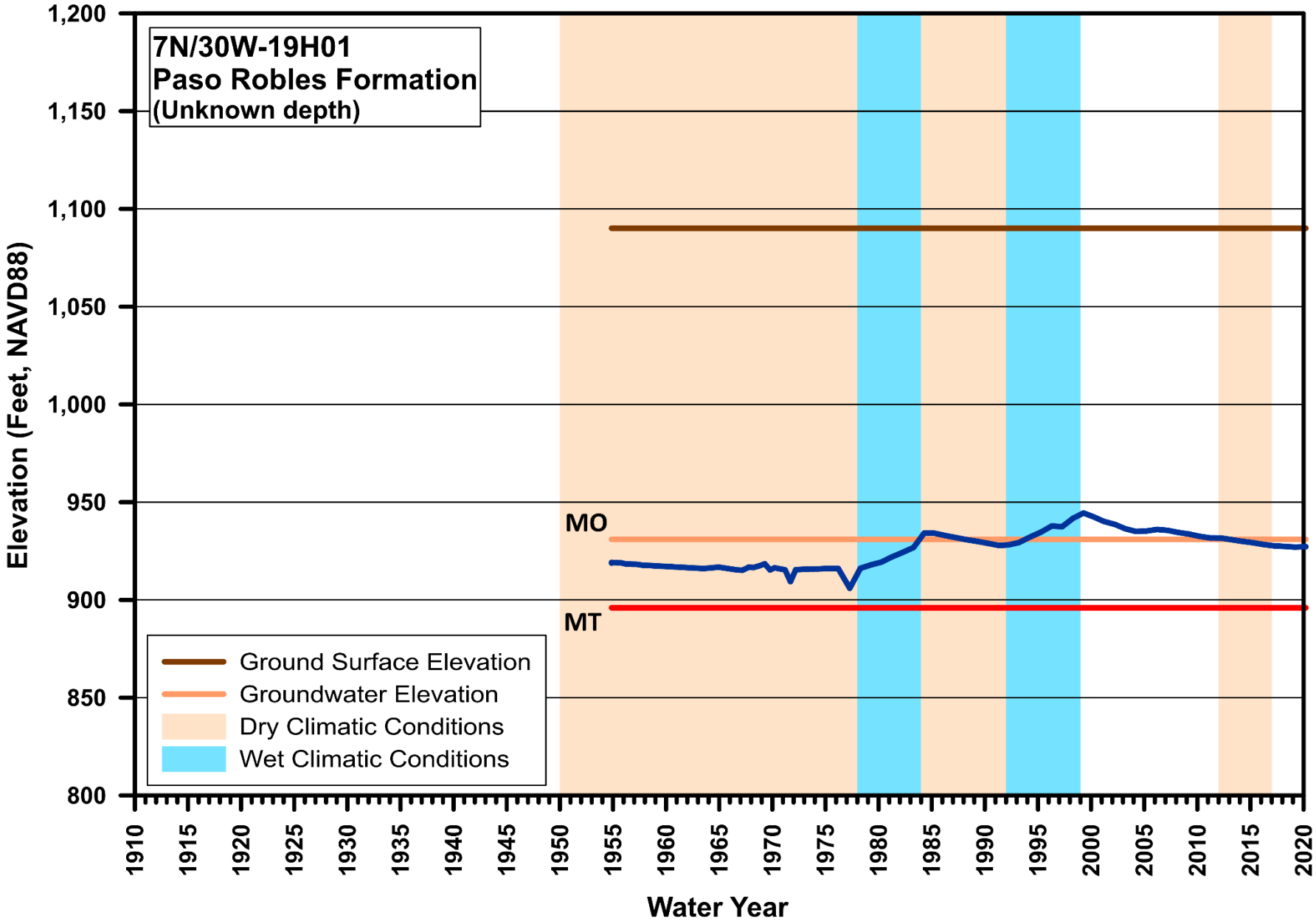
Measurable Objective: 550 feet

Minimum Threshold: 505 feet



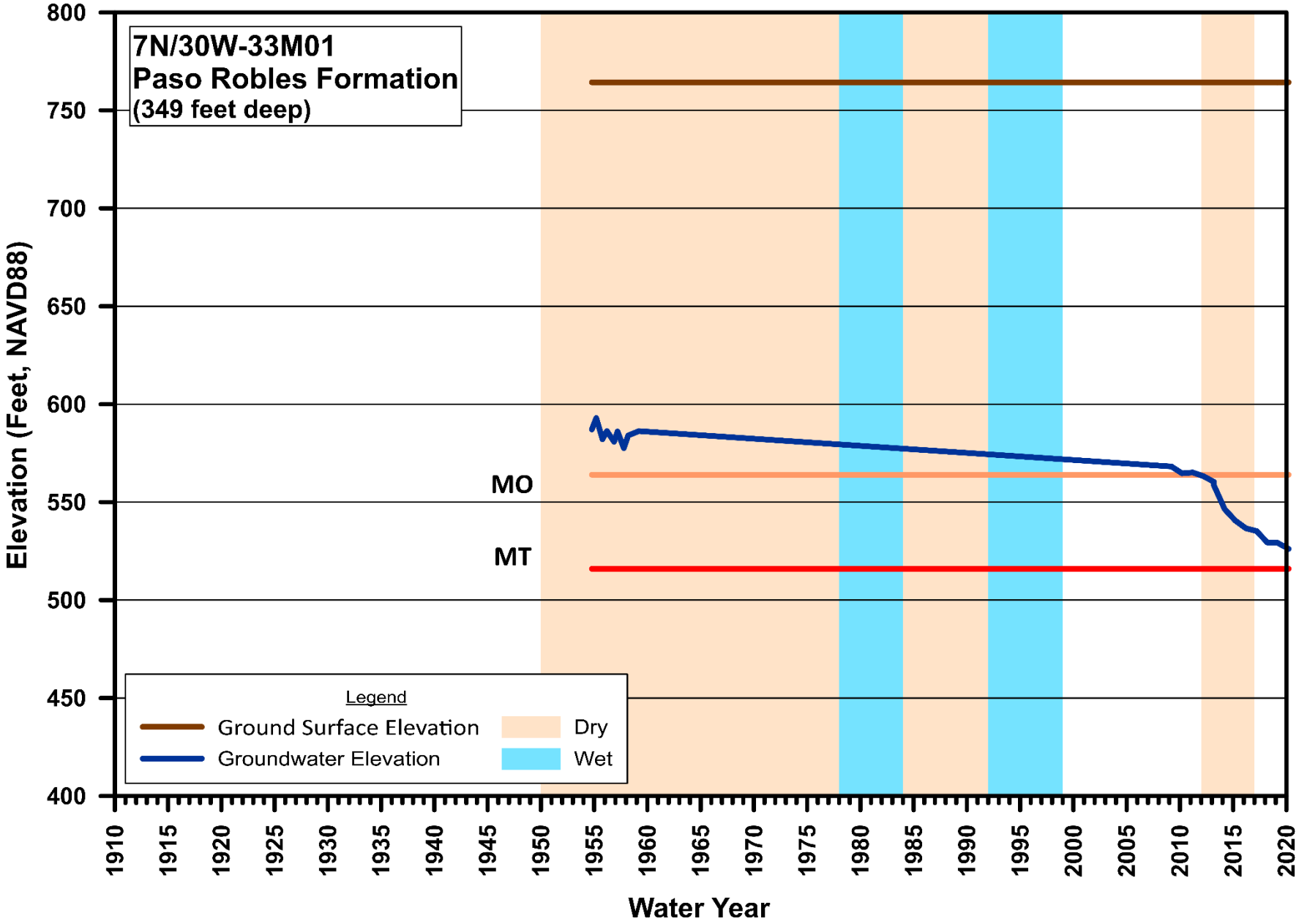
Measurable Objective: 555 feet

Minimum Threshold: 510 feet



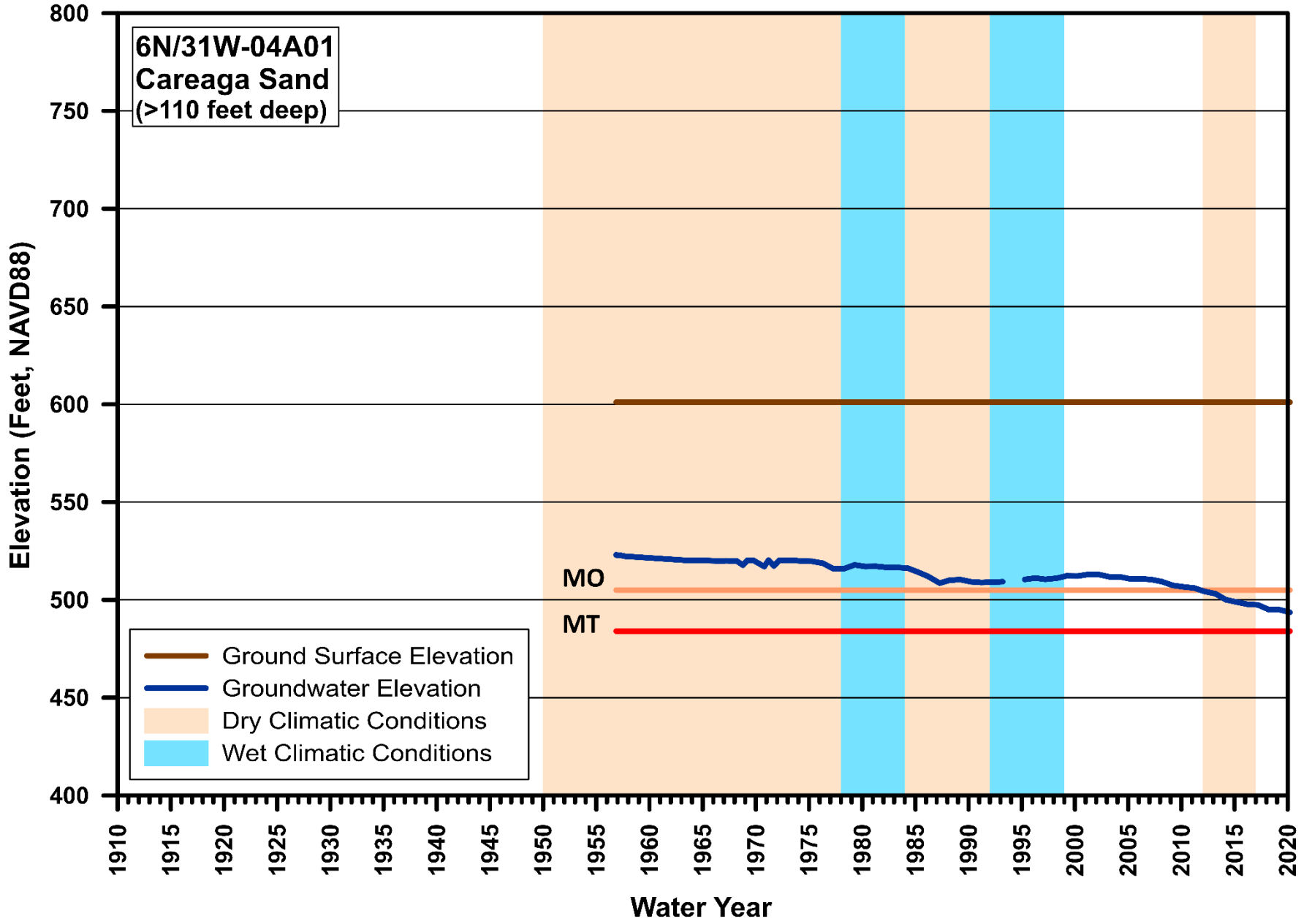
Measurable Objective: 930 feet

Minimum Threshold: 895 feet

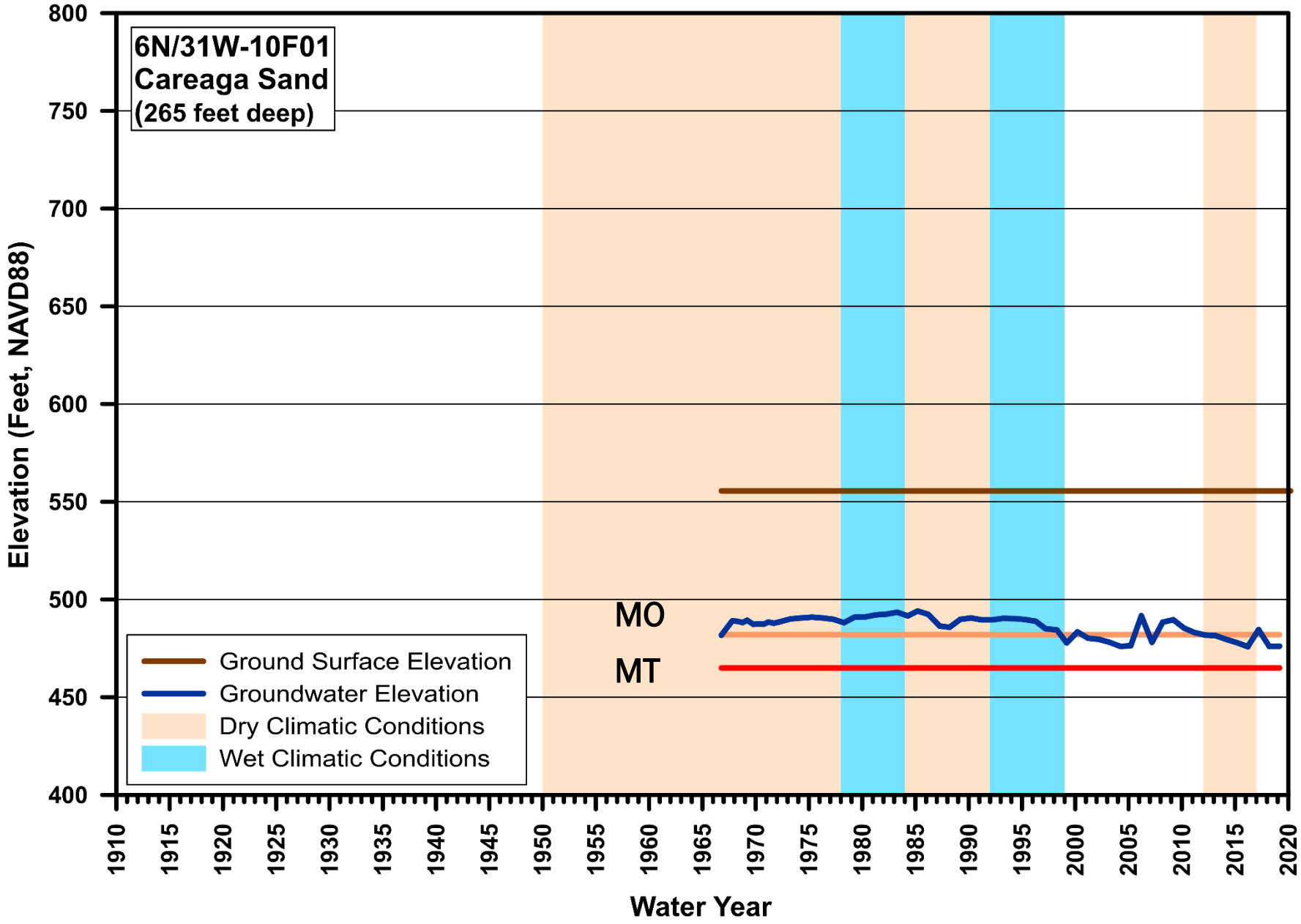


Measurable Objective: 565 feet

Minimum Threshold: 520 feet

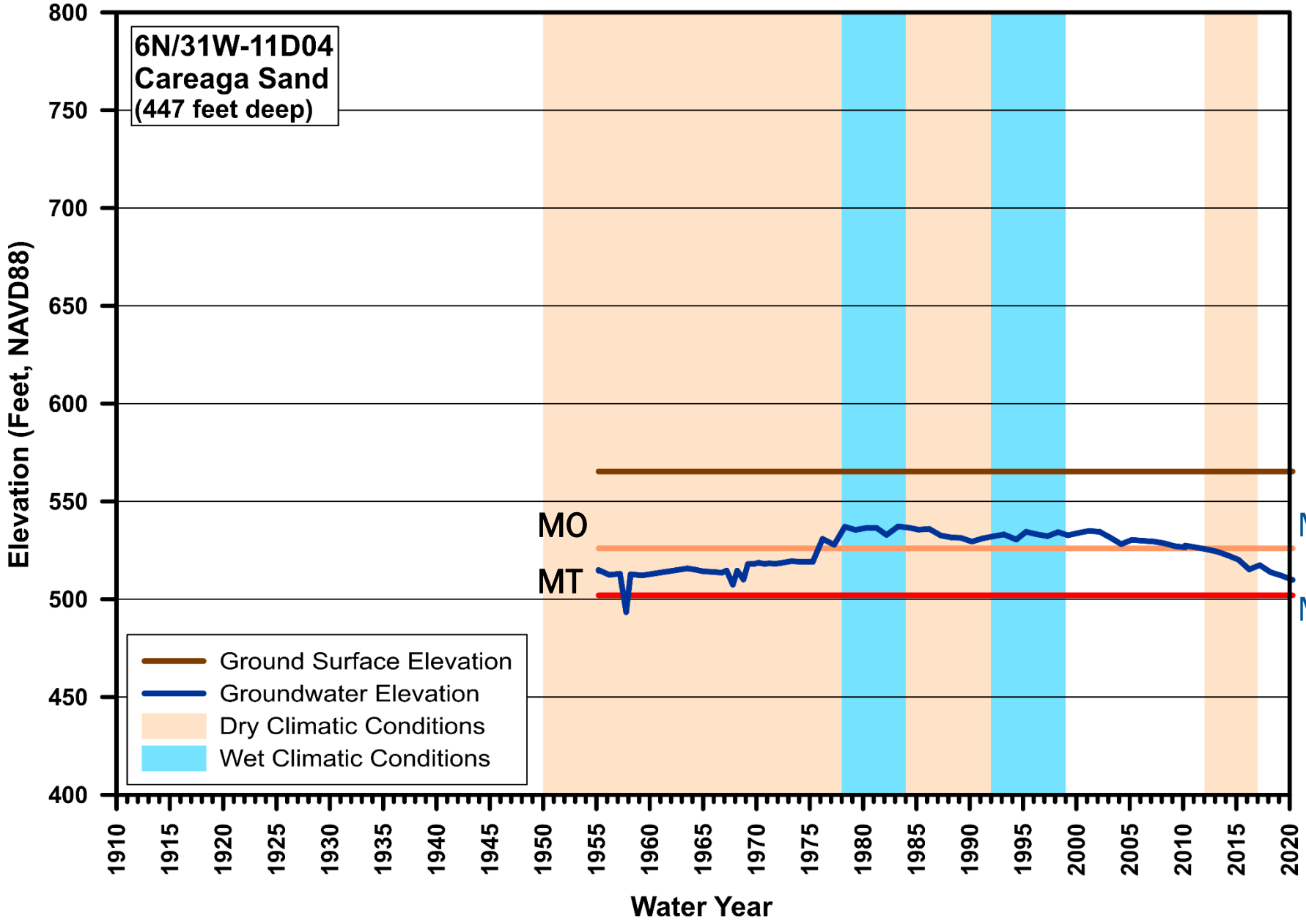


Measurable Objective: 510 feet
Minimum Threshold: 470 feet



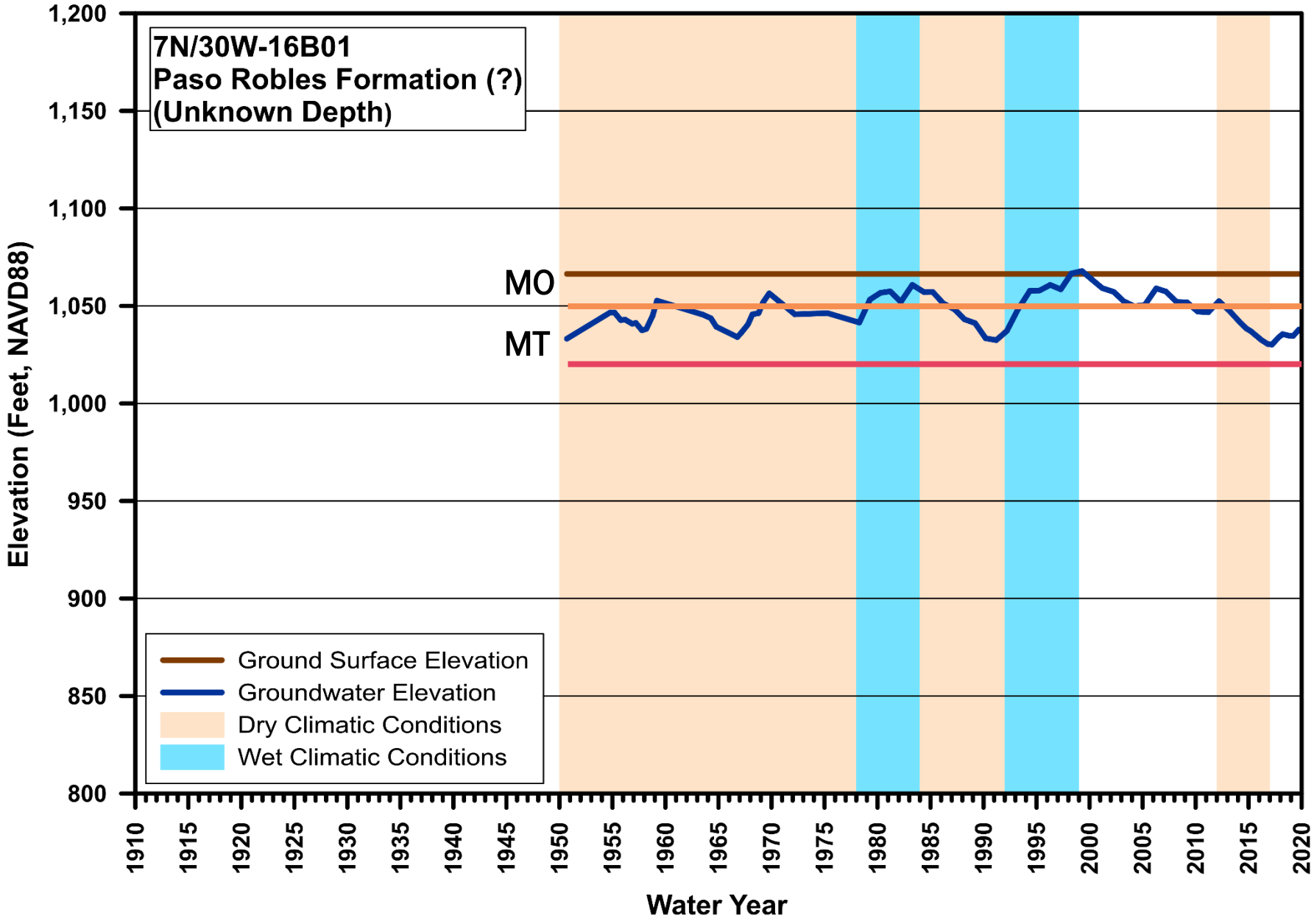
Measurable Objective: 480 feet

Minimum Threshold: 465 feet



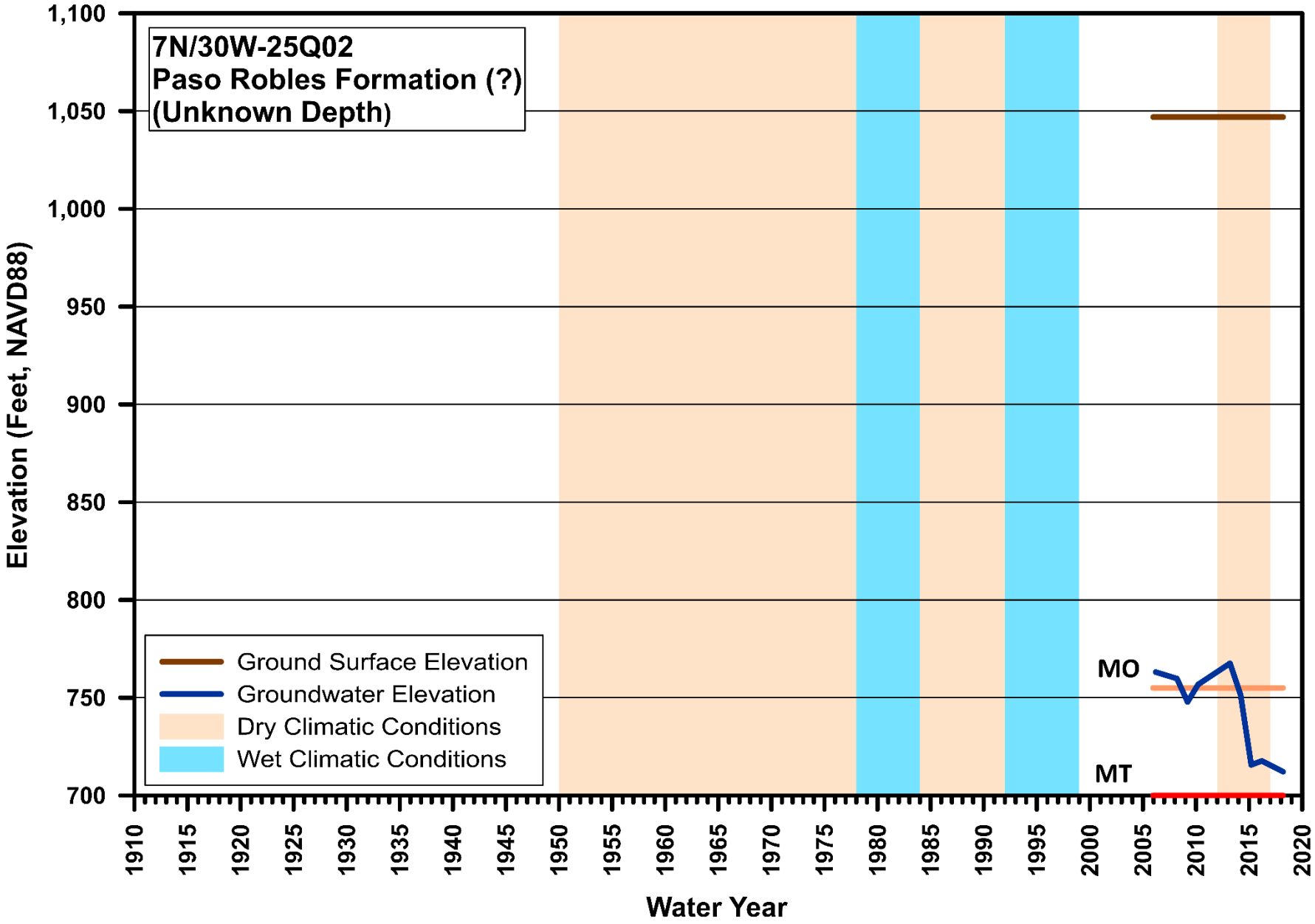
Measurable Objective: 525 feet

Minimum Threshold: 500 feet



Measurable Objective: 1,050 feet

Minimum Threshold: 1,020 feet



Measurable Objective: 755 feet

Minimum Threshold: 700 feet

Sustainable Management Criteria Summary

Chronic Reduction of Groundwater in Storage

Potential Undesirable Results	Minimum Threshold	Measurable Objective	Interim Milestones
• Chronic reduction of groundwater in storage that is commensurate with chronic reduction in groundwater levels. • Significant number of existing agricultural, municipal, and domestic wells are unable to produce usual historical quantities of water. • Groundwater in storage continues to decrease over multiple years in the future.	Same as chronic water level decline. Groundwater levels are a proxy for storage.	Same as chronic water level decline.	Same as chronic water level decline.

Sustainable Management Criteria Summary

Degraded Water Quality

Potential Undesirable Results	Minimum Threshold	Measurable Objective	Interim Milestones
• Concentrations of regulated contaminants in municipal, private domestic, or agricultural wells exceed regulatory thresholds caused by pumping or GSA actions. • Groundwater pumping causes concentrations of salts and nutrients (total dissolved solids (TDS), chloride, boron, nitrate and sulfate) to exceed Basin Plan Water Quality Objectives.	• No minimum threshold set for regulated contaminants – State is responsible for management. • For salts and nutrients, water quality objectives in basin plan exceeded in three consecutive monitoring events in more than 50 percent of wells or is greater than concentrations present when SGMA was enacted (January 2015).	Quality of groundwater meets basin plan water quality objectives or, is not worse than concentrations present when SGMA was enacted (January 2015).	No interim milestones proposed because there are no known undesirable results.

Sustainable Management Criteria Summary

Depletion of Interconnected Surface Water

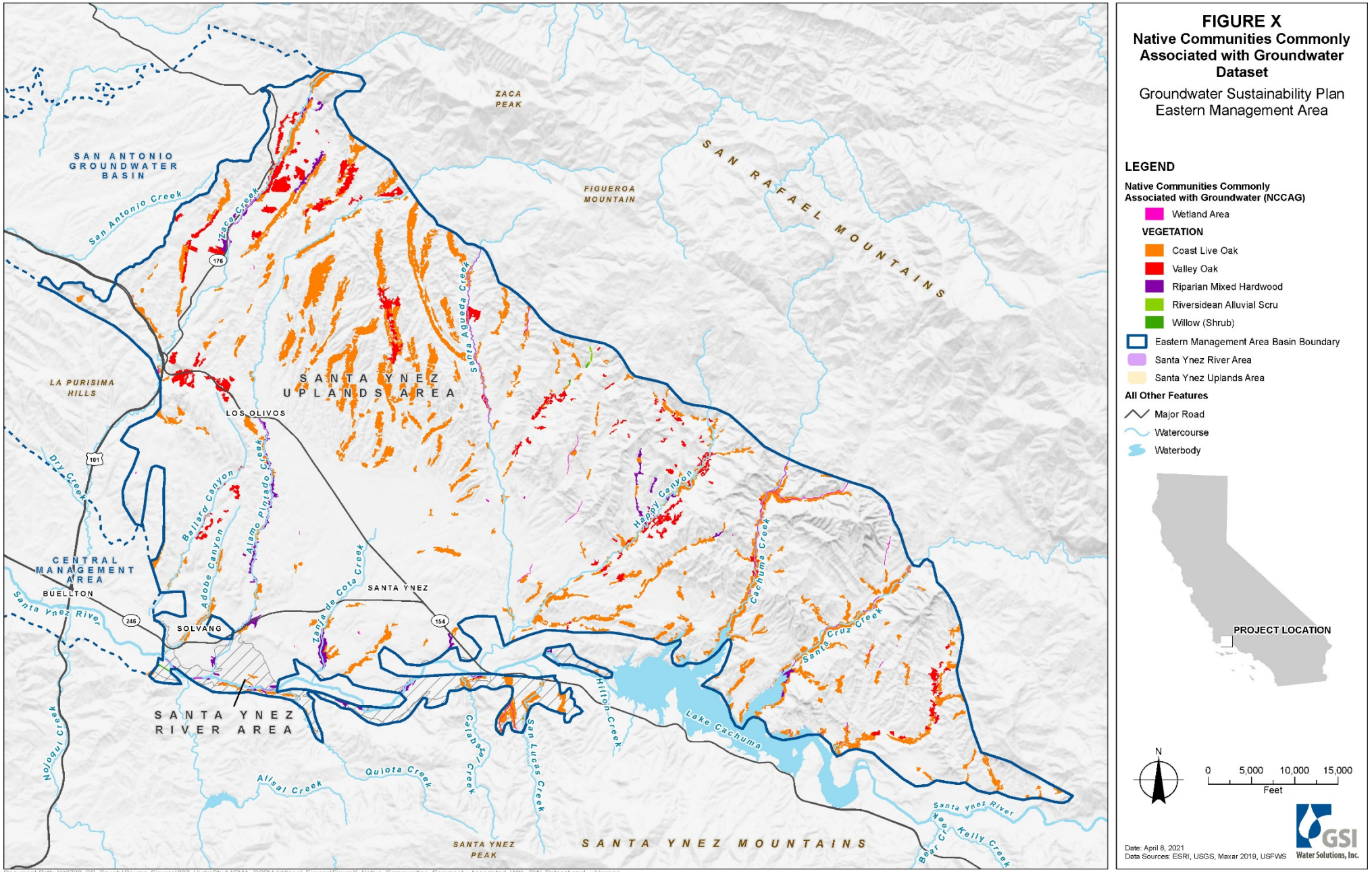
Potential Undesirable Results	Minimum Threshold	Measurable Objective	Interim Milestones
• Category A GDEs present in tributaries are significantly and unreasonably impacted as a result of groundwater pumping when groundwater levels drop below the maximum rooting depth for three consecutive quarters.	• Trigger level for evaluation of depletion of interconnected surface water and impacts to GDEs is an observed groundwater level >15ft. below ground surface measured in a dedicated piezometer within a Category A GDE tributary area.[1]	Groundwater levels within 10 feet of ground surface observed in Category A GDE areas of tributaries.	No interim milestones proposed because there are no known undesirable results.

[1] Monitoring wells in these locations do not yet exist. This is a data gap to be addressed in projects and management actions.

How were Potential GDEs Identified?

- Began with the Native Communities Commonly Associated with Groundwater (NCCAG) dataset
- Screened by 30-foot depth to groundwater [using Spring 2015 water levels]
  - As recommended by TNC

Native Communities Commonly Associated with Groundwater



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30-foot Depth to Groundwater Screening [Spring 2015 water levels]

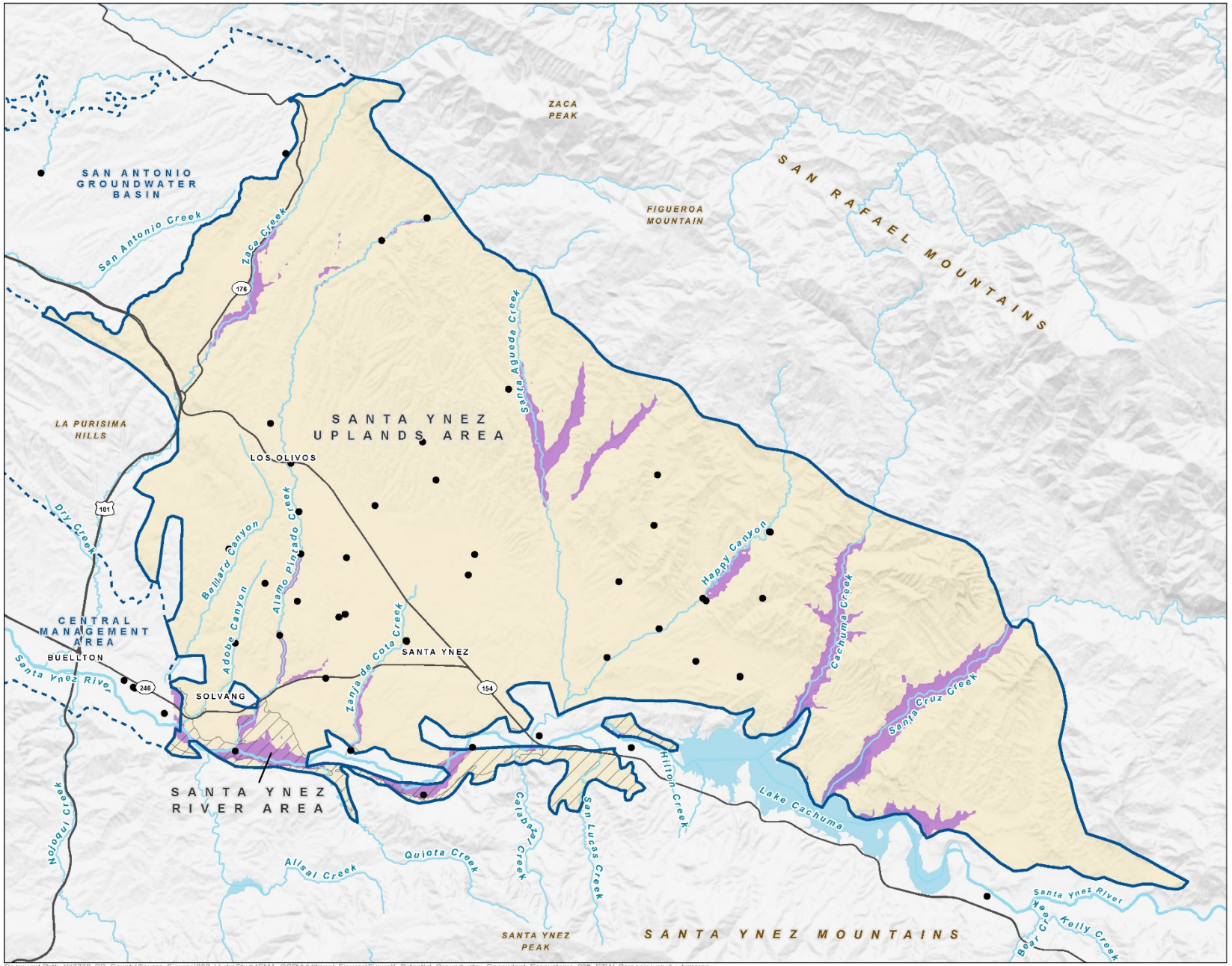

FIGURE X
Potential Groundwater Dependent Ecosystems 30 foot Depth to Groundwater Screening

Groundwater Sustainability Plan
Eastern Management Area

LEGEND

- Spring 2015 Measured Groundwater Elevations

Spring 2015 Depth to Groundwater

- <= 30' Depth To Water
- >30' Depth To Water
- Eastern Management Area Basin Boundary
- Santa Ynez River Area

All Other Features

- Major Road
- Watercourse
- Waterbody

N

0 5,000 10,000 15,000
Feet

Date: April 8, 2021
Data Sources: ESRI, USGS, Maxar 2019, USFWS

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Potential GDEs after 30-foot depth to Groundwater Screening

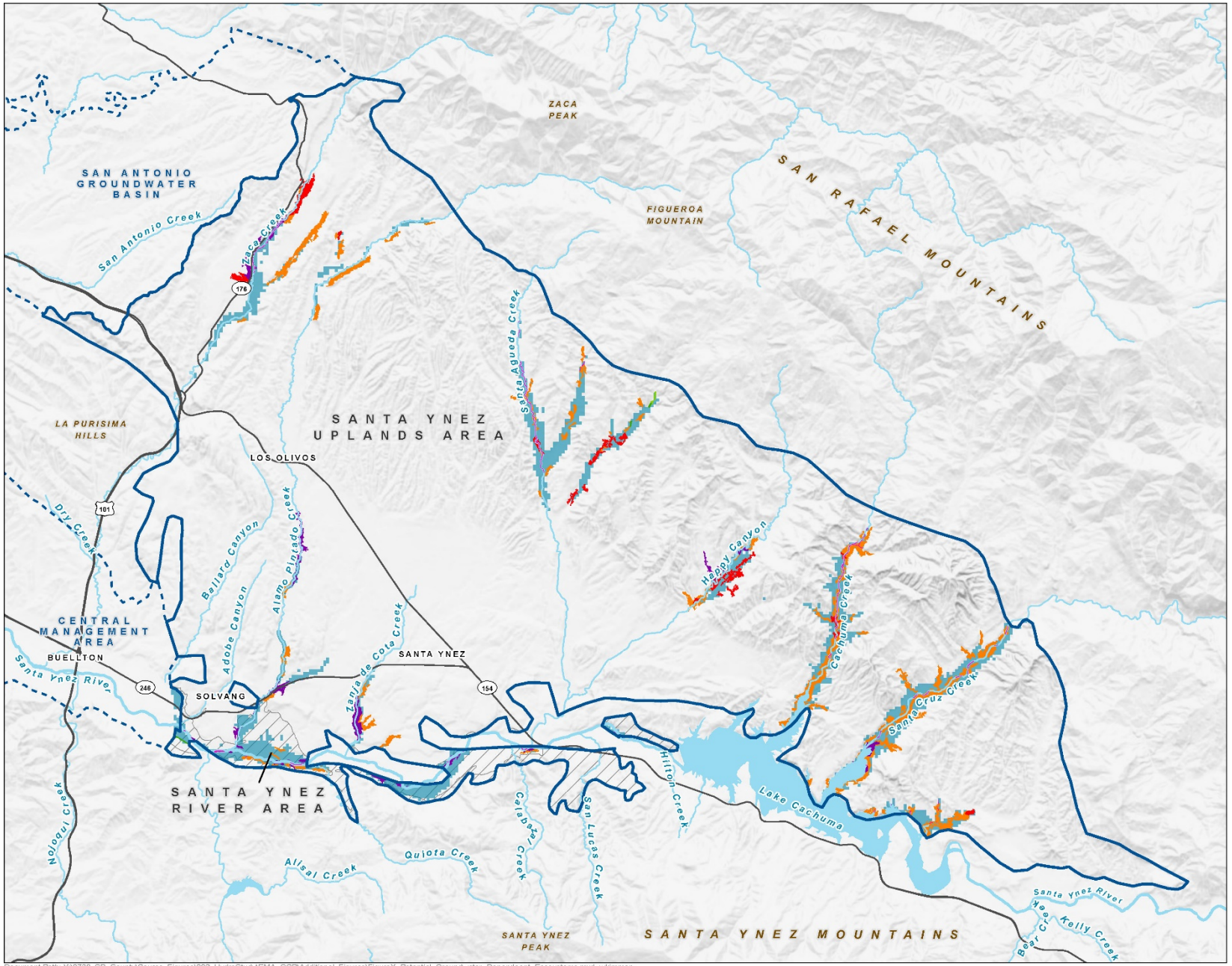

FIGURE X

Potential Groundwater Dependent Ecosystems

Groundwater Sustainability Plan
Eastern Management Area

LEGEND

Native Communities Commonly Associated with Groundwater (NCCAG)

- Wetland Area (31 acres)

VEGETATION

- Coast Live Oak (1,320 acres)
- Valley Oak (280 acres)
- Riparian Mixed Hardwood (338 acres)
- Riversidean Alluvial Scrub (5 acres)
- Willow (Shrub) (7 acres)
- Spring 2015 Depth to Water – Less than 30 feet
- Eastern Management Area Basin Boundary
- Santa Ynez River Area
- Santa Ynez Uplands Area

All Other Features

- Major Road
- Watercourse
- Waterbody

N

0 5,000 10,000 15,000
Feet

Date: April 8, 2021
Data Sources: ESRI, USGS, Maxar 2019, USFWS

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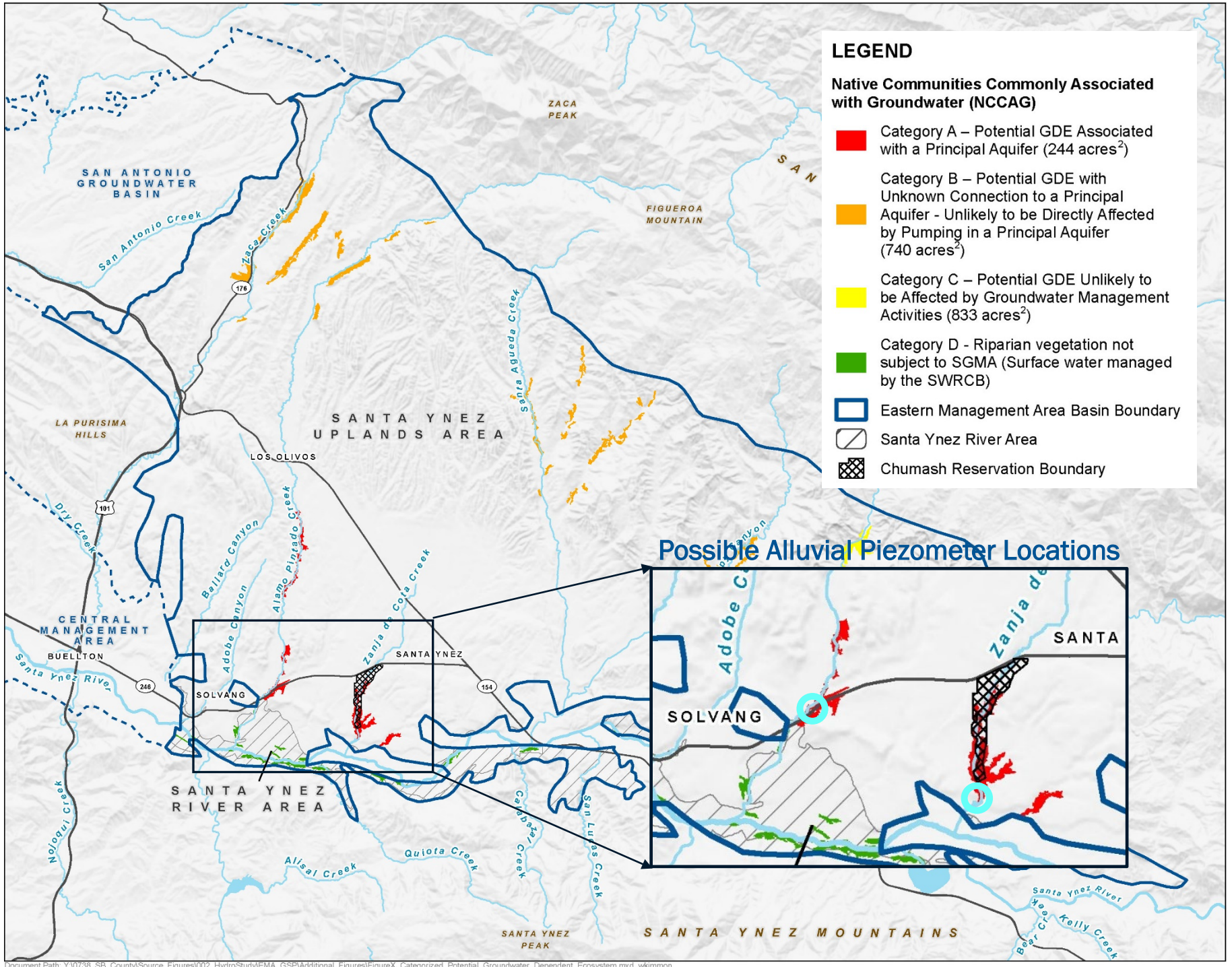
Categorized Potential GDEs



Sustainable Management Criteria Summary

Subsidence

Potential Undesirable Results	Minimum Threshold	Measurable Objective	Interim Milestones
• Significant and unreasonable subsidence caused by groundwater extraction exceeds the annual rate observed at InSAR monitoring station located in Santa Ynez and • Causes damage to structures and infrastructure and substantially interferes with surface land uses.	Rate of subsidence exceeds 1.0 inch per year measured at the InSAR monitoring station located in Santa Ynez, caused by EMA groundwater pumping and results in damage to surface land uses.	Average rate of subsidence (0.5 inches per year) as a result of pumping.	No interim milestones proposed because there are no known undesirable results.

Next Steps

- Receive comments on recently released Draft Water Budget section
- Continued development of Sustainable Management Criteria based on stakeholder feedback
- Preparation of Sustainable Management Criteria Section of GSP
- Develop monitoring plan
- Develop list of possible Management Actions and Projects

Thank you!

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Photo Credit: Jeremy Ball, Courtesy of Longoria Wines