

2022 Mission Creek Subbasin Alternative Plan Update

WORKSHOP #3
MAY 11, 2021



- Introductions
- Alternative plan overview
- Recap of public workshops 1 and 2
- Overview of the future
 - Water demand projections
 - Supply projection assumptions
 - Baseline groundwater model results
 - Assumptions for future scenarios (new supplies, improved reliability, drought and climate change)
 - Sustainable management criteria
- Public comment

Introductions

MCSB Management Committee

Coachella Valley Water District (CVWD)

Desert Water Agency (DWA)

Mission Springs Water District (MSWD)

Consultants

Wood Environment & Infrastructure Solutions, Inc.

Richard Rees, P.G., C.Hg.

David Bean, P.G., C.Hg.

Kennedy Jenks Consultants

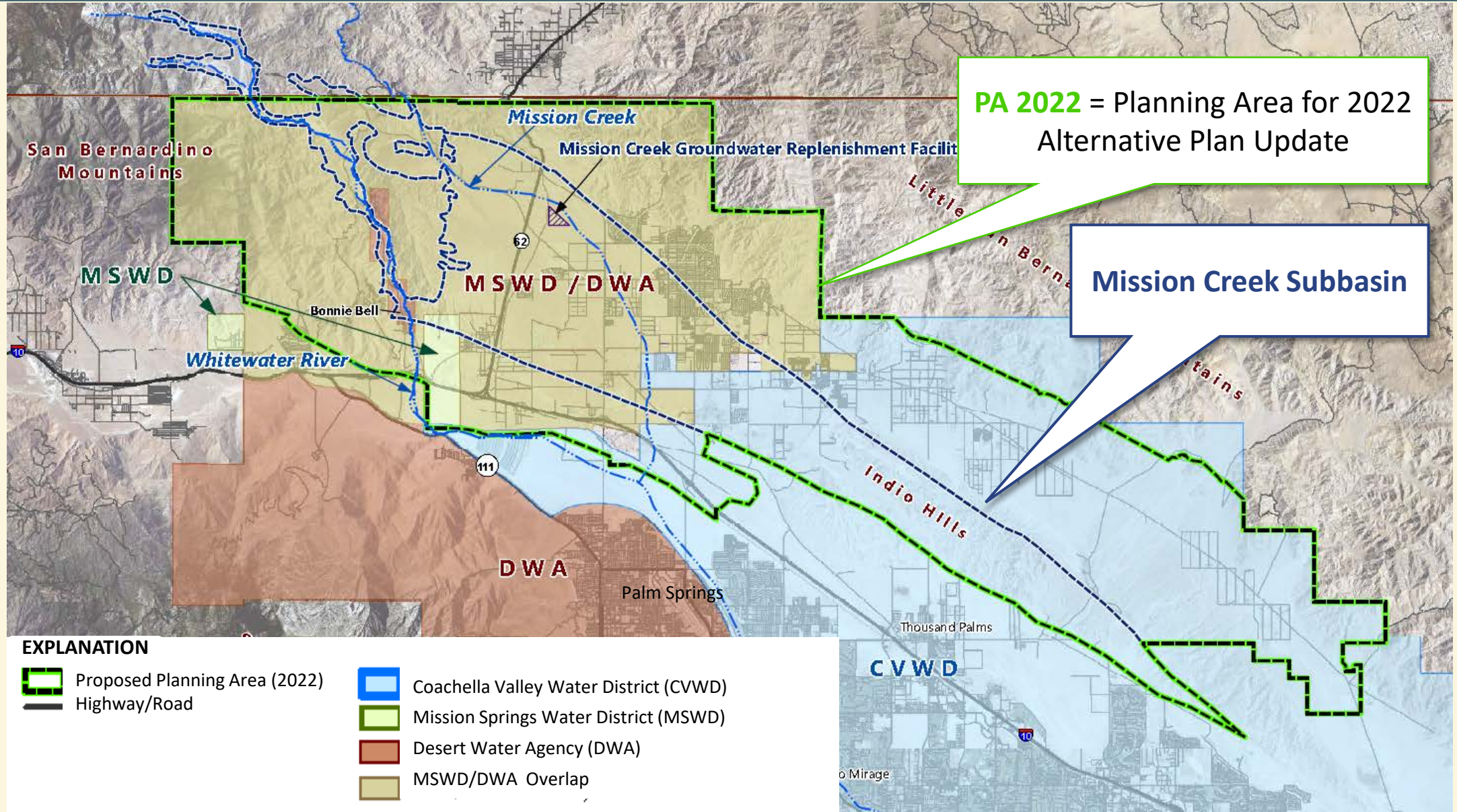
Sachi Itagaki, P.E.

Connor Rutten, P.E.

Rachel Druffel-Rodriguez, P.E.



Management Committee Agencies



The Virtual Experience: Comments

The image shows a screenshot of a Microsoft Teams meeting interface. On the left is a navigation pane with icons for Activity, Chat, Teams, Calendar, Calls, Files, and Apps. The main area displays a circular profile picture of a woman and the text "Waiting for others to join...". Below this is a call control bar with icons for mute, video, screen share, and chat. A blue arrow points from a text box to the chat icon in the call control bar. On the right, a "Meeting chat" panel is open, showing a message "Melanie Rivera joined the meeting." and a text input field with the placeholder "Type a new message". A blue arrow points from the text box to the input field.

Search or type a command

Activity
Chat
Teams
Calendar
Calls
Files
...

Waiting for others to join...

00:29

Click on speech bubble icon to open "Chat" for comments and questions

Meeting chat

Melanie Rivera joined the meeting.

Type comments or questions here

Type a new message

The Virtual Experience: Polls

The screenshot shows a Microsoft Teams meeting interface. On the left is a navigation pane with icons for Activity, Chat, Teams, Calendar, Calls, Files, Apps, and Help. The main area displays a circular profile picture of a woman and the text "Waiting for others to join...". At the bottom is a meeting control bar with icons for mute, video, screen share, and others. On the right, a "Meeting chat" window is open, showing a message from Melanie Rivera: "8:54 AM https://forms.office.com/Pages/ResponsePage.aspx?id=EA5B4LC8yUeqVGPcvTp6MqUQcFHhOU1GpR6uPC_O4iJUQ1kyUVpKNFdEMTRJWDI3TUVPM0hWVzBHty4u See less". A blue callout box with the text "Sometimes, there will be a link to a poll. Click on the link" has an arrow pointing to the poll link in the chat.

The Virtual Experience: Polls

The screenshot shows a Microsoft Forms poll titled "I represent:". The poll question is "1. I represent:". The options are radio buttons for "General Public", "Planning Agency", "Water Agency", "Business", "Community non-profit", "Tribe", "Consultant", and "Other". The "Other" option is followed by a text input field. A green callout box on the left contains the text "Fill out the poll and click 'Submit'", with a blue arrow pointing to a green "Submit" button at the bottom of the form. The browser address bar shows the URL: forms.office.com/Pages/ResponsePage.aspx?id=EA5B4LC8yUeqVGPcvTp6MqUQcFHhOU1GpR6uPC_O4iUQ1kyUVpKNFdeMTRJWDI3TUVPM0hWVzBHTy4u. The browser's taskbar shows various applications like KJNet, Teams, OneDrive, SharePoint, CVWD OneDrive, Wood Drive, CVWD Comm, and D&I.

I represent:

1. I represent:

- General Public
- Planning Agency
- Water Agency
- Business
- Community non-profit
- Tribe
- Consultant
- Other

Submit

Never give out your password. [Report abuse](#)

Go to “Comments” Box for Poll Link

I represent:

1. General public
2. Planning agency
3. Water agency
4. Business
5. Community non-profit
6. Tribe
7. Consultant
8. Other

Did you attend Public Workshop #1?

Yes

No

Did you attend Public Workshop #2?

Yes

No

Alternative Plan Overview

SGMA: Sustainable Groundwater Management Act

- Signed into law in September 2014
- Provides framework for sustainable groundwater management over 20 years
- Supports local management via Groundwater Sustainability Agencies (GSAs)

SGMA Requirements

- GSAs must submit plans (Groundwater Sustainability Plan (GSP) or Alternative Plan) and annual reports to the California Department of Water Resources (DWR), and demonstrate progress towards achieving sustainable management
- GSP or Alternative Plan updates due every 5 years
- MCSB Alternative Plan submitted to DWR in December 2016 and approved by DWR in July 2019
- First Mission Creek Subbasin (MCSB) Alternative Plan update due by January 1, 2022

What is a GSA?

- **GSA:** Groundwater Sustainability Agency
- Consists of one or more local governmental agencies that implement the provisions of SGMA
- Formation of a GSA is required in high- and medium-priority basins
- MCSB has been designated a medium-priority basin

- **Basin Priority is Based On:**



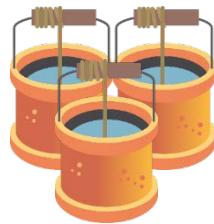
Total
Population



Population
Growth



of Public
Wells



of Total
Wells



Irrigated
Acreage



Groundwater
Reliance



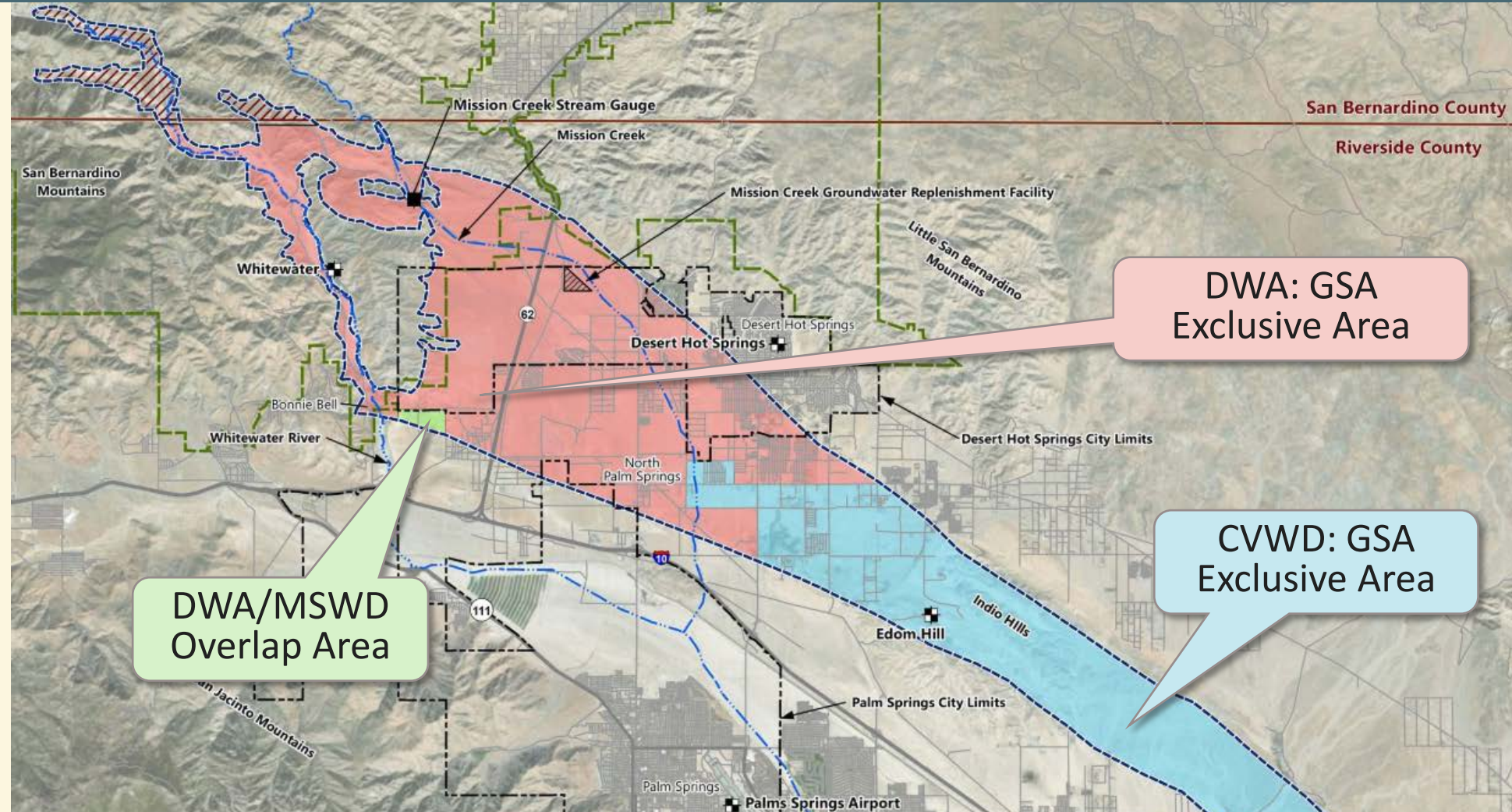
Groundwater
Impacts



Other Adverse
Impacts

GSA in the Mission Creek Subbasin (MCSB)

- GSAs include CVWD and DWA
- Management Committee includes CVWD, DWA, and MSWD



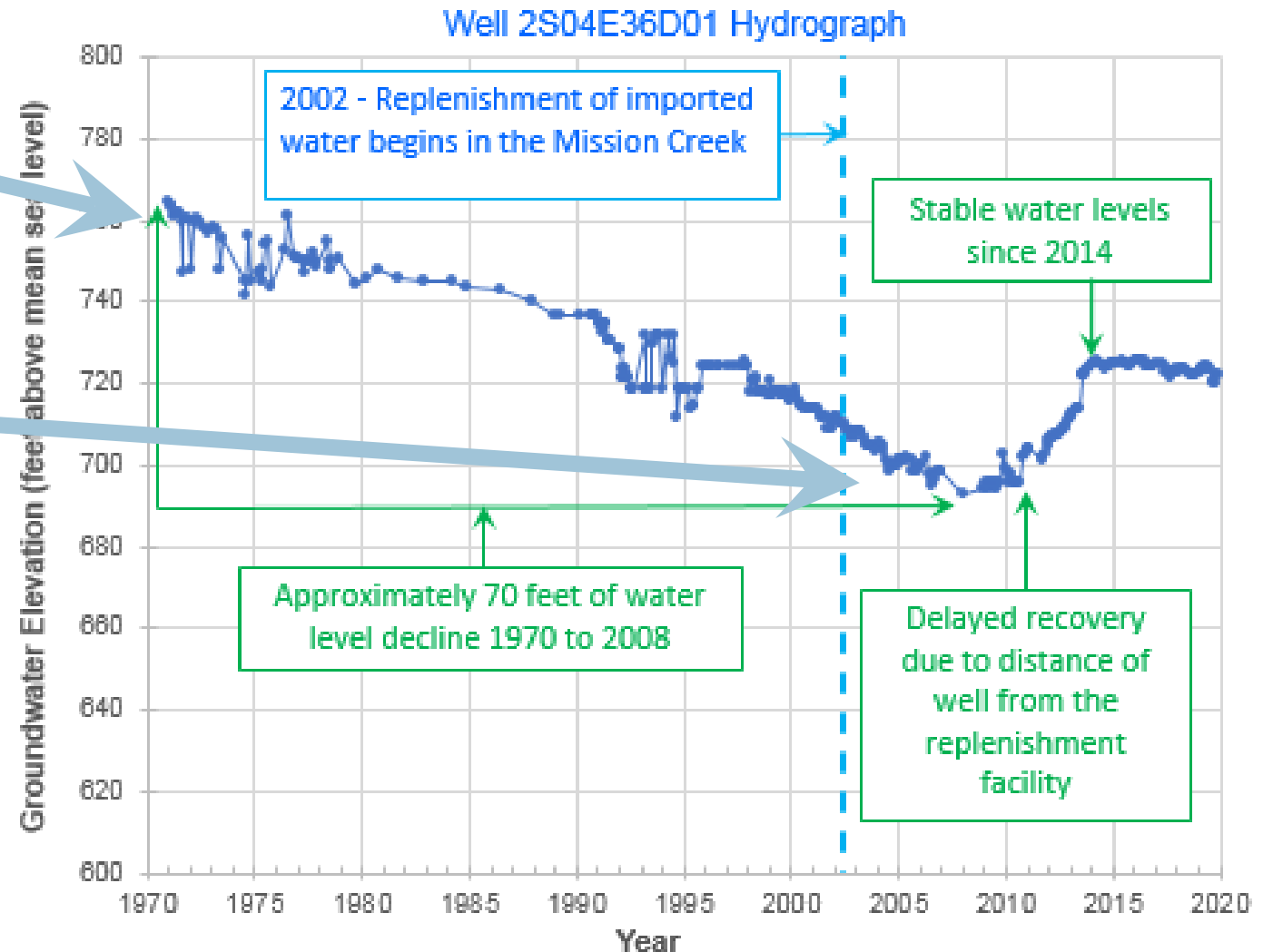
Explanation

- ☒ Rain gauge location
- ☒ Stream gauge location
- ▭ Mission Creek Subbasin
- ▭ Sand to Snow National Monument (Bureau of Land Management)
- ▨ Mission Creek Subbasin fringe area
- ▬ Highway/road

- ▬ Streams
- ▭ Groundwater Sustainability Agency (GSA) Areas
- ▭ Coachella Valley Water District (GSA Exclusive Area)
- ▭ Desert Water Agency (GSA Exclusive Area)
- ▭ Overlap area

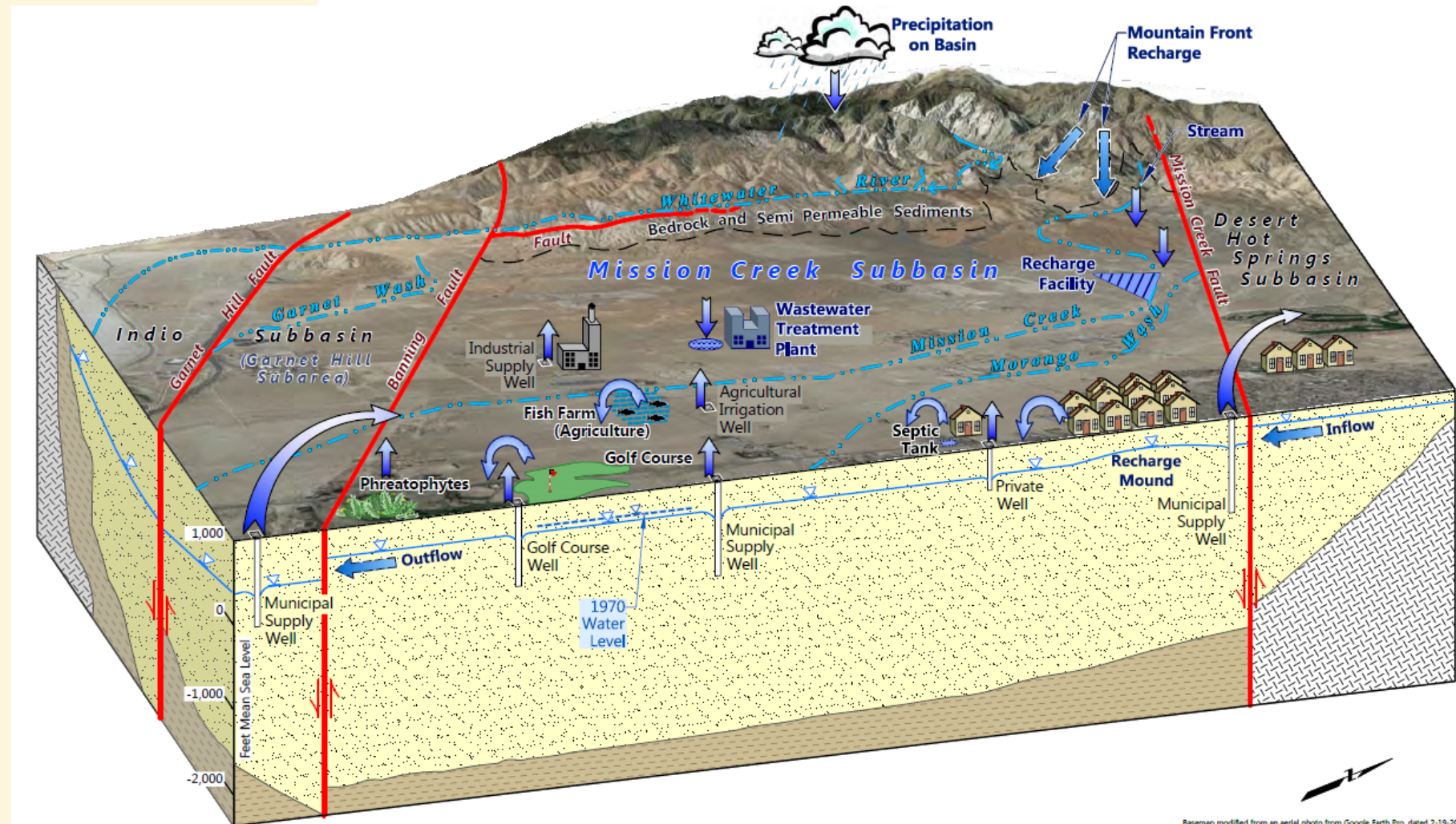
Note:
Overlap area of GSA Notices by
Desert Water Agency and Mission
Springs Water District.

- Groundwater levels steadily declined in the MCSB as water use increased with population
- Recharge of imported water and reduced demand through conservation has reversed this trend



Public Workshop #2 Summary

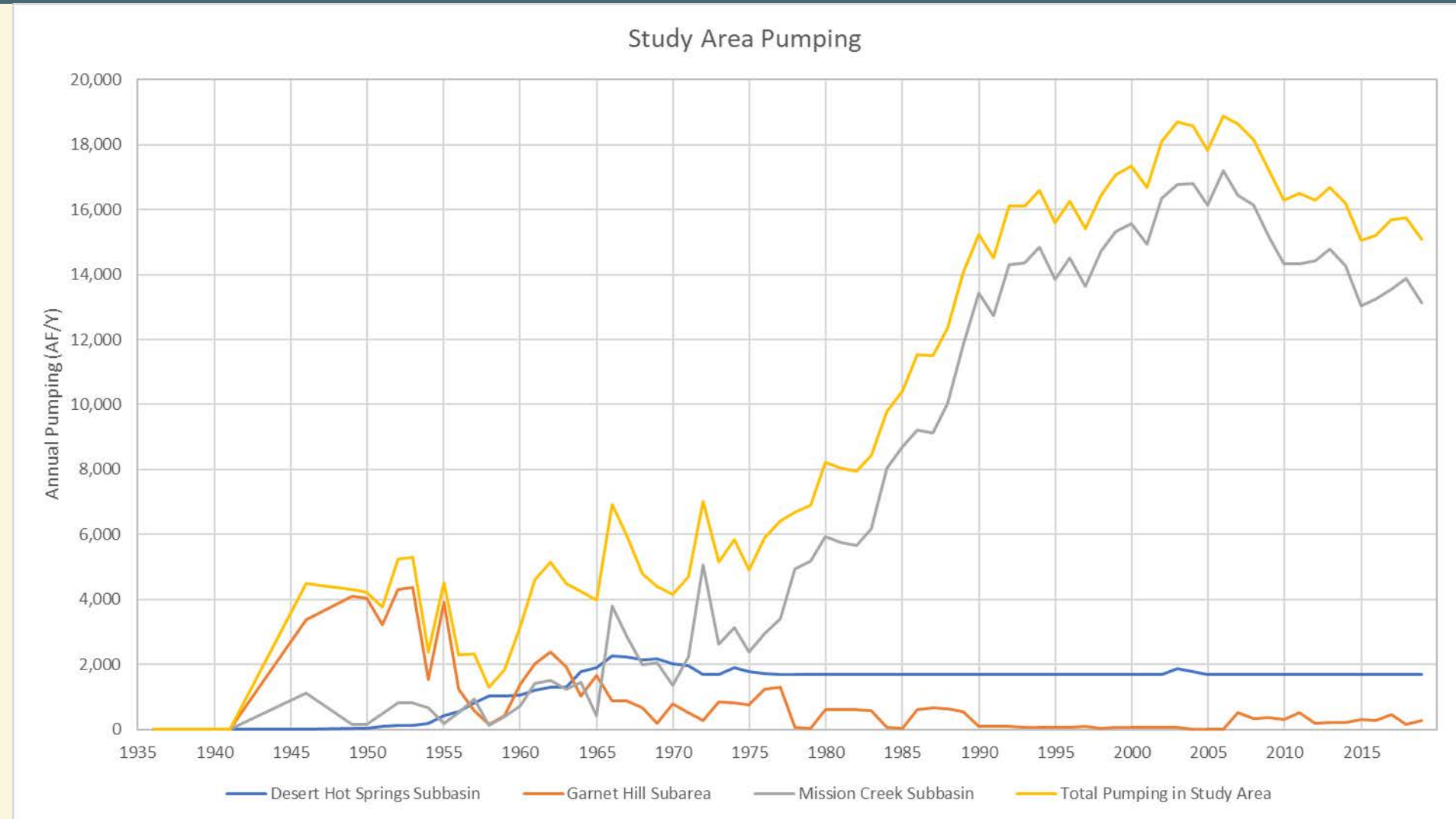
- Hydrogeologic Conceptual Model (HCM) overview
- Recharge sources are highly variable
- Most pumping occurs in MCSB
- Groundwater model overview
- Population projections



Basemap modified from an aerial photo from Google Earth Pro, dated 2-19-2018.

Public Workshop #2 HCM– Groundwater Pumping

- Most of the pumping occurs in MCSB
- Pumping in Garnet Hill Subarea (GHSA) of the Indio Subbasin has declined and is currently in the range of 100 AF per year
- DHSSB is private pumping and is estimated



Pumping estimates prior to 1978 from PSOMAS model estimates

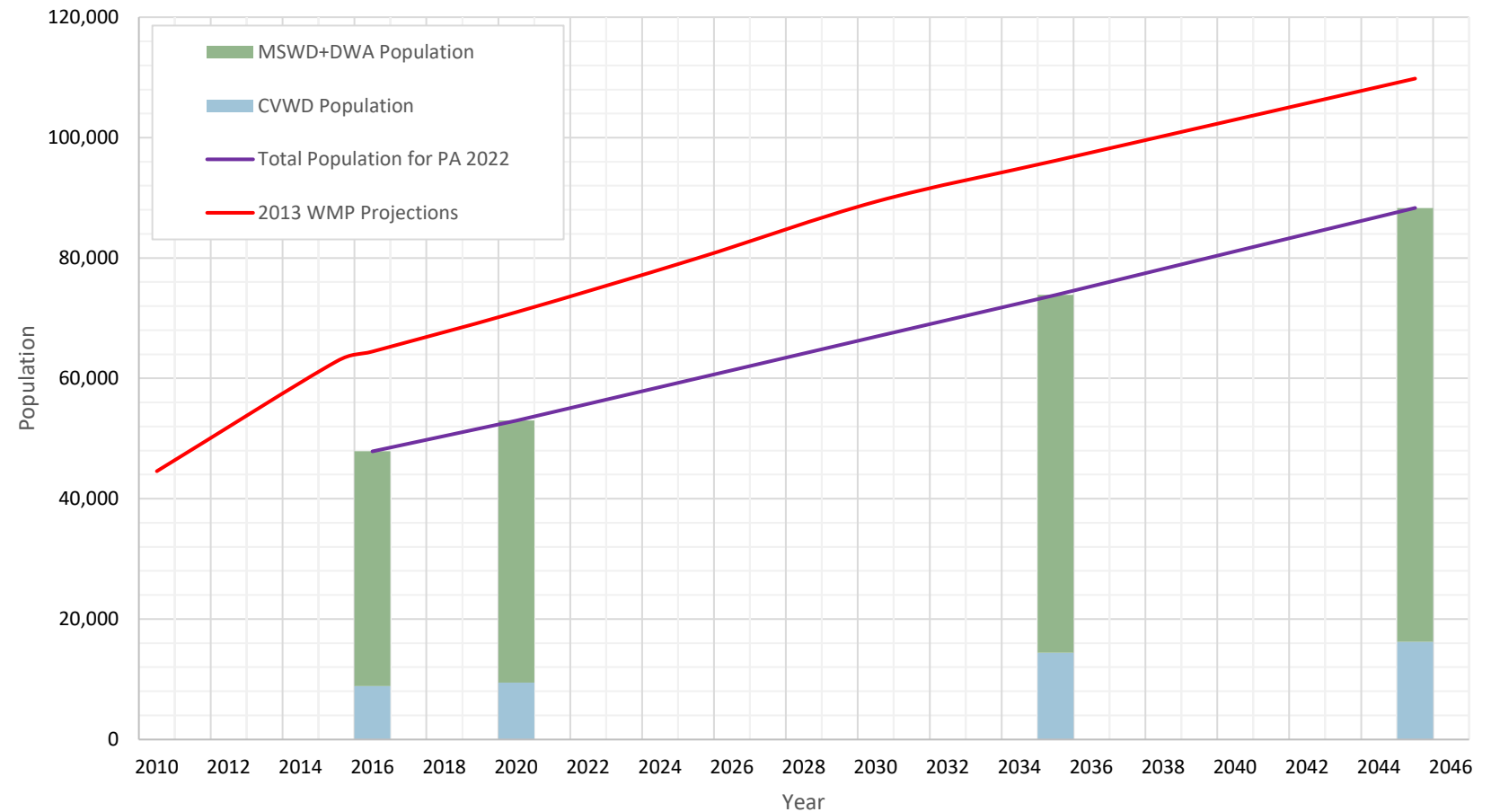
Pumping estimates from 1978 to present based on Agency records

Pumping from DHSSB is private pumping and is estimated from Mayer et al., 2007

Public Workshop #2: Population Projections

- 2013 WMP projections anticipated higher short-term growth than what occurred
- 2013 WMP projections were higher nearly 20% higher than actual 2016 estimates prepared by Southern California Area of Governments

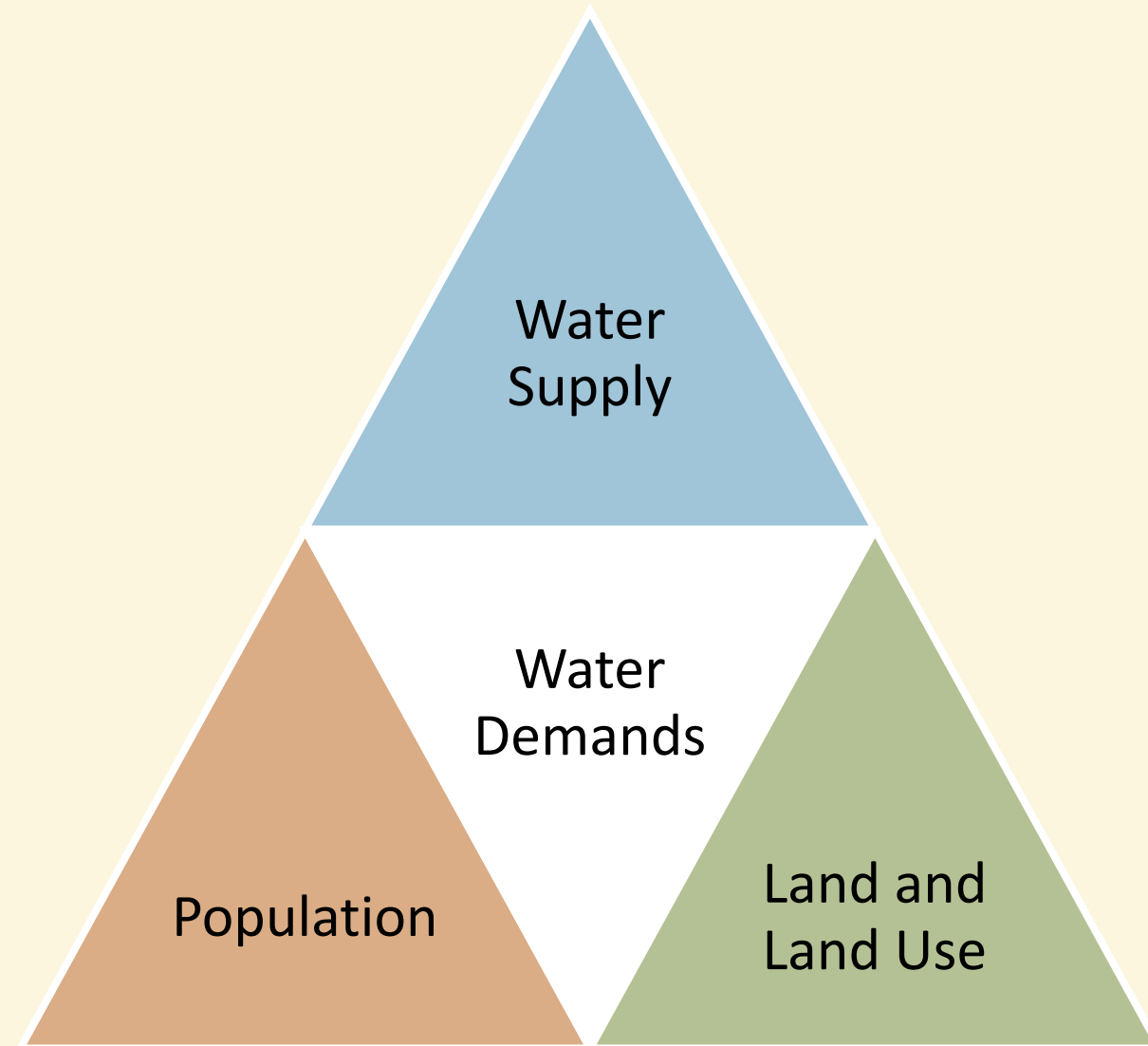
Population Projections – 2013 WMP vs 2016 SCAG



PA 2022 = Planning Area for 2022 Alternative Plan Update

Overview Of The Future

Future Groundwater Conditions Are Built On:



- Used recent meter data to estimate water usage by land use type by acre
 - Adjusted future water usage for each land use type for passive conservation*
- Identified undeveloped parcels for potential future development to estimate ultimate buildout demand
- Estimate demand increase over time by assuming the demand growth rate is same as the identified population growth rate

* Passive conservation occurs when toilets, faucets, and appliances are replaced by higher efficiency devices as the devices end their useful life

Used Historic Metered Consumption to Estimate Typical Usage for Each Land Use Type

$$\begin{array}{ccc} \text{Consumption} & & \text{Acres of Land} \\ \text{by Land Use}^* & \times & \text{of Same Land} \\ \text{(AFY/Acre)} & & \text{Use (Acres)} \\ & & = \\ & & \text{Total} \\ & & \text{Consumption} \\ & & \text{by Land Use} \\ & & \text{(AFY)} \end{array}$$

* Adjustments Made to Reflect Passive Water Conservation

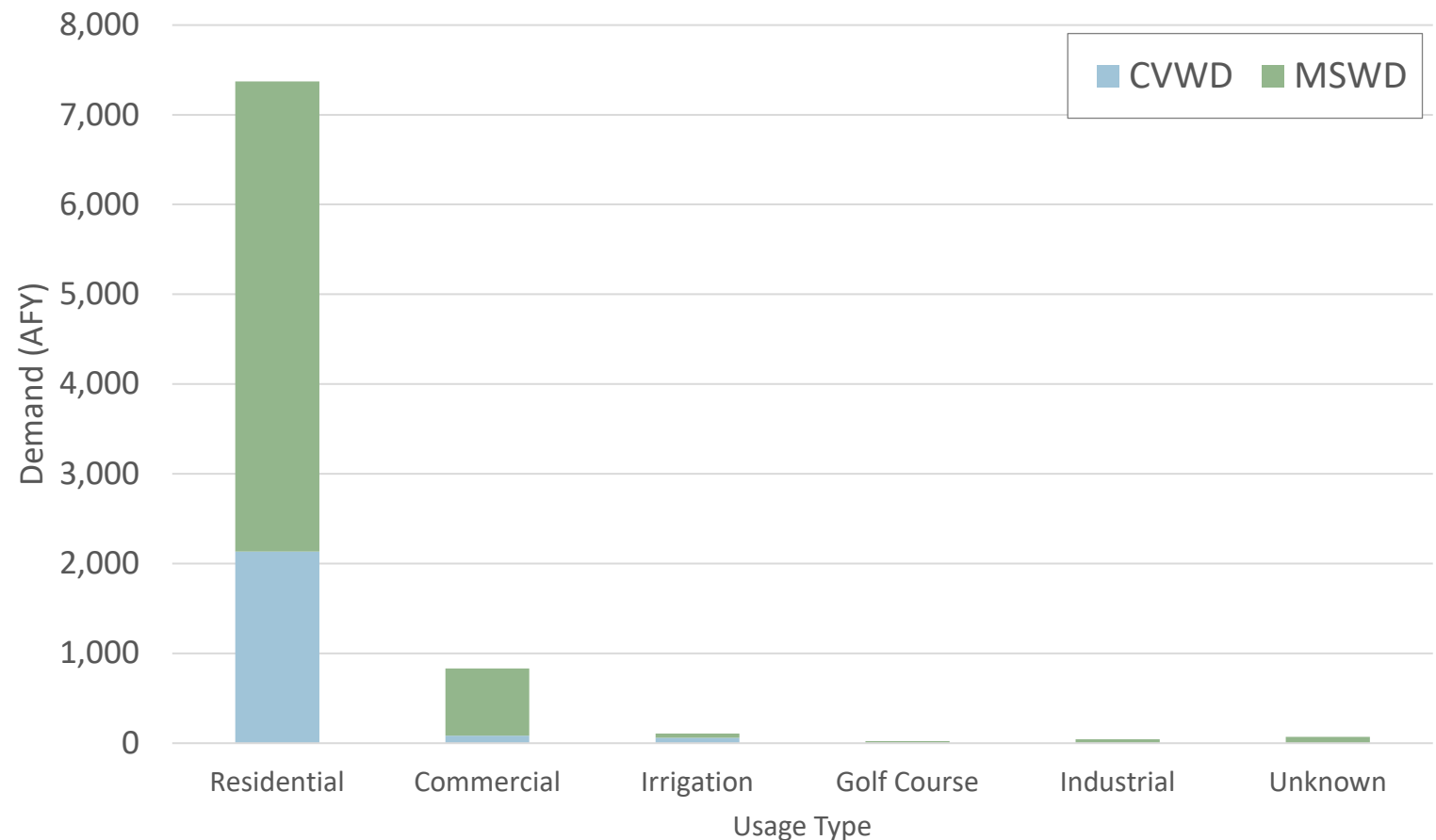
Historic Municipal Water Usage by Land Use

Usage Type by Land Use*	2014-2019 Average Consumption (AFY)**	
	CVWD	MSWD
Residential	2,134	5,238
Commercial	83	748
Irrigation	60	46
Golf Course	3	21
Industrial	1	42
Unknown	0	69
Grand Total	2,280	6,164

* Riverside County Land Use

** Does Not Include Private Pumping

Consumption by Usage Type in PA 2022



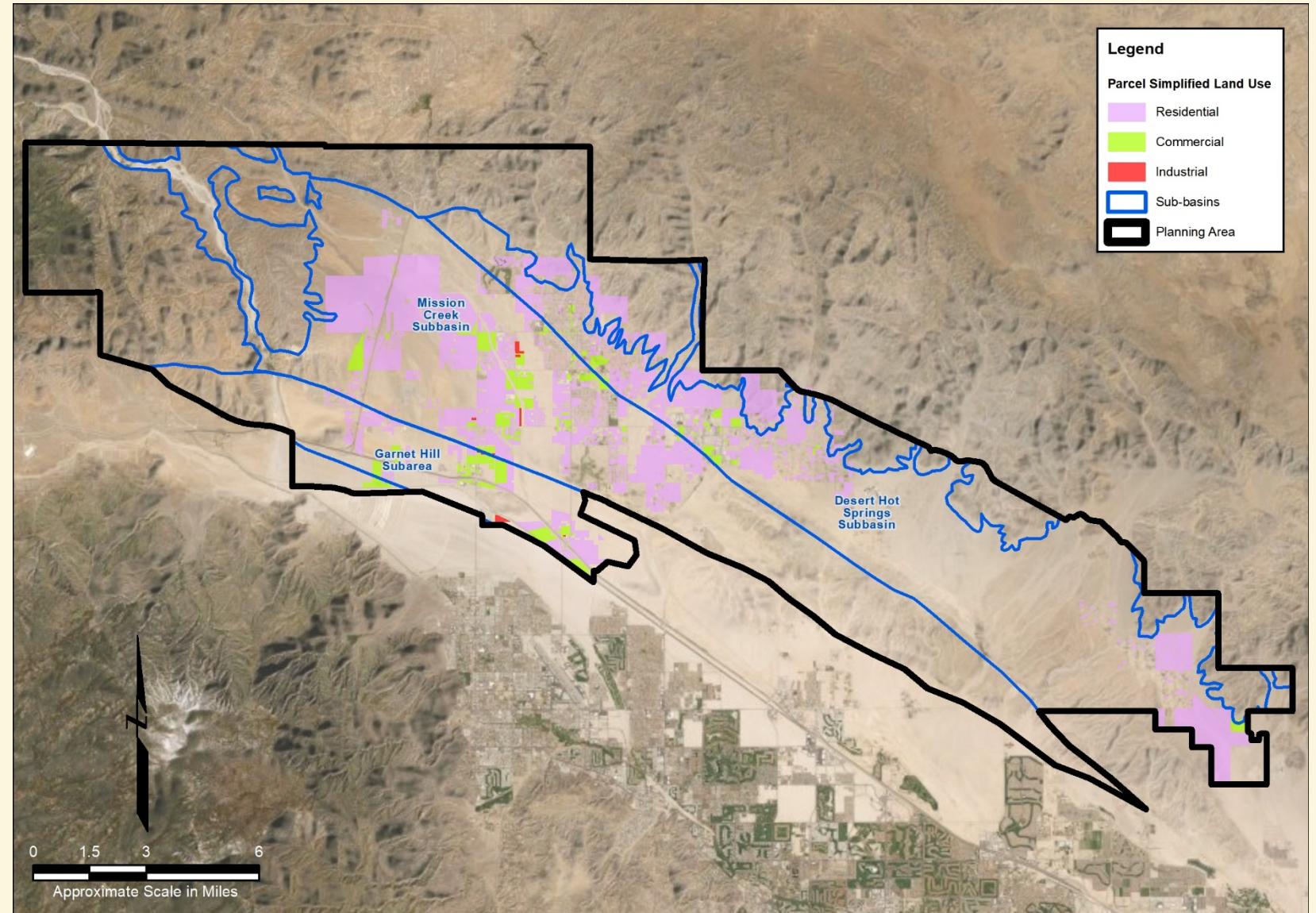
Undeveloped Parcels by Land Use

- The Remaining 8,293 Undeveloped Parcels in CVWD and MSWD Account for 21,882 Acres in the Planning Area as Categorized by Riverside County Land Use Usage Type

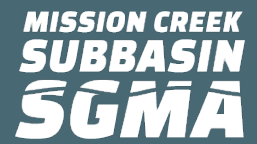
	CVWD		MSWD	
Usage Type	Acreage	# Parcels	Acreage	# Parcels
Residential	7,395	1,441	12,062	6,144
Commercial	501	61	1,827	632
Industrial	46	3	51	12
Total	7,942	1,505	13,940	6,788

Remaining Undeveloped Parcels by Classification

- Refined undeveloped parcel classification based on:
 - Relevant General/ Specific Plans
- Parcels removed from future development consideration based on:
 - Multi Species Habitat Conservation Plan Area
 - Federal Lands Area



Projected Total Municipal Consumption with Passive Conservation



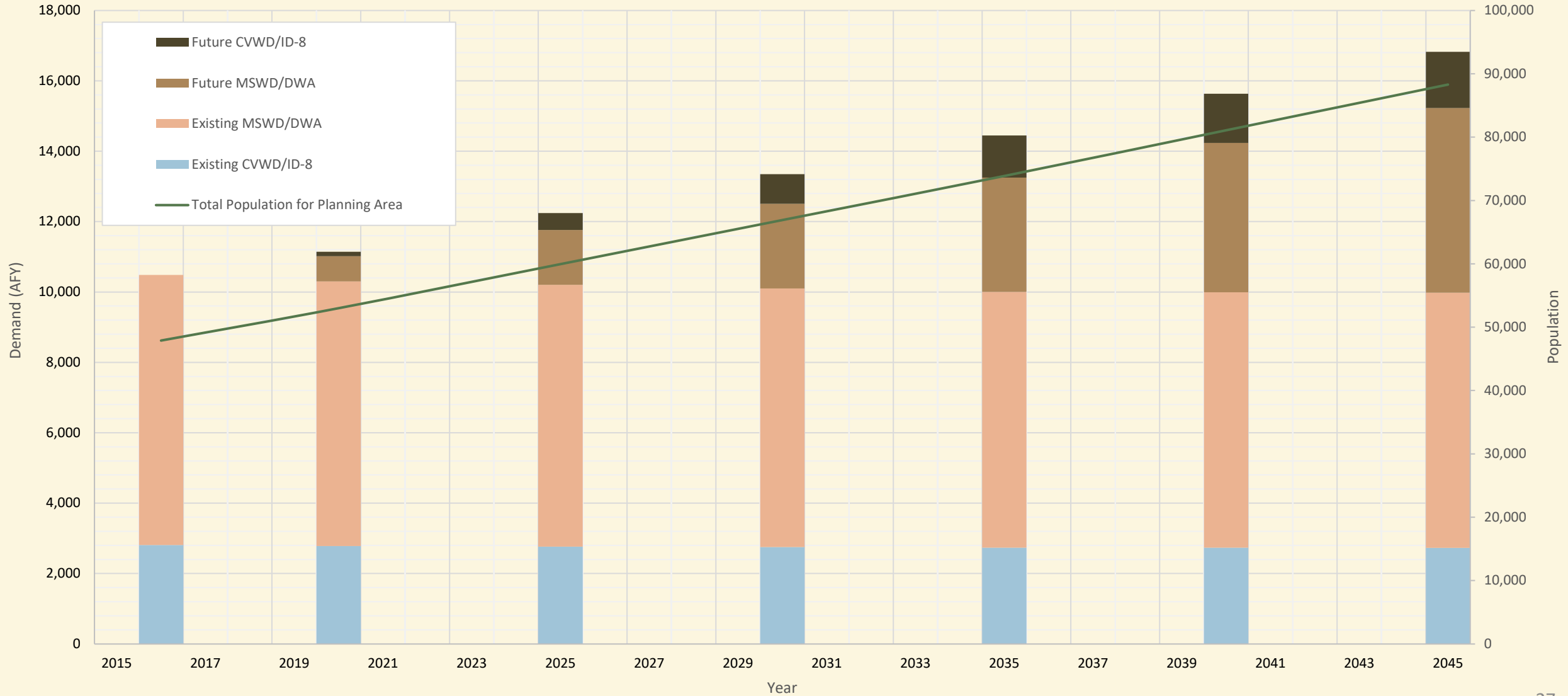
Year	2016	2020	2025	2030	2035	2040	2045
Consumption for Existing Customers with Passive Conservation	9,136	8,974	8,886	8,799	8,711	8,702	8,692
Consumption for Future Customers with Passive Conservation	0	742	1,785	2,829	3,873	4,924	5,976
Total Consumption	9,136	9,715	10,671	11,628	12,584	13,626	14,668
Non-Revenue Water (NRW)	1,349	1,429	1,574	1,718	1,863	2,008	2,154
Total Municipal Demand	10,485	11,145	12,245	13,346	14,447	15,634	16,822

% NRW by Agency		
Agency	CVWD	MSWD/DWA
Average	17.2%*	11.3%*

*Assume existing % NRW

Note:
Additional production from metered/unmetered pumpers accounted for in model. Production rates for these pumpers assumed to be constant over planning period.

Projected Total Municipal Demand with Passive Conservation

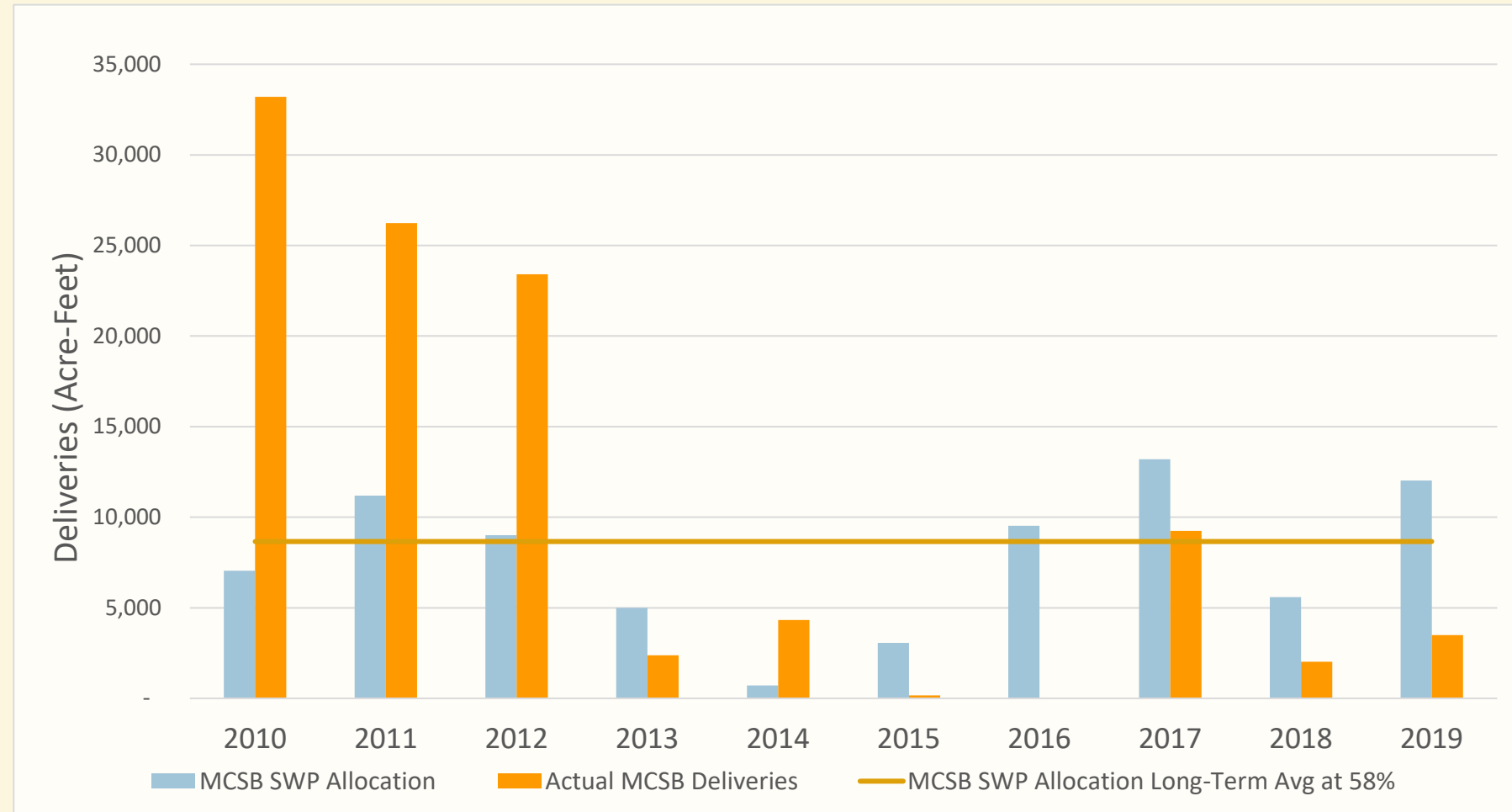


Supply Projections

- Water Conservation
- Groundwater
- Local Runoff
- Future Recycled Water
- Imported Water For Groundwater Replenishment
 - Derives From State Water Project (SWP)
 - SWP Water Exchanged with MWD for Colorado River Water
 - CVWD/DWA SWP Table A Contract is up to 194,100 AFY for both Mission Creek and Indio Subbasins based on pumping
 - Delivered for Recharge at Mission Creek GRF and Whitewater GRF in Indio Subbasin

State Water Project Reliability Is Critical for Imported Water Recharge

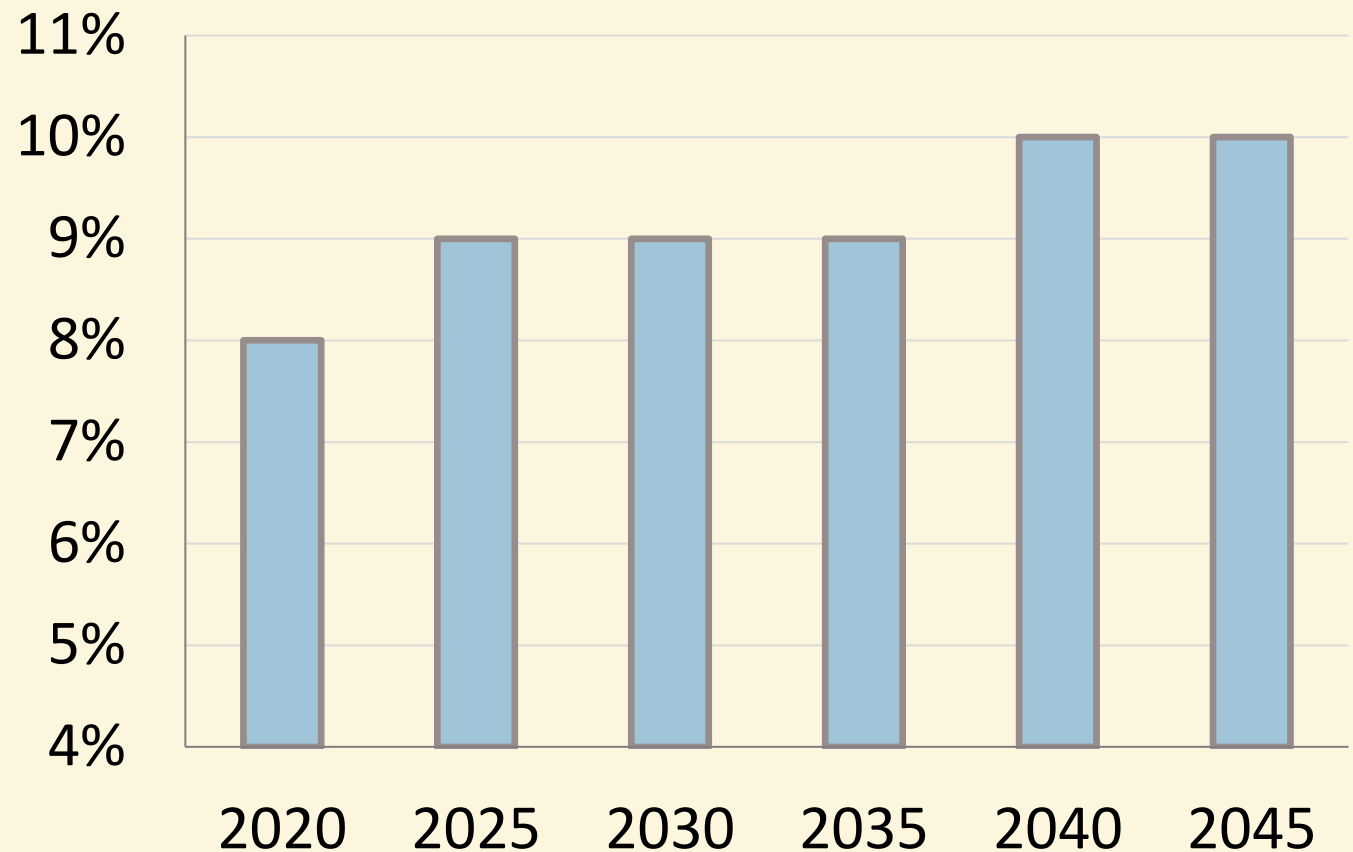
- MCSB SWP Allocation is for Table A and Other SWP Sources
- Actual MCSB Deliveries include:
 - Table A Allocation and Supplemental Water
 - Can Include Advanced Delivery, Which is Accounted for in the Region's SWP Delivery Balance



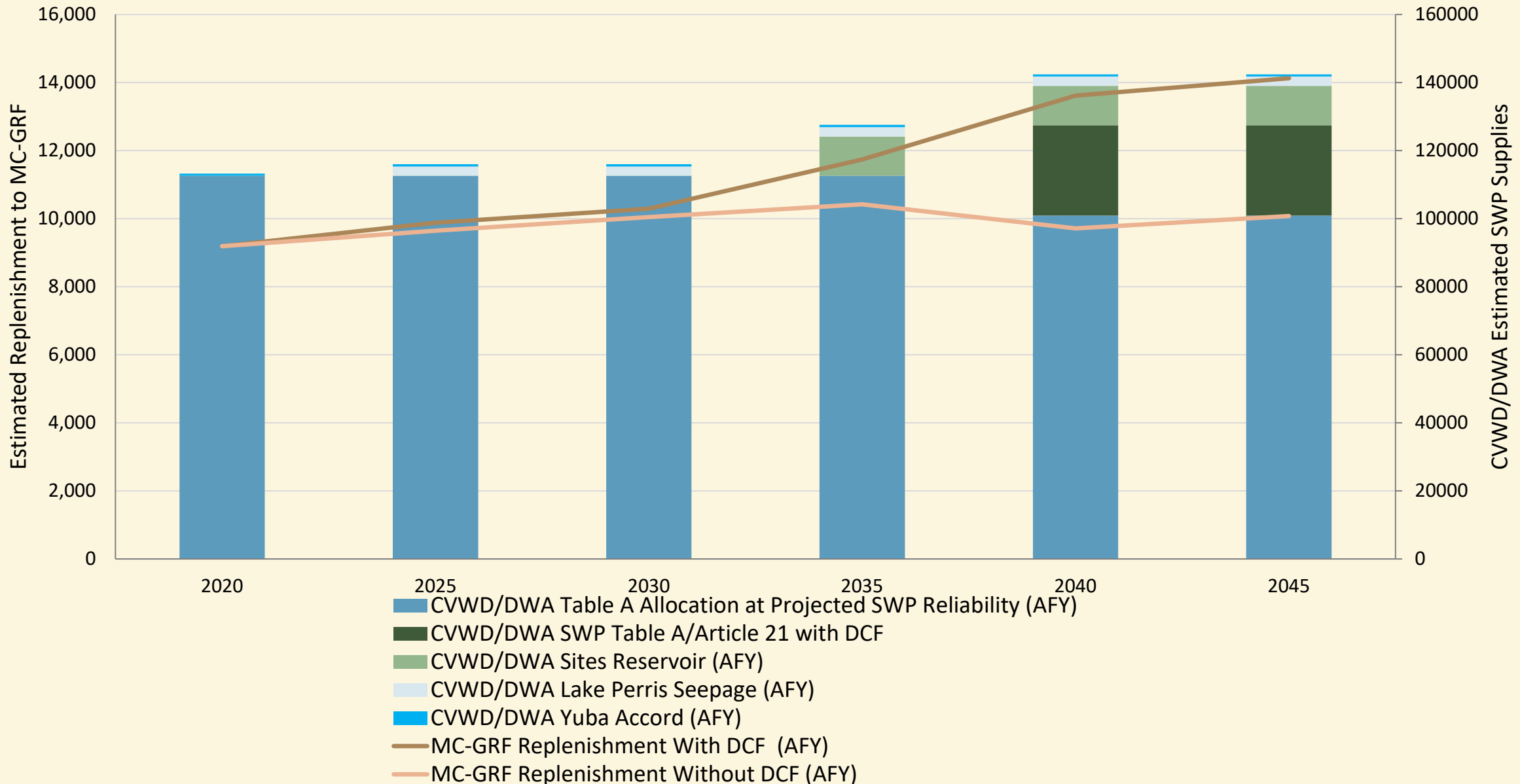
* The long-term trend is for the 58% delivery reliability to further reduce to 52% delivery reliability

- SWP Supply is split between the West Whitewater River (WWR) and Mission Creek (MC) Management Areas proportional to production
- Over the planning period, the MCSB gains a greater proportion of the SWP
- SWP reliability improvement projects will increase future recharge
 - Lake Perris Seepage
 - Sites Reservoir
 - Delta Conveyance Facility (DCF)

% MC Replenishment



Projected State Water Project (SWP) Deliveries

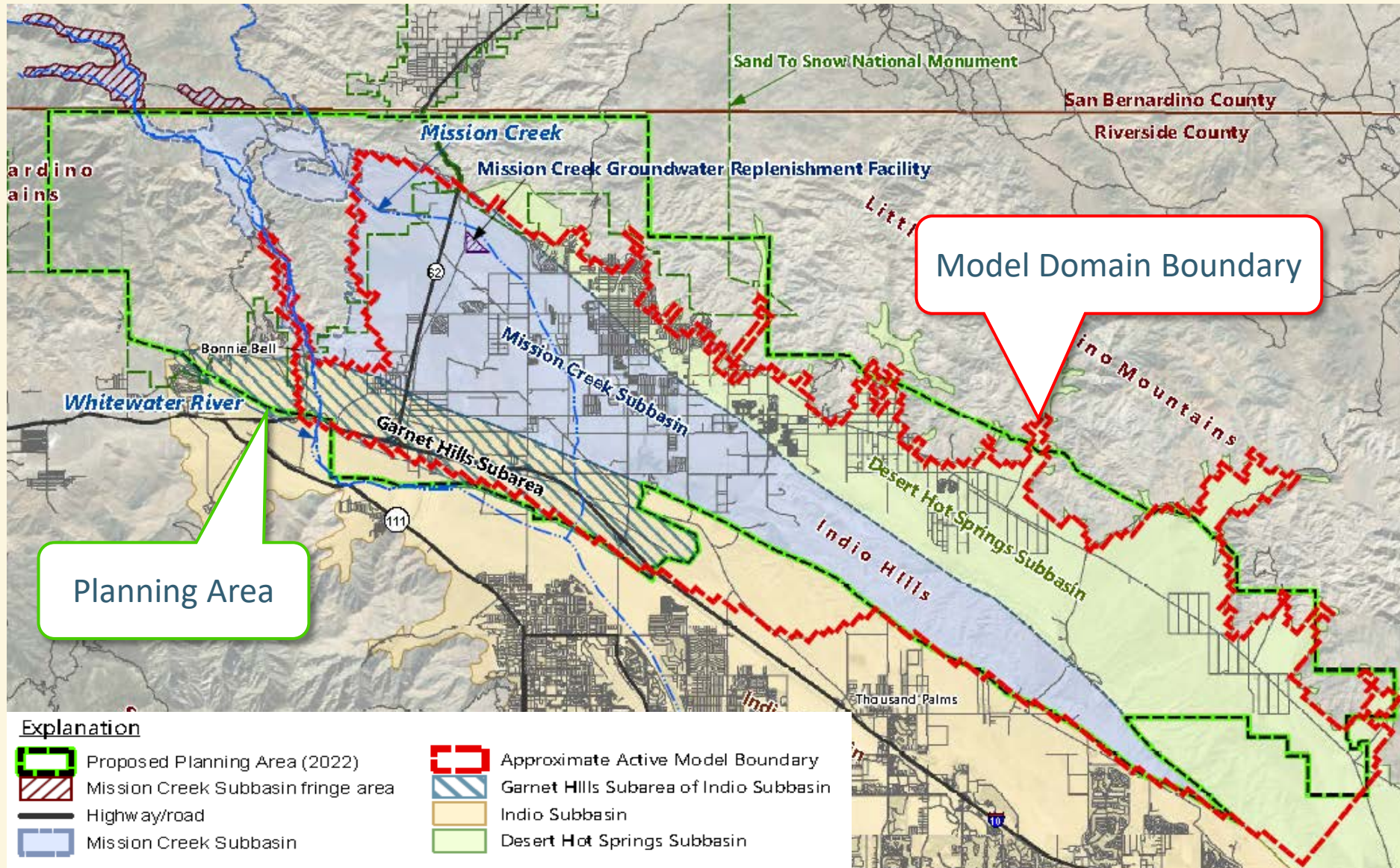


- Is the level of detail presented appropriate?
 - Yes
 - No
 - If no, I'd like more information on _____

Groundwater Model Calibration

Mission Creek Subbasin Groundwater Model

- Planning Area is focused on current and potential future water use
- Model Domain is the focus area for the computer simulation of groundwater (occurrence, flow, recharge, pumping, etc.)



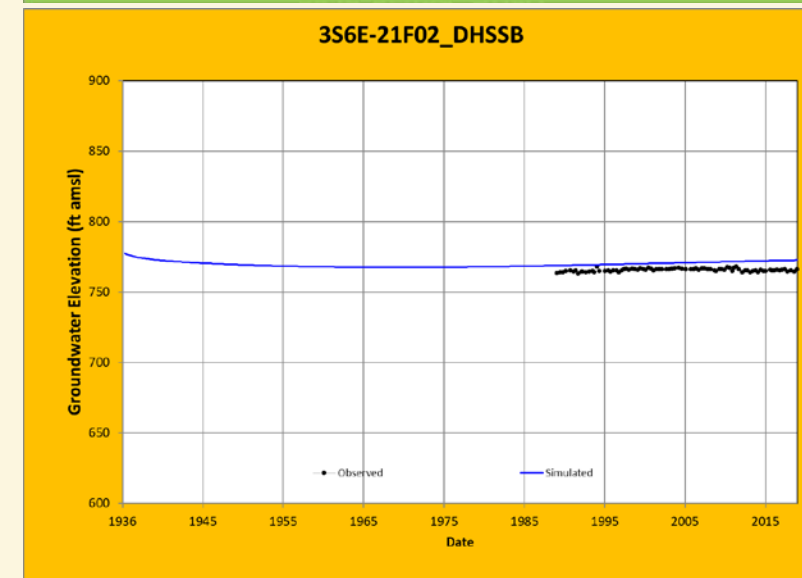
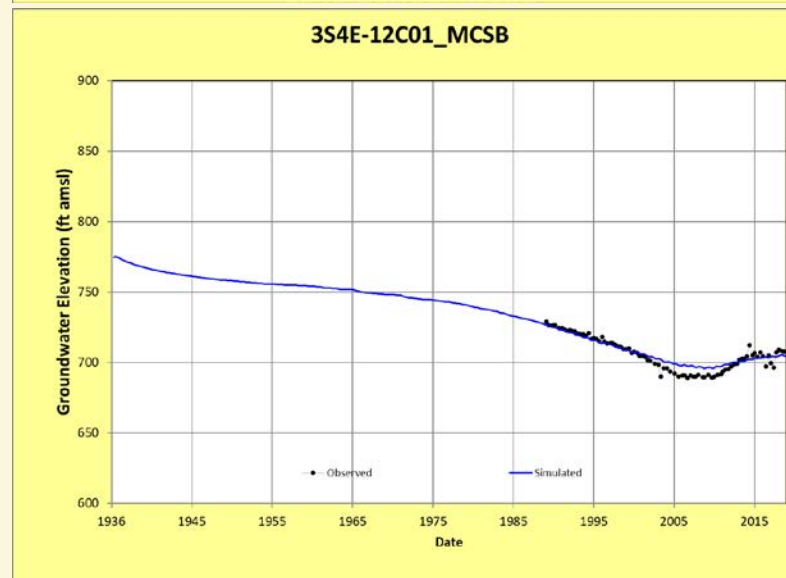
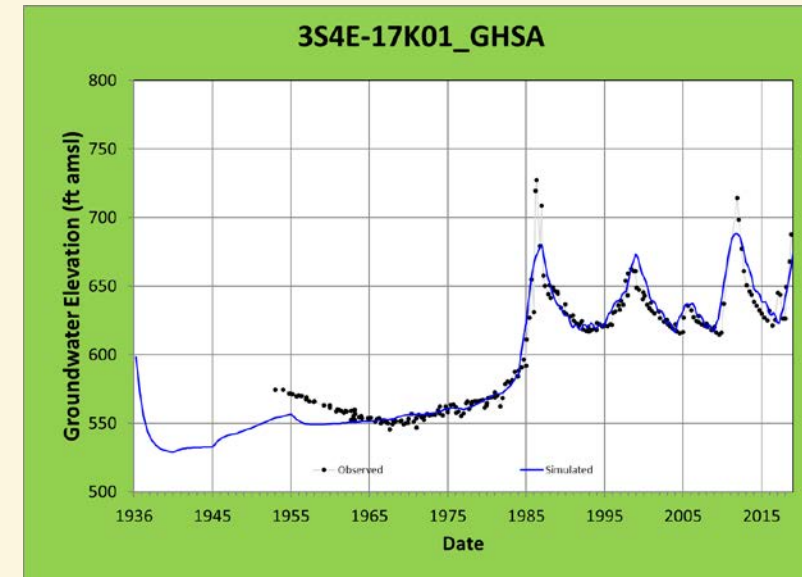
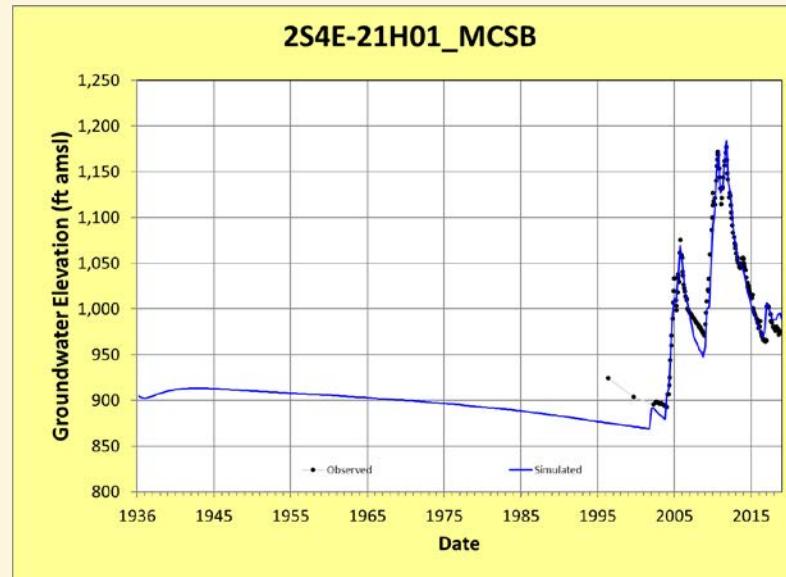
Calibration Model – 84 Year simulation from 1936 to 2019

- Study Area – The Mission Creek Subbasin (MCSB), northwestern Desert Hot Springs Subbasin (DHSB), and Garnet Hill Subarea (GHSA) of Indio Subbasin
- Local Hydrology – Use United States Geological Survey (USGS) Basin Characterization Model (BCM) to estimate monthly mountain front recharge from San Bernardino and Little San Bernardino Mountains bordering Study Area
- Pumping – Based on Agency records and past modeling estimates
- Return Flows – Estimated based on Agency records and past modeling estimates
- Mission Creek Groundwater Recharge Facility (MCGRF) – State Water Project (SWP) deliveries based on Agency records (2002 to present)

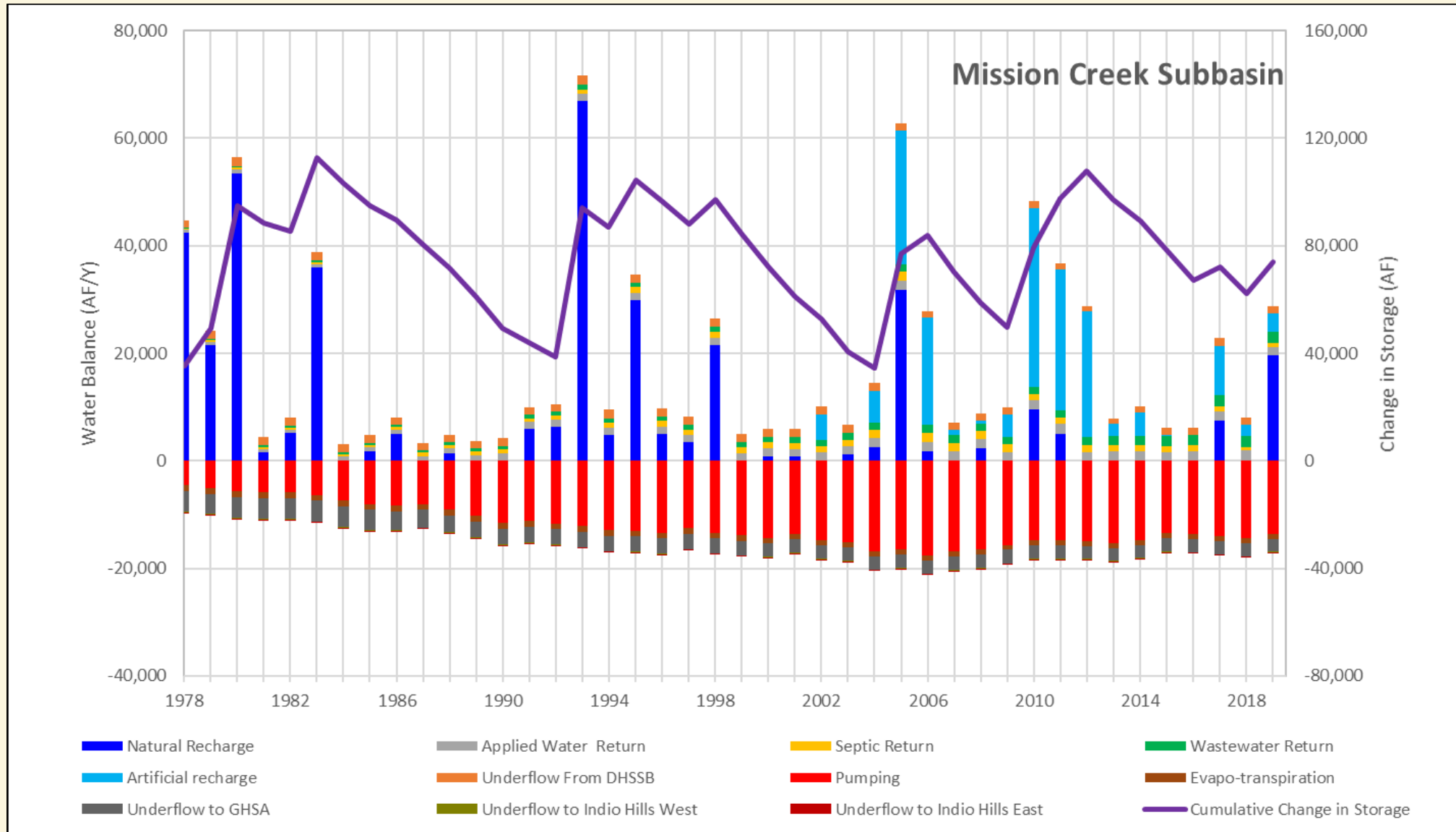
- Examples of Inflows and Outflows
 - Mountain Front Recharge and Precipitation
 - Return flow from use
 - SWP Table A recharge
 - Inter-basin underflow
 - Groundwater pumping
 - Evapotranspiration
- Examples of Variables
 - Aquifer parameters
 - Subsurface fault conductance

MCSB Groundwater Model Calibration

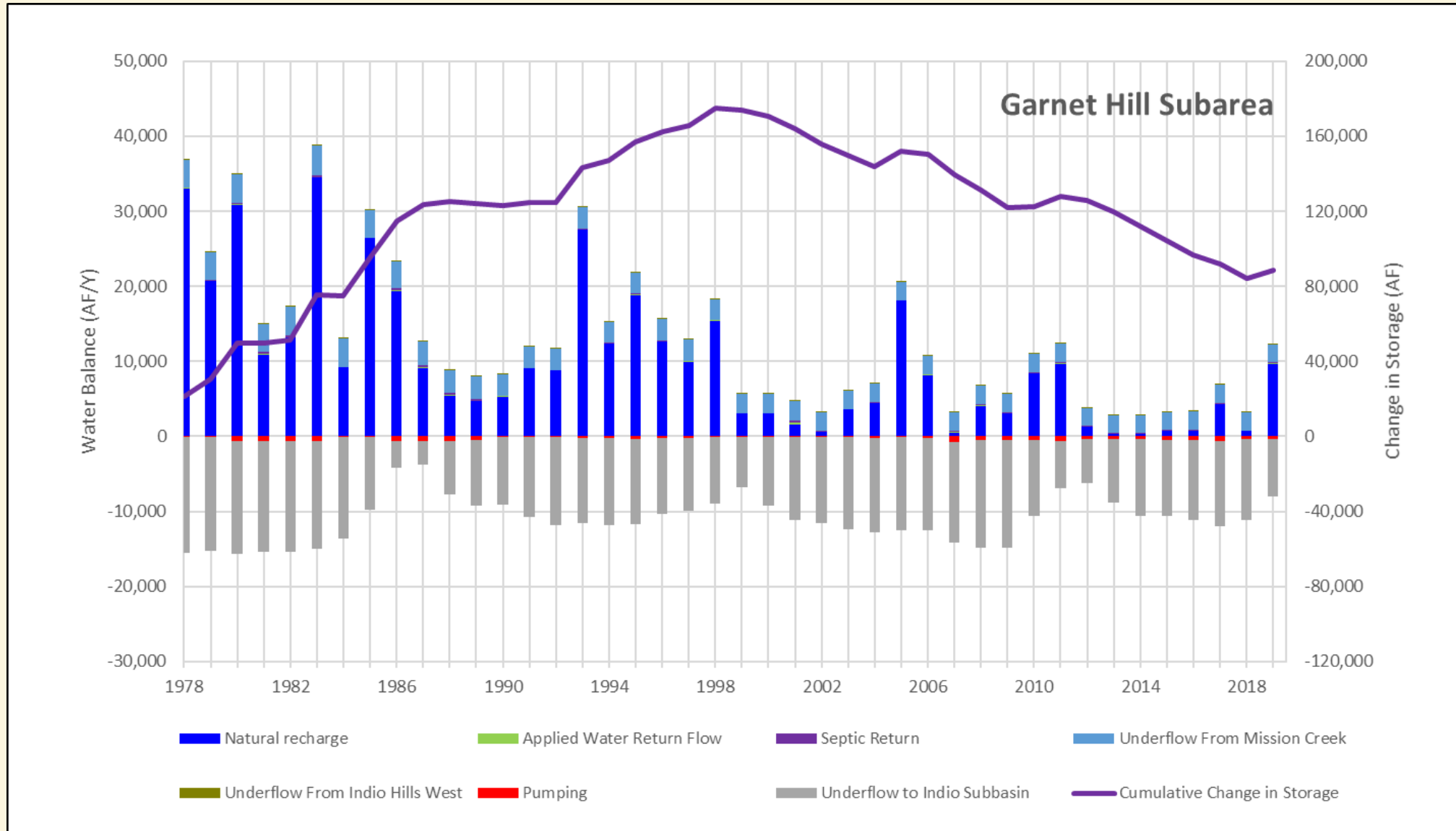
- The model is a computer simulation of groundwater levels over time and space using the various inputs and variables
- Calibration is the process of matching the computer simulation with measured water levels
- A perfect match is not expected, and faults are difficult to simulate
- The model is considered “well calibrated” by modeling standards



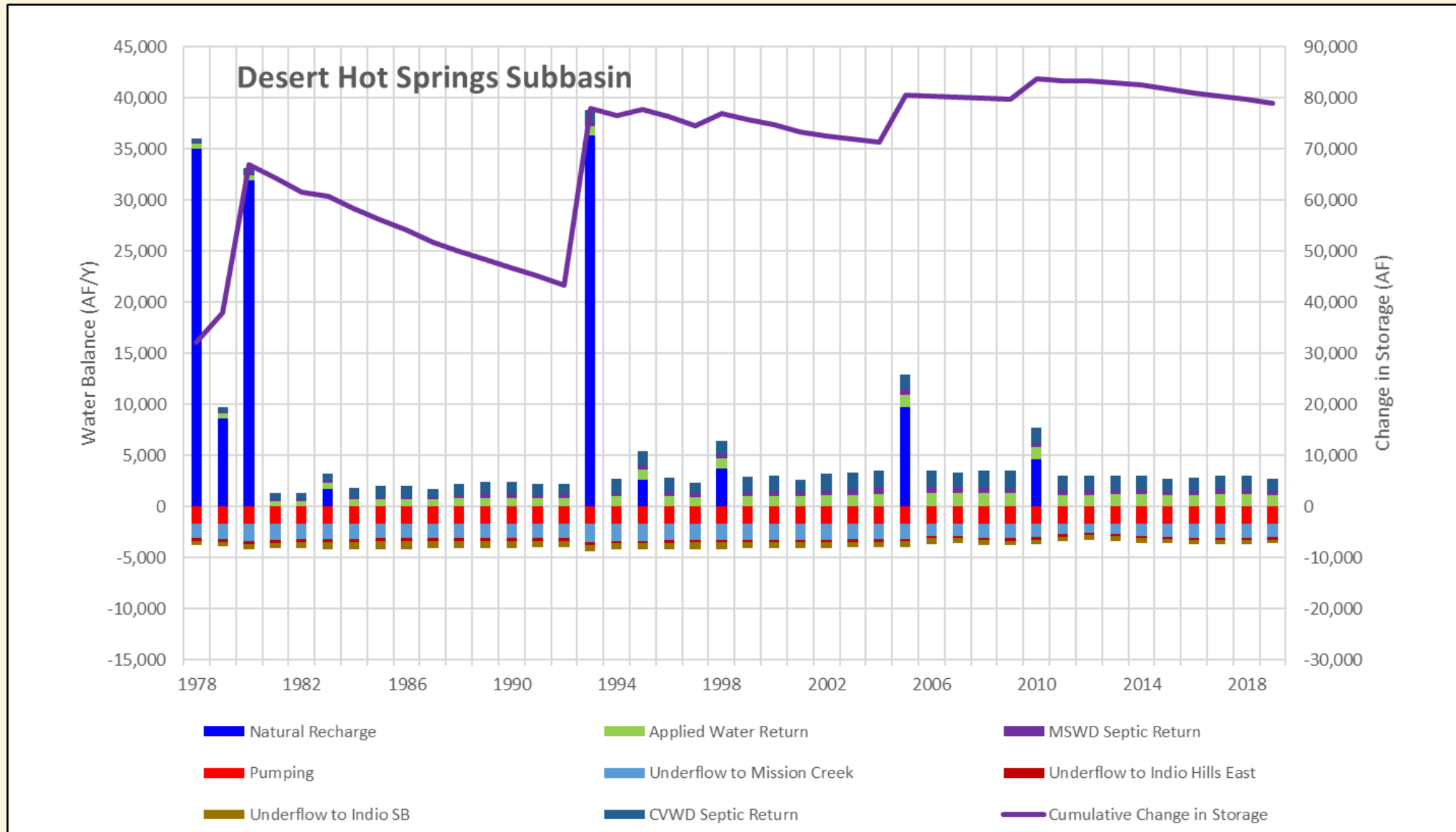
MCSB Groundwater Model – Simulated Water Balance



MCSB Groundwater Model – Simulated Water Balance



MCSB Groundwater Model – Simulated Water Balance

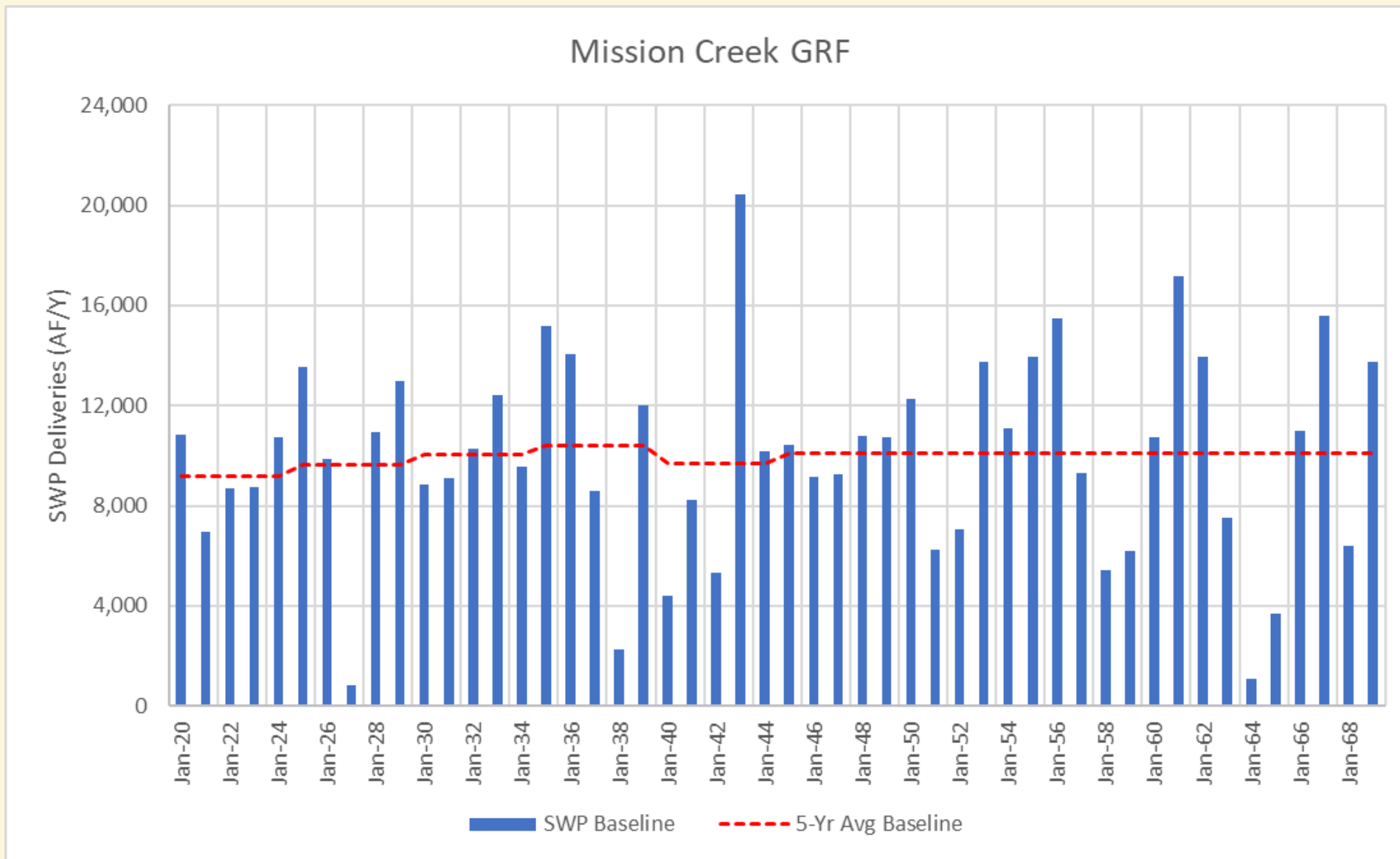


Baseline Forecast Groundwater Model

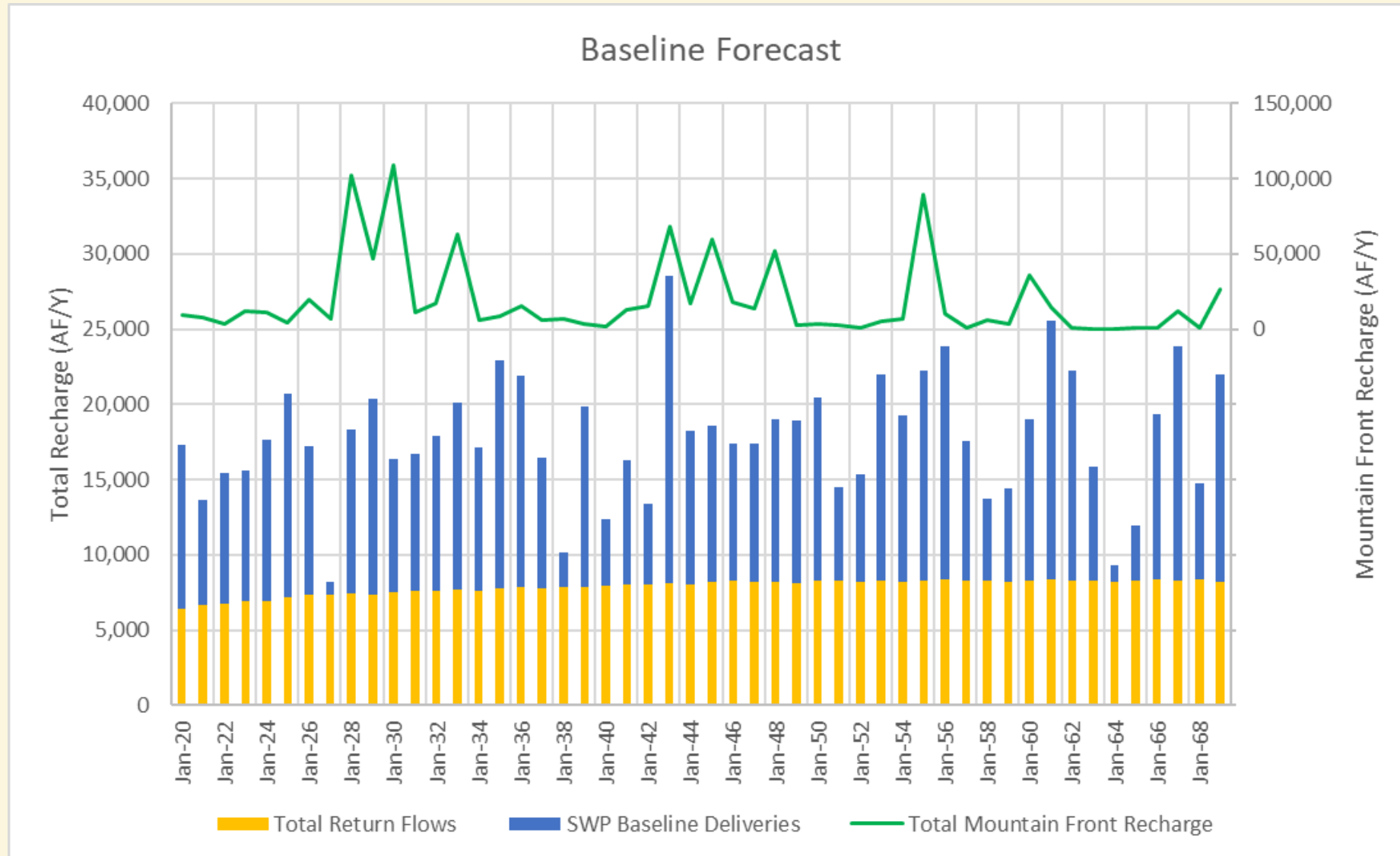
Baseline Forecast - 50-Year Annual Forecast from 2020 to 2070

- Local hydrology (precipitation, runoff, and recharge) assumed to be the same as period 1970 to 2019 with the exception of 1993, which was very anomalous wet year that is unlikely to repeat in the next 50 years
- Reduction in SWP Table A deliveries due to declining reliability
- Increase in SWP Table A deliveries for the MCSB due to higher demand relative to the Indio Subbasin
- No new supplies or agreements to increase reliability of SWP Table A recharge
- No new projects, for example, MSWD recycled water project
- Demand increase based on population increase plus 10% buffer for municipal demand to 2045
- Demand and SWP Table A recharge is held steady after 2045 due to uncertainty in estimating these values

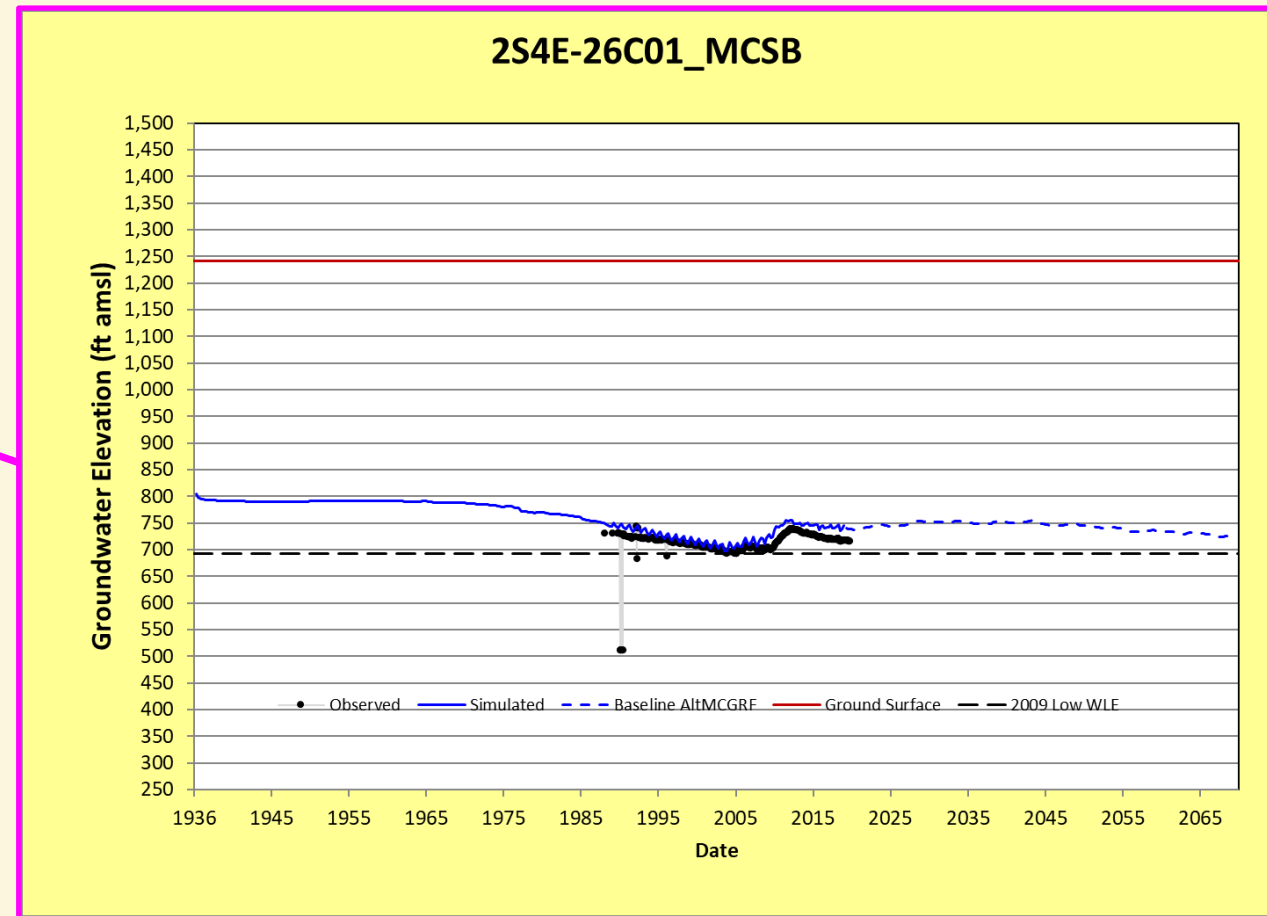
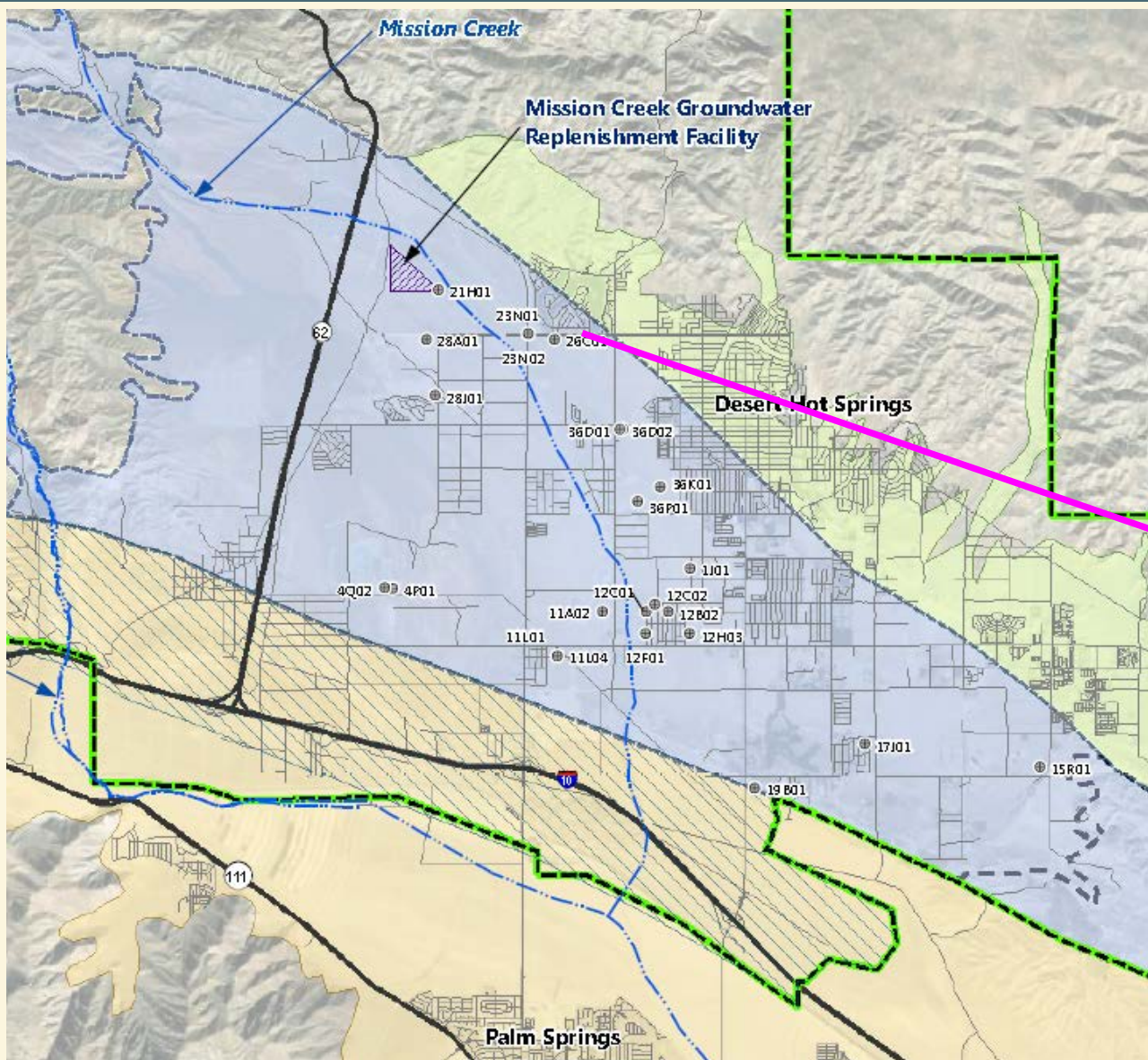
Baseline Assumptions – State Water Project Supplies



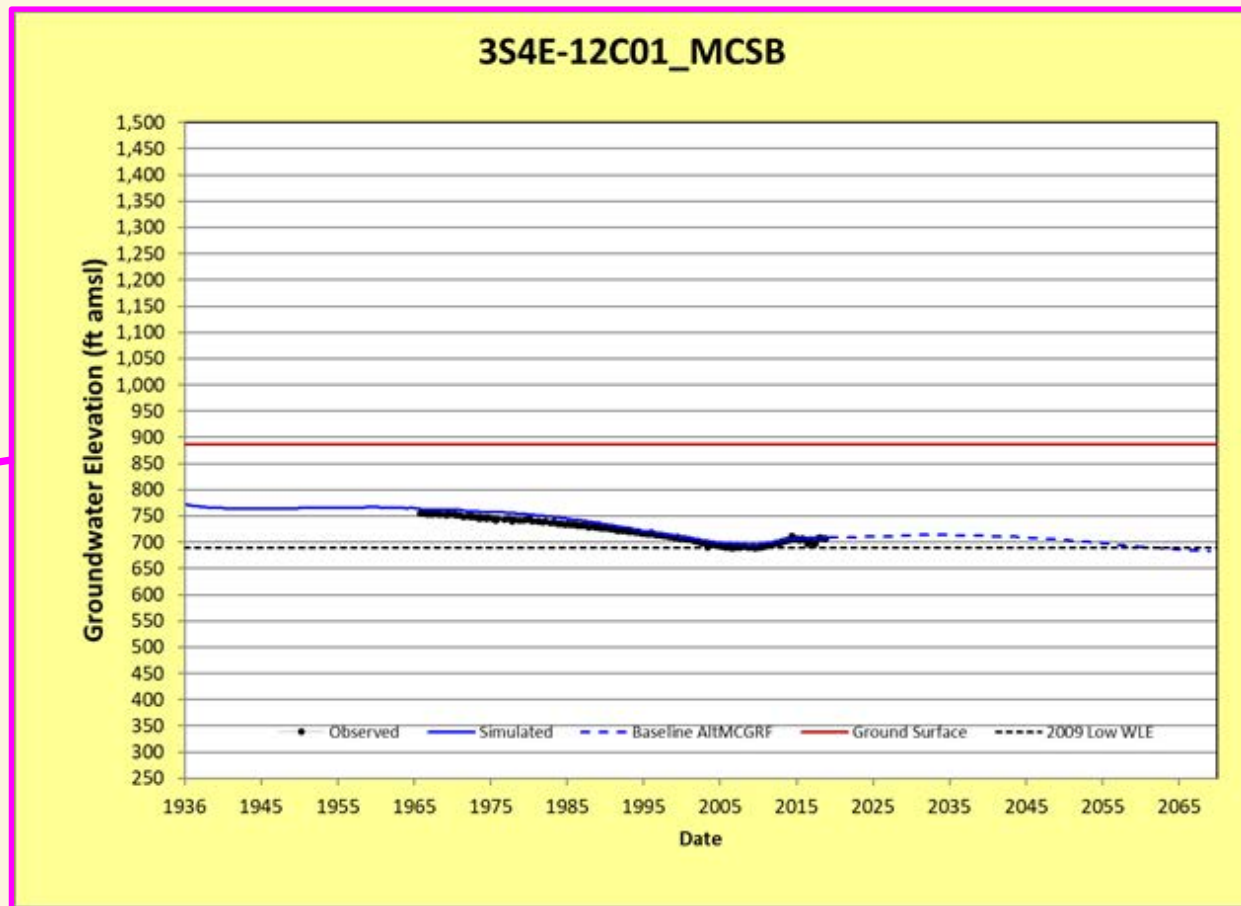
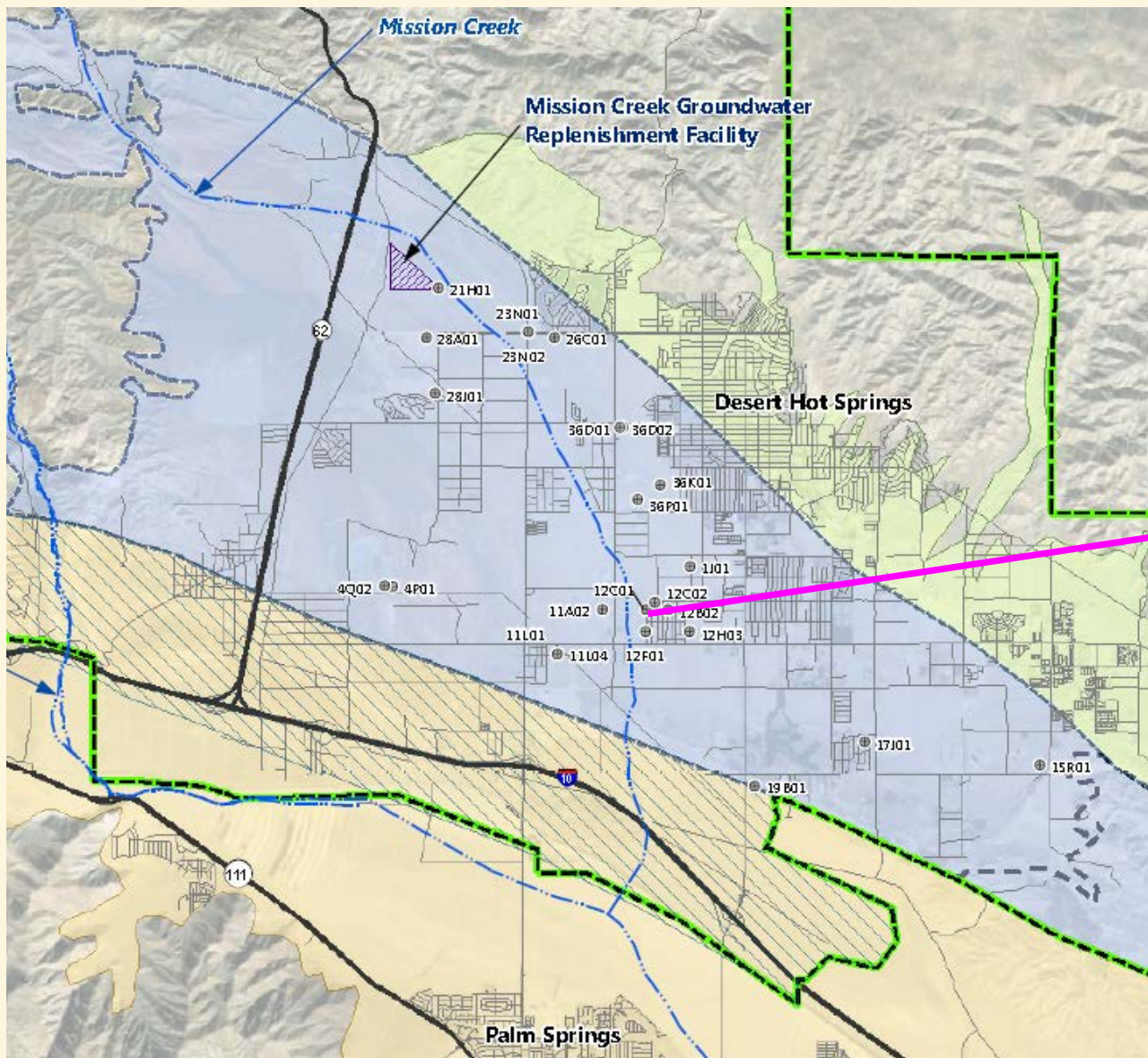
Baseline Assumptions – Total Recharge



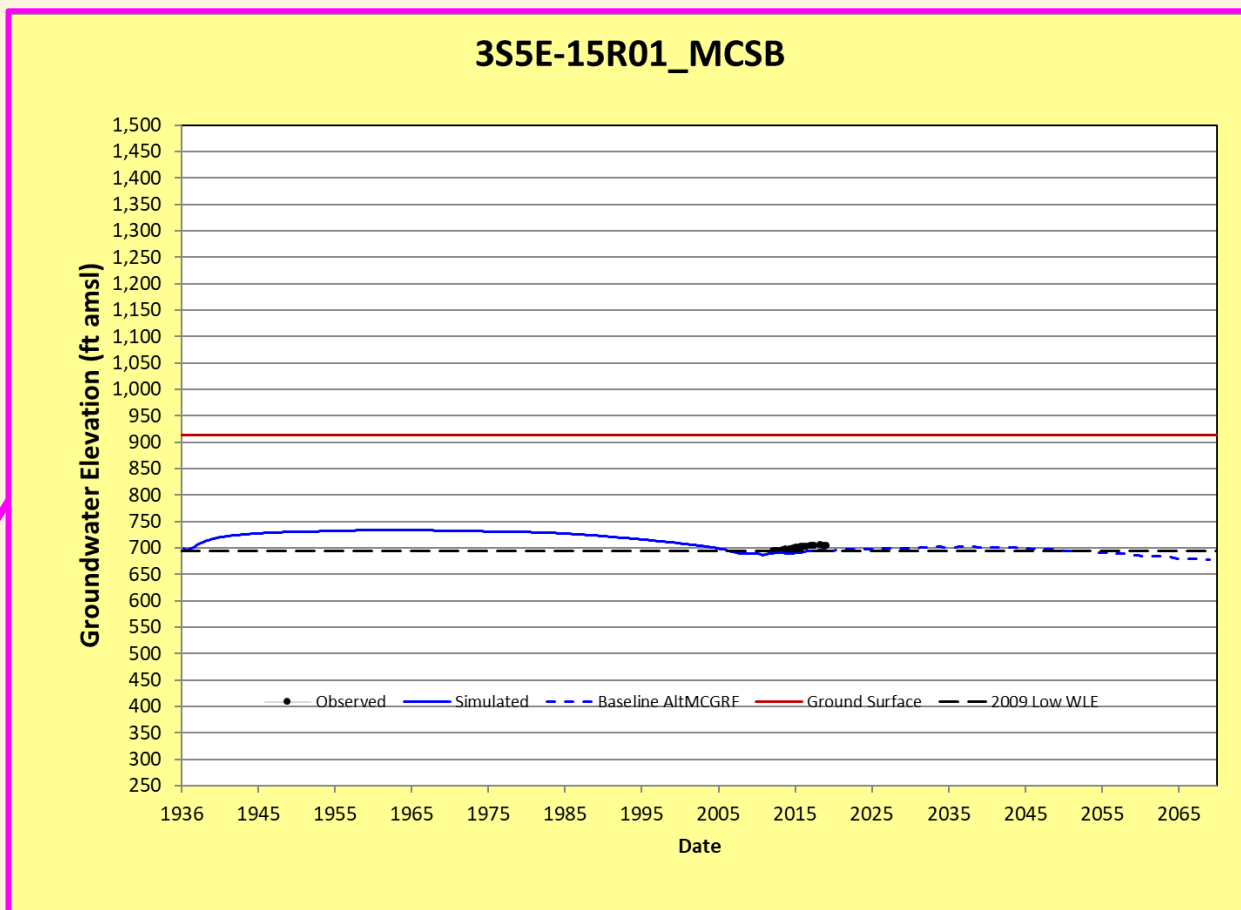
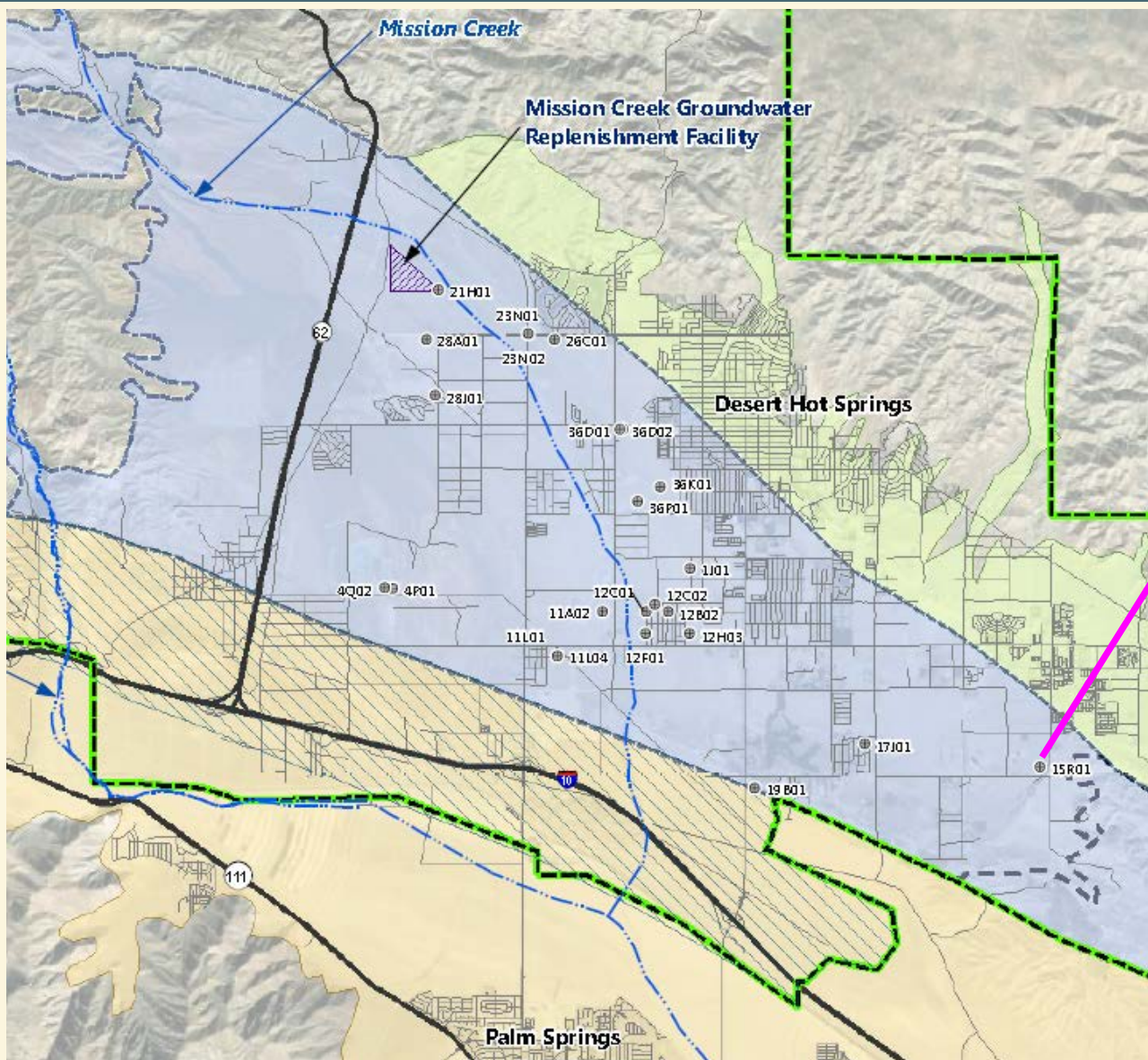
Baseline Forecast Results - Hydrographs



Baseline Forecast Results - Hydrographs



Baseline Forecast Results - Hydrographs



- Is the information presented too technical?
 - Yes
 - No
 - I don't understand _____

Questions?

Future Scenarios for Groundwater Model

- Baseline assumptions included in each scenario unless noted otherwise
- Scenario 1 - New supplies, increased reliability, and projects
- Scenario 2 – Scenario 1 with climate change
- Scenario 3 – Scenario 1 with extended drought condition

Assumptions:

- Baseline Local Hydrology (1970 -2019) and Demand
- New Supplies
 - Lake Perris seepage
- Increased Reliability
 - Sites reservoir
 - Delta Conveyance Facility (DCF)
- New Project
 - MSWD recycled water recharge

Assumptions:

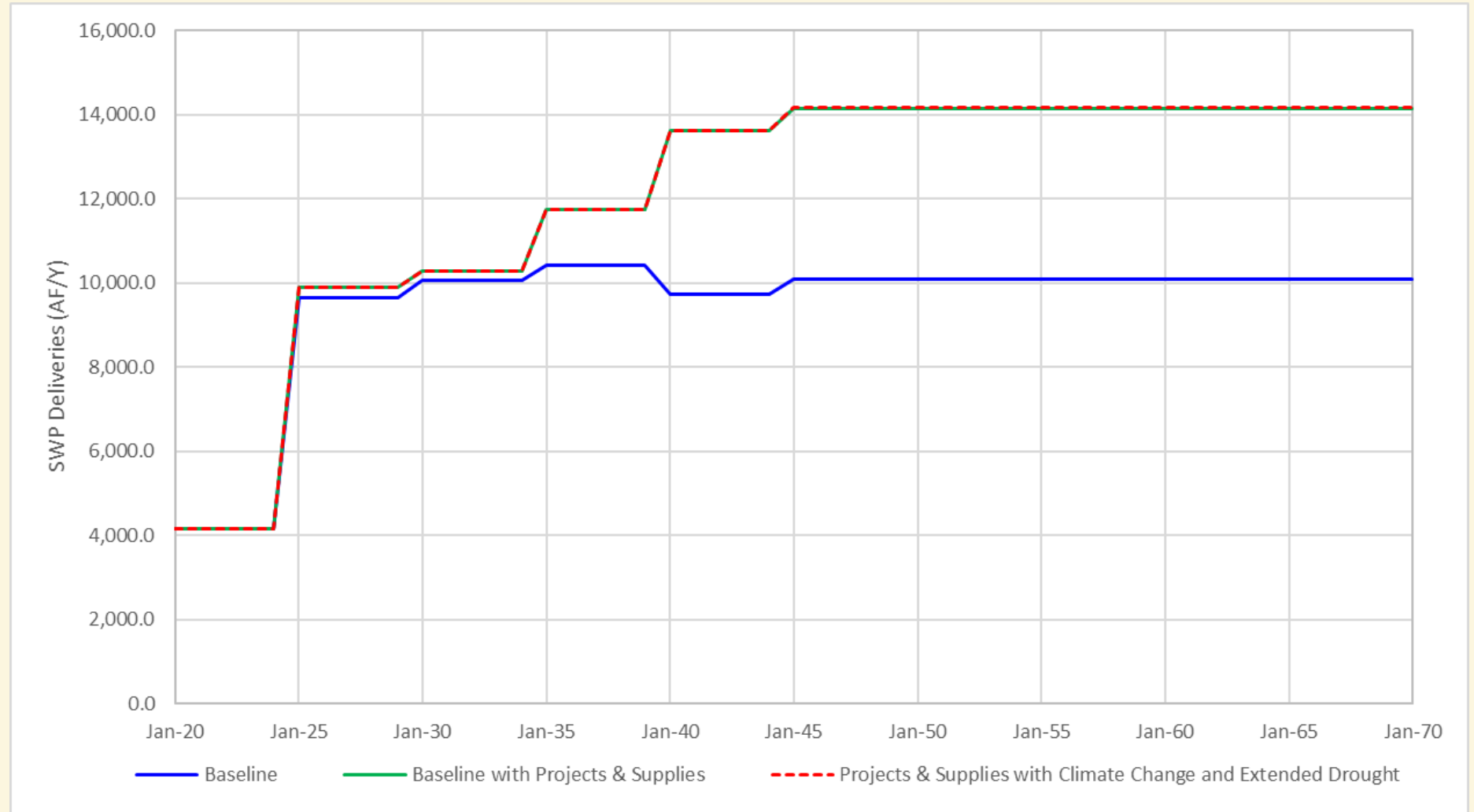
- Baseline demand
- Baseline local hydrology similar to baseline except:
 - Local hydrology is adjusted based on DWR Climate Change Factors for 2030 and 2070
- New supplies, increased reliability and new project from Scenario 1
Except:
 - Table A reliability adjusted down in 2045 from 52% to 50.5%
 - DCF reliability is adjusted down by 1.5%
- MSWD recycled water recharge project

Assumptions:

- Baseline demand
- Represent local hydrology as drought condition using the 25-year drought period from 1995 to 2019 two times; no DWR climate change factor
- New supplies, increased reliability, and new project same as Scenario 2

Comparison of SWP Deliveries by Scenario

- Recharge differences
Primarily due to new supplies and increased reliability
- SWP Table A deliveries past 2045 were not estimated due to uncertainty and were held constant through 2070



- Suggestions for other factors to be included in the forecast model Scenarios?

Sustainable Management Criteria

- Sustainable Management Criteria Terminology:
 - Undesirable Results – Significant and unreasonable impacts caused by groundwater usage
 - Sustainability Goal – No undesirable results
 - Minimum Thresholds (MTs) – Not to exceed level prevent undesirable results (example water levels)
 - Measurable Objectives (MOs) – Level of maintenance of Sustainability goal
 - Interim Milestones (IM) – level of progress to achieve the sustainability goal

Groundwater Conditions May Result in the Following Undesirable Results

Groundwater Level Declines



Groundwater Storage Reductions

Land Subsidence



Interconnected Surface Water Depletions

Seawater Intrusion



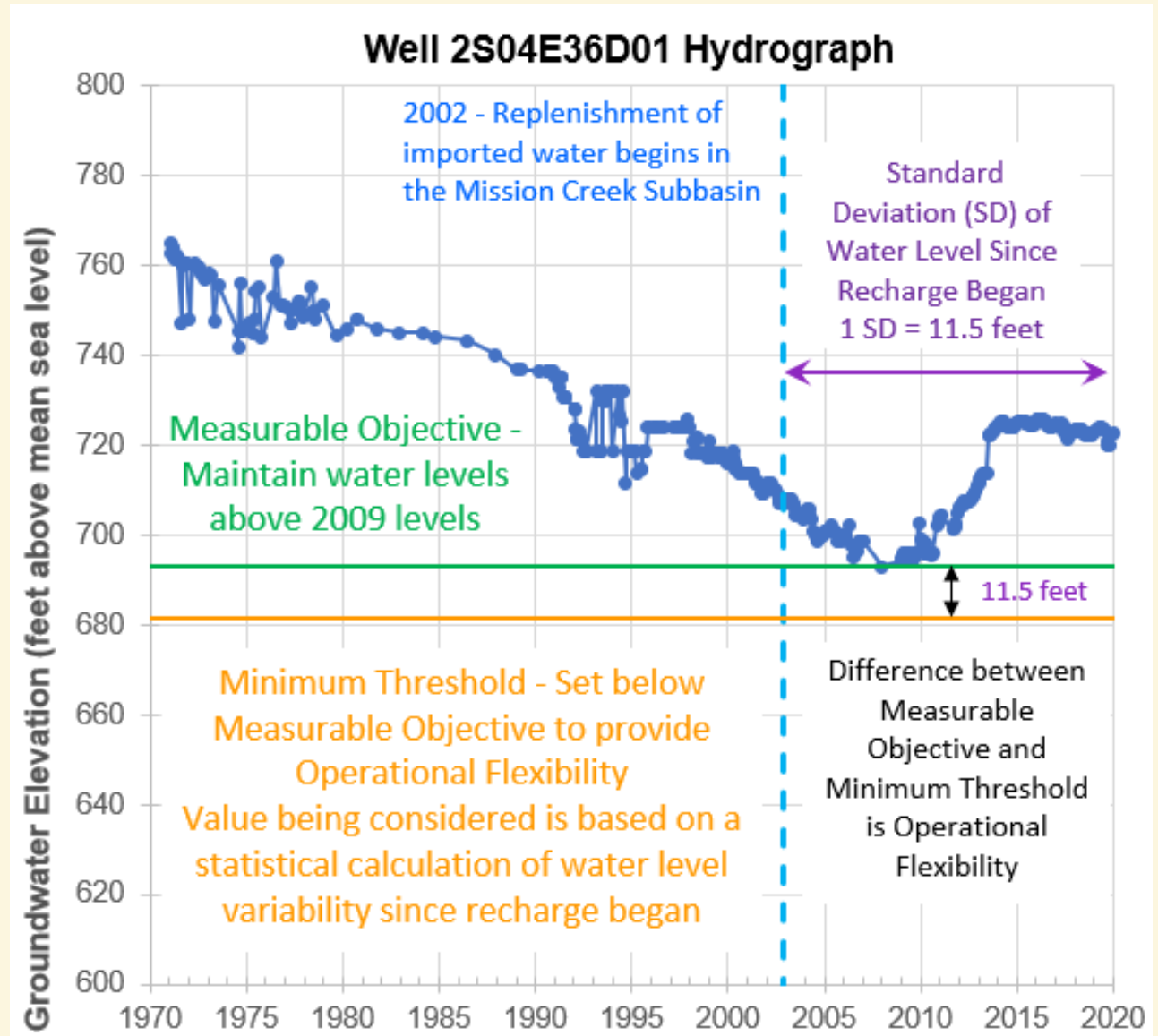
Water Quality Degradation

Not applicable in Mission Creek
Subbasin

- Groundwater level declines and groundwater storage reductions have occurred in the MCSB historically
- Recharge at the MC-GRF beginning in 2002 resulted in rising water levels and increased groundwater storage in the MCSB
- Groundwater in storage in MCSB has returned to 1978 levels
- No specific undesirable results (e.g., dry wells) were observed when water levels and groundwater storage were at a low point in 2009

Sustainable Management Criteria – Water Level and Storage

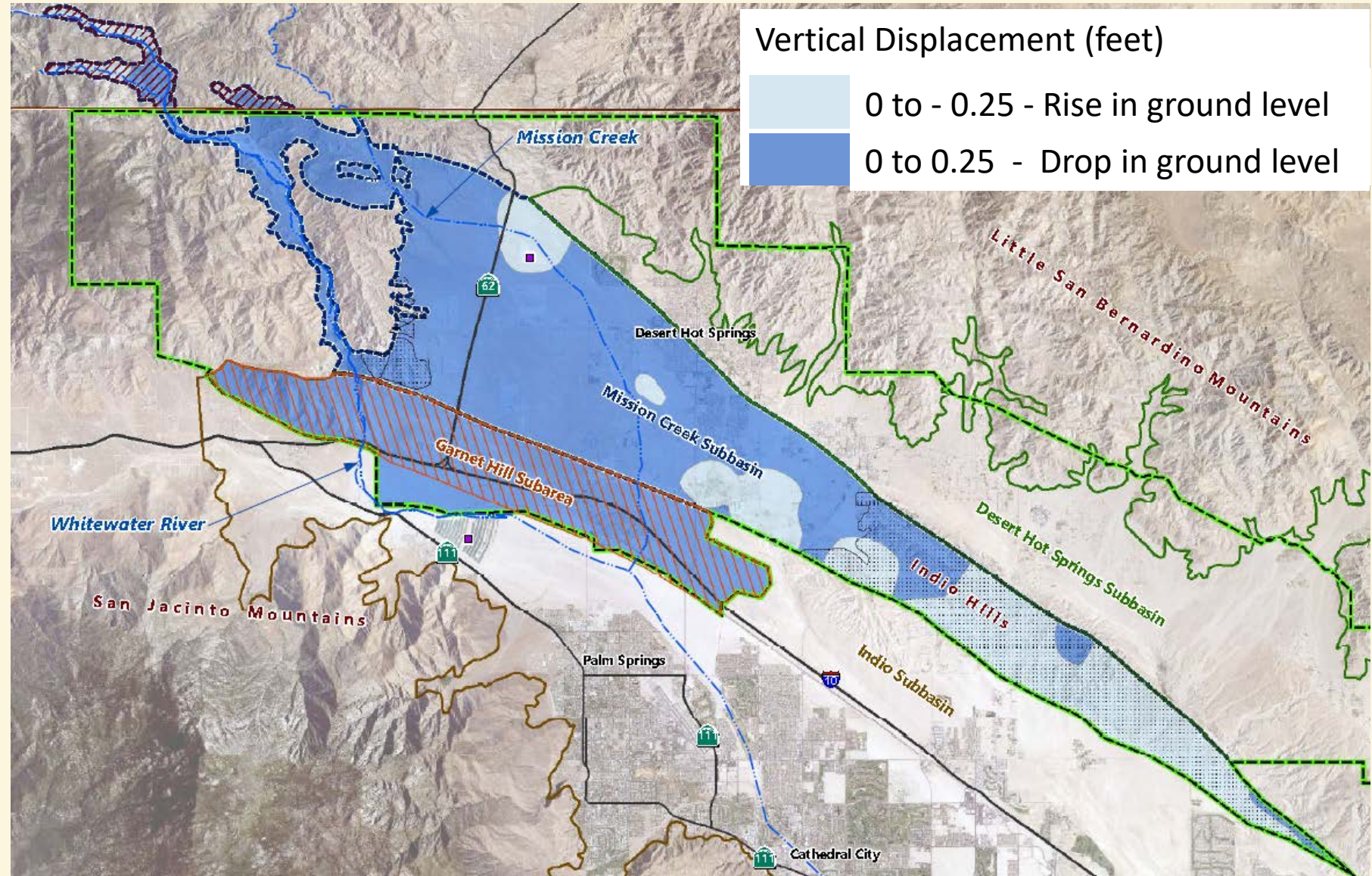
- No undesirable results have been identified in the MCSB other than persistent historical water level declines and storage reductions that have since been reversed
- Use water levels as an indicator (proxy) for storage
- Measurable Objective - maintain groundwater levels at or above 2009 levels
- Minimum Threshold - set at levels that will not impact well pumping operation
- Operational Flexibility - operations between Measurable Objective and Minimum Threshold
- Temporary and localized exceptions - allow for water levels to drop below the Minimum Threshold temporarily in some wells



- Subsidence may occur when groundwater levels drop below historical levels
- No evidence of subsidence (for example, rising well casings, broken pipes, or ground fissuring) has been observed in the MCSB
- Recent statewide monitoring by DWR has not indicated subsidence in the MCSB - 2015 to 2019

Ground Level Vertical Displacement 2015 to 2019

- A small rise and drop in ground level (GL) from 2015 to 2019
- Active faulting in the area may play a role
- Non-permanent changes in GL may occur from water level changes and is not an undesirable result
- Water levels may be used as a proxy for subsidence monitoring
- Continue to use DWR monitoring of subsidence



No connected surface waters near known groundwater pumping in the MCSB

Mesquite hummocks are a known groundwater dependent ecosystem.

- It is unclear which factors impact mesquite health: Urban encroachment, non-native tamarisk trees as competitors, groundwater levels, unique fault conditions, drought, climate change, or a combination of these factors
- Further study is needed, including continued planned monitoring

- No exceedance of water quality thresholds (e.g., State Maximum Contaminant Levels [MCLs] for drinking water) have been identified that are known to be related to groundwater levels
- Total Dissolved Solids (TDS) have been increasing in parts of the MCSB
- TDS will be addressed on a regional scale as part of the Coachella Valley Salt and Nutrient Management Plan

- Complete development of future scenarios for the groundwater model
- Refine sustainable management criteria and key well network
- Draft alternative plan update sections
- Release draft report to the public in August 2021
- Agencies adoption by the end of 2021
- Submittal to DWR by January 1, 2022

Public Outreach

- **Goals for Outreach:**

- Enhance public understanding
- Inform public of Plan Update process
- Engage all parties within planning area
- Respond to public concerns

- **Communication and Engagement Plan:**

- Outlines public outreach goals in more detail
- Available at www.MissionCreekSubbasinSGMA.org

- **Next workshop:** Late summer 2021
 - Discuss draft Alternative Plan
 - Receive comments on draft Alternative Plan
- **For additional information, please contact:**
 - Sachi Itagaki at (650) 852-2817
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Stay Connected

Name *

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Public Comment

The Virtual Experience: Raising Hand

The screenshot displays the Microsoft Teams meeting interface. At the top, there is a search bar with the text "Search or type a command". On the left side, a vertical navigation pane includes icons for Activity, Chat, Teams, Calendar, Calls, Files, and Apps. The main area features a circular profile picture of a woman with the text "Waiting for others to join..." below it. At the bottom, a control bar contains icons for a timer (00:29), video off, microphone off, screen share, a hand icon, chat, participants, and end call. A blue arrow points from a text box to the hand icon. On the right, a "Meeting chat" window shows a message: "Melanie Rivera joined the meeting." Below the chat is a text input field with the placeholder "Type a new message" and various icons for formatting and sharing.

Search or type a command

Activity
Chat
Teams
Calendar
Calls
Files
...

Waiting for others to join...

00:29 [video off] [microphone off] [screen share] [hand icon] [chat] [participants] [end call]

Meeting chat

Melanie Rivera joined the meeting.

Type a new message

"Raise your hand" by clicking on hand icon

- Questions?
- Possible Topics:
 - Water demand analysis
 - Groundwater model and baseline future conditions
 - Model scenarios of future conditions
 - Sustainable management criteria

Thanks for joining us!