Groundwater Management Area 16 Joint Planning Cycle: 2019-2022 Water Supply Needs & Management Strategies

Falfurrias, TX
June 23, 2020

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Joint Planning Requirements

- Balancing Test
  - DFCs must provide "*a balance between the highest practicable level of groundwater production and the conservation, preservation, protection, recharging, and prevention of waste of groundwater and control of subsidence in the management area*"

Joint Planning Requirements

- Consideration of 9 “factors” (paraphrased)
  - Aquifer uses or conditions
  - ***Water supply needs and management strategies***
  - Hydrological conditions
  - Other environmental impacts
  - Impact on subsidence
  - Socioeconomic impacts
  - Impact on private property rights
  - Feasibility of achieving the DFC
  - Any other relevant information

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Consideration of Water Supply Needs & Management Strategies

- Describe the water supply needs and water management strategies included in the state water plan

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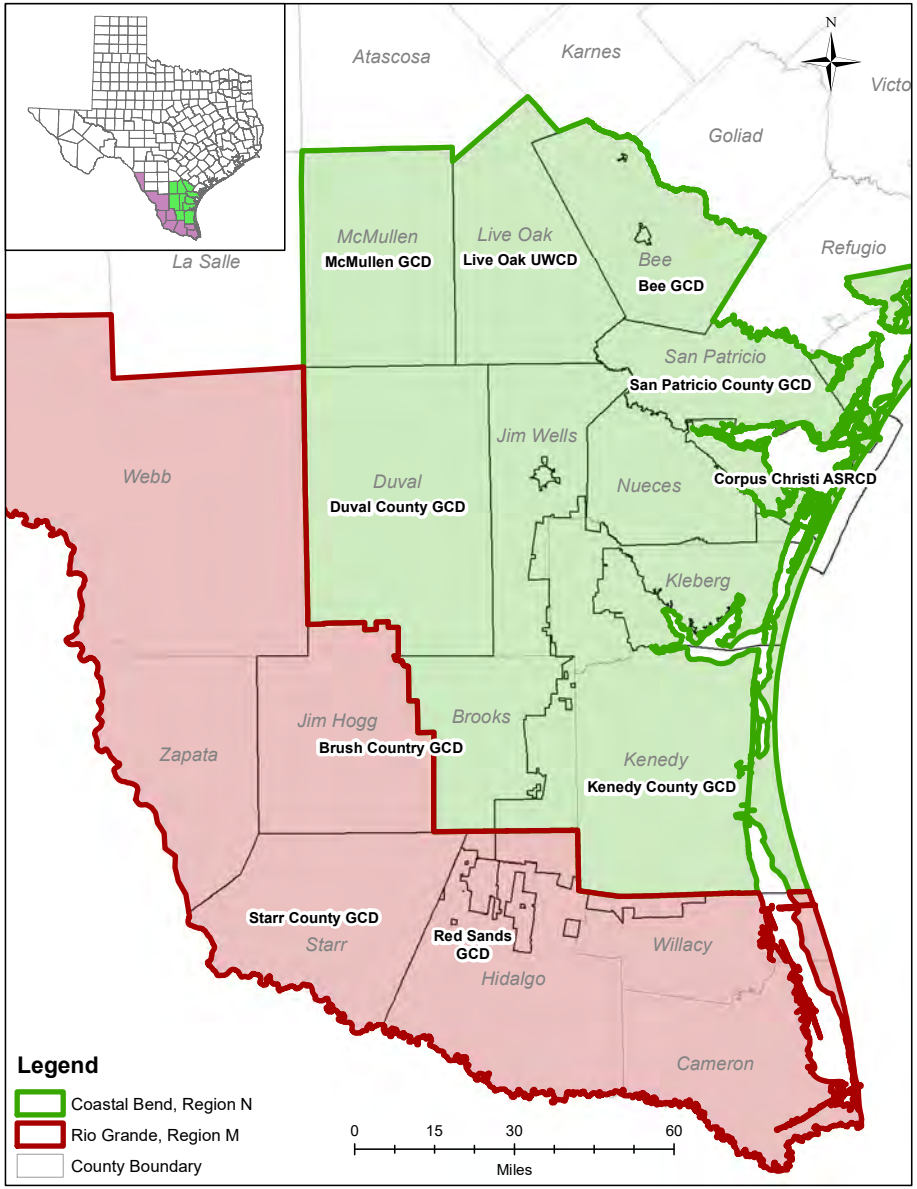
Regional Water Planning Areas



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- Texas State Water Plan is compilation of Regional Water Plans
- GMA 16 falls into 2 Regional Water Planning Areas:
  - Region N (Coastal Bend)
  - Region M (Rio Grande)

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Regional Water Planning Areas

RIO GRANDE REGIONAL WATER PLAN:
2021 UPDATE

INITIALLY PREPARED PLAN

Prepared by: Rio Grande Regional Water Planning Group
With administration by: Lower Rio Grande Valley Development Council

MARCH 3, 2020

RIO GRANDE REGIONAL WATER PLANNING GROUP

BLACK & VEATCH

Coastal Bend
Regional Water Planning Area
Region N

Executive Summary and
Initially Prepared Plan
March 2020

Prepared for

Texas Water Development Board

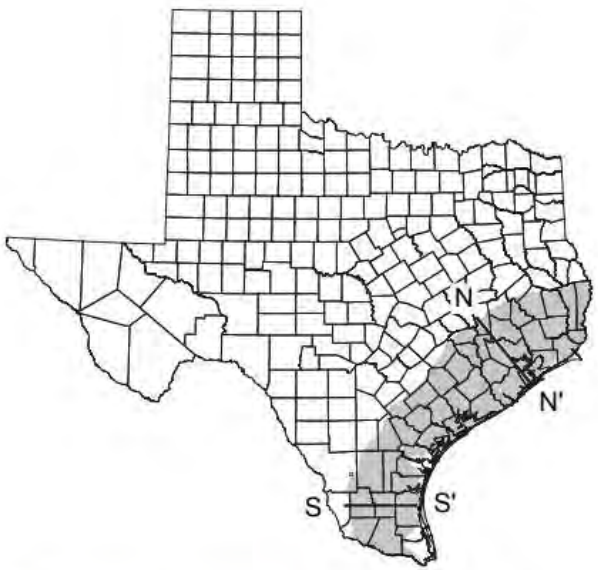
Prepared by
Coastal Bend Regional
Water Planning Group

With administration by

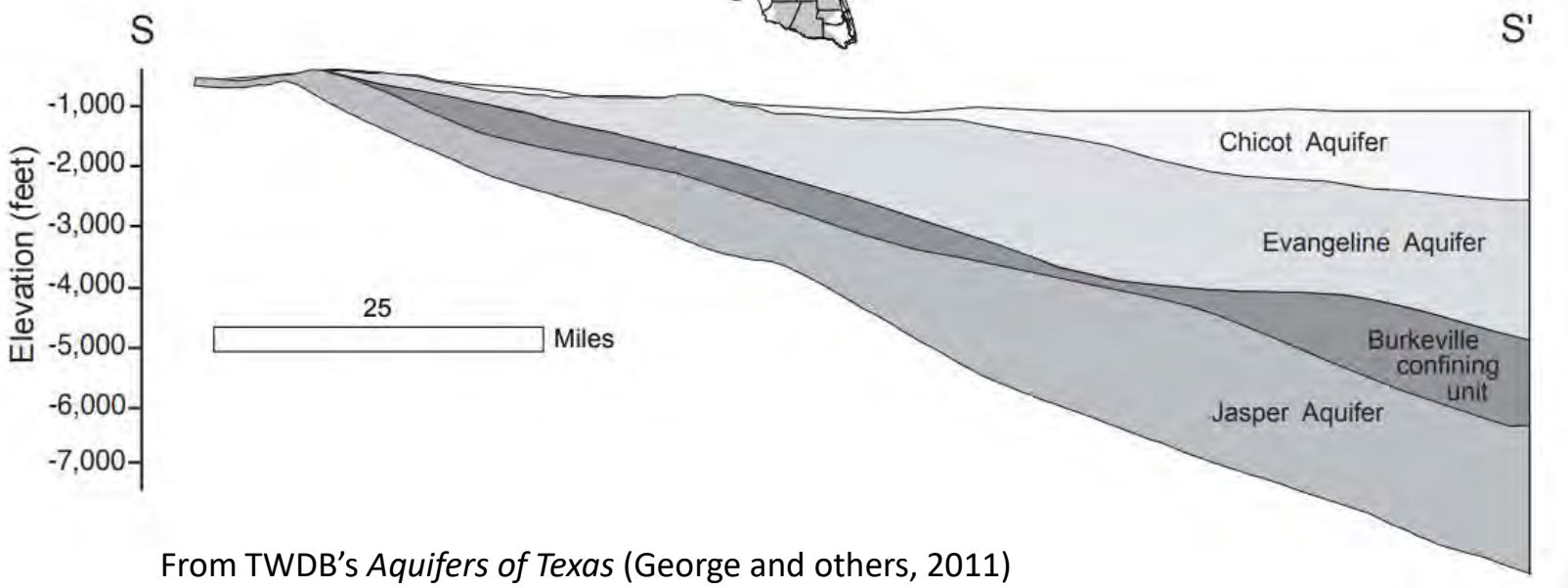
With technical assistance by
HDR Engineering, Inc

HDR

Gulf Coast Aquifer System



- Gulf Coast Aquifer is the only groundwater source listed for GMA 16 counties (*except Live Oak, McMullen & Starr*)
- Regional Water Planning values only specify the major aquifer name (Gulf Coast Aquifer)
- Regional Planning values do not distinguish between the 4 aquifer layers



From TWDB's *Aquifers of Texas* (George and others, 2011)

Example of Regional Water Plan Accounting by County

Existing Groundwater Supplies (Kleberg County)

WUG NAME	SOURCE REGION	SOURCE DESCRIPTION	2020	2030	2040	2050	2060	2070
BAFFIN BAY WSC	N	GULF COAST AQUIFER SYSTEM | KLEBERG COUNTY	237	253	268	285	303	320
KINGSVILLE	N	GULF COAST AQUIFER SYSTEM | KLEBERG COUNTY	3781	3946	4168	4415	4424	4561
NAVAL AIR STATION	N	GULF COAST AQUIFER SYSTEM | KLEBERG COUNTY	256	284	303	327	347	366
RIVIERA WATER SYSTEM	N	GULF COAST AQUIFER SYSTEM | KLEBERG COUNTY	114	121	129	137	145	153
COUNTY-OTHER	N	GULF COAST AQUIFER SYSTEM | KLEBERG COUNTY	218	231	247	264	281	297
MANUFACTURING	N	GULF COAST AQUIFER SYSTEM | KLEBERG COUNTY	1809	1809	1809	1809	1809	1809
MINING	N	GULF COAST AQUIFER SYSTEM | KLEBERG COUNTY	218	218	218	218	218	218
LIVESTOCK	N	GULF COAST AQUIFER SYSTEM | KLEBERG COUNTY	673	673	673	673	673	673
IRRIGATION	N	GULF COAST AQUIFER SYSTEM | KLEBERG COUNTY	850	850	850	850	850	850

Existing Surface Water Supplies (Kleberg County)

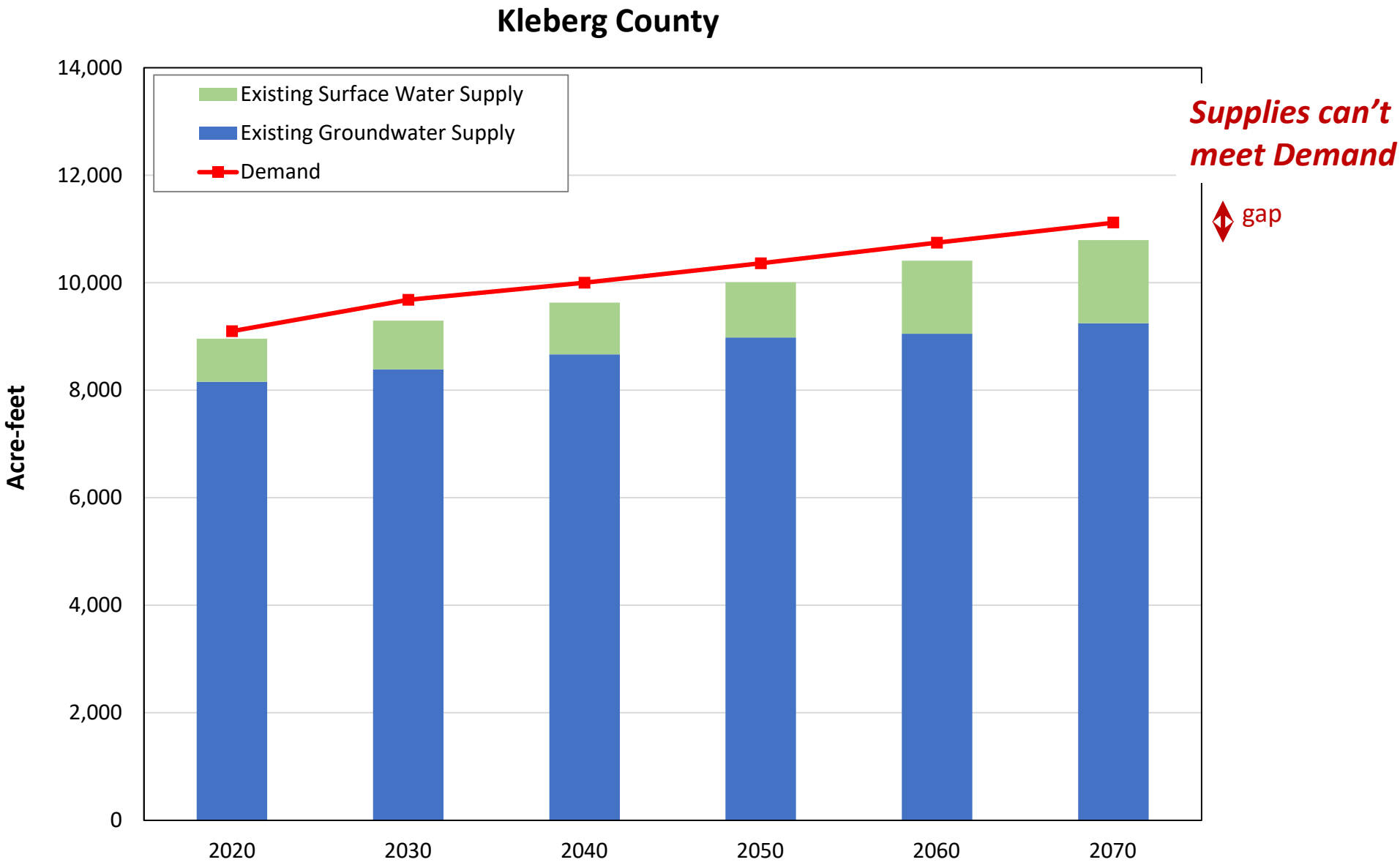
WUG NAME	SOURCE REGION	SOURCE DESCRIPTION	2020	2030	2040	2050	2060	2070
KINGSVILLE	N	CORPUS CHRISTI-CHOKE CANYON LAKE/RESERVOIR SYSTEM	211	252	268	289	438	518
KINGSVILLE	P	TEXANA LAKE/RESERVOIR	213	255	270	288	439	520
RICARDO WSC	N	CORPUS CHRISTI-CHOKE CANYON LAKE/RESERVOIR SYSTEM	170	180	191	202	215	227
RICARDO WSC	P	TEXANA LAKE/RESERVOIR	170	181	191	203	215	227
COUNTY-OTHER	N	CORPUS CHRISTI-CHOKE CANYON LAKE/RESERVOIR SYSTEM	20	21	22	24	25	26
COUNTY-OTHER	P	TEXANA LAKE/RESERVOIR	19	20	22	23	25	26

Example of Regional Water Plan Accounting by County

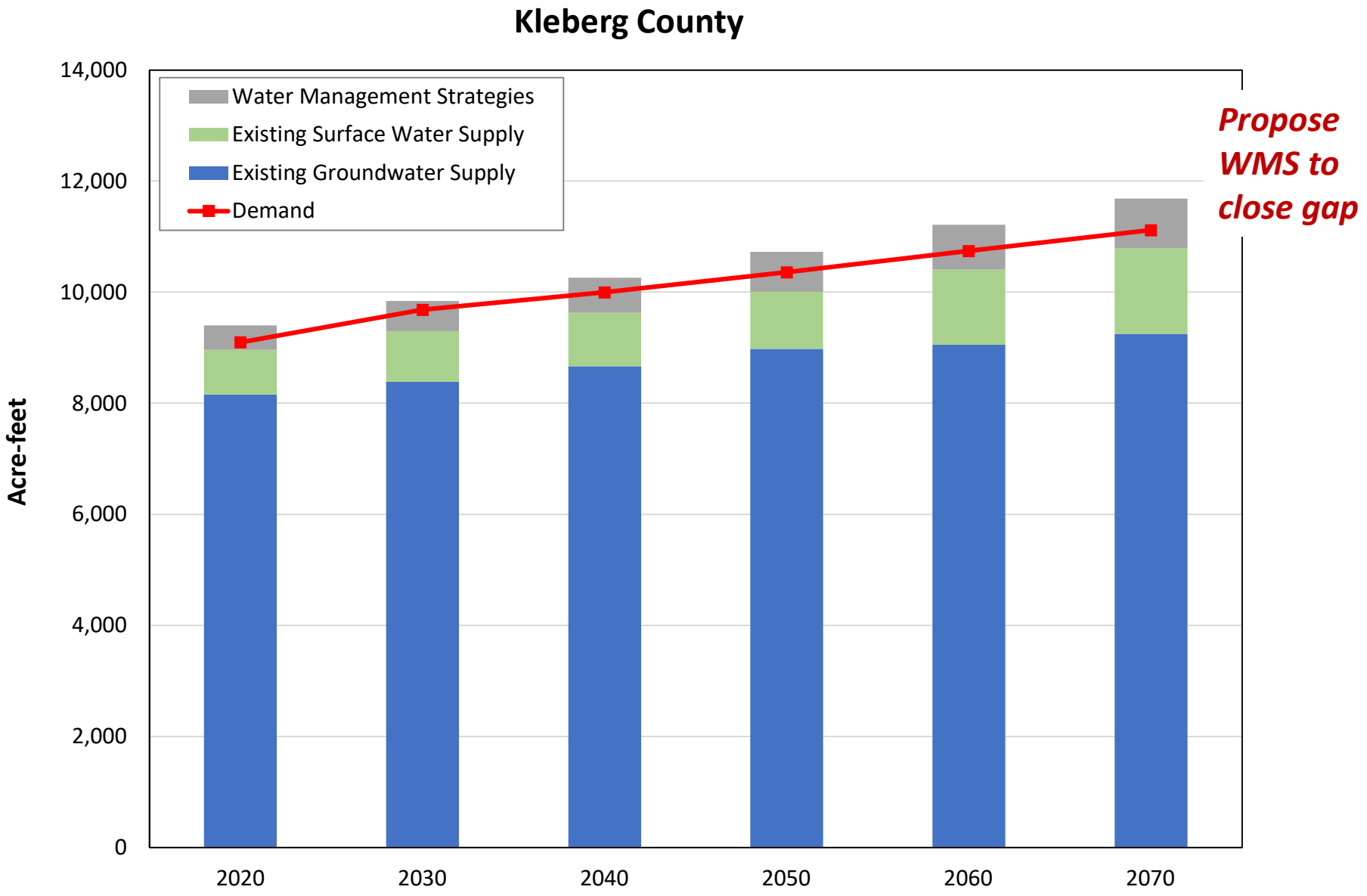
Predicted Demand (Kleberg County)

Demand	2020	2030	2040	2050	2060	2070
Municipal	5,409	5,744	6,078	6,457	6,857	7,241
Manufacturing	1,809	2,056	2,056	2,056	2,056	2,056
Steam-Electric	0	0	0	0	0	0
Mining	357	360	340	324	308	298
Irrigation	850	850	850	850	850	850
Livestock	673	673	673	673	673	673

Example of Regional Water Plan Accounting by County



Example of Regional Water Plan Accounting by County



Example of Regional Water Plan Accounting by County

Water Management Strategies can include:

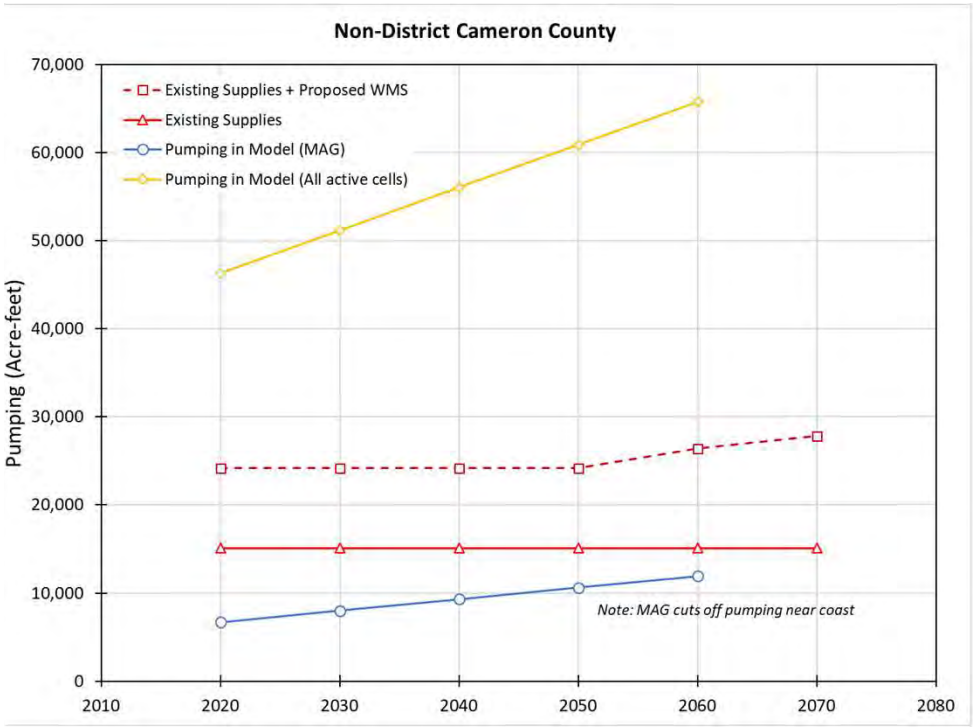
- Conservation
- Demand Reduction
- Water Re-use
- Additional Infrastructure
  - Groundwater wells
  - Desalination plants
  - Reservoirs or pipelines

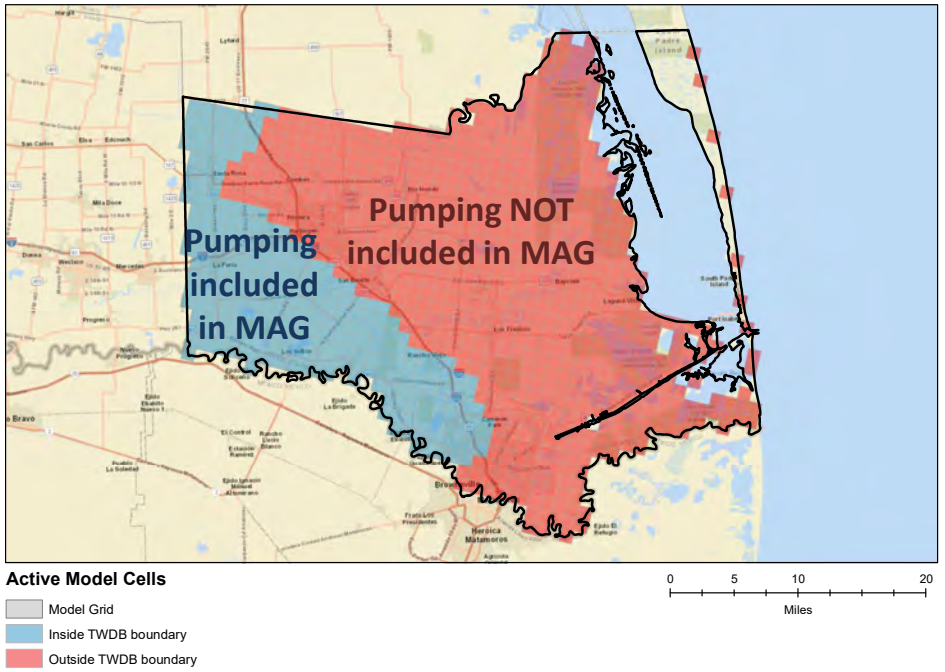
What is the connection between Regional Water Planning & GMA?

- If Water Management Strategy involves groundwater, it has to be possible based on modeled MAG values.

- GMA modeled pumping should be equal or higher to Existing Supplies listed in Regional Water Planning – this is a double-check that modeled pumping realistically accounts for pumping in the GMA.

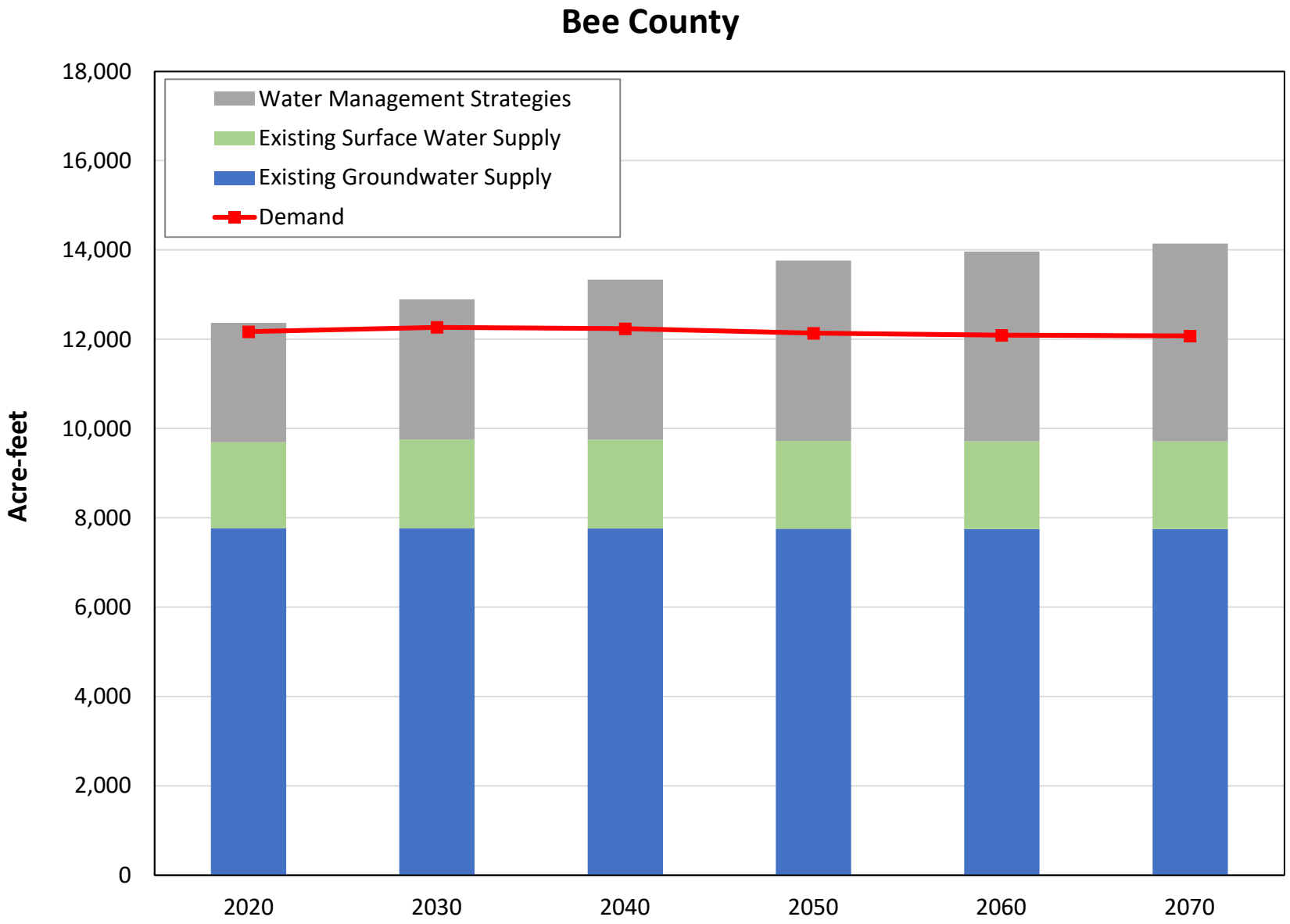
Connection between Regional Water Planning & GMA



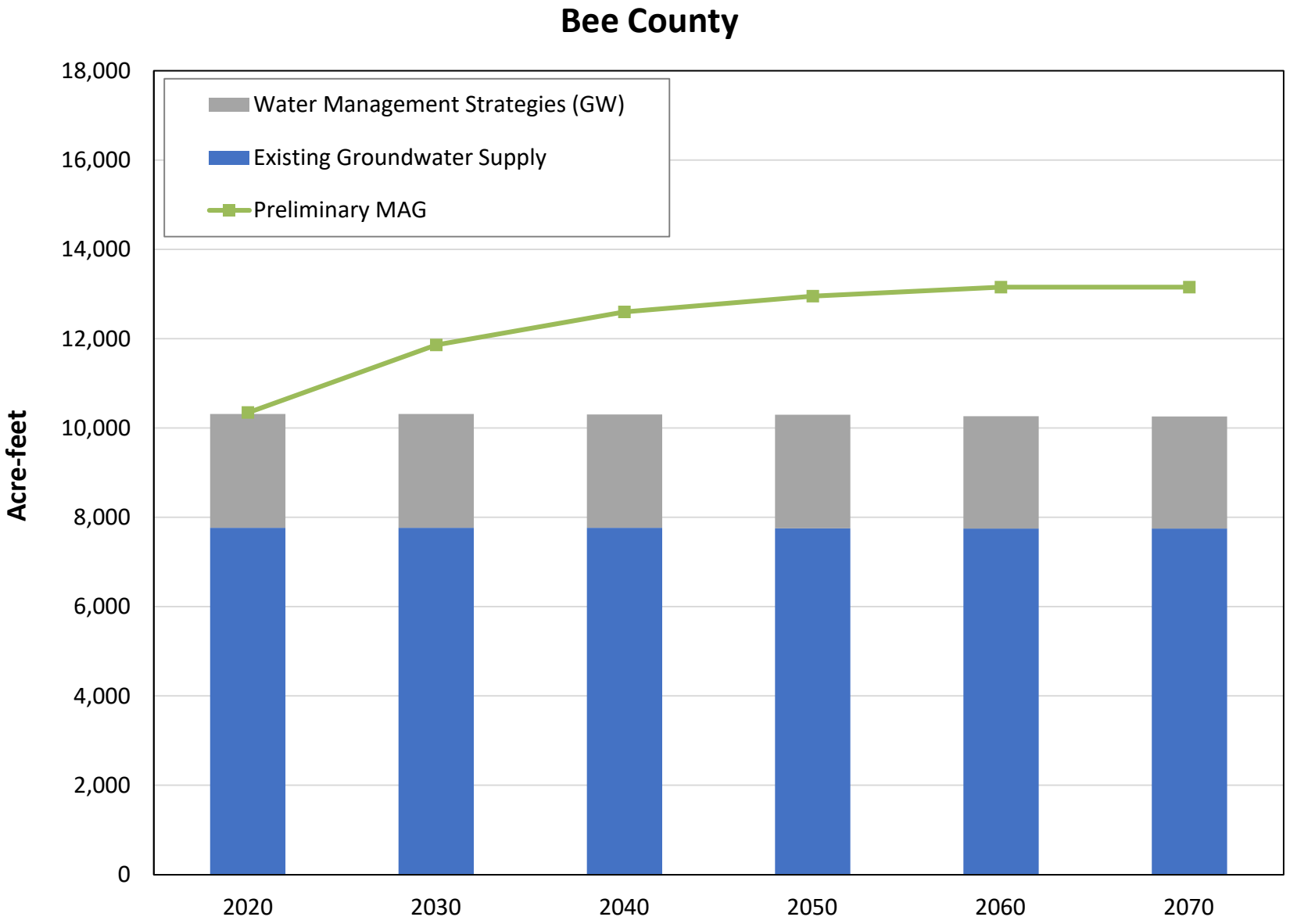


*Cameron County (Region M) could not suggest addl WMS because MAG did not include all pumping

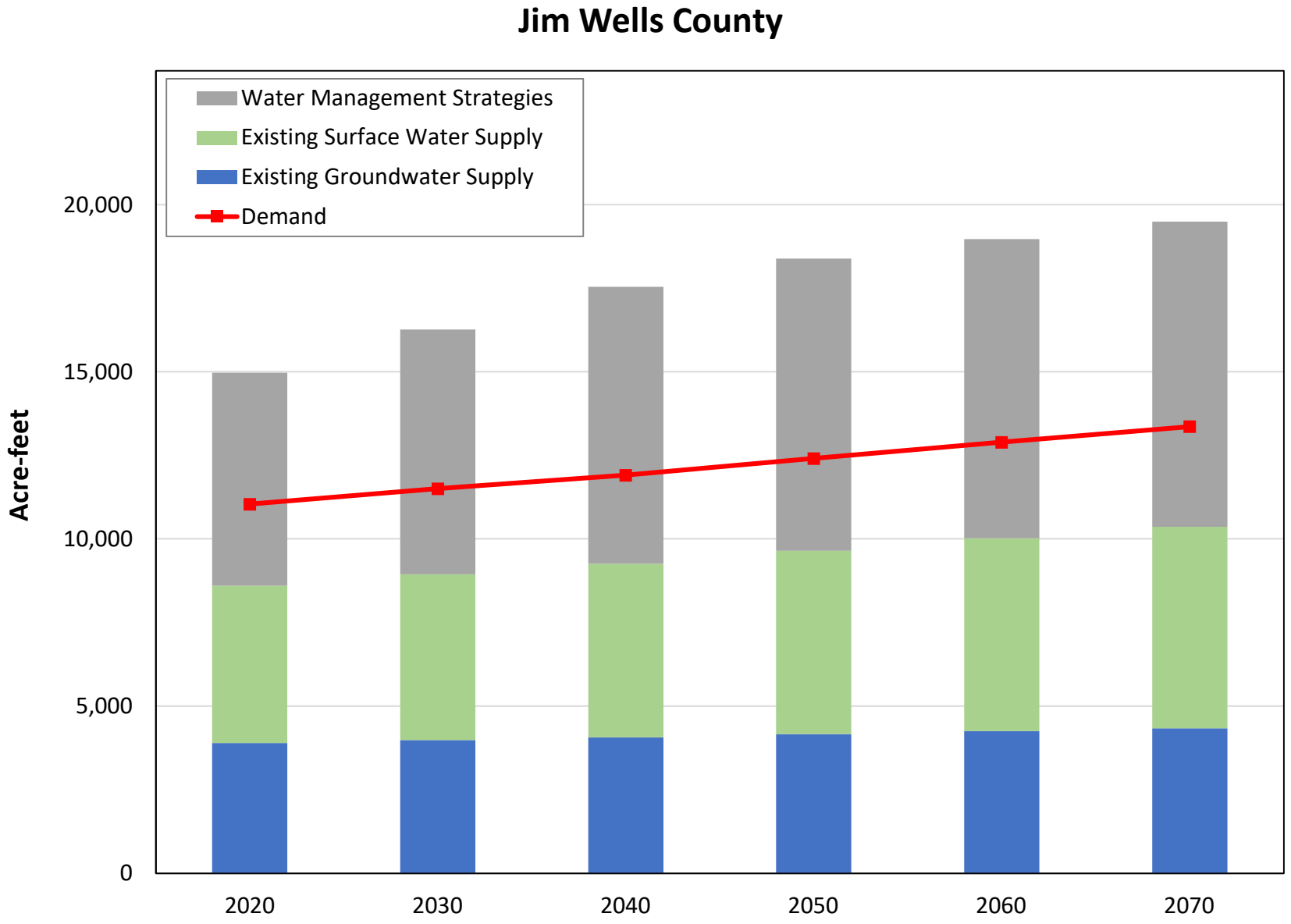
Bee GCD


Bee County
Water Management Strategies
Existing Surface Water Supply
Existing Groundwater Supply
Demand
Acre-feet
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
2020
2030
2040
2050
2060
2070

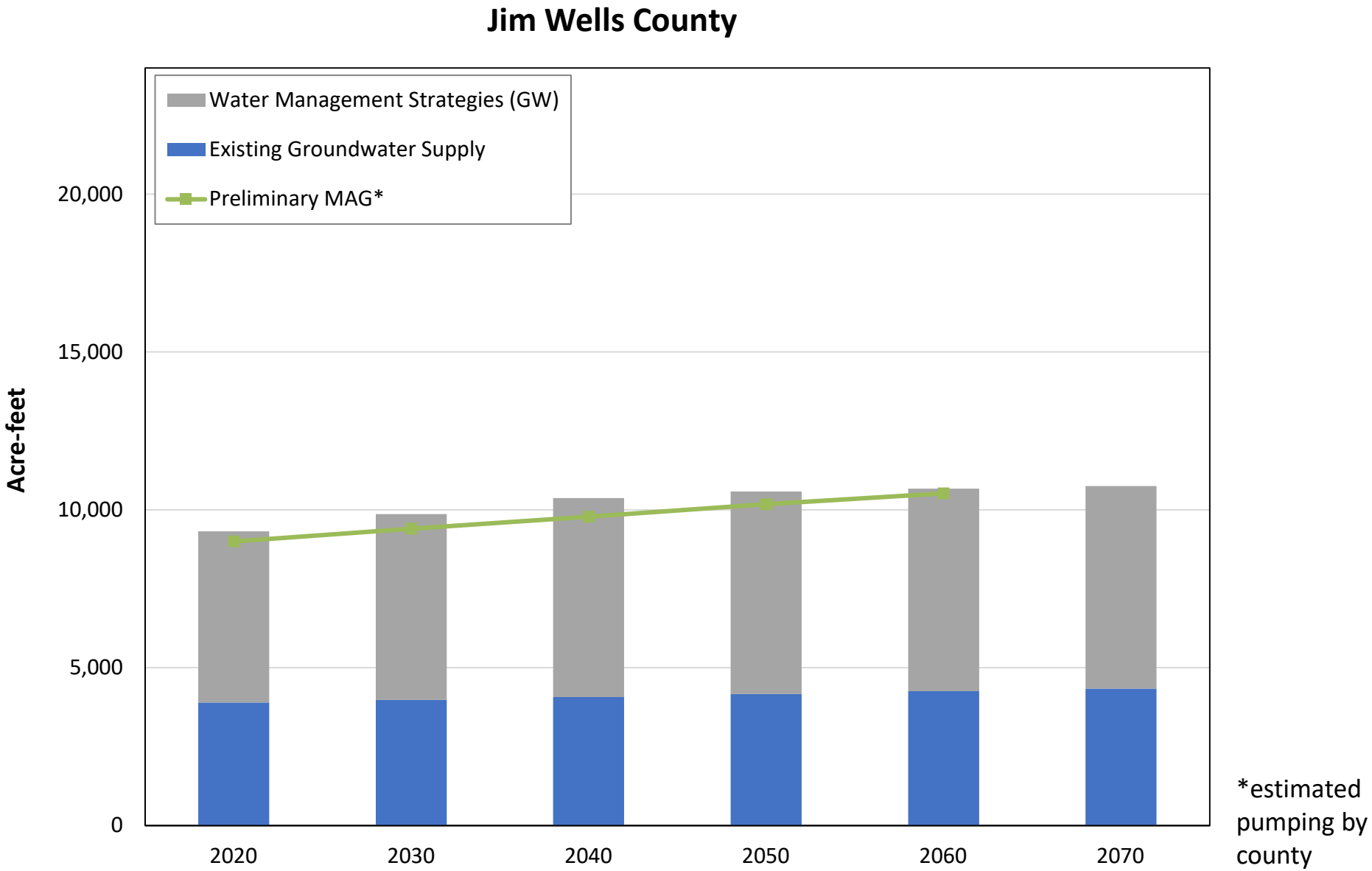
Bee GCD


Bee County
Water Management Strategies (GW)
Existing Groundwater Supply
Preliminary MAG
Acre-feet
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
2020
2030
2040
2050
2060
2070

Brush Country GCD

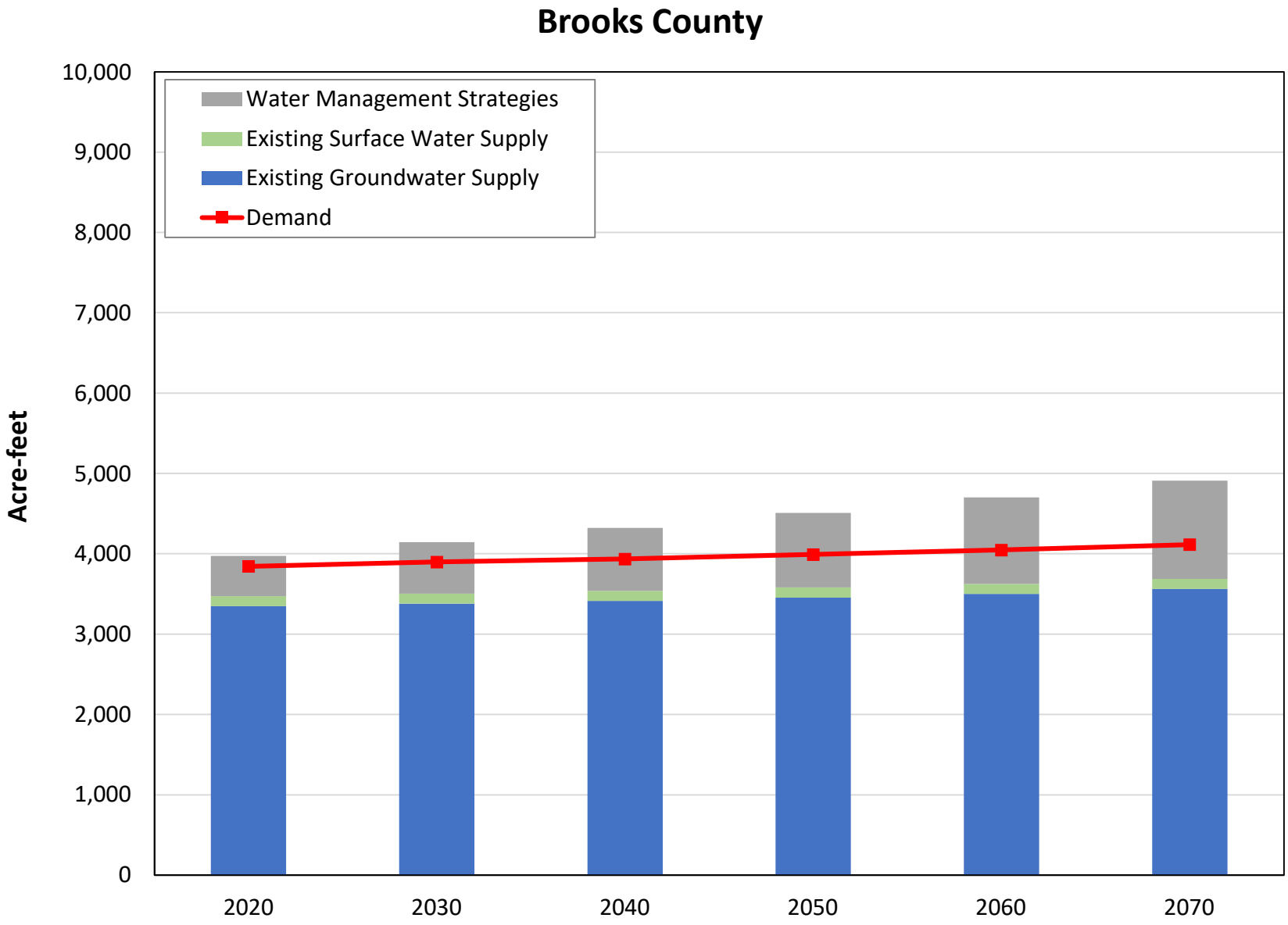


Brush Country GCD

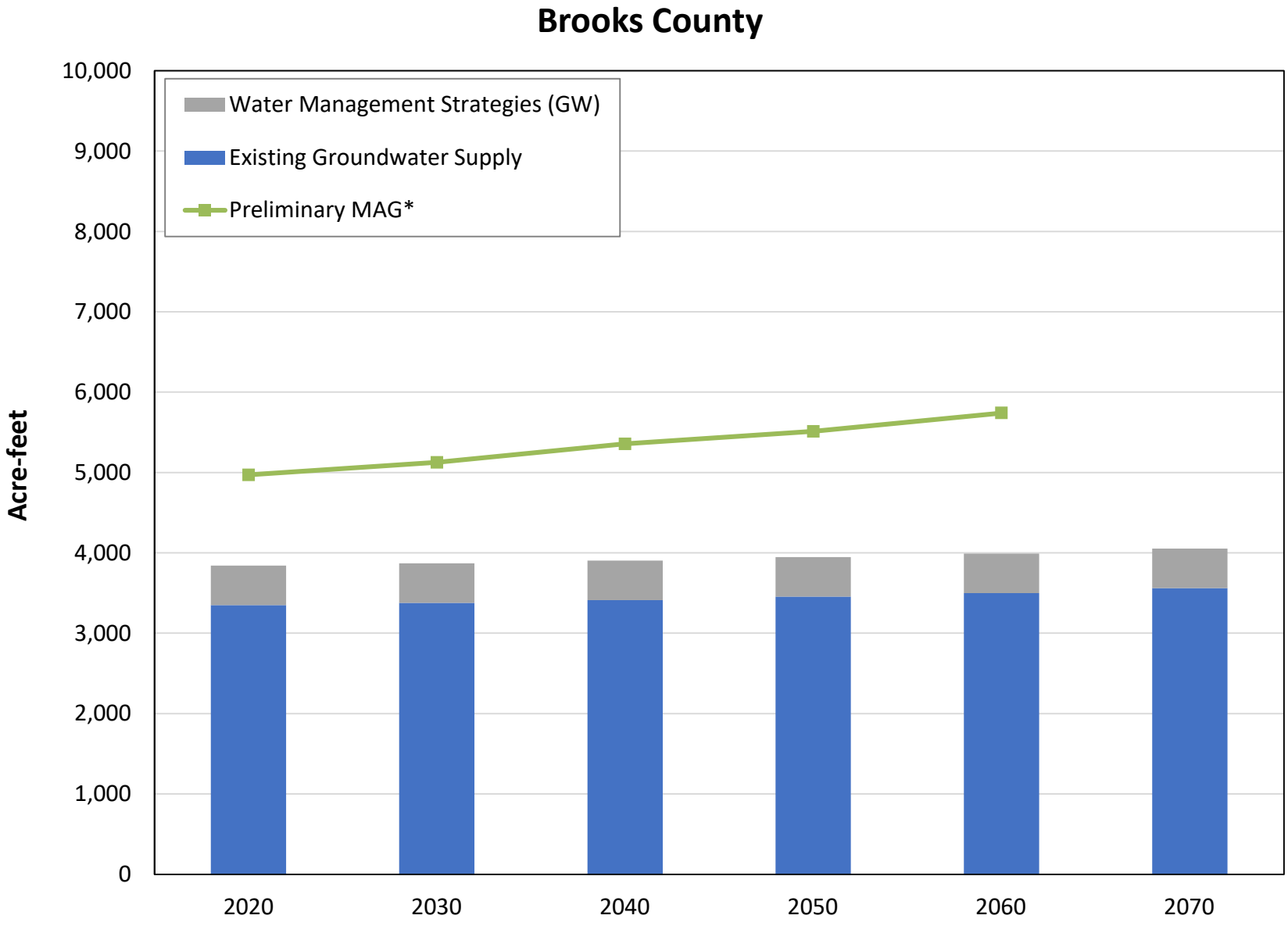


*estimated pumping by county

Brush Country GCD

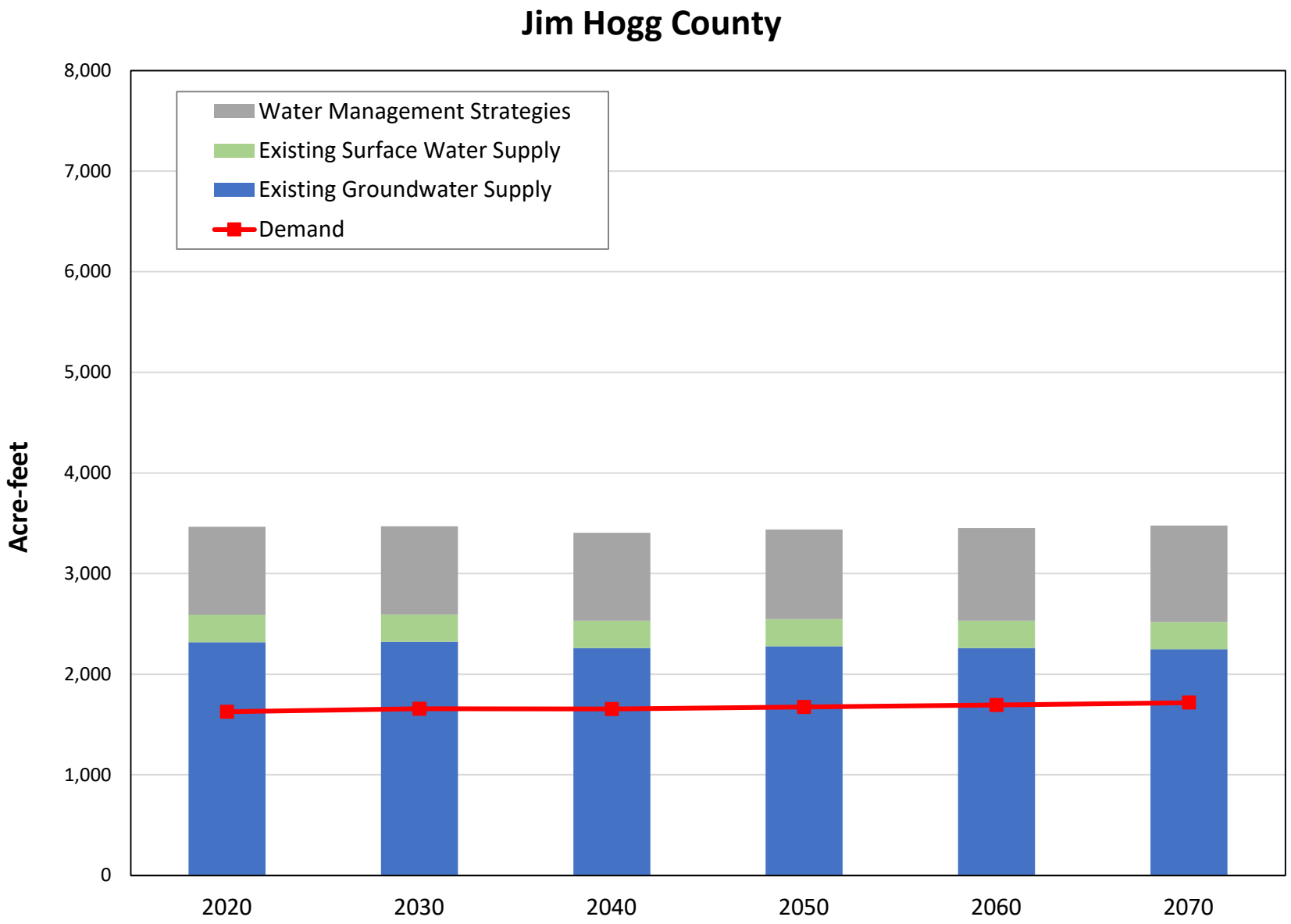


Brush Country GCD



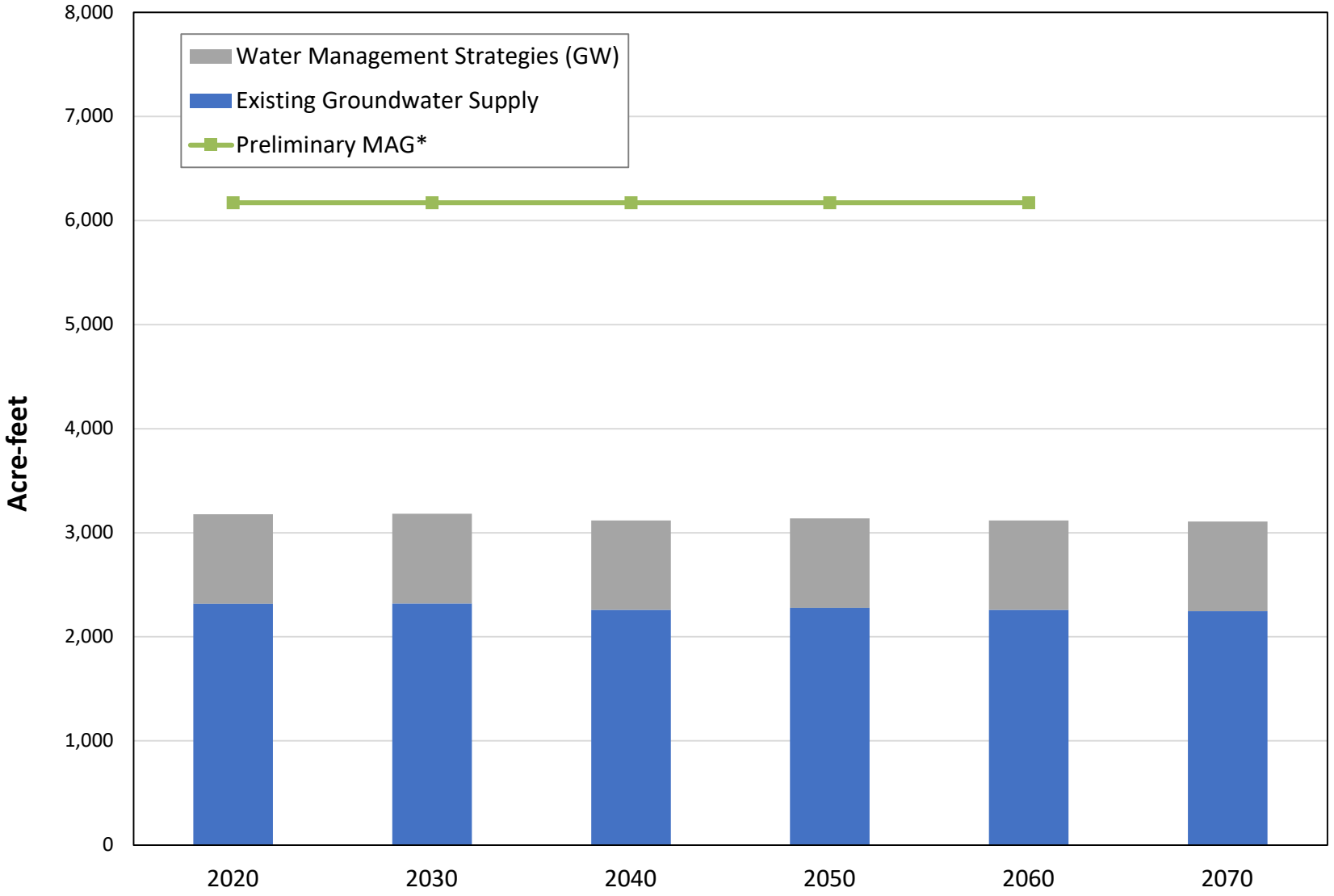
*estimated pumping by county

Brush Country GCD



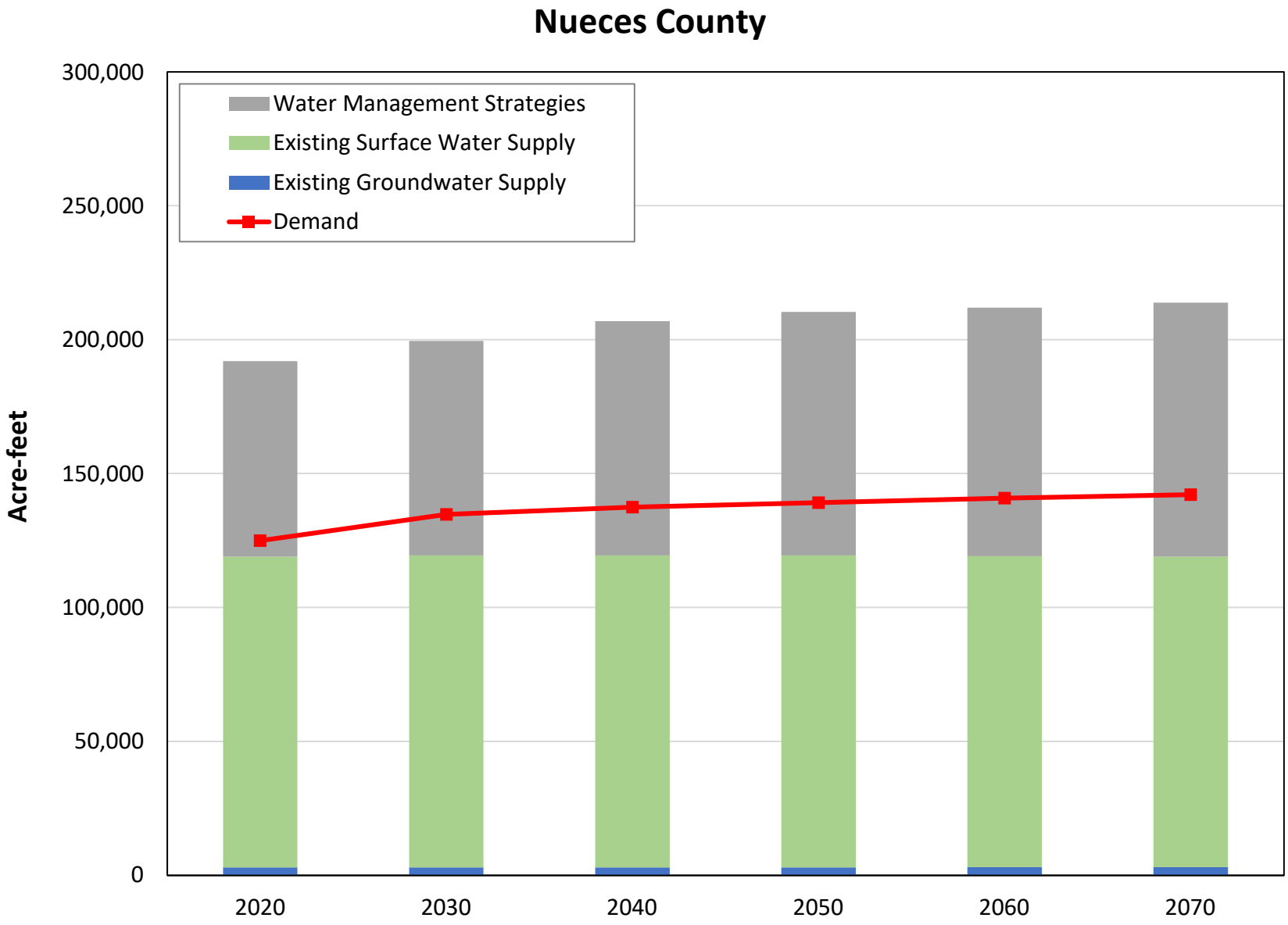
Brush Country GCD

Jim Hogg County

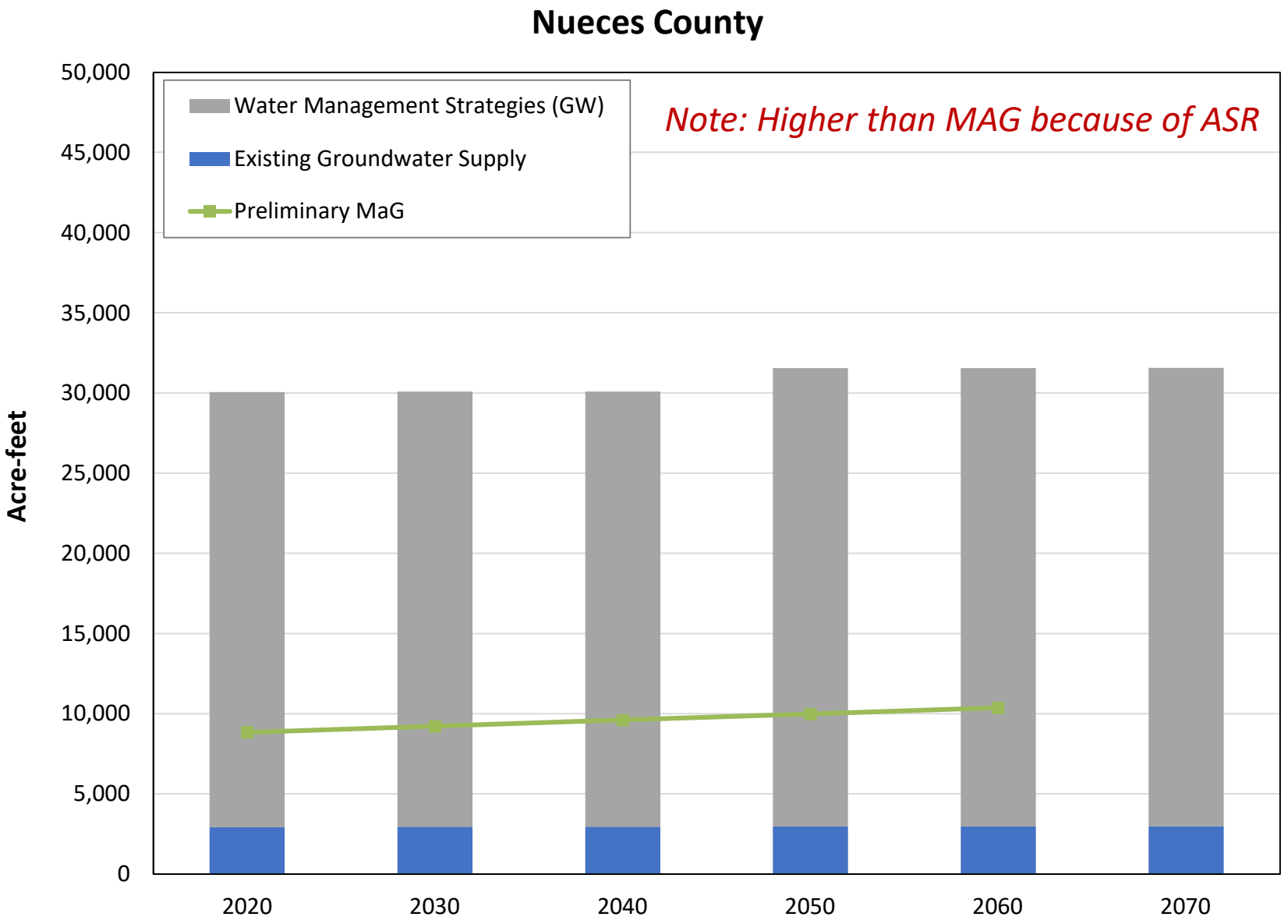


*estimated pumping by county

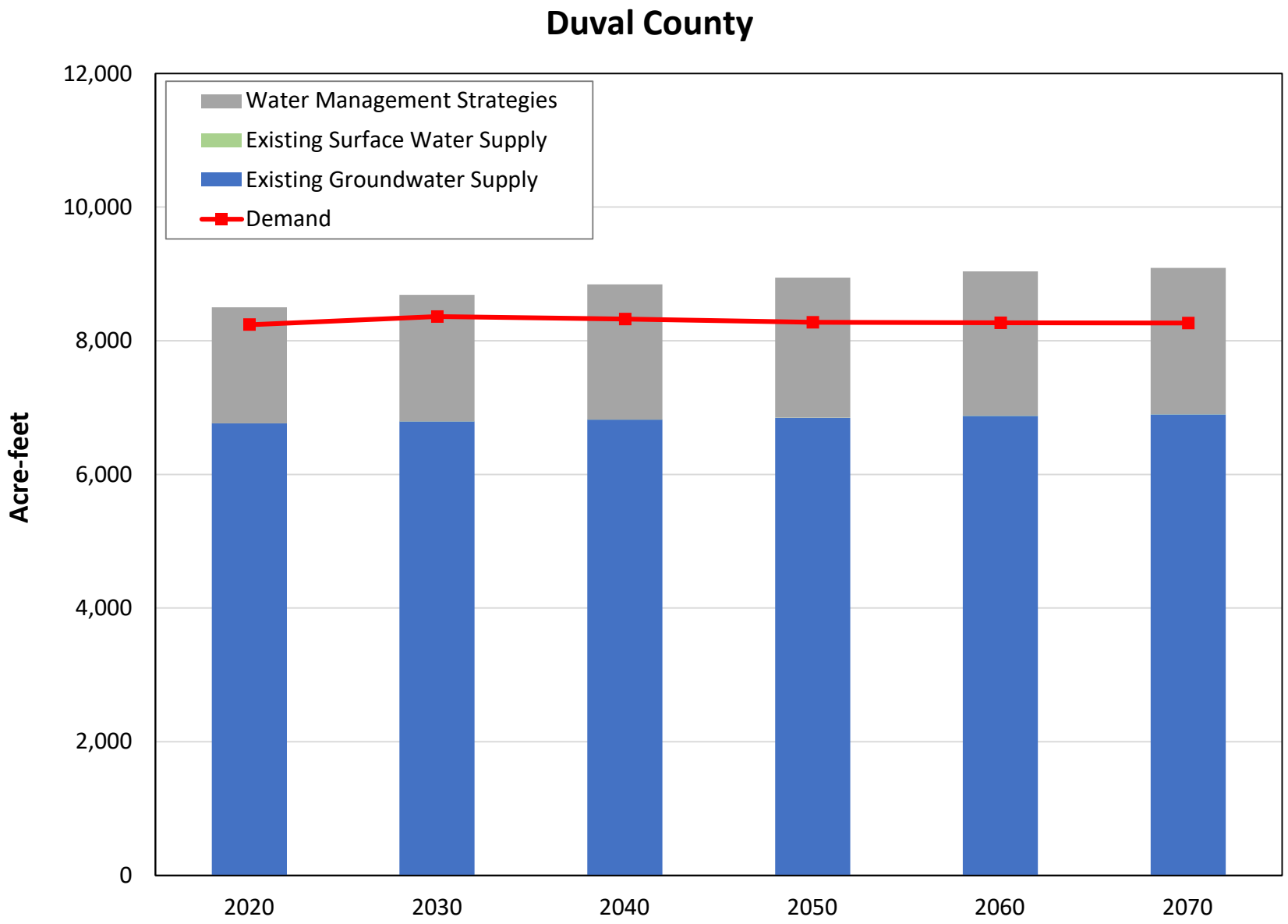
Corpus Christi ASRCD



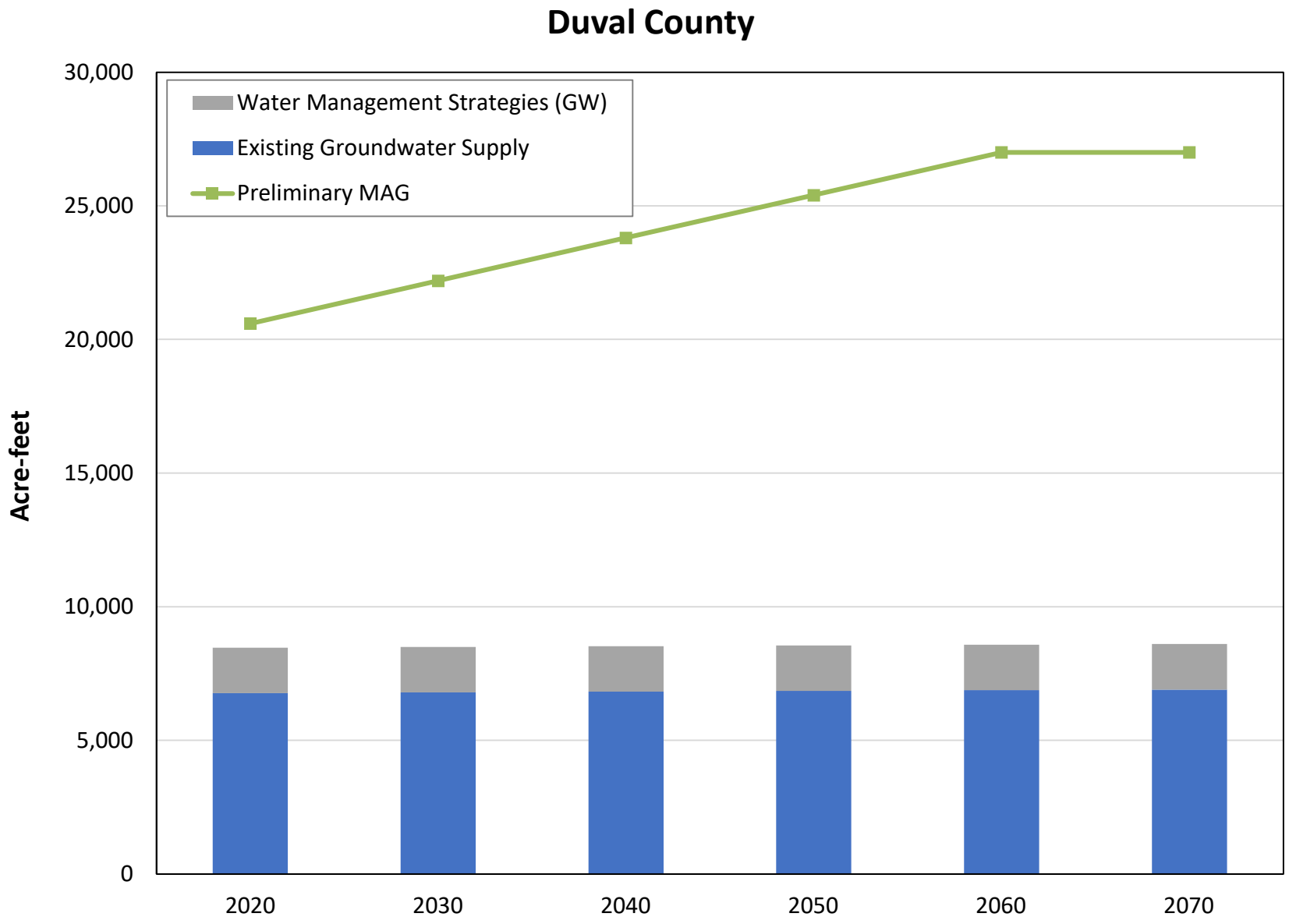
Corpus Christi ASRCD



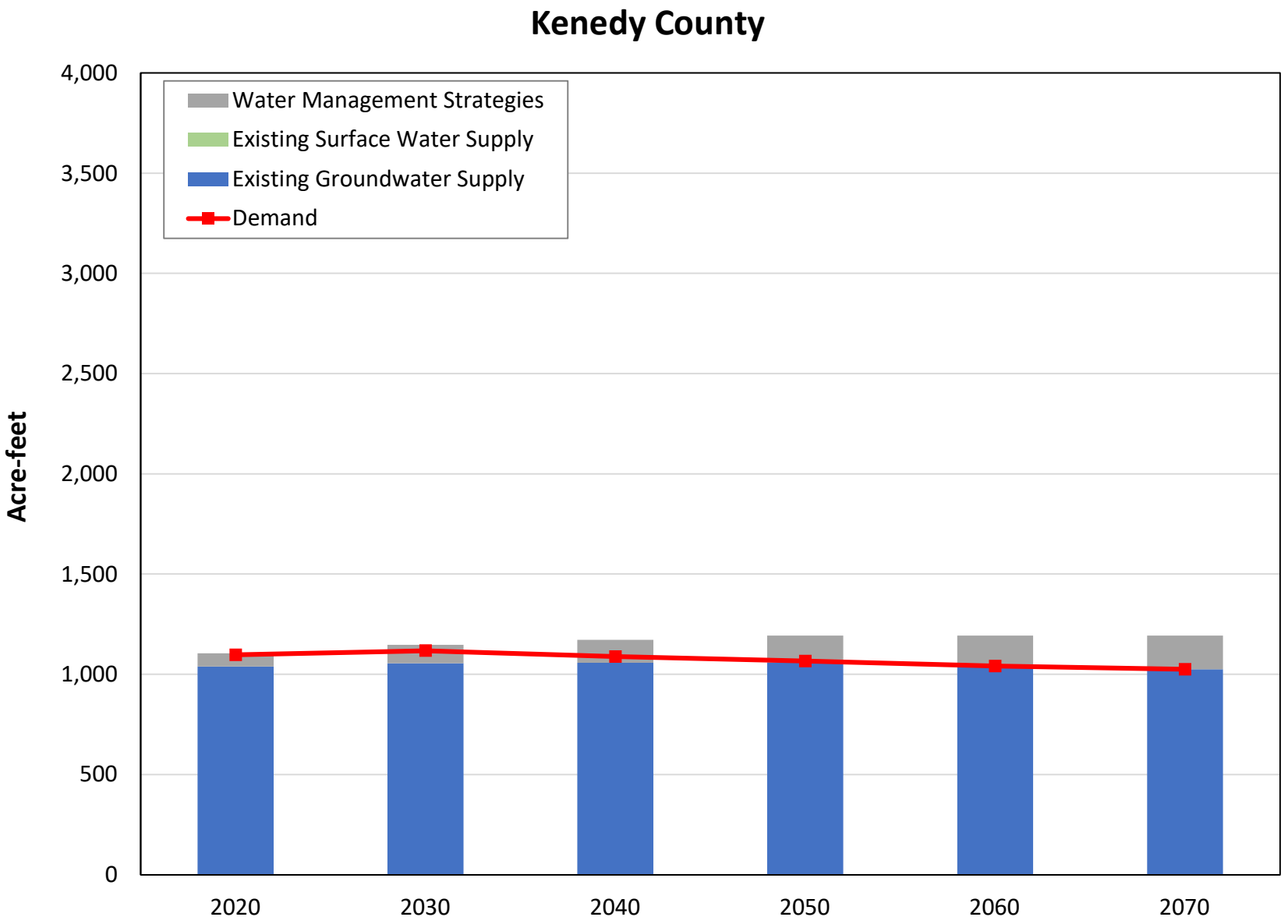
Duval County GCD



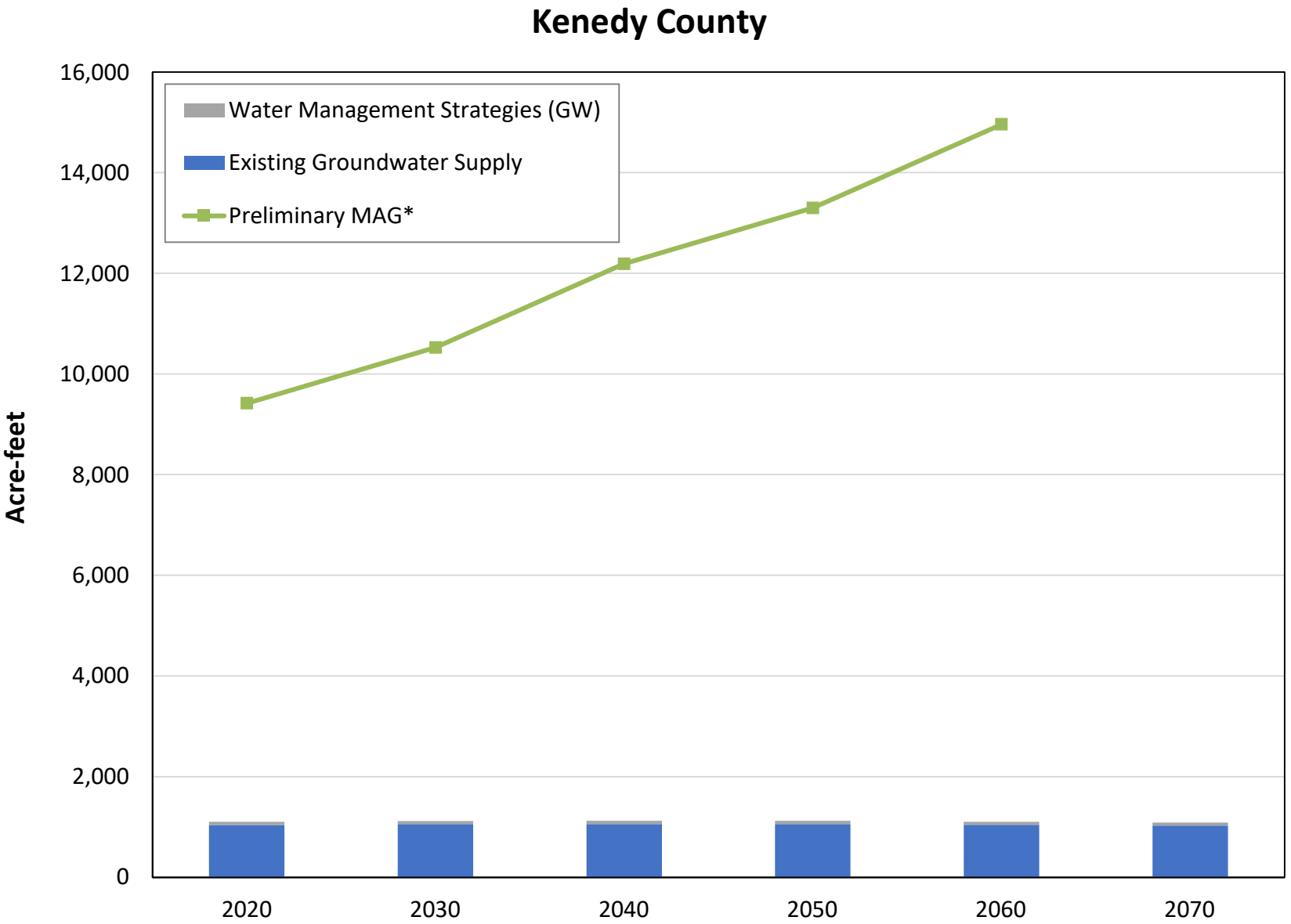
Duval County GCD



Kenedy County GCD

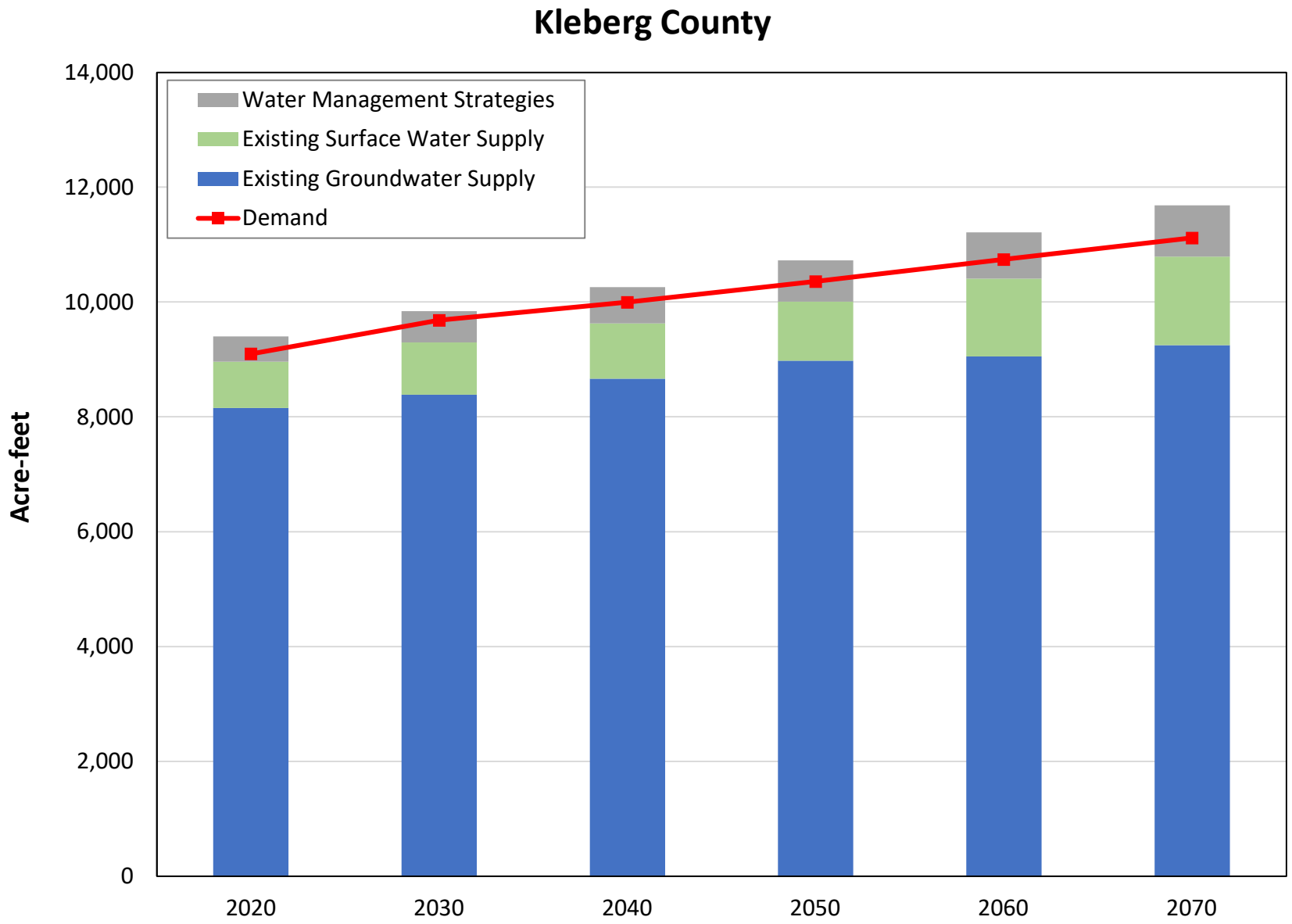


Kenedy County GCD

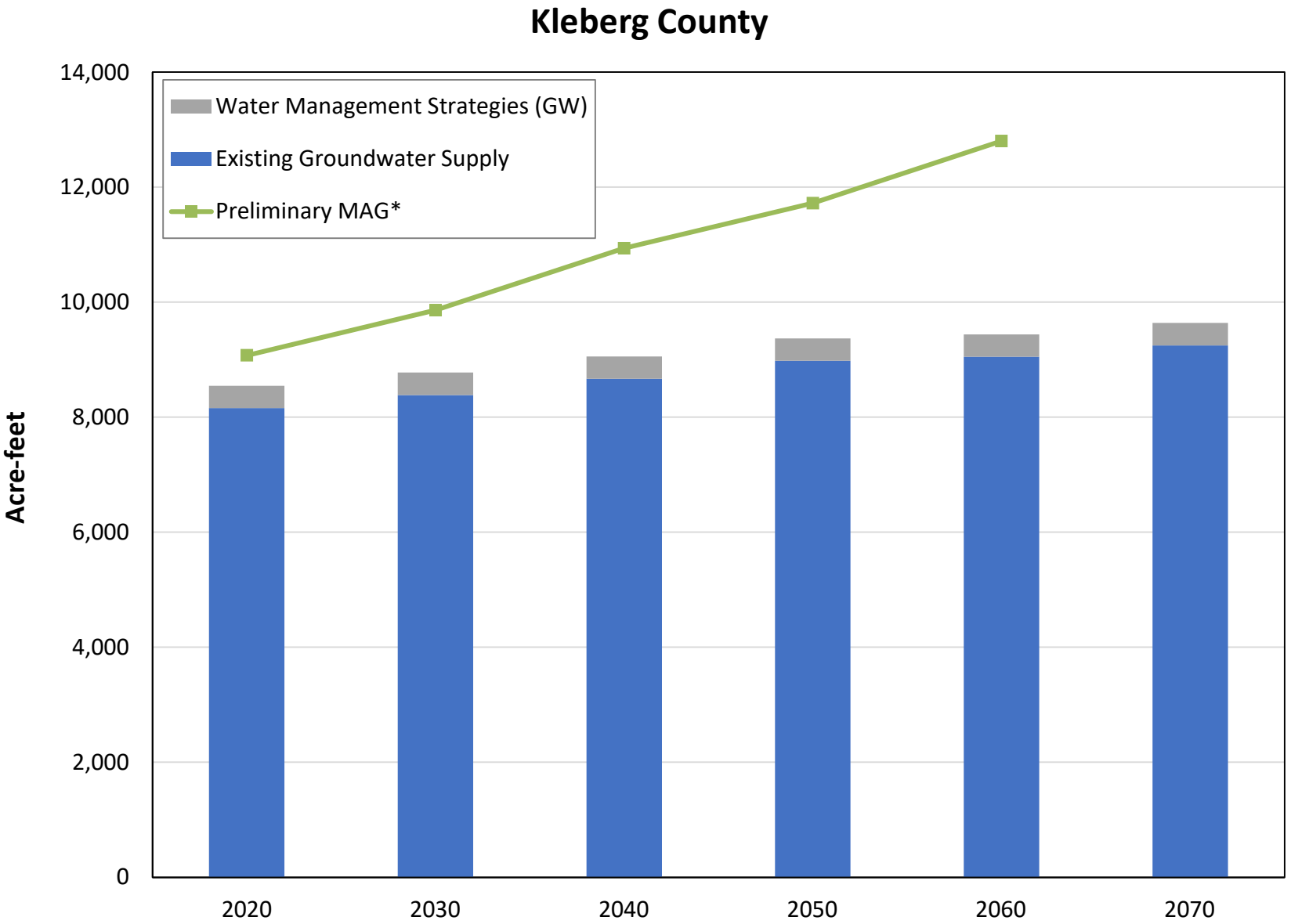


*estimated pumping by county

Kenedy County GCD

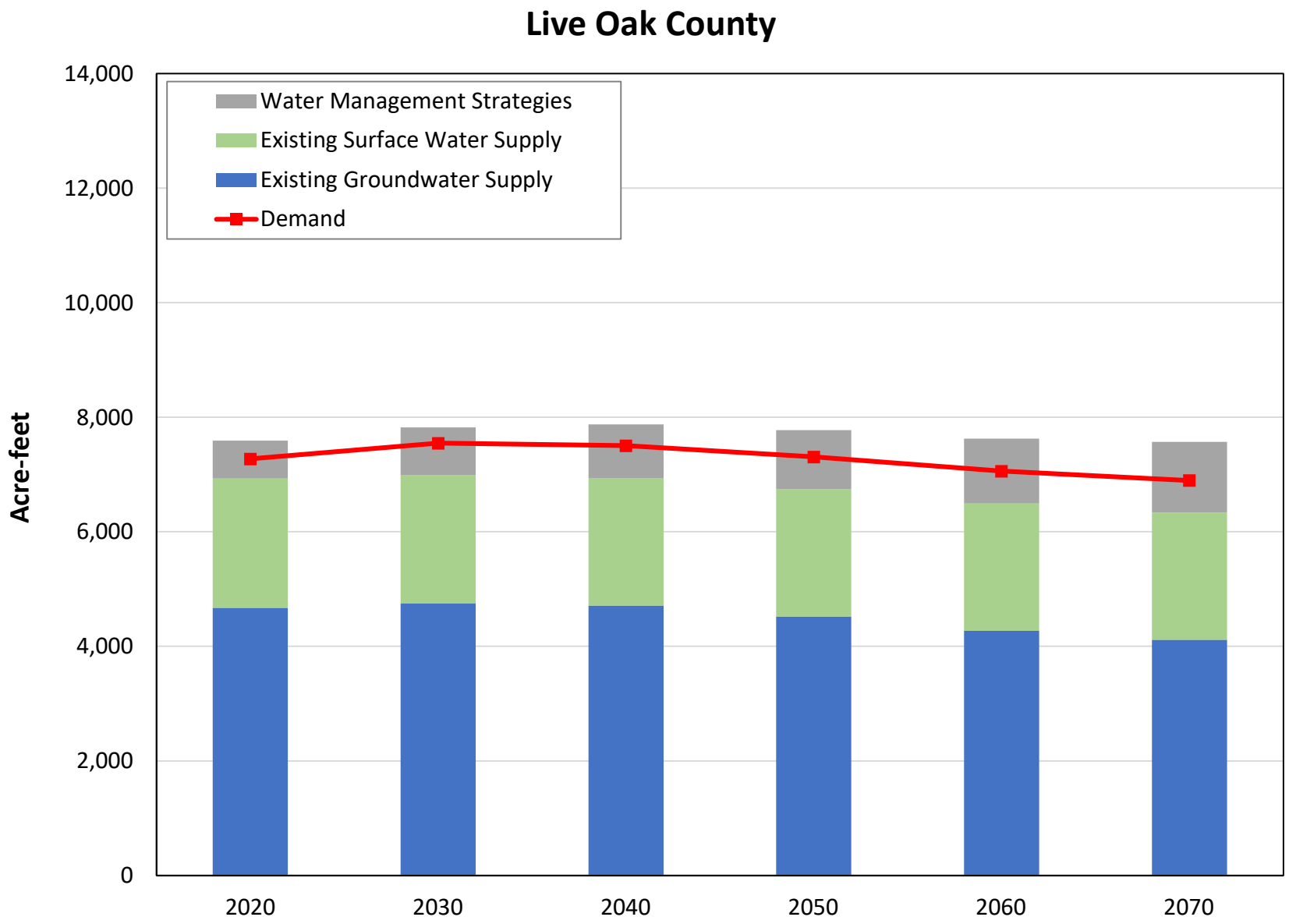


Kenedy County GCD

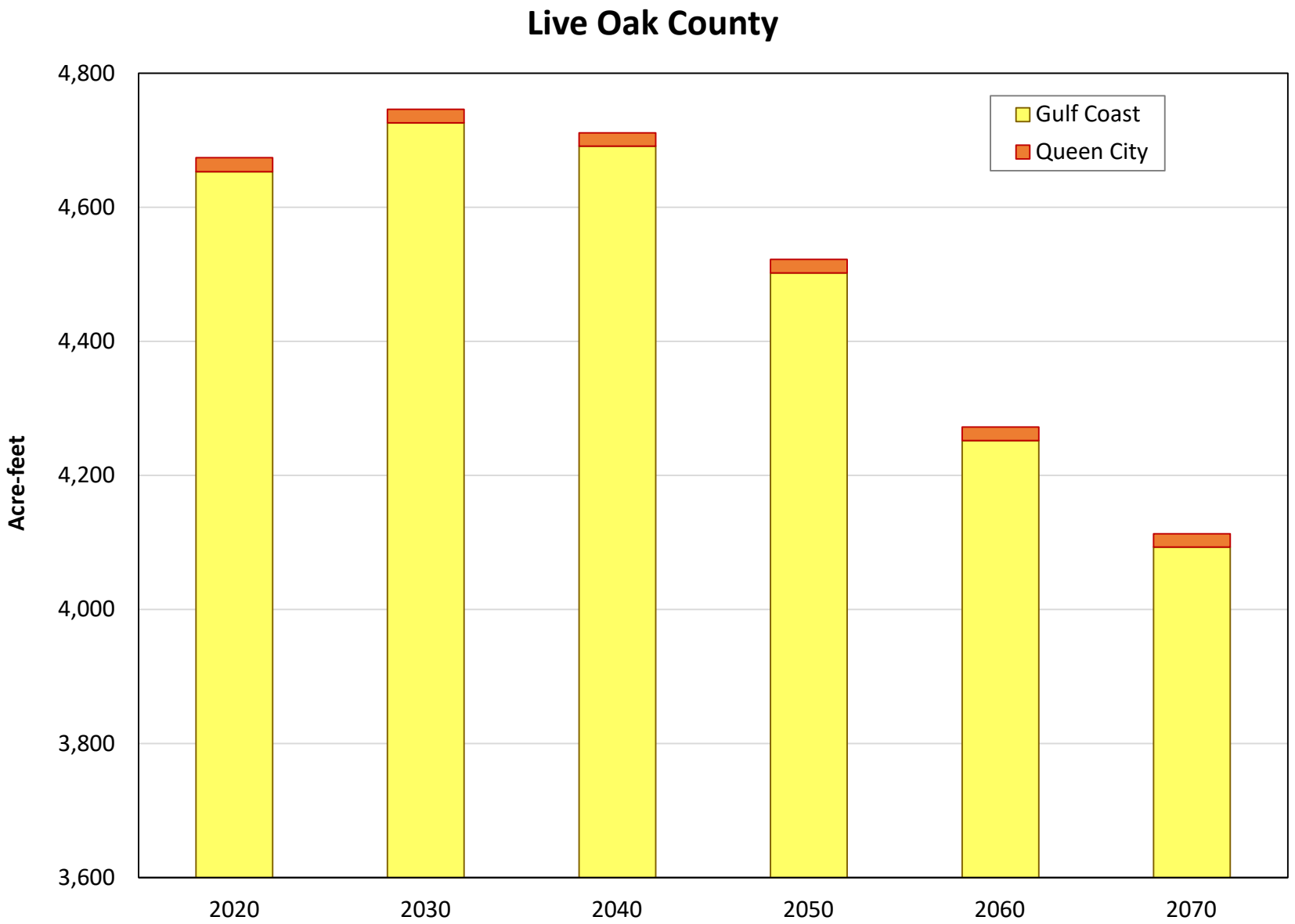


*estimated pumping by county

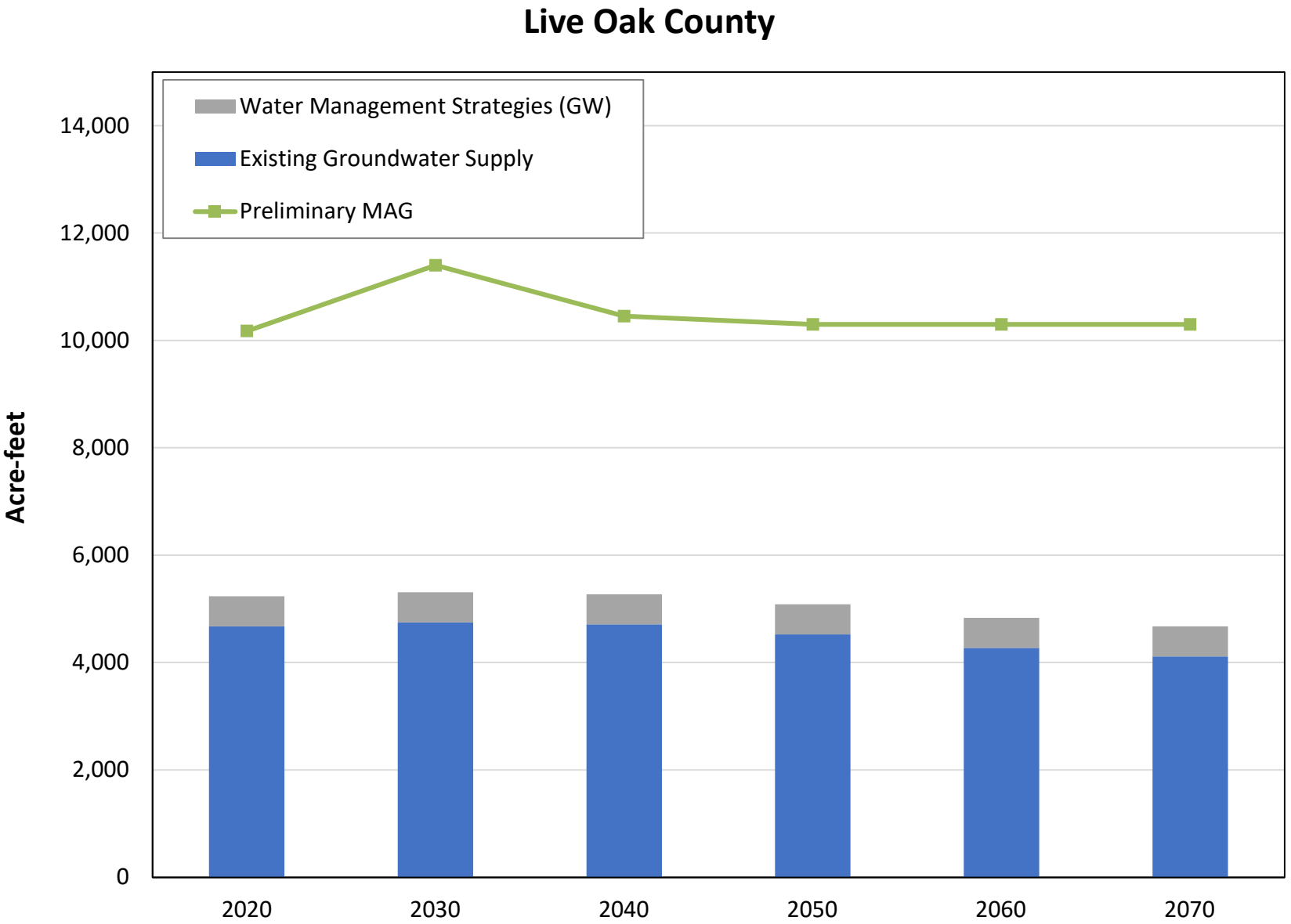
Live Oak GCD


Live Oak County
Water Management Strategies
Existing Surface Water Supply
Existing Groundwater Supply
Demand
Acre-feet
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
2020
2030
2040
2050
2060
2070

Live Oak GCD


Live Oak County
Acre-feet
4,800
4,600
4,400
4,200
4,000
3,800
3,600
Gulf Coast
Queen City
2020
2030
2040
2050
2060
2070

Live Oak GCD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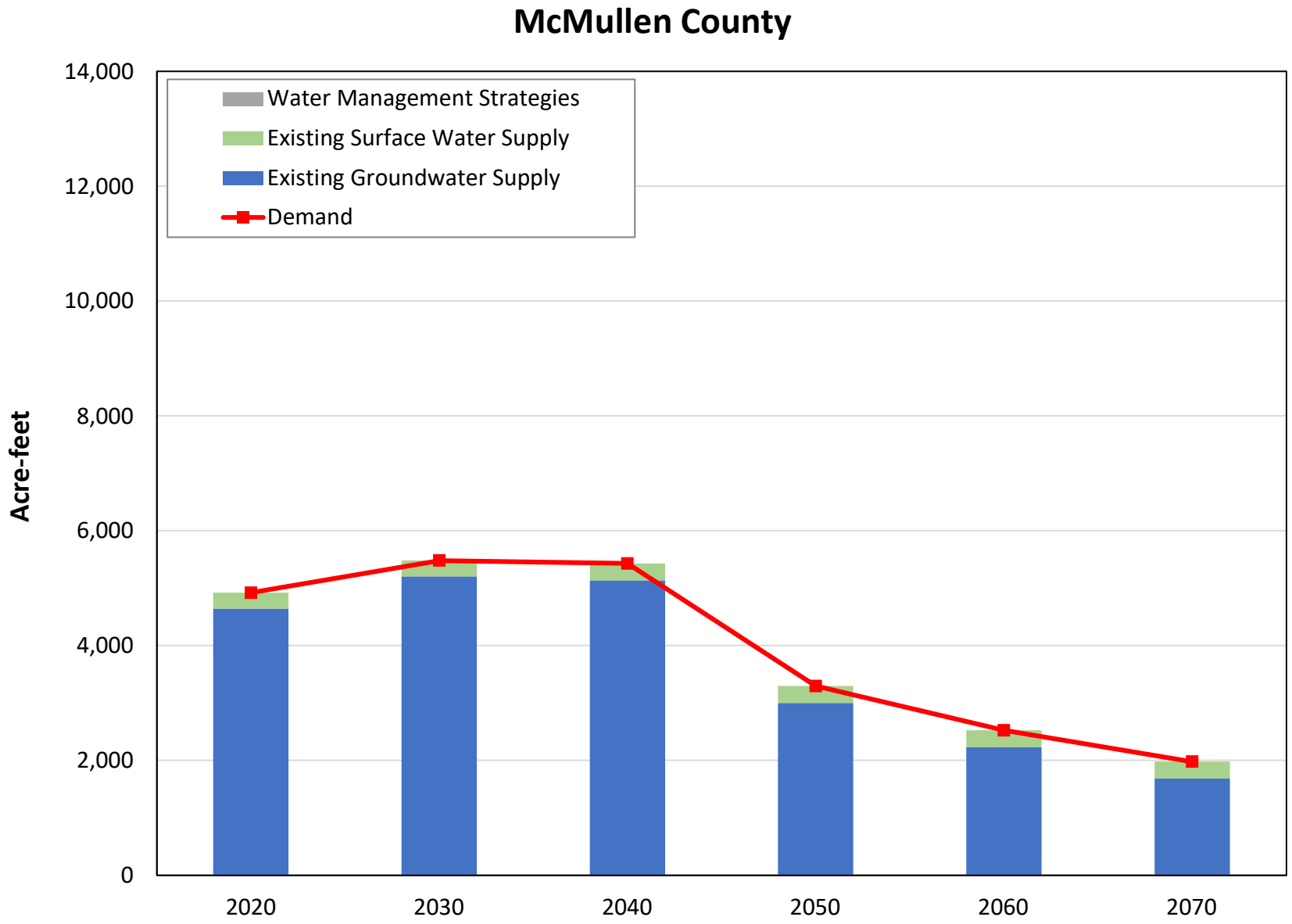
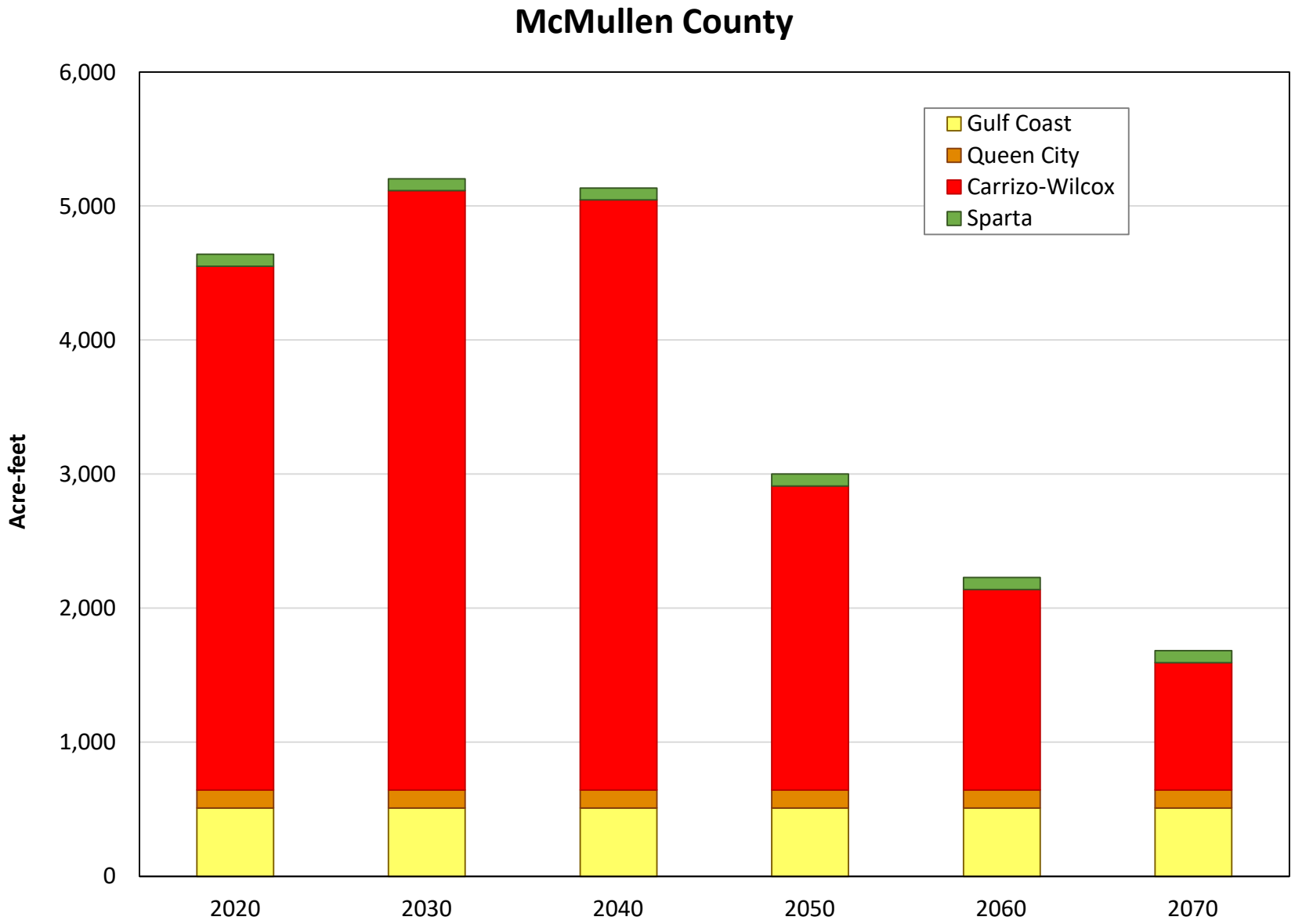
Existing Groundwater Supply
Preliminary MAG
Acre-feet
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
2020
2030
2040
2050
2060
2070

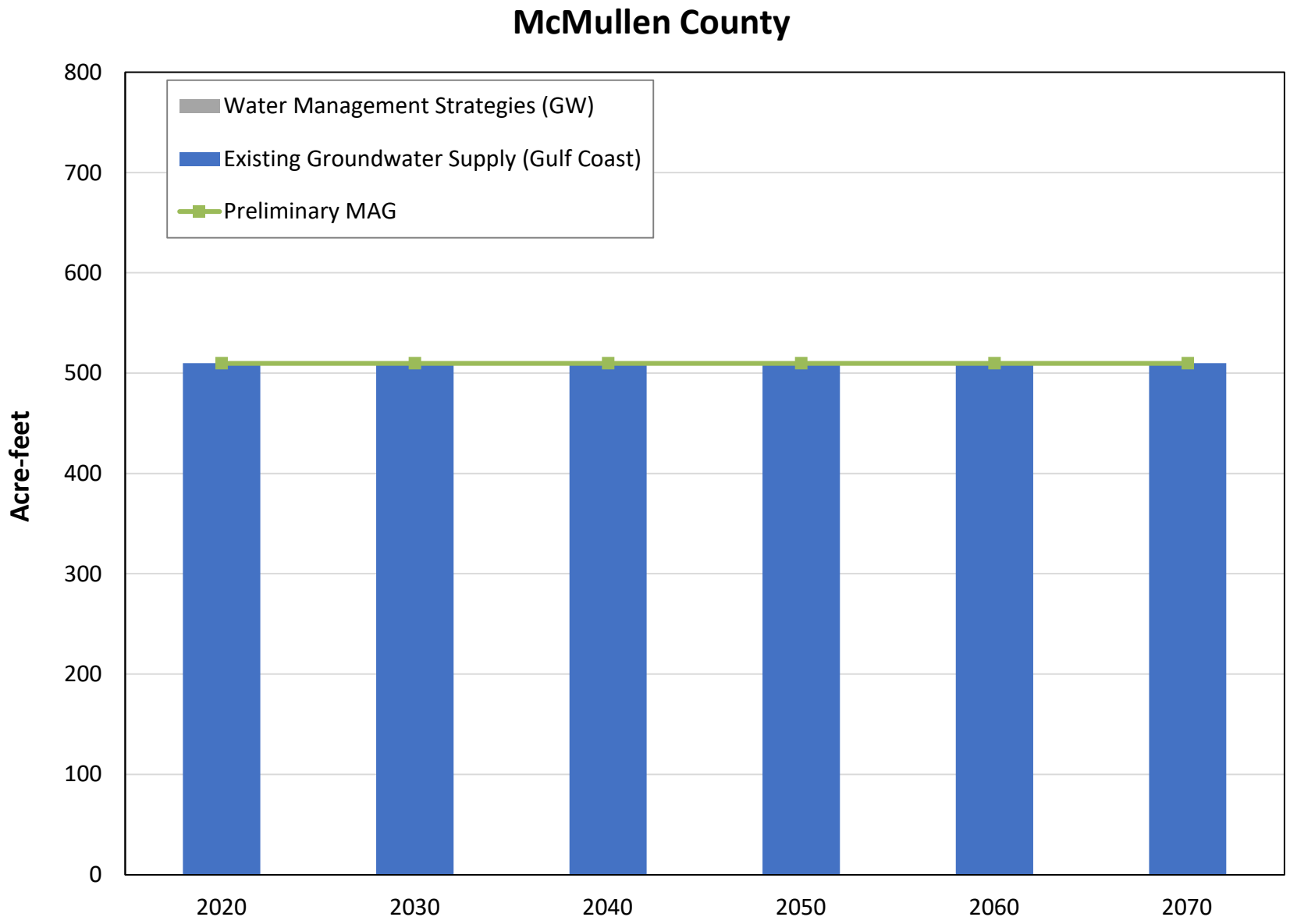
McMullen GCD



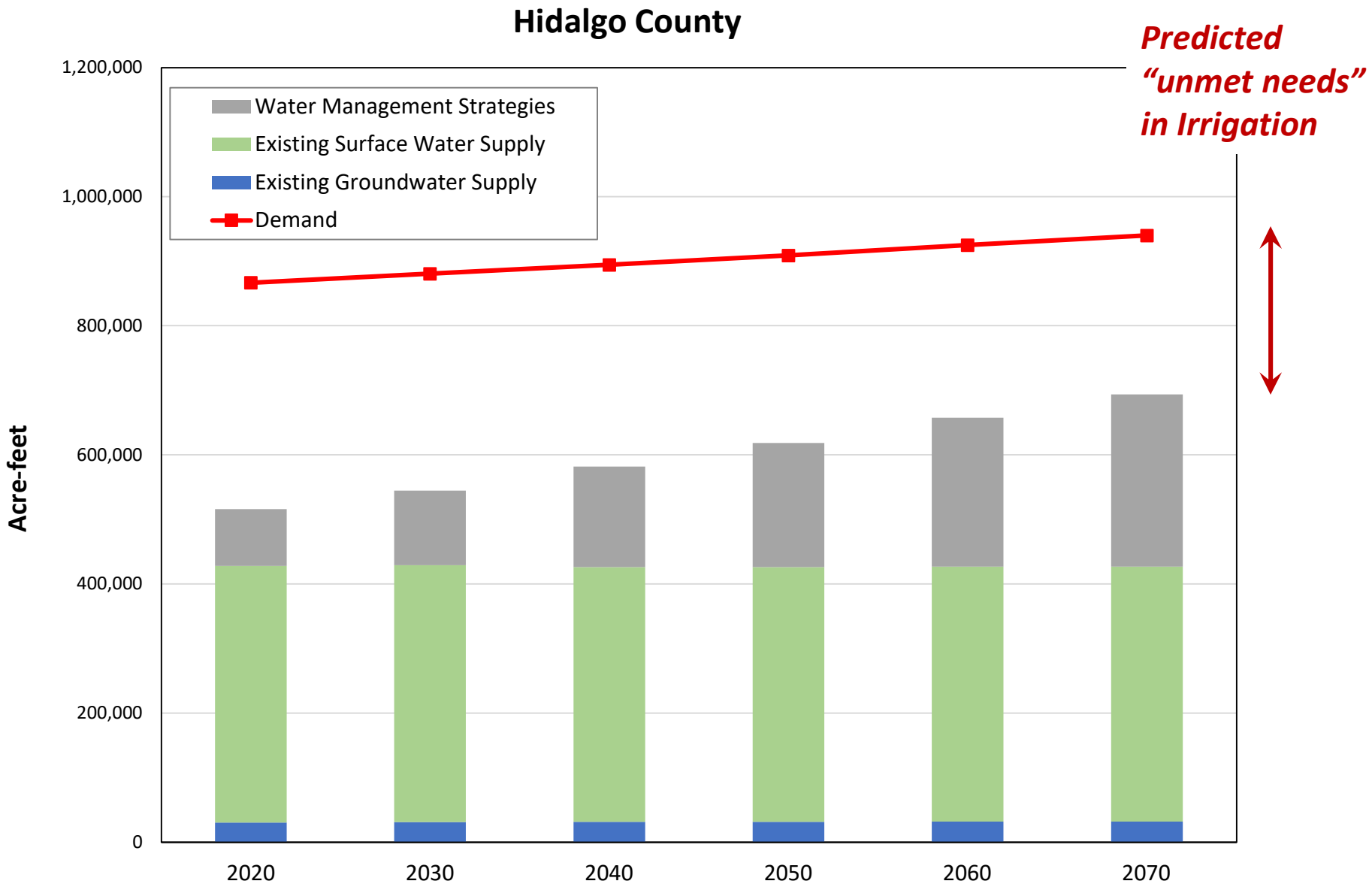
McMullen GCD



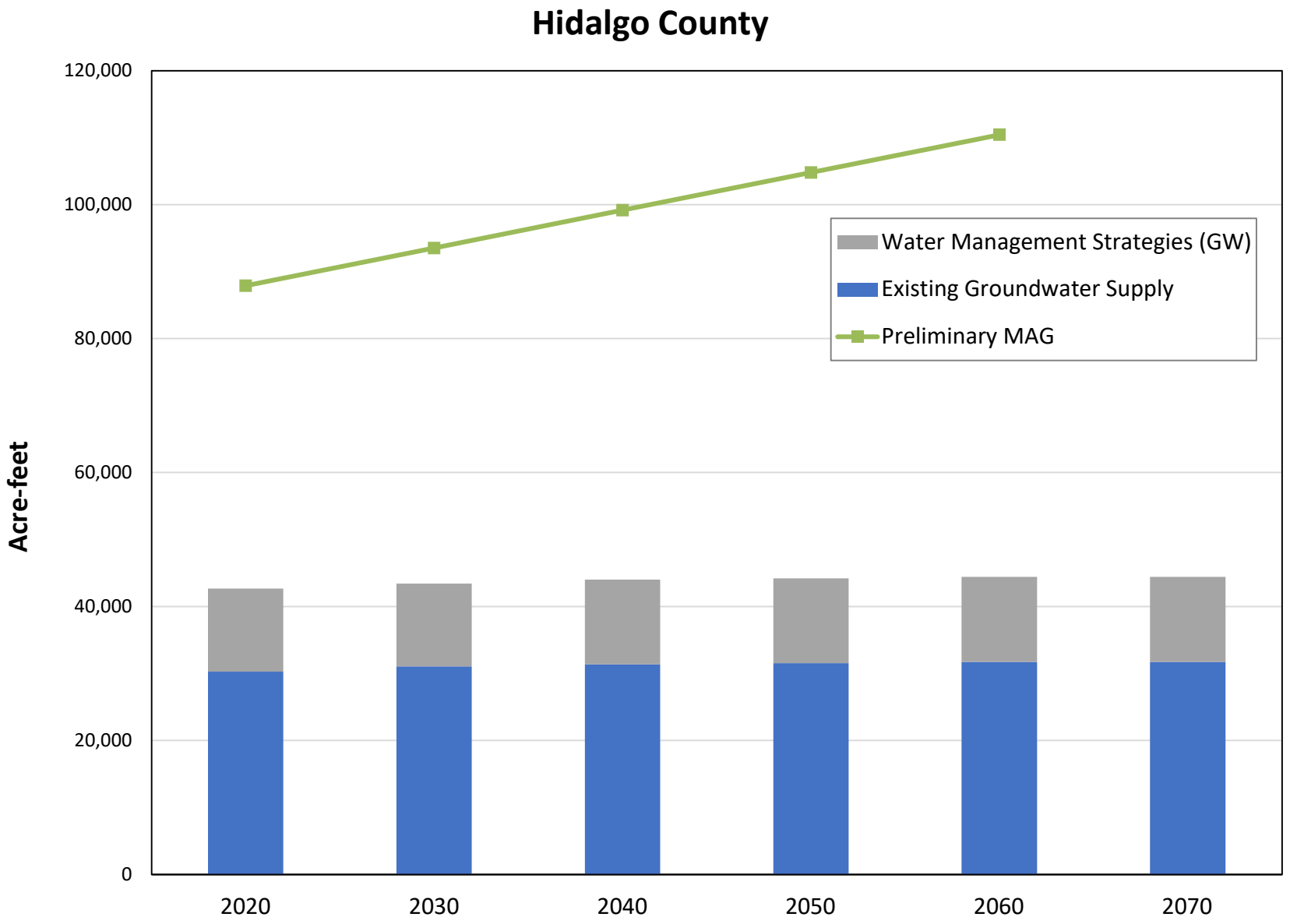
McMullen GCD



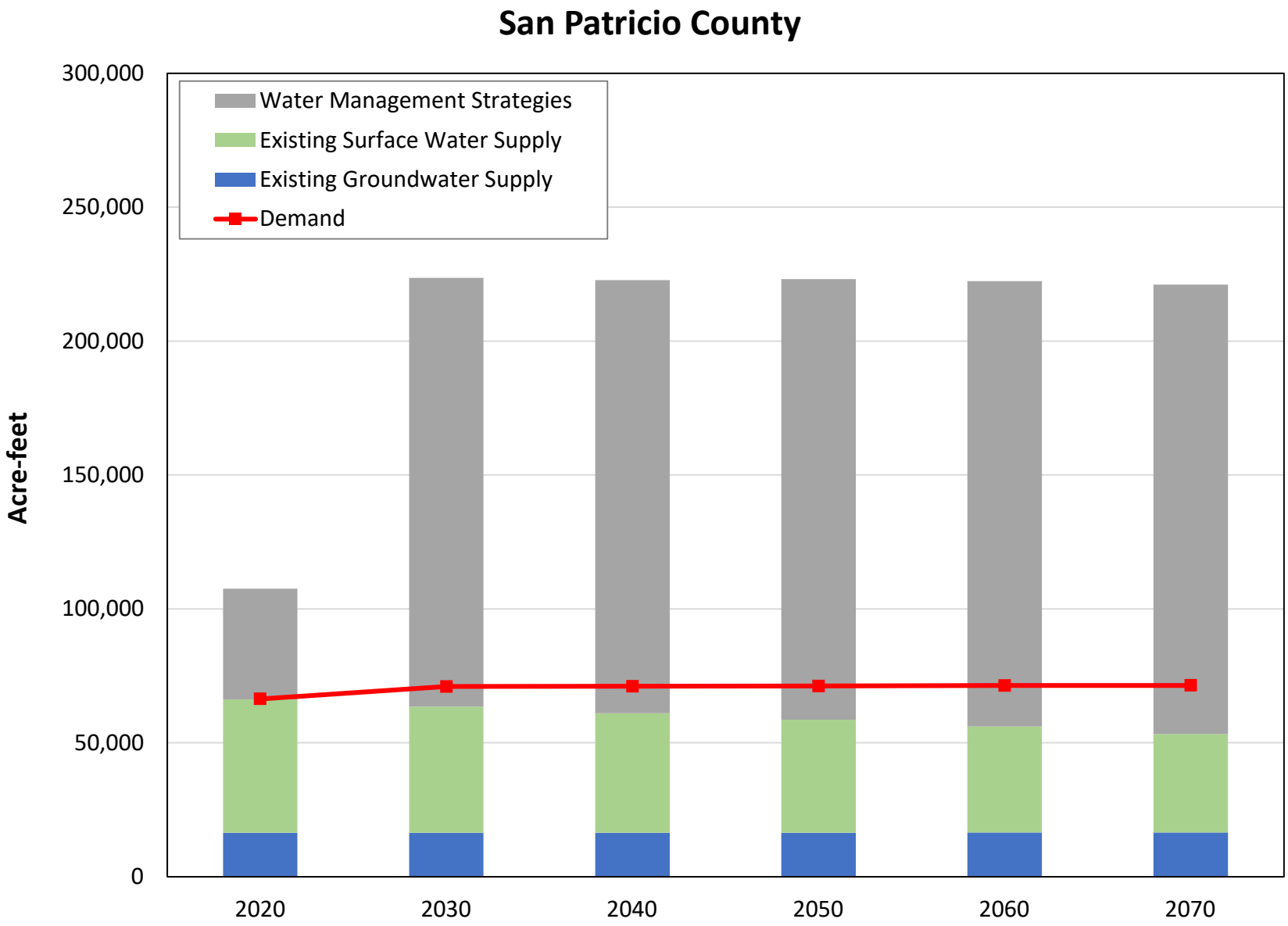
Red Sands GCD



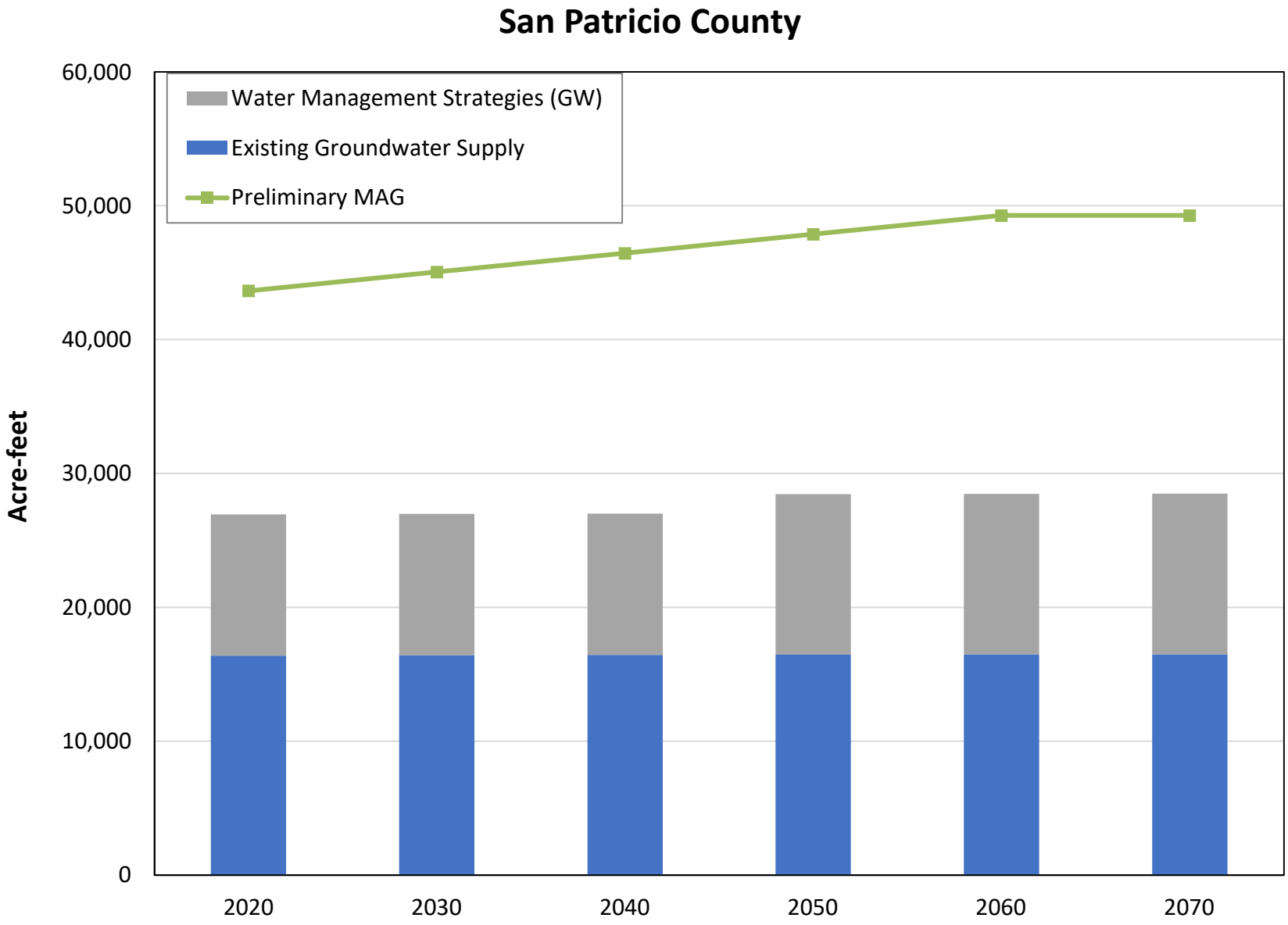
Red Sands GCD



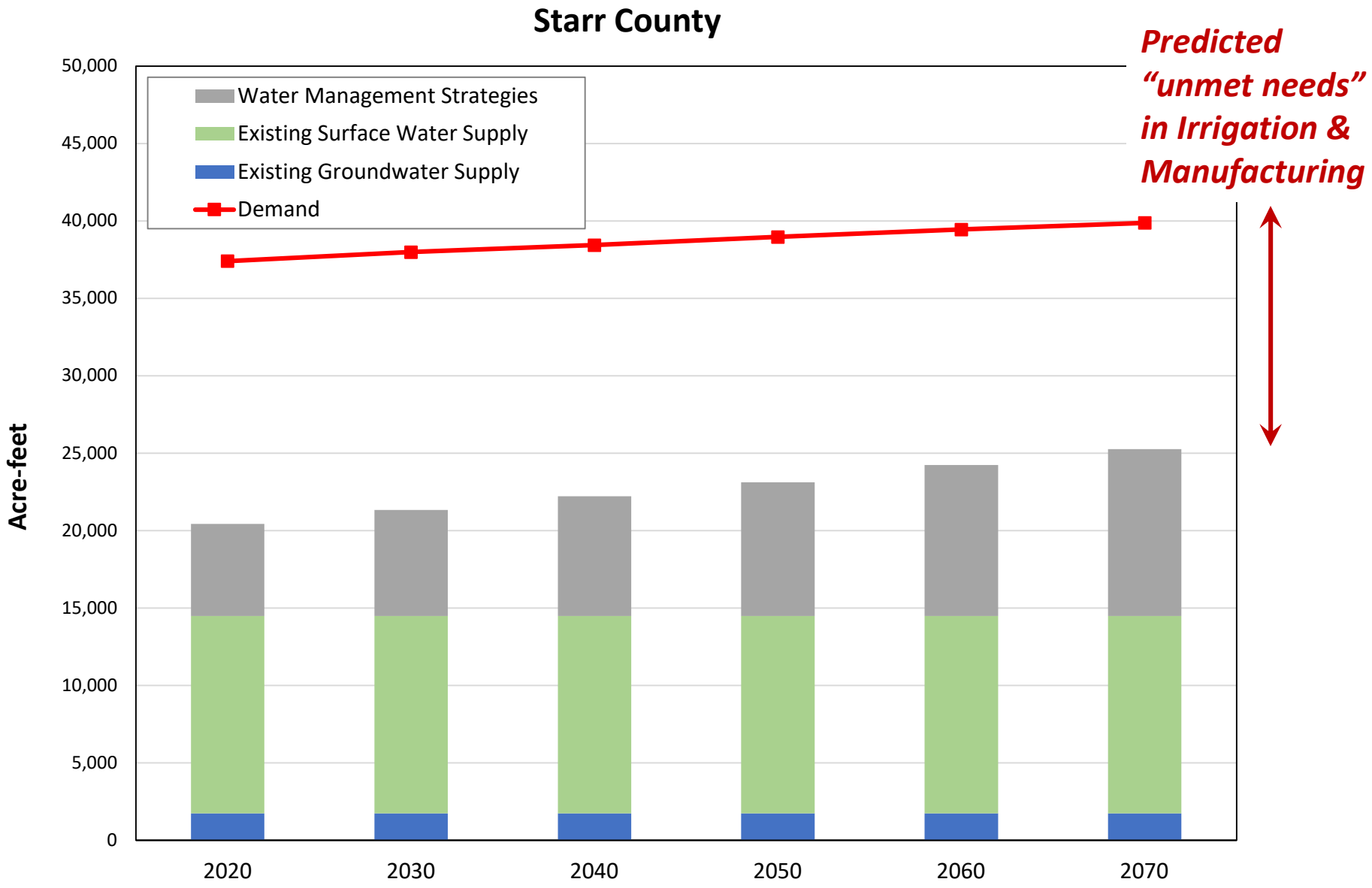
San Patricio GCD



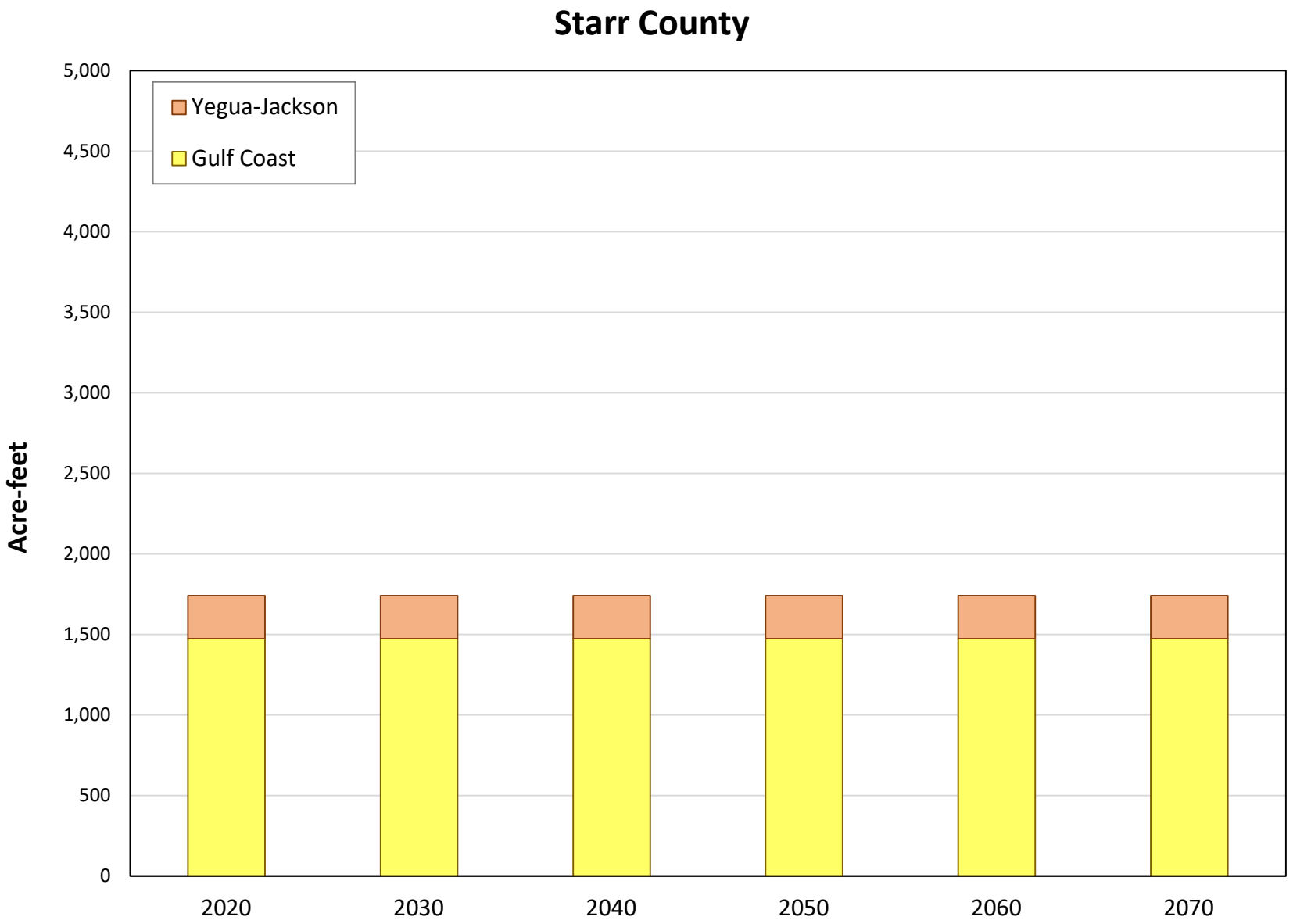
San Patricio GCD



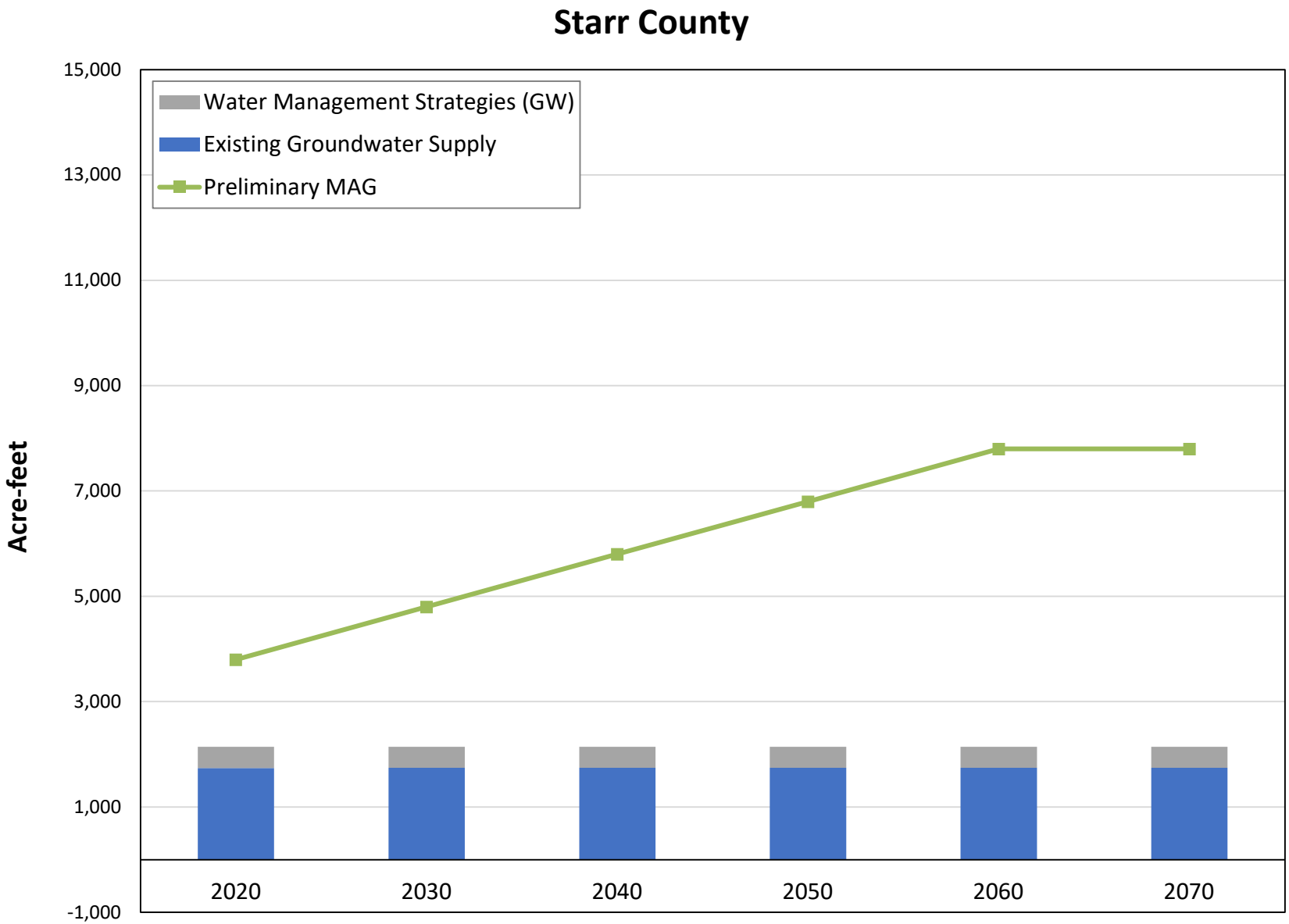
Starr County GCD



Starr County GCD



Starr County GCD



Explanatory Report

DFC Explanatory Report for Groundwater Management Area 16

5.2 Water Supply Needs and Water Management Strategies

The GCDs of GMA 16 considered the following information regarding water supply needs and water management strategies in developing a DFC:

- Data from the 2012 State Water Plan on;
- Identified groundwater sources
- Identified needs
- Water management strategies using a groundwater source
- Modeled Available Groundwater Report; GAM Run 10-047 (Hassan and Jigmond, 2011)
- A tabular summary of the range of future pumping estimates used in developing the proposed DFC

The Rio Grande Valley is expected to have a significant increase in growth and water demands over the next 50 years. The GMA 16 counties in Region N are also expected to grow, although the rate of growth will not be as great as in the Rio Grande Valley (Table 1). A significant part of anticipated new water supplies for portions of these planning regions are expected to be met by increased groundwater production. The Gulf Coast Aquifer is the primary groundwater supply source for these regions. Much of the groundwater in this region is brackish, and may need to be treated to drinking water standards if intended for drinking water supply.

The information on water supply needs and water management strategies considered by the GCDs of GMA 16 are included in Appendix E. Also included in Appendix E is the Modeled Available Groundwater Report (Wade, 2012) that was developed by TWDB associated with the previously developed DFC adopted in 2011. These data were presented to the GMA 16 Board and discussed in the public meeting on March 25, 2014. Revisions to proposed pumping scenarios in light of developing water management strategies discussed by the Board represented a large part of the public meetings conducted from March 5, 2013, through June 23, 2014. Details regarding these alternative pumping scenarios are presented in the technical memos included in Appendix C.

- Explanatory report will briefly summarize this presentation & provide a copy as appendix
- Any District can provide INTERA with more District-specific information or details regarding this topic, if they feel it is necessary
- Deadline for addl District-specific information: next GMA meeting

← Previous report (O'Rourke, 2017) will be used as template

Questions?

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