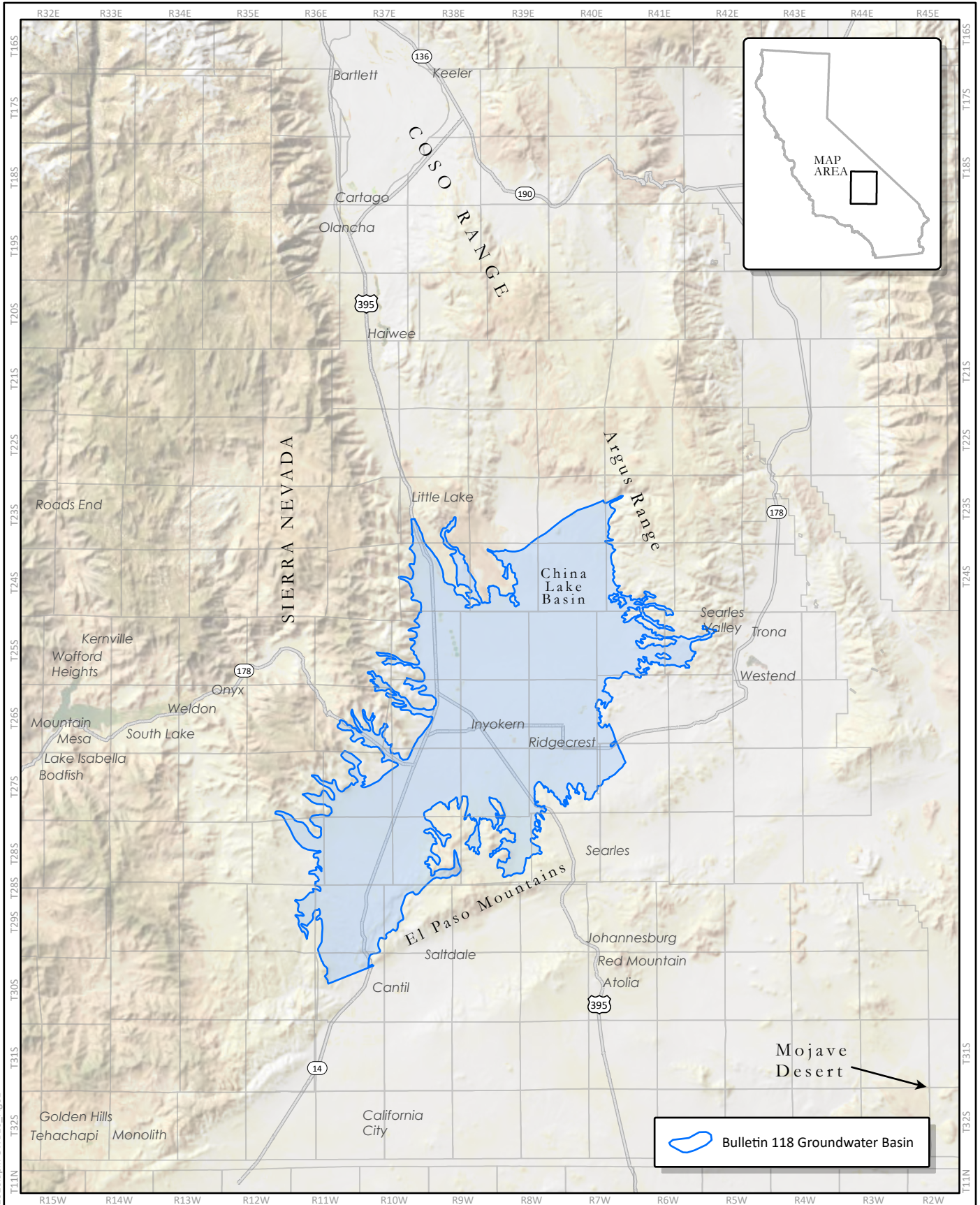


FIGURE 1



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**GENERAL BASIN SETTING**  
**INDIAN WELLS VALLEY GROUNDWATER BASIN**  
 (DWR BULLETIN 118 BASIN NO. 6-054)

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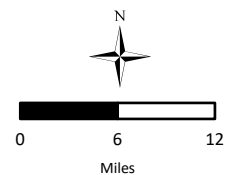
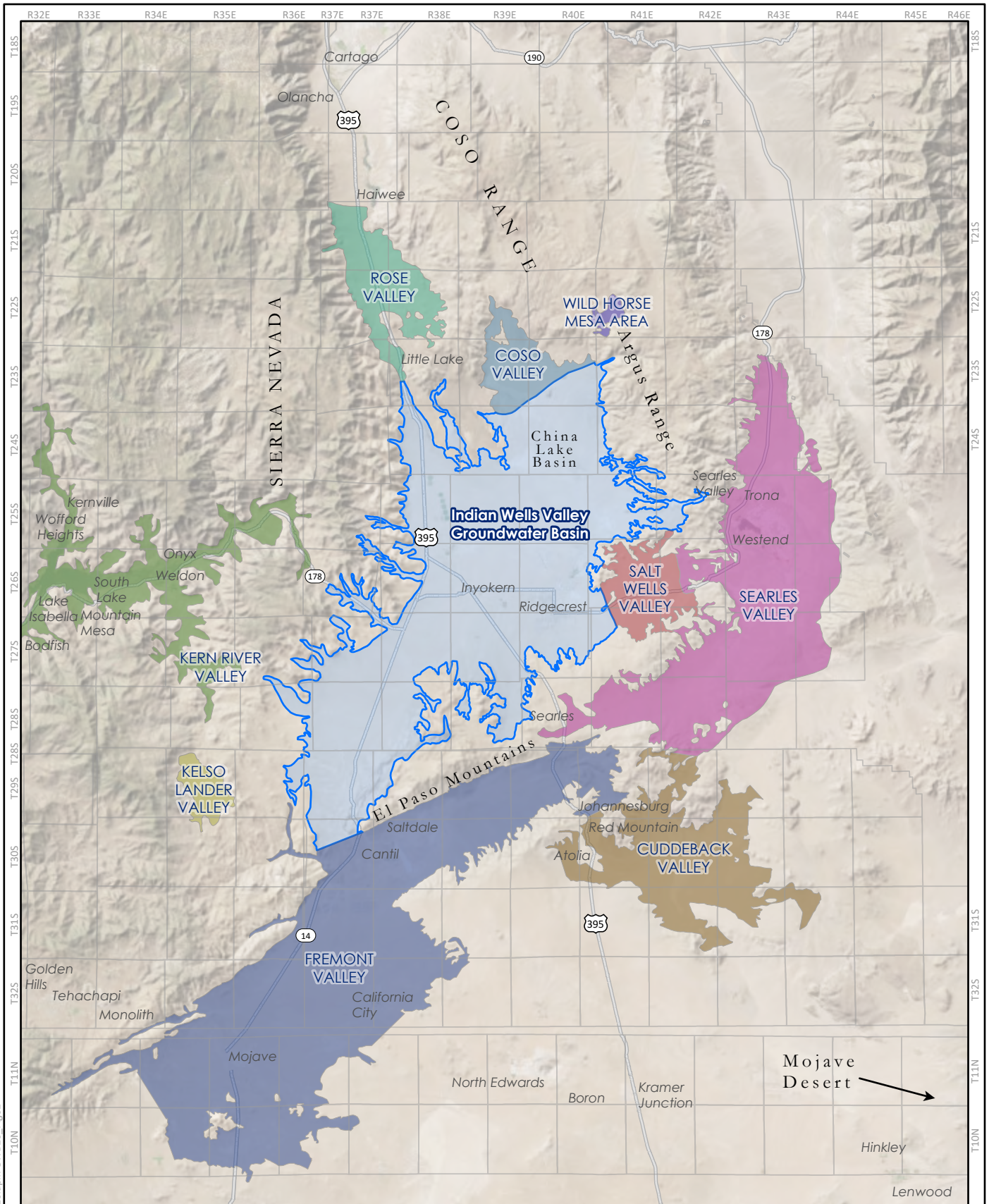


FIGURE 2



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**ADJACENT AND NEIGHBORING GROUNDWATER BASINS**

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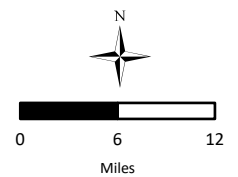
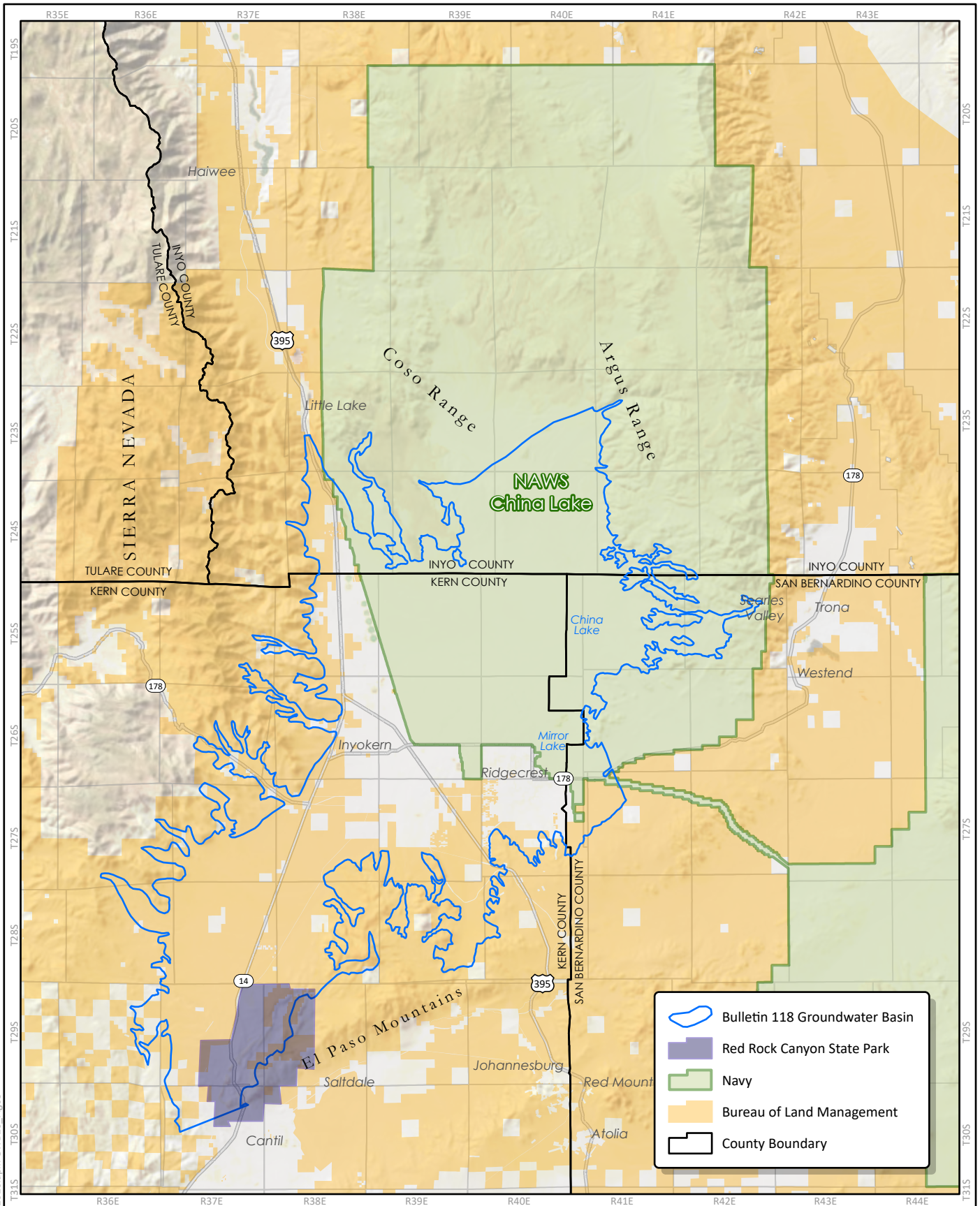


FIGURE 3



	Bulletin 118 Groundwater Basin
	Red Rock Canyon State Park
	Navy
	Bureau of Land Management
	County Boundary

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**JURISDICTIONS AND BOUNDARIES**

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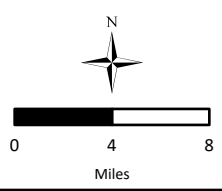
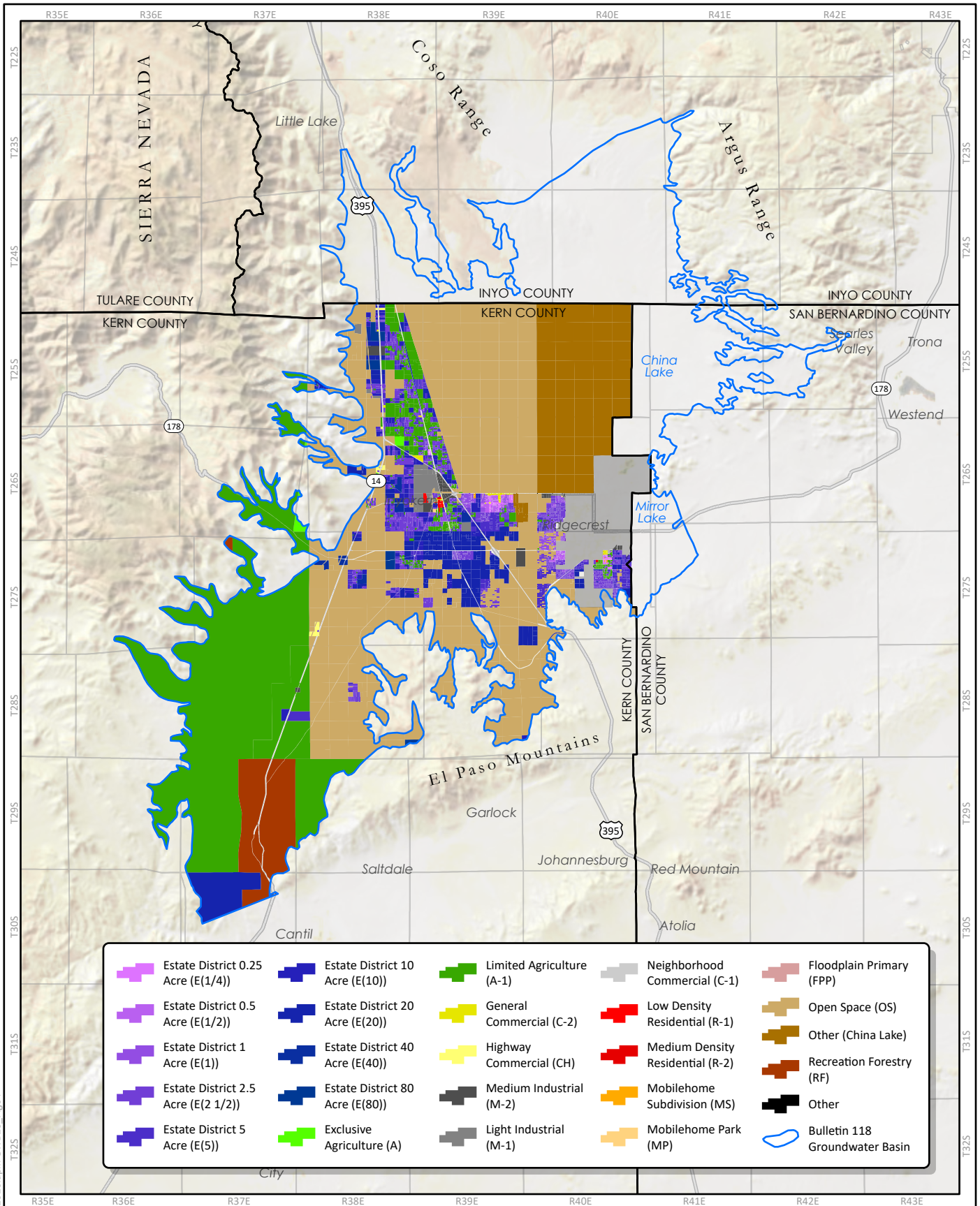


FIGURE 4



Estate District 0.25 Acre (E(1/4))	Estate District 10 Acre (E(10))	Limited Agriculture (A-1)	Neighborhood Commercial (C-1)	Floodplain Primary (FPP)
Estate District 0.5 Acre (E(1/2))	Estate District 20 Acre (E(20))	General Commercial (C-2)	Low Density Residential (R-1)	Open Space (OS)
Estate District 1 Acre (E(1))	Estate District 40 Acre (E(40))	Highway Commercial (CH)	Medium Density Residential (R-2)	Other (China Lake)
Estate District 2.5 Acre (E(2 1/2))	Estate District 80 Acre (E(80))	Medium Industrial (M-2)	Mobilehome Subdivision (MS)	Recreation Forestry (RF)
Estate District 5 Acre (E(5))	Exclusive Agriculture (A)	Light Industrial (M-1)	Mobilehome Park (MP)	Other
			Bulletin 118 Groundwater Basin	

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**ZONING DISTRICTS (KERN COUNTY)**

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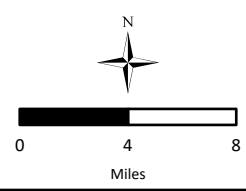
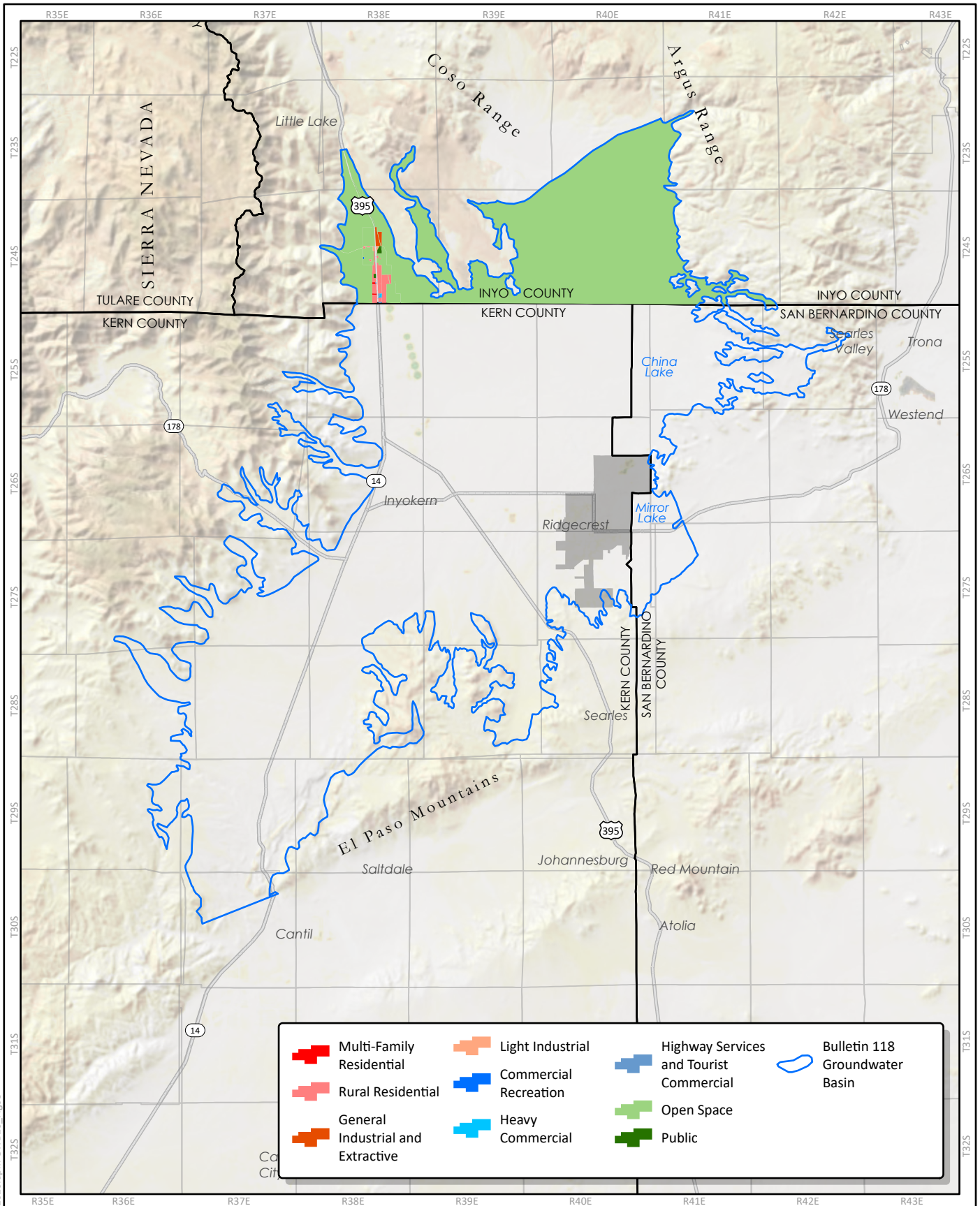


FIGURE 5



	Multi-Family Residential		Light Industrial		Highway Services and Tourist Commercial		Bulletin 118 Groundwater Basin
	Rural Residential		Commercial Recreation		Open Space		
	General Industrial and Extractive		Heavy Commercial		Public		

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ZONING DISTRICTS (INYO COUNTY)

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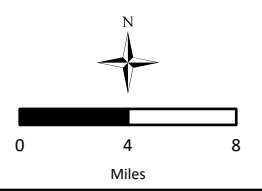
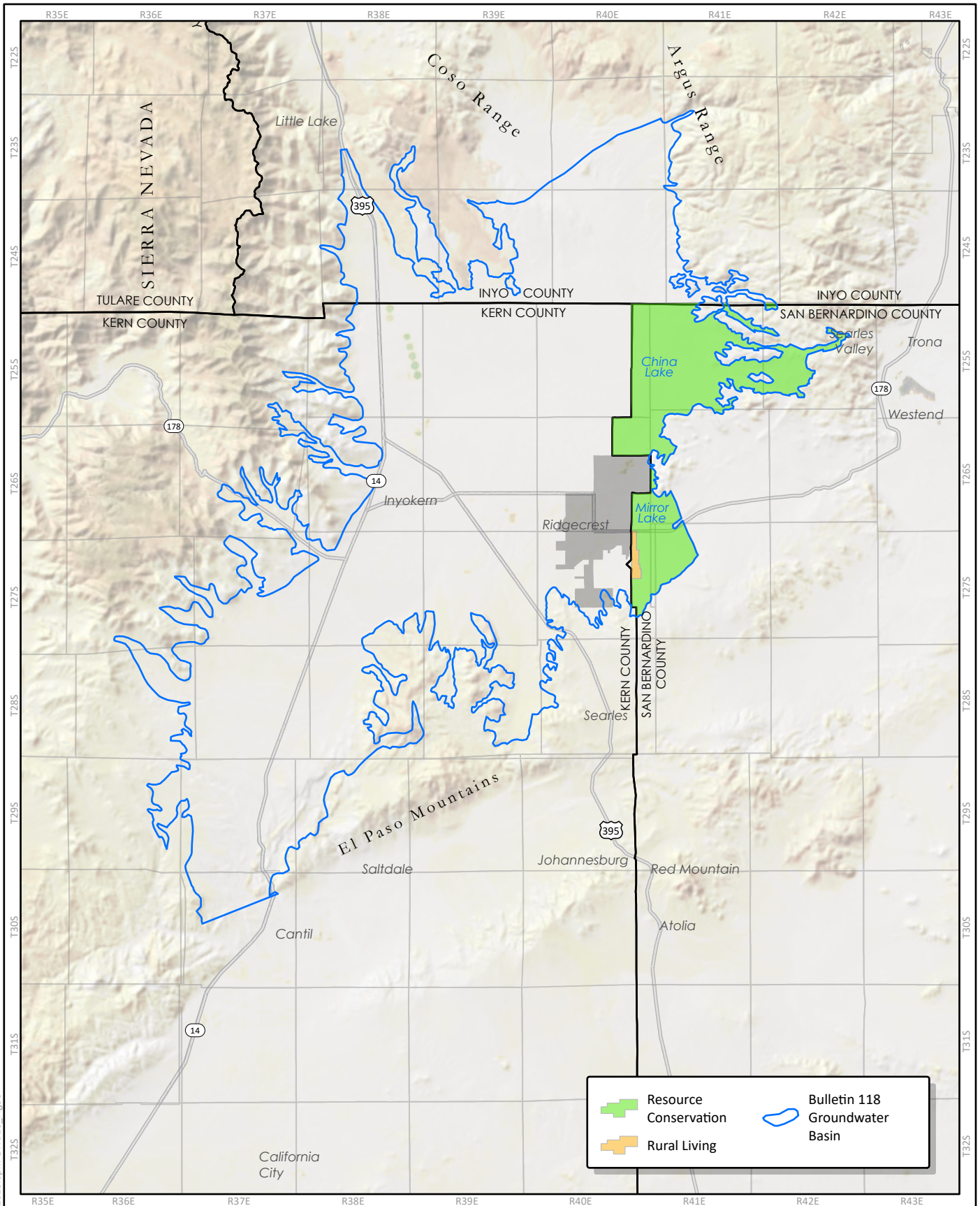


FIGURE 6



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**ZONING DISTRICTS (SAN BERNARDINO COUNTY)**

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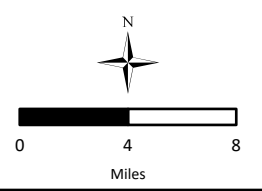
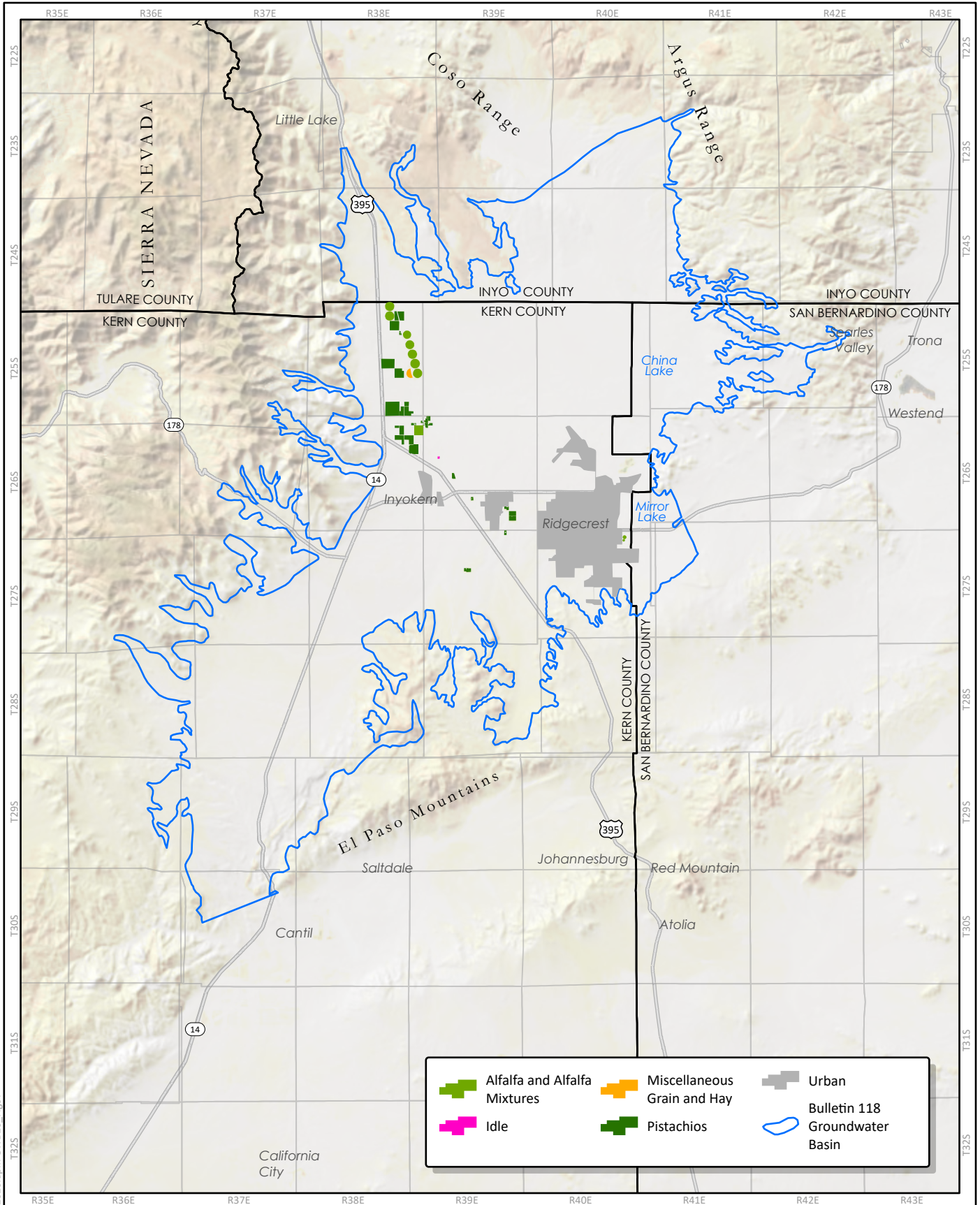


FIGURE 7

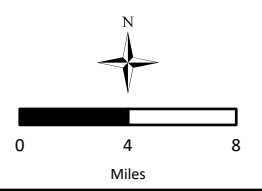


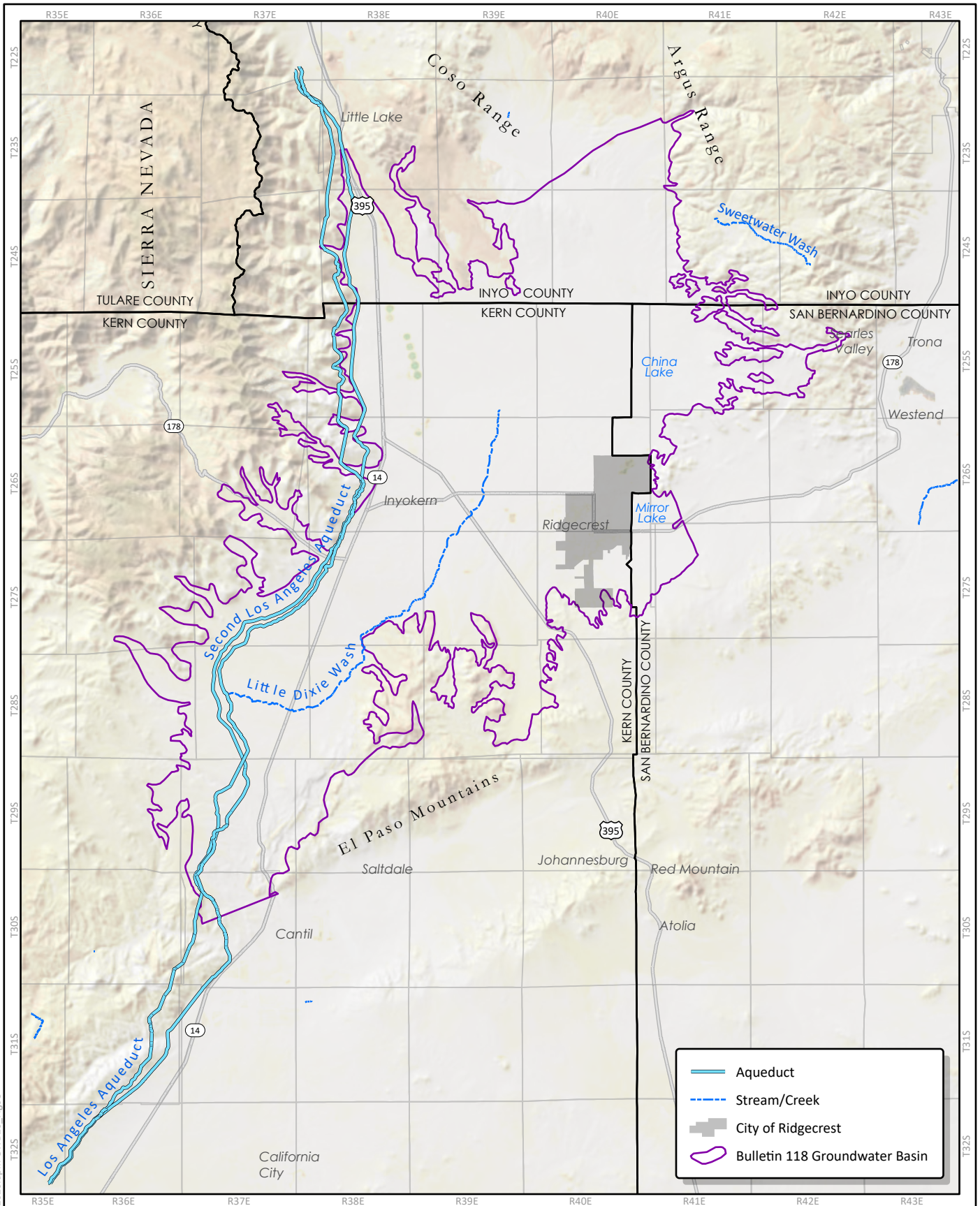
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### ACTIVE AGRICULTURAL LANDS

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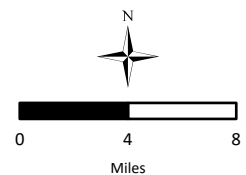


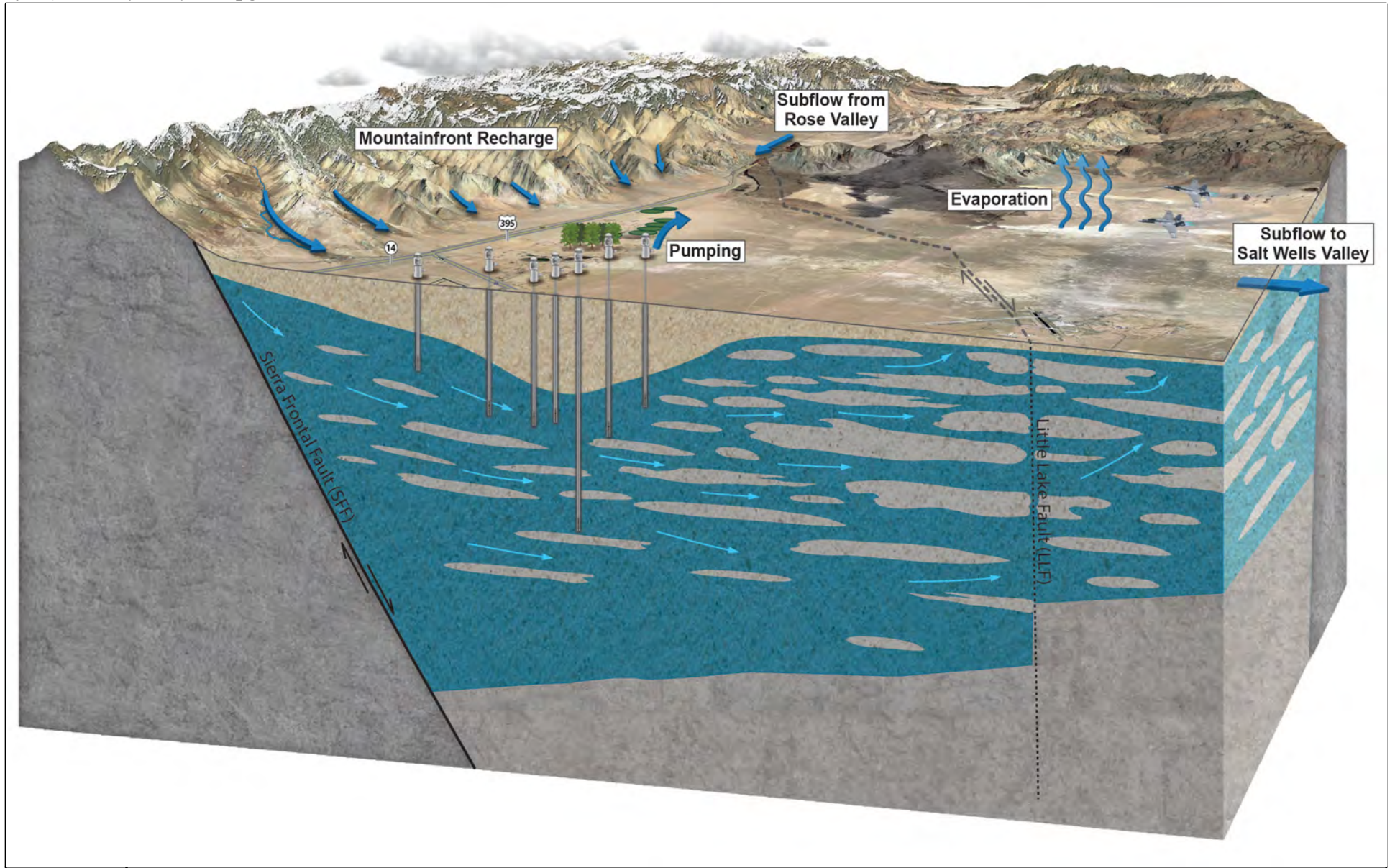
J:\n\2652\GWBasinTechReport\2026.aprx GWB26 - Fig08



**STREAMS, RIVERS AND OTHER SURFACE WATERS**

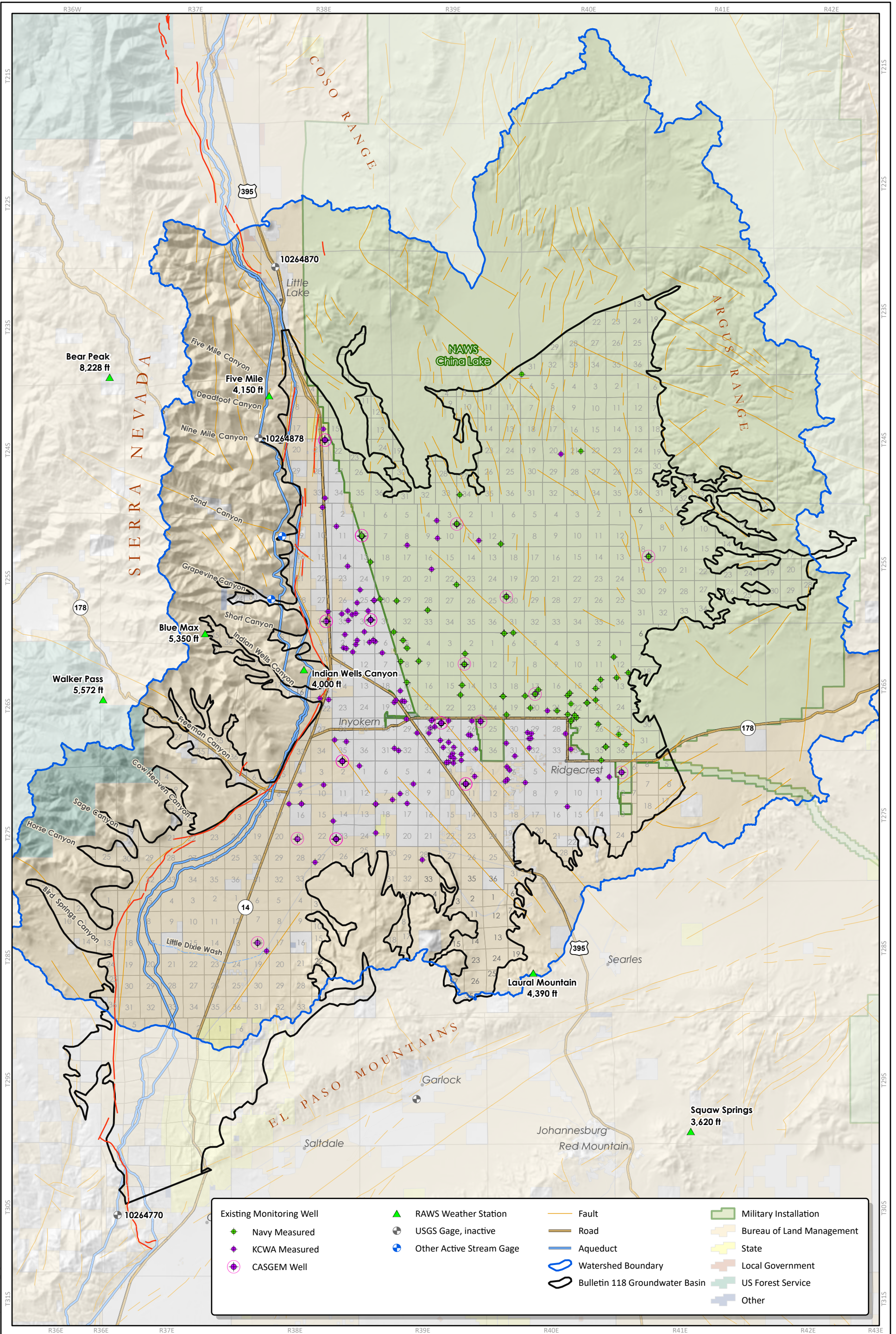
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4/27/2026





HYDROGEOLOGIC CONCEPTUAL MODEL



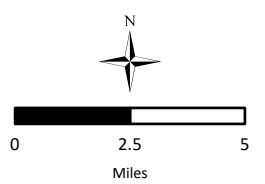


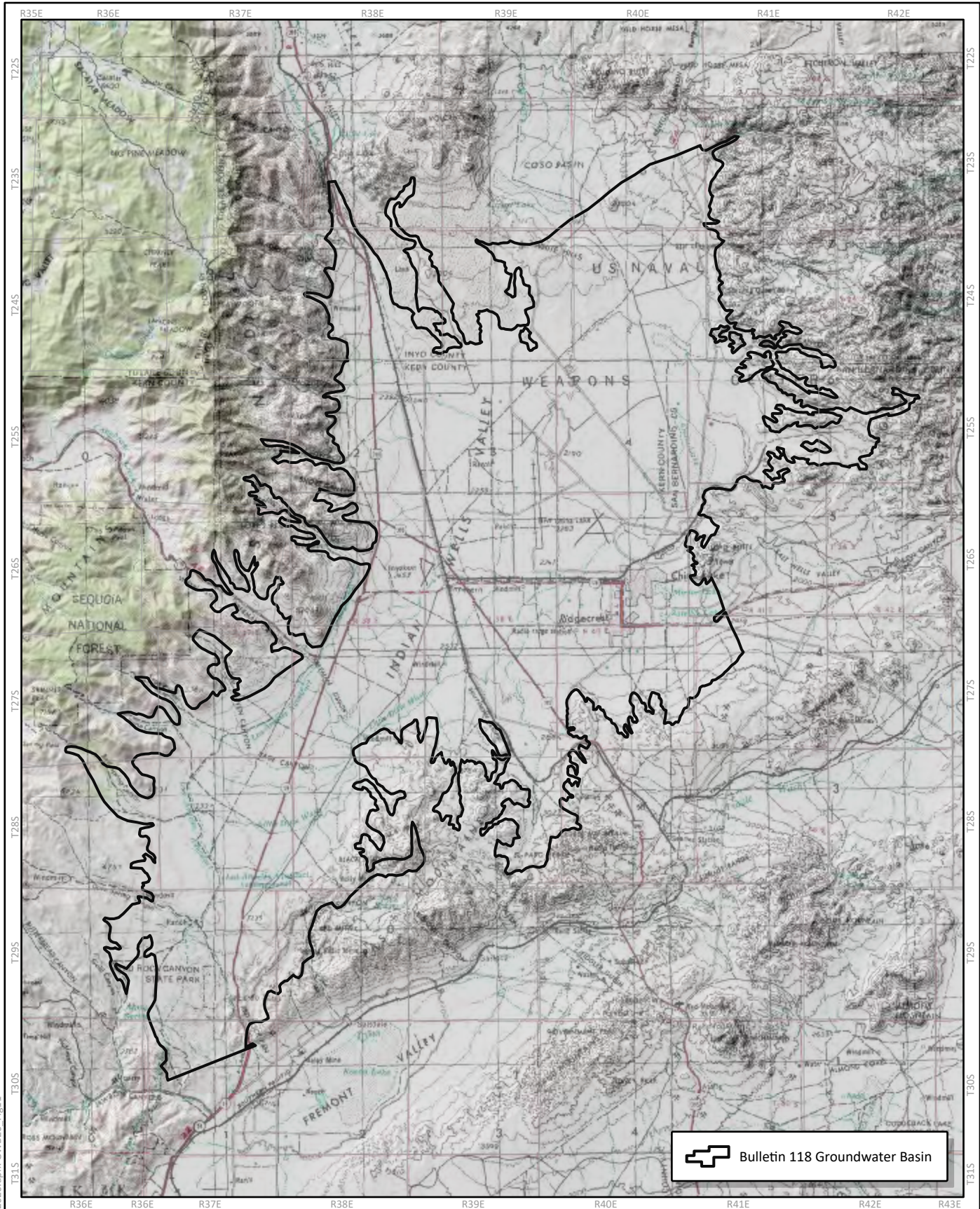
Existing Monitoring Well	▲ RAWWS Weather Station	— Fault	■ Military Installation
◆ Navy Measured	⊕ USGS Gage, inactive	— Road	■ Bureau of Land Management
◆ KCWA Measured	⊕ Other Active Stream Gage	— Aqueduct	■ State
◆ CASGEM Well		— Watershed Boundary	■ Local Government
		— Bulletin 118 Groundwater Basin	■ US Forest Service
			■ Other

LOCATION MAP



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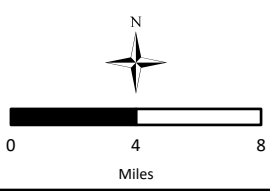


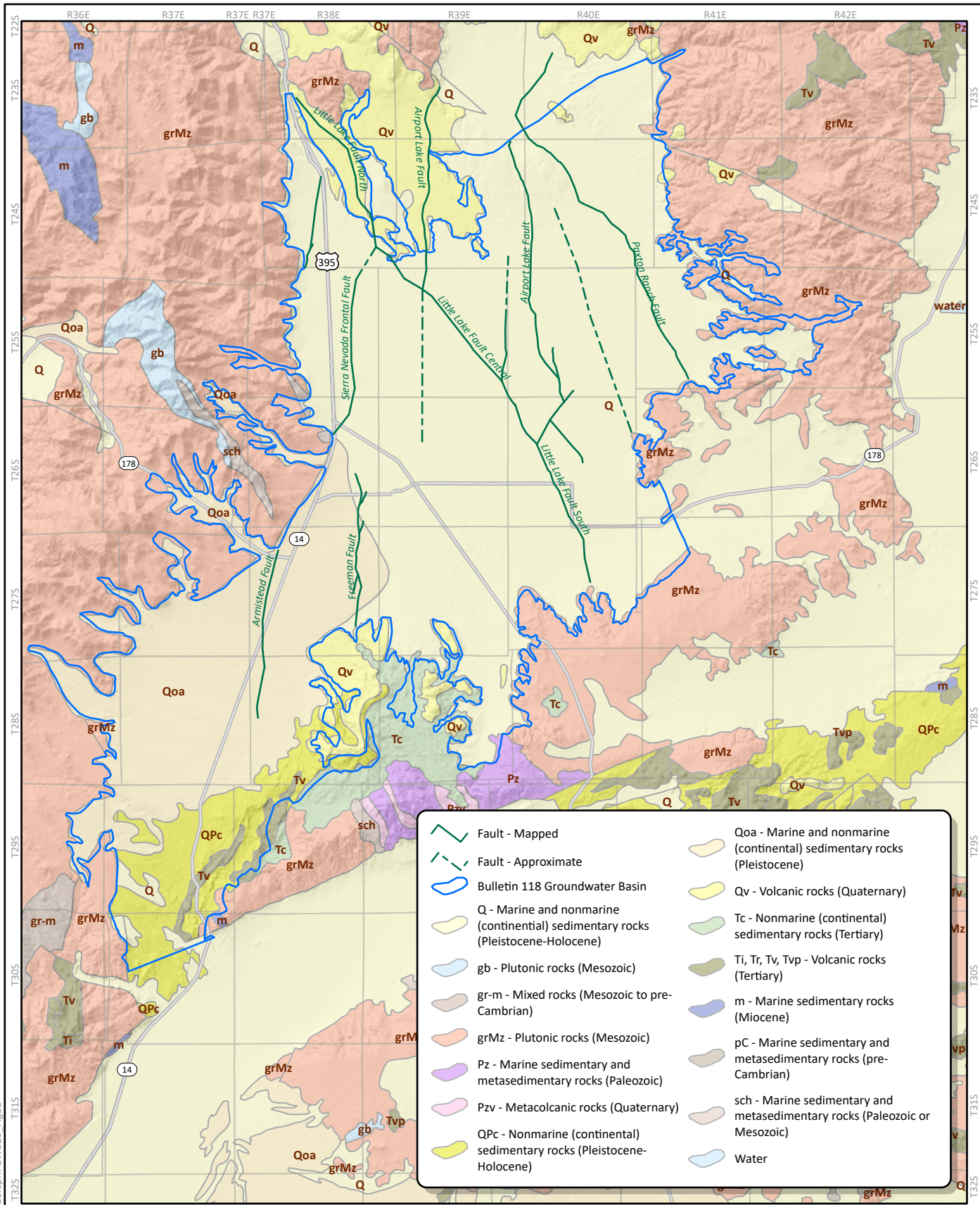
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**TOPOGRAPHIC MAP**

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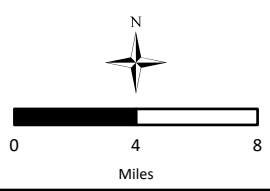


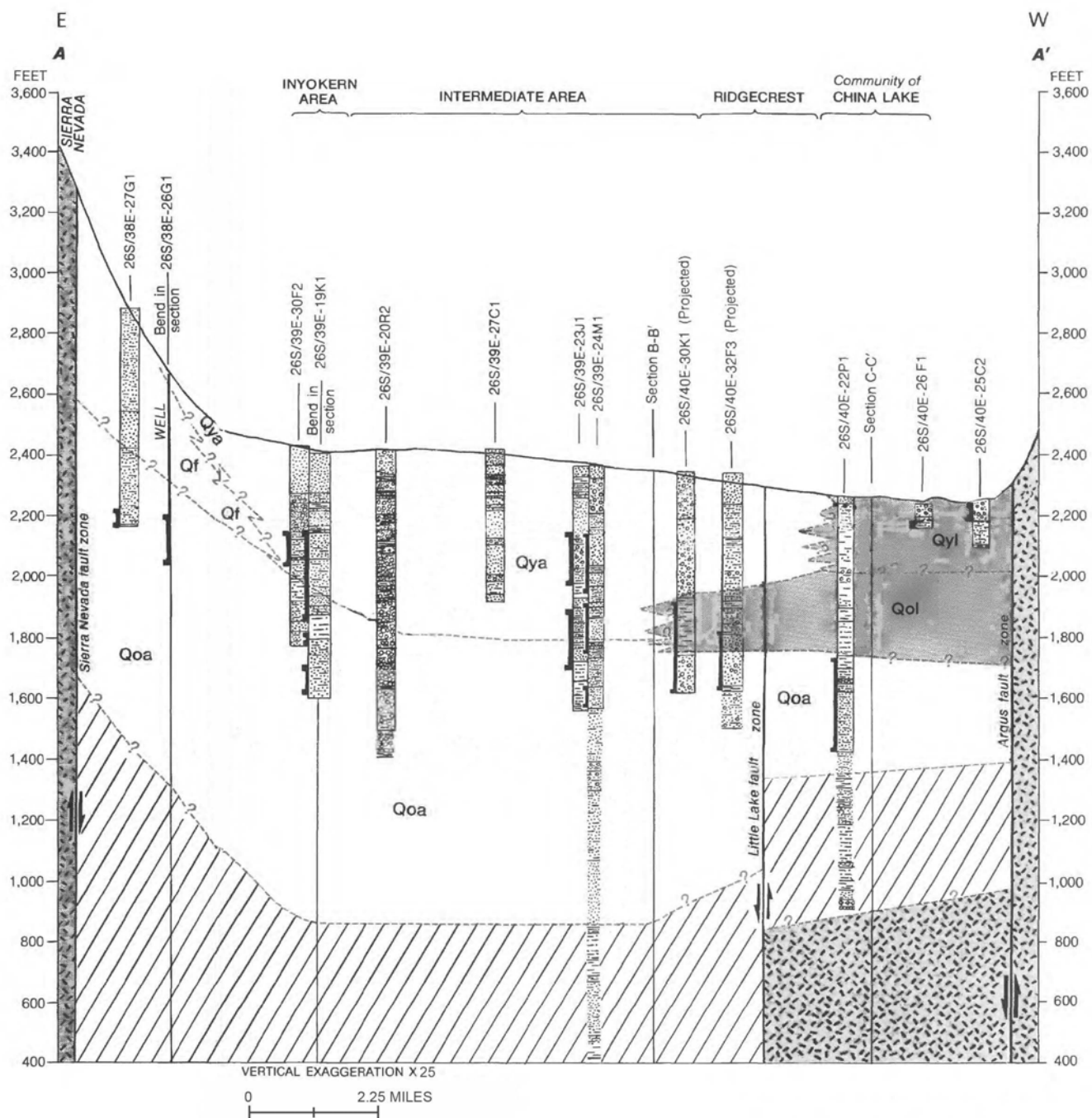
J:\n2652\GWBasinTechReport2026.aprx GWB26 - Fig12



**GEOLOGY MAP**

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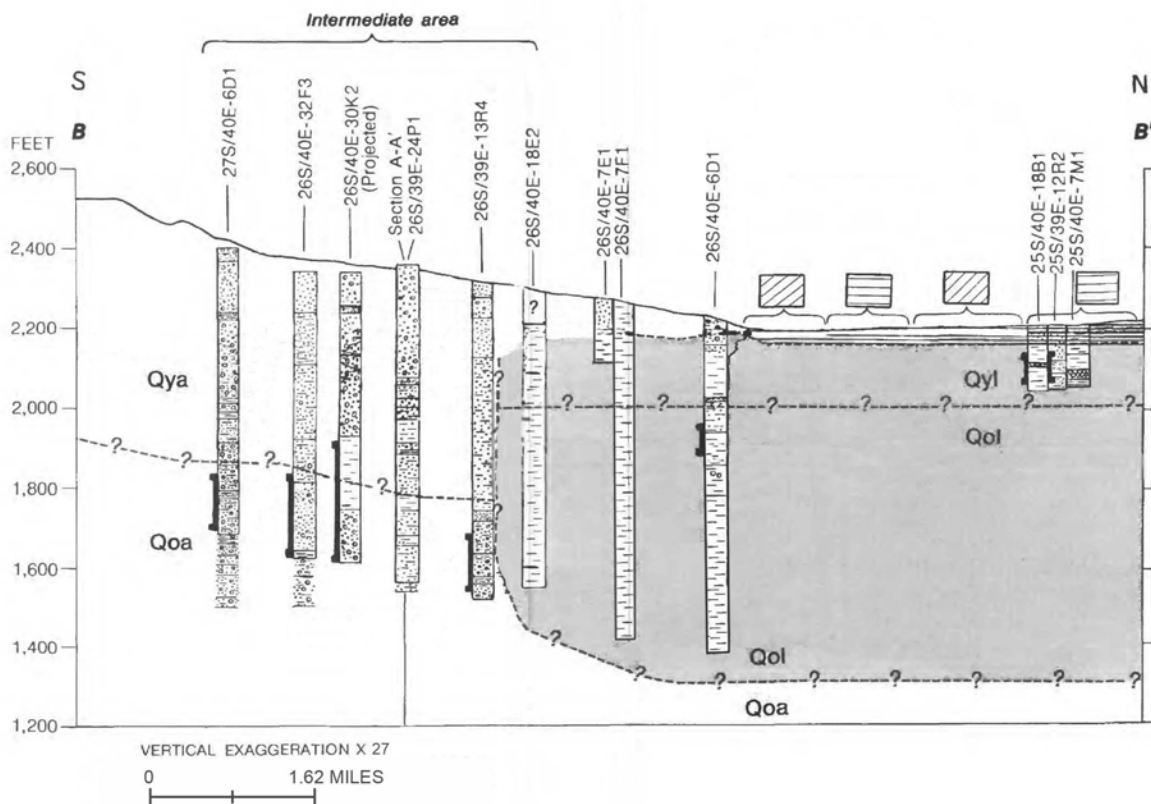
Modified from Berenbrock and Martin (1991, Figure 3); Kunkel and Chase (1969, Figure 3)

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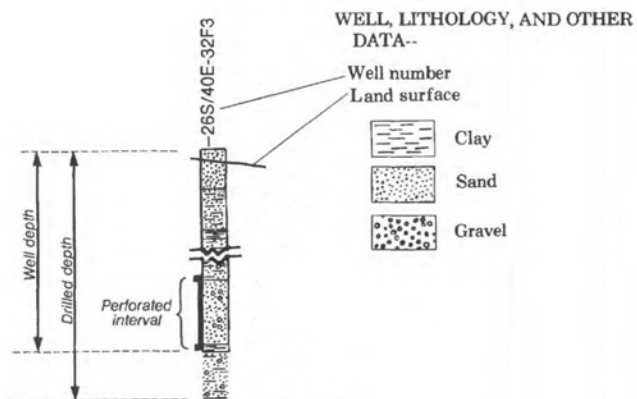
CROSS SECTION A TO A'

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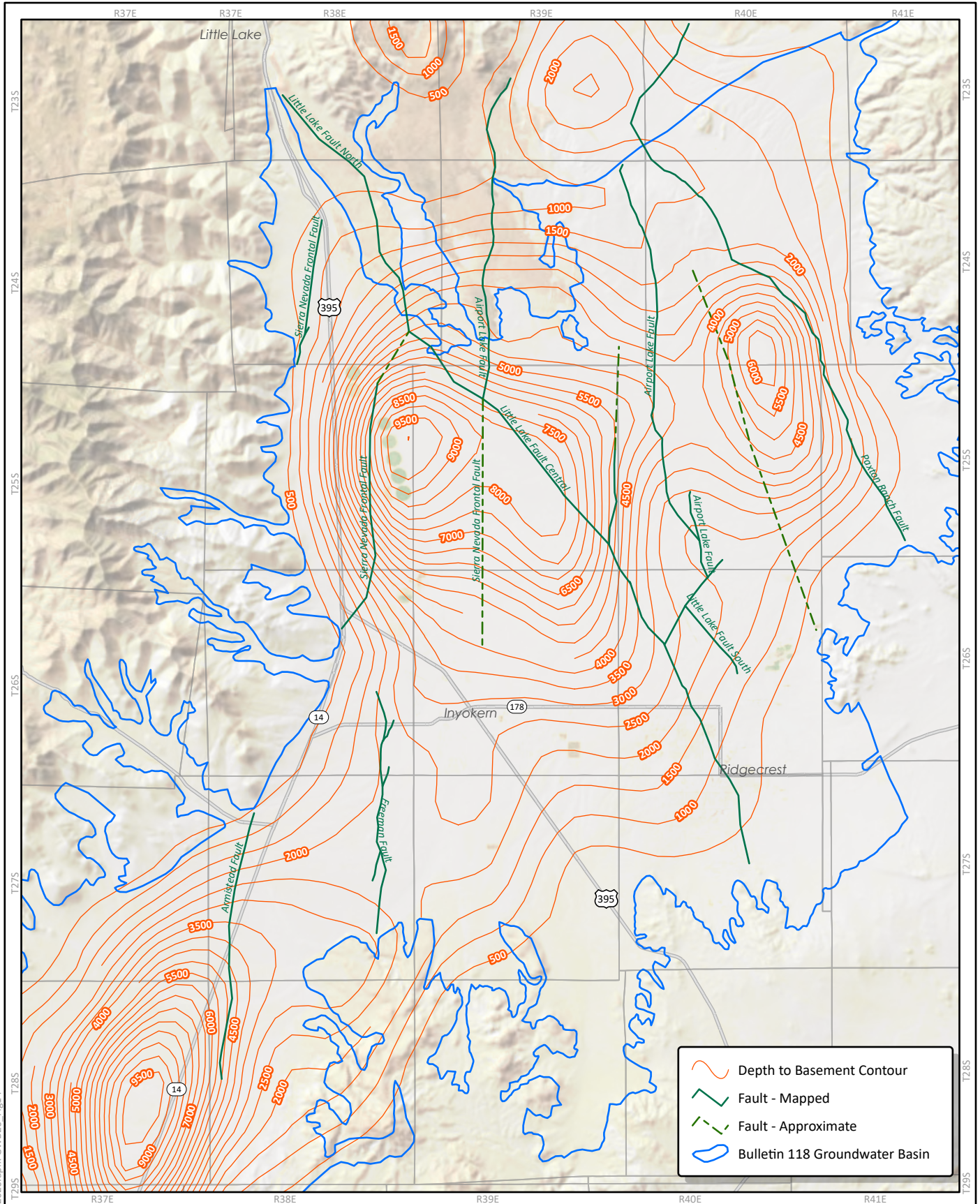


**EXPLANATION**

- GEOLOGIC UNITS**
- UNCONSOLIDATED DEPOSITS --**
- QUATERNARY**
- Alluvium (Holocene and Pleistocene)- Includes Qya (younger), Qoa (older) and Qf (fan deposits)
  - ▨ Lacustrine deposits (Pleistocene)- Includes Qyl (younger) and Qol (older)
- TERTIARY**
- ▧ **CONSOLIDATED ROCKS --** Continental deposits (Pliocene and Miocene)
- PRE-TERTIARY**
- ▩ **Basement complex**
- ?- - - - CONTACT--Queried where doubtful



Modified from Berenbrock and Martin (1991, Figure 3); Kunkel and Chase (1969, Figure 3)

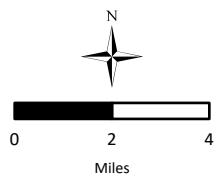


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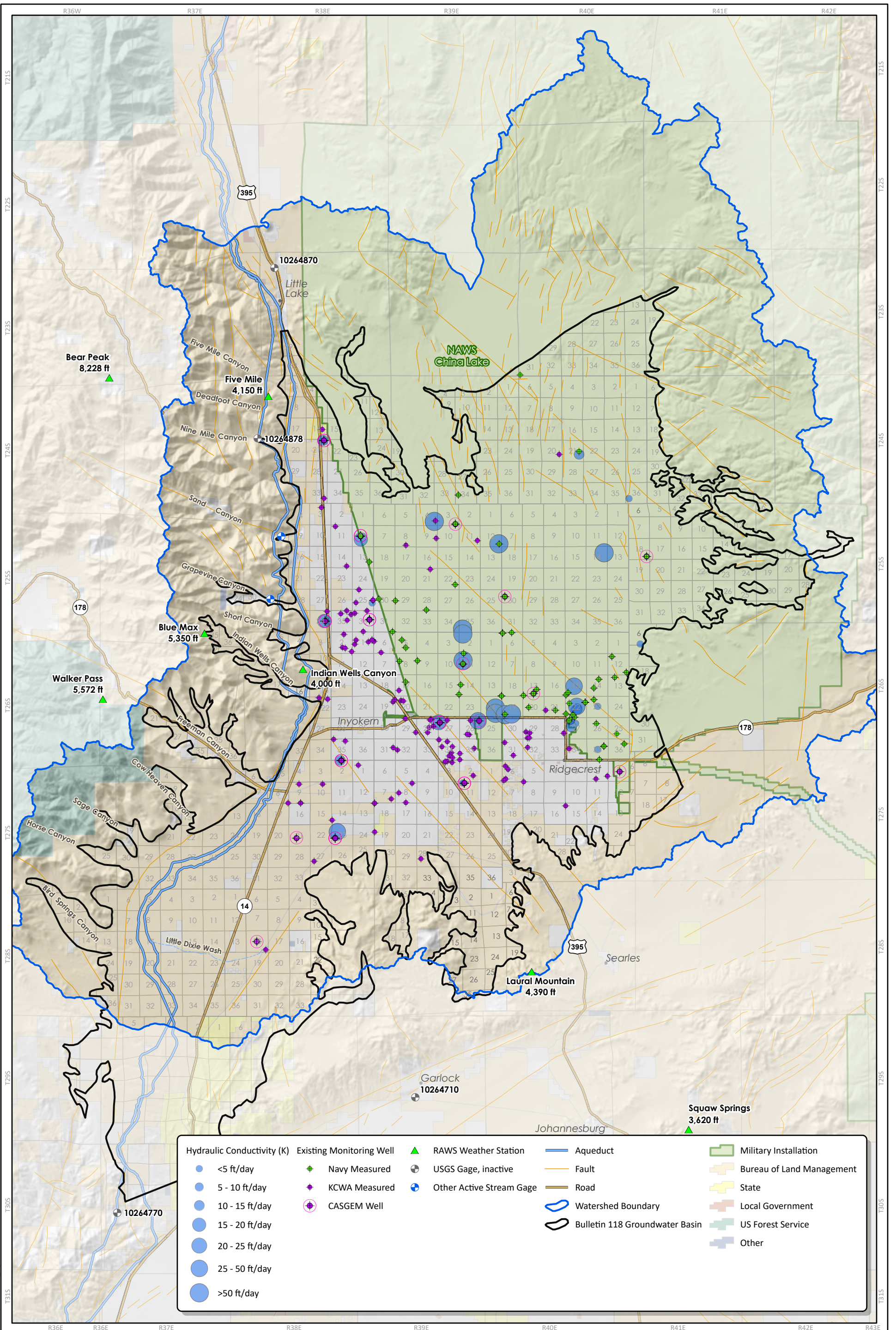


### DEPTH TO BASEMENT CONTOUR MAP

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**HISTORIC AQUIFER TEST LOCATIONS**

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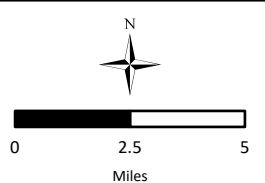
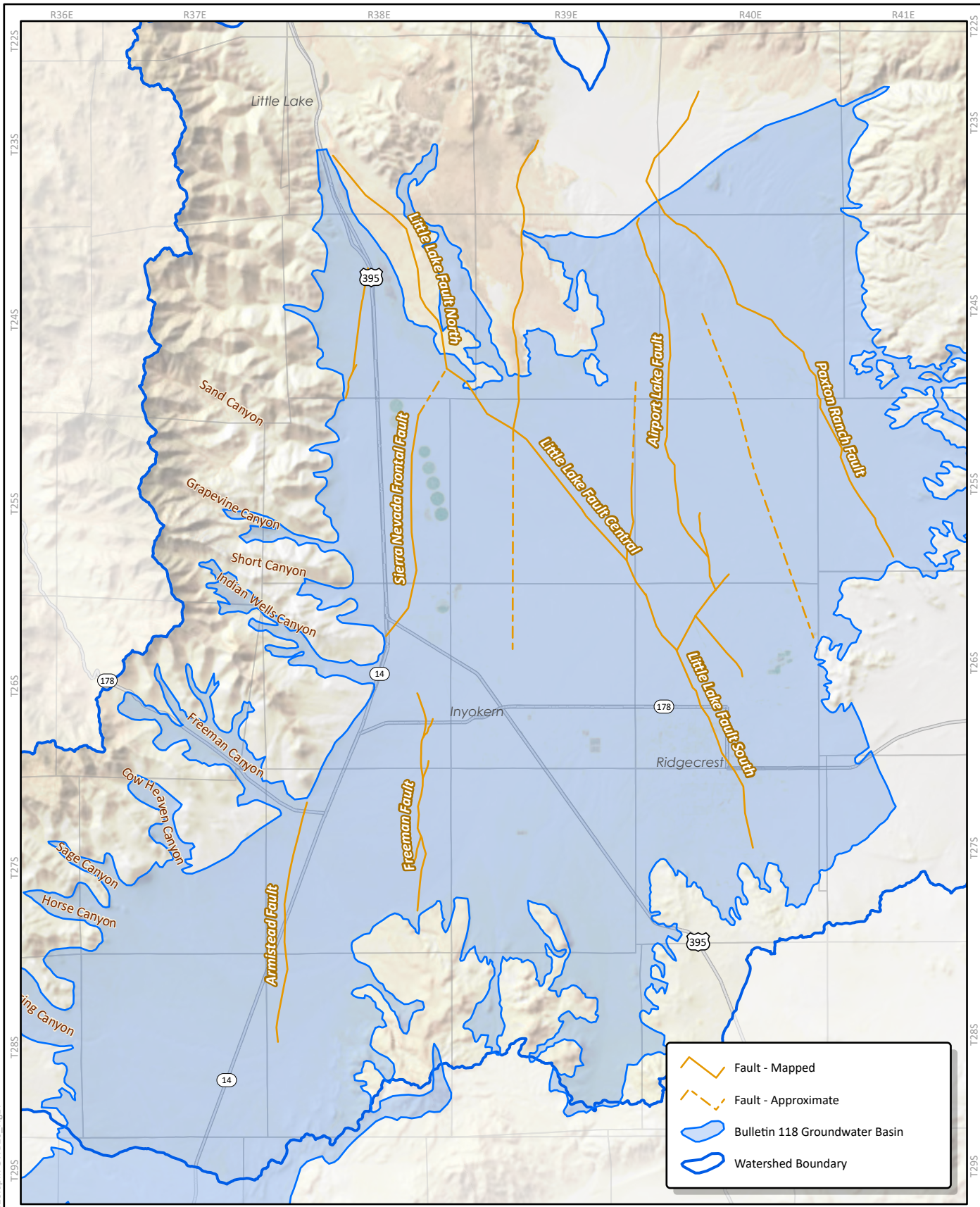


FIGURE 16

FIGURE 17

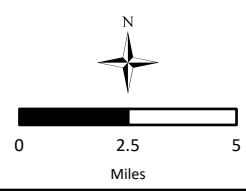


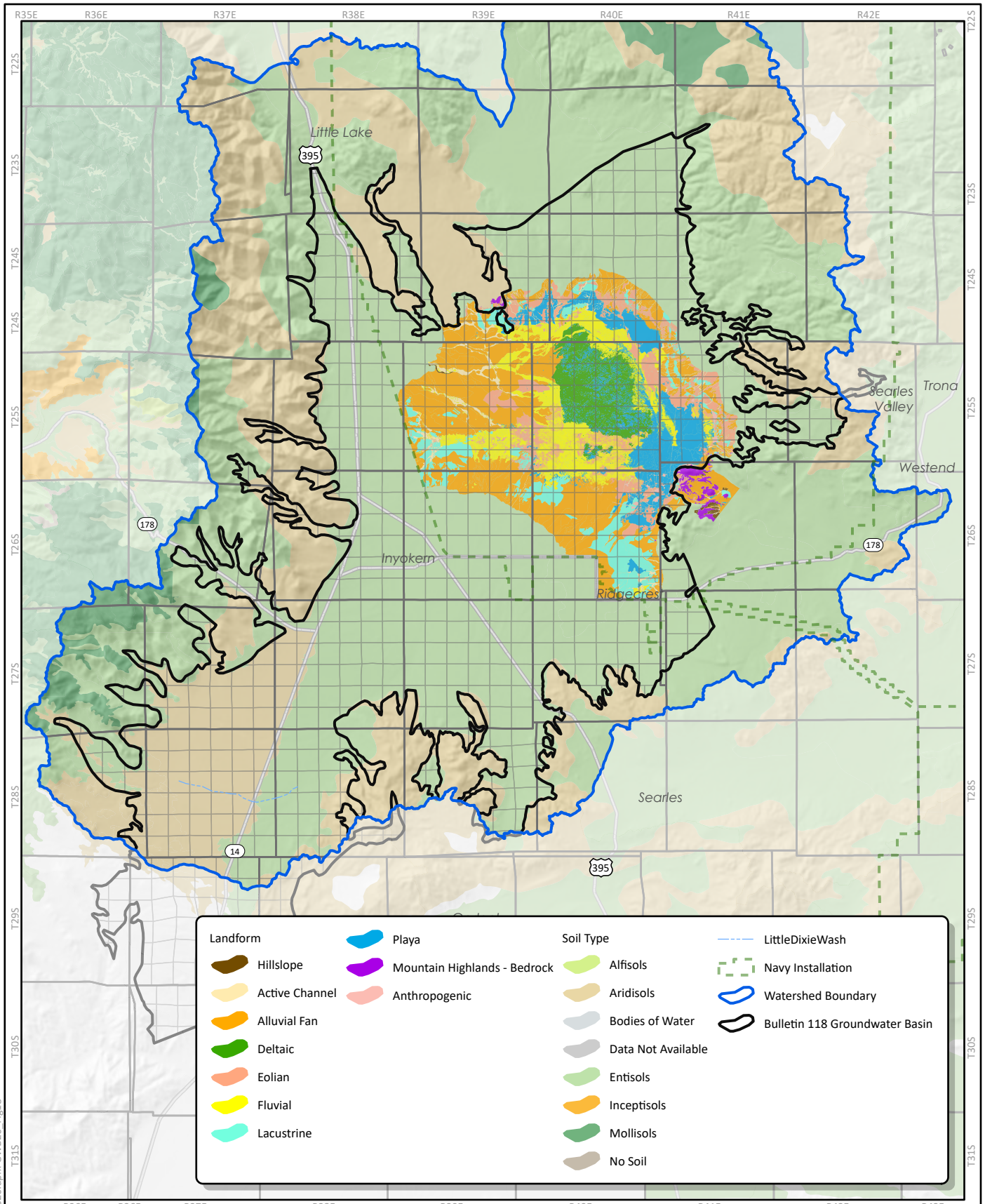
J:\In2652\GWBasinTechReport2026.aprx GWB26 - Fig17



**FAULTS IN THE INDIAN WELLS VALLEY GROUNDWATER BASIN**

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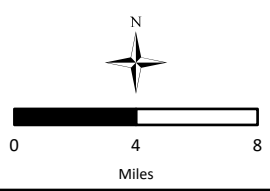


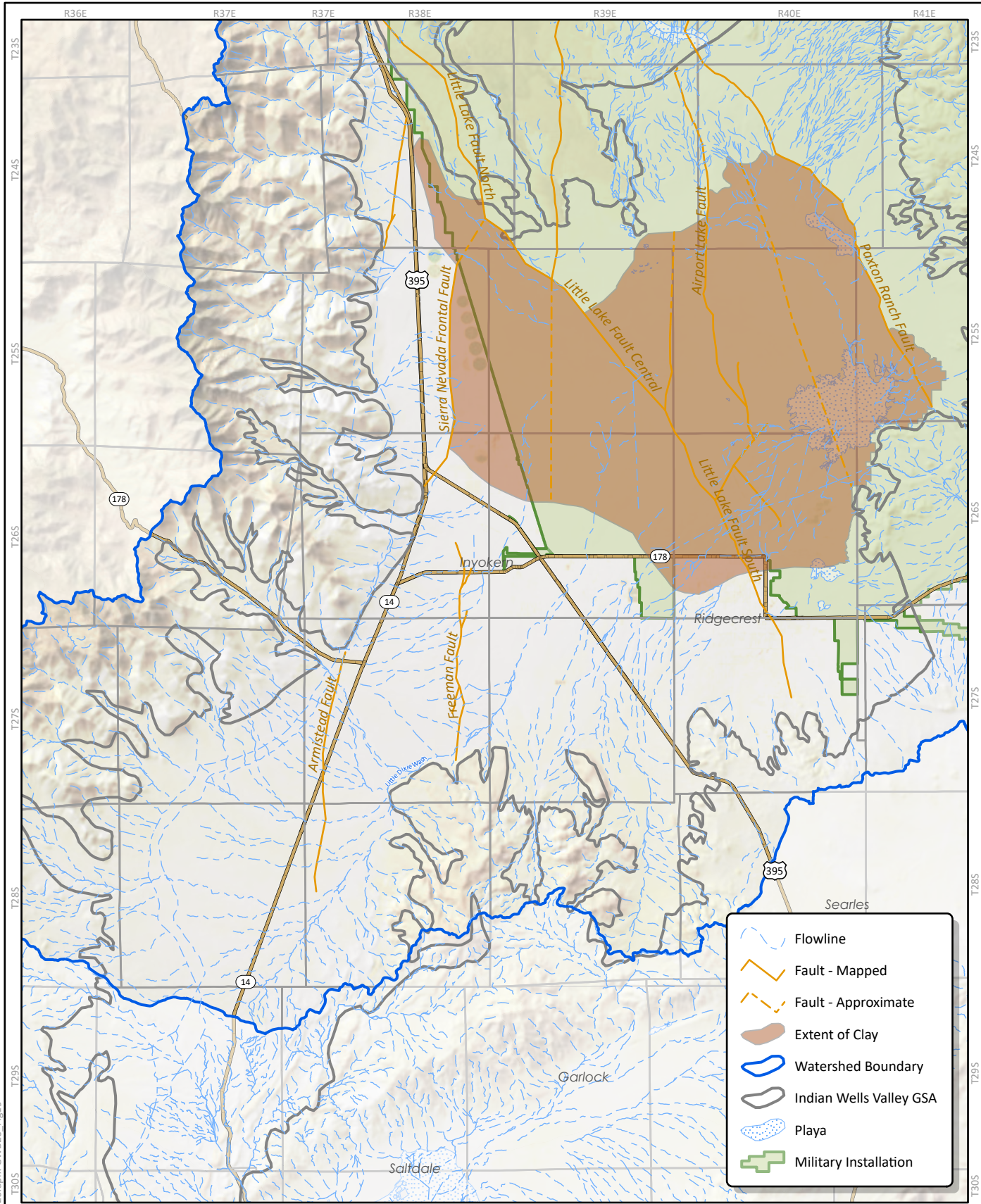
J:\n\_2652\GWBasinTechReport2026.aprx GWB26 - Fig18



SOILS AND LANDFORMS

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**GROUNDWATER BASIN CLAY LAYER**

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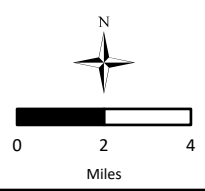
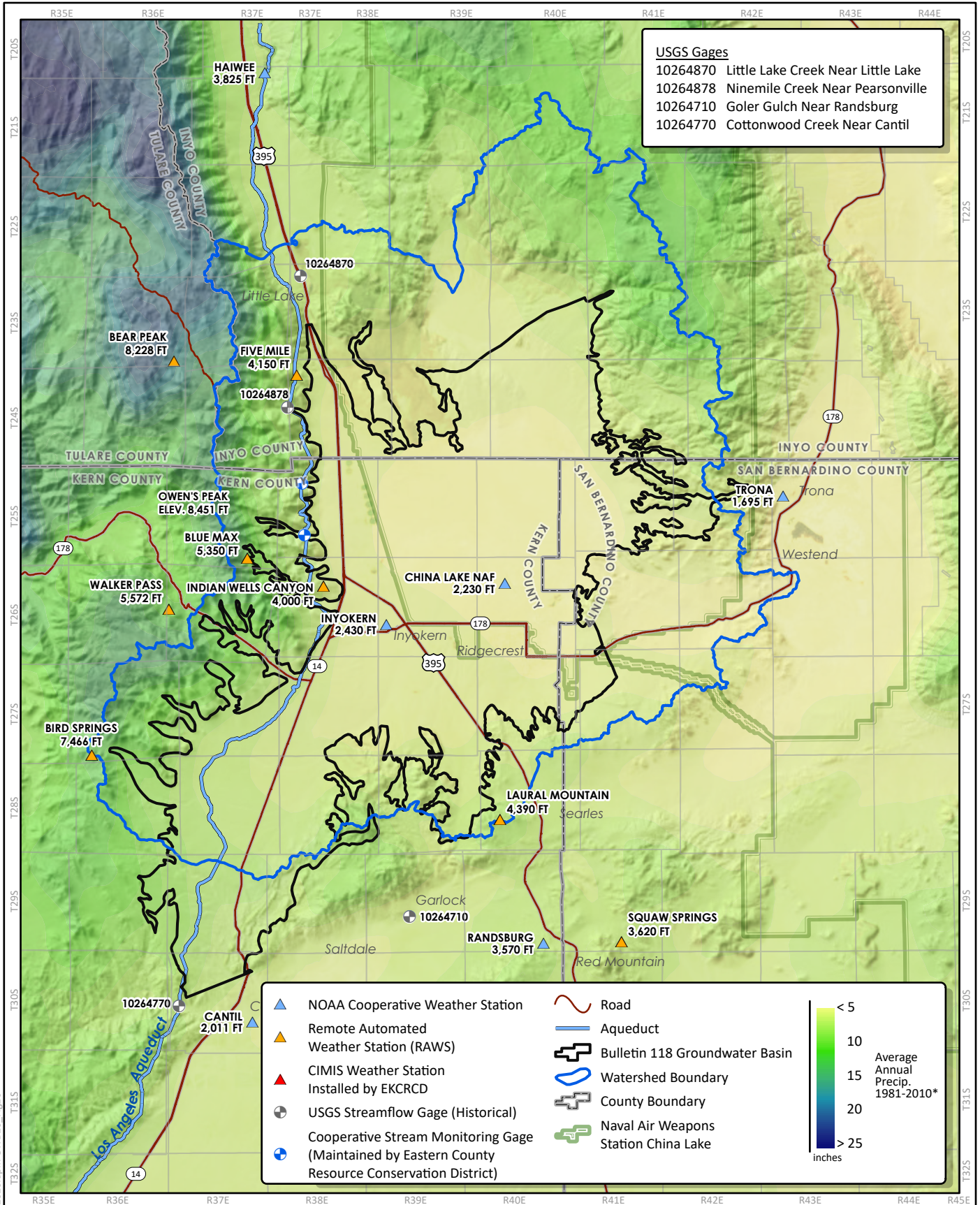


FIGURE 20

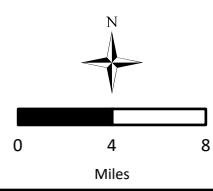


J:\In\_2652\GWBasinTechReport2026.aprx GWB26 - Fig.20

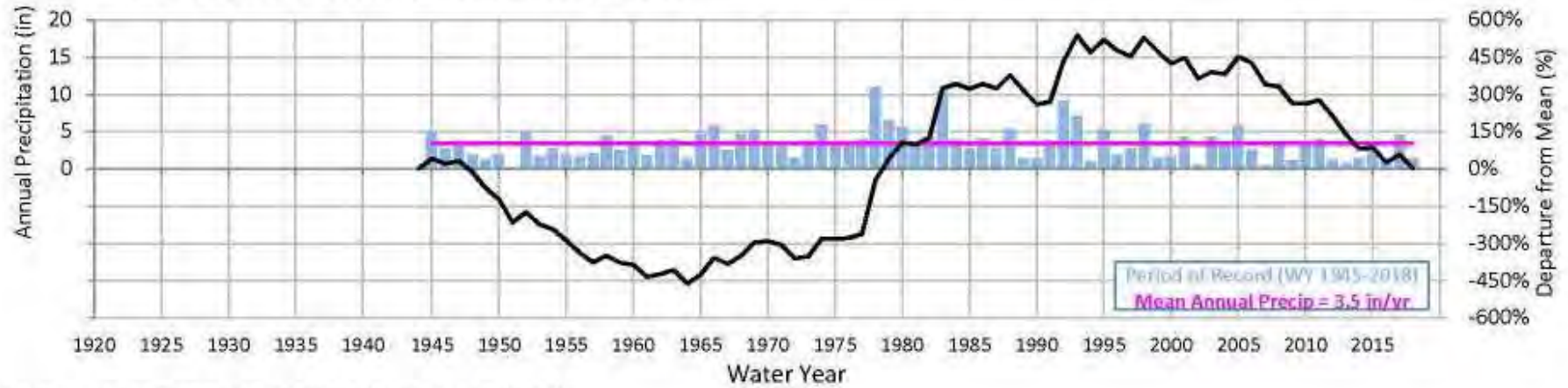


**WEATHER STATIONS, STREAM GAGES,  
AND AVERAGE ANNUAL PRECIPITATION**

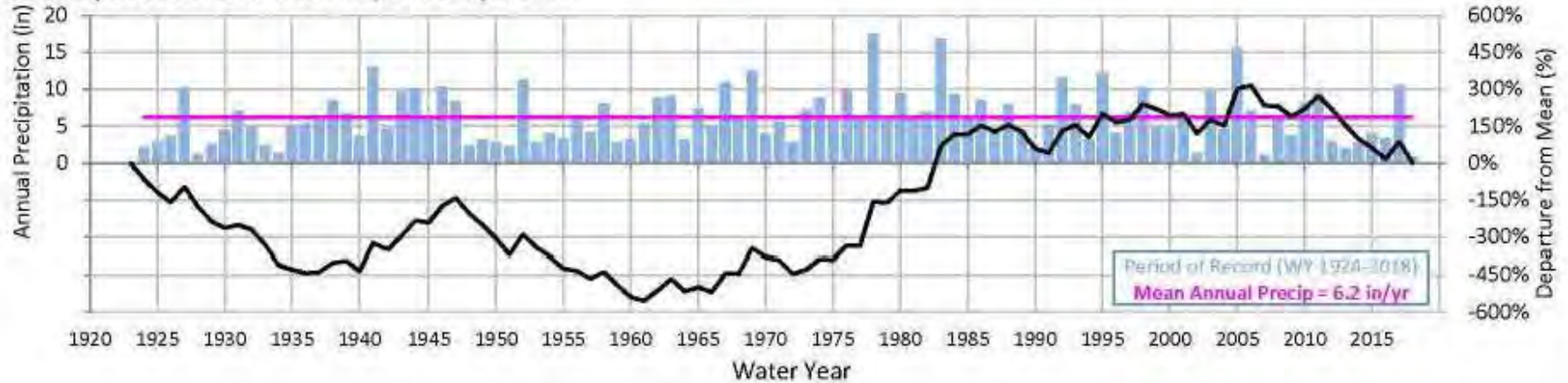
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**China Lake NAF, Station No. 041733, Elev. 2,230 ft**



**Haiwee, Station No. 043710, Elev. 3,825 ft**

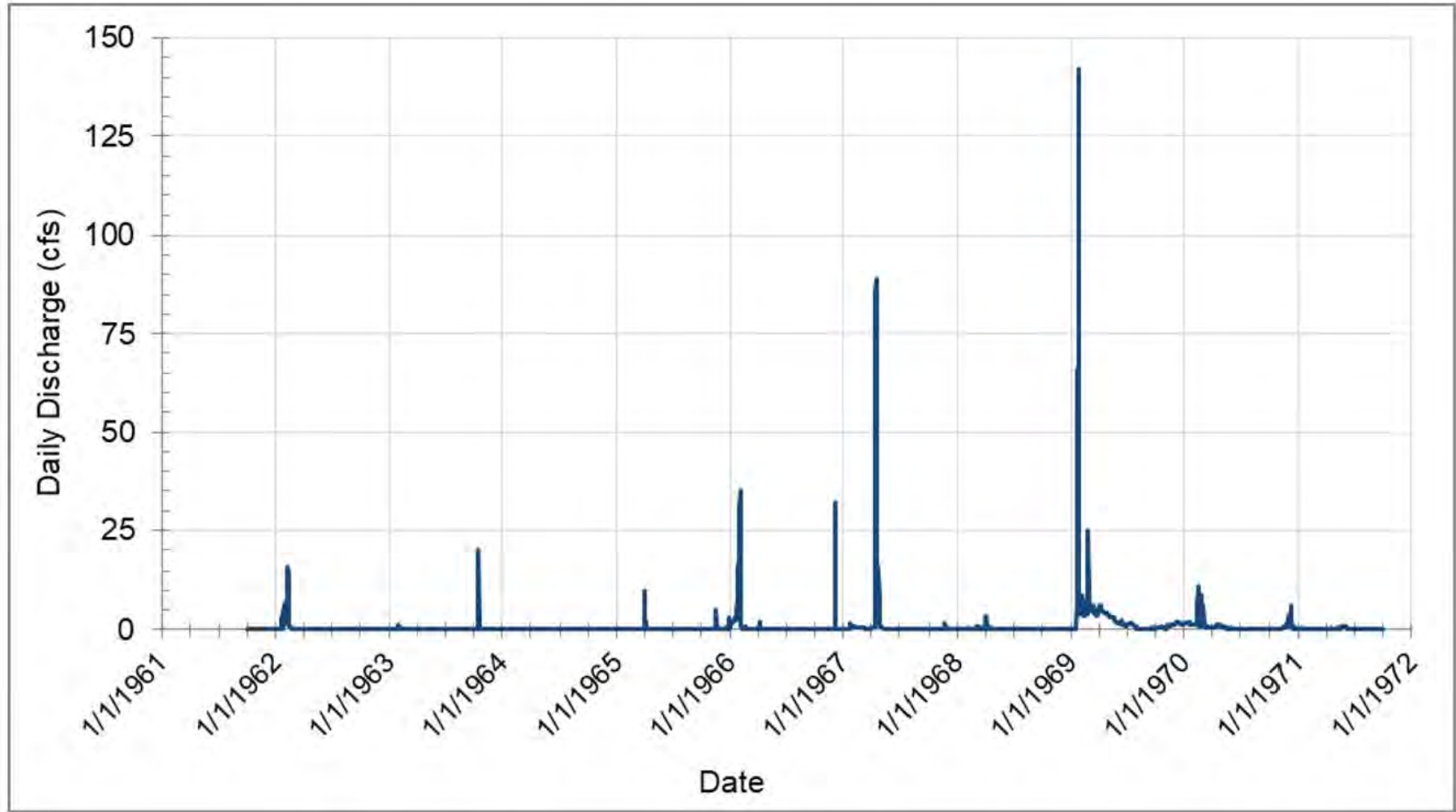


■ Annual Precipitation (inches)     
 — Mean Annual Precipitation (inches)     
 — Cumulative Departure from Mean (%)



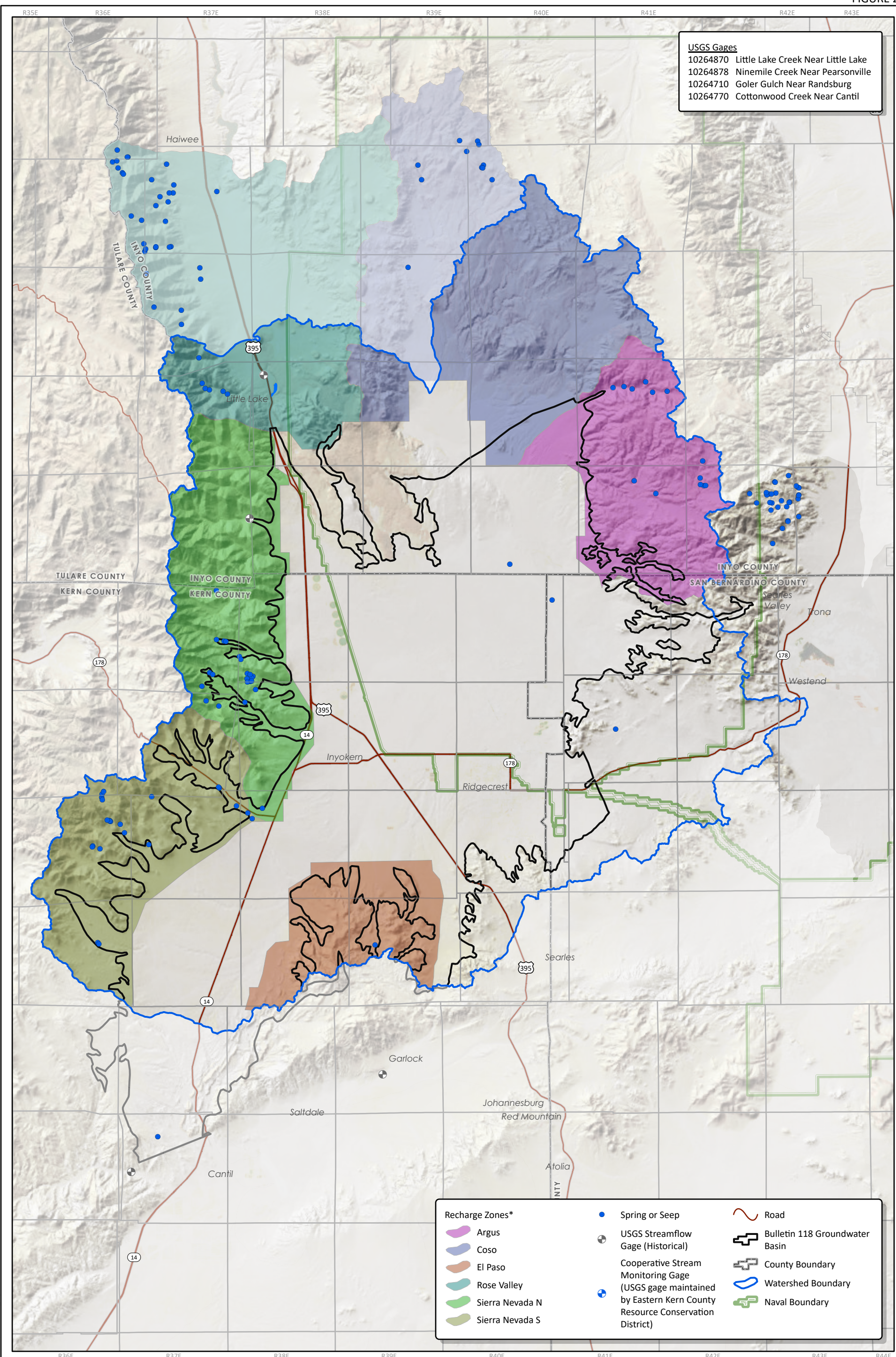
**ANNUAL PRECIPITATION AND CUMULATIVE DEPARTURE FROM MEAN**

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HYDROGRAPH OF DAILY DISCHARGE AT NINEMILE CREEK

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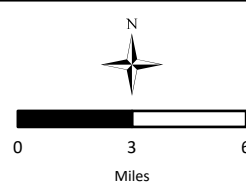
I:\m2652\GW\BasinTech\Report\2026 apr\GW26 Fig23

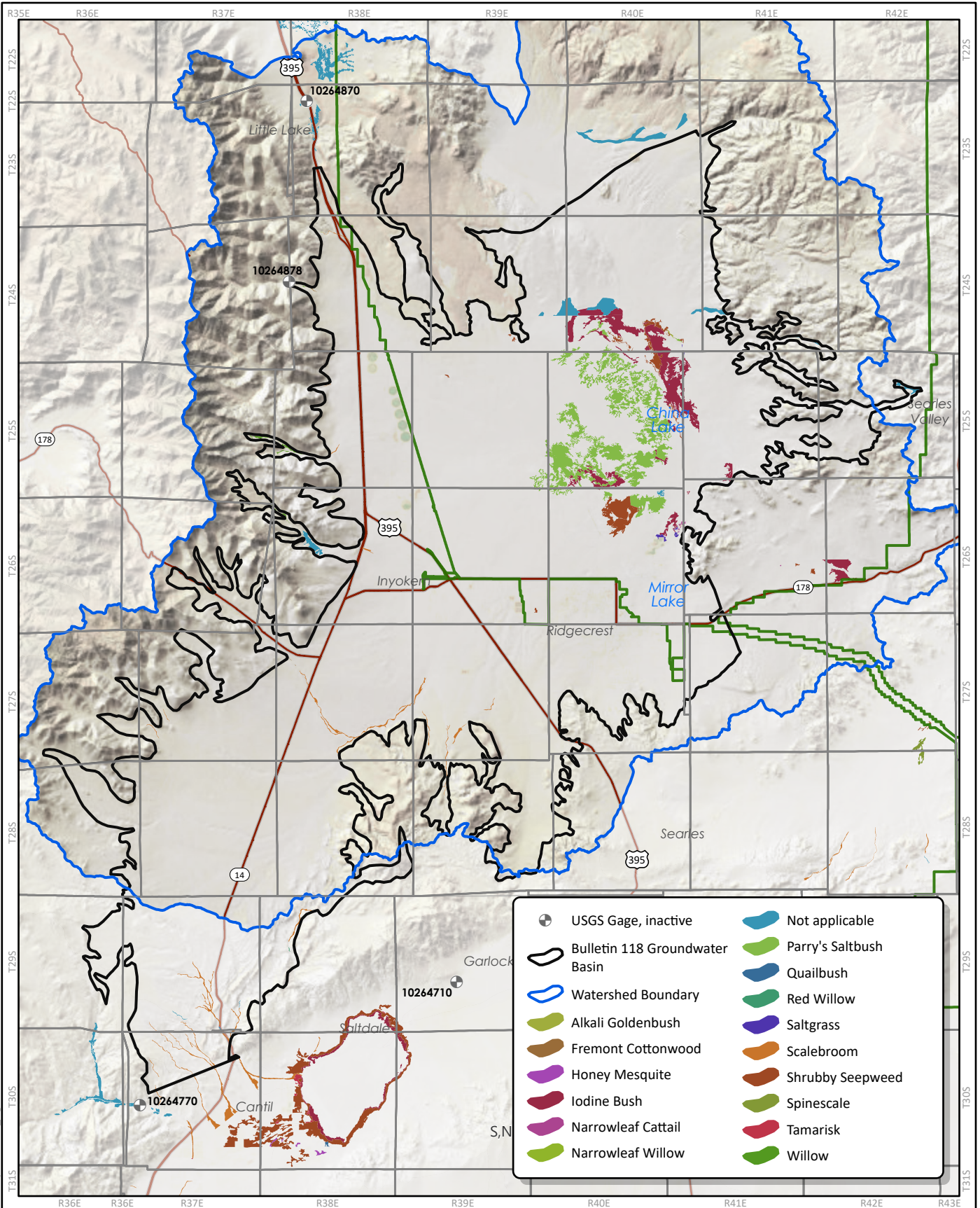


**RECHARGE ZONES AND SPRINGS**

Source(s): \*Recharge zones as developed by Desert Research Institute (McGraw et al, 2016)

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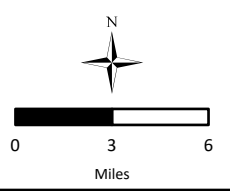
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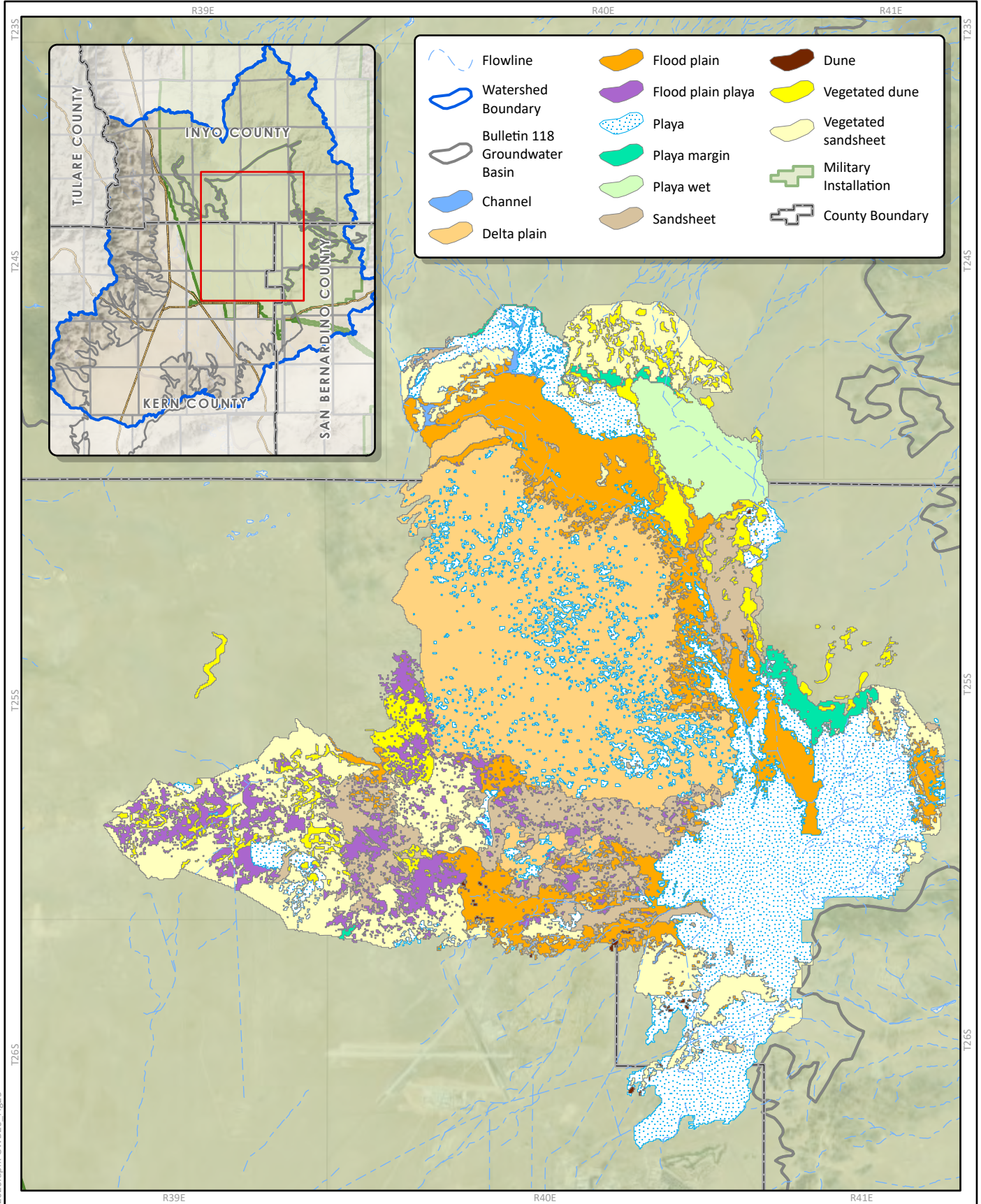


**GROUNDWATER DEPENDENT ECOSYSTEMS**

Source(s): DWR Natural Communities Commonly Associated with Groundwater

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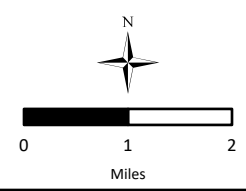


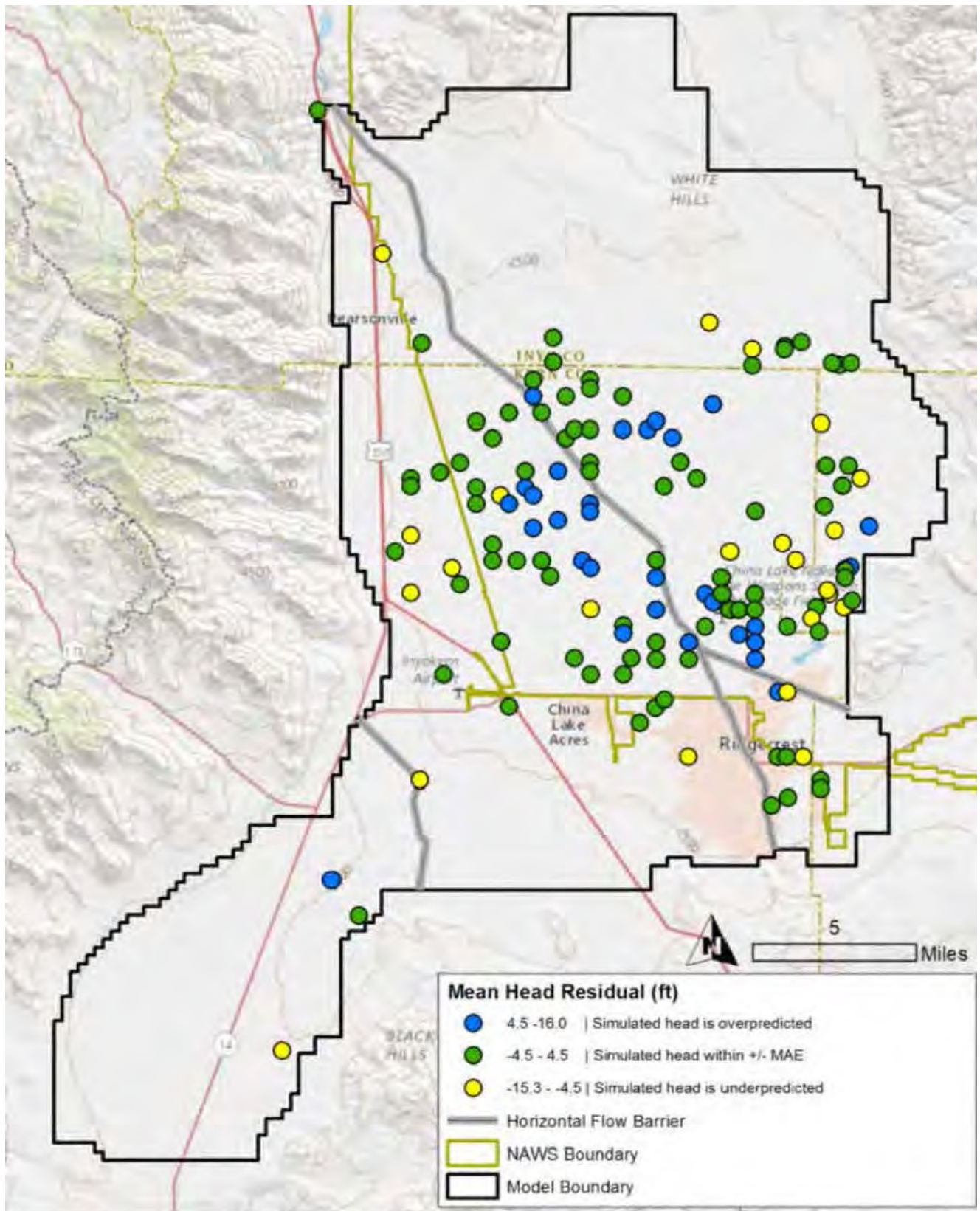
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**LANDFORM ET ZONES**

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**CALIBRATION SIMULATED-MEASURED RESIDUAL GROUNDWATER LEVELS**

Source: Desert Research Institute

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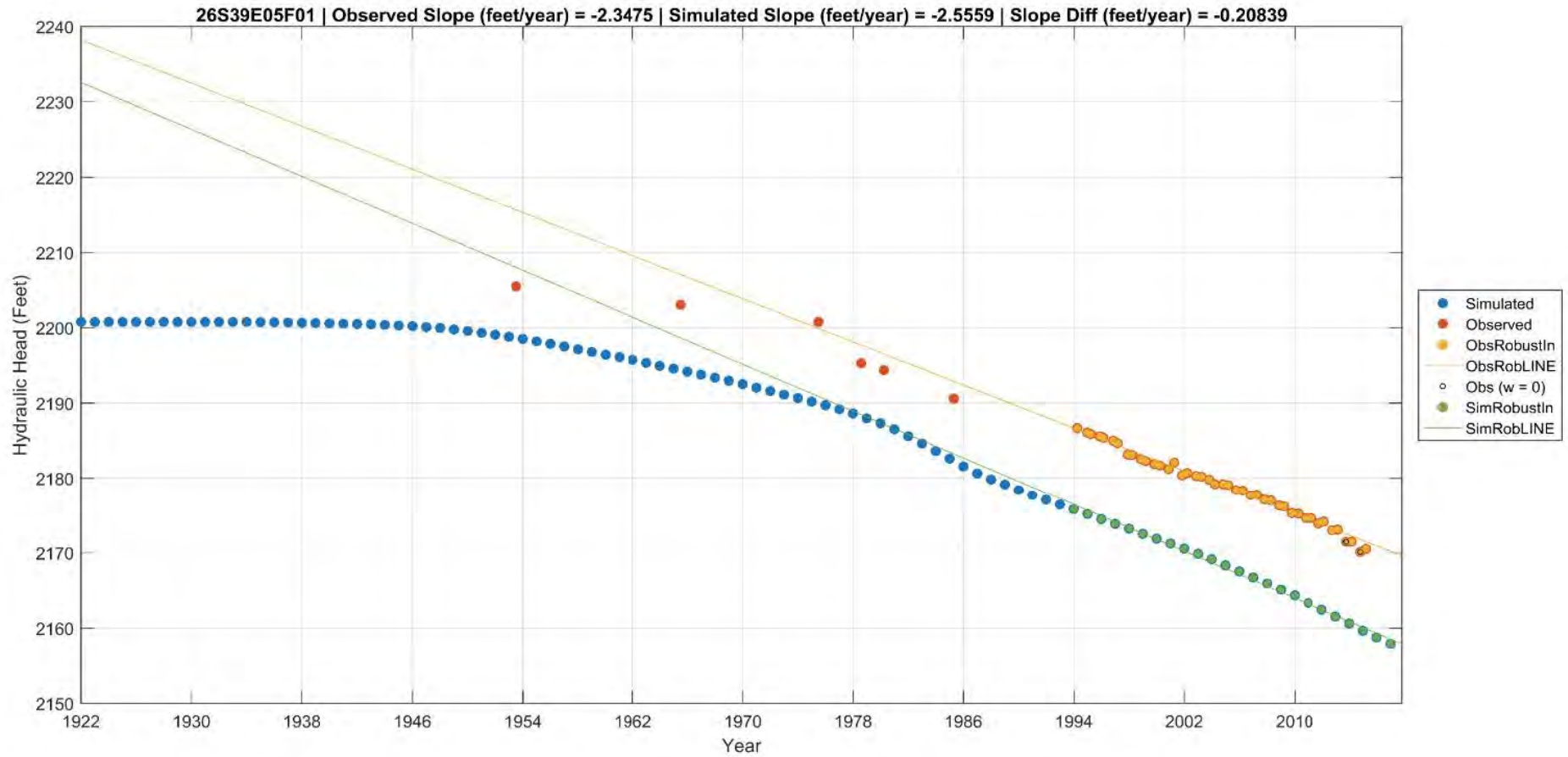
J:\In2652\GWBasinTechReport2026.aprx GWB26 - Fig27



Source: Desert Research Institute

### CALIBRATION GROUNDWATER LEVEL TARGETS

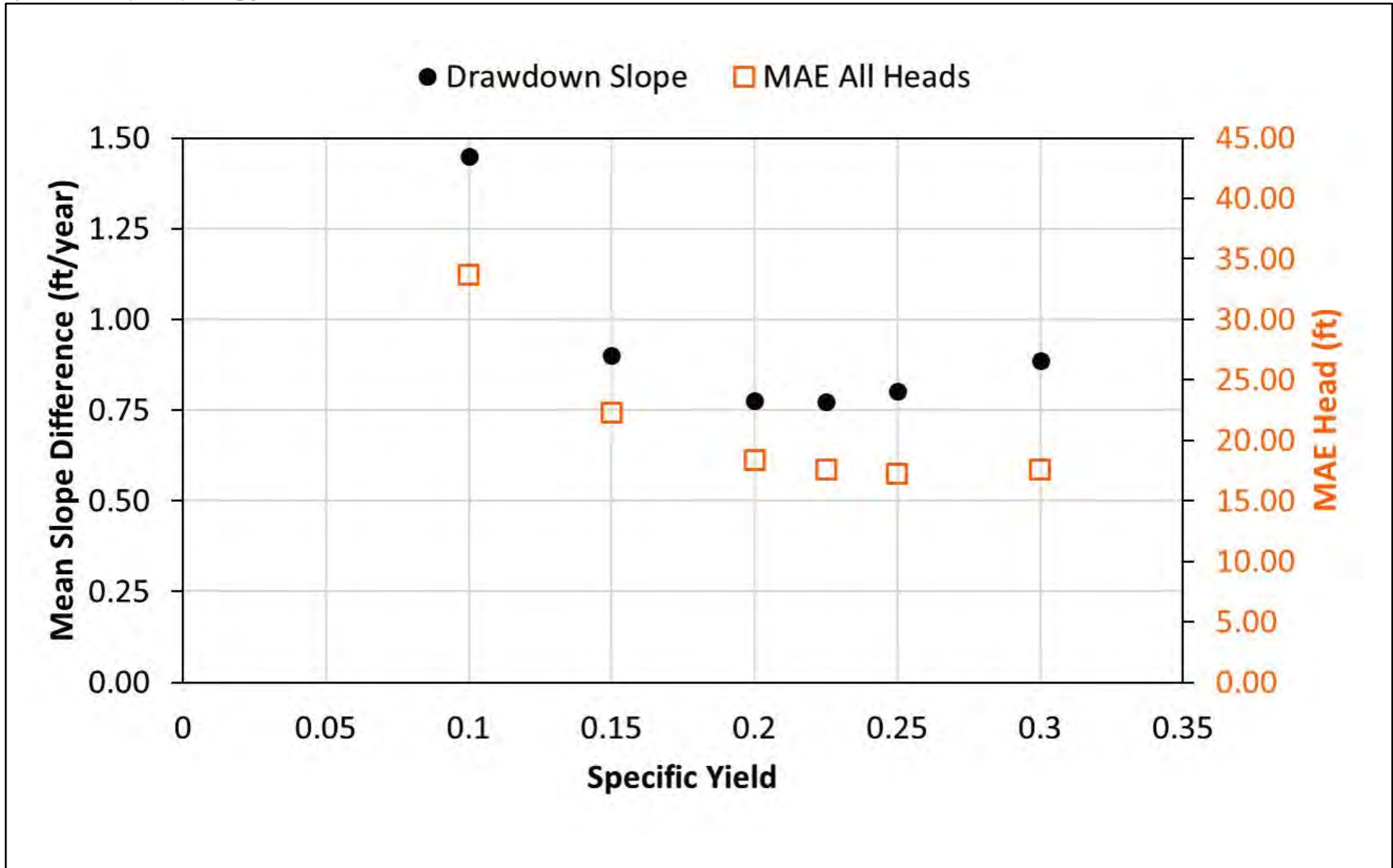
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Source: Desert Research Institute

### EXAMPLE HYDROGRAPH SLOPE-FITTING METHOD USED FOR CALIBRATION

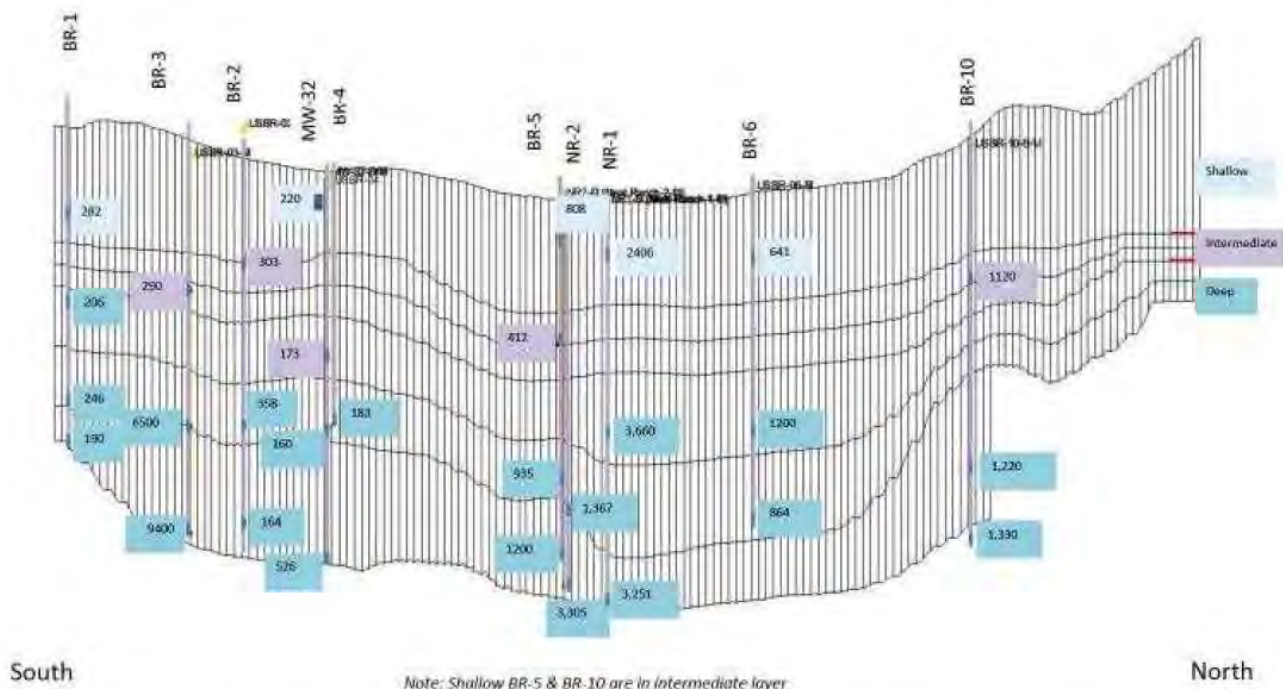
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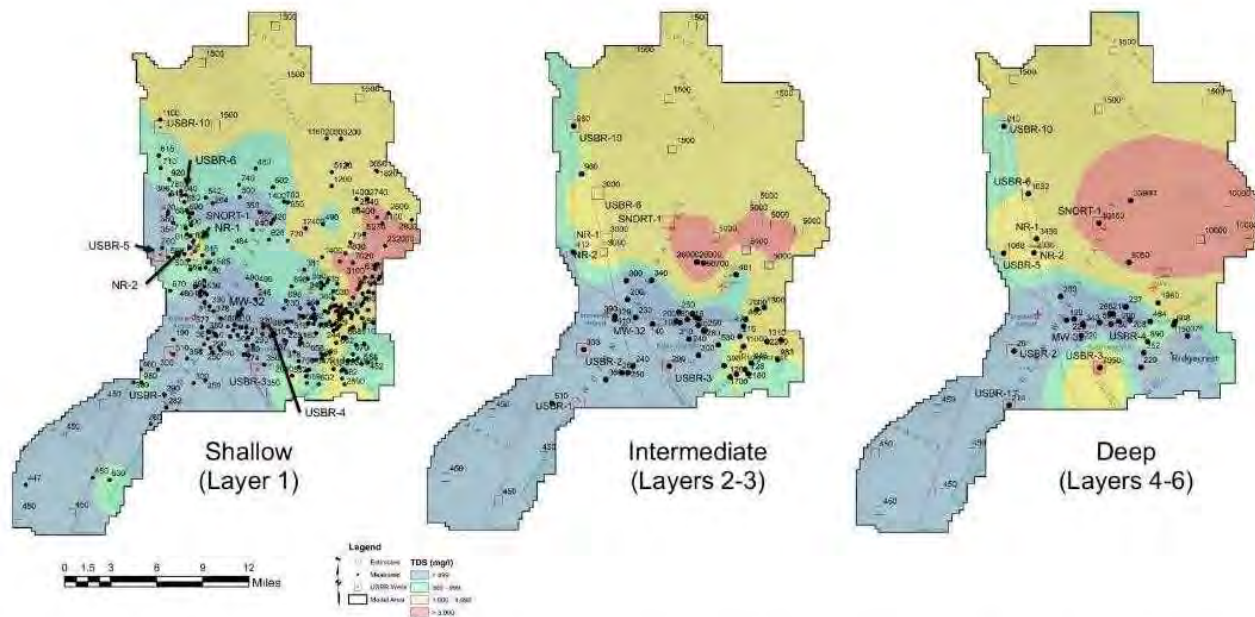
Source: Desert Research Institute

DRAWDOWN SLOPE AND MAE RESULTS

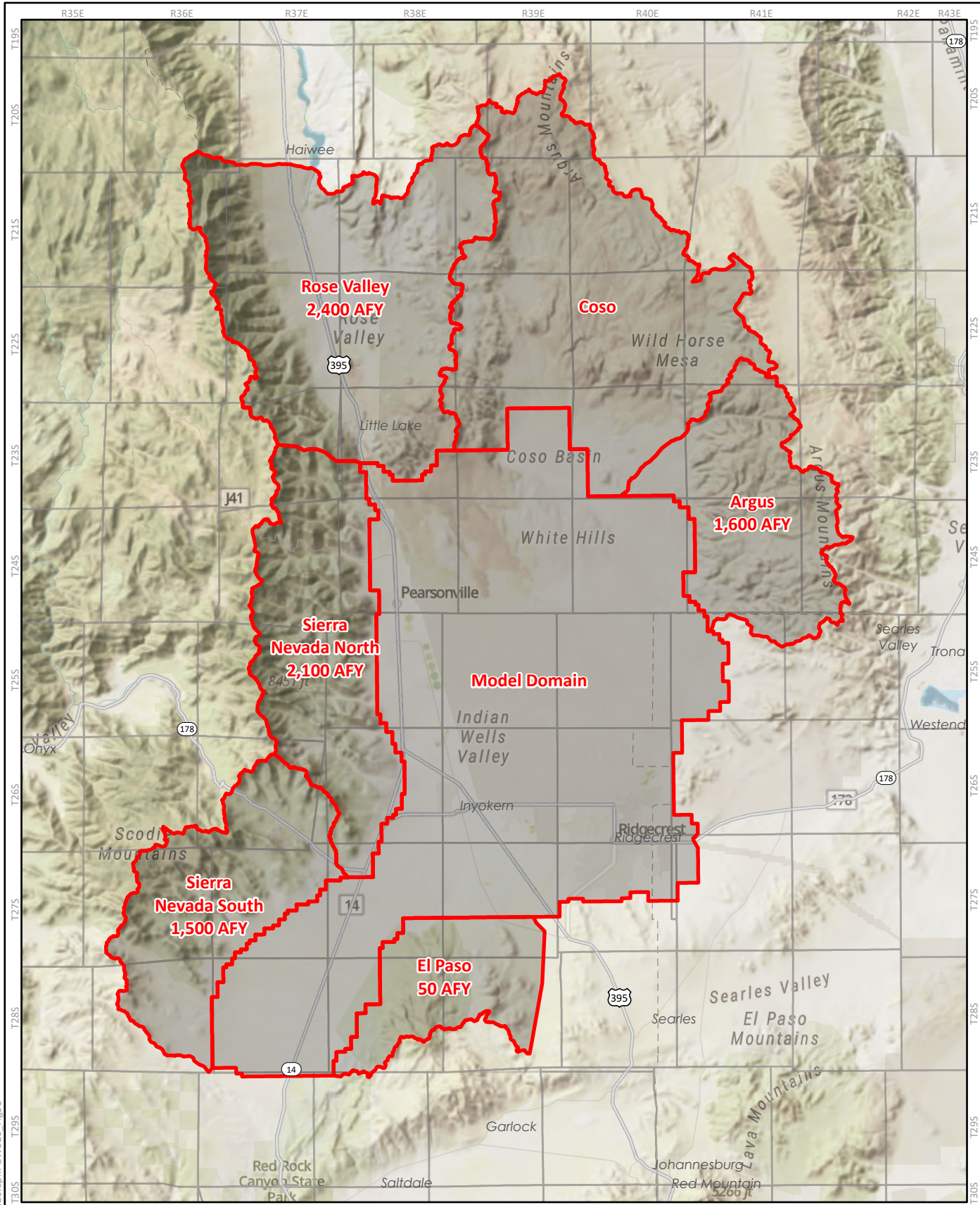
DRAFT  
4/27/2026



An example North-South cross section through the transport model illustrating the relationship between of the Shallow, Intermediate, and Deep TDS zones to the six computational layers in the flow model. TDS measurements at selected well locations are also shown to illustrate the averaging of multiple values within a TDS zone. Measured TDS concentrations were interpolated to the transport model grid cells based on the TDS zone in which they fall.



Spatial distributions of TDS concentration in the three TDS zones that are used for initial conditions in the transport model.

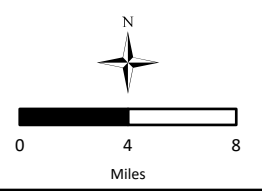


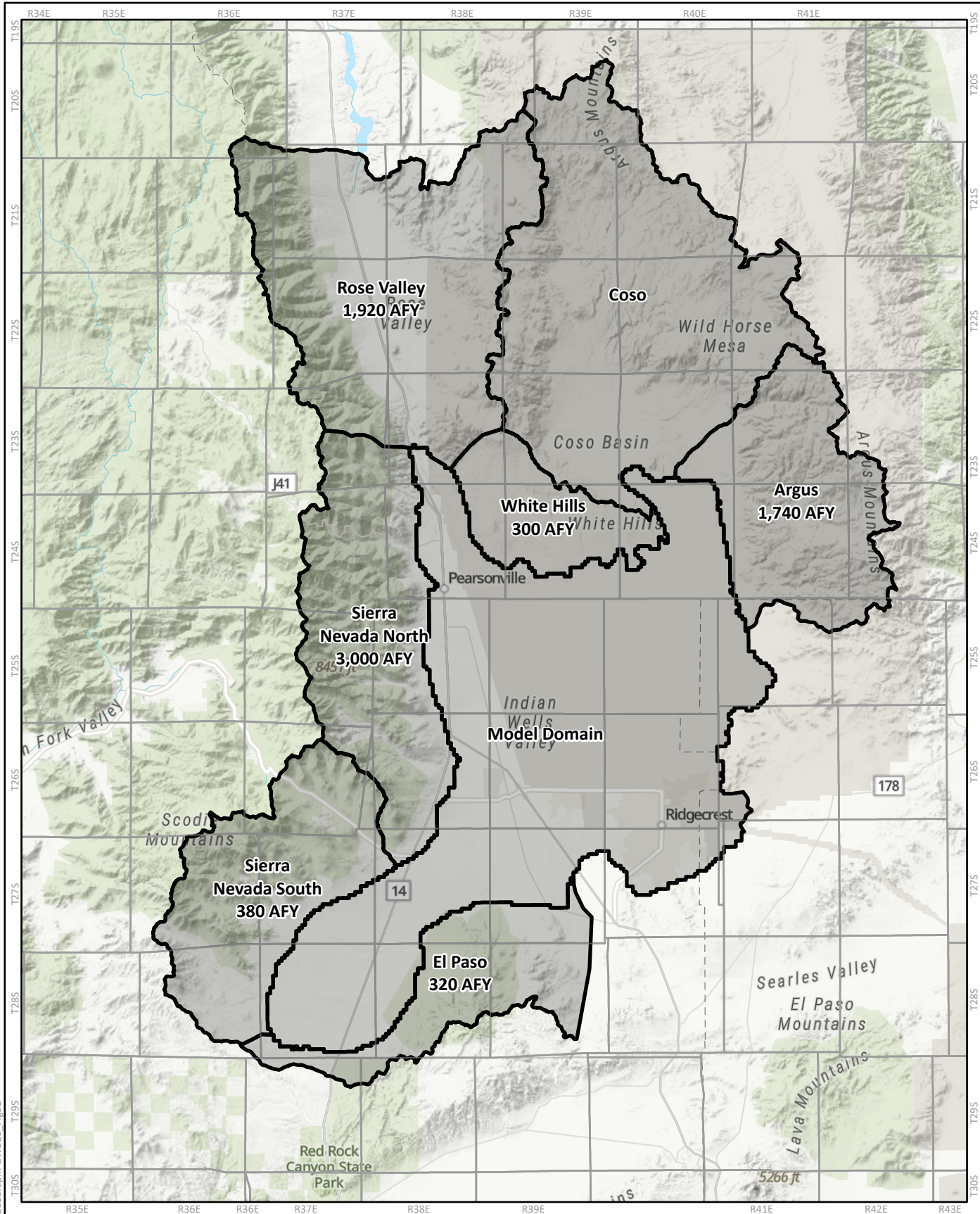
J:\n\2652\GWBasinTechReport\2026.aprx GWB26 - Fig31



**2020 BASIN MODEL MFR DISTRIBUTION**

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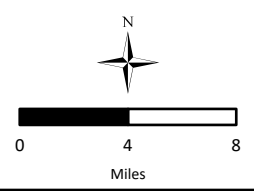


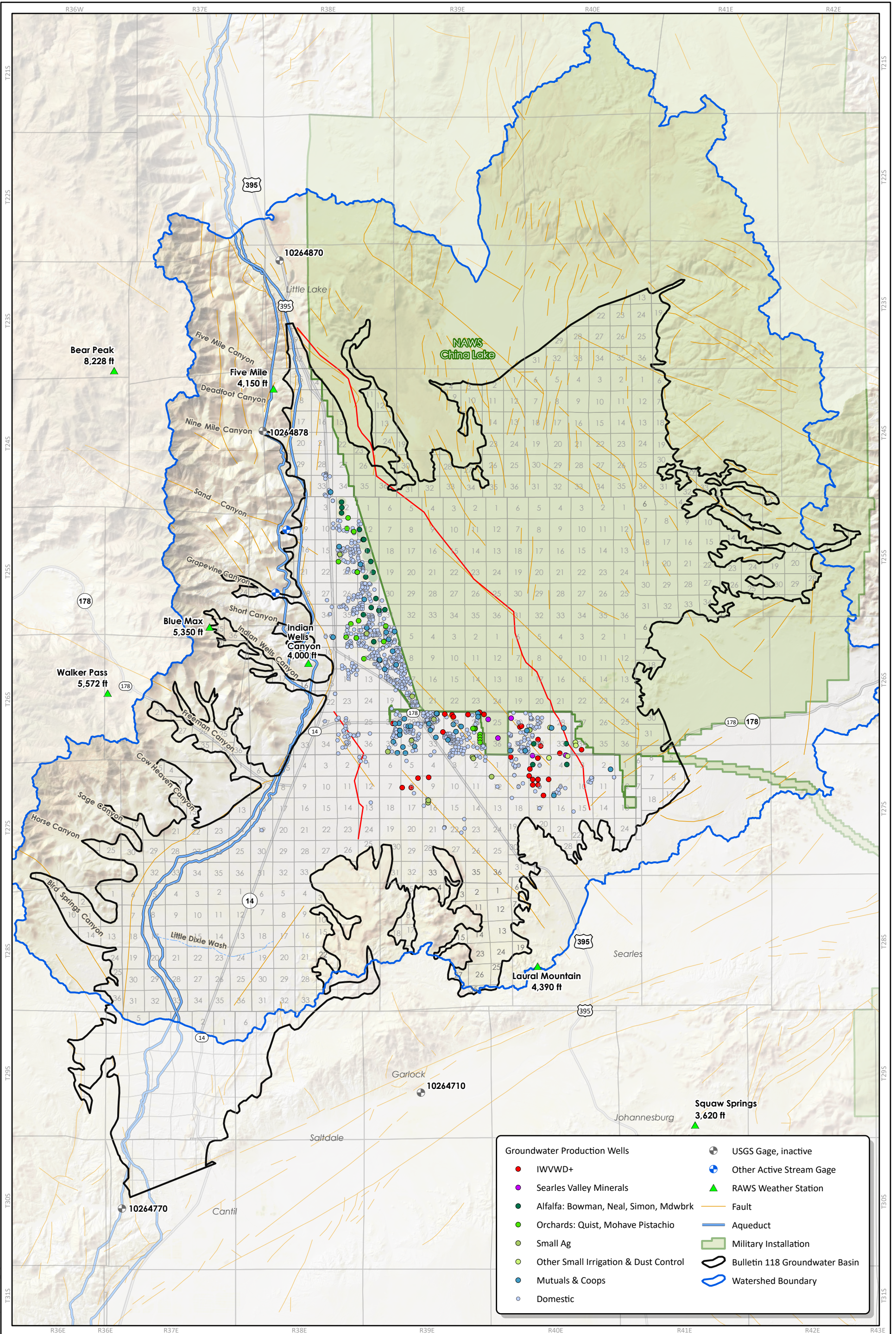
J:\n2652\GWBasinTechReport2026.aprx GWB26 - Fig32



### 2025 BASIN MODEL MFR DISTRIBUTION

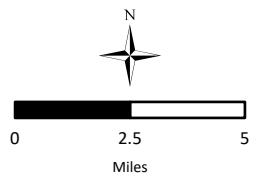
DRAFT  
4/27/2026

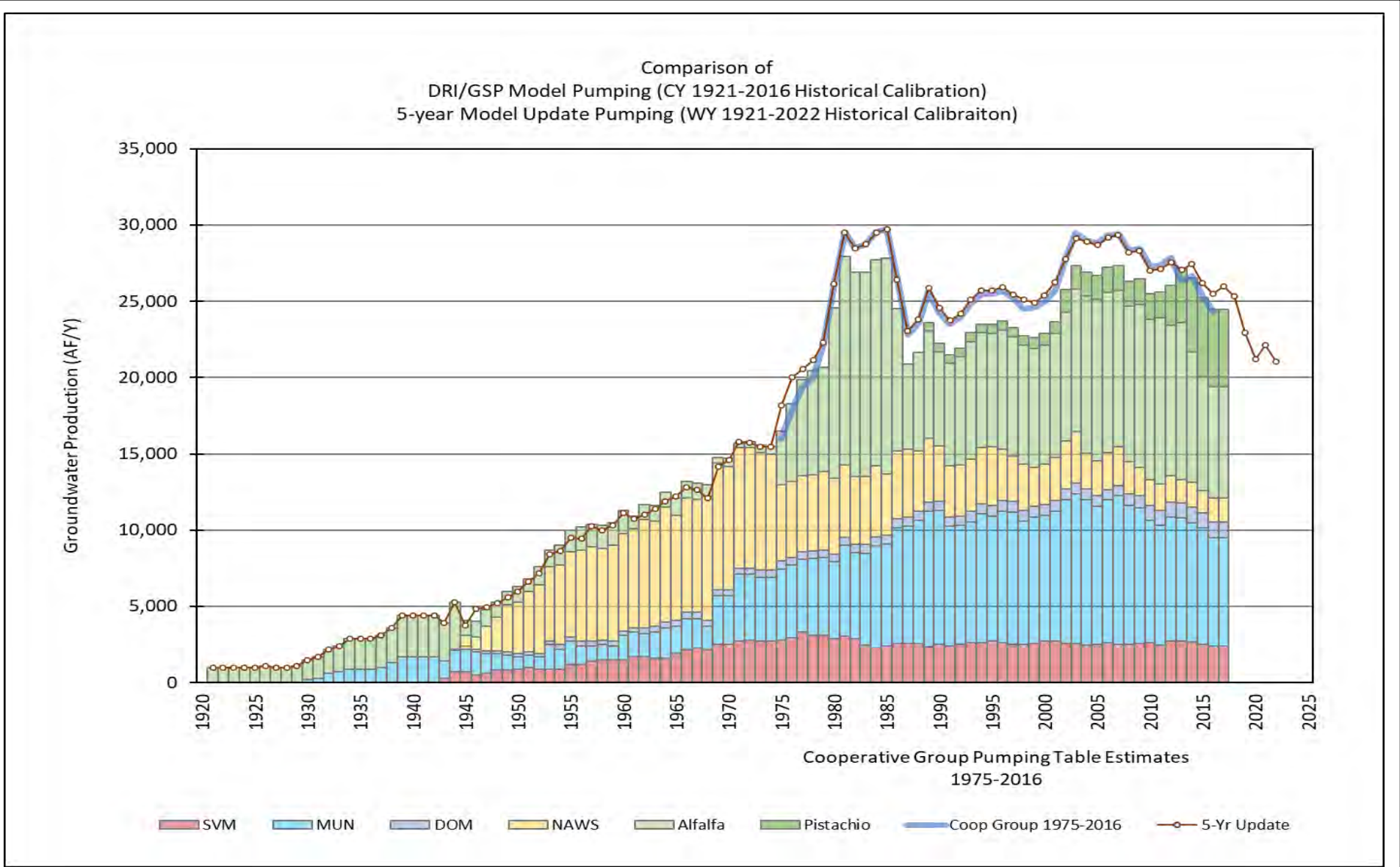




**PUMPING WELL LOCATIONS**

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5/8/2026

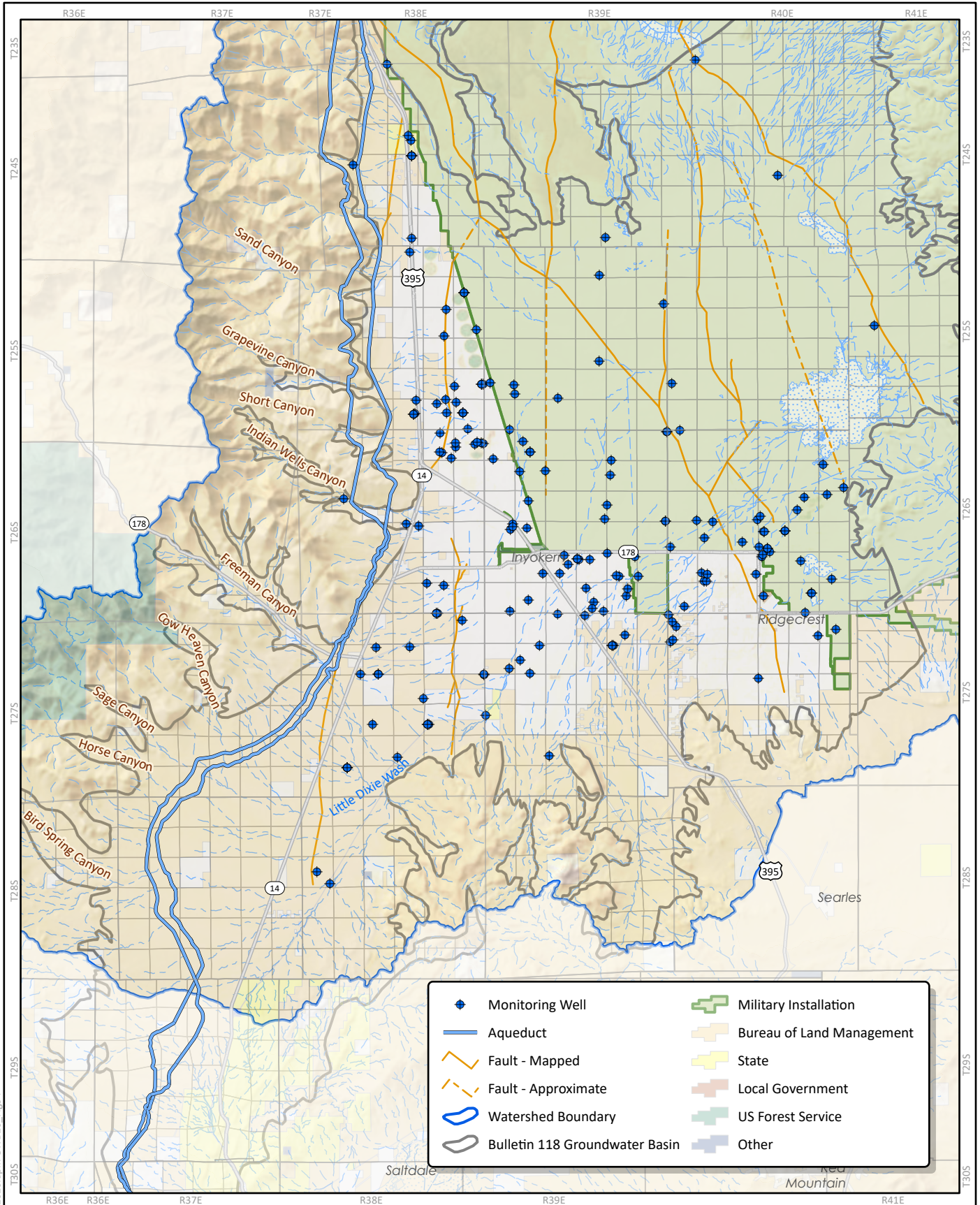




**ESTIMATED ANNUAL PUMPING BY WATER YEAR AND  
PUMPING GROUP FOR THE HISTORICAL CALIBRATION (WY 1921-2022)**

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5/8/2026

FIGURE 33B

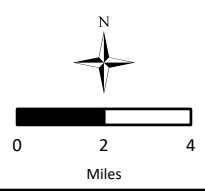


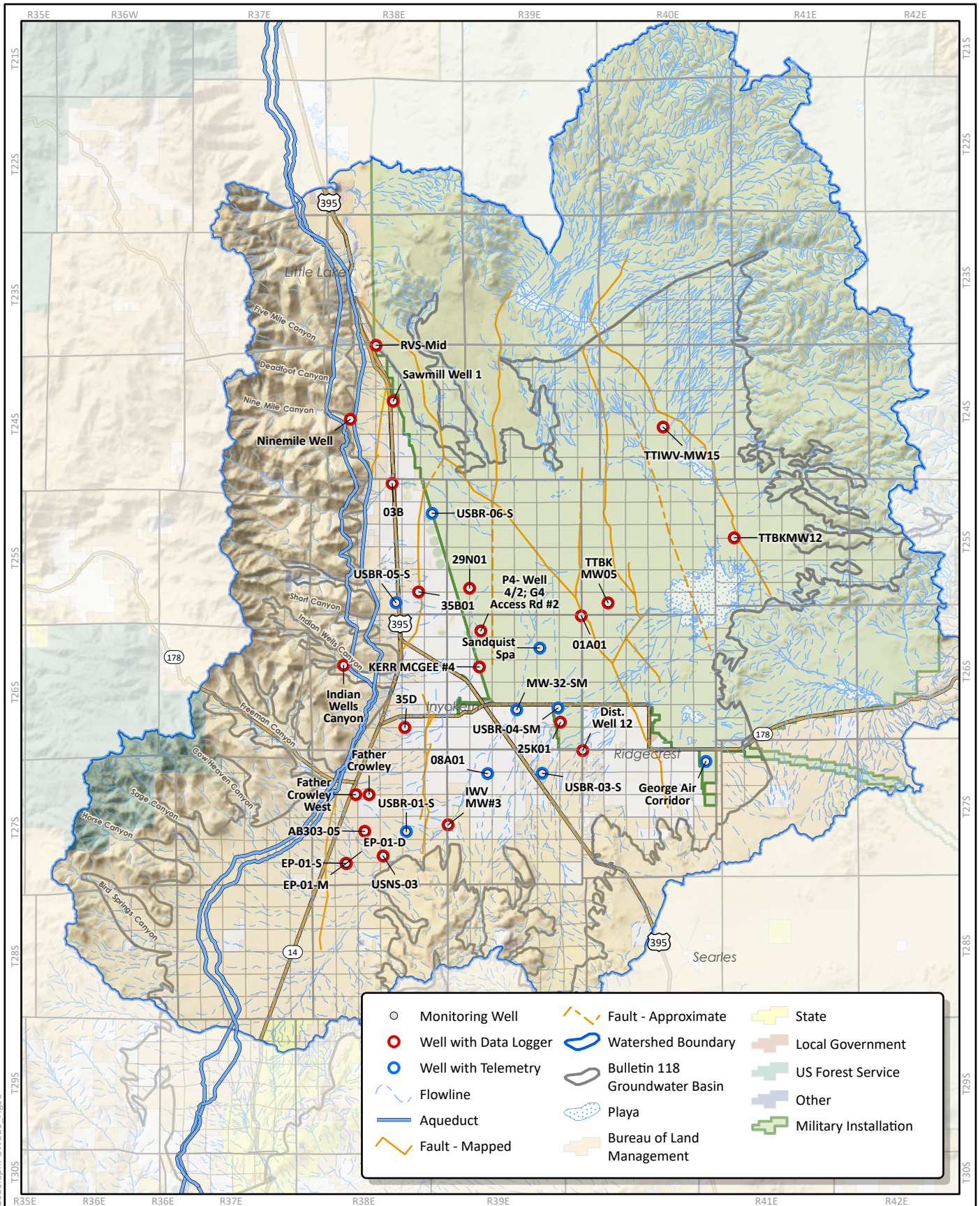
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**2025 GSP MONITORING NETWORK FOR GWLS**

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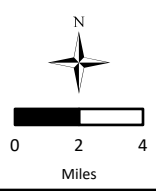


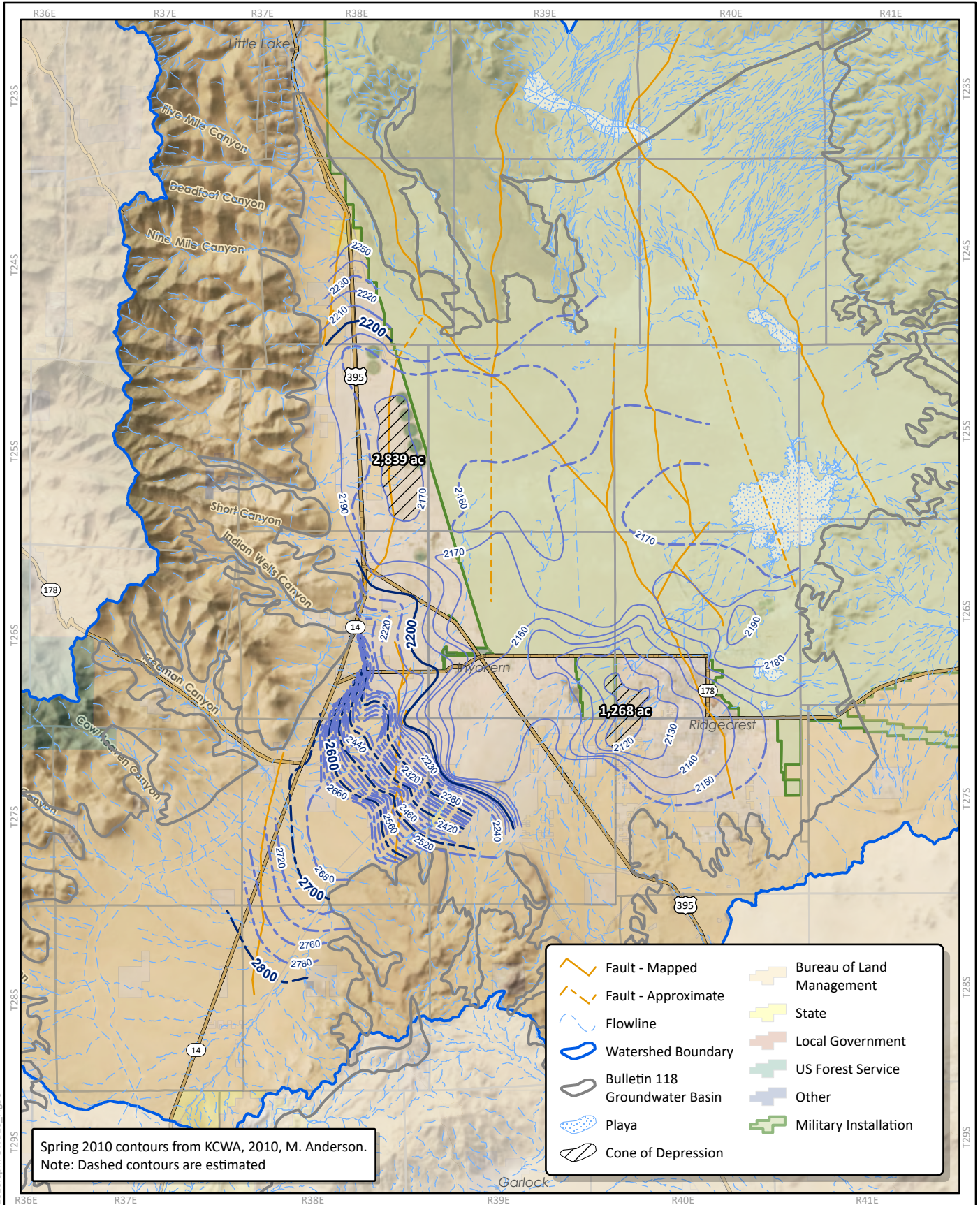
J:\In\2652\GWBasinTechReport\2026.aprx GWB26 - Fig35



**GWL MONITORING SITES WITH DATALOGGER AND TELEMETRY**

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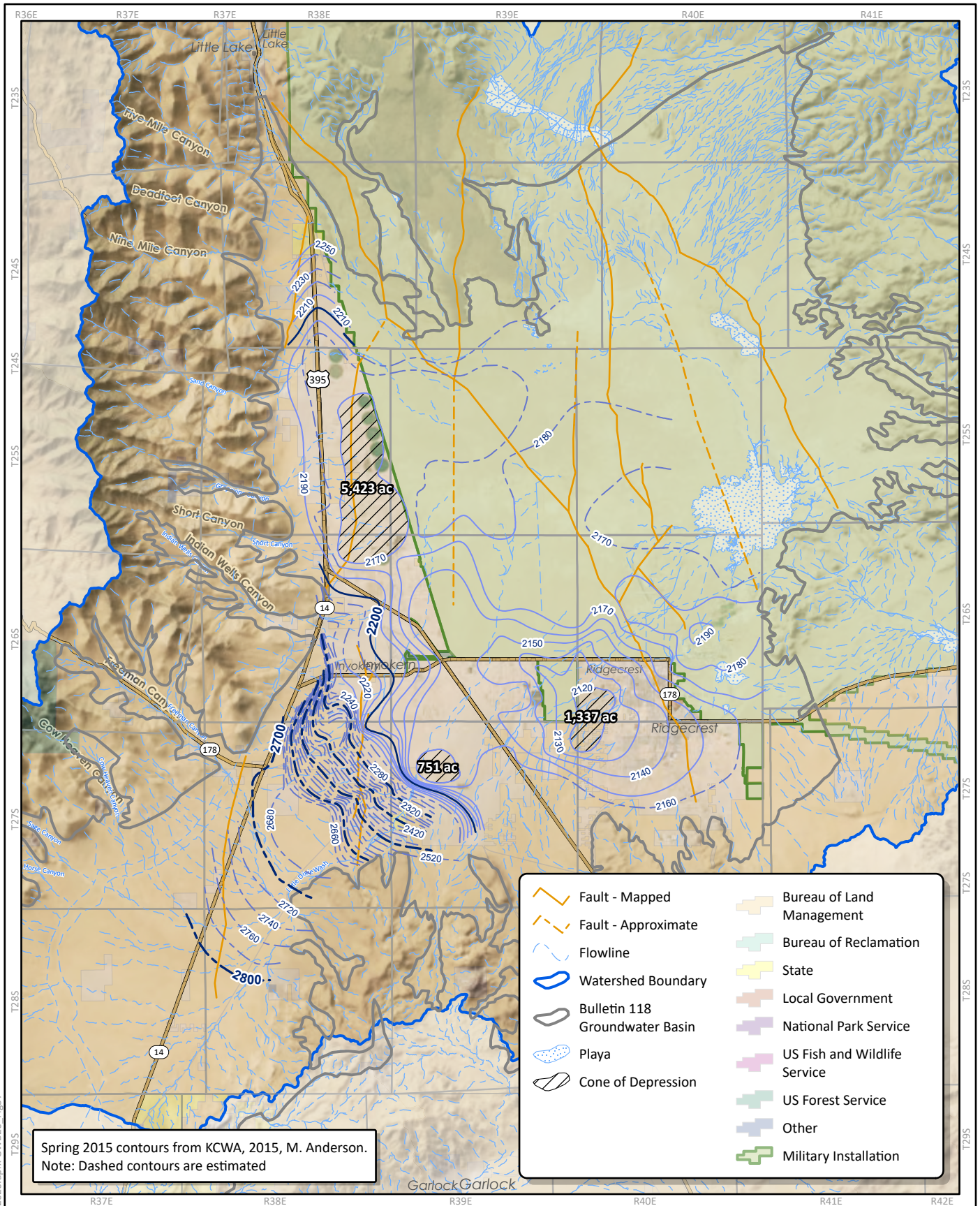
Spring 2010 contours from KCWA, 2010, M. Anderson.  
 Note: Dashed contours are estimated

J:\In\2652\GWBasinTechReport\2026.aprx GWB26 - Fig36



**SPRING 2010 GROUNDWATER CONTOUR MAP**

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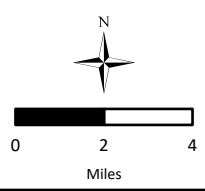
Spring 2015 contours from KCWA, 2015, M. Anderson.  
 Note: Dashed contours are estimated

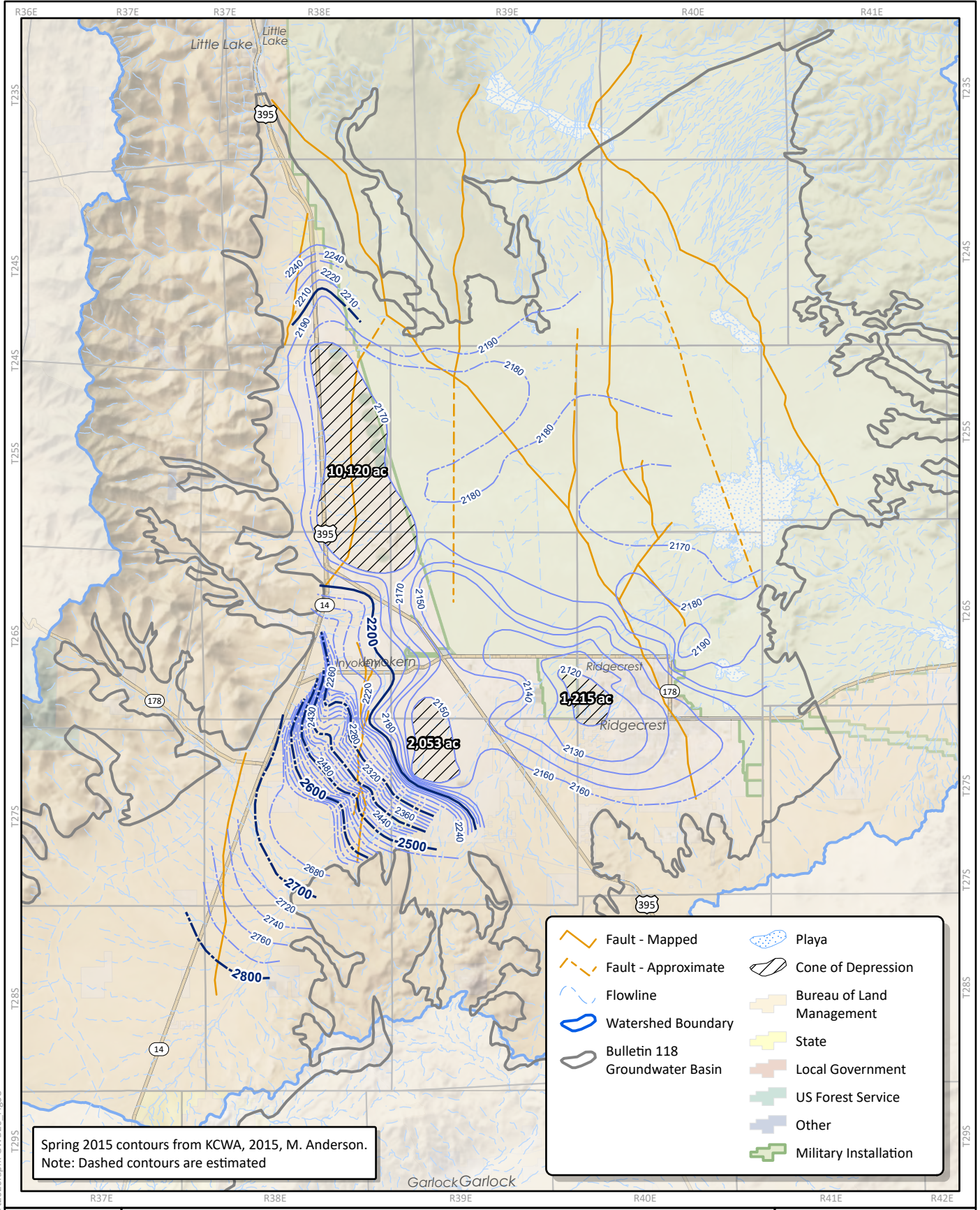
J:\In\2652\GWBasinTechReport\2026.aprx.GWB26-Fig37



**SPRING 2015 GROUNDWATER CONTOUR MAP**

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Spring 2015 contours from KCWA, 2015, M. Anderson.  
 Note: Dashed contours are estimated

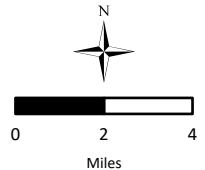
	Fault - Mapped		Playa
	Fault - Approximate		Cone of Depression
	Flowline		Bureau of Land Management
	Watershed Boundary		State
	Bulletin 118 Groundwater Basin		Local Government
			US Forest Service
			Other
			Military Installation

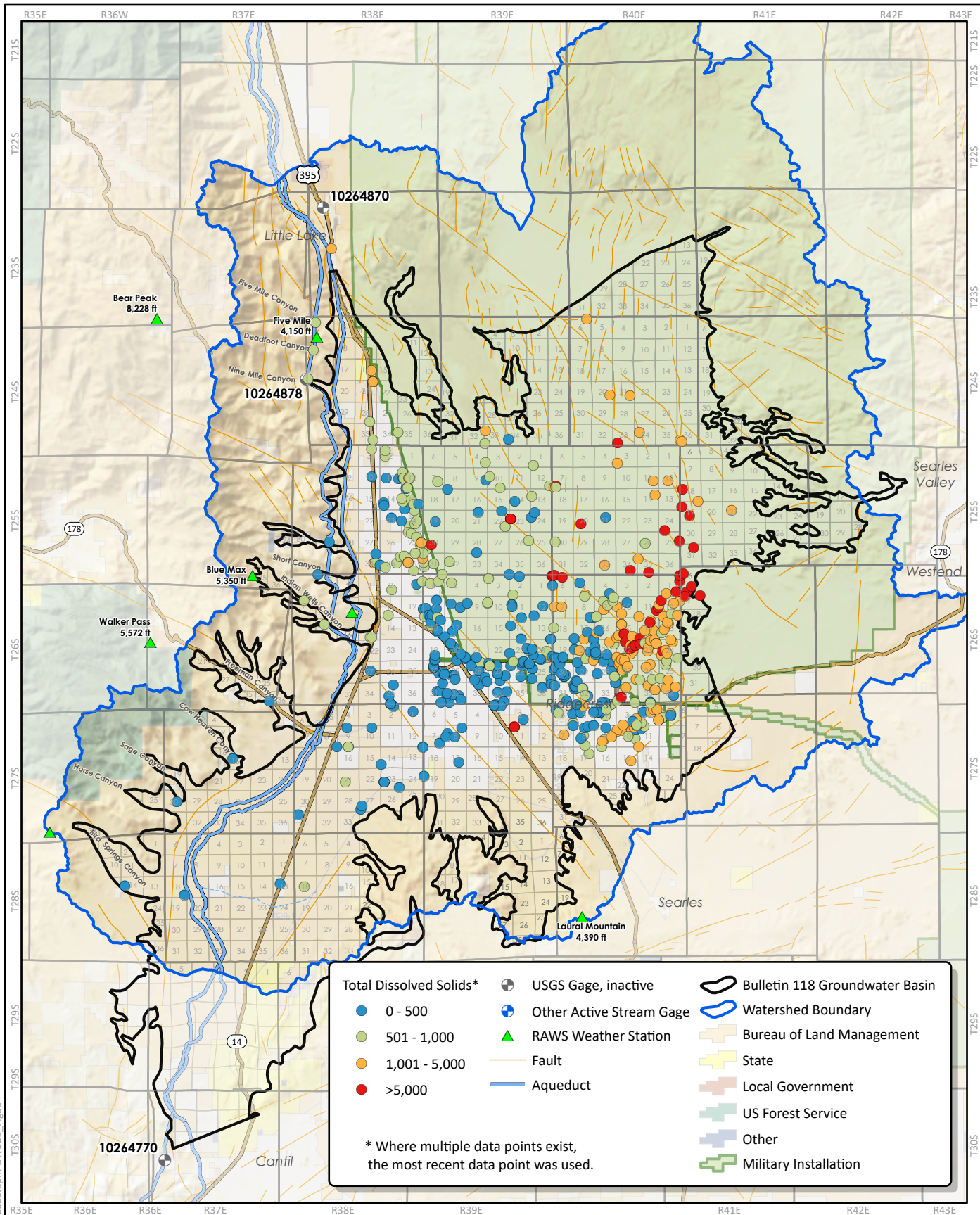
J:\n\2652\GWBasinTechReport2026.aprx.GWB26 - Fig38



**SPRING 2023 GROUNDWATER CONTOUR MAP  
 INDIAN WELLS VALLEY, CA**

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Total Dissolved Solids*	USGS Gage, inactive	Bulletin 118 Groundwater Basin
0 - 500	Other Active Stream Gage	Watershed Boundary
501 - 1,000	RAWS Weather Station	Bureau of Land Management
1,001 - 5,000	Fault	State
>5,000	Aqueduct	Local Government
		US Forest Service
		Other
		Military Installation

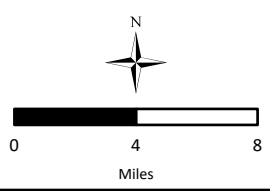
\* Where multiple data points exist, the most recent data point was used.

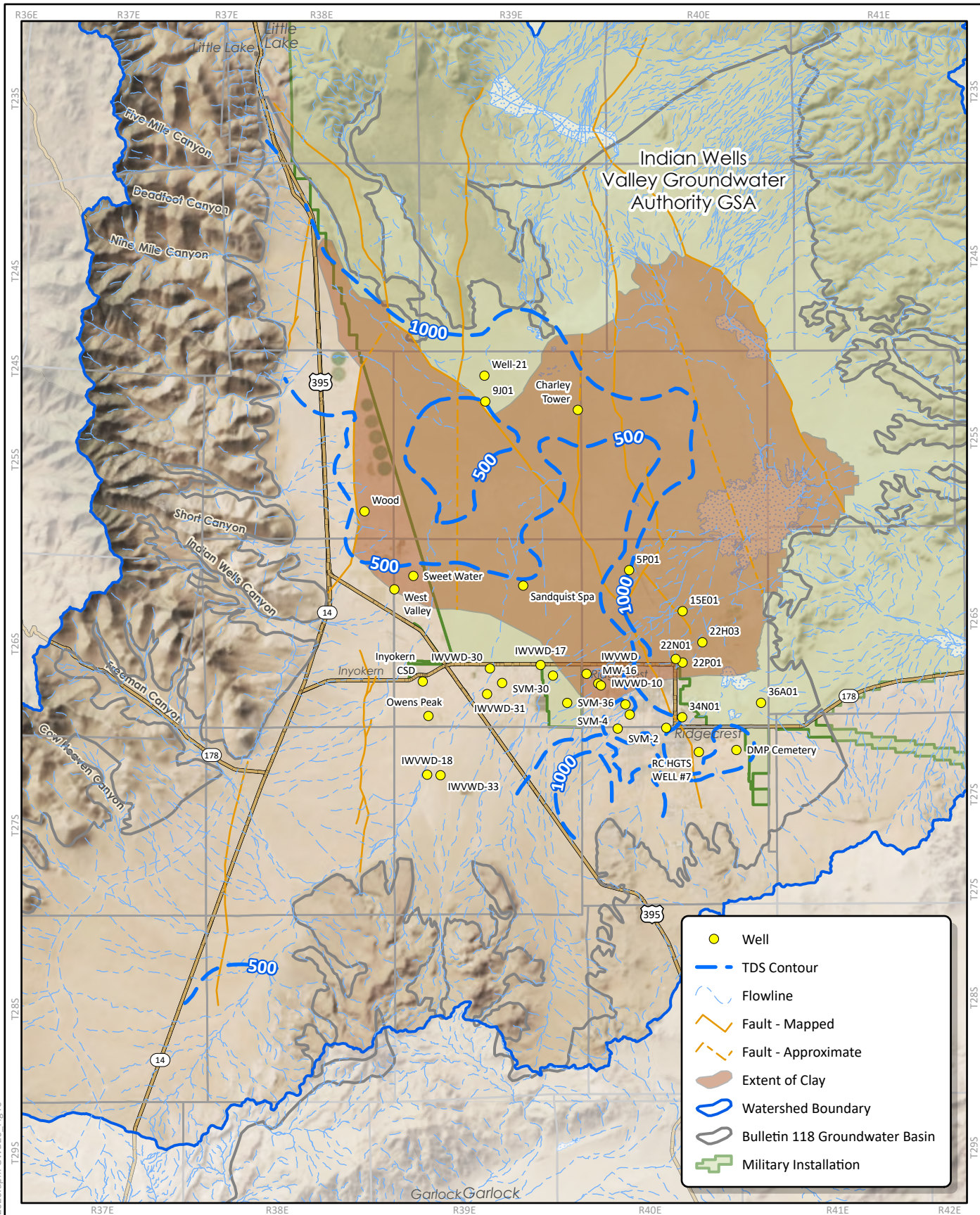
J:\In\_2652\GWBasinTechReport2026.aprx GWB26 - Fig39



### 2020 TDS CONCENTRATIONS

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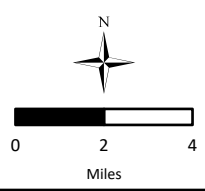


J:\In\2652\GWBasinTechReport\2026.aprx.GWB26 - Fig40



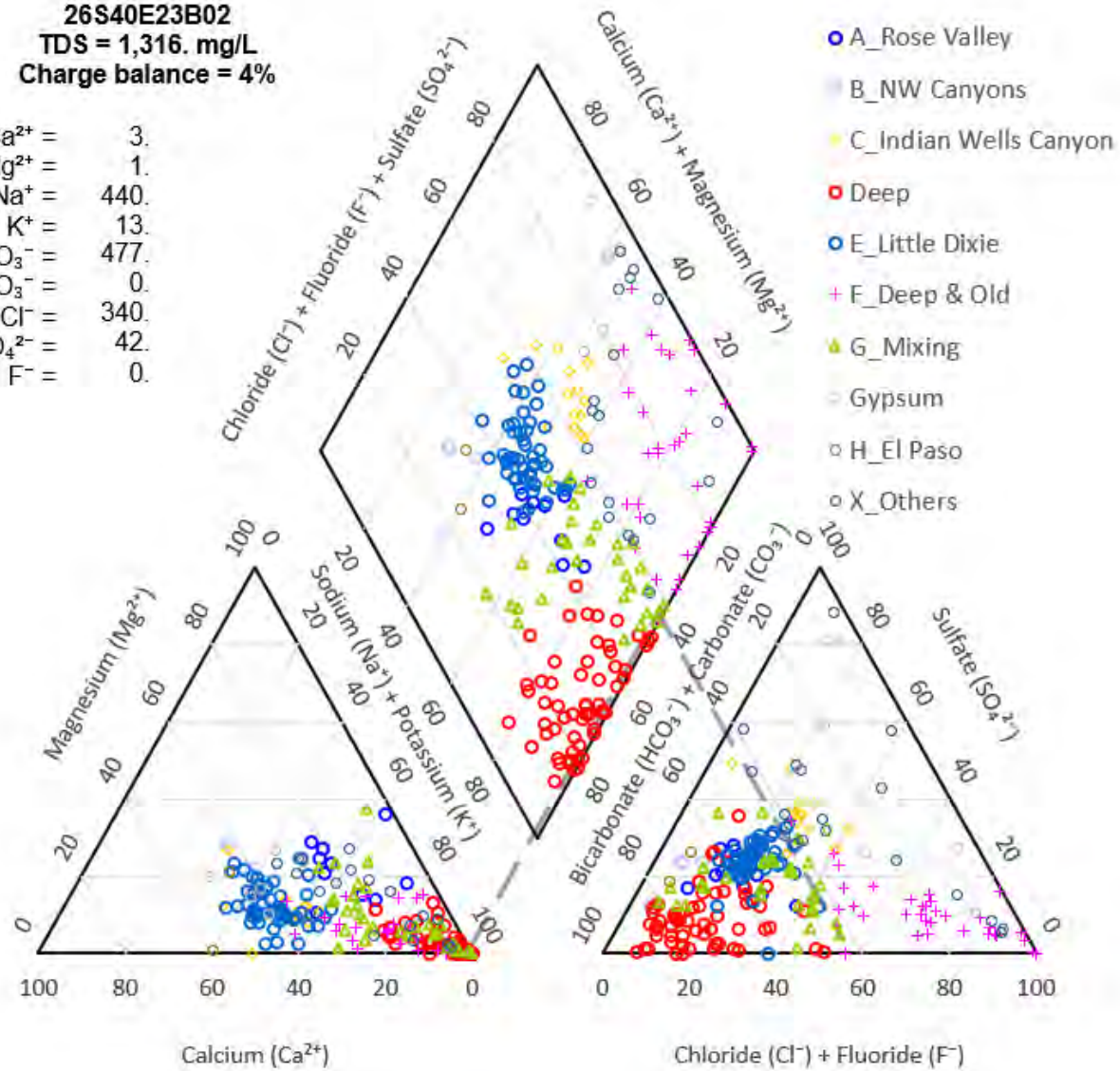
**TDS CONCENTRATION CONTOUR MAP**

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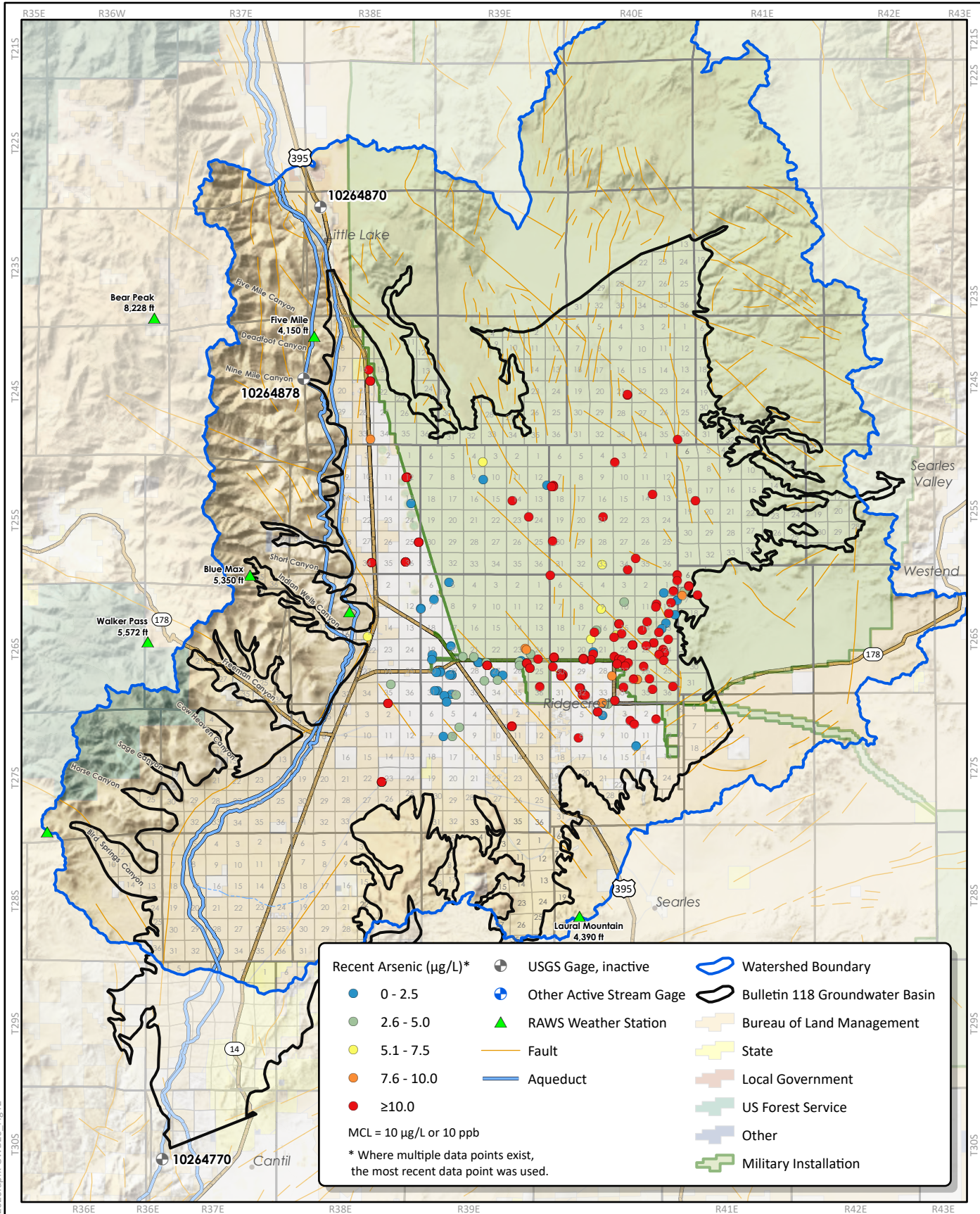


**26S40E23B02**  
**TDS = 1,316. mg/L**  
**Charge balance = 4%**

Ca<sup>2+</sup> = 3.  
 Mg<sup>2+</sup> = 1.  
 Na<sup>+</sup> = 440.  
 K<sup>+</sup> = 13.  
 HCO<sub>3</sub><sup>-</sup> = 477.  
 CO<sub>3</sub><sup>-</sup> = 0.  
 Cl<sup>-</sup> = 340.  
 SO<sub>4</sub><sup>2-</sup> = 42.  
 F<sup>-</sup> = 0.



**GROUNDWATER QUALITY PIPER DIAGRAM**

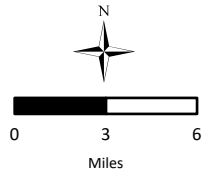


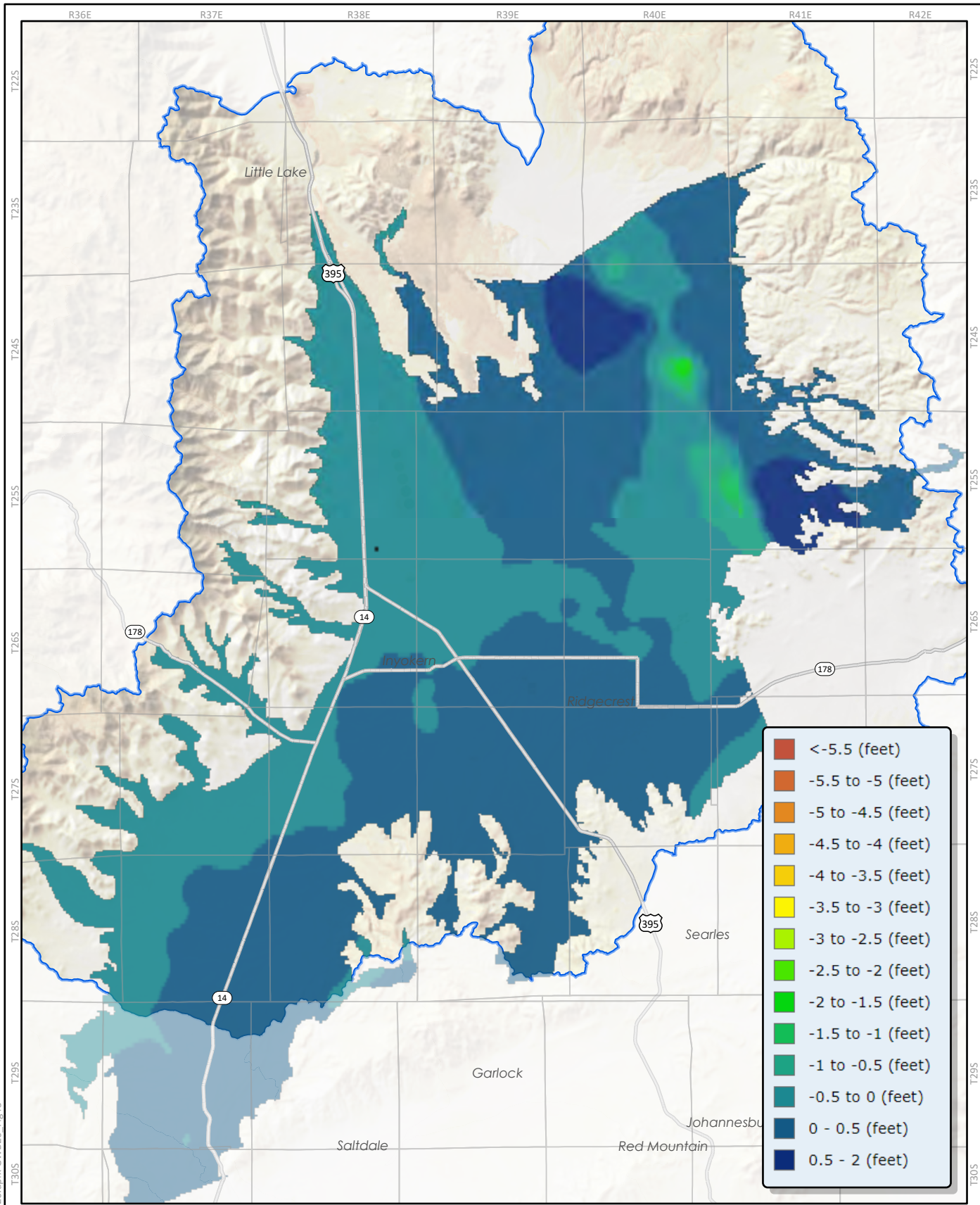
J:\In\2652\GWBasinTechReport2026.aprx GWB26 - Fig42



**2020 ARSENIC CONCENTRATIONS**

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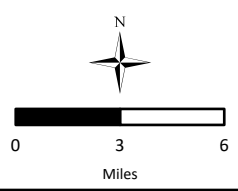


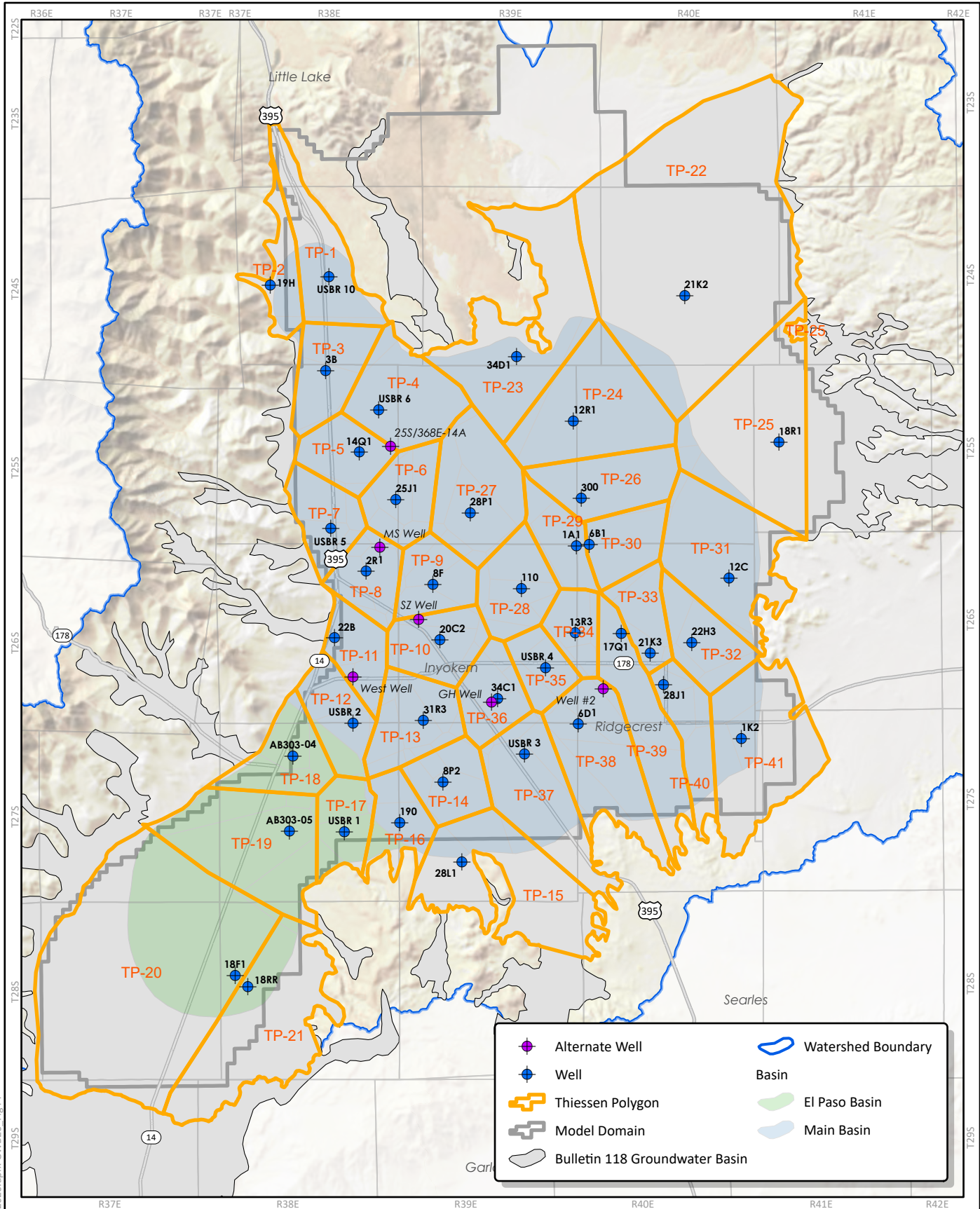
J:\n2652\GWBasinTechReport2026.aprx GWB26 - Fig43



### CUMULATIVE LAND SUBSIDENCE 2015-2024

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**BASIN STORAGE – MODIFIED THIESSEN POLYGON METHOD**

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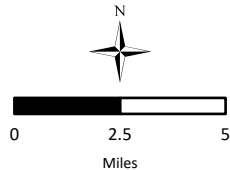
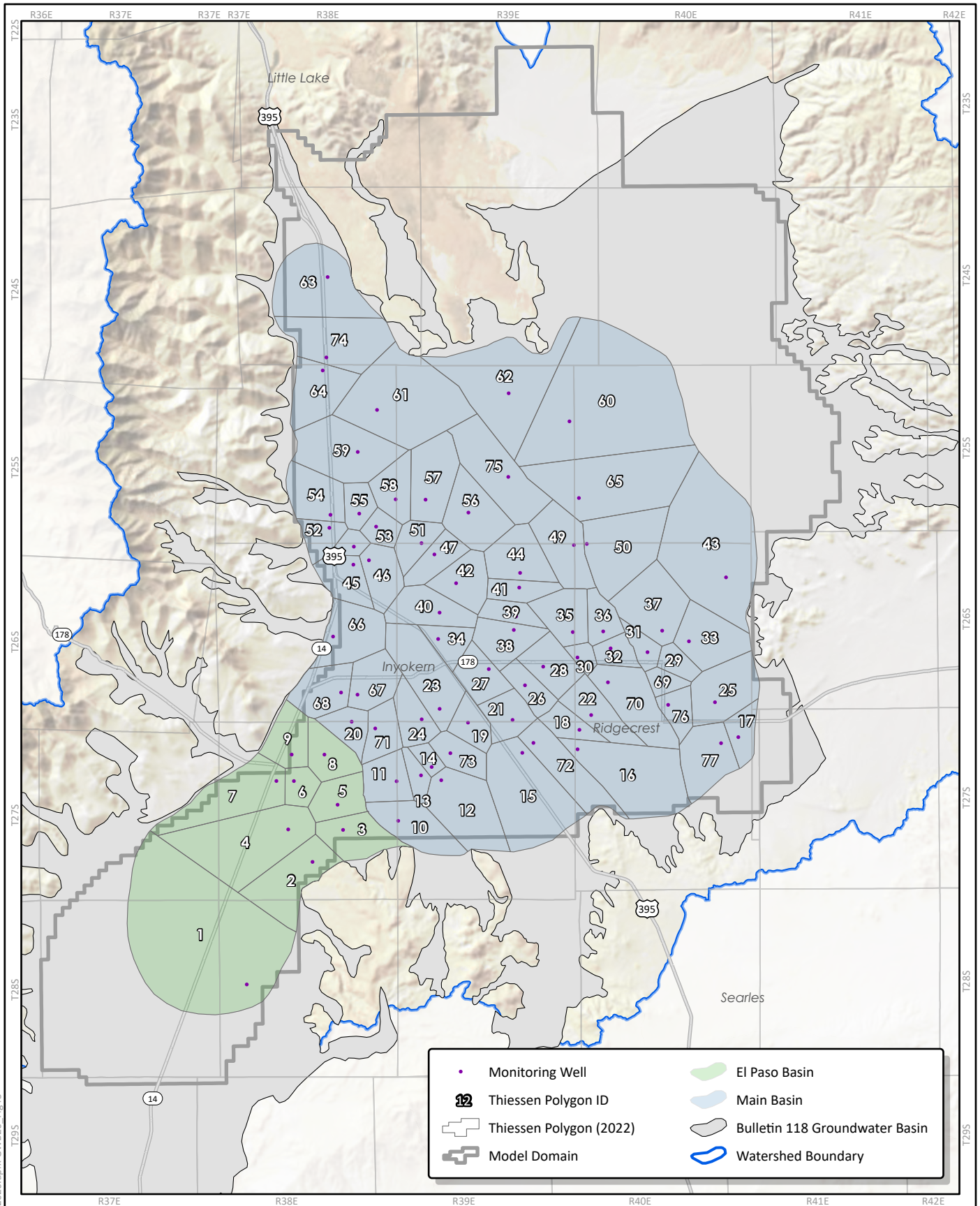


FIGURE 45



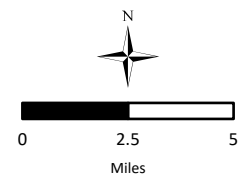
Monitoring Well	El Paso Basin
Thiessen Polygon ID	Main Basin
Thiessen Polygon (2022)	Bulletin 118 Groundwater Basin
Model Domain	Watershed Boundary

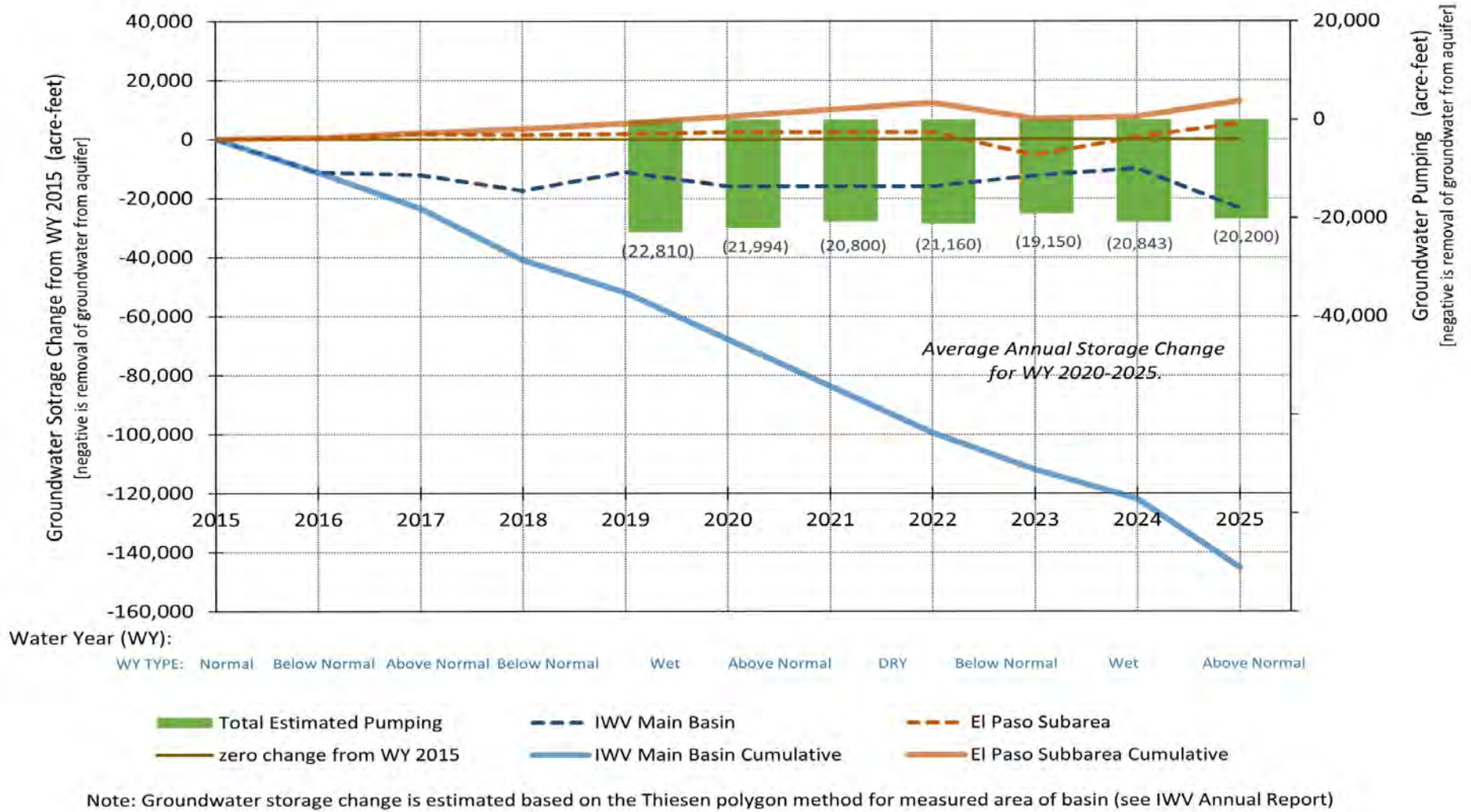
J:\In\2652\GWBasinTechReport2026.aprx GWB26 - Fig45



**BASIN STORAGE – MODIFIED THIESSEN POLYGON METHOD**

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**ESTIMATED GROUNDWATER STORAGE CHANGE WY 2016-2025  
 WITH RECENT GROUNDWATER PUMPING**

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 4/27/2026