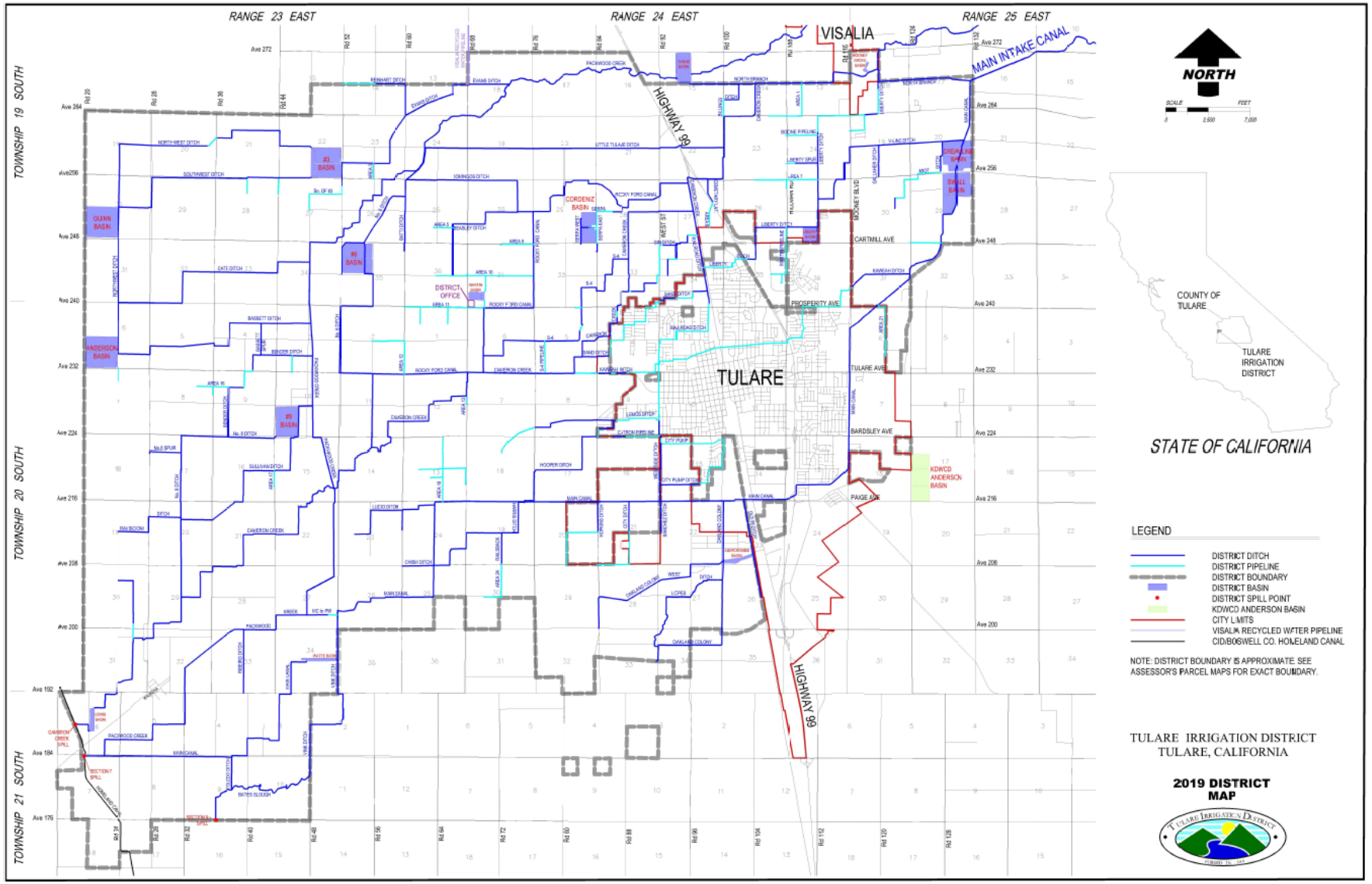
Tulare ID & City of Tulare – The History of Water

A Presentation to the Tulare City Council and the Board of Public Utilities

District Staff

Tulare Irrigation District



Stats:

- Formed in 1889
- Acreage: Approx. 70,000 Acres
- 300 miles of earthen canals
- 30 miles of pipelines
- Average Annual Surface Water Supply of 190,000 AF
- Kaweah River Pre-1914 Water Rights
- CVP Friant Supplies
  - Class 1: 30,000 AF
  - Class 2: 141,000 AF
- Approx. 200 Growers
- Main Crops
  - Corn
  - Wheat
  - Alfalfa
  - Walnuts
  - Almonds
  - Pistachios

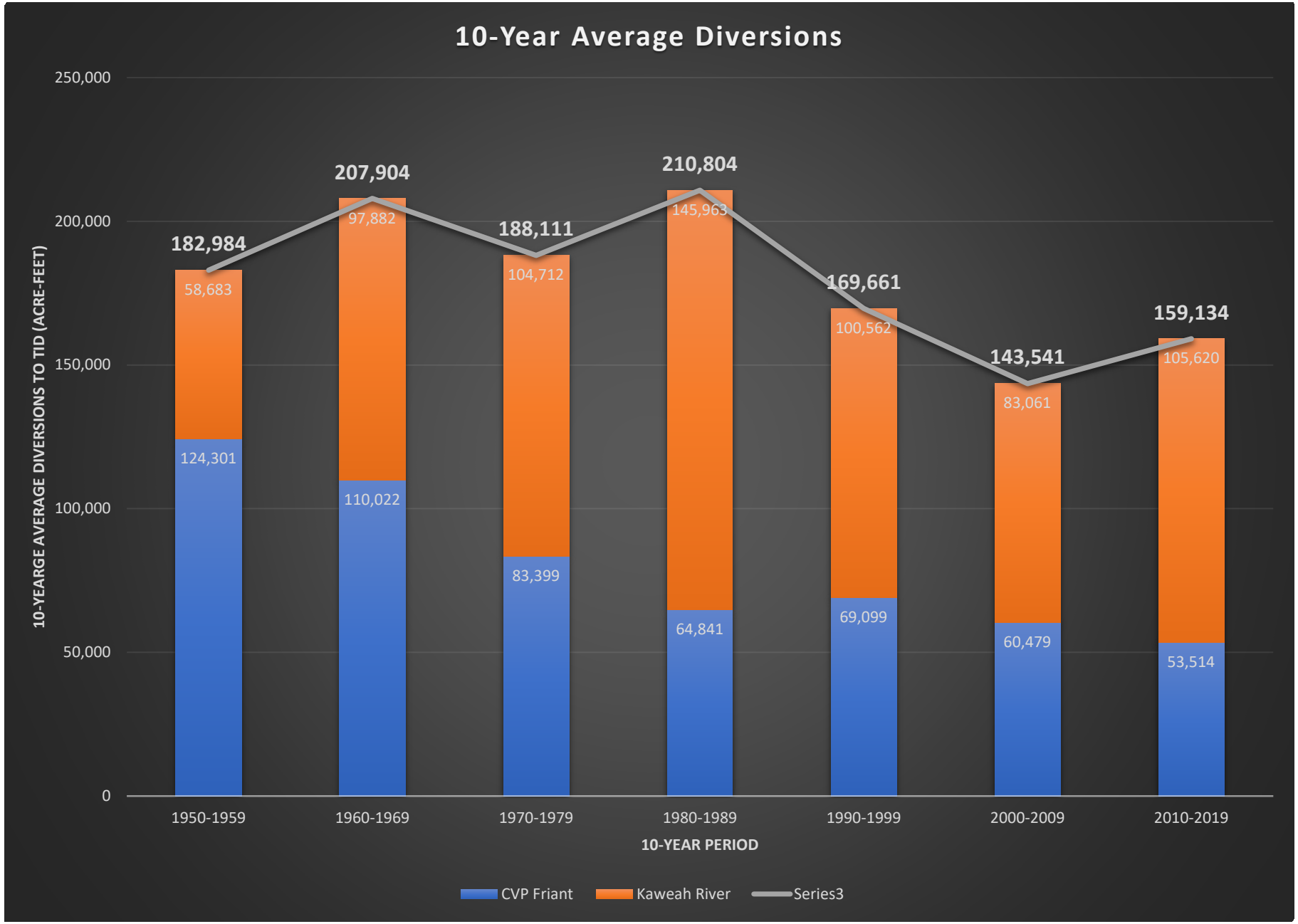
TID Main Water Supplies

Kaweah River (Pre-1914) Rights

- TID Historical Water Rights
- Packwood Canal Company
- Wutchumna Water Company
  - Rayo Water Company
- Evans Ditch Company
- Tulare Irrigation Company
- Persian Ditch Company
- Consolidated Peoples Ditch Co.

CVP Friant Division Contract Supplies

- Class 1 Contract – 30,000 AF
- Class 2 Contract – 141,000 AF
- Section 215
- Restoration (URF, RWA, and Recirculation/Recapture)



10-year Average Historical Trend

- Kaweah Supplies have remained fairly stable around 100,000 AF
- CVP Friant Supplies have declined significantly to approximately 55,000 AF (50% decline)
- Total average surface water supply 180,000 AF

CITY / TID HISTORY & BACKGROUND

Early History – Late 1940's

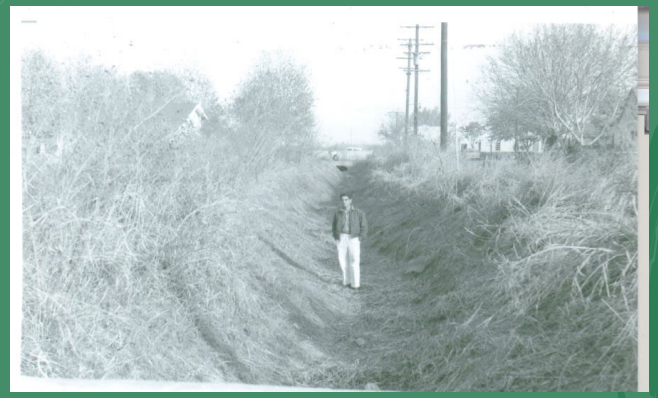
City of Tulare

- City Population – 11,000
- Predominant Ag. job base, with small manufacturing, service, and gov't sectors
- City occupied about 2,000 acres
- City groundwater demand about 3,300 AF per yr.
- City evaluating means to dispose of storm water – engineering study to deliver to treatment plant at est. cost of $300,000
- TID securing contract for CVP water from San Joaquin River in Fresno County
- City-TID discussions re. City participation in CVP importation
- Greater Tulare area in severe groundwater overdraft

Tulare Irrigation District

- TID serving 60,000 acres
- Main crops cotton, alfalfa, pasture
- Avg. surface water supply 50,000 AF per yr from Kaweah River
- TID groundwater demand about 185,000 AF per yr

Early History – Early 1950's

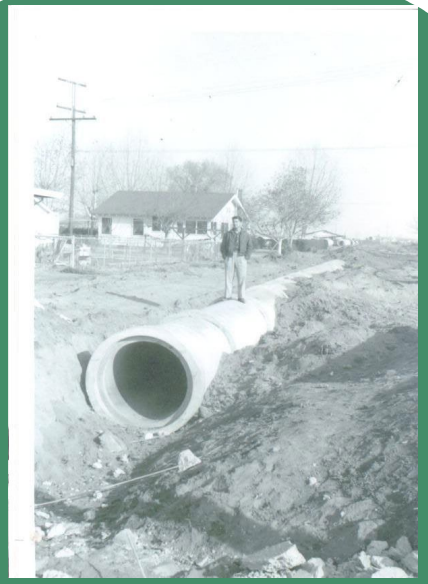


Original 1948 Agreement, 40-year term; Kaweah Ditch left as open canal

FUTILE JOB — Mrs. Margaret Mahan, 1245 Sequoia street, pokes at a dense growth of weeds hiding the irrigation ditch at the rear of her property. Mrs. Mahan claims the Tulare irrigation district has refused to clean its ditch this year. (Advance-Register photo.)

Protest Heard Over Weeds in the Ditch

Disputes over assessments, canal maintenance & liabilities regarding City/TID Overlap issues



1954 Master Agreement

1954 Master Agreement

- Issues resolved under new 1954 master agreement and sub-agreements, which provided:
  - City pmt. of assessments on detached/annexed properties
  - Discharge of City storm water into TID system at designated flow rates and locations
  - Piping of Kaweah Ditch under shared cost arrangement
    - District quitclaimed interest in Kaweah Pipeline in exchange for a reserved right for conveyance of irrigation water (Flowage Easement)
  - Piping of ditches in future subdivisions
  - Quit claim by City of 4 acres to TID, corner of West St and Cross Ave
  - Contemplation of extending agreement beyond 1988
    - Between 1988 and 2005 the City and TID operated under the 1954 Mater Agreement terms, but without an agreement

Tulare Irrigation District

- TID contract with the USBR for a 30,000 AF Class 1 and 141,000 AF Class 2 supply in the Millerton Reservior
- Terminus Dam, Lake Kaweah completed in 1962; TID buys storage rights for 48,000 AF
- TID acquires more Kaweah water stock – avg. now 75,000 AF per yr
- TID's long-term CVP contract renewed in year 2000 at same quantities (avg. 80,000 AF), higher cost by factor of 15
- Lake Kaweah enlarged in 2004; TID buys added space, total now 62,000 AF
- City growth from 11,000 to about 60,000 people; still Ag. job base; annual groundwater demand grows from 3,300 to about 17,500 AF
- TID serving 65,000 acres; Same crop mix with corn acreage; annual groundwater demand now at about 100,000 AF

City of Tulare & TID Current Agreements

Agreement Regarding Joint Ownership and Development of Charge Basin Site

(Swall Basin Agreement)

2005 Master Agreement

Agreement Regarding Delivery of Water to Certain Groundwater Recharge Facilities

(Recharge Agreement or Water Delivery Agreement)

2005 Agreement

- Date of Execution: May 10, 2005
- Term of Agreement: May 10, 2035
- Establishes same storm water discharge volumes and locations per 1954 agreement
- Acknowledges TID access to Kaweah Pipeline under ownership of City (TID flowage easement)
- Confirms same methodology for City pmt. of assessments on detached lands, which is currently at about $32 per acre
- Allows for additional City storm water discharge sites with approval of TID; any existing additional sites to be formally recognized
- Sets forth non-pollution obligation of City for storm water discharges as per 1954 agreement
- Establishes 30-year term for agreement

2005 Agreement

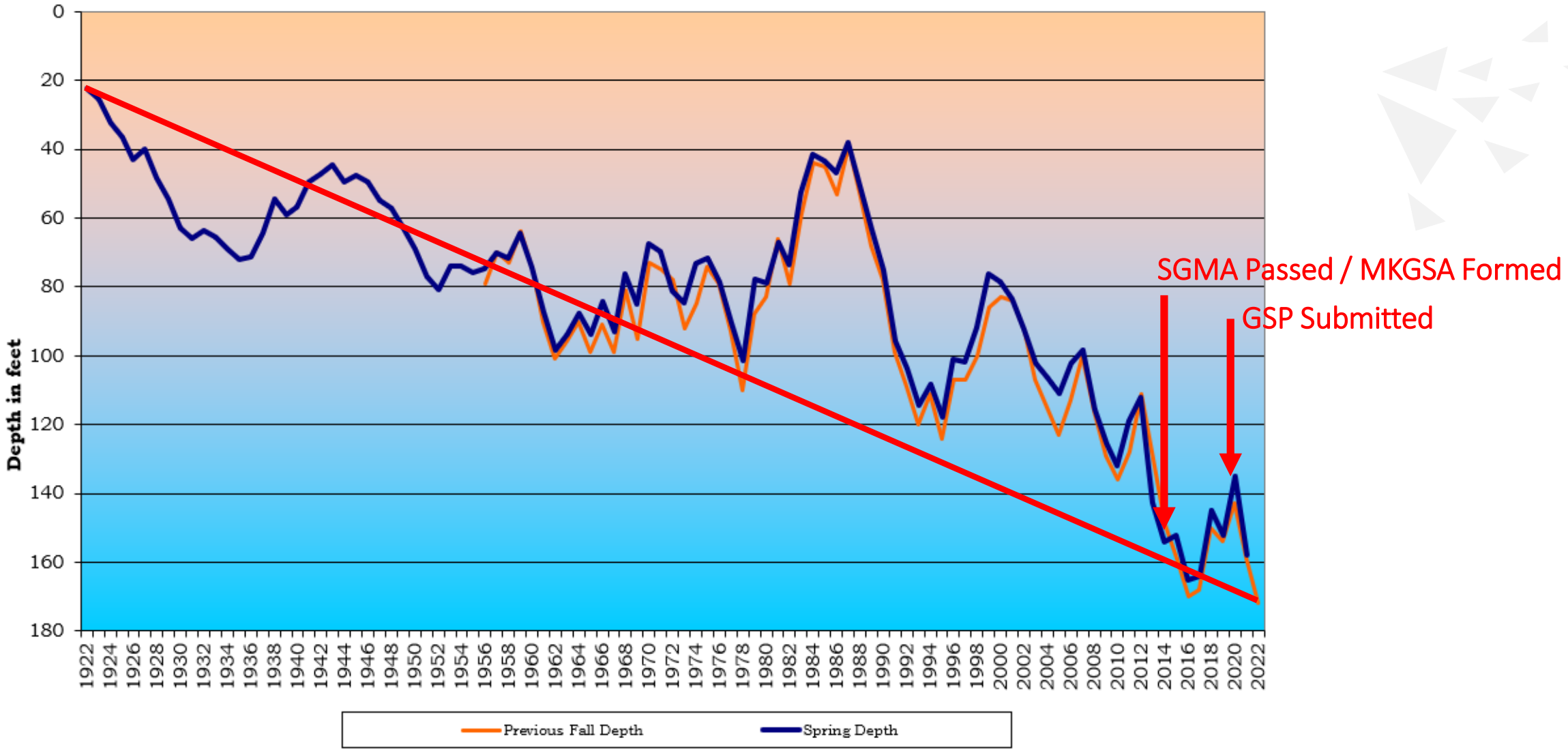
- Joint Operations Committee
  - Min. of two representatives each from City and TID; meet no less than every six months
  - Committee to inventory all storm water discharge locations
  - Committee to address development policies regarding:
    - Conversion from ditches to pipelines
    - Canal fencing, setback, and service road requirements
    - Other operational issues as may arise
    - Addition of aesthetic/recreational features alongside canals and waterways
- Committee to work on development of mutually beneficial projects/programs such as:
  - Groundwater recharge facilities
  - Acquisition of local water rights or imported water for mutual benefits
  - Consideration of TID surface water deliveries to City
  - Project for delivery of City wastewater treatment plant water into TID canal system
  - Joint construction, use of waterway bridge crossings
  - Telemetry and automation of City storm water discharge operations
  - Consideration of siting City fire station on TID property

Swall Basin Agreement

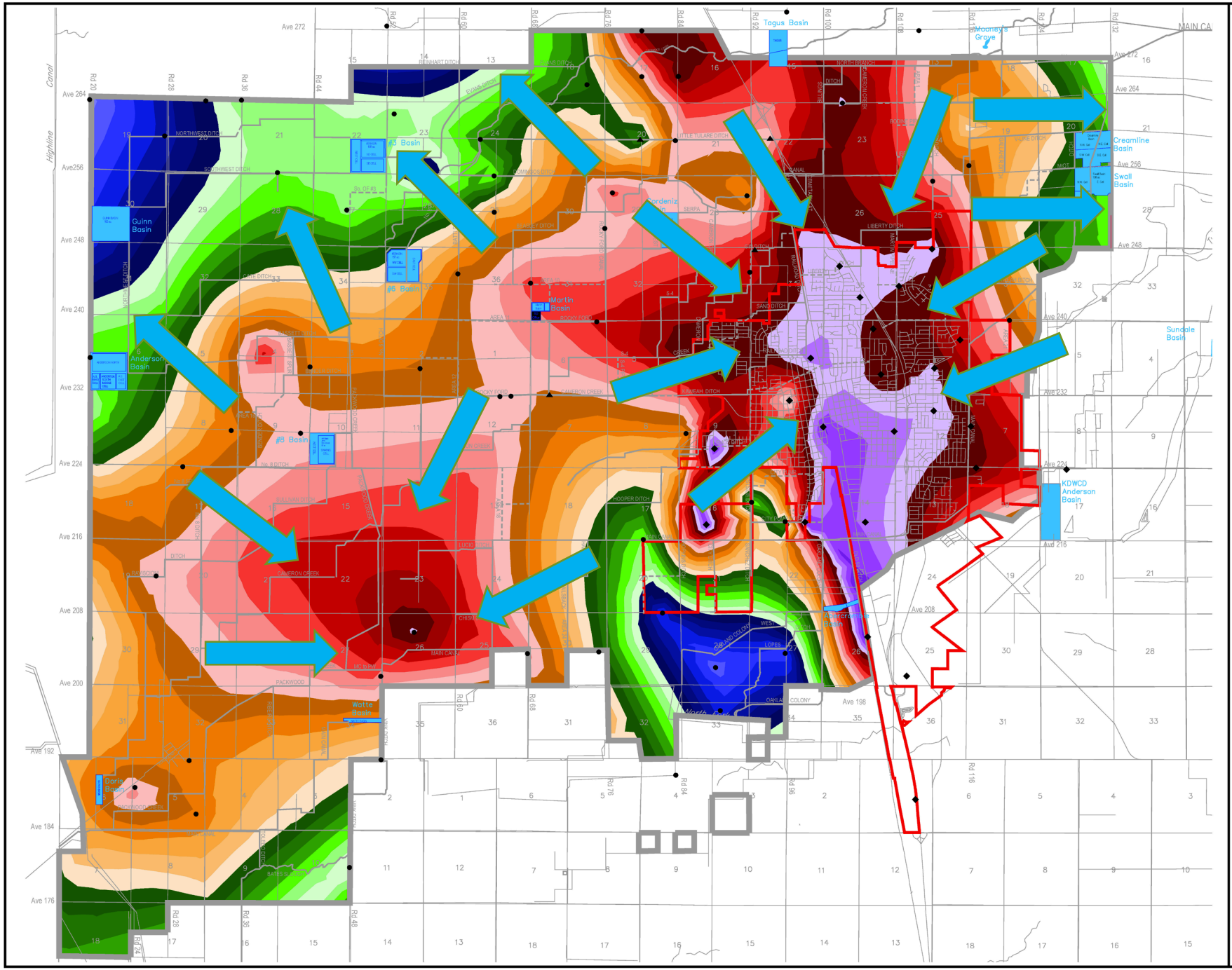
- Plum Property (Swall Basin) Purchase Agreement
  - City vesting @ 75% (easement/license in lieu of fee title)
  - City commits to 75% of construction and maintenance & repairs
  - Provison that City/TID enter into “Water Delivery Agreement” to provide avg. deliveries of 10 taf to selected basins, amount to increase as City grows
- Executed: December 30, 2009
- TID to operate and utilize project per 2008 “Water Delivery Agreement”
- TID to conduct O&M at its own cost when ≤ $10,000 per repair
- Repairs, replacements > $10,000 on shared basis (75% City)
- City may bring other water to basin provided additional agreements w/ TID for use of channel system are in place

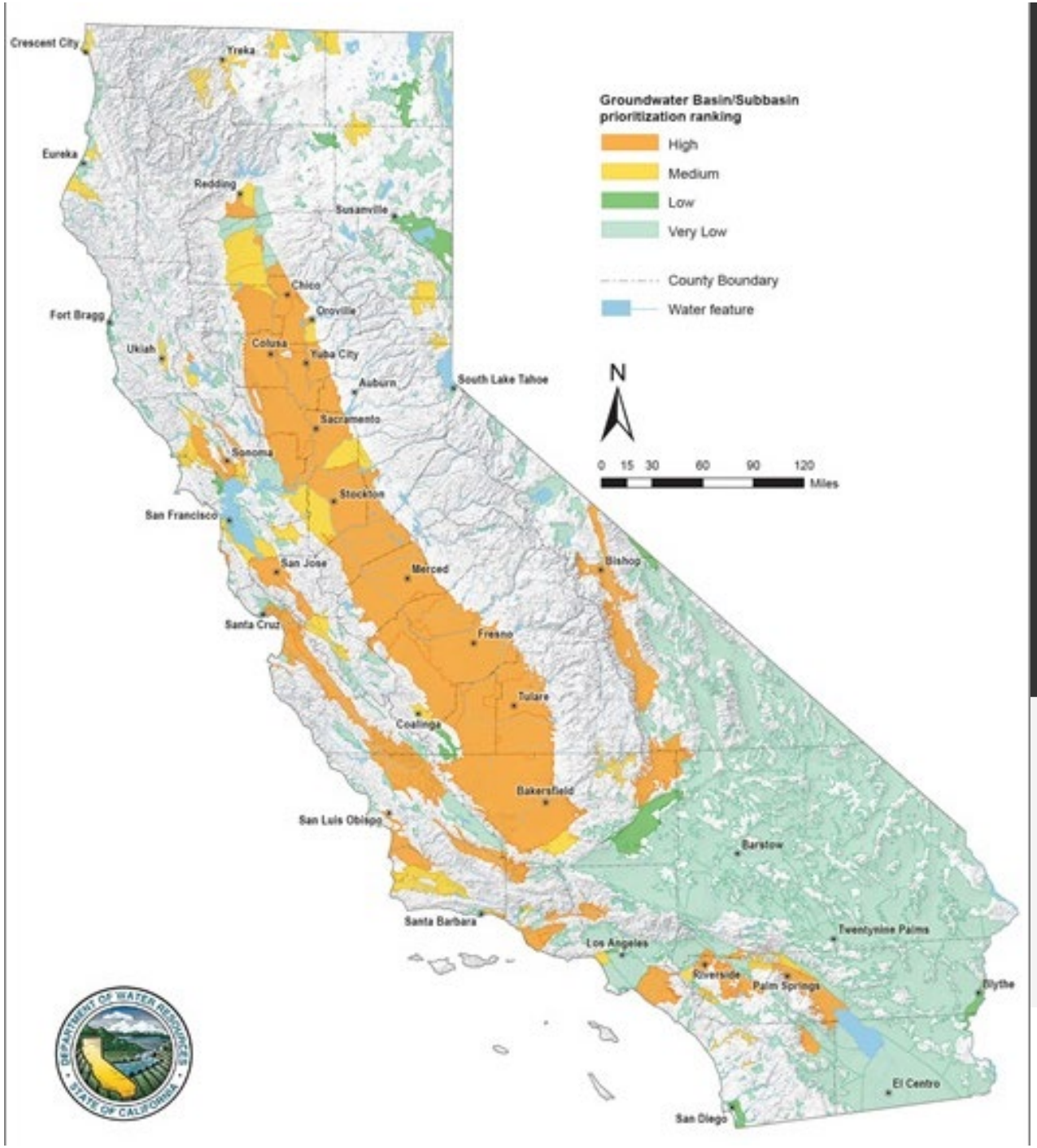
Recharge Agreement

- Pilot program in 2007 – payment for 10,000 AF @ $25 per AF. Basis was 2/3 of City well field pumping
- No payment in 2008; agreement signed in May 6, 2008
- Term: concurrent with the Master Agreement
- Terms and operation of agreement
  - TID to deliver water to “Agreed Facilities”
  - City to pay TID’s Class 2 price each year for “Avg. Annual Quantity,” which amount is about 2/3 of City pumping per defined formula
  - TID’s performance tied to “Credited Water Balance,” a rolling 5-yr average
  - “Credited Water Balance” is not intended to establish a right to water or groundwater bank supply
  - TID to prepare annual report of operations
- Current balance as of 2020 is 67,750 AF



1922 – 2017 historical depth to groundwater


NORTH
LEGEND
TULARE IRRIGATION DISTRICT
CITY OF TULARE LIMITS
T.I.D. WELLS
CITY WELLS
CONJUNCTIVE USE PROJECT MONITORING WELLS
105'
110'
115'
120'
125'
130'
135'
140'
145'
150'
155'
160'
165'
170'
175'
180'
185'
190'
195'
200'
205'
210'
215'
220'
225'
230'
TULARE IRRIGATION DISTRICT
TULARE, CALIFORNIA
FALL 2021
DEPTH TO
GROUNDWATER MAP
TULARE IRRIGATION DISTRICT
FORMED IN 1889



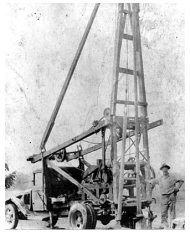
The Sustainable Groundwater Management Act

December 2021

Tulare Irrigation District Groundwater Chapters

Late 1800's

Plentiful Underground Supplies, Surface Water Developing but Unstable



1920's

Running Short

1st Way Out: Deeper Wells

1940's

Groundwater Supplies Unstable

2nd Way Out: Surface Water Projects such as CVP, Terminus Dam, SWP

1990's

CVP/SWP Supplies Eroding & Pumping Accelerates

3rd Way Out: Capitalize on Wet-Year Surface Water Resources (Groundwater Recharge)

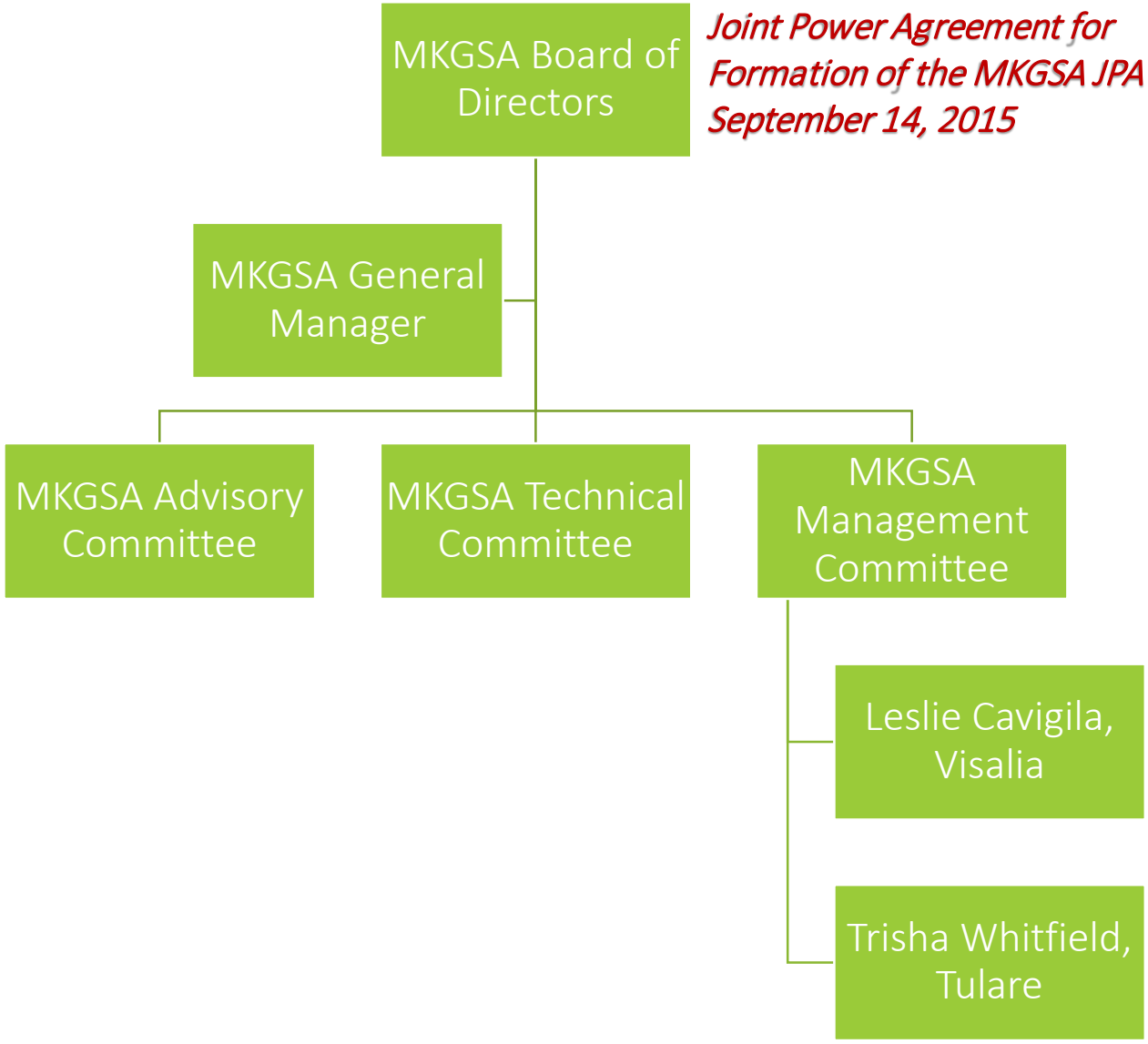
2014

Sustainable Groundwater Management Act

Sustainable Groundwater Management Act

- Signed into law on September 16, 2014
- Composed of three pieces of legislation
  - AB 1739 (Dickenson)
  - SB 1168 (Pavley)
  - SB 1319 (Pavley)
- Requires high and medium priority basins to halt overdraft and reach sustainability within 20 years.
- GSAs are empowered to manage basins sustainably via a GSP
- Local Controls was preserved and allows for the avoidance of State intervention ("Backstop")
- Empowers GSAs to:
  - Measure Extractions
  - Conduct Studies
  - Manage Extractions
  - Assess Fees
  - Achieve Sustainability (Avoid 6 Undesirable Results)

MKGSA Organizational Structure

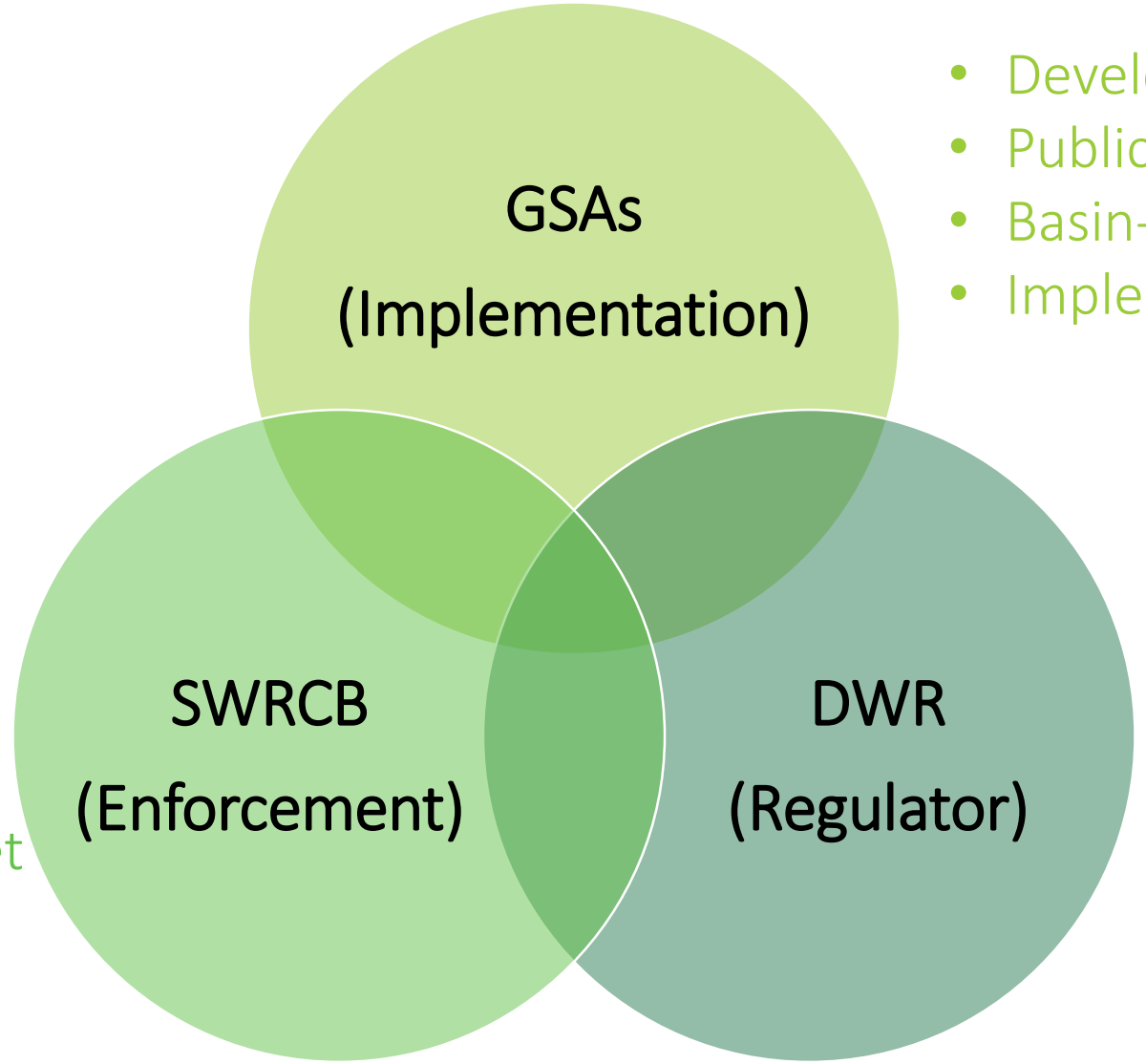


Mid Kaweah GSA

Advisory Committee Term Summary

Group I **One-Year Term** **(12/31/2023)**	• Vacant Seat (At Large, Ag.) • Richard Garcia (Env.) • Eric Correia (Ag.)
Group II **Two-Year Term** **(12/31/2021)**	• Blake Wilbur (Agriculture) • Soapy Mulholland (Environmental) • Eric Furtado (At Large, Cal. Water Service) • Jessi Snyder (Disadvantaged Community)
Group III **Three-Year Term** **(12/31/2022)**	• Ed Henry (At Large, Tulare) • Lee Johnson (At Large, Visalia) • Mike Lane (At Large, Visalia) • Vacant Seat (Disadvantaged Community)

GSA/DWR/State Board Relationship & Responsibility

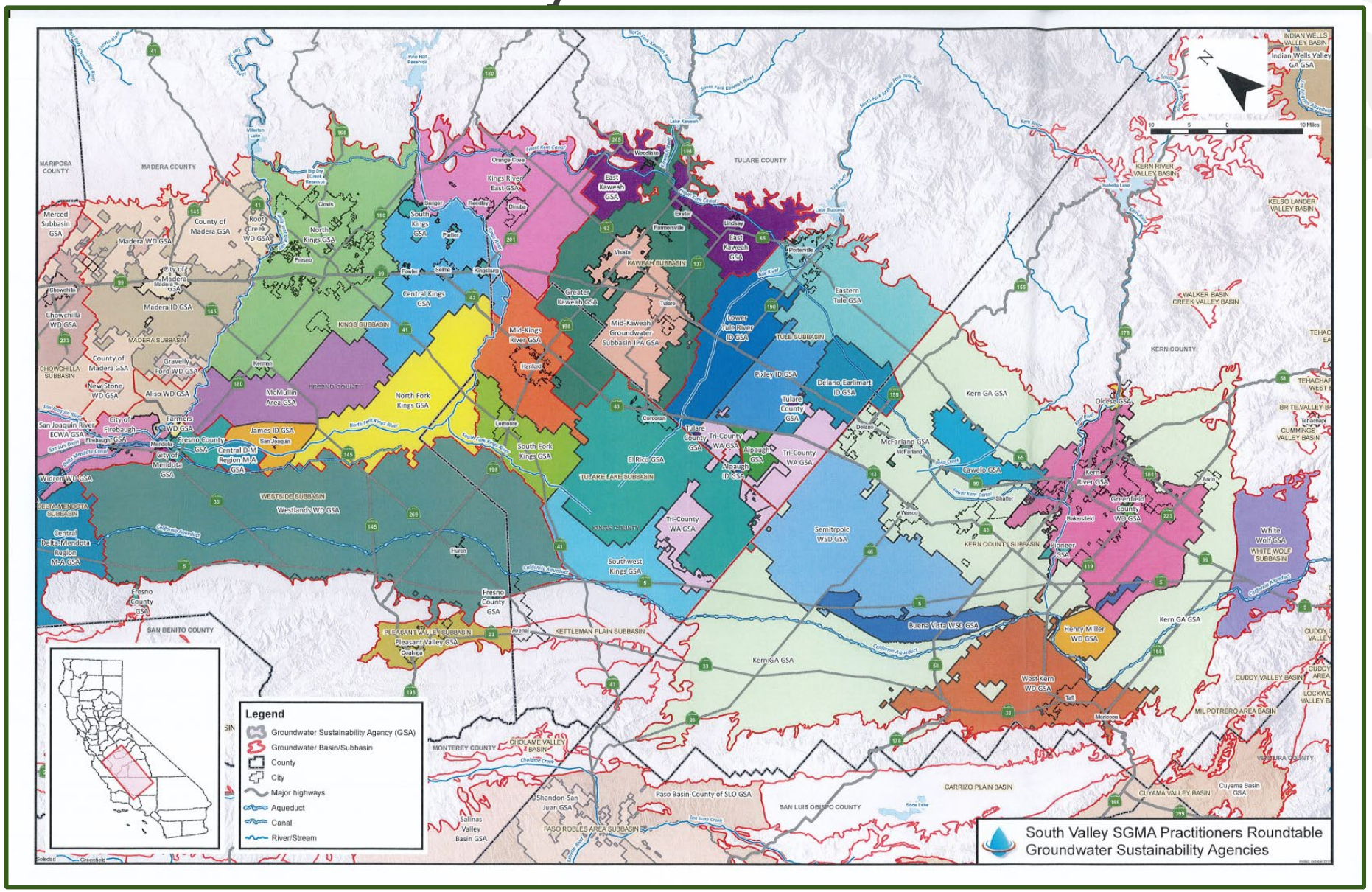


- Develop GSP
- Public Engagement
- Basin-wide Coordination
- Implement Plan

- State Backstop
  - Step in if no GSA
  - Step in if local efforts don't meet SGMA requirements

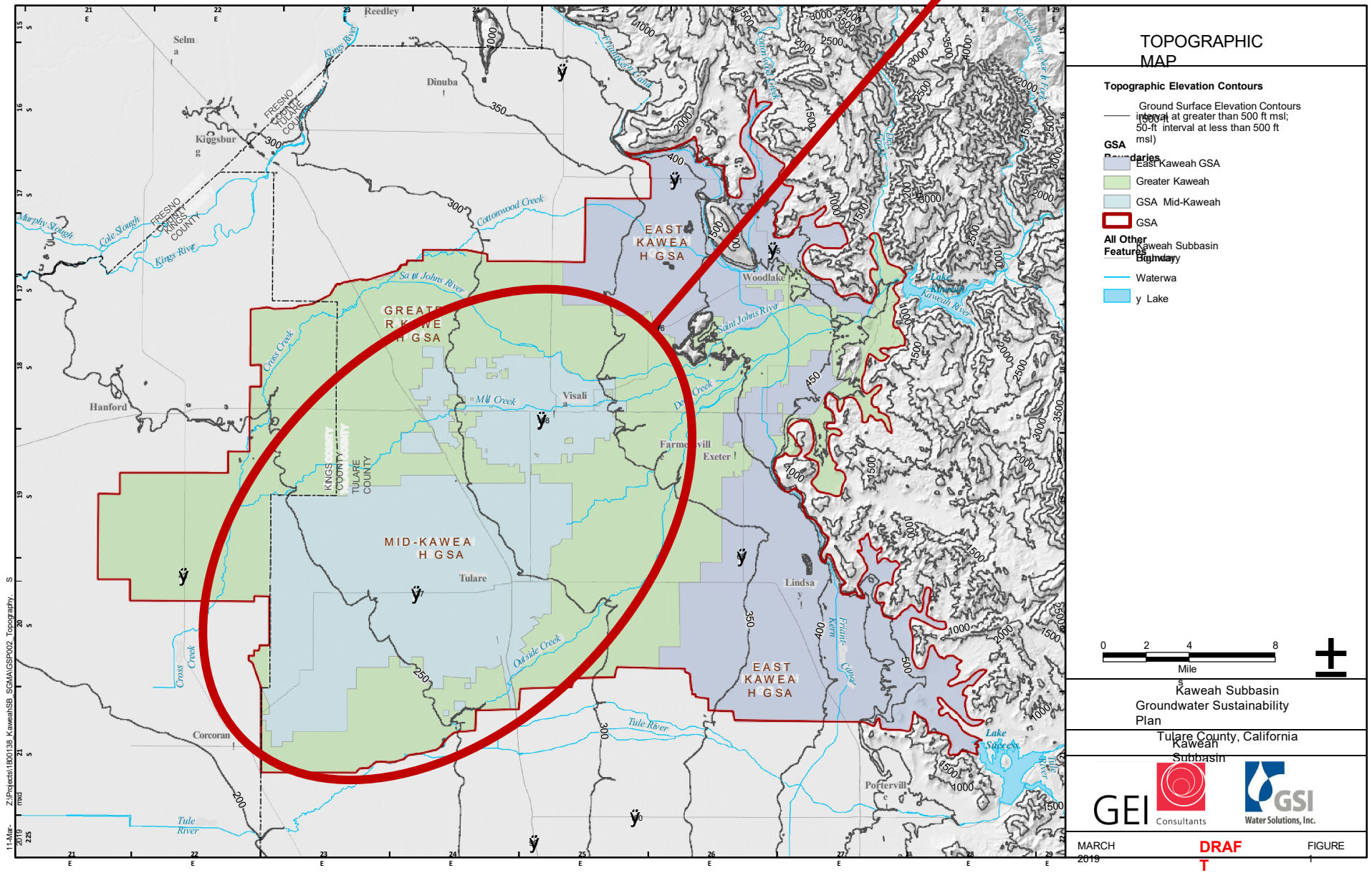
- Set Framework
  - Regulations
  - Basin Priorities
  - Basin Boundaries
- Review Plans
- Technical & Financial Help

GSAs in the Central Valley

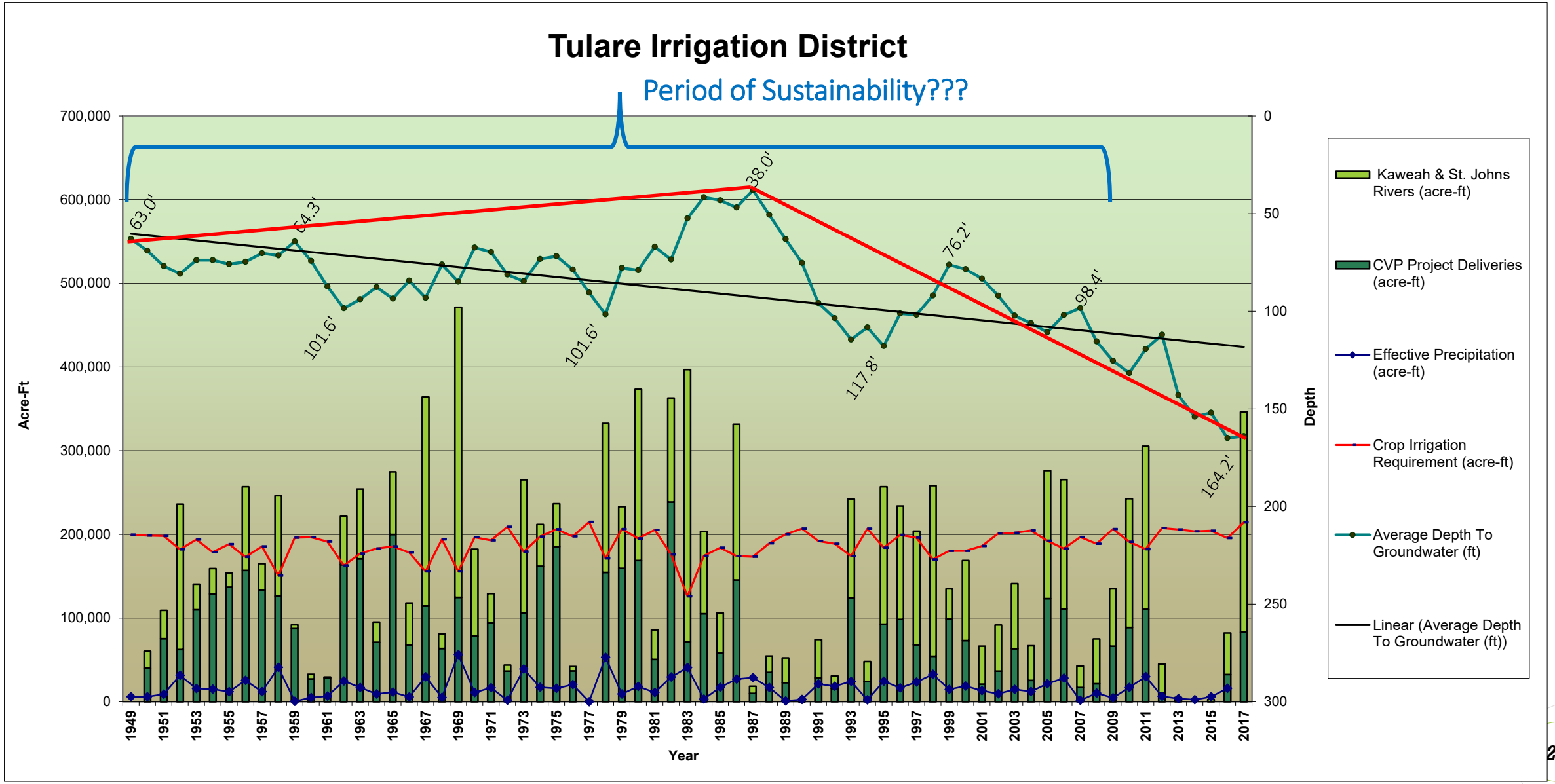


Kaweah Sub Basin

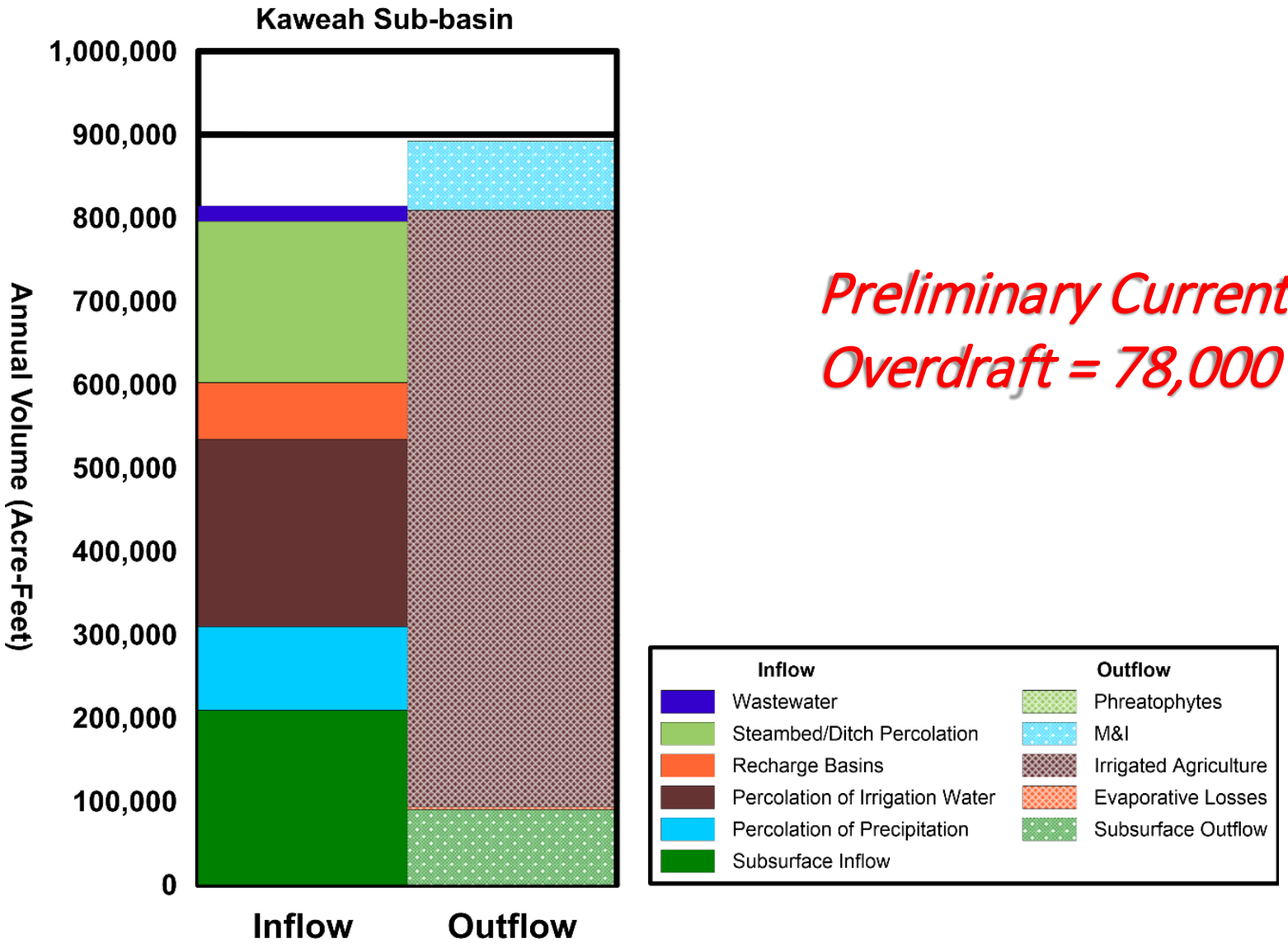
Mid-Kaweah GSA



Historical Depth to Groundwater In Tulare ID



Kaweah Sub Basin Overdraft



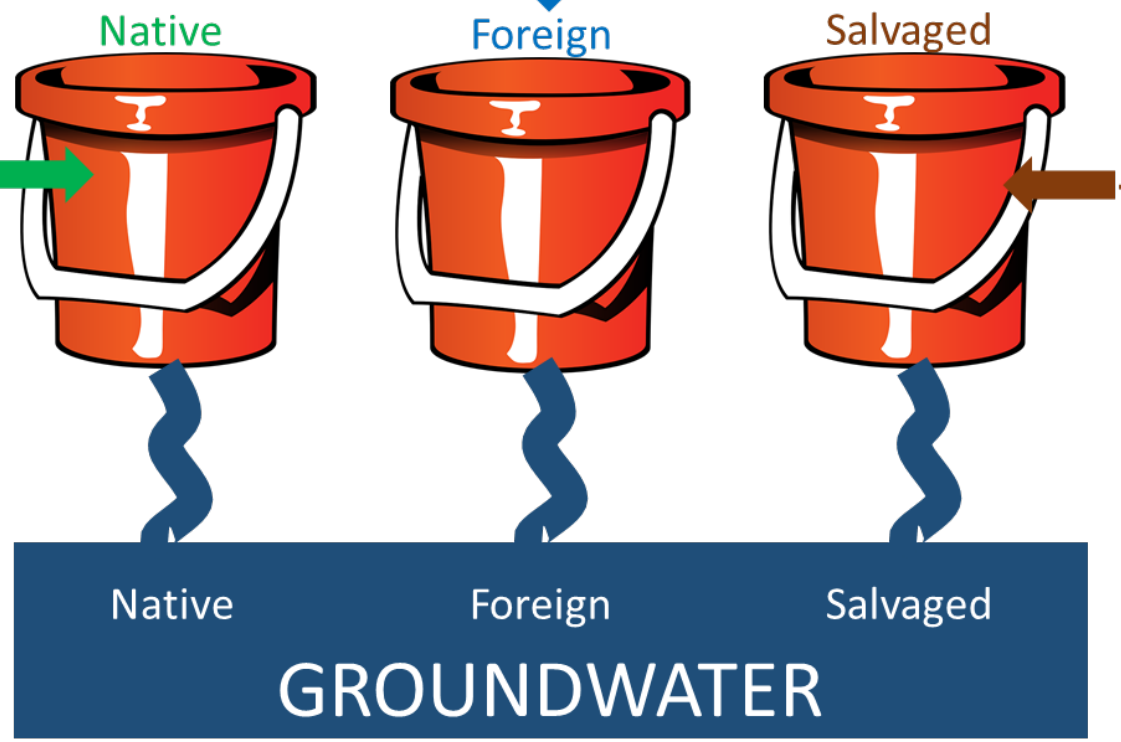
Preliminary Current Period Overdraft = 78,000 acre-feet

1 AF = 325,800 Gallons

Water Accounting Framework

Segregation by Appropriator method

- Natural, man-made channel seepage from imported sources
- Sinking basin infiltration from imported sources
- Irrigation return flows from imported sources



- Precipitation
- Natural channel seepage from Kaweah sources
- Irrigation return flow from pumped local groundwater
- Mountain front inflows

Segregation by common (GSA acreage) method

- Man-Made channel seepage from Kaweah sources
- Storm water return flows
- WWTP return flows
- Sinking basin infiltration from Kaweah sources
- Irrigation return flows from appropriated Kaweah Sources

Segregation by Appropriator method

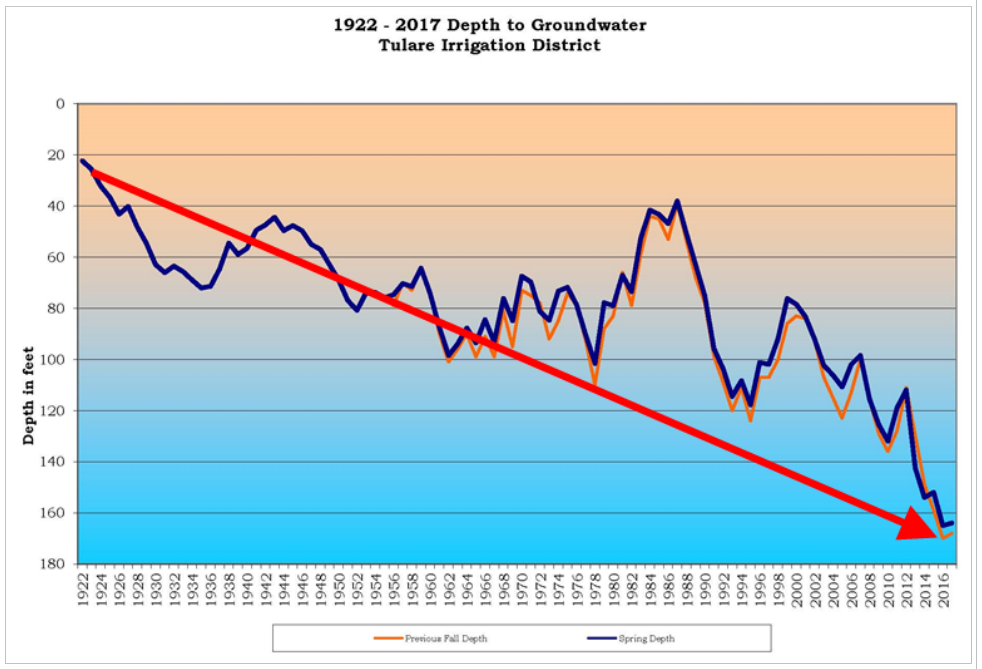
Water Accounting Framework

Table 6-3: Imputed Water Balance (1997-2017)

(values in 1,000 AF)

	MKGSA
Groundwater Inflow Balance	230.0
GSA Total Pumping Extraction (*)	192.2
Imputed Balance	37.8

(*) Obtained from data furnished by the Subbasin consultant to the three Subbasin GSAs which was supplemental to the Basin Setting report



Where is Groundwater Going????

(values in acre-feet)

	Native Water			
	East	Greater	Mid	Total
Percolation of Precipitation. (Ag and 'Native' non-Ag land)	23,666	44,213	20,974	**88,854**
Streambed Percolation from Kaweah River Sources	16,767	31,324	14,860	**62,952**
Irrigation Return from Pumped GW	41,484	77,501	36,766	**155,752**
Mountain Front Recharge	14,976	27,978	13,273	**56,227**
Total Native	**96,894**	**181,017**	**85,874**	**363,784**
GSA% of Total Native	**27%**	**50%**	**24%**	**100%**

	Foreign Water			
	East	Greater	Mid	Total
Streambed Percolation from Imported Sources	0	11,730	2,523	**14,253**
Ditch Percolation from Imported Sources	0	1,204	21,745	**22,949**
Basin Percolation from Imported Sources	0	1,050	14,305	**15,355**
Irrigation Returns from Imported Sources	12,073	1,241	7,140	**20,453**
Total Foreign	**12,073**	**15,225**	**45,713**	**73,010**
GSA% of Total Foreign	**17%**	**21%**	**63%**	**100%**

	Salvaged Water			
	East	Greater	Mid	Total
Ditch Percolation from Kaweah River Sources	8,835	49,771	34,880	**93,486**
Additional Storage	226	6,892	5,697	**12,815**
Stormwater Return Flows	508	2,370	8,491	**11,368**
WWTP Return Flows	1,470	3,129	13,878	**18,477**
Basin Percolation from Kaweah River Sources	0	16,005	23,479	**39,484**
Irrigation Returns from Kaweah River Sources	4,555	31,039	11,981	**47,574**
Total Salvaged	**15,593**	**109,205**	**98,406**	**223,205**
GSA% of Total	**7%**	**49%**	**44%**	**100%**

	East	Greater	Mid	Total *
Grand Total	**124,560**	**305,447**	**229,992**	**659,999****
GSA% of Total	**19%**	**46%**	**35%**	**100%**

The Tulare ID Solutions

Surface Water

Groundwater Recharge Basins

New Basins: Martin Basin, Swall Basin, Cordeniz Basin, Okieville Basin

Total = 230 Acres

Recharge Basin Enhancements

On-Farm Recharge

Grower participation in on-farm Recharge: 2017 had 600 Acres and achieved 6,800 AF in 3 months

GRAT Tool and Crop Buy-Out Program

Surface Water Storage Projects

Temperance Flat Reservoir

&

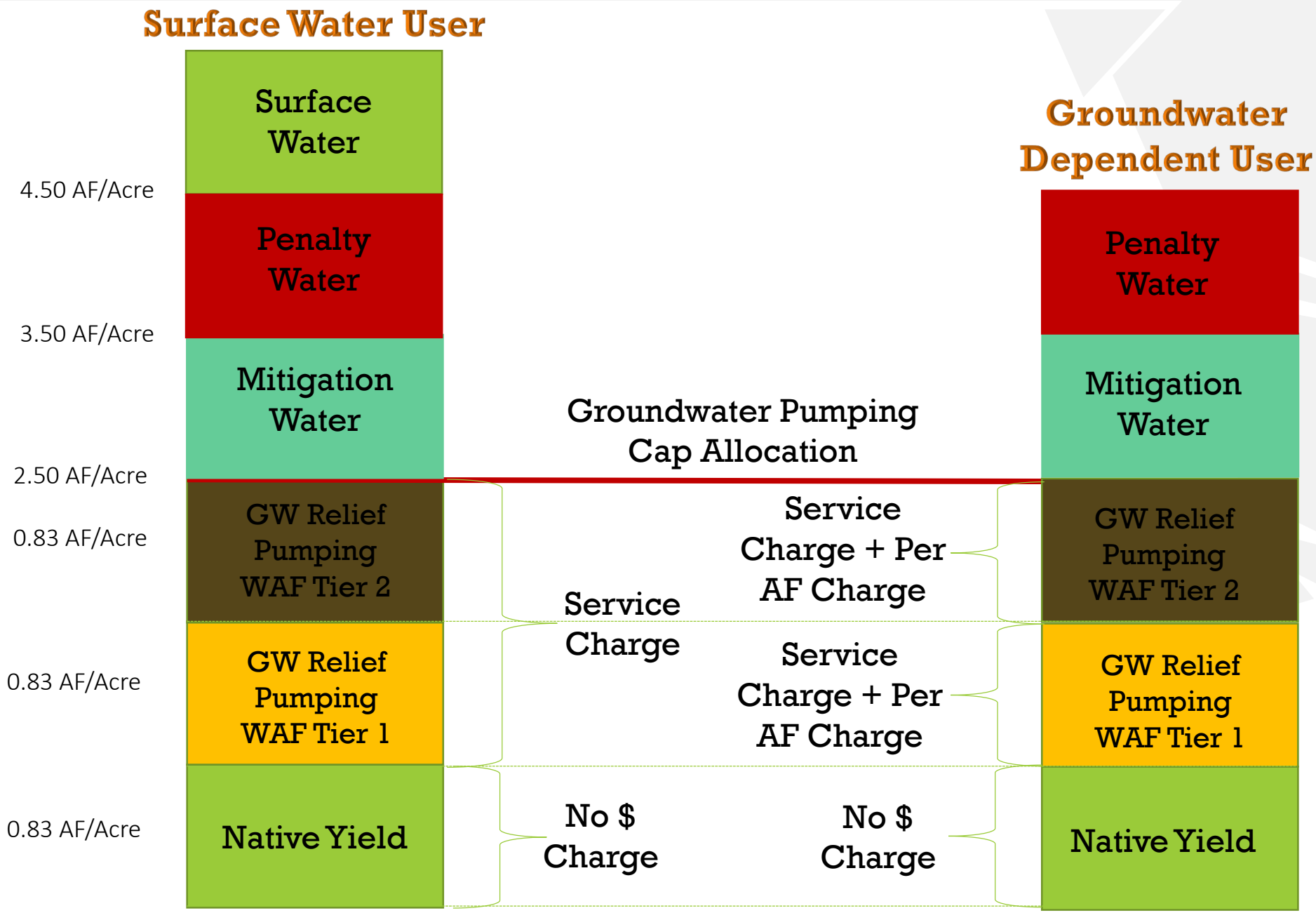
Reservoir Projects at McKay Point

Groundwater Market

Groundwater credit program to allow for the marketing of credits for ability to forgo groundwater pumping

MKGSA Emergency Ordinance – Extraction Limitation (AG)

- Allocation of Native Yield and Tiered Relief pumping as Evapotranspiration 2.5 AF/acre
- Measurement – Land IQ Satellite Evapotranspiration
- Transferability – Limit transfer (not a formal water market)
- Durability – Can carry unused water into future years
- Penalty – Mitigation Tier then Penalty Tier
  - Mitigation Tier – Pay to replace water
  - Penalty Tier – Pay penalty fee and lose future water supplies 1:1 into the future
- Costs:
  - Native – Free
  - Tiered Pumping – Service Fees and Cost of Water ($250 to $250 per AF)
  - Mitigation - $250 to $350 per AF
  - Penalty - $500


Surface Water User
Surface Water
4.50 AF/Acre
Penalty Water
3.50 AF/Acre
Mitigation Water
2.50 AF/Acre
GW Relief Pumping WAF Tier 2
0.83 AF/Acre
GW Relief Pumping WAF Tier 1
0.83 AF/Acre
Native Yield
0.83 AF/Acre
Groundwater Pumping Cap Allocation
Service Charge
No $ Charge
Service Charge + Per AF Charge
Service Charge + Per AF Charge
No $ Charge
Groundwater Dependent User
Penalty Water
Mitigation Water
GW Relief Pumping WAF Tier 2
GW Relief Pumping WAF Tier 1
Native Yield

Allocation/Cap Enforcement

Groundwater Cap	2.50 AF/Acre	
Actual GW ET	3.00 AF/Acre	
Mitigation ET	.50 AF/Acre	Charge: .50 AF/Acre * $300 = $150 per acre (spread over 3 AF/Acre = $50 AF/acre)
Total	**3.00 AF/ Acre**	**No loss of future water supply (full 2023 allocation and cap)**

Mitigation and Penalty Fees used to purchase replacement water

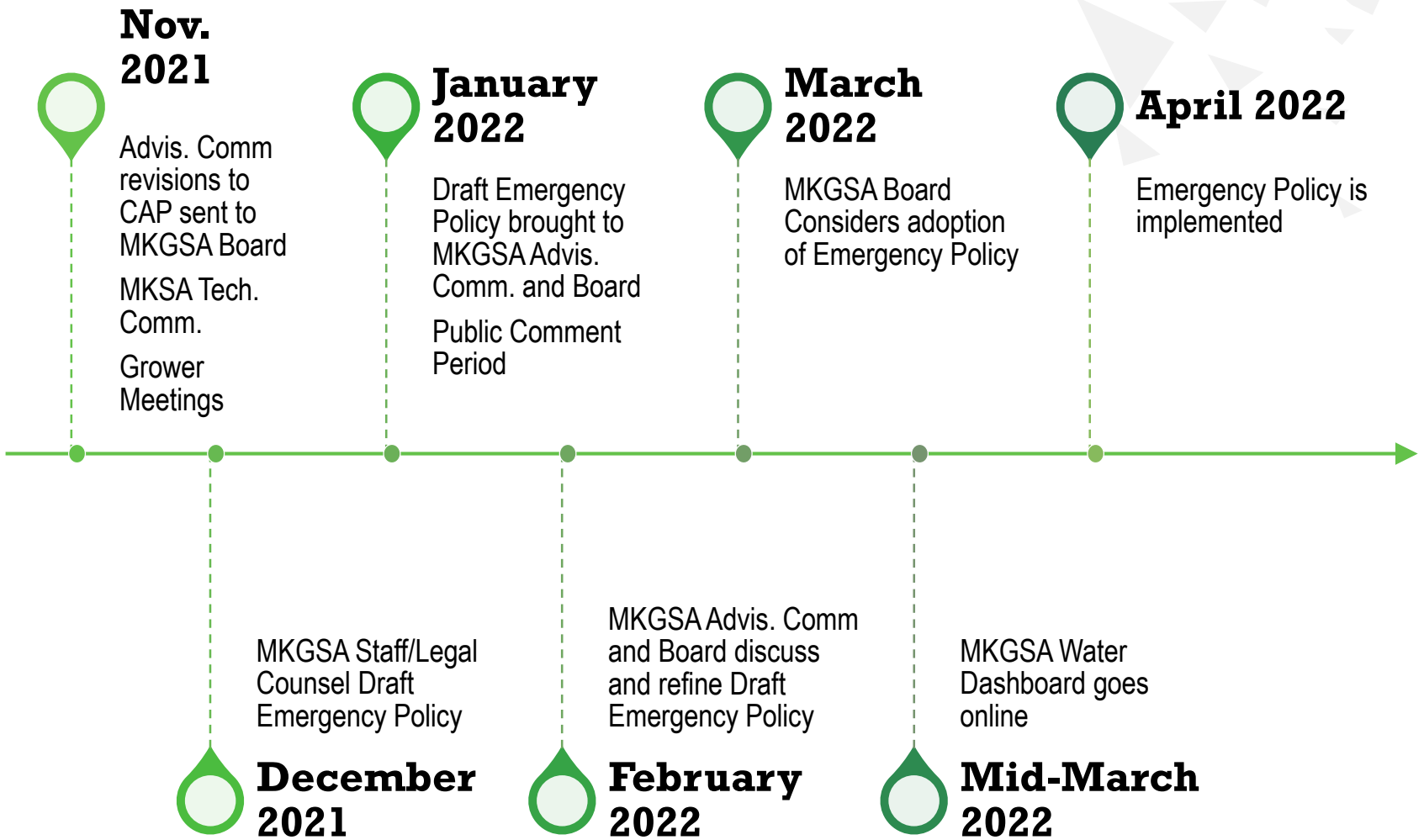
Note: Prices do not reflect service charges for Relief Pumping or Pumping Charges for Groundwater Dependent Areas

Groundwater Cap	2.50 AF/Acre	
Actual GW ET	4.00 AF/Acre	
Mitigation ET	1 AF/Acre	Charge: 1.00 AF/Acre * $300 = $300 per acre (spread over 4 AF/Acre = $75 AF/acre)
Penalty ET	.50 AF/Acre	Charge: .50 AF/Acre * $500 = $250 per acre (spread over 4 AF/Acre = $62.50 AF/acre)
Total	**4.00 AF/ Acre**	**Total cost AF/acre = $137.50 and loss of .50 AF/acre in 2023**

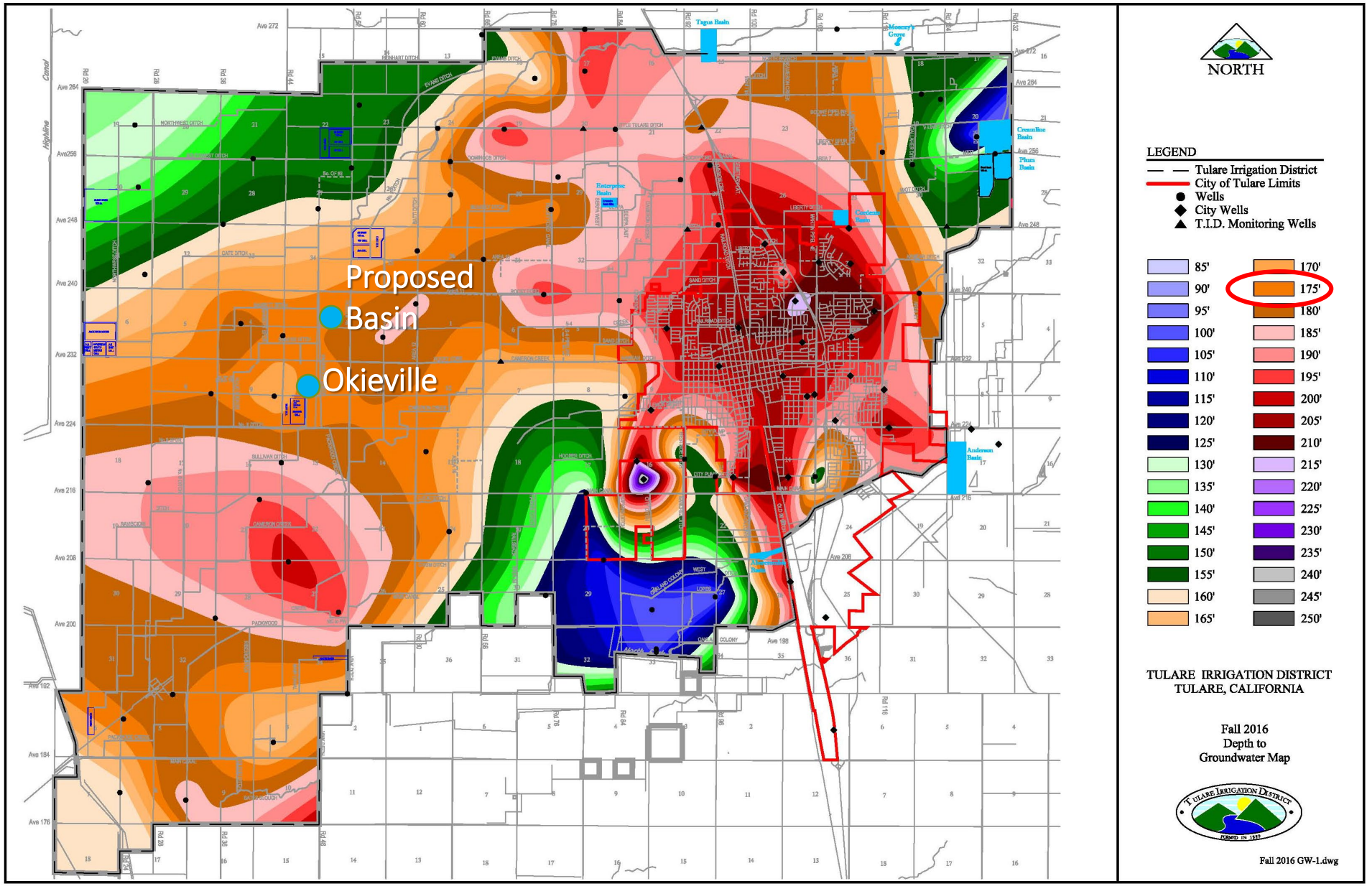
Mitigation and Penalty Fees used to purchase replacement water

Note: Prices do not reflect service charges for Relief Pumping or Pumping Charges for Groundwater Dependent Areas

MKGSA Groundwater Allocation and Pumping Cap Proposal Schedule



Groundwater Recharge


Proposed
Basin
Okieville
NORTH
LEGEND
Tulare Irrigation District
City of Tulare Limits
Wells
City Wells
T.I.D. Monitoring Wells
85'
90'
95'
100'
105'
110'
115'
120'
125'
130'
135'
140'
145'
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155'
160'
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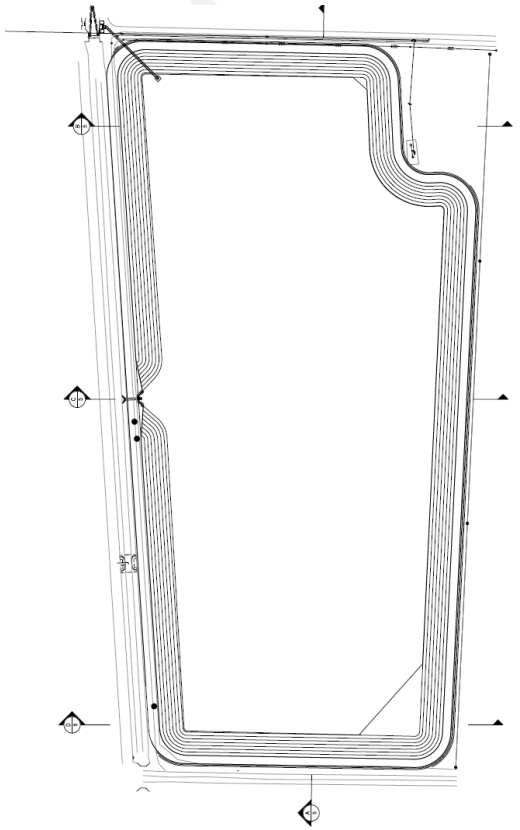
210'
215'
220'
225'
230'
235'
240'
245'
250'
TULARE IRRIGATION DISTRICT
TULARE, CALIFORNIA
Fall 2016
Depth to
Groundwater Map
TULARE IRRIGATION DISTRICT
FORMED IN 1888
Fall 2016 GW-1.dwg



On-Farm Recharge

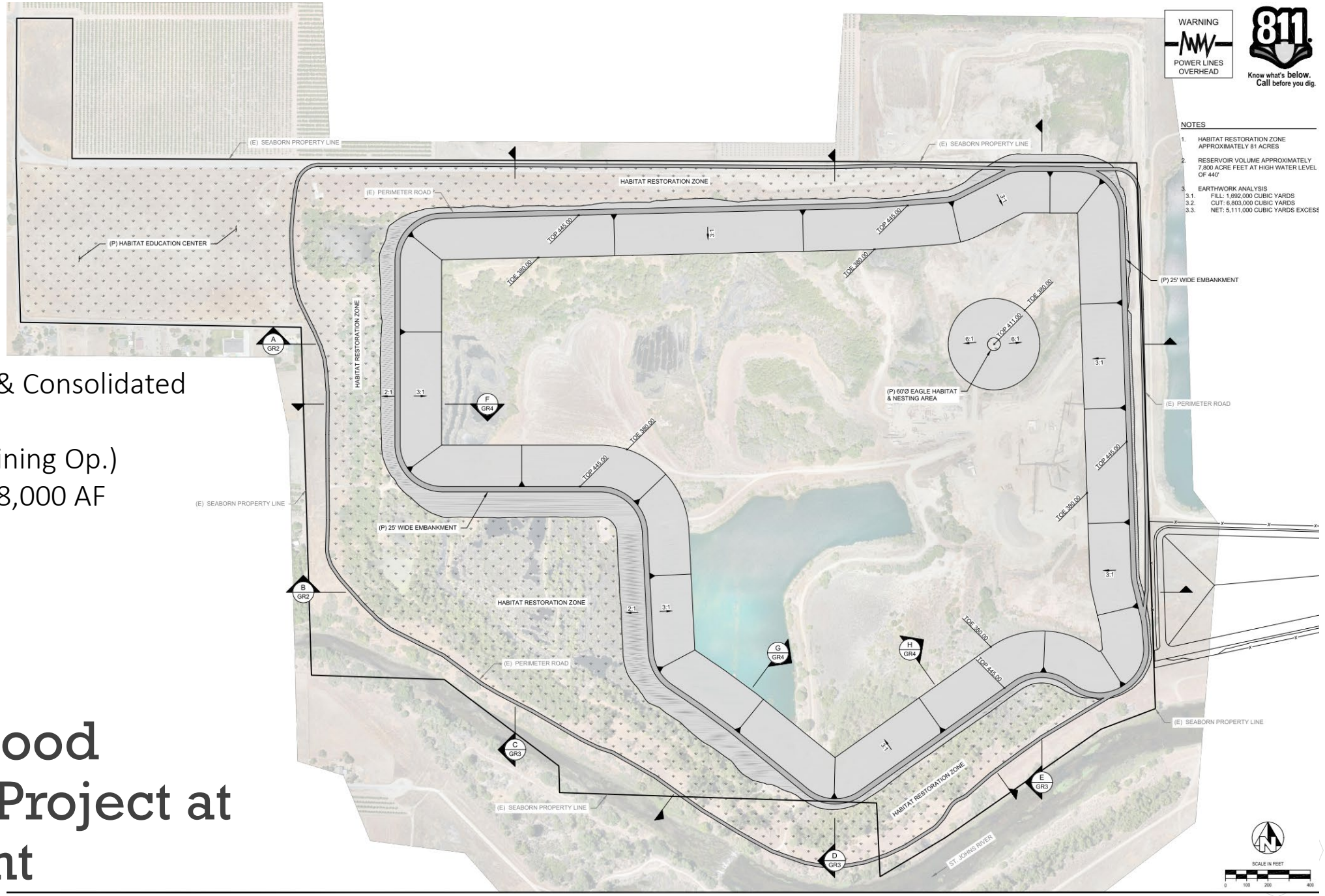
- 2011 – Concept
- 2016 – Pilot Program Initiated
- 2017 – Pilot Program Implemented
  - On-Farm Recharge
  - Reduce Rate Surface Water ($10/AF)
  - Private Pond Recharge

Total Number of Participants	14
On-Farm Field Participants	6
On-Farm Pond Participants	8
On-Farm Field Acreage	650 Acres
Total Recharge	6,800 Acre-Feet[3]
On-Farm Field Recharge	2,500 Acre-Feet
On-Farm Pond Recharge	4,300 Acre-Feet

Surface Water Storage

Project Highlights

- Creates new water storage
- Provides flood control
- Can help to take pressure off of the Friant-Kern system during and after subsidence fix
- Minimizes groundwater and SGMA impacts



Partnership: Tulare ID & Consolidated Peoples Ditch Co

Site: 260 Acres (Old Mining Op.)

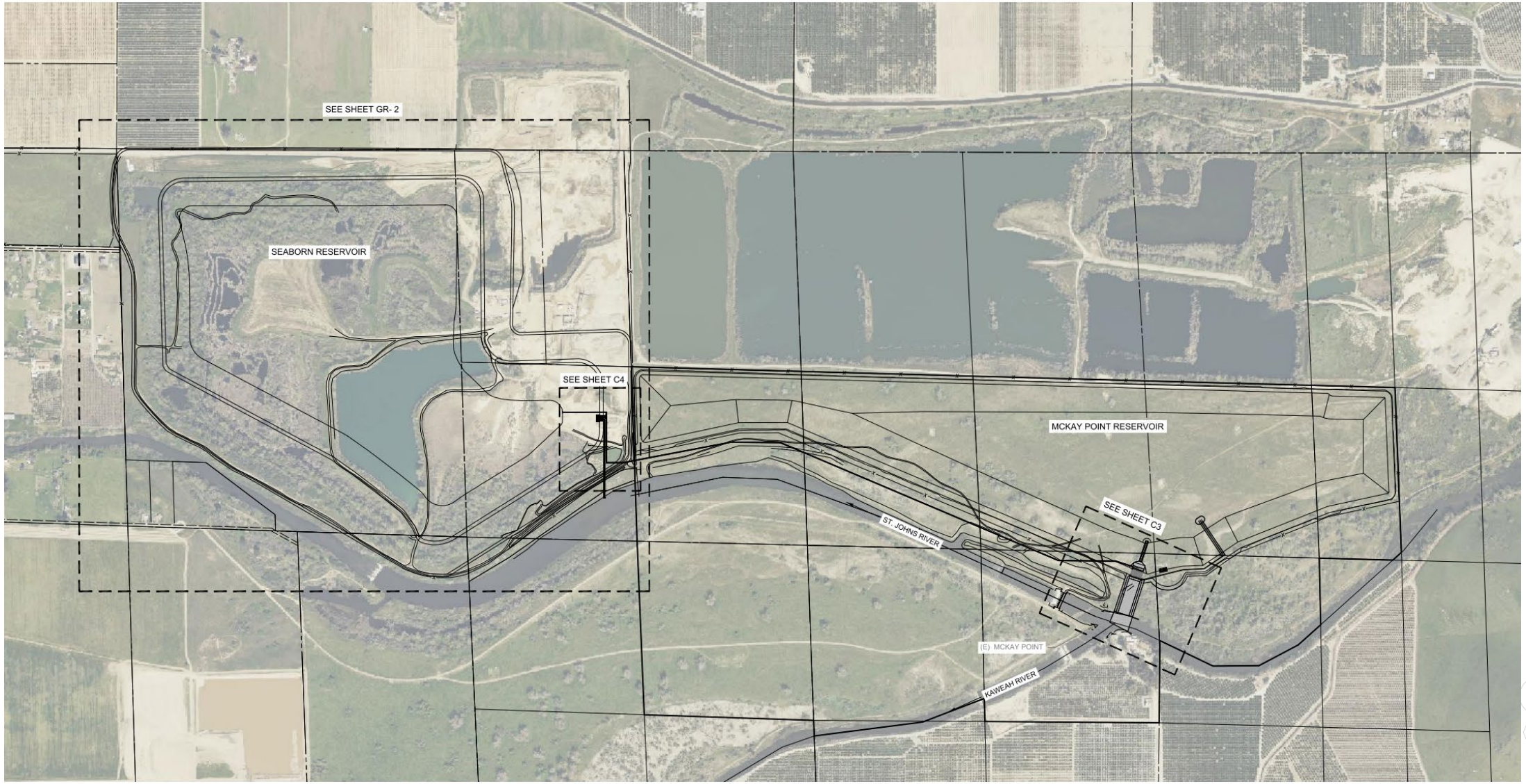
Total Storage: approx. 8,000 AF

Habitat Potential

- Riparian
- Wetlands
- Upland Wetlands
- Wet Meadow

Drought/Flood Mitigation Project at McKay Point

Overall Storage at McKay Point

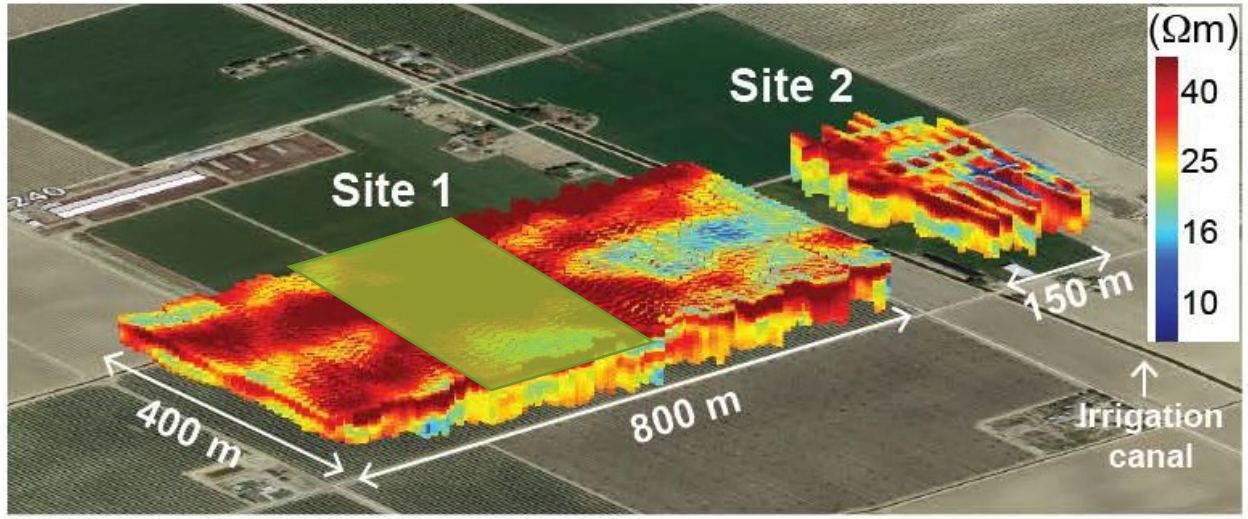


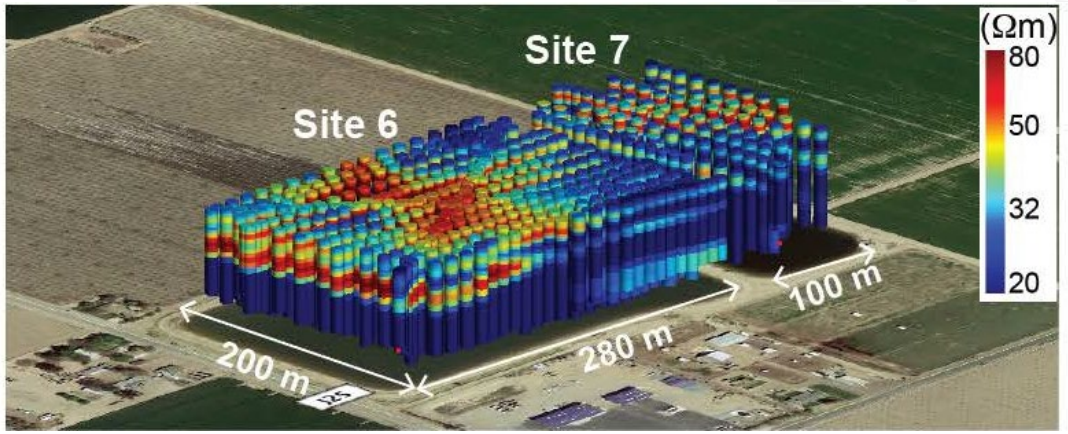
Technology of Groundwater

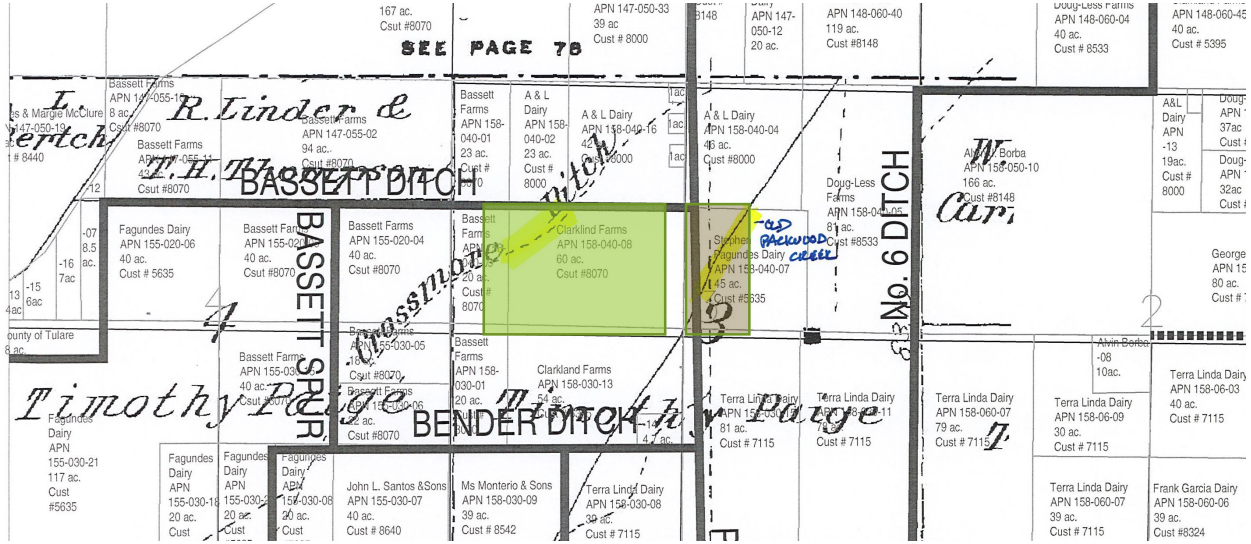
Groundwater Knowledge

- Kaweah Sub Basin in partnership with Stanford University completed a SkyTEM data acquisition for the entire sub basin
  - Information will be used in the Kaweah Sub Basin Modflow model for our GSP
- MKGSA is working with Stanford and has acquire a TowTEM unit
  - Will be used to evaluate District recharge opportunities
- Continue to collect data to increase subsurface knowledge and to calibrate TEM data collected within the sub basin

TowTEM Unit







How do we use the information:

1. Confirmation
2. Inform site specific testing program
3. Assist with due diligence during lease/purchase agreements
4. Increase efficiency of on-farm recharge program
5. Increase existing recharge basin sinking capacity
6. Provide textural input to our groundwater models
7. Assist in citing new groundwater monitoring wells

SkyTEM Unit

Hydrogeologic Framework of Selected Areas of the Kaweah Subbasin Region

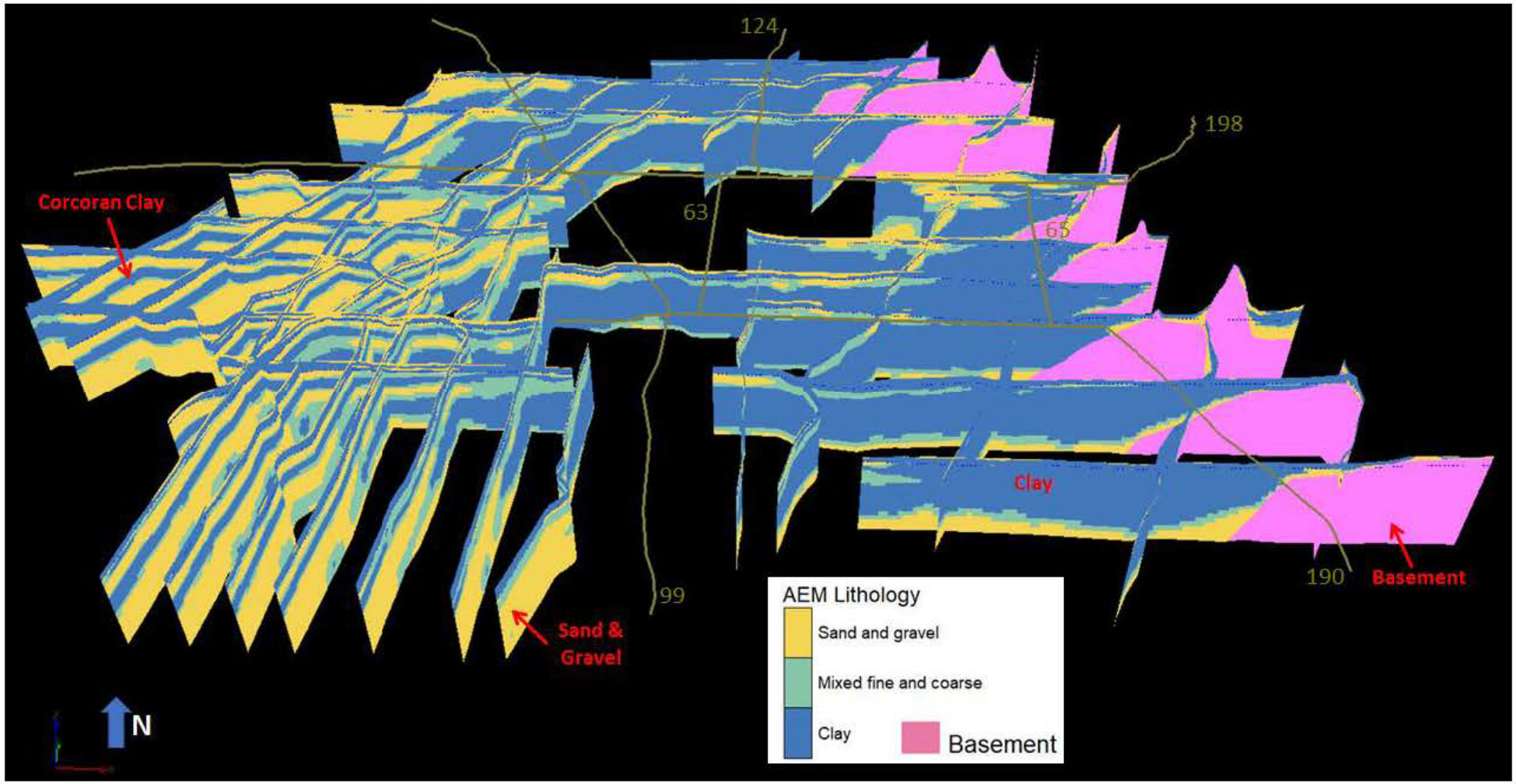
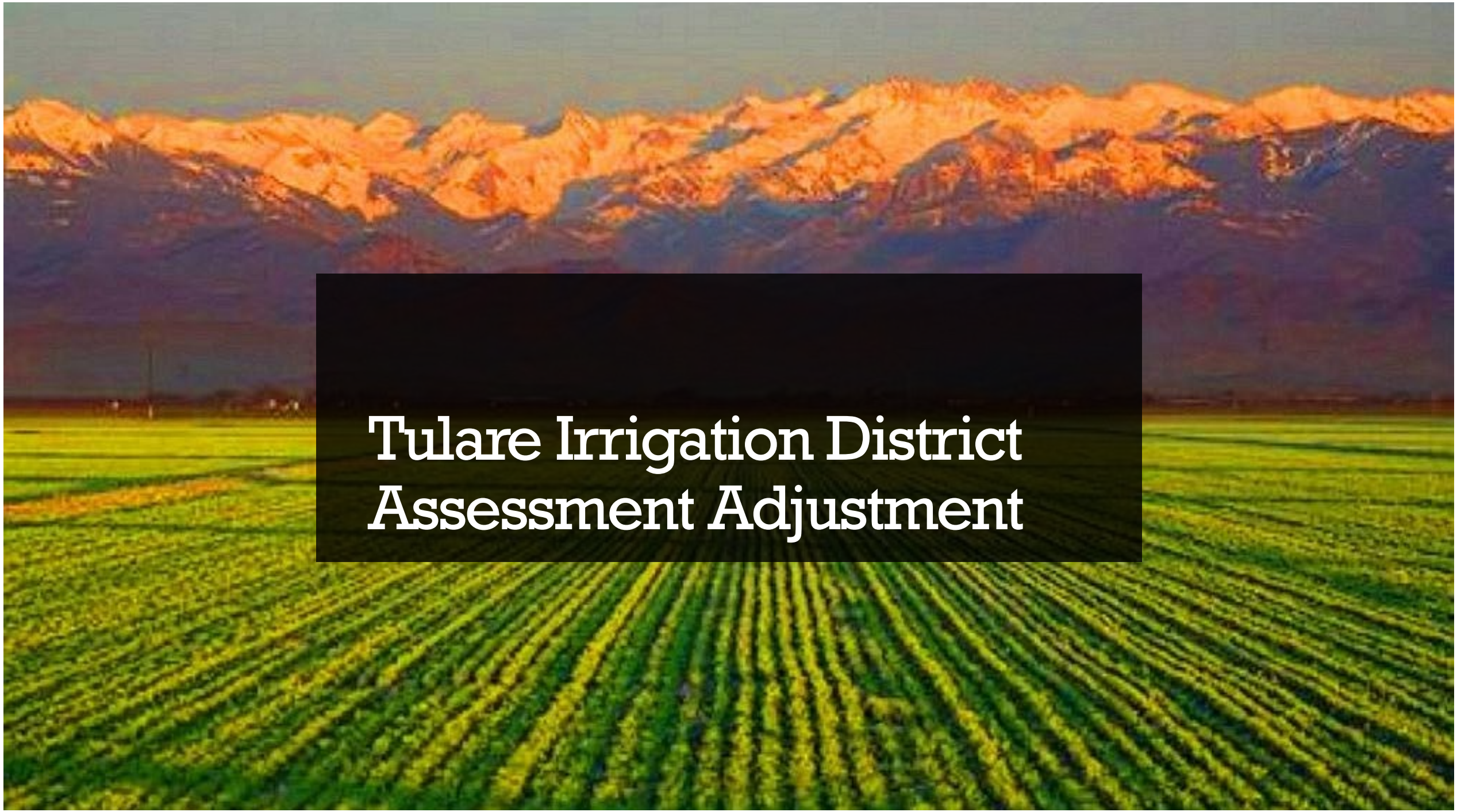


Figure 5-33. 3D lithologic interpretative fence diagram of the Kaweah Subbasin AEM inverted earth models, looking north. Greenish lines are local highways. Examples of the different lithologies are marked including the Corcoran Clay, undifferentiated Clay material, Sand and Gravel, and Basement materials.


Tulare Irrigation District
Assessment Adjustment

Strategic Plan

- Water Supply – surface water supplies are diminishing and the District will need to implement actions to increase surface water supplies
- District Facilities – District facilities are aging and not meeting current irrigation needs. District staff will need to assess existing infrastructure and develop a Capital Improvement Plan
- SGMA – District shall identify the needed funds to continue representing growers
- District Staffing – The District has a small and efficient workforce. District shall work on new programs to continue to attract talented employees and keep them motivated.
- District Financials – The District is currently not balancing ongoing O&M expenses with revenue and historic revenue streams are depleting faster than they can be replaced. District will need to look at a **long-range financial plan** and establish a path toward financial stability

Long-Range Financial Plan Model Summary

	Worst Case Scenario	Realtime Hydrology Scenario	Average Scenario
Range of ADDITIONAL Annual Assessment (does not include existing $32 Assessment	$60-$93	$54-$82	$51-70
Total Proposed Assessment Range	$92-$125	$86-$114	$83-$102
Average Annual Assessment (O&M + Capital)	$114	$92	$89

Assessment Range $83-$125

Future Assessment & Water Rate

- Board of Directors will be considering an increase in land assessments based upon Long-Range Financial Plan
  - Replace Ad-Velorem Assessment
  - Assessment will be based upon budget, needs, and Capital Improvement
- Prop 218 Process will begin next year
  - New assessment anticipated November 2022
- New Assessment will be used to bolster District water supplies, infrastructure, and finances

Thank You

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