South Fork Kings Groundwater Sustainability Agency

October 2019 Board Workshop

Lemoore, CA October 17, 2019 Geosyntec consultants





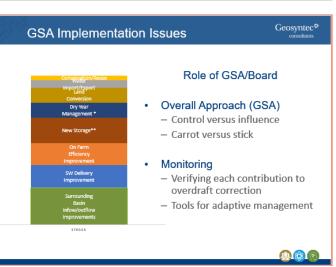


January Topics



Overdraft, sustainable yield, management actions







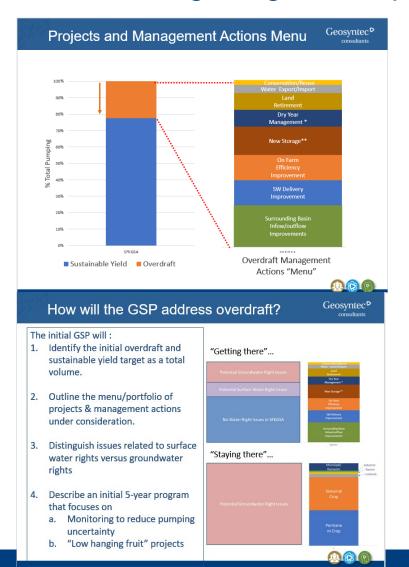


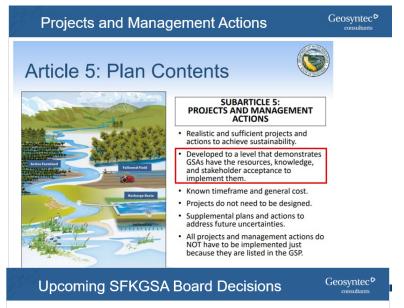


February Topics



Monitoring Program, Implementation issues





Implementation Elements:

- Adopt Measurement Approach
 - Methods and accuracy
- · Adopt Data Management Approach
 - Structure, access, reporting functions
- Adopt Oversight and Enforcement Approach
 - GSA/County/City/Voluntary Actions
- Adopt Resources and Budgeting Approach
 - GSA and basin resources
 - Infrastructure and personnel
- Confirm Capacity to Implement GSP
 - Organizational, financial



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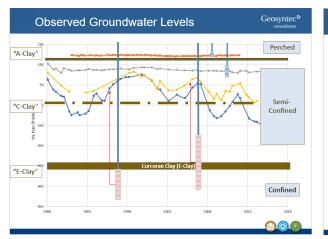


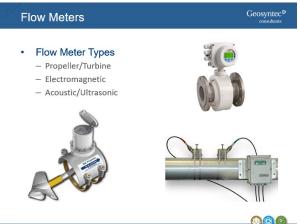


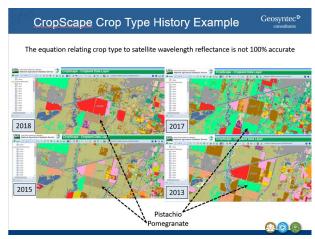
March Topics



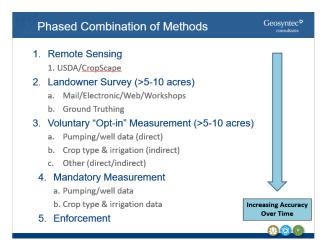
Semi-confined aquifer, GW measurement program







Parcel size	# of parcels	Total	Cumulative	Cumulative	Cumulative	Cumulative
Parcei Size	# or parceis	Acreage	Parcels	Acres	% of Parcels	% of Acres
>640 acres	4	2626	4	2,626	0%	39
320-640 acre	28	12,135	32	14,761	0%	199
160-320 acre	80	18,245	112	33,006	1%	419
80-160 acres	126	15,422	238	48,428	3%	619
40-80 acres	207	12,867	445	61,295	5%	779
20-40 acres	277	8799	722	70,094	8%	889
10-20 acres	290	4523	1,012	74,617	11%	949
5-10 acres	232	1787	1,244	76,404	14%	969
2-5 acres	384	1213	1,628	77,617	18%	989
<2 acres	7,284	1984	8,912	79,601	100%	100%





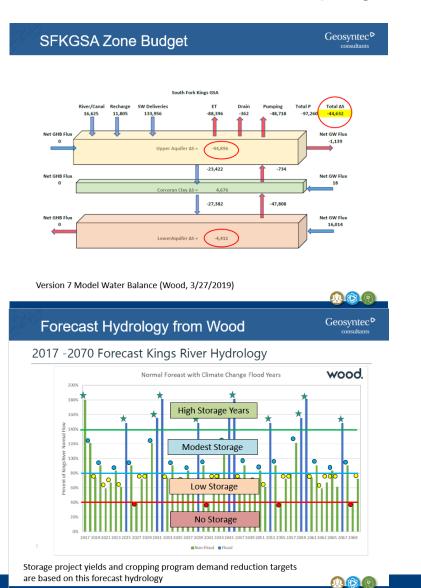


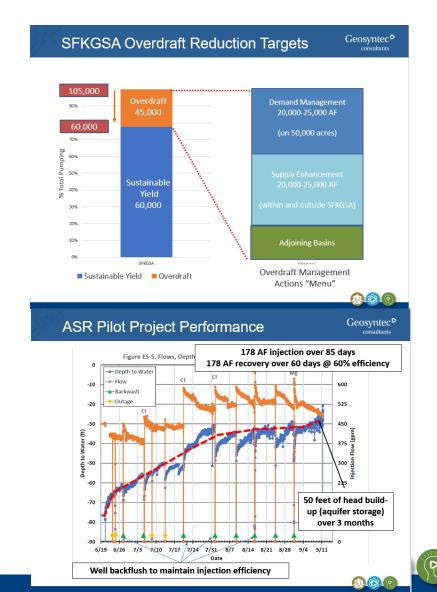


April Topics



Overdraft reduction, projects "menu", ASR,





May Topics



Implementation costs and tool, water trading/banking



Projects Cost Model

Geosyntec^D

100

- Basic operations

- Annual/5-Yr Activities

- Meters/Monitor Wells

Demand/Supply

- CAPEX/OPEX

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Relative Cost Classification for Actions

- Estimates total cost to develop combination of
 - Supply enhancement (ASR + MAR); and
 - Demand reduction (seasonal fallowing + land retirement + SW delivery improvements)
- Evaluates multiple combinations of supply enhancement and demand reduction actions to capture total and relative costs of each element
 - More demand reduction means less supply enhancement
 - More land retirement means less fallowing
 - More surface recharge means less ASR

	ITEM	Capital Cost (CAPEX)	Annualized Operating cost (OPEX)
	SW Delivery Improvement	Mod	Very Low
AND	On-Farm Improvements and Conservation	Low	Low
DEMAND	Land Retirement or Long-Term Fallowing Contract	High	Very Low
	Seasonal Cropping and Fallowing Program	Very Low	High
PLY	Mid-Kings Recharge	High	Mod
SUPPLY	SFKGSA ASR	Mod	High





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Fee Category						
	Applicable Parties – Reporting Extractors	Fee Amount	Current Total	Future Total		Individual
Base Filing Fee ^(a)	Any extractor submitting an extraction report	\$100 per well	Pumping	Pumping		Pumper Prof
	Fees based on intervention status ^(a)					Tumper Froi
1. Unmanaged	Extractors in an unmanaged area.	\$10 per acre-foot per year, if metered		- 16		
Area Rate	Extractors in an unmanaged area.	\$25 per acre-foot per year, if unmetered		Overdraft Reduction		Overdraft Reduction
2. Probationary Basin Rate	Extractors in a probationary basin.	\$40 per acre-foot per year			H ₂ O	
3. Interim Plan Rate	Extractors in a probationary basin after the time period identified by § 10735.4 or § 10735.6 (180 days or one year, accordingly).	\$55 per acre-foot per year		Marketed Water	\$\$\$	Marketed Wat
	Fees independent of intervention status ^(b)					
Late Fee	Extractors that do not file reports by the due date.	25% of total fee amount, accrued monthly		Protected or	GSA and "bank manager" certify trades and	Protected o
Special Studies Fee	May apply to extractors when basin-specific special probationary or interim plan rates are insufficient. I developing special technical studies such as groundw modeling will be apportioned to extractors based on		Non-Market Water	maintain accounting of groundwater pumping and transactions	Non-Market Water	





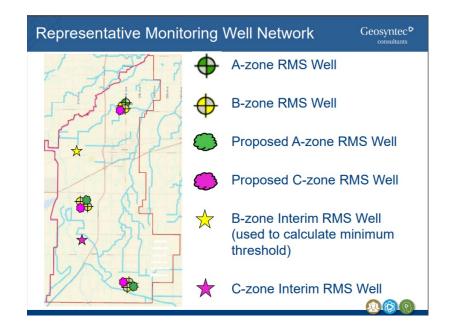


June Topics



June: Monitoring network and GSP Update

SFKGSA 2040 Sustainability Goal Summary Geosyntect consultants									
Maintain water levels at these levels or higher by 2040									
Aquifer	Measurable Objective (ft MSL)	Minimum Threshold (ft MSL)							
A-zone	190	180							
B-zone	-5 to -60	-40 to -95							
C-zone	-130	-185							
Aquifer	Measurable Objective	Minimum Threshold							
	(ft bgs)	(ft bgs)							
A-zone	30	20							
B-zone	225 to 260	260 to 295							
C-zone	330	385							







August Topics



August: GSP budget and schedule, Chapter 6, ASR Pilot

GSP Public Review Schedule 90-day notice of public hearing 9/3 Public workshop and outreach Public hearing 12/3 1+ months to address comments SFK Board approval 1/16 DWR is required to establish a GSP public comment period of no less than 60 days A GSP that is determined to be incomplete may be revised and resubmitted to DWR within 180 days from the date DWR issues the assessment



ASR Pilot Test

- Identified test location & surrounding wells
- Met with Regulatory agencies on requirements
- Submitted USEPA Injection well permit
- Preparing Workplan for approval and CEQA exemption
 - Will include a pumping test & water quality data











- January: Overdraft, sustainable yield, management actions
- February: Monitoring Program, implementation issues
- March: Semi-confined aquifer, GW measurement program
- April: Overdraft reduction, projects "menu", ASR concept
- May: Implementation costs and tool, water trading/banking
- June: GSP Update
- July: No Meeting
- August: GSP Budget/Schedule, Chapter 6, ASR Pilot
- September: No Workshop



Chapter 6: Projects & Mgmt Actions



General Menu of Supply Enhancement Actions

- 1. Conveyance facilities
- 2. Surface storage
- 3. Intentional recharge basins
- 4. On-Farm "unintentional" recharge
- Aquifer Storage and Recovery (ASR)

Chapter 6 : Projects & Mgmt Actions



General Menu of Management Actions

- 1. Voluntary fallowing
- 2. Fee assessments
- 3. Groundwater allocation
- 4. Groundwater marketing/trading
- 5. Proof of water supply
- 6. Registration of wells
- 7. Metering requirements (+sounding tube/sampling port)
- 8. Self-reporting requirement (flow, water-level, water quality)
- 9. Flood flow contracts into Tulare Subbasin



Chapter 6 - Costs

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Mid Kings: \$103 M

El Rico : \$100 M

Tri-County: \$ 45 M

South Fork: \$ 62 M

TOTAL \$310 M

Demand Reduction \$13 M

ASR: \$15 M

Surface Storage: \$ 6 M

Surface Recharge: \$ 28 M





Now here we are.... GSP Chapter 7



CHAPTER 7 TABLE OF CONTE NTS

7.0	Plan Implementation	7–1
	Estimate of GSP Implementation Costs	
	Schedule for Implementation	
	Identify Funding Alternatives	
	Data Management System	
	Annual Reporting	
	Periodic Evaluations	

Figures:

Tables:

Table 7-1.	§354.44 Projects and Management Actions	7–13
Table 7-2.	DMS Annual Reporting Requirements	7–21





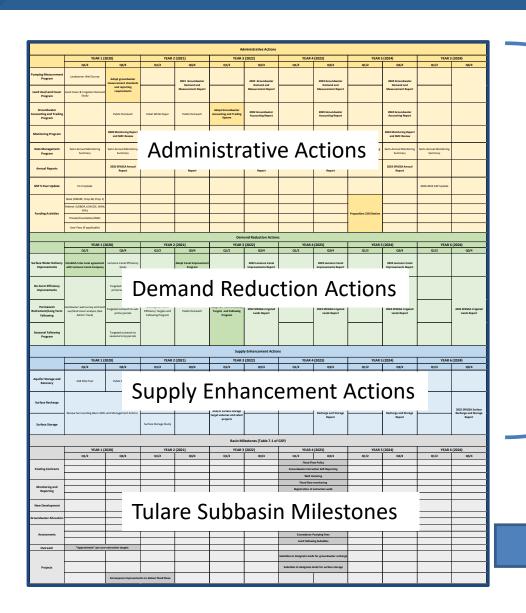
#	Management Action (b)(1) *	Description (b)(1)	Measurable Objective (b)(1)	Circumstances of Implementation (b)(1)(A)	Quantification of Demand Reduction (b)(2)	Permitting & Regulatory Process (b)(3)	Status, Start, End, & Accrual of Benefits (b)(4)	Explanation of Benefits & Method of Evaluation (b)(5)	Explanation of Water Source & Reliability (b)(6)	Cost & Funding Options (b)(8)	Management of Groundwater Extraction & Recharge (b)(9)	Level of Uncertainty associated with the basin setting, 1=uncertain 5=certain (d)
1	Infiltration Basin Project	The Subbasin may adopt a policy to incentivize groundwater extractors through subsidies to utilize designate lands for banking only and or designate lands for scheduled banking under contract during certain periods of the season.	The goal is to encourage land owners to fallow land and replenish the groundwater, as well as encourage GSA water trading between GSA in the Tulare Lake Basin.	The policy will begin shortly after GSP approval and will solicit volunteers first. Project lands area needed will designed by GSA.	Demand reduction will be based on acreage removed from farming practices.	No permits or regulatory process is required for the Subbasin to adopt the policy. The Subbasin has the power as outlined in the SGMA, and related provisions to adopt ordinances.	Policy to be written by 2023 and implemented by 2025 and to remain indefinitely but can be revise as needed.	A direct benefit to the groundwater levels will be accomplished through this policy. Groundwater elevations will be utilized as the evaluation method.	The management action may be accomplished through policy adoption by the Subbasin. External water source is needed.	Estimated cost to draft and adopt policy, SSO,000. Ongoing subsidies may range from annually.	Chronic lowering of groundwater levels or depletion of supply during periods of drought may be offset by a storing water in wetter years.	Level of uncertainty of the project is 2, in wet years there is water available for this area as well as the infrastructure to deliver it.
2	Storage Project	The Subbasin may adopt a policy to incentivize groundwater extractors through subsidies to utilize designate lands for storage only and or designate lands for scheduled storage under contract during certain periods of the season.	The goal is to encourage land owners to fallow land and replenish the groundwater, as well as encourage GSA water trading between GSA in the Subbasin.	The policy will begin shortly after GSP approval and will solicit volunteers first. Project lands area needed will designed by GSA.	Demand reduction will be based on acreage removed from farming practices.	No permits or regulatory process is required for the Subbasin to adopt the policy. The Subbasin has the power as outlined in the SGMA, and related provisions to adopt ordinances.	Policy to be written by 2023 and implemented by 2025 and to remain indefinitely but can be revise as needed.	A direct benefit to the groundwater levels will be accomplished through this policy, for in-leu groundwater supplies. Groundwater elevations will be utilized as the evaluation method.	The management action may be accomplished through policy adoption by the Subbasin. External water source is needed.	Estimated cost to draft and adopt policy, \$50,000. Ongoing subsidies may range from annually.	Chronic lowering of groundwater levels or depletion of supply during periods of drought may be offset by storing water in wetter years.	Level of uncertainty of the project is 2, in wet years there is water available for this area as well as the infrastructure to deliver it.
3	Existing Infrastructure and/or Rehabilitation of New Construction	The Subbasin may adopt to fund projects to rehabilitate existing facilities, and construct new facilities to divert, or bank water in areas conducive of	The goal is to modify or develop new facilities that can deliver a larger amount of water when needed. As well as service an area that does not	Development of the project will begin shortly after GSP approval.	This project will work in conjunction with a banking project or other projects as needed.	No permits or regulatory process is required for the Subbasin to adopt the project. The Subbasin has the power as outlined in the SGMA, and related provisions	Project to be include in the GSP. Soon after adoption of GSP projects to begin development.	A direct benefit to the groundwater levels will be accomplished through this project, for in-leu groundwater supplies. Groundwater	The management action may be accomplished through policy adoption by the Subbasin. External water source is needed.	Estimated cost to draft and adopt policy, \$50,000. Project costs will vary.	Chronic lowering of groundwater levels or depletion of supply during periods of drought may be offset by storing water in wetter years, trading of GW to	Level of uncertainty of the project is 2, in wet years there is water available for this area as well as the infrastructure to deliver it.





Proposed SFKGSA Implementation Timeline





GSP Section 7.7
Or
Stand-alone
implementation
summary

GSP Table 7-1





Administrative Actions



	Administrative Actions											
	YEAR 1 (2020)		YEAR 2	(2021)	YEAR 3 (2022)		YEAR 4 (2023)		YEAR 5 (2024)			
	Q1/2	Q3/4	Q1/2	Q3/4	Q1/2	Q3/4	Q1/2	Q3/4	Q1/2	Q3/4		
Pumping Measurement Program	Landowner Well Survey	Adopt groundwater measurement standards		2021 Groundwater Demand and		2022 Groundwater Demand and		2023 Groundwater Demand and		2024 Groundwater Demand and		
Land Use/Land Cover Program	Land Cover & Irrigation Demand Study	and reporting requirements		Measurement Report		Measurement Report		Measurement Report		Measurement Report		
Groundwater Accounting and Trading Program		Public Outreach	Initial White Paper	Public Outreach	Adopt Groundwater Accounting and Trading System	2022 Groundwater Accounting Report		2023 Groundwater Accounting Report		2024 Groundwater Accounting Report		
Monitoring Program	Monitoring Well Installation	2020 Monitoring Report and SMC Review	Monitoring Well Installation	2021 Monitoring Report and SMC Review	Monitoring Well Installation	2022 Monitoring Report and SMC Review	Monitoring Well Installation	2023 Monitoring Report and SMC Review	Monitoring Well Installation	2024 Monitoring Report and SMC Review		
Data Management Program	Semi-Annual Monitoring Summary	Semi-Annual Monitoring Summary	Semi-Annual Monitoring Summary	Semi-Annual Monitoring Summary	Semi-Annual Monitoring Summary	Semi-Annual Monito ine Summa iy	Smi-Annual Monitoring Summary	Semi-Annual Monitoring Summary	Semi-Annual Monitoring Summary	Semi-Annual Monitoring Summary		
Annual Reports		2020 SFKGSA Annual Report		2021 SFKGSA Annual Report	MG	207 . SFKGSA Annual Report		2023 SFKGSA Annual Report		2024 SFKGSA Annual Report		
GSP 5-Year Update	First Update			2021 SFKGSA Annual Report	KII							
	State (DWSRF, Prop 68, Prop 1)			111								
Funding Activities	Federal (USBOR, USACOE, WIIN, EPA)						Proposition 218 Election					
. anding Activities	Private/Foundation/NGO											
	User Fees (if applicable)											

Demand Reduction and Supply Enhancement

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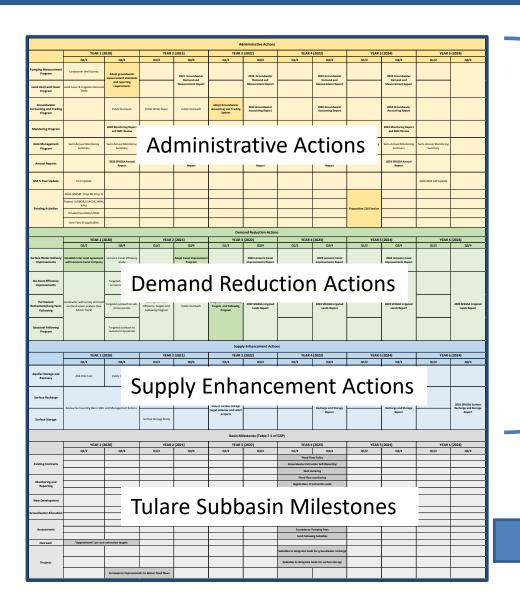
					Dem	and Reduction Action	5						
	YEAR 1 (2020) YEAR 2 (2021)			YEAR 3 (2022)			YEAR 4 (2023)		YEAR 5 (2024)				
	Q1/2	Q3/4	Q1/2	Q3/4	Q1/2	Q3/4	Q1/2	Q3/4	Q1/2	Q3/4			
Surface Water Delivery Improvements	Establish Inter-local agreement with Lemoore Canal Company	Lemoore Canal Efficiency Study		Adopt Canal Improvement Program		2022 Lemoore Canal Improvements Report		2023 Lemoore Canal Improvements Report		2024 Lemoore Canal Improvements Report			
On-Farm Efficiency Improvements		Targeted outreach to prime land parcels											
Permanent Retirement/Long Term Fallowing	Landowner well survey and land use/land cover analysis (See Admin Track)	Targeted outreach to sub- prime parcels	Develop On-Farm Efficiency Targets and Fallowing Program	Public Outreach	Adopt On-Farm Efficiency Targets and Fallowing Program	2022 SFKGSA Irrigated Lands Report		2023 SFKGSA Irrigated Lands Report		2024 SFKGSA Irrigated Lands Report			
Seasonal Fallowing Program		Targeted outreach to seasonal crop parcels			Public Outreach Targets and Falle Program 2021) Y Q1/2	G D'	RAFI						
				-V	Suppl	y Enhancement Action	5						
	YEAR 1 (2	020)	YEAR 2	(2021)	YEAR 3 (2022) YEAR 4 (2023)			YEAR 5 (2024)					
	Q1/2	Q3/4	01/2	Q3 1	Q1/2	Q3/4	Q1/2	Q3/4	Q1/2	Q3/4			
Aquifer Storage and Recovery	ASRPilotTest	Public Outreach	Programmatic ŒQA	Approve ASR Program	Begin ASR Program Implementation	2022 SFKGSA ASR Report		2023 SFKGSA ASR Report		2024 SFKGSA ASR Report			
Surface Recharge			Surface Recharge Options Study		Adopt surface recharge and/or surface storage		2023 SFKGSA Surface		2024 SFKGSA Surface Recharge and Storage				
Surface Storage	Review Surrounding Basin GSPs	anu maragement Actions	Surface Storage Study		target volumes and select projects			Recharge and Storage Report		Report			





Proposed SFKGSA Implementation Timeline





GSP Section 7.7
Or
Stand-alone
implementation
summary

GSP Table 7-1



Thank You

