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# EKI TECHNICAL PRESENTATION

## COSUMNES SUBBASIN GSP IMPLEMENTATION

17 OCTOBER 2022

COSUMNES GROUNDWATER AUTHORITY BOARD OF DIRECTORS MEETING

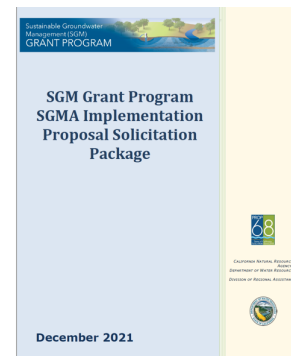
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## GRANT SOLICITATION

- Opened October 4<sup>th</sup>, with applications due by November 30<sup>th</sup>
- Very competitive: total of \$230 million available for 94 eligible basins (\$2.5 million per basin if split evenly)
- Each grant can ask for \$1 to \$20 million
- Cost share not required; however, additional points will be given to those who have a cost share of at least 5% of total project cost
  - Shows commitment!!
- All work must be completed by June 30, 2026



Program Schedule and Key Dates	
Milestone or Activity	Tentative Schedule
SGMA Implementation Round 2 Grant Solicitation Opens	October 4, 2022
SGMA Implementation Round 2 - Application Workshop	October 20, 2022, 10 a.m.-Noon (PST)
SGMA Implementation Round 2 Grant Solicitation Closes	November 30, 2022, at 5 p.m. (PST)
Draft Award List Posted for Public Review	May 2023
Final Award List Posted	August 2023
Execute Agreements	September-November 2023

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## APPLICATION COMPONENTS

### ■ Work Plan

#### A. General - Project Descriptions:

- |                    |   |  |
|--------------------|---|--|
| EKI/CGA            | { | <ul style="list-style-type: none"> <li>■ Justification</li> <li>■ Goals, objectives, needs &amp; how they will be met</li> <li>■ Expected benefits for Implementation Projects / Description of how the Planning Project is well-coordinated</li> </ul>  |
| Grant Writer / CGA | { | <ul style="list-style-type: none"> <li>■ How the project will benefit an Underrepresented Community (URC), Tribe or Severely Disadvantaged Community (SDAC)</li> <li>■ How the project will positively impact issues associated with small water systems or shallow wells</li> <li>■ How the project addresses the Human Right to Water</li> </ul> |
| EKI/CGA            | { | B. Scope of Work & Deliverables  |
| Both               | { | <ul style="list-style-type: none"> <li>C. Budget</li> <li>D. Schedule</li> </ul>   |

Note: EKI will provide descriptive technical information and the Grant Writer will provide explanatory text, edit all text for consistency, populate all necessary tables (Budget, Schedule), & assemble all pieces.

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## PROPOSED COSUMNES PROJECTS

1. **Managed and Natural Aquifer Recharge** (Section 18.2.4 in the GSP)
  - Stream impoundments to store rainfall runoff.
  - Surface water from outside the basin delivered by natural drainages .
  - Local farm-scale rainwater capture projects.
2. **Representative Monitoring Network Improvements** (Section 19.1.2 “Data Gap Filling Efforts” in the GSP)
3. **Water Conservation** (Section 18.2.4 in the GSP)
  - Land use changes toward less water intensive crops.
  - Water use efficiency, management and conservation projects.
4. **Voluntary Land Repurposing** (Section 18.2.3 PMA #5)

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# SUPPLY AUGMENTATION APPROACH

## Feasibility Projects

- Preparation for large-scale implementation
- Quantity of water capable of recharge
- Timing and availability

## Explore water supply

- Baseline water budget
- Existing water rights
- Stormwater capture
- Delivered water - Folsom South Canal, Amador, water banking
- Partnership w/ Tom Gohring (capacity)

## Explore partnerships

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# DRY CREEK

## Explore recharge potential along Dry Creek and its tributary Jackson Creek

- Natural and MAR
- Site evaluation

## Evaluate water supply

- Existing water rights, stormwater
- Regulatory requirements
- Amador water exploration
- Availability and timing
- Available and required infrastructure

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## LAGUNA CREEK

### Explore recharge potential along Laguna Creek

- Natural and MAR
- Site Evaluation

### Evaluate water supply

- Existing water rights; stormwater; FSC
- Regulatory requirements
- Availability and timing
- Available and required infrastructure

### CBEC ECOFIP Analysis - Proposal

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## FOLSOM SOUTH CANAL SERVICE AREA

### Explore recharge potential along Folsom South Canal

- Site evaluation

### Explore availability of water supply

- Partnerships and coordination

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## DRY WELLS - LAGUNA DEL SOL PILOT PROJECT

### Recharge well design refinement

- Coordination with USDA's Agricultural Research Station (ARS)
- Dry well design, cost-benefit analysis
- Water quality

### Geophysical characterization methods and calibration

- ERT,  $\epsilon$ TEM, NMR
- Sonic Core drilling

### Expansion of project

- Second location
- Test dry well designs
- Expansion of monitoring (storage and quality)

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## SUPPLY AUGMENTATION FEASIBILITY PROJECTS

- Rank candidate sites and secure access
- Confirm site suitability (geophysics/infiltration tests/source water and groundwater quality)
- Plan & design diversion and recharge infrastructure
- Approve plans and construct infrastructure
- Locate, design & construct necessary monitoring equipment to quantify benefits
- Update appropriate model input files
- Project analysis

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## MANAGED AND NATURAL AQUIFER RECHARGE (1 OF 3)

### LOCAL DIVERSION PROJECTS

- Outreach to landowners along Dry Creek & Laguna Creek to identify lands with existing diversion infrastructure & willingness to participate.
- Locate Project sites focused along Dry Creek and Laguna Creek.
- Rank potential sites based on location & surface/subsurface hydrogeologic conditions.
- CGA select up to 4 sites to secure access for confirmation studies & project development
  - Confirm site suitability (geophysics/infiltration tests/source water and groundwater quality)
  - Plan & design diversion and recharge infrastructure for 1-2 sites
  - Approve plans and construct infrastructure
- Locate, design & construct necessary monitoring equipment to quantify benefits (e.g., meters, weirs, monitoring wells, etc.)
- Update appropriate model input files

Table 1. Summary of Available Surface Water Supplies from Water Year 1990 through 2021.

Creek	90 <sup>th</sup> Percentile Flow, CFS	Max Diversion Flow Rate, CFS	Max. Avg Annual Diversion Volume, AF	Expected Avg Annual Diversion Volume, AF (Note 1)
Badger Creek	26	24	700	700
Laguna Creek	325	225	7,300	1,000
Hadselville Creek	20	6	100	100
Jackson Creek	136	127	2,700	800
Dry Creek	412	392	10,500	1,000
Total:			21,300	3,600

Notes:

1.) The expected near-term diversion volume is based on a maximum diversion of 15 CFS. Higher rates of diversion may be possible depending on site specific constraints and available funding.

*Note: Model-calculated surface water flows suggest that 85% of available surface water for diversions are from flows in Dry and Laguna Creeks. The runoff would be directed to local percolation basins and/or dry wells for infiltration into the Basin if site suitability assessments confirm project feasibility.*

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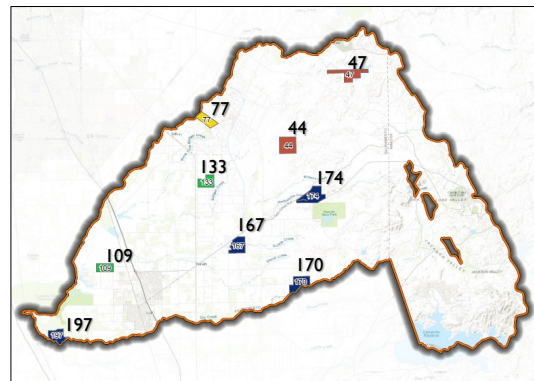
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## MANAGED AND NATURAL AQUIFER RECHARGE (2 OF 3)

### ON-FARM STORMWATER CAPTURE

- Utilize data from the GSP and CoSANA model to identify high volume sites with acceptable soil conditions
- Rank candidate sites base on expected runoff volumes, expected infiltration rates & subsurface conditions
- CGA select up to 4 sites to secure access to
  - Confirm site suitability (geophysics/infiltration tests/source water and groundwater quality)
  - Plan & design diversion and recharge infrastructure for 1-2 sites
  - Approve plans and construct infrastructure
- Locate, design & construct necessary monitoring equipment to quantify benefits (e.g., meters, weirs, monitoring wells, sampling stations, etc.)



*Note: Map shows example land parcels with model-calculated average (1990-2021), annual runoff in acre-feet (AF).*

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## MANAGED AND NATURAL AQUIFER RECHARGE (3 OF 3) FLOOD-MAR ANALYSIS (LAGUNA CREEK)

- Multi-benefit Flood-MAR Opportunities Analysis
- Draft Scope of Work developed by cbec eco engineering
  - Data Discovery
  - Field Data Collection and Monitoring
  - Hydrologic Model Development
  - Hydraulic Model Development and Simulation
  - Ecological Floodplain Inundation Potential Analysis (EcoFIP)
  - Reporting and Outreach

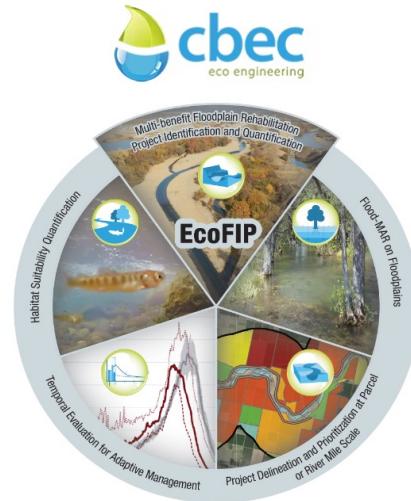


Figure 1 – EcoFIP ecohydraulic modeling framework.

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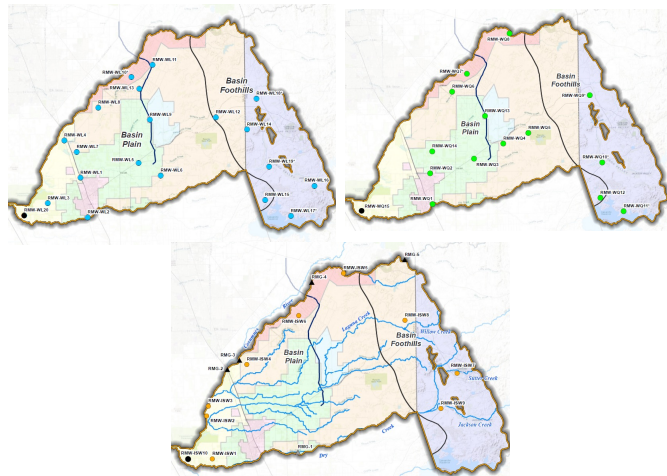
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## REPRESENTATIVE MONITORING NETWORK IMPROVEMENTS

- The SGMA Monitoring Network (RMWs) provides data to evaluate Sustainable Management Criteria (SMCs) and assess Sustainability Indicators for the Basin
- Multiple data gaps within the networks were identified in the GSP
- Improving the monitoring network includes the following task
  - Downhole video log/surveying of current RMWs
  - Construct monitoring well sites located near DACs, GDEs areas, and within the mapped cone of depression
  - Expand the network of supplemental domestic and agricultural wells to confirm the SGMA monitoring network is representative. (supplemental wells do not have assigned SMCs)
  - Update appropriate model input files



Note: Wells and other relevant monitoring infrastructure installed as part of the demonstration projects will be incorporated into the SGMA Monitoring Network as appropriate to also fill identified data gaps.

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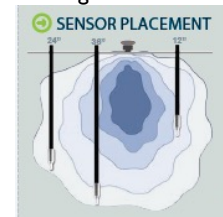
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## WATER CONSERVATION

- Additional outreach to landowners
- Use updated land use data (work task under Land Repurposing project) and update ET estimates to refine consumptive use estimates
- Identify & rank candidate demonstration project sites based on site conditions (soil characteristics, land uses, current irrigation & water practices, & conduciveness to testing selected BMPs)
- CGA select up to 4 sites to secure access for
  - Site inspection by Agricultural Consultant
  - Identify recommended BMPs & plan/design conservation activities
  - Approve plans & construct necessary field modifications and necessary infrastructure
- Locate, design & construct necessary monitoring equipment to quantify benefits (e.g., sensors, meters, weirs, monitoring wells, etc.)
- Update appropriate model input files

Soil moisture monitoring



Flow meter monitoring



*Note: Commercially available weather stations can be installed along with other tracking equipment to measure and record soil moisture, water flows, water levels, and climate data at strategically placed stations in the basin.*

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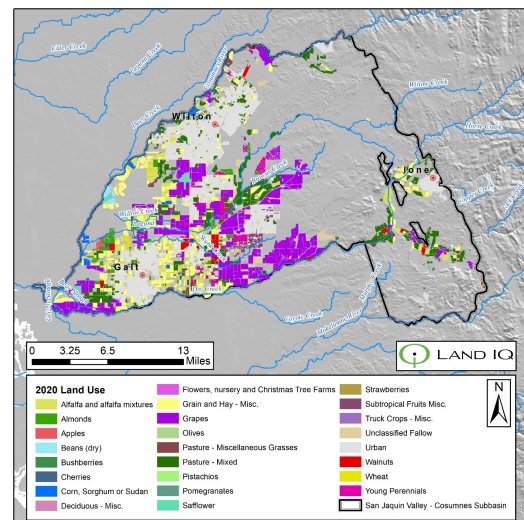
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## VOLUNTARY LAND REPURPOSING

- Additional outreach to landowners
- Update land use map & data
- Develop scoring framework to identify & rank sites for possible projects
  - Land characteristics
  - Revenue generated by existing use
  - Landowner preferences
  - Implementation timeframe & estimated benefits
- Identify 2 to 3 demonstration projects
- Locate, design & construct necessary monitoring equipment to quantify benefits (e.g., meters, weirs, monitoring wells, etc.)
- Update appropriate model input files



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## OTHER POTENTIAL COMPONENTS

- Data Gaps:
  - Groundwater Dependent Ecosystems / Interconnected Surface Water

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## EKI'S NEXT STEPS

- Finalize Project Descriptions
  - Project justifications
  - Goals, objectives, & needs
  - Expected benefits
  - Scope of work
  - List of deliverables
- Draft Budgets & Schedules
- Continue coordination with CGA staff

### LAND REPURPOSING

Land Repurposing is included as Project and Management Action (PMA) #5 in the GSP and includes voluntary changes in land use to reduce groundwater extractions. In the guidance document *Advancing Strategic Land Repurposing and Groundwater Sustainability in California*, the Environmental Defense Fund (EDF) defined land repurposing as any activity that converts previously irrigated agricultural land to new uses that reduce groundwater demand or use and provide some other measurable benefits to the environment. The GSP assumed that 750 – 1,000 acres could be repurposed during Phase 1 of implementation (approximate savings of 2,700 APY of groundwater). This demonstration project will develop protocols and methods to identify and prioritize target lands for repurposing.

The Land Repurposing demonstration project will support landowners in the required application processes, scoring framework to maximize project ranking, guidance with contracting protocol, construct infrastructure necessary to track and verify actual water use and water savings, and then implement the specific options identified for each test site.

- Utilize 2020 land use data to preliminarily identify the magnitude and distribution of potentially greatest water consuming crops (for example, alfalfa, pasture, and orchards such as walnuts and almonds).
- Update land use map and data to represent current conditions (assumed to be based on 2024 growing season).
- Develop scoring framework to identify and rank land areas for voluntary land repurposing that consider the following factors:
  - Land characteristics such as soil type, topography, subsurface characteristics such as geological layers, proximity to surface water, and suitability for alternative uses.
  - Revenue generated by existing use.
  - Landowner preferences, stakeholder input, and regional coordination.
  - Implementation timeframe and estimated benefits.
- Explore potential options to incentivize participation in land-repurposing program (e.g., CGA funded programs, mitigation or conservation banks, conservation easements, soil carbon sequestration/credits, solar rentals, grazing leases, and so forth).
- Identify two to three demonstration projects for implementation by CGA.
- Locate, design and construct necessary monitoring equipment to track recharge and quantify benefits (e.g., meters, weirs, monitoring wells, and so forth).
- Update appropriate model input files.

### Component 1

Budget Categories	Grant Amount
(a) Grant Agreement Administration	\$0
(b) Environmental / Engineering / Design	\$0
(c) Implementation / Construction	\$0
(d) Monitoring / Assessment	\$0
(e) Engagement / Outreach	\$0
<b>Total:</b>	<b>\$0</b>

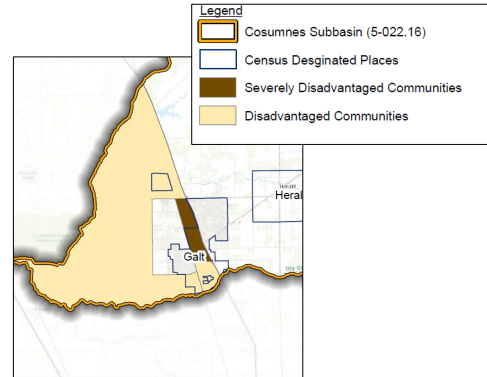
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## OUTREACH

- Farmer Survey
- Focus Groups
- Letters of Support
  - To score full points, require 3 comment letters from Underrepresented Communities

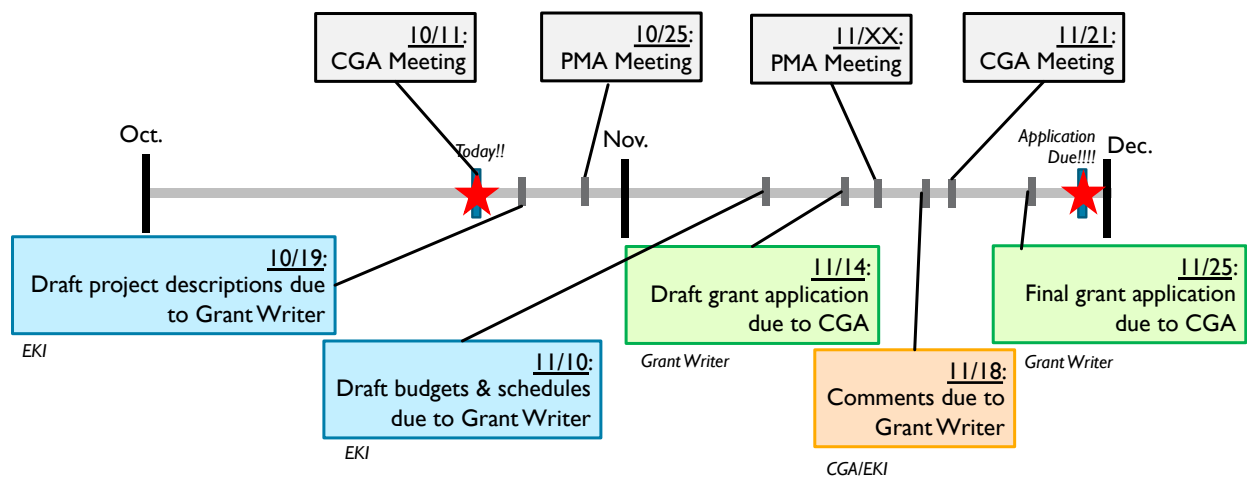


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## TIMELINE



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## APPLICATION DEVELOPMENT NEXT STEPS

- Next Steps:
  - Outreach: Farmer Survey, Letters of Support, etc.
  - Joint PMA Committee and Citizen Advisory Committee Meeting: October 25<sup>th</sup>, Review next draft application
    - Additional PMA Committee meeting(s) in early November as needed
  - CGA Board Meeting: November 21<sup>st</sup>, finalization of grant application
    - Additional Board meeting in early November?

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## GRANT WRITING

- At the September CGA Board Meeting, the Board directed Staff to prepare agreements with EKI and SAFCA to map out CGA's approach to preparing a DWR SGMA Implementation Grant and that EKI should bring recommendations to the Board and then the Board would work with SAFCA/the grant writer to develop the application.
- CGA Staff developed a MOA between CGA and the Sacramento Area Flood Control Agency (SAFCA), for Board consideration, to clearly articulate the roles and responsibilities of each organization during grant development and submission.
- **Staff Recommendation**
  - Authorize staff to enter into an agreement with SAFCA for Grant Writing Services.

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