Sustainable Groundwater Management and Land Subsidence

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Bryce McAteer
Executive Director, ETGSA
**What:** A package of three bills – AB 1739 (Dickinson), SB 1168 (Pavley), and SB 1319 (Pavley) – collectively known as the **Sustainable Groundwater Management Act**.

**When:** Signed into law on September 16, 2014.

**Why:** To provide a framework for the sustainable management of California’s groundwater resources in order to avoid 6 “significant and unreasonable” undesirable results.

“Significant and unreasonable...”

- Lowering GW Levels
- Reduction of Storage
- Seawater Intrusion
- Degraded Quality
- Land Subsidence
- Surface Water Depletion
How is SGMA to be Implemented?

“A central feature of these bills is the recognition that groundwater management in California is best accomplished locally” – Governor Jerry Brown, September 2014

Groundwater Sustainability Agency (GSA): A local agency charged with implementing SGMA through the creation, adoption, and implementation of a Groundwater Sustainability Plan.

Groundwater Sustainability Plan (GSP): A plan developed and implemented by a GSA that describes, among other things, how the GSA will meet the sustainability goal of basin.
Subsidence in the Central Valley

Mid-sections of critical conveyance infrastructure (Delta-Mendota Canal, California Aqueduct, and Friant-Kern Canal) have, and continue to be, subject to land subsidence that impairs flow capacity to southern communities.

Subsidence along the Friant-Kern Canal (esp. MP 95.7-112.9) has decreased capacity to less than 40% of original design, with fix costs now estimated to be $100-400 million.

Subsidence threatens groundwater sustainability by minimizing communities’ ability to supply surface water in-lieu of groundwater and altering the ability of aquifers to effectively receive water for recharge.

Source: Tom Farr, NASA Jet Propulsion Laboratory (2007-11)
GSAs Overlying the Tule Subbasin

General Statistics
- Total Area: ~475,000 acres
- Urban/Industrial: ~30,000 acres
- Agricultural: ~320,000 acres
- Native/Rural Area: ~125,000 acres
- Population: ~95,000 persons
- DACs/SDACs: 14 communities
- Clean-Up Sites: 26 active

Community Water Supplied by Groundwater: ~95%
Agricultural Water Supplied by Groundwater: ~52%

Sources: DWR, DWR SGMA Data Viewer, TH&Co
Critical Overdraft and Subbasin Imbalance

1990/91 to 2009/10 Net Groundwater Pumping within the Tule Subbasin

Subbasin-Wide Sustainable Yield

Total Pumping

Total Pumping Minus Return Flow

Source: TH&Co 2017 Tule Subbasin Water Budget Report (note - subject to change)
Subsidence at Porterville Airport (GPS Station P056)

Source: UNAVCO, PBO Station P056; Analysis by ETGSA
Local stakeholders define what they consider to be significant and unreasonable within their basin, but implementation of their GSP cannot impede on an adjacent basins’ ability to achieve their sustainability goal.
Tools for Sustainable GW Management

GSAs will describe the Projects & Management Actions they intend to undertake in order to sustainably manage groundwater within their jurisdiction. These might include:

- **Groundwater Recharge**
- **New & Optimized Supplies**
- **Collaboration, Mitigation, and Project Funding**
- **Reduction in GW Pumping**
- **Pumping Fees**
- **Groundwater Markets**
- **Management Areas**
- **Land Retirement/Fallowing**
Subsidence and FKC Flow Capacity

Friant-Kern Canal: Comparison of Current Conditions to Original Construction

Tulare County's Ave. 96 is the first of five bridge crossings that have subsided below design flow levels, limiting gravity flow on the Friant-Kern Canal.

Current allowable flow level

Designed flow levels are now several feet above both canal liner and bridge crossings.

SUBSIDENCE TIMELINE:

- 1970's - 3,000 cfs (after repairs, including bridge and liner raises)
- 2010 - 2,500 cfs
- 2017 - 1,600 cfs
- ? - 1,200 cfs

Subsidence has continued since measured in 2017, advancing at rates of 1 inch per month. If another 4 feet of subsidence were to occur, conveyance capacity would drop to less than 30% of its original design.

Source: Friant Water Authority
Mile Points – Relative Location within ETGSA

Source: DWR Land Use Data, 2014; Analysis by 4Creeks; MP Approximate Location by ETGSA
Future Projected FKC Subsidence, Scenarios

Source: TH&Co Updated Groundwater Flow Model Results (Jan. 16, 2019); Preliminary and Draft
Addressing Subsidence Along the FKC

The Tule Subbasin GSAs have engaged Thomas Harder & Co. to undertake a series of analyses to accurately define the source and scope of factors that significantly contribute to subsidence along the Friant-Kern Canal in order to assist the Tule Subbasin GSAs and others in developing effective, least-cost, and long-term solutions for all potentially effected stakeholders.

**4 Major Analyses**

- Impact of *pumping distance from FKC*
- Impact of *pumping depth* (i.e. different aquifers)
- Delineate “Area of Subsidence Concern” or AoSC (i.e. area from which groundwater pumping contributes *significantly more to subsidence* on FKC than other areas)
- Identify *existing wells* within AoSC

**STUDY AREA**

*note – Study Area is NOT AoSC*

5 Mile Radius, from ~Tule River to ~White River

*Image Source: TH&Co Scope of Work*
Fixing the FKC: Latest Design Proposals

**Raise Existing Canal – Typical Section**

**Parallel Canal – Typical Section (Existing Canal Remain in Operation)**

Source: Friant Water Authority
Draft GSP Creation Schedule

Drafting
Present - April 2019

Finalizing
April - June 2019

Public Review
July - September 2019

Adoption
September 2019 - January 31 2020

See the Full Schedule Online by visiting ETGSA’s Website!
ETGSA - Ways to Get Involved

Join the ETGSA and help us shape our local GSP!

1) Share your **vision for sustainability** and ideas for projects to address groundwater conditions by **filling out our Stakeholder Survey** (found on our website)

2) Visit our website for more information: **www.easterntulegsa.com**

3) Join us at **Monthly Meetings**
   - **Board Meetings**
     - (a) 1st Thursday of Every Month at 2pm
     - (b) City of Porterville Council Chambers
   - **Stakeholder Committee Meetings**
     - (b) 2nd Thursday of Every Month at 2pm
     - (c) 15 E. Thurman Ave, Suite D, Porterville
   - **Executive Committee Meetings**
     - (b) 3rd Thursday of Every Month at 2pm
     - (c) 15 E. Thurman Ave, Suite D, Porterville

4) Join our **Interested Parties List** (sign up at our website) for more updates
ETGSA Contact Information

Eastern Tule GSA
Bryce G. McAteer
Executive Director

www.easterntulegsa.com
info@easterntulegsa.com
559-791-8880
881 W. Morton Ave, Ste D, Porterville