

Board Workshop

Proposed Dededesignation of MUN & AGR in a Portion of the Tulare Lake Bed Groundwater Basin



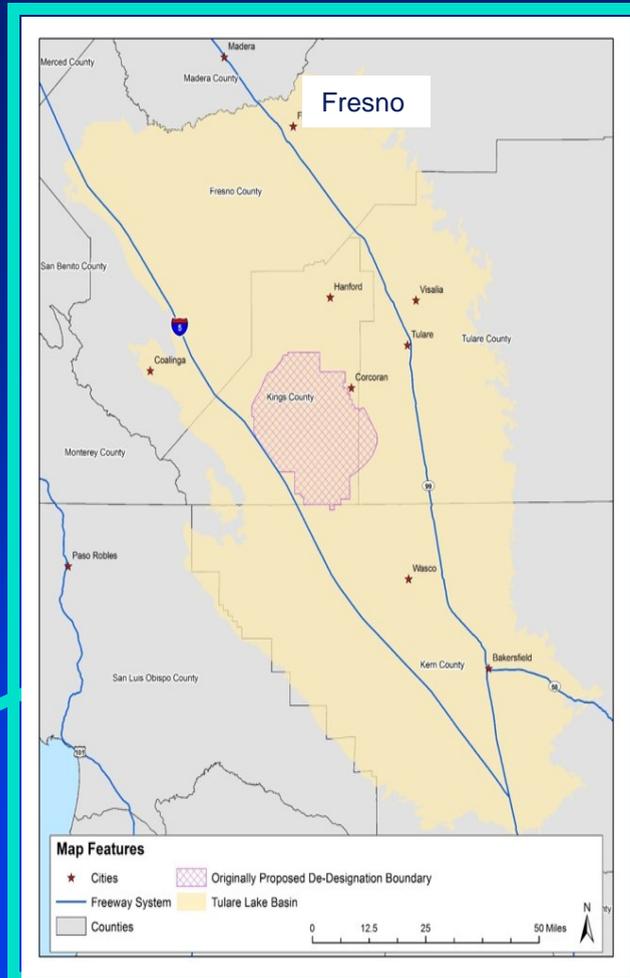
Presentation Outline

- Background/Project Area
- Evaluation Approach
- Proposed Alternative
- Discussion/Comments
 - Horizontal and Vertical Boundaries
 - Existing and Potential Use Evaluation
 - Environmental/Economic Impact
- Next Steps

Why are we here?

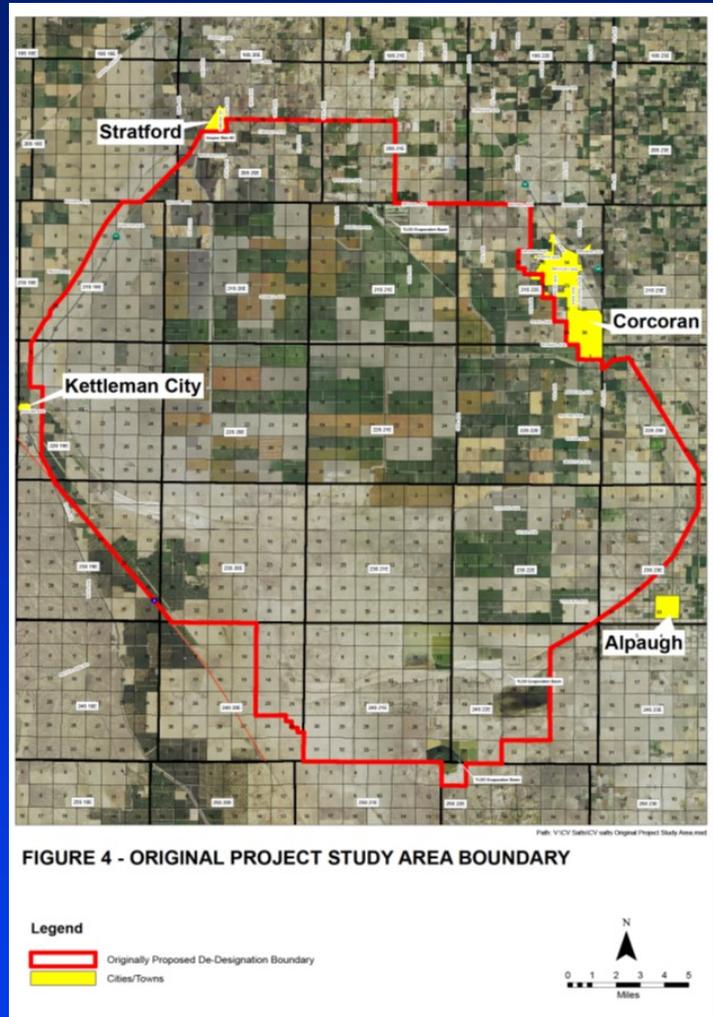
Potential over conservative protection of MUN and AGR in portions of the Tulare Lake Bed groundwater basin when compared to natural groundwater salinity concentrations

Project Location

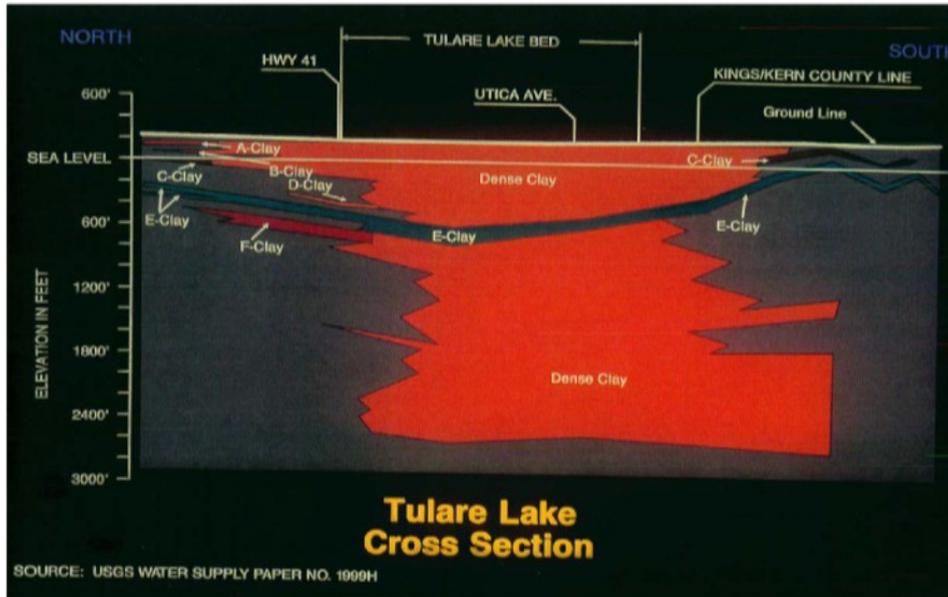


Project Area Characteristics

- Bottom of historic lake bed-Closed Basin
- Constructed channels move water
- Agricultural land use
- Floods ~every 7-ysr
- Small communities ring project area
 - Corcoran
 - Alpaugh
 - Kettleman City
 - Stratford



Area Geology



Designated Beneficial Uses

- Municipal & Domestic Supply – MUN
- Agricultural Supply – AGR
 - Irrigation/Stock Watering
- Industrial Service Supply – IND
- Industrial Process Supply – PRO
- Wildlife Habitat - WILD

MUN Exceptions

Sources of Drinking Water Policy (88-63)

- TDS exceeds 3000 mg/L (5,000 uS/cm EC) and not reasonably expected by Regional Boards to supply a public water system; or
- The water source <200 gpd sustained yield

MUN Water Quality Objectives

Title 22 Secondary Maximum Contaminant Levels

Constituent	Recommended	Upper	Short Term
Total Dissolved Solids (mg/L) or Specific Conductance ($\mu\text{S}/\text{cm}$)	500	1,000	1,500
Chloride (mg/L)	250	500	600
Sulfate (mg/L)	250	500	600

Not Incorporated into Basin Plans but in Title 22:

- Concentrations lower than the recommended level are desirable
- Concentrations ranging to the upper level are acceptable if is neither reasonable nor feasible to provide more suitable waters
- Concentrations ranging to the short term level are acceptable only for existing community water systems on a temporary basis pending construction of treatment facilities or development of an acceptable new water source



AGR Water Quality Objective

Narrative

- Ground waters shall not contain chemical constituents that adversely affect beneficial uses

Interpretation (Ayers/Westcot, 1985)

- EC < 700 uS/cm - No Restrictions
- EC = 700 – 3000 uS/cmL - Slight to Moderate Restrictions
- EC > 3000 uS/cm– Severe Restrictions

Recent Events

- ✓ New WDR's – December 2015
- ✓ State Recycled Water Policy
 - ✓ Requires Salt & Nutrient Management Plan for all Groundwater Basins
- ✓ Long-Term ILRP

Recent Direction

Triennial Review Priority

- Appropriate Beneficial Use Designation and Level of Protection

CV-SALTS

- Define salinity related requirements to allow increased flexibility to:
 - Manage limited water supplies
 - Encourage reuse and recycling
 - Identify potential salt management areas

Decision

CV-SALTS Case Study

Evaluate appropriate designation and level of protection for MUN and AGR in a portion of the Tulare Lake Bed Groundwater Basin

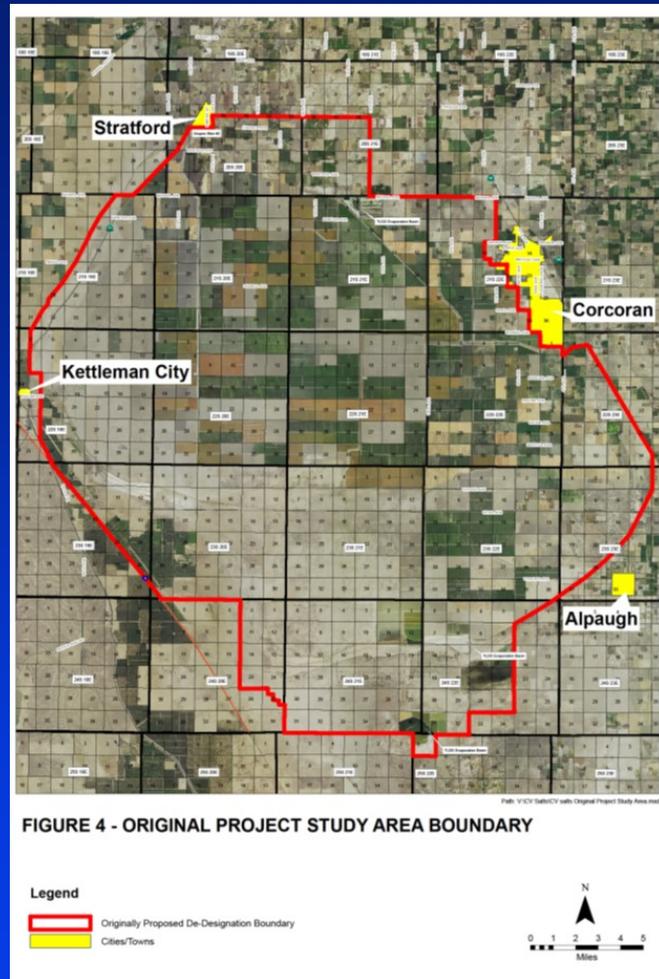
Evaluation Approach

Preliminary Boundary

- Water Quality
- Subsurface Geology
- Surface Features
- Cities/Communities
- Water Agencies

Data Collection

- Historic Info
- Subsurface geological evaluation
- Groundwater Gradient
- Well reconnaissance
- Zone of Capture



Preliminary Boundary Review

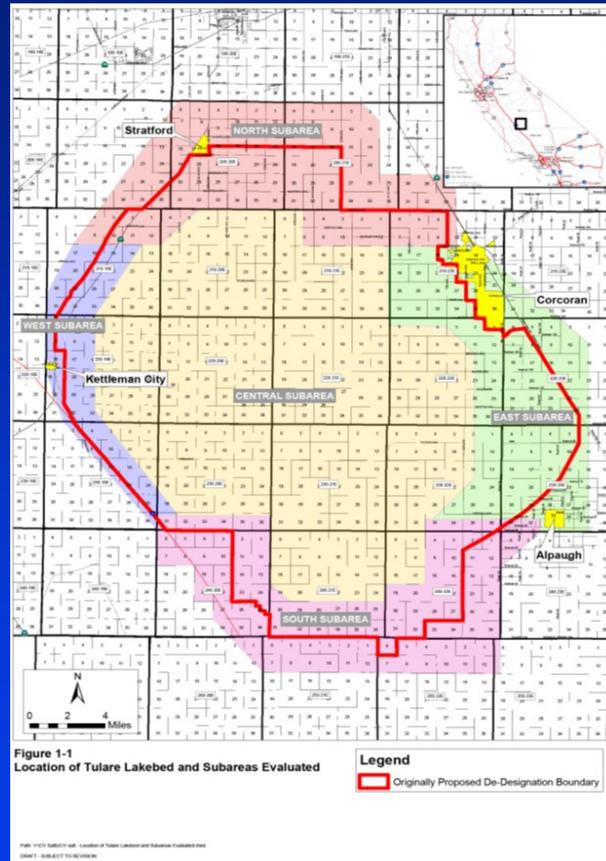
➤ Horizontal Boundary

- Water Quality
- Communities
- Existing Wells/Use

➤ Vertical Boundary

- Water Quality
- Existing Wells/Use
- Geological clay layers

Horizontal Boundary Review

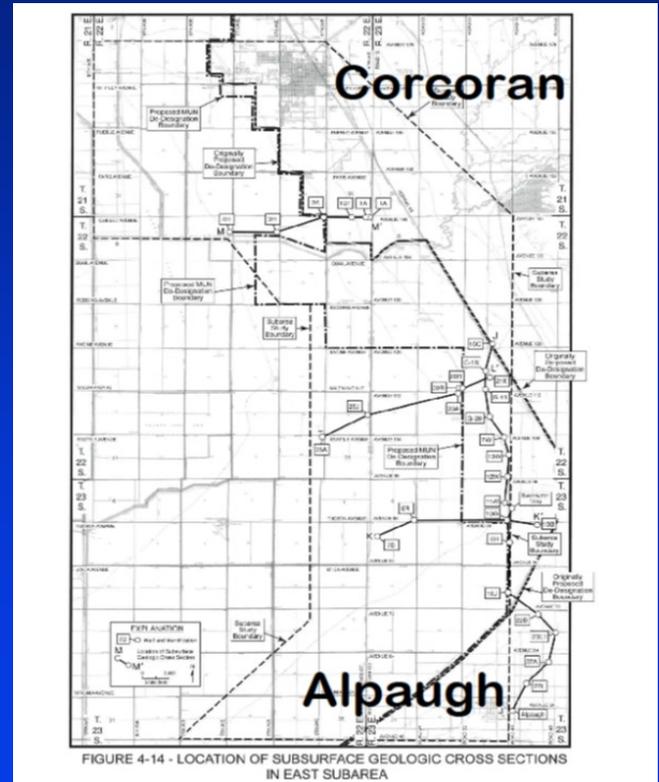


Sub-Area Review

East Sub-Area

Technical Report
(Schmidt, 2015)

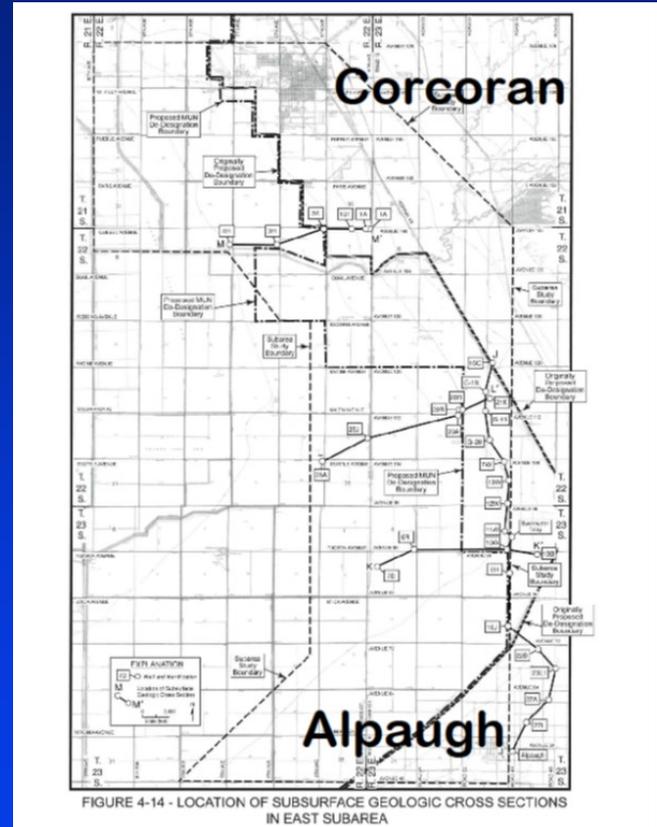
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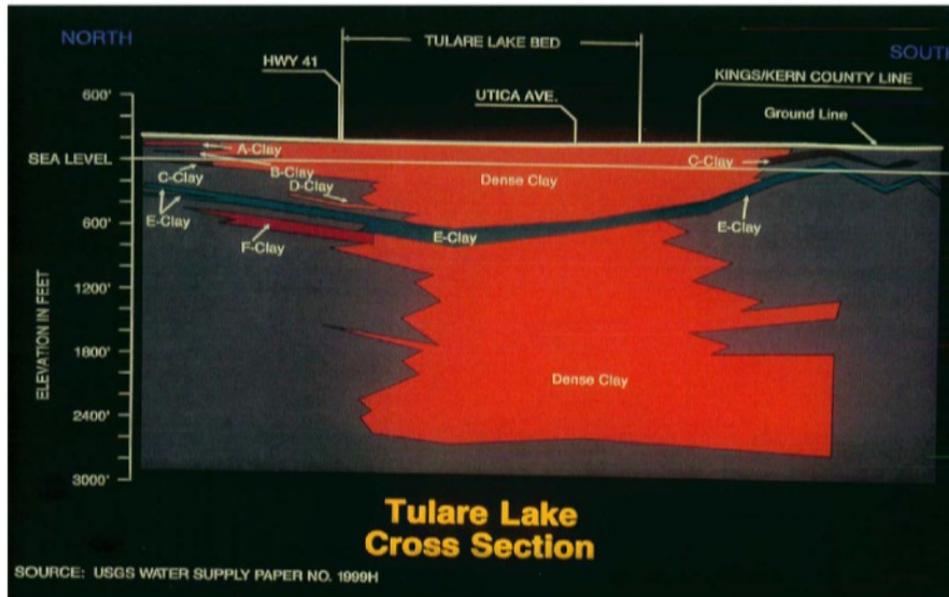
Sub-Area Review

Outreach

- TLBWSB Board Meeting since 2011
- Personal Communication with Landowners (2011-current)
- Letters of Support
 - Landowners (2013)
 - Surrounding Communities (2013)
- Kings County Water Commission (2013)
- Kings County Board of Supervisors (2013)
- Public Workshop and CEQA scoping (2015)



Vertical Boundary Geology



Alternatives

(CEQA Scoping April 2015)

MUN Proposed Alternatives

1. No Action.
2. De-designate MUN within Historical Footprint of the Tulare Lake Bed at an Elevation of 200' above Mean Sea Level with No Vertical De-designation Boundary.
3. De-designate MUN in a Portion of Historical Tulare Lake Bed Based on the Sources of Drinking Water Policy Exception 1a.
4. Develop MUN Site-Specific Salinity Objectives within the Proposed De-designation Boundary.

AGR Proposed Alternatives

1. No Action
2. Develop AGR Site-Specific Salinity Objectives within Proposed AGR De-designation Boundaries for Irrigation Supply and Livestock Watering.
3. De-designate AGR within Separate Horizontal and Vertical Boundaries for Irrigation Supply and Livestock Watering.
4. Develop Classes of AGR Uses & WQO that Better Represent Irrigation and Livestock Watering Limitations at Different Groundwater Salinity Concentrations within the Proposed AGR De-designation Boundaries

AGR Proposed Alternatives

5. De-designate AGR Irrigation Supply and Livestock Watering Beneficial Uses within Combined Horizontal and Vertical Boundaries Based on EC of 5,000 $\mu\text{S}/\text{cm}$.
6. De-designate AGR Irrigation Supply and Livestock Watering Beneficial Uses within Combined Horizontal and Vertical Boundaries Based on of 7,500 $\mu\text{S}/\text{cm}$

Evaluation Criteria MUN/AGR

- Maintain consistency with federal and state laws and policies
- Meet exceptions to Sources of Drinking Water Policy (N/A AGR)
- Protect existing and future beneficial uses
- Maintain ag production in project area
- Support the proactive control and management of salt for application of disposal in the western portion of the Basin
- Technically feasible, economically viable, and reasonable action
- Scientifically supported by existing data
- Support socioeconomic well-being of the project area
- Ease of implementation

MUN Alternative #3

- De-designate MUN Beneficial Use in a Portion of the Historical Tulare Lake Bed Based on Application of the Sources of Drinking Water Policy (SWRCB Resolution No. 88-63) Exception 1a:

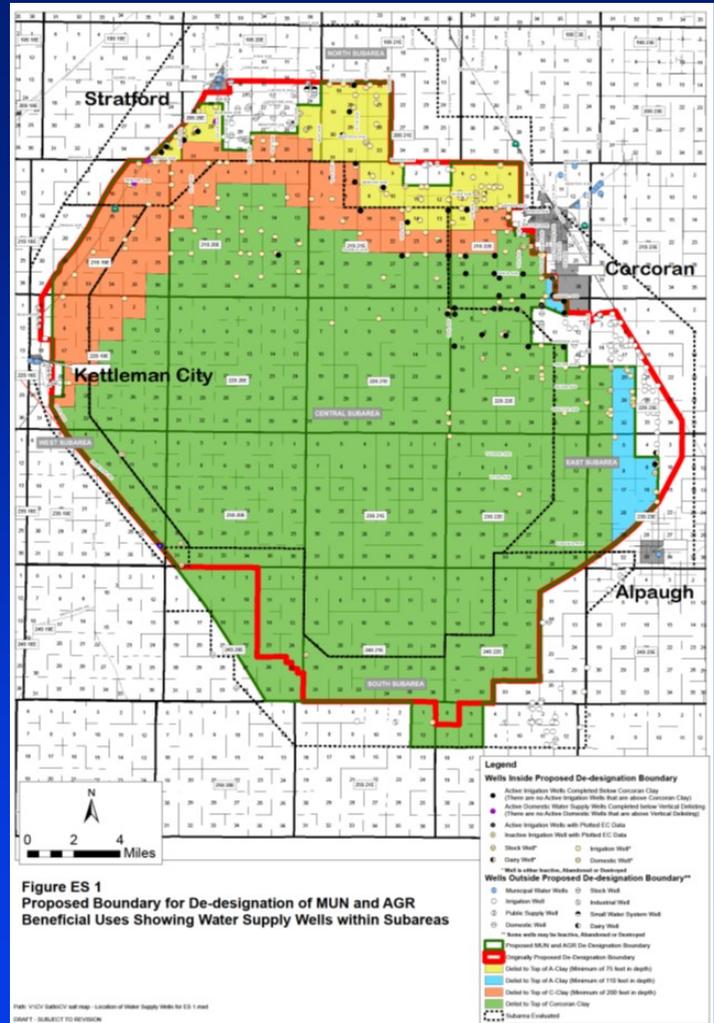
EC > 5,000 uS/cm

AGR Alternative #5

- De-designate AGR Irrigation Supply and Livestock Watering Beneficial Uses within Combined Horizontal and Vertical Boundaries Based on an EC Groundwater Quality Threshold of 5,000 $\mu\text{S}/\text{cm}$

Proposed Dedesignation Area

- Horizontal Boundary
- Variable Vertical Depth
 - #45 wells screened below depth
- $WQ > 5,000 \text{ uS/cm}$
- Near small Communities
- Zone of Capture Studies



Groundwater Quality in Proposed De-designation Area by Subarea.

Electrical Conductivity ($\mu\text{S}/\text{cm}$) in Proposed De-designation Area Based on Monitor Well Data				
Subarea	Min	Max	Median	Avg.
North	7,100	22,000	9,930	12,419
West	12,600	59,200	40,000	34,356
South	6,250	57,000	25,000	26,289
East	10,500	44,000	19,250	22,667
Central	5,800	12,400	10,400	9,436

Alternative Addresses

- Triennial Review
 - Appropriate Beneficial Use Designation/Level of Protection
- CV-SALTS
 - Increased Flexibility
 - Manage Limited Water Supplies
 - Encourage Reuse/Recycling
 - Identify potential salt management areas

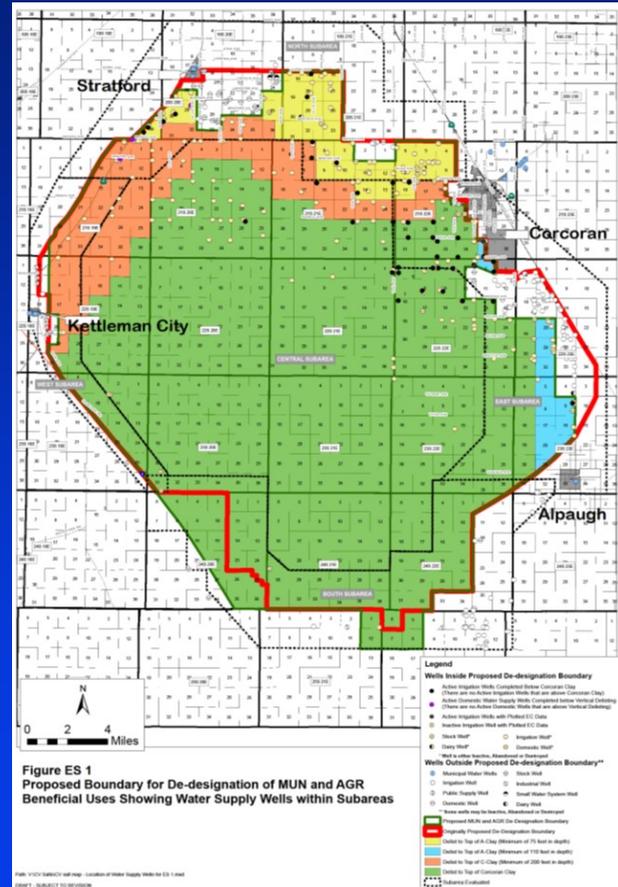
Letters of Support

- Kings County Board of Supervisors
- Alpaugh Community Service District
- City of Corcoran Public Works Department
- Stratford Public Utility District
- Kettleman City Community Services District
- Farming Entities and Landowners

Discussion/Comment

Preliminary Versus Proposed Project Boundary

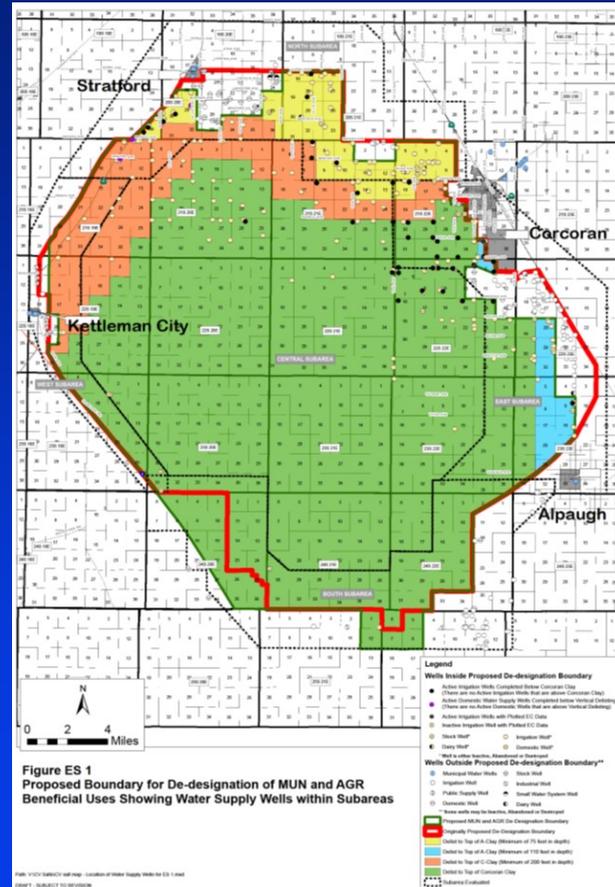
- ◆ Horizontal
- ◆ Vertical



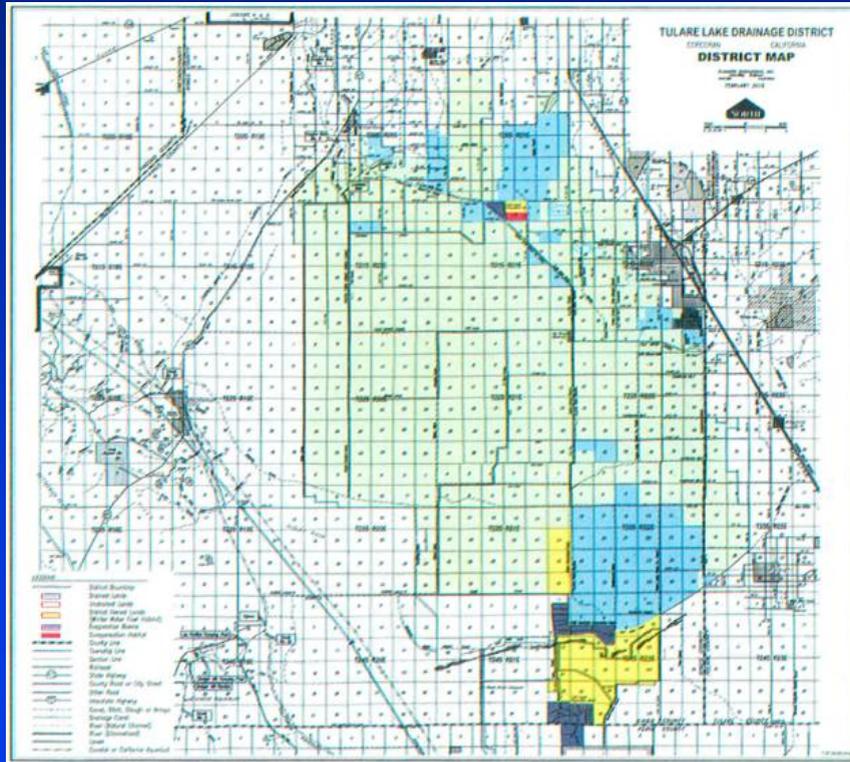
Discussion/Comment

Existing and Potential Use Evaluation

- Outreach
- Zone Capture Study



TLDD District Map



TLDD

Operations

- Presently 33,000+ acres being drained annually.
- Operation of 3,453 acres of evaporation basins.
- Additional 1,800 of basins to be constructed accompanying 18,000+ acres of new drainage.
- An average of 120,000+ tons of salt disposed annually.
- Landowners desire to drain additional 50,000 acres to restore productivity
- Immediate benefit, drainage lowers cost inputs, soil disturbances, directly impacting production yields and productivity.



TLDD Salt Management

■ District Projects

- Algae Blooms
- Agroforestry
- Flow Through Wetlands/Bio-remediation
- Nepa Forage/Jose Tall Wheat Grass
- \$5 mil Enhanced Evaporation Spray Field

■ Technology Firms

- New Sky Energy (Salt Removal)
- WaterFX (Solar Distillation)
- PACE/Pearl (Algae Water Treatment)
- Element Renewal – Agreement with the District (3,000 AF.) to treat and generate clean water.



Next Steps

- Final Review of Subareas
- Finish CEQA Environmental Review & Economic Analysis
- Finish Draft Staff Report
- Determine need for Peer Review

Timeline

- CEQA Environmental Review and Economic Analysis – Fall 2016
- Draft Staff Report Peer Review - ?
- Draft Staff Report Public Review – Fall 2016
- Board Workshop – Winter 2016
- Board Hearing – Spring 2017

Questions/Comments?