

Irrigation Evaluations: The Hardware Side of Irrigation Efficiency

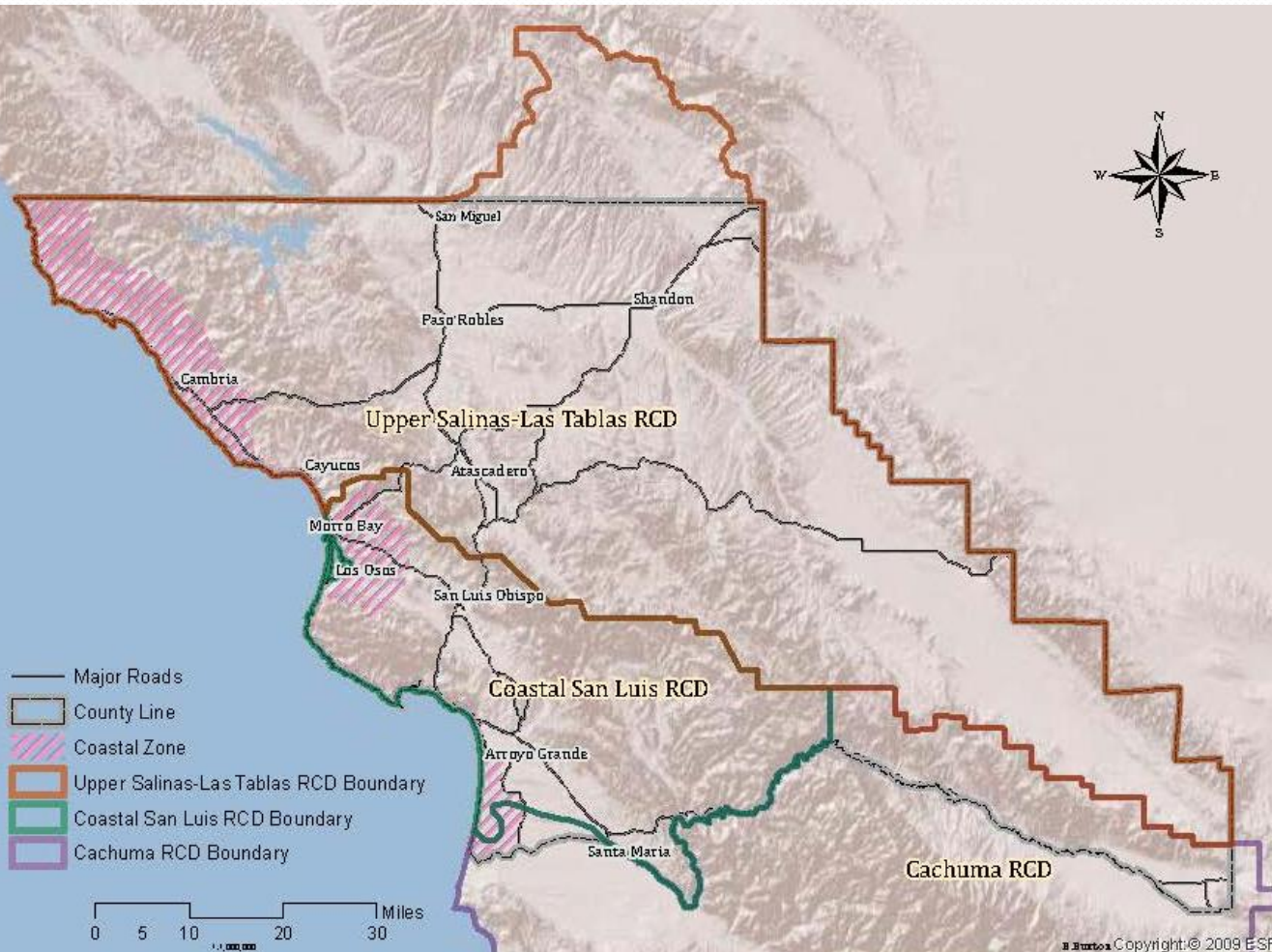


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Resource Conservation
District

What is the RCD?

- Non-regulatory
- Non-profit
- Voluntary and confidential



Mobile Irrigation Lab

- On-site irrigation system evaluations
- Technical assistance for growers
- Performed over 200 evaluations over 10 years

What is an Irrigation Evaluation?

- Pressure and flow measurements to determine efficiency of system



Distribution Uniformity

- DU pressure
- DU unequal spacing
- DU unequal drainage
- DU other

Pressure Measurements

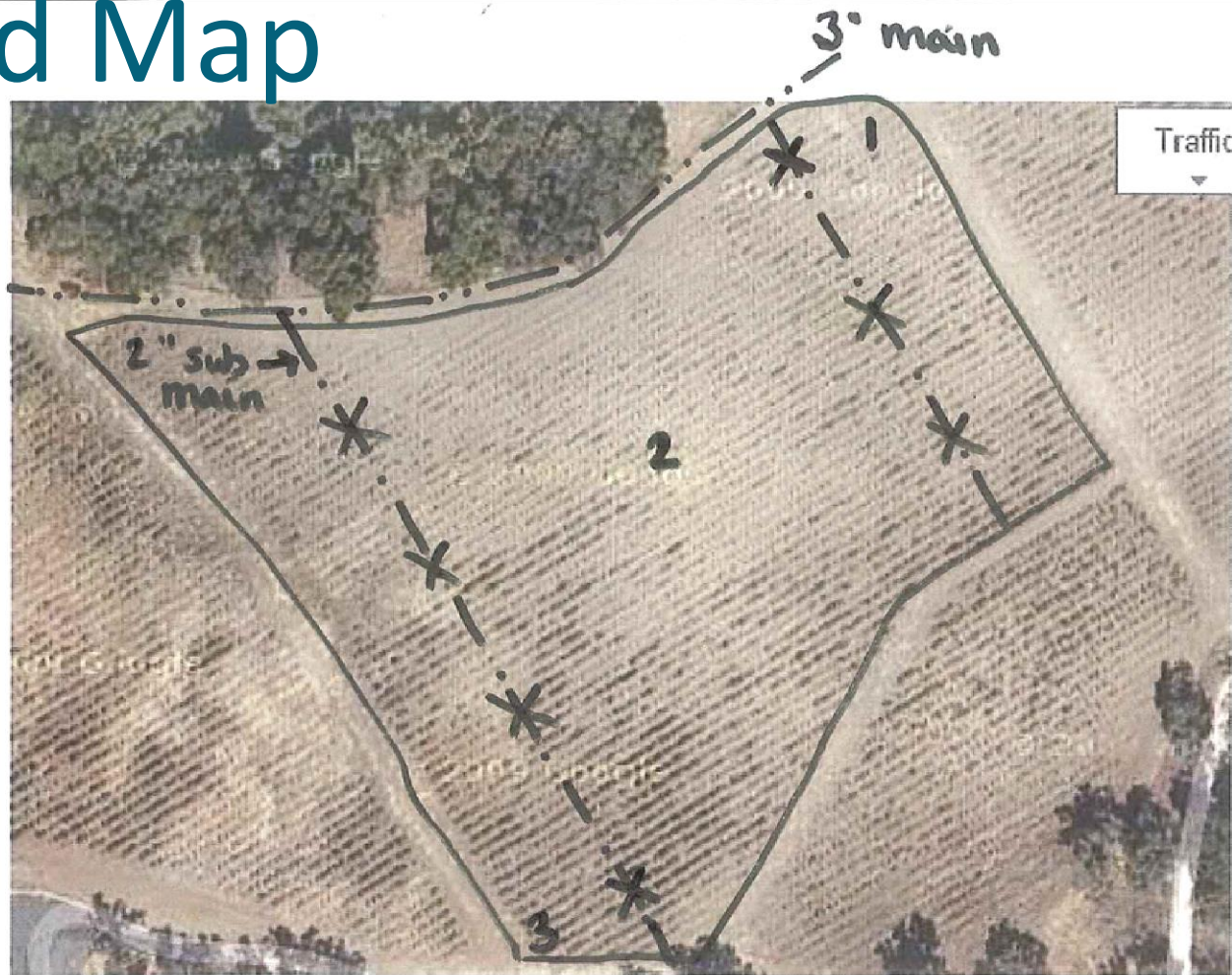


Follow the water from the source to the furthest point

Flow Measurements



Field Map



X = pressure measurements
1-3 = Flow measurements

Other Measurements/Observations

- Emitter spacing
- Unequal drainage
- Water quality
- Leaks/plugs

Drip/Microirrigation Evaluation – Example Problem Results

DRIP/MICRO EVALUATION EXAMPLE PROBLEM RESULTS

DRIP/MICRO EVALUATION: RESULTS

GLOBAL SYSTEM DULQ 0.87
(Low Quarter Infiltrated / Average Infiltrated)

DISTRIBUTION UNIFORMITY PROBLEMS - PERCENT OF TOTAL NON-UNIFORMITY DUE TO EACH PROBLEM:

Pressure differences 34%

Difference between hose inlet pressures: 4.6 psi

Maximum pressure difference within a hose: 3.8 psi

Other causes of flow variation 43%

Unequal Spacing 20%

Unequal Drainage 2%

ESTIMATE OF EXCESS PRESSURE 0 psi

ESTIMATE OF RUNOFF (percent of applied water) 0 %

Drip/Microirrigation Evaluation – Example Problem Results

DRIP/MICRO EVALUATION: SCHEDULING DATA

	AREA NUMBER:	#1	#2	#3
Available Water Holding Capacity (AWHC, inches):		4	4	
AWHC adjusted for percent wetted area (in):		1.40	1.71	
Gross Application Rate (in/hr):		0.035	0.043	
Net Application Rate (in/hr):		0.031	0.038	

MANAGEMENT INFORMATION

	AREA NUMBER:	#1	#2	#3
Gross hours of irrigation required at a point to fill up 50% of the wetted soil reservoir (hours):		22.5	22.5	
Hours needed for plant to deplete 50% of the wetted soil reservoir during the peak water use period. This assumes the emitters are not operating right then at that location (hours):		60.0	64.1667	

CURRENT SCHEDULING

Set duration during peak ET (hours):		18	18	
Irrigation frequency during peak ET (hours):		84	84	

Common Findings

- Pressure varies among submains
- Pressure is too low in field
- Pressure varies during the irrigation
- Plugged emitters
- Leaks caused low pressure down stream



Common Recommendations

- Install pressure reducing valves to maintain constant pressure
- Fix leaks or replace drip line
- Regularly flush drip lines
- Shorten bed length or use larger diameter tape

Benefits of Evaluations

- Increase crop yield
- Lower energy costs
- Reduce water usage
- Reduce pollution and runoff
- Decrease leaching of plant nutrients
- Lower pesticide and fertilizer costs
- Satisfy SIP requirement

Cost

- Full cost = \$1500
- Grower's cost = \$100 - \$500

How to sign up

- Go to <http://us-ltrcd.org/services/mobile-water-lab/mil-sign-up/>

Sign-up for an Evaluation

Note: ONLY ONE EVALUATION CAN BE SCHEDULED PER DAY

April 2013							>>
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28	29	30					

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First Name (required):