

Where is all that water going?

by

Charles Burt

Irrigation Training and Research Center



**California Polytechnic State University
San Luis Obispo, CA.
USA**

Some have proposed to conserve 4-6
Million AF/yr in Agriculture with
pragmatic, economical measures.

All we need to do is find the inefficiencies. Then
we'll get rid of them.

Fundamental #1

On-farm irrigation savings do not necessarily translate into basin-wide savings.

Blanket extrapolation of on-farm
efficiency to basin efficiency is:

- incorrect
- inexcusable

We have serious problems

We need serious, technically correct solutions.

Let's find those inefficiencies !!

Irrigation Efficiency isn't the same as
fuel efficiency.

An inefficient engine burns up the
fuel. Gone. Fini. Adios.

Basics

There are only a few water destinations in a **basin**:

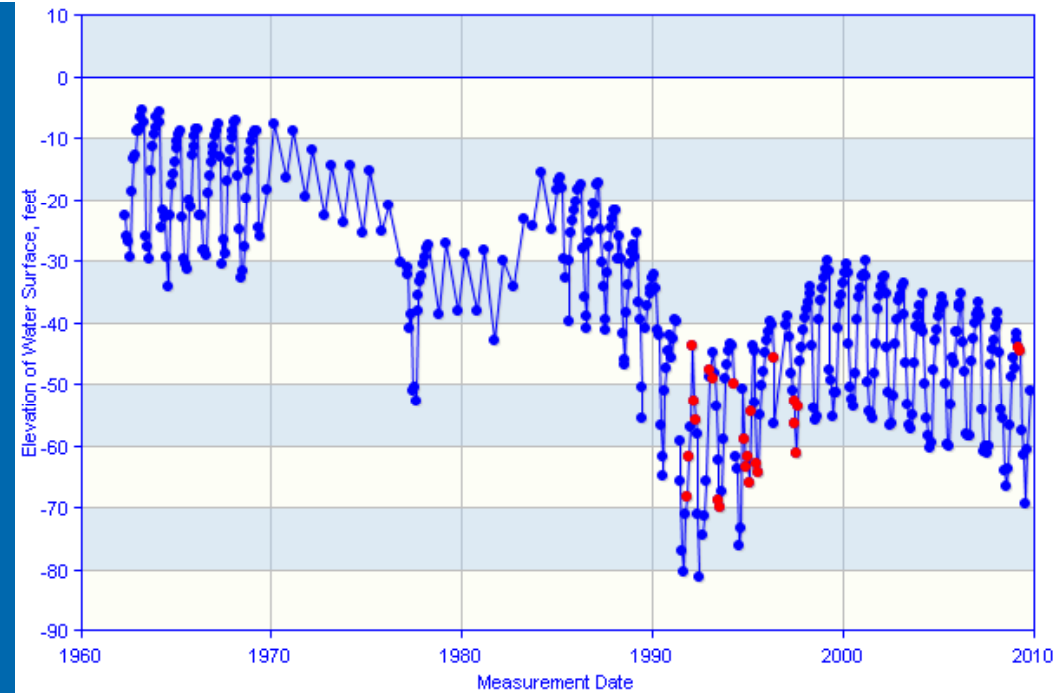
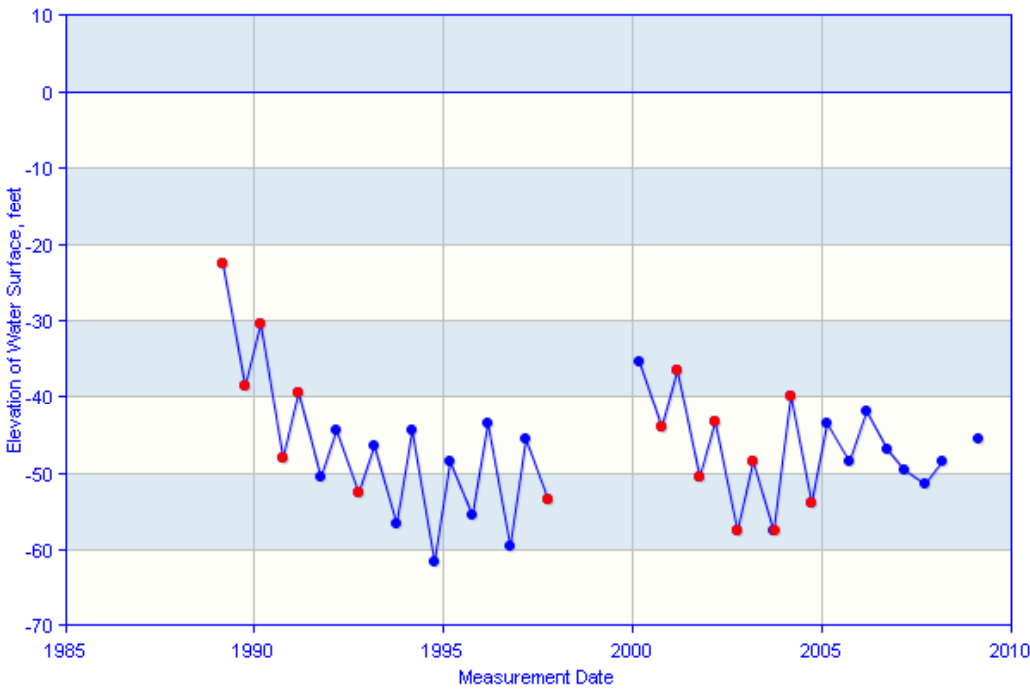
- Change in groundwater storage
- Surface or subsurface outflows
- Into the air (ET)
- Harvested crop (very minor)

Possibilities for all the wasted water in the San Joaquin Valley

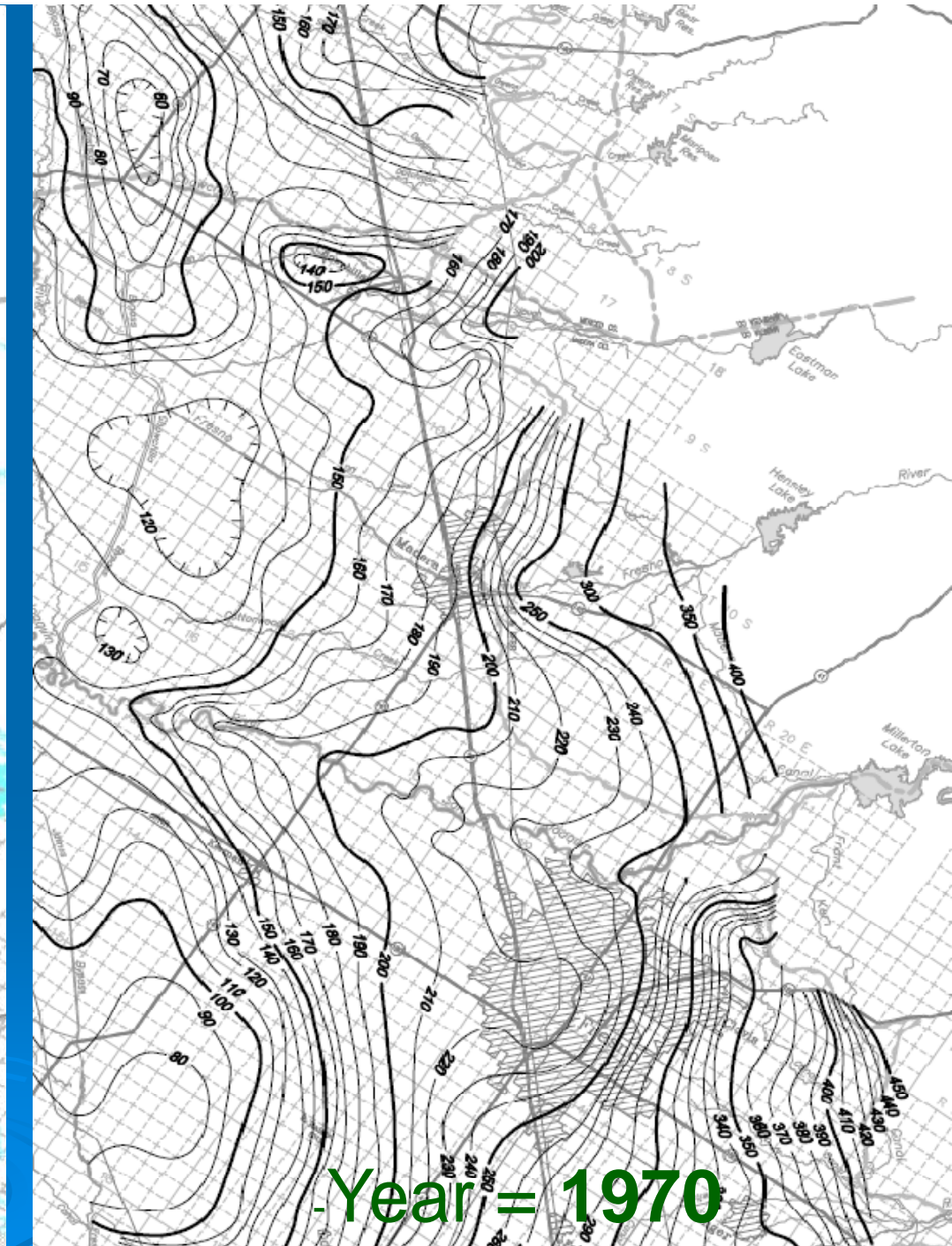
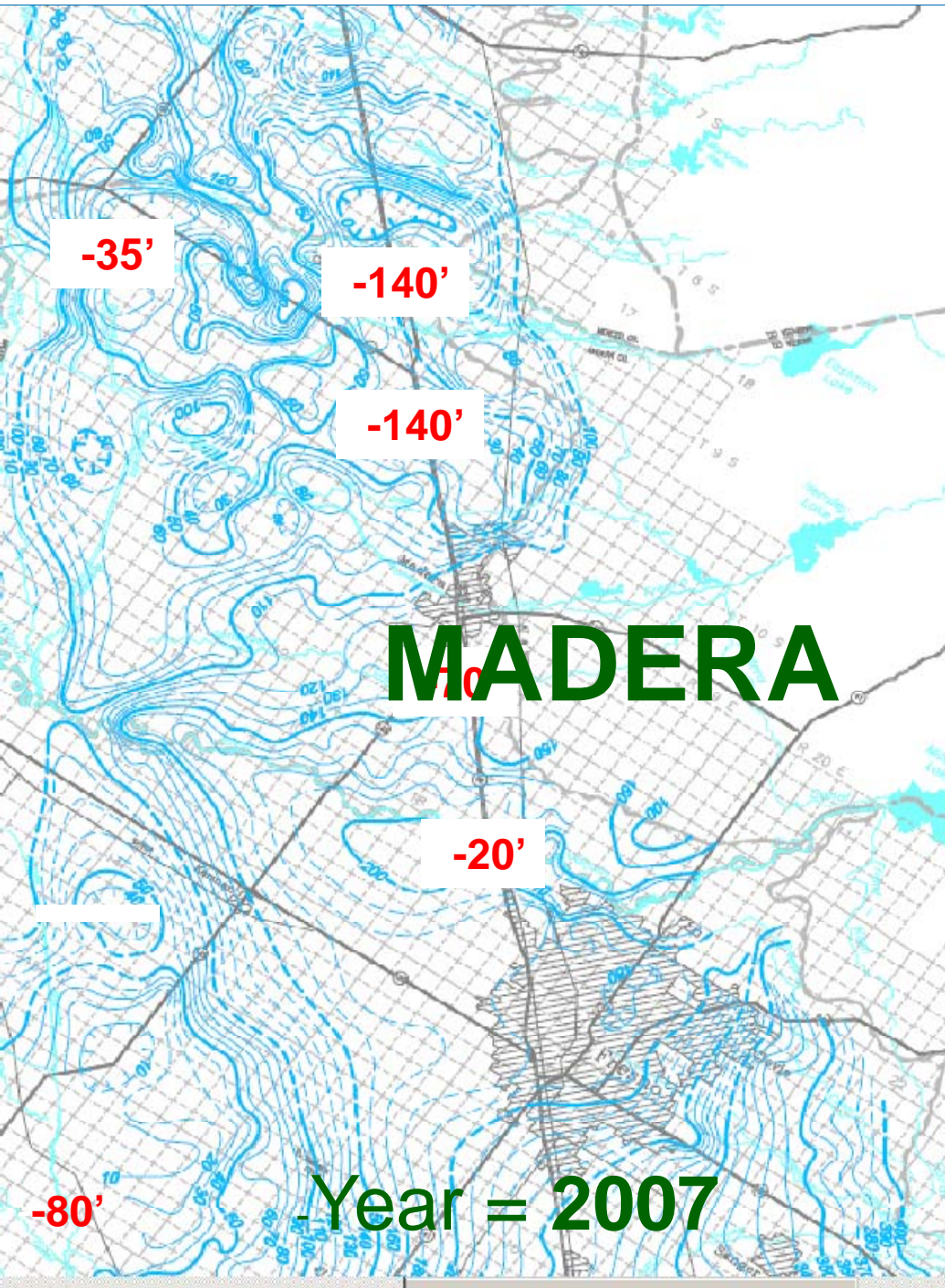
- It's hiding in the ground
- It's running down the San Joaquin River
- It's sneaking underground to LA
- There is excessive Evapotranspiration

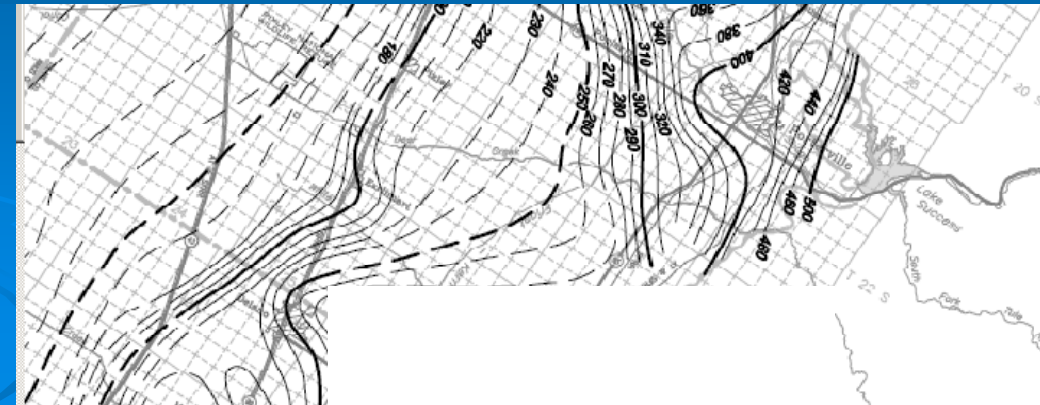
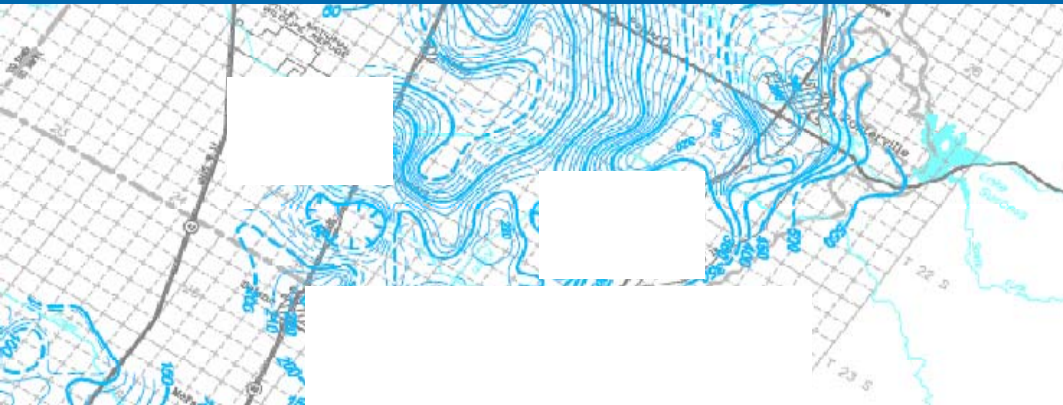
Where is all that wasted water hiding? (Remember, it isn't burned up like gasoline after one use !!!)

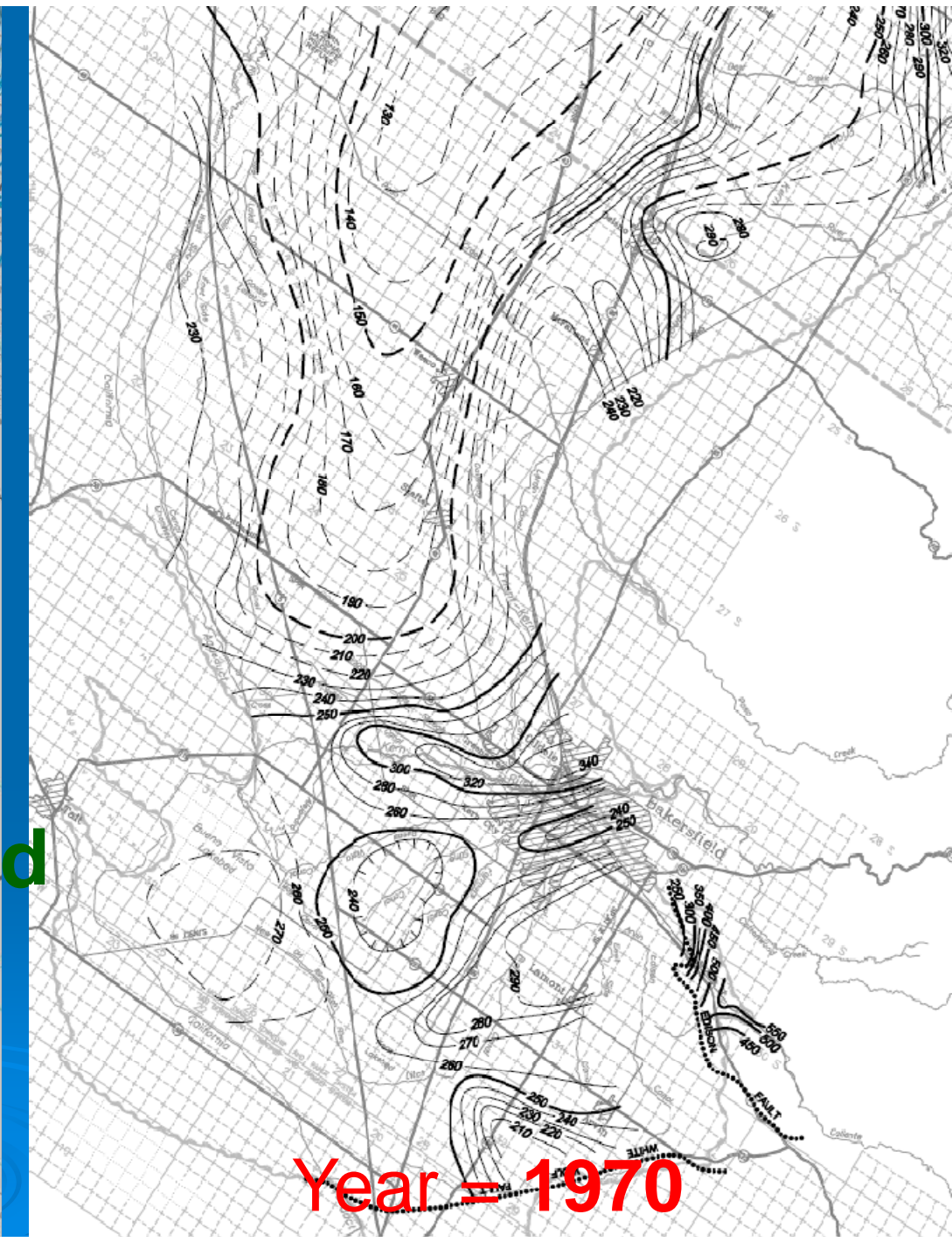
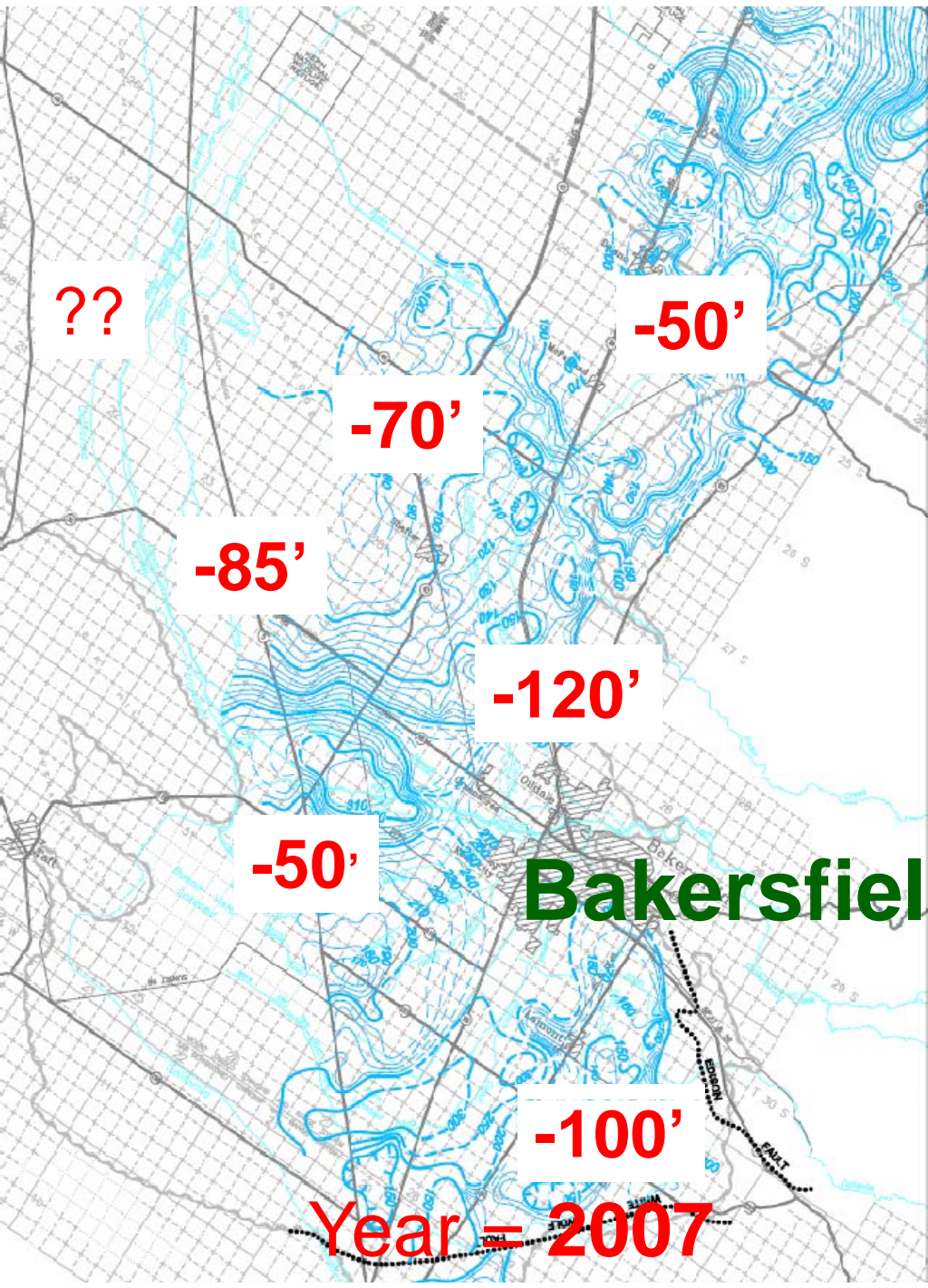
Possibility #1: That wasted water must be hiding below the ground surface



Groundwater levels just east of Stockton







The first 2 million AF/yr (normal year) we find can't be transferred.

We need it to
JUST TO BREAK EVEN
on groundwater

Where did those inefficiencies go?

Possibility #2 - Maybe the water is roaring down the San Joaquin River?

Wait !!

Why do we have the San Joaquin River
Restoration program?

A trial flow from Friant Dam began on October 1, 2009

It took about 50 days to reach Mendota Dam.

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It took about 50 days to reach Mendota Dam.

My scientific assessment after analyzing
the math for several months:

The river was dry.

Well, that's 2 out of 3

- Water isn't hiding in the ground
- Water isn't roaring down the San Joaquin River.

How about the last one:

- Excessive ET?

Let's all switch to drip to reduce ET !

Let's use drip to reduce ET

******THERE ARE MANY REASONS THAT FARMERS HAVE CONVERTED TO DRIP******

I am NOT, NOT, NOT saying that Drip Irrigation is
“bad”

INCORRECT: Reduce ET via drip/micro.

Think about it:

- Plants have less stress (more Transpiration)
- The bare ground surface is wet (more Evaporation)



How about RDI ? (Regulated Deficit Irrigation)

This is already STANDARD practice on

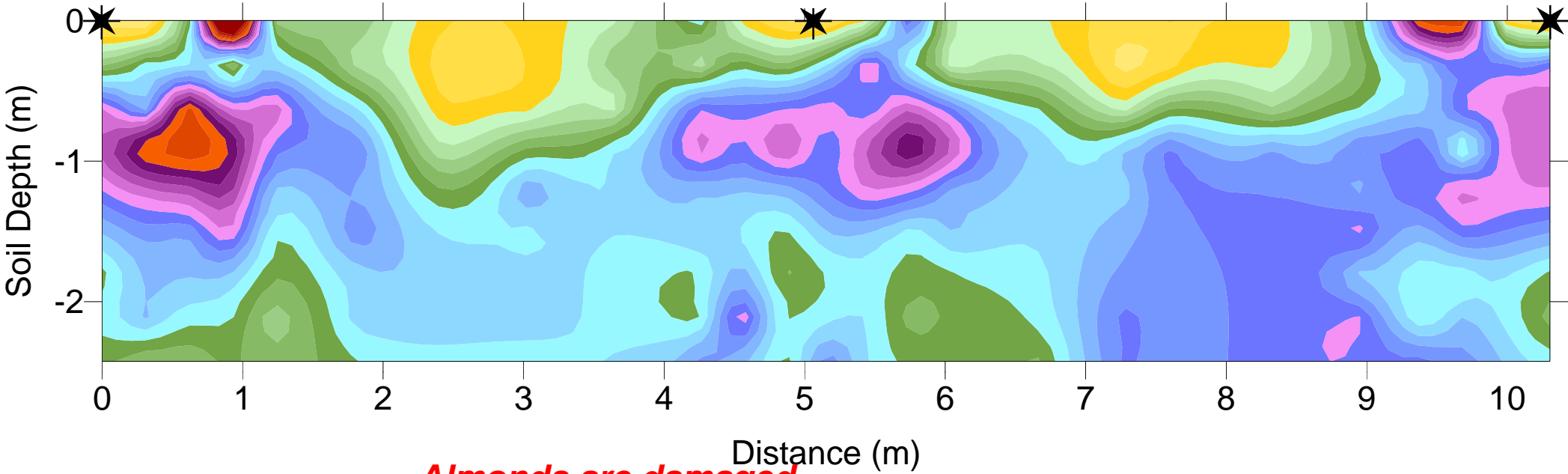
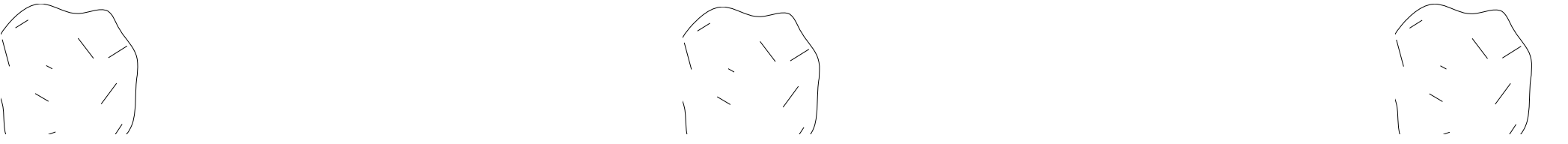
- Winegrapes (sugar %)
- Processing tomatoes (% solids)
- Cotton (boll/vegetative balance)
- Almonds (hull rot)
- Pistachios (just look at the available water supply)

RDI

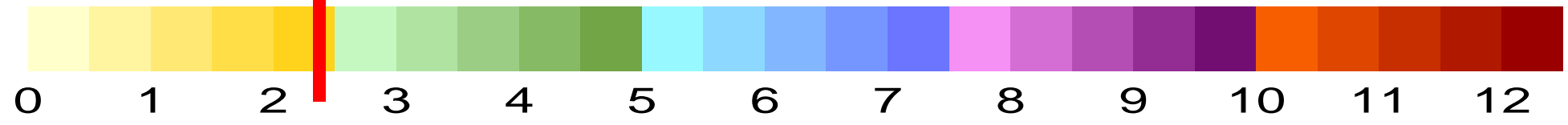
Of course, there's always some room for improvement in almost anything.

But the facts:

1. There's already extensive under-irrigation.
2. RDI is not a silver bullet.
3. RDI doesn't account for SALT leaching



Almonds are damaged



Ece color scale (dS/m)

Are low on-farm irrigation efficiencies the cause of our water problems?

Fact: Not generally in the San Joaquin Valley or Sacramento Valley. The BASIN is the correct scale.

Fact: In Imperial Valley, it's different.

Exception: Flows to local salt sinks are influenced by low on-farm efficiencies.

Confusion between BASIN and ON-FARM efficiencies is:

- Common
- Erroneous
- Harmful

Voodoo, Agenda Science

The confusion is pervasive

The Pacific Institute (2007) quotes Egypt's annual renewable water resource as 86.8 km³—a surprisingly high figure, given that Egypt's agreed share of the Nile is 55.5 km³, and rainfall is negligible.

www.worldwater.org/data20082009/Table1.pdf

We have serious problems.

We need technically correct discussions.

Of COURSE, we need to continue to improve

- On-farm irrigation
- Irrigation district flexibility
- Groundwater management
- Fertigation
- Reduction of embedded energy in water

But those actions won't even get rid of the deficit.

Demonstration of Differences

On-farm vs. Basin Irrigation Efficiencies

We are overextended.

- It's a serious problem.
- We need technically correct discussions.

Those are the facts!!

Thank you.

