Ditch System Sustainability Project - Tuolumne Utilities District

Mountain Counties Water Resources Association

June 15, 2012

Barbara J. Balen, Director

Ditch System Sustainability Project

Cultural Resources Board Meeting




December 14, 2011

Judith Marvin – Foothill Resources, Ltd.
Charla Francis – Francis Heritage, LLC
Sarah McIlroy – Stantec

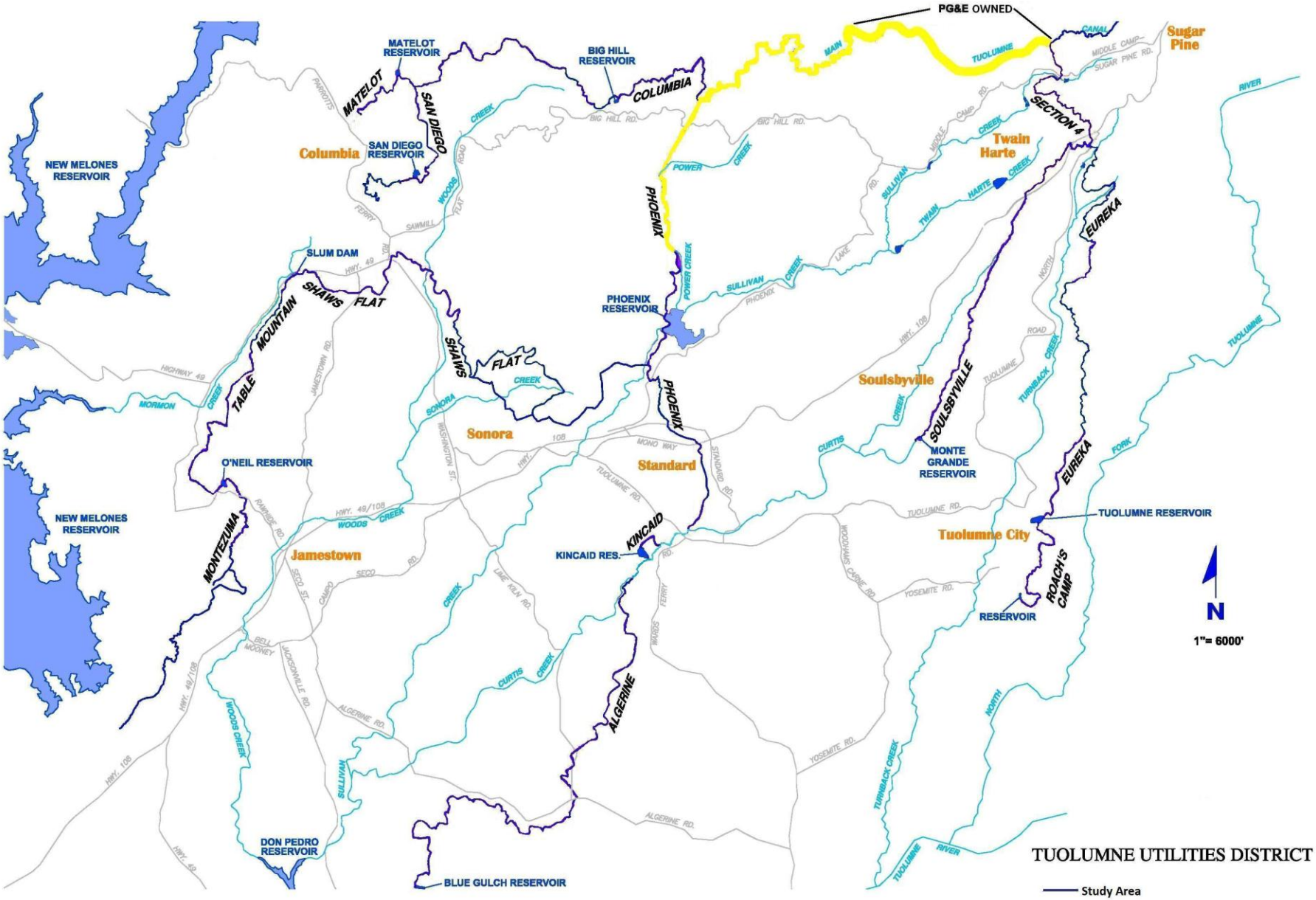
Stantec

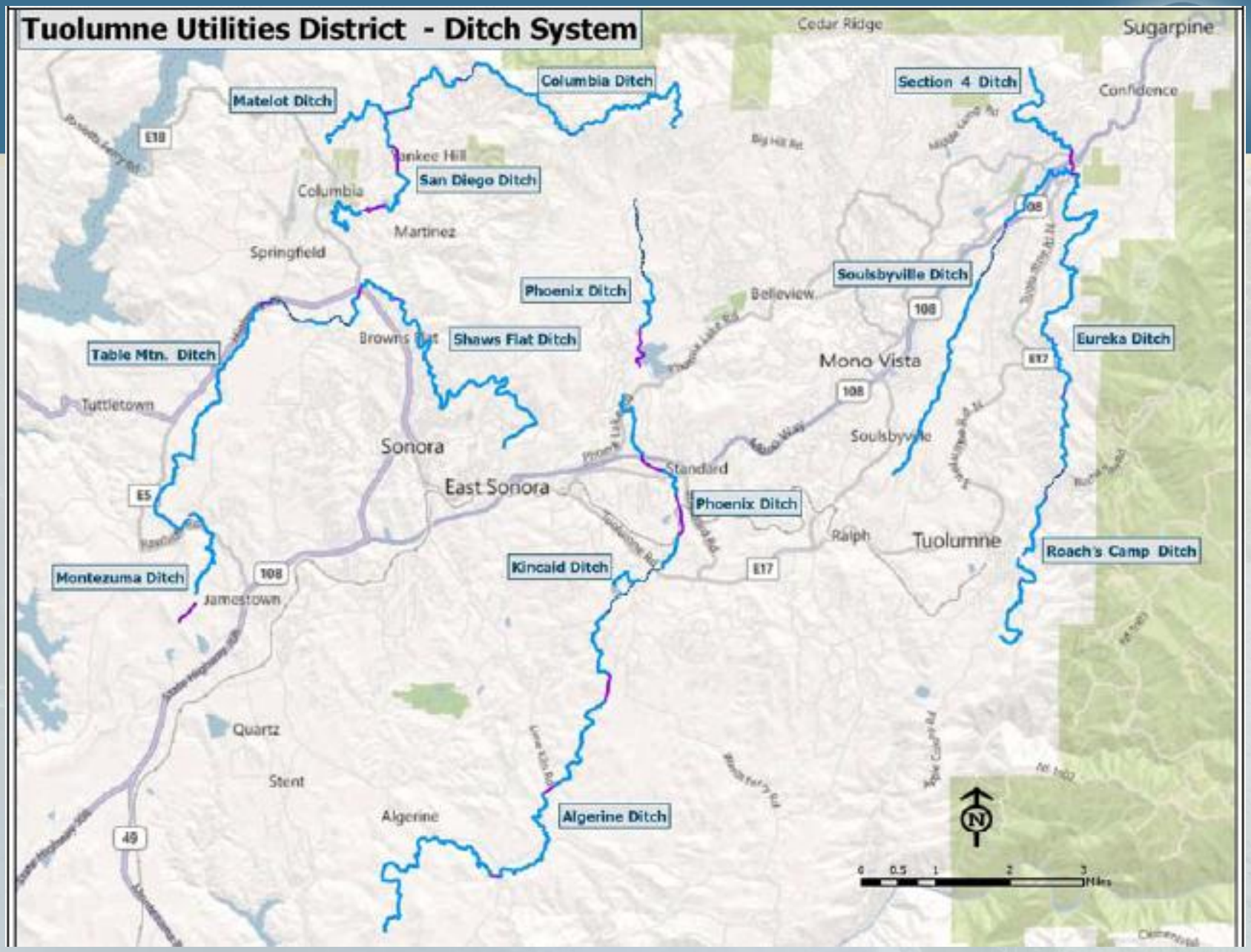
One Team. Infinite Solutions.

Presentation Outline

- Project background
- History
- Significance
- The Ditch System Today
- Management Objectives

TUD Ditch System - 13




Tuolumne Utilities District - Ditch System
Cedar Ridge
Sugarpine
Confidence
Matelot Ditch
Columbia Ditch
Section 4 Ditch
San Diego Ditch
Columbia
Martinez
Springfield
Phoenix Ditch
Soulsbyville Ditch
Belieview
Table Mtn. Ditch
Shaws Flat Ditch
Eureka Ditch
Mono Vista
Tuttletown
Sonora
East Sonora
Standard
Soulsbyville
Phoenix Ditch
Ralph
Tuolumne
Roach's Camp Ditch
Montezuma Ditch
Kincaid Ditch
Jamestown
Quartz
Stent
Algerine
Algerine Ditch
108
E18
E5
E17
49
N
0 0.5 1 2 3
Miles

Project Background

- Ditch Optimization Study
- Community Values
- 2005 Sierra Nevada Conservancy created
- Proposition 84 Grant for $350,000

- How can the District continue to utilize the ditch system to convey water to the treatment plants and users?

Project Approach

- **Stewardship of heritage resources**
  - Identify and protect
- **Stewardship of the environment**
  - Smart planning of wetland, aquatic, terrestrial resources
  - Work with engineers
- **Safe, reliable, and efficient water**
  - Clear understanding of constraints
  - Develop strategies
- **Fiscal responsibility**
  - Balance resource, stakeholder interests, reliable system performance, and costs

Work Plan Tasks

- Evaluate the system for eligibility for the NRHP
- Develop a CIP
- Develop a Public Outreach and Education Program
- Develop an operation and maintenance strategy to reduce water loss

Project Background Setting

- **56 miles of ditches**
- **16 surface water treatment plants**
- **Agricultural and domestic ditch customers**
- **Benefits of ditch system**
  - Living History
  - Recreational opportunities
  - Wetland and water quality enhancement
  - Wildlife habitat
  - Contribute to unique quality of life

Multi-disciplinary approach

- Cultural significance
- Wildlife, terrestrial
- Aquatic species habitat
- Safe, reliable water supply
- Fiscal responsibility
- Ground water recharge
- Fire protection
- Storm water collection
- Aesthetic – property values
- Agriculture
- Health and Well being

Linkages and Synergy

- Connectivity

  Recreation, flora and fauna migration

- Economic Asset

  Infrastructure asset, property values, hydro-energy generation, remote storage, tax break (Mills Act), heritage tourism, water delivery during power outage

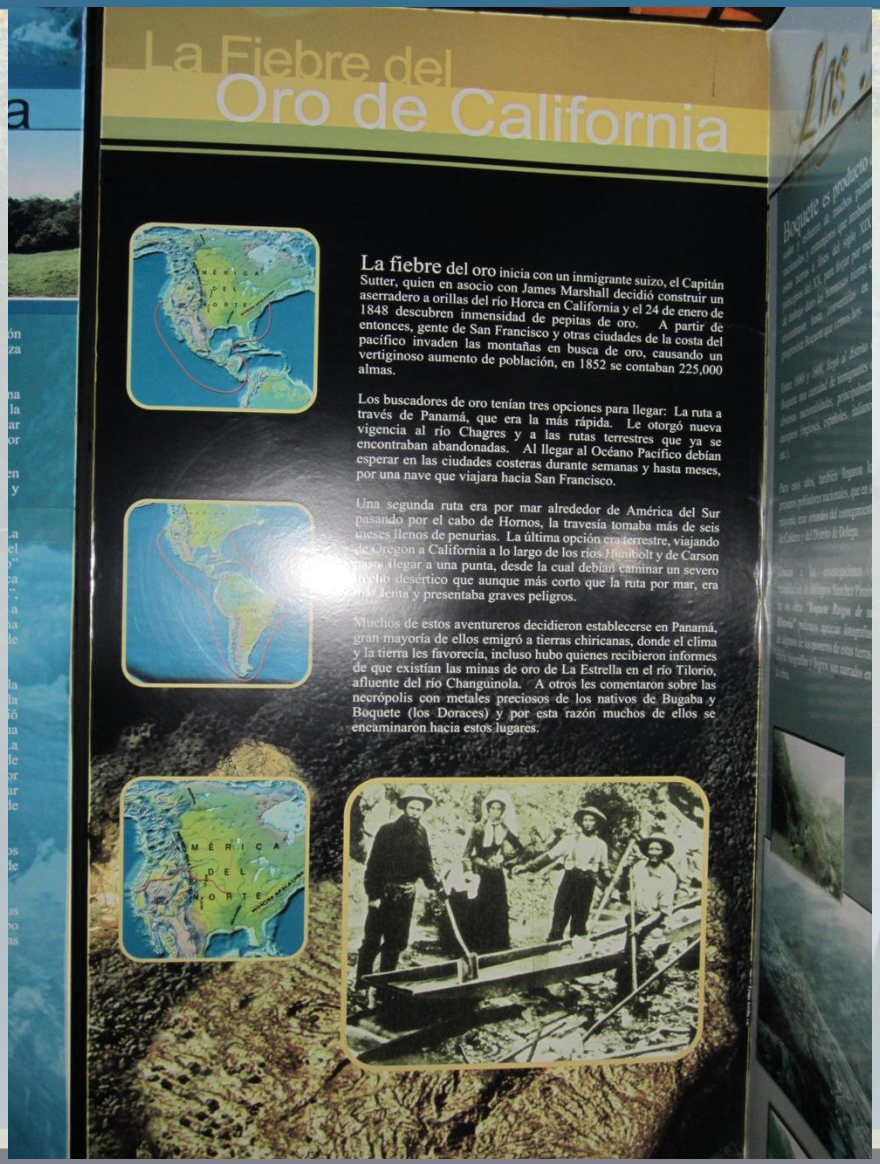
Stakeholder Meetings

- **Cultural Resources** (11/15)
  - Heritage Committee, Historical Society, Farm Bureau, Me Wuk, Columbia College
  - Private property issues
  - Increased cost of O&M as a result
- **Education** (12/6)
  - County Planning, TCTC, College, Me Wuk
  - Several ideas for collaborating
- **CIP and Operations & Maintenance Strategies** (12/6)
  - Private property issues

Historical Overview


AMÉRICA
DEL
NORTE
MONTES APALACHES

International Significance



La Fiebre del Oro de California

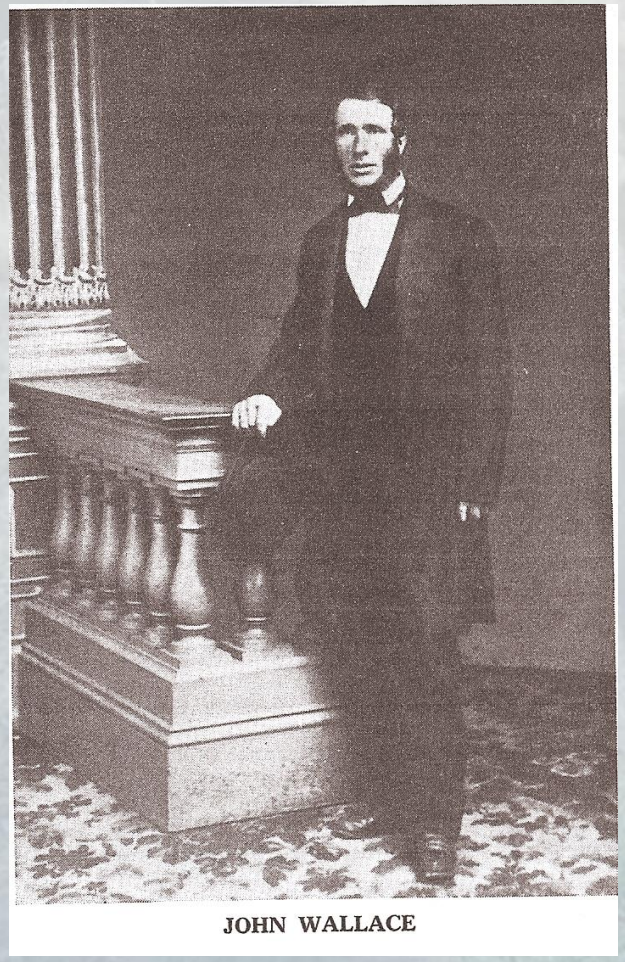
La fiebre del oro inicia con un inmigrante suizo, el Capitán Sutter, quien en asocio con James Marshall decidió construir un aserradero a orillas del río Horca en California y el 24 de enero de 1848 descubren inmensidad de pepitas de oro. A partir de entonces, gente de San Francisco y otras ciudades de la costa del pacífico invaden las montañas en busca de oro, causando un vertiginoso aumento de población, en 1852 se contaban 225,000 almas.

Los buscadores de oro tenían tres opciones para llegar: La ruta a través de Panamá, que era la más rápida. Le otorgó nueva vigencia al río Chagres y a las rutas terrestres que ya se encontraban abandonadas. Al llegar al Océano Pacífico debían esperar en las ciudades costeras durante semanas y hasta meses, por una nave que viajara hacia San Francisco.

There is no class of enterprise which is more essential to the development of the resources of California, than the construction of such works as will secure to the mining populations… and adequate supply of water. The 1859 California *State Register*

Ditches occupy an important place in California mining. Indeed, it may be said that without them the mines of the state would be relatively insignificant
Browne 1869

John Wallace



JOHN WALLACE

- In 1851 Tuolumne Water Company was formed.
- English engineer John Wallace was hired to survey the South Fork, Stanislaus .

System History

John Wallace Map of system - using only a theodolite

Theodolite

A large town has been built, entirely upon the strength of our company, bringing the water into a large tract of country, abounding in gold, but which is of no value without the water (Wallace, November 23, 1851)

Columbia Diggings

Columbia 1858

Between Columbia and Sonora

- May 1852 - 25 miles of canal brought in $500 a day in water sales
- May more side canals needed to be constructed to reach the different mining regions
- Articles of Incorporation for the TCWC specified 200 shares of stock be issued with individual stockholders having one vote each.

Stock Certificate

- End of 1852 the Tuolumne County Water Company's system of 18 miles of flumes, 30 miles of earthen ditch, and four small reservoirs and a diversion dam at Lyons Flat was complete.

- December 1852 the system averaged $9000 a week in income, with investments totaling $350,000.

TCWC System

RESERVOIR OF THE TUOLUMNE COUNTY WATER COMPANY, AT STRAWBERRY FLAT.

In addition to routine maintenance, expensive repairs were frequently needed due to breaching, flooding, landslides, and trees and animals falling into the canal, so that the company felt justified in charging high prices for water.

Water Companies

Tuolumne County Water Company (1851-1898)

Columbia and Stanislaus River Water Company (1855-1860)

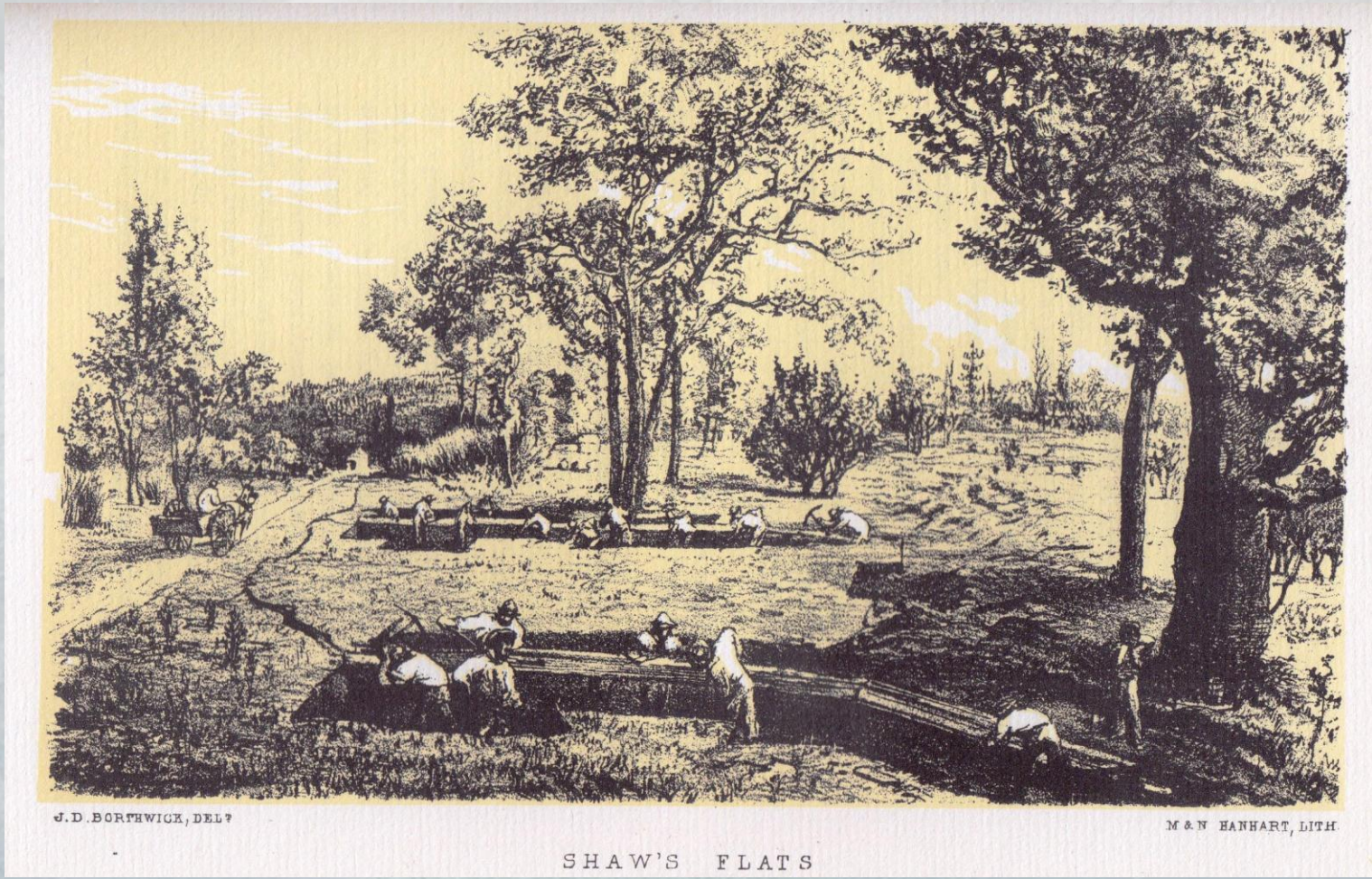
Tuolumne Hydraulic Association and its successors (1852-1876)

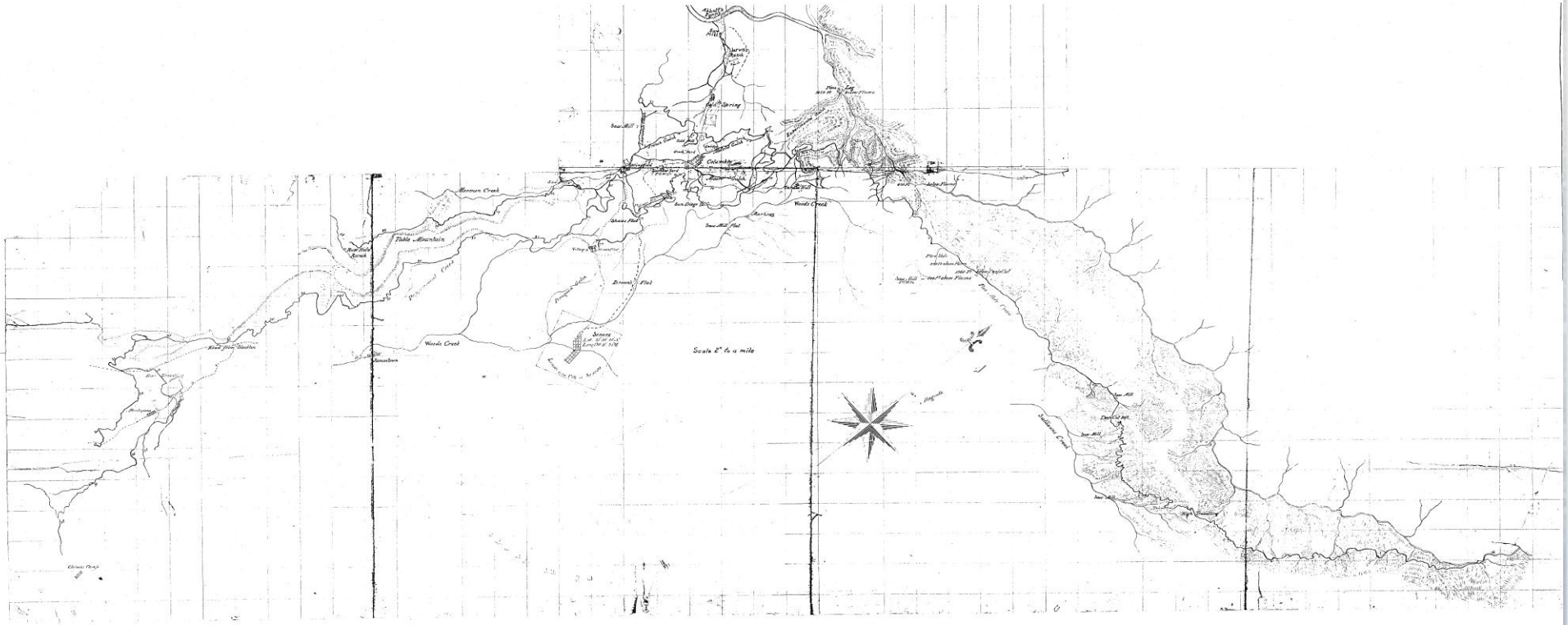
Sullivan Creek/Street's/Shaw's Flat system (1855-1876)

Others

Columbia and Stanislaus River Water Company (the Miner's Ditch)

- As early as January 1853, the miners began to complain about the "enormous price they had to pay to TCWC
- 1855 3,000 miners met and voted to go on strike and started work on a separate system to bring water from the Middle Fork, Stanislaus.
- The system was complete, but short lived.
- Debt and creditors foreclosed on the company.
- The company was sold to the TCWC

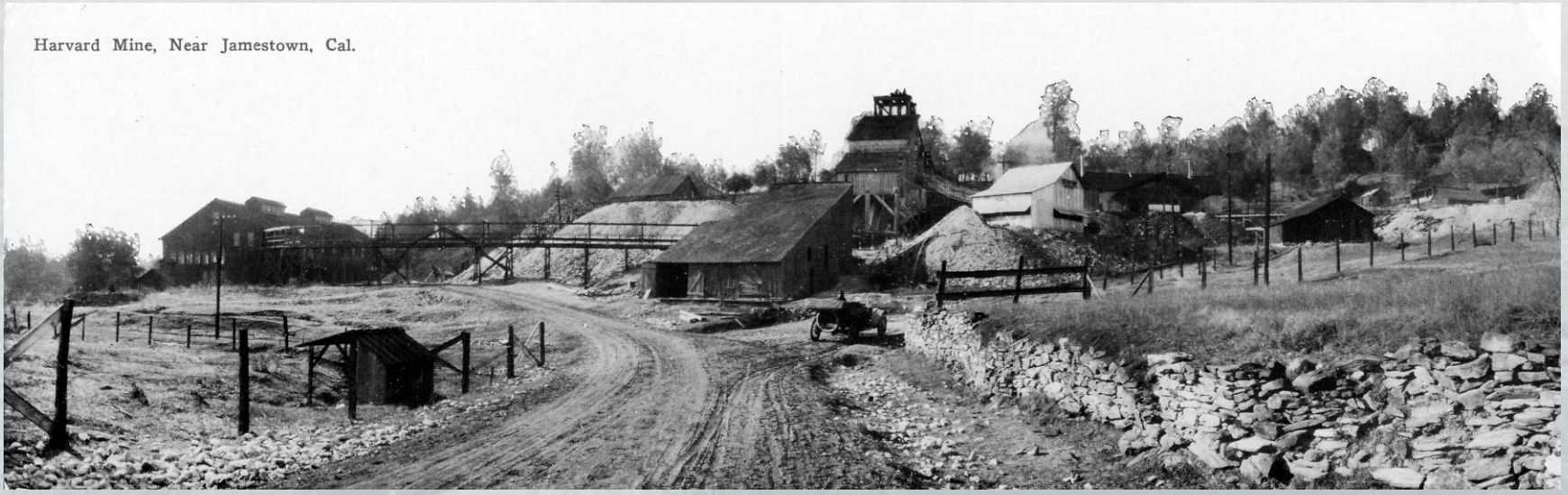

J.D.BORTHWICK, DEL?
M & N HANHART, LITH.
SHAW'S FLATS


Scale 2" to a mile
Woods Creek
Table Mountain
Sullivans Creek

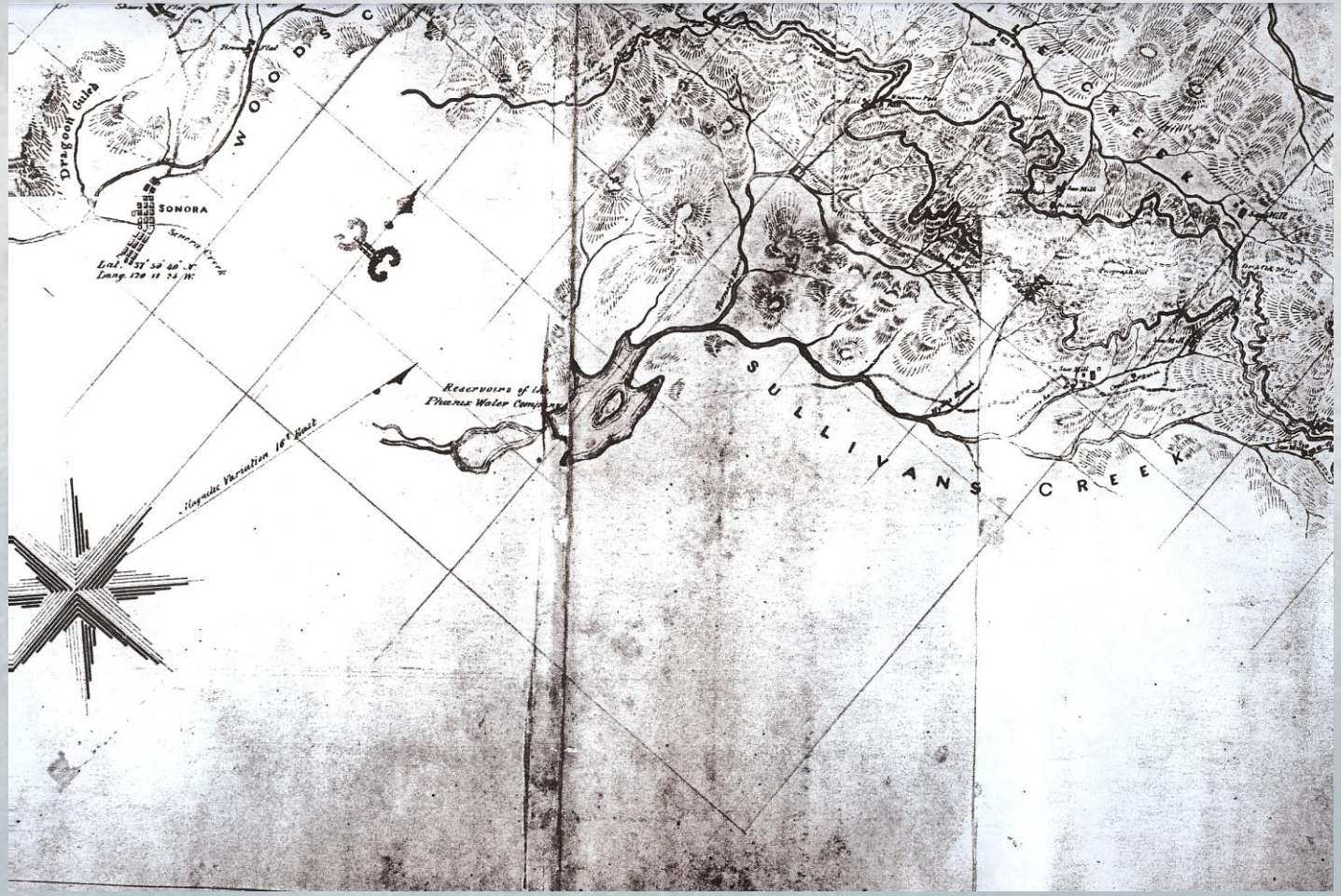
Placering In Brown's Flat

Dondero Hydraulic Mine

Harvard Mine



Sullivan Creek and Phoenix System



Consolidation over time

Algerine Ditch
Columbia Ditch
Eureka Ditch Kincaid Ditch,
Deadman/Matelot Ditch
Montezuma Ditch
Phoenix Ditch
Roach’s Camp Ditch
San Diego Ditch
Section 4 Ditch
Shaws Flat ditch
Soulsbyville Ditch
Table Mountain Ditch

End of the Boom

1866 TCWC still making a profit $35,750 in dividends to stock holders

1860s gold mining was on the decline

Between 1860s and 70s 50% decline in population

Hard-rock Boom of 1880s-1910 saved TCWC from bankruptcy

System rebuilt for Hydroelectricity and Hard-rock

Hydroelectricity Expansion 1880s-90s

Tuolumne Water and Power Company bought TCWC

System retrofitted with penstocks and powerhouses

Reformed as the Sierra and San Francisco Power Company in 1909

PG and E bought entire system in 1927. Water delivery continued for hydro, agriculture, and historic communities.

TCWPC System In 1909