



EAST BAY MUNICIPAL UTILITY DISTRICT

A Look at EBMUD's Watershed and Rangeland Management






Why does EBMUD Care About Watershed Management?

Mission

To manage the natural resources with which the District is entrusted; to provide reliable, high quality water and wastewater services at fair and reasonable rates for the people of the East Bay; and to preserve and protect the environment for future generations.



Where EBMUD Gets the Direction



**Mokelumne Watershed
Fire Management Plan**
East Bay Municipal Utility District
December 2011



FINAL 15 March 2013



**Mokelumne Watershed
Master Plan**
East Bay Municipal Utility District



**Rangeland
Management
Plan**

**Mokelumne Watershed
Master Plan**
East Bay Municipal Utility District
January 2010

Creation
ement

We take a Holistic Approach

Protect Water Quality

Preserve and Protect the Natural Resources

Support the Historic Land-Use Practices

Minimize Development in
the Mokelumne
Watershed




Managing the resources to protect the resources





Landscape Management Strategies

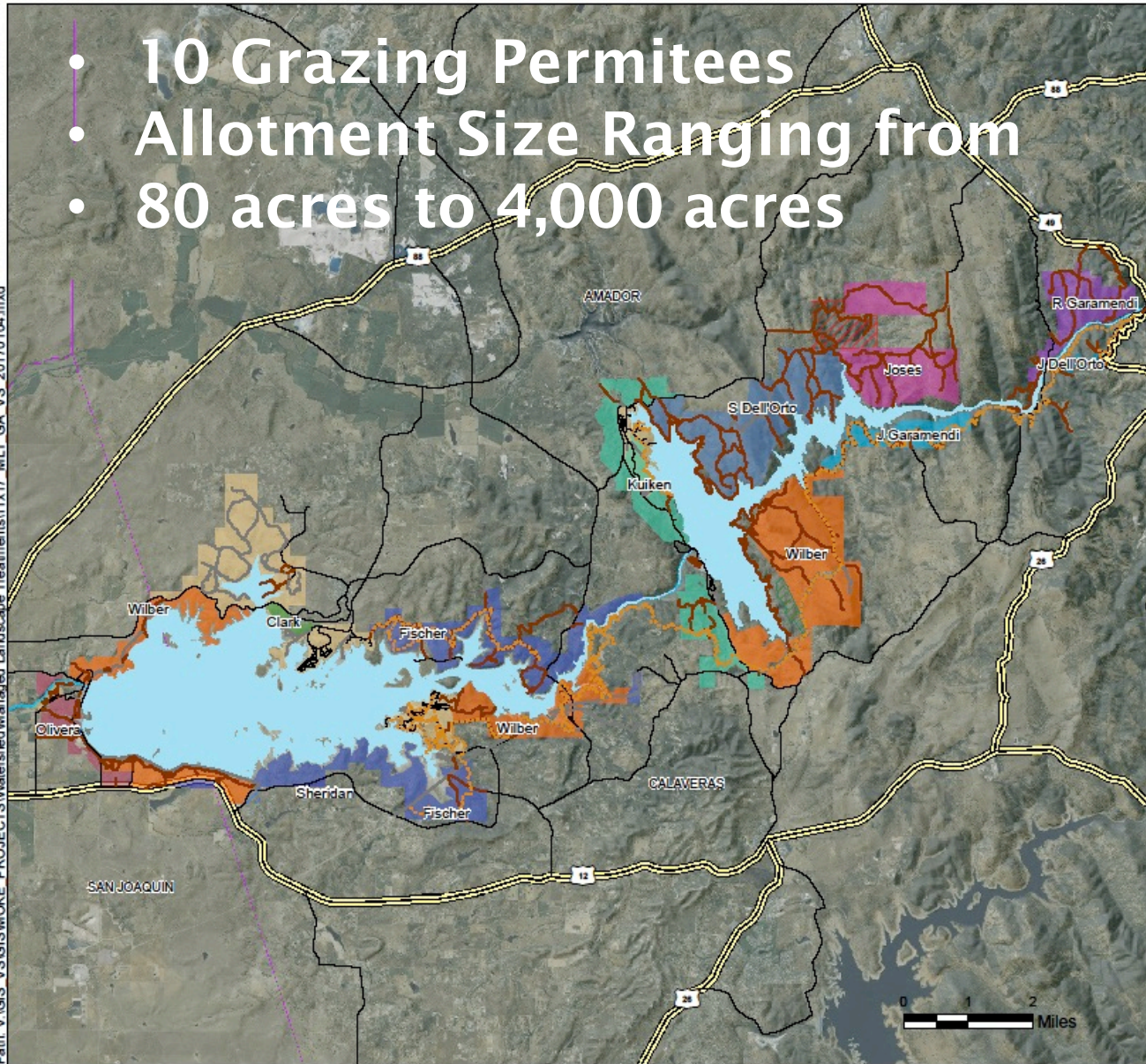
Grazing:

- Low cost vegetation management
 - Supports local economy
 - Taylorable
 - Natural process
- 

Landscape Management Strategies

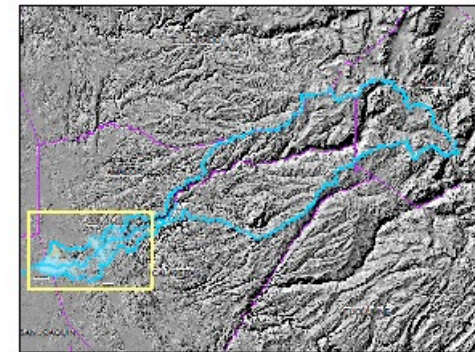
- 10 Grazing Permittees
- Allotment Size Ranging from
- 80 acres to 4,000 acres

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Mokelumne Watershed Managed Landscape Grazing Allotments

Prepared: January 2017



Focus Region: EBMUD Managed Landscape



Absolute Scale: 1:100,000
Relative Scale: 1 inch equals 1.58 miles

Identified Goals

Water Quality

Flammable Fuels/Fire

Ecological Diversity

Rangeland Health



Water Quality

- Sampling Programs
 - Long History of Regulatory Monitoring
 - Stormwater Monitoring



Landscape Management Strategies

Vegetation-type Transition – Brush to grassland



Landscape Management Strategies

Vegetation Type Transition – Brush to grassland

Pre brushing



Mosaic pattern after brushing



A track skid steer with brush grapple was used to remove and pile brush (for burning). Stubs were manually removed. Area was seeded with Dryland pas mix. Cattle kept off for 3 months. Spray for Tecolote thistle in '15 and '16.

Landscape Management Strategies

Fire! Prescribed Fire that is....



Landscape Management Strategies

Winter Firing



Landscape Management Strategies

1 week after after-digestion



Landscape Management Strategies

Animal Power – Never underestimate what a motivated herd of animals is capable of doing!



Landscape Management Strategies

Herbicides

Milestone for Medusahead



GRA\$\$ BANKING



A Bale Saved is a Bale Earned...

Grass Banking for the Hard Times



What it really amounts to is...

When you need grass, you need grass

A Bale Saved is a Bale Earned...

Grass Banking for the Hard Times

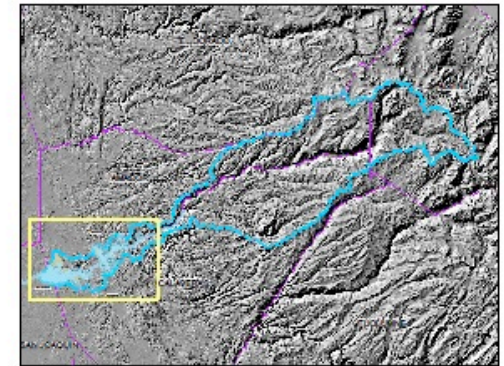
Self-contained
Accessible
Not high fire risk
Enough to make
a difference



We have several GB sites in the Mokelumne

Mokelumne Watershed Managed Landscape
Grass Banks - Prescribed Fire

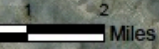
Prepared: January 2017



Focus Region: EBMUD Managed Landscape

- Prescribed Fire
- Grass Banks
- EBMUD Trails
- Roads**
 - Dirt
 - Gravel
 - Pavement
 - HWY
- Recreation Areas
- Headquarters
- Mokelumne River
- Mokelumne Watershed
- Reservoirs
- EBMUD
- Counties

All in All - ~1,800 acres or 15% of the available rangeland



Absolute Scale: 1:100,000
Relative Scale: 1 inch equals 1.58 miles

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Value added in Banking Sites

More grass in lean times
Operational Flexibility
Not tied to a current operation
Larger scale ecological variability





Our Watershed Management Strategies try to...

- Manage the system as a whole
- Work with our partners
- Experiment, learn, and share information
- Recognize and honor the balance between our business goals, the environment/regulations, and our partner's goals
- Always put water quality first

Other Things that Keep Us Busy on the Watershed

Site Protection
Lessee Safe Harbor Agreement
Patrol
Trails
Sampling Programs
Coordination
Infrastructure Development
Routinized Maintenance
Naturalist Programs
Fencing
Restoration Agreement
Roads

Butte Fire Mitigation





Our Approach – Mulch and Seed as Much Ground as Practical Before it Starts Raining!

And meet everyone's expectations, regulations, and limitations

- Our straw bale application rate ~ 40 bales/acre
- BLM's Wood Shred rate 1-2 inches over the selected treatment sites



The Cover Story



The Cover Story



Annual Seed and Live Plants



On private property and along public roads we utilized a variety of strategies

Seed, straw, and tackify

Volunteers

Plug planting

CCC

Some Telling Results



Time Lapse from 10/21/15 to 4/28/16

In the Severe Burn Areas Where We Did Not Seed



4/29/16

Where We Seeded We Had Growth



Let Me Reiterate

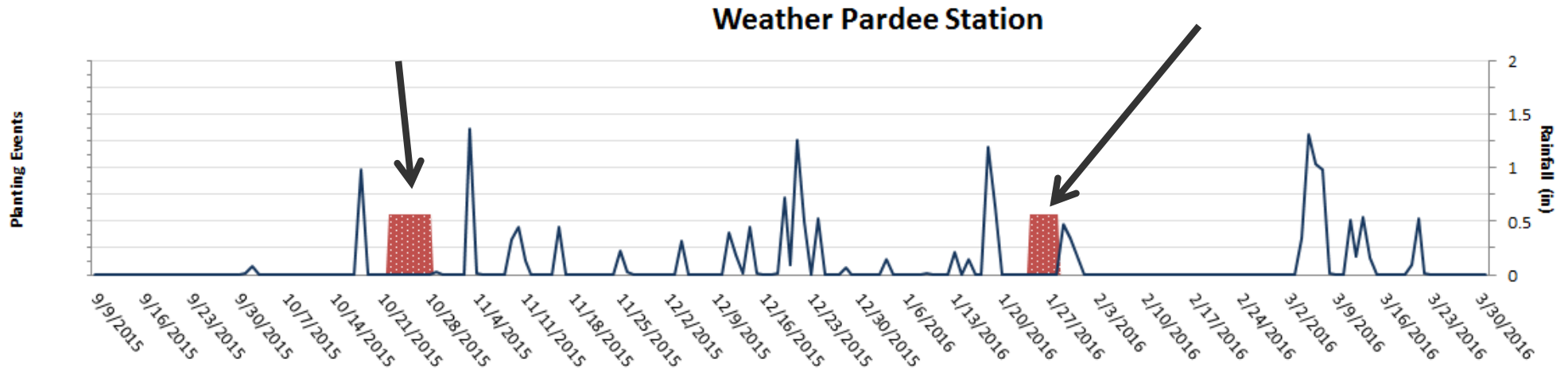
No seeding – minimal growth



Side By Side Comparison



Planting Early in the Season Produced More Growth



Early seeded sites produced up to 5,000 Lbs/acre growth

Later seeding, although still producing growth, had far less total production



Materials and the cost of doing business...

When you're trying to save the world

Description	Total	Cost
Calaveras Straw Bales	2000	\$ 11,500.00
Amador Straw Bales	500	\$ 2,900.00
Straw for public use	700	\$ 4,025.00
Binder		\$3,000.00
Equipment		\$10,000.00
CA Native Seed		\$ 30,000.00
Annual grass Seed		\$ 2,000.00
Misc Expenditures		\$ 14,000.00
Water		\$300
Total		\$ 77,725.00
Field Staff Hours	1650	

Our Partners made the Difference



Lessons Learned

- Early seeding (with the right precip) improves vegetative cover.
- Mulching without seeding (where seed bank is gone) can help with erosion, but does not greatly enhance immediate revegetation.
- Having an action plan in place before a catastrophic, landscape altering event can expedite effective response and collaboration.
- It is harder to establish growth from seed on steeper slopes, but it is doable.
- It ain't over 'till it's over. Regular follow up assessments of restoration efforts need to be included in the project so that changing conditions can be addressed in a timely fashion.

It really doesn't get any better than this



Special Thanks to:

- Justin Mynk, Wade Chambers, Scott Werner, Dave Johnson, Lora Sparrowk, and Vanessa Stevens



Questions, Comments for the Good of the Order



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