

# Camp Fire Impacts on Livestock Drinking Water Quality

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# Commercial Livestock Operators

- ~35,000 acres of rangeland
- Most not in valley
- Concerns with Feed and Water



# Background Information

- Fire alters physical and biogeochemical properties
- Post-fire water implications poorly understood
- Heavy metals increase
 

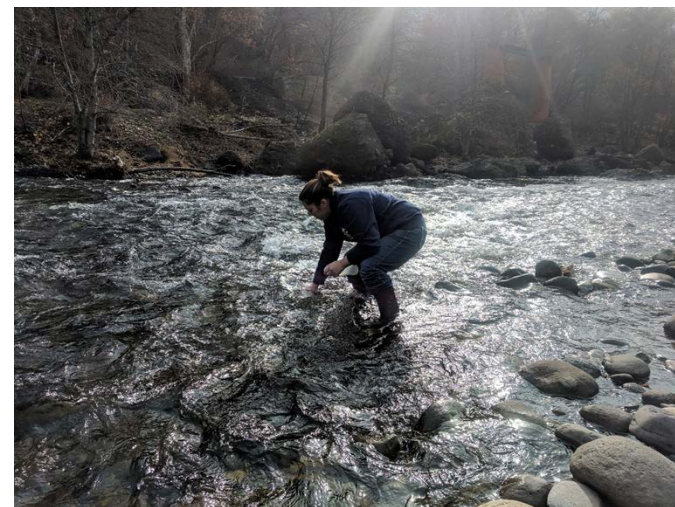
|              |                |              |
|--------------|----------------|--------------|
| Copper (Cu)  | Lead (Pb)      | Zinc (Zn)    |
| Iron (Fe)    | Manganese (Mn) | Arsenic (As) |
| Mercury (Hg) |                |              |
- Nitrate and nitrite (2-4x higher)
- Burned residences higher trace elements

# Livestock Drinking Water Quality

- 4 Location
- Private Lands, below Paradise
- Testing Focus
  - Heavy Metals
  - Nitrates
  - Nitrite
  - VOC's



**“Do not allow pets or livestock to consume tap water”**  
- Paradise Irrigation District





# Research Project

- Pre-Rain Samples Throughout Watershed (November 21)
- Every Friday Sampling November 23 – March 8
- Samples in Paradise in early December as references
- Average 3 working days for results Heavy Metals
- VOC testing results took time



# Results

- No VOC's found
- Heavy Metals
  - Manganese 1.4 mgL
  - Iron 5.6 mgL
  - Zinc 0.08 mgL
  - Cooper .04 mgL
- Nitrate
  - Paradise 19 mgL
  - Rangeland 9 mgL
- Nitrite
  - Rangeland 1 mgL



# Results and Livestock Concentration Limits

- Heavy Metals
  - Manganese 1.4 mgL (35-250 mgL)
  - Iron 5.6 mgL
  - Zinc 0.08 mgL (25 mgL)
  - Cooper .04 mgL (0.5 mgL)
- Nitrate (100-440 mgL)
  - Paradise 19 mgL
  - Rangeland 9 mgL
- Nitrite (10-33 mgL)
  - Rangeland 1 mgL

# Conclusion

- Focused on cattle drinking water
- Random Approach – Friday's
- Limitations on sampling threshold
- No Baseline Samples
- Heavy Metals

Copper (Cu)

Iron (Fe)

Mercury (Hg)

Lead (Pb)

Manganese (Mn)

Zinc (Zn)

Arsenic (As)

# Project Team & Funding

## **Cooperative Extension Advisors**

Tracy Schohr, Whitney Brim-Deforest, Luke Milliron, Emily Symmes

## **UC Davis Faculty/Extension Specialist**

Gaby Maier, Robert Poppenga, Kenneth Tate and John Maas  
(retired)

## **Funders**

UC Division of Agriculture & Natural Resources  
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