

Post-Fire Monitoring Update and Preliminary Results

LECL TMDL Task Force Meeting
February 21, 2019



RIVERSIDE COUNTY
WATERSHED PROTECTION

Agenda

1

Holy Fire

2

Sampling Design

3

Storm Events

4

Preliminary Results



Holy Fire

Began on August 06, 2018

Cleveland National Forest

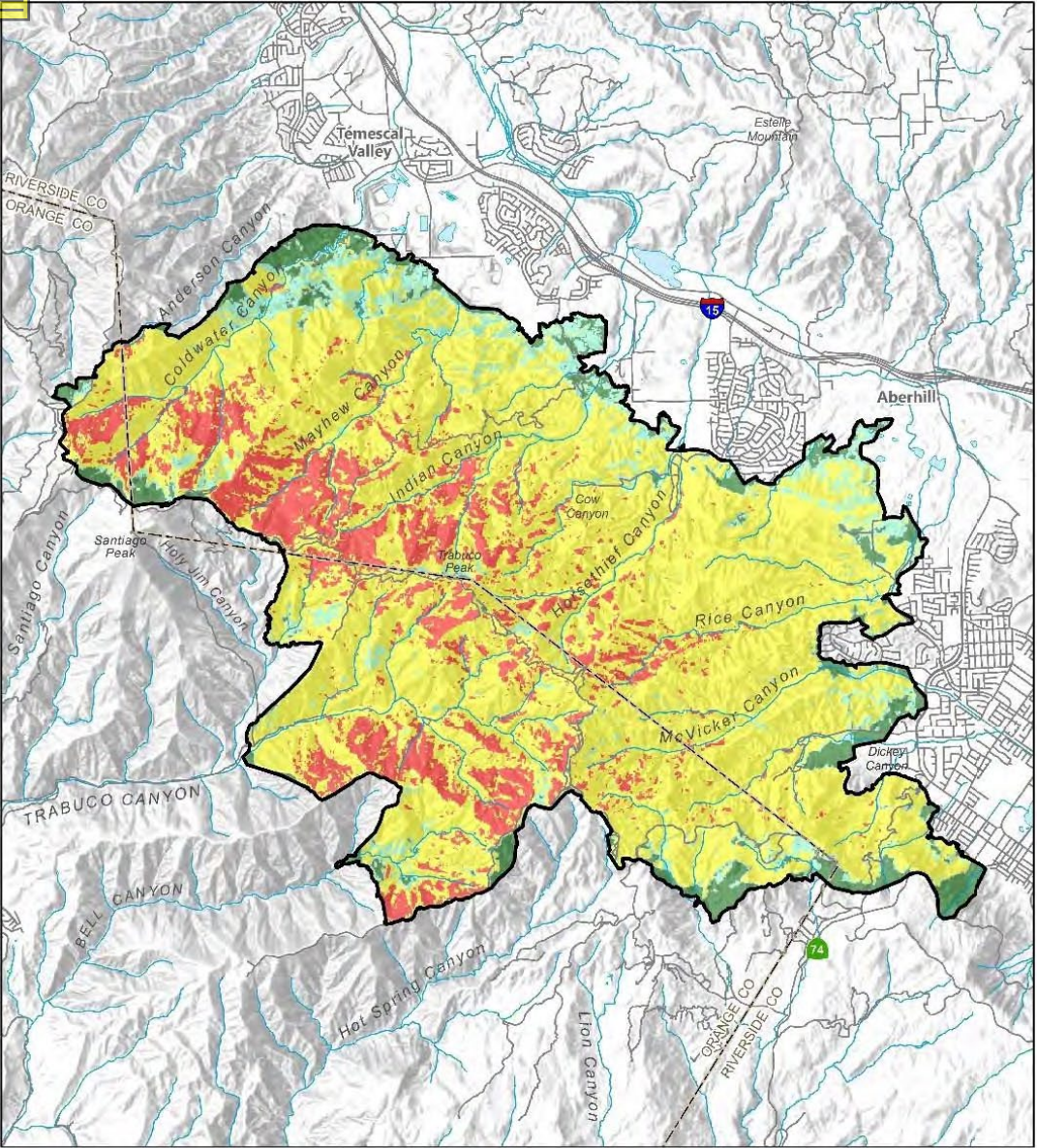
22,877 acres burned

- 14% high soil burn severity
- 71% moderate burn severity
- 15% low soil burn severity

Potential Fire Impacts

- High debris flows in watersheds with steep slopes and high-to-moderate soil burn severity
- Exacerbated debris flows within 1-3 years of the fire

Schwartz, J.Y., and T. Stempniewicz. 2018. Burned Area Emergency Response (BAER) Assessment: Geological Hazards. Cleveland National Forest, CA.



Soil Burn Severity
Holy Fire Incident
CA-RRU-100160

Soil Burn Severity
Very Low / Unburned
Low
Moderate
High

Holy Fire perimeter
County boundary

0 1 2 Miles



Sampling Design

- Assess the potential impacts of the Holy Fire
- Not part of Permittee's required compliance monitoring
- Expedited process to capture 'first flush'
 - Contracting/mobilization/equipment
- Feedback from the LECL TMDL Task Force
- Followed SMC Post-Fire Water Quality Monitoring Plan:

"Effects of Post-fire Runoff on Surface Water Quality: Development of a Southern California Regional Monitoring Program with Management Questions and Implementation Recommendations" (SCCWRP, 2009).

http://ftp.sccwrp.org/pub/download/DOCUMENTS/TechnicalReports/598_SoCalRegionalFireMonitoringPlan.pdf

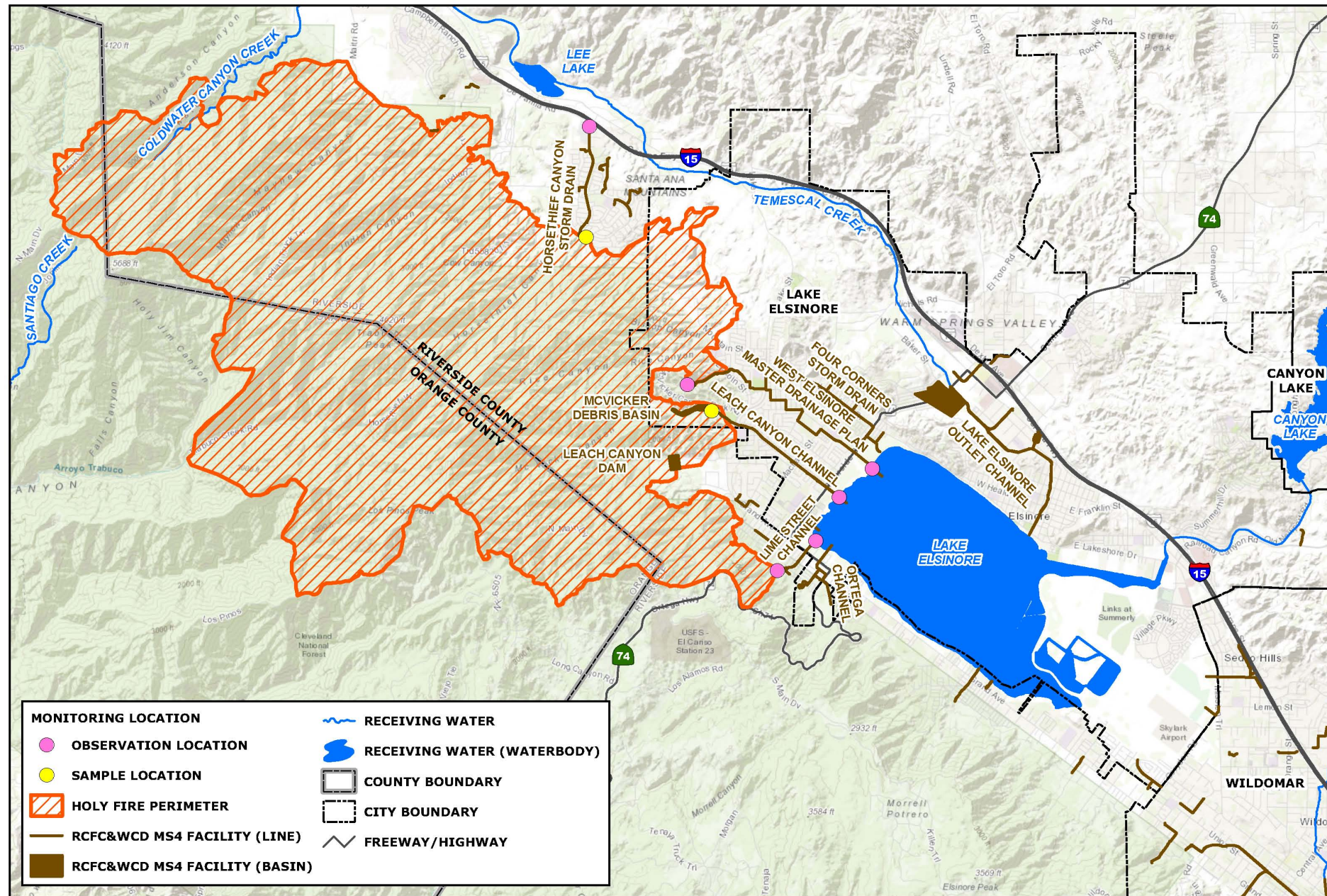


SMC Post-Fire Water Quality Monitoring Plan Priority Management Questions:

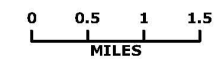
1. How does post-fire runoff affect contaminant flux?
2. What is the effect of post-fire runoff on downstream receiving waters?
3. What are the factors that influence how long post-fire runoff effects persist?

Sampling Design to Address Question #1

- Sample post-fire runoff from the terminal end of burned catchments
 - Downstream of debris basins
- Compare the data to reference or control sites
- Assess the effects of the Holy Fire:
 - Hydrologic response
 - Sediment and pollutant loads



HOLY FIRE PERIMETER AND DRAINAGE POSTFIRE MONITORING LOCATIONS FY18-19



Storm Events

Event #1

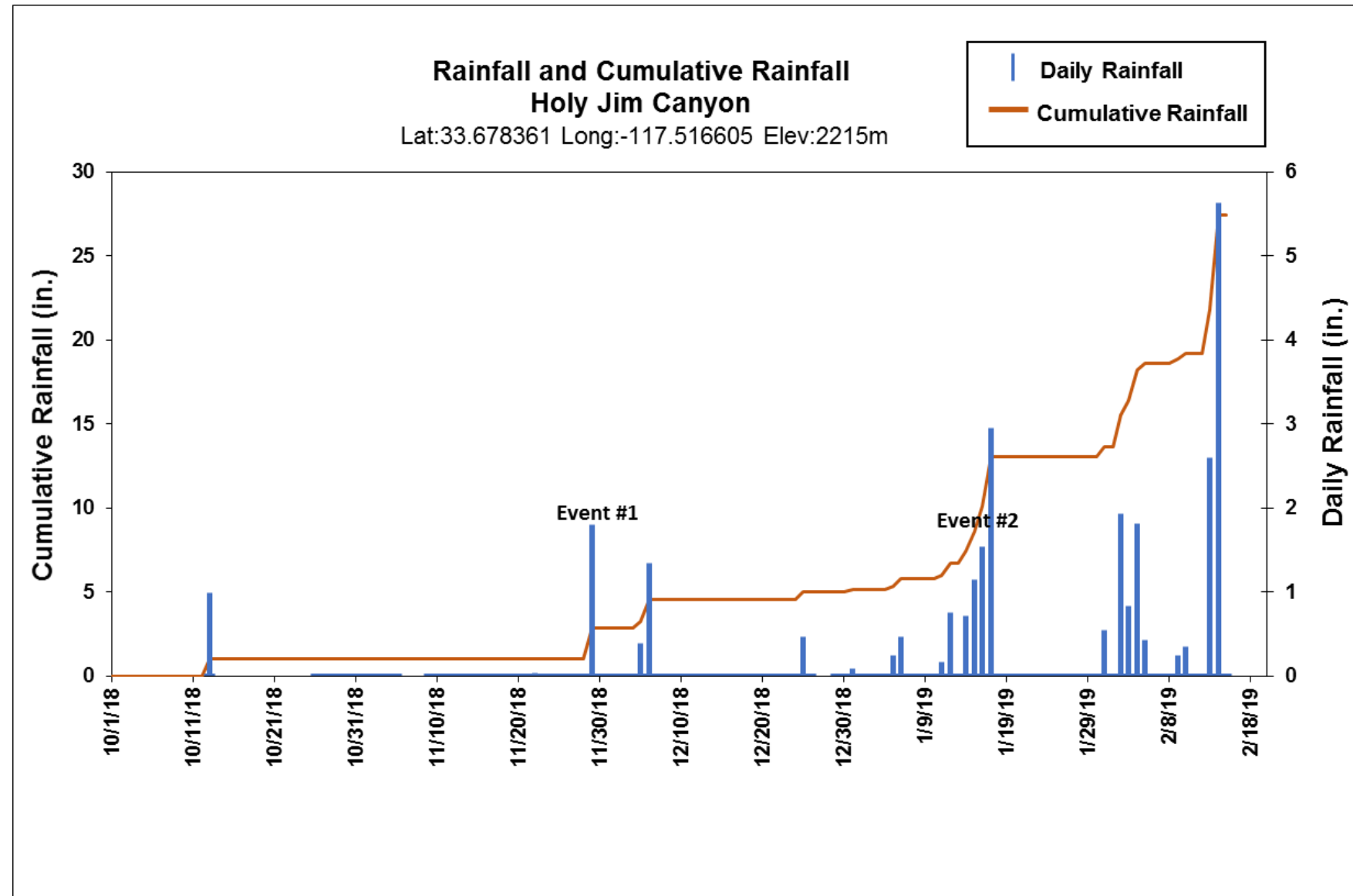
11/29/2018 'First Flush'

- McVicker
- Horsethief
- Adobe Reference

Event #2

1/14/2019

- McVicker
- 1/17/2019
- Horsethief



McVicker Debris Basin-Leach Canyon



Pre-Storm
10/1/2018



Post-Storm
11/30/2018

Horsethief Canyon



Pre-Storm
10/1/2018



Post-Storm
11/30/2018

Leach Canyon Dam



Post-Storm
11/30/2018



Pre-Storm
01/08/2019

Lake Elsinore



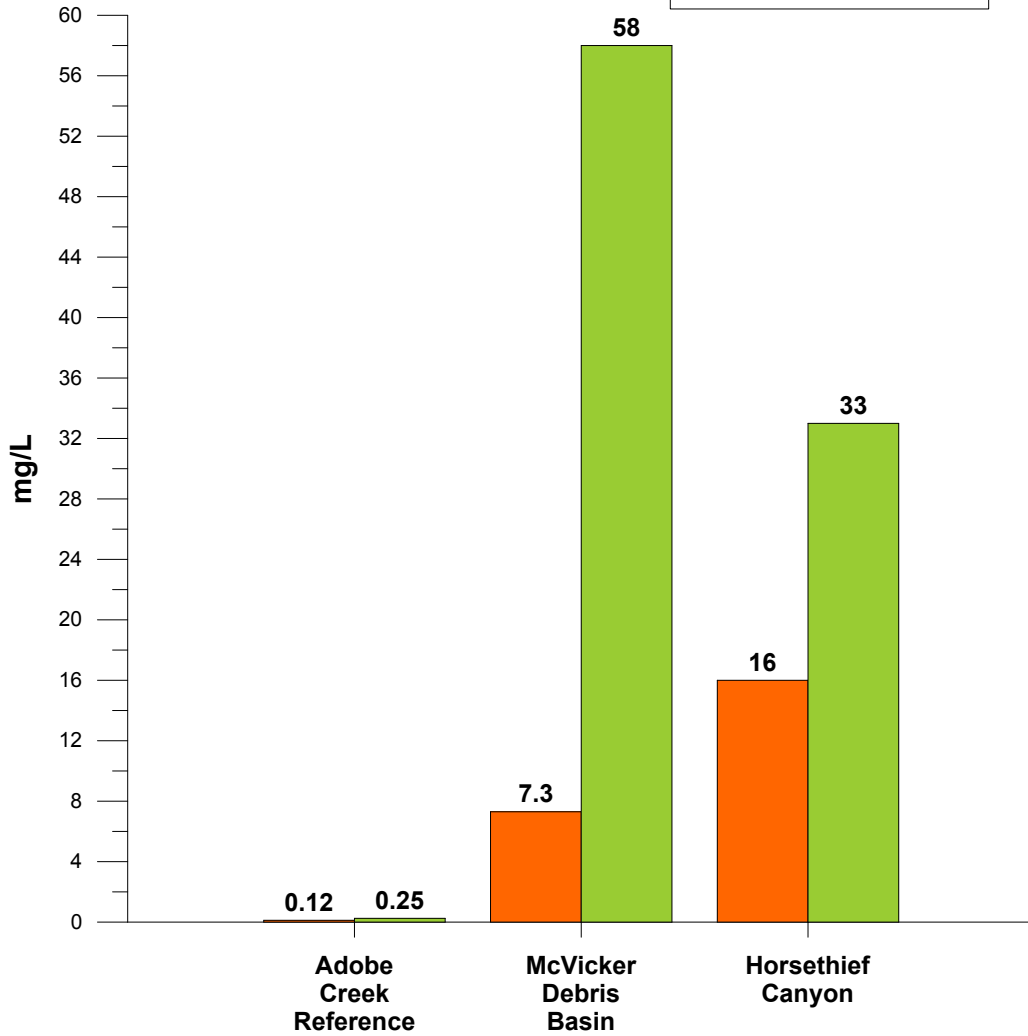
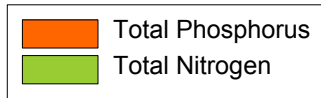
Pre-Storm
01/08/2019



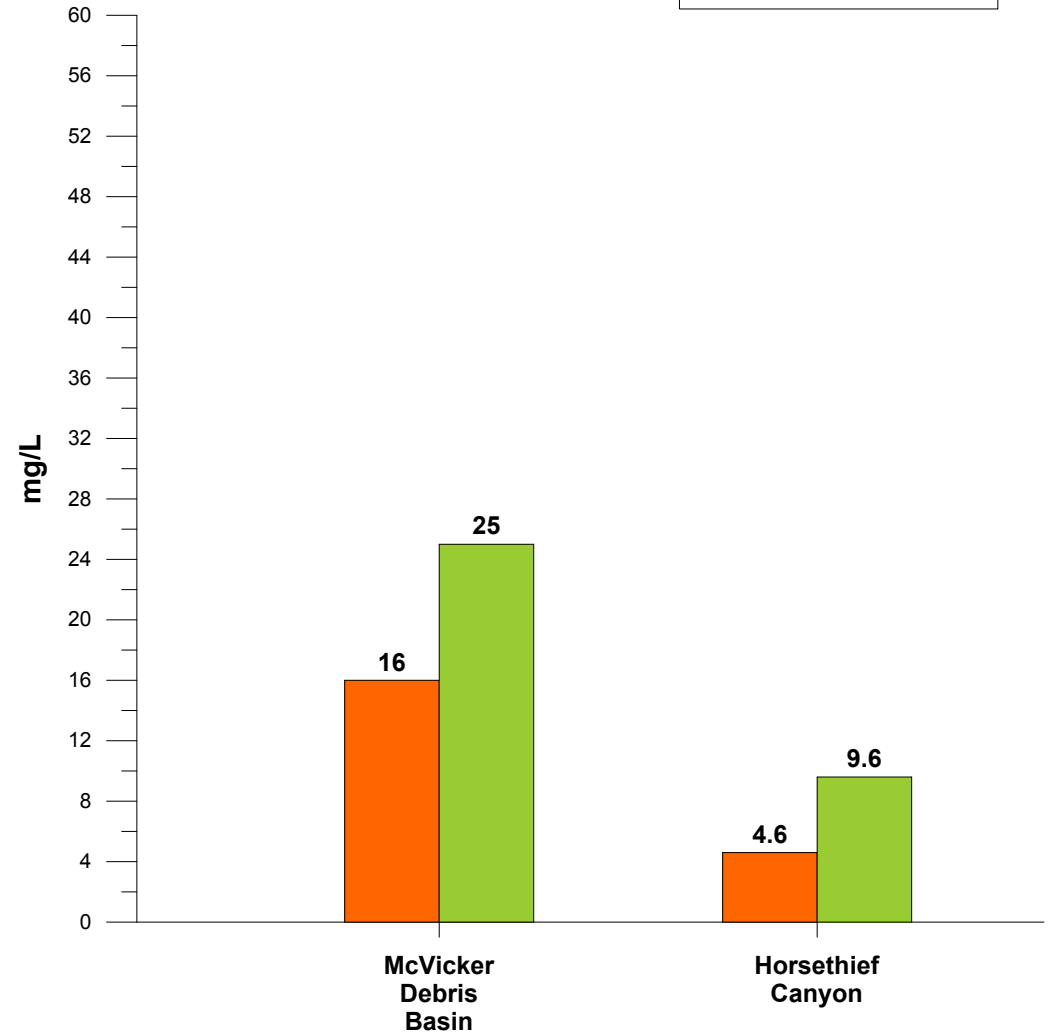
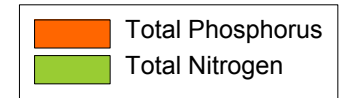
Post-Storm
01/18/2019

Preliminary Analyte Concentrations

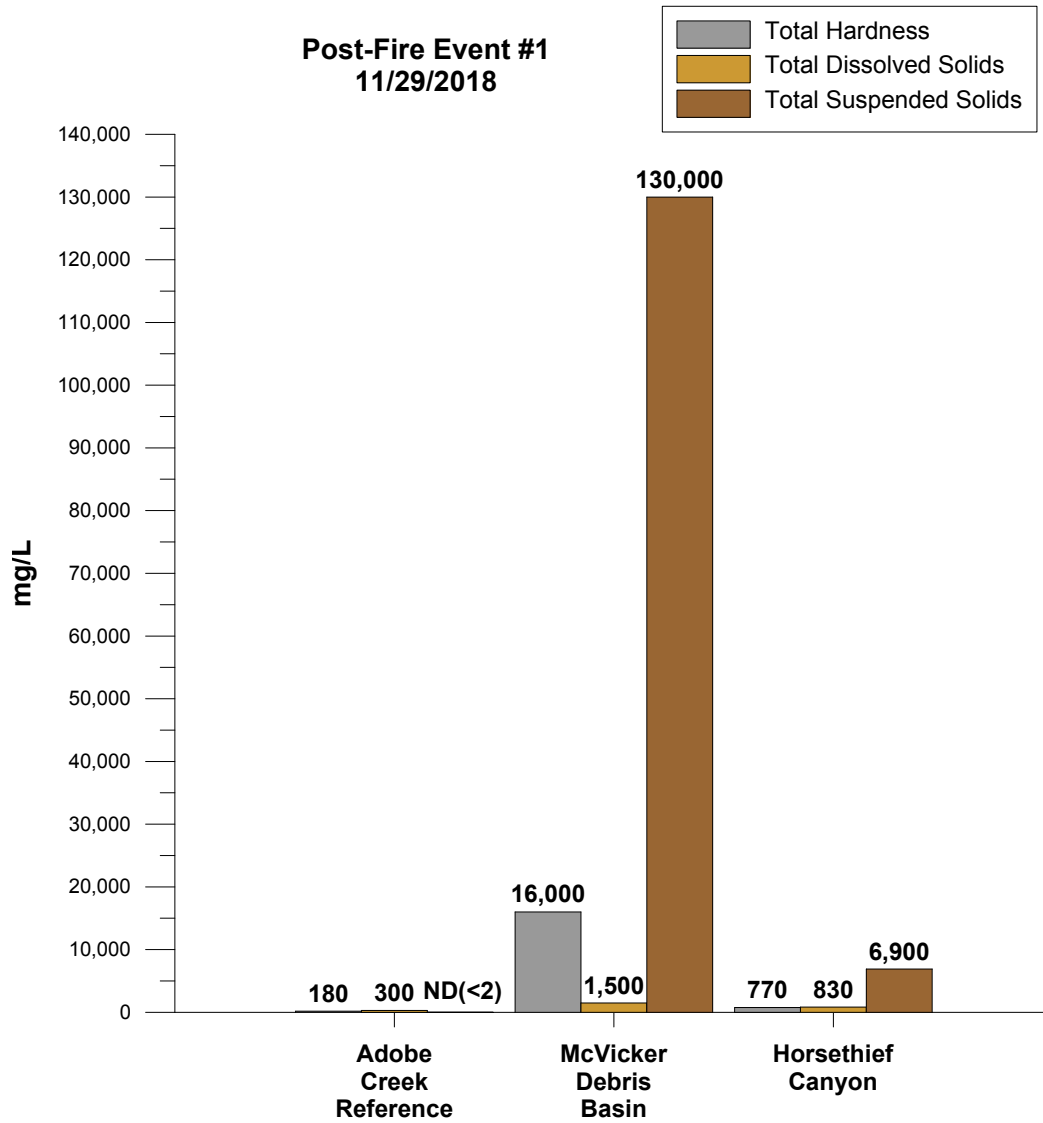
**Post-Fire Event #1
11/29/2018**



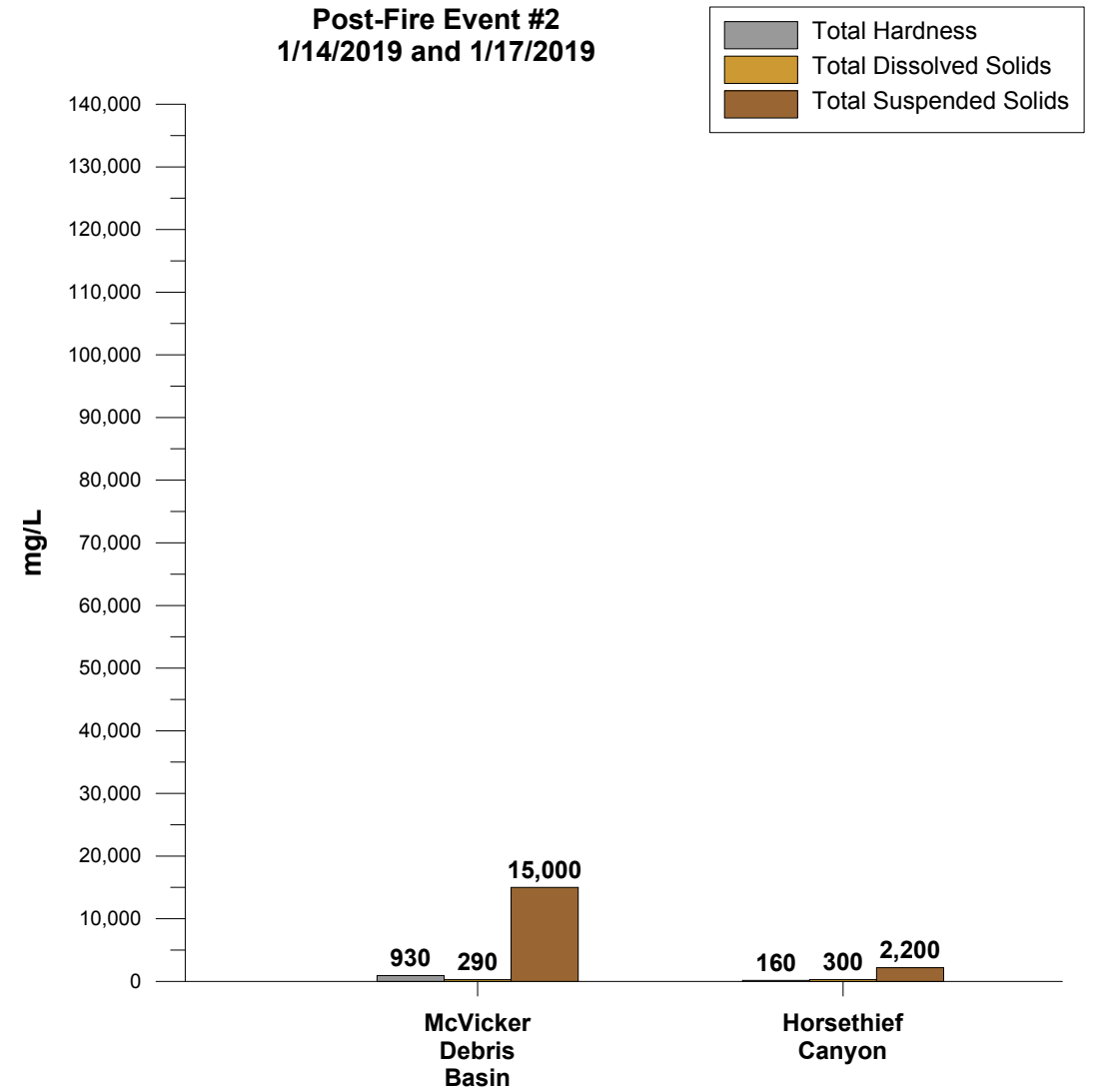
**Post-Fire Event #2
1/14/2019 and 1/17/2019**



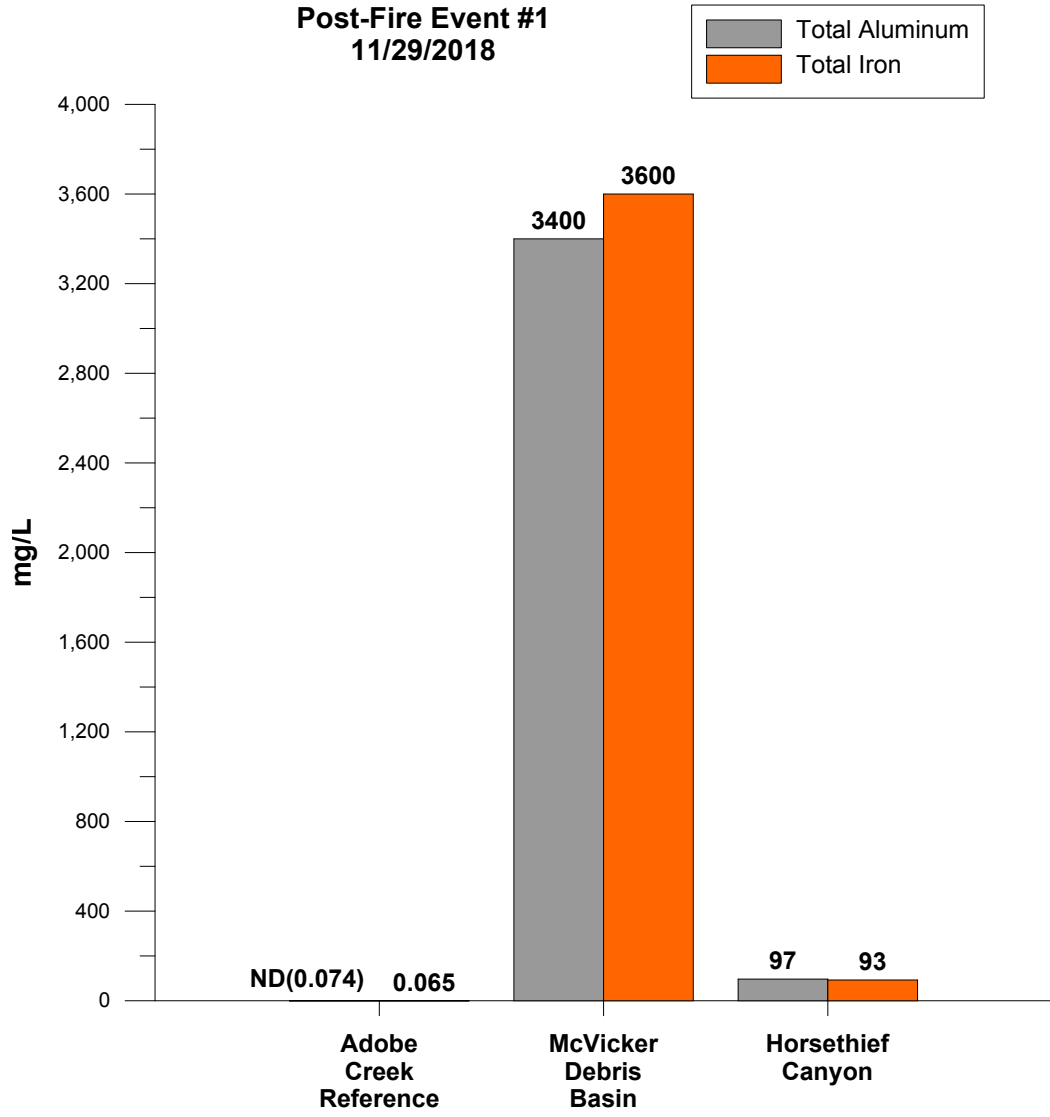
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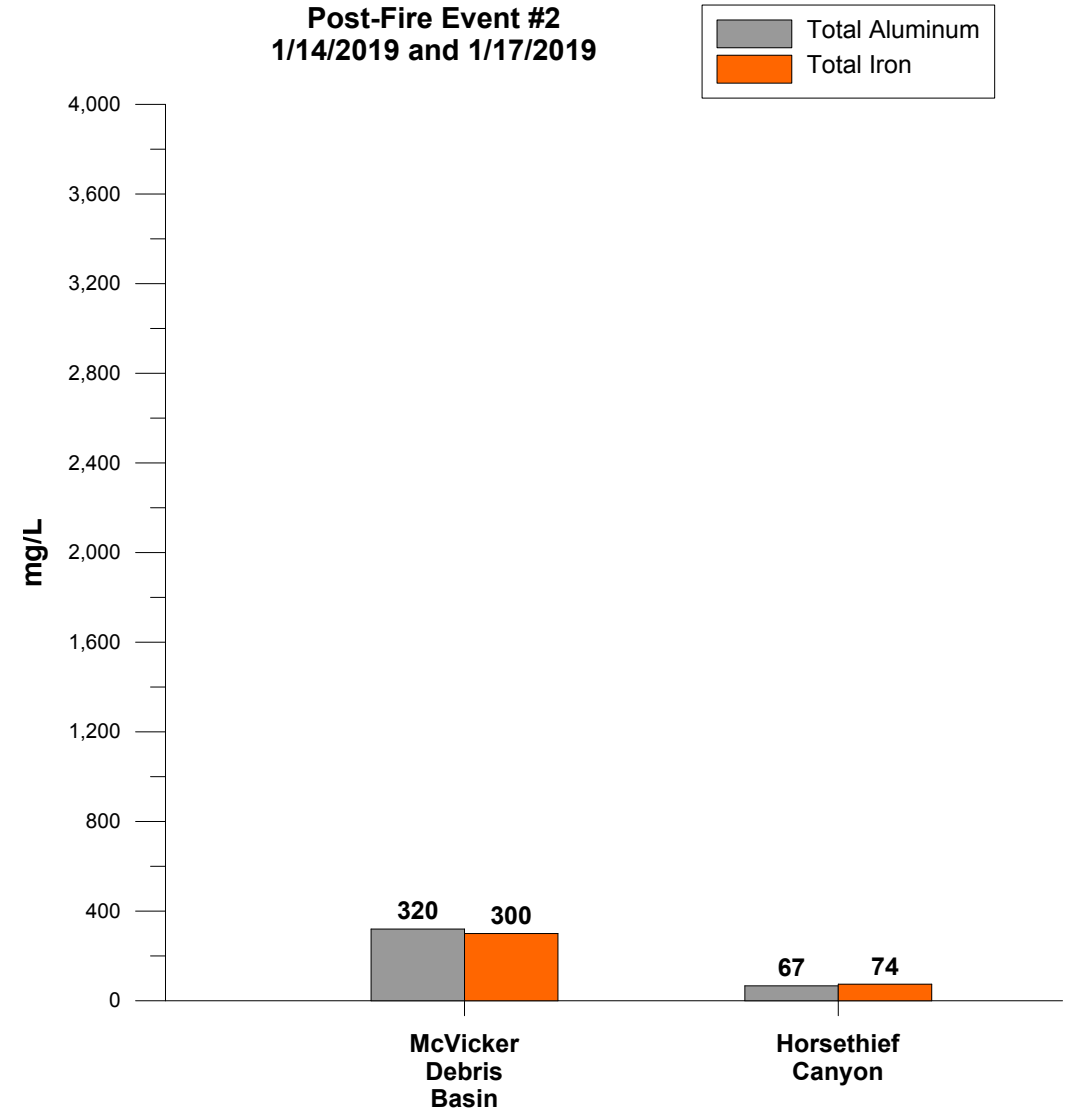
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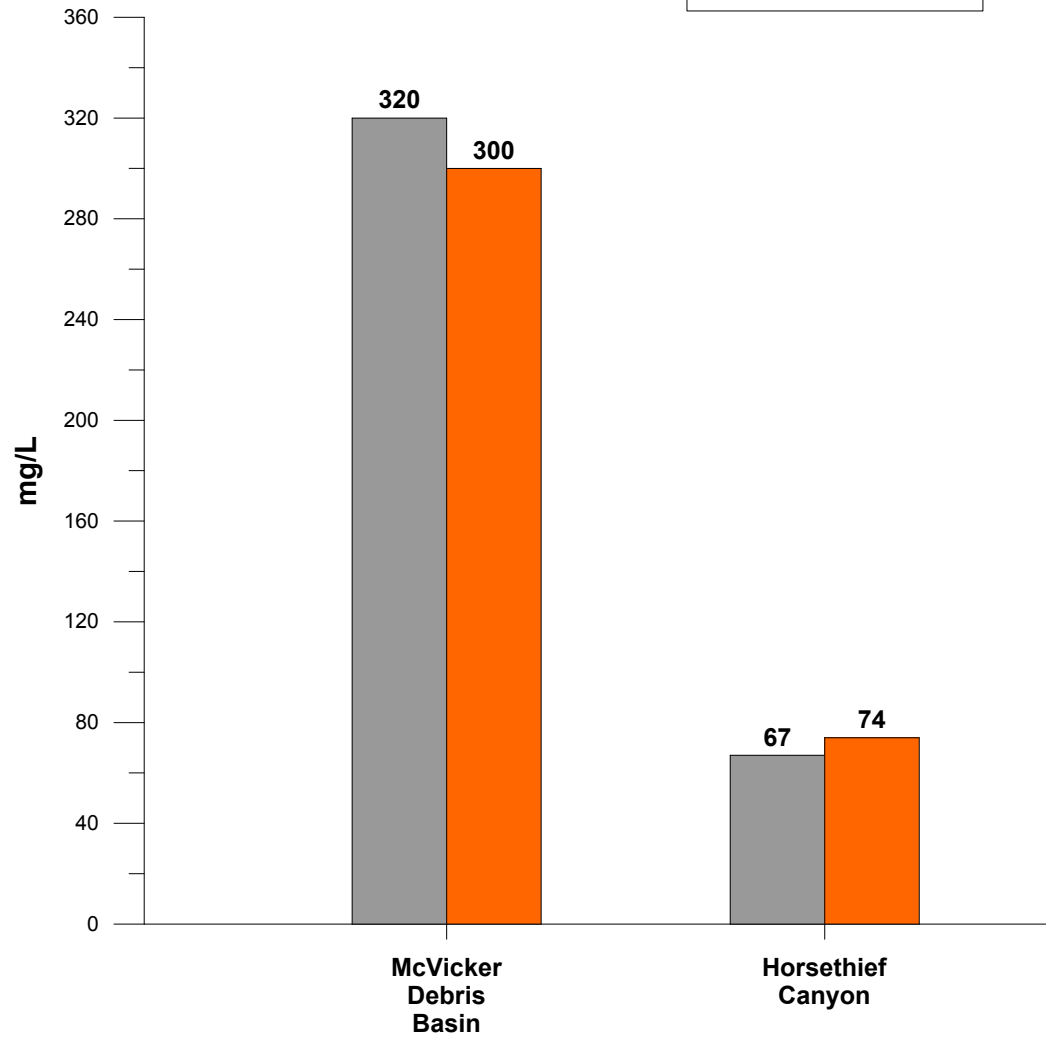
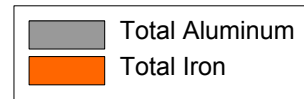
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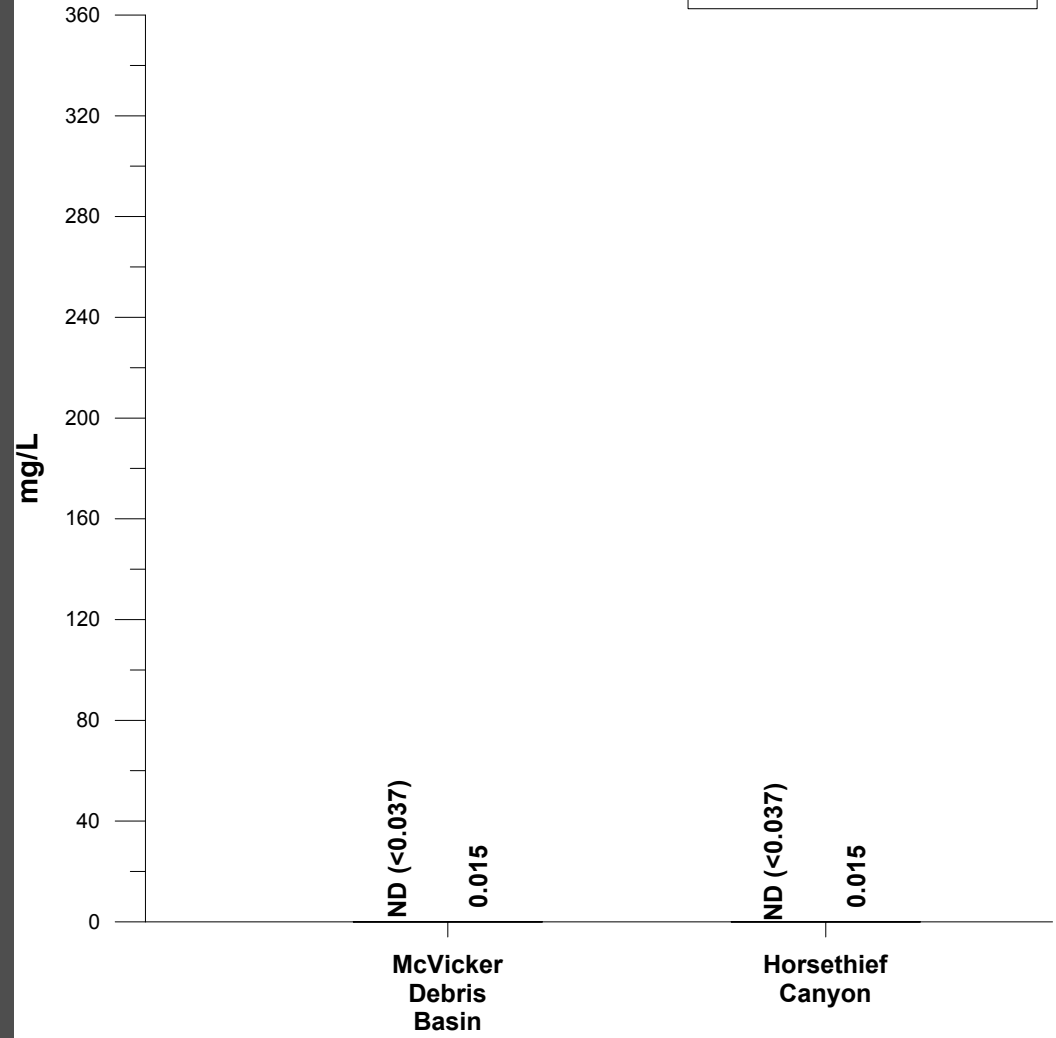
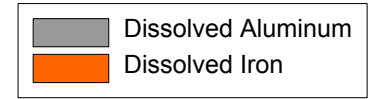
**Post-Fire Event #2
1/14/2019 and 1/17/2019**



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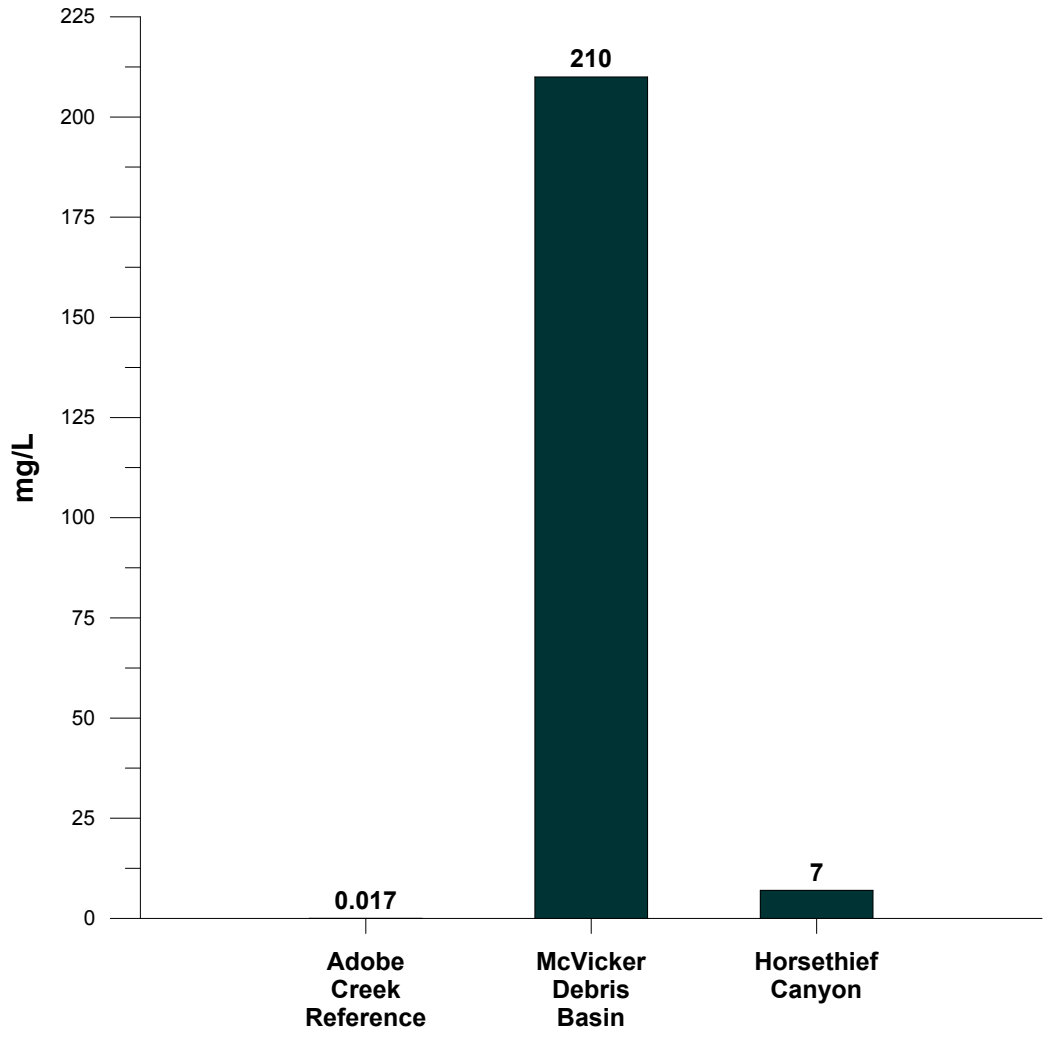


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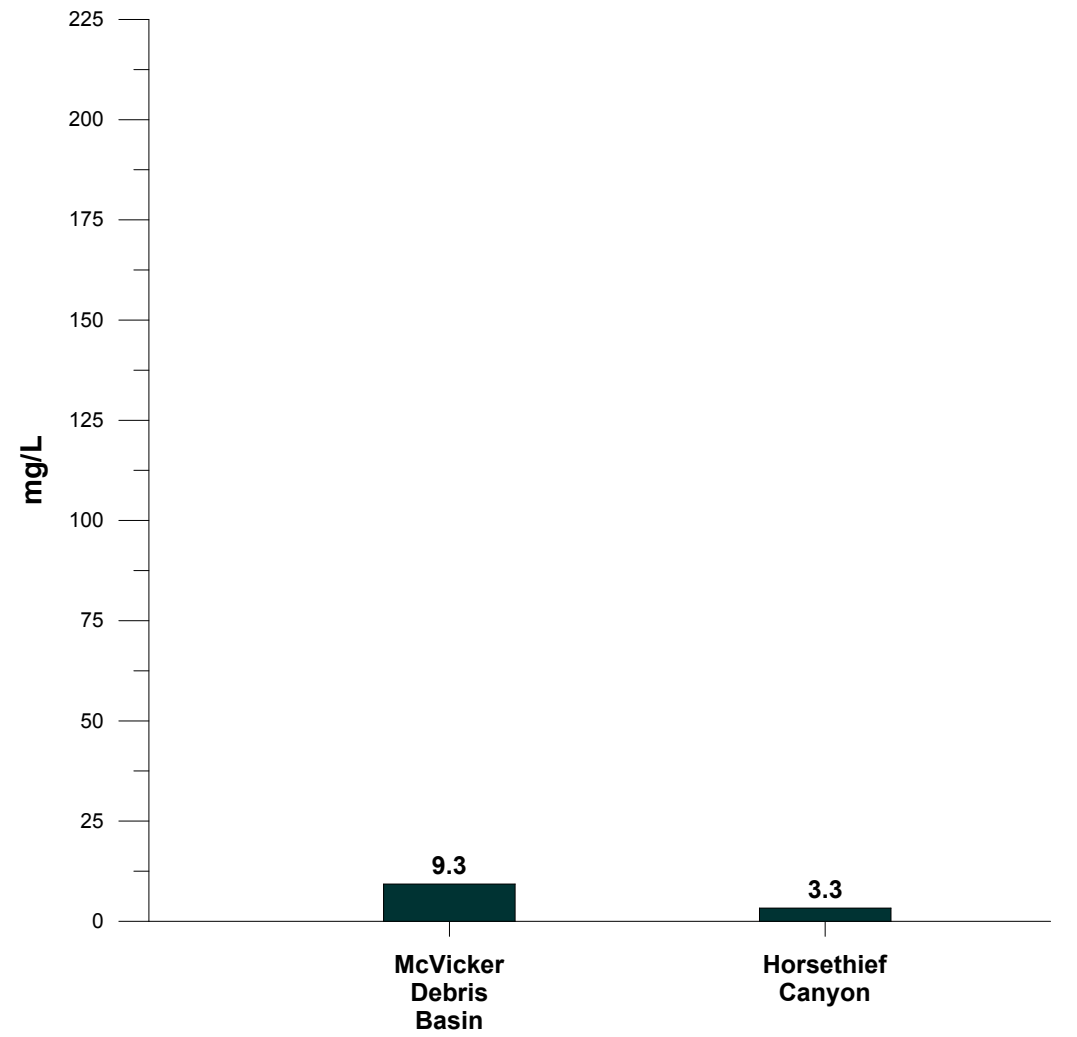
**Post-Fire Event #1
11/29/2018**

■ Total Manganese

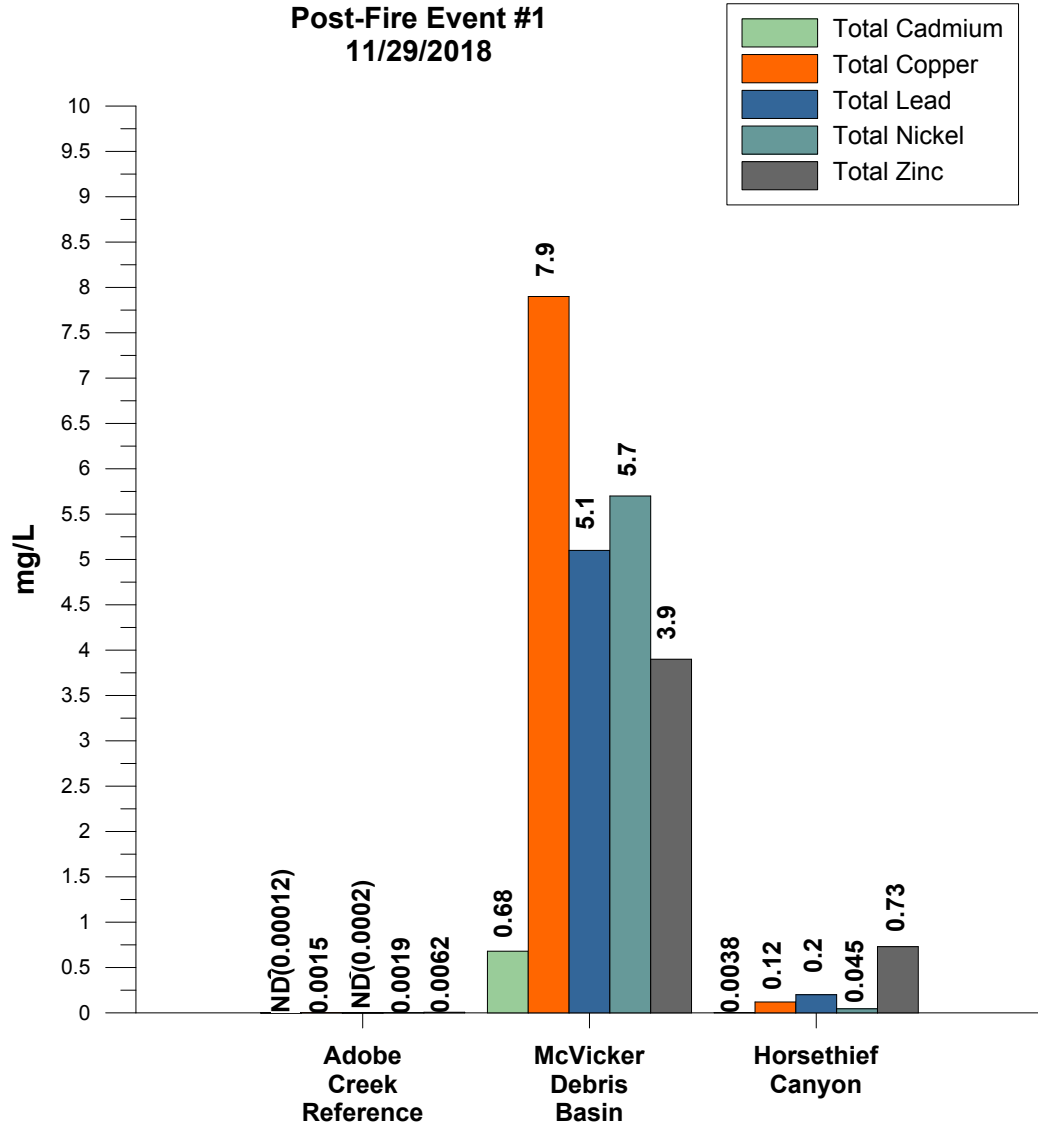


**Post-Fire Event #2
1/14/2019 and 1/17/2019**

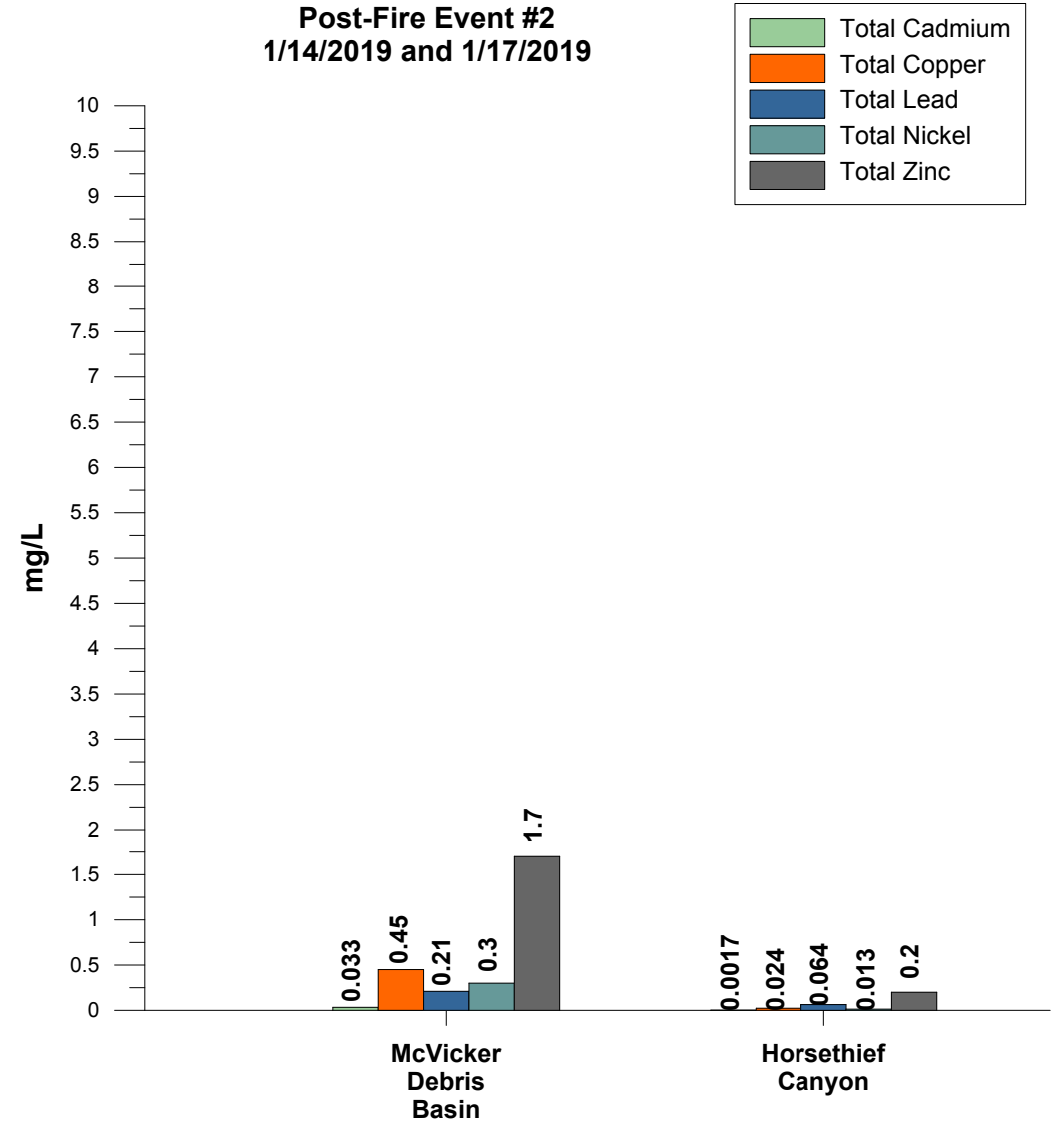
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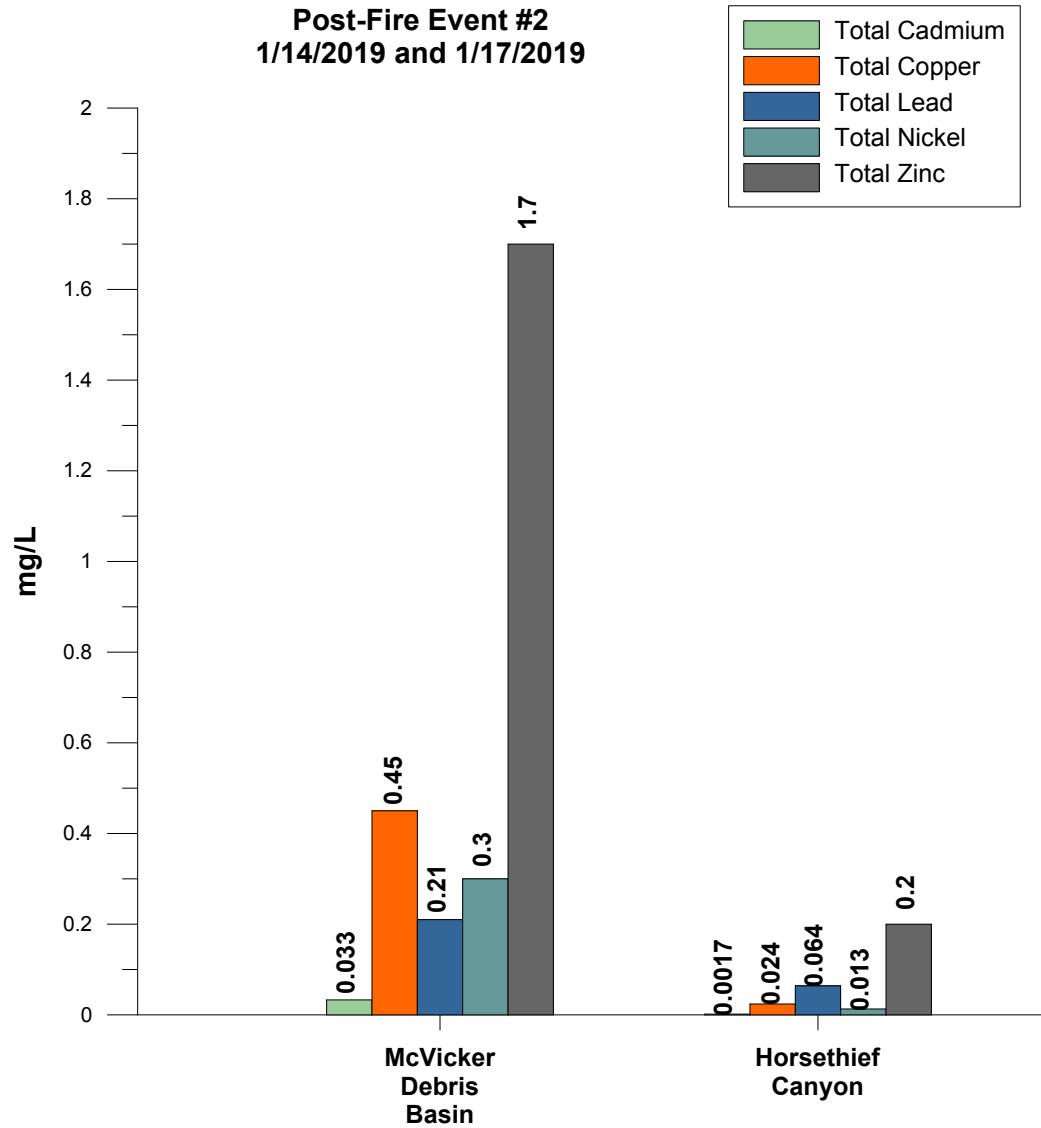
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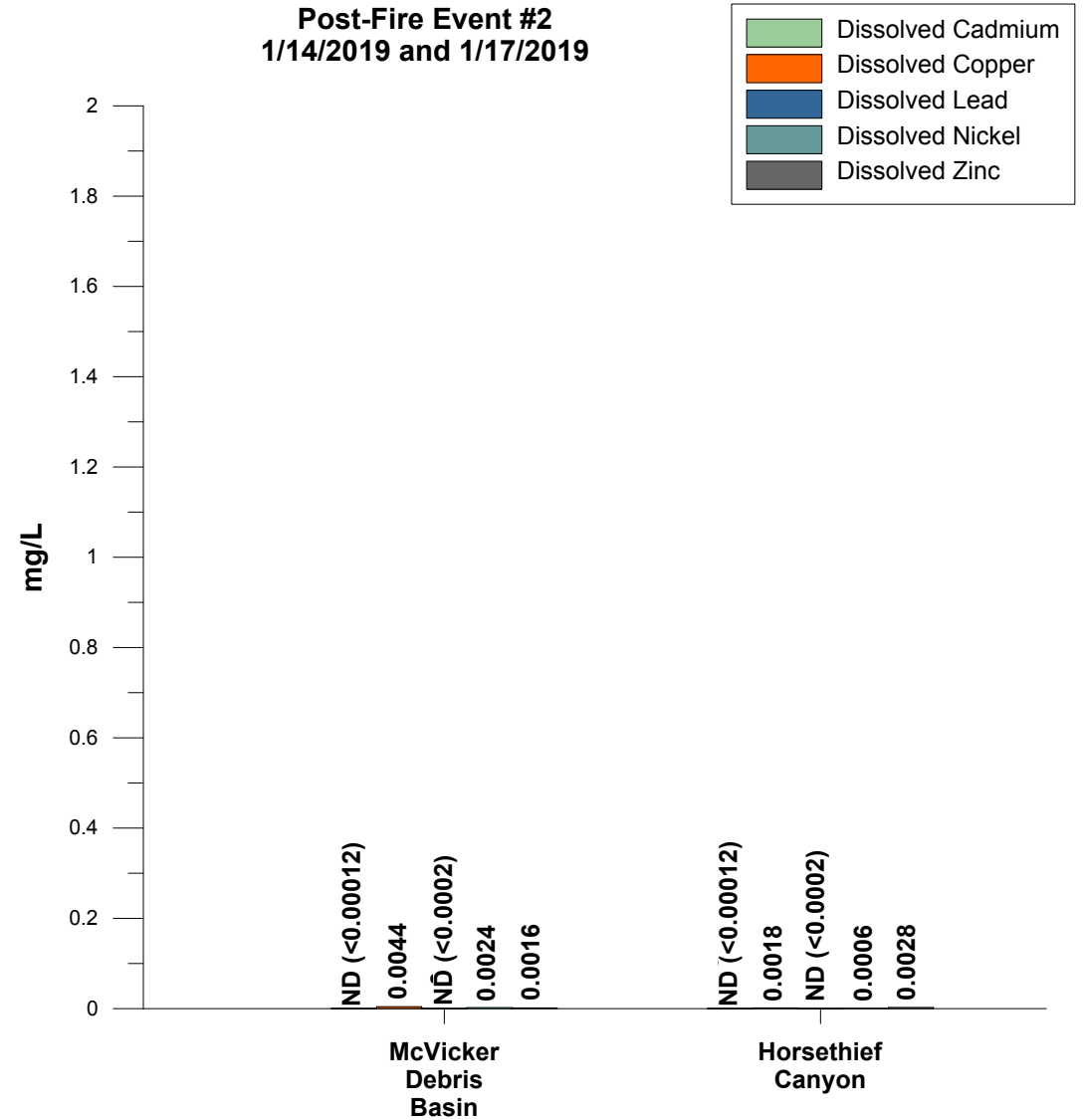
**Post-Fire Event #2
1/14/2019 and 1/17/2019**



**Post-Fire Event #2
1/14/2019 and 1/17/2019**



**Post-Fire Event #2
1/14/2019 and 1/17/2019**



1.

How does post-fire runoff affect contaminant flux?



Initial Takeaways

- High concentrations of sediment, nutrients, and metals
 - Significantly higher than reference data
 - Concentrations lower in Event #2
- Debris basins reduced downstream impacts

Post-Fire Monitoring Report (expected May/June 2019)

- Assessment of post-fire contaminant and flux
 - Pollutant concentrations
 - Flow data
 - Event-based sediment and pollutant loads
- Comparison with reference data

THANK YOU!



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