



U.S. DEPARTMENT OF
ENERGY

OFFICE OF
**ENVIRONMENTAL
MANAGEMENT**



2019 Storm Water Monitoring Year and Results for the Individual Permit

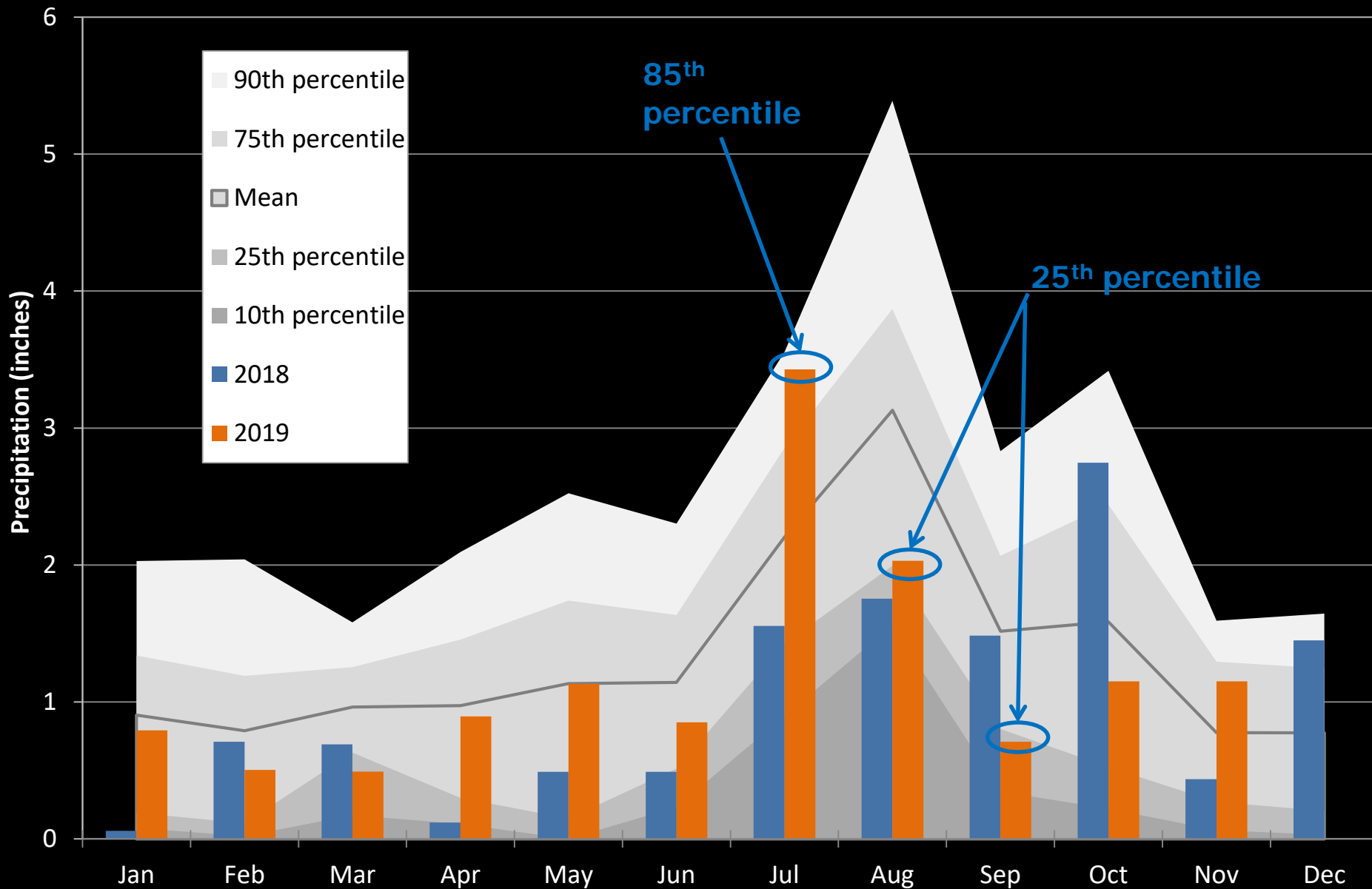
December 17, 2019

Amanda White
Manager, Surface Water Monitoring and IP
N3B Los Alamos



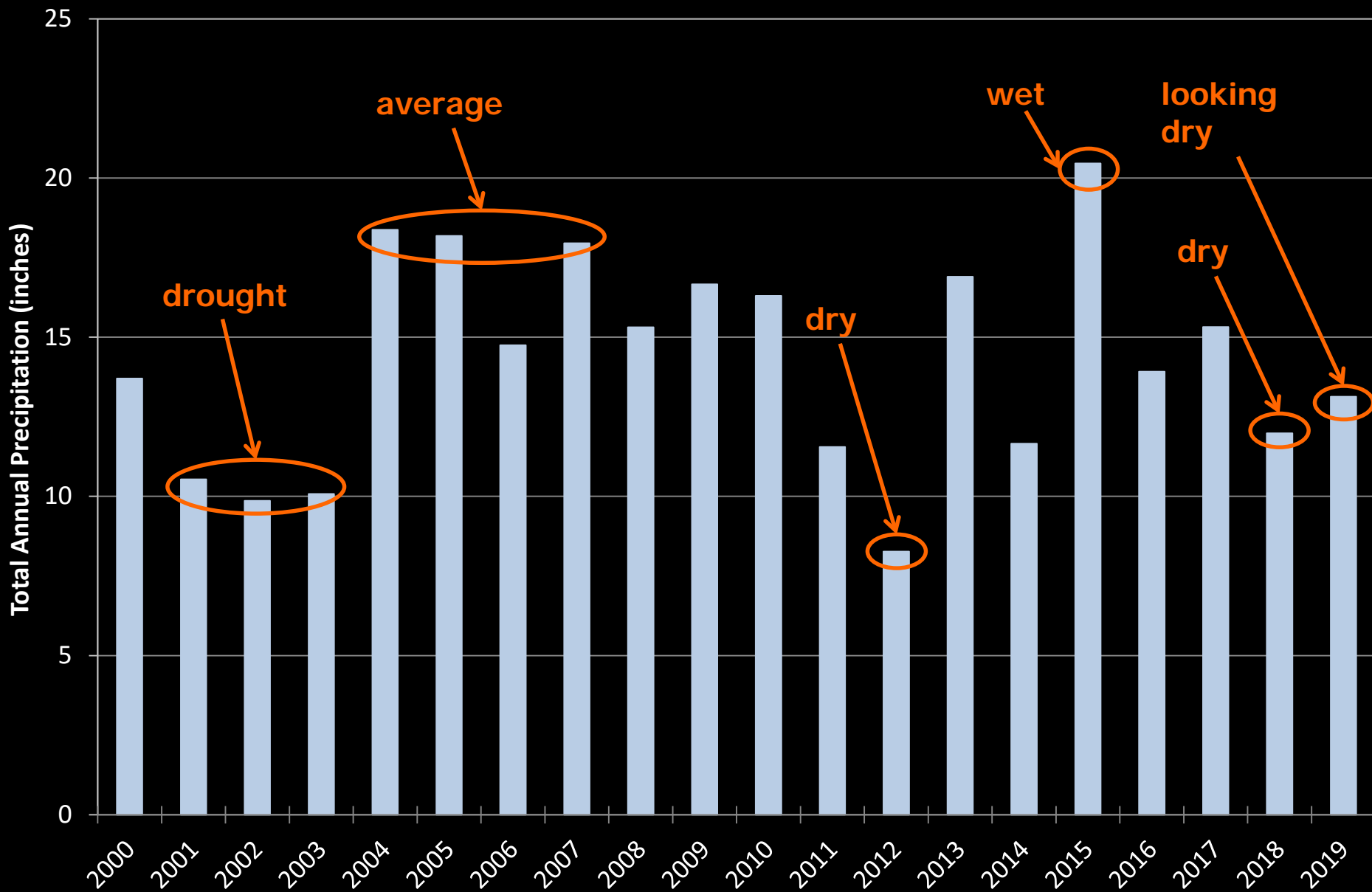
ENVIRONMENTAL MANAGEMENT
SAFETY ♦ EFFICIENCY ♦ TRANSPARENCY

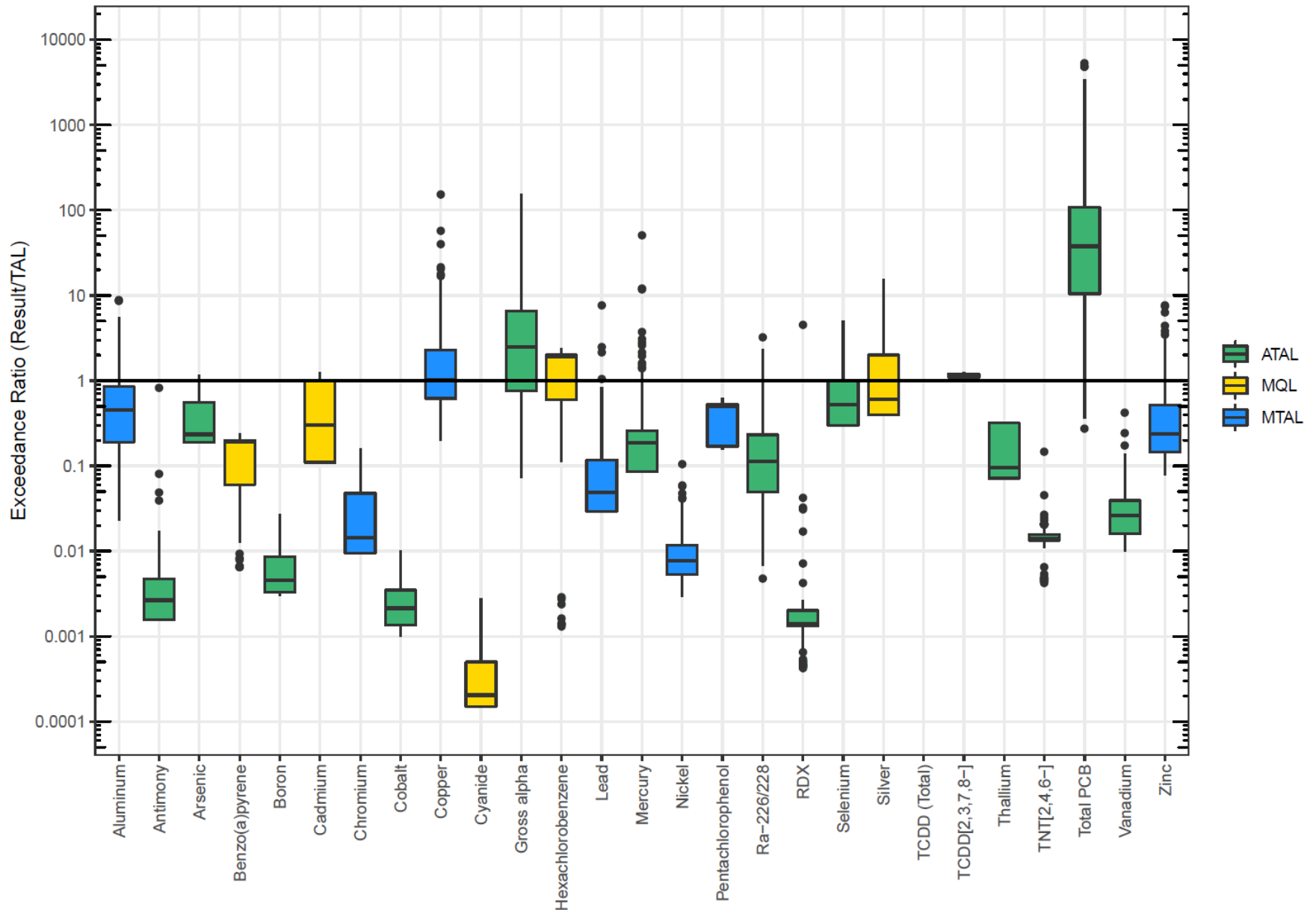
N3B Los Alamos

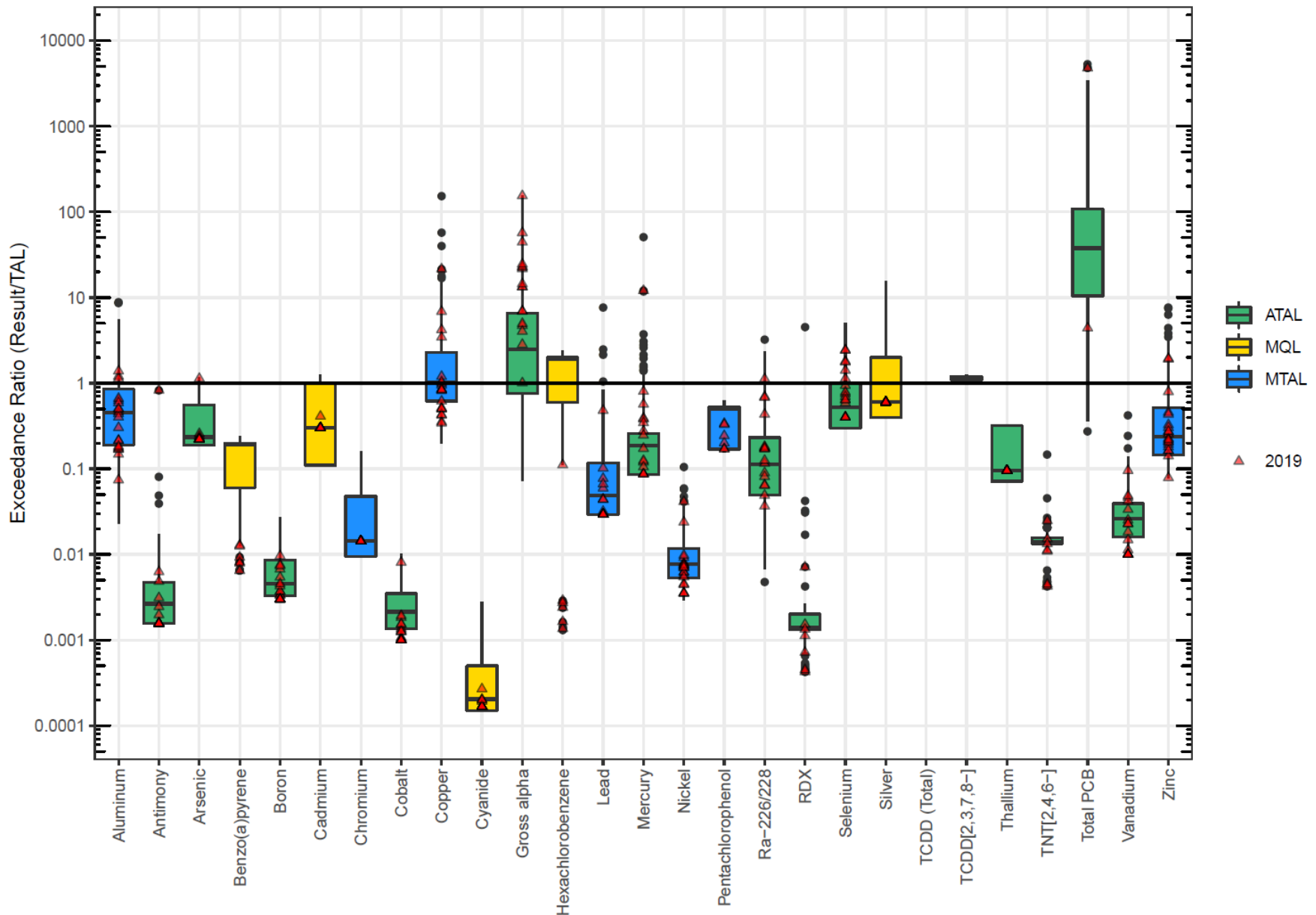




2019 Compared to Past Years









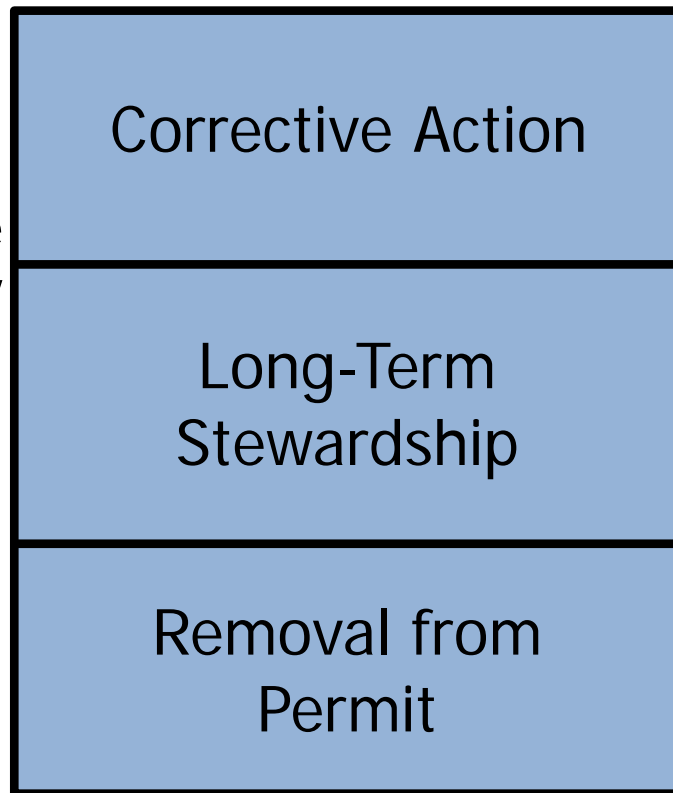
Summary of IP Results from 2019

- Aluminum, radium-226/228, and selenium – geology
- Gross alpha – geology & Site-related
- Copper and zinc – urban areas & Site-related
- Mercury and arsenic – Site-related
- Total PCBs – associated with humans (in atmosphere, precipitation, and storm water runoff) & Site-related





Storm Water



Composite BTV

Target Action Limit

Composite BTV =

$$\text{NBG} * \% \text{Pervious} + \text{DBG} * \% \text{Impervious}$$

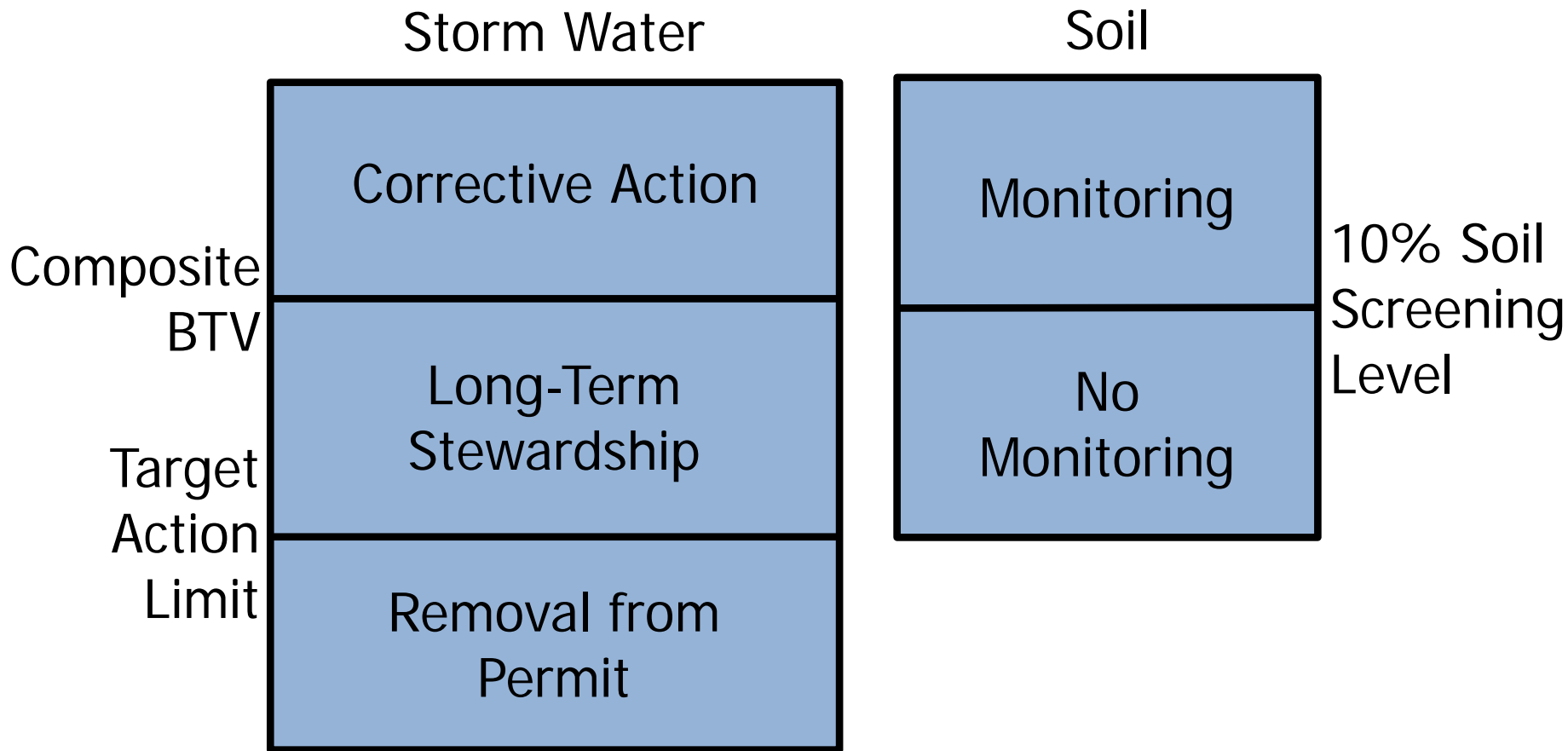
where:

NBG = natural background BTV

DBG = developed background BTV

Note both are 90th Percentile background threshold values





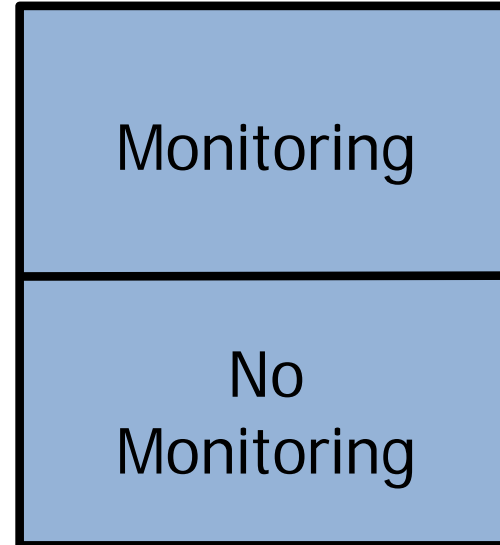
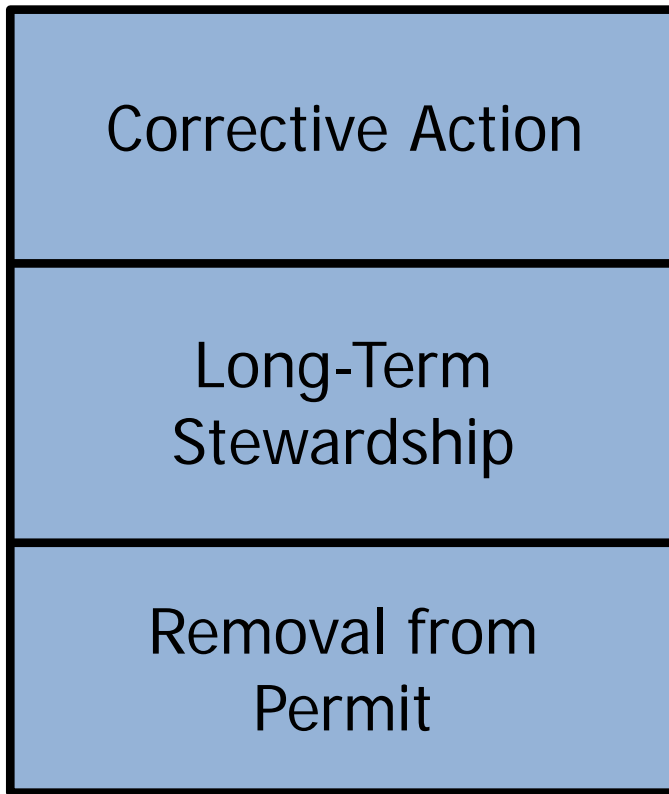


Storm Water

Soil

Composite
BTV

Target
Action
Limit



10% Soil
Screening
Level





- Aluminum = 902 $\mu\text{g/L}$
 - NBG 90th Percentile BTV = 3200 $\mu\text{g/L}$
 - DBG 90th Percentile BTV = 210 $\mu\text{g/L}$
 - Composite BTV = $3200 \times 0.961 + 210 \times 0.039 = 3084 \mu\text{g/L}$
 - $902 < 3084$, thus Long-Term Stewardship

%Impervious
= 3.9%

%Pervious =
96.1%



- Aluminum = 902 $\mu\text{g/L}$
 - NBG 90th Percentile BTV = 3200 $\mu\text{g/L}$
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 - Composite BTV = $3200 \times 0.961 + 210 \times 0.039 = 3084 \mu\text{g/L}$
 - $902 < 3084$, thus Long-Term Stewardship
- Gross Alpha = 857 pCi/L & SSC = 60,800 mg/L
 - Normalized GA = $(857 / 60,800) \times 1000 = 14.10 \text{ pCi/g}$
 - NBG 90th Percentile BTV = 66 pCi/g
 - DBG 90th Percentile BTV = 47 pCi/g
 - Composite BTV = $66 \times 0.961 + 47 \times 0.039 = 65 \text{ pCi/g}$
 - $14.10 < 65$, thus Long-Term Stewardship

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 - DBG 90th Percentile BTV = 47 pCi/g
 - Composite BTV = $66 \times 0.961 + 47 \times 0.039 = 65 \text{ pCi/g}$
 - $14.10 < 65$, thus Long-Term Stewardship
- Selenium = 5.66 $\mu\text{g/L}$
 - NBG 90th Percentile BTV = 4.8 $\mu\text{g/L}$
 - DBG 90th Percentile BTV = none (too many non-detects)
 - Composite BTV = 4.8 $\mu\text{g/L}$ (mostly pervious, or 96.1%)
 - $5.66 > 4.8$ thus Corrective Action

% Impervious
= 3.9%

% Pervious =
96.1%



- Summary:
 - Storm water
 - Long-term stewardship for aluminum and gross alpha
 - Corrective action for selenium
 - Soil
 - No monitoring for aluminum, gross alpha, or selenium
 - Selenium not detected
 - Site history
 - No historical use of aluminum, radionuclides, or selenium
 - Therefore long-term stewardship is most likely outcome

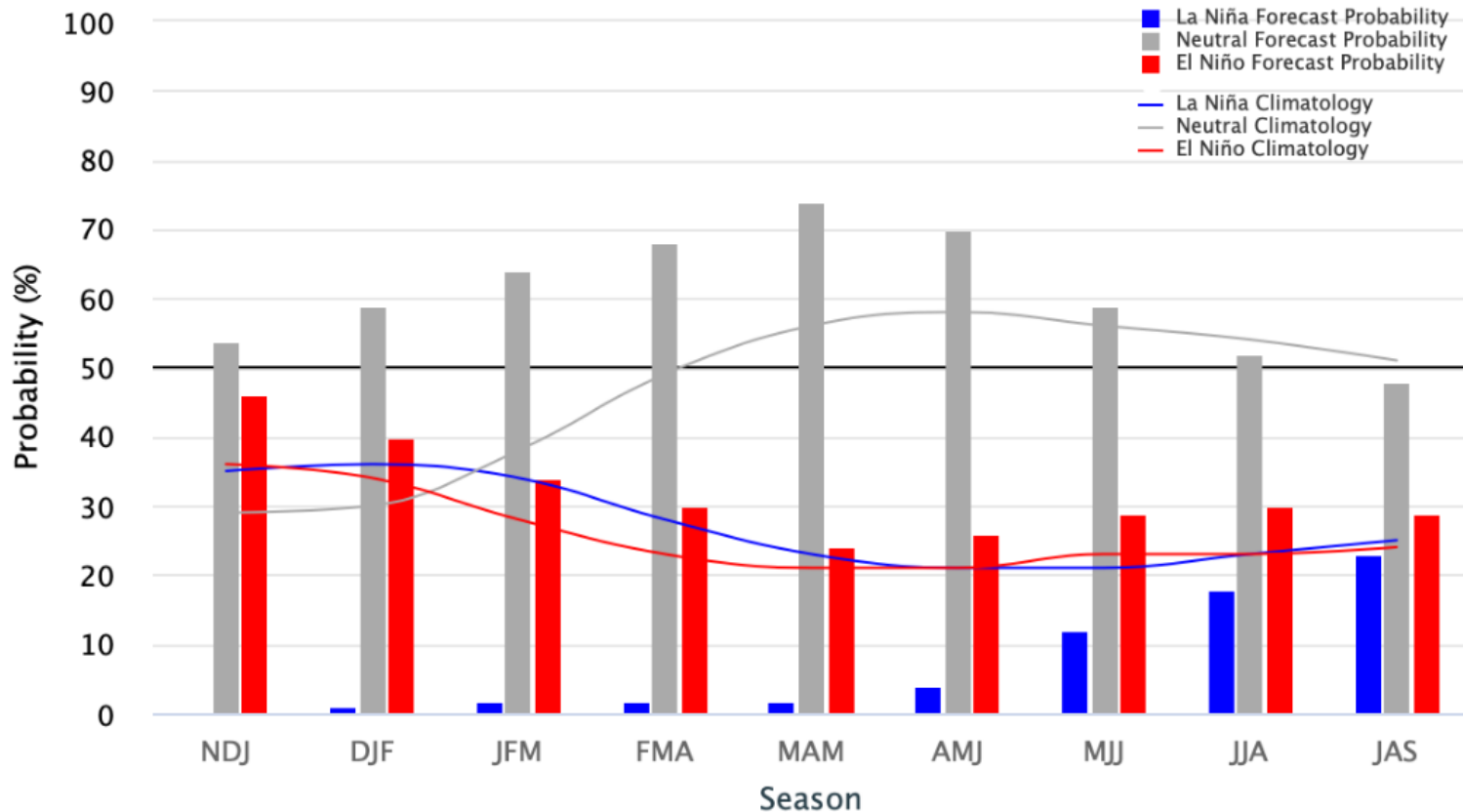


Current ENSO Conditions

ENSO-neutral is favored during the Northern Hemisphere winter 2019-2020 (~70% chance), continuing through spring 2020 (60 to 65% chance)

Mid-November 2019 IRI/CPC Model-Based Probabilistic ENSO Forecasts

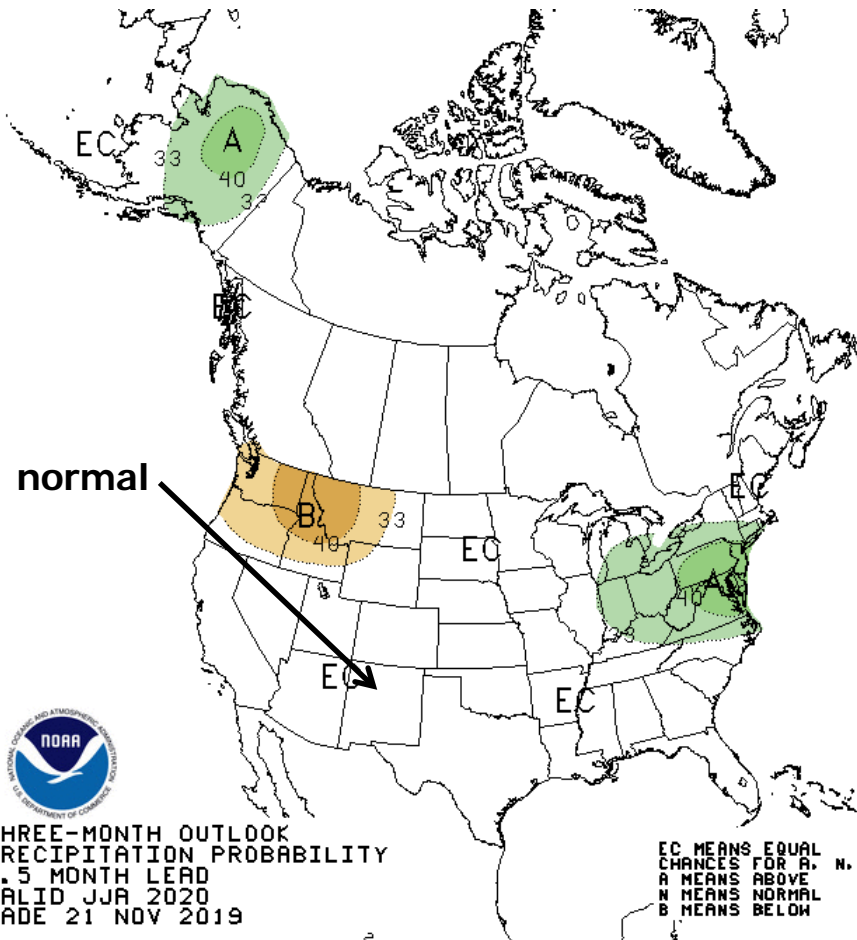
ENSO state based on NINO3.4 SST Anomaly
Neutral ENSO: $-0.5\text{ }^{\circ}\text{C}$ to $0.5\text{ }^{\circ}\text{C}$



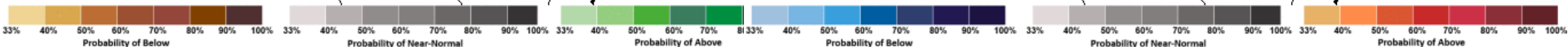
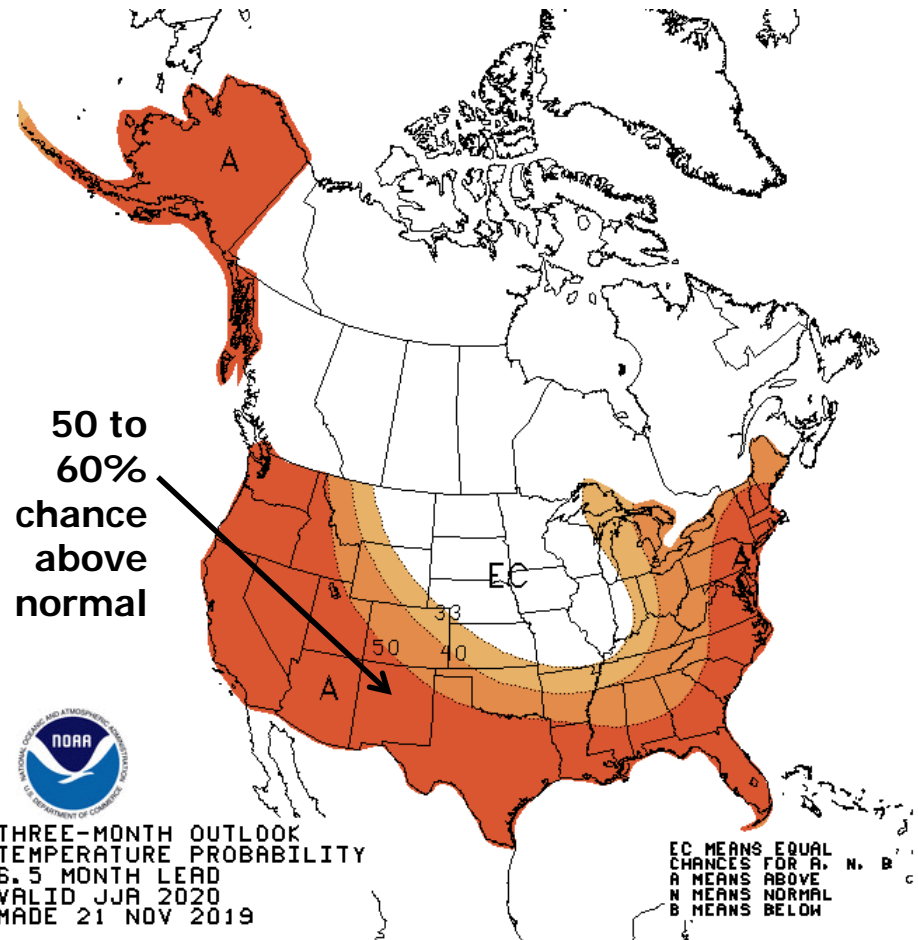


U.S. Seasonal Outlooks for June, July, August 2020

Precipitation



Temperature





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Questions?



ENVIRONMENTAL MANAGEMENT
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Produced by Los Alamos Legacy Cleanup Contractor, N3B Los Alamos
on behalf of DOE's Environmental Management Los Alamos Field Office

