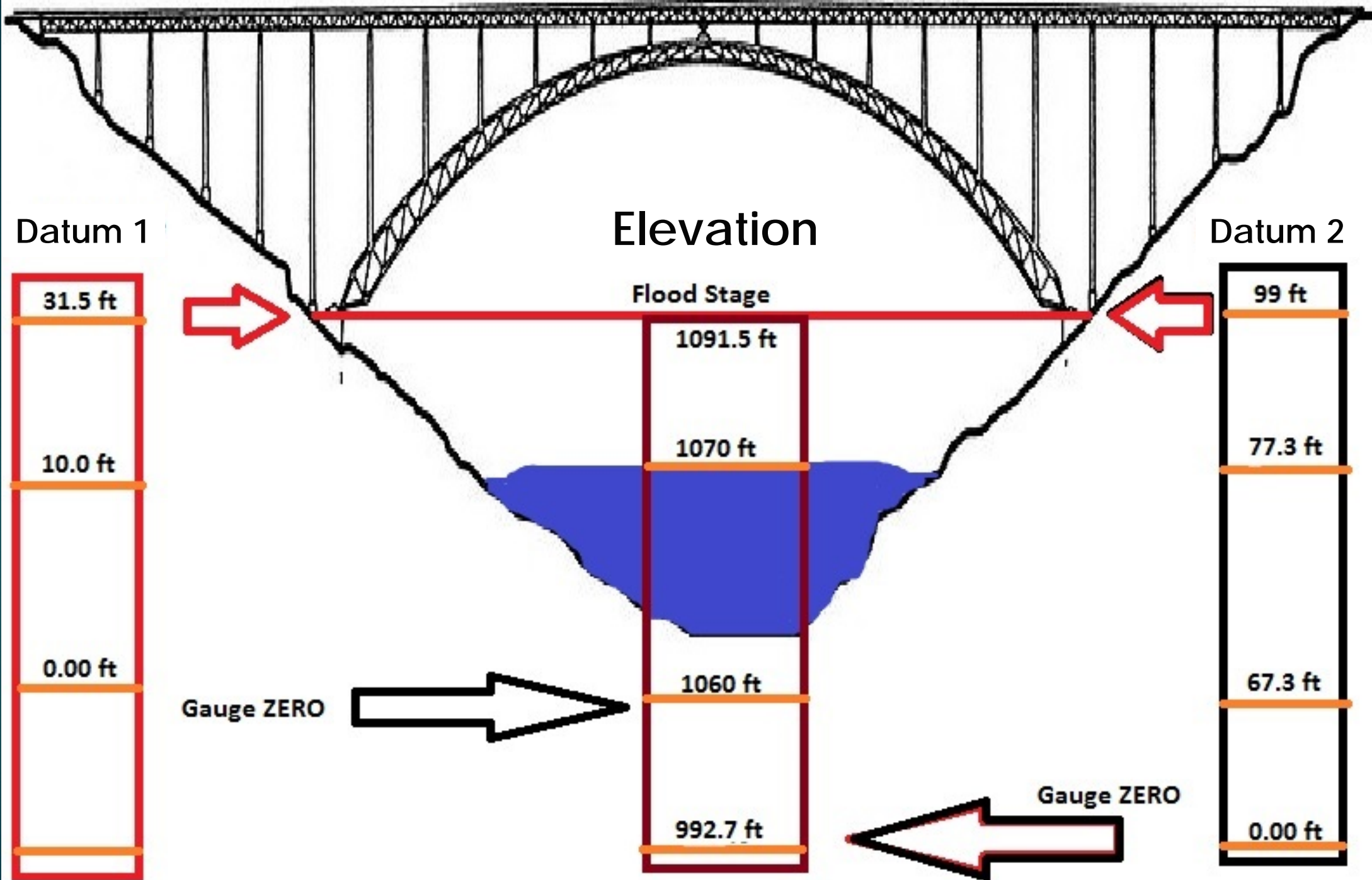


Changing Flood Reference Elevations is Relative but it is a Big Deal!

DAVID C. CURTIS, PH.D., F.EWRI, WEST CONSULTANTS, FOLSOM, CA

SCOTT BOETTCHER, CHEHALIS RIVER BASIN FLOOD AUTHORITY, CENTRALIA, WA





River gages in Chehalis River Basin
were resurveyed in 2018.

River Stage is just a number.



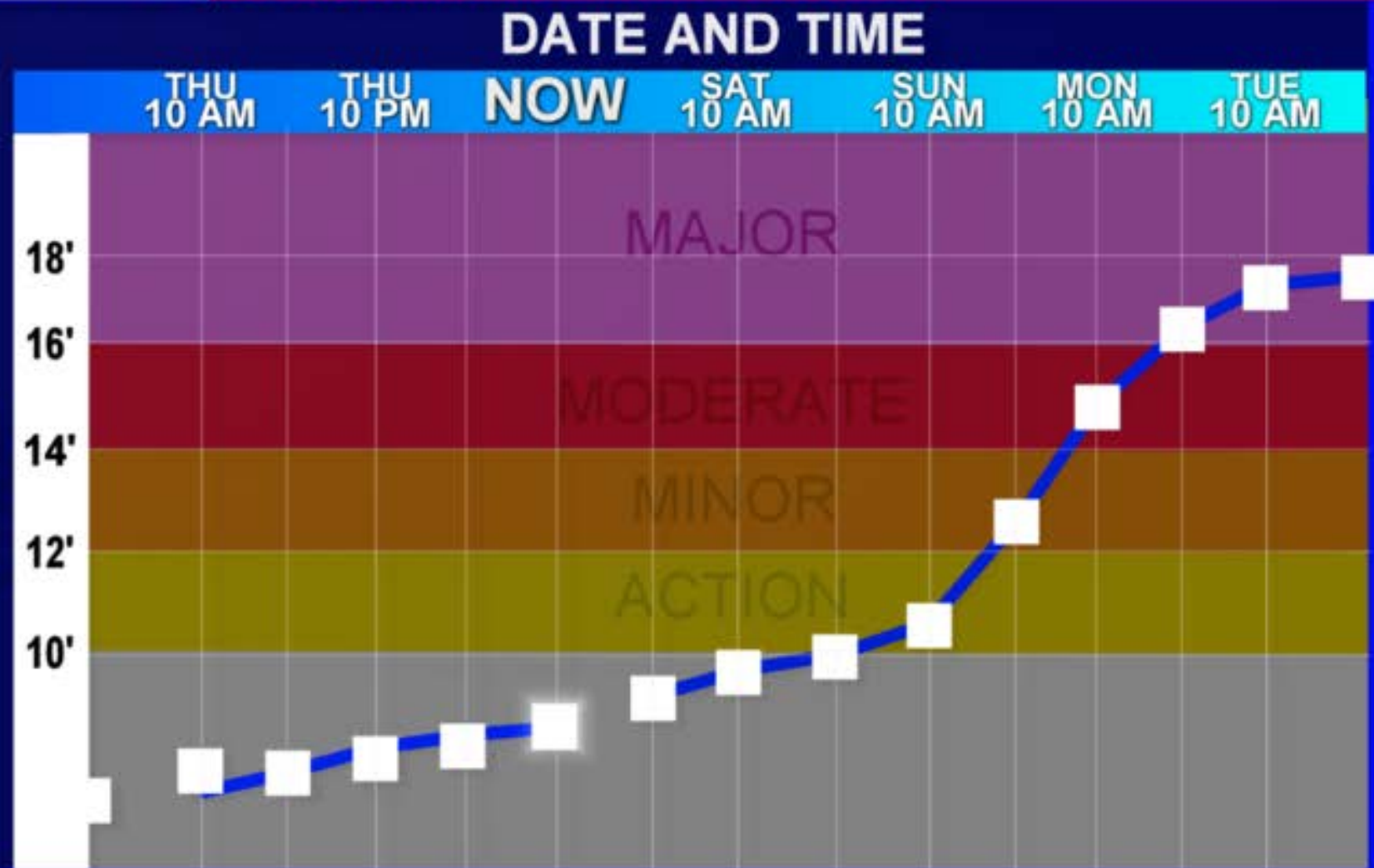


RIVER STAGE

CEDAR RIVER AT CEDAR RAPIDS

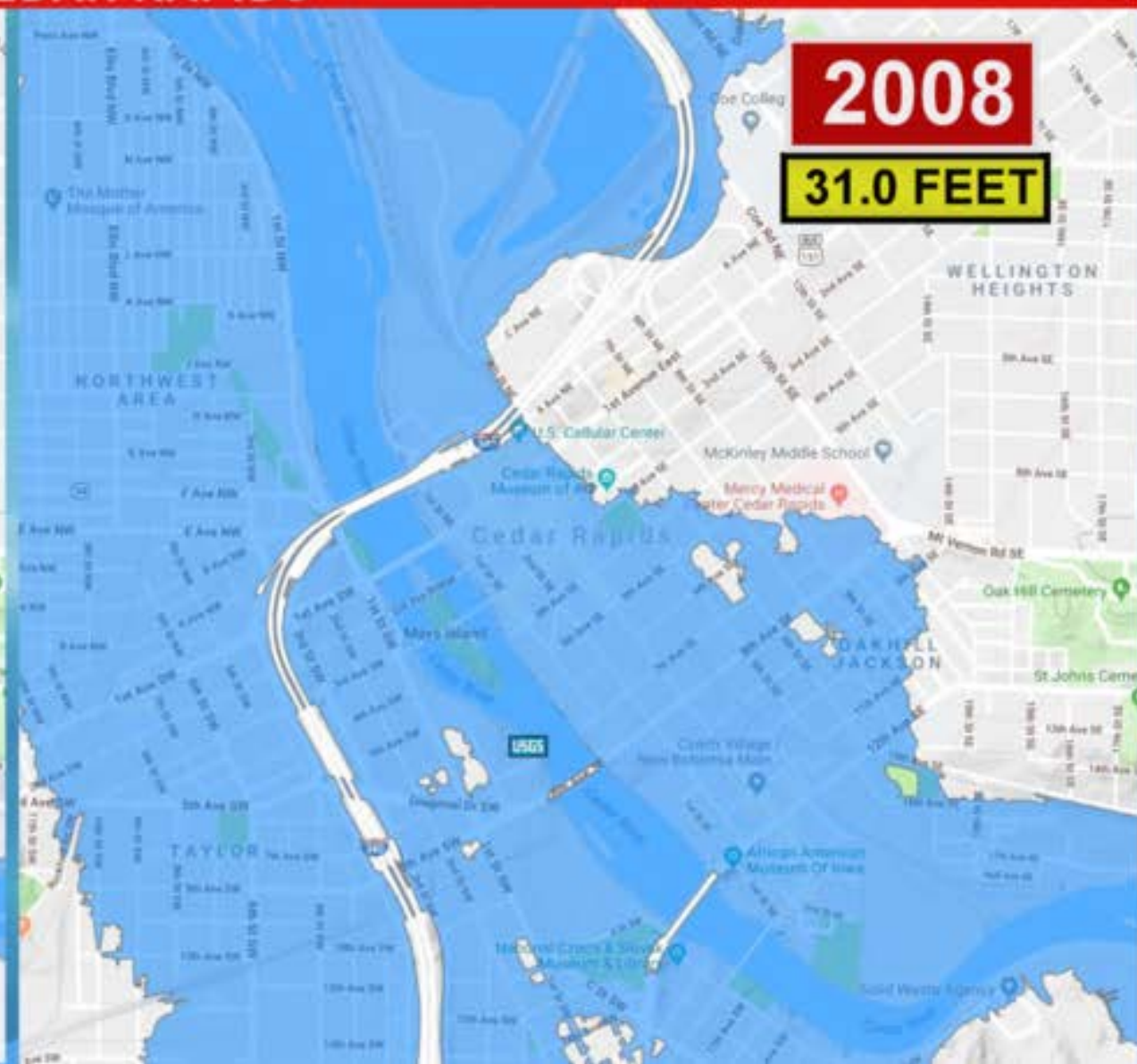
CURRENT
8.65ft
FORECAST
17.3ft
CREST
TUESDAY

STAGE



INUNDATION MAP

CEDAR RIVER - CEDAR RAPIDS







MITIGATION

Public Education

Hazard & Vulnerability Assessment

Improved Infrastructure

PREPAREDNESS

Emergency Response Plans

Training & Exercises

Sirens

RECOVERY

Economic Recovery

Debris Management

Housing

Health & Social Services

RESPONSE

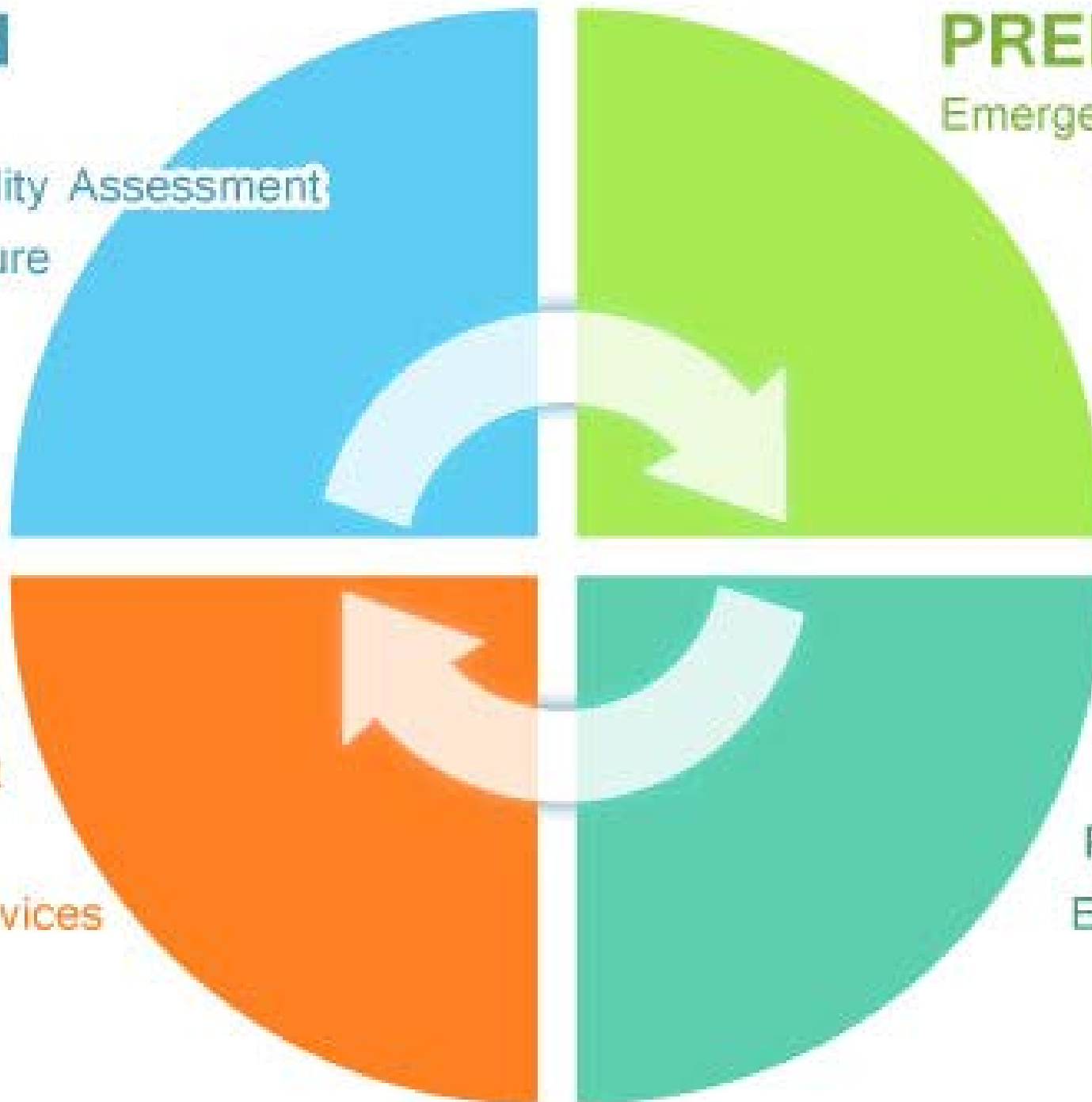
Life Safety

Incident Stabilization

Property Preservation

Evacuation & Shelters

Mass Care



A person wearing a blue puffer jacket, blue jeans, and brown boots stands with their back to the camera, looking over a metal fence. The fence is made of silver metal posts and wire mesh. Behind the fence is a grassy field with a large pile of brown, fallen leaves. In the background, there are several tall evergreen trees and some bare deciduous trees under a cloudy sky.

Chehalis River Basin "Critter Pads"

VERTICAL DATUMS OF THE UNITED STATES

**First General Adjustment – 1899
(a.k.a. – Sandy Hook Datum)**

Second General Adjustment - 1903

Third General Adjustment - 1907

Fourth General Adjustment - 1912

Mean Sea Level 1929

National Geodetic Vertical Datum of 1929 (NGVD 29)

North American Vertical Datum of 1988 (NAVD 88)



What Happens When You Change the Number?





Unrelenting Outreach

- ▶ Outreach flyer
- ▶ Social media postings
- ▶ Email notifications
- ▶ Notifications sent to federal, state, and local agencies
- ▶ Public meeting
- ▶ Emergency preparedness meetings
- ▶ Notices to Chambers of Commerce
- ▶ Newspapers
- ▶ Radio/TV
- ▶ Relevant websites



Conversion Example #1
Old Gage Height Readings Showing Equivalent New Gage Heights (rounded to nearest half foot)

Stream Gaging Station	Old Gage Height (ft)	Add Conversion (ft)	New Gage Height (ft)
(9) Newaukum River near Chehalis, WA	10.5	191.94	202.5
(19) Skookumchuck River near Bucoda, WA	13.5	198.15	211.5
(23) Chehalis River at Porter, WA	21.0	27.11	48.0

Conversion Example #2
National Weather Service Revised Flood Stage Designations (rounded to nearest half foot)

Stream Gaging Station	Old NWS Flood Stage (ft)	New NWS Flood Stage (ft)
(3) Chehalis River near Doty, WA	13.0	318.0
(9) Newaukum River near Chehalis, WA	10.5	202.5
(13) Chehalis River at Centralia, WA	65.0	168.5
(14) Skookumchuck River at Centralia, WA	85.0	189.0
(19) Skookumchuck River near Bucoda, WA	13.5	211.5
(20) Chehalis River near Grand Mound, WA	14.0	141.0
(23) Chehalis River at Porter, WA	21.0	48.0
(24) Satsop River near Satsop, WA	34.0	38.0
(27) Wynoochee River above Black Creek near Montesano, WA	18.0	42.5

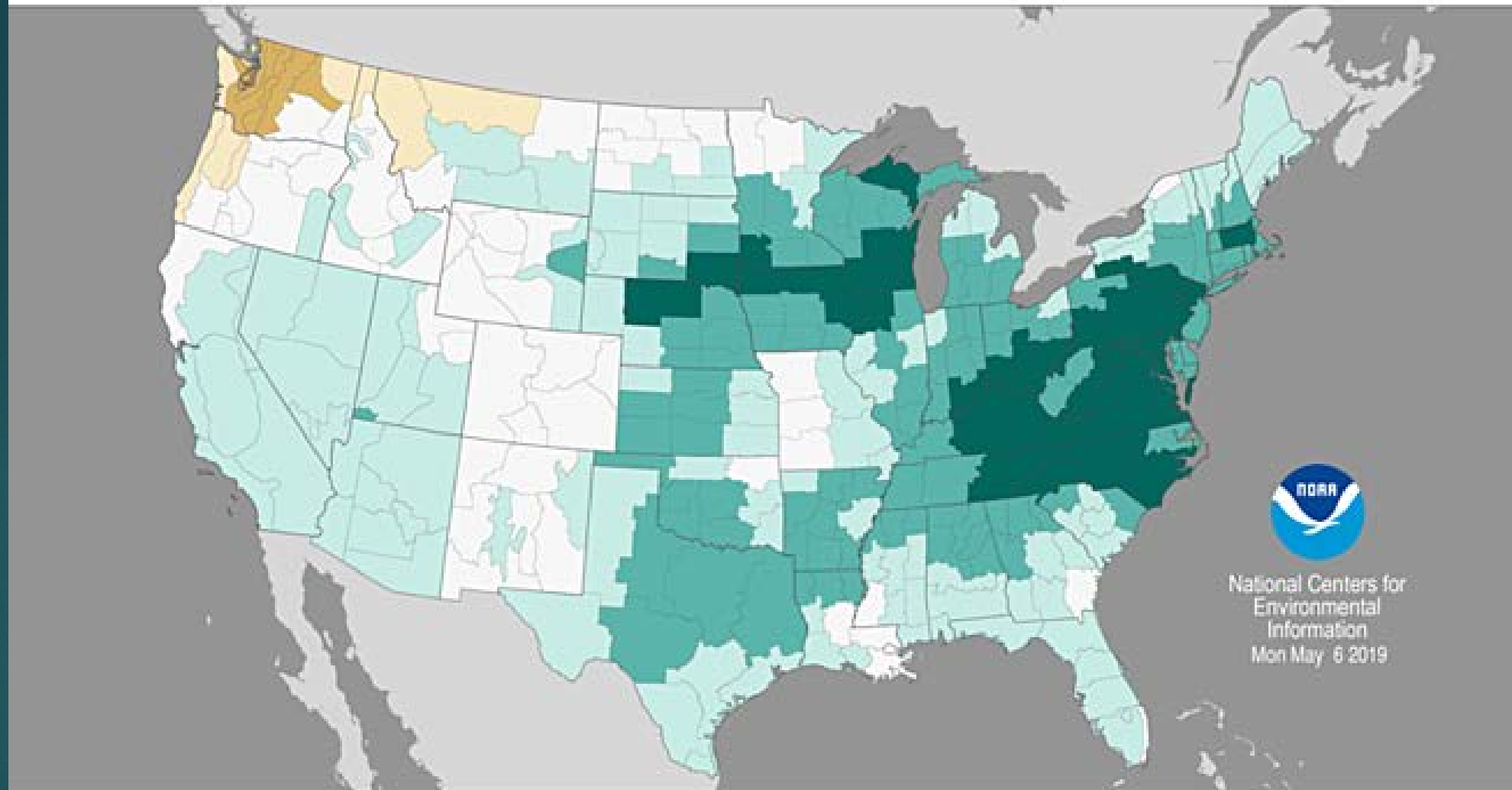
What Happened This Flood Season?



Divisional Precipitation Ranks

May 2018–April 2019

Period: 1895–2019



National Centers for
Environmental
Information
Mon May 6 2019

Record
Driest

Much
Below
Average

Below
Average

Near
Average

Above
Average

Much
Above
Average

Record
Wettest



**Multi-year
Unrelenting
Outreach**



Questions?

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