

# WILLAMETTE VALLEY SYSTEM MANAGEMENT

## Challenges Posed by WY 2023

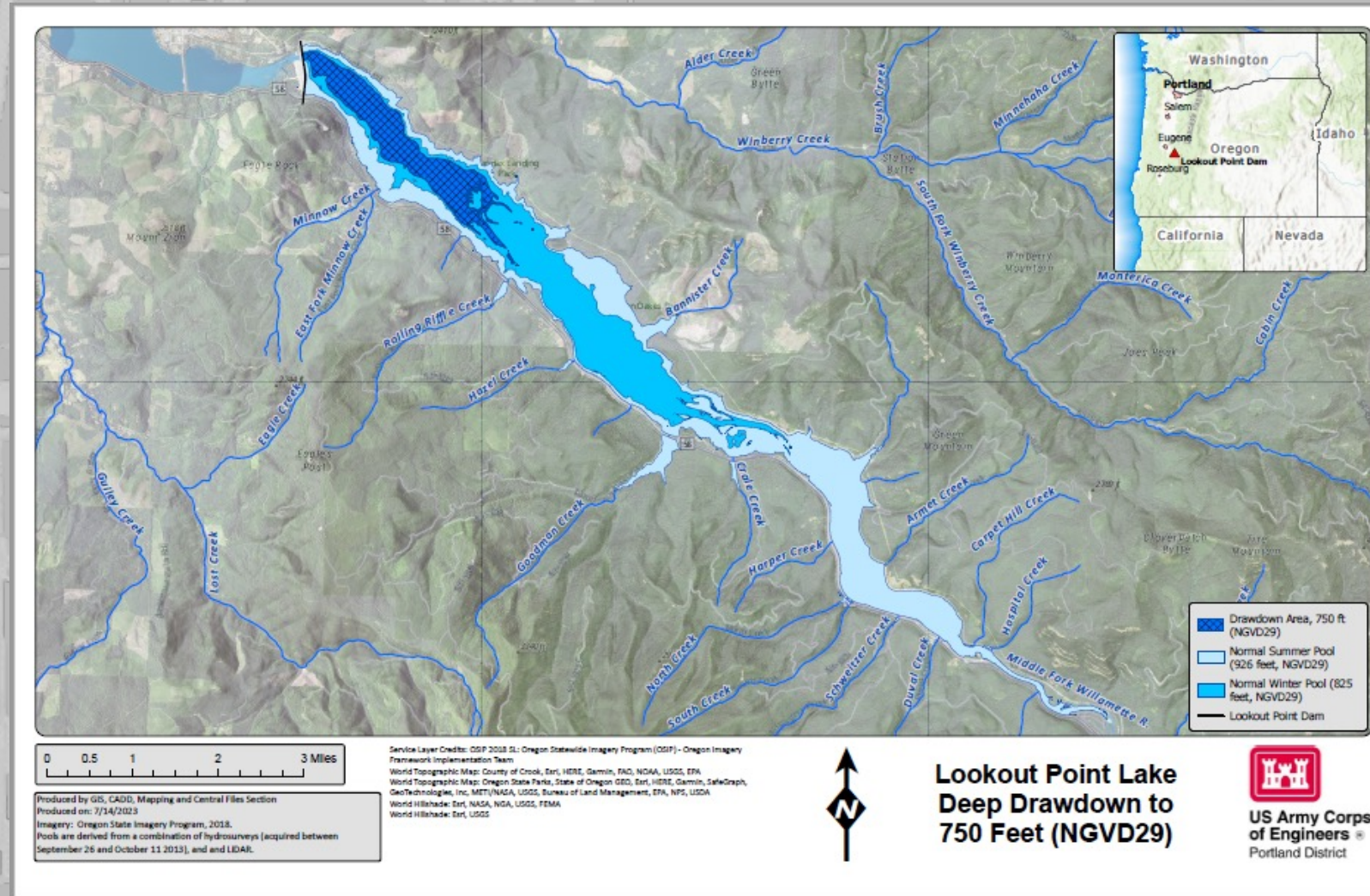
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USACE Portland District  
Reservoir Regulation and Water  
Quality

OR/WA Water Year 2023 Meeting

*"The views, opinions and findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other official documentation."*



US Army Corps  
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# WILLAMETTE VALLEY SYSTEM RESERVOIRS



Authorized by the Flood Control Acts of 1936, 1938, 1950, and 1962

Authorized purposes: Flood risk management, Hydropower, Fish & wildlife, ~~Navigation~~, Water quality, Recreation, Irrigation, Municipal & industrial water supply

**Storage: 1.6 MAF Conservation / 1.8 MAF Flood**



Fern Ridge 1941



Cottage Grove 1942



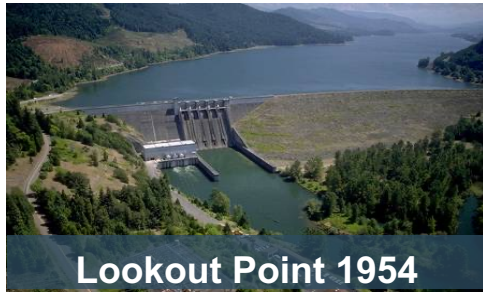
Dorena 1949



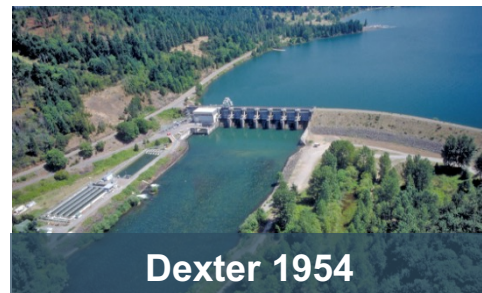
Detroit 1953



Big Cliff 1953



Lookout Point 1954



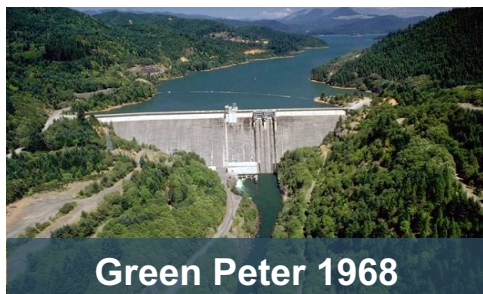
Dexter 1954



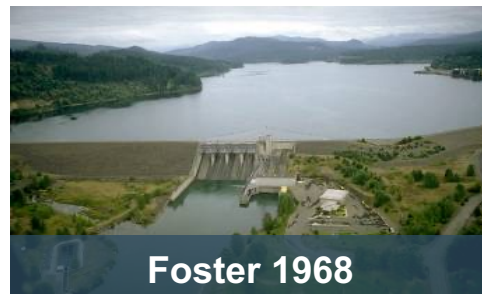
Hills Creek 1961



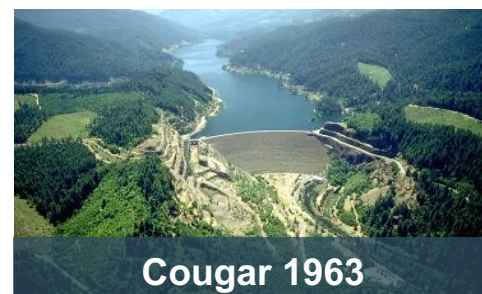
Fall Creek 1965



Green Peter 1968



Foster 1968



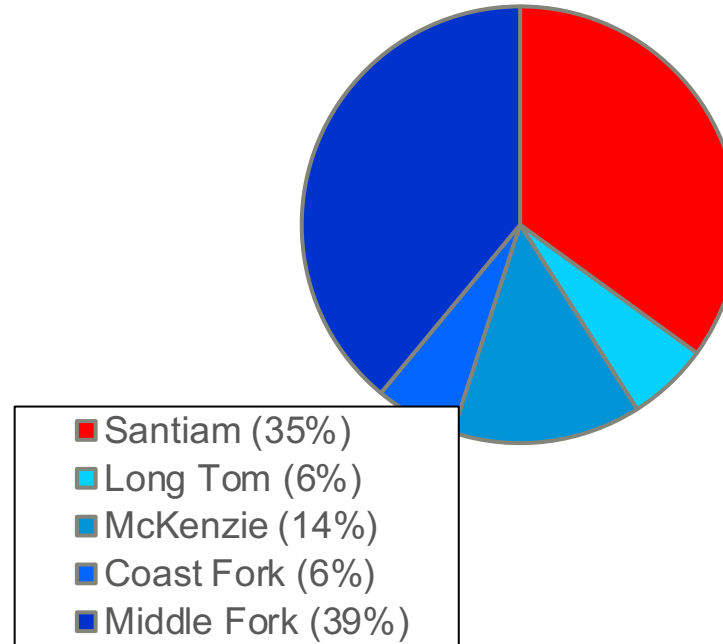
Cougar 1963



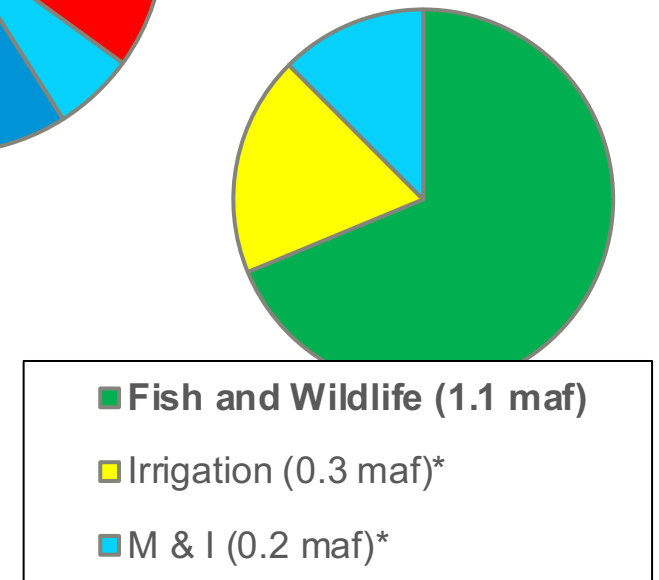
Blue River 1969



Conservation Storage by Basin



Supply by End-Use



How did changing operations and the hydrology of 2023 impact management for

- Total Water Supply, Fish and Wildlife Supply, Water Quality?



# ENDANGERED SALMONIDS



- Steelhead, Spring/Fall Chinook Salmon
- Jeopardy finding for Chinook in 2008 ESA BiOp:
- Set (seasonal) at-site minimum flows and systemwide minimum flow among other actions
- Established fish passage and temperature management “reasonable and prudent actions”
- USACE / NMFS sued for failure to implement RPAs
- US District Court injunction ordered USACE to follow measures developed by expert panel until next biological opinion (2024).



# SUMMARY IMPACTS, WVI



Injunction measures:

– Delayed spring refill

- Fall Creek
- Cougar
- Foster

– Deep summer/fall drawdown

- Lookout Point
- Fall Creek
- Green Peter

– Spill for juvenile outmigration & temperature mgmt

- Hills Creek
- Lookout Point
- Cougar
- Green Peter
- Foster
- Detroit

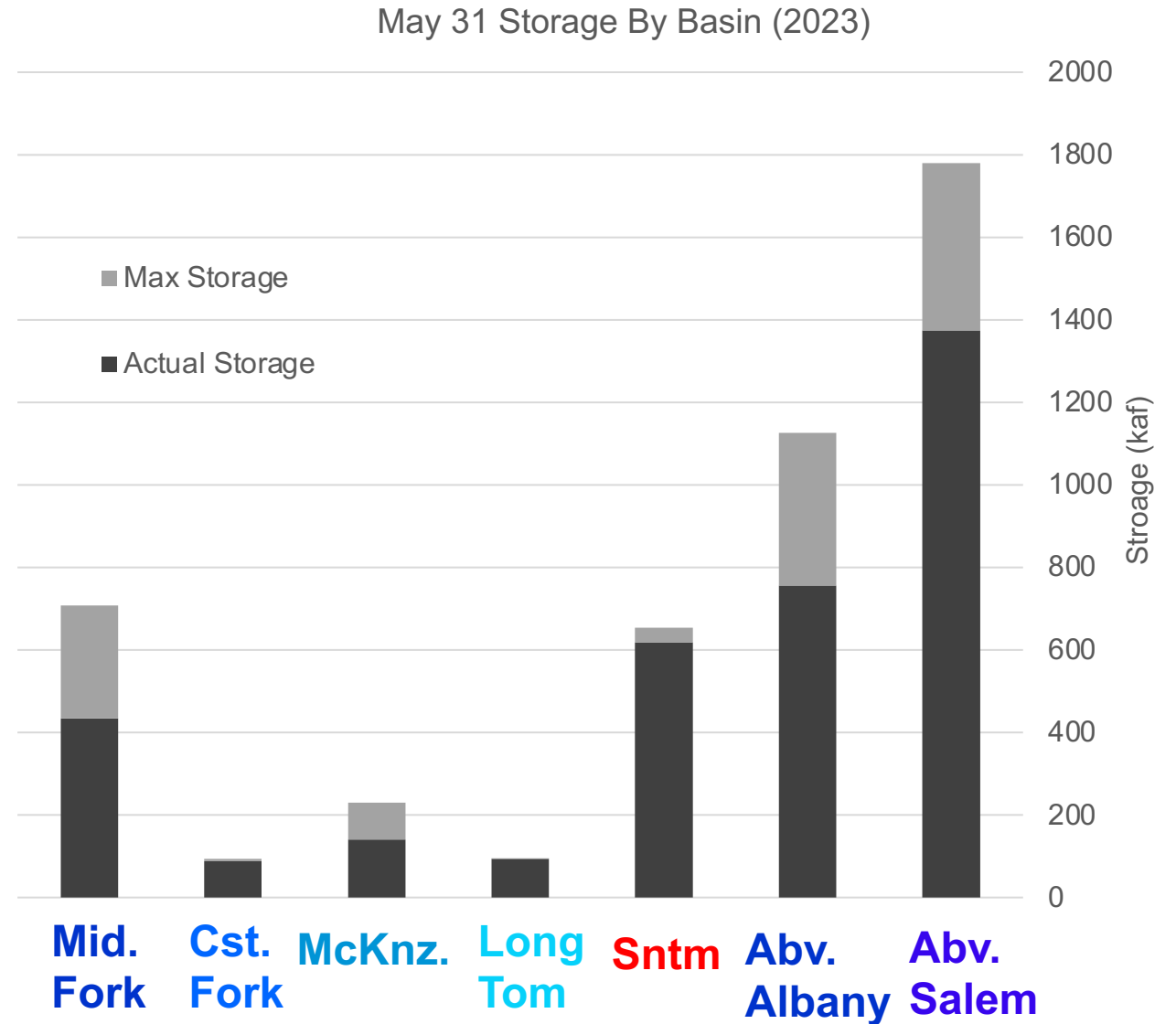
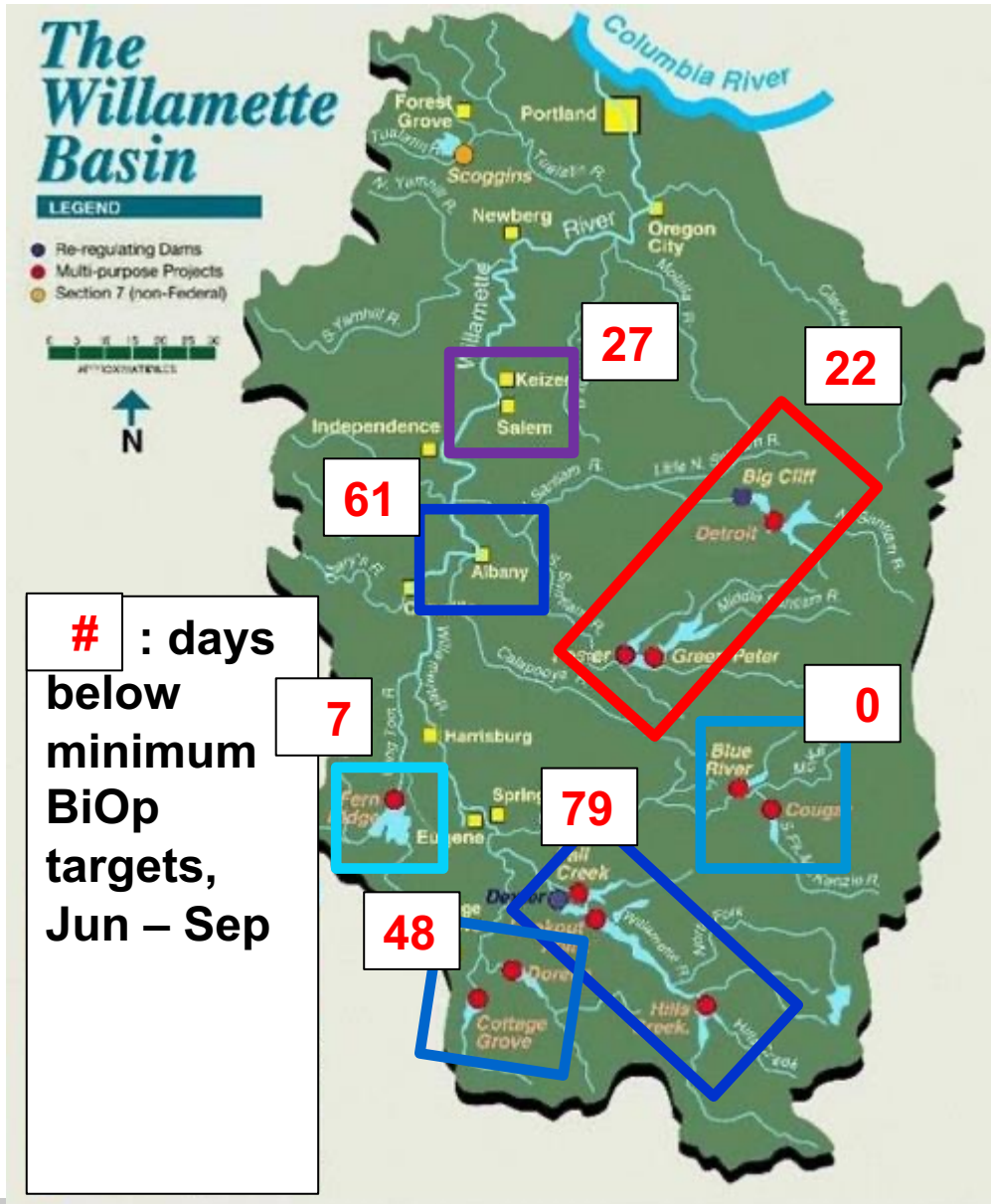


Deep Drawdown

Delayed Refill



# HOW DID WE DO MEETING OUR BIOP TARGETS?

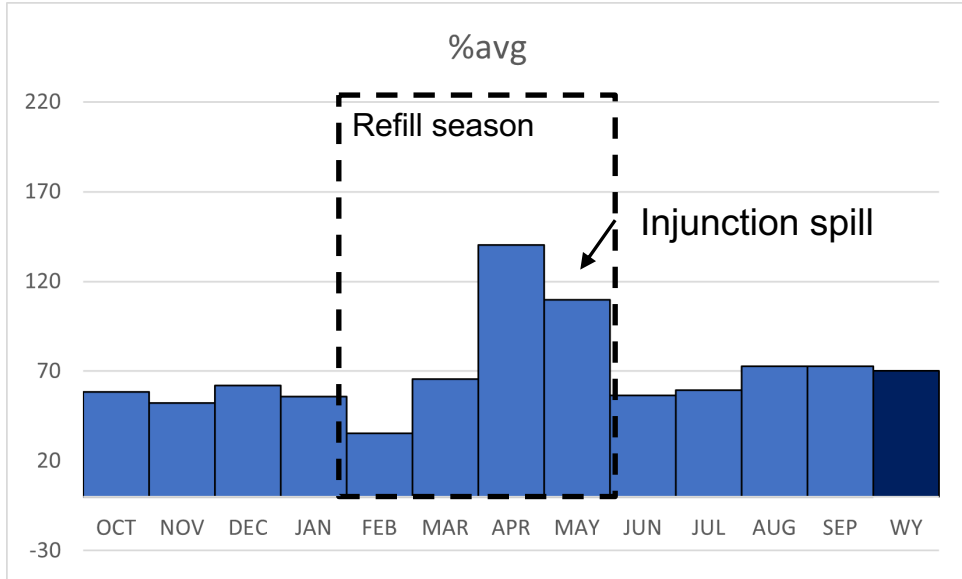




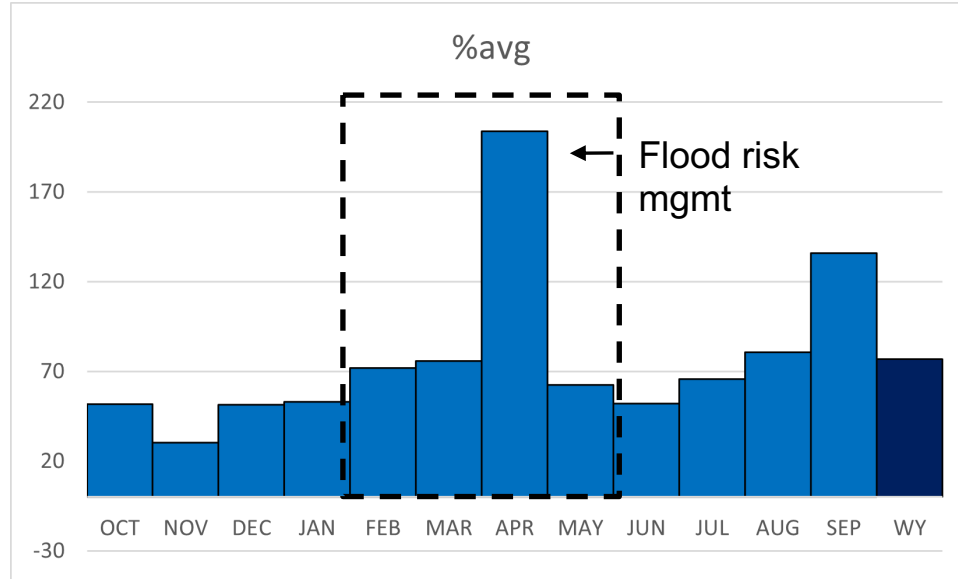
# WHY WAS 2023 CHALLENGING?



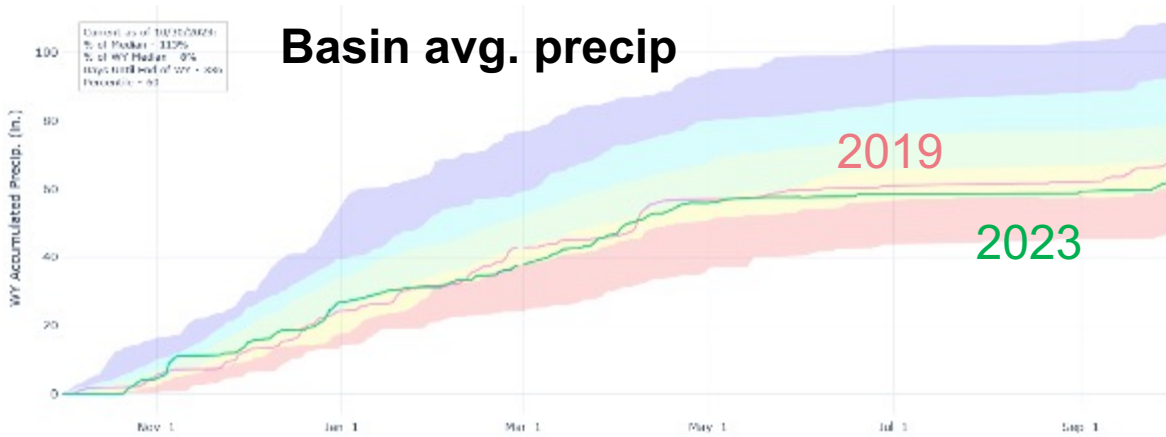
### Unregulated runoff @ Salem (2023)



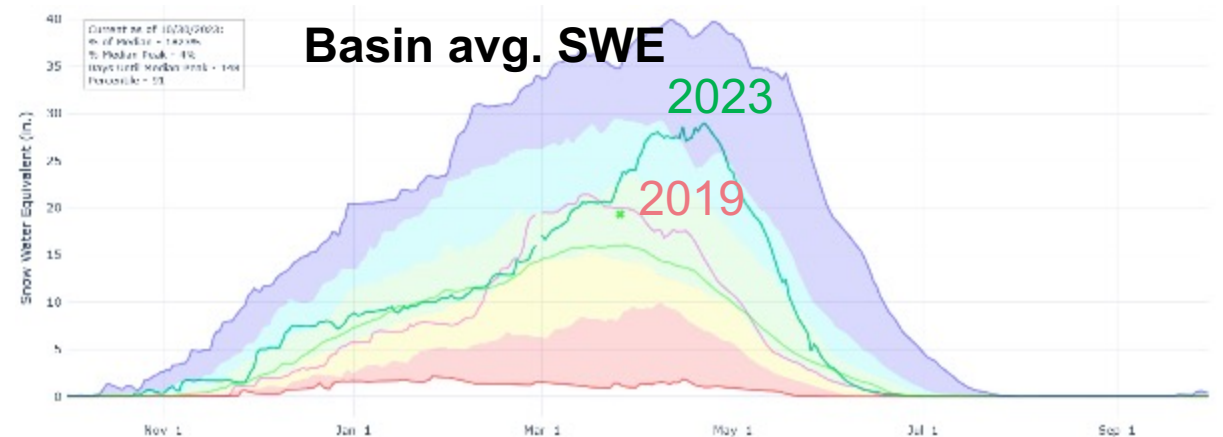
### Unregulated runoff @ Salem (2019)



### Basin avg. precip

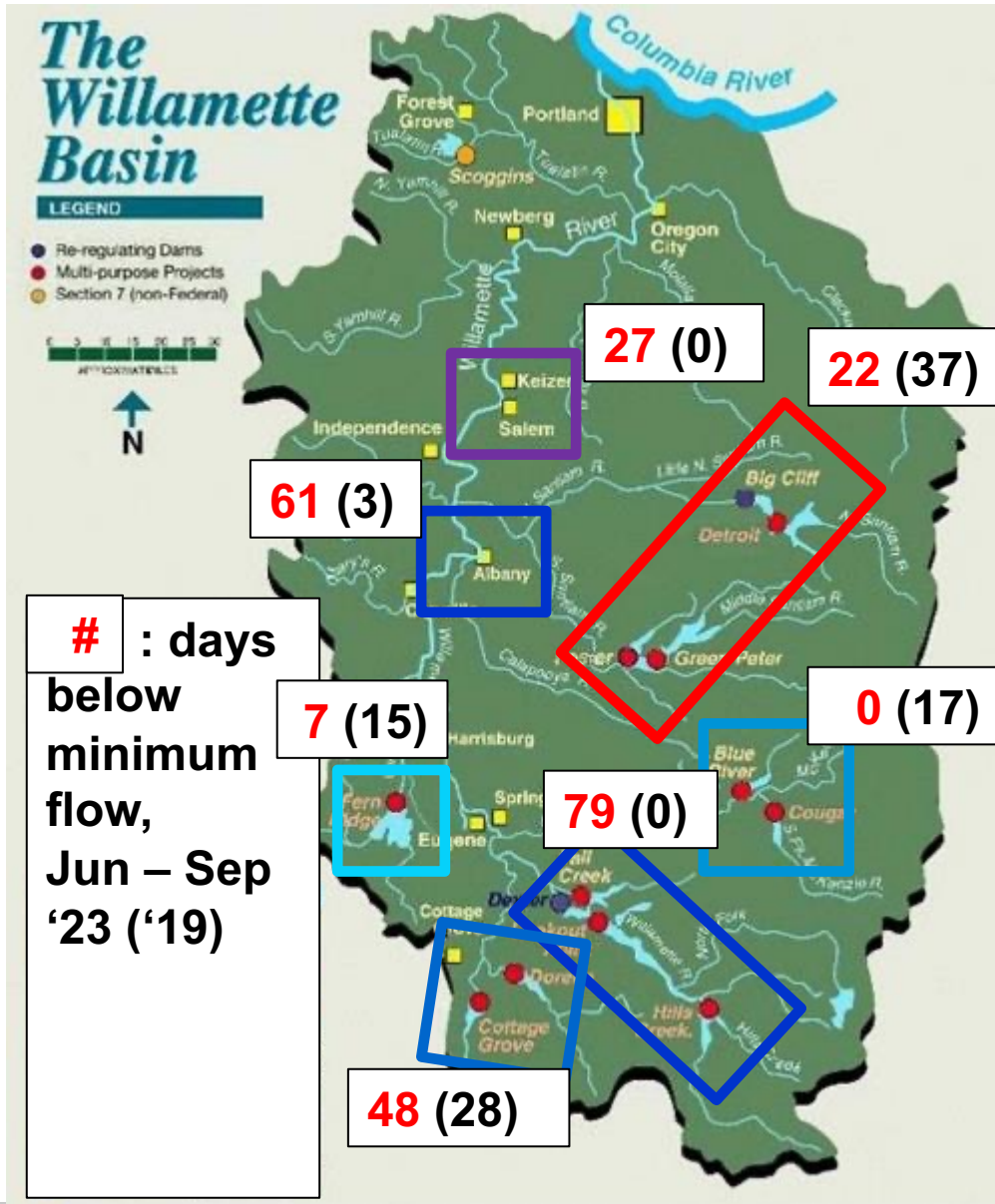
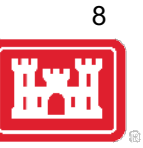


### Basin avg. SWE

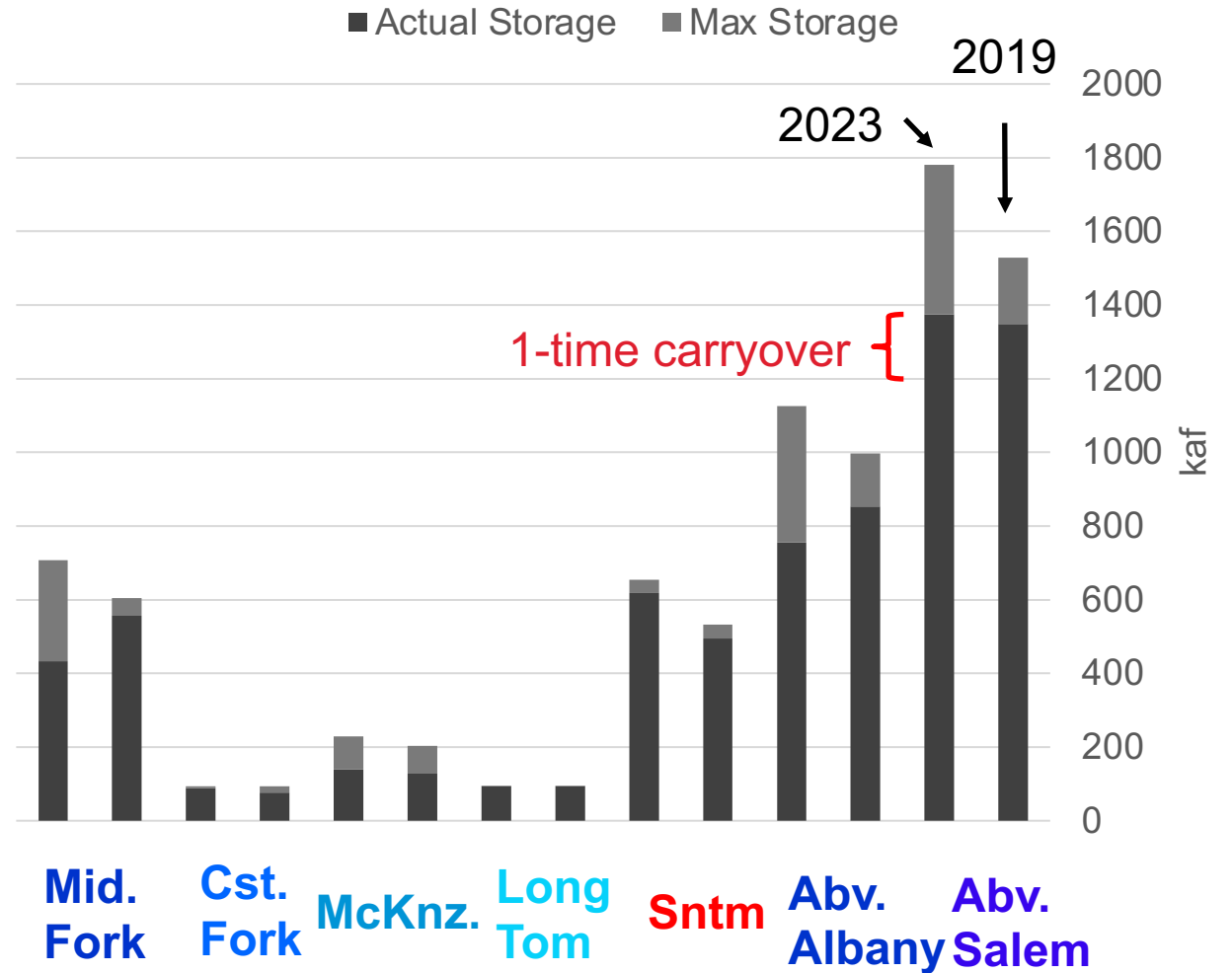




# 2023 VS 2019 SYSTEM TARGETS



May 31 Storage By Basin 2023 (left) vs 2019 (right)



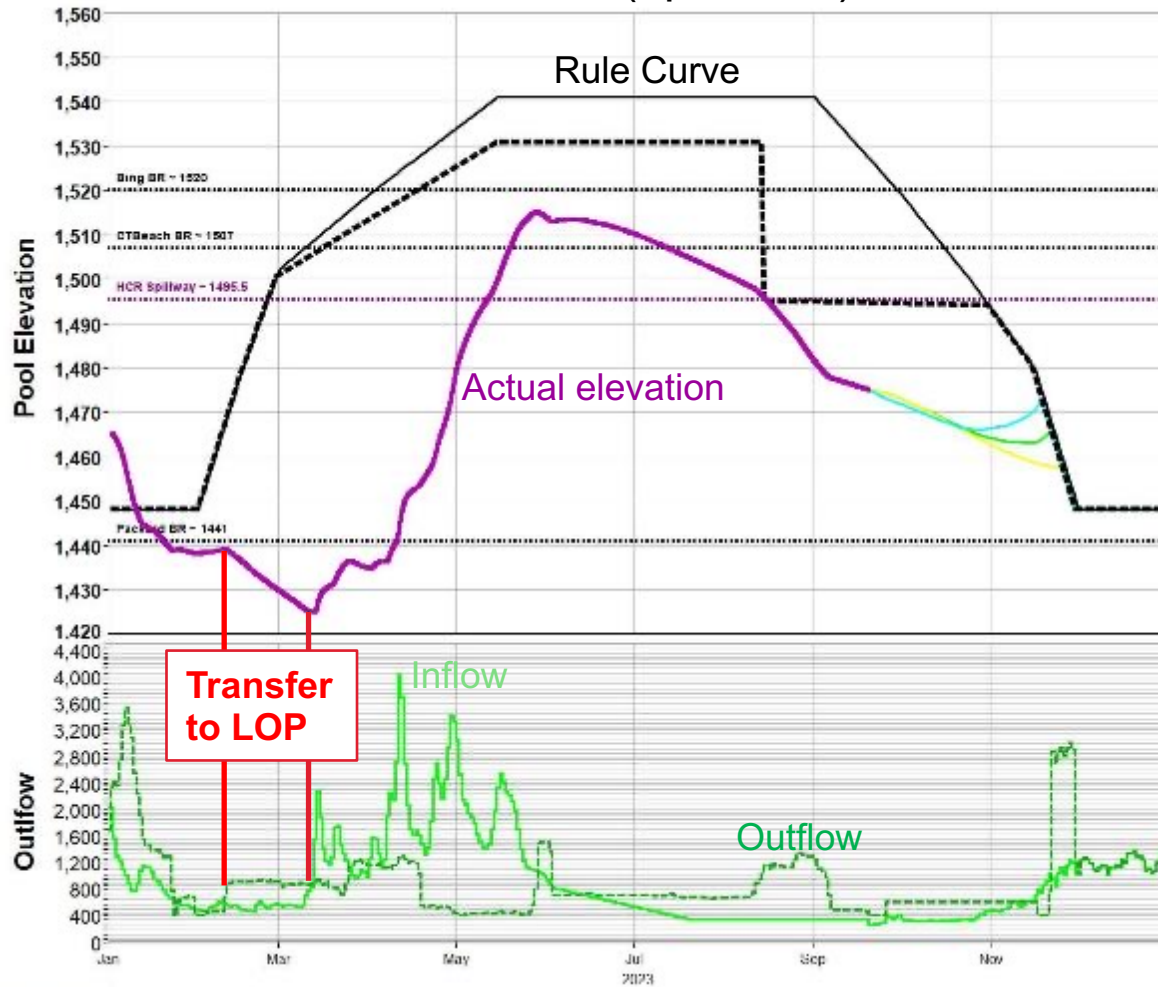




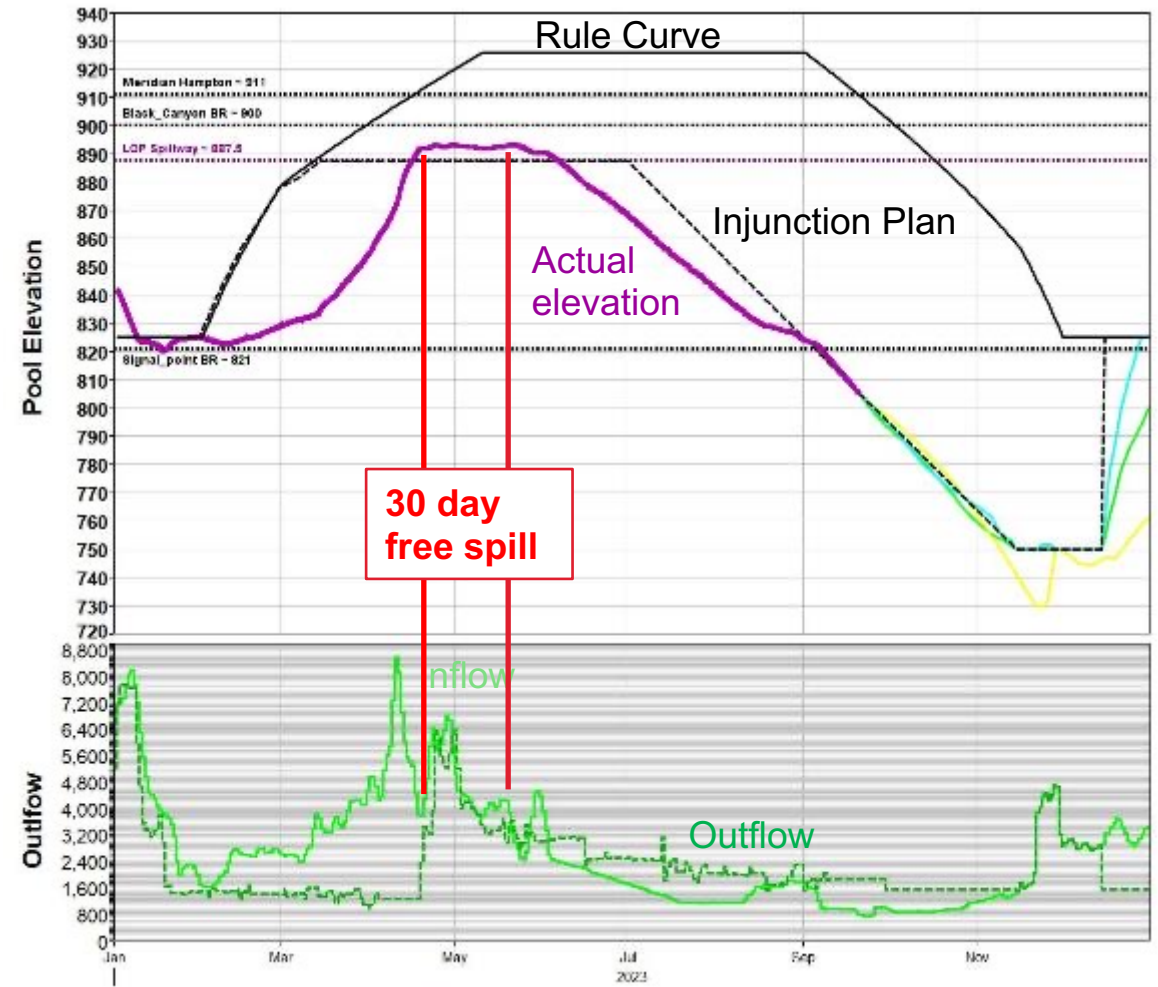
# EXAMPLE: MIDDLE FORK MANAGEMENT



### Hills Creek (upstream)



### Lookout Point (downstream)

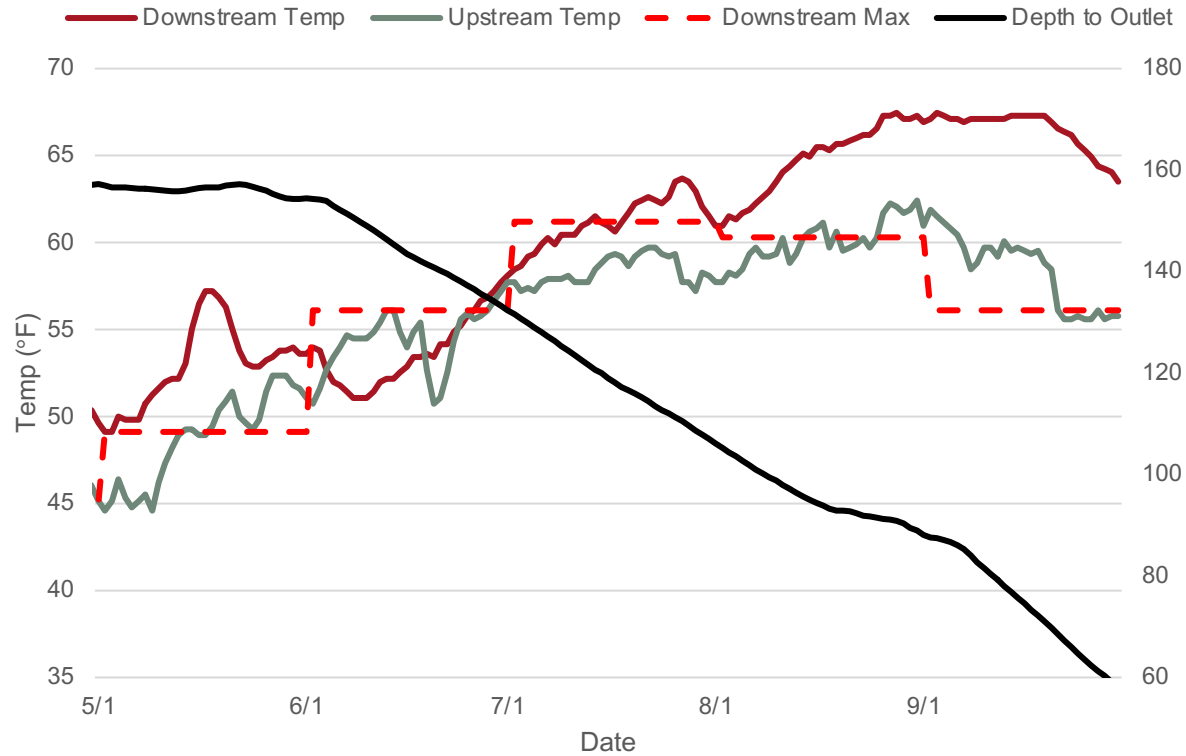




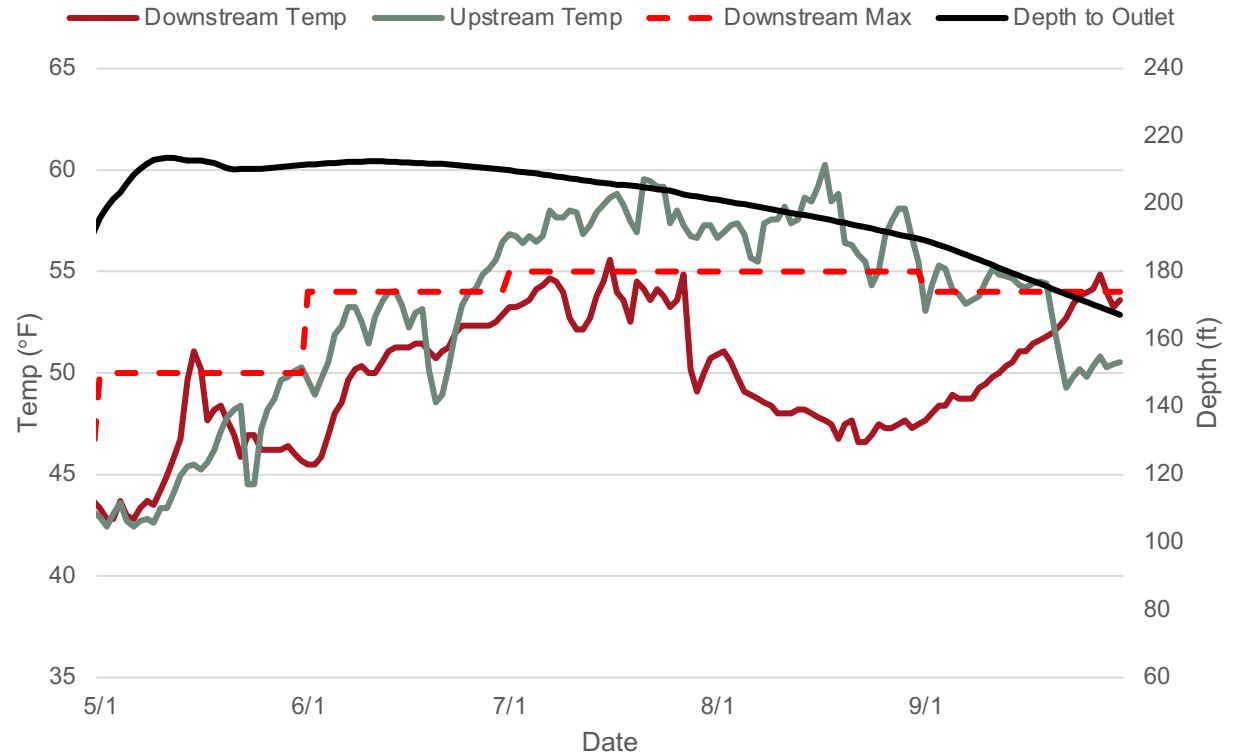
# DOWNSTREAM TEMPERATURE MANAGEMENT



## Lookout Point



## Detroit





# OUTLOOK



- Willamette Valley Injunction delayed refills, deep drawdowns and spill for fish passage will largely be adopted through the ongoing environmental impact statement process (expected conclusion in 2024).
- Flow timing matters!
  - e.g. The difference in an actual 70% WY vs. WY constructed from 70% of the daily median.
- Adaptive minimum flow targets are currently being examined.
- New R&D: use of forecasts to evaluate real-time risk of storing above rule curve