

# IMPACTS TO RECREATION FROM SEDIMENTATION IN THE KANSAS RIVER BASIN

Jennifer Henggeler, USACE, Kansas City



US Army Corps  
of Engineers®



# KANSAS RIVER RESERVOIRS FLOOD AND SEDIMENT STUDY (WATERSHED STUDY)



- Authorized watershed study (Sec. 729 WRDA of 1986)
- Collaborative effort between **USACE** and the **State of Kansas** including the **Kansas Water Office** and the **Kansas Department of Wildlife and Parks**
- Comprehensive and holistic long-term (50-100 years) plan – address **multiple water resource problems** within Kansas River Basin
- **Three primary focus areas:**
  - Flood risk management
  - Sediment management
  - Reservoir operations
- Also looking at opportunities related to:
  - Infrastructure investment
  - Water supply availability and sustainment
  - Water quality
  - **Recreation**
  - Ecosystem preservation and restoration



# RECREATION IN THE KANSAS RIVER BASIN NOW AND IN THE FUTURE



## Kansas River Watershed Study Assessment of Recreation

- Describes how sedimentation in reservoirs affects recreation now and over the next 100 years
- Identifies recreation facilities, parks and associated visitation that would be affected by reduced water-based access
- Describes how increased sedimentation could affect fish and wildlife, occurrence of Harmful Algal Blooms, and indirectly impact angling, hunting, wildlife viewing, other recreation opportunities
- Describes how estimated changes in visitation (i.e., decrease) in the future associated with sedimentation would affect:
  - Recreational values (consumer surplus) – loss of \$\$
  - Regional economic conditions (visitor spending, jobs, and income)
- Use of future reservoir depth maps to determine impacts on recreation from loss of storage
  - Multi-purpose pool depths under drought conditions, leaving recreation areas inaccessible (boat ramps, coves, marinas)



LEGEND

Legend

Year 2049

<VALUE>

- Boat Ramp
- Beach
- Marina
- Playground
- Picnic Area
- Camp Sites
- Archery Range
- Hiking Trailhead
- 0 ft
- 2 ft
- 3 ft
- 4 ft
- 5 ft
- 7 ft
- > 7 ft

Reservoir Area Not Included in Model

Paved Road

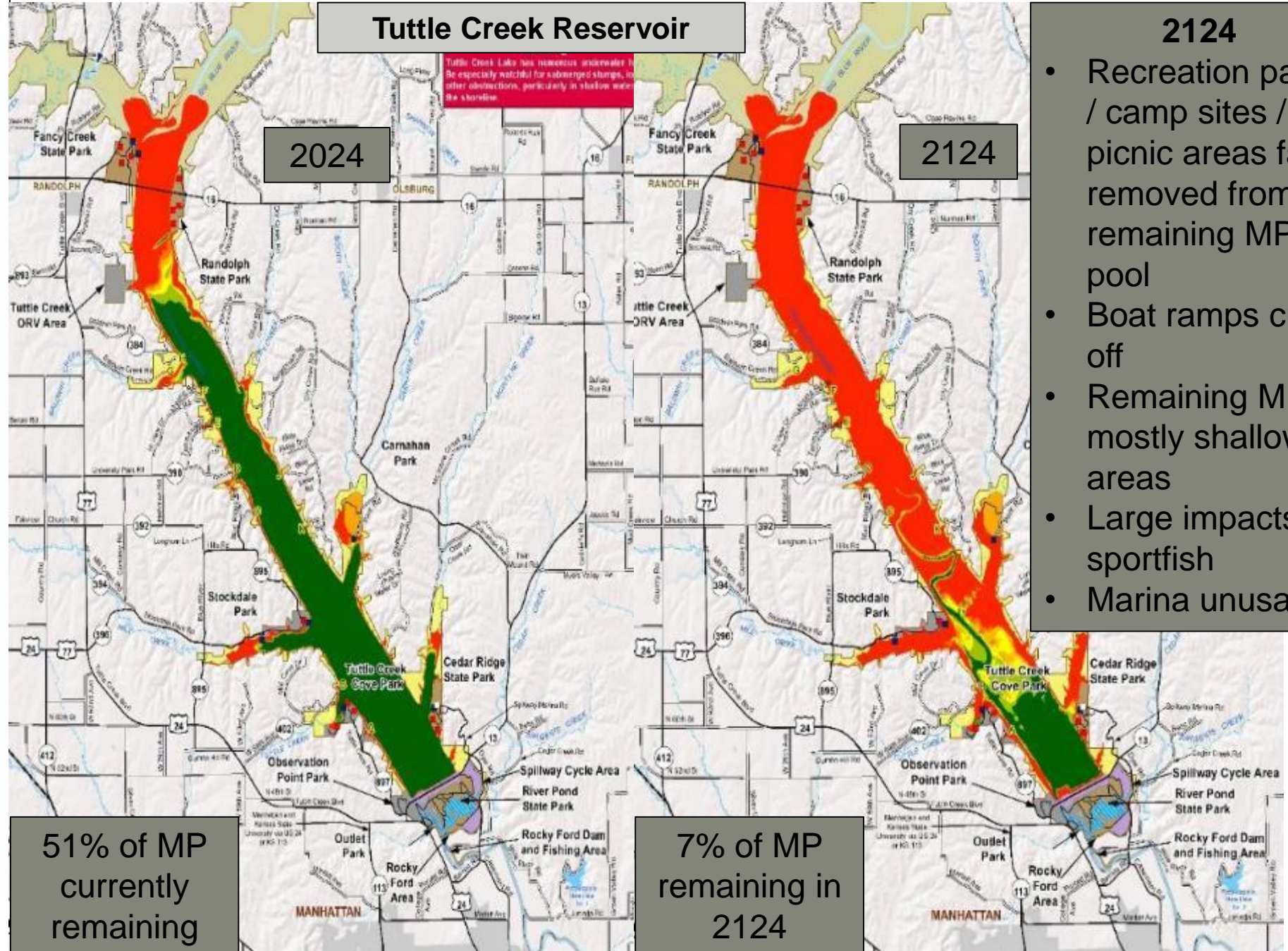
Gravel Road

Unimproved Road

Hiking Trails (inset only)

- Corps of Engineers Park
- State Park
- County Park
- Administrative Area No Hunting
- Corps Managed Wildlife Area Hunting Allowed
- State Managed Wildlife Area Hunting Allowed
- Shallow Water
- No Wake Zone

Tuttle Creek Reservoir



51% of MP currently remaining

7% of MP remaining in 2124

2124

- Recreation parks / camp sites / picnic areas far removed from remaining MP pool
- Boat ramps cut off
- Remaining MP mostly shallow areas
- Large impacts to sportfish
- Marina unusable



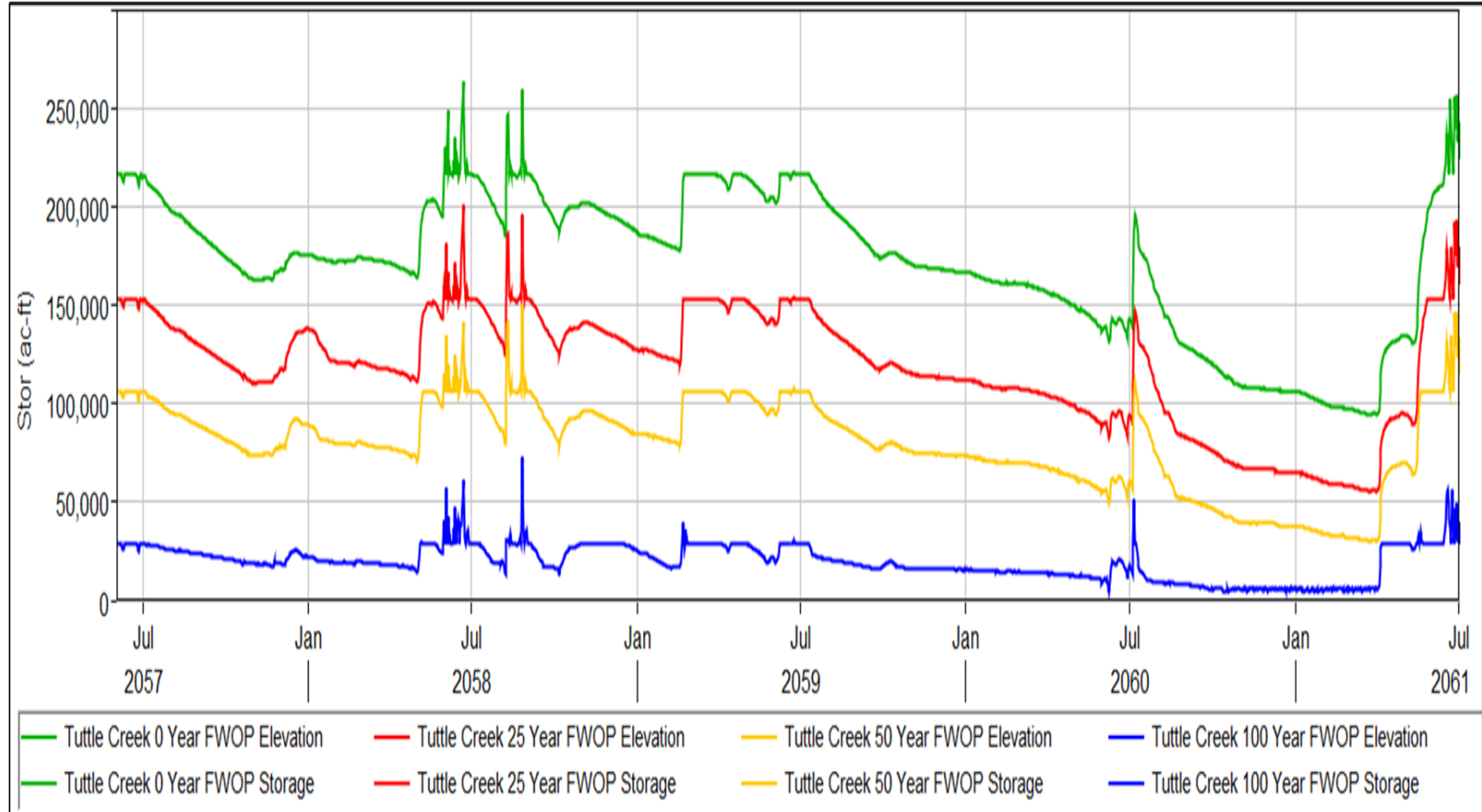
# RECREATION FUTURE CONDITIONS

## TUTTLE CREEK RESERVOIR (2024 COMPARED TO 2124)



### Drought Example

- Visitation, visitor spending drops (2124) compared to current conditions (2024) resulting in **decreased economic benefits in the local economy** (-\$420K in sales)
- 16K drop in visitors (2124) and a **decrease of \$151K** in consumer surplus value







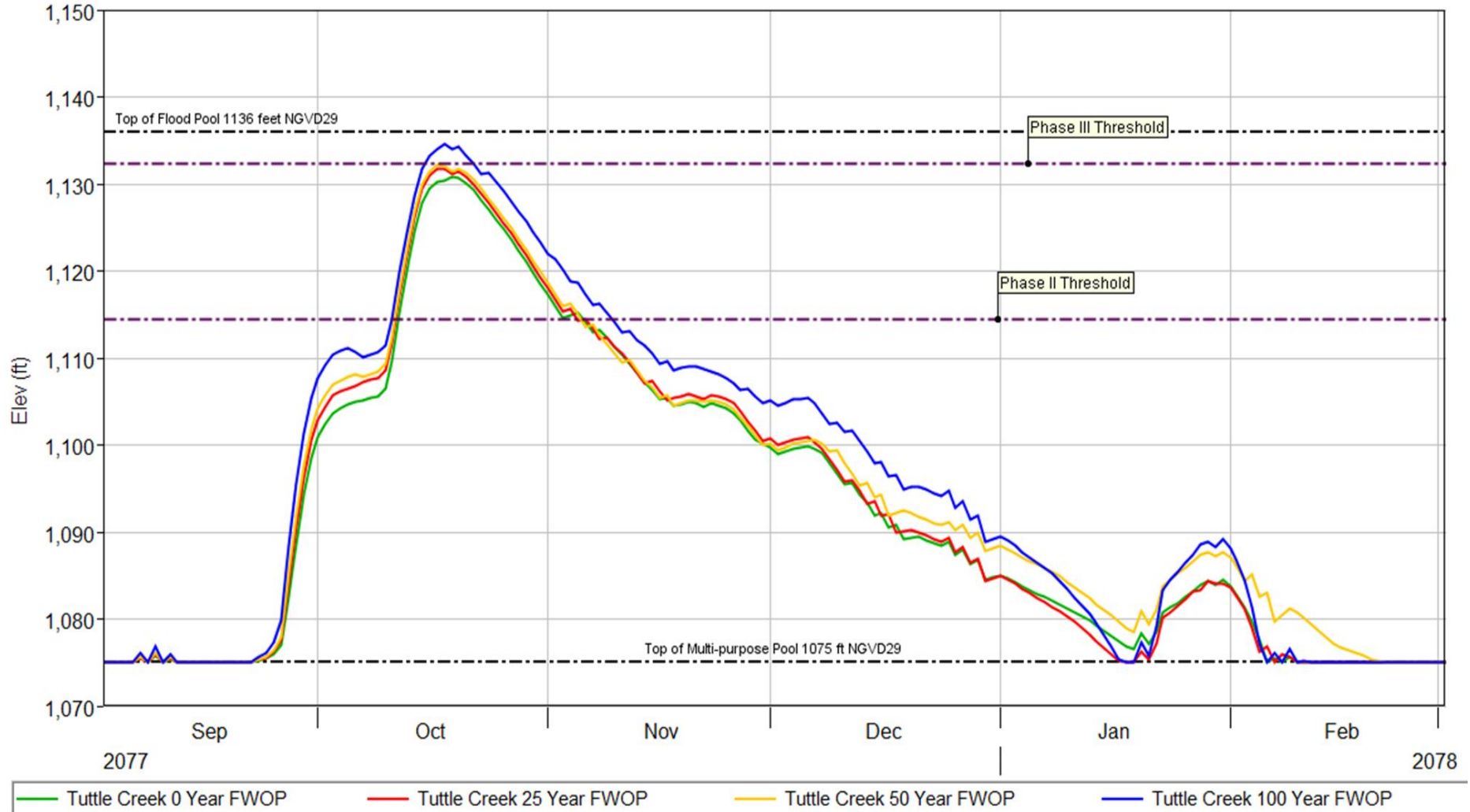
# RECREATION FUTURE CONDITIONS

## TUTTLE CREEK RESERVOIR



### Flood Example

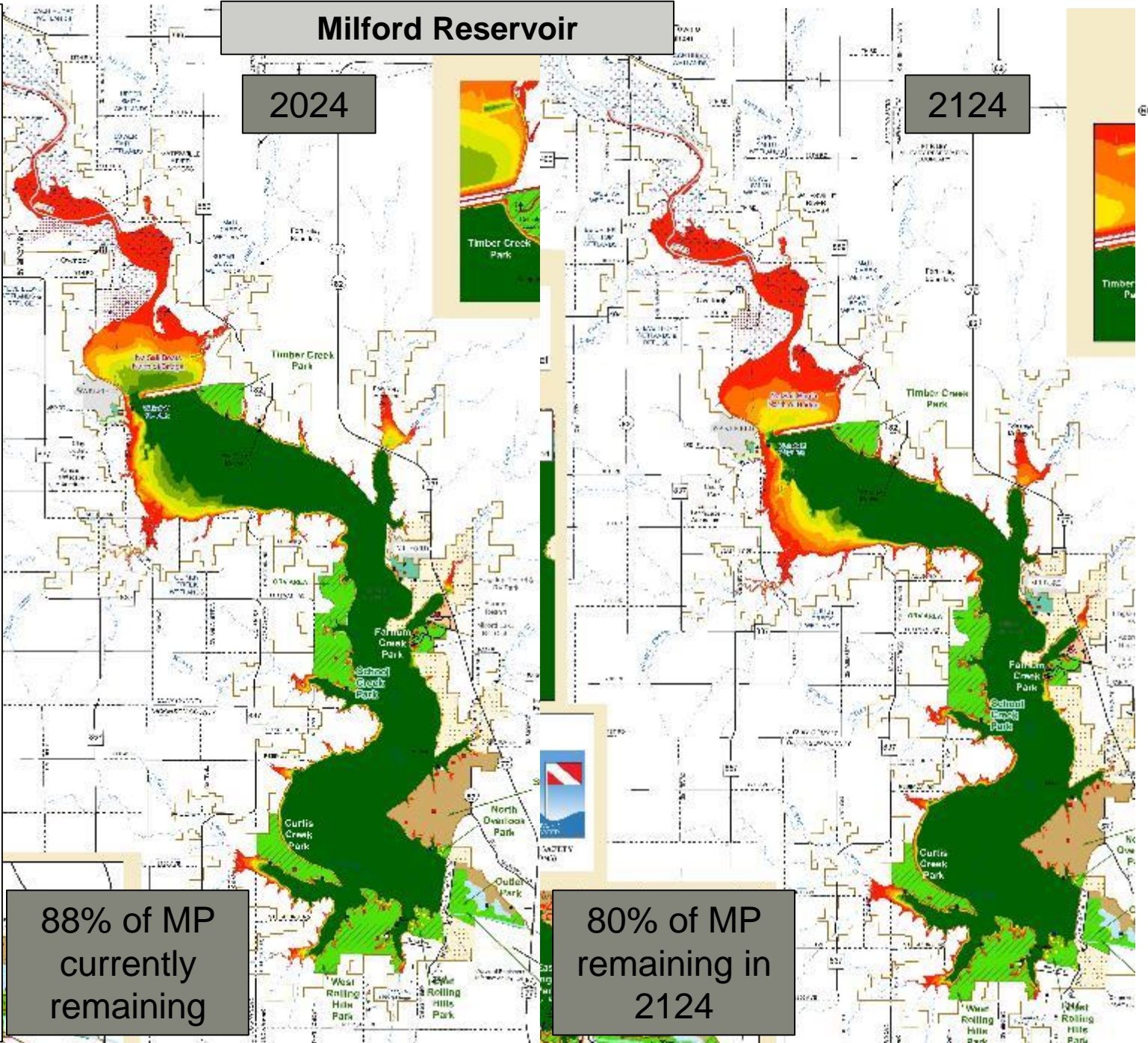
- Visitation, **visitor spending drops** (2124) compared to current conditions (2024) resulting in **decreased economic benefits in the local economy** (-\$420K in sales)
- **16K drop in visitors** (2124) and a **decrease of \$151K** in consumer surplus value



# Milford Reservoir

2024

2124



88% of MP currently remaining

80% of MP remaining in 2124

## LEGEND

### Legend

### Year 2049

### <VALUE>

- Boat Ramp
  - Beach
  - Marina
  - Playground
  - Picnic Area
  - Camp Sites
  - Archery Range
  - Hiking Trailhead
  - Reservoir Area Not Included in Model
- 
- Paved Road
  - Gravel Road
  - Unimproved Road
  - Hiking Trails (inset only)
- 
- Corps of Engineers Park
  - State Park
  - County Park
  - Administrative Area No Hunting
  - Corps Managed Wildlife Area Hunting Allowed
  - State Managed Wildlife Area Hunting Allowed
  - Shallow Water
  - No Wake Zone





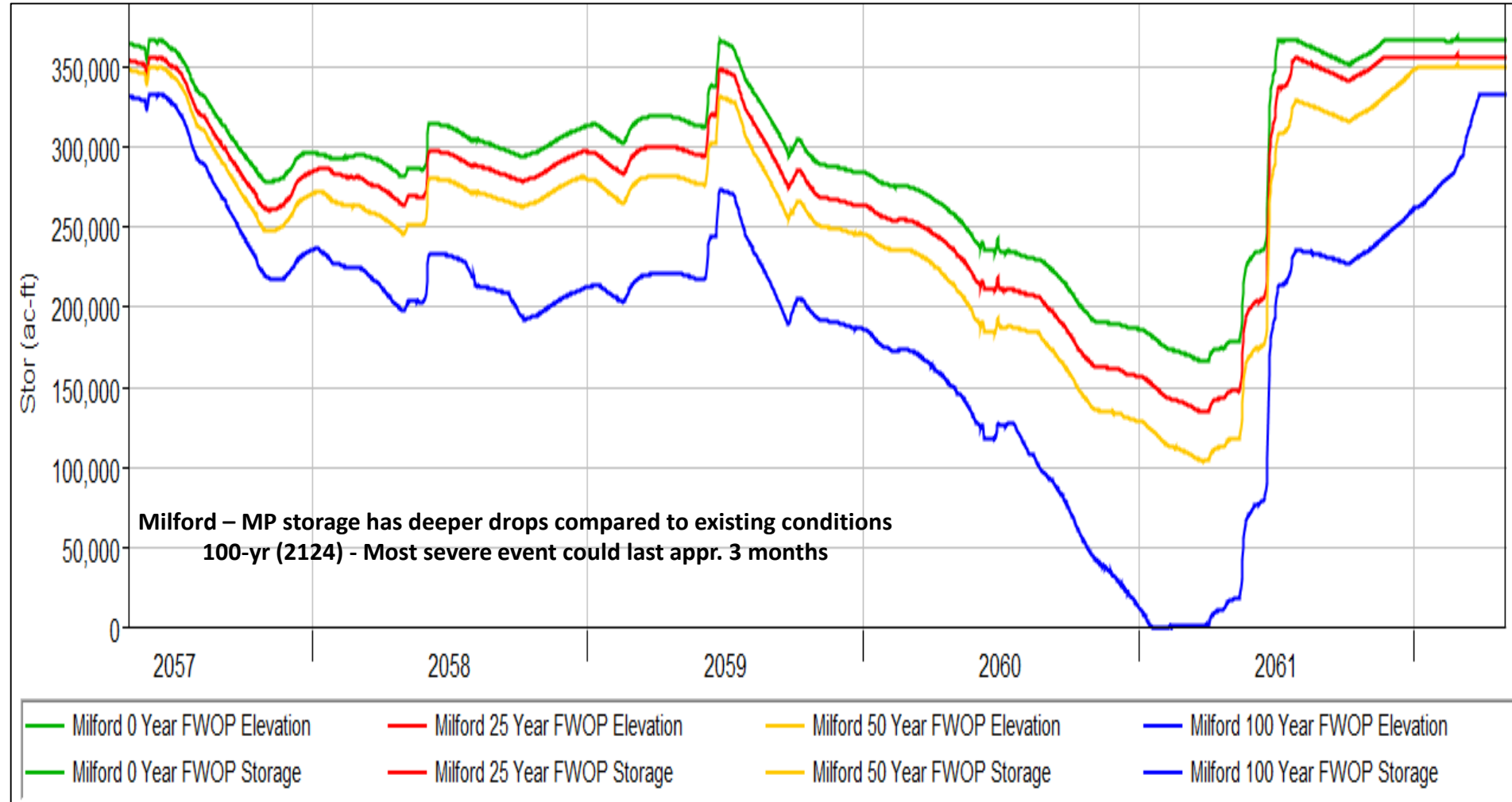
# RECREATION FUTURE CONDITIONS

## MILFORD RESERVOIR (2024 COMPARED TO 2124)



### Drought Example

- Visitation, and visitor spending drops (2124) compared to current conditions = **decreased economic benefits in the local economy (- \$12.7M in sales)**
- **640K drop in visitors (2124) and a decrease of \$6.3M in consumer surplus value**







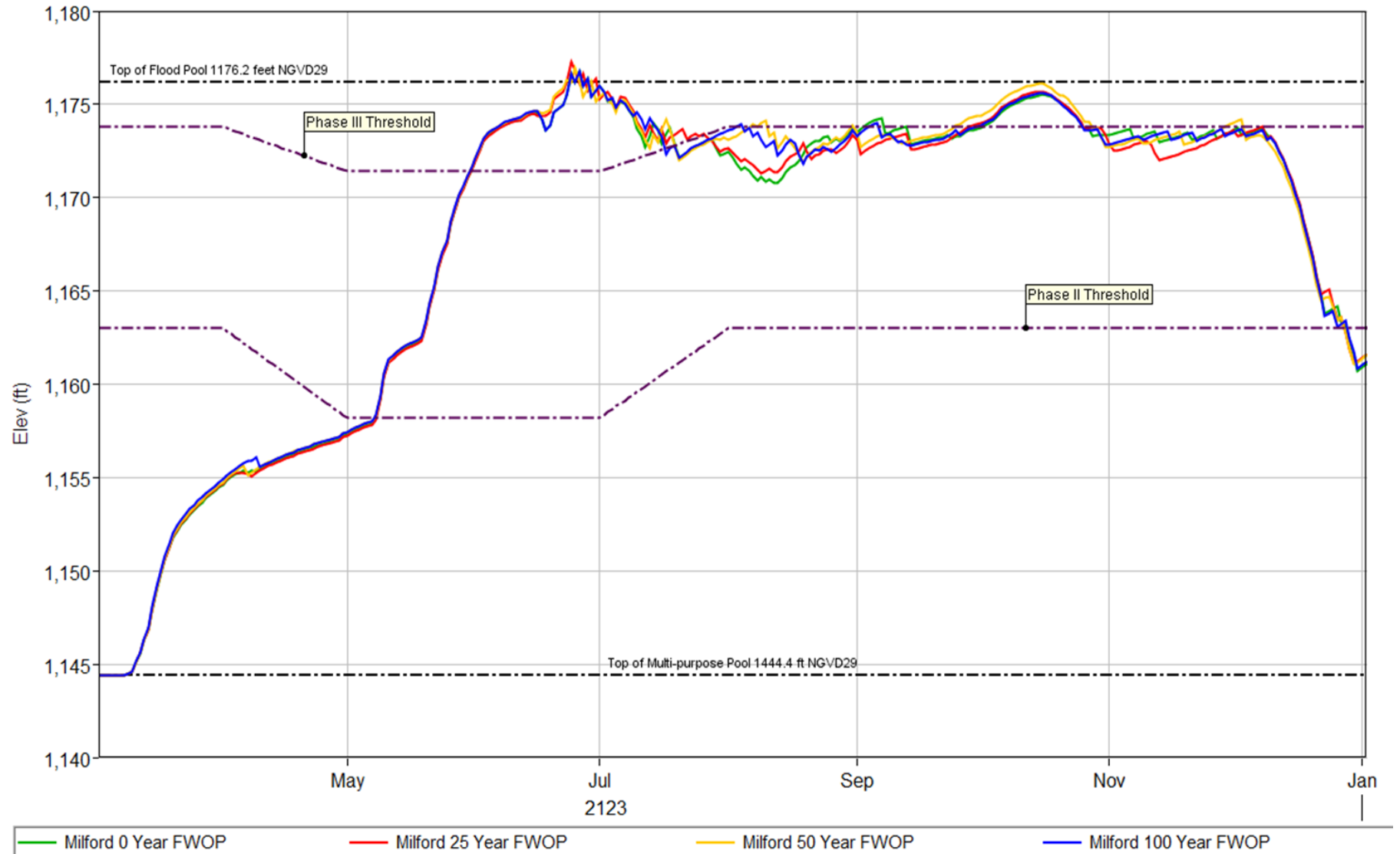
# RECREATION FUTURE CONDITIONS

## MILFORD RESERVOIR



### Flood Example

- Flood pool elevation conditions similar to past conditions (i.e., last 100-year of record)
- **No substantial increase** in economic impacts to recreation from flooding in the future compared to past and current conditions

















**LEGEND**





**Legend**

**Year 2049**







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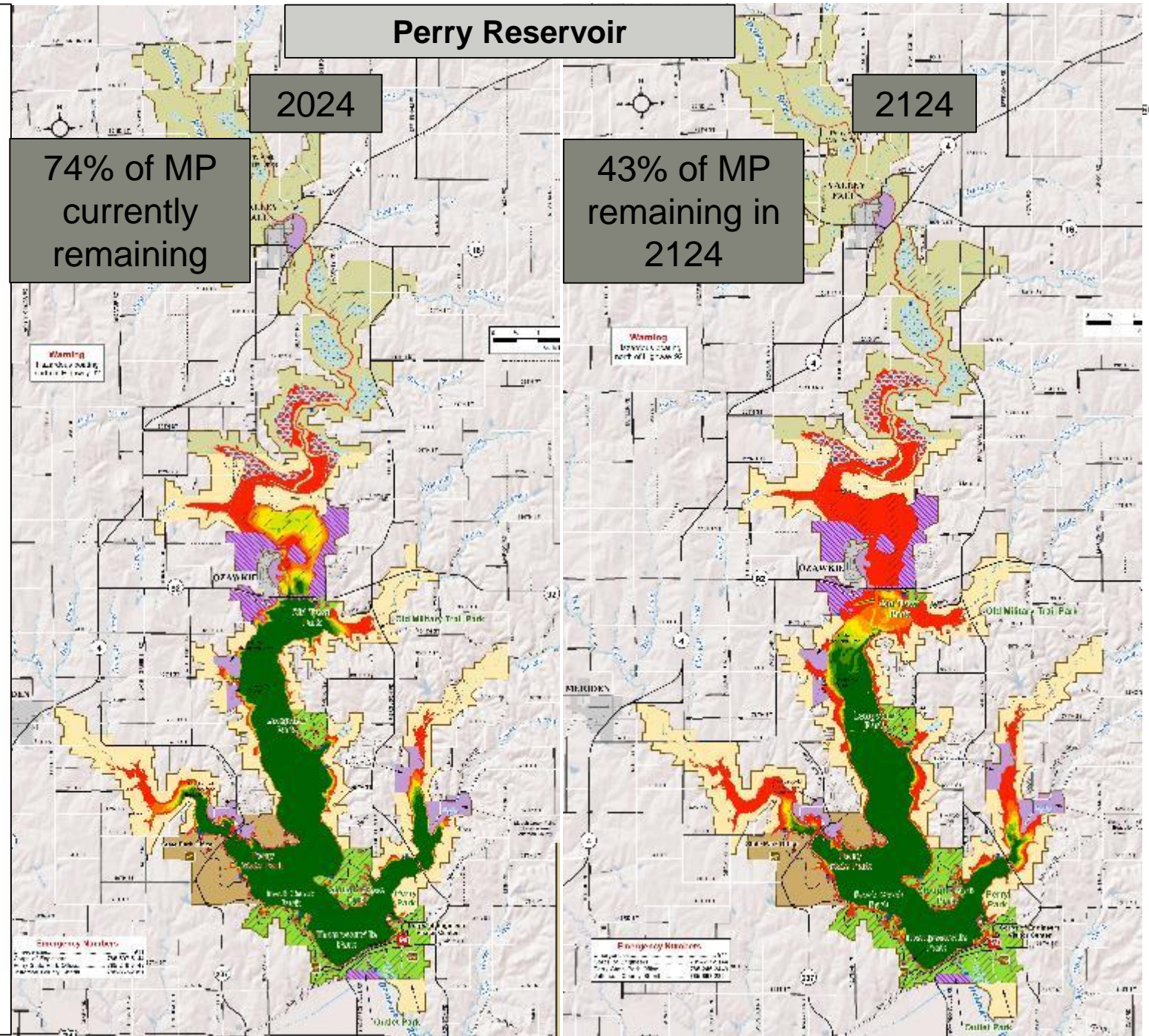
	Boat Ramp		0 ft
	Beach		2 ft
	Marina		3 ft
	Playground		4 ft
	Picnic Area		5 ft
	Camp Sites		7 ft
	Archery Range		> 7 ft
	Hiking Trailhead		
	Reservoir Area Not Included in Model		

	Paved Road
	Gravel Road
	Unimproved Road
	Hiking Trails (inset only)

	Corps of Engineers Park		Corps Managed Wildlife Area Hunting Allowed
	State Park		State Managed Wildlife Area Hunting Allowed
	County Park		Shallow Water
	Administrative Area No Hunting		No Wake Zone







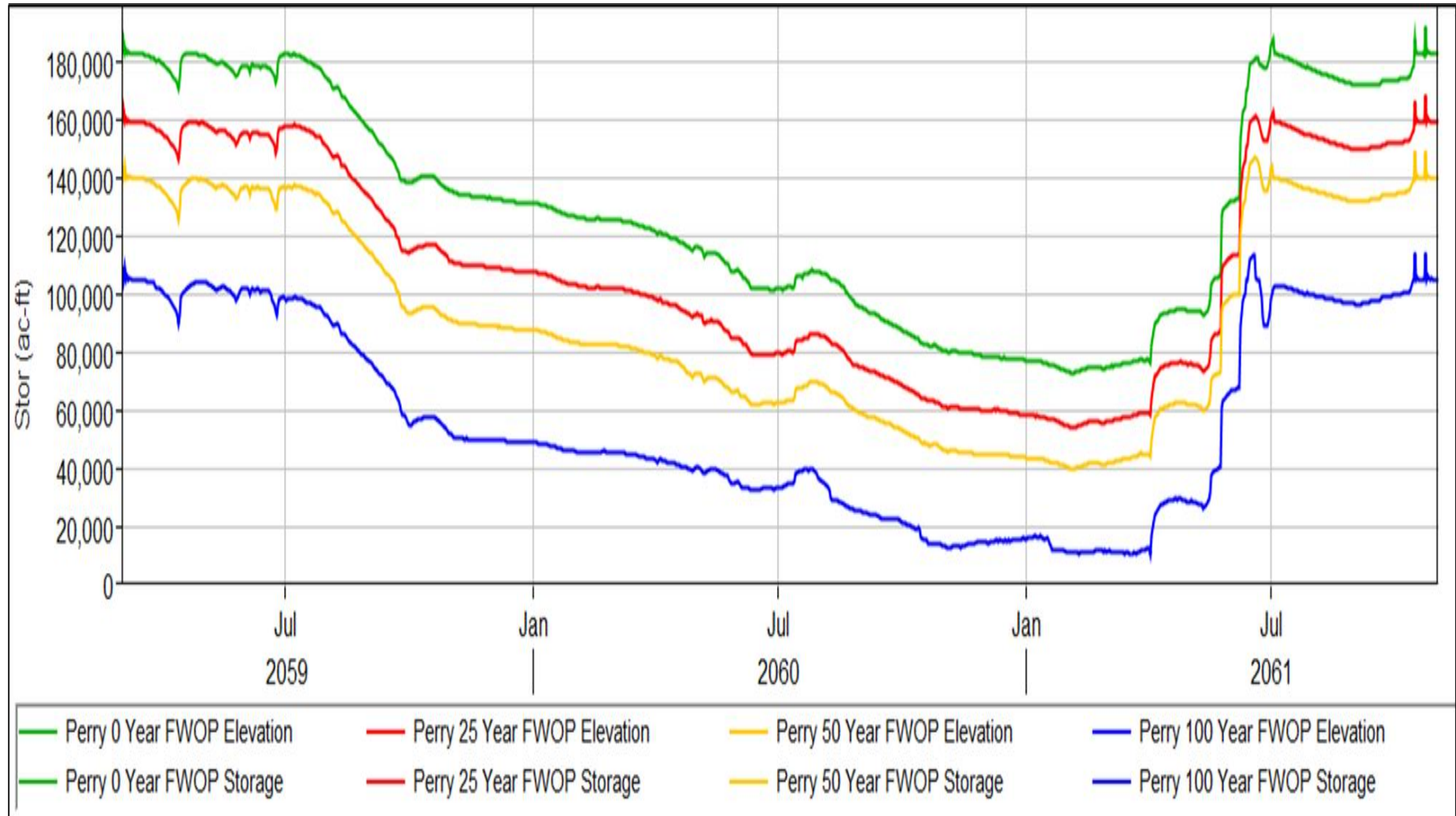
# RECREATION FUTURE CONDITIONS

## PERRY RESERVOIR (2024 COMPARED TO 2124)



### Drought Example

- Visitation, visitor spending drops (2124) compared to current conditions resulting in **decreased economic benefits in the local economy** (\$1.3M in sales)
- **62K drop in visitors** (2124) and a **decrease of \$649K** in consumer surplus value
- Loss of ~11 jobs





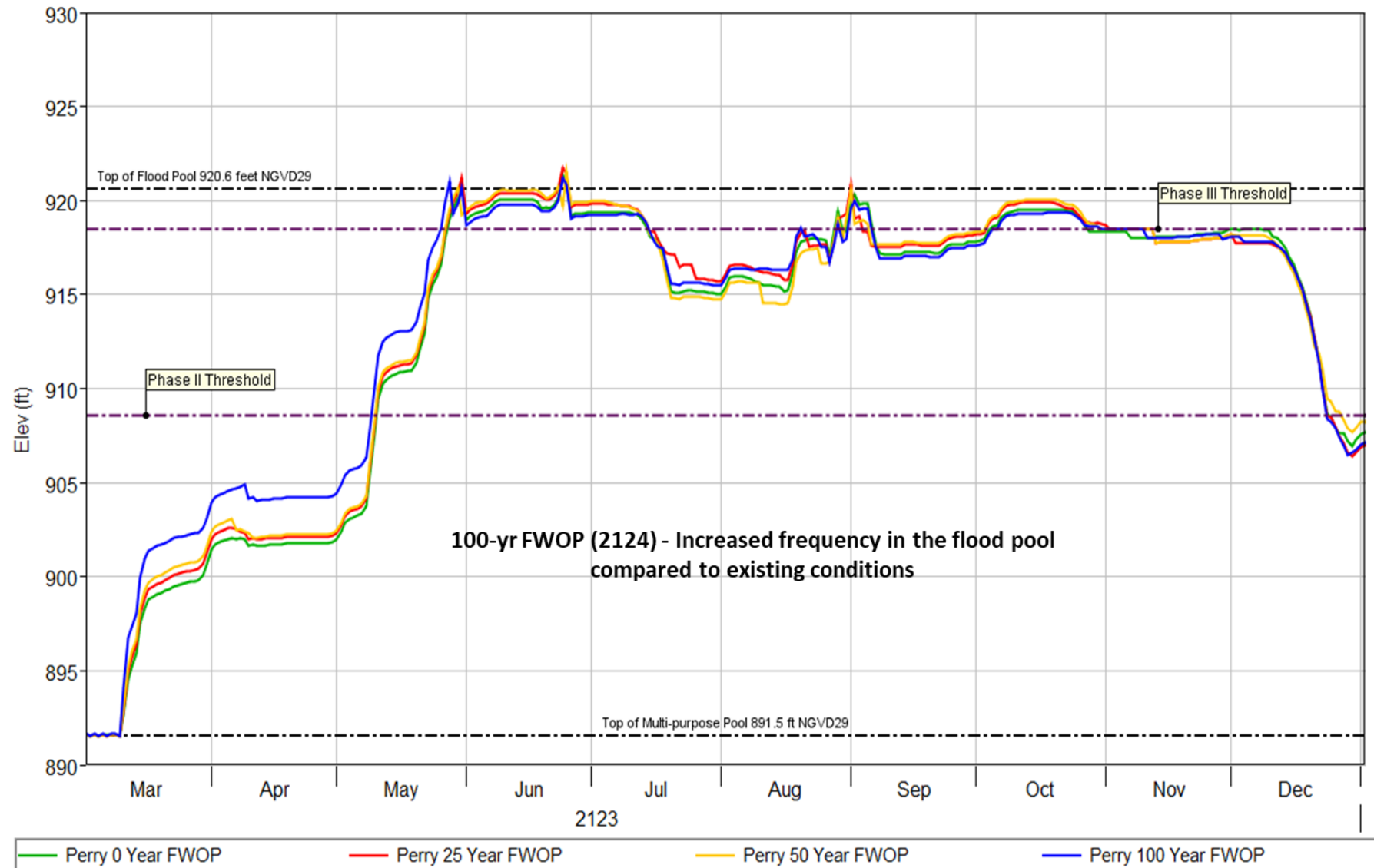
# RECREATION FUTURE CONDITIONS

## PERRY RESERVOIR

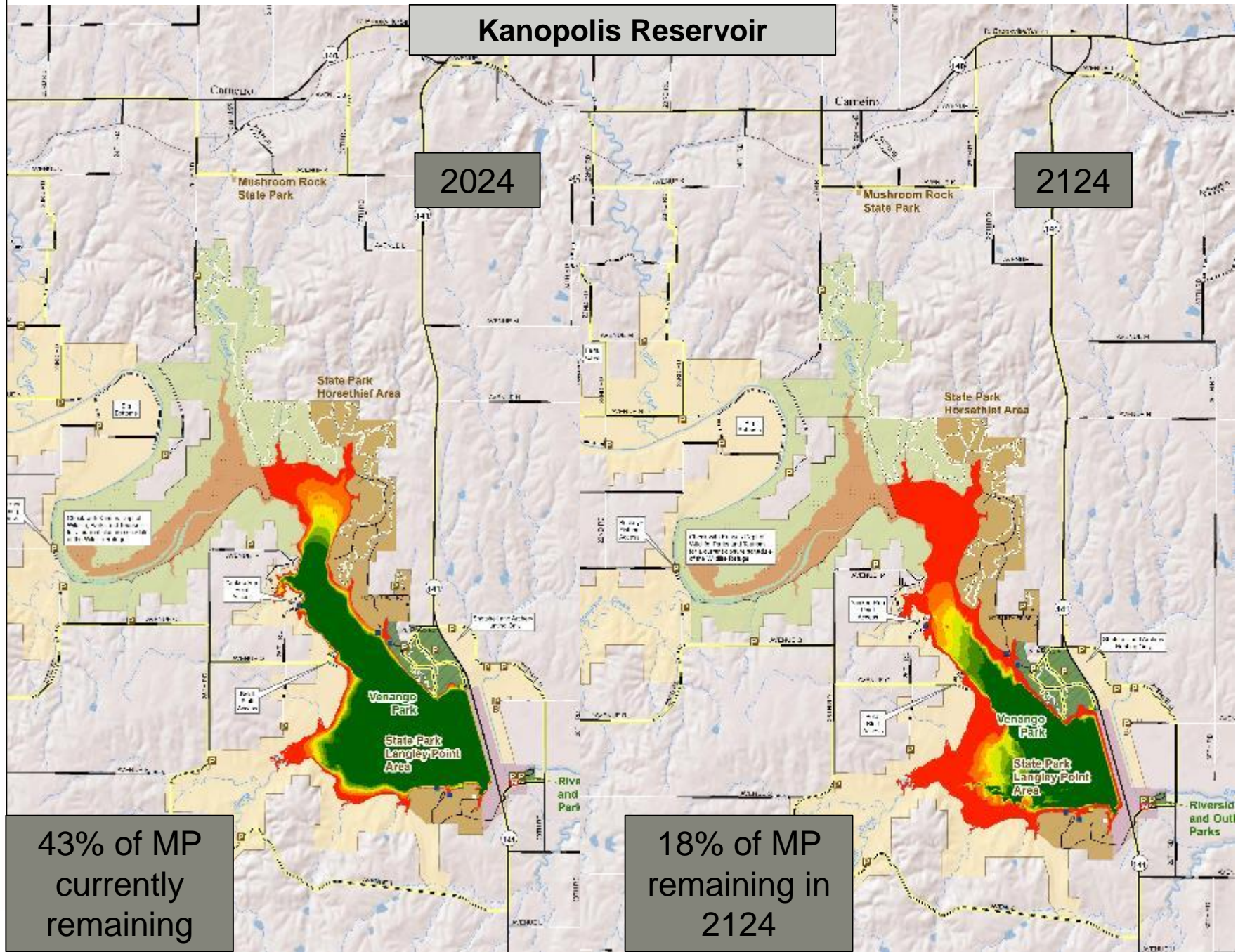


### Flood Example

- Visitation, visitor spending drops (2124) compared to current conditions resulting in **decreased economic benefits in the local economy** (\$508K in sales)
- **13K drop in visitors** (2124) and a **decrease of \$141K** in consumer surplus value









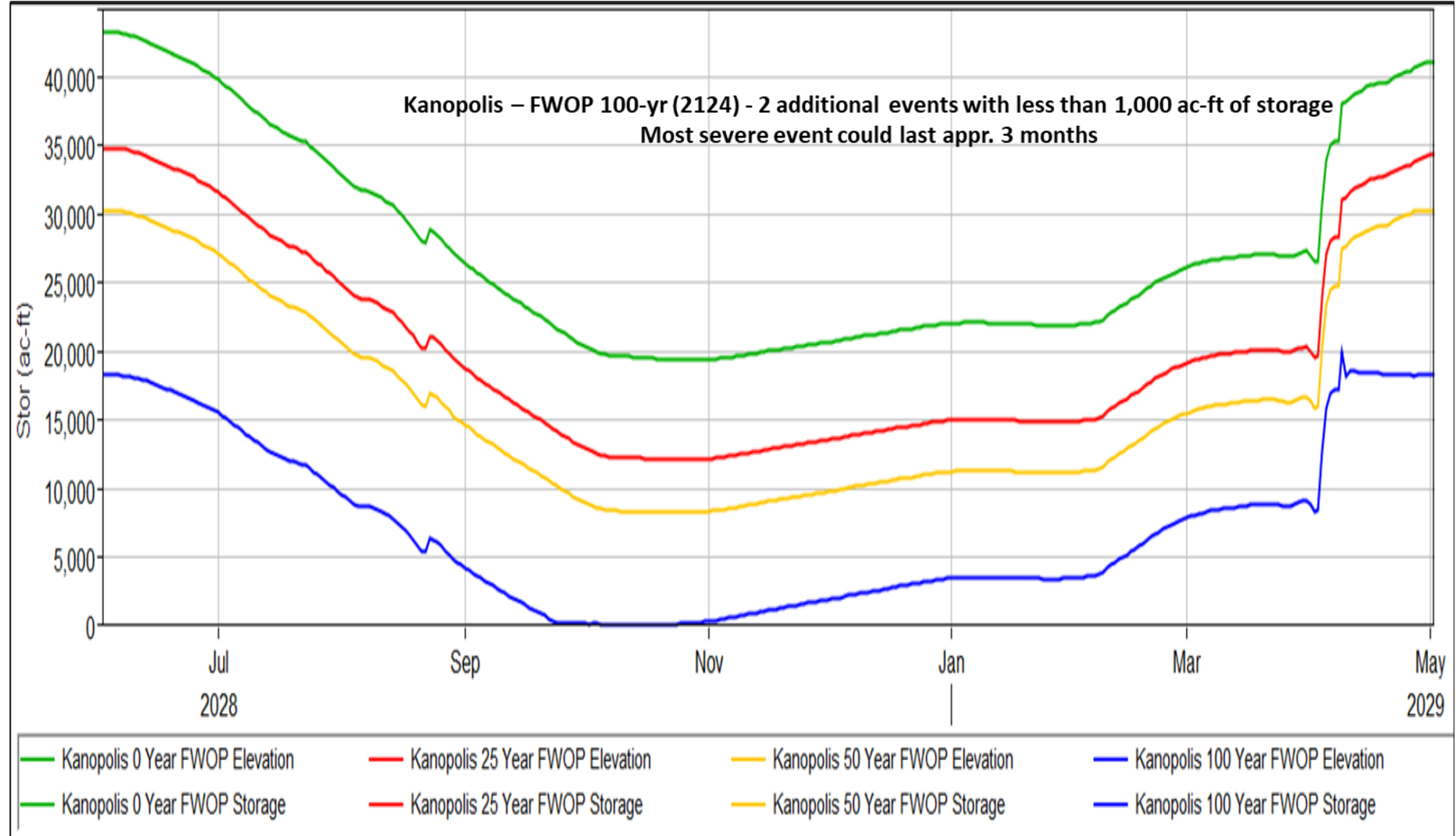
# RECREATION FUTURE CONDITIONS

## KANOPOLIS RESERVOIR (2024 COMPARED TO 2124)



### Drought Example

- Visitation, visitor spending drops (2124) compared to current conditions (2024) resulting in **decreased economic benefits in the local economy** (- \$77,089 in sales)
- **3K drop in visitors** (2124) and a **decrease of \$34,272** in consumer surplus value







# QUESTIONS ?

US Army Corps of Engineers  
Kansas City District

