

May 4, 2023

# Halligan Water Supply Project: Fish and Wildlife Mitigation and Enhancement Plan

Presented by:

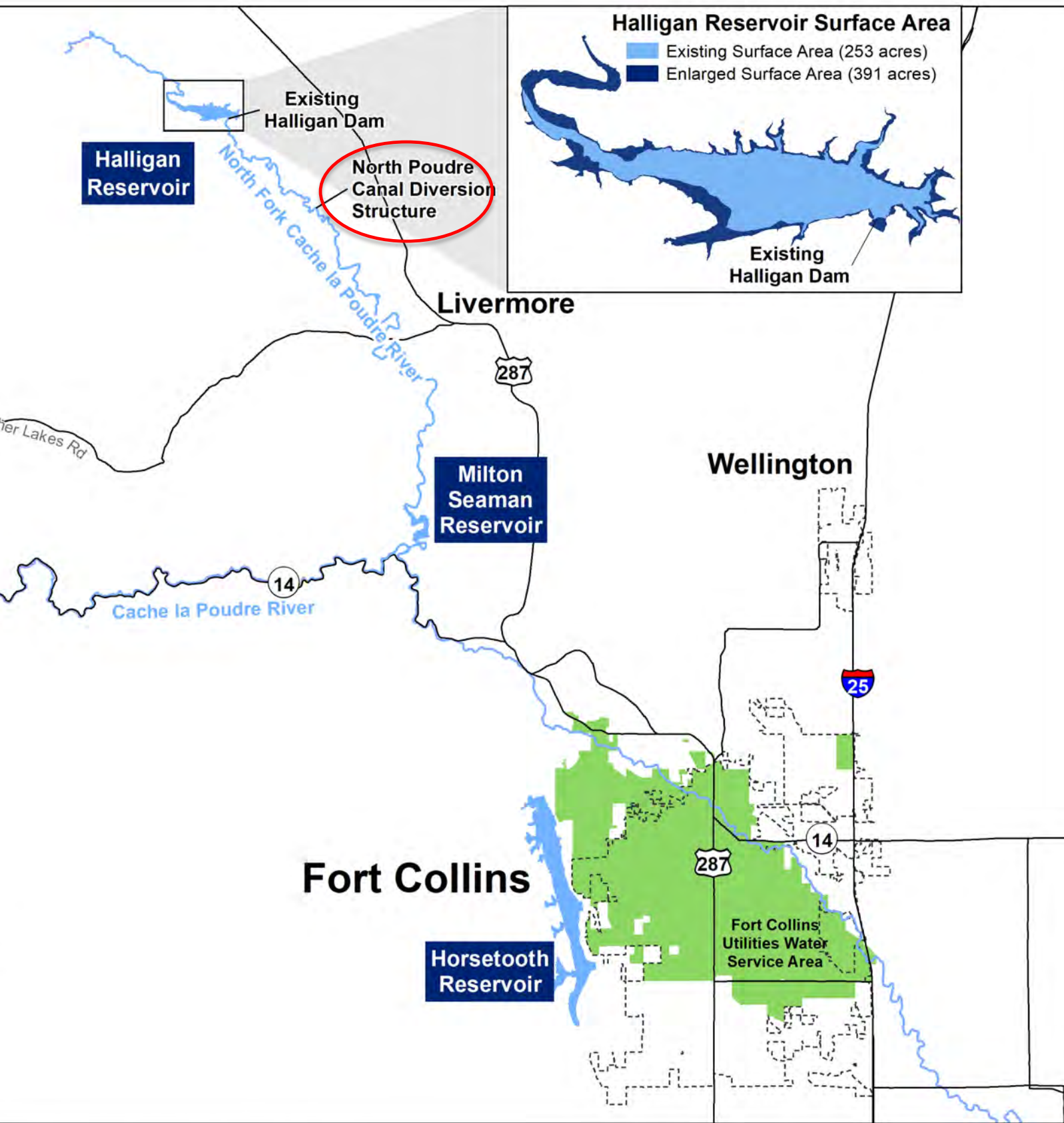
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**HALLIGAN WATER  
SUPPLY PROJECT**

City of  
**Fort Collins**





- Project purpose and need
- Location and existing use
- Proposed action and operations





**EXISTING CONDITIONS:** The North Poudre Irrigation Company's operations of the dam and the North Poudre Canal Diversion have significantly and adversely affected river flows in the North Fork and impaired downstream aquatic habitats.

## Two types of impacts are expected:

### DIRECT

Caused by the project, such as inundation of habitat by the enlarged reservoir

### INDIRECT

Caused by the project but occurs later in time and/or farther removed in distance, such as construction noise affecting wildlife

Both can have an **adverse** or a **beneficial** effect.



**EXISTING CONDITIONS:** The North Fork experiences many zero-flow days (shown) in both winter and summer creating low-flow conditions and disconnected pools, particularly between Halligan Reservoir and Livermore.



### ADVERSE

North Fork inundation:

- Upstream inundation would convert 0.75 miles of existing free-flowing river habitat to reservoir
- About 200-feet of river would be converted to reservoir habitat between old and new dams

### BENEFICIAL

- Flow releases would almost eliminate zero-flow days in North Fork below the dam
- Improved river connectivity during low flow periods
- Increased area and function of riffle and pool complexes

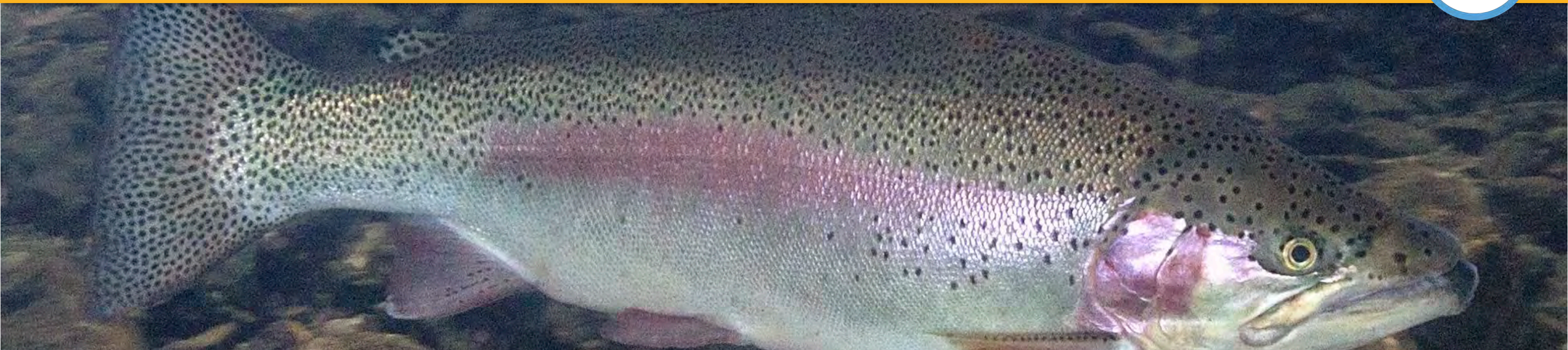








**EXISTING CONDITIONS:** The North Fork below Halligan experiences many zero-flow days creating disconnected pools that negatively impact aquatic habitat.



### ADVERSE

- Inundation of approximately 0.75-mile of North Fork upstream of the reservoir
- Loss of approximately 200 feet of stream length between existing and new dam
- Elimination of some potential spawning habitat

### BENEFICIAL

- During normal operations continual water releases would:
- Return a perennial flow regime to portions of the North Fork
  - Rewet up to 12 acres of riffle and pool complexes along portions of the North Fork
  - Increased habitat connectivity by eliminating dry riverbed conditions



**EXISTING CONDITIONS:** The population of the Lone Pine herd has declined in recent years for unknown reasons. In addition, domestic sheep grazing has the potential to introduce disease to wild bighorn sheep.



## ADVERSE IMPACTS

- Negligible impacts from habitat loss due to inundation
- Construction activities may disrupt:
  - Feeding and movement patterns
  - Exposure to fugitive dust can increase stress and the likelihood of disease
  - Could exacerbate the conditions in which bighorn sheep may commingle with domestic sheep



**EXISTING CONDITIONS:** Recreational use on Halligan Reservoir is currently restricted to private landowners, which will end once it is enlarged. The surface of Halligan Reservoir is not open to the public for recreational use. Other use may occur on the Cherokee SWA west of the reservoir and the North Fork via private access.



### LAND OWNERSHIP

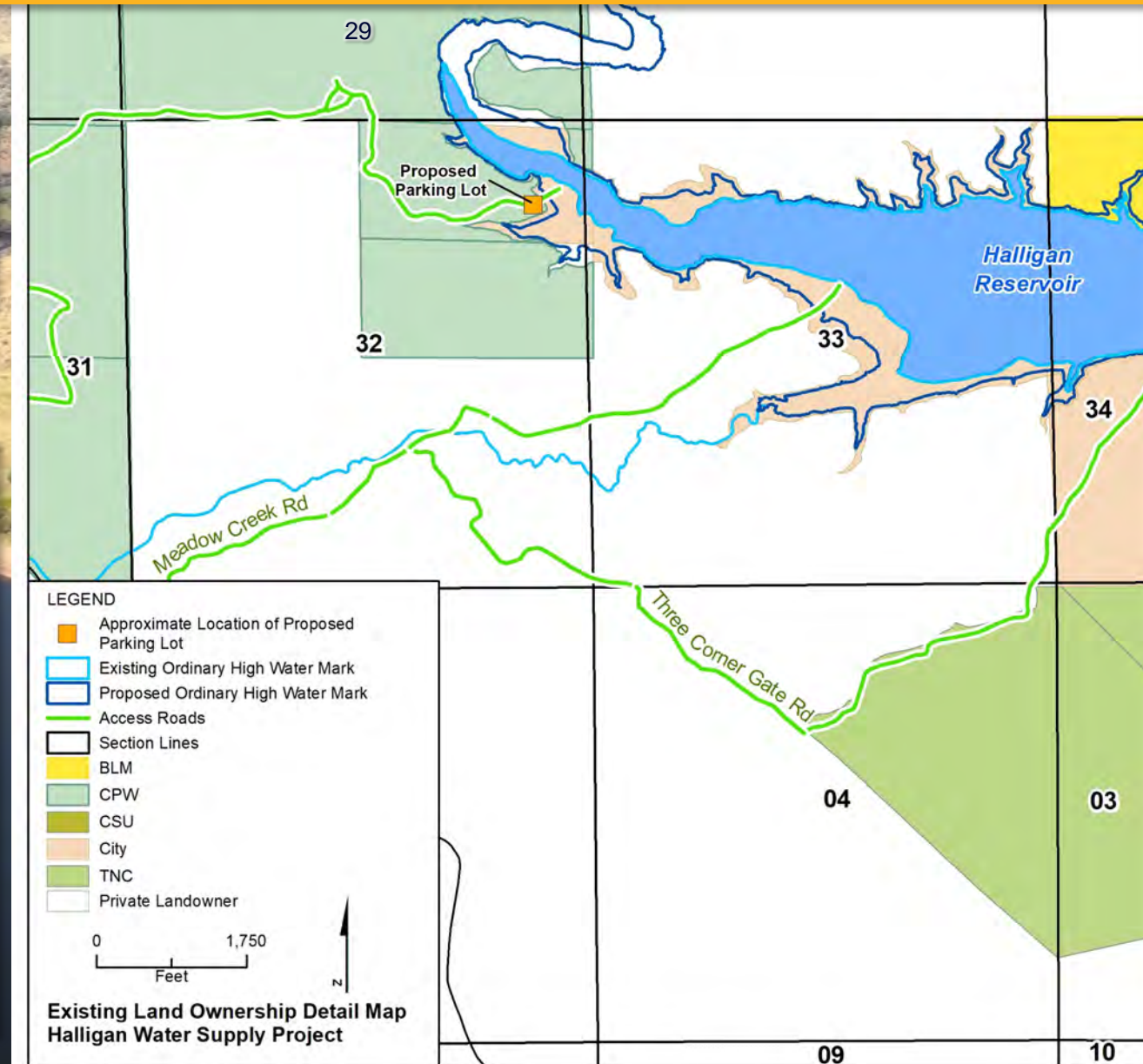
Fort Collins' research identified isolated parcels that were thought to be held in fee title by CPW but were determined to be held in fee by a private entity or Fort Collins

### ADVERSE

- Loss of approximately 20 acres of potential privately-owned hunting lands and river fishing along a 0.4-mile stretch of North Fork upstream of reservoir
- About 21 acres of CPW's land would be inundated during the extremely rare probable maximum flood event

### NEUTRAL

- As with existing conditions:
- No public surface water access
  - No long-term change to land-based activities on surrounding properties





Surface recreation has not been open to the public. CPW and Fort Collins jointly discussed various recreation concepts that included opening all or portions of Halligan Reservoir to public recreation after enlargement.



## CONSIDERATIONS

Recreation issues considered:

- The only public access is through the Cherokee SWA and would need to be consistent with the area's regulations
- Public access closures from September 1 to May 1
- Visitors currently need a license or pass to enter Cherokee SWA
- If pursued, shoreline and surface water fishing only with human-propelled watercraft

## CONCERNS

- Increased visitation when the only access road to the reservoir is undeveloped
- Cost of providing safe recreational opportunities
- Relatively narrow range of recreationalists who would benefit from the opportunity

## CONCLUSION

- Public surface recreation not be pursued at this time
- Recreational opportunities may be jointly considered in the future and impacts would be re-evaluated at that time

Fort Collins' focus on equity and providing equal opportunities for its citizens does not align with certain access limitations in this area.



AVOIDANCE AND  
MINIMIZATION  
CATEGORIES





Several flow-related operational measures will be included to avoid, minimize, and improve impacts on stream functions:

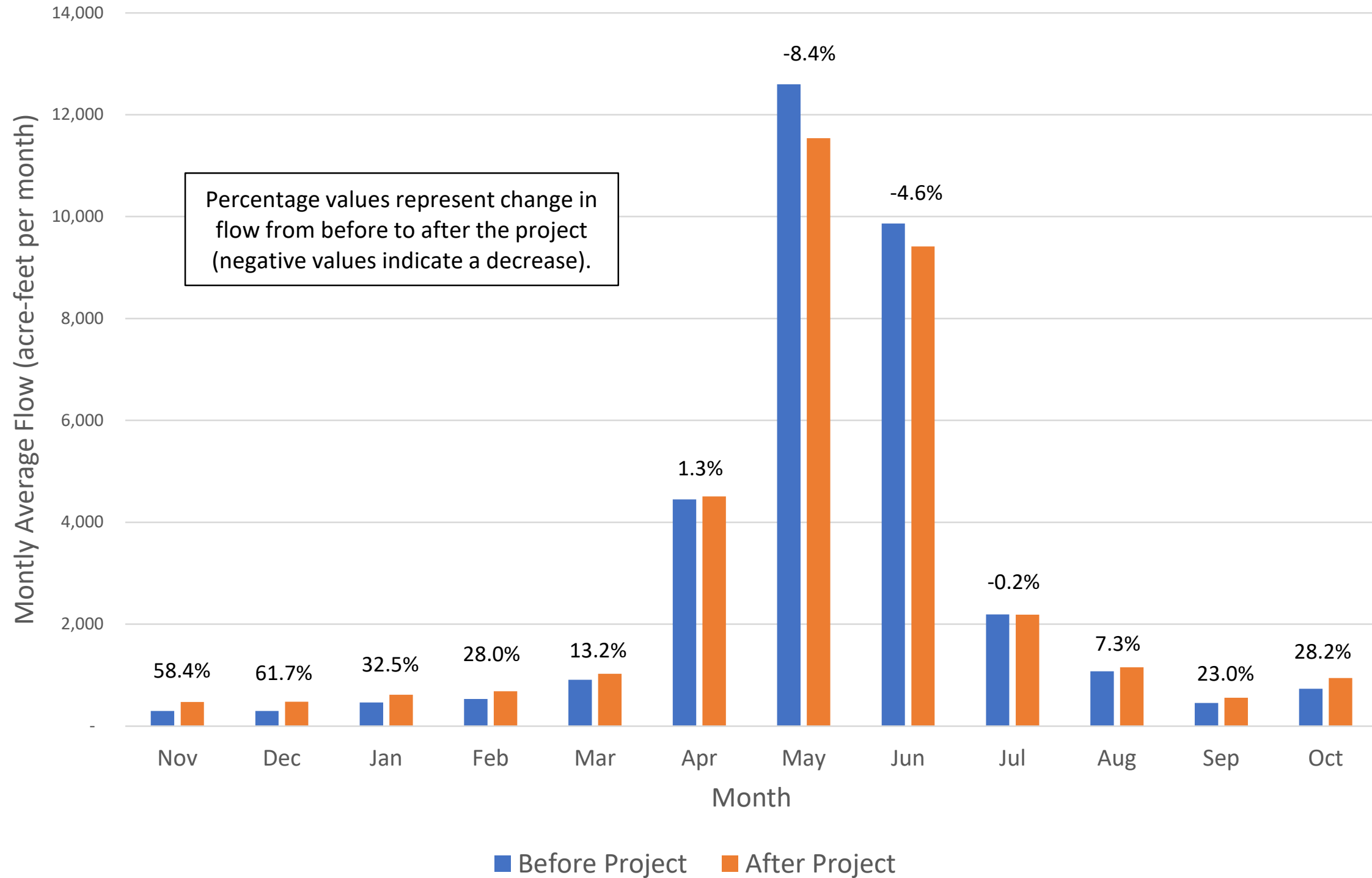
- Winter Release Plan
- Summer Low-flow Plan
- Ramping Rate Limitations
- Peak Flow Bypass Program
- End of Summer Flushing Event

These provide varying **beneficial** effects on about 22 miles of the North Fork from the replacement dam to Seaman Reservoir.

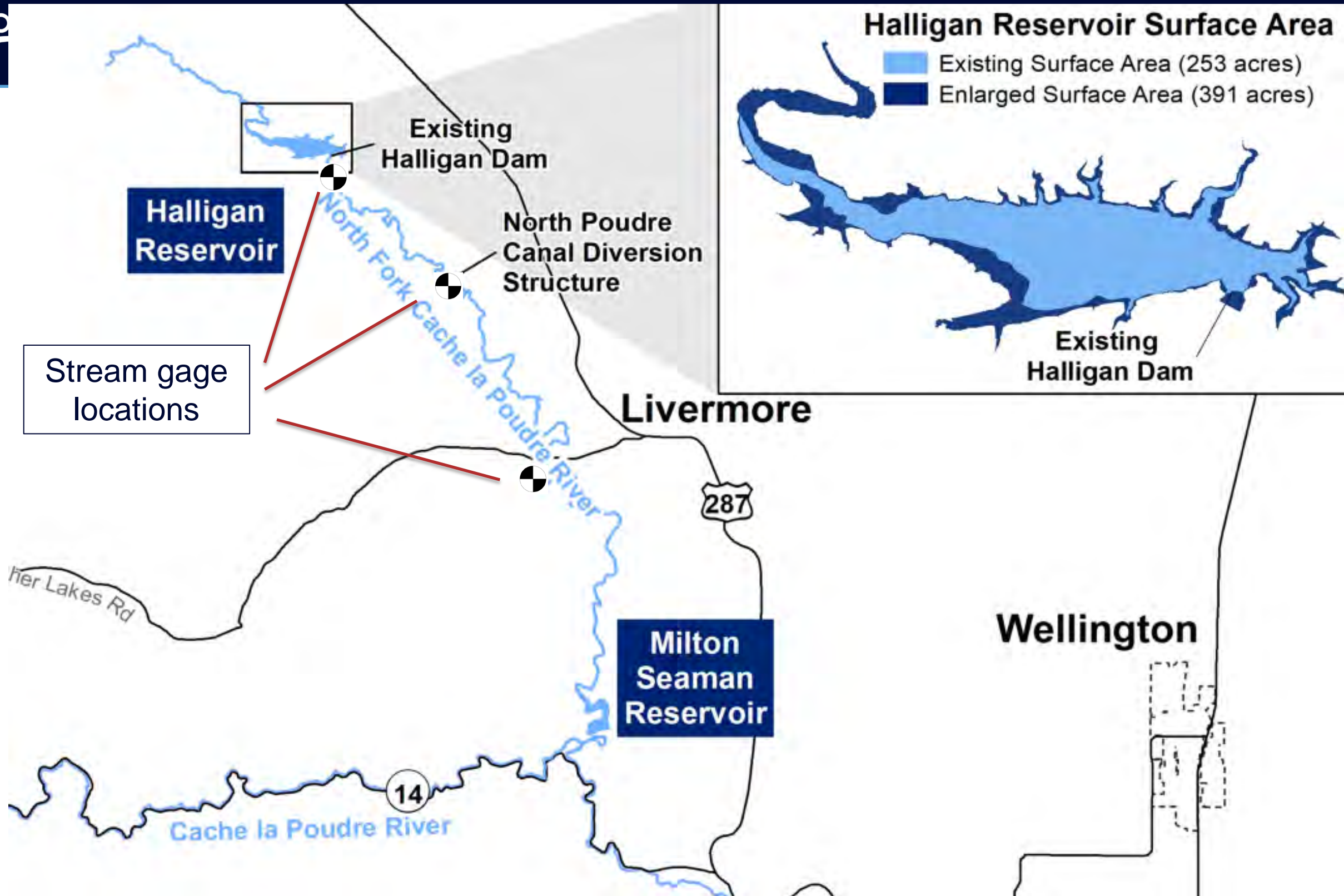




# Halligan Water Supply Project: Monthly Average Future Flows Below the North Poudre Canal Before and After the Project









Fort Collins and CPW have agreed to some Halligan Project specific preconstruction-related measures to avoid and minimize impacts to bighorn sheep.



## AVOIDANCE AND MINIMIZATION

Provide CPW with \$370,000 for:

- Habitat (cheatgrass) treatment over at least 500 acres and installation of two remote passive water sources in the Cherokee State Wildlife Area
- GPS collaring of bighorn sheep to track their movements before, during, and immediately after Halligan Project construction





Fort Collins and CPW have agreed to some Halligan Project specific preconstruction-related measures to avoid and minimize impacts to bighorn sheep.

## AVOIDANCE AND MINIMIZATION

- Construction windows will be used to minimize potential construction-related disturbances

	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR
Spring Timing Restrictions	Red	Red										
Construction Mobilizations												
Access Road Construction				Green	Green							
Fall Timing Restrictions						Red	Red					
Diversion and Fish Passage Construction								Green	Green	Green	Green	Green
Calloway Structure Mobilization/Construction								Green	Green	Green		

Construction
  Optional
  No Construction



# COMPENSATORY MITIGATION MEASURES



Used to compensate for any remaining unavoidable impacts.



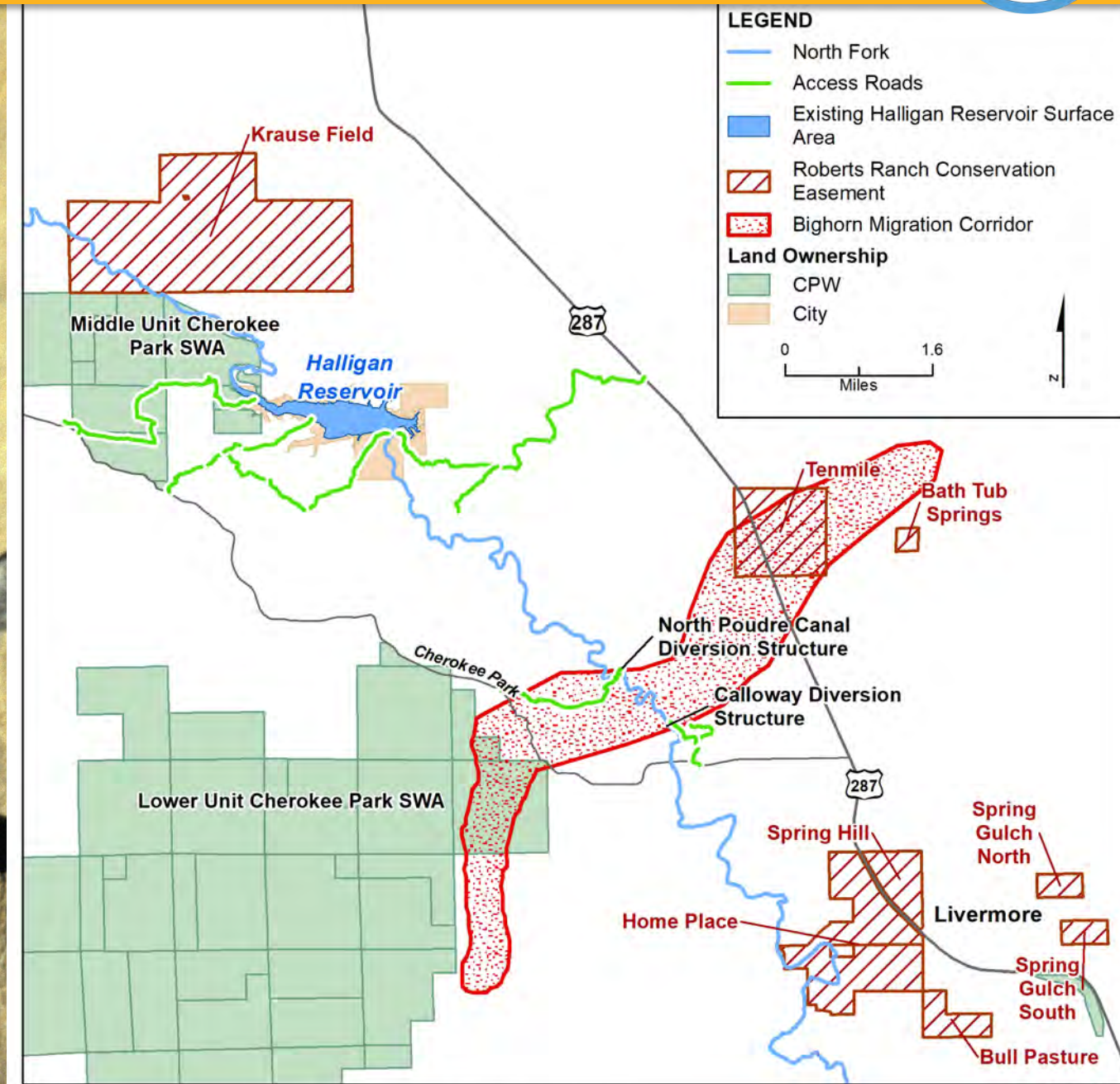




In 2003 to 2004, Fort Collins led the purchase and preservation of a permanent conservation easement of a 4,557-acre property known as Roberts Ranch.

## COMPENSATORY MITIGATION

- Easement contains several disconnected parcels in the Livermore Valley
- Perpetual preservation and conservation of habitat suitable for big game
- Serves as mitigation for the threatened Preble's meadow jumping mouse
- Conservation of more than 8.8 miles of perennial streams
- Direct connectivity to 14,000 acres of adjacent state and locally protected lands





Fort Collins will compensate for reduction of flows on the Main Stem by constructing fish passage around the Fort Collins Intake diversion structure at Gateway Park.



## COMPENSATORY MITIGATION

- Increases connectivity for trout and other large-bodied fish species
- Designed in consultation with CPW per their *Fish Passage and River Structures* guidelines



If, despite other various mitigation efforts, mortality to bighorn sheep occur in the Lone Pine herd, Fort Collins will provide monetary compensation to CPW.



## COMPENSATORY MITIGATION

- Compensation for any mortality during Project construction and 2 years after
- Adaptive management to monitor movements and to assess disease transmission between bighorn sheep herds with CPW's data analysis unit

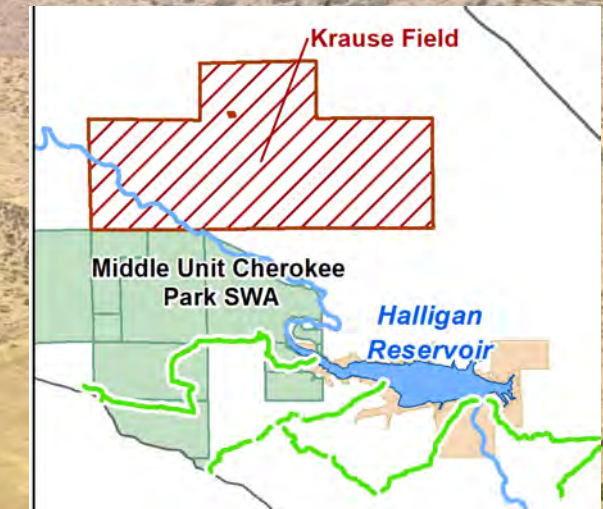




The Halligan Project will not change the public's current inability to recreate on the reservoir. After completion of construction, surface water access by private landowners will end.

## COMPENSATORY MITIGATION

- Reconciliation of title chain confusion
- Seek an agreement with CPW to convey an easement to CPW across Fort Collins property for public use of the North Fork
- Contribute \$135,000 to CPW to support a private foot access for hunting and fishing lease on the Krause Field parcel of the Roberts Ranch
- Provide \$30,000 to replace a primitive parking area on CPW land above the inundation area





## ENHANCEMENT CATEGORIES



1

**Aquatic Resources**  
1 measure proposed

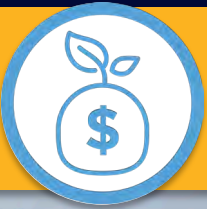
2

**Surface Water Quality**  
3 measures proposed

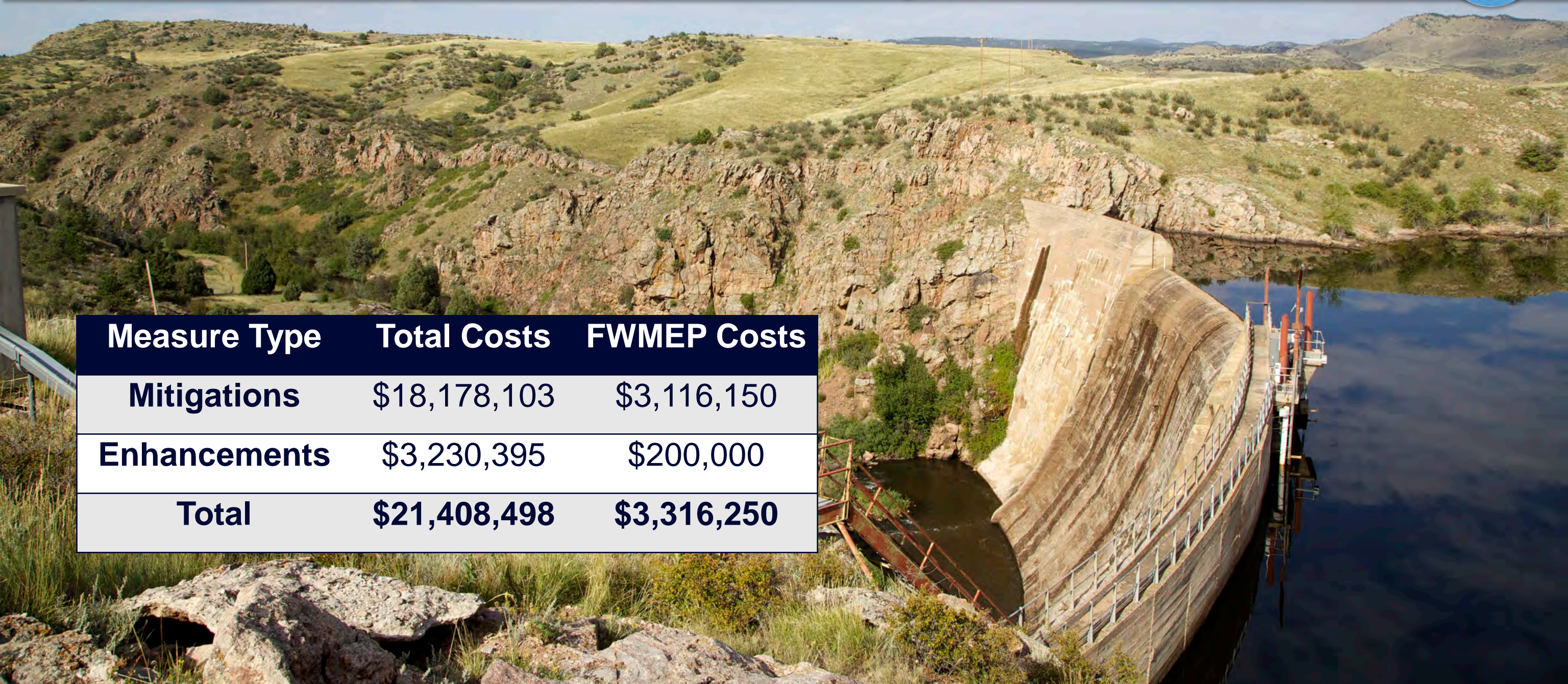
3

**Ecological Resource Monitoring**  
3 measures proposed



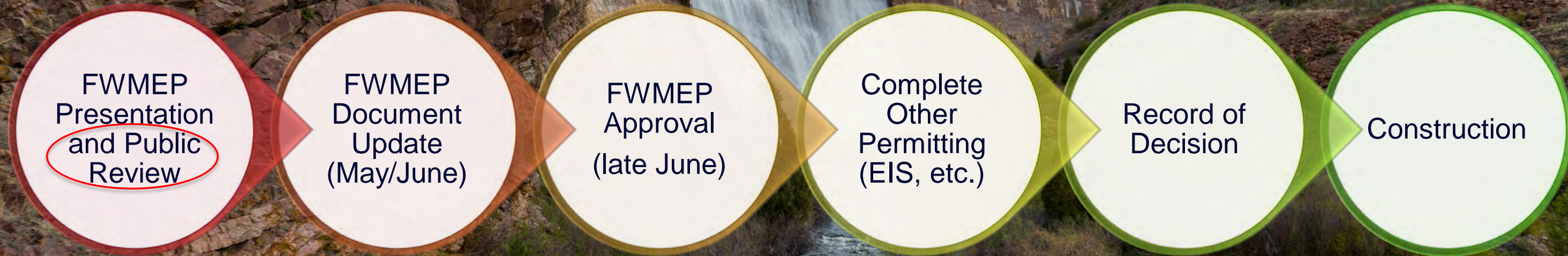


Fort Collins' Modified Proposed Action would cost an estimated \$144.6 million (2022 dollars) for design and construction only. The FWMEP summaries all mitigation and enhancement measures.



Measure Type	Total Costs	FWMEP Costs
<b>Mitigations</b>	\$18,178,103	\$3,116,150
<b>Enhancements</b>	\$3,230,395	\$200,000
<b>Total</b>	<b>\$21,408,498</b>	<b>\$3,316,250</b>







# THANK YOU!

For More Information, Visit

[fcgov.com/halligan](http://fcgov.com/halligan)

