Agenda Item No: 19.B

STAFF REPORT

Report To: Board of Supervisors **Meeting Date:** July 15, 2021

Staff Contact: Nancy Paulson, City Manager

Agenda Title: For Discussion Only: Discussion and presentation by the Carson Water Subconservancy District ("CWSD") on the Carson River Water Marketing Study. (Edwin James, edjames@cwsd.org)

Staff Summary: In 2018, CWSD received a grant from the Bureau of Reclamation to evaluate ways to enhance water sustainability through various programs such as water marketing, water banking, and water storage. CWSD hired Lumos & Associates to conduct this study. Lumos evaluated the water trends throughout the watershed, evaluated water use by the various water purveyors in the watershed, evaluated groundwater use and supply in each groundwater basin, and evaluated how water marketing could be developed to enhance water sustainability. This agenda item will provide a brief overview of the study and discussion on the next steps in evaluating the water supply for the entire Carson River Watershed.

Agenda Action: Other / Presentation **Time Requested:** 15 mins

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Proposed Motion
N/A

Board's Strategic Goal
N/A

Previous Action
N/A

Background/Issues & Analysis
N/A

Applicable Statute, Code, Policy, Rule or Regulation
N/A

Financial Information
Is there a fiscal impact? No

If yes, account name/number:

Is it currently budgeted?

Explanation of Fiscal Impact:

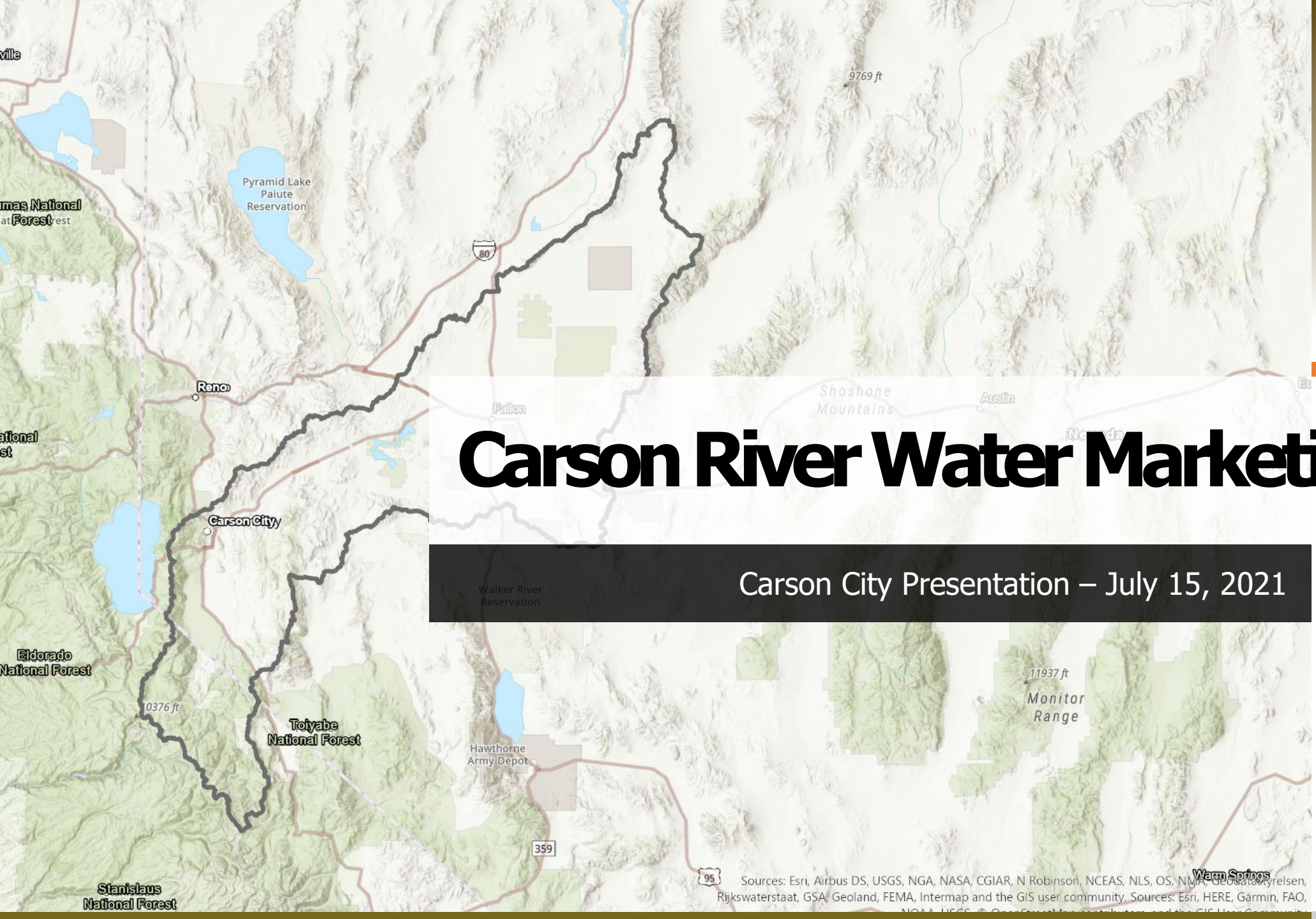
Alternatives
N/A

Attachments:
Carson City Water Marketing Presentation.pdf

Board Action Taken:

Motion: _____ 1) _____ Aye/Nay
2) _____ _____
_____
_____
_____
_____

_____
(Vote Recorded By)



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Carson River Water Marketing Study

Carson City Presentation – July 15, 2021

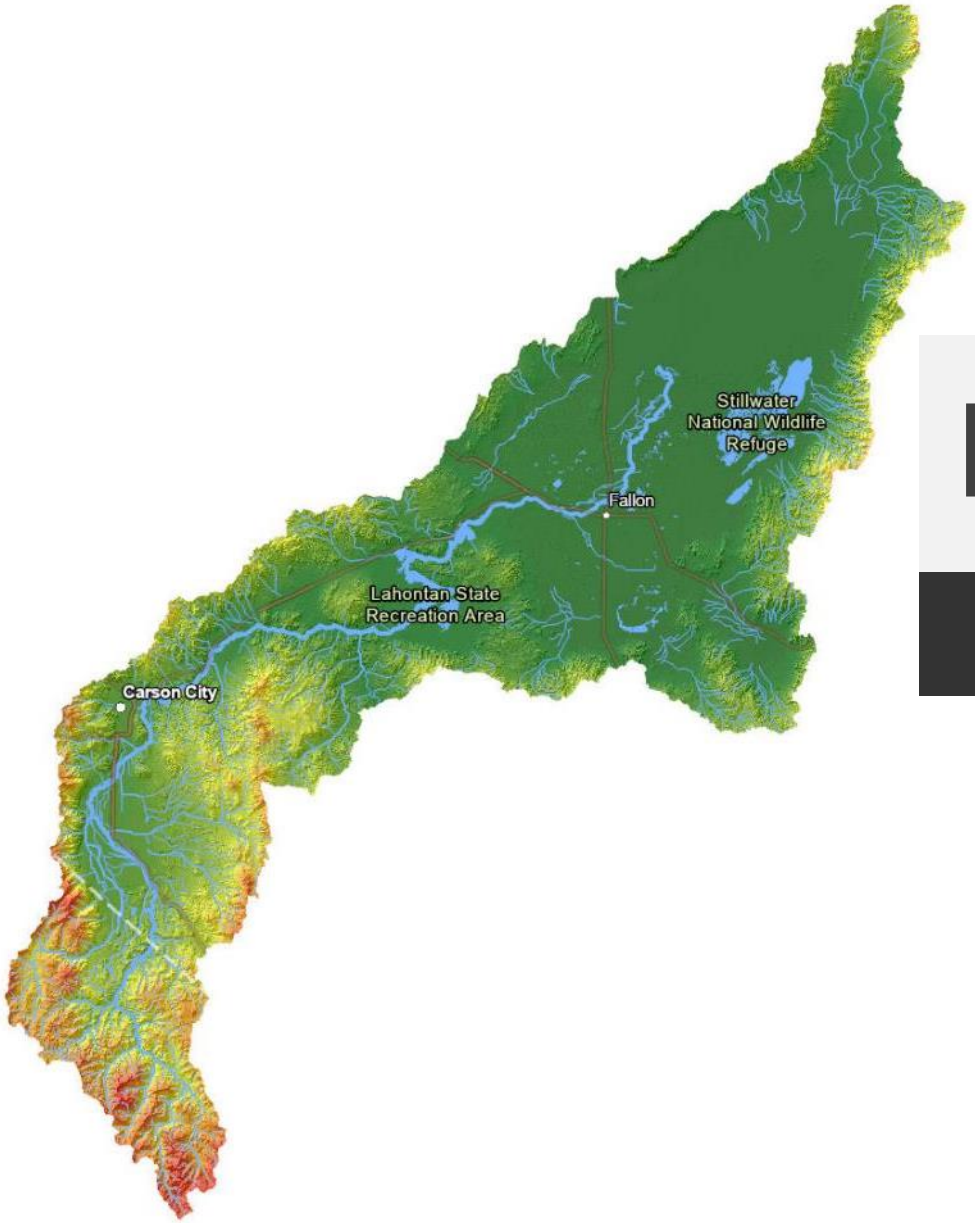
Background

What is a Water Marketing Study?

Funded through a *USBR WaterSMART Water Marketing Strategy Grant to:*

"develop water marketing strategies that establish or expand water markets or water marketing activities between willing participants, in compliance with state and Federal laws"

usbr.gov/watersmart/watermarketing/index.html



Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contr

Project Strategy

1. Understand the Watershed Trends
2. Understand existing water users
3. Define existing water marketing activities
4. Consider other water marketing strategies

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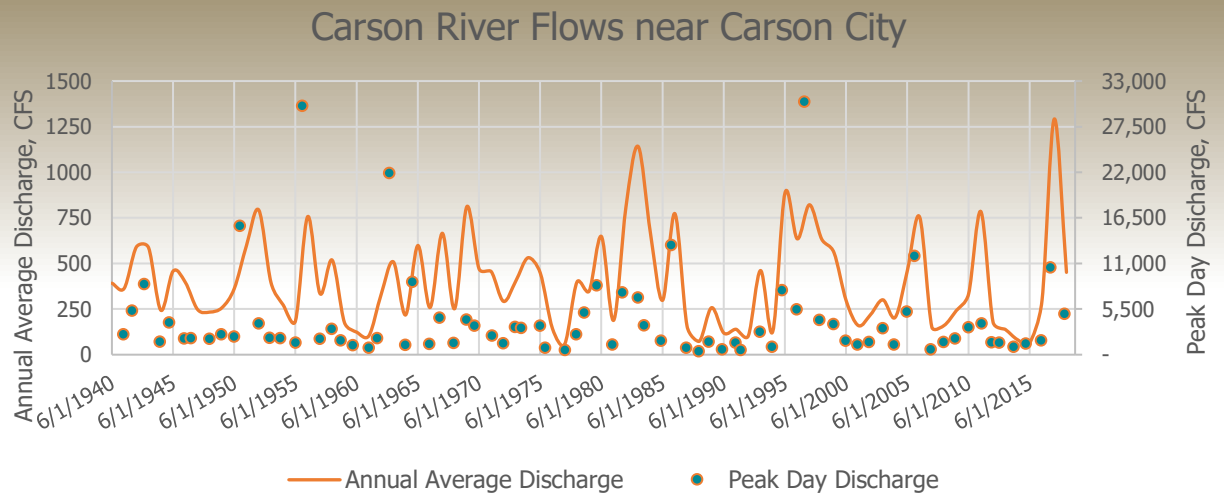
Watershed Trends

What do we know about the flow and climate trends in the watershed?

Instream Flows - 1940 to 2018

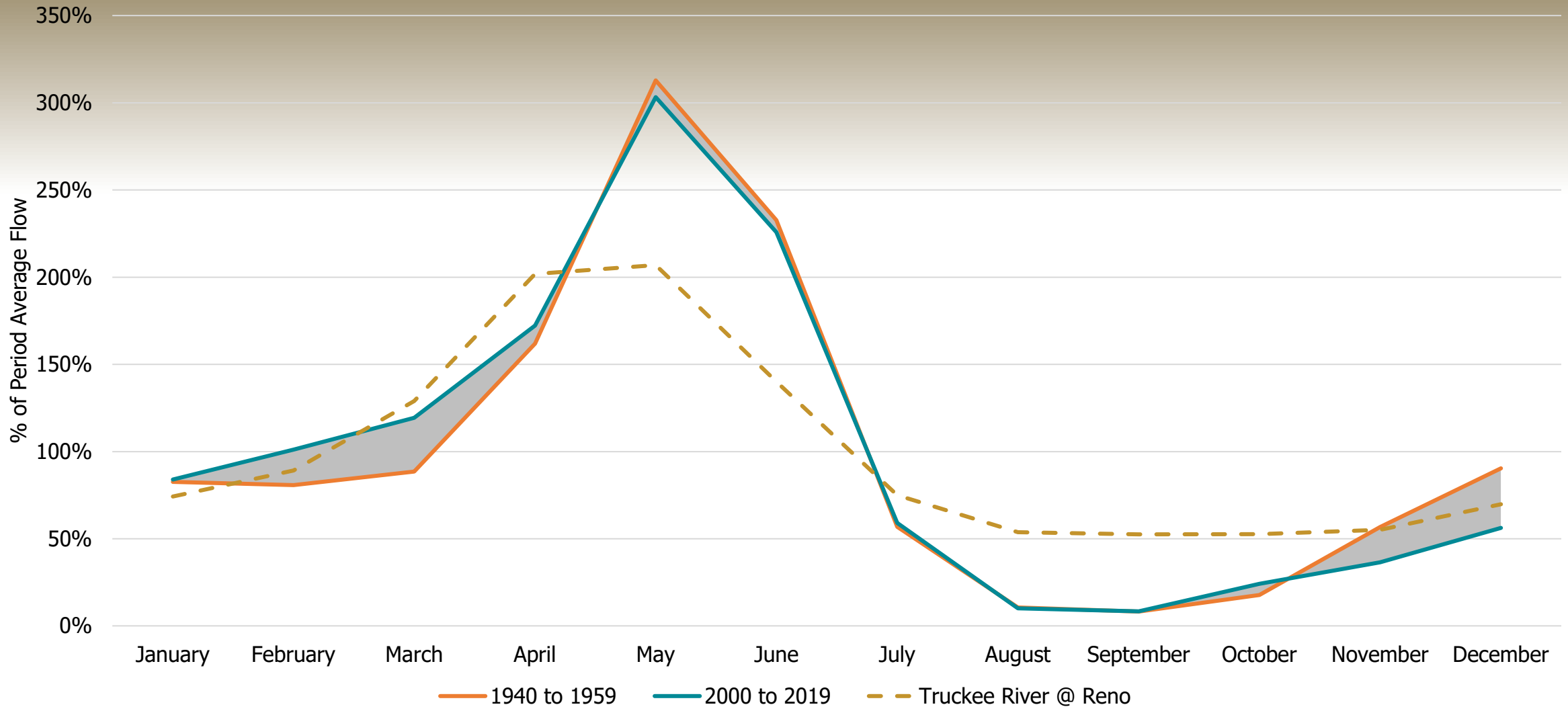
- Flows are highly variable
- On average, flows are slowly decreasing in each river stretch



Location	WF at Woodfords	EF near Gardnerville	EF +WF	CR near Carson City	CR near Fort Churchill*
USGS Station #	10310000	10309000		10311000	10312000
Annual Average Flow, CFS	103.0	365.4	468.3	401.1	377.4
Annual Flow Standard Deviation, CFS	50.2	181.3		256.4	258.4
Average Peak Day Flow, CFS	1,150.7	3,599.5		4,178.8	3,278.8
Peak Day Flow Standard Deviation, CFS	1,253.8	3,579.0		5,544.0	3,700.5
% Average Annual Change in Flow	-0.10%	-0.05%	-0.06%	-0.12%	-0.05%
% Average Change in Flow between 1940 and 2018	**-7.91%**	**-4.03%**	**-4.88%**	**-8.99%**	**-3.74%**

*Data trends from Ft Churchill gauge are not statistically significant and should be interpreted as such

Impacts to Instream Flows at Carson City



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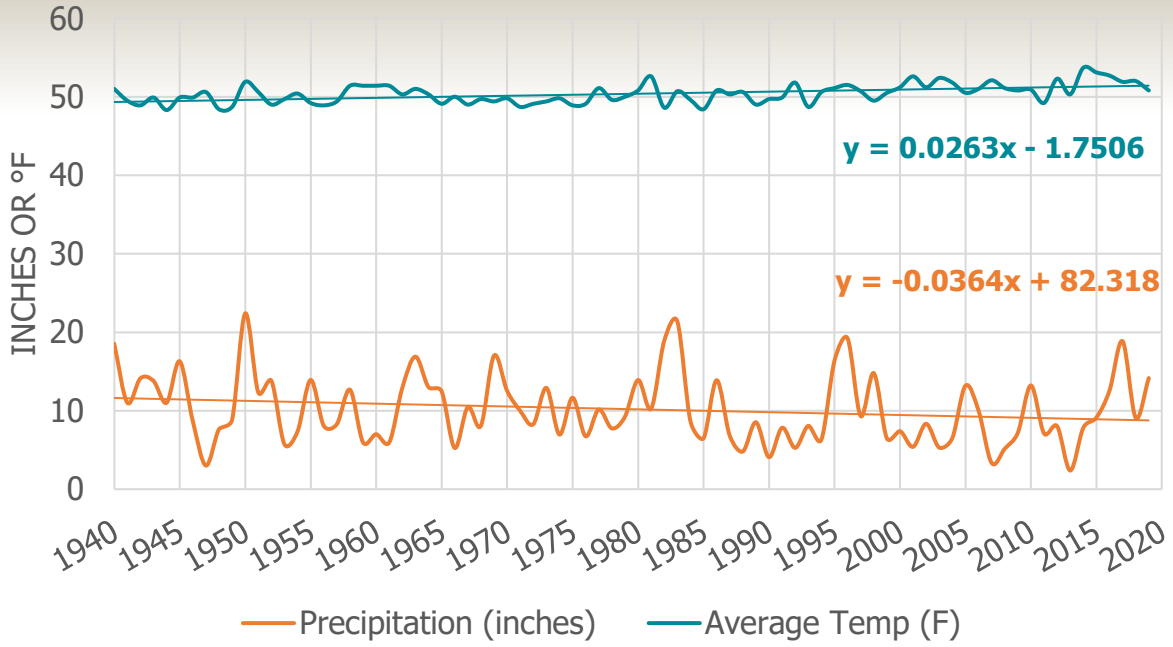
Climatic Conditions at Carson City – 1940 to 2019

- Climatic (not weather) trends in Carson City indicate that:
  - Temperatures are increasing
  - Precipitation is decreasing
- Impacts on instream flows:
  - Correlation between temperature and precipitation with Carson River flows
  - Increasing temperatures + decreasing precipitation = decreasing instream flow



The Challenge

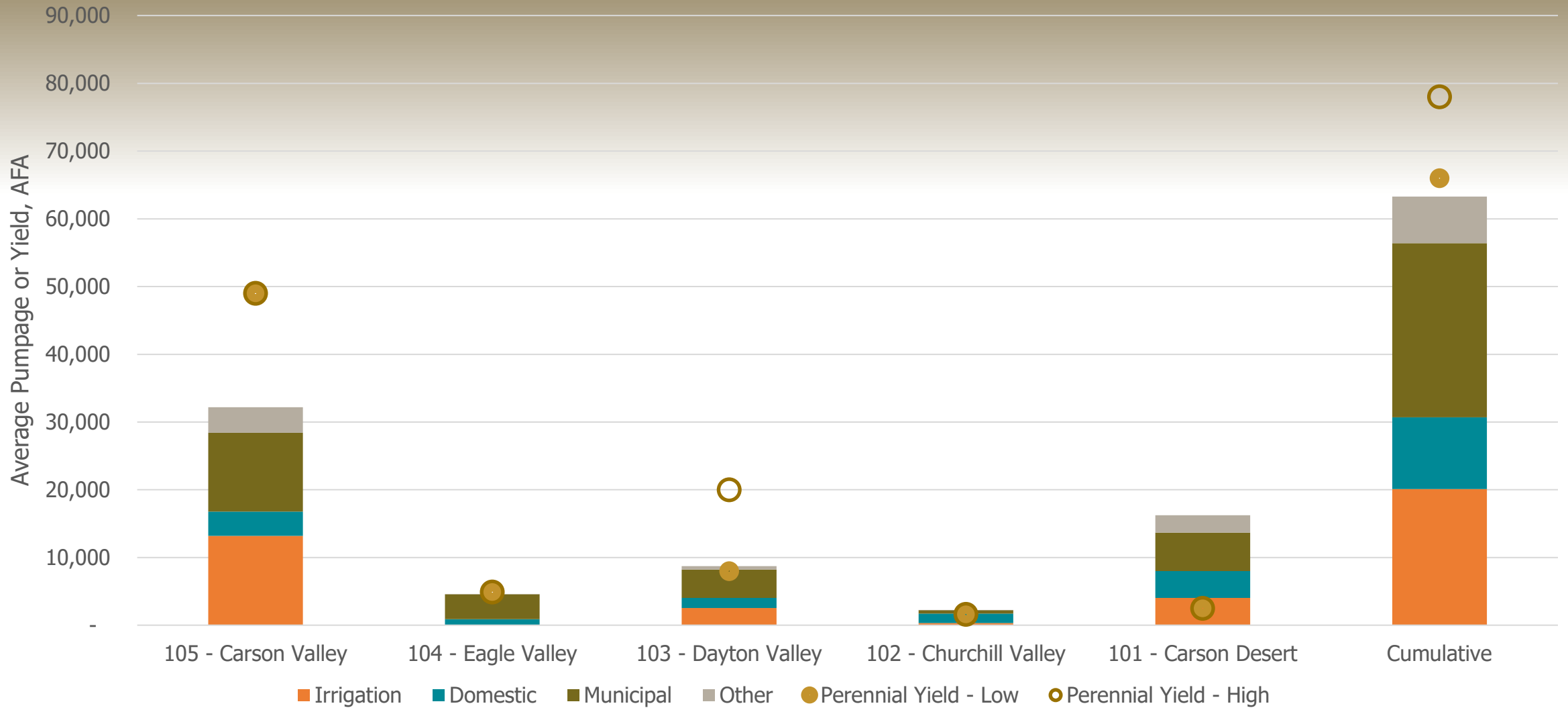
What do conditions look like in the future?

For water users along the Carson River, these trends are troubling. The result is an amplification of the "feast or famine" condition that already exists for the Carson River with the average flow slowly decreasing and flow patterns slowly changing. If this trend continues, flows will continue to become more extreme, less reliable, and continue to decline. The lack of significant storage in the upper watershed prevents any stabilization or mitigation of these extremes.

Watershed Users

What do we know about how water is being used?

Groundwater Usage – 2013 to 2017



Water Marketing & Management

How are we managing the Carson Watershed?

- Alpine Decree & Water Rights Law allow changes
  - Point of diversion
  - Place of use
  - Manner of use
  - Rotation
- Municipal water system regionalization & interties
- Water reuse & engineered recharge
  - Wastewater effluent
  - Aquifer storage and recovery (ASR)
- Water leasing & banking
- Water imports
  - Truckee Canal
  - Marlette Water System

Current Options

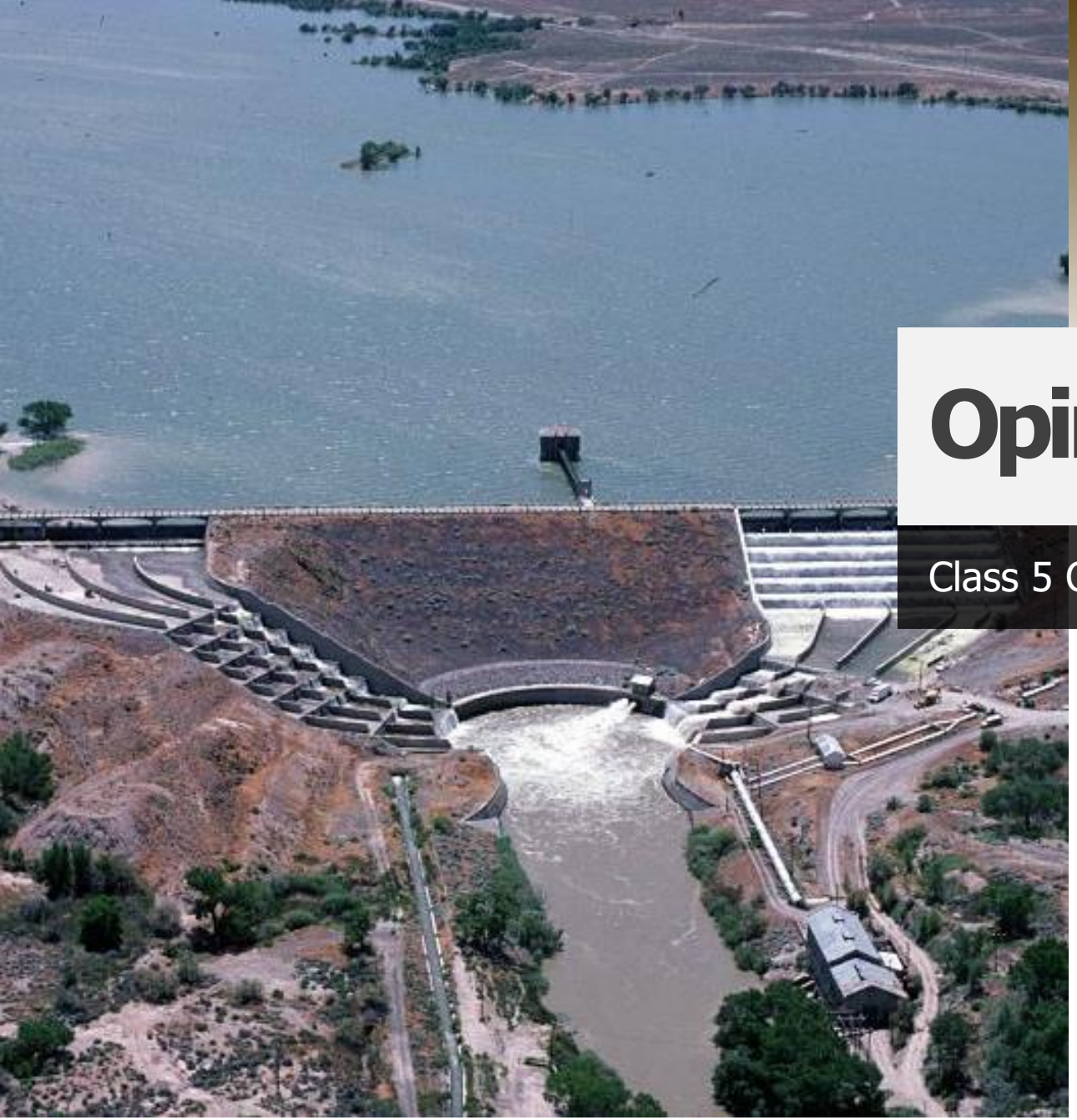
Water marketing strategies are already available?

General Concepts

1. Surface Water Extraction
2. Water Conveyance
3. Water Storage
4. Water Banking

Conceptual Alternatives

1. Managed Aquifer Recharge – Site 1
2. Managed Aquifer Recharge – Site 2
3. Expand Existing Reservoirs
   A. Mud Lake
   B. Lahontan Reservoir
4. Regional Water System Managed Aquifer Recharge
5. Combined Flood Control & Groundwater Recharge
6. New Reservoir



Opinion of Probable Costs

Class 5 Capital Costs

Conceptual Alternative	Total Cost
Managed Aquifer Recharge Site 1	$12,000,000
Managed Aquifer Recharge Site 2	$12,900,000
Expand Existing Reservoir Storage – Mud Lake	$11,600,000
Expand Existing Reservoir Storage – Lahontan Reservoir	$59,000,000
Potable Water Managed Aquifer Recharge	$6,800,000
Combined Flood Control and Groundwater Recharge	$16,200,000
New Reservoir Storage	$18,600,000

Recommendations

Where do we go from here?

- CWSD has applied for a USBR WaterSmart grant to develop a regional water management plan
  - Update the USGS Middle and Upper Carson River Models
  - Incorporate climate changes and its impact to runoff.
  - Evaluate future water demands
  - Evaluate surface and groundwater interaction


QUESTIONS?
WWW.CWSD.ORG
Photo by: Juan Guzman