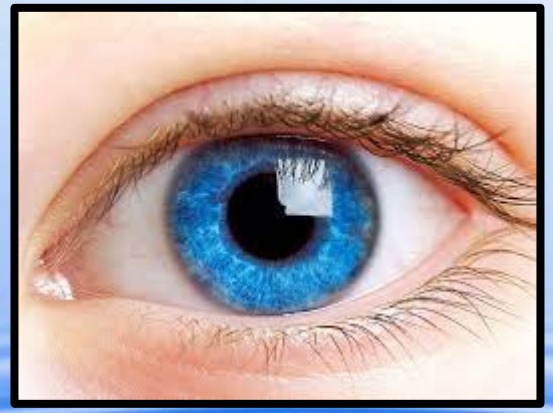
2026 Water Conference

Water---What Do You









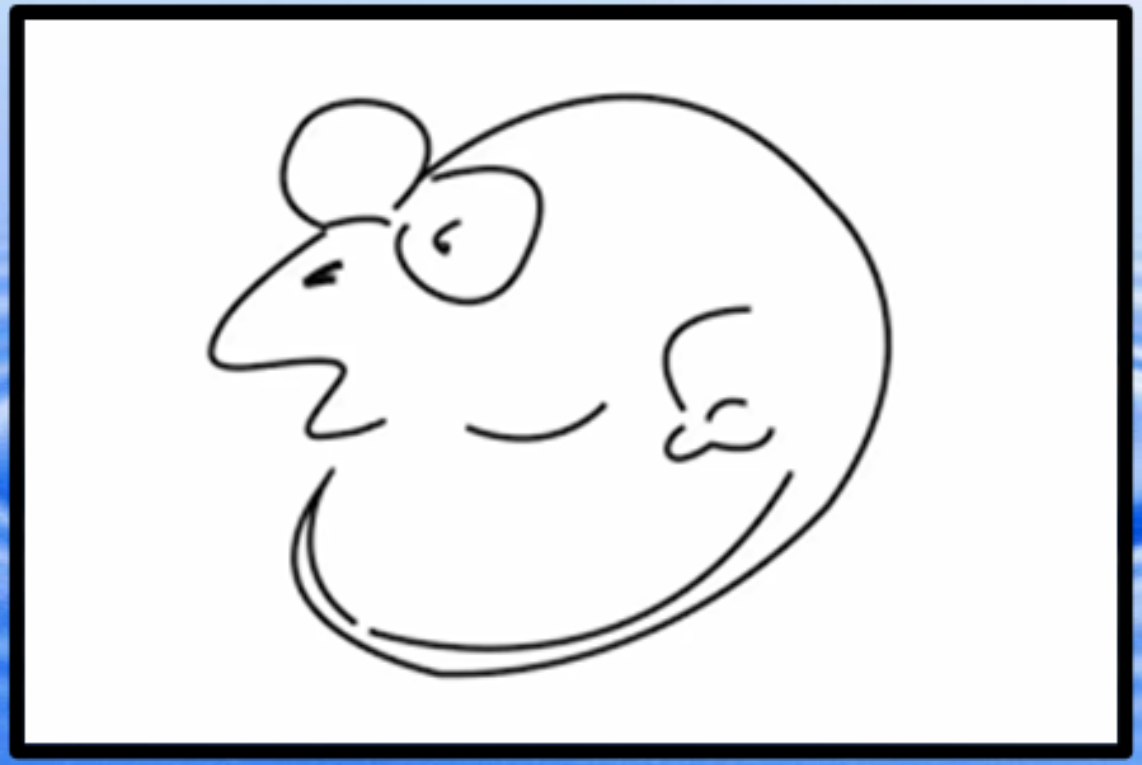


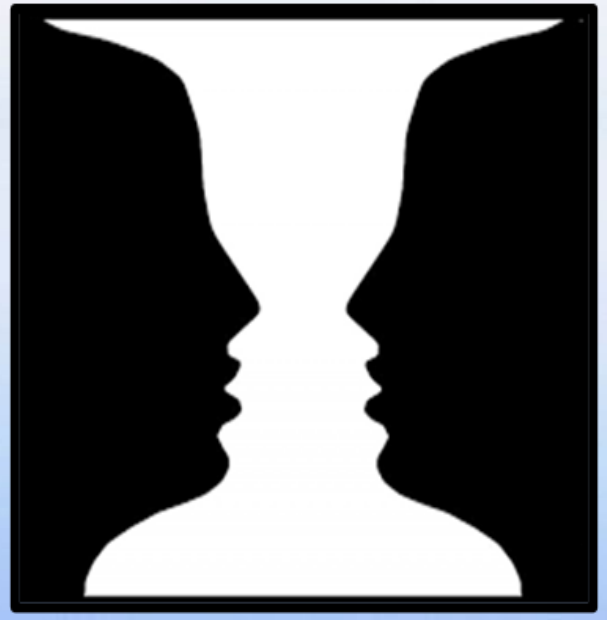


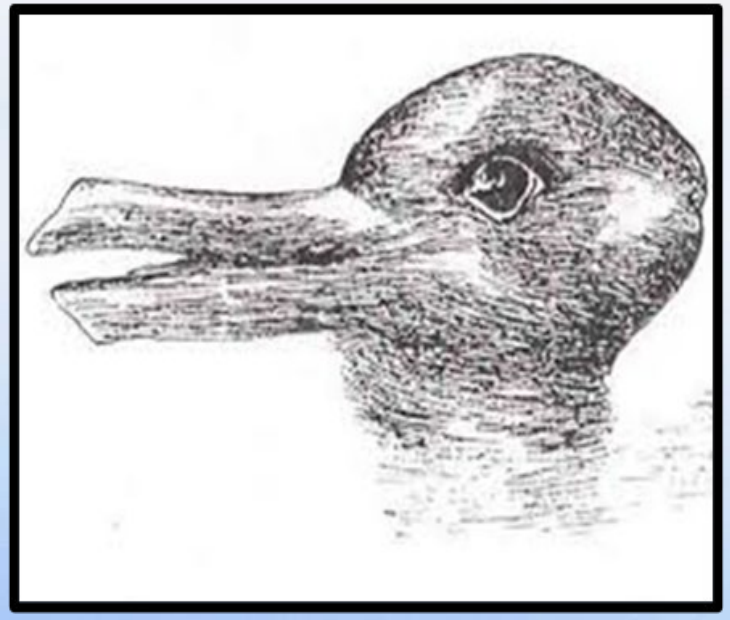


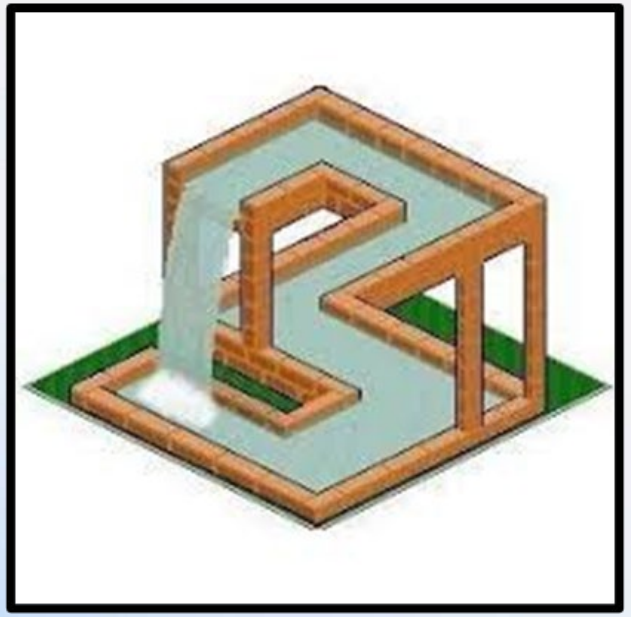


“-our brains form hypotheses based on our knowledge of the world around us, which is not always true.”

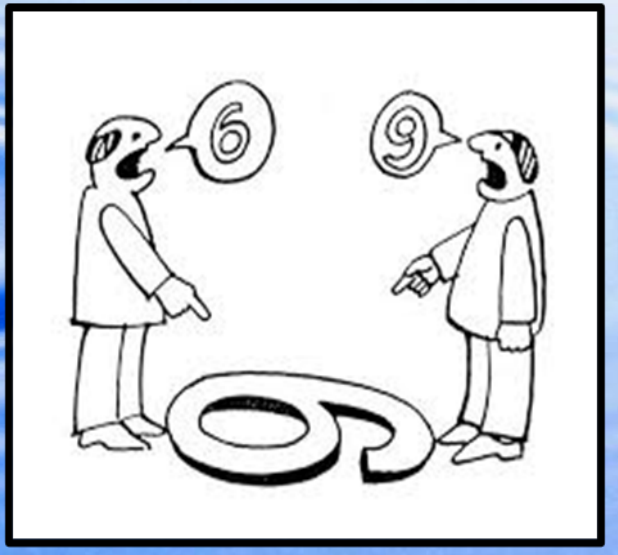




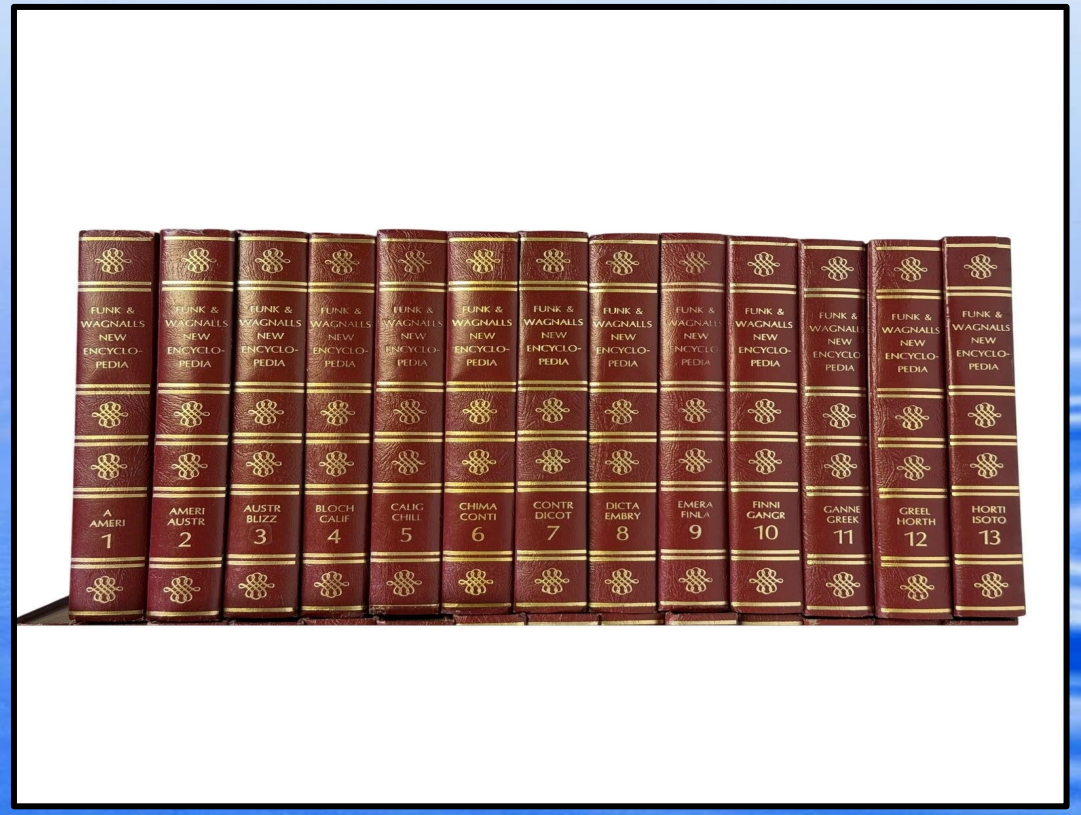







6
9

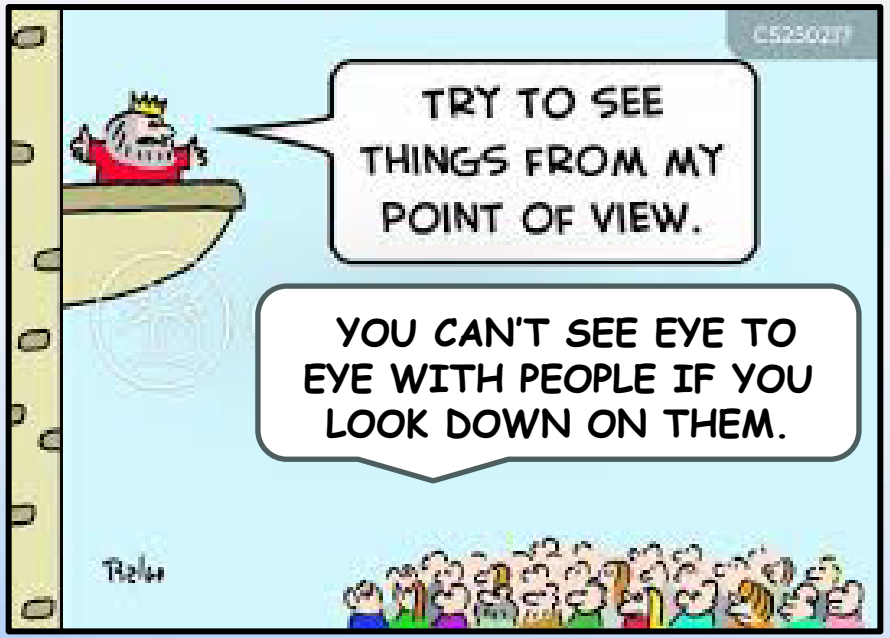
TIME changes
how we see things



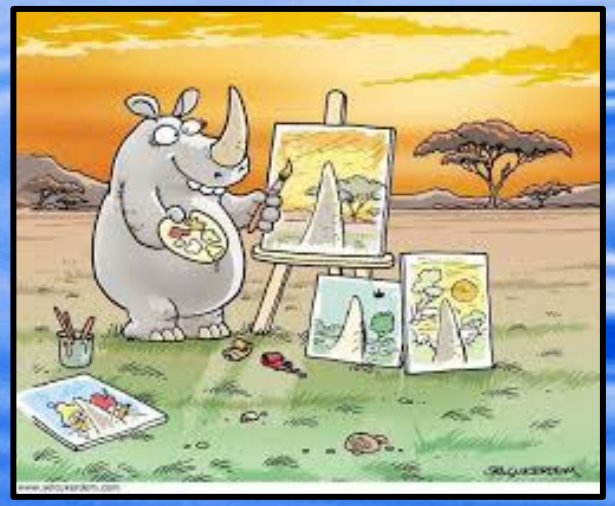


WHAT DO YOU SEE





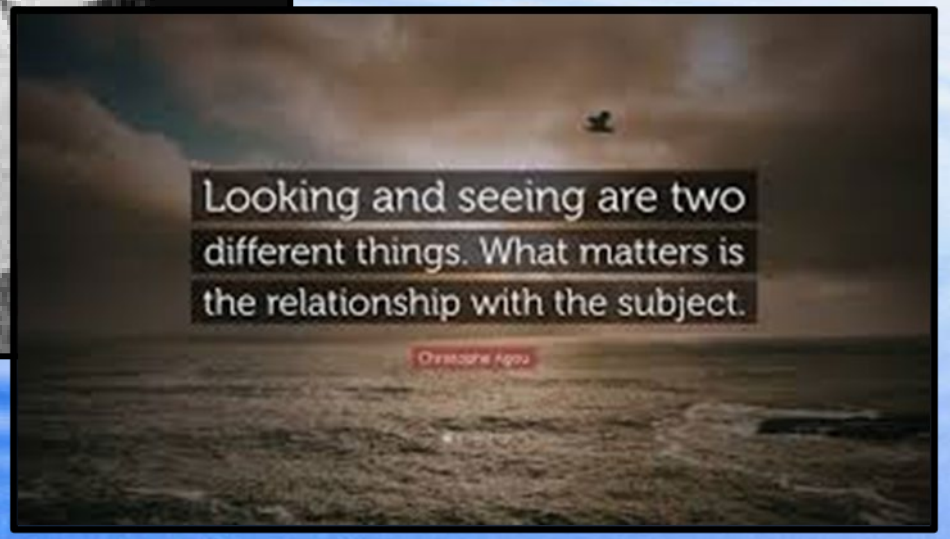







BY TANYA ELISE
WE DONT SEE THINGS AS THEY ARE;
WE SEE THEM AS WE ARE...
WWW.LADYHARMONY.COM.AU




Looking and seeing are two
different things. What matters is
the relationship with the subject.

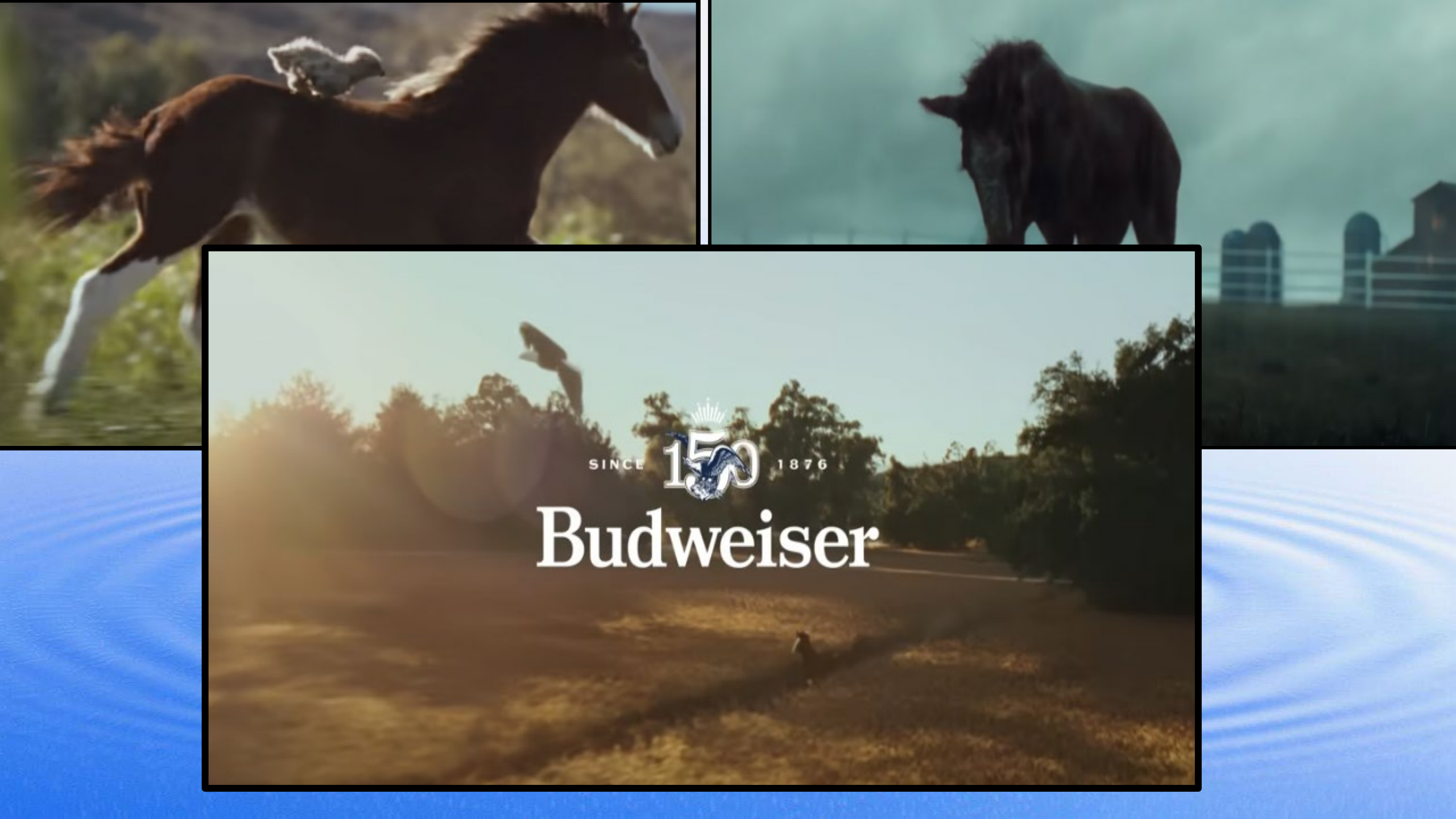
What do you *FEEL*?





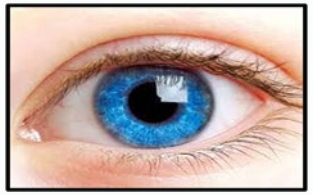

Lay's
Classic


Real potatoes grown by generations
of farmers across North America.


SINCE 150 1876
Budweiser



Water—What Do YOU See?







I. Introduction

II. How We See Water
Others

III. Seeing the Time and Process of Water
Many Have to See It

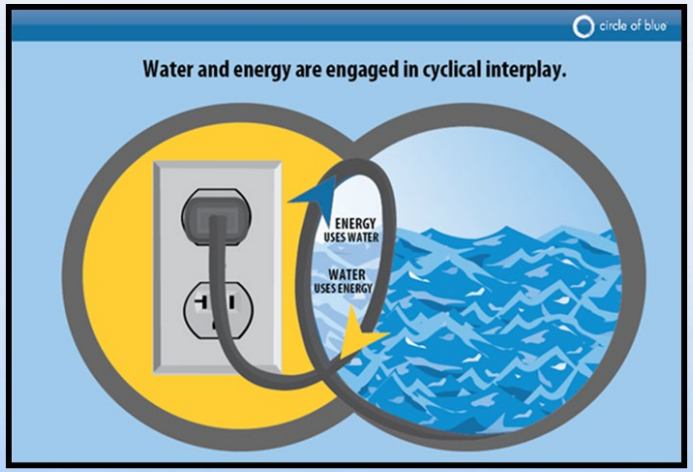
IV. Seeing What's Ahead

V. What Must We See—and DO?

II. How Have We Seen Water?



2015



2016



2017



2018



2019



2020



2021



2022



2023



2024



2025

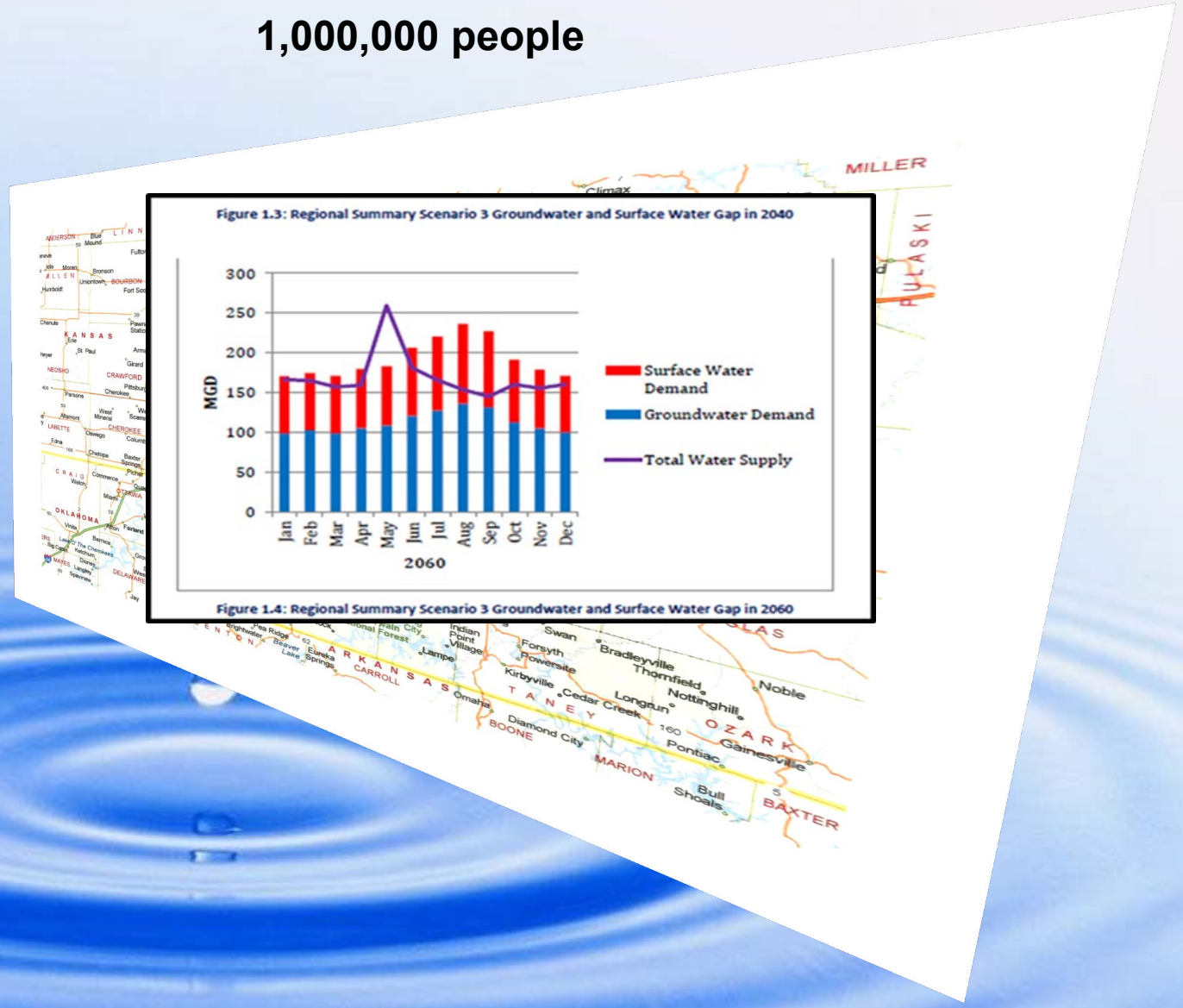


Members

- Carthage*
- Branson*
- Stockton*
- Joplin*
- Monett*
- Mt Vernon*
- Nixa*
- Republic*
- Ozark*
- City Utilities of Springfield*
- Liberty Utilities
- Greene County
- Jasper County
- Missouri American Water Company
- Pierce City*
- Springfield

* JMUC members

1,000,000 people



Cost of Water Over Time by Household



$27 million=>$2 million annual debt service
(30-year amortization)



1,000,000 people/ 2.5 people per household
=400,000 households



$2,000,000/400,000 households=$5 /year/household
17 cents/month---about a half penny per day



Infrastructure Cost over Time

$1-2 billion=>$50-100 million annual debt service

1,000,000 people/ 2.5 people per household
=400,000 households





$50-100,000,000/400,000 households=$125 /year/household
$10/month---30-60 cents per day



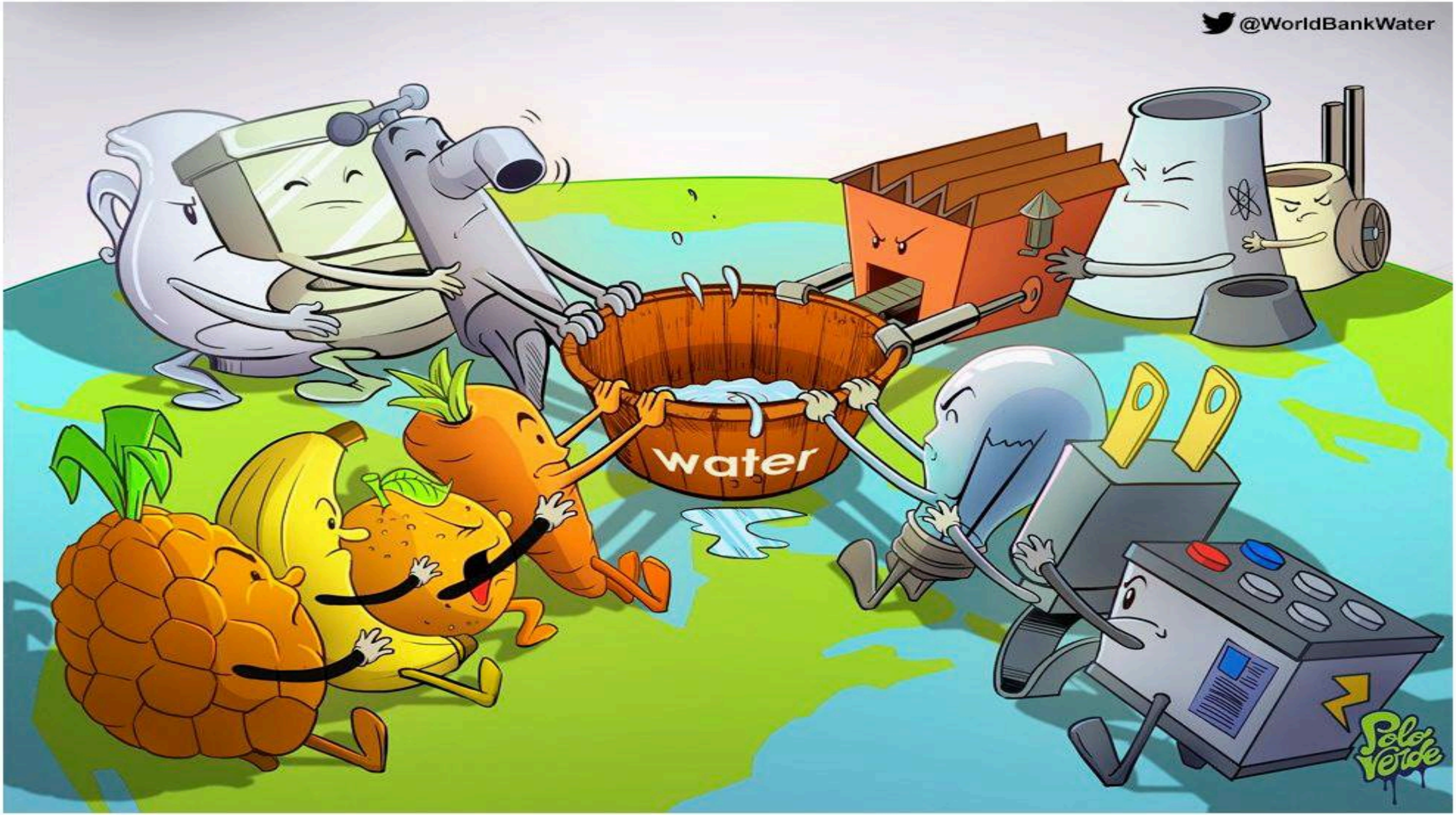


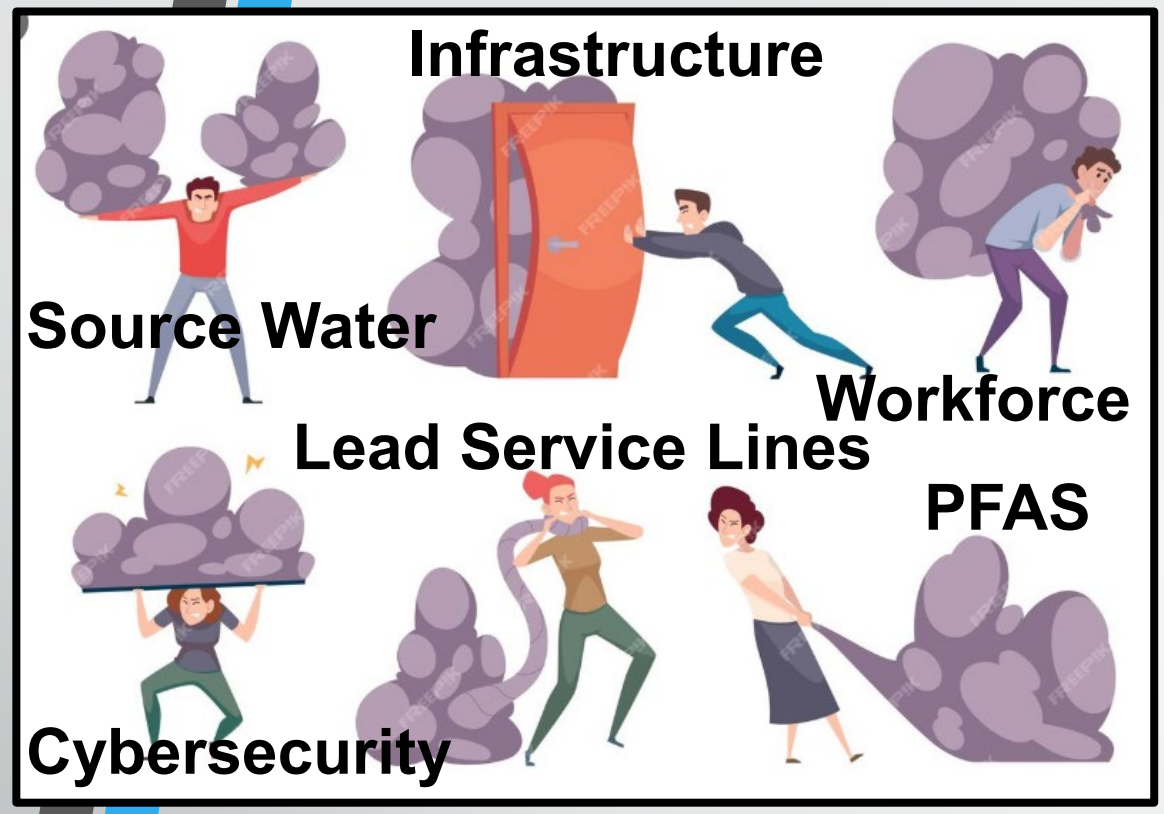
or

Investment opportunity for pennies per day



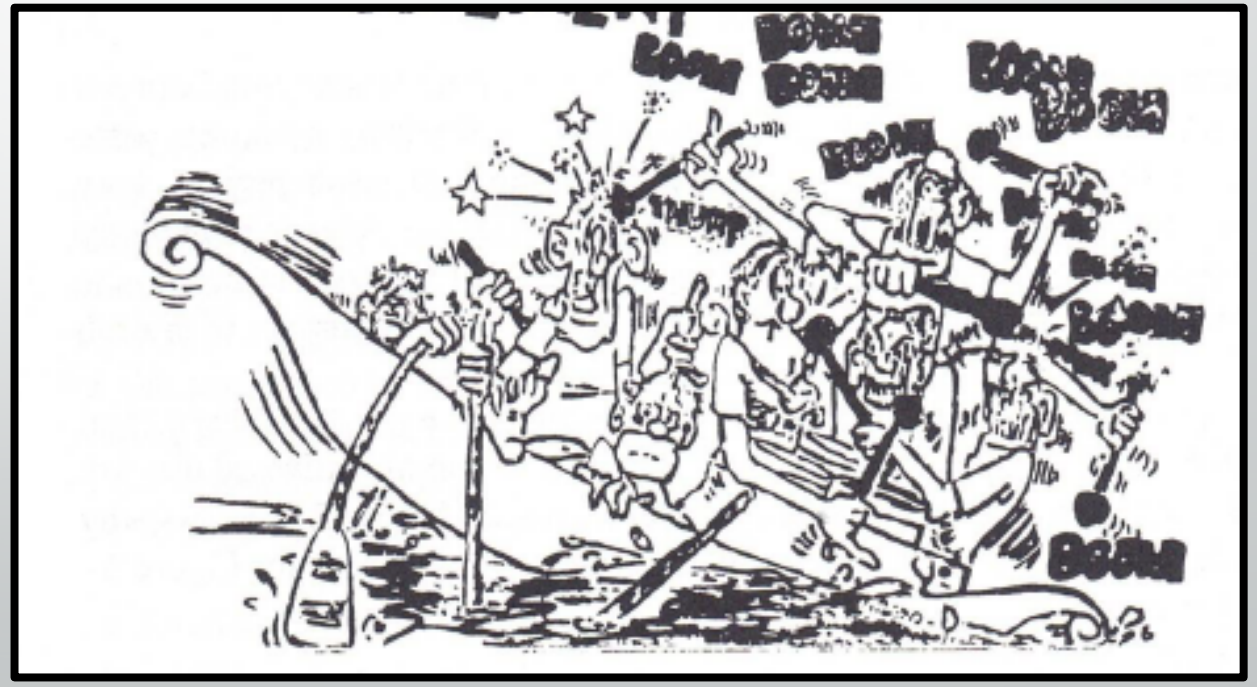

NO WATER
VALLEY FARMS
=NO JOBS
Families Protecting The Valley .com


@WorldBankWater
water
Polo Verde



WATER SYSTEM CHALLENGES

50,000 Systems
Independently Addressing



Water utilities can serve as both a key partner as well as an anchor for regional economic and workforce development



Water utilities

Economic development agencies

Workforce development organizations

Other industry partners

Community-based organizations and labor groups

Contractors

Educational institutions

Source: Brookings authors

Brookings Metro

How do others see water?

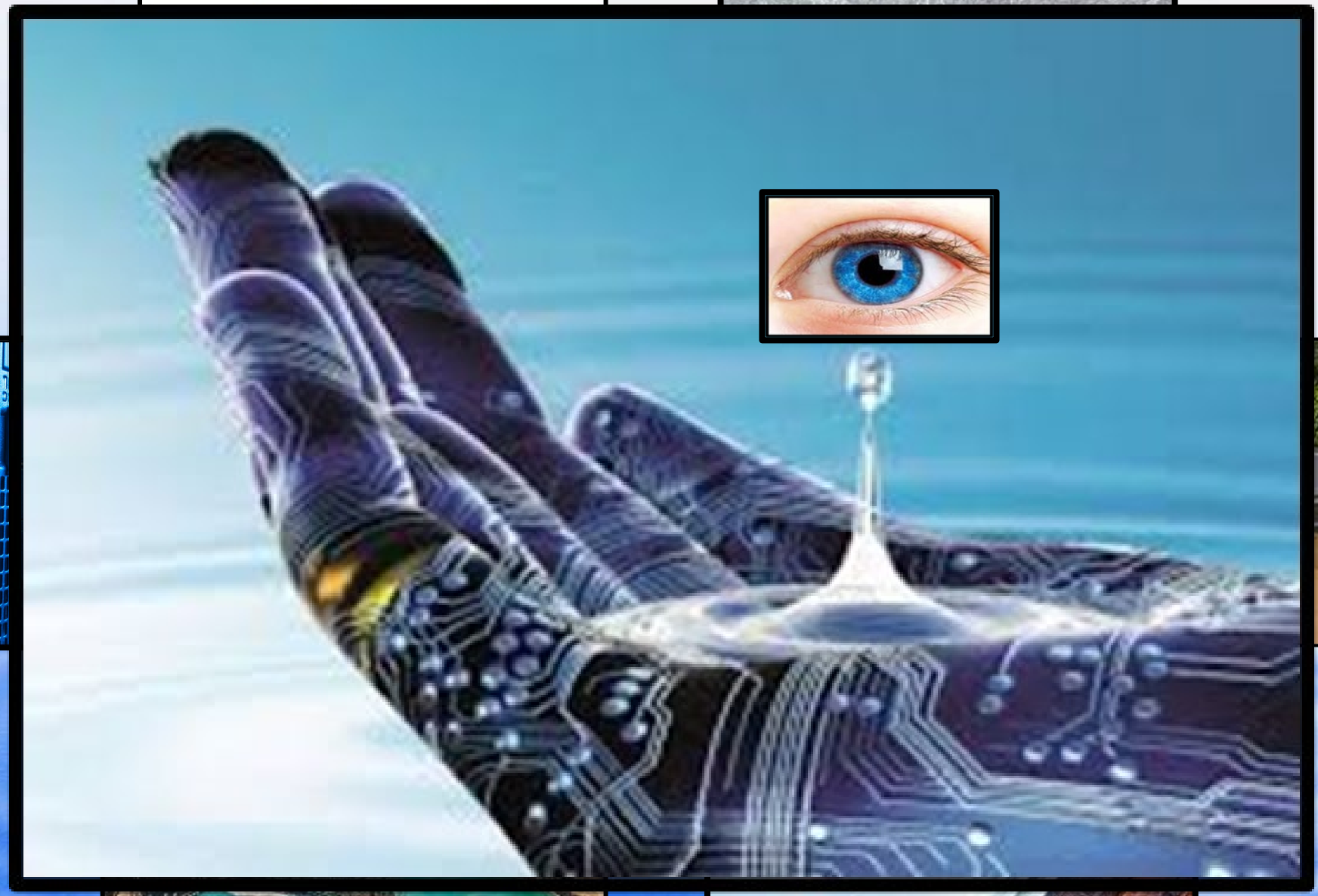












Data Center Included?











Sectors

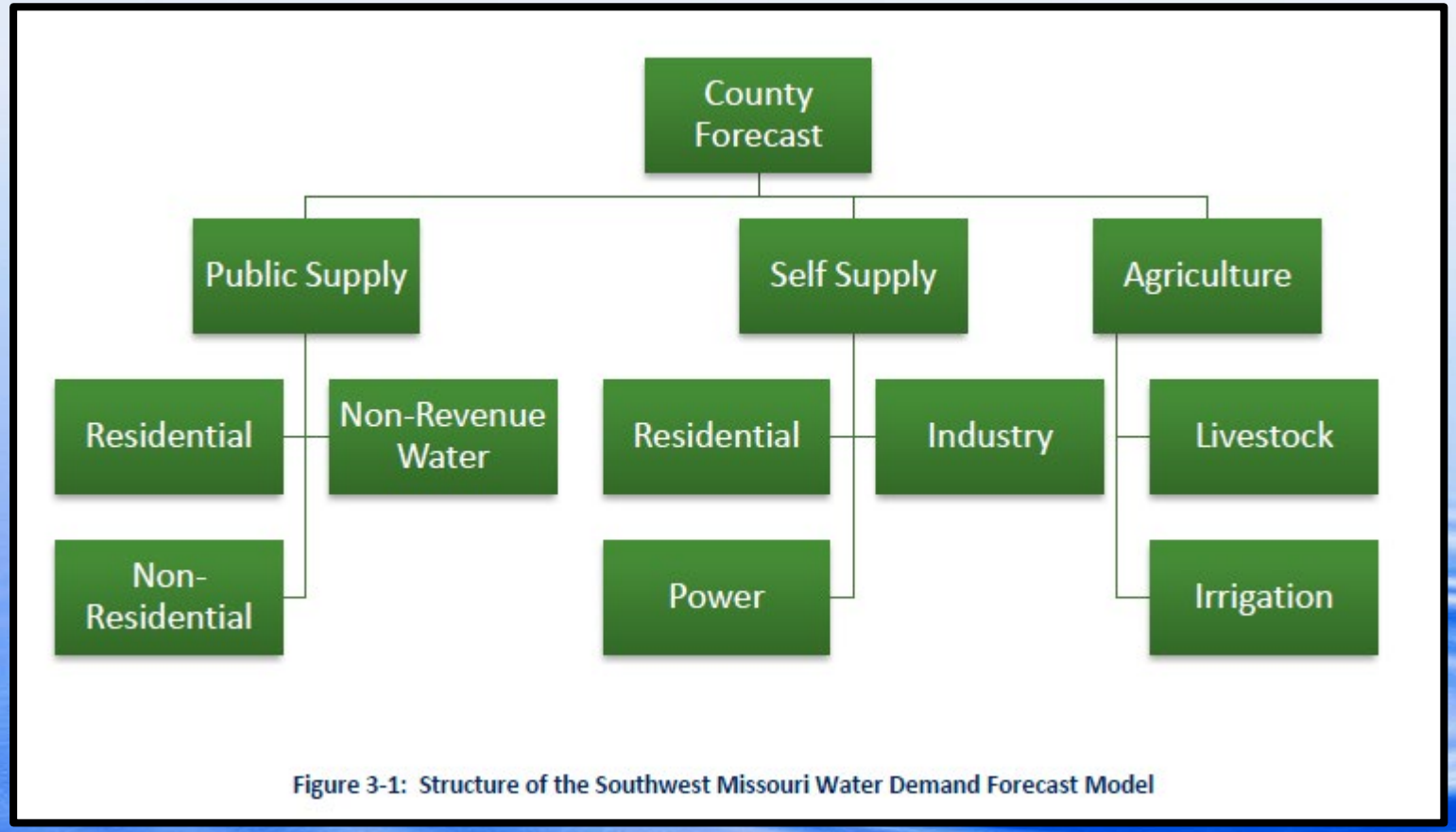


Figure 3-1: Structure of the Southwest Missouri Water Demand Forecast Model

- Single Family Residential
- Multi-Family Residential
- Commercial
- Industrial
- Institutional

Water Use Coefficients
North American Industrial Classification System

Table 4-1: Non-residential Water Use Coefficients from IWR-MAIN

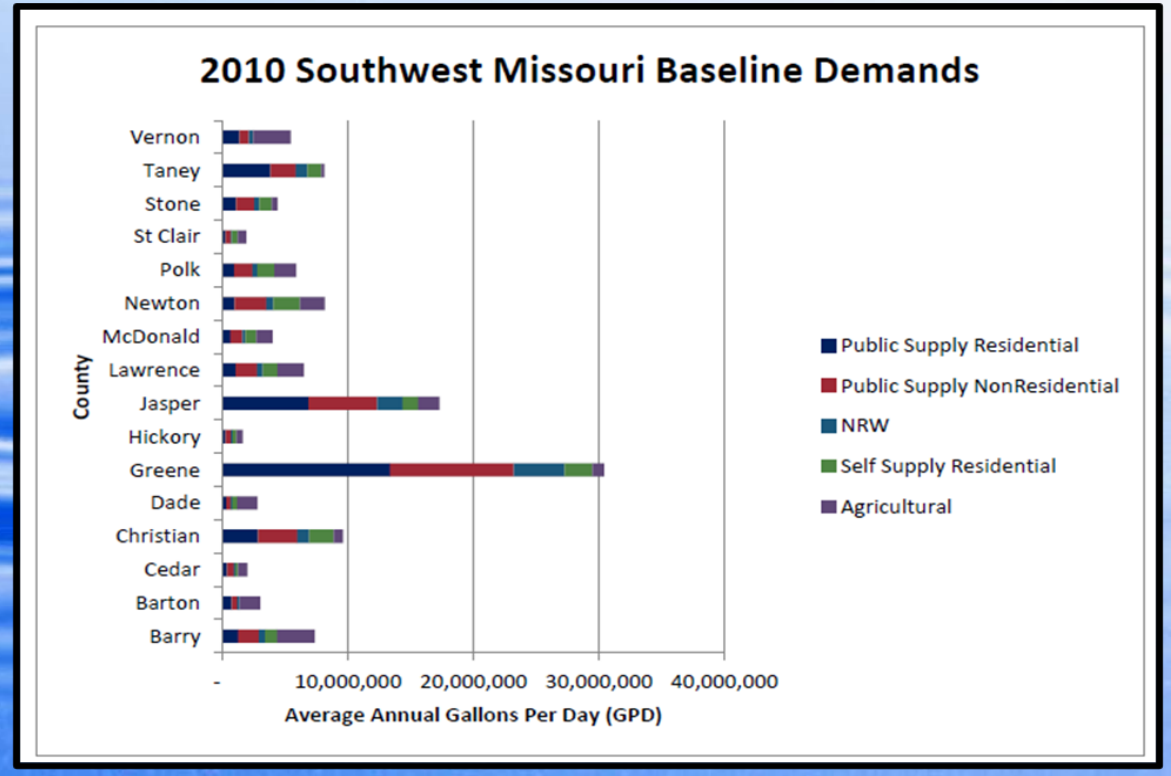
NACIS	GED*
11 - Agriculture, forestry, fishing and hunting	111.8
21 - Mining	488.4
22 - Utilities	28.4
23 - Construction	66.6
31 - Manufacturing[1]	144.5
42 - Wholesale trade	44.1
44 - Retail Trade	46.4
452 - General Merchandise Stores	36.5
453 - Miscellaneous Store Retailers	66.1
48 - Transportation and Warehousing[2]	57.2
51 - Information	28.0
52 - Finance and insurance	59.8
53 - Real estate and rental and leasing	163.5
54 - Professional and technical services	68.6
55 - Management of companies and enterprises	64.0
56 - Administrative and waste services	41.2
61 - Educational Services	103.6
62 - Health care and social assistance	84.7
71 - Arts, entertainment, and recreation[3]	33.0
72 - Accommodation and food services[3]	149.8
81 - Other services, except public administration[4]	73.9
Local, State and Federal Government[3]	68.2

* GED - gallons per employee per day
1 Manufacturing GED adjusted for Barry County: 354.0 and McDonald County: 778.0 (See Section 5.3)
2 Transportation and Warehousing GED adjusted to 216.00 for Barry County
3 Adjusted from standard GED based on supplemental regional information
4 Average county-wide employment GED applied for each individual county (overall average 73.9)

$$PSNR_{c,m,y}^{GPD} = \left[\sum\left(E_{c,y}^{NAICS} \times GED_{c}^{NAICS}\right) - SSI_{c,m,y}^{GPD}\right] \times S_{c,m}$$

Where:

- $PSNR_{c,m,y}^{GPD}$ = Public-supplied non-residential water use in county (c) in month (m) in year (y) in GPD
- $E_{c,y}^{NAICS}$ = Employment by NAICS group in county (c) and year (y)
- GED_{c}^{NAICS} = Water use per employee by NAICS group, which may be adjusted for a specific county (c)
- $SSI_{c,m,y}^{GPD}$ = Self-supplied industrial water use in county (c) in month (m) in year (y) in GPD
- $S_{c,m}$ = Seasonality of Public-supplied non-residential water use in county (c) in month(m)



Home Budget
Salt Included?





MONTHLY BUDGET

MONTH_____

TOTAL INCOME:

BILLS	EXPECTED AMOUNT	ACTUAL AMOUNT	DIFFERENCE
Rent / Mortgage			
Car / Transportation			
Electricity			
Heat			
Groceries			
Gas (for vehicle)			
Cable			
Internet			
Cell Phone			
Medical / Dental			
Car Insurance			
Home / Rental Insurance			
Childcare			
Credit Card			
Entertainment / Misc.			
Savings			
OTHER/MISC			
TOTAL EXPENSES:			

Environmental and Energy Study Institute (EESI-6/25)



5,426 data centers

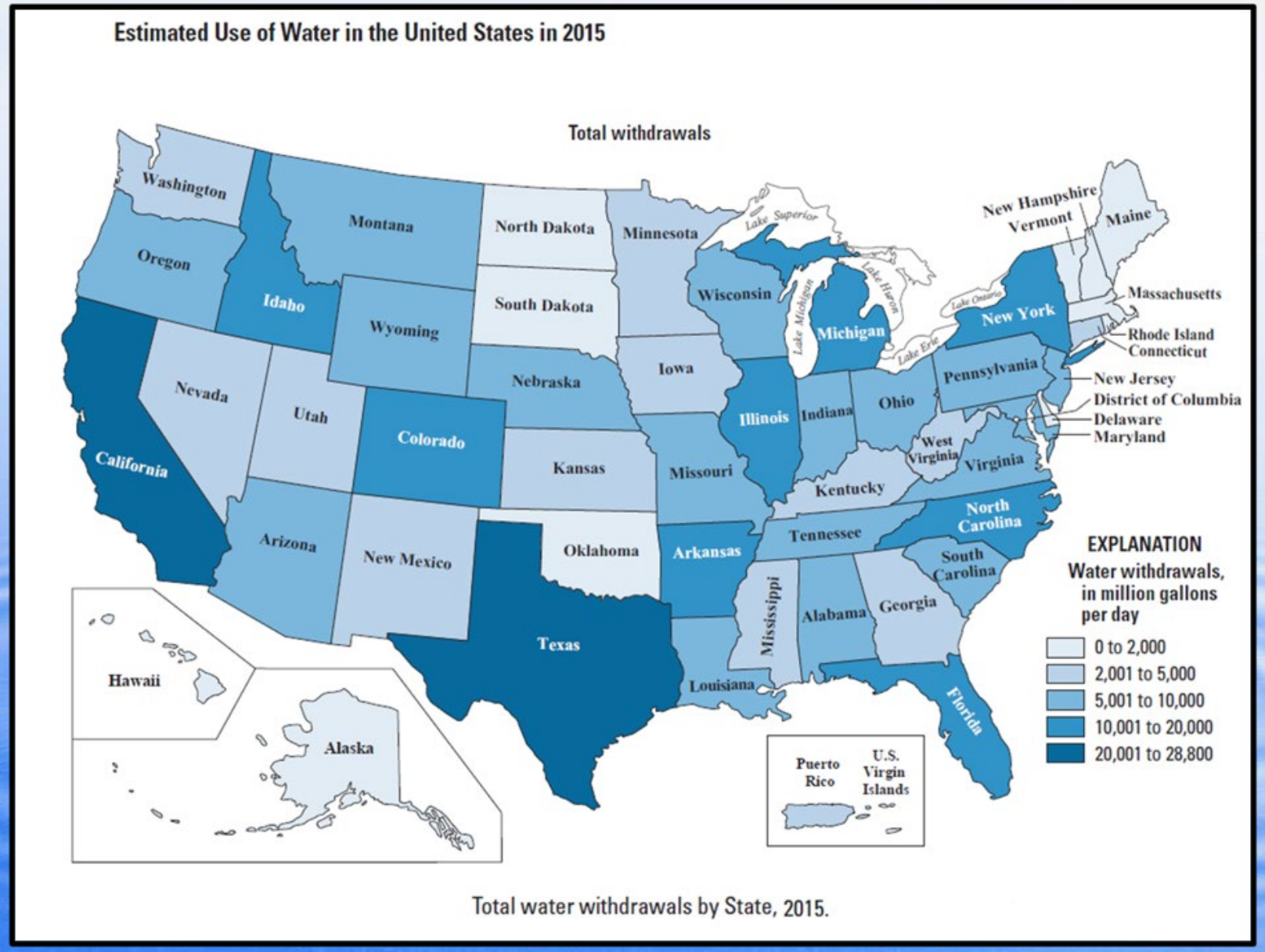
Medium sized center
300,000 gallons per day

1.6 billion gallons per day

8 billion gallons per day



322 billion gallons daily in 2015



Total water withdrawals by State, 2015.





$7.5 trillion per year

JP Morgan

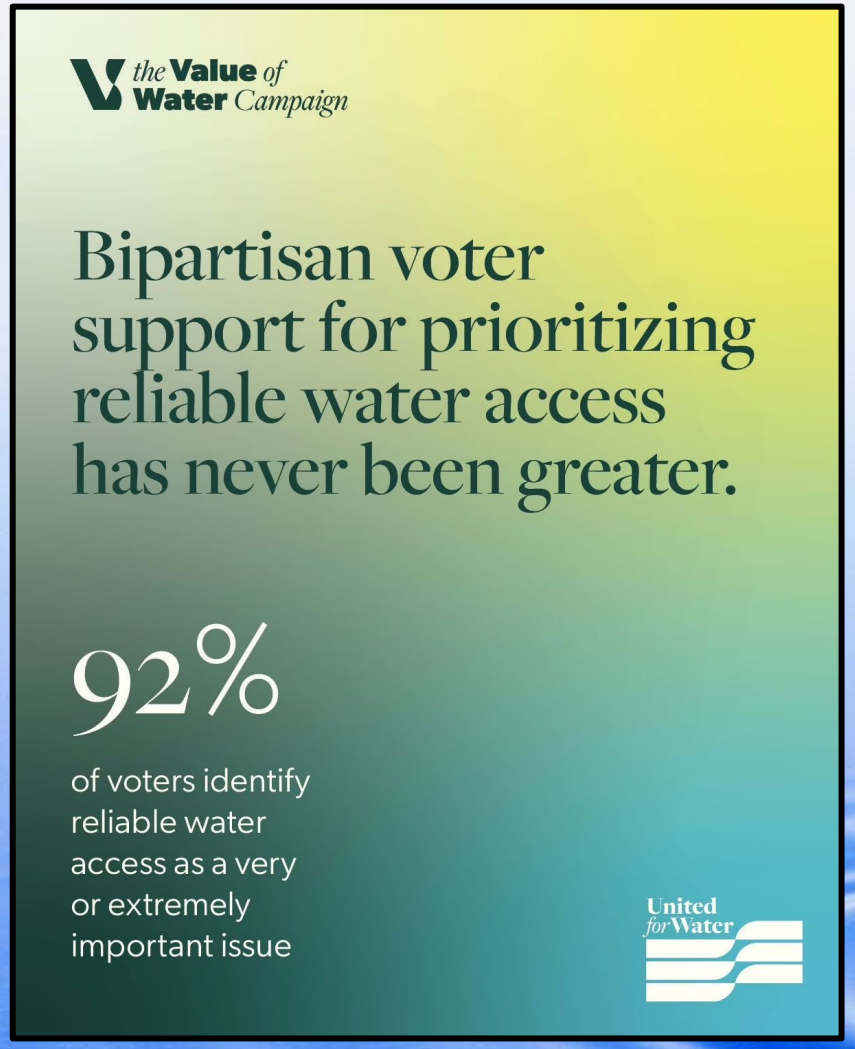






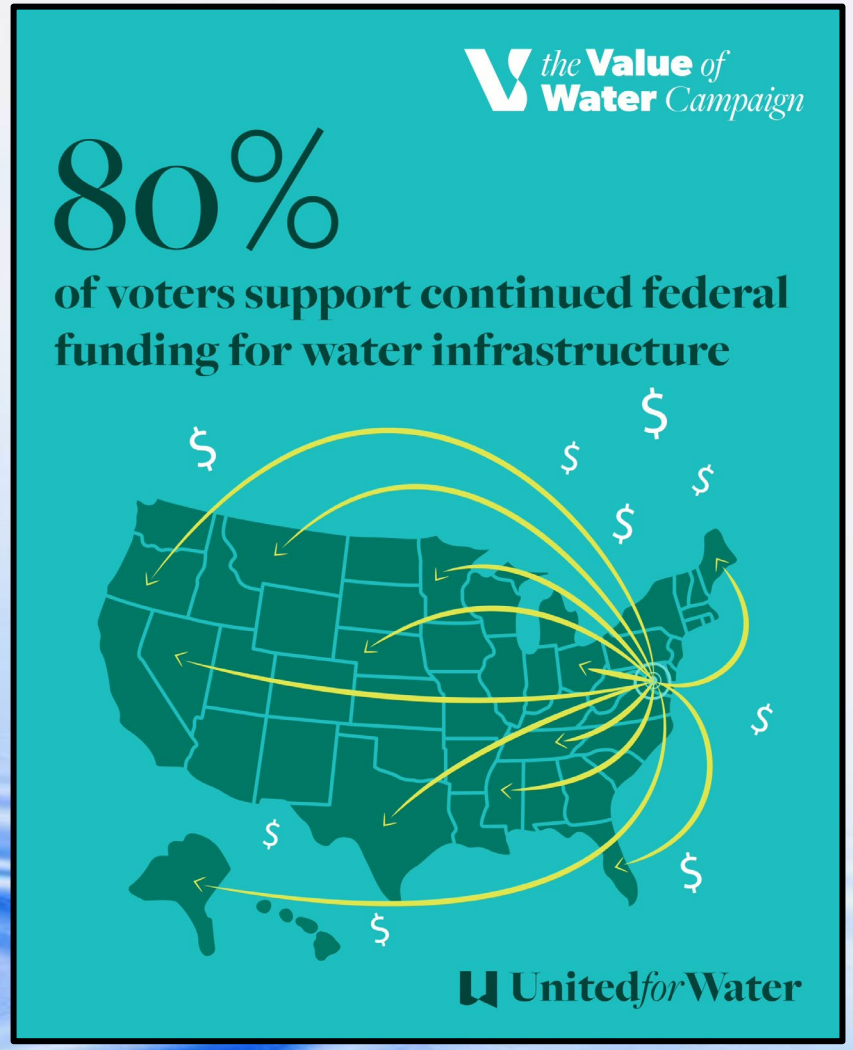






Value of Water CAMPAIGN





2) Reducing inflation

3) Strengthening the economy

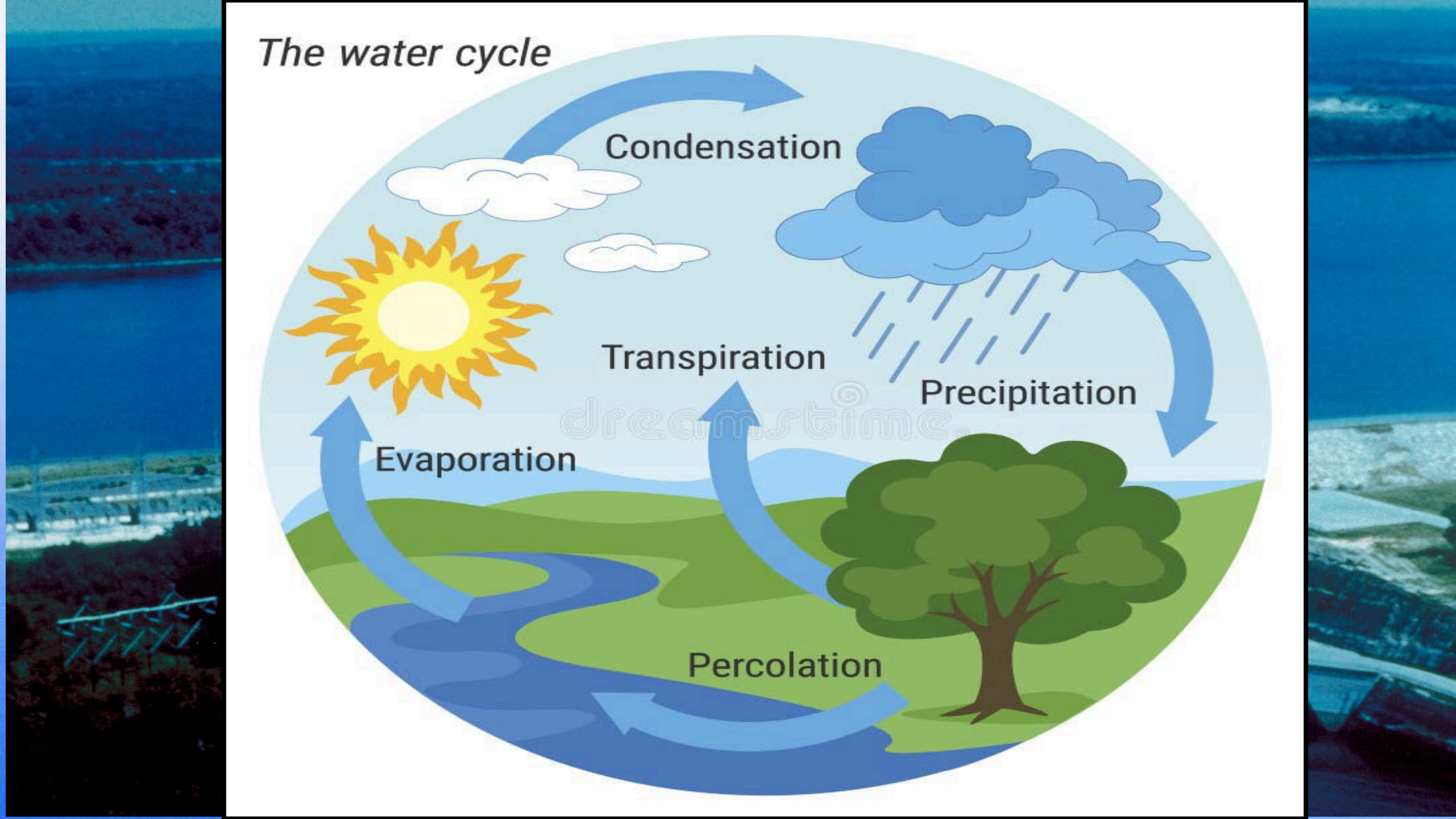
1/3





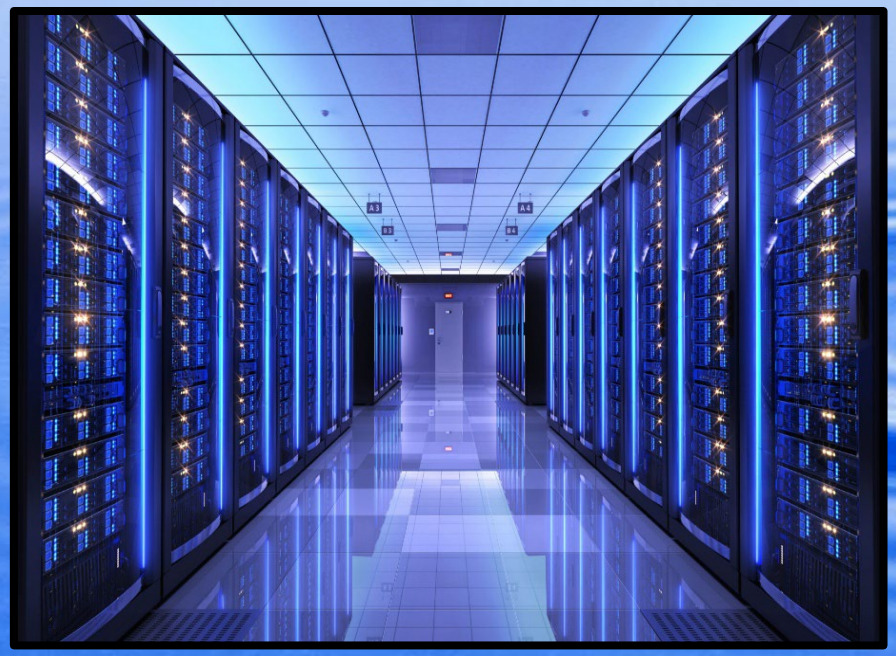
Return Flows




The water cycle
Condensation
Transpiration
Precipitation
Evaporation
Percolation


Hagers
Rockville
Washington
Lexington
Ashland
Richmond





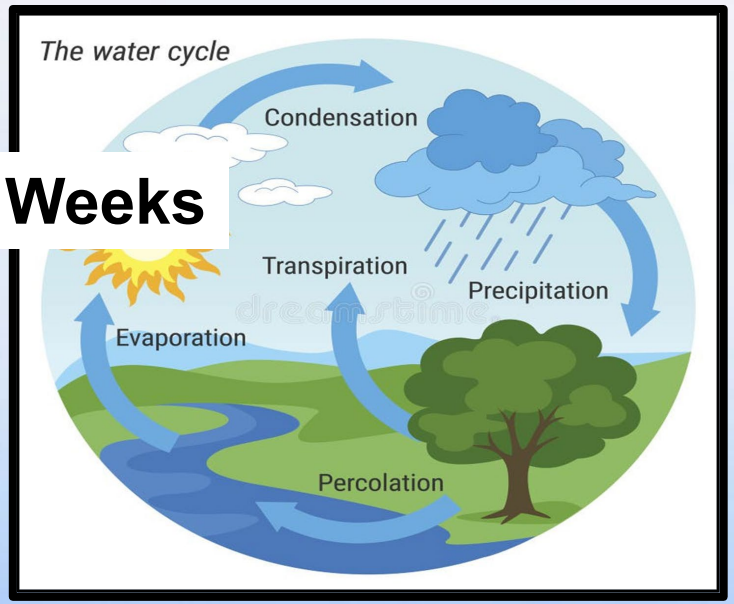












Weeks



DAYS FOR RETURN FLOWS



DECADES

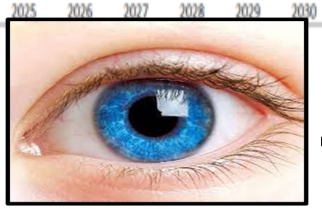


DAYS

SWMO Water--Water Resource Project 9/17/21
Timeline for est probable proj elements pending realloc
Caveat--elements/work efforts are iterative
Project element/work effort and estimated year

2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042

Tri State Water Resource Coalition formed
Groundwater and other studies(Whitman)
Black and Veatch Study on alternatives
Request to COE for realloc Stockton/TR
Freese and Nichols studies on reservoir locations
JMUC formed
Phase I COE/DNR/CDM study on water demands
Phase II COE/DNR/CDM study on water availability
Phase III COE/DNR/CDM study on preferred solutions
Reallocation studies by COE--KC District
COE cost allocation studies and contract prep
Update Reallocation request with COE --LR and KC
Funding requests for Reallocation studies
Stakeholder communications/meetings
Permitting agencies communications/meetings
Adopt JMUC bylaws
Rate Study
Establish Project
COE contract negotiation/Washington review
Permitting Studies
Environmental Impact Statement (EIS)?
Funding strategy
DC visit
Environmental/ Archaeological Studies
Hydraulic Studies
Aerial Photos
Macro Corridor Studies
Timing study
Legal
Public Info Workshop #1
ROW Definition
Geotechnical Investigation
Public Info Workshop #2
Intake Study
Power Source Study for Intake
Right of Way Activities
Design
Bonding activities
Intake Structure Permit
Mitigation
Storm Water Permits
Crossing Permits
Other Permits
Pipeline Construction
Intake Construction
Booster Stations Construction
Completion/Restoration/Cleanup/Break in



the Process- Time Element of Water

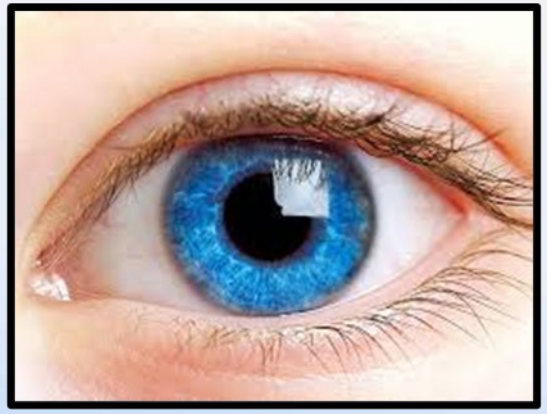
BEEN HERE

COMPLETE

LOOKING AHEAD

2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042





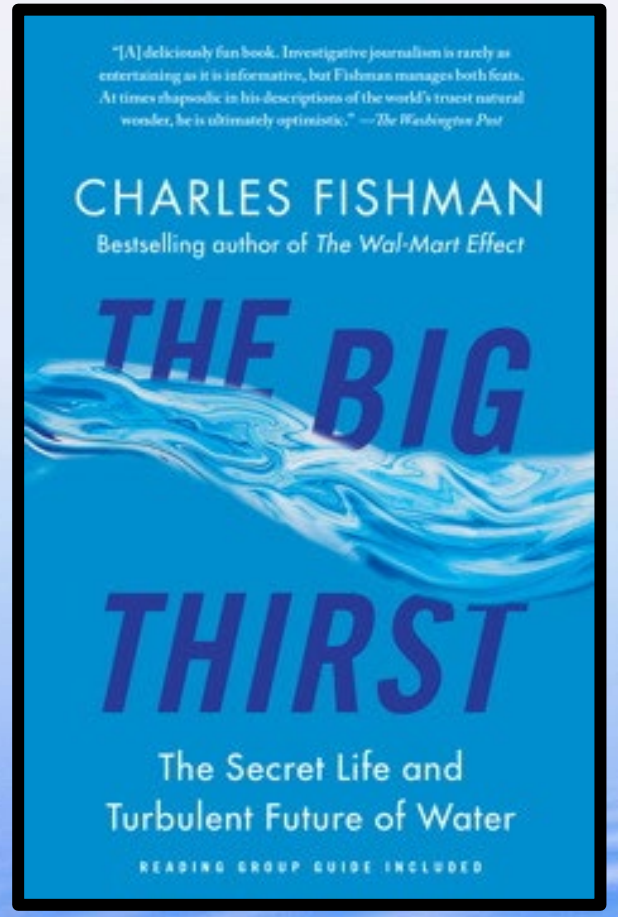


III. Seeing the Process of Water

How can something so "simple" take so long to <u>see</u>-- come into focus?

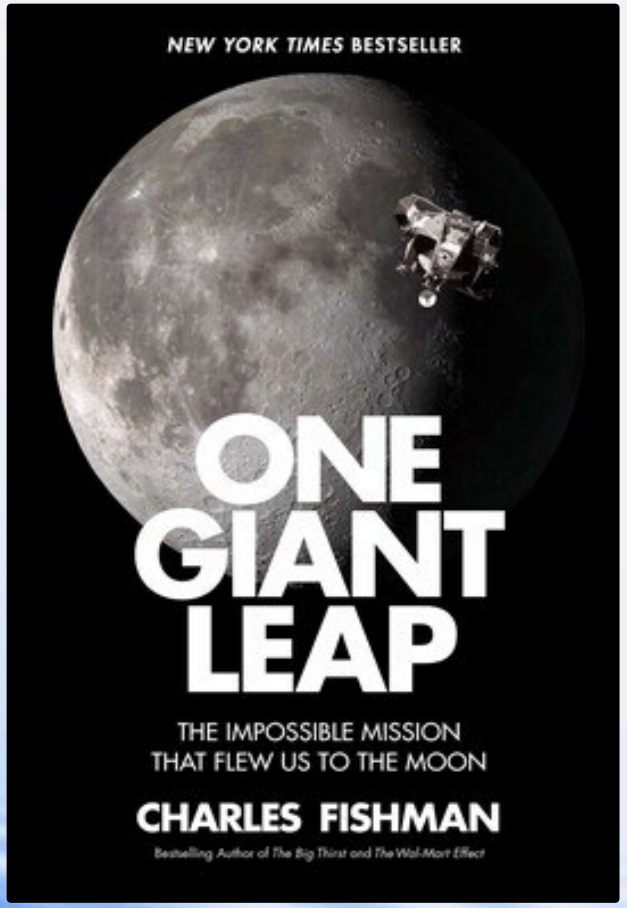
"It takes as long, to view  ***it... as it does to do it".***

Alan Watts

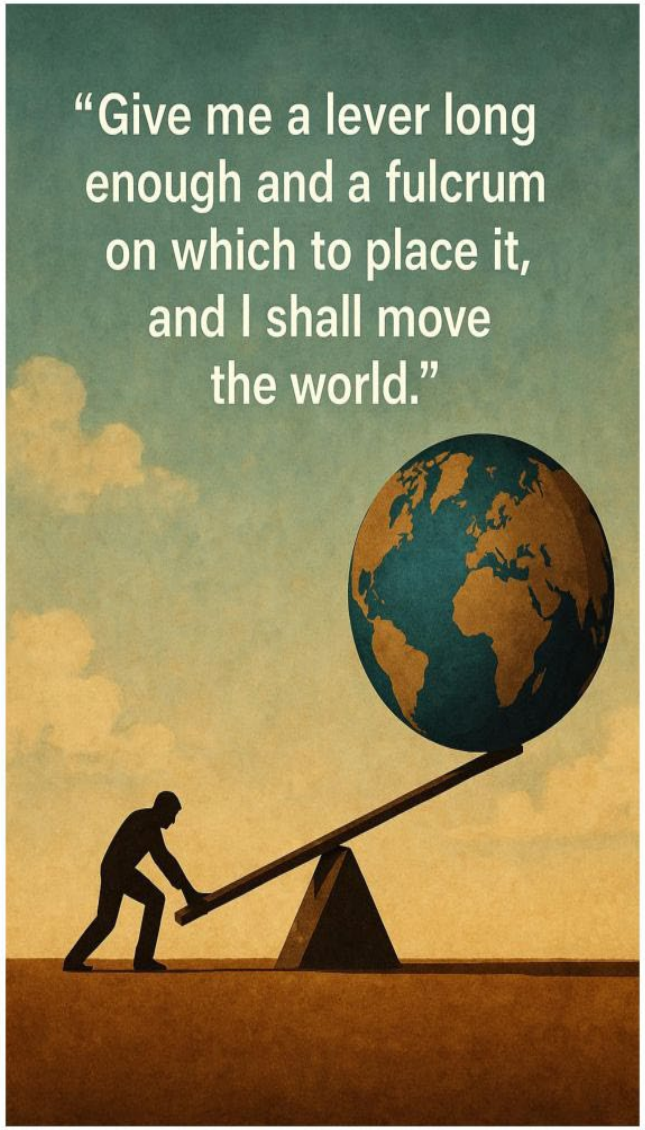

"[A] deliciously fun book. Investigative journalism is rarely as entertaining as it is informative, but Fishman manages both feats. At times rhapsodic in his descriptions of the world's truest natural wonder, he is ultimately optimistic." —The Washington Post
CHARLES FISHMAN
Bestselling author of The Wal-Mart Effect
THE BIG THIRST
The Secret Life and Turbulent Future of Water
READING GROUP GUIDE INCLUDED



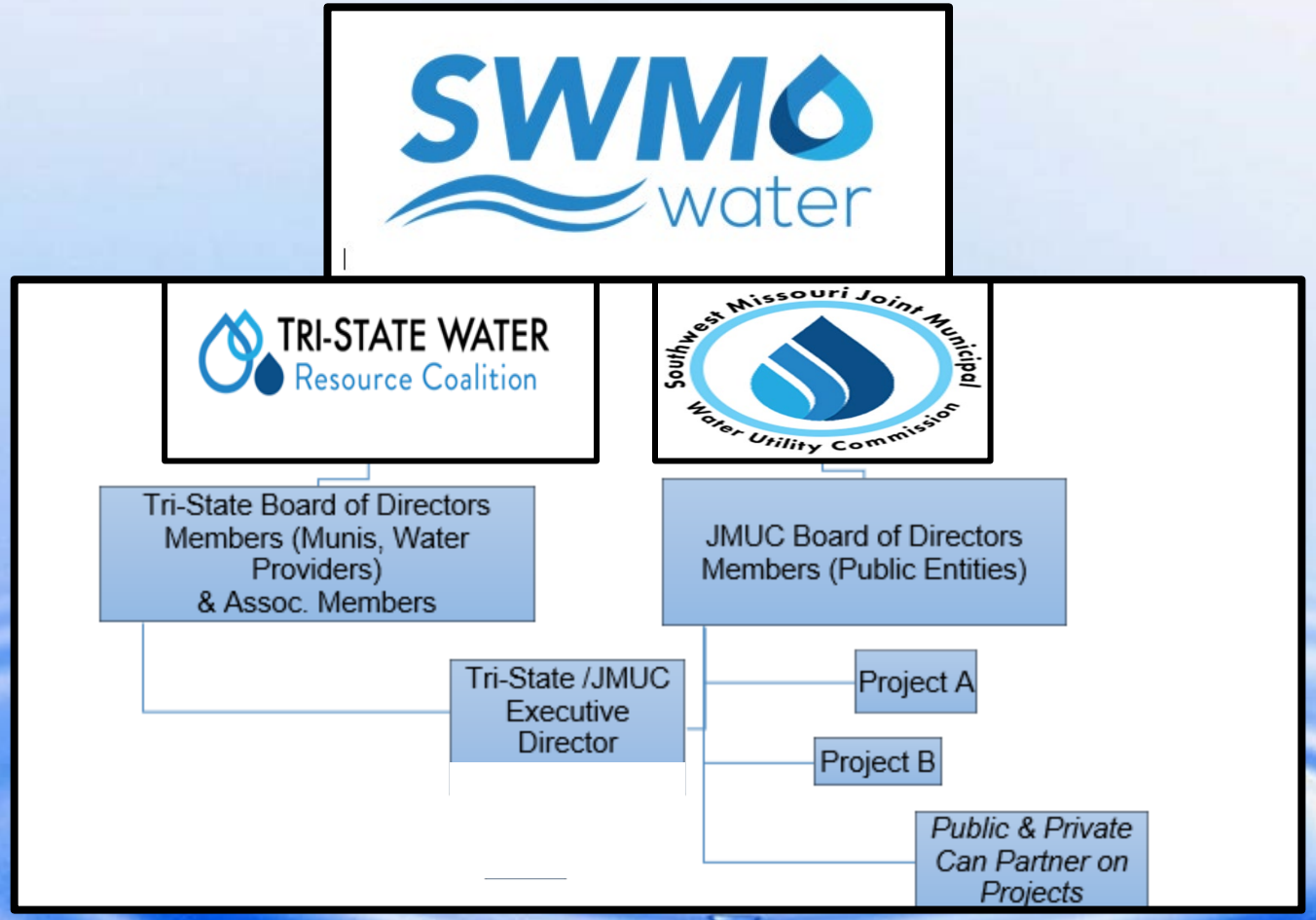



NEW YORK TIMES BESTSELLER
ONE GIANT LEAP
THE IMPOSSIBLE MISSION THAT FLEW US TO THE MOON
CHARLES FISHMAN
Bestselling Author of The Big Thirst and The Wal-Mart Effect




“Give me a lever long
enough and a fulcrum
on which to place it,
and I shall move
the world.”

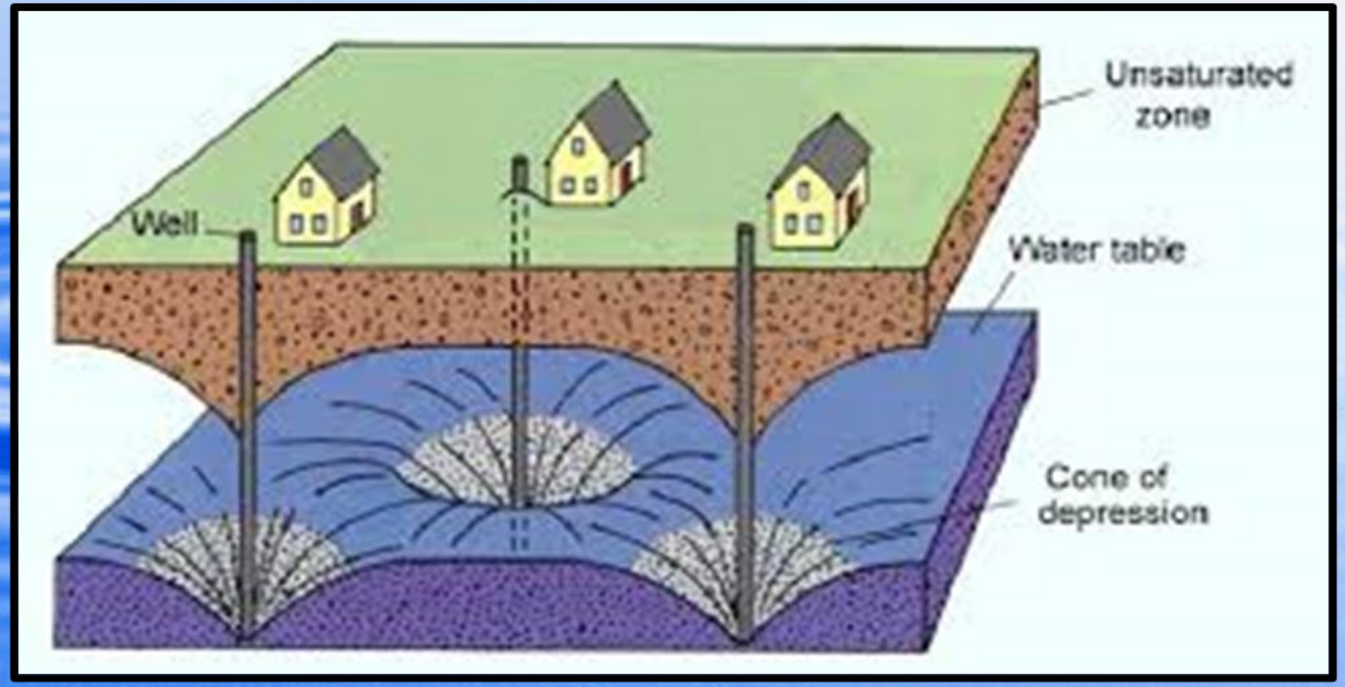



SWMO water
TRI-STATE WATER Resource Coalition
Southwest Missouri Joint Municipal Water Utility Commission
Tri-State Board of Directors Members (Munis, Water Providers) & Assoc. Members
JMUC Board of Directors Members (Public Entities)
Tri-State /JMUC Executive Director
Project A
Project B
Public & Private Can Partner on Projects



Groundwater is ***not*** a **reliable** ***long term*** source

- **Groundwater is being withdrawn faster than it can be replenished**
- **Declining water tables and overlapping cones of depression make it worse, especially in drought**



Where We've Been



Groundwater Study

TRI-STATE WATER Resource Coalition Formed

Reallocation to CC



2003

2005

200

Study on Water Source Alternatives

16

OE) Studies

2017

Cost/Rate Study

2020

Joint Municipal Utility Commission (JMUC) Formed

Updated Reallocation Request



Why needed?

Figure 1.3: Regional Summary Scenario 3 Groundwater and Surface Water Gap in 2040

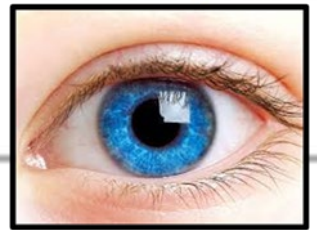


Figure 1.4: Regional Summary Scenario 3 Groundwater and Surface Water Gap in 2060

Here Now

Public Posting Reallocation Report

July 2020

Jan. 2021

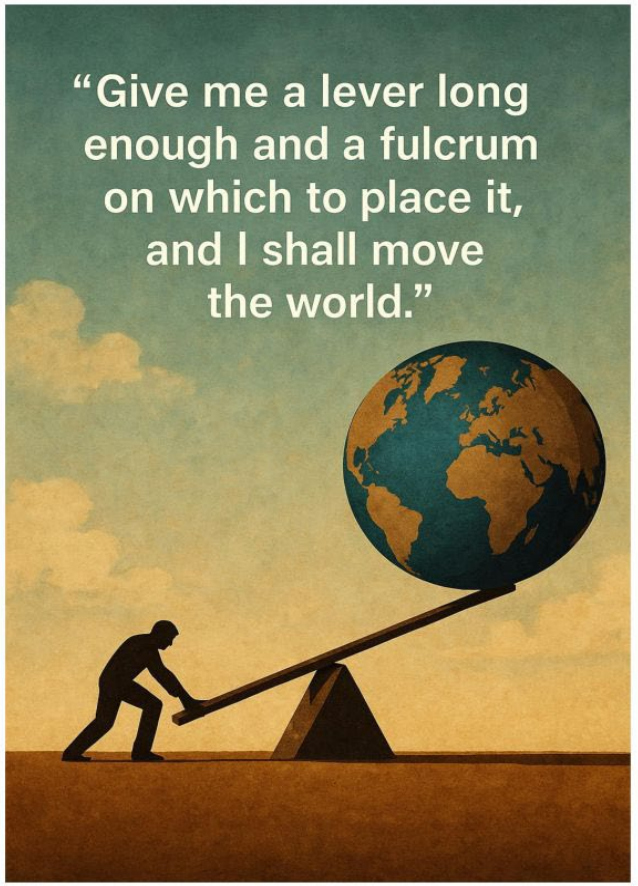
Review & Public Comment

Draft Final Report to HQ for review

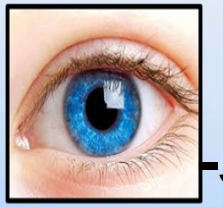
Spring 2024

November 2024

Transmit to Assistant Secretary of Army



** Legal*

How many have to  ***-so many filters and perspectives?***

USACE Storage Contract



US Army Corps
of Engineers ®
Kansas City

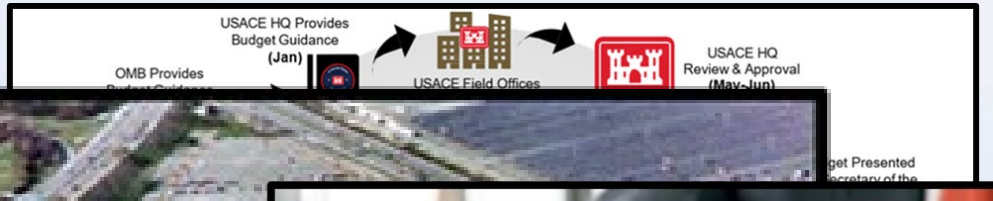




U.S. Army Corps
of Engineers
Hydrologic Engineering Center



Dam Safety
FEMA 93
U.S. Army Corps of Engineers
ER 1110-2-1156
a pz.27.net reprint









U.S. ARMY CORPS OF ENGINEERS
ENGINEERING AND SUPPORT CENTER, HUNTSVILLE

LAKE REGULATION
MANUAL
IN 10 VOLUMES
VOLUME NO. 5
STOCKTON LAKE
MISSOURI
DEPARTMENT OF THE ARMY
KANSAS CITY DISTRICT, CORPS OF ENGINEERS






10
MY
BIG
FAT
GREEK
WEDDING
MUSIC FROM THE MOTION PICTURE



- Congressman Burlison—”This is a big win for Missouri”
- Senator Schmitt—
- Congressman Alford—
- Congressman Graves T and I-
- ***Reduced price***
- ***from close to $50 million***
- ***to $27 million***









Allocation Based on Needs Analysis

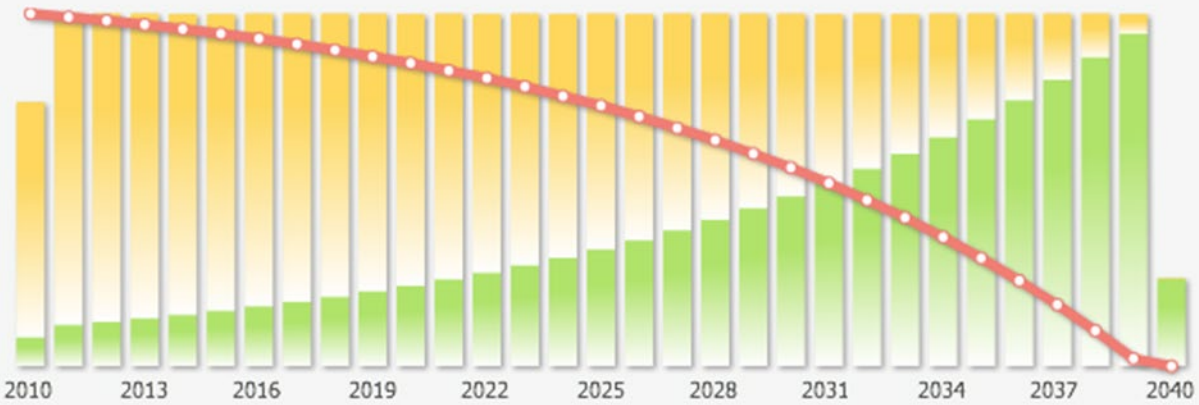


	ion)
JMUC	38.0
Cartha	3.0
Mo An	16.0
	0.5
Ozark	1.5
Monet	1.0
	-
Nixa	1.0
Repub	2.5
CU-Sp	12.0
Dade	0.5

$699.21
Monthly principal & interest

$251,717.22
Total of 360 payments

Mar, 2040
Payoff date



Date	Principal	Interest	Balance
2010	$684.87	$5,608.06	$99,315.13
2011	$975.00	$7,415.57	$98,340.12
2012	$1,050.70	$7,339.88	$97,289.43
2013	$1,132.26	$7,258.31	$96,157.16
2014	$1,220.16	$7,170.41	$94,937.00
2015	$1,314.89	$7,075.69	$93,622.11
2016	$1,416.97	$6,973.61	$92,205.15
2017	$1,526.97	$6,863.60	$90,678.18

Possible MDNR support

MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

How does DNR  **it?**

Will reduce cost and annual payment even more





- **Enter subcontract with JMUC for [XX] acre-feet of storage space in Stockton Lake**
- **Estimated annual cost of $[XX]**
  - **Years 1 – 30: $[XX]**
  - **After year 30: $[XX]**

MISSOURI
DEPARTMENT OF
NATURAL RESOURCES



IV. See What's Ahead



FUTURE

Aerial Photography
Corridor Studies

Environmental
Archeological Studies

Power Source Study

2024

ROW Definition

Intake Study

Geotechnical Studies

Good Neighbors



Permits

Public Info Workshops

ROW Activities

Mitigation

Design – Pipe, Pumps, Tanks

Construction

Figure 3-2
Alternative B Transmission System
April 2020

Pipe Diameter
72
54
48
24

Tri-State Customer
CU Connection Point
Pump Station
WTP
Finished Water
Raw Water

Demand MGD

CDM Smith









St. Clair
Vernon
Crawford
Cherokee
Oklahoma
Newton
Barry
Polk
Dallas
Camden
Laclede
Webster
Greene
Lawrence
Stone
Christian
Missouri
Stockton Lake
Bonne de Terre Lake
Carthage
Mo American Joplin
Future Joplin Reservoir
Monett
Mount Vernon
Republic
Willard
Springfield / Nixa / Ozark
Nixa
Ozark
WTP
0 5 10 20 mi

Least Cost Plus Example (Alt. B)

Entity	% water storage	Location (segments)	Annual Cost by % water storage	Annual Cost by Location	Annual Cost by Least Cost Plus
Carthage	7.7%	A thru J	$3,615,000	$6,207,000	$4,467,000
Mo Am	42.8%	A thru I	$20,002,000	$26,768,000	$24,714,000
	2.1%	A thru C	$964,000	$292,000	$519,000
Ozark	3.9%	A thru B	$1,807,000	$1,067,000	$1,493.000
Monett	2.6%	A thru G	$1,205,000	$2,845,000	$1,489,000
Dade County	0.9%	A thru F	$410,000	$338,000	$435,000
Nixa	2.6%	A thru B	$1,205,000	$719,000	$1,003,000
Republic	6.5%	A thru D	$3,012,000	$1,302,000	$2,012,000
CU	31.0%	A thru B	$14,459,000	$7,143,000	$10,549,000
Total			$46,680,000	$46,680,000	$46,680,000
			$35,683,000		
			$10,997,000 shy		



How do we see paying for/financing of water infrastructure?











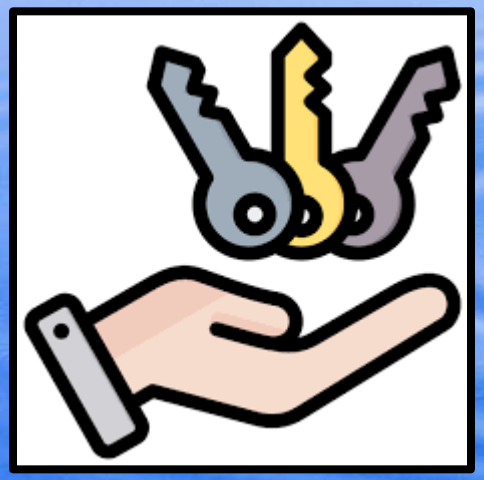


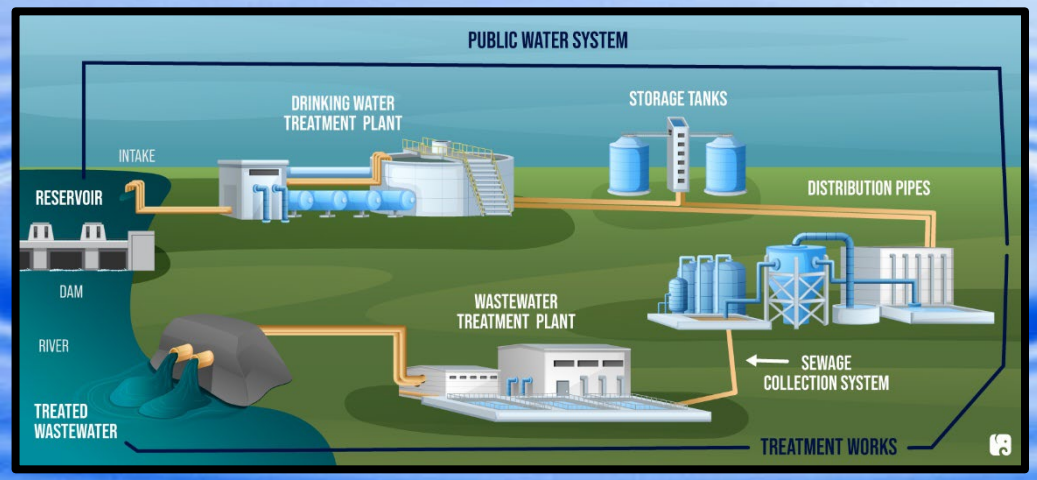







STANDARDS
GUIDELINES




PUBLIC WATER SYSTEM
DRINKING WATER TREATMENT PLANT
STORAGE TANKS
INTAKE
RESERVOIR
DISTRIBUTION PIPES
DAM
WASTEWATER TREATMENT PLANT
RIVER
SEWAGE COLLECTION SYSTEM
TREATED WASTEWATER
TREATMENT WORKS









National Projections

600,000 + jobs

$Billions















V. What Must We  --?









Regional Economic Impact Analysis



Table 5-3 Direct, Indirect, and Induced Economic Output, Value Added, and Jobs Associated with Project Construction and Engineering Costs in the 16-County Region

Expenditures	Total Economic Output	Total Value Added	Total Jobs
Construction	$1,086,000,000	$585,000,000	7,810
Engineering/Legal/Administration	$75,000,000	$46,000,000	567
Total	**$845,958,006**	**8,659**	**8,377**

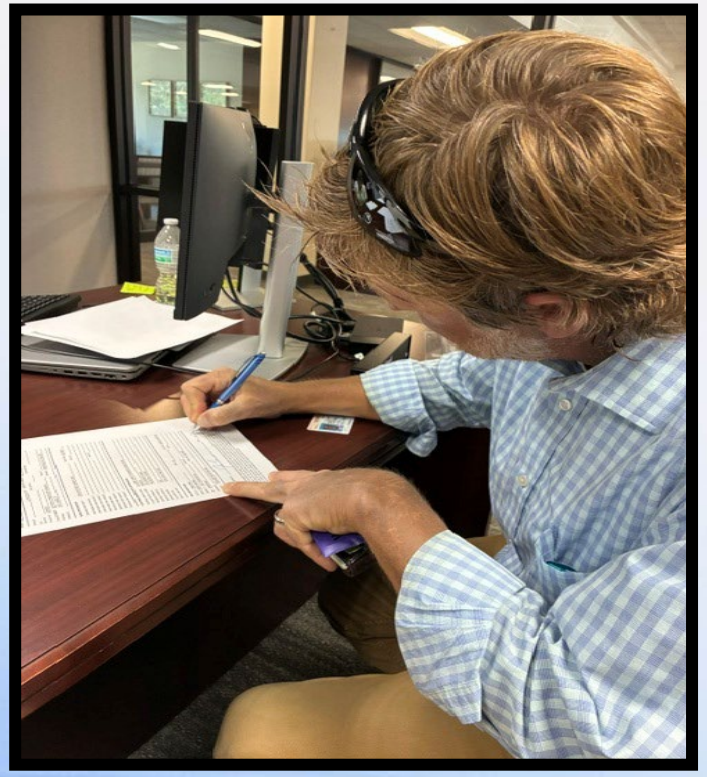
Note: Job estimates include both full- and part-time employment. This evaluation assumes that the economic activity and economic impacts would be incurred in a one-year time period.





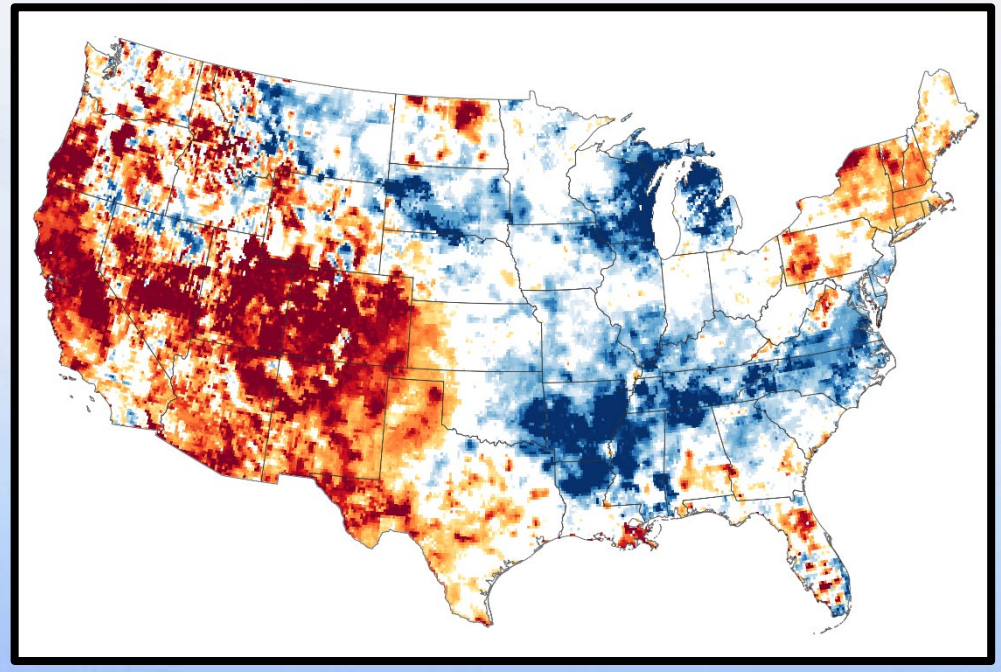
Water Reliability—

WE HAVE IT!!



2007-----
2024-----
2025----
2026

STOCKTON LAKE REALLOCATION





Cost of our COE Water Allocation
$300/acre ft=

Cost to buy water on
the open market



OURS $27 million

$2,500/acre ft
$6,000
$11,000

Compared to $235 million
$1/2 to 1 billion

NBC NEWS

It's just water in a can. How did Liquid Death become a billion-dollar brand?



Valued at $1.4 billion



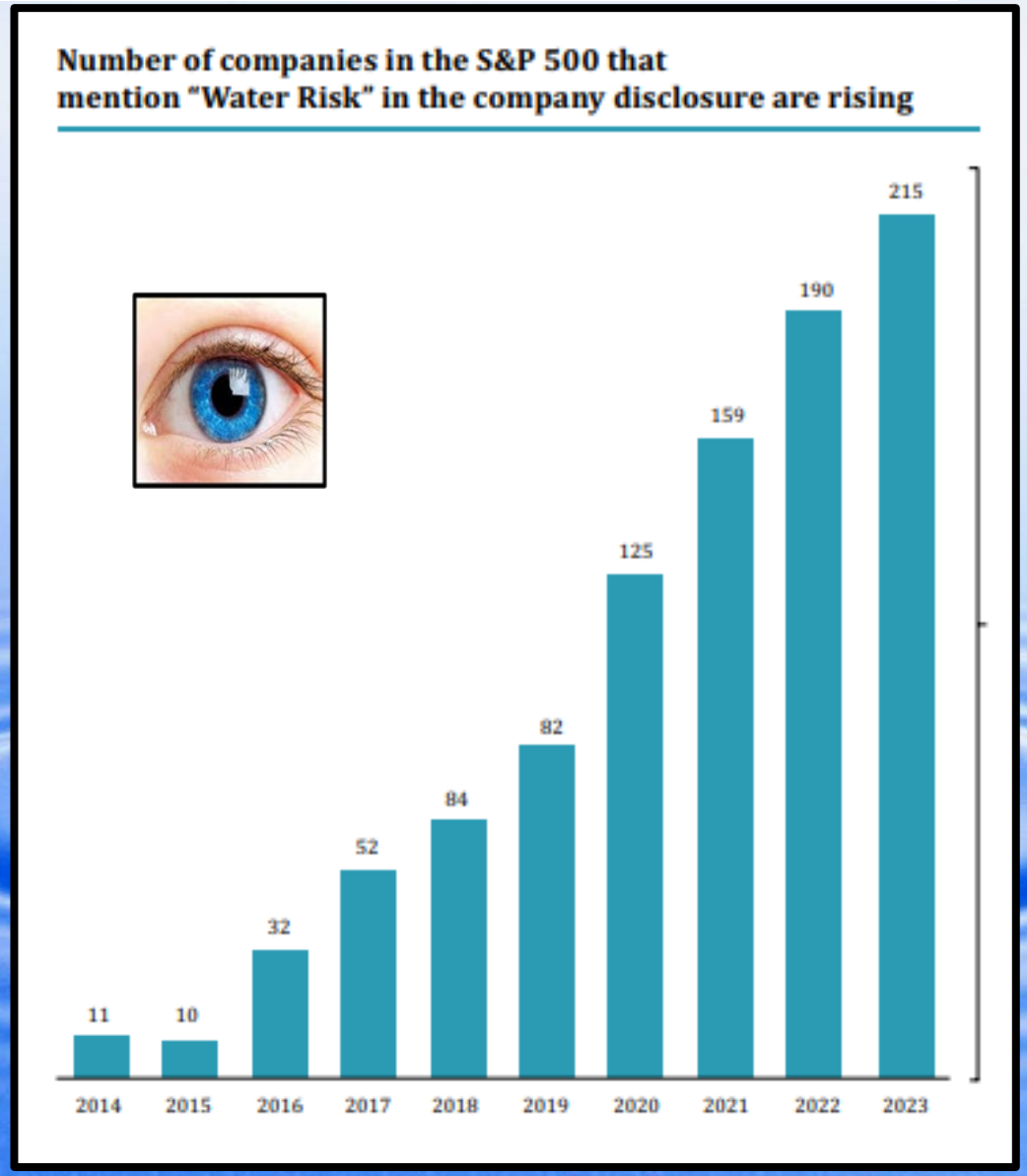


$300 billion per year



Water is Changing the Shape of the US Economy

Figure 15: Companies are increasingly taking note of water as a risk.



SACRIFICES

- Rate Impacts
- Political pressure
- Setbacks
- Time
- Effort
- Patience
- Fear of Loss of Control
- Multiple Parties with Different Perspectives



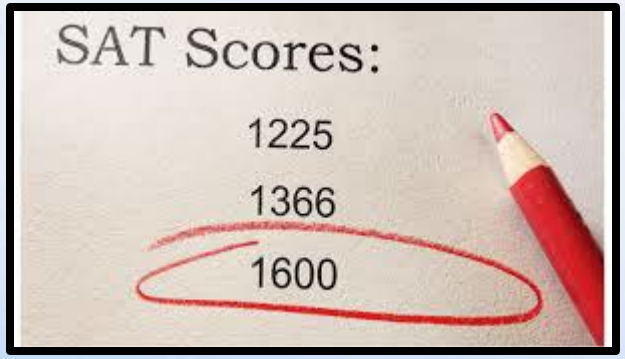


Worth It








SAT Scores:
1225
1366
1600

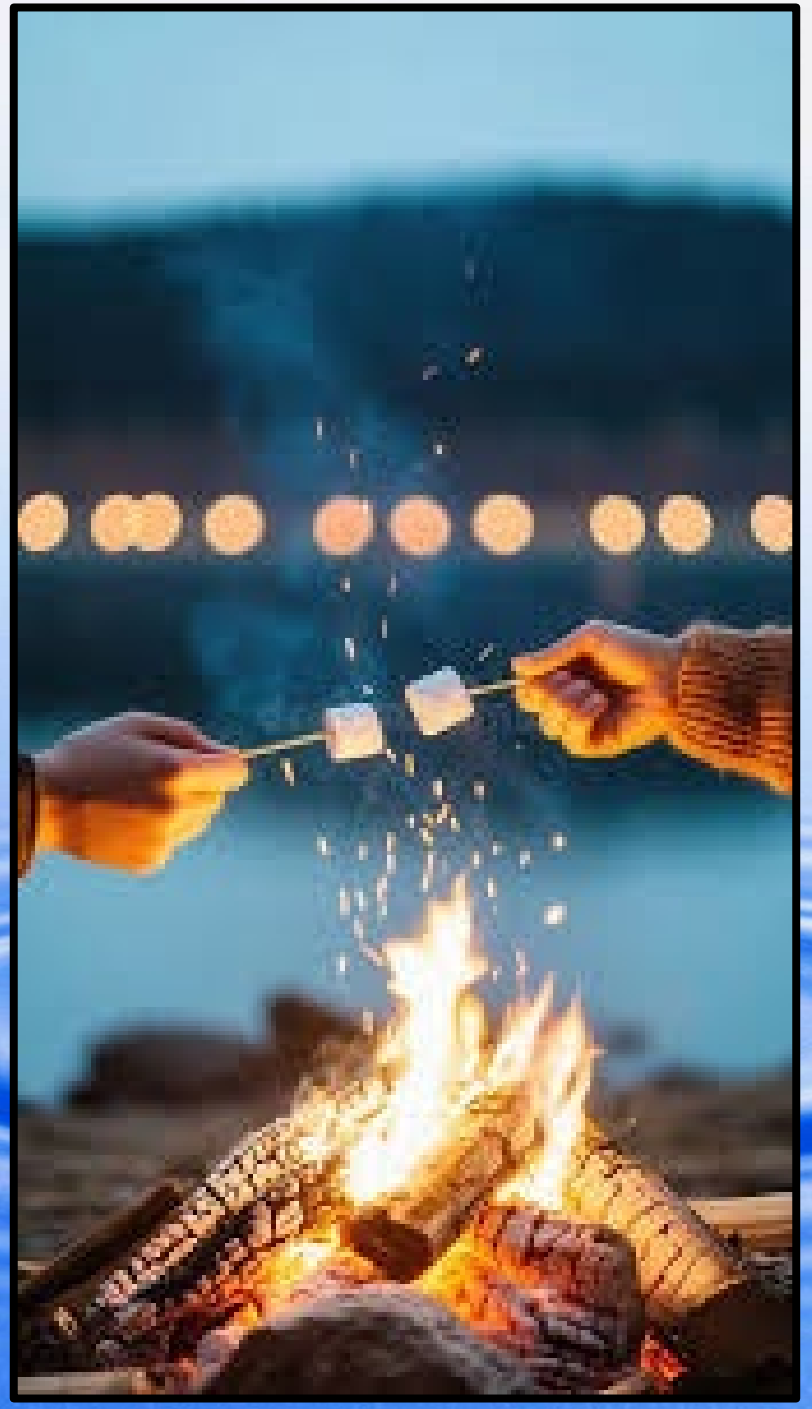

WORK
24
help




Self-control
in action







I AM 3RD









OUR **WATER** FUTURE

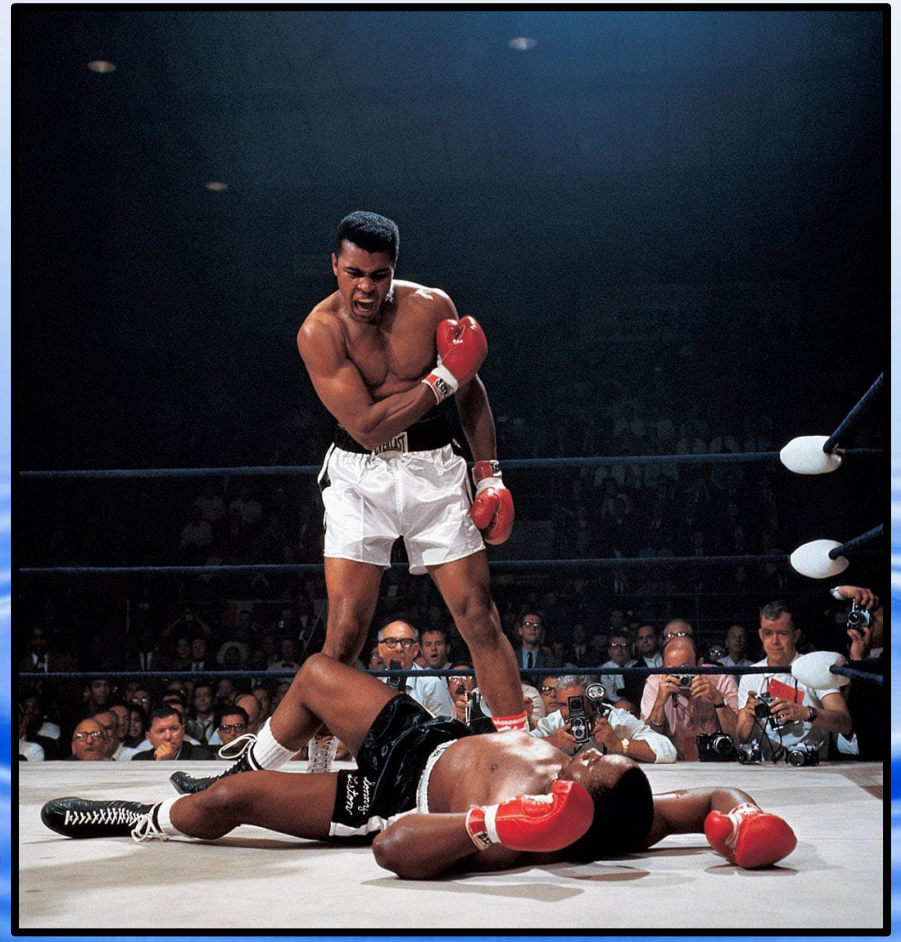


TRUST



What Must We DO?







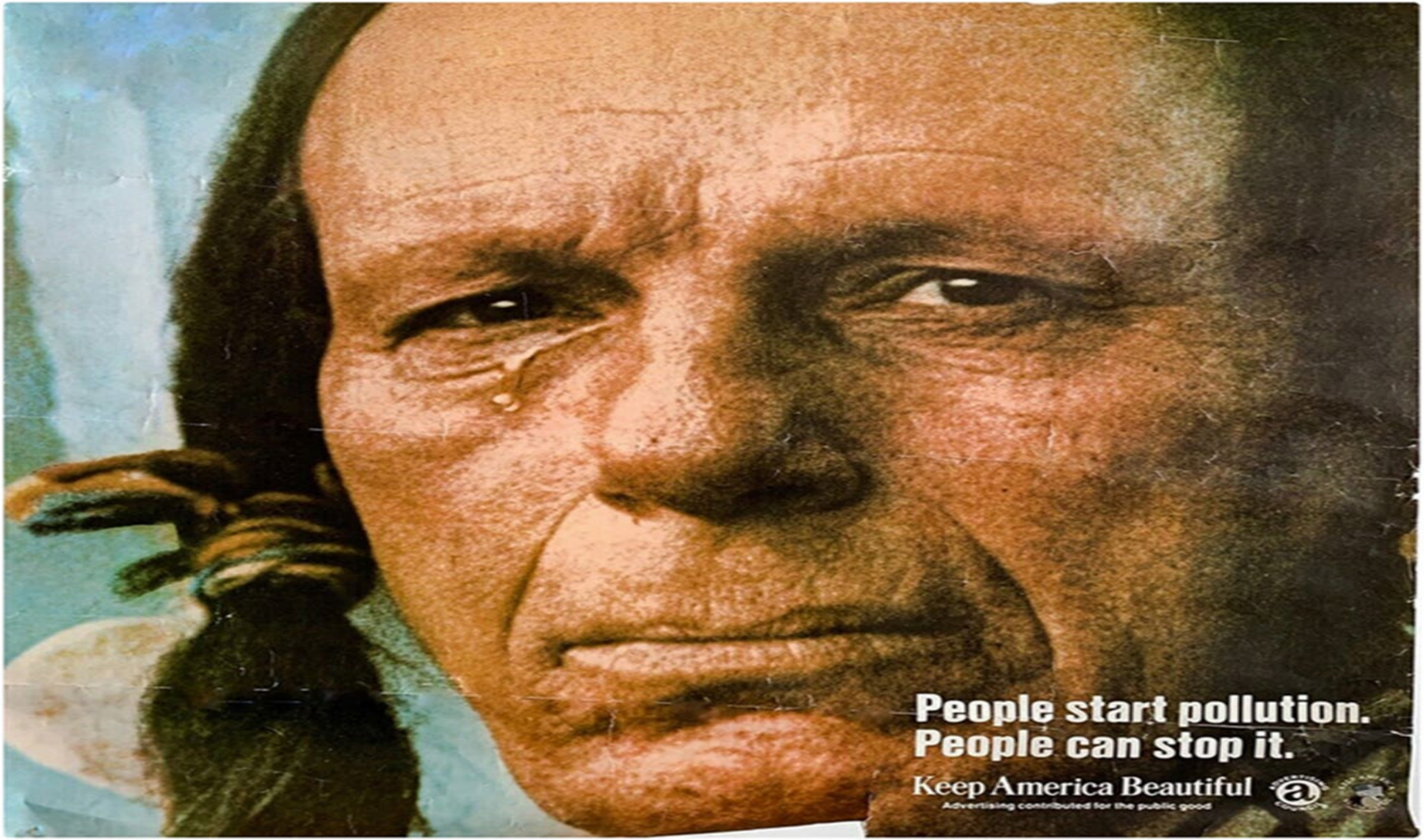




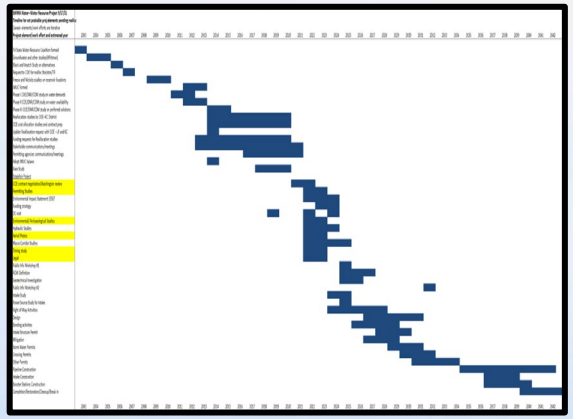


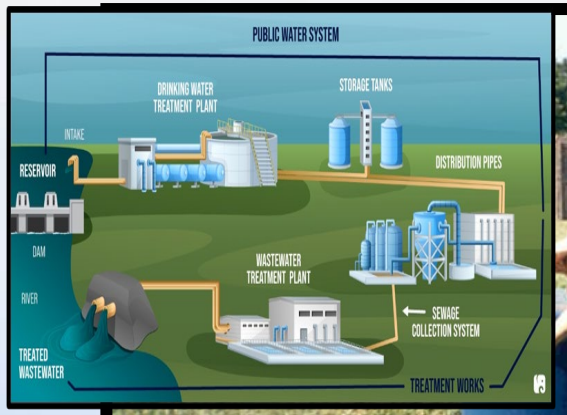


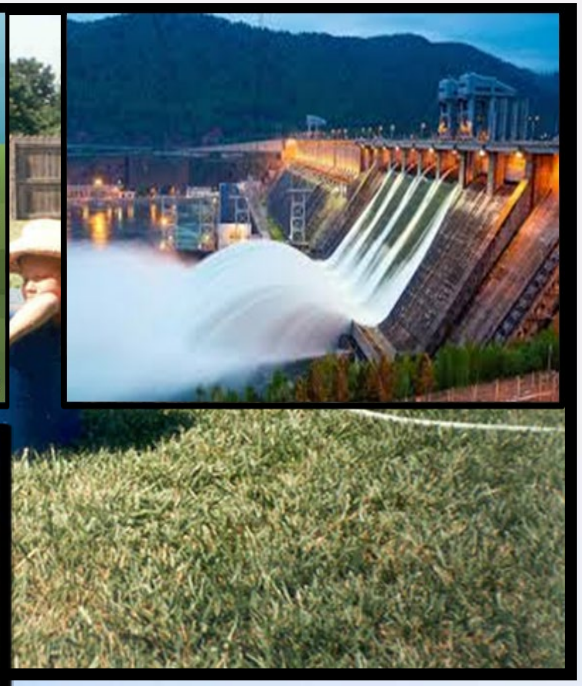



People start pollution.
People can stop it.
Keep America Beautiful
Advertising contributed for the public good


$



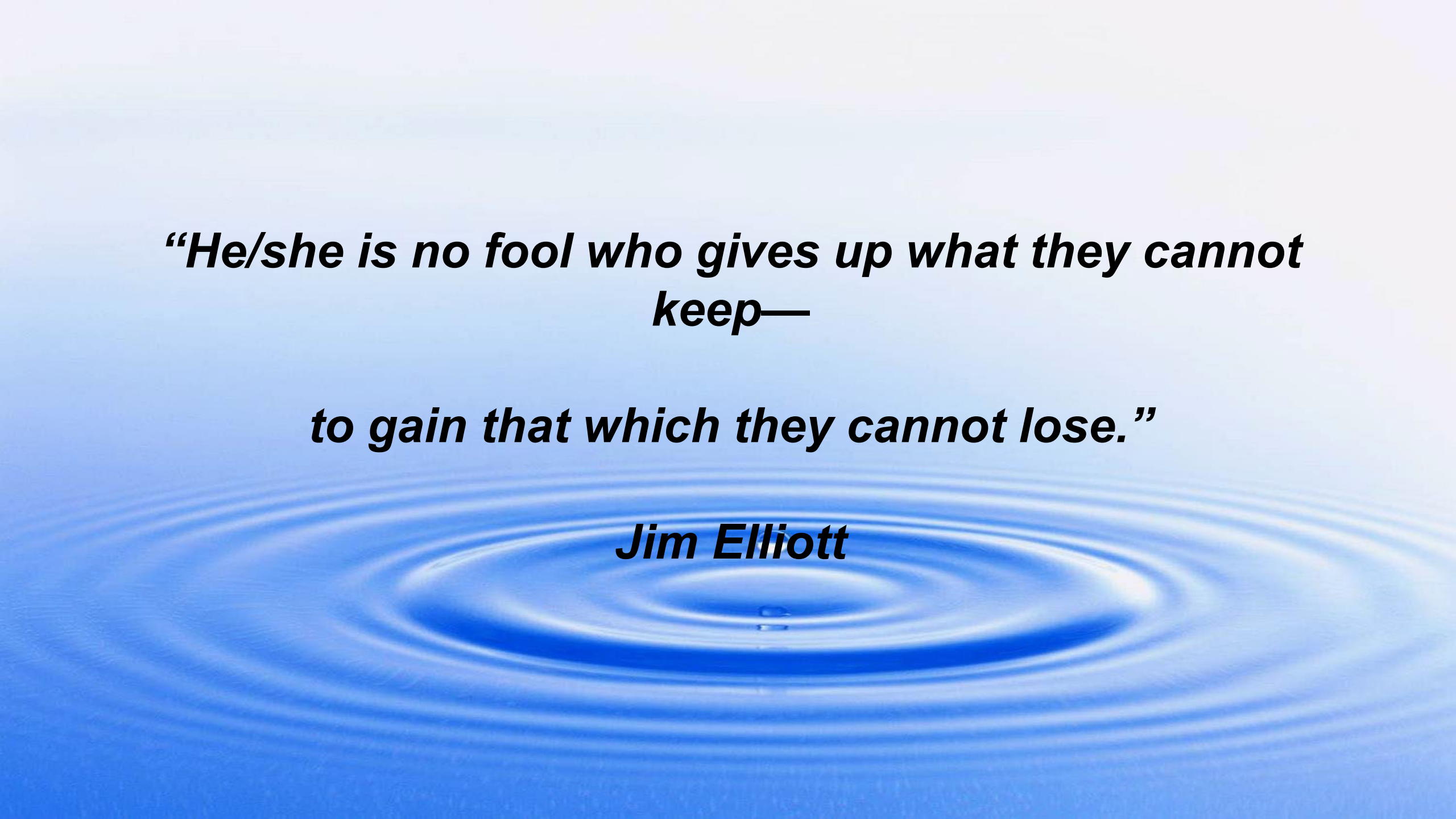

PUBLIC WATER SYSTEM
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WASTEWATER TREATMENT PLANT
RIVER
SEWAGE COLLECTION SYSTEM
TREATED WASTEWATER
TREATMENT WORKS





BUDGET




“He/she is no fool who gives up what they cannot keep—
to gain that which they cannot lose.”
Jim Elliott

2026 Water Conference

Water---  Do You Water?










SWM
water





Corps of Engineers

Contract for Water Storage

- Permanent
- 90,790 Acre Feet
- 39 mgd
- $27 million

SWMO Water

Pass Through Contract	Pass Through Contract	Pass Through Contract	Pass Through Contract	Pass Through Contract	Pass Through Contract	Pass Through Contract	Pass Through Contract
Dade County	Ozark	Monett	Mo Am/Joplin	Nixa	Carthage	CU Spfd	Republic