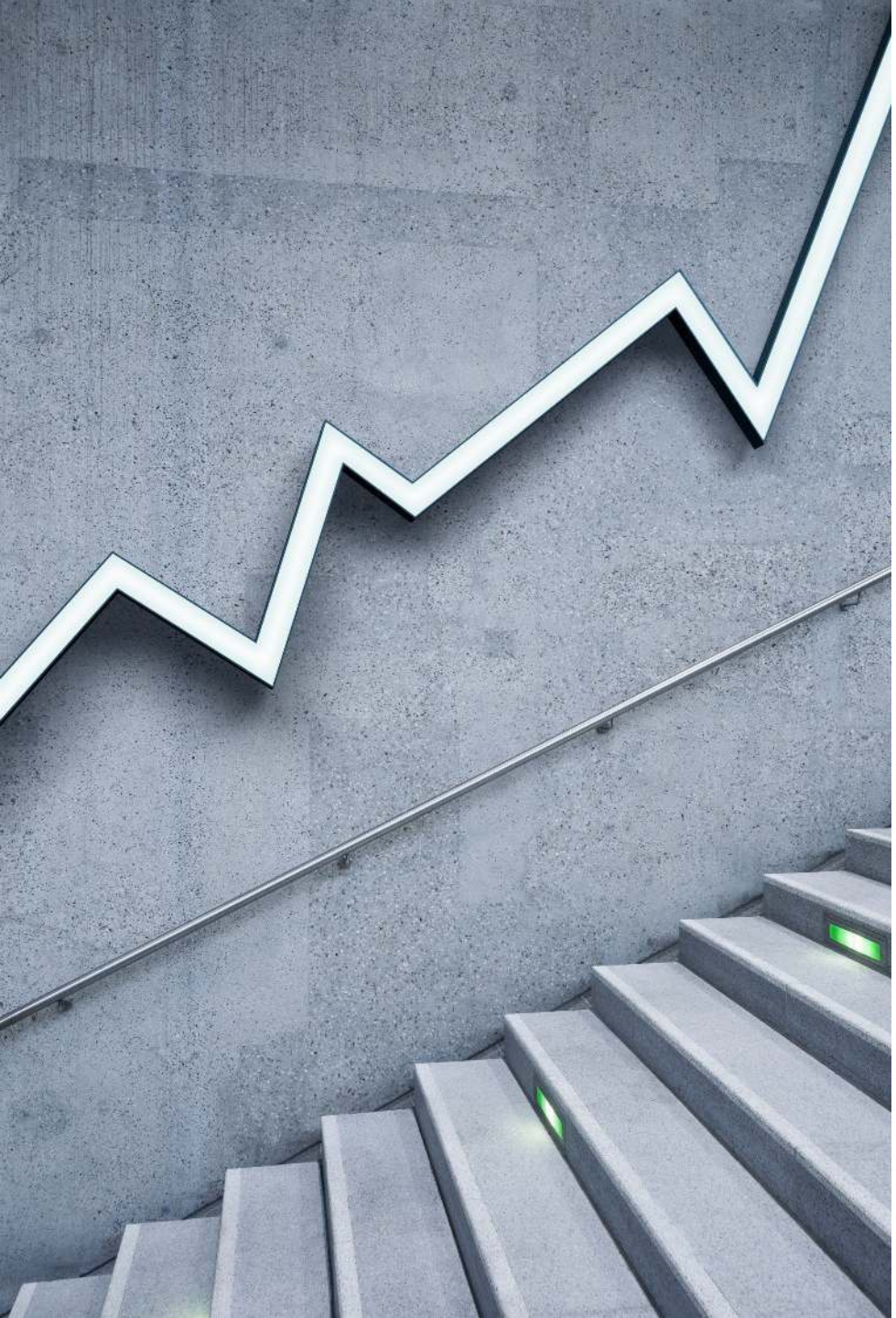


PINE AND STRAWBERRY WATER CRISIS

OBJECTIVES

Explain	Explain the water shortage and the causes
Describe	Describe the fragile substandard infrastructure
Discuss	Discuss the need for infrastructure to be upgraded to current national standards
Discuss	Discuss financial state and needed sources of revenue

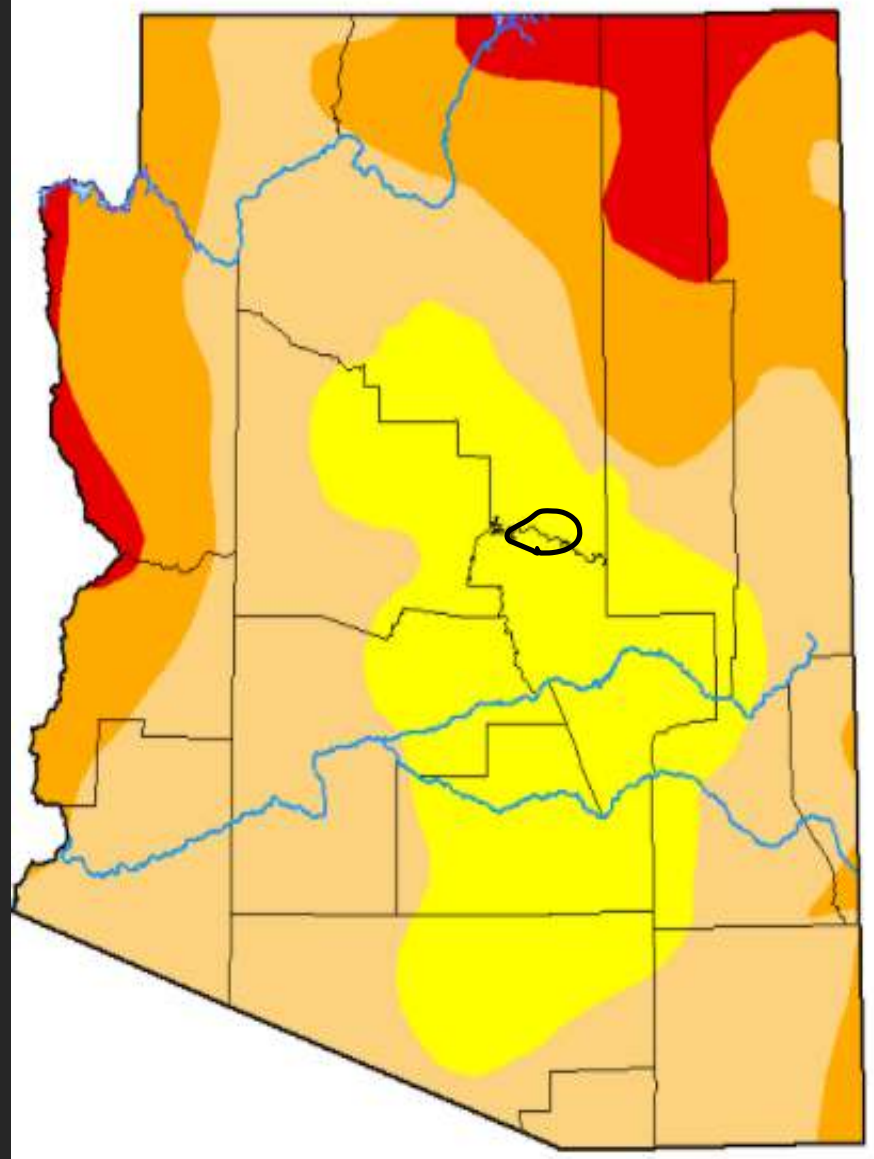
Arizona is in the midst of a historic water shortage. The Southwest and much of the West is suffering from an intense 22-year drought, resulting in increasingly low water levels, dry soil, and dry vegetation fueled wildfires.

DOES PINE AND STRAWBERRY HAVE ENOUGH WATER? LET'S DO THE MATH.

ARIZONA DROUGHT March 22, 2022

ARIZONA CONTINUES TO BE IN A DROUGHT OF ABNORMALLY DRY IN SPITE OF HAVING RAIN.

U.S. Drought Monitor
Arizona



March 22, 2022
(Released Thursday, Mar. 24, 2022)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	75.35	29.49	6.28	0.00
Last Week 03-15-2022	0.00	100.00	75.35	29.49	6.28	0.00
3 Months Ago 12-21-2021	0.00	100.00	76.93	34.11	8.95	0.00
Start of Calendar Year 01-04-2022	0.00	100.00	55.74	26.15	5.08	0.00
Start of Water Year 09-28-2021	0.00	100.00	80.38	40.02	13.69	0.00
One Year Ago 03-23-2021	0.00	100.00	98.90	94.66	86.56	54.80

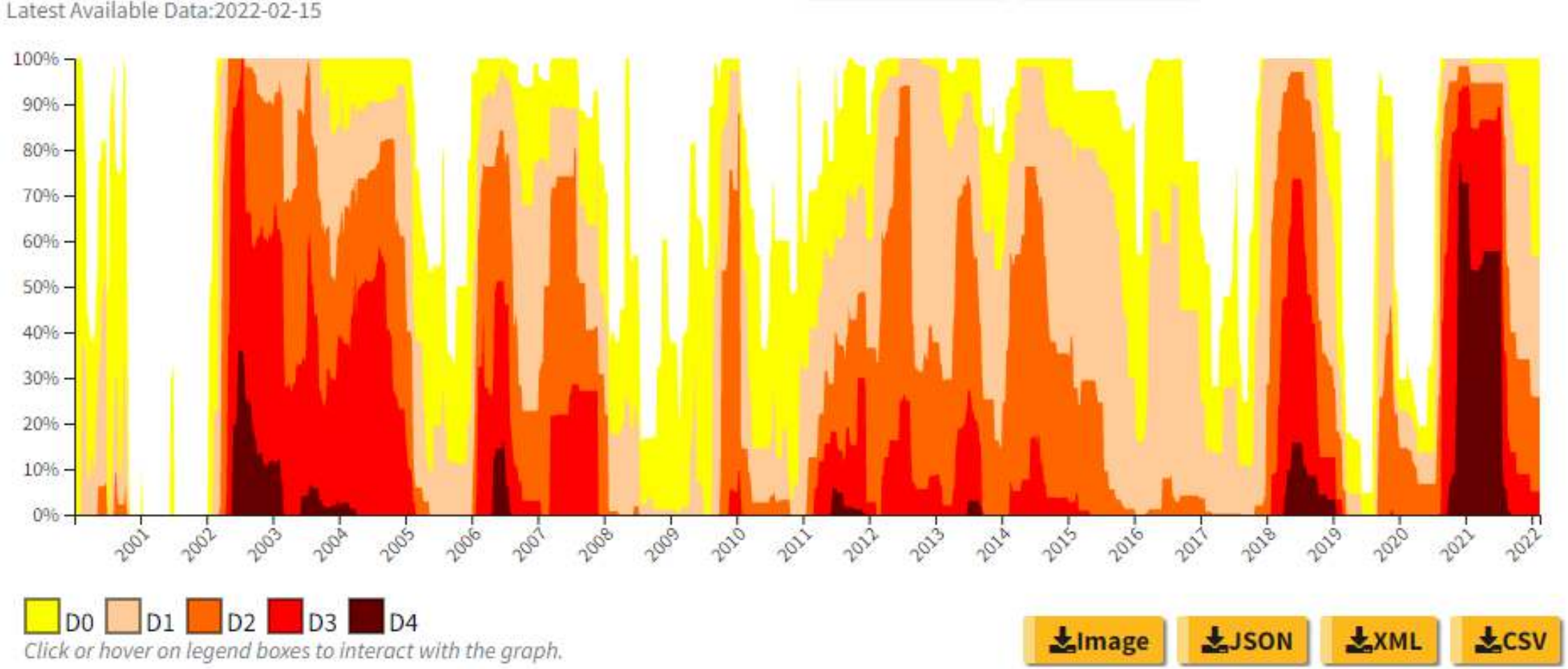
Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

Author:
Adam Hartman
NOAA/NWS/NCEP/CPC

droughtmonitor.unl.edu



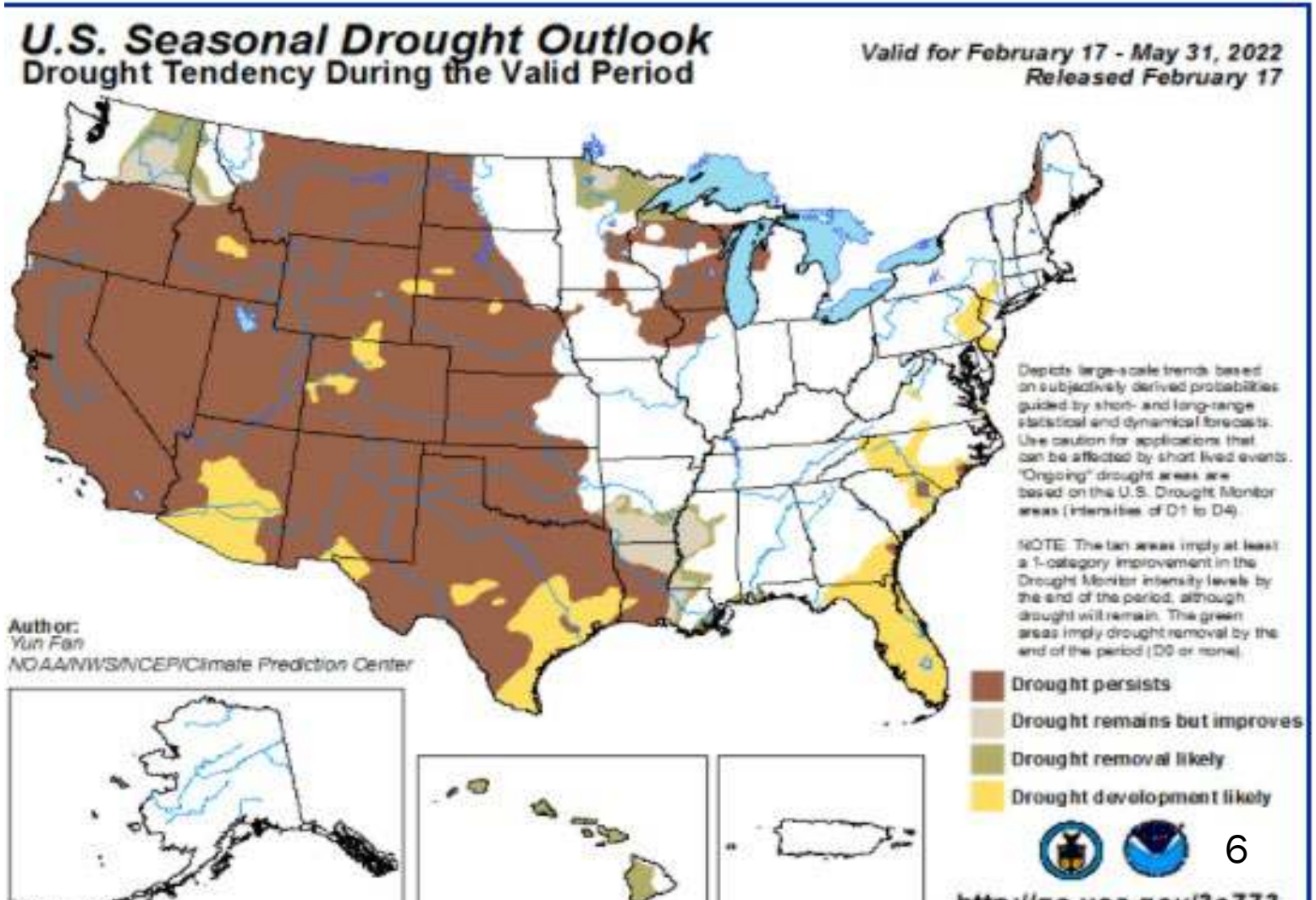
ARIZONA DROUGHT MAP 2-15-2022 SHOWING THE 22 YEAR DROUGHT

https://www.drought.gov/states/arizona#:~:text=Drought%20in%20Arizona%20from%202000%E2%80%93Present&text=Since%202000%2C%20the%20longest%20duration,affected%2076.81%25%20of%20Arizona%20land.

NOAA NATIONAL WEATHER SERVICE CLIMATE PREDICTION CENTER

ARIZONA WILL CONTINUE TO HAVE A PERSISTANT DROUGHT

U.S. Seasonal Drought Outlook

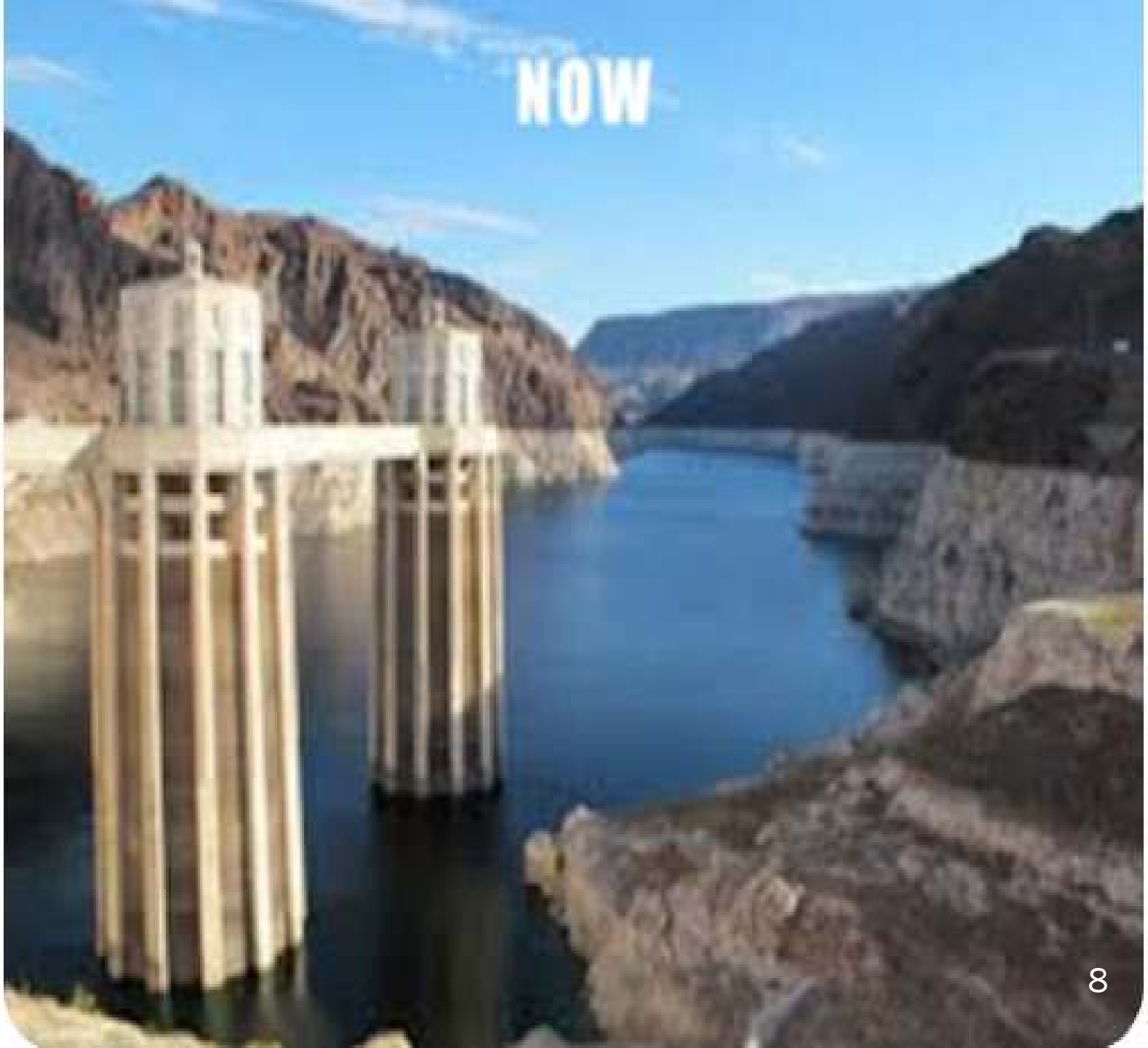


LAKE MEAD IN 1980's

This is a picture prior to the drought

LAKE MEAD 2022

This is a picture of the exact same area of the previous picture today.



IMPACT OF THE DROUGHT

3/28/2022
https://www.usbr.gov/lc/region/g4000/weekly.pdf

Country's two largest reservoirs

If water levels drop to 22% and 15%, respectively, the dams can no longer generate hydropower

Lake Powell Reservoir 24.02%

8%, they will become "dead pools," meaning water cannot continue being delivered

Lake Mead Reservoir 34%

It will trigger an urgent water crisis for the >40 million people

WATER IS RUNNING OUT IN PART BECAUSE OF YEARS OF OVER PROMISING IT

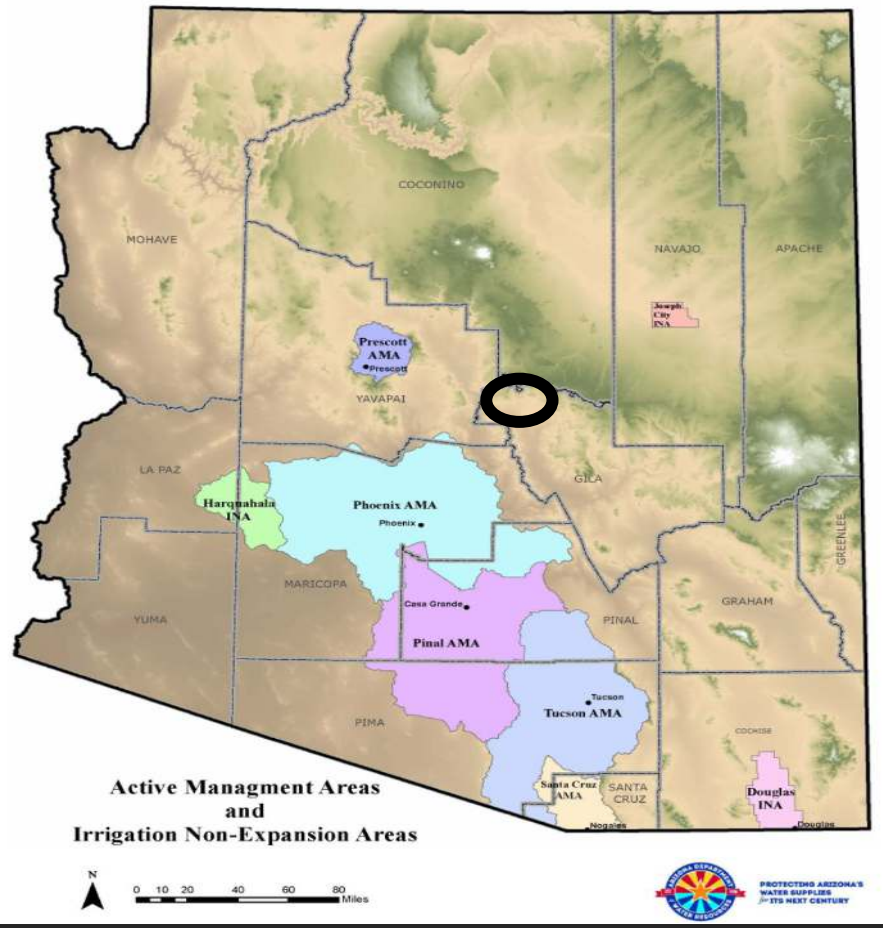
- Water crisis isn't only being driven by the megadrought
- A century of basing policies and development on an overestimate of how much water was actually in the Colorado River
- Betting on more years with heavy snow and rainfall — started us on the path toward our current water shortages.
- Last two decades of megadrought in the Southwest — amplified by a warming climate — have hit the fast-forward button.

ARIZONA'S WATER SUPPLY
>RURAL ARIZONA WATER SUPPLY IS **PRIMARLY GROUNDWATER**

Arizona HB 2661 Introduced to Regulate Groundwater

"This is a picture of Lake Mead here in Arizona, taken in 2022."

"The boat had sunk into the water years earlier"



Arizona HB 2661 Introduced to Allow Groundwater to be Regulated **OUTSIDE** of the ACTIVE MANAGEMENT ASSOCIAITIONS (AMAs)

ARIZONA HB 2661

Co-sponsored by AZ Representatives Regina Cobb and Leo Biasiucci

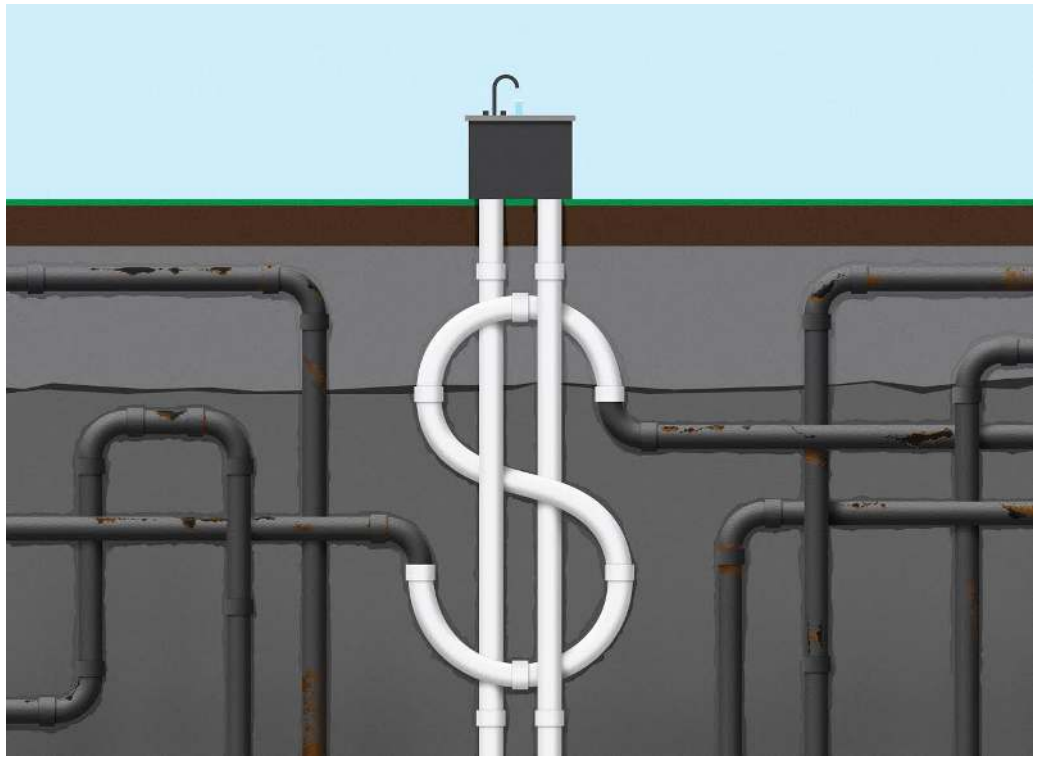
Legislation introduced to help regulate ground water

Allow city and county leadership the opportunity to manage the ground water for basins at-risk of losing their groundwater

Pine-Strawberry Water Improvement District is on **100% GROUND WATER**!

Gov. Doug Ducey proposes Arizona Water Authority

- Plan to create a state agency to acquire new supplies and develop and fund projects
- Would be funded with an initial $1 billion investment and have the authority to borrow money and issue bonds to fund larger projects
- At least six members of the authority would be appointed by the governor. The remaining three spots would be occupied by Arizona's director of environmental quality, director of administration, and director of water resources.



vs.

You cannot engineer your way out of a management problem

PINE AND STRAWBERRY GROWTH CHALLANGES

- Primary Challenge – Water
  - 100% Reliant On Ground Water
- Fragile Infrastructure
  - Pine Strawberry Water Improvement District (PSWID)
  - 6 Small Water Providers
    - I.E. Pondarosa 60 Clients
  - One Major Road In and Out of Pine Strawberry
- Forest Fire Potential – Devastating
- Unsustainable Growth With Current Infrastructure

POPULATION TRENDS

Pine and Strawberry, Arizona

Unincorporated communities

Arizona Office of Economic Opportunity (AOEO)

https://population.az.gov/population-projections

Increased shift in housing demands due to COVID

- Residents leaving urban areas to rural areas
- Increased out of state residents seeking housing in rural areas

Developers buying property to build subdivisions due to shift in population trends

POPULATION TRENDS (CONTINUED)

Gila County Comprehensive Plan reports that approximately 55 percent of the housing units in both Pine and Strawberry are seasonal units.

When seasonal units are occupied, there is a trend toward a higher number of persons per unit than would be present during the offseason, i.e. winter.

These two factors help to explain why the combined population of about >3,000 persons for the two communities reported by the State balloons to an estimated >8,000 persons served by Pine-Strawberry Water Improvement District during their highest demand days

CURRENT ISSUES

LACK OF WATER

REVENUE SOURCE NEEDED

CURRENT ISSUES

Extreme Drought

- Little to no snow for **recharge (replenishing the water table)** of ground water
- Light to almost non-existent monsoon
- Increase in temperatures – AZ is in the top 5 states increasing in heat

Resulting dry soils will reduce future **recharge (replenishing the water table)** by absorbing potential run-off in the spring.

Fire potential devastating – Pine and Strawberry was evacuated June 2021 due to the Backbone Fire

CURRENT ISSUES (CONTINUED)

- Water Loss
  - 2020 - **32.71% loss average**
    - 3,494,519 gallons per month
    - 41, 934,225 gallons annually
  - 2021 – **28.42% loss average**
    - 2,755,400 gallons per month
    - 33,064,794 gallons annually

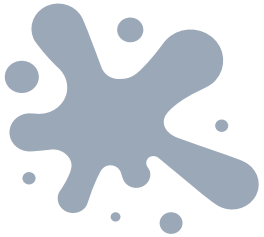
CURRENT ISSUES (CONTINUED)

Wells 38

14 Functioning

- Average 23 gallons per minute (GPM) both shallow & deep well average.

24 Non-Functioning (Most have run dry – continuously monitored for water return)



Leaks

30-40 Logged monthly

Major – Can drain 100,000 gallons in 30 minutes (Happens every other month)

Approximately 80% of operational budget spent fixing leaks - estimate

Pine-Strawberry Water Improvement District (PSWID)

Aging system with significant water loss

Moratorium on new connections

3221 active connections (3153 residential, 67 commercial, 2974 with 5/8” meters)

Numerous projects with approved funding

Provides water that is supplied exclusively by groundwater

District’s wells drawn from the East Verde Watershed

Mogollon Rim Water Resources Management Study Report of Findings states that Pine and Strawberry have rights 500 acre-feet per year of surface water that is developed by the C.C. Cragin Dam and Reservoir, formerly known as Blue Ridge Reservoir. 500 acre-feet per year.

INFRASTRUCTURE

- Infrastructure
  - Developed gradually over time
  - Each residential subdivision building a separate stand-alone water system with little or no redundancy (a hodge-podge of piping, pumps, booster stations and storage tanks)
  - Old substandard infrastructure
    - Substandard pipes
    - ABS – sewer piping
  - Poor installation practices by developers
  - Government Regulation Oversight
    - Little to no regulation from the governing body
    - Little if any inspections by governing body
  - All residential subdivisions were eventually included in Pine-Strawberry Water Improvement District

50 to 60 year old hodge-podge pipe.

ABS Sewer Pipe, hose clamps, electrical conduit cut in half for a service saddle, A/C pipe, and Galvanized.

AWWA Specified Pipe HDPE (High Density Polyethylyne)

FACTS

January 2022 study by Sunrise Engineering states:

FACT: PSWID has a deficit of 177 gallons per minute during peak summer months.

FACT: Fixing all the leaks tomorrow would still leave a deficit of 136 gallons per minute.

FACT: The biggest priority right now is more capacity, i.e. more “deep wells”.

FACT: A typical “deep well” is a minimum of two million dollars to install.

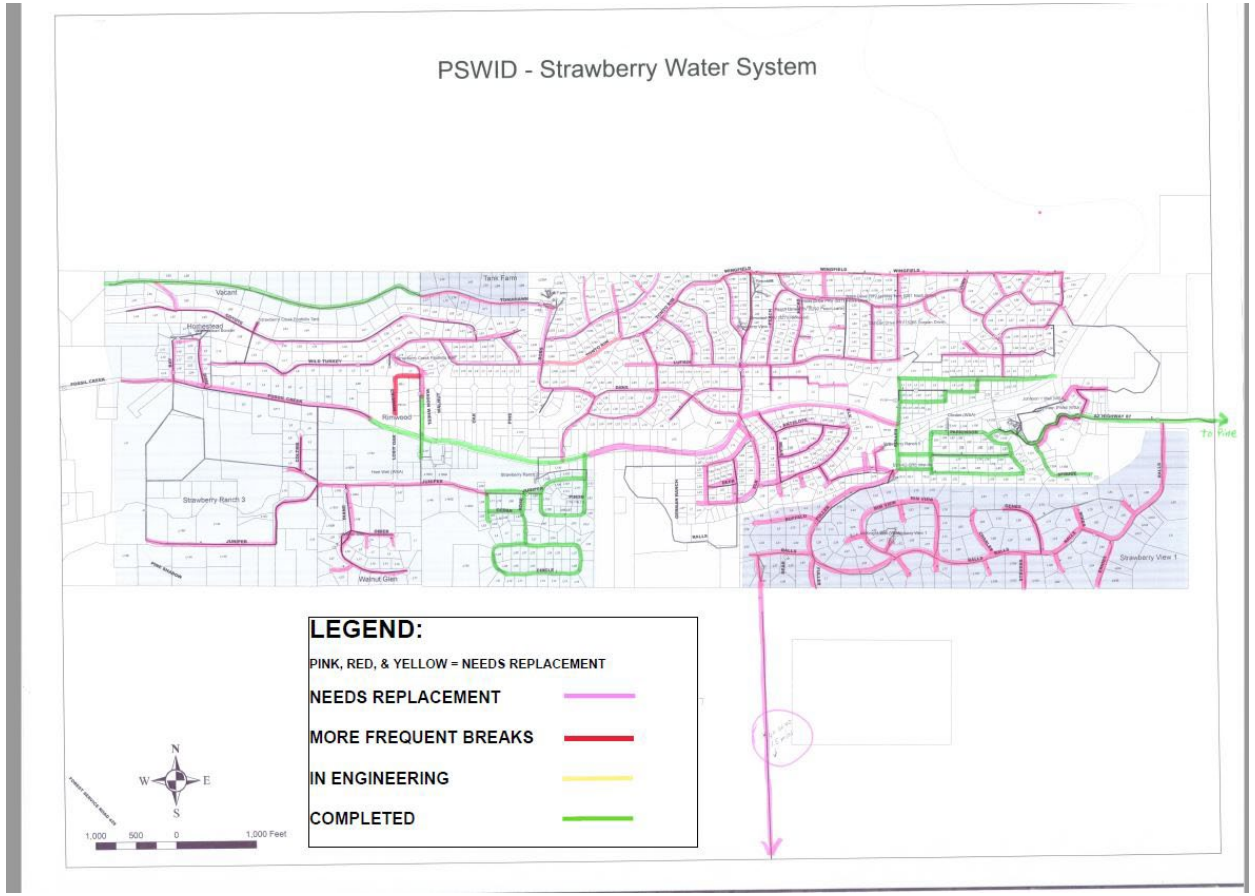
FACT: The average production of a deep well in our area of 32.5 gallons per minute,
it will take four to five new deep wells just to keep up with demand!

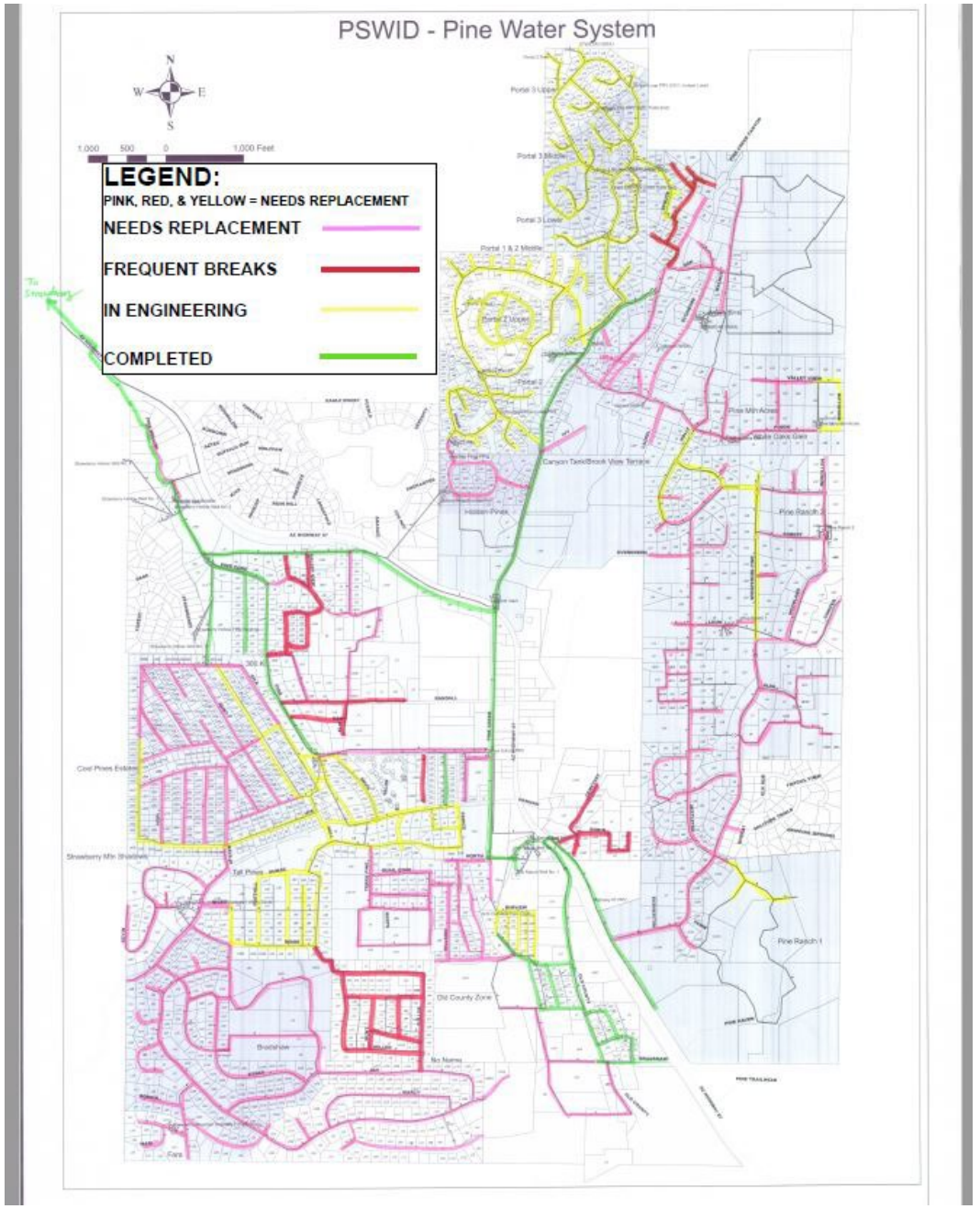
Infrastructure Improvement Status 2/22/22

Green = Complete

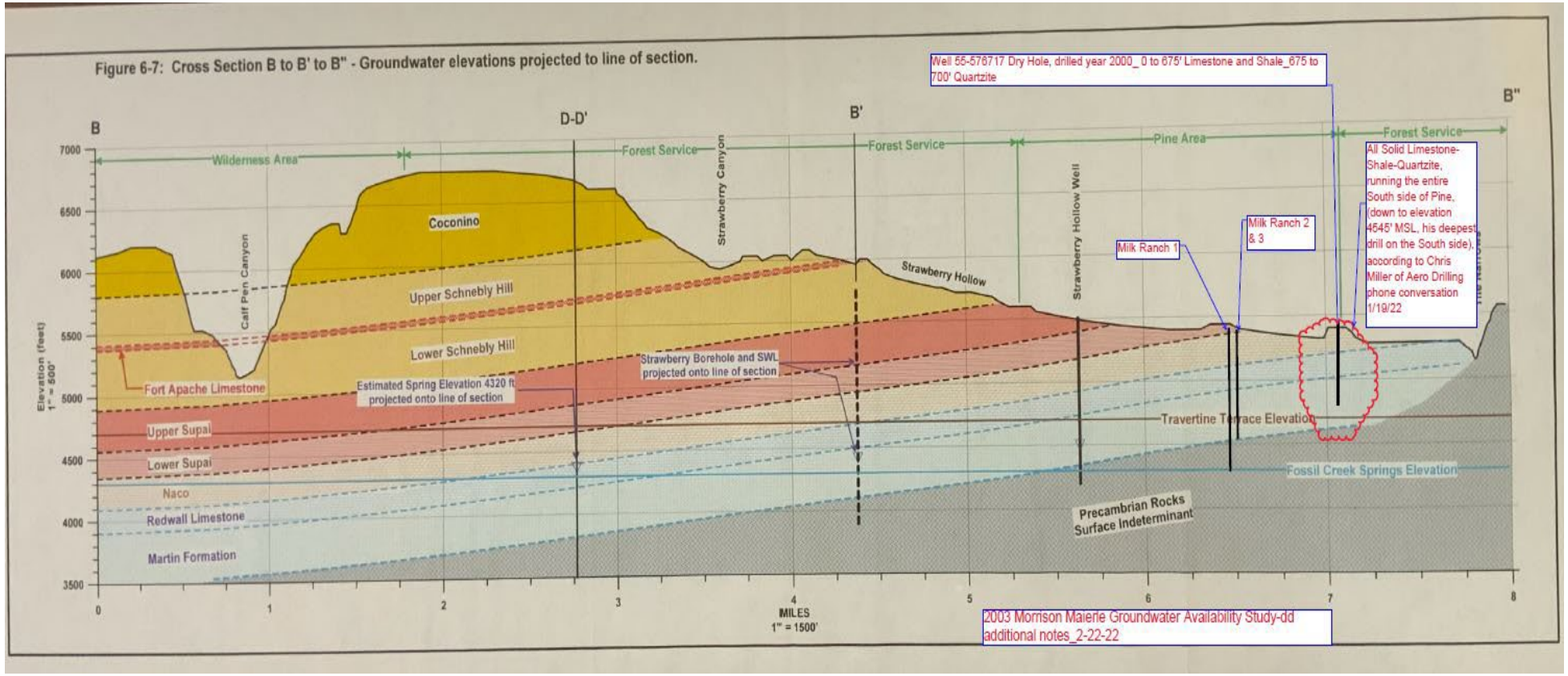
Yellow = in design

Pink & Red = awaiting funding





Investigation of Groundwater Availability for PSWID 2003 Morrison Maierle, Inc,



Currently only five wells in the deep aquifer.

PSWID - Milk Ranch 1, 2, 3, and SH-3.

PCCD – Portal 4 Well

GEOLOGY

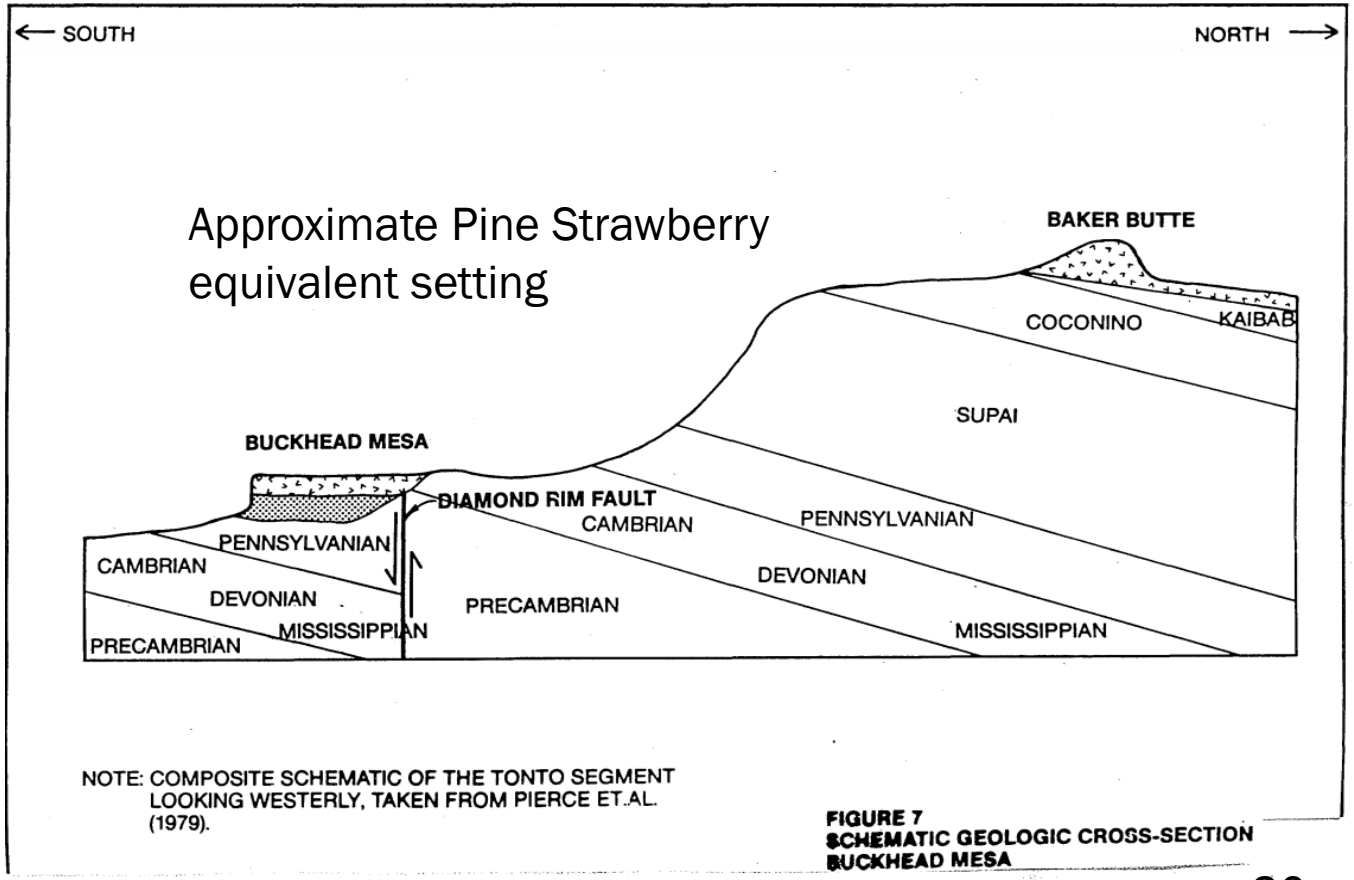
Between Plateau and Basin/Range
- Transition Zone

Geology determines aquifers
- Some water from fractured rock
- Some water from sandy units
- Some water from fault zones
- Some water from limestone

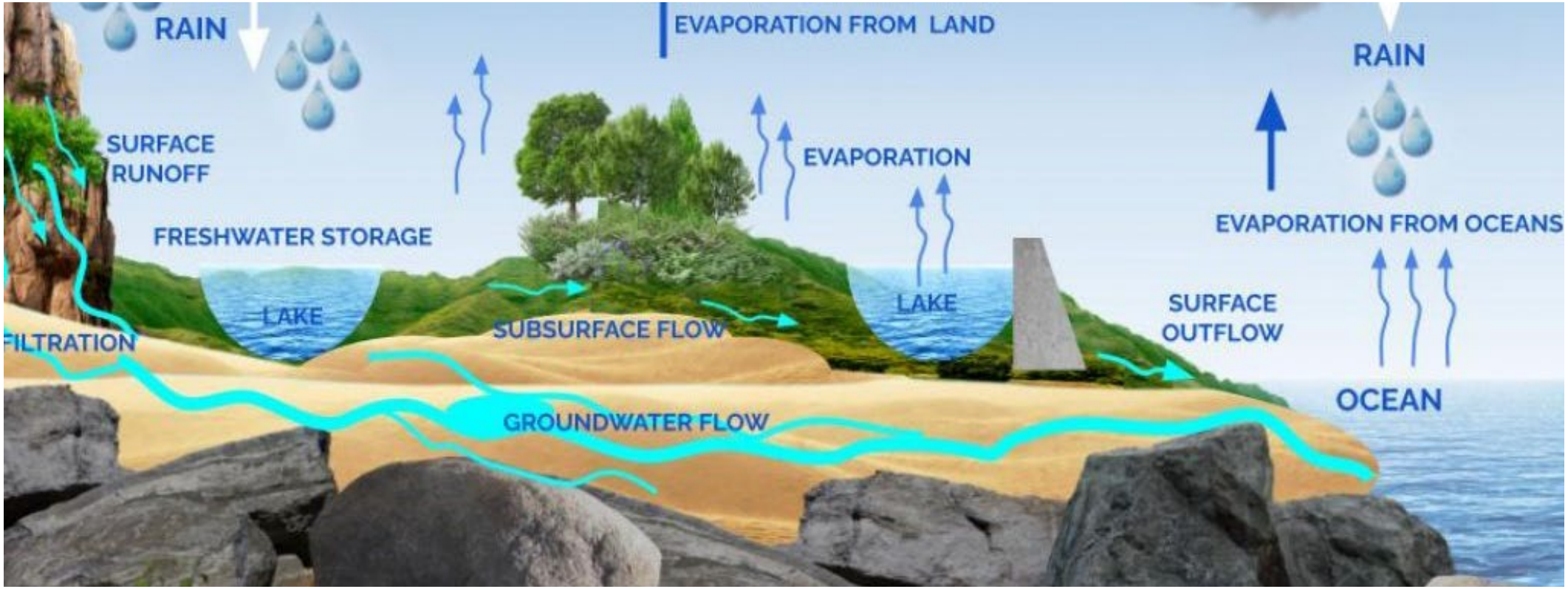
Aquifers are limited to what the formations might produce
- Low well productions reported by PSWID

Limited recharge based on snowpack, precipitation

Therefore, this area is <u>water-limited</u>



HYDROGEOLOGICAL SETTING & LIMITATIONS



Finances, Projects, and Projects Completed

WIFA PSWID Funding Program FY18 thru FY22

WIFA CIP Schedule – FYE JUNE 2022

	WIFA PSWID Funding Program FY18 thru FY22							
	WIFA CIP SCHEDULE - FYE JUNE 2022							
Project Number	PSWID CIP PROGRAM FY18 THRU FY22 PROJECT NAME	TYPE	PHASE	FINAL FUNDING PROJECT SCHEDULE	COSTS TO DATE 6/30/2021	REMAINING FUNDING	COSTS TO DATE-21/22	REMAINING FUNDING
920283-18-02	Strawberry Ranch 1/Circle Drive Waterline - Completed	Pipe	1	$196,536.90	$196,536.90	$0.00		$0.00
920283-18-04	Pine Creek 4" Waterline Replacement- Completed	Pipe	2.1	$146,185.08	$146,185.08	$0.00		$0.00
920283-18-05	Pinewood Haven/Rim Vista Waterline Replacement -Completed	Pipe	2.1	$889,430.44	$889,430.44	$0.00		$0.00
920283-18-06	Cool Pines Est Pipe Waterline Replacement Updgrade Phases B & C	Pipe	2.2	$711,955.13	$93,914.34	$618,040.79	$506,593.95	$111,446.84
920283-18-07	Strawberry Ranch 2 & Strawberry Knolls 2 - Completed	Pipe	2.2	$1,049,411.32	$1,049,411.32	$0.00		$0.00
920283-18-17	State Route 87 Bradshaw to MR Well Site Waterline-Completed	Pipe	1	$535,896.12	$535,896.12	$0.00		$0.00
920283-18-18	Juniper-Tanner Rails/Fossil Creek-Wagon Wheel-Completed	Pipe	1	$444,390.37	$444,390.37	$0.00		$0.00
920283-18-19	Strawberry Knolls 1-Completed	Pipe	1	$529,720.36	$529,720.36	$0.00		$0.00
920283-18-21	Install 3,240 Radio Read Meters-Completed	Meters	1	$856,591.37	$856,591.37	$0.00		$0.00
920283-18-36	Pine Creek 2 Waterline Replacement	Pipe	1	$271,407.90	$0.00	$271,407.90	$16,850.00	$254,557.90
	Waterline Projects Total			$5,631,524.99	$4,742,076.30	$889,448.69	$523,443.95	$366,004.74
920283-18-01	Strawberry View 1 Tank Replacement 20K - Completed	Tank	1	$315,802.50	$315,802.50	$0.00		$0.00
920283-18-13	Canyon Tanks 1 & 2 Replacement 100K - Completed	Tank	2	$994,078.69	$994,078.69	$0.00		$0.00
920283-18-16	Portal 2/Portal 3 Tank Rehabilitations - 100K - Completed	Tank	2	$893,675.94	$893,675.94	$0.00		$0.00
	Tank Projects Total			$2,203,557.13	$2,203,557.13	$0.00	$0.00	$0.00
	Aerial Surveys			$40,000.00	$40,000.00	$0.00		$0.00
	Program Management Fees			$124,917.88	$64,500.73	$64,500.73	$52,813.12	$11,687.61
				$164,917.88	$40,000.00	$64,500.73	$52,813.12	$11,687.61
	Total Revised Funded Projects			$8,000,000.00	$6,985,633.43	$953,949.42	$576,257.07	$377,692.35
	TOTAL FUNDED PROJECTS			$8,000,000.00	$6,985,633.43	$953,949.42	$576,257.07	$377,692.35

PSWID USDA CIP Program FY21 thru FY26

Fiscal Year to Date Thru June 2022

PSWID USDA CIP Program FY21 thru FY26

Fiscal Year to Date Thru June 2022

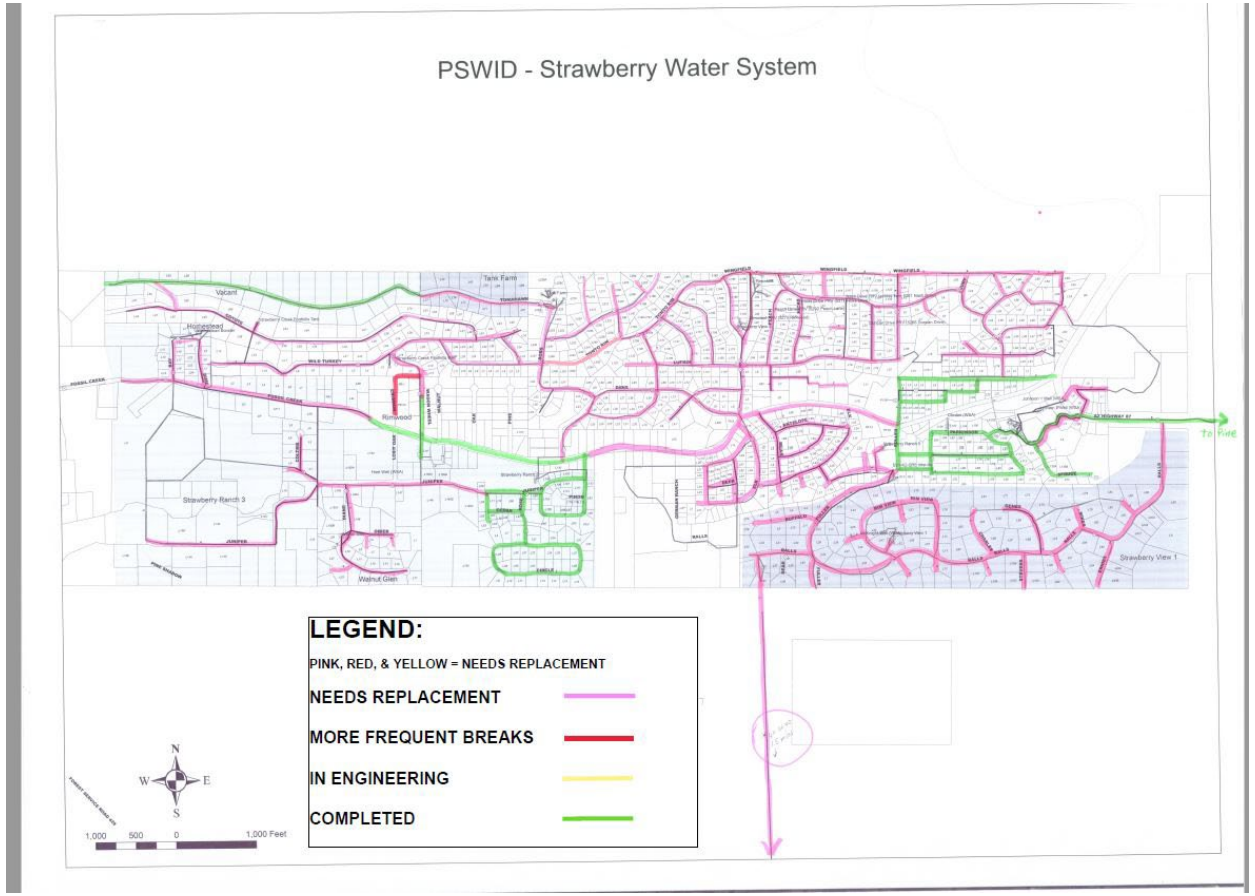
Project #	PSWID USDA CIP PROGRAM FY21 THRU FY26 PROJECT NAME	Approved Project Budget	PHASE	CIP Budget	Approved Budget Changes	CIP Revised Budget	Total Costs to Date FY 2022	FY 22 CIP Remaining Budget
1	Strawberry Creek Foothills/Strawberry Place Waterline	$3,000,000.00	1	$3,000,000.00				$3,000,000.00
2	Intermountain/Pie-Strawberry Waterline Replacement	$2,100,000.00	1	$2,100,000.00				$2,100,000.00
3	Strawberry View 3/Shady Lane Waterline Replacement	$3,035,700.00	1	$3,035,700.00				$3,035,700.00
4	Strawberry View 1&2 Waterline Replacement	$3,722,000.00	1	$3,722,000.00				$3,722,000.00
5	Portals 1, 2 & 3 Waterline Replacement	$2,010,700.00	1	$2,010,700.00				$2,010,700.00
6	Whispering Pines Waterline Replacement	$431,000.00	1	$431,000.00			$27,720.00	$303,307.10
7	Cool Pines Pines A Waterline Replacement	$995,004.00	1	$995,004.00			$84,300.00	$710,704.00
8	Woodland Heights Phase A Waterline Replacement	$0.00	1	$0.00				
9	Woodland Heights Phase B &C Waterline Replacement-Combined	$2,040,410.00	1	$2,040,410.00			$170,201.00	$2,040,410.00
10	Pine Mountain Acres/Pinion Waterline Replacement	$334,400.00	1	$334,400.00			$17,207.00	$317,203.40
11	White Oak/Cedar Meadows Waterline Replacement	$400,100.00	1	$400,100.00			$84,000.00	$415,213.30
12	Hidden Pines Waterline Replacement	$400,100.00	1	$400,100.00				$400,100.00
13	Glenmore Pines Waterline Replacement	$1,210,172.00	1	$1,210,172.00				$1,210,172.00
14	Brookview Terrace 1 & 2 Waterline Replacement	$1,410,200.00	1	$1,410,200.00				$1,410,200.00
15	Strawberry Mtn Meadows 1&2/Pine Cove Waterline Replacement	$4,000,100.00	1	$4,000,100.00				$4,000,100.00
16	Strawberry Mtn Meadows 3 Service Corp Stop Replacement	$400,200.00	1	$400,200.00				$400,200.00
	USDA WATERLINE PROJECTS	$34,002,011.00		$34,002,011.00			$302,301.70	$34,070,400.00
17	Mtn Ranch Tank	$300,010.00	1	$300,010.00				$300,010.00
18	System Wide Goals	$340,000.00	1	$340,000.00				$340,000.00
19	System Wide Water Model	$300,000.00	1	$300,000.00			$104,110.07	$130,201.00
	USDA OTHER PROJECTS	$1,150,010.00		$1,150,010.00			$104,110.07	$000,700.00
1	Strawberry Ranch #2 Deep Well	$1,000,271.00	2	$1,000,271.00			$10,044.00	$1,040,000.00
	USDA DEEP WELL PROJECT	$1,000,271.00		$1,000,271.00			$10,044.00	$1,040,000.00
	PSID Bank Payoff	$4,000,000.00		$4,000,000.00				$4,000,000.00
	Interim Financing Fees	$1,200,000.00		$1,200,000.00			$1,130.00	$1,000,000.11
	Legal Fees	$110,720.00		$110,720.00			$10,007.00	$100,770.00
	Single Audit Fees	$10,000.00		$10,000.00				$10,000.00
	Program Management Fees	$1,210,700.00		$1,210,700.00			$00,000.17	$1,000,004.00
	PSWID USDA CIP PROGRAM FY21 THRU FY26	Approved Project Budget		CIP Budget	Approved Budget Changes	CIP Revised Budget	Total Costs to Date FY 2022	FY 22 CIP Remaining Budget
Project #	PROJECT NAME		PHASE					
	USDA OTHER FEES	$0,040,201.00		$0,040,201.00			$00,201.00	$0,000,140.00
	TOTAL PER USDA PROJECT SCHEDULE-ADJUSTED	$44,442,000.00		$44,442,000.00			$000,007.00	$44,002,002.00

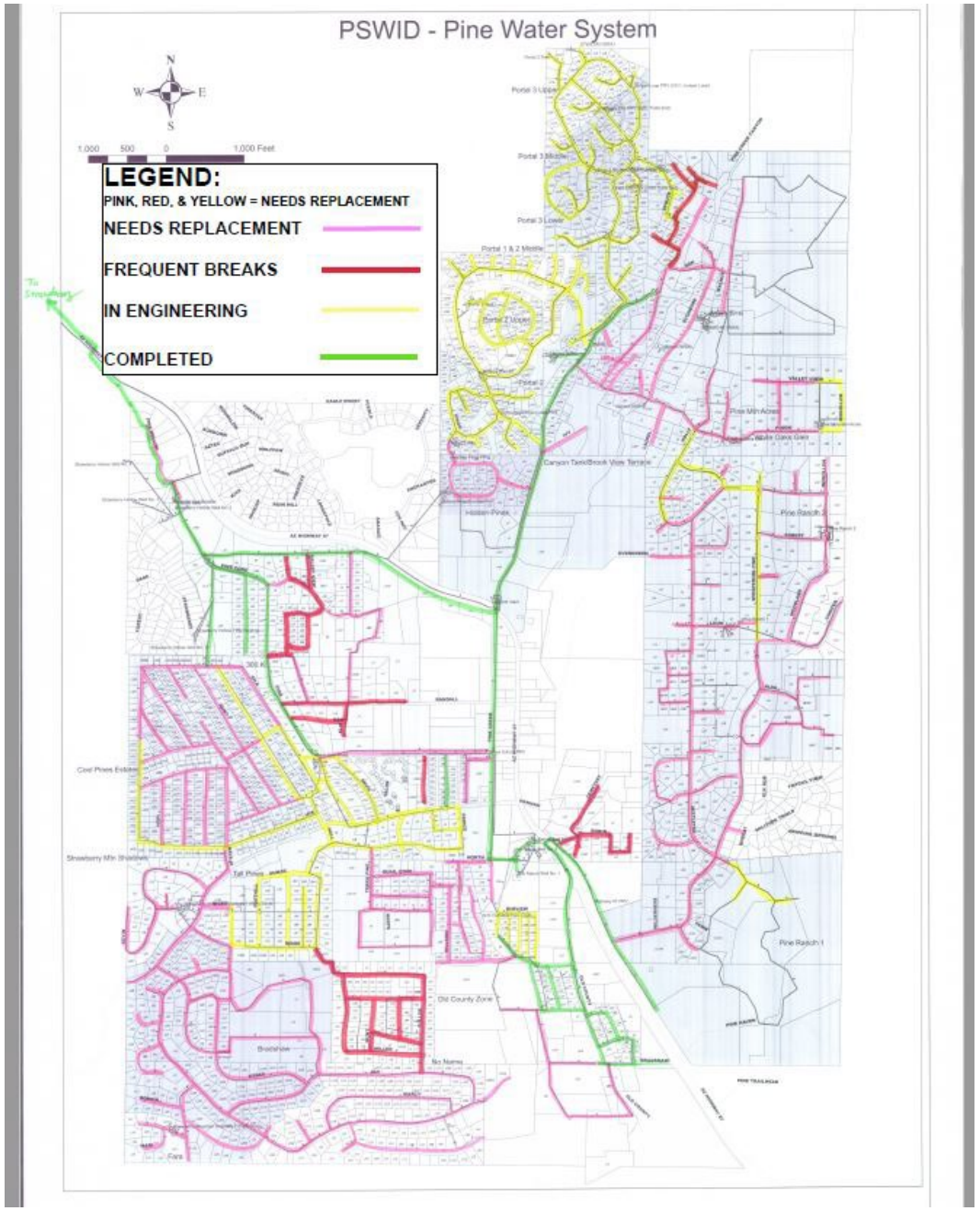
Infrastructure Improvement Status 2/22/22

Green = Complete

Yellow = in design

Pink & Red = awaiting funding





PROJECTED COST TO STANDARIZE PINE STRAWBERRY WATER IMPROVEMENT DISTRICT

Previous Slide of the Map

Green = complete.
Yellow = in engineering which are funded, or to be funded.
Pink and Red = are not started nor funded.

Miles not funded - **61 x 1.1million = $67.1million**

Infrastructure includes much more than just pipe, you still need boosters, storage tanks, and treatment facilities.

Modest number **based on 2020 calculations from EPS Engineering Group**

Cost of materials has gone up >20% since 2020 calculations!

There are some older estimates stating it would take $135,000,000 to bring PSWID to current standards.

Pine Strawberry Fire Department has required PSWID to size the water system for fire flow as improvements are made that will double the standardization costs. (with the assumption that someday in the far future we would actually have enough water meet fire flow minimums).

COBRE VALLEY WATERSHED PARTNERSHIP

Cobre Valley Watershed Partnership

-Positive steps towards resiliency and water sustainability

Victoria Hermosilla

March 31, 2022

Outline

What is a watershed partnership?

How did we get here?

What is a watershed action plan?

USBOR funding

What is a watershed partnership?

Watershed Partnerships

are voluntary alliances among vested stakeholders that share a common bond in that they would like to see their watershed improve water quality and maintain or improve the quality of life.

How did we get here?

WRRC work

Vision, Mission, Goals development

By-Laws and Leadership

Water Forums

Small Teams Meetings

Non-Profit Status

Complete Action Plan

Watershed Restoration

& Action Plan

February 21, 2022

V. HERMOSILLA
With contributions from A. Hullinger, M. Seronde, L. Emler,
A. Mohr-Felsen, D. Hsieh, C. Boyd, J. Rose

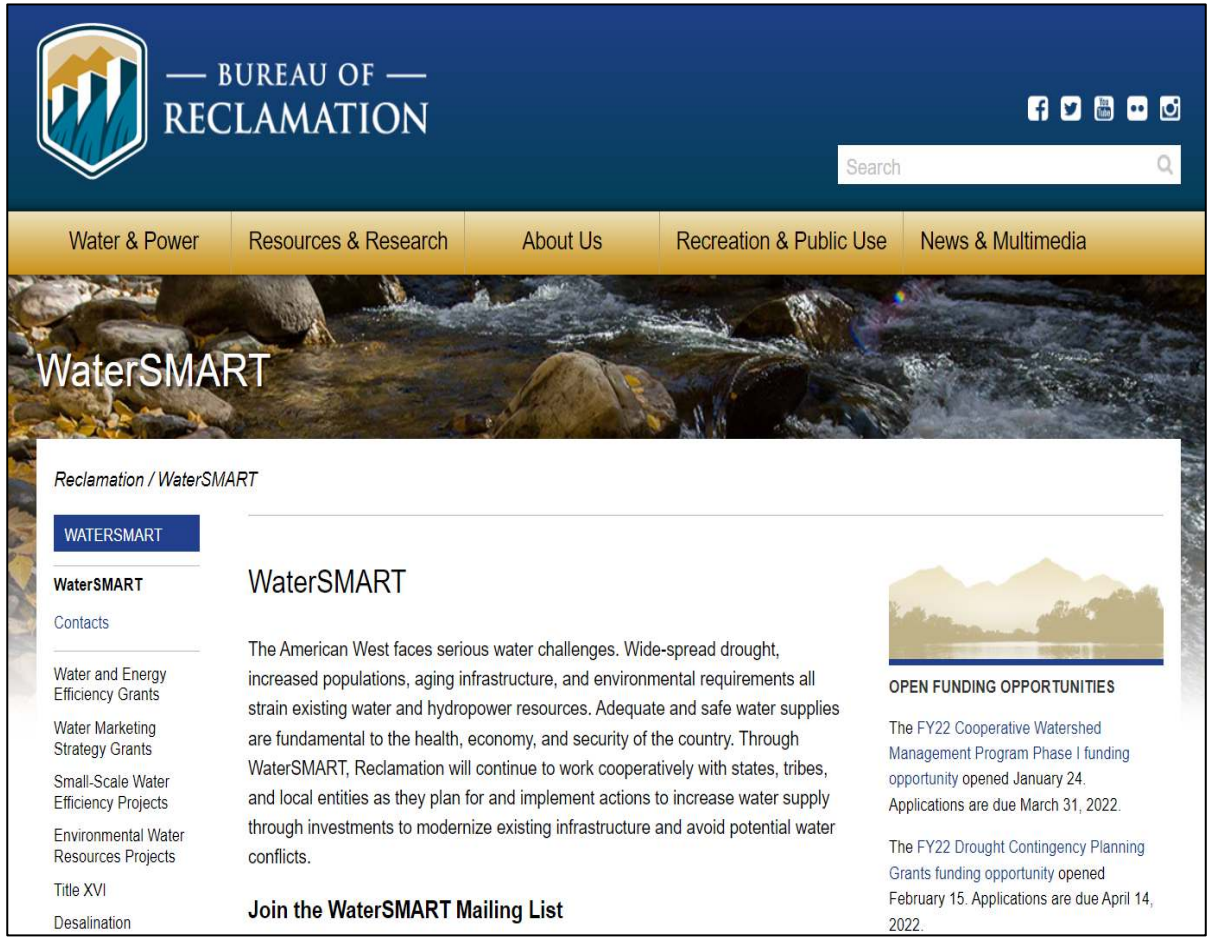
USBOR Funding

USBOR WaterSMART Main Page
- https://www.usbr.gov/watersmart/

Cooperative Watershed Management Program
- https://www.usbr.gov/watersmart/cwmp/index.html

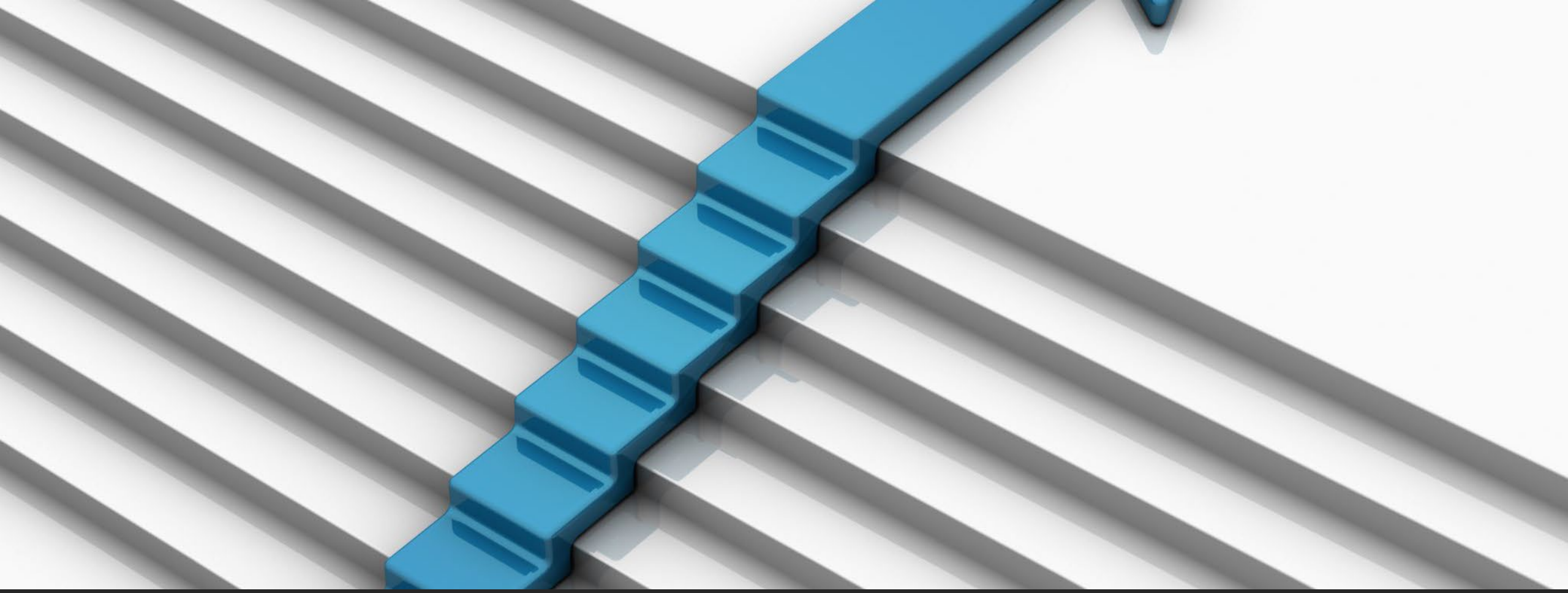
WaterSMART Water and Energy Efficiency Grants
- https://www.usbr.gov/watersmart/weeg/index.html

Drought Response Program
- https://www.usbr.gov/drought/



Questions?

COMMENTS, CONCERNS, IDEAS, COMPLAINTS?



NEXT STEPS

Highest Urgency, Pursue deep well options ASAP

Enact more aggressive water conservation efforts

Continue to replace infrastructure as quickly as possible within the limitations of the budget.

Next Steps for PSWID

- Improved water supply reliability
  - PSWID major improvements
    - Wells need to be inspected, repaired, and replaced
    - Pipes (61 miles) needing replacement with standardized PVC
    - Modernized remote controls
    - Inspect/repair/replace storage tanks
    - Inspect/repair/replace pressure zones/pumps
  - New deep wells
    - Currently one in planning
    - Four to five more needed

REVENUE SOURCES NEEDED

Currently – can continue to fix the infrastructure and add one well

Do not have the financial means to borrow more until we pay off current loans

Looking for more forgivable dollars to create more source (Drill additional wells)

NEXT STEPS FOR OUR ELECTED OFFICIALS

- Federal Budget –
  - What money is available for water infrastructure
  - How to apply for available funding
  - Navigating Communication between programs
- Grants
  - What grants are available
  - Assistance in grant writing
- Regulations to protect rural communities
  - Groundwater regulation
  - Regulations stating that there is enough water for >?? years for any new building before permits are issued
- Water Wise development codes (i.e.)
  - Instant hot water on new builds
  - Gray water plumbing on new builds
  - Rainwater harvesting
  - Low-flow fixtures
- Conservation incentives
- High-efficiency retrofits and incentives
- Conjunctive fire, water and land use planning
- Talk with their constituents

NEXT STEPS FOR GILA COUNTY

- Develop drought Conservation Regulations
- Develop groundwater regulations for sustainability
  - Current residents
  - Develop regulations for community development to include >?? Years of water source for current and potential residents
- Develop grants to residents for
  - Low water fixtures
  - Rainwater harvesting
  - Installing for Grey water usage
- Develop Realistic Growth Regulations
- Improve Building Regulations to meet current national standards
- Have actual building inspectors go to job sites to supervise contractors
- Talk to the residents

NEXT STEP FOR RESIDENTS

Increase your awareness

Get involved

Become proactive

- Write letters/emails to elected officials
- Call elected officials
- Hold our elected officials accountable

Vote

- Know the candidates and where they stand on policies

KNOW THAT YOU CAN MAKE A DIFFERENCE

QUESTIONS?