PALOUSE BASIN AQUIFER committee

Working to ensure a long-term, quality water supply for the Palouse Basin region.

Columbia Basin Sustainable Water Coalition Stakeholder Meeting

July 20, 2023

Discussion Topics:

- History of the Palouse Basin Aquifer Committee (PBAC)
- Groundwater Management Plan
- Current and ongoing work within the Basin
- Our future

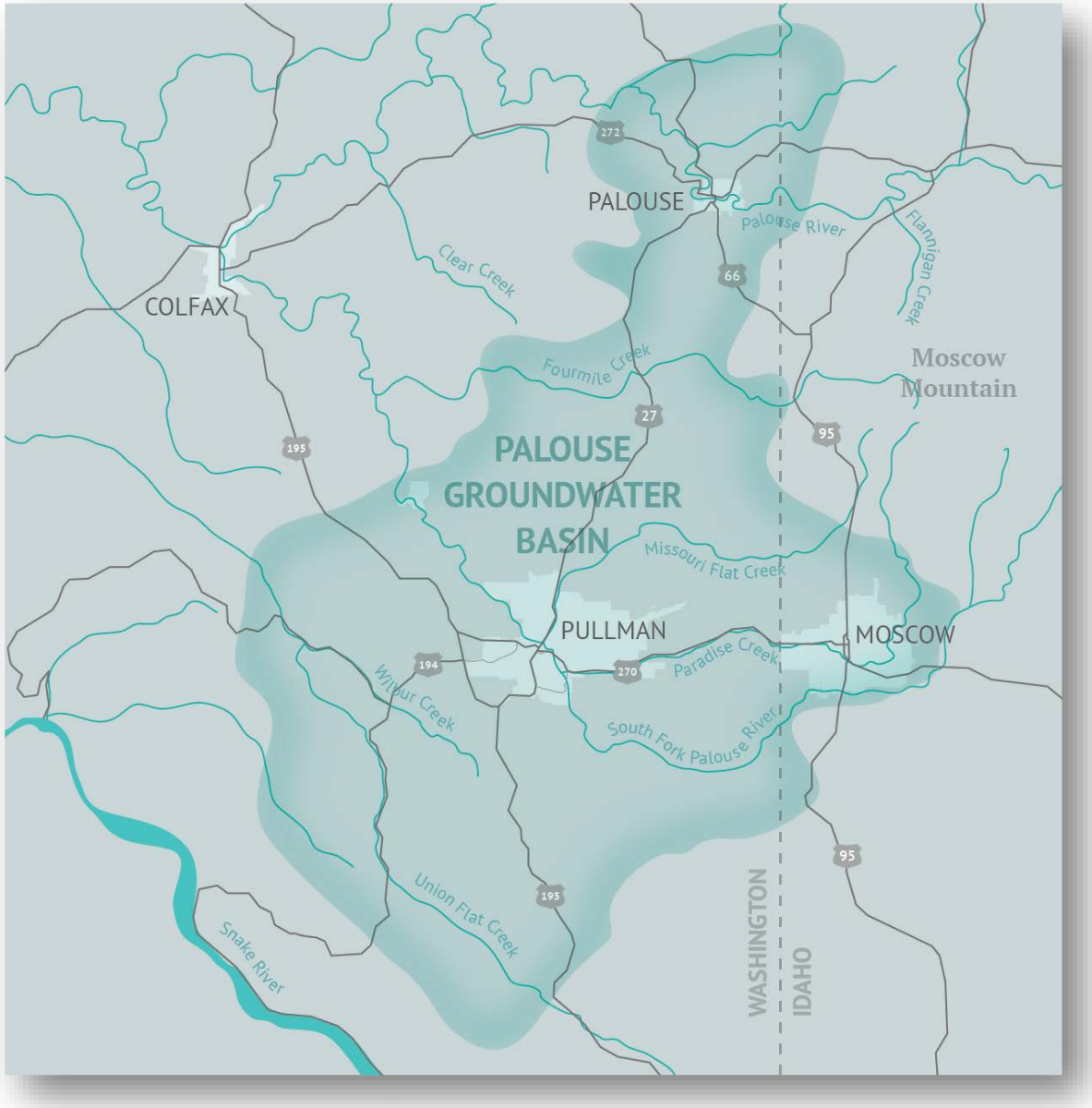
Palouse Groundwater Basin

The sole source of drinking water in the Palouse region

includes communities in
Latah and Whitman Counties

Moscow, ID and Pullman and Palouse, WA

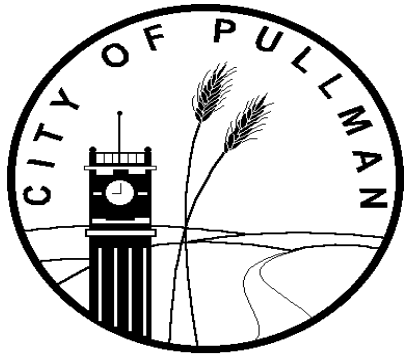
University of Idaho and Washington State University (both state land grant universities)



PALOUSE BASIN AQUIFER committee

PBAC's Mission

"To ensure a long-term, quality water supply for the Palouse Basin region"



What We Do

Collect data and fund groundwater research

Supply community with vital information

Provide strategic long-term water supply solutions

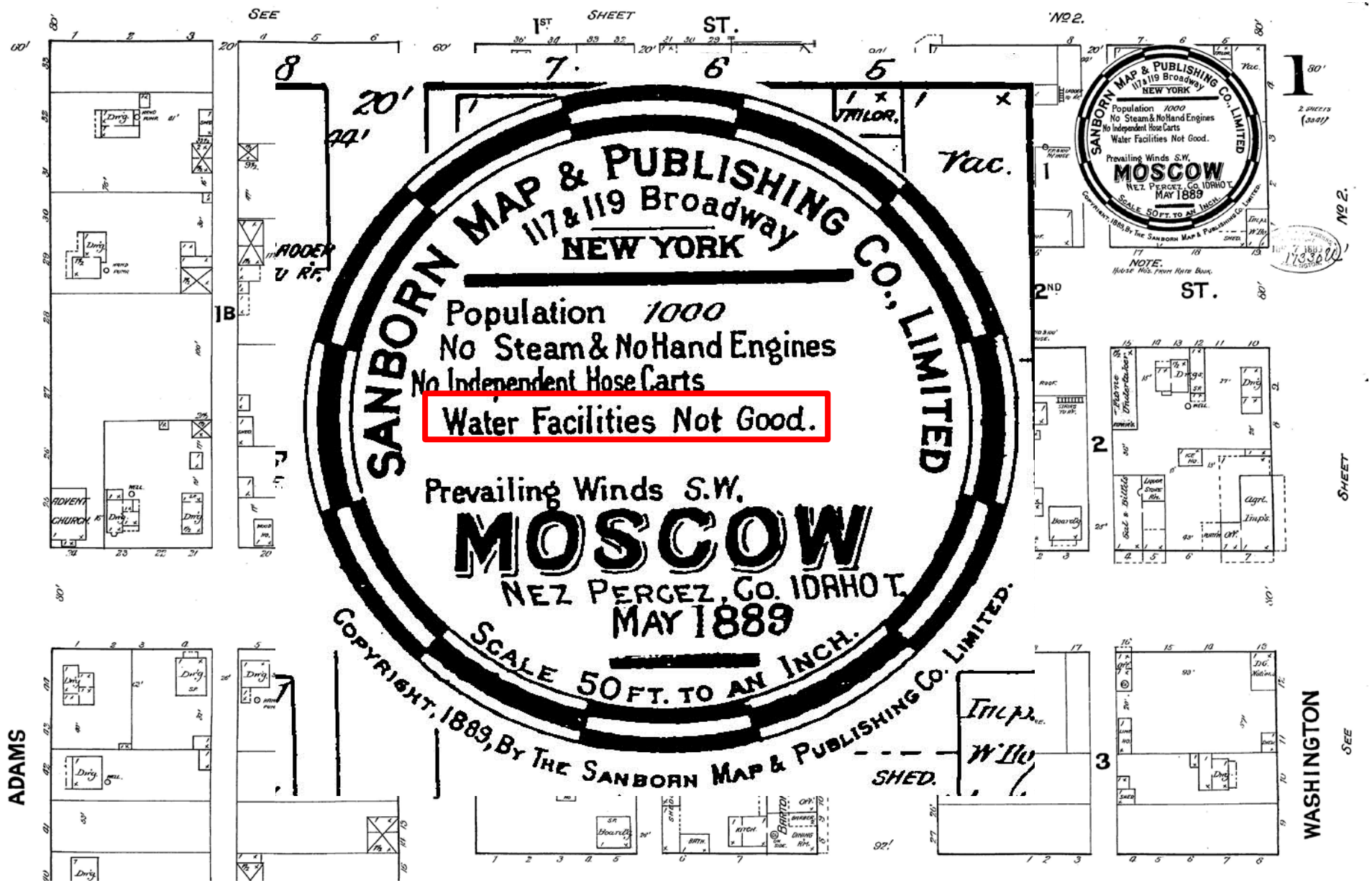
Public engagement and communications

History

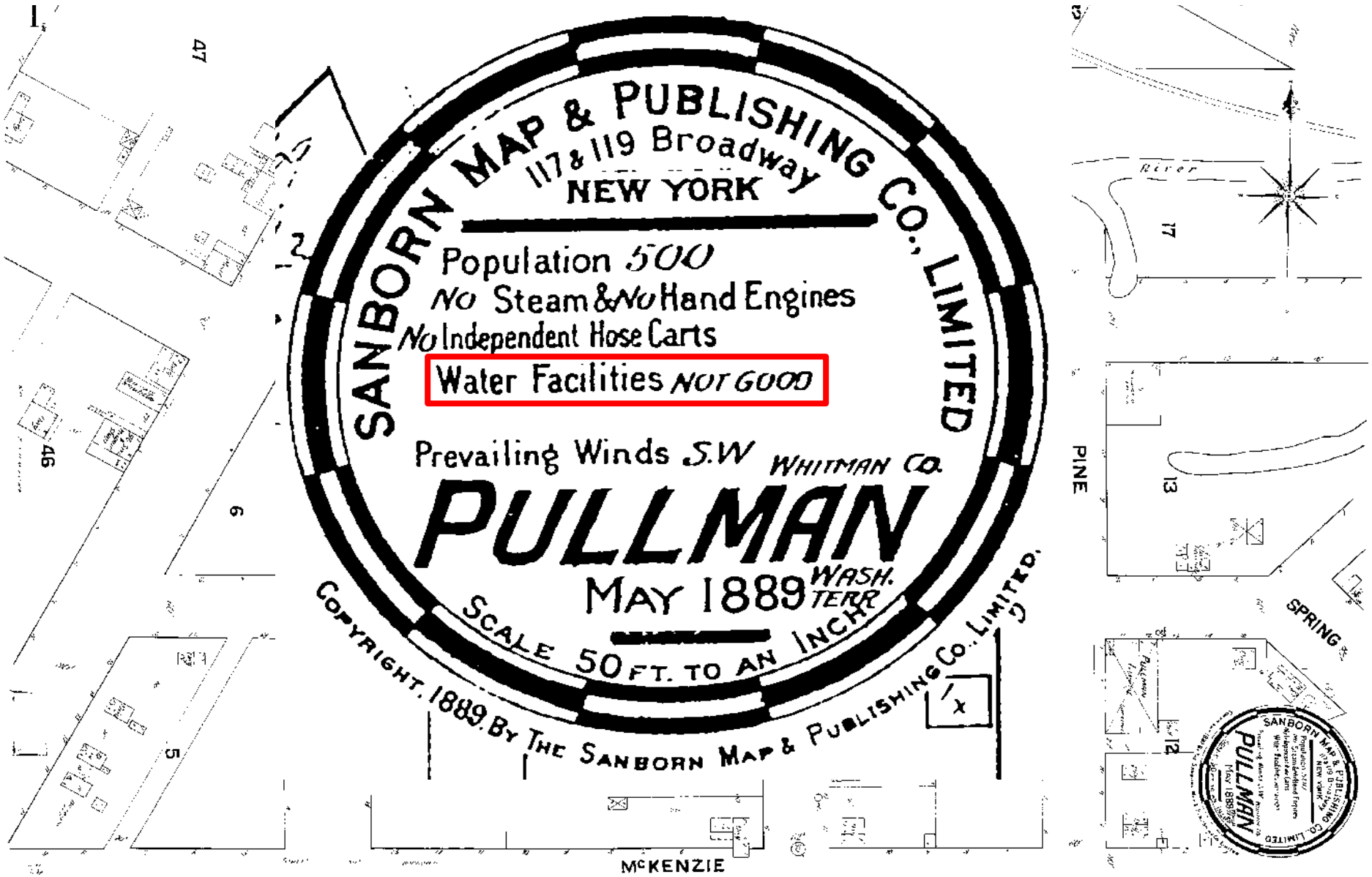
- Artesian wells
- Water Level declines
- PBAC was established in 1967
- Establishment of the Groundwater Management Plan in 1992 (GWMP)

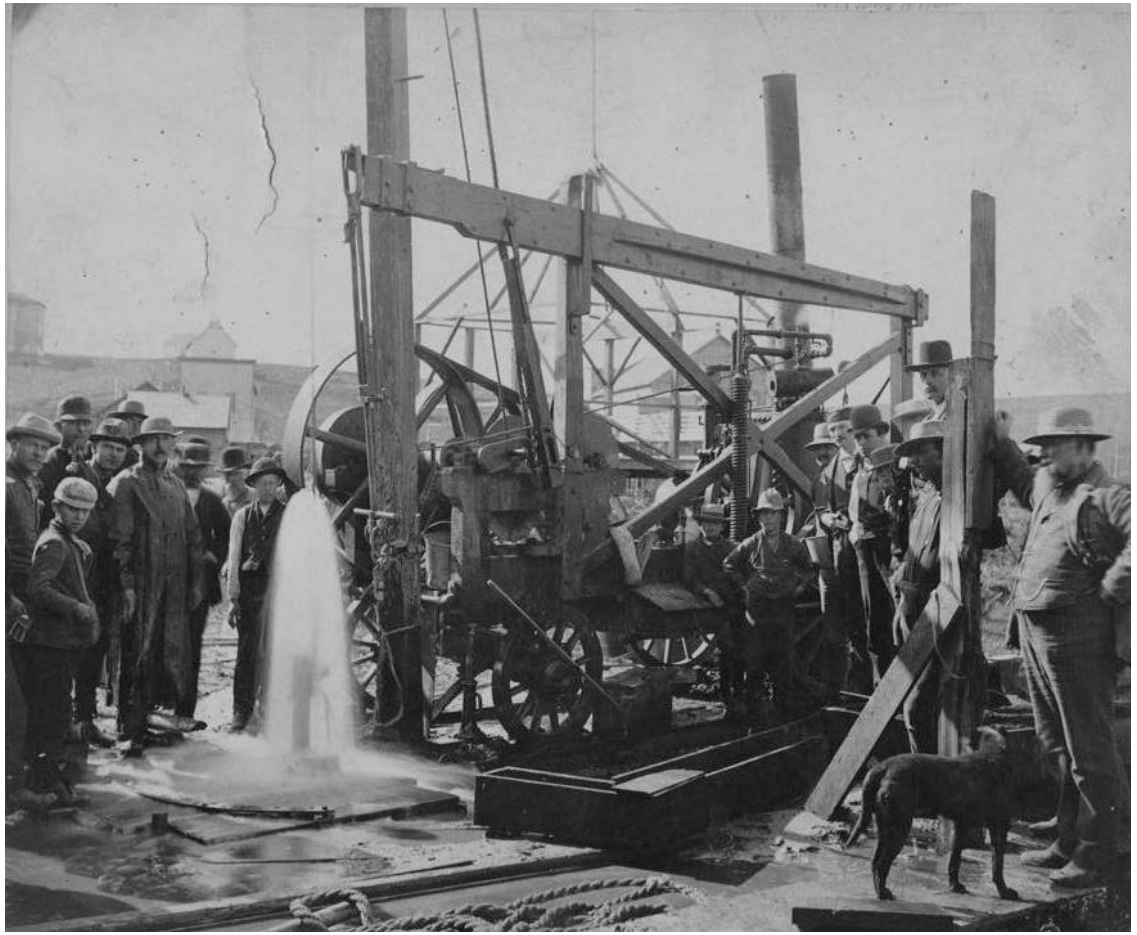
Moscow 1883

Map of Central Moscow – May 1889



Map of Central Pullman – May 1889





PALOUSE BASIN
AQUIFER
committee

Pullman Herald
May 2, 1891

The Agricultural College and School of Science come to . . .
The City of Flowing Wells

PULLMAN WINS.

The Agricultural College and School of Science come to The City of Flowing Wells.

The Vedder property is the accepted site. Only one-third of a mile from postoffice.

Building will be commenced in a short time. A Richly endowed Institution.

"The fight is over. Whitman wins, Pullman gets the agricultural college and school of science. Three cheers for the little star of the Palouse."

The above was a telegram received last Monday morning, from E. H. Letterman, one of the delegates who had been looking out for the county's interests at Olympia, that sent a thrill of joy throughout all Whitman, and the thrill was especially thrilling in Pullman, the favored spot.

For eighteen months Whitman county has been presenting her claims as the most suitable place for the location of the institution, and the claim was recognized.

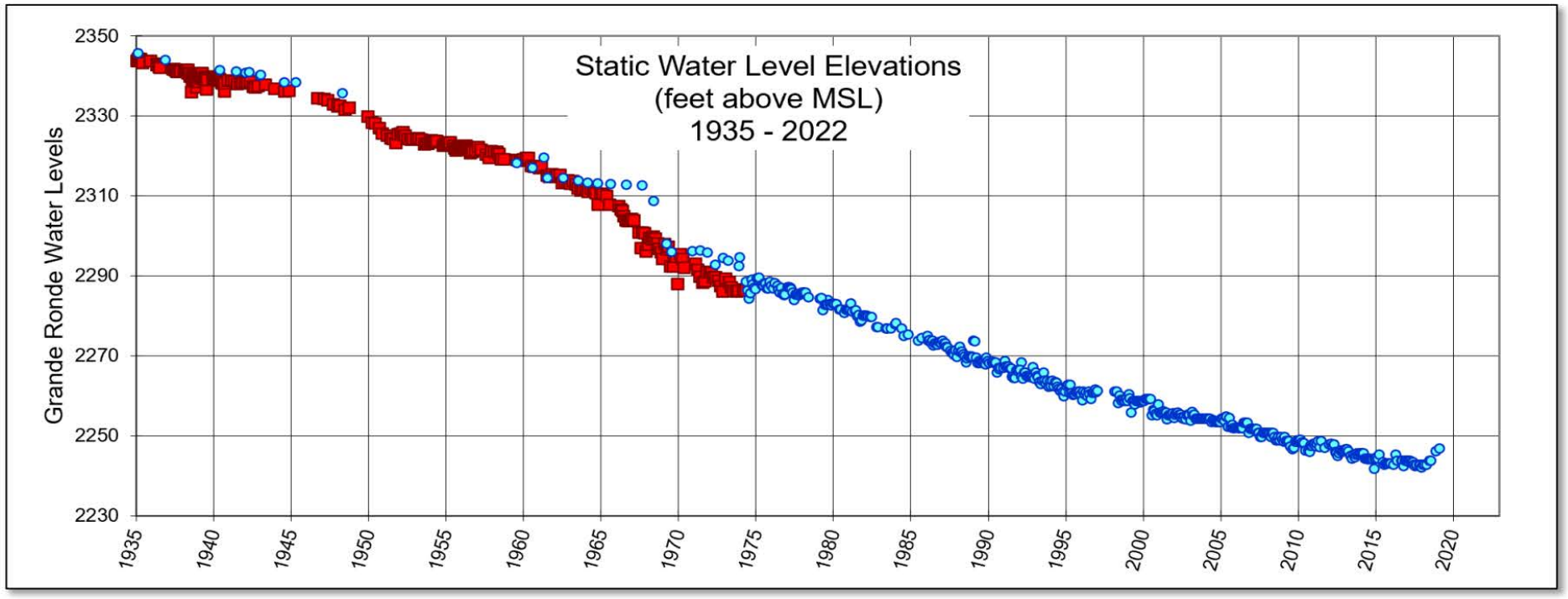
PALOUSE BASIN AQUIFER committee

2,352 ft above MSL

2,500 ft

2,400 ft

2,300 ft



Grande Ronde Water Level: 2,235 ft above MSL

PALOUSE BASIN AQUIFER committee

REPORT

Meetings

Following review of the domestic water supply problems with The Regents at the 2 March 1967 meeting, three meetings have been held with the four governmental, institutional units concerned with the local problem.

13 March 1967 University of Idaho Student Union.
Review of concepts and philosophy.

3 April 1967 University of Idaho Student Union.
Review of possible sources of water and selection of Potlatch River as best source.

11 April 1967 On site inspection of Potlatch River.

Participating Parties

1. City of Pullman
   Joe Street
   Larry Larse

2. Washington State University
   Dr. E. Roy Tinney, Director, State of Washington Water Research Center
   Jim Crosby

3. City of Moscow
   Marvin Kimberling
   Richard Day

4. University of Idaho
   George Gagon
   Kenneth A. Dick

UI/Moscow Domestic Water Supply Report (1968)

In the Spring of 1967, a series of meetings was held with the four governmental and institutional units concerned with the domestic water supply problems participating. The participating parties were the City of Pullman, Washington State University, the City of Moscow, Idaho, and the University of Idaho. From these meetings agreement was developed and endorsed by all four parties on the following points:

6. A non-profit corporate entity, owned by the four parties to construct and operate the system, should be developed.

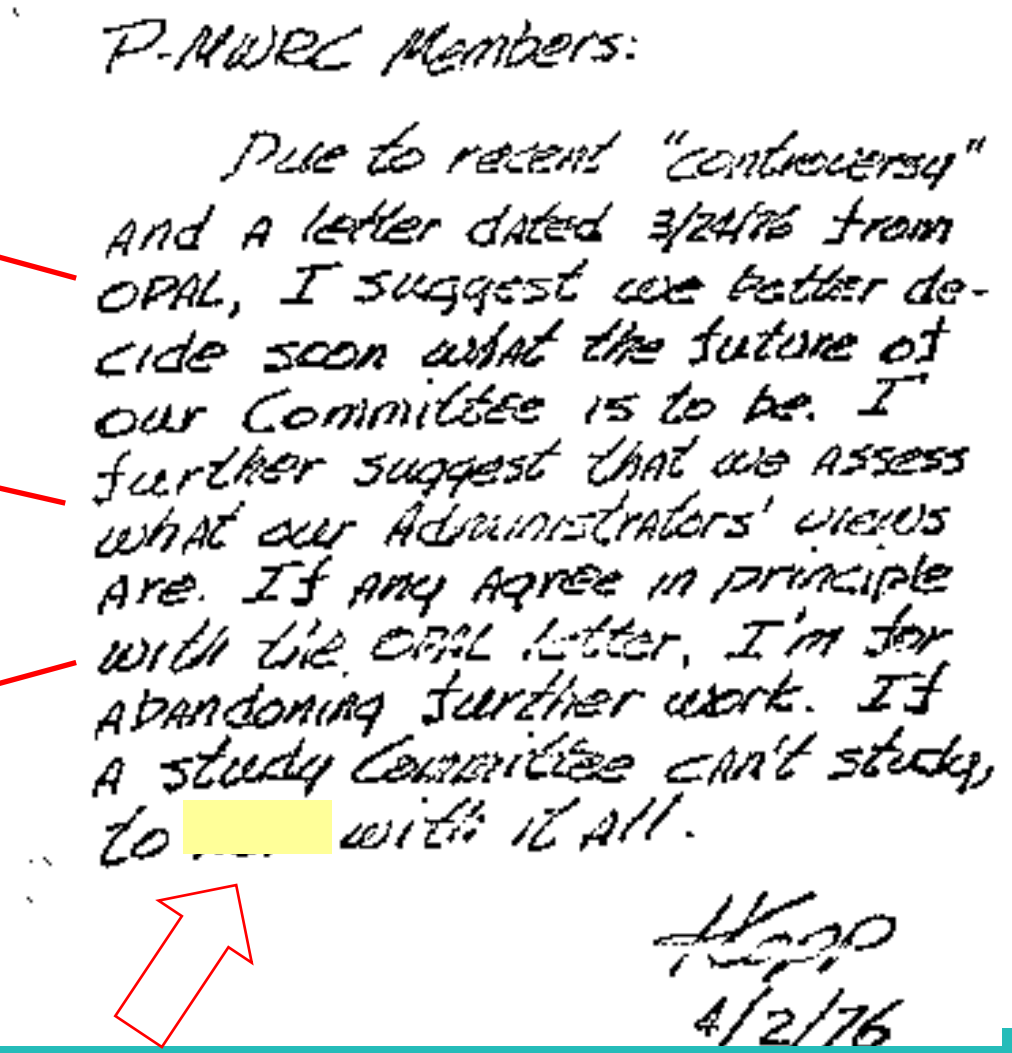
7. Enabling legislation in both Idaho and Washington, would be necessary, and should be developed for consideration at the 1969 legislature.

PMWRC Becomes Inactive (1976)

I suggest we better decide soon what the future of our Committee is to be.

. . . assess what our Administrators' views are

If any agree in principle with the OPAL letter, I'm for abandoning further work.



P-MWRC Members:

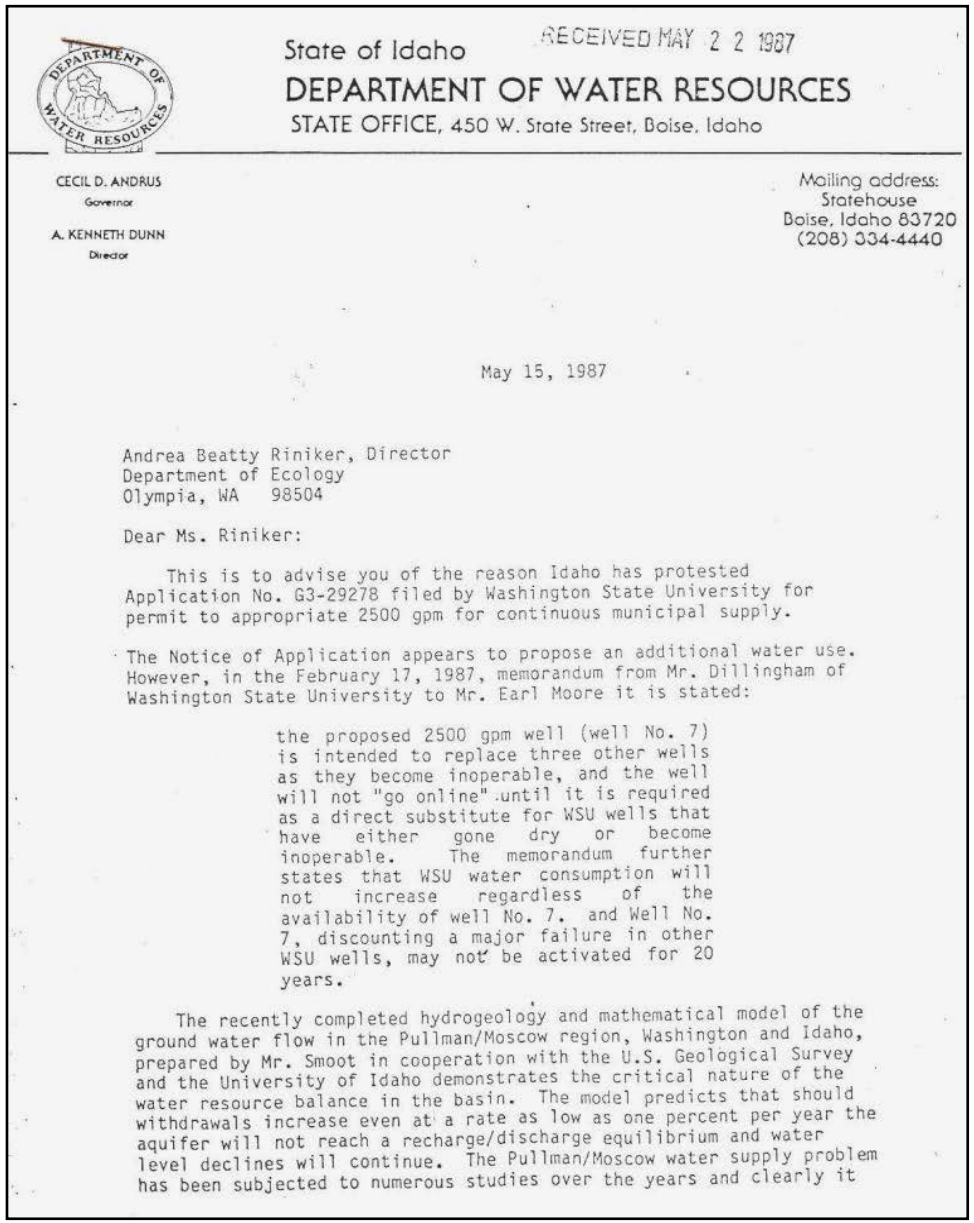
Due to recent "controversy" and a letter dated 3/24/76 from OPAL, I suggest we better decide soon what the future of our Committee is to be. I further suggest that we assess what our Administrators' views are. If any agree in principle with the OPAL letter, I'm for abandoning further work. If a study committee can't study, to [redacted] with it all.

4/2/76

IDWR Letter to WDOE - 1987

This is to advise you of the reason Idaho has protested Application . . . filed by Washington State University . . .

The model predicts that should withdrawals increase even at a rate as low as one percent per year the aquifer will not reach a recharge/discharge equilibrium and water level declines will continue . . .



State of Idaho
DEPARTMENT OF WATER RESOURCES
STATE OFFICE, 450 W. State Street, Boise, Idaho

RECEIVED MAY 2 2 1987

CECIL D. ANDRUS
Governor

A. KENNETH DUNN
Director

Mailing address:
Statehouse
Boise, Idaho 83720
(208) 334-4440

May 15, 1987

Andrea Beatty Riniker, Director
Department of Ecology
Olympia, WA 98504

Dear Ms. Riniker:

This is to advise you of the reason Idaho has protested Application No. G3-29278 filed by Washington State University for permit to appropriate 2500 gpm for continuous municipal supply.

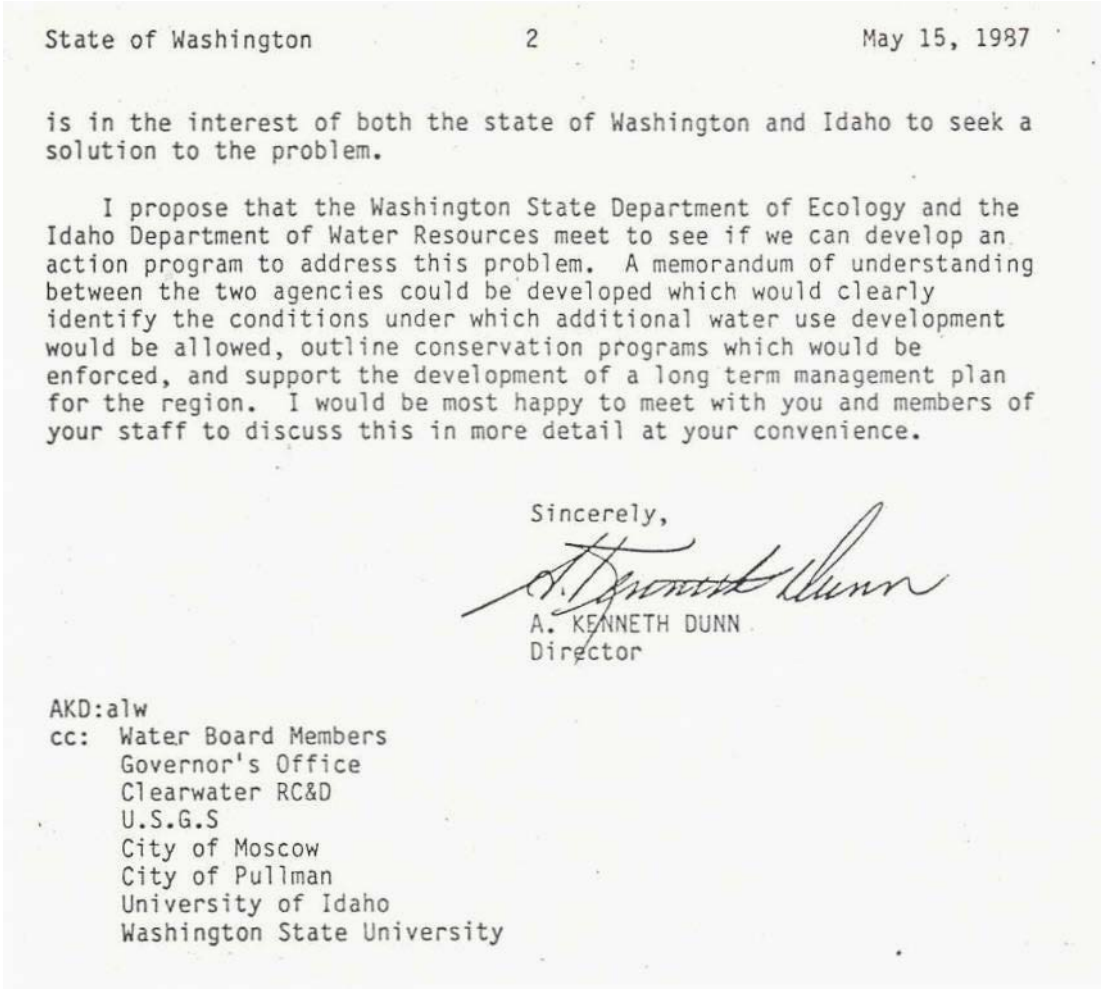
The Notice of Application appears to propose an additional water use. However, in the February 17, 1987, memorandum from Mr. Dillingham of Washington State University to Mr. Earl Moore it is stated:

> the proposed 2500 gpm well (well No. 7) is intended to replace three other wells as they become inoperable, and the well will not "go online" until it is required as a direct substitute for WSU wells that have either gone dry or become inoperable. The memorandum further states that WSU water consumption will not increase regardless of the availability of well No. 7. and Well No. 7, discounting a major failure in other WSU wells, may not be activated for 20 years.

The recently completed hydrogeology and mathematical model of the ground water flow in the Pullman/Moscow region, Washington and Idaho, prepared by Mr. Smoot in cooperation with the U.S. Geological Survey and the University of Idaho demonstrates the critical nature of the water resource balance in the basin. The model predicts that should withdrawals increase even at a rate as low as one percent per year the aquifer will not reach a recharge/discharge equilibrium and water level declines will continue. The Pullman/Moscow water supply problem has been subjected to numerous studies over the years and clearly it

IDWR Letter to WDOE - 1987

I propose . . . meet. A memorandum of understanding between the two agencies could be developed which would clearly identify the conditions under which additional water use development would be allowed, outline conservation programs which would be enforced, and support the development of a long term management plan for the region



State of Washington 2 May 15, 1987

is in the interest of both the state of Washington and Idaho to seek a solution to the problem.

I propose that the Washington State Department of Ecology and the Idaho Department of Water Resources meet to see if we can develop an action program to address this problem. A memorandum of understanding between the two agencies could be developed which would clearly identify the conditions under which additional water use development would be allowed, outline conservation programs which would be enforced, and support the development of a long term management plan for the region. I would be most happy to meet with you and members of your staff to discuss this in more detail at your convenience.

Sincerely,

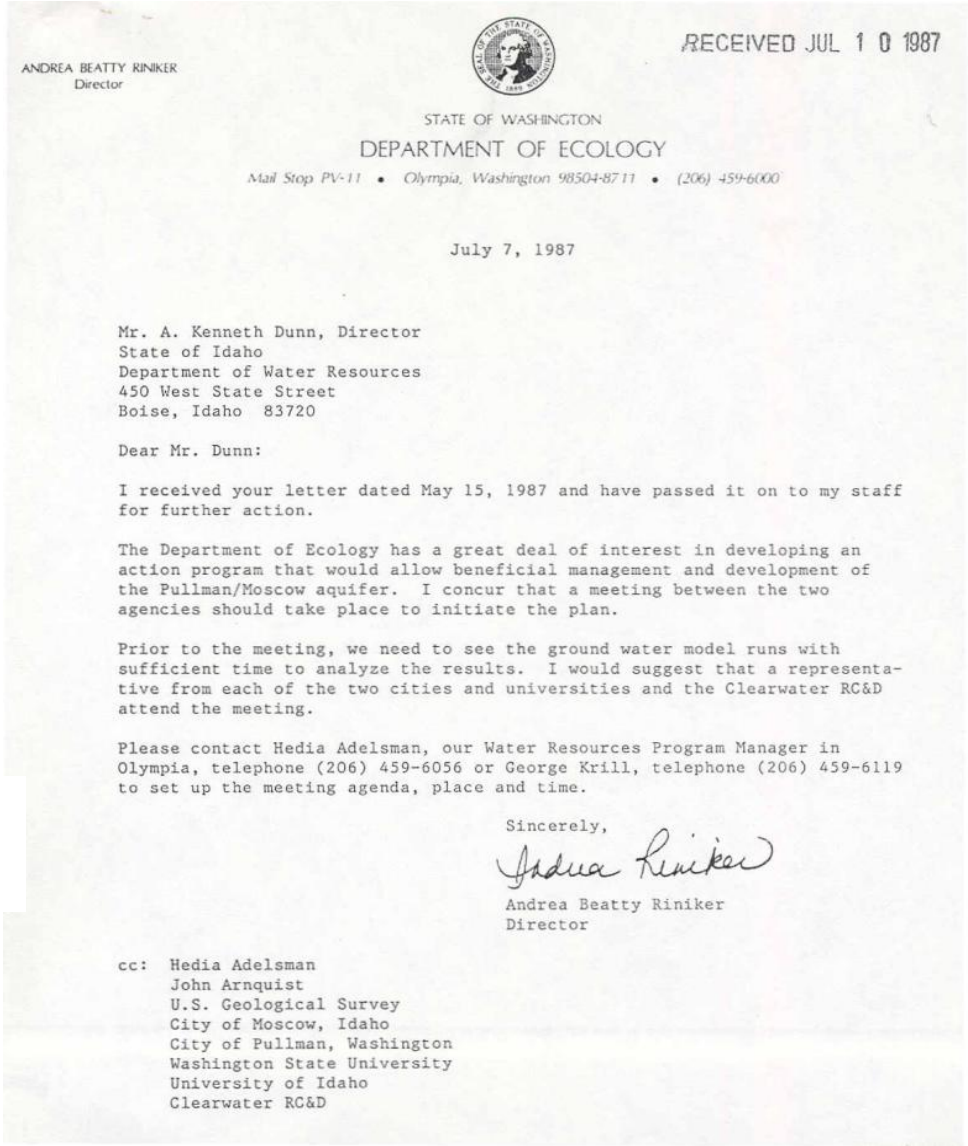
A. KENNETH DUNN
Director

AKD:alw
cc: Water Board Members
Governor's Office
Clearwater RC&D
U.S.G.S
City of Moscow
City of Pullman
University of Idaho
Washington State University

WDOE Response to IDWR Letter - 1987

The Department of Ecology has a great deal of interest. I concur that a meeting between the two agencies should take place to initiate the plan.

I would suggest that a representative from each of the two cities and universities . . . attend the meeting.



ANDREA BEATTY RINIKER
Director

RECEIVED JUL 1 0 1987

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Mail Stop PV-11 • Olympia, Washington 98504-8711 • (206) 459-6000

July 7, 1987

Mr. A. Kenneth Dunn, Director
State of Idaho
Department of Water Resources
450 West State Street
Boise, Idaho 83720

Dear Mr. Dunn:

I received your letter dated May 15, 1987 and have passed it on to my staff for further action.

The Department of Ecology has a great deal of interest in developing an action program that would allow beneficial management and development of the Pullman/Moscow aquifer. I concur that a meeting between the two agencies should take place to initiate the plan.

Prior to the meeting, we need to see the ground water model runs with sufficient time to analyze the results. I would suggest that a representative from each of the two cities and universities and the Clearwater RC&D attend the meeting.

Please contact Hedia Adelsman, our Water Resources Program Manager in Olympia, telephone (206) 459-6056 or George Krill, telephone (206) 459-6119 to set up the meeting agenda, place and time.

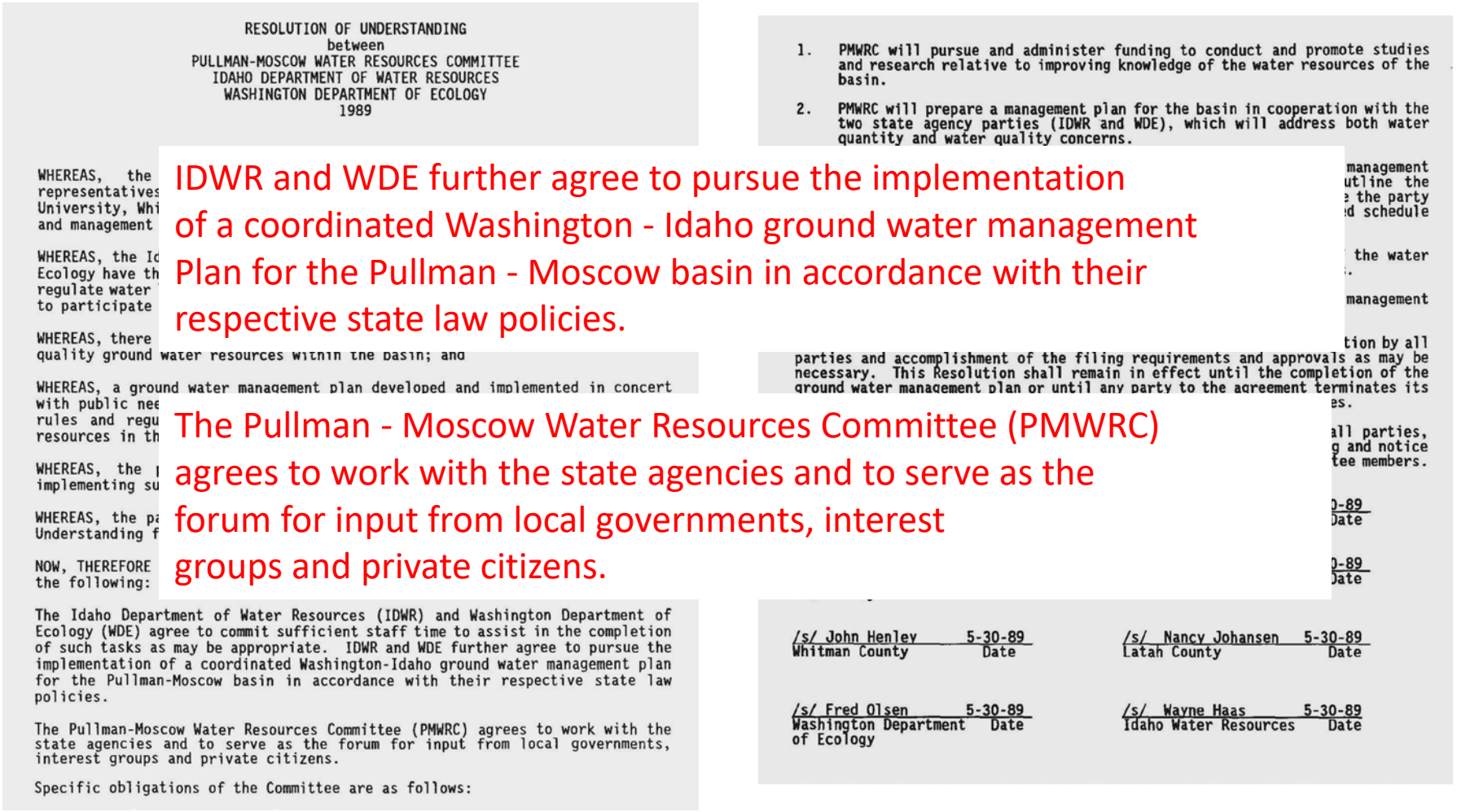
Sincerely,

Andrea Riniker

Andrea Beatty Riniker
Director

cc: Hedia Adelsman
John Arnquist
U.S. Geological Survey
City of Moscow, Idaho
City of Pullman, Washington
Washington State University
University of Idaho
Clearwater RC&D

Resolution of Understanding (PMWRC, IDWR, WDOE) - 1989



RESOLUTION OF UNDERSTANDING
between
PULLMAN-MOSCOW WATER RESOURCES COMMITTEE
IDAHO DEPARTMENT OF WATER RESOURCES
WASHINGTON DEPARTMENT OF ECOLOGY
1989

WHEREAS, the
representatives
University, Whi
and management

WHEREAS, the Id
Ecology have th
regulate water
to participate

WHEREAS, there
quality ground water resources within the basin; and

WHEREAS, a ground water management plan developed and implemented in concert
with public nee
rules and regu
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implementing su

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Understanding f

NOW, THEREFORE
the following:

The Idaho Department of Water Resources (IDWR) and Washington Department of Ecology (WDE) agree to commit sufficient staff time to assist in the completion of such tasks as may be appropriate. IDWR and WDE further agree to pursue the implementation of a coordinated Washington-Idaho ground water management plan for the Pullman-Moscow basin in accordance with their respective state law policies.

The Pullman-Moscow Water Resources Committee (PMWRC) agrees to work with the state agencies and to serve as the forum for input from local governments, interest groups and private citizens.

Specific obligations of the Committee are as follows:

1. PMWRC will pursue and administer funding to conduct and promote studies and research relative to improving knowledge of the water resources of the basin.

2. PMWRC will prepare a management plan for the basin in cooperation with the two state agency parties (IDWR and WDE), which will address both water quantity and water quality concerns.

management
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management

tion by all
parties and accomplishment of the filing requirements and approvals as may be necessary. This Resolution shall remain in effect until the completion of the ground water management plan or until any party to the agreement terminates its
es.

all parties,
g and notice
tee members.

0-89
Date

0-89
Date

/s/ John Henley 5-30-89
Whitman County Date

/s/ Nancy Johansen 5-30-89
Latah County Date

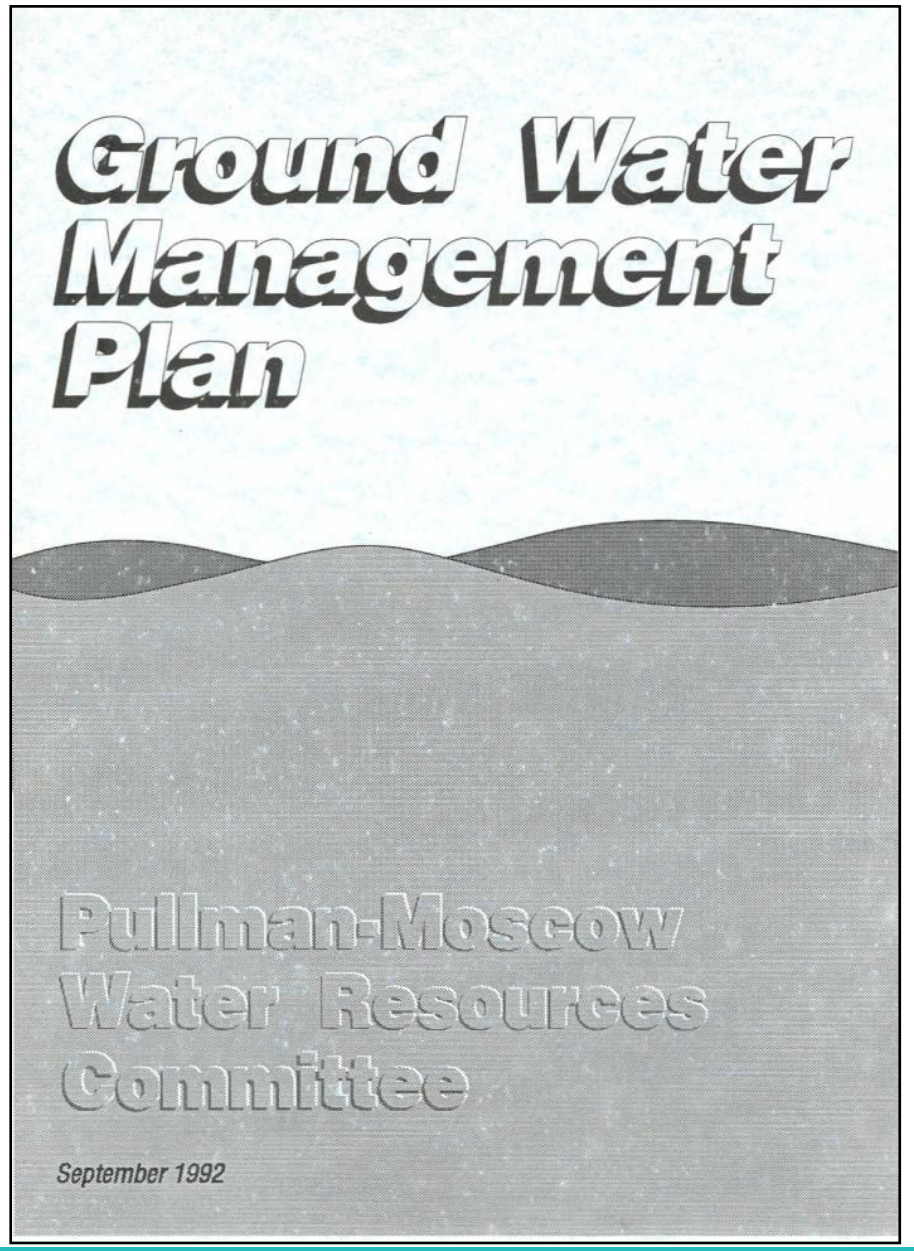
/s/ Fred Olsen 5-30-89
Washington Department Date
of Ecology

/s/ Wayne Haas 5-30-89
Idaho Water Resources Date

IDWR and WDE further agree to pursue the implementation of a coordinated Washington - Idaho ground water management Plan for the Pullman - Moscow basin in accordance with their respective state law policies.

The Pullman - Moscow Water Resources Committee (PMWRC) agrees to work with the state agencies and to serve as the forum for input from local governments, interest groups and private citizens.

Ground Water Management Plan - 1992



- GOAL -

- **TO PROVIDE FOR FUTURE BENEFICIAL USE OF THE BASIN GROUND WATER WITHOUT DEPLETING THE BASIN AQUIFERS WHILE PROTECTING THE QUALITY OF THE WATER.**

The primary goal is to insure that a stable ground water level is maintained in the **BASIN** aquifers. The **COMMITTEE** adopts the standard that the two universities and the two cities shall attempt to limit their annual aquifer pumping increases to one percent (1.0%) of their pumping volume based on a five (5) year moving average starting with 1986. At no time shall the accumulated total pumping exceed 125% of the 1981-1985 average for the two universities and the two cities. These initial limits on pumping rates are based upon historical data and water levels predicted by the **MODEL**. An estimate of the dispersed county pumping will be made based on an average per capita use for all county residences within the **BASIN** boundaries. Latah and Whitman counties will attempt to limit pumping increases from the **BASIN** aquifers to 125% of the estimated 1990 pumping levels. Further refinement of the **MODEL** will be necessary to establish acceptable limits on long term pumping rates which will confirm a stable water level for future users. The **COMMITTEE** will update the **MODEL** periodically and

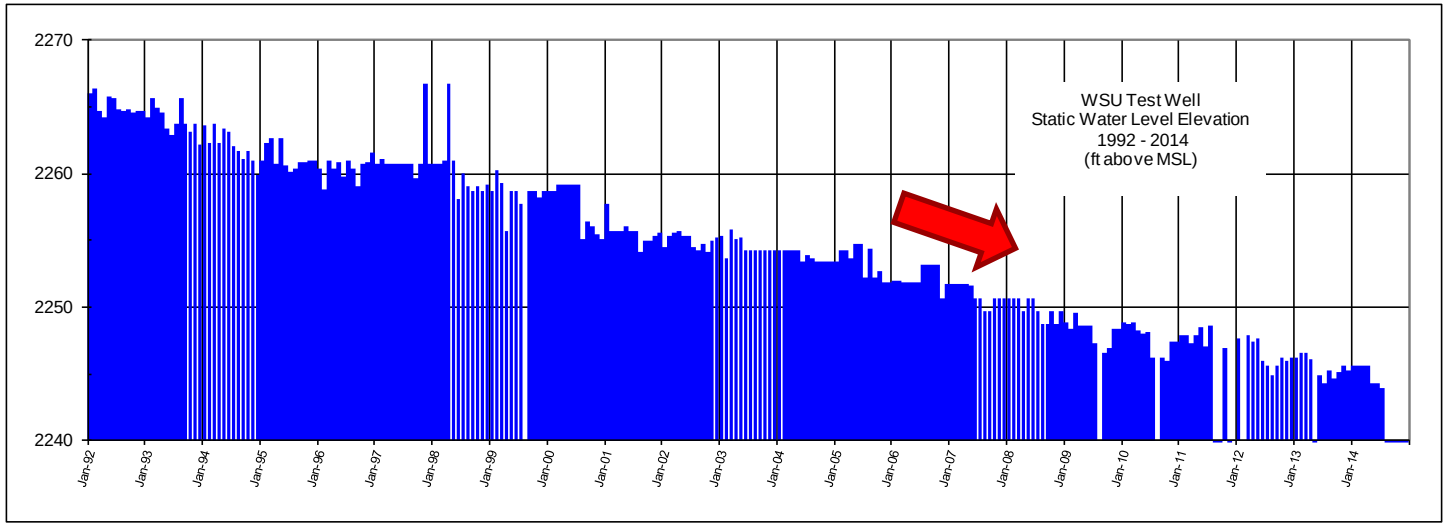
Ground Water Management Plan – Chapter 6 - 2011 Mission and Goals

- **Mission: To ensure a long-term, quality water supply for the Palouse Basin region.**

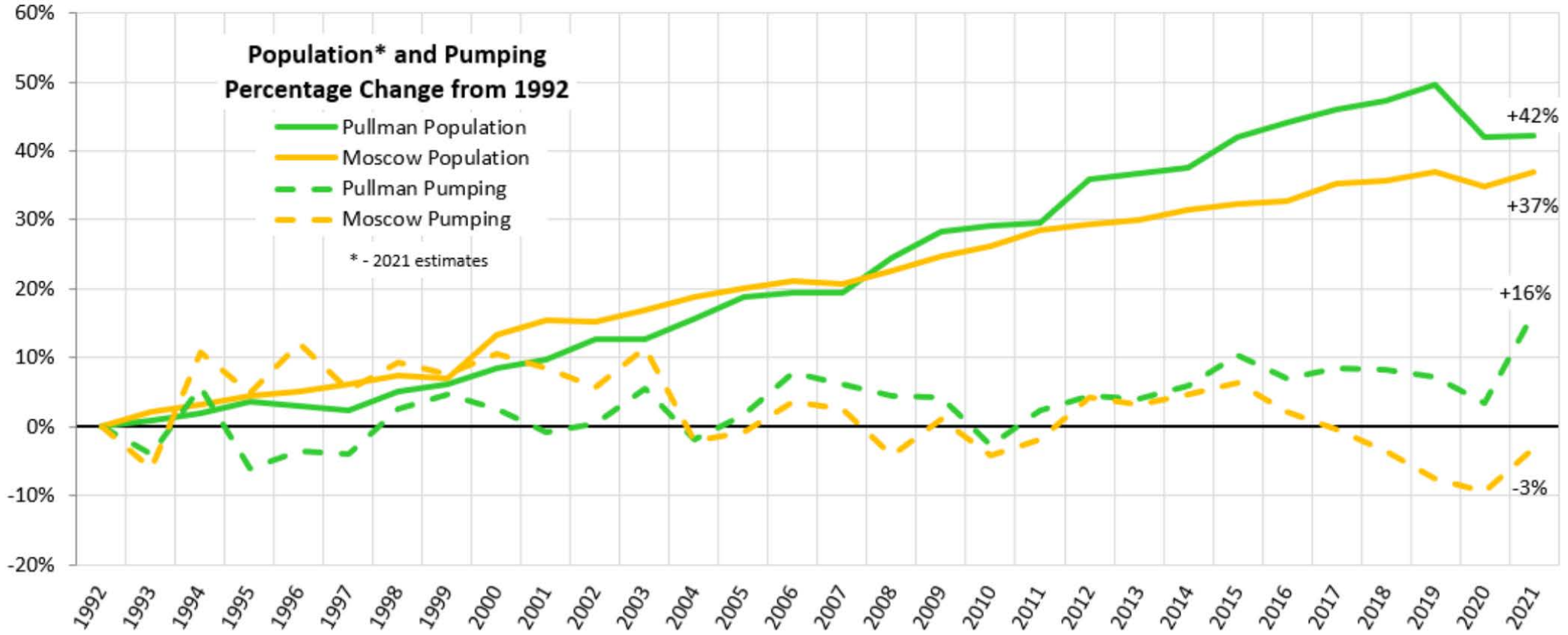
- **Consistent with the Palouse Basin Groundwater Management Plan, develop and Implement a balanced basin wide Water Supply and Use Program by 2025.**

- **Create and maintain an action plan for aquifer system sustainability, enhancement and/or alternate water supply development.**

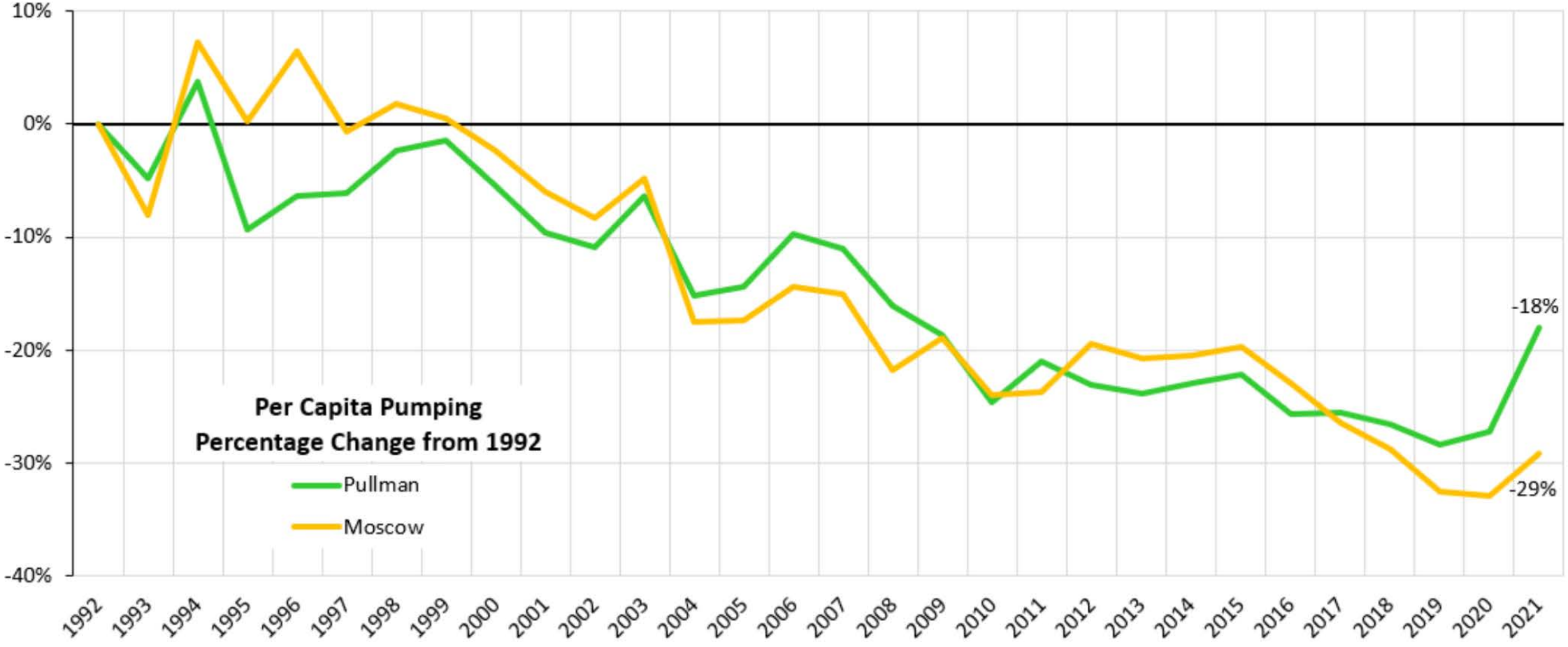
- **Direct research and implement pilot projects necessary to understand the basin hydrogeology in a manner sufficient to support the Water Supply and Use Program and the affiliated supply projects.**



Pop & Pumping % Change from 1992

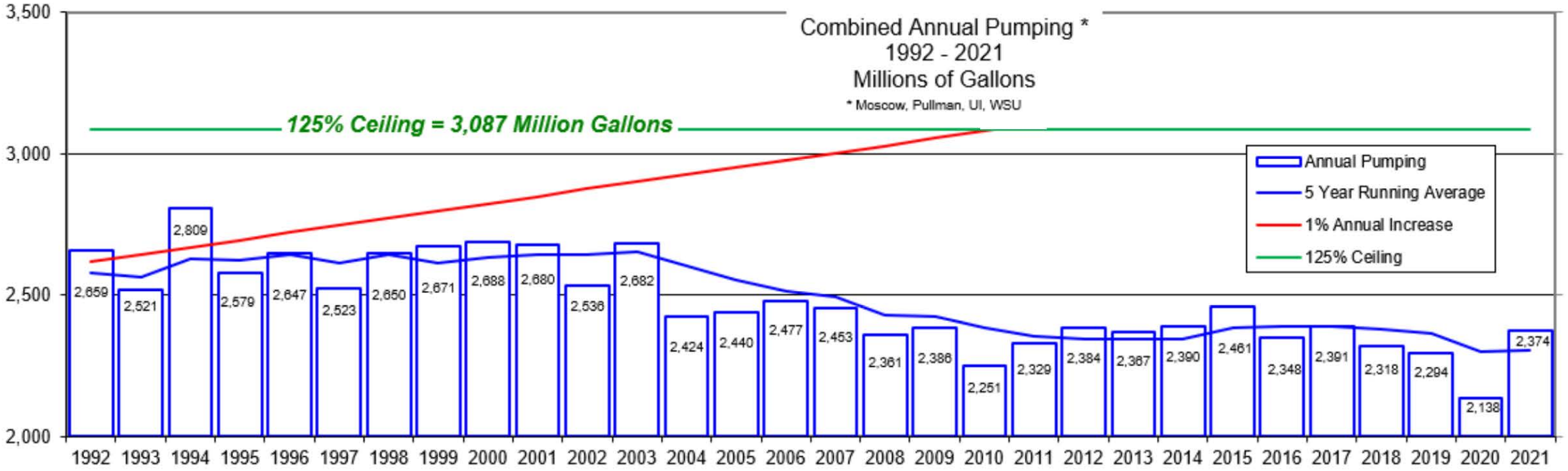


Per Capita Pumping % Change from 1992



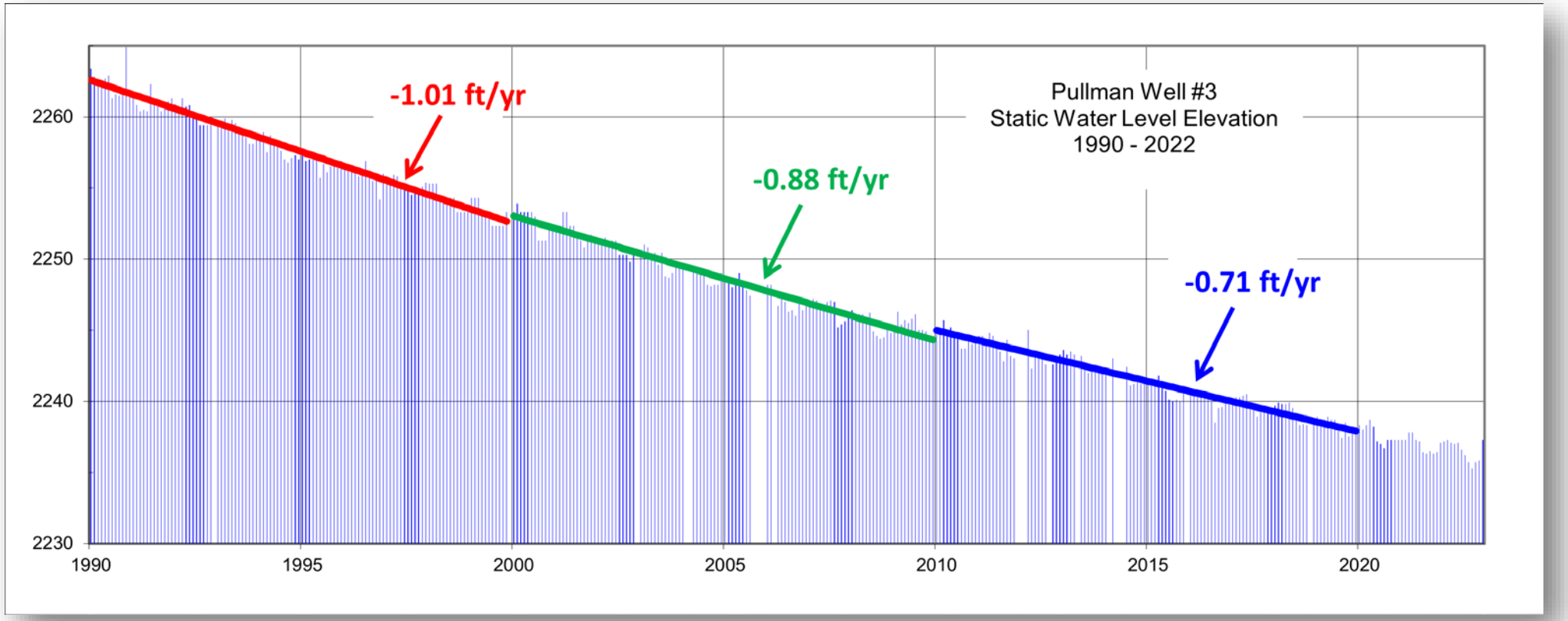
PALOUSE BASIN AQUIFER committee

Combined Annual Pumping – 1992-2021



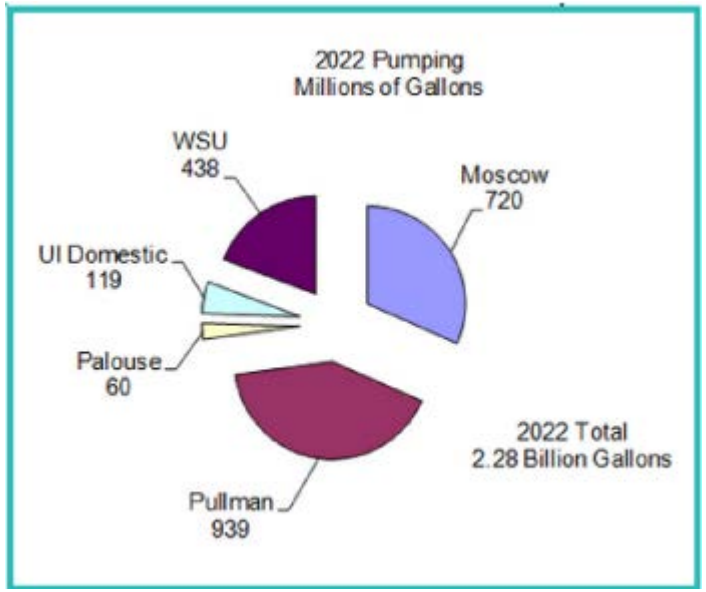
PALOUSE BASIN AQUIFER committee

Annual Water Levels (1990-2022)

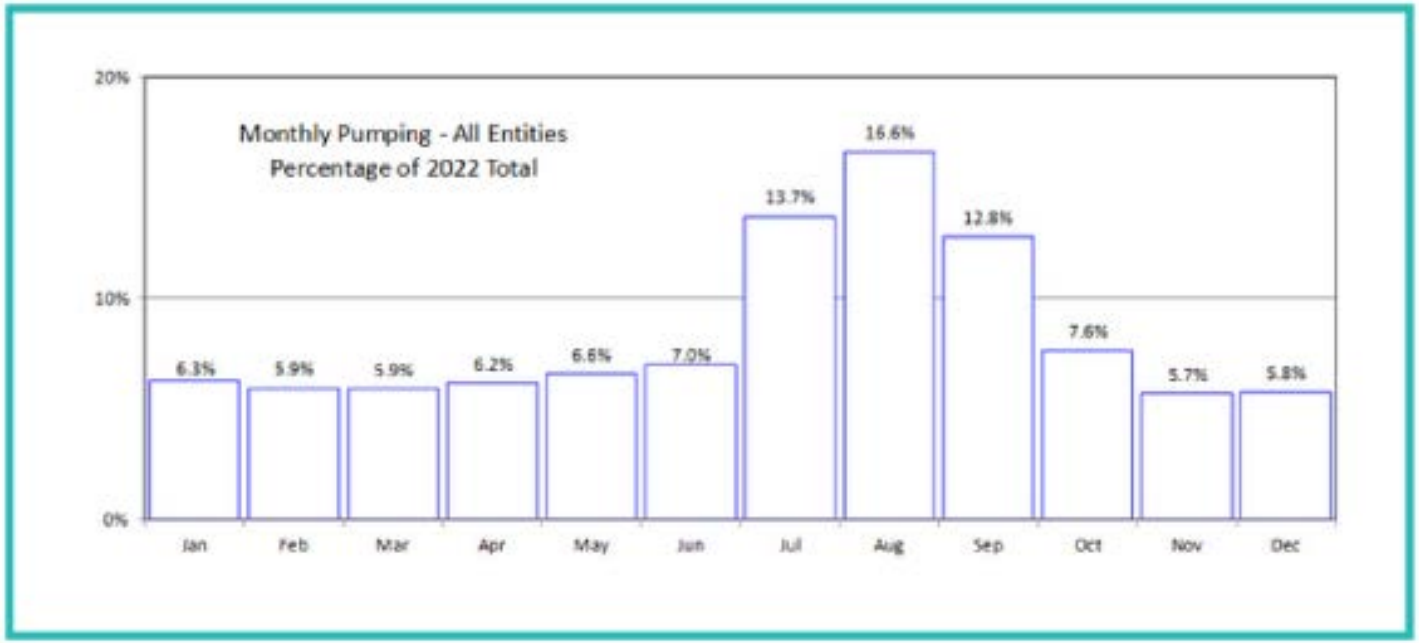


In 2022, approx. 2.28 billion gallons of water pumped

2022 GROUNDWATER USAGE

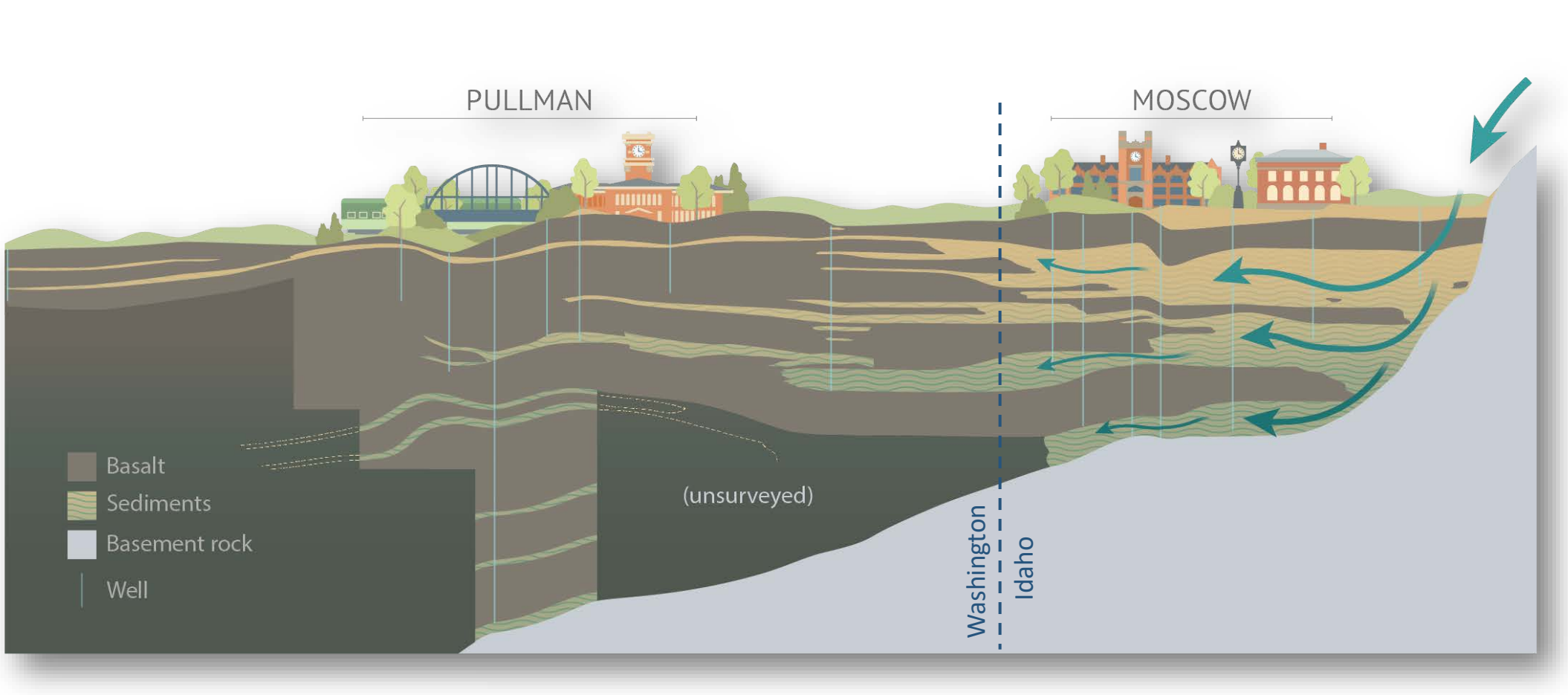


The total combined groundwater pumped by the cities (Pullman, Moscow, and Palouse) and the universities (WSU and UI) for the year 2022 was 2.28 billion gallons. In aggregate, this was 6% less than was pumped in 2021 (2.48 billion gallons), and 17% less than was pumped in 1992 (2.74 billion gallons), the first year the GWMP took effect.

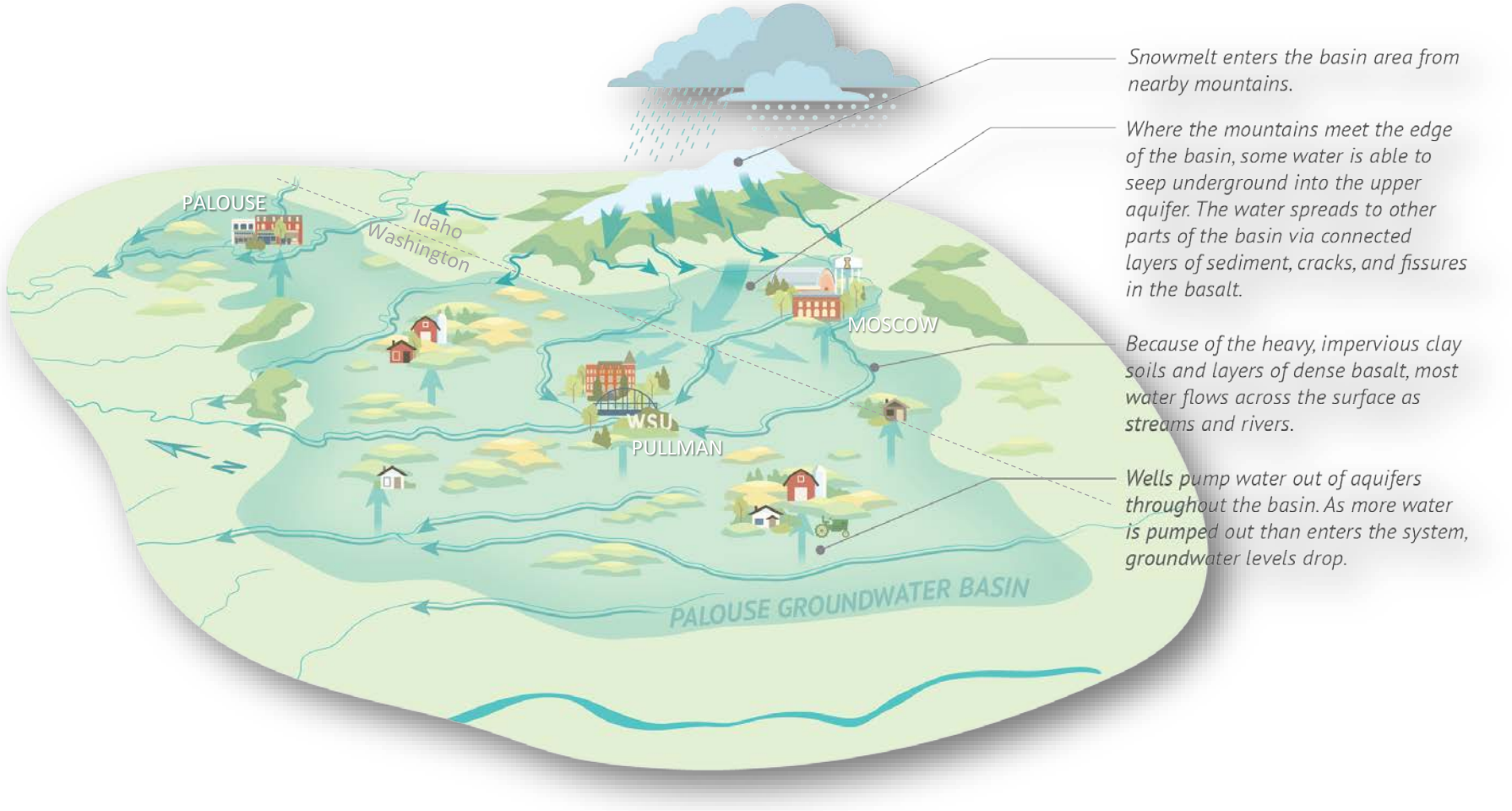


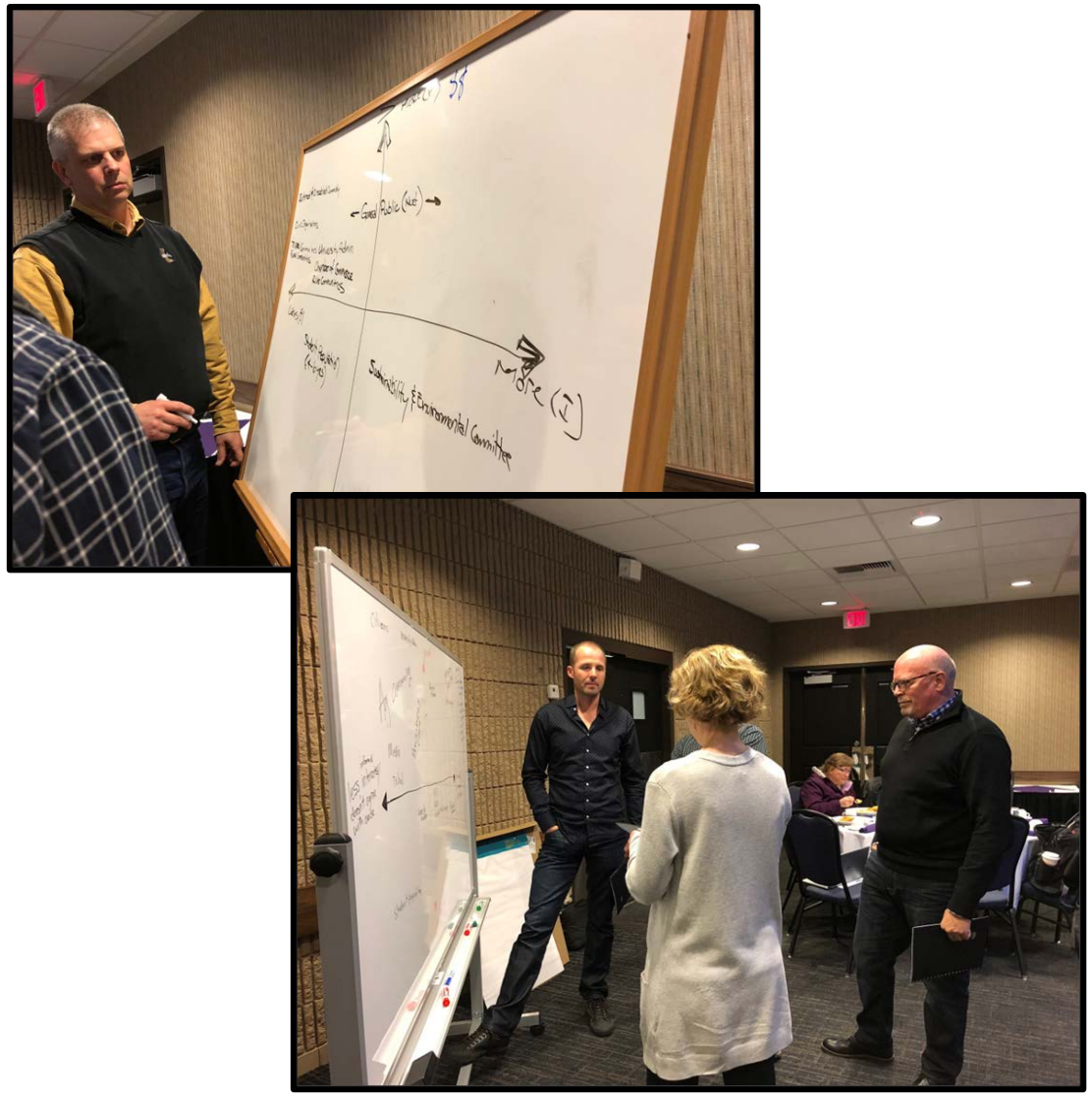
PALOUSE BASIN AQUIFER committee

Geologic Cross Section of the Basin



Water Cycle of the Palouse Groundwater Basin





What to Do?

- **Use Less**
  - Inside
  - Outside
- **Reuse Some**
- **Find More**
- **Collaborate**
- **Communicate**

Palouse Basin Water Supply Project

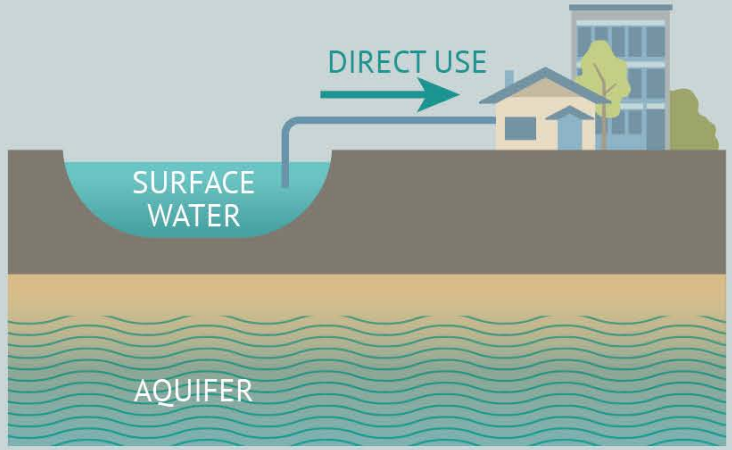
- The region's target need is **2,324 million gallons per year**
  - Calculated using historical water use data and anticipated population growth over 50 years
  - With a goal of aquifer stabilization (i.e., water levels no longer dropping and an aquifer in recovery)

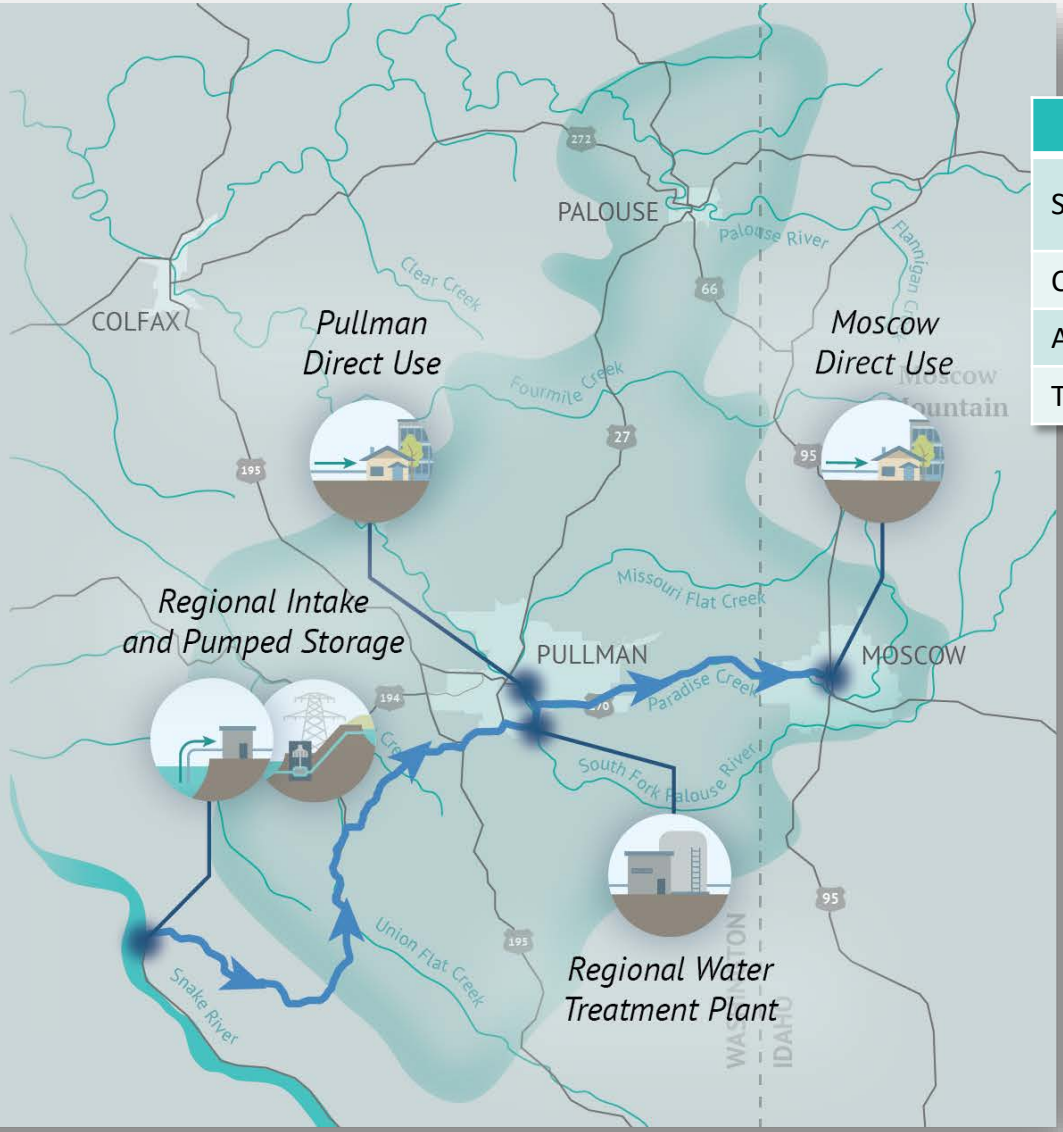
- PBAC is in the discovery phase for selecting an alternative water supply project.
  - In 2022, a consultant generated recommendations for 5 different projects. They analyzed:
    - what percentage of the target need would be supplied with each project,
    - the capital costs for build out
    - the capital costs for annual operating and maintenance costs
    - projected the timeline for implementation

Alternative 1

Direct Use of the Snake River:
Surface water would be diverted from the Snake River and conveyed to a new regional water treatment plant. There it would be treated and conveyed into the existing municipal water system for Pullman and WSU. An additional pipeline would allow treated water to be conveyed to Idaho into the existing municipal system for Moscow and UI.

Due to the topography change from the Snake River to the Palouse region, the potential for an off-channel pumped storage reservoir and hydropower facility would be considered to help offset costs and create additional power for the region.



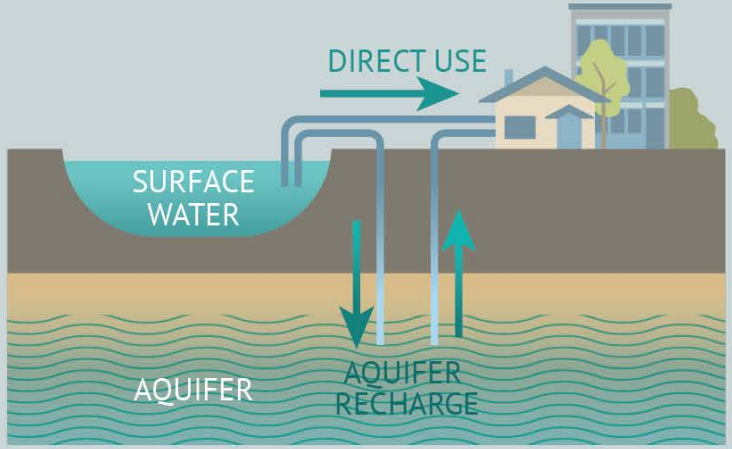


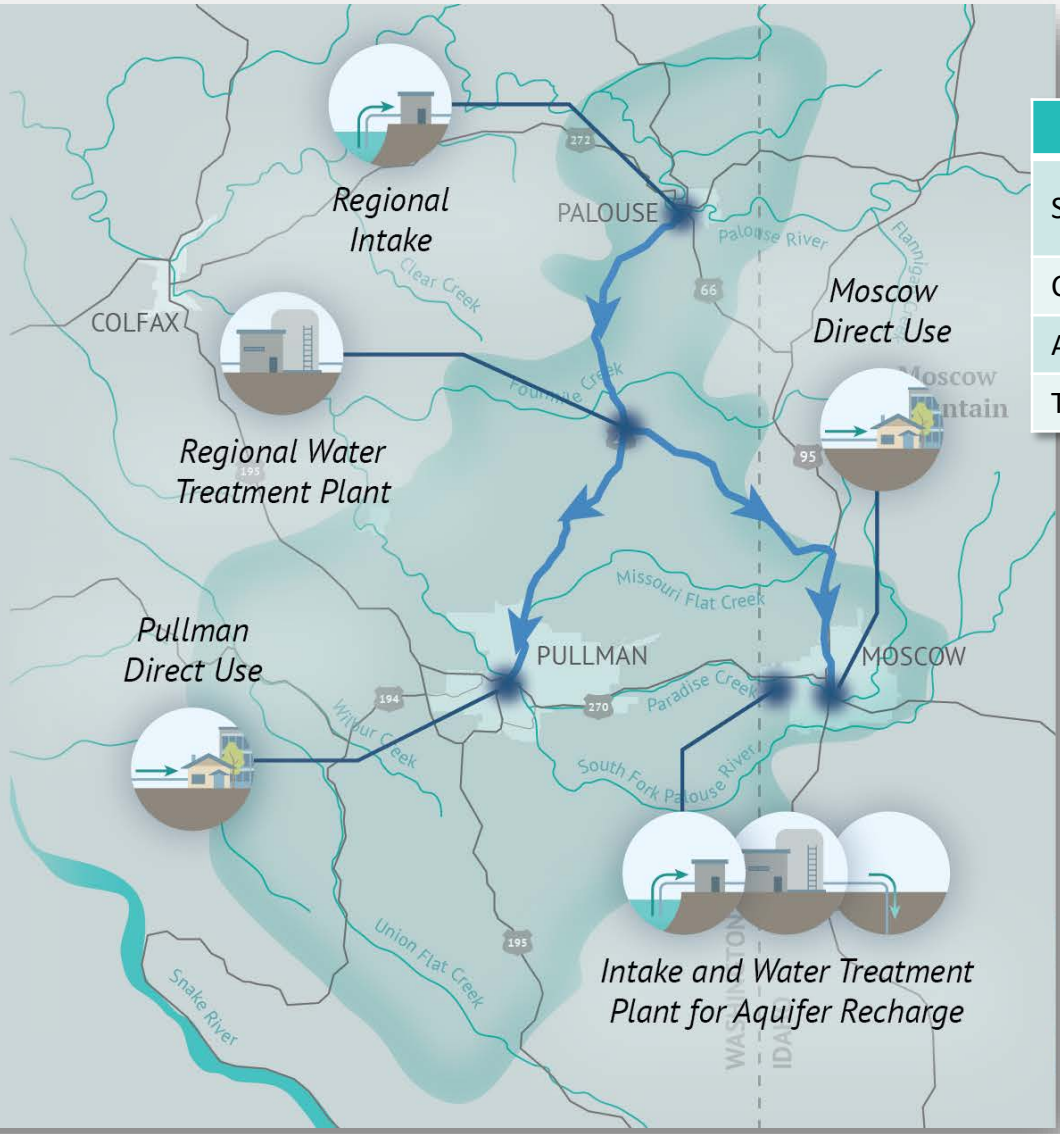
ALTERNATIVE 1	
Supply:	1,967 MGY (85% of target)
Capital Cost:	$109,851,689
Annual O&M:	$6,044,000
Timeline:	12 years

Alternative 2

Direct Use of the North Fork of the Palouse River:
Surface water would be diverted from the North Fork of the Palouse River near Palouse and conveyed to a new regional treatment plant. There it would be treated and conveyed into the existing municipal water system for Pullman and WSU. An additional pipeline would allow treated water to be conveyed to Idaho into the existing municipal system for Moscow and UI.

Aquifer Recharge from the South Fork of the Palouse River or Paradise Creek:
Surface water would be diverted from the South Fork of the Palouse River or Paradise Creek, treated, and injected into the aquifer system via recharge wells.



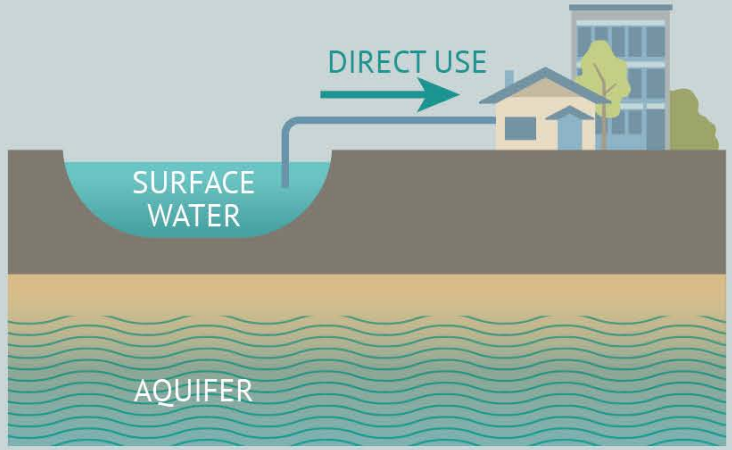


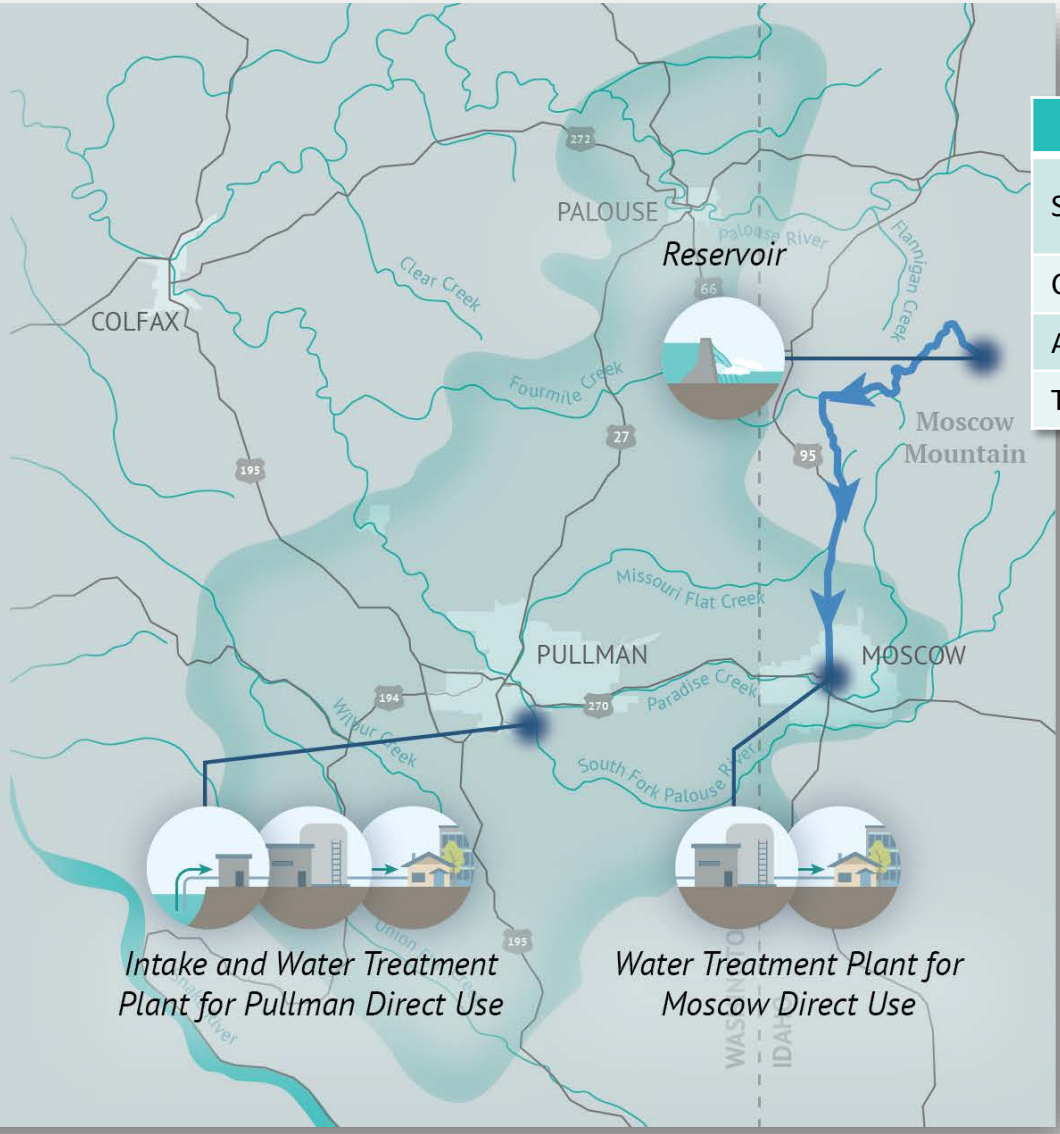
ALTERNATIVE 2	
Supply:	1,908 MGY (82% of target)
Capital Cost:	$76,987,615
Annual O&M:	$2,447,000
Timeline:	12 years

Alternative 3

Direct Use of Flannigan Creek:
Surface water from Flannigan Creek would be stored behind a new reservoir. Water would be pumped to Moscow to be treated and conveyed into the existing municipal water system for Moscow and UI.

Direct Use of the South Fork of the Palouse River:
Surface water would be diverted from the South Fork of the Palouse River, treated, and conveyed into the existing municipal water system for Pullman and WSU.





ALTERNATIVE 3	
Supply:	2,324 MGY (100% of target)
Capital Cost:	$105,016,244
Annual O&M:	$4,016,000
Timeline:	11 years

PALOUSE BASIN AQUIFER committee

Alternative 4

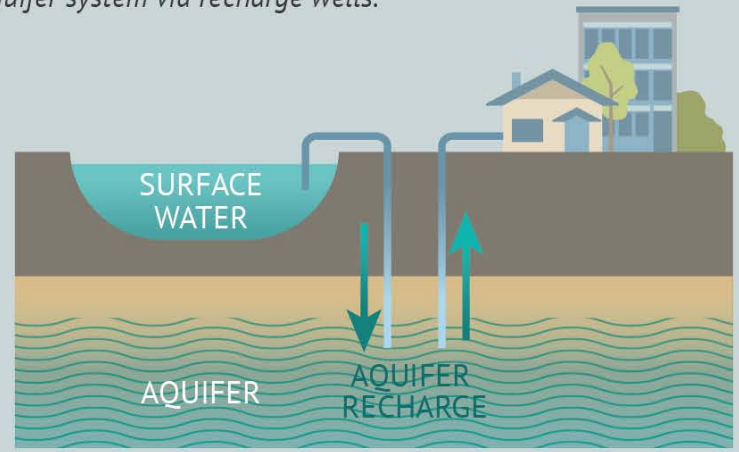
Aquifer Recharge from the South Fork of the Palouse River:
Surface water would be diverted from the South Fork of the Palouse River in Pullman, treated, and injected into the aquifer system via recharge wells.

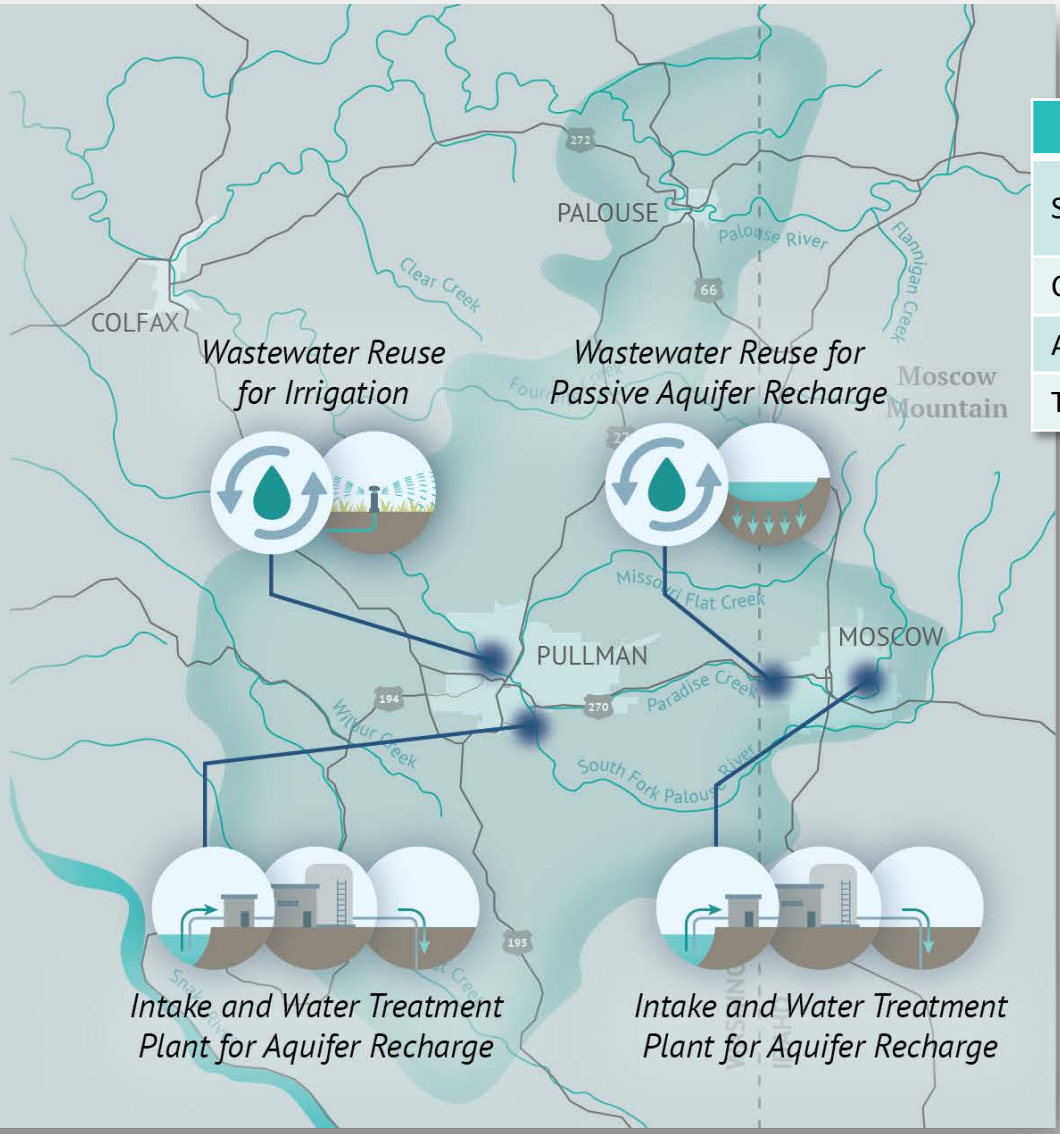
Aquifer Recharge from Paradise Creek:
Surface water would be diverted from Paradise Creek in Moscow, treated, and injected into the aquifer system via recharge wells.

Pullman Wastewater Reuse:
Using treated wastewater for irrigation in Pullman.

Moscow Wastewater Reuse:
Using treated wastewater for passive aquifer recharge in Moscow.

Additional Water Conservation:
Implementing conservation measures resulting in 15% less water than currently being used.





ALTERNATIVE 4	
Supply:	1,893 MGY (81% of target)
Capital Cost:	$121,322,206*
Annual O&M:	$1,838,000
Timeline:	12 years

Paradise/South Fork Direct Use:

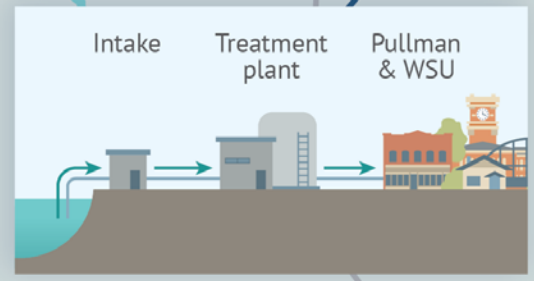
This project involves diverting water from Paradise Creek and the South Fork of the Palouse River to supply the communities of Moscow and Pullman. New facilities will collect and treat the water before directing it into existing city water systems. In addition to these direct use projects, additional conservation measures will be implemented with a goal to use 15% less water than currently being used.

PULLMAN

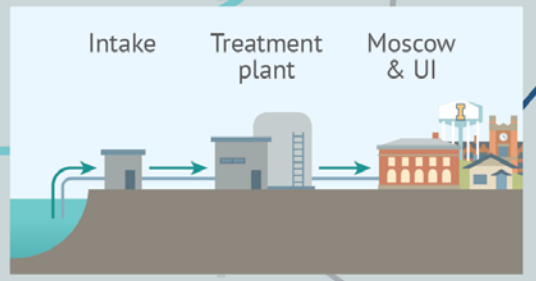
MOSCOW

Paradise Creek

South Fork Palouse River



Direct Use of the South Fork of the Palouse River
Surface water would be diverted from the South Fork of the Palouse River, treated, and then conveyed into the existing municipal water system for Pullman and WSU.



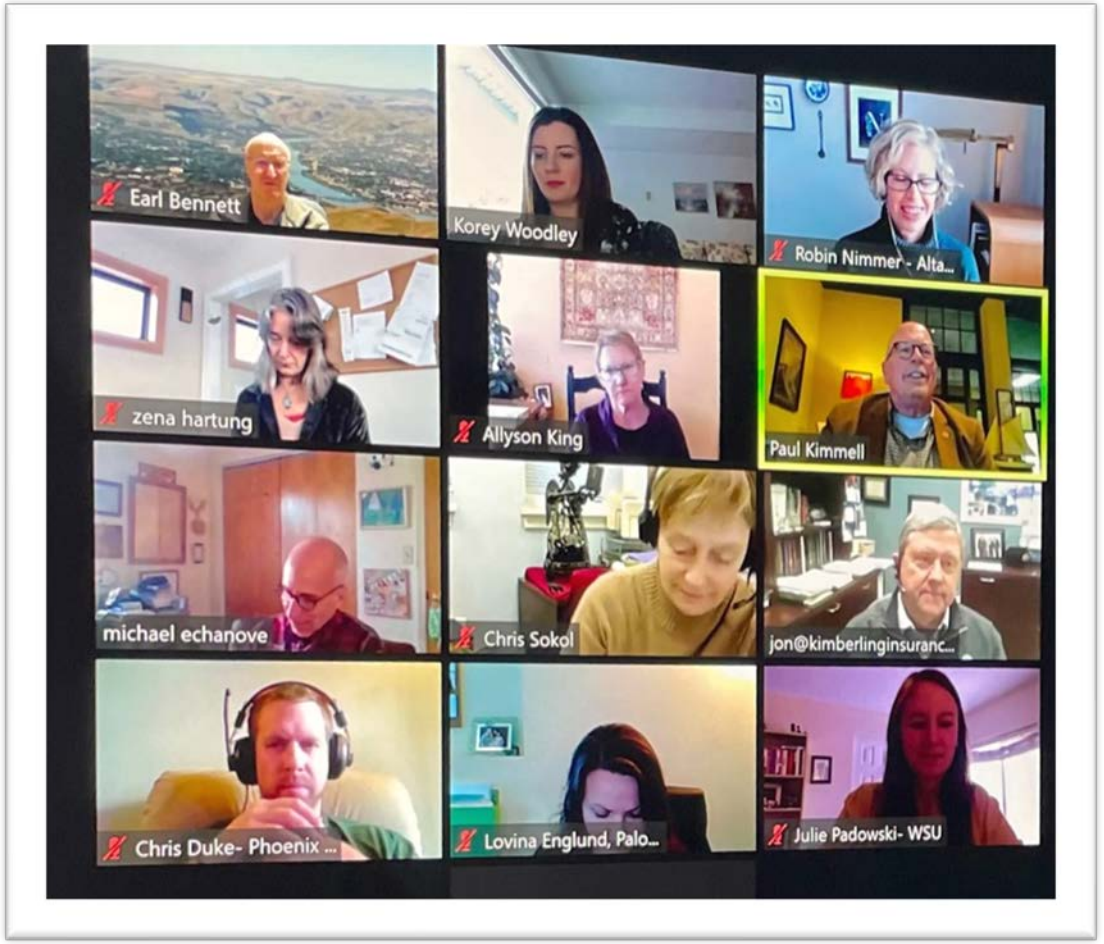
Direct Use of Paradise Creek
Surface water would be diverted from Paradise Creek, treated, and then conveyed into the existing municipal water system for Moscow and UI.

ALTERNATIVE 5	
Supply:	1,861 MG (80% of target)
Capital Cost:	$73,767,727*
Annual O&M:	$1,637,000
Timeline:	12 years

Stakeholder Engagement Group (SEG) Launched 2021

Mission: to provide input to PBAC through dialogue among a broad range of interested parties focusing on the four water supply alternatives and associated engineering and environmental evaluations and analyses, research activities, and public involvement.

- Build community awareness and understanding of the Palouse Basin's groundwater supply
- Engage the community and build public support of and involvement in PBAC's mission to ensure a quality, long-term water supply
- Strengthen PBAC's reputation and credibility as the Palouse Basin groundwater authority



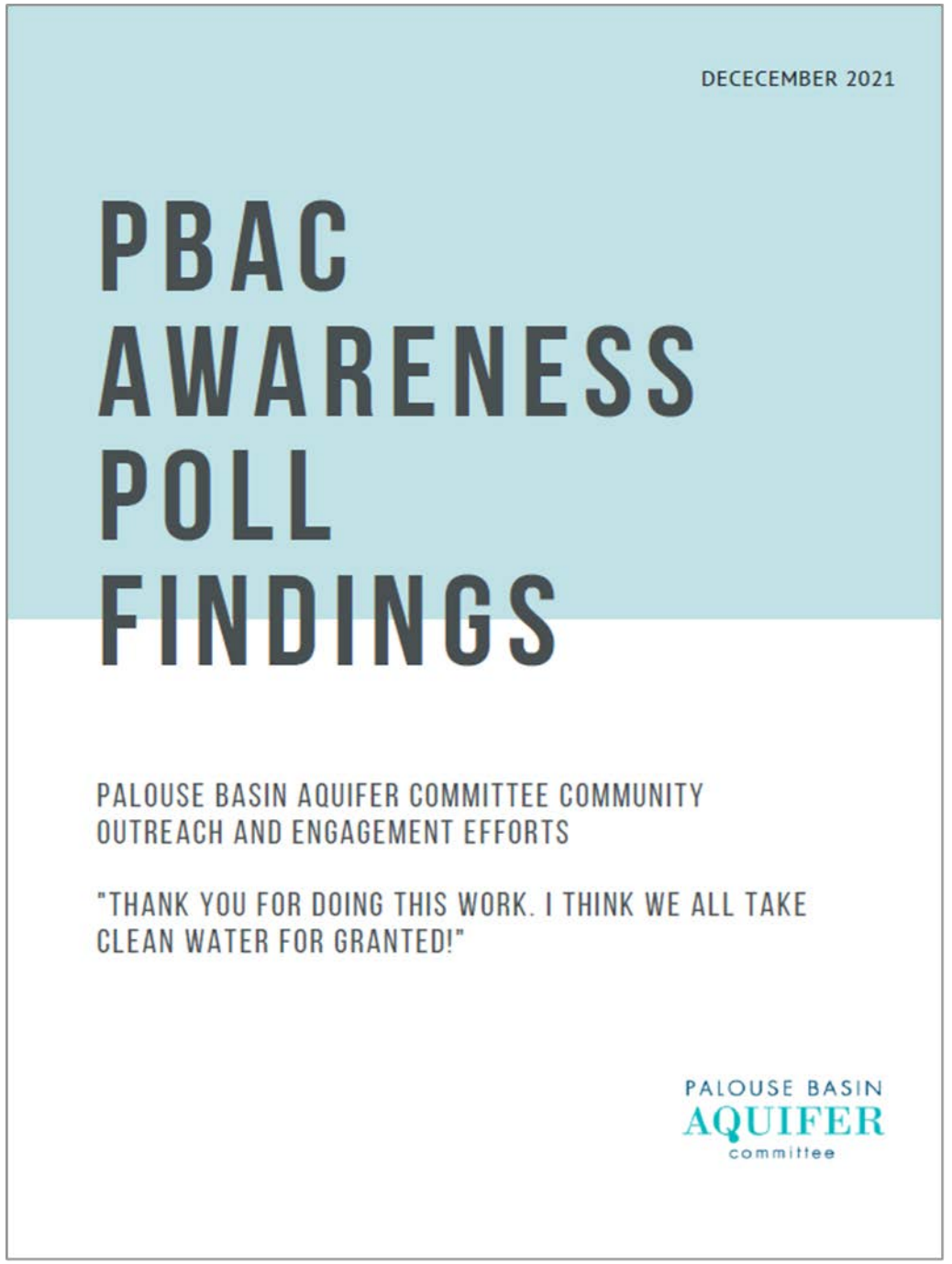
PBAC Community Awareness Poll

Gain understanding of public knowledge of our aquifers and water conservation

Better understand how residents access information on water matters

How we can shape messaging and effectively use social media

Increase community engagement through PBAC's "Conserve, Stabilize and Thrive" Campaign



Goal:

The goal of the following conservation questions was to understand what the public does for conservation, how important it is to them and what resources they might need moving forward.

> *"We need more definitive information about the status of the aquifer. How much is left? Our situation could be urgent and we don't know it. I understand that it is very difficult to measure. But knowing this information is imperative for the community to act collectively."*

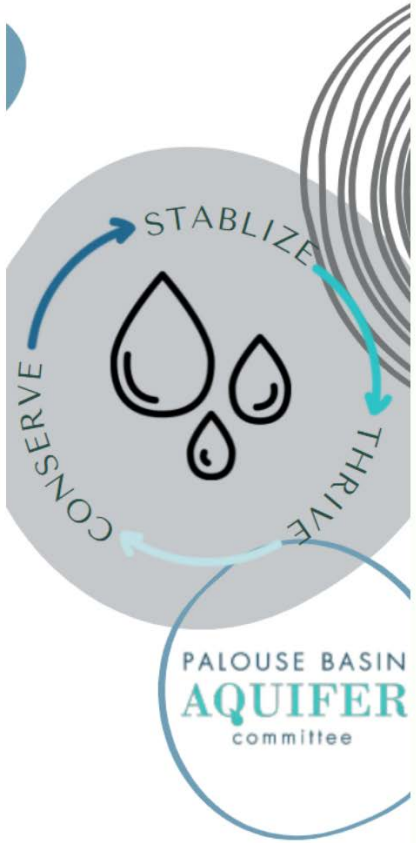
CONSERVATION QUESTIONS

CONSERVE

STABILIZE

THRIVE

PALOUSE BASIN
AQUIFER
committee



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PALOUSE BASIN
AQUIFER
committee

The Palouse Basin Aquifer Committee works to ensure a long-term, quality water supply for the Palouse Basin region.

Water on THE PALOUSE

What is the Basin?

The Palouse Groundwater Basin underlies approximately 500 square mile area of north central Idaho and eastern Washington. 60,000 residents rely on the aquifer.

Increase Awareness

There is increased regional awareness and action. For example, there has been a 13% decline in pumping since the creation of the 1992 Palouse Basin Groundwater Management Plan, even though the population has grown by over 35%.

Conservation

Conservation efforts by communities have resulted in reduced pumping and a reduced rate of water decline about 0.72 feet per year. Water conservation is a great way for you to do your part: shorter showers, water-saving devices, and more. see your communities for free devices

Solution

PBAC has identified four possible water supply alternatives to stabilize the groundwater level in the lowe aquifer and to provide a sufficient water supply for our future, including growth of the community. PBAC is currently working on selecting the top 1-2 alternatives to move forward PBAC works closely with the Idaho Water Resource Board, Washington Department of Ecology and others to ensure support and identify funding opportunities.

Resources http://palousebasin.org.

Regional Water Conservation Plan

Priorities to Ensure Long-term Water Savings

- **Conservation Plan Development**
  - ✓ Open-minded goal-setting process: all water-saving options on the table
  - ✓ Benefit-cost analysis includes comparisons to new water and wastewater capital plan options
  - ✓ Financial commitment to conservation is equivalent to new water supply (and wastewater) expansions
- **Program Goals, Scale, and Budget Reflect Big Thinking, Long-term View**
  - ✓ Declared measurable volume and percent water saving goals, e.g. 20% by 2024, 30% by 2030
  - ✓ Significant capital and O&M cost savings,
  - ✓ Avoided adverse environmental impacts, e.g., river diversion, dam construction, energy/climate
- **Conservation Program Design Reflects Proven Practices–and Innovation**
  - ✓ Emphasis on hardware measures with documented water savings
  - ✓ Enticing incentives: Free fixtures/equipment, generous customer rebates
  - ✓ Ordinances: Maximum 1- or 2-day/week irrigation, development offsets, cap system water losses
  - ✓ High program participation, analytics-based customer targeting (high users, irrigation, leaks)

(Continued)

Priorities to Ensure Long-term Water Savings (cont.)

- **Interdisciplinary And Committed Team**
  - ✓ Water utility staff, community stakeholders; networking with regional and national water conservation colleagues and organizations
  - ✓ Integration with green, energy efficiency, and renewable energy and climate programs
  - ✓ Go to the annual Watersmart Innovations Conference
- **Commitment To An Open And Public Process**
  - ✓ Active and highly visible public and online/social presence
  - ✓ Ease in sharing information, progress updates and decision points shared with the public and media
  - ✓ Stay accountable to the public and meet your conservation goals

Annual Palouse Basin Water Summit

20th Year

250-300 community members attend

Key Takeaways

- Our community has water supply alternative options within our basin and near our basin
- Actively investigating and refining the water supply alternatives
- Need for community-wide solutions
- Continue to engage the communities
- Need to stay focused and work together

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