



Water Rights and Use Policy in Indiana: How the LEAP Project Reveals Gaps and Opportunities

Jane Frankenberger, Professor
Agricultural and Biological Engineering



The proposal to withdraw up to 100 million gallons per day from the Wabash River has drawn much concern.

Wabash River could be solution to Boone County's development needs

October 21, 2022 | Peter Blanchard



A dry summer and fall [has](#) left Wabash levels low in the Lafayette area. (IBJ photo/Eric Learned)

To meet the water demands of a new innovation district planned for Boone County, state officials are exploring the idea of tapping into the aquifer along the Wabash River in Tippecanoe County, downstream of Lafayette.

8 wlfj.com News From Where You Live West Lafayette

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State officials propose pumping water from Lafayette to Lebanon for industrial park

By: Joseph Paul Nov 1, 2022 Updated Nov 1, 2022 14

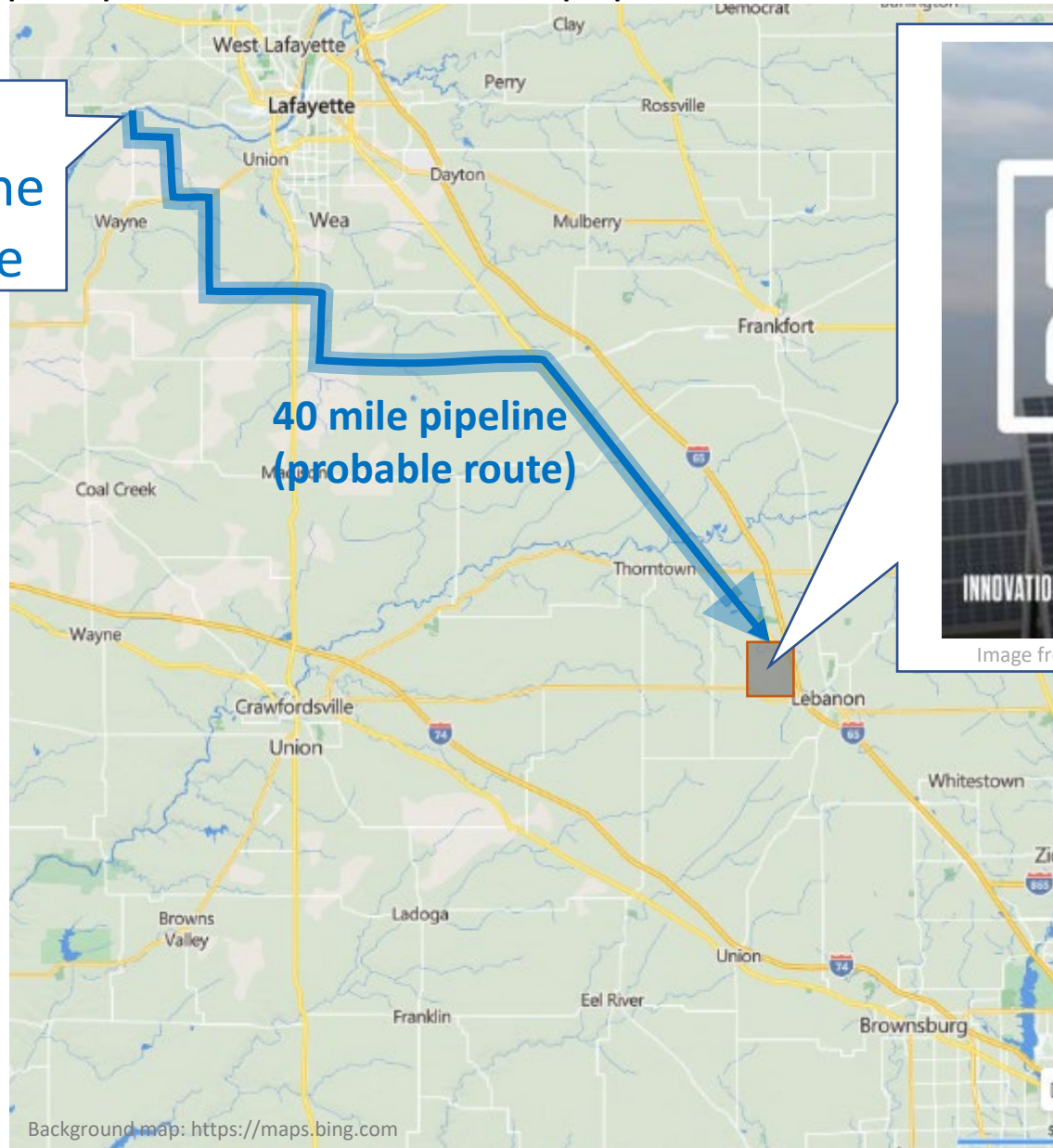
f t e i s

A large white water tower with a blue number 5 and a blue scalloped top. The tower is supported by four white pillars. The background is a dense forest of green trees.

The LEAP district in Lebanon lacks water, so the Indiana Economic Development Commission has proposed a 40-mile pipeline from the Wabash River.

Proposed wellfield near the Granville Bridge

40 mile pipeline (probable route)



Background map: <https://maps.bing.com>



Image from <https://iedc.in.gov/leap-lebanon>

Pipeline location from <https://www.clintoncountytoday.com/state-to-pump-water-through-clinton-county-to-boone-county/>

Legislators, local officials, and the public are expressing disagreement with the idea.



FOR SUBSCRIBERS INDIANA

'They underestimated us': Local legislators band together to address LEAP concerns

Noe Padilla Lafayette Journal & Courier

Published 1:21 p.m. ET Oct. 20, 2023 | Updated 1:31 p.m. ET Oct. 20, 2023



10 Photos

VIEW FULL GALLERY

Hundreds gather at public hall to share concerns of LEAP project

Hundreds of concern citizens gather at public hall to share their concerns regarding the LEAP project.

Indiana's water resources are generally plentiful, available to all at no cost. But priceless for supporting all of life...

Wabash River



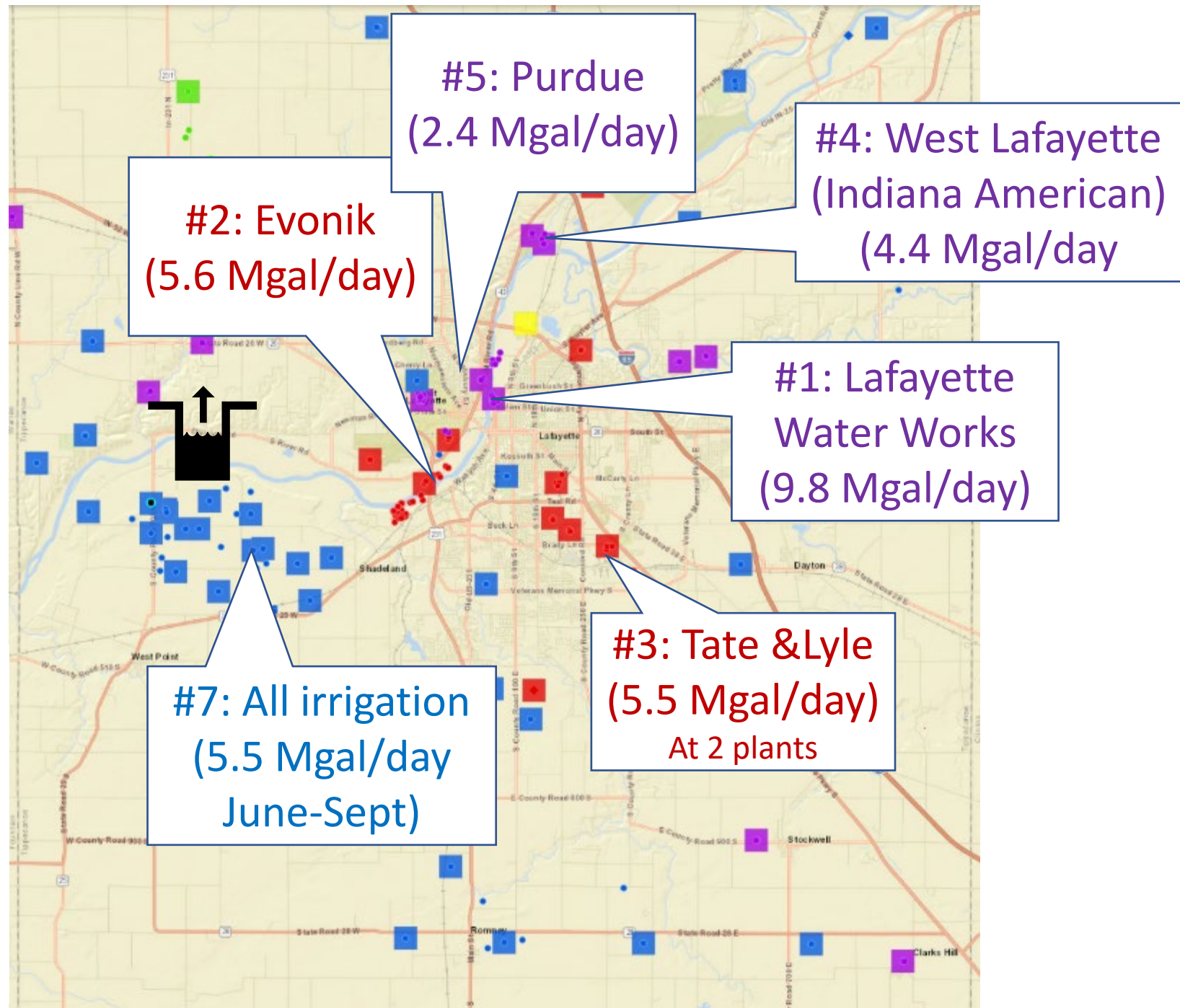
Well for public water supply



Image from <https://www.lafayette.in.gov/1081/Waters-Path-to-You>

While water is more abundant in Tippecanoe County, there are many users already.

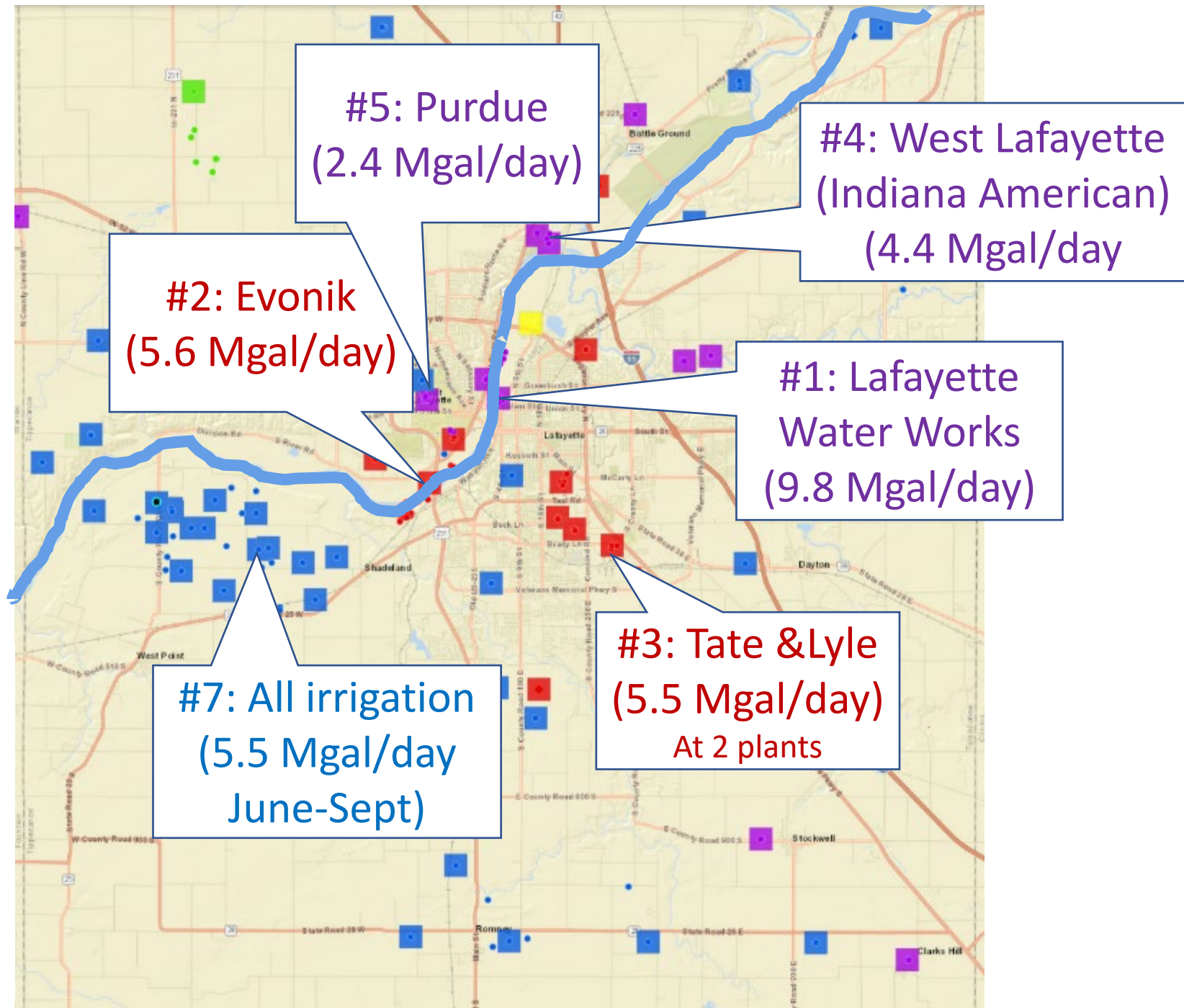
(Significant Water Withdrawal Facilities, 2021 reported water use from Indiana Department of Natural Resources)



These users withdraw water, use it, and return the wastewater into the Wabash.

Irrigation water is mostly **consumed**.

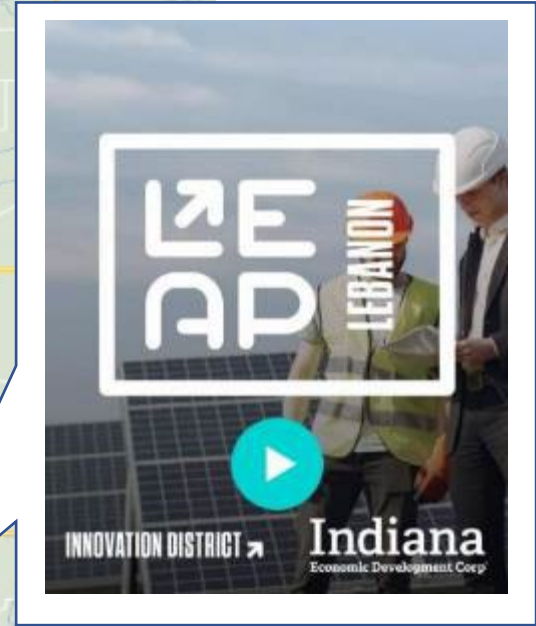
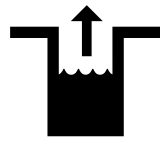
- Industry
- Irrigation
- Public Supply
- Rural Use
- Miscellaneous



The proposal to send water to LEAP Lebanon will withdraw water and send it to another basin.

- This is called a **water transfer** or **water diversion**.
- It would have more effect on the Wabash River than the **non-consumptive** current users.

Proposed wellfield



Citizens want to know whether water withdrawn for the pipeline will affect current users.

Or how about future users?

Large water users



Home wells



“Skywater unveils plan to build \$1.8 B chip factory in West Lafayette”

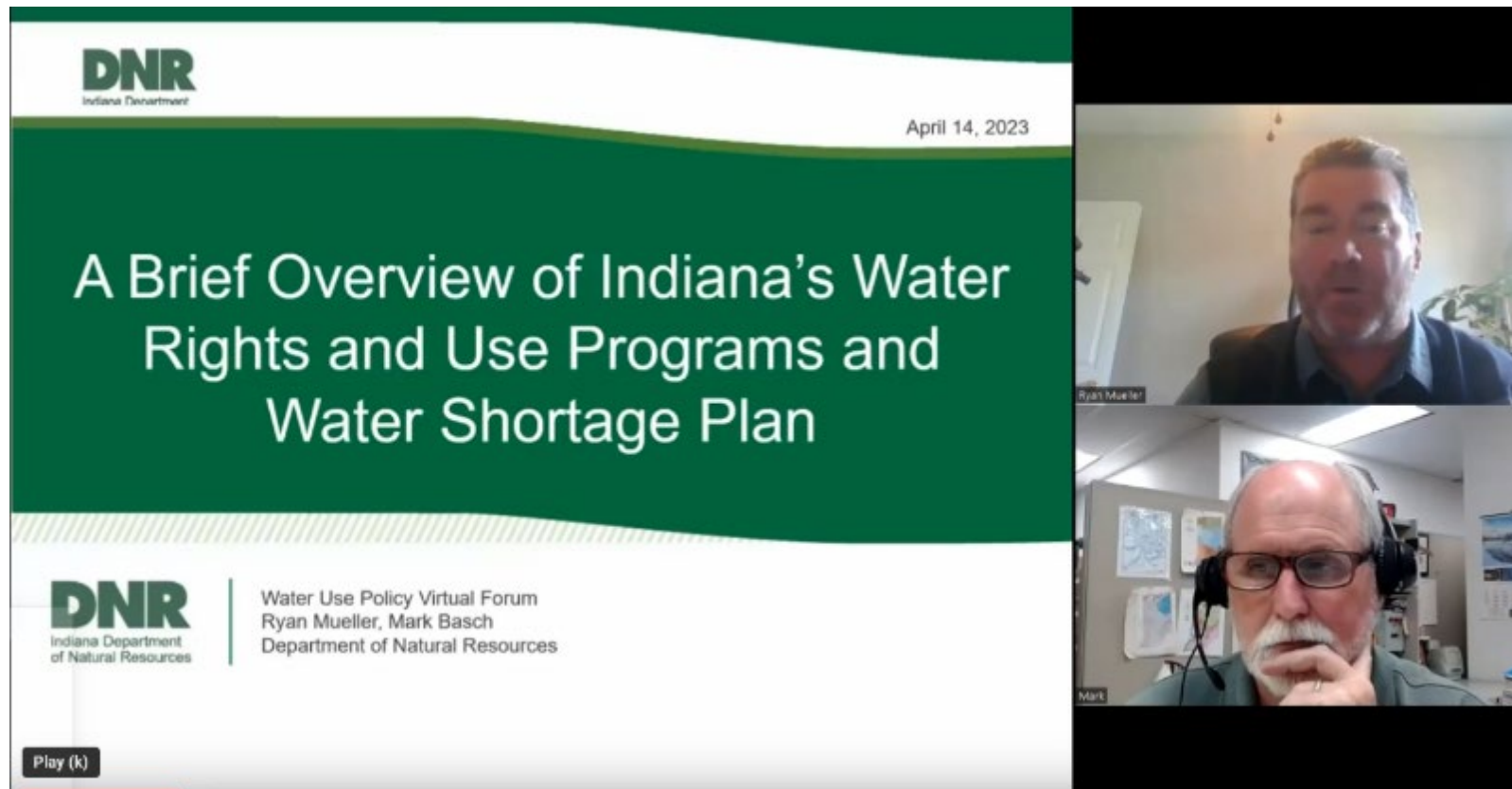
How will it affect the Wabash River and its ecosystem?



[@HookLab](#) : “Grad students recently sampled the Wabash River for hybrid striped bass. With success!!”

What Indiana regulations protect our water resources?

- The Indiana Department of Natural Resources staff responsible for water rights and use presented the laws that might be relevant at online forum.



The image shows a screenshot of a virtual forum. On the left is a presentation slide with a green header and footer. The header contains the DNR logo and the date "April 14, 2023". The main title of the slide is "A Brief Overview of Indiana's Water Rights and Use Programs and Water Shortage Plan". The footer contains the DNR logo, the text "Water Use Policy Virtual Forum", and the names "Ryan Mueller, Mark Basch" and "Department of Natural Resources". A "Play (k)" button is visible in the bottom left corner of the slide area. On the right side of the screenshot are two video feeds. The top feed shows a man with short hair and a beard, wearing a dark shirt, with a name tag that says "Ryan Mueller". The bottom feed shows an older man with glasses and a white beard, wearing a headset and a light-colored shirt, with a name tag that says "Mark".

Recorded virtual forum at <https://research.purdue.edu/isf/events/index.php?view=5334>

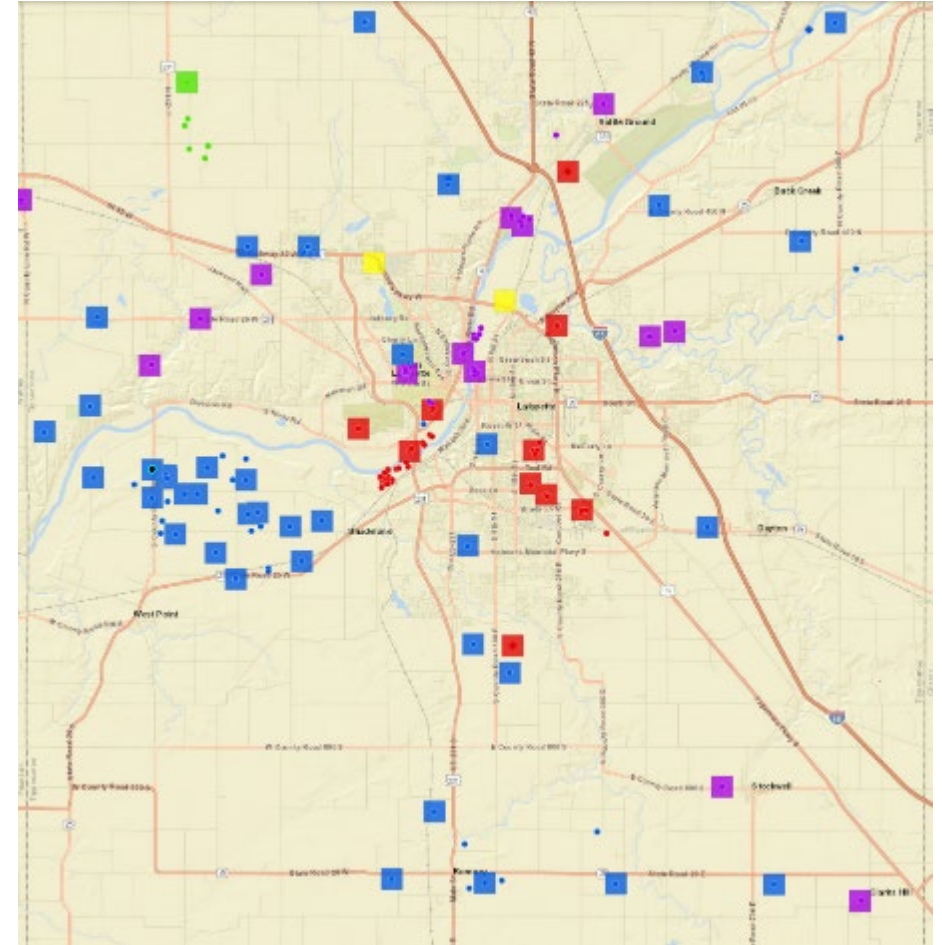
1. Indiana Code 14-25-7: Water Resources Management Act

- Enacted in 1983
- Requires **registration** of all Significant Water Withdrawal Facilities (greater than 100,000 gallons/day capability)
- Annual water use **reporting**

Note: This is the reason we know who is using how much water in Tippecanoe County.

But it does not require advance notification or a permit.

There is no procedure for addressing whether it is too much.



2. Indiana Code 14-25-4: Emergency Regulation of Groundwater Rights

- Provides for “Timely and Reasonable Compensation” to owners of **small capacity wells** affected by high-capacity groundwater pumping.
- Provides for restrictions on high-capacity groundwater pumping **upon the declaration of a groundwater emergency** under certain conditions

Note: There has been only one ground water emergency declared, in 1988 in Jasper and Newton Counties



3. Indiana Code 14-25-5 Emergency Regulation of Surface Water Rights

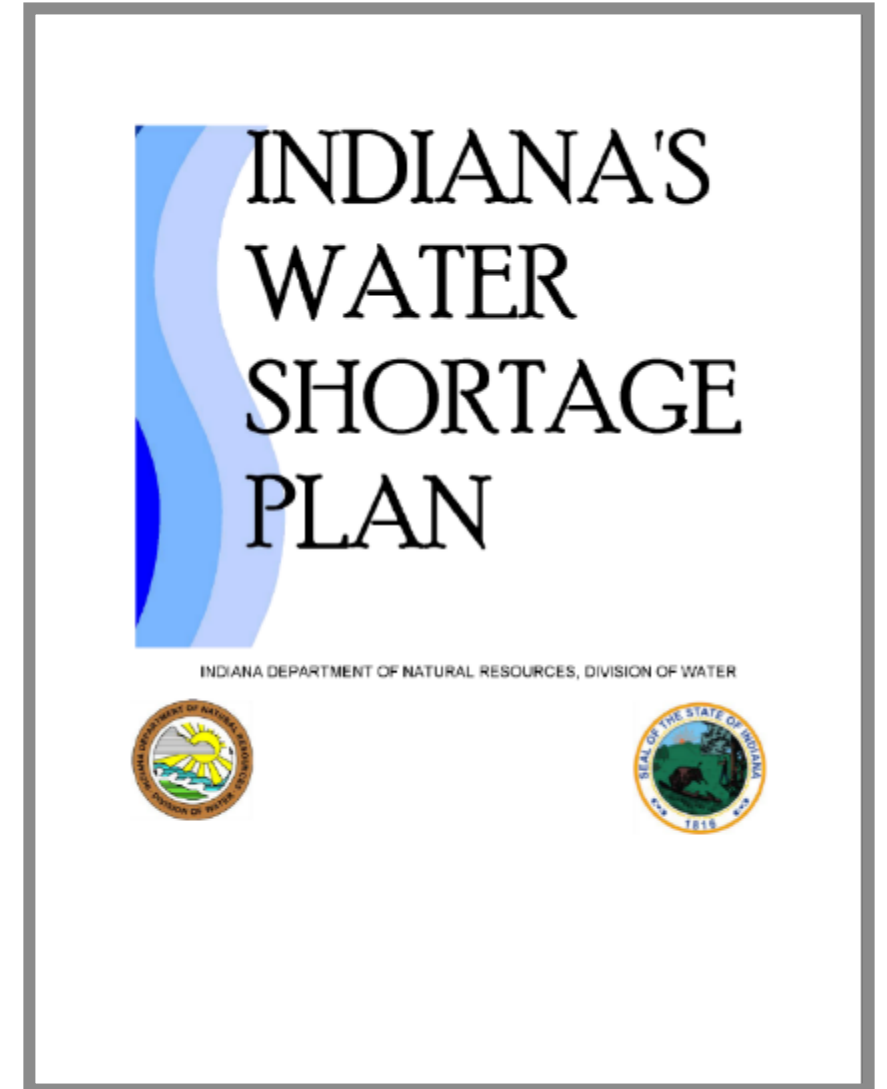


Applies only to freshwater **lakes with area at least 10 acres** at the normal level.

4. Water Shortage Plan (2015)

- Coordinated response to water shortage conditions
- **Voluntary** conservation to avoid or reduce shortages
- Resources and tools (e.g. model ordinance)
- Priority water uses

Voluntary plan, does not address impacts of proposed withdrawals



<https://www.in.gov/dnr/water/files/watshplan.pdf>

Conclusion: No current laws address potential impacts.

- Current situation: “Law of the biggest pump”. (Not “first come first served.”)

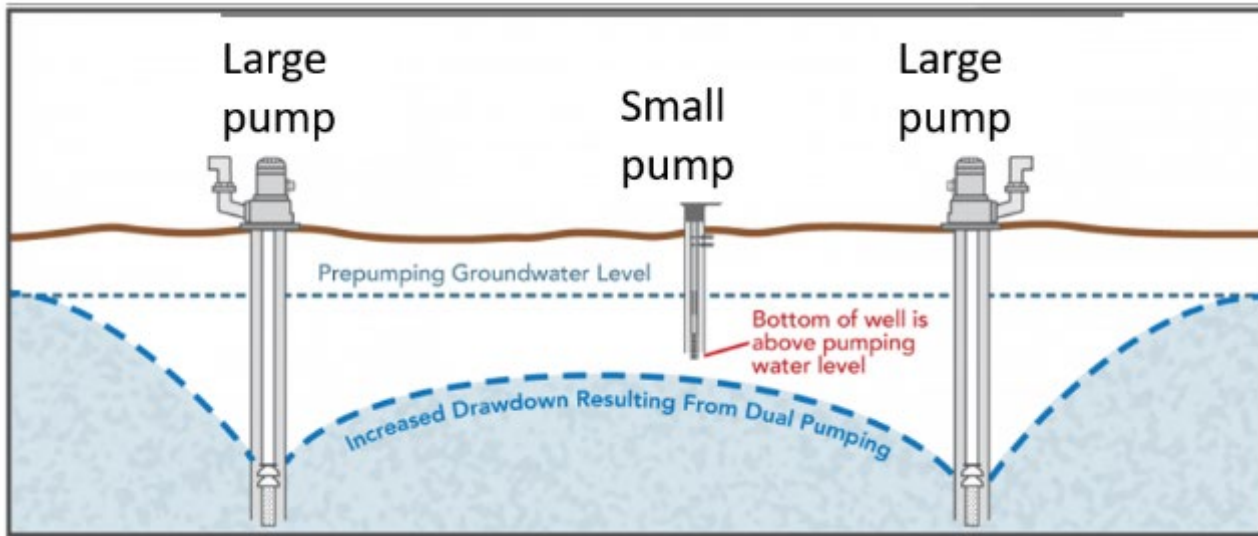
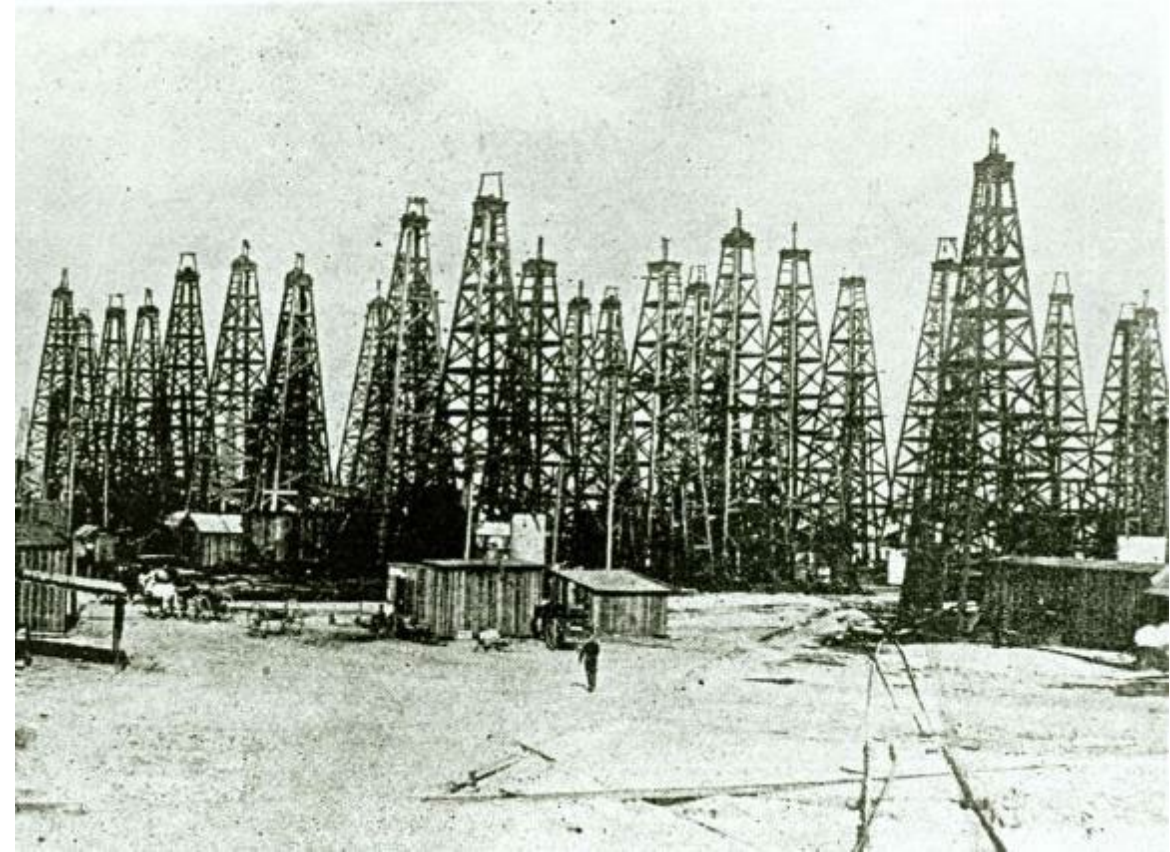



Image from
<https://dnr.mo.gov/print/document-search/pub3001>

Rep. Mike Aylesworth office



How many wells could draw from the same aquifer?
Spindletop, 1901. Photo by the Texas Energy Museum/Newsmakers

Is there enough water for everyone?

Indiana CAPITAL CHRONICLE 







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ECONOMY HEALTH & ENVIRONMENT

IN BRIEF

'Abundant' water in Wabash aquifer for LEAP District, say early IEDC findings

BY: LESLIE BONILLA MUÑIZ - SEPTEMBER 21, 2023 5:15 PM



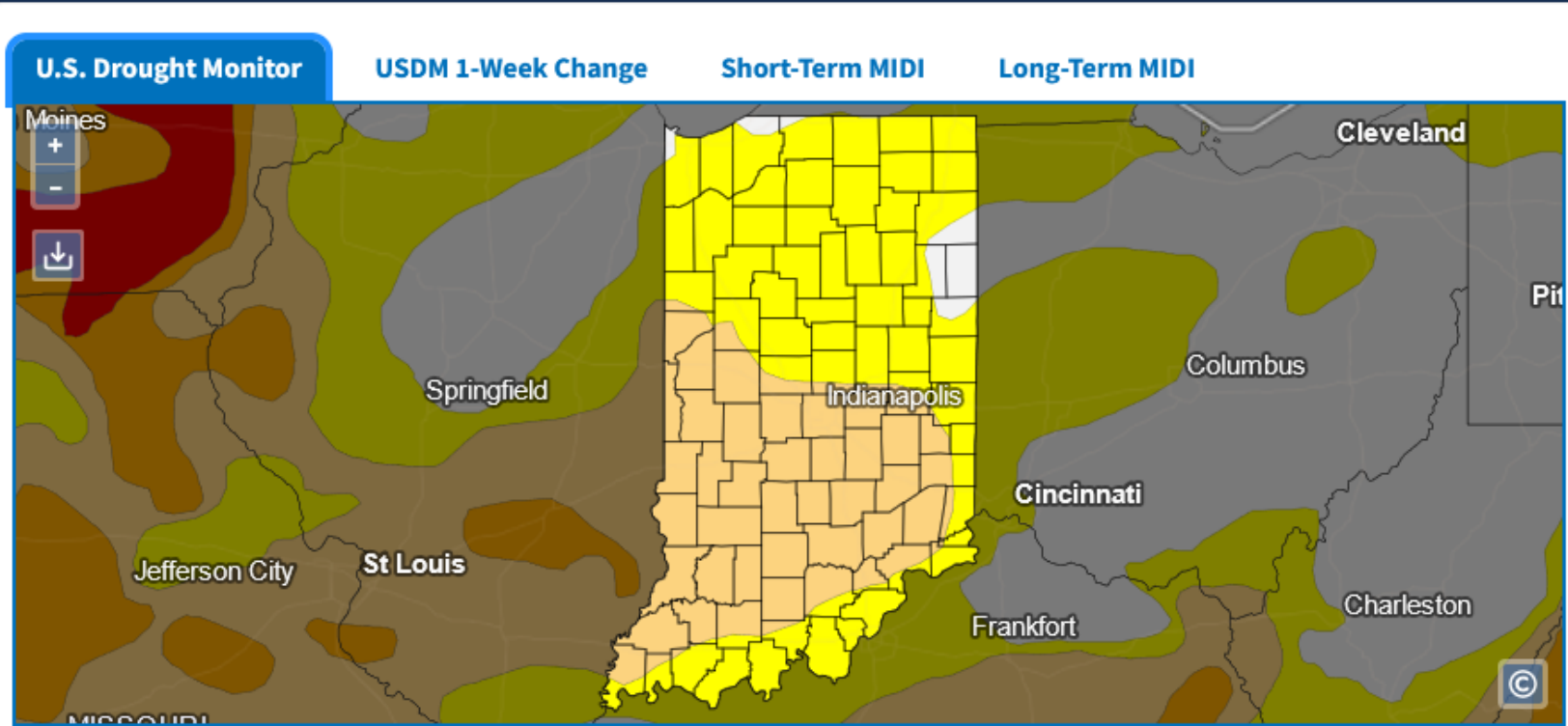
Some say Yes



Some say "We don't know", or "We don't trust the answer that IEDC is providing."

Current Indiana Drought Maps

It doesn't help that we have had a very dry summer and much of the state is currently in drought conditions.



The U.S. Drought Monitor depicts the location and intensity of drought across the country. The map uses 5 classifications: Abnormally Dry (D0), showing areas that may be going into or are coming out of drought, and four levels of drought (D1–D4).







This map is used by the U.S. Department of Agriculture to trigger some disaster declarations and loan eligibility. Individual states and water supply planning may use additional information to inform their declarations and actions. [Learn more](#) .

How has drought impacted this state in the past? View [examples of past drought impacts](#) or explore [historical Drought Monitor maps](#).

Source(s): [NDMC](#), [NOAA](#), [USDA](#)

Legend

Drought & Dryness Categories

		% of IN
	D0 – Abnormally Dry	52.8%
	D1 – Moderate Drought	44.1%
	D2 – Severe Drought	0.0%
	D3 – Extreme Drought	0.0%
	D4 – Exceptional Drought	0.0%
	Total Area in Drought (D1–D4)	44.1%

This week's Drought Map

<https://www.drought.gov/states/indiana>

Or that the New York Times published a well-researched and alarming series of stories on our poor management of groundwater this summer.

CLIMATE

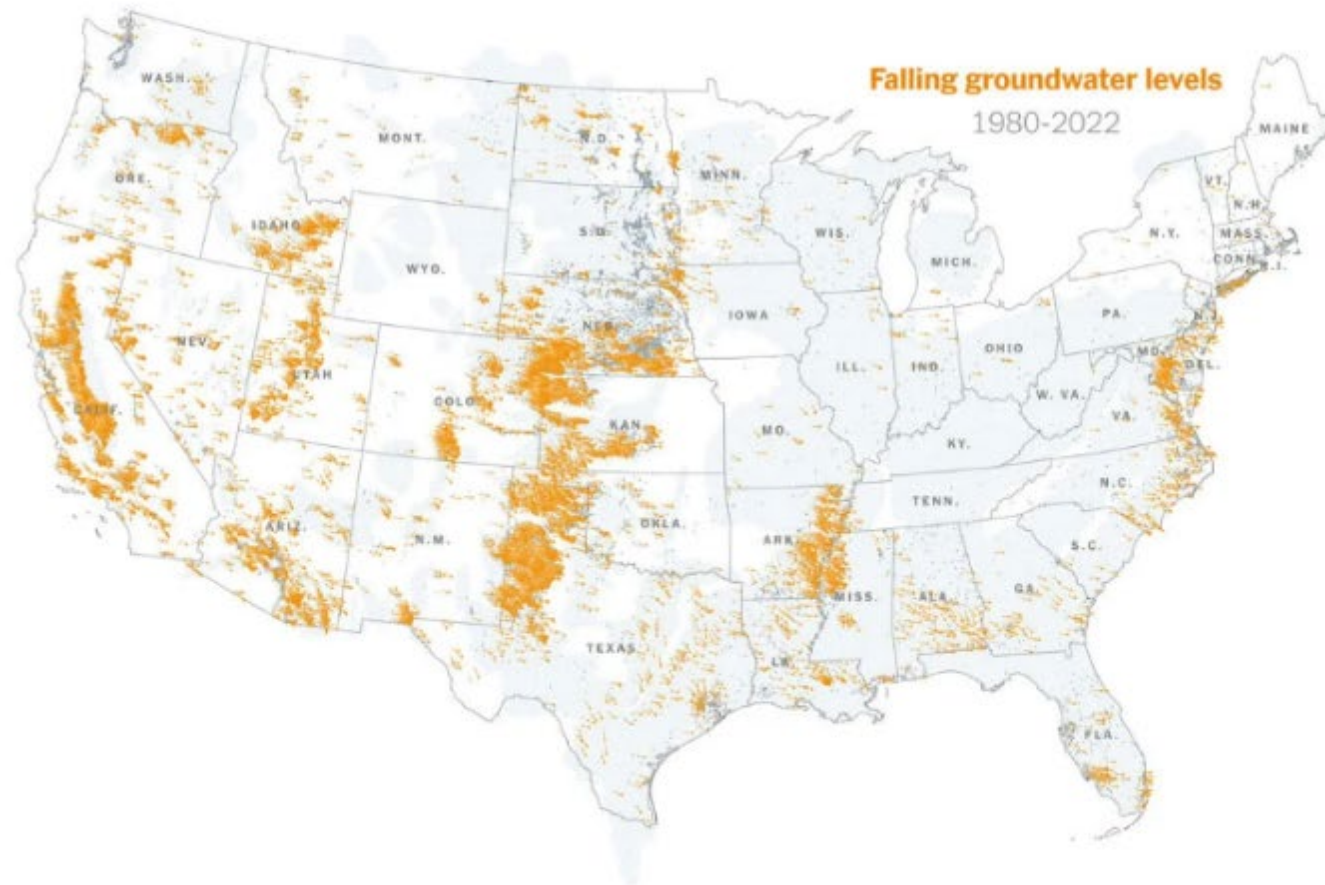
Uncharted Waters

A series on the causes and consequences of disappearing water.

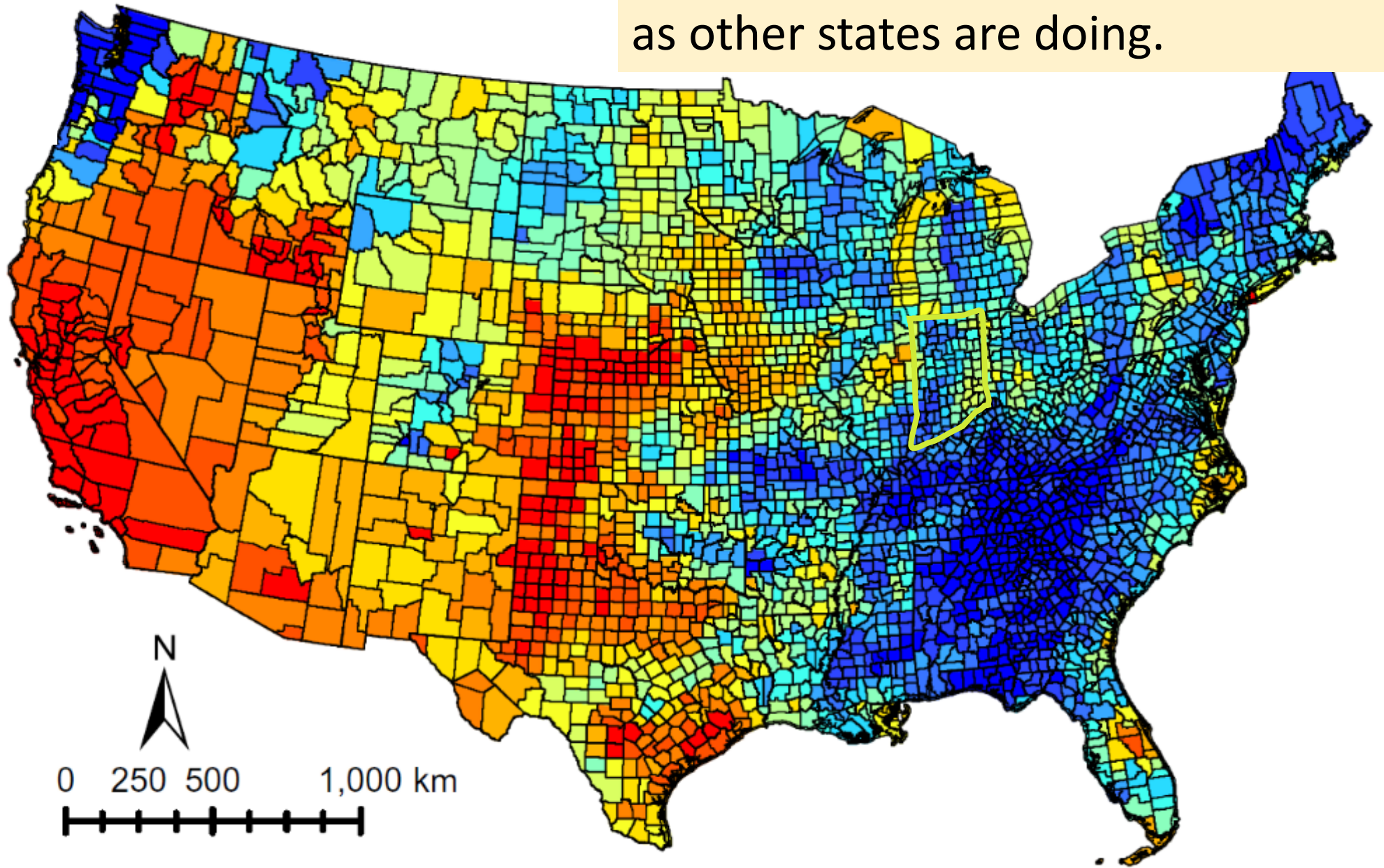
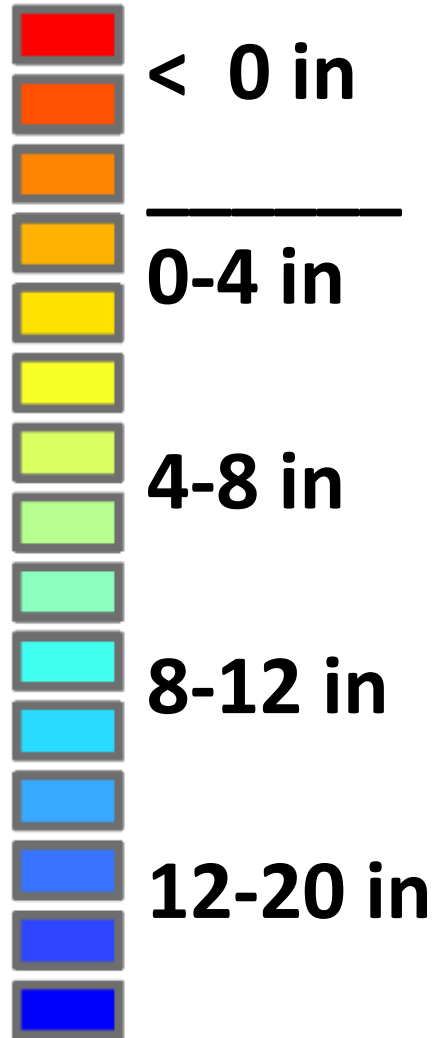
America Is Using Up Its Groundwater Like There's No Tomorrow

Unchecked overuse is draining and damaging aquifers nationwide, a data investigation by the New York Times revealed, threatening millions of people and America's status as a food superpower.

November 30, 2023 • By MIRA ROJANASAKUL, CHRISTOPHER FLAVELLE, BLACKI MIGLIOZZI and ELI MURRAY

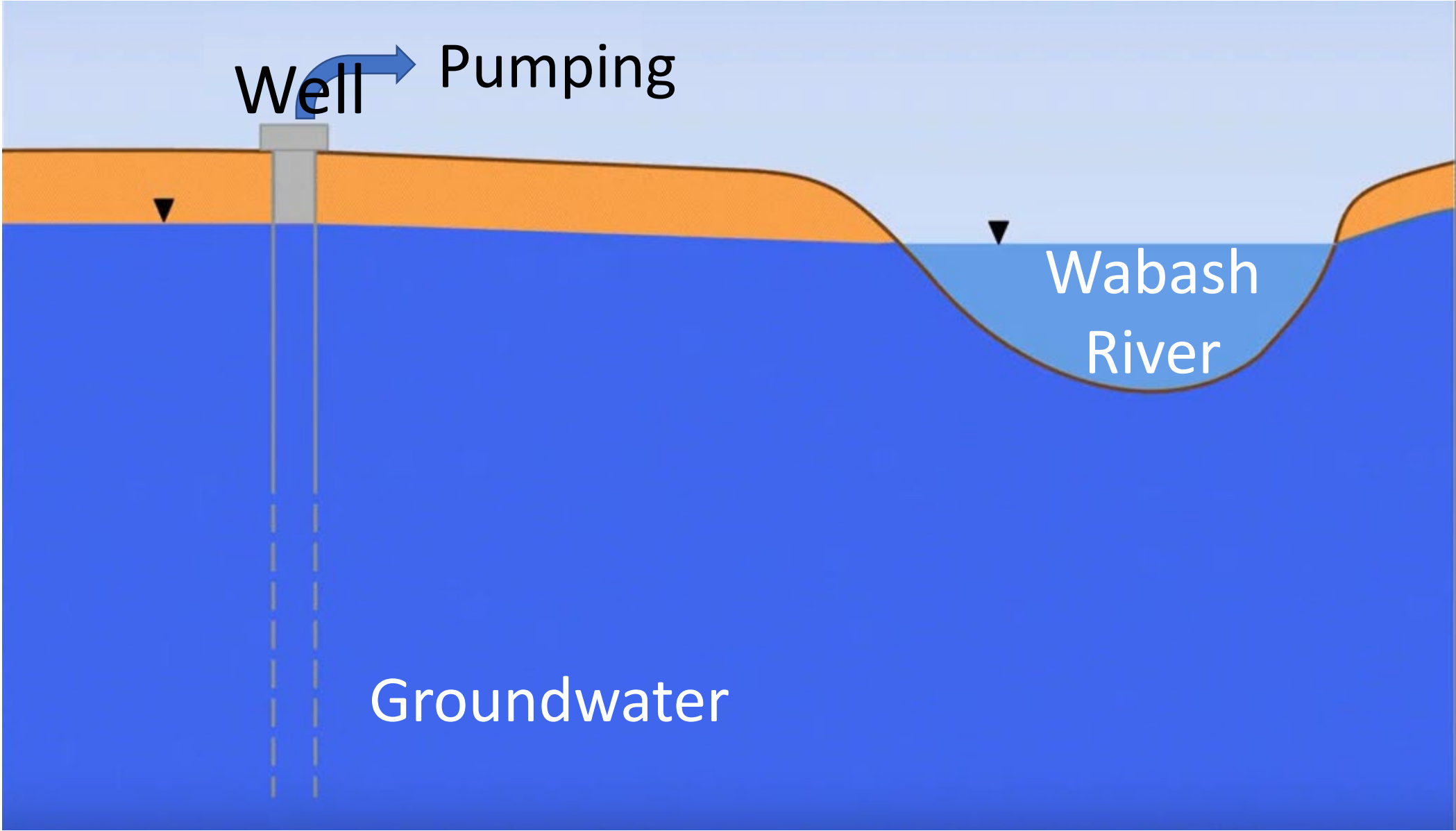


Avg. Annual Recharge - Withdrawal



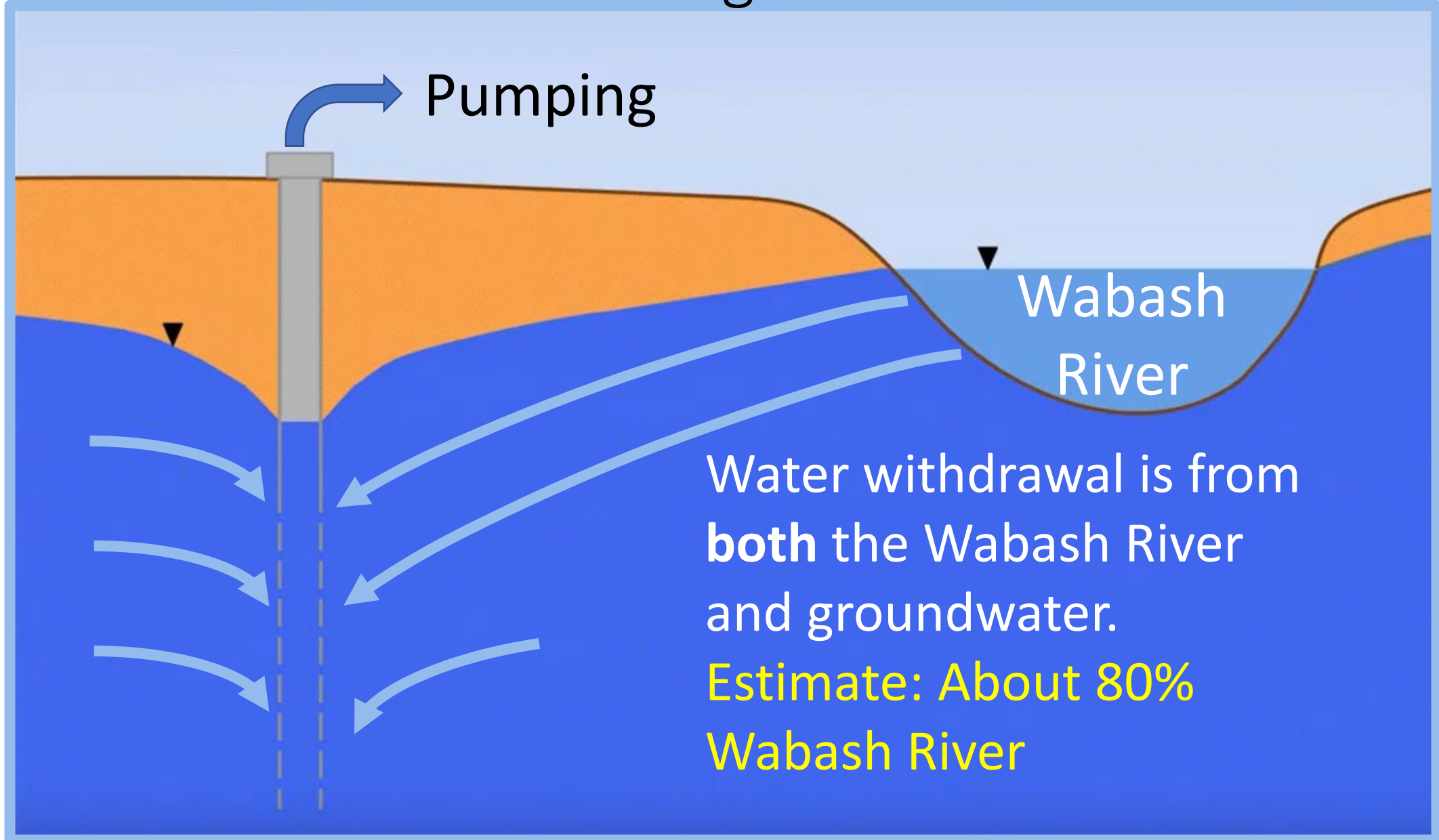
Indiana is not “mining groundwater” as other states are doing.

Riverbank Filtration – Draws from a well **near** the river

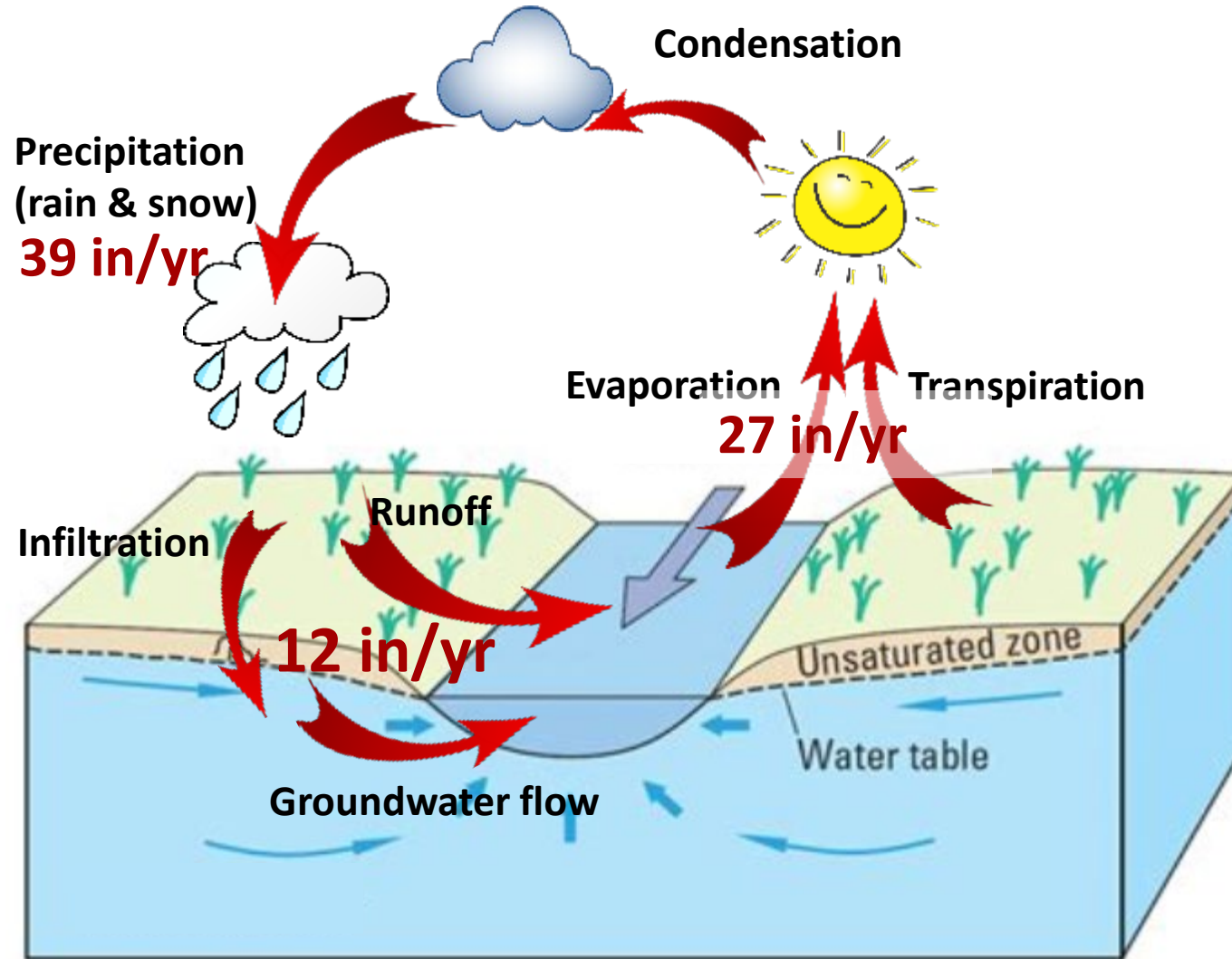


Adopted from Division of Water Sciences, University of Applied Sciences Dresden, Germany, <https://www.youtube.com/watch?v=83cjs6q8Xz0>

Riverbank Filtration – Uses groundwater + river water



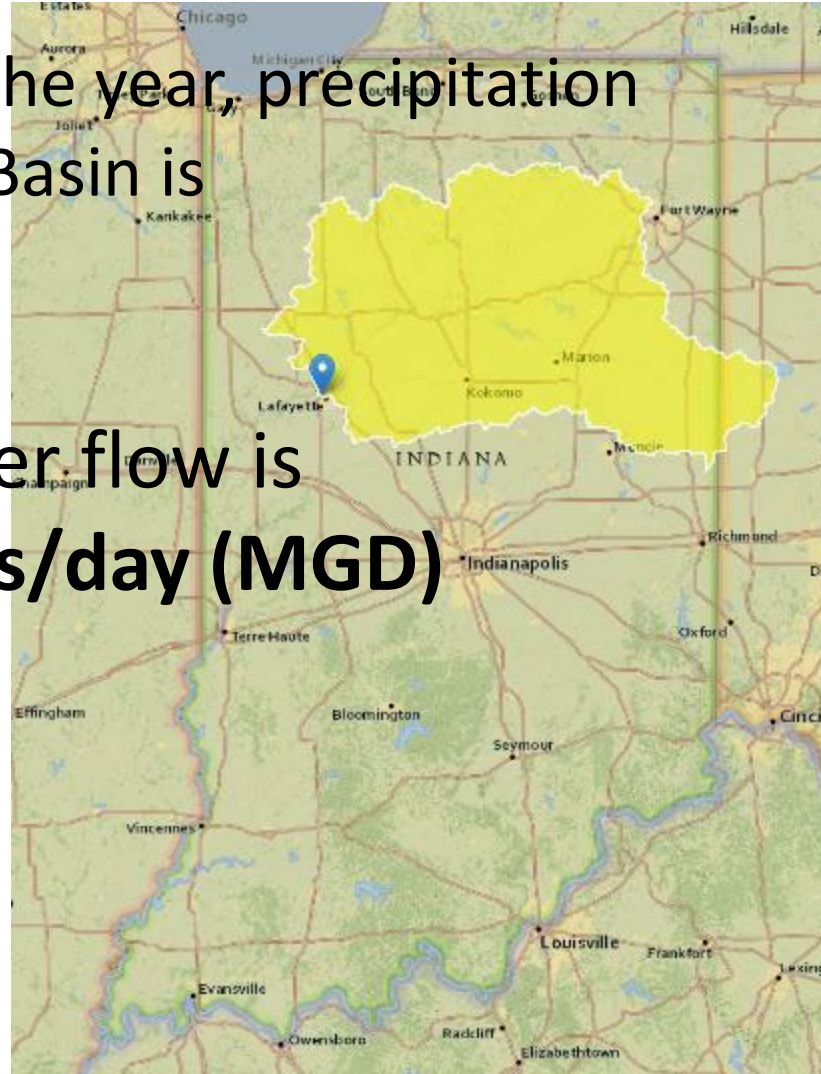
Is there enough? Let's look at the water cycle.



Amount over the Wabash Basin (6275 square miles)

If evenly spread over the year, precipitation falling in the Wabash Basin is 13,000 MGD

Runoff + groundwater flow is 4,055 million gallons/day (MGD)



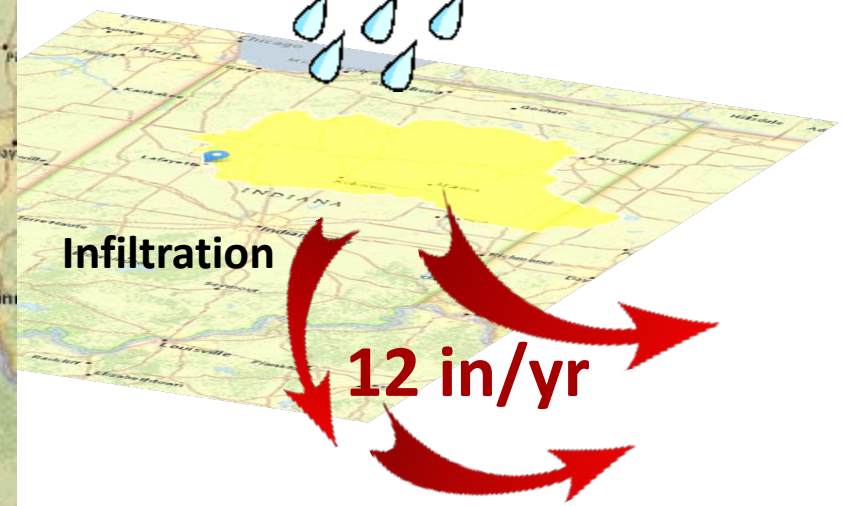
Precipitation
(rain & snow)
39 in/yr



Infiltration

12 in/yr

Groundwater flow



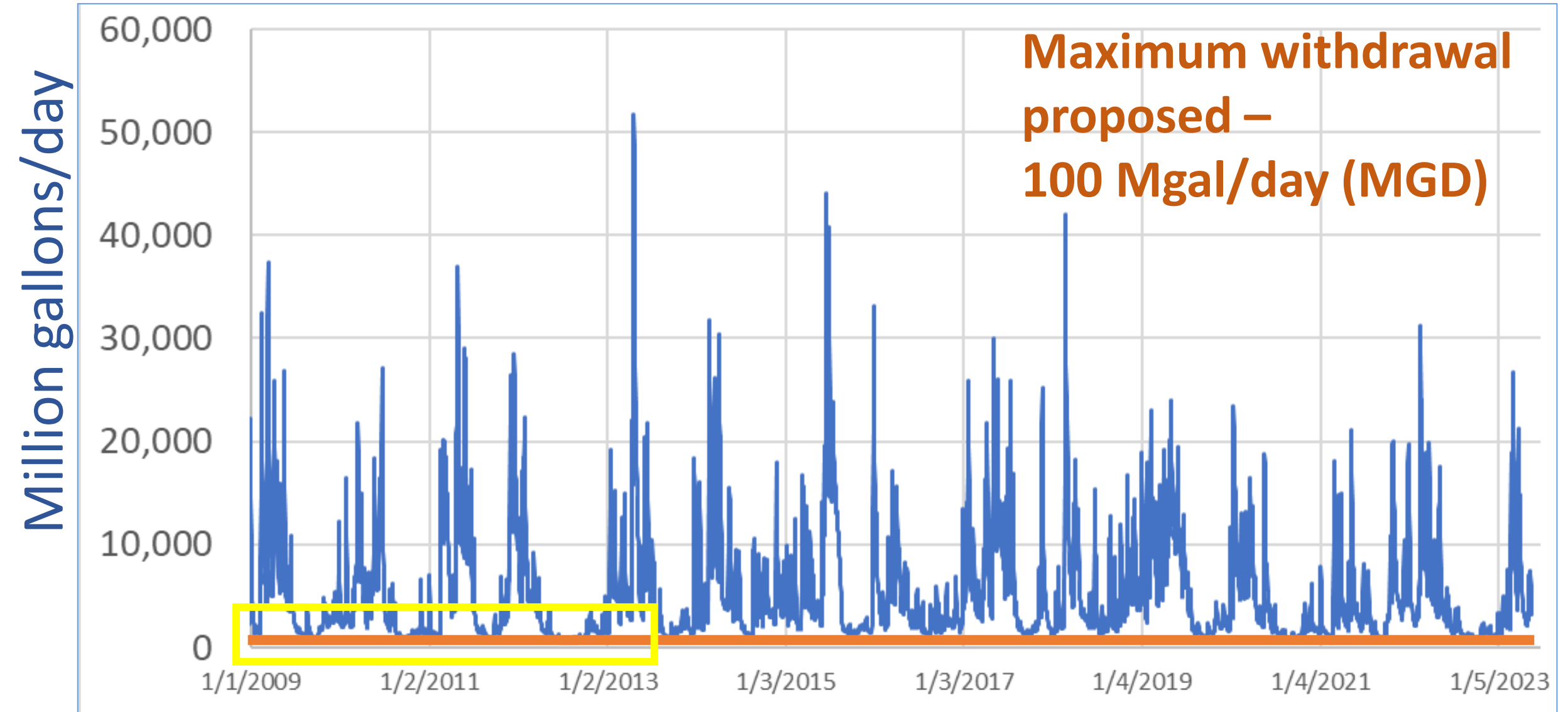
[IMAGES](#) | PHOTOGRAPHY

Wabash River at Lafayette, Indiana

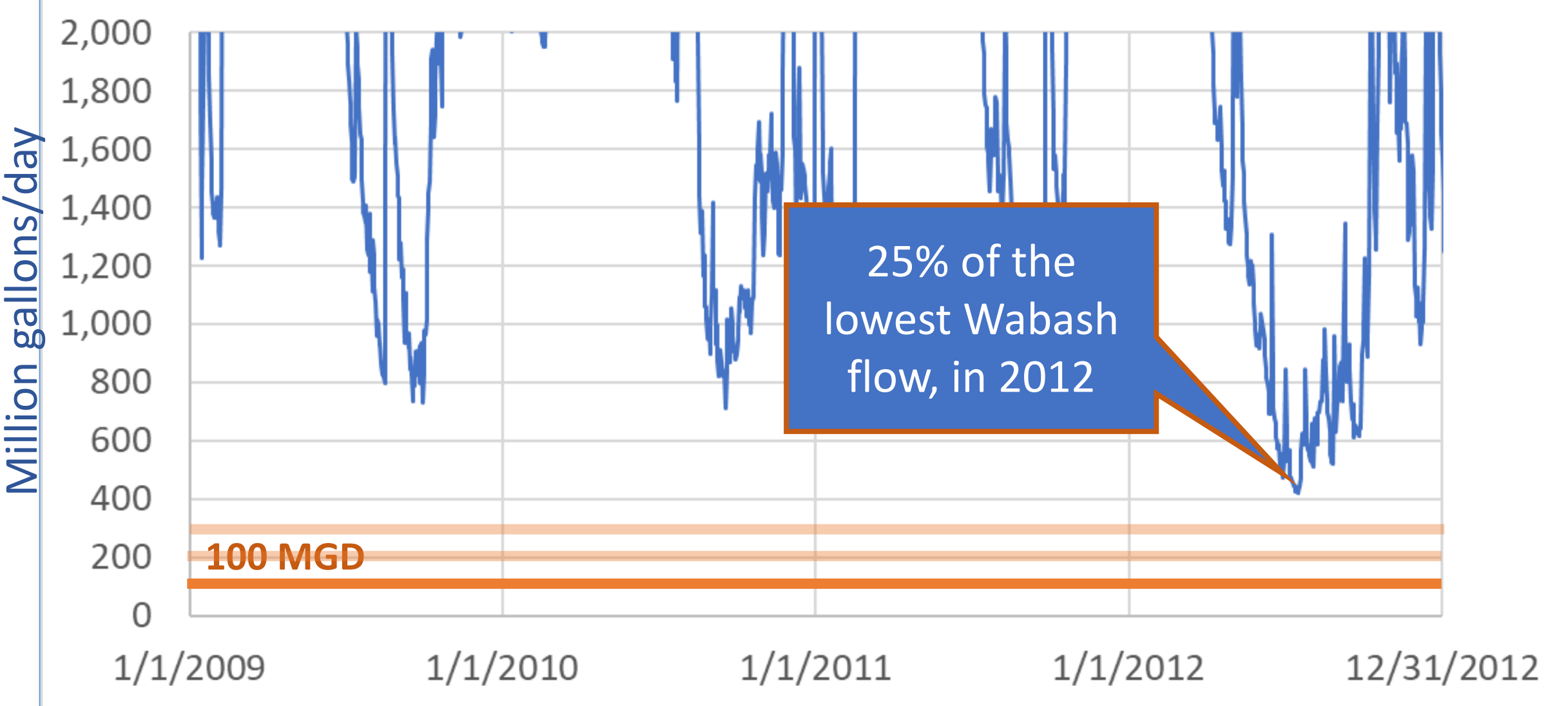
By [Ohio-Kentucky-Indiana Water Science Center](#) SEPTEMBER 29, 2016



Wabash River flow at Lafayette in Mgal/day, 2009-2023



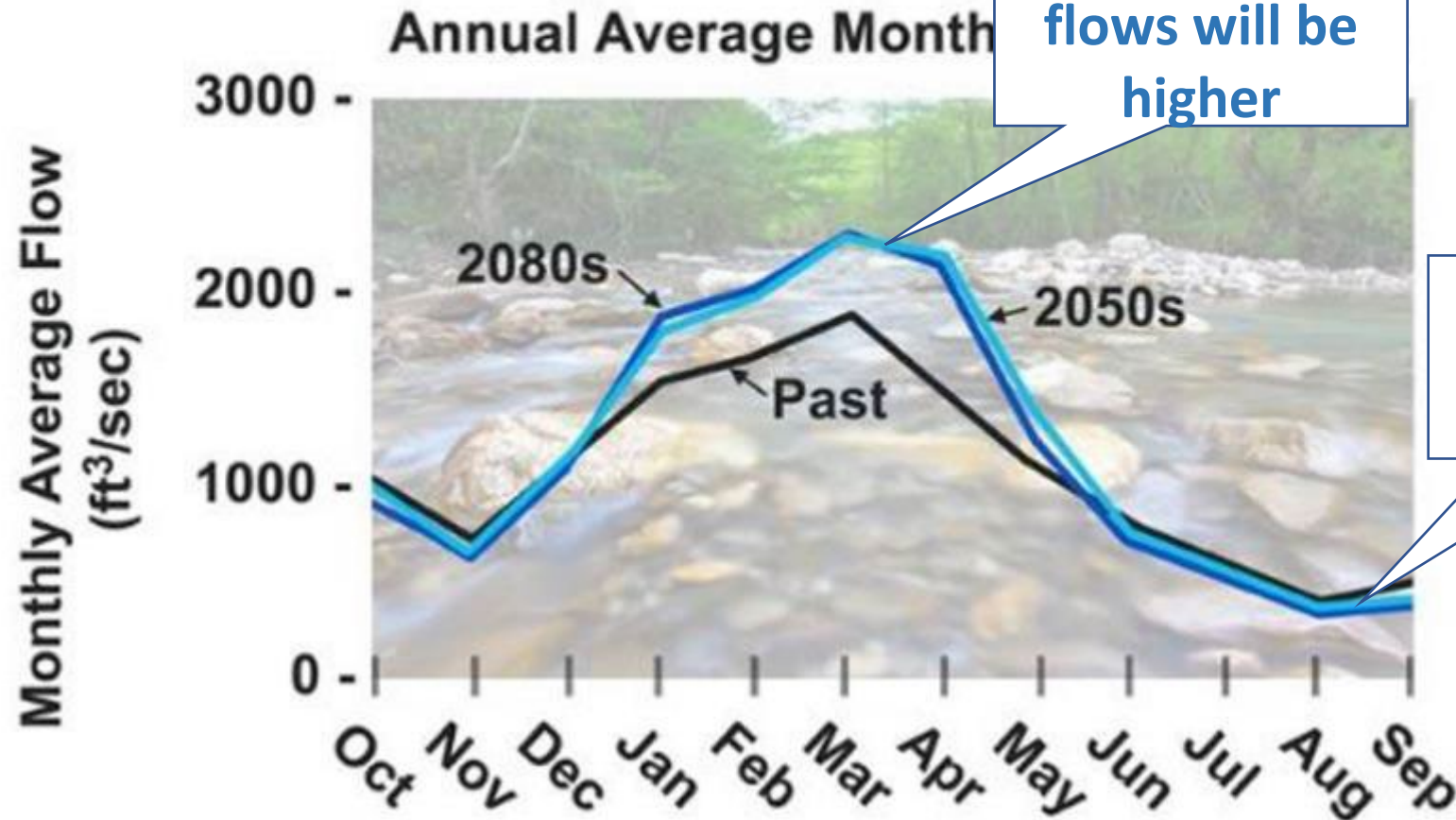
Wabash River flow at Lafayette in Mgal/Day, 2009-2012



Climate change will make the flow more extreme

Higher Highs, Lower Lows

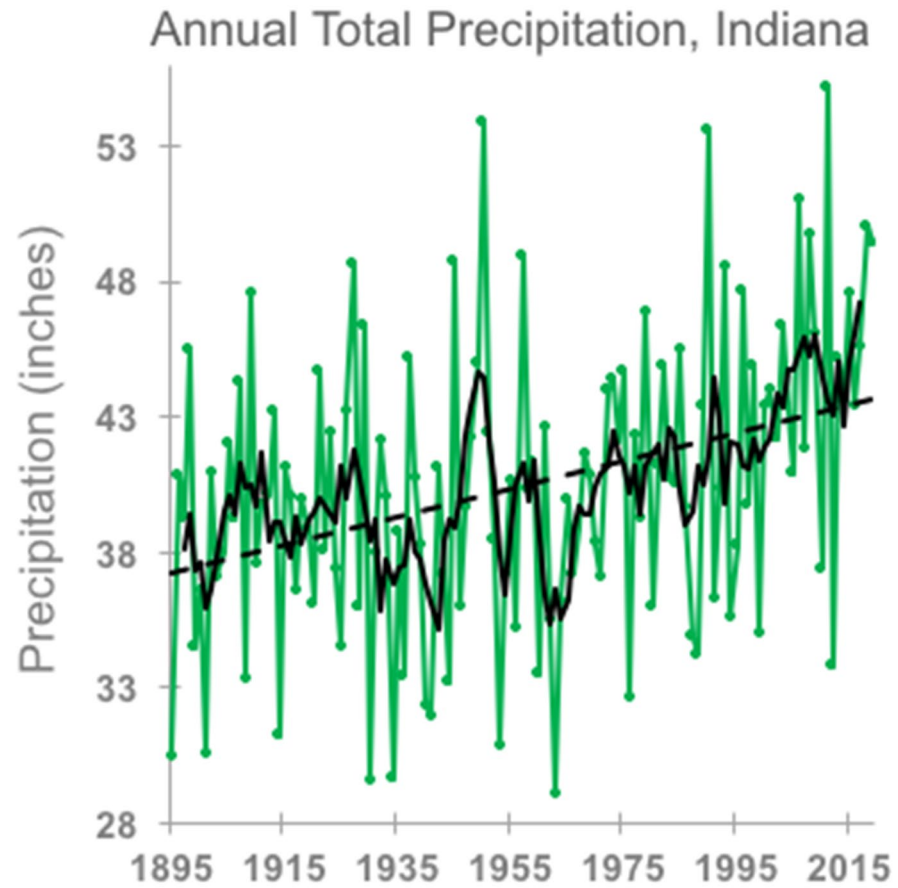
White River near Indianapolis, IN



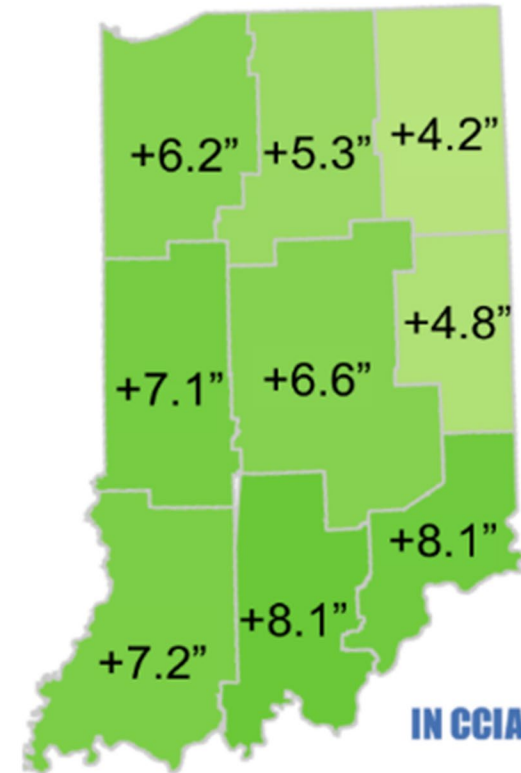
IN CCIA

Indiana Climate Change
Impacts Assessment

Average Annual Total Precipitation Change



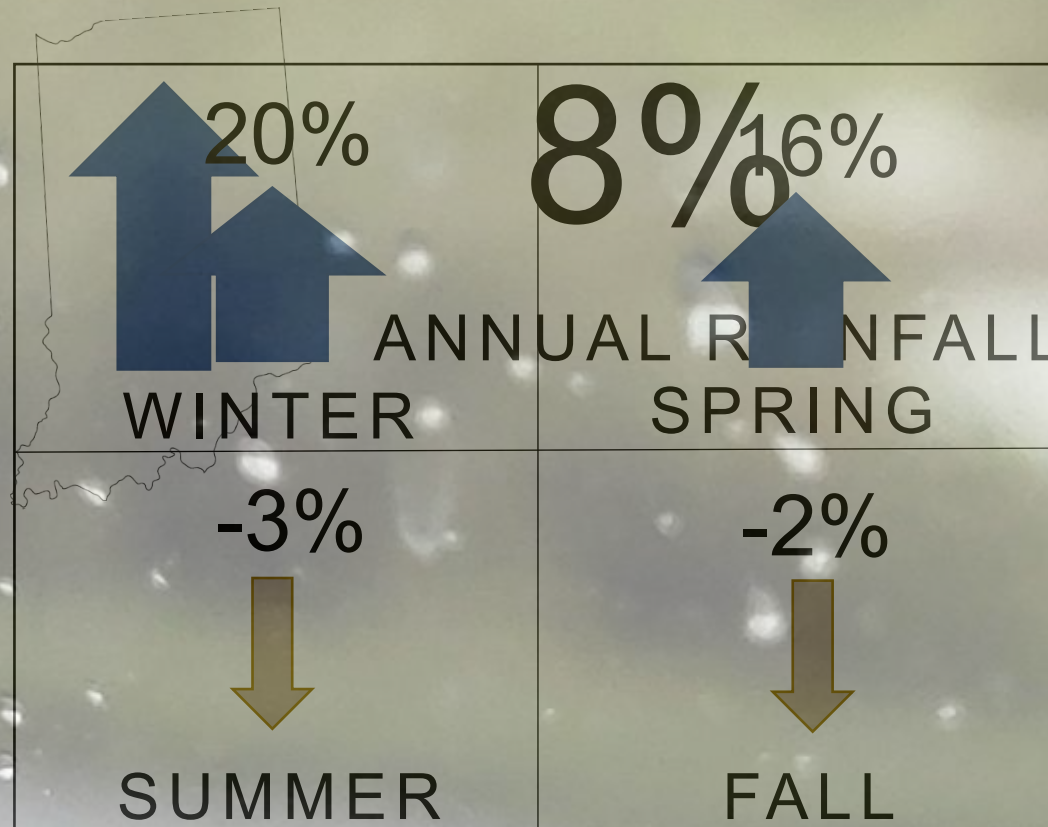
Trend = 0.52 in/decade



Change in annual average precipitation
based on linear trend between 1895 to 2019

2050

Relative to
1971-2000 average



Statewide Average
Widhalm et al. (2018)

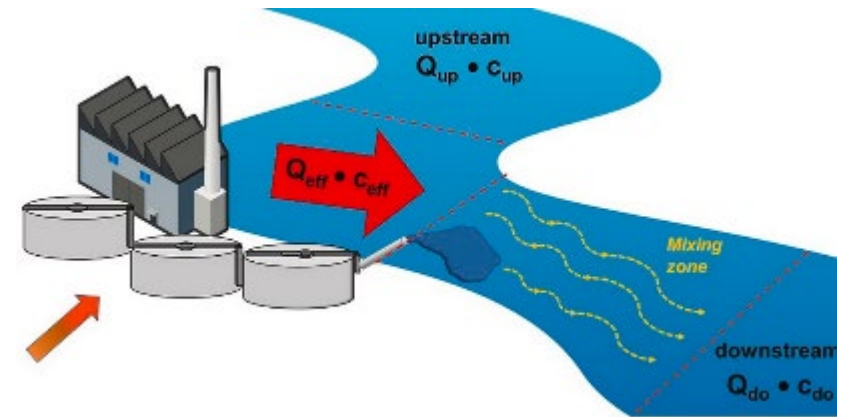
*Future data based on high
emissions scenario, 2050*

What is the impact of 25% less flow during low flows in the Wabash?

- **Fish:** Can move to deeper pools, but smaller pools likely to be warmer and therefore lower dissolved oxygen.
- **Mussels:** Mostly sedentary, may be stranded or lose their food sources.
- **Downstream communities:** Wastewater permits may be affected by lower flow.
- Other impacts should be studied.

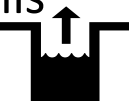


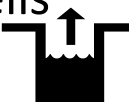
Dr. Reuben Goforth, Purdue Fisheries Biologist
(Purdue University photo)

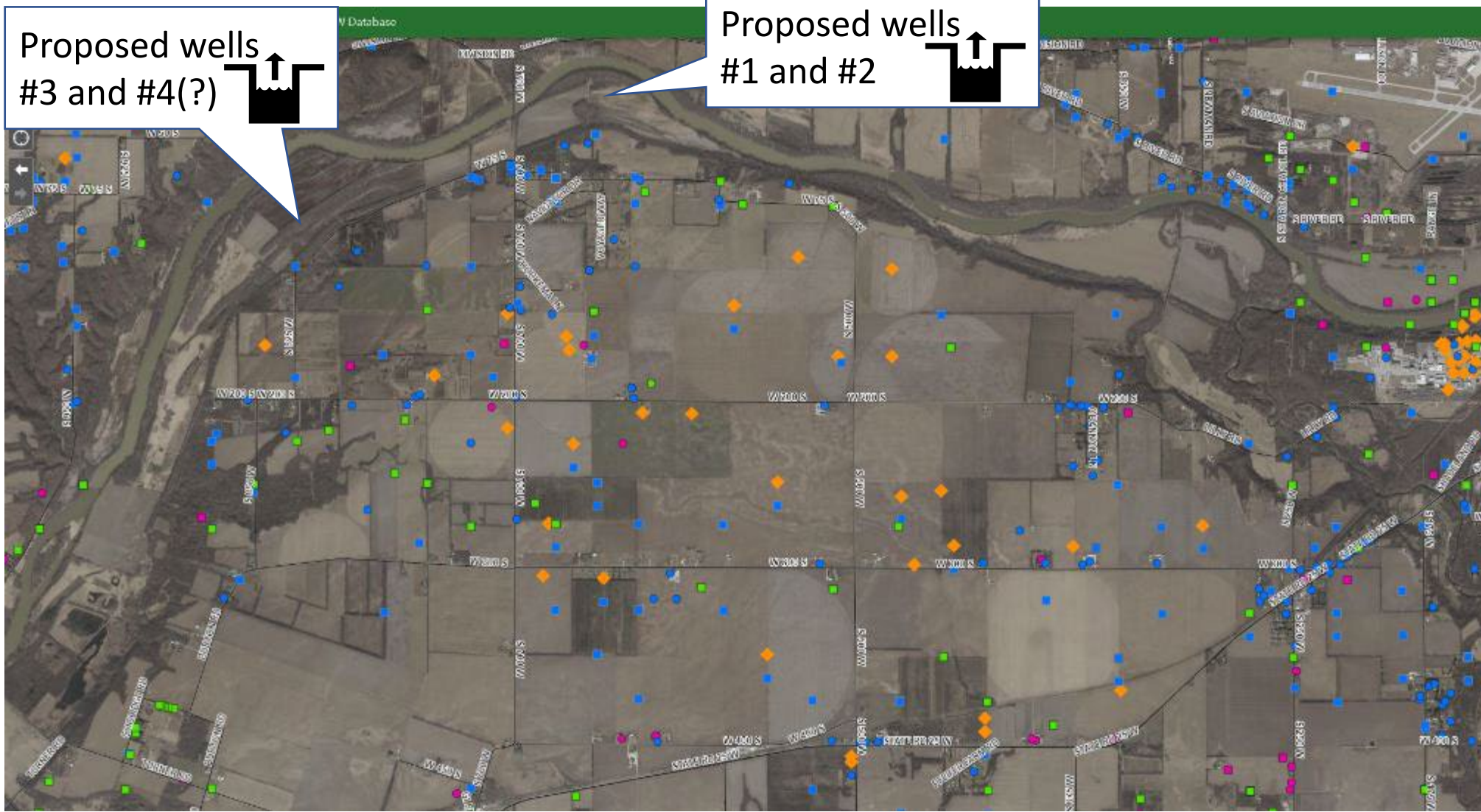


What is the impact of pumping on neighboring wells?

- Indiana DNR Water Well Viewer

Proposed wells #3 and #4(?) 

Proposed wells #1 and #2 



Boreholes Drilled to Bedrock

- Field Located
- Other

Unconsolidated Wells

- Field Located
- Other

Unspecified Well Type

- Field Located
- Other

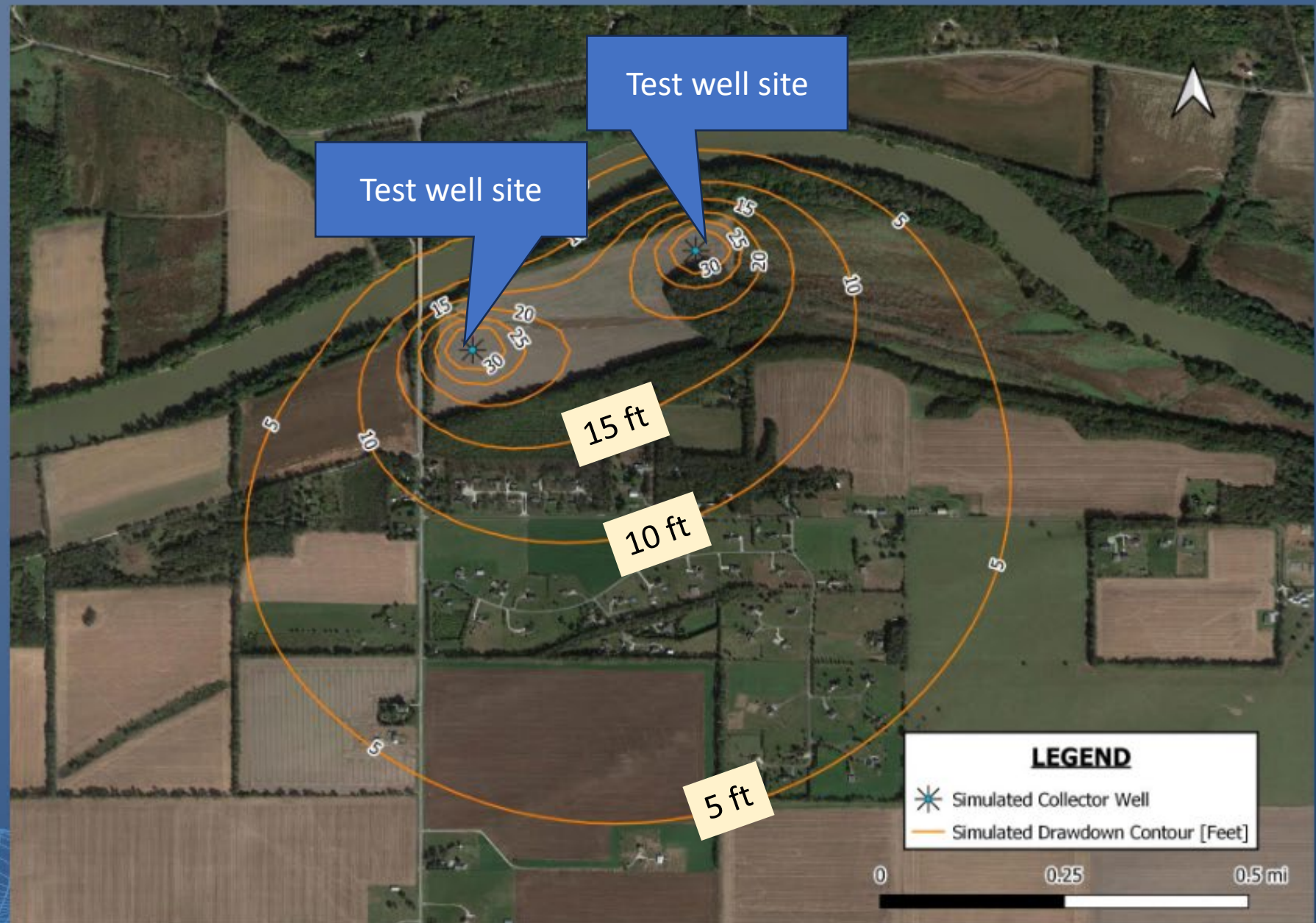
Significant Withdraw Wells

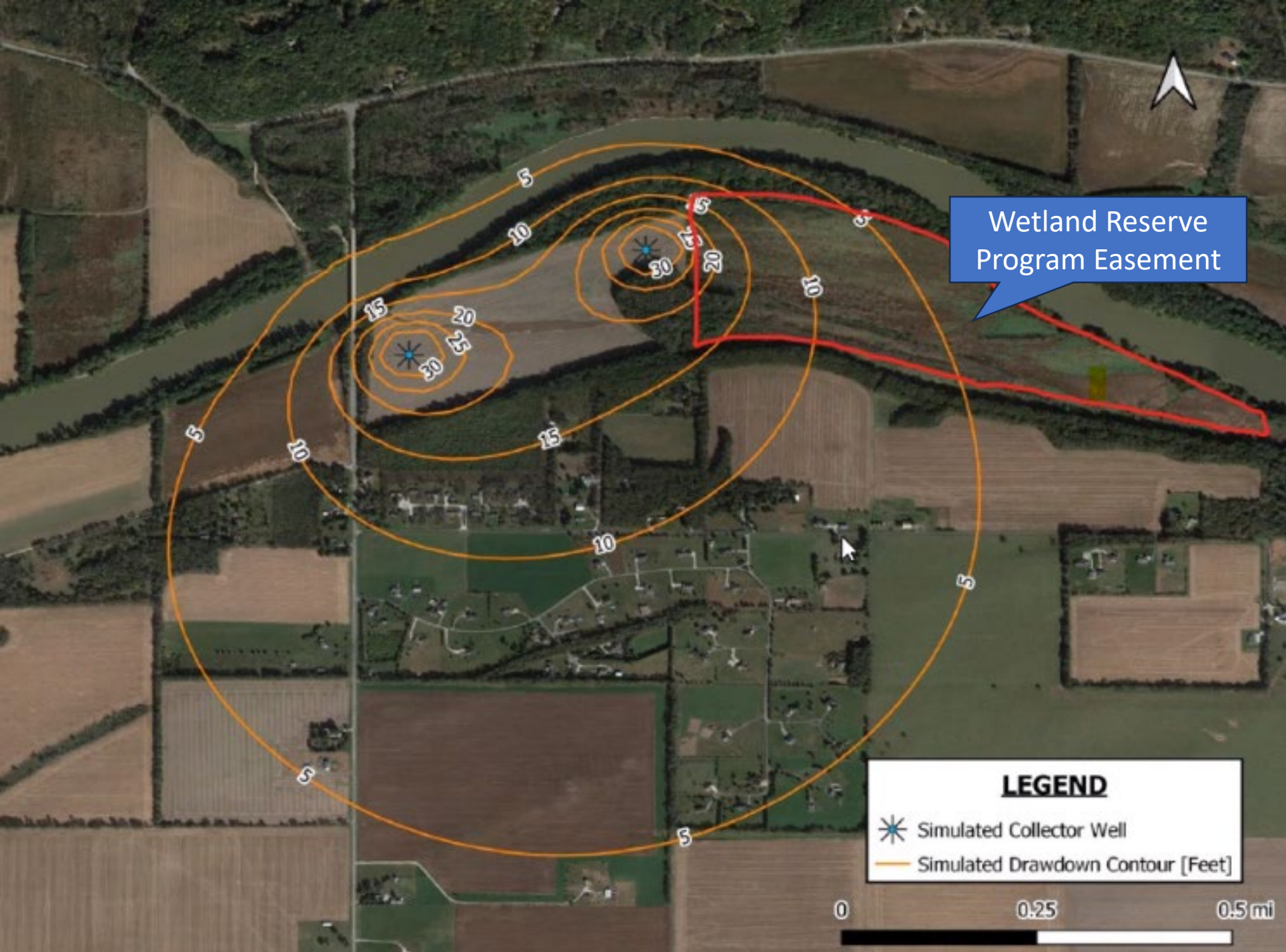
- ◆

Maximum Drawdown Scenario

45 MGD
Combined
Pumping Rate

Impact of this depends on the depth of standing water in the wells currently.





Wetland Reserve Program Easement

Numerous **wetland easements** are funded by USDA Natural Resources Conservation Service in the area.

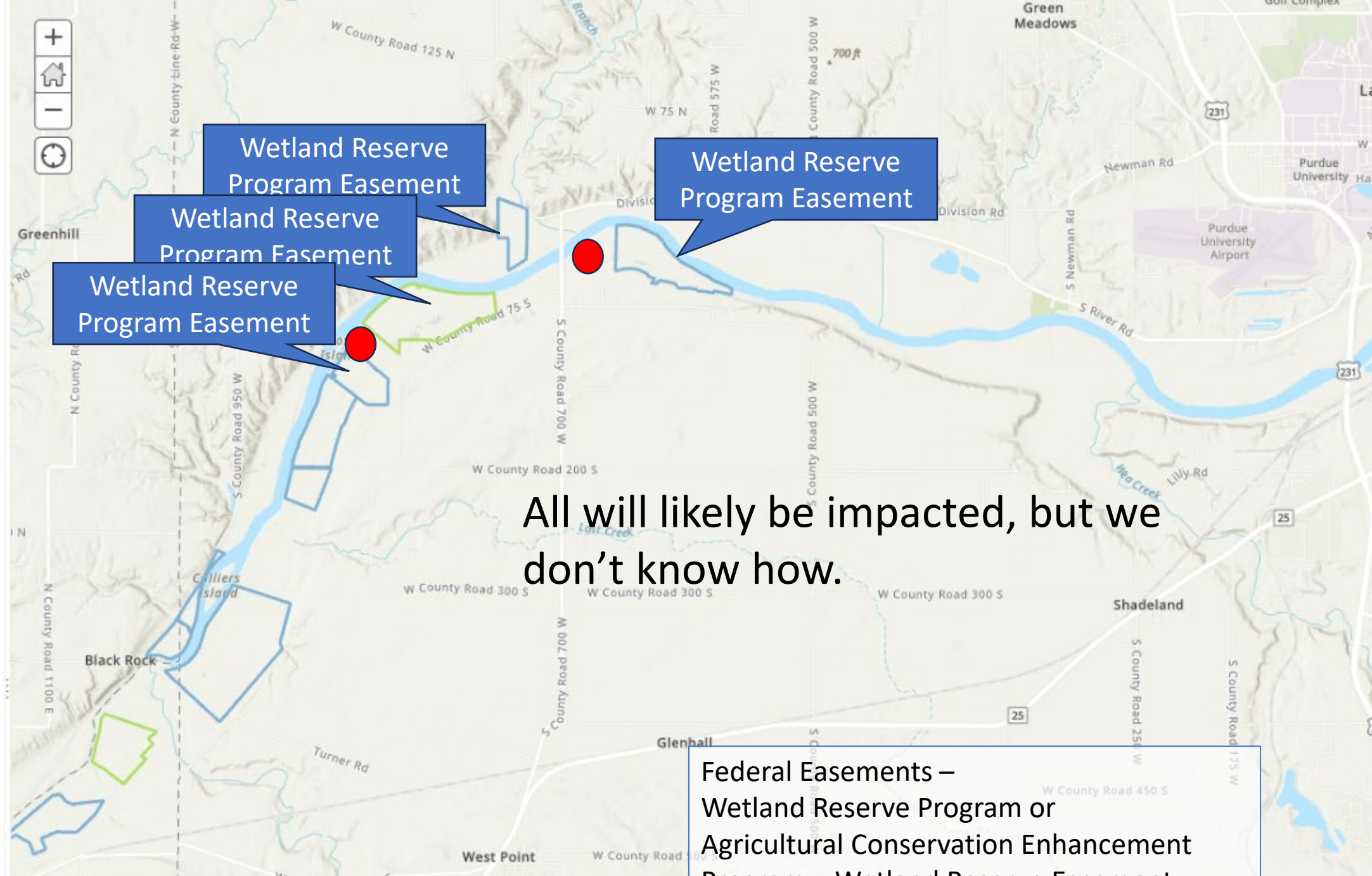


Legend

easements

USDA NRCS Easements

- ACEP-ALE
- ACEP-WRE
- EWPP-FPE
- EWRP
- FRPP
- GRP
- HFRP
- OSL
- RCPP-ALE
- RCPP-HFRP
- RCPP-WRE
- WRP



Wetland Reserve Program Easement

Wetland Reserve Program Easement

Wetland Reserve Program Easement

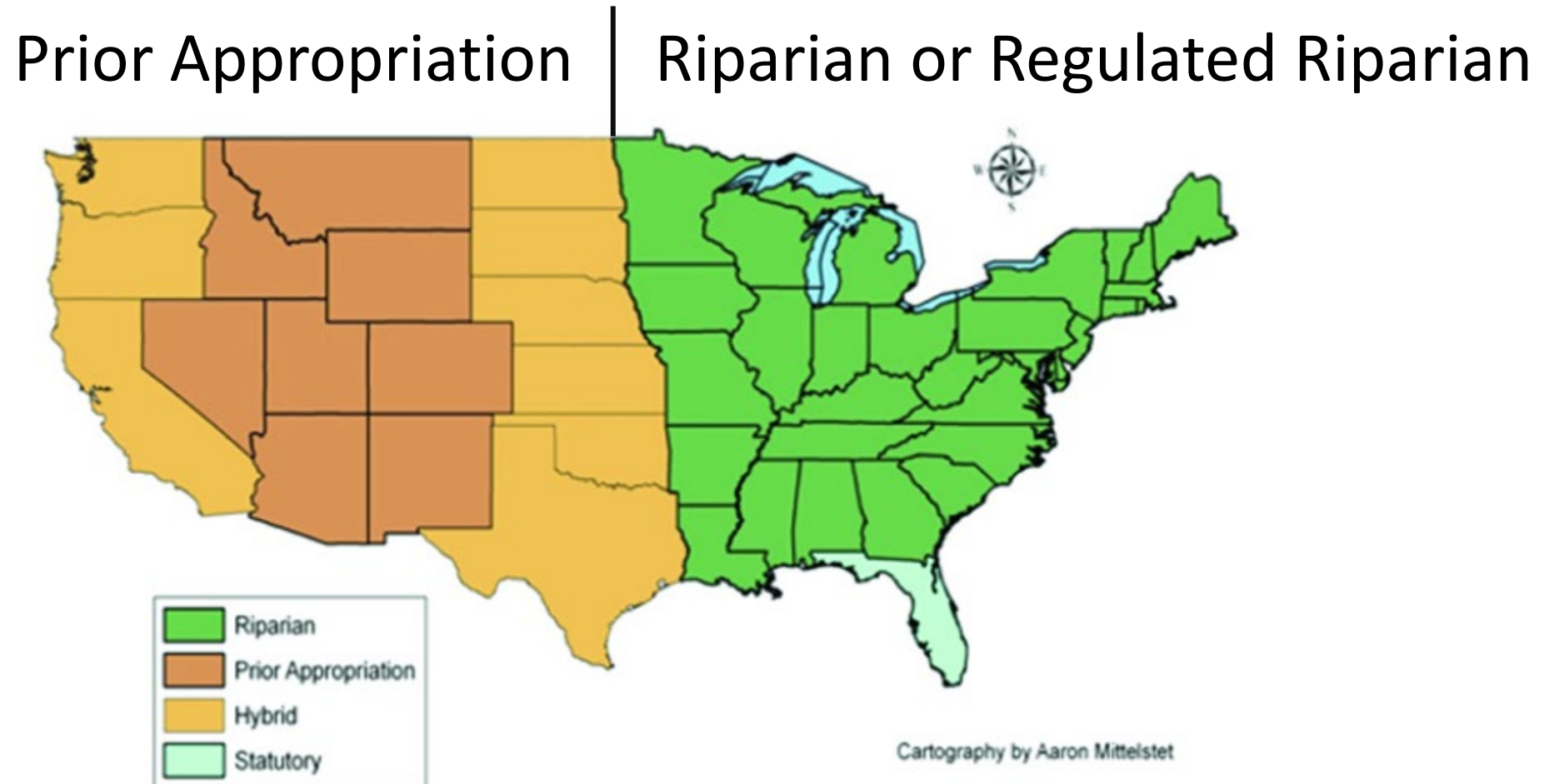
Wetland Reserve Program Easement

All will likely be impacted, but we don't know how.

Federal Easements –
Wetland Reserve Program or
Agricultural Conservation Enhancement
Program – Wetland Reserve Easement

Potential Policy – What could it look like?

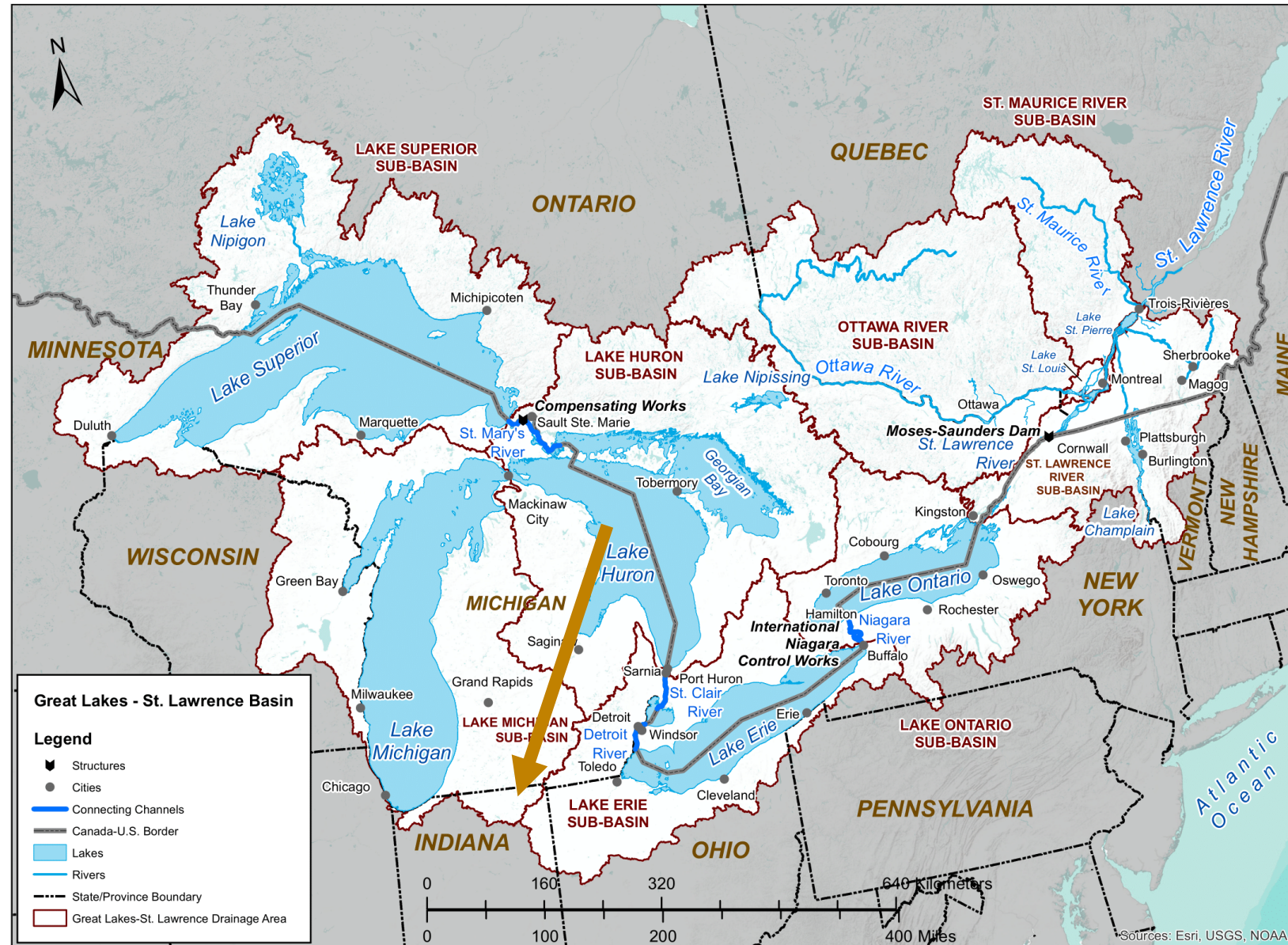
What do other states do?



Great Lakes Basin

Indiana already has much stricter oversight in a small part of the state.

- No diversion out of the Basin
- General permit for 1 MGD
- Individual permit for any withdrawal that averages 5 MGD for 90 days.



Require a Permit for Large Water Withdrawal or Transfer

- **No permit:** Missouri, Illinois, Indiana
- **Permit Required:** Minnesota, Kentucky, Iowa, Ohio, Michigan (Registration), New York, Connecticut

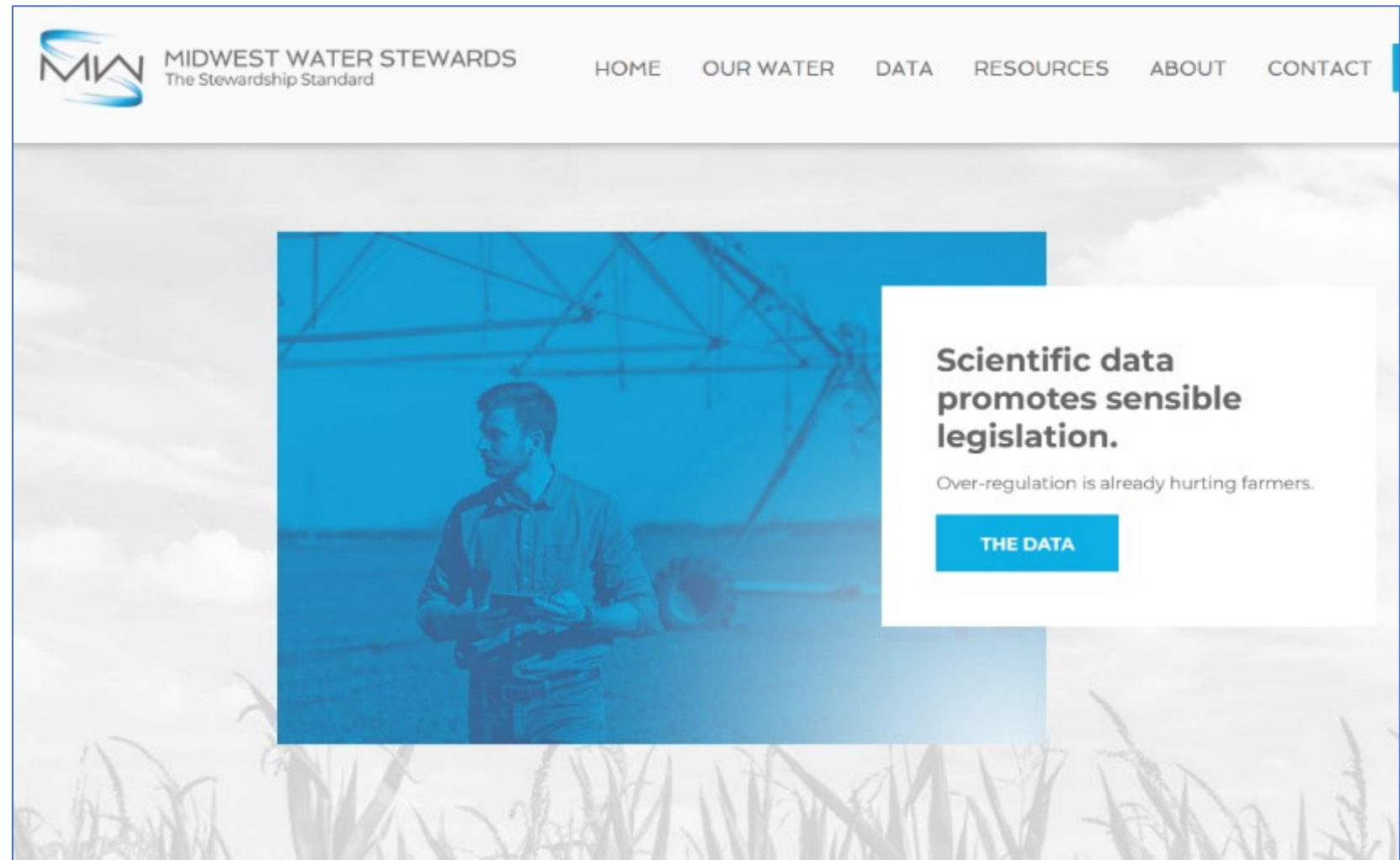
- Withdrawal rate at which permit required:

10,000 gpd Minnesota, Kentucky	25,000 gpd Iowa	50,000 gpd Connecticut	100,000 gpd New York	5 MGD over 90 days Indiana Great Lakes Basin	10 MGD Aylesworth proposed bill in 2023	2 MGD consumptive use Ohio (2.2 MGD irrigation; 20 MGD industry)
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- Concern from water resources professionals in the state:
 - We don't have enough data/information to analyze each application properly
 - Staffing increase would be needed for this new program.

Could monitoring of ground water levels be a way to minimize fear, and better prepare the state for the future at the same time?

- Farmer-funded effort in northern Indiana and Michigan.



The image shows a screenshot of the Midwest Water Stewards website. The header features the MW Stewards logo on the left, which consists of the letters 'MW' in a stylized blue font. To the right of the logo is the text 'MIDWEST WATER STEWARDS' in a bold, sans-serif font, with the tagline 'The Stewardship Standard' underneath it. Further right is a navigation menu with the following items: 'HOME', 'OUR WATER', 'DATA', 'RESOURCES', 'ABOUT', and 'CONTACT'. The main content area has a background image of a man in a field, overlaid with a blue semi-transparent rectangle. On the right side of this rectangle is a white box containing the text: 'Scientific data promotes sensible legislation.' followed by 'Over-regulation is already hurting farmers.' and a blue button labeled 'THE DATA'.

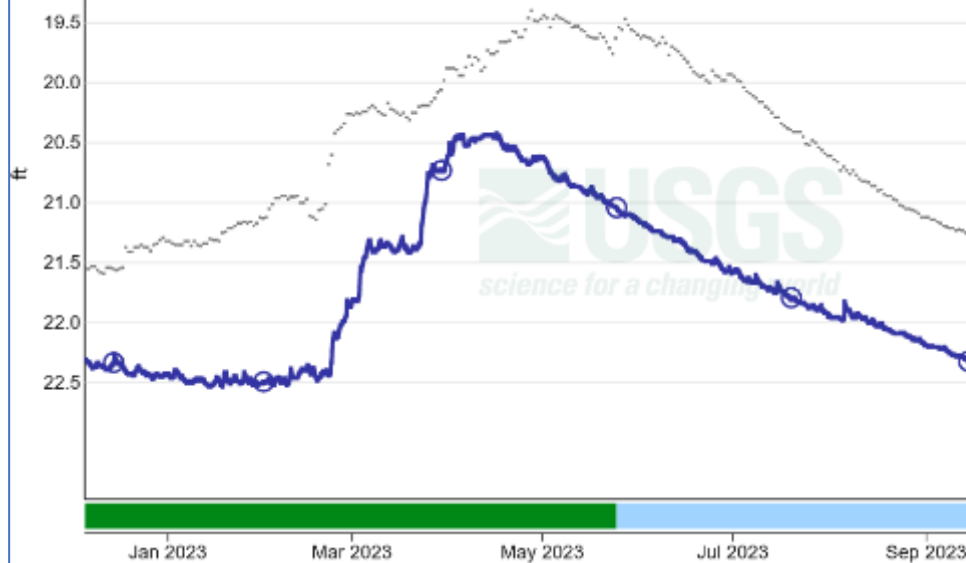
US Geological Survey monitors at limited locations and provides data in real time. (~20K/year)

Tippecanoe 18 (Tc 18) - 402734087033402

December 5, 2022 - December 5, 2023

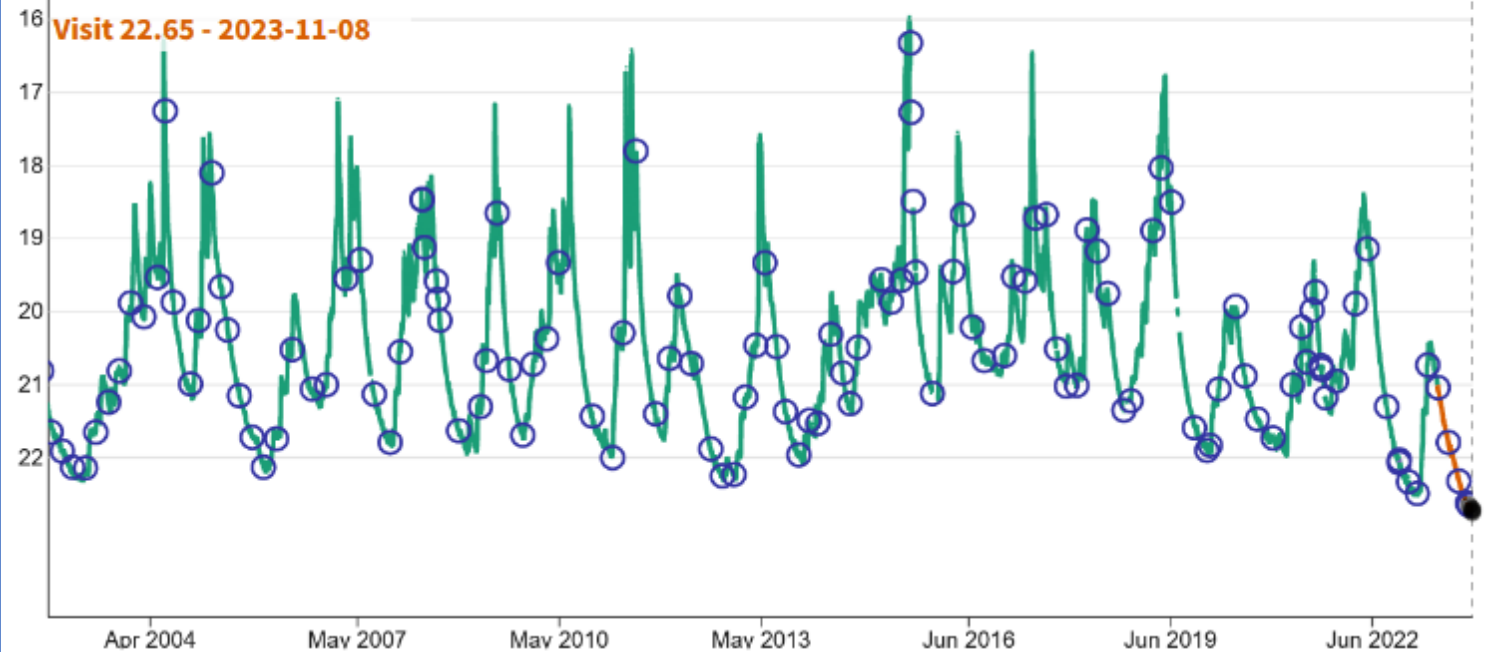
Depth to water level, feet below land surface

22.78 ft - Nov 28, 2023 04:30:00 PM EST
22.65 ft - Nov 08, 2023 10:43:00 AM EST



Depth to water level, ft below land surface, ft

Min 22.70 ft - 2023-11-26
Mean 22.72 ft - 2023-11-26
Max 22.75 ft - 2023-11-26
Visit 22.65 - 2023-11-08



Transfer of study to the Indiana Finance Authority may help, as they will be asking broader questions.

Results expected summer 2024



North Central Water Study

Directed by the Indiana Finance Authority

PROJECT PURPOSE

The primary goal of the North Central Water Study is to provide a better understanding of the supply and demand of water resources in Benton, Cass, Carroll, Clinton, Fountain, Howard, Montgomery, Parke, Tippecanoe, Tipton, Vermillion, Warren and White counties.

PROJECT VISION

When complete, the project will provide a data-driven foundation for collaborative decision making on shared water needs, challenges, and opportunities.

PROJECT STRATEGIES



Inventory and Build Upon Current Knowledge

- Identify data gaps
- Inventory the water resources of North Central Indiana
- Upgrade monitoring networks to address data gaps



Collaborate Across Many Partners

- Consult with utilities and industry to better understand current and future needs
- Establish productive partnerships among water-resources agencies



Evaluate Future Water Demand

- Quantify current water use and forecast future demand
- Include water conservation, population and economic growth, and historical droughts



Understand Available Supply

- Examine regional water availability
- Explore the impact of groundwater quality on availability
- Investigate surface water and groundwater interactions
- Build a regional water-resources model based on water budgets and geology
- Utilize the model to investigate potential regional water supply limitations and/or surpluses

“I’ve never seen an issue like this that united everybody,” said Sen. [Spencer Deery](#), R-West Lafayette.

Your questions answered: Why the state is feuding with Tippecanoe County over water for the LEAP District



Wabash River taken at Fort Quiatenon near West Lafayette, Indiana. (Credit: Johnny Jupiter/Flickr)

SA BY KAITLIN LANGE & STEVE BROWN
DEC 04, 2023

SHARE

Editor's note: This article is part of a State Affairs and Fox59/CBS4 series looking at how decisions get made at the Indiana Economic Development Corp. and how it impacts economic development in the state. The IEDC has faced increased scrutiny due to its involvement with Boone County's LEAP Lebanon Innovation District and because two gubernatorial candidates are former IEDC leaders. Read our first story [here](#).

Will Indiana seize the moment to improve data collection and develop sensible oversight to be able to better manage water for future generations?

