



## DANIEL CIRIGNANI WOOD

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### WHY ARE YOU RUNNING FOR THE CAWCD BOARD?

I first noticed the severity of Arizona's drought during Covid lockdown. The whole thing got a grip on me because the subject was so important but at the time everyone was ignoring it, meanwhile the social temperature was getting so high, with everyone hating on everyone else and becoming divided over what seemed like increasingly trivial things. I have been a supply chain professional for most of my career including a long stint as a Business Analyst at Intel Corporation and several years when I taught full-time in the W.P. Carey School of Business at Arizona State. I have also done work in Israel. The deeper I studied the drought issue, the more I brought to bear my own professional skills to understand it - it became like a hobby - and I began building models just like we do in supply chain to assess various paths out of it. What I discovered is that this is a supply problem, and it responds to supply solutions just like any private sector supply problem. The better I understood the issue the more I felt moved to step up and do something about it, that's about when I remembered, Central Arizona Project!

### WHAT ARE THE BIGGEST CHALLENGES FACING THE CENTRAL ARIZONA PROJECT?

The three biggest problems are: 1) State leaders believe our own PR 2) Drought predation and 3) Anachronistic water laws. Concerning PR: Arizona has done a comparatively superb job preparing for drought conditions and that's why so many businesses have flocked to our state in favor of our neighbors. I want to get on the board so businesses keep coming here. The problem is that just because we have done a good job so far, does not mean there isn't room to do - a lot! - better. Our yields and efficiency that are touted as top-of-the-line by so many of our public officials, including on the CAP FAQ page, but they are simply unacceptable by private sector standards. We need someone on CAWCD to point this out, loudly and with evidence and self-confidence. This hubris causes too many of our leaders to ignore the best solutions right in front of us so the best ideas are barely on the public agenda. Arizona loses seven times more water to the air than it receives. If you do the math, stopping evaporative water loss alone has the best hope of reversing the drought. Plugging evaporative leaks can save more than half a trillion gallons of water a year and Israel has already shown how to do this we won't be pioneers this has already been done. Plugging leaks is the least expensive approach the state

can take to reversing the drought. Yet we don't even bother to assess the costs of plugging evaporative leaks, which leads us to the second biggest problem: drought predation. There is someone with a bridge – I mean – desalinization in Mexico, to sell you. It will cost \$1.2 billion up front, maybe \$5-6 billion if the plants are ever completed, and it will generate the least amount of water of any possible solution while it never stops costing money and exposes the state to cartel influence. Many leading our state think this is a great idea – because they don't have a supply chain business analyst working for them, and they believe the state's PR. I'd like to get on the board and do something about that. The third problem, anachronistic laws, is a problem for CAWCD because CAWCD can encourage water saving strategies such as I'm describing and even provide funding for them – strategies that follow Israel's example and plug evaporative leaks, but CAWCD can't mandate them. Mandating modern water efficiency techniques will take a state legislature with the political will to modernize laws that date back to territorial days.

## **WHAT UNIQUE SKILLS OR PERSPECTIVES WOULD YOU BRING TO THE CAWCD BOARD TO HELP ADDRESS THESE CHALLENGES?**

I'll answer this sideways. Israel has done amazing things to reverse its drought. Its drought was worse than ours and Israel managed to turn the drought into a water surplus and now exports water to surrounding states. We can do that here in Arizona, but we have to think bigger, and smarter. There are many techniques Israel used to accomplish this, most of them have to do with two things, generally: 1) efficiency and 2) plugging leaks. Those two strategies account for the overwhelming majority of the Israeli water miracle. Yet – you would never know this listening to Governor Doug Ducey. He's been to Israel and seen up close everything they did, and he comes back to Arizona, snaps his fingers, poofs! out of thin air \$1.2 billion, and he wants to steer the state towards desalinization, in Mexico! Why would he do that? Well, I suspect the biggest reason is that he's like so many of our leaders: a) He isn't a private sector supply chain professional who would bring the kind of analysis and skepticism that comes from 16 years of working in supply chain at Intel Corporation that sharpens a deep habitual focus on ROI and the bottom line b) He did believe our state's PR. He thinks that by way of water efficiency and plugging leaks, Arizona is already like Israel, so in his assessment all we need to do is desalinization and that will catch us up. I could have him wrong I admit that's an exercise in mind-reading, but on desalinization nothing could be further from the truth. As a former business analyst, university lecturer and currently as a solution architect, I will always look closely at the data, and I will always do the math, and check the math, personally. And I will carry habits that a long career at Intel honed in me and I will speak up loudly when people are not following the data. As a professor I delighted in making complex information accessible to everyone – in as much as CAWCD can affect this, on the board I'll advocate to have something

like the Kyl Center for Water Policy's Blueprint available on everyone's water bill. Voters should know the state and trends for supply in our reservoirs, groundwater, our relative consumption levels and expected resupply from snowpack, among other things. Lastly – in the private sector – we do projects. Big ones. And Arizona will need some big, well planned, well executed projects to get to the other side of this drought.

**CAP'S LONG-TERM CONTRACT HOLDERS – PRIMARILY URBAN WATER PROVIDERS, TRIBAL NATIONS, AND INDUSTRIAL USERS – ARE FACING SIGNIFICANT SHORTAGES IN THE COMING YEARS. HOW WILL YOU WORK ON BEHALF OF THE NEEDS OF THESE CUSTOMERS?**

Urban water providers, tribal nations and industrial users have one thing in common: they need more supply. I will advocate for creating more supply by plugging leaks, that's what I mean to bring. I'm going to give the big answer up front, but then take the opportunity to work through some details before we come back to it. Israel converted every farm in the country to drip irrigation. Converting Arizona's 140,000 acres of farmland to drip irrigation like Israel did can save 700 billion gallons of water per year, it would only cost \$400 million which is a \$7 surcharge on your water bill for two years, and by itself this one step would reverse Arizona's drought. Before I answer in more detail – it's half facetious but one thing I'd do if I could is forbid CAP and state agencies from using the confusing word "acre-feet". Consider all these constituencies: urban water providers, tribal nations, industrial users. At day end: water is something that is bought and sold – there are many parties with a financial interest in the outcome that is at odds with the interests all of these constituencies, and frankly with anyone reading this voter's guide. Urban water providers, tribal nations and industrial users need more water, for less money. Someone has water to sell, and they want to sell less water, for more money. People with water to sell, for a lot of money, have heard of Arizona and they are talking to our public officials and filling them with ideas. This is a good time to have a supply chain business analyst on your side. It's a bad time to elect someone who is naïve about supply. I believe that when the public understands water issues – the answers are largely self-evident and we can build political will for those answers and the only people who stand to gain from the public misunderstanding those issues, are those who want to manipulate the conversation to their own financial ends. So we start by eliminating this confusing term, "acre feet". Here's an example. CAP loses 66000 acre-feet to evaporation every year. This statistic is cited as an example of CAP efficiency. We are supposed to believe that isn't a lot of water so we should be so proud of CAP. "Yay!" "Everything's been done!" "Move along move along, nothing to see here". "Find some other water source." But wait a second! We are also expected to believe that stopping that evaporation will cost too much. Meanwhile, someone is selling desalinization, which we already saw, will cost \$1.2 billion up front, and \$5-6 billion if it's ever completed.

When people want to talk about how much water we save by stopping evaporation, they talk in acre-feet. When someone is repeating a salesperson's talking points on expensive water from desalinization, they speak in millions of gallons per day. Pay attention now that I told you that – you'll see that it's true. The 66000 acre-feet CAP loses to evaporation every year is: almost 58.2 million gallons a day. I hope everyone re-reads that: 58.2 million gallons, per-day! "Only" 66000 acre-feet is enough water for the entire city of Chandler for a year. I believe that if this drought is the emergency most claim it to be and if the Republican governor can snap his fingers and find \$1.2 billion to spend on it, then there's money to stop CAP evaporation loss and claw back 58.2 million gallons per day from the air. Then there's drip. Drip is probably how we get out of this crisis. Arizona agriculture consumes 1.4 trillion gallons of water a year. Since no one speaks in gallons in this business, I will bet very few readers if any have ever been told that until now. 1.4 trillion gallons! Not "acre-feet", gallons! Israel reduced its agricultural water consumption by 40-50% by mandating all farms convert to drip irrigation, and it increased crop yields while it was at it. CAWCD by itself cannot mandate that farmers convert to drip, but it can make it easy for them to take this necessary step. I estimate that converting all 140,000 acres of Arizona farmland to drip would cost only \$400 million, and it stands to save the state as much as 700 billion gallons of water per year. \$400 million is a \$7 surcharge on the tri-county area's water bills, for 24 months. There is nothing we can do for less money that will generate as much water savings. Drip irrigation, "plugging a leak", alone can reverse the drought.

**THE COLORADO RIVER SYSTEM IS SEVERELY DEPLETED AFTER YEARS OF OVERUSE AND ARIDIFICATION IN THE WATERSHED. HOW SHOULD ARIZONA NEGOTIATE WITH THE OTHER BASIN STATES TO STABILIZE THE RIVER IN LIGHT OF CAP'S JUNIOR PRIORITY?**

As a Junior Partner Arizona has a tough road to hoe, but the most powerful thing we can do is lead by example. More than anything else that means spending limited financial resources smartly and: Plug evaporative leaks Plug evaporative leaks And plug more evaporative leaks Then – when we are successful for example by saving 700 billion gallons of water per year by converting our agriculture to drip, and when we do this in as few as two-years time, we lean on California and suggest: "psst: California! If Arizona can do what Israel did and save 700 billion gallons of water per year by converting to drip, that means California could save more than 5 trillion (!) gallons of water per if it followed suit?" We're all drinking from the same spigot. Our ability to lead will come from the example we set. Once again here: it's going to be important who we elect. This is a technocratic, non-partisan position. Nothing could be more important than that our voters elect professionals for this role, if we are to have any chance of leading by strength with a behemoth like California, we need professionals on CAWCD.

**THE CENTRAL ARIZONA PROJECT IS RESPONSIBLE FOR MEETING THE GROUNDWATER REPLENISHMENT REQUIREMENTS OF THE CENTRAL ARIZONA GROUNDWATER REPLENISHMENT DISTRICT (CAGRD). CAP IS REQUIRED TO DEVELOP THE CAGRD'S NEXT 10-YEAR PLAN OF OPERATION BY 2025. WHAT IS YOUR ROLE IN THIS PROCESS AS A CAWCD BOARD MEMBER AND WHAT ISSUES NEED TO BE CONSIDERED?**

One word: yield Reader, please Google these words, "Central Arizona safe yield" - don't vote on this position until you understand safe yield. I've concentrated most of my energies learning about the water issue on areas I understand the most, which hopefully by now that's clear: supply. Where it concerns the 10-year Plan of Operation for Groundwater Replenishment, the primary issue that percolates to the top (no pun intended) is safe yield. This is the last question but it's such an important one, because it should go a long way to separate professionals from well-meaning candidates. This is a 15-person board and we need other areas of expertise to serve such as geology, engineering, hydrology and law - because there are answers we do not yet have, but we need professionals to be sure we get those answers right! I hope voters select other professionals for the board and use the opportunity to take a pass on well-meaning candidates who might not be working in an area of their depth. In industry: it is all about yields. Industry lives and dies by yields. Companies thrive and become blue-chips, or fold and become has-beens, on the basis of yields. And that's when we're only talking about manufactured goods and services delivery. The subject before us with "groundwater safe yield" is: water. Phoenix - will fail - if we got safe yield wrong, and we don't use our precious time and limited resources to correct it. Failure on safe-yield: means the failure of our state - and scientists who study safe yield suspect we might not have gotten it right. We need to re-work the analysis, the numbers and the science, we need to revisit the technologies and operations for groundwater replenishment, and we need to make sure that we got this one right. After we use science, modeling and analysis to determine the actual state of safe yield in Central Arizona and the steps we need to take to ensure safe yield for a prosperous future, then in addition to analysis and advocacy I will bring years of successful, on-time, in-budget project delivery experience to bear to help put those steps into implementation so that Arizona succeeds and we all have a future of prosperity together in this beautiful state.