

To: Joint Committee on Semiconductors

From: Aileen Kaye, Horse Owner

Date: March 10, 2023

Re: "No" on SB 4 -4

Dear Co-Chair Sollman, Co-Chair Bynum, Co-Vice Chair Knopp, Co-Vice Chair Wallan and Members of the Committee,

This is my third letter to you.

I witnessed the hearing 3-8-23 at which each committee member was asked how they like SB 4. Unfortunately, all but one seemed to say they want to get the fed money and spend lots of Oregon money that might result in having semiconductor plants built in Oregon. There was no mention that the preponderance of testimony was against this bill; that these manufacturing plants take huge amounts of water; that because the lands in competition must be shovel ready, farmland will be lost even if the land does not get selected as a chip plant.

Since this might be the last day testimony will be accepted, I want to remind you that the Oregon Farm Bureau opposes this; too many questions about water remain; too many questions about probable rapid population growth in rural areas will occur.

Please see the attached articles regarding Oregon water issues and about the financial status of the chip industry.

Thank you for your concern.

# Water's Critical Role in Semiconductor Manufacturing

January 18, 2022

*Increased environmental regulations continue to drive the need for the efficient management of water used across semiconductor fabs.*

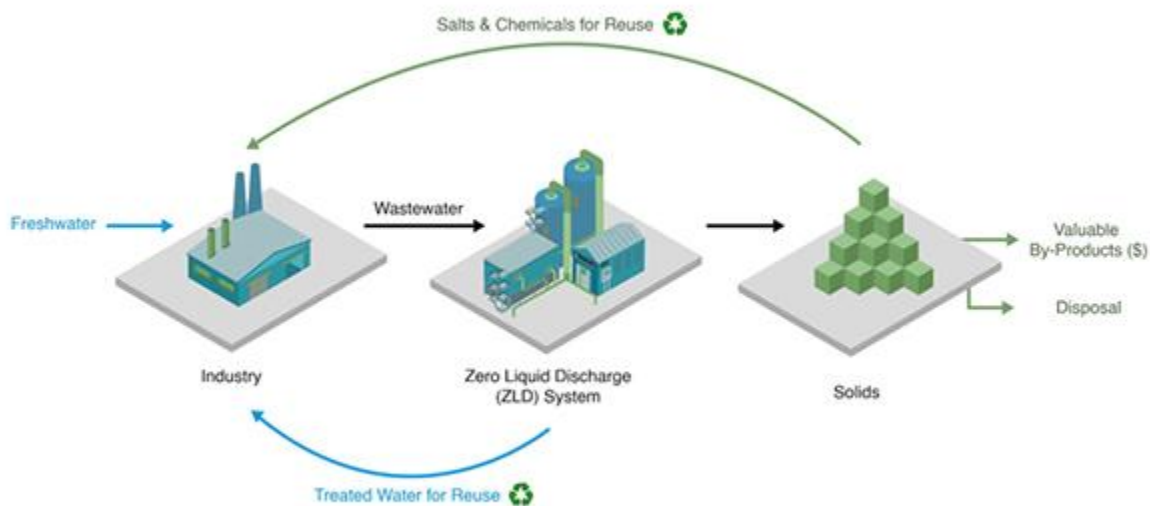


Figure 1. Overview of the Zero Liquid Discharge Wastewater Treatment Process

By Prakash Govindan, COO of [Gradiant](#)

There is urgent need today for sustainability in water management at wafer fabrication and semiconductor manufacturing plants (or “fabs”). We are experiencing a global shortage of semiconductors that are required to control everything from automobiles to smartphones to appliances. As the semiconductor shortage persists, manufacturers are facing increasingly greater pressure to adopt sustainable and efficient practices in their water operations. Water serves a critical role in chip production, as it’s needed to rinse and clean silicon wafers as they are manufactured – and not just any water, but Ultrapure Water (UPW), which is thousands of times purer than drinking water. It takes roughly [1,400 -1,600 gallons of municipal water](#) to make 1,000 gallons of UPW, with fabs using up to [5 million gallons](#) daily.

At this time of unprecedented demand for semiconductors, severe droughts in major semiconductor manufacturing areas are threatening the operational continuity and expansion plans of brand owners and foundries. The intensive water consumption required by semiconductor fabs limits water availability for local households, businesses, and wildlife in the community. Further, in the major areas where fabs are located, such as [Taiwan](#) and the [Western](#)

[U.S.](#), recent droughts have plagued these regions, thereby threatening the global supply chain, increasing the costs of production, and placing pressure on overall water availability.

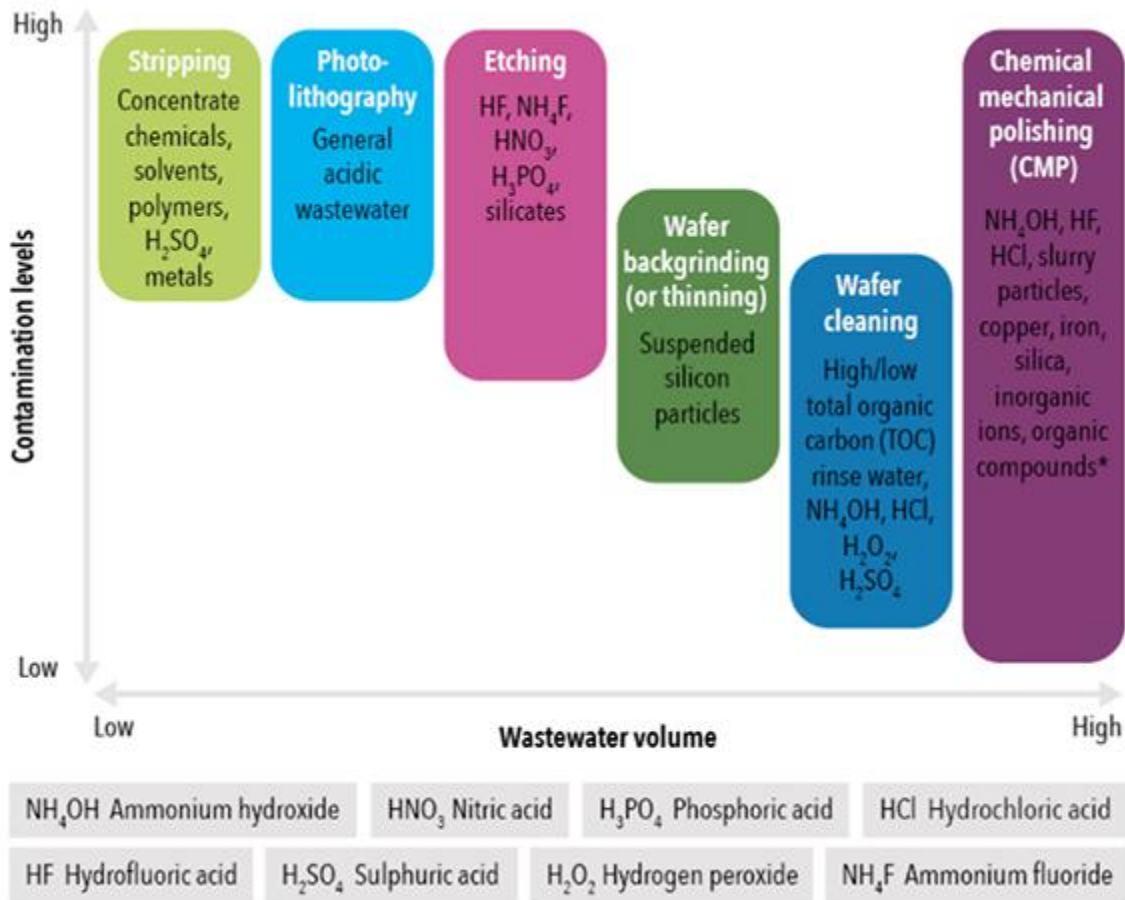


Figure 2. Separating Waste Streams for Optimized Treatment and Reuse. Global Water Intelligence.

## An increase in water scarcity influences new technological trends

In response to prolonged droughts and increasing demand for semiconductors, brand owners and manufacturers are focusing on new ways to recycle, reduce, and reuse the water used in their production. New advancements in water treatment have emerged to allow semiconductor manufacturers to recover and reuse wastewater, remove targeted contaminants, and even reclaim valuable products from waste streams.

Water reuse with simple measures such as the cooling of equipment continues to be widely adopted due to the ease of implementation, but fabs are increasingly interested in treating and channeling individual streams of process wastewater, to serve as feedwater for UPW systems. This practice is complex as each wastewater stream is different, sometimes requiring its own treatment approach. When implemented in concert with other water management strategies,

manufacturers can greatly reduce their overall water consumption and ensure sustainability and continuity in their manufacturing operations and supply chain.

## Pressure from world leaders

Global leaders are becoming increasingly strict on water and wastewater quality and quantity as our freshwater resources are dwindling. Officials have recently announced ambitious goals to achieve a sustainable future, with a key focus to address the need for water. At the UN Climate Change Conference, better known as COP26, water was a primary focus of discussion. UN officials forecasted the world will see a [40% shortfall in water by 2030](#), prompting many [leading brand owners](#) from the world's essential industries to pledge their operations will be [net-water positive](#).

Outside of brand owners, many countries are also adopting initiatives for sustainable water management. In Asia, where most of the semiconductor manufacturing takes place, Singapore announced its [Green Plan 2030](#) this year, to maximize the use of natural resources and reduce the amount of waste being discharged into the environment. As these initiatives and programs continue to grow and regulations related to water and wastewater management are enacted, brand owners and manufacturers are facing greater pressure to optimize their operations and minimize footprint through sustainable water practices.

## Future expansion plans

The need for semiconductors will only grow in the future to address our insatiable appetite for technology and electronic devices in our daily lives. Innovation advancements in water treatment now allow industries to recover and reuse wastewater, remove contaminants, and reclaim valuable products from waste streams. As large chip fabs prepare for expansion in the coming years, advanced water and wastewater treatment will serve a critical role to meet the world's demand for semiconductors.

### About the Author

Prakash Govindan is the COO of Gradiant. Under his leadership, Gradiant has developed and commercialized a platform of sustainable clean water treatment technologies, with the goal of solving the most important water treatment challenges. Prakash leads Gradiant's global project acquisition and execution work. Prior to Gradiant, he earned his Ph.D. in Mechanical Engineering at MIT and holds more than 100 patents. Prakash is based in Singapore.

### About Gradiant

Gradiant is a global solutions provider and developer of cleantech water projects for advanced water and wastewater treatment, with focus on water reuse, industrial wastewater, resource recovery, and zero liquid discharge. Gradiant's end-to-end solutions and technology expertise enable sustainable and cost-effective treatment of the world's most important water challenges. With a full-suite of robust and proprietary technologies, powered by the top minds in water, Gradiant serves its clients' mission-critical operations in the world's essential industries. Today, with over 400 employees, Gradiant serves its clients around the world from its headquarters in

Boston and Singapore and offices across ten countries. Gradiant creates new possibilities for water. For more information, please visit [www.gradiant.com](http://www.gradiant.com).

# Silicon Valley Bank: Regulators take over firm behind market slump



Image source, Reuters

**US regulators have shut down Silicon Valley Bank (SVB) and taken control of its customer deposits in the largest failure of a US bank since 2008.**

The moves came as the firm, a key tech lender, was scrambling to raise money to plug a loss from the sale of assets affected by higher interest rates.

Its troubles prompted customers to rush to withdraw deposits and sparked fears about the wider banking sector.

Officials said they shut the bank to "protect insured depositors".

The Federal Deposit Insurance Corporation (FDIC), which typically protects deposits up to \$250,000, said it had taken charge of the deposits.

Clients with insured deposits would have access to funds "no later than Monday morning", it said, adding that money raised from selling the bank's assets would go to uninsured depositors.

The episode came after SVB said it was trying to raise \$2.25bn (£1.9bn) to plug a loss caused by the sale of assets affected by higher interest rates.

The news caused investors to flee the bank. Shares saw their biggest one-day drop on record on Thursday, plunging more than 60% and fell further in after-hours trade.

Concerns that other banks could face similar problems led to widespread selling of bank shares globally on Thursday and early Friday.

SVB did not respond to a request for comment immediately.

A crucial lender for early-stage businesses, SVB is the banking partner for nearly half of US venture-backed technology and healthcare companies that listed on stock markets last year.

Speaking in Washington on Friday, US Treasury Secretary Janet Yellen said she was monitoring "recent developments" at Silicon Valley Bank and others "very carefully".

"When banks experience financial losses, it is and it should be a matter of concern," she said.