### De-Coupling: Another View of Our Water Challenges

#### 2016 Arizona Water Reuse July 25, 2016

#### with acknowledgments

Fleck, John. "High-Tech Desert: The Great Decoupling of the West's Water," The Breakthrough Journal, Summer 2016.

http://thebreakthrough.org/index.php/jour nal/issue-6/high-tech-desert



# I. The Supply Gap



"[W]e have identified a long-term imbalance between available supplies and projected water demands over the next 100 years of up to 3 million acre-feet."

Arizona Department of Water Resources, Arizona's Next Century: A Strategic Vision for Water Supply Sustainability (2014)

#### **ADWR's Planning Areas**





#### Sun Corridor Planning Area (a.k.a. "Basin & Range Areas")

Source: ADWR Strategic Vision (2014)

#### Projected Sun Corridor Demand

Sector	2010	2035	2060	
Agriculture	2,029,432	1,716,697	1,373,909	
Dairy	18,590	18,480	8,000	
Feedlot	3,091	3,091	3,091	
Municipal	1,381,251	2,319,897	2,959,583	C.
Other Industrial	16,132	40,922	40,922	) <sup>Sun</sup> Corridor m
Mining	34,905			& industry a municipalities
High		117,500	117,500	Wator y = 115% increase
Low		58,300	58,300	aver demand by 200
Power Plants	72,337			~~~~y 2060
High		184,026	230,952	
Low		133,838	160,330	
<b>Rock Production</b>	15,603			
High		103,244	132,069	
Low		43,019	55,029	
Turf	76,649			
High		102,524	116,389	Idomand
Low		89.536	116,569	20 - 40% total demo
Total (High)	3,647,990	4,606,381	4,982,415	Su screase by 2000
Total (Low)	3,647,990	4,423,780	4,775,733	Source: ADWR Strategic Vision (2014)

## **The Central Premise**

### more people & & economic activity

#### greater water demand





### **Demand Is Changing**

#### TOTAL NUMBER OF ACRES PLANTED FOR ALL AGRICULTURAL PURPOSES BY COUNTY



Source: Morrison Institute for Public Policy, ASU; data from USDA, National Agriculture Statistics Service, 2007

#### **Agricultural Demand as %-age AZ Statewide**



Source: ADWR



#### **Phoenix Population and Water Usage**





#### Water is Broken. Data Can Fix It.

by Charles Fishman, March 17, 2016

"The question White House officials are asking is simple: What could the federal government do that wouldn't cost much but that would change how we think about water?

"The best and simplest answer: Fix water data."

### Doeve eest be Reedaise

#### 

activity

#### greater water demand



### 2. The Water Rights Cases

#### (aka "The general stream adjudications)





Strategic Priority No. I Resolution of Water Rights Claims

"Until that process is complete, **uncertainty** regarding the nature, extent and priority of water rights will make it **difficult** to identify **all the strategies necessary** for meeting projected water demands."

Arizona Department of Water Resources, Arizona's Next Century: A Strategic Vision for Water Supply Sustainability (2014)

## The Subflow Problem

#### What's the big deal about "subflow"?

"Under Arizona's bifurcated system of managing surface and groundwater, the concept of subflow serves to protect appropriable surface water rights against interference caused by the pumping of groundwater. Because water is a very precious and limited commodity in Arizona, much turns on how 'subflow' is determined."

In re General Adjudication of All Rights to Use Water in the Gila River System and Source, 198 Ariz. 330, 334-35, 9 P.3d 1069, 1073-74 (2000)

### So what is "subflow"?

"the saturated floodplain Holocene alluvium"

- all wells within the zone subject to adjudication
- AND all wells in the cone of depression
- EXCEPT de minimis wells

In re General Adjudication of All Rights to Use Water in the Gila River System and Source, 198 Ariz. 344, 9 P.3d 1083

## So why case studgare?

### Projected Upper San Pedro Demand

Sector	2010	2035	2060
Agriculture	8,800	8,800	8,800
Dairy	42	42	42
Feedlot	0	U	0
Municipal	19,168	26,226	31,062
Other Industrial	288	288	288
Mining	0		
High		12,000	12,000
Low		2,000	2,000
Power Plants	0		
High		0	0
Low		0	0
Rock Production	75		
High		1,489	1,764
Low		620	735
Turf	1,552		
High		1,675	1,731
Low		1,552	1,734
Total (High)	29,925	50,520	55,687
Total (Low)	29,925	39,528	44,661



## ≈ 50% increase in municipal demand

Silver v. Pueblo Del Sol Water Co. Maricopa County Superior Court



die Hall at Siema Vista "[T]he law surrounding 'subflow' has proven to be the root cause of the delay – whatever one might think of that concept from a philosophical perspective, it has proven to be extraordinarily difficult to apply in practice."

Minute Order, In re Gila (2015)

Maybe there's another way to solve this problem?



## 3. Wastewater as an Asset

#### **City of San Diego Pure Water Program**

#### 2016

- 85% water imported
- 201 KAF/year effluent discharge
- facing costly WWTP upgrade

93 KAF Potable Reuse

#### eliminate \$1.8 billion W/W TP upgrade avoid desal's GHG & energy costs

Photo © Aaron White, Wikimedia Commons Source: San Diego 2012 Long Range Water Resources Plan "Sometimes I wonder what terrible thing I did wrong in a previous lifetime that I must now spend so much of my time in windowless hotel ballrooms, listening to people read slides to me."

"I must have been Vlad the Impaler."

https://onthepublicrecord.org/

a really good blog about California water policy



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