Research Travel Support

WRPI was pleased to provide some support for CSU San Marcos Professor Kristine Diekman's travel to Durban, South Africa in June 2018. Professor Diekman presented her project, Run Dry, at the International Symposium on Electronic Art. She also researched investigative media projects about Durban's Right to Water. Here, she recounts some highlights on Day Zero in Cape Town.

Cape Town is the second largest city in South Africa and the home of 3.78 million people about to run out of water.

Landing at Cape Town's international airport, I am stunned by the droplet shaped signage in the public restrooms, "Due to the water restrictions, this tap has been switched off." I have been up north in the iSimangaliso Wetland Park, and the person driving me to my hotel jokingly asks why I didn't bring some water back. I tell him I am in Cape Town to research the water situation. He promptly and somewhat impatiently tells me that Day Zero is fake news and the government is lying about the drought while mismanaging water. I acknowledge his viewpoint, especially given the tense relationship of provincial and national politics in the Cape. Yet, I remain curious to find out first hand.

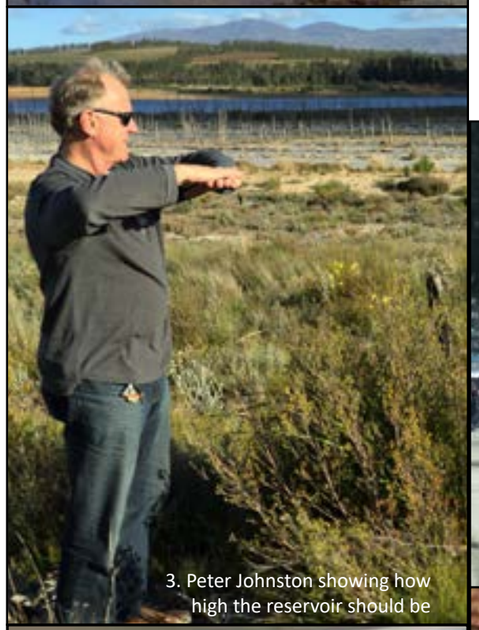
Is Day Zero, the day when the taps run dry in Cape Town, fact or myth?

Well, it does depend on who you ask. First I asked Dr. Peter Johnston, Applied Climatologist, University of Cape Town. He thought it best I see it for myself, so he graciously took me on a driving tour of the two largest dams and reservoirs that provide water to the city, Theewaterskloof Dam and the Berg River Dam, and the surrounding catchment areas. These are two of the six major dams that provide 99.6% of the water in the Western Cape Water Supply System. Driving about 100 kilometers outside the city through a gorgeous landscape that has greened due to some rainfall in April, we first look at the Berg River Dam. Not so bad – 61% full. [image 1]. The average level for dams across the Western Cape in June 2018 was about 30%, up from 22% the year before, with the Berg River Dam now at 61% full and the Theewaterskloof Dam at 26% full. Why such a big difference? This brings me to my first lesson about critical analysis, water science and the dangers of media misrepresentation. (Note: As of this printing, September 2018, Berg River Dam is now 96% full, and the Theewaterskloof Dam is 48.7% full.)

The Theewaterskloof Dam is the stunning image used in the international reports about Day Zero. It shows a dry lake bed with stunted and dead trees starkly rising out of the sand and rock. It is the poster child for Cape Town's dire situation, shocking and apocalyptic. Granted, in May 2017, the Theewaterskloof Dam was at 16% capacity. A year later, June 2018, I saw it reported at 26% full [image 2]. So, it was not exactly overflowing. Dr. Johnston stood on the dry lake bed and indicated with his hand how high the reservoir should be, about up to his chest. [image 3]. However, he also explained why it is so low compared to the other dams in the area. Theewaterskloof is the largest, shallowest reservoir in the region; therefore, more prone to evaporation. Rather than try to continue to store precious water in the least efficient reservoir, this water is prioritized for use while other reservoirs, such as the Berg River, fill. This stark image has been widely distorted in the media. The recently uncovered tree stumps in the image have been described as "dying plant life left behind due to retreating water levels" when in fact the trees died long ago when the region was flooded by the dam. Now, with the water levels so low, they are just showing up again. This isn't to say that climate change and drought aren't real and pressing, but we need more coordination between science and communication to create responsive narratives that educate the public and work to solve these pressing issues. Using images out of context and without accurate water science information is irresponsible, does not help to educate the public, and works against water resource management.

1. Berg River Dam

2. Theewaterskloof Dam



3. Peter Johnston showing how high the reservoir should be

4. Westin Cape Town's Desalination Engineer, Andrew Gartshore

Day Zero, and the international media hysteria it prompted, unfairly impacted Cape Town's hospitality industry.

Cape Town, like all of South Africa, is one of the most welcoming places I have traveled to. Curious as to how water conservation and tourism worked together, I met with Jeff Rosenberg, the Cape Chairperson of FEDHASA, the Federated Hospitality Association of South Africa, a national trade association in the Cape. I met Mr. Rosenberg at the Westin Cape Town Hotel along with Leon Meyer, Westin's General Manager, Ross Baines, Westin's Director of Marketing, and Andrew Gartshore [image 4], the engineer for their new desalination system, whose name tag said "my passion: fresh water fishing". Our discussion centered on alternate messaging that FEDHASA is using to promote tourism and water conservation, and what the Westin is doing. "Save Like a Local" has become the new outreach tool, hopefully replacing Day Zero. The message from FEDHASA is "Cape Town is open for business and we need everyone to help by being water-wise when visiting." The Westin has its own water saving campaign which includes removal of bath plugs, ubiquitous water-free hand sanitizers, water pressure reduction, and filling the swimming pool with non-potable water. Probably the most interesting measure is the localized desalination plant that was installed in the basement. Because the Westin is built on reclaimed land on the waterfront, it has high water levels that can be used in their desalination effort. Seven already existing pumps in the basement, used originally with sumps to pump out the groundwater, are now used to pump this water to the desalination system.

5. Informal Settlement

6. Informal Settlement Drainage

Water conservation is a way of life for Cape Townians.

With only 12 gallons allocated per person per day, everyone uses a bucket in the shower, plumbs grey water, installs rain capture barrels, takes two-minute showers, and essentially reuses every drop in the house at least once. Californians could learn from this, even though we are generously allowed 55 gallons per person per day. Yet, in the many marginalized informal settlements (housing without formal infrastructure, such as sanitation and water, but may have electricity) surrounding Cape Town there is no running water at all, and people collect water from communal faucets. Without accessible water in their homes, these communities are stressed by lack of sanitation. While driving in the rich countryside of wine growers, Dr. Johnston and I drove into an informal settlement of agricultural workers lacking domestic water and plumbing [image 5]. We saw the effluent in the streets and ditches that carries pollution and waterborne diseases affecting the local population and the water supply in the watershed [image 6].

Dr. Jo Barnes, an epidemiologist and Senior Lecturer Emeritus at Stellenbosch University Faculty of Medicine and Health Sciences, has collected data on river pollution for 18 years. The level of pathogens in the water has increased dramatically. The irrigation limit of the EU for safe irrigation of edible crops is 1000 E. coli organisms per 100 mL water; the river she tested even before the drought was at times running at over 200,000 E. coli per 100 mL water. The drought elevates E. coli bacteria occurrences in the water drastically because of lower water levels. While waterborne diseases affect entire populations, those with compromised immune systems, such as those with HIV, suffer the most. South Africa has the largest HIV epidemic and treatment program in the world, with about 19% of people living with HIV. When asked about Day Zero, Dr. Barnes said that from an engineering standpoint, Cape Town was not going to run out of water completely. Still, she says, "Never waste a good drought." What she means by this is that in "normal" times, we tend to forget the persistent problems associated with water resource management. So why not use this crisis, real or manufactured, to raise awareness of the multiple critical issues that we face globally?