



TWV Podcast #003:
Clean Water = Great Beer! A Conversation with New Belgium's Jenn Vervier
Show Notes at <http://thewatervalues.com/pod3>

Intro: Welcome to The Water Values Podcast. This is the podcast dedicated to water utilities, resources, treatment, reuse, and all things water. Now here's your host, Dave McGimpsey.

Dave: Hello and welcome to The Water Values Podcast. Today I am speaking with Jenn Vervier, the Director of Sustainability and Strategic Development for New Belgium Brewery, the makers of Fat Tire Amber Ale and other fine beers.

We are going to learn a lot about New Belgium's use of water in the brewing process, some water efficiency measures they have adopted, some energy-water-food security nexus issues, and a whole bunch more. This is actually the first interview I recorded in The Water Values Podcast series but the third released. So I hope you don't think I've regressed in my interviewing skills too much.

Now, as you know, before we get into the podcast, I need to make a few disclaimers. I'm a lawyer licensed in Colorado and Indiana. And nothing in this podcast should be taken as providing legal advice or as establishing an attorney-client relationship with you or with anyone else. Additionally, nothing in this podcast should be considered a solicitation for professional employment. I'm just a lawyer that finds water issues interesting and that believes greater public education is needed about water issues. And that includes enhancing my own education about water issues because no one knows everything about water.

With that said, let's get on with it. Open the valves, fasten your seatbelts, and here we go.

Dave: Hi Jenn, and thanks for coming on The Water Values Podcast, greatly appreciate the time you're taking here, and I am super stoked to have you on. If you could please, tell us a little bit about your background and how you came to work at New Belgium Brewery.

Jenn: Sure. I'm Jenn Vervier. I am the Director of Strategy and Sustainability at New Belgium and I have worked at New Belgium for 20 years.

Dave: All as the Director of Strategy and Sustainability?

Jenn: No, I started when I was in grad school at CSU on the bottling line and when I was studying philosophy and environmental ethics at CSU and then was on the bottling line and then



became financial manager. I got my MBA in Finance and became the CFO, and then I spent some time as the COO and then moved over into sustainability and strategy after that.

Dave: Can you tell us a little bit about who New Belgium is and a little bit about, in a broad sense, its sustainability efforts.

Jenn: Sure. At New Belgium, we have a purpose that defines why we come to work every day. And that purpose is to manifest our love and talent by crafting our customers' favorite brands and proving that business can be a force for good. So it's really important to us, obviously, to make great beer and have people love that beer. And we're passionate about beer, obviously, but we are also passionate about saying you can be really successful in the conventional sense, in the P&L, profitability sense and make the world a better place. I'm an executive director of sustainability, I have four people working for me who work on sustainability and that's not entirely common. We do that because, we constantly ask: how can we minimize our footprints? How can we show other companies that acting this way is not only possible but actually might make you more profitable and more successful? We have been fortunate to be successful – how can we spread that good fortune out into the world to help others, like non-profits, with their causes to do things that we wouldn't be able to do as a company?

Dave: Can you talk a little about how New Belgium Brewery approaches sustainability, especially with the focus on water?

Jenn: Sure. So our co-founders were a social worker and an electrical engineer. And when they, before they even started selling beer, they went for a hike in Rocky Mountain National Park outside of Fort Collins and decided how they wanted to run the company, what kind of company they wanted to create and being environmental stewards was one of their four core values and beliefs. So that was back in 1991. So environmental efficiency, resource efficiency, has been part of how we run the business from the very beginning, and having been founded by an engineer, that has been designed throughout the process, to focus on water and energy.

Dave: I have seen these campaigns and slogans, no water, no beer. What are some of the things that New Belgium does, particular to water, how it approaches water from a business standpoint.

Jenn: There are many aspects to it, and the first and most obvious is operational. Years ago, fifteen years ago or more, we became one of the first craft breweries in the country to hard-pipe our operations because it is a much more efficient way to move liquid throughout the brewery than when you are dragging hoses. And we have long had process engineers looking at optimizing our cleaning regimens, which is another place where you use a lot of water. So, on the operations side, it is very similar to any other manufacturing process in capturing the steam off the kettle, condensing it, reusing it in other brews. There is an energy-water nexus in brewing



like there is throughout society, and so wherever we have hot water or steam, we try to capture it and reuse it again in the cycle, saving both energy and water.

Dave: I'm not terribly familiar with the mechanics of brewing. What is hard-piping?

Jenn: It is literally putting pipes on vessels to connect them to other vessels, so that when you move the wort or the beer or the cleaning fluids around the brewery, you are doing it through pipes rather than hoses that you are coupling and uncoupling.

Dave: Using hoses, typically, there is waste water in that because when you undo it there is spillage?

Jenn: There is water in the line, yep, and there is spillage, and they are harder to clean and so you end up cleaning less efficiently.

Dave: What types of cleaning regimens does New Belgium go through and if you could talk about the water intensity of the cleaning regimens?

Jenn: I don't think I can go into that in good detail for you because that is not my area of expertise. You know, it's just a clean-in-place system that runs throughout the entire brewery. I think that what might be interesting to folks is to know that the craft beer consumer is really in love with hoppy beers. I don't know if you have noticed that everywhere you go across the country, there are more and more hoppy beers being sold and more and more people making hoppy beers. It is a very American style at this point, and hoppy beer is a very water intensive beer to make. And so New Belgium has actually had more challenges in the last couple of years, being water efficient than we ever have throughout our history when consumers just like – 60% of what they bought or 70% was Fat Tire. You have one product that you are running throughout your system, you don't have to clean between the brands as often because you are making less brands and now that we are making two to three dozen brands a year, and many of those brands are very hoppy. It has become more of a challenge to be conscience of our water.

Dave: It's interesting to note that you indicated that hoppy beers are more water intensive. Why is that?

Jenn: Because the hoppy beers with the aromatic hops, you add that at the end of the process, and so then you have to get the hops out of the beer before you filter it and package it. And so there is a lot of water left in the hops. It's as simple as that. So, you are putting whole hops in and then you have to take them out and a lot of water comes with them.



Dave: What about the water intensity? On New Belgium's website, they have some great infographics about the water intensity of the beer and kind of the water footprint. Could you talk a little about how much water it takes to make a glass of beer.

Jenn: We have done a water footprint, a full water footprint from grain to glass as they say or from grain to consumer, and we actually don't share that data on our website because we have found the exercise to be very instructive. Although our intuitions were proven true – growing the barley and growing the hops is where the most water use is – I think in all food products, all consumer products, if they are agricultural, it's in agriculture is where most water is used. And so the water that we actually use in the plant, if they are four part generally, one part goes into the beer, one part maybe or less is lost through evaporation, through steam or in the spin tops or in the spent yeast and then two parts are cleaned on-site and then head back to the municipal treatment plant and then go back into the water supply. So we are not actually consuming that water, we are returning it to the watershed. But in agriculture, that happens less.

Dave: Sure. So about how many glasses of water, under that metric, does it take to produce a glass of beer?

Jenn: About four to one. One of them, you are drinking and two are returned to the watershed.

Dave: In terms of how breweries look at and decide to locate, what are some of the factors that, for example, why is New Belgium in Fort Collins, Colorado?

Jenn: A coincidence of history, where these folks lived, but it is also true that Colorado makes second to California, the most beer in the U.S., and I think that we can absolutely attribute that to the quality of our water supply and being at the top of the watershed. So our water is less expensive, because it is less costly to treat, and it's really plentiful. And I think that a lot of folks would say that's why there are so many great breweries in Colorado. And we recently, at New Belgium, have gone through a multi-year site selection process, and we have chosen Asheville, North Carolina, to build our second brewery. And during that site selection process, which occurred up and down the East Coast, one of the primary factors was availability of water – that they couldn't locate in a water scarce area and that the water profile matched to the water profile in Fort Collins, so that we could more readily match the flavors of the year.

Dave: What kind of process, how long did it take to settle on Asheville? Was it a year-long process?

Jenn: It was about two years.

Dave: When you say that the water profile was very similar to what you are looking at in the Fort Collins water supply, what are the factors there in terms of what you are looking at?



Jenn: Well, I am not a chemist, but it is not that complicated. At least from where I sit, it's not that complicated. Your utility gives you the water data – how much chlorine or chloramines are in it? That is a hugely important for brewers that there isn't too much chlorine. And if a treatment plant, if a municipality uses chloramines instead of chlorine, that's worse. I think they are harder to get out and they have more of a flavor impact. And then you are looking at the mineral balance – are those similar? And are there any other residuals in the water that will impact flavor?

Dave: In terms of the water supply, that is interesting that you take your water directly from the municipal water supply.

Jenn: It is a fascinating process and in order for us to get the water delivered municipally. We have to buy water rights and turn them over to the city. And then the City of Fort Collins has done a water scarcity study and where they are now is, they say, a developer, which, in this case would be us in the unconventional sense, but we are making more of our product, we have to deliver 1.92 times the amount of water we want to use and that helps the City of Fort Collins feel like it is protected in a one-in-fifty-year drought. It is absolutely a big deal in Fort Collins and in northern Colorado recently – we had fires two years ago, we had floods last year and all of those things affect water quality and affect our watershed.

Dave: Have you taken any special measures as a result of the fires, floods, any of those natural disasters?

Jenn: Yeah, we work closely with the city and their water treatment operators to be in close touch with the quality of the water that is coming out, and the city in turn is doing telemetrics up high in the watershed – more than they ever had before to have more lead time, awareness if something bad is coming down the pike. And the City of Fort Collins is fortunate to have water sourced from two totally different watersheds that provide some redundancy, and then likewise, inside our plant, we've stepped up the tasting so that we have trained tasters that test the beer throughout the process, test the finished product, as well as test raw materials, and then their testing of the water before we even brew with it is also part of the regimen.

Dave: Are there certain beers that are best produced with a certain type of water? How does the water impact the brewing process if you're trying to brew a lager versus an ale?

Jenn: I believe that as long as you have clean water that you can produce any type of beer. There are salts or minerals, you can adjust the pH of the water as it goes into the brewhouse as you mix it with the grain to facilitate the enzymatic reactions and get the flavor profile you want at the end. But yeah, absolutely, I don't want to say manipulating but working with the natural qualities of the water is part of the brewer's art.



Dave: What are some of the specific things that New Belgium has done on the water sustainability front? We talked about hard-piping.

Jenn: I think that sub-metering is something that was on our list of things to do, and we finally got it done a couple of years ago. So putting meters in at each major piece of the process, so we cannot just go here's how much water you used last month or last week, but here's how much water it took to filter this beer versus that beer. Here is how much water it took to clean the packaging line after this run versus that run. And so then our operators on the floor are looking at that live data and can see an anomaly when it happens. Oh my goodness, that process just used a lot more water than it normally does, let's go on the floor and look to see what happened and how can we control that. And only by getting that kind of visibility into our day-to-day runnings, are we going to be able to eke out those last bits of efficiency around water use. I think that is one of those things where we are going to harvest throughout the process. We are constantly fine tuning.

And then another big project for us is just looking at losses and making sure that we are being the most efficient with the extract that we create in the brewhouse, so when you take the sugars out of the grain and the flavors out of the grain, how do we make sure that we are getting the most saleable beer out of that and not wasting any of it along the way, which ultimately is wasting the water that goes with?

Another significant improvement that was implemented was changing to dry lube on our packaging line. And on our first year we did it, it saved over 50,000 gallons of water a year. So instead of having a wet lubricant for all those conveyors that run all those bottles throughout packaging, it is now done dry and the entire floor of the packaging hall is completely dry and so I would guess it is probably saving us upwards of 70,000 gallons a year.

Dave: Jenn, can you talk a little about waste water treatment and what goes on at the brewery?

Jenn: So we treat all of our process waste water on site and that reduces the BOD, the Biological Oxygen Demand and the TSS, the Total Suspended Solids, to a very low level. We don't directly discharge into any water supplies, we still send it to the city, so we have a backup. We feel safer knowing that water is going to the city, but it is going already pre-treated. A great side benefit of that treatment for New Belgium, the by-product anaerobic treatment of waste water is methane. We harvest that methane. We have two massive balloons on-site where we harvest the methane from the water treatment plant, we store it, and then we pipe it back up to the brewery and run it in two cogens – engines that make both heat and power. So we have a 600 kW engine and a 300 kW engine on-site that we run during our peak power times – the coincident peaks. So when the municipality is peaking, they charge us a heck of a lot more for our electricity than at any other time, so that if we can offset or lower that peak, then we lower



our electric bill by upwards of 30%. So we can produce about 15% of our total energy with a by-product of on-site water treatment, but we end up saving close to 30% on our electric bill.

Dave: That's great. I love combined heat and power. I think it is a fantastic technology and application. Could you also talk a little about graywater use and what some of the hurdles are and what's coming down the pike in terms of graywater.

Jenn: Yeah, we have a couple of systems in a brew where do reuse processed water. So in the cleaning systems, you can reuse it a certain amount of times before it is too loaded up to use again and in our packaging hall, we take the water that we rinse the inside the bottle with, we capture it and put it in a bowl, UV filter it, and then use it to rinse the outside of the bottles. That actually reduces the water used in packaging by half because cleaning those bottles is one of the most intensive uses. But we have not been able to embrace the more broad-scale water reuse because we didn't pipe the brewery for it. And so for us to now go back and try to think now how do we get water from our processed water treatment plant say, and bring it back to the brewery and use it in cleaning? The cost effectiveness of that just isn't there. But as you know probably better than I, with the recent changes in graywater harvesting that the state just passed, we are hoping to work with the city and with CSU to do some demonstrations on how that might become more practical.

Dave: Sure, and that graywater usage statute that you referenced – Reg 86 is being promulgated. It's not just going to be a regulation. The city has to adopt an ordinance allowing it, it's got to not interfere with any water rights, and there's a bunch of hurdles that need to be jumped over before graywater reuse is going to be authorized, at least here in Colorado. I know other states are different in that regard, but it is exciting that you are ready to go and be a part of a new chapter of Colorado water reuse.

Jenn: Absolutely, we don't want to damage any property owners. We don't want to impair any downstream water rights holders, and at the same time, it feels like Colorado water law has to evolve a little bit, to reflect our current reality. Water is scarce. The needs of recreationists. The needs of habitat. We are hopeful that we can find solutions that meet everyone's needs, while still not harming anyone's property.

Dave: One other question that is interesting. Water is such a scarce commodity or becoming a scarcer commodity in Colorado. Do you get any pushback or flack for exporting a lot of that water as part of the beer?

Jenn: I don't know that we have gotten flack. Maybe it's come up. I think that people realize the economic benefit that we bring to the area. There are over 120,000 people who visit the brewery in Fort Collins every year, so we feel like we are giving back, hopefully, to our watershed in different ways. We are very sensitive to it, and I think that is why New Belgium



will be at the front of the line saying, you know, we want to conserve water, we want to protect water quality, we want to be respectful of the fact that our livelihoods, over 500 people work for New Belgium, depend on the quality and quantity of the water that comes out of the Rocky Mountains.

Dave: Did that issue have any impact on the decision to locate a brewery in Asheville, North Carolina?

Jenn: Yes, we certainly wouldn't want to have chosen a home where our water use would have had detrimental impacts on other folks who depended on water in that area.

Dave: In terms of sustainability, can you expand on some of the issues, again broadly? You mentioned the energy-water nexus, and because when you save energy, you are in effect saving water. What are some of the energy sustainability initiatives that New Belgium is undertaking?

Jenn: We first measured the carbon footprint of a six pack of Fat Tire, six or seven years ago, and we published it as soon as we were finished. We were the first brewery, the first consumer packaging company to publish their entire carbon footprint, which showed that packaging is very impactful. Transportation is not as impactful as people think. Refrigeration at retail is impactful. Raw materials are, and I think that gave people good visibility, and it helped us prioritize where do we want to work. So, you have total control, or almost total control, of your operations. But then when you do these footprints, water footprint or carbon footprint, you realize that it is your supply chain where there is the most potential for negative or positive impact. And so, we spend a lot of our time talking to our suppliers, talking to the folks who grow barley or grow hops or our maltsters about their practices. How are they reducing their water use? How are they reducing their chemical use? How are they reducing their energy use? Because ultimately, our product is more sustainable if their process is more sustainable. That's true for packaging, as well. Packaging is very energy intensive to turn sand into glass. And so how can we get more recycled content into the supply chain in order to reduce that energy? We are really trying to take a holistic approach to what our impact is.

Dave: In terms of New Belgium's activities just in the water industry and sustainability and things of that nature. Can you talk a little about how New Belgium is involved in water issues?

Jenn: Absolutely. It is an interesting place to be because we sit on both sides of the fence. We're heavy water users, and we also are conservationists and wanting to protect water sources. And so one of the things that we have done is create a campaign called "Save the Colorado". Which we got other brands, other well-known consumer brands, to be involved with like Patagonia and Clif Bar and Aspen Ski Company – all companies that rely on Colorado River water for their livelihoods. And we did that so that we'd all put money in the campaign, and we'd donate to non-profits who were working up and down the Colorado River from Granby, up



at the genesis in the mountains of Colorado, all the way down to San Diego, Los Angeles, and Mexico. And so we donate money to non-profits, but part of what we do there is try to make the 30 to 40 million people who depend on the Colorado River for their drinking water aware that they do. Because we got into this 4, 5, 6 years ago, people really don't know where their water comes from. They really have no idea when they turn on the tap, where their water comes from, and then in the case of the Colorado, how imperiled it is. That water shortages and water "wars" are a reality in the Southwest or could become so.

Dave: What kind of impact are you seeing that these philanthropic and targeted endeavors have? Are they having the impact you'd think?

Jenn: It is hard to measure, but I do believe that they snowball. Just like New Belgium's work around promoting bicycle transportation. The more people have it in front of them, the more active they get. You love water issues, and you are educating people and then people find out about their watershed, and they say, "Oh, what's going on in my back yard?" "Oh, this stream near us flows into the Colorado, and look how it's not being protected by the Clean Water Act anymore." We want to get involved in that. So I think it absolutely have a snowball effect as awareness is raised.

Dave: What are some of the other – you mentioned, "Save the Colorado" – are there any other philanthropic activities besides just donating money to charities?

Jenn: We are involved with the National Resources Defense Council's "Brewers for Clean Water" campaign and the technical expert in NRDC, who started the campaign, actually said she was inspired to do so by reading a blog that I wrote in the Huffington Post a year-and-a-half ago about the Clean Water Act and the fortieth anniversary of the Clean Water Act and that we were asking the Obama Administration to step up and clarify its jurisdiction and help the EPA administer it and to say that intermittent and ephemeral and headwater streams should be included in protection. And so ourselves along with 40-50 other breweries have signed on and said in writing letters to President Obama and saying clean water is essential for brewing. There are over 2,400 breweries in the U.S. right now, over 2,500 breweries in the U.S., and I would hazard a guess that that wouldn't be true if people weren't getting clean water all over the country, which wasn't necessarily the case 40 plus years ago.

Dave: Are the any other activities that you are involved in?

Jenn: Locally, we have helped get some irrigation diversions removed from the river that runs through Fort Collins. The Poudre River runs through Fort Collins, and there have been many historic diversions on that river for ditch water, some of which are no longer in use. They stay there, and they impede recreation, and they impede fishery running, so we work with our city to



get other people involved and to raise the money to get those diversions out and hopefully create a kayak park on the river.

Dave: Oh, nice. How long have you been at that?

Jenn: A couple of years. Yeah, actually, one of the ditches is an historic ditch from the 1860's – runs through our property at the brewery at Fort Collins. But it is now retired, no one uses the water anymore, so we have been working for years to get that ditch retired, formally, in the water court way.

Dave: Well, Jenn, thanks very much for spending time with us today. Where can people go to learn about you and New Belgium?

Jenn: It was a great pleasure to be here and have time to talk to you. NewBelgium.com everything you need to know. Facebook and Twitter.

Dave: That was my interview with Jenn Vervier, the Director of Sustainability and Strategic Development for New Belgium Brewery in Fort Collins, Colorado. I am very appreciative of her time and her willingness to come on The Water Values Podcast and be an essentially a guinea pig. I mean, remember, this was the first session I recorded for The Water Values Podcast and she was fantastic throughout the entire process. You know, in terms of just the interview, she was just absolutely great. You can tell she's been around sustainability issues and water sustainability issues in particular for a long time and I learned a lot from Jenn and hope that when you enjoy that next Fat Tire, if you are of legal drinking age, and always please drink responsibly, I hope that when you enjoy that next Fat Tire, that you think of all the great information that Jenn provided us with in the interview. To me, some of the highlights were learning that 1. That hoppy beers are increasing in popularity in the U.S. and that those beers, those Hoppy beers are much more water intensive beers to brew than non-hoppy beers. Something else I learned was that Colorado is home to so many breweries because Colorado is a headwater state, essentially meaning that because the water is harvested or used too close to its source, it doesn't need the same treatment regimen that breweries farther downstream might need. The third thing, the third highlight that I got out of that interview was that there are so many opportunities for water efficiency in the brewing process. Jenn talked about hard-piping. She talked about dry lubing the labels. She talked about a lot of different things, and I think it was fascinating hearing about all the different water efficiency measures they have put into place and that they have found that those water efficiency measures actually help the P&L, the bottom line, of the brewery. So that to me was a real important take away.



Well, what interested you about the interview? Please let me know by posting a comment on the show notes, which will be posted at <http://thewatervalues.com/pod3>. I also appreciate any of your feedback, good, bad or indifferent by emailing me at david@thewatervalues.com or you can tweet at me @DTM1993. Contact me with suggestions for potential interviewees, water issues you would like to hear about or even just to let me know what you liked or didn't like about the podcast. I am always trying to improve, and I want deliver the information about water that you want to hear. I appreciate your support by spreading the word about The Water Values Podcasts and by providing an honest review on iTunes and Stitcher, and I promise you this, I will never turn down a five-star review.

In closing, remember the core message of The Water Values Podcast: Water is our most valuable resource. So join me by going out into the world and acting like it.

Outro: You've been listening to The Water Values Podcast. Thank you for spending some of your day with us.