

## *Hank Speaks...* **So Listen** by Hank Bienert

### **Making Water (part 2)**

A local lad, Tom Conklin, brewer at Gordon Biersch downtown has won many awards including the Super Bowl of brewing-Great American Brew festival-using de-chlorinated, un-augmented tap water which seems to fly in the face of the usual recipes for lagers which call for a very low mineral soft (mostly RO) water.

This seems to prove the old adage that if your water tastes good it will make tasty styles; personal experiences with water from City of Atlanta, Northshore Parishes and some West Texas towns demonstrate that off flavors will carry through into homebrewed beer. Bad water supply will require reverse Osmosis water which could mean a filter-costly and how do you know when the filter element needs to be changed or can be easily handled by inexpensively filling your 5 gallon jugs at a reverse osmosis machine.

When I need some RO water for an accurate lager or mineral dilution, the nearest supply for Fashionable Old Metairie/Deutsches Haus is in front of the Winn Dixie on the Lake (North) side of Veteran's Highway where it first leaves Orleans Parish. Bring jugs/coins since it is not closely related to the store's operation.

There are also cheap 1 gallon bottles of distilled water at lower Garden District Walmart and while you are there you can also pick up some large jugs of them-there pork rinds to get rid of aggravating older folks who have named you in their will and to do so in a S-L-O-W fashion without being obvious enough to be indicted.

Let's begin by dealing with pH which is recommended to be between 5 and 5.5. Orleans parish water is definitely more alkaline than JP water. The city has so many old lead soldered pipes that for safety it is kept by design quite basic (high pH) and needs to be made more acid. Even though one can expect some mild acid to be generated in the mashing process it may not be enough in Orleans to overcome the initial alkalinity.

Although Gordon Biersch guru Conklin doesn't add acid, counting on a pH drop to naturally occur from the mashing grains via the Kulmbach reaction, the addition of acid (1/2 teaspoon 88% lactic acid for each 5 gals to include ALL water used) is the advice of Lakeview (East Bank Orleans Parish) resident Charles Sule, a prize winning brewer and excellent brewoff host which almost makes up for he did awhile back-working as a software consultant one weekend while tasting barley wines with the background of Heavy Metal sounds, a combination of influences which gave him the idea of "pimping up" the bank's system, a modification which lead to the present world-wide banking crisis - if INTERPOL only knew!!

Based on personal communications with some nationally known brewers when Orleans water is acidified and approaches East Bank Jefferson Parish water, it turns out that one need minimal additional minerals to make pretty good porters and pale ales.

But what about those who wish to "finetune" their brewing so they can combine their British hops/yeast/grain with the local water of London for a "real" London Ale? They need to modify the mineral content with the important values being 6-Ca, Cl, CO<sub>3</sub>, Mg, Na SO<sub>4</sub>. Local water analysis is interesting since we have so many different systems with Orleans and Jefferson parish each having separate plants for each bank of the river.

Contact your local water treatment plant for the makeup asking for the 6 minerals cited above... unless you can get East Bank JP H<sub>2</sub>O (TIP - Deutsches Haus faucet looks unguarded to me!!) and then you can simply read on.

A few years ago I introduced myself to Sal, lab tech at East Bank Jefferson Parish water plant, that singular structure on Jefferson highway near Central Ave which I believe is the inspiration for that old song "By the banks of the S and WB" also known as "I get sedimental over you". Because the plant is fenced, no hops have been added to the drinking water even though Hopzilla-our own Peter Cadoo- lives nearby and I suspect would love to "improve" JP water. Rumor has it he even adds hops to the reservoir tank of his toilet - talk about a refreshing bathroom experience!!

Sal, a sometimes brewer, was glad to provide the chemical makeup. Although it varies slightly from season to season the figures I will give are close to reliable year round being numbers calculated by averaging 104 weeks. Knowing the mineral content, one can determine style appropriate mineral additions by 2 methods:

---1) direct calculation

Step 1/6. Compute the mole fractions of carbonic (f<sub>1o</sub>), bicarbonate (f<sub>2o</sub>) and carbonate (f<sub>3o</sub>) at the water sample's pH (example: pH<sub>o</sub> = 8.3)

$$\text{pH}_o = 8.3$$

$$r_{1o} = 10^{(\text{pH}_o - 6.38)} = 83.17638$$

$$r_{2o} = 10^{(\text{pH}_o - 10.33)} = 0.009332$$

$$d_o = 1 + r_{1o} + r_{1o} * r_{2o} = 84.95262$$

$$f_{1o} = 1/d_o = 0.011771$$

$$f_{2o} = r_{1o}/d_o = 0.97909$$

$$f_{3o} = r_{1o} * r_{2o}/d_o = 0.009137$$

Step 2/6. Compute the mole fractions at pH<sub>b</sub> = 4.3 (the pH which defines alkalinity).

I will stop now in mid-step 2...hey, I didn't make that stuff up!!

:-Those who want the entire thesis need only to contact me.

---2) Software - I used the freebie Brewwater. One can recalculate every time one makes a style of beer just as I can recalculate the distance from my house to the Lake each trip but it is the SAME every day no matter how I travel the distance. I preferred doing it ONCE for all common styles so here's an early Easter gift and you can reciprocate and buy a beer for me/Monk at the next meeting..

Mineral adjustment in tsp. for 5 gallons/H<sub>2</sub>O (I treat all water)

Based on average East Bank JP mineral report which is:

***Ca-41 Cl -27 CO<sub>3</sub>-90 Mg-12 Na-19 SO<sub>4</sub>-50***

***for LONDON-porters, browns, milds***

***Add 1/8 MgSO<sub>4</sub>; 1 NaHCO<sub>3</sub>***

***For Yorkshire pale***

***Add .9/10 Ca SO4 +.1/8 MgSO4***

***For Munich (malty) lager***

***dilute 1to9 JP/Reverse Osmosis H2O***

***For Pilsner***

***dilute 1to9 JP/Reverse Osmosis H2O-***

***For Vienna***

***Add 9/10 MgSO4***

***For hoppy Pales- Burton***

***Add 2 3/4 tsp. CaSO4; .1MgSO4; 3/4 NaHCO3***

***For stouts***

***Add 2/3 NaHCO3; 1/8 NaCl***

***Belgian***

***Add 2/3 CaSO4***

***Dortmund***

***Add 1/5 MgSO4; 1/6 NaCl; 2/3 NaHCO3; 3 1/2 CaSO4***

As always, constructive comments are welcome via the Hopline ... for those uncomfortable with readin' n' writin' big words, please continue to mumble during meetings from the back row which is where I like to sit/sip/mumble...and where the afore mentioned free beer should be delivered

**Thanks**

**Hank**