

Incoming City Water Baseline

We've all heard the expression, "Garbage in, Garbage out" and it applies to an ultrapure water system as well. The incoming city water feed is a critical location for routine analytical monitoring, yet often it is overlooked and/or understudied. Many times we are not aware of a negative water quality change until it shows up in our instrumentation at the Point of Distribution (POD), then we are not sure where the problem started. Keeping a close eye on the city water can aid troubleshooting by identifying (or eliminating) the feedwater as a source of the contaminant. POD upsets can be avoided all together by early detection and swift response to a city water change.

It is important to have a good working relationship with city personnel and be able to contact them when a change is seen. Do you know the answers to the following questions: What type of source water does your city plant process? Is it surface or well water? Do they switch sources or blend it? Is it a stable source or does it change unexpectedly and often? Do you experience seasonal water quality variations?

City feed water changes can be human or nature related. Examples of human intervention can be piping distribution changes, construction projects, and operational activities.

These can be seen in city water as elevated trihalomethanes due to periodic higher chlorination levels, carbon fines from organic treatments, or iron (rust) from degrading pipes and valves.

Some nature related fluctuations are blending of surface and ground water and switching water sources as water demands change or flood control issues arise. Natural sources of water quality change can be seen during times of extreme weather conditions or due to seasonal variations. Droughts can concentrate contaminants, especially particulates. Floods can cause increases in ionic activity such as ammonium, nitrates and phosphates from runoff containing pesticides or fertilizers.

Seasonal variations can cause increases in TOC when lakes undergo temperature inversions ("turn over") or biological activity increases ("blooms"). Key parameters we recommend monitoring at the city feed are ions (Na^+ , K^+ , NH_4^+ , PO_4^{3-} , NO_3^- , Cl^- , SO_4^{2-} and F^-), critical metals (including Ca, Mg, Sr, Fe, Mn, Ba and B), TOC, dissolved silica, pH, hardness, & alkalinity. Surface water is usually lower in ions and metals than ground water but higher in organics and particulates. Surface water sources also have more water quality fluctuations than a ground water source. To better understand the "normal" water quality variations, Balazs™ recommends building a comprehensive database by testing your city water at least monthly for a year. We can assist you with analyses, trending and presentation of your database. In addition, collecting a city water sample along with POD, can aid in troubleshooting out of specification parameters. Being familiar with the annual maximum level expected for each type of contaminant can also help determine if water system design modifications are needed.

In summary, by getting to know and understand your specific city water quality you will be able to quickly respond to changes before they negatively impact final water quality. Please contact us and see how we can design a monitoring program for you.



Distribution Crew at work making a repair to a 24 inch water main