



Reviewing DWR Emerging Contaminants Reconnaissance Studies December 2019

DWR completed several studies in earlier this year to determine the presence and concentration of several emerging contaminants in certain untreated waterbodies across the state. The emerging contaminants included 23 per- and polyfluoroalkyl substances (PFAS) compounds; 1,4-dioxane; and bromide. The Intensive Survey Branch (ISB) completed these special studies using monitoring sites from the Ambient Lake Monitoring Program (ALMP), under which ISB samples and monitors the state's seventeen major river basins on a rotating five-year cycle. Those specific study details and results for the (1) Cape Fear, New, and Watauga River Basins; (2) Jordan Reservoir, Haw River Arm Watershed, and New Hope Creek Arm Watershed; and (3) Falls of the Neuse Reservoir and surrounding watershed, follow below.

Although PFAS and 1,4-dioxane were detected in some locations in these studies, no bromide was found above the detection limits in any of the basins.

DWR's first study covered the Cape Fear, New, and Watauga River Basins. PFOS was detected at 76 ppt and 68 ppt at Cane Creek Reservoir and Lake Brandt, respectively, which is right at or exceeding the EPA health advisory of 70 ppt for combined PFOS and PFOA. The study also reported 1,4-dioxane detections of 2.7 ppb and 1.4 ppb at Randleman Reservoir and Buckhorn Reservoir, respectively, which is above the 1:1,000,000 cancer risk value of 0.35 ppb for this unregulated contaminant. Although acknowledging the limited data set, DWR noted that the results "indicate that the analytes of interest are not omnipresent" in these river basins but recommended additional studies on these unregulated contaminants.

DWR's second study encompassed Jordan Lake and the Haw River and New Hope Creek basins. Seven different PFAS compounds were detected, including:

- PFBA—Detected 10 out of 70 samples; Range 40–160 ppt; Average detected 62.4 ppt; Median detected 51 ppt.
- PFHxA—Detected 15 out of 70 samples; Range 38–350 ppt; Average detected 106 ppt; Median detected 78 ppt.
- PFHpA—Detected 14 out of 70 samples; Range 42–280 ppt; Average detected 90 ppt; Median detected 56 ppt.
- PFOA—Detected 4 out of 70 samples; Range 43–90 ppt; Average detected 60 ppt; Median detected 54 ppt.
- PFPeA—Detected 16 out of 70 samples; Range 42–260 ppt; Average detected 76 ppt; Median detected 54 ppt.
- PFHxS—Detected in 2 out of 70 samples at 56 and 71 ppt.
- PFOS—Detected in 5 out of 70 samples; Range 41–590 ppt; Average detected 174 ppt; Median detected 54 ppt.

1,4-Dioxane was detected at 5 out of 13 locations sampled, including sampling at different days. The highest 1,4-dioxane levels were detected in the Haw River. Although the underlying 1,4-dioxane was not made publicly available, it appears that it was not detected at every location on every day sampled. DEQ stated that additional monitoring of PFAS and 1,4-dioxane would need to be conducted before conclusions could be drawn but noted that “the Haw River and the most upstream site in the Haw River arm of Jordan Lake, exhibited the widest variety and highest relative concentrations of target analytes.”

DWR’s third study was on Falls Lake and several river/stream locations in the surrounding watershed. There were only two detections of PFAS in this study, 46 ppt of PFOS and 57 ppt of PFPeA on separate days at the Knap of Reeds Creek near Butner. There was a single detection of 1 ppb 1,4-dioxane in Falls Lake west of the Highway 50 bridge. ISB stated that additional monitoring would need to be conducted before conclusions could be drawn about the persistence and effects on drinking water sources.