

Nitrate Analyzers in the Lake Pontchartrain Basin

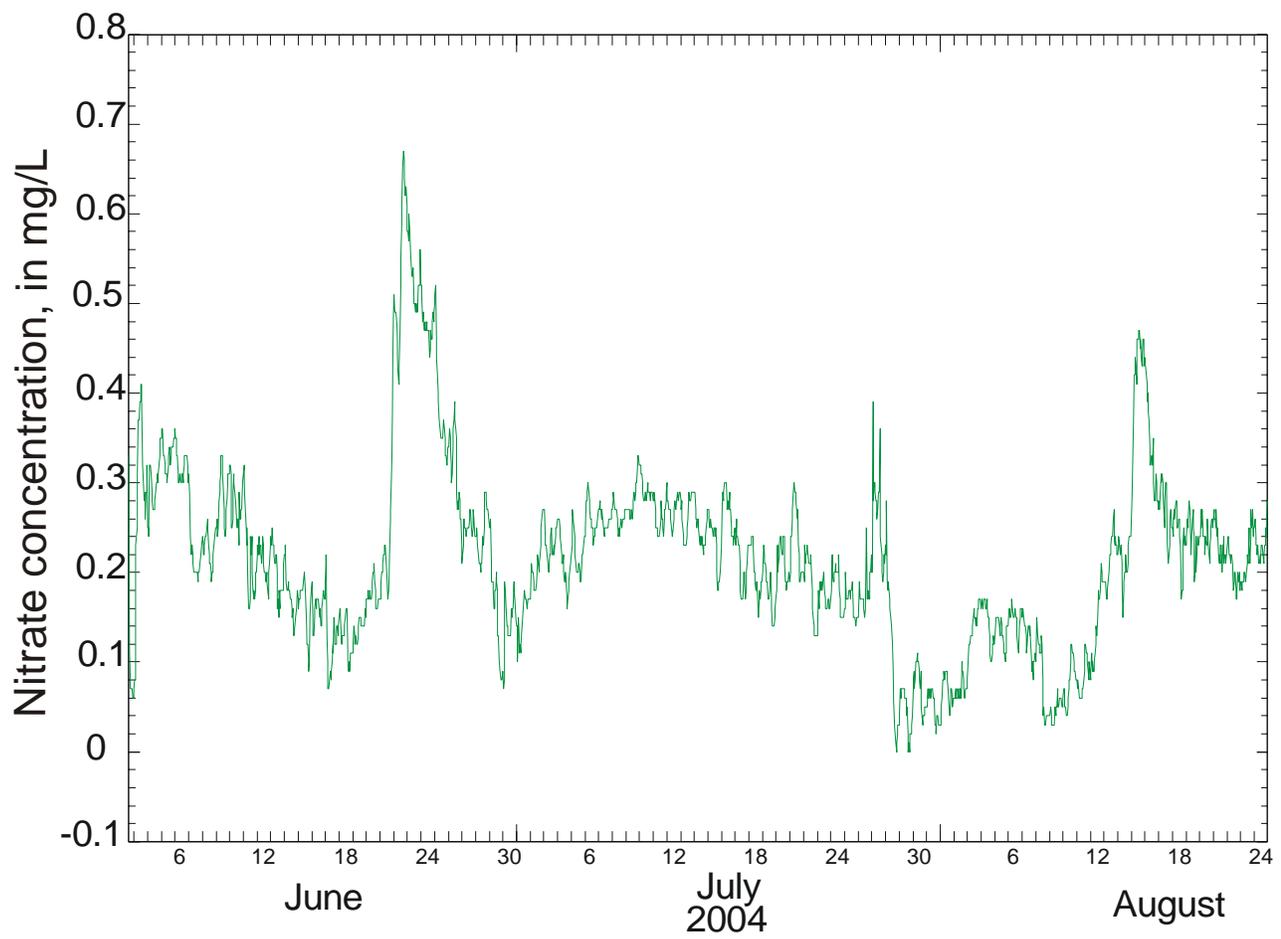
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ABSTRACT

Beginning in the spring of 2004, the USGS installed 4 real-time water-quality monitoring stations in the Lake Pontchartrain Basin. The stations record 10 water-quality parameters in real time, including water level, directional water velocity, water temperature, specific conductance, salinity, dissolved oxygen, percent saturation of dissolved oxygen, pH, turbidity, and nitrate. Of these, the analysis of nitrate concentrations entailed the use of relatively new technology in a field setting. The nitrate analyzers use cadmium-reduction colorimetry. Although this is a proven, standard method for laboratory chemistry, it is a great improvement over ion-selective probes for prolonged field deployment and monitoring in estuarine environments. Ion-selective probes can give false positives in estuarine systems, due primarily to chlorides. The utilization of a standard laboratory method in the field enables researchers and resource managers to confidently assess environmental concentrations of 0.5 mg/L and lower, as low as 0.05 mg/L. The hourly sampling interval also records short-term changes in nitrate concentrations caused by storms and tidal fluctuations. On-site Acoustic-Doppler flow instrumentation allows direct calculation of nitrate loads in these tidally affected systems.

The Lake Pontchartrain sites are located on the lower Tangipahoa River below Bedico Creek, the Tchefuncte River at Madisonville, Pass Manchac at Turtle Cove, and The Rigolets at US Hwy 90. Data from these sites are viewable at:

<http://waterdata.usgs.gov/la/nwis/current/?type=flow>



Nitrate concentrations in the Tangipahoa River below Bedico Creek, La., showing a spike in the latter part of June caused by heavy rainfall in the upper Tangipahoa River Basin.