



Catawba River New Indy Water Special Study

Executive Summary

Water quality sampling upstream and downstream of the New Indy discharge does not show any indication that the discharge has had any impact to water quality in the Catawba River watershed.

Discussion

This is a summary of what we see in the Catawba River sample results released by the SCDHEC Analytical and Radiological Environmental Services Division (ARESD) and Access Analytical as of June 28, 2021.

There were two sampling events for these sites: May 11, 2021, and May 25, 2021.

Site naming convention: CWUSNI upstream of New Indy (includes CW-041), CWDSNI downstream of New Indy.

Sampling was conducted in conjunction with the Catawba Riverkeeper.

Many of the compounds included in this effort are not part of DHEC's routine ambient surface water quality monitoring program.

State of South Carolina Monitoring Strategy,

https://scdhec.gov/sites/default/files/media/document/2021%20State%20Monitoring%20Strategy_sig.pdf

Why are these parameters important?

<https://scdhec.gov/sites/default/files/media/document/Water%20Quality%20Indicators.doc>

Site Explanations

CW-041, CATAWBA RIVER AT SC 5

CWUSNI-04, MOUTH OF TWELVEMILE CREEK AT SC 5

CWDSNI-01, CATAWBA RIVER AT SOUTHERN RAILROAD CROSSING

CWDSNI-02, CATAWBA RIVER AT LANDSFORD CANAL STATE PARK

CWDSNI-03, FISHING CREEK RESERVOIR AT FISHING CREEK BOAT RAMP DOCK

- All Methylene Blue Active Substances (MBAS), a class of surfactant compounds that may be associated with foam production, were below reporting limits.
- All Volatile Fatty Acid Substances (VFAS), a class of surfactant compounds that may be associated with foam production, were below reporting limits.
- All Cobalt Thiocyanate Active Substances (CTAS), a class of surfactant compounds that may be associated with foam production, were below reporting limits.
- All results for metals with Water Quality Standards (WQS) were below reporting limits.
- All ammonia results were within WQS.
- All turbidity results were within WQS.

- Many of the parameters sampled lack WQS; Total Suspended Solids (TSS), Total Dissolved Solids (TDS), Five-day Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total Organic Carbon (TOC), Total Kjeldahl Nitrogen (TKN), Nitrate/Nitrite Nitrogen (NO₃/NO₂), Total Phosphorus (TP), Orthophosphate (ortho-P), alkalinity, hardness, calcium, magnesium, iron, and manganese.
- Turbidity, TSS, TDS, TKN, NO₃/NO₂, TP, ortho-P, alkalinity, hardness, calcium, iron, and manganese all showed a slight increase in concentration between CW-041 and the first location downstream of New Indy, CWDSNI-01. For those compounds with WQS this did not result in any WQS exceedances.
- BOD Analytical issues for the May 11th sampling made a resampling of the BODs necessary. This Sampling was conducted on May 25th. See discussion below. To confirm results an outside lab contracted to split samples.

The only measurements of note were the pH and DO results at CWDSNI-03, Fishing Creek Reservoir, on May 25. DO was very high, 11.75 mg/L, and pH was also high, 8.64 SU, and exceeded the WQS. These elevated values would not be surprising in association with an active algae bloom. Fishing Creek Reservoir has shown elevated nutrient levels and was part of the intensive study to develop system specific nutrient standards. Current numeric nutrient standards may not be adequately protective given multiple discharges to the river, including the city of Charlotte, and stormwater inputs from development.

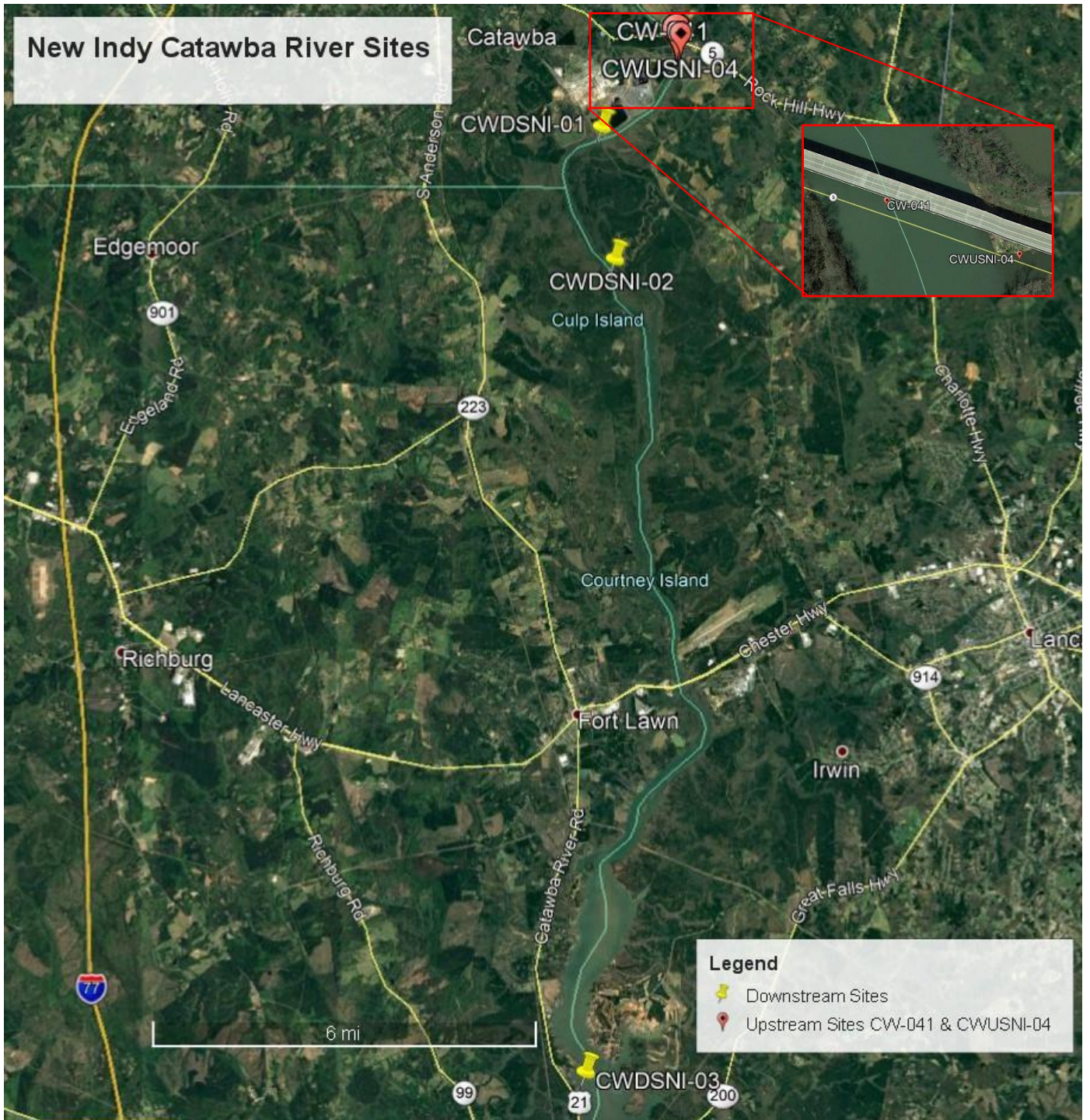
Conductivity results also showed interesting results on May 25. There are no WQS for conductivity. There was a high concentration coming from Twelvemile Creek, CWUSNI-04, of 251 UHOMS/CM, relative to CW-041, 97.9 UHOMS/CM. On that day conductivity continued to be above 100 UHOMS/CM at all of the downstream sites. There are no water quality standards for conductivity, so it is not included in the routine ambient surface water quality suite of parameters.

Higher conductivity concentrations downstream of NPDES discharges tend to be elevated relative to background ambient freshwater concentrations. The Twelvemile Creek watershed extends through South Carolina into North Carolina. This suggests that there may be upstream NPDES discharges that may be contributing.

The BOD test replicates for May 11th showed more than 30% difference between high and low dilutions. Per Standard Methods 5210B, "samples with large differences between the computed BOD for different dilutions (e.g., the highest value is >30% larger than the lowest value) may indicate a toxic substance or analytical problems. When the effect becomes repetitive, investigate to identify the cause. Toxicity should be claimed only after thorough investigation using respirometric (5210D) or equivalent methods." The values reported were for the most dilute sample, not average of all dilutions. After resampling it became apparent there was an analytical issue with the May 11th samples, and not a toxic substance concern.

This report concludes this special study. The routine ambient surface water quality monitoring program will continue to collect monthly samples throughout the watershed. Should ongoing investigations or routine sampling identify a potential issue related to the river, additional sampling will be conducted as needed.

New Indy Catawba River Sites



ND = Not detected

Most samples were collected at a depth of 0.3 meters (1 foot)

The letter "D" following Site ID means that sample was taken at a depth of 1 meter (3.3 feet)

New Indy Containerboard Sampling Data Summary - Catawba River																				
Site ID	Date	Sample Type	Parameter	pH	DO	Temperature	Conductivity	Turbidity	TSS	TDS	MBAS - Access	VFAS - Access	CTAS - Access	BOD	BOD - Access	COD	TOC	Ammonia	TKN	Nitrate/Nitrite
			Units	S.U.	mg/L	degrees-C	UHOMS/CM	NTU	mg/L	mg/L	ug/l	ug/l	ug/l	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
CW-041	5/11/2021	Grab		7.30	7.71	22.31	98	6.5	4.4	59	ND	ND	ND	< 2.0		< 20	2	< 0.050	0.68	0.65
CW-041	5/25/2021	Grab		7.69	7.78	23.47	97.9							<2						
CWUSNI-04	5/11/2021	Not Sampled																		
CWUSNI-04	5/25/2021	Grab		7.15	6.39	21.7	251							<2	<10.1					
CWDSNI-01	5/11/2021	Grab		7.18	7.19	22.09	22	10	6.6	79	ND	ND	ND	3.0*		< 20	3	0.069	0.71	0.78
CWDSNI-01D	5/11/2021	Not Sampled																		
CWDSNI-01	5/25/2021	Grab		7.09	6.96	23.78	121							<2	<10.1					
CWDSNI-01D	5/25/2021	Grab												<2	<10.1					
CWDSNI-02	5/11/2021	Grab		7.28	7.32	22.75	120	8.3	6.3	79	ND	ND	ND	2.9*		< 20	2.9	0.06	0.46	0.71
CWDSNI-02	5/25/2021	Grab		7.34	7.43	25.03	124							<2	<10.1					
CWDSNI-03	5/11/2021	Grab		7.84	8.49	25.97	107	14	6.4	70	ND	ND	ND	7.6*		< 20	2.6	< 0.050	0.68	0.69
CWDSNI-03	5/25/2021	Grab		8.64	11.75	30.5	119							4.6	<10.1					

*Test replicates show more than 30% difference between high and low values. Per Standard Methods 5210B, "samples with large differences between the computed BOD for different dilutions (e.g., the highest value is >30% larger than the lowest value) may indicate a toxic substance or analytical problems. When the effect becomes repetitive, investigate to identify the cause. Toxicity should be claimed only after thorough investigation using respirometric (5210D) or equivalent methods." The values reported were for the most dilute sample, not average of all dilutions. After resampling it became apparent there was an analytical issue with the May 11th samples, and not a toxic substance concern.

