CHARLOTTE WATER

July 29, 2022

Ms. Kim Nimmer
Water Supply Planning Branch
N.C. Division of Water Resources
1611 Mail Service Center
Raleigh, North Carolina 27699-1611

Subject: IBT Report for 2021

Dear Ms. Nimmer:

We are sending our calendar year 2021 IBT Annual Report. We are also transmitting this report to you electronically. The report follows the format of earlier reports and includes a narrative section with background and program progress reports along with spreadsheets detailing the IBT amount calculation.

For calendar year 2021, we experienced an actual maximum day IBT based in August billing data of 25.57 mgd. Of our authorized 33 mgd IBT, this value was approximately 77.5%. The average IBT was 20.28 mgd, approximately 61.4% of authorized IBT.

As of December 31, 2021, there were additional outstanding IBT commitments of 3.76 mgd. This total takes into account permitted donated projects (largely subdivisions) and non-activated master metered connections. We are aware of the impact of these additional flows on our current IBT.

Please let me know if you have any questions.

Sincerely,

CHARLOTTE WATER

Alan H. Gaines

Alan Gaines, PE
Senior Engineer – Engineering Planning Section

CHARLOTTE WATER

Charlotte Water
Annual Report on Interbasin Transfer
Calendar Year 2021

INTRODUCTION

The North Carolina Environmental Management Commission (EMC) approved Charlotte Water's (CLTWater's) petition to increase the amount of water transferred from the Catawba River basin to the Rocky River basin. An interbasin transfer (IBT) Certificate was issued on March 14, 2002, that authorizes CLTWater to transfer up to 33 million gallons per day (mgd) between the river basins.

The IBT Certificate requires CLTWater to report maximum daily IBT amounts annually to the North Carolina Division of Water Resources (NC DWR) until such time as the transfer amount exceeds 80% of the authorized amount. Once that amount is exceeded, CLTWater is required to report monthly. CLTWater has not exceeded 80% of the authorized IBT amount.

SYSTEM OVERVIEW

CLTWater operates the water and wastewater systems that serve Charlotte, Cornelius, Davidson, Huntersville, Mint Hill, Matthews, Pineville, and much of the unincorporated areas of Mecklenburg County. This system is divided between two river basins designated by NC General Statutes for regulation of IBT water. The western portion of the system is within the Catawba River basin and the eastern portion is within the Rocky River basin. Water transferred from the Catawba River basin to the Rocky River basin that is not returned to the Catawba river basin is regulated IBT.

Water for distribution to CLTWater's customers is withdrawn from the Catawba River basin at two locations. An intake at Lake Norman sends water to the Lee S. Dukes Water Treatment Plant. A second intake at Mountain Island Lake sends water to the Walter M. Franklin Water Treatment Plant and to the Vest Water Treatment Plant. Potable water from these three plants is delivered through an interconnected distribution system to retail customers throughout CLTWater's service area in Mecklenburg County and in small areas of Iredell, Cabarrus, and Union Counties. CLTWater also provides wholesale water to municipal systems for resale including: City of Concord (NC), Town of Harrisburg (NC), Union County (NC), Lancaster County Water and Sewer District (SC), and Blue Granite – Lake Wylie (SC).

CLTWater treats wastewater at five advanced wastewater treatment plants (WWTP's) that discharge into small streams in Mecklenburg County. Four of the streams are tributary to the Catawba River basin and one (Mallard Creek) is tributary to the Rocky River basin. In 2021 CLTW also treated wastewater at two smaller package plants that discharge into streams tributary to the Rocky River Basin. In July of 2021, the Oxford Glen package WWTP was decommissioned, and flow was re-routed to the new Stevens Creek wastewater lift station. The Stevens Creek Lift Station discharges into the McAlpine Creek WWTP service area for wastewater treatment and discharge

in the Catawba River Basin CLTWater also conveys wastewater generated in portions of Mecklenburg County to the Rocky River Regional Wastewater Treatment Plant (RRRWWTP) operated by the Water and Sewer Authority of Cabarrus County (WSACC). The RRRWWTP discharges treated effluent to the Rocky River.

IBT Monitoring

Water supplied to CLTWater's retail customers in the Rocky River Basin, that is not returned to the Catawba basin, is included in the reported IBT amounts. Water provided to municipalities with service areas in the Rocky River basin includes the City of Concord and the Town of Harrisburg.

CLTWater can transfer treated potable water to the City of Concord through three metered connections to their water system. All of Concord's service area is within the Rocky River basin; therefore, any water purchased by them becomes an IBT. Water service is only provided as an emergency back-up to Concord's routine supply, which are Lake Howell and several smaller reservoirs. All of these reservoirs are within the Rocky River basin. Wastewater from Concord is treated at the RRRWWTP. CLTWater's agreement with Concord is that water will be supplied to them subject to availability and subject to regulatory constraints including IBT and Federal Energy Regulatory Commission (FERC) limitations.

Concord received an IBT Certificate in January 2007 for the transfer of up to 10 mgd from the Catawba River basin to the Rocky River basin. NC DWR advised CLTWater that water sold to Concord should not be applied to CLTWater's IBT amount. For calendar year 2021, Concord did purchase water for 50 days at an average of 3.500 MGD. Therefore, Charlotte Water's IBT estimate was adjusted by this amount to account for Concord's consumption.

CLTWater can transfer treated potable water to the Town of Harrisburg through three metered connections to their water system. Harrisburg's service area is entirely within the Rocky River basin and is included in CLTWater's IBT amounts.

Table 1 summarizes actual IBT amounts for calendar years 2002 through 2021 (all amounts were calculated using the methodology approved by NC DWR in June of 2006). The table considers the daily amounts of water transferred from the Catawba River basin to customers within the Rocky River basin that is not returned to the Catawba River basin.

The maximum daily IBT for calendar year 2021 was 25.57 mgd in August, which was 77.5% of the authorized IBT of 33 mgd. The average IBT for 2021 was 20.28 mgd, 61.4% of the authorized IBT. In addition to the actual amount of IBT reported in Table 1, CLTWater has committed to provide IBT to development that has been proposed but has not yet been activated within the Rocky River basin. As of December 31, 2021, 1.746 mgd was committed to permitted donated projects (subdivisions) that have not been activated and 2.010 mgd was committed to master meter connections (generally commercial or multi-family developments) that have not been activated; both commitments are based on maximum day estimates. The combined actual plus committed maximum day IBT for 2021 was 29.324 mgd, approximately 88.9% of the authorized IBT.

CHARLOTTE WATER

Table 1: Actual IBT Summary

Calendar Year	Avg. Annual IBT (mgd)	Max. Day IBT (mgd)
2002	6.74	11.97
2003	6.91	9.82
2004	7.79	12.56
2005	8.66	13.79
2006	9.56	14.35
2007	9.96	17.22
2008	11.39	17.42
2009	12.04	16.00
2010	13.33	18.33
2011	13.11	18.82
2012	12.18	17.67
2013	12.99	16.80
2014	15.02	21.44
2015	16.59	24.19
2016	17.32	22.39
2017	16.27	21.97
2018	19.13	25.81
2019	18.06	25.26
2020	17.74	23.66
2021	20.28	25.57

COMPLIANCE WITH CERTIFICATE CONDITIONS

Condition 1: S.W.I.M. Program Summary

Mecklenburg County is required to annually summarize progress in implementation of watershed management approaches of the Surface Water Improvement and Management (S.W.I.M.) Program. Provided below is the summary of progress made during calendar year (CY) 2021. The Division of Water Resources shall have the authority to approve modifications to and need for continued reporting as necessary.

During CY2021, watershed management approaches continued to be implemented by Charlotte-Mecklenburg Storm Water Services (CMSWS) as part of Mecklenburg County's S.W.I.M. Program. Efforts continued to focus on McDowell and Goose Creeks, as initiated in 2007, as well as on the West Branch of the Rocky River in Davidson that began in 2009. During calendar year 2021, the following work was completed in the three (3) watersheds by CMSWS:

McDowell Creek (including the Torrence Creek Tributary to McDowell Creek)

1. *CMSWS in partnership with the Town of Cornelius completed the Willow Pond Project. The project restored a free-flowing stream in place of an ornamental pond and restored additional reaches of upper McDowell Creek.*
2. *CMSWS in partnership with the Town of Huntersville has completed construction of a stream restoration project downstream of North Mecklenburg Park through the Hamptons Neighborhood to Statesville Road.*

Goose Creek (including the Stevens Creek Tributary to Goose Creek)

1. *Ongoing monitoring and inspection of the Stevens Creek Stream Restoration project, including evaluation of reintroduced freshwater mussels into the project area.*

Rocky River

1. *Construction was completed on Phase I of the restoration of a tributary of the South Prong of the West Branch of the Rocky River. The remaining two (2) phases of the project, which are on the South Prong of the Rocky River, will be constructed as funding and stakeholder input allows.*
2. *Easement acquisition was underway for the restoration of approximately 1.5 miles of a tributary of the South Prong West Branch of the Rocky River. The project is awaiting allocation of funding prior to hiring a design consultant*

Condition 2: Stakeholder Process (Completed)

A stakeholder process is required to investigate, develop, adopt, and implement storm water ordinances that control water quantity from single-family development and water quality for all development until completed. The requirements of Condition 2 were completed in 2007.

Condition 3: Goose Creek Subbasin (Completed)

The IBT Certificate removed the Goose Creek subbasin from the area to be served by the IBT, and imposed a moratorium on the installation of new IBT water lines (water lines crossing the ridgeline) into Goose Creek subbasin until the impacts of additional growth on the endangered species were fully evaluated.

CLTWater submitted the final Environmental Assessment of new development in the Goose Creek basin (Mint Hill area) to the NC Division of Water Resources (DWR) in February of 2013. The Environmental Management Commission approved the Environmental Assessment in May of 2013 and has removed the requirements under Condition 3.

Condition 4: Environmental Management Commission

The IBT Certificate provides that the Environmental Management Commission may reopen the Certificate under certain circumstances. This did not occur in 2021.

Condition 5: Compliance and Monitoring Plan

The IBT Certificate requires CLTWater to develop a compliance and monitoring plan for reporting maximum daily transfer amounts, compliance with certificate conditions, and progress on mitigation measures, and drought management activities. CLTWater's monitoring plan and reporting format were approved in June of 2006 by NC DWR and continue to be used for 2021.

> *Charlotte Water monitored water treatment plant pump rates, streamflow and lake storage indicators, the US Drought Monitor, and other factors in accordance with the CLTWater Water Shortage Response Plan. Measurements were assessed monthly to identify designated triggers that could indicate developing drought conditions. All appropriate planning, communication and preparation were in place to respond as needed to changing conditions.*
>
> *In coordination with 17 other utilities in the Catawba-Wateree river basin, CLTWater participated in regional drought response planning and response activities as directed by the Catawba Basin Low Inflow Protocol.*

SUMMARY

The actual maximum day amount of water transferred from the Catawba River basin to the Rocky River basin was 25.57 mgd, which was 77.5% of the authorized maximum day value of 33 mgd. The combined total of actual and outstanding committed IBT volumes was 29.32 mgd, which was approximately 88.9% of the authorized maximum day value. CLTWater was in full compliance with IBT authorizations and compliance conditions for calendar year 2021.

INTERBASIN TRANSFER WATER BALANCE TABLE

- AVERAGE DAILY TRANSFER ESTIMATES -

Water System: Charlotte Water

Date: July 29, 2022

Source Basin: Catawba River

Prepared By: Alan Gaines, PE

Receiving Basin(s): Rocky River

Year[2] (A)	Water System (B)	Withdrawal from Source[1] (MGD) (C)	Consumptive Loss[1]		Wastewater Discharge[1]		Total Return to Source Basin[1] (MGD) (H)=(D)+(F)	Total Surface Water Transfer[1] (MGD) (I)=(C)-(H)
			Source Basin (MGD) (D)	Receiving Basin[3] (MGD) (E)	Source Basin (MGD) (F)	Receiving Basin[3] (MGD) (G)		
2010	Charlotte Water	101.83	14.72	6.40	72.74	10.13	87.46	14.37
2017	Charlotte Water	104.04	17.36	7.21	69.85	13.42	87.21	16.83
2018	Charlotte Water	107.37	13.99	5.16	74.23	13.99	88.22	19.15
2019	Charlotte Water	110.29	19.69	5.43	72.80	12.38	92.49	17.78
2020	Charlotte Water	104.54	16.79	5.22	70.30	12.23	87.09	17.46
2021	Charlotte Water	115.62	25.64	6.25	70.00	13.73	95.64	19.98
2030	Charlotte Water	137.09	30.41	7.41	83.00	16.28	113.41	23.69
2040	Charlotte Water	155.63	34.52	8.41	94.23	18.48	128.74	26.89
2050	Charlotte Water	178.35	39.56	9.63	107.98	21.18	147.54	30.81
2060	Charlotte Water	204.24	45.30	11.03	123.66	24.25	168.96	35.29
2070	Charlotte Water	230.14	51.04	12.43	139.34	27.33	190.38	39.76

Notes:

1. All numbers are expressed in million gallons per day (MGD) rounded to two decimal places.
2. The row marked 2010 should be used to estimate current data (change date to reflect current year). Future years should account for a 50-year planning timeframe (consistent with LWSP projections). Additional rows may be added to mark system milestones or critical planning timeframes (planned expansions, increased industrial user contributions, etc.)
3. If there is more than one receiving basin, you may add additional columns for each basin.

INTERBASIN TRANSFER WATER BALANCE TABLE

- MAXIMUM DAILY TRANSFER ESTIMATES -

Water System: Charlotte Water Date: July 29, 2022

Source Basin: Catawba River Prepared By: Alan Gaines, PE

Receiving Basin(s): Rocky River

Year[2] (A)	Water System (B)	Withdrawal from Source[1] (MGD) (C)	Consumptive Loss[1]		Wastewater Discharge[1]		Total Return to Source Basin[1] (MGD) (H)=(D)+(F)	Total Surface Water Transfer[1] (MGD) (I)=(C)-(H)
			Source Basin (MGD) (D)	Receiving Basin[3] (MGD) (E)	Source Basin (MGD) (F)	Receiving Basin[3] (MGD) (G)		
2010	Charlotte Water	126.91	33.26	6.48	76.22	10.95	109.48	17.43
2017	Charlotte Water	134.11	31.64	10.11	81.17	11.18	112.82	21.29
2018	Charlotte Water	149.44	43.40	14.76	80.23	11.05	123.63	25.81
2019	Charlotte Water	148.24	36.78	10.15	86.59	14.72	123.37	24.87
2020	Charlotte Water	137.28	36.75	9.99	77.11	13.42	113.87	23.41
2021	Charlotte Water	148.24	44.14	9.76	78.80	15.46	122.94	25.21
2030	Charlotte Water	175.67	52.34	11.57	93.43	18.33	145.77	29.90
2040	Charlotte Water	199.42	59.41	13.14	106.07	20.80	165.48	33.94
2050	Charlotte Water	228.53	68.09	15.05	121.55	23.84	189.64	38.89
2060	Charlotte Water	261.71	77.97	17.24	139.20	27.30	217.17	44.54
2070	Charlotte Water	294.89	87.86	19.42	156.85	30.76	244.71	50.19

Notes:

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3. If there is more than one receiving basin, you may add additional columns for each basin.