

**2017 Annual Report on Interbasin Transfers
for
The Cities of Concord and Kannapolis**

Prepared for and by:

City of Concord



City of Kannapolis



Submitted to:

North Carolina Division of Water Resources

February 2018

Executive Summary

The 2017 Annual Report on Interbasin Transfers (IBTs) for the Cities of Concord and Kannapolis (Cities) includes monitoring data for daily tracking of IBT amounts and documentation of compliance with all IBT Certificate conditions. Annual reports were previously prepared for calendar years 2007 through 2016 and are available on the North Carolina Division of Water Resources (NCDWR) website.

The North Carolina Environmental Management Commission (EMC) approved the Cities' IBT Certificate in January 2007 authorizing transfers of up to 10 million gallons per day (mgd) from the Catawba River Basin to the Rocky River Basin and 10 mgd from the Yadkin River Basin to the Rocky River Basin. Additionally, a grandfathered IBT of 6 mgd authorizes transfer from Second Creek, located in the South Yadkin River Basin, to the Rocky River Basin. The terms "Cities" and "Certificate Holders" are used interchangeably herein.

In 2017, the Certificate Holders complied with all conditions of their IBT Certificate. The Cities of Concord and Kannapolis had a maximum daily transfer from the Catawba River Basin of 1.1 mgd during 2017. The maximum daily transfer from the Yadkin River Basin was 3.51 mgd.

In 2017, the City of Kannapolis pumped water from Second Creek to Kannapolis Lake under its South Yadkin River Basin grandfathered IBT. The maximum daily transfer under the grandfathered IBT from the South Yadkin River Basin to the Rocky River Basin in 2017 was 5.22 mgd. The 2017 IBT daily transfers for Concord and Kannapolis are shown in Figure ES-1.

In addition, a settlement was reached in 2010 on a lawsuit filed by the Catawba River Foundation, Inc. and the Protect the Catawba Coalition. While this does not change the IBT Certificate or required reporting in any way, the Cities did agree to some operational conditions regarding the Catawba River Basin during times of drought.

Table ES-1

2017 IBT Average Annual & Maximum Day Demands for Concord and Kannapolis Service Areas

Year	Catawba River Basin			Yadkin River Basin			Second Creek ^{c,d} (South Yadkin River Basin)		
	Water Purchase (mgd)		IBT as % of Certificate ^a	Water Purchase (mgd)		IBT as % of Certificate ^{b,c}	Water Transfer (mgd)		IBT as % of Grandfathered amount
	Average Annual	Max. Day	Max. Day	Average Annual	Max. Day	Max. Day	Average Annual	Max. Day	Max. Day
2017	0.01	1.10	11%	2.27	3.51	35.14%	0.34	5.22	86.92%

^a Maximum Day IBT of 10 mgd from the Catawba River Basin.

^b Maximum Day IBT of 10 mgd from the Yadkin River Basin.

^c The grandfathered 6-mgd Maximum Day IBT limit from Second Creek (South Yadkin River Basin) into the Rocky River Basin is not included in the 10-mgd Maximum Day IBT limit for the Yadkin River Basin.

2017 Daily IBT Per Basin (mgd)

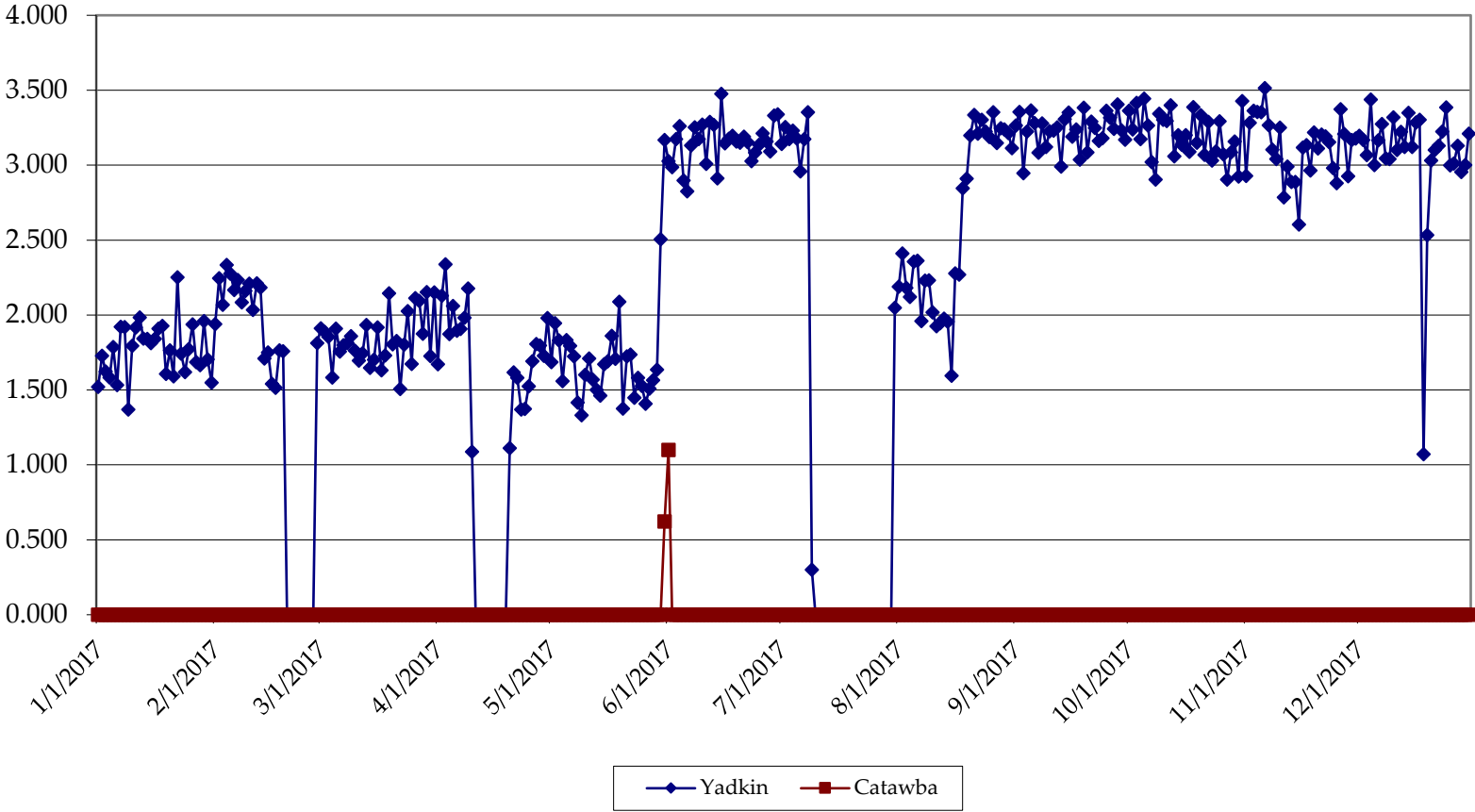


Figure ES-1
2017 Daily Interbasin Transfers by Basin

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Daily Interbasin Transfer Amounts for 2017

Acronyms and Abbreviations

DMAC	Drought Management Advisory Council
EMC	Environmental Management Commission
FERC	Federal Energy Regulatory Commission
IBT	Interbasin Transfer
LIP	Low Inflow Protocol
mgd	million gallons per day
NCDWR	North Carolina Division of Water Resources
WSRP	Water Shortage Response Plan
WTP	Water Treatment Plant

1.0 - Introduction

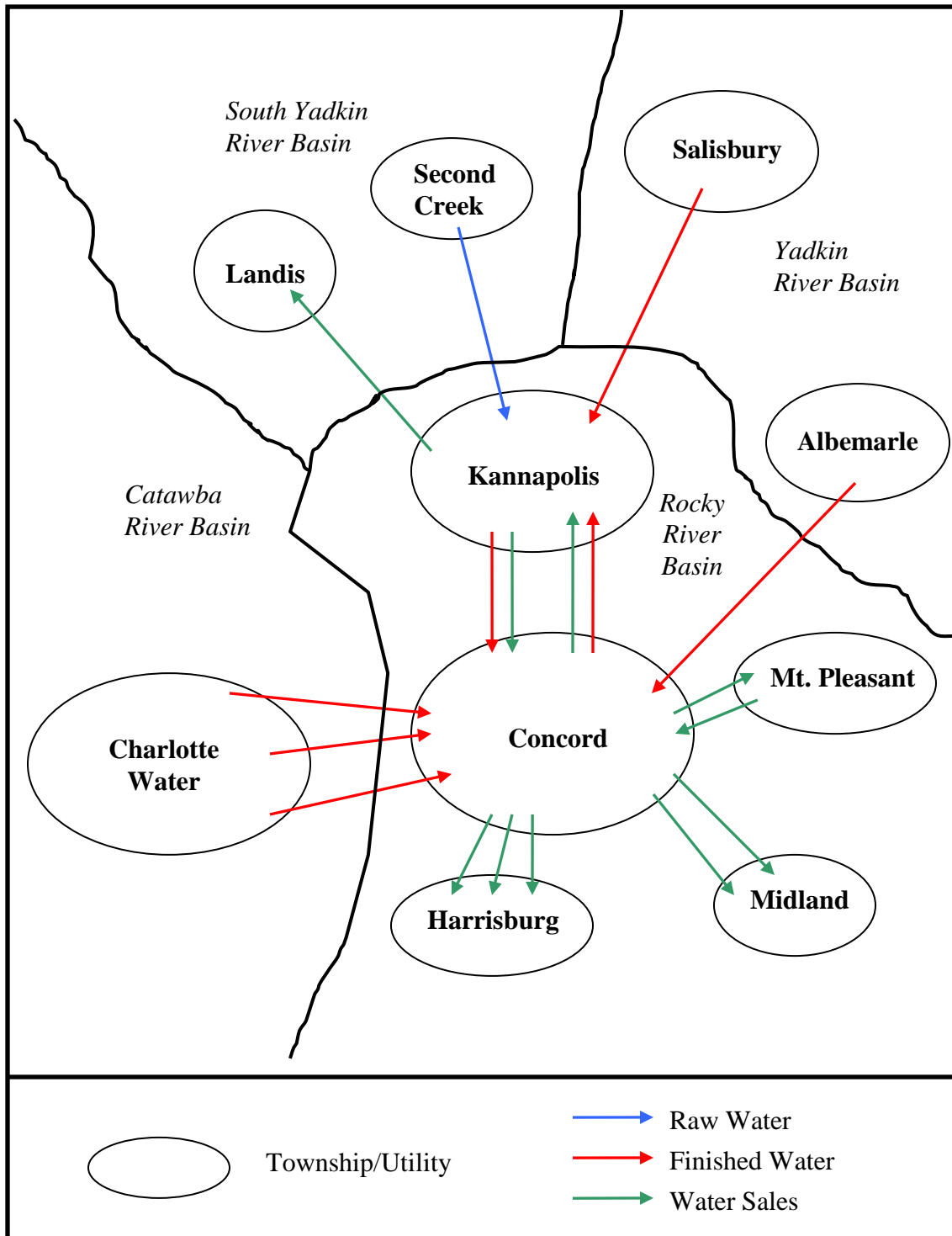
The Cities of Concord and Kannapolis (Cities) received an interbasin transfer (IBT) Certificate, which was originally approved on January 10, 2007, and signed into effect on January 25, 2007. The North Carolina Environmental Management Commission (EMC) has authorized transfers of up to 10 million gallons per day (mgd) from the Catawba River Basin to the Rocky River Basin and 10 mgd from the Yadkin River Basin to the Rocky River Basin. As a condition of the IBT Certificate, the Cities are required to produce an Annual Report that documents transfers over the past year. Annual reports were also prepared for calendar years 2007 through 2016 and are available on the North Carolina Division of Water Resources (NCDWR) website.

The Cities provide water to each other, various municipalities in the area (including: Mount Pleasant, Midland, Harrisburg, and Landis), and unincorporated areas of Cabarrus County. Concord owns and operates the water distribution system used by the Town of Midland. Charlotte Water and the City of Salisbury currently have contracts to provide water to the Cities from the Catawba and Yadkin River Basins, respectively.

The terms “Cities” and “Certificate Holders” are used interchangeably herein. Figure 1-1 illustrates the ability to transfer water among the Certificate Holders and all municipalities served by the Certificate Holders.

Figure 1-1

Water Connections of the Certificate Holders and All Municipalities Served by the Certificate Holders



2.0 - IBT Monitoring

2.1 - Service Area Water Demand

Table 2-1 presents 2017 annual average water production for the Certificate Holders based on finished water produced at the Hillgrove, Coddle Creek, and Kannapolis Water Treatment Plants (WTPs). It also shows finished water purchases from Charlotte Water, the City of Salisbury and the City of Albemarle, if they occurred. Additionally, Table 2-1 presents the 2017 annual average IBT (or water purchases) from each basin covered by the IBT Certificate and from Second Creek, from which transfers are authorized by a grandfathered IBT. In 2017, finished water production averaged 13.14 mgd, purchased IBT finished water averaged 0.01 mgd for Catawba River Basin, 2.27 mgd for the Yadkin River Basin and 0.34 mgd for Second Creek. The combined 2017 annual average water use for the Certificate Holders was 15.76 mgd.

Table 2-1

2017 Water Production or Purchases by River Basin

2017					
Certificate Holders	Annual Average Finished Water Produced ^a (mgd)	Annual Average Purchased Water (mgd)			Annual Average Combined Water Use (mgd)
		Catawba River Basin ^b	Yadkin River Basin	Second Creek	
Concord & Kannapolis	13.14	0.01	2.27	0.34	15.76

^a Water produced within Rocky River Basin; may include water from Second Creek transferred directly into Kannapolis Lake.

2.2 - Interbasin Transfers

Daily IBT amounts for the Certificate Holders are included in the Appendix. Data is provided for the period January 1, 2017 through December 31, 2017. The maximum day IBT from the Catawba River Basin during the calendar year 2017 was 1.10 mgd. This represents 11% of the permitted maximum day, 10 mgd IBT from the Catawba River Basin under the Certificate approved by the EMC in January 2007. The maximum day IBT from the Yadkin River Basin during the calendar year 2017 was 3.51 mgd. This represents 35.14% of the permitted maximum day, 10 mgd IBT from the Yadkin River Basin under the Certificate. There were transfers of raw water from Second Creek with a maximum day IBT 5.22 mgd, which represents 86.92% of the permitted maximum day, 6 mgd IBT from the South Yadkin River Basin under the grandfathered Certificate. Table 2-2

shows the IBT use for the Certificate Holders and the percentage of use from the Catawba and Yadkin River Basins.

Table 2-2

2017 IBT Average Annual & Maximum Day Demands for Concord and Kannapolis Service Areas

Year	Catawba River Basin			Yadkin River Basin			Second Creek ^{c,d} (South Yadkin River Basin)		
	Water Purchase (mgd)		IBT as % of Certificate ^a	Water Purchase (mgd)		IBT as % of Certificate ^{b,c}	Water Transfer (mgd)		IBT as % of Grand-fathered amount
	Average Annual	Max. Day	Max. Day	Average Annual	Max. Day	Max. Day	Average Annual	Max. Day	Max. Day
2017	0.01	1.10	11%	2.27	3.51	35.14%	0.34	5.22	86.92%

^a Maximum Day IBT of 10 mgd from the Catawba River Basin.

^b Maximum Day IBT of 10 mgd from the Yadkin River Basin.

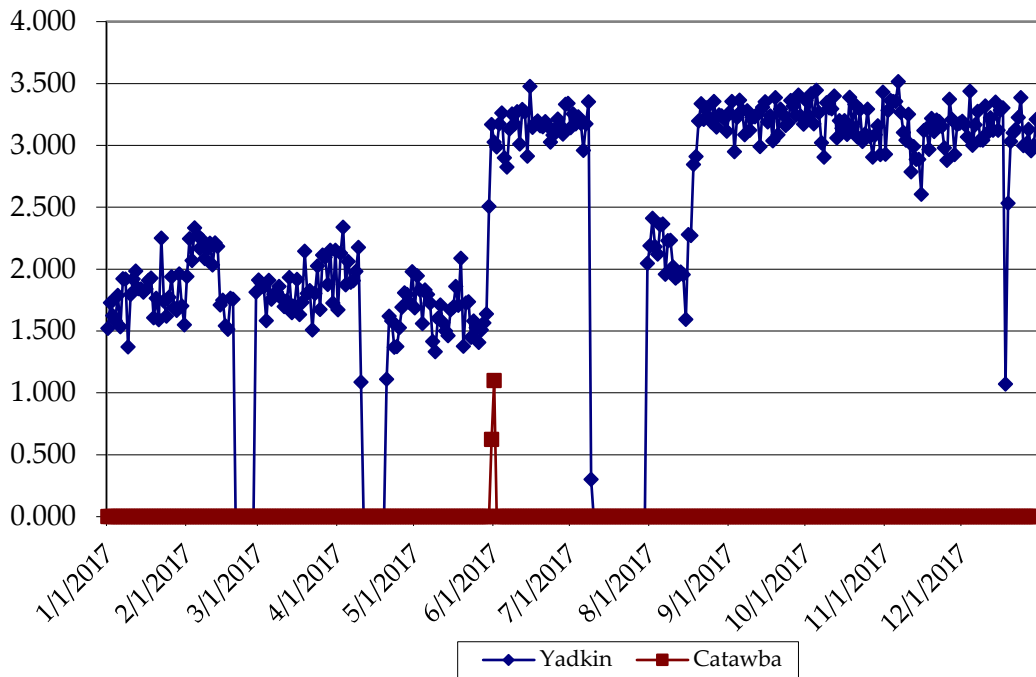
^c The grandfathered 6-mgd Maximum Day IBT limit from Second Creek (South Yadkin River Basin) into the Rocky River Basin is not included in the 10-mgd Maximum Day IBT limit for the Yadkin River Basin.

Figure 2-1 displays the daily IBT amounts for water purchases from the Catawba and Yadkin River Basins.

Figure 2-1

2017 Daily Interbasin Transfers by Basin

2017 Daily IBT Per Basin (mgd)



3.0 - Other Related Information

In 2010, a settlement was reached in a lawsuit filed by the Catawba River Foundation, Inc. and the Protect the Catawba Coalition. While this does not affect the IBT Certificate, its conditions, or required reporting in any way, the Cities did agree to some operational conditions regarding the Catawba River Basin during times of drought.

During designated droughts beyond July 1, 2015, following either Low Inflow Protocol (LIP) or Drought Management Advisory Council (DMAC) Drought Stage declaration, the Cities have agreed to limit the Catawba River Basin IBT so that it corresponds to water use reduction goals. A summary of this agreement is presented in Table 3-1.

Table 3-1
Catawba River Basin IBT during Drought Conditions

LIP Stage or DMAC Drought Stage	Maximum Day Transfer (mgd)
0 / Abnormally Dry	10.0
1 / Moderate Drought	9.0
2 / Severe Drought	8.5
3 / Extreme Drought	7.0
4 / Exceptional Drought	6.0

4.0 - Compliance with Certificate Conditions

A summary of the conditions of the IBT Certificate approved on January 10, 2007 along with the current status of compliance for each is provided below. Language from the certificate is followed by 2010 actions for each condition.

4.1 - Condition 1 (Federal Energy Regulatory Commission [FERC] Licensure)

If at any time any legal requirement that (a) governs the operation of the hydroelectric facilities in the Catawba River Basin currently licensed as Federal Energy Regulatory Commission (FERC) Project No. P-2232 or in the Yadkin Pee-Dee River Basin currently licensed as FERC Project Nos. P-2206 and P-2197 and (b) governs or affects water use and/or quality, substantially differs from the actual or anticipated FERC license conditions or other legal requirement upon which the analysis underlying this Certificate is based, such as changes to minimum flow requirements or drought mitigation measures, the Commission may reopen and modify this Certificate.

This condition requires no action by the Certificate Holders.

4.2 - Condition 2 (Drought Management Plan)

Each Certificate Holder shall prepare a Drought Management Plan. The Cities shall implement measures corresponding to the most severe level of drought conditions in either the Catawba or Yadkin River Basins. The Cities shall not transfer any water to any other jurisdictions unless that jurisdiction agrees to be bound by this condition in full.

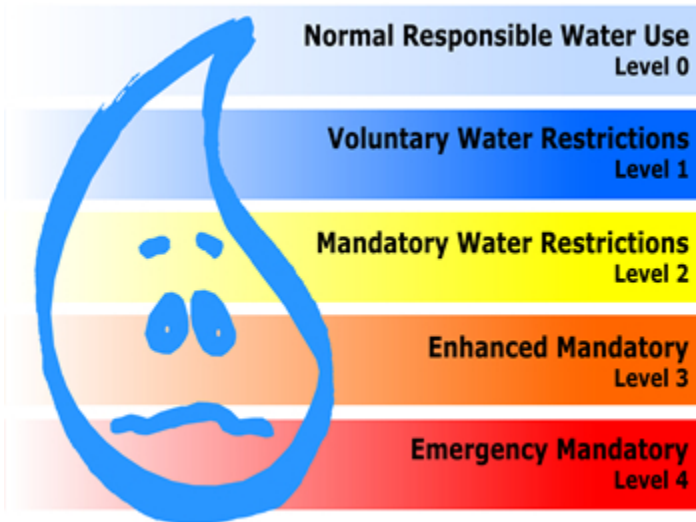
The Cities submitted the Drought Management Plan on July 31, 2007; comments were received on November 11, 2007, and the revised plan was submitted on January 8, 2008. The Drought Management Plan was incorporated into an updated Water Shortage Response Plan (WSRP) in 2010. The WSRP, prepared as a joint document for the Certificate Holders, is available on the NCDWR website at the following web address:

http://www.ncwater.org/Water_Supply_Planning/Water_Shortage_Response_Plans/plan

Table 4-1 shows Normal and Drought Stages 0-4, the names of each, the date the Catawba River Basin managers implemented Draft LIP actions in response to drought monitoring, the Yadkin-Pee Dee River Basin drought monitor, and the associated actions taken by the Cities.

Beginning in the winter of 2008, drought conditions in the state began to decrease, permitting an easing of drought restrictions for both the Catawba and Yadkin River Basins. Level 0, Normal Responsible Water Use, was in place from July 3 through December 31 of 2017 (Figure 4-1). Other outdoor water use conservation measures are encouraged but not required. Level 1, Voluntary Water Restriction, was in place January 1 through July 3 of 2017.

During the year, the Cities drought stages follow the drought stages of the Catawba-Wataree Water Management Group; hence the Cities stayed in Normal Responsible Water Use Level.



The Cities have agreements in place that include enforcement policies with other systems that purchase water from them.

Table 4-1

Concord and Kannapolis 2017 Normal and Drought Stages

2017 Period of Drought					
Drought Stage	Drought Monitor Classification	Catawba River Basin ^a (NC Drought Monitor)	Yadkin River Basin ^b (NC Drought Monitor)	Action by Cities	Cities' Actions Taken
	Normal	May 2 – November 27	February 21 – February 27 April 25 – August 28 September 5 – October 2 October 24 – November 6		
0	Abnormally Dry	January 24 – February 27 April 25 – May 1 November 28 – December 31	January 3 – January 23 February 14 – February 20 February 28 – March 13 March 21 – March 27 August 29 – September 4 October 3 – October 23 November 7 – December 31	Level 0 from July 3 – December 31	Voluntary conservation measures encouraged through public notification.
1	Moderate Drought	January 1 – January 23 February 28 – April 24	January 1 – January 2 January 24 – February 13 March 14 – March 20 March 28 – April 24	Level 1 from January 1 – July 3	Voluntary conservation measures encouraged through public notification.
2	Severe Drought				
3	Extreme Drought				
4	Exceptional Drought				

^a The Catawba River Basin is listed as the drought stage declared by the Catawba-Wateree Water Management Group.

^b The Yadkin River Basin is listed as the highest classification within the basin at a given date. Portions of the basin may be in a lower category.

4.3 - Condition 3 (Disaggregation of IBT Amount)

If the Certificate Holders discontinue their cooperative service agreement, then the permitted IBT amount will be allocated amongst the Certificate Holders based on their projected 2030 needs.

The cooperative service agreement between the Certificate Holders remained in effect throughout 2017.

The Cities and local municipalities cooperatively and effectively communicate and manage their respective water distribution systems. The Cities sell water to each other and reconcile billing monthly. Additionally, Concord owns and operates the water distribution system for Midland, providing water service to all Midland customers. Harrisburg purchases water from Concord, measured by six meters. Concord also provides water service to unincorporated areas of Cabarrus County. Mount Pleasant did not purchase water from the City of Concord in 2017. Further emphasizing the interconnected nature of the Cities and local municipalities, Kannapolis provides water to Landis, located in the South Yadkin River Basin, which is not subject to this IBT Certificate.

4.4 - Condition 4 (Compliance and Monitoring Plan)

In cooperation with the Division of Water Resources, the Certificate Holders shall develop an IBT Compliance and Monitoring Plan.

The Cities submitted the Compliance and Monitoring Plan on July 31, 2007. This plan was finalized in December 2007.

4.5 - Condition 5 (EMC Consideration of Impacts)

The EMC may reopen the Certificate and adjust existing or require new conditions to ensure detrimental impacts are mitigated if environmental impacts are found to be substantially different from those projected in the EMC's Findings of Fact.

This condition requires no action by the Certificate Holders. The EMC did not take action on this condition in 2017.

4.6 - Condition 6 (20-Year Certificate Evaluation)

In twenty years from the date of the Certificate, the Cities shall submit a written report to the EMC to include: (a) summary of transfers for the previous twenty years, (b) discussion of any changes to the environmental impacts assessment from IBT transfers, (c) summary of all actions to address actual or potential drought conditions, (d) recommendations for any changes to the Certificate, (e) details on consultation with interested stakeholders, and (f) certification of compliance with Certificate. This will continue at 20-year intervals.

The IBT Certificate was approved on January 10, 2007 and signed into effect on January 25, 2007; therefore, the first 20-year certificate evaluation report will be completed in 2027.

4.7 - Condition 7 (Limit of Certificate)

The Certificate does not exempt the Cities from compliance with any other requirements of law.

This condition requires no action by the Cities.

APPENDIX

Daily Interbasin Transfer Amounts for 2017

Map Code Source Basin	Water Transfer (MGD) to Rocky River Basin				Water Sales (MGD)		IBT Totals Per Basin				Interbasin Transfer							
	Salisbury 1		Albemarle 1		Charlotte 1-3		NOTE: All Wastewater discharge is to the Rocky River from RRWWTP, excluding water sales to Landis (subtracted from Total South Yadkin IBT).											
	South Yadkin	Yadkin	Yadkin	Yadkin	Catawba	South Yadkin	South Yadkin	Yadkin	Catawba	Grandfathered IBT from Second Creek - South Yadkin River Basin								
DATE	Raw Water to Kannapolis Lake from Second Creek	Salisbury Finished water Interconnection with Kannapolis	Finished water Interconnection with Concord	Albemarle Finished water Interconnection with Concord	Charlotte Water Interconnections with Concord	Kannapolis water sales to Landis	Finished water sales to Landis	Total South Yadkin IBT ¹	Total Yadkin IBT	Total Catawba IBT	Catawba	% of Permitted MDD Transfer	Yadkin	% of Permitted MDD Transfer	IBT from Yadkin to South Yadkin River Basin	% of Permitted MDD Transfer		
11/29/2017	0.000	0.000	3.168	0.000	0.000	0.235	-0.235	3.168	0.000	0.000	0.000	0.000%	3.168	31.680%	-0.235	-3.917%	0.235	11.809%
11/30/2017	0.000	0.000	3.177	0.000	0.000	0.257	-0.257	3.177	0.000	0.000	0.000	0.000%	3.177	31.770%	-0.257	-4.283%	0.257	12.915%
12/1/2017	0.000	0.000	3.195	0.000	0.000	0.270	-0.270	3.195	0.000	0.000	0.000	0.000%	3.195	31.950%	-0.270	-4.500%	0.270	13.568%
12/2/2017	0.000	0.000	3.168	0.000	0.000	0.222	-0.222	3.168	0.000	0.000	0.000	0.000%	3.168	31.680%	-0.222	-3.700%	0.222	11.156%
12/3/2017	0.000	0.000	3.066	0.000	0.000	0.247	-0.247	3.066	0.000	0.000	0.000	0.000%	3.066	30.660%	-0.247	-4.117%	0.247	12.412%
12/4/2017	0.000	0.000	3.437	0.000	0.000	0.264	-0.264	3.437	0.000	0.000	0.000	0.000%	3.437	34.370%	-0.264	-4.400%	0.264	13.266%
12/5/2017	0.000	0.000	3.001	0.000	0.000	0.249	-0.249	3.001	0.000	0.000	0.000	0.000%	3.001	30.010%	-0.249	-4.150%	0.249	12.513%
12/6/2017	0.000	0.000	3.165	0.000	0.000	0.252	-0.252	3.165	0.000	0.000	0.000	0.000%	3.165	31.650%	-0.252	-4.200%	0.252	12.663%
12/7/2017	0.000	0.000	3.274	0.000	0.000	0.247	-0.247	3.274	0.000	0.000	0.000	0.000%	3.274	32.740%	-0.247	-4.117%	0.247	12.412%
12/8/2017	0.000	0.000	3.044	0.000	0.000	0.247	-0.247	3.044	0.000	0.000	0.000	0.000%	3.044	30.440%	-0.247	-4.117%	0.247	12.412%
12/9/2017	0.000	0.000	3.041	0.000	0.000	0.249	-0.249	3.041	0.000	0.000	0.000	0.000%	3.041	30.410%	-0.249	-4.150%	0.249	12.513%
12/10/2017	0.000	0.000	3.319	0.000	0.000	0.251	-0.251	3.319	0.000	0.000	0.000	0.000%	3.319	33.190%	-0.251	-4.183%	0.251	12.513%
12/11/2017	0.000	0.000	3.102	0.000	0.000	0.256	-0.256	3.102	0.000	0.000	0.000	0.000%	3.102	31.020%	-0.256	-4.267%	0.256	12.864%
12/12/2017	0.000	0.000	3.223	0.000	0.000	0.249	-0.249	3.223	0.000	0.000	0.000	0.000%	3.223	32.230%	-0.249	-4.150%	0.249	12.513%
12/13/2017	0.000	0.000	3.122	0.000	0.000	0.244	-0.244	3.122	0.000	0.000	0.000	0.000%	3.122	31.220%	-0.244	-4.067%	0.244	12.261%
12/14/2017	0.000	0.000	3.348	0.000	0.000	0.249	-0.249	3.348	0.000	0.000	0.000	0.000%	3.348	33.480%	-0.249	-4.150%	0.249	12.513%
12/15/2017	0.000	0.000	3.121	0.000	0.000	0.238	-0.238	3.121	0.000	0.000	0.000	0.000%	3.121	31.210%	-0.238	-3.967%	0.238	11.960%
12/16/2017	0.000	0.000	3.285	0.000	0.000	0.238	-0.238	3.285	0.000	0.000	0.000	0.000%	3.285	32.850%	-0.238	-3.967%	0.238	11.960%
12/17/2017	0.000	0.000	3.303	0.000	0.000	0.213	-0.213	3.303	0.000	0.000	0.000	0.000%	3.303	33.030%	-0.213	-3.550%	0.213	10.704%
12/18/2017	0.000	0.000	1.072	0.000	0.000	0.259	-0.259	1.072	0.000	0.000	0.000	0.000%	1.072	10.720%	-0.259	-4.317%	0.259	13.015%
12/19/2017	0.000	0.000	2.533	0.000	0.000	0.244	-0.244	2.533	0.000	0.000	0.000	0.000%	2.533	25.330%	-0.244	-4.067%	0.244	12.261%
12/20/2017	0.000	0.000	3.031	0.000	0.000	0.260	-0.260	3.031	0.000	0.000	0.000	0.000%	3.031	30.310%	-0.260	-4.333%	0.260	13.065%
12/21/2017	0.000	0.000	3.101	0.000	0.000	0.272	-0.272	3.101	0.000	0.000	0.000	0.000%	3.101	31.010%	-0.272	-4.533%	0.272	13.668%
12/22/2017	0.000	0.000	3.129	0.000	0.000	0.226	-0.226	3.129	0.000	0.000	0.000	0.000%	3.129	31.290%	-0.226	-3.767%	0.226	11.357%
12/23/2017	0.000	0.000	3.225	0.000	0.000	0.265	-0.265	3.225	0.000	0.000	0.000	0.000%	3.225	32.250%	-0.265	-4.417%	0.265	13.317%
12/24/2017	0.000	0.000	3.385	0.000	0.000	0.242	-0.242	3.385	0.000	0.000	0.000	0.000%	3.385	33.850%	-0.242	-4.033%	0.242	12.161%
12/25/2017	0.000	0.000	2.998	0.000	0.000	0.205	-0.205	2.998	0.000	0.000	0.000	0.000%	2.998	29.980%	-0.205	-3.417%	0.205	10.302%
12/26/2017	0.000	0.000	3.010	0.000	0.000	0.194	-0.194	3.010	0.000	0.000	0.000	0.000%	3.010	30.100%	-0.194	-3.233%	0.194	9.749%
12/27/2017	0.000	0.000	3.129	0.000	0.000	0.242	-0.242	3.129	0.000	0.000	0.000	0.000%	3.129	31.290%	-0.242	-4.033%	0.242	12.161%
12/28/2017	0.000	0.000	2.955	0.000	0.000	0.201	-0.201	2.955	0.000	0.000	0.000	0.000%	2.955	29.550%	-0.201	-3.350%	0.201	10.101%
12/29/2017	0.000	0.000	3.001	0.000	0.000	0.246	-0.246	3.001	0.000	0.000	0.000	0.000%	3.001	30.010%	-0.246	-4.100%	0.246	12.362%
12/30/2017	0.000	0.000	3.209	0.000	0.000	0.235	-0.235	3.209	0.000	0.000	0.000	0.000%	3.209	32.090%	-0.235	-3.917%	0.235	11.809%
12/31/2017	0.000	0.000	3.093	0.000	0.000	0.214	-0.214	3.093	0.000	0.000	0.000	0.000%	3.093	30.930%	-0.214	-3.567%	0.214	10.754%
AVG 2017	0.644	0.000	2.278	0.005	0.005	0.303	0.341	2.271	0.005	0.005	0.005	0.047%	2.271	22.706%	0.341	5.685%	0.280	14.057%
MAX 2017	5.500	0.000	3.514	1.100	1.100	0.651	5.215	3.514	1.100	1.100	1.100	11.000%	3.514	35.140%	5.215	86.917%	0.454	22.814%

¹ Transfers from Second Creek to Kannapolis Lake (South Yadkin Basin to Rocky River Basin) shall not exceed 6 MGD, positive numbers represent this direction of transfer as dominate
Transfers from Kannapolis (via purchase from Salisbury) to Landis (Yadkin Basin to South Yadkin Basin) shall not exceed 2 MGD; negative numbers represent this direction of transfer as the dominate