STATE OF NORTH CAROLINA COUNTY OF WAKE	IN THE GENERAL COURT OF JUSTICE SUPERIOR COURT DIVISION 21 CVS 015426
NORTH CAROLINA LEAGUE OF CONSERVATION VOTERS, INC., et al., REBECCA HARPER, et al., COMMON CAUSE, *Plaintiffs,* v. REPRESENTATIVE DESTIN HALL, in his official capacity as Chair of the House Standing Committee on Redistricting, et al. *Defendants.*	**AFFIDAVIT OF CHRISTOPHER DALTON KETCHIE**

NOW COMES Christopher Dalton Ketchie.

I, Christopher Dalton Ketchie, declare as follows:

1. I am over 18 years of age, legally competent to give this Affidavit, and have personal knowledge of the facts set forth in this Affidavit.

2. I am a graduate of North Carolina State University with a master's degree in Forestry and Environmental Resources with a concentration in Geographic Information Systems (GIS). Additionally, I have over 11 years of professional GIS and data analysis experience.

3. I am employed by the Southern Coalition for Social Justice in Durham, North Carolina as a Senior Data Analyst and Quantitative Researcher, which includes the frequent use of GIS.

4. I drew the proposed remedial districts submitted to the Court on behalf of Plaintiff Common Cause in consultation with attorneys Hilary Harris Klein and Allison J. Riggs.

5. I first identified two areas where the 2020 Decennial Census Data indicated geographically compact populations of Black Voting Age Population (BVAP) in North Carolina constituted a majority in single-member House or Senate districts. Using 2020 Census total population numbers and BVAP shading at the precinct level, and considering compactness and community related boundaries such as municipalities and precincts, I drew the VRA demonstrative districts shown in Figures 1 and 3 in the submission by Plaintiff Common Cause in Dave's Redistricting App, http://davesredistricting.org.

6. Dave's Redistricting App is a free, publicly available platform that is generally considered a reliable source of demographic data, and sources its total population and voting age population data directly form the Census Bureau. *See* "About Data," Dave's Redistricting App at https://davesredistricting.org/maps#aboutdata.

7. I also generated a racially polarized voting (RPV) study for House District 10 and Senate District 4 enacted by the General Assembly in 2021, S.L. 2021-173 and S.L. 2021-175, which are the districts that geographically correspond to the VRA demonstrative districts in Figures 1 and 3. These RPV studies are appended to this affidavit as **Exhibit 1 (2021 Enacted HD10)** and **Exhibit 3 (2021 Enacted SD4).**

8. The RPV studies were generated using election results and voter turnout data from the North Carolina State Board of Elections, available at https://dl.ncsbe.gov/?prefix=ENRS/2016_11_08/ for 2016 and https://dl.ncsbe.gov/?prefix=ENRS/2020_11_03/ for 2020. After downloading the raw data files, I removed any administrative precinct data (one-stop absentee, mail absentee, provisional, curbside, and transfer data fields) and joined the election results data to the voter turnout data using a custom precinct ID field. A small number of precincts were combined in the election results files

but not the voter turnout files, and I manually adjusted those precincts in the voter turnout files to reconcile the data, but this did not substantively change the underlying data or results. Finally, I selected the relevant precincts for each district to be analyzed, excluding any precincts that were split by a district boundary.

9. The elections in this analysis were chosen by selecting four statewide contests from 2016 and 2020 that featured a Black candidate running against a White candidate listed below:

a. 2020 NC Supreme Court Chief Justice – Cheri Beasley (B) vs. Paul Newby (W)

b. 2020 NC Commissioner of Labor – Jessica Holmes (B) vs. Josh Dobson (W)

c. 2016 NC Treasurer – Dan Blue (B) vs. Dale Folwell (W)

d. 2016 Lieutenant Governor – Linda Coleman (B) vs. Dan Forest (W)

10. I then used the eiCompare package in R statistical computing software to generate four commonly used RPV metrics listed below:

a. Homogenous Precincts

b. Ecological Regression

c. King's Iterative Ecological Inference

d. RxC Ecological Inference

Each of these metrics use increasingly complex statistical techniques to draw conclusions about individual level behavior from aggregate level data. Detailed descriptions for each function of the eiCompare package can be found at the following link:

https://cran.r-project.org/web/packages/eiCompare/eiCompare.pdf.

11. I then drew the proposed remedial districts using 2020 Census total population numbers, county lines, precinct lines, municipal boundaries, and BVAP shading at the precinct level to ensure adequate BVAP populations in the areas in which the *Gingles I* criteria were met, as shown

by the demonstrative districts. This included at least 38% BVAP in House District 10 and *at least* 37% BVAP in Senate District 4, which was informed by expert testimony provided in this matter regarding these areas, as well as ensuring equal population for district size, including how remaining districts in a given cluster would be impacted. I did not model the remedial districts after any previously drawn districts, but I did aim to minimize the number of county clusters, as set forth in the Duke Academic Paper, impacted by each remedial district. Additionally, I also considered minimizing county splits and traversals, minimizing splits of community related boundaries such as municipalities and precincts, and maximizing compactness because I did not intend or want race to predominate in the drawing of these remedial district lines.

12. Finally, I conducted RPV studies on the remedial districts to ensure Black voters would have an equal opportunity to elect candidates of choice. These studies are appended to this affidavit as **Exhibit 2 (HD10 remedial RPV)** and **Exhibit 4 (SD4 remedial RPV**). I did not otherwise use partisan data in the drafting or analysis of these proposed remedial districts, and I did not consider incumbency protection in drafting proposed remedial districts.

13. Appended to this affidavit as additional exhibits are true and accurate copies of:

a. the block assignment files for the proposed remedial districts, as **Exhibit 5** (**HD10 remedial block file)** and **Exhibit 6 (SD4 remedial block file)**;

b. the ESRI shapefiles for the proposed districts, as **Exhibit 7 (HD10 remedial ESRI file)** and **Exhibit 8 (SD10 remedial ESRI file**);

c. population totals and deviations for each remedial district based on the 2020 Census P.L. 94-171 dataset, as **Exhibit 9 (HD10 remedial totals and deviations)** and **Exhibit 10 (SD4 remedial totals and deviations**);

d. and "stat pack" equivalents for the districts, as **Exhibit 11 (HD10 remedial stat pack)** and **Exhibit 12 (SD4 remedial stat pack)**.

I declare under penalty of perjury that the foregoing is true and correct.

Executed this the 18th day of February, 2022.

Christopher Ketchie

Sworn and subscribed before me this the 18th day of February, 2022.

Talia Ray

Notary Public

Name: Talia Ray

My commission expires: 11/6/2024

TALIA RAY
My Commission Expires
NOTARY PUBLIC
November 6, 2024
MOORE COUNTY, NC