

**FILED**  
**01-12-2024**  
**CLERK OF WISCONSIN**  
**SUPREME COURT**

**EXPERT REPORT OF ANTHONY E. FAIRFAX ON THE  
DEVELOPMENT OF REMEDIAL STATE LEGISLATIVE DISTRICT PLANS FOR  
THE STATE OF WISCONSIN**

**JANUARY 12, 2024**

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## I. Executive Summary

1. I have been retained by Governor Tony Evers to develop a remedial redistricting plan for Wisconsin State Assembly and Senate districts that adhered to state, federal and traditional redistricting criteria (the Governor's proposed "Assembly Remedial Plan" and "Senate Remedial Plan," collectively the "Remedial Plans"). The development of the Remedial Plans is due to the Supreme Court case, *Clarke v. Wisconsin Elections Commission*, where the Court ruled that the current districts violate Article IV, Sections 4 and 5 of the Wisconsin Constitution and enjoined the Wisconsin Elections Commission from using the current legislative maps and new legislative district maps must be adopted.
2. The Court appointed a team of two expert consultants to facilitate the plan selection process: Dr. Bernard Grofman and Dr. Jonathan Cervas. The Court's consultants will receive expert reports and plans from related and interested parties. This report and its accompanied Assembly and Senate Remedial Plans are designed to assist the Court's consultants with selecting and recommending a plan for adoption.
3. The center piece of the Court's decision held that the violated the Constitution of Wisconsin (specifically sections 4 and 5 of Article IV) which requires "Wisconsin's state legislative districts must be composed of physically adjoining territory."<sup>1</sup> Thus, correcting the enacted plan requires special attention to areas that were not contiguous. The Court provides an exception to the contiguity requirement, which states that areas surrounded by water are to be considered contiguous and acceptable within an adopted plan.

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<sup>1</sup> See <https://law.justia.com/cases/wisconsin/supreme-court/2023/2023ap001399-0a-1.html>

4. The Court's consultants also established redistricting criteria for proposed maps to adhere to and follow (See Appendix E). The criteria followed standard traditional redistricting principles common to most states and local jurisdictions. The redistricting criteria includes Population Equality, Political Subdivision Splits, Contiguity, Compactness, Federal Law Compliance, Community Considerations, and Political Neutrality. All of these criteria were adhered to in the Remedial Plans (Assembly and Senate).
5. Several datasets were acquired and utilized during the Remedial Plan development process. This included the U.S. Census Bureau's 2020 Census population dataset's PL94-171 extract for the state of Wisconsin and geographic boundaries for the Assembly and Senate 2022 Enacted Plans (implemented as a result of the *Johnson v. Wisconsin Election Commission* litigation), 2021 Plans (the previous Assembly and Senate plans that were in effect prior to the 2022 Enacted Plans), and August 2021 wards (that also contained the county subdivision boundaries). The datasets were imported into Maptitude for Redistricting which was used to develop the Remedial Plans and perform most of the criteria analysis and comparison.
6. The starting point for the Assembly Remedial Plan was consideration of the 2022 Enacted Plan. It is common for map-drawers to consider the latest enacted plan even if it has been deemed in violation of law then begin to correct the violation. However, the goal was not to intentionally minimize the number of districts changed from the 2022 Enacted Plan (i.e., a "Least Change" plan). It only served as a useful reference point for continuity of districts that showed no violation and did not require modification during the correction of the violations, and otherwise complied with constitutional and traditional redistricting criteria.

7. The Senate Remedial Plan was generated from the Assembly Remedial Plan. The Senate Remedial Plan was generated by merging adjacent Assembly Districts that occurred in sequential numbers in groups of three (e.g., Assembly Districts 1, 2, and 3 assigned to Senate District 1, Assembly Districts 4, 5, and 6 assigned to Senate District 2, etc.). The assignment of grouping of Senate was accomplished using adjacent district following the Court's redistricting criteria and community considerations as well.
8. The August 2021 ward boundaries were used as the primary building block for the Assembly and Senate Remedial Plans. These wards, county subdivisions, and county boundaries were generated from the "Wisconsin Blocks without Water" shapefile located on the Wisconsin Legislative Technology Service Bureau website. The Remedial Plans as well as the 2022 Enacted and 2021 Plans were generated using this common geographic base. Thus, all criteria metrics were compared on a common geographic platform.
9. The proposed Remedial Plans perform exceptionally well in regard to satisfying the redistricting criteria. Indeed, the Remedial Plans (Assembly and Senate) adhered to all of the criteria and in most cases significantly exceeded the metric performance of the 2022 Enacted Plans and the prior 2021 Plans.
10. The initial plan development steps involved removing the noncontiguous areas from the districts. All of the districts' areas in the Assembly and Senate Remedial Plans were contiguous, excluding the areas surrounded by water. Additional steps were completed to minimize splits in wards, cities, towns, county subdivisions, and counties. Steps were also taken to note splits in three general accepted communities of interest landmark areas of colleges, universities, and Native American Reservations.

11. While reducing the number splits of these geographic areas, the criteria performance of the Remedial Plans improved. The result of this process was that in almost every case the Assembly and Senate Remedial Plans performed better with minimizing splits, and respecting and preserving these critical geographies than the 2022 Enacted Plans and 2021 Plans.
12. In addition to minimizing splits and respecting and and preserving these critical geographies, the Assembly and Senate Remedial Plan districts are more compact than the 2022 Enacted Plans and 2021 Plans. I used two different compactness measures, Reock and Polsby-Popper to compare the plans. I also used two methods of comparison, the mean or average of all districts and district by district. Each of these methods revealed that the Assembly and Senate Remedial Plans were more compact than the 2022 Enacted Plans and 2021 Plans.
13. In order to maintain compliance with the Federal Law and the Voting Rights Act (VRA), race was not considered in the Remedial Plan drawing process and likewise does not predominate. The Remedial Plans duplicate the opportunity districts previously recognized in the *Johnson v. Wisconsin Elections Commission* or *Baldus v. Members of the Wisconsin Government Accountability Board* litigation (which were contiguous and otherwise complied with the constitutional and traditional redistricting criteria). Therefore, multiple Assembly and Senate districts in the Remedial Plans are identical to the 2022 Enacted Plans and maintain their configuration as previously recognized as opportunity districts in litigation.
14. When considering political neutrality, the Assembly and Senate Remedial Plans far exceed the 2022 Enacted and 2021 Plans insofar as partisan fairness. To compare and score the plans, I used PlanScore to determine political neutrality and partisan performance for each set of plans. Four methods were used via PlanScore: Efficiency Gap, Declination, Partisan Bias, and Mean-

Median. Each of these methods shows that the Assembly and Senate Remedial Plans improved in political neutrality and balanced partisan performance. I also determined and compared the plans' Efficiency Gap using the Maptitude for Redistricting software, comparing the plans using their performance based on specific illustrative statewide Wisconsin election data.

15. In addition, improvement was made in the district political competitiveness. The Assembly and Senate Remedial Plans significantly increased the number of competitive districts when compared to the 2022 Enacted Plans and 2021 Plans.

16. Overall, the Assembly and Senate Remedial Plans performs equal to or better than the Assembly and Senate 2022 Enacted Plans in all seven of the Court's seven redistricting criteria. The Assembly and Senate Remedial Plans perform better in five criteria of (1) political subdivision splits (including ward splits, county subdivisions splits, and county splits), (2) contiguity, (3) compactness, (4) community considerations (including census places splits and landmark splits), and (5) political neutrality. Next, the Assembly and Senate Remedial Plans and the 2022 Enacted Plans were both within acceptable population deviation. Last, both the Assembly and Senate Remedial Plans and the Assembly and Senate 2022 Enacted Plans follow prior litigation decisions on existing minority opportunity districts thus conforming to the Federal Laws and Voting Rights Act. The Assembly and Senate Remedial Plans are also better than the 2021 Plans in the same ways.

17. In sum, the Assembly and Senate Remedial Plans perform remarkably better than the Assembly and Senate 2022 Enacted Plans and the prior state legislative plans, the 2021 Plans. In every metric that was analyzed the Assembly and Senate Plans meet or exceed the performance of the Assembly and Senate 2022 Enacted Plans and 2021 Plans. Undoubtedly,



the Assembly and Senate Remedial Plans would be drastic improvements upon the current and recent districts if recommended and adopted as the next legislative districts for the state of Wisconsin.

## **II. Qualifications**

18. I received a Bachelor of Science degree in Electrical Engineering (BSEE) from Virginia Tech in 1982 and a Master of Geospatial Information Science and Technology (MGIST) degree from N.C. State University in 2016.
19. Currently, I am a demographic and mapping consultant and the CEO/Principal Consultant of CensusChannel LLC. As a consultant working on redistricting issues over the last thirty years, I have developed nearly one thousand redistricting plans during the last four redistricting cycles. I have drawn plans for jurisdictions of all sizes, from statewide plans to redistricting plans for small municipalities. In the course of my career, I have also had the opportunity to draw and analyze many plans for jurisdictions within multiple states throughout the country. In addition, during that timeframe, I have provided consulting services for numerous non-profit and public-sector groups centering on redistricting plan development, analysis, and training.
20. Throughout the four redistricting cycles, I have provided services and/or training for several notable organizations including: the American Civil Liberties Union (“ACLU”), Campaign Legal Center, State legislative Black Caucus Institute (“CBC Institute”), Harvard Law Clinic, Louisiana Legislative Black Caucus (“LLBC”), NAACP, NAACP Legal Defense Fund (“LDF”), Power Coalition for Equity and Justice, Southern Coalition for Social Justice (“SCSJ”), Southern Echo, and the U.S. Department of Justice (“DOJ”).

21. Prior to this round of redistricting, I was hired to develop remedial redistricting plans, associated expert reports, depositions, and provide testimony in the *Holloway v. City of Virginia Beach* court case.
22. During this redistricting cycle I was also hired by the U.S. Department of Justice to provide a Remedial plan, associated expert reports, depositions, and provide testimony in *United States v. Galveston County*, a redistricting case in Texas.
23. In 2022, I was hired by the NAACP LDF to develop a Remedial redistricting plan for the *Robinson v. Ardoin*, No. 3:22-cv-00211 (M.D. La.) court case.
24. Also, prior to the 2020 redistricting cycle, I was hired to be the Districting Master for the City of Everett, Washington. The task was to assist the city's Redistricting Commission with developing their districting plan. The city moved from a seven-member fully at-large voting system to five single-member districts and two members elected at-large. As Districting Master, I shepherded the commission through the entire plan development process as they successfully developed the city's first districting system.
25. In addition, I have testified and/or provided depositions as a redistricting expert in Alabama, Arkansas, North Carolina and Texas. I have provided testimony with a focus on demographic and mapping analysis in federal and state court cases. These include: *Arkansas State Conference of the NAACP v. Arkansas Board of Apportionment* (Arkansas), *Covington v. North Carolina* (North Carolina), *NC NAACP v. State of North Carolina* (North Carolina), *Wright v. North Carolina* (North Carolina), *Perez v. Perry* (Texas), and *Perez v. Abbott* (Texas).

26. My redistricting/GIS experience and work as an expert are contained within my attached resume (see Appendix A).

### III. Software, Data, and Technical Process Utilized

27. The software utilized to develop the Governor's proposed Remedial Plans for this litigation (the Remedial Plans) was Maptitude for Redistricting ("Maptitude") by Caliper Corporation. Maptitude for Redistricting is one of the leading redistricting software applications utilized by consultants, major nonprofit groups, and governmental entities.<sup>2</sup> The software includes 2020 Census data ("PL94-171") for the state of Wisconsin that was utilized during the map-drawing process.<sup>3</sup>

28. ESRI's ArcGIS's ArcMap application was used to generate statewide and district maps for the final Remedial Plans and the 2022 Enacted Plans for inclusion in this report. ESRI, the creator of the "shapefile," is one of the leading GIS corporations in the world.

29. Several datasets were acquired and utilized:

- a. The geographic boundaries for the 2022 State Assembly and Senate legislative districts<sup>4</sup> were obtained from the Wisconsin Legislative Technology Services Bureau (LTSB) website.<sup>5</sup> The 2020 Wisconsin Blocks without Water dataset was also downloaded from the LTSB website. The 2012 Assembly Plan ("Assembly 2021 Plan") and 2012 Senate Plan ("Senate 2021 Plan") were imported from Caliper Corp.'s dataset.<sup>6</sup>
- b. I utilized Maptitude to perform a process that joined the 2020 Wisconsin Blocks without Water dataset to the 2020 PL94-171 dataset. Once, joined together, I utilized another

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<sup>2</sup> See <https://www.caliper.com/mtrnews/clients.htm> for Maptitude for Redistricting's client list.

<sup>3</sup> Caliper Corporation provides 2020 Census Data (PL94-171 data) in a format readable for their software, Maptitude for Redistricting. The population data are identical to the data provided by the Census Bureau.

<sup>4</sup> See <https://gis-ltsb.hub.arcgis.com/pages/download-data>

<sup>5</sup> There was a single census block (550291005002052) that remained unassigned after the plan was imported. I assigned the census block to its sole adjacent Assembly District 1. Nine persons were contained within the block.

<sup>6</sup> The Caliper Dataset was verified and matched the U.S. Census Bureau's 2020 State Legislative Geography. The 2011 Assembly Plan and the 2012 Senate Plan on the LTSB contained numerous unassigned census blocks.

process that merged the census block and generated the August 2021 ward and the county subdivision boundaries.

- c. I also used the landmark area dataset that is provided by Caliper Corp. This digital layer is a copy of the landmark areas geographic dataset provided by the U.S. Census Bureau in Maptitude format. I extracted and only used three generally accepted communities of interest (COI) specifically colleges/universities, military bases, and Native American reservations.
- d. 2020 Census Places were imported from the dataset provided by Caliper Corp. In order to distinguish between four census places with the same name, an additional field was generated that added to the layer to include both the name and the census place type (e.g., city, town, CDP). This prevents Maptitude split reports from combining the census places with the same names.
- e. In order to adhere to political neutrality and to evaluate partisan performance, periodically, district plan shapefiles and Geo.json<sup>7</sup> files were generated and uploaded to the website PlanScore<sup>8</sup> to provide partisan performance for the plans. PlanScore is a nonpartisan website designed for the purpose of evaluating political performance of statewide plans. The website is routinely used by experts, consultants, and organizations to obtain unbiased partisan performance measures.
- f. I also used a second method of evaluating partisan performance, I downloaded the recent 2022 and 2020 election datasets from the LTSB website. In order to allow Maptitude to analyze the Efficiency Gap performance at the district level, the 2020 and 2022 Election data for the Remedial and 2022 Enacted Plans, I utilized Maptitude for Redistricting's disaggregation/aggregation process. The disaggregation/aggregation process is an acceptable industry process when evaluating data that is not provided at the census block or other levels.<sup>9</sup> Once the disaggregation/aggregation process was completed, estimated election results were available for review at the district level (as well as other Census levels).
- g. Finally, I obtained a list of stipulated wards<sup>10</sup> (see Appendix D) that contained misassigned and noncontiguous areas. These wards should be omitted when counting the number of splits wards.

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<sup>7</sup> In some instances, the PlanScore application required a geo.json file created by Maptitude in order to complete its partisan analysis. Geo.json is an open source standard designed to representing simple geographical feature

<sup>8</sup> See <https://planscore.org/#12022-statehouse>

<sup>9</sup> Disaggregation apportions a population to a lower geographic area from a higher geographic area using a percentage of a matching population field at both geographic levels. In this instance, voting age population was used as the weighted variable to apportion amounts to census blocks. Aggregation sums up the lower-level results to all other higher geographic levels that are to be used. Maptitude also includes a pure geographic disaggregation/aggregation process that was not utilized during this analysis.

<sup>10</sup> See Appendix E

#### IV. Methodology

30. First, I reviewed relevant Wisconsin state constitution, the Court's December 22, 2023 Decision ("Decision" or "*Clarke Opinion*"), and the redistricting criteria set forth by the Court-appointed consultants. Next, appropriate datasets were acquired and downloaded. The 2022 Enacted Plans' district boundaries—implemented as a result of the *Johnson v. Wisconsin Elections Commission* litigation—for the Assembly and Senate districts were reviewed and analyzed. The central dataset utilized centers on the U.S. Census Bureau's 2020 Census population dataset's PL94-171 extract for the state of Wisconsin. This also included the associated Census geographic boundaries (TIGER). Both of these datasets were acquired from Caliper Corp. In addition, geographic data for the 2022 Enacted Plan and August 2021 ward and county subdivision boundaries were obtained from the Wisconsin Legislative Technology Service Bureau website. The 2021 Plans consists of the last Assembly and Senate plans in effect prior to the *Johnson* litigation resulting in the 2022 Enacted Plans. The 2021 Plans were imported from the Caliper Corp. dataset. The Caliper Corp, Wisconsin Assembly and Senate dataset comes from the U.S. Census Bureau 2020 State Legislative boundary files.
31. The August 2021 ward boundaries were used as the primary building block for the Remedial Plans. When possible, the county subdivisions and counties were also selected to build district boundaries. The wards, county subdivisions, and counties, were generated from the August 2021 "blocks without water" dataset that was downloaded from the Wisconsin LTSB website. The "blocks without water" dataset comes from the 2020 census block geography, however, the dataset did not include the zero populated water blocks that are contained within the 2020 census block dataset. However, the Assembly and Senate Remedial, 2022 Enacted and 2021 Plans were all generated using this base census block dataset.

32. Although the development of the Remedial Plans balanced all redistricting criteria, initial considerations were made to eliminate noncontiguous districts. Following the Court's ruling, districts that contain territory with portions of land separated by water are considered contiguous in the Plan. (*Clarke Opinion*, ¶ 27 at p. 19). Likewise, another notable consideration included minimizing ward splits. Therefore, when developing the Remedial Plans, attention was made to minimize ward splits. These two became initial objectives for the Remedial Plan development in addition to otherwise complying with constitutional and traditional redistricting criteria.
33. In order to adhere to the Court's criterion of Political Neutrality, periodically plans were evaluated for partisan performance. The development processes did not favor or disfavor any particular political party.
34. Throughout the plan development process, considerations were made pertaining to communities of interest. In addition to considering standard COIs such as municipalities, a considerable amount of regional knowledge was obtained from legal counsel. Thus, district configurations were made with an understanding of local and regional aspects and accomplished in a logical manner.
35. After completion of the Assembly Remedial Plan, the districts were sequentially merged together in groups of three to form the Senate Plan. Finally, I generated data reports that summarized the Assembly and Senate plans' performance on the redistricting criteria and generated maps presenting the geographic results produced by adhering to all of the redistricting criteria. I compared the redistricting criteria of the Remedial Plans' results to the

2022 Enacted Plans and the 2021 Plans and documented the results. My findings are presented and discussed below.

## V. Redistricting Criteria

36. Prior to plan development, I reviewed relevant portions of the Wisconsin state constitution on redistricting, the *Clarke* Opinion, and the redistricting criteria set forth in the Court's consultants' memo: *RE: Technical Specifications and Data Requirements for Proposed Remedial Maps Submission*<sup>11</sup> The Court's consultants established redistricting guidelines for state legislative and legislative plans (see Appendix E). A summary of the redistricting criteria that were established and followed during the map-drawing process includes:

### a. Population Equality:

- Ensuring compliance with population equality requirements, as stated in the opinion. *Clarke* Opinion ¶ 64 at pp. 43-44.

Indicate the total population deviation (overall deviation), and also provide a district-by-district enumeration of the difference between actual and ideal population.

### b. Political Subdivision Splits:

- “the extent to which assembly districts split counties, towns, and wards.” *Clarke* Opinion ¶ 66 at p. 45.

Provide the number of counties or other units that are split, and the total number of split pieces for each type of unit. Also, specify exactly which units are being split and how many times each unit is being split.

### c. Contiguity:

- Composed of contiguous territory. *Clarke* Opinion ¶ 65 at p. 44.

If there are non-contiguous units, please identify which these are and into how many pieces each unit is being divided. Provide a rationale based on a valid state interest for each instance (e.g., “A district can still be contiguous if it contains territory with portions of land separated by water.” *Clarke* Opinion ¶ 27 at 19.)

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<sup>11</sup> See Appendix D

d. Compactness:

- Formed in as compact a manner as practicable. *Clarke* Opinion ¶ 65 at p. 44.

Indicate the compactness metric or metrics employed and provide comprehensive data (i.e., average) for the entire plan as well as detailed data for each district.

e. Federal Law Compliance:

- Adherence to the Equal Protection Clause and the Voting Rights Act of 1965. *Clarke* Opinion ¶ 67 at pp. 45-46.

Provide any data relevant to your assessment of compliance with the Voting Rights Act. This includes any replication code required for the analysis of racially polarized voting. Also explain the methodology used.

f. Community Considerations:

- Preserving communities of interest. *See Clarke* Opinion ¶ 68 at p. 46 “These criteria will not supersede constitutionally mandated criteria, such as equal population requirements, but may be considered when evaluating submitted maps.” *Clarke* Opinion ¶ 68 at p. 46.

Parties must specify the size and geographic location of any communities of interest identified and the degree to which these communities of interest have been split across multiple districts. Also, parties should clarify how they arrived at their definition and identification of communities of interest.

g. Political Neutrality:

- Considering partisan impact and maintaining political neutrality in the drawing of maps. *Clarke* Opinion ¶ 70 at pp. 47-48. This was done while acknowledging that “consideration of partisan impact will not supersede constitutionally mandated criteria such as equal apportionment or contiguity” *Clarke* Opinion ¶ 71 at p. 48.

Parties should specify which metrics were used to estimate the degree to which a map satisfies partisan neutrality. Parties must also submit any partisan or election data utilized in determining political neutrality. Parties must submit any replication code necessary for reproducing the results of simulation/ensemble analyses if that methodology has been employed.

## VI. The Remedial Plans

### A. State Assembly & Senate Remedial Plans - Introduction

37. The Governor’s Assembly and Senate Remedial Plans adhere to state and federal laws as well as traditional redistricting criteria. The Remedial Plans also address the concerns of the Court



regarding noncontiguous areas contained as part of the districts. The remedial plans do not contain any noncontiguous areas.

38. Figure 1 depicts the Assembly Remedial Plan while Figure 2 shows the Senate Remedial Plan.

Detailed maps of each Assembly and Senate districts are included in Appendix B.

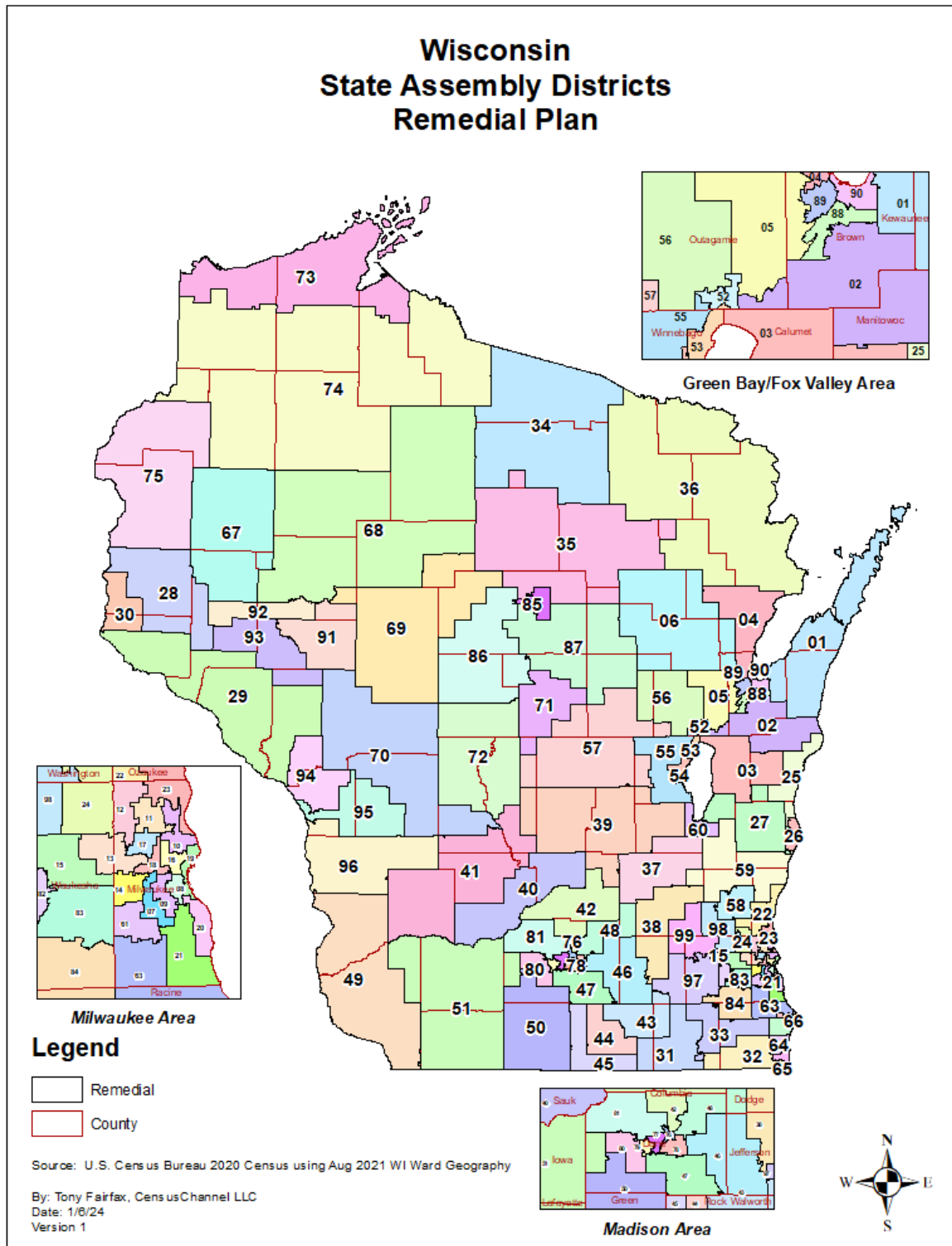


Figure 1 – Remedial Plan for Wisconsin State Assembly Districts

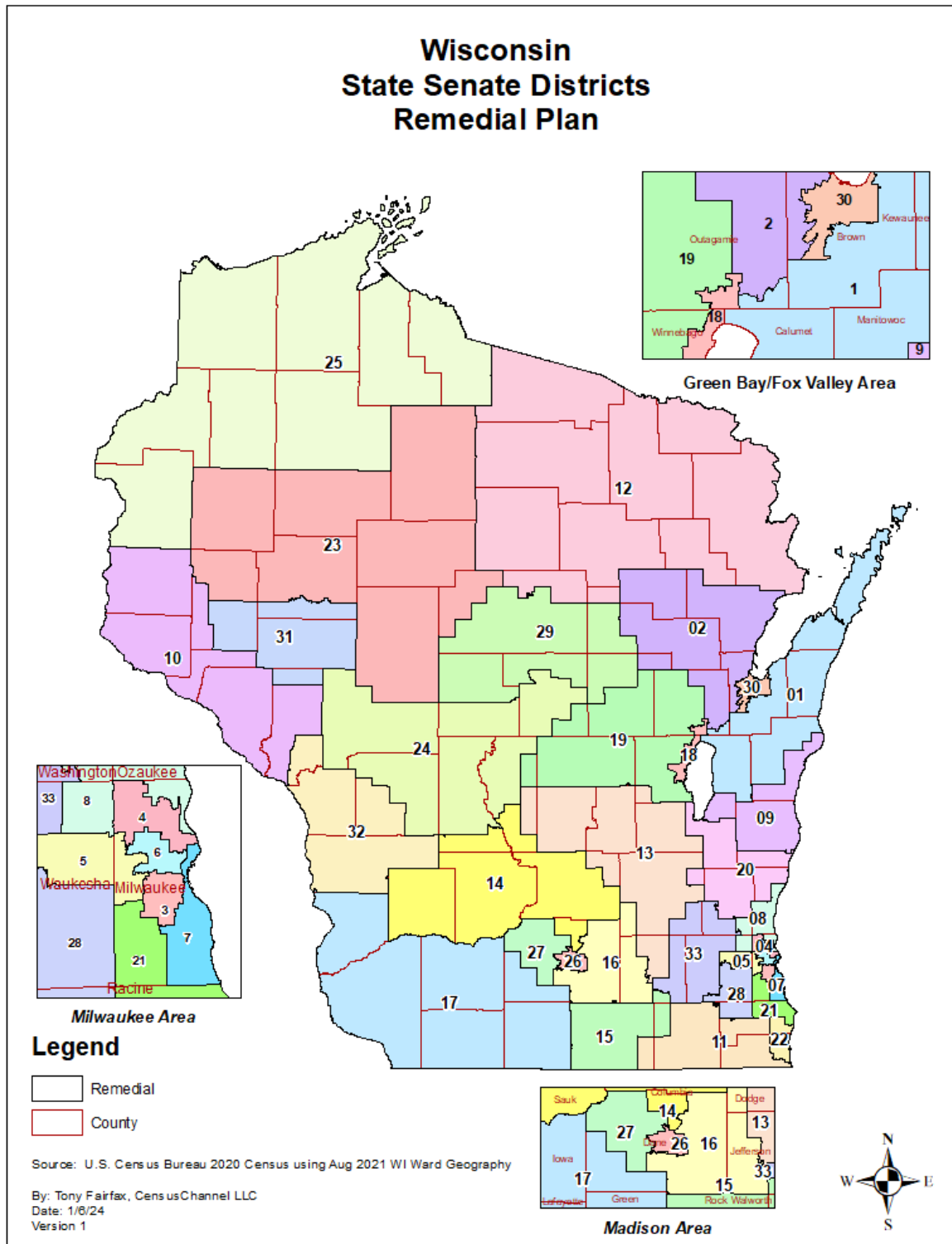


Figure 2 – Remedial Plan for Wisconsin State Senate Districts

## **VII. Remedial Plan Development**

39. The Assembly and Senate Remedial Plans were developed following state, federal and traditional redistricting criteria. The splits of wards, county subdivisions, and counties were minimized and their boundaries fundamentally respected. The decisions I made to split these areas were based on population equality, compactness, communities of interest, and other traditional redistricting criteria. Also, noncontiguous areas were eliminated other than those located in water bodies (See Appendix D).
40. In addition, there was an attempt to create district lines that follow municipal, natural, and infrastructural boundaries (such as rivers or lakes and major highways). Finally, the party generated “stipulation list” of wards and municipalities were referred to in order to determine the true number of splits.
41. At their inception, the Remedial Plans considered the Assembly 2022 Enacted Plan. In fact, several districts in the remedial plans are identical to ones in the Assembly 2022 Enacted Plans. Although adherence to district cores was not a redistricting criterion, one of my goals was to consider the Assembly 2022 Enacted Plan’s district configurations while remedying manifest instances of non-contiguity and accounting for and balancing the criteria set forth by the Court and the Court’s consultants.
42. The Senate Remedial Plan is designed such that each district is made up of consecutive numbered Assembly Districts. For instance, Assembly Districts one, two, and three make up senate district one while assembly districts four, five, and six, create senate district two. The same sequence is repeated until the creation of Senate District 33.

43. The assignment of grouping of Senate was accomplished using adjacent district following the Court's redistricting criteria. Also, community considerations were made as well with many of the decisions contained within Table 5. For instance, as the table includes for Senate Remedial District 1, "This district is similar to the Senate 2022 Enacted Plan but maintains a more rural and agricultural nature by excluding cities like De Pere and Two Rivers and including more agricultural areas in Brown, Calumet and Manitowoc Counties."

### **VIII. Remedial Plans Redistricting Criteria**

#### **A. Remedial Plan: Population Equality (One Person, One Vote)**

44. Equal Population (one person, one vote): The "One person, One vote" principle of the Fourteenth Amendment's Equal Protection Clause requires that state legislative districts be equally populated as nearly as mathematically practicable.<sup>12</sup> The Courts have ruled that state legislative districts should be held under a "substantial" equality standard. For Wisconsin state legislative districts, the acceptable benchmark is plus or minus one percent deviation from the ideal population size. The Assembly Plan's ideal population size is 59,533 while the Senate Plan's ideal population size is 178,598.<sup>13</sup> See Appendix C for detailed population summary reports on each district.

#### **Assembly Districts**

45. The Assembly District's Remedial Plan was developed using a single-member, ninety-nine state legislative district scheme. The Assembly Remedial Plan has a resulting overall

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<sup>12</sup> A series of Supreme Court cases helped define the equal population criteria, beginning with: *Baker v. Carr*, 369 U.S. 186 (1962); *Gray v Sanders*, 372 U.S. 368 (1963); and *Wesberry v. Sanders*, 376 U.S. 1 (1964).

<sup>13</sup> The Assembly plan's ideal population size of 59,533 is calculated by dividing the state's 2020 total population of 5,893,718 by 99 districts. The Senate plan's ideal population of 178,598 is calculated by dividing the state's 2020 total population by 33 districts.

population deviation of 1.96%. The Assembly 2022 Enacted Plan has an overall population deviation of 0.85%. Although the Assembly 2022 Enacted Plan has a closer overall population deviation to the ideal, both plans are within the acceptable deviation of +/-1% (or 2% overall),<sup>14</sup> especially when considering the criteria of eliminating noncontiguous districts. It is important to note that the Assembly 2022 Enacted Plan contains noncontiguous district areas which allows for a greater number of district configurations and thus the selection of a tighter population equality.

46. Unsurprisingly because it was draw using now-outdated population data, the Assembly 2021 Plan exceeds the overall population deviation the most. The Assembly 2021 Plan has an overall population deviation of 32.01%. Since the Assembly 2021 Plan exceeds the +/-1% acceptable deviation, the plan is not in compliance with federal law.

### Senate Districts

47. The Senate Remedial Plan's ideal population size is 178,598.<sup>15</sup> The Senate Remedial Plan has a resulting overall population deviation of 1.46%. The Senate 2022 Enacted Plan has an overall population deviation of 0.61%. Although the Senate 2022 Enacted Plan has a closer overall population deviation to the ideal, both plans are within the acceptable deviation of +/-1% (or 2% overall). As previously mentioned, any difference is particularly irrelevant when considering the criteria of eliminating noncontiguous districts. It is important to note that the

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<sup>14</sup> A "constitutionally acceptable plan . . . should, if possible, be kept below 2%." *Wis. State AFL-CIO v. Elections Bd.*, 543 F. Supp. 630, 634 (E.D. Wis. 1982). In other words, courts have recognized a "de minimis 2% threshold" for state legislative maps. *Baumgart v. Wendelberger*, No. 01-C-0121, 2002 WL 34127471, at \*7 (E.D. Wis. May 30, 2002).

<sup>15</sup> The ideal population size is calculated by dividing the state's 2020 total population of 5,893,718 by 33 districts.

Senate 2022 Enacted Plan contains noncontiguous district areas which allows for a tighter population equality.

48. Like its Assembly Plan counterpart, the Senate 2021 Plan drastically exceeds the acceptable overall population deviation. The Senate 2021 Plan has an overall population deviation of 22.26%. See Appendix C for the complete data analysis of all redistricting criteria for the Senate Remedial Plan, Senate 2022 Enacted Plan, and Senate 2021 Plan.

B. Remedial Plan: Contiguity

49. Contiguity: Contiguity ensures that there are no parts of a district separated from the district itself. Exceptions are generally used for water bodies that separate land areas.<sup>16</sup> Although, the redistricting criteria set forth by the Courts' consultants provide no priority, establishing a plan with no noncontiguous areas was mandatory in light of the Court's December 22 *Clarke* opinion. Thus, eliminating all noncontiguous areas contained with the 2022 Assembly Enacted Plan was paramount in the development of the Remedial Plans.

Assembly Plan

50. The Remedial Assembly Plan's districts are contiguous with no detached landmasses or areas other than the areas separated by water (see Appendix D).<sup>17</sup> The Court's consultants' criteria allow land separated by water to be contiguous. However, the Assembly 2022 Enacted Plan contains multiple areas that are noncontiguous and are not separated by water.

51. According to the Maptitude Contiguity report for the Assembly Remedial Plan (see Appendix C), the plan contains 146 separate geographic areas. Subtracting the 99 parts (representing the

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<sup>16</sup> <https://www.ncsl.org/research/redistricting/redistricting-criteria.aspx>.

<sup>17</sup> Areas separated by water bodies are typically excepted as contiguous.

number of Assembly districts), yields 47 detached noncontiguous areas. These represent the number of areas separated by water. On the other hand, the Assembly 2022 Enacted Plan contains 404 separate geographic areas. Therefore, the Assembly 2022 Enacted Plan has 305 noncontiguous areas when the 99 assembly districts are subtracted. Only 47 of those 305 areas are separated by water. Thus, the Assembly Remedial Plan unsurprisingly performs significantly better than the Assembly 2022 Enacted Plan for the criteria of contiguity.

52. The Assembly 2021 Plan contains 191 separate geographic areas (see Appendix C), with 158 separate noncontiguous areas when the 33 senate districts are subtracted. Once again, only 47 of these areas are separated by water. Thus, the Assembly Remedial Plan performs significantly better than the Assembly 2021 Plan for the criteria of contiguity.

### Senate Plan

53. Similar to the Assembly plan, the Senate Remedial Plan's districts are contiguous with no separate landmasses or areas other than the areas contained within water (see Appendix D). Conversely, the Senate 2022 Enacted Plan contains multiple areas that are noncontiguous and are not connected by water.

54. Reviewing the Maptitude Contiguity report reveals that the Senate Remedial Plan contains 80 separate geographic areas (see Appendix C). Subtracting the 33 areas for the number of senate districts yields 47 separate noncontiguous areas, all of them separated by water. It is important to note that these are the same noncontiguous areas separated by water that existed in the Assembly Plans.

55. The Senate 2022 Enacted Plan contains 191 separate geographic areas (see Appendix C), with 158 separate noncontiguous areas when the 33 senate districts are subtracted. Once again, only



47 of these areas are separated by water. Thus, the Senate Remedial Plan unsurprisingly performs significantly better than the Senate 2022 Enacted Plan for the criteria of contiguity.

56. The Senate 2021 Plan contains 191 separate geographic areas (see Appendix C), with 158 separate noncontiguous areas when the 33 senate districts are subtracted. Once again, only 47 of these areas are separated by water. Thus, the Senate Remedial Plan performs significantly better than the Senate 2021 Plan for the criteria of contiguity.

### C. Remedial Plan: Political Subdivision Splits

57. Preserving or Minimizing Political Subdivision Splits: Minimizing the splitting of political subdivisions<sup>18</sup> keeps intact political entities such as counties, county subdivisions, and wards. Minimizing political subdivision splits ensures that these voters can collectively vote for the same representatives and potentially reduces costs in administering elections (e.g., ballot modifications and additional staff).

58. When analyzing the ward and county subdivision splits, I utilized the August 2021 ward and county subdivision boundaries.<sup>19</sup> These boundaries were generated from the Wisconsin “2020 Blocks without Water” dataset located on the Legislative Technology Services Bureau website.<sup>20</sup>

### Assembly Plan

59. The Assembly Remedial Plans minimize county, county subdivision, and ward splits. The Assembly Remedial Plan splits five wards although the split report generated from

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<sup>18</sup> See *Reynolds v. Sims*, 377 U.S. 533 (1964).

<sup>19</sup> Because I utilized these boundaries, the statistics for municipal and ward splits for the 2021 Plans do not reflect the same number of splits that would have existed at the time of the 2021 Plans’ enactment using then-existent boundaries.

<sup>20</sup> See <https://gis-ltsb.hub.arcgis.com/pages/download-data>

Maptitude's community of Interest report (see Appendix C) indicates 16 ward splits.

However, 11 of the 16 splits indicated in the report are included in the stipulation list of wards. Those 11 of 16 stipulated wards include 55025468500003, 55025480000001, 55025480000003, 55025480000004, 55035223000001, 55035223000003, 55035223000006, 55035223000007, 55105378250004, 55139605000009, and 55087388000002.

60. In addition, two of the non-stipulated split wards are contained within now non-existing municipalities. These are municipalities that have been absorbed within other municipalities. These include wards 55025480250002 and 55025480250003. Also, two other non-stipulated split ward parts contain zero population. These include: 55025516000008 (Town of Middleton) and 55079853000025 (City of West Allis).

61. Finally, a single ward remains with population and existing in a current municipality and is not on the stipulation list. The ward is 55025516000004 (Town of Middleton). However, only seven (7) people are contained within the minor split – keeping this ward intact would require splitting the City of Middleton. Also, it would take only a minor adjustment to realign the ward boundaries to include this census block post-redistricting.

62. The 2022 Enacted Plan splits 10 wards. However, none of the split wards are on the stipulation list. Table 1 provides a comparison of the Assembly Remedial and Assembly 2022 Enacted Plan's splits.

**Table 1 – Splits of Assembly Remedial, 2022 Enacted, and 2021 Plans**

<b>District</b>	<b>Assembly Remedial Plan</b>	<b>Assembly 2022 Enacted Plan</b>	<b>Assembly 2021 Plan</b>
Wards	<b>5*(16)</b>	10	372
County Subdivisions	<b>55</b>	59	188
Counties	<b>45</b>	53	58
Census Places	<b>37</b>	39	113

\*Note: Although Maptitude reports show 16 ward splits, 11 are contained within the stipulated list of wards to omit.

Source: Assembly Remedial Plan, Enacted Plan, and 2021 Plan data were extracted from Maptitude for Redistricting reports.

63. The Assembly 2021 Plan split 372 wards. The Assembly 2021 Plan splits considerably more wards since the districts were following older ward and Voting Tabulation District<sup>21</sup> (VTD) boundaries.

64. The Assembly Remedial Plan also splits fewer county subdivisions, counties, and census places than the 2022 Enacted Plan. The Assembly Remedial Plan splits 55 county subdivisions, 45 counties, and 37 census places. The Assembly 2022 Enacted Plan splits a greater amount with 59 county subdivisions, 53 counties, and 39 census places. The Assembly 2021 Plan splits a larger amount with 188 county subdivisions, 58 counties, and 113 census places.

65. Thus, the Assembly Remedial Plan respects the boundaries of political subdivision notably more than the Assembly 2022 Enacted and Assembly 2021 Plans.

### Senate Plan

66. The Senate Remedial Plan also minimizes the county, county subdivision, and ward splits.

The Senate Remedial Plan splits two wards although the split report generated from Maptitude's community of interest report (see Appendix C) indicates seven ward splits.

<sup>21</sup> Voting Tabulation Districts are generated by the U.S. Census Bureau and usually follows local precinct or ward boundaries. However, VTDs always follow census block boundaries.

However, five of the seven splits indicated in the report are included in the stipulation list of wards. The five stipulated wards include: 55025468500003, 55025480000001, 55025480000004, 55139605000009, and 55087388000002.

67. In addition, one of the non-stipulated split wards is contained within a now non-existing municipality that has been absorbed within another municipality. This includes ward 55025480250003. Finally, just as the Assembly Remedial Plan, a single ward remains with population and existing in a current municipality and is not on the stipulation list. The ward is 55025516000004 (Town of Middleton). To reiterate, only seven (7) people are contained within the census block of the split ward – keeping this ward intact would require splitting the City of Middleton.

68. The Senate 2022 Enacted Plan splits six wards. However, none of the split wards in the Senate 2022 Enacted Plan are on the stipulation list. Table 2 provides a comparison of the Senate Remedial and Senate 2022 Enacted Plan splits.

**Table 2 – Splits of Senate Remedial, 2022 Enacted, and 2021 Plans**

<b>District</b>	<b>Senate Remedial Plan Splits</b>	<b>Senate 2022 Enacted Plan Splits</b>	<b>Senate 2021 Plan Splits</b>
Wards	2*(7)	6	214
County Subdivisions	33	35	123
Counties	33	42	46
Census Places	23	33	80

Note: Although Maptitude reports show 7 ward splits, 5 are contained within the stipulated list of wards to omit.

Source: Remedial Plan and Enacted Plan data extracted from Maptitude for Redistricting reports.

69. The Senate 2021 Plan split 214 wards. Once again, the Senate 2021 Plan splits considerably more wards since the districts were following older ward and Voting Tabulation District<sup>22</sup> (VTD) boundaries.

70. The Senate Remedial Plan also splits fewer county subdivisions, counties, and census places than the 2022 Enacted Plan. The Senate Remedial Plan splits 33 county subdivisions, 33 counties, and 23 census places. The Senate 2022 Enacted Plan splits a greater amount with 35 county subdivisions, 42 counties, and 33 census places. Thus, like the Assembly Remedial Plan, the Senate Remedial Plan respects the boundaries of political subdivision more than the Senate 2022 Enacted Plan.

D. Remedial Plan: Federal Law Compliance:

71. This criterion includes complying with Section 2 of the Voting Rights Act (VRA) as well as providing equal protection for all voters. Districts cannot dilute minority voting strength or be configured to discriminate on the basis of race, color, or membership in one of the language minority groups.<sup>23</sup>

72. The Remedial Assembly and Senate Plans maintained the same configuration of opportunity districts that were contained within the 2022 Enacted Plans. These include Assembly districts 8, 9, 10, 11, 12, 16, 17, and 18. In the Senate Remedial Plan this included districts 4 and 6. In addition, race was not considered during the development of the Assembly and Senate Remedial Plans. Each of the preexisting opportunity districts did not contain any noncontiguous parts otherwise satisfying the Wisconsin constitution, comported with the other

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<sup>22</sup> Voting Tabulation Districts are generated by the U.S. Census Bureau and usually follows local precinct or ward boundaries. However, VTDs always follow census block boundaries.

<sup>23</sup> <https://www.justice.gov/opa/press-release/file/1429486/download>

Courts criteria, and thus they simply retained their configuration and thus their compliance with Federal Law.<sup>24</sup>

E. Remedial Plan: Community Considerations

73. Preservation of Communities of Interest (COI): Preservation of communities of interest aims to maintain a specific population group within a defined geographic area where the group shares one or more common interests (e.g., economic, social, cultural, or ethnic interests).<sup>25</sup> Similar to political subdivisions, minimizing splits tends to ensure that these voters can collectively vote for the same representatives.

74. In addition, to minimizing splitting of counties and county subdivisions, I endeavored to preserve COIs of census places<sup>26</sup> (including cities, towns, and census designated places or “CDPs”) and select landmark areas (i.e., military bases, colleges/universities, and Native American reservations).<sup>27</sup>

75. The Assembly and Senate Remedial Plans were developed with the goal of preserving communities of interest. When quantifying the preservation of COIs, census places and three major types of landmark areas were analyzed<sup>28</sup>. Census places include governmental entities such as cities and towns as well as Census Designated Places or CDPs. Although CDPs are generated by the Census Bureau for statistical purposes, they usually reflect “named” areas

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<sup>24</sup> In addition to adherence to Federal Law, the remedial plans also satisfies the Wisconsin constitution requirements in regards to not containing any noncontiguous areas (other than those separated by water), following traditional redistricting criteria, and comporting with the notion of partisan fairness.

<sup>25</sup> <https://redistricting.lls.edu/redistricting-101/where-are-the-lines-drawn/#communities-of-interest>.

<sup>26</sup> Census Places include cities, towns, and Census Designated Places (“CDPs”). CDPs are statistical geographic areas of unincorporated communities. They are usually locally recognized and identified using a particular name.

<sup>27</sup> In addition, specific socioeconomic characteristics of census tracts were overlaid and viewed for analyzed for potential communities of interest.

<sup>28</sup> The three landmark areas were extracted from Calipers “landmark area” dataset the comes with the Maptitude for Redistricting software. The dataset mimics the geographic dataset generated by the U.S. Census Bureau, but in the format that works with the Maptitude application.

that the local community designates but have no governmental body.<sup>29</sup> The select landmark areas included three generally acceptable COI areas (defined to include military bases, colleges/universities, and Native American reservations). The goal is to preserve and keep intact CDPs and select landmark areas to the extent practicable. Thus, the splitting of census places (including cities, towns and CDPs) and major landmarks areas (defined to include military bases, colleges/universities, and Native American reservations) were minimized.

76. In addition to standard census places and generally accepted landmark areas, the Assembly and Senate Remedial Plans were created using local and regional community considerations. The below Section regarding District's Counties, Municipalities, and Community Considerations includes a district-by-district table of relevant areas for each Assembly and Senate district contained within the Remedial Plans.

#### Assembly Plan

77. The Assembly Remedial Plan also splits fewer census places than the Assembly 2022 Enacted Plan. The Assembly Remedial Plan splits 37 census places while the Assembly 2022 Enacted Plan splits a greater amount with 39 census places (see Table 3). The Assembly 2021 Plan splits census places a considerable amount more at 113.

78. The Assembly Remedial Plan's landmark area splits of three generally accepted COIs contains 22 splits, and the Assembly 2022 Enacted Plan includes 23, while the Assembly

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<sup>29</sup> <https://www.federalregister.gov/documents/2018/11/13/2018-24571/census-designated-places-cdps-for-the-2020-census-final-criteria>.

2021 Plan includes 22. Therefore, the Assembly 2021 Plan splits the same amount of the three generally accepted COIs as the Assembly Remedial Plan.

**Table 3 – Places/Landmark Area Splits of Assembly Remedial, 2022 Enacted, 2021 Plans**

<b>District</b>	<b>Assembly Remedial Plan Splits</b>	<b>Assembly 2022 Enacted Plan Splits</b>	<b>Assembly 2021 Plan Splits</b>
Census Places	37	39	113 <sup>30</sup>
Landmark Areas Military Bases, Colleges/Universities, Reservations	22	23	22

Source: Assembly Remedial Plan, 2022 Enacted, and 2021 Plan data extracted from Maptitude for Redistricting reports.

### Senate Plan

79. The Senate Remedial Plan also splits fewer census places than the Senate 2022 Enacted Plan and the Senate 2021 Plan. The Assembly Remedial Plan splits 23 census places while the 2022 Enacted Plan splits a greater amount with 33 census places (see Table 4). The Assembly Remedial Plan's landmark splits of three generally accepted COIs contain 17 splits, and the 2022 Enacted Plan also includes 17. The Senate 2021 Plan splits 80 census places and 16 landmark areas of three generally accepted COIs. The landmark area splits represent the only analyzed geographic area with fewer splits than the Remedial Plans.

<sup>30</sup> In the Governor's plaintiffs brief, 78 municipalities were identified. Most likely this was due to use only different municipalities and not Census Designated Places (CDP) or different year municipalities. This report uses 2020 census places which includes cities, towns, villages, and CDPs. Although CDPs are generated by the U.S. Census Bureau, they are recognizable local areas and are usually desired to remain intact.



**Table 4 – Places/Landmark Area Splits of Senate Remedial, 2022 Enacted, 2021 Plans**

<b>District</b>	<b>Senate Remedial Plan Splits</b>	<b>Senate 2022 Enacted Plan Splits</b>	<b>Senate 2022 Enacted Plan Splits</b>
Census Places	<b>23</b>	33	80
Landmark Areas Military Bases, Colleges/Universities, Reservations	17	<b>17</b>	<b>16</b>

Source: Senate Remedial Plan and Senate 2022 Enacted Plan data extracted from Maptitude for Redistricting reports.

F. Remedial Plan: Compactness

80. Compactness: Compactness refers to the shape or dispersion of the district boundary lines.

Compactness can be demonstrated by analyzing statistical compactness measures.<sup>31</sup> Many compactness measures, such as the ones used in this report, are developed such that the resultant value exists between 0 and 1, whereby the closer the value is to 1, the more compact the district. The districts were analyzed using two of the most widely used compactness measures: Reock and Polsby-Popper.<sup>32</sup>

Assembly Plan

81. A primary way of comparing compactness between different plans is to compare the mean or average of the district measures. The mean compactness measures for the Assembly Remedial Plan are .42 (Reock) and .35 (Polsby-Popper). The mean compactness measures for the 2022 Enacted Plan are .38 (Reock) and .24 (Polsby-Popper). Thus, the Assembly Remedial Plan is more compact than 2022 Assembly Enacted Plan for both of the measures. The Assembly 2021

<sup>31</sup> Compactness measures quantify the geographic shape of the districts as compared to a designated perfectly compact shape, such as a circle.

<sup>32</sup> *Maptitude for Redistricting* documentation defines the compactness measures: 1) Reock: “[T]he Reock test computes the ratio of the area of the district to the area of the minimum enclosing circle for the district.”; 2) Polsby-Popper: “The Polsby-Popper test computes the ratio of the district area to the area of a circle with the same perimeter:  $4pArea/(Perimeter^2)$ .”

Plan also is less compact than the Assembly Remedial Plan when comparing the means. The Assembly 2021 Plan's measures are .40 (Reock) and .26 (Polsby-Popper), both lower than the Assembly Remedial Plan.

82. A district-by-district comparison of the Assembly Remedial Plan and the Assembly 2022 Enacted Plan shows that Remedial Plan also performs better overall (see Appendix C). Using the Reock measure, the Assembly Remedial Plan contains 53 districts that are more compact than the Assembly 2022 Enacted Plan's districts. The Assembly 2022 Enacted Plan performs better in only 29 districts. The remaining 17 assembly districts are the same in compactness using Reock.

83. Using Polsby-Popper, the Assembly Remedial Plan contains 73 districts that are more compact than the Assembly 2022 Enacted Plan districts. The 2022 Enacted Plan performs better in only 14 districts. The remaining 12 assembly districts have the same compactness measurement values using Polsby-Popper.

84. When comparing the Assembly Remedial Plan with the Assembly 2021 Plan, the Assembly Remedial Plan is more compact. Using the Reock measure, 56 districts in the Assembly Remedial Plan are more compact than those in the Assembly 2021 Plan. The Assembly 2021 Plan is more compact in 41 districts. Two districts in both plans have the same compactness measurement values.

85. When comparing the Assembly Remedial Plan with the Assembly 2021 Plan for Polsby-Popper, the Assembly Remedial Plan is more compact. Using the Polsby-Popper measure, 74 districts in the Assembly Remedial Plan are more compact than those in the Assembly 2021

Plan. The Assembly 2021 Plan is more compact in only 22 districts. Three districts have the same compactness measurement values.

86. Using two different measures and two different methods of comparison, shows that Assembly Remedial Plan is more compact than the Assembly 2022 Enacted and Assembly 2021 Plans.

### Senate Plan

87. The Senate Remedial Plan's compactness measures also perform better than the 2022 Senate Enacted Plan. The mean compactness measures for the Senate Remedial Plan are .42 (Reock) and .32 (Polsby-Popper). The mean compactness measures for the 2022 Enacted Plan are .39 (Reock) and .22 (Polsby-Popper). The Senate 2021 Plan's measures are .40 (Reock) and .23 (Polsby-Popper), both lower than the Senate Remedial Plan. Thus, the Senate Remedial Plan is more compact than Senate 2022 Enacted Plan and the Senate 2021 Plan for both mean measures.

88. A district-by-district comparison of the Senate Remedial Plan and the Senate 2022 Enacted Plan shows that the Senate Remedial Plan also performs better overall (see Table 7). Using the Reock measure, the Senate Remedial Plan contains 19 districts that are more compact while the Senate 2022 Enacted Plan performs better in only 12 districts. The remaining two senate districts have the same compactness measurements for Reock.

89. Using Polsby-Popper, the Senate Remedial Plan contains 26 districts that are more compact than the Senate 2022 Enacted Plan districts. The Senate 2022 Enacted Plan performs better in only three districts. The remaining four senate districts have the same compactness measurement values using Polsby-Popper.

90. When comparing the Senate Remedial Plan with the Senate 2021 Plan for Polsby-Popper, the Senate Remedial Plan is more compact. Using the Polsby-Popper measure, 25 districts in the Senate Remedial Plan are more compact than those in the Senate 2021 Plan. The Senate 2021 Plan is more compact in only five districts. Three districts in both plans have the same compactness measurement values using Polsby-Popper.
91. When comparing the Senate Remedial Plan with the Senate 2021 Plan, Senate Remedial Plan is more compact. Using the Reock measure, 18 districts in the Senate Remedial Plan are more compact than those in the Senate 2021 Plan. The Senate 2021 Plan is more compact in 13 districts. Two districts in both plans have the same compactness measurement values.
92. Using two different measures and two different methods of comparison, shows that the Senate Remedial Plan is more compact than the Senate 2022 Enacted Plan and the Senate 2021 Plan.

G. Political Neutrality

93. The Remedial Assembly and Senate Plans also prove that not only can plans be developed that perform better in constitutional and traditional redistricting criteria, but those same plans can also perform better within the context of political neutrality and partisan fairness as well.
94. In order to maintain political neutrality in drawing of maps, past election results must be incorporated into the analysis and development of the plan. Reviewing the political neutrality for a state level districts, usually requires a review and integration of statewide election results. In this context, statewide elections have been and must be integrated in the partisan analysis to determine political neutrality.

### Assembly Plan

95. I used the website PlanScore<sup>33</sup> to determine political neutrality and partisan performance for each set of plans.<sup>34</sup> One of the political measurement indicators that I used was the widely popular measure of partisan symmetry called Efficiency Gap.<sup>35</sup> The Efficiency Gap measures “wasted votes.” It relies on the concept that all of the votes for a political party that loses in a district are “wasted.” In addition, every vote above the necessary votes needed to win is also wasted. The Efficiency Gap sums these wasted voters for each party, calculates the difference between the two,<sup>36</sup> and produces a percentage of wasted votes using the totals votes casts. PlanScore uses multiple statewide elections and a predictive model<sup>37</sup> to determine wasted votes.

96. Reviewing PlanScore’s Efficiency Gap for the Assembly Remedial Plan shows a percentage of 6.4%. The Assembly 2022 Enacted Plan has a PlanScore Efficiency Gap of 11.0% favoring Republicans. The Assembly 2021 Plan has a PlanScore Efficiency Gap of 10.4% favoring Republicans. The Assembly Remedial Plan dramatically improves partisan fairness in the district configuration compared to the Assembly Remedial Plan and Assembly 2021 Plan.

97. I also reviewed the Efficiency Gap using the Maptitude application. Different from PlanScore’s Efficiency Gap process, where the application uses an average of multiple elections, I reviewed Maptitude’s the Efficiency Gap scores using two separate elections. The two elections included

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<sup>33</sup> See <https://planscore.org>

<sup>34</sup> Plans were uploaded on January 10, 2024. PlanScore updates its application on a regular basis and thus, different upload times may result in different results.

<sup>35</sup> See <https://ssrn.com/abstract=2457468>

<sup>36</sup> In a two major party determination.

<sup>37</sup> See <https://planscore.org/models/data/2022F/>

the 2022 general election for Governor and the 2020 general election for President. Thus, the three measurements will provide partisan insight into three different election viewpoints.

98. Maptitude's Efficiency Gap process shows a 4.16% value favoring Republicans for the Assembly Remedial Plan using the 2022 Governor's election and a 3.77% value favoring the Republican using the 2020 Presidential election. The Assembly 2022 Enacted Plan shows a 16.91% value favoring the Republicans using the 2022 Governor's election and 16.88% using the 2020 Presidential election. The Assembly 2021 Plan shows a 10.24% value favoring the Republicans using the 2022 Governor's election and 14.64% using the 2020 Presidential election.

99. Although the Democratic candidates continue to waste more votes than the Republican candidates in the Assembly Remedial Plan, the amount of wasted voters is significantly lower than for the Assembly 2022 Enacted Plan or the Assembly 2021 Plan. Thus, the Assembly Remedial Plan dramatically improves the partisan fairness in the district configuration.

100. In addition to the Efficiency Gap, I also reviewed the competitiveness of the plans. PlanScore provides an analysis of the districts that can flip from one party control to another. The Assembly Remedial Plan contains 32 districts with a "chance"<sup>38</sup> of flipping from one party to another (see Appendix C). The Assembly 2022 Enacted Plan includes only 19 districts, a difference of 13 fewer competitive districts (see Appendix C). Finally, the Assembly 2021 Plan includes 24 districts with a chance of flipping from one party to another (see Appendix C).

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<sup>38</sup> PlanScore uses predictive modeling, accounting for "the relationship between districts' latent partisanship and candidates' incumbency status with election outcomes," to determine the chance that a particular district will flip party control. See <https://planscore.org/models/data/2022F/>.

101. Therefore, the Assembly Remedial Plan is a much more competitive plan than the Assembly 2022 Enacted Plan and the Assembly 2021 Plan.
102. Declination which PlanScore calculates “the difference between mean Democratic vote share in Democratic districts and the mean Republican vote share in Republican districts...” A zero declination value is neutral, a negative declination value favors Republicans, and a positive declination value favors Democrats in the districts that they won, but not in the plan overall. The Assembly Remedial Plan is scored at .37, favoring Republicans, while the Assembly 2022 Enacted Plan scores a .63, favoring Republicans, while the Assembly 2021 Plan scores at .59, favoring Republicans, in the plan overall.
103. Thus, the Assembly Remedial Plan is closer to a balance plan of zero. In contrast, the Assembly 2022 Enacted Plan and the Assembly 2021 Plan much more substantially favors the Republican candidates, with a greater number of predicted districts won with a smaller increase in their voting share than the Democratic candidates with a similar increase in vote share.
104. Partisan Bias or Partisan Symmetry, which PlanScore calculates, is “the difference between each party’s seat share and 50% in a hypothetical, perfectly tied election.” Thus, in 50/50 statewide vote share perfect each party would win 50% of the districts. The Assembly Remedial Plan the Partisan Bias is 6% favoring the Republican candidates. Thus, in a 50/50 election the Republicans would win 6% more of the districts. The 2022 Enacted Plan yields a 13.9% Partisan Bias while the Assembly 2021 value is 10.6%. Thus, in a 50/50 election Republicans are predicted to win 13.9% and 10.65 more districts for the Assembly 2022 Enacted Plan and the 2021 Plan, respectively.

105. Mean-Median, which PlanScore calculates, is “a party’s median vote share minus its mean vote share, across all of a plan’s districts.” In essence, the Mean-Median provides a measurement of the distribution of the party performance of the districts. The closer the mean and the median the more a plan has a symmetrical district party performance distribution. A skewed or higher percentage usually favors one party over another. The Assembly Remedial Plan has a Mean-Median of 2.9% favoring the Republican candidates while the Assembly 2022 Enacted Plan is 5.0% favoring the Republicans as well. Thus, the median Republican vote share of the Assembly 2022 Enacted Plan was 5.0% higher than the mean Republican vote share versus 2.9% higher for Assembly Remedial Plan. The Assembly 2021 Plan is higher than the Assembly Remedial Plan as well at 4.6%. Once again, The Assembly Remedial Plan has a more balanced plan partisan district configuration.

106. Reviewing all four partisan performance metrics reveals that the Assembly Remedial Plan is a substantially more neutral plan when compared to the Assembly 2022 Enacted Plan and the Assembly 2021 Plan. From competitiveness to partisan bias to symmetrical political performance, the Assembly Remedial Plan outperforms the Assembly 2022 Enacted Plan.

### Senate Plan

107. The Senate Plan showed similar results as the Assembly Plans. Reviewing PlanScore’s Efficiency Gap for the Senate Remedial Plan shows a value of 7.7% favoring Republican. The Senate 2022 Enacted Plan has a PlanScore Efficiency Gap of 13.7% that favors the Republicans. The Senate 2021 Plan has a value of 12.8% favoring the Republicans. The Senate Remedial Plan dramatically improves partisan fairness in the partisan district configuration over the Senate 2022 Enacted Plan and the Senate 2021 Plan.



108. Once again, I reviewed the Efficiency Gap using the Maptitude application. Maptitude's Efficiency Gap process shows a value of 1.17% favoring Republicans for the Senate Remedial Plan using the 2022 Governor's election while a value of 1.80% favoring Democrats using the 2020 Presidential election. The Senate 2022 Enacted Plan has a value of 16.19% favoring Republicans using the 2022 Governor's election and a value of 19.06% favoring Republicans using the 2020 Presidential election. The Senate 2021 Plan has a value of 12.33% favoring Republicans using the 2022 Governor's election and a value of 19.22% favoring Republicans using the 2020 Presidential election.

109. Although the Democratic candidates continue to waste more votes than the Republican candidates in the Senate Remedial Plan, the amount is significantly lower than for the Senate 2022 Enacted Plan and the Senate 2021 Plan. Thus, the Senate Remedial Plan dramatically improves the partisan fairness in the district configuration over the two other senate plans.

110. In addition to the Efficiency Gap, I also reviewed the competitiveness of the plans. PlanScore provides an analysis of the districts that can flip from one party control to another. The Senate Remedial Plan contains 11 districts with a chance of flipping from one party to another (see Appendix C). The Senate 2022 Enacted Plan includes only three districts that have a chance of flipping, a difference of eight fewer competitive districts. The Senate 2021 Plan includes only five districts that have a chance of flipping, a difference of six less competitive districts than the Senate Remedial Plan. Thus, the Senate Remedial Plan is a much more competitive plan than the Senate 2022 Enacted Plan and the Senate 2021 Plan.

111. For Declination, the Senate Remedial Plan is scored at .32 favoring Republicans while the Senate 2022 Enacted Plan scores a .57 favoring Republicans. The Senate 2021 Plan's declination is calculated to be .53 favoring Republicans.
112. Thus, the Senate Remedial Plan is closer to a balance plan of zero. Again, the Senate 2022 Enacted Plan and Senate 2021 Plan each favors Republican candidates more with a greater number of predicted districts won with a smaller increase in their voting share than the Democratic candidates will win with a similar increase in their vote share.
113. Partisan Bias or symmetry shows that, using the Senate Remedial Plan, in a 50/50 election Republicans would win 7% more senate districts. The Senate 2022 Enacted Plan yields a 13.9% Partisan Bias favoring Republicans while the Senate 2021 Plan's declination is 12.9% favoring Republicans. Thus, in a 50/50 election the Republican are predicted to win more districts for the Senate 2022 Enacted and Senate 2021 Plans, compared to the Senate Remedial Plan.
114. Mean-Median indicates the Senate Remedial Plan has a Mean-Median of 2.9% favoring the Republican candidates while the Senate 2022 Enacted Plan is 5.0% favoring Republican as well. The Senate 2021 Plan Mean-Median is 4.9% favoring Republicans.
115. Thus, the median Republican vote share of the Senate 2022 Enacted Plan and Senate 2021 Plan were 5.0% and 4.9% higher, respectively than the mean Republican vote share of 2.9% higher for the Senate Remedial Plan. Once again, The Senate Remedial Plan has a more partisan balanced plan configuration.
116. Once more, reviewing all four partisan performance metrics reveals that the Senate Remedial Plan is a more balanced and fairer plan when compared to the Senate 2022 Enacted

Plan and Senate 2021 Plan. From competitiveness to partisan bias to symmetrical political performance the Senate Remedial Plan outperforms the Senate 2022 Enacted Plan and Senate 2021 Plan.

### IX. District's Counties, Municipalities, and Community Considerations

117. In addition to equal population, contiguity, compactness, minimizing political subdivision splits, respect for general communities of interest, political neutrality, other community considerations were also considered. Table 5 provides a listing of the counties, municipalities, and local communities contained within each Assembly and Senate district. In Table 5 the Assembly districts are grouped together with its appropriated Senate districts.

<b>Table 5 - District's Counties, Municipalities, and Community Considerations</b>			
<b>Assembly</b>		<b>Senate</b>	
1	<ul style="list-style-type: none"> <li>This district includes the entirety of Door and Kewaunee Counties, along with rural areas in northeastern Brown County, and retains the shape of the Assembly 2022 Enacted Plan.</li> </ul>	1	<ul style="list-style-type: none"> <li>This district is similar to the Senate 2022 Enacted Plan but maintains a more rural and agricultural nature by excluding cities like De Pere and Two Rivers and including more agricultural areas in Brown, Calumet and Manitowoc Counties.</li> </ul>
2	<ul style="list-style-type: none"> <li>This district includes rural and suburban areas between Green Bay, Appleton, and Manitowoc.</li> </ul>		
3	<ul style="list-style-type: none"> <li>This district includes nearly all of Calumet County and adjacent rural areas in Manitowoc County.</li> </ul>		
4	<ul style="list-style-type: none"> <li>This district includes suburban and rural areas north of Green Bay along the US41/US141 corridors.</li> </ul>	2	<ul style="list-style-type: none"> <li>This district includes suburban and commuter communities to the north and west of Green Bay, and places the Oneida, Menominee, and Stockbridge-Munsee Reservations within one district.</li> </ul>
5	<ul style="list-style-type: none"> <li>This district includes suburban communities in western Brown County and eastern Outagamie County, including the majority of the Oneida Nation Reservation.</li> </ul>		
6	<ul style="list-style-type: none"> <li>This district is based around Shawano and surrounding communities, including the Menominee and Stockbridge-Munsee Reservations.</li> </ul>		

<b>Table 5 - District's Counties, Municipalities, and Community Considerations</b>			
<b>Assembly</b>		<b>Senate</b>	
7	<ul style="list-style-type: none"> <li>This district maintains similar boundaries, with slight adjustments for compactness.</li> </ul>	3	<ul style="list-style-type: none"> <li>This district maintains similar boundaries to the Senate 2022 Enacted Plan, with slight adjustments for compactness.</li> </ul>
8	<ul style="list-style-type: none"> <li>This district is identical to the Assembly 2022 Enacted Plan and maintains an opportunity district previously recognized in the <i>Baldus</i> litigation.</li> </ul>		
9	<ul style="list-style-type: none"> <li>This district is identical to the Assembly 2022 Enacted Plan and maintains an opportunity district previously recognized in the <i>Baldus</i> litigation.</li> </ul>		
10	<ul style="list-style-type: none"> <li>This district is identical to the Assembly 2022 Enacted Plan and maintains a district previously recognized as an opportunity district in the <i>Johnson</i> litigation.</li> </ul>	4	<ul style="list-style-type: none"> <li>This district is identical to the Senate 2022 Enacted Plan and maintains a district previously recognized as an opportunity district in the <i>Johnson</i> litigation.</li> </ul>
11	<ul style="list-style-type: none"> <li>This district is identical to the Assembly 2022 Enacted Plan and maintains a district previously recognized as an opportunity district in the <i>Johnson</i> litigation.</li> </ul>		
12	<ul style="list-style-type: none"> <li>This district is identical to the Assembly 2022 Enacted Plan and maintains an opportunity district previously recognized in the <i>Johnson</i> litigation.</li> </ul>		
13	<ul style="list-style-type: none"> <li>This is a suburban district based in the city of Wauwatosa and the village of Elm Grove and includes adjacent portions of the city of Brookfield.</li> </ul>	5	<ul style="list-style-type: none"> <li>This is a suburban district following the I-94 corridor out of Milwaukee including the majority of the cities of city West Allis and Wauwatosa, and all of the village of Elm Grove, city of Brookfield, town of Brookfield, city of Pewaukee, and village of Pewaukee.</li> </ul>
14	<ul style="list-style-type: none"> <li>This district is based in the city of West Allis and is bounded by the Milwaukee County line. It includes most of the city of West Allis which is too populous to be fully in one district.</li> </ul>		
15	<ul style="list-style-type: none"> <li>This suburban district includes the village of Pewaukee, city of Pewaukee, and the commercial areas near I-94 in the city of Waukesha, town of Brookfield, and city of Brookfield.</li> </ul>		
16	<ul style="list-style-type: none"> <li>This district is identical to the Assembly 2022 Enacted Plan and maintains a district previously recognized as an</li> </ul>	6	<ul style="list-style-type: none"> <li>This district is identical to the Senate 2022 Enacted Plan and maintains a</li> </ul>

<b>Table 5 - District's Counties, Municipalities, and Community Considerations</b>			
<b>Assembly</b>		<b>Senate</b>	
	opportunity district in the <i>Johnson</i> litigation.		district previously recognized as an opportunity district in the <i>Johnson</i> litigation.
17	<ul style="list-style-type: none"> <li>This district is identical to the Assembly 2022 Enacted Plan and maintains a district previously recognized as an opportunity district in the <i>Johnson</i> litigation.</li> </ul>		
18	<ul style="list-style-type: none"> <li>This district is identical to the Assembly 2022 Enacted Plan and maintains a district previously recognized as an opportunity district in the <i>Johnson</i> litigation.</li> </ul>		
19	<ul style="list-style-type: none"> <li>This district includes the portions of the city of Milwaukee east of the Milwaukee and Kinnikinnic Rivers along the Lake Michigan shoreline and is identical to the Assembly 2022 Enacted Plan.</li> </ul>	7	<ul style="list-style-type: none"> <li>This district follows the Lake Michigan shoreline in central and southern Milwaukee County.</li> </ul>
20	<ul style="list-style-type: none"> <li>This district includes the cities of Saint Francis, Cudahy, and South Milwaukee along the shoreline of Lake Michigan, along with adjacent wards in the city of Milwaukee.</li> </ul>		
21	<ul style="list-style-type: none"> <li>This district includes the city of Oak Creek and adjacent wards on the south side of the city of Milwaukee.</li> </ul>		
22	<ul style="list-style-type: none"> <li>This growing suburban district includes communities in central Ozaukee County and adjacent portions of Mequon, the village of Germantown, and the entirety of the Town of Germantown. Cedarburg and Grafton are connected communities united into one district here (split in Assembly 2022 Enacted Plan).</li> </ul>	8	<ul style="list-style-type: none"> <li>This growing suburban district includes communities north and northwest of Milwaukee, including Lake Michigan shoreline communities.</li> </ul>
23	<ul style="list-style-type: none"> <li>This district includes north suburban communities in Milwaukee County and the adjacent portions of Mequon (including all of the city's shoreline) and Thiensville in Ozaukee County.</li> </ul>		
24	<ul style="list-style-type: none"> <li>This suburban district includes Butler, Lannon, and Menomonee Falls, as well as adjacent portions of the village of Germantown.</li> </ul>		

<b>Table 5 - District's Counties, Municipalities, and Community Considerations</b>			
<b>Assembly</b>		<b>Senate</b>	
25	<ul style="list-style-type: none"> <li>This district includes the adjacent maritime communities of Manitowoc and Two Rivers, both historic port cities, which are separated in the Assembly 2022 Enacted Plan. It follows the Lake Michigan shoreline.</li> </ul>	9	<ul style="list-style-type: none"> <li>This district is based in Manitowoc and Sheboygan Counties and includes the Lake Michigan cities of Sheboygan, Manitowoc, and Two Rivers.</li> </ul>
26	<ul style="list-style-type: none"> <li>This district includes the entire city of Sheboygan (which is split in the Assembly 2022 Enacted Plan) and portions of surrounding townships.</li> </ul>		
27	<ul style="list-style-type: none"> <li>This district is based around Plymouth and includes suburban and commuter towns in Sheboygan County, as well as nearby rural areas.</li> </ul>		
28	<ul style="list-style-type: none"> <li>This district is anchored by the city of New Richmond and includes most of St. Croix County and the I-94 corridor between Hudson and Menomonie.</li> </ul>	10	<ul style="list-style-type: none"> <li>This district includes the entirety of St. Croix, Pierce, Pepin, and Buffalo Counties, and many communities within this district are experiencing population growth from the expansion of the Minneapolis/St. Paul metropolitan area.</li> </ul>
29	<ul style="list-style-type: none"> <li>This district follows the Mississippi River and includes the entirety of Pepin and Buffalo Counties, along with adjacent rural areas in Pierce and Trempealeau Counties.</li> </ul>		
30	<ul style="list-style-type: none"> <li>This district is anchored by Hudson and River Falls, two growing cities in western Wisconsin. River Falls, and its university campus, is not divided by this district.</li> </ul>		
31	<ul style="list-style-type: none"> <li>This district includes communities near the I-43 corridor with strong agricultural connections. The two municipalities that are split in this district are divided to avoid ward splits within the City of Lake Geneva, which contains municipal islands of four different townships.</li> </ul>	11	<ul style="list-style-type: none"> <li>This district, which includes most of Walworth County and western Kenosha and Racine Counties, includes many resort areas and is seeing both population and commercial growth from Illinois.</li> </ul>
32	<ul style="list-style-type: none"> <li>This district includes all of western Kenosha County and portions of adjacent municipalities along the Illinois border that are seeing population and business growth from Illinois. Its northern border is the county line.</li> </ul>		
33	<ul style="list-style-type: none"> <li>This district is anchored by the cities of Burlington and Lake Geneva and nearby</li> </ul>		

<b>Table 5 - District's Counties, Municipalities, and Community Considerations</b>			
<b>Assembly</b>		<b>Senate</b>	
	communities in Walworth and Racine Counties.		
34	<ul style="list-style-type: none"> <li>This district includes all of Vilas County, most of Oneida County, and maintains the boundaries of the Assembly 2022 Enacted Plan.</li> </ul>	12	<ul style="list-style-type: none"> <li>This district covers the eastern half of northern Wisconsin and is predominantly forested, with tourism and outdoor recreation playing a large role in the economy. The southern portion of the district include a number of agricultural communities.</li> </ul>
35	<ul style="list-style-type: none"> <li>This district includes all of Lincoln and Langlade Counties and adjacent municipalities in Oneida, Marathon, Shawano, and Oconto Counties.</li> </ul>		
36	<ul style="list-style-type: none"> <li>This district includes the entirety of Marinette, Forest, and Florence Counties and most of the northern, forested portion of Oconto County.</li> </ul>		
37	<ul style="list-style-type: none"> <li>This district is anchored by Beaver Dam and Waupun and includes most of northern Dodge County. It keeps Waupun whole, which requires crossing a county line as the city is in two counties.</li> </ul>	13	<ul style="list-style-type: none"> <li>This district includes agricultural areas interspersed with small cities that fall in between the larger metropolitan areas to the east, west, and northeast of the district.</li> </ul>
38	<ul style="list-style-type: none"> <li>This district includes communities along Wis. 26 in between the Madison and Milwaukee areas, anchored by Watertown and Jefferson. Watertown is included in its entirety despite being in two counties.</li> </ul>		
39	<ul style="list-style-type: none"> <li>This district includes the entirety of Marquette and Green Lake Counties, as well as the Ripon area in adjacent western Fond du Lac County.</li> </ul>		
40	<ul style="list-style-type: none"> <li>This district follows the Wisconsin River between Portage and Spring Green in Sauk and Columbia Counties, encompassing many outdoor recreation areas.</li> </ul>	14	<ul style="list-style-type: none"> <li>This district follows the Wisconsin River and the I-90/94 corridor north of the Madison area and includes all of Richland and Sauk Counties and most of Columbia County.</li> </ul>
41	<ul style="list-style-type: none"> <li>This district includes the entirety of Richland County and the northern half of Sauk County, including the entirety of the Wisconsin Dells resort area.</li> </ul>		
42	<ul style="list-style-type: none"> <li>This district includes suburban areas along the US 51 corridor in northern</li> </ul>		

<b>Table 5 - District's Counties, Municipalities, and Community Considerations</b>			
<b>Assembly</b>		<b>Senate</b>	
	Dane County and growing communities in southern Columbia County.		
43	<ul style="list-style-type: none"> <li>This district includes the cities of Edgerton, Milton, and Whitewater northeast of Janesville. It keeps Edgerton and Whitewater whole where both cross county lines. This means Whitewater's state university campus, split in the Assembly 2022 Enacted Plan, is placed in one assembly district.</li> </ul>	15	<ul style="list-style-type: none"> <li>This district includes all of Janesville, Beloit, Whitewater, and Edgerton. The Rock/Green County line forms most of the western boundary and the Dane/Rock County line serves as the northern boundary except for the portion of Edgerton that crosses into Dane County.</li> </ul>
44	<ul style="list-style-type: none"> <li>This district is anchored by the city of Janesville and surrounding townships. It keeps most of Janesville in one district though it is too populous to be undivided.</li> </ul>		
45	<ul style="list-style-type: none"> <li>This district includes the entirety of the city of Beloit and remains within Rock County. In contrast, the Assembly 2022 Enacted Plan splits Beloit.</li> </ul>		
46	<ul style="list-style-type: none"> <li>This district contains growing communities east of Madison along the I-94 and US 12 corridors in eastern Dane County and western Jefferson County. The Village of Cottage Grove is split only to prevent a ward split in the Town of Sun Prairie.</li> </ul>	16	<ul style="list-style-type: none"> <li>This district includes suburban communities in southern and eastern Dane County, as well as communities with growing commuter populations slightly further from Madison.</li> </ul>
47	<ul style="list-style-type: none"> <li>This district contains growing communities south of Madison (including the entirety of Fitchburg and Stoughton) and is wholly within Dane County.</li> </ul>		
48	<ul style="list-style-type: none"> <li>This district is anchored by the city of Sun Prairie, includes the main commercial area on the east side of the city of Madison, and includes additional townships further northeast.</li> </ul>		
49	<ul style="list-style-type: none"> <li>This district follows the Mississippi River and includes all of Crawford County and the majority of Grant County. It contains both UW-Platteville and Southwest Wisconsin Technical College.</li> </ul>	17	<ul style="list-style-type: none"> <li>This district includes the entirety of five rural agricultural counties in southwestern Wisconsin. There is a high concentration of dairy</li> </ul>



<b>Table 5 - District's Counties, Municipalities, and Community Considerations</b>			
<b>Assembly</b>		<b>Senate</b>	
50	<ul style="list-style-type: none"> <li>This district includes all of Green County and adjacent communities in southern Dane County.</li> </ul>		farms and cheesemakers in the communities united in this district.
51	<ul style="list-style-type: none"> <li>This district includes the entirety of Iowa and Lafayette Counties, as well as adjacent municipalities in Dane and Grant Counties. Choosing to split Grant County prevents 5 municipal splits.</li> </ul>		
52	<ul style="list-style-type: none"> <li>This district is the urban core of the city of Appleton and includes portions of the town of Grand Chute to prevent ward splits.</li> </ul>	18	<ul style="list-style-type: none"> <li>This district includes the urban cores of Appleton and Oshkosh, the two largest of the Fox Cities, as well as the connecting communities within the Fox Cities.</li> </ul>
53	<ul style="list-style-type: none"> <li>This district includes all of the city and town of Neenah, as well as all of the Winnebago County portions of the cities of Appleton and Menasha. Neenah and Menasha both have large papermaking industries and share Doty Island in the Fox River.</li> </ul>		
54	<ul style="list-style-type: none"> <li>This district includes the urban core of the city of Oshkosh and includes all of the town of Oshkosh. (The City of Oshkosh is too populous to be contained in one assembly district). Downtown Oshkosh, its hospitals, and the entirety of the state university campus are included in this district.</li> </ul>		
55	<ul style="list-style-type: none"> <li>This district includes the remainder of the City of Oshkosh and surrounding commuter towns in Winnebago County.</li> </ul>	19	<ul style="list-style-type: none"> <li>This district includes suburban communities and rural areas that have economic connections to the Fox Cities.</li> </ul>
56	<ul style="list-style-type: none"> <li>This district includes suburban areas northwest of Appleton and the New London area, including the Wis. 15 corridor.</li> </ul>		
57	<ul style="list-style-type: none"> <li>This district includes Waushara County and the Waupaca area. Waupaca and Wautoma are similar communities connected by Wis. 22.</li> </ul>		
58	<ul style="list-style-type: none"> <li>This district is anchored by West Bend and surrounding municipalities in Washington County.</li> </ul>	20	<ul style="list-style-type: none"> <li>This district includes Fond du Lac and West Bend, the main two cities between</li> </ul>

<b>Table 5 - District's Counties, Municipalities, and Community Considerations</b>			
<b>Assembly</b>		<b>Senate</b>	
59	<ul style="list-style-type: none"> <li>This district includes agricultural communities in between the Milwaukee, Sheboygan, and Fond du Lac areas.</li> </ul>		Milwaukee and the Fox Cities along both I-41 and US 45.
60	<ul style="list-style-type: none"> <li>This district contains the entirety of the city of Fond du Lac and four surrounding municipalities which contain embedded municipal islands.</li> </ul>		
61	<ul style="list-style-type: none"> <li>This district includes the suburban neighborhoods southwest of Milwaukee, including the entirety of Hales Corners and Greendale.</li> </ul>	21	<ul style="list-style-type: none"> <li>This district includes suburban communities south of Milwaukee and a portion of the adjacent city of Racine.</li> </ul>
62	<ul style="list-style-type: none"> <li>This district includes the northern half of Racine and adjacent wards in neighboring municipalities. Racine is too populous to be contained in one district.</li> </ul>		
63	<ul style="list-style-type: none"> <li>This district contains growing suburban communities of Caledonia, Raymond, and Franklin in Racine and Milwaukee Counties.</li> </ul>		
64	<ul style="list-style-type: none"> <li>This district includes all of the town and village of Somers and the northern portion of the city of Kenosha. The northern boundary is the Kenosha/Racine County line. The western boundary is I-94, which also serves as the boundary of the Kenosha Unified School District.</li> </ul>	22	<ul style="list-style-type: none"> <li>This district connects the urban cores of Kenosha and Racine Counties east of I-94. This is not dissimilar to the grouping of Kenosha and Racine as similar communities in the Senate 2022 Enacted Plan, but eliminates municipal islands and avoids splitting wards.</li> </ul>
65	<ul style="list-style-type: none"> <li>This district includes downtown Kenosha and the southern portion of the city, including adjacent wards of Pleasant Prairie. The district remains east of I-94.</li> </ul>		
66	<ul style="list-style-type: none"> <li>The district contains the entirety of Sturtevant and Elmwood Park, most of Mount Pleasant, and the southern portion of the city of Racine. The southern boundary is the Kenosha /Racine County line and the western boundary is I-94, which also serves as the boundary of the Racine Unified School District.</li> </ul>		
67	<ul style="list-style-type: none"> <li>This district contains the entirety of Barron County and adjacent rural areas in Dunn and Chippewa Counties. The</li> </ul>	23	<ul style="list-style-type: none"> <li>This district includes the entirety of Barron, Rusk, Price, Taylor, and Clark</li> </ul>

<b>Table 5 - District's Counties, Municipalities, and Community Considerations</b>			
<b>Assembly</b>		<b>Senate</b>	
	district contains several agricultural communities.		Counties, and adjacent rural agricultural areas in Chippewa, Dunn, and Marathon Counties.
68	<ul style="list-style-type: none"> <li>This district contains the entirety of Rusk and Price Counties, the predominantly rural northern two-thirds of Chippewa County, and adjacent portions of Taylor County.</li> </ul>		
69	<ul style="list-style-type: none"> <li>This district includes the entirety of Clark County and adjacent agricultural communities in Chippewa, Marathon, and Taylor Counties.</li> </ul>		
70	<ul style="list-style-type: none"> <li>This district follows the I-94 corridor in west-central Wisconsin, including the entirety of Jackson County, and the western half of the state's major cranberry growing region.</li> </ul>	24	<ul style="list-style-type: none"> <li>This district includes the nearby Stevens Point and Wisconsin Rapids areas, which have a history of paper manufacturing and food processing, and includes all of Wisconsin's main cranberry growing region (generally bounded by Wisconsin Rapids, Black River Falls, and Tomah).</li> </ul>
71	<ul style="list-style-type: none"> <li>This district includes the core of the Stevens Point area and surrounding rural communities. It is similar to the Assembly 2022 Enacted Plan but avoids ward/municipal splits by including the Town of Hull. The urban areas of Stevens Point and its UW campus are wholly included.</li> </ul>		
72	<ul style="list-style-type: none"> <li>This district includes the core of the Wisconsin Rapids area and economically connected communities to the south, and is the eastern portion of the state's major cranberry growing region.</li> </ul>		
73	<ul style="list-style-type: none"> <li>This district includes communities along the shoreline of Lake Superior with strong maritime traditions and includes the largest cities in far northern Wisconsin. Apostle Islands National Lakeshore is kept within the district. Portions of the Bad River Reservation within Ashland County and on Madeline Island are also united by this configuration.</li> </ul>	25	<ul style="list-style-type: none"> <li>The district comprises northwestern Wisconsin and is composed wholly of entire counties (all of Polk, Burnett, Washburn, Sawyer, Iron, Ashland, Bayfield, and Douglas); tourism and outdoor recreation play a very large role in the economy of the district.</li> </ul>
74	<ul style="list-style-type: none"> <li>This district includes the entirety of Washburn, Sawyer, and Iron Counties, as well as the rural southern portions of</li> </ul>		

<b>Table 5 - District's Counties, Municipalities, and Community Considerations</b>			
<b>Assembly</b>		<b>Senate</b>	
	Douglas, Bayfield, and Ashland Counties. Wis. 77 and US 63 connect the major communities in this district.		
75	<ul style="list-style-type: none"> <li>This district includes all of Polk County and most of Burnett County.</li> </ul>		
76	<ul style="list-style-type: none"> <li>This district includes downtown Madison, most of the isthmus, and the near-east side of the city.</li> </ul>	26	<ul style="list-style-type: none"> <li>This district includes the urban core of the city of Madison, including the entirety of the isthmus, all of the neighborhoods surrounding Lake Monona, and the entirety of the University of Wisconsin – Madison campus.</li> </ul>
77	<ul style="list-style-type: none"> <li>This district includes the entirety of the University of Wisconsin – Madison campus and nearby neighborhoods where many people affiliated with the university live (ex: student housing at State-Langdon; faculty neighborhoods like Shorewood Hills).</li> </ul>		
78	<ul style="list-style-type: none"> <li>This district includes the city of Monona and neighborhoods on the south and southeast sides of Madison.</li> </ul>		
79	<ul style="list-style-type: none"> <li>This district contains the core of the city of Madison's west side, where single-family homes and commercial areas dominate.</li> </ul>	27	<ul style="list-style-type: none"> <li>The district, which is wholly contained within Dane County, includes the west side of the city of Madison and northern and western suburban communities.</li> </ul>
80	<ul style="list-style-type: none"> <li>This growing suburban district contains the entirety of the city and town of Verona and village and town of Cross Plains, as well as portions of the town of Middleton and the far west side of the city of Madison.</li> </ul>		
81	<ul style="list-style-type: none"> <li>This growing suburban district includes the entire city of Middleton, village of Waunakee, town of Westport, and the more rural municipalities of northwestern Dane County.</li> </ul>		
82	<ul style="list-style-type: none"> <li>This district includes the majority of the city of Waukesha and the western half of the village of Waukesha.</li> </ul>	28	<ul style="list-style-type: none"> <li>This district is anchored by the city of Waukesha and includes suburban communities in southeastern Waukesha County and adjacent Racine County.</li> </ul>
83	<ul style="list-style-type: none"> <li>This district includes the entirety of the city of New Berlin and adjacent wards in surrounding municipalities.</li> </ul>		
84	<ul style="list-style-type: none"> <li>The district includes suburban communities in southern Waukesha</li> </ul>		

<b>Table 5 - District's Counties, Municipalities, and Community Considerations</b>			
<b>Assembly</b>		<b>Senate</b>	
	County and adjacent municipalities in northwestern Racine County.		
85	<ul style="list-style-type: none"> <li>This district includes the entirety of the city of Wausau and the village of Weston, the core municipalities of the Wausau metropolitan area.</li> </ul>	29	<ul style="list-style-type: none"> <li>This senate district includes the core of the Wausau metropolitan area and most of Marathon County, and adjacent rural areas; healthcare plays a strong role in both Wausau and Marshfield's economies.</li> </ul>
86	<ul style="list-style-type: none"> <li>This district includes the city of Marshfield and surrounding areas in northern Wood and southern and western Marathon Counties.</li> </ul>		
87	<ul style="list-style-type: none"> <li>This district contains the municipalities along the Wisconsin River in the Wausau metropolitan area south of the city and rural areas in Marathon, Portage, Shawano, and Waupaca Counties.</li> </ul>		
88	<ul style="list-style-type: none"> <li>This district includes urban and suburban areas south and east of the city of Green Bay, as well as the entirety of the city of De Pere.</li> </ul>	30	<ul style="list-style-type: none"> <li>This district includes the urban core of the Green Bay area, including all of the incorporated municipalities along the Fox River wholly within Brown County.</li> </ul>
89	<ul style="list-style-type: none"> <li>This district includes the entirety of the village of Ashwaubenon and the west side of the city of Green Bay, including the region's major sporting and entertainment facilities.</li> </ul>		
90	<ul style="list-style-type: none"> <li>This district includes the port of Green Bay, downtown Green Bay, and the city's east side, and is wholly contained in the City of Green Bay. UW-Green Bay is within this district.</li> </ul>		
91	<ul style="list-style-type: none"> <li>This district includes downtown Eau Claire, the City of Altoona, and all of eastern Eau Claire County.</li> </ul>	31	<ul style="list-style-type: none"> <li>This district includes the core of the Eau Claire metropolitan area, including all of the city of Eau Claire, all of Eau Claire County, and the two nearby cities that form the census bureau's combined statistical area. It also includes two state universities, UW-Eau Claire and UW-Stout</li> </ul>
92	<ul style="list-style-type: none"> <li>This district includes the cities of Menomonie and Chippewa Falls and the communities between them along Wis. 29.</li> </ul>		
93	<ul style="list-style-type: none"> <li>This district includes the portion of Eau Claire west of the Chippewa River, the entirety of the UW-Eau Claire campus, and western Eau Claire County.</li> </ul>		

<b>Table 5 - District's Counties, Municipalities, and Community Considerations</b>			
<b>Assembly</b>		<b>Senate</b>	
94	<ul style="list-style-type: none"> <li>This district includes northern La Crosse County and adjacent municipalities in southern Trempealeau County.</li> </ul>	32	<ul style="list-style-type: none"> <li>This district contains La Crosse and Vernon Counties and portions of Monroe and Trempealeau Counties that are economically connected to the La Crosse area.</li> </ul>
95	<ul style="list-style-type: none"> <li>This district includes downtown La Crosse (including all of the UW-La Crosse campus) and the Sparta area in Monroe County.</li> </ul>		
96	<ul style="list-style-type: none"> <li>This district includes Vernon County and the southern portion of the city of La Crosse.</li> </ul>		
97	<ul style="list-style-type: none"> <li>This district includes portions of western Waukesha and eastern Jefferson County that are seeing suburban growth from the Milwaukee area.</li> </ul>	33	<ul style="list-style-type: none"> <li>This district is anchored by Waukesha County's Lake Country and includes surrounding communities that are seeing suburban growth and development pressures from the Milwaukee area.</li> </ul>
98	<ul style="list-style-type: none"> <li>This district includes portions of Waukesha and Washington Counties that are seeing suburban growth from the Milwaukee area in recent years.</li> </ul>		
99	<ul style="list-style-type: none"> <li>This district includes portions of northwestern Waukesha County and southeastern Dodge County that are seeing suburban growth from the Milwaukee area.</li> </ul>		

Source: Redistricting plan development process with attorney inputs

## **X. Summary Criteria Comparison**

118. Overall, the Assembly and Senate Remedial Plans performs equal or better than the Assembly and Senate 2022 Enacted Plans in seven of the seven redistricting criteria (see Tables 6 and 7). The Assembly and Senate Remedial Plans performing better in five criteria of political subdivision splits (including ward splits, county subdivisions splits, and county splits), contiguity, compactness, community considerations (including census places splits and landmark splits), and political neutrality.

119. The Assembly and Senate Remedial Plan and the 2022 Enacted Plan were both within acceptable population deviation. In addition, both Assembly and Senate Remedial Plans and the Assembly and Senate 2022 Enacted Plans follow prior litigation decisions on existing minority opportunity districts thus conforming to the Federal Laws and Voting Rights Act. The Assembly and Senate Remedial Plans fare better 2021 Plan as well with the addition of satisfying the equal population requirement and the matching of one of the communities of interest metric (landmark areas).

<b>Table 6 – Assembly Remedial, 2022 Enacted, 2021 Plans’ Criteria Comparison</b>				
<b>Criteria</b>	<b>Remedial Plan</b>	<b>2022 Enacted Plan</b>	<b>2021 Plan</b>	<b>Best Plan</b>
Equal Population	1.96%	0.85%	32.01%	Remedial 2022 Same
Contiguity	Y	N	N	Remedial
Ward Splits*	5	10	372	Remedial
County Subdivisions Splits	55	59	188	Remedial
County Splits	45	53	58	Remedial
COI Census Places Splits	37	39	113	Remedial
COI Landmark Splits (3)	22	23	22	Remedial
Compactness (Reock/Polsby-Popper)				
-Mean	.42 / .35	.38 / .24	.40 / .26	Remedial
-District by District (more compact)	53 / 73	29 / 14	41 / 22	
Political Neutrality (PlanScore)				
-Efficiency Gap	6.4%	11.0%	10.4%	Remedial
-Declination	.37	.63	.59	Remedial
-Partisan Bias	6%	13.9%	10.6%	Remedial
-Mean-Median	2.9%	5.0%	4.6%	Remedial
-Competitiveness #Districts	32	19	24	Remedial

Source: Assembly Remedial and Enacted Plans extracted from Maptitude for Redistricting reports

\*Stipulated wards have been removed

^Both plans meet the acceptable overall population deviation amount

<b>Table 7 – Senate Remedial, 2022 Enacted, and 2021 Plans’ Criteria Comparison</b>				
<b>Criteria</b>	<b>Remedial Plan</b>	<b>2022 Enacted Plan</b>	<b>2021 Plan</b>	<b>Best Plan</b>
Equal Population	1.46%	0.61%	22.26%	Remedial 2022 Same <sup>^</sup>
Contiguity	Y	N	N	Remedial
Ward Splits*	2	6	214	Remedial
County Subdivisions Splits	33	35	123	Remedial
County Splits	33	42	46	Remedial
COI Census Places Splits	23	33	80	Remedial
COI Landmark Splits (3)	17	17	16	2021
Compactness (Reock/Polsby-Popper)				
-Plan Mean #s	.42 / .32	.39 / .22	.40 / .23	Remedial
-District by District (more compact)	19 / 26	12 / 3	5 / 13	
Political Neutrality (PlanScore)				
-Efficiency Gap	7.7%	13.7%	12.8%	Remedial
-Declination	.32	.57	.53	Remedial
-Partisan Bias	7%	13.9%	12.9%	Remedial
-Mean-Median	2.9%	5.0%	4.9%	Remedial
-Competitiveness #Districts	11	3	5	Remedial

Source: Senate Remedial and Enacted Plans extracted from Maptitude for Redistricting reports

\*Stipulated wards have been removed

<sup>^</sup>Both plans meet the acceptable overall population deviation amount

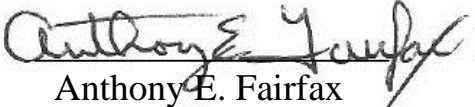
## **XI. Appendices**

120. The following appendices are included with this report:

- Appendix A - Resume of Anthony E. Fairfax
- Appendix B - Maps of the Remedial Plan, 2022 Enacted Plan, and 2021 Plan for the Assembly and Senate Districts for Wisconsin
- Appendix C - Maptitude Redistricting Criteria Data Reports of the Remedial Plan, 2022 Enacted Plan, and 2021 Plan for the Assembly and Senate Districts for Wisconsin
- Appendix D - Court Technical Specification Document and Stipulation List



Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct according to the best of my knowledge, information, and belief.

A handwritten signature in black ink, appearing to read "Anthony E. Fairfax". The signature is written in a cursive style with a horizontal line through the middle of the letters.

Anthony E. Fairfax  
January 12, 2024

**Appendix A**  
Resume of Anthony E. Fairfax

## Anthony "Tony" Fairfax

16 Castle Haven Road, Hampton, Virginia 23666

Office Telephone: (757) 838-3881

Email: fairfax@censuschannel.com

### Experience Highlights:

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- Demographic, Geographic & Voter Data Analysis
- Multiple GIS Software/Census Data Skillsets
- Redistricting Plan Development & Analysis
- Redistricting Expert Reports & Testimony
- Redistricting Presentations & Training
- ESRI ArcGIS Map Applications & Dashboards
- Maptitude for Redistricting Proficiency
- Professional Presentations/Training Experience

### Education:

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Master of Geospatial Information Science and Technology (2016)  
North Carolina State University, Raleigh, North Carolina

Graduate Certificate in Geographic Information Systems (2016)  
North Carolina State University, Raleigh, North Carolina

Bachelor of Science Degree in Electrical Engineering (1982)  
Virginia Tech, Blacksburg, Virginia

### Work Experience:

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#### **CensusChannel LLC, Hampton, VA (2009 - Present)**

CEO & Principal Consultant - Providing overall project management and operations as well as primary consulting services for clients. Also responsible for customer acquisition and support. Core tasks include GIS-centered services centering on: redistricting support (extensive use and analysis of traditional redistricting principles); demographic/socioeconomic, geographic, and voting data; GIS, Census Data, and Redistricting training; GIS data processing/conversion; expert redistricting plan development, analysis, depositions, testimony, and training. Major clientele and projects include:

- **U.S. Department of Justice, Washington D.C. (2022 – Present)** – Providing expert report, deposition, and testimony for Galveston County, TX redistricting court case.
- **City of Baltimore, MD Office of Council President (2022 - Present)** – Provided advice, consultation, and redistricting plan development services as redistricting consultant to the city's Office of Council President. Efforts center on the alternative development of districting plans for the city.
- **Town of Cheverly, MD (2022 – 2023)** – Providing advice, consultation, and redistricting plan development services as redistricting consultant to the town. Efforts center on developing new districting plan options for the town.
- **My Brother's Keeper Alliance, Chicago, IL (2022)** – Providing demographic and socioeconomic analysis of select neighborhood communities.
- **The ACLU, New York, NY (2021 – Present)** – Providing expert plan development services centering on the states of Alabama, Arkansas, and California.
- **The Power Coalition for Equity and Justice, New Orleans, LA (2021 - 2022)** - Providing technical advice and input for building an equitable redistricting process in Louisiana for communities, legislators, and organizations. Providing analysis and plan alternatives for Louisiana state legislative House and Senate districts where Black voters could elect a candidate of choice.

- **Crescent City Media Group, New Orleans, LA (2021)** – Provided redistricting training to the PreRedistricting Lab. Training centered on various educational presentations and hands-on sessions for community leaders and local/state legislators.
- **Bondurant, Mixson & Elmore LLP, Atlanta, GA (2021)** – Provided statewide redistricting plan development for Georgia congressional districts. Tasks included being part of a three-member map-drawing team that developed the proposed plan for the Georgia House and Senate Democratic caucus.
- **NAACP Legal Defense Fund (LDF), New York, NY (2020 – 2022)** - Provided redistricting development and analysis of various district configurations for city, county, and state-level plans.
- **Crowd Academy [an SCSJ sponsored effort], Durham, NC (2020 - 2021)** - Provided redistricting training and support. Training centered on presentations on “How the Lines are Drawn” which focuses on pre-plan development and plan development activities of redistricting. The target attendee included individuals in Georgia, North Carolina, South Carolina, Tennessee, and Texas. The effort also includes providing mentorship to Academy Fellows and Academy Mentors.
- **City of Everett, WA, Everett, WA (2020)** – Provided advice, consultation, and mapping services as Districting Master to the city of Everett, WA’s Districting Commission. Efforts centered on the development of the city’s first districting plan. Also assisted with answering questions at public forums and developed an ArcGIS web map application for public access to all plans.
- **NAACP, Baltimore, MD (2018 - Present)** – Providing GIS consulting services via the NAACP (as fiscal agent) to the *Racial Equity Anchor Collaborative* (consisting of the Advancement Project, APIA Health Forum, Demos, Faith in Action, NAACP, National Urban League, NCAI, Race Forward, and Unidos U.S.). Efforts include the development of the Racial Equity 2020 Census Data Hub. The Data Hub utilized ESRI’s Hub Cloud platform, that centralized web maps, mapping applications, and dashboards into a common platform that enabled collaborative partners to locate hard-to-count areas by major race or ethnicity.
- **Southern Echo, Jackson, MS (2018 - Present)** – Providing Map related educational products pertaining to the state of Mississippi. Also provided redistricting training sessions to Southern Echo partners throughout the south. Also provided GIS data, maps, and training to Southern Echo, community leaders, stakeholders, and subsequently in the field to groups working in the following states; Alabama, Arkansas, Georgia, Florida, Louisiana, Mississippi, New Mexico, North Carolina, South Carolina, and Texas. Specifically, deliverables include map-centered projects centering on education, GOTV, and redistricting.
- **Campaign Legal Center, Washington, DC (2018 –2021)** – Developed illustrative redistricting plans, associated expert reports, depositions, and testimony in the *Holloway v City of Virginia Beach* court case. The Illustrative plans included two majority Hispanic, Black, and Asian combined districts for the purpose of providing evidence of the first prong in *Gingles* for the city of Virginia Beach.
- **Southern Coalition for Social Justice [SCSJ], Durham, NC (2015 - 2018)** - Provided several expert reports, depositions, and testimony for multiple redistricting court cases in North Carolina. Testimony, depositions, and reports included numerous plans at the congressional, state Senate, state House, and local jurisdiction levels. Analyses covered certain district characteristics, including population deviation, political subdivision splits, partisan performance, and incumbent effect analysis.
- **The Rehab Crew, Durham, NC (2017)** - Provided geospatial & demographic analysis as well as website development and the creation of a proprietary application for the use of targeting real estate investment properties.

- **Congressman G.K. Butterfield, NC (2016 & 2021)** - Developed several congressional district plan alternatives for the State of North Carolina. Provided analyses on alternative district configurations.
- **Alabama Democratic Conference (ADC), Montgomery, AL (2015 - 2016)** - Developed state Senate and House redistricting plans for the state of Alabama in response to the *ADC v Alabama* court case. Also, provided a series of thematic maps depicting areas added from the previous plan to the enacted plan, displaying concentrations of African American voters that were added to the enacted plan.
- **Net Communications, Tallahassee, FL (2014 - 2015)** - Generated offline mapping and online web services (ArcGIS.com) of client's energy company's resources and organizational assets. Mapping included demographic, socioeconomic, and other resources of the energy company.
- **National NAACP Office of General Counsel, Baltimore, MD (2012 - 2013)** - Provided project management and developmental support for the creation of a final report for the NAACP National Redistricting Project. Provided planning, organizing, supplemental writing, and interfacing with graphics entity for the complete development of the final report.
- **Congressional Black Caucus Institute (CBC Institute), Washington, DC (2011 - 2012)** - Provided contract duties as the Project Director and Consulting Demographer for the CBC Institute's Redistricting Project. Provided project management, redistricting plan development, review, analysis, advice, and answers to various questions pertaining to redistricting plans, principles, and processes. Focus included districts where Black voters could elect a candidate of choice.
- **Mississippi NAACP, Jackson, MS (2011)** - Developed state Senate plans and analyzed enacted plans that were developed by the State Court.
- **African American Redistricting Collaborative (AARC) of California, Los Angeles, CA (2011)** - Provided demographic and redistricting contracted services. Responsible for developing congressional, state Senate, and state assembly plans for the collaborative. Special focus was given to the southern Los Angeles area (SOLA) and the Bay Area region. In addition to plan development, several socioeconomic maps were developed to show various communities of interest commonalities.  
  
Also, developed a demographic profile using maps and reports of California's congressional, state Senate, and state Assembly districts for the purpose of preparing for the redistricting plan development process by identifying areas of growth throughout the state. The profiles included data from the American Community Survey (ACS) 2005-2009 and the 2010 Census.
- **The Advancement Project, Washington, DC (2011)** - Provided redistricting plan development services and training. Included was the development of a base map for a new seven (7) district plan in New Orleans that was further developed by community groups in Louisiana. The second effort included training a staff person on the use of Maptitude for Redistricting as well as on various redistricting scenarios.
- **Louisiana Legislative Black Caucus (LLBC), Baton Rouge, LA (2011)** - Provided redistricting plan development services. Responsibilities included supporting the Caucus members' efforts to develop state House, state Senate, and congressional redistricting plans. Developed or analyzed over eighty different redistricting plans. The effort also included testifying in front of the Louisiana Senate and Governmental Affairs committee.
- **Community Policy Research & Training Institute (One Voice), Jackson, MS (2011)** - Developed Mississippi State Senate plan along with appropriate reports and a large-scale map.

- **National Black Caucus of State Legislators (NBCSL), Washington, DC (2010)** - Provided services as the Project Director for a 2010 census outreach effort. Developed proposal and managed personnel to generate and execute a strategy to utilize Black state Senate and House legislators to place targeted posters in select hard-to-count (HTC) areas throughout the country.
- **Duke University's Center for REGSS & SCSJ, Durham, NC (2010 - 2011)** - Contracted to serve as one of two Project Coordinators to support an expert preparation workshop hosted by Duke University's REGSS and the SCSJ.

Project Coordinator duties included developing, managing, and providing hands-on training for the Political Cartographer's side of a week-long intensive "redistricting expert" preparation workshop. The workshop trained 18 political cartographers from various parts of the country on all aspects of redistricting plan development and principles. Also, two hands-on redistricting scenarios were created to train large audiences on the plan development process.

### **Democracy South, Virginia Beach, VA (2004 - 2008)**

Senior Technical Consultant - Provided technical, GIS mapping, data analysis, and management support for several projects and civic engagement-related efforts. Major project efforts included:

- Senior Technical Consultant for the National Unregistered Voter Map. Developed a web-based interactive map that allowed visitors to view state/county-level information pertaining to the number of unregistered voters (2009)
- Co-Director of the Hampton Roads Missing Voter Project (a nonpartisan nonprofit voter engagement effort to increase voter participation with a focus on underrepresented population groups). The effort covered the seven major Independent cities in Hampton Roads. Responsibilities included co-managing the overall civic engagement effort and was solely responsible for integrating and processing Catalist voter data into targeting maps and walk lists for all focus areas. Directly Responsible for overseeing the operations in Hampton, Newport News, Portsmouth, and Suffolk, Virginia (2008)
- Senior Technical Consultant for Civic Engagement Efforts. Provided telephone technical voter database support to 17 USAction state partners in 2004; and 12 USAction state partners in 2006. Trained client on VBASE voter data software; Performed voter data conversion; and voter targeting assistance.

### **Congressional Black Caucus Institute, Redistricting Project, Washington D.C. (2001 - 2003)**

Consulting Demographer - Provided services that included the development, review, and analysis of over 75 congressional district plans. Responsible for all setup and configuration of hardware and GIS software and performed all development and analyses of redistricting plans. Congressional district plans were developed for 22 states. Also, performed as a redistricting expert advisor in a consolidated U.S. District Court Voting Rights case in Alabama.

### **National Voter Fund, Washington, D.C. (2000)**

GIS Consultant (in a consulting partnership of Hagens & Fairfax) - Developed hundreds of precinct targeting maps for a civic engagement effort designed to increase the turnout in the November 2000 election. Efforts included: geocoding voter data, census data integration, and precinct mapping.

### **Norfolk State University, Poli. Science & Computer Science Dept., Norfolk, Virginia (1996 - 2001)**

Adjunct Faculty - Provided instruction to students for BASIC Programming, Introduction to Computer Science, and Computer Literacy courses.

**GeoTek. Inc. (formally GIS Associates), Virginia Beach, VA (1992 - 1995)**

Consultant and Co-owner - Provided geodemographic research and analysis; client technical & training support; hardware/software system installation; and redistricting manual/ brochure development. Major clients and tasks included:

- New York City Housing Authority - Redistricting Training
- Maryland State Office of Planning - Redistricting Tech Support
- City of Virginia Beach, VA Planning Dept. - Redistricting Training/Tech Support
- City of Norfolk, VA Registrar - Redistricting Training/Tech Support
- City of Chesapeake, VA Registrar - Precinct Realignment

**Norfolk State University, Political Science Dept., Norfolk, Virginia (1991 - 1999)**

GIS Consultant - Provided a variety of geographic and demographically related tasks. Major Redistricting related tasks included:

- Installed and operated the LogiSYS ReapS software that was used to perform the bulk of redistricting plans. Performed the intricate ReapS processing of the U.S. Census Bureau Topographically Integrated Geographic Encoded Referencing (TIGER) line files, Public Law 94-171 (PL94-171) demographic data, and the STF socioeconomic data series.
- Developed over 200 hundred redistricting plans, located in over 60 jurisdictions, in the states of Florida, Louisiana, North Carolina, Texas, and Virginia. Developed plans from city/county to legislative to congressional district.
- Traveled to and trained several university faculty personnel on setting up and utilizing the ReapS redistricting system. Also, trained on redistricting plan development principles.

Major GIS-related tasks included:

- Performed a study commissioned by the U.S. Department of Transportation to analyze the ethnic differences in commuting behavior. This study extensively utilized the Summary Tape File 3 A (STF3 A) and Public Microdata Sample (PUMS) data to locate, map, and report the frequency and average travel time to and from work for: Miami, FL MSA; Kansas City, MO-KS MSA; and Detroit, MI MSA.
- Performed a study funded by the City of Norfolk, VA, and NSU School of Business that determined and analyzed the trade area of a section located in Norfolk, VA. Major duties included: geocoding customer addresses, producing address point maps, and developing demographic reports for the project.
- Performed a study commissioned by the U.S. Department of Housing and Urban Development (HUD) to revitalize a neighborhood located in Norfolk, VA. The purpose of the GIS component was to first establish a socioeconomic base-line then track the progress of the revitalized area as well select surrounding areas. Geocoded address locations, generated point as well as demographic thematic maps, and produced reports of the target areas.
- Provided demographic analysis of proposed newly incorporated areas in Florida for local Florida civic organizations.

**Cooperative Hampton Roads Org. for Minorities in Engineering, Norfolk, VA (1991 - 1992)**

Computer Consultant - Designed and developed a menu-driven student database, used to track hundreds of minority Junior High and High School students that were interested in pursuing science or engineering degrees.

**Norfolk State University, School of Education, Norfolk VA (1990 - 1991)**

Technical Consultant/Computer Lab Manager- Provided a variety of support, including hardware and software installation; faculty workshops; course instruction; Network Administrator; and technical support.

**Engineering and Economics Research (EER) Systems (1989)**

Technical Consultant - Coordinated and participated in writing, editing, and formatting technical test documents; central role in the development of the Acceptance Test Procedures for the initial phase of a multi-million dollar Combat Maneuver Training Complex (CMTC) in Hohenfels, Germany; the final review and editing of all test documentation.

**Executive Training Center (ETC). Newport News, VA (1988 - 1989)**

Vice President & Co-founder - Managed over 11 part-time and full-time employees; assisted in developing and implementing company policies; performed the duties of the Network Administrator for a Novell-based computer training network; and taught several courses by substituting for instructors when necessary.

**Engineering & Economics Research (EER) Systems. Newport News, VA (1986 - 1987)**

Hardware Design Engineer and Electronics Engineer - Provided engineering and select project management support for the development of the following million/multi-million dollar project efforts:

- Baseline Cost Estimate (BCE) to be used in the procurement of the Combat Maneuver Training Complex - Instrumentation System (CMTC-IS)
- Operational and Maintenance (O&M) Support Plan at the National Training Center (NTC)
- Quality Assurance Surveillance Plan for the O&M Support Plan at the NTC; Configuration Management Plan for CMTC
- Requirements Operational Capabilities (ROC) Analysis for an instrumentation System at the U.S. Army Ranger School, Georgia;
- ROC Analysis for an Instrumentation System at Fort Chaffee, Arkansas;
- Suggested Statement of Work for the Digital Data Entry Device (DDED); and the Concept Formulation Package and Requirements Definition to Support Interface and Integration of Red Flag at the NTC:
- Phase II of a multi-million dollar GIS-based concept test demonstration. Performing as Assistant Test Director (ATD) - liaison between the Government Director Army Ranges and Targets (DART) personnel and EER Systems' personnel; and assumed the role of Test Director when required (1987).
- Suggested Statement of Work (SOW) for a \$1 million procurement of Multivehicle Player Units (MVPUs) at the NTC. Performed as Project Task Manager for a team of engineers, computer programmers, and technical support personnel in the development of a position location player unit for the Army (1986).

**Teledyne Hastings-Raydist, Hampton, VA (1982 - 1986)**

Hardware Design Engineer - Designed and developed custom flow and vacuum measuring products; Project Manager for the production and completion of a \$.25 million flow measuring system; Electrical Engineer - Chiefly responsible for developing special products for customers.



## Major Litigation Clients & Testimony Related Efforts:

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### **Election Law Clinic at Harvard Law School, Cambridge, MA (2022 - 2023)**

Developed a declaration centering on “Core Retention” analysis tables presenting the demographic change in population of Duval County, FL school board districts from the previously approved plan to the recently enacted plan.

Also, developed an expert report that contained a series of thematic and demographic map and table analyses for the *Jacksonville Branch of the NAACP et al. v. City of Jacksonville et al* redistricting court case.

### **ACLU of Southern California, Los Angeles, CA (2022 – Present)**

Developed an illustrative redistricting plan and associated expert report for the *Inland Empire United et al v. Riverside County et al* redistricting court case. The Illustrative plan included a second additional majority Latino district as opposed to the county’s plan of one.

### **U.S. Department of Justice, Washington D.C. (2022 – Present)**

Developed an illustrative redistricting plan and associated expert report for the *Petteway et al v Galveston County* redistricting court case. The Illustrative plan included the “Least Change” approach to bring the plan within acceptable deviation. The plan continued to contain a majority Black and Latino district as opposed to the state’s plan. The plan, report, and deposition provided evidence of the first prong in *Gingles*.

### **Southern Coalition for Social Justice (SCSJ), Durham, NC (2022 – Present)**

Developed an expert report that included opinions on the state’s expert report in the *LULAC et al v. Abbott* Texas state legislative redistricting court case. The report responded to any conclusions by the State’s expert regarding minority vote dilution, specifically concerning the Fair Maps proposed plans.

### **NAACP LDF, New York, New York, NY (2022 - Present)**

Developed an illustrative redistricting plan and associated expert report for the *Robinson v. Ardoin* redistricting court case. The Illustrative plan included a second additional majority Black district as opposed to the state’s plan. The plan, report, and testimony provided evidence of the first prong in *Gingles* in proving dilution of Black voting strength in violation of Section 2 of the Voting Rights Act (VRA). The effort included plan development, expert report, rebuttal report, and testimony.

### **ACLU, New York, New York, NY (2021 – Present)**

Developed an illustrative redistricting plan and associated expert report for the *Arkansas State Conference NAACP v. Arkansas Board of Apportionment* preliminary injunction case. The Illustrative plan included five additional majority Black districts as opposed to the Board of Apportionment plan. The plan, report, and testimony provided evidence of the first prong in *Gingles* in proving dilution of Black voting strength in violation of Section 2 of the Voting Rights Act (VRA). The effort included plan development, expert report, rebuttal report, and testimony.

### **Campaign Legal Center, Washington, DC (2018 – 2020)**

Developed multiple illustrative redistricting plans and associated expert reports for *Latasha Holloway v City of Virginia Beach* court case. The Illustrative Plans included two majority Hispanic, Black, and Asian combined (Coalition) districts for the purpose of providing evidence of the first prong in *Gingles* in the section 2 court case. The effort included an additional rebuttal, supplemental report, deposition, and testimony.

**Virginia NAACP, Richmond, VA (2018)**

Developed a statewide remedial plan for *Bethune-Hill v. Virginia State Bd. of Elections*. The plan corrected 11 unconstitutional racial gerrymandered state House districts in the Richmond, Peninsula, and Southside Hampton Roads areas.

**Southern Coalition for Social Justice (SCSJ), Durham, NC (2018)**

Developed a demonstrative remedial redistricting plan and associated expert report as well as provided a deposition for *North Carolina State Conference of NAACP Branches v. Lewis Wake County Superior Court* case. The demonstrative remedial plan corrected the two Wake County, N.C. House Districts declared by a federal court to be racially gerrymandered districts (HD33 & HD38). The expert report provided a narrative that not only discussed my results but also provided insight for the Court on how a map drawer would reasonably go about fixing racially gerrymandered districts and still comply with the state constitution's prohibition on mid-decade redistricting.

**Texas NAACP, San Antonio, TX, (2017)**

Provided expert report, deposition, and testimony for the *Perez v. Abbott* US Federal District Court Case. Analyses focused on certain redistricting criteria, including population deviation, compactness, political subdivision splits, and communities of interest for congressional and House plans. Additional analysis was performed on demographic projections for certain congressional and State House districts.

**Southern Coalition for Social Justice (SCSJ), Durham, NC (2015 - 2016)**

Provided expert testimony, deposition, and expert report for the *City of Greensboro v The Guilford County Board of Elections* U.S. District Court Case. Deposition and report included several district plans for the city council of Greensboro, NC, and analyzed certain characteristics, including population deviation, political subdivision splits, partisan performance, and incumbent effect analysis.

Provided expert testimony and report for the *Covington v North Carolina* federal redistricting court case. The testimony included an analysis from *Dickson v Rucho* (also *NAACP v North Carolina*) of compactness on state legislative House and Senate districts.

Provided expert testimony and report for the *Wright v North Carolina* federal redistricting court case. The testimony and report included an analysis of population deviation, compactness, partisan impact, and incumbent residences for county commission and school board plans.

**Alabama Democratic Conference (ADC), Montgomery, AL (2015 - 2016)**

Developed Senate and House redistricting plans for the state of Alabama for the *ADC v Alabama* court case. Provided deposition on the creation of the plan. Also, generated a series of thematic maps depicting areas added from the previous benchmark plan to the enacted plan, displaying concentrations of African American voters that were added to the enacted plan.

**Southern Coalition for Social Justice (SCSJ), Durham, NC (2014)**

Provided expert testimony, report, and deposition for the federal redistricting court case, *Perez v. Perry* of Texas. The report included an analysis of population extrapolations and projections for several submitted plans for select congressional and House districts.

**North Carolina NAACP, Raleigh, NC (2012)**

Provided expert opinions and analysis in an affidavit for the *NC NAACP v. State of North Carolina* federal redistricting case (later *Dickson v Rucho*). The affidavit included an examination of compactness measurements pertaining to the Congressional, State Senate, and State House "Benchmark" plans, several approved plans, and several legislative submitted plans. The report also contained county splits for the target districts.

**Southern Coalition for Social Justice (SCSJ), Durham, NC (2011)**

Provided expert opinions and analysis in an affidavit for the *Moore v. State of Tennessee* redistricting case. The affidavit included an analysis of county splits comparing State Senate “Benchmark” plans, the approved plan, and several legislative submitted plans.

**Texas NAACP, San Antonio, TX (2011)**

Provided expert report, deposition, and testimony for the federal redistricting court case *Perez v. Perry*. Testimony covered the evaluation of traditional redistricting criteria of the Congressional and House-approved plans compared to several proposed or legislative submitted plans.

**Louisiana Legislative Black Caucus, Baton Rouge, LA (2011)**

Provided expert testimony in front of the Senate and Governmental Affairs committee. Testimony included the analysis of two redistricting plans comparing ideal population deviation, political subdivision splits (Parishes), and compactness ratios. Also, developed a redistricting plan and testified in front of the House and Governmental Affairs in support of a new majority-minority (African American) congressional district in Louisiana.

**Morrison & Foerster LLP, Los Angeles, CA (2004)**

Provided expert report on several state Senate plans for the *Metts v. Murphy* Rhode Island court case. The report contained analyses of communities of interest areas that were not included in the state’s enacted plan of the only majority-minority district.

**Congressional Black Caucus Institute, Redistricting Project, Washington D.C. (2002)**

Performed as the redistricting mapping expert for Congressman Hilliard in a consolidated U.S. District redistricting court case in Alabama (*Montiel v. Davis and Barnett v. Alabama*). Developed the submitted plan and provided advice to legal counsel for the court case.

**Council of Black Elected Democrats (COBED) New York State, New York, NY (2002)**

Performed as one of the redistricting experts (*Allen v Pataki/Rodriguez v Pataki*) by developing several New York State congressional district plans that were presented by COBED.

**Miami-Dade, Florida (1993)**

Provided expert technical redistricting support as one-half of the Expert Master’s Team for the remedial Plan (*Meek v. Metropolitan Dade County*). Developed over 50 commissioner district plans for the county as well as the final adopted Plan for the metro Dade County.

**NAACP Legal Defense and Educational Fund (LDEF), New York, NY (1993)**

Provided expert technical support for the *Shaw v. Reno* Supreme Court case (via Norfolk State University). Analyzed and compared various compactness ratios for congressional districts throughout the U.S. The results were compared to the 12<sup>th</sup> congressional district of North Carolina. Also, developed several alternative congressional district plans.

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**Major GIS/Demographic/Redistricting Training and Presentations:**

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**Southern Echo (2021)**

Presented multiple training sessions (11 planned) on various aspects of redistricting. Included both presentations and ultimately hands-on (Dave’s Redistricting)

**Crowd Academy (2020 – 2021)**

Presented multiple Training sessions (>25) that center on “How the lines are Drawn” which focuses on the plan development activities of redistricting.

**Crescent City Media Group (2021)**

Presented ten three-hour-long training sessions on various aspects of redistricting. Included both presentations and hands-on (Maptitude for Redistricting)

**NAACP LDF/MALDEF Expert Convening (2021)**

Provided multiple sessions to potential future experts on expert report development, giving depositions, and providing testimony.

**SIF Voting Rights Convening (2021)**

Presented on a panel the unique aspects and issues pertaining to the 2020 round of redistricting.

**SIF Voting Rights Convening (2020)**

Presented on a panel various preparatory aspects and questions that should be addressed prior to the development of plans.

**Delta Days in the Nation's Capital, Washington, DC (2020)**

Provided panel presentation on suggested efforts in preparation for the next round of redistricting. Plenary presentation to several hundred Delta Sigma Theta (DST) sorority sisters throughout the country.

**William and Mary, Williamsburg, VA (2019)**

Presented lecture to the GIS and Districting course students centering on improving as well as potential adverse trade-offs from improvements of the adopted redistricting plan chosen by the special masters of the *Bethune-Hill v. Virginia State Bd. of Elections* redistricting case.

**Southern Echo, Jackson, Mississippi (2019)**

Provided detailed training/presentation (3 hours) on various aspects of redistricting. Topics included: Relevant redistricting court cases, traditional redistricting criteria, and redistricting data.

**William and Mary, Williamsburg, VA (2018)**

Presented lecture to the GIS and Districting course students centering on aspects of the *Bethune-Hill v. Virginia State Bd. of Elections* redistricting case. Discussion pertained to how to develop a plan that corrected the 11 unconstitutional racial gerrymandered states House districts.

**Congressional Black Caucus Institute, Washington, DC (2016)**

Presented at the annual legislative conference in Tunica, MS. Presented the election demographic analysis for the 2016 presidential and Senate elections. Panel also included Congressman Cedrick Richmond (L.A.), Congressman Sanford Bishop (G.A.), and Professor Spencer Overton.

**Coalition of Black Trade Unionists (CBTU), Chicago, IL (2015)**

Presented at the annual CBTU conference on the election panel that included Congressman Al Green (TX) and Congressman Bobby Rush (I.L.).

**Nobel Women's Initiative, Washington, DC (2015)**

Presented on a panel at the annual conference in San Diego, CA, on the upcoming 2020 census.

**Tennessee NAACP, Nashville, TN (2011)**

Provided redistricting training session on the mapping and demographic aspects of Redistricting.

**Congressional Black Caucus Institute, Washington, DC (2002 - 2012, 2014)**

Presented "The Demographics of Campaigns" twelve times at the institute's annual political campaign "Boot Camp." The presentation covers how to locate and utilize demographic data for political campaigns.

**Congressional Black Caucus Foundation (CBCF), Washington, DC (2011)**

Presented as one of the panelists at the "Judge A. Leon Higginbotham" Braintrust at the CBC Annual Legislative Conference. The panel was moderated by Congressman Mel Watt.

**The Advancement Project, Washington, DC (2011)**

Trained staff GIS person on Maptitude for Redistricting as well as on redistricting scenarios.

**National Association for the Advancement of Colored People, Baltimore, MA (2011)**

Provided training session on "Redistricting Mapping Overview" at the organization's national redistricting training seminar for state and local chapters.

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**Major GIS/Demographic/Redistricting Training and Presentations (cont.):**

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**Congressional Black Caucus Institute, Washington, DC (2010)**

Presented at the annual CBC Institute conference in Tunica, MS (The panel included Congressman John Lewis and Congressman Jim Clyburn). Outlined two critical issues that would surface in the 2010 round of redistricting: 1) Prison-based Gerrymander; and 2) The use of Citizen Voting Age Population (CVAP).

**Community Census and Redistricting Institute (CCRI), Durham, NC (2010)**

Developed, managed, and provided hands-on training for the Political Cartographer's side of a week-long intensive "redistricting expert" preparation workshop. The workshop trained 18 political cartographers on all aspects of plan development.

**North Carolina University's Center for Civil Rights, Chapel Hill, NC (2010)**

Provided presentation on "Redistricting Laws & GIS" at the *Unfinished Work* conference. The presentation outlined the evolution of major redistricting laws and GIS and their impact on minority representation.

**NAACP Legal Defense Fund AIRLIE Conference, AIRLIE, VA (2010)**

Provided training using hands-on "paper" redistricting scenarios to voting rights advocates on developing a plan without the use of computers.

**Young Elected Officials, Los Angeles, CA (2010)**

Provided training using hands-on "paper" redistricting scenarios to young legislators on developing a plan without the use of computers.

**Young Elected Officials, Alexandria, VA (2010)**

Provided overview training on the major aspects of redistricting to young legislators.

**North Carolina University's Center for Civil Rights, Chapel Hill, NC (2006)**

Provided presentation on "Congressional Elections Won by African Americans Race & Ethnicity District Perspective (1960 - 2004)" at the *Who Draws the Lines? The Consequences of Redistricting Reform for Minority Voters* conference.

**Howard University - Continuing Education - HBCU GIS Workshop, Washington, DC (2002)**

Provided presentation on redistricting and the use Maptitude for Redistricting to faculty members of Historically Black Colleges and Universities (HBCUs).

**Norfolk State University Redistricting Project Training Workshops (1991 - 1998)**

Provided redistricting training to the following:

- Alabama State University, Montgomery, Alabama
- Albany State University, Albany, Georgia
- Florida A & M, Tallahassee, Florida
- National Conference of Black Political Scientists, Atlanta, Georgia Conference
- Norfolk State University, Norfolk, Virginia
- North Carolina A & T State University, Greensboro, North Carolina
- North Carolina Central University, Durham, North Carolina
- Southern University, Baton Rouge, Louisiana
- Williams College, Williamstown, Massachusetts

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**Major GIS/Redistricting/Voter Data Software Experience:**


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- ArcGIS - GIS Software - Primary GIS Software after 2012 ([ESRI](#))
- ArcGIS Online – Including Story Maps & Web Application Builder ([ArcGIS.com](#))
- GRASS GIS – Open Source GIS ([OSGeo](#))
- Maptitude for Redistricting - Primary Redistricting software, since 2001 ([Caliper](#))
- ESRI Redistricting Online - Beta Tester ([ESRI](#))
- Public Mapping Project – Initial Advisory Board Member ([an open source online software](#))
- ReapS Redistricting and Reapportionment System - Redistricting software, 1990s ([LogiSYS](#))
- Voter Activation Network System [NPGVAN](#)
- Voterlistonline.com Aristotle software [Aristotle](#)

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**GIS Skillset/Coding Languages:**


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- |                       |                        |              |
|-----------------------|------------------------|--------------|
| • Geocoding Data      | • Suitability Analysis | • Python     |
| • Linear Referencing  | • Image Classification | • PostgreSQL |
| • Digital Cardinality | • ArcGIS Web Services  |              |
| • Spatial Statistics  | • pdAdmin              |              |

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**ESRI Training Certificates:**


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- Learning ArcGIS Desktop (for ArcGIS 10) - 24 hrs training
- Turning Data into Information Using ArcGIS 10 - 18 hrs training
- Basics of Raster Data (for ArcGIS 10) - 3 hrs training
- Using Raster Data for Site Selection (for ArcGIS 10) - 3 hrs training
- Working with Geodatabase Domains and Subtypes in ArcGIS - 3 hrs training
- Network Analysis Using ArcGIS - 3 hrs training

## **Publications:**

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### Books

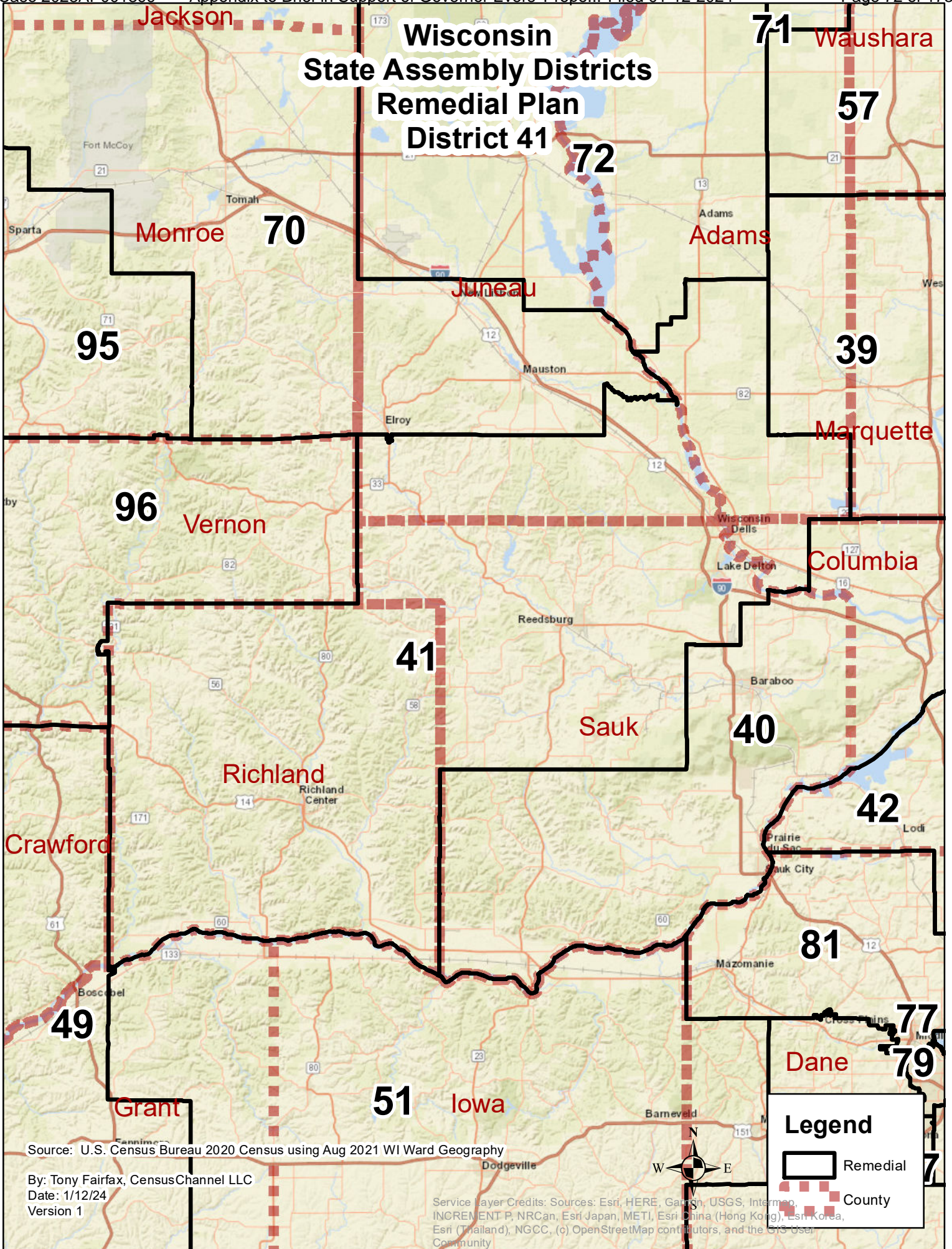
- *An Introduction to the Presidential Trend*, Statistical Press, March 2015
- *The Presidential Trend*, Statistical Press, December 2013
- *A Step by Step Guide to Using Census 2000 Data*, MediaChannel LLC, March 2004. Also included was a companion CD-ROM (sold through various Census-related workshops and training sessions and used in a political science course).

### Manuals

- *A Beginner's Guide To Using Census 2000 Data*, November 2002 (Co-authored- developed for the U.S. Census Bureau's Census Information Centers)

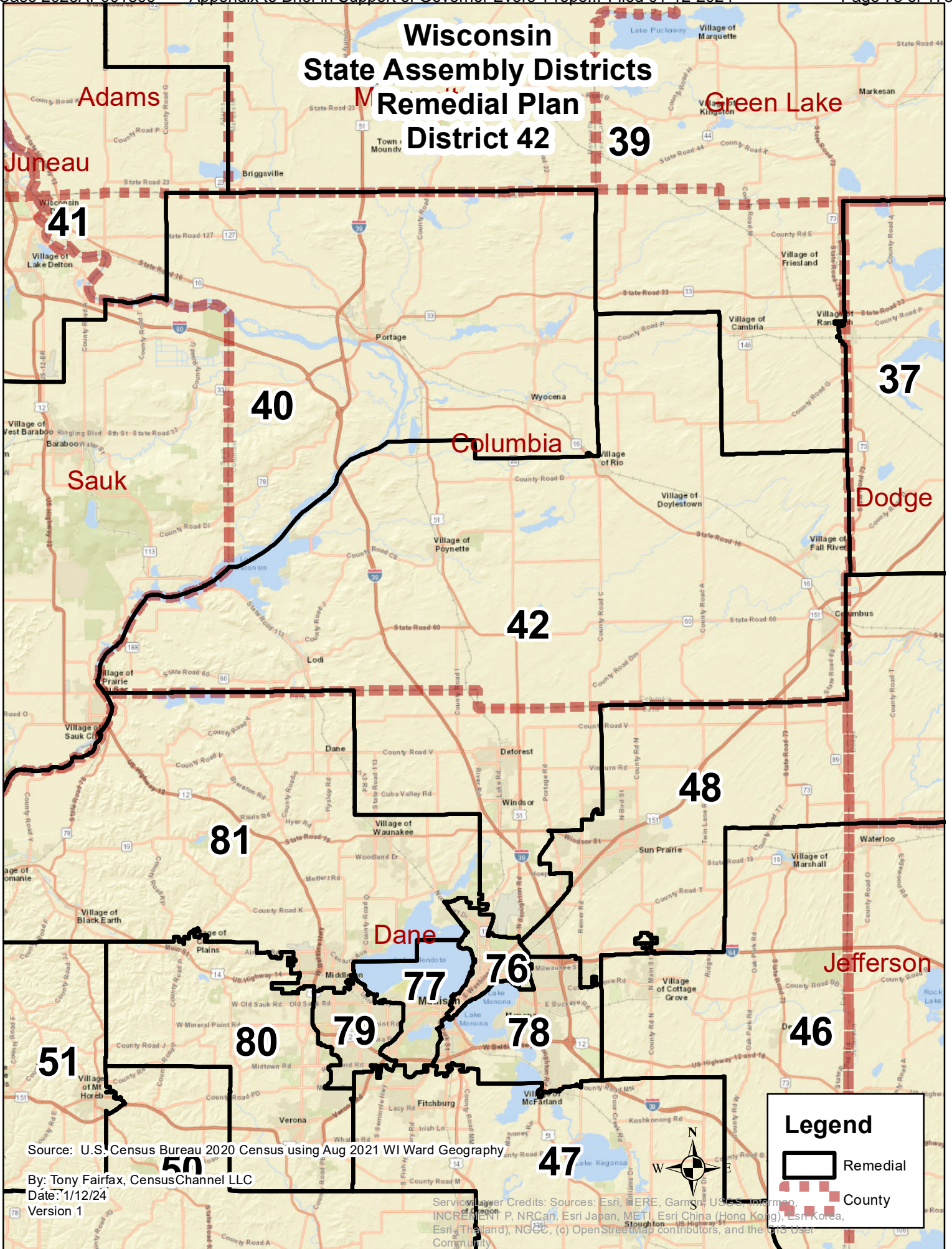
### Articles

- "Precision Voter Targeting: GIS Maps Out a Strategy," Geo Info Systems, November 1996 (Co-authored one of the first articles published on using modern-day GIS for voter targeting).





# Wisconsin State Assembly Districts Remedial Plan District 42 39



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

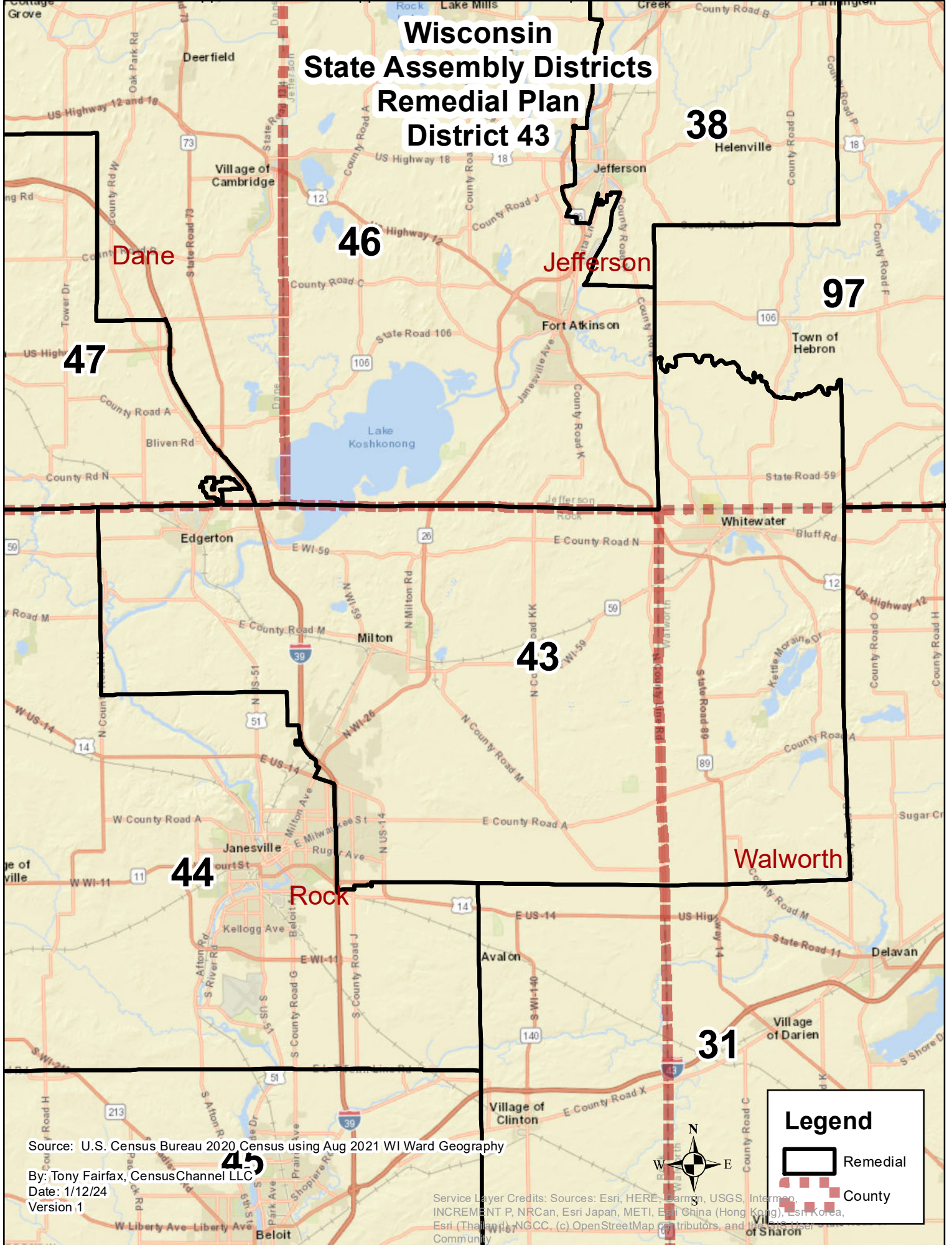
By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGIS, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Assembly Districts Remedial Plan District 43

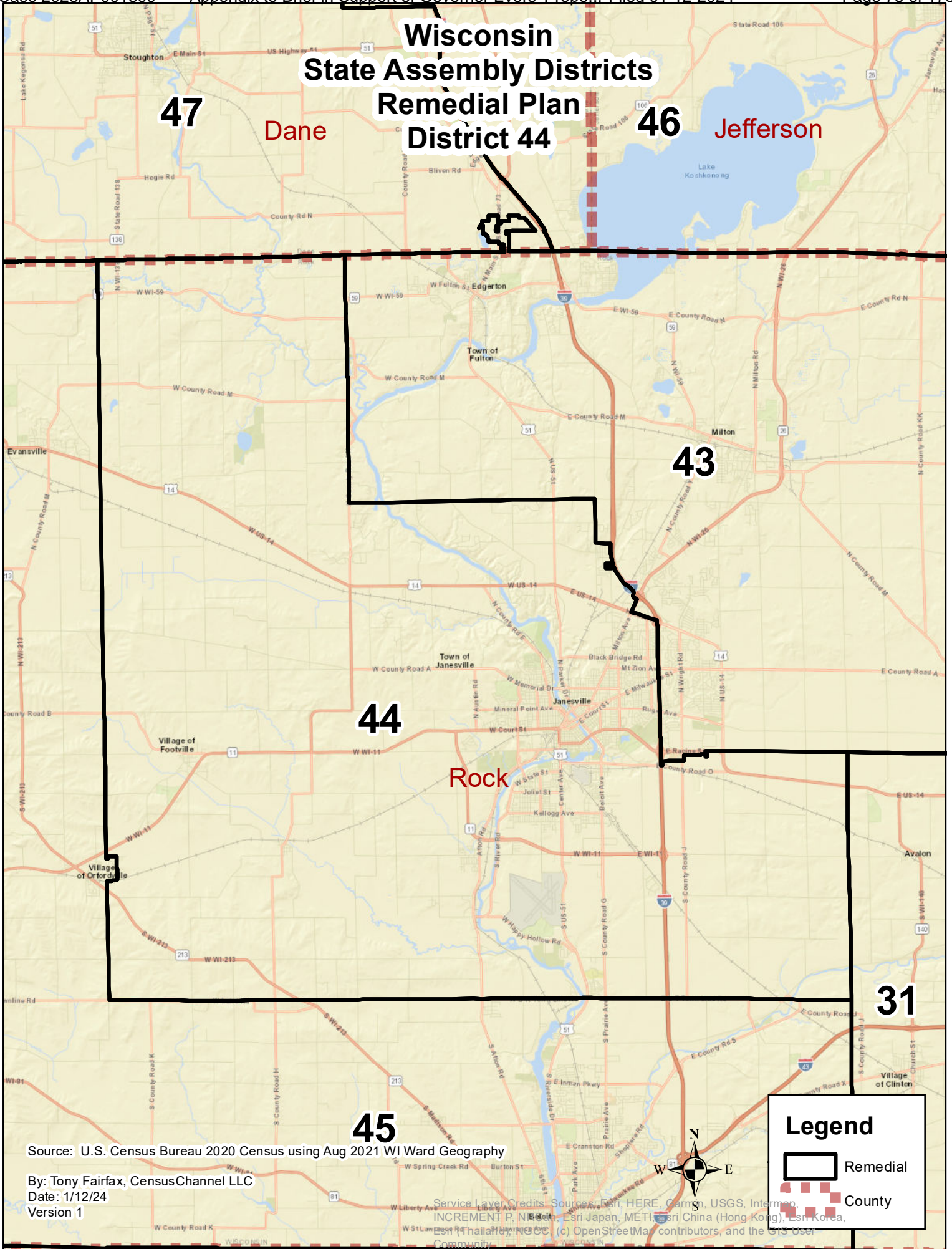


Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensuChannel LLC  
Date: 1/12/24  
Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Assembly Districts Remedial Plan District 44



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

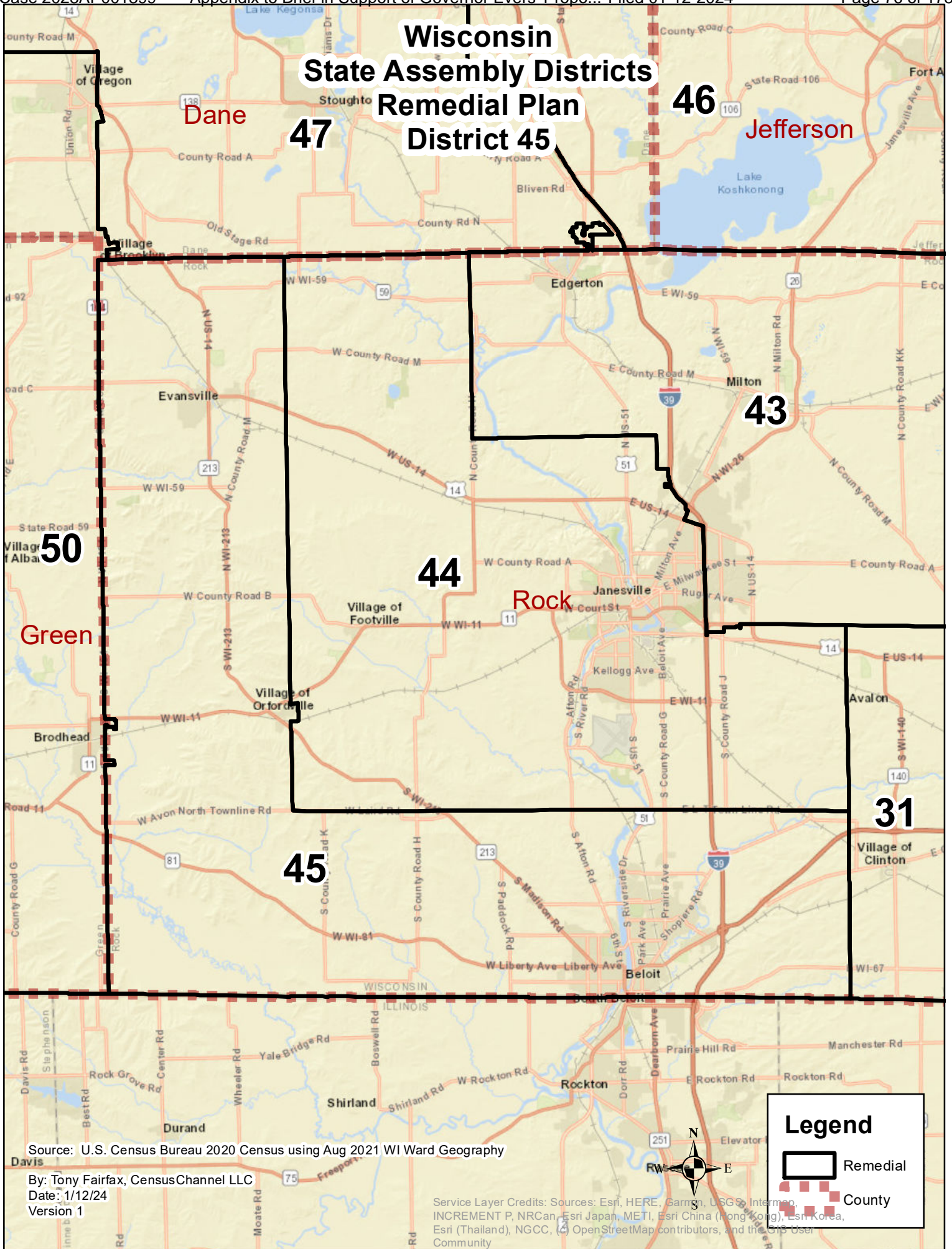
By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri Thailand, Swisstopo, (c) OpenStreetMap contributors, and the GIS User Community

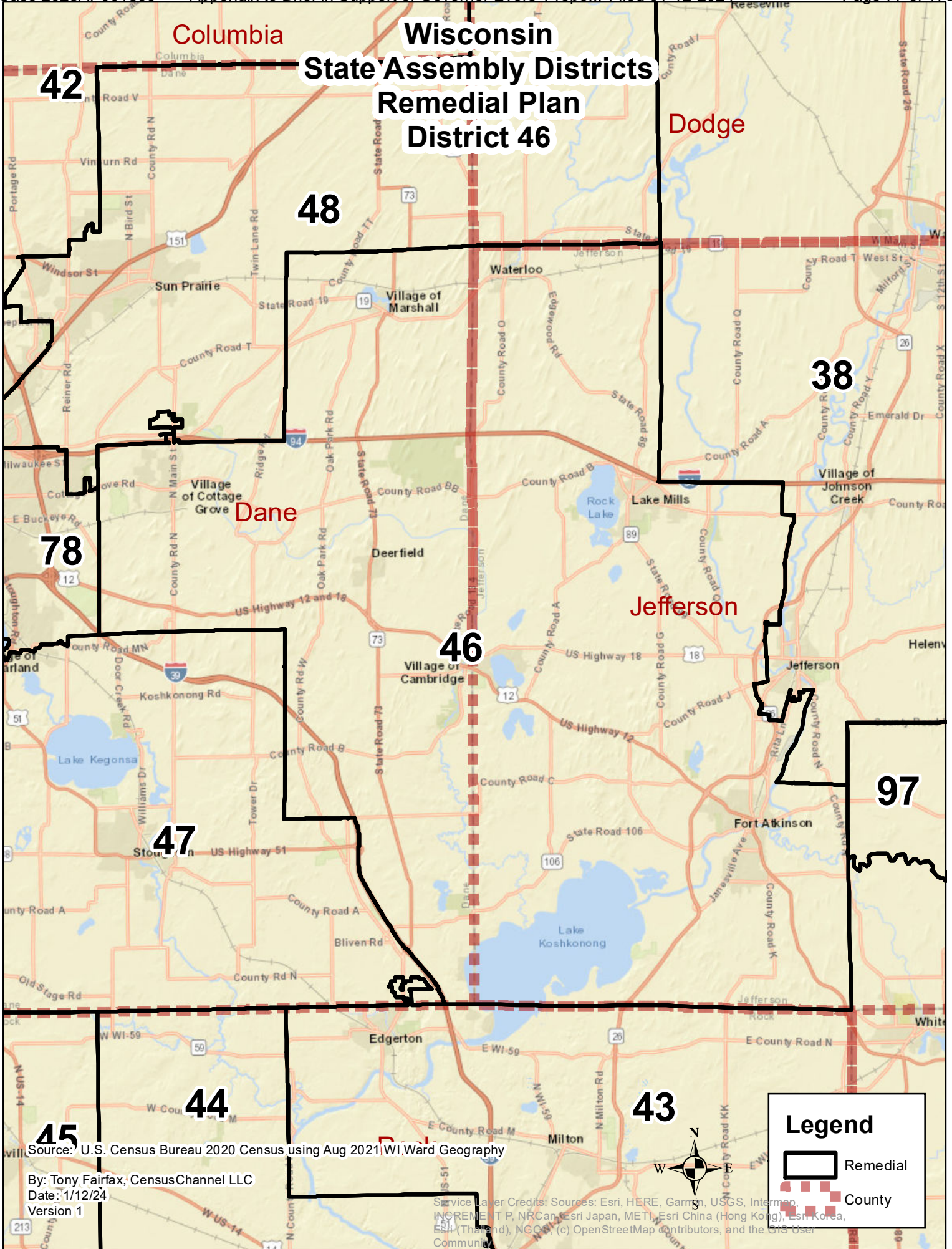
# Wisconsin State Assembly Districts Remedial Plan District 45



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
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**Wisconsin  
State Assembly Districts  
Remedial Plan  
District 46**

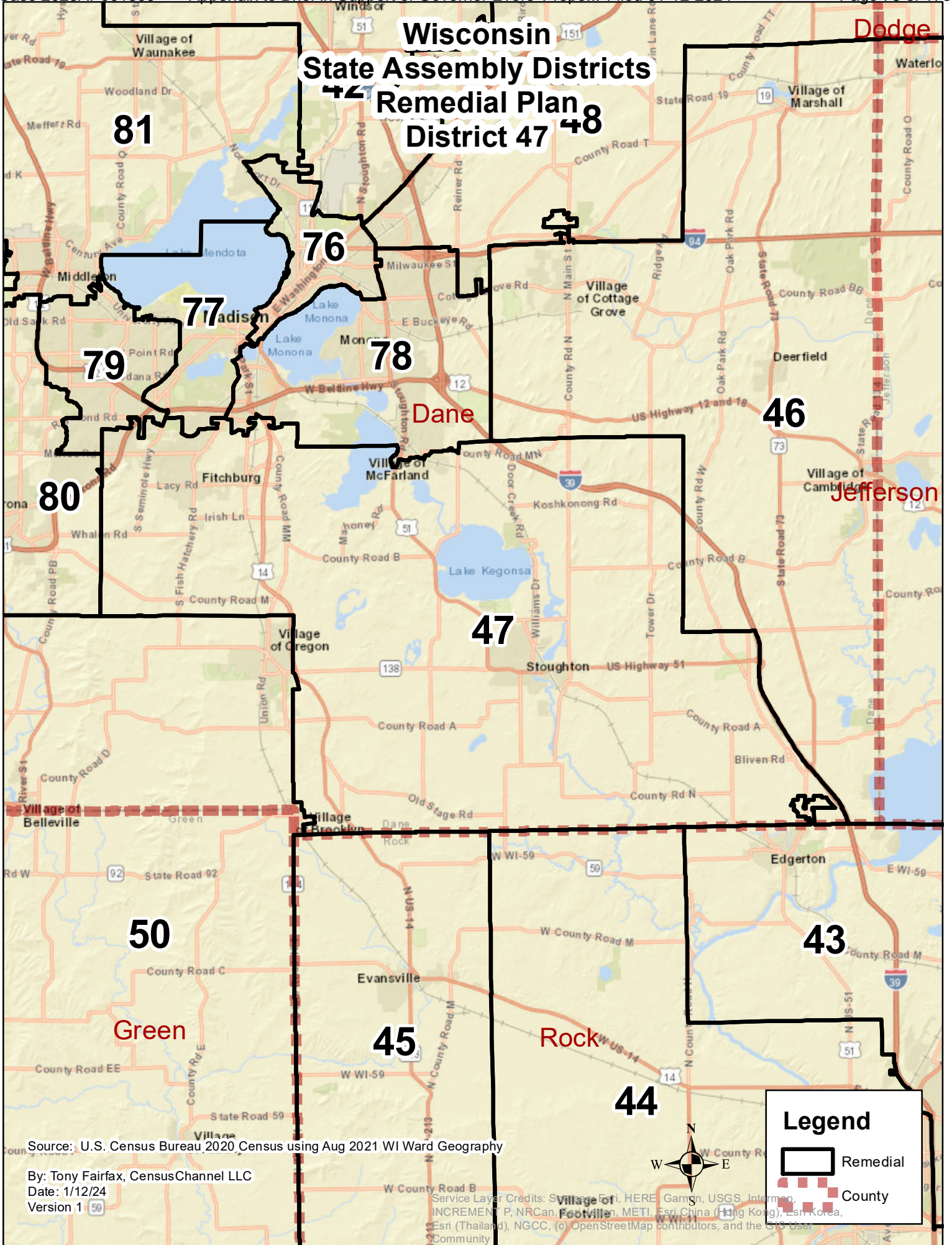
Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

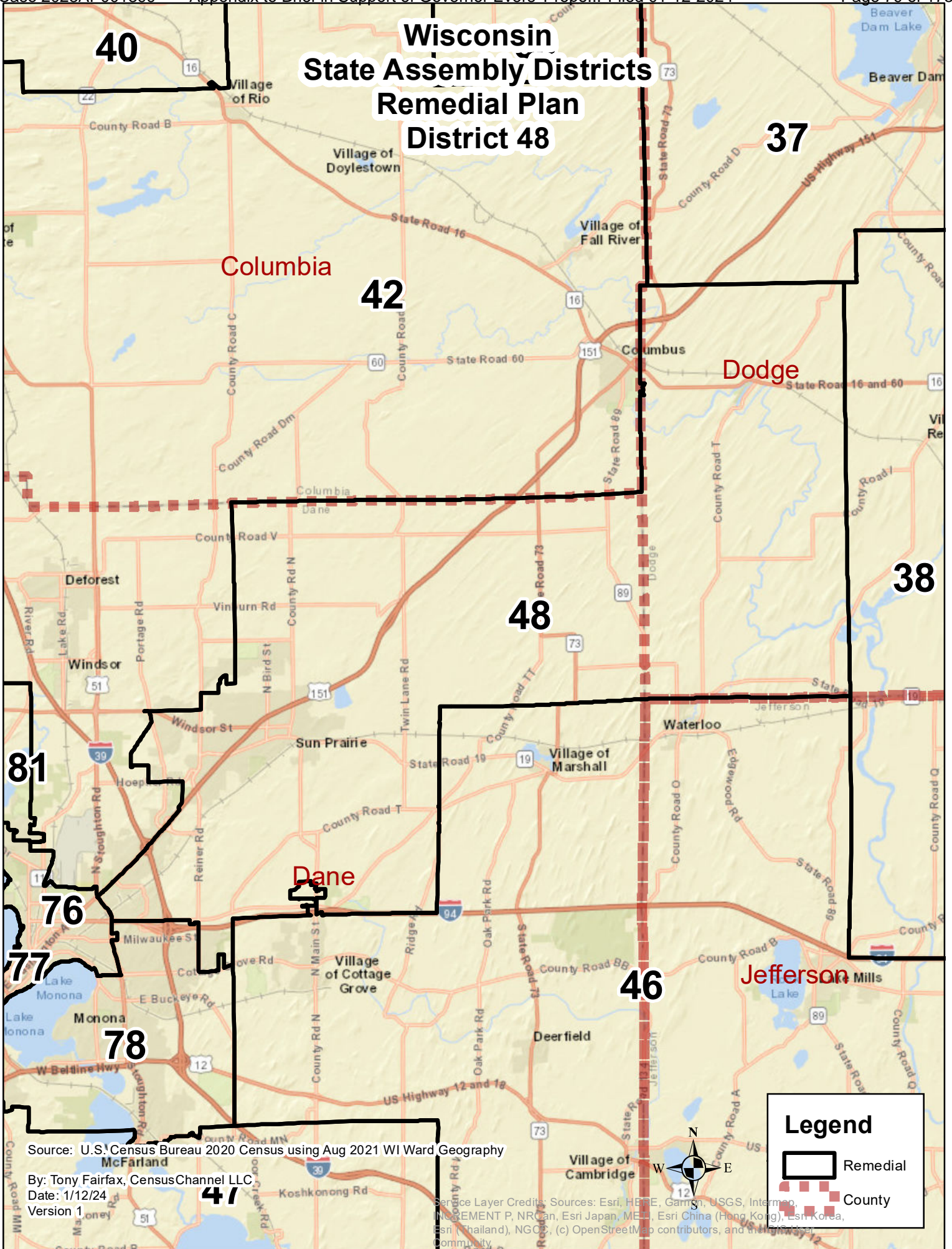
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGIS, (c) OpenStreetMap Contributors, and the GIS User Community

**Legend**

- Remedial
- County



# Wisconsin State Assembly Districts Remedial Plan District 48



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

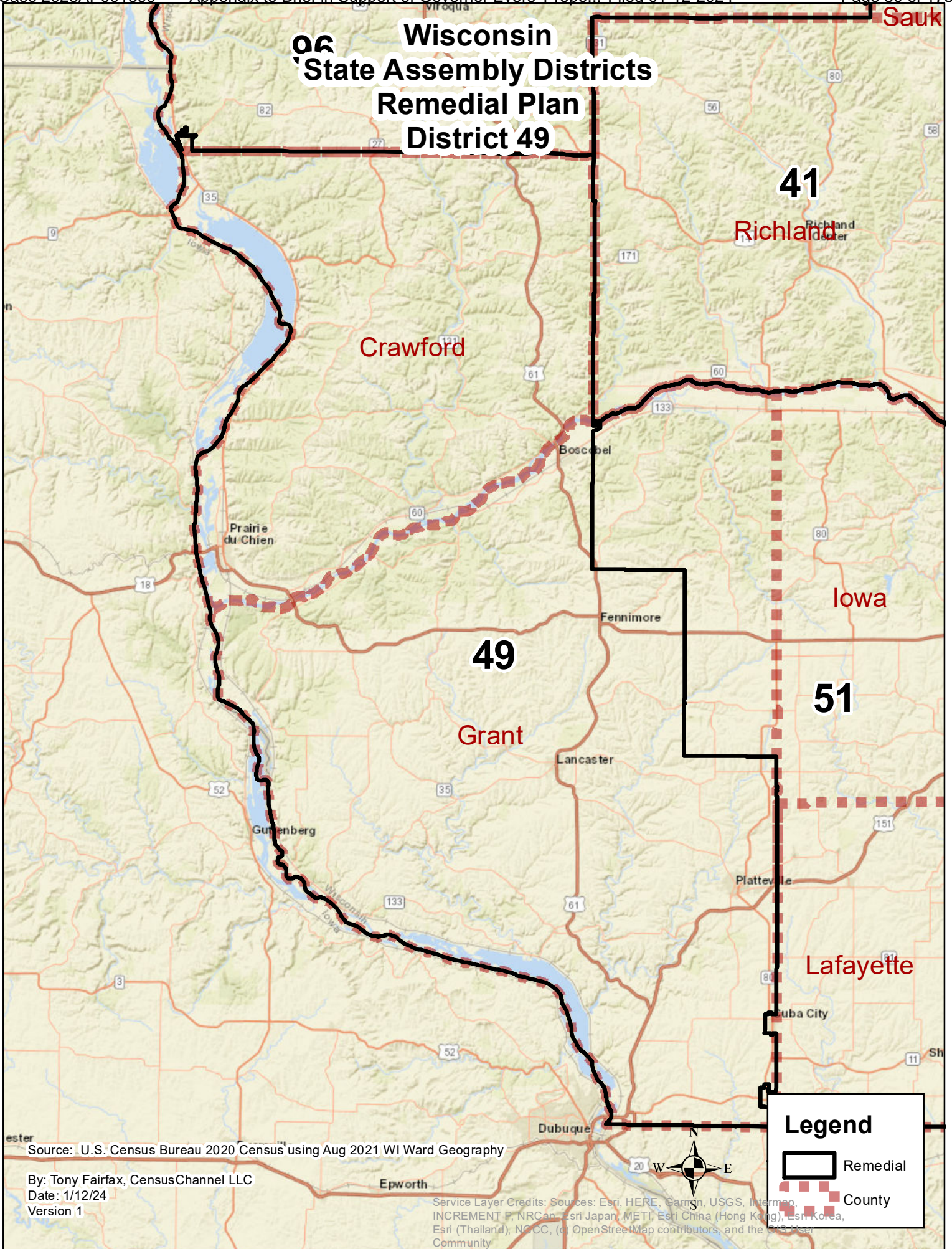
By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGIS, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Assembly Districts Remedial Plan District 49



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

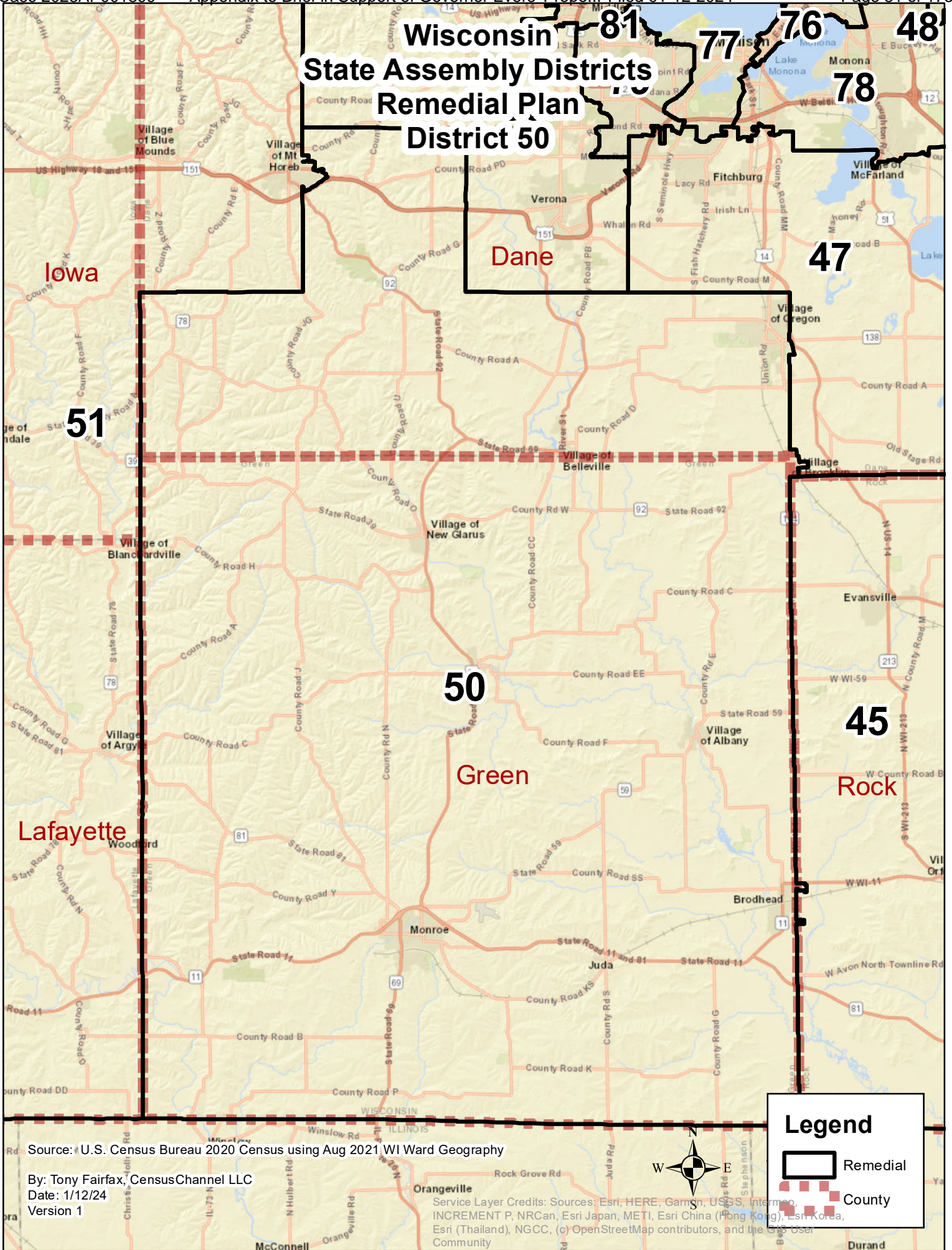
By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

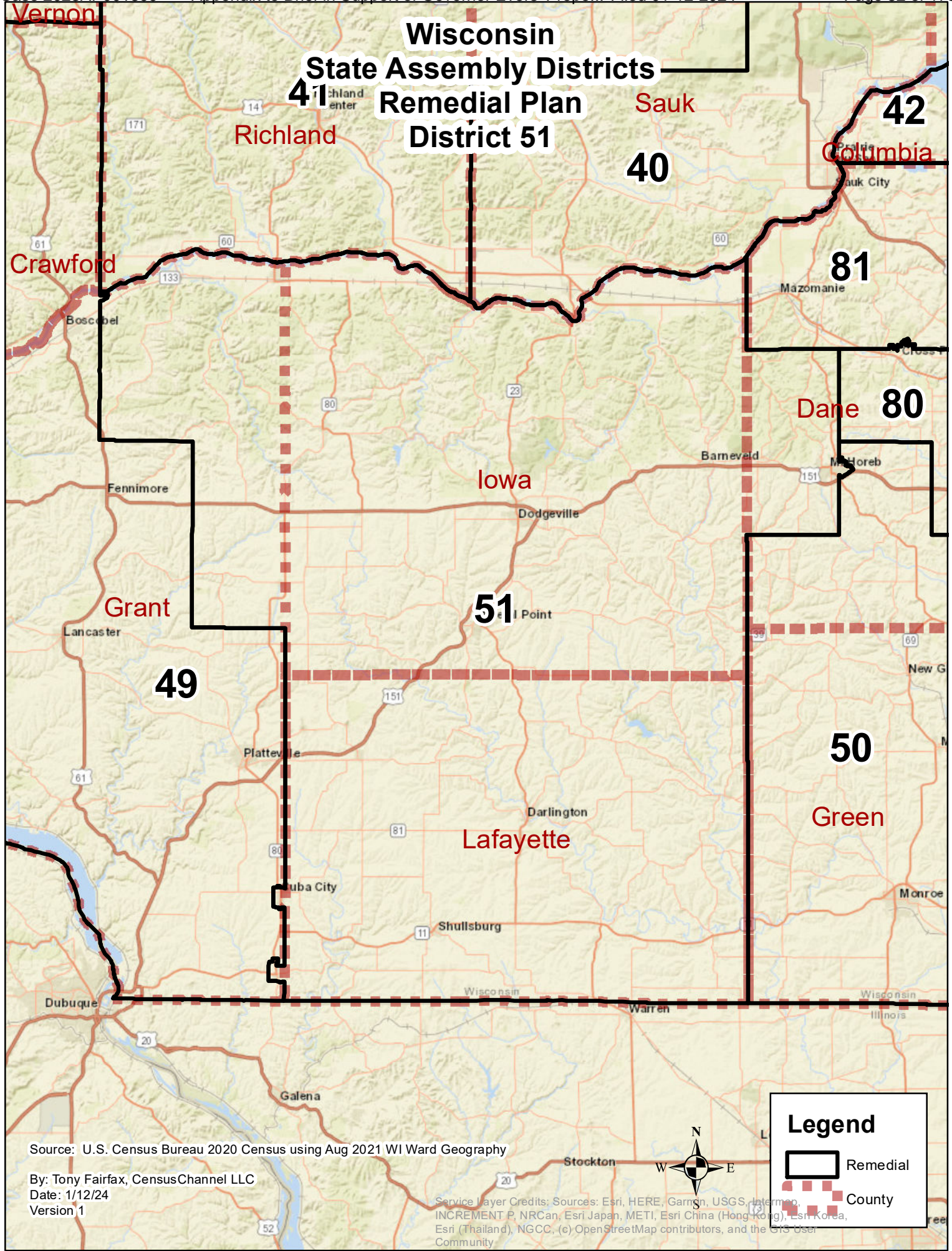
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

### Legend

- Remedial
- County







Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

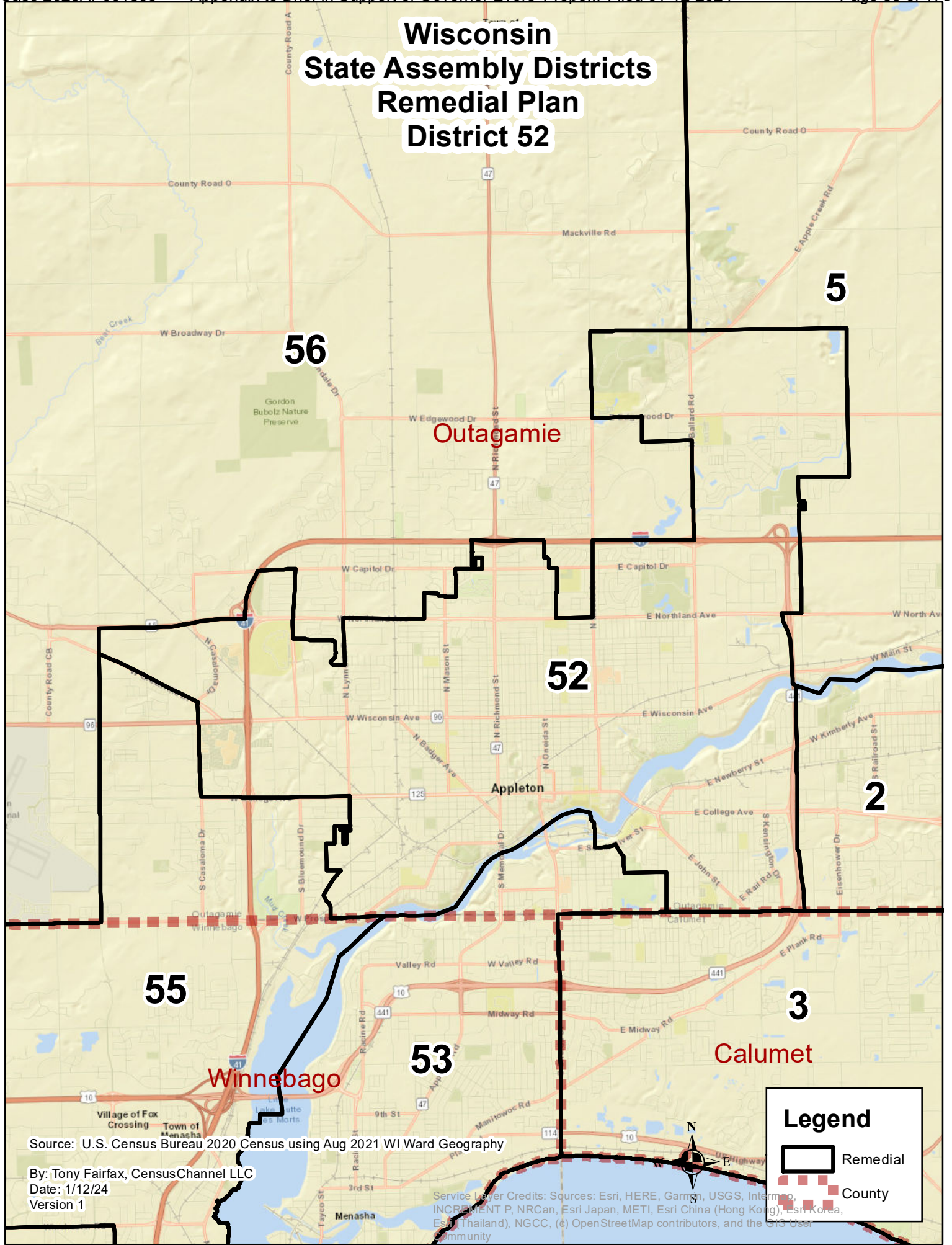
By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

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# Wisconsin State Assembly Districts Remedial Plan District 52



**Legend**

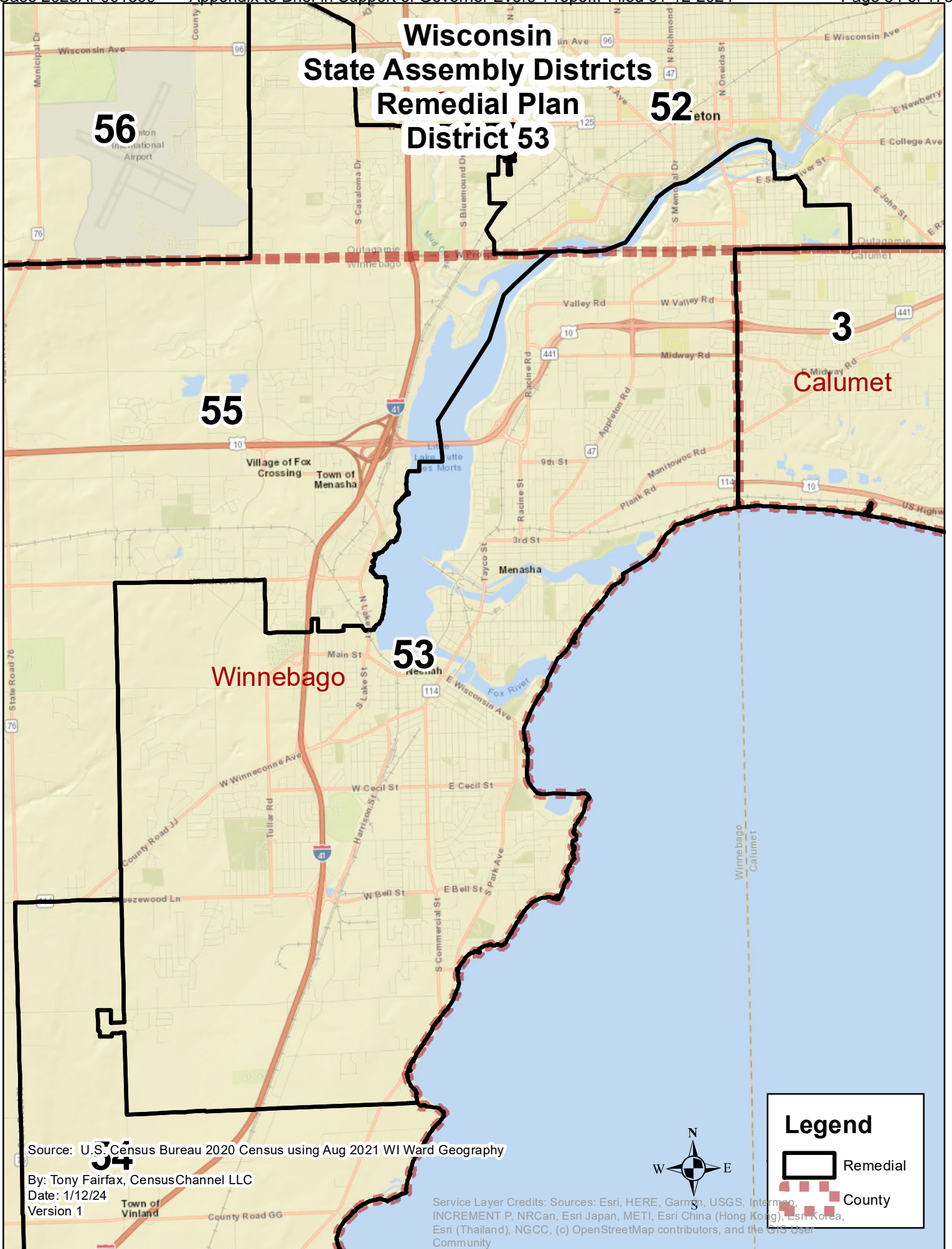
- Remedial
- County

Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
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Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Assembly Districts Remedial Plan District 53



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

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Date: 1/12/24

Version 1

Town of Vinland

County Road GG

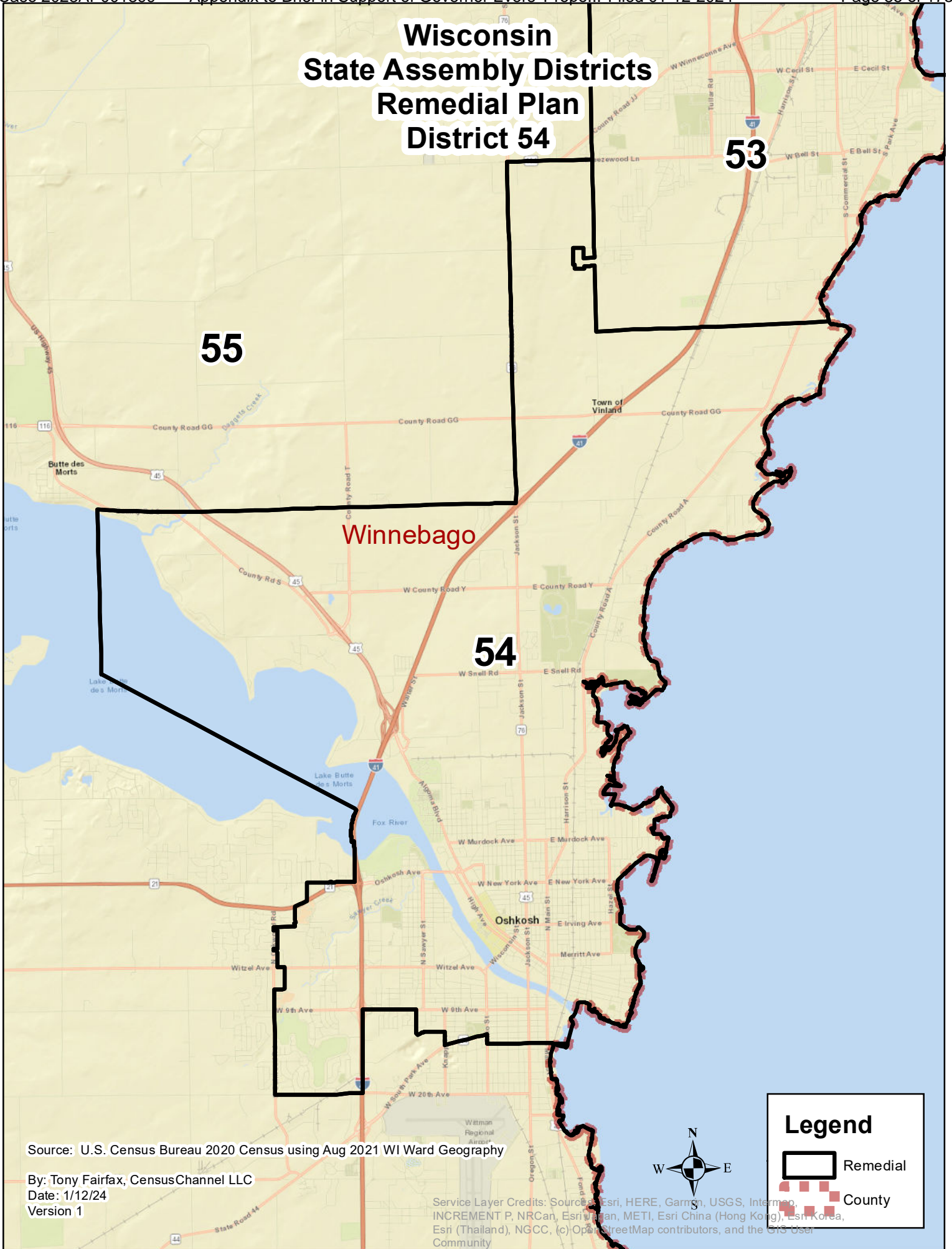


## Legend

- Remedial
- County

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# Wisconsin State Assembly Districts Remedial Plan District 54

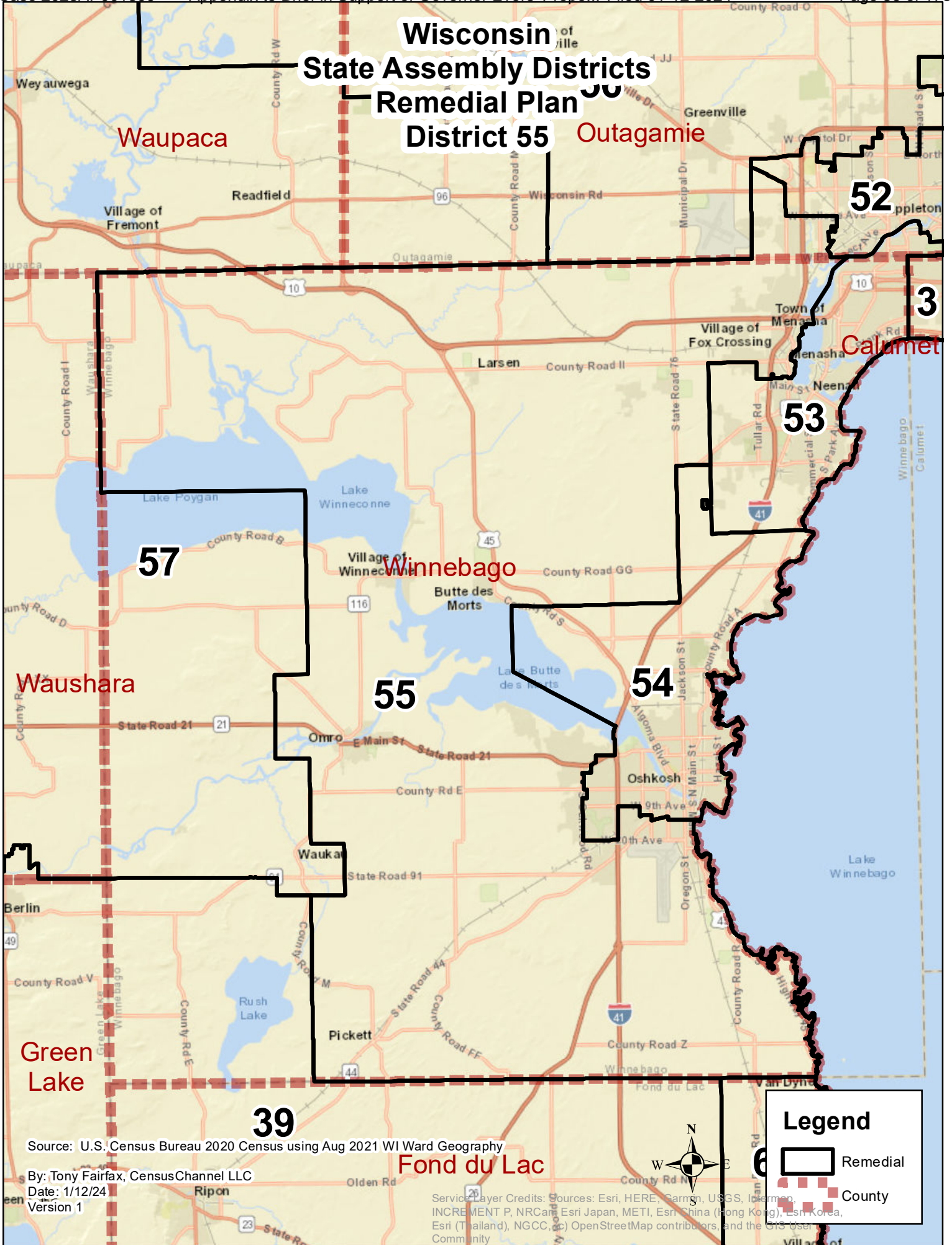


Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

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# Wisconsin State Assembly Districts Remedial Plan District 55

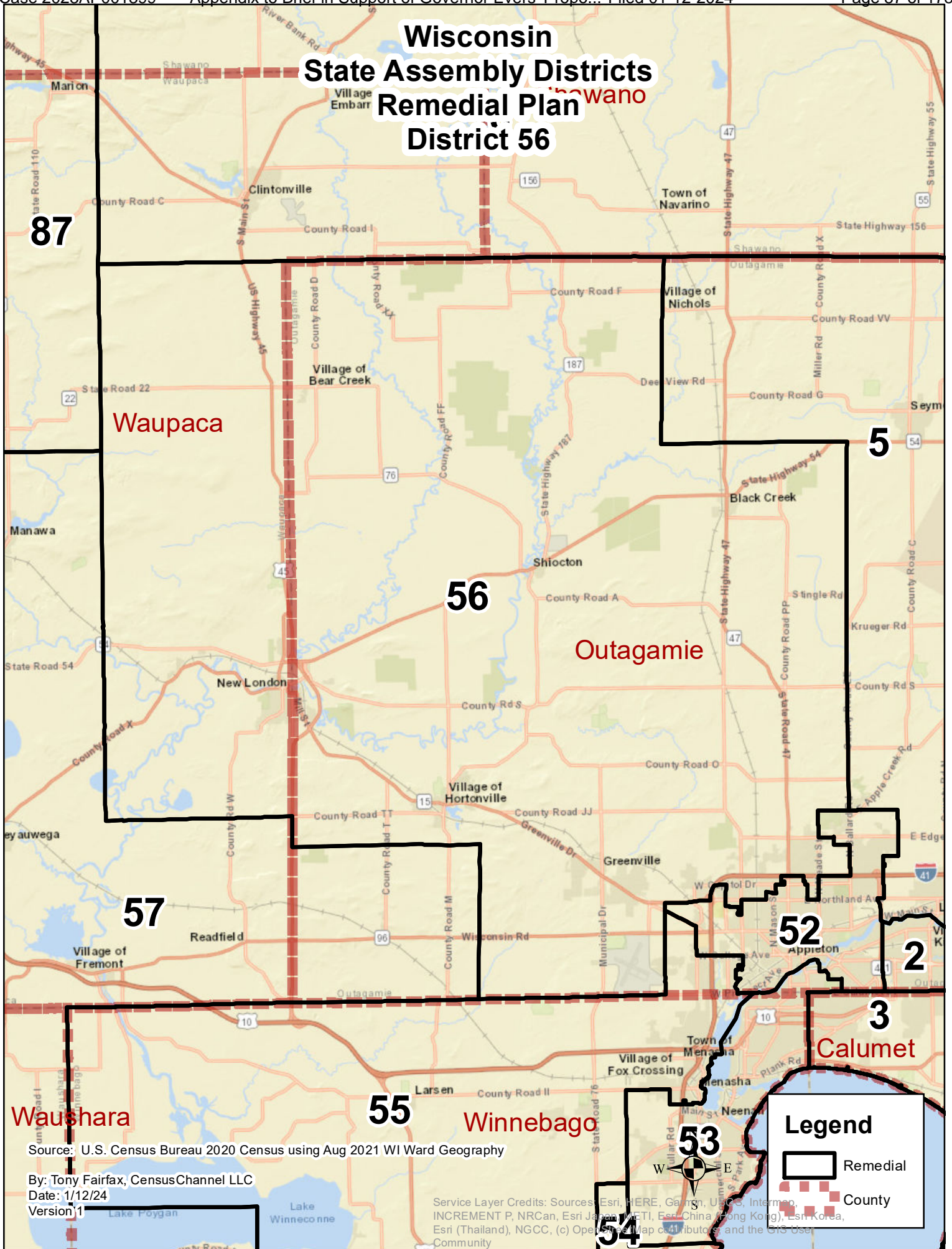


Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Assembly Districts Remedial Plan District 56



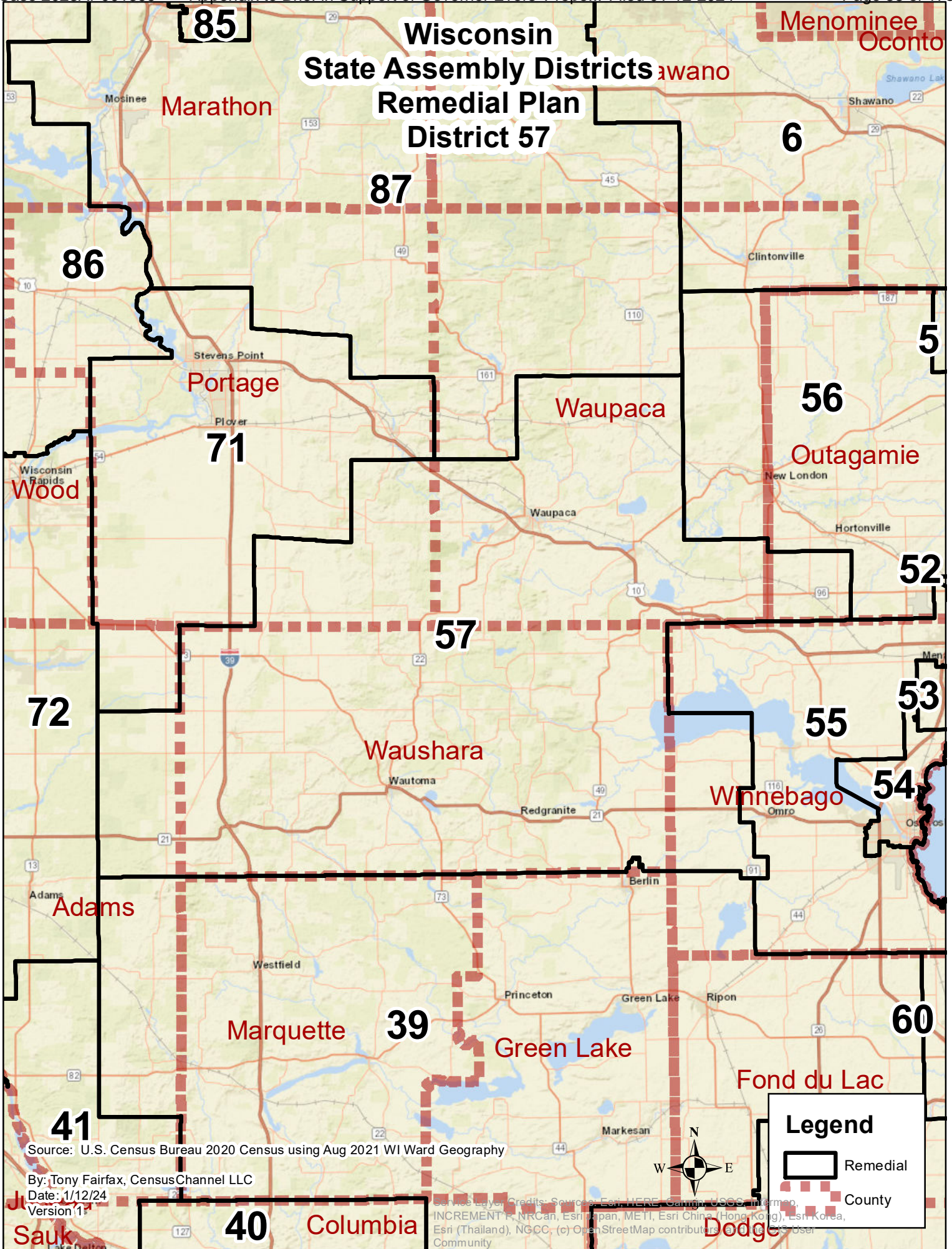
Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

Version: 1

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**Wisconsin State Assembly Districts**  
**Remedial Plan**  
**District 57**

Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

Version 1

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**Legend**

- Remedial
- County



Fond du Lac Sheboygan

# Wisconsin State Assembly Districts Remedial Plan District 58

59



58

22

98

24

### Legend

-  Remedial
-  County

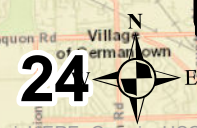
Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC

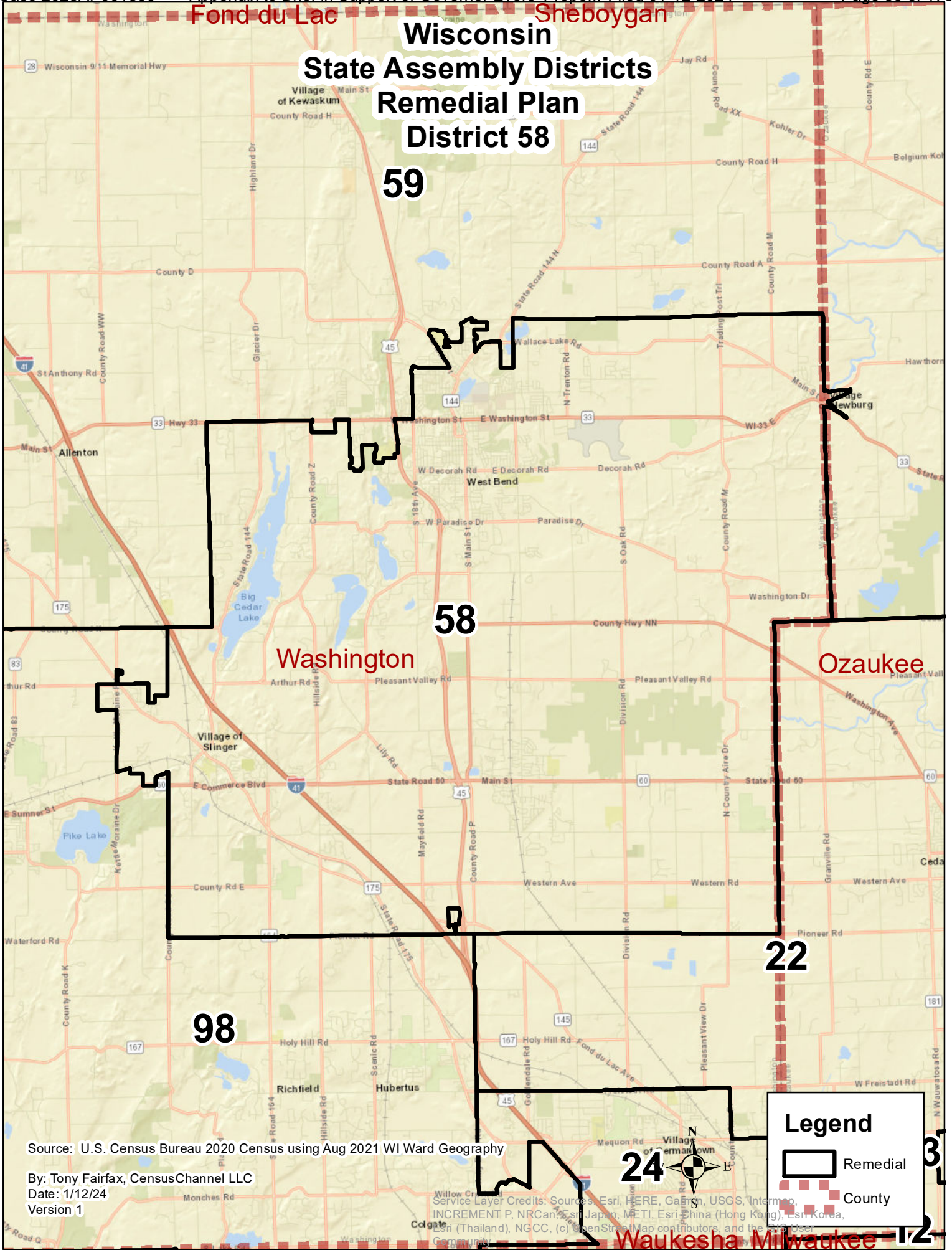
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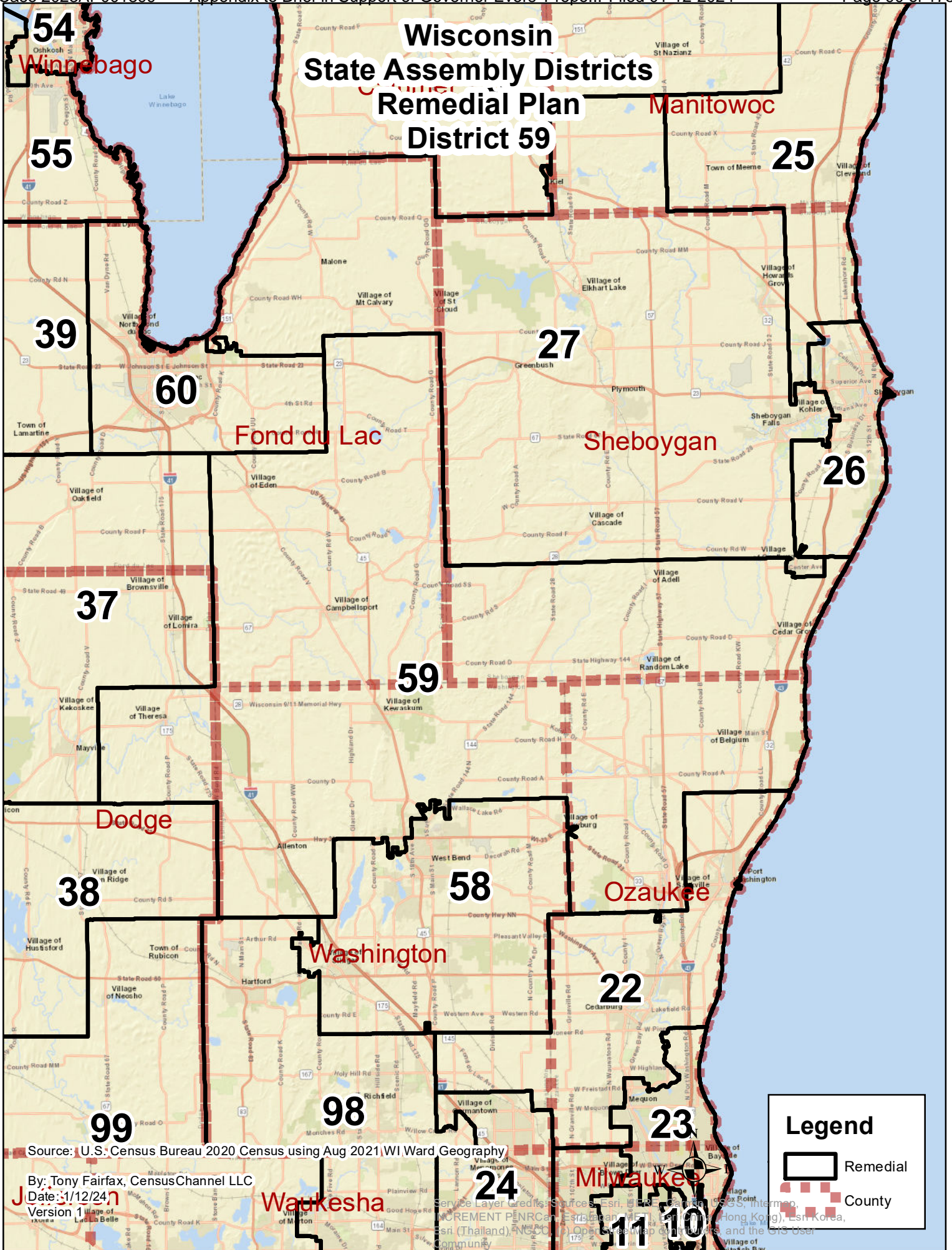
Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

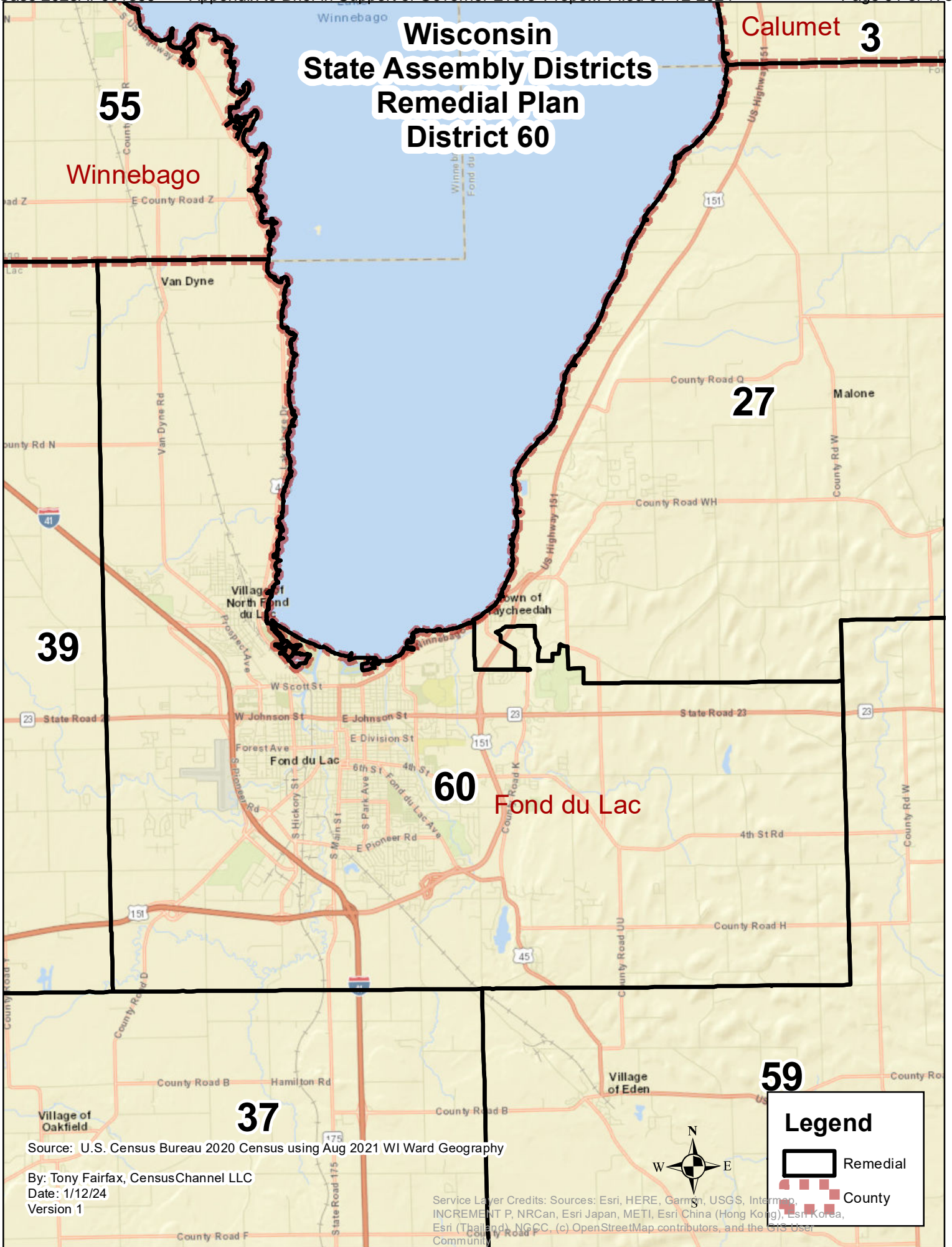


Waukesha Milwaukee





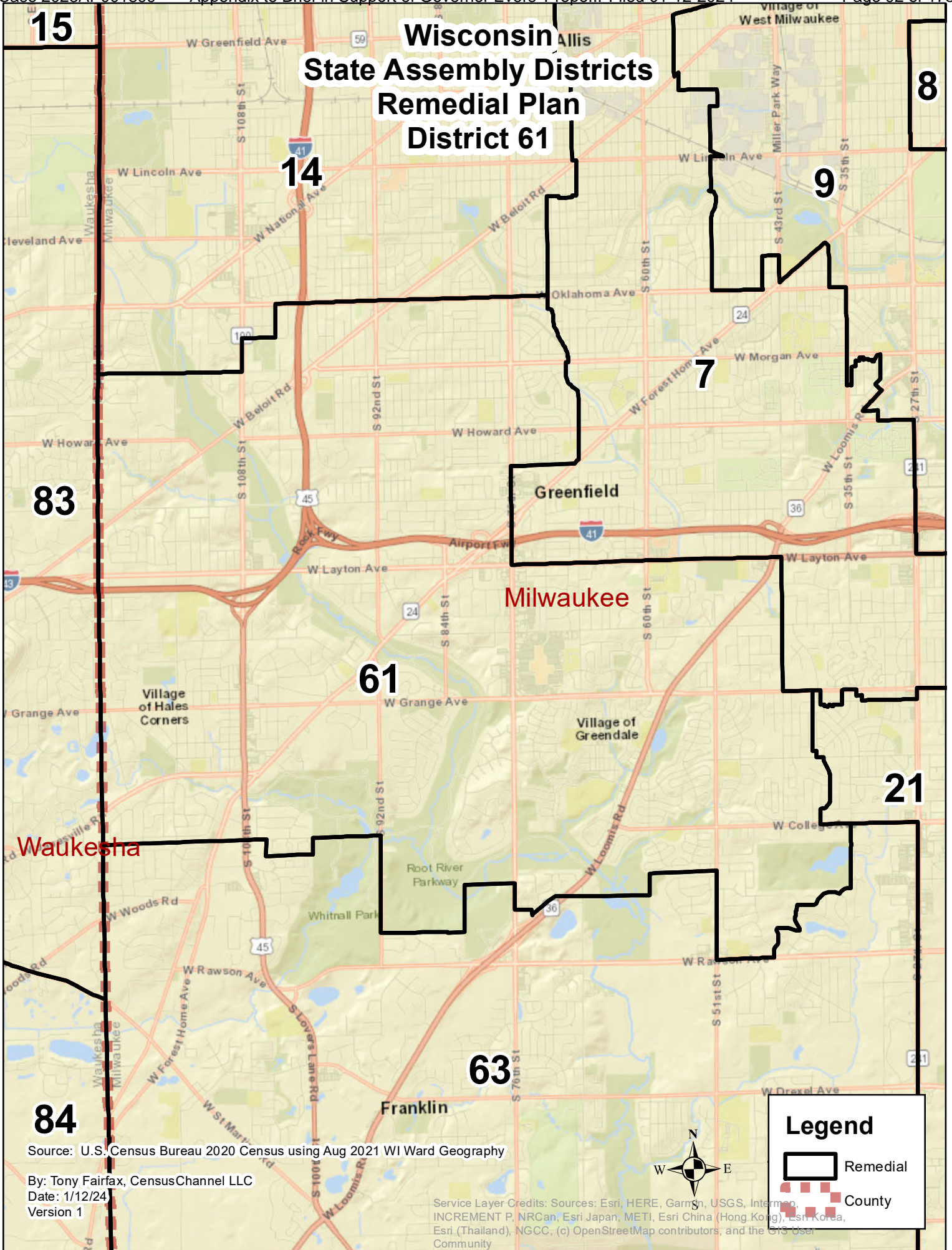
# Wisconsin State Assembly Districts Remedial Plan District 60



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

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**Wisconsin  
State Assembly Districts  
Remedial Plan  
District 61**

Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

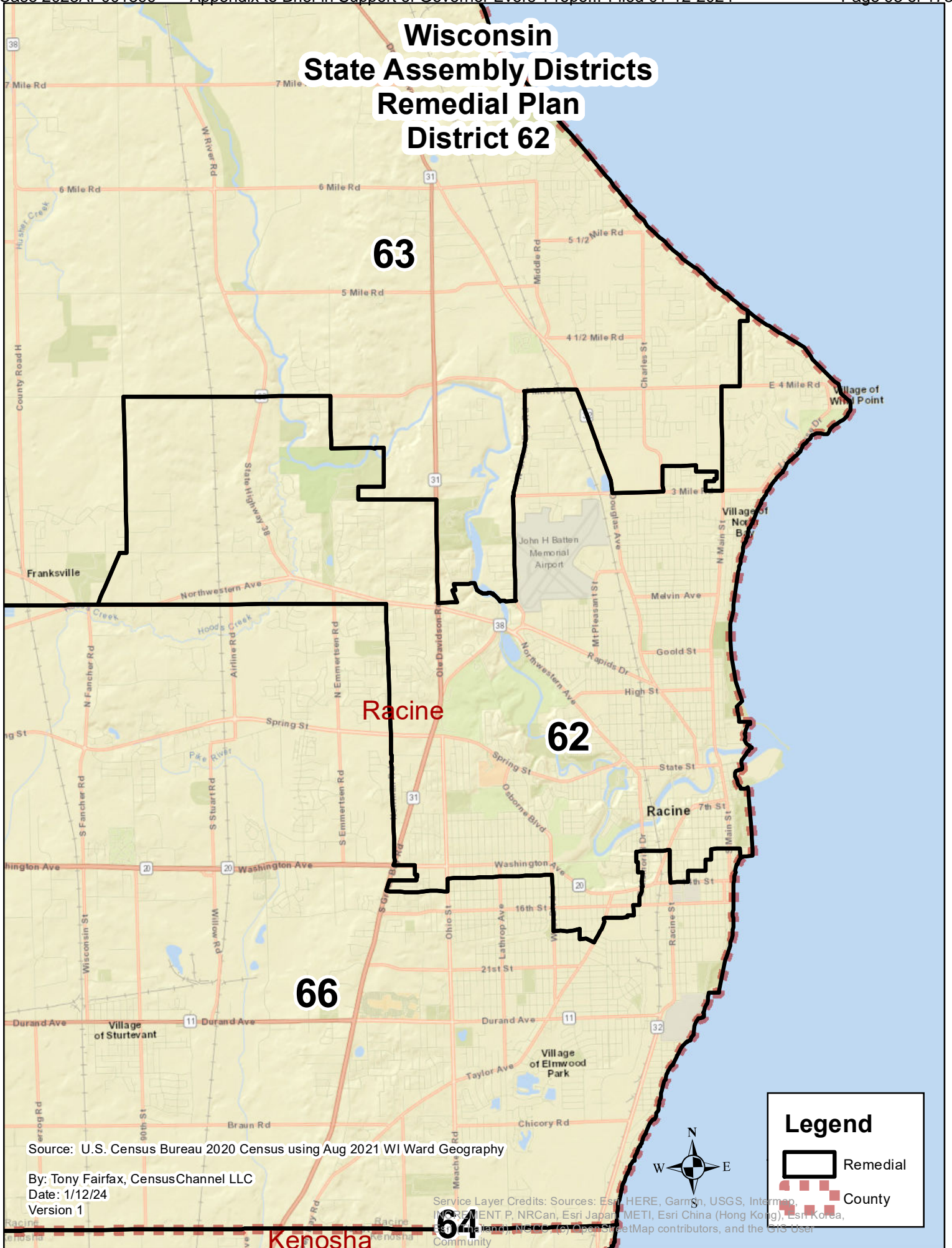
By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

**Legend**

-  Remedial
-  County

# Wisconsin State Assembly Districts Remedial Plan District 62



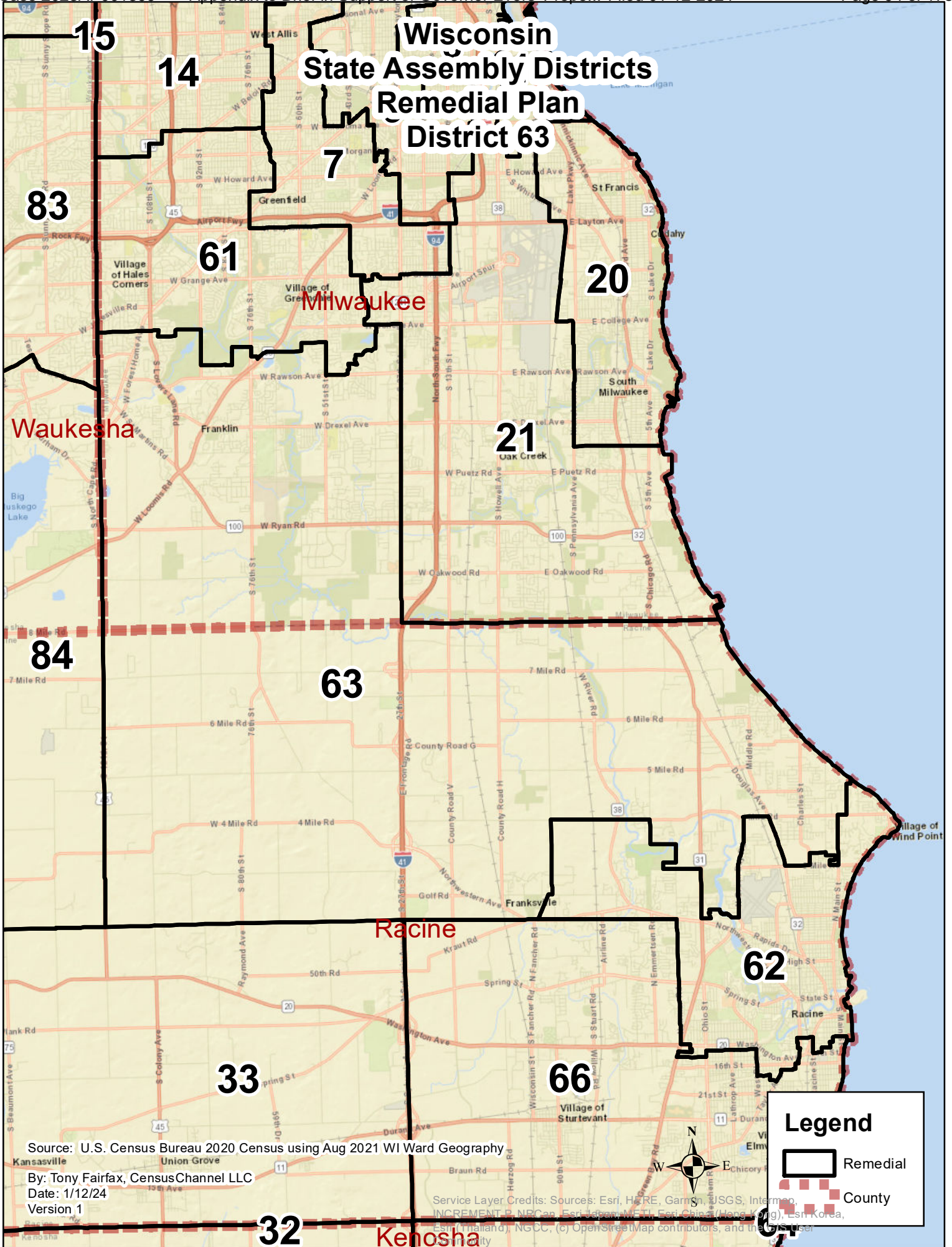
Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Singapore), Esri (India), Swisstopo, Mapbox, OpenStreetMap contributors, and the GIS User Community



# Wisconsin State Assembly Districts Remedial Plan District 64

33



64

Kenosha

32

65

### Legend

-  Remedial
-  County



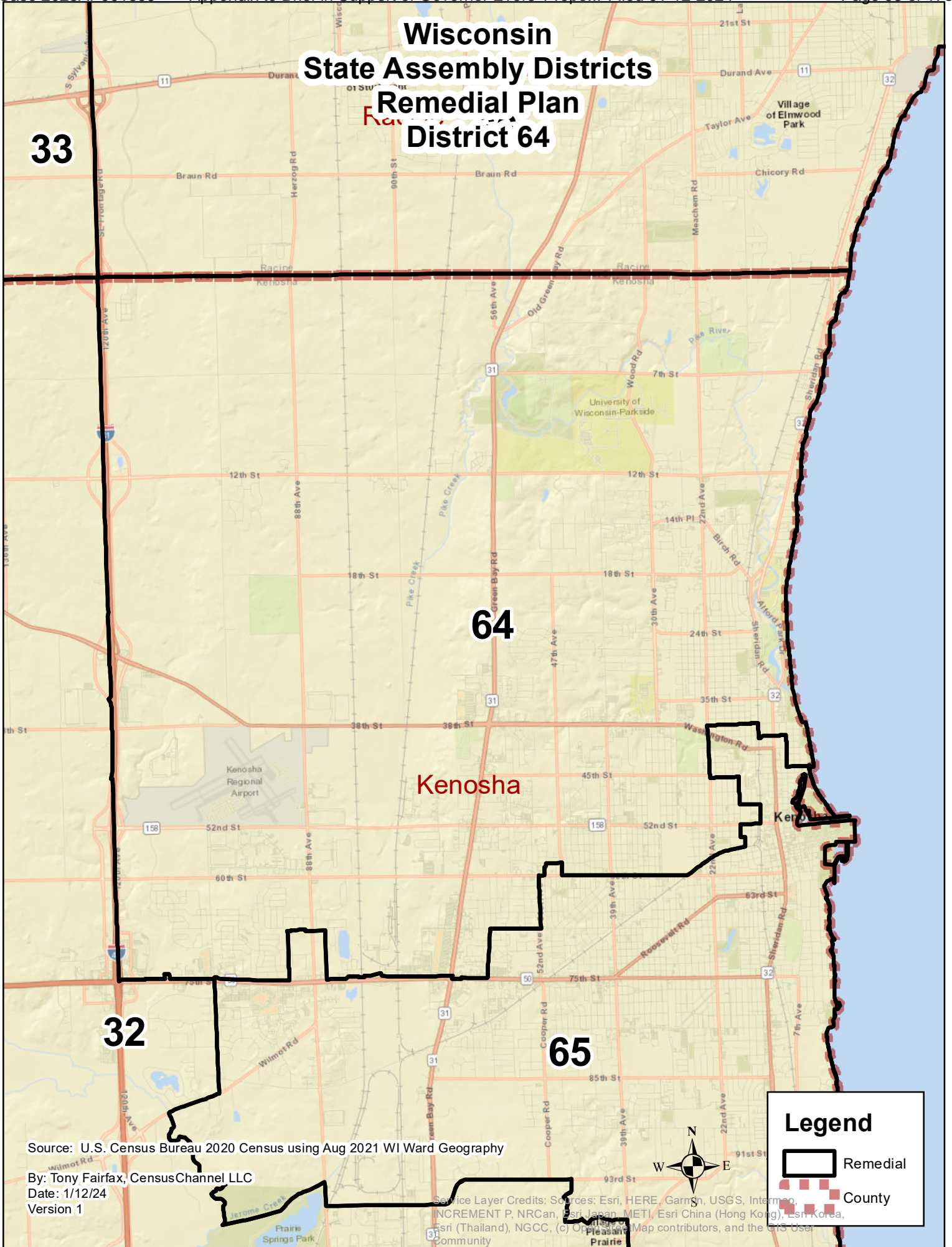
Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC

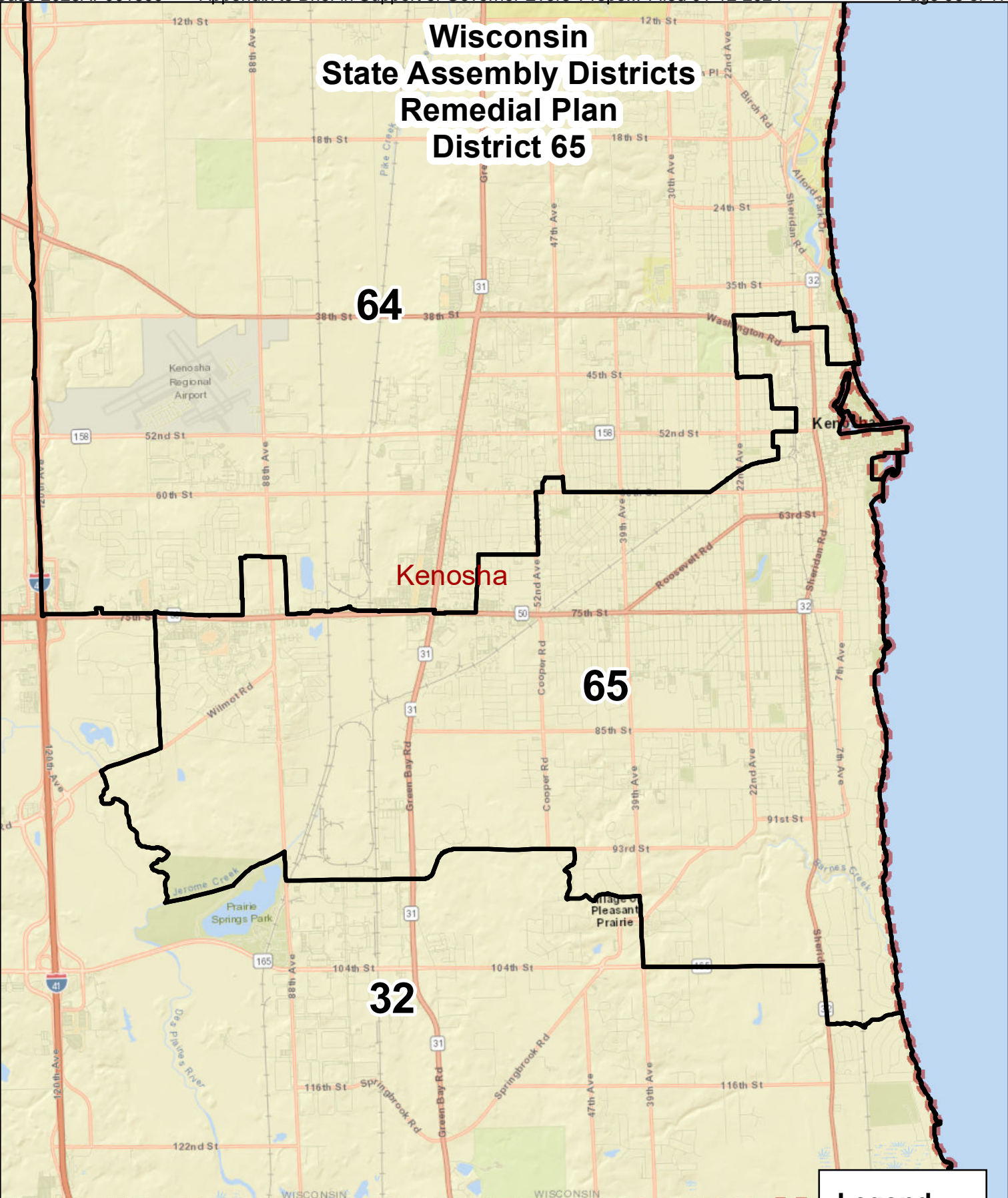
Date: 1/12/24

Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



# Wisconsin State Assembly Districts Remedial Plan District 65





64

65

32

Kenosha

### Legend

-  Remedial
-  County



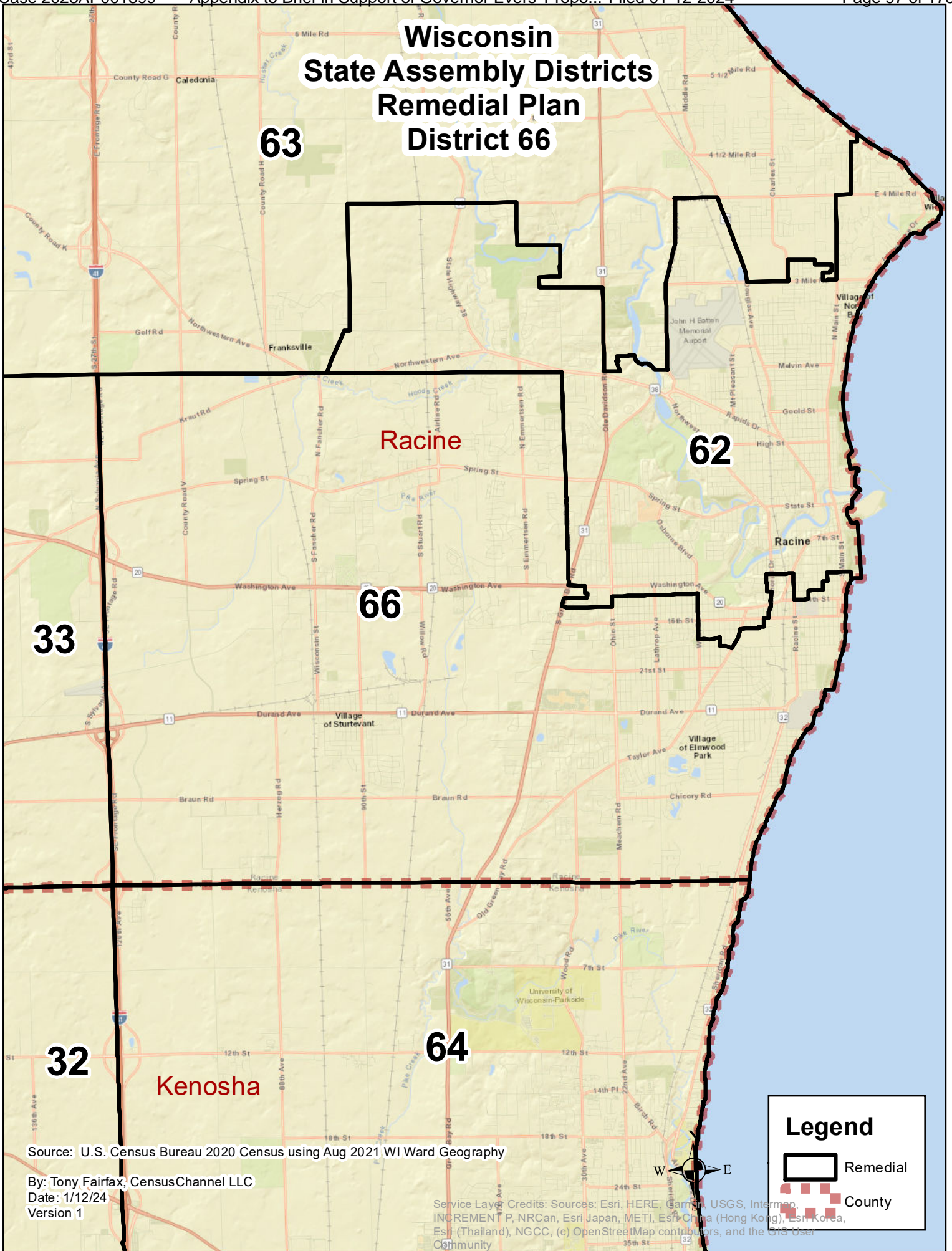
Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



# Wisconsin State Assembly Districts Remedial Plan District 66



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC

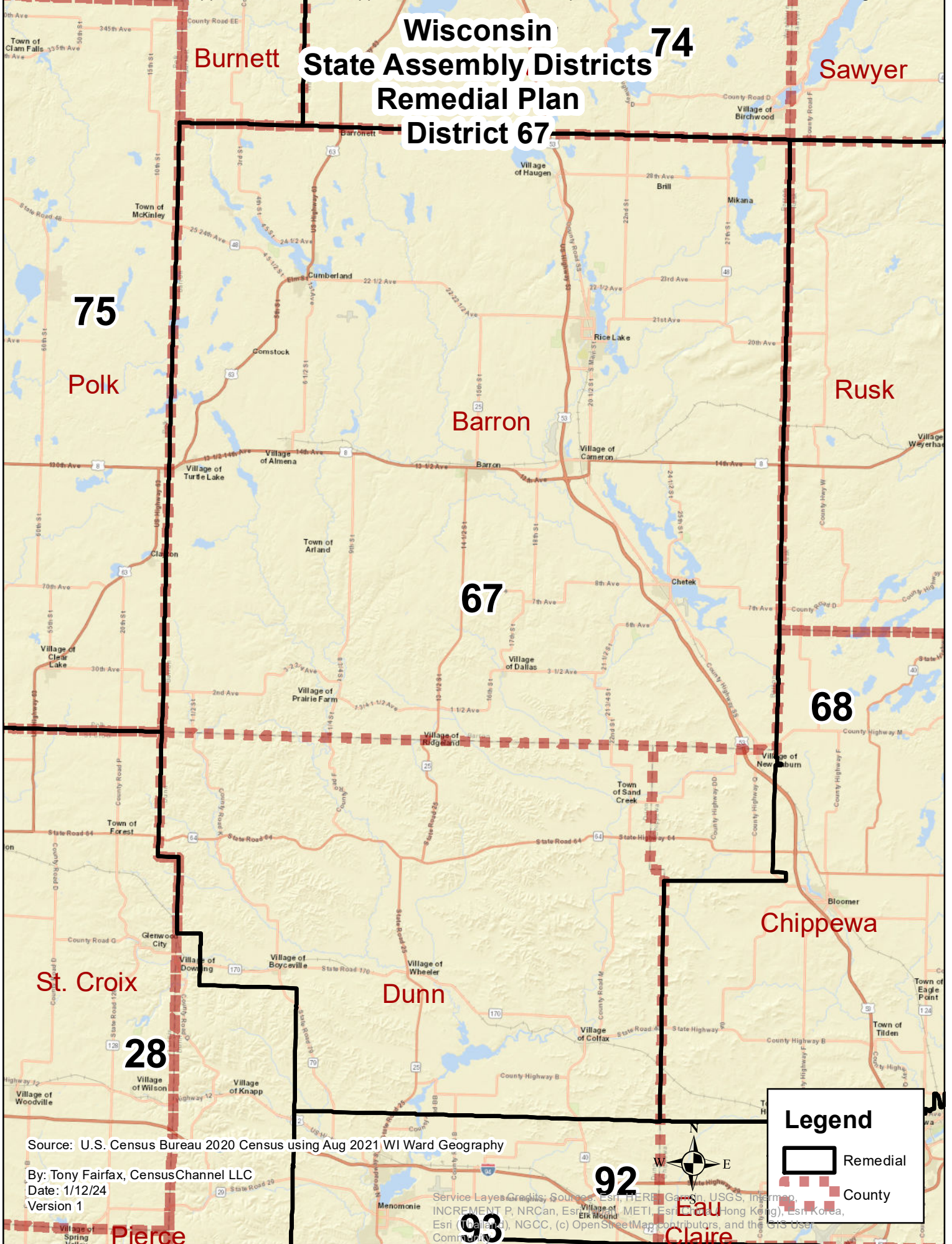
Date: 1/12/24

Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Assembly Districts

## Remedial Plan District 67



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

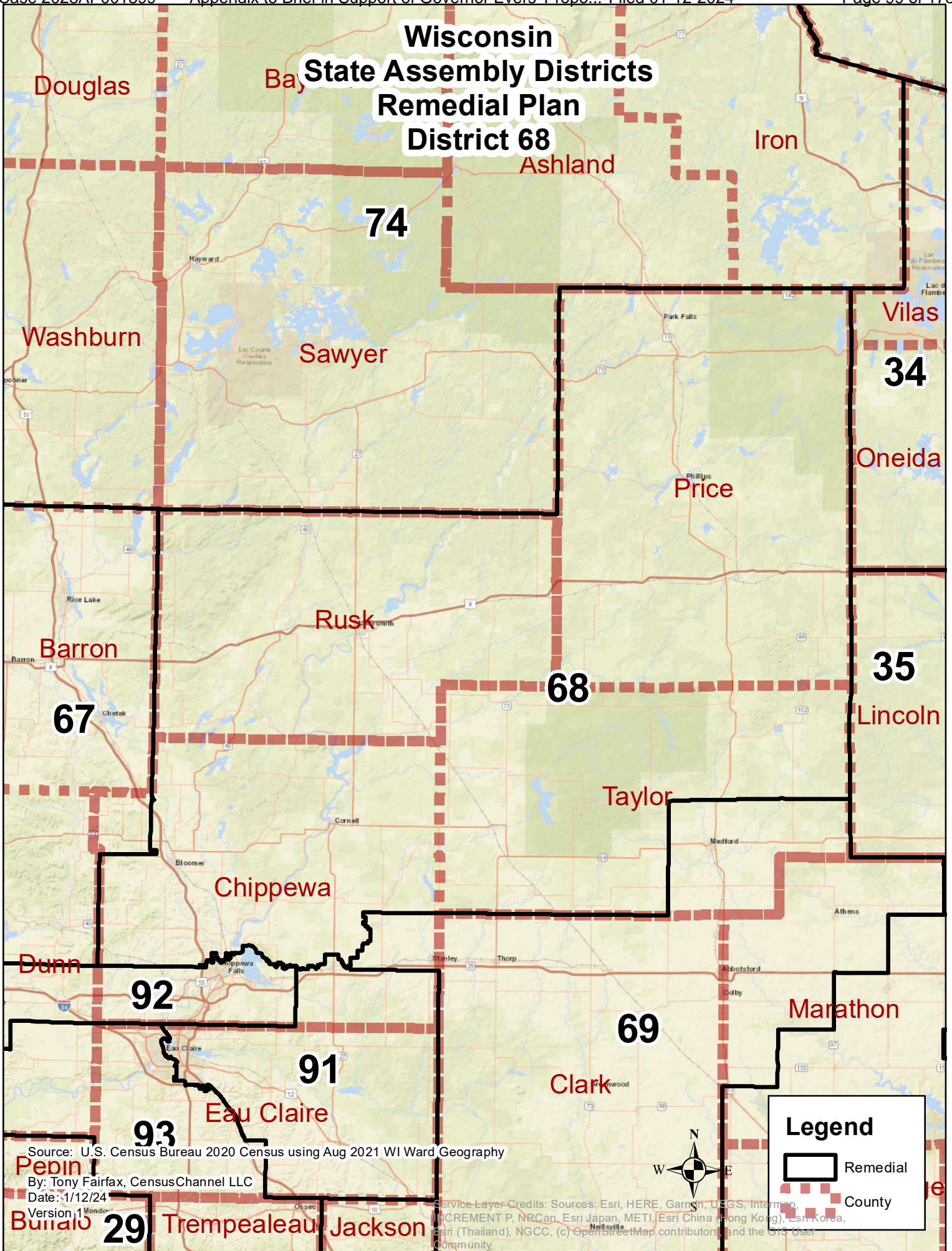
By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

Version 1

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# Wisconsin State Assembly Districts Remedial Plan District 68

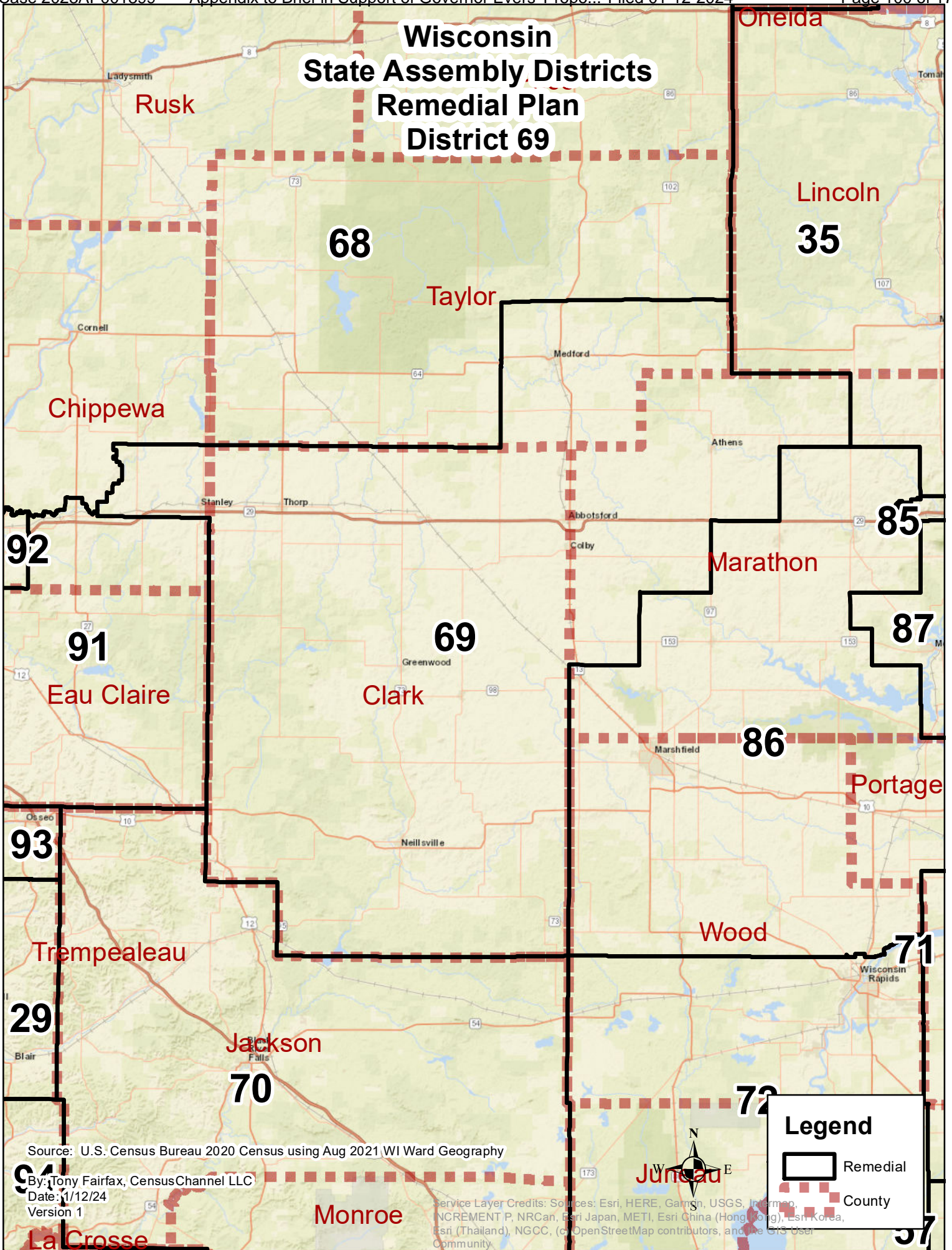


Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography  
 By: Tony Fairfax, CensusChannel LLC  
 Date: 1/12/24  
 Version 1

Burlington 29 Trempealeau Jackson

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# Wisconsin State Assembly Districts Remedial Plan District 69




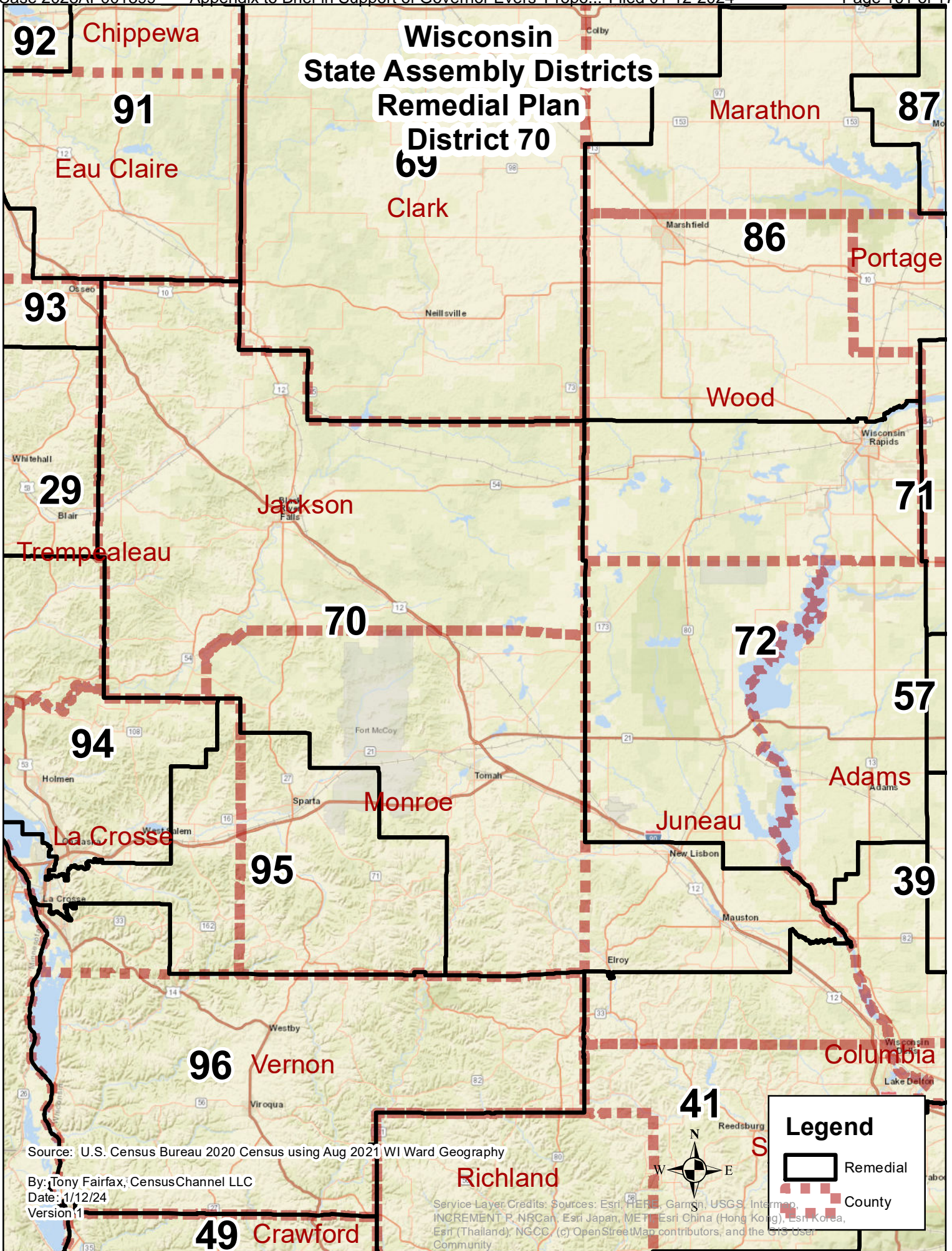
Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

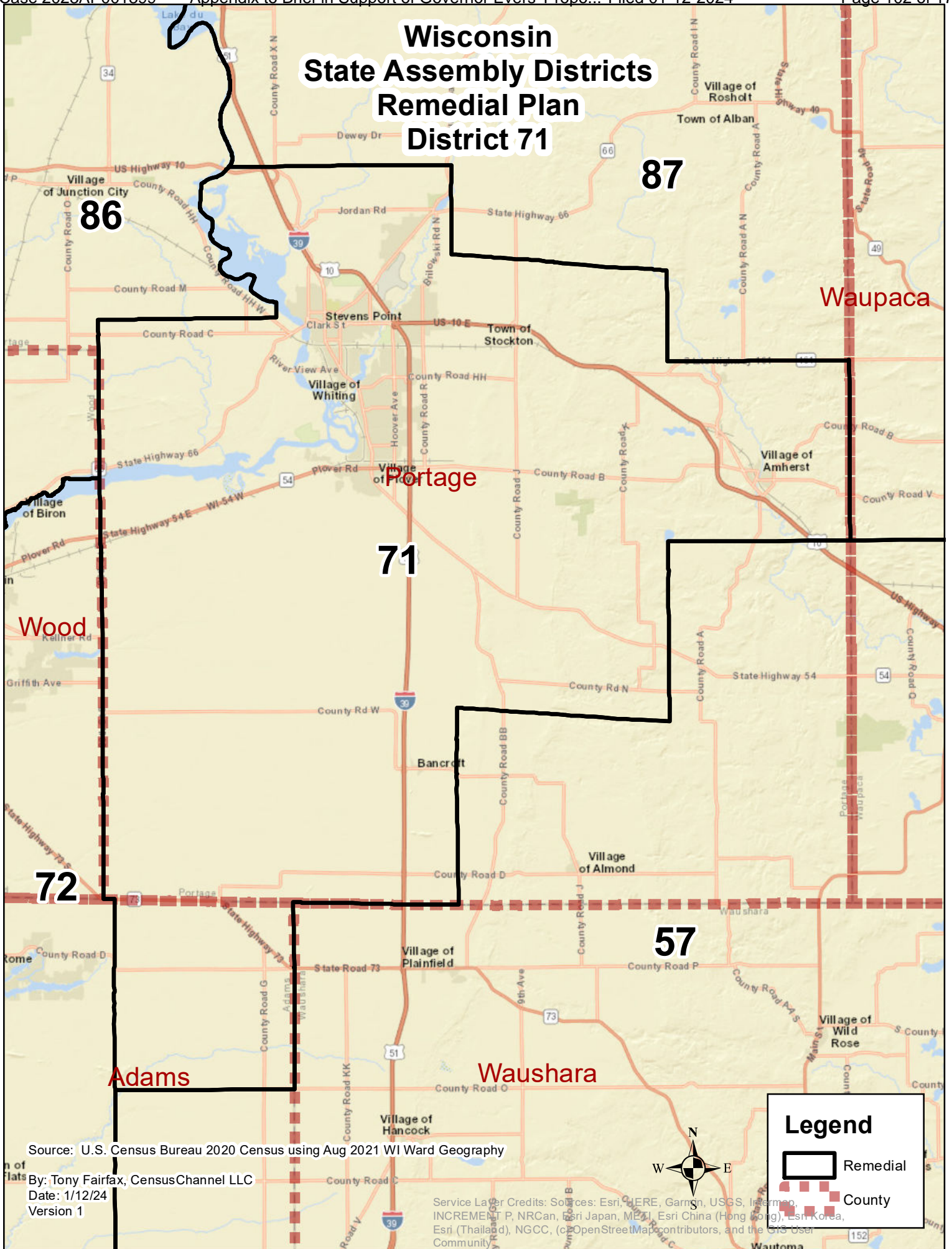
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Imagery, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community.

### Legend

-  Remedial
-  County



# Wisconsin State Assembly Districts Remedial Plan District 71



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography



By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

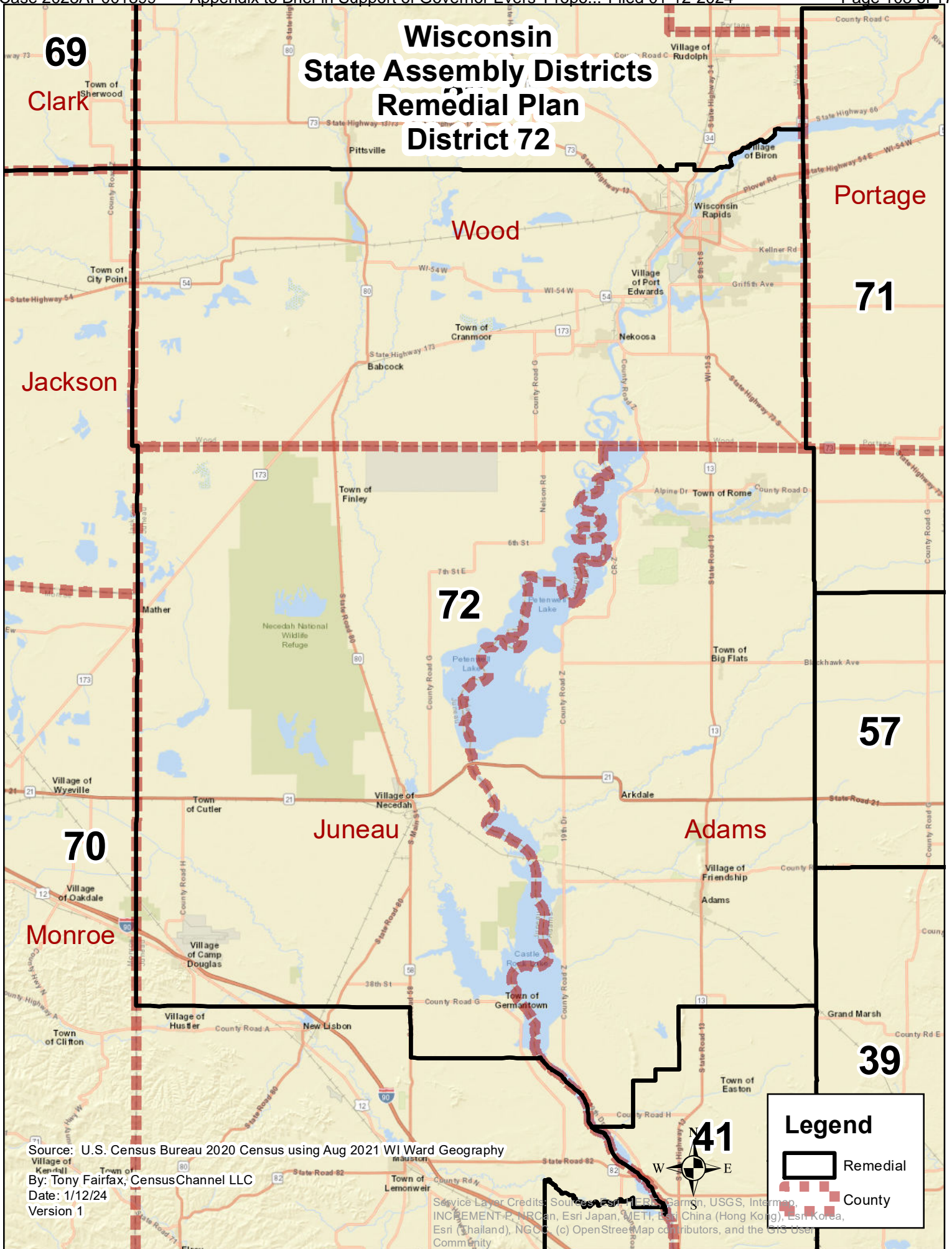
Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Imagery, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

**Legend**

-  Remedial
-  County

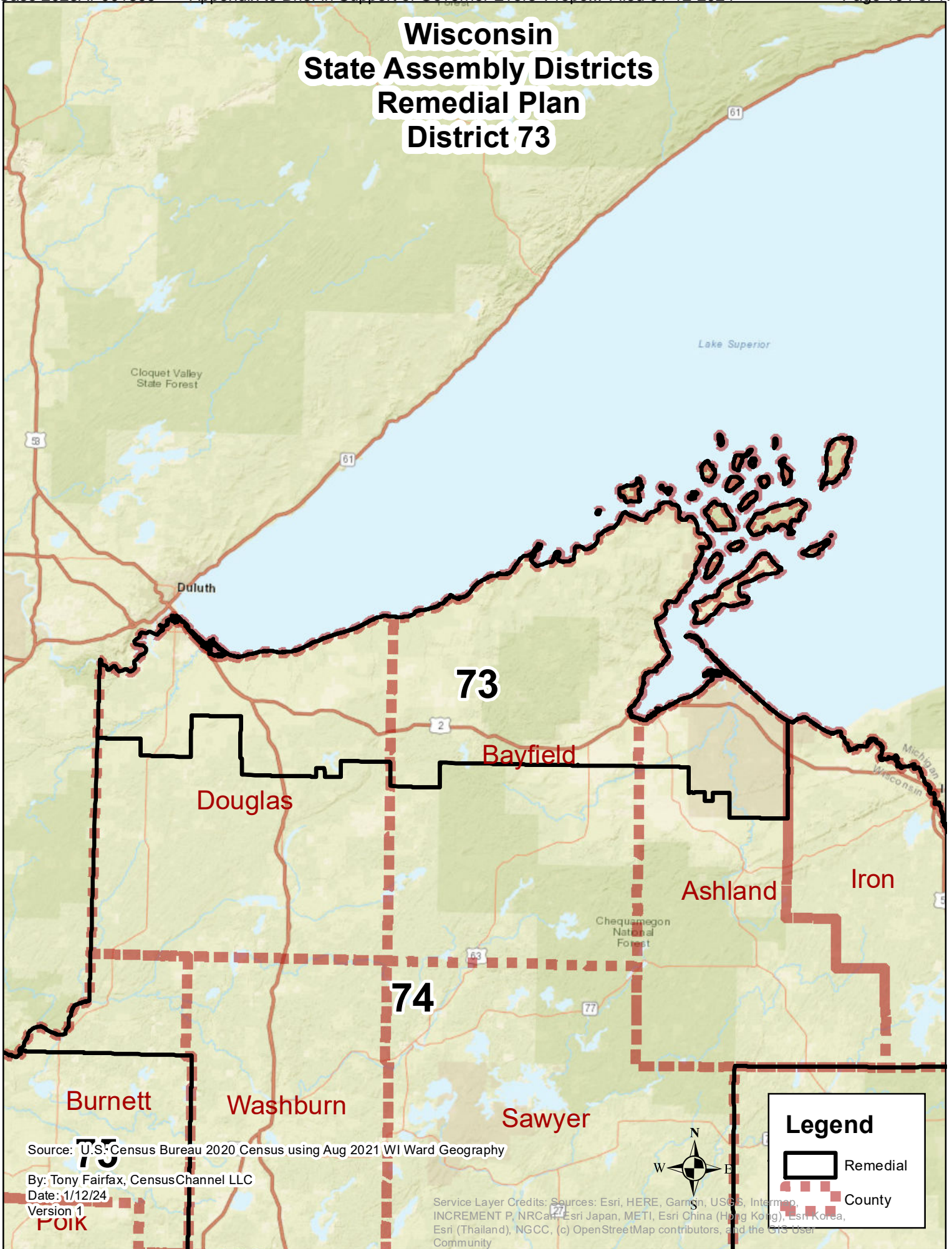
# Wisconsin State Assembly Districts Remedial Plan District 72



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography  
 By: Tony Fairfax, CensusChannel LLC  
 Date: 1/12/24  
 Version 1

Service Layer Credits: Sources for MERIS, Garmin, USGS, Intermap, INCREMENT-P, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Shanghai), NCCO, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Assembly Districts Remedial Plan District 73



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC



Date: 1/12/24

Version 1

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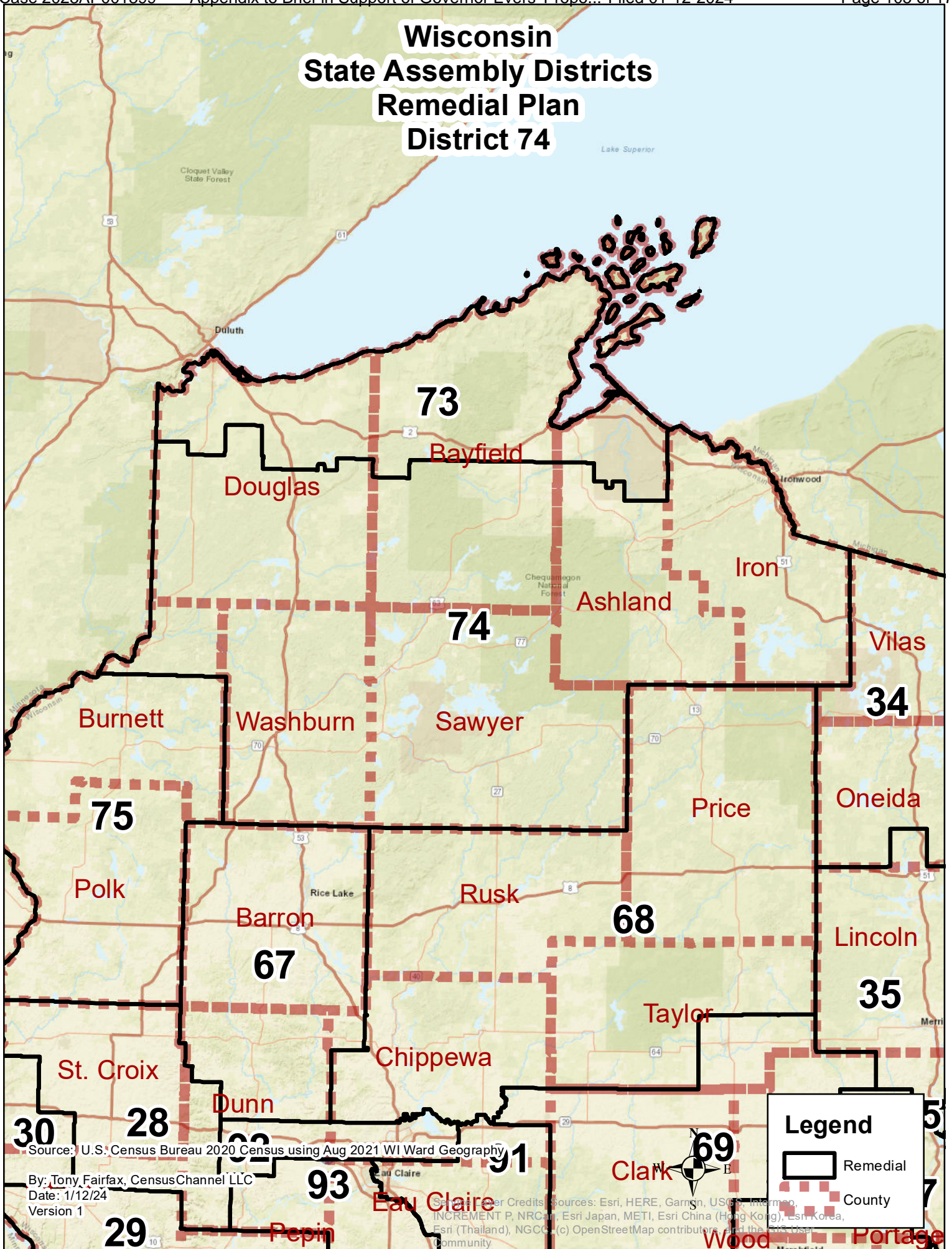
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

## Legend

-  Remedial
-  County



# Wisconsin State Assembly Districts Remedial Plan District 74



**Legend**

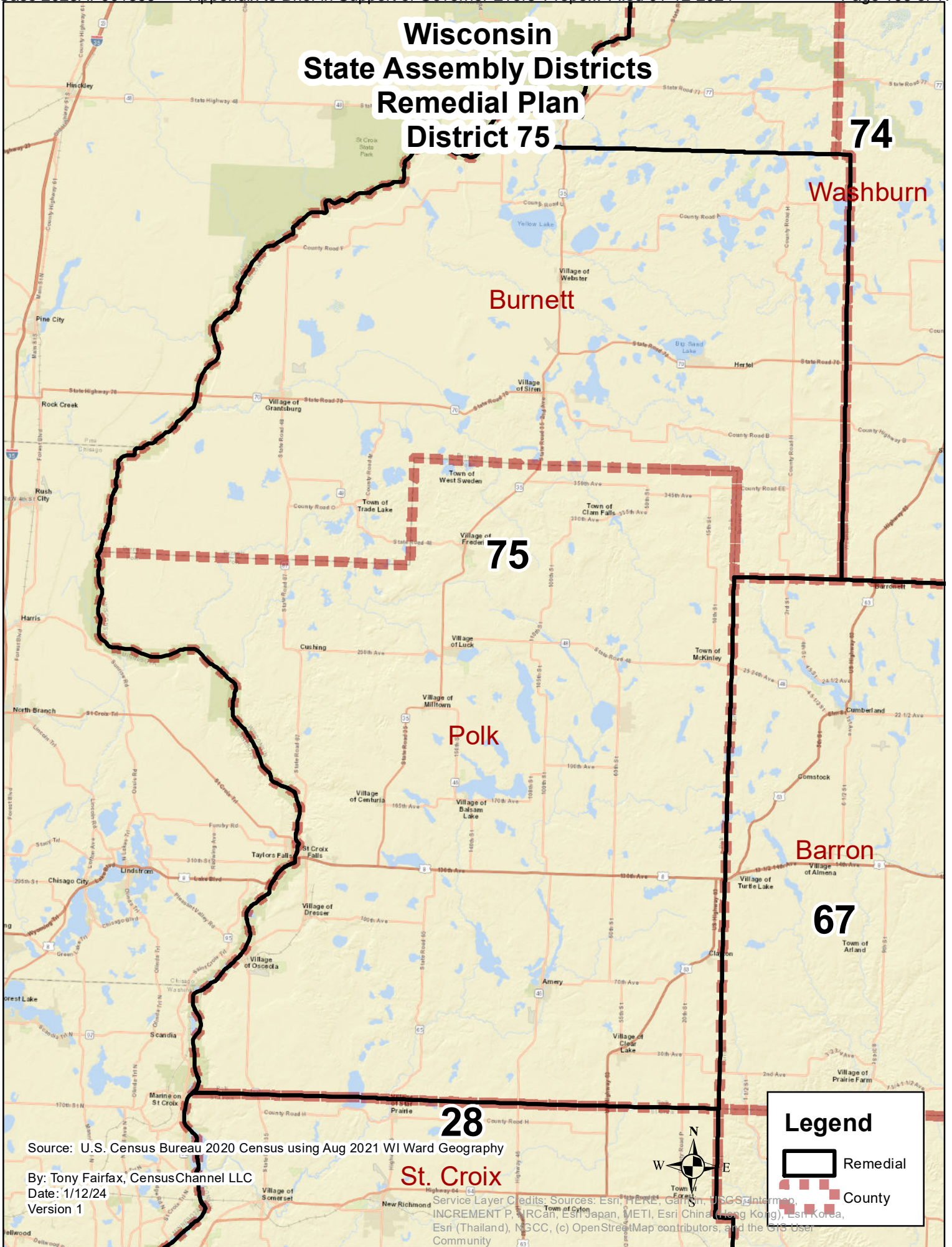
- Remedial
- County

Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

Special Thanks Credits Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Assembly Districts Remedial Plan District 75



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

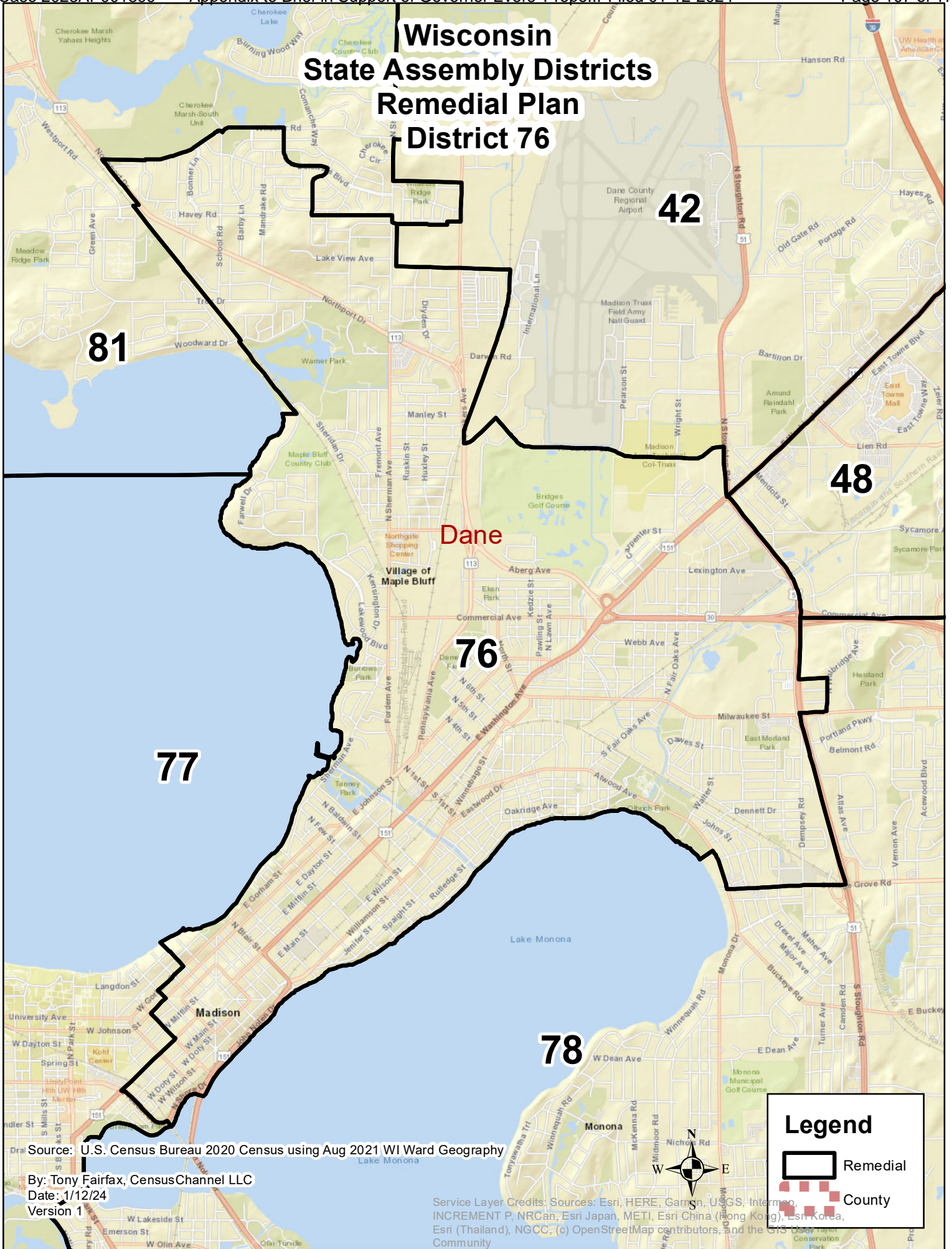
By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Assembly Districts Remedial Plan District 76



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

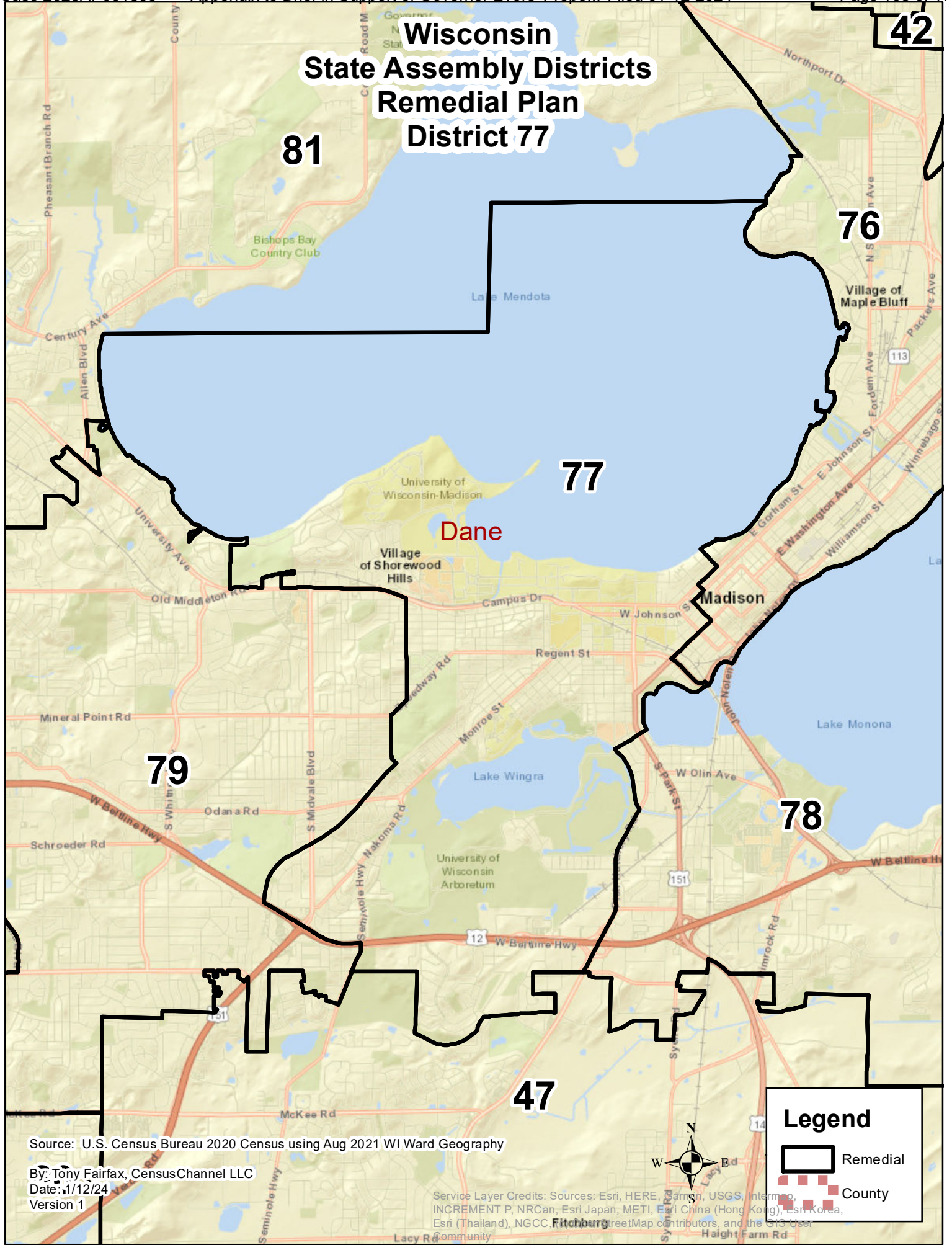
By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, UMG, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Assembly Districts Remedial Plan District 77




Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

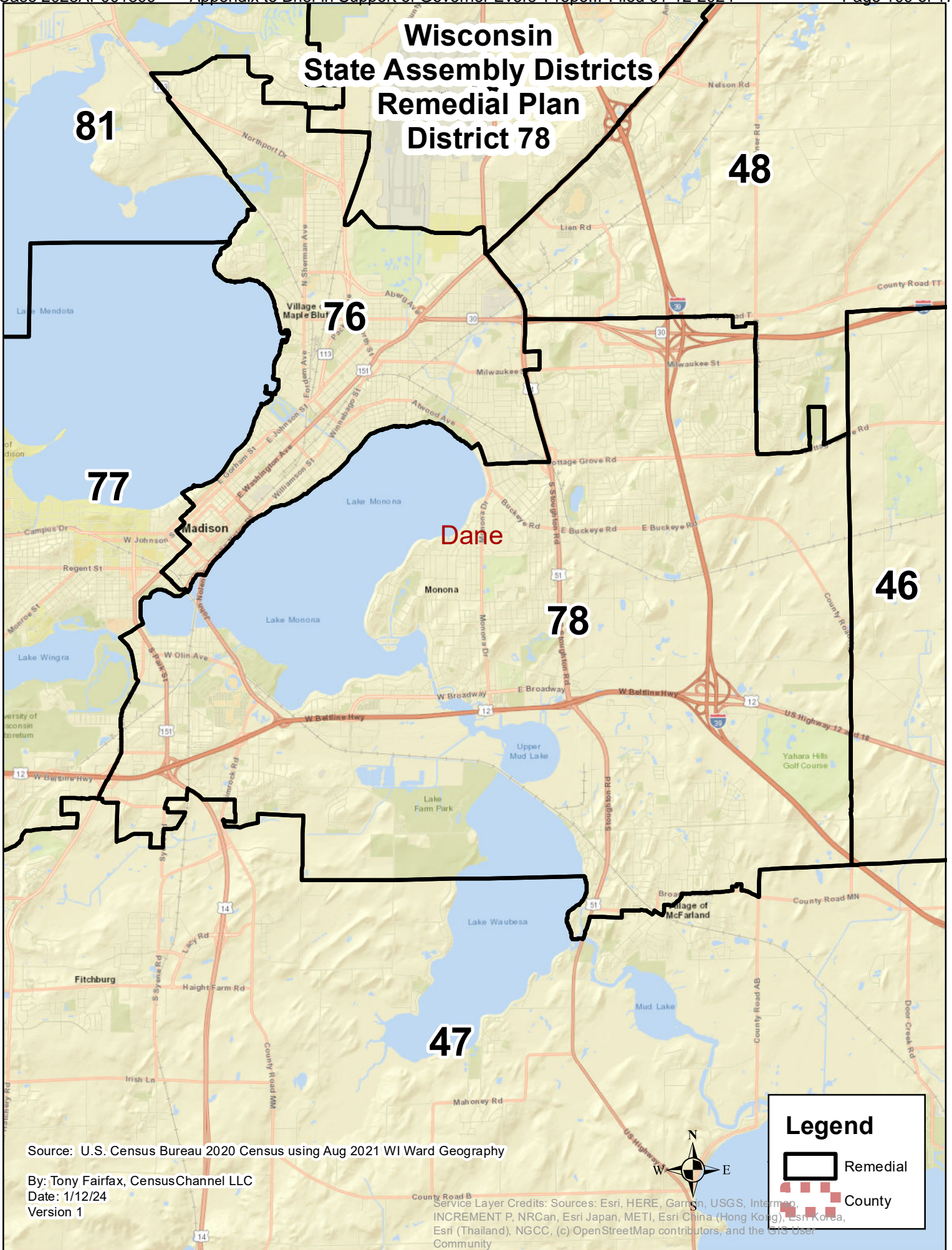
By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, Fitchburg, StreetMap contributors, and the GIS User Community

### Legend

-  Remedial
-  County

# Wisconsin State Assembly Districts Remedial Plan District 78



Dane



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

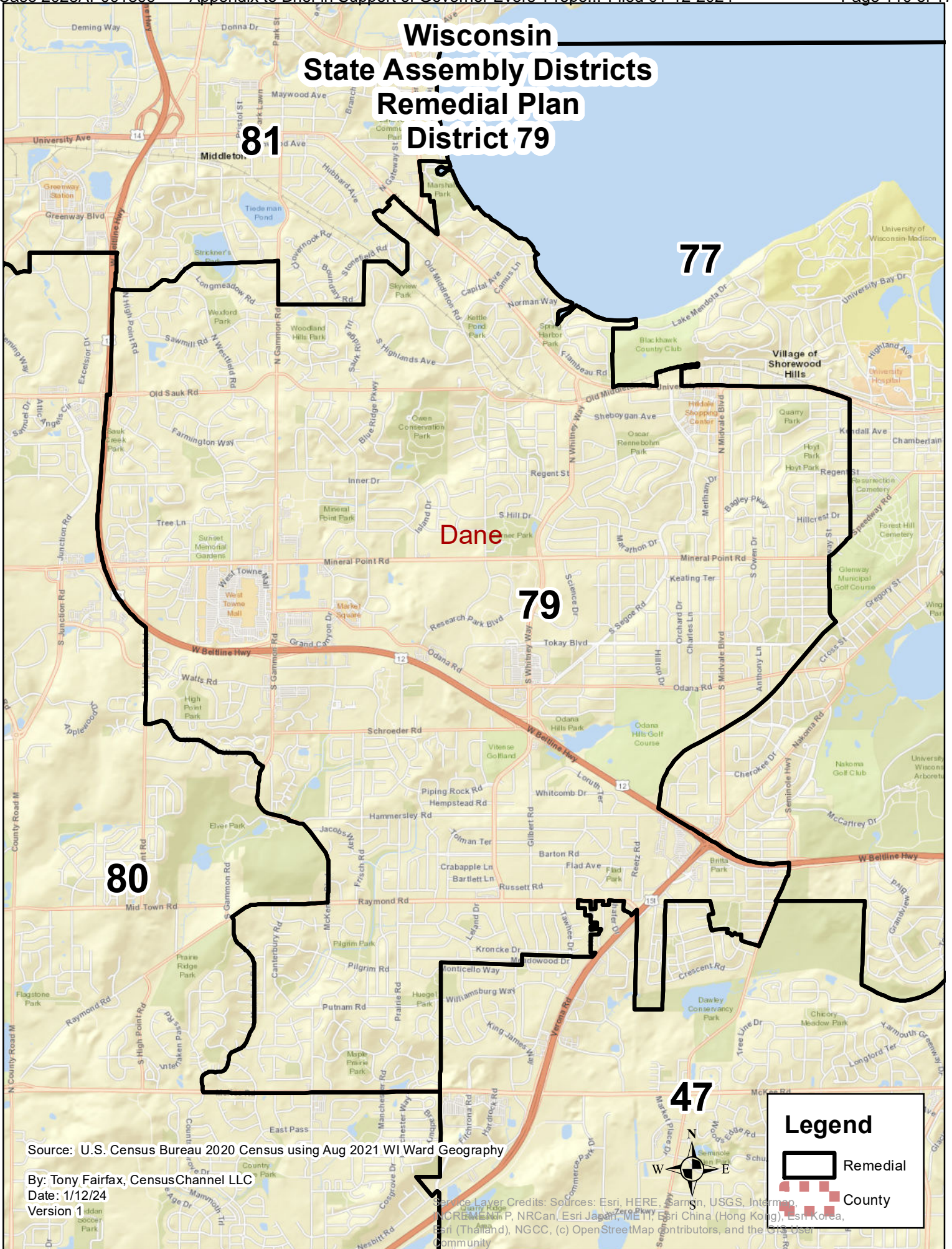
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



**Legend**

-  Remedial
-  County

# Wisconsin State Assembly Districts Remedial Plan District 79



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

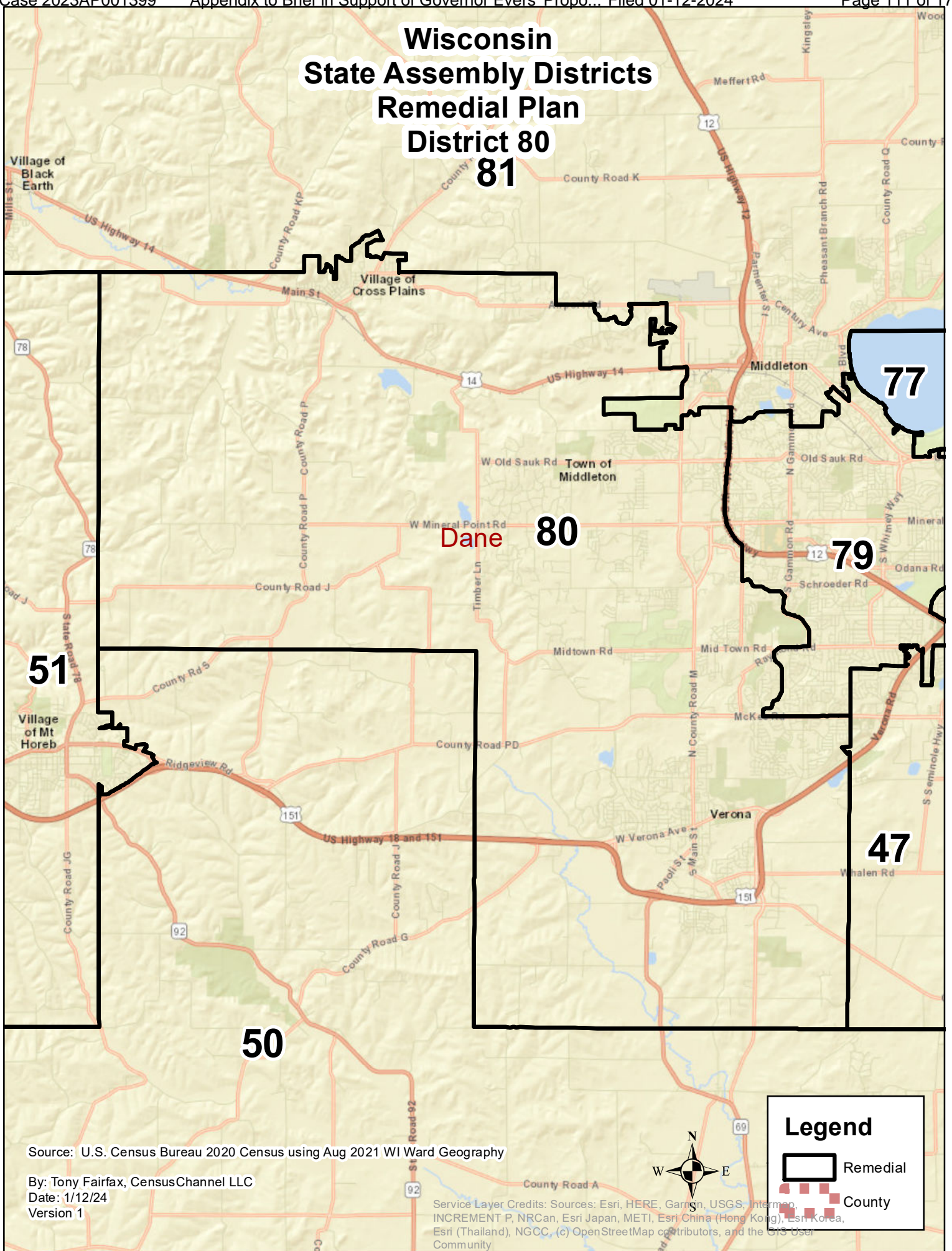
By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

Version 1

Source Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Swis, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Assembly Districts Remedial Plan District 80





Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

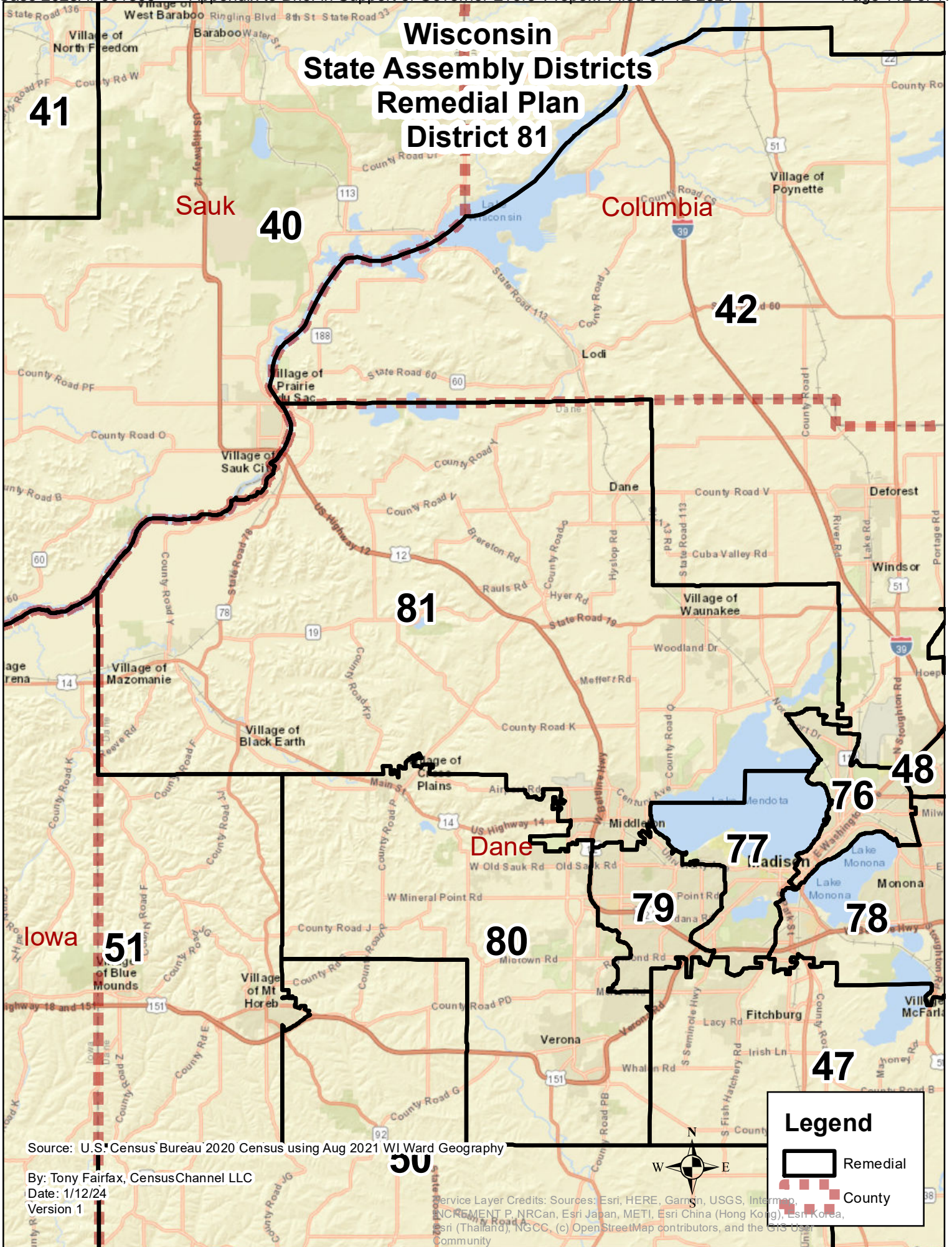
By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

### Legend

-  Remedial
-  County

# Wisconsin State Assembly Districts Remedial Plan District 81



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC

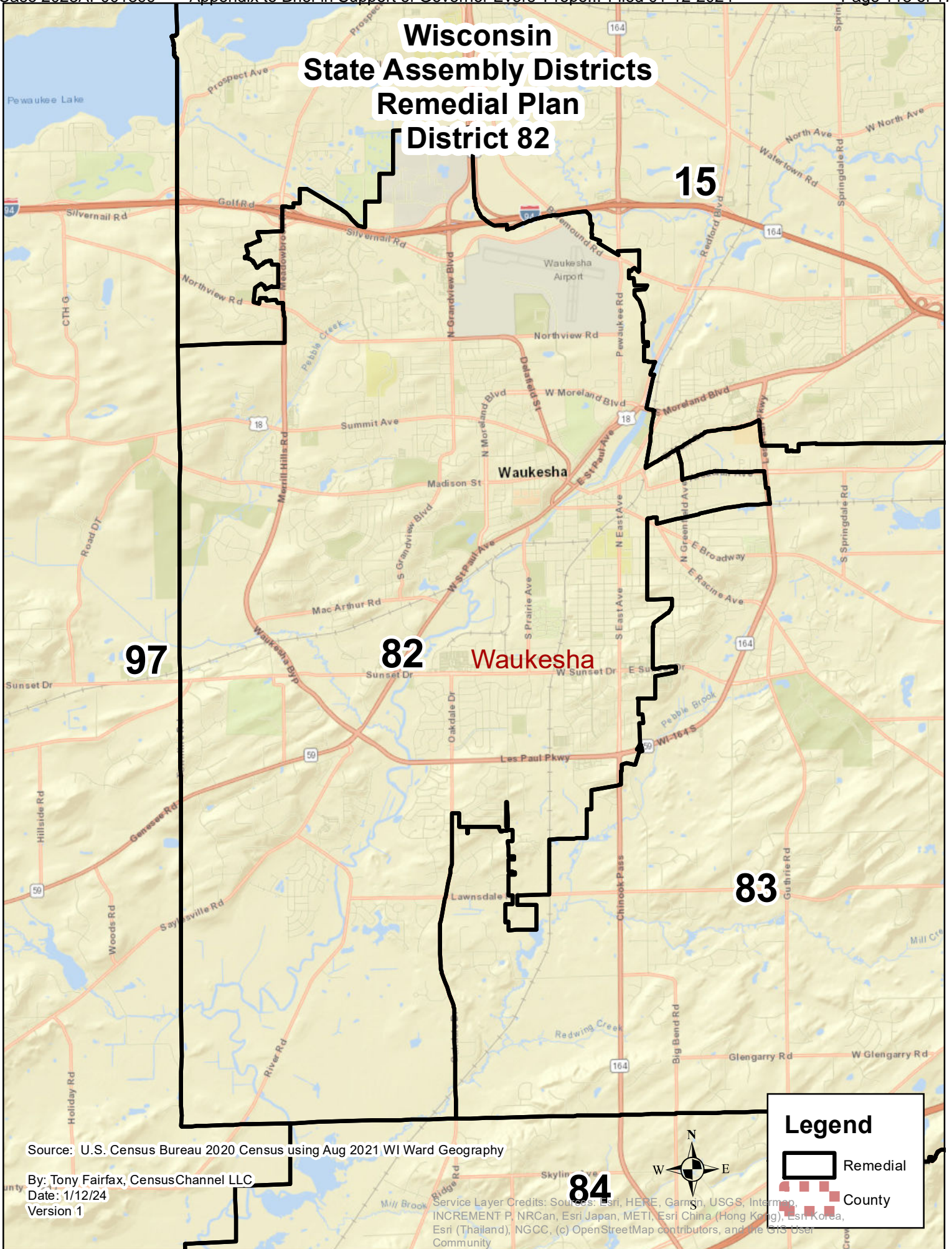
Date: 1/12/24

Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



# Wisconsin State Assembly Districts Remedial Plan District 82



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC



Date: 1/12/24

Version 1

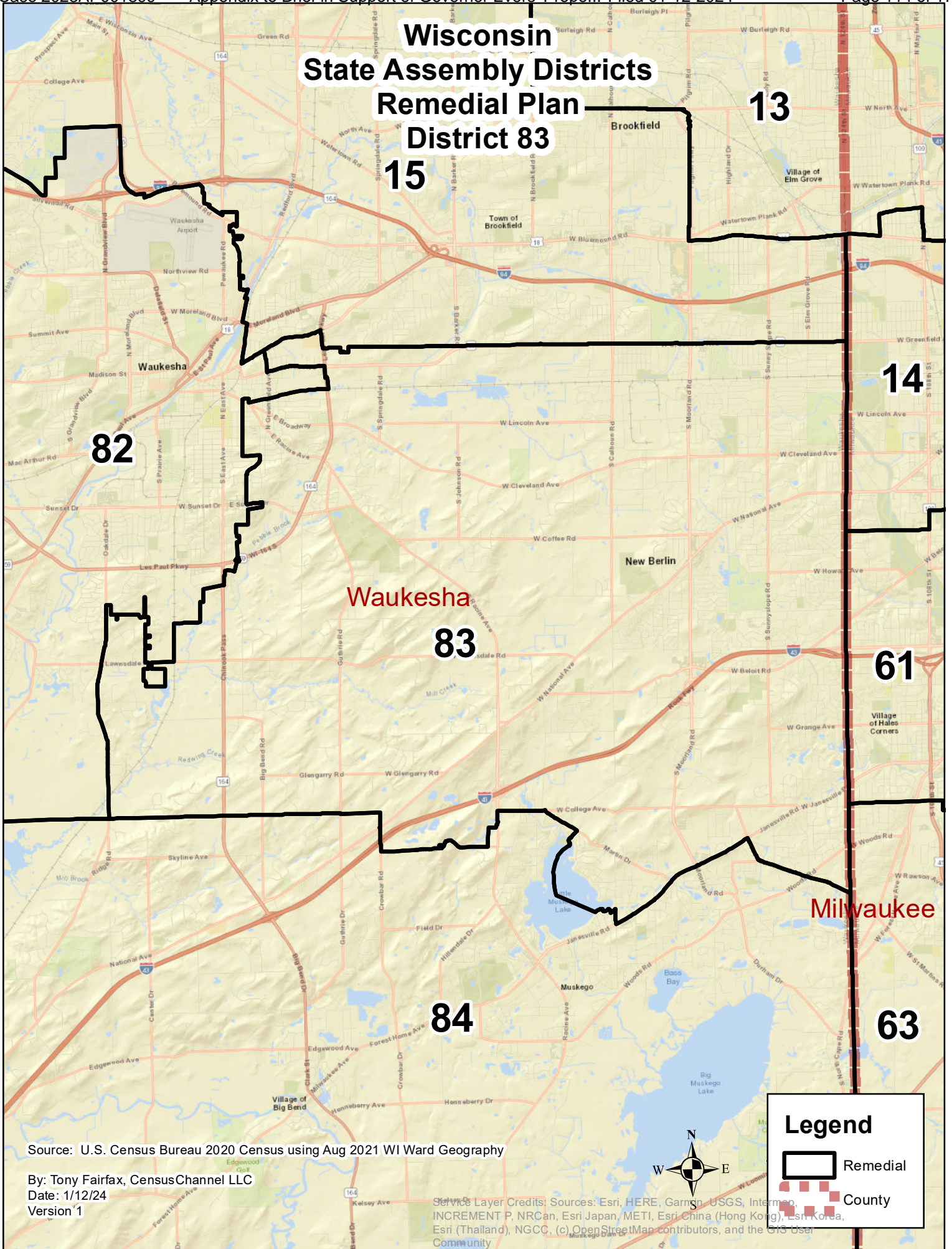
84

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

### Legend

-  Remedial
-  County

# Wisconsin State Assembly Districts Remedial Plan District 83



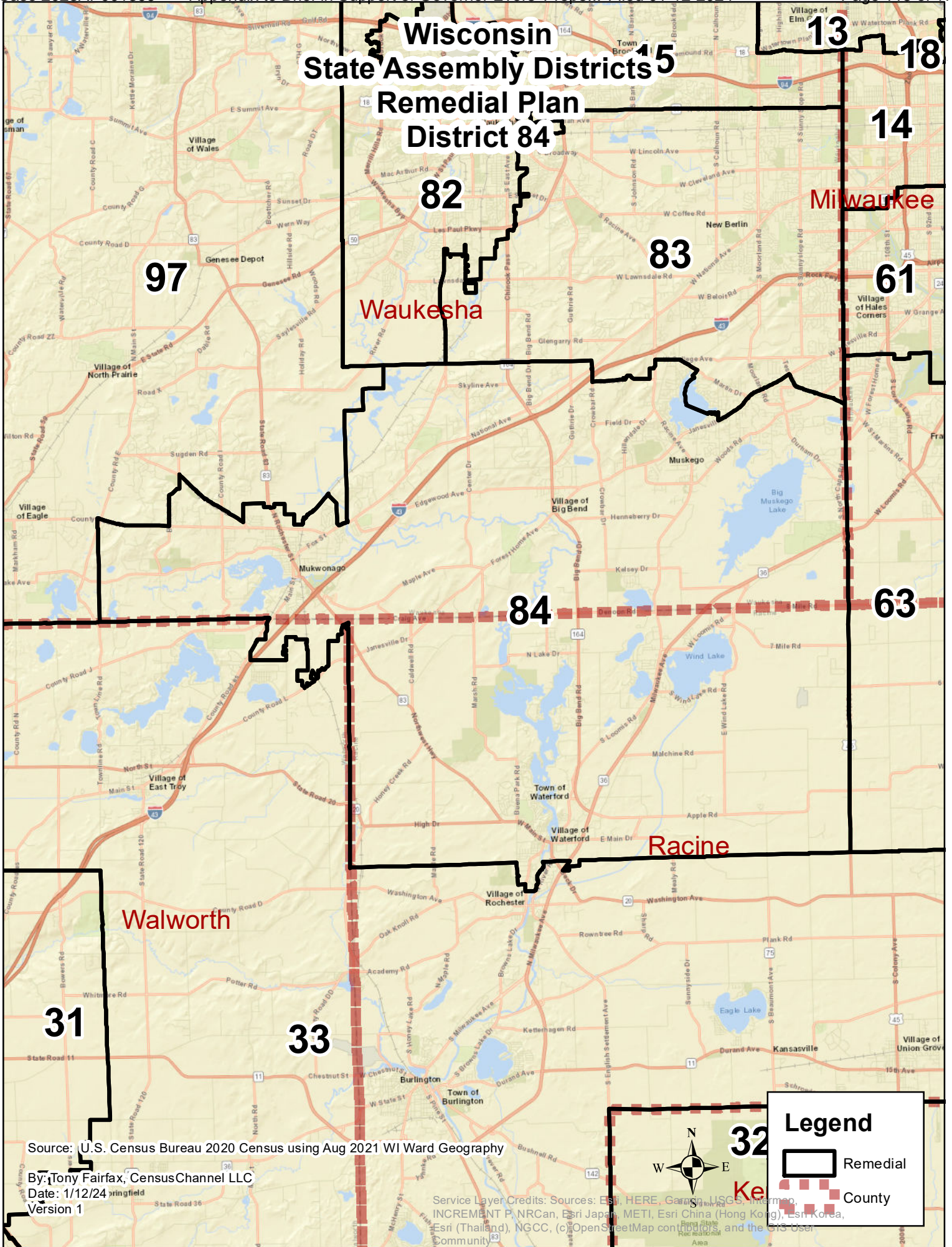
Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC



Date: 1/12/24

Version 1

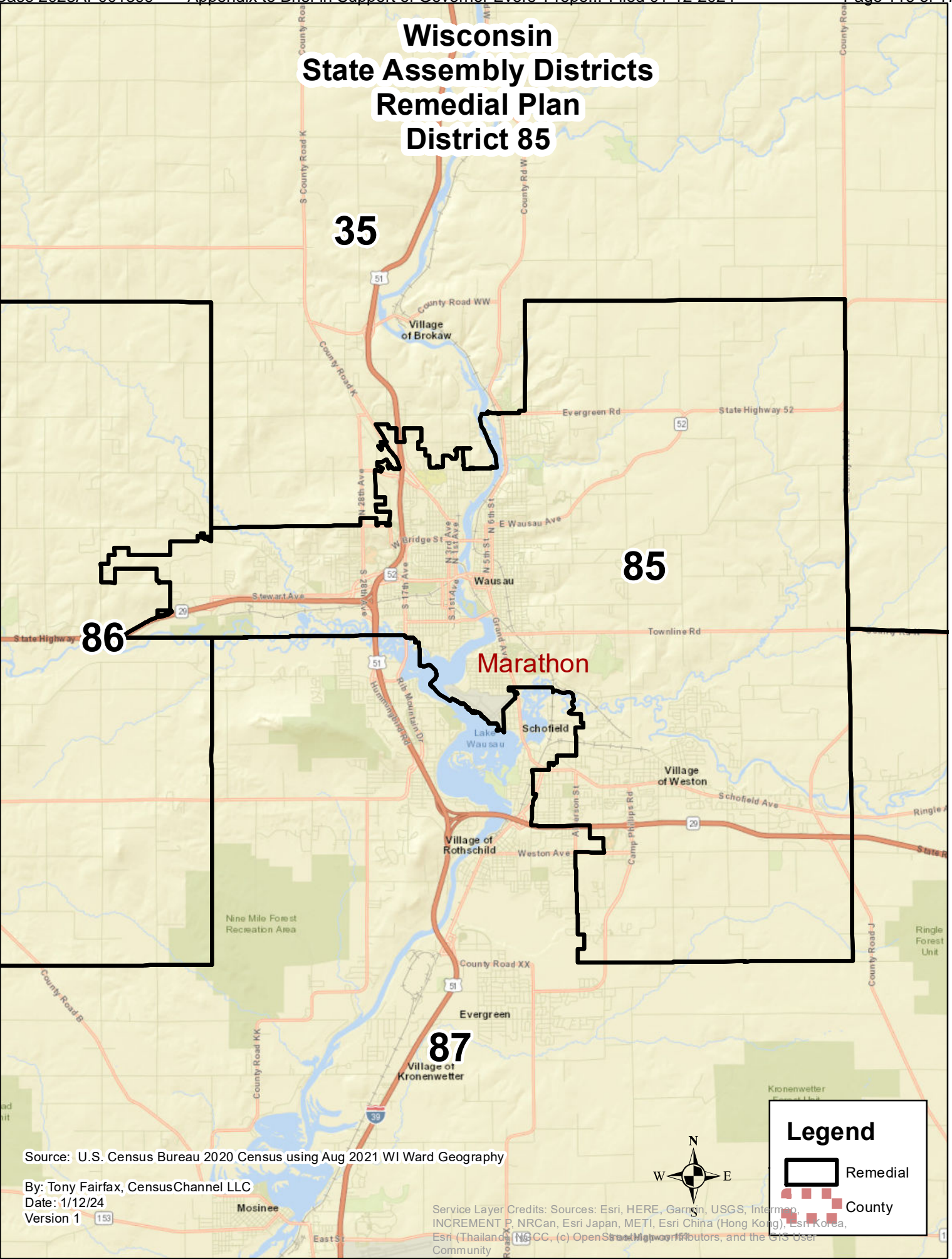
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Legend

-  Remedial
-  County

# Wisconsin State Assembly Districts Remedial Plan District 85



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC

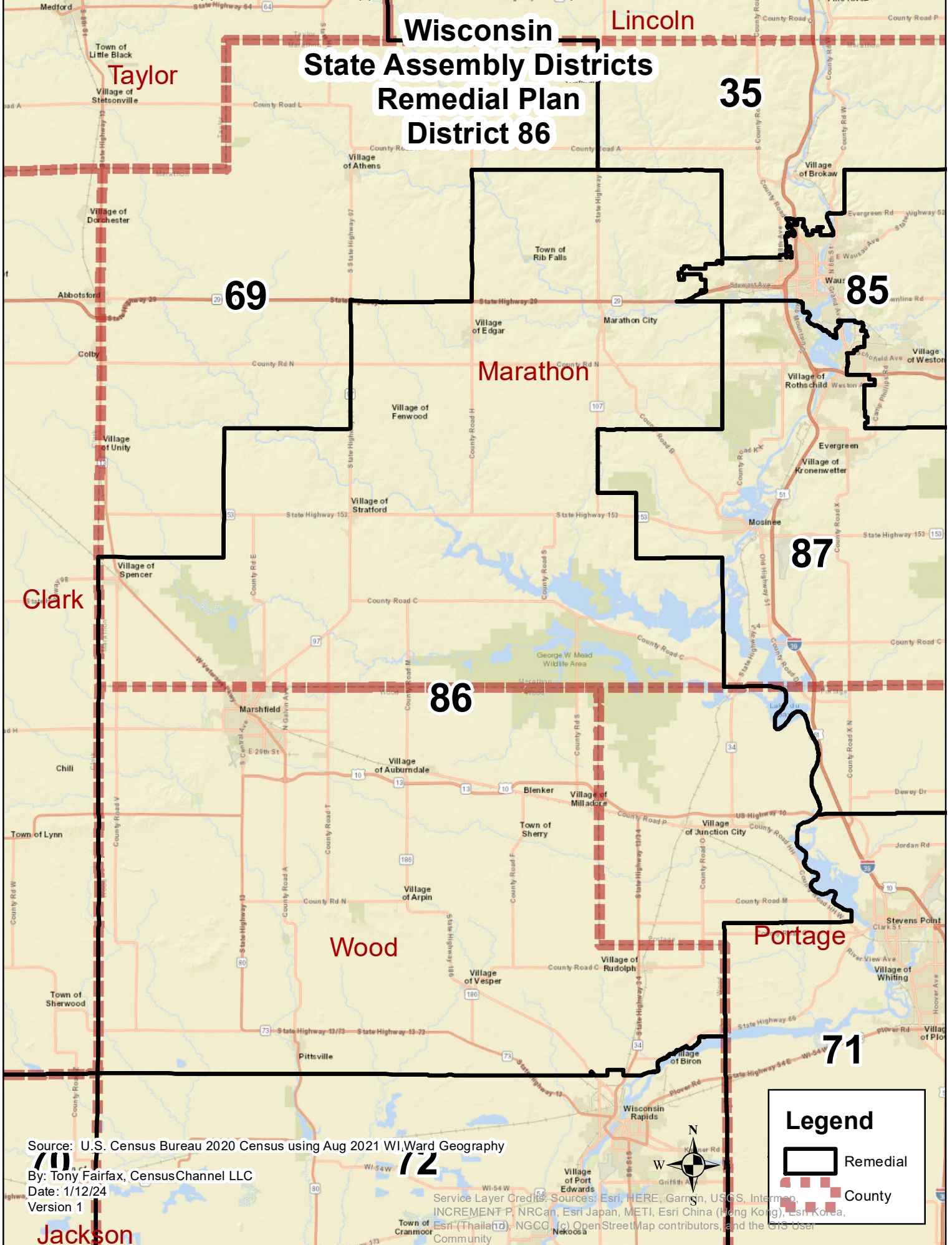
Date: 1/12/24

Version 1

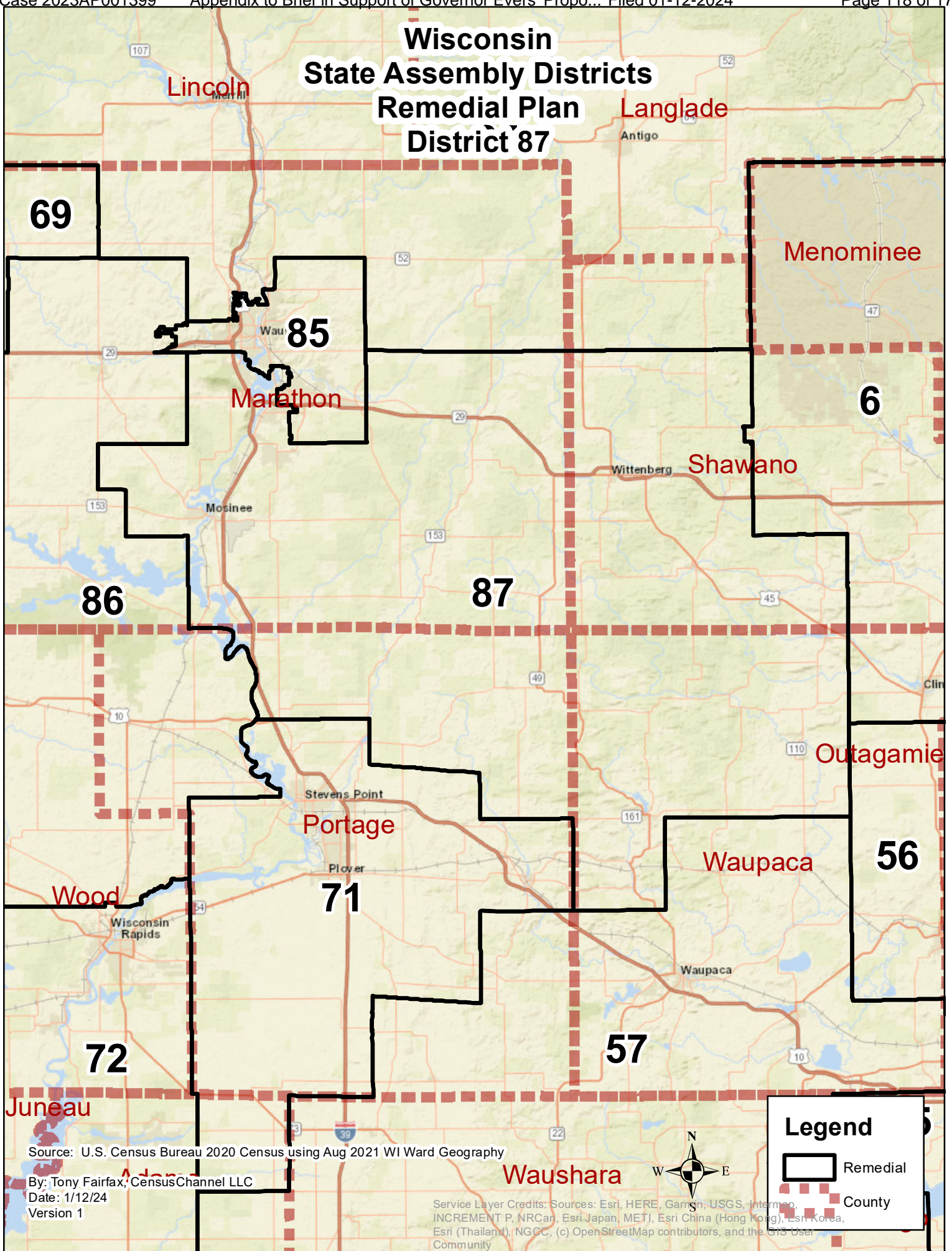
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

**Legend**

- Remedial
- County



# Wisconsin State Assembly Districts Remedial Plan District 87



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography


By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

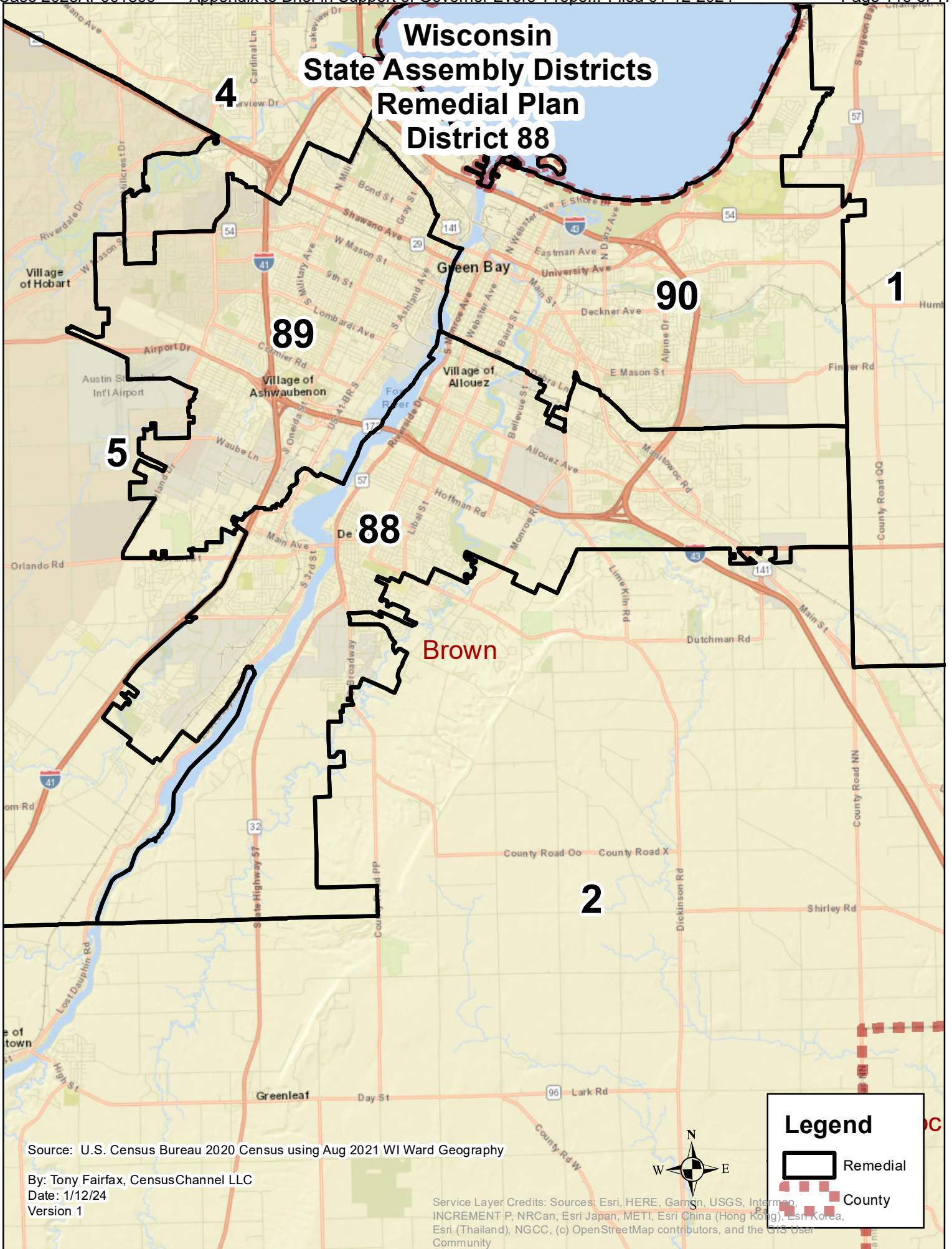
Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

### Legend

-  Remedial
-  County

# Wisconsin State Assembly Districts Remedial Plan District 88



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography



By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

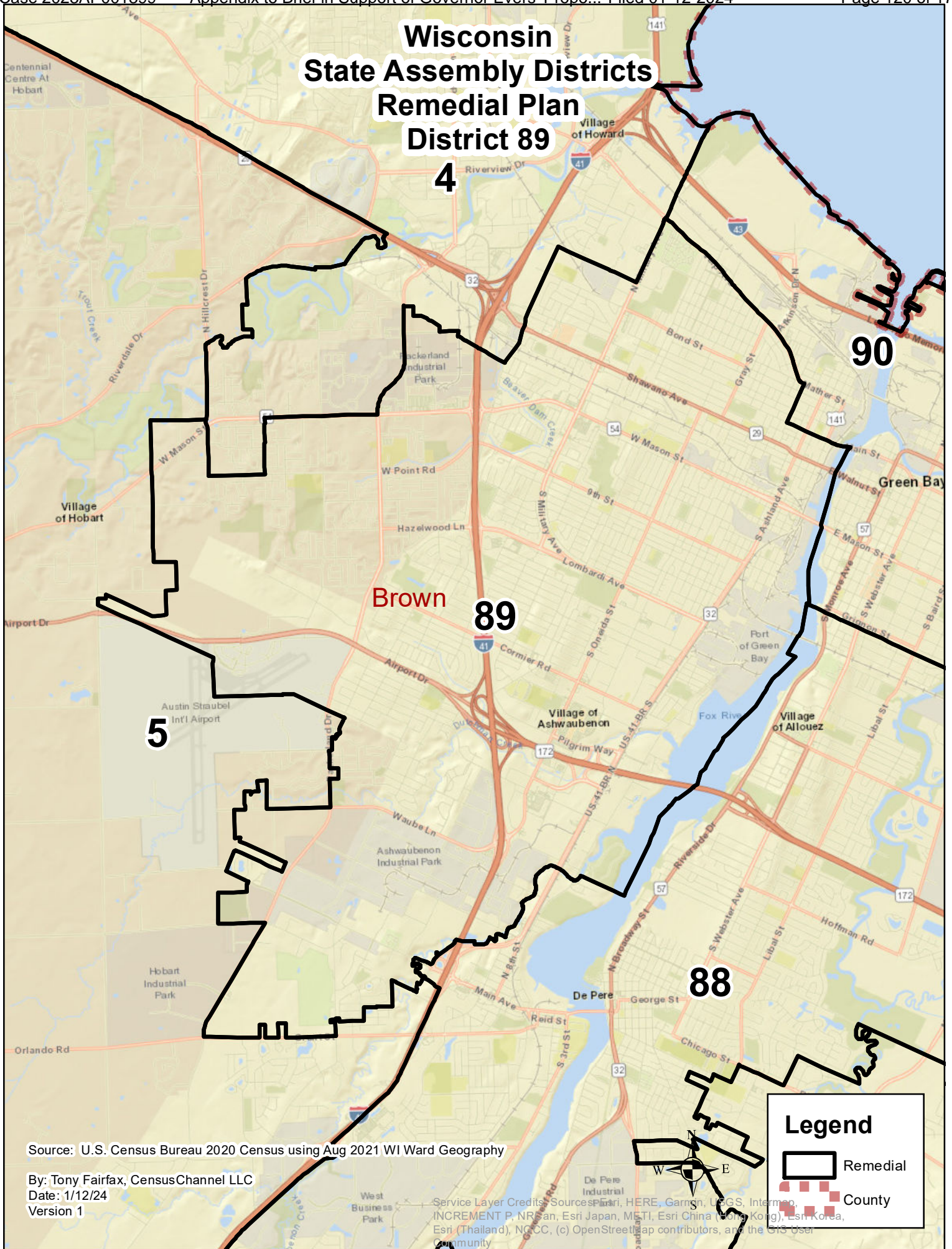
Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

### Legend

-  Remedial
-  County

# Wisconsin State Assembly Districts Remedial Plan District 89



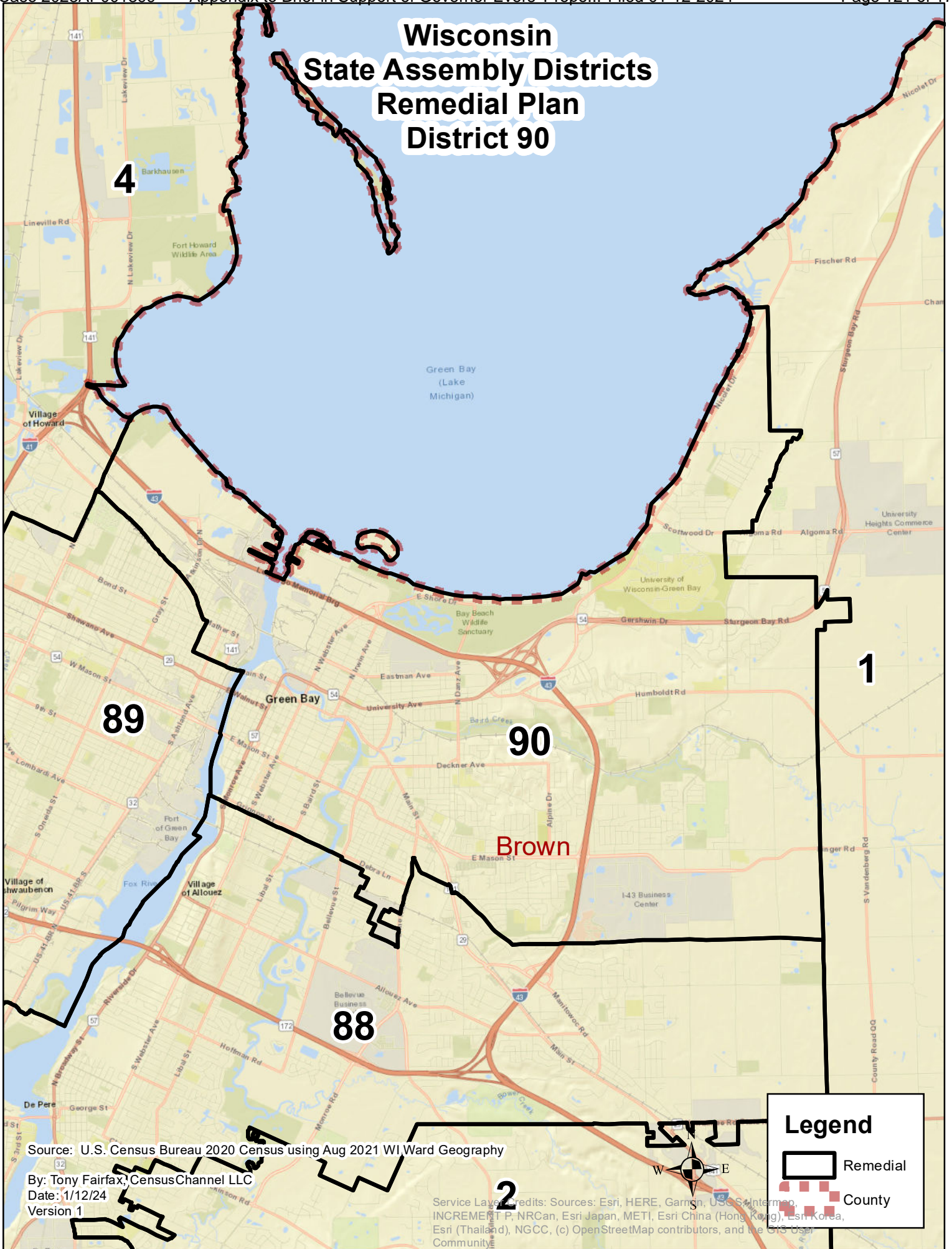
Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, UFGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



# Wisconsin State Assembly Districts Remedial Plan District 90



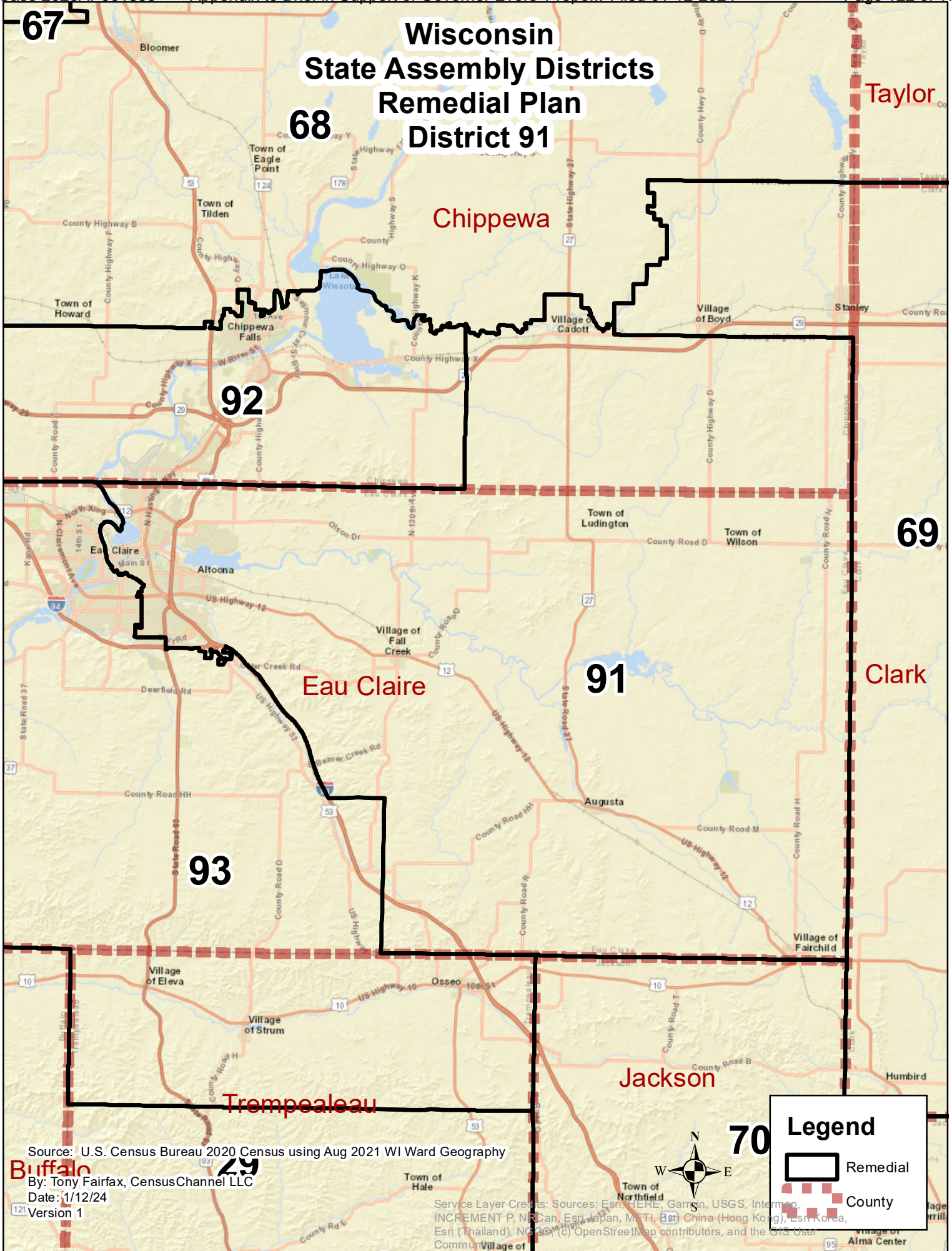
Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



**Wisconsin  
State Assembly Districts  
Remedial Plan  
District 91**

Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

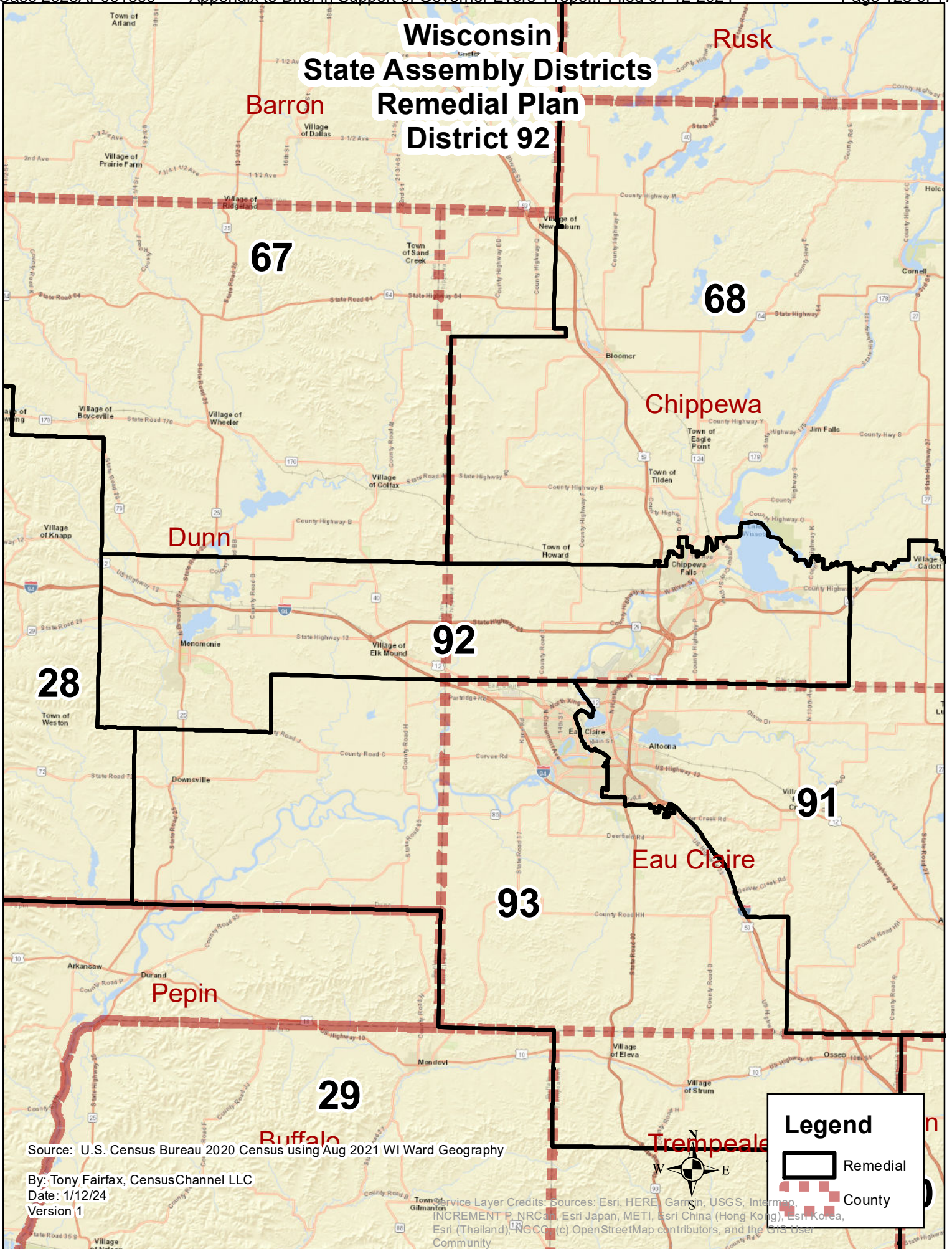
Version 1

Service Layer Credits: Sources: Esri, DeLorme, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NOAA, Swisstopo, (c) OpenStreetMap contributors, and the GIS User Community

**70 Legend**

- Remedial
- County

# Wisconsin State Assembly Districts Remedial Plan District 92



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

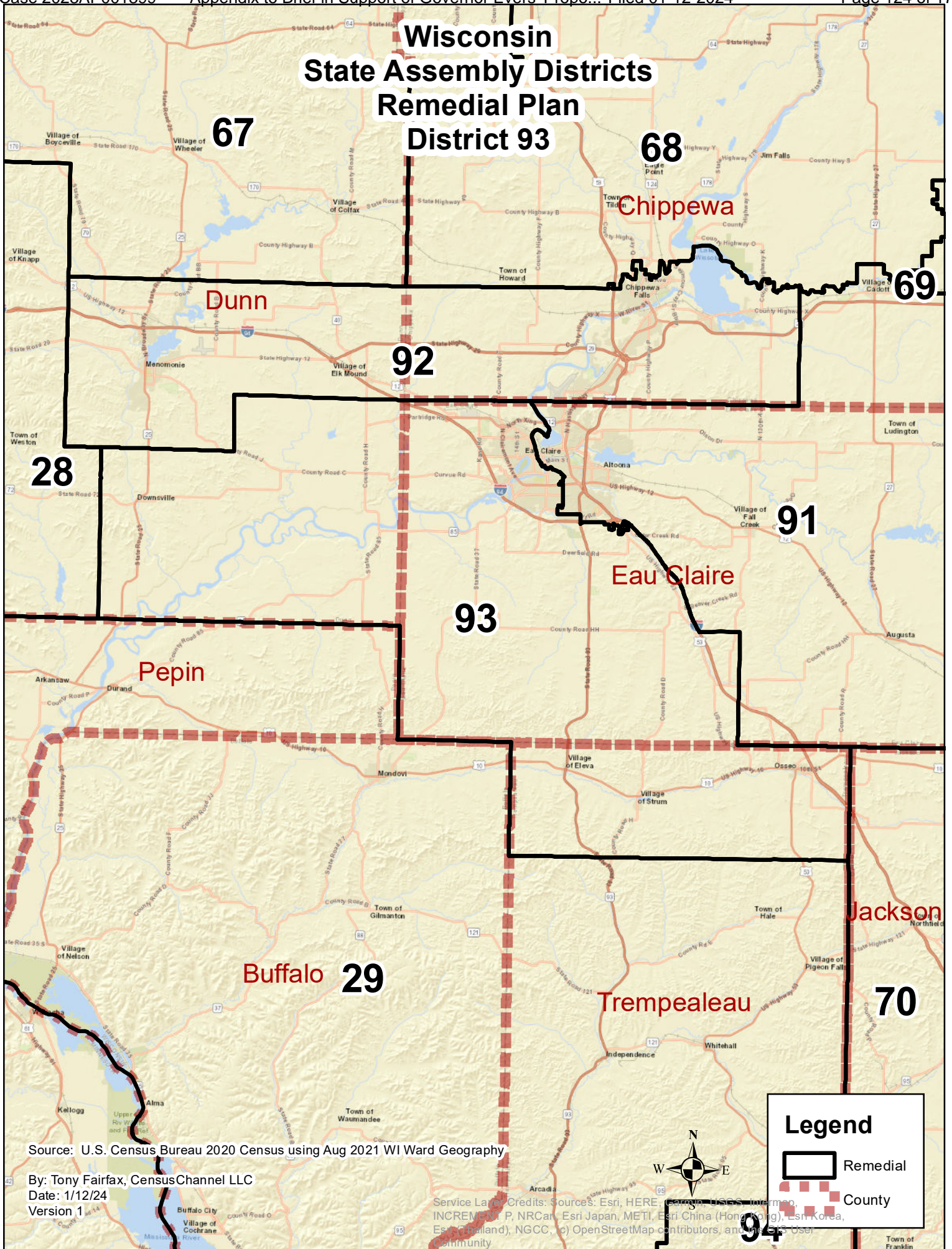
By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCA, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Assembly Districts Remedial Plan District 93





Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

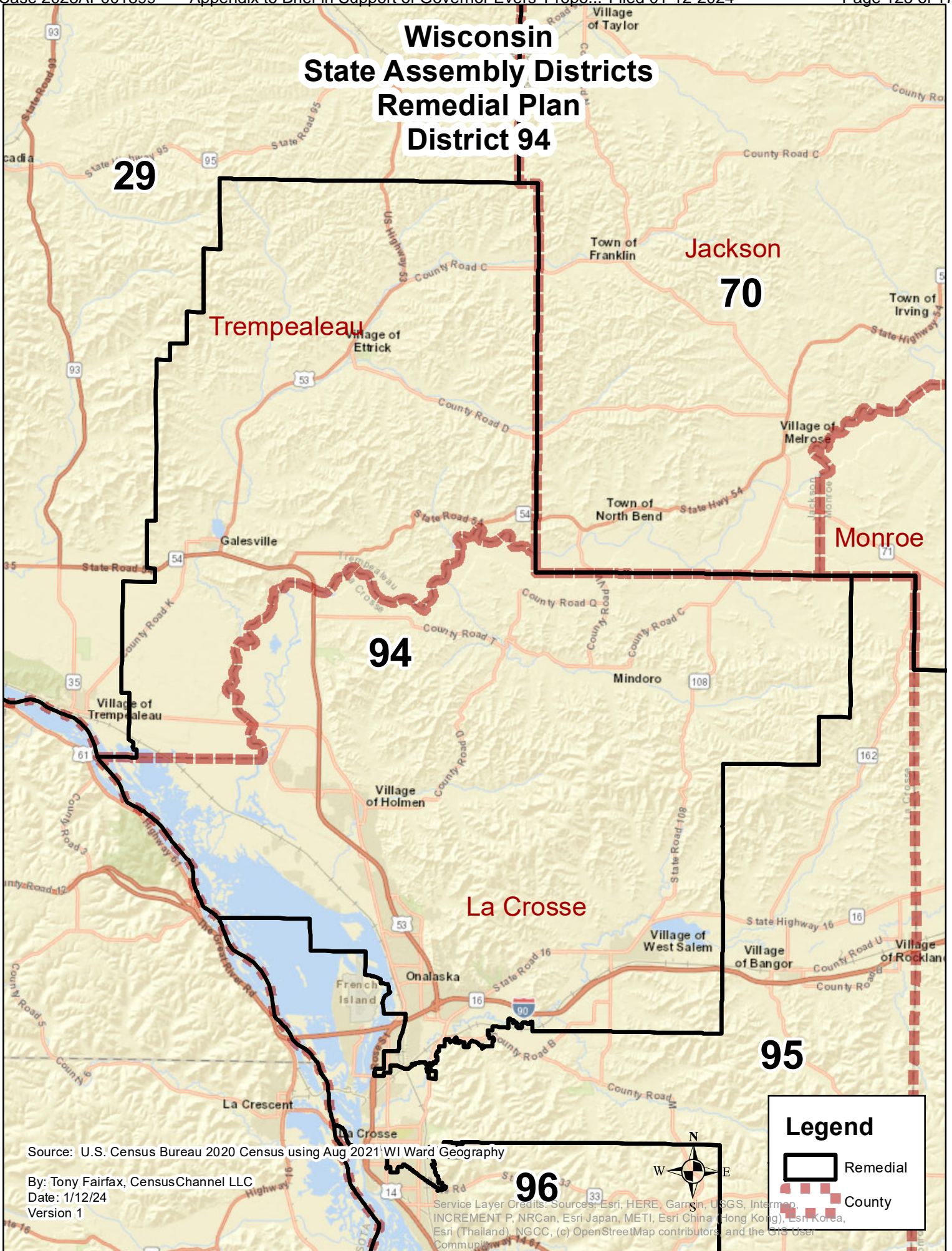
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Shanghai), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

**Legend**

-  Remedial
-  County



# Wisconsin State Assembly Districts Remedial Plan District 94

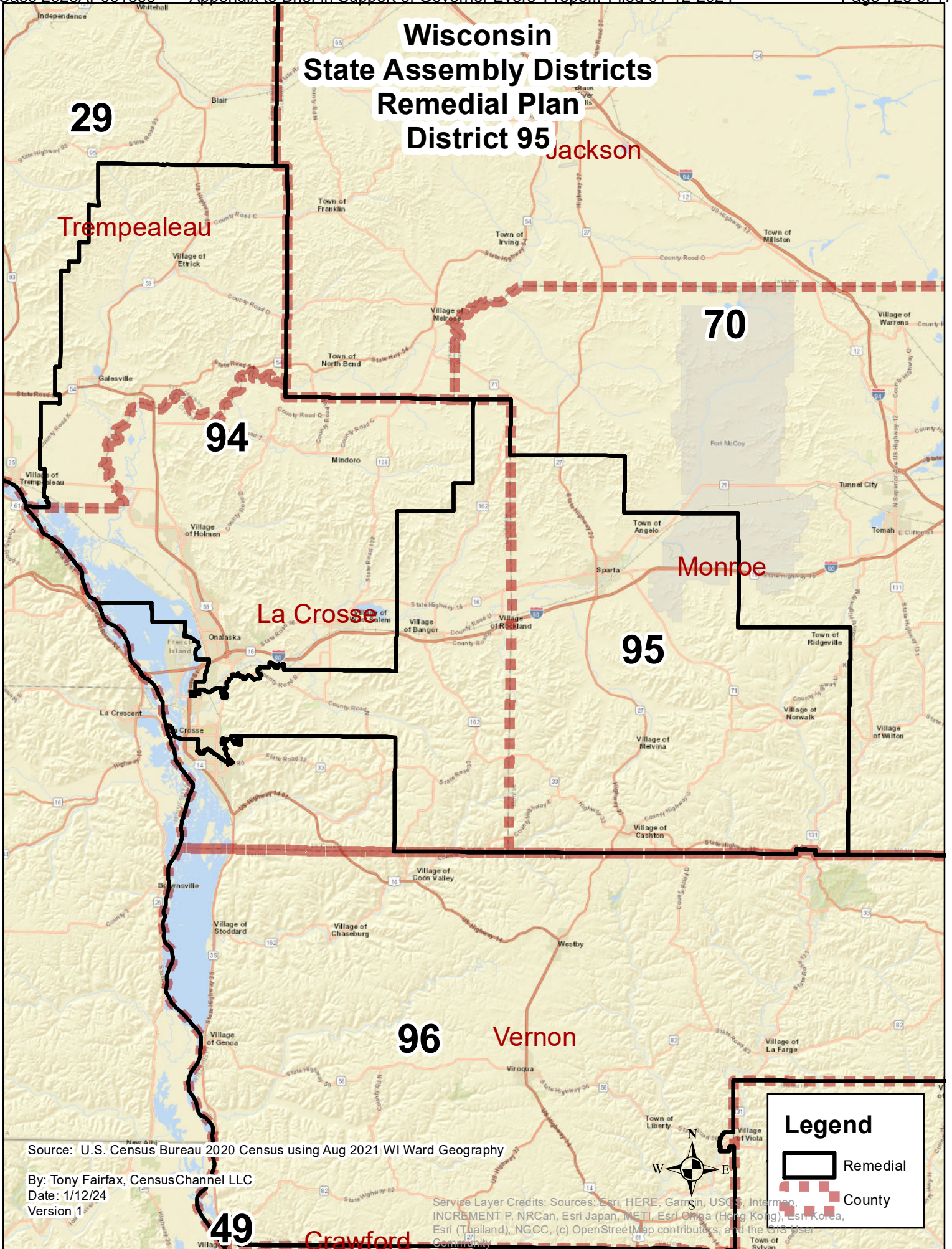


Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Assembly Districts Remedial Plan District 95



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC

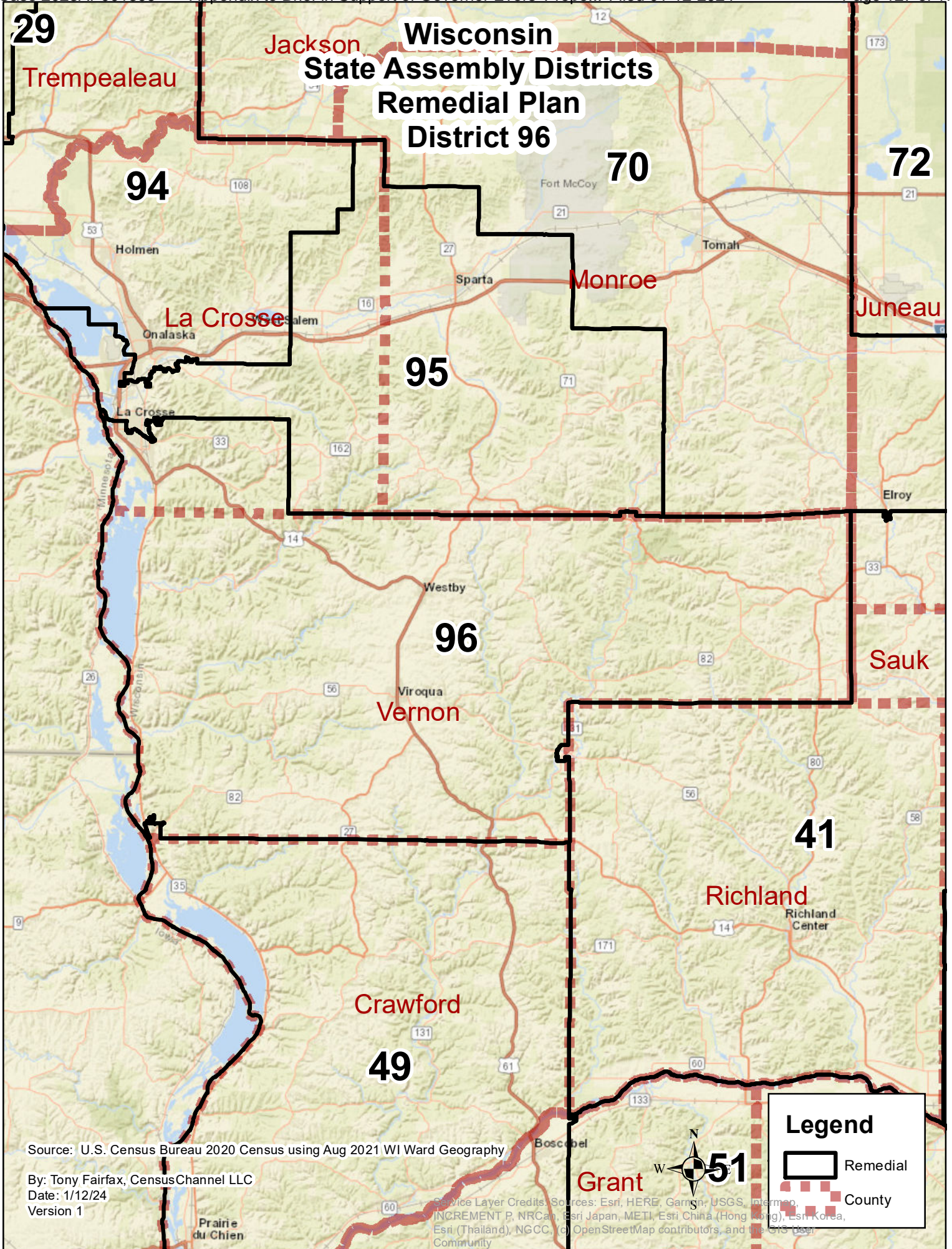
Date: 1/12/24

Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

### Legend

-  Remedial
-  County



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

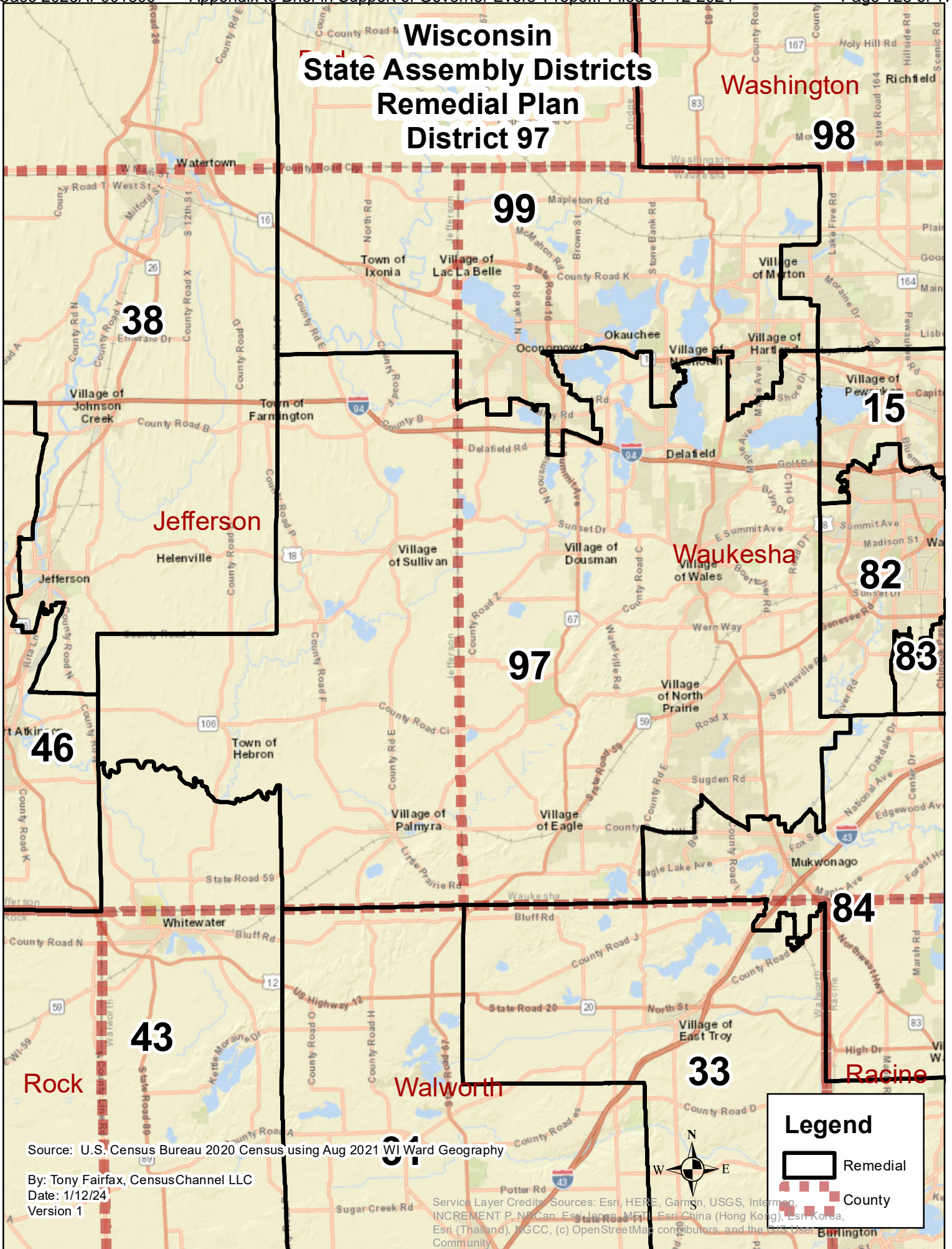
Version 1

Service Layer Credits. Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

**Legend**

-  Remedial
-  County

# Wisconsin State Assembly Districts Remedial Plan District 97

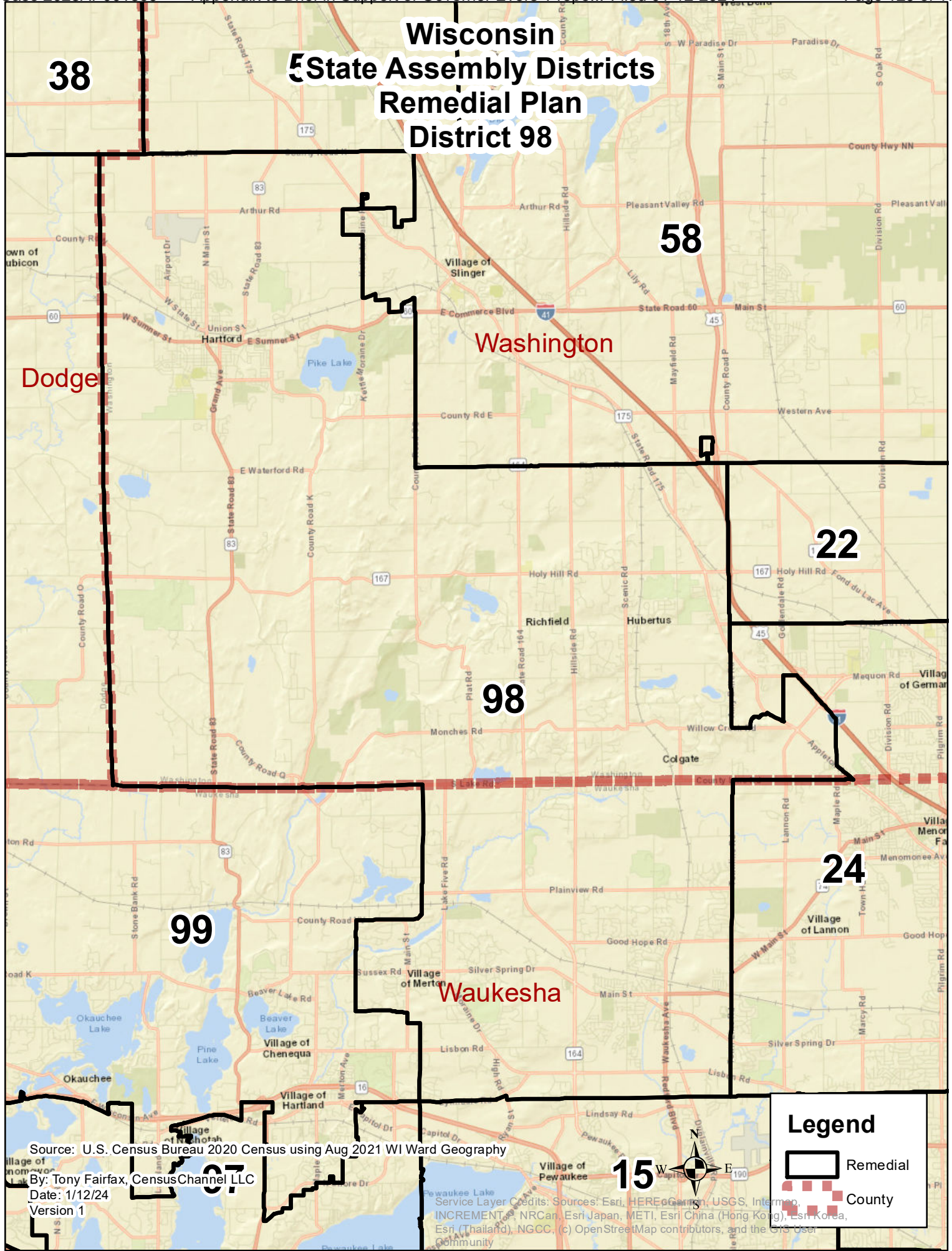


Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

Service Layer Credits Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community





**Wisconsin  
State Assembly Districts  
Remedial Plan  
District 98**

38

58

Dodge

Washington

22

98

24


99

Waukesha

07

15

**Legend**

-  Remedial
-  County

Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

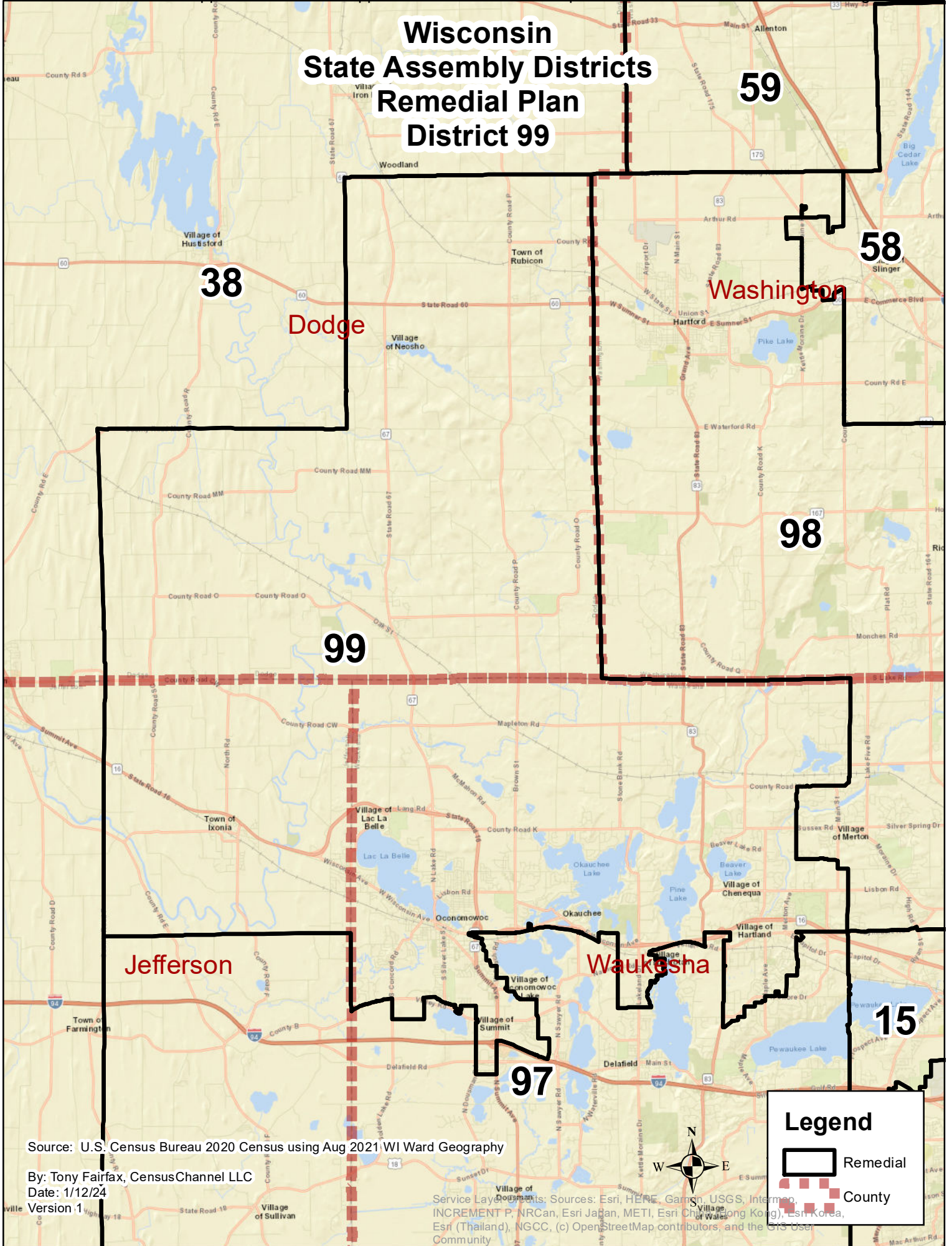
By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Assembly Districts Remedial Plan District 99



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

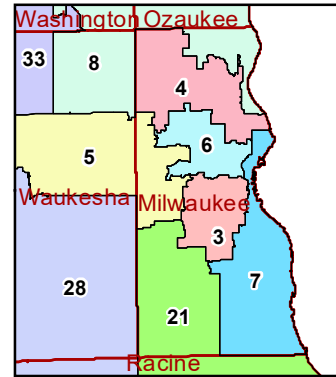
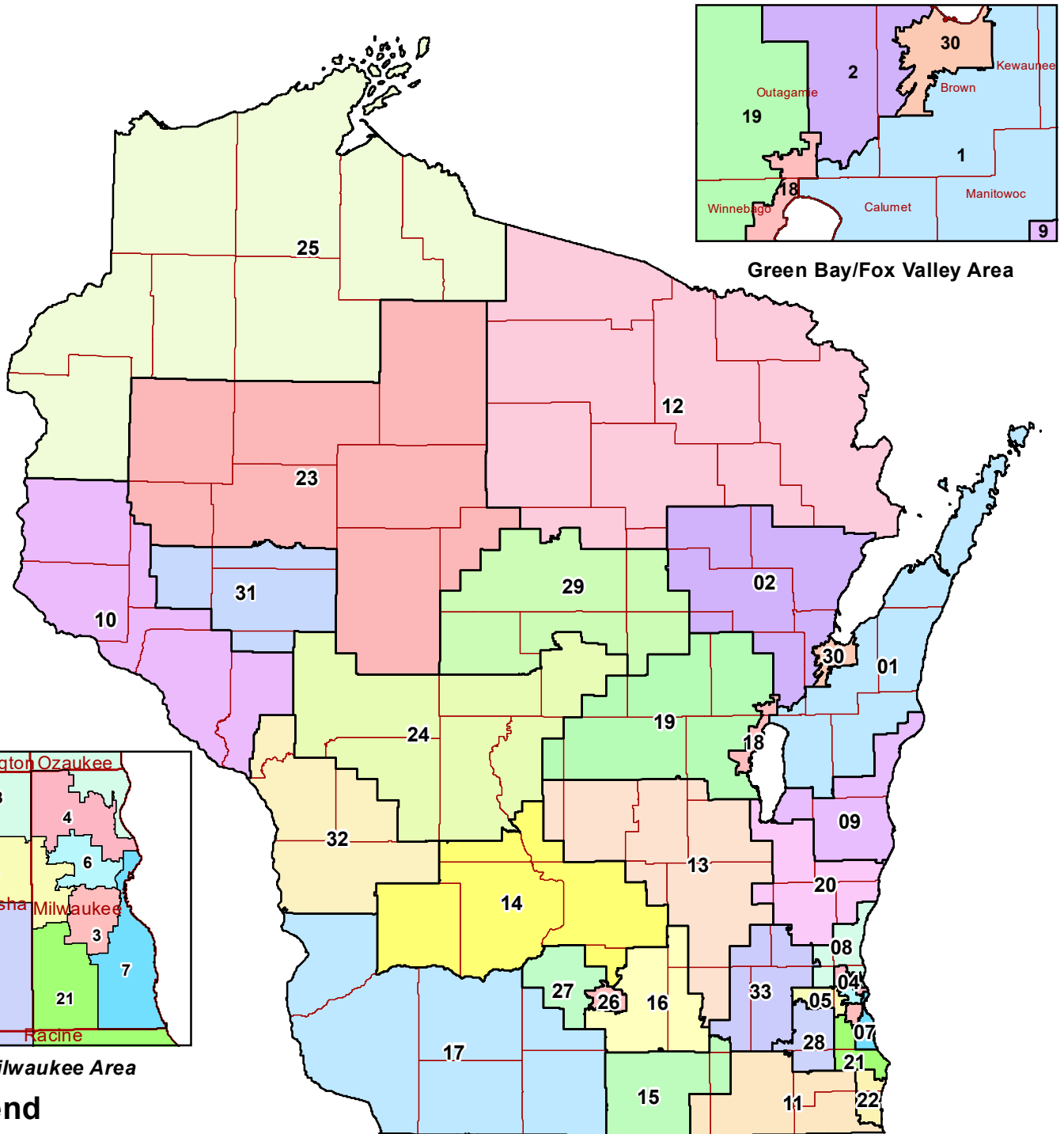
By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

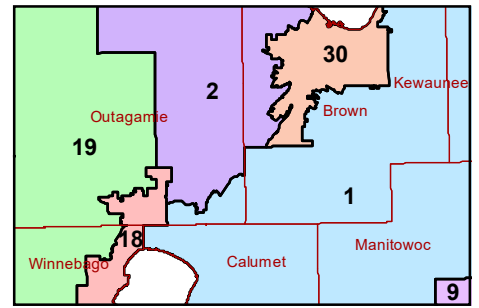
Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

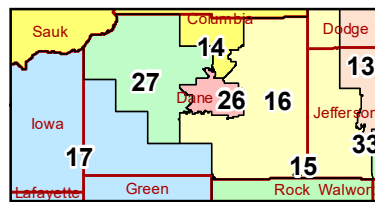
# Wisconsin State Senate Districts Remedial Plan



Milwaukee Area



Green Bay/Fox Valley Area



Madison Area

## Legend

- Remedial
- County

Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

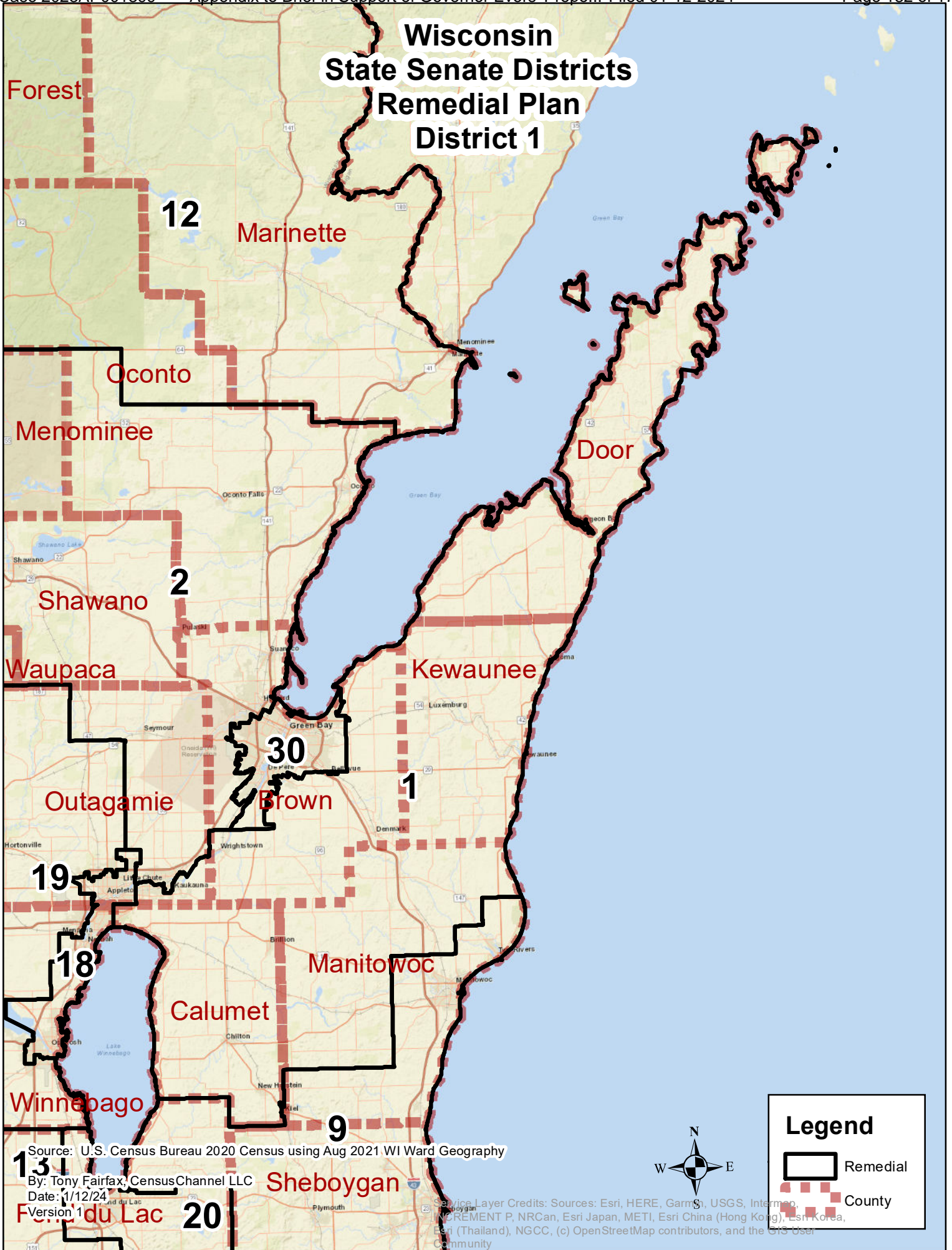
By: Tony Fairfax, CensusChannel LLC

Date: 1/6/24

Version 1



# Wisconsin State Senate Districts Remedial Plan District 1



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

Version 1

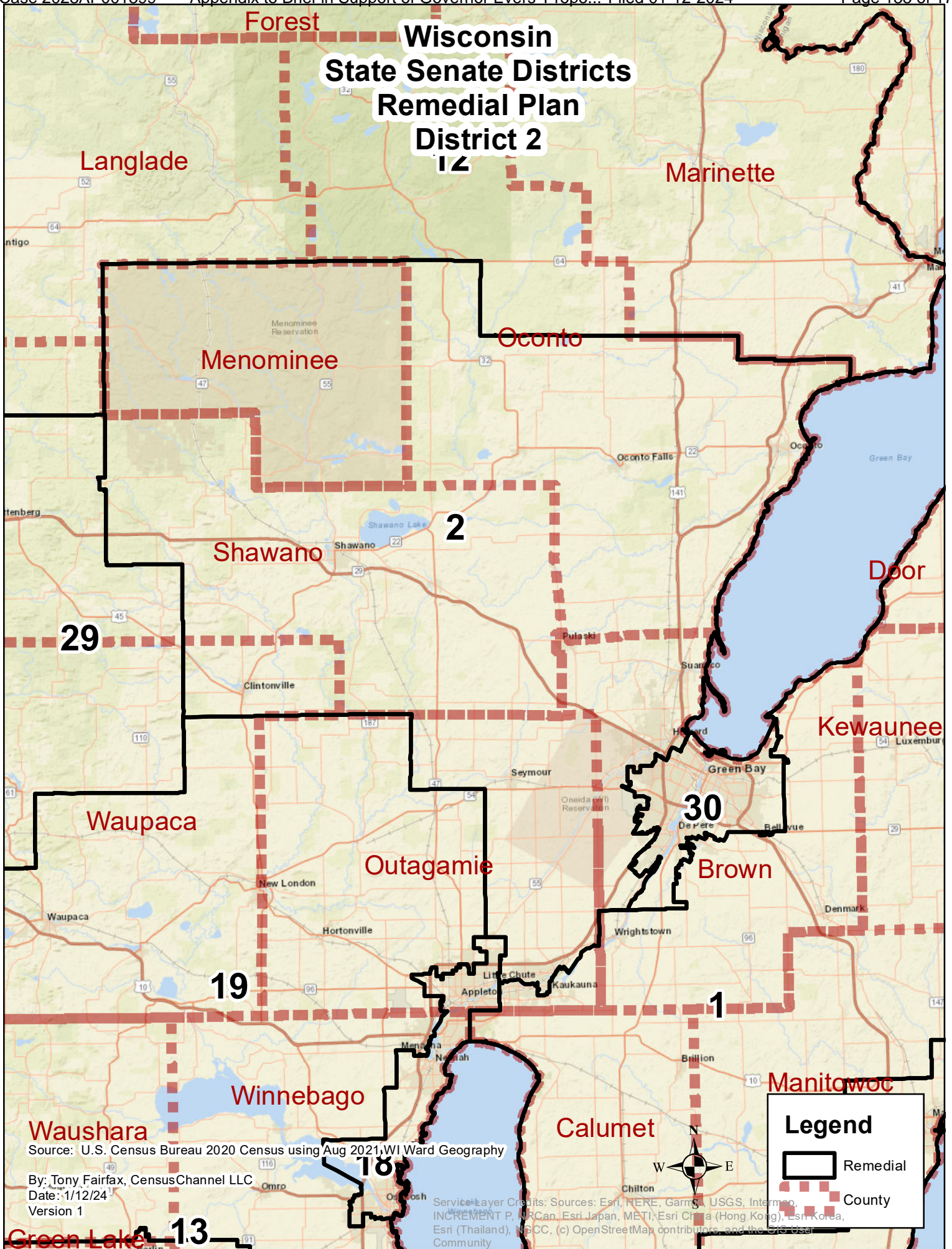
**Legend**

- Remedial
- County



Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Senate Districts Remedial Plan District 2

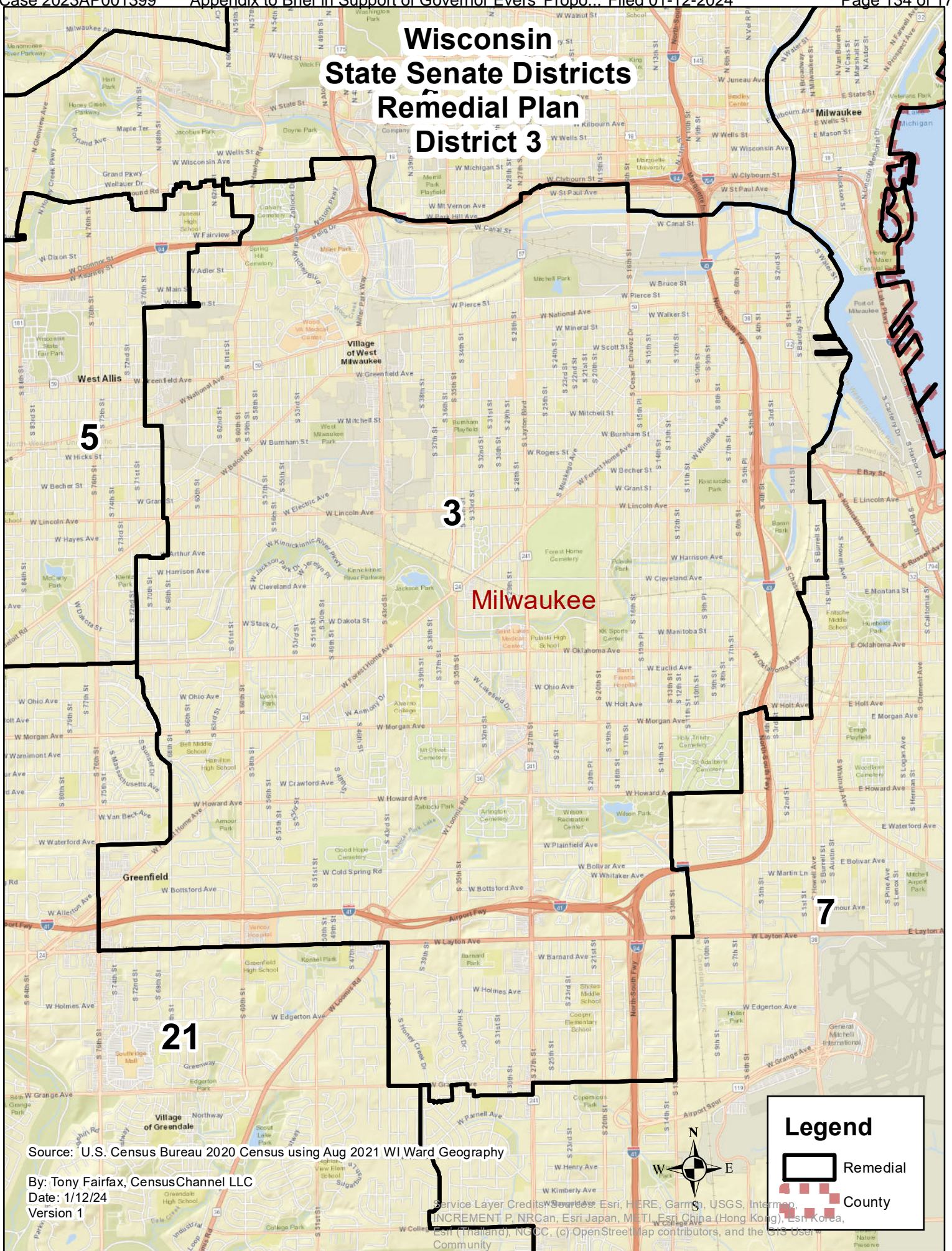


Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NCC, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Senate Districts Remedial Plan District 3



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC

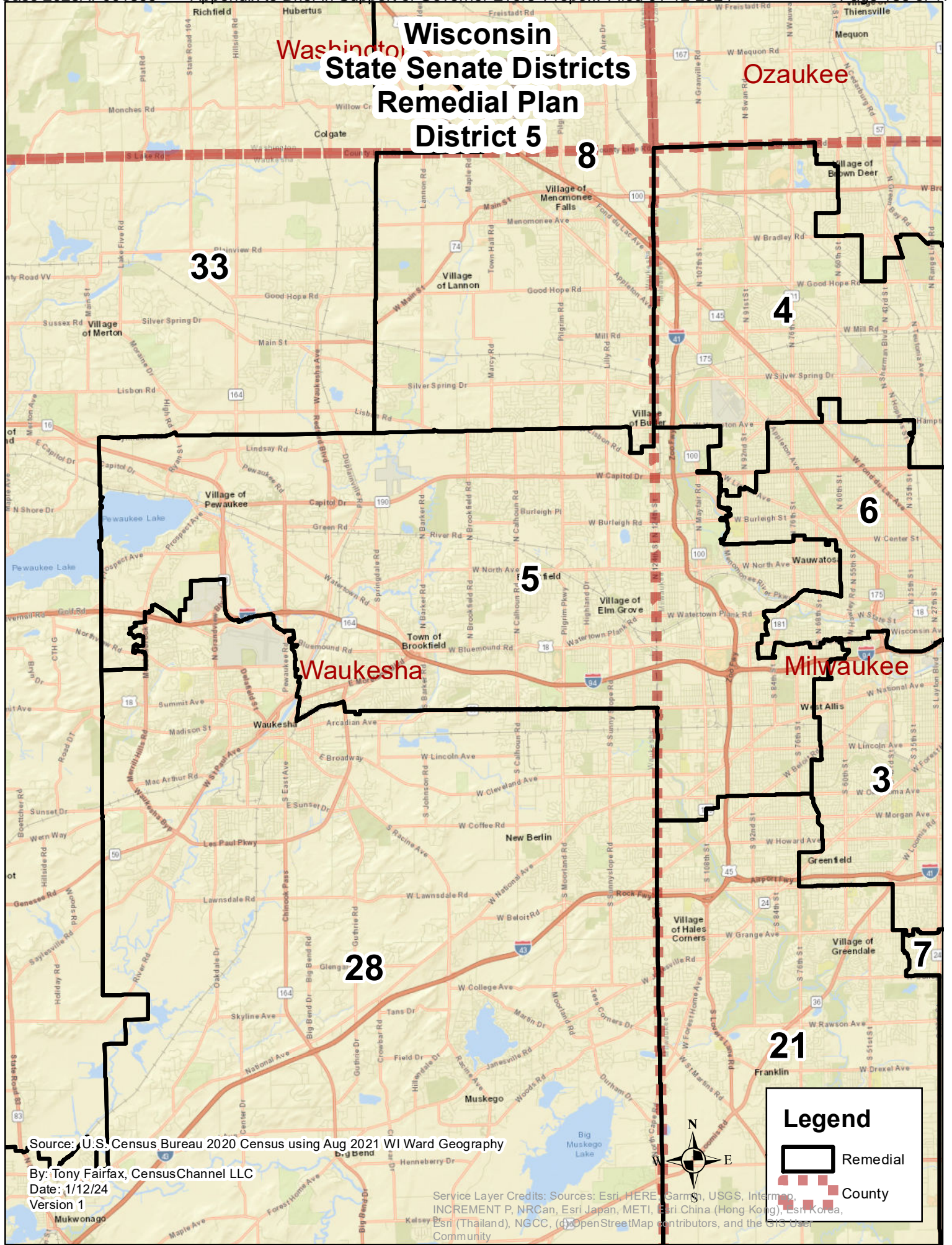
Date: 1/12/24

Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Swis Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



# Wisconsin State Senate Districts Remedial Plan District 5



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

Version 1

**Legend**

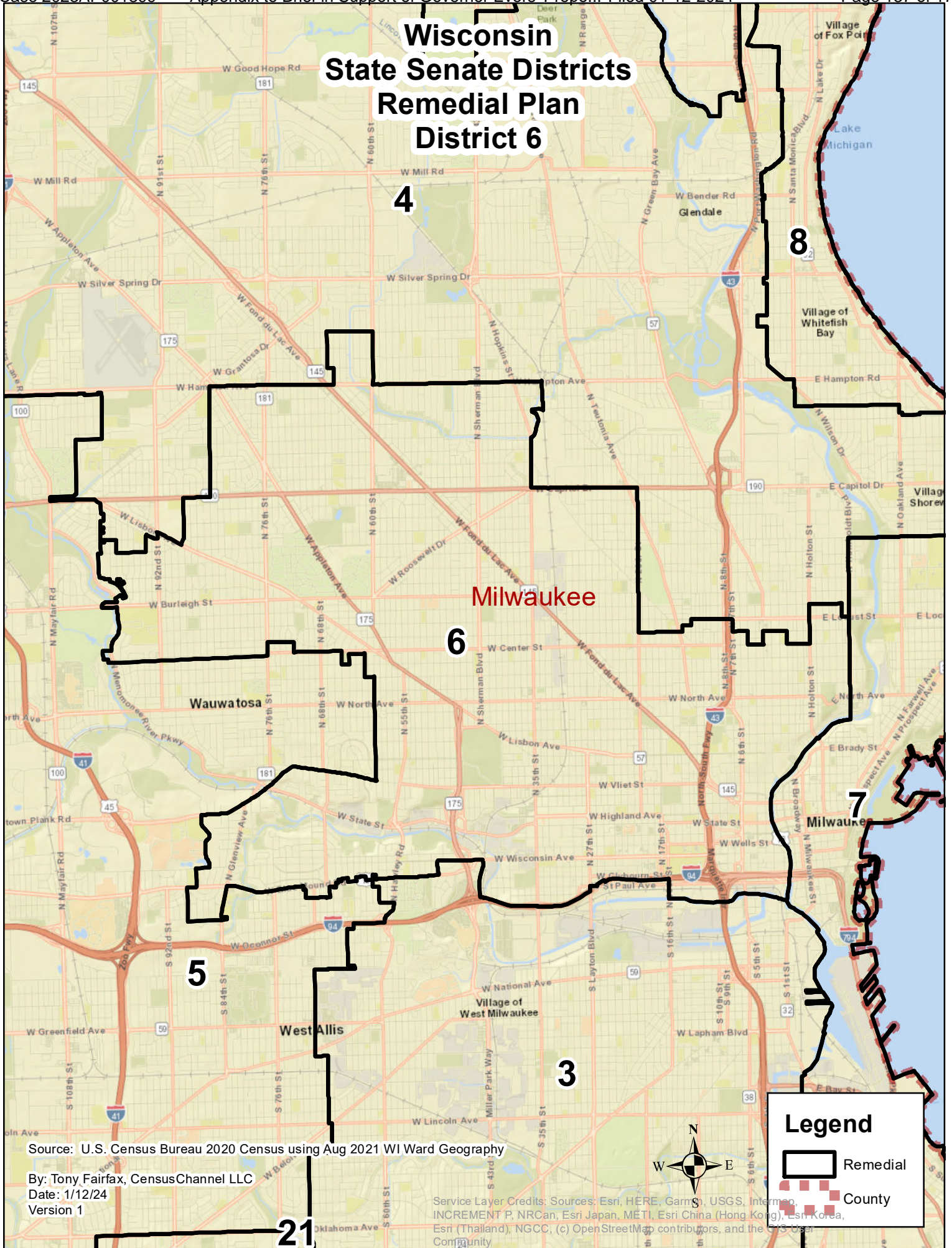
- Remedial
- County



Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



# Wisconsin State Senate Districts Remedial Plan District 6



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

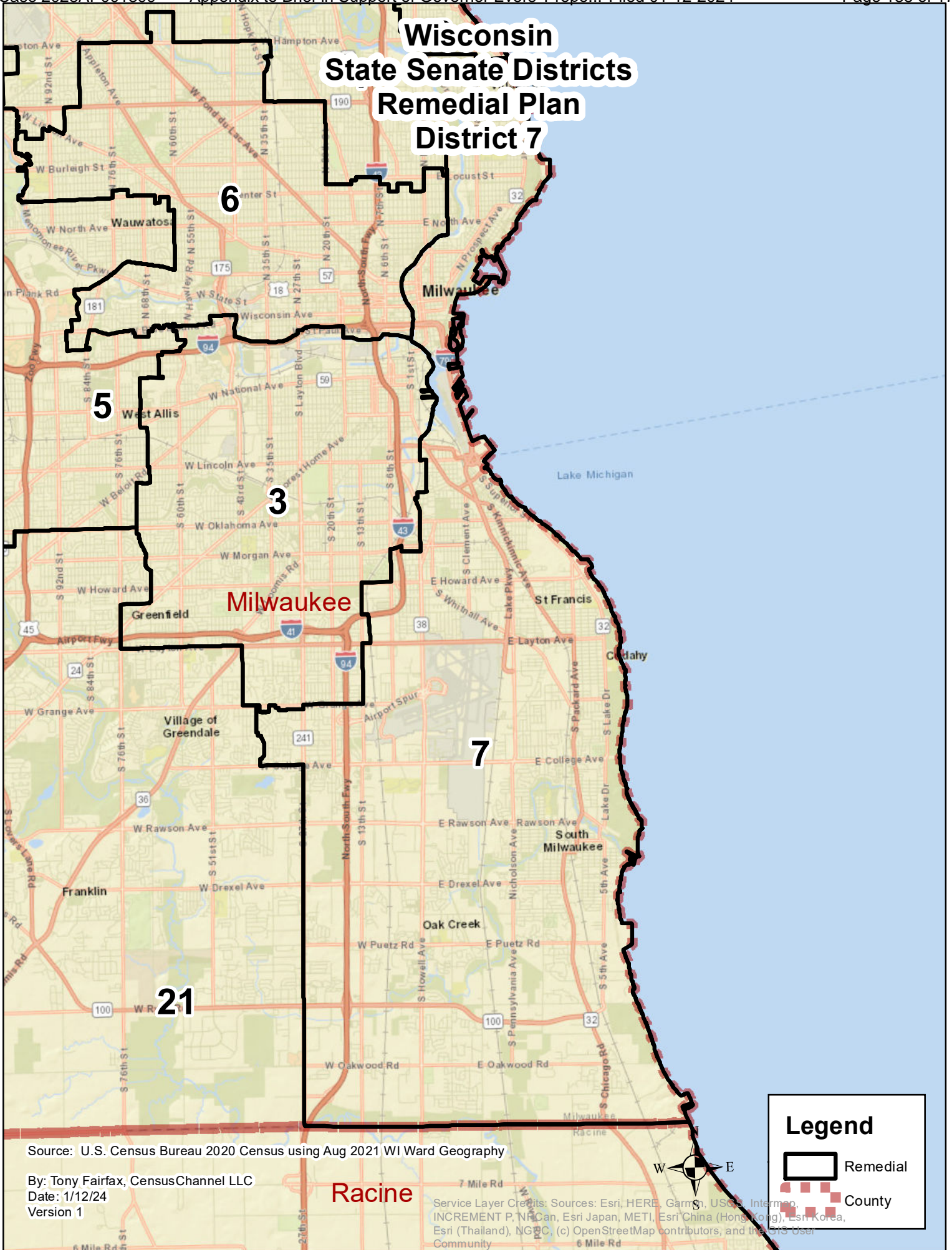
By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Senate Districts Remedial Plan District 7

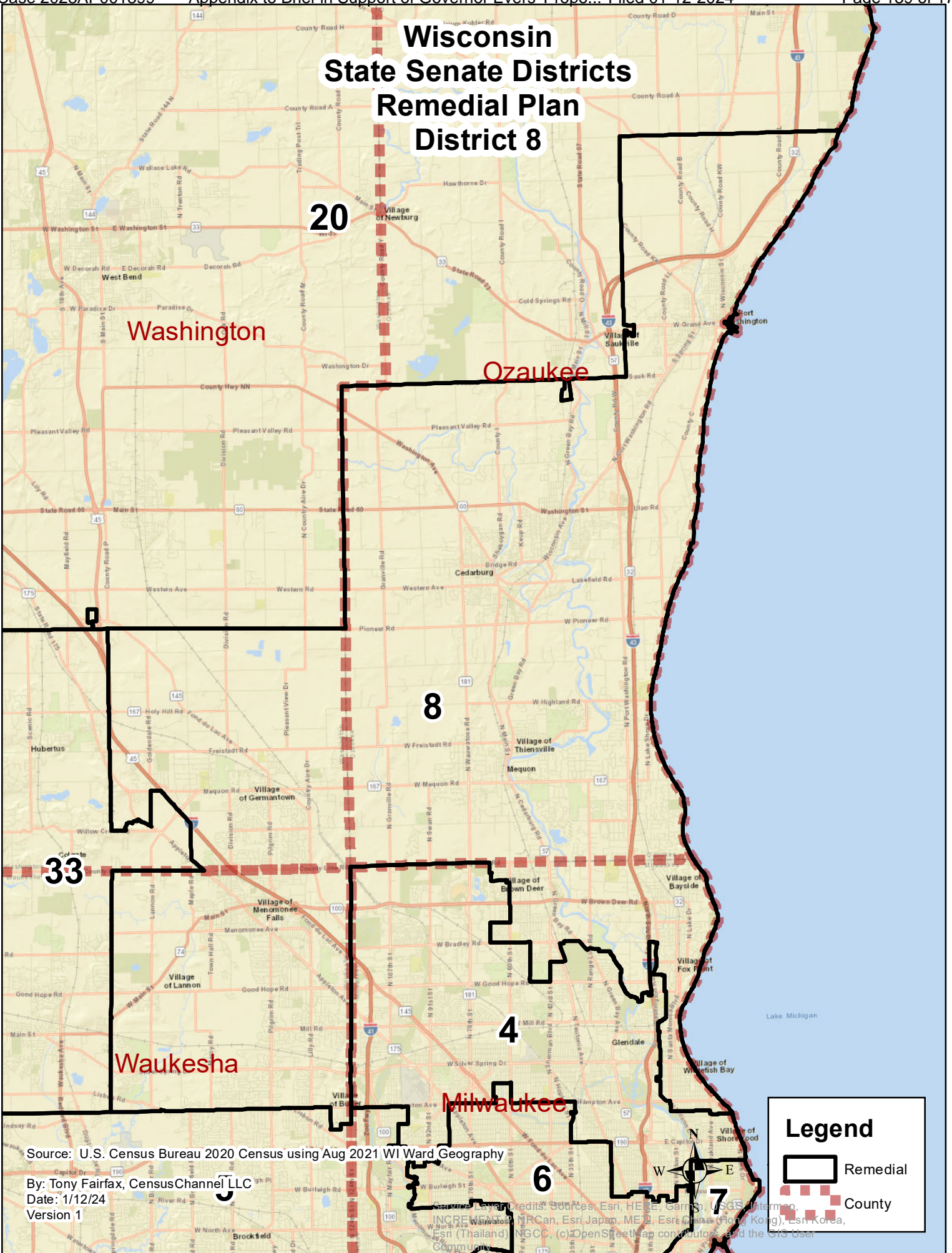


Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGIS, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Senate Districts Remedial Plan District 8



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

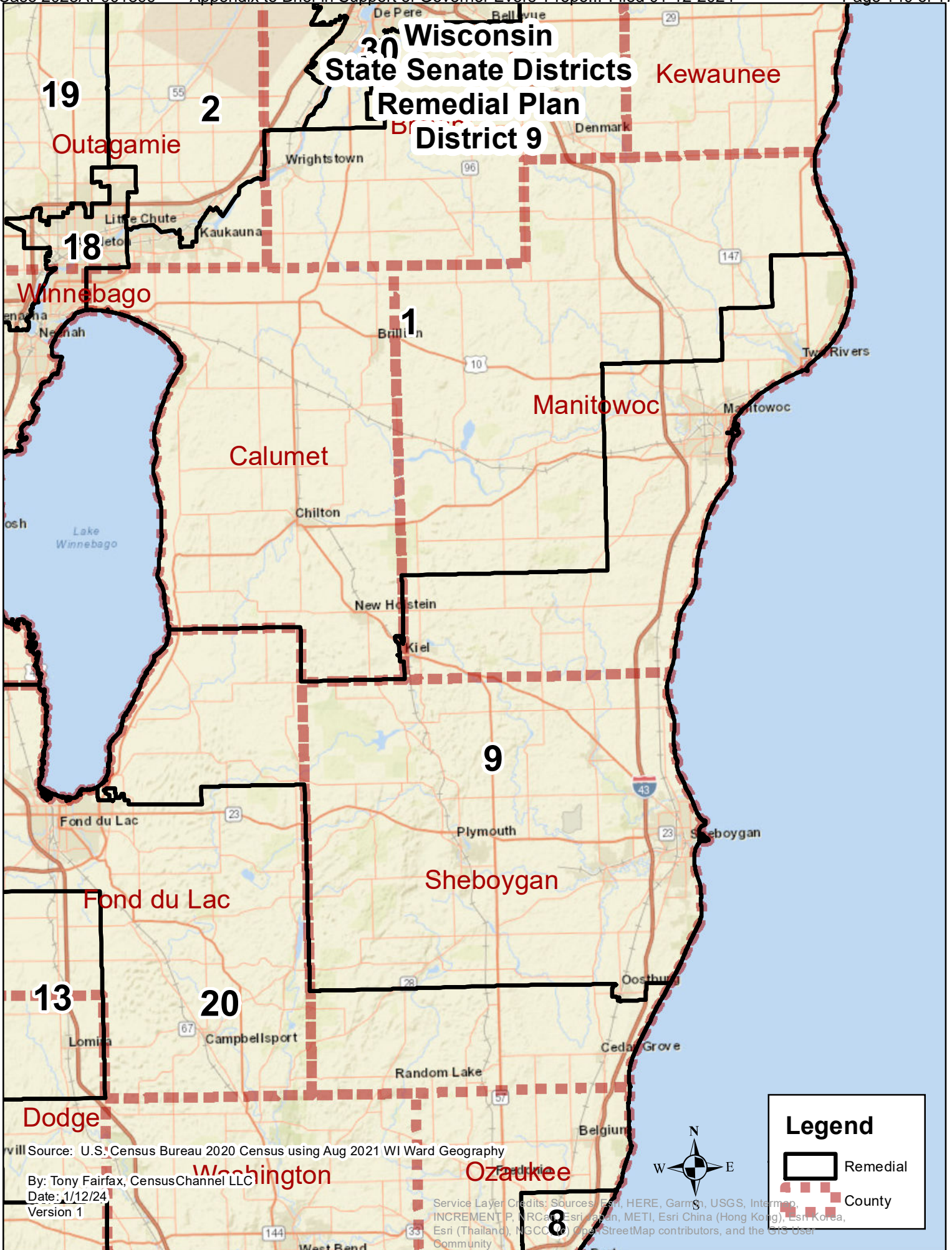
By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

Version 1

Esri, Esri Japan, Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community  
 Esri, Esri Japan, Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community  
 Esri, Esri Japan, Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Senate Districts [Remedial Plan] District 9





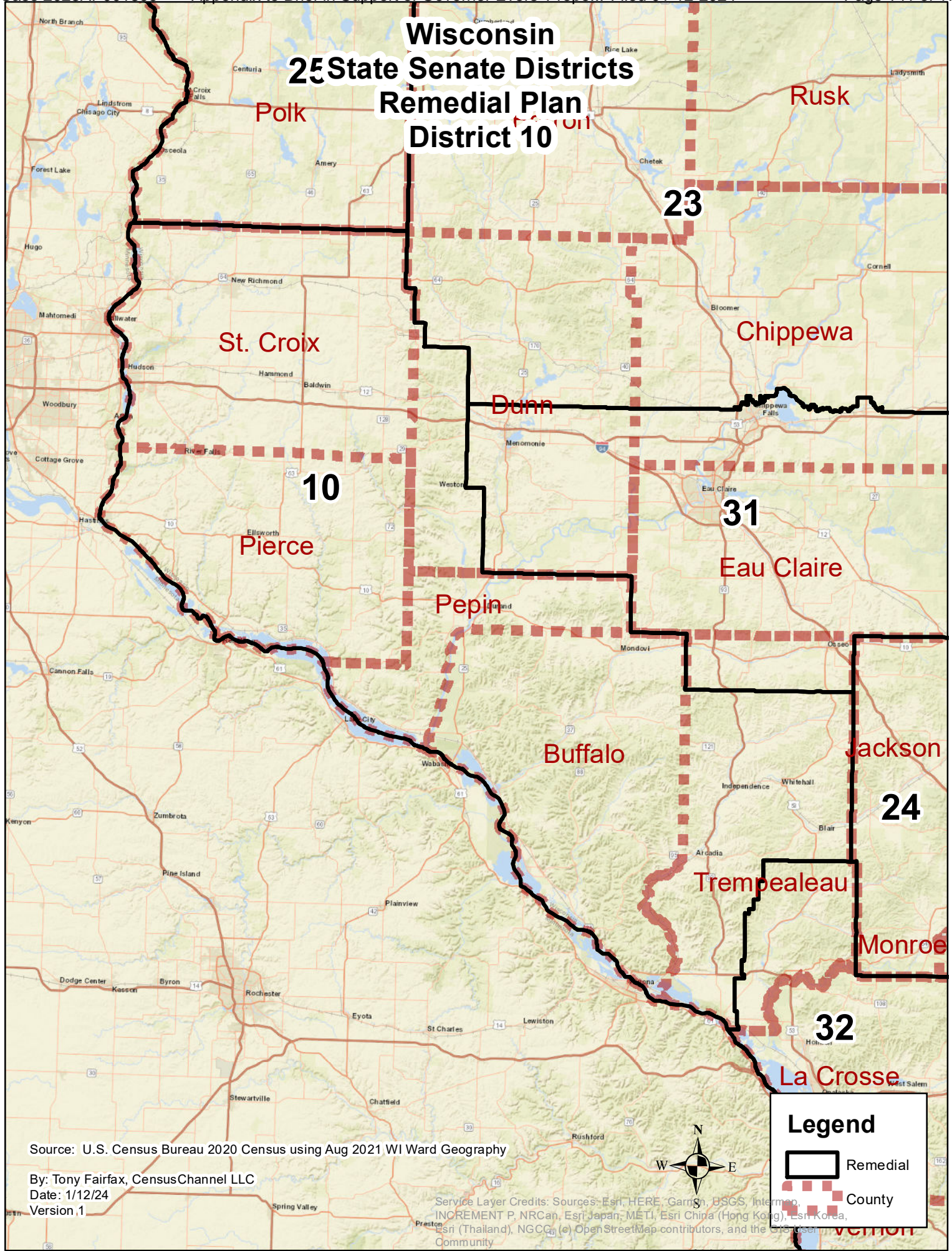
Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, OpenStreetMap contributors, and the GIS User Community



**Legend**

-  Remedial
-  County



**Wisconsin  
25 State Senate Districts  
Remedial Plan  
District 10**

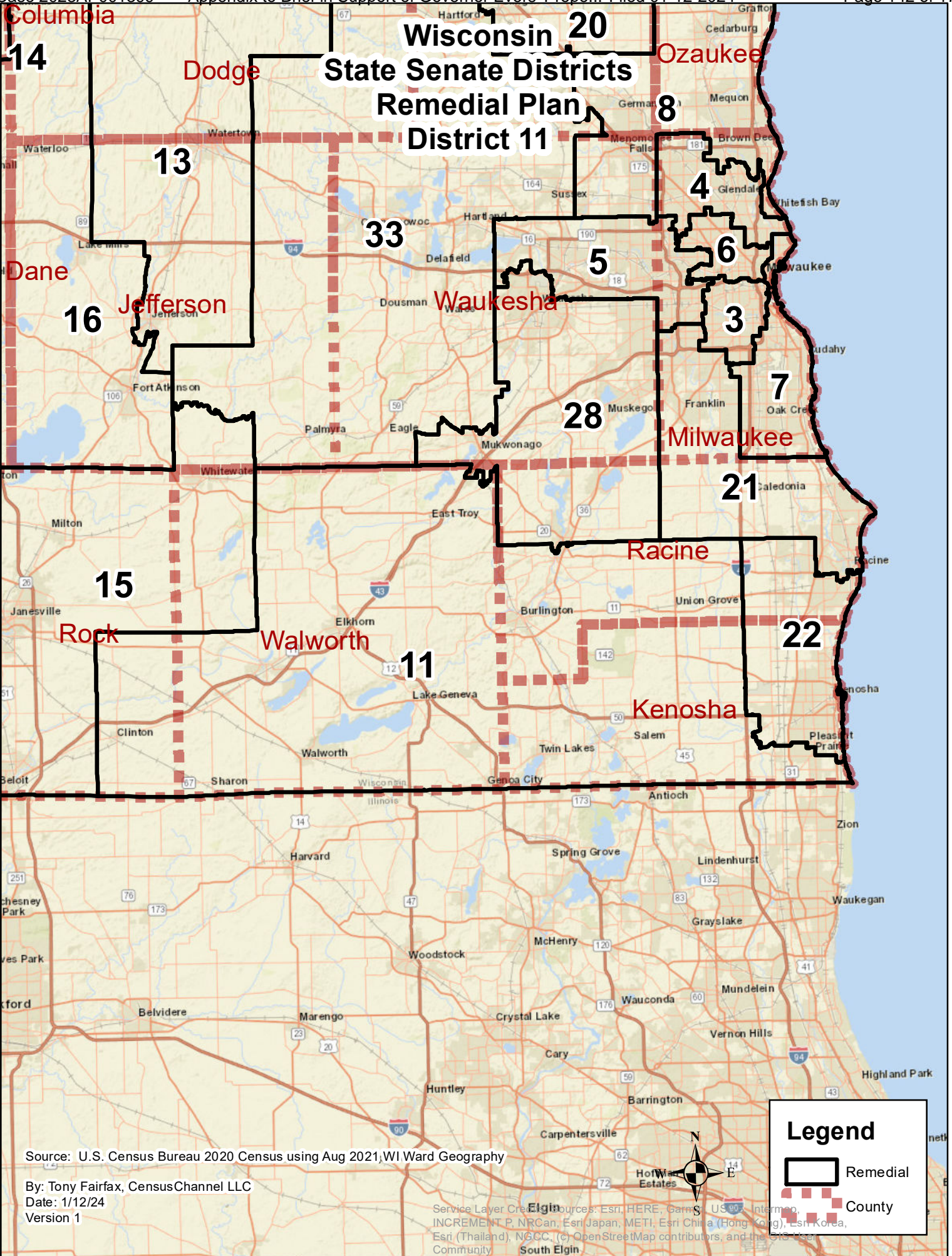
**Legend**

-  Remedial
-  County

Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, BGS, Intermap, INCREMENT P, NRCan, Esri Japan: METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography



By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

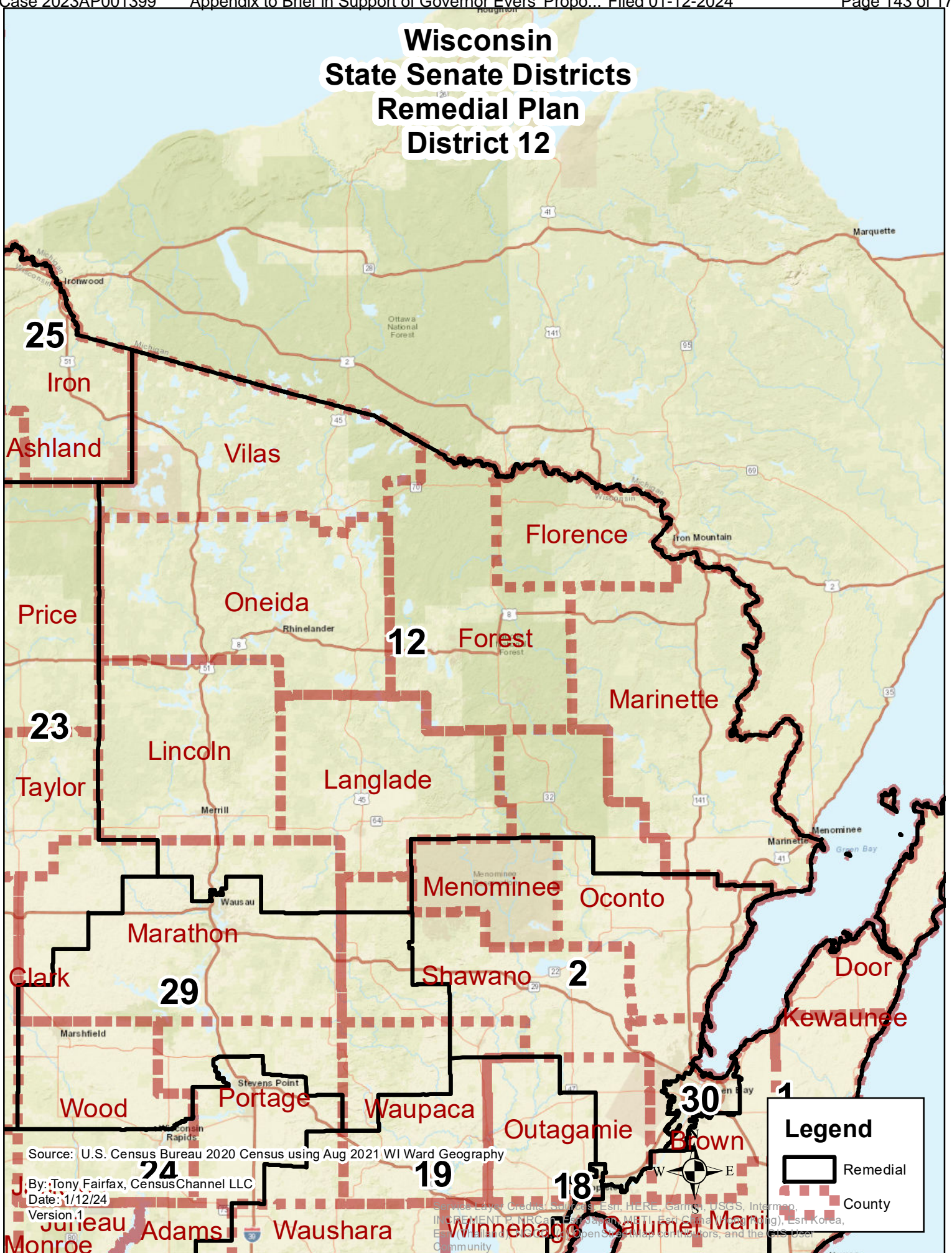
Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

**Legend**

-  Remedial
-  County

# Wisconsin State Senate Districts Remedial Plan District 12





Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

Version: 1

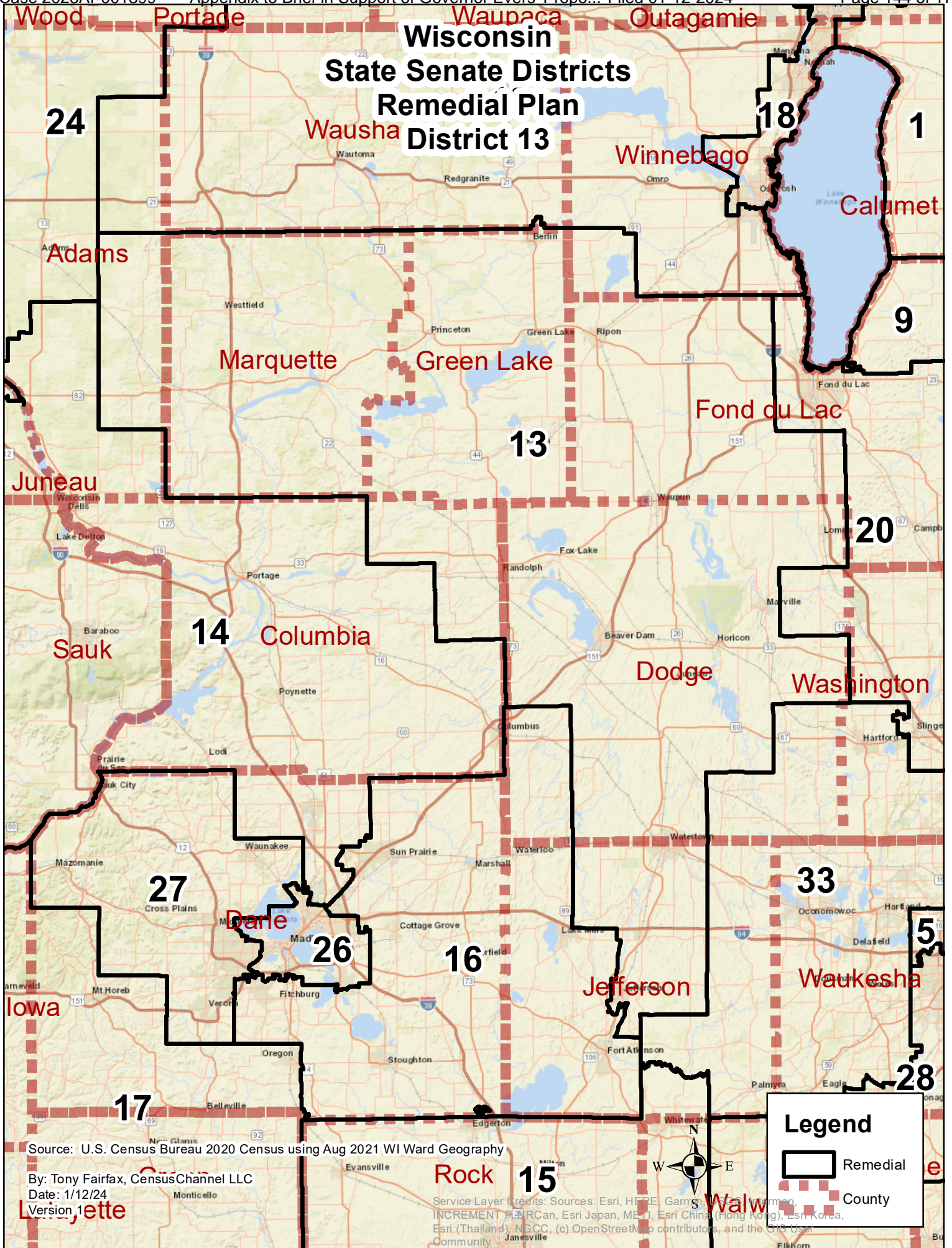
**Legend**

-  Remedial
-  County

Source Layer Credits: Esri, HERE, Garmin, U.S.G.S., Intermap, INCREMENT P, NRCan, DeLorme, NAVTEQ, Esri Korea, Esri (Japan), Swisstopo, OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Senate Districts Remedial Plan

## District 13




Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensuChannel LLC  
Date: 1/12/24

Version 1.0

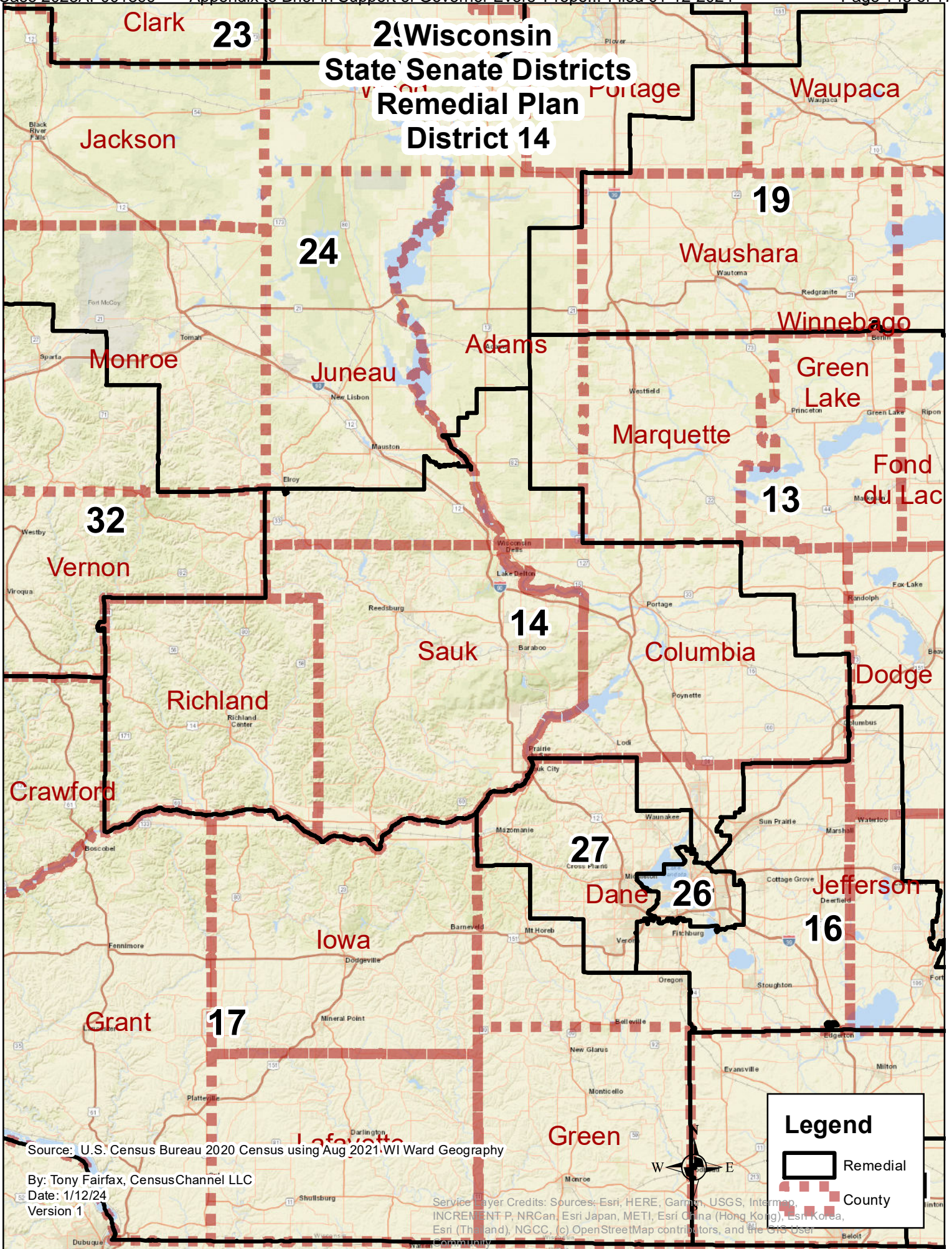
Service Layer Credits: Sources: Esri, HERE, Garmin, Swisstopo, IGN, CNRS, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NBCC, (c) OpenStreetMap contributors, and the GIS User Community

### Legend



-  Remedial
-  County



# 2 Wisconsin State Senate Districts Remedial Plan District 14



**Legend**

-  Remedial
-  County

Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

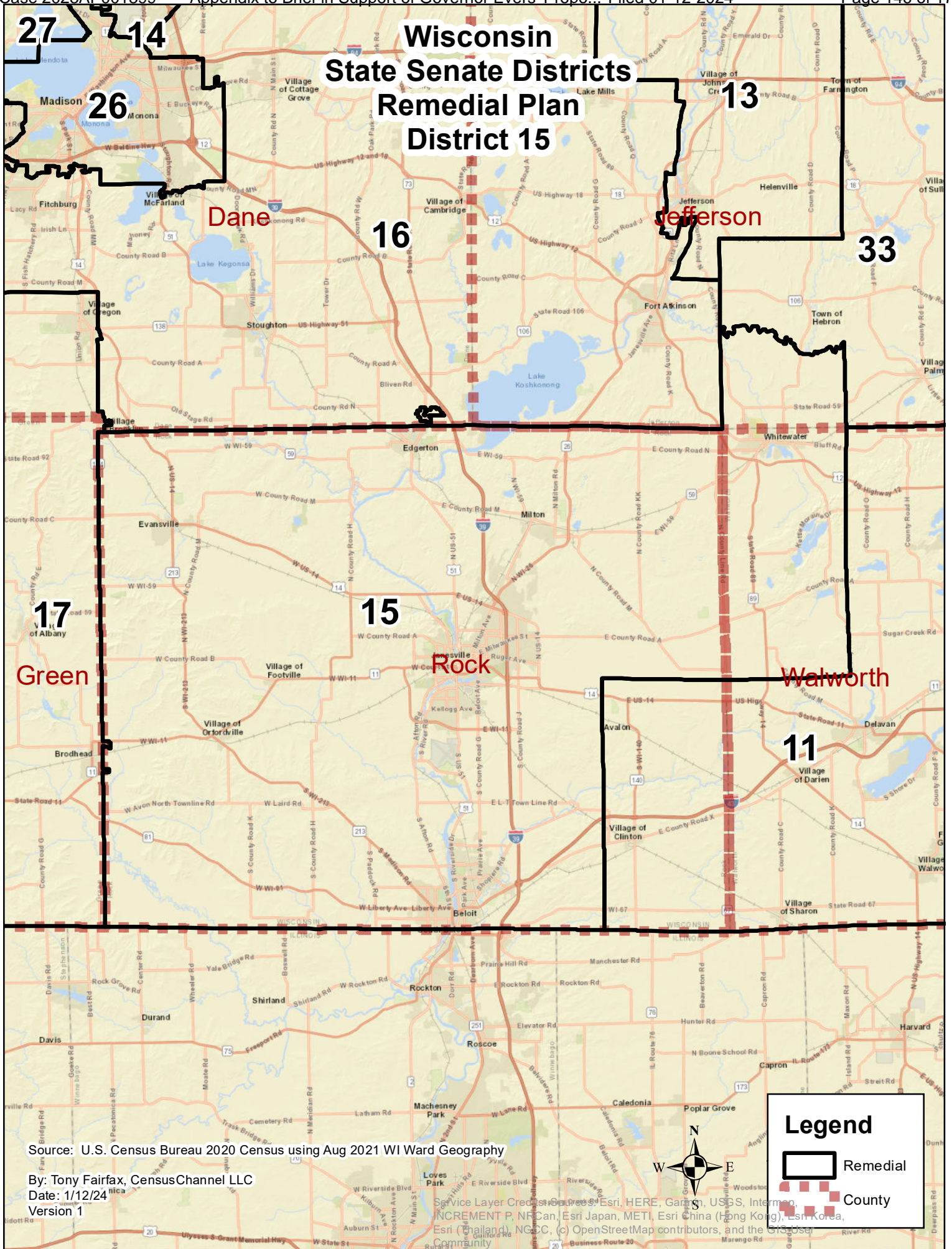
By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Senate Districts Remedial Plan District 15



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

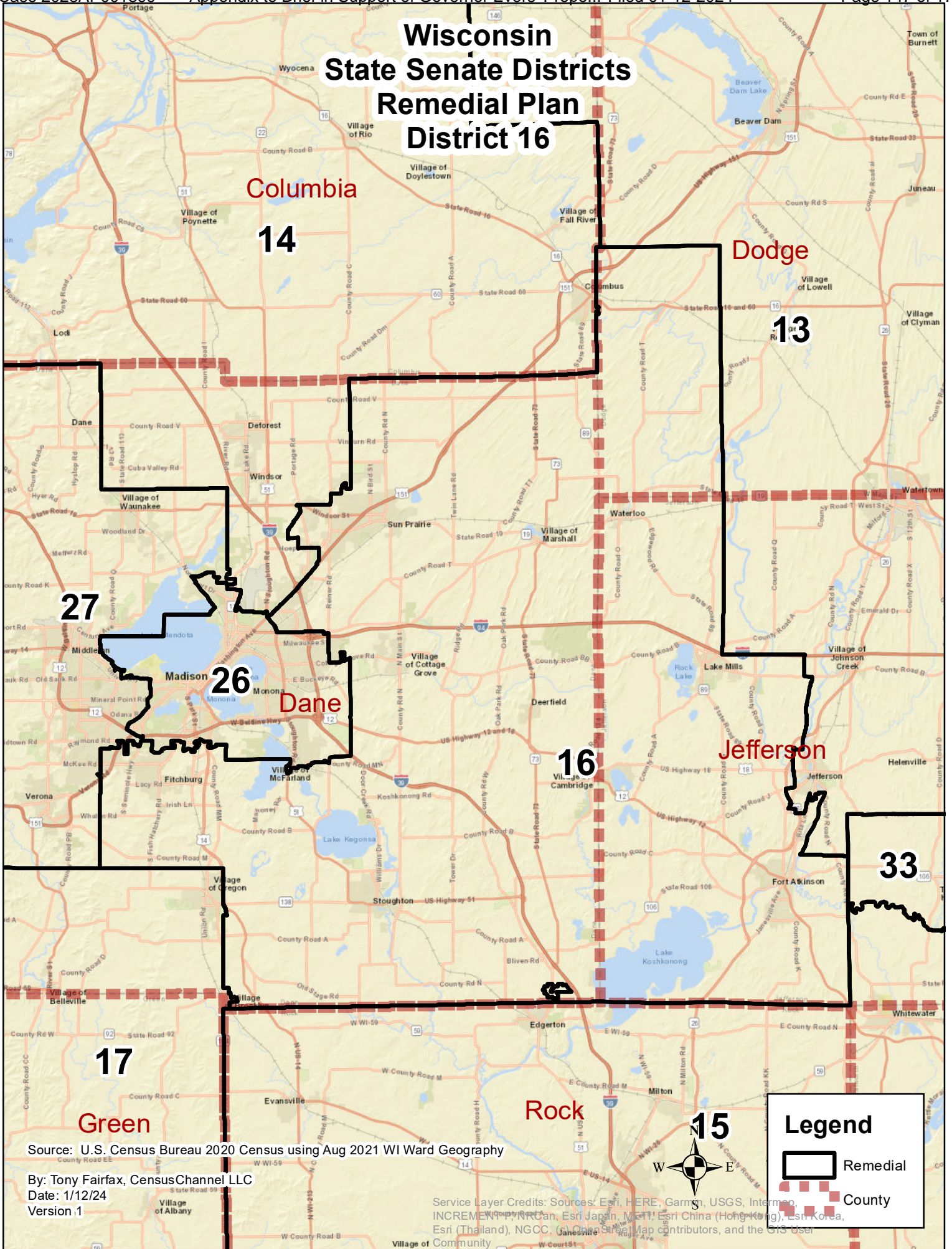
By: Tony Fairfax, CensurChannel LLC

Date: 1/12/24

Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGIS, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Senate Districts Remedial Plan District 16





Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensurChannel LLC

Date: 1/12/24

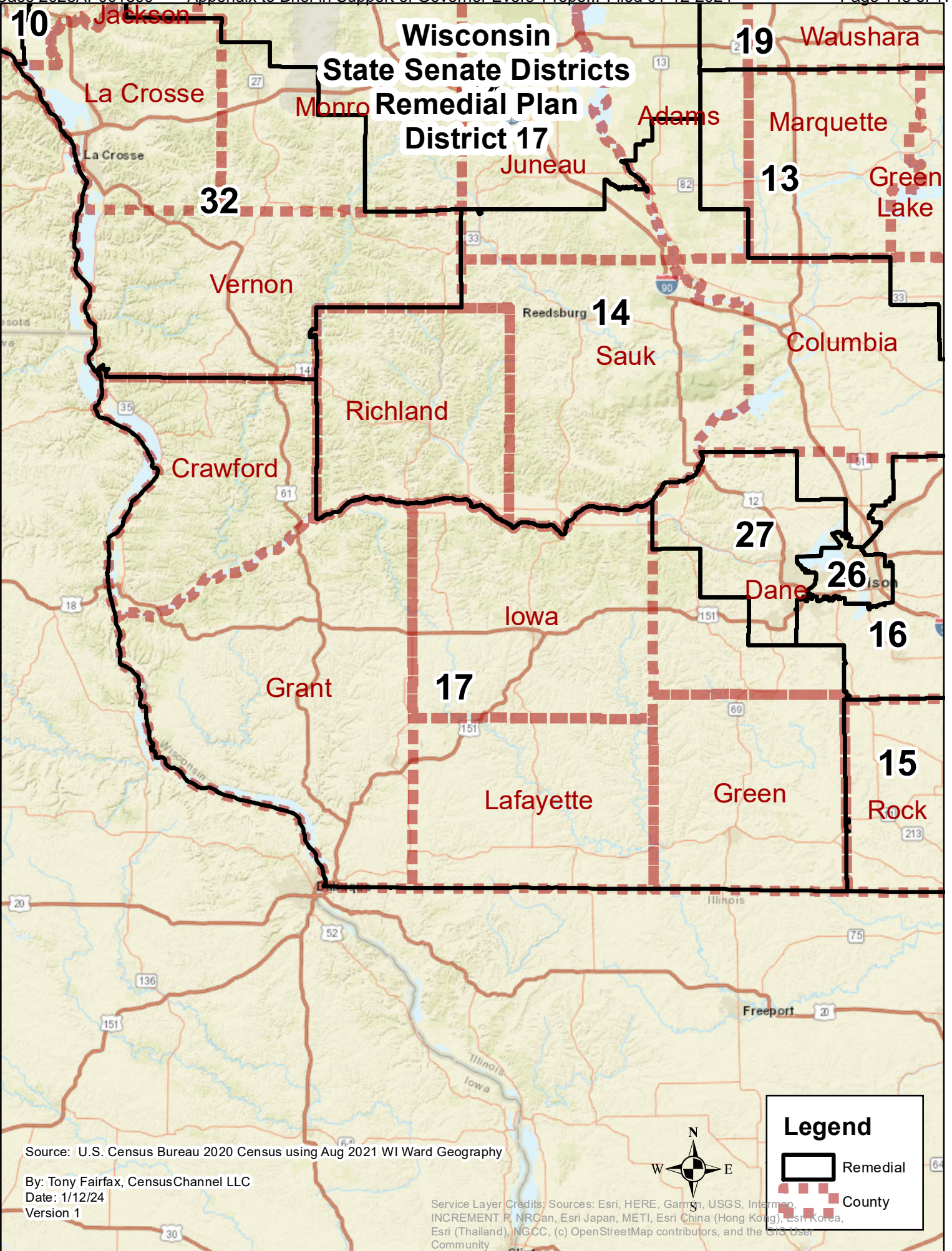
Version 1

**Legend**

-  Remedial
-  County





Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, Swisstopo, Mapbox Contributors, and the GIS User Community



**Wisconsin  
State Senate Districts  
Remedial Plan  
District 17**

**Legend**

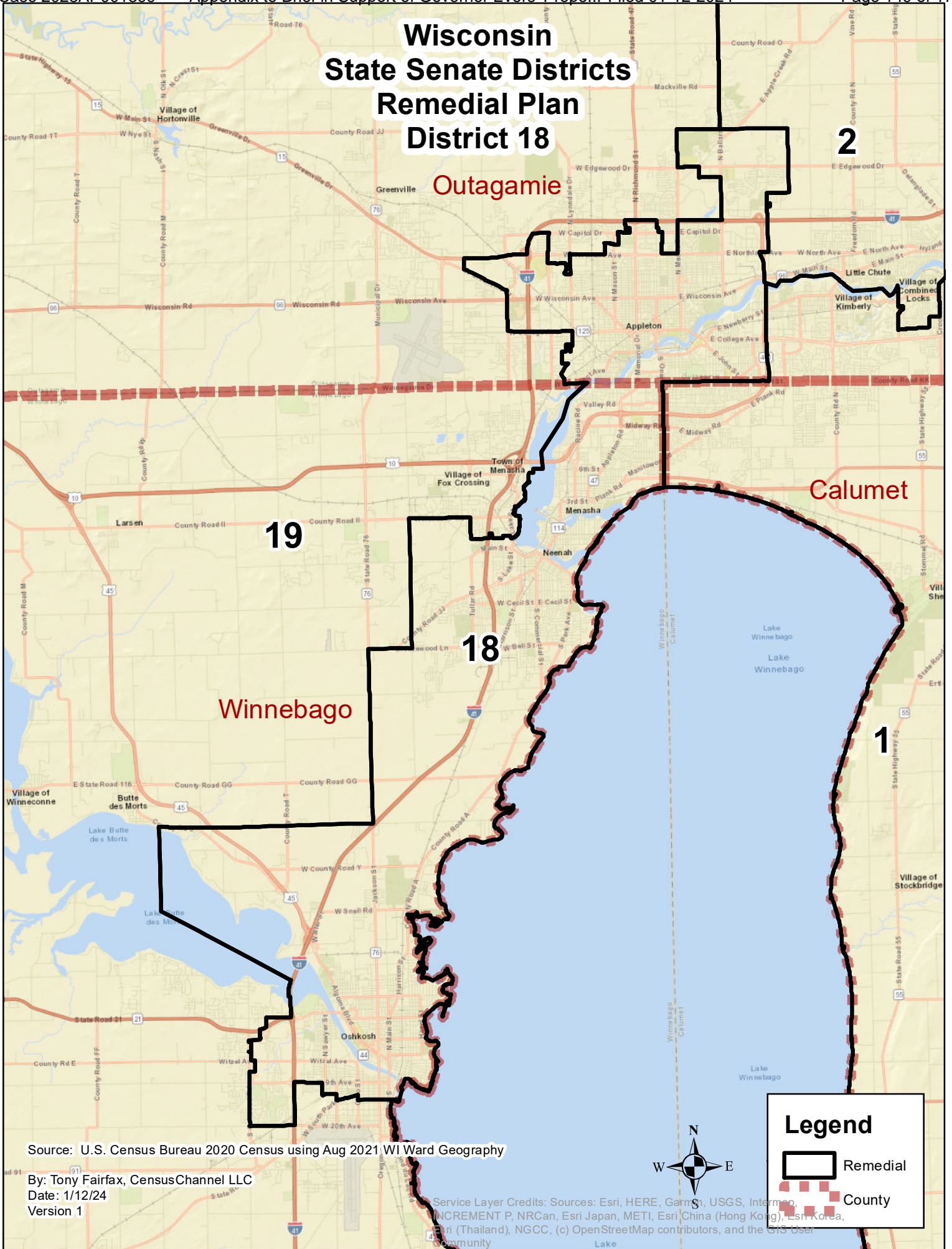
-  Remedial
-  County

Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography



By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Senate Districts Remedial Plan District 18



**Legend**

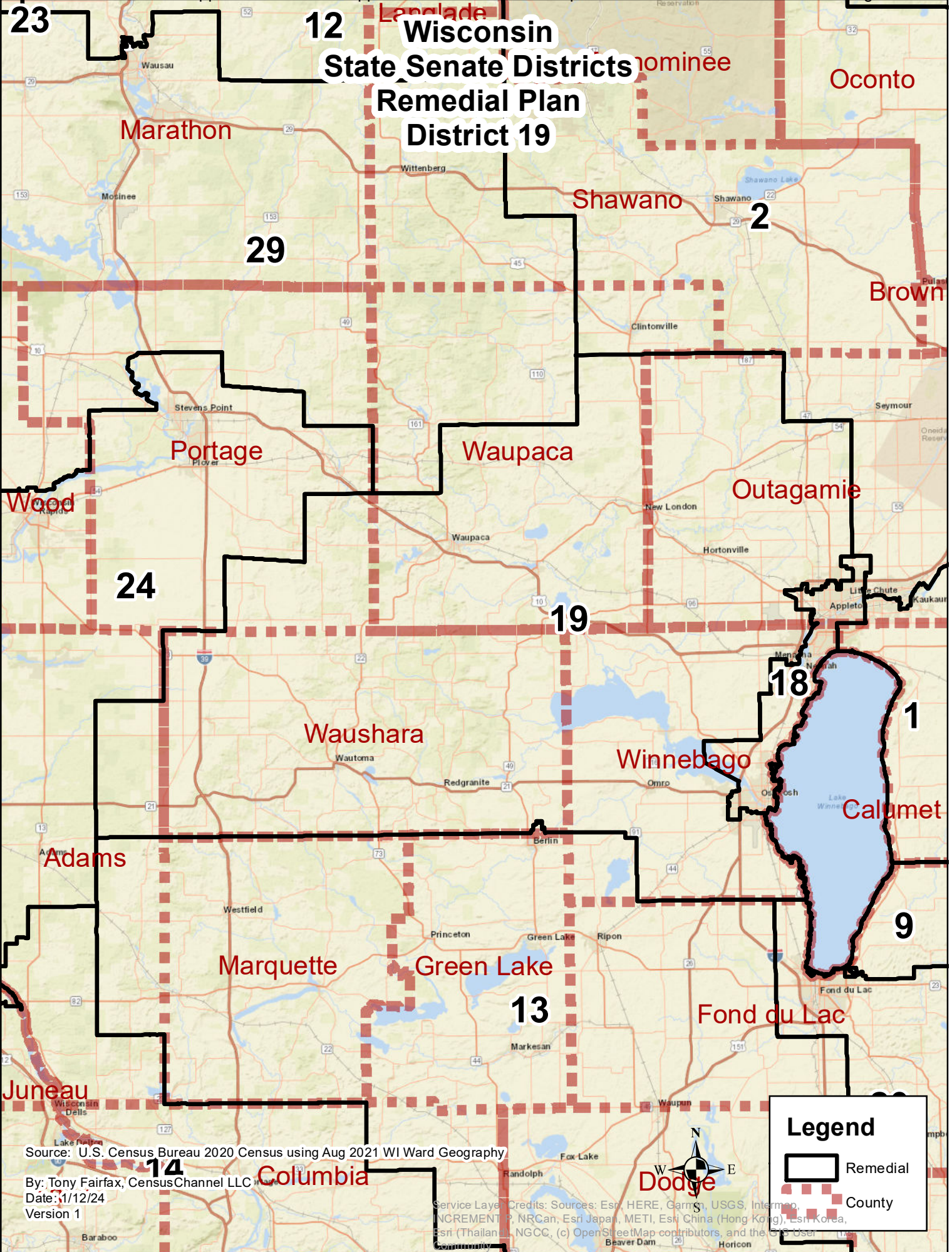
-  Remedial
-  County



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC

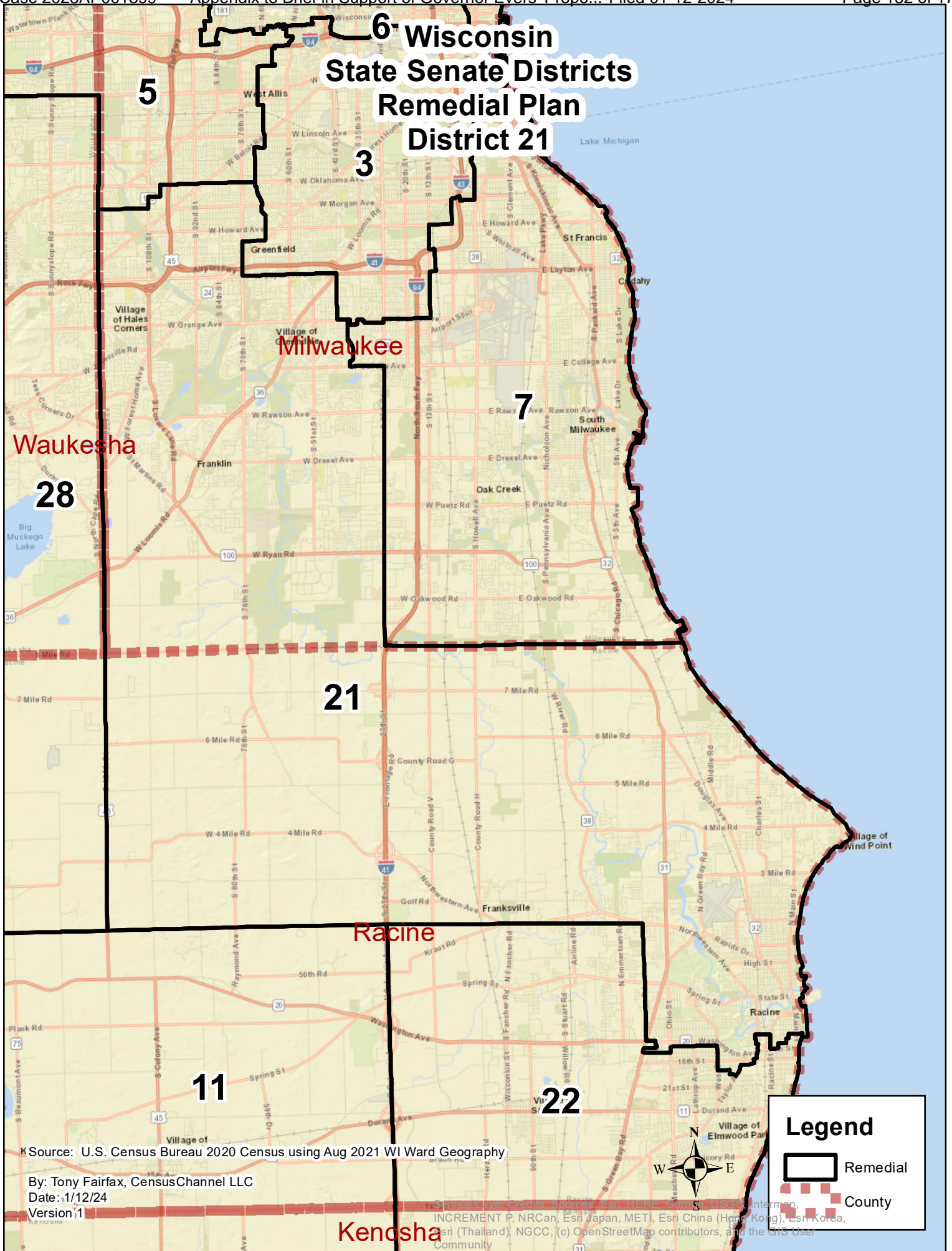
Date: 1/12/24

Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



# 6 Wisconsin State Senate Districts Remedial Plan District 21



Waukesha

Milwaukee

Racine

Kenosha

Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

**Legend**

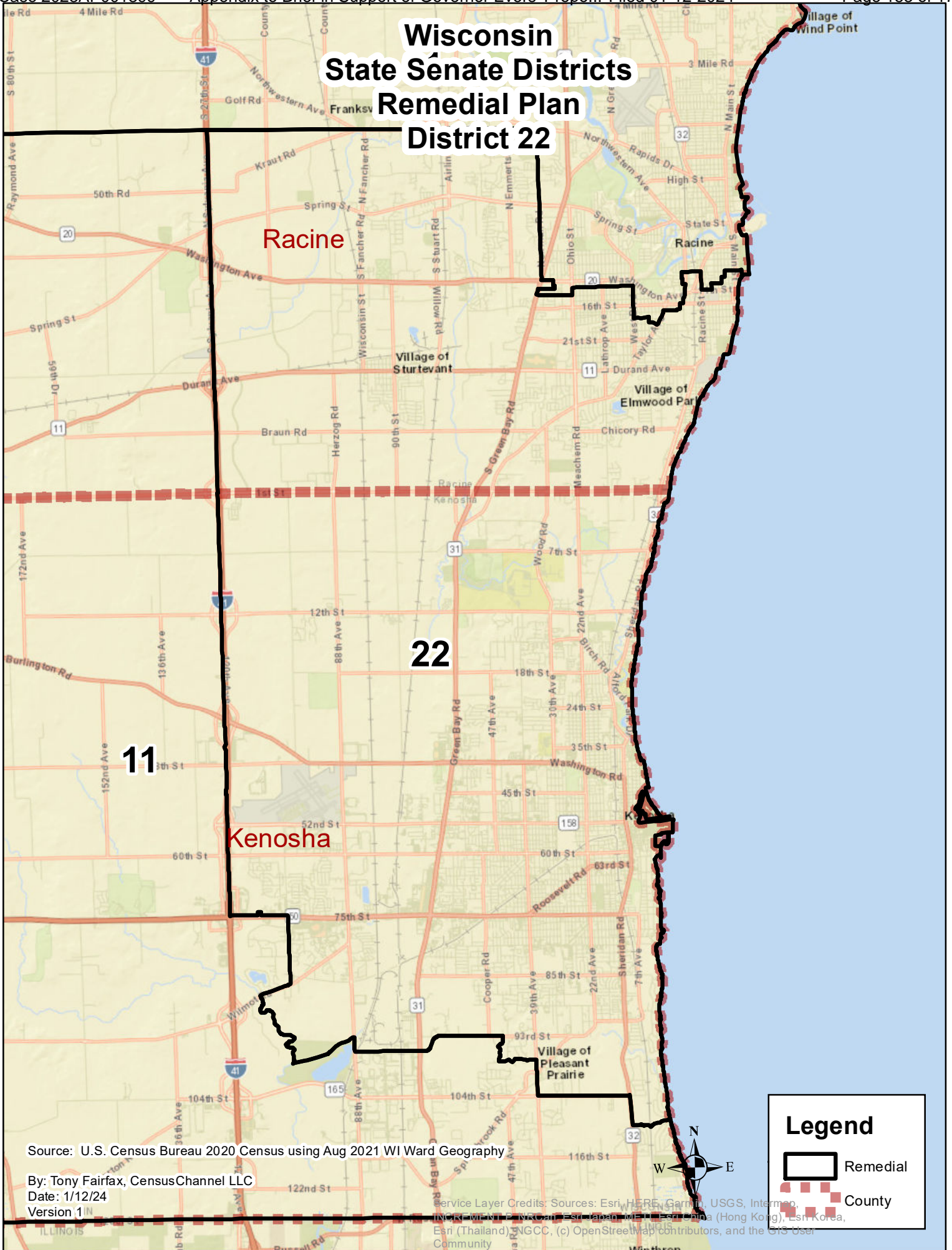
- Remedial
- County



Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



# Wisconsin State Sénate Districts Remedial Plan District 22



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

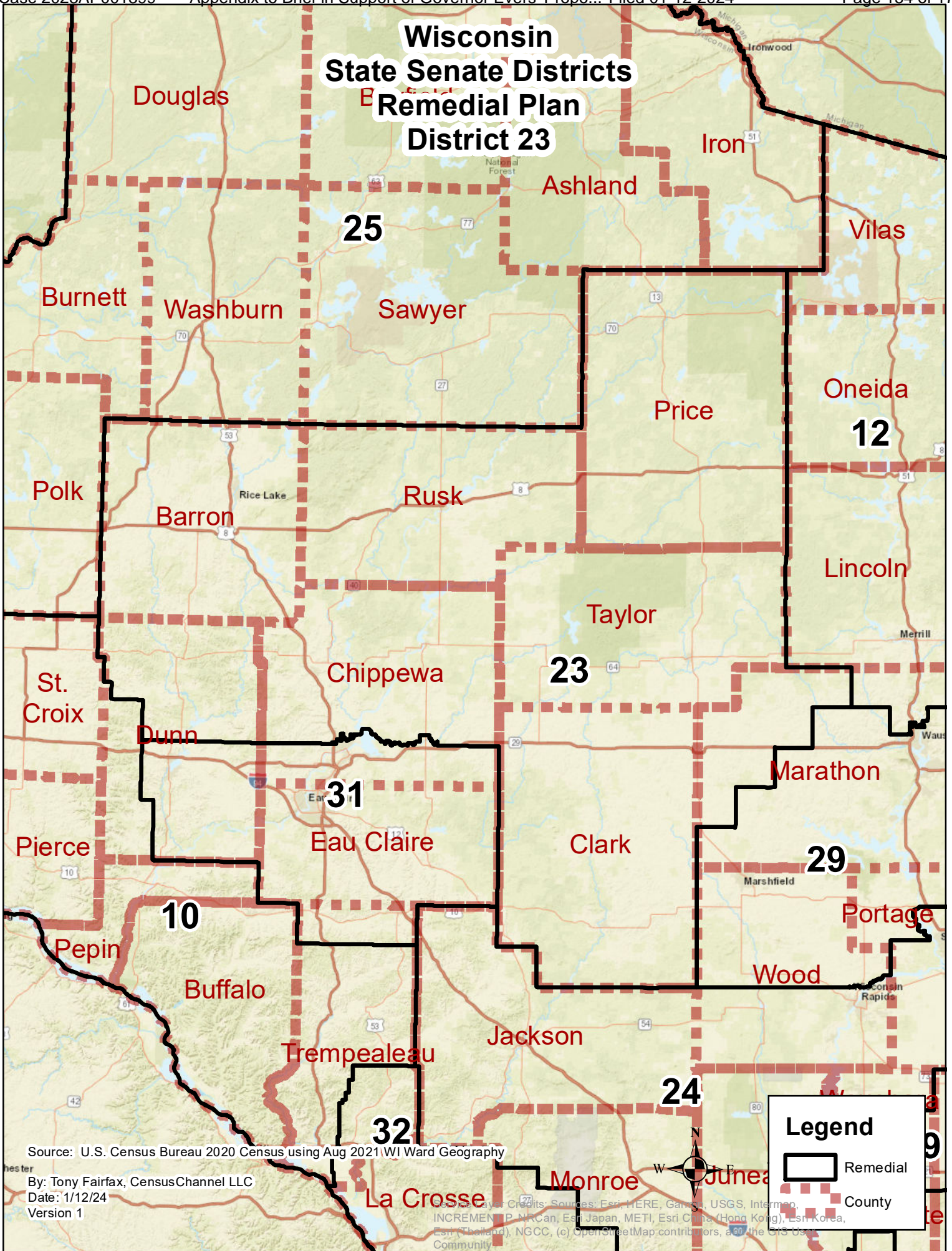
By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENTAL PRT, Swire, Esri, DeLorme, GeoEye, (China, India, Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Senate Districts Remedial Plan District 23





Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

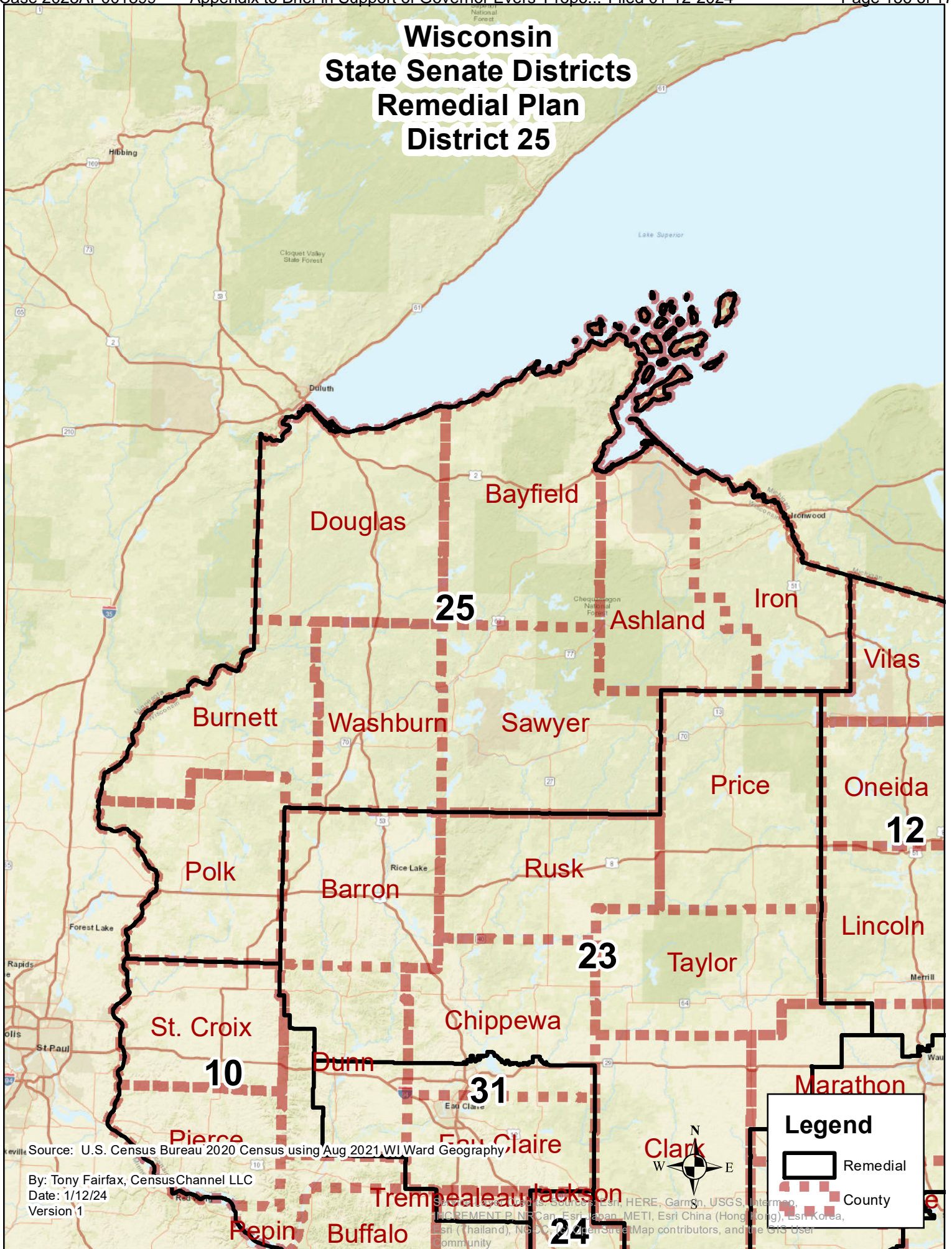
Map Data Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

**Legend**

-  Remedial
-  County



# Wisconsin State Senate Districts Remedial Plan District 25

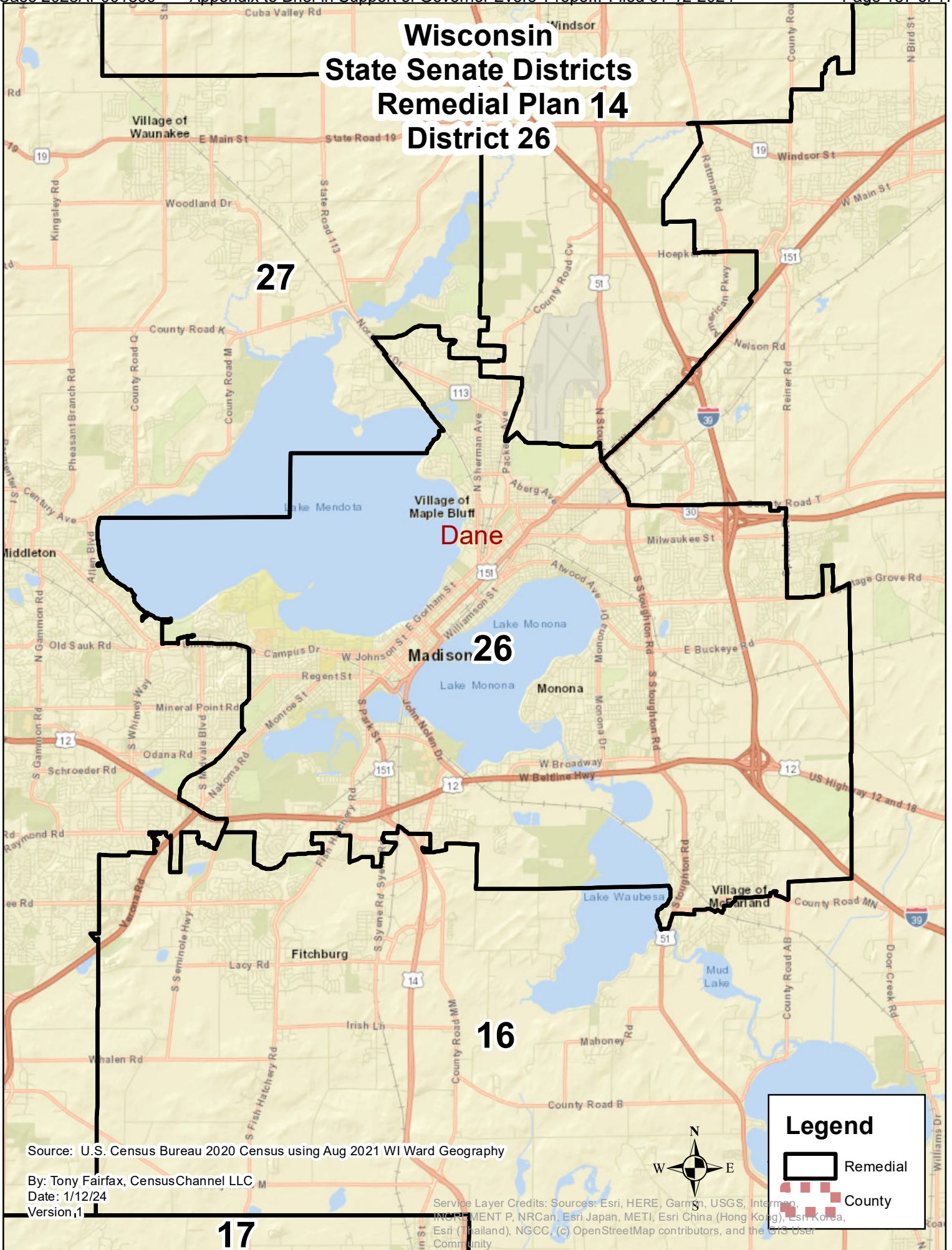


Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

Map data by Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NOAA, Swisstopo, Mapbox, OpenStreetMap contributors, and the GIS User community

# Wisconsin State Senate Districts Remedial Plan 14 District 26



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

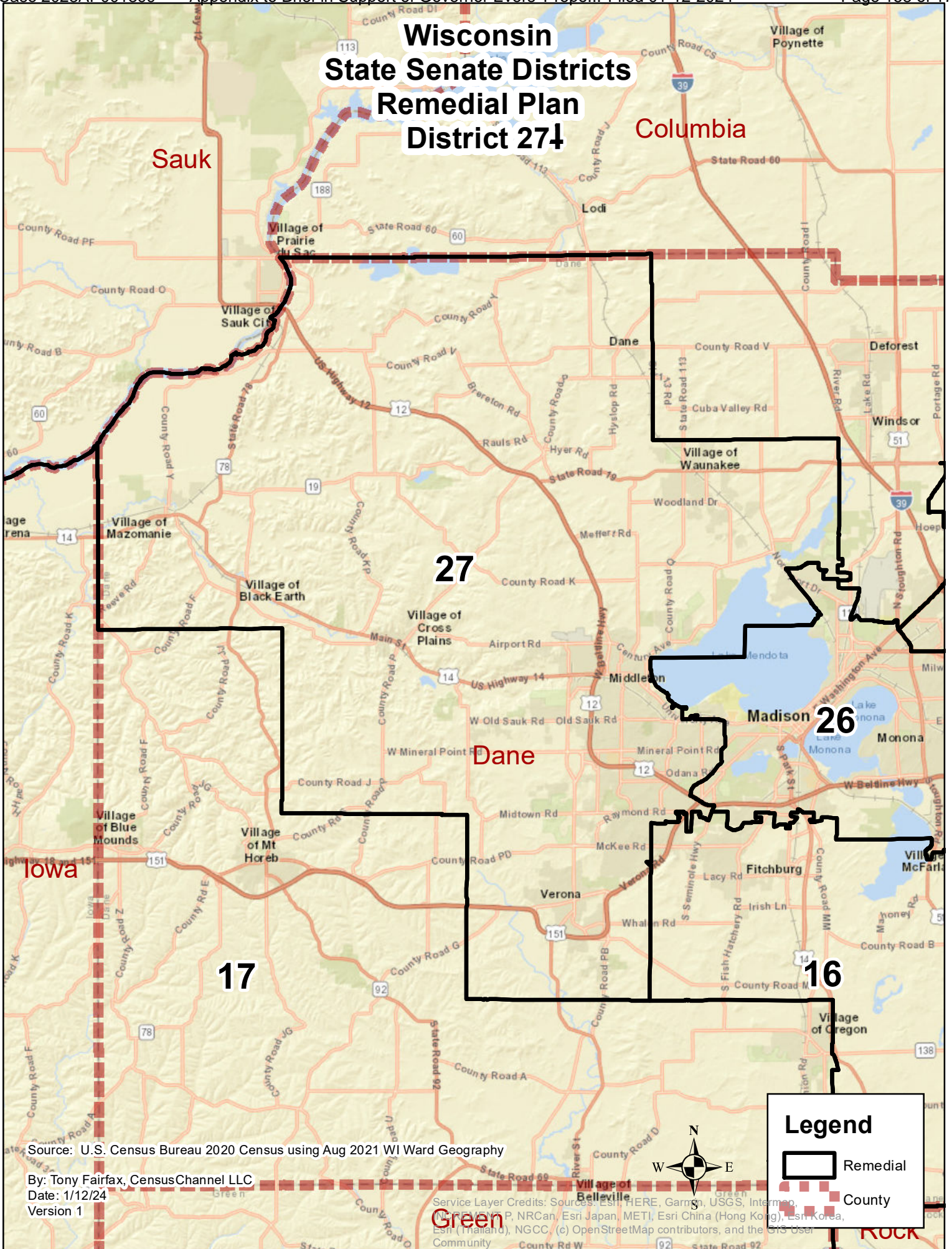
By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

Version: 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Senate Districts Remedial Plan District 27

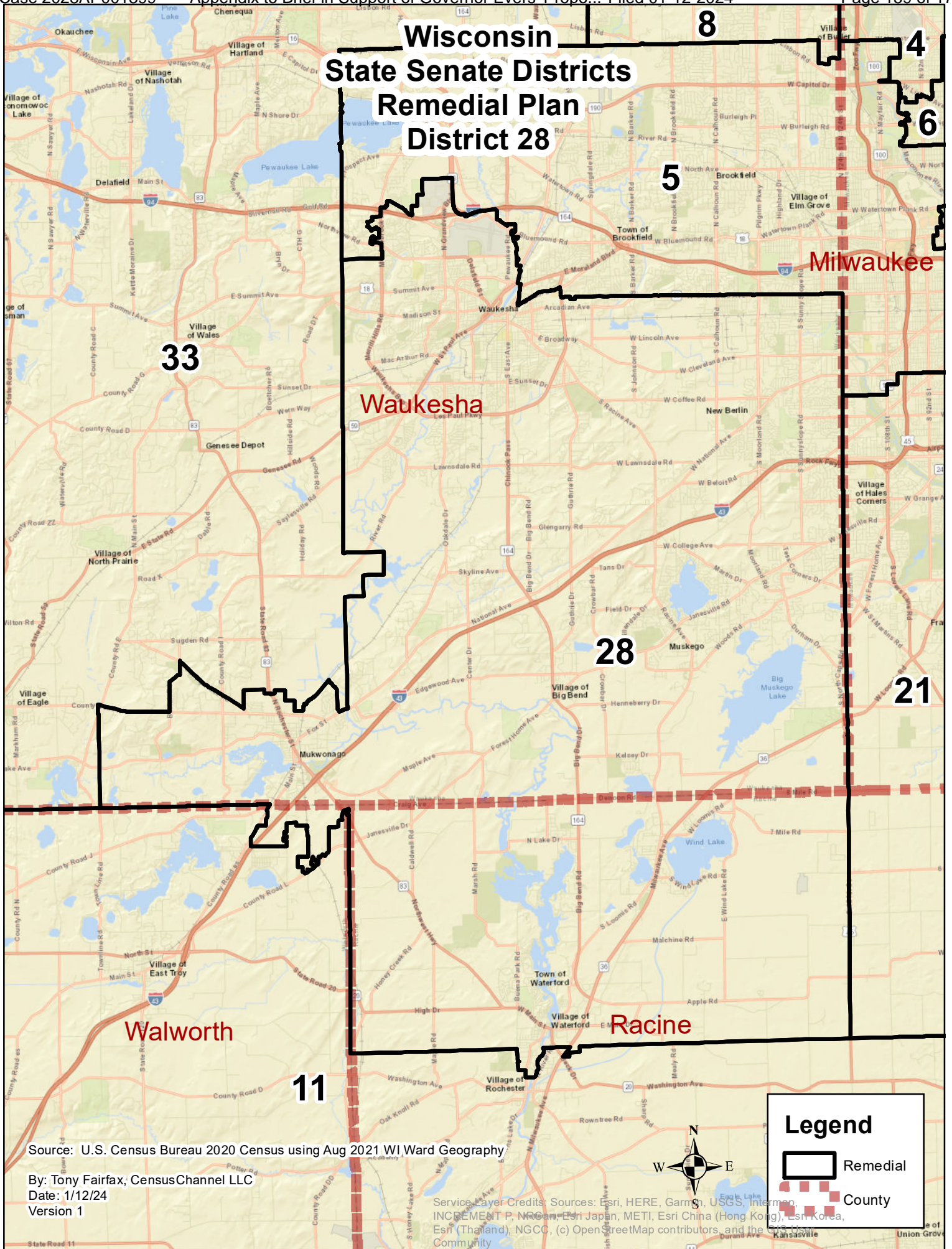


Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Senate Districts Remedial Plan District 28



33

8

4

6

5

28

21

11

### Legend

- Remedial
- County



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

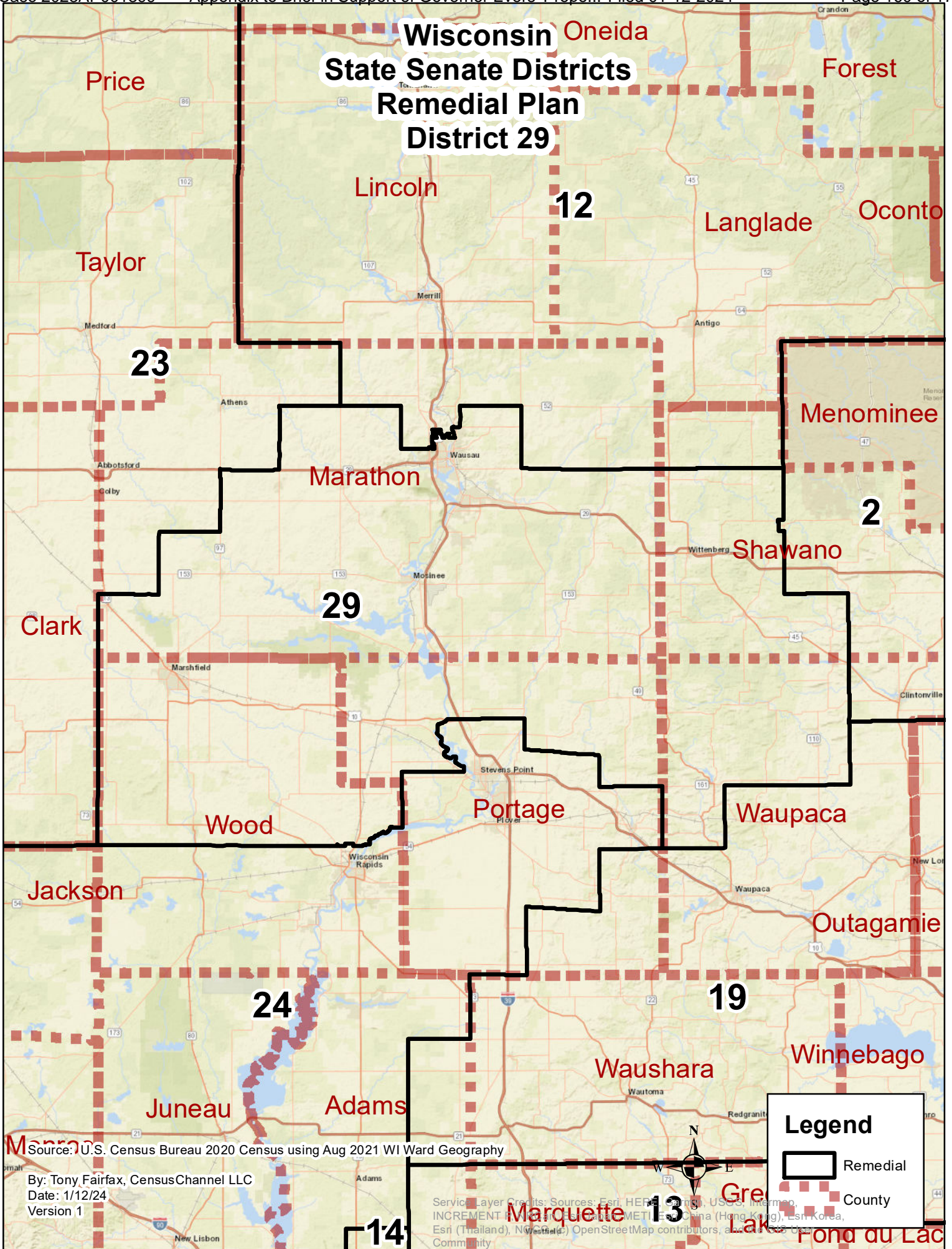
By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Swis, Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Senate Districts Remedial Plan District 29





Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

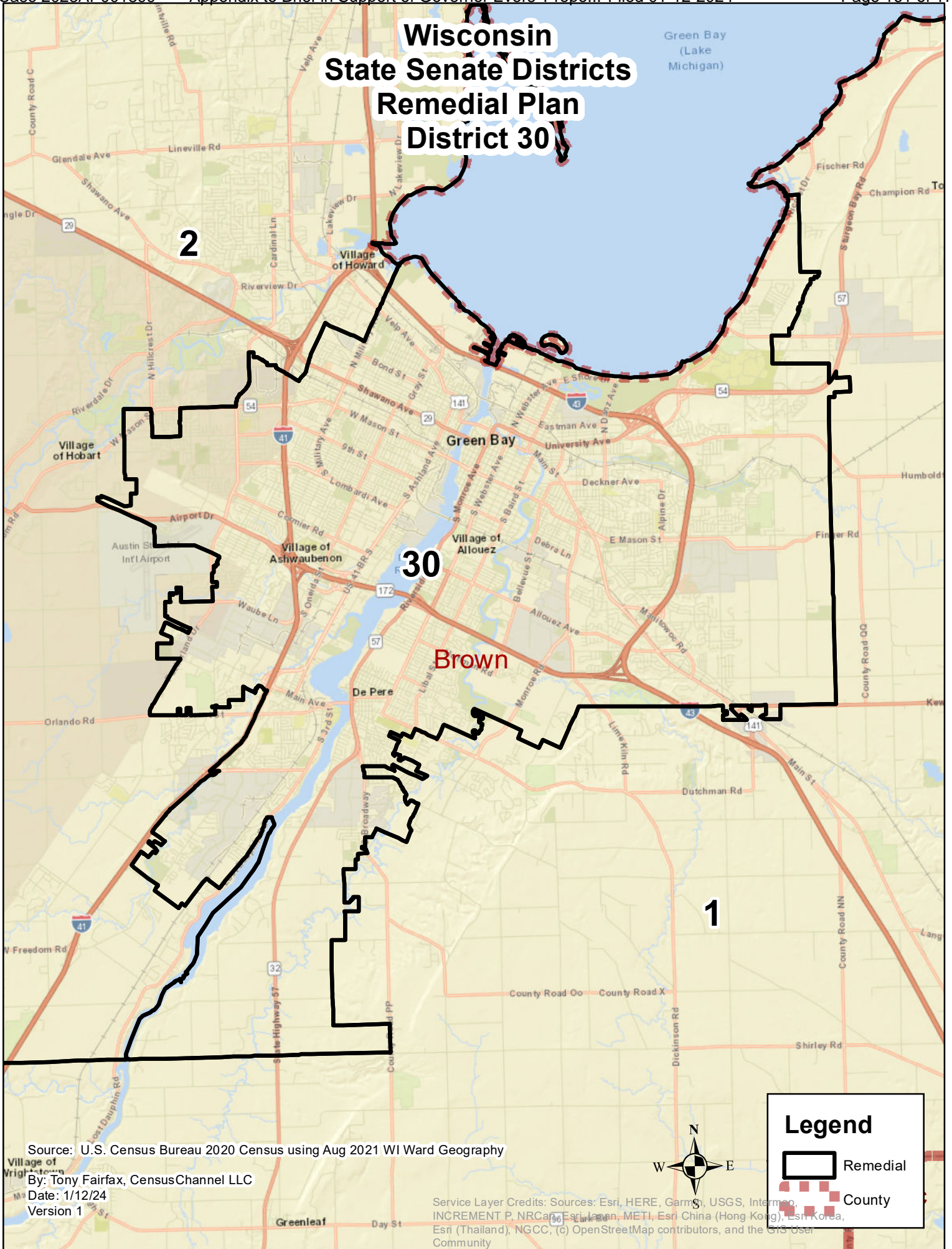
Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NOAA, GEBCO, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NextGIS, OpenStreetMap contributors, and the GIS User Community

**Legend**

-  Remedial
-  County



# Wisconsin State Senate Districts Remedial Plan District 30



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

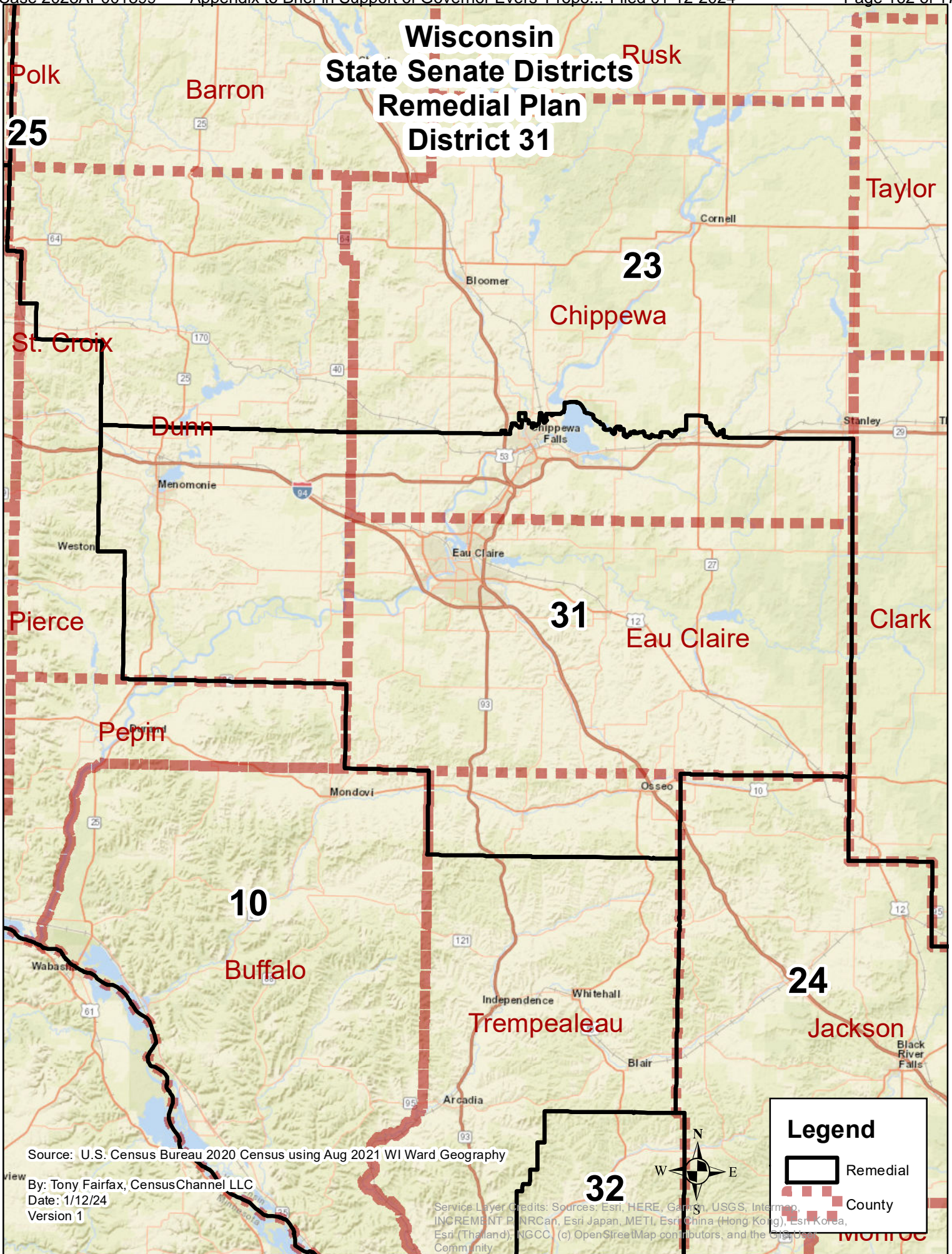
By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCA, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



# Wisconsin State Senate Districts Remedial Plan District 31



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

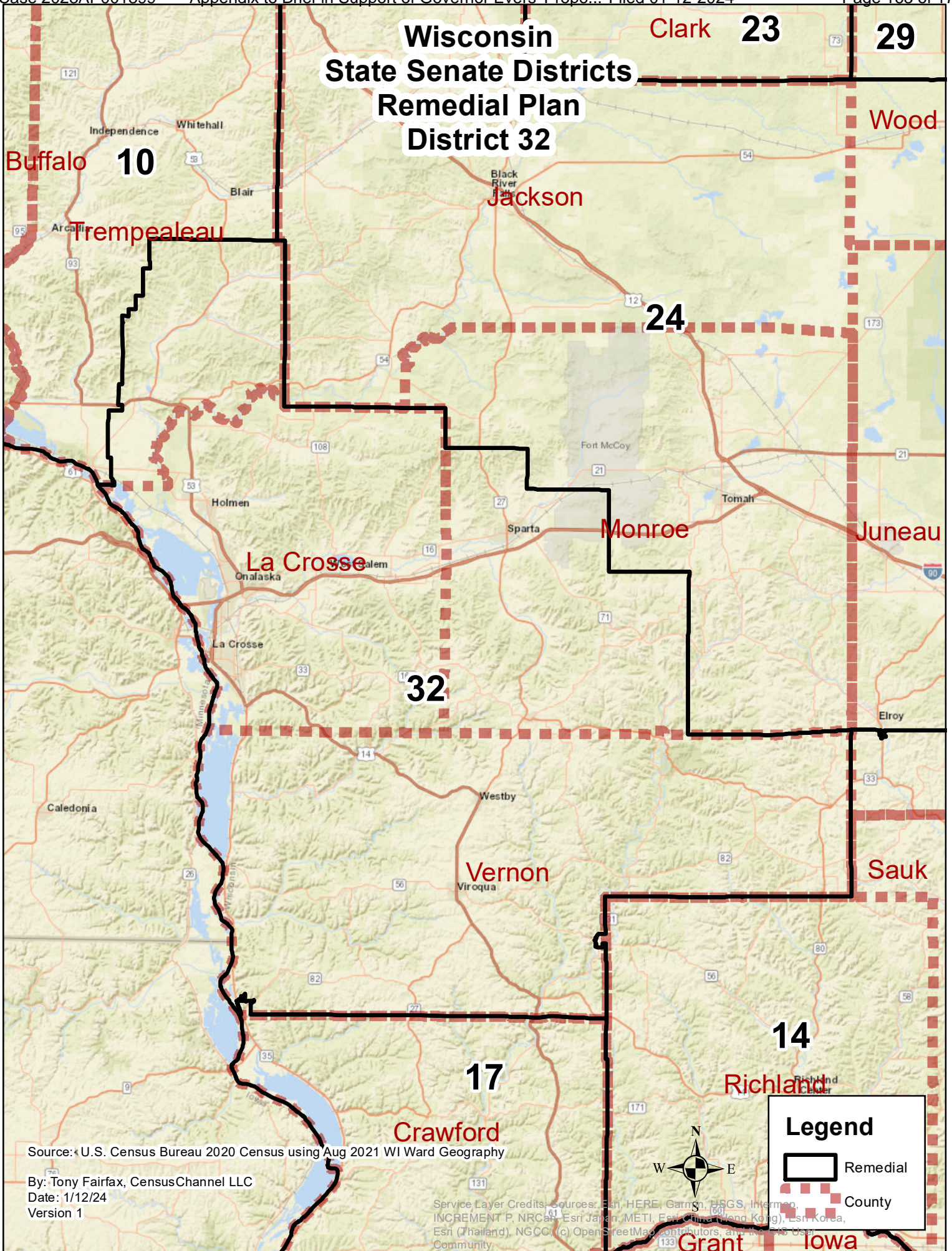
**Legend**

-  Remedial
-  County



Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Senate Districts Remedial Plan District 32

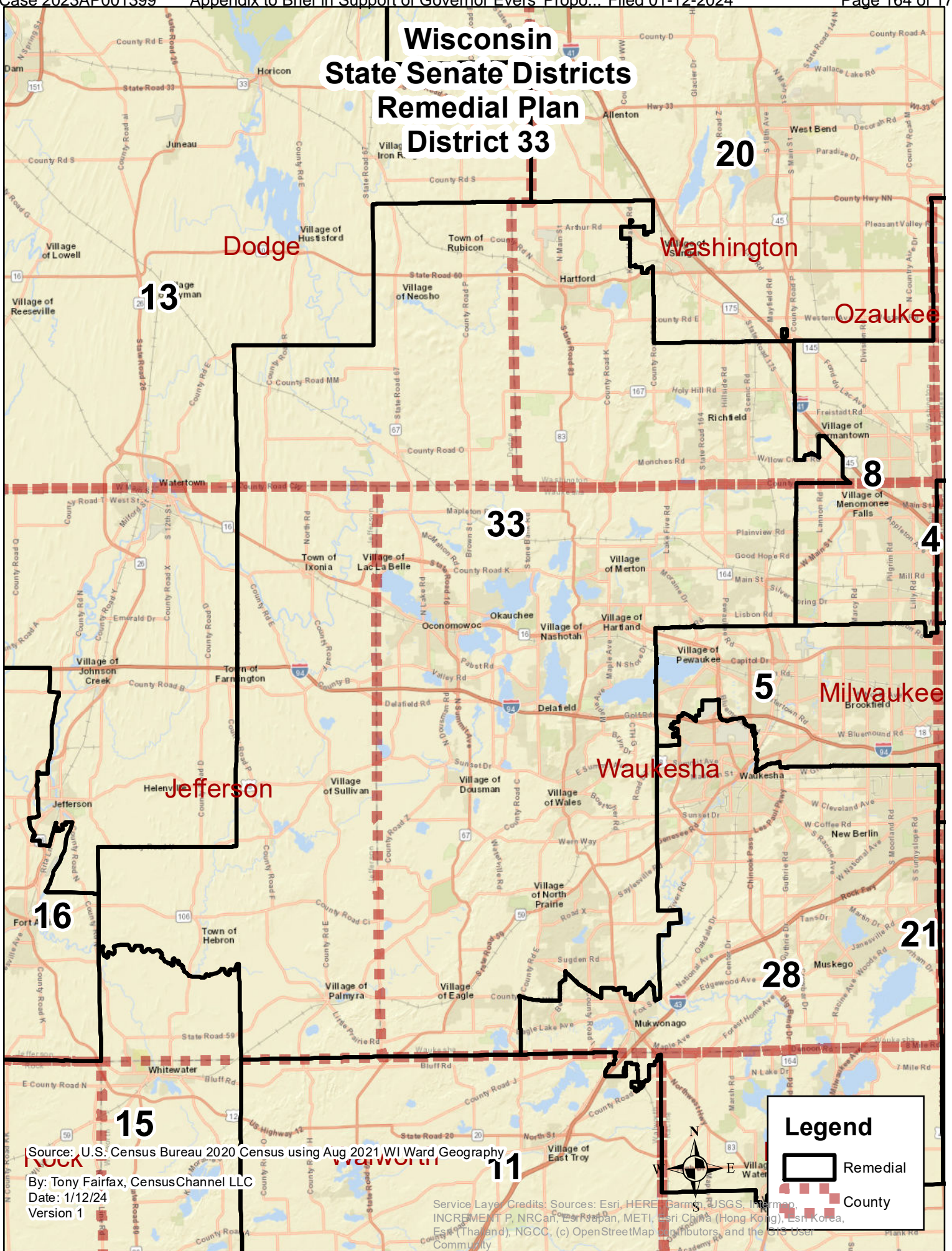


Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCA, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Senate Districts Remedial Plan District 33



Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography

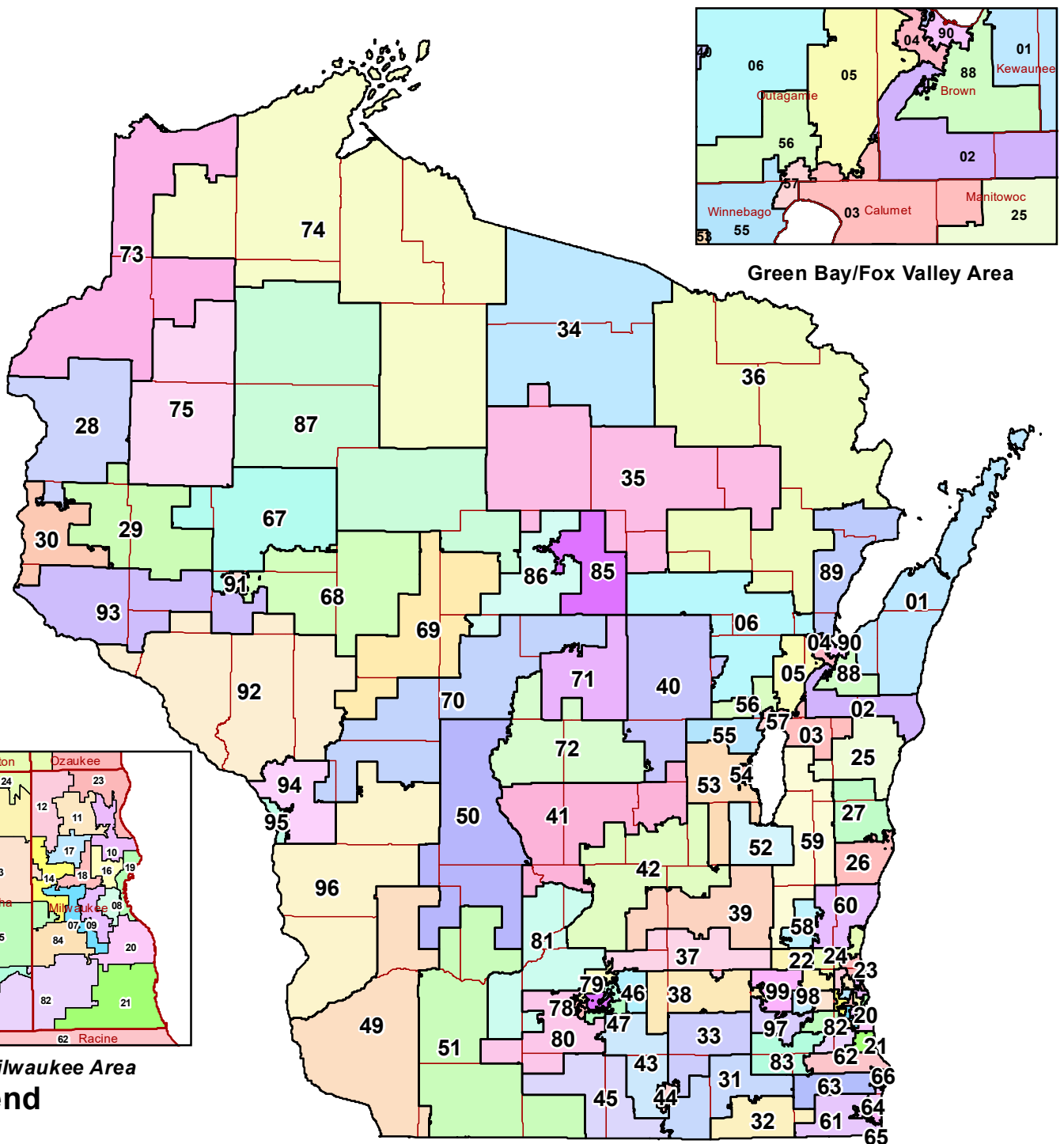
By: Tony Fairfax, CensusChannel LLC

Date: 1/12/24

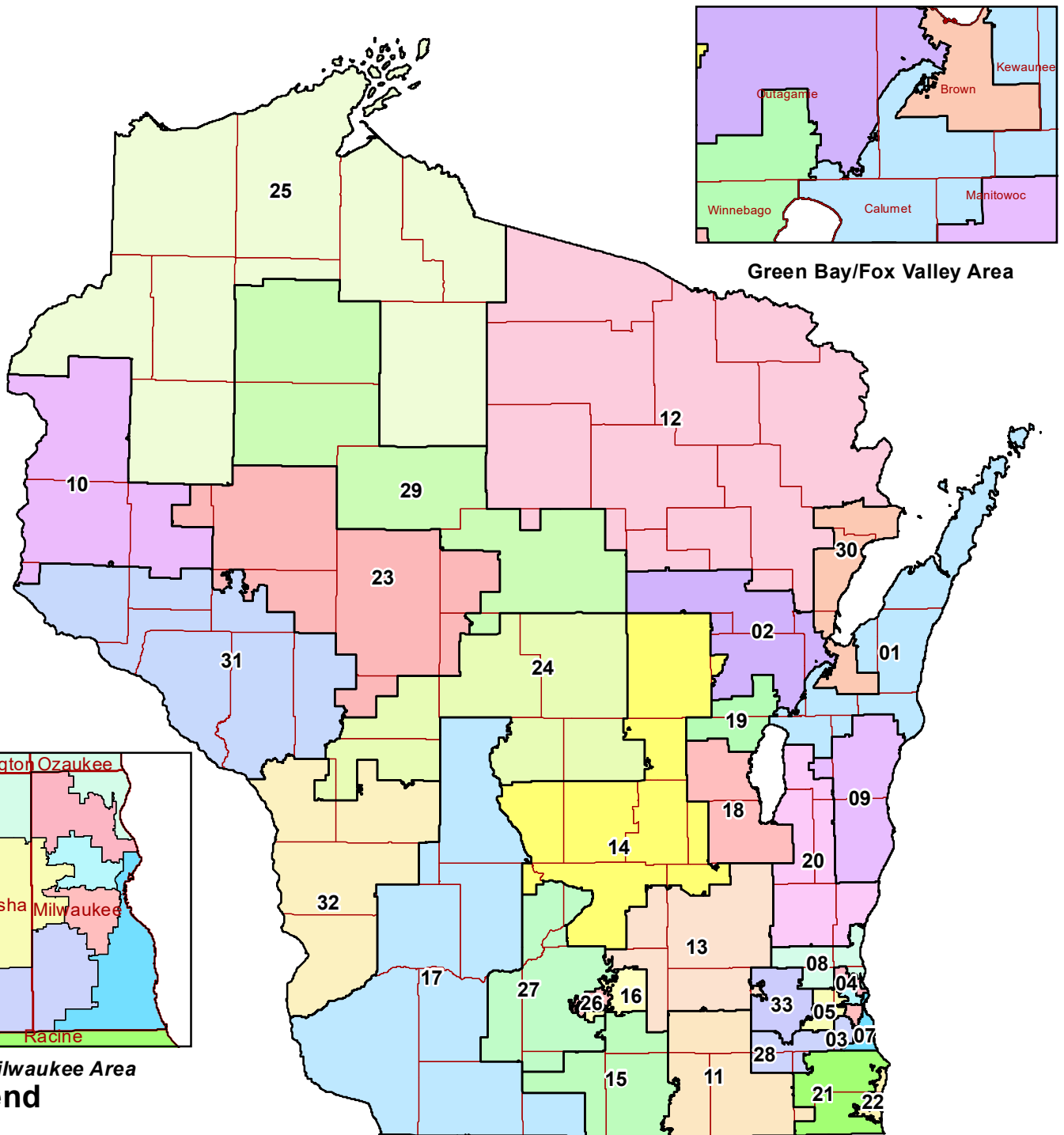
Version 1

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

# Wisconsin State Assembly Districts 2022 Enacted Plan



# Wisconsin State Senate Districts 2022 Enacted Plan

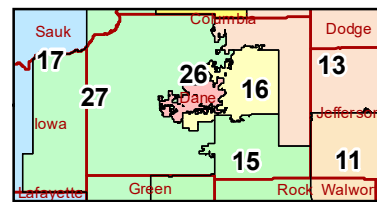


## Legend

- Districts
- County

Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography  
WI Legislative Technology Service Bureau

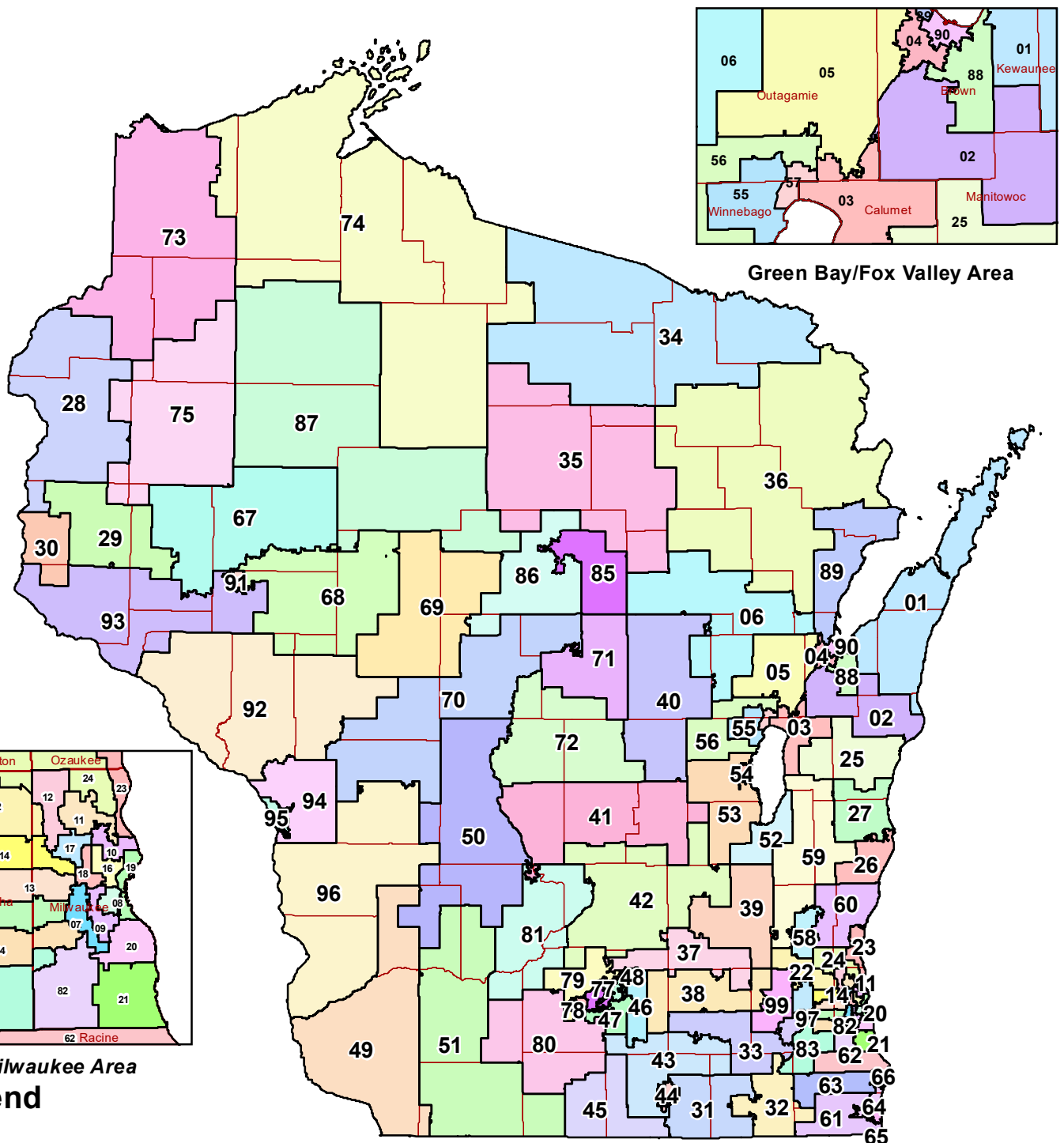
By: Tony Fairfax, CensusChannel LLC  
Date: 1/6/24  
Version 1



**Madison Area**



# Wisconsin State Assembly Districts 2021 Plan



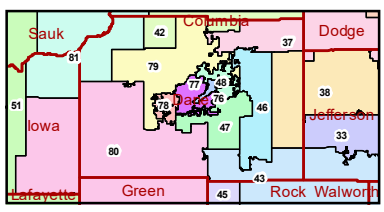
Milwaukee Area

## Legend

- Districts
- County

Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography  
WI Legislative Technology Service Bureau

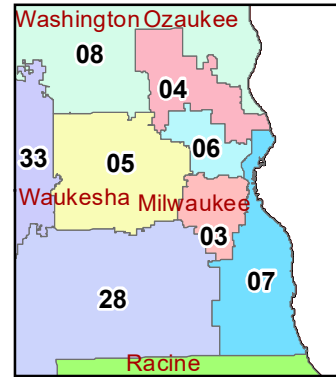
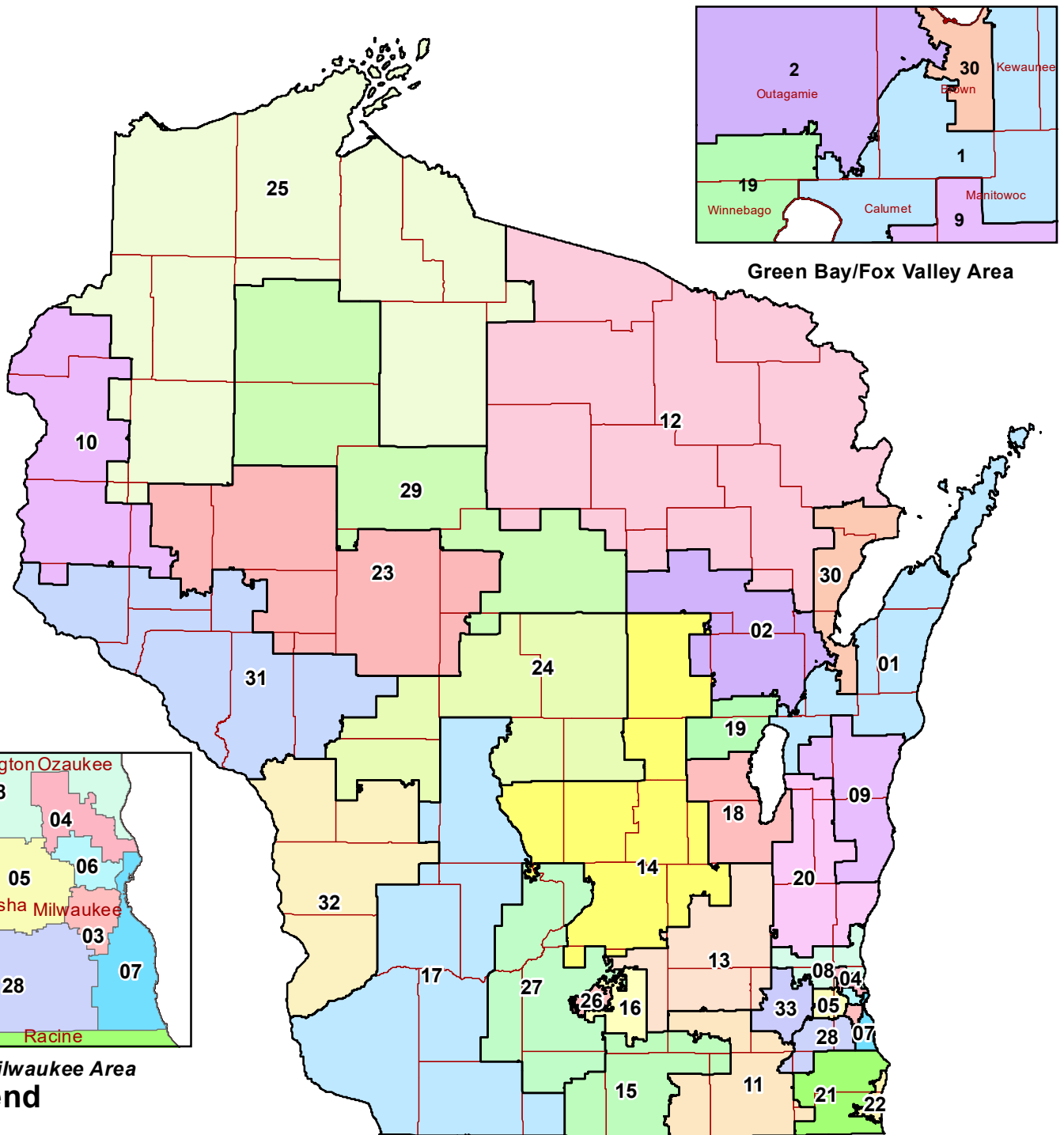
By: Tony Fairfax, CensusChannel LLC  
Date: 1/12/24  
Version 1



Madison Area



# Wisconsin State Senate Districts 2021 Plan



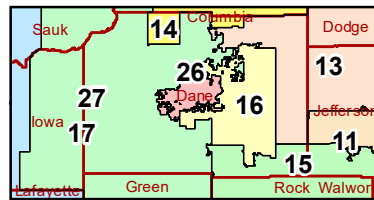
Milwaukee Area

## Legend

- Districts
- County

Source: U.S. Census Bureau 2020 Census using Aug 2021 WI Ward Geography  
WI Legislative Technology Service Bureau

By: Tony Fairfax, CensusChannel LLC  
Date: 1/6/24  
Version 1



Madison Area





## **Appendix C**

Report data

[submitted only in digital form due to its size]

## **Appendix D**

### **Court's Consultant's Technical Specification Document and Ward Stipulation List**

- Court's Consultant's Technical Specification Document
- Ward Stipulation List

## MEMORANDUM TO THE COURT

*Rebecca Clarke v. Wisconsin Election Commission* Appeal Number 2023AP001399

RE: Technical Specifications and Data Requirements for Proposed Remedial Maps Submission

Honorable Justices,

Pursuant to the recent directives of this honorable court, and in line with the guidelines specified in the Court's opinion dated December 22, 2023, we hereby outline our approach for the submission of data accompanying each of the parties' proposed remedial maps and supporting materials.

**Data**

Parties are required to submit their proposed remedial maps as digital files. These files must be in the format of a block assignment, comma-separated file. This file should consist of two columns: the first column should contain the 15-character "GEOID" for each Census Block, and the second column should specify the district each census block is assigned to.<sup>1</sup> Furthermore, parties should follow the guidelines of this court's order on December 22, 2023 (stating "Each party filing such documents through the electronic filing system shall deliver eight courtesy hard copies to the clerk of this court by 5:00 p.m. on January 12, 2024, and shall serve via overnight delivery one courtesy hard copy of such documents to Dr. Grofman and one courtesy copy to Dr. Cervas." at p.2).

Parties should additionally email all digital files in relation to proposed remedial plans to both Dr. Bernard Grofman at <bgrofman@uci.edu> and Dr. Jonathan Cervas at <cervas@cmu.edu>. The first item in the header of each e-mail should be <"Clarke v. WEC"> to facilitate identifying the e-mail as an official communication from a party. Adding communication of information by e-mail will facilitate prompt review since the consultants may be away from their campus offices.

A link to the plan hosted on Dave's Redistricting App (DRA) is also encouraged. Dave's Redistricting App <<https://davesredistricting.org/>> is a free mapping software program that is easy to use and has been made use of by some other state courts. Posting a map on DRA strongly facilitates public access to any proposed map.

In addition, parties should submit a quantitative assessment of their remedial plan regarding the Court's stated criteria (listed below).

**Data Analysis**

All parties should provide a quantitative evaluation of their plans, in line with the court's defined parameters. Where applicable, parties should provide data in a machine-readable format, such as a comma-separated file. If a party is unable to provide the required data analysis for some factor, they should indicate the reasons why they cannot comply.

As per the Court's directives, the following criteria will be assessed.

---

<sup>1</sup> Parties are welcome to send geographic information system files (i.e., shapefiles, geojson) in addition to the block assignment file.

**1. Population Equality:**

- Ensuring compliance with population equality requirements, as stated in the opinion. ¶64 at p.43.

Indicate the total population deviation (overall deviation), and also provide a district-by-district enumeration of the difference between actual and ideal population.

**2. Political Subdivision Splits:**

- “the extent to which assembly districts split counties, towns, and wards.” ¶66 at p.45.

Provide the number of counties or other units that are split, and the total number of split pieces for each type of unit. Also, specify exactly which units are being split and how many times each unit is being split.

**3. Contiguity:**

- Composed of contiguous territory. ¶65 at p.44.

If there are non-contiguous units, please identify which these are and into how many pieces each unit is being divided. Provide a rationale based on a valid state interest for each instance (e.g., “A district can still be contiguous if it contains territory with portions of land separated by water.” ¶27 at p.19.)

**4. Compactness:**

- Formed in as compact a manner as practicable. ¶65 at p.44.

Indicate the compactness metric or metrics employed and provide comprehensive data (i.e., average) for the entire plan as well as detailed data for each district.

**5. Federal Law Compliance:**

- Adherence to the Equal Protection Clause and the Voting Rights Act of 1965. ¶67 at p.46.

Provide any data relevant to your assessment of compliance with the Voting Rights Act. This includes any replication code required for the analysis of racially polarized voting. Also explain the methodology used.

**6. Community Considerations:**

- Preserving communities of interest. (See Court opinion, “These criteria will not supersede constitutionally mandated criteria, such as equal population requirements, but may be considered when evaluating submitted maps.” ¶68 at p.46.

Parties must specify the size and geographic location of any communities of interest identified and the degree to which these communities of interest have been split across multiple districts. Also, parties should clarify how they arrived at their definition and identification of communities of interest.

**7. Political Neutrality:**

- Maintaining political neutrality in the drawing of maps. ¶70 at p.47, while acknowledging that “consideration of partisan impact will not supersede constitutionally mandated criteria such as equal apportionment or contiguity” ¶71 at p.48.

Parties should specify which metrics were used to estimate the degree to which a map satisfies partisan neutrality. Parties must also submit any partisan or election data utilized in determining political neutrality. Parties must submit any replication code necessary for reproducing the results of simulation/ensemble analyses if that methodology has been employed.

We will conduct independent verification of this quantitative data to ensure that comparisons can be made across plans in a consistent fashion that is compliant with the guidelines specified by the Court. If we find that there are limitations of the data analyses presented by the parties, we will seek to remedy them by conducting data analyses of our own using established social science methodologies to describe the properties of each submitted map vis-à-vis each of the criteria laid out by the Court in its December 22, 2023, opinion. We fully recognize that it is the Court alone which determines the relevant evaluative criteria, and it is the Court which judges the degree to which any map that the Court might adopt complies with the Wisconsin Constitution and provisions of statutory law.

We appreciate the Court's guidance in this matter and are committed to upholding the standards set forth in your opinion.

Respectfully submitted,

Dr. Bernard Grofman  
Distinguished Research Professor of Political Science  
University of California Irvine

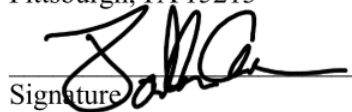
UC Irvine School of Social Sciences  
5229 Social Science Plaza B  
Irvine, CA 92697



\_\_\_\_\_  
Signature December 23, 2023  
Date

Dr. Jonathan Cervas  
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Signature December 23, 2023  
Date

ROW_NUMBER	COUNTY	MUNICIPAL_WARD_LABEL	WARD_GEOID	BLOCKS	POPULATION	ASSEMBLY_DISTRICT	SENATE_DISTRICT	ERROR_TYPE	CORRECTED_LABEL	CORRECTED_GEOID
1	BARRON	CAMERON - V 0001	5500512250001	{550050008003013}	0	75	25	NON-OVERLAPPING	CAMERON - V 0003	55005122500003
2	BARRON	CUMBERLAND - C 0001	55005180250001	{550050002002023}	0	75	25	NON-OVERLAPPING	CUMBERLAND - C 0003	55005180250003
3	BARRON	CUMBERLAND - C 0001	55005180250001	{550050002002047}	0	75	25	NON-OVERLAPPING	CUMBERLAND - C 0002	55005180250002
4	BARRON	LAKELAND - T 0001	55005416000001	{550050002002012}	0	75	25	NON-OVERLAPPING	LAKELAND - T 0002	55005416000002
5	BROWN	DE PERE - C 0003	55009197750003	{550090214001018, 550090214001020}	0	2	1	NON-OVERLAPPING	DE PERE - C 0009	55009197750009
6	BROWN	DE PERE - C 0006	55009197750006	{550099400071006}	0	2	1	NON-OVERLAPPING	DE PERE - C 0014	55009197750014
7	CHIPPEWA	CHIPPEWA FALLS - C 0003	55017145750003	{550170105003020}	0	67	23	NON-OVERLAPPING	CHIPPEWA FALLS - C 0002	55017145750002
8	CHIPPEWA	LAKE HALLIE - V 0007	55017415250007	{550170102003009, 550170102003010}	0	67	23	NON-OVERLAPPING	LAKE HALLIE - V 0002	55017415250002
9	CHIPPEWA	LAKE HALLIE - V 0007	55017415250007	{550170102003006}	9	67	23	NON-OVERLAPPING	LAKE HALLIE - V 0002	55017415250002
10	CHIPPEWA	LAKE HALLIE - V 0016	55017415250016	{550170101001038}	2	67	23	NO SUCH WARD	LAKE HALLIE - V 0007	55017415250007
11	CHIPPEWA	LAKE HALLIE - V 0016	55017415250016	{550170101002032}	5	67	23	NO SUCH WARD	LAKE HALLIE - V 0007	55017415250007
12	CHIPPEWA	WOODMOHR - T 0002	55017888750002	{550170112004035}	4	67	23	NON-OVERLAPPING	WOODMOHR - T 0001	55017888750001
13	CLARK	NEILLSVILLE - C 0002	55019558000002	{550199507002035}	0	69	23	NON-OVERLAPPING	NEILLSVILLE - C 0003	55019558000003
14	COLUMBIA	COLUMBUS - C 0001	55021164500001	{550219712002006}	0	37	13	NON-OVERLAPPING	COLUMBUS - C 0008	55021164500008
15	COLUMBIA	PORTAGE - C 0002	55021641000002	{550219705001053}	0	41	14	NON-OVERLAPPING	PORTAGE - C 0011	55021641000011
16	COLUMBIA	POYNETTE - V 0001	55021649000001	{550219707004010, 550219707004013}	0	42	14	NON-OVERLAPPING	POYNETTE - V 0004	55021649000004
17	CRAWFORD	PRAIRIE DU CHIEN - C 0001	55023650500001	{550239604004062}	0	96	32	NON-OVERLAPPING	PRAIRIE DU CHIEN - C 0004	55023650500004
18	DANE	BERRY - T 0001	55025070250001	{550250130001055}	0	81	27	NON-OVERLAPPING	BERRY - T 0002	55025070250002
19	DANE	CHRISTIANA - T 0003	55025146500003	{550250119004040}	0	38	13	NO SUCH WARD	CHRISTIANA - T 0001	55025146500001
20	DANE	CHRISTIANA - T 0003	55025146500003	{550250119004038}	0	38	13	NO SUCH WARD	CHRISTIANA - T 0001	55025146500001
21	DANE	COTTAGE GROVE - V 0003	55025171750003	{550250117002073}	0	46	16	NON-OVERLAPPING	COTTAGE GROVE - V 0013	55025171750013
22	DANE	COTTAGE GROVE - V 0003	55025171750003	{550250117002078}	0	46	16	NON-OVERLAPPING	COTTAGE GROVE - V 0013	55025171750013
23	DANE	DEERFIELD - V 0002	55025192500002	{550250119001017}	0	38	13	NON-OVERLAPPING	DEERFIELD - V 0001	55025192500001
24	DANE	DEFOREST - V 0010	55025193500010	{550250132022046}	0	37	13	NON-OVERLAPPING	DEFOREST - V 0019	55025193500019
25	DANE	MADISON - C 0001	55025480000001	{550250109052006}	0	47	16	NON-OVERLAPPING	MADISON - C 0110	55025480000110
26	DANE	MADISON - C 0001	55025480000001	{550250027003003, 550250027003031}	0	47	16	NON-OVERLAPPING	MADISON - C 0016	55025480000016
27	DANE	MADISON - C 0001	55025480000001	{550250018041001}	0	47	16	NON-OVERLAPPING	MADISON - C 0029	55025480000029
28	DANE	MADISON - C 0001	55025480000001	{550250114053016}	0	47	16	NON-OVERLAPPING	MADISON - C 0008	55025480000008
29	DANE	MADISON - C 0001	55025480000001	{550250026033002, 550250026033004, 550250026033023, 550250114053038}	0	47	16	NON-OVERLAPPING	MADISON - C 0022	55025480000022
30	DANE	MADISON - C 0001	55025480000001	{550250009024001, 550250008001000, 550250008001001}	88	47	16	NON-OVERLAPPING	MADISON - C 0064	55025480000064
31	DANE	MADISON - C 0003	55025480000003	{550250014021042, 550250014021043, 550250014022001, 550250014021044, 550250014021050}	0	47	16	NON-OVERLAPPING	MADISON - C 0075	55025480000075
32	DANE	MADISON - C 0003	55025480000003	{550250014021018, 550250014021058, 550250014021059, 550250014021060, 550250014021061, 550250014021062, 550250014021064, 550250014021065, 550250014021066, 550250014021033}	0	47	16	NON-OVERLAPPING	MADISON - C 0075	55025480000075
33	DANE	MADISON - C 0003	55025480000003	{550250114071111, 550250114071112, 550250114071099, 550250114071119, 550250105011003}	0	47	16	NON-OVERLAPPING	MADISON - C 0001	55025480000001
34	DANE	MADISON - C 0003	55025480000003	{550250105011021}	0	47	16	NON-OVERLAPPING	MADISON - C 0001	55025480000001
35	DANE	MADISON - C 0004	55025480000004	{550250006001006, 550250006001005}	0	47	16	NON-OVERLAPPING	MADISON - C 0076	55025480000076
36	DANE	MADISON - C 0004	55025480000004	{550250112011068}	0	47	16	NON-OVERLAPPING	MADISON - C 0145	55025480000145
37	DANE	MCFARLAND - V 0003	55025468500003	{550250105011007}	0	47	16	NON-OVERLAPPING	MCFARLAND - V 0012	55025468500012
38	DANE	MIDDLETON - C 0003	55025515750003	{550250109072003, 550250109081032, 550250109081062}	0	79	27	NON-OVERLAPPING	MIDDLETON - C 0010	55025515750010
39	DANE	MIDDLETON - T 0107	55025516000107	{550250109054020}	0	80	27	NO SUCH WARD	MIDDLETON - T 0008	55025516000008
40	DANE	MIDDLETON - T 0107	55025516000107	{550250109054019}	0	80	27	NO SUCH WARD	MIDDLETON - T 0008	55025516000008
41	DANE	MIDDLETON - T 0107	55025516000107	{550250109054023}	0	80	27	NO SUCH WARD	MIDDLETON - T 0008	55025516000008
42	DANE	MIDDLETON - T 0107	55025516000107	{550250109054025}	0	80	27	NO SUCH WARD	MIDDLETON - T 0008	55025516000008
43	DANE	MIDDLETON - T 0107	55025516000107	{550250109054027}	0	80	27	NO SUCH WARD	MIDDLETON - T 0008	55025516000008
44	DANE	MONONA - C 0003	55025536750003	{550250029003024, 550250029003015}	0	47	16	NON-OVERLAPPING	MONONA - C 0006	55025536750006
45	DANE	MONTROSE - T 0001	55025541000001	{550250126003053}	0	80	27	NON-OVERLAPPING	MONTROSE - T 0002	55025541000002
46	DANE	RUTLAND - T 0009	55025704000009	{550250124002003, 550250124002019}	0	43	15	NO SUCH WARD	RUTLAND - T 0001	55025704000001
47	DANE	RUTLAND - T 0009	55025704000009	{550250124002000}	0	43	15	NO SUCH WARD	RUTLAND - T 0001	55025704000001
48	DANE	STOUGHTON - C 0005	55025776750005	{550250122011013}	0	43	15	NON-OVERLAPPING	STOUGHTON - C 0003	55025776750003
49	DANE	STOUGHTON - C 0007	55025776750007	{550250106005019}	2	43	15	NON-OVERLAPPING	STOUGHTON - C 0016	55025776750016

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50	DANE	SUN PRAIRIE - T 0002	55025786250002	{550250117002072}	0	46	16	NON-OVERLAPPING	SUN PRAIRIE - T 0003	55025786250003
51	DANE	VERONA - C 0003	55025826000003	{550250137001012}	0	80	27	NON-OVERLAPPING	VERONA - C 0002	55025826000002
52	DANE	VERONA - T 0098	55025826250098	{550250108012008}	0	80	27	NO SUCH WARD	VERONA - T 0002	55025826250002
53	DANE	VERONA - T 0098	55025826250098	{550250108012009}	0	80	27	NO SUCH WARD	VERONA - T 0002	55025826250002
54	DANE	VERONA - T 0115	55025826250115	{550250005043017}	0	80	27	NO SUCH WARD	VERONA - T 0002	55025826250002
55	DANE	VERONA - T 0115	55025826250115	{550250005043020}	0	80	27	NO SUCH WARD	VERONA - T 0002	55025826250002
56	DODGE	BEAVER DAM - C 0002	55027059000002	{550279607003006, 550279607003005}	0	39	13	NON-OVERLAPPING	BEAVER DAM - C 0013	55027059000013
57	DODGE	OAK GROVE - T 0004	55027590000004	{550279612002028}	0	39	13	NON-OVERLAPPING	OAK GROVE - T 0001	55027590000001
58	DODGE	WAUPUN - C 0001	55027844250001	{550279602003159, 550279603001045}	0	53	18	NON-OVERLAPPING	WAUPUN - C 0002	55027844250002
59	EAU CLAIRE	EAU CLAIRE - C 0001	55035223000001	{550350003025029, 550350008034021, 550350003025037, 550350008034019, 550350008034020}	0	91	31	NON-OVERLAPPING	EAU CLAIRE - C 0018	55035223000018
60	EAU CLAIRE	EAU CLAIRE - C 0001	55035223000001	{550350003026068}	0	91	31	NON-OVERLAPPING	EAU CLAIRE - C 0033	55035223000033
61	EAU CLAIRE	EAU CLAIRE - C 0001	55035223000001	{550350013001015}	0	91	31	NON-OVERLAPPING	EAU CLAIRE - C 0019	55035223000019
62	EAU CLAIRE	EAU CLAIRE - C 0001	55035223000001	{550350013001004}	0	91	31	NON-OVERLAPPING	EAU CLAIRE - C 0019	55035223000019
63	EAU CLAIRE	EAU CLAIRE - C 0003	55035223000003	{550350009003072}	0	91	31	NON-OVERLAPPING	EAU CLAIRE - C 0021	55035223000021
64	EAU CLAIRE	EAU CLAIRE - C 0003	55035223000003	{550350003011036}	0	91	31	NON-OVERLAPPING	EAU CLAIRE - C 0011	55035223000011
65	EAU CLAIRE	EAU CLAIRE - C 0004	55035223000004	{550350009003031}	0	91	31	NON-OVERLAPPING	EAU CLAIRE - C 0017	55035223000017
66	EAU CLAIRE	EAU CLAIRE - C 0004	55035223000004	{550350008021002}	0	91	31	NON-OVERLAPPING	EAU CLAIRE - C 0027	55035223000027
67	EAU CLAIRE	EAU CLAIRE - C 0004	55035223000004	{550350008021007}	0	91	31	NON-OVERLAPPING	EAU CLAIRE - C 0026	55035223000026
68	EAU CLAIRE	EAU CLAIRE - C 0004	55035223000004	{550350013001052}	0	91	31	NON-OVERLAPPING	EAU CLAIRE - C 0023	55035223000023
69	EAU CLAIRE	EAU CLAIRE - C 0004	55035223000004	{550350013001059}	10	91	31	NON-OVERLAPPING	EAU CLAIRE - C 0019	55035223000019
70	EAU CLAIRE	EAU CLAIRE - C 0005	55035223000005	{550350008021017}	0	91	31	NON-OVERLAPPING	EAU CLAIRE - C 0052	55035223000052
71	EAU CLAIRE	EAU CLAIRE - C 0005	55035223000005	{550350008021018}	14	91	31	NON-OVERLAPPING	EAU CLAIRE - C 0027	55035223000027
72	EAU CLAIRE	EAU CLAIRE - C 0006	55035223000006	{550350008031031}	0	91	31	NON-OVERLAPPING	EAU CLAIRE - C 0033	55035223000033
73	EAU CLAIRE	EAU CLAIRE - C 0007	55035223000007	{550350008032011}	0	91	31	NON-OVERLAPPING	EAU CLAIRE - C 0015	55035223000015
74	EAU CLAIRE	UNION - T 0004	55035815500004	{550350013002034}	0	67	23	NON-OVERLAPPING	UNION - T 0003	55035815500003
75	EAU CLAIRE	WASHINGTON - T 0017	55035836120017	{550350009003057}	0	93	31	NO SUCH WARD	WASHINGTON - T 0005	55035836120005
76	EAU CLAIRE	WASHINGTON - T 0017	55035836120017	{550350009003046}	10	93	31	NO SUCH WARD	WASHINGTON - T 0004	55035836120004
77	FOND DU LAC	FOND DU LAC - C 0001	55039262750001	{550390403005002}	0	52	18	NON-OVERLAPPING	FOND DU LAC - C 0007	55039262750007
78	FOND DU LAC	FOND DU LAC - C 0004	55039262750004	{550390420012062, 550390420012067}	0	52	18	NON-OVERLAPPING	FOND DU LAC - C 0017	55039262750017
79	FOND DU LAC	RIPON - C 0001	55039681750001	{550390415001017}	57	42	14	NON-OVERLAPPING	RIPON - C 0007	55039681750007
80	GRANT	BOSCOBEL - C 0002	55043088500002	{550439602001037}	0	49	17	NON-OVERLAPPING	BOSCOBEL - C 0001	55043088500001
81	GRANT	BOSCOBEL - C 0002	55043088500002	{550439602001017, 550439602001024}	0	49	17	NON-OVERLAPPING	BOSCOBEL - C 0001	55043088500001
82	GRANT	FENNIMORE - C 0001	55043256000001	{550439603002045}	0	49	17	NON-OVERLAPPING	FENNIMORE - C 0003	55043256000003
83	GRANT	LANCASTER - C 0003	55043422500003	{550439607004032}	0	49	17	NON-OVERLAPPING	LANCASTER - C 0006	55043422500006
84	GRANT	MUSCODA - T 0002	55043552250002	{550439601002063, 550439601002068}	0	49	17	NO SUCH WARD	MUSCODA - T 0001	55043552250001
85	GRANT	MUSCODA - T 0002	55043552250002	{550439601001046}	0	49	17	NO SUCH WARD	MUSCODA - T 0001	55043552250001
86	GRANT	PLATTEVILLE - C 0001	55043632500001	{550439610004023}	0	49	17	NON-OVERLAPPING	PLATTEVILLE - C 0003	55043632500003
87	GRANT	PLATTEVILLE - C 0002	55043632500002	{550439609003047, 550439609003048, 550439609003054}	43	49	17	NON-OVERLAPPING	PLATTEVILLE - C 0007	55043632500007
88	GREEN	MONROE - C 0002	55045537500002	{550459605003043}	0	51	17	NON-OVERLAPPING	MONROE - C 0005	55045537500005
89	GREEN LAKE	BROOKLYN - T 0002	55047101250002	{550471004003083}	0	41	14	NON-OVERLAPPING	BROOKLYN - T 0001	55047101250001
90	GREEN LAKE	GREEN LAKE - C 0001	55047313000001	{550471004003066}	9	41	14	NON-OVERLAPPING	GREEN LAKE - C 0002	55047313000002
91	GREEN LAKE	GREEN LAKE - T 0002	55047313500002	{550471004003045}	0	42	14	NON-OVERLAPPING	GREEN LAKE - T 0001	55047313500001
92	GREEN LAKE	GREEN LAKE - T 0004	55047313500004	{550471005001049}	0	42	14	NO SUCH WARD	GREEN LAKE - T 0001	55047313500001
93	GREEN LAKE	GREEN LAKE - T 0004	55047313500004	{550471005001022}	0	42	14	NO SUCH WARD	GREEN LAKE - T 0001	55047313500001
94	GREEN LAKE	PRINCETON - C 0003	55047656000003	{550471003003036}	0	41	14	NON-OVERLAPPING	PRINCETON - C 0001	55047656000001
95	JACKSON	ALMA - T 0001	55053012750001	{550539602001093}	0	92	31	NON-OVERLAPPING	ALMA - T 0003	55053012750003
96	JEFFERSON	FORT ATKINSON - C 0005	55055266750005	{550551013003022}	0	33	11	NON-OVERLAPPING	FORT ATKINSON - C 0001	55055266750001
97	JEFFERSON	JEFFERSON - C 0002	55055379000002	{550551007002077, 550551010001019, 550551010002006}	0	33	11	NON-OVERLAPPING	JEFFERSON - C 0003	55055379000003
98	JEFFERSON	JOHNSON CREEK - V 0002	55055383500002	{550551017011110}	0	38	13	NON-OVERLAPPING	JOHNSON CREEK - V 0003	55055383500003
99	JEFFERSON	KOSHKONONG - T 0001	55055403750001	{550551013003012}	0	33	11	NON-OVERLAPPING	KOSHKONONG - T 0005	55055403750005
100	JEFFERSON	KOSHKONONG - T 0002	55055403750002	{550551009003078}	0	33	11	NON-OVERLAPPING	KOSHKONONG - T 0001	55055403750001
101	JEFFERSON	LAKE MILLS - C 0001	55055416750001	{550551005005042}	0	38	13	NON-OVERLAPPING	LAKE MILLS - C 0003	55055416750003
102	JEFFERSON	LAKE MILLS - C 0001	55055416750001	{550551005002011}	0	38	13	NON-OVERLAPPING	LAKE MILLS - C 0004	55055416750004
103	JEFFERSON	LAKE MILLS - C 0002	55055416750002	{550551005001012}	12	38	13	NON-OVERLAPPING	LAKE MILLS - C 0001	55055416750001
104	KENOSHA	KENOSHA - C 0001	55059392250001	{550590028021062}	0	64	22	NON-OVERLAPPING	KENOSHA - C 0072	55059392250072

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105	KENOSHA	KENOSHA - C 0002	55059392250002	{550590006016025, 550590026042009, 550590026042010}	0	64	22	NON-OVERLAPPING	KENOSHA - C 0072	55059392250072
106	KENOSHA	KENOSHA - C 0002	55059392250002	{550590006016057}	0	64	22	NON-OVERLAPPING	KENOSHA - C 0072	55059392250072
107	KENOSHA	KENOSHA - C 0002	55059392250002	{550590006031001}	0	64	22	NON-OVERLAPPING	KENOSHA - C 0023	55059392250023
108	KENOSHA	KENOSHA - C 0002	55059392250002	{550590006033012, 550590006033013}	5	64	22	NON-OVERLAPPING	KENOSHA - C 0022	55059392250022
109	KENOSHA	KENOSHA - C 0006	55059392250006	{550590024001017, 550590024001018}	25	65	22	NON-OVERLAPPING	KENOSHA - C 0066	55059392250066
110	KENOSHA	PADDOCK LAKE - V 0003	55059609750003	{550590029031014}	0	61	21	NON-OVERLAPPING	PADDOCK LAKE - V 0005	55059609750005
111	LA CROSSE	HOLLAND - T 0003	55063353500003	{550630102021018, 550630102021019}	15	94	32	NON-OVERLAPPING	HOLLAND - T 0001	55063353500001
112	LA CROSSE	ONALASKA - C 0001	55063599250001	{550630105004020}	0	94	32	NON-OVERLAPPING	ONALASKA - C 0009	55063599250009
113	LAFAYETTE	ARGYLE - T 0001	55065026750001	{550659701003062}	0	51	17	NON-OVERLAPPING	ARGYLE - T 0002	55065026750002
114	MARQUETTE	MONTELLO - C 0003	55077538750003	{550779603002031}	0	42	14	NON-OVERLAPPING	MONTELLO - C 0004	55077538750004
115	MILWAUKEE	FRANKLIN - C 0023	55079273000023	{550791873003009, 550791873003010, 550791873003011, 550791873003012, 550791873003013, 550791873003014, 550791873003015, 550791873003026, 550791873003027, 550791873003028, 550791873003029, 550791873003030}	553	82	28	NON-OVERLAPPING	FRANKLIN - C 1502	55079273001502
116	MONROE	SPARTA - C 0002	55081753250002	{550819503004011, 550819503004008, 550819503005001, 550819503004012}	9	70	24	NON-OVERLAPPING	SPARTA - C 0011	55081753250011
117	MONROE	SPARTA - T 0017	55081753500017	{550819509003042}	0	70	24	NO SUCH WARD	SPARTA - T 0002	55081753500002
118	MONROE	SPARTA - T 0017	55081753500017	{550819503004044}	0	70	24	NO SUCH WARD	SPARTA - T 0002	55081753500002
119	MONROE	TOMAH - C 0002	55081800750002	{550819507003019}	0	70	24	NON-OVERLAPPING	TOMAH - C 0007	55081800750007
120	ONEIDA	RHINELANDER - C 0003	55085672000003	{550859705001041}	0	34	12	NON-OVERLAPPING	RHINELANDER - C 0010	55085672000010
121	OUTAGAMIE	APPLETON - C 0016	55087023750016	{550870125031036}	0	56	19	NON-OVERLAPPING	APPLETON - C 0019	55087023750019
122	OUTAGAMIE	APPLETON - C 0016	55087023750016	{550870125031034}	0	56	19	NON-OVERLAPPING	APPLETON - C 0019	55087023750019
123	OUTAGAMIE	BUCHANAN - T 0002	55087107500002	{550870120002039}	0	3	1	NON-OVERLAPPING	BUCHANAN - T 0003	55087107500003
124	OUTAGAMIE	GRAND CHUTE - T 0020	55087300750020	{550870125032001}	0	56	19	NO SUCH WARD	GRAND CHUTE - T 0016	55087300750016
125	OUTAGAMIE	GRAND CHUTE - T 0020	55087300750020	{550870125031004}	0	56	19	NO SUCH WARD	GRAND CHUTE - T 0016	55087300750016
126	OUTAGAMIE	GRAND CHUTE - T 0020	55087300750020	{550870125031015}	0	56	19	NO SUCH WARD	GRAND CHUTE - T 0016	55087300750016
127	OUTAGAMIE	GRAND CHUTE - T 0020	55087300750020	{550870125031014}	0	56	19	NO SUCH WARD	GRAND CHUTE - T 0016	55087300750016
128	OUTAGAMIE	KAUKAUNA - C 0002	55087388000002	{550870121011004}	0	5	2	NON-OVERLAPPING	KAUKAUNA - C 0012	55087388000012
129	OUTAGAMIE	LITTLE CHUTE - V 0003	55087449500003	{550870119024009}	0	5	2	NON-OVERLAPPING	LITTLE CHUTE - V 0012	55087449500012
130	OZAUKEE	PORT WASHINGTON - C 0002	55089644500002	{550896302023034}	0	60	20	NON-OVERLAPPING	PORT WASHINGTON - C 0004	55089644500004
131	POLK	ST. CROIX FALLS - C 0002	55095705500002	{550959607011014}	0	28	10	NON-OVERLAPPING	ST. CROIX FALLS - C 0004	55095705500004
132	PORTAGE	HULL - T 0017	55097363500017	{550979605002103, 550979605002104, 550979605002105}	0	71	24	NO SUCH WARD	HULL - T 0008	55097363500008
133	PORTAGE	HULL - T 0017	55097363500017	{550979605002057, 550979605002086}	0	71	24	NO SUCH WARD	HULL - T 0008	55097363500008
134	PORTAGE	HULL - T 0020	55097363500020	{550979605002115}	0	71	24	NO SUCH WARD	HULL - T 0008	55097363500008
135	PORTAGE	HULL - T 0020	55097363500020	{550979605002116, 550979605002117}	0	71	24	NO SUCH WARD	HULL - T 0008	55097363500008
136	PORTAGE	HULL - T 0020	55097363500020	{550979605003077}	0	71	24	NO SUCH WARD	HULL - T 0006	55097363500006
137	PORTAGE	HULL - T 0020	55097363500020	{550979605003144}	0	71	24	NO SUCH WARD	HULL - T 0006	55097363500006
138	PORTAGE	HULL - T 0022	55097363500022	{550979604004034}	0	70	24	NO SUCH WARD	HULL - T 0001	55097363500001
139	PORTAGE	HULL - T 0022	55097363500022	{550979604004012}	0	70	24	NO SUCH WARD	HULL - T 0001	55097363500001
140	PORTAGE	PLOVER - V 0001	55097635250001	{550979607011075}	0	71	24	NON-OVERLAPPING	PLOVER - V 0007	55097635250007
141	PORTAGE	STEVENS POINT - C 0001	55097772000001	{550979605003121}	0	71	24	NON-OVERLAPPING	STEVENS POINT - C 0023	55097772000023
142	PORTAGE	STEVENS POINT - C 0001	55097772000001	{550979604003028}	0	71	24	NON-OVERLAPPING	STEVENS POINT - C 0032	55097772000032
143	PORTAGE	STEVENS POINT - C 0001	55097772000001	{550979604003010}	0	71	24	NON-OVERLAPPING	STEVENS POINT - C 0024	55097772000024
144	PORTAGE	STEVENS POINT - C 0001	55097772000001	{550979605003046}	0	71	24	NON-OVERLAPPING	STEVENS POINT - C 0024	55097772000024
145	PORTAGE	STEVENS POINT - C 0002	55097772000002	{550979607021053}	0	71	24	NON-OVERLAPPING	STEVENS POINT - C 0016	55097772000016
146	PORTAGE	STEVENS POINT - C 0002	55097772000002	{550979607021034}	0	71	24	NON-OVERLAPPING	STEVENS POINT - C 0016	55097772000016
147	PORTAGE	STEVENS POINT - C 0002	55097772000002	{550979605003126}	0	71	24	NON-OVERLAPPING	STEVENS POINT - C 0033	55097772000033
148	PORTAGE	STEVENS POINT - C 0006	55097772000006	{550979605003125}	0	71	24	NON-OVERLAPPING	STEVENS POINT - C 0020	55097772000020
149	RICHLAND	RICHLAND CENTER - C 0003	55103676250003	{551039704002007}	0	50	17	NON-OVERLAPPING	RICHLAND CENTER - C 0010	55103676250010
150	ROCK	BELOIT - C 0003	55105065000003	{551050021001015}	8	45	15	NON-OVERLAPPING	BELOIT - C 0001	55105065000001
151	ROCK	BELOIT - C 0004	55105065000004	{551050026022083}	0	45	15	NON-OVERLAPPING	BELOIT - C 0022	55105065000022
152	ROCK	BELOIT - T 0001	55105065250001	{551050022001031}	0	45	15	NON-OVERLAPPING	BELOIT - T 0003	55105065250003
153	ROCK	HARMONY - T 0026	55105327000026	{551050013024004, 551050013024011}	0	33	11	NO SUCH WARD	HARMONY - T 0004	55105327000004
154	ROCK	HARMONY - T 0026	55105327000026	{551050013024008, 551050013024009}	0	33	11	NO SUCH WARD	HARMONY - T 0004	55105327000004
155	ROCK	HARMONY - T 0026	55105327000026	{551050013032061}	0	33	11	NO SUCH WARD	HARMONY - T 0004	55105327000004
156	ROCK	HARMONY - T 0026	55105327000026	{551050013051041}	0	33	11	NO SUCH WARD	HARMONY - T 0004	55105327000004



ROW_NUMBER	COUNTY	MUNICIPAL_WARD_LABEL	WARD_GEOID	BLOCKS	POPULATION	ASSEMBLY_DISTRICT	SENATE_DISTRICT	ERROR_TYPE	CORRECTED_LABEL	CORRECTED_GEOID
157	ROCK	JANESVILLE - C 0004	55105378250004	{551050013024078}	0	44	15	NON-OVERLAPPING	JANESVILLE - C 0026	55105378250026
158	ROCK	JANESVILLE - C 0004	55105378250004	{551050013051037}	0	44	15	NON-OVERLAPPING	JANESVILLE - C 0022	55105378250022
159	ROCK	JANESVILLE - C 0005	55105378250005	{551050014003053, 551050014003052}	0	44	15	NON-OVERLAPPING	JANESVILLE - C 0010	55105378250010
160	ROCK	JANESVILLE - C 0008	55105378250008	{551050005001006}	0	44	15	NON-OVERLAPPING	JANESVILLE - C 0001	55105378250001
161	ROCK	JANESVILLE - C 0009	55105378250009	{551050012022062}	0	44	15	NON-OVERLAPPING	JANESVILLE - C 0016	55105378250016
162	ROCK	TURTLE - T 0023	55105810500023	{551050026021066}	0	31	11	NO SUCH WARD	TURTLE - T 0001	55105810500001
163	ROCK	TURTLE - T 0023	55105810500023	{551050026021083}	0	31	11	NO SUCH WARD	TURTLE - T 0001	55105810500001
164	ROCK	TURTLE - T 0024	55105810500024	{551050026022087}	0	31	11	NO SUCH WARD	TURTLE - T 0004	55105810500004
165	ROCK	TURTLE - T 0024	55105810500024	{551050026022075, 551050026022084}	0	31	11	NO SUCH WARD	TURTLE - T 0004	55105810500004
166	SAWYER	HAYWARD - C 0003	55113334500003	{551131003002119, 551131003003003}	0	87	29	NON-OVERLAPPING	HAYWARD - C 0004	55113334500004
167	SAWYER	HAYWARD - C 0003	55113334500003	{551131003002117}	6	87	29	NON-OVERLAPPING	HAYWARD - C 0004	55113334500004
168	SAWYER	HAYWARD - T 0003	55113334750003	{551131003001031}	0	87	29	NON-OVERLAPPING	HAYWARD - T 0002	55113334750002
169	SHEBOYGAN	PLYMOUTH - C 0003	55117637000003	{551170105021034}	0	27	9	NON-OVERLAPPING	PLYMOUTH - C 0006	55117637000006
170	SHEBOYGAN	SHEBOYGAN - C 0001	55117729750001	{551170108001049}	17	27	9	NON-OVERLAPPING	SHEBOYGAN - C 0023	55117729750023
171	SHEBOYGAN	SHEBOYGAN - C 0002	55117729750002	{551170108002049}	0	27	9	NON-OVERLAPPING	SHEBOYGAN - C 0023	55117729750023
172	SHEBOYGAN	SHEBOYGAN - C 0004	55117729750004	{551170108001020}	0	27	9	NON-OVERLAPPING	SHEBOYGAN - C 0023	55117729750023
173	SHEBOYGAN	SHEBOYGAN - T 0001	55117730000001	{551170107001032}	0	27	9	NON-OVERLAPPING	SHEBOYGAN - T 0002	55117730000002
174	SHEBOYGAN	SHEBOYGAN - T 0005	55117730000005	{551170003004006}	2	27	9	NON-OVERLAPPING	SHEBOYGAN - T 0009	55117730000009
175	SHEBOYGAN	SHEBOYGAN - T 0017	55117730000017	{551170004002033}	0	27	9	NO SUCH WARD	SHEBOYGAN - T 0010	55117730000010
176	SHEBOYGAN	SHEBOYGAN - T 0017	55117730000017	{551170004002096}	0	27	9	NO SUCH WARD	SHEBOYGAN - T 0010	55117730000010
177	SHEBOYGAN	SHEBOYGAN FALLS - T 0003	55117730500003	{551170106013008}	1	27	9	NON-OVERLAPPING	SHEBOYGAN FALLS - T 0001	55117730500001
178	SHEBOYGAN	SHERMAN - T 0001	55117734250001	{551170112003061}	0	26	9	NON-OVERLAPPING	SHERMAN - T 0002	55117734250002
179	SHEBOYGAN	SHERMAN - T 0001	55117734250001	{551170112003022}	0	26	9	NON-OVERLAPPING	SHERMAN - T 0002	55117734250002
180	TAYLOR	MEDFORD - C 0002	55119504250002	{551199606003009}	0	87	29	NON-OVERLAPPING	MEDFORD - C 0004	55119504250004
181	TREMPEALEAU	BLAIR - C 0003	55121080750003	{551211004002130}	0	92	31	NON-OVERLAPPING	BLAIR - C 0002	55121080750002
182	TREMPEALEAU	BURNSIDE - T 0001	55121113250001	{551211003001013, 551211004002006, 551211004002017, 551211004002027, 551211004002033, 551211004002034, 551211004002056, 551211004002012, 551211004002057}	24	92	31	NON-OVERLAPPING	BURNSIDE - T 0002	55121113250002
183	WALWORTH	BLOOMFIELD - T 0001	55127082750001	{551270017015050}	0	32	11	NON-OVERLAPPING	BLOOMFIELD - T 0002	55127082750002
184	WALWORTH	EAST TROY - V 0006	55127221000006	{551270001021057, 551270001021062, 551270001021066}	0	83	28	NO SUCH WARD	EAST TROY - V 0003	55127221000003
185	WALWORTH	EAST TROY - V 0006	55127221000006	{551270001021055}	0	83	28	NO SUCH WARD	EAST TROY - V 0003	55127221000003
186	WALWORTH	EAST TROY - V 0006	55127221000006	{551270001021059}	0	83	28	NO SUCH WARD	EAST TROY - V 0003	55127221000003
187	WALWORTH	LAKE GENEVA - C 0008	55127414500008	{551270015032006}	0	32	11	NON-OVERLAPPING	LAKE GENEVA - C 0005	55127414500005
188	WALWORTH	LINN - T 0001	55127447500001	{551270016032040, 551270016032041, 551270016032042, 551270016062052, 551270016062053, 551270016062054}	0	32	11	NON-OVERLAPPING	LINN - T 0005	55127447500005
189	WALWORTH	WHITEWATER - C 0003	55127869250003	{551270004002042}	0	31	11	NON-OVERLAPPING	WHITEWATER - C 0001	55127869250001
190	WASHBURN	CHICOG - T 0001	55129144250001	{551299502002098}	0	73	25	NON-OVERLAPPING	CHICOG - T 0002	55129144250002
191	WASHBURN	SPOONER - C 0002	55129756250002	{551299505011023}	0	75	25	NON-OVERLAPPING	SPOONER - C 0001	55129756250001
192	WASHBURN	SPOONER - T 0001	55129756500001	{551299505012046}	0	75	25	NON-OVERLAPPING	SPOONER - T 0003	55129756500003
193	WASHINGTON	HARTFORD - C 0002	55131330000002	{551314401043012, 551314401052044}	0	59	20	NON-OVERLAPPING	HARTFORD - C 0012	55131330000012
194	WASHINGTON	HARTFORD - C 0004	55131330000004	{551314401051054}	0	59	20	NON-OVERLAPPING	HARTFORD - C 0030	55131330000030
195	WASHINGTON	HARTFORD - T 0014	55131330250014	{551314401052015}	0	59	20	NO SUCH WARD	HARTFORD - T 0001	55131330250001
196	WASHINGTON	HARTFORD - T 0014	55131330250014	{551314401052008}	0	59	20	NO SUCH WARD	HARTFORD - T 0001	55131330250001
197	WASHINGTON	SLINGER - V 0004	55131744000004	{551314501063062}	0	58	20	NON-OVERLAPPING	SLINGER - V 0001	55131744000001
198	WASHINGTON	SLINGER - V 0005	55131744000005	{551314501051029}	0	58	20	NON-OVERLAPPING	SLINGER - V 0008	55131744000008
199	WASHINGTON	WEST BEND - C 0005	55131853500005	{551314201072015}	0	58	20	NON-OVERLAPPING	WEST BEND - C 0036	55131853500036
200	WASHINGTON	WEST BEND - C 0008	55131853500008	{551314001041030}	0	58	20	NON-OVERLAPPING	WEST BEND - C 0014	55131853500014
201	WAUKESHA	BUTLER - V 0002	55133114750002	{551332006002029}	0	22	8	NON-OVERLAPPING	BUTLER - V 0003	55133114750003
202	WAUKESHA	GENESEE - T 0003	55133284870003	{551332038052006}	0	97	33	NON-OVERLAPPING	GENESEE - T 0010	55133284870010
203	WAUKESHA	MENOMONEE FALLS - V 0002	55133510000002	{551332003002014}	0	22	8	NON-OVERLAPPING	MENOMONEE FALLS - V 0023	55133510000023
204	WAUKESHA	MERTON - T 0004	55133514000004	{551332036012004}	0	99	33	NON-OVERLAPPING	MERTON - T 0008	55133514000008
205	WAUKESHA	MERTON - T 0008	55133514000008	{551332036021005}	6	99	33	NON-OVERLAPPING	MERTON - T 0009	55133514000009
206	WAUKESHA	MUKWONAGO - V 0005	55133550500005	{551332039022011}	0	83	28	NON-OVERLAPPING	MUKWONAGO - V 0003	55133550500003
207	WAUKESHA	SUMMIT - V 0001	55133783750001	{551332040041005}	0	97	33	NON-OVERLAPPING	SUMMIT - V 0005	55133783750005
208	WAUKESHA	SUSSEX - V 0002	55133787500002	{551332034064017}	0	27	8	NON-OVERLAPPING	SUSSEX - V 0007	55133787500007
209	WAUKESHA	SUSSEX - V 0002	55133787500002	{551332034031002, 551332034032019}	0	22	8	NON-OVERLAPPING	SUSSEX - V 0006	55133787500006

ROW_NUMBER	COUNTY	MUNICIPAL WARD LABEL	WARD GEOID	BLOCKS	POPULATION	ASSEMBLY DISTRICT	SENATE DISTRICT	ERROR TYPE	CORRECTED LABEL	CORRECTED GEOID
210	WAUKESHA	WAUKESHA - C 0009	5513384250009	{551332021031029}	0	98	33	NON-OVERLAPPING	WAUKESHA - C 0016	5513384250016
211	WAUPACA	CLINTONVILLE - C 0001	55135157250001	{551351001004045}	0	40	14	NON-OVERLAPPING	CLINTONVILLE - C 0010	55135157250010
212	WAUPACA	LIND - T 0002	55135445750002	{551351007002081}	0	40	14	NON-OVERLAPPING	LIND - T 0001	55135445750001
213	WAUSHARA	WAUTOMA - T 0002	55137846500002	{551379608002030}	0	72	24	NON-OVERLAPPING	WAUTOMA - T 0001	55137846500001
214	WINNEBAGO	MENASHA - C 0012	55139508250012	{551390026023004}	0	57	19	NON-OVERLAPPING	MENASHA - C 0010	55139508250010
215	WINNEBAGO	OSHKOSH - C 0005	55139605000005	{551390016001036, 551390016002021}	0	54	18	NON-OVERLAPPING	OSHKOSH - C 0026	55139605000026
216	WINNEBAGO	OSHKOSH - C 0009	55139605000009	{551390018011012}	0	54	18	NON-OVERLAPPING	OSHKOSH - C 0019	55139605000019