

# 2022 Georgia Risk-Limiting Audit

FINAL REPORT



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## I. Executive Summary

After the November 2022 election, Georgia conducted a batch-comparison risk-limiting audit (RLA) of the secretary of state contest and confirmed the original reported result: the reelection of Brad Raffensperger.

The Carter Center, which has observed more than 110 elections in 39 countries, was credentialed by the Office of the Secretary of State of Georgia to observe the audit process. The Center had the same access provided to political party monitors. In deploying independent observers for the RLA, The Carter Center aimed to bolster voter confidence in Georgia's electoral process by providing an independent assessment of the state's efforts to make election administration processes more transparent.

On Nov. 17 and 18, The Carter Center sent 40 nonpartisan observers to 33 counties<sup>1</sup> to watch the audit process. Observers collected information on each step of the public process, including reporting on ballot security and chain of custody, the work of the two-person audit boards and bipartisan vote review panels to interpret and count votes, and the data entry process used to upload tally information into the open-source RLA software. The Carter Center also conducted a desk review of the training provided to counties prior to the audit, which included topics such as ballot storage, preparation of source data, and use of the RLA software.

The Carter Center team found that the Office of the Secretary of State and county election officials conducted the Nov. 17-18 tally in an open and transparent way, adhering to rules outlining access and behavior for official party monitors, Carter Center monitors, and public observers. No conflicts among party observers or interference with audit boards were observed. The Center's observers were welcomed by election officials and were able to conduct their observation without hindrance.

In all counties observed, the audit proceeded smoothly and calmly on the counting days, with few significant problems. Most counties completed their work by midafternoon on the first day, with only a handful continuing to the second day. Although counting procedures occasionally deviated from the official procedures demonstrated in the Office of the Secretary of State's training video, the minor variations were not significant enough to affect the overall count. The main challenges during counting – as in 2020 – were associated with handling large batches of early-voting ballots.

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<sup>1</sup> Barrow, Bartow, Bibb, Catoosa, Chatham, Clarke, Clayton, Cobb, Coffee, Columbia, DeKalb, Douglas, Fannin, Fayette, Floyd, Forsyth, Fulton, Gilmer, Glynn, Gwinnett, Hall, Henry, Jackson, Lowndes, Muscogee, Newton, Oconee, Paulding, Pickens, Polk, Richmond, Rockdale, Walton.

In addition, the Carter Center team found several challenges worth addressing going forward, including the way the source data was prepared. Ensuring the software independence of the ballot manifest is critical for a trustworthy audit, and simple process improvements will make the entire operation easier for counties and more transparent for observers. The Center recommends the following steps be implemented before the 2024 elections when eyes will once again be on Georgia:

- Create ballot manifests that are independent of the tabulator data.
- Standardize audit procedures and forms to help streamline processes and ensure consistency across the state.
- Work with the vendor to improve system support for batch audits and allow smaller batch sizes.
- Improve/enhance statewide training materials for election officials and audit boards, focusing on ballot security and chain of custody.
- Provide more resources for state-level oversight and support for counties to reduce reliance on the vendors.
- Consider making publicly available documentation related to the audit (e.g., information about batches selected for audit by the algorithm) more easily usable by interested members of the public.
- Consider using party volunteers to staff audit boards as a way to increase trust in the process.
- Provide training for observers/monitors on RLA procedures so they are better able to fulfill their transparency objectives.

## II. Risk-Limiting Audits (RLAs)

Measures such as audits to promote transparency in election results and verify the accuracy of the process are an internationally recognized good practice. They can be a critical means of promoting citizen confidence and serve as a valuable opportunity for election officials to continuously improve the voting process.

The “risk-limiting audit” is used to validate the winner reported by the electronic tally of votes. RLAs examine a statistically random sample of paper ballots by hand (individual ballots or batches of ballots), comparing the votes seen by auditors on the sampled ballots with the results from the tabulator. The number of ballots to be checked depends on the margin of victory and the chosen “risk limit” for the audit – a number set before the audit that represents the maximum chance the audit might miss an incorrect winner. In general, larger margins of victory in the audited contest require fewer ballots to be examined during the audit, while smaller margins require a more extensive sample. If the statistical calculation does not meet the risk limit after the initial sample of ballots are examined, more ballots are drawn to expand the sample size. The audit ends when the risk limit is met or, in the most extreme case, when all ballots have been reexamined. The RLA is considered the gold standard for post-election tabulation auditing, providing an efficient means for ensuring that the reported winner actually won.

## III. Risk-Limiting Audits in Georgia

Georgia gained the ability to perform RLAs in 2019, when ballot-marking devices (BMDs) from Dominion Voting Systems replaced older direct recording electronic (DRE) voting systems statewide, providing the voter-verifiable paper ballots necessary to conduct an RLA<sup>2</sup>. In 2022, the state was required to conduct an RLA of one statewide election in every even-numbered year, placing Georgia in the forefront of adopting what is widely recognized as the most technically accurate and efficient approach to post-election auditing. By statute, it is the secretary of state who selects the contest to be audited and the risk limit.

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<sup>2</sup> Voters mark their votes on the BMD screen. The device then prints out a paper ballot, and voters are encouraged to confirm the accuracy of their vote before inserting the paper into the tabulator. Studies indicate that voters often do not check for accuracy. Neither BMD nor tabulator is connected to the internet.

Georgia conducted its first statewide RLA on the presidential election of Nov. 3, 2020. The state planned to conduct a ballot polling-style RLA, where specific ballots are selected randomly from all ballots cast (e.g., from Batch A37, retrieve the 35th ballot and the 472nd ballot), retrieved from storage, and tallied by hand. However, due to the very close margin of victory in the race, the number of ballots that would need to be retrieved was prohibitive. It was determined that increasing the sample size to include all the ballots (which essentially lowers the risk limit for the audit to zero) would be more efficient than sorting through each ballot container to retrieve the specified ballots. This method had been suggested as a valid alternative for conducting RLAs on very close races<sup>3</sup> but had not yet been attempted in any jurisdiction. The completion of Georgia’s “full hand tally” RLA under the intense scrutiny of a contested presidential election was a significant milestone for the state’s adoption of RLAs.

Two years later, for the Nov. 8, 2022, election, the race for secretary of state was selected,<sup>4</sup> with the audit conducted Nov. 17-18. The 2022 audit, on a contest with a much larger margin of 9%, provided Georgia with its first opportunity to test the process of sampling and retrieving particular ballots for the RLA, and therefore was the first audit where counties had to create a ballot manifest for audit purposes.

Preparation for an RLA begins well in advance of Election Day, as county election staff process ballots from early voting through Election Day, including absentee, provisional and overseas ballots, and prepare a *ballot manifest*. After ballots are cast, they must be stored so that every ballot or batch is subsequently “findable” for audit. The ballot manifest is a countywide spreadsheet listing all ballot containers, the groupings of ballots packed in each (called “batches”), and the number of ballots in each batch. Batch sizes vary widely: Election Day ballots at one precinct or the set of all early votes at some location might constitute a batch of several thousand ballots, while ballots arriving in the mail on a single day might constitute a batch of a few dozen. Ballots in a batch are scanned on a single tabulator and a vote count is associated with each batch, so what constitutes a batch, as well as batch sizes, are largely determined by aspects of the voting system.

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<sup>3</sup> Philip Stark comments, “Making Every Vote Count: A Practical Guide to Risk-Limiting Audits” event, Brennan Center for Justice, [https://www.youtube.com/watch?v=gMbz0\\_dizoA](https://www.youtube.com/watch?v=gMbz0_dizoA).

<sup>4</sup> It should be noted that while the audit of the race for secretary of state was conducted by the Office of the Secretary of State (through its Elections Division), the hand sorting and counting of ballots was done independently by election offices in 159 counties.

Georgia statute does not specify which variety of RLA is used – either ballot polling, batch comparison, or some hybrid process. For the 2022 RLA, *batches* of ballots were selected for audit. Batches were chosen for audit using software specially designed for an RLA.<sup>5</sup> A pseudo-random number algorithm is initiated by a *seed*, a random 20-digit number. The seed for this audit was created in a public ceremony, well-covered by the media, held at 3 p.m. Nov. 16 on the south steps of the State Capitol. One at a time, 20 individuals tossed a 10-sided die. The resulting number, along with the vote counts generated by the original electronic tabulation, the chosen risk limit (5%), and additional source data files (ballot manifests and reports of candidate vote totals for each ballot batch) were loaded into the RLA tool, which generated the statewide list of batches to be audited.<sup>6</sup> That evening, the secretary of state’s office notified each county which batches to retrieve for audit.<sup>7</sup> A hash that could be used to validate the ballot manifests after the audit was shared by the Office of the Secretary of State via social media.

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<sup>5</sup> The open-source risk-limiting audit software, Arlo, was developed by VotingWorks, a nonpartisan, nonprofit election technology vendor, with support from the U.S. Cybersecurity and Infrastructure Security Agency. Voting Works provided assistance to the Office of the Secretary of State in the implementation of the audit.

<sup>6</sup> The math behind the batch audit takes into consideration the probative value of the batch. An RLA determines – to the specified risk limit – whether the announced winner did in fact win the contest. It would be pointless to audit a batch that went heavily for the loser; even if every ballot was wrongly tabulated and these votes should have gone for the winner, the conclusion that the election was correctly decided would only be strengthened.

<sup>7</sup> The Office of the Secretary of State published on its website the list of batch tallies, including those selected for audit. <https://sos.ga.gov/sites/default/files/2022-11/2022-11-08-georgia-rla-county-batch-tallies.zip>. While counties were informed which batches to pull for audit, the batches listed on the website are not labeled by county, so interested parties – whether media, parties or independent observers – have no simple way to determine whether the batches pulled for audit at county level were indeed those selected by the algorithm.

#### IV. The 2022 Batch-Comparison RLA

The 2022 RLA presented several challenges. Counties had to conduct the RLA while simultaneously preparing for a Dec. 6 runoff in the U.S. Senate race. Staff at the Office of the Secretary of State and 159 County Election Superintendents are to be commended for managing the training, logistics, and staffing demands of both the RLA and the runoff.

Given the margin of victory in the secretary of state race (approximately 9%), it was known in advance that only 36 batches would need to be audited statewide in the initial round. This is considerably fewer than one per county, given the nature of the batch selection. To give all counties experience with the full RLA process and promote public confidence, the Office of the Secretary of State assigned each county not technically included in the RLA a minimum of two batches to count.<sup>8</sup> These non-RLA batches were not included in the risk-limit calculations but were otherwise handled identically to the RLA batches. For this report, we will differentiate these two groups as RLA batches and non-RLA. Neither counties nor Carter Center observers knew until after the audit which batches would contribute to the RLA.

As detailed in the snapshot below, all 159 counties in Georgia counted ballots on audit day, but only 25<sup>9</sup> counted batches that were technically included in the RLA.<sup>10</sup>

#### Snapshot: 2022 Georgia Risk-Limiting Audit

- Number of counties in Georgia: **159**.
- Number of counties with batches selected for RLA: **25 (16% of total)**.
- Total number of batches counted (RLA and non-RLA): **328**.
- Number of RLA batches audited from the 25 counties: **36 (12% of all batches)**.
- Number of non-RLA batches counted in remaining counties: **292**.
- Total number of ballots counted: **231,072**.
- Approximate number of ballots contributing to the risk calculation for the RLA: **100,000**.

<sup>8</sup> The secretary of state's office also stipulated that each county audit ballots from each voting method: at least one batch of ballots cast in person (either early or Election Day) and one batch cast absentee by mail. These batches were selected by simple random sample within each county and, if both batches happened to be of the same type, occasionally resulted in additional batches being added to satisfy this criterion.

<sup>9</sup> The RLA counties were Barrow, Bartow, Bibb, Bleckley, Bryan, Chatham, Clarke, Cobb, Dade, Decatur, DeKalb, Effingham, Fayette, Floyd, Forsyth, Fulton, Gilmer, Gordon, Gwinnett, Houston, Jasper, Newton, Richmond, Tatnall, and Walton.

<sup>10</sup> In a sense, all could be considered part of the RLA, and their results were reported publicly, although only the 25 counties and 36 batches entered into the risk calculation.



## V. The Carter Center and the Audit

In late October 2022, The Carter Center was accredited by the Georgia Secretary of State's Office to observe the RLA. As an independent, nonpartisan monitor, the Center assessed the postelection tabulation audit and related processes to help bolster transparency and confidence in election results. An internationally recognized leader in election observation, The Carter Center has observed more than 100 elections around the world, including Georgia's RLA following the 2020 presidential election, which resulted in a full hand tally due to the small margin.<sup>11</sup> Comparison of the 2020 and 2022 Georgia audits allows some conclusions about progress toward institutionalization of RLA procedures.

The Carter Center recruited and trained 40 observers to deploy to 33 out of Georgia's 159 counties on Nov. 17, 2022, to observe ballot counting for the audit. Counties were selected based on voting population, geographic representation, and the need to include both urban and rural centers, as well as educated guesses about where the RLA batches were most likely to be assigned (counties with a higher proportion of the vote share were more likely to be selected, etc.). Observers were trained on the audit methodology in advance of the audit. Training included watching the videos prepared by the Office of the Secretary of State, a detailed overview of observer checklists, and a briefing on the Center's Code of Conduct (please see Annex B), which observers were required to sign prior to observing the RLA.

Throughout their observations, Carter Center observers used checklists to record quantitative and qualitative data on the audit process. They also were encouraged to document any irregularities or improvised procedures they witnessed as well as observations about the general environment in which the audit took place. All observers, including those from the Center, had to identify themselves to a county election supervisor, sign an oath, and wear an identifying badge. In some counties, these were color-coded by party.

The Carter Center's 40 observers were assigned to 33 counties in advance of the audit day. In some counties, a single observer was present; in others, a team of two observed. Only after the audit did the Center learn which were RLA counties and which were not. In the end, the Center had observers in 16 of the 25 RLA counties (64%). These counties accounted for 28 of the 36 RLA batches, 78% of the batches in the RLA. Given that no county personnel knew whether their batches were RLA or not, and that all were following roughly the same procedures, it is likely that conclusions drawn from all counties observed apply to the RLA more broadly.

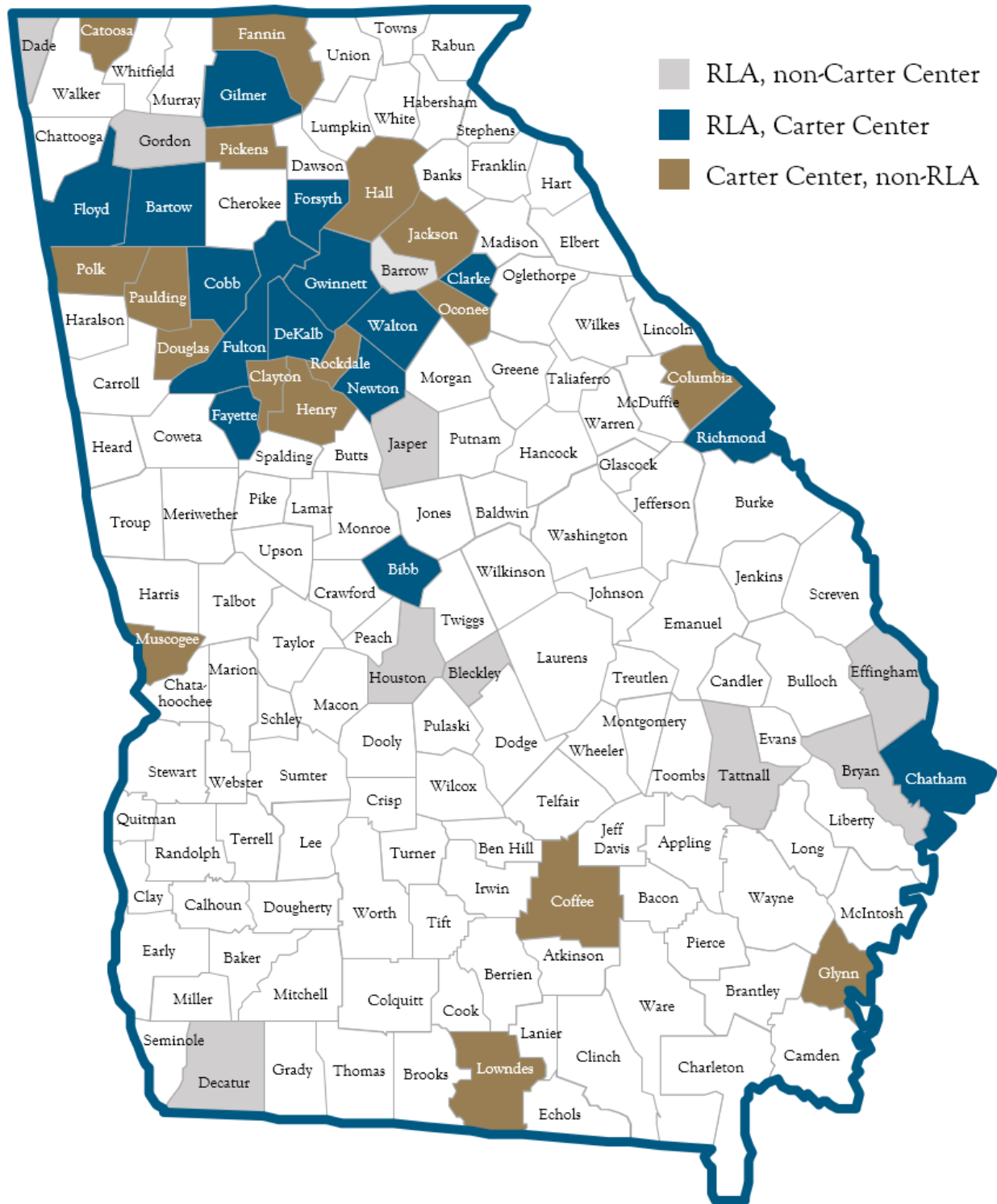
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<sup>11</sup> All Carter Center election observation efforts are conducted in accordance with the Declaration of Principles for International Election Observation, adopted at the United Nations in 2005, and since endorsed by more than 50 election observation groups.

The following table summarizes Carter Center observer coverage.

| RLA County   | RLA Counties Observed |                            |                                |                           |
|--|-----------------------|----------------------------|--------------------------------|---------------------------|
|  | # of Batches Audited  | # of RLA Batches in County | Carter Center Observer Present | # of RLA Batches Observed |
| Barrow   | 3                     | 2                          | ✓                              | 2                         |
| Bartow   | 2                     | 1                          | ✓                              | 1                         |
| Bibb   | 2                     | 1                          | ✓                              | 1                         |
| Bleckley   | 2                     | 1                          |                                |                           |
| Bryan  | 2                     | 1                          |                                |                           |
| Chatham  | 3                     | 3                          | ✓                              | 3                         |
| Clarke   | 2                     | 1                          | ✓                              | 1                         |
| Cobb   | 2                     | 1                          | ✓                              | 1                         |
| Dade   | 2                     | 1                          |                                |                           |
| Decatur  | 2                     | 1                          |                                |                           |
| DeKalb   | 3                     | 2                          | ✓                              | 2                         |
| Effingham  | 3                     | 2                          |                                |                           |
| Fayette  | 2                     | 1                          | ✓                              | 1                         |
| Floyd  | 2                     | 1                          | ✓                              | 1                         |
| Forsyth  | 3                     | 2                          | ✓                              | 2                         |
| Fulton   | 3                     | 2                          | ✓                              | 2                         |
| Gilmer   | 2                     | 1                          | ✓                              | 2                         |
| Gordon   | 2                     | 1                          |                                |                           |
| Gwinnett   | 5                     | 4                          | ✓                              | 4                         |
| Houston  | 3                     | 2                          |                                |                           |
| Jasper   | 2                     | 1                          |                                |                           |
| Newton   | 2                     | 1                          | ✓                              | 1                         |
| Richmond   | 2                     | 1                          | ✓                              | 2                         |
| Tattnall   | 2                     | 1                          |                                |                           |
| Walton   | 2                     | 1                          | ✓                              | 2                         |
| <b>25</b>  | <b>60</b>             | <b>36</b>                  | <b>16</b>                      | <b>28</b>                 |
| <p>In addition to the above, Carter Center observers were deployed in 17 counties that were not part of the RLA: Catoosa, Clayton, Coffee, Columbia, Douglas, Fannin, Glynn, Hall, Henry, Jackson, Lowndes, Muscogee, Oconee, Paulding, Pickens, Polk, and Rockdale.</p> |                       |                            |                                |                           |

Figure 1 below displays the statewide distribution of counties participating in the RLA, and the distribution of observers from The Carter Center across RLA and non-RLA counties.



## VI. Findings

Overall, Carter Center monitors reported that although somewhat relaxed in detail, audit day processes were conducted according to procedures, in an atmosphere of calm, and without significant problems. Delays observed were largely due to challenges in handling the large early voting batches of several thousand ballots. Carter Center monitors noted that the audit tally sheets did not provide categories for recording blank votes and write-ins, and there were some minor delays associated with confusion about how to report write-in ballots. Most counties observed by the Center had finished their audits by early afternoon on the first day. Only two of the counties observed had to continue the audit on the second day and only then to recount ballots that had been counted the day before. Carter Center monitors reported that data entry was not readily visible to observers in most locations and found that there was no interference from political party observers. The Carter Center did not observe the creation of the ballot manifest or the batch totals source data in individual counties, but did observe the training for these activities, and noted some issues of concern that are detailed below.

### A. Preparing for the Audit

For the audit outcome to be trusted, the source data used to set up the audit must be trustworthy. For this reason, The Carter Center conducted a desk review of the training provided to counties prior to beginning the audit, including processes around ballot storage, preparation of source data, and use of the RLA software.

In 2022, Georgia used new software called the Batch Inventory Tool alongside the existing RLA tool, created specifically for the state by the RLA software vendor. Election officials from each county were instructed to upload two files from the tabulation system into this new tool: the full Cast Vote Record (CVR) file detailing every ballot counted on their voting system, and the Tabulator Status file, which logs the assignment of each tabulator ID to a specific voting location. From this data, the new tool generated two files: a ballot manifest and a list of the tabulator totals for each candidate by ballot batch.

This new software was necessary because the Dominion Voting System used in Georgia does not produce a usable batch totals file for all ballots. To be usable, the file must encompass both those ballots counted centrally at the election office, which are normally batched in relatively small numbers and tracked that way in the tabulation system, as well as those counted in the precinct, which are not batched by the tabulator. To fill this gap, the third-party tool collated votes from all the ballots listed in the Dominion CVR as having been counted by a particular precinct tabulator into a single “batch,” thus producing the complete batch totals file for all ballots needed to conduct the batch-comparison audit.

The introduction of this software into the RLA process created some reliability concerns, but in general seemed to provide the necessary information to enable Georgia to conduct the batch-comparison RLA. In the future, however, The Carter Center suggests that the state work with Dominion Voting Systems to enable the production of this type of file directly from the voting system, to eliminate the possibility of errors introduced by another software system, and to enable the creation of other useful ballot reconciliation features within the voting system. For example,

some counties prefer to batch and store their in-precinct early voting ballots by day, to eliminate the very large ballot batches that come from letting ballots build up in the tabulator across 21 days of early voting. This best practice also allows officials to transport voted ballots to secure storage each night during early voting, rather than leaving them locked and sealed in the tabulators at the voting location. Currently, there is no way for counties to track such batching of precinct-counted ballots within the voting system, which creates some challenges discussed below. Features to support batching of precinct-counted ballots would greatly improve the ability to reconcile ballots across paper and electronic systems.

Another issue is the use of this new software to create ballot manifests using tabulator CVR data instead of a separate independent source, which is important to ensure that no ballots are missing from the tabulator records. To make up for the lack of an independent manifest, the state's training instead instructed election officials to validate the manifest against other source after the fact. This included reconciling the overall number of voters marked in the state voter file as having voted in their county ("voter credit") against the total number of ballots counted. This was a useful check, but insufficient to the larger purposes of the audit.

For an audit that doesn't use a software-independent source to generate the ballot manifest, any artifacts that election officials use to validate the manifest must become part of the publicly available chain of evidence, disclosed before the audit in the same manner as the ballot manifest. This would require the preparation and public disclosure of a large volume of additional documents and chain-of-custody information that is not usually published during an RLA. The Office of the Secretary of State has indicated that they plan for counties to create ballot manifests from data independent of the voting system in the future. With additional audit experience, creation of the manifest by the counties should become easier.

## **B. Audit Days**

### **1. Spaces and Operation**

Carter Center monitors reported that in 75% of locations they observed, the audit spaces were uniformly neat and well-organized, with signs designating ballot storage, audit boards, review panels, data entry, and public observation areas. Space was generally sufficient to allow monitors to circulate without interfering with the audit board members, although 20% of observers reported party monitors talking directly to board members, which should be actively discouraged. In only two counties did observers report that there was insufficient space between audit boards to allow observers easy access. Almost all counties allowed only red pens on audit tables (as stipulated), although 45% of observers noted that party monitors were regularly allowed non-red pens in the audit areas.

While counties had to prepare space and staff for auditing an unknown (and possibly large) number of batches, they were able to "right-size" the operation the night before when they learned how many batches they had to audit. For example, DeKalb County had prepared space for 25 audit boards and five vote review panels, but only called in staff for 13 audit boards and one vote

review panel when they learned they had only about 6,000 ballots to audit. Other counties similarly downsized, and five counties never called on their vote review panel at all.

## 2. Audit Board Training

From the perspective of the audit boards, a full hand tally (as in 2020) and a batch-comparison audit are identical. Election officials bring the ballot containers to be counted to the audit floor; audit boards take custody of containers one at a time, sort and stack the ballots into piles for each candidate, count the number of ballots in each stack, report the counts on the tally sheets, and return the ballots and resealed containers to the storage area. While the greater volume of ballots in the full hand tally (approximately 5 million), compared with this batch-comparison audit (231,000 ballots statewide), creates vastly greater logistical problems, the tasks are the same in concept, facilitating comparisons between the 2020 and 2022 audits.

The audit boards usually were staffed by election workers who were quite familiar with handling and interpreting ballots, but training for their audit tasks varied widely from county to county. In one county visited by Carter Center observers, training consisted of half an hour of orientation at the start of the day, including a four-minute video prepared by the audit software vendor, VotingWorks. The video focused primarily on the “sort and stack” method for tallying ballots.<sup>12</sup> In another county, that same video played on a silent loop on two screens throughout the audit, with no additional guidance. In a third county, there was no initial orientation; audit boards simply began work and asked questions as necessary. The Carter Center observer in this county noted that there were a lot of questions during the first batches audited, fewer during the second round, and none during the third. (All audit tables had a placard with a red question mark to raise to summon a supervisor for assistance.) This “on-the-job” training strategy likely would be less effective with a larger number of audit boards and less experienced auditors. One-quarter of the county trainings observed were fairly simplistic and did not cover important topics like how to audit duplicated ballots. To prepare for more challenging audit circumstances, the Center recommends that statewide training resources be enhanced, standardized, and used uniformly across all counties.

## 3. Ballot Transfer and Chain of Custody

The “chain of custody” is a fundamental requirement of the RLA. The human check of ballots is meaningful only if the ballots being reviewed are indeed those marked by voters. This requires that the ballots be secured after leaving voters’ hands, with unambiguous responsibility for their custody at every step of the way from voter to auditor. Ballot containers must be sealed, with seal numbers recorded. When a container is opened for audit, seals should be broken, with the contents signed over to a new custodian. After the audit, containers should be resealed and signed back into storage. Responsibility is typically documented in a “chain of custody” form, with each recipient signing upon receipt of the ballots and recording seal numbers. If the chain of custody is broken at any point – e.g., ballots left in an unsecured storage room, moved without documentation or left unattended – then ballots could be removed, inserted, or altered.

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<sup>12</sup> The VotingWorks training video can be viewed here: <https://www.youtube.com/watch?v=pjcGXjvpEDs>.

In all counties monitored, “chain of custody” forms were in use, with ballot containers signed out of storage, over to audit boards, and then back into storage. However, there was variability on how batches were signed over to audit boards. In some counties observed, ballot containers were stored in a separate room and brought out as needed for audit. In other counties, containers were in the same large room (e.g., a warehouse space) but at some distance from the audit tables and maintained securely by elections personnel. In the majority of counties observed (84%), runners carried ballot containers between storage and audit tables. Each audit table had a placard with a green checkmark to raise to signal for a runner. This facilitated smooth traffic around the audit floor and minimized crowding at the check-in station. Observers in some jurisdictions noted that it was hard to tell whether the numbers on the seals securing ballot containers were being checked against existing chain-of-custody documentation before the containers were opened, or if auditors were simply checking that the boxes were sealed. In the future, it is important that auditors check both that the seal is secure and that the seal number matches the number recorded when the container was initially sealed, ideally in view of observers.

Carter Center observers did not observe training specifically for ballot security, runners, or check-in personnel.<sup>13</sup> However, workers appeared well-organized, and every county observed had an election official specifically tasked with monitoring the movement of batches in and out of the secure storage areas.

Attention to the forms may have obscured the larger point about ballot security. In one county, during the lunch break, two audit board tables were in the midst of counting a batch, and the ballots were left unattended on the audit tables. Monitors had these tables in view until a supervisor came to keep watch, so there was no risk to these ballots. However, the incident suggests that expanding on current training to explain the function and importance of chain of custody, as well as how to complete chain-of-custody forms, would be helpful.

Ballot containers always should be sealed between handoffs so there is no possibility of ballots being added, removed, or changed. In the counties observed, there was a wide variety of types of ballot containers – cardboard, banker, plastic, and metal boxes. Only some had lids that accommodated numbered plastic seals, and many containers were closed with tamper-evident tape, removed and retaped with every transfer. Again, given the small number of ballots and the absence of partisan interference, chain-of-custody was reasonably well-maintained. However, a more uniform process for storing and sealing ballots would benefit all parties.

#### 4. Sorting and Counting

For a batch RLA, the main challenge lies in counting. There is little difficulty in locating the ballots to be counted, as auditors just retrieve the required containers. In contrast, for a ballot polling RLA, the challenge lies in identifying individual ballots to be tallied (e.g., the 18th, 27th and 102nd in stacked order in some container); sorting and counting the smaller number of ballots is less of a burden. If Georgia plans to continue batch RLAs, more attention to the

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<sup>13</sup> This was included in the statewide training conducted in October before the Center's observation began.

counting process would better prepare counties for handling larger numbers of batches in a closer and more politically contentious election.<sup>14</sup>

The official method for counting (as shown in the training video) was a “sort and stack” procedure. One member of the team reads the candidate’s name aloud, with the second member confirming the name aloud and then placing the ballot in the proper candidate stack.<sup>15</sup>

For mail-in/absentee ballots, the ballots to be sorted and counted were marked by the voter, with the ballot formatted with spaces for all the possible candidates listed. For in-person votes cast on BMD ballots, the printout was a single-spaced column listing the office and under it the selected candidate, which is produced by the computer system but seemingly without consideration of user readability. When queried, several audit board members said they were accustomed to looking at ballots and had no difficulty picking out the office under audit and the candidate selected. It has been noted, however, that voters do not always check their printouts before inserting them into the tabulator. As a result, the BMD printout format could well be discouraging voter reviews of their ballots. The Carter Center suggests that before the next election, BMD ballots be formatted to improve usability.

Across counties, the process for counting varied. Audit boards were instructed to count their candidate piles in groups of 10. Some audit boards followed this procedure and also spontaneously created new stacks of 100. (This appeared to work well for counting batches up to several hundred.) Other audit boards counted in groups of 25 or did not maintain a separation of counted sub-batches. Most audit boards read the votes aloud as instructed, but boards that did not made it difficult for observers to see whether both members agreed and check that the ballot was being placed in the right stack. Some audit boards members independently counted portions of their batch – at least until corrected by a supervisor. Individual audit boards were observed devising a variety of methods for keeping track of their counts – stacking in various ways, making hash marks on a scrap of paper, paper-clipping groups of 10 ballots, adding up subtotals by hand, and pulling out a cellphone to use the calculator function.

Once batches were counted, an election supervisor compared the total ballots counted in the batch with the total ballots from the ballot manifest. In most cases, the recount number differed by one or a few ballots (not an unexpected result in any hand-counting operation) or was off by 10, suggesting a miscounted stack. Counties were told by the Office of the Secretary of State that they had the option of recounting to see if there was a counting error or simply uploading the number they counted. Only one county observed experienced discrepancies large enough to initiate a recount, and this second count resolved the issue, indicating that poor audit board process was to blame for the first count. Since the RLA does not depend on a precise match between the original and audited vote totals, consistent procedures about when to recount can and should be followed across counties. The Carter Center, therefore, recommends that clearer guidance be given to

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<sup>14</sup> Georgia is required to audit a statewide contest, and it appears that only the presidential contest will be statewide in 2024. Public Service Commissioners are the only executive office up for election in 2024, and there are two districts (3 and 5). All the other statewide executive offices were on the ballot in 2022. Neither U.S. senator is up for reelection.

<sup>15</sup> Reading candidate names aloud may have seemed unimportant in a low-key election with few party observers present to listen to audit boards. However, this was an issue in 2020 when party observers did not trust audit boards and should be instituted as a best practice for any count.



county election officials on when recounts are needed, in order to ensure greater consistency across counties.

The very large early voting batches (thousands of ballots) multiplied these problems. In some cases, a single audit board had to deal with the large batch alone – and would rapidly run out of table space when making stacks of 100. In some counties, other audit boards had to sit and wait while one finished a large batch. In other counties, election supervisors parceled out large batches among several audit boards, with candidate totals later summed up. This strategy raises potential chain-of-custody problems since ballots were not always unambiguously signed out to specific audit boards. It also may be more difficult to find the source of counting errors when summed counts do not match the ballot manifest.<sup>16</sup> The result for both large and smaller batches was occasional confusion about totals and extra time taken to redo counts. In two counties observed, counting had to be redone the following day due to problems with mixing batches and transposing numbers.

Tally sheets provided to audit boards listed the three candidate names but did not include separate categories for blank, overvoted, or write-in ballots. By midafternoon, at least one country was informed by the Office of the Secretary of State that they needed to record the number of votes for write-in candidates – instead of simply grouping write-in, overvote, and blank ballots together. If separate counts are desired for these categories, the tally sheets should include spaces for each category. Some counties modified the tally sheet to record write-ins anyway; others did not. In one county observed, batches were unsealed and reopened to pull out “none-of-the-above” ballots and find any write-ins. Per statute, they then needed an audit review panel to determine which write-ins were qualified candidates. Since party members already had gone home, there was more delay until they could return. Again, consistency in procedure, made clear in advance, reduces workload and delay.

Best practice suggests that the required counting process be standardized with documentation, clearly demonstrated in training videos, and enforced by audit supervisors. Procedural regularity prevents errors and extra work for staff. This will be particularly important in future audits, especially if a closer margin requires auditing of even more batches.

## 5. Batch Size

The inconsistency of batch size was noted in The Carter Center’s report on the 2020 audit and similarly presented chain-of-custody and counting problems in the 2022 audit. The following table shows batch-size data for the 60 batches audited in the 25 counties where the RLA took place, separated by type of ballots (early, Election Day, absentee).<sup>17</sup> (The table includes only candidate

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<sup>16</sup> One county observed had a single batch of more than 6,000 ballots packaged in four boxes. The supervisor divided each box between two audit boards. After counting, each audit board then switched with its “box mate table,” and the batch was recounted to confirm. This strategy reduces the chance of error before eight batches are summed, but doubles the amount of counting. Each of the eight audit boards devoted roughly 2½ hours to counting.

<sup>17</sup> The data were extracted from the audit summary data link on the secretary of state’s website reporting the results by batch for all 159 counties. <https://www.sos.ga.gov/news/georgias-2022-statewide-risk-limiting-audit-confirms-results>. 226,770 ballots were tallied across 159 counties. The RLA batches totaled 100,445 ballots. The number of ballots actually counted in the RLA is slightly larger. This table includes only valid votes for candidates; no vote, blanks, and write-ins are not included.

votes. The actual number processed – including write-in and no votes – is slightly higher.) The RLA tool variously assigned two, three or five batches to audit.

The table shows a batch size range of 1-100 (average 36) for absentee by mail, 250-921 (average 564) for Election Day, and 1,838-9,405 (average 4,737) for early voting. Ballots voted over the entire course of early voting at each location were accumulated into one large batch, with a single batch total registered by the tabulator.

|    | RLA Batches by County<br>(* RLA batches) | Early Vote | Election Day | Absentee by Mail |
|----|--|------------|--------------|------------------|
| 1  | Barrow                                   | 7,692*     |              |                  |
| 2  |  |            | 921*         |                  |
| 3  |  |            |              | 50               |
| 4  | Bartow                                   |            | 817*         |                  |
| 5  |  |            |              | 15               |
| 6  | Bibb                                     |            | 250*         |                  |
| 7  |  |            |              | 11               |
| 8  | Bleckley                                 | 2,638*     |              |                  |
| 9  |  |            |              | 4                |
| 10 | Bryan                                    |            | 401*         |                  |
| 11 |  |            |              | 35               |
| 12 | Chatham                                  |            | 441*         |                  |
| 13 |  |            | 675*         |                  |
| 14 |  |            | 398*         |                  |
| 15 | Clarke                                   |            | 654*         |                  |
| 16 |  |            |              | 27               |
| 17 | Cobb                                     | 4,643*     |              |                  |
| 18 |  |            |              | 3                |
| 19 | Dade                                     | 2,589*     |              |                  |
| 20 |  |            |              | 46               |
| 21 | Decatur                                  |            |              | 2                |
| 22 |  | 4,791*     |              |                  |
| 23 | DeKalb                                   |            |              | 98               |
| 24 |  | 4,774*     |              |                  |
| 25 |  |            | 753*         |                  |
| 26 | Effingham                                | 5,357*     |              |                  |
| 27 |  |            | 687*         |                  |
| 28 |  |            |              | 1                |

|    |   |                                |              |            |
|----|---|--------------------------------|--------------|------------|
| 29 | Fayette                                 | 9,405*                         |              |            |
| 30 |   |                                |              | 50         |
| 31 | Floyd                                   | 5,925*                         |              |            |
| 32 |   |                                |              | 31         |
| 33 | Forsyth                                 | 4,791*                         |              |            |
| 34 |   |                                | 502*         |            |
| 35 |   |                                |              | 12         |
| 36 | Fulton                                  | 2,302*                         |              |            |
| 37 |   |                                | 847*         |            |
| 38 |   |                                |              | 8          |
| 39 | Gilmer                                  |                                | 374*         |            |
| 40 |   |                                |              | 49         |
| 41 | Gordon                                  | 1,852*                         |              |            |
| 42 |   |                                |              | 99         |
| 43 | Gwinnett                                | 6,295*                         |              |            |
| 44 |   | 1,835*                         |              |            |
| 45 |   |                                | 279*         |            |
| 46 |   |                                | 457          |            |
| 47 |   |                                |              | 9          |
| 48 | Houston                                 | 3,624*                         |              |            |
| 49 |   |                                | 317*         |            |
| 50 |   |                                |              | 4          |
| 51 | Jasper                                  |                                | 820*         |            |
| 52 |   |                                |              | 4          |
| 53 | Newton                                  | 7,715*                         |              |            |
| 54 |   |                                |              | 99         |
| 55 | Richmond                                | 6,260*                         |              |            |
| 56 |   |                                |              | 50         |
| 57 | Tattnall                                | 2,287*                         |              |            |
| 58 |   |                                |              | 100        |
| 59 | Walton                                  | 5,225*                         |              |            |
| 60 |   |                                |              | 45         |
|    | <b>Total Ballots</b>                    | <b>90,000</b>                  | <b>9,593</b> | <b>852</b> |
|    | <b>Average</b>                          | <b>4,737</b>                   | <b>564</b>   | <b>36</b>  |
|    | <b>Total Candidate<br/>Vote Audited</b> | <b>100,445 (99,593 in RLA)</b> |              |            |

Hand-counting batches of several thousand ballots is challenging and creates an opening for error. Smaller batches would make the task more manageable and allow for greater consistency of practice. The Carter Center suggests that the Office of the Secretary of State work with counties and equipment vendors to find ways to ensure more manageable batch sizes. In future elections, the relative numbers of early, Election Day and absentee by mail votes will be driven by voter choices about when and how to vote (within the options and timelines offered by Georgia law) as well as political party recommendations. This uncertainty only adds to the difficulty of preparing for the next election and audit, and is an additional reason for reducing batch sizes and standardizing procedures.

### C. Vote Review Panels

In addition to monitoring the work of the audit boards, Carter Center monitors were prepared to observe the work of the vote review panels, which are the three-person committees that include one representative from each of the two major parties and a representative of the election office. When the three could not agree, the election superintendent was to be called in as a tiebreaker. The vote review panels were tasked with reviewing irregular ballots – ballots with write-in candidates, ballots that had to be duplicated because the voter’s mark on the original ballot wasn’t clear, or ballots where there was a question about voter intent.

All counties observed had vote review panels. However, few had any work to do. Early voting and Election Day voting used ballot marking devices that allowed the voter to type in a “write-in” so there was no uncertainty about the voter’s intent. Only the absentee/mail hand-marked ballots had the potential for voters making marks that required interpretation. Carter Center monitors reported no actual disagreements observed, and found that the main function of the vote review panels observed was to determine whether the write-in was a qualified write-in. No monitor reported use of a guide for interpreting ballot marks, although some counties had the Georgia guide to voter intent available. (Such a guide is supposed to be used for interpreting ballots during the initial vote count, and the same standards should be applied during an audit.) Since the mix of printed and handwritten ballots might well be different in a future audit, counties should be prepared to supply guides and train on their consistent use.

Staffing of vote review panels was handled by the Democratic and Republican parties. In one county, Carter Center observers spoke with two panel members who said they had received no training, but at the audit site, an election supervisor gave them a brief review of the sort of oddities (e.g., checkmarks rather than completely filled-in ovals) that might be encountered on hand-marked ballots.<sup>18</sup> Should Georgia again experience an election as contentious as in 2020, parties and vote review panels need to be better prepared for consistent adjudication of disputed ballots.

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<sup>18</sup> There is remarkable creativity in voters’ approach to paper ballots. Rather than filling in ovals or completing a line connecting name and office as instructions direct, voters have been known to circle the names of favored candidate or add check marks or X’s, cross out the names of the rejected options, or add comments or other symbols. On mail-in ballots, voters have used scissors to cut along dashed lines on the page.

## 1. Data Entry

Audit boards record their tallies for each audited batch on a tally sheet, and these must be entered into the computer system. Data entry should be clearly visible to monitors so they can confirm that tally sheets are accurately entered. Human data entry of numbers is notoriously error-prone. All data entry should be observed and checked by a second person.

In 45% of the counties observed by Carter Center monitors, data entry was conducted by a single person, sometimes as batches were completed, sometimes at the end of the day, sometimes in the room where the audit was completed, sometimes elsewhere out of view. Even when done in the presence of monitors, computer tables often were arranged so that monitors could not see the data entry screen without walking behind to look over the operator's shoulder, which monitors were reluctant to do. Only about half the Carter Center monitors reported that they could see data entry screens. There is no indication that the timing and spatial arrangements were designed to conceal information, and reconciliations ensured that numbers were in fact accurate. Rather, it appeared that little attention was given to transparency and the resulting confidence engendered by transparent data entry. In some states that have conducted RLAs, each tally sheet is projected on a screen so all monitors can see it, and the typed entries are simultaneously projected. Any errors are caught immediately, and observers can watch while standing well away from data entry staff. (In some states, the process is live-streamed.) The Carter Center urges the Office of the Secretary of State and the county offices to adopt similar procedures for routine use in audits even if some additional costs are incurred. Should the contentious results of 2020 recur, preparation in advance would eliminate one source of partisan conflict.

## D. Vendor Constraints

As a final point – and one not specific to Georgia – it is worth noting the effect of vendor constraints in the implementation of RLAs. The point of any postelection audit, and the reason for adopting the improved methodology of the RLA, is to increase voter – and candidate – confidence in the outcome of the election. If the RLA and the assumptions (e.g., about software independence) on which it is based cannot be fully implemented, there is a risk of undercutting the credibility of the RLA and the election.

Several examples of this problem have been noted above. These include the creation of smaller batches with associated batch totals, the listing of selected batches by county, and the user interface for the printed ballot that voters are told to review. "The software doesn't do that" is not a good enough answer. Instead, the implementing software should be able to fully support the RLA methodology.

## The Political Environment

In sharp contrast with the 2020 RLA, the 2022 audit proceeded smoothly and without partisan rancor in all 33 counties that were observed by The Carter Center. No law enforcement was required, and no one was ejected from an audit location.

The less contentious political environment surrounding the 2022 election was reflected in the reduced numbers of political observers observing the audit. In five of the 33 counties observed,

Carter Center observers reported that no party representatives were present. About half had both a Republican and Democratic observer; two counties reported seeing only a Democratic observer and five reported only a Republican observer. Six reported a Libertarian observer. State election board members were present in a few counties. A nonpartisan observer was noted in two counties. While all counties prepared a space for public observers, 70% of the counties observed reported no public in attendance. News media coverage also was minimal. While several stations (and The Atlanta Journal-Constitution) covered the dice throw at the Capitol on Nov. 16, on audit day, Georgia Public Broadcasting reported from Fulton County, and WBRC from Muscogee.

While the 2022 audit went smoothly, some of the lessons from 2020 suggest the need for caution when preparing for 2024. In 2020, a large number of audit boards was needed – more than could be staffed with experienced election workers, so other country workers were recruited. Many partisan observers harassed audit boards in 2020, including leaning over them (during a pandemic). Audit boards in 2022 were composed of election workers except for one county that used party auditors.

Looking ahead to 2024, the political climate could well be more contentious, and the margin for the presidential contest could be tighter, so some of the problems of 2020 may resurface. There may be a need for more audit boards than can be staffed with experienced election personnel, and cross-partisan participation could help meet this need while promoting confidence in the process. Use of less experienced personnel also puts a premium on standardized counting procedures and on ballot readability.

## VII. Conclusions and Summary of Recommendations for Future RLAs

### 2024 Recommendations

*Looking ahead, the following recommendations are offered in the interest of creating regularized and institutionalized procedures and a trustworthy audit process.*

- Create ballot manifests independent of the tabulator data to ensure the integrity of the outcome of the RLA.
- Work with the voting system vendor to improve system support for batch audits and to allow smaller batch sizes.
- Standardize procedures and forms for the audit across the state.
- Create statewide training materials for both election officials and audit boards, with a special emphasis on ballot security and chain of custody.
- Provide more state-level oversight and support for counties, with less reliance on the RLA vendor.
- On the published list of batches selected for audit, identify batches by county so interested parties can readily confirm that audited batches are indeed those published.
- Consider using party volunteers to staff audit boards.
- Provide training for observers/monitors.

Georgia's 2022 RLA went smoothly, in a politically low-key environment, and with relatively few ballots to tally. Overall, audit day implementation proceeded smoothly and with no partisan interference. Most irregularities observed by The Carter Center were minor and would be easily addressed in future audits through clarification and standardization of procedures and training. The Carter Center found that there was meaningful access for partisan and nonpartisan observers, and interested public and media. However, it was a challenge for observers to match the batches seen being counted with the selected batches as listed on the secretary of state's website. A more user-friendly listing by county would increase transparency. Most critical is ensuring that the source data for the RLA – in this case, the ballot manifest – is created in such a way that the integrity of the overall audit process is protected without creating excessive burdens on county election officials.

It is worth noting that a number of these recommendations also were made by The Carter Center after the 2020 audit and the Center's observation of the full hand tally (rather than a sampling RLA), as seen below.

#### 2020 Recommendations (Full Hand Tally)

- Develop a systematic, statewide strategy for ballot storage.
- Make it a regular practice to create ballot manifests.
- Develop reconciliation procedures specifically designed to handle increased numbers of absentee and early votes.
- Improve the layout and readability of the printed ballot.
- Strengthen public outreach and education about the RLA well in advance of its next implementation in 2022.
- Increase use of party volunteers to staff audit boards and vote review panels.
- Provide training for monitors.
- Re-examine the design of scanner/tabulator ballot boxes.



## VIII. Annexes

### A. Carter Center Preliminary Statement on Georgia's 2022 Risk-Limiting Audit Process

#### Press Release

ATLANTA (Nov. 22, 2022) – Georgia's risk-limiting audit process examining the 2022 secretary of state race was transparent and well-conducted, with only minor problems that can be corrected through more standardization and training, The Carter Center said in a preliminary report issued today.

According to the report, county election officials provided meaningful access to partisan and nonpartisan observers, as well as the public, and the audit should bolster confidence in the results.

The Carter Center, which has observed more than 110 elections in 39 countries and also observed the 2020 audit in Georgia, was invited to observe the 2022 risk-limiting audit by the Office of the Secretary of State. It sent about 40 nonpartisan observers to 34 counties on Nov. 17 and 18 to systematically collect information about the risk-limiting audit process, which is considered the gold standard in post-election auditing and requires hand counting a statistically significant percentage of ballots to determine whether the reported results are valid.

Few counties where The Carter Center observed had issues that required recounting or other mitigations. Audit spaces were well-organized and had plenty of room to allow observers to watch the counting process without interfering with the audit board members. Most counties observed by the Center finished auditing by early afternoon on the first day.

Looking ahead to 2024 and beyond, The Carter Center encourages the Office of the Secretary of State and Georgia's counties to find ways to maximize transparency and to expand training to help ensure the continued standardization of the auditing process across the state.

**The Carter Center Preliminary Statement on  
Georgia’s November 2022 Risk-Limiting Audit Process**  
(Nov. 22, 2022)

The Carter Center commends Georgia’s 159 counties on completion of the 2022 risk-limiting audit process. The audit examined the Georgia secretary of state race and confirmed the original reported result, the reelection of Secretary of State Brad Raffensperger. The Carter Center, which has observed more than 110 elections in 39 countries, was the only nonpartisan organization observing the audit. The Center was credentialed by the Office of the Secretary of State to provide an impartial assessment of the implementation of the audit process and had the same access provided to political party monitors.<sup>19</sup> The Center’s observers reported that the process proceeded quickly and professionally in most of the counties observed. This is a credit to the hard work of Georgia’s election officials, who were simultaneously preparing for the Dec. 6 U.S. Senate runoff while conducting the audit. On Nov. 17 and 18, The Carter Center sent approximately 40 nonpartisan observers to watch the process in 34 counties.<sup>20</sup> They systematically collected information on each step of the process, including reporting on ballot security and chain-of-custody, the work of the two-person audit boards and vote review panels to interpret and count votes, and the data entry process used to record audit results via the centralized reporting software.<sup>21</sup> The Center’s observers were welcomed by election officials and were able to conduct their observation without hindrance. This is a preliminary statement of their findings, based on observation on the audit days.<sup>22</sup> A more detailed final report will be made public in the coming weeks.

\* \* \*

Since 2019, Georgia has been required by statute<sup>23</sup> to conduct a risk-limiting audit of one statewide contest in every even-numbered election year. In 2020, the selected contest was the presidential race. Because of the very close margin of that contest and the timeline of the audit, the secretary of state chose to conduct a full hand count of all ballots, rather than just a sample of ballots, as RLAs typically use. The 2022 secretary of state contest was won by a much wider margin (Raffensperger garnered about 53% of the vote). This audit, conducted Nov. 17-18, 2022, was Georgia’s first opportunity to audit a statistically significant sample of the ballots and conduct a true RLA. The 2022 audit proceeded smoothly and peacefully at all locations observed.

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<sup>19</sup> Carter Center observers abide by the Center’s code of conduct for election observers.

<sup>20</sup> Barrow, Bartow, Bibb, Catoosa, Chatham, Cherokee, Clarke, Clayton, Cobb, Coffee, Columbia, Dekalb, Douglas, Fannin, Fayette, Floyd, Forsyth, Fulton, Gilmer, Glynn, Gwinnett, Hall, Henry, Jackson, Lowndes, Muscogee, Newton, Oconee, Paulding, Pickens, Polk, Richmond, Rockdale, Walton.

<sup>21</sup> The open-source risk-limiting audit software ARLO was developed by VotingWorks, a nonpartisan, nonprofit election technology vendor, with support from the U.S. Cybersecurity and Infrastructure Security Agency. Voting Works provided assistance to the Office of the Secretary of State in the implementation of the audit.

<sup>22</sup> The Carter Center did not observe the creation or validation of the ballot manifest or the batch totals source data, or any other aspects of the audit preparation process.

<sup>23</sup> See OCGA § 21-2-498. The procedure for conducting the risk-limiting audit is stated in GA ADC 183-1-15-.04.

**Risk-Limiting Audits:** The risk-limiting audit, which looks at a statistically significant random sample of paper ballots, is now considered the gold standard for post-election tabulation auditing. The number of ballots to be audited depends on both the margin of victory in the chosen contest(s) and the chosen “risk limit” for the audit – the maximum chance (say, 5 or 10 percent) that the audit might miss an incorrect outcome. The RLA process is currently in use in over a dozen U.S. states, and Georgia law now requires that an RLA with a risk limit at or below 10 percent be conducted prior to state certification of the election, placing Georgia in the forefront of adopting this approach to post-election auditing. This year, the specific type of RLA used was a Batch Comparison RLA.

Preparation began well in advance of the election, as county election staff processed, counted, and stored voted ballots, keeping them in the groupings in which they were counted (ballot batches). After the election, officials prepared a “ballot manifest,” or a record listing each of the carefully labeled containers of ballots, the number of batches of ballots stored in each container, and the number of ballots in each batch. Ballot batches vary greatly in size depending on the type of ballot – a precinct’s cumulated early voting ballots could be a batch of several thousand; ballots arriving in the mail on a single day might constitute a batch of a dozen.

For this RLA, entire batches – rather than individual ballots – were selected for audit. The batches were chosen using an algorithm called a pseudo-random number generator, seeded with a random 20-digit number. That seed number was created by rolling 20 10-sided dice in a public ceremony, well-covered by the media, held at 3 p.m. on Nov. 16 on the south steps of the State Capitol. The resulting seed, the ballot manifests from each county, the vote totals as originally reported, as well as the chosen risk limit (in this case five percent), were fed into the risk-limiting audit software, which generated the list of randomly selected batches to be audited in each county. Because the seed, the software, and the ballot manifests are all now public, anyone running the software could produce the same list of batches for audit; there is complete transparency in the selection.

Because the margin of the selected contest was wide enough, some counties were not assigned any batches to audit during the RLA random selection. To give all counties experience with the RLA methodology, however, the secretary of state required every county to audit at least two batches of ballots, including both hand-marked ballots and those printed off the ballot marking devices (BMD) used during early and Election Day voting. These “extra” batches were not included in the statistical calculations for the RLA but were audited using the exact same RLA process. Neither counties nor observers knew which batches would contribute to the audit and which would not. Statewide, 328 batches totaling 231,072 ballots were audited. Thirty-six of those batches across 25 counties contributed to the RLA.

**Preliminary Findings:** Overall, Carter Center observers reported that the audit was conducted according to procedures and without significant problems, with fewer than 10% of counties having issues that required recounting or other mitigations. Audit spaces were well-organized, with sufficient room to allow observers to watch the counting process without interfering with the audit board members. Most counties observed by the Center finished auditing by early afternoon on the first day.

While counties were prepared to audit a large number of batches, in part because of their experience in 2020 when all the ballots were counted, this year they were able to “right-size” the operation when they learned the final number of batches they were assigned to audit. For example, DeKalb County had prepared space for 25 audit boards and five vote review panels but only called in staff for 13 audit boards and one vote review panel when they learned they would only be auditing about 6,000 ballots.

***Audit Boards.*** The audit boards were generally staffed by election workers who were familiar with handling and reading ballots. Training observed prior to the start of auditing consisted of a brief orientation and a video prepared by VotingWorks, the vendor providing the audit software. There was, however, some variability among and within counties in the implementation of the audit process. For example, the recommended method for counting was not consistently implemented across the counties, resulting in occasional confusion about totals and extra time taken to recount batches. In two of the counties observed, counting had to be redone the following day because of some problems with mixing batches and transposing numbers. The Carter Center recommends that the required process be standardized, written down, more clearly demonstrated during training, and better enforced by audit supervisors. This procedural regularity prevents errors and extra burdens on already overloaded election staff. This will be particularly important in future audits when a closer margin may require auditing more batches. None of the inconsistencies noted by Carter Center observers affected the outcome of the process (as determined by significant, unresolved discrepancies between tabulated and audited vote totals).

Once votes from the ballot batches were counted, an election supervisor compared the total number of ballots counted in the batch with the total ballots reported for that batch on the ballot manifest. In some cases, the audited number differed by one or a few ballots (not an unexpected result in any hand-counting operation). If large discrepancies in the number of ballots were discovered, the supervisor had the option to recount. Note that only the total number of ballots in the batch were compared to decide whether audit boards should recount; by design, original candidate vote totals in each batch were not available for comparison until after the audit was over, so that tabulated vote counts did not influence the manual counts.

At all counties observed, chain-of-custody procedures were in place, with care taken to sign ballot containers out of storage, over to audit boards, and then back into storage. However, in one county, during the lunch break, two audit board tables were in the midst of counting a batch and the ballots were left unattended on the audit tables for a short time. Observers had these tables in view until a supervisor came to keep watch, so in fact there was no risk to these ballots. Expanding on current training that explains the point of maintaining the chain of custody would be helpful.

***Vote Review Panels.*** In addition to observing the work of the audit boards, The Carter Center observed the work of the bipartisan vote review panels. These two-person committees were tasked with reviewing irregular ballots – ballots with write-in candidates, ballots that had to be duplicated because the voter’s mark on the original ballot wasn’t clear, or ballots where there was a question about voter intent.

All counties observed had vote review panels staffed. However, a relatively small proportion of them were busy because only paper ballots marked by hand required interpretation. The main function of the vote review panels was to determine whether the write-in was qualified. Of the panels the Center observed, only 18 percent had visible access to Georgia’s guide to voter intent that could have informed this work, but there were no actual disagreements observed. Since the mix of BMD-marked and hand-marked ballots might well be different in a future audit, counties should be prepared to supply guides and train about how to use them consistently.

The Democratic and Republican parties staffed the vote review panels. Two panel members in one county told Carter Center observers that little to no training was offered on their roles. At the audit site, an election supervisor gave them a brief overview of what they might see when reviewing the voter hand-marked ballots. Assuming that future audits may focus on races with closer results, parties and vote review panels need to be better prepared for consistent adjudication of disputed ballots.

***Data Entry.*** In terms of transparency, data entry was the most challenging aspect of the audit observation. Audit boards record their tallies for each audited batch on a tally sheet, and these must subsequently be entered into the audit software. Data entry should be clearly visible to monitors so they can confirm that tally sheets are accurately entered. Human data entry of numbers is notoriously error-prone, and all data entry should be observed as well as checked by a second election worker.

In the counties observed, data entry practices varied greatly – sometimes it was conducted by a single person, sometimes as batches were completed, sometimes at the end of the day, sometimes in the room where the audit was completed, sometimes elsewhere out of view. Even when done in the presence of observers, it was difficult to see the data-entry screen without walking behind to look over the operator’s shoulder, which monitors were reluctant to do. Only about half of the Carter Center observers reported that they could see data-entry screens.

There is no indication that the timing and spatial arrangements were designed to conceal information, and reconciliations ensured that numbers were, in fact, accurate. Rather, it appeared that little thought was given to the role of transparency of data entry in building confidence in the process. In some states, each tally sheet is projected on a screen so that all monitors can see it, and the typed entries are simultaneously projected, ensuring that errors are caught immediately and visibly. The Carter Center urges the secretary of state and the county offices to adopt similar procedures for routine use in audits. This could eliminate one source of conflict should future audits be more contentious, as 2020 was.

***Transparency and Access for the Public and Monitors.*** Carter Center observers reported that they had adequate access to assess the process and found that in all counties visited, the audit process was conducted transparently and was open to party and other official monitors as well as to general public observation.

Of the counties observed, only three reported no party monitors. Otherwise, one or two Democratic and Republican monitors were present in each county. Other monitors included Libertarian Party and State Board of Elections members. Members of the general public were present in only 24 percent of the counties visited and were restricted to viewing proceedings from marked-off areas, as required by law. Media were seen in only three of the counties observed. Law enforcement or security were posted in only 20 percent of the counties, and there was only one reported instance of a monitor being disruptive.

Party monitors had to provide a letter from their designated party, sign in and take an oath, and wear a name tag. Party monitors were prohibited from interfering, touching ballots, or taking photos or recording the process. Party monitors were expected to maintain a safe distance from audit board personnel and not to hover over tables or speak to the audit board members while they were counting. The same rules applied to Carter Center observers.

Carter Center observers noted that party monitors were able to walk around the ballot counting area to observe audit boards at work and were generally able to hear the votes as they were read out and sorted into the appropriate piles to be counted. They also were able to witness the counting of the stacks of ballots. The Center notes that there was variability in the enforcement of monitor guidelines by county officials, particularly the rule about monitors talking to audit board members.

Carter Center observers reported that none of the party monitors had checklists or observation forms to record data, although some note-taking was observed. In general, it did not appear that the political parties had consistently trained their monitors on the audit process or on how to systematically collect information about the process.

\* \* \*

Overall, The Carter Center found that the RLA should increase confidence in the reported result in the secretary of state contest this cycle. The Office of the Secretary of State and Georgia's counties completed the audit while preparing for a runoff election, and did so fairly transparently through the provision of meaningful access to partisan and nonpartisan observers and the interested public. Problems encountered were minor and can be easily corrected in future audits through clarification and standardization of procedures and training.

## B. Code of Conduct for Nonpartisan Election Observers

### Election Observer Code of Conduct

The purpose of election observation is to help ensure the integrity of the election process, by witnessing and reporting accurately and impartially on each aspect of the process to evaluate whether it is conducted in an open and transparent manner and in conformity with applicable laws and electoral regulations. Election observation and monitoring also seeks to ensure the integrity of the election process by calling on all electoral actors (including the candidates, political parties, those supporting or opposing referendum initiatives, election officials, other governmental authorities, mass media, and voters) to respect the laws and election-related rights of all citizens and to hold accountable those who violate the law or any person's election-related rights.

**While serving as a Nonpartisan Election Observer, I will:**

- **Be an informed observer**
  - I will complete all required election observation training, familiarize myself with relevant election law and processes prior to the election, and adhere to the observation methods used by The Carter Center.
- **Be an objective observer**
  - I will report what I see – whether positive or negative – impartially, accurately, and in a timely manner. I will adhere to the highest standards of accuracy of information and impartiality of analysis. I will document my observations and return this documentation to The Carter Center. If I report a serious problem, I will include documentation sufficient to allow for verification.
- **Respect the election process**
  - I will respect state and federal election laws, follow the instructions of election officials, and maintain a respectful and professional attitude at all times.
- **Remain politically neutral**
  - I will not publicly express or exhibit any preference for or against any candidate, political party, initiative, or public official.
- **Protect the integrity of the election**
  - I will not interfere with election processes or procedures. If I have objections or concerns, I will elevate them using the methods from my training.
- **Follow the rules and guidance of the observer organizations**

- I will follow this code of conduct, and any written or verbal instructions given by the Carter Center's observation effort leadership. I will report any conflict of interest that I may have and report any improper behavior that I see conducted by any other observers that are part of this effort.
- **Refrain from speaking about the observation process on social media, to the media or to the public**
  - I will refrain from making any personal comments on my observations to the media or members of the public (including through social media). I will refer all media enquiries to The Carter Center leadership team.

I understand that my violation of this Code of Conduct may result in my accreditation as observer being withdrawn and my dismissal from the observation effort.

NAME (please print):

Signature:

Date:



C. Observer Forms for 2022 Risk-Limiting Audit

TCC GEORGIA 2022 GENERAL RLA OBSERVATION

PART A: OBSERVER INFO

Your Name: \_\_\_\_\_

County where you are observing the audit: \_\_\_\_\_

Today's date (e.g., 10/31/22): \_\_\_\_\_

Time you arrive at the audit location (e.g., 2:30 PM): \_\_\_\_\_

Time you leave the audit location (e.g., 2:30 PM): \_\_\_\_\_

|    |   |                           |                          |
|----|---|---------------------------|--------------------------|
| A1 | Were you allowed to observe?                                | <input type="radio"/> Yes | <input type="radio"/> No |
| A2 | Did the election workers cooperate with you?                | <input type="radio"/> Yes | <input type="radio"/> No |
| A3 | Were party monitors also able to observe the audit process? | <input type="radio"/> Yes | <input type="radio"/> No |

I have, to the best of my ability, conducted myself in accordance with the Carter Center's Code of Conduct for Observation and provided truthful, complete answers to these questions.

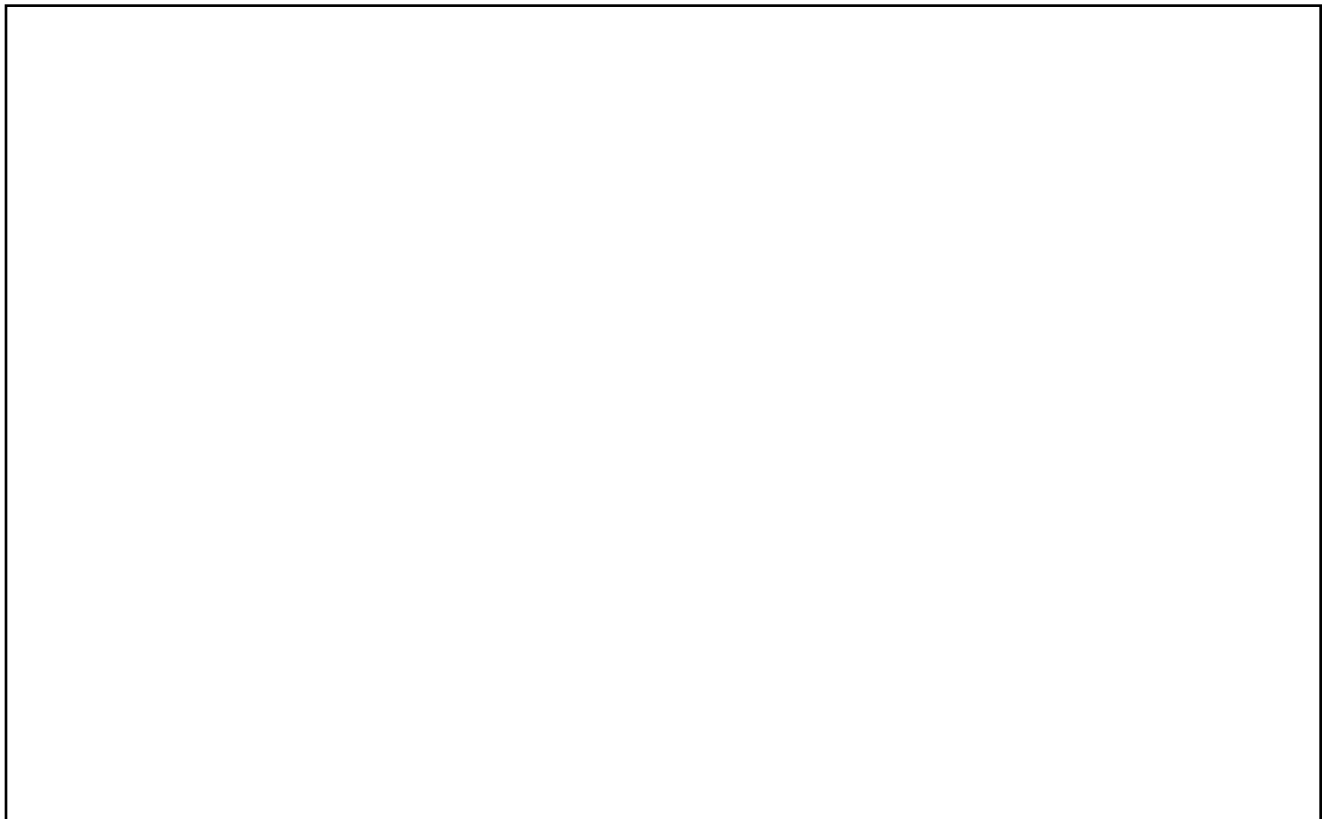
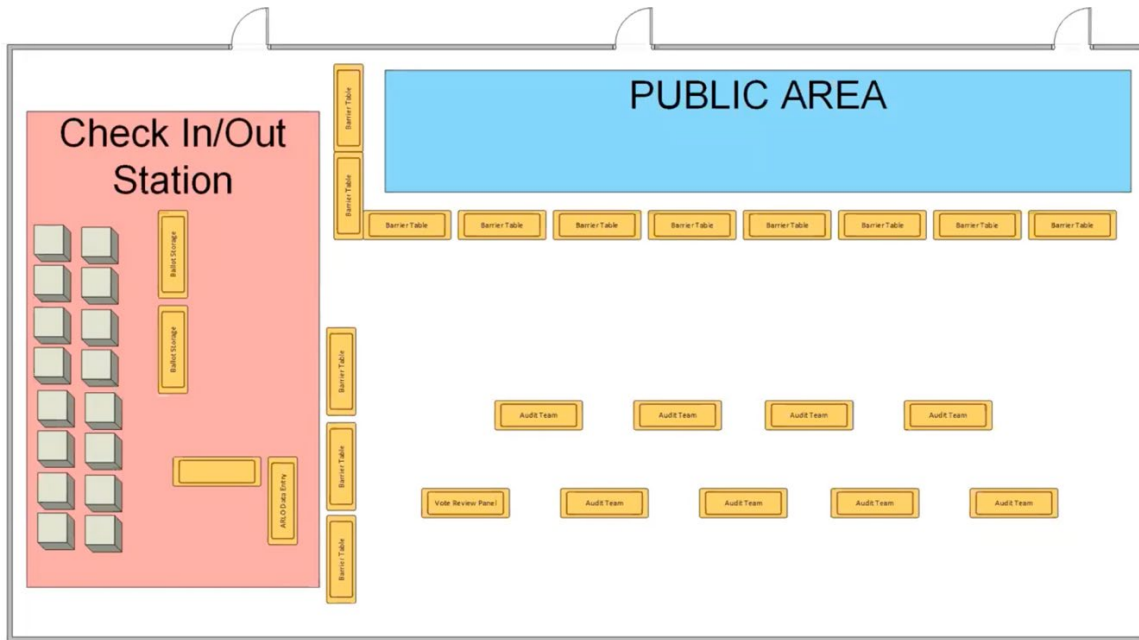
\_\_\_\_\_  
(Sign on the above line)

**PART B: PHYSICAL SPACE**

|            |  |   |
|------------|--|---|
| <b>B1</b>  | Is the audit location clearly marked with signage?   | <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Don't know |
| <b>B2</b>  | How many check in/out stations are set up?   | Count:  |
| <b>B3</b>  | How many Audit Boards are set up?  | Count:  |
| <b>B4</b>  | How many Vote Review Panels are set up?  | Count:  |
| <b>B5</b>  | How many data entry stations are set up?   | Count:  |
| <b>B6</b>  | Is the room big enough for the audit?  | <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Don't know |
| <b>B7</b>  | Is there adequate space for the monitors to be on the floor without crowding the Audit Boards? | <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Don't know |
| <b>B8</b>  | Is there a clearly defined space for public observers?   | <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Don't know |
| <b>B9</b>  | Is the audit floor neat & well-organized?  | <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Don't know |
| <b>B10</b> | Are rules/instructions for monitors clearly posted?  | <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Don't know |

**B11:** Draw the approximate layout of the audit floor. Include the public observation area, secure ballot storage area, check in/out stations, vote review panels, audit boards, etc.

EXAMPLE:



**PART C: TRAINING**

|     |   |                           |                          |                                  |
|-----|---|---------------------------|--------------------------|----------------------------------|
| C1  | Were you able to observe the audit board training?  | <input type="radio"/> Yes | <input type="radio"/> No | <input type="radio"/> Don't know |
| C2  | If so, did the audit board training cover:  |                           |                          |                                  |
| C3  | - Chain of custody for checking batches in/out?   | <input type="radio"/> Yes | <input type="radio"/> No | <input type="radio"/> Don't know |
| C4  | - Checking seals on the containers before opening them?                                     | <input type="radio"/> Yes | <input type="radio"/> No | <input type="radio"/> Don't know |
| C5  | - "Sort & Stack" procedure for sorting ballots?   | <input type="radio"/> Yes | <input type="radio"/> No | <input type="radio"/> Don't know |
| C6  | - What to do with blank/overvoted ballots?  | <input type="radio"/> Yes | <input type="radio"/> No | <input type="radio"/> Don't know |
| C7  | - What to do with ballots that have been duplicated?  | <input type="radio"/> Yes | <input type="radio"/> No | <input type="radio"/> Don't know |
| C8  | - What to do with ballots where the Audit Board cannot agree on the vote(s)?                | <input type="radio"/> Yes | <input type="radio"/> No | <input type="radio"/> Don't know |
| C9  | - "Count by 10s" procedure for counting/recording the totals for each stack?                | <input type="radio"/> Yes | <input type="radio"/> No | <input type="radio"/> Don't know |
| C10 | - Procedures for resealing the batches?   | <input type="radio"/> Yes | <input type="radio"/> No | <input type="radio"/> Don't know |
| C11 | - How to call for help/ask a question?  | <input type="radio"/> Yes | <input type="radio"/> No | <input type="radio"/> Don't know |
| C12 | Was a separate training or explanation of procedures offered for observers/monitors/public? | <input type="radio"/> Yes | <input type="radio"/> No | <input type="radio"/> Don't know |

**PART D: BALLOT STORAGE**

|    |  |                           |                          |                                  |
|----|--|---------------------------|--------------------------|----------------------------------|
| D1 | Was the ballot storage area in the same room or a separate space?<br>(Circle one)  | Same                      | Separate                 |                                  |
| D2 | Was access to the ballot storage area always secure/guarded?   | <input type="radio"/> Yes | <input type="radio"/> No | <input type="radio"/> Don't know |
| D3 | Were ballot containers well organized in the storage area?   | <input type="radio"/> Yes | <input type="radio"/> No | <input type="radio"/> Don't know |
| D4 | Was an election worker checking batches in/out of the storage area?  | <input type="radio"/> Yes | <input type="radio"/> No | <input type="radio"/> Don't know |
| D5 | Were audit boards retrieving/returning ballot batches themselves, or are runners bringing the batches to the audit boards?<br>(Circle one) | ABs                       | Runners                  |                                  |

**PART E: VOTE REVIEW PANELS**

|    |  |   |
|----|--|---|
| E1 | Were bipartisan Vote Review Panels reviewing any ballots where the audit boards could not agree on the vote? | <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Don't know |
| E2 | Was a copy of Georgia's voter intent guidelines available to guide the vote review panel's decisions?        | <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Don't know |

**PART F: DATA ENTRY**

|    |  |   |
|----|--|---|
| F1 | Was data entry done by a team of two, with one person checking the other's work?   | <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Don't know |
| F2 | Was the data entry visible to monitors, either because they could stand close enough to view the screen or because the screen was projected? | <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Don't know |
| F3 | Were completed tally sheets entered into the software as soon as the counting was complete?  | <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Don't know |

**PART G: MONITORS, MEDIA & OTHERS**

|     |   |   |
|-----|---|---|
| G1  | How many party monitors were present?   | Count:  |
| G2  | If party monitors were present, what parties did they represent?<br><i>(Circle all that apply, if 'other' please describe in Notes)</i> | DEM      REP      OTHER   |
| G3  | Did an election official check the credentials of all monitors?   | <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Don't know |
| G4  | Were monitors required to wear badges?  | <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Don't know |
| G5  | Were any monitors disruptive?<br><i>(If yes, describe in Notes)</i>   | <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Don't know |
| G6  | Did monitors attempt to talk to Audit Boards?   | <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Don't know |
| G7  | Did monitors appear to understand the audit steps and purpose?  | <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Don't know |
| G8  | Did monitors systematically record observations?  | <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Don't know |
| G9  | Were monitors using red pens?   | <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Don't know |
| G10 | Were members of the public in attendance?   | <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Don't know |
| G11 | Were media present at the audit location?   | <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Don't know |
| G12 | IF YES: what media outlet do they represent?  | Outlet:   |

