OFFICE OF THE
STATE AUDITOR

September 3, 2024

The Honorable Deidre Henderson, Lieutenant Governor
Utah State Capitol
Suite 200
Salt Lake City, Utah 84114

Dear Lt. Governor Henderson:

As communicated in our August 20, 2024 engagement letter, the Office of the State Auditor (OSA) is performing a limited review of certain policies and procedures for Utah's election process.[1] This letter communicates the methodology and results of our initial work related to the signature gathering and validation process, specifically:

- Determining whether the signature validation process was reasonable, particularly regarding voters whose voter registration information is protected, and
- Determining whether the signature validation process yielded statistically-accurate results for certain candidates for statewide federal and state offices who chose to gather signatures as a path to the 2024 Republican primary election.

Utah Code 20A-9-202(5)(a) states: "A declaration of candidacy filed under this section is valid unless a written objection is filed with the clerk or lieutenant governor before 5 p.m. on the last business day that is at least 10 days before [the first Wednesday after the fourth Saturday in April]." It is our understanding that no written objection was filed within this timeframe. As such, our conclusions noted in this letter have no impact on the eligibility of any candidate in the upcoming general election, nor in the recently completed primary election.

Additional aspects of our review are ongoing, the results of which will be reported to you upon completion. As an elected official, the State Auditor is the independent auditor for state and local governments. As such, the Office of the State Auditor is uniquely positioned to provide an independent assessment of statutory compliance and performance management in this matter. In addition, as a member of the State Board of Canvassers, the State Auditor has a particular statutory interest in ensuring the integrity of Utah's elections.

[1] Our review is limited to certain aspects of the state's election process, including controls over and disclosure of voter registration information as well as the validation process associated with signature-gathering by candidates.

Statutory Requirements for Candidate Signature Gathering

Utah statute allows political candidates to gather signatures to gain access to a primary ballot.[2] State statute sets forth the requirements for candidates as well as the requirements and processes for election officials. In brief:

- A candidate must file a notice of intent to gather signatures for candidacy with the lieutenant governor, after which that candidate may commence gathering signatures. A candidate must use the specified form and gather signatures in the specified manner.
- Signatures gathered by a candidate must be submitted to the appropriate election oversight personnel for validation (Validators). The candidate must reach the threshold for the minimum number of valid signatures by the statutory deadline. A candidate continues to submit signatures until the statutorily required threshold is reached or the deadline lapses. For a statewide race the threshold is 28,000 valid signatures.
- Validators review each signature to validate[3] that the person who signed the petition:
    - Is a registered Utah voter;[4]
    - Is a registered member of the required political party;[5]
    - Lives in the appropriate district (if applicable);[6]
    - Has not signed duplicate petitions for any candidate in the same race;[7]
    - Is in fact the purported individual as evidenced by a substantially similar signature on both the petition and a signature on file in the statewide voter registration database.[8]

We note that in the case of candidates for federal and statewide offices, the Lieutenant Governor has contracted with the Davis County Clerk to perform the signature validation process for petitions.

Standard for Evaluating Signatures

State statute requires a signature on a petition to be "substantially similar" to the "signature on the statewide voter registration database."[9] Lacking a statutory definition of "substantially similar" as the term relates to a handwritten signature, signature validation is by necessity a subjective exercise. We also note that *Utah Code* 20A-9-401 states "This part shall be construed liberally so as to ensure full opportunity for persons to become candidates and for voters to express their choice." As such, Validators are trained to consider a variety of factors regarding signature features, such as evolution of a signature over time. Validators attempt to use multiple sources of the voter's signature and handwriting to enhance the accuracy of their determination regarding whether a signature is substantially similar. There must be a combination or cluster of shared characteristics

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[2] *Utah Code* 20A-9-403(3) and 20A-9-408
[3] *Utah Code* 20A-9-403(3) and *Utah Code* 20A-1-1002
[4] *Utah Code* 20A-9-403(3)(a)(ii)
[5] *Utah Code* 20A-9-403(3)(a)(ii)
[6] *Utah Code* 20A-9-403(3)(a)(ii)
[7] *Utah Code* 20A-9-411(1)
[8] *Utah Code* 20A-1-1002(1)
[9] *Utah Code* 20A-1-1002

to allow a Validator to validate a signature as substantially similar. Likewise, there must be a cluster of differences to conclude that a signature is not substantially similar.

We note that your office provides an online signature validation course on the principles and techniques of signature validation which all Validators are required to complete.[10] Each Validator must pass an assessment with a minimum required score. This appears intended to provide greater consistency of signature validation performed by different Validators.

Methodology for Signature Review

The Davis County Clerk's Validators process signatures until the statutory threshold of required valid signatures is reached. At that time, any unverified and uncounted signatures are set aside.[11] Due to the subjectivity of the validation process and human error, we expected to find exceptions[12] within the population of validated signatures. Therefore, we anticipated our work would entail testing a primary sample from validated signatures and then possibly testing a secondary sample of the uncounted and unverified signatures to determine whether the statutory threshold would have nevertheless been met with the collected signatures.

Primary Sample Methodology

A representative sample allows an auditor to validly infer the prevalence of an attribute (e.g., signature validation error) for a population reliably and with great accuracy while optimizing audit resources. There are several necessary conditions to ensure the validity of these procedures. These include:

- a clear definition of the relevant population of interest;
- an estimate of the proportion of the population with the attribute of interest;
- a level of confidence reflecting the probability that the sample accurately reflects the population;
- an acceptable margin of error between the sample estimate and the actual population value;
- homogeneity of the attribute across the population; and
- a random method to select items for the sample to reduce bias and enhance generalizability.

To evaluate the populations of interest, we designed a random sample without replacement to determine the number of items that would be subject to further testing. According to common statistical practice, we utilized Cochran's formula (see Figure 1) with adjustment for finite populations to determine the size of the sample for each test. After randomizing each sampling framework via random number assignment, every element within the population was sorted and then selected up to the relevant sample size.

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[10] *Utah Code* 20A-1-107

[11] The Validators may stop mid-packet and even mid-page.

[12] A sample item was classified as an exception when we determine the signature was not substantially similar to one of the signatures in the statewide voter registration database or when the signor did not belong to the required party at the time the petition was signed.

Figure 1: Cochran's Formula

$$n_0 = \frac{Z^2 \times p \times (1-p)}{e^2}$$

$$n = \frac{n_0}{\left(1 + \left(\frac{n_0}{N}\right)\right)}$$

Z: The desired confidence level.[13]
p: The assumed proportion of the attribute of interest.[14]
e: The margin of error.[15]

Secondary Sample Methodology

We assumed we would encounter exceptions which, when projected onto the primary population of validated signatures, might necessitate a secondary sampling of previously uncounted signatures. We used a similar statistical approach in calculating and randomizing our secondary sample. However, since the size of the secondary population of uncounted signatures was significantly smaller, we adjusted *p* to reflect our sampled exception rate and adjusted the margin of error to increase the sample size. In addition, we selected additional sample items (oversampled) to add more assurance to our results.

Review of Validated Signatures

Of particular public interest has been the Republican primary contest for governor. Therefore, we analyzed the signatures gathered by the Cox/Henderson campaign (Cox). We also reviewed the signatures gathered by two additional statewide Republican primary races: (1) those gathered in the federal senate race by the Curtis campaign (Curtis); and (2) those gathered in the state attorney general race by the Brown campaign (Brown).

For each of the three candidates, we obtained lists of all voters whose signatures had been identified as valid during the validation process from the statewide voter registration database. From each list, we determined the number of signors who had invoked privacy protection for their voter registration information and were, therefore, less subject to review by interested outside parties. Since every other aspect of the full population of validated signatures appears to be homogenous with the sub-population of validated signatures for protected voters, we believe we can infer statistical observations of this sub-population are equally applicable to the full population. As such, our primary sample was specifically drawn from this sub-population to provide greater insight into, and review of, validated signatures for protected voters to inform the public regarding an aspect of the validation process that could not otherwise be reviewed by interested outside parties due to

[13] For example, at 1.96 represents a 95% degree of certainty that a sample estimate falls within a specified range of the true population parameter.
[14] For example, without additional information, assuming half of items may have the relevant attribute maximizes the sample size.
[15] For example, 5% is the maximum expected difference between the sample estimate and the actual population value.

the privacy protection invoked by those voters. Table 1 shows key statistics of validated signatures as well as the size of this sub-population of validated signatures for protected voters.

Table 1 – Key Signature Validation Statistics

	Cox	Curtis	Brown
Number of signatures processed by Validators	32,883	36,944	31,694
Number of validated signatures	28,006	28,006	28,004
Validation rate[16]	85%	76%	88%
Number of validated signatures for voters who requested privacy protection (sub-population)	11,770	10,974	11,089
Percent of validated signatures for voters who requested privacy protection	42%	39%	40%

Using the primary sample methodology described above, we calculated our sample size as shown in Table 2. *p* was specified to maximize this sample size. We then randomly selected the number of sample items from the sub-population.

Table 2 – Elements of Statistical Calculation for Primary Sample

	Cox	Curtis	Brown
Number of validated signatures for voters who requested privacy protection (sub-population)	11,770	10,974	11,089
95% confidence interval (*Z* score)	1.96	1.96	1.96
Proportion of population deemed to be valid (*p*)	50%	50%	50%
Margin of error (*e*)	5%	5%	5%
Statistical sample size (*n*)	373	372	372

Prior to beginning our signature validation review, we completed the same online signature validation course required for Validators. As we reviewed each sample validated signature, we identified whether the signor was a registered Republican at the time of signing the petition as well as whether the signature on the petition was substantially similar to at least one of the voter's signatures on file in the statewide voter registration database. We found that for each of the sampled signatures that the voter was registered as a Republican voter at the time of signing. However, a few signatures, as noted in Table 3, did not meet our subjective belief that they were substantially similar to any of the signatures on file.[17] Therefore, in those cases, we took exception

[16] Various factors influence validation rates, including whether a candidate was first to submit signatures for validation, avoiding a signature being invalidated as a "double count." In addition, certain candidates use third-party validators to monitor the effectiveness of their signature gathering efforts, prior to submission to official validation review.

[17] Out of the 1,252 signatures we sampled, we identified one signature that we believe was fraudulent. For the other 11 exceptions, while we believe those signatures were not substantially similar to any of the signatures in the statewide voter registration database, we cannot conclusively determine they were not signed by the voters. We simply believe they lacked a sufficient combination or cluster of shared characteristics to allow a Validator to validate

with the Validator's original determination. We projected these exceptions onto the entire validated population to determine the statistical number of additional possible exceptions in the full population of validated signatures. Table 3 shows the exception projection.

Table 3 – Statistical Projection for Primary Sample

	Cox	Curtis	Brown
Number of validated signatures	28,006	28,006	28,004
Samples reviewed	373	372	372
Number of exceptions noted (Exception race)	4 (1.1%)	3 (0.8%)	5 (1.3%)
Sampled margin of error for full population	±1.0%	±0.9%	±1.2%
Projected number of possible exceptions for full population	300	226	376

Statistically, it is possible that each candidate might have fallen short of the statutory requirement in the validated population of signatures based on our projected number of possible exceptions. Therefore, we proceeded with our secondary sample testwork. Each candidate gathered and submitted additional signatures that were not processed by the Validators (uncounted signatures). As noted, the practice has been that once the statutory threshold of validated signatured is reached, the validation process stops. Furthermore, we analyzed whether the uncounted, and therefore unverified, signatures turned in by each candidate were sufficient to backfill the projected exceptions noted.

Curtis and Brown had gathered and submitted additional uncounted signatures in such volume that we considered it statistically unlikely they would not have exceeded our projected exceptions. Adding to our confidence, Curtis and Brown used the same signature gathering company. As expected, we found a significant number of signors that signed petitions for both candidates.[18] This correlation gave us additional assurance of our statistical observations. As such, we determined performing additional sample work was unnecessary and would have been an inefficient use of resources.

Cox had submitted a smaller number of additional uncounted signatures such that we determined additional testwork was needed. Therefore, we asked the Validators to examine uncounted signatures submitted for Cox to determine whether they were substantially similar and should be considered valid. (We note that those uncounted signatures had been submitted on or before March

a given signature as substantially similar. Of note, the Validators appeared to have used reasonable skills and techniques for detecting fraudulent signatures where the gatherer appeared to engage in significant and intentional fraud.

[18] Of the total number of validated signatures for Curtis and Brown, 74% of signors signed petitions for both candidates. We would expect this high correlation since the signature gathering company indicated that both petitions for both candidates were circulated together. Of our primary sample size, 277 sample items for Curtis and 276 sample items for Brown fell in this overlap. Of those, only 12 sample items were duplicative for both candidates.

15, 2024.[19]) After the Validators completed this additional work, we determined there were approximately 391 additional valid signatures for Cox that were not included in the primary sample. We then sampled those validated signatures to review their validity pursuant to our secondary sample methodology. We did not stratify this secondary population by protected status.

Table 4 – Elements of Statistical Calculation for Secondary Sample

	Cox
Estimated number of valid signatures from previously uncounted signatures	391
95% confidence interval (Z score)	1.96
Proportion of population deemed to be valid (p)	2%
Margin of error (e)	2%
Statistical sample size (n)	128
Number of randomly sampled valid signatures reviewed	135
Exceptions noted	0
Projected number of valid signatures within the population of uncounted signatures	391

As shown in Table 4, the projected number of additional signatures gathered by Cox exceeded our projected number of exceptions noted in Table 3.

Conclusion

Based on the statistical sampling of validated signatures within our primary sub-population of validated signatures for voters with privacy protection as well as consideration of the secondary population of uncounted signatures, we conclude that it is statistically likely each of these candidates met the statutory threshold of required valid signatures. Of note, had the Validators reported that additional signatures were required, each candidate had ample time to gather additional signatures to meet the statutory threshold.

While this letter notes exceptions, this should not negatively reflect on the quality of work performed by Davis County Clerk's office. Rather, the low exception rate indicates that they performed their validation duties with care and professionalism.

We express appreciation for the professionalism and assistance extended to us by officials in both your Election Office and the Davis County Clerk's office during our review. We understand the challenges associated with simultaneously meeting the expectations and demands of two different audit teams, particularly during the time constraints associated with preparing for the upcoming general election.

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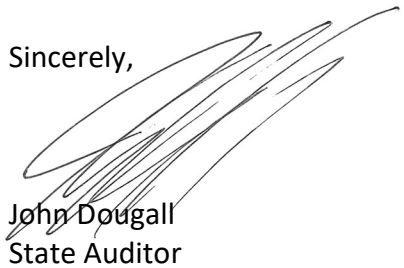
[19] State statute required a candidate to submit signatures no later than April 15, 2024 at 5:00 p.m. (See *Utah Code* 20A-9-408(8)(b).) As such, Cox had ample time to collect additional signatures, had the Validators indicated more were needed to meet the statutory threshold.

Sincerely,



John Dougall
State Auditor

cc: Joe Pyrah, Chief of Staff, Office of the Lt. Governor
Ryan Cowley, Director, Utah Election Office
Brian McKenzie, Davis County Clerk