Dominion Diamond Corporation

Uncertainty Analysis and Lower Bound

July 20, 2015

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20 m for Lower Bound

Question:

- Why was 20m selected for the EPZ in the lower bound scenario?

Answer:

- The 20 m width was based on other diamond projects in the area, judgment, and experience in the North.

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500 Realizations

Question:

- What was the basis for the 500 realizations in the 2D Monte Carlo modelling, and do we have plots demonstrating that the model converged on an average?

Answer:

- The four probability distribution functions (PDFs) were sampled and each realization manually input into the 2D model representing the EPZ
- 500 realizations conducted within the time period
- Following tests confirmed that 500 realizations were sufficient

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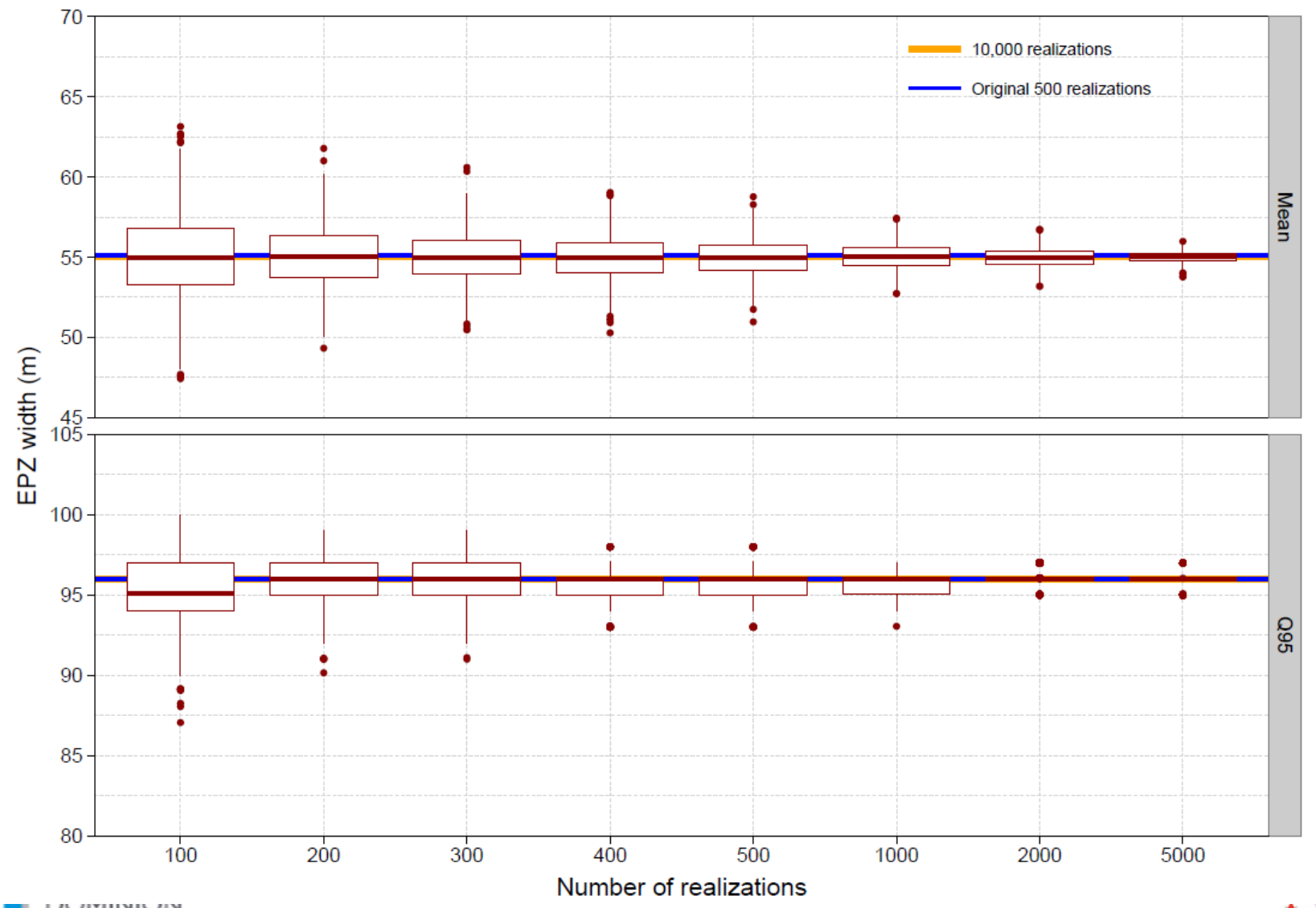
Number of Realizations

- Parameters check:
  - For each of the parameters, 100, 200, 300, 400, 500, 1,000, 2,000, 5,000, and 10,000 random samples were taken. The mean and 95th quantile values were calculated for each sample and recorded. The process was repeated 1,000 times.
  - The distributions of the 1,000 mean and 95th quantile values for each sample size were summarized using boxplots. In these plots, each box represents the 25th and 75th quantiles (bottom and top lines, respectively), and the median (middle, bold line); whiskers extend to 1.58 times the interquartile distance; outliers are shown as individual points.
  - The mean and 95th quantile values of the original 500 realizations of the parameters, were plotted as horizontal lines for reference and comparison across different samples sizes.
  - The median values of the 1,000 mean and 95th quantile statistics, calculated for the 10,000 sample size were also plotted as a horizontal line for reference and comparison, and represent the converged values.

PDF for EPZ Width



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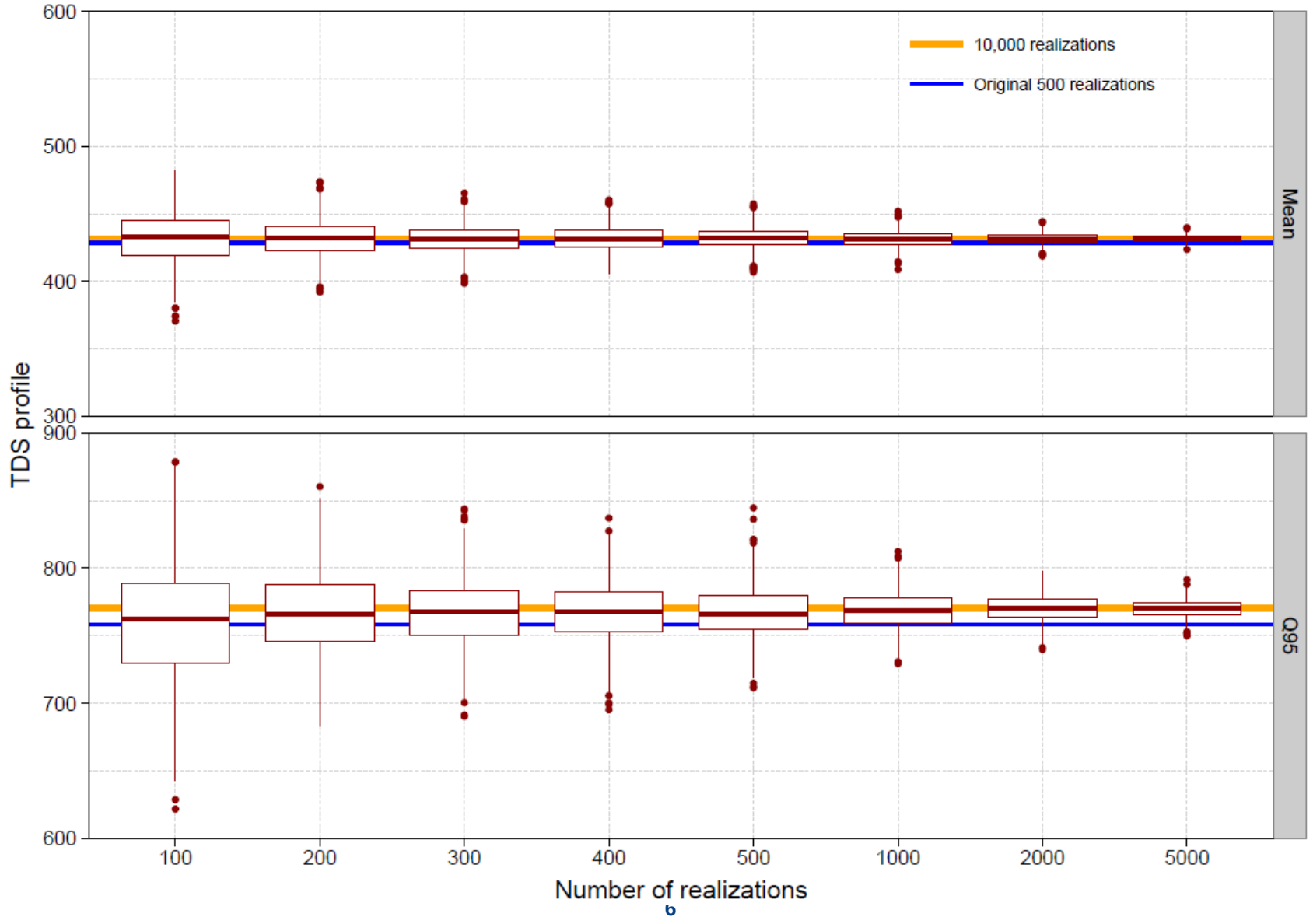
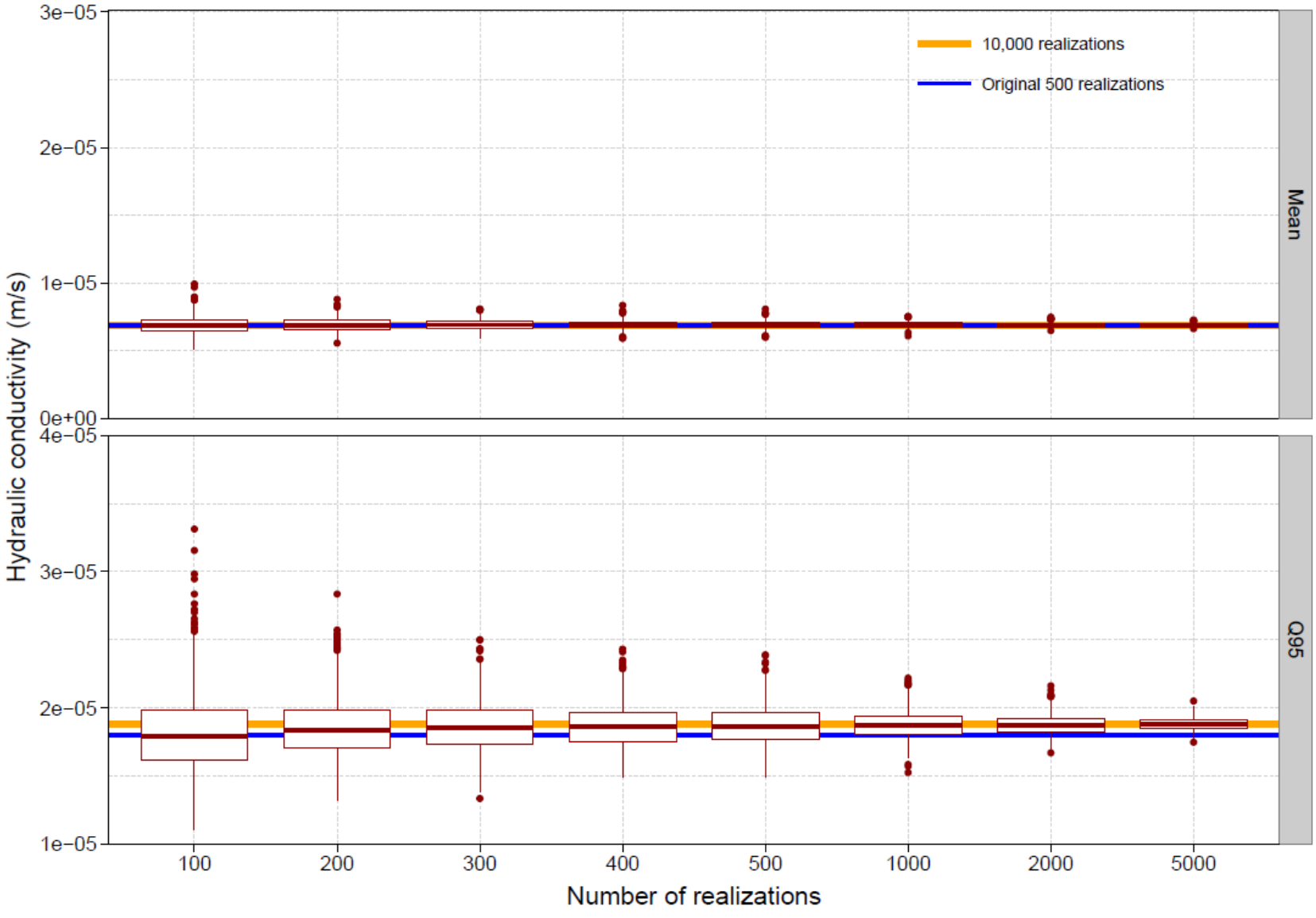
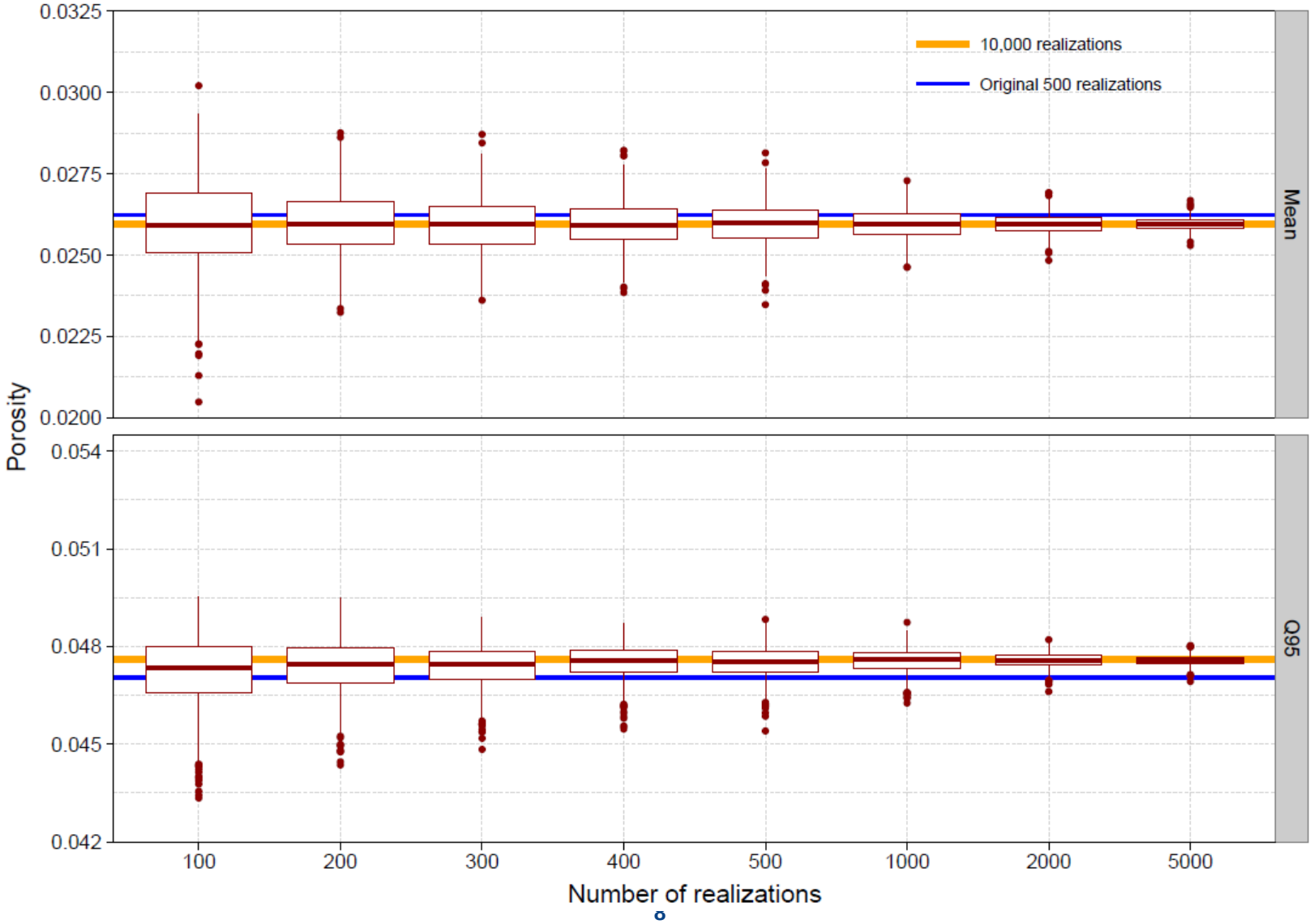
PDF of TDS Profile Intercept



PDF of Hydraulic Conductivity



PDF of Porosity



500 Realizations

- There is very little difference between the mean and 95th quantile for the original 500 realizations and the 10,000 converged values.
- Indicates that 500 realizations do converge closely to the average, and are sufficient.

- Results:
  - A further test examined the model outputs.
  - The mean and 95th percentile were calculated for the first 10 up to the entire 500 realizations for the planned end of mine life (total mass and inflow).
  - Results appear to stabilize/converge between 100 and 200 realizations.
  - These results also show that 500 realizations are sufficient.

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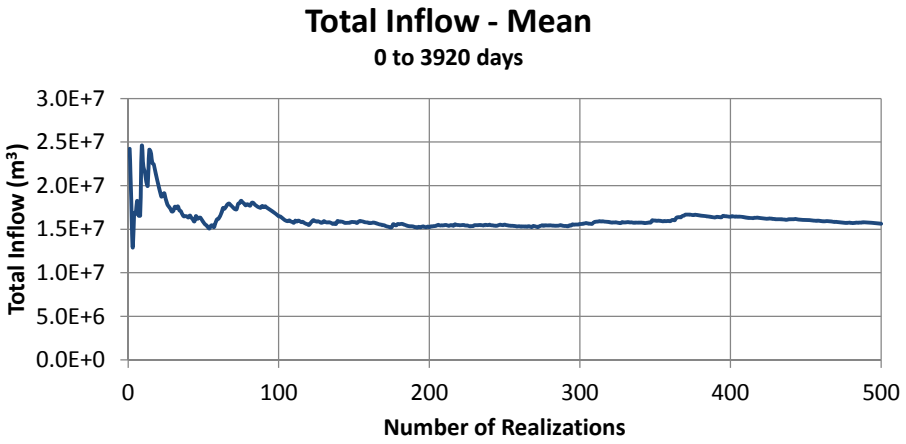
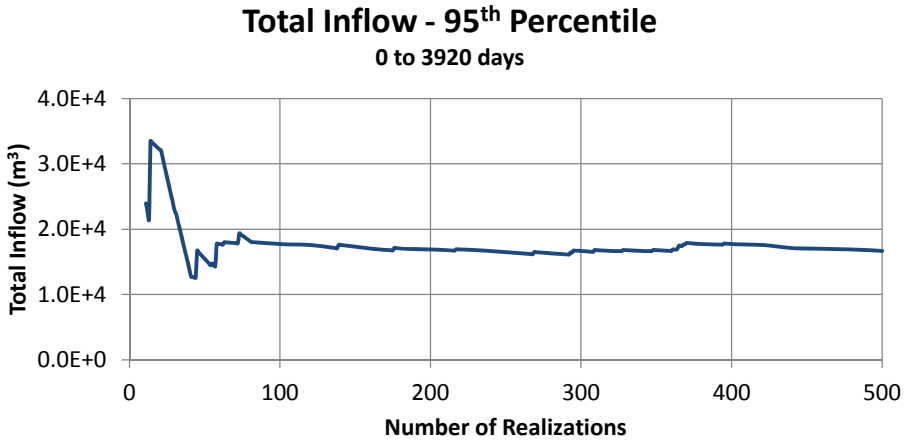
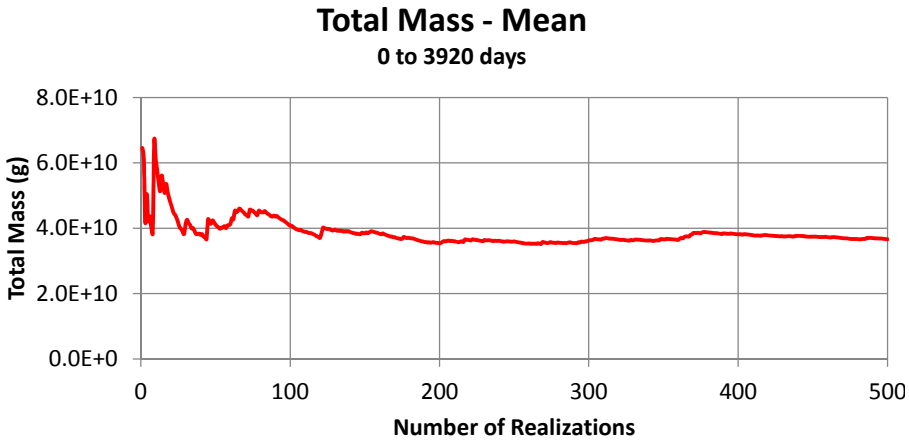
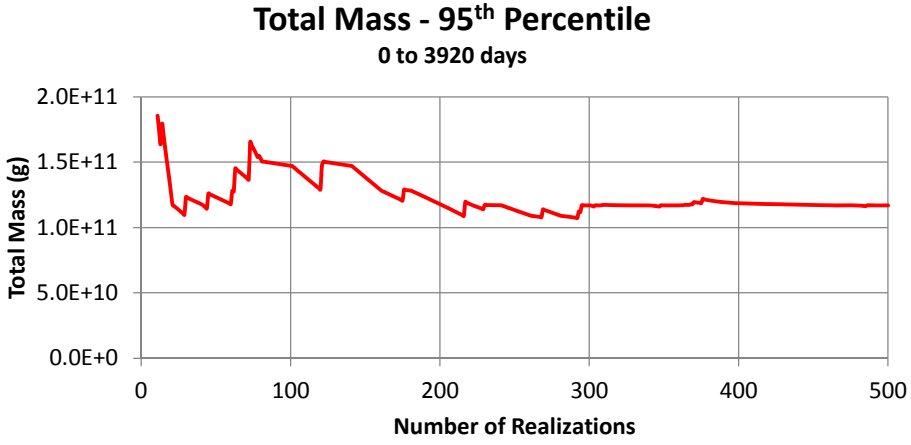
Results - Convergence









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First Percentile

Question:

- Is the 1st percentile 2D Monte Carlo carried forward into the lower bound scenario?

Answer

- Yes

Parameters in Lower Bound

Question:

- Why were only EPZ thickness, EPZ hydraulic conductivity, and porosity varied as part of the lower bound scenario?

Answer:

- There is less uncertainty in the other parameters due to site data, such as, TDS profile (three sampling rounds) and numerous packer tests in competent bedrock (outside of EPZ).

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Lower Bound – Post-Closure

Question:

- Were the lower bound scenario parameters carried forward into the post-closure hydrogeological model for generating the inputs for the hydrodynamic model?

Answer

- Yes

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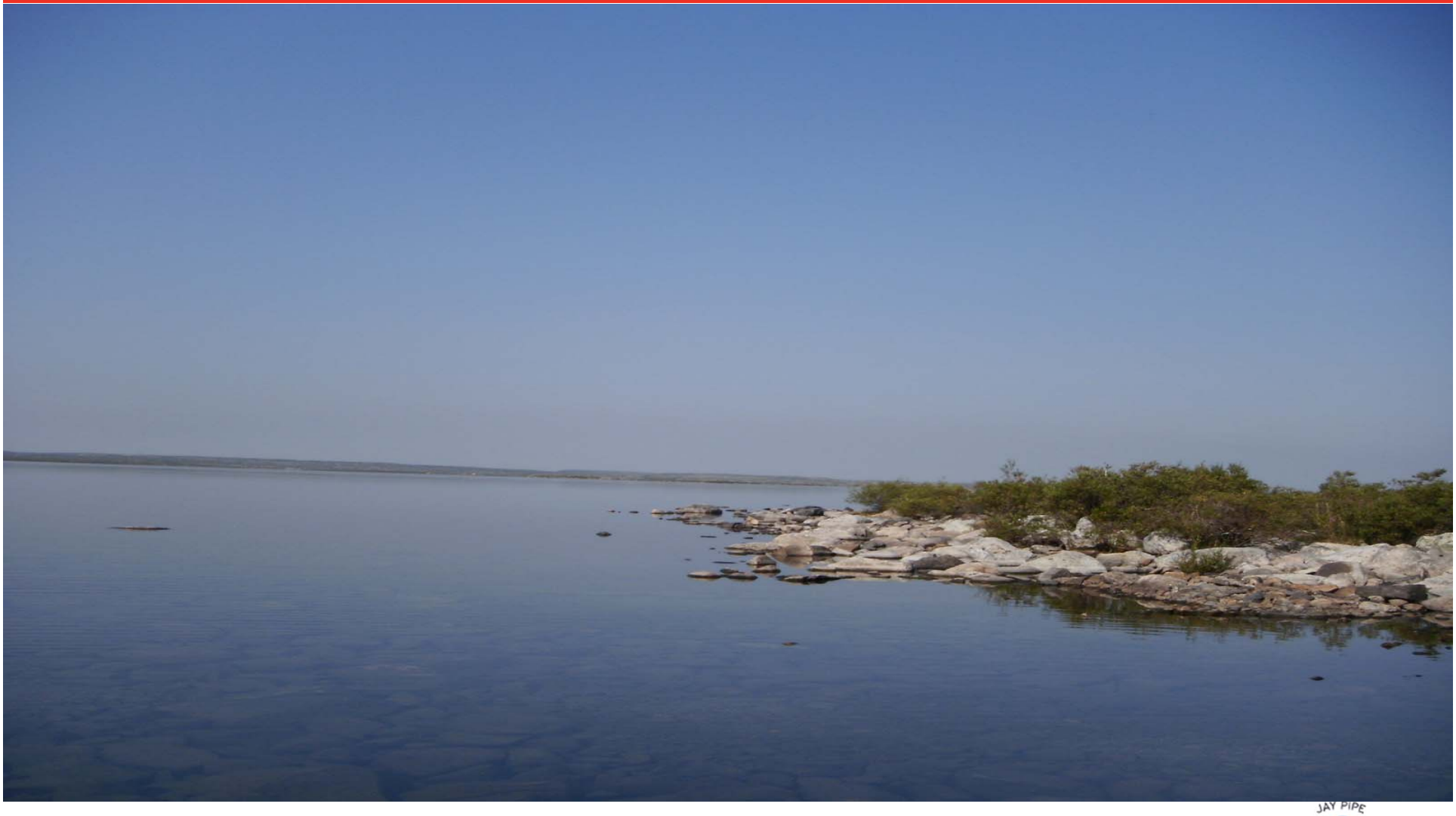
Questions?



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