Brief Study on CPAL Settings
40 Asp Variable Dsp
Variable Flow Rates
Variable Plunger

Starting Points
for
Method Development Work
for the Researcher

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Outline

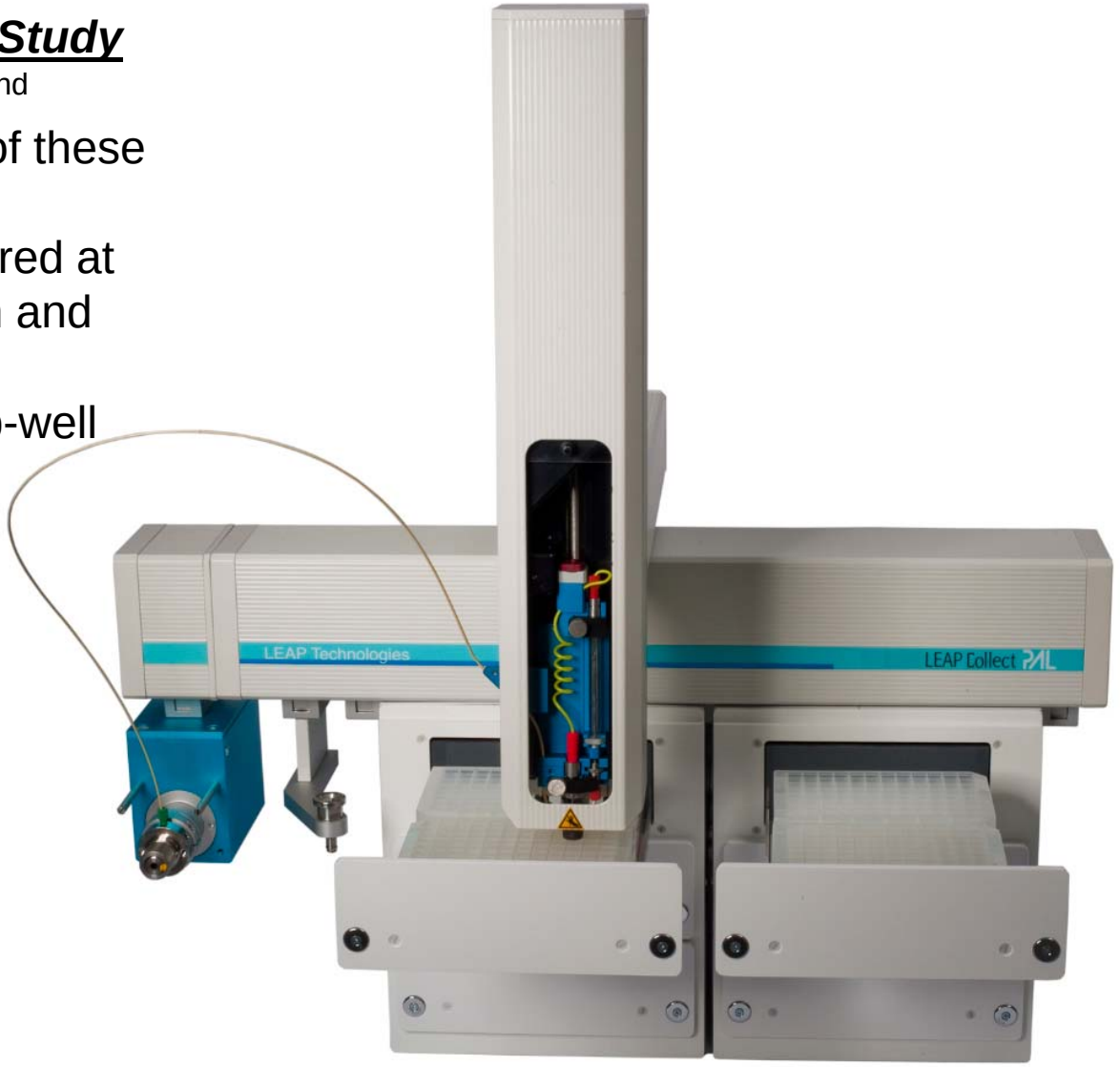
- This study was conducted over a period of three days with various settings to optimize the Collect PAL in house.
- Liquid (50:50 H2O:MeOH) was collected.
- Parameters were selected in order to test for no dripping between well-to-well or waste-to-well movements. Previous testing was performed to find these “starting” parameters shown here.
- Version 2.1 Collect PAL Application was used.
- Only 500 uL/min, 1.0 mL/min, and 1.5 mL/min flow rates were measured.
- 40Asp and Variable Dsp settings were tested with only 3 sec and 6 sec Collection values.
- 0mm PENETRATION and 0mm RETRACTION values were used for the study.
- A Gilson 305 Pump with manometric module and 5.0 mL head were used. These had been PM’d and QA/QC performed just prior to use by Gilson.
- For these studies the furthest plate location was chosen as a worst case scenario for waste-to-well time movement after a short delay.

Study Overview

- A straight line in the graph means that every well was accessed for the same amount of time per well. It can be deduced from this that the Fraction Time per Well setting is accurate over a wide range of Fraction Sites.
- Both Numerical by Column and Serpentine by Column collection patterns were examined.
- Move from Waste incorporates a new feature in version 2.1 that adds 10mm distance only for the 1st aspiration to prevent dripping from Waste to Well #1.
- Multiple 3 and 6 second collection trials were performed to show the DSP variable effects at these flow rates.

Set Up as Shown for the Study

1) The 3rd Drawer of the 2nd Stack was used for all of these measurements.
2) Flow rates were measured at 500 uL/min, 1.0 mL/min and 1.5 mL/min.
3) Collection into 96, deep-well plates.

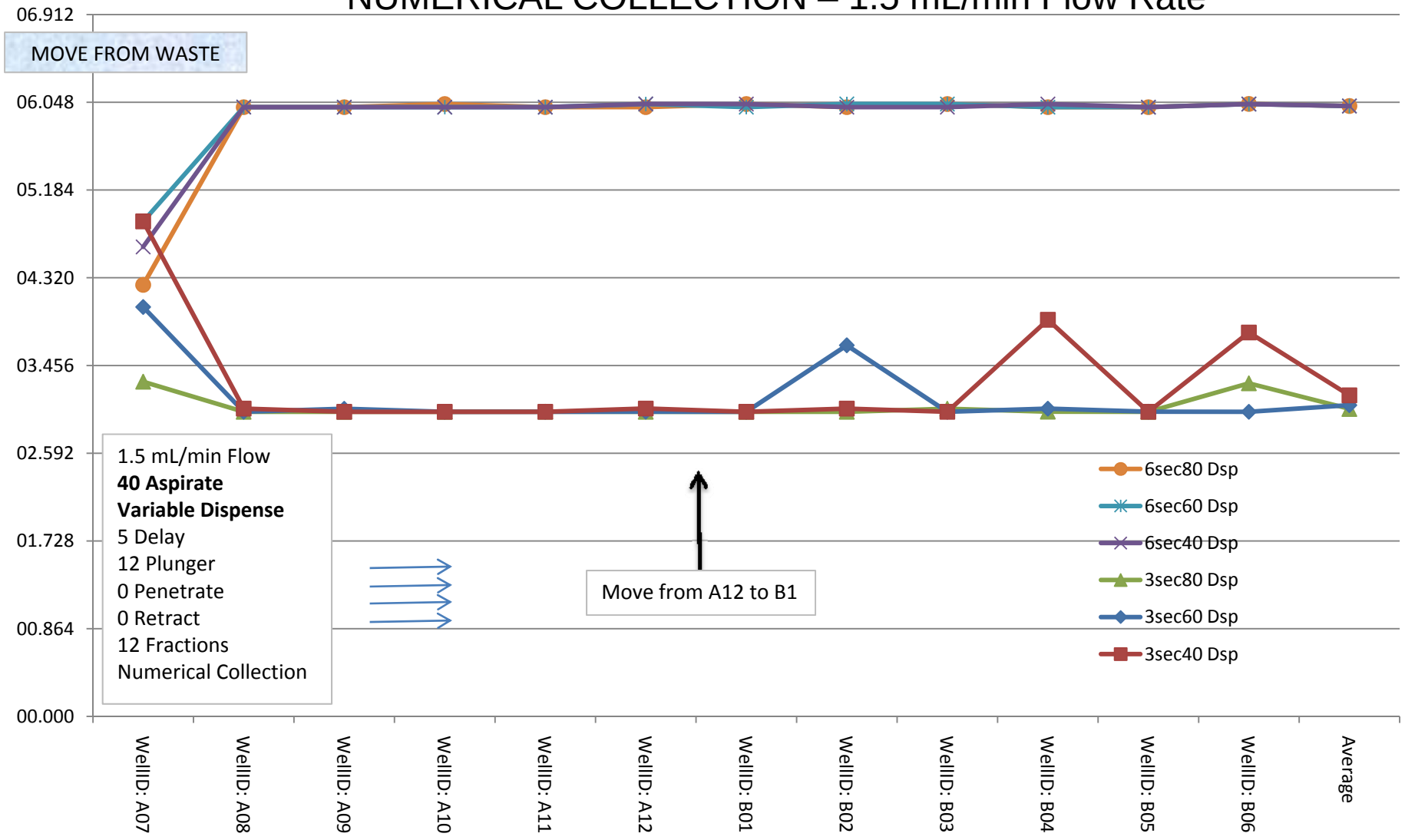


40 ASPIRATE Variable DISPENSE 5sec Delay

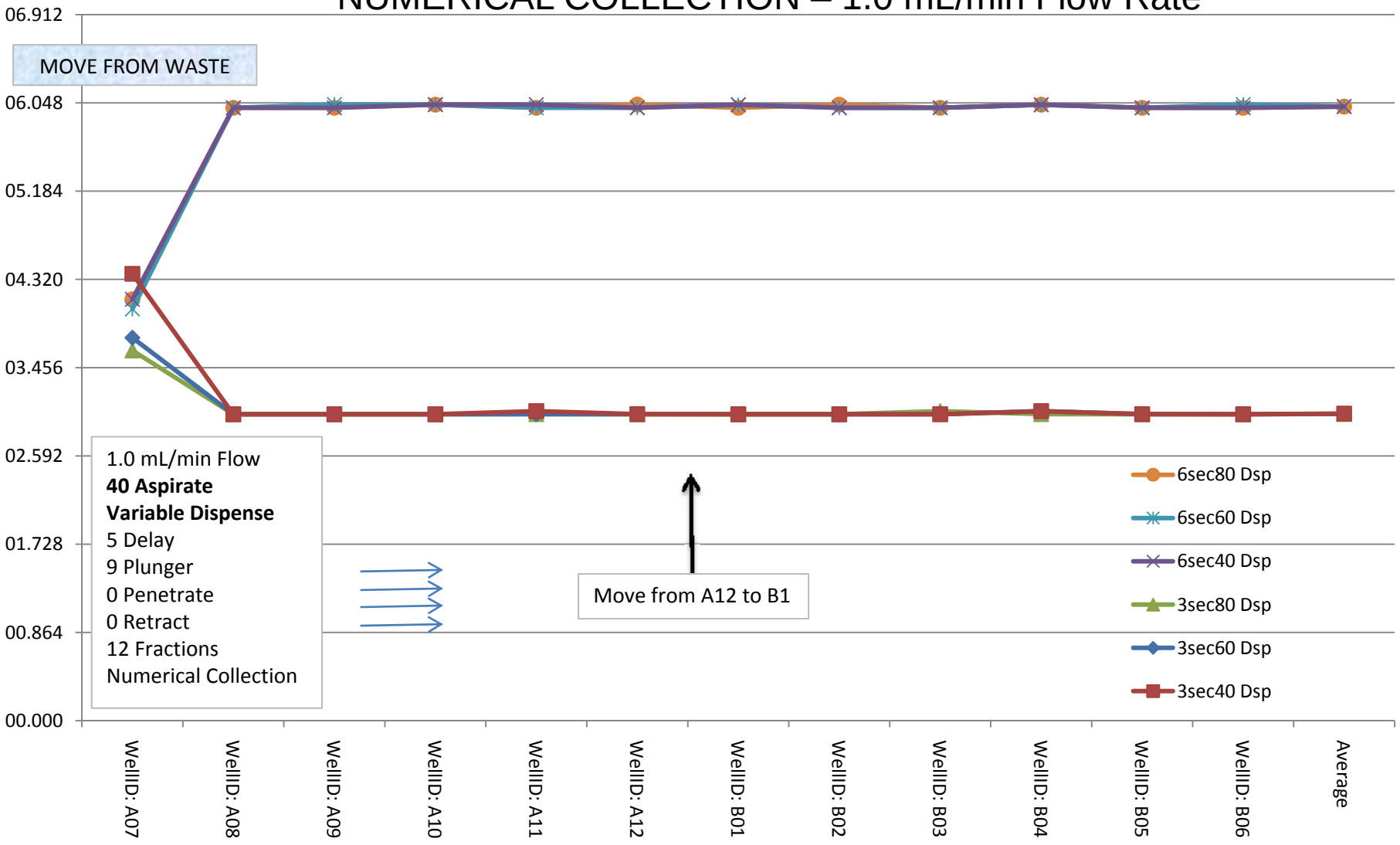
Results

- With the delay you will always have different first well TOTAL FRACTION TIME that does not match to the Fraction Time per Well setting. This time has to take into account the movement of the Head from the Waste position to Well #1. A worst case (furthest distance scenario was used). A longer collection time does not adjust for this first well movement.
- This time is a measure from time=0 (when the valve switches at the waste station) to the aspirate movement of the syringe prior to moving to well #2. The graph does take into account the 5 sec delay. So REAL time for well #1 is the recorded time minus delay time.
- For numerical collection patterns all DSP settings for the flow rates tested had great reproducibility. The only setting that passed for 3sec collection was the 80DSP.
- For serpentine collection patterns all DSP settings for all flow rates passed.

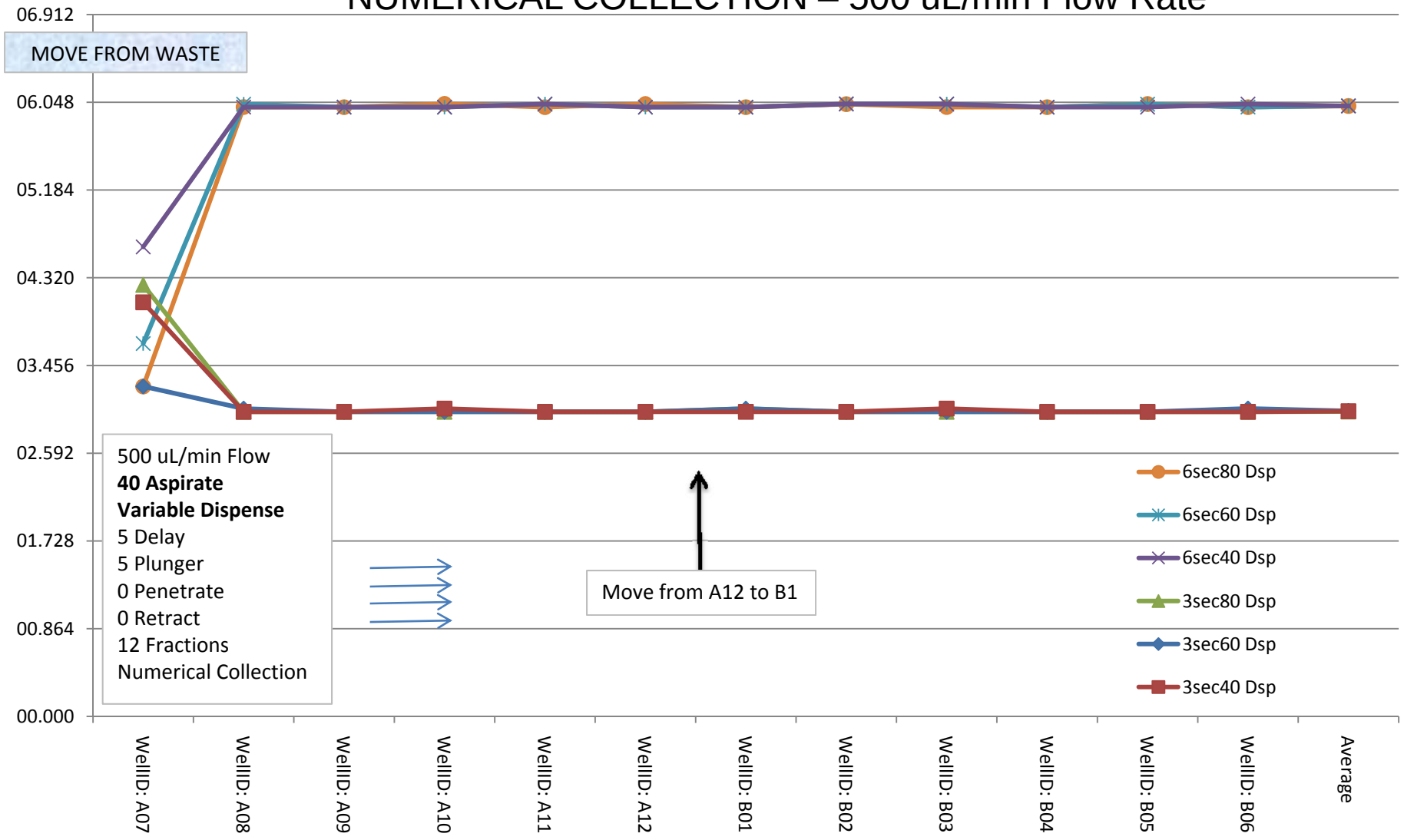
40 ASPIRATE
NUMERICAL COLLECTION – 1.5 mL/min Flow Rate



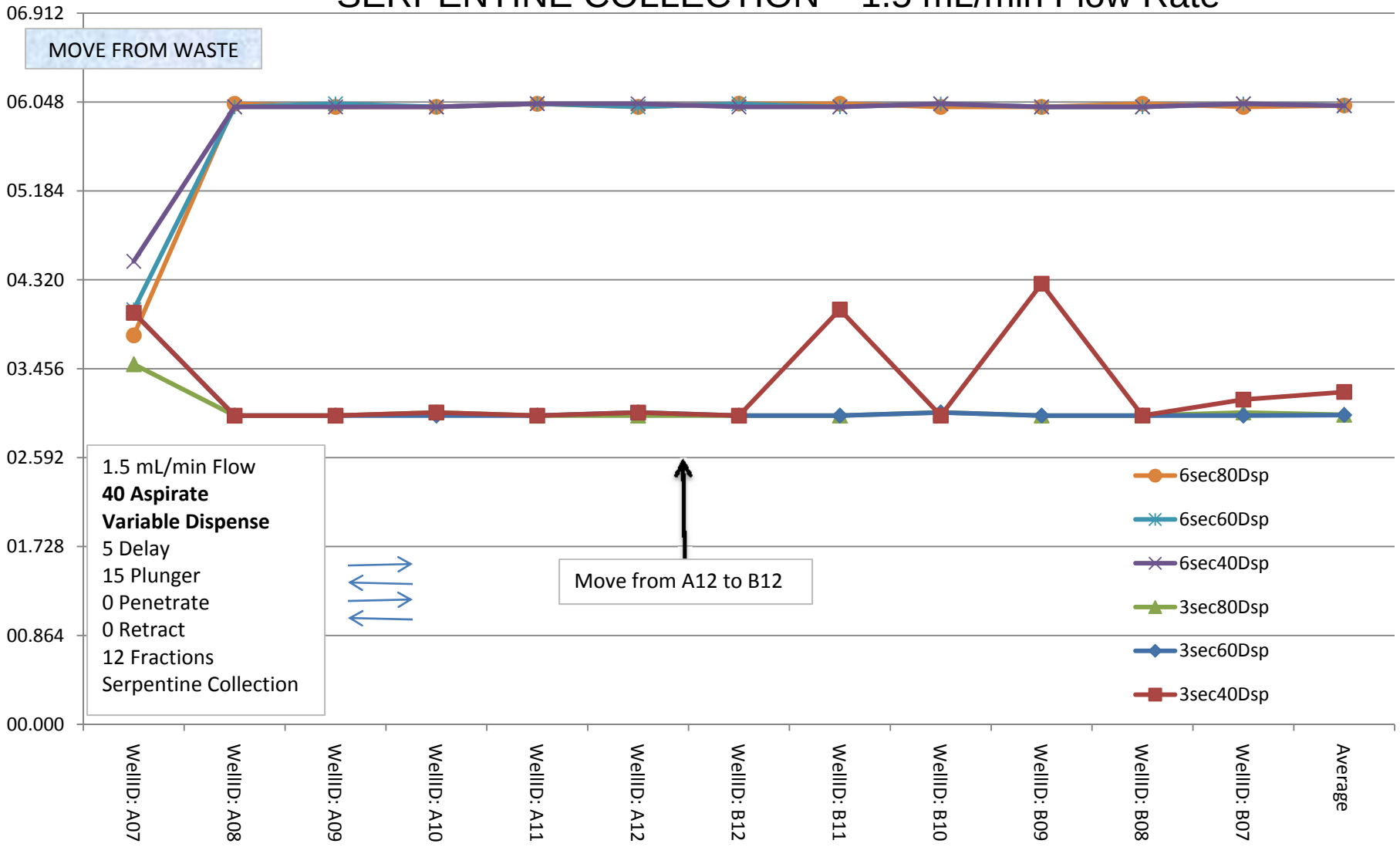
40 ASPIRATE
NUMERICAL COLLECTION – 1.0 mL/min Flow Rate



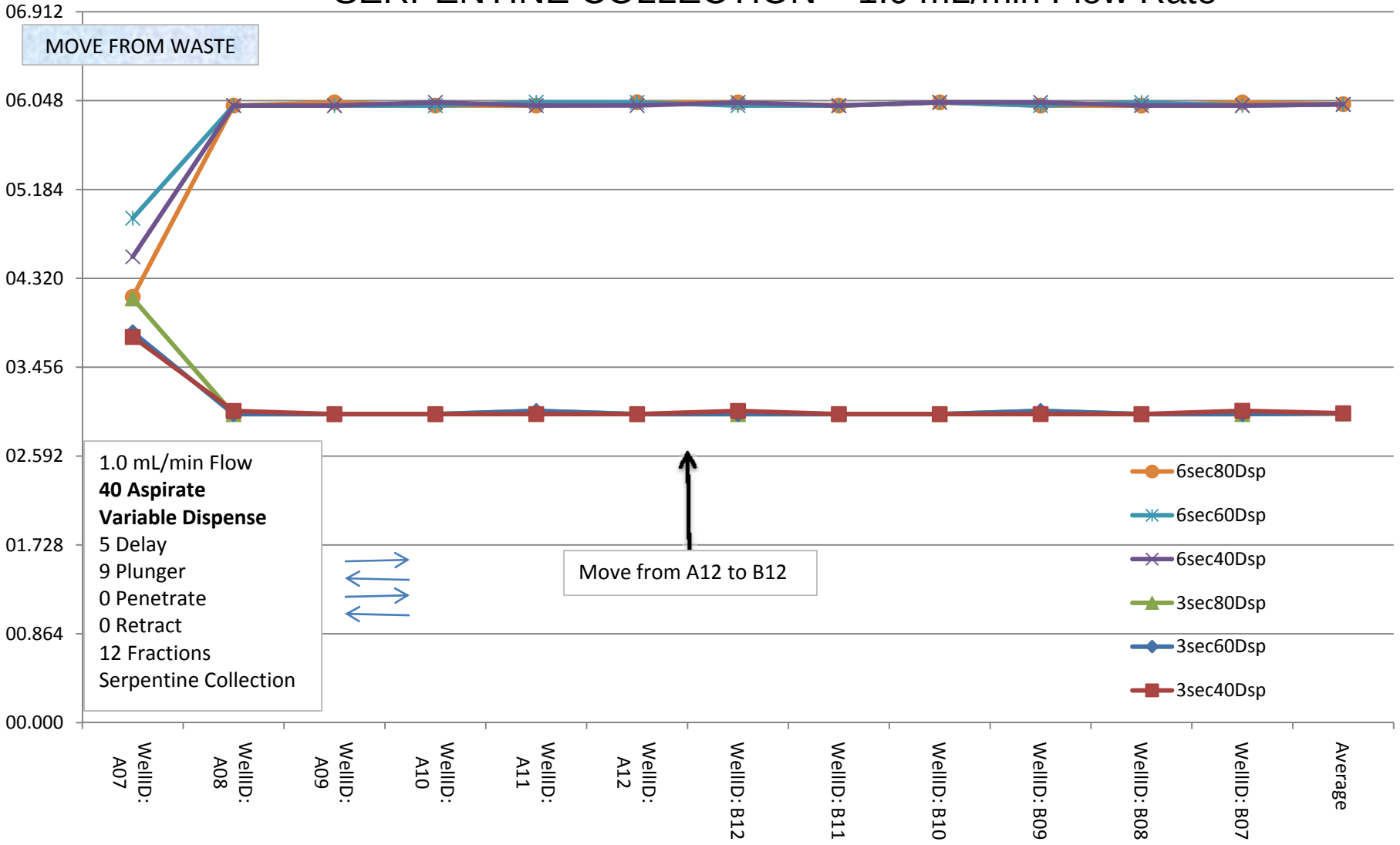
40 ASPIRATE
NUMERICAL COLLECTION – 500 uL/min Flow Rate



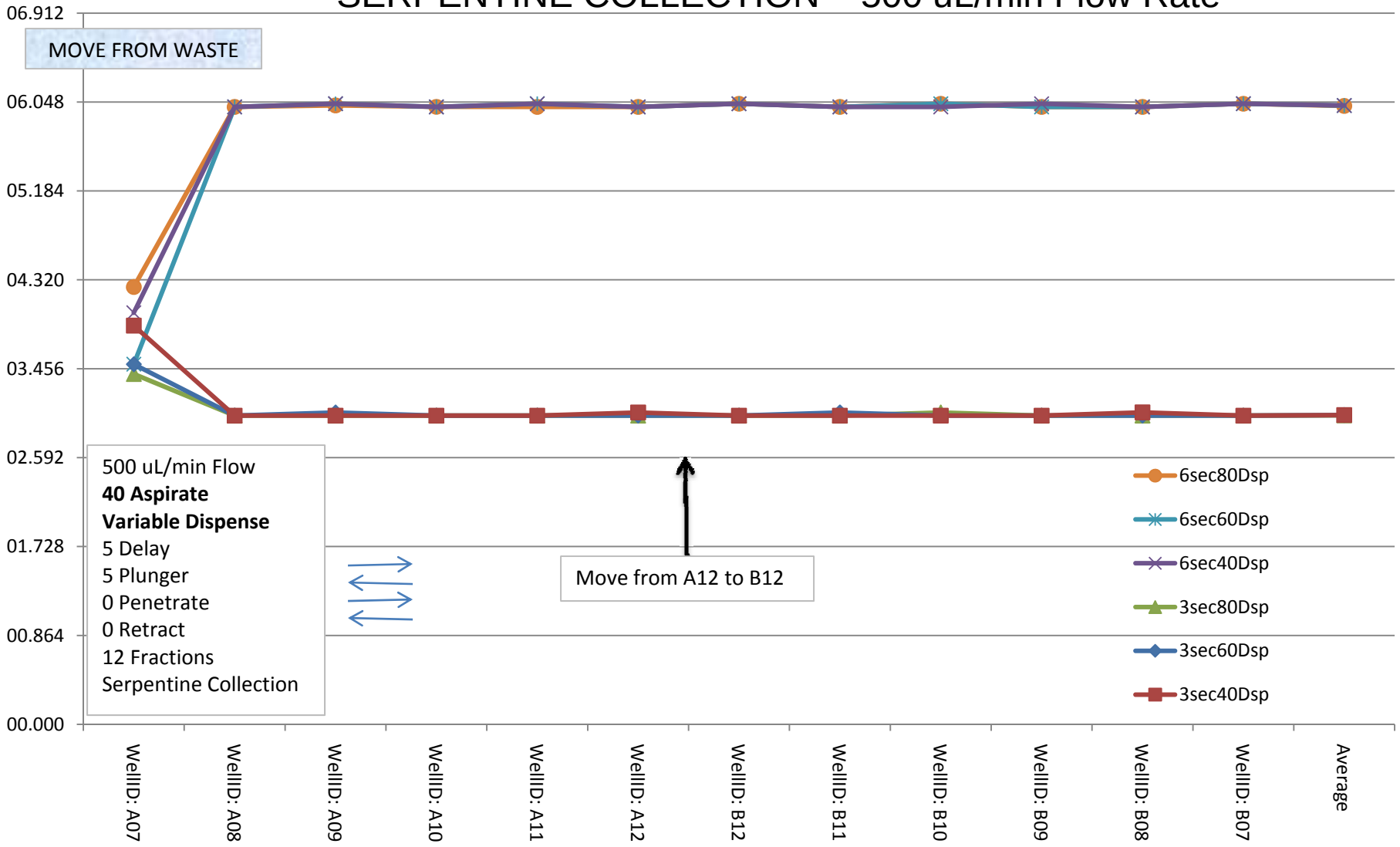
40 ASPIRATE
SERPENTINE COLLECTION – 1.5 mL/min Flow Rate



40 ASPIRATE
SERPENTINE COLLECTION – 1.0 mL/min Flow Rate



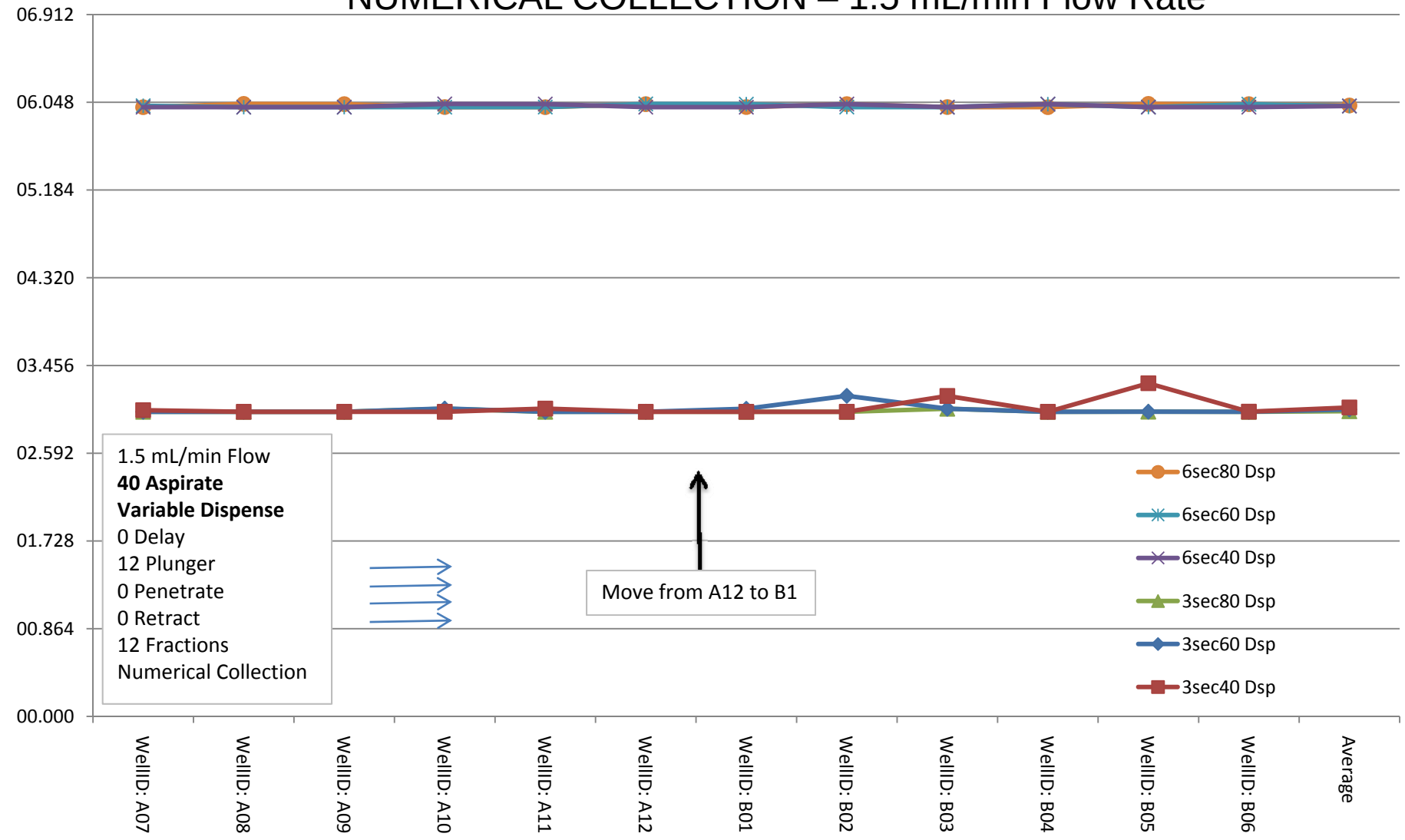
40 ASPIRATE
SERPENTINE COLLECTION – 500 uL/min Flow Rate



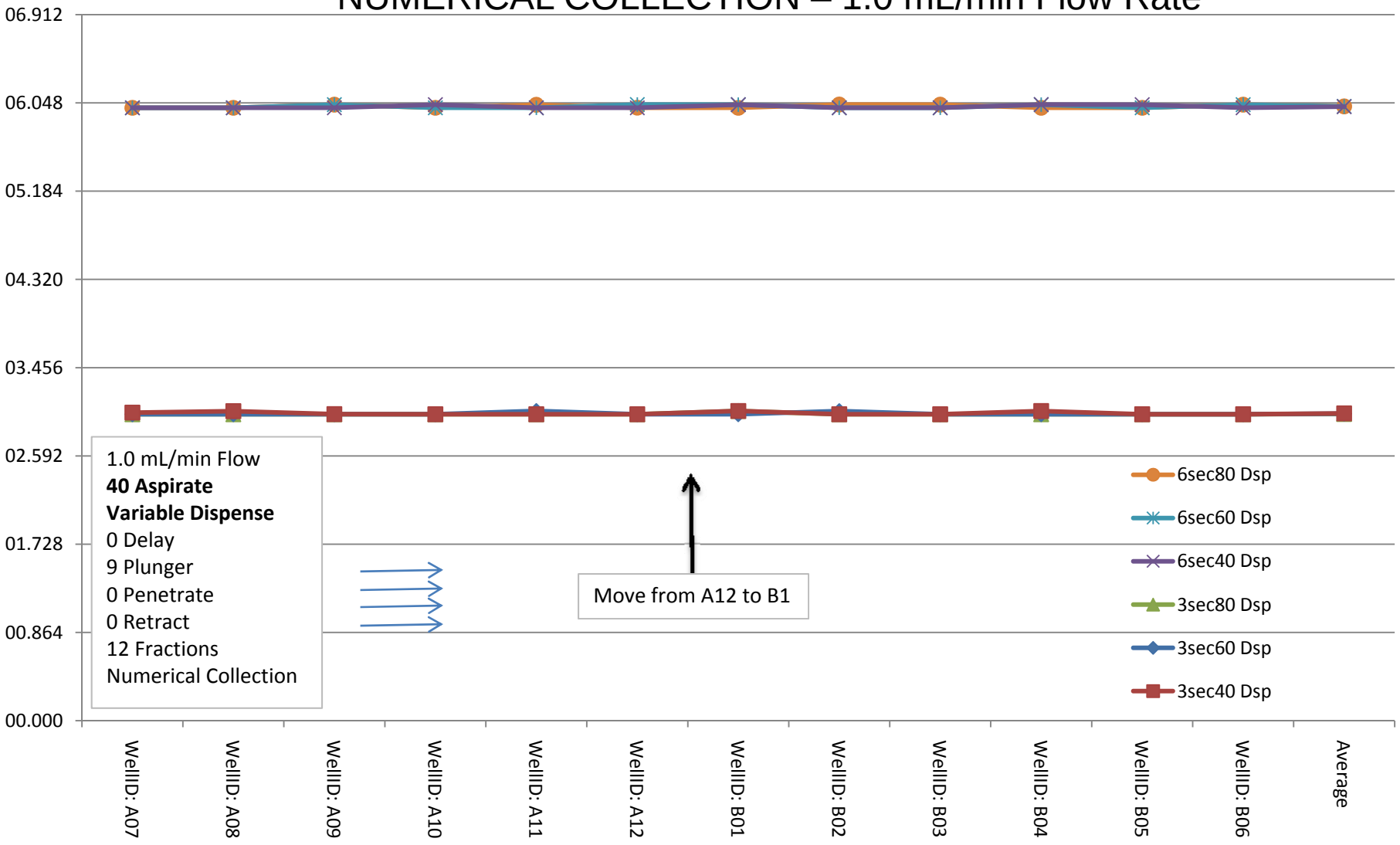
40 ASPIRATE Variable DISPENSE 0sec Delay Results

- With the 0 sec delay you should always have the first well TOTAL FRACTION TIME matching to the Fraction Time per Well setting.
- This time is a measure from time=0 (when the valve switches at Well #1) to the aspirate movement of the syringe prior to moving to well #2.
- For numerical collection patterns there were slight variations at the 1.5 mL/min flow rate and perhaps 80DSP is the better setting for this 40 ASP parameter. For the other flow rates all other settings passed
- For serpentine collection patterns there were slight variations at the 1.5 mL/min flow rate and perhaps 60 or 80DSP is the better setting for this 40 ASP parameter. For the other flow rates all other settings passed.

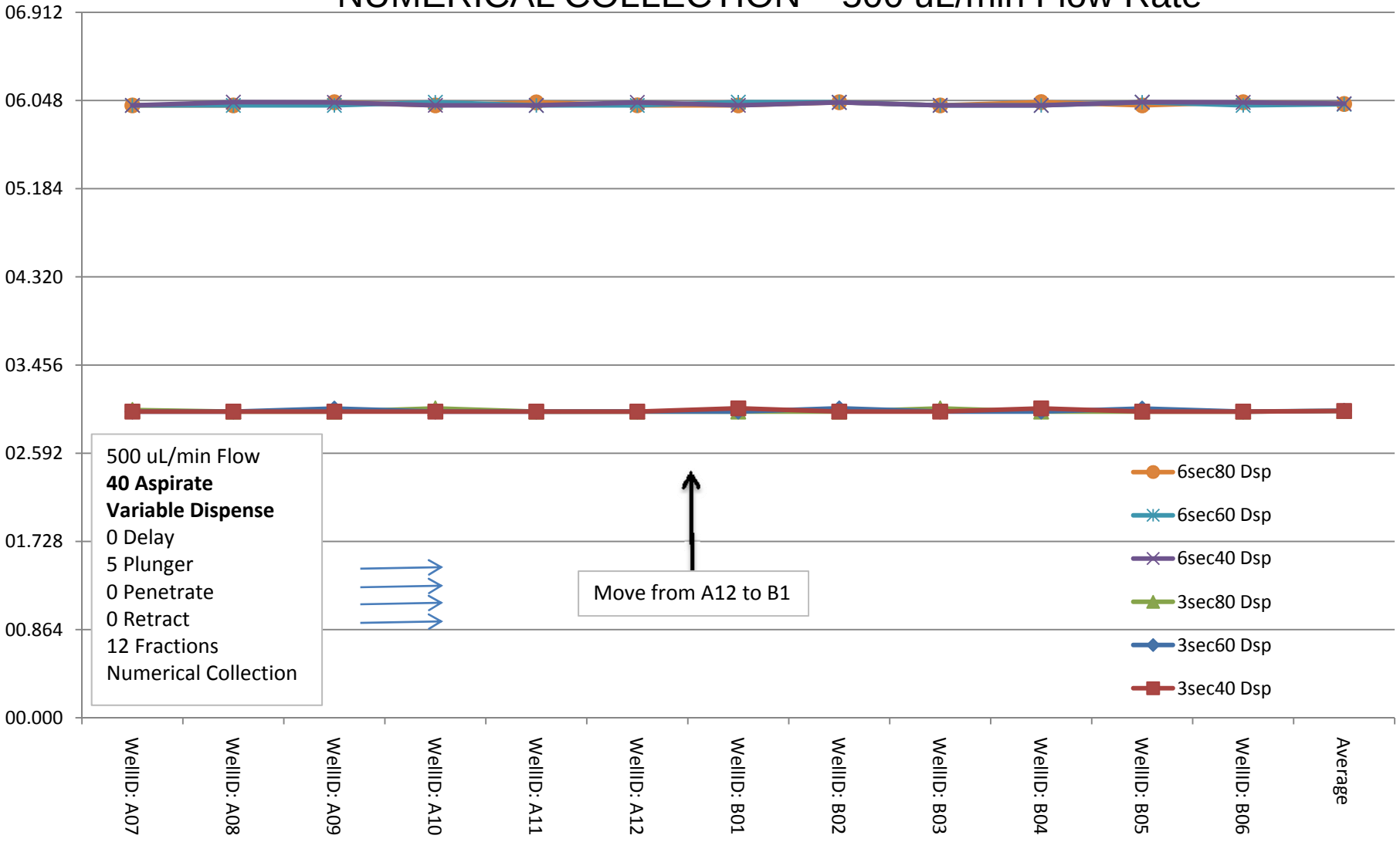
40 ASPIRATE
NUMERICAL COLLECTION – 1.5 mL/min Flow Rate



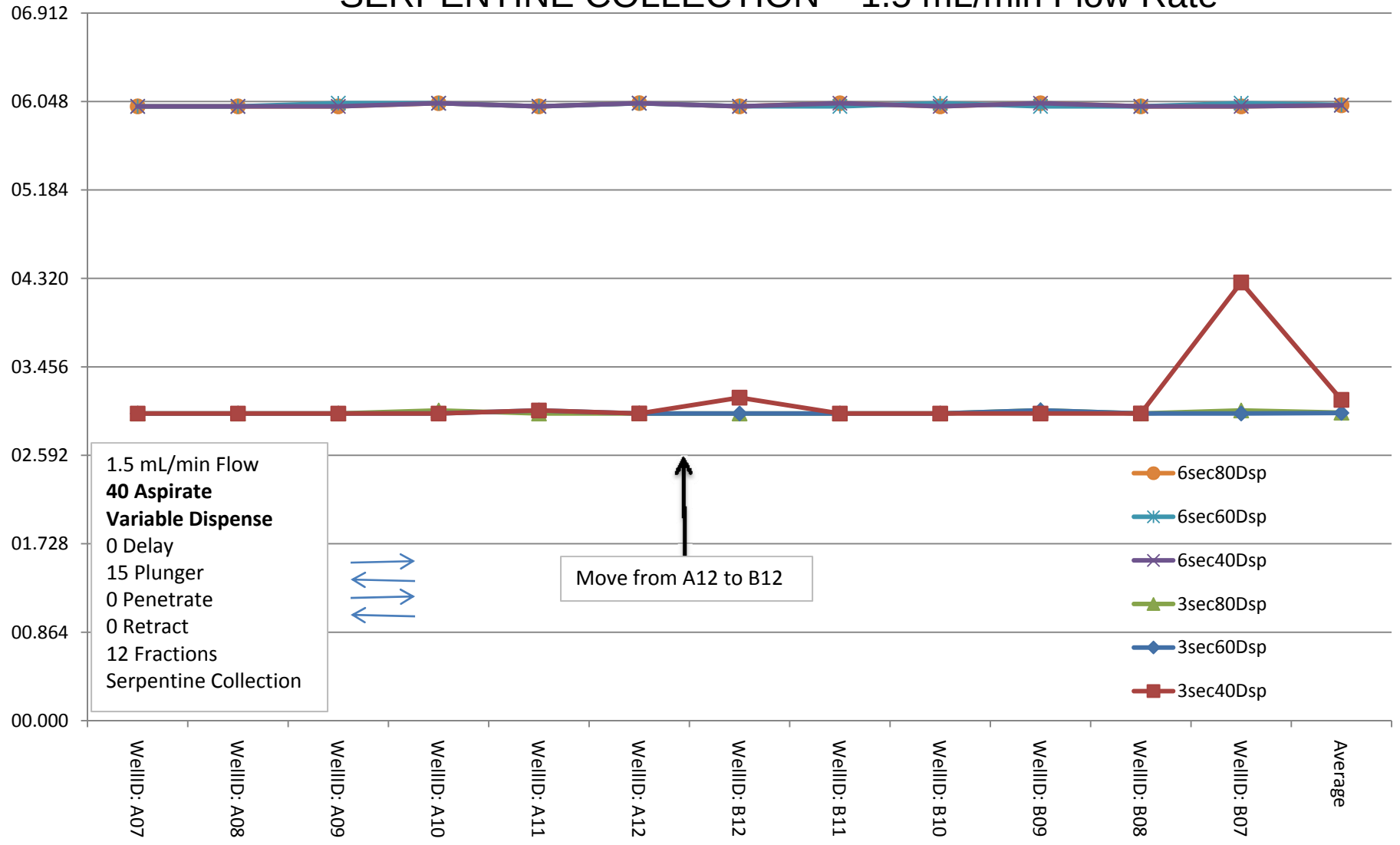
40 ASPIRATE
NUMERICAL COLLECTION – 1.0 mL/min Flow Rate



40 ASPIRATE
NUMERICAL COLLECTION – 500 uL/min Flow Rate



40 ASPIRATE
SERPENTINE COLLECTION – 1.5 mL/min Flow Rate



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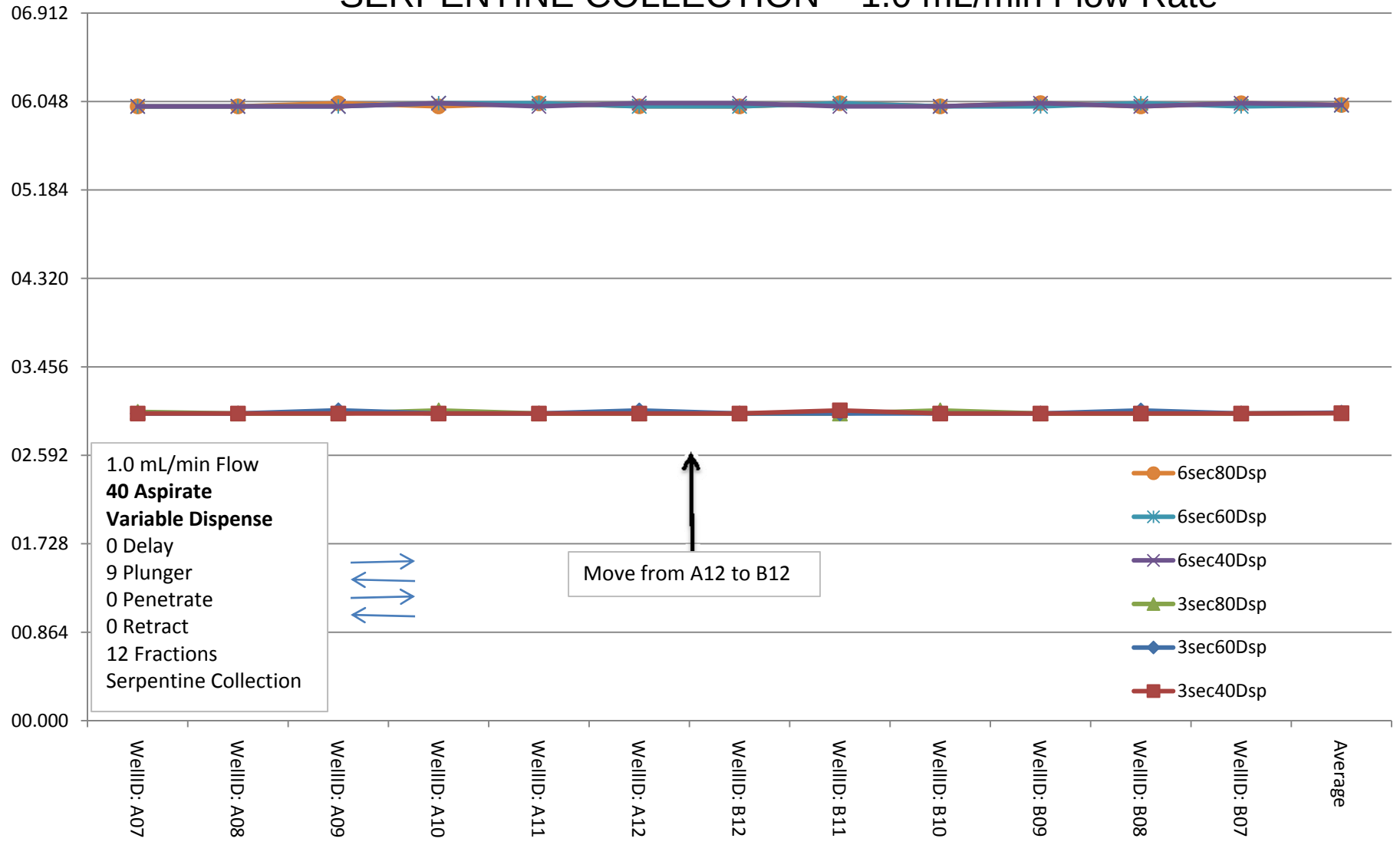
SERPENTINE COLLECTION – 1.0 mL/min Flow Rate



40 ASPIRATE
SERPENTINE COLLECTION – 500 uL/min Flow Rate