AMD

Improving Water Utilization For CMP Processes and Equipment

by

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Overview

- CMP project review outline
  - *Tool flow measurements and water characterization*
  - *Balance tool conditions and maintain equal flows in process*
  - *Rinse optimization on tools to fit manufacturing needs*
  - *Work with process engineers to understand the process flow and ensure changes are to low impact elements of tool*

Tool Layout

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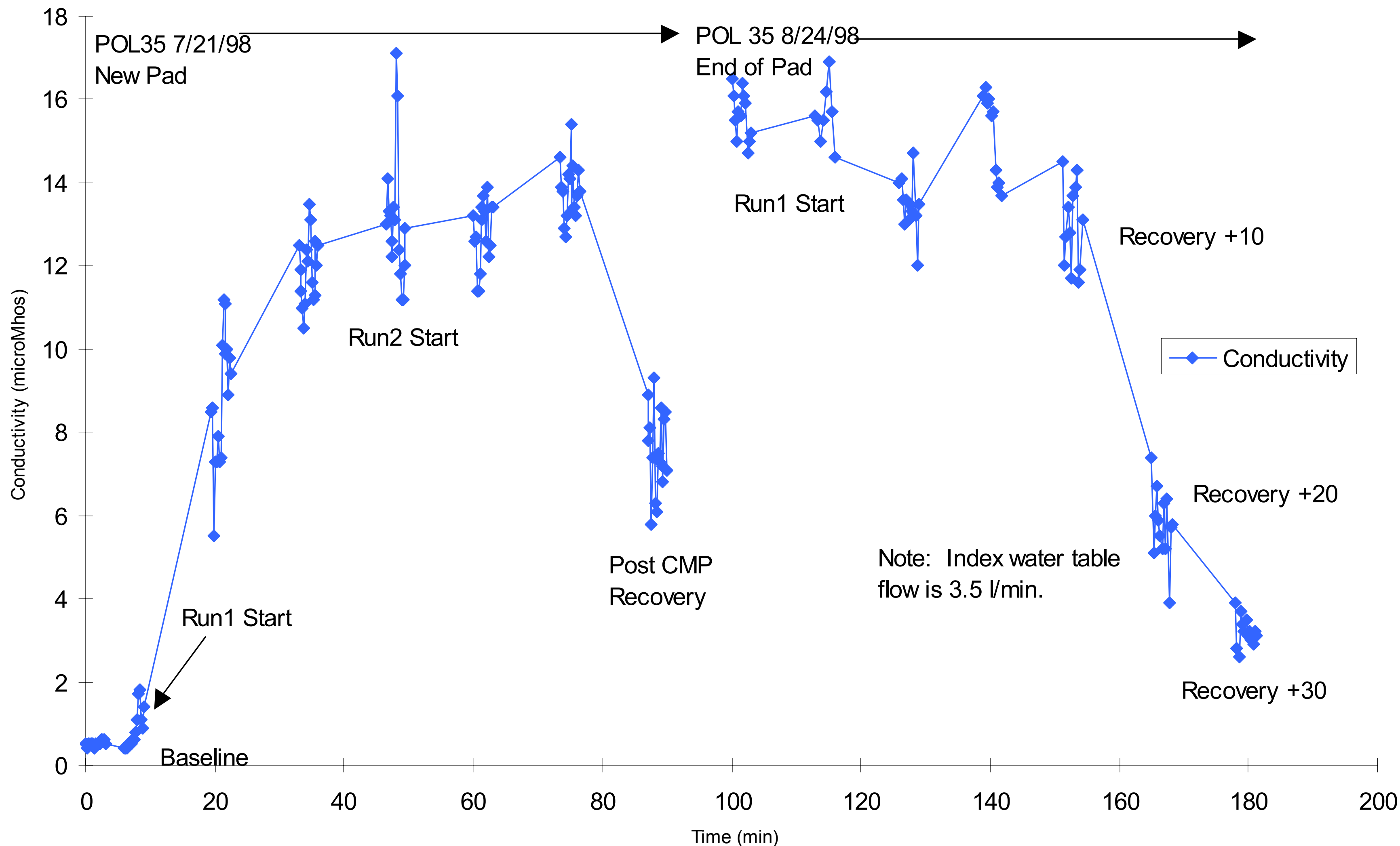
Methodology

- Conductivity & flow measurements using an Orion Model #130 & Panametrics Ultrasonic Flow Meter
- Tool measurements taken at beginning and end of polish pad life
- Measurements of time required to recover baseline conductivity
- Trace metal, wafer particle count, TXRF analysis etc..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Conductivity vs. Time for Oxide Polishers
(Data for new and old pads)
POL35 7/21/98
New Pad
POL 35 8/24/98
End of Pad
Run1 Start
Run2 Start
Run1 Start
Baseline
Post CMP
Recovery
Recovery +10
Recovery +20
Recovery +30
Note: Index water table
flow is 3.5 l/min.
Conductivity
Conductivity (microMhos)
Time (min)
0
2
4
6
8
10
12
14
16
18
0
20
40
60
80
100
120
140
160
180
200

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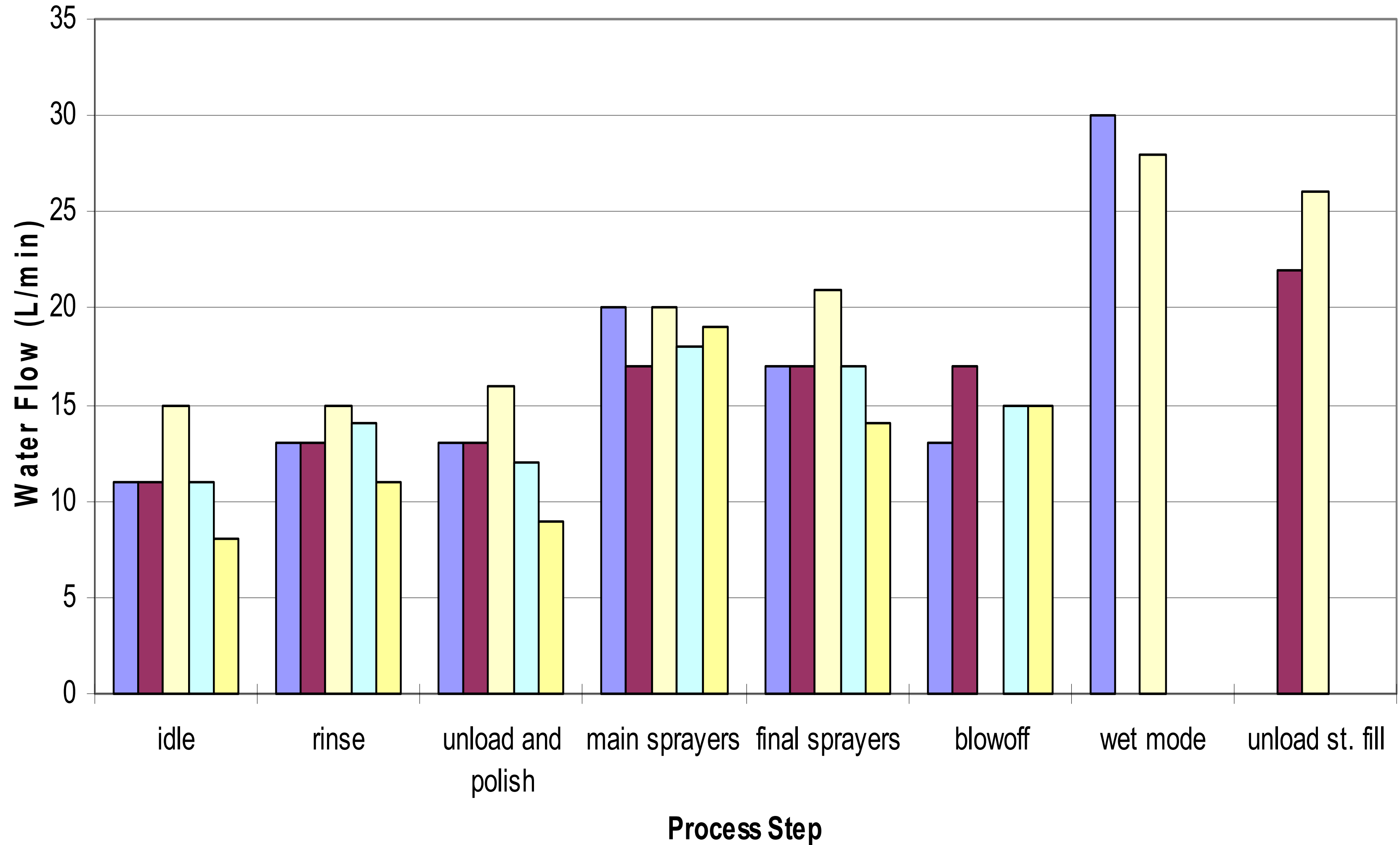

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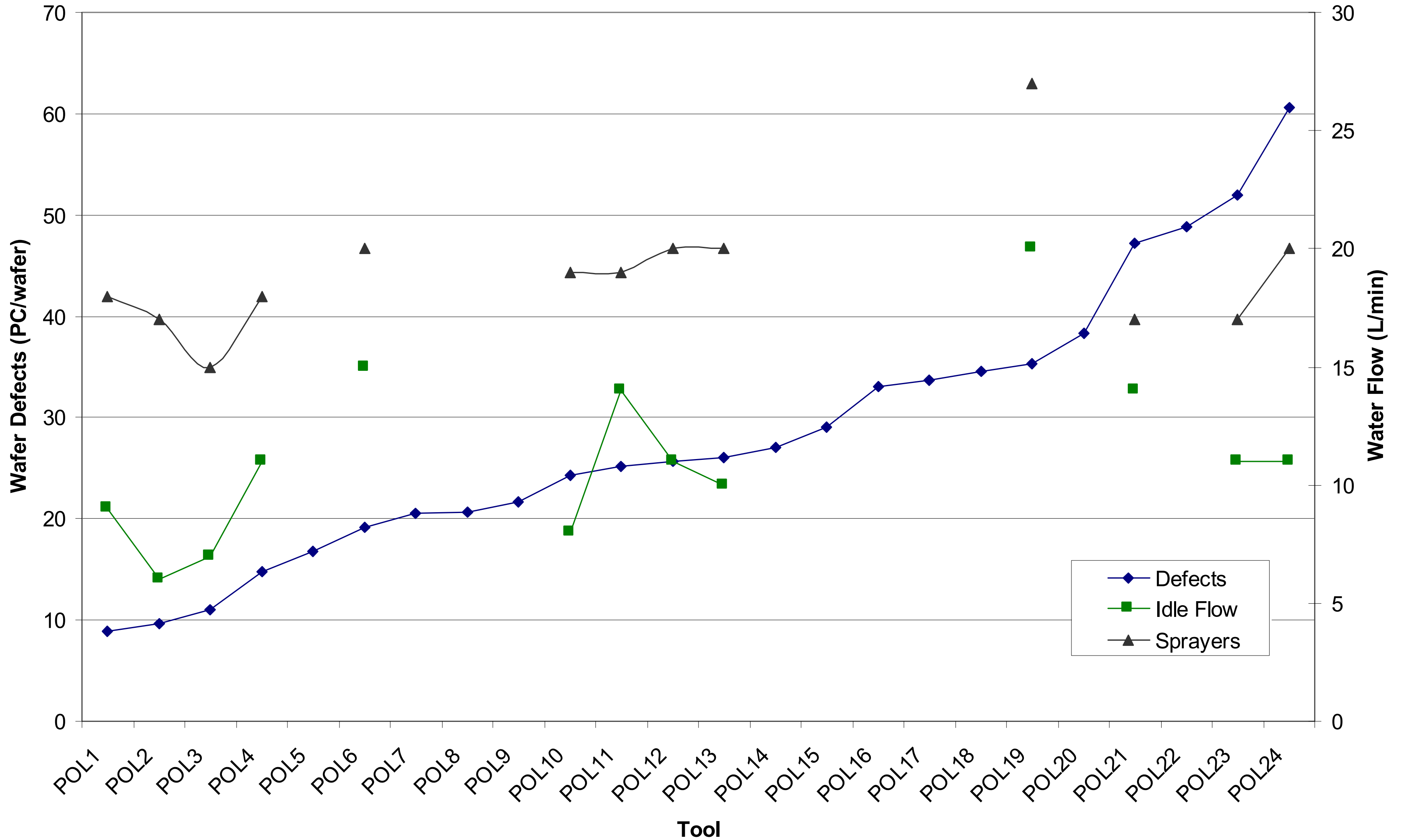

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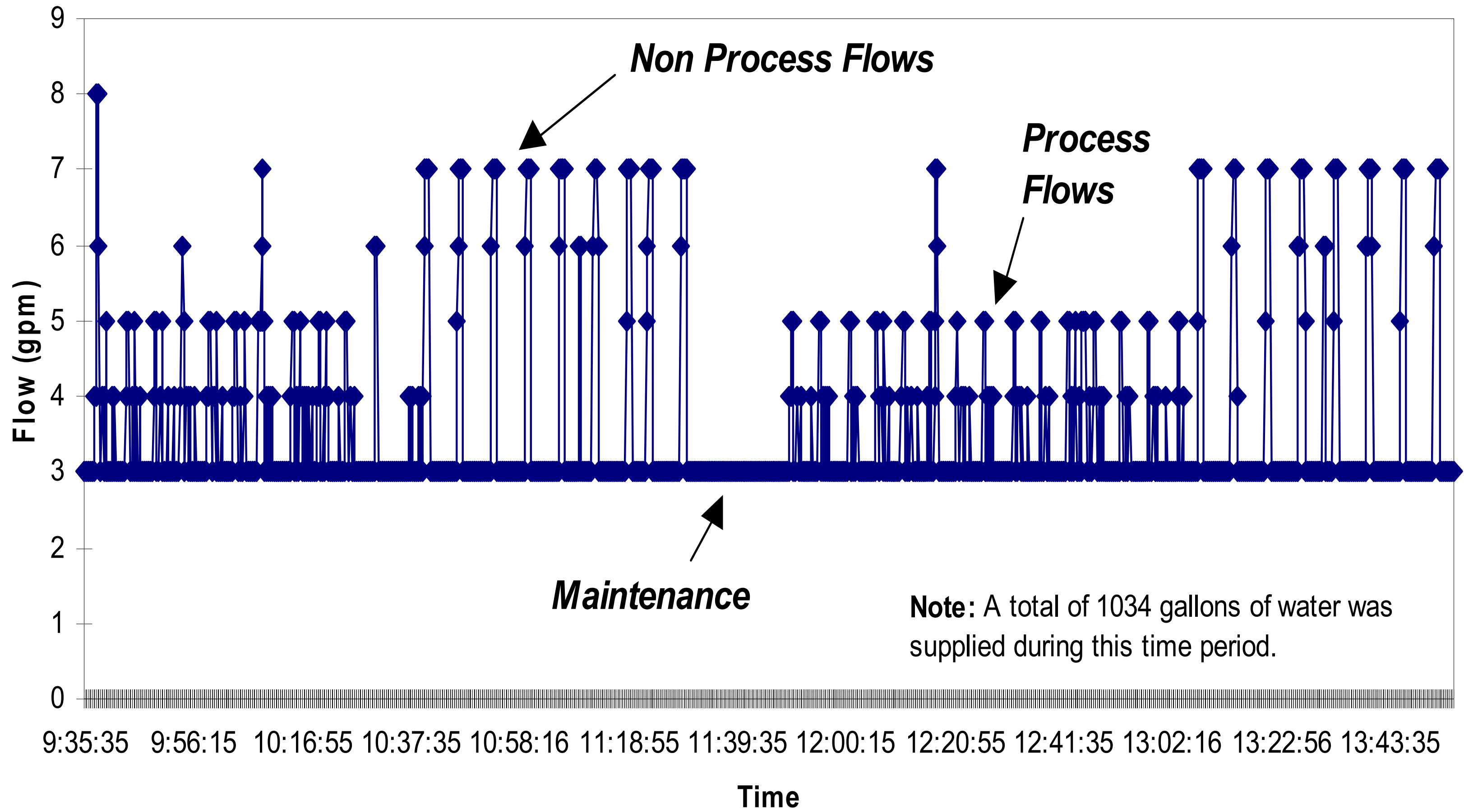

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Proposed Work

- SRC could possibly concentrate on increased CMP research efforts such as:
  - Wafer analysis on pre and post pad life
  - Tool manufacturers optimization & modifications of flow controls
  - Reduce & standardize tool flows
  - Possible on board tool recycling efforts

AMD - Conclusions

- Index table water is not to UPW specifications after first polish run
- Pad life is assumed to have no effect on index table water quality
- System never recovers to baseline conductivity
- Verify flows and measurements during idle & process conditions