

Middle Huron Stream Nutrient Monitoring Program

2009 Preliminary Summary

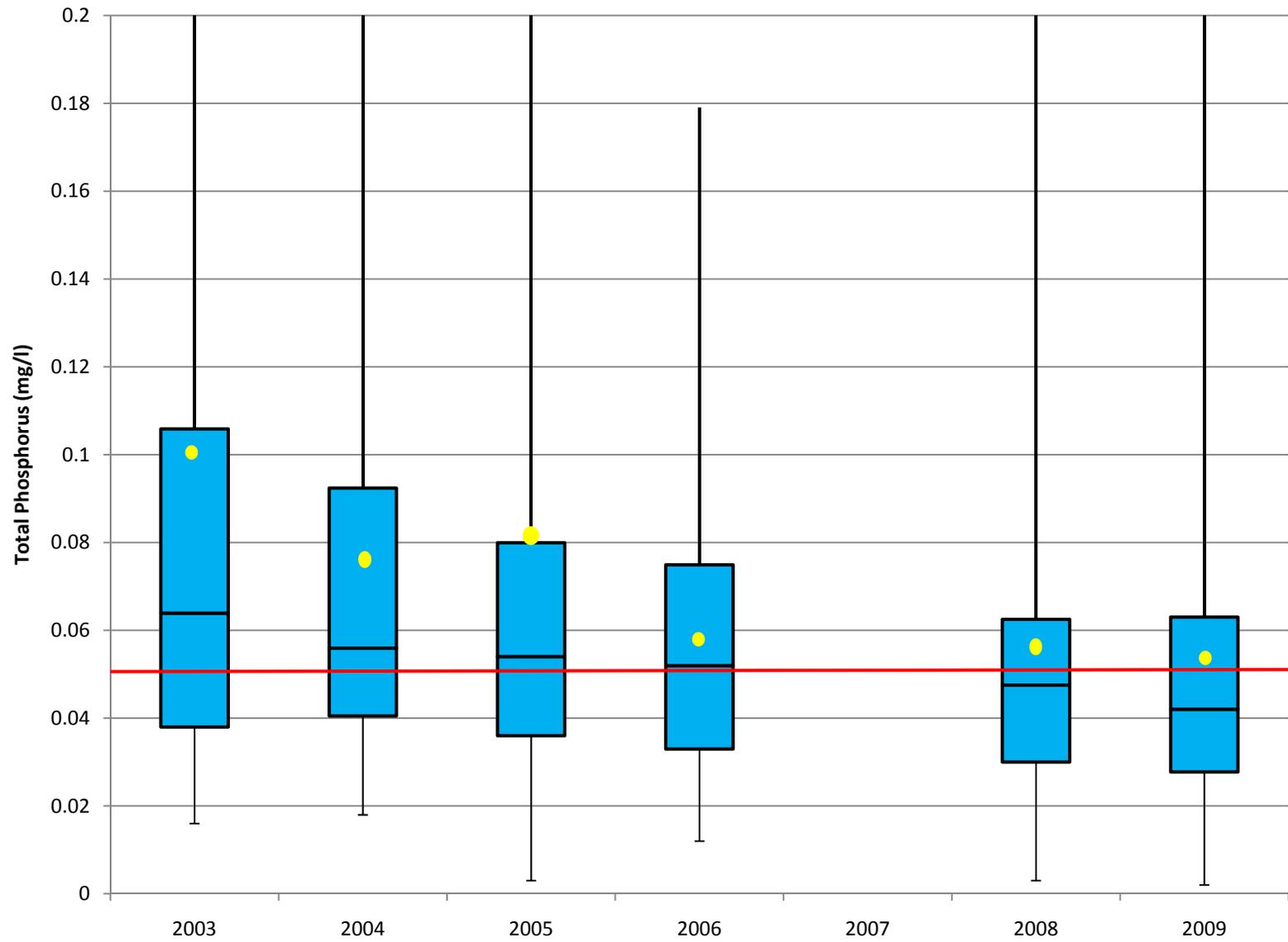
2009 Highlights

- 10 sites monitored using baseline protocols as previous five years
- Sampled twice/month (double previous years)
- Storm samples @ 4 sites with autosampler
- Funded by state grant

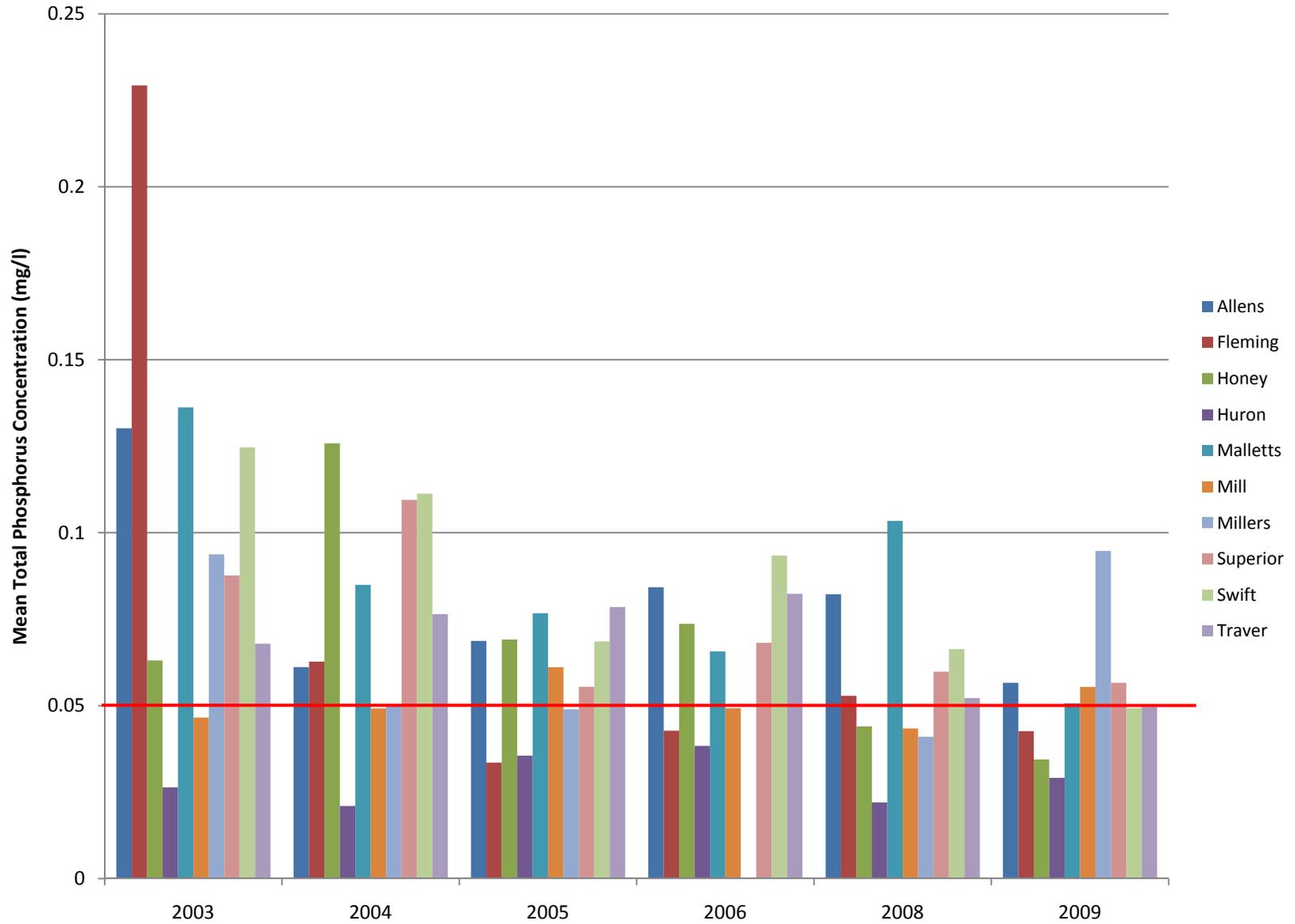
2009 Highlights

- Flow sensors installed at Honey & Fleming Creeks
- Flow gauges installed at all sites
 - Sensor and gauges require fewer flow measures
- 116 samples collected and analyzed
- Storm samples were logistically difficult to coordinate, but should result in good information

TP Concentrations (all sites)



TP Concentrations by site

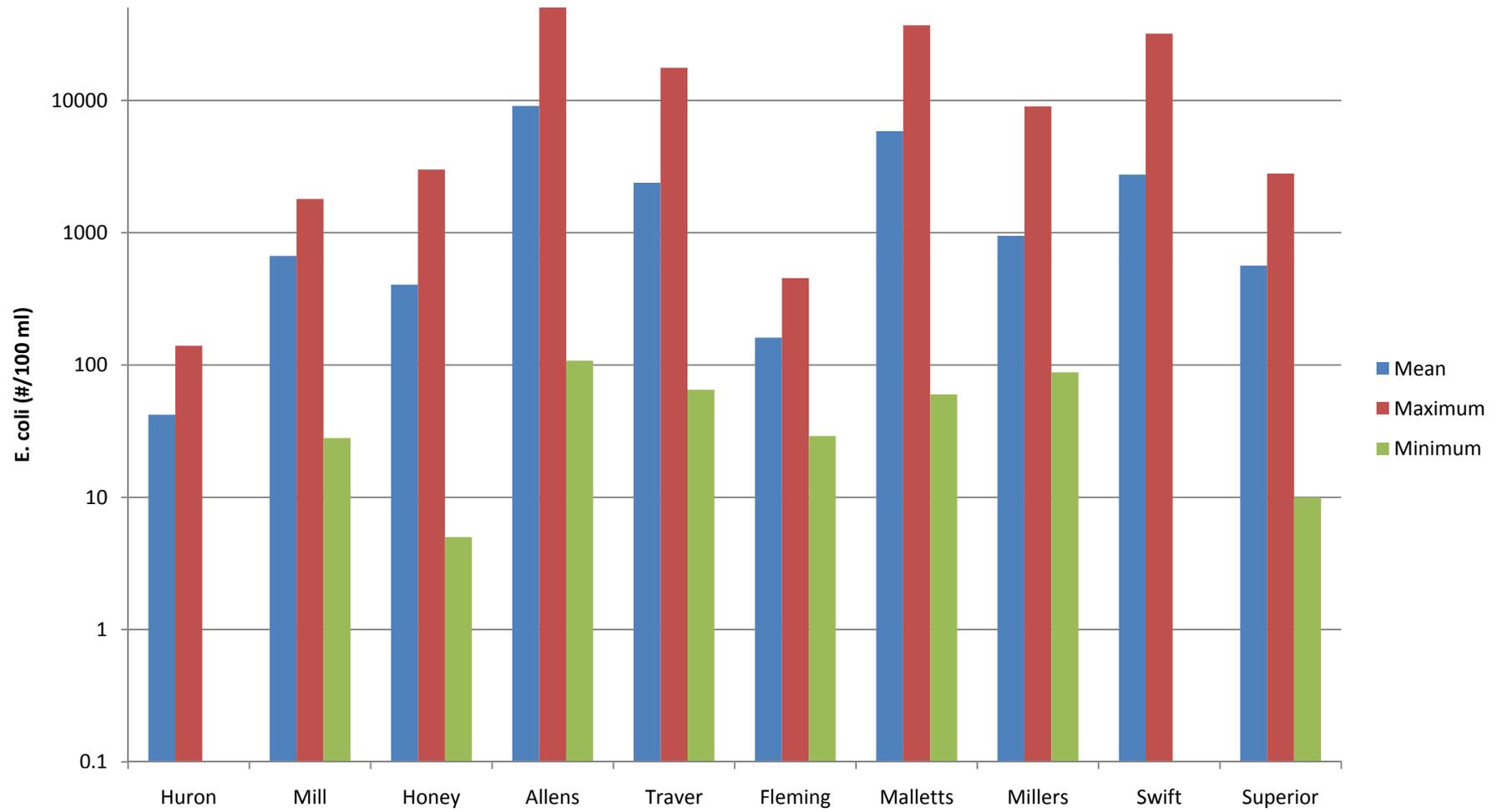


Mean [TP] Comparisons

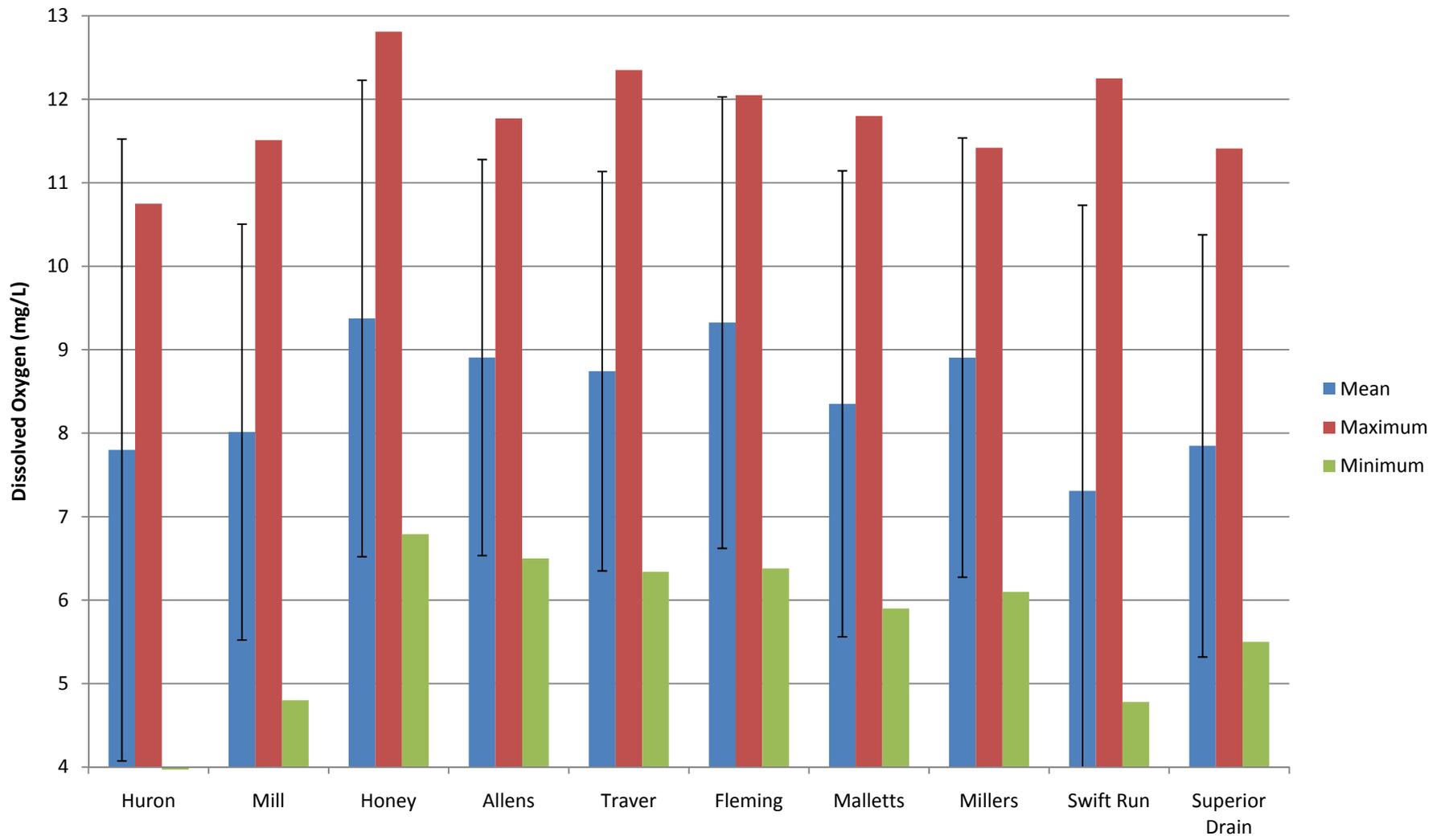
| Site(s) | [TP] (mg/l) 2003-06 | [TP] (mg/l) 2008-09 | Probability | % Reduction |
|----------------|------------------------|------------------------|-----------------|-------------|
| Non-Urban | 0.044 | 0.035 | 0.02 | 21 |
| Urban | 0.072 | 0.046 | <0.01 | 36 |
| | | | | |
| Traver Creek | 0.069 | 0.046 | <0.01 | 33 |
| Swift Run | 0.095 | 0.040 | <0.01 | 58 |
| Honey Creek | 0.063 | 0.035 | <0.01 | 45 |
| Allens Creek | 0.073 | 0.054 | 0.07 | 26 |
| Malletts Creek | 0.076 | 0.059 | 0.09 | 23 |
| Superior Drain | 0.070 | 0.043 | 0.03 | 38 |

Note: Baseline samples only. Only sites with $p < 0.10$ are shown.

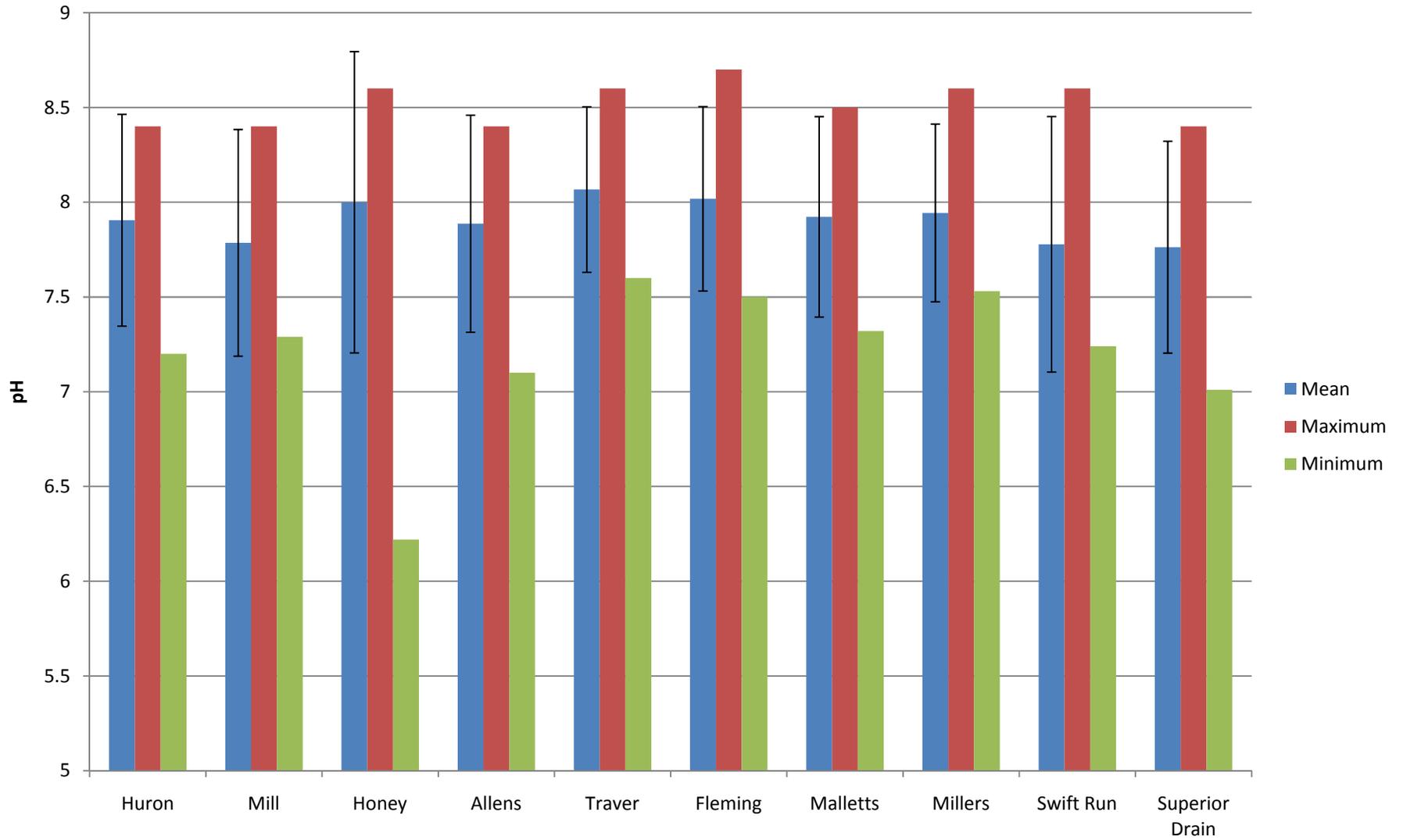
E. coli



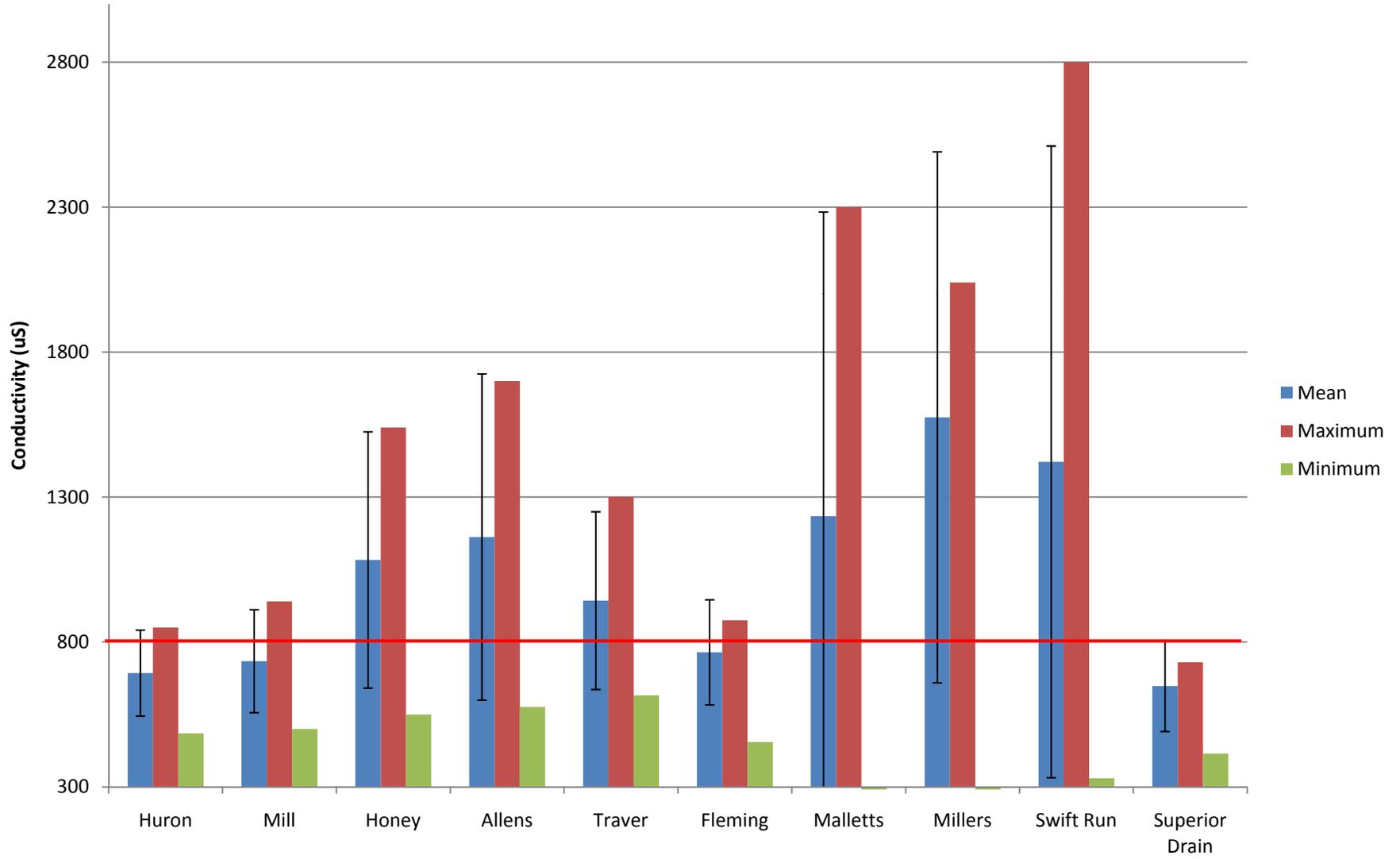
Dissolved Oxygen



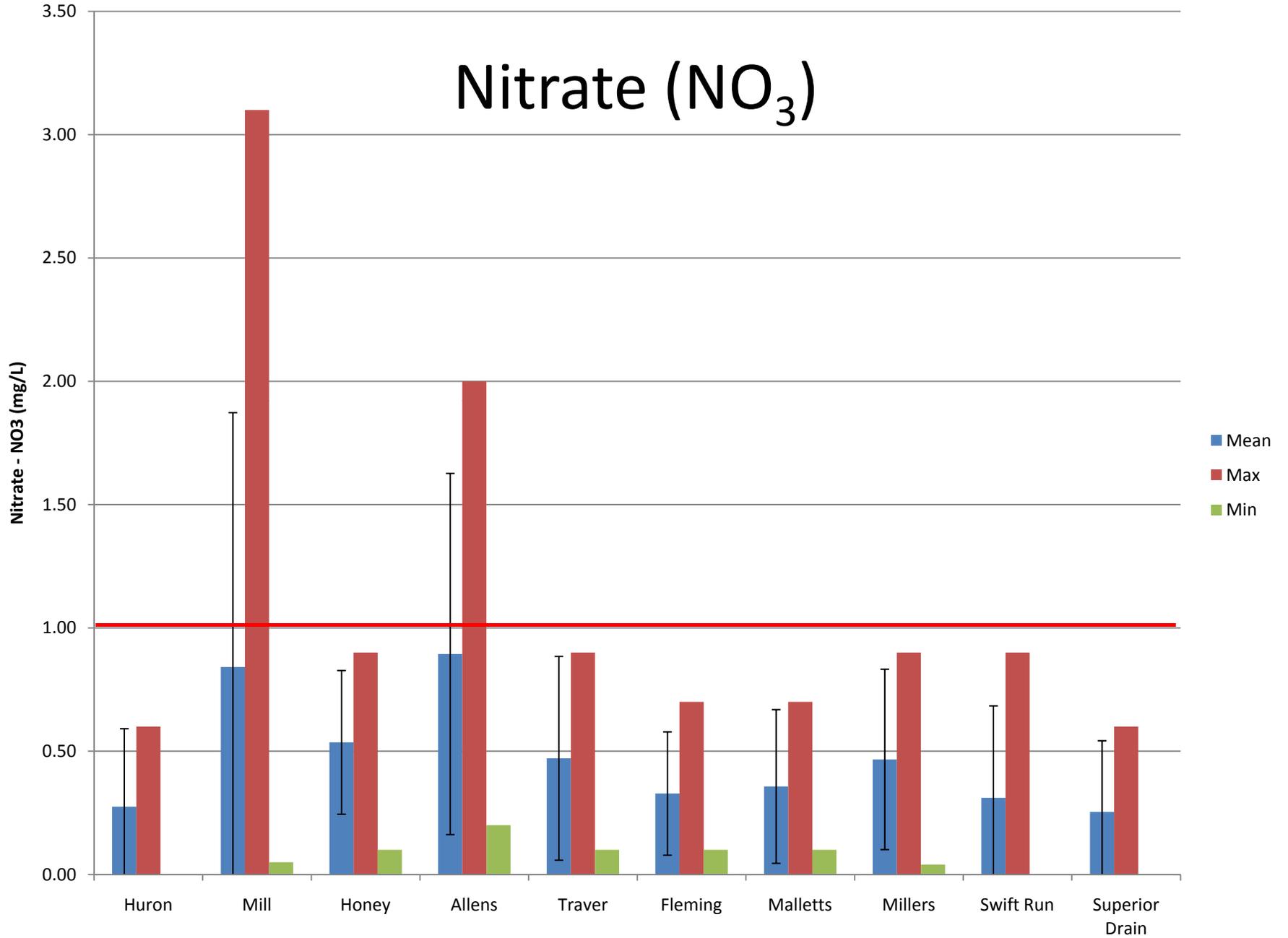
pH



Conductivity



Nitrate (NO₃)



Further Analysis

- TSS and N-N
- Discharge and loading
- Storm event mean concentrations (EMC)
- TP vs. TSS
- TP trends against “housing starts”
- Loading comparison to 1995

2010 Monitoring

- TMDL Implementation grant
- Target follow-up sites for TP and E. coli
- Investigative sampling
 - Ambient vs. discharge points
- Wet weather sampling