

AutoPrep Flow Diagrams

David Cerna, January 24, 2023

Instrument

- Thermo Scientific™ Dual ICS-6000 system with 1 6-port injection valve
 - Pump 1 for eluent
- Thermo Scientific™ AS-HV autosampler with internal peristaltic pump for sample delivery or delivery of higher level standards
- ICS-6000 10-port valve for sample loading/washing and standard loading/washing
 - AutoPrep 10 mL (or 2 10-mL) sample loops and small loop (10 or 20 μ L)
- External peristaltic pump or Pump 2 for loading μ g/L standards
- Thermo Scientific™ ICS-6000 CD Detector
- Thermo Scientific™ AXP Pump to transfer large loop volume to concentrator column

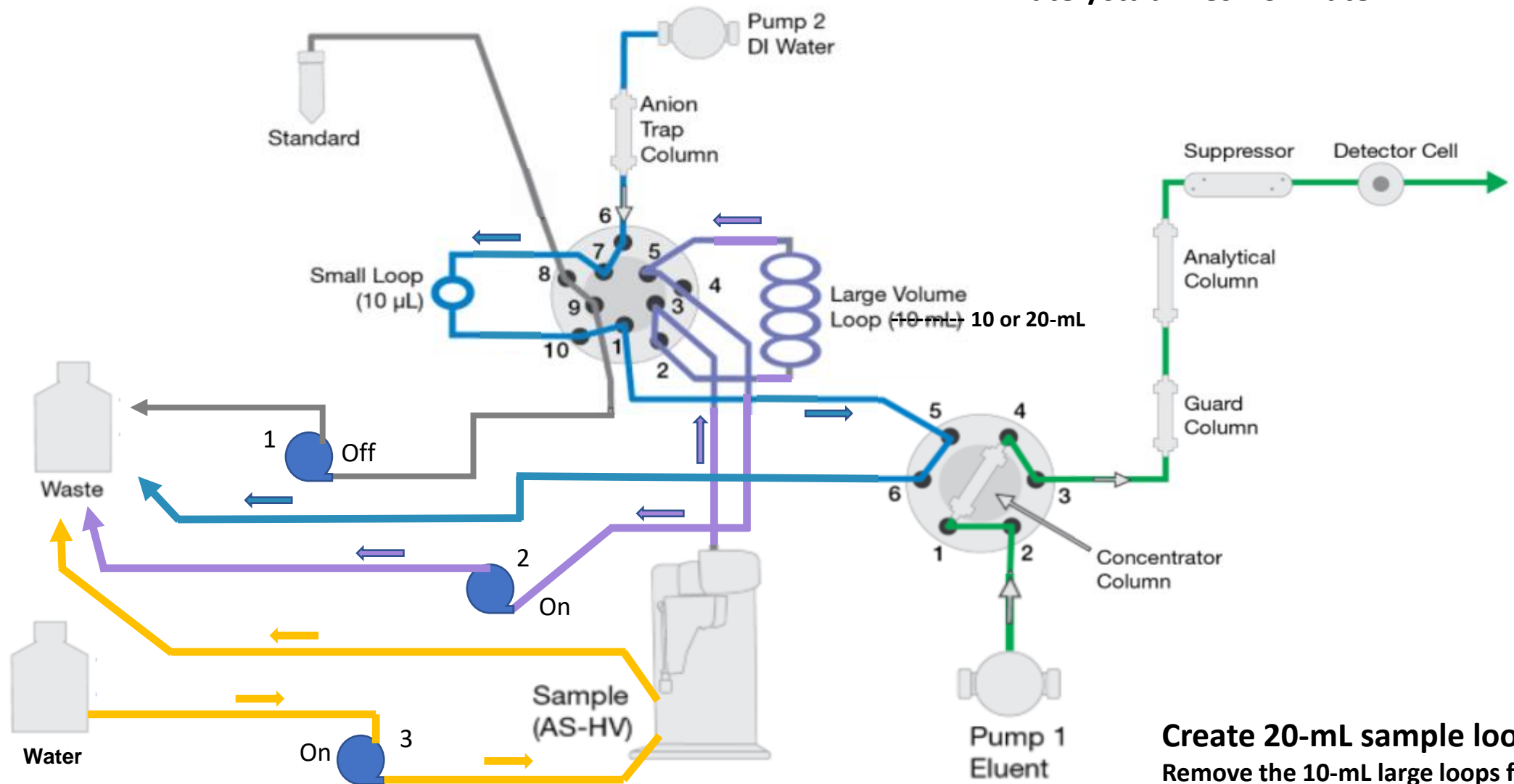
Consumables

- Anion Columns
 - Thermo Scientific™ IonPac™ UTAC-ULP2 concentrator column
 - Thermo Scientific™ IonPac™ AS17-C guard and analytical column
 - Thermo Scientific™ IonPac™ ATC-500 trap column for AXP pump
- Thermo Scientific™ EGC-500 KOH eluent generator cartridge
- Thermo Scientific™ CR-ATC 600 Continuously generated trap column
- Thermo Scientific™ ADRS 600 suppressor

- 1 – External Peristaltic Pump (ppt standard)
- 2 – AS-HV internal Peristaltic Pump (line 1, sample needle)
- 3 – AS-HV internal Peristaltic Pump (line 2, wash port)

Large Loop Sample/Standard Injection

20-mL sample load into loop, AXP runs water/stabilizes flow rate.

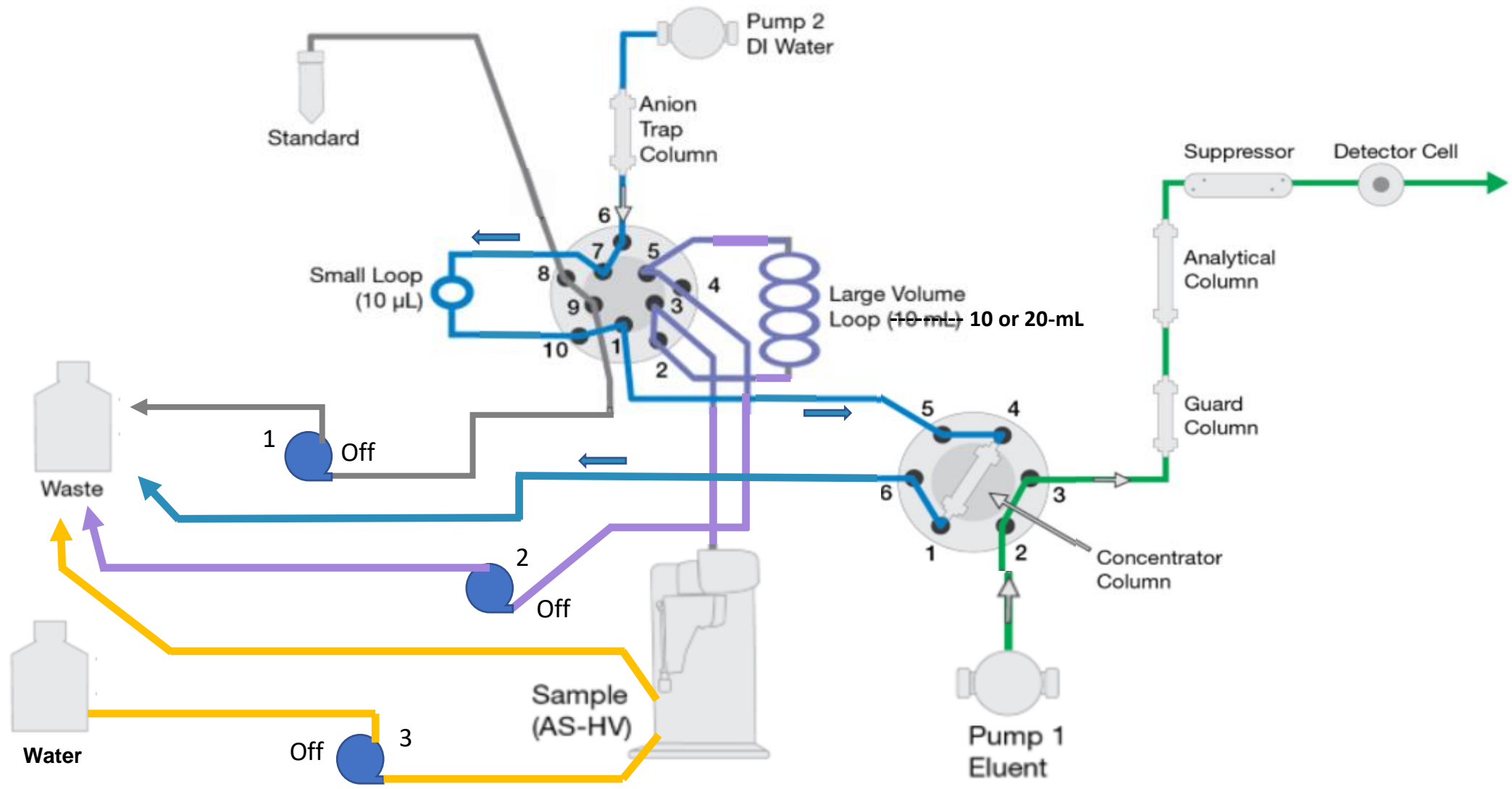


Create 20-mL sample loop.
 Remove the 10-mL large loops from two large loop cartridges. Connect the loops using PEEK connector unions. Secure with tie wraps.

- 1 – External Peristaltic Pump (ppt standard)
- 2 – AS-HV internal Peristaltic Pump (line 1, sample needle)
- 3 – AS-HV internal Peristaltic Pump (line 2, wash port)

Large Loop Sample/Standard Injection

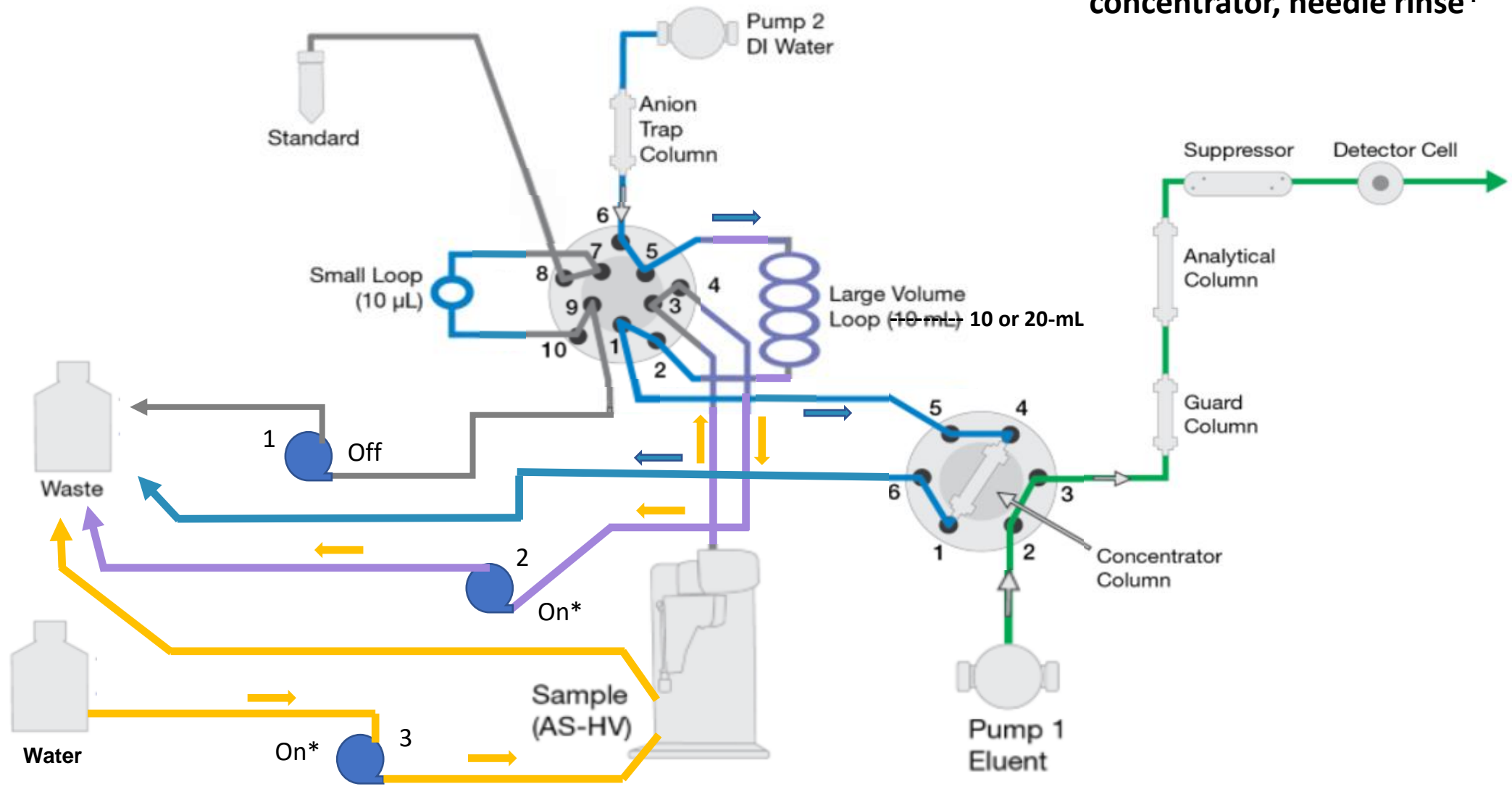
AXP rinses concentrator



- 1 – External Peristaltic Pump (ppt standard)
- 2 – AS-HV internal Peristaltic Pump (line 1, sample needle)
- 3 – AS-HV internal Peristaltic Pump (line 2, wash port)

Large Loop Sample/Standard Injection

20-mL sample load onto concentrator, needle rinse*

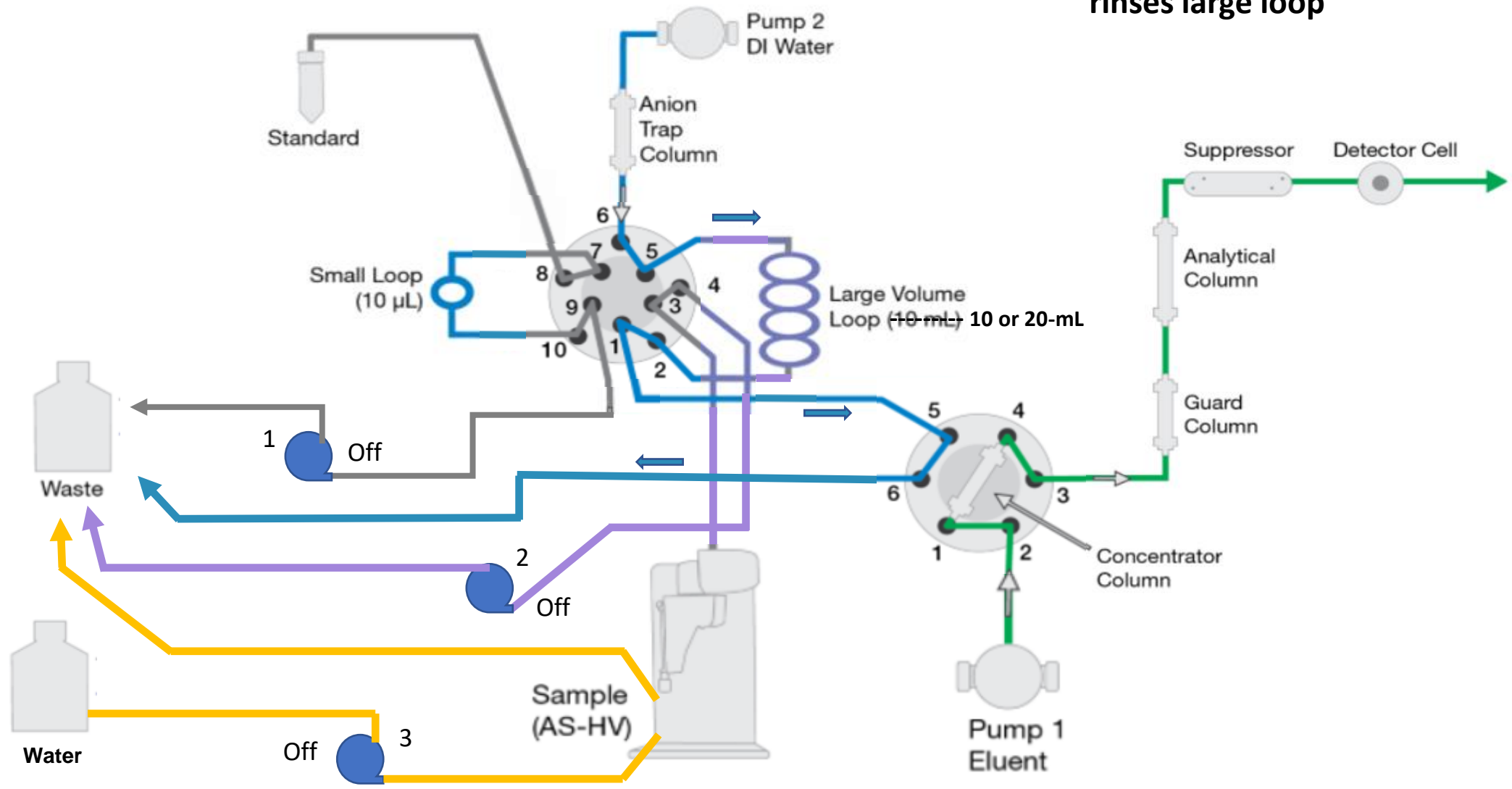


* Needle rinse does not start at same time as sample delivery

- 1 – External Peristaltic Pump (ppt standard)
- 2 – AS-HV internal Peristaltic Pump (line 1, sample needle)
- 3 – AS-HV internal Peristaltic Pump (line 2, wash port)

Large Loop Sample/Standard Injection

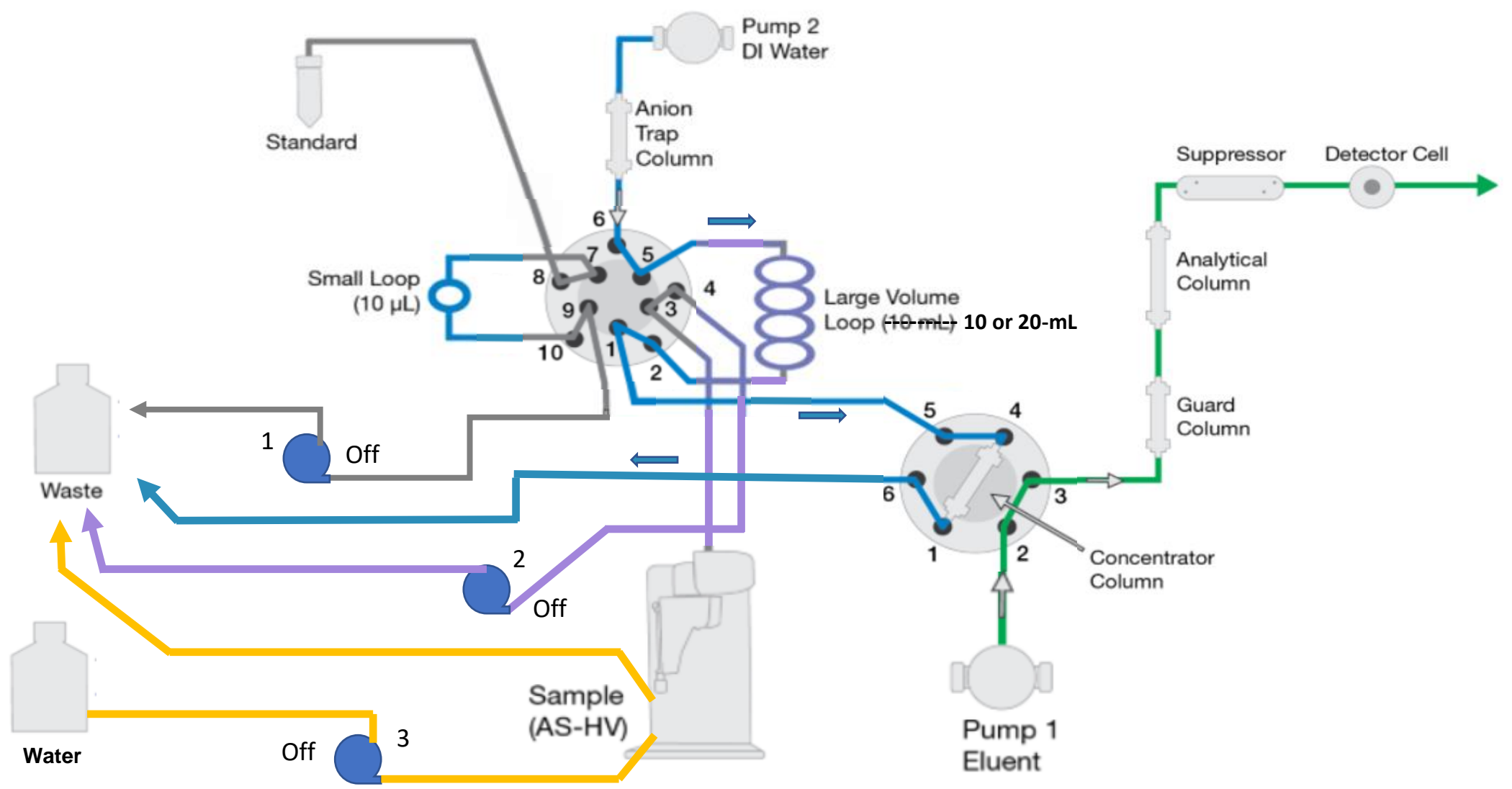
**20-mL sample inject into IC, AXP
rinses large loop**



- 1 – External Peristaltic Pump (ppt standard)
- 2 – AS-HV internal Peristaltic Pump (line 1, sample needle)
- 3 – AS-HV internal Peristaltic Pump (line 2, wash port)

PPT Standard Injection

AXP rinses concentrator

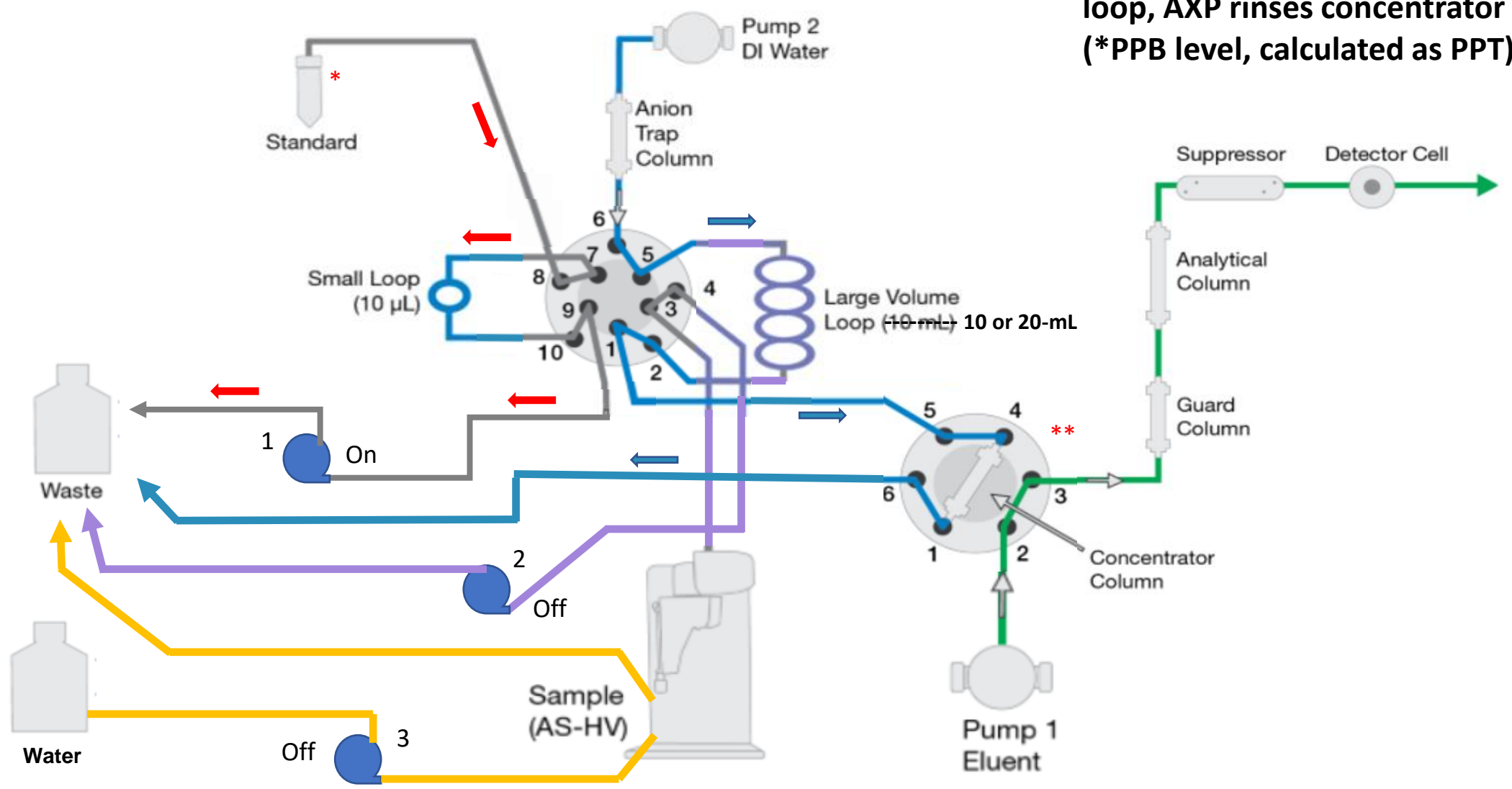


* Located in AS-HV sample position closest to IC or somewhere else away from the low-level samples

- 1 – External Peristaltic Pump (ppt standard)
- 2 – AS-HV internal Peristaltic Pump (line 1, sample needle)
- 3 – AS-HV internal Peristaltic Pump (line 2, wash port)

PPT Standard Injection

PPT* standard load onto small loop, AXP rinses concentrator (*PPB level, calculated as PPT)



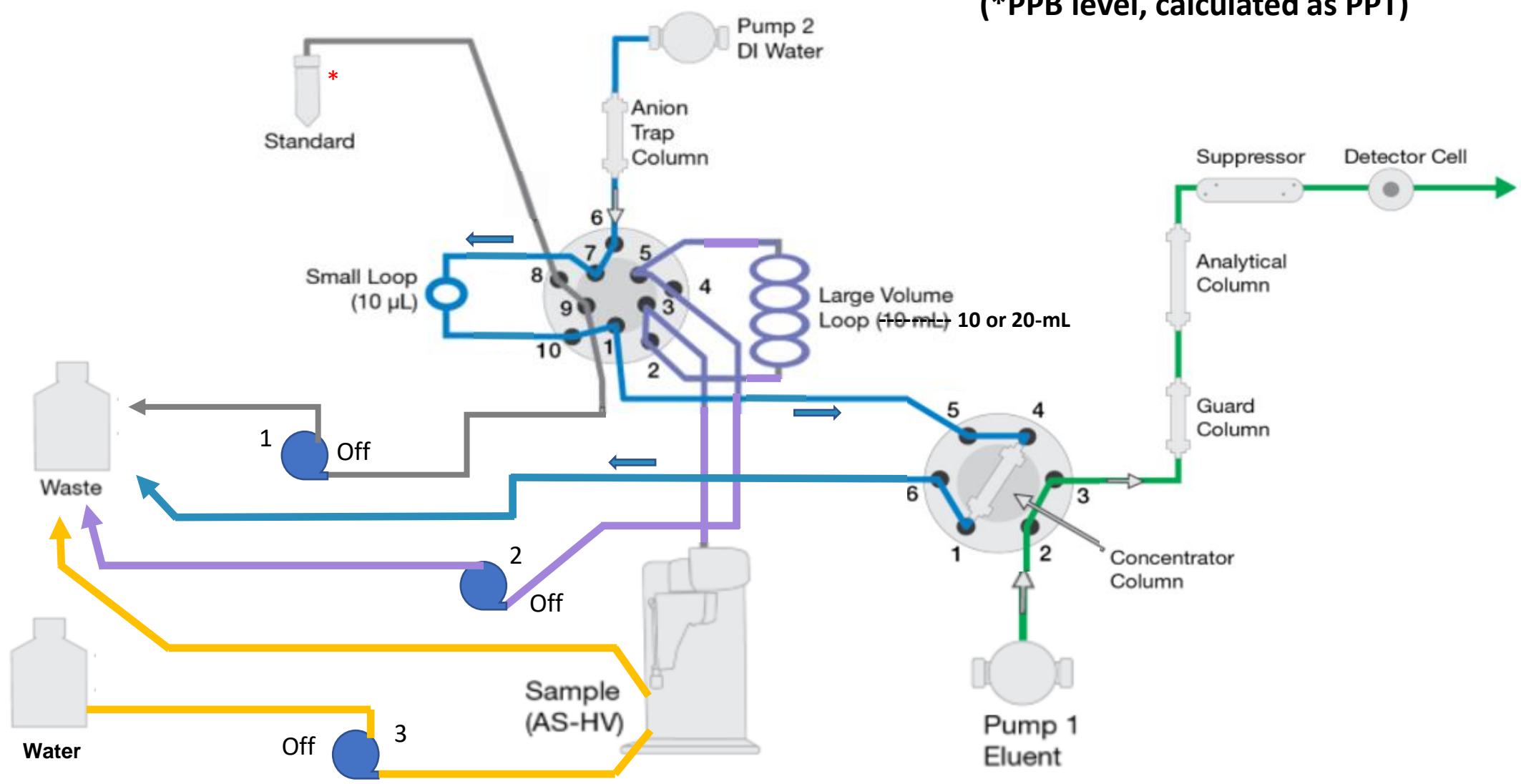
* Located in AS-HV sample position closest to IC or somewhere else away from the low-level samples

** Main inject valve must remain in load position during every standard pass through the small loop

- 1 – External Peristaltic Pump (ppt standard)
- 2 – AS-HV internal Peristaltic Pump (line 1, sample needle)
- 3 – AS-HV internal Peristaltic Pump (line 2, wash port)

PPT Standard Injection

PPT* standard load onto concentrator (*PPB level, calculated as PPT)

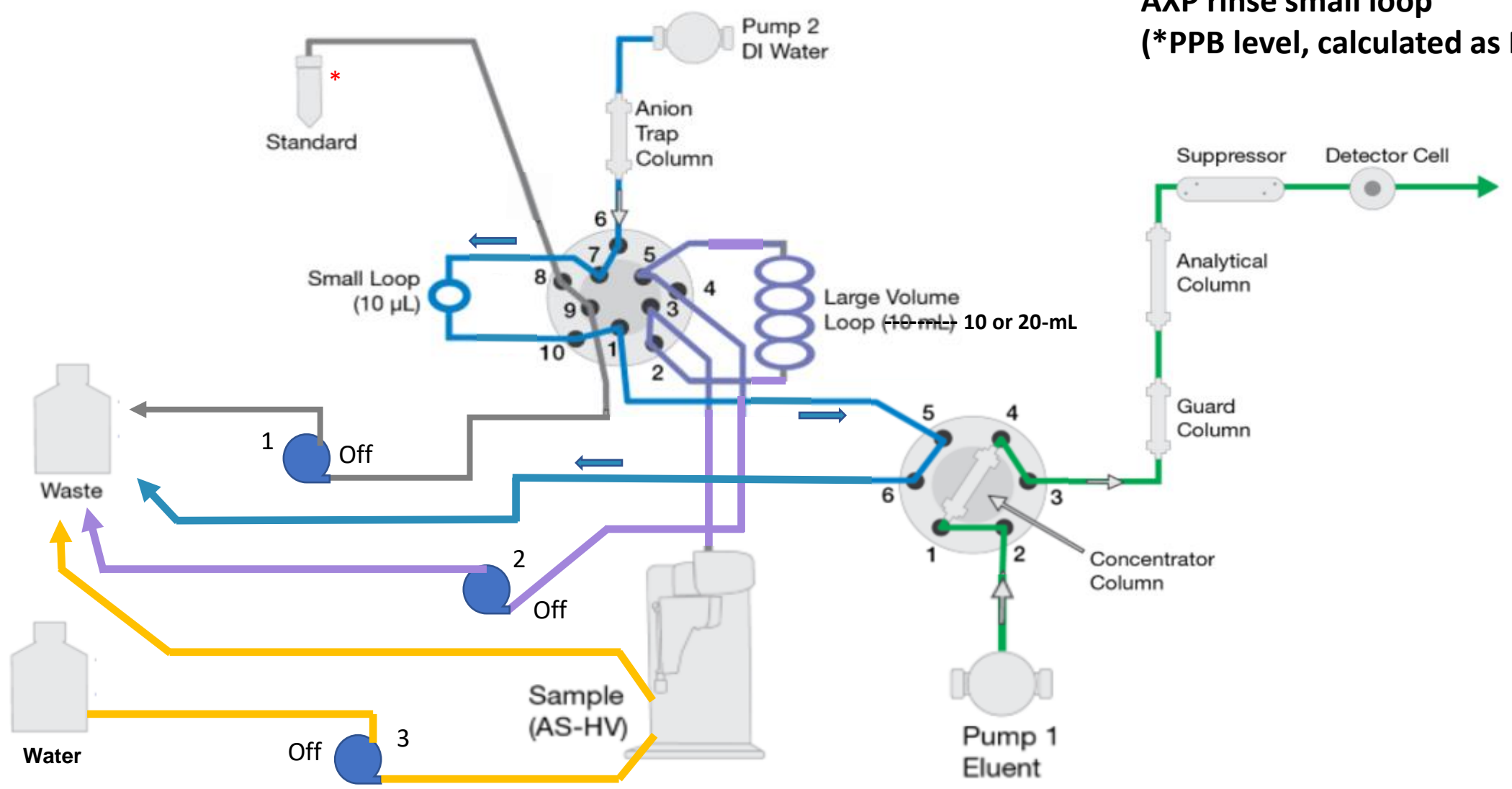


* Located in AS-HV sample position closest to IC or somewhere else away from the low-level samples

- 1 – External Peristaltic Pump (ppt standard)
- 2 – AS-HV internal Peristaltic Pump (line 1, sample needle)
- 3 – AS-HV internal Peristaltic Pump (line 2, wash port)

PPT Standard Injection

**PPT* standard inject into IC,
AXP rinse small loop
(*PPB level, calculated as PPT)**



* Located in AS-HV sample position closest to IC or somewhere else away from the low-level samples