

Synoptic CB: Porewater Nutrients

June 2024 Samples

2025-10-31

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```

##Run Information

cat("Run Information: NAME ") #lets you know what section you're in

## Run Information: NAME

#set the run date & user name
run_date <- "5/20/2025"
sample_year <- "2024"
sample_month <- "June"
user <- "Isabelle Van Benschoten"

#identify the files you want to read in
#read in as a list to accomodate ultiple runs in a month
NOx_files <- c("Raw Data/COMPASS_Synoptic_CB_202406_NOx_1.csv")
NH3_P04_files <- c("Raw Data/COMPASS_Synoptic_CB_202406_NH3_P04_1.csv")

# Define the file path for QAQC log file - NO Need to change just check year
file_path <- "Raw Data/SEAL_COMPASS_Synoptic_QAQC_Log_2024.csv"
final_path <- "Processed Data/COMPASS_Synoptic_Nutrients_202406.csv"

#record any notes about the run or anything other info here:
run_notes <- "SWH_TR_LysC_10cm has a very high CV between duplicates"

#Set up file path for metadata
#downloaded metadata csv - downloaded from Google drive as csv for this year
Raw_Metadata = "Raw Data/COMPASS_SynopticCB_PW_SampleLog_2024.csv"

cat(run_notes)

## SWH_TR_LysC_10cm has a very high CV between duplicates

##Setup

##Read in metadata and create similar sample IDs for matching to samples

```

0.1 Import Data & Clean

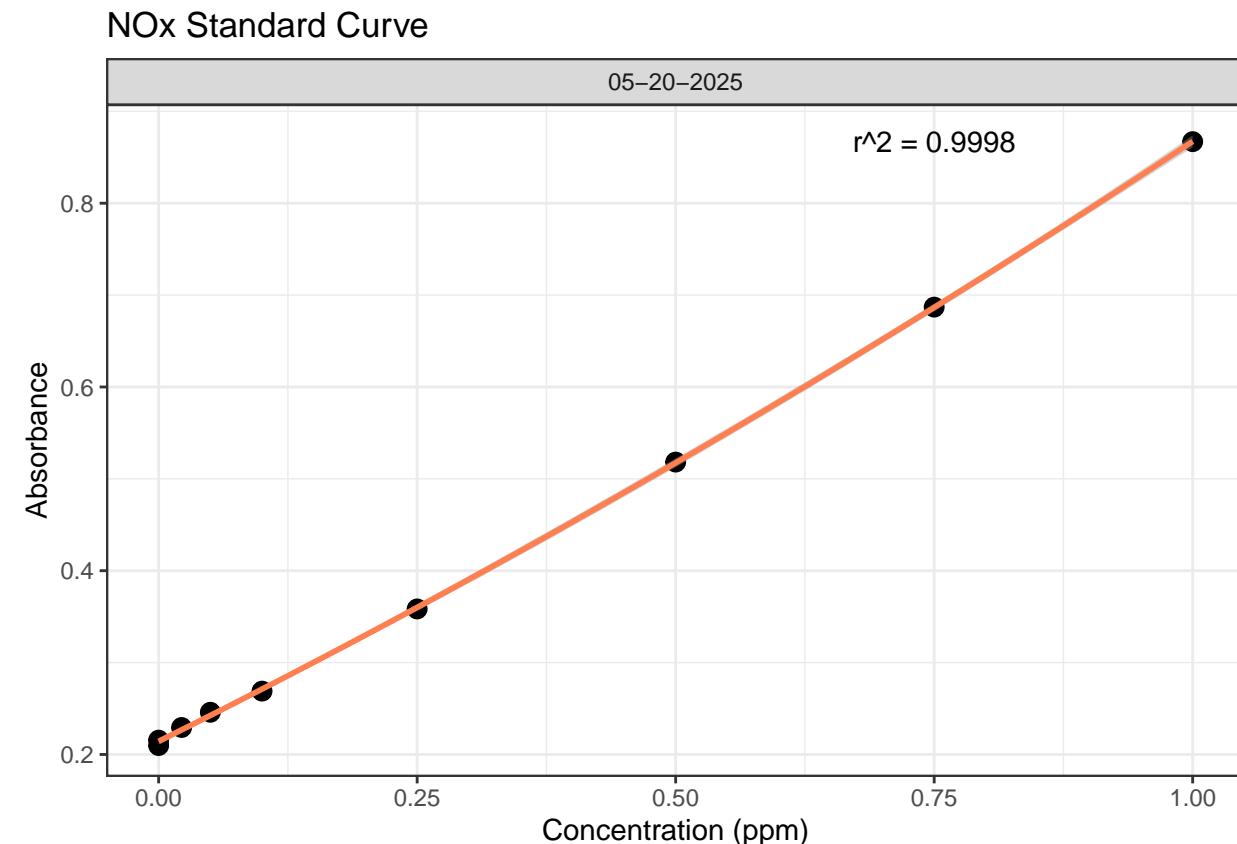
0.2 Assessing standard Curves

```
#Pull out standards data
```

```
## Assess Standard Curves
```

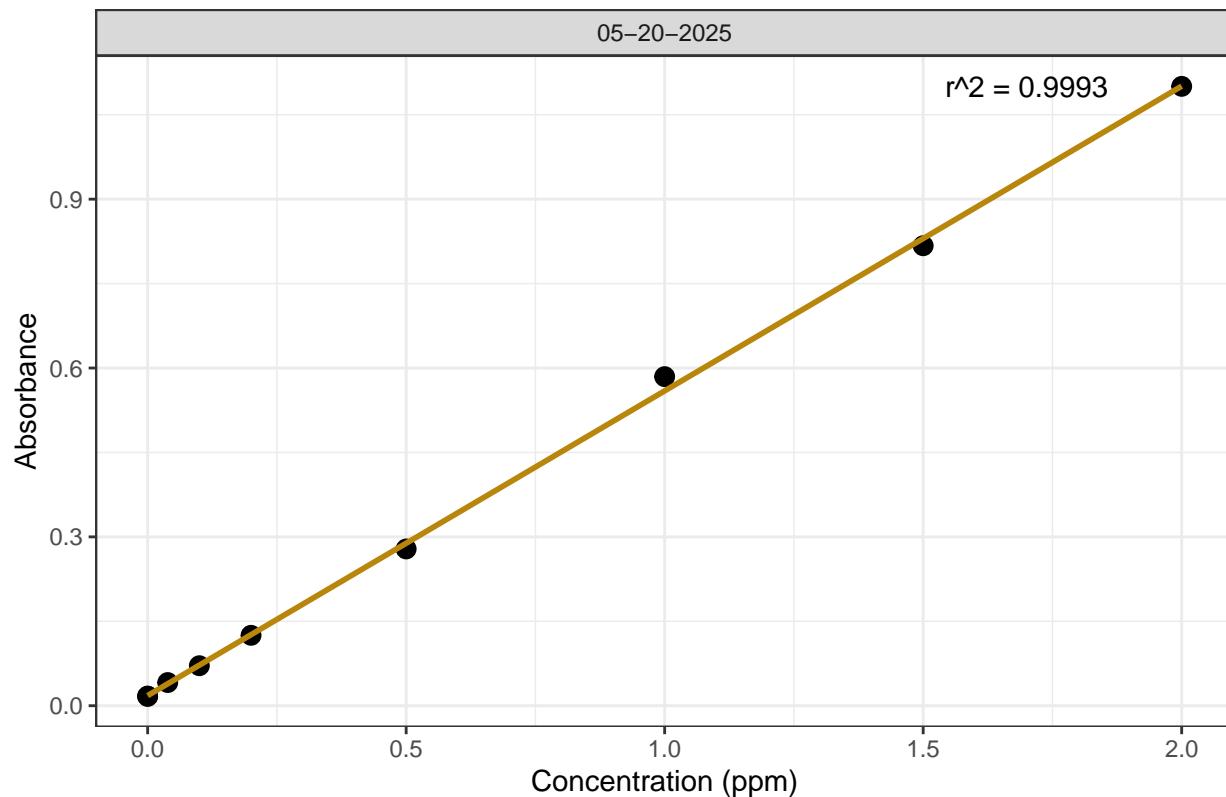
```
#Plot standards data
```

```
## Assess Standard Curves
```



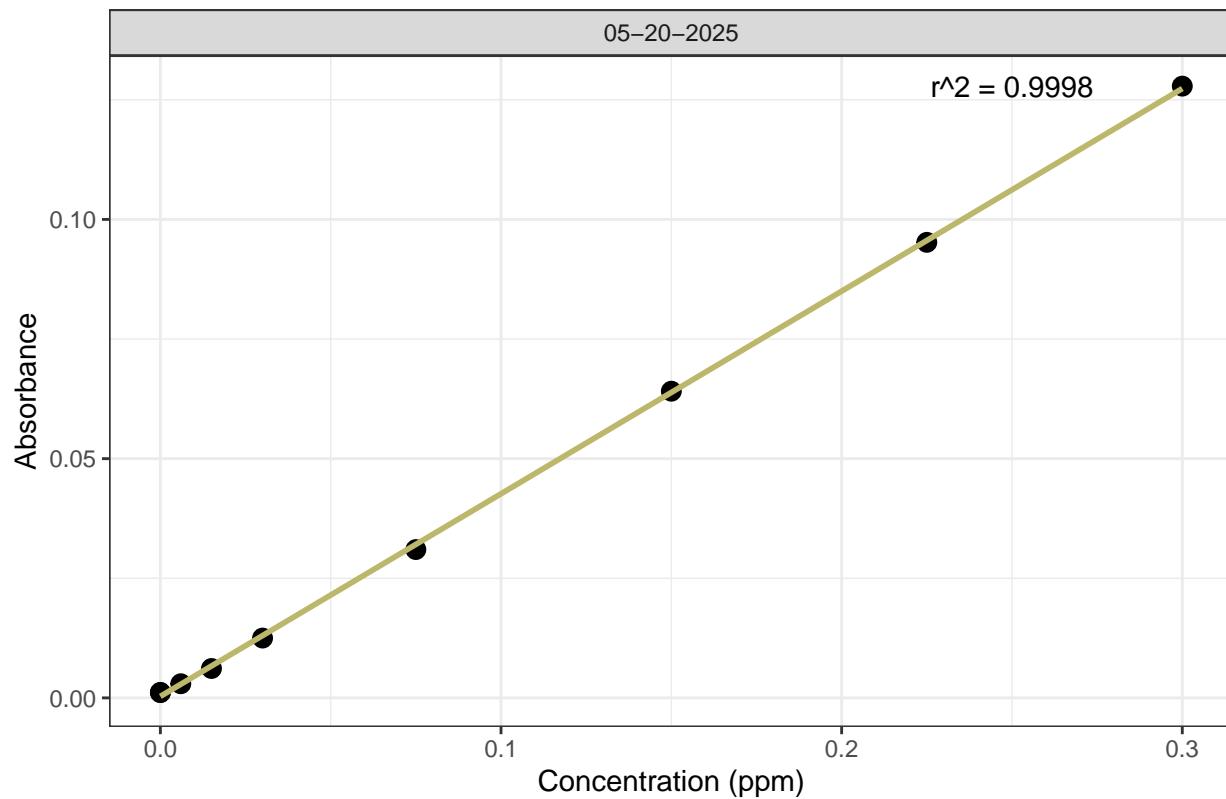
```
## `geom_smooth()` using formula = 'y ~ x'
```

NH3 Standard Curve



```
## `geom_smooth()` using formula = 'y ~ x'
```

PO4 Standard Curve



```
## [1] "NOx Curve r2 GOOD - PROCEED"  
## [1] "NH3 Curve r2 GOOD - PROCEED"  
## [1] "PO4 Curve r2 GOOD - PROCEED"  
## [1] "QAQC log file exists and has been read into the code."
```

Slope Drift Assessment

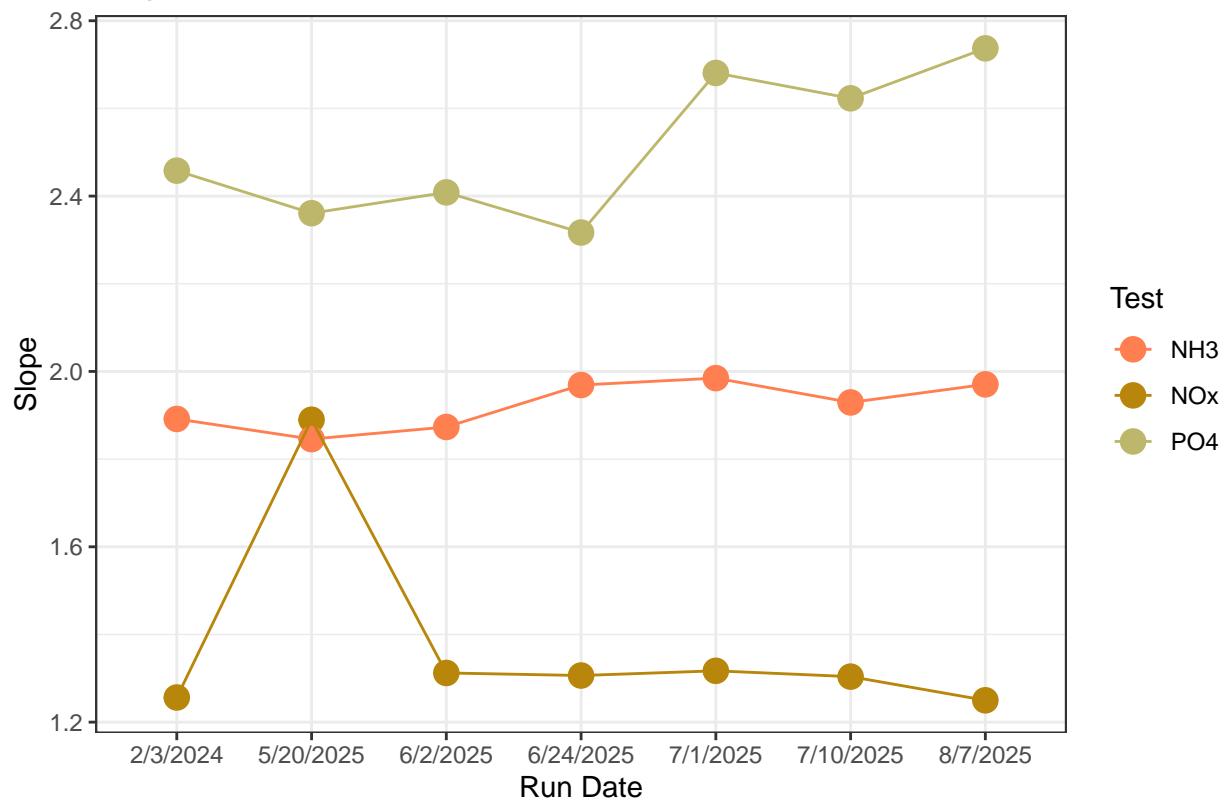


Table 1: Average Slope by Analyte

Test	avg_slope
NH3	1.923
NOx	1.376
PO4	2.512

0.3 Dilution Corrections - ensure the latest dilution is kept

```
## Dilution Corrections

## Duplicated samples: SWH_202406_TR_LysA_20cm, SWH_202406_TR_LysB_20cm, SWH_202406_SWAMP_LysB_10cm, SWH_202406_SWAMP_LysA_10cm

## All duplicated samples have valid dilutions. No naming issues detected.
```

0.4 Performance Check

```
## [1] NA

## Run mean = NaN

## Expected = 1.51

## [1] "NH3 pe Check has a % Difference <25% - PROCEED"

## Run mean = 1.254233

## Expected = 1.034

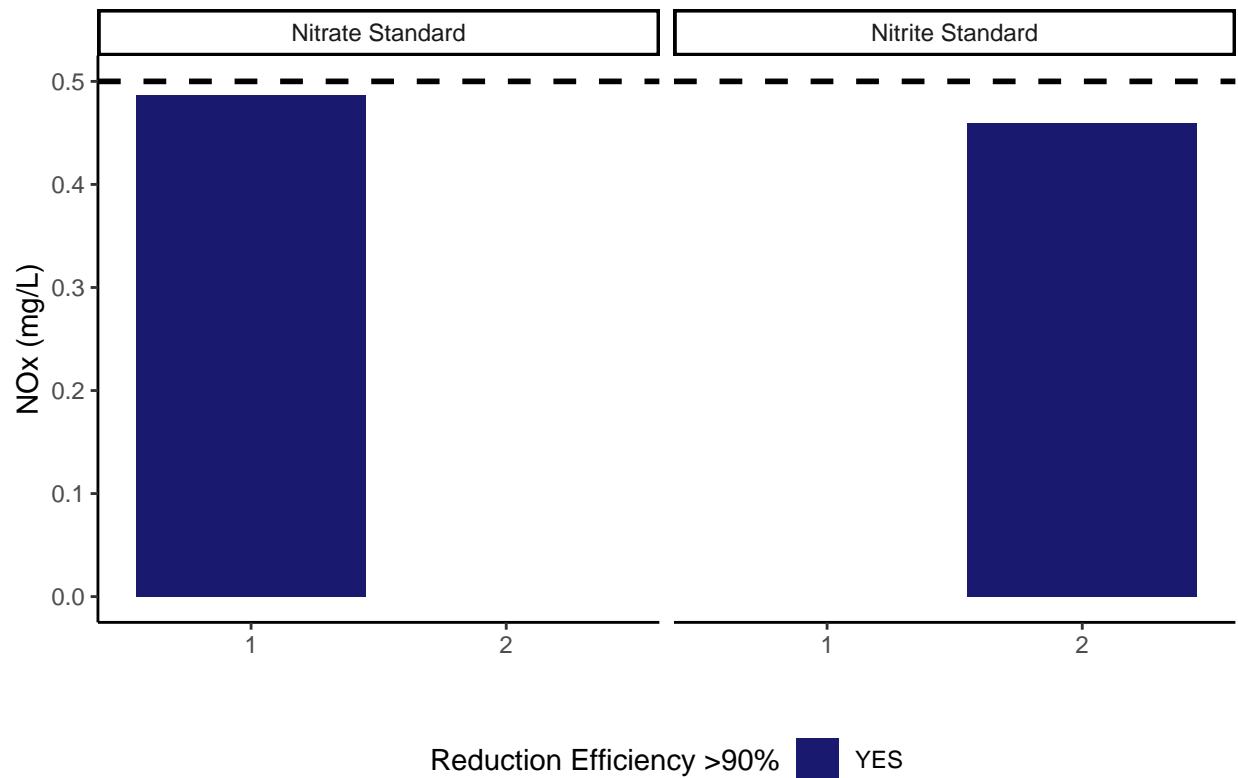
## [1] "PO4 pe Check has a % Difference <25% - PROCEED"

## Run mean = 0.884865

## Expected = 0.824

##Check NOx Reduction Efficiency

## Assess Reduction Efficiency
```



```
## [1] "Mean NOx Reduction Efficiency <95% - REASSESS"
```

```
## [1] 94.6139
```

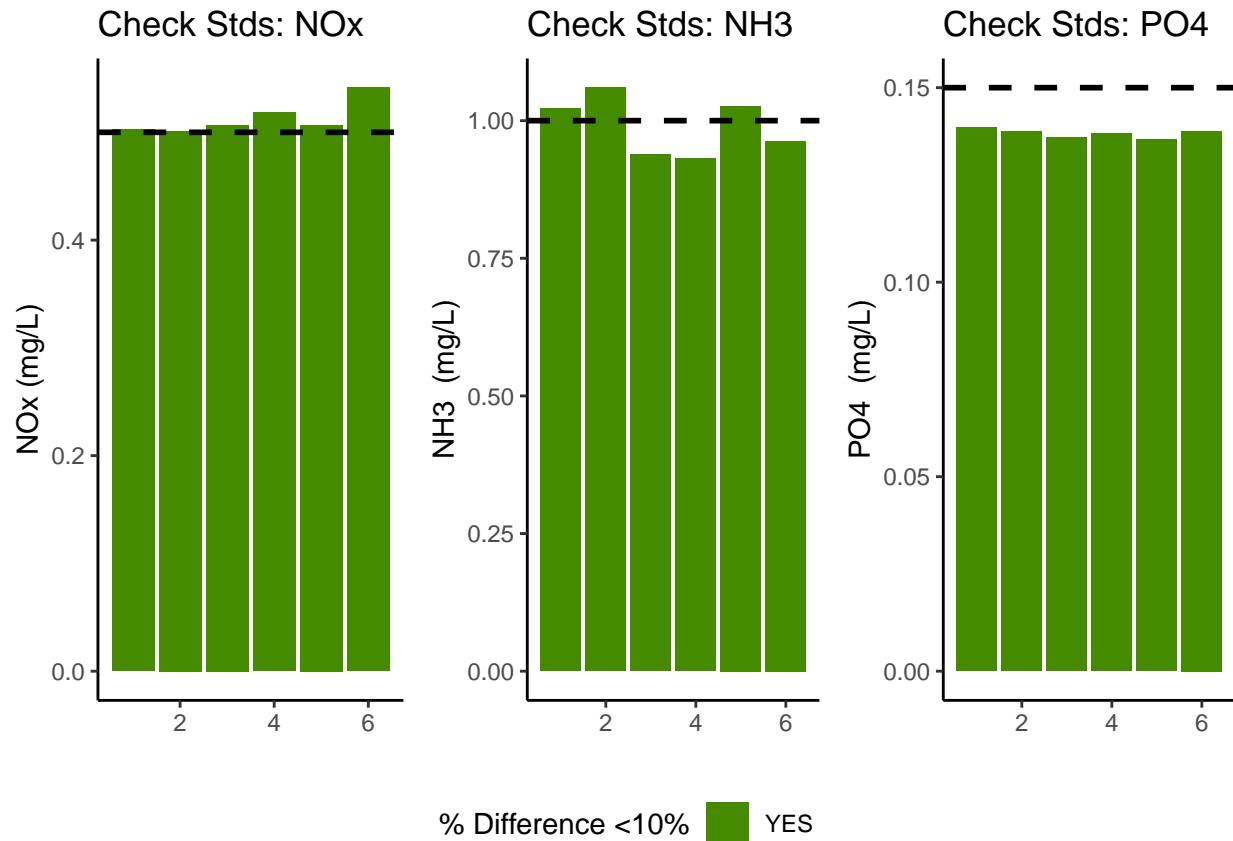
0.5 Analyze the Check Standards

```
## Analyze Check Standards

## [1] "NOx Check Standard RSD within Range - PROCEED"

## [1] "NH3 Check Standard RSD within Range - PROCEED"

## [1] "PO4 Check Standard RSD within Range - PROCEED"
```



```
## [1] ">60% of NOx Check Standards are within range of expected concentration - PROCEED"

## [1] ">60% of NH3 Check Standards are within range of expected concentration - PROCEED"

## [1] ">60% of PO4 Check Standards are within range of expected concentration - PROCEED"
```

0.6 Analyze Blanks

```
## Assess Blanks

## [1] ">60% of NOx Blanks are below the lower 25% quartile of samples or 1/2 detection limit - PROCEED"

## [1] ">60% of NH3 Blanks are below the lower 25% quartile of samples - PROCEED"

## [1] ">60% of PO4 Blanks are below the lower 25% quartile of samples- PROCEED"
```

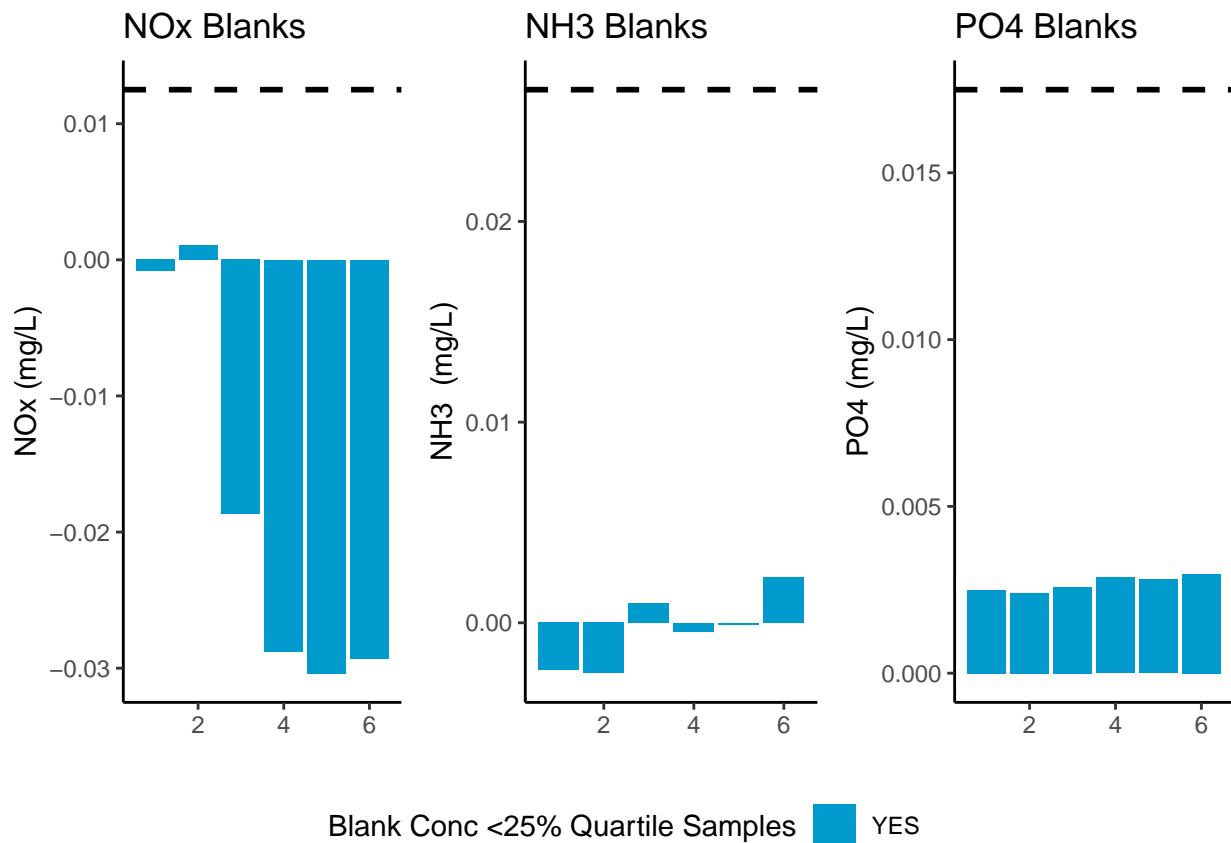


Table 2: Mean Concentration of Blanks

Test	Blank_Mean_Conc
NOx	-0.0178
NH3	-0.0004
PO4	0.0027

0.7 Analyze Duplicates

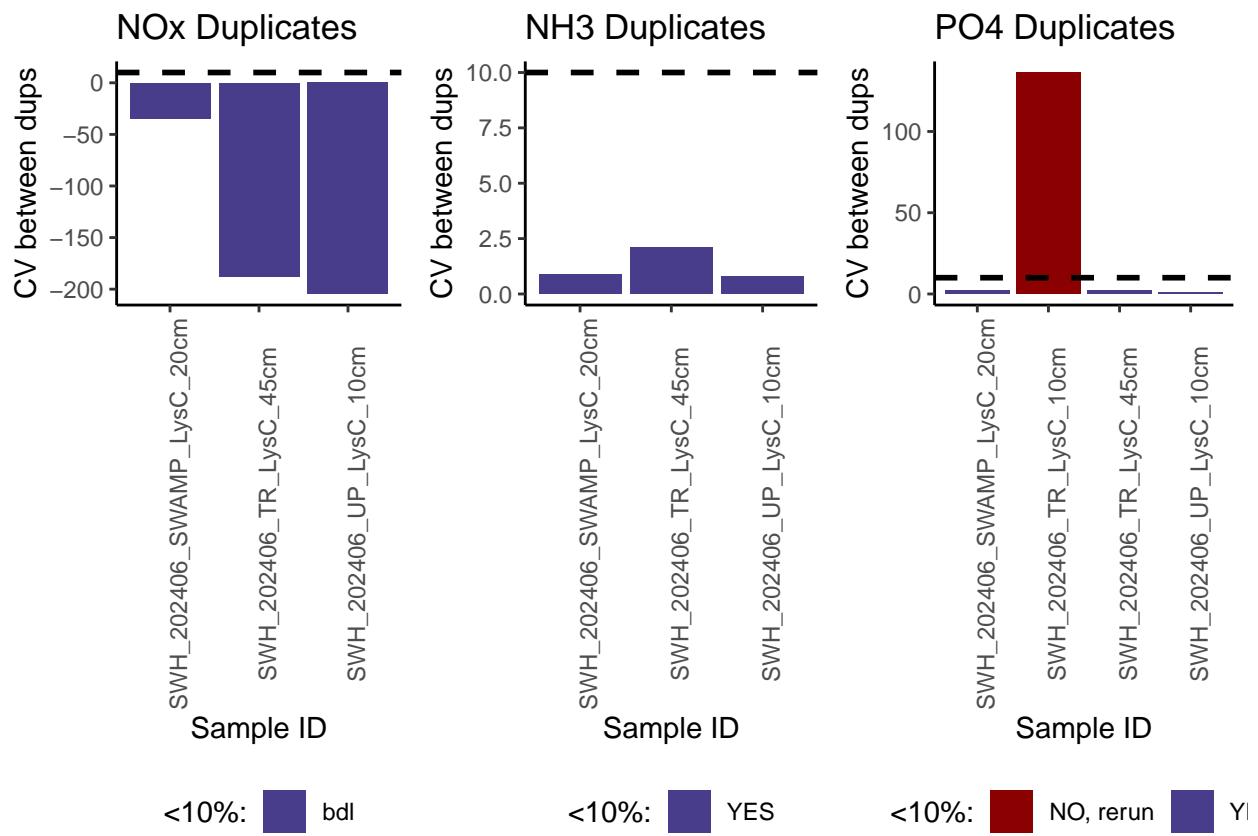
```
## Analyze Duplicates

## [1] ">60% of NOx Duplicates have a CV <10% - PROCEED"

## [1] ">60% of NH3 Duplicates have a CV <10% - PROCEED"

## [1] ">60% of PO4 Duplicates have a CV <10% - PROCEED"

## Warning: Using 'size' aesthetic for lines was deprecated in ggplot2 3.4.0.
## i Please use 'linewidth' instead.
## This warning is displayed once every 8 hours.
## Call 'lifecycle::last_lifecycle_warnings()' to see where this warning was
## generated.
```

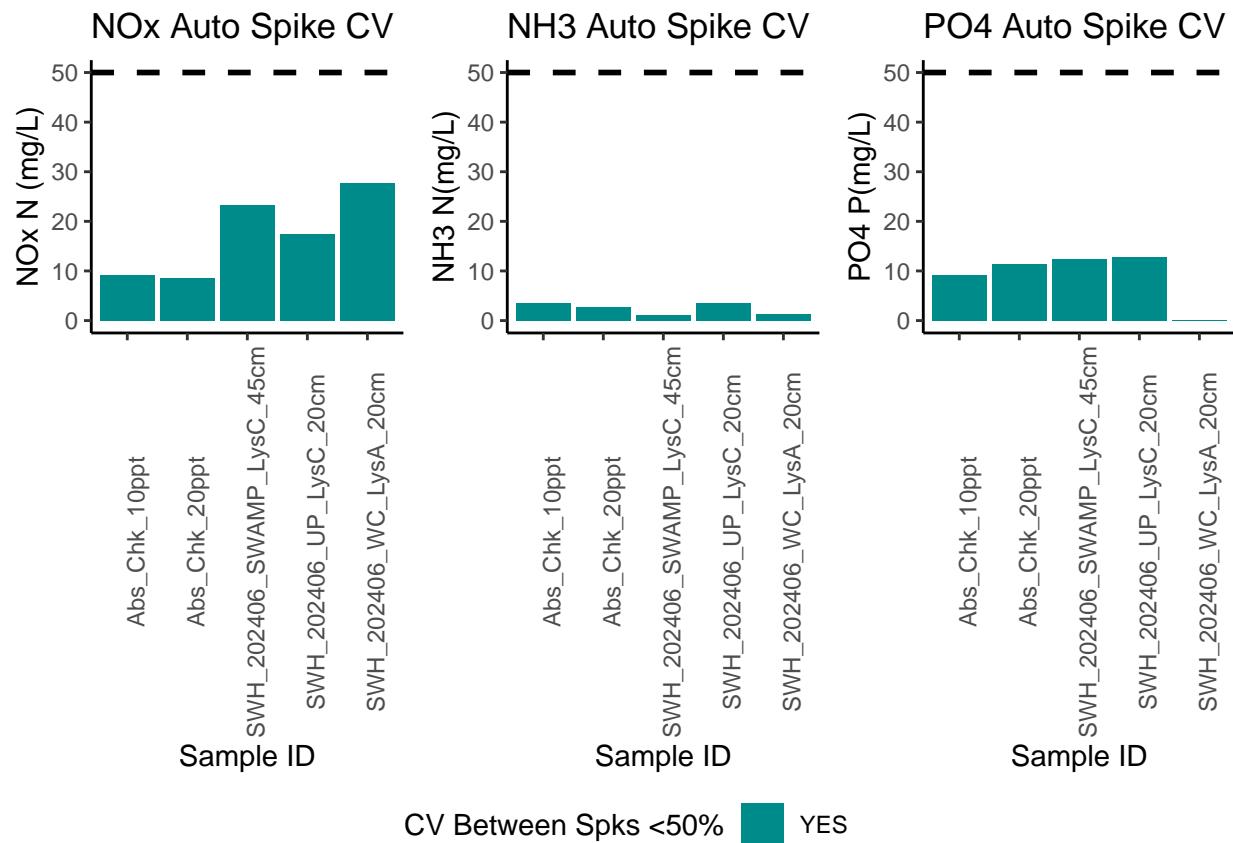


0.8 Spikes

```
## [1] ">60% of Spikes have a CV <50% - PROCEED"
```

```
## [1] ">60% of Spikes have a CV <50% - PROCEED"
```

```
## [1] ">60% of Spikes have a CV <50% - PROCEED"
```



0.9 Matrix Effects

```
## [1] "NO NOx Matrix Effect, PROCEED"  
  
## [1] "NO NH3 Matrix Effect, PROCEED"  
  
## [1] "NO PO4 Matrix Effect, PROCEED"
```

0.10 Unit Converted Data Column Added (mg/L to uM)

0.11 Sample Flagging - Within range of standard curve

```
## Sample Flagging
```

0.12 Pull out sample id information

```
## Sample Processing  
  
## Warning: Expected 5 pieces. Missing pieces filled with 'NA' in 9 rows [34, 35, 36, 68,  
## 69, 70, 93, 94, 95].
```

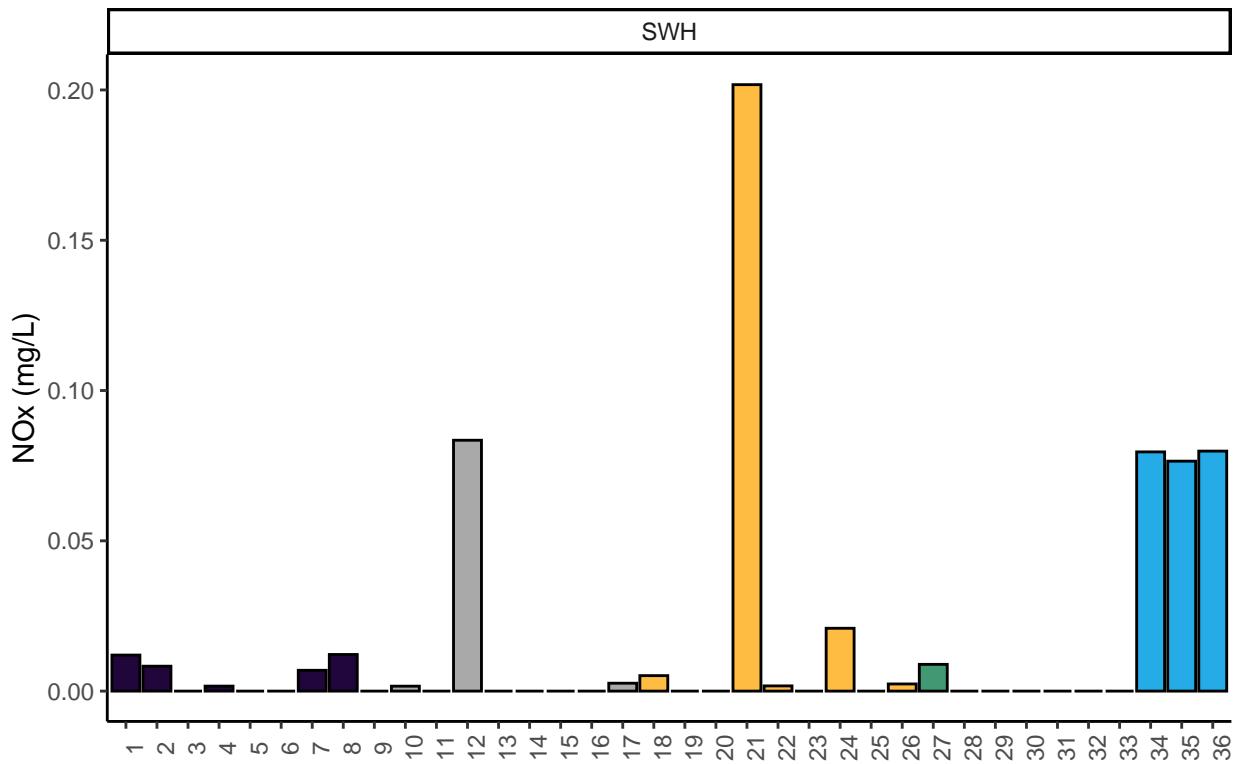
0.13 Check to see if samples run match metadata & merge info

```
## Check Sample IDs with Metadata  
  
## Some sample IDs are missing from metadata.  
  
## [1] "SWH_202406_WC_LysA_45cm"  
  
## Warning: Expected 5 pieces. Missing pieces filled with 'NA' in 9 rows [34, 35, 36, 68,  
## 69, 70, 93, 94, 95].
```

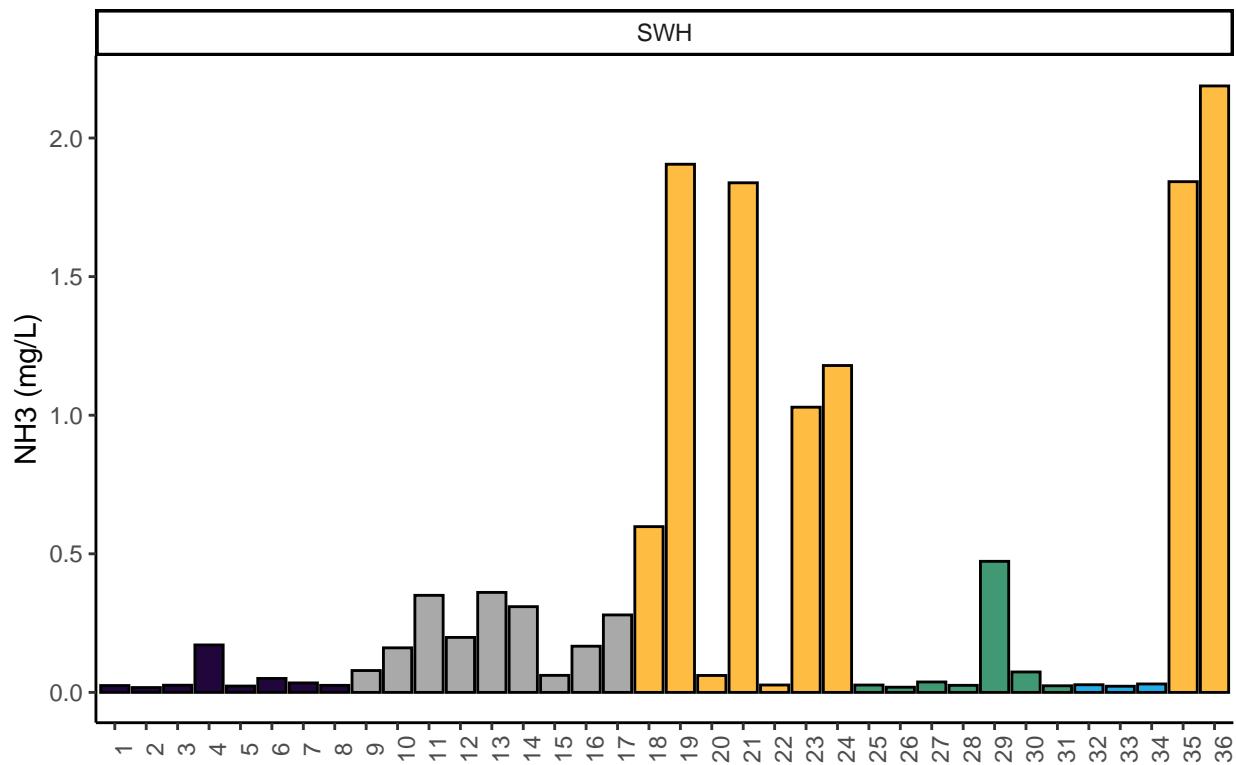
0.14 Visualize Data

```
## Visualize Data
```

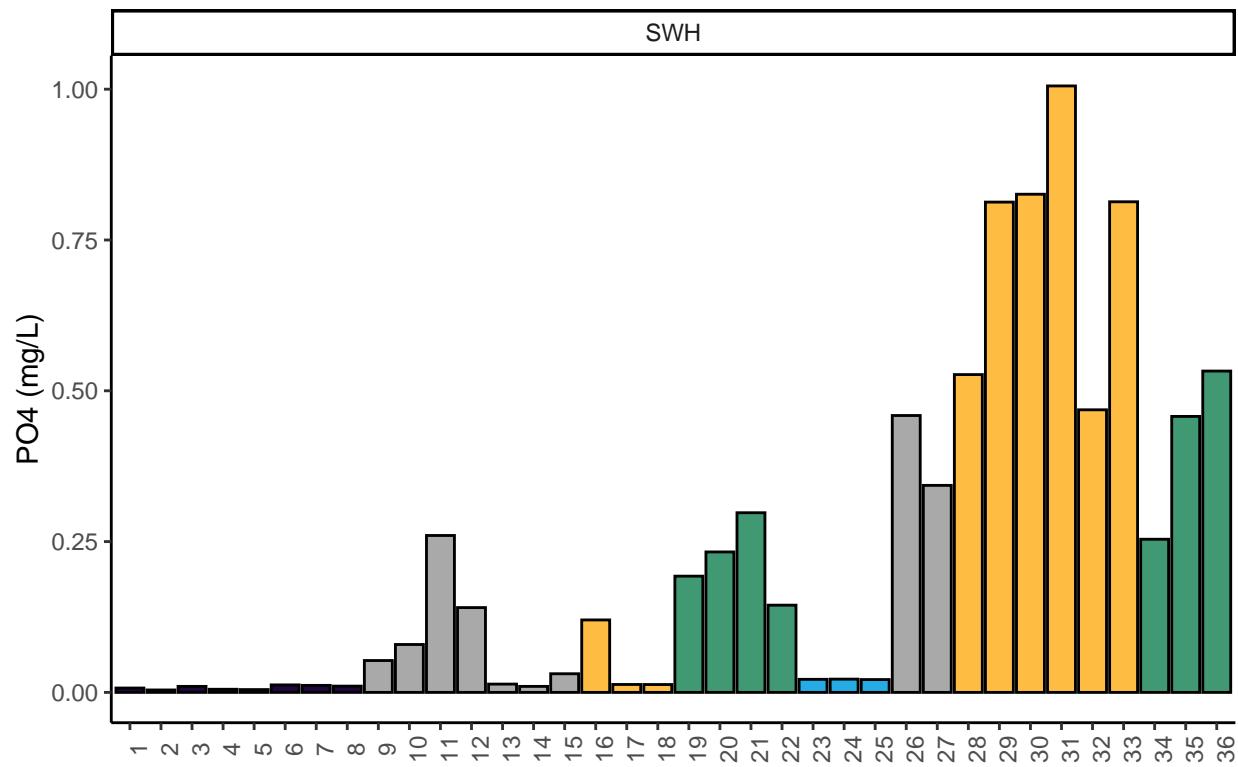
Porewater NOx



Porewater NH3



Porewater PO4



0.15 Export Processed Data

```
#end
```