

Synoptic CB: Porewater Nutrients

October 2024 Samples

2025-07-09

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##Run Information

```
cat("Run Information: Isabelle Van Benschoten ") #lets you know what section you're in
```

Run Information: Isabelle Van Benschoten

```
#set the run date & user name
run_date <- "07/01/2025"
sample_year <- "2024"
sample_month <- "October"
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_202410_VNOx_1.csv")
NH3_PO4_files <- c("Raw Data/COMPASS_Synoptic_CB_202410_NH3_PO4_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_202410.csv"

#record any notes about the run or anything other info here:
run_notes <- "Nitrate and nitrite reduction efficiency is okay, graph off
because only one run for this month.
Performance check for NOx looks like DI was run instead of the peCheck.
** Something up with the phosphate on this run... needs looked at. "

#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)
```

```
## Nitrate and nitrite reduction efficiency is okay, graph off
## because only one run for this month.
## Performance check for NOx looks like DI was run instead of the peCheck.
## ** Something up with the phosphate on this run... needs looked at.
```

##Setup

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

0.1 Import Data & Clean

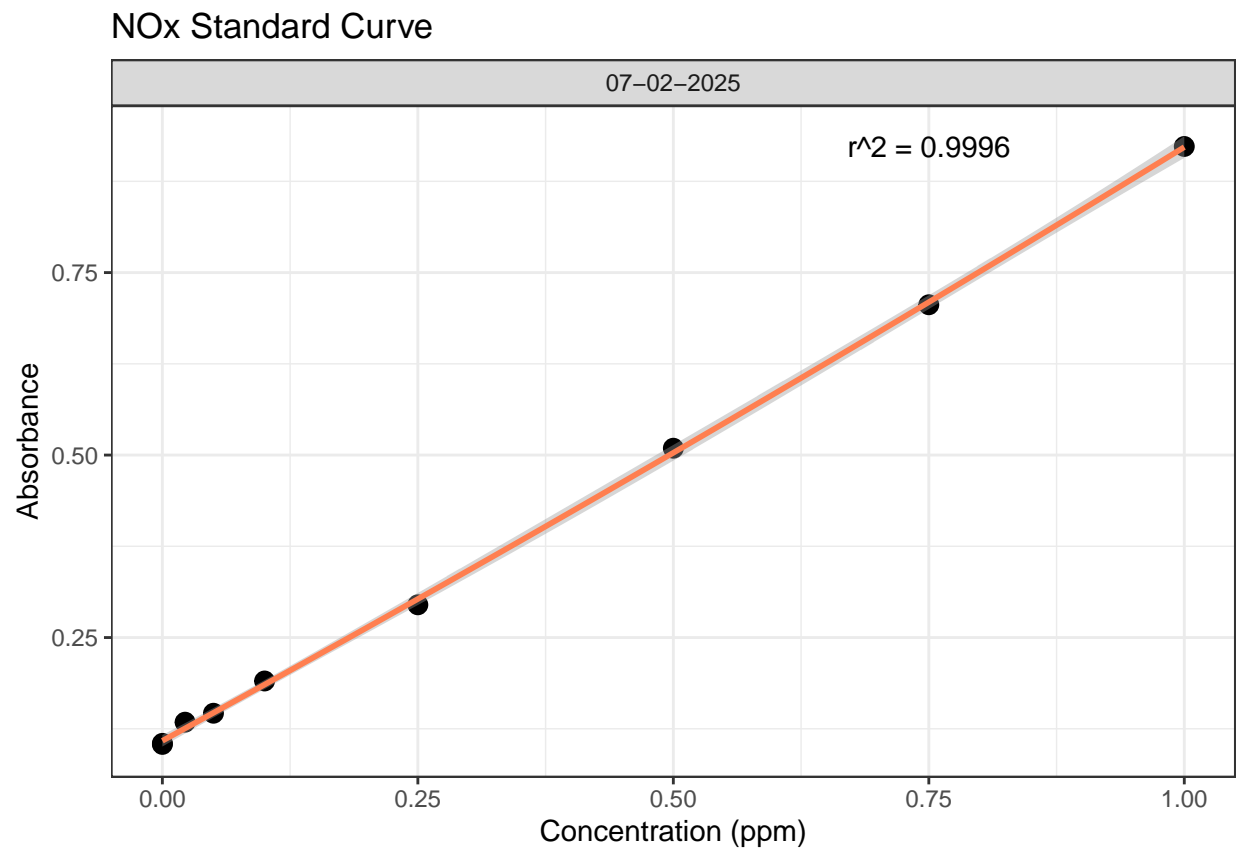
0.2 Assessing standard Curves

```
#Pull out standards data
```

```
## Assess Standard Curves
```

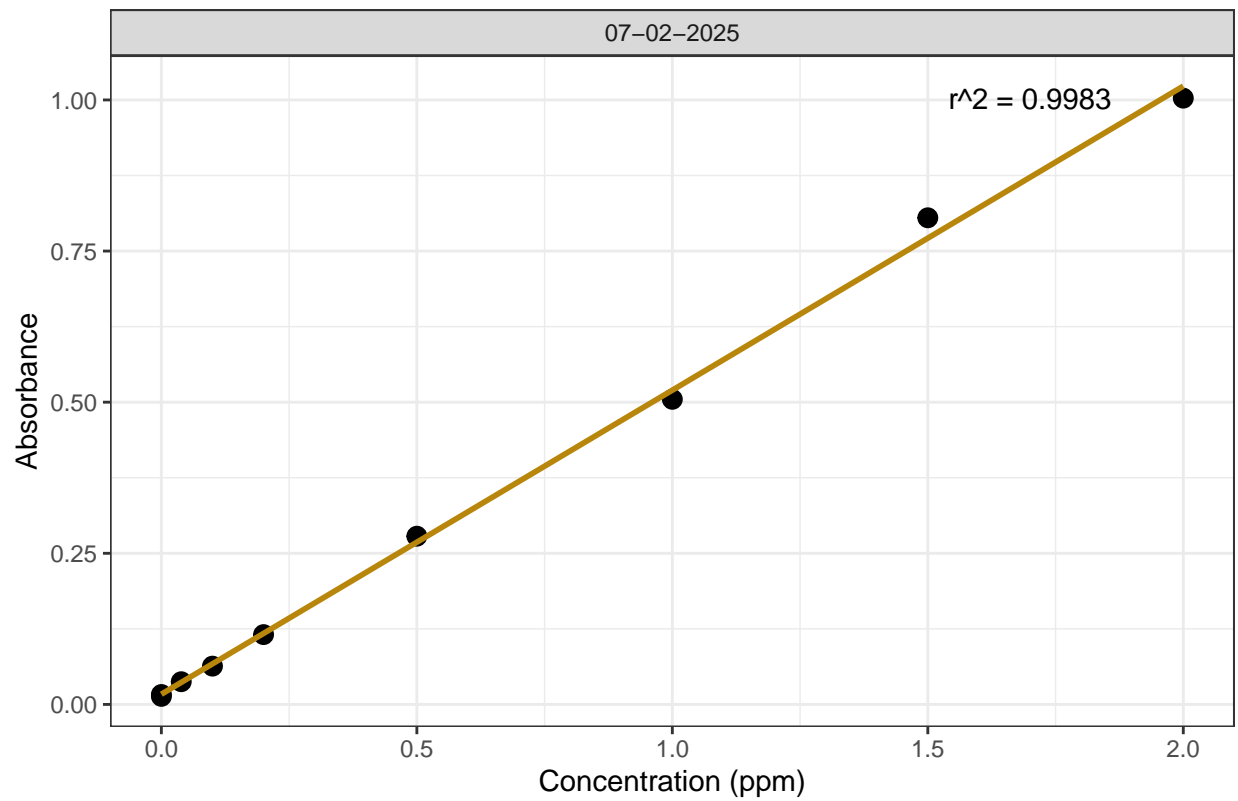
```
#Plot standards data
```

```
## Assess Standard Curves
```



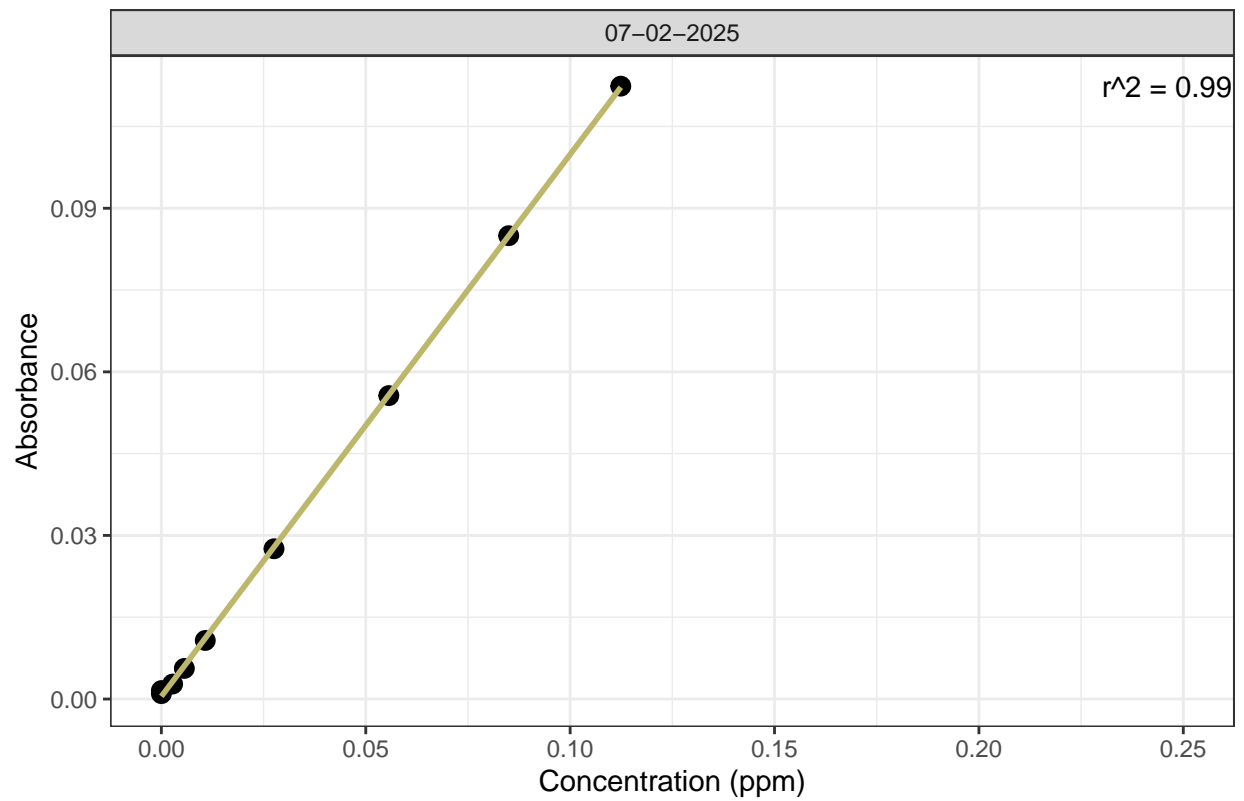
```
## 'geom_smooth()' using formula = 'y ~ x'
```

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."
```

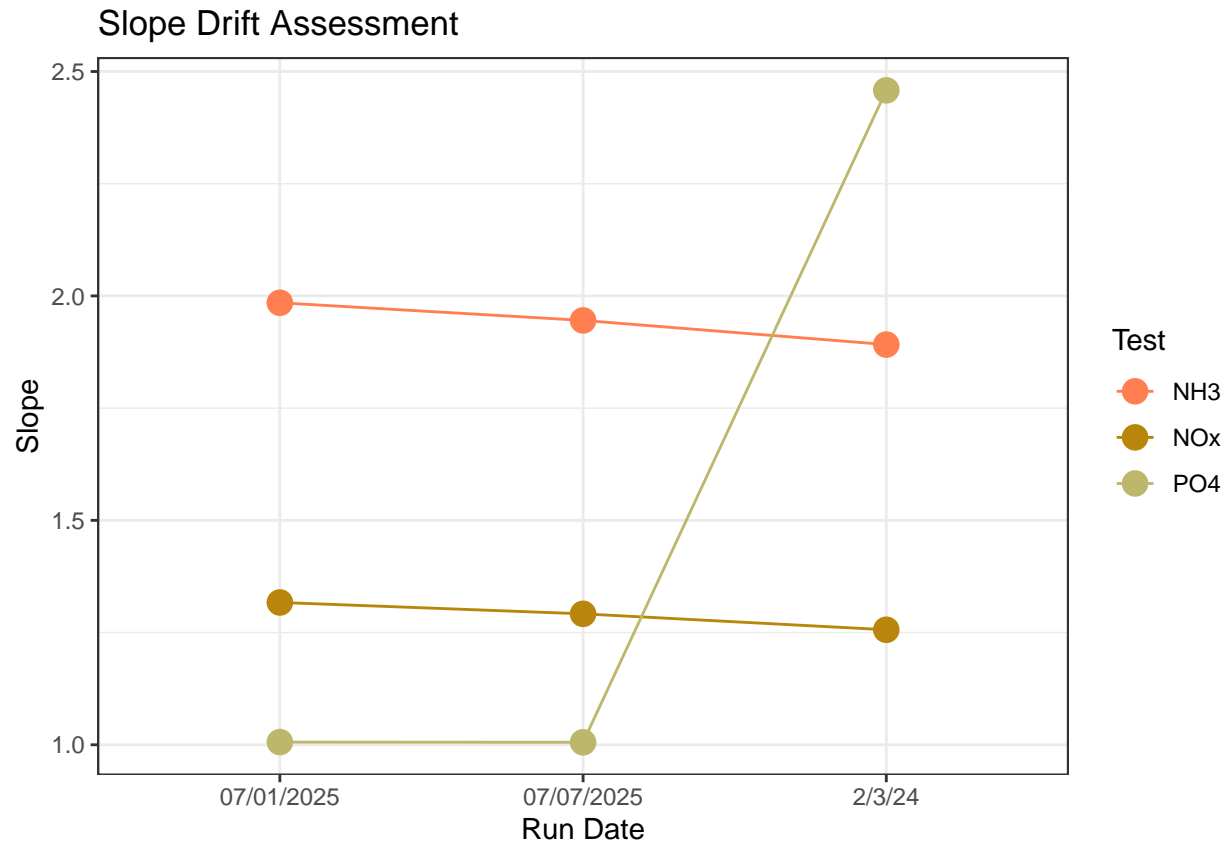


Table 1: Average Slope by Analyte

| Test | avg_slope |
|------|-----------|
| NH3 | 1.941 |
| NOx | 1.288 |
| PO4 | 1.490 |

0.3 Dilution Corrections - ensure the latest dilution is kept

```
## Dilution Corrections
```

```
## Duplicated samples: , SWH_202410_TR_LysA_20cm, SWH_202410_TR_LysB_20cm, SWH_202410_TR_LysB_45cm, SWH_202410_TR_LysB_100cm
```

```
## Duplicated samples with NO dilution present (possible input error):
```

0.4 Performance Check

```
## [1] "NOx pe Check has a % Difference >25% - REASSESS"
```

```
## Run mean = 0.057199
```

```
## Expected = 1.51
```

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

```
## Run mean = 1.154324
```

```
## Expected = 1.034
```

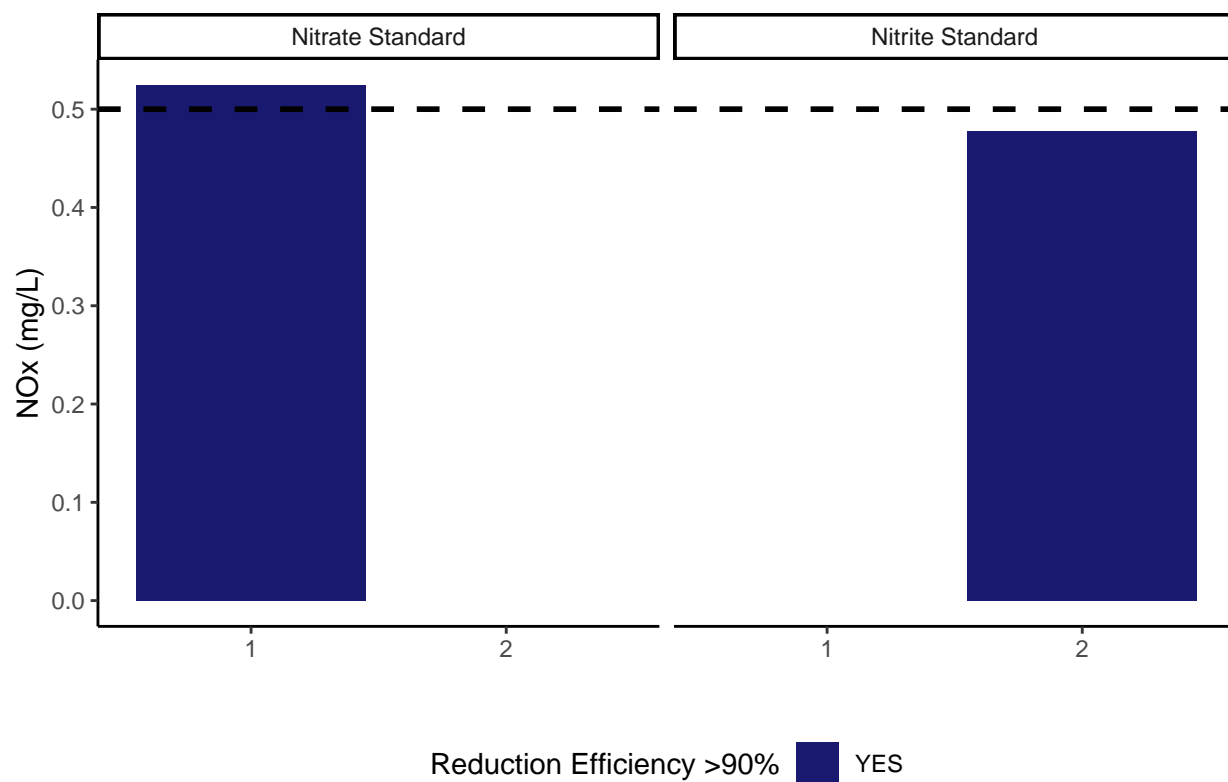
```
## [1] "PO4 pe Check has a % Difference <25% - PROCEED"
```

```
## Run mean = 0.956811
```

```
## Expected = 0.824
```

```
##Check NOx Reduction Efficiency
```

```
## Assess Reduction Efficiency
```



```
## [1] "Mean NOx Reduction Efficiency >95% - PROCEED"
```

```
## [1] 100.1906
```

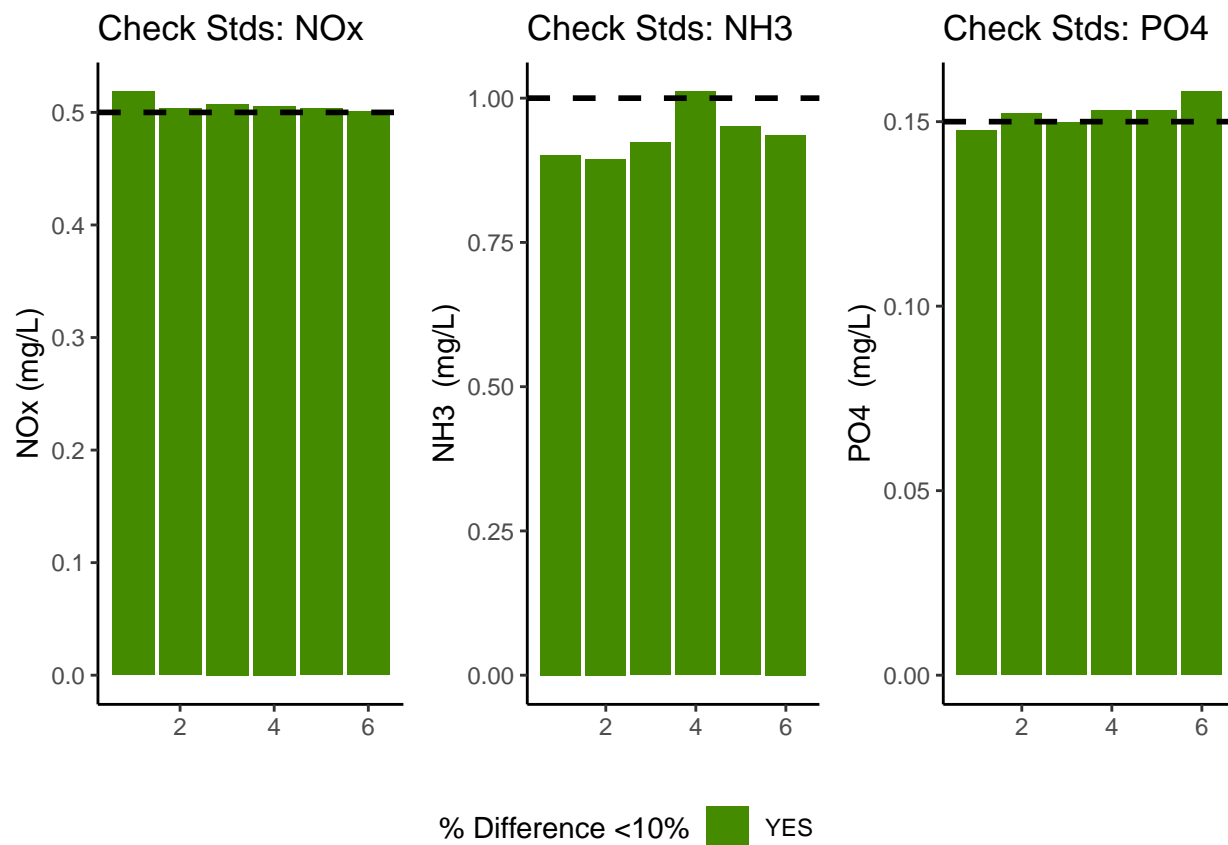

0.5 Analyze the Check Standards

```
## 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"

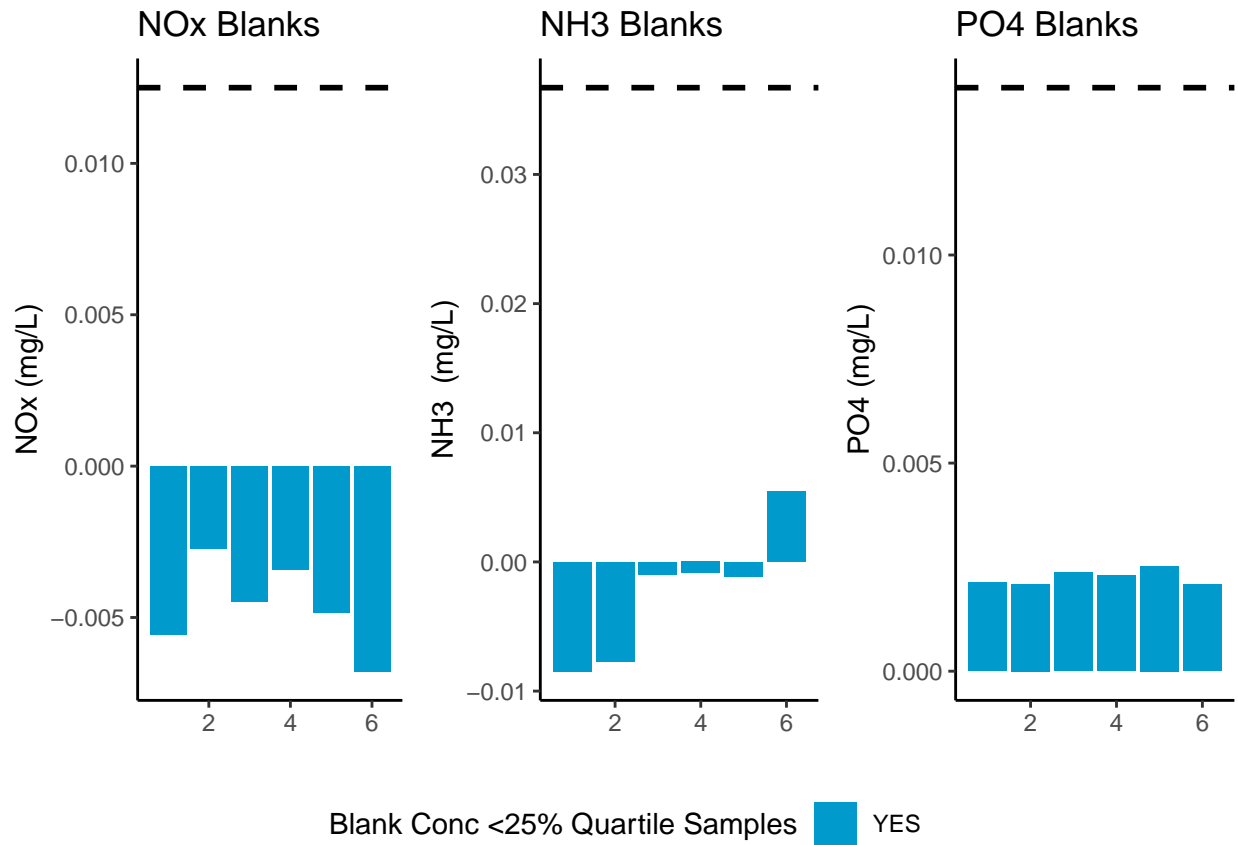


Table 2: Mean Concentration of Blanks

| Test | Blank_Mean_Conc |
|------|-----------------|
| NOx | -0.0046 |
| NH3 | -0.0023 |
| PO4 | 0.0023 |

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"
```

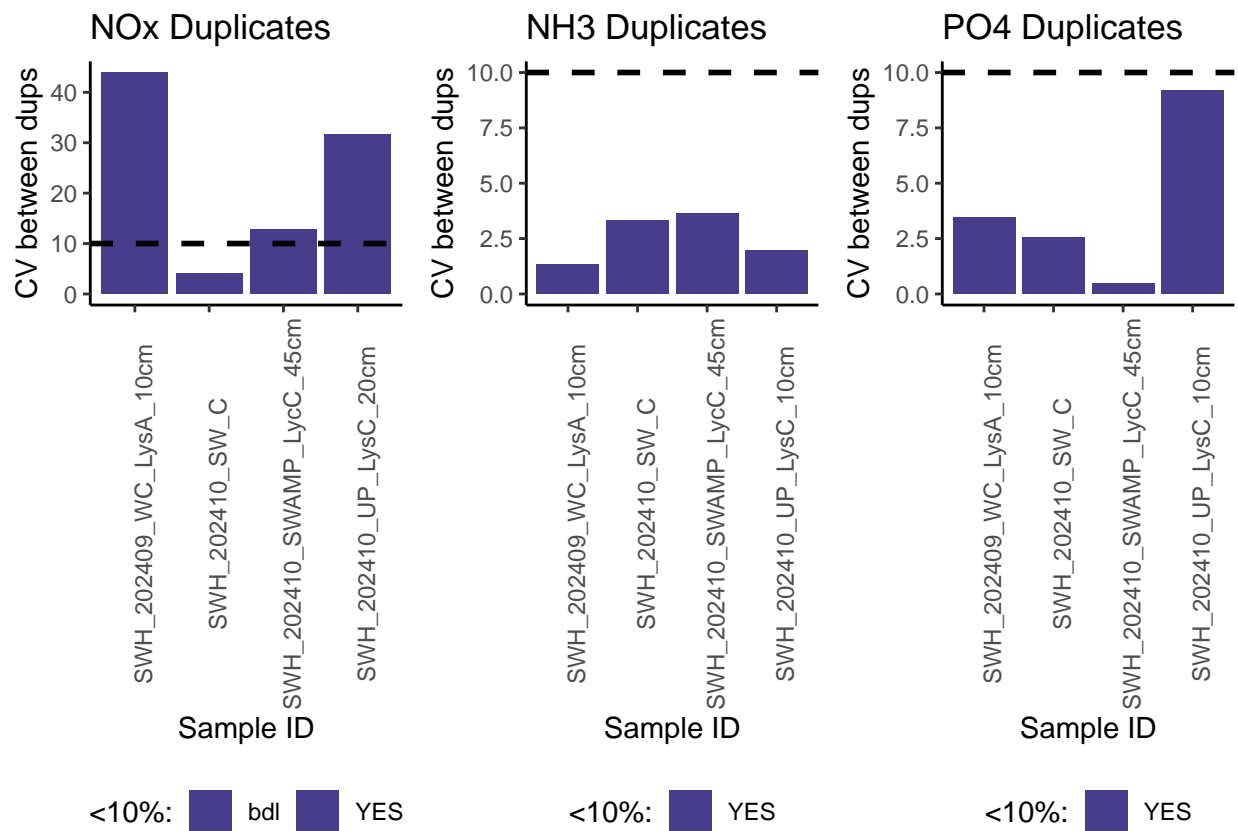
```
## Warning: Using 'size' aesthetic for lines was deprecated in ggplot2 3.4.0.
```

```
## 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.
```

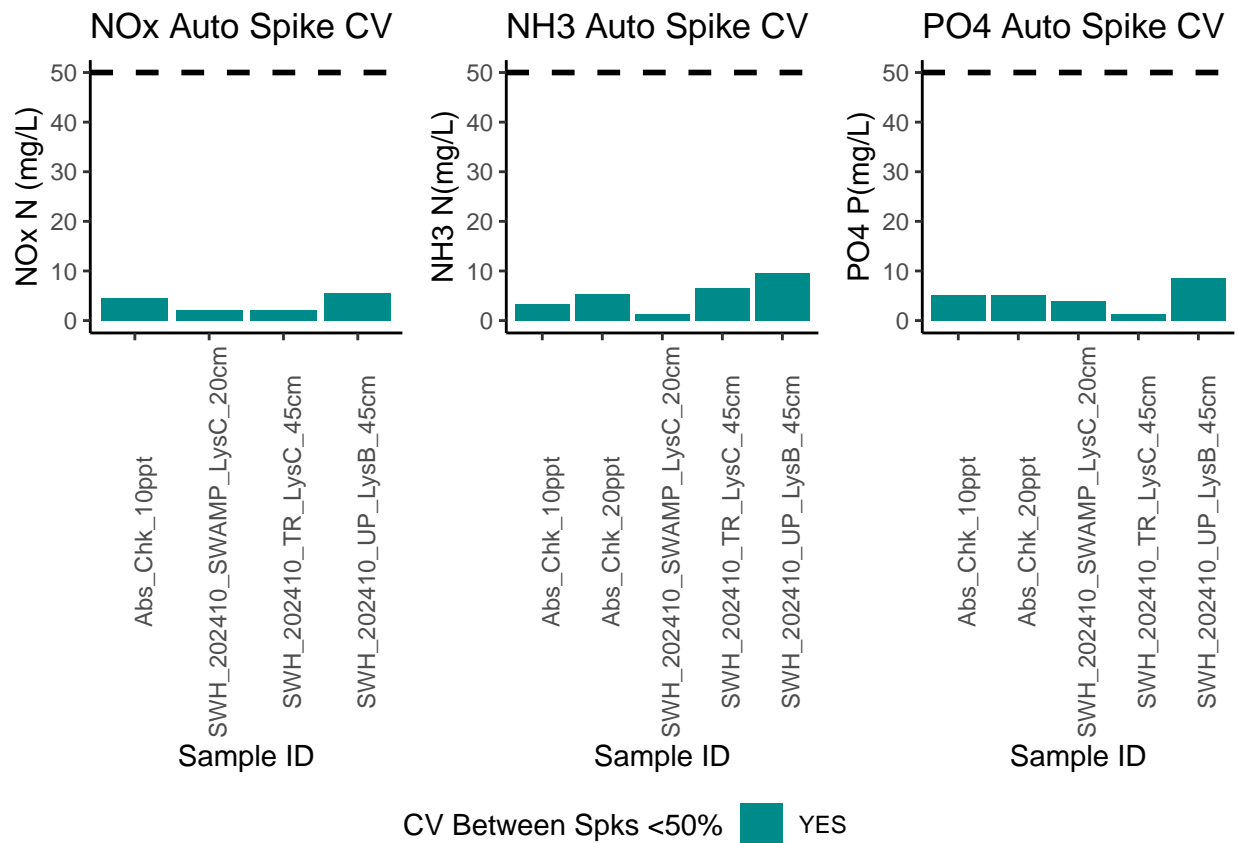


0.8 Spikes

[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, 64,  
## 65, 66, 98, 99, 100].
```

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

```
## Check Sample IDs with Metadata
```

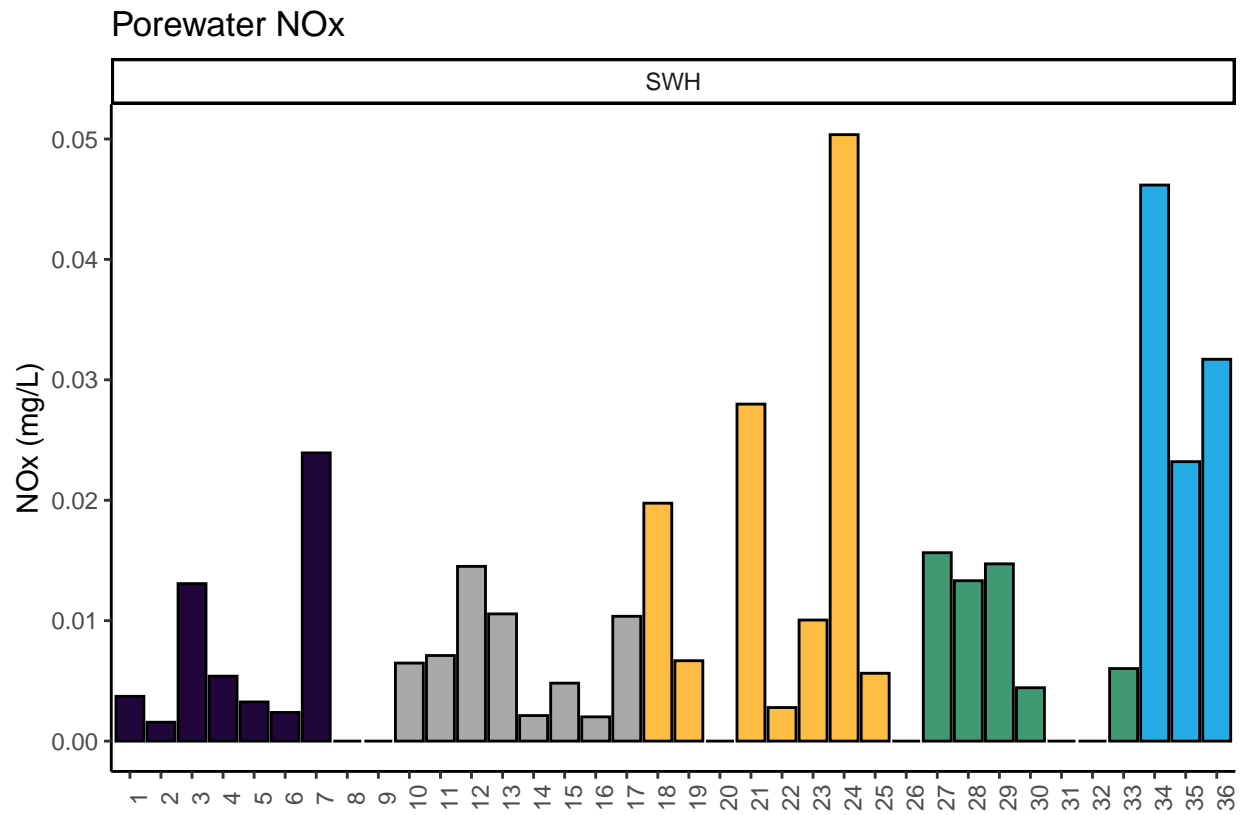
```
## Some sample IDs are missing from metadata.
```

```
## [1] "SWH_202410_SWAMP_LycC_45cm" "SWH_202410_UP_LysC_10cm"
```

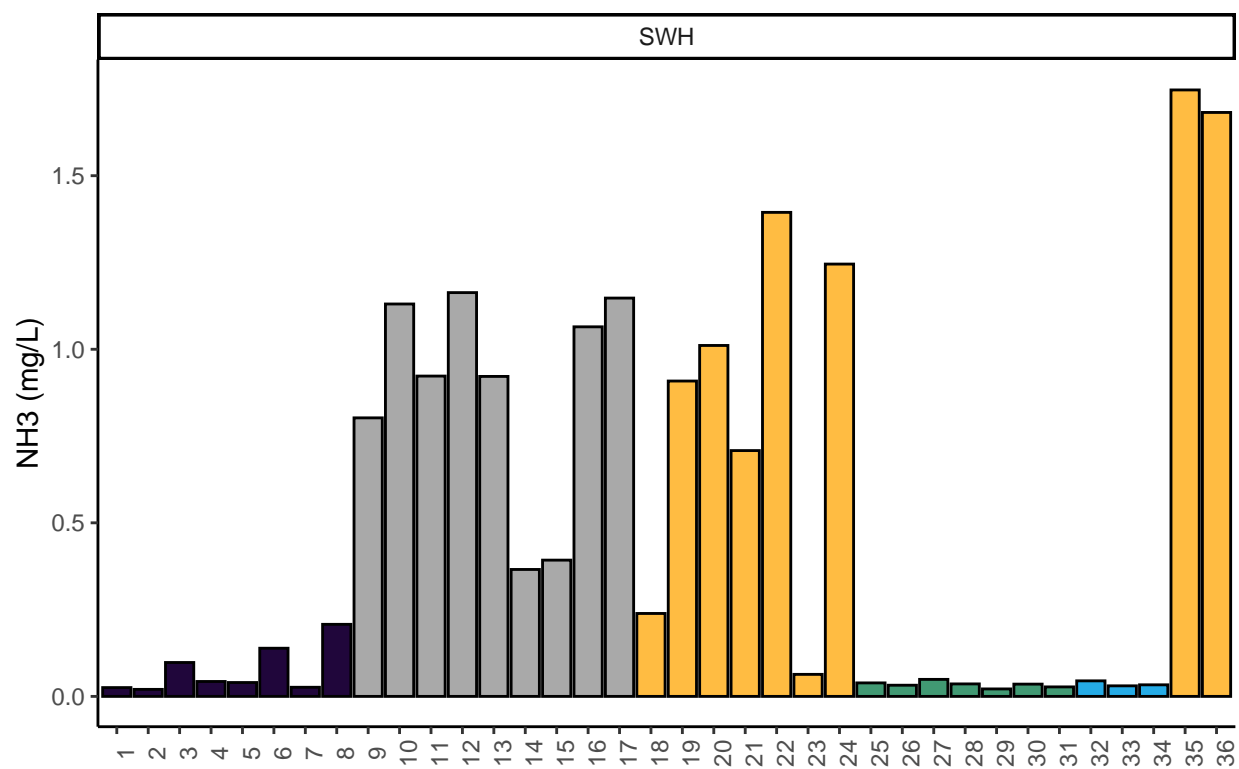
```
## Warning: Expected 5 pieces. Missing pieces filled with 'NA' in 9 rows [34, 35, 36, 64,  
## 65, 66, 98, 99, 100].
```

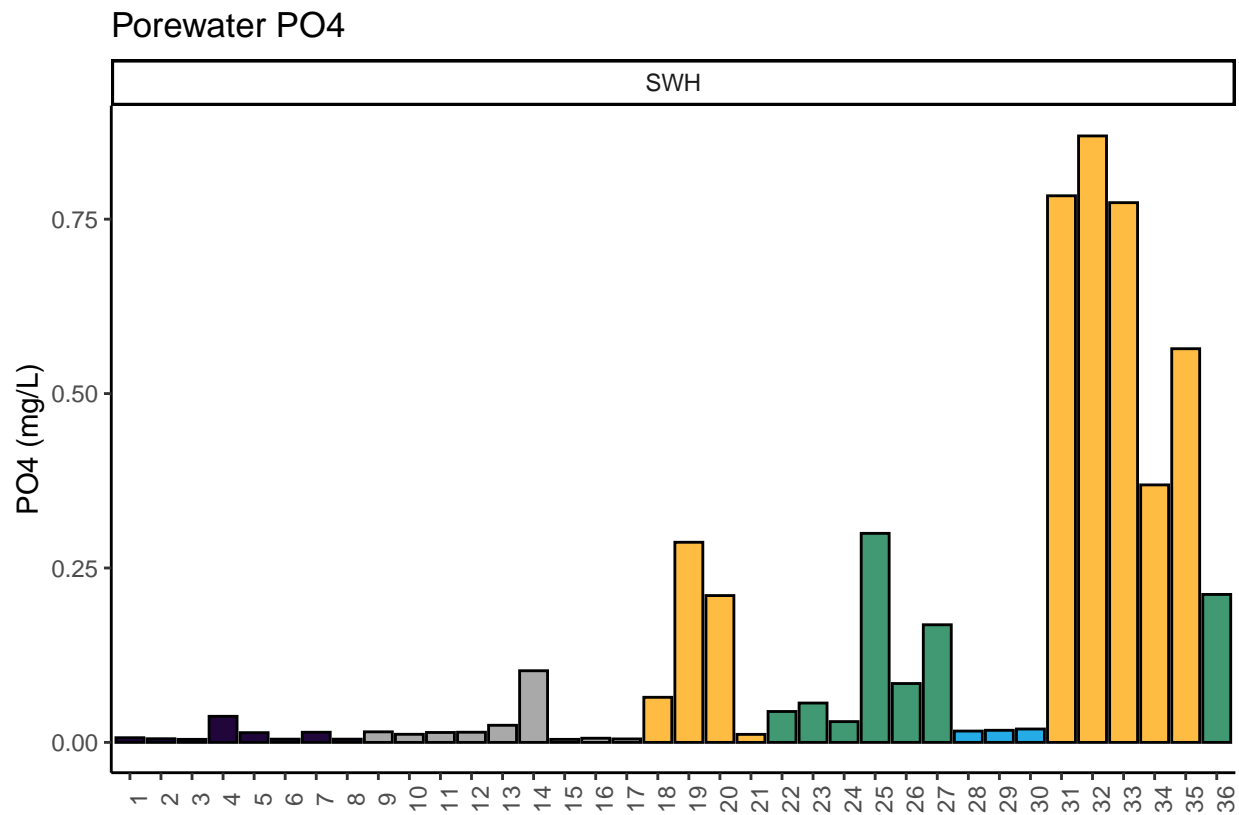
0.14 Visualize Data

Visualize Data



Porewater NH3





0.15 Export Processed Data

#end