



COMPREHENSIVE
ENVIRONMENTAL
INCORPORATED

December 31, 2015

Mr. Chris Countie
Water Supply Manager
Pennichuck Water Works
200 Concord Street
Nashua, NH 03064

**RE: PENNICHUCK WATER WORKS
2015 TRIBUTARY AND GROUNDWATER SAMPLING PROGRAM**

Dear Mr. Countie:

The attached report outlines the results of 2015 tributary and groundwater sampling as part of the ongoing monitoring program. Analysis, conclusions and recommended follow-up actions are provided throughout for each location.

During the August 6, 2015 sampling round, results from two tributary total phosphorus samples were erroneously high. Correspondence with Granite State Analytical indicated samples did not meet their internal quality assurance requirements and should have been reanalyzed, however due to a lab oversight this was not performed. GSA plans to implement unspecified corrective actions to avoid future problems, however it is recommended that CEI collect blind duplicate samples at one random location per sampling round for laboratory analysis of phosphorus to help verify data accuracy. It is also recommended that members of Pennichuck and CEI meet with lab staff prior to commencing 2016 sampling to discuss potential QA/QC concerns. Should ongoing issues occur, CEI can conduct split samples as needed for analysis by an alternate lab.

If you have any questions or require any additional information, please do not hesitate to contact me at (603) 424-8444.

Sincerely,

COMPREHENSIVE ENVIRONMENTAL INC.

Eileen Pannetier
President

cc: Donald Ware, P.E., Chief Operating Officer, Pennichuck Corporation

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2015 TRIBUTARY AND GROUNDWATER SAMPLING PROGRAM

for

Pennichuck Water Works

December 2015

Prepared For:
Pennichuck Water Works
200 Concord Street
Nashua, NH 03064

Prepared By:
Comprehensive Environmental Inc.
21 Depot Street
Merrimack, NH 03054



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Attachment A: Tributary Sampling Data, 2010 through 2015

Attachment B: Groundwater Sampling Data, 2012 through 2015

Attachment C: Tributary Graphs

Attachment D: Groundwater Graphs



Background

Pennichuck Water Works has been collecting data from the watershed since 1991. Over this time, sampling locations and parameters varied until around 2005, at which time a sampling program using a specific set of water quality parameters was developed for nine tributary locations within the watershed. In 2013, Pennichuck also initiated a groundwater sampling program to evaluate phosphorus concentrations in the groundwater and how this compares with phosphorus concentrations found in the tributaries. This report concentrates on more recent data collected from 2010 through 2015.

Monitoring Locations

The nine groundwater and tributary sampling locations are shown on **Figure 1** with descriptions provided in **Table 1**.

Table 1 – Groundwater and Tributary Sampling Locations

Sampling Location	Location / Description
01-BFB	Boire Field Brook, Tinker Road
09-PEN	Holt Pond Dam
09T-PEN	Route 101A Bridge
09-XPB ¹ (01-CML)	Unnamed Tributary to Pennichuck Brook on 101A. (Craftsman Lane, Merrimack Valley Baptist Church, Merrimack)
01-WCH	South Merrimack Road Bridge
01-XWB	Unnamed Tributary to Witches Brook
02-WCH ¹ (01-HAY)	Ames Road Bridge on Route 122. (Hayden Road, Hollis, in PSNH electrical line easement)
12-PEN	Nevins Road Bridge
01-MUD	Farley Road Bridge

¹Groundwater monitoring wells not installed adjacent to tributary sampling locations.

Data Collection

In 2015, water samples were collected on the following dates: April 13th, May 7th, July 16th, August 6th, August 27th, September 24th, and November 5th. Tributary and groundwater samples were analyzed by assorted laboratories during the sampling program, most recently Granite State Analytical and Chemserve. Tributaries and groundwater are field-analyzed for conductivity, dissolved oxygen, pH, and temperature, with lab analysis conducted for ammonia, chloride, nitrates, nitrites, Total Kjeldahl Nitrogen (TKN), total nitrogen, and total phosphorus. Tributaries are also analyzed for E.coli, fecal coliform, and total suspended solids (TSS).

Data Analysis

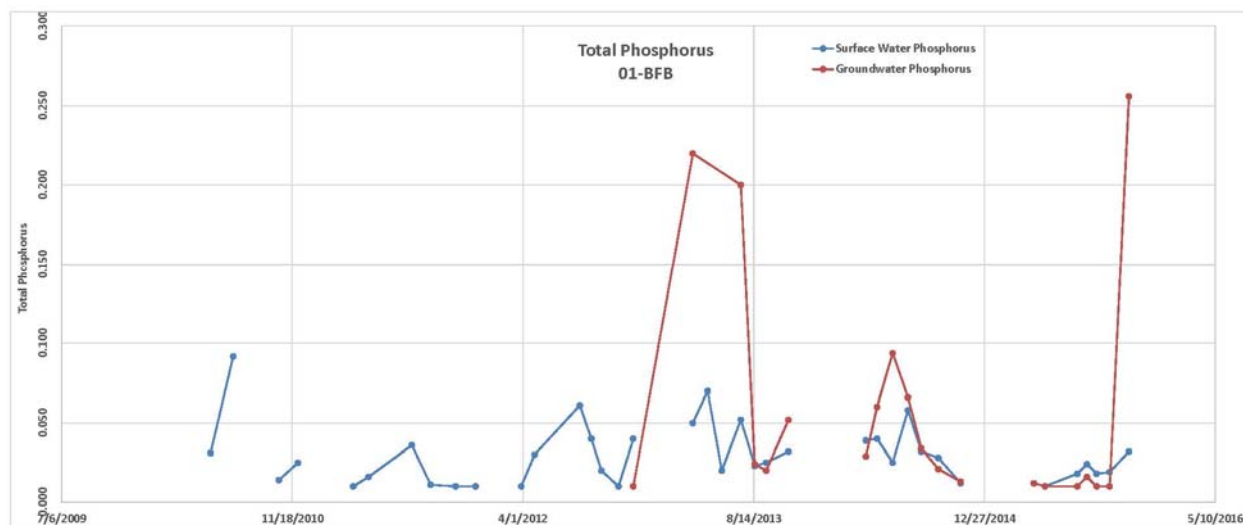
The following sections provide a brief data analysis for each location. For additional information, see the attachments at the end of this report.



01-BFB



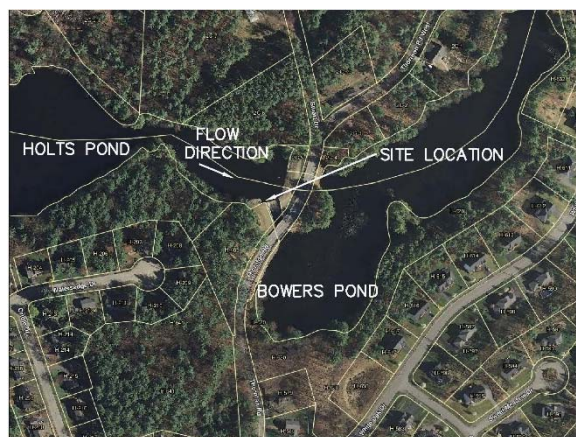
Sampling location 01-BFB is located at the culvert intersection of Tinker Rd. and Boire Field Brook. Immediate vicinity of the sampling location is residential but the upstream sub-watershed includes commercialized sections of 101A in Nashua, including Nashua Municipal Airport.



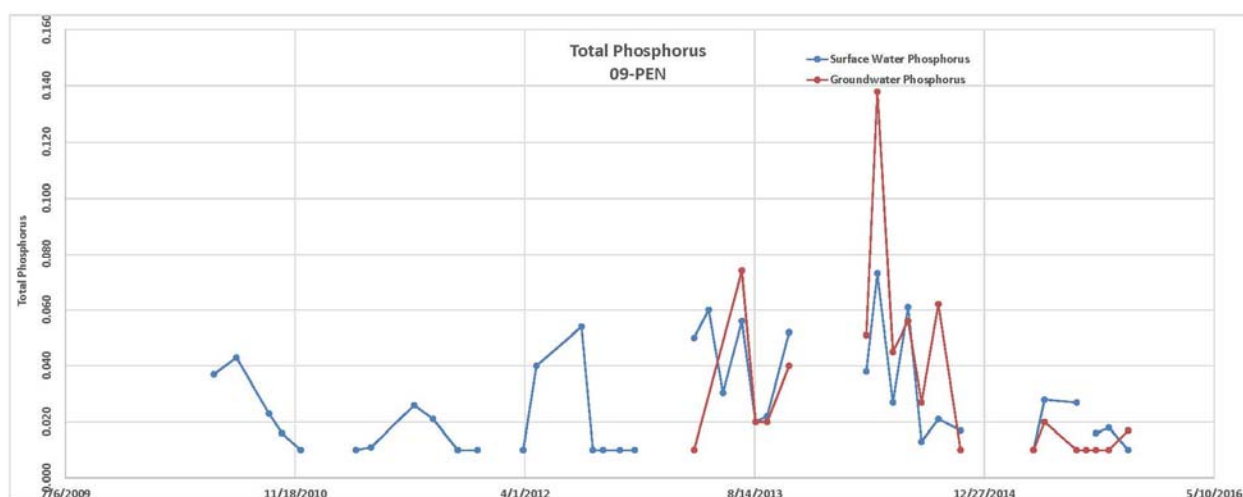
Analysis

The phosphorus results for 01-BFB have generally been moderate with occasional spikes during summer months when flow is low. Conductivity and chloride results are quite high and closely mimic each other, with the highest levels during the spring months and the lowest levels coming in the fall. This is consistent with large quantities of road salt being applied upstream on local roadways and at the airfield during the winter months and slowly leaching into the tributary when groundwater levels are high. The groundwater phosphorus is periodically quite high but the reason are unknown. Water levels in the well near the brook are generally higher than the streams water level, indicating at least some discharge to the brook.

09-PEN



Sampling location 09-PEN is located on the upstream side of the dam separating Holts and Bowers Ponds.



Note: Surface water data for 8/6/15 was removed due to lab error

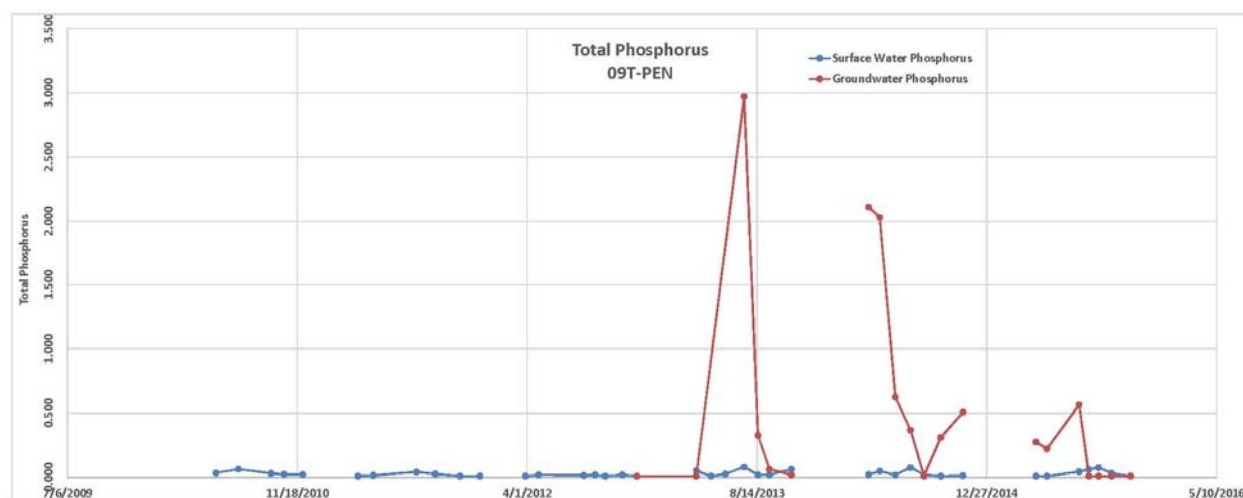
Analysis

Phosphorus levels in the surface water at 09-PEN are generally moderate except after storms or algal blooms, as in the spike shown above on 8/6/15. Since there was little recorded precipitation prior to this spike, it could be related to algal blooms. Groundwater phosphorus at this site has been unreliable due to the strong influence of bedrock in the area. This well should be removed as a result of these local conditions.

09T-PEN



Sampling location 09T-PEN is located at the culvert where Pennichuck Brook passes underneath Route 101A. The terrain at this location is unsuitable for microwell installation so the groundwater sampling is done a few hundred yards downstream, behind the Pennichuck Square shopping complex.



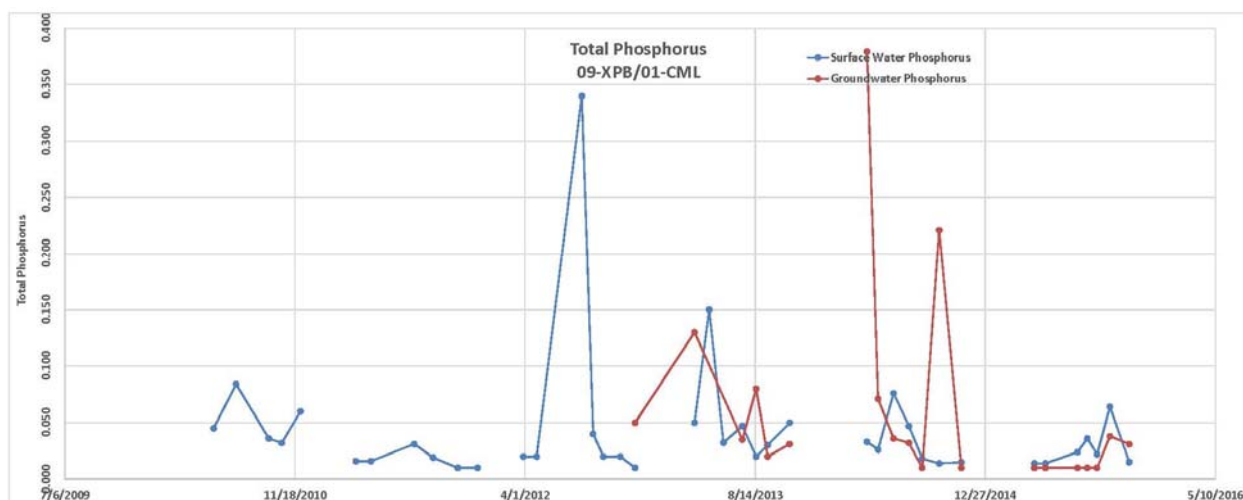
Analysis

Surface water phosphorus levels at this location are low, likely because the brook at this point has just flowed out of the Witches Brook wetland complex. Groundwater is higher in general from the few samples we have, some being extraordinarily high. The cause is unknown but may be due to excessive illegal dumping in this area

09-XPB/01-CML



Sampling location 09-XPB is split into two sites. Groundwater and tributary monitoring takes place at site 01-CML while data logging and stage discharge readings are performed at site 09-XPB, located just south of Rt. 101A.



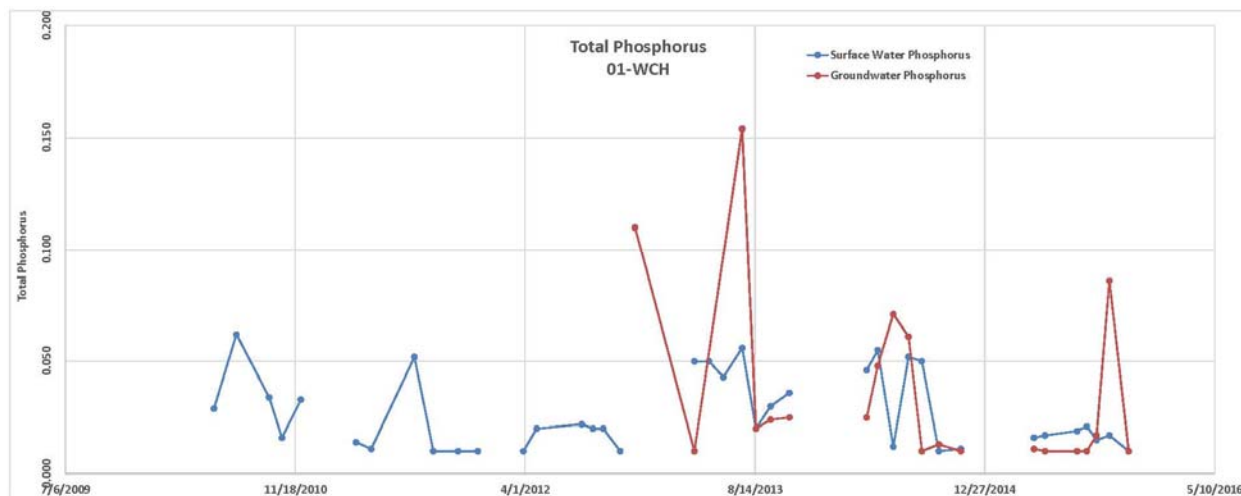
Analysis

Surface water samples suggest very high phosphorus levels from Stump Pond. The sources are unknown, but could include septic system leachate, internal recycling, and other non-point sources of phosphorus. Groundwater Phosphorus levels are also relatively high and may reflect the apparent leakage through the roadway (Craftsman Lane). This culvert is in poor condition and the shoulder and banks have been paved over sloping down to the stream. It is possible that the roadway and culvert, located in Merrimack, will wash out. Additionally, the stage-discharge relationship at this location remains unreliable due to multiple blockages during 2015, and a new relationship should be established during 2016. The groundwater well should also be replaced during 2016 due to recent siltation.

01-WCH



Sampling location 01-WCH is located on South Merrimack Road, just south of a set of railroad tracks. Large wetlands inhabit both sides of the Witches Brook culvert, with the brook forming a meandering channel through the vegetation. Water velocity is typically slow in this area but water levels are deep, especially after heavy rain events.



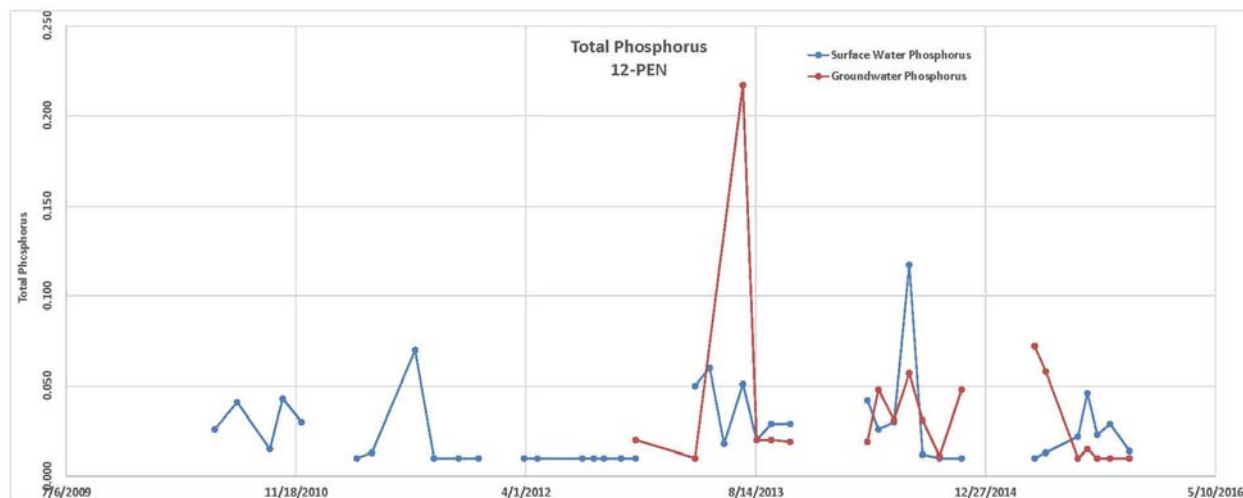
Analysis

Surface water phosphorus levels are not as low as one would expect at this location where brook trout are stocked, although they were quite low in 2015. Groundwater quality was highly variable for unknown reasons but there are not enough data points to see a specific trend. This well is recommended to be replaced as it has been silting in recently.

12-PEN



Sampling location 12-PEN is located where Nevins Road crosses Pennichuck Brook. The watershed is mostly wooded and residential, but there are some small livestock enclosures in the area. Water velocity is generally high while water depth is low. However, there have been periodic beaver dams that have been built downstream which has caused the water in this area to stagnate on occasion.



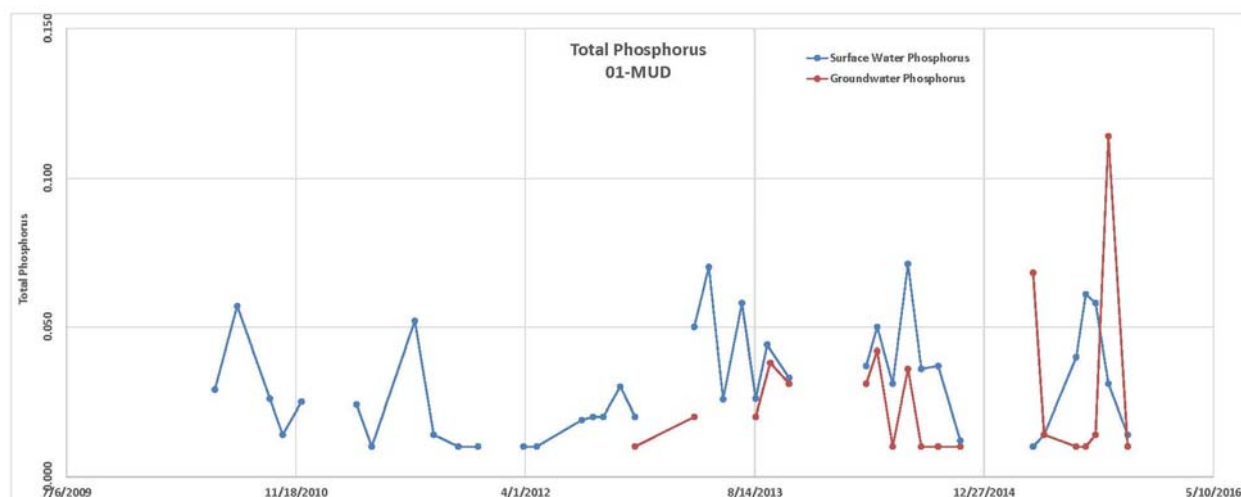
Analysis

Surface water at 12-PEN has had moderate to high levels of phosphorus but this location has periodic beaver dams that sometimes result in stagnant water. A beaver dam or other obstruction was present here during fall 2014 and may have changed the flow characteristics of this location. Therefore, a new stage-discharge relationship should be developed during 2016. Further, this well location requires a replacement due to silting.

01-MUD



Sampling location 01-MUD is located where Muddy Brook crosses underneath Farley Road. Much like 01-WCH, this area consists of a large wetland with the Muddy Brook stream channel meandering through the vegetation. Water velocity is also low and typical water depth high.



Note: the groundwater sample on 7/17/13 was removed as an outlier that was skewing the scale

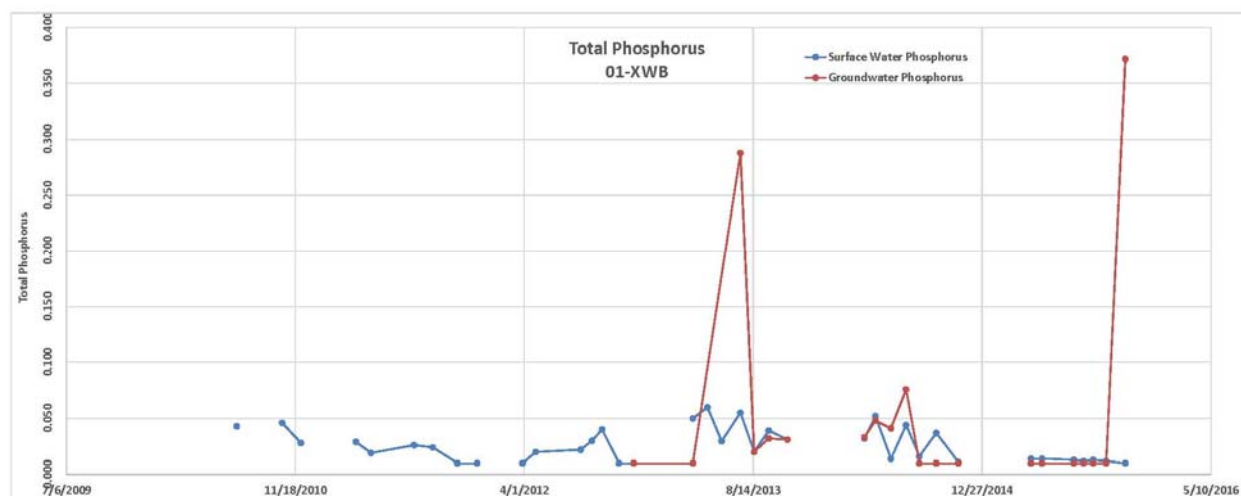
Analysis

The surface and groundwater quality here is usually pretty good, suggesting a “background” level of about 0.04 mg/L.

01-XWB



Sampling location 01-XWB is located on the edge of a farm plot off of Witches Spring Road. The tributary is unnamed and travels through a combination of wooded, residential, agricultural and wetland/swamp areas. The farm 01-XWB is located on is still used lightly for hay production and there are small livestock enclosures in the area. This portion of the tributary is wide and deep, but moves rather slowly.



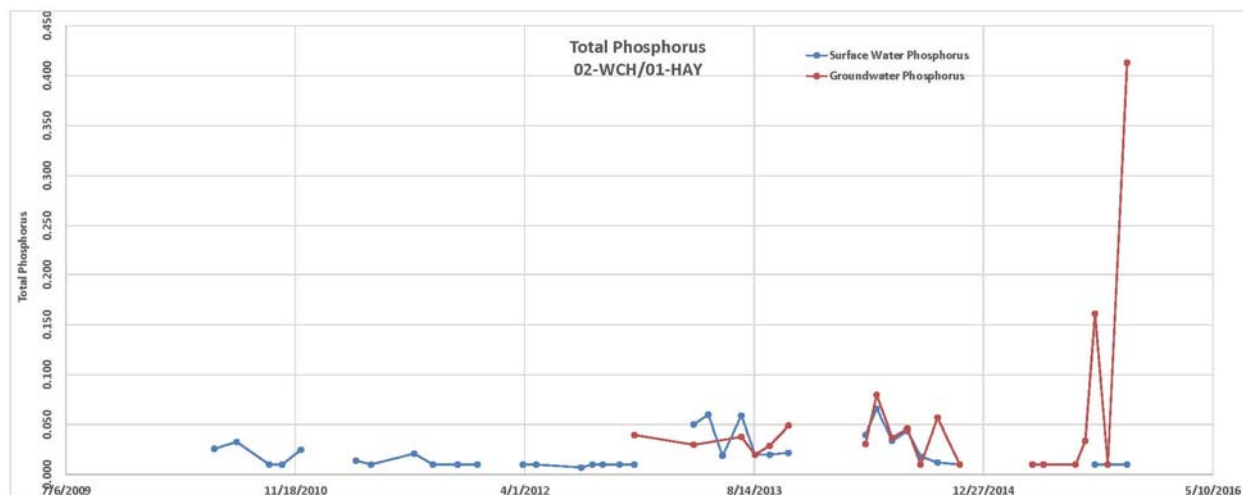
Analysis

Surface water quality at 01-XWB is moderately high in phosphorus. Although groundwater spikes have been seen here, the cause is unknown but may include agricultural inputs.

02-WCH/01-HAY



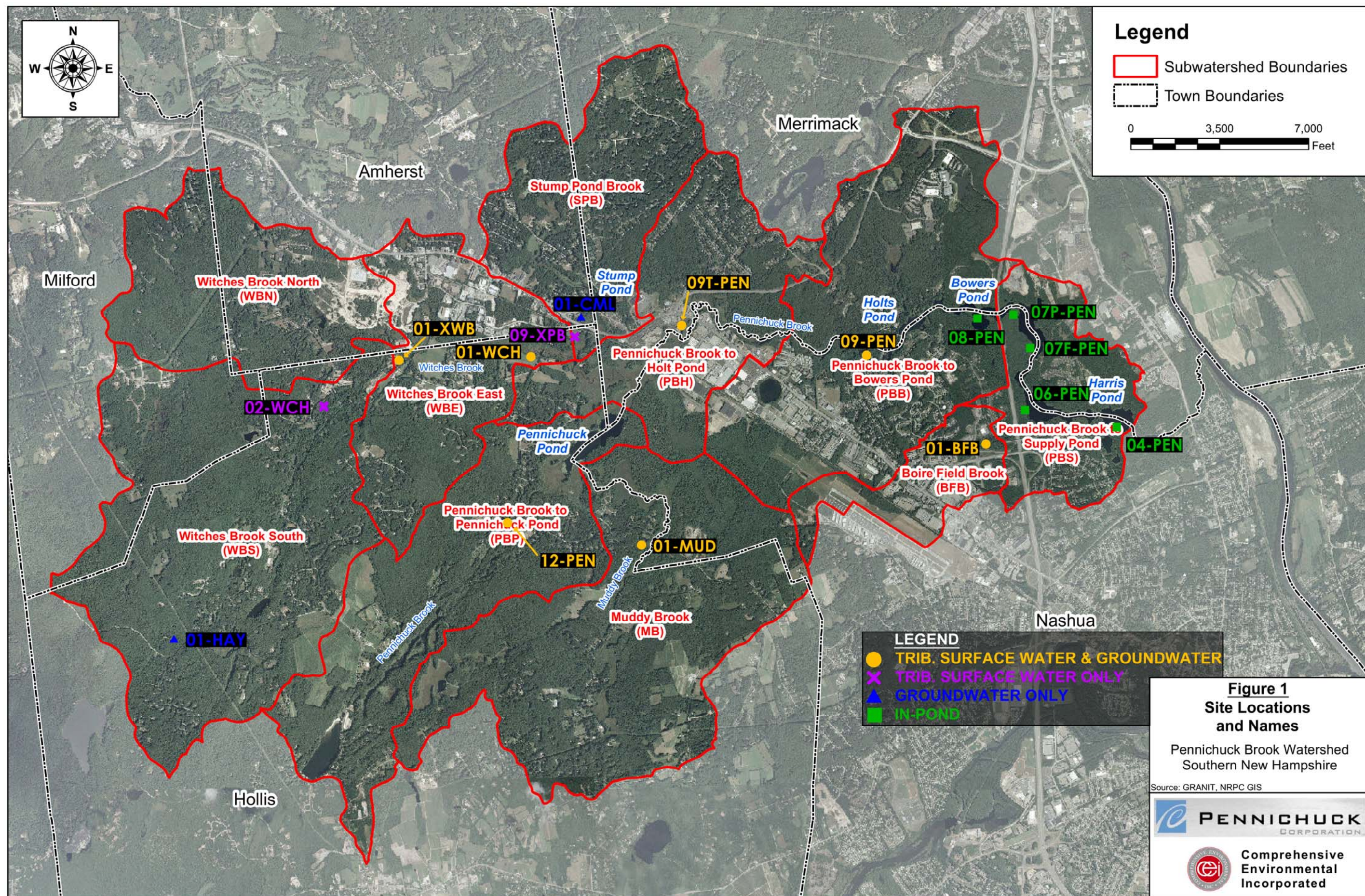
Sampling location 02-WCH is located where Witches Brook flows underneath Ames Road. The brook travels through a largely wooded and residential area of Hollis, NH. This site does not yet have a well for groundwater sampling due to earlier permission issues. The well for this location is located at site 01-HAY which is several miles to the southwest on Haynes Rd, and is used as a “background” groundwater sample.



Note: Surface water data for 8/6/15 was removed due to lab error

Analysis

The surface water phosphorus results at 02-WCH normally exhibit relatively low results, likely representative of close to background in the part of the upper watershed. Groundwater at 01-HAY is misleading because it is quite a small stream that sometimes goes dry. As such, it is a good location for background flow and baseflow as there is little watershed. A staff gauge and surface water monitoring should be added at 01-HAY for purposes of comparing the mostly undeveloped watershed. It is also recommended that a groundwater monitoring well be installed adjacent to tributary location 02-WCH now that permission issues have been resolved



Attachment A:
Tributary Sampling Data, 2010 through 2015



Pennichuck Water Works
Tributary Sampling Data
2010 through 2015

Phosphorus - outlier >0.250 mg/L
Total coliform: exceeds detection limits
All others: non-detect

Station	Date	e Reading	Ammonia	Chloride	Conductivity	DO	E. coli	Fecal Coliform	Nitrate	Nitrite	Nitrate/Nitrite	pH	Temperature	TKN	Total Nitrogen	Total Phosphorus	TSS
01-BFB	1/1/2010																
01-BFB	5/25/2010		0.418 mg/L		768 µS/cm	6.34 mg/L	81.6 cts/100 mL		1 mg/L			7.19 pH units	20.1 °C	0.519 mg/L		0.031 mg/L	16 mg/L
01-BFB	7/13/2010		0.4 mg/L		854 µS/cm	7.06 mg/L	165.8 cts/100 mL		1 mg/L			7.77 pH units	23.4 °C	0.5 mg/L		0.092 mg/L	4 mg/L
01-BFB	9/22/2010																
01-BFB	10/20/2010		0.2 mg/L		600 µS/cm		90.6 cts/100 mL		1 mg/L			8.31 pH units	9.1 °C	0.5 mg/L		0.014 mg/L	4 mg/L
01-BFB	11/30/2010	0.51	0.2 mg/L		700 µS/cm		12.2 cts/100 mL		1 mg/L			5.53 pH units	3.8 °C	0.5 mg/L		0.025 mg/L	4 mg/L
01-BFB	1/1/2011																
01-BFB	3/30/2011	0.64	0.2 mg/L		925 µS/cm	11.80 mg/L	3.1 cts/100 mL					7.24 pH units	5.8 °C	0.5 mg/L		0.01 mg/L	4 mg/L
01-BFB	5/2/2011	0.53	0.49 mg/L		858 µS/cm	9.65 mg/L	21.3 cts/100 mL					7.45 pH units	13.4 °C	0.5 mg/L		0.016 mg/L	4 mg/L
01-BFB	8/4/2011	0.38	0.2 mg/L		720 µS/cm	7.40 mg/L	148.3 cts/100 mL					6.90 pH units	22.1 °C	0.5 mg/L		0.036 mg/L	4 mg/L
01-BFB	9/14/2011	0.49	0.2 mg/L		638 µS/cm	7.34 mg/L	248.1 cts/100 mL					7.30 pH units	20.4 °C	0.5 mg/L		0.011 mg/L	4 mg/L
01-BFB	11/7/2011	0.62	0.2 mg/L		658 µS/cm	10.88 mg/L	14.5 cts/100 mL					7.17 pH units	6.5 °C	0.5 mg/L		0.01 mg/L	4 mg/L
01-BFB	12/20/2011	0.58	0.2 mg/L		650 µS/cm	11.73 mg/L	26.5 cts/100 mL					7.21 pH units	4.4 °C	0.5 mg/L		0.01 mg/L	4 mg/L
01-BFB	1/1/2012																
01-BFB	3/28/2012	0.53	0.05 mg/L		820 µS/cm	10.22 mg/L	10.9 cts/100 mL					7.16 pH units	7.8 °C	0.5 mg/L		0.01 mg/L	5 mg/L
01-BFB	4/26/2012	0.54	0.05 mg/L		477 µS/cm	9.42 mg/L	44.1 cts/100 mL					6.99 pH units	10.6 °C	0.7 mg/L		0.03 mg/L	5 mg/L
01-BFB	8/2/2012	0.41	0.06 mg/L		558 µS/cm	6.00 mg/L	1046.2 cts/100 mL					6.92 pH units	22.7 °C	0.5 mg/L		0.061 mg/L	8 mg/L
01-BFB	8/27/2012		0.05 mg/L		596 µS/cm	7.34 mg/L	166.4 cts/100 mL					7.20 pH units	20.5 °C	0.5 mg/L		0.04 mg/L	7 mg/L
01-BFB	9/18/2012	0.41	0.05 mg/L		666 µS/cm	8.73 mg/L	35 cts/100 mL					7.43 pH units	16.9 °C	0.5 mg/L		0.02 mg/L	5 mg/L
01-BFB	10/25/2012	0.46	0.05 mg/L		576 µS/cm	8.06 mg/L	19.9 cts/100 mL					6.95 pH units	11.7 °C	0.5 mg/L		0.01 mg/L	5 mg/L
01-BFB	11/26/2012	0.55		150 mg/L	470 µS/cm	11.84 mg/L				0.5 mg/L		6.78 pH units	2.8 °C	0.5 mg/L	0.5 mg/L	0.04 mg/L	
01-BFB	1/1/2013																
01-BFB	4/4/2013		0.2 mg/L	240 mg/L	930 µS/cm	10.76 mg/L	1 cts/100 mL	1 cts/100 mL			0.5 mg/L	6.86 pH units	4.8 °C	0.5 mg/L	0.8 mg/L	0.05 mg/L	6 mg/L
01-BFB	5/6/2013	0.62	0.2 mg/L		813 µS/cm	10.23 mg/L	7.3 cts/100 mL	0				6.87 pH units	19.2 °C	0.5 mg/L		0.07 mg/L	6 mg/L
01-BFB	6/6/2013	0.52	0.2 mg/L		512 µS/cm	6.28 mg/L	79.4 cts/100 mL	17 cts/100 mL				6.67 pH units	18.2 °C	0.5 mg/L		0.02 mg/L	6 mg/L
01-BFB	7/17/2013	0.59	0.2 mg/L	167 mg/L	718 µS/cm	8.35 mg/L	140 cts/100 mL	260 cts/100 mL	0.38 mg/L	0.2 mg/L	0.38 mg/L	6.82 pH units	23.6 °C	0.5 mg/L	0.38 mg/L	0.052 mg/L	6 mg/L
01-BFB	8/16/2013	0.50	0.2 mg/L	139 mg/L	509 µS/cm	7.35 mg/L	98.5 cts/100 mL	140 cts/100 mL	0.3 mg/L	0.2 mg/L	0.3 mg/L	6.79 pH units	18.4 °C	0.5 mg/L	0.3 mg/L	0.023 mg/L	6 mg/L
01-BFB	9/10/2013	0.48	0.2 mg/L	155 mg/L	533 µS/cm	11.51 mg/L	71.7 cts/100 mL	0	0.28 mg/L	0.2 mg/L	0.28 mg/L	6.89 pH units	17.3 °C	0.5 mg/L	0.28 mg/L	0.025 mg/L	6 mg/L
01-BFB	10/28/2013	0.43	0.1 mg/L	146 mg/L	417 µS/cm	10.32 mg/L	21.3 cts/100 mL	80 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.86 pH units	6.1 °C	0.5 mg/L	0.2 mg/L	0.032 mg/L	6 mg/L
01-BFB	1/1/2014																
01-BFB	4/14/2014	0.62	0.2 mg/L	259 mg/L	990 µS/cm		17.3 cts/100 mL	28 cts/100 mL	0.55 mg/L	0.2 mg/L	0.55 mg/L	7.45 pH units	10.3 °C	0.2 mg/L	0.55 mg/L	0.039 mg/L	4 mg/L
01-BFB	5/8/2014	0.54	0.2 mg/L	246 mg/L	934 µS/cm	9.89 mg/L	16.1 cts/100 mL	10 cts/100 mL	0.33 mg/L	0.2 mg/L	0.33 mg/L	7.12 pH units	12.4 °C	0.2 mg/L	0.33 mg/L	0.04 mg/L	4 mg/L
01-BFB	6/11/2014	0.46	0.2 mg/L	215 mg/L	531 µS/cm	8.28 mg/L	1300 cts/100 mL	1350 cts/100 mL	0.26 mg/L	0.2 mg/L	0.26 mg/L	7.97 pH units	17.6 °C	0.2 mg/L	0.26 mg/L	0.025 mg/L	4 mg/L
01-BFB	7/14/2014	0.42	0.2 mg/L	172 mg/L	474 µS/cm	7.79 mg/L	201 cts/100 mL	151 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	7.63 pH units	23.2 °C	0.2 mg/L	0.2 mg/L	0.058 mg/L	4 mg/L
01-BFB	8/12/2014	0.42	0.2 mg/L	138 mg/L	402 µS/cm	8.34 mg/L	154 cts/100 mL	180 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	7.20 pH units	21.3 °C	0.2 mg/L	0.2 mg/L	0.032 mg/L	4 mg/L
01-BFB	9/18/2014	0.36	0.2 mg/L	164 mg/L	418 µS/cm	10.61 mg/L	24.6 cts/100 mL	24 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.56 pH units	13.4 °C	0.2 mg/L	0.2 mg/L	0.028 mg/L	4 mg/L
01-BFB	11/5/2014	0.52	0.2 mg/L	157 mg/L	400 µS/cm	11.38 mg/L	9.6 cts/100 mL	14 cts/100 mL	0.3 mg/L	0.2 mg/L	0.3 mg/L	7.18 pH units	9.7 °C	0.2 mg/L	0.3 mg/L	0.012 mg/L	4 mg/L
01-BFB	1/1/2015																
01-BFB	4/13/2015	0.66	0.2 mg/L	257 mg/L	1022 µS/cm	11.70 mg/L	1 cts/100 mL	2 cts/100 mL	0.5 mg/L	0.2 mg/L	0.5 mg/L	7.66 pH units	9.3 °C	1.14 mg/L	1.64 mg/L	0.012 mg/L	4 mg/L
01-BFB	5/7/2015	0.53	0.2 mg/L	251 mg/L	970 µS/cm	9.70 mg/L	30.9 cts/100 mL	34 cts/100 mL	0.25 mg/L	0.2 mg/L	0.25 mg/L		14.2 °C	0.557 mg/L	0.81 mg/L	0.01 mg/L	4 mg/L
01-BFB	7/16/2015	0.46	0.2 mg/L	194 mg/L	708 µS/cm	4.04 mg/L	127 cts/100 mL	310 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	7.52 pH units	18.7 °C	0.537 mg/L	0.537 mg/L	0.018 mg/L	4 mg/L
01-BFB	8/6/2015	0.38	0.2 mg/L	207 mg/L	774 µS/cm	5.35 mg/L	162 cts/100 mL	110 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	7.66 pH units	18.9 °C	1.18 mg/L	1.18 mg/L	0.024 mg/L	4 mg/L
01-BFB	8/27/2015	0.32	0.2 mg/L	203 mg/L	742 µS/cm	5.96 mg/L	55.6 cts/100 mL	110 cts/100 mL	0.28 mg/L	0.2 mg/L	0.28 mg/L	7.62 pH units	19.3 °C	0.495 mg/L	0.78 mg/L	0.018 mg/L	4 mg/L
01-BFB	9/24/2015	0.32	0.2 mg/L	171 mg/L	561 µS/cm	7.45 mg/L	53 cts/100 mL	50 cts/100 mL	0.22 mg/L	0.2 mg/L	0.22 mg/L	8.27 pH units	14.2 °C	0.569 mg/L	0.79 mg/L	0.019 mg/L	4 mg/L
01-BFB	11/5/2015	0.38	0.2 mg/L	150 mg/L	481.3 µS/cm		5.2 cts/100 mL	5 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	7.82 pH units	8.9 °C	0.2 mg/L	0.2 mg/L	0.032 mg/L	4 mg/L
09-PEN	5/25/2010		0.316 mg/L		186.6 µS/cm	7.43 mg/L	52.9 cts/100 mL	1 mg/L	1 mg/L			6.72 pH units	21.5 °C	0.641 mg/L		0.037 mg/L	4 mg/L
09-PEN	7/13/2010		0.4 mg/L		361 µS/cm	7.61 mg/L	19.9 cts/100 mL	1 mg/L	1 mg/L			7.10 pH units	25 °C	0.5 mg/L		0.043 mg/L	4 mg/L
09-PEN	9/22/2010	4.10	0.2 mg/L		380 µS/cm		6.3 cts/100 mL	1 mg/L	1 mg/L			7.72 pH units	17.6 °C	0.5 mg/L		0.023 mg/L	4 mg/L
09-PEN	10/20/2010		0.2 mg/L		200 µS/cm		25.9 cts/100 mL	1 mg/L	1 mg/L			7.06 pH units	9.1 °C	0.5 mg/L		0.016 mg/L	4 mg/L
09-PEN	11/30/2010		0.2 mg/L		210 µS/cm		12.2 cts/100 mL	1 mg/L	1 mg/L			5.92 pH units	2 °C	0.5 mg/L		0.01 mg/L	4 mg/L
09-PEN	1/1/2011																
09-PEN	3/30/2011		0.2 mg/L		153.5 µS/cm	10.85 mg/L	16.1 cts/100 mL					6.70 pH units	5 °C	0.5 mg/L		0.01 mg/L	4 mg/L
09-PEN	5/2/2011		0.529 mg/L		160.9 µS/cm	7.27 mg/L	23.3 cts/100 mL					6.67 pH units	15 °C	0.5 mg/L		0.011 mg/L	4 mg/L
09-PEN	8/4/2011		0.2 mg/L		258 µS/cm	5.30 mg/L	18.3 cts/100 mL					6.79 pH units	23.3 °C	0.5 mg/L		0.026 mg/L	4 mg/L
09-PEN	9/14/2011		0.2 mg/L		142.9 µS/cm	3.51 mg/L	49.5 cts/100 mL					6.73 pH units	21.6 °C	0.5 mg/L		0.021 mg/L	4 mg/L
09-PEN	11/7/2011		0.2 mg/L		88.7 µS/cm	9.82 mg/L	12.1 cts/100 mL					6.34 pH units	5.9 °C	0.5 mg/L		0.01 mg/L	4 mg/L
09-PEN	12/20/2011		0.2 mg/L		137.3 µS/cm	10.85 mg/L	7.5 cts/100 mL					6.75 pH units	1.2 °C	0.5 mg/L		0.01 mg/L	4 mg/L
09-PEN	1/1/2012																
09-PEN	3/28/2012	0.31	0.05 mg/L		170.3 µS/cm	10.75 mg/L	28.8 cts/100 mL					6.95 pH units	6.5 °C	0.5 mg/L		0.01 mg/L	5 mg/L
09-PEN	4/26/2012	0.45	0.05 mg/L		117.6 µS/cm	7.07 mg/L	27.2 cts/100 mL					6.41 pH units	11.8 °C	0.5 mg/L		0.04 mg/L	5 mg/L
09-PEN	8/2/2012	0.09	0.05 mg/L		370 µS/cm	3.18 mg/L	9.8 cts/100 mL					6.58 pH units	23.9 °C	0.5 mg/L		0.054 mg/L	5 mg/L
09-PEN	8/27/2012		0.09 mg/L		273 µS/cm	4.35 mg/L	6.3 cts/100 mL					6.65 pH units	22.3 °C	0.5 mg/L		0.01 mg/L	5 mg/L
09-PEN	9/18/2012	0.05	0.05 mg/L		390 µS/cm	6.10 mg/L	8.6 cts/100 mL					6.31 pH units	17.1 °C	0.5 mg/L		0.01 mg/L	21 mg/L
09-PEN	10/25/2012	0.15	0.05 mg/L		217.1 µS/cm	7.31 mg/L	21.1 cts/100 mL					6.52 pH units	11.4 °C	0.5 mg/L		0.01 mg/L	5 mg/L
09-PEN	11/26/2012	0.30		58 mg/L	214.5 µS/cm	10.49 mg/L					0.5 mg/L	6.43 pH units	1.7 °C	0.5 mg/L	0.5 mg/L	0.01 mg/L	
09-PEN	1/1/2013																
09-PEN	4/4/2013	0.46	0.2 mg/L	27 mg/L	127.3 µS/cm	10.09 mg/L	18.7 cts/100 mL	6 cts/100 mL			0.5 mg/L	6.56 pH units	4.7 °C	0.5 mg/L	0.5 mg/L	0.05 mg/L	6 mg/L
09-PEN	5/6/2013	0.30	0.365 mg/L		195.9 µS/cm	7.26 mg/L	52 cts/100 mL	22 cts/100 mL				7.11 pH units	20.1 °C	0.5 mg/L		0.06 mg/L	6 mg/L
09-PEN	6/6/2013	0.25	0.2 mg/L		138.5 µS/cm	5.36 mg/L	49.6 cts/100 mL	48 cts/100 mL				6.42 pH units	21.2 °C	0.5 mg/L		0.0304 mg/L	6 mg/L
09-PEN	7/17/2013	0.30	0.2 mg/L	41 mg/L	188.2 µS/cm	2.40 mg/L	34.5 cts/100 mL	70 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.64 pH units	26.4 °C	0.5 mg/L	0.2 mg/L	0.056 mg/L	6 mg/L
09-PEN	8/16/2013	0.35	0.2 mg/L	38 mg/L	141.7 µS/cm	3.49 mg/L	52.8 cts/100 mL	260 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.59 pH units	19.6 °C	0.5 mg/L	0.2 mg/L	0.02 mg/L	6 mg/L
09-PEN	9/10/2013	0.18	0.2 mg/L	71 mg/L	226 µS/cm	8.75 mg/L	21.3 cts/100 mL	48 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.84 pH units	17.8 °C	0.5 mg/L	0.2 mg/L	0.022 mg/L	6 mg/L
09-PEN	10/28/2013	0.20	0.1 mg/L	68 mg/L	179.5 µS/cm	9.16 mg/L	18.7 cts/100 mL	15 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.58 pH units	7.7 °C	0.5 mg/L	0.2 mg/L	0.052 mg/L	6 mg/L
09-PEN	1/1/2014																
09-PEN	4/14/2014	0.54	0.2 mg/L	33 mg/L	150 µS/cm		27.8 cts/100 mL	26 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg						

Phosphorus - outlier >0.250 mg/L
Total coliform: exceeds detection limits
All others: non-detect

Station	Date	e Reading	Ammonia	Chloride	Conductivity	DO	E. coli	Fecal Coliform	Nitrate	Nitrite	Nitrate/Nitrite	pH	Temperature	TKN	Total Nitrogen	Total Phosphorus	TSS
09T-PEN	1/1/2010																
09T-PEN	5/25/2010	2.21	0.1 mg/L		171.2 µS/cm	5.71 mg/L	28.8 cts/100 mL		1 mg/L			6.54 pH units	22.9 °C	0.5 mg/L		0.034 mg/L	4 mg/L
09T-PEN	7/13/2010	2.05	0.4 mg/L		251 µS/cm	1.39 mg/L	75.9 cts/100 mL		1 mg/L			6.67 pH units	23.8 °C	0.5 mg/L		0.062 mg/L	4 mg/L
09T-PEN	9/22/2010	2.05	0.2 mg/L		780 µS/cm		146.7 cts/100 mL		1 mg/L			7.14 pH units	17.1 °C	0.5 mg/L		0.031 mg/L	4 mg/L
09T-PEN	10/20/2010	1.98	0.2 mg/L		150 µS/cm		25.3 cts/100 mL		1 mg/L			7.51 pH units	8.5 °C	0.5 mg/L		0.024 mg/L	4 mg/L
09T-PEN	11/30/2010	1.92	0.2 mg/L		170 µS/cm		28.1 cts/100 mL		1 mg/L			5.80 pH units	2.4 °C	0.5 mg/L		0.022 mg/L	4 mg/L
09T-PEN	1/1/2011																
09T-PEN	3/30/2011	2.81	0.2 mg/L		137.6 µS/cm	10.72 mg/L	1 cts/100 mL					6.34 pH units	5.1 °C	0.5 mg/L		0.01 mg/L	4 mg/L
09T-PEN	5/2/2011	2.54	0.297 mg/L		142 µS/cm	8.61 mg/L	17.3 cts/100 mL					6.68 pH units	16.1 °C	0.5 mg/L		0.016 mg/L	4 mg/L
09T-PEN	8/4/2011	1.99	0.2 mg/L		193.9 µS/cm	2.88 mg/L	39.3 cts/100 mL					6.47 pH units	23 °C	0.5 mg/L		0.041 mg/L	4 mg/L
09T-PEN	9/14/2011		0.2 mg/L		130.2 µS/cm	2.02 mg/L	25.6 cts/100 mL					6.40 pH units	21.5 °C	0.5 mg/L		0.026 mg/L	4 mg/L
09T-PEN	11/7/2011		0.2 mg/L		75.9 µS/cm	8.40 mg/L	3.1 cts/100 mL					6.09 pH units	5 °C	0.5 mg/L		0.01 mg/L	4 mg/L
09T-PEN	12/20/2011		0.2 mg/L		127 µS/cm	10.76 mg/L	1 cts/100 mL					6.46 pH units	1.3 °C	0.5 mg/L		0.01 mg/L	4 mg/L
09T-PEN	1/1/2012																
09T-PEN	3/28/2012	4.00	0.05 mg/L		144 µS/cm	8.48 mg/L	24.9 cts/100 mL					6.05 pH units	6.2 °C	0.5 mg/L		0.01 mg/L	5 mg/L
09T-PEN	4/26/2012	2.90	0.05 mg/L		109 µS/cm	7.04 mg/L	7.4 cts/100 mL					6.29 pH units	12.7 °C	0.5 mg/L		0.02 mg/L	5 mg/L
09T-PEN	8/2/2012	1.68	0.05 mg/L		310 µS/cm	1.45 mg/L	228.2 cts/100 mL					6.19 pH units	22.2 °C	0.5 mg/L		0.016 mg/L	5 mg/L
09T-PEN	8/27/2012		0.05 mg/L		264 µS/cm	2.36 mg/L	90.8 cts/100 mL					6.43 pH units	20.3 °C	0.7 mg/L		0.02 mg/L	5 mg/L
09T-PEN	9/18/2012	1.59	0.05 mg/L		366 µS/cm	2.93 mg/L	88.2 cts/100 mL					6.35 pH units	15 °C	0.5 mg/L		0.01 mg/L	5 mg/L
09T-PEN	10/25/2012	1.92	0.05 mg/L		179.2 µS/cm	5.91 mg/L	8.6 cts/100 mL					6.10 pH units	10.1 °C	0.5 mg/L		0.02 mg/L	5 mg/L
09T-PEN	11/26/2012	1.94		45 mg/L	170.9 µS/cm	9.89 mg/L					0.5 mg/L	5.80 pH units	3 °C	0.5 mg/L	0.5 mg/L	0.01 mg/L	
09T-PEN	1/1/2013																
09T-PEN	4/4/2013	3.00	0.2 mg/L	24 mg/L	115.3 µS/cm	9.73 mg/L	4.1 cts/100 mL	3 cts/100 mL				6.22 pH units	5.1 °C	0.5 mg/L	0.5 mg/L	0.05 mg/L	6 mg/L
09T-PEN	5/6/2013	2.24	0.2 mg/L		163.1 µS/cm	8.53 mg/L	21.3 cts/100 mL	12 cts/100 mL				6.95 pH units	20 °C	0.5 mg/L		0.01 mg/L	6 mg/L
09T-PEN	6/6/2013	2.22	0.2 mg/L		116.3 µS/cm	4.05 mg/L	47.1 cts/100 mL	100 cts/100 mL				5.95 pH units	20.1 °C	0.5 mg/L		0.0254 mg/L	6 mg/L
09T-PEN	7/17/2013	2.59	0.2 mg/L	35 mg/L	166.9 µS/cm	0.91 mg/L	46.5 cts/100 mL	100 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.15 pH units	25.6 °C	0.5 mg/L	0.2 mg/L	0.079 mg/L	7 mg/L
09T-PEN	8/16/2013	2.54	0.2 mg/L	33 mg/L	128 µS/cm	2.72 mg/L	75.9 cts/100 mL	240 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.23 pH units	19.3 °C	0.5 mg/L	0.2 mg/L	0.02 mg/L	6 mg/L
09T-PEN	9/10/2013	1.63	0.2 mg/L	59 mg/L	187.8 µS/cm	3.85 mg/L	179 cts/100 mL	220 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	7.06 pH units	16.6 °C	0.5 mg/L	0.2 mg/L	0.02 mg/L	6 mg/L
09T-PEN	10/28/2013	1.84	0.1 mg/L	55 mg/L	147.1 µS/cm	7.57 mg/L	7.4 cts/100 mL	19 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.41 pH units	5.5 °C	0.5 mg/L	0.2 mg/L	0.061 mg/L	6 mg/L
09T-PEN	1/1/2014																
09T-PEN	4/14/2014	3.06	0.2 mg/L	29 mg/L	120 µS/cm		34.5 cts/100 mL	8 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	7.23 pH units	11.8 °C	0.2 mg/L	0.2 mg/L	0.021 mg/L	4 mg/L
09T-PEN	5/8/2014	2.64	0.2 mg/L	34 mg/L	149.2 µS/cm	7.86 mg/L	20.1 cts/100 mL	26 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	7.06 pH units	14.7 °C	0.2 mg/L	0.2 mg/L	0.047 mg/L	4 mg/L
09T-PEN	6/11/2014	2.14	0.2 mg/L	42 mg/L	117 µS/cm	5.12 mg/L	33.1 cts/100 mL	20 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	7.14 pH units	20.5 °C	0.2 mg/L	0.2 mg/L	0.019 mg/L	4 mg/L
09T-PEN	7/14/2014	2.24	0.2 mg/L	41 mg/L	130.9 µS/cm	1.66 mg/L	184 cts/100 mL	87 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.58 pH units	24.4 °C	1.21 mg/L	1.21 mg/L	0.075 mg/L	6 mg/L
09T-PEN	8/12/2014	1.86	0.2 mg/L	54 mg/L	145.2 µS/cm	2.18 mg/L	41.9 cts/100 mL	68 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.63 pH units	20.9 °C	0.2 mg/L	0.2 mg/L	0.021 mg/L	4 mg/L
09T-PEN	9/18/2014	1.72	0.2 mg/L	57 mg/L	138.9 µS/cm	4.16 mg/L	98.5 cts/100 mL	27 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.69 pH units	13.6 °C	0.798 mg/L	0.8 mg/L	0.01 mg/L	4 mg/L
09T-PEN	11/5/2014	3.00	0.2 mg/L	39 mg/L	94.5 µS/cm	7.53 mg/L	12.2 cts/100 mL	16 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	7.08 pH units	7.4 °C	0.2 mg/L	0.2 mg/L	0.014 mg/L	4 mg/L
09T-PEN	1/1/2015																
09T-PEN	4/13/2015	3.30	0.2 mg/L	26 mg/L	121.5 µS/cm	9.96 mg/L	4.1 cts/100 mL	6 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.34 pH units	10 °C	0.876 mg/L	0.88 mg/L	0.01 mg/L	4 mg/L
09T-PEN	5/7/2015	2.53	0.2 mg/L	40 mg/L	171.1 µS/cm	6.72 mg/L	34.1 cts/100 mL	26 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L		19.4 °C	0.478 mg/L	0.48 mg/L	0.01 mg/L	4 mg/L
09T-PEN	7/16/2015	2.30	0.2 mg/L	42 mg/L	185.5 µS/cm	1.01 mg/L	61.3 cts/100 mL	74 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.49 pH units	21.8 °C	0.573 mg/L	0.573 mg/L	0.043 mg/L	7 mg/L
09T-PEN	8/6/2015	1.95	0.2 mg/L	52 mg/L	223.4 µS/cm	0.81 mg/L	73.8 cts/100 mL	343 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.40 pH units	21.4 °C	0.889 mg/L	0.89 mg/L	0.06 mg/L	22 mg/L
09T-PEN	8/27/2015	-	0.2 mg/L	58 mg/L	244 µS/cm	1.02 mg/L	88.2 cts/100 mL	45 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.38 pH units	21.6 °C	0.987 mg/L	0.99 mg/L	0.075 mg/L	8 mg/L
09T-PEN	9/24/2015	1.10	0.2 mg/L	75 mg/L	260 µS/cm	2.75 mg/L	32.2 cts/100 mL	15 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.77 pH units	15.6 °C	0.701 mg/L	0.7 mg/L	0.032 mg/L	4 mg/L
09T-PEN	11/5/2015	1.97	0.2 mg/L	51 mg/L	157.2 µS/cm		4.1 cts/100 mL	5 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.68 pH units	9 °C	0.393 mg/L	0.39 mg/L	0.01 mg/L	4 mg/L
09-XPB	1/1/2010																
09-XPB	5/25/2010		0.1 mg/L		197.3 µS/cm	6.56 mg/L	235.9 cts/100 mL		1 mg/L			6.63 pH units	25.1 °C	1.66 mg/L		0.045 mg/L	4 mg/L
09-XPB	7/13/2010		0.4 mg/L		914 µS/cm	1.00 mg/L	325.5 cts/100 mL		1 mg/L			6.38 pH units	19.4 °C	0.5 mg/L		0.084 mg/L	4 mg/L
09-XPB	9/22/2010		0.2 mg/L		950 µS/cm		4.1 cts/100 mL		1 mg/L			6.94 pH units	15.4 °C	0.5 mg/L		0.036 mg/L	4 mg/L
09-XPB	10/20/2010		0.2 mg/L		230 µS/cm		12.1 cts/100 mL		1 mg/L			6.79 pH units	9.3 °C	0.5 mg/L		0.032 mg/L	8 mg/L
09-XPB	11/30/2010	1.18	0.2 mg/L		210 µS/cm		3.1 cts/100 mL		1 mg/L				5.4 °C	0.5 mg/L		0.060 mg/L	6 mg/L
09-XPB	1/1/2011																
09-XPB	3/30/2011	0.99	0.2 mg/L		210.3 µS/cm	12.26 mg/L	1 cts/100 mL					6.92 pH units	5.6 °C	0.5 mg/L		0.016 mg/L	4 mg/L
09-XPB	5/2/2011	1.24	0.2 mg/L		208.2 µS/cm	10.37 mg/L	12 cts/100 mL					6.98 pH units	17.3 °C	0.5 mg/L		0.016 mg/L	4 mg/L
09-XPB	8/4/2011	0.73	0.2 mg/L		237 µS/cm	3.70 mg/L	108.1 cts/100 mL					6.56 pH units	23.5 °C	0.5 mg/L		0.031 mg/L	4 mg/L
09-XPB	9/14/2011	1.12	0.2 mg/L		183.8 µS/cm	5.45 mg/L	45.5 cts/100 mL					6.61 pH units	21.6 °C	0.5 mg/L		0.019 mg/L	4 mg/L
09-XPB	11/7/2011		0.2 mg/L		130.6 µS/cm	10.26 mg/L	12.2 cts/100 mL					6.47 pH units	5.3 °C	0.5 mg/L		0.01 mg/L	4 mg/L
09-XPB	12/20/2011		0.2 mg/L		188.5 µS/cm	11.70 mg/L	2 cts/100 mL					6.46 pH units	3 °C	0.5 mg/L		0.01 mg/L	4 mg/L
09-XPB	1/1/2012																
09-XPB	3/28/2012	1.28	0.05 mg/L		197.2 µS/cm	9.94 mg/L	16.1 cts/100 mL					6.43 pH units	7.6 °C	0.7 mg/L		0.02 mg/L	7 mg/L
09-XPB	4/26/2012	1.31	0.05 mg/L		144.6 µS/cm	8.86 mg/L	52.8 cts/100 mL					6.70 pH units	14 °C	0.5 mg/L		0.02 mg/L	5 mg/L
09-XPB	8/2/2012	0.00	0.28 mg/L		109.8 µS/cm	0.82 mg/L	547.5 cts/100 mL					7.23 pH units	16.5 °C	0.6 mg/L		0.34 mg/L	5 mg/L
09-XPB	8/27/2012		0.39 mg/L		233 µS/cm	1.76 mg/L	37.3 cts/100 mL					6.45 pH units	17.7 °C	0.9 mg/L		0.04 mg/L	5 mg/L
09-XPB	9/18/2012	0.35	0.28 mg/L		229 µS/cm	2.30 mg/L	32.3 cts/100 mL					6.41 pH units	13.8 °C	0.7 mg/L		0.02 mg/L	10 mg/L
09-XPB	10/25/2012	0.72	0.08 mg/L		210.2 µS/cm	5.91 mg/L	8.6 cts/100 mL					6.61 pH units	13.1 °C	0.5 mg/L		0.02 mg/L	5 mg/L
09-XPB	11/26/2012	0.76		51 mg/L	206.4 µS/cm	9.32 mg/L					0.5 mg/L	6.63 pH units	4 °C	0.5 mg/L	0.5 mg/L	0.01 mg/L	
09-XPB	1/1/2013																
09-XPB	4/4/2013	1.26	0.2 mg/L	45 mg/L	182.6 µS/cm	11.37 mg/L	1 cts/100 mL	0				6.27 pH units	5.5 °C	0.5 mg/L	0.5 mg/L	0.05 mg/L	6 mg/L
09-XPB	5/6/2013	1.10	0.402 mg/L		230 µS/cm	9.90 mg/L	15.8 cts/100 mL	30 cts/100 mL				7.23 pH units	21.4 °C	0.5 mg/L		0.15 mg/L	6 mg/L
09-XPB	6/6/2013	0.92	0.2 mg/L		145.5 µS/cm	5.62 mg/L	11 cts/100 mL	120 cts/100 mL				6.30 pH units	21.2 °C	0.5 mg/L		0.0323 mg/L	6 mg/L
09-XPB	7/17/2013	0.90	0.2 mg/L	46 mg/L	208.2 µS/cm	4.53 mg/L	98.7 cts/100 mL	120 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.17 pH units	27.3 °C	0.5 mg/L	0.2 mg/L	0.047 mg/L	6 mg/L
09-XPB	8/16/2013	0.80	0.2 mg/L	38 mg/L	144.7 µS/cm	4.76 mg/L	38.9 cts/100 mL	60 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.15 pH units	21.3 °C	0.5 mg/L	0.2 mg/L	0.02 mg/L	6 mg/L
09-XPB	9/10/2013		0.2 mg/L	56 mg/L	190.9 µS/cm	5.97 mg/L	12.2 cts/100 mL	24 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	7.35 pH units	17.8 °C	0.5 mg/L	0.2 mg/L	0.03 mg/L	22 mg/L
09-XPB	10/28/2013	0.56	0.1 mg/L	28.9 mg/L	150.9 µS/cm	7.44 mg/L	2 cts/100 mL	3 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	7.08 pH units	9.8 °C	0.5 mg/L	0.2 mg/L	0.05 mg/L	6 mg/L
09-XPB	1/1/2014																

Pennichuck Water Works
Tributary Sampling Data
2010 through 2015

Phosphorus - outlier >0.250 mg/L
Total coliform: exceeds detection limits
All others: non-detect

Station	Date	e Reading	Ammonia	Chloride	Conductivity	DO	E. coli	Fecal Coliform	Nitrate	Nitrite	Nitrate/Nitrite	pH	Temperature	TKN	Total Nitrogen	Total Phosphorus	TSS
01-WCH	1/1/2010																
01-WCH	5/25/2010	0.41	0.1 mg/L		177.5 µS/cm	6.66 mg/L	73.8 cts/100 mL		1 mg/L			6.43 pH units	21.1 °C	0.5 mg/L		0.029 mg/L	4 mg/L
01-WCH	7/13/2010	0.70	0.4 mg/L		502 µS/cm	2.68 mg/L	54.8 cts/100 mL		1 mg/L			6.22 pH units	15.3 °C	0.5 mg/L		0.062 mg/L	4 mg/L
01-WCH	9/22/2010	0.65	0.2 mg/L		260 µS/cm		2 cts/100 mL		1 mg/L			7.16 pH units	14.2 °C	0.5 mg/L		0.034 mg/L	4 mg/L
01-WCH	10/20/2010	0.95	0.2 mg/L		180 µS/cm		30.1 cts/100 mL		1 mg/L			7.06 pH units	8.4 °C	0.5 mg/L		0.016 mg/L	4 mg/L
01-WCH	11/30/2010	0.87	0.2 mg/L		150 µS/cm		21.6 cts/100 mL		1 mg/L				1.6 °C	0.5 mg/L		0.033 mg/L	4 mg/L
01-WCH	1/1/2011																
01-WCH	3/30/2011	1.14	0.2 mg/L		135.2 µS/cm	11.42 mg/L	1 cts/100 mL					6.32 pH units	5.5 °C	0.5 mg/L		0.014 mg/L	4 mg/L
01-WCH	5/2/2011	2.21	0.4 mg/L		143.8 µS/cm	9.83 mg/L	14.8 cts/100 mL					6.65 pH units	15 °C	0.5 mg/L		0.011 mg/L	4 mg/L
01-WCH	8/4/2011	1.43	0.2 mg/L		229 µS/cm	3.36 mg/L	73.3 cts/100 mL					6.38 pH units	22.1 °C	0.5 mg/L		0.052 mg/L	4 mg/L
01-WCH	9/14/2011	1.03	0.2 mg/L		163 µS/cm	4.87 mg/L	178.9 cts/100 mL					6.39 pH units	20.6 °C	0.5 mg/L		0.01 mg/L	4 mg/L
01-WCH	11/7/2011	1.07	0.2 mg/L		114.7 µS/cm	9.88 mg/L	32.3 cts/100 mL					6.04 pH units	5.4 °C	0.5 mg/L		0.01 mg/L	4 mg/L
01-WCH	12/20/2011	1.01	0.2 mg/L		138.2 µS/cm	11.24 mg/L	7.4 cts/100 mL					6.73 pH units	1 °C	0.5 mg/L		0.01 mg/L	4 mg/L
01-WCH	1/1/2012																
01-WCH	3/28/2012	1.22	0.05 mg/L		144.9 µS/cm	8.86 mg/L	13.0 cts/100 mL					5.96 pH units	5.4 °C	0.5 mg/L		0.01 mg/L	5 mg/L
01-WCH	4/26/2012	0.41	0.05 mg/L		110.5 µS/cm	7.93 mg/L	12.1 cts/100 mL					6.10 pH units	12.3 °C	0.5 mg/L		0.02 mg/L	5 mg/L
01-WCH	8/2/2012	0.49	0.06 mg/L		369 µS/cm	2.56 mg/L	122.3 cts/100 mL					6.26 pH units	20.5 °C	0.5 mg/L		0.022 mg/L	5 mg/L
01-WCH	8/27/2012		0.05 mg/L		276 µS/cm	4.14 mg/L	53.7 cts/100 mL					6.21 pH units	19.3 °C	0.5 mg/L		0.02 mg/L	5 mg/L
01-WCH	9/18/2012	0.43	0.05 mg/L		254 µS/cm	5.92 mg/L	95.9 cts/100 mL					6.42 pH units	14.5 °C	0.5 mg/L		0.02 mg/L	5 mg/L
01-WCH	10/25/2012	1.20	0.05 mg/L		197.3 µS/cm	5.07 mg/L	8.5 cts/100 mL					6.27 pH units	10 °C	0.5 mg/L		0.01 mg/L	5 mg/L
01-WCH	11/26/2012																
01-WCH	1/1/2013																
01-WCH	4/4/2013	1.46	0.2 mg/L	240 mg/L	104.2 µS/cm	10.69 mg/L	3.1 cts/100 mL	3 cts/100 mL			0.5 mg/L	6.20 pH units	5.8 °C	0.5 mg/L	0.5 mg/L	0.05 mg/L	6 mg/L
01-WCH	5/6/2013	1.04	0.2 mg/L		161.4 µS/cm	6.54 mg/L	14.6 cts/100 mL	2 cts/100 mL				7.06 pH units	15.1 °C	0.5 mg/L		0.05 mg/L	6 mg/L
01-WCH	6/6/2013	1.00	0.2 mg/L		122.2 µS/cm	4.10 mg/L	219 cts/100 mL	261 cts/100 mL				5.99 pH units	19 °C	0.5 mg/L		0.0429 mg/L	6 mg/L
01-WCH	7/17/2013	1.07	0.2 mg/L	42 mg/L	179.3 µS/cm	6.13 mg/L	95.9 cts/100 mL	120 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.27 pH units	26.4 °C	0.5 mg/L	0.2 mg/L	0.056 mg/L	6 mg/L
01-WCH	8/16/2013	1.00	0.2 mg/L	39 mg/L	133.3 µS/cm	8.04 mg/L	111 cts/100 mL	120 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.27 pH units	19.9 °C	0.5 mg/L	0.2 mg/L	0.02 mg/L	6 mg/L
01-WCH	9/17/2013	1.12	0.2 mg/L	48 mg/L	147.7 µS/cm	6.68 mg/L	190 cts/100 mL	0	0.2 mg/L	0.2 mg/L	0.2 mg/L	5.99 pH units	13.2 °C	0.5 mg/L	0.2 mg/L	0.03 mg/L	6 mg/L
01-WCH	10/28/2013	1.48	0.1 mg/L	56 mg/L	146.4 µS/cm	6.20 mg/L	41 cts/100 mL	38 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.08 pH units	6.4 °C	0.5 mg/L	0.2 mg/L	0.036 mg/L	6 mg/L
01-WCH	1/1/2014																
01-WCH	4/14/2014	1.65	0.2 mg/L	28 mg/L	100 µS/cm		6.3 cts/100 mL	3 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L		12.4 °C	0.2 mg/L	0.2 mg/L	0.046 mg/L	4 mg/L
01-WCH	5/8/2014	1.40	0.2 mg/L	35 mg/L	148.3 µS/cm	7.84 mg/L	8.6 cts/100 mL	16 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.56 pH units	14.4 °C	0.2 mg/L	0.2 mg/L	0.055 mg/L	4 mg/L
01-WCH	6/11/2014	1.44	0.2 mg/L	47 mg/L	123.7 µS/cm	5.50 mg/L	140 cts/100 mL	97 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.60 pH units	20 °C	0.2 mg/L	0.2 mg/L	0.012 mg/L	4 mg/L
01-WCH	7/14/2014	1.25	0.2 mg/L	52 mg/L	141.5 µS/cm	3.56 mg/L	38.4 cts/100 mL	23 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.50 pH units	25.5 °C	0.2 mg/L	0.2 mg/L	0.052 mg/L	4 mg/L
01-WCH	8/12/2014	1.08	0.2 mg/L	60 mg/L	155.2 µS/cm	5.51 mg/L	41.9 cts/100 mL	6 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.50 pH units	21 °C	0.2 mg/L	0.2 mg/L	0.05 mg/L	6 mg/L
01-WCH	9/18/2014	1.12	0.2 mg/L	61 mg/L	146.2 µS/cm	6.51 mg/L	42.6 cts/100 mL	22 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.44 pH units	14 °C	0.2 mg/L	0.2 mg/L	0.01 mg/L	4 mg/L
01-WCH	11/5/2014	1.59	0.2 mg/L	40 mg/L	105.4 µS/cm	5.16 mg/L	55.6 cts/100 mL	32 cts/100 mL	0.21 mg/L	0.2 mg/L	0.21 mg/L	6.25 pH units	7.4 °C	0.2 mg/L	0.21 mg/L	0.011 mg/L	4 mg/L
01-WCH	1/1/2015																
01-WCH	4/13/2015	1.90	0.2 mg/L	25 mg/L	113.1 µS/cm	10.12 mg/L	2 cts/100 mL	2 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.81 pH units	10.4 °C	0.2 mg/L	0.2 mg/L	0.016 mg/L	4 mg/L
01-WCH	5/7/2015	1.49	0.2 mg/L	43 mg/L	171.6 µS/cm	6.92 mg/L	58.3 cts/100 mL	56 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L		18.5 °C	0.438 mg/L	0.44 mg/L	0.017 mg/L	4 mg/L
01-WCH	7/16/2015	1.10	0.2 mg/L	51 mg/L	198.2 µS/cm	3.25 mg/L	39.9 cts/100 mL	72 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.45 pH units	21.1 °C	0.672 mg/L	0.672 mg/L	0.019 mg/L	4 mg/L
01-WCH	8/6/2015	0.94	0.2 mg/L	61 mg/L	235.4 µS/cm	4.26 mg/L	61.3 cts/100 mL	106 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.42 pH units	21.6 °C	1.01 mg/L	1.01 mg/L	0.021 mg/L	4 mg/L
01-WCH	8/27/2015	0.96	0.2 mg/L	64 mg/L	249.1 µS/cm	4.00 mg/L	131 cts/100 mL	105 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.30 pH units	21.5 °C	0.593 mg/L	0.59 mg/L	0.015 mg/L	4 mg/L
01-WCH	9/24/2015	1.00	0.2 mg/L	222.5 mg/L	222.5 µS/cm		152 cts/100 mL	55 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.40 pH units	15 °C	0.613 mg/L	0.61 mg/L	0.017 mg/L	4 mg/L
01-WCH	11/5/2015	1.49	0.2 mg/L	60 mg/L	179.1 µS/cm		33.2 cts/100 mL	15 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.52 pH units	8.5 °C	0.349 mg/L	0.35 mg/L	0.01 mg/L	4 mg/L
12-PEN	1/1/2010																
12-PEN	5/25/2010		0.1 mg/L		127.5 µS/cm	9.32 mg/L	16.1 cts/100 mL		1 mg/L			6.89 pH units	21.5 °C	0.5 mg/L		0.026 mg/L	4 mg/L
12-PEN	7/13/2010		0.4 mg/L		131.6 µS/cm	8.14 mg/L	145 cts/100 mL		1 mg/L			7.02 pH units	21.3 °C	0.5 mg/L		0.041 mg/L	4 mg/L
12-PEN	9/22/2010		0.2 mg/L		310 µS/cm		93.3 cts/100 mL		1 mg/L			7.56 pH units	14.7 °C	0.5 mg/L		0.015 mg/L	4 mg/L
12-PEN	10/20/2010		0.2 mg/L				154.1 cts/100 mL		1 mg/L					0.5 mg/L		0.043 mg/L	4 mg/L
12-PEN	11/30/2010	0.40	0.2 mg/L		130 µS/cm		3.1 cts/100 mL		1 mg/L			5.53 pH units	3.8 °C	0.5 mg/L		0.030 mg/L	4 mg/L
12-PEN	1/1/2011																
12-PEN	3/30/2011	0.92	0.2 mg/L		125.9 µS/cm	12.79 mg/L	1 cts/100 mL					7.04 pH units	6.4 °C	0.5 mg/L		0.01 mg/L	4 mg/L
12-PEN	5/2/2011	0.77	0.2 mg/L		140.7 µS/cm	10.63 mg/L	24.1 cts/100 mL					7.19 pH units	15.2 °C	0.5 mg/L		0.013 mg/L	4 mg/L
12-PEN	8/4/2011		0.2 mg/L		142.3 µS/cm	9.28 mg/L	107.6 cts/100 mL					7.15 pH units	21.1 °C	0.5 mg/L		0.070 mg/L	4 mg/L
12-PEN	9/14/2011	0.52	0.2 mg/L		134.1 µS/cm	8.78 mg/L	44.1 cts/100 mL					7.09 pH units	20.7 °C	0.5 mg/L		0.01 mg/L	4 mg/L
12-PEN	11/7/2011	0.92	0.2 mg/L		123.9 µS/cm	11.36 mg/L	5.2 cts/100 mL					7.13 pH units	8 °C	0.5 mg/L		0.01 mg/L	4 mg/L
12-PEN	12/20/2011	0.99	0.2 mg/L		128.8 µS/cm	12.56 mg/L	12.2 cts/100 mL					7.32 pH units	4 °C	0.5 mg/L		0.01 mg/L	4 mg/L
12-PEN	1/1/2012																
12-PEN	3/28/2012	0.59	0.05 mg/L		123.8 µS/cm	11.13 mg/L	36.9 cts/100 mL					6.80 pH units	7.5 °C	0.5 mg/L		0.01 mg/L	5 mg/L
12-PEN	4/26/2012	0.60	0.05 mg/L		116.1 µS/cm	10.04 mg/L	29.5 cts/100 mL					6.84 pH units	13.5 °C	0.5 mg/L		0.01 mg/L	5 mg/L
12-PEN	8/2/2012	0.35	0.05 mg/L		143.9 µS/cm	8.67 mg/L	365.4 cts/100 mL					6.73 pH units	21.6 °C	0.5 mg/L		0.01 mg/L	5 mg/L
12-PEN	8/27/2012		0.05 mg/L		131.7 µS/cm	8.45 mg/L	172.3 cts/100 mL					6.88 pH units	19.1 °C	0.5 mg/L		0.01 mg/L	5 mg/L
12-PEN	9/18/2012	1.00	0.05 mg/L		130.4 µS/cm	9.32 mg/L	52 cts/100 mL					6.89 pH units	14.3 °C	0.5 mg/L		0.01 mg/L	5 mg/L
12-PEN	10/25/2012	0.25	0.05 mg/L		115.3 µS/cm	10.22 mg/L	10.8 cts/100 mL					6.17 pH units	10 °C	0.5 mg/L		0.01 mg/L	5 mg/L
12-PEN	11/26/2012	0.32		24 mg/L	115.1 µS/cm	11.97 mg/L					0.5 mg/L	6.47 pH units	3.1 °C	0.5 mg/L	0.5 mg/L	0.01 mg/L	
12-PEN	1/1/2013																
12-PEN	4/4/2013	0.82	0.2 mg/L	24 mg/L	118.2 µS/cm	12.05 mg/L	2 cts/100 mL	1 cts/100 mL				6.63 pH units	5.3 °C	0.5 mg/L	0.5 mg/L	0.05 mg/L	6 mg/L
12-PEN	5/6/2013	0.52	0.2 mg/L		138.1 µS/cm	9.73 mg/L	4.1 cts/100 mL	0				7.12 pH units	13.7 °C	0.5 mg/L		0.06 mg/L	6 mg/L
12-PEN	6/6/2013	0.68	0.2 mg/L		96.6 µS/cm	8.67 mg/L	16 cts/100 mL	17 cts/100 mL				6.54 pH units	16.8 °C	0.5 mg/L		0.018 mg/L	6 mg/L
12-PEN	7/17/2013	0.59	0.2 mg/L	30 mg/L	147 µS/cm	11.24 mg/L	119 cts/100 mL	56 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.63 pH units	24.3 °C	0.5 mg/L	0.2 mg/L	0.051 mg/L	6 mg/L
12-PEN	8/16/2013	0.46	0.2 mg/L	28 mg/L	113.2 µS/cm	8.88 mg/L	16.1 cts/100 mL	100 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.28 pH units	18 °C	0.5 mg/L	0.5 mg/L	0.02 mg/L	6 mg/L
12-PEN	9/17/2013	0.35	0.2 mg/L	27 mg/L	104.7 µS/cm	14.05 mg/L	24.6 cts/100 mL	0	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.63 pH units	11 °C	0.5 mg/L	0.2 mg/L	0.029 mg/L	56 mg/L
12-PEN	10/28/2013	0.26	0.1 mg/L	28 mg/L	89.1 µS/cm	11.15 mg/L	13.1 cts/100 mL	19 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.57 pH units	8 °C	0.5 mg/L	0.2 mg/L	0.029 mg/L	6 mg/L
12-PEN	1/1/2014																
12-PEN	4/14/2014	0.96	0.2 mg/L	28 mg/L	80 µS/cm		2 cts/100 mL	2 cts									

Pennichuck Water Works
Tributary Sampling Data
2010 through 2015

Phosphorus - outlier >0.250 mg/L
Total coliform: exceeds detection limits
All others: non-detect

Station	Date	e Reading	Ammonia	Chloride	Conductivity	DO	E. coli	Fecal Coliform	Nitrate	Nitrite	Nitrate/Nitrite	pH	Temperature	TKN	Total Nitrogen	Total Phosphorus	TSS
01-MUD	1/1/2010																
01-MUD	5/25/2010	2.10	0.1 mg/L		112 µS/cm	5.76 mg/L	35.8 cts/100 mL		1 mg/L			6.81 pH units		0.5 mg/L		0.029 mg/L	4 mg/L
01-MUD	7/13/2010	1.17	0.4 mg/L		203.1 µS/cm	5.79 mg/L	40.8 cts/100 mL		1 mg/L			6.99 pH units	24.9 °C	0.5 mg/L		0.057 mg/L	4 mg/L
01-MUD	9/22/2010		0.2 mg/L				57.6 cts/100 mL		1 mg/L					0.5 mg/L		0.026 mg/L	4 mg/L
01-MUD	10/20/2010		0.2 mg/L				48 cts/100 mL		1 mg/L					0.5 mg/L		0.014 mg/L	4 mg/L
01-MUD	11/30/2010		0.2 mg/L		170 µS/cm		416 cts/100 mL		1 mg/L				2.5 °C	0.5 mg/L		0.025 mg/L	27 mg/L
01-MUD	1/1/2011																
01-MUD	3/30/2011		0.2 mg/L		125.8 µS/cm	11.68 mg/L	1 cts/100 mL					7.06 pH units	6.7 °C	0.5 mg/L		0.024 mg/L	4 mg/L
01-MUD	5/2/2011		0.2 mg/L		124.2 µS/cm	9.02 mg/L	15.8 cts/100 mL					7.10 pH units	15.3 °C	0.5 mg/L		0.01 mg/L	4 mg/L
01-MUD	8/4/2011		0.2 mg/L		121.7 µS/cm	8.25 mg/L	4.1 cts/100 mL					7.24 pH units	25.8 °C	0.5 mg/L		0.052 mg/L	13 mg/L
01-MUD	9/14/2011		0.2 mg/L		147 µS/cm	6.34 mg/L	44.1 cts/100 mL					7.05 pH units	20.5 °C	0.5 mg/L		0.014 mg/L	4 mg/L
01-MUD	11/7/2011		0.2 mg/L		128.5 µS/cm	10.45 mg/L	37.3 cts/100 mL					7.28 pH units	7.2 °C	0.5 mg/L		0.01 mg/L	4 mg/L
01-MUD	12/20/2011		0.2 mg/L		131.7 µS/cm	11.05 mg/L	13.5 cts/100 mL					7.26 pH units	2.2 °C	0.5 mg/L		0.01 mg/L	4 mg/L
01-MUD	1/1/2012																
01-MUD	3/28/2012	2.20	0.05 mg/L		123.2 µS/cm	9.43 mg/L	13.4 cts/100 mL					7.03 pH units	5.7 °C	0.5 mg/L		0.01 mg/L	5 mg/L
01-MUD	4/26/2012	2.29	0.05 mg/L		134.7 µS/cm	8.89 mg/L	24.9 cts/100 mL					6.92 pH units	12.7 °C	0.6 mg/L		0.01 mg/L	5 mg/L
01-MUD	8/2/2012	1.69	0.05 mg/L		209.2 µS/cm	2.49 mg/L	7.3 cts/100 mL					6.84 pH units	22.7 °C	0.5 mg/L		0.019 mg/L	5 mg/L
01-MUD	8/27/2012		0.05 mg/L		187.4 µS/cm	3.13 mg/L	21.3 cts/100 mL					6.23 pH units	20.3 °C	0.5 mg/L		0.02 mg/L	5 mg/L
01-MUD	9/18/2012	1.67	0.05 mg/L		128.8 µS/cm	4.25 mg/L	24.6 cts/100 mL					6.84 pH units	15.6 °C	0.5 mg/L		0.02 mg/L	5 mg/L
01-MUD	10/25/2012	2.10	0.05 mg/L		106 µS/cm	5.89 mg/L	38.3 cts/100 mL					6.84 pH units	9.7 °C	0.8 mg/L		0.03 mg/L	6 mg/L
01-MUD	11/26/2012	2.20		13 mg/L	190.6 µS/cm	9.20 mg/L					0.5 mg/L	6.19 pH units	2.9 °C	0.5 mg/L	0.5 mg/L	0.02 mg/L	
01-MUD	1/1/2013																
01-MUD	4/4/2013	2.38	0.2 mg/L	23 mg/L	129.7 µS/cm	10.37 mg/L	2 cts/100 mL	4 cts/100 mL			0.6 mg/L	6.75 pH units	6.1 °C	0.5 mg/L	0.5 mg/L	0.05 mg/L	6 mg/L
01-MUD	5/6/2013	2.42	0.2 mg/L		151.6 µS/cm	7.10 mg/L	48 cts/100 mL	30 cts/100 mL				7.09 pH units	14.3 °C	0.5 mg/L		0.07 mg/L	6 mg/L
01-MUD	6/6/2013	2.38	0.374 mg/L		115.2 µS/cm	3.30 mg/L	66.9 cts/100 mL	119 cts/100 mL				6.64 pH units	17.8 °C	0.5 mg/L		0.0258 mg/L	6 mg/L
01-MUD	7/17/2013	1.82		19 mg/L	161.9 µS/cm	8.95 mg/L	166 cts/100 mL	160 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.90 pH units	25.8 °C	0.5 mg/L	0.2 mg/L	0.058 mg/L	6 mg/L
01-MUD	8/16/2013	1.97	0.2 mg/L	25 mg/L	120.2 µS/cm	5.18 mg/L	43.7 cts/100 mL	260 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.50 pH units	18.5 °C	0.5 mg/L	0.2 mg/L	0.026 mg/L	6 mg/L
01-MUD	9/10/2013	1.96	0.2 mg/L	15 mg/L	112.6 µS/cm	3.88 mg/L	33.1 cts/100 mL	36 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.54 pH units	12.4 °C	0.5 mg/L	0.2 mg/L	0.044 mg/L	6 mg/L
01-MUD	10/28/2013	1.87	0.1 mg/L	33 mg/L	98.3 µS/cm	7.14 mg/L	5.2 cts/100 mL	1 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.62 pH units	10 °C	0.5 mg/L	0.2 mg/L	0.033 mg/L	6 mg/L
01-MUD	1/1/2014																
01-MUD	4/14/2014	2.42	0.2 mg/L	31 mg/L	140 µS/cm		13.4 cts/100 mL	5 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L		12.6 °C	0.2 mg/L	0.2 mg/L	0.037 mg/L	4 mg/L
01-MUD	5/8/2014	2.28	0.2 mg/L	23 mg/L	146.7 µS/cm	8.62 mg/L	41 cts/100 mL	53 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.85 pH units	13.7 °C	0.2 mg/L	0.2 mg/L	0.05 mg/L	4 mg/L
01-MUD	6/11/2014	2.29	0.2 mg/L	19 mg/L	96.7 µS/cm	4.87 mg/L	83.6 cts/100 mL	50 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.68 pH units	19.9 °C	0.2 mg/L	0.2 mg/L	0.031 mg/L	4 mg/L
01-MUD	7/14/2014	2.22	0.2 mg/L	17 mg/L	168.2 µS/cm	3.47 mg/L	14.6 cts/100 mL	9 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.72 pH units	21.6 °C	0.2 mg/L	0.2 mg/L	0.071 mg/L	4 mg/L
01-MUD	8/12/2014	2.22	0.2 mg/L	27 mg/L	126.7 µS/cm	4.61 mg/L	326 cts/100 mL	208 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.83 pH units	20.1 °C	0.2 mg/L	0.2 mg/L	0.036 mg/L	4 mg/L
01-MUD	9/18/2014	2.58	0.2 mg/L	26 mg/L	109.9 µS/cm	2.25 mg/L	7.3 cts/100 mL	3 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.49 pH units	12.4 °C	0.2 mg/L	0.2 mg/L	0.037 mg/L	4 mg/L
01-MUD	11/5/2014	2.48	0.2 mg/L	23 mg/L	85.7 µS/cm	8.17 mg/L	78.9 cts/100 mL	36 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.36 pH units	7.8 °C	0.2 mg/L	0.2 mg/L	0.012 mg/L	4 mg/L
01-MUD	1/1/2015																
01-MUD	4/13/2015	2.70	0.2 mg/L	23 mg/L	85 µS/cm	9.62 mg/L	3.1 cts/100 mL	2 cts/100 mL	0.22 mg/L	0.2 mg/L	0.22 mg/L	7.61 pH units	9.8 °C	0.2 mg/L	0.22 mg/L	0.01 mg/L	4 mg/L
01-MUD	5/7/2015	2.48	0.2 mg/L	31 mg/L	148.8 µS/cm	6.91 mg/L	21.1 cts/100 mL	30 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L		18.6 °C	0.458 mg/L	0.46 mg/L	0.014 mg/L	4 mg/L
01-MUD	7/16/2015		0.2 mg/L	22 mg/L	145.4 µS/cm	0.48 mg/L	36.4 cts/100 mL	56 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.52 pH units	20.3 °C	1.03 mg/L	1.03 mg/L	0.04 mg/L	4 mg/L
01-MUD	8/6/2015	2.20	0.2 mg/L	22 mg/L	151.3 µS/cm	0.86 mg/L	23.1 cts/100 mL	28 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.51 pH units	19.3 °C	1.42 mg/L	1.42 mg/L	0.061 mg/L	9 mg/L
01-MUD	8/27/2015	1.80	0.2 mg/L	30 mg/L	195 µS/cm	2.57 mg/L	3.1 cts/100 mL	5 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.79 pH units	21.1 °C	0.593 mg/L	0.59 mg/L	0.058 mg/L	4 mg/L
01-MUD	9/24/2015	1.62	0.2 mg/L	28 mg/L	147.1 µS/cm	3.91 mg/L	10.9 cts/100 mL	5 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.69 pH units	16.3 °C	0.679 mg/L	0.68 mg/L	0.031 mg/L	4 mg/L
01-MUD	11/5/2015	2.01	0.2 mg/L	17 mg/L	82.1 µS/cm		8.6 cts/100 mL	10 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.48 pH units	7.4 °C	0.481 mg/L	0.48 mg/L	0.014 mg/L	4 mg/L
01-XWB	1/1/2010																
01-XWB	5/25/2010																
01-XWB	7/13/2010		0.4 mg/L		121.8 µS/cm	1.25 mg/L	101.9 cts/100 mL					6.48 pH units	22.4 °C	0.5 mg/L		0.043 mg/L	4 mg/L
01-XWB	9/22/2010								1 mg/L								
01-XWB	10/20/2010		0.2 mg/L		140 µS/cm		29.5 cts/100 mL		1 mg/L			7.22 pH units	8.5 °C	0.5 mg/L		0.046 mg/L	244 mg/L
01-XWB	11/30/2010	1.47	0.2 mg/L		100 µS/cm		8.4 cts/100 mL		1 mg/L				3.9 °C	0.5 mg/L		0.028 mg/L	4 mg/L
01-XWB	1/1/2011																
01-XWB	3/30/2011	2.18	0.2 mg/L		104.1 µS/cm	12.97 mg/L	8.6 cts/100 mL					6.83 pH units	5.9 °C	0.5 mg/L		0.029 mg/L	5 mg/L
01-XWB	5/2/2011	2.22	0.2 mg/L		112.7 µS/cm	11.30 mg/L	18.5 cts/100 mL					6.58 pH units	15.7 °C	0.5 mg/L		0.019 mg/L	4 mg/L
01-XWB	8/4/2011	2.19	0.2 mg/L		149.6 µS/cm	5.65 mg/L	142.1 cts/100 mL					6.25 pH units	21 °C	0.5 mg/L		0.026 mg/L	4 mg/L
01-XWB	9/14/2011	2.55	0.2 mg/L		124.7 µS/cm	5.53 mg/L	118.7 cts/100 mL					6.08 pH units	19 °C	0.5 mg/L		0.024 mg/L	5 mg/L
01-XWB	11/7/2011	2.67	0.2 mg/L		181.3 µS/cm	10.57 mg/L	3.1 cts/100 mL					6.29 pH units	6 °C	0.5 mg/L		0.01 mg/L	4 mg/L
01-XWB	12/20/2011	2.53	0.2 mg/L		106.7 µS/cm	12.71 mg/L	4.1 cts/100 mL					6.69 pH units	1.9 °C	0.5 mg/L		0.01 mg/L	4 mg/L
01-XWB	1/1/2012																
01-XWB	3/28/2012	2.34	0.05 mg/L		114.6 µS/cm	10.45 mg/L	6.3 cts/100 mL					6.19 pH units	5.4 °C	0.5 mg/L		0.01 mg/L	5 mg/L
01-XWB	4/26/2012	2.36	0.05 mg/L		90.6 µS/cm	9.82 mg/L	9.8 cts/100 mL					6.60 pH units	12.5 °C	0.5 mg/L		0.02 mg/L	6 mg/L
01-XWB	8/2/2012	1.50	0.05 mg/L		140.3 µS/cm	0.59 mg/L	121.1 cts/100 mL					6.19 pH units	21.7 °C	0.5 mg/L		0.022 mg/L	5 mg/L
01-XWB	8/27/2012		0.05 mg/L		140.7 µS/cm	0.25 mg/L	146.7 cts/100 mL					6.49 pH units	22.8 °C	0.5 mg/L		0.03 mg/L	12 mg/L
01-XWB	9/18/2012	1.78	0.05 mg/L		151.3 µS/cm	6.05 mg/L	155.3 cts/100 mL					6.29 pH units	14.8 °C	0.6 mg/L		0.04 mg/L	12 mg/L
01-XWB	10/25/2012	1.78	0.05 mg/L		135.4 µS/cm	5.64 mg/L	30.1 cts/100 mL					5.99 pH units	9.9 °C	0.5 mg/L		0.01 mg/L	5 mg/L
01-XWB	11/26/2012	1.76		28 mg/L	116.4 µS/cm	8.91 mg/L					0.5 mg/L	6.15 pH units	3.4 °C	0.5 mg/L	0.5 mg/L	0.01 mg/L	
01-XWB	1/1/2013																
01-XWB	4/4/2013	2.46	0.2 mg/L	18 mg/L	87.1 µS/cm	12.10 mg/L	1 cts/100 mL	2 cts/100 mL			0.5 mg/L	6.81 pH units	7.6 °C	0.5 mg/L	0.5 mg/L	0.05 mg/L	6 mg/L
01-XWB	5/6/2013	1.98	0.2 mg/L		123 µS/cm	8.77 mg/L	34.1 cts/100 mL	30 cts/100 mL				7.21 pH units	16.8 °C	0.5 mg/L		0.06 mg/L	6 mg/L
01-XWB	6/6/2013	2.32	0.374 mg/L		91.5 µS/cm	6.02 mg/L	142 cts/100 mL	123 cts/100 mL				6.10 pH units	17.3 °C	0.5 mg/L		0.0297 mg/L	6 mg/L
01-XWB	7/17/2013	2.42	0.2 mg/L	31 mg/L	139.4 µS/cm	8.57 mg/L	67.6 cts/100 mL	38 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.03 pH units	25.5 °C	0.5 mg/L	0.2 mg/L	0.055 mg/L	6 mg/L
01-XWB	8/16/2013	2.44	0.2 mg/L	29 mg/L	106.9 µS/cm	5.82 mg/L	98.5 cts/100 mL	70 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.08 pH units	18.2 °C	0.5 mg/L	0.2 mg/L	0.02 mg/L	6 mg/L
01-XWB	9/10/2013	2.25	0.2 mg/L	31 mg/L	104.7 µS/cm	9.39 mg/L	179 cts/100 mL	6 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.10 pH units	13.1 °C	0.5 mg/L	0.2 mg/L	0.039 mg/L	6 mg/L
01-XWB	10/28/2013	2.67	0.1 mg/L	33 mg/L	97.6 µS/cm	7.11 mg/L	166 cts/100 mL	120 cts/100 mL	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.30 pH units	7.4 °C	0.5 mg/L	0.2 mg/L	0.031 mg/L	6 mg/L
01-XWB	1/1/2014																
01-XWB	4/14/2014	2.76	0.2 mg/L	24 mg/L	110 µS/cm		6.3 cts/100 mL	2 cts/100 mL	0.21 mg/L	0.2 mg/L	0.21 mg/L		11.8 °C	0.2 mg/L	0.21 mg/L	0.032 mg/L	4 mg/L

Phosphorus - outlier >0.250 mg/L
Total coliform: exceeds detection limits
All others: non-detect

Station	Date	e Reading	Ammonia		Chloride		Conductivity		DO		E. coli		Fecal Coliform		Nitrate		Nitrite		Nitrate/Nitrite		pH		Temperature		TKN		Total Nitrogen		Total Phosphorus		TSS	
02-WCH	1/1/2010																															
02-WCH	5/25/2010	1.47	0.1	mg/L			141.8	µS/cm	10.85	mg/L	16.1	cts/100 mL			1	mg/L					6.79	pH units	16	°C	0.5	mg/L			0.026	mg/L	4	mg/L
02-WCH	7/13/2010	1.29	0.4	mg/L			162.2	µS/cm	7.13	mg/L	36.8	cts/100 mL			1	mg/L					7.12	pH units	18.7	°C	0.5	mg/L			0.033	mg/L	4	mg/L
02-WCH	9/22/2010		0.2	mg/L			310	µS/cm			8.4	cts/100 mL			1	mg/L					7.59	pH units	13.3	°C	0.5	mg/L			0.01	mg/L	4	mg/L
02-WCH	10/20/2010		0.2	mg/L			120	µS/cm			7.3	cts/100 mL			1	mg/L					7.58	pH units	8.3	°C	0.5	mg/L			0.01	mg/L	4	mg/L
02-WCH	11/30/2010		0.2	mg/L			90	µS/cm			2	cts/100 mL			1	mg/L							3.6	°C	0.5	mg/L			0.025	mg/L	4	mg/L
02-WCH	1/1/2011																															
02-WCH	3/30/2011		0.2	mg/L			92.2	µS/cm	13.84	mg/L	1	cts/100 mL									6.99	pH units	5.2	°C	0.5	mg/L			0.014	mg/L	4	mg/L
02-WCH	5/2/2011		0.349	mg/L			95.2	µS/cm	11.60	mg/L	53.7	cts/100 mL									6.94	pH units	13.1	°C	0.5	mg/L			0.01	mg/L	4	mg/L
02-WCH	8/4/2011		0.2	mg/L			150.4	µS/cm	10.23	mg/L	23.3	cts/100 mL									6.89	pH units	16.9	°C	0.5	mg/L			0.021	mg/L	4	mg/L
02-WCH	9/14/2011		0.2	mg/L			120.3	µS/cm	9.52	mg/L	27.5	cts/100 mL									6.84	pH units	17.7	°C	0.5	mg/L			0.01	mg/L	4	mg/L
02-WCH	11/7/2011	1.15	0.2	mg/L			121	µS/cm	11.99	mg/L	4.1	cts/100 mL									6.84	pH units	5.4	°C	0.5	mg/L			0.01	mg/L	4	mg/L
02-WCH	12/20/2011	0.92	0.2	mg/L			89.1	µS/cm	13.66	mg/L	2	cts/100 mL									6.50	pH units	2.7	°C	0.5	mg/L			0.01	mg/L	4	mg/L
02-WCH	1/1/2012																															
02-WCH	3/28/2012	0.88	0.05	mg/L			100.3	µS/cm	12.23	mg/L	1	cts/100 mL									6.66	pH units	5.2	°C	0.5	mg/L			0.01	mg/L	5	mg/L
02-WCH	4/26/2012	0.80	0.05	mg/L			82.5	µS/cm	10.93	mg/L	18.3	cts/100 mL									6.75	pH units	10.8	°C	0.5	mg/L			0.01	mg/L	5	mg/L
02-WCH	8/2/2012	0.57	0.05	mg/L			141.5	µS/cm	9.20	mg/L	17.1	cts/100 mL									6.42	pH units	17.8	°C	0.5	mg/L			0.007	mg/L	5	mg/L
02-WCH	8/27/2012		0.05	mg/L			144.7	µS/cm	9.39	mg/L	18.3	cts/100 mL									6.71	pH units	16.7	°C	0.5	mg/L			0.01	mg/L	5	mg/L
02-WCH	9/18/2012	1.56	0.05	mg/L			147.5	µS/cm	10.30	mg/L	4.1	cts/100 mL									6.69	pH units	12.7	°C	0.5	mg/L			0.01	mg/L	10	mg/L
02-WCH	10/25/2012	0.60	0.05	mg/L			120.4	µS/cm	9.92	mg/L	1	cts/100 mL									6.47	pH units	9.6	°C	0.5	mg/L			0.01	mg/L	5	mg/L
02-WCH	11/26/2012	0.50			23	mg/L	103.8	µS/cm	12.95	mg/L									0.5	mg/L	6.64	pH units	2.9	°C	0.5	mg/L	0.5	mg/L	0.01	mg/L		
02-WCH	1/1/2013																															
02-WCH	4/4/2013	1.28	0.2	mg/L	14	mg/L	74	µS/cm	12.15	mg/L	2	cts/100 mL	1	cts/100 mL					0.5	mg/L	6.49	pH units	5.8	°C	0.5	mg/L	0.5	mg/L	0.05	mg/L	6	mg/L
02-WCH	5/6/2013	0.76	0.2	mg/L			109.4	µS/cm	10.10	mg/L	12.2	cts/100 mL	0								7.21	pH units	14.2	°C	0.5	mg/L			0.06	mg/L	6	mg/L
02-WCH	6/6/2013		0.2	mg/L			84.6	µS/cm	9.28	mg/L	6.3	cts/100 mL	7	cts/100 mL							6.87	pH units	15.2	°C	0.5	mg/L			0.019	mg/L	6	mg/L
02-WCH	7/17/2013	0.61	0.2	mg/L	30	mg/L	129.7	µS/cm	12.18	mg/L	10.8	cts/100 mL	6	cts/100 mL	0.47	mg/L	0.2	mg/L	0.47	mg/L	6.35	pH units	21.2	°C	0.5	mg/L	0.47	mg/L	0.059	mg/L	6	mg/L
02-WCH	8/16/2013	0.59	0.2	mg/L	30	mg/L	108.9	µS/cm	9.43	mg/L	9.8	cts/100 mL	0		0.49	mg/L	0.2	mg/L	0.49	mg/L	6.03	pH units	16.3	°C	0.5	mg/L	0.49	mg/L	0.02	mg/L	6	mg/L
02-WCH	9/10/2013	0.55	0.2	mg/L	30	mg/L	103.5	µS/cm	14.40	mg/L	16.1	cts/100 mL	0		0.48	mg/L	0.2	mg/L	0.48	mg/L	6.19	pH units	11.5	°C	0.5	mg/L	0.48	mg/L	0.02	mg/L	6	mg/L
02-WCH	10/28/2013	0.58	0.1	mg/L	32	mg/L	94.6	µS/cm	10.89	mg/L	1	cts/100 mL	1	cts/100 mL	0.49	mg/L	0.2	mg/L	0.49	mg/L	6.26	pH units	7.8	°C	0.5	mg/L	0.49	mg/L	0.022	mg/L	6	mg/L
02-WCH	1/1/2014																															
02-WCH	4/14/2014	1.28	0.2	mg/L	21	mg/L	70	µS/cm		mg/L	3.1	cts/100 mL	1	cts/100 mL	0.22	mg/L	0.2	mg/L	0.22	mg/L			11.3	°C	0.2	mg/L	0.22	mg/L	0.04	mg/L	5	mg/L
02-WCH	5/8/2014	0.98	0.2	mg/L	26	mg/L	110.2	µS/cm	11.18	mg/L	1	cts/100 mL	2	cts/100 mL	0.25	mg/L	0.2	mg/L	0.25	mg/L	6.54	pH units	13.2	°C	0.2	mg/L	0.25	mg/L	0.066	mg/L	4	mg/L
02-WCH	6/11/2014	0.66	0.2	mg/L	34	mg/L	90.7	µS/cm	11.00	mg/L	8.6	cts/100 mL	2	cts/100 mL	0.48	mg/L	0.2	mg/L	0.48	mg/L	6.80	pH units	15.2	°C	0.2	mg/L	0.48	mg/L	0.034	mg/L	4	mg/L
02-WCH	7/14/2014	0.54	0.2	mg/L	37	mg/L	104.8	µS/cm	10.17	mg/L	236	cts/100 mL	175	cts/100 mL	0.58	mg/L	0.2	mg/L	0.58	mg/L	7.06	pH units	19	°C	0.2	mg/L	0.58	mg/L	0.044	mg/L	4	mg/L
02-WCH	8/12/2014	0.51	0.2	mg/L	40	mg/L	105.9	µS/cm	11.00	mg/L	108	cts/100 mL	8	cts/100 mL	0.62	mg/L	0.2	mg/L	0.62	mg/L	6.55	pH units	17	°C	0.2	mg/L	0.62	mg/L	0.018	mg/L	4	mg/L
02-WCH	9/18/2014	0.48	0.2	mg/L	38	mg/L	96.6	µS/cm	11.92	mg/L	8.5	cts/100 mL	17	cts/100 mL	0.6	mg/L	0.2	mg/L	0.6	mg/L	6.46	pH units	12.7	°C	0.2	mg/L	0.6	mg/L	0.012	mg/L	4	mg/L
02-WCH	11/5/2014	0.90	0.2	mg/L	26	mg/L	68.8	µS/cm	12.44	mg/L	4.1	cts/100 mL	2	cts/100 mL	0.26	mg/L	0.2	mg/L	0.26	mg/L	6.32	pH units	9.4	°C	0.2	mg/L	0.26	mg/L	0.01	mg/L	4	mg/L
02-WCH	1/1/2015																															
02-WCH	4/13/2015	1.48	0.2	mg/L	18	mg/L	142.5	µS/cm	13.02	mg/L	1	cts/100 mL	2	cts/100 mL	0.2	mg/L	0.2	mg/L	0.2	mg/L	6.98	pH units	9.1	°C	0.2	mg/L	0.2	mg/L	0.01	mg/L	4	mg/L
02-WCH	5/7/2015	0.89	0.2	mg/L	33	mg/L	131.5	µS/cm	10.72	mg/L	5.2	cts/100 mL	2	cts/100 mL	0.3	mg/L	0.2	mg/L	0.3	mg/L			16.3	°C	0.318	mg/L	0.62	mg/L	0.01	mg/L	4	mg/L
02-WCH	7/16/2015	0.60	0.2	mg/L	42	mg/L	146.2	µS/cm	10.19	mg/L	35.9	cts/100 mL	40	cts/100 mL	0.67	mg/L	0.2	mg/L	0.67	mg/L	6.64	pH units	16	°C	0.396	mg/L	1.07	mg/L	0.01	mg/L	4	mg/L
02-WCH	8/6/2015	0.57	0.2	mg/L	45	mg/L	157.1	µS/cm	6.89	mg/L	16	cts/100 mL	6	cts/100 mL	0.64	mg/L	0.2	mg/L	0.64	mg/L	6.56	pH units	16	°C	0.475	mg/L	1.12	mg/L	1.29	mg/L	4	mg/L
02-WCH	8/27/2015	0.52	0.2	mg/L	46	mg/L	96.6	µS/cm	9.31	mg/L	29.2	cts/100 mL	15	cts/100 mL	0.61	mg/L	0.2	mg/L	0.61	mg/L	6.69	pH units	16.9	°C	0.396	mg/L	1.01	mg/L	0.01	mg/L	4	mg/L
02-WCH	9/24/2015	0.50	0.2	mg/L	46	mg/L	150	µS/cm	8.70	mg/L	13.4	cts/100 mL	5	cts/100 mL	0.64	mg/L	0.2	mg/L	0.64	mg/L	6.53	pH units	13.4	°C	0.37	mg/L	1.01	mg/L	0.01	mg/L	4	mg/L
02-WCH	11/5/2015	0.56	0.2	mg/L	41	mg/L	130.4	µS/cm		mg/L	3	cts/100 mL	5	cts/100 mL	0.46	mg/L	0.2	mg/L	0.46	mg/L	6.39	pH units	9.9	°C	0.217	mg/L	0.68	mg/L	0.01	mg/L	4	mg/L

Attachment B:
Groundwater Sampling Data, 2012 through 2015



Pennichuck Water Works
Groundwater Sampling Data
2012 through 2015

Phosphorus - outlier >0.250 mg/L
Phosphorus - caution, abnormally high value
All - non-detect

	Station	Date	Water Level Depth	Ammonia	Chloride	Conductivity	DO	Nitrate	Nitrite	Nitrate/Nitrite	pH	Temperature	TKN	Total Nitrogen	Total Phosphorus, Filtered
	01-BFB	11/26/2012			91 mg/L	413 µS/cm	4.27 mg/L			0.5 mg/L	6.90 pH units	9.7 °C	3.7 mg/L	3.7 mg/L	0.01 mg/L
	01-BFB	4/4/2013			86 mg/L					0.5 mg/L			0.7 mg/L	0.7 mg/L	0.22 mg/L
	01-BFB	7/17/2013	2.32	0.4 mg/L	90 mg/L	426 µS/cm	4.23 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.08 pH units	17.7 °C	0.5 mg/L	0.2 mg/L	0.2 mg/L
	01-BFB	8/16/2013	2.50	0.2 mg/L	200 mg/L	646 µS/cm	2.61 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.51 pH units	17.1 °C	0.5 mg/L	0.2 mg/L	0.024 mg/L
	01-BFB	9/10/2013	2.75	0.2 mg/L	133 mg/L	436 µS/cm	2.83 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.63 pH units	17.4 °C	0.5 mg/L	0.2 mg/L	0.02 mg/L
	01-BFB	10/28/2013	2.89	0.1 mg/L	135 mg/L	406 µS/cm	2.71 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.61 pH units	13.5 °C	0.5 mg/L	0.2 mg/L	0.052 mg/L
	01-BFB	1/1/2014													
	01-BFB	4/14/2014	1.83	0.2 mg/L	209 mg/L	720 µS/cm		0.2 mg/L	0.2 mg/L	0.2 mg/L	7.45 pH units	7.4 °C	0.2 mg/L	0.2 mg/L	0.029 mg/L
	01-BFB	5/8/2014	2.13	0.2 mg/L	76 mg/L	280 µS/cm	8.80 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	7.35 pH units	8.8 °C	0.2 mg/L	0.2 mg/L	0.06 mg/L
	01-BFB	6/11/2014	2.46	0.2 mg/L	304 mg/L	519 µS/cm	8.13 mg/L	0.5 mg/L	0.2 mg/L	0.5 mg/L	7.60 pH units	11.5 °C	0.2 mg/L	0.5 mg/L	0.094 mg/L
	01-BFB	7/14/2014	2.66	0.2 mg/L	196 mg/L	472 µS/cm	2.98 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.92 pH units	15.8 °C	0.2 mg/L	0.2 mg/L	0.066 mg/L
	01-BFB	8/12/2014	2.78	0.2 mg/L	254 mg/L	571 µS/cm	2.87 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.69 pH units	17.5 °C	0.2 mg/L	0.2 mg/L	0.034 mg/L
	01-BFB	9/18/2014	2.91	0.2 mg/L	119 mg/L	315 µS/cm	2.98 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.79 pH units	16.9 °C	0.2 mg/L	0.2 mg/L	0.021 mg/L
	01-BFB	11/5/2014	2.51	0.2 mg/L	143 mg/L	385 µS/cm	2.45 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.91 pH units	13.8 °C	0.2 mg/L	0.2 mg/L	0.013 mg/L
	01-BFB	1/1/2015													
	01-BFB	4/13/2015	1.89	0.2 mg/L	113 mg/L	423 µS/cm	8.75 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	7.75 pH units	5.6 °C	0.2 mg/L	0.2 mg/L	0.012 mg/L
	01-BFB	5/7/2015	2.22	0.2 mg/L	211 mg/L	680 µS/cm	7.60 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L		10.9 °C	0.438 mg/L	0.44 mg/L	0.01 mg/L
	01-BFB	7/16/2015	2.60	0.2 mg/L	279 mg/L	856 µS/cm	2.57 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.73 pH units	14.4 °C	0.498 mg/L	0.498 mg/L	0.01 mg/L
	01-BFB	8/6/2015	2.77	0.2 mg/L	181 mg/L	579 µS/cm	1.73 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.70 pH units	16.2 °C	0.633 mg/L	0.63 mg/L	0.016 mg/L
	01-BFB	8/27/2015	2.86	0.2 mg/L	212 mg/L	695 µS/cm	2.04 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.72 pH units	17.5 °C	0.396 mg/L	0.4 mg/L	0.01 mg/L
	01-BFB	9/24/2015	2.89	0.2 mg/L	202 mg/L	681 µS/cm	2.09 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	7.49 pH units	17.7 °C	0.393 mg/L	0.39 mg/L	0.01 mg/L
	01-BFB	11/5/2015	2.80	0.2 mg/L	140 mg/L	523 µS/cm		0.2 mg/L	0.2 mg/L	0.2 mg/L	7.02 pH units	15.2 °C	0.679 mg/L	0.68 mg/L	0.256 mg/L
	09-PEN	11/26/2012			150 mg/L					4.3 mg/L			11 mg/L	15.3 mg/L	
	09-PEN	4/4/2013			410 mg/L					0.9 mg/L			0.5 mg/L	0.9 mg/L	0.01 mg/L
	09-PEN	7/17/2013	2.92	0.4 mg/L	227 mg/L	780 µS/cm	12.25 mg/L	0.67 mg/L	0.2 mg/L	0.67 mg/L	6.53 pH units	23.1 °C	0.5 mg/L	0.67 mg/L	0.074 mg/L
	09-PEN	8/16/2013	2.97	0.2 mg/L	235 mg/L	741 µS/cm	7.56 mg/L	1.14 mg/L	0.2 mg/L	1.14 mg/L	6.42 pH units	18.3 °C	2.8 mg/L	3.9 mg/L	0.02 mg/L
	09-PEN	9/10/2013	3.27	0.2 mg/L	266 mg/L	716 µS/cm	12.81 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.51 pH units	17.4 °C	0.5 mg/L	0.2 mg/L	0.02 mg/L
	09-PEN	10/28/2013	3.22	0.1 mg/L	150 mg/L	439 µS/cm	10.42 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.65 pH units	13 °C	0.5 mg/L	0.2 mg/L	0.04 mg/L
	09-PEN	1/1/2014													
	09-PEN	4/14/2014	2.53	0.2 mg/L	333 mg/L	860 µS/cm		2.03 mg/L	0.2 mg/L	0.2 mg/L	6.37 pH units	15 °C	0.2 mg/L	2.03 mg/L	0.051 mg/L
	09-PEN	5/8/2014	2.65	0.2 mg/L	401 mg/L	1369 µS/cm	10.46 mg/L	2.75 mg/L	0.2 mg/L	2.75 mg/L	6.73 pH units	12 °C	0.2 mg/L	2.75 mg/L	0.138 mg/L
	09-PEN	6/11/2014	3.13	0.2 mg/L	443 mg/L	902 µS/cm	9.86 mg/L	1.56 mg/L	0.2 mg/L	1.56 mg/L	6.78 pH units	16.2 °C	0.2 mg/L	1.56 mg/L	0.045 mg/L
	09-PEN	7/14/2014	3.20	0.2 mg/L	425 mg/L	922 µS/cm	9.68 mg/L	0.56 mg/L	0.2 mg/L	0.56 mg/L	6.79 pH units	20.2 °C	0.2 mg/L	0.56 mg/L	0.056 mg/L
	09-PEN	8/12/2014	3.31	0.2 mg/L	248 mg/L	595 µS/cm	10.36 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	7.09 pH units	19 °C	0.2 mg/L	0.2 mg/L	0.027 mg/L
	09-PEN	9/18/2014	3.28	0.2 mg/L	124 mg/L	356 µS/cm	10.83 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.90 pH units	15.8 °C	0.876 mg/L	0.88 mg/L	0.062 mg/L
	09-PEN	11/5/2014	3.01	0.2 mg/L	220 mg/L	474 µS/cm	10.98 mg/L	3.36 mg/L	0.2 mg/L	3.36 mg/L	6.92 pH units	12.9 °C	0.2 mg/L	3.36 mg/L	0.01 mg/L
	09-PEN	1/1/2015													
	09-PEN	4/13/2015	2.38	0.2 mg/L	211 mg/L	728 µS/cm	11.27 mg/L	1.32 mg/L	0.2 mg/L	1.32 mg/L	6.96 pH units	10.2 °C	0.975 mg/L	0.98 mg/L	0.01 mg/L
	09-PEN	5/7/2015	2.90	0.2 mg/L	163 mg/L	598 µS/cm	10.44 mg/L	1.83 mg/L	0.2 mg/L	1.83 mg/L		14.1 °C	0.458 mg/L	2.29 mg/L	0.02 mg/L
	09-PEN	7/16/2015	3.08	0.2 mg/L	260 mg/L	801 µS/cm	6.03 mg/L	2.58 mg/L	0.2 mg/L	2.58 mg/L	6.94 pH units	16.8 °C	0.2 mg/L	2.58 mg/L	0.01 mg/L
	09-PEN	8/6/2015	3.24	0.2 mg/L	249 mg/L	770 µS/cm	6.72 mg/L	0.45 mg/L	0.2 mg/L	0.45 mg/L	6.95 pH units	17.5 °C	0.633 mg/L	1.08 mg/L	0.01 mg/L
	09-PEN	8/27/2015	3.28	0.2 mg/L	130 mg/L	484.5 µS/cm	6.24 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.84 pH units	18.8 °C	0.593 mg/L	0.59 mg/L	0.01 mg/L
	09-PEN	9/24/2015	3.38	0.2 mg/L	94 mg/L	366.6 µS/cm	6.54 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.97 pH units	18.8 °C	0.635 mg/L	0.64 mg/L	0.01 mg/L
	09-PEN	11/5/2015	3.10	0.2 mg/L	96 mg/L	378.4 µS/cm		0.2 mg/L	0.2 mg/L	0.2 mg/L	6.89 pH units	16.8 °C	0.283 mg/L	0.28 mg/L	0.017 mg/L
	09T-PEN	11/26/2012			20 mg/L	104.1 µS/cm	7.67 mg/L			0.5 mg/L	5.86 pH units	8.6 °C	4.2 mg/L	4.2 mg/L	0.01 mg/L
	09T-PEN	4/4/2013			26 mg/L					0.5 mg/L			0.5 mg/L	0.5 mg/L	0.01 mg/L
	09T-PEN	7/17/2013	3.20	0.4 mg/L	23 mg/L	184 µS/cm	9.54 mg/L	0.2 mg/L	0.2 mg/L	0.4 mg/L	6.04 pH units	24.2 °C	7.27 mg/L	7.27 mg/L	2.97 mg/L
	09T-PEN	8/16/2013	3.28	0.2 mg/L	21 mg/L	131.4 µS/cm	6.38 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.64 pH units	18.1 °C	4.07 mg/L	4.07 mg/L	0.327 mg/L
	09T-PEN	9/10/2013	3.97	0.2 mg/L	21 mg/L	97 µS/cm	7.94 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.93 pH units	17.1 °C	0.5 mg/L	0.2 mg/L	0.061 mg/L
	09T-PEN	10/28/2013	3.87	0.1 mg/L	21 mg/L	101.8 µS/cm	9.39 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.19 pH units	12.7 °C	0.5 mg/L	0.2 mg/L	0.02 mg/L
	09T-PEN	1/1/2014													
	09T-PEN	4/14/2014	2.60	0.2 mg/L	70 mg/L	170 µS/cm		0.41 mg/L	0.2 mg/L	0.2 mg/L	6.79 pH units	12.2 °C	4.2 mg/L	4.61 mg/L	2.11 mg/L
	09T-PEN	5/8/2014	3.01	0.2 mg/L	28 mg/L	161.1 µS/cm	8.27 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.62 pH units	10.7 °C	3.17 mg/L	3.17 mg/L	2.03 mg/L
	09T-PEN	6/11/2014	3.48	0.2 mg/L	23 mg/L	84.1 µS/cm	6.90 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.49 pH units	13.9 °C	0.2 mg/L	0.2 mg/L	0.623 mg/L
	09T-PEN	7/14/2014	3.53	0.2 mg/L	28 mg/L	89.2 µS/cm	8.63 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.53 pH units	18.2 °C	1.46 mg/L	1.46 mg/L	0.368 mg/L
	09T-PEN	8/12/2014	3.85	0.2 mg/L	27 mg/L	80.2 µS/cm	10.14 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.71 pH units	17.4 °C	0.2 mg/L	0.2 mg/L	0.01 mg/L
	09T-PEN	9/18/2014	3.96	0.2 mg/L	28 mg/L	85.4 µS/cm	9.64 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.58 pH units	16.6 °C	1.48 mg/L	1.48 mg/L	0.311 mg/L
	09T-PEN	11/5/2014	3.24	0.2 mg/L	39 mg/L	121.9 µS/cm	10.11 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.73 pH units	13.6 °C	0.2 mg/L	0.2 mg/L	0.507 mg/L
	09T-PEN	1/1/2015													
	09T-PEN	4/13/2015	2.57	0.2 mg/L	23 mg/L	136.7 µS/cm	9.89 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.60 pH units	8.1 °C	0.2 mg/L	0.2 mg/L	0.275 mg/L
	09T-PEN	5/7/2015	3.17	0.2 mg/L	20 mg/L	117.2 µS/cm	9.39 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L		14 °C	1.14 mg/L	1.14 mg/L	0.223 mg/L
	09T-PEN	7/16/2015	3.34	0.2 mg/L	27 mg/L	99.4 µS/cm	7.73 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.26 pH units	16.5 °C	0.731 mg/L	0.731 mg/L	0.564 mg/L
	09T-PEN	8/6/2015	3.78	0.2 mg/L	44 mg/L	126.9 µS/cm	6.70 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.55 pH units	18 °C	2.09 mg/L	2.09 mg/L	0.01 mg/L
	09T-PEN	8/27/2015	4.04	0.2 mg/L	35 mg/L	137.8 µS/cm	5.95 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.12 pH units	18.7 °C	0.987 mg/L	0.99 mg/L	0.01 mg/L
	09T-PEN	9/24/2015	4.26		29 mg/L	107.3 µS/cm	6.04 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.40 pH units	17.5 °C			0.01 mg/L
	09T-PEN	11/5/2015	3.76	0.2 mg/L	86 mg/L	270.8 µS/cm		0.2 mg/L	0.2 mg/L	0.2 mg/L	6.23 pH units	13.6 °C	0.2 mg/L	0.2 mg/L	0.01 mg/L

Pennichuck Water Works
Groundwater Sampling Data
2012 through 2015

Phosphorus - outlier >0.250 mg/L
Phosphorus - caution, abnormally high value
All - non-detect

	Station	Date	Water Level Depth	Ammonia	Chloride	Conductivity	DO	Nitrate	Nitrite	Nitrate/Nitrite	pH	Temperature	TKN	Total Nitrogen	Total Phosphorus, Filtered											
	01-CML (09	11/26/2012			99	mg/L	355	µS/cm	4.55	mg/L																
	01-CML (09	4/4/2013			67	mg/L																				
	01-CML (09	7/17/2013	3.20	0.4	mg/L	456	mg/L	1229	µS/cm	4.57	mg/L	0.2	mg/L	0.2	mg/L	0.5	mg/L	10	mg/L	10	mg/L	0.05	mg/L			
	01-CML (09	8/16/2013	3.26	0.2	mg/L	158	mg/L	486	µS/cm	7.00	mg/L	0.2	mg/L	0.2	mg/L	5.86	pH units	10.8	°C	10	mg/L	10	mg/L	0.13	mg/L	
	01-CML (09	9/10/2013	3.47	0.2	mg/L	88	mg/L	264	µS/cm	7.50	mg/L	0.2	mg/L	0.2	mg/L	5.62	pH units	20.1	°C	0.5	mg/L	0.2	mg/L	0.035	mg/L	
	01-CML (09	10/28/2013	3.46	0.1	mg/L	63	mg/L	185	µS/cm	6.82	mg/L	0.2	mg/L	0.2	mg/L	5.98	pH units	16.3	°C	0.5	mg/L	0.2	mg/L	0.08	mg/L	
	01-CML (09	1/1/2014														6.66	pH units	15.7	°C	0.5	mg/L	0.2	mg/L	0.02	mg/L	
	01-CML (09	4/14/2014	2.95	0.2	mg/L	57	mg/L	230	µS/cm							6.48	pH units	13.4	°C	0.5	mg/L	0.2	mg/L	0.031	mg/L	
	01-CML (09	5/8/2014	3.09	0.2	mg/L	39	mg/L	165.4	µS/cm	7.42	mg/L	0.2	mg/L	0.2	mg/L			11.9	°C	0.2	mg/L	0.2	mg/L	0.379	mg/L	
	01-CML (09	6/11/2014	3.24	0.2	mg/L	61	mg/L	796	µS/cm	7.07	mg/L	0.2	mg/L	0.2	mg/L	6.46	pH units	12.9	°C	0.2	mg/L	0.2	mg/L	0.071	mg/L	
	01-CML (09	7/14/2014	3.37	0.2	mg/L	360	mg/L	720	µS/cm	7.86	mg/L	0.2	mg/L	0.2	mg/L	6.02	pH units	14	°C	0.2	mg/L	0.2	mg/L	0.036	mg/L	
	01-CML (09	8/12/2014	3.44	0.2	mg/L	253	mg/L	508	µS/cm	9.13	mg/L	0.2	mg/L	0.2	mg/L	6.33	pH units	16.1	°C	0.2	mg/L	0.2	mg/L	0.032	mg/L	
	01-CML (09	9/18/2014	3.47	0.2	mg/L	122	mg/L	264	µS/cm	9.26	mg/L	0.2	mg/L	0.2	mg/L	6.45	pH units	16.1	°C	0.2	mg/L	0.2	mg/L	0.01	mg/L	
	01-CML (09	11/5/2014	3.10	0.2	mg/L	150	mg/L	332	µS/cm	9.00	mg/L	0.2	mg/L	0.2	mg/L	6.56	pH units	15	°C	0.2	mg/L	0.2	mg/L	0.221	mg/L	
	01-CML (09	1/1/2015														6.27	pH units	13.8	°C	0.2	mg/L	0.2	mg/L	0.01	mg/L	
	01-CML (09	4/13/2015	2.91	0.2	mg/L	89	mg/L	373	µS/cm	9.91	mg/L	0.2	mg/L	0.2	mg/L											
	01-CML (09	5/7/2015	3.09	0.2	mg/L	83	mg/L	273	µS/cm	9.02	mg/L	0.2	mg/L	0.2	mg/L	6.67	pH units	9.5	°C	0.2	mg/L	0.2	mg/L	0.01	mg/L	
	01-CML (09	7/16/2015	2.91	0.2	mg/L	252	mg/L	660	µS/cm	7.31	mg/L	0.2	mg/L	0.2	mg/L	14.5	°C	0.398	mg/L	0.4	mg/L	0.4	mg/L	0.01	mg/L	
	01-CML (09	8/6/2015	2.71	0.2	mg/L	247	mg/L	724	µS/cm	6.04	mg/L	0.2	mg/L	0.2	mg/L	6.06	pH units	13.7	°C	0.2	mg/L	0.554	mg/L	0.01	mg/L	
	01-CML (09	8/27/2015	3.10	0.2	mg/L	125	mg/L	385.6	µS/cm	5.66	mg/L	0.2	mg/L	0.2	mg/L	6.09	pH units	15.6	°C	0.77	mg/L	0.77	mg/L	0.01	mg/L	
	01-CML (09	9/24/2015	3.29	0.2	mg/L	90	mg/L	275.6	µS/cm	2.19	mg/L	0.2	mg/L	0.2	mg/L	6.29	pH units	15.3	°C	0.593	mg/L	0.59	mg/L	0.01	mg/L	
	01-CML (09	11/5/2015	2.95	0.2	mg/L	62	mg/L	226.7	µS/cm			0.2	mg/L	0.2	mg/L	6.36	pH units	15	°C	0.503	mg/L	0.5	mg/L	0.038	mg/L	
	01-WCH	11/26/2012														6.39	pH units	13.8	°C	0.305	mg/L	0.3	mg/L	0.031	mg/L	
	01-WCH	4/4/2013			55	mg/L																		0.11	mg/L	
	01-WCH	7/17/2013	1.95	0.4	mg/L	68	mg/L	259	µS/cm	10.72	mg/L	0.2	mg/L	0.2	mg/L	2.1	mg/L				0.5	mg/L	2.1	mg/L	0.01	mg/L
	01-WCH	8/16/2013	1.76	0.2	mg/L	76	mg/L	247	µS/cm	6.82	mg/L	2.41	mg/L	0.2	mg/L	5.67	pH units	14.5	°C	0.5	mg/L	0.2	mg/L	0.154	mg/L	
	01-WCH	9/17/2013	1.80	0.2	mg/L	80	mg/L	243	µS/cm	10.63	mg/L	0.2	mg/L	2.33	mg/L	5.58	pH units	13.6	°C	0.5	mg/L	2.41	mg/L	0.02	mg/L	
	01-WCH	10/28/2013	1.56	0.1	mg/L	61	mg/L	158.3	µS/cm	2.71	mg/L	0.2	mg/L	0.2	mg/L	5.58	pH units	12.6	°C	0.5	mg/L	2.33	mg/L	0.024	mg/L	
	01-WCH	1/1/2014														5.88	pH units	11.4	°C	0.5	mg/L	0.2	mg/L	0.025	mg/L	
	01-WCH	4/14/2014	1.12	0.2	mg/L	67	mg/L	250	µS/cm			1.77	mg/L	0.2	mg/L											
	01-WCH	5/8/2014	1.43	0.2	mg/L	49	mg/L	208.2	µS/cm	7.17	mg/L	1.92	mg/L	0.2	mg/L			11.1	°C	0.2	mg/L	1.77	mg/L	0.025	mg/L	
	01-WCH	6/11/2014	1.51	0.2	mg/L	40	mg/L	118.7	µS/cm	8.21	mg/L	1.85	mg/L	0.2	mg/L	5.83	pH units	10.9	°C	0.2	mg/L	1.92	mg/L	0.048	mg/L	
	01-WCH	7/14/2014	1.72	0.2	mg/L	41	mg/L	119.2	µS/cm	7.47	mg/L	1.74	mg/L	0.2	mg/L	5.95	pH units	13	°C	1.85	mg/L	1.85	mg/L	0.071	mg/L	
	01-WCH	8/12/2014	1.86	0.2	mg/L	41	mg/L	116.4	µS/cm	7.58	mg/L	1.85	mg/L	0.2	mg/L	6.00	pH units	13.9	°C	0.2	mg/L	1.72	mg/L	0.061	mg/L	
	01-WCH	9/18/2014	1.82	0.2	mg/L	42	mg/L	114.9	µS/cm	6.02	mg/L	0.2	mg/L	1.8	mg/L	6.33	pH units	13.5	°C	0.2	mg/L	1.85	mg/L	0.01	mg/L	
	01-WCH	11/5/2014	1.31	0.2	mg/L	93	mg/L	116.4	µS/cm	4.63	mg/L	0.2	mg/L	0.2	mg/L	6.03	pH units	12.8	°C	0.2	mg/L	1.8	mg/L	0.013	mg/L	
	01-WCH	1/1/2015														5.91	pH units	12.8	°C	0.2	mg/L	1.8	mg/L	0.013	mg/L	
	01-WCH	4/13/2015	0.92	0.2	mg/L	104	mg/L	419	µS/cm	5.75	mg/L	1.8	mg/L	0.2	mg/L	5.96	pH units	11.1	°C	0.2	mg/L	0.2	mg/L	0.01	mg/L	
	01-WCH	5/7/2015	1.04	0.2	mg/L	72	mg/L	277	µS/cm	5.39	mg/L	1.75	mg/L	0.2	mg/L											
	01-WCH	7/16/2015	1.75	0.2	mg/L	58	mg/L	185.4	µS/cm	5.58	mg/L	1.54	mg/L	0.2	mg/L	5.34	pH units	9.7	°C	0.2	mg/L	1.8	mg/L	0.011	mg/L	
	01-WCH	8/6/2015	2.94	0.2	mg/L	61	mg/L	200.1	µS/cm	4.45	mg/L	1.57	mg/L	0.2	mg/L	11.5	°C	0.478	mg/L	2.23	mg/L	2.23	mg/L	0.01	mg/L	
	01-WCH	8/27/2015	2.00	0.2	mg/L	51	mg/L	173	µS/cm	3.22	mg/L	1.4	mg/L	0.2	mg/L	5.79	pH units	11.6	°C	0.613	mg/L	2.15	mg/L	0.01	mg/L	
	01-WCH	9/24/2015	1.99	0.2	mg/L	37	mg/L	141.8	µS/cm	3.11	mg/L	1.3	mg/L	0.2	mg/L	5.73	pH units	12.5	°C	0.514	mg/L	2.08	mg/L	0.01	mg/L	
	01-WCH	11/5/2015	1.57	0.2	mg/L	39	mg/L	145.6	µS/cm			0.2	mg/L	0.2	mg/L	5.65	pH units	12.8	°C	0.495	mg/L	1.9	mg/L	0.017	mg/L	
	12-PEN	11/26/2012			43	mg/L	173.7	µS/cm	2.83	mg/L																
	12-PEN	4/4/2013			42	mg/L																				
	12-PEN	7/17/2013	2.00	0.4	mg/L	42	mg/L	171.9	µS/cm	3.61	mg/L	0.2	mg/L	0.2	mg/L	5.71	pH units	9.3	°C	11	mg/L	11	mg/L	0.02	mg/L	
	12-PEN	8/16/2013	2.43	0.2	mg/L	41	mg/L	144.2	µS/cm	2.29	mg/L	0.2	mg/L	0.2	mg/L						0.5	mg/L	0.5	mg/L	0.01	mg/L
	12-PEN	9/17/2013	3.02	0.2	mg/L	39	mg/L	134.5	µS/cm	3.03	mg/L	0.2	mg/L	0.2	mg/L	6.43	pH units	14.2	°C	0.5	mg/L	0.2	mg/L	0.217	mg/L	
	12-PEN	10/28/2013	3.32	0.1	mg/L	37	mg/L	111.7	µS/cm	2.43	mg/L	0.2	mg/L	0.2	mg/L	6.04	pH units	13.1	°C	0.5	mg/L	0.2	mg/L	0.02	mg/L	
	12-PEN	1/1/2014														5.98	pH units	11.7	°C	0.5	mg/L	0.2	mg/L	0.02	mg/L	
	12-PEN	4/14/2014	1.36	0.2	mg/L	39	mg/L	160	µS/cm			0.2	mg/L	0.2	mg/L	6.06	pH units	12.6	°C	0.5	mg/L	0.2	mg/L	0.019	mg/L	
	12-PEN	5/8/2014	1.82	0.2	mg/L	33	mg/L	143.9	µS/cm	2.45	mg/L	0.2	mg/L	0.2	mg/L											
	12-PEN	6/11/2014	2.27	0.2	mg/L	31	mg/L	87	µS/cm	2.50	mg/L	0.2	mg/L	0.2	mg/L	6.18	pH units	9.6	°C	0.2	mg/L	0.2	mg/L	0.048	mg/L	
	12-PEN	7/14/2014	2.70	0.2	mg/L	30	mg/L	88	µS/cm	2.85	mg/L	0.2	mg/L	0.2	mg/L	6.44	pH units	9.6	°C	0.2	mg/L	0.2	mg/L	0.031	mg/L	
	12-PEN	8/12/2014	3.10	0.2	mg/L	35	mg/L	94.4	µS/cm	2.48	mg/L	0.2	mg/L	0.2	mg/L	6.37	pH units	12	°C	0.2	mg/L	0.2	mg/L	0.057	mg/L	
	12-PEN	9/18/2014	3.28	0.2	mg/L	35	mg/L	94.8	µS/cm	2.72	mg/L	0.2	mg/L	0.2	mg/L	6.34	pH units	12.3	°C	0.2	mg/L	0.2	mg/L	0.031	mg/L	
	12-PEN	11/5/2014	2.20	0.2	mg/L	33	mg/L	109.4	µS/cm	2.26	mg/L	0.2	mg/L	0.2	mg/L	6.24	pH units	12.4	°C	0.2	mg/L	0.2	mg/L	0.011	mg/L	
	12-PEN	1/1/2015														6.35	pH units	11.9	°C	0.2	mg/L	0.2	mg/L	0.048	mg/L	
	12-PEN	4/13/2015	1.10	0.2	mg/L	34	mg/L	148.5	µS/cm	2.91	mg/L	0.2	mg/L	0.2	mg/L											
	12-PEN	5/7/2015	1.62	0.2	mg/L	35	mg/L	143.3	µS/cm	3.69	mg/L	0.2	mg/L	0.2	mg/L	6.37	pH units	4	°C	14.6	mg/L	14.6	mg/L	0.072	mg/L	
	12-PEN	7/16/2015	2.21	0.2	mg/L	34	mg/L	120.1	µS/cm	3.50	mg/L	0.2	mg/L	0.2	mg/L	9	°C	0.517	mg/L	0.52	mg/L	0.52	mg/L	0.058	mg/L	
	12-PEN	8/6/2015	2.70	0.2	mg/L	33	mg																			

Pennichuck Water Works
Groundwater Sampling Data
2012 through 2015

Phosphorus - outlier >0.250 mg/L
Phosphorus - caution, abnormally high value
All - non-detect

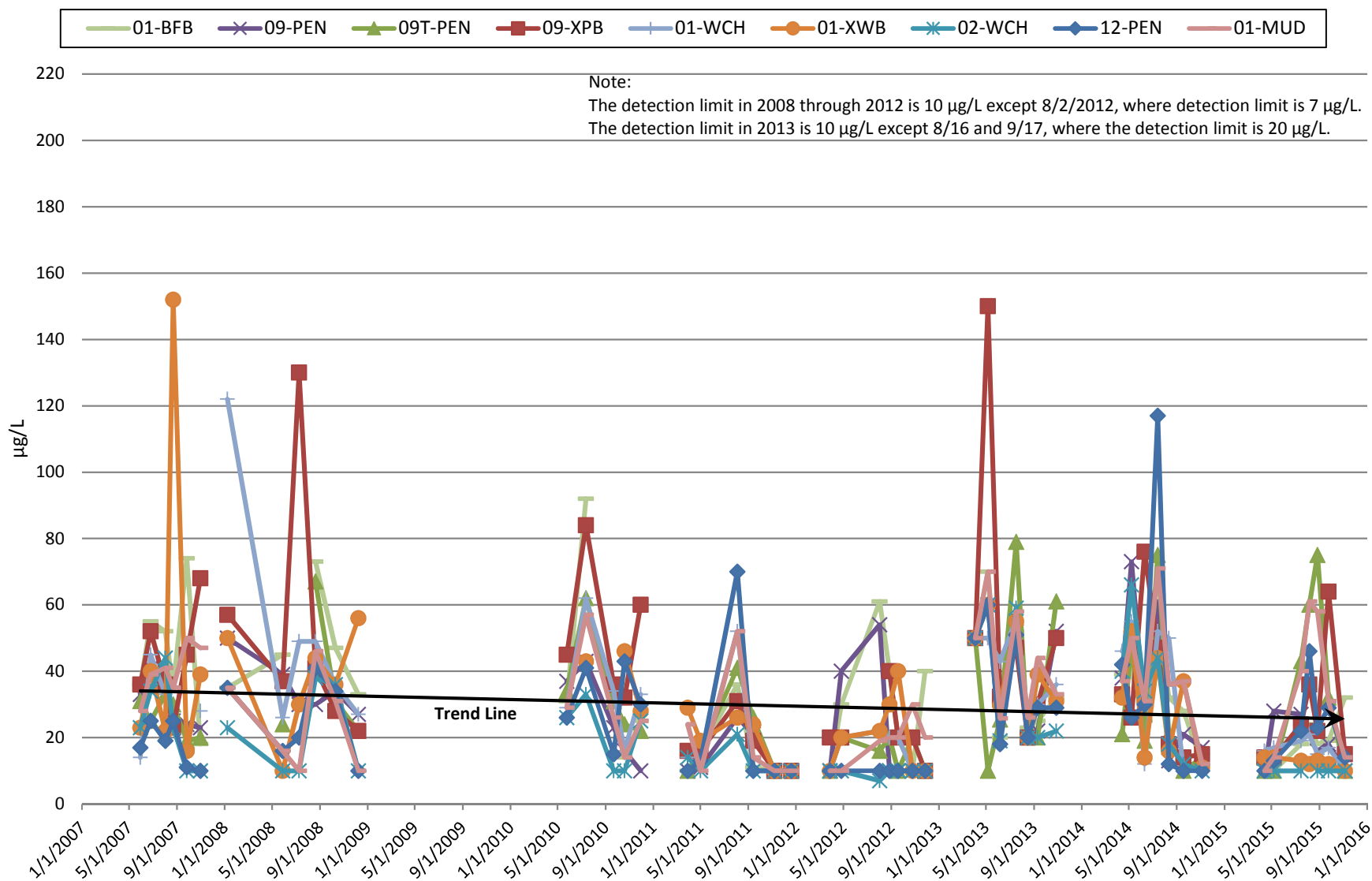
	Station	Date	Water Level Depth	Ammonia	Chloride	Conductivity	DO	Nitrate	Nitrite	Nitrate/Nitrite	pH	Temperature	TKN	Total Nitrogen	Total Phosphorus, Filtered
	01-MUD	11/26/2012			640 mg/L	1982 µS/cm	3.21 mg/L			0.5 mg/L	5.41 pH units	9.3 °C	2 mg/L	2 mg/L	0.01 mg/L
	01-MUD	4/4/2013			350 mg/L					0.5 mg/L			0.5 mg/L	0.5 mg/L	0.02 mg/L
	01-MUD	7/17/2013	1.45	0.4 mg/L	314 mg/L	1004 µS/cm	3.34 mg/L	0.2 mg/L	0.2 mg/L	0.4 mg/L	5.78 pH units	16.9 °C	0.5 mg/L	0.2 mg/L	0.8 mg/L
	01-MUD	7/17/2013	1.36	0.2 mg/L	334 mg/L	916 µS/cm	2.38 mg/L	5.05 mg/L	1 mg/L	5.05 mg/L	5.68 pH units	15.4 °C	0.5 mg/L	5.05 mg/L	0.02 mg/L
	01-MUD	9/17/2013	1.40	0.2 mg/L	373 mg/L	960 µS/cm	5.01 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	5.49 pH units	14 °C	0.5 mg/L	0.2 mg/L	0.038 mg/L
	01-MUD	10/28/2013	1.46	0.1 mg/L	378 mg/L	850 µS/cm	3.00 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	5.74 pH units	13.2 °C	0.5 mg/L	0.2 mg/L	0.031 mg/L
	01-MUD	1/1/2014													
	01-MUD	4/14/2014	0.80	0.2 mg/L	282 mg/L	960 µS/cm		0.2 mg/L	0.2 mg/L	0.2 mg/L		8.2 °C	0.2 mg/L	0.2 mg/L	0.031 mg/L
	01-MUD	5/8/2014	1.00	0.2 mg/L	287 mg/L	947 µS/cm	4.98 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	5.94 pH units	10.4 °C	0.2 mg/L	0.2 mg/L	0.042 mg/L
	01-MUD	6/11/2014	1.10	0.2 mg/L	296 mg/L	609 µS/cm	5.36 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	5.92 pH units	13.9 °C	0.2 mg/L	0.2 mg/L	0.01 mg/L
	01-MUD	7/14/2014	1.21	0.2 mg/L	275 mg/L	589 µS/cm	4.29 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	5.96 pH units	14.5 °C	0.2 mg/L	0.2 mg/L	0.036 mg/L
	01-MUD	8/12/2014	1.39	0.2 mg/L	270 mg/L	577 µS/cm	3.43 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	5.79 pH units	15.8 °C	0.2 mg/L	0.2 mg/L	0.01 mg/L
	01-MUD	9/18/2014	1.17	0.2 mg/L	269 mg/L	565 µS/cm	3.83 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.00 pH units	14.6 °C	0.2 mg/L	0.2 mg/L	0.01 mg/L
	01-MUD	11/5/2014	0.85	0.2 mg/L	315 mg/L	647 µS/cm	6.70 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.07 pH units	12.3 °C	0.2 mg/L	0.2 mg/L	0.010 mg/L
	01-MUD	1/1/2015													
	01-MUD	4/13/2015	0.50	0.2 mg/L	104 mg/L	490 µS/cm	7.17 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.54 pH units	8.3 °C	0.2 mg/L	0.2 mg/L	0.068 mg/L
	01-MUD	5/7/2015	0.95	0.2 mg/L	107 mg/L	443 µS/cm	5.89 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L		13 °C	0.697 mg/L	0.7 mg/L	0.014 mg/L
	01-MUD	7/16/2015	0.40	0.2 mg/L	138 mg/L	443 µS/cm	3.38 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.03 pH units	12.4 °C	0.81 mg/L	0.81 mg/L	0.01 mg/L
	01-MUD	8/6/2015	1.17	0.2 mg/L	210 mg/L	603 µS/cm	4.41 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	5.89 pH units	14.2 °C	0.869 mg/L	0.87 mg/L	0.01 mg/L
	01-MUD	8/27/2015	1.61	0.2 mg/L	222 mg/L	660 µS/cm	4.53 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	5.93 pH units	15 °C	0.495 mg/L	0.5 mg/L	0.014 mg/L
	01-MUD	9/24/2015	1.85	0.2 mg/L	241 mg/L	683 µS/cm	1.77 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	5.98 pH units	15.2 °C	0.635 mg/L	0.64 mg/L	0.114 mg/L
	01-MUD	11/5/2015	1.30	0.2 mg/L	277 mg/L	797 µS/cm		0.2 mg/L	0.2 mg/L	0.2 mg/L	5.83 pH units	13.9 °C	0.481 mg/L	0.48 mg/L	0.01 mg/L
	01-XWB	11/26/2012			27 mg/L	123 µS/cm	4.93 mg/L			1.3 mg/L	5.15 pH units	9.5 °C	10.3 mg/L	10.3 mg/L	0.01 mg/L
	01-XWB	4/4/2013			17 mg/L					0.9 mg/L					
	01-XWB	7/17/2013	2.75	0.4 mg/L	17 mg/L	96.7 µS/cm	3.60 mg/L	1.27 mg/L	0.2 mg/L	1.27 mg/L	5.55 pH units	19.1 °C	0.5 mg/L	1.27 mg/L	0.288 mg/L
	01-XWB	8/16/2013	2.78	0.2 mg/L	17 mg/L	83.9 µS/cm	1.84 mg/L	0.79 mg/L	0.2 mg/L	0.79 mg/L	5.48 pH units	18.1 °C	0.5 mg/L	0.79 mg/L	0.02 mg/L
	01-XWB	9/17/2013	3.05	0.2 mg/L	20 mg/L	99.8 µS/cm	6.69 mg/L	1.1 mg/L	0.2 mg/L	1.1 mg/L	5.57 pH units	16.3 °C	0.5 mg/L	1.1 mg/L	0.032 mg/L
	01-XWB	10/28/2013	2.94	0.1 mg/L	26 mg/L	91.8 µS/cm	4.87 mg/L	1.56 mg/L	0.2 mg/L	1.56 mg/L	5.68 pH units	13.9 °C	0.5 mg/L	1.56 mg/L	0.031 mg/L
	01-XWB	1/1/2014													
	01-XWB	4/14/2014	2.08	0.2 mg/L	6 mg/L	60 µS/cm		0.46 mg/L	0.2 mg/L	0.46 mg/L		10.7 °C	0.2 mg/L	0.46 mg/L	0.033 mg/L
	01-XWB	5/8/2014	2.33	0.2 mg/L	23 mg/L	112.5 µS/cm	4.50 mg/L	1.41 mg/L	0.2 mg/L	1.41 mg/L	5.88 pH units	10.2 °C	0.2 mg/L	1.41 mg/L	0.048 mg/L
	01-XWB	6/11/2014	2.72	0.2 mg/L	14 mg/L	60.1 µS/cm	2.74 mg/L	1.14 mg/L	0.2 mg/L	0.2 mg/L	5.80 pH units	12.9 °C	0.2 mg/L	1.14 mg/L	0.041 mg/L
	01-XWB	7/14/2014	3.03	0.2 mg/L	13 mg/L	61.1 µS/cm	4.12 mg/L	0.96 mg/L	0.2 mg/L	0.96 mg/L	5.90 pH units	17.5 °C	0.2 mg/L	0.96 mg/L	0.076 mg/L
	01-XWB	8/12/2014	3.28	0.2 mg/L	20 mg/L	72.1 µS/cm	3.78 mg/L	1.34 mg/L	0.2 mg/L	1.34 mg/L	5.85 pH units	17.9 °C	0.2 mg/L	1.34 mg/L	0.01 mg/L
	01-XWB	9/18/2014	3.28	0.2 mg/L	21 mg/L	71.2 µS/cm	4.29 mg/L	1.3 mg/L	0.2 mg/L	1.3 mg/L	5.81 pH units	16.6 °C	0.2 mg/L	1.3 mg/L	0.01 mg/L
	01-XWB	11/5/2014	2.65	0.2 mg/L	28 mg/L	82.6 µS/cm	2.92 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	5.89 pH units	13.1 °C	0.2 mg/L	1.14 mg/L	0.01 mg/L
	01-XWB	1/1/2015													
	01-XWB	4/13/2015	2.10	0.2 mg/L	17 mg/L	102.2 µS/cm	4.75 mg/L	1.2 mg/L	0.2 mg/L	1.2 mg/L	6.08 pH units	6.1 °C	0.2 mg/L	1.2 mg/L	0.01 mg/L
	01-XWB	5/7/2015	2.52	0.2 mg/L	16 mg/L	81.8 µS/cm	3.55 mg/L	1.12 mg/L	0.2 mg/L	1.12 mg/L		10.8 °C	0.298 mg/L	1.42 mg/L	0.01 mg/L
	01-XWB	7/16/2015	2.91	0.2 mg/L	14 mg/L	78.9 µS/cm	2.63 mg/L	0.75 mg/L	0.2 mg/L	0.75 mg/L	5.59 pH units	16.1 °C	0.554 mg/L	1.3 mg/L	0.01 mg/L
	01-XWB	8/6/2015	3.03	0.2 mg/L	18 mg/L	92.9 µS/cm	2.91 mg/L	1.65 mg/L	0.2 mg/L	1.06 mg/L	5.64 pH units	17.2 °C	0.593 mg/L	1.65 mg/L	0.01 mg/L
	01-XWB	8/27/2015	3.01	0.2 mg/L	21 mg/L	103.6 µS/cm	2.78 mg/L	1.36 mg/L	0.2 mg/L	1.36 mg/L	5.61 pH units	17.2 °C	0.396 mg/L	1.76 mg/L	0.01 mg/L
	01-XWB	9/24/2015	3.08	0.2 mg/L	22 mg/L	105 µS/cm	2.85 mg/L	1.42 mg/L	0.2 mg/L	1.42 mg/L	5.75 pH units	16.8 °C	0.2 mg/L	1.42 mg/L	0.01 mg/L
	01-XWB	11/5/2015	2.80	0.2 mg/L	19 mg/L	90.5 µS/cm		1 mg/L	0.2 mg/L	1 mg/L	5.79 pH units	13.6 °C	0.767 mg/L	1.77 mg/L	0.372 mg/L
	01-HAY (02	11/26/2012			58 mg/L	210.5 µS/cm	5.41 mg/L			0.5 mg/L	5.28 pH units	6.8 °C	26 mg/L	26 mg/L	0.04 mg/L
	01-HAY (02	4/4/2013			59 mg/L					0.5 mg/L			0.5 mg/L	0.5 mg/L	0.03 mg/L
	01-HAY (02	7/17/2013	1.80	0.4 mg/L	25 mg/L	97.3 µS/cm	4.96 mg/L	0.2 mg/L	0.2 mg/L	0.4 mg/L	5.57 pH units	19.2 °C	2.38 mg/L	2.38 mg/L	0.038 mg/L
	01-HAY (02	8/16/2013	1.88	0.2 mg/L	24 mg/L	85.9 µS/cm	5.25 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	5.68 pH units	17.1 °C	0.5 mg/L	0.2 mg/L	0.02 mg/L
	01-HAY (02	9/17/2013	1.90	0.2 mg/L	26 mg/L	44.2 µS/cm	4.98 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	5.31 pH units	15.2 °C	0.5 mg/L	0.2 mg/L	0.029 mg/L
	01-HAY (02	10/28/2013	1.93	0.1 mg/L	10 mg/L	40.9 µS/cm	4.13 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	5.81 pH units	11.3 °C	0.5 mg/L	0.2 mg/L	0.049 mg/L
	01-HAY (02	1/1/2014													
	01-HAY (02	4/14/2014	1.44	0.2 mg/L	41 mg/L	150 µS/cm		0.2 mg/L	0.2 mg/L	0.2 mg/L		10.2 °C	0.2 mg/L	0.2 mg/L	0.031 mg/L
	01-HAY (02	5/8/2014	1.83	0.2 mg/L	35 mg/L	140.6 µS/cm	7.96 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	5.89 pH units	10.3 °C	0.2 mg/L	0.2 mg/L	0.08 mg/L
	01-HAY (02	6/11/2014	2.13	0.2 mg/L	71 mg/L	161.8 µS/cm	7.60 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	5.85 pH units	13.2 °C	0.2 mg/L	0.2 mg/L	0.037 mg/L
	01-HAY (02	7/14/2014	2.46	0.2 mg/L	33 mg/L	88.5 µS/cm	8.15 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.26 pH units	17.3 °C	0.2 mg/L	0.2 mg/L	0.046 mg/L
	01-HAY (02	8/12/2014	3.10	0.2 mg/L	22 mg/L	70.7 µS/cm	9.53 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.37 pH units	17.7 °C	0.2 mg/L	0.2 mg/L	0.01 mg/L
	01-HAY (02	9/18/2014	2.86	0.2 mg/L	21 mg/L	63.2 µS/cm	9.80 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	6.22 pH units	15.8 °C	0.2 mg/L	0.2 mg/L	0.057 mg/L
	01-HAY (02	11/5/2014	1.90	0.2 mg/L	43 mg/L	222 µS/cm	6.80 mg/L	1.49 mg/L	0.2 mg/L	0.2 mg/L	5.79 pH units	11.2 °C	0.2 mg/L	1.49 mg/L	0.01 mg/L
	01-HAY (02	1/1/2015													
	01-HAY (02	4/13/2015	1.40	0.2 mg/L	99 mg/L	356 µS/cm	5.84 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	5.84 pH units	6 °C	0.2 mg/L	0.2 mg/L	0.01 mg/L
	01-HAY (02	5/7/2015	1.01	0.2 mg/L	44 mg/L	161.8 µS/cm	7.06 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L		11.7 °C	0.478 mg/L	0.48 mg/L	0.01 mg/L
	01-HAY (02	7/16/2015	2.03	0.2 mg/L	128 mg/L	384.2 µS/cm	4.01 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	5.30 pH units	15.4 °C	0.455 mg/L	0.455 mg/L	0.01 mg/L
	01-HAY (02	8/6/2015	2.74	0.2 mg/L	42 mg/L	142.2 µS/cm	6.26 mg/L	0.2 mg/L	0.2 mg/L	0.2 mg/L	5.95 pH units	16.3 °C	0.633 mg/L	0.63 mg/L	0.034 mg/L
	01-HAY (02	8/27/2015	4.02	0.2 mg/L	37 mg/L			0.2 mg/L	0.2 mg/L	0.2 mg/L			0.396 mg/L	0.4 mg/L	0.161 mg/L
	01-HAY (02	9/24/2015		0.2 mg/L	46 mg/L			0.64 mg/L	0.2 mg/L	0.64 mg/L			0.37 mg/L	1.01 mg/L	0.01 mg/L
	01-HAY (02	11/5/2015	2.00	0.2 mg/L	31 mg/L	128.7 µS/cm		0.2 mg/L	0.2 mg/L	0.2 mg/L	5.50 pH units	12.6 °C	0.503 mg/L	0.5 mg/L	0.413 mg/L

Attachment C:
Tributary Graphs

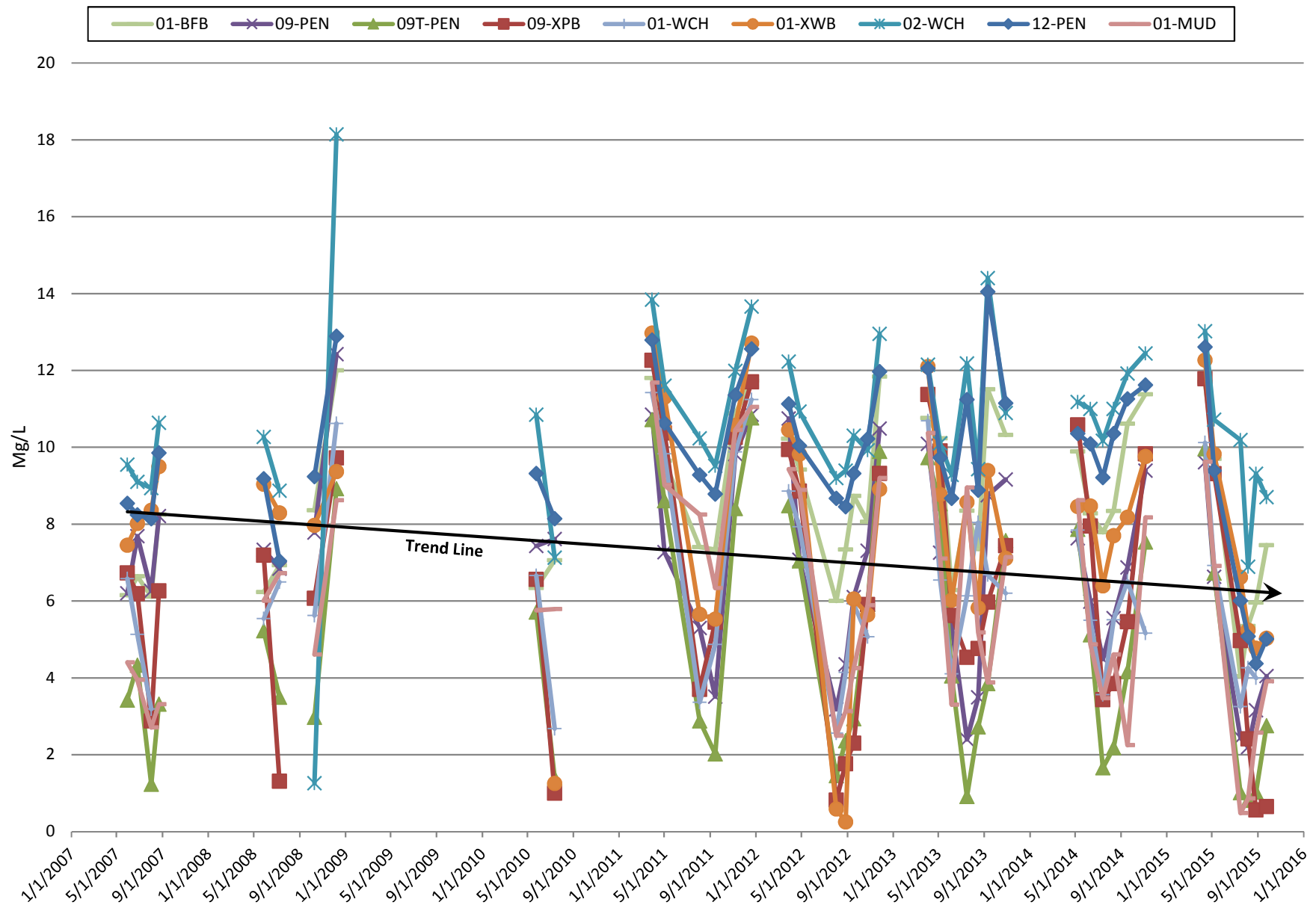


Phosphorus Trends in Tributaries, 2007-2015

(Outliers >250 µg/L Not Shown)

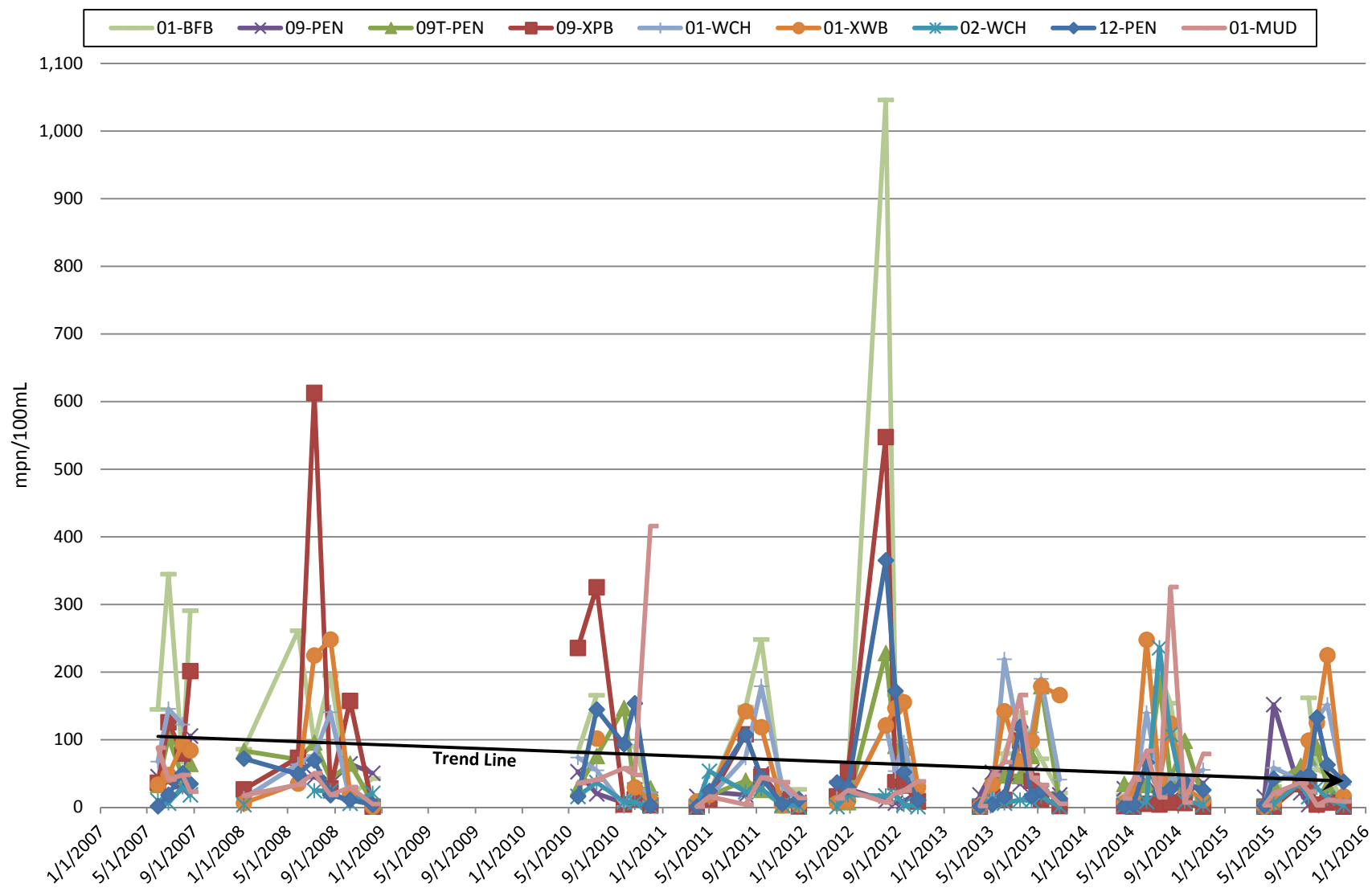


Dissolved Oxygen Trends in Tributaries, 2007-2015

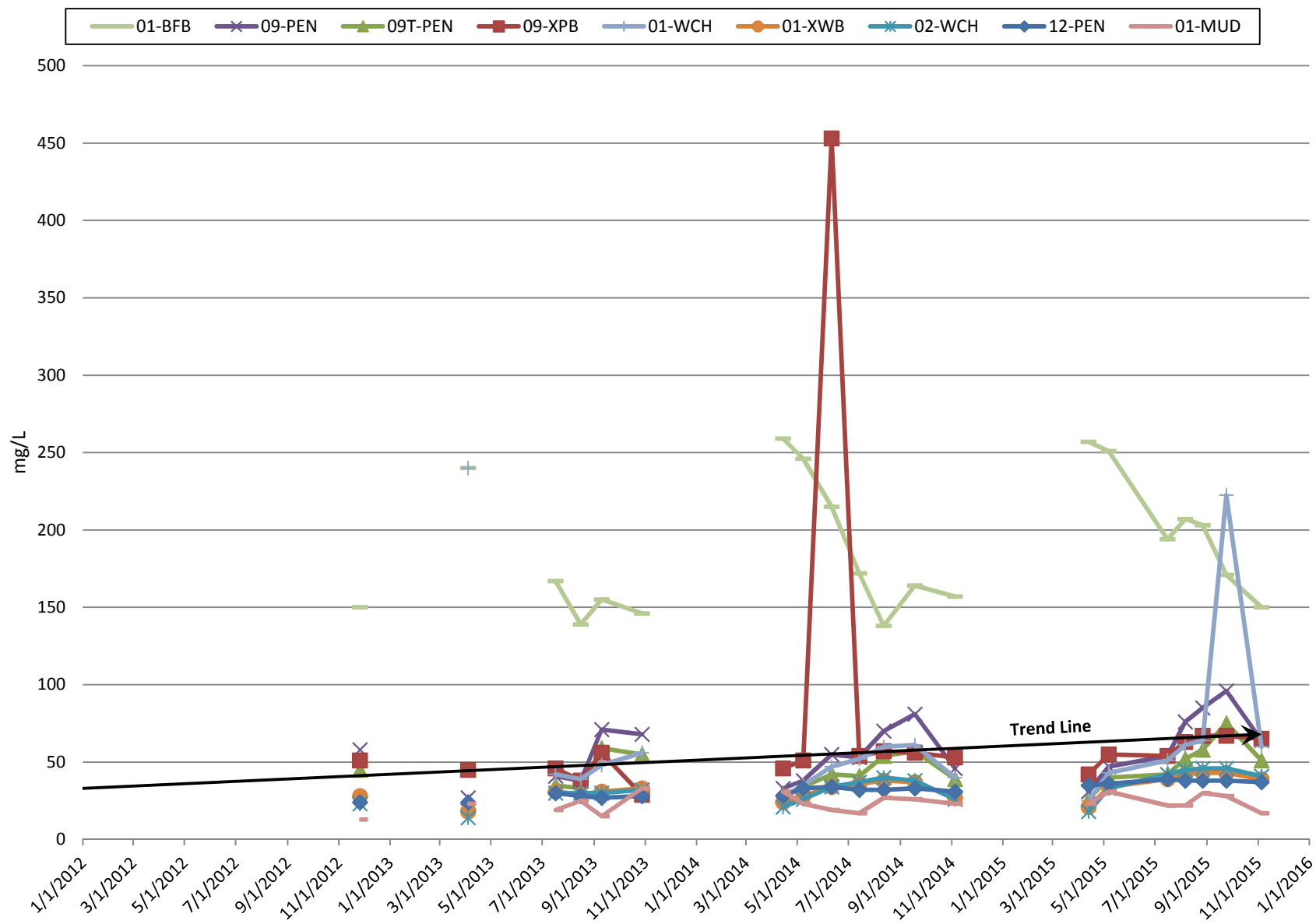


(Outliers >1,400 MPN/100 mL Not Shown)

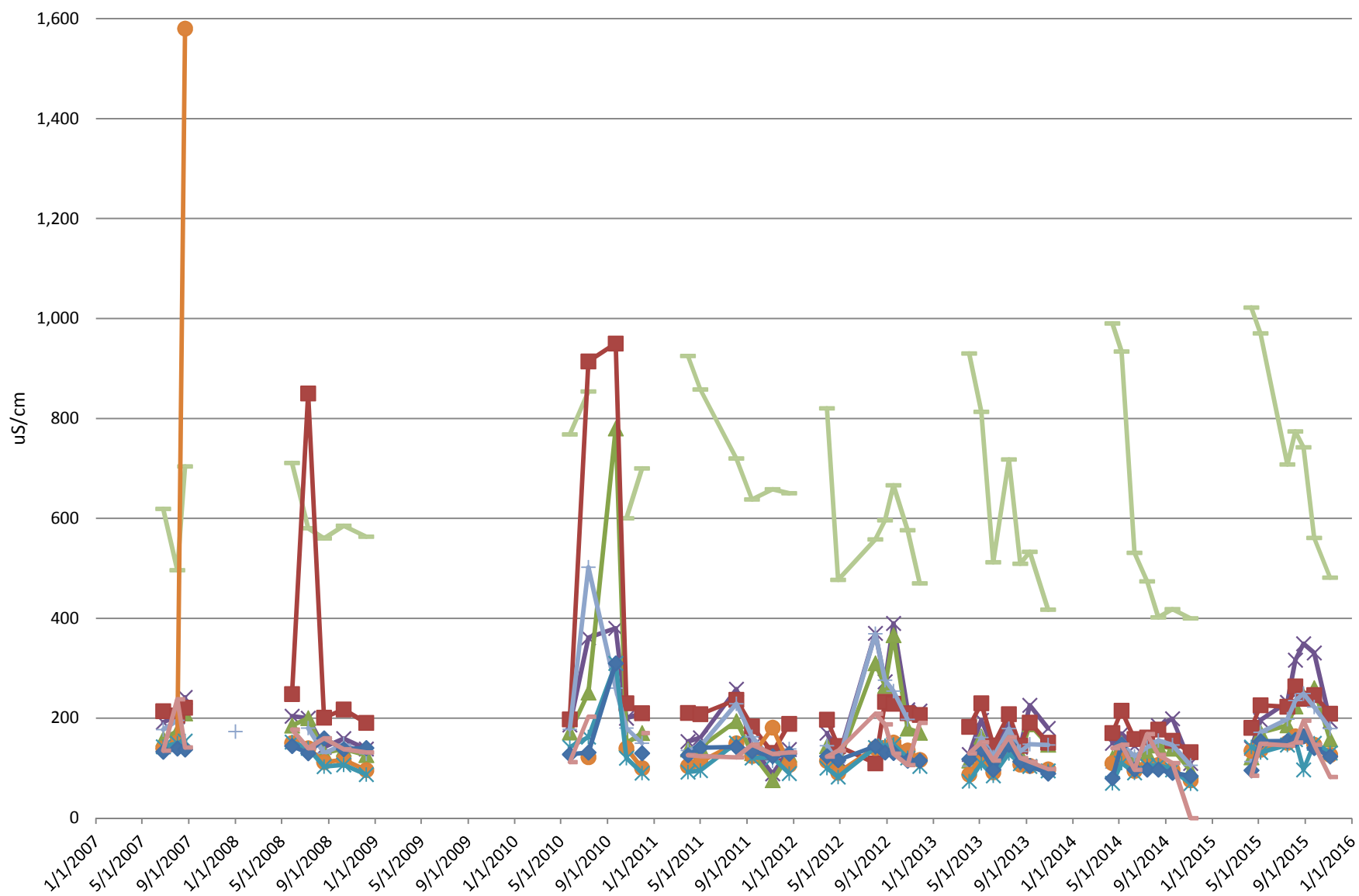
(Outliers >1,400 MPN/100 mL Not Shown)



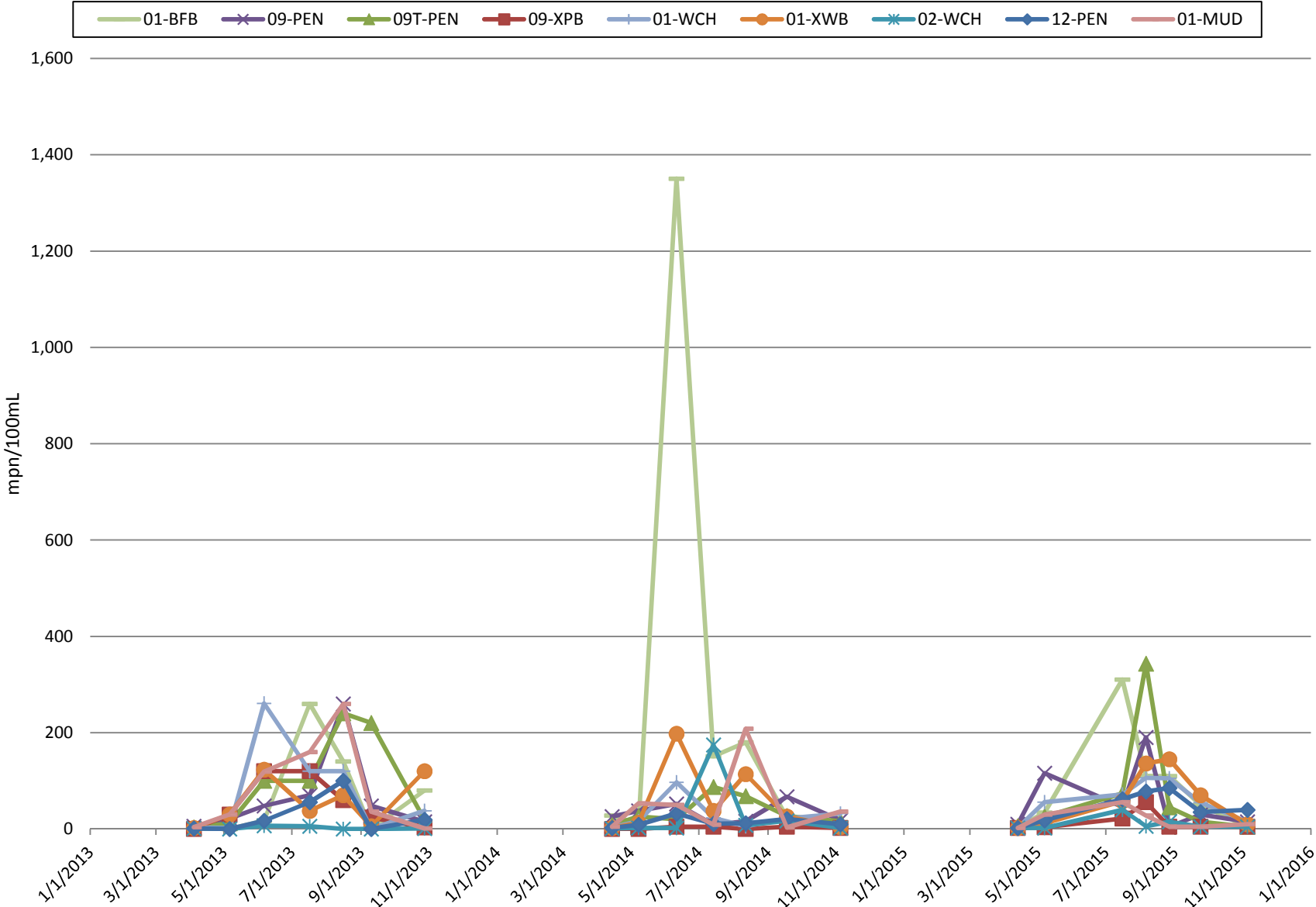
Tributary Dry Weather Sampling - Chloride Levels 2012-2015



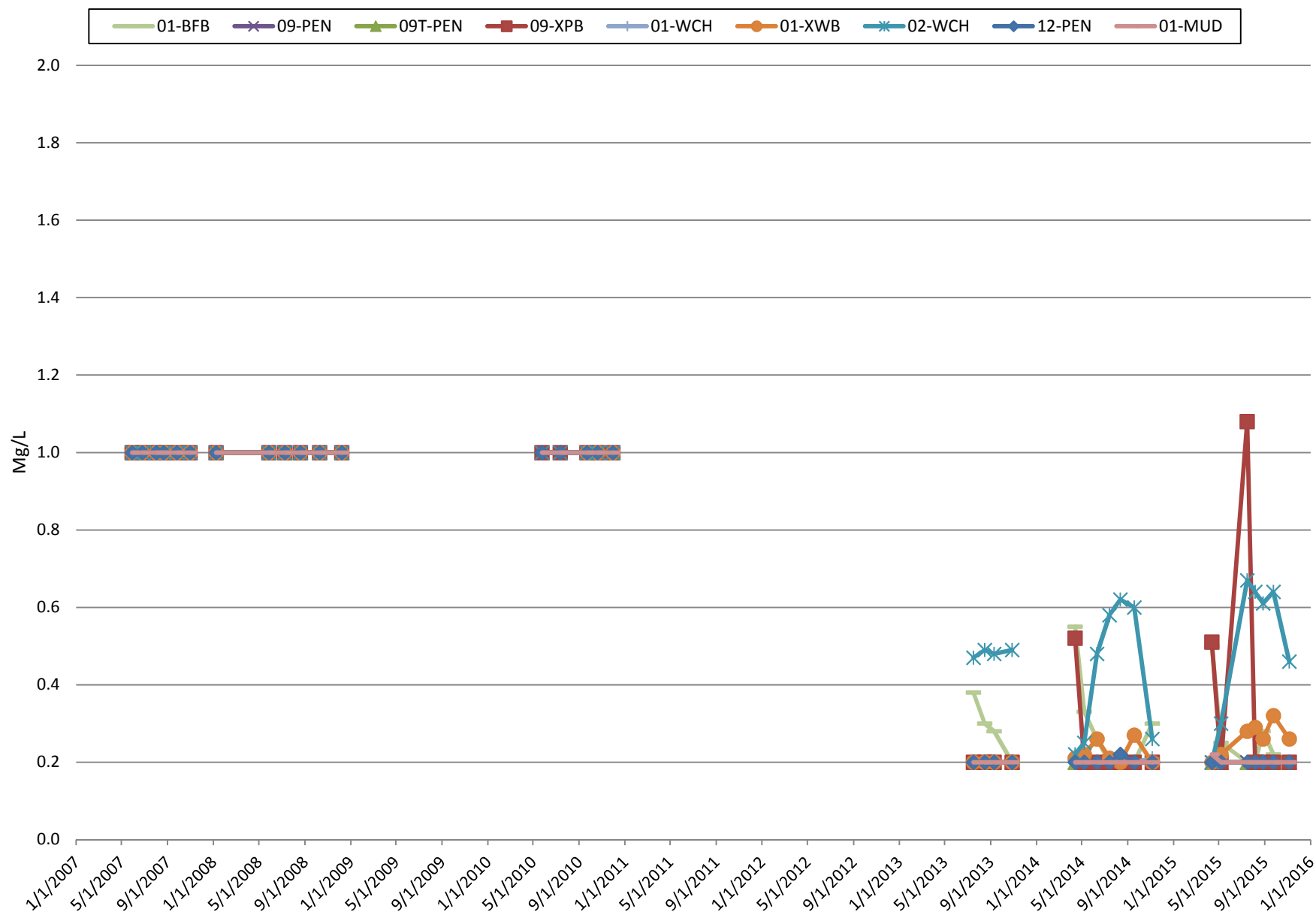
01-BFB 09-PEN 09T-PEN 09-XPB 01-WCH 01-XWB 02-WCH 12-PEN 01-MUD



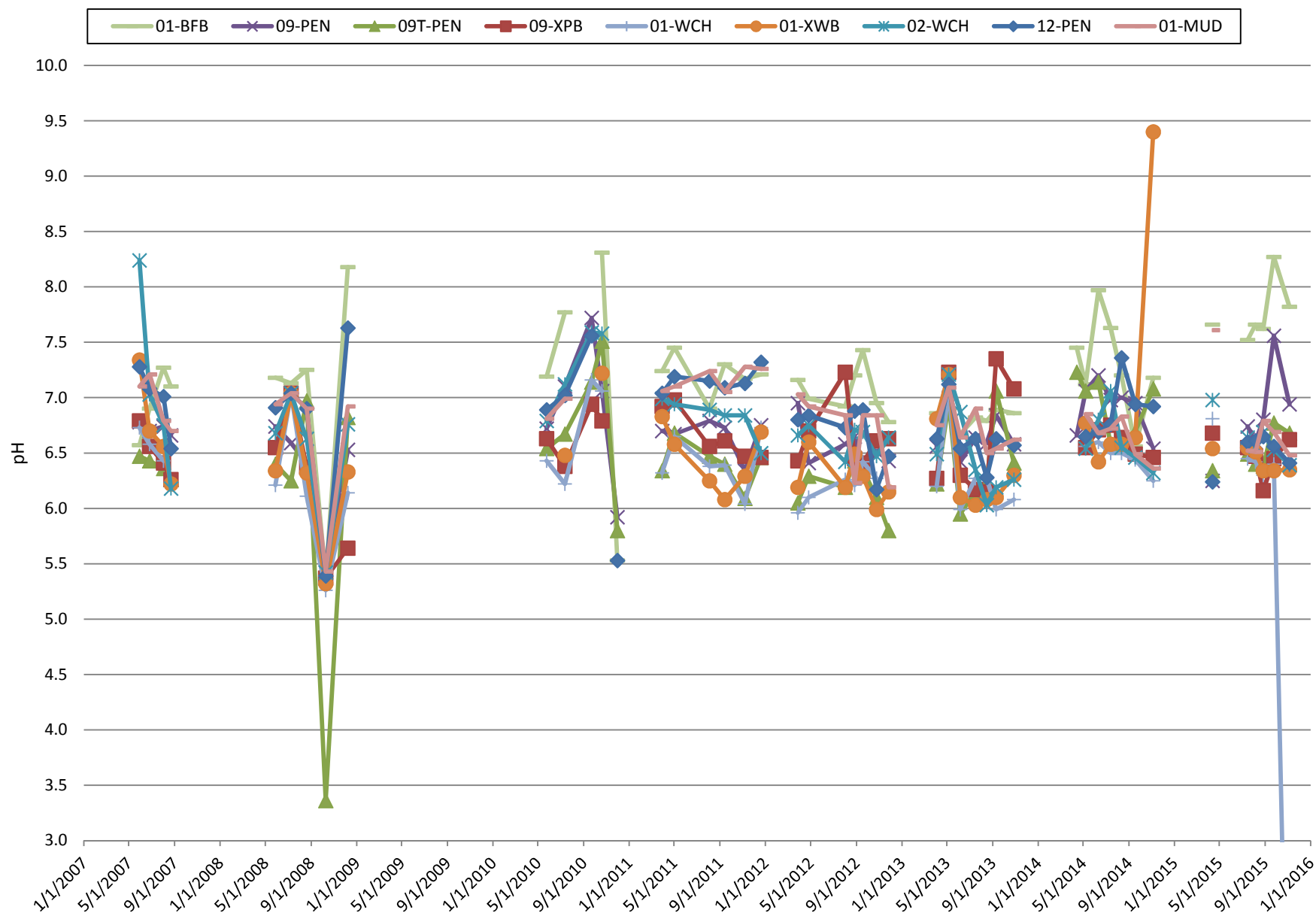
Tributary Dry Weather Sampling - Fecal Coliform Levels 2013-2015



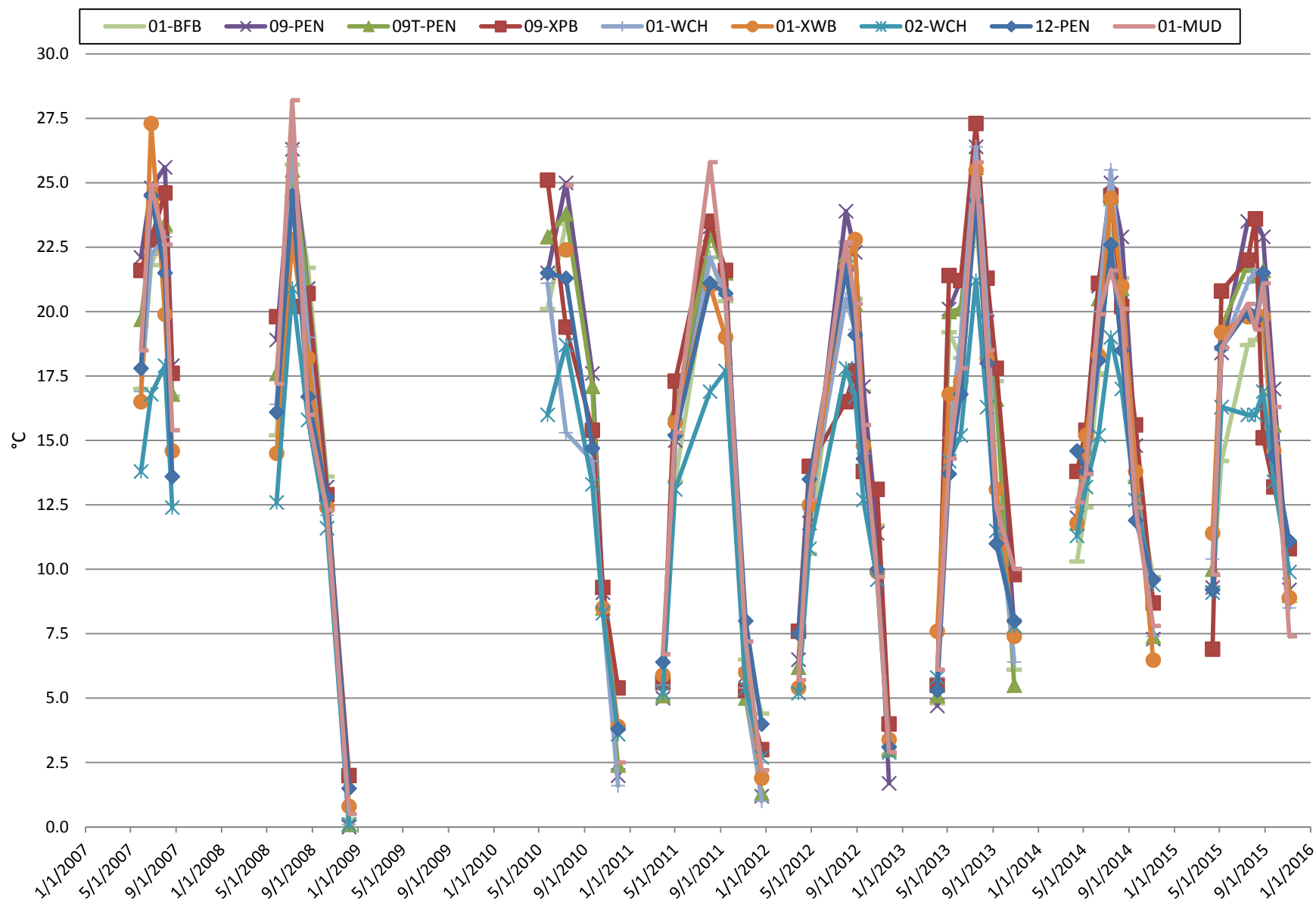
Tributary Dry Weather Sampling - Nitrate Levels 2007-2015



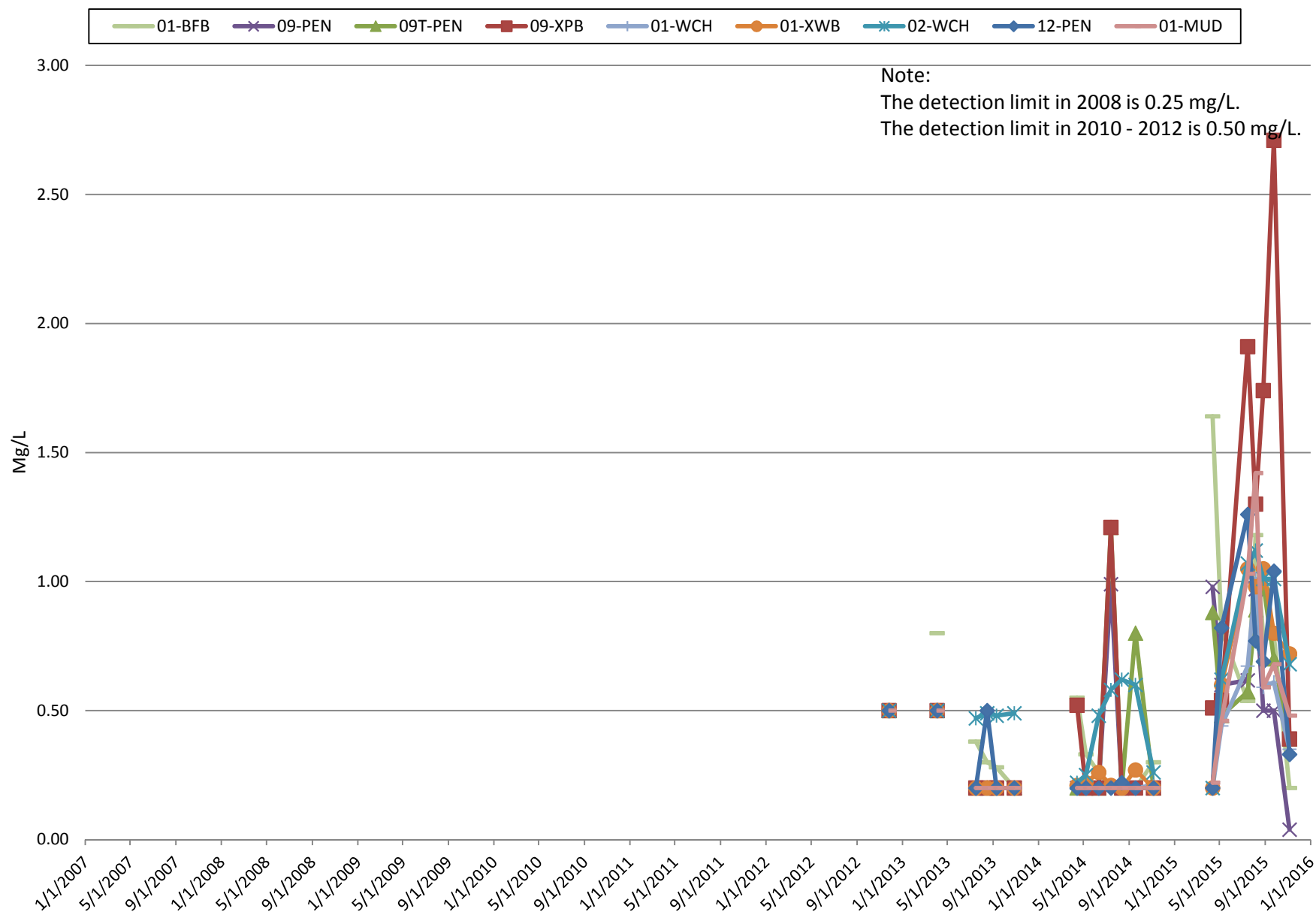
Tributary Dry Weather Sampling - pH 2007-2015



Tributary Dry Weather Sampling - Temperature 2007-2015

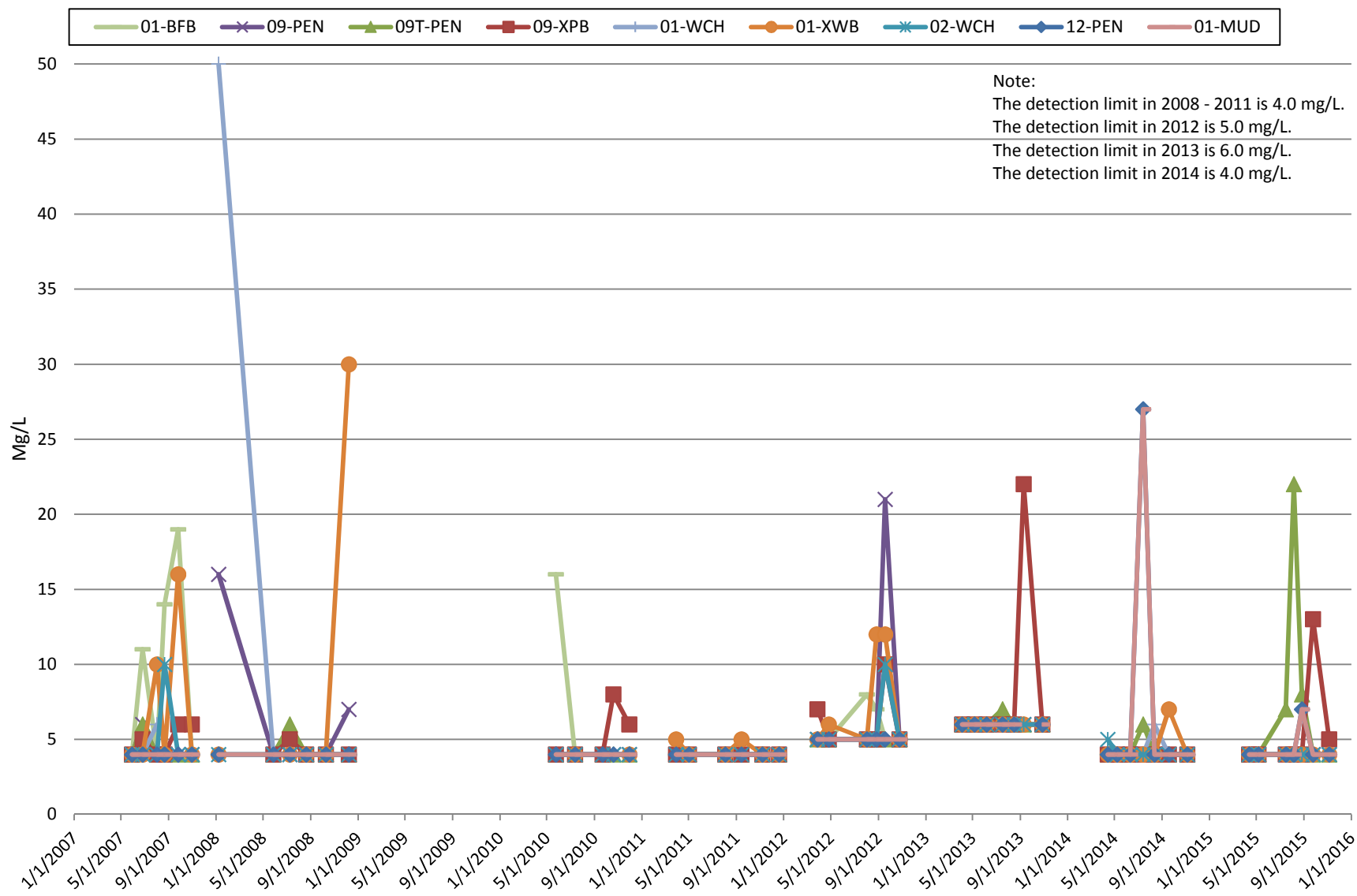


Tributary Dry Weather Sampling - Total Nitrogen Levels 2013-2015



Tributary Dry Weather Sampling - TSS Levels 2007-2015

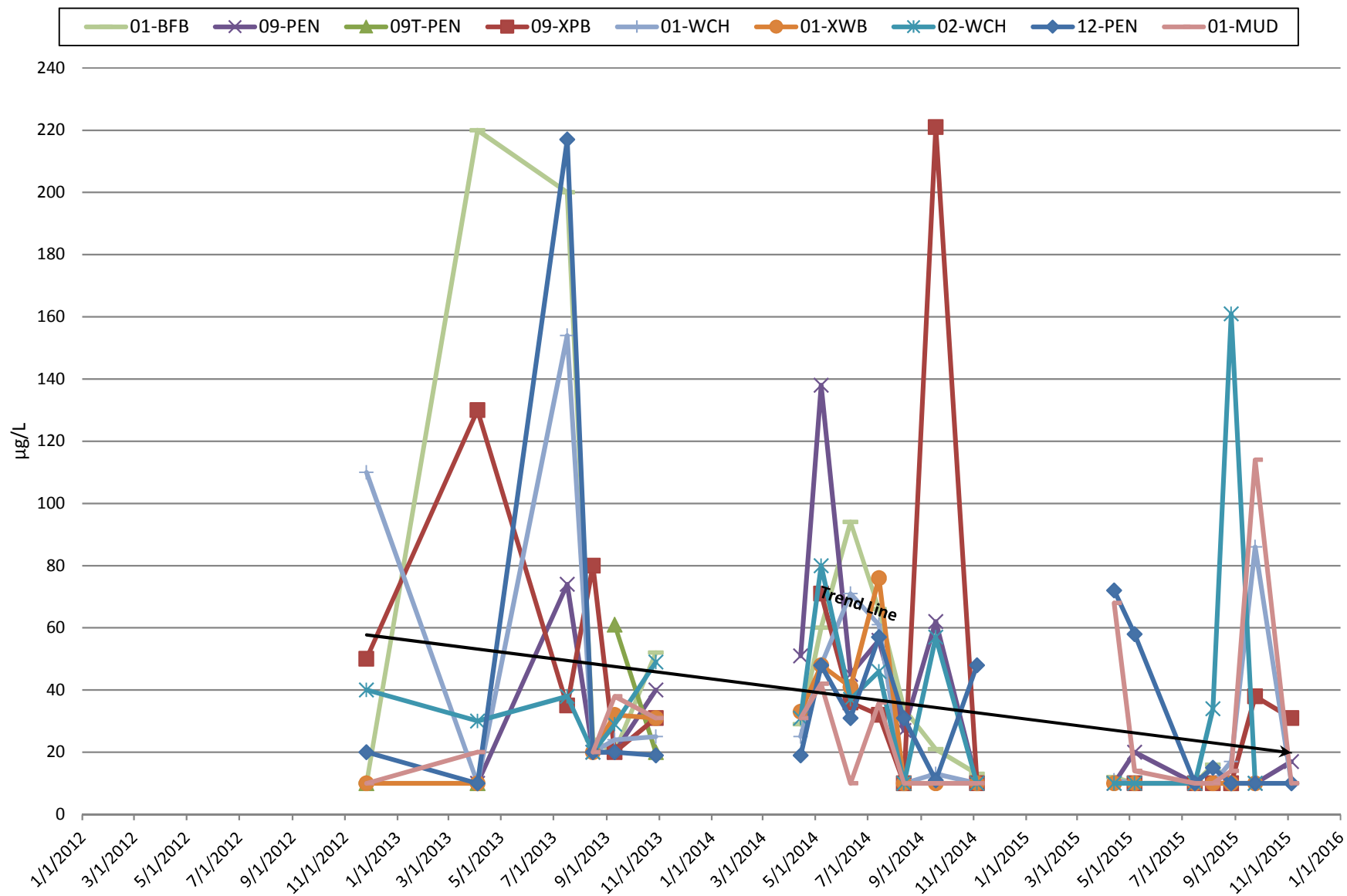
(Outliers >50 mg/L Removed)



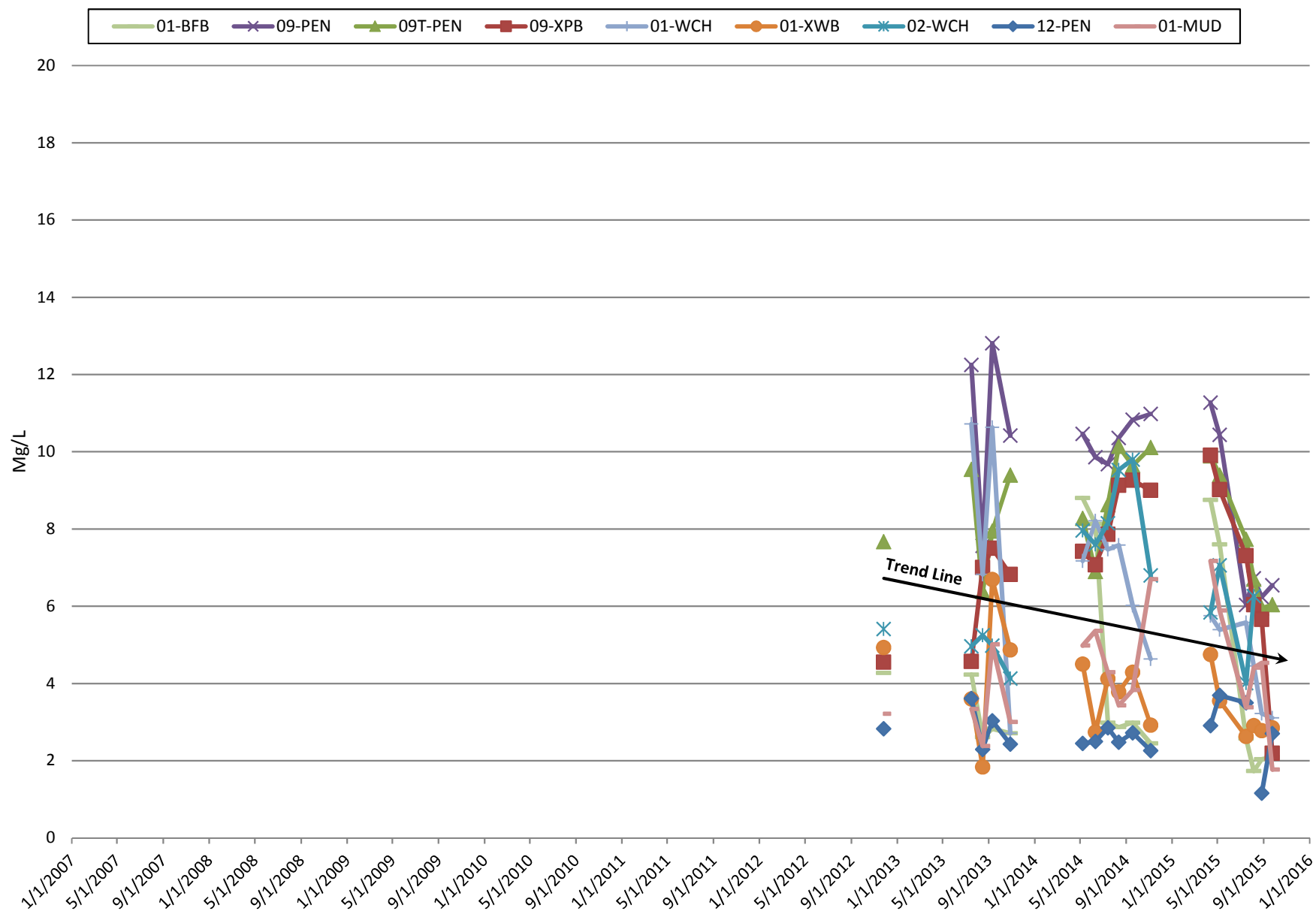
Attachment D:
Groundwater Graphs



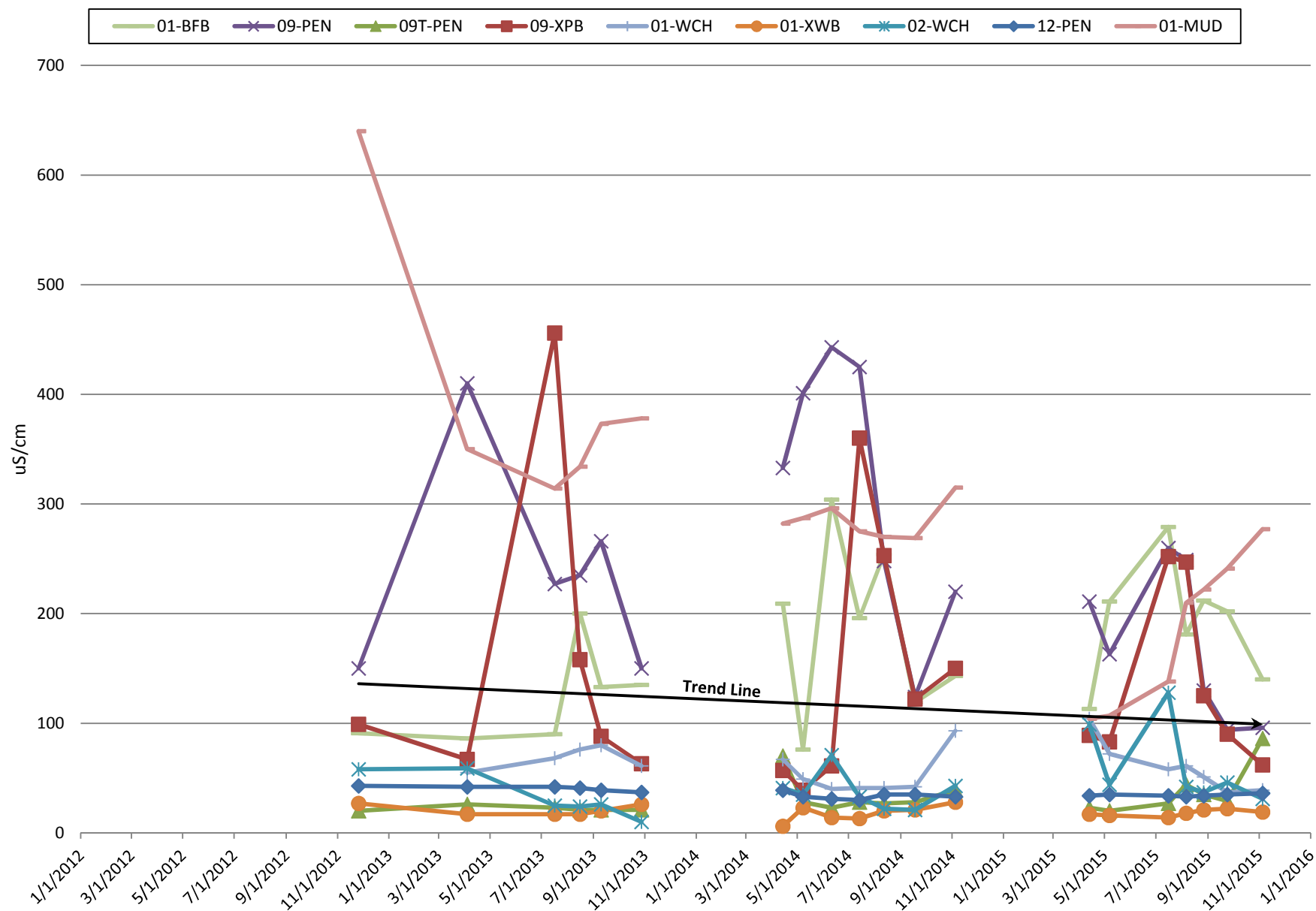
(Outliers >250 µg/L Removed)



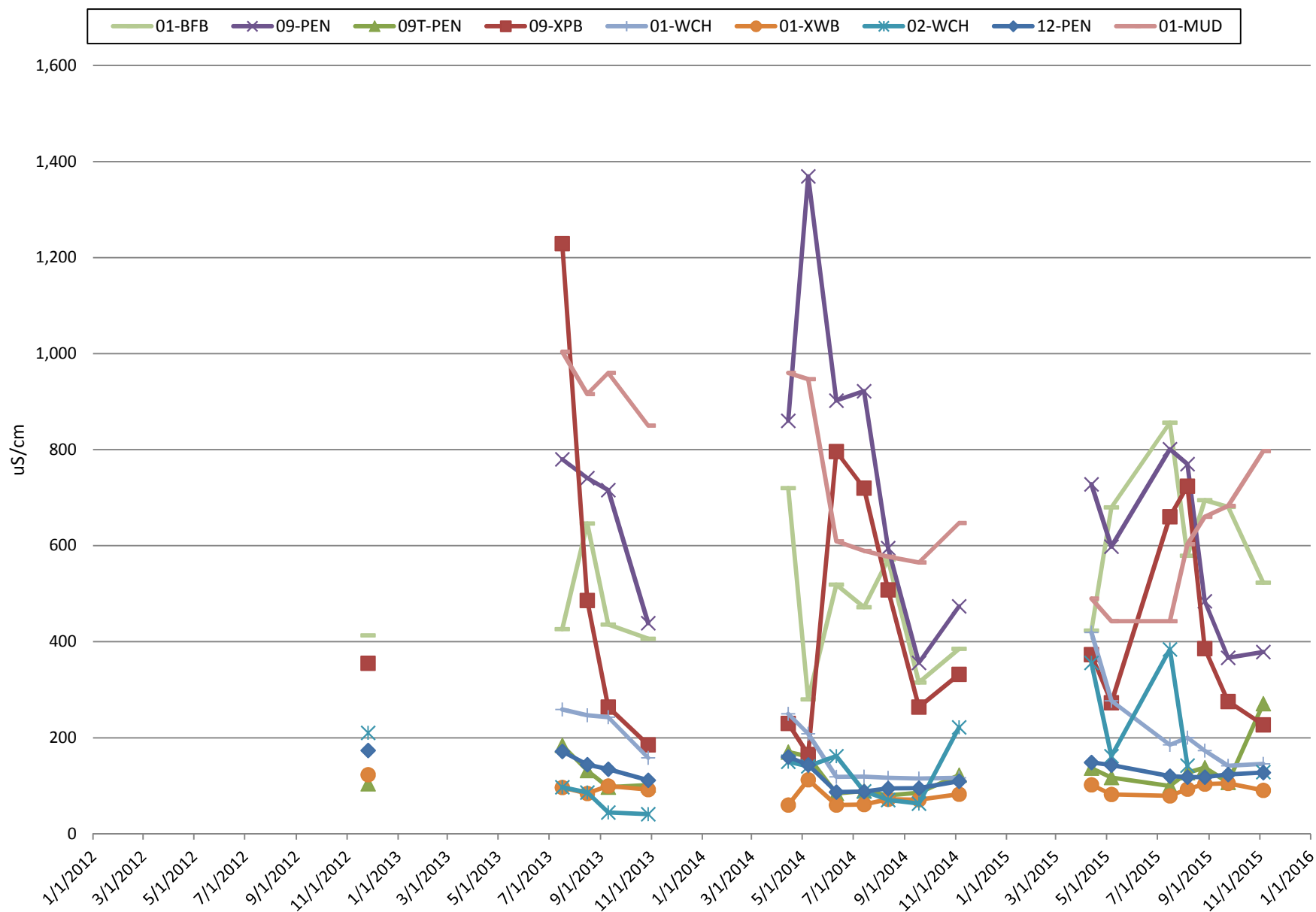
Dissolved Oxygen in Groundwater, 2012-2015



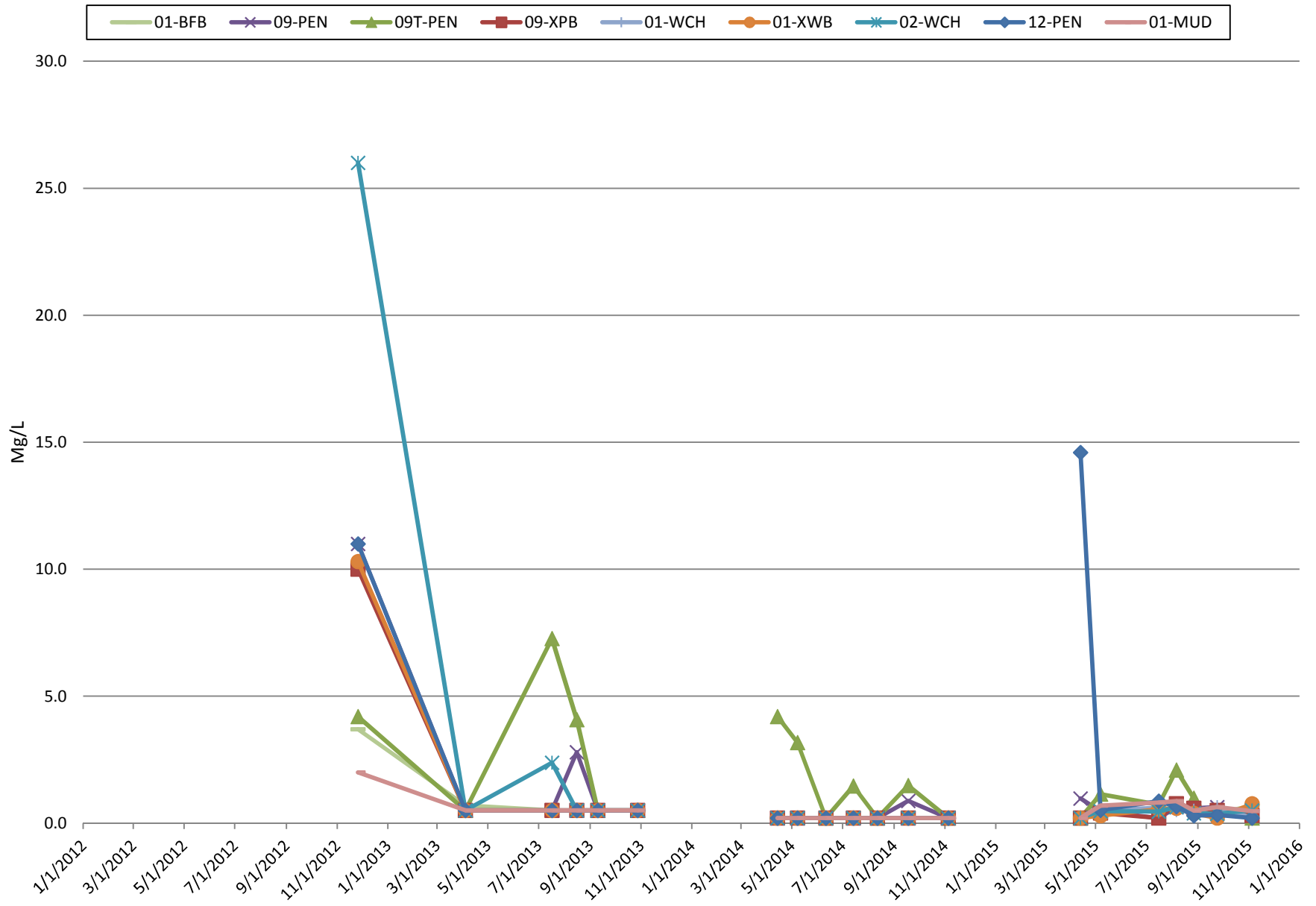
Groundwater Dry Weather Sampling - Chloride Levels 2012-2015



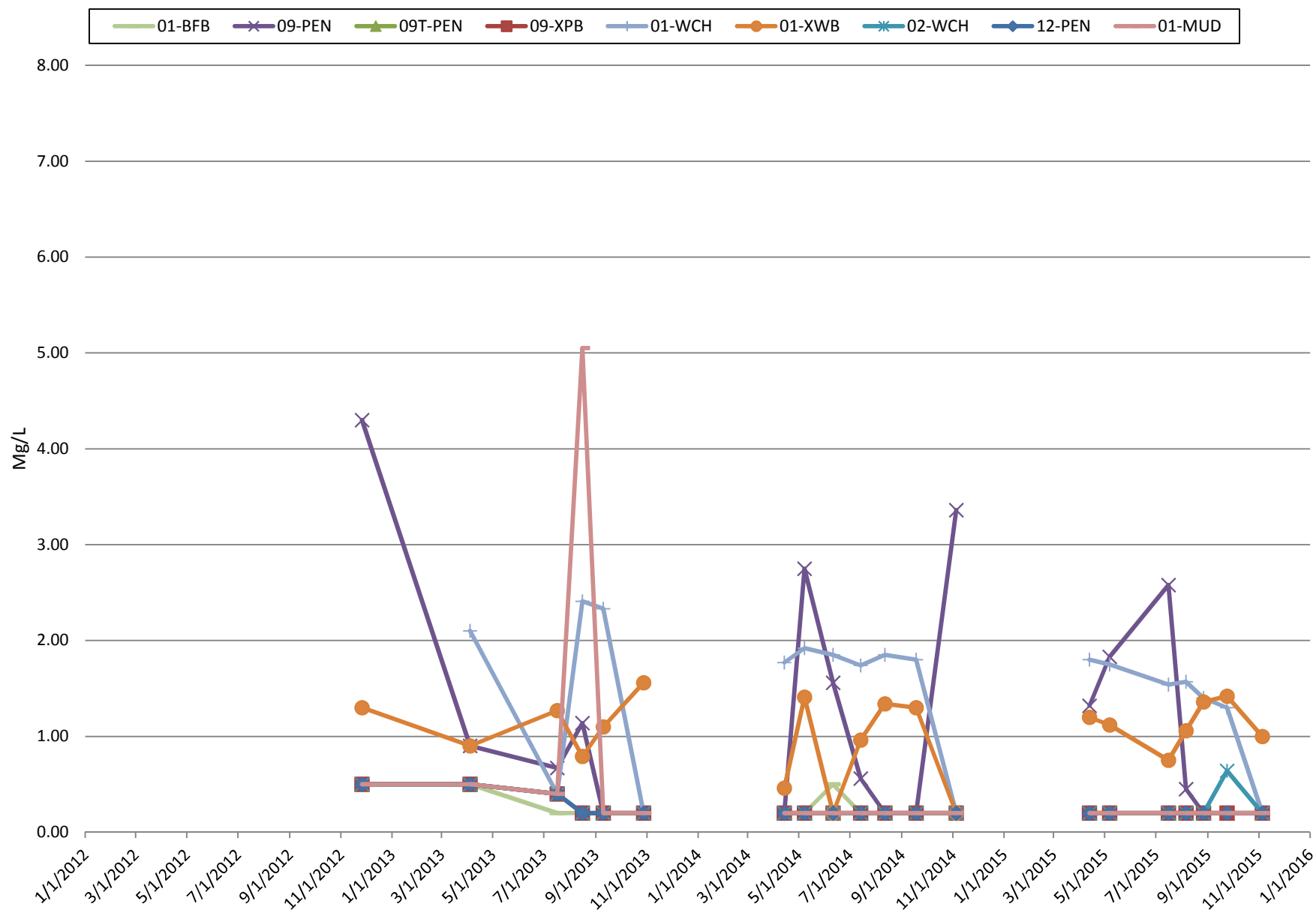
Groundwater Dry Weather Sampling - Conductivity Levels 2012-2015



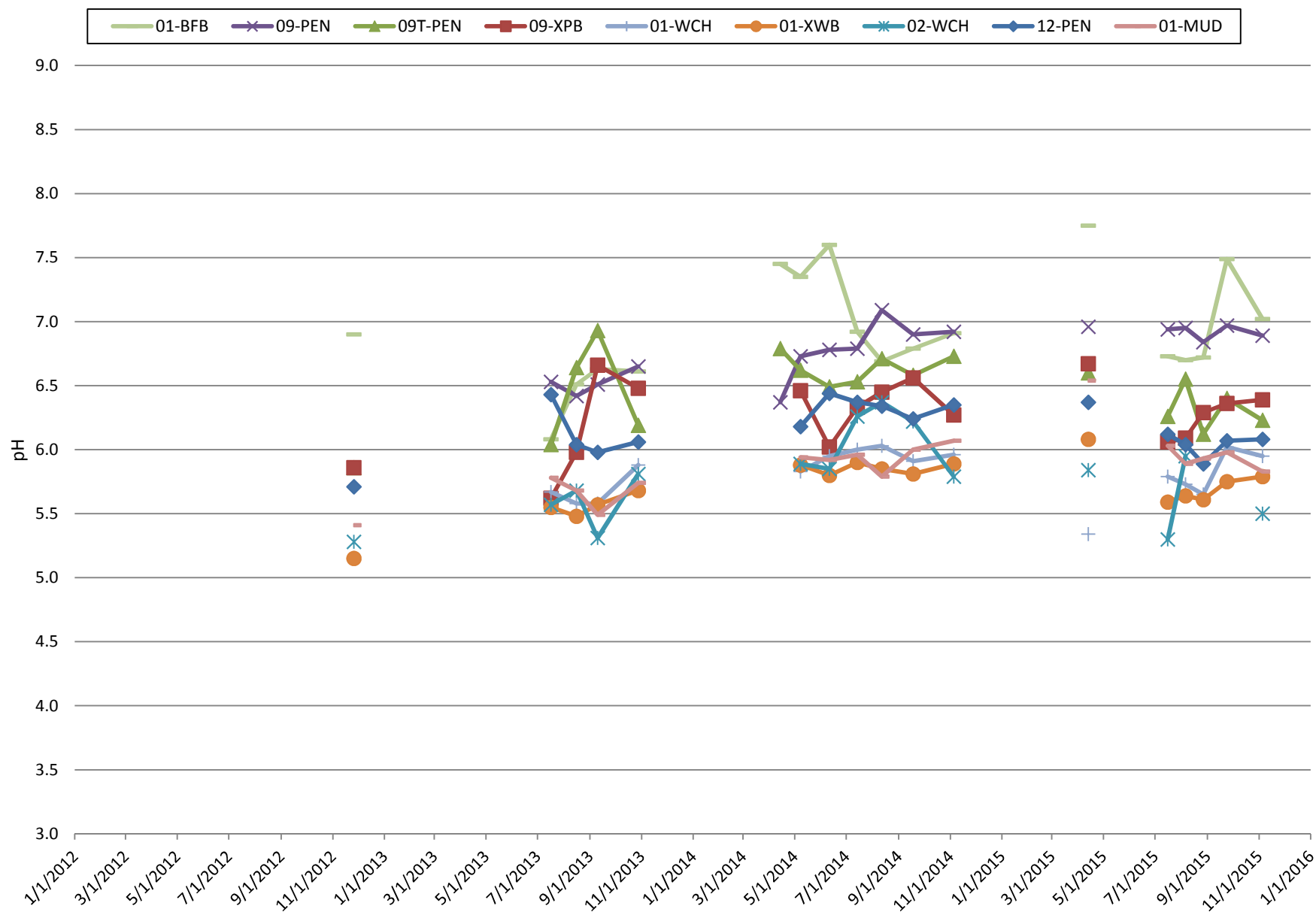
Groundwater Dry Weather Sampling - Nitrate Levels 2012-2015



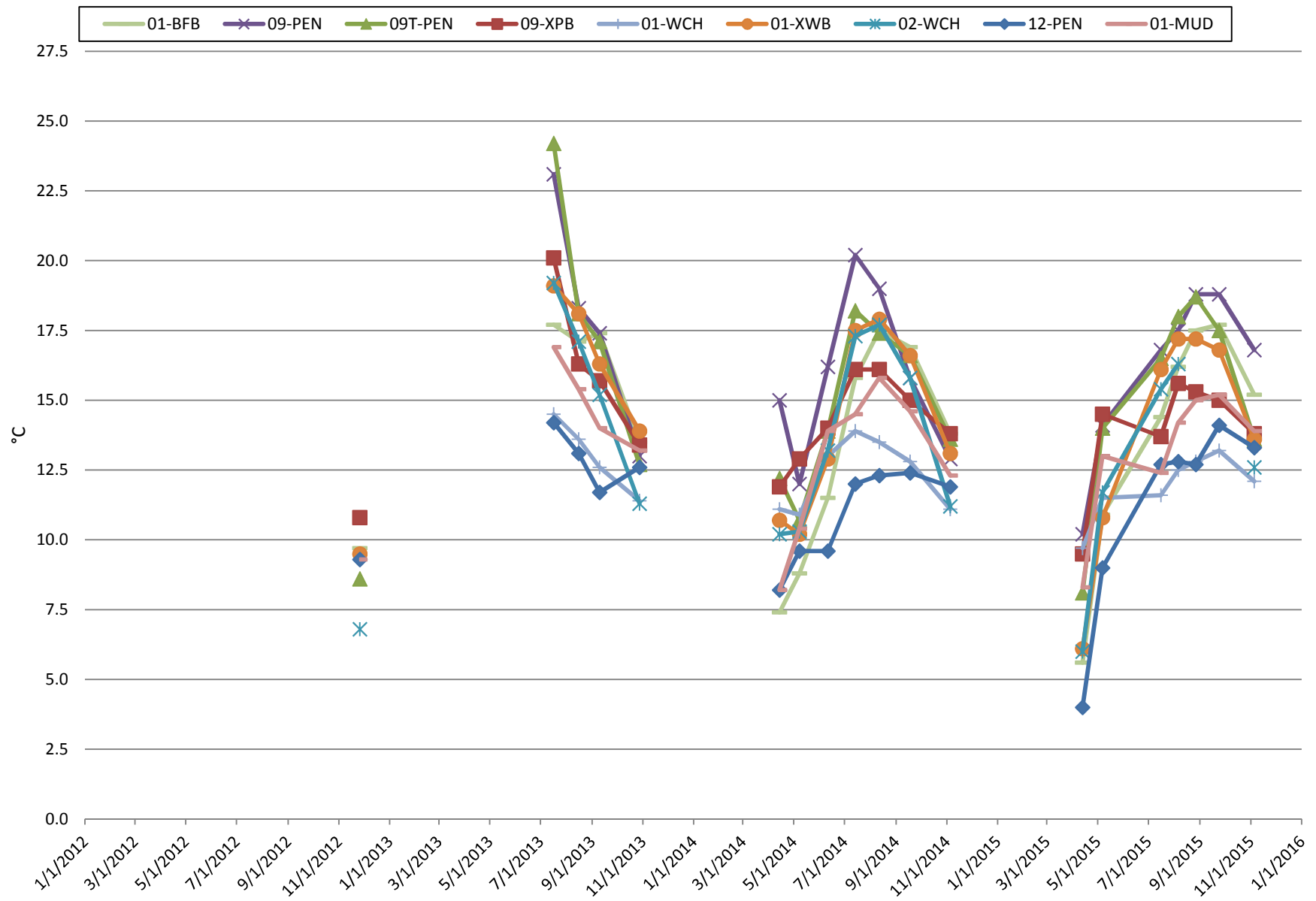
Groundwater Dry Weather Sampling - Nitrate/Nitrite Levels 2012-2015



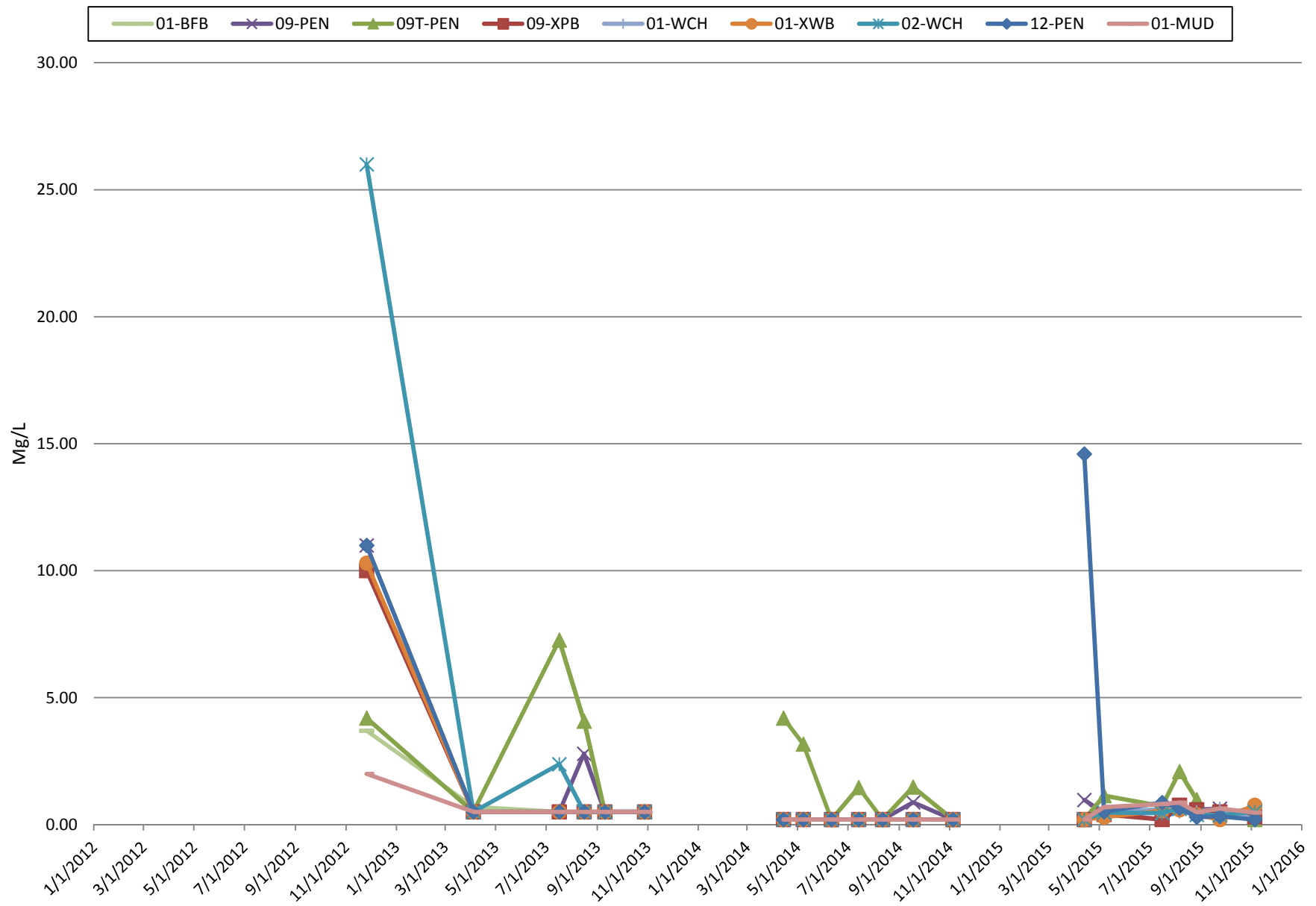
Groundwater Dry Weather Sampling - pH 2012-2015



Groundwater Dry Weather Sampling - Temperature 2012-2015



Groundwater Dry Weather Sampling - TKN Levels 2012-2015



Groundwater Dry Weather Sampling - Total Nitrogen 2012-2015

