Chiusano, David (DEC)

From: Gianazza, Sara <Gianazza@mnr.org>
Sent: Monday, March 19, 2018 12:01 PM
To: Chiusano, David (DEC)
Cc: Ray Kampff
Subject: Harmon OUI/OUII: NYSDEC Submittal
Attachments: Harmon Yard Site No 360010.pdf; ATT00001.htm

Hi David,

I think the attached should answer what we've been discussing over the past week.

The document summarizes work done to access the free product identified in off-site locations in proximity of the Harmon Railroad Site No. 360010, and it includes the results of perfluorinated compound testing done on groundwater samples collected on August 2, 2017. [Note: The perfluorinated compound test results were initially transmitted to the NYSDEC in a document titled '*Site Management Plan Status Report, Report Period: June 1, 2017 through August 31, 2017, Harmon Railroad Yard, OU-I and OU-II, Westchester County, New York, Site No. 3-60-10'.* As requested in your email dated March 15, 2018, Day Engineering, P. C. (DAY) is in the process of inputting these results into EQUIS.]

Ray Kampff (DAY) and I are available for a conference call to discuss the items in your March 9, 2018 email and other outstanding issues on either March 20, 22, or 23 this week or March 27 through 30 next week.

Please contact me with a preferred date and time for a conference call and/or with questions.

Thank you,

Sara

HARMON RAILROAD YARD
OPERABLE UNITS I/II
CROTON-ON-HUDSON, NEW YORK
NYSDEC SITE NO. 360010

Off-Site Monitoring Wells

Day Engineering P.C. (DAY) is in the process of evaluating the need for additional remedial actions to address the presence of free product detected in off-site locations south of the Harmon Railroad Site Operable Units I/II. As part of this evaluation, static water level and free product thickness records were compiled for off-site monitoring wells OUII-A through OUII-F (refer to the Site Plans included in Attachment A for the location of these off-site monitoring wells). Monitoring wells OUII-A through OUII-F are 1-inch diameter monitoring wells that were installed between September 20, 2016 and September 22, 2016. Static water level and free product thickness (if present) measurements have been made in the off-site monitoring wells on a weekly basis since October 4, 2016. To date, free product has not been removed from any of the off-site monitoring wells. The groundwater surface elevations and free product thicknesses observed during the monitoring events conducted are presented on the graphs included in Attachment B and discussed below.

OUII-A: The free product thickness at this location is influenced by the static water levels. The greatest free product thickness (3 feet) was measured when the groundwater elevation was at its lowest (i.e., elevation 2.09 ft). As shown on the graph included in Attachment B, fluctuations in the free product thickness are generally inversely proportional to fluctuations in the groundwater level (i.e., the free product thickness increased as the groundwater elevation declined). Conversely, decreasing free product thicknesses were measured during periods of groundwater recharge and increasing groundwater elevations.

A trend analysis of the free product thickness measurements indicates a neutral to slightly increasing trend (refer to Attachment B). Based on the observations to date it appears that the conditions at this location are near steady-state.

OUII-B: The free product thickness at this location appears to be influenced by the static water levels. The greatest free product thickness (3.2 feet) was measured when the groundwater elevation was at its lowest (i.e., elevation 1.64 ft), and the free product thickness responded to groundwater elevation fluctuations. Increasing free product thicknesses were measured when groundwater elevations decreased. Conversely, decreasing NAPL thicknesses were measured during periods of groundwater recharge and increasing groundwater elevations.

A trend analysis of the free product thickness for this location indicates an increasing trend (refer to Attachment B). Based on the observations to date it appears that the conditions at this location have not reached a steady-state. However, free product thicknesses have been declining since December 2017, suggesting a cyclical pattern may emerge with additional data indicating that near steady-state conditions have been reached at this location.

OUII-C: To date, free product has not been detected. However, the groundwater elevations measured in this monitoring well do not fluctuate as much as the off-site monitoring wells that contained free product (i.e., static water levels measured OUII-C were typically above elevation 5.0 ft and free product generally accumulated in other off-site monitoring wells when the groundwater elevation was below elevation 4.0 ft). It is possible that monitoring well OUII-C is plugged/partially plugged and it may require cleaning.

OUII-D: The free product thickness at this location is relatively consistent and somewhat independent of groundwater elevations. The free product thickness at this location appears to be at steady-state (refer to Attachment B) with an average free product thickness of 1.8 feet.

OUII-E: Free product does not appear to be present at this location. The static water level in OUII-E is historically between about elevation 3.0 ft and 1.5 ft, which is within the range where increased amounts of free product were detected in other off-site monitoring wells. This monitoring well could be plugged/partially plugged, installed within a low permeability zone or in a location where free product is not present.

OUII-F: The free product thickness at this location appears to be influenced by the static water levels. The greatest free product thickness measurement (3.19 feet) was recorded when the groundwater elevation was at its lowest (i.e., elevation 0.67 ft). The free product thickness trend mirrors fluctuations in groundwater elevations. Increasing free product thicknesses were measured when groundwater elevations declined. Conversely, decreasing free product thicknesses were measured during periods of groundwater recharge and increasing groundwater elevations.

Based on the observations to date it appears that there is an increasing trend in free product at this location (i.e., conditions at this location have not reached steady state).

OUII Free Product Assessment and Removal

Wells located within OUI/OUII of the Harmon Railroad site are monitored on a regular basis (i.e., weekly, monthly, or quarterly based on location and the amount of free product detected). Following the identification of free product in the off-site wells, the monitoring and free product removal frequency was increased in select wells located within OUII Area L4 (i.e., the portion of OUII located between OUI and the off-site wells). In addition to the more frequent removal of free product using a portable product only removal system (i.e., a Spill Buddy™), additional permanent product only removal systems (i.e., Spill Busters™) were installed in wells that historically contained consistent amounts of free product.

The historic monitoring results and free product removal records for several wells located in proximity/upgradient of the off-site monitoring wells are presented on the graphs included in Attachment C. These include wells are designated VE4-5, PGW-2, FA4-8, FA4-11, FA4-12, FA4-14, FA4-16, FA4-17, FA4-18, and RW-1 (refer to the Site Plan in Attachment A for well locations). As shown on the graphs included in Attachment C, the thickness of free product

(and the amount of free product removed) typically increases as the groundwater level decreases. The continuous removal of free product using Spill Buster™ systems reduces the thickness of free product (refer to the graph for FA4-8, FA4-17, and RW-1), and increases the amount of free product removed.

Perfluorinated Compounds

Per a NYSDEC request dated March 1, 2017 (refer to Attachment D), groundwater samples were collected from OUII monitoring wells VE1-2, VE1-4, VE2-1, VE3-1, VE4-11, and DAY-1 on August 2, 2017, and submitted to Test America Laboratories, Inc. for testing of perfluorinated compounds. [Note: Since there is no documented use of chlorinated volatile organic compounds (VOCs) at the Harmon Railroad site and chlorinated VOCs were not identified as a contaminant of concern, 1,4-Dioxane Analysis of the samples collected on August 2, 2017 was not done.] The analytical laboratory test results for the samples collected on August 2, 2017 were presented in a report titled *Site Management Plan Status Report, Report Period: June 1, 2017 through August 31, 2017, Harmon Railroad Yard, OU-I and OU-II, Westchester County, New York, Site No. 3-60-10* that was submitted to the NYSDEC. A table summarizing the concentrations of the detected perfluorinated compounds is included in Attachment D. A second table summarizing the test results for only the 6 UCMR3 PFAS compounds is also included in Attachment D.

ATTACHMENT A

Last Date Saved: 14 Mar 2018 Document Path: \\MAR\GIS\MAR_Documents\GIS_Data\NR\Harmon Yard\Well Site Plans\Harmon Yard 20180313 - Remediation_OUI_OUII.mxd

PROJECT MANAGER	RLK
DATE	03-2018
DRAWN BY	CPS/CCD
DATE DRAWN	03-2018
SCALE	As Noted
DATE ISSUED	03-13-2018

DAY ENGINEERING, P.C.
ENVIRONMENTAL ENGINEERING CONSULTANTS
ROCHESTER, NEW YORK 14606
NEW YORK, NEW YORK 10170

Project Title
METRO-NORTH RAIL ROAD
HARMON YARD OPERABLE UNITS OU-I AND OU-II
CROTON-ON-HUDSON, NEW YORK

Drawing Title
OUI & OU II Site Plan with 2016 Aerial Imagery

Project No
15-5063M (46)

FIGURE 1

N

NOTES:

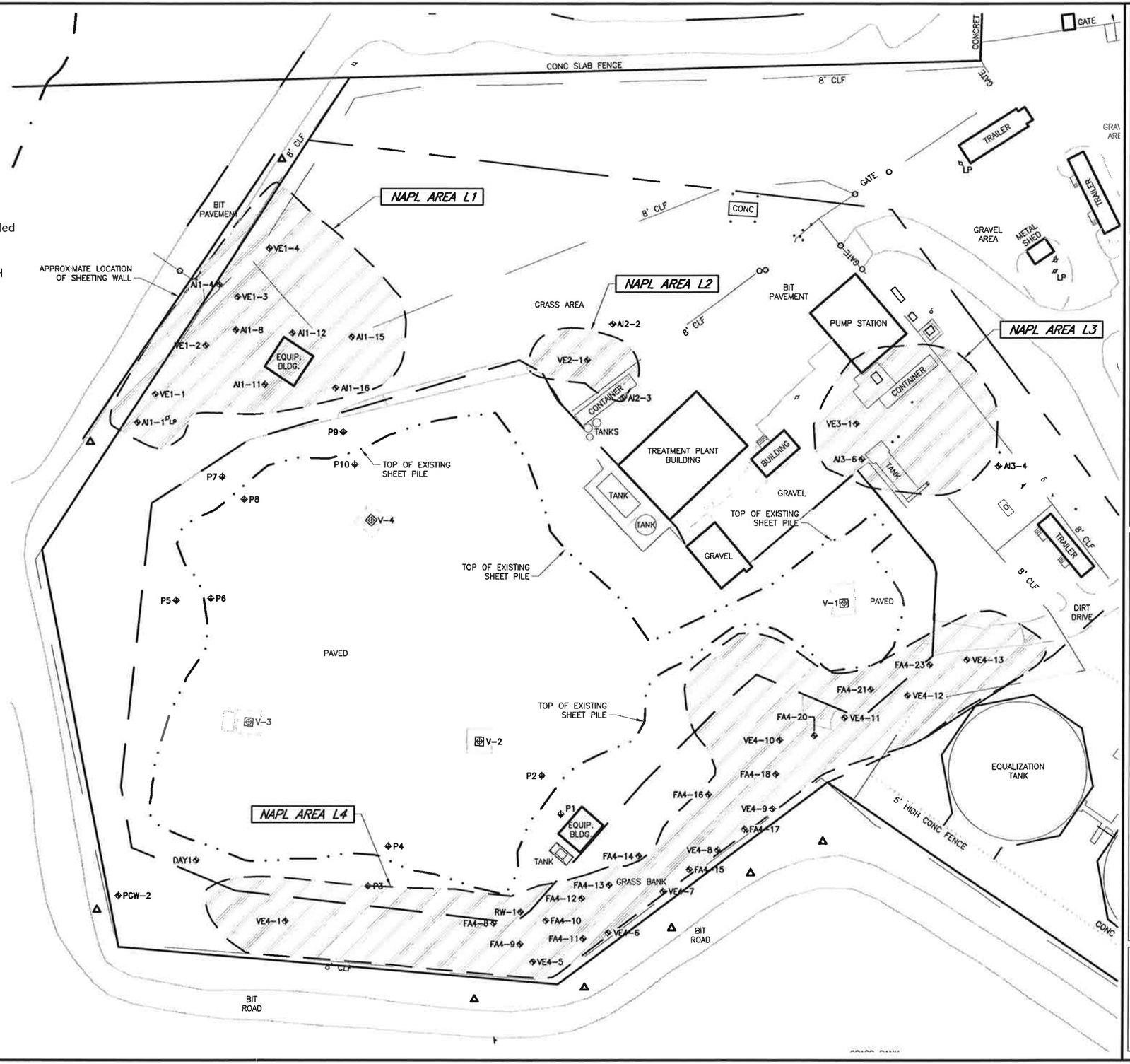
1. This drawing was prepared from a CAD base file provided by others, from a drawing by ERM, entitled "EXISTING SITE PLAN AND SURVEY CONROL" sheet No. C-1 dated 7/31/00 and from a drawing by ERM, "SITE PLAN WITH LOCATIONS OF PROPOSED WELLS AND SHEET PILING", sheet No. C-2, dated 7/31/00.
2. Operable Unit II (OU-II) remedy well locations were determined from coordinate values listed on the ERM drawings identified in note No. 1.

LEGEND:

V-2	OU-I Well Within Vault
P8	Piezometer Installed Around OU-I/OU-II Sheet Pile Wall
VE4-1	Well Within OU-II
△	Proposed Monitoring Well
	Approximate NAPL Area
	Approximate Fence And Harmon Yard Property Line Location
	Approximate Location Of Sheet Pile Wall Around Remediated Former Lagoon Area (OU-I)
	Property Line

SITE PLAN
OPERABLE UNIT II
1" = 60'

0' 60' 120' 180'



PROJECT MANAGER	RLK
DATE	10-2014
DRAWN BY	RJM
DATE DRAWN	10-2014
SCALE	1" = 60'
DATE ISSUED	1-15-2015

day
DAY ENGINEERING, P.C.
ENVIRONMENTAL ENGINEERING CONSULTANTS
ROCHESTER, NEW YORK 14614-1008
NEW YORK, NEW YORK 10016-0710

PROJECT TITLE
METRO-NORTH RAILROAD
HARMON YARD OPERABLE UNITS OU-I AND OU-II
CROTON-ON-HUDSON, NEW YORK

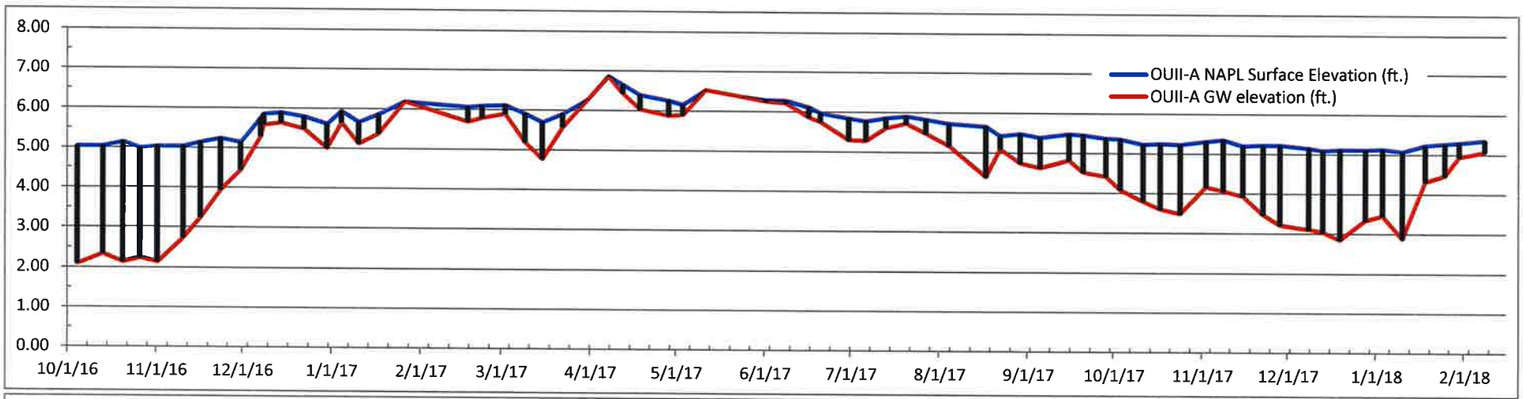
DRAWING TITLE
OU-I AND OU-II Well Locations

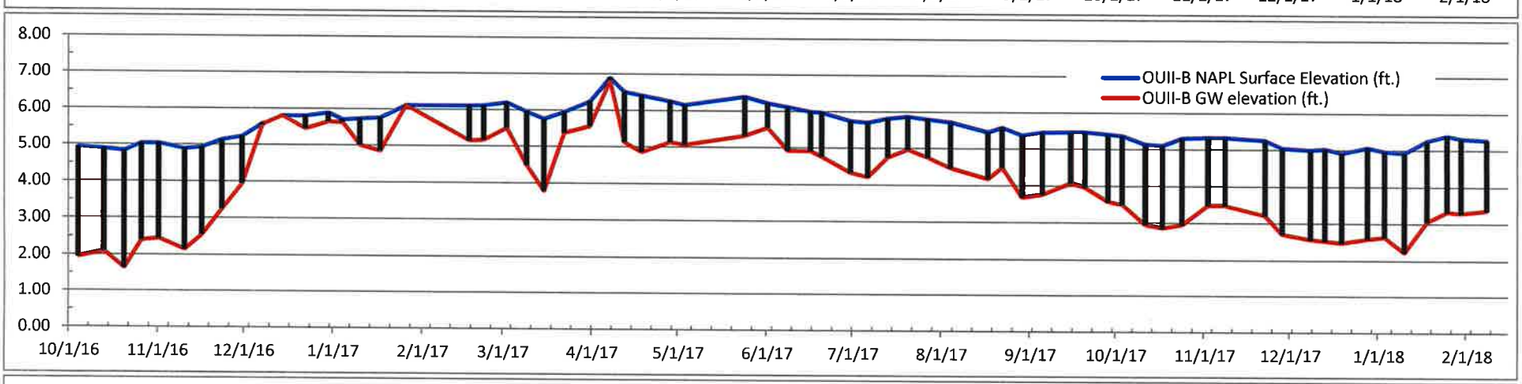
PROJECT NO.
10-3231M (46)

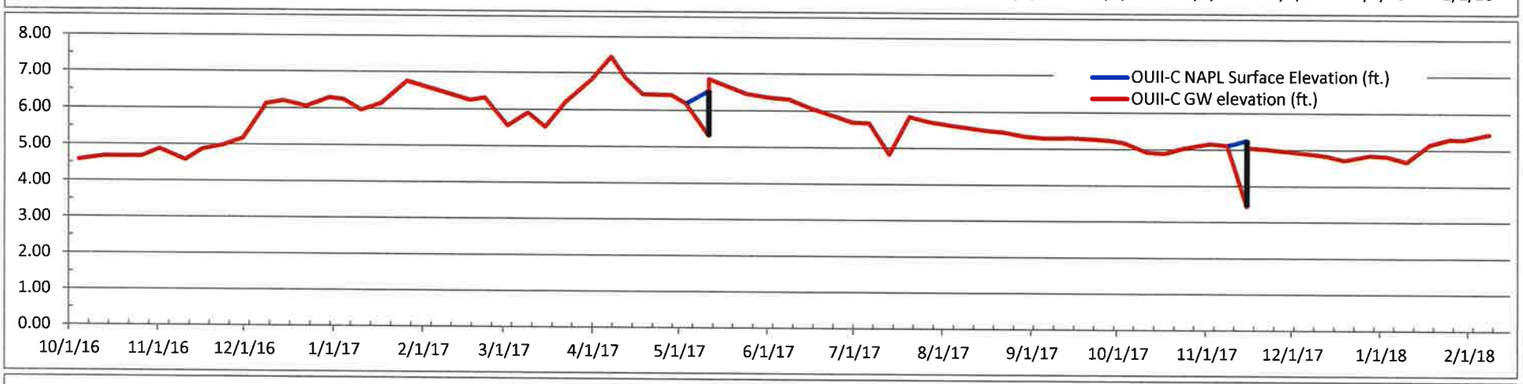
FIGURE 5

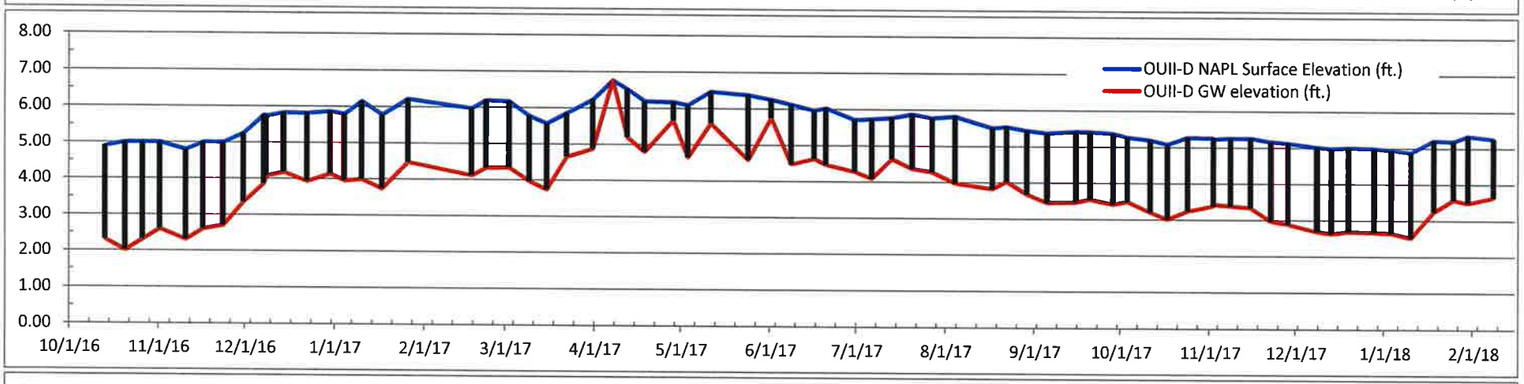
ATTACHMENT B

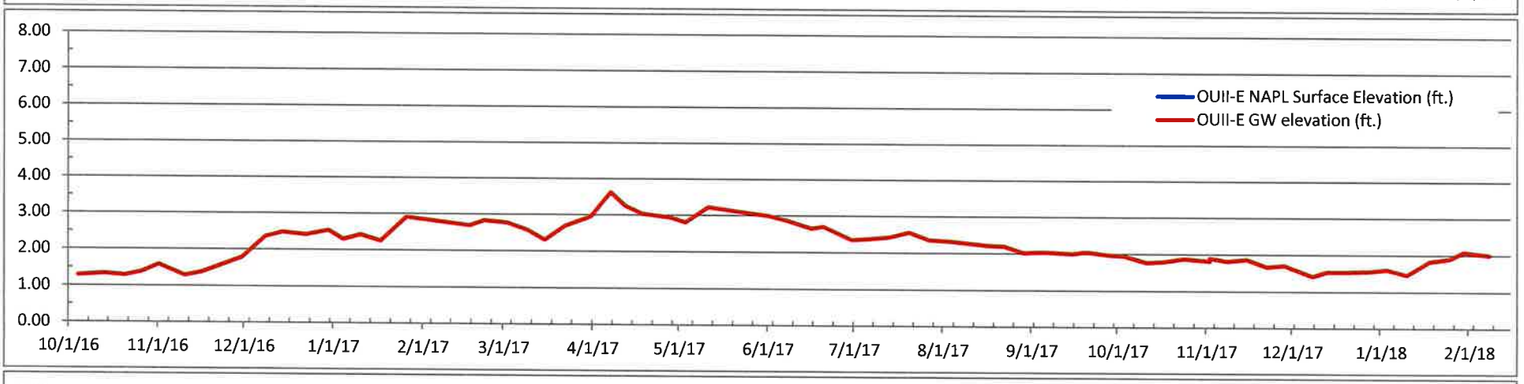
Metro North Railroad
Harmon Yard OUII - Offsite Wells
NAPL Measurements - October 2016 through February 2018

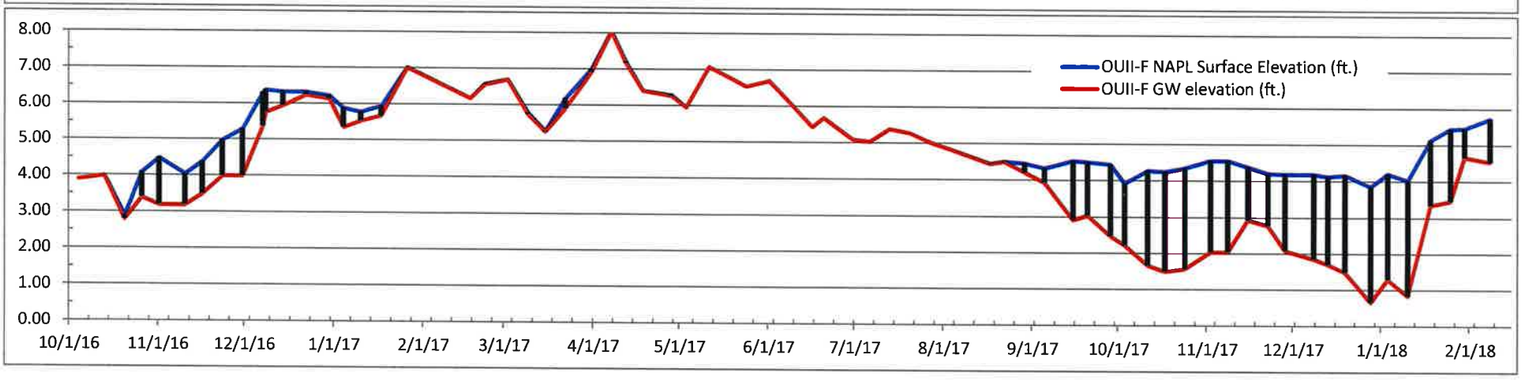


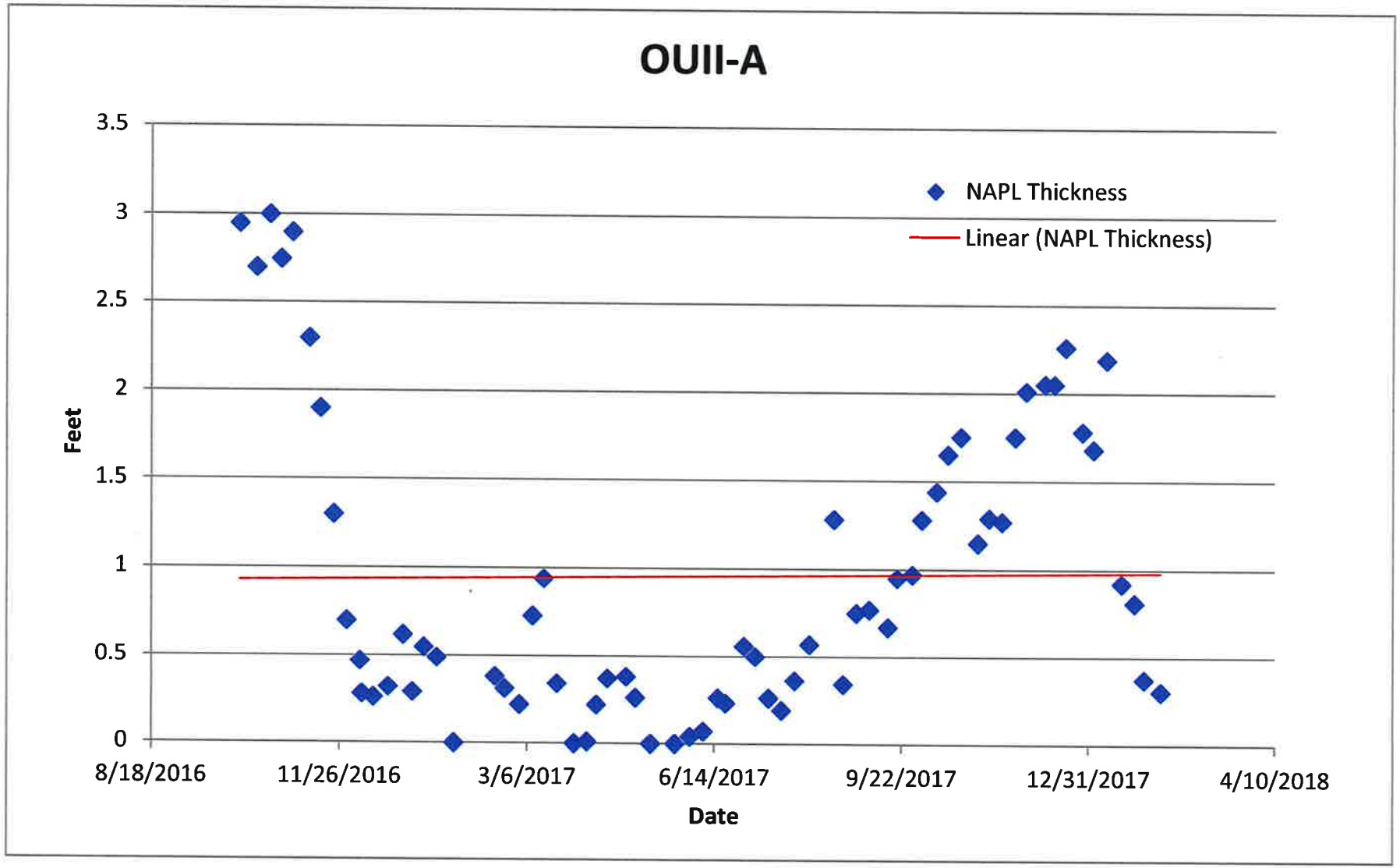


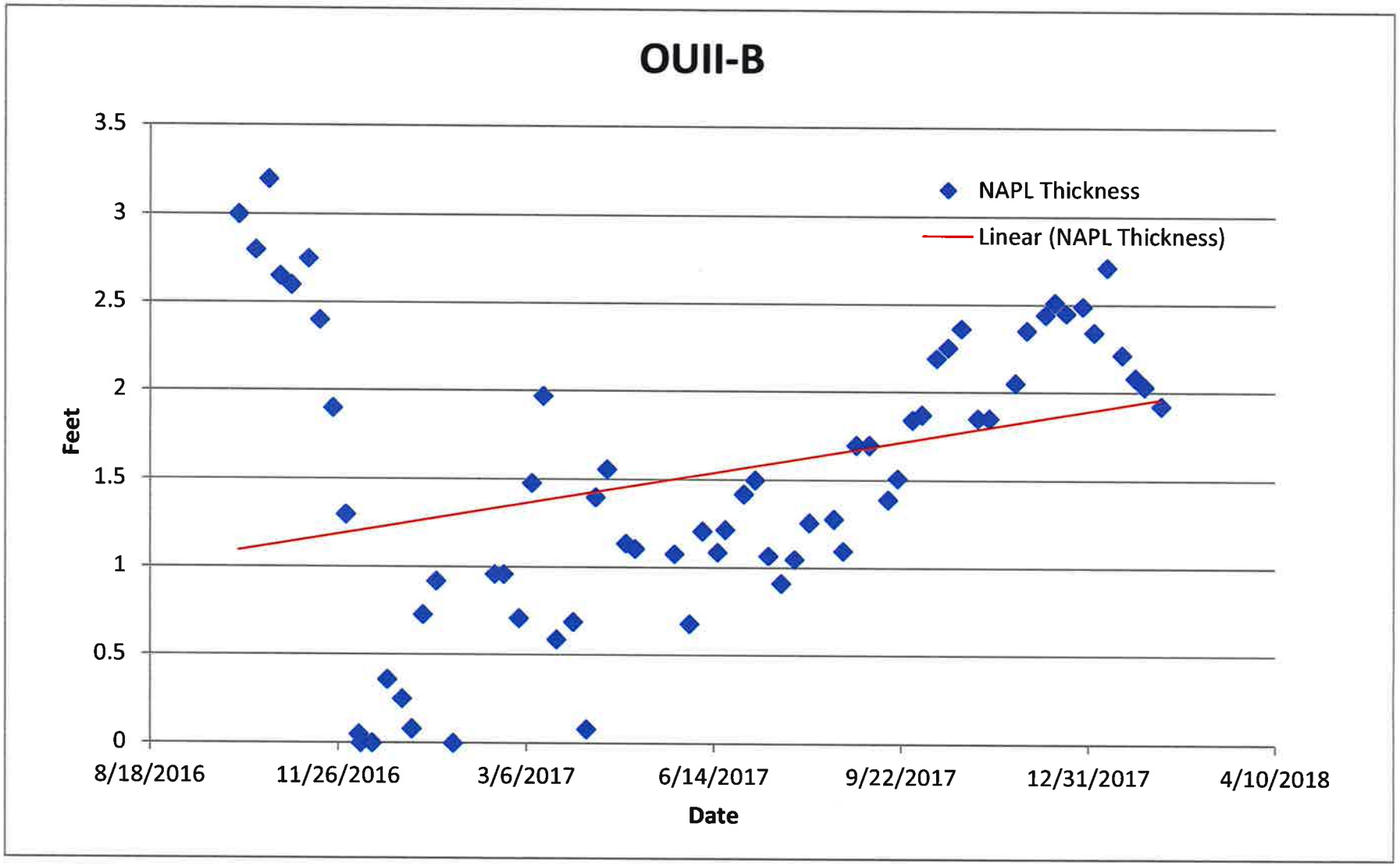


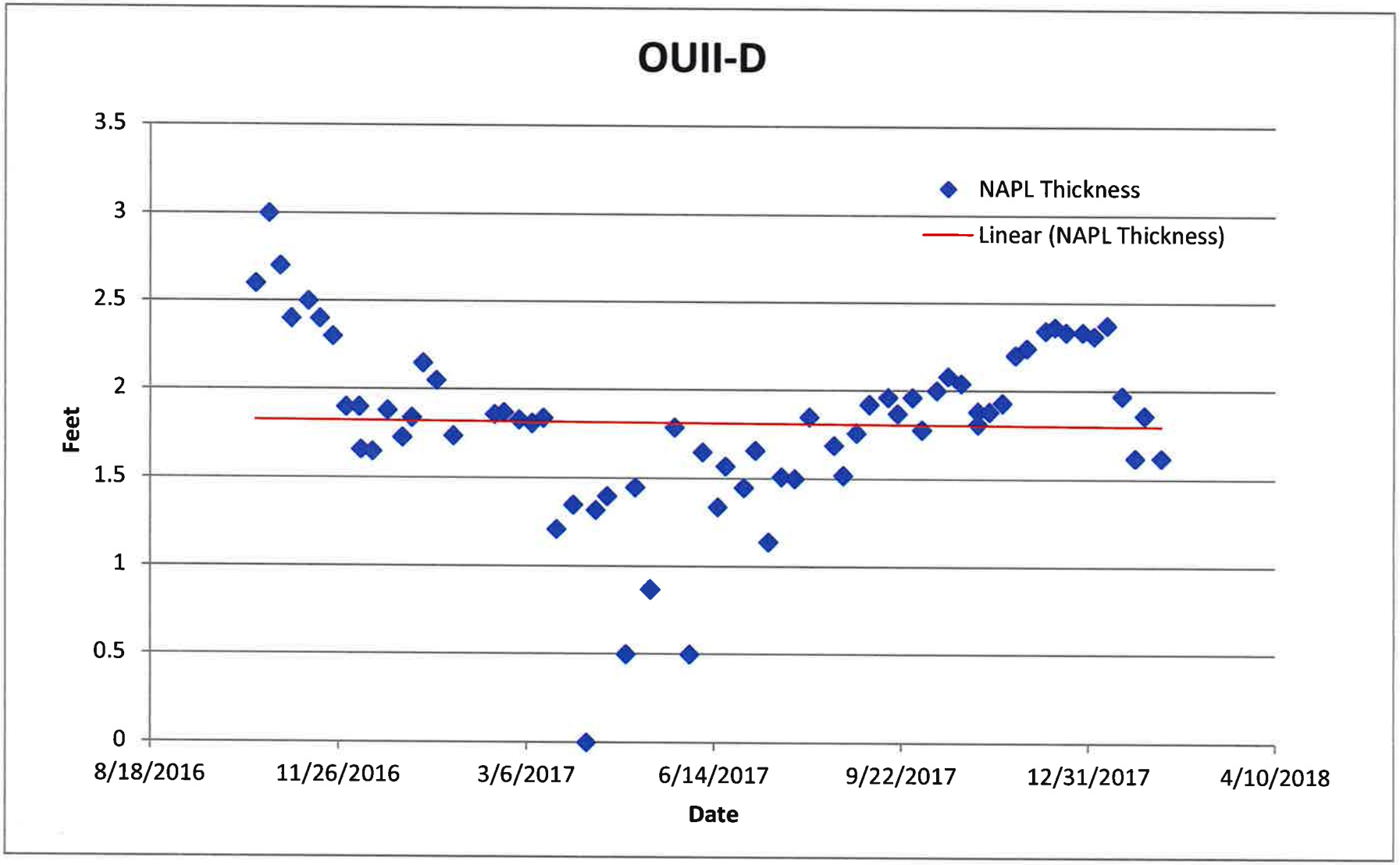


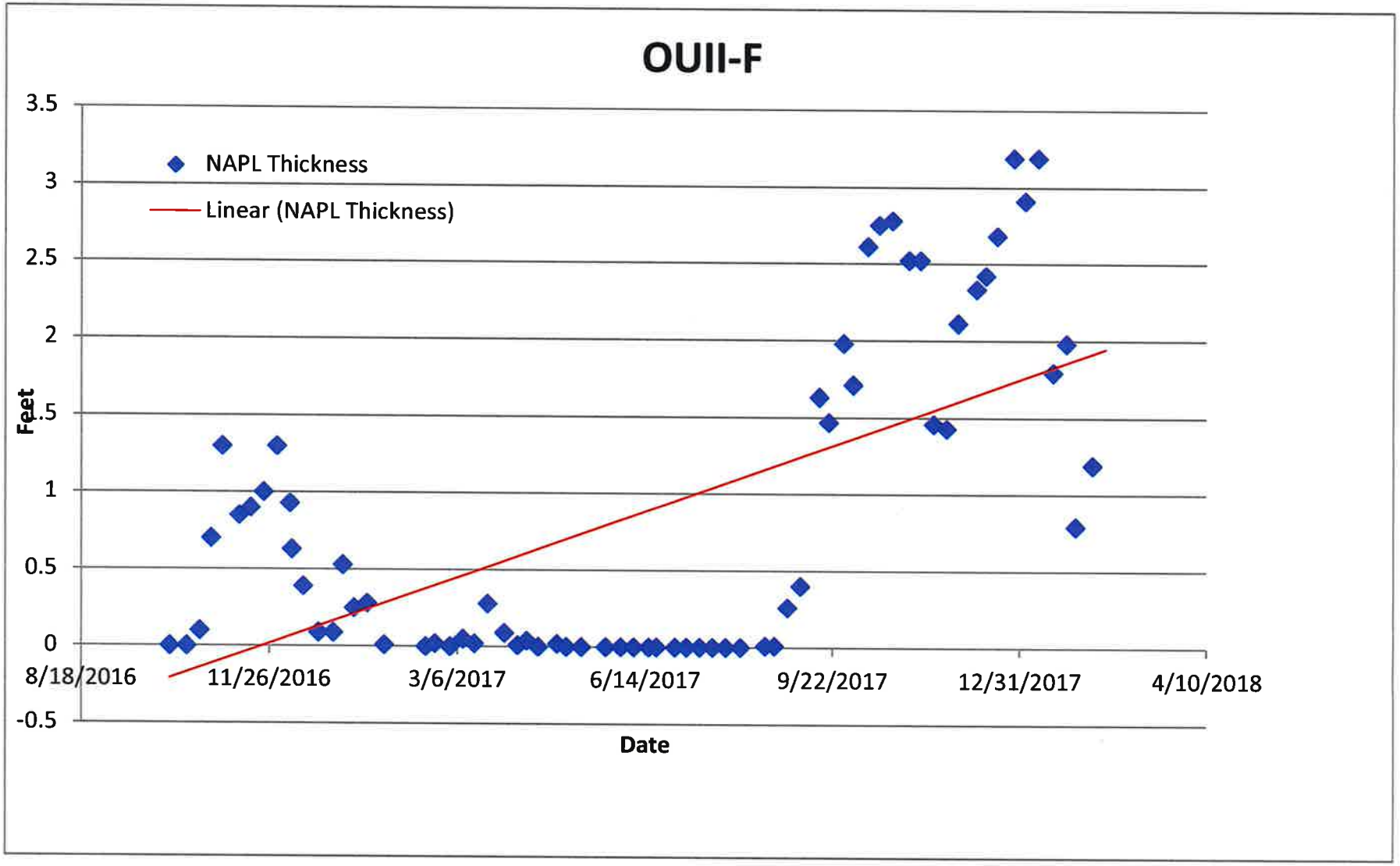





OUII-A
3.5
3
2.5
2
1.5
1
0.5
0
Feet
NAPL Thickness
Linear (NAPL Thickness)
8/18/2016
11/26/2016
3/6/2017
6/14/2017
9/22/2017
12/31/2017
4/10/2018
Date

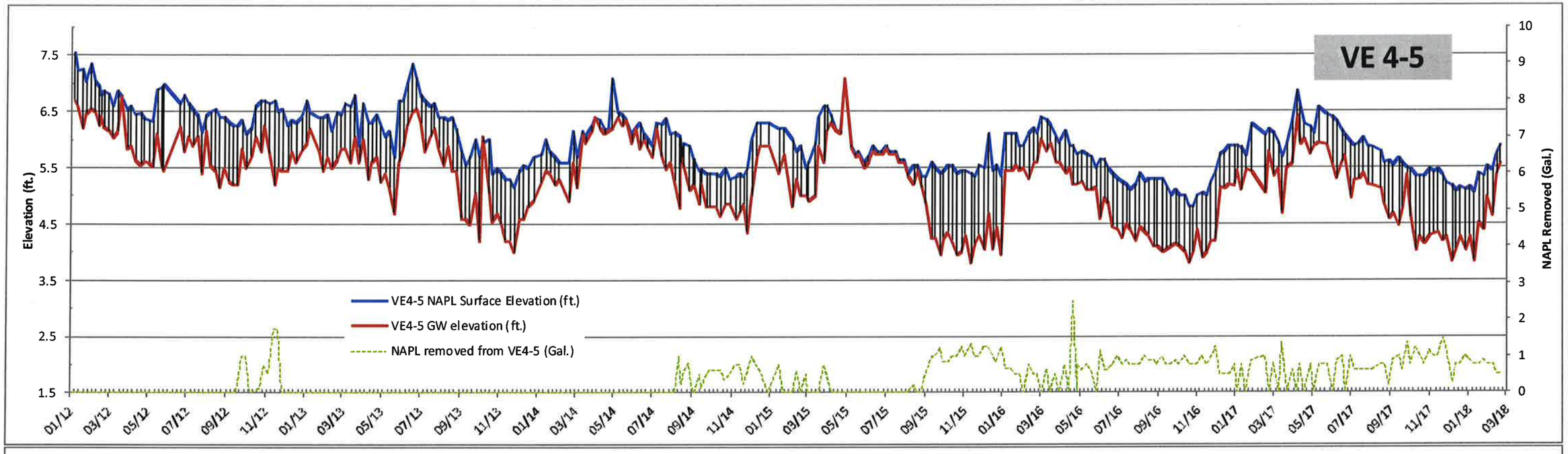

OUII-B
3.5
3
2.5
2
1.5
1
0.5
0
Feet
NAPL Thickness
Linear (NAPL Thickness)
8/18/2016
11/26/2016
3/6/2017
6/14/2017
9/22/2017
12/31/2017
4/10/2018
Date

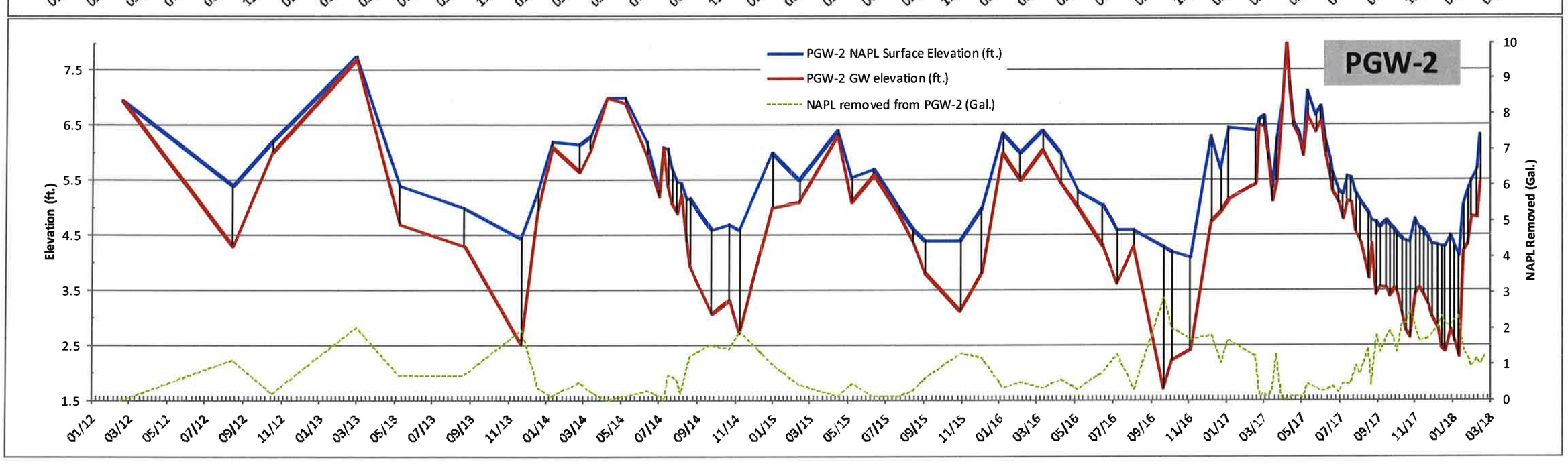

OUII-D
3.5
3
2.5
2
1.5
1
0.5
0
Feet
NAPL Thickness
Linear (NAPL Thickness)
8/18/2016
11/26/2016
3/6/2017
6/14/2017
9/22/2017
12/31/2017
4/10/2018
Date


OUII-F
NAPL Thickness
Linear (NAPL Thickness)
Feet
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
8/18/2016
11/26/2016
3/6/2017
6/14/2017
9/22/2017
12/31/2017
4/10/2018
Date

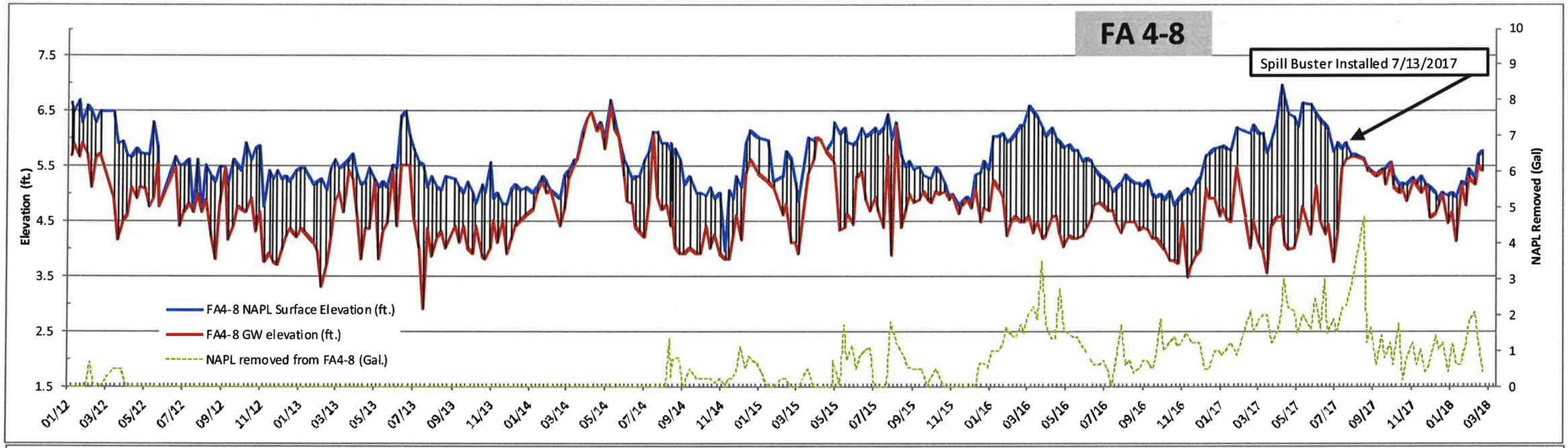
ATTACHMENT C

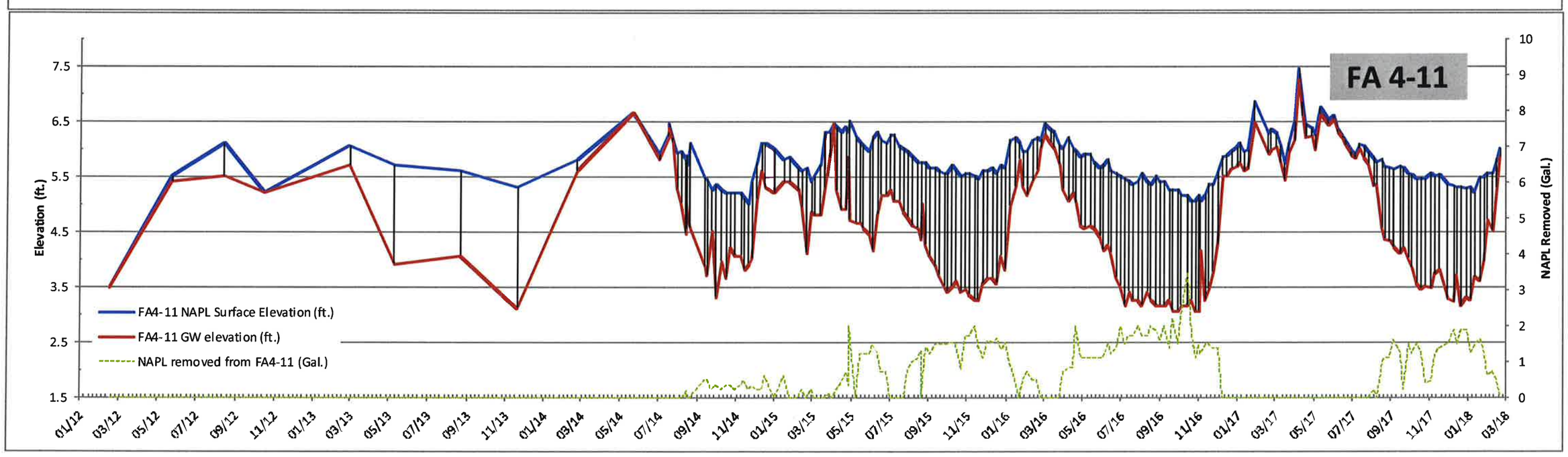
Metro North Railroad Harmon Yard OUII
NAPL Measurements - January 2012 through February 2018



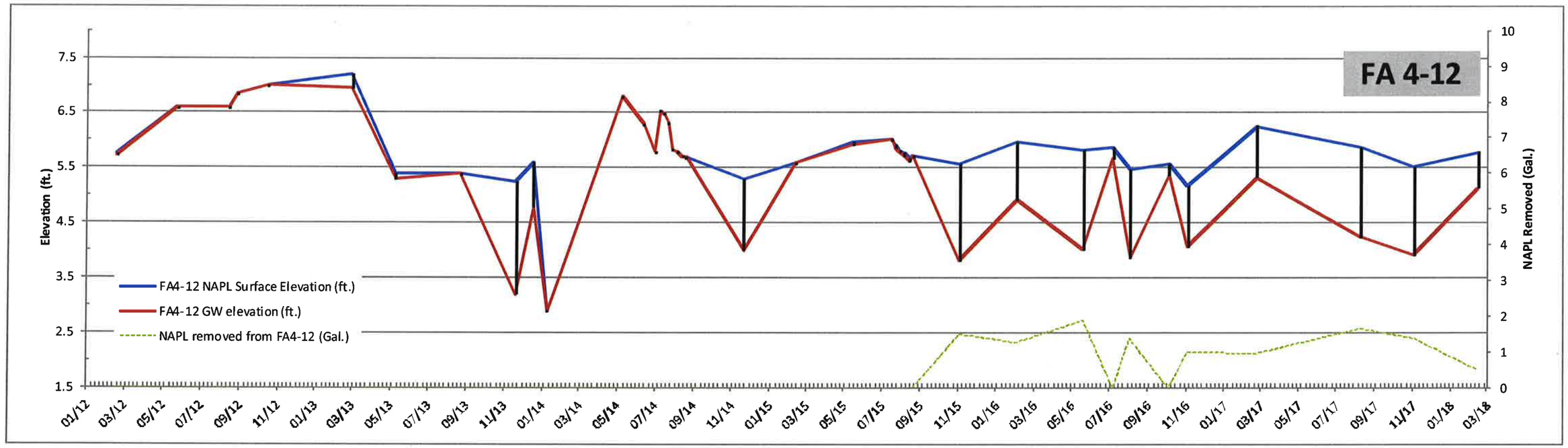


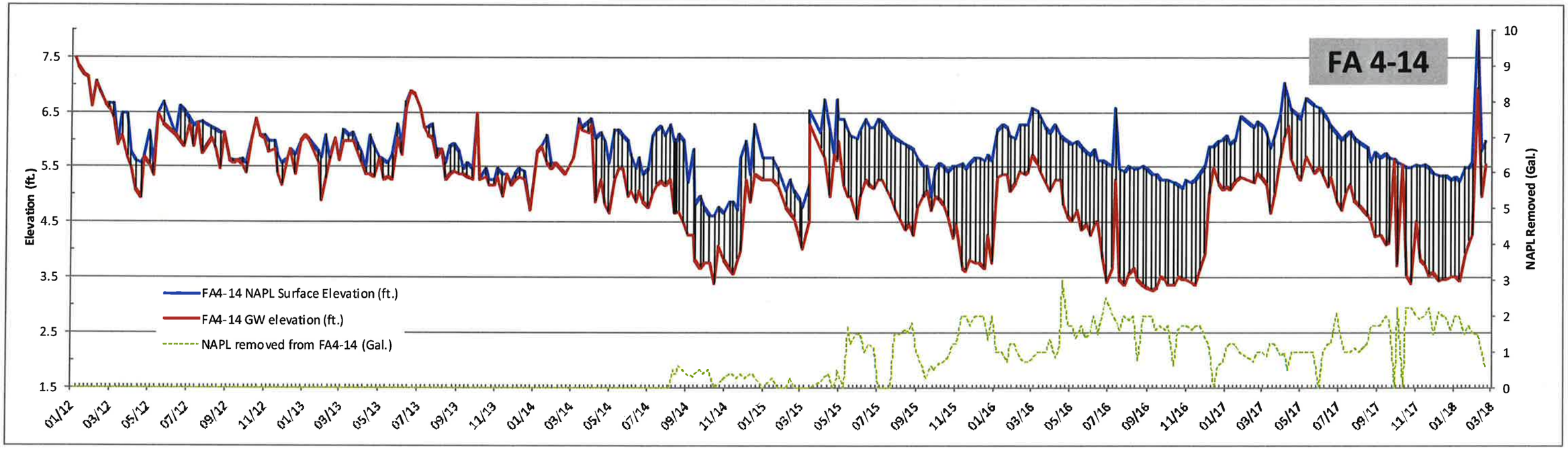
Metro North Railroad Harmon Yard OUII
NAPL Measurements - January 2012 through February 2018



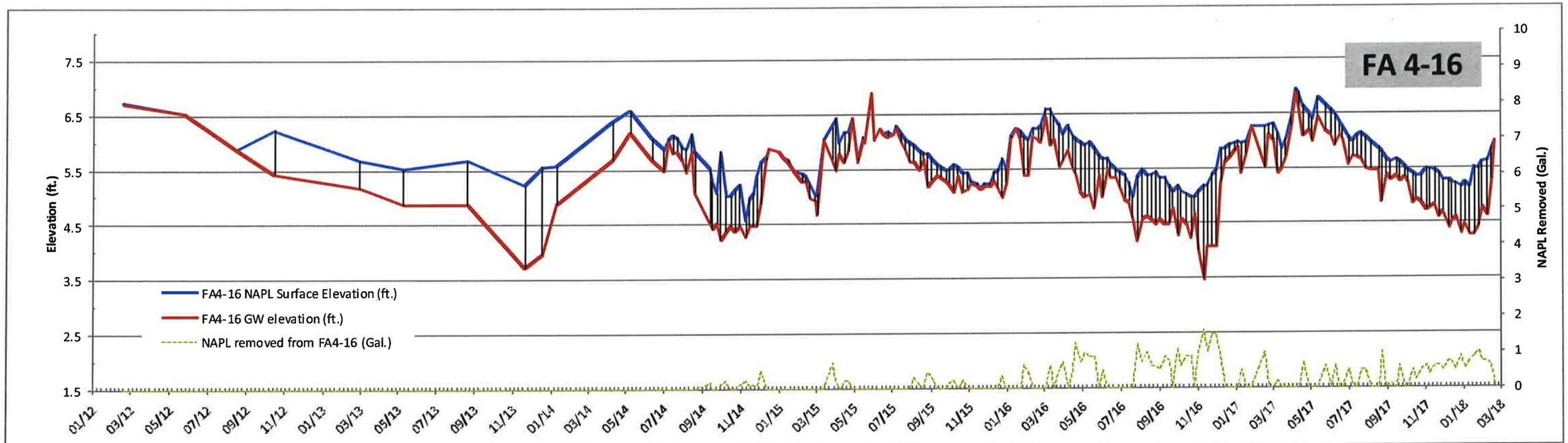


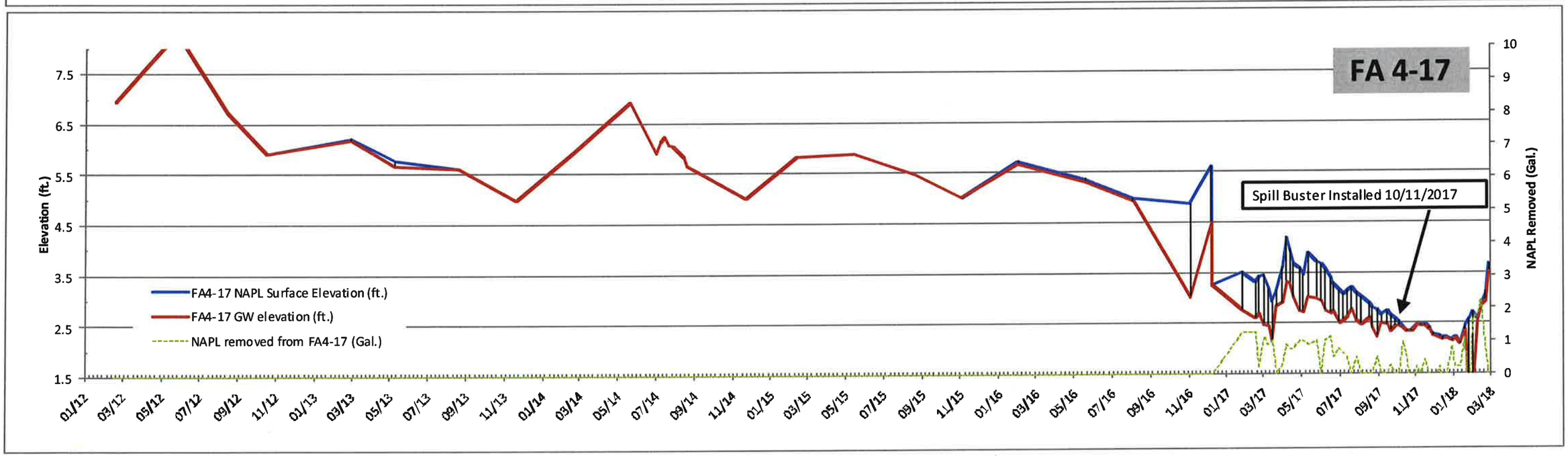
Metro North Railroad Harmon Yard OUII
NAPL Measurements - January 2012 through February 2018



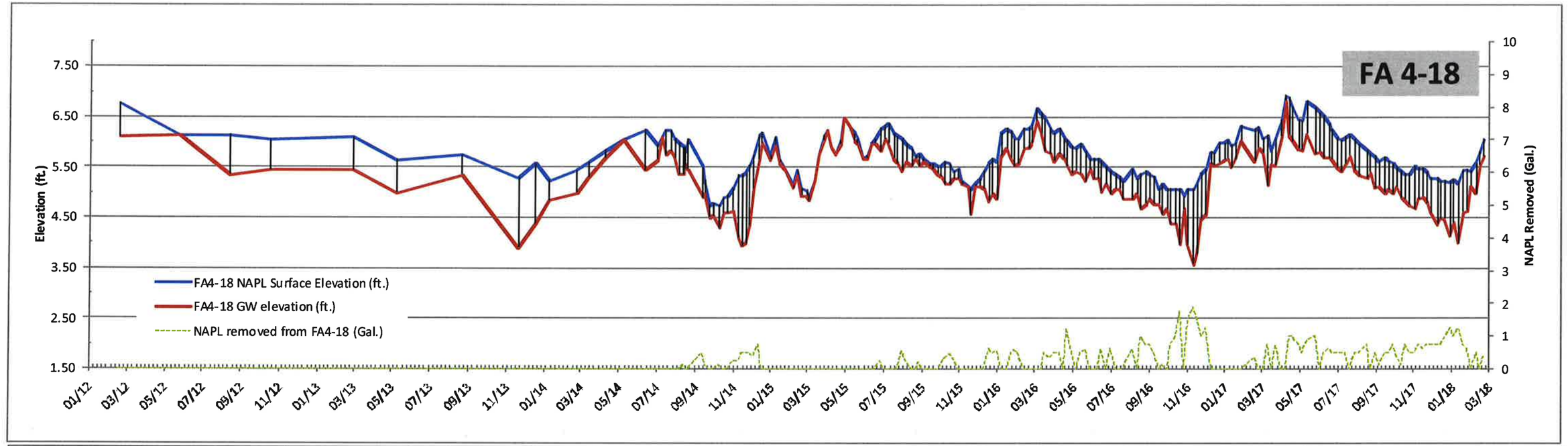


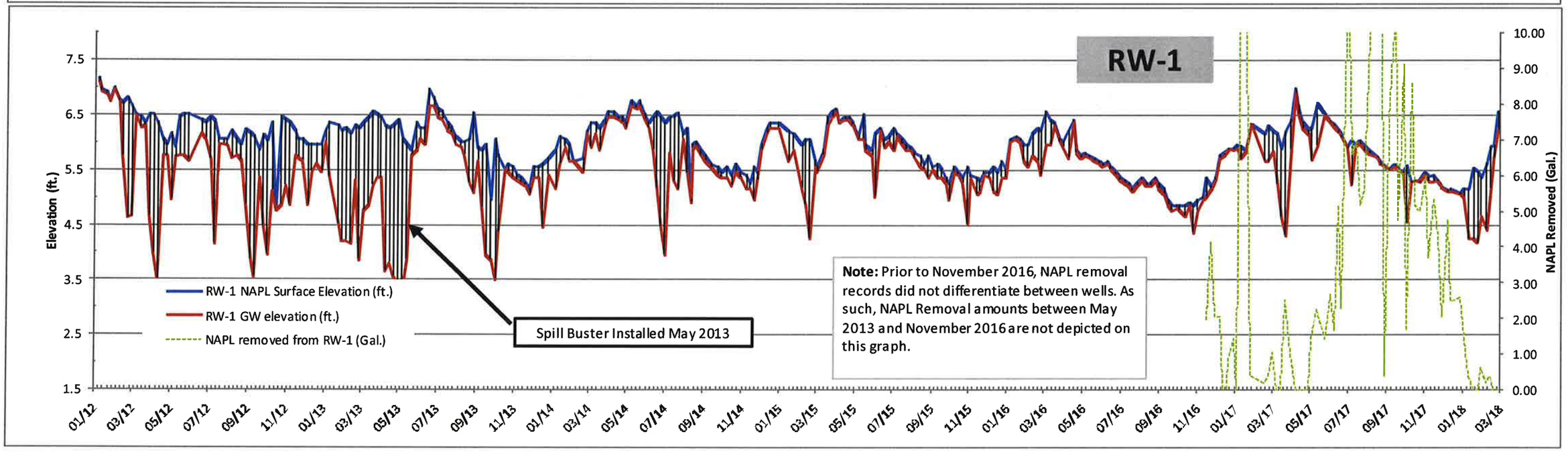
Metro North Railroad Harmon Yard OUII
NAPL Measurements - January 2012 through February 2018





Metro North Railroad Harmon Yard OUII
NAPL Measurements - January 2012 through February 2018





ATTACHMENT D

Ray Kampff

From: Sara Gianazza
Sent: Wednesday, March 01, 2017 3:12 PM
To: Ray Kampff; Tom Roszak
Subject: FW: Analysis of 1,4-dioxane and PFCs in Groundwater
Attachments: 14dioxaneSampling 2016-10-11.pdf

FYI – this just came from David Chiusano

From: Chiusano, David (DEC) [mailto:david.chiusano@dec.ny.gov]
Sent: Wednesday, March 01, 2017 3:05 PM
Subject: Analysis of 1,4-dioxane and PFCs in Groundwater

To All :

It has been requested that groundwater samples from existing DER remediation sites that have chlorinated solvents as a contaminant of concern (COC) be analyzed for 1,4-dioxane and PFCs in at least 1 future round of sampling. For sites without a documented history of chlorinated VOC use/ CVOC identified as a site specific COC, only analysis for PFCs will be required.

1,4-dioxane was added as a stabilizer in 1,1,1-trichloroethane (TCA) at percent levels. Since 1,4-dioxane is more soluble than TCA, it is often at the front of TCA plumes, or even out ahead of the main plumes, so delineation can be challenging. Facilities that used chlorinated solvents other than TCA (e.g. tetrachloroethene (PCE), trichloroethene (TCE) or carbon tetrachloride) frequently used TCA for short periods of time while transitioning away from other solvents, so there is some potential for 1,4-dioxane to be present in groundwater plumes associated with these other solvents.

PFC Analysis: Groundwater samples shall be analyzed by an environmental laboratory certified by ELAP to use EPA method 537. For drinking water samples, DEC and DOH have agreed to report the 6 UCMR3 PFAS chemicals, with the report identifying any chemicals detected above the reporting limit. The drinking water sample reports do not quantify and flag "detected" values below the reporting limit. In order to achieve the reporting limits required to evaluate PFOA and PFOA, DEC has been requiring our contract labs to use a modified EPA method 537. Using the modified EPA Method 537, labs have been able to achieve reporting limits for PFOA and PFOS of 2 ppt (part per trillion) in water.

1,4-Dioxane Analysis: see attached

Feel free to contact me should you have any questions.

New York State Department of Environmental Conservation
Division of Environmental Remediation, Bureau E, Section A
625 Broadway, Albany, NY 12233-7017
P: (518) 402-9813 | C: (518) 598-7753 | David.Chiusano@dec.ny.gov

www.dec.ny.gov | |

Table 7
NYSDEC Site #360010
Harmon Yard Waste Water Area
OU II

Summary of Perfluorinated Compounds
Groundwater Samples

Compound	Test Location and Sample Date						
	VE 1-2	VE 1-4	VE 2-1	VE 3-1	VE 4-11	DAY 1	Field Blank
	8/2/17	8/2/17	8/2/17	8/2/17	8/2/17	8/2/17	-
Perfluoroheptanoic acid (PFHpA)	ND [0.79]	7.7	4	3.3	ND [0.81]	5.4	ND [0.67]
Perfluorooctanoic acid (PFOA)	5.2	29	7.7	5.6	ND [0.75]	18	ND [0.62]
Perfluorononanoic acid (PFNA)	1.3 J	2.8	2.6	1.1 J	ND [0.66]	2.4	ND [0.54]
Perfluorodecanoic acid (PFDA)	ND [0.43]	ND [0.43]	0.76 J	ND [0.44]	ND [0.44]	ND [0.44]	ND [0.37]
Perfluoroundecanoic acid (PFUnA)	ND [0.73]	ND [0.73]	ND [0.74]	ND [0.75]	ND [0.75]	ND [0.75]	ND [0.62]
Perfluorododecanoic acid (PFDoA)	1.2 J	ND [0.57]	ND [0.58]	ND [0.75]	1.4 J	ND [0.58]	ND [0.49]
Perfluorotridecanoic acid (PFTriA)	ND [0.54]	ND [0.54]	ND [0.54]	ND [0.59]	ND [0.56]	ND [0.55]	ND [0.46]
Perfluorotetradecanoic acid (PFTeA)	ND [0.20]	ND [0.19]	0.27 J B	ND [0.55]	ND [0.20	ND [0.20]	ND [0.17]
Perfluorohexanesulfonic acid (PFHxS)	7.4	9.7	24	2	39	5.0	ND [0.72]
Perfluoroheptanesulfonic acid (PFHpS)	ND [0.70]	0.77 J	ND [0.70]	ND [0.72]	ND [0.72]	ND [0.71]	ND [0.59]
Perfluorooctanesulfonic acid (PFOS)	37	62	55	14	7.2	16	ND [1.1]
Perfluorodecanesulfonic acid (PFDS)	ND [1.2]	ND [1.2]	ND [1.2]	ND [1.2]	ND [1.2]	ND [1.2]	ND [1.0]
Perfluorooctane Sulfonamide (FOSA)	ND [0.63]	ND [0.62]	3.9 J	ND [0.64]	ND [0.64]	ND [0.64]	ND [0.53]
Perfluorobutanoic acid (PFBA)	ND [22]	ND [22]	54 J B Cl	2200 B Cl	ND [23]	2000 B Cl	ND [0.38]
Perfluoropentanoic acid (PFPeA)	ND [48]	ND [48]	ND [49]	ND [50]	ND [50]	4600 Cl	ND [0.82]
Perfluorohexanoic acid (PFHxA)	ND [39]	ND [38]	ND [39]	ND [39]	ND [40]	ND [39]	ND [0.65]
Perfluorobutanesulfonic acid (PFBS)	ND [45]	ND [45]	ND [45]	ND [46]	ND [46]	ND [46]	ND [0.76]

Notes:

All results are in nanograms per liter (ng/L) or parts per trillion (ppb)

ND (Method Detection Limit) [Reporting Limit] = Not Detected at a concentration greater than the reporting limit shown in brackets

J = Estimated Concentration

B = Compound was found in the blank and samples

Cl = The peak identified in the data system exhibited chromatographic interference that could not be resolved. There is reason to suspect there may be a high bias

The NYSDEC does not have groundwater standard or guidance values for perfluorooctanoic acid (PFOA) or prefluorooctanesulfonic acid (PFOS); however, in 2016 the United States Environmental Protection Agency (USEPA) issued a health advisory level of 70 nanograms per liter (ng/l) or parts per trillion (ppt) for the combined concentration of PFOA and PFOS in drinking water sources.

NYSDEC Site #360010
Harmon Yard Waste Water Area
OU II

Summary of 6 UCMR3 PFAS Compounds
Groundwater Samples

Compound	Test Location and Sample Date						
	VE 1-2	VE 1-4	VE 2-1	VE 3-1	VE 4-11	DAY 1	Field Blank
	8/2/17	8/2/17	8/2/17	8/2/17	8/2/17	8/2/17	-
Perfluorooctanesulfonic acid (PFOS)	37	62	55	14	7.2	16	ND [1.1]
Perfluorooctanoic acid (PFOA)	5.2	29	7.7	5.6	ND [0.75]	18	ND [0.62]
Perfluoroheptanoic acid (PFHpA)	ND [0.79]	7.7	4	3.3	ND [0.81]	5.4	ND [0.67]
Perfluorononanoic acid (PFNA)	1.3 J	2.8	2.6	1.1 J	ND [0.66]	2.4	ND [0.54]
Perfluorohexanesulfonic acid (PFHxS)	7.4	9.7	24	2	39	5.0	ND [0.72]
Perfluorobutanesulfonic acid (PFBS)	ND [45]	ND [45]	ND [45]	ND [46]	ND [46]	ND [46]	ND [0.76]
Combined PFOS & PFOA	42.2	91	62.7	19.6	7.2	34	0

Notes:

All results are in nanograms per liter (ng/L) or parts per trillion (ppb)

ND (Method Detection Limit) [Reporting Limit] = Not Detected at a concentration greater than the reporting limit shown in brackets

J = Estimated Concentration

The NYSDEC does not have groundwater standard or guidance values for perfluorooctanoic acid (PFOA) or prefluorooctanesulfonic acid (PFOS); however, in 2016 the United States Environmental Protection Agency (USEPA) issued a health advisory level of 70 nanograms per liter (ng/l) or parts per trillion (ppt) for the combined concentration of PFOA and PFOS in drinking water sources.