ARM Group LLC
Engineers and Scientists

September 7, 2023

Ms. Barbara Brown
Project Coordinator
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, MD 21230

Re: Comment Response Letter:
Rod and Wire Mill 2022 IM Report
Area A: Parcel A3
Tradepoint Atlantic
Sparrows Point, MD 21219

Dear Ms. Brown:

On behalf of Tradepoint Atlantic (TPA), ARM Group LLC (ARM) is pleased to provide the following responses to comments received from the Maryland Department of the Environment (MDE) and the Environmental Protection Agency (EPA) via email on June 21, 2023 regarding the Rod and Wire Mill (RWM) 2022 Interim Measure Report (Revision 0 dated April 13, 2023), for Parcel A3 of the TPA property located in Sparrows Point, Maryland. Responses to the comments are given below; the original comments are included in italics with responses following.

General Comments:

- *Any discussion of concentration trends throughout this report should include an actual trend analysis in lieu of determinations based on data plots, particularly regarding unknown data distributions.*

  Response: All trend analysis has been redone using Mann-Kendall. All discussion of trends as it relates to the time-series plots has been removed.

- *A discussion on the geochemical conditions needs to be provided in this report. Zinc and cadmium will be more soluble under oxidizing conditions than in a reducing environment, so it is important to understand the redox conditions. Additionally, the solubility of zinc and cadmium can be reduced by sulfide formation. It is recommended moving forward to collect sulfide and alkalinity data. All geochemical and field parameter data should be tabulated and provided in this report.*

  Response: Field parameters (including redox) are now included in **Table 6** (shallow wells) and **Table 9** (intermediate and deep wells). As part of the RWM Supplemental Investigation Report (Revision 1, April 8, 2020), alkalinity was analyzed across the Site. TPA will collect

samples for analysis of alkalinity (via USEPA Method SM2320) from all wells scheduled for sampling in the Fall 2023. TPA will also collect samples for analysis of sulfide (via USEPA Method 9031) from twelve wells (six well pairs) from spatially representative locations across the site. The sulfide samples will be collected from the RWB well pair (shoreline), RW05 well pair (shoreline), RWQ well pair (upgradient), RW23 well pair (central portion of site), and the RWJ and RWL well pairs (focused wells). Once the sulfide data has been reviewed a determination will be made as to whether additional sampling/analysis for this parameter will be performed.

- *Please provide a well construction summary table that includes at a minimum installation date, ground surface elevation, top of casing elevation, well depth, screen length, and screen interval.*
  Response: New **Table 1** has been added with well construction details.
- *Please provide all historic zinc and cadmium data in Tables 3 through 6 to better assess the trench effectiveness.*
  Response: **Tables 4, 5, 7, and 8** (tables numbers changed based on new tables added) have been updated with available data (same data as utilized in Appendices C and D). Please note that the majority of the wells were installed in 2016 (for numbered RW wells) and in 2019 (for lettered RW wells).

Appendix A:

- *What does "Auger Only Interval" mean on the NR intervals on the boring logs? Please also confirm drilling method (i.e., sonic, HSA, etc.) used.*
  Response: The wells were installed via hollow stem auger. Drilling method has been added to the bore logs. These were replacement wells, to be installed with the same depths / screened intervals as the original wells; no soil sampling was required. Therefore, when drilling was performed, samples were collected using a 2-foot split spoon sampler for lithologic purposes. Samples were collected at 5-foot intervals

Appendix D:

- *Recent pH readings for RW05-MWS/I are missing from the plots.*
  Response: pH readings have been added to the plots (RW05 and RW05R shown on the same trend line).

Section 3.3.1.2 Zinc:

- *Zinc and cadmium concentrations in both RW03R-MWS and RW-03R-MWI showed substantial decreases from the last sampling event in RW03-MWS/I. Please confirm that*

the replacement well was installed co-located with the original well and show both well locations on a figure.

Response: The new wells were installed about 14 feet south of the original wells (based on GIS measurements of surveyed locations) – refer to Figure 1 attached to this CRL. The intermediate replacement well has the same screen interval as the original intermediate well (30-40' bgs). The shallow replacement well has a screen interval of 12-20' bgs compared to 10-20' bgs for the original.

- *Zinc is not delineated to the northwest, northeast, southwest, south, or southeast. Please indicate that this will be addressed in the RWM Groundwater CMS.*
  Response: The monitoring well network coverage will be evaluated in the RWM Groundwater CMS. This has been added to Section 4.0. However, please note that the Site is bounded by the MD 695 Highway to the north, Bear Creek to the west, and to the south by a building (currently occupied by Amazon).

Section 3.3.1.3 Cadmium:

- *Cadmium is not delineated to the south. Please indicate that this will be addressed in the RWM Groundwater CMS.*
  Response: The monitoring well network coverage will be evaluated in the RWM Groundwater CMS. This has been added to Section 4.0. However, please note that to the south is a building (currently occupied by Amazon).

Section 3.3.2.1 Groundwater Elevations:

- *Update Figures 24 and 25 with smaller contour intervals (i.e., 0.5') to get a better sense of groundwater flow direction in this area.*
  Response: Figure 24 and Figure 25 have been updated with contour intervals of 0.5 feet.
- *The text indicates that groundwater elevations were higher in Q3 than in Q1. Is this a seasonal variation that is observed annually or was gauging done after a rain event, etc.?*
  Response: The gauging events were completed on Mach 21 and September 7, 2022. A review of historical precipitation data for the Baltimore area indicates the most recent rain events were March 17, 2022 (0.38 inches) and September 6, 2022 (1.38 inches). So, it is possible that the increase in groundwater elevations in the Fall 2022 gauging event is partially attributable to the recent rain event. Text has been added to Section 3.3.2.1. However, no clear seasonal trends are observed when looking at groundwater elevations over time. Wells within paved and unpaved areas were also considered, with no clear trends (refer to Attachment 2 to this CRL).
- *The text indicates that groundwater elevations are lower in the shallow zone, indicating a*

downward vertical gradient. However, the vertical gradient would be upward since the deeper well screen has a higher water level than the shallower well. Please verify and provide calculations of the vertical gradient.
Response: The second paragraph of Section 3.3.2.1 notes that the groundwater elevations are lower in the intermediate zone, indicating a downward gradient, with three exceptions. A potential upward gradient was observed in three locations only (RW22R, RWE and RWG well pairs).

Section 3.3.2.2 Zinc:

- *The third paragraph of this Section states that zinc was not detected in the Q1 sampling event. This result appears to be an anomaly. Please provide further discussion on why zinc was not detected during this sampling event.*
  Response: This finding appears to be an anomaly (as mentioned in the 5th paragraph in that section). Low concentrations have occasionally been detected at RW06-MWI (November 2020 was 79.7 ug/L). Based on a review of field parameters (i.e., pH, DO, ORP), there is no clear correlation between field parameters and the concentrations (refer to Attachment 2 to this CRL). Fluctuating trends are more typically observed in the numbered wells (installed in 2016).
- *The time-series graphs indicate that zinc concentrations have fluctuated in some interior wells (RW10-MWI, RW13-MWI, and RW15-MWI). Please provide a discussion on what could account for these fluctuations. It would be useful to discuss redox conditions (specifically ORP and pH) and any potential variations that could be influencing metals solubility.*
  Response: Based on a review of field parameters (i.e., pH, DO, ORP), there is no clear correlation between field parameters and the concentrations (refer to Attachment 2 to this CRL). Fluctuating trends are more typically observed in the numbered wells (installed in 2016).
- *The text states that zinc concentrations decreased in RWJ-MWI; however, a Mann-Kendall trend analysis indicates no trend in this monitoring well. Please indicate what this decrease is referring to.*
  Response: All trend analysis has been redone using Mann-Kendall. All discussion of trends as it relates to the time-series plots has been removed. Based on the results of the Mann-Kendall analysis, there is no statistically significant trend for zinc at RWJ-MWI.
- *The last paragraph states that monitoring well RW19-MWI experienced a significant increase in zinc concentration during the Q1 sampling event. Could this increase be attributed to an artifact of sampling, such as an increase in turbidity, or a change in redox conditions, etc.? Please expand on this statement.*

Response: The Q1 2022 zinc concentration at RW19-MWI was in line with historic concentrations, while the previous sample (from Q2 2021) was anonymously low. Report text has been updated to clarify.

- *Zinc is not delineated in any direction within the intermediate zone. Please indicate that this will be addressed in the RWM Groundwater CMS.*
  Response: The monitoring well network coverage will be evaluated in the RWM Groundwater CMS. This has been added to Section 4.0. However, please note that this site is bounded by the MDE 695 Highway to the north, Bear Creek to the west, and a building to the south (currently occupied by Amazon).

Section 3.3.2.3 Cadmium:

- *The first paragraph states that the high cadmium detected at RWA-MWI appears to be isolated from known source areas. Based on the potentiometric maps, this well appears to be downgradient and possibly indicates that the trenches are not capturing all groundwater flow directions.*
  Response: When the trenches were installed in 2017, there were already groundwater impacts downgradient (between the trenches and Bear Creek). The trenches were not designed to treat groundwater to the west or northwest of the trench area, but rather to focus on the original source areas. It is noted in Section 4.0 of the Report that some areas are outside the effective zone of the remediation trench, and that it will be further evaluated in the RWM CMS.
- *The time-series graphs indicate that cadmium concentrations have fluctuated in some interior wells (RW10-MWI, RW11-MWI, RW13-MWI, and RW15-MWI). Please provide a discussion on what could account for these fluctuations. It would be useful to discuss redox conditions (specifically ORP and pH) and any potential variations that could be influencing metals solubility.*
  Response: Based on a review of field parameters (i.e., pH, DO, ORP), there is no clear correlation between field parameters and the concentrations (refer to Attachment 2 to this CRL). Fluctuating trends are more typically observed in the numbered wells (installed in 2016). Currently, a separate evaluation is being conducted in select RWM wells to look into potential differences between numbered and lettered wells.
- *The text states that cadmium concentrations decreased in RWJ-MWI; however, a Mann-Kendall trend analysis indicates no trend in this monitoring well. Please indicate what this decrease is referring to.*

  Response: All trend analysis has been redone using Mann-Kendall. All discussion of trends as it relates to the time-series plots has been removed. Based on the results of the Mann-Kendall analysis, there is no statistically significant trend for cadmium at RWJ-MWI.

- *Cd is not delineated in any direction within the intermediate zone. Please indicate that this will be addressed in the RWM Groundwater CMS.*

Response: The monitoring well network coverage will be evaluated in the RWM Groundwater CMS. This has been added to Section 4.0. However, please note that this site is bounded by the MDE 695 Highway to the north, Bear Creek to the west, and a building to the south (currently occupied by Amazon).

Section 3.3.3 Focused Well Pairs J-K-L:

- *The second paragraph states, "Measured pH values exhibit decreasing gradient moving away from the trench in the intermediate zone. In both the Q1 and Q3 events, RWJ-MWI has the highest pH (6.84 and 7.47) while RWL-MWI has the lowest pH (5.77 and 6.24), with RWK-MWI having a pH between the two (6.37 and 6.60)." Monitoring well RW24-MWI appears to be installed directly next to one of the trenches, yet the pH in this well is below 6 SU. And the pH in RW13-MWI, located upgradient of these trenches, is over 6 SU. Please expand on this discussion to indicate why this same pattern is not observed throughout the area, yet still provides evidence that the trenches are effective in raising pH and lowering metals concentrations.*

  Response: Groundwater sampling was not conducted prior to 2017 (or 2019 depending on the well) in this area, so we cannot evaluate potential changes in pH related to the installation of the remediation trench for each specific well. However, for RW24-MWI, the pH has increased from 4.66 in the 3rd Quarter 2019 to between 5.51 and 6.10 since 2020. For RW13-MWI, the pH has fluctuated significantly, from 5.8 to 12.2 since 2017, with no apparent trend. It is difficult to draw conclusions from RW13-MWI without pre-remediation trench data.
- *The third paragraph concludes that pH readings in the J-K-L cluster were higher in the intermediate zone than the shallow zone, suggesting treated groundwater from the trench is now reaching RWK-MWI and RWL-MWI. As stated in the comment above, the pH distribution between and among the shallow and intermediate intervals does not appear to be consistent enough to state that the trenches are effective in raising pH or that groundwater from the trench is reaching these wells. Please provide all historic pH readings to verify this statement.*

  Response: All historic pH readings for all wells are included in the figures in Appendix C and Appendix D, along with the historic cadmium and zinc concentrations. As mentioned in the previous comment response, it is difficult to evaluate pH changes in a particular well as there is no pH data from pre-remediation trench installation. Section 3.3.3 is only evaluating the J-K-L well pairs and does not draw conclusions about the entire remediation trench. For the J-K-L well pairs, observations are made based on available data and will be further evaluated based on 2023 sampling results.
- *Additionally, Section 3.1 stated that groundwater flow in the intermediate zone is approximately 5 ft/yr. If RWK-MWI and RWL-MWI are located ~10 and 20 feet, respectively*

from the trench, and the trenches were installed in early 2017, it stands to reason that groundwater treated in the trench has already reached these two monitoring wells. Please provide a brief discussion on the stratigraphic sequence corresponding to the shallow and intermediate groundwater zones.

Response: As part of the RWM Supplemental Investigation Report (Revision 1, April 8, 2020), there is a detailed discussion of site geology, site hydrogeology, groundwater flow, and hydraulic gradients. Cross sections were also included in this previous submittal. All cross sections are included as Attachment 1 to this CRL for reference.

- *Please verify monitoring well RWJ-MWS/I was installed next to the trench. The figures show it being installed through the trench. Were the extents of the trenches surveyed?*
  Response: Please note that the remediation trenches are wider at the top than at the base, so RWJ was installed through the top of the remediation trench but is screened adjacent to the remediation trench. Refer to the attached Figure 2 showing a cross section (previously included in the 2020 IM Report). A formal survey of the trench extent is not available.
- *The last paragraph states, "The groundwater elevations of the Focused well pairs provide evidence that groundwater may be draining through the trenches from the shallow zone to the intermediate zone. In both semiannual sampling events 2022, there is a groundwater elevation gradient toward the trench (from L toward J) in these three wells in the shallow zone." Provide a discussion and calculations of a vertical gradient in the area to provide evidence for this statement. Additionally, please discuss the significance of this very localized groundwater flow direction.*

  Response: All calculations and additional discussion were included in the RWM Supplemental Investigation Report (Revision 1, April 8, 2020). This localized groundwater flow direction appears to be simply associated with trench construction.

<u>Section 3.4 Contaminant Reduction</u>:

- *Annual average concentrations of cadmium and zinc were calculated for each well where values for total and dissolved metals were used interchangeably in the calculations. However, dissolved concentrations are typically lower than total metals concentrations so this may skew the average. Were turbidity values low enough to assume total and dissolved would be about the same? Why was a switch made from total to dissolved analyses?*
  Response: As noted in the footnotes for Tables 4, 5, 7, and 8, total metals were analyzed in all sampling events prior to October 2018. In December 2018, analysis was completed for both total and dissolved metals at each well location. This was discussed in the Rod and Wire Mill 2018 Interim Progress Report (February 15, 2019). Following the December 2018 sampling event, all groundwater samples have been analyzed for dissolved metals.
- *Table 7 includes data starting in 2015. Is there any pre-2015 data that is not accounted for here?*

Response: All available data has been included. The majority of the wells were installed in 2016 (for numbered RW wells) and in 2019 (for RW lettered wells). Wells that were existing prior to 2016 were sampled sporadically between 2013 and 2015, and all available results are included in the tables.

If you have questions regarding any information covered in this document, please feel free to contact Peter Haid at Tradepoint Atlantic: 443-649-5055.

Respectfully Submitted,
ARM Group LLC

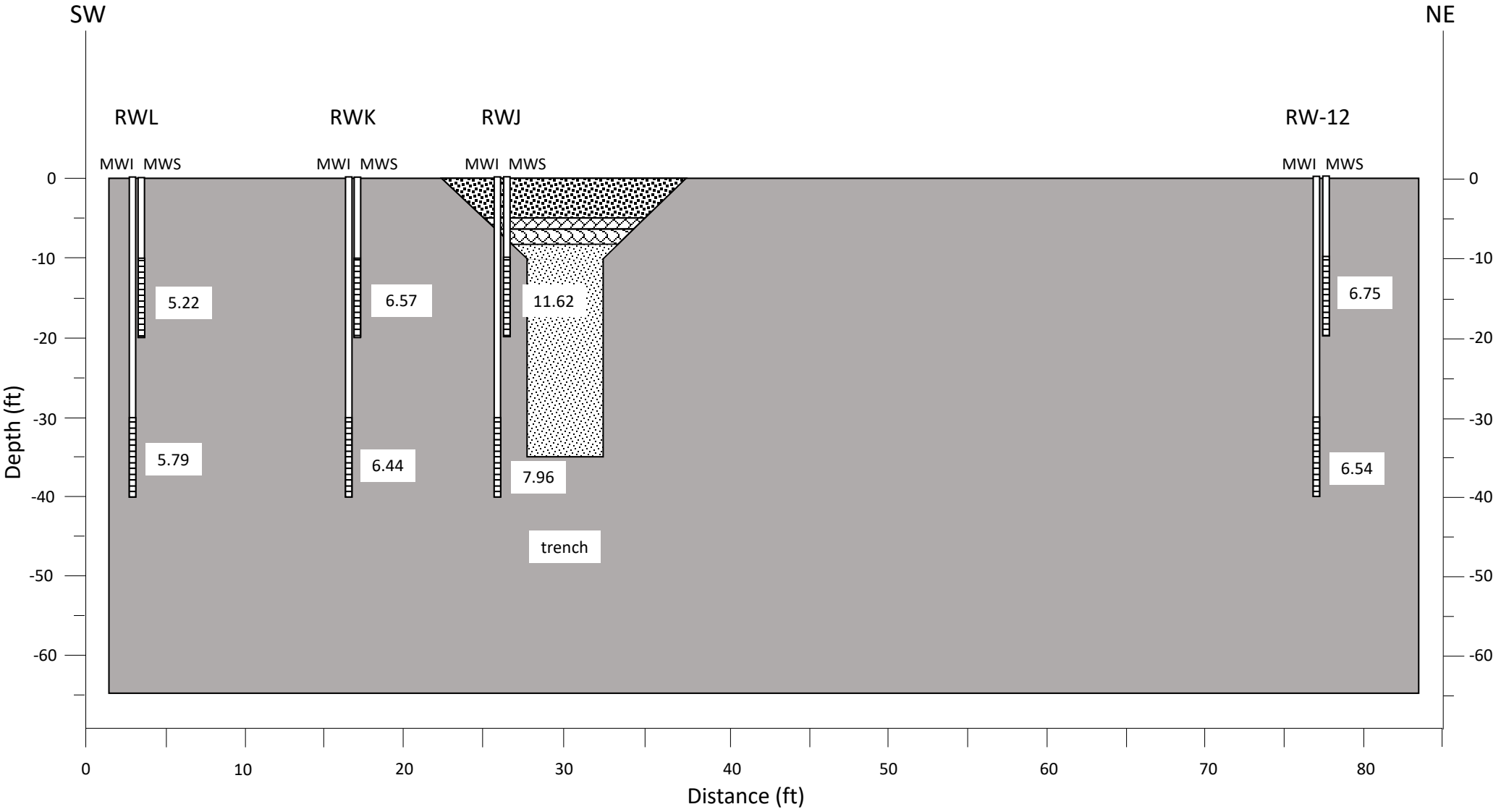
Joshua M. Barna, G.I.T.
Project Geologist

Kaye Guille, P.E., PMP
Senior Engineer

FIGURES


RW03-MW(S)
RW03-MW(I)
RW03R-MWS
RW03R-MWI
Legend
Monitoring Well (Existing)
Monitoring Well (Abandoned)
Rod & Wire Mill
RW03 Well Comparison
Figure
1
ARM Group LLC
Engineers and Scientists
0 5 10 20
Feet
Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 21010103

Figure 2 - Rod and Wire Mill Cross Section - pH Values

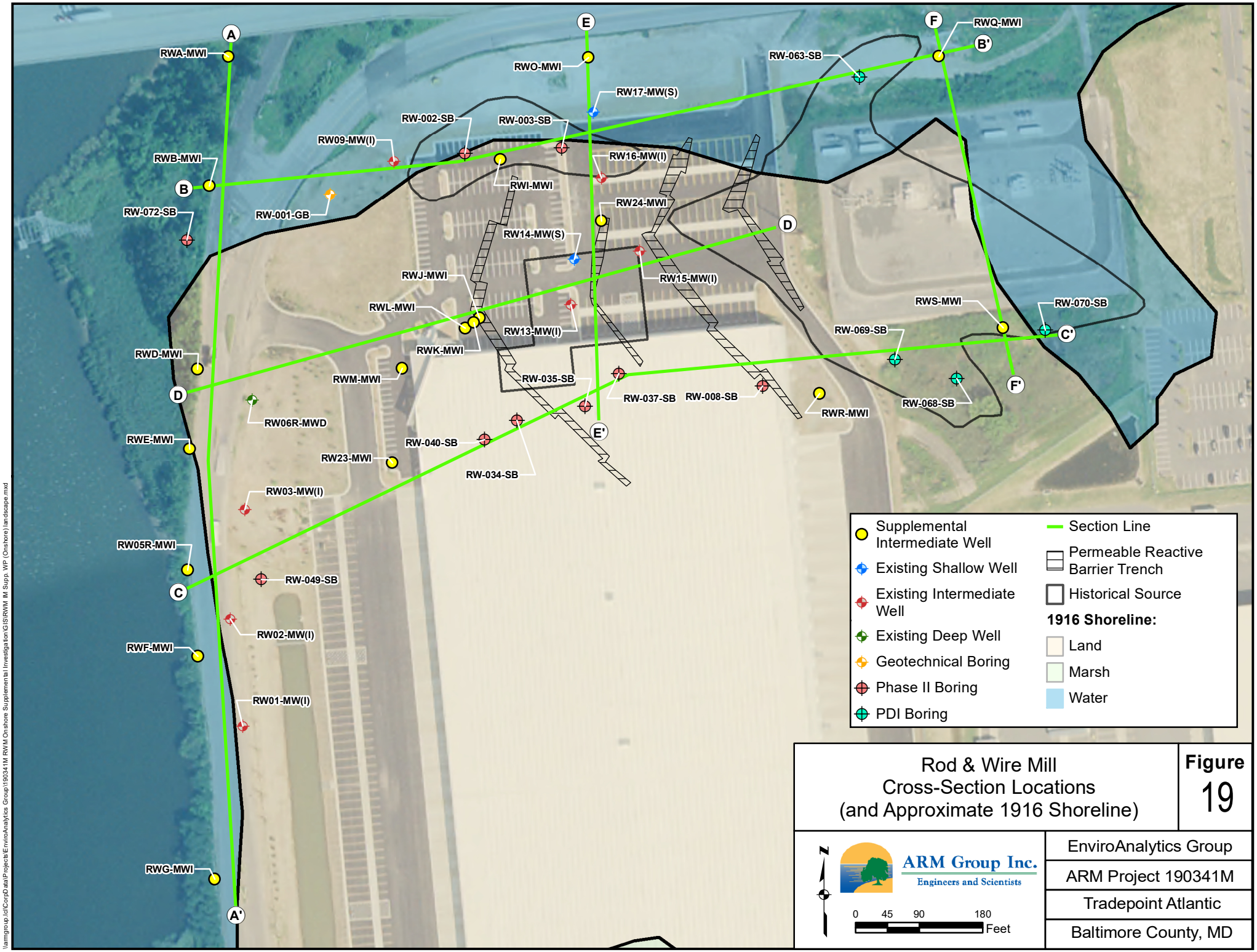


Notes:
- Assumption of flat ground surface; actual ground surface varies by a few feet
- Diagram is horizontally exaggerated

Fine (<¾") steel mill slag
#57 Crushed limestone aggregate
Large (>2") steel mill slag
Terrabond/#57 Crushed limestone reagent mixture

pH
June 2020

ATTACHMENT 1



Rod & Wire Mill
Cross-Section Locations
(and Approximate 1916 Shoreline)

Figure 19

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Tradepoint Atlantic
Baltimore County, MD

\\armgroup.lcl\CorpData\Projects\EnviroAnalytics Group\190341M RWM Onshore Supplemental Investigation\GIS\RWM IM Supp. WP (Onshore) landscape.mxd

A (north)

A' (south)

RWA-MWS/I

RWB-MWS/I

RWD-MWS/I

RWE-MWS/I

RW05R-MWS/I

RW02-MWS/I

RWF-MWS/I

RW01-MWS/I

RWG-MWS/I

Cd: 2.3 J
Zn: 516

Cd: 3 U
Zn: 7.4 J

Cd: 3 U
Zn: 4.7 J

Cd: 0.57 J
Zn: 468

Cd: 3 U
Zn: 10 U

Cd: 1.7 J
Zn: 21,900

Cd: 4.2
Zn: 39,100

Cd: 4.7
Zn: 16,300

Cd: 3 U
Zn: 10 U

Cd: 6,830
Zn: 375,000

Cd: 3 U
Zn: 18.4

Cd: 395
Zn: 36,200

Cd: 700
Zn: 112,000

Cd: 2,570
Zn: 66,800

Cd: 785
Zn: 56,600

Cd: 859
Zn: 41,900

Cd: 19.4
Zn: 5,670

Cd: 22.9
Zn: 332

ELEVATION (feet)

20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45

0 50 100 150 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900 950 1000 1050 1100 1150 1200 1250

DISTANCE (feet)

LEGEND

Slag

Sand

Silt/Clay

Shallow Well Groundwater Elevation

Intermediate Well Groundwater Elevation

Notes:
No geologic data below bottom of boreholes.
All concentrations are dissolved fraction in micrograms per liter.

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Figure 20

Cross Section A-A'

(Revision 1)

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B (west)

B' (east)

RWB-MWS/I

RW-001-GB

RW-002-SB

RWI-MWS/I

RW-003-SB

RW17-MW(S)

RW-063-SB

RWQ-MWS/I

Cd: 3 U
Zn: 7.4 J

Cd: 714
Zn: 25,800

Cd: 2.6 J
Zn: 146

Cd: 3 U
Zn: 18.4

Cd: 8,050
Zn: 632,000

Cd: 26.2
Zn: 357,000

ELEVATION (feet)

20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40

0 50 100 150 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900 950 1000 1050 1100 1150 1200

DISTANCE (feet)

LEGEND

Slag

Sand

Silt/Clay

Shallow Well Groundwater Elevation

Intermediate Well Groundwater Elevation

Notes:
No geologic data below bottom of boreholes.
All concentrations are dissolved fraction in micrograms per liter.
RW17-MWS is a NAPL well not sampled for Cd or Zn.

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Figure 21

Cross-Section B-B'
(Revision 1)

07-12-2019 \\armgroup.lcl\CorpData\Projects\EnviroAnalytics Group\190341M RWM Onshore Supplemental Investigation\Documents\Cross Sections\QuickCross\B-B' SCK.cro

C (west)

C' (east)

RW05R-MWS/I

RW23-MWS/I

RW-040-SB

RW-034-SB

Trench

RW-035-SB

RW-037-SB

Trench

RWR-MWS/I

RW-069-SB

RWS-MWS/I

RW-070-SB

Cd: 3 U
Zn: 10 U

Cd: 3 U
Zn: 22.4

Cd: 50
Zn: 213,000

Cd: 3 U
Zn: 10,100

Cd: 2,270
Zn: 109,000

Cd: 2,570
Zn: 66,800

Cd: 440
Zn: 2,560,000

Cd: 3 U
Zn: 797,000

Elevation (feet)

20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35

0 50 100 150 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900 950 1000 1050 1100 1150 1200 1250 1300 1350

DISTANCE (feet)

LEGEND

- Slag
- Sand
- Silt/Clay
- Trench Alkaline Charge Material

Shallow Well Groundwater Elevation

Intermediate Well Groundwater Elevation

Notes:
No geologic data below bottom of boreholes.
All concentrations are dissolved fraction in micrograms per liter.

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Figure 22

Cross-Section C-C'
(Revision 1)

D (west)

D' (east)

RWD-MWS/I

RW06R-MWS/I/D

RWM-MWS/I

RWL-MWS/I

RWK-MWS/I

Trench

RW13-MWI

Trench

RW15-MWS/I

Trench

Trench

RW19-MWS/I

Cd: 3 U
Zn: 20.7

Cd: 3 U
Zn: 4.7 J

Cd: 3 U
Zn: 6 J

Cd: 3 U
Zn: 8,480

Cd: 3 U
Zn: 6,710

Cd: 3 U
Zn: 10 U

Cd: 19.1
Zn: 684

Cd: 3 U
Zn: 3,180

Cd: 64.2
Zn: 16,400

Cd: 1,080
Zn: 162,000

Cd: 51.1
Zn: 97.7

Cd: 2,420
Zn: 7,280,000

Cd: 395
Zn: 36,200

Cd: 885
Zn: 108,000

Cd: 1,230
Zn: 169,000

Bottom of trench at 35' bgs

Cd: 61.2
Zn: 1,580

Cd: 33.5
Zn: 21,100

Note: No recovery in RW06R-MWD below 30 feet bgs due to flowing sands.

Cd: 3 U
Zn: 24.3

Elevation (feet)

20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45 -50 -55

0 50 100 150 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900 950 1000

DISTANCE (feet)

LEGEND

- Slag
- Sand
- Silt/Clay
- Trench Alkaline Charge Material

- Shallow Well Groundwater Elevation
- Intermediate Well Groundwater Elevation

Notes:
No geologic data below bottom of boreholes.
All concentrations are dissolved fraction in micrograms per liter.
Lithologies from RW19-MWI boring log not included because they were logged with inconsistent descriptive scheme.

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Figure 23

Cross-Section D-D'

02-22-2020 C:\Users\SKabis\Desktop\RWM QuickCross\D-D'.cro

E (north)

E' (south)

RWO-MWS/I

RW17-MWS

RW16-MWS/I

RW24-MWS/I

RW14-MWS

Trench

RW13-MWI

RW-037-SB

RW-035-SB

Cd: 1.4 J
Zn: 2,660

Cd: 3 U
Zn: 106

Cd: 3 U
Zn: 5 J

Cd: 3,000
Zn: 69,600

Cd: 51.1
Zn: 97.7

Cd: 68.2
Zn: 249,000

Cd: 3 U
Zn: 4.9 J

Cd: 1,580
Zn: 650,000

Elevation (feet)

20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
-40

0
50
100
150
200
250
300
350
400
450
500
550
600

DISTANCE (feet)

LEGEND

- Slag
- Sand
- Silt/Clay
- Trench Alkaline Charge Material

▼ Shallow Well Groundwater Elevation

▽ Intermediate Well Groundwater Elevation

Notes:
No geologic data below bottom of boreholes.
All concentrations are dissolved fraction in micrograms per liter.

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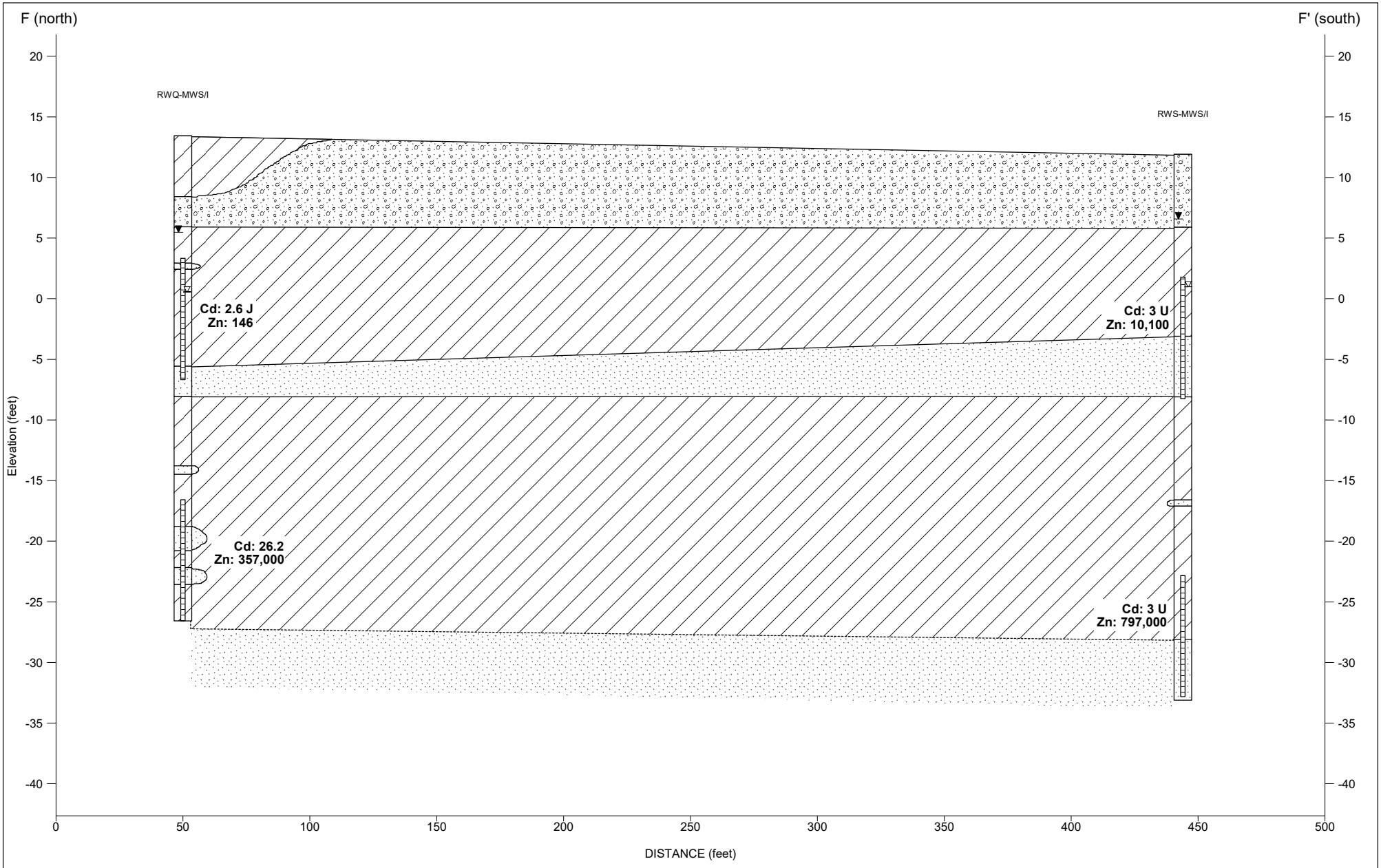
Figure 24

Cross-Section E-E'

02-24-2020 \\armgroup.lcl\CorpData\Projects\EnviroAnalytics Group\190341M RWM Onshore Supplemental Investigation\Documents\Cross Sections\QuickCross\E-E'.cro



LEGEND

- Slag
- Sand
- Silt/Clay
- Shallow Well Groundwater Elevation
- Intermediate Well Groundwater Elevation

Notes:
No geologic data below bottom of boreholes.
All concentrations are dissolved fraction in micrograms per liter.

Tradepoint Atlantic
Sparrows Point, MD
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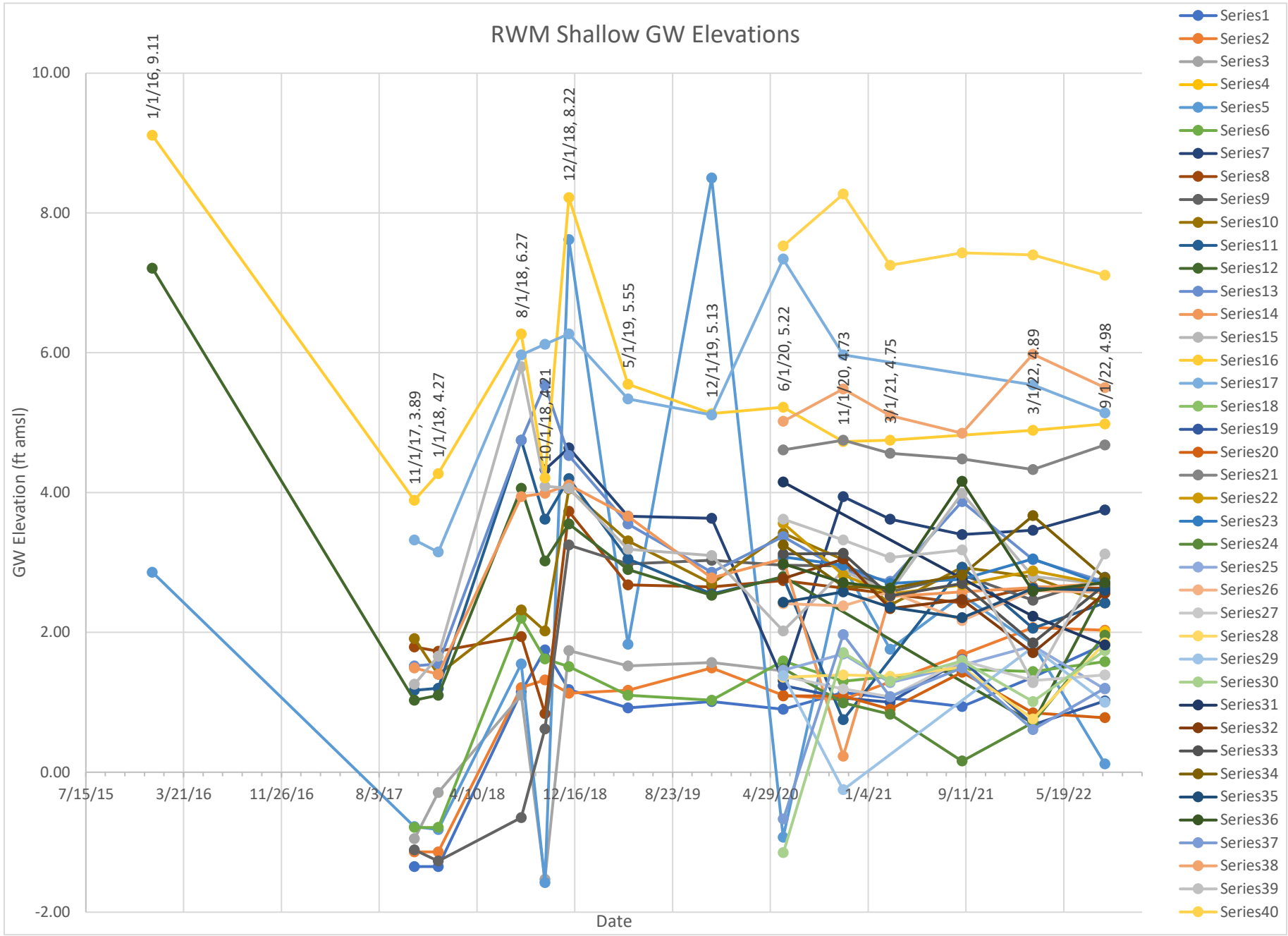
Figure 25

Cross-Section F-F'

ATTACHMENT 2


RWM Shallow GW Elevations
GW Elevation (ft amsl)
Date
10.00
8.00
6.00
4.00
2.00
0.00
-2.00
7/15/15
3/21/16
11/26/16
8/3/17
4/10/18
12/16/18
8/23/19
4/29/20
1/4/21
9/11/21
5/19/22
1/1/16, 9.11
11/1/17, 3.89
1/1/18, 4.27
8/1/18, 6.27
10/1/18, 4.21
12/1/18, 8.22
5/1/19, 5.55
12/1/19, 5.13
6/1/20, 5.22
11/1/20, 4.73
3/1/21, 4.75
3/1/22, 4.89
9/1/22, 4.98
Series1
Series2
Series3
Series4
Series5
Series6
Series7
Series8
Series9
Series10
Series11
Series12
Series13
Series14
Series15
Series16
Series17
Series18
Series19
Series20
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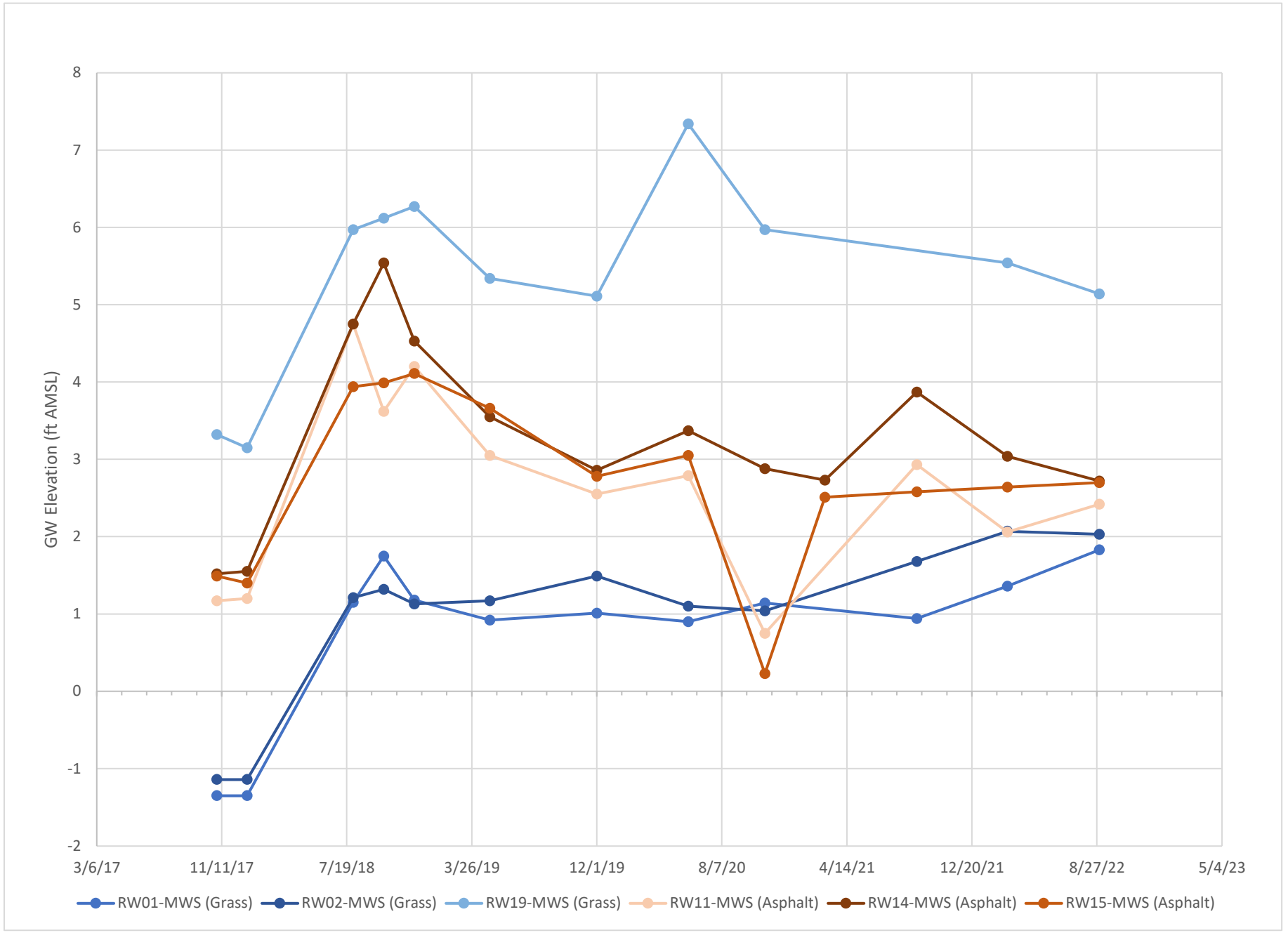
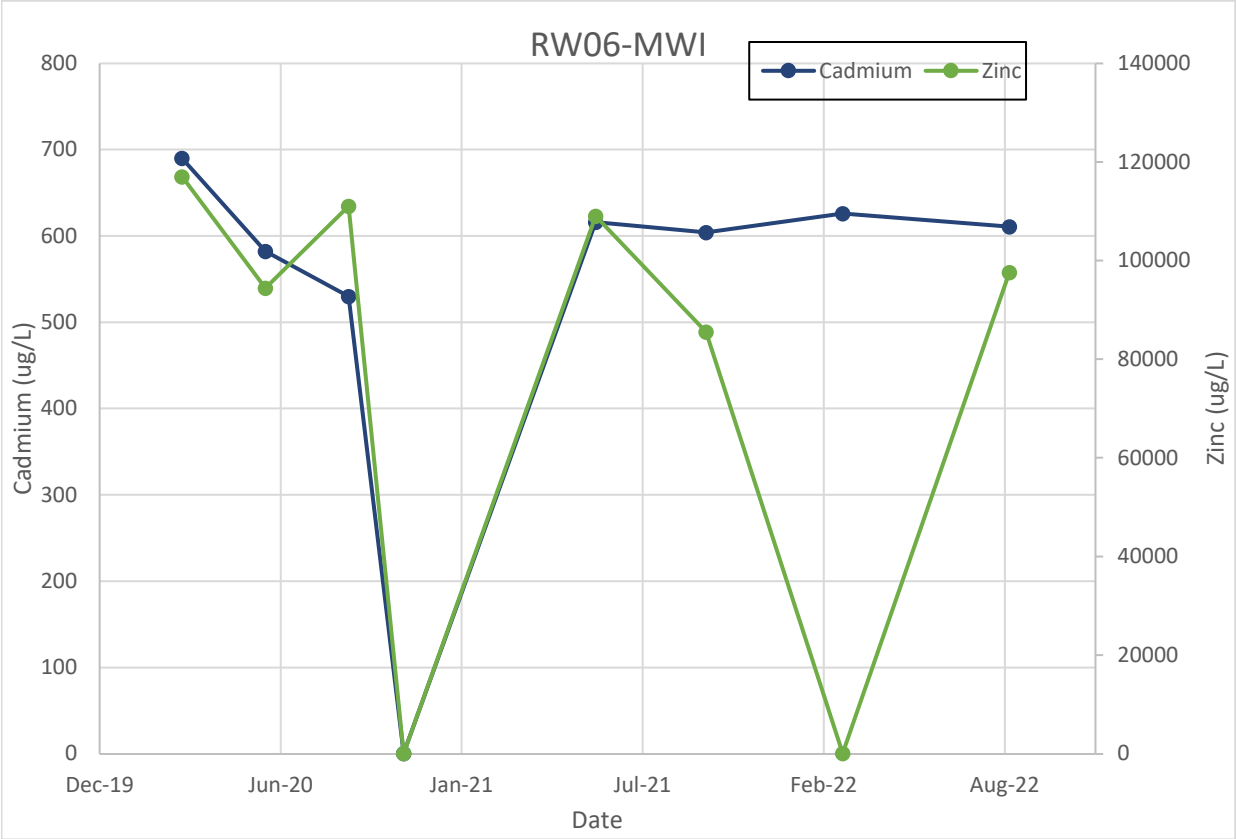
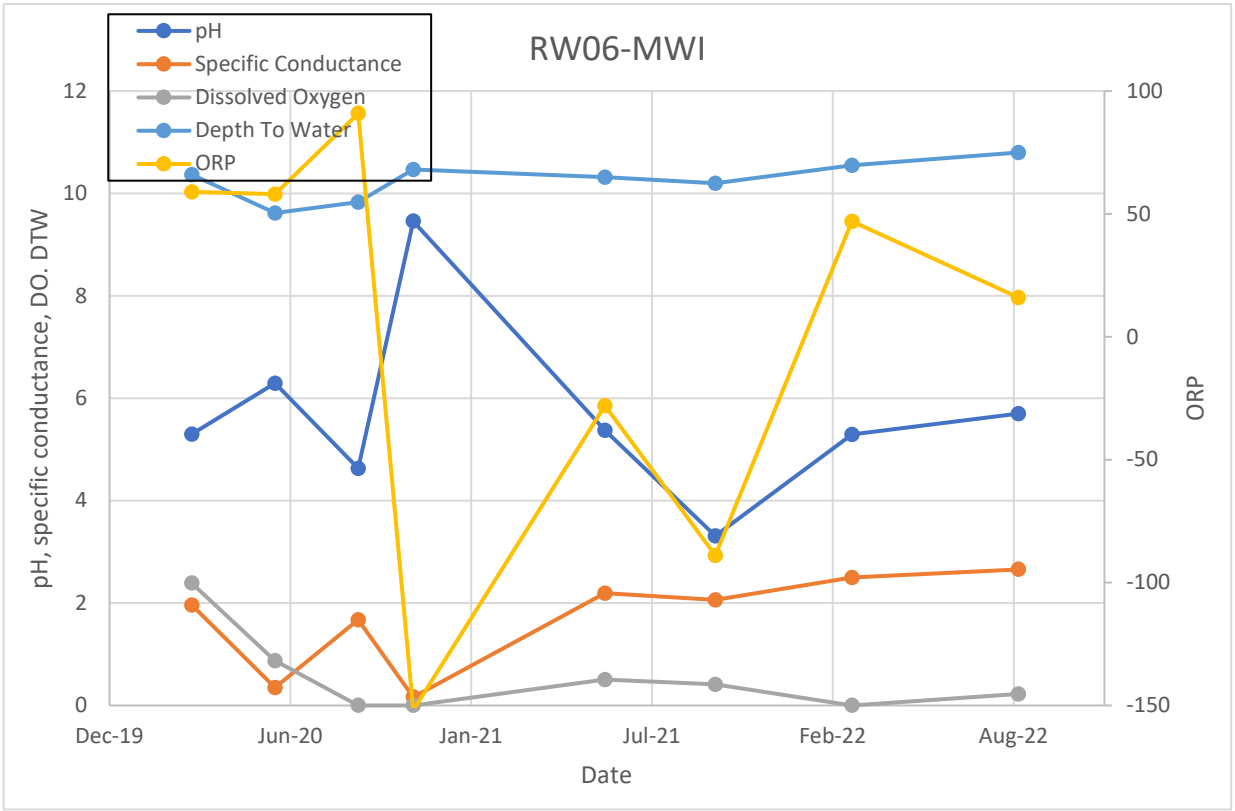
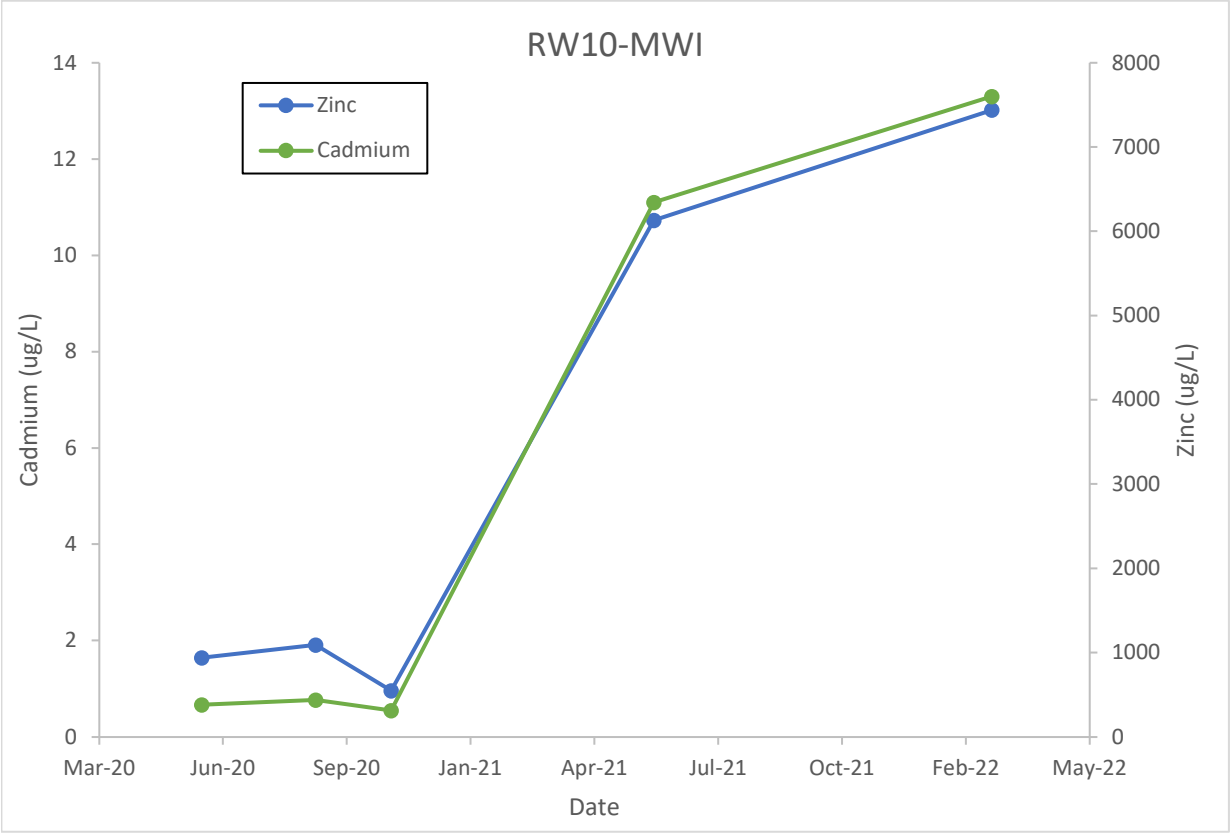
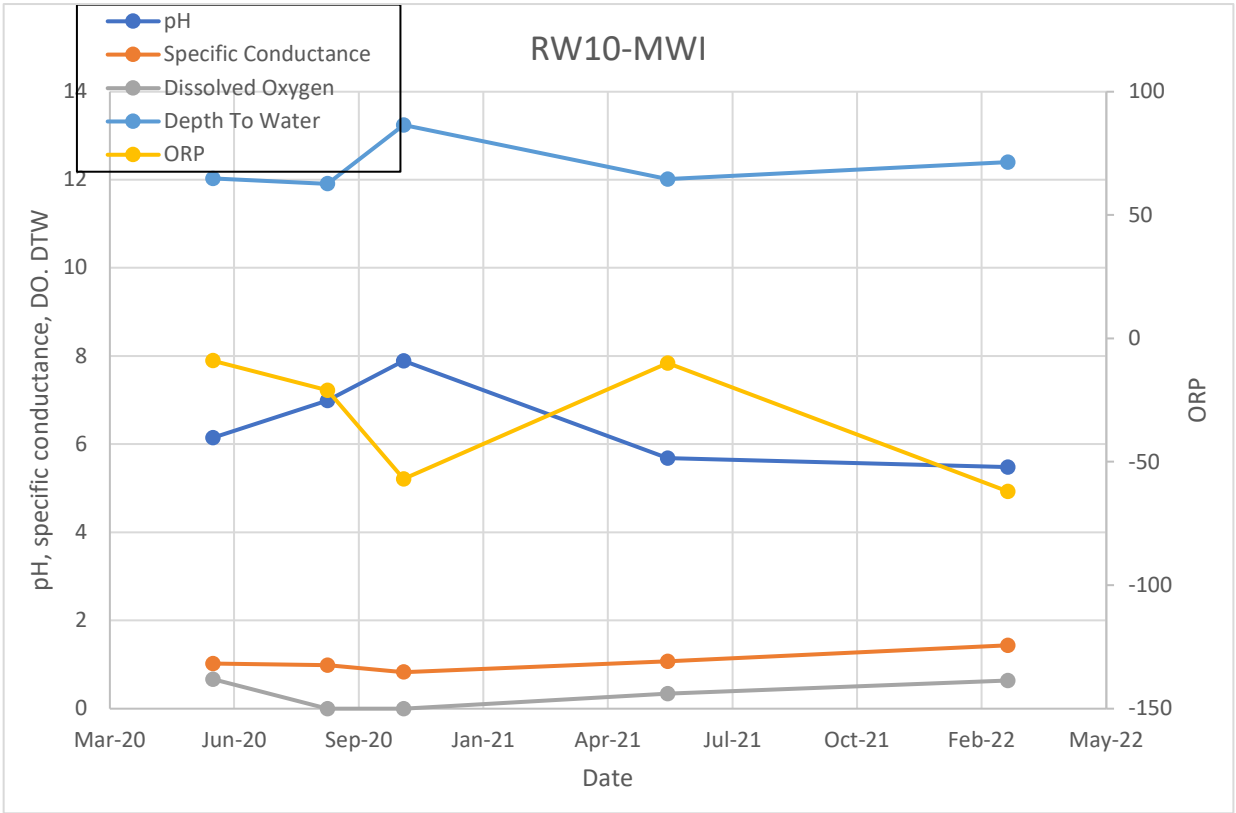
Series32
Series33
Series34
Series35
Series36
Series37
Series38
Series39
Series40

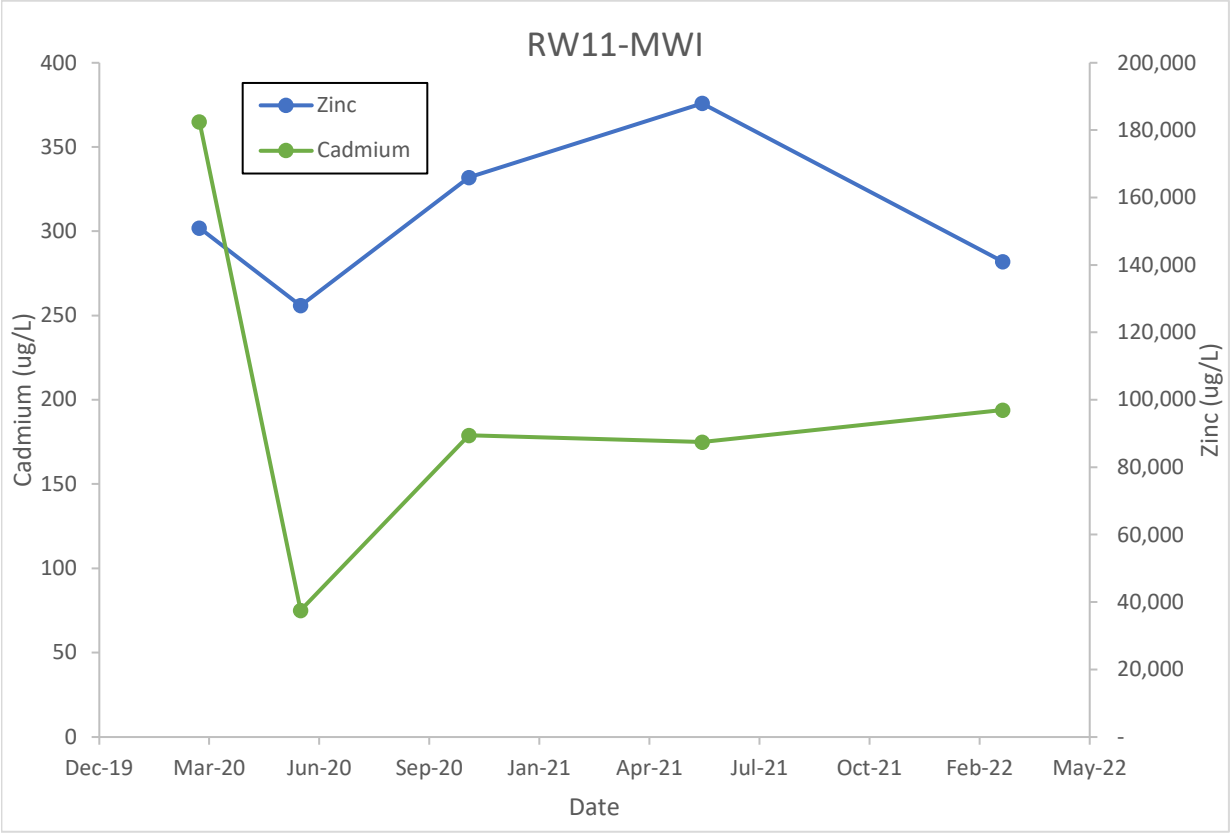

GW Elevation (ft AMSL)
8
7
6
5
4
3
2
1
0
-1
-2
3/6/17
11/11/17
7/19/18
3/26/19
12/1/19
8/7/20
4/14/21
12/20/21
8/27/22
5/4/23
RW01-MWS (Grass)
RW02-MWS (Grass)
RW19-MWS (Grass)
RW11-MWS (Asphalt)
RW14-MWS (Asphalt)
RW15-MWS (Asphalt)

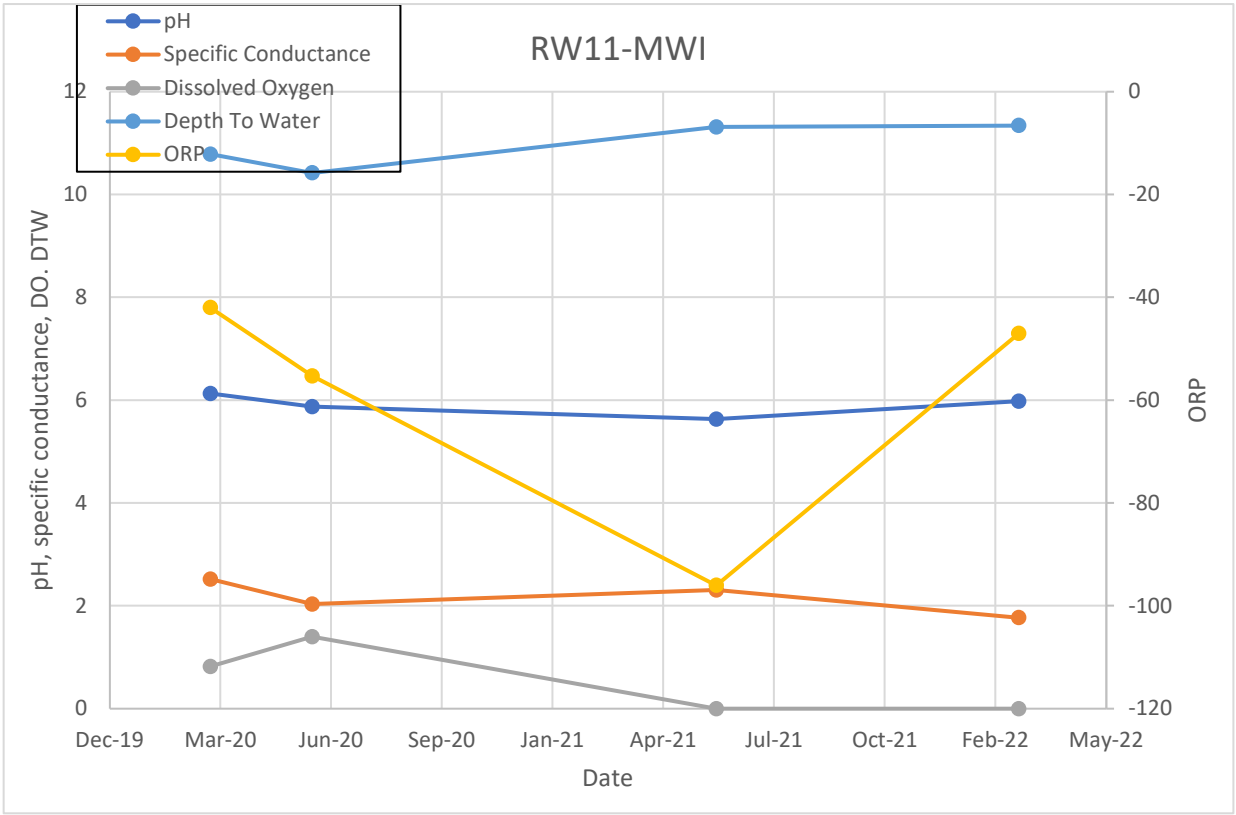

RW06-MWI
Cadmium
Zinc
Cadmium (ug/L)
Zinc (ug/L)
800
700
600
500
400
300
200
100
0
140000
120000
100000
80000
60000
40000
20000
0
Dec-19
Jun-20
Jan-21
Jul-21
Feb-22
Aug-22
Date

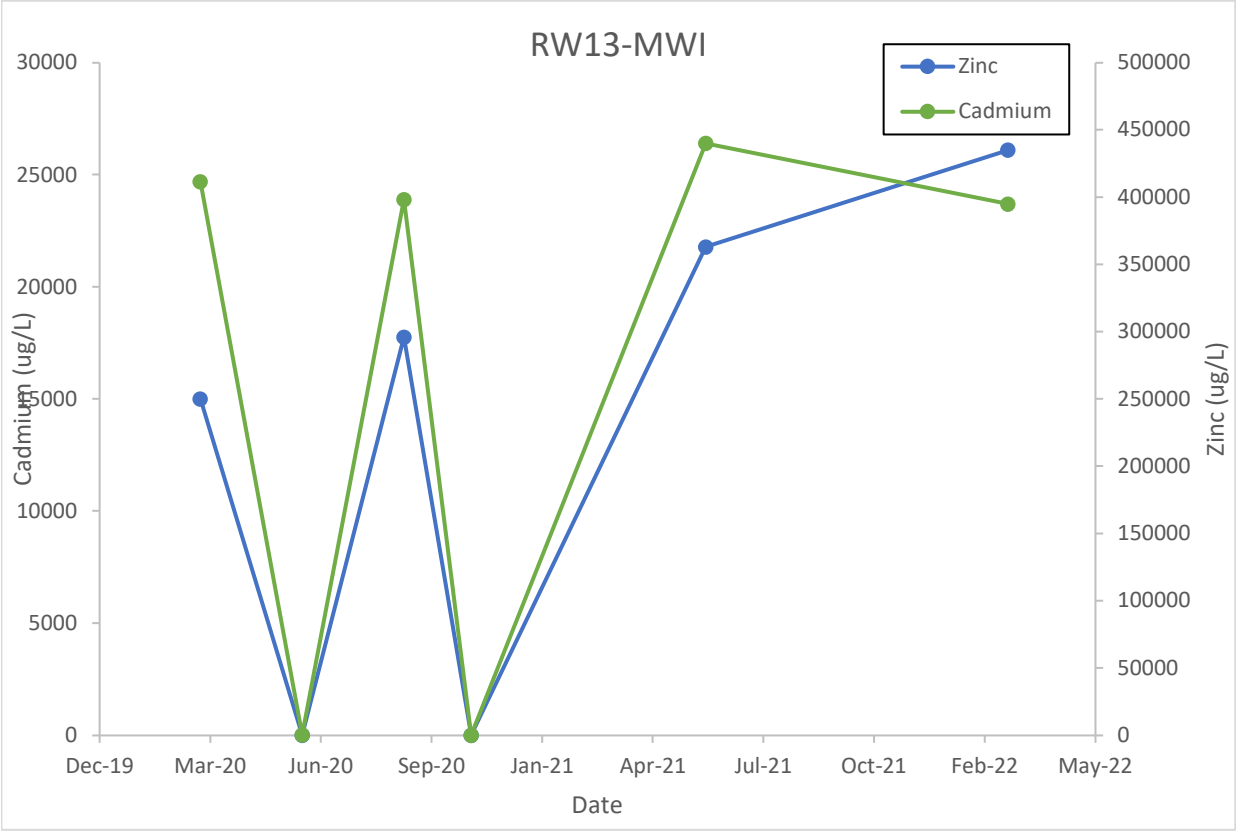

RW06-MWI
pH
Specific Conductance
Dissolved Oxygen
Depth To Water
ORP
pH, specific conductance, DO. DTW
ORP
12
10
8
6
4
2
0
100
50
0
-50
-100
-150
Dec-19
Jun-20
Jan-21
Jul-21
Feb-22
Aug-22
Date

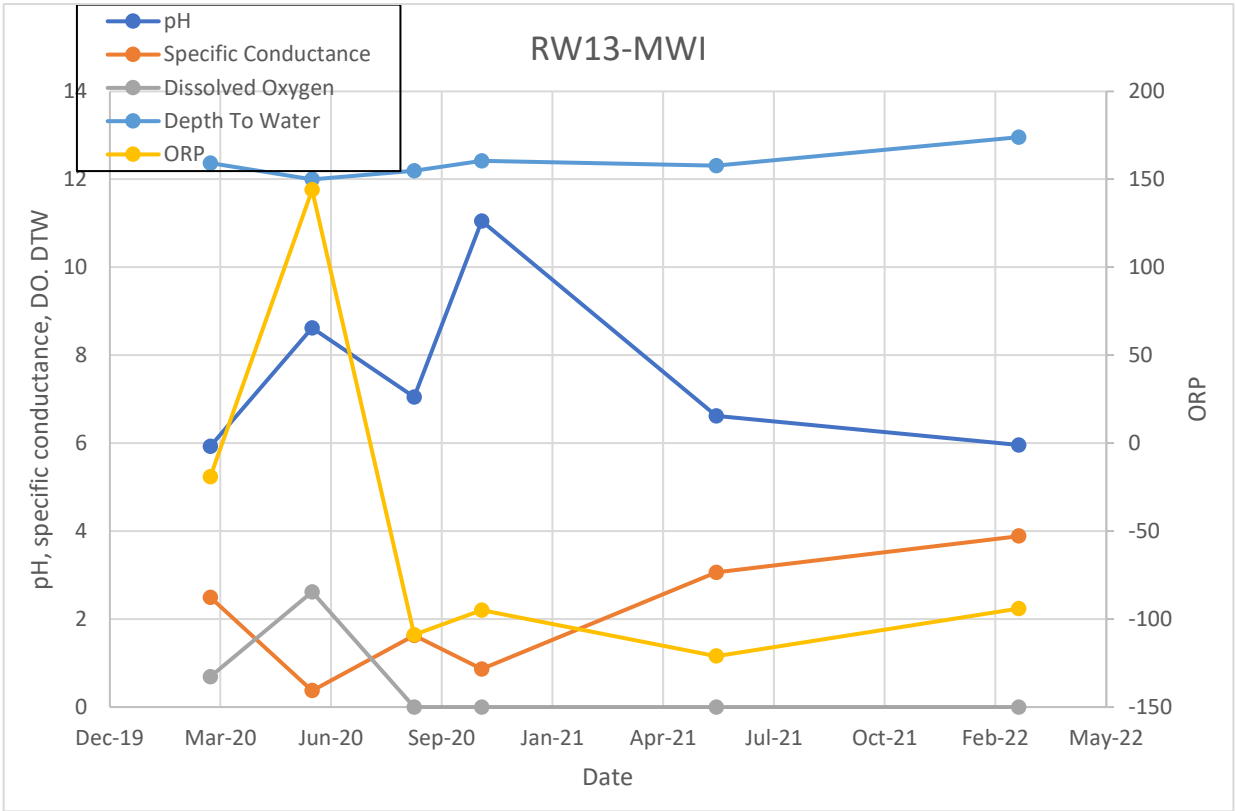

RW10-MWI
Zinc
Cadmium
Cadmium (ug/L)
Zinc (ug/L)
Date
0
2
4
6
8
10
12
14
0
1000
2000
3000
4000
5000
6000
7000
8000
Mar-20
Jun-20
Sep-20
Jan-21
Apr-21
Jul-21
Oct-21
Feb-22
May-22

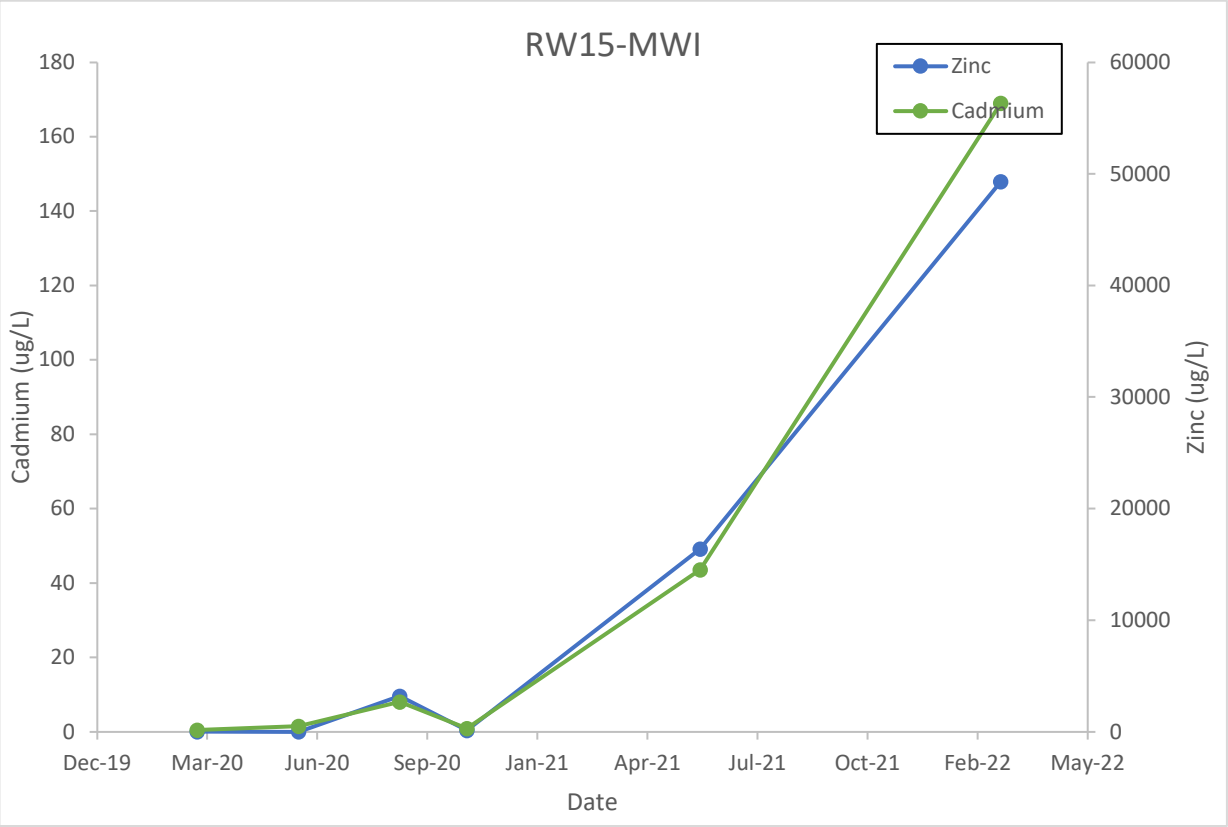

RW10-MWI
pH
Specific Conductance
Dissolved Oxygen
Depth To Water
ORP
pH, specific conductance, DO. DTW
ORP
Date
0
2
4
6
8
10
12
14
100
50
0
-50
-100
-150
Mar-20
Jun-20
Sep-20
Jan-21
Apr-21
Jul-21
Oct-21
Feb-22
May-22

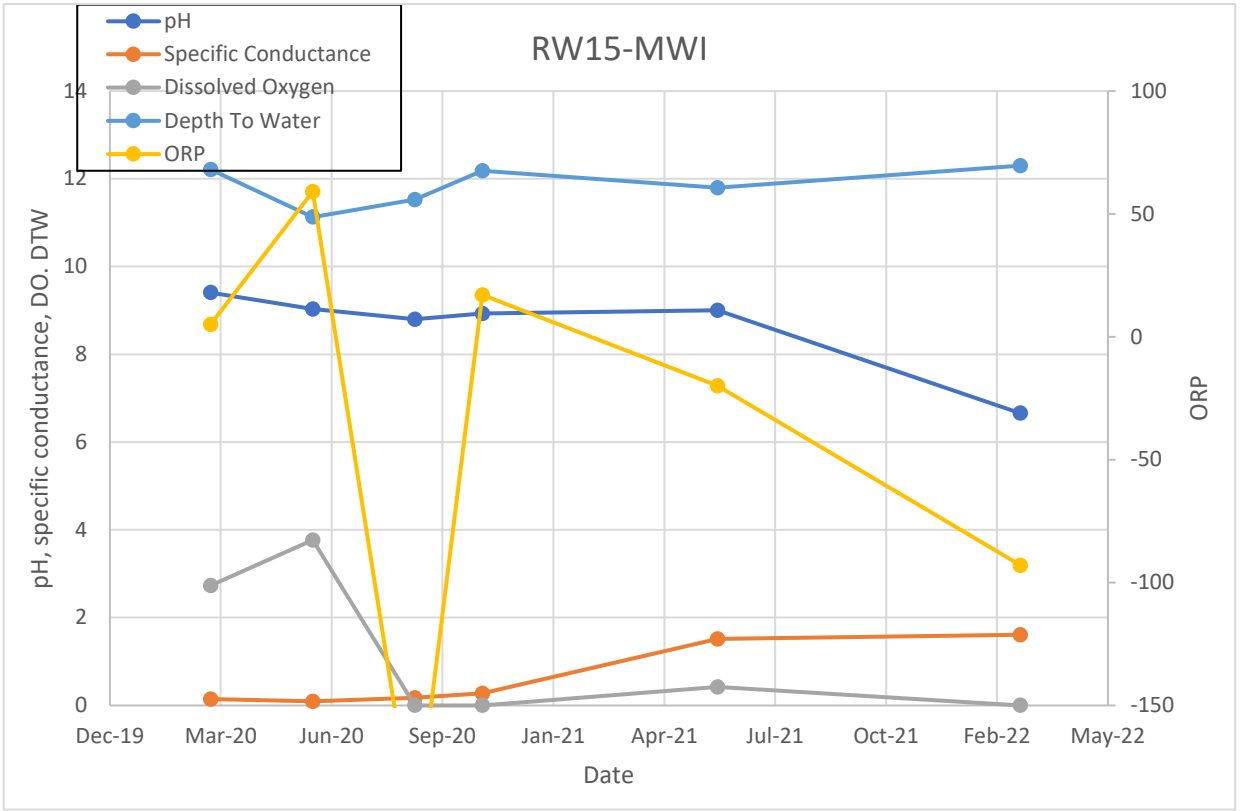

RW11-MWI
Zinc
Cadmium
Cadmium (ug/L)
Zinc (ug/L)
400
350
300
250
200
150
100
50
0
200,000
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
-
Dec-19
Mar-20
Jun-20
Sep-20
Jan-21
Apr-21
Jul-21
Oct-21
Feb-22
May-22
Date


RW11-MWI
pH
Specific Conductance
Dissolved Oxygen
Depth To Water
ORP
pH, specific conductance, DO. DTW
ORP
12
10
8
6
4
2
0
0
-20
-40
-60
-80
-100
-120
Dec-19
Mar-20
Jun-20
Sep-20
Jan-21
Apr-21
Jul-21
Oct-21
Feb-22
May-22
Date


RW13-MWI
Zinc
Cadmium
30000
25000
20000
15000
10000
5000
0
Cadmium (ug/L)
500000
450000
400000
350000
300000
250000
200000
150000
100000
50000
0
Zinc (ug/L)
Dec-19
Mar-20
Jun-20
Sep-20
Jan-21
Apr-21
Jul-21
Oct-21
Feb-22
May-22
Date


RW13-MWI
pH
Specific Conductance
Dissolved Oxygen
Depth To Water
ORP
14
12
10
8
6
4
2
0
pH, specific conductance, DO. DTW
200
150
100
50
0
-50
-100
-150
ORP
Dec-19
Mar-20
Jun-20
Sep-20
Jan-21
Apr-21
Jul-21
Oct-21
Feb-22
May-22
Date


RW15-MWI
Zinc
Cadmium
Cadmium (ug/L)
Zinc (ug/L)
180
160
140
120
100
80
60
40
20
0
60000
50000
40000
30000
20000
10000
0
Dec-19
Mar-20
Jun-20
Sep-20
Jan-21
Apr-21
Jul-21
Oct-21
Feb-22
May-22
Date


RW15-MWI
pH
Specific Conductance
Dissolved Oxygen
Depth To Water
ORP
pH, specific conductance, DO. DTW
ORP
14
12
10
8
6
4
2
0
100
50
0
-50
-100
-150
Dec-19
Mar-20
Jun-20
Sep-20
Jan-21
Apr-21
Jul-21
Oct-21
Feb-22
May-22
Date