



ARM Group LLC

Engineers and Scientists

March 9, 2021

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

Re: Parcel A3 (Former Rod and Wire Mill)
Monitoring Network Update
Tradepoint Atlantic
Sparrows Point, MD 21219

Dear Ms. Brown:

On behalf of Tradepoint Atlantic (TPA), ARM Group LLC (ARM) is pleased to provide this letter establishing an updated Groundwater Monitoring Plan for Parcel A3 (the Site) of the Tradepoint Atlantic property located in Sparrows Point, Maryland. Parcel A3 is also known as the former Rod and Wire Mill (RWM). The overall objective of this Plan is to establish a modified sampling schedule for targeted wells in this study area. The proposed modifications are primarily based upon a review of the spatial distribution and the historical trend analysis of contaminant concentrations detected in the subject monitoring wells.

Site History and Monitoring Rationale

The groundwater at the Site has three hydrogeologic zones: the shallow, the intermediate, and the deep (or lower) zones. As a result of historical manufacturing activities at the former Rod and Wire Mill, the groundwater at the Site contains elevated levels of cadmium and zinc. Cadmium and zinc are known to be present in both the shallow and intermediate zones with the intermediate zone having relatively higher levels. The lower zone has received little to no impact from cadmium or zinc.

For further description of the history or description of hydrogeologic conditions of the Site, see the *Rod and Wire Mill Interim Measure 2020 Progress Report* (ARM; April 2020).

Monitoring Well Network

As of the date of this letter, there are 78 monitoring wells located at the Site. All wells except two are installed with screen intervals in the shallow zone or the intermediate zone. Shallow zone

wells have been assigned a well name ending in “-MWS” while intermediate zone wells have been assigned a well name ending in “-MWI”. One monitoring well, RW06R-MWD, is installed with a screen interval in the deep zone. Another monitoring well, RW21-MWP, is installed with a screen interval in a localized perched zone (less deep than the shallow zone). This well was installed at the request of the Maryland Department of the Environment (MDE) to monitor non-aqueous phase liquid (NAPL) identified during a previous investigation. In addition to RW21-MWP, NAPL thickness is measured on a quarterly basis in the following wells: RW21-MWS, RW21-MWI, RWI-MWS, RWI-MWI, RW16-MWS, RW16-MWI, RWO-MWS, RWO-MWI, RWH-MWS, and RWH-MWI. The results of these quarterly NAPL measurement events will be summarized and submitted in semi-annual NAPL monitoring reports. All monitoring well locations are shown on the attached **Figure 1** and **Figure 2**. The NAPL gauging area boundary is also provided on each figure.

Groundwater Sampling Frequency and Analyses

Groundwater samples will be collected from the monitoring wells as indicated on **Figure 1** and **Figure 2**. Each well shown in Figures 1 and 2 will be gauged prior to each semi-annual groundwater monitoring event and the data will be presented in potentiometric surface figures for the shallow and intermediate zones will be incorporated in the progress report(s). Samples will be collected using low-flow sampling methodologies. Each sample will be collected using a 0.45-micron disposable filter to remove particulate metals. As such, the ensuing groundwater sample will be analyzed for dissolved cadmium and dissolved zinc via laboratory USEPA method 6010C. The reporting limit (RL) and method detection limit (MDL) for this method for each analyte are shown in the table below.

Analyte	Method	RL	MDL
Cadmium	6010C	3.0 µg/L	0.34 µg/L
Zinc	6010C	10.0 µg/L	2.4 µg/L

The analytical results of each sampling event will be summarized and interpreted in annual RWM Interim Measure Progress Reports which will be submitted to the MDE.

The proposed sampling frequency for each well is provided on **Table 1** and **Table 2**. Each monitoring well was evaluated for sampling frequency based on historical groundwater concentrations and proximity to other wells in the network. An individual description for sampling frequency rationale is included in **Table 1** and **Table 2**.

The RWM area is undergoing a Corrective Measures Study (and pilot tests) this year. Therefore, this proposed monitoring plan will ultimately be superseded and replaced once a final remedy decision is made.



If you have any questions, or if we can provide any additional information at this time, please do not hesitate to contact ARM Group LLC at 410-290-7775.

Respectfully Submitted,
ARM Group LLC



Stewart Kabis, P.G.
Project Geologist II



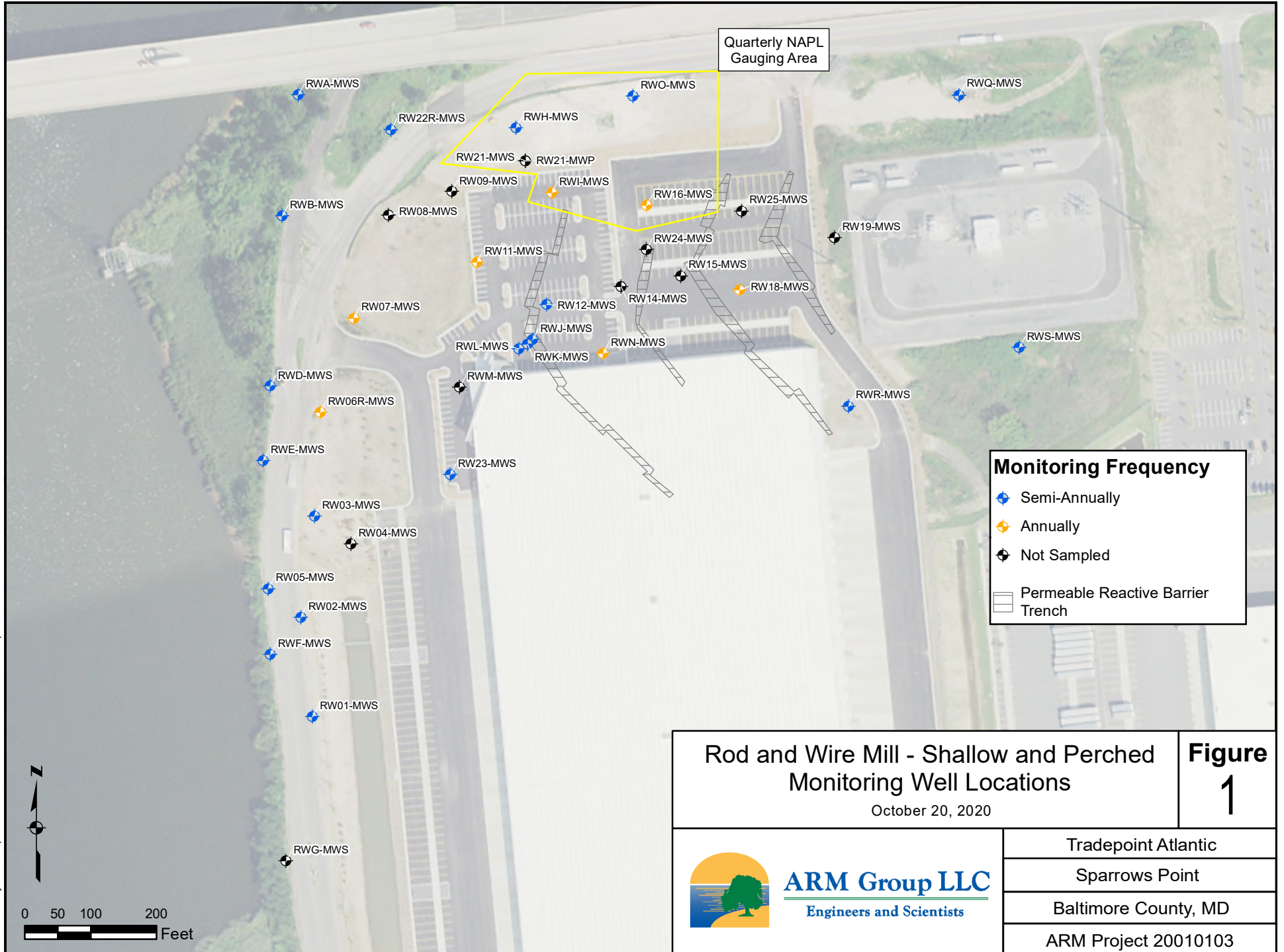
T. Neil Peters, P.E.
Senior Vice President

QA Review Performed by: T. Neil Peters, P.E.

Attachments: **Figure 1** – Shallow and Perched Monitoring Well Locations
Figure 2 – Intermediate and Deep Monitoring Well Locations
Table 1 – Shallow Zone Sampling Frequency
Table 2 – Intermediate Zone Sampling Frequency



FIGURES



Monitoring Frequency

- ◆ Semi-Annually
- ◆ Annually
- ◆ Not Sampled
- Permeable Reactive Barrier Trench

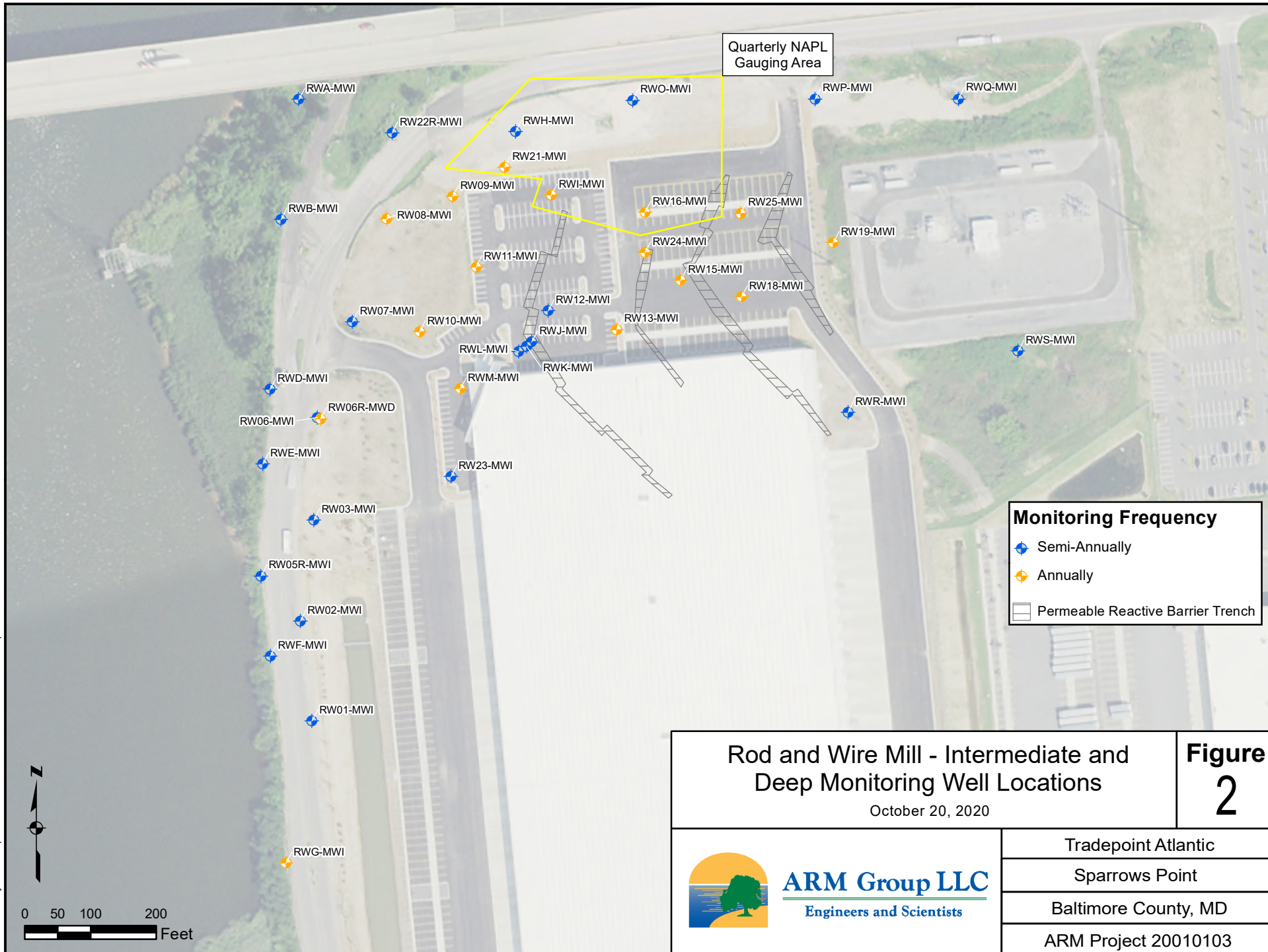
**Rod and Wire Mill - Shallow and Perched
Monitoring Well Locations**
October 20, 2020

**Figure
1**



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Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010103



TABLES

**Table 1 - Rod and Wire Mill
Shallow Zone Sampling Frequency**

Well Name	Monitoring Area	Sample Frequency	Sampling Rationale
RWA-MWS	Perimeter	Semi-Annually	Monitor for changes in perimeter concentrations
RWB-MWS	Perimeter	Semi-Annually	Monitor for changes in perimeter concentrations
RWD-MWS	Perimeter	Semi-Annually	Monitor for changes in perimeter concentrations
RWE-MWS	Perimeter	Semi-Annually	Monitor for changes in perimeter concentrations
RWF-MWS	Perimeter	Semi-Annually	Monitor for changes in perimeter concentrations
RWG-MWS	Perimeter	Not Sampled	Outside the area of concern (south) and do not expect to see any changes
RWH-MWS	Delineation	Semi-Annually	Monitor northern perimeter concentrations
RWI-MWS	Delineation	Annually	Monitor the northwest pond
RWJ-MWS	Interior	Semi-Annually	Compare to the intermediate well to assess potential vertical migration
RWK-MWS	Interior	Semi-Annually	Compare to the intermediate well to assess potential vertical migration
RWL-MWS	Interior	Semi-Annually	Compare to the intermediate well to assess potential vertical migration
RWM-MWS	Interior	Not Sampled	Not monitoring the perimeter
RWN-MWS	Interior	Annually	Monitor effect on former sludge storage area and any southern direction impacts before the operational building
RWO-MWS	Delineation	Semi-Annually	Monitor northern perimeter concentrations
RWQ-MWS	Delineation	Semi-Annually	Monitor northern perimeter concentrations
RWR-MWS	Upgradient	Semi-Annually	Monitor eastern perimeter concentrations
RWS-MWS	Upgradient	Semi-Annually	Monitor eastern perimeter concentrations
RW01-MWS	Perimeter	Semi-Annually	Monitor for changes in perimeter concentrations
RW02-MWS	Perimeter	Semi-Annually	Monitor for changes in perimeter concentrations
RW03-MWS	Perimeter	Semi-Annually	Monitor for changes in perimeter concentrations
RW04-MWS	Perimeter	Not Sampled	In close proximity to RW03-MWS; not needed to monitor the perimeter
RW05-MWS	Perimeter	Semi-Annually	Monitor for changes in perimeter concentrations
RW06R-MWS	Perimeter	Annually	In close proximity to RWD and RWE-MWS; not needed to monitor the perimeter
RW07-MWS	Perimeter	Annually	In close proximity to RWB; not needed to monitor the perimeter
RW08-MWS	Perimeter	Not Sampled	Not monitoring the perimeter
RW09-MWS	Interior	Not Sampled	Not monitoring the perimeter
RW11-MWS	Interior	Annually	Provide spatial coverage in central area
RW12-MWS	Interior	Semi-Annually	Compare to the intermediate well to assess potential vertical migration
RW14-MWS	Interior	Not Sampled	Redundant with other wells monitoring central area
RW15-MWS	Interior	Not Sampled	Redundant with other wells monitoring central area
RW16-MWS	Interior	Annually	Within the area of the northwest disposal pond; provide spatial coverage in central area
RW18-MWS	Interior	Annually	Monitor any southern direction impacts before the operational building; provide spatial coverage in central area
RW19-MWS	Upgradient	Not Sampled	Do not expect to see changes in conditions
RW21-MWP	Delineation	Not Sampled	Installed for NAPL monitoring
RW21-MWS	Delineation	Not Sampled	Redundant with other monitoring wells in the central area
RW22R-MWS	Perimeter	Semi-Annually	Monitor downgradient of northwest pond area; monitor northern perimeter concentrations
RW23-MWS	Interior	Semi-Annually	Monitor southern perimeter and immediately downgradient of operational building concentrations
RW24-MWS	Interior	Not Sampled	Redundant with other monitoring wells in the central area
RW25-MWS	Interior	Not Sampled	Redundant with other monitoring wells in the central area

**Table 2 - Rod and Wire Mill
Intermediate Zone Sampling Frequency**

Well Name	Monitoring Area	Sample Frequency	Sampling Rationale
RWA-MWI	Perimeter	Semi-Annually	Monitor for changes in perimeter concentrations
RWB-MWI	Perimeter	Semi-Annually	Monitor for changes in perimeter concentrations
RWD-MWI	Perimeter	Semi-Annually	Monitor for changes in perimeter concentrations
RWE-MWI	Perimeter	Semi-Annually	Monitor for changes in perimeter concentrations
RWF-MWI	Perimeter	Semi-Annually	Monitor for changes in perimeter concentrations
RWG-MWI	Perimeter	Annually	Monitor for changes in perimeter concentrations
RWH-MWI	Delineation	Semi-Annually	Monitor northern perimeter conditions
RWI-MWI	Delineation	Annually	Do not expect to see rapid changing conditions due to passive condition and slow migration of groundwater
RWJ-MWI	Performance	Semi-Annually	Near field wells to monitor trench effectiveness; inside final treatment trench
RWK-MWI	Performance	Semi-Annually	Near field wells to monitor trench effectiveness; immediate well downgradient after final treatment trench
RWL-MWI	Performance	Semi-Annually	Near field wells to monitor trench effectiveness; delineation of final treatment trench
RWM-MWI	Performance	Annually	Trench effectiveness is already being monitored closer to the area of concern
RWO-MWI	Delineation	Semi-Annually	Monitor northern perimeter conditions
RWP-MWI	Delineation	Semi-Annually	Monitor northern perimeter conditions
RWQ-MWI	Delineation	Semi-Annually	Monitor northern perimeter conditions
RWR-MWI	Upgradient	Semi-Annually	Monitor eastern perimeter conditions; monitor concentrations proximal to the operational building
RWS-MWI	Upgradient	Semi-Annually	Monitor eastern perimeter conditions
RW01-MWI	Perimeter	Semi-Annually	Monitor for changes in perimeter concentrations
RW02-MWI	Perimeter	Semi-Annually	Monitor for changes in perimeter concentrations
RW03-MWI	Perimeter	Semi-Annually	Monitor for changes in perimeter concentrations
RW05R-MWI	Perimeter	Semi-Annually	Monitor for changes in perimeter concentrations
RW06-MWI	Perimeter	Semi-Annually	Monitor for changes in perimeter concentrations
RW06R-MWD	Perimeter	Annually	Monitor any vertical movement of groundwater into lower hydrogeologic zone
RW07-MWI	Perimeter	Semi-Annually	Monitor western perimeter
RW08-MWI	Perimeter	Annually	Do not expect to see rapid changing conditions due to passive condition and slow migration of groundwater
RW09-MWI	Performance	Annually	Do not expect to see rapid changing conditions due to passive condition and slow migration of groundwater
RW10-MWI	Performance	Annually	Do not expect to see rapid changing conditions due to passive condition and slow migration of groundwater
RW11-MWI	Performance	Annually	Do not expect to see rapid changing conditions due to passive condition and slow migration of groundwater
RW12-MWI	Performance	Semi-Annually	Near field wells to monitor trench effectiveness; well immediate upgradient to final treatment trench
RW13-MWI	Performance	Annually	Do not expect to see rapid changing conditions due to passive condition and slow migration of groundwater
RW15-MWI	Performance	Annually	Do not expect to see rapid changing conditions due to passive condition and slow migration of groundwater
RW16-MWI	Performance	Annually	Do not expect to see rapid changing conditions due to passive condition and slow migration of groundwater
RW18-MWI	Performance	Annually	Do not expect to see rapid changing conditions due to passive condition and slow migration of groundwater
RW19-MWI	Upgradient	Annually	Do not expect to see changing conditions because it is upgradient of all treatment trenches
RW21-MWI	Delineation	Annually	Do not expect to see rapid changing conditions due to passive condition and slow migration of groundwater
RW22R-MWI	Perimeter	Semi-Annually	Monitor downgradient of northwest pond area; monitor northern perimeter concentrations
RW23-MWI	Performance	Semi-Annually	Monitor the concentrations along the southern perimeter and immediately downgradient of operational building
RW24-MWI	Performance	Annually	Do not expect to see rapid changing conditions due to passive condition and slow migration of groundwater
RW25-MWI	Performance	Annually	Do not expect to see rapid changing conditions due to passive condition and slow migration of groundwater