



# ARM Group Inc.

Engineers and Scientists

March 7, 2019

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

Re: RWM Interim Measure Supplemental  
Investigation Work Plan (Revision 0)  
Response to EPA & MDE Comments  
Sparrows Point, MD

Dear Ms. Brown:

On behalf of EnviroAnalytics Group, LLC (EAG), ARM Group Inc. (ARM) is pleased to provide the following responses to comments for the RWM Interim Measure Supplemental Investigation Work Plan (Revision 0) received from the US Environmental Protection Agency (USEPA) in an email dated February 7, 2019, and from the Maryland Department of the Environment (MDE) via email on February 28, 2019. The USEPA email provided a figure showing four additional recommended well locations, all of which have been incorporated into the revised work plan (RWM Interim Measure Supplemental Investigation Work Plan, Revision 1, dated March 7, 2019). The responses to the MDE's comments are detailed below; the original comments are included in italics with the responses following.

- 1. Provide rationale for installing only intermediate "sentinel" wells? There is shallow contamination on-site and it would seem appropriate to have nested sentinel wells to go along with the nested wells within the investigation area, particularly around RW03-MW(S), RW02-MW(S), and RW01-MW(S). Additionally, RW-022MS (I) does not share a nested shallow well - this could be a useful perimeter location for shallow groundwater sampling.*

Shallow temporary piezometers are now proposed all along the western shoreline, as well as a shallow temporary piezometer next to RW22-MW(I).

- 2. The northern boundary of shallow zinc contamination is undefined. It is understood that, at this time, the newly constructed building prevents further southern delineation of shallow zinc and cadmium concentration. Groundwater sampling of NAPL monitoring wells located to the north of the treatment trenches may be considered (RW17, RW20, and RW21).*

A sample will be collected RW21-MW(S). A new shallow temporary piezometer is proposed just north of NAPL well RW17-MW(S) per request from MDE. A new shallow temporary piezometer is also proposed to the south of RW14-MW(S).

- A thorough push-probe sampling plan would be useful to determine the most practical locations for long-term monitoring wells, both shallow and intermediate, filling in data gaps that currently exist within the parcel. It is noted that EPA submitted general comments regarding on-shore delineation work and push-probe sampling is mentioned as a possible investigation method.*

Revision 1 of the Work Plan proposes several new temporary piezometers, both shallow and intermediate, in spatial gaps throughout the RWM to be installed using a direct-push drilling rig. After an initial round of sampling and analysis of the findings, the report will include recommendations to retain a subset of the new piezometers as permanent monitoring locations.

- Provide rationale for the absence of upgradient wells south of the power station, southeast of RW-19? Pre-Trench installation zinc concentrations were highest in former piezometer RW-006-PZ (or RW-070-PZ, both designations exist for same point) which was located in this area (former East Pond). It is noted that comments sent by EPA included a figure identifying where additional monitoring wells would be useful and includes a well location upgradient of the trenches and just east of the newly constructed building, near the area directly south of the power station.*

A shallow and intermediate temporary piezometer pair is planned to be installed at this location.

- During review of the plan to install additional monitoring wells I also reviewed the PDI Construction Completion Report (2018) and the Parcel A3-1 RDWP, Rev 3. I noted that there are three wells depicted in the As-Built Drawing in the Completion Report that do not appear to be currently installed on the parcel, including RW17-MW(S), RW20-MW(S), and RW21-MW(S) - not to be confused with the NAPL monitoring wells installed more recently on the northern border of the site. Table 5 does identify these three wells, but the well IDs are given to the NAPL piezometers that were installed around former Phase II boring RW-003-SB. Explain why these wells were not installed as part of the IM monitoring well network as depicted in the As-Built drawing. The original proposed locations are vastly different than where they ended up in the NAPL area, and they are not currently being used for IM monitoring.*

It is assumed that “PDI Construction Completion Report (2018)” is referring to the “Interim Measures Construction Report In-Situ Groundwater Treatment” report (Advanced GeoServices Corp., January 2018). The wells shown on the as-built drawing accurately depict the locations of previously-existing wells, but they are labeled with the wrong names. The well that is labeled as RW21-MW(S) on this drawing is actually historical well RW16-PZM020. According to the RDWP, it was supposed to be retained. The well



that is labeled RW20-MW(S) on the drawing is actually well RW15-MW(SA), formerly known as well RW-RW95. This well was proposed for abandonment in the RDWP. The well that is labeled RW17-MW(S) on the drawing is actually well RW17-MW(SA). The "A" was added to the name after it was abandoned to avoid confusion with the NAPL monitoring well RW17-MW(S). This well was originally installed to replace well RW03-PZM003, because RW03-PZM003 was intended to be retained.

These three wells, plus one other (RW15-MW(IA)), were abandoned on September 19, 2017 to facilitate development activities at the site. The two wells mentioned above that were intended to be retained according to the RDWP will be re-installed as described in the new work plan.

6. *Also, Figure 10 in the RDWP depicts an existing well to be retained, RW-003-PZM003 that seems to be the same as the aforementioned RW17-MS(S) location. This well is also identified in the IM WP Table 5 as to be retained. Why was this monitoring point not retained as proposed? Note: former RW-003-PZM003 is not to be confused with Phase II boring RW-003-SB (the locations are not the same).*

This is addressed in the response to comment 5 above.

7. *Also, Figure 11 in the RDWP depicts a well to be installed between the IM performance wells RW16-MW(I) and RW15-MW(I), while RW-16-PZM020(I) is depicted as being retained. Review of the most recent IM Report indicates that these two intermediate wells do not exist on the parcel. Is there more recent discussion/approvals regarding these wells and the decision to abandon/not install them?*

The re-installation of RW16-PZM020 is addressed in the response to comment 5 above. The well seen on Figure 11 in the RADWP that is located between current wells RW16-MW(I) and RW15-MW(I) was installed as planned on July 12, 2017. However, it was among the four wells that were abandoned as mentioned in comment 5 above. It will be re-installed as described in the new work plan.

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

Respectfully submitted,  
ARM Group Inc.



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