UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

April 26, 2018

Dr. Douglas Sutton
Project Coordinator
DS&G Remedial Trust
100 East Market Street, Suite 1
Newport, DE 19804

Re: Work Plan, Per- and Polyfluoroalkyl Substances – Well Purging, Groundwater Sampling and Analysis Program for 2018; Delaware Sand & Gravel Landfill Superfund Site

Dear Dr. Sutton:

EPA and DNREC have reviewed Golder's February 7, 2018 Work Plan and have the following comments. Please provide responses to the comments and modify the Work Plan as necessary within 30 days.

Comments

1. Section 1.0, Introduction, and Table 1: It is stated here that the work plan is to provide the monitoring well purging, sampling and analysis program for PFAS in groundwater at and downgradient of the DS&G Site. Please explain why Table 1 presents locations for VOCs, 1,4-dioxane, SVOCs, BCEE, total and dissolved Fe/Mn without any accompanying text for context. Is the DS&G Remedial Trust proposing to eliminate key monitoring locations (e.g., UPA-101-TZ, BW-2, etc.) from the semi-annual groundwater monitoring program?

Section 2.0, PFAS Program

2. It is stated that the sampling locations were chosen to evaluate the distribution of PFAS in the Columbia Aquifer, the UPCUTZ and the UPA at and downgradient of the DS&G Site. However, several areas do not have wells proposed for sampling in the downgradient portions of the aquifers that are targeted for monitoring. For example, on the attached figure, the area identified as "A" does not have any wells proposed for monitoring; DGC-2S should be included. In the area marked "B," there are no upper sand monitoring wells proposed for sampling; DDA-16-US should be added. In area "C," no wells are proposed for monitoring; at least one UPA well and one transition zone monitoring well should be added. In area "D," one transition zone monitoring well should be added to the proposed sampling program.

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3. It is stated here that Golder will purge each well using low-flow sampling procedures. It is not recommended that long screened wells be used to monitor a contaminant plume and such wells should not be sampled using low-flow techniques. Low-flow sampling protocols specifically state that the screen should be short (10 feet or less). It is recommended that the well network be carefully evaluated to determine where, if anywhere, low-flow sampling is appropriate and if the replacement of long screened wells with well clusters would be appropriate. Wells screened across both the upper and lower sands of the UPA would be candidates for replacement. If wells with long screens are sampled, the pumping rate during purging should be slightly less than the yield of the well. After one well volume has been removed, stabilization of field parameters should be monitored while continuing to purge up to three well volumes.

4. Site groundwater samples have been analyzed for PFAS using USEPA Method 537 Revision 1.1 Modified. Available information indicates the use of modified EPA Method 537 can, among other things, provide results that artificially suppress or enhance analyte concentrations reported. This ultimately can result in the rejection of sample data. Please provide EPA with a full description of the modifications and additional information to allow an assessment of whether the modifications to Method 537, Revision 1.1 would impact the accuracy of the results. The additional information required for EPA's assessment includes the SOP from the laboratory and data to demonstrate the performance of the laboratory's method modifications on the sample matrix (demonstration of capability/method detection limit, performance testing, and quality control data).

5. If matrix interference is a concern for certain groundwater samples (e.g., source area samples), these samples could be analyzed using the direct-inject method described in EPA Region 5's draft SOP (attached) for PFAS as an alternative to, or in addition to, analysis by Method 537.

6. DNREC's Site Investigation and Restoration Section has been working on developing field sampling protocols for PFAS to help minimize possible sample contamination. They have been using the attached EPA NASA PFCs SOP. MassDEP and NHDES have also developed detailed PFAS collection guidance which may be helpful to review. Also attached for consideration is DNREC's Site Inspection Work Plan from May 2017 which includes PFAS sampling for the nearby New Castle Public Wells Groundwater Plume Site.

7. Section 3.0, Scheduling and Reporting: Please specify that PFAS results will be provided to EPA and DNREC in the EQuIS EDD format.

8. Appendix A, SOP-1: Deionized water and methanol used for PFAS decontamination must be certified to be PFAS free. The use of Ziploc® storage bags to store equipment where the equipment comes in direct contact with the bag has the potential to transfer PFAS to sampling equipment. It would be impossible to know if this is an issue without first analyzing the Ziploc® bags.

Appendix B, SOP-2, Section 1.0: SOP-2 specifies "monitoring well purge protocols included in the USEPA-approved Feasibility Study Work Plan Revision 2 (FSWP Rev 2) Sampling and Analysis Plan (SAP) dated October 2011." Comments 9 through 12, below, pertain to the SAP in Appendix 11-1 of FSWP Rev 2:

9. FSWP Rev 2 SAP, Section 3.2.3.2, Low Flow Groundwater Sampling Procedures: The document states that during purging, field parameters will be monitored until the parameters stabilize based on three consecutive readings within specified ranges. Measurement of field parameters should not be made until at least one well volume, plus the volume of the sampling apparatus and tubing, has been removed.

10. FSWP Rev 2 SAP, Section 3.2.3.2, Low Flow Groundwater Sampling Procedures, and Section 3.2.3.3, Volume Average Purging Using Bailers: The procedure for filling VOC vials states, "If air bubbles are discovered, additional groundwater will be added to the vial until the bubbles are removed." If air bubbles are discovered, the sample vial should be discarded and a new sample should be collected, filling the entire bottle.

11. FSWP Rev 2 SAP, Section 3.2.3.3, Volume Average Purging Using Bailers: Bailers should not be used to collect samples for analysis of VOCs and inorganics, and under no circumstances should a well be purged to dryness. For wells which recover slowly, the water level should be drawn down and allowed to recover three times. As soon as the well has recovered sufficiently to sample, samples should be collected immediately.

12. FSWP Rev 2 SAP, Section 3.2.3.3, Volume Average Purging Using Bailers: The SAP states that samples for filtered metals analysis "will be forced through the filter using a hand pump or pressurized nitrogen." The samples should only be field filtered using an in-line 0.45-micron filter. When using low-flow sampling techniques, only total metals should be taken for analysis.

13. Appendix C, SOP-3, Section 3.3, Field Blanks: EPA strongly recommends the collection of more than one field blank for PFAS due to their ubiquitous nature. A single high-level field blank would result in rejection of the data for all samples collected on a given day. Instead, if field blanks are collected at a rate of one per sample location, then only the results for the sample associated with the high-level blank would be rejected.

If you have questions or if you would like to discuss any of the comments, please let me know.

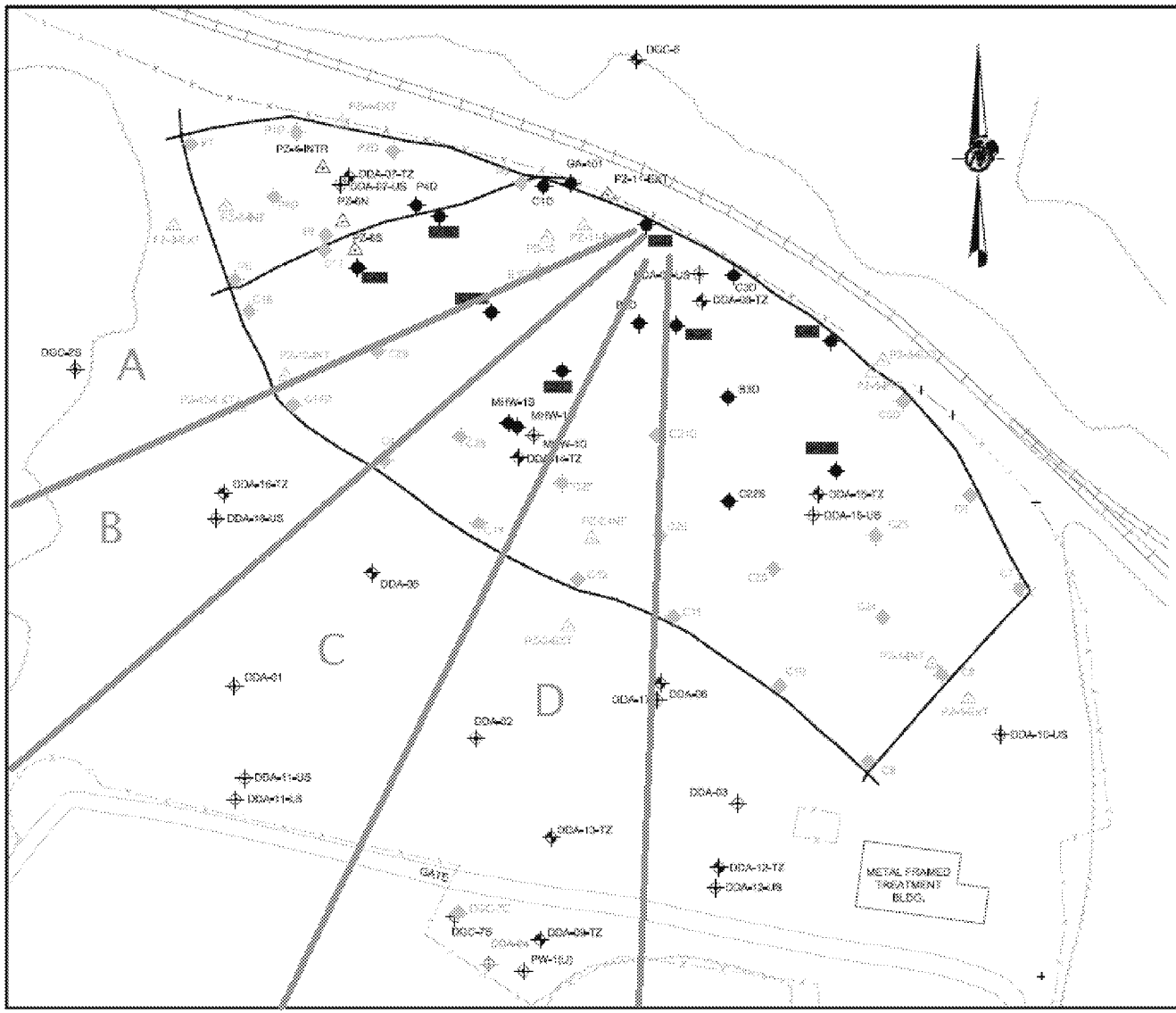
Sincerely,

Debra Rossi

Debra Rossi
Remedial Project Manager
DE, VA, WV Remedial Branch

Attachments

cc: Christina Wirtz, DNREC
Theresa Miller, Golder
Susanna Mays, DS&G Remedial Trust



LEGEND

	FENCELINE
	CENTERLINE OF SLURRY WALL AROUND DRUM DISPOSAL AREA
	RAILROAD
	DDA LOW-FLOW EXTRACTION SYSTEM (LFEXS) WELL
DGC-2S	MONITORING WELL SCREENED IN UPPER POTOMAC AQUIFER
DDA-05	UPPER POTOMAC CONFINING UNIT TRANSITION ZONE MONITORING WELLS
PZ-10	DDA PIEZOMETERS
C1D	COLUMBIA MONITORING WELLS

NOTES

1.) LOCATIONS OF WELLS AND BORINGS ARE APPROXIMATE.

REFERENCES

1.) BASE MAP TAKEN FROM DIGITAL U.S.G.S. 7.5 MINUTE QUADRANGLES OF WILMINGTON SOUTH, DELAWARE/NEW JERSEY (DATED 1984), DELAWARE CITY, DELAWARE (DATED 1984), NEWARK EAST, DELAWARE (DATED 1984) AND SAINT GEORGES, DELAWARE (DATED 1984).

60 0 60
SCALE FEET

DELAWARE SAND AND GRAVEL
SUPERFUND SITE
NEW CASTLE, DELAWARE

TITLE
DDA VICINITY MONITORING WELL LOCATIONS

Golder Associates
Woodbridge, New Hampshire

FIGURE 1