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24 July 2019
File No. 127841-006

New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, New York 12233

Attention: Mr. Robert DeCandia Jr. P.E.

Subject: PFAS Groundwater Investigation Scope of Work – Offsite Locations
Oerlikon Metco
1101 Prospect Avenue
Westbury, New York
BCP Site No: C130178

Dear Mr. DeCandia:

This letter is being provided on behalf of Oerlikon Metco and provides the scope of work (SOW) for sampling and analysis of groundwater at locations installed on properties adjacent to the above-referenced site.

BACKGROUND

Haley & Aldrich of New York (Haley & Aldrich), on behalf of Oerlikon Metco, collected groundwater samples from existing groundwater monitoring wells at the Oerlikon Metco property (Site No. C130178) in October 2018. The samples were submitted for the analysis of polyfluoroalkyl substances (PFAS) and 1,4-dioxane in accordance with a NYSDEC-approved work plan. The analysis of the groundwater samples did not detect the presence of 1,4-dioxane, but PFAS were reported in the samples obtained from the existing groundwater monitoring wells.

Following the October 2018 sampling, the NYSDEC issued a letter dated January 16, 2019 requesting additional investigation of PFAS impacts within groundwater at and near the Site. In May 2019, the existing groundwater monitoring wells were subsequently resampled and groundwater samples were collected from five additional temporary groundwater grab sample locations. PFAS were reported in the groundwater samples tested with higher concentrations detected in the southeast corner of the Oerlikon Metco property, however Oerlikon Metco operations have not been identified as a source of PFAS. As such, Haley & Aldrich participated in a conference call with the NYSDEC on June 5, 2019 where it was discussed that additional investigation offsite was warranted to evaluate whether PFAS compounds are present on offsite properties. Accordingly, Oerlikon Metco has requested testing of adjacent offsite properties to help identify the source and direction of the PFAS.

This work plan provides a scope of work to conduct an additional PFAS investigation of groundwater at the adjacent neighboring properties including the Nassau County Board of Cooperative Extension Services (BOCES) property located to the north and east of the Oerlikon property and the Nassau County Department of Public Works (Public Safety Center) property located to the south of the Oerlikon Metco property.

SCOPE OF WORK

The following scope of work will be performed:

Confirmation of Groundwater Flow Direction

Historical reports indicate that groundwater flow direction at the Site is towards the southwest. In order to validate this, static water levels will be collected from the existing permanent monitoring wells previously installed by others. Water levels will be collected from the four (4) permanent monitoring wells (MW-1, MW-2, MW-3, and MW-4) were installed in 2012 by AECOM on the Oerlikon Metco property. The total depth of the well and the depth to groundwater will be measured. The water level data will be used to establish groundwater flow direction along with other groundwater elevation data. Sampling of these wells is not planned since they have been previously sampled in October 2018 and May 2019.

Supplemental Offsite Grab Sampling

A drilling contractor will install 12 borings to collect groundwater grab samples at offsite locations as shown on Figure 1. The exact locations of the samples will be determined in the field based on accessibility and utility clearance. Four (4) samples will be collected from the Nassau County BOCES property, two (2) samples will be collected within the right-of-way between the Oerlikon Metco Property and the Nassau BOCES and six (6) samples will be collected on the Nassau County Public Safety Center property.

Prior to drilling, each proposed boring location will be marked out or staked and the drilling location will be cleared of potential utilities by a qualified private utility locating service. Each boring will be installed to a depth of approximately 70 feet below ground surface (BGS) and representative groundwater samples will be collected using a PFAS-free SP16 groundwater samplers and high-density polyethylene tubing (HDPE). One groundwater sample will be collected from each sample location and submitted to a NYSDOH-certified laboratory for analysis as described in the section below. Following sampling, the grab sample locations will be removed.

Sample Analysis and Quality Assurance/Quality Control

The groundwater samples will be submitted via courier to Alpha Analytical Inc. of Westborough, MA for analysis of the following:

- NY Polyfluoroalkyl Analytes (NY PFAAs) via EPA Method 537(M)-Isotope Dilution

The laboratory will be requested to achieve the reporting limits for the individual PFAS compounds per the NYSDEC's guidance attached to this work plan as Appendix A.

In addition, two equipment blanks (one for each offsite property), one field blank, one field duplicate, and one set of matrix spike/matrix spike duplicate (MS/MSD) samples will be prepared and submitted for analysis along with the field samples to evaluate the precision and accuracy of the sampling and analysis procedures.

The final laboratory reports will be presented in a format equivalent to the NYSDEC ASP Category B format and an EQuIS® electronic data deliverable (EDD) compatible with the NYSDEC's electronic database format.

The final laboratory reports will be reviewed by a third-party data validator and a Data Usability Summary Report (DUSR) will be prepared in accordance with NYSDEC DER-10 Appendix 2B guidelines.

Data Evaluation and Reporting

After the receipt of the final DUSRs from the third-party data validator, a letter report describing the onsite (previously conducted in May 2019) and offsite sampling program will be prepared and submitted to the NYSDEC, and the EQuIS® EDD will be uploaded to the NYSDEC database.

Please do not hesitate to contact us should you have any questions.

Sincerely yours,
HALEY & ALDRICH OF NEW YORK

Claire L. Mondello, CHMM
Senior Project Manager

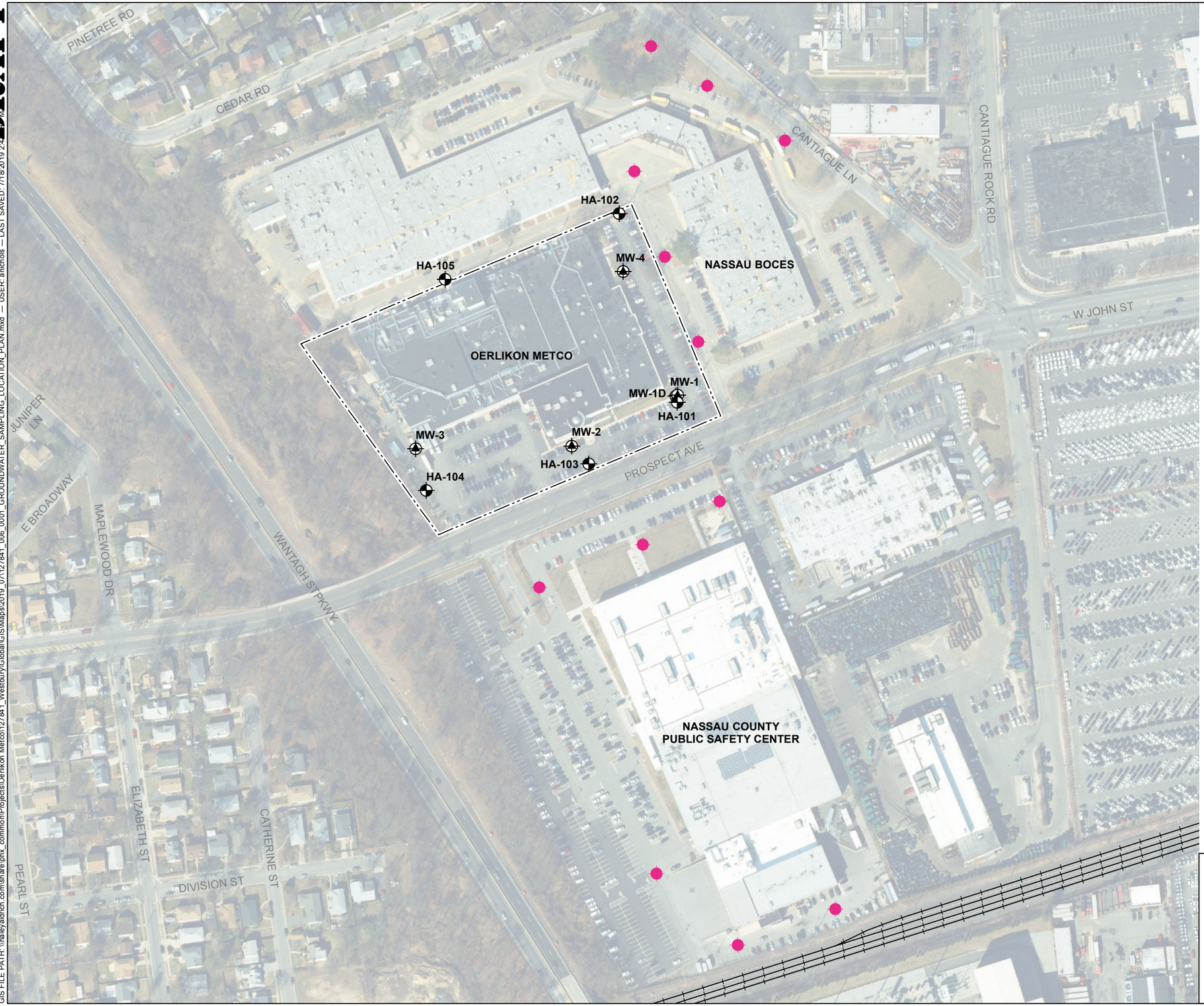
Richard J. Rago
Senior Associate

Attachments:

Figure 1 – Groundwater Sampling Location Plan
Appendix A – NYSDEC Collection of Groundwater Samples for Perfluorooctanoic Acid (PFOA) and Perfluorinated Compounds (PFCs) from Monitoring Well Sample Protocol

c: Jacquelyn Nealon, New York State Department of Health
Charlotte Bethoney, New York State Department of Health
Michael Lydon; Oerlikon Metco (U.S.) Inc
Scott Turner, Esq.; Nixon Peabody LLP

DRAFT



LEGEND

- GROUNDWATER MONITORING WELL, INSTALLED BY OTHERS
- TEMPORARY GRAB SAMPLE, COLLECTED MAY 2019
- PROPOSED OFF-SITE TEMPORARY GRAB SAMPLE
- RAILROAD
- PROPERTY BOUNDARY

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI

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0 200 400
SCALE IN FEET

HALEY ALDRICH

OERLIKON METCO
1101 PROSPECT AVENUE
WESTBURY, NEW YORK

GROUNDWATER SAMPLING LOCATION PLAN

JULY 2019

FIGURE 1

GIS FILE PATH: \\haleyaldrich.com\share\phx_common\Projects\Oerlikon Metco\127841_Westbury\Global\GIS\Maps\2019_07\127841_006_0001_GROUNDWATER_SAMPLING_LOCATION_PLAN.mxd — USER: anichols — LAST SAVED: 7/18/2019 2:4

Appendix A

NYSDEC Collection of Groundwater Samples for Perfluorooctanoic Acid (PFOA) and Perfluorinated Compounds (PFCs) from Monitoring Well Sample Protocol

Collection of Groundwater Samples for Perfluorooctanoic Acid (PFOA) and Perfluorinated Compounds (PFCs) from Monitoring Wells Sample Protocol

Samples collected using this protocol are intended to be analyzed for perfluorooctanoic acid (PFOA) and other perfluorinated compounds by Modified (Low Level) Test Method 537.

The procedure used must be consistent with the NYSDEC March 1991 Sampling Guidelines and Protocols http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf with the following materials limitations.

At this time acceptable materials for sampling include: stainless steel, high density polyethylene (HDPE), PVC, silicone, acetate and polypropylene. Equipment blanks should be generated at least daily. Additional materials may be acceptable if pre-approved by NYSDEC. Requests to use alternate equipment should include clean equipment blanks. **NOTE: Grunfos pumps and bladder pumps are known to contain PFC materials (e.g. Teflon™ washers for Grunfos pumps and LDPE bladders for bladder pumps).** All sampling equipment components and sample containers should not come in contact with aluminum foil, low density polyethylene (LDPE), glass or polytetrafluoroethylene (PTFE, Teflon™) materials including sample bottle cap liners with a PTFE layer. Standard two step decontamination using detergent and clean water rinse will be performed for equipment that does come in contact with PFC materials. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFC materials must be avoided. Many food and drink packaging materials and “plumbers thread seal tape” contain PFCs.

All clothing worn by sampling personnel must have been laundered multiple times. The sampler must wear nitrile gloves while filling and sealing the sample bottles.

Pre-cleaned sample bottles with closures, coolers, ice, sample labels and a chain of custody form will be provided by the laboratory.

1. Fill two pre-cleaned 500 mL HDPE or polypropylene bottle with the sample.
2. Cap the bottles with an acceptable cap and liner closure system.
3. Label the sample bottles.
4. Fill out the chain of custody.
5. Place in a cooler maintained at 4 ± 2º Celsius.

Collect one equipment blank for every sample batch, not to exceed 20 samples.

Collect one field duplicate for every sample batch, not to exceed 20 samples.

Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, not to exceed 20 samples.

Request appropriate data deliverable (Category A or B) and an electronic data deliverable.

Groundwater Sampling for Emerging Contaminants

April 2018

Issue: NYSDEC has committed to analyzing representative groundwater samples at remediation sites for emerging contaminants (1,4-dioxane and PFAS) as described in the below guidance.

Implementation

NYSDEC project managers will be contacting site owners to schedule sampling for these chemicals. Only groundwater sampling is required. The number of samples required will be similar to the number of samples where "full TAL/TCL sampling" would typically be required in a remedial investigation. If sampling is not feasible (e.g., the site no longer has any monitoring wells in place), sampling may be waived on a site-specific basis after first considering potential sources of these chemicals and whether there are water supplies nearby.

Upon a new site being brought into any program (i.e., SSF, BCP), PFAS and 1,4-dioxane will be incorporated into the investigation of groundwater as part of the standard "full TAL/TCL" sampling. Until an SCO is established for PFAS, soil samples do not need to be analyzed for PFAS unless groundwater contamination is detected. Separate guidance will be developed to address sites where emerging contaminants are found in the groundwater. The analysis currently performed for SVOCs in soil is adequate for evaluation of 1,4-dioxane, which already has an established SCO.

Analysis and Reporting

Labs should provide a full category B deliverable, and a DUSR should be prepared by a data validator, and the electronic data submission should meet the requirements provided at: https://www.dec.ny.gov/chemical/62440.html ,

The work plan should explicitly describe analysis and reporting requirements.

PFAS sample analysis: Currently, ELAP does not offer certification for PFAS compounds in matrices other than finished drinking water. However, laboratories analyzing environmental samples (ex. soil, sediments, and groundwater) are required, by DER, to hold ELAP certification for PFOA and PFOS in drinking water by EPA Method 537 or ISO 25101.

Modified EPA Method 537 is the preferred method to use for groundwater samples due to the ability to achieve 2 ng/L (ppt) detection limits. If contract labs or work plans submitted by responsible parties indicate that they are not able to achieve similar reporting limits, the project manager should discuss this with a DER chemist. Note: Reporting limits for PFOA and PFOS should not exceed 2 ng/L.

PFAS sample reporting: DER has developed a PFAS target analyte list (below) with the intent of achieving reporting consistency between labs for commonly reportable analytes. It is expected that reported results for PFAS will include, at a minimum, all the compounds listed. This list may be updated in the future as new information is learned and as labs develop new capabilities. If lab and/or matrix specific issues are encountered for any particular compounds, the NYSDEC project manager will make case-by-case decisions as to whether particular analytes may be temporarily or permanently discontinued from analysis for each site. Any technical lab issues should be brought to the attention of a NYSDEC chemist.

Some sampling using this full PFAS target analyte list is needed to understand the nature of contamination. It may also be critical to differentiate PFAS compounds associated with a site from other

sources of these chemicals. Like routine refinements to parameter lists based on investigative findings, the full PFAS target analyte list may not be needed for all sampling intended to define the extent of contamination. Project managers may approve a shorter analyte list (e.g., just the UCMR3 list) for some reporting on a case by case basis.

1,4-Dioxane Analysis and Reporting: The method detection limit (MDL) for 1,4-dioxane should be no higher than 0.28 µg/l (ppb). ELAP offers certification for both EPA Methods 8260 and 8270. In order to get the appropriate detection limits, the lab would need to run either of these methods in "selective ion monitoring" (SIM) mode. DER is advising the use of method 8270, since this method provides a more robust extraction procedure, uses a larger sample volume, and is less vulnerable to interference from chlorinated solvents (we acknowledge that 8260 has been shown to have a higher recovery in some studies).

Full PFAS Target Analyte List

Group	Chemical Name	Abbreviation	CAS Number
Perfluoroalkyl sulfonates	**Perfluorobutanesulfonic acid**	**PFBS**	**375-73-5**
	Perfluorohexanesulfonic acid	**PFHxS**	**355-46-4**
	Perfluoroheptanesulfonic acid	PFHpS	375-92-8
	Perfluorooctanessulfonic acid	**PFOS**	**1763-23-1**
	Perfluorodecanesulfonic acid	PFDS	335-77-3
Perfluoroalkyl carboxylates	Perfluorobutanoic acid	PFBA	375-22-4
	Perfluoropentanoic acid	PFPeA	2706-90-3
	Perfluorohexanoic acid	PFHxA	307-24-4
	Perfluoroheptanoic acid	**PFHpA**	**375-85-9**
	Perfluorooctanoic acid	**PFOA**	**335-67-1**
	Perfluorononanoic acid	**PFNA**	**375-95-1**
	Perfluorodecanoic acid	PFDA	335-76-2
	Perfluoroundecanoic acid	PFUA/PFUdA	2058-94-8
	Perfluorododecanoic acid	PFDoA	307-55-1
	Perfluorotridecanoic acid	PFTriA/PFTrDA	72629-94-8
	Perfluorotetradecanoic acid	PFTA/PFTeDA	376-06-7
Fluorinated Telomer Sulfonates	6:2 Fluorotelomer sulfonate	6:2 FTS	27619-97-2
	8:2 Fluorotelomer sulfonate	8:2 FTS	39108-34-4
Perfluorooctane-sulfonamides	Perfluroroctanesulfonamide	FOSA	754-91-6
Perfluorooctane-sulfonamidoacetic acids	N-methyl perfluorooctanesulfonamidoacetic acid	N-MeFOSAA	2355-31-9
	N-ethyl perfluorooctanesulfonamidoacetic acid	N-EtFOSAA	2991-50-6

Bold entries depict the 6 original UCMR3 chemicals