Specifications for

## GROUNDWATER SAMPLING EVALUATION

for PFAS and 1,4-DIOXANE at the TAYLOR LANE COMPOST SITE for the VILLAGE OF

MAMARONECK, NY



## SPECIFICATIONS FOR GROUNDWATER SAMPLING EVALUATION FOR PFAS AND 1,4-DIOXANE AT THE TAYLOR LANE COMPOST SITE FOR THE VILLAGE OF MAMARONECK, NY

## 1.1 SCOPE OF WORK

Six wells, one manhole, and the QA/QC samples were selected for the sampling evaluation of PFAS and 1,4-dioxane for the Taylor Lane Compost Site. At each location, the bottles for the PFAS must be sampled and packed in a cooler with ice prior to sampling for the 1,4-dioxane. The bottles for PFAS must be kept in a separate cooler from the 1,4-dioxane amber glass jars. The special sampling procedures are outlined in section 4.1. Table 1 outlines what is prohibited and acceptable items for PFC sampling. The selected locations can be found on Figure 1. These are the locations selected for PFAS and 1,4-dioxane sampling evaluation:

- 1. Up-gradient wells: Well couplet MW-9S and MW-9D are up-gradient wells located in a small wooded area on Greenhaven Road just before Boston Post Road.
- 2. Down-gradient wells: Well couplets MW-4S, MW-4D and MW-2S, MW-2D are down-gradient wells that were selected for this evaluation. Well couplet MW-4S and MW-4D are located on the edge of the site property near residential property 1406 Shadow Lane. Well couplet MW-2S and MW-2D are located on Taylor Lane.
- 3. Manhole: Manhole #1 (MH-1) is located on Shadow Lane near the landfill and just before residential property 1406 Shadow Lane.

## 2.2 FIELD LOG RECORDINGS:

Contractor shall provide the laboratory with the necessary field data within 30 days after completion of the sampling event.

- 1. Field Logs.
  - a. Field records must be documented in the field logbook and must contain sufficient information such that someone else can reconstruct the sampling event without reliance on the sample collector's memory. The logbook is a controlled document which records all major on-site activities. The logbook is a bound notebook with pages that cannot be removed without cutting or tearing pages. Daily entries into the logbook may contain a variety of information. At the beginning of each day the following information must be recorded:
    - (1) Date
    - (2) Start Time
    - (3) Weather
    - (4) All field personnel present
    - (5) Any visitors present

- b. Entries in the field log book will include, at a minimum, the following:
  - (1) Start of completion time of sampling activities
  - (2) Sampling point name and description
  - (3) Well purging procedure and equipment
  - (4) Well-specific information such as static water level, depth, and volume purged
  - (5) Sample collection procedure and equipment
  - (6) Collector's sample identification numbers
  - (7) References such as maps or photographs of the sampling site, if available
  - (8) Field observations
  - (9) Pertinent weather factors such as temperature, wind direction, and precipitation
  - (10) Any field measurements made, such as pH, specific conductance, or sample appearance
  - (11) Health and safety protocols, (eg, level of protection)
  - (16) Deviations from established protocols, if any
- c. Upon return to the office, the field data sheets should be completed and placed in the project file. Photocopies should be made of all field logbook pages and placed in the site file. This ensures a record exists in the office of all field and sampling activities, and limits the potential loss of field notes due to the loss or destruction of the log book in the field.
- 2. Chain of Custody

Chain-of-custody records for all samples shall be maintained. A sample shall be considered to be "in custody" of an individual if said sample is either in direct view of or otherwise directly controlled by that individual. Storage of samples during custody shall be performed according to established preservation techniques, in appropriately sealed storage containers. Chain-of-custody shall be completed when the samples or sealed sample coolers are directly transferred from one individual to the next, with the first individual witnessing the signature of the recipient upon the chain-of-custody record.

If samples are to be sent via a courier (e.g., Federal Express), signed Chain-of- Custody Forms will be included in each cooler documenting sample content. Chain-of-Custody Forms should be placed in a zip-lock bag or Federal Express pouch and attached to the inside lid of the sample cooler. A copy should be kept with the sampling personnel.

The chain-of-custody records will contain the following information:

- Respective sample numbers of the laboratory
- Signature of collector
- Date and time of collection
- Sample type (e.g., groundwater, surface water) Identification of well or sampling point Number of containers
- Parameters requested for analysis, if appropriate
- Signature of person(s) involved in the chain of possession Description of sample bottles and their condition
- Problems associated with sample collection (i.e., breakage, no preservatives), if any

## 3.1 DECONTAMINATION PROCEDURES

- A. Decontamination of equipment should be performed at monitoring well location and away from well prior to use.
- B. Water Level Indicator (WLI) and sampling equipment. All reusable sampling equipment (bailers, trowels, bowls, etc.) will be pre-cleaned prior to field entry. The following cleaning procedures will be used:
  - 1. De-ionized water rinse.
  - 2. Alconox detergent and de-ionized water scrub.
  - 3. De-ionized water rinse.
  - 4. Air dry when possible.

## 4.0 WATER QUALITY MONITORING PROGRAM

## 4.1 MONITORING WELL PURGING AND GROUNDWATER SAMPLING PROCEDURES

Sampling shall be conducted using the following procedures which were adopted from EPA, NYSDEC and NYS Health Dept. guidelines.

The method of well purging and the timing of sample collection significantly affect turbidity levels in groundwater samples. A majority of the wells are screened in fine grained glacial formations which are slow to recharge. Well purging and sampling will be conducted in a manner to minimize agitation of the water column and to ensure collection or representative groundwater samples.

A dedicated bailer will be used with cotton rope for each well including the manhole location at the Taylors Lane site. Upgradient wells shall be purged prior to downgradient wells to minimize any possibility of cross- contamination. Monitoring wells can also be purged using ONLY one of the following:

- Stainless steel, PVC, silicone, acetate, polypropylene, and high density polyethylene (HDPE) disposable bailers dedicated to a single monitoring well location.
- Centrifugal pump connected to HDPE tubing.
- Pre-cleaned HDPE bailer connected to new solid cotton rope.

## A. MONITORING WELL PURGING.

Wells are purged in the following manner:

- 1. Inspect well protective casing, and remove well casing cap. Make note in field book if cap is missing.
- 2. New cotton rope for each well will be utilized to measure for the water level from a reference mark at the top of the protective casing. A knot will be made every two feet on the cotton rope to determine the water level within the well. Lower the rope one foot at a time and check to see if the end of the rope is wet. This will give an estimate of the depth to water for the well. Record measurements in field book.

- 3. Use new cotton rope for each sampling location.
- 4. Calculate well volume by subtracting water level from depth to bottom, and multiply by the appropriate well factor.
- 5. The bailer should remove water from the top of the water column so as to assure removal of all stagnant water in the well.
- 6. Remove a minimum of three well volumes from wells with adequate recharge properties, and at least one well volume from slowly recharging wells (defined as any well from which three well volumes cannot be removed during a single day's sampling activities and allow adequate time for sample collection). Refer to table of well depths and recovery characteristics.
- 7. All purge water from MW-9S/9D will be disposed of in either the dewatering well MW-4M located on the landfill or manhole #1 on Shadow Lane. All purge water from MW-4S/4D will be disposed of in the dewatering well MW-4M located on the landfill and all purge water from MW-2S/2D will be disposed of in the manhole located near MW-2D on Taylor Lane. The manhole on Shadow Lane and Taylor Lane goes to the local treatment plant.
- 8. Remove non-dedicated purging equipment.

## B. MONITORING WELL SAMPLING.

Unless dedicated sampling equipment is used, up-gradient wells shall be sampled prior to down-gradient wells. Wells are sampled in the following manner:

- 1. After purging and recovery, collect the samples for the PFA analysis first then pack the bottles in a cooler with ice. Once the bottle for PFAS is packed in the cooler, the samples for 1,4-dioxane may be collected and packed in ice in a separate cooler from the PFAS bottles.
- 2. Record measurements of pH, Eh, temperature, turbidity, dissolved oxygen, and specific conductance at this time, along with the date and the time the sample was obtained. Sample appearance such as color, and odor will also be recorded.
- 3. Calibrate all field chemistry equipment each day.
- 4. Follow recordkeeping and chain-of-custody procedures.
- 5. Replace all well caps and lock protective well cover.
- 6. Between wells, clean any equipment needed for additional sampling locations using the same decontamination procedures, or use pre-cleaned equipment.
- 7. At the end of the sampling day, the coolers will be taped shut with the custodian's initials placed on custody seals at points of entry. Samples will be shipped via overnight express to the contract laboratory for morning delivery, picked up by courier or delivered directly to the laboratory by the field personnel at the end of the sampling day.

## C. WELL SAMPLING PROTOCOL FOR PFAS/PFCs.

Samples collected for PFAS will be analyzed for perfluorooctanoic acid (PFOA) and other perfluorinated compounds by Low Level **Modified EPA Method 537**. Reporting limits should not exceed 2 ng/L (ppt). The procedure used must be consistent with the PFAS target analyte list included with NYSDEC guidance.

Samples collected for 1,4-Dioxane will be analyzed by **EPA Method 8270 SIM**. Method detection limits should not exceed  $0.28 \mu g/L$  (ppb).

Pace Analytical will be providing a full category B deliverable, and a DUSR will be prepared by Environmental Data Validation, Inc. The electronic data submission will meet the requirements provided at: <u>https://www.dec.ny.gov/chemical/62440.html</u>.

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<sup>TM</sup> 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<sup>TM</sup>) 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  $4 \pm 2^{\circ}$  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.

## 5.0 QUALITY ASSURANCE/QUALITY CONTROL

## 5.1 FIELD ANALYTICAL QUALITY ASSURANCE/ANALYTICAL QUALITY CONTROL

Pre-cleaned laboratory supplied sample container and decontaminated or precleaned/disposable sample equipment and measuring instruments will be used. Field quality control samples will include equipment blanks, trip blanks, and field duplicates, when necessary.

When sampling requires analysis of volatile organics, 1 trip blank per day will be analyzed. Laboratory analysis of the trip blank will determine if any volatile organic contamination has occurred to the sample containers during transport. Trip blanks are 40-milliliter vials of organic-free water which are shipped to the site, and then back to the lab, along with the samples. The trip blanks remain unopened at all times. Trip blanks are not required under 6 NYCCR Part 360 during routine sampling events, but are required for annual baseline and contingency monitoring events.

Equipment blanks or rinsates, will be used to determine if "other" sources may be contributing to sample contamination. Other sources of contamination may include preservatives, airborne contaminants, the sample containers themselves, improper decontamination procedures, or poor sampling practices. An equipment blank is created by pouring de-ionized water (laboratory grade water) into or over the sampling equipment and into a sample bottle.

Field duplicates will be collected and analyzed at a frequency of 1 field duplicate per 20 samples. The duplicate is a second sample from a sample location, which is analyzed under a different identification. A comparison of the field sample and its duplicate determines the reproducibility of the analytical technique.

## 5.2 SAMPLE PRESERVATION AND TRANSPORTATION

Since multiple analyses will be performed, different types of containers and preservatives will be required. Multiple, pre-labeled containers containing any necessary preservatives, will be supplied by the laboratory for each sampling point. Immediately after sample collection, sample bottles will be placed in insulated coolers with ice and/or ice packs. Appropriate chain of custody forms will be signed and included with the sample shipment. The chain of custody forms will also include sample identification, sample date and time, and requested analyses. Sample coolers will be sealed, and delivered to the lab by overnight courier within 24 hours of collection. Upon receipt of the sample coolers, the date, time and temperature of the sample will be noted, as will the integrity of the sample cooler.

## 5.3 QA/QC SAMPLES

The collection of additional samples for quality assurance/quality control (QA/QC) purposes for the Taylors Lane site will include the following; Duplicate sample on MW-4D, matrix spike and matrix spike duplicate on MW-2D, and a field (equipment) blank on a new bailer. If a stainless steel bucket is required for sampling the manhole (MH-01), a field (equipment) blank will be performed on the stainless steel bucket.

#### A. BLIND DUPLICATES/SPLIT SAMPLES

Duplicate (replicate) samples are collected to provide a check of both sampling technique and analytical reproducibility at the same laboratory. Split samples (destined for different laboratories) are often used by governmental agencies on a limited basis on projects requiring agency oversight, to evaluate inter-laboratory variability. Duplicate and split samples are obtained by equally dividing a sample collected at one location so as to have two samples which should provide equivalent analytical results.

When splitting or duplicating water samples, water collected in a sampling device (i.e., bailer, Kemmerer, etc.) should be divided equally among the same parameter-specific bottles for both the sample and the duplicate sample. When sampling for volatile organics, vials should be filled in such a way as to ensure that the same amount of water from the sampling device is transferred to the same parameter-specific bottle from each set each time the device is retrieved (e.g., when sampling for metals with a bailer, the metals bottle from each set would be filled halfway with one bail of water and topped off with the next).

When splitting or duplicating soil or sediment samples, it is also important to alternate the bottle filling sequence between sample sets to ensure a representative "split". When sampling for volatile organics, the vials should be filled first on an alternating basis prior to homogenizing the remaining sample. The remaining soil jars should then be filled, alternating between sample sets.

## B. TRIP BLANKS

Trip Blanks consist of 40 ml vials of laboratory pure water provided by the laboratory to accompany sample bottles to and from the laboratory when samples are collected for volatile organic (VOC) analysis. The vials are not opened by the sampling personnel. The purpose of the Trip Blank is to ensure that samples are not impacted by contaminants during bottle preparation in the lab or during bottle shipment. One set of trip blanks should accompany each cooler containing bottles and samples for VOC analysis. Trip Blanks are identified by the 2-letter code TB.

## C. FIELD BLANKS

Field or Equipment Blanks consist of laboratory provided water which is poured over or through the decontaminated sampling device and collected in the appropriate sample containers. The purpose is to ensure that equipment is decontaminated properly and is not resulting in cross contamination from one sampling location to another. One field blank is typically collected per event for each non-disposable sampling device used. Field Blanks are typically collected and analyzed for the same parameters as the samples. Field or Equipment Blanks are identified by the 2-letter code FB or EB.

#### D. MATRIX SPIKE/MATRIX SPIKE DUPE

Matrix Spike/Matrix Spike Duplicates (MS/MSD) consist of extra sample volume collected for laboratory QA/QC analysis, particularly for projects requiring USEPA Contract Laboratory Protocol (CLP) deliverables (or State equivalent). Three times the standard volume is collected, one volume for the analysis, one volume for the MS (sample is spiked with known concentrations or specific compounds), and one for the MSD (duplicate spiked sample). One MS/MSD is collected for every 20 samples.

Although separate QA/QC samples may not be collected for every project, the laboratory must conduct QA/QC at specific intervals. The laboratory typically is required to run method blanks, duplicates, and spiked samples to monitor their performance.

## VILLAGE OF MAMARONECK TAYLORS LANE COMPOST SITE

TABLE 1 –

PROHIBITED AND ACCEPTABLE ITEMS FOR PFC SAMPLING

# Table 1

## PFC Sampling – Prohibited and Acceptable Items

Prohibited	Acceptable		
Field Eq	uipment		
Teflon <sup>®</sup> containing materials	High-density polyethylene (HDPE) materials		
Low density polyethylene (LDPE) materials	Acetate Liners		
	Silicon Tubing		
Waterproof field books	Loose paper (non-waterproof)		
Plastic clipboards, binders, or spiral hard cover notebooks	Aluminum field clipboards or with Masonite		
	Sharpies <sup>®</sup> , pens		
Post-It Notes®			
Chemical (blue) ice packs	Regular ice		
Field Cloth	ing and PPE		
New cotton clothing or synthetic water resistant, waterproof, or stain-treated clothing, clothing containing Gore-Tex <sup>TM</sup>	Well-laundered clothing made of natural fibers (preferable cotton)		
Clothing laundered using fabric softener	No fabric softener		
Boots containing Gore-Tex <sup>TM</sup>	Boots made with polyurethane and PVC		
Tyvek®	Cotton clothing		
No cosmetics, moisturizers, hand cream, or other related products as part of personal cleaning/showering routine on the morning of sampling	To Cucumbers, Aubrey Organics, Jason Natural Sur Block, Kiss my face, Baby sunscreens that are "free or "natural" Insect Repellents - Jason Natural Quit Bugging Me, Repel Lemon Eucalyptus Insect repellant, Herbal Armor, California Baby Natural Bug Spray, BabyGanics Sunscreen and insect repellant - Avon Skin So Soft Bug Guard Plus – SPF 30 Lotion		
Sample C	Containers		
LDPE or glass containers	HDPE or polypropylene		
Teflon-lined caps	Unlined polypropylene caps		
Rain	Events		
Waterproof or resistant rain gear	Gazebo tent that is only touched or moved prior t and following sampling activities		
Equipment De	contamination		
Decon 90®	Alconox <sup>®</sup> and/or Liquinox <sup>®</sup>		
Water from an on-site well	Potable water from municipal drinking water supp		
Food Con	siderations		
All food and drink, with exceptions noted on right	Bottled water and hydration fluids (i.e, Gatorade <sup>®</sup> and Powerade <sup>®</sup> ) to be brought and consumed on in the staging areas		

## VILLAGE OF MAMARONECK TAYLORS LANE COMPOST SITE

FIGURE 1 - SITE MAP

LECEND       Suntrary Steren MAHOLE         ○ SM = 5       Suntrary Steren MAHOLE         ○ SM = 6       Suntrary Steren MAHOLE         ○ SM = 7       Suntrary Steren MAHOLE         ○ SM = 7       Constraine         Constraine       Constraine	<ul> <li>NOTES:</li> <li>1. NORTH REFERENCE IS BASED ON FILE MAP #3107.</li> <li>2. BOUNDARY INFORMATION SHOWN HEREON IS BASED VERMA FIELD SURVEY PERFORMED BY WEHRAN ENGINEERING IN APRL OF 1934.</li> <li>3. TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON A GROUND SURVEY PERFORMED BY COUND SURVEY PERFORMED BY CONTRACTORYS UNE &amp; CRADE SOUTH OF BASED UPON A GROUND SURVEY PERFORMED BY COUND SURVEY PERFORMED BY COUND SURVEY PERFORMED BY COUND SURVEY PERFORMED BY CONTRACTORYS UNE &amp; CRADE SOUTH OF BEDFORD HILLS NEW YORK, DATED OCT. 24, 1995</li> <li>4. VERTICAL DATUM D' 1926.</li> <li>5. EASEMENTS OR RIGHT-OF-WAYS ON, OR UNDER THE LANDS, AND NOT VISIBLE, ARE NOT SHOWN HEREON ARE BASED UPON NEW YORK STATE PLANE COORDINATE SYSTEM.</li> <li>6. GRID COORDINATES SHOWN HEREON ARE BASED UPON NEW YORK STATE PLANE COORDINATE SYSTEM.</li> <li>7. FINAL COVER DRAINAGE PIPES LIE ALONG THE SAME ALIGNMENT AS THE TRANGULAR PRAINAGE CHANNELS.</li> <li>8. DRAINAGE INFORMATE AND FIELD VERIFIED BY MEASUREMENTS FROM EXISTING FEATURES.</li> </ul>	MAP REFERENCE : 1. "REVISED MAP OF FIRST ADDITION TO GREENHAVEN", AS FILED ON 2/5/27. IN WESTCHESTER COUNTY CLERK'S OFFICE. 2. "MAP #204*, AS FILED ON 11/16/35. OFFICE.	FIGURE VILLAGE OF MAMARONECK TAYLOR'S LANE COMPOST SITE TOWN OF RYE, WESTCHESTER, NEW YORK SITE MAP
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