

**PHASE I APPLICATION
CAMP HOPE RUN LANDFILL
BOGGS TOWNSHIP, CLEARFIELD COUNTY, PENNSYLVANIA**

**FORM 8
ATTACHMENT 8-13
Groundwater and Surface Water Sampling and Analysis Plan**



**GROUNDWATER AND SURFACE WATER
SAMPLING AND ANALYSIS PLAN**

**PA WASTE LLC
CAMP HOPE RUN LANDFILL
BOGGS TOWNSHIP, CLEARFIELD COUNTY, PENNSYLVANIA**

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SAMPLING SCHEDULE

Monitoring Wells and Surface-Water Points

The proposed groundwater monitoring well network includes the following wells:

- shallow system wells: GMW-1A, GMW-6A, GMW-9A, GMW-10A, GMW-11A;
- middle system wells: GMW-1B, GMW-2B, GMW-4B, GMW-6B, GMW-7B, GMW-8B, GMW-9B, GMW-10B, NW-3B, and NW-5B; and
- lower system wells: GMW-1C, GMW-4C, GMW-6C, GMW-9C, and GMW-10C.

The proposed surface water sampling network includes the following locations:

- Camp Hope Run monitoring locations: GR-440, GR-405, and GR-452; and
- Sanbourn Run monitoring locations: GR-415, GR-419, GR-505, GR-410A.

Information regarding the proposed groundwater quality and surface-water quality monitoring points is on the attached tables, Table 7.5 and Table 7.6, respectively, (also in Attachment 7-7 in Form 7). Table 7.5 also includes the well construction details. The groundwater and surface-water monitoring point locations are shown on Exhibit 7-1.5 in Form 7. The groundwater monitoring points are listed as 4-inch diameter screened, but with the Pennsylvania Department of Environmental Protection's (PADEP's) approval, 2-inch diameter casing and screen in a 6-inch diameter borehole may also be utilized. The proposed Camp Hope Run and Sanbourn Run surface-water monitoring locations are presented in topographic/hydraulic order (i.e. upgradient to downgradient).

Samples from the groundwater and surface-water sampling locations will be collected each quarter or as determined by mutual agreement of Camp Hope Run Landfill and PADEP.

Leachate and Detection Zone Monitoring

Raw, untreated leachate samples will be obtained from proposed landfill and collection/storage vessels, as part of the quarterly sampling. Detection zone samples will also be collected quarterly. The actual number and locations of proposed leachate and detection zone monitoring points will vary with time as these cells/facilities are brought on-line.

SAMPLING OF MONITORING WELLS

Prior to collection of any sample, the depth to water in the monitoring well will be measured from the top of the steel well casing using a battery-operated water-level indicator which has an accuracy of ± 0.01 feet. A record of the measured depth to water will be entered onto the Sampling Record. An example of the Sampling Record is attached as Figure 1.

All site wells with sufficient yield will be purged and sampled using submersible pumps. This plan assumes that dedicated pumps or other sampling devices will be used. Those wells with insufficient water will be purged and sampled using a well-specific dedicated bailer or non-standard pumping technique. If non-dedicated pumps or sampling devices are used, prior to and between sampling locations, the pump/device will be properly decontaminated. Sampling personnel will wear a new pair of disposable gloves for each sampling location. Using portable meters, pH and specific conductance will be measured in a water sample collected in a separate container to evaluate stabilized chemistry. This eliminates the potential for the probe(s) to contaminate a sample designated for laboratory analysis. These common stabilization parameters will be used to indicate that groundwater coming from a pumped interval is aquifer water. The minimum number of parameters that will be measured include temperature, pH, conductivity, and dissolved oxygen. Groundwater monitoring wells will be sampled: 1) after a minimum of one well borehole volume has been purged, and 2) stabilization is indicated after three successive readings taken at 3- to 5-minute intervals. Stabilization occurs when indicator parameters show a change of less than ± 0.1 for pH, and no more than 5% for conductivity. In addition, wells that have limited yield will be purged dry and sampled once the well has recovered to sufficient

volume for sampling. Based upon future conditions encountered in the field during groundwater sampling activities, the PA DEP Groundwater Monitoring Guidance (specifically D.3.d.iv [Special Problems of Low-Yielding Wells]), will be implemented as warranted.

A borehole volume is calculated as follows. The depth-to-water measurement is subtracted from the well's depth equaling the feet of the water in the well. For 4-inch and 2-inch-diameter wells, the calculated feet of water is then multiplied by 0.65 and 0.16 gallons per foot, respectively, equaling the gallons in one well volume. Well construction data are presented

SAMPLING OF SURFACE WATER

Surface-water samples will be collected as grab samples with care given not to create turbidity by disturbing the underlying sediments. Samples should be collected from the center of the stream or body of water and at mid-depth, when possible. The sample containers should be labeled prior to sample collection. The information on the container label should be complete and legible before sample collection. Sampling personnel will wear a new pair of disposable gloves for each sampling location. The surface-water samples will be collected by submerging and filling the appropriate sample container, or if necessary, a decontaminated transfer vessel can be used to collect the water sample, and then used to fill the sample container. Care should be given to not overfill sample bottles containing preservatives. Downstream sampling locations should be collected before upstream locations. The dissolved metals sample will be filtered using a disposable 0.45-micron filter system before filling the preserved sample container. The collected samples will be placed into an iced cooler for shipment to the certified laboratory, following proper chain-of-custody protocol.

Flow will be measured at the seven proposed surface water monitoring locations. At locations GR-415, GR-419, GR-505, GR-410A, GR-405, and GR-440 flows will be measured with permanent weirs. These weirs will also provide a permanent field location for sampling and monitoring. Due to the larger flows at GR-452, the downstream monitoring location on Camp Hope Run, it is likely a permanent staff gauge will be installed as opposed to a weir. The GR-452 stream will be gauged at various stages to develop a rating curve, which will then be used to

determine the flow during monitoring events. The staff gauge will mark the sampling location.

Field parameters of pH, specific conductance, and temperature and stream flow will be collected directly from the surface-water body and recorded onto the Sampling Record, Figure 1.

SAMPLING OF LEACHATE & DETECTION ZONES

Leachate and detection zone samples will be collected as grab samples using dedicated or new sampling devices. The sample containers should be labeled prior to sample collection. The leachate and detection zone samples will then be transferred into the appropriate laboratory-provided containers, and placed in an iced cooler for shipment to the certified laboratory, following proper chain-of-custody protocol.

SAMPLE CONTAINERS

Appropriate sample containers are provided by the laboratory. The sample containers should be labeled and each label should be completed with the following information prior to sample collection:

- Project and facility name;
- Sampling location identification;
- Time and date of sample collection; and
- Sampler's initials.

When metals are the analytes of interest, fluorocarbon resin or polyethylene containers with polypropylene caps are used. When organics are the analytes of interest, glass bottles with fluorocarbon resin-lined caps are used.

Appropriate preservatives are provided in the sample containers by the laboratory, as necessary. Methods of sample preservation are generally intended to: (1) retard biological action; (2) retard hydrolysis; and (3) reduce sorption effects. Preservation methods are generally

limited to pH control, chemical addition, refrigeration, and protection from light. Care should be given to not overfill those sample containers containing preservatives.

The appropriate sample containers will be labeled, field filtered (0.45 micron) as necessary, filled, placed in an iced cooler, and transported to the certified laboratory, following proper chain-of-custody protocol.

FIELD DECONTAMINATION OF COLLECTION EQUIPMENT

For those wells without dedicated pumps or bailers, the pump or non-dedicated bailers used will be decontaminated prior to and between sampling locations using an Alconox (or equivalent) and potable water wash with a distilled/deionized water rinse. Since the meter used to measure pH, specific conductance, and temperature does not contact the sampled water, decontamination is limited to the water-level meter probe. Cleaning and decontamination procedures for the water-level probe include rinsing the probe tip with distilled/deionized water between sampling locations.

TRANSPORTATION OF SAMPLES

At the completion of sampling, containers are placed inside coolers where they are packed with ice in sealed plastic bags. The coolers are then transported to the certified laboratory for analysis. The samples will either be shipped to the laboratory by the sample collector(s), or picked up by the laboratory. Collected samples should be transported to the laboratory as soon as possible, and/or within prescribed sample holding times.

CHAIN-OF-CUSTODY

The chain-of-custody program allows for the tracing of possession and handling of individual samples from the time of field collection through laboratory analysis. The chain-of-custody program includes:

Sample Labels - prevents misidentification of samples;

Sampling Record - records information about each sample collected during the monitoring program; and

Chain-of-Custody - establishes the documentation necessary to trace sample possession from time of collection to analysis, provides an official communication to the laboratory of the particular analysis(es) required for each sample, and provides further evidence that the chain-of-custody is complete.

To establish the documentation necessary to trace sample possession from time of collection, a chain-of-custody record is filled out to accompany every sample. Chain-of-Custody forms are provided by the laboratory.

The record contains the following information:

- Sampling location/description
- Sample matrix (e.g., groundwater, surface water, etc.)
- Date and time of collection
- Sample type (grab or composite)
- Analyses requested
- Signature of person(s) involved in chain of possession
- Number of containers
- Inclusive dates of possession

ANALYTICAL PARAMETERS

T monitoring well and stream samples from Camp Hope Run Landfill will be analyzed for those parameters listed on Form 19, which is based on the Department's Municipal Waste Regulations, Section 273.284. Annual sampling will also be conducted which will include an expanded list of Form 19 parameters. Leachate and detection zone samples are analyzed for the Form 50 list of parameters and/or Form 50 indicator analytes, as outlined on page 2 of Form 50. The analyses to be performed of well, stream, leachate, and detection zone samples are shown on Table 1.

Analytes that are not detected above respective laboratory reporting limits will be reported on Form 19 and qualified with a less than (<) symbol. The laboratory reporting limits will be at or below the current USEPA Maximum Contaminant Levels (MCLs), where reasonable.

The quarterly and annual analytical data will be submitted to the PADEP within 60 days of the last date of sampling. A letter report will be submitted with the data that will evaluate trends using time-series comparisons particularly for analytes that would indicate a release from the site and whether degradation has occurred. The report will evaluate whether groundwater protection standards have been exceeded.