Proposed Sampling Plan

Vertical Expansion
Adams County Sanitary Landfill
WDNR License #3150, FID #701040560

Table of Contents

Introduction 1
Approved Monitoring Program 1
- **Groundwater Monitoring** 1
- **Leachate Monitoring** 2
- **Surface Water Monitoring** 3
- **Landfill Gas Monitoring** 3
- **Air Monitoring** 4
- **Unsaturated Zone Monitoring** 4
- **Other** 4

Sample Schedule 4
Procedures for Field Measurements 4
Procedures for Purging Wells 5
Procedures for Sampling Wells 5
- **Samples for Organic Analyses** 6
- **Samples for Inorganic Analyses** 6
- **Decontamination Procedures** 6
- **Private Well Sampling** 6

Quality Assurance and Quality Control Procedures 7
- **Trip Blanks** 7
- **Duplicate Samples** 7
- **Rinse Blanks** 7

Procedures for Sampling Leachate Headwells and Other Devices 7
- **Leachate Sampling** 7
- **Gas Probes** 8
- **Gas Extraction Wells and Flare** 8
- **Gas Condensate Monitoring** 9

Chain of Custody Procedures 9
Availability of Sampling Plan 9

List of Attachments

Attachment 1 February 14, 2019 Approved Monitoring Plan

Attachment 2 Field Report Form

Attachment 3 Chain of Custody Form

Attachment 4 Table K1-1 Proposed Environmental Monitoring Program & Site Map

Introduction

This Sampling Plan is being submitted for Wisconsin Department of Natural Resources ("Department") approval as part of the Feasibility Report for the proposed Vertical Expansion ("Expansion") of the Adams County Landfill ("Landfill"), WDNR License #3150, FID #701040560. This Sampling Plan updates the previously prepared Sampling Plan by Ayres and Associates for the Horizontal Expansion of the Landfill, approved by the WDNR as part of the February 14, 2019 Conditional Plan of Operation Approval for the Adams County Landfill Horizontal Expansion letter. The Landfill is currently owned and operated by the Adams County Solid Waste Department ("Adams County"). The Sampling Plan has been prepared in accordance with Chapter NR 507.16, Wisconsin Administrative Code (WAC), and shall be implemented as approved in writing by the Department.

Detailed procedures for collecting samples and measurements from groundwater monitoring wells, sampling points associated with the leachate collection systems, and sampling points associated with the gas system are provided in this Sampling Plan. The plan follows procedures and methodologies specified by the Department and complies with the requirements in Chapter NR 507.16 and 140.16, WAC. The outlined procedures are based on the Department Groundwater Sampling Field Manual (Publication Number PUBL-DG-038 96) and Groundwater Sampling Desk Reference (Publication Number PUBL-DG-037 96). The manual and reference are available at the offices of the Department, the legislative reference bureau, and the secretary of state.

Sample results often represent the only data available to infer the spread of contaminants in the environment. For this reason, it is important to collect representative samples to the extent practical. To assist in the collection of representative samples, field technicians will be familiarized with this Sampling Plan and associated documents, as well as spend time with existing experienced technicians to learn proper sampling procedures.

Approved Monitoring Program

The monitoring program outlined below is based on the Adams County Landfill Horizontal Expansion Plan of Operation Approval dated February 14, 2019 (Attachment 1). The proposed Vertical Expansion will not change the monitoring program and therefore, the monitoring program approved in 2019 is still valid; the only exceptions being monitoring points that have since been abandoned. The monitoring program will provide continued evaluation of the landfill's performance by measurement of groundwater elevations and groundwater quality analysis; leachate levels and leachate quantity and quality; landfill gas volumes, pressures, composition, and migration potential; and landfill gas condensate quality. Groundwater, leachate, and landfill gas and condensate will also be monitored after site closure, during the long-term care period. Based on the performance of the site during operation, it may be necessary to submit a modified post-closure monitoring plan as part of the site closure documentation plans.

Groundwater Monitoring

Groundwater monitoring will include the water table observation wells and piezometers around the perimeter of the Landfill. Groundwater monitoring requirements are outlined below.

The groundwater monitoring program to be conducted during the operational life of the Landfill is designed to provide groundwater quality and flow information upgradient and downgradient from the Landfill, to evaluate horizontal and vertical gradients, and to detect any impacts from the facility on groundwater quality.

The existing Subtitle D wells for the site are MW-7, MW-16, MW-18 and MW-30.

The procedures for groundwater sampling are described in subsequent sections of this plan. The following table lists the active wells associated with the Adams County Landfill monitoring network:

Adams County Landfill Lic# 03150

Well Name	Status
MW-1	Active
MW-1P	Active
MW-2	Active
MW-2P	Active
MW-6	Active
MW-6P	Active
MW-7[1]	Active
MW-7P	Active
MW-9	Active
MW-16[1]	Active
MW-18[1]	Active
MW-18P	Active
MW-19	Active
MW-19P	Active
MW-20	Active
MW-21	Active
MW-22	Active
MW-25[2]	Active
MW-26[2]	Active
MW-27[2]	Active
MW-28[2]	Active
MW-29	Active
MW-30[1]	Active
MW-30P	Active
MW-31	Active

[1] Subtitle D Well

[2] Monitored for Groundwater Elevation Only

Leachate Monitoring

Leachate monitoring will be performed on monitoring points associated with the leachate collection system including the leachate collection tank, leachate headwells, and lysimeters. Procedures for leachate monitoring are included in subsequent sections of this report.

Leachate samples are collected from the leachate storage tank on a semiannual sampling schedule, with the exception of volume pumped. Volume of leachate pumped will be monitored monthly and reported to the Department semi-annually. The samples are analyzed for the parameters listed in Table 2a of the 2019 Environmental Monitoring Plan (Attachment 1) and in Table 4 of NR 507 for landfills accepting municipal solid waste. The proposed Environmental Monitoring Plan is included as Table K1-1 in Attachment 4.

Leachate head levels will be measured monthly during operations and post-closure care periods. The leachate headwells will be installed during liner construction of each phase. No new leachate headwells will be installed as part of the proposed Vertical Expansion. Leachate head levels will be reported to the Department along with the other routine environmental monitoring results.

Leachate extraction volume data will be obtained by documenting the number of loads hauled and disposed of at the designated leachate treatment and disposal facility (e.g. City of Adams waste water treatment plant (WWTP) or recirculated back into the waste mass. The present practice is to weigh each vehicle hauling leachate during operational hours. Leachate volume will be reported to the Department with the routine semi-annual monitoring data submittal. Leachate recirculation has not yet been implemented at the existing Landfill. However, Adams County currently holds Department approval to implement leachate recirculation in the form of drain fields and surface application.

Surface Water Monitoring

Surface water monitoring in the form of obtaining samples, for laboratory analysis, of a surface water body and/or a storm water discharge outfall is not currently performed. There are no surface water bodies located immediately adjacent to the existing nor proposed Landfill area. The existing sedimentation basins are the only locations containing a typical “outfall” from which storm water could potentially be sampled. Since the start of Landfill operations, storm water has rarely accumulated in enough quantity to be discharged from the sedimentation basin outfall. Storm water readily infiltrates into the ground due to the permeable nature of the surficial soils.

Monitoring of storm water runoff is performed in accordance with the Facility’s Stormwater Pollution Prevention Plan (SWPPP) and Wisconsin Pollutant Discharge Elimination System (WPDES) Tier 2 Industrial Storm Water General Permit. This includes conducting quarterly visual inspections at storm water outfalls, non-storm water discharge monitoring, and an Annual Facility Site Compliance Inspection (AFSCI). In general, storm water inspections and monitoring involve observing storm water outfalls for signs of storm water contamination and verifying compliance with the best management practices (BMPs) highlighted in the SWPPP. These routine inspections and monitoring events will continue to be conducted for the Expansion. Storm water is covered under a separate permit and is not part of the environmental monitoring program described in this Sampling Plan.

Landfill Gas Monitoring

The Adams County Landfill currently has an active gas extraction system. The system extracts landfill gas from the gas extraction well field within the Landfill via a prefabricated blower and flare skid unit. Gas system performance monitoring is conducted monthly on the blower and at the gas extraction well heads per Table 3a of the 2019 Environmental Monitoring Program (Attachment 1). The proposed Environmental Monitoring Plan is included as Table K1-1 in Attachment 4. Monitoring at the flare includes gas temperature, percent methane, percent oxygen, percent carbon dioxide, vacuum, flow rate, and header pressure.

Landfill gas monitoring also includes monitoring for potential subsurface gas migration in the unsaturated zone using gas probes. One gas probe is installed on each side of the Landfill to monitor for gas migration. The existing probes are monitored quarterly for landfill gas constituents (precent by volume) as prescribed on Table 3b of the 2019 Environmental Monitoring Program (Attachment 1). The proposed Environmental Monitoring Plan is included as Table K1-1 in Attachment 4. During each event, ambient air temperature, ground condition, barometric pressure, and barometric pressure trend will also be recorded. The results are reported to the Department along with the semi-annual monitoring report.

Condensate produced during the operation of the gas management system is removed from the landfill gas system via a drip leg. Condensate is then routed to the leachate storage tank. Condensate is not proposed to be monitored separately as it is co-mingled with leachate pumped from the Landfill. However, should the need to sample condensate generated within the gas system arise, a sample can be obtained from the dripleg near the gas flare.

Procedures for landfill gas monitoring are presented in subsequent sections of this Sampling Plan.

Air Monitoring

Ambient air monitoring for particulates or other constituents is not part of the monitoring program at the Adams County Landfill. Ambient air monitoring requirements, if any, will be established through the air permitting process.

Unsaturated Zone Monitoring

Unsaturated zone (i.e. portion of the subsurface above the groundwater table) will be monitored via gas probes to check for the presence of subsurface landfill gas migration. Lysimeters CLR-1 and CLR-2, installed in Phases 1 and 2, respectively, of the Landfill, will continue to be monitored monthly for discharge in gallons and semi-annually for the parameters listed on Table 4 of the 2019 Environmental Monitoring Plan (Attachment 1). The proposed Environmental Monitoring Plan is included as Table K1-1 in Attachment 4. Lysimeter monitoring data will be submitted to the Department semi-annually.

Other

No additional environmental monitoring is proposed to occur.

Sample Schedule

The 2019 Environmental Monitoring Plan Tables (Attachment 1) summarizes the Landfill sampling schedule. The proposed Environmental Monitoring Plan is included as Table K1-1 in Attachment 4. The schedule includes the sampling period, months each point is to be sampled, and list of parameters to be analyzed from each monitoring device during each sampling event. Currently, the Landfill is sampled in March, June, September, and December. No changes to the sampling schedule are proposed.

Procedures for Field Measurements

Field measurements included in the Adams County Landfill groundwater monitoring plan include water level elevation, water temperature, specific conductance and pH. The water level at each groundwater monitoring well is measured with a water level indicator prior to purging. Temperature, specific conductance, and pH are measured on an unfiltered portion of the groundwater sample, collected after purging, that is discarded following field measurements. The Specific Conductance measurement is converted to an equivalent value at 25°C.

The pH/conductivity/temperature meter used to take field water quality measurements requires frequent calibration to ensure accurate results. Equipment calibration shall be conducted daily at a minimum during the sampling event. The pH meter is calibrated per manufacturer's recommendation and field calibrated before use each day. Calibration solutions must be freshly prepared or bottled from non-expired stock. In the absence of manufacturer guidance, field equipment should be calibrated to within +/- 5% of the standard (or 0.1 standard unit for pH meters). Calibration of field-specific conductance should be verified against a chilled standard to verify temperature compensation. Equipment that fails calibration should be taken out of service and replaced or repaired prior to sampling. It is recommended that calibration checks be conducted periodically (e.g., midday and at end of day) to document any instrument drift. If there is significant instrument drift (e.g., >10% or 0.2 standard unit for pH), then the meters should be recalibrated.

The physical appearance of the water, including color, odor, and turbidity, is determined by visual observation of an unfiltered sample collected after purging, and recorded on an in-field report form (see Attachment 2 for an example). Water level and all field observations are recorded on the field report form.

The order of sampling at the Adams County Landfill is from least to most likely contaminated, based on previously detected contaminant levels at each respective monitoring location. If water quality results are similar, as they are at the Landfill, a sequence is chosen based on the sample point position with respect to any suspected contamination, horizontal groundwater gradients, and collection efficiency. Should groundwater impacts become evident in the future, the order in which wells should be sampled may be revisited.

Field leachate measurements in the Adams County Landfill monitoring plan include leachate level elevation, leachate temperature, specific conductance, color, odor, and turbidity. Field leachate measurements will be obtained with procedures parallel to those described for groundwater. Measurements of leachate will be collected after all other groundwater monitoring points are completed, if the sample meters are used for both groundwater and leachate.

Procedures for Purging Wells

The goal of purging is to either remove stagnant water from a well or prevent stagnant water from entering samples as they are collected. Stagnant water does not represent true groundwater quality.

The water level at each well, relative to a reference point (typically the top of well casing), is measured before purging during routine monitoring. Wells are purged immediately before sampling by slowly and gently lowering the bailer until it is submerged and in the middle of the well screen. Then, the bailer is slowly and carefully raised out of the water column to the surface. The bailer shall not contact the bottom of the well nor bang against the sides of the well casing during purging, as a BMP. The volume of water removed during purging is a minimum of four times the volume of water contained in the well casing, per Department procedures for purging with a standard bailer. The quantity purged is measured in a graduated pail. The required quantity to be purged is determined by measuring the water surface and calculating the approximate water volume using the known well casing diameter and well depth (volume = pi x (well diameter/2)^2 x feet of water in well x 4 x 7.48 gallons/cubic feet). The in-field sampling report offers well volumes per foot of water for several common well diameters. If a well purges dry, it is allowed to recover and then is sampled.

Three types of bailers are available for purging and sampling groundwater from 2-inch diameter monitoring wells: PVC, Teflon, and disposable polyethylene bailers. All bailers are bottom-loading bails approximately 1.75 inches in diameter. When bailers are used, the bailer cord shall be fastened securely to the bailer and shall be constructed of nylon, stainless steel, or polypropylene. This cord must be clean, and in good condition. Care should be taken not to excessively disturb the column of water in the well casing while bailing. Gently lower the bailer into the well with each cycle. The sampler's knowledge of the depth to water will help in this regard. Attempt to lower the bailer into the water only to the extent necessary to fill or nearly fill the chamber. Avoid submerging the top of the bailer. Larger-diameter wells (4-inch and greater) are often purged with larger PVC bailers or a submersible electric pump. The pump is sometimes necessary to properly purge the required four well volumes before collecting a sample for analysis.

Reusable bailers and pumps (non dedicated equipment) must be thoroughly cleaned and sterilized using a triple rinse system that includes a water and lab soap (Alconox) mixture, water rinse and finally a distilled water rinse before use in the field. Reusable bailers are cleaned in the lab and transported to the site in a clean area of the vehicle. Reusable equipment is thoroughly rinsed with distilled water between purge points. When disposable bailers are used, a new bailer is provided for each sampling point. Each disposable bailer is individually wrapped in sterile plastic for transport to the site.

Procedures for Sampling Wells

Three types of bailers are available for sampling groundwater from 2-inch diameter monitoring wells: PVC, Teflon, and disposable polyethylene bailers. All bailers are bottom-loading bails approximately 1.75

inches in diameter. Procedures for sampling wells are analogous to the procedures described above for purging wells.

Organic and inorganic samples are handled in different manners during collection. The technician receives clean containers for sample collection from state-certified contract laboratories. Required sample preservatives are precisely added in the certified laboratory before containers are taken into the field. After sample collection, the sample information is recorded on a chain of custody record. A chain of custody for each sampling event will be completed. The chain of custody accompanies the collected groundwater samples from the field to the laboratory. An example chain of custody form is as Attachment 3 to this Sampling Plan.

Samples for Organic Analyses

Organic samples, primarily VOCs and polycyclic aromatic hydrocarbons (PAHs), are collected with Teflon or disposable polyethylene bailers. The sample is collected after purging the required volume of water from each well. VOC and PAH samples are withdrawn from the bailer with a bottom emptying device that extracts the sample from the bailer with minimal introduction of air to the sample.

VOC samples are placed directly into a 40-mL glass vial with Teflon-coated cap liners, containing 1 to 2 drops of 1:1 concentration of HCI. The sample bottle is allowed to fill to a point where a positive meniscus is created on top of the vial; then the cap is carefully placed on the vial to keep air from entering the vial. The vial is then placed in an iced cooler. Typically, two to three vials per sampling point are collected and submitted to the laboratory.

The PAH samples are emptied into 1,000 mL amber glass jars, capped, and placed in an iced cooler.

Samples for Inorganic Analyses

A sample is withdrawn from the well or sample point with the bailer. If appropriate for the analyte and sampling technique, in-field filtering is performed with Nalgene disposable 0.45-micron filter units, or equivalent. Typically, the filter is rinsed with distilled water before filtering the sample, and the first 50 mL of sample is run through the filter and discarded before collecting enough for analysis. A new filter is used at each sample point and, in cases where the sample is very turbid, more than one filter is necessary to filter a large enough volume for analysis. Any filtering not completed in the field is accomplished at the end of the day (within 24-hours of sample collection) with 0.45-micron disposable filter units and a hand pump or vacuum pump. The filtered samples are placed in the correct laboratory container.

Approximately 250-mL of the filtered sample is placed in a labeled plastic bottle that contains 1 mL of nitric acid (HNO3) preservative, for analysis of metals and hardness. Another 250-mL portion of the filtered sample is collected in a 250-mL unpreserved sample bottle, which provides a sample sufficient for general remaining parameters (alkalinity, chloride). All sample bottles are then placed in a cooler packed with ice and accompanied by a completed chain of custody form for transportation.

Decontamination Procedures

If used, all reusable bailers and pumps are thoroughly cleaned and sterilized using a triple rinse system that includes a water and lab soap (Alconox) mixture, water rinse and finally a distilled water rinse before use in the field. Reusable bailers are cleaned in the lab and transported to the site in a clean area of the vehicle. Reusable equipment is thoroughly rinsed with distilled water between sample points. When disposable bailers are used, a new bailer is provided for each well. Each disposable bailer is individually wrapped in sterile plastic for transport to the site.

Private Well Sampling

No private wells are included in the Sampling Plan.

Quality Assurance and Quality Control Procedures

Quality assurance and quality control measures are used by the field sampling technician and analytical lab to provide accurate representative groundwater quality data.

Trip Blanks

For VOCs, trip blanks are used; these VOC-free distilled water samples from the lab accompany the sample bottles from the lab to the field and back to the lab. The purpose of the trip blank is to detect any VOCs that may have been introduced to the sample through handling or outside sources other than the sample point. Trip blank use only occurs when VOCs are sampled. One trip blank will be submitted to the laboratory with each cooler in which VOCs are stored.

Duplicate Samples

Duplicate samples are also analyzed to verify that reported results are an accurate representation of the water being tested. The frequency of duplicate sample analysis is varied, but we attempt to analyze one duplicate sample for every 10 samples analyzed, or one duplicate per batch of samples, whichever is greater. The frequency of duplicate testing is the same, regardless of the parameter being analyzed.

Rinse Blanks

Rinse blanks are collected from reuseable sampling equipment, such as bailers and pumps used to collect the sample. The rinse blank is a sample of distilled water which is run through the bailer or pump after rinsing as a check on the cleaning procedures. This sample can be used to evaluate the potential for cross-contamination of samples.

Procedures for Sampling Leachate Headwells and Other Devices

The technician will collect samples from the leachate storage tank and leachate collection system, as well as conduct monitoring on the leachate headwells, lysimeters, gas probes, and the passive gas system (flare and gas extraction wells) on a monthly to semi-annual basis. Monitoring data will be submitted to the Department Groundwater and Environmental Monitoring System (GEMS) on a semi-annual basis.

Leachate Sampling

The owner will be responsible for documenting the required monthly volumes of leachate pumped from the leachate storage tank and quarterly monitoring from leachate headwells, per NR 507. Leachate monitoring is described on Table 2a of the 2019 Environmental Monitoring Plans (Attachment 1). The proposed Environmental Monitoring Plan is included as Table K1-1 in Attachment 4. Landfill staff will measure and record the amount of leachate that has been pumped by tanker trucks from the leachate collection tank. The results will be submitted semi-annually in conjunction with other monitoring data.

As leachate recirculation is implemented in each leachate drainage basin, the owner will be responsible for documenting the required monthly monitoring from leachate headwells, in accordance with NR 507.215.

Samples will be collected at the leachate collection tank to assess leachate quality. Samples are collected using clean, disposable bailers, placed into the appropriate laboratory-provided containers, and preserved for analysis. Field measurements collected for leachate samples are analogous to those collected for groundwater samples. Leachate samples will not be filtered. In addition to the sampling outlined in the Environmental Monitoring Plan, there may be additional leachate monitoring or calculations required by the receiving wastewater treatment and disposal facility. If required by a wastewater treatment plant, sampling will be conducted from the collection tank as outlined above. Leachate levels will be measured using a water level indicator (using equipment dedicated for leachate only) at each headwell. The measurements are collected in the same manner as water levels are measured in monitoring wells. The top of each headwell's casing is surveyed to provide elevation

measurements for leachate levels. Calculations are then completed to translate inclined measurements to vertical equivalents.

Lysimeters

Lysimeter liquid levels are measured with a water level indicator. The measurements are collected similar to water levels in monitoring wells and headwells. The top of the lysimeters are surveyed to provide elevation measurements. Lysimeters are typically installed at an angle, so lowering the water level is done with a "chimney cleaning rod" specifically purchased for lysimeter measurements. The water level probe is attached to the bottom of the rod and as the probe is pushed to the bottom of the lysimeter, adding more rods as the depth increases. The measurements are then recorded on the field sampling report form. Existing lysimeter monitoring parameters and frequency are included on Table 2b in the 2019 Environmental Monitoring Plan (Attachment 1). The proposed Environmental Monitoring Plan is included as Table K1-1 in Attachment 4.

Gas Probes

Ambient air temperature, barometric pressure, barometric pressure trend, percent methane (lower explosive limit), and percent oxygen in each gas sample, collected from the gas probe petcock valve, are measured in the field using an Envision® gas meter. Equivalent instruments may also be used. The use of the equivalent instruments will be documented on the field sampling report form. Ground conditions will also be noted at the time of sampling. Existing gas probe monitoring parameters and frequency are included on Table 2b in the 2019 Environmental Monitoring Plan (Attachment 1). The proposed Environmental Monitoring Plan is included as Table K1-1 in Attachment 4.

The probes will be sampled with the instrument described above and the following sampling protocol will be used to measure the required parameters at the gas probes.

Caution will be exercised when opening the gas probe sampling port (petcock valve) to isolate the probe from the atmosphere to minimize dilution with atmospheric air. Connect the instrument inlet hose onto the petcock valve to seal the gas probe prior to opening the valve. Once the valve is open, collect the measurement and record the appropriate parameter readings. A reading should be collected for a minimum of 30 seconds and a maximum of 1 minute. The highest concentrations of oxygen and methane that the instrument detects will be recorded. Once all readings are recorded, close the valve before disconnecting the hose.

Field readings displayed on the instrument are recorded on an in-field sampling report during each sampling round. This form assists the technician in recording all of the necessary field information. A copy of this form is included as Attachment 2.

After recording the reading, remove the hose from the well and replace the cap. Prior to sampling the next gas probe, let the instrument purge itself with ambient air to return to the ambient air reading or zero. If the readings differ from other probes on site or from historic readings, recalibrate the instrument and recheck the gas probe.

Gas Extraction Wells and Blower

Gas extraction wells and the flare will be sampled similarly to the gas probes. Gas temperature, percent methane, percent oxygen, percent carbon dioxide, vacuum (flare only), flow rate, header pressure (inches of water), and valve opening % (gas extraction wells only) will be measured monthly at each gas extraction well and the blower using a portable gas meter. Existing gas extraction well and blower monitoring parameters and frequency are included on Table 2b in the 2019 Environmental Monitoring Plan (Attachment 1). The proposed Environmental Monitoring Plan is included as Table K1-1 in Attachment 4.

Each sampling point will first be visually inspected for loose pipe connections, loose hose clamps, or

loose bolts. Items needing repair will be recorded on the form and brought to the attention of the Landfill staff. Once the well has been inspected, the instrument's inlet hose is connected to the appropriate sample port. The required readings are recorded on the field sampling form.

Gas Condensate Monitoring

Condensate produced during the operation of the gas management system can be monitored at the condensate dripleg near the gas flare. Gas system condensate that accumulates will drain into the driplegs. The driplegs will then convey condensate into the leachate collection tank. Condensate is not proposed to be monitored separately from leachate. However, should the need arise to sample condensate separately, samples may be collected at the dripleg location.

Chain of Custody Procedures

After sample collection, all sample information is recorded on a chain of custody by the field technician. A chain of custody for each sampling event will be completed. The chain of custody accompanies the collected samples from the field to the laboratory. A copy of this form is included as an attachment to this plan (see Attachment 3).

Samples are transported from the field to the lab in a cooler with ice that is transported by a car or truck. Samples that are collected each morning or afternoon may be delivered by the technician to the lab by 5:00 p.m. each day. Samples may be transported by next-day transport companies to a contract lab for analysis. In any case, samples do not exceed the required holding time before analysis of the sample is completed by the lab.

Availability of Sampling Plan

A copy of this Sampling Plan, once approved, shall be kept at the Adams County Landfill office and a copy shall be provided to the sampling personnel for use during sampling. The approved Sampling Plan shall be followed unless the Wisconsin Department of Natural Resources is notified of and concurs with modifications. Adams County Solid Waste Department shall submit documentation of the approved changes to the department within 90 days. Adams County Solid Waste Department shall retain field records of all monitoring activities throughout the long-term care period.

Attachment 1 – February 14, 2019 Approved Monitoring Plan

Attachment #1 for the Adams County Landfill Expansion Plan of Operation
License # 3150
Environmental Monitoring Tables

Table 1
Detection Groundwater Monitoring NR 507 Wells

Wells	DNR ID#	WUWN	Comment[1]	Sampling & Reporting[2] Frequency	Parameter Codes	Parameters
Non-Subtitle D Wells						
Annual VOCs						
MW-1	1	DM435		Sample Semiannually March and September	72020	Elevation, Groundwater (feet above mean sea level)
MW-1P	2	DM436			00001	Odor
MW-2	3	DM437			00002	Color
MW-2P	4	DM438			00003	Turbidity
MW-3	5	DM439	to be abandoned		00010	Temperature, of water taken in field ^{0}C
MW-3P	6	DM440	to be abandoned		00094	Field Conductivity @ 25^{0} C(umho/cm)
MW-6	7	DM441			00400	Field pH (standard units)
MW-6P	8	DM442			00941	Chloride, filtered (mg/L)
MW-7	9	DM443			00946	Sulfate, filtered (mg/L)
MW-7P	10	DM444			22413	Total Hardness, filtered (mg/L)
MW-9	12	DM446			39036	Alkalinity, filtered (mg/L)
MW-17P	15	DM449	to be abandoned			
MW-18P	17	DM451				
MW-19	18	DM452				
MW-19P	19	DM453				
MW-20	40	EI302				
MW-21	41	EI303				
MW-22	42	EI304		Sample Annually March		VOCs (ug/L) Using EPA Solid Waste Method 8260 (NR 507, appendix III)
MW-29	49	VP147				
MW-30P	51	VP145				
MW-31	52	VP146				
Subtitle D Wells						
Semiannual VOCs						
MW-7	9	DM443		Sample Semiannually March and September	72020	Elevation, Groundwater (feet above mean sea level)
MW-16	13	DM447			00001	Odor
MW-17	14	DM448	to be abandoned		00002	Color
MW-18	16	DM450			00003	Turbidity
MW-30	50	VP144			00010	Temperature, of water taken in field ^{0}C
					00094	Field Conductivity @ 25^{0} C(umho/cm)
					00400	Field pH (standard units)
					00941	Chloride, filtered (mg/L)
					00946	Sulfate, filtered (mg/L)
					22413	Total Hardness, filtered (mg/L)
					39036	Alkalinity, filtered (mg/L)
						VOCs (ug/L) Using EPA Solid Waste Method 8260 (NR 507, appendix III)
Groundwater Elevation Only						
MW-25	45	GN076		Sample Semiannually March and September	72020	Elevation, Groundwater (feet above mean sea level)
MW-26	46	GN077				
MW-27	47	GN078				
MW-28	48	GN079				

1. Monitoring Points that are abandoned are no longer monitored.
2. In accordance with s. NR 507.26 (3), Wis. Adm. Code, data shall be submitted within 60 days after the end of the sampling period, unless otherwise specified.
Trip Blank (999) and/or Field Blank (997) data must also be submitted electronically.

Table 2a
Leachate Characteristic Monitoring

Monitoring Pt.	DNR ID#	Comment[1]	Sampling & Reporting[2] Frequency	Parameter Codes	Parameters
Leachate Tank Pump Man Hole	35		Sample/Record Total Volumes Monthly Report Semiannually March and September	00032 99723	Leachate Volume Pumped (1000s of gallons) Leachate Volume Recirculated (1000s of gallons)
			Sample Quarterly March, June, September, December	00094 00310 00340 00400 00410 00610 00900	Field Conductivity @ 25oC (umho/cm) BOD (5 day @ 20°C (mg/L) COD, unfiltered (mg/L) Field pH, (standard units) Alkalinity, total as CaCO3 (mg/L) Nitrogen, Ammonia, total (mg/L as N) Hardness, total (mg/L as CaCO3)
			Sample Semiannually March and September	00150 00625 00929 00940 00945 01027 01051 01055 71900 74010 VOCs (ug/L) Using EPA Solid Waste Method 8260 (NR 507, appendix III)	Suspended Solids, total (mg/l) Nitrogen, Kjeldahl, total (mg/L as N) Sodium, total (mg/L) Chloride, total (mg/L) Sulfate, total (mg/L) Cadmium, total (ug/l) Lead, total (mg/L) Manganese, total (mg/L) Mercury, total (mg/L) Iron, total (mg/L)
			Sample Annually March		Semi-volatiles, using EPA Method SW-8270 (NR 507, appendix IV)

1. Monitoring Points that are abandoned are no longer monitored.
2. In accordance with s. NR 507.26 (3), Wis. Adm. Code, data shall be submitted within 60 days after the end of the sampling period, unless otherwise specified.

Table 2b

Leachate Headlevel and Volume Monitoring

Monitoring Pt.	DNR ID#	Comment[1]	Sampling & Reporting[2] Frequency	Parameter Codes	Parameters
LHW-5	24		Sample Monthly Report Semiannually	00031	Depth of Leachate from top of liquid level to bottom in feet
LHW-6	25			99423	Elevation, Leachate Head feet above mean sea level
LHW-7	26				
LHW-8	27				
LHW-9		to be constructed			
LHW-9A		to be constructed			
LHW-10		to be constructed			
LHW-10A		to be constructed			
		Extraction Vault/Manhole	Sample Monthly Report Semiannually	00032	Leachate Volume Pumped
LV3		Phase 3 manhole		99723	Leachate Volume Recirculated
LV4		Phase 4 manhole			
LV5		vault to be constructed			
LV6		vault to be constructed			

1. Monitoring Points that are abandoned are no longer monitored.
2. In accordance with s. NR 507.26 (3), Wis. Adm. Code, data shall be submitted within 60 days after the end of the sampling period, unless otherwise specified.
3. Phases 1 and 2 leachate collection drains by gravity into the (underground) leachate tank. Phases 3 - 6 are forcemains to the tank.

Table 3a
Landfill Gas Extraction

Gas Extraction Well - DNR ID #						Sampling & Reporting[3] Frequency	Parameter Codes	Parameters
Monitoring Pt	ID#	Comment[1]	Monitoring Pt	ID#	Comment[1]			
GEW-1	601					Sample Monthly Report Semiannually March and September	46382	Header Pressure (inches of water column)
GEW-2	603						46385	Well Head Pressure (inches of water column)
GEW-3	605						99098	Gas Flow Rate (cfm)
GEW-4		2					46388	Gas Temperature (^{0} F)
GEW-5		2					46387	Valve Opening (% open)
GEW-6		2					85547	Percent Methane, by volume
GEW-7		2					85550	Percent Oxygen, by volume
GEW-8		2					85544	Percent Carbon Dioxide (CO_2), by volume
GEW-9		2					99848	Percent Balance Gas, by volume
GEW-10		2				Sample Annually March	00031	Depth of Leachate from top of liquid level to bottom in feet
GEW-11		2						
GEW-12		2						
GEW-13		2						
GEW-14		2						
GEW-15		2						
Gas Blower								
Blower	650					Sample Monthly Report Semiannually	46382	Header Pressure (inches of water column)
							98927	Gas Extracted, Total Monthly Volume (1000 cu. Ft. /month)
							99098	Gas Flow Rate (scfm)
							46388	Gas Temperature (^{0} F)
							85547	Percent Methane, by volume
							85550	Percent Oxygen, by volume
							85544	Percent Carbon Dioxide (CO_2), by volume
							99848	Percent Balance Gas, by volume
						Sample Annually March Report Annually		VOCs using USEPA Method TO-15 or TO-14A[4]
							99423	Sulfate, total reduced

1. Monitoring Points that are abandoned are no longer monitored.

2. To be constructed.

3. In accordance with s. NR 507.26 (3), Wis. Adm. Code, data shall be submitted within 60 days after the end of the sampling period, unless otherwise specified.

4. Refer to department guidance *Volatile Organic Compound Parameters for Landfill Gas Monitoring at Municipal Solid Waste Landfills* (PUB-WA 1701), dated August 1, 2014.

Attachment #1 for the Adams County Landfill Expansion Plan of Operation
License # 3150
Environmental Monitoring Tables

Table 3b
Landfill Gas Monitoring Probes

Monitoring Point - DNR ID #			Sampling & Reporting[2, 3] Frequency	Parameter Codes	Parameters
Landfill Gas Monitoring Probes					
Monitoring Pt	**ID#**	**Comment[1]**			
GP-1	36		Sample Quarterly March, June, September & December	85547	Percent Methane, by volume
GP-2	37			85550	Percent Oxygen, by volume
GP-3	38				
GP-4	39	to be constructed			
Site Conditions					
Site Conditions			Record quarterly at same time as blower Report Semiannually	00021	Ambient Air Temperature (^{0} F)
				00025	Barometric Pressure (mm of Hg)
				46381	Trend in Barometric Pressure
				00007	Ground Conditions 1=frozen, 2=wet, 3=dry

1. Monitoring Points that are abandoned are no longer monitored.
2. In accordance with s. NR 507.26 (3), Wis. Adm. Code, data shall be submitted within 60 days after the end of the sampling period, unless otherwise specified.
3. Immediate notification may be necessary under NR 507.22(1)(c) Wis. Adm. Code.

Table 4
Lysimeter and Surface Water Monitoring

Monitoring Pt.	DNR ID #	Comments	Monitoring Pt.	DNR ID #	Comments	Sampling & Reporting[2] Frequency	Parameter Codes	Parameters
Lysimeters								
CLR-1	30					Sample Monthly Report Semiannually	74064	Lysimeter discharge volume pumped (gal)
CLR-2	31					Sample Semiannually March and September	72020	Elevation, Groundwater (feet above mean sea level)
							00001	Odor
							00002	Color
							00003	Turbidity
							00094	Field Conductivity @ 25^0 C(umho/cm)
							00340	COD, Unfiltered
							00400	Field pH (standard units)
							00410	Alkalinity, total as CaCO3 (mg/L)
							00625	Nitrogen, Kjeldahl, total (mg/L as N)
							00900	Hardness, total (mg/L as CaCO3)
							00929	Sodium, total (mg/L)
							00940	Chloride (mg/L)
							00945	Sulfate, total (mg/L)
						Sample Annually March		VOCs (ug/L) Using EPA Solid Waste Methods 8260 (NR 507, appendix III)
Sedimentation Basins								
SW-1, North Infiltration Basin						Inspect Quarterly March, June, September, and December (report in annual report)		Visual inspection for: Odor, Turbidity, Floating Solids, Foam, Oil Sheen[3]
SW-2, South Infiltration Basin								
SW-3, West Sed. Basin								

1. Monitoring Points that are abandoned are no longer monitored.
2. In accordance with s. NR 507.26 (3), Wis. Adm. Code, data shall be submitted within 60 days after the end of the sampling period, unless otherwise specified.
3. See Storm Water Pollution Prevention Plan.

Attachment #1 for the Adams County Landfill Expansion Plan of Operation
License # 3150
Environmental Monitoring Tables

Table 5			
Settlement Monitoring			
Monitoring Point	**Sampling & Reporting[2] Frequency**	**Parameter Codes**	**Parameters**
Survey Final Cover at Grid Stations	Measure Annually June Until 5 years after closure; then every 5 years Report in Annual Report	99422	Elevation, Ground Surface feet above mean sea level

Attachment #2 for the Adams County Horizontal Expansion Plan of Operation,
License #: 3150
PAL and ACL Tables
February 2019 - page 1 of 2

Table 6 Groundwater Indicator Parameter Preventative Action Limits (PALs)

Wells	DNR ID#	WUWN	Abandoned or to be Abandoned	Alkalinity (mg/L) GEMS ID#: 39036	Hardness (mg/L) GEMS ID#: 22413	Specific Conductance (umhos/cm) GEMS ID#: 00094	Comments
NR 140 Wells							
MW-1	1	DM435		290	310	590	Approved in the May 7, 1995 Plan Modification Approval
MW-1P	2	DM436		220	300	610	Approved in the May 7, 1995 Plan Modification Approval
MW-2	3	DM437		240	350	480	Approved in the May 7, 1995 Plan Modification Approval
MW-2P	4	DM438		220	310	440	Approved in the May 7, 1995 Plan Modification Approval
MW-3	5	DM439	to be abandoned	290	390	590	Approved in the May 7, 1995 Plan Modification Approval
MW-3P	6	DM440	to be abandoned	230	320	450	Approved in the May 7, 1995 Plan Modification Approval
MW-6	7	DM441		230	270	470	Approved in the May 7, 1995 Plan Modification Approval
MW-6P	8	DM442		290	380	580	Approved in the May 7, 1995 Plan Modification Approval
MW-7P	10	DM444		250	290	490	Approved in the May 7, 1995 Plan Modification Approval
MW-9	12	DM446		330	340	560	Approved in 2019 Plan of Operation Horizontal Expansion*
MW-17P	15	DM449	to be abandoned	250	290	370	Approved in the May 7, 1995 Plan Modification Approval
MW-18P	17	DM451		260	300	500	Approved in the May 7, 1995 Plan Modification Approval
MW-19	18	DM452		300	340	590	Approved in the May 7, 1995 Plan Modification Approval
MW-19P	19	DM453		240	320	460	Approved in the May 7, 1995 Plan Modification Approval
MW-20	40	EI302		290	390	590	Approved in the May 7, 1995 Plan Modification Approval
MW-21	41	EI303		290	390	590	Approved in the May 7, 1995 Plan Modification Approval
MW-22	42	EI304		290	390	590	Approved in the May 7, 1995 Plan Modification Approval
MW-29	49	VP147		300	280	470	Approved in 2019 Plan of Operation Horizontal Expansion
MW-30P	51	VP145		220	220	370	Approved in 2019 Plan of Operation Horizontal Expansion
MW-31	52	VP146		390	360	570	Approved in 2019 Plan of Operation Horizontal Expansion
MW-7	9	DM443		290	370	560	Approved in the May 7, 1995 Plan Modification Approval
MW-16	13	DM447		320	360	590	Approved in the May 7, 1995 Plan Modification Approval
MW-17	14	DM448	to be abandoned	250	370	490	Approved in the May 7, 1995 Plan Modification Approval
MW-18	16	DM450		340	420	650	Approved in the May 7, 1995 Plan Modification Approval
MW-30	50	VP144		210	200	350	Approved in 2019 Plan of Operation Horizontal Expansion

Subtitle D wells are in bold

* Based on data with appropriate quality assurance and quality control flags from before filling begins in phase 3 south (11/1/2005 liner documentation submittal)

Attachment #2 for the Adams County Horizontal Expansion Plan of Operation,
License #: 3150
PAL and ACL Tables
February 2019 - page 2 of 2

Table 7				
Groundwater Alternative Concentration Limits (ACLs)				
Wells	**DNR ID#**	**WUWN**	**Lead** **GEMS ID#:01049**	**Comments**
NR 140 Wells				
MW-30	50	VP144	4.4 ug/L	Approved in 2018 Plan of Operation Horizontal Expansion

Subtitle D wells are in bold

Attachment 2 - Field Report Form

FIELD SAMPLING REPORT

Site Name:______________________________ Job# :______________ Project Manager: ______________________________ Date:______________

Sample collector(s):______________________________ Weather Conditions:____ Lab.:______________

Sampling Sequence:___________________________________ Sample Handling Methods:____

						Purging[3]		Sampling								Parameters											
I.D.	Type[1]	Ref. Elev ft, MSL	Depth to Bottom / Depth to Water feet	Depth of Water / Water Elev. ft, MSL	Sample[2] method	Date / Time	Vol	Time	Meter #___ °C	Meter #___ D.O.	Meter #___ Sp. Cond. Ω	Meter #___ pH	Meter #___ Eh mV	Turb. / Color	Odor	U	F	U	F	U	F	U	F	U	F	U	F
	Comments:																										
	Comments:																										
	Comments:																										
	Comments:																										
	Comments:																										
	Comments:																										
	Comments:																										

Note 1 - Sample Type

Code	Type Description
WPF__	Well, PVC, Flush mt, Add Size
WPP__	Well, PVC, Pro-top, Add Size
WS__	Well, Steel, Add Size
SUR	Surface Water
LY	Lysimeter
LE	Leachate
RWS	Residential Water Supply
Sys__	System, Add Influent/Effluent
O	Other

Note 2 - Sampling Method

Code	Description
SSB__	Stainless Steel Bail, Add Length
PVCB__	PVC Bail, Add Length
TB__	Teflon Bail, Add Length
DB__	Disposable Bail, Add Length
GS	Grab Sample
Tap	Tap Sample
DS	Dedicated System
O	Other ______________________

Note 3 - Purging

Size, In., I.D.	gallons/ft
2	0.16
3	0.4
4	0.6
5	1.0
6	1.5
8	2.6

* see reverse for calculations

PRODUCT COLLECTION DATA

Well Id.	Depth to Product	Water	h1	h2	Product Volume

REDUCED VOLUME DOCUMENTATION

Well I.D.

Volume	pH	Conductivity	Temp.

Well I.D.

Volume	pH	Conductivity	Temp.

Well I.D.

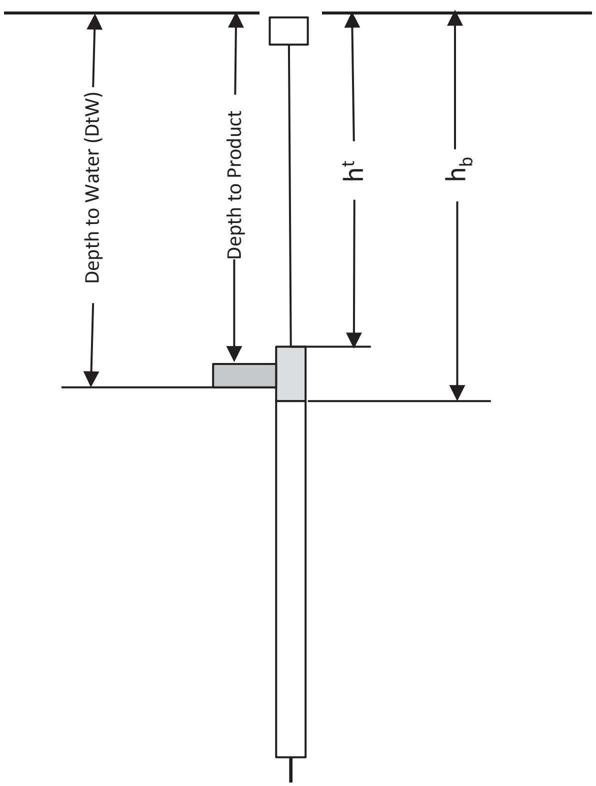
Volume	pH	Conductivity	Temp.

Well I.D.

Volume	pH	Conductivity	Temp.

If purging the standard 4 well volumes:
purge volume = height of water column (ft) x gallons/ft (second column in Note 3) x 4

Free product collection



h^t = height of canister screen to well cap
h_b = height from bottom of canister to well cap
Adjust the chain leght so that the depth to water is less than h_b but greater than h^t

$h^t < DtW < h_b$

Attachment 3 - Chain of Custody Form

CHAIN OF CUSTODY RECORD

PROJECT NO.	PROJECT NAME/CLIENT					NO. OF CON-TAINERS	Field Filtered:									REMARKS
SAMPLERS: (*Signature*)																
SAMPLE NO.	DATE	TIME	COMP.	GRAB	SAMPLE LOCATION/ DESCRIPTION											
Project Contact:							Project Manager:									
Invoice To:																
RELINQUISHED BY: *(Signature)*		DATE / TIME	RECEIVED BY: *(Signature)*				RELINQUISHED BY: *(Signature)*					DATE / TIME	RECEIVED BY: *(Signature)*			

Shipped on ice: ____ **yes** ____ **no**

Received on ice: ____ **yes** ____ **no**

Temp. if **not** received on ice: _____

COMMENTS:

Attachment 4 – Table K1-1 Proposed Environmental Monitoring Program & Site Map

TETRA TECH

Table K1-1
Proposed Environmental Monitoring Program
Adams County Sanitary Landfill - Vertical Expansion Feasibility Report - Addendum No. 1
WDNR License No. 3150
Town of Strongs Prairie, Adams County, WI

Groundwater Monitoring				
Wells	**DNR ID#**	**WUWN**	**Sampling and Reporting Frequency**	**Parameters**
Non-Subtitle D Wells				
MW-1	1	DM435	Sample	72020 Elevation, Groundwater (feet above mean sea level)
MW-1P	2	DM436	Semiannually	00001 Odor
MW-2	3	DM437	March and September	00002 Color
MW-2P	4	DM438		00003 Turbidity
MW-6	7	DM441		00010 Temperature, of water taken in field °C
MW-6P	8	DM442		00094 Field Conductivity @ 25°C (umho/cm)
MW-7P	10	DM444		00400 Field pH (standard units)
MW-9	12	DM446		00941 Chloride, filtered (mg/L)
MW-18P	17	DM451		00946 Sulfate, filtered (mg/L)
MW-19	18	DM452		22413 Total Hardness, filtered (mg/L)
MW-19P	19	DM453		39036 Alkalinity, filtered (mg/L)
MW-20	40	EI302		
MW-21	41	EI303		
MW-22	42	EI304		
MW-29	49	VP147	Sample	VOCs (ug/L) Using EPA Solid Waste Method 8260
MW-30P	51	VP145	Annually	
MW-31	52	VP146	March	
Subtitle D Wells				
MW-7	9	DM443	Sample	72020 Elevation, Groundwater (feet above mean sea level)
MW-16	13	DM447	Semiannually	00001 Odor
MW-18	16	DM450	March and September	00002 Color
MW-30	50	VP144		00003 Turbidity
				00010 Temperature, of water taken in field 0c
				00094 Field Conductivity @ 25°C (umho/cm)
				00400 Field pH (standard units)
				00941 Chloride, filtered (mg/L)
				00946 Sulfate, filtered (mg/L)
				22413 Total Hardness, filtered (mg/L)
				39036 Alkalinity, filtered (mg/L)
				VOCs (ug/L) Using EPA Solid Waste Method 8260
Groundwater Elevation Only				
MW-25	45	GN076	Sample	72020 Elevation, Groundwater (feet above mean sea level)
MW-26	46	GN077	Semiannually	
MW-27	47	GN078	March and September	
MW-28	48	GN079		

TETRA TECH

Table K1-1
Proposed Environmental Monitoring Program
Adams County Sanitary Landfill - Vertical Expansion Feasibility Report - Addendum No. 1
WDNR License No. 3150
Town of Strongs Prairie, Adams County, WI

Leachate Characteristic Monitoring			
Monitoring Point	**DNR ID#**	**Sampling and Reporting Frequency**	**Parameters**
Leachate Tank Pump Man Hole	35	Record Monthly Report Semiannually March and September	00032 Leachate Volume Pumped (1000s of gallons) 99723 Leachate Volume Recirculated (1000s of gallons)
		Sample Quarterly March, June, September, and December	00094 Field Conductivity@ 25°C (umho/cm) 00310 BOD (5 day@20°C (mg/L) 00340 COD, unfiltered (mg/L) 00400 Field pH, (standard units) 00410 Alkalinity, total as CaCO3 (mg/L) 00610 Nitrogen, Ammonia, total (mg/Las N) 00900 Hardness, total (mg/Las CaCO3)
		Sample Semiannually March and September	00150 Suspended Solids, total (mg/l) 00625 Nitrogen, Kjeldahl, total (mg/Las N) 00929 Sodium, total (mg/L) 00940 Chloride, total (mg/L) 00945 Sulfate, total (mg/L) 01027 Cadmium, total (ug/1) 01051 Lead, total (mg/L) 01055 Manganese, total (mg/L) 71900 Mercury, total (mg/L) 74010 Iron, total (mg/L) VOCs (ug/L) Using EPA Solid Waste Method 8260 (NR 507, appendix III)
		Sample Annually March	Semi-volatiles, using EPA Method SW-8270 (NR 507, appendix IV)

TETRA TECH

Table K1-1
Proposed Environmental Monitoring Program
Adams County Sanitary Landfill - Vertical Expansion Feasibility Report - Addendum No. 1
WDNR License No. 3150
Town of Strongs Prairie, Adams County, WI

Leachate Headlevel and Volume Monitoring			
Monitoring Point	**DNR ID#**	**Sampling and Reporting Frequency**	**Parameters**
Leachate Headwells			
LHW-5	24	Sample	00031 Depth of Leachate
LHW-6	25	Monthly	from top of liquid level to bottom in feet
LHW-7	26	Report Semiannually	99423 Elevation, Leachate Head
LHW-8	27		feet above mean sea level
LHW-9	28		
LHW-9A	400		
LHW-10	29		
LHW-10A	402		
Leachate Manholes / Extraction Vaults			
LM3		Sample	00032 Leachate Volume Pumped
LM4		Monthly	99723 Leachate Volume Recirculated
LM5		Report Semiannually	
LM6			

TETRA TECH

Table K1-1
Proposed Environmental Monitoring Program
Adams County Sanitary Landfill - Vertical Expansion Feasibility Report - Addendum No. 1
WDNR License No. 3150
Town of Strongs Prairie, Adams County, WI

Landfill Gas Extraction Monitoring			
Monitoring Point	**DNR ID#**	**Sampling and Reporting Frequency**	**Parameters**
Gas Extraction Wells			
GEW-1	601	Sample	46382 Header Pressure (inches or water column)
GEW-2	603	Monthly	46385 Well Head Pressure (inches or water column)
GEW-3	605	Report Semiannually	99098 Gas Flow Rate (cfm)
GEW-4	607	March and September	46387 Valve Opening (% open)
GEW-5	609		85547 Percent Methane, by volume
GEW-6	611		85550 Percent Oxygen, by volume
GEW-7	613		85544 Percent Carbon Dioxide, by volume
GEW-8	(1)		99848 Percent Balance Gas, by volume
GEW-9	(1)		
GEW-10	(1)	Sample	00031 Depth of Leachate
GEW-11	(1)	Annually	from top of liquid level to bottom in feet
GEW-12	(1)	March	
GEW-13	(1)		
GEW-14	(1)		
GEW-15	(1)		
Gas Blower			
Blower	650	Sample	46382 Header Pressure (inches or water column)
		Monthly	98927 Gas Extracted
		Report Semiannually	99098 Gas Flow Rate (scfm)
		March and September	46388 Gas Temperature (°F)
			85547 Percent Methane, by volume
			85550 Percent Oxygen, by volume
			85544 Percent Carbon Dioxide, by volume
			99848 Percent Balance Gas, by volume
		Sample	VOCs using USEPA Method TO-15 or TO-14A
		Annually	99423 Sulfate, total reduced
		March	
		Report Annually	
Site Conditions			
Site Conditions		Record quarterly	00021 Ambient Air Temperature (°F)
		at same time as blower	00025 Barometric Pressure (mm of Hg)
		(March, June,	46381 Trend in Barometric Pressure
		September, December)	00007 Ground Conditions
		Report Semiannually	

Notes:
(1) To be constructed

TETRA TECH

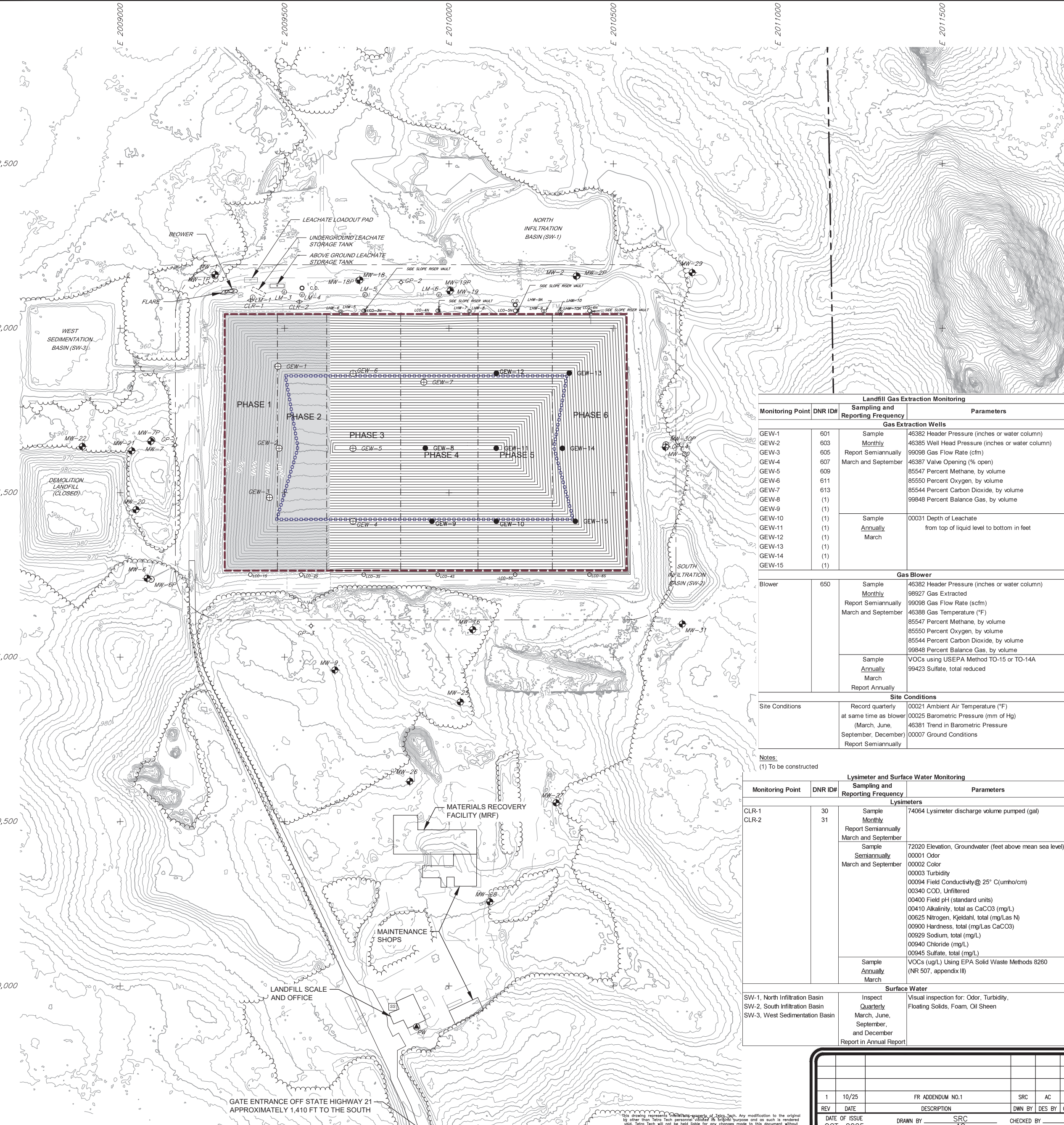
Table K1-1
Proposed Environmental Monitoring Program
Adams County Sanitary Landfill - Vertical Expansion Feasibility Report - Addendum No. 1
WDNR License No. 3150
Town of Strongs Prairie, Adams County, WI

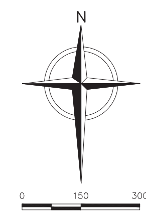
Landfill Gas Monitoring Probes & Settlement Monitoring			
Monitoring Point	**DNR ID#**	**Sampling and Reporting Frequency**	**Parameters**
Gas Monitoring Probes			
GP-1 GP-2 GP-3 GP-4	36 37 38 39	Sample Quarterly March, June, September, and December	85547 Percent Methane, by volume 85550 Percent Oxygen, by volume
Landfill Settlement			
Survey Final Cover at Grid Stations or equivalent 100-ft grid coordinates		Measure Annually June Until 5 years after closure; then every 5 years Report in Annual Report	99422 Elevation, Ground Surface feet above mean sea level

TETRA TECH

Table K1-1
Proposed Environmental Monitoring Program
Adams County Sanitary Landfill - Vertical Expansion Feasibility Report - Addendum No. 1
WDNR License No. 3150
Town of Strongs Prairie, Adams County, WI

Lysimeter and Surface Water Monitoring			
Monitoring Point	**DNR ID#**	**Sampling and Reporting Frequency**	**Parameters**
Lysimeters			
CLR-1 CLR-2	30 31	Sample Monthly Report Semiannually March and September	74064 Lysimeter discharge volume pumped (gal)
		Sample Semiannually March and September	72020 Elevation, Groundwater (feet above mean sea level) 00001 Odor 00002 Color 00003 Turbidity 00094 Field Conductivity@ 25° C(umho/cm) 00340 COD, Unfiltered 00400 Field pH (standard units) 00410 Alkalinity, total as CaCO3 (mg/L) 00625 Nitrogen, Kjeldahl, total (mg/Las N) 00900 Hardness, total (mg/Las CaCO3) 00929 Sodium, total (mg/L) 00940 Chloride (mg/L) 00945 Sulfate, total (mg/L)
		Sample Annually March	VOCs (ug/L) Using EPA Solid Waste Methods 8260 (NR 507, appendix III)
Surface Water			
SW-1, North Infiltration Basin SW-2, South Infiltration Basin SW-3, West Sedimentation Basin		Inspect Quarterly March, June, September, and December Report in Annual Report	Visual inspection for: Odor, Turbidity, Floating Solids, Foam, Oil Sheen





LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- EXISTING LIMITS OF WASTE
- PHASE BOUNDARY
- VERTICAL EXPANSION BOUNDARY
- DESIGN MANAGEMENT ZONE (DMZ)
- CLOSED LANDFILL
- EXISTING BUILDING
- EXISTING WETLAND
- EXISTING WATER BODY
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING UNDERGROUND ELECTRIC LINE
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EXISTING CULVERT
- 800 — EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- FM — EXISTING SANITARY HOLDING TANK
- SS — EXISTING LEACHATE FORCE MAIN
- F — EXISTING FLARE
- B — EXISTING BLOWER(S)
- EXISTING LEACHATE RISER VAULT
- LM-5 — EXISTING LEACHATE MANHOLE
- LCO-5N — EXISTING LEACHATE RISER CLEANOUT
- B-15 — SOIL BORING
- MW-1 — EXISTING WATER TABLE WELL
- MW-1P — EXISTING PIEZOMETER
- PW — EXISTING PRIVATE WELL
- LHW-5 — EXISTING LEACHATE HEADWELL
- CLR-1 — EXISTING LYSIMETER
- GP1 — EXISTING GAS PROBE
- GEW-5 — EXISTING LFG EXTRACTION WELL
- 107 — EXISTING CONTROL MONUMENT
- GEW-10 — PROPOSED LFG EXTRACTION WELL

Landfill Gas Extraction Monitoring

Monitoring Point	DNR ID#	Sampling and Reporting Frequency	Parameters
Gas Extraction Wells			
GEW-1	601	Sample	46382 Header Pressure (inches or water column)
GEW-2	603	Monthly	46385 Well Head Pressure (inches or water column)
GEW-3	605	Report Semiannually	99098 Gas Flow Rate (cfm)
GEW-4	607	March and September	46387 Valve Opening (% open)
GEW-5	609		85547 Percent Methane, by volume
GEW-6	611		85550 Percent Oxygen, by volume
GEW-7	613		85544 Percent Carbon Dioxide, by volume
GEW-8	(1)		99848 Percent Balance Gas, by volume
GEW-9	(1)		
GEW-10	(1)	Sample	00031 Depth of Leachate
GEW-11	(1)	Annually	from top of liquid level to bottom in feet
GEW-12	(1)	March	
GEW-13	(1)		
GEW-14	(1)		
GEW-15	(1)		
Gas Blower			
Blower	650	Sample	46382 Header Pressure (inches or water column)
		Monthly	98927 Gas Extracted
		Report Semiannually	99098 Gas Flow Rate (scfm)
		March and September	46388 Gas Temperature (°F)
			85547 Percent Methane, by volume
			85550 Percent Oxygen, by volume
			85544 Percent Carbon Dioxide, by volume
			99848 Percent Balance Gas, by volume
		Sample	VOCs using USEPA Method TO-15 or TO-14A
		Annually	99423 Sulfate, total reduced
		March	
		Report Annually	
Site Conditions			
Site Conditions		Record quarterly	00021 Ambient Air Temperature (°F)
		at same time as blower	00025 Barometric Pressure (mm of Hg)
		(March, June,	46381 Trend in Barometric Pressure
		September, December)	00007 Ground Conditions
		Report Semiannually	

Notes:
(1) To be constructed

Lysimeter and Surface Water Monitoring

Monitoring Point	DNR ID#	Sampling and Reporting Frequency	Parameters
Lysimeters			
CLR-1	30	Sample	74064 Lysimeter discharge volume pumped (gal)
CLR-2	31	Monthly	
		Report Semiannually	
		March and September	
		Sample	72020 Elevation, Groundwater (feet above mean sea level)
		Semiannually	00001 Odor
		March and September	00002 Color
			00003 Turbidity
			00094 Field Conductivity@ 25° C(umho/cm)
			00340 COD, Unfiltered
			00400 Field pH (standard units)
			00410 Alkalinity, total as CaCO3 (mg/L)
			00625 Nitrogen, Kjeldahl, total (mg/Las N)
			00900 Hardness, total (mg/Las CaCO3)
			00929 Sodium, total (mg/L)
			00940 Chloride (mg/L)
			00945 Sulfate, total (mg/L)
		Sample	VOCs (ug/L) Using EPA Solid Waste Methods 8260
		Annually	(NR 507, appendix III)
		March	
Surface Water			
SW-1, North Infiltration Basin		Inspect	Visual inspection for: Odor, Turbidity,
SW-2, South Infiltration Basin		Quarterly	Floating Solids, Foam, Oil Sheen
SW-3, West Sedimentation Basin		March, June,	
		September,	
		and December	
		Report in Annual Report	

Groundwater Monitoring

Wells	DNR ID#	WUWN	Sampling and Reporting Frequency	Parameters
Non-Subtitle D Wells				
MW-1	1	DM435	Sample	72020 Elevation, Groundwater (feet above mean sea level)
MW-1P	2	DM436	Semiannually	00001 Odor
MW-2	3	DM437	March and September	00002 Color
MW-2P	4	DM438		00003 Turbidity
MW-6	7	DM441		00010 Temperature, of water taken in field °C
MW-6P	8	DM442		00094 Field Conductivity @ 25°C (umho/cm)
MW-7P	10	DM444		00400 Field pH (standard units)
MW-9	12	DM446		00941 Chloride, filtered (mg/L)
MW-18P	17	DM451		00946 Sulfate, filtered (mg/L)
MW-19	18	DM452		22413 Total Hardness, filtered (mg/L)
MW-19P	19	DM453		39036 Alkalinity, filtered (mg/L)
MW-20	40	EI302		
MW-21	41	EI303		
MW-22	42	EI304		
MW-29	49	VP147	Sample	VOCs (ug/L) Using EPA Solid Waste Method 8260
MW-30P	51	VP145	Annually	
MW-31	52	VP146	March	
Subtitle D Wells				
MW-7	9	DM443	Sample	72020 Elevation, Groundwater (feet above mean sea level)
MW-16	13	DM447	Semiannually	00001 Odor
MW-18	16	DM450	March and September	00002 Color
MW-30	50	VP144		00003 Turbidity
				00010 Temperature, of water taken in field 0c
				00094 Field Conductivity @ 25°C (umho/cm)
				00400 Field pH (standard units)
				00941 Chloride, filtered (mg/L)
				00946 Sulfate, filtered (mg/L)
				22413 Total Hardness, filtered (mg/L)
				39036 Alkalinity, filtered (mg/L)
				VOCs (ug/L) Using EPA Solid Waste Method 8260
Groundwater Elevation Only				
MW-25	45	GN076	Sample	72020 Elevation, Groundwater (feet above mean sea level)
MW-26	46	GN077	Semiannually	
MW-27	47	GN078	March and September	
MW-28	48	GN079		

Leachate Characteristic Monitoring

Monitoring Point	DNR ID#	Sampling and Reporting Frequency	Parameters
Leachate Tank	35	Record	00032 Leachate Volume Pumped (1000s of gallons)
Pump Man Hole		Monthly	99723 Leachate Volume Recirculated (1000s of gallons)
		Report Semiannually	
		March and September	
		Sample	00094 Field Conductivity@ 25°C (umho/cm)
		Quarterly	00310 BOD (5 day@20°C (mg/L)
		March, June,	00340 COD, unfiltered (mg/L)
		September,	00400 Field pH, (standard units)
		and December	00410 Alkalinity, total as CaCO3 (mg/L)
			00610 Nitrogen, Ammonia, total (mg/Las N)
			00900 Hardness, total (mg/Las CaCO3)
		Sample	00150 Suspended Solids, total (mg/l)
		Semiannually	00625 Nitrogen, Kjeldahl, total (mg/Las N)
		March and September	00929 Sodium, total (mg/L)
			00940 Chloride, total (mg/L)
			00945 Sulfate, total (mg/L)
			01027 Cadmium, total (ug/1)
			01051 Lead, total (mg/L)
			01055 Manganese, total (mg/L)
			71900 Mercury, total (mg/L)
			74010 Iron, total (mg/L)
			VOCs (ug/L) Using EPA Solid Waste Method 8260
			(NR 507, appendix III)
		Sample	Semi-volatiles, using EPA Method SW-8270
		Annually	(NR 507, appendix IV)
		March	

Leachate Headlevel and Volume Monitoring

Monitoring Point	DNR ID#	Sampling and Reporting Frequency	Parameters
Leachate Headwells			
LHW-5	24	Sample	00031 Depth of Leachate
LHW-6	25	Monthly	from top of liquid level to bottom in feet
LHW-7	26	Report Semiannually	99423 Elevation, Leachate Head
LHW-8	27		feet above mean sea level
LHW-9	28		
LHW-9A	400		
LHW-10	29		
LHW-10A	402		
Leachate Manholes / Extraction Vaults			
LM3		Sample	00032 Leachate Volume Pumped
LM4		Monthly	99723 Leachate Volume Recirculated
LM5		Report Semiannually	
LM6			

Landfill Gas Monitoring Probes & Settlement Monitoring

Monitoring Point	DNR ID#	Sampling and Reporting Frequency	Parameters
Gas Monitoring Probes			
GP-1	36	Sample	85547 Percent Methane, by volume
GP-2	37	Quarterly	85550 Percent Oxygen, by volume
GP-3	38	March, June,	
GP-4	39	September,	
		and December	
Landfill Settlement			
Survey Final Cover at		Measure	99422 Elevation, Ground Surface
Grid Stations or equivalent		Annually	feet above mean sea level
100-ft grid coordinates		June	
		Until 5 years after	
		closure; then every 5	
		years	
		Report in Annual Report	

NOTES:

1. EXISTING CONTOURS ARE FROM A SURVEY ON APRIL 2010 BY AYRES WITH SUPPLEMENTAL SURVEY ON JANUARY 9, 2025 BY TETRA TECH OF THE DMZ AND ACTIVE AREAS.
2. HORIZONTAL COORDINATES ARE NAD83 (2011), WISCONSIN STATE PLANE, SOUTH ZONE.
3. VERTICAL DATUM IS NAVD88.

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
1	10/25	FR ADDENDUM NO.1	SRC	AC	TD	LRS

DATE OF ISSUE OCT. 2025 — DRAWN BY SRC — DESIGNED BY AC — CHECKED BY TD — APPROVED BY LRS

TETRA TECH

ADAMS COUNTY SOLID WASTE DEPARTMENT
ADAMS COUNTY SANITARY LANDFILL
ADAMS COUNTY, WISCONSIN
FEASIBILITY REPORT ADDENDUM NO. 1
VERTICAL EXPANSION
ENVIRONMENTAL MONITORING PLAN

SHEET NO. 25R
PROJECT NO. 4251274