Attachment B5.H

LEACHATE MONITORING SAMPLING & ANALYSIS PLAN

WAYNE DISPOSAL, INC. SITE #2
MID 048 090 633

SAMPLING AND ANALYSIS PLAN FOR THE MONITORING OF LEACHATE AND LEACHATE LEVELS

WAYNE DISPOSAL, INC. SITE #2
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1.0 INTRODUCTION

The purpose of this document is to outline the procedures for monitoring leachate in compliance with current license and permit conditions and applicable regulations. Leachate monitoring includes the collection and analysis of leachate samples and monitoring leachate levels for the purpose of ensuring that leachate is effectively removed from operating and closed hazardous waste landfill cells.

Collection and analysis of leachate samples is conducted in order to characterize the leachate for the purpose of developing or amending appropriate monitoring parameter lists for other monitoring programs such as groundwater and leak detection. The composition of the leachate over time may change during the operation of a landfill cell.

Leachate level monitoring is necessary to ensure that leachate collection systems are functioning properly so as to limit the leachate head on the liner system. CFR 40 264.301(2) states that "The Regional Administrator will specify design and operating conditions in the permit to ensure that the leachate depth over the liner does not exceed 30 cm (1 foot)". Wayne Disposal, Inc. Site #2 monitors the volume of leachate pumped from each active and closed cell at the facility. The volume of leachate pumped from each cell per month is recorded in the operating log. The following SAP describes how WDI maintains compliance with the conditions outlined above.

2.0 DESCRIPTION OF LEACHATE COLLECTION SYSTEMS

Leachate level control is a function of the design and operation of the leachate collection systems (LCS). Each LCS at WDI is designed to transmit leachate to the sump at rates sufficient to permit removal of leachate so that levels do not build up on the primary liner to a depth greater than one foot. The slope of the cell floor, permeability of granular materials, and the size and spacing of collector pipes are all taken into consideration in the design transmissivity of the LCS.

Once the leachate is conveyed to the collection sump, it must be removed at a rate sufficient to prevent leachate from backing up into the collection system to levels higher than one foot above the lowest elevation of the primary liner (the compliance elevation) , which is the liner elevation just outside of the sump. Each cell has a measured compliance elevation that is used to determine if the levels are in compliance. The pumps are set within the sump beneath the level where the leachate conveyance pipes enter the sump (see Figure 1.). These 4" or 6" diameter HDPE pipes are directly on top of the liner in the sump. The pumps are set to run automatically by either a timer system or a level sensor system. On the timer system, the pump runs until the sump is dry and then turns off. It restarts after a programmed time delay to allow enough leachate to accumulate in the sump for the pump to restart. The timed delay is adjusted as the leachate

accumulation rate changes to keep the leachate head in compliance without over-using the pump. A level sensor does the same thing but uses a transducer to monitor the leachate level in the sump to trigger the pump to activate. As long as the pumps keep the leachate levels in the sump below the compliance elevation, then compliance with the one-foot head rule is maintained. Therefore, the key to compliance is maintaining an operating collection system in each cell. Frequent inspection and swift repairs of these systems are necessary to ensure that any mechanical problems are remedied in a timely manner.

The volume of leachate pumped out of each sump is recorded on a totalizing flow meter which is placed in line in the discharge line from the pump. Leachate is conveyed to the wastewater pretreatment plant on site.

3.0 LEACHATE LEVEL AND VOLUME MEASUREMENTS

The keys to maintaining compliance with leachate level and volume record keeping requirements are frequency of inspection and maintenance of each system. To ensure proper performance of the leachate collection system, weekly inspections of the sump areas must be conducted. Figure 2 is a checklist form for recording the results of this weekly inspection. The main components of this inspection are determining leachate levels in the sump, whether the pump/meter is operating correctly and the monthly volume of leachate. An outline of these procedures in the form of a flow chart is included on Figure 3. The procedures for the weekly inspection are as follows:

Step #1. PUMP/METER FUNCTION

a. Take meter reading from flowmeter and record on form. If the meter has moved since the last reading then proceed to Step 2. If not, then proceed to step 1.b.

b. Change pump switch to "hand" position listen for the sound of the pump turning on and check for meter advancement. Then change pump switch back to "auto" position.

c. If the meter moves then proceed to step 2.

d. If meter does not move then:

   i. Determine if it is likely that the pump intake above the leachate level in sump. This can be done by visual inspection (can you see the pump above the leachate), by sound (the pump makes a distinctive noise when trying to draw in air), or by measuring the leachate head elevation. If the leachate level is below the sump intake then the inspection is completed and the results should be noted on the form.

   ii. If the pump intake is below the leachate level then further investigation is necessary. Record the apparent malfunction on the inspection form and report results to the Site Manager or Environmental Manager and proceed with steps 2 and 3.

Step #2. LEVEL MEASUREMENT

a. If not already done, measure the leachate level in sump from the top of the sump with an electronic water level sensor device.

b. Compare the depth to leachate with the minimum allowable depth listed on Figure 2. Determine whether the level is in compliance.

c. Record the result on the weekly inspection form.

d. Notify the Site or Environmental Manager immediately if the levels are found to be above the allowable level.

Step #3. REPAIRS

a. Unless a specific problem is evident from the inspection (e.g., the pump doesn't turn on), the following steps should be conducted:

   i. Remove the meter, switch back to "hand" position, and check for flow.

   ii. If there is flow, then field clean the meter, replace, and check for meter advancement. If the meter advances, then switch back to “auto" position. If not, take the meter in for repair or replacement.

   iii. If there is no flow, then disconnect power to pump and remove pump and pump switch from the sump. Inspect the electrical cord and the pump switch. Replace the pump and test functions. If the pump or the switch still doesn't work, remove the pump, have it power washed and get it repaired/replaced.

   iv. If the pump and meter are functional but no flow is observed then arrangements must be made to clean out the pipes.

   v. All actions taken, and any repairs/replacements conducted must be reported to the Site Environmental Manager.

Every effort should be made to keep or restore leachate level compliance while maintenance or repairs are conducted. Spare parts and spare pumps should be kept in stock on site to minimize down time. In the event that leachate levels exceed compliance elevations due to equipment failure, the leachate level should be measured to determine when the levels return to compliance after repairs are completed.

The weekly inspection checklist forms are to be kept on file at the site. Any conditions noted that would require maintenance or repair should be noted on the weekly inspection form (Figure 2) and reported to the Landfill Manager. Any repairs required on the sump or pump that is necessary to keep leachate levels in compliance must be given the highest priority.

On a monthly basis, the total volume recorded on the flow meters from each sump is summarized from the Weekly Inspection Checklist for Leachate Collection Systems onto an electronic spread sheet.

In addition to these inspections, periodic maintenance of the LCS is required. In particular, leachate clean-out pipes, where present, must be jetted once every two years unless experience indicates that a more or less frequent jetting program is necessary or adequate.

4.0 LEACHATE SAMPLING AND ANALYSIS

Leachate samples are to be collected annually from each of the 18 currently operational collection sumps within Master Cells V, VI and VII as shown on Figure 4. When the additional phases of cells VI-G or VI-F are constructed and put into operation, the additional sumps must be sampled in accordance with this plan as well. The samples are collected during the third quarter of each year. Samples are collected by either 1) lowering a clean stainless steel sampling bucket vessel down into the sump and retrieving a sample, or 2) pumping leachate into a from a valve at the top of the riser pipe and collecting the sample using the stainless-steel vessel or directly filling sample bottles. The stainless-steel vessel and bucket must be decontaminated between each sample location with cleaning solution and a distilled water rinse.

The sample is then carefully decanted from the stainless-steel vessel into appropriate sampling containers. Samples for VOC's are collected first while ensuring that no headspace is present within the sampling vials. Additional samples are then collected in order of decreasing volatility, semi-volatiles then total organic carbon then phenolics and finally metals and indicator parameters. Appropriate sample handling and container requirements are summarized on Figure 5. Metals are analyzed as "total metals" quantity; no filtration is required.

Protective gloves must be worn during sample collection and care should be taken to prevent spills on skin or clothing. Each sample container must be carefully labeled with the sampling location, time and date, identity of preservatives contained within and the sampler's initials. After collection, the samples shall be stored in a clean cooler containing ice or ice packs. The coolers containing samples must be stored in a secure location, on-site, until they are transported to the laboratory.

Field Quality Assurance/Quality Control samples must include:

- One trip blank for every ten samples collected. The trip blank must be stored in the cooler utilized for storing and shipping samples. The trip blank must be analyzed for VOCs.
- One field blank for each ten samples collected. The field blank samples are to be collected by filling an identical set of sample bottles at a given location with clean deionized water. The field blank samples must be analyzed VOCs.
- One blind duplicate for each sampling event. The duplicate must be collected by filling an identical set of sample bottles at a given location and submitting them for an identical analysis.
- One equipment blank per sampling day for each piece of non-dedicated sampling equipment utilized in the sampling process (i.e. the stainless steel bucket). The equipment blank must be collected by pouring clean deionized water into the

decontaminated piece of equipment and collecting the rinsate in the appropriate jar for analysis. The equipment blank must be analyzed for VOCs.

A sample collection log (Figure 6) must be filled out at each sampling location. The log must be filled out to include the location, date, time, identity of sampler and a description of any unusual conditions encountered must be noted. A chain of custody form must be filled out for each sampling event. This form must be filled out fully for each sample submitted for analysis and each person responsible for the handling of these samples must sign and date the form. When the samples are delivered to the laboratory and the lab has signed for their receipt, a copy of this form must be retained on site.

Except as described below, each sample must be analyzed for the parameters listed on Figure 7, which also contains the analytical methods and targeted method detection limits. The detection limits listed on Table 7 (and Table 8) must be consistent with EGLE Policy and Procedures document OWMRP-111/115-8 or approved by EGLE and may need to be revised as analytical methods change. Exceptions to the parameter lists are as follows: 1) The PCB's listed on Figure 5 are only analyzed in samples from Master Cell VI, and 2) In order to fully characterize the leachate, each of the leachate sumps in MC V, MC VI and MC VII must be analyzed for a modified list of 40 CFR 264 Appendix IX parameters on a rotating basis. The list is considered "modified" as dioxins and furans are analyzed at screening levels as opposed to a breakdown of the specific cogeners. Analysis of the cogeners requires the use of a specialty laboratory and the ultra-low detection limits have no practical use in this leachate characterization. Each year, two of the leachate samples must be analyzed for the modified list of Appendix IX parameters. The two cells sampled will change each year until all are sampled and then the process will be repeated throughout the operation of the facility. New cells will not be analyzed for the Appendix IX constituents until they have been producing leachate for at least one year. A list of Appendix IX parameters along with corresponding analytical methods and detection limits are presented on Figure 8. It is recognized that in most cases the detection limits shown on Figures 7 and 8 will not be attained due to sample dilutions and matrix effects.

5.0 REPORTING REQUIREMENTS

Within 60 days after each sampling event is completed, the analytical results must be submitted to EGLE along with a summary of QA/QC data and the sampling documentation forms. In addition to the reporting requirements described above, an annual leachate report must be filed with the EGLE by March 1 of the following year. In this report, annual leachate production rates, leachate head levels and leachate analytical results are to be evaluated and summarized. This summary must also include a description of any non-compliances and associated corrective actions and of any major maintenance or repair activities. The leachate analytical data must be evaluated with respect to the need to refine secondary collection and groundwater monitoring programs by summarizing, in table form, the rate of detection and concentration of leachate monitoring parameters. The results of this summary will be compared to groundwater and leak detection parameter lists. Any parameter that is found in more than 50% of the leachate samples and/or in concentrations greater than 1 mg/L will be considered for inclusion in the leak detection and/or groundwater monitoring program(s). WDI will recommend whether to include such a parameter based on its chemical properties and any other relevant information.

Leachate volume and head level information must be evaluated in graphical and/or tabular form, respectively. Monthly and annual volumes for each cell must be plotted to determine if there are increases in production rates that should be evaluated. The head levels must be presented to show the dates and results of head measurements and identify any periods where heads exceed the 1 foot limit as well as the duration of the exceedance and the cause and correction of the exceedance.

SCHEMATIC OF LEACHATE COLLECTION SUMP ARRANGEMENT
WAYNE DISPOSAL SITE #2 HAZARDOUS WASTE LANDFILL

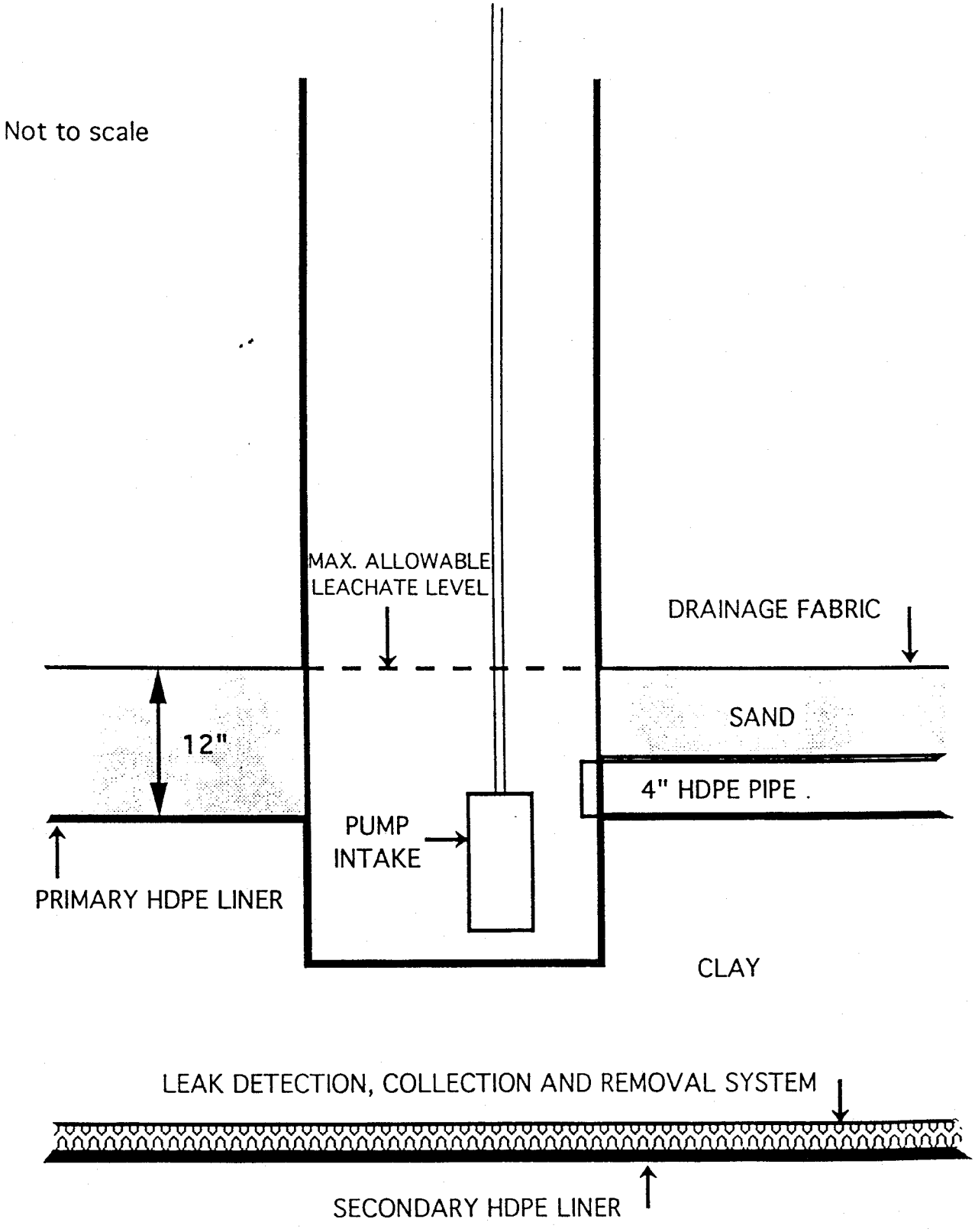

Figure 1

FIGURE 2

WEEKLY INSPECTION CHECKLIST FOR LEACHATE COLLECTION SYSTEM
WAYNE DISPOSAL, INC. SITE #2 HAZARDOUS WASTE LANDFILL MASTER CELLS

Inspector: _____ **Date:** _____

Cell	Meter Reading	Meter Advance?		Compliance Depth to Leachate (ft)	Actual Depth to Leachate (ft)	Level in Complaince?		Pump Functioning?		Meter Functioning?	
		Y	N			Y	N	Y	N	Y	N
VI-AS				660.0							
VI-AN				660.1							
VI-B				658.8							
VI-C				654.3							
VI-D				653.7							
VI-ESW				716.5							
VI-ESE				716.5							
VI-ENW				719.0							
VI-ENE				704.5							
VI-G				670.0							

Note: Report items needing immediate attention to the Site Manager

Leachate and Contact Water Collection Systems	Yes	No
Leachate collection sump riser covers present and properly seated (if applicable)?		
Condition of leachate collection sump risers acceptable?		
Leachate depths in each collection sump in compliance?		
Pumps functioning properly?		
Condition of flow meters acceptable?		
Secondary containment monitoring sumps for leachate and contact water force mains free of liquid?		

Comments/Action Taken _____

_____

_____

_____

_____

Leachate and Contact Water Collection Systems

Top cover is required only if riser rim is low enough to be a fall hazard. If present, verify that cover is properly seated.

Inspect aboveground exterior and visible interior portions of risers for damage, stress (buckling) and deterioration.

Measure depth to leachate in each collection sump. If leachate head is non-compliant, immediately notify the Landfill Manager (or designee).

Inspect flow meters for damage or malfunction. Report meter readings to Landfill Manager (or designee).

Check for liquid in the secondary containment monitoring sumps for both the leachate and contact water force mains. If liquid is present, determine whether it is condensate, groundwater or leachate/contact water. If condensate, no action required. If groundwater, there is a leak in the secondary pipe. If leachate or contact water, there is a leak in the primary pipe. Any leaks must be reported to the Landfill Manager immediately and repaired.

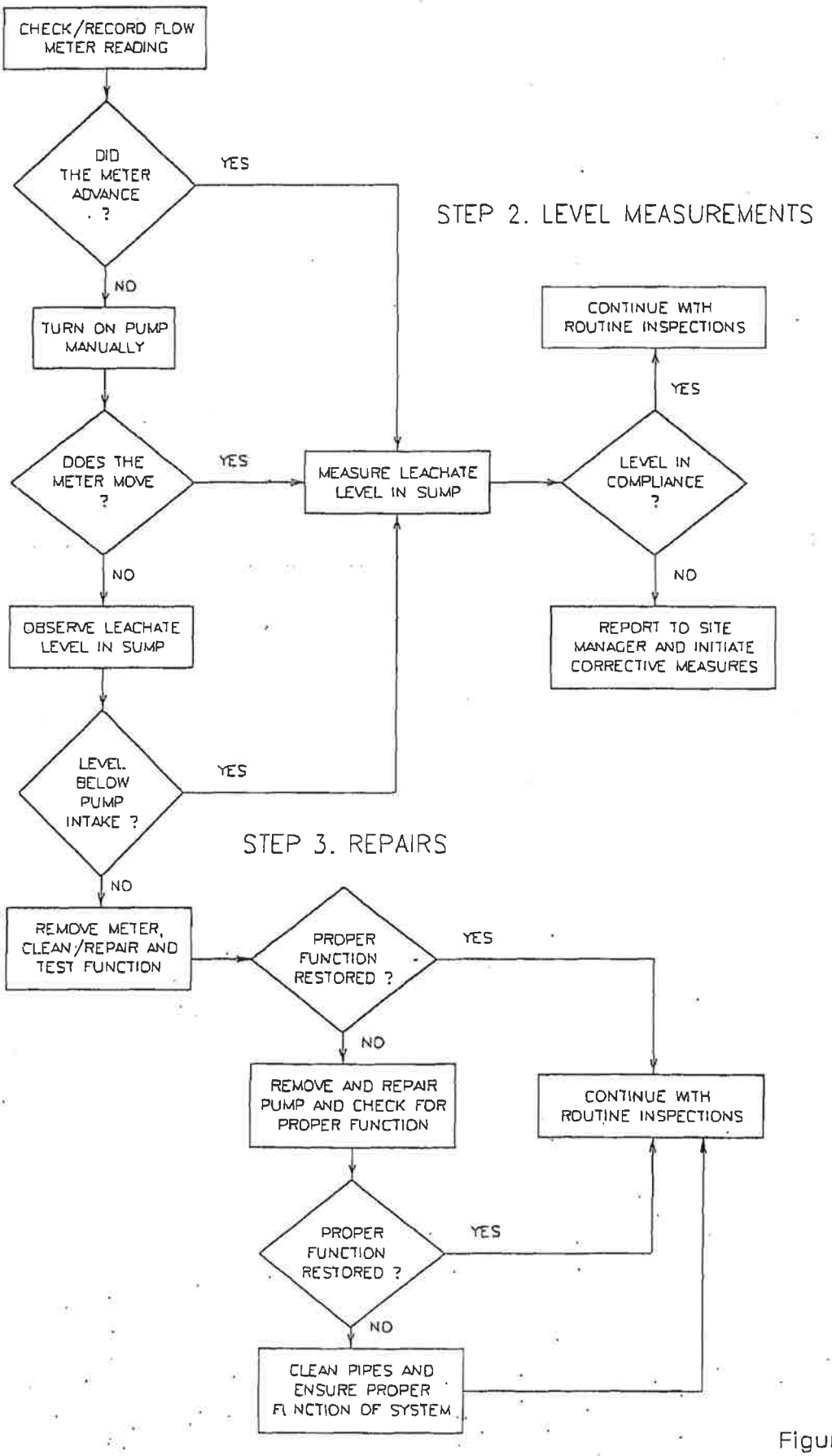
STEP 1. PUMP/METER FUNCTION
CHECK/RECORD FLOW METER READING
DID THE METER ADVANCE . ?
YES
NO
TURN ON PUMP MANUALLY
DOES THE METER MOVE ?
YES
NO
OBSERVE LEACHATE LEVEL IN SUMP
LEVEL BELOW PUMP INTAKE ?
YES
NO
STEP 2. LEVEL MEASUREMENTS
MEASURE LEACHATE LEVEL IN SUMP
LEVEL IN COMPLIANCE ?
YES
CONTINUE WITH ROUTINE INSPECTIONS
NO
REPORT TO SITE MANAGER AND INITIATE CORRECTIVE MEASURES
STEP 3. REPAIRS
REMOVE METER, CLEAN/REPAIR AND TEST FUNCTION
PROPER FUNCTION RESTORED ?
YES
NO
REMOVE AND REPAIR PUMP AND CHECK FOR PROPER FUNCTION
PROPER FUNCTION RESTORED ?
YES
NO
CLEAN PIPES AND ENSURE PROPER FUNCTION OF SYSTEM
CONTINUE WITH ROUTINE INSPECTIONS

Figure 3.

LEGEND:

- EXISTING LEACHATE COLLECTION SUMP
- PROPOSED LEACHATE COLLECTION SUMP
- EXISTING LEACHATE DETECTION SUMP RISER
- PROPOSED LEACHATE DETECTION SUMP RISER
- NEW CELL BOUNDARY LOCATION
- OLD CELL BOUNDARY LOCATION
- PROPERTY LINE LOCATION
- EXISTING CONTOUR (2 FT INTERVAL)
- EXISTING STRUCTURE / BUILDING
- PAVED / GRAVEL — EXISTING ROAD
- GRID COORDINATES

NOTES:

1. AERIAL TOPGRAPHY BY DRONEVIEW TECHNOLOGIES DATE OF AERIAL: DECEMBER 10, 2020 UPDATED WITH FLYOVER 9-2-21.

SCALE 0' 100' 200' 400'

DRAWING SIZE: 24" X 36"

DATE:	2-9-21
DESIGNED BY:	XZ
DRAWN BY:	BDA
CHECKED BY:	HS
APPROVED BY:	XZ

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REV	DATE	REVISION DESCRIPTION	DRN	APP

REVISIONS

WAYNE DISPOSAL SITE NO. 2
WAYNE, MICHIGAN

LEACHATE COLLECTION AND LEAK DETECTION LOCATIONS

PROJECT NUMBER 1218070066

SCALE 1" = 200'

DRAWING NO

Figure 5. Handling Requirements of Monitoring Parameters

Parameter	Perservation	Holding Time	Bottle Type	Minimum Volume
Total Phenolics	1,2	28 Days	Amber Glass	500 ml
Sulfate	2	28 Days	Plastic	50 ml*
Alkalinity	2	14 Days	Plastic	100 ml*
Chloride	2	28 Days	Plastic	50 ml*
Total Phosphorus	1,2	28 Days	Plastic	200 ml***
Total Cyanide	4	14 Days	Plastic	500 ml
Nitrate/Nitrite	1,2	48 Hours	Plastic	500 ml
Kjeldahl Nitrogen	1,2	28 Days	Plastic	200 ml***
Aluminum	3,5	6 Mos	Plastic	200 ml**
Antimony	3,5	6 Mos	Plastic	200 ml**
Arsenic	3,5	6 Mos	Plastic	200 ml**
Barium	3,5	6 Mos	Plastic	200 ml**
Beryllium	3,5	6 Mos	Plastic	200 ml**
Cadmium	3,5	6 Mos	Plastic	200 ml**
Calcium	3,5	6 Mos	Plastic	200 ml**
Chromium	3,5	6 Mos	Plastic	200 ml**
Chromium, Hexavalent	2,5	24 Hrs	Plastic	100 ml
Cobalt	3,5	6 Mos	Plastic	200 ml**
Copper	3,5	6 Mos	Plastic	200 ml**
Iron	3,5	6 Mos	Plastic	200 ml**
Potassium	3,5	6 Mos	Plastic	200 ml**
Lead	3,5	6 Mos	Plastic	200 ml**
Magnesium	3,5	6 Mos	Plastic	200 ml**
Manganese	3,5	6 Mos	Plastic	200 ml**
Mercury	3,5	6 Mos	Plastic	200 ml**
Molybdenum	3,5	6 Mos	Plastic	200 ml**
Nickel	3,5	6 Mos	Plastic	200 ml**
Selenium	3,5	6 Mos	Plastic	200 ml**
Silver	3,5	6 Mos	Plastic	200 ml**
Sodium	3,5	6 Mos	Plastic	200 ml**
Thallium	3,5	6 Mos	Plastic	200 ml**
Tin	3,5	6 Mos	Plastic	200 ml**
Vanadium	3,5	6 Mos	Plastic	200 ml**
Zinc	3,5	6 Mos	Plastic	200 ml**
pH		Immediate	Plastic	25 ml
Bicarbonate	2	14 Days	Plastic	100 ml*
Carbonate	2	14 Days	Plastic	100 ml*
Total Organic Carbon	1,7	28 Days	Glass	100 ml
Chemical Oxygen Demand	1,2	28 Days	Glass	250 ml
Specific Conductivity	2	28 Days	Plastic	100 ml
Semi-Volatile Organics	2	14 Days	Glass/Teflon	1000 ml
Volatile Organics	2,6	14 Days	Glass/Teflon	2x40 ml
PCBs	2	7 Days-Extraction	Glass	2 L
	2	40 Days-Analysis	Glass	40 ml

1) pH<2 with concentrated Sulfuric Acid
2) Store at 4 degrees Centigrade
3) pH<2 with nitric acid
4) pH>12 with sodium hydroxide
5) Filtered using 0.45 micron membrane filters on the daily of sample collection
6) 4 drops HCL, no headspace
7) pH<2 with hydrochloric acid

* Note: One liter for all these parameters stored similarily
** Note: One liter for all these parameters stored similarily
*** Note: One liter for all these parmeters stored similarily

Figure 6. Sample Collection Log for Leachate - WDI Site #2

Sample ID:	**Sample Date:**	**Sample Time:**
Sample Location:	**Sampling Method:**	**Sampler:**
Observations/Comments*:		

Sample ID:	**Sample Date:**	**Sample Time:**
Sample Location:	**Sampling Method:**	**Sampler:**
Observations/Comments*:		

Sample ID:	**Sample Date:**	**Sample Time:**
Sample Location:	**Sampling Method:**	**Sampler:**
Observations/Comments*:		

Sample ID:	**Sample Date:**	**Sample Time:**
Sample Location:	**Sampling Method:**	**Sampler:**
Observations/Comments*:		

Sample ID:	**Sample Date:**	**Sample Time:**
Sample Location:	**Sampling Method:**	**Sampler:**
Observations/Comments*:		

* Note anything unusual in the sample or conditions of or near the riser pipe

FIGURE 7 ORGANIC COMPOUNDS FOR LEACHATE MONITORING

VOLATILE ORGANIC PARAMETERS (8260)	MDL (mg/L)	SEMI-VOLATILE ORGANIC PARMETERS (8270)	MDL		MDL
Acetone	0.020	Acenapthene	0.001	Hexachlorobenzene	0.001
Bromodichloromethane	0.001	Acenapthylene	0.001	Hexachlorobutadiene	0.001
Bromoform	0.001	Anthracene	0.001	Hexachlorocyclopentadiene	0.010
Bromomethane	0.005	Benzidene	0.080	Hexachloroethane	0.001
Carbon Tetrachloride	0.001	Benzo(a)anthracene	0.001	Indeno (1,2,3-cd) pyrene	0.002
Chlorobenzene	0.001	Benzo(b)fluoranthene	0.001	Isophorone	0.001
Chloroethane	0.005	Benzo(k)fluoranthene	0.001	2-Methylnapthalene	0.005
2-Chloroethylvinyl Ether	0.010	Benzo(ghi)perylene	0.001	Napthalene	0.001
Chloroform	0.005	Benzoic Acid	0.050	2-Nitroaniline	0.020
Chloromethane	0.005	Benzo(a)pyrene	0.001	3-Nitoraniline	0.020
Dibromodifluoromethane	0.001	Benzyl alcohol	0.050	4-Nitroaniline	0.020
1,2 Dichlorobenzene	0.001	Bis (2-chloroethoxy) methane	0.002	Nitrobenzene	0.002
1,3 Dichlorobenzene	0.001	Bis (2-chloroethyl) ether	0.001	N-Nitrosodiphenylamine	0.002
1,4 Dichlorobenzene	0.001	Bis (2)chloroisopropyl) ether	0.001	N-Nitroso-di-n-propylamine	0.002
Dichlorodifluoromethane	0.001	Bis (2-ethylhexyl) phthalate	0.005	Phenanathrene	0.001
1,1-Dichloroethane	0.001	4-Bromo phenyl ether	0.002	Pyrene	0.001
1,2-Dichloroethane	0.001	Butyl benzyl phthalate	0.005	1,2,4-Trichlorobenzene	0.002
1,1-Dichloroethene	0.001	4-Chloroaniline	0.010	4-Chloro-3-methylphenol	0.005
1,2-Dichloroethene	0.001	2-chloronapthene	0.002	2-Chlorophenol	0.010
1,2 Dichloropropane	0.001	4-Chlorophenyl phenyl ether	0.001	2,4-Dichlorophenol	0.010
1,3 Dichloropropene	0.001	Chrysene	0.001	2,4-Dimethylphenol	0.005
1,1,2,2 Tetrachloroethane	0.001	Dibenz (a,h) anthracene	0.002	4,6-Dinitro-2-methylphenol	0.050
Tetrachloroethane	0.001	Dibenzofuran	0.004	2,4-Dinitrophenol	0.025
Tetrachloroethene	0.001	Di-n-butyl phthalate	0.005	2-Methylphenol	0.010
1,1,2-Trichloroethane	0.001	1,2-Dichlorobenzene	0.001	3-Methylphenol	0.010
1,1,1-Trichloroethane	0.001	1,3-Dichlorobenzene	0.001	4-Methylphenol	0.010
Trichloroethene	0.001	1,4-Dichlorobenzene	0.001	2-Nitrophenol	0.005
Trichlorofluoromethane	0.001	3,3'-Dichlorobenzene	0.020	4-Nitrophenol	0.025
Vinyl Chloride	0.001	Diethyl pthalate	0.005	Pentachlorophenol	0.020
Methylene Chloride	0.005	Dimethyl pthalate	0.005	Phenol	0.005
Methyl Ethyl Ketone	0.005	2,4-Dinitrotoluene	0.005	2,4,5-Trichlorophenol	0.005
Benzene	0.001	2,6-Dinitrotoluene	0.005	2,4,6-Trichlorophenol	0.004
Toluene	0.001	Di-n-octyl phthalate	0.005		
Ethylbenzene	0.001	Fluoranthene	0.001		
Total Xylenes	0.003	Fluorene	0.001		
4-Methyl-2-Pentanone	0.005				
Isobutyl Alcohol	1.000				
1,4-Dioxane	0.001				
PCB's (Method 8082)					
PCB-1016	0.0001	PCB-1232	0.0001	PCB-1248	0.0001
PCB-1221	0.0001	PCB-1242	0.0001	PCB-1254	0.0001
PCB-1260	0.0001				

FIGURE 7. METHODS AND DETECTION LIMITS

PARAMETER	MDL (mg/L)	METHOD
TOTAL PHENOLICS	0.01	9066
SULFATE	2	ASTM D516-90
TOTAL ALKALINITY	20	2320B
CHLORIDE	1.0	4500-Cl E
KJELDAHL NITROGEN	0.1	351.2
NITRATE/NITRITE	0.1	4500-NO3 F
TOTAL PHOSPHORUS	0.01	4500-P E
TOTAL CYANIDE	0.005	4500-CN G
ALUMINUM	0.05	6010/6020
ANTIMONY	0.001	6020
ARSENIC	0.001	6020
BARIUM	0.005	6010/6020
BERYLLIUM	0.001	6010/6020
CADMIUM	0.0002	6020
CALCIUM	1	6010
CHROMIUM	0.001	6010/6020
HEX. CHROMIUM	0.005	7196
COBALT	0.015	6010/6020
COPPER	0.001	6010/6020
IRON	0.02	6010
LEAD	0.001	6020
MAGNESIUM	1	6010
MANGANESE	0.005	6010/6020
MERCURY	0.0002	7470
MOLYBDENUM	0.025	6010/6020
NICKEL	0.002	6010/6020
POTASSIUM	0.1	6010
SELENIUM	0.001	7741/6020
SILVER	0.0002	6020/7760
SODIUM	1	6010
THALLIUM	0.002	6020/7841
TIN	0.5	6020
VANADIUM	0.002	6010/6020
ZINC	0.1	6010/6020
pH	N/A	4500-H B
BICARBONATE	10.0	2320B
CARBONATE	10.0	2320B
TOTAL ORGANIC CARBON	0.5	5310C
CHEMICAL OXYGEN DEMAND	10.0	5220D
SPEC. CONDUCTANCE	5.0	2510B
SEMI-VOLATILE ORGANICS*	**	8270
VOLATILE ORGANICS*	**	8260
PCB's	**	8082

* see attached lists of compounds

** detection limits are compound dependent

FIGURE 8. METHODS AND DETECTION LIMITS FOR APPENDIX IX PARAMETERS

Constituent	Method	Detection Limit	Unit
Cyanide, Total	9012	0.005	mg/L
Sulfide	9030	0.020	mg/L
Antimony	6010/6020	0.001	mg/L
Arsenic	7061	0.001	mg/L
Barium	6010	0.005	mg/L
Beryllium	6010	0.001	mg/L
Cadmium	6010	0.0002	mg/L
Chromium	6010	0.001	mg/L
Cobalt	6010	0.015	mg/L
Copper	6010	0.001	mg/L
Lead	6010	0.001	mg/L
Mercury	7470	0.0002	mg/L
Nickel	6010/6020	0.002	mg/L
Selenium	7741	0.001	mg/L
Silver	6010	0.0002	mg/L
Thallium	6010	0.002	mg/L
Tin	6010	0.200	mg/L
Vanadium	6010	0.002	mg/L
Zinc	6010	0.010	mg/L
Aldrin	8081	0.01	ug/L
alpha-BHC	8081	0.02	ug/L
beta-BHC	8081	0.02	ug/L
delta-BHC	8081	0.02	ug/L
gamma-BHC (Lindane)	8081	0.02	ug/L
Chlordane	8081	0.01	ug/L
4,4'-DDD	8081	0.02	ug/L
4,4'-DDE	8081	0.02	ug/L
4,4'-DDT	8081	0.02	ug/L
Dieldrin	8081	0.02	ug/L
alpha-Endosulfan	8081	0.02	ug/L
beta-Endosulfan	8081	0.03	ug/L
Endosulfan sulfate	8081	0.05	ug/L
Endrin	8081	0.02	ug/L
Endrin aldehyde	8081	0.02	ug/L
Heptachlor	8081	0.01	ug/L
Heptachler epoxide	8081	0.01	ug/L
Isodrin	8081	0.05	ug/L
Kepone	8081	0.10	ug/L
Methoxychlor	8081	0.05	ug/L
Toxaphene	8081	0.1	ug/L
PCB-1016	8082	0.10	ug/L
PCB-1221	8082	0.10	ug/L
PCB-1232	8082	0.10	ug/L
PCB-1242	8082	0.10	ug/L
PCB-1248	8082	0.10	ug/L
PCB-1254	8082	0.10	ug/L
PCB-1260	8082	0.10	ug/L
Disulfoton	8270	2.00	ug/L
Methyl parathion	8270	0.50	ug/L
Thionazin*	8270	10.0	ug/L
Parathion	8270	0.50	ug/L
Phorate	8140	2.00	ug/L
2,4-dichlorophenoxy-acetic acid	8150	0.50	ug/L

FIGURE 8. METHODS AND DETECTION LIMITS FOR APPENDIX IX PARAMETERS

Constituent	Method	Detection Limit	Unit
2,4,5-TP (Silvex)	8150	0.50	ug/L
2,4,5-T	8150	0.50	ug/L
Acetone	8260	0.020	mg/L
Benzene	8260	0.001	mg/L
Bromodichloromethane	8260	0.001	mg/L
Bromoform	8260	0.001	mg/L
Bromomethane	8260	0.005	mg/L
2-Butanone	8260	0.005	mg/L
Carbon disulfide	8260	0.001	mg/L
Carbon Tetrachloride	8260	0.001	mg/L
Chlorobenzene	8260	0.001	mg/L
Chloroethane	8260	0.005	mg/L
2-Chloroethylvinyl ether	8260	0.010	mg/L
Chloromethane	8260	0.005	mg/L
Dibromochloromethane	8260	0.001	mg/L
1,2-Dichlorobenzene	8260	0.001	mg/L
1,3-Dichlorobenzene	8260	0.001	mg/L
1,4-Dichlorobenzene	8260	0.001	mg/L
1,1-Dichloroethane	8260	0.001	mg/L
1,2-Dichloroethane	8260	0.001	mg/L
1,1-Dichloroethene	8260	0.001	mg/L
1,2-Dichloroethene (total)	8260	0.001	mg/L
1,2-Dichloropropane	8260	0.001	mg/L
cis-1,3-Dichloropropene	8260	0.001	mg/L
trans-1,3-Dichloropropene	8260	0.001	mg/L
Ethylbenzene	8260	0.001	mg/L
2-Hexanone	8260	0.005	mg/L
Methylene Chloride	8260	0.005	mg/L
4-Methyl-2-pentanone	8260	0.005	mg/L
Styrene	8260	0.001	mg/L
1,1,2,2-Tetrachloroethane	8260	0.001	mg/L
Toluene	8260	0.001	mg/L
1,1,1-Trichloroethane	8260	0.001	mg/L
1,1,2-Trichloroethane	8260	0.001	mg/L
Trichloroethene	8260	0.001	mg/L
Vinyl acetate	8260	0.050	mg/L
Vinyl chloride	8260	0.001	mg/L
Xylenes (total)	8260	0.003	mg/L
Acetonitrile	8260	0.050	mg/L
Acrolein	8260	0.100	mg/L
Acrylonitrile	8260	0.050	mg/L
2-Chloro-1,3-butadiene (Chloroprene)	8260	0.050	mg/L
3-Chloropropene(Allyl Chloride)	8260	0.010	mg/L
1,2-Dibromo-3-chloropropane	8260	0.005	mg/L
1,2-Dibromomethane	8260	0.001	mg/L
trans-1,4-Dichloro-2-butene	8260	0.005	mg/L
Dichlorodifluoromethane	8260	0.005	mg/L
1,4-dioxane	8260	0.001	mg/L
Ethyl methacrylate	8260	0.300	mg/L
Iodomethane	8260	0.050	mg/L
Isobutyl alcohol	8260	1.0	mg/L
Methacrylonitrile	8260	0.010	mg/L
Methyl methacrylate	8260	0.010	mg/L

FIGURE 8. METHODS AND DETECTION LIMITS FOR APPENDIX IX PARAMETERS

Constituent	Method	Detection Limit	Unit
Propionitrile	8260	0.100	mg/L
1,1,1,2-Tetrachloroethane	8260	0.001	mg/L
Trichlorofluoromethane	8260	0.001	mg/L
1,2,3-Trichloropropane	8260	0.001	mg/L
Acetopheneone	8270	0.010	mg/L
2-Acetylaminofluorene	8270	0.010	mg/L
4-Aminobiphenyl	8270	0.010	mg/L
Aniline	8270	0.040	mg/L
Aramite	8270	0.010	mg/L
Chlorobenzilate	8270	0.010	mg/L
Diallate	8270	0.010	mg/L
Dimethoate	8270	0.010	mg/L
p-(Dimethylamino)azobenzene	8270	0.010	mg/L
7,12-Dimethylbenz[a]anthracene	8270	0.010	mg/L
3,3'-Dimethylbenzidine	8270	0.040	mg/L
alpha, alpha-Dimethyphenethlamine	8270	0.100	mg/L
1,3-Dinitrobenzene	8270	0.010	mg/L
Diphenylamine*	8270	0.010	mg/L
Ethyl methanesulfonate	8270	0.010	mg/L
Farmphur	8270	0.010	mg/L
Hexachlorodibenofurans	8270	0.010	mg/L
Hexachlorodibenzo-p-dioxins	8270	0.010	mg/L
Hexachloropropene	8270	P/A	mg/L
Isosafrole	8270	0.010	mg/L
Methapyrilene	8270	0.010	mg/L
3-Methylcholanthrene	8270	0.080	mg/L
Methyl methanesulfonate	8270	0.040	mg/L
1,4-Naphthoquinone	8270	0.010	mg/L
1-Naphthylamine	8270	0.010	mg/L
2-Naphthylamine	8270	0.010	mg/L
5-Nitro-o-toluidine	8270	0.010	mg/L
4-Nitroquinoline-1-oxide	8270	0.010	mg/L
N-Nitroso-di-n-butylamine	8270	0.010	mg/L
N-Nitrosodiethylamine	8270	0.010	mg/L
N-Nitrosodimethylamine	8270	0.005	mg/L
N-Nitrosomethylethlamine	8270	0.005	mg/L
N-Nitrosomorpholine	8270	0.010	mg/L
N-Nitrosopyrrolidine	8270	0.010	mg/L
N-Nitrosopiperdine	8270	0.010	mg/L
Pentachlorobenzene	8270	0.010	mg/L
Pentachlorodibenzofurans	8270	0.010	mg/L
Pentachlorodibenzo-p-dioxins	8270	0.010	mg/L
Pentachloroethane	8270	0.010	mg/L
Pentachloronitrobenzene	8270	0.010	mg/L
Phenacetin	8270	0.010	mg/L
p-Phenylene diamine	8270	0.010	mg/L
2-Picoline	8270	0.080	mg/L
Pronamide	8270	0.080	mg/L
Pyridine	8270	0.020	mg/L
Safrole	8270	0.010	mg/L
Sulfotepp**	8270	0.010	mg/L
1,2,4,5-Tetrachlorobezene	8270	0.010	mg/L
Tetrachlorodibenzofurans	8270	0.010	mg/L

FIGURE 8. METHODS AND DETECTION LIMITS FOR APPENDIX IX PARAMETERS

Constituent	Method	Detection Limit	Unit
Tetrachloroibenzo-p-dioxins	8270	0.010	mg/L
o-Toluidine	8270	0.010	mg/L
o,o,o,-Triethylphosphorothioate	8270	0.010	mg/L
1,3,5-Trinitrobenzene	8270	0.010	mg/L
Tris (2,3-dibromopropyl) phosphate	8270	0.200	mg/L
2,6-Dichlorophenol	8270	0.010	mg/L
Dinoseb	8270	0.020	mg/L
Hexachlorophene	8270	0.080	mg/L
3-Methylphenol	8270	0.010	mg/L
2, 3,4,6-Tetrachlorophenol	8270	0.010	mg/L
Acenaphthene	8270	0.001	mg/L
Acenaphthylene	8270	0.001	mg/L
Anthracene	8270	0.001	mg/L
Benzidine	8270	0.080	mg/L
Benzo (a) anthracene	8270	0.001	mg/L
Benzo (b) fluoranthene	8270	0.001	mg/L
Benzo (k) fluoranthene	8270	0.001	mg/L
Benzo (ghi) perylene	8270	0.001	mg/L
Benzoic acid	8270	0.050	mg/L
Benzo (a) pyrene	8270	0.001	mg/L
Benzyl alcohol	8270	0.050	mg/L
Bis (2-chloroethoxy) methane	8270	0.002	mg/L
Bis (2-chloroethyl) ether	8270	0.001	mg/L
Bis (2-chloroisopropyl) ether	8270	0.001	mg/L
Bis (2-ethylhexyl) phthalate	8270	0.005	mg/L
4-Bromophenyl phenyl ether	8270	0.002	mg/L
Butyl benzyl phthalate	8270	0.005	mg/L
4-Chloroaniline	8270	0.010	mg/L
2-Chloronaphthalene	8270	0.002	mg/L
4-Chlorophenyl phenyl ether	8270	0.001	mg/L
Chrysene	8270	0.001	mg/L
Dibenz (a,h)anthracene	8270	0.002	mg/L
Dibenzofuran	8270	0.004	mg/L
Di-n-butyl phthalate	8270	0.005	mg/L
1,2-Dichlorobenzene	8270	0.010	mg/L
1,3-Dichlorobenzene	8270	0.010	mg/L
1,4-Dichlorobenzene	8270	0.010	mg/L
3,3'-Dichlorobenzidine	8270	0.020	mg/L
Diethyl phthalate	8270	0.005	mg/L
Dimethyl phthalate	8270	0.005	mg/L
2,4-Dinitrotoluene	8270	0.005	mg/L
2,6-Dintrotoluene	8270	0.005	mg/L
Di-n-octyl phthalate	8270	0.005	mg/L
Fluoranthene	8270	0.001	mg/L
Fluorene	8270	0.001	mg/L
Hexachlorobenzene	8270	0.001	mg/L
Hexachlorobutadiene	8270	0.001	mg/L
Hexachlorocyclopentadiene	8270	0.010	mg/L
Hexachloroethane	8270	0.001	mg/L
Indeno (1,2,3-cd) pyrene	8270	0.002	mg/L
Isophorone	8270	0.001	mg/L
2-Methylnaphthalene	8270	0.005	mg/L
Naphthalene	8270	0.001	mg/L

FIGURE 8. METHODS AND DETECTION LIMITS FOR APPENDIX IX PARAMETERS

Constituent	Method	Detection Limit	Unit
2-Nitroaniline	8270	0.020	mg/L
3-Nitroaniline	8270	0.020	mg/L
4-Nitroaniline	8270	0.020	mg/L
Nitrobenzene	8270	0.002	mg/L
N-Nitrosodiphenylamine*	8270	0.002	mg/L
N-Nitroso-di-n-propylamine	8270	0.002	mg/L
Phenanthrene	8270	0.001	mg/L
Pyrene	8270	0.001	mg/L
1,2,4-Trichlorobenzene	8270	0.002	mg/L
4-Chloro-3-methylphenol	8270	0.005	mg/L
2-Chlorophenol	8270	0.010	mg/L
2,4-Dichlorophenol	8270	0.010	mg/L
2,4-Dimethylphenol	8270	0.005	mg/L
4,6-Dinitro-o-cresol	8270	0.050	mg/L
2,4-Dinitrophenol	8270	0.025	mg/L
2-Methylphenol	8270	0.010	mg/L
4-Methylphenol	8270	0.010	mg/L
2-Nitrophenol	8270	0.005	mg/L
4-Nitrophenol	8270	0.025	mg/L
Pentachlorophenol	8270	0.020	mg/L
Phenol	8270	0.005	mg/L
2,4,5-Trichlorophenol	8270	0.005	mg/L
2,4,6-Trichlorophenol	8270	0.004	mg/L