ATTACHMENT B5.F

SURFACE WATER SAMPLING AND ANALYSIS PLAN
WAYNE DISPOSAL, INC.

REVISION 0– November 2021

1.0 INTRODUCTION

This Surface Water Sampling and Analysis Plan (SW SAP) identifies the procedures to be used for monitoring on-site surface water (storm water) samples from the perimeter ditches that convey on-site surface water run-off at Wayne Disposal, Inc. (WDI), Site 2 to the North, Northwest and South Sedimentation Basins. All surface water collected in these sedimentation basins is treated by sedimentation, filtration and activated carbon adsorption prior to discharge to off-site surface water (Quirk Drain). The effluent from this treatment process is discharged into Quirk Drain in accordance with an effective National Pollutant Discharge Elimination System (NPDES) permit.

The surface water monitoring program described by this SW SAP is designed to test the quality of the on-site surface water to determine if hazardous waste or hazardous waste constituents are present within the surface water. If these constituents are detected or exceed statistical limits the plan outlines the notification and response actions that WDI must take. This monitoring program is one of the checks on the engineered controls and operational procedures employed by WDI to detect an on-site release of hazardous waste or hazardous waste constituents as early as possible and allow WDI to initiate efforts to locate and control the source and prevent the off-site release of hazardous waste or hazardous waste constituents.

2.0 REVISIONS

WDI may revise this SW SAP and submit the revised plan to the Chief of the Materials Management Division (MMD) of the Michigan Department of Environment, Great Lakes, and Energy (EGLE)EGLEfor review and approval prior to implementation.

3.0 SAMPLE LOCATIONS

Surface water grab samples are currently collected from each of the eight permanent locations shown on Figure 1 designated as SS-1, SS-2, SS-5, SS-6, SS-7, SS-8, SS-9 and SS-10. Location SS-3 is the effluent from the treatment system and is monitored in accordance with an NPDES permit and the TSCA Approval per 40 CFR 761.75 for the facility. SS-4 was abandoned due to changes to the drainage system at the site. Location SS-8 will be abandoned during the construction of MC VI-F4. Location SS-11 and SS-12 will be added to the program when MC-VI-G Phase 3 is constructed.

4.0 SAMPLE FREQUENCY

Each surface water sample location in the program is to be sampled once during each calendar quarter following a rain event (defined as a 0.5 inches or more in 24 hours) when enough surface water is present within the ditches to collect a representative sample. Surface water samples will not be collected within a calendar quarter if there are no significant rain events that allow for the sampling to be completed.

5.0 SAMPLE COLLECTION

Surface water grab samples for each of the required parameters are to be collected from each of the sampling locations. Samples for volatile organic compounds (VOCs) are to be collected first and require zero headspace (no air bubbles) and minimal agitation of the water sample. Samples for PCBs are collected next followed by total phenolics and then the remaining parameters.

Duplicate samples must be collected at each sample location for VOCs, PCBs and metals. The duplicate samples are to be held by the laboratory as potential confirmation samples to be analyzed in the event of an apparent statistically significant increase (ASSI) using the criteria defined in Section 7.0 of this SW SAP. The duplicate sample for PCBs must be extracted when it arrives at the laboratory and the extract held in case a confirmation analysis is required.

Samples are to be collected by direct fill by dipping the bottles provided by the laboratory into the water and directly filling the containers. If site conditions do not allow for sampling in this way, a disposable plastic cup can be used to collect the sample and the sample then carefully decanted into the sample bottles. Care must be taken to ensure that any preservatives in the bottles are not spilled during sample collection. Field measurements of pH, specific conductance, temperature and dissolved oxygen are collected with calibrated field instruments at the time of sampling. WDI is to use the instructions for the use and maintenance of these instruments contained in the Groundwater Sampling and Analysis Plan for equipment used to collect field measurements under this SW SAP.

Protective gloves must be worn during sample collection and clean gloves must be used at each sample location. Care should be taken at all times when handling the samples. Samples to be analyzed for volatile organic compounds require zero-headspace, no air bubbles and minimal agitation of the sample. Samples collected for metals analyses are not to be filtered as the metals analyses are "totals" analyses. Each sample container must be carefully labeled with the sampling location, time and date, and the sampler's initials. Field Quality Assurance/Quality Control samples must include:

- One trip blank in each cooler utilized for storing and shipping samples. The trip blank must be analyzed for VOCs and PCBs.
- One field blank for each day in which samples are 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 and PCB.
- 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 for the disposable cups is prepared by filling the cup with water provided by the laboratory and decanting the water into the sample containers. The equipment blank must be analyzed for VOCs and PCBs.

After collection, the samples must be stored in a clean cooler containing ice or ice packs. The coolers containing samples must be stored in a secure location until being transported to the laboratory.

A sample collection log (Figure 2) must be filled out at each sampling location and any unusual conditions (e.g. odors, sheens) encountered must be noted. A chain of custody (COC) form that lists each sample submitted to the laboratory must be fully filled out for each sampling event and each person who has custody of the samples, from sample collection through sample check-in,

must sign and date the form. When the samples are delivered to the laboratory and the laboratory has signed for their receipt, a copy of this form must be retained on site.

6.0 SAMPLE ANALYSIS

One surface water grab sample from each of the required sampling locations must be analyzed for the parameters listed on Table 1 using the analytical methods and method detection limits specified in Table 1, which are consistent with Policy and Procedure Document OWMRP-111/115-8. The potential confirmation duplicate samples from each surface water sampling location must be retained at the laboratory but need only be analyzed if an ASSI is detected in the first sample using the criteria described in Section 7.0 of this SW SAP.

In some cases the laboratory may not be able to attain the method detection limits specified due to factors such as sample dilution or matrix effects. If this is the case, the laboratory report must include an explanation for not achieving the specified method detection limits.

The laboratory quality control/quality assurance manual (QA/QC Manual) describing the required internal policies, guidelines and procedures of any contract lab is used by WDI in evaluating the QA/QC standard operating procedures of any contract laboratory utilized for the purposes of this SW SAP. WDI ensures that the laboratory employs acceptable QA/QC practices.

7.0 DATA EVALUATION

The analytical data from the surface water samples is to be evaluated as follows:

- For VOCs, any reported concentration at or above the method detection limit is an apparent statistically significant increase (ASSI).

- For PCBs, the data will be evaluated as follows:
  - Any reported concentration at or above 0.5 mg/L is an ASSI.

- For metals and inorganic parameters, the data will be evaluated using the sign test as described in Attachment A. In addition, if a ten-fold increase in concentration is noted in any metal or inorganic parameter between sampling events in any of the individual grab samples, then there has been an ASSI.

Any PCBs or VOC detection at the NPDES discharge location (SS-3) that is monitored monthly in accordance with WDI's TSCA Approval must be reported as an ASSI as outlined in Section 8 of this document and WDI's Part 111 Operating License.

8.0 RESPONSE ACTIONS

In the event of an ASSI, WDI must verbally notify the EGLE, Hazardous Waste Program Section staff immediately in accordance with the Environmental Monitoring Conditions of the Operating License and implement the procedures identified below to confirm the ASSI.

- If a VOC is present in a sample above its method detection limit, the duplicate sample must be analyzed.
- If a metal in any grab sample has met or exceeded ten times increase criteria identified in Section 7.0, an ASSI has occurred and the duplicate sample must be analyzed for the offending parameter(s) .
- If PCBs have met or exceeded the criteria identified in Section 7.0, an ASSI has occurred and the duplicate sample extract must be analyzed.
- If the sign test fails at any location then the sample location must be inspected closely and resampled as soon as there is water to sample and analyzed for all sign test procedures.

If the holding time for any sample or sample extract has been exceeded, the location where the ASSI sample was collected must be resampled as soon as there is water in the sample location and the sample must be analyzed.

If an ASSI is not repeated, WDI will resume routine monitoring. If the ASSI is repeated upon analyzing the second sample, a confirmed statistically significant increase (CSSI) has occurred. In the event of a CSSI, WDI must notify the EGLE in accordance with the General Operating Conditions of the Operating License for Reporting Noncompliance that may endanger human health or the environment. Further, in the event of a CSSI, within 30 days of becoming aware of a CSSI, WDI must:

- Determine whether a discharge of hazardous waste and/or hazardous waste constituents to off-site surface waters is occurring, determine the source, and take immediate steps to eliminate and prevent any such discharge. WDI may demonstrate a source other than the licensed facility caused the CSSI or that the CSSI resulted from error in sampling, analysis or evaluation.
- Submit a report to the EGLE documenting WDI's investigation, response, and any further response actions proposed.

9.0 REPORTING REQUIREMENTS

For quarterly reports, the final data must be received from the laboratory, evaluated and the report transmitted to the EGLE within 60 days of sampling. The report must include a narrative description of the sampling event, a map showing the locations sampled, copies of the sampling logs, a summary and discussion of the analytical data and the data statistics, a discussion of field and laboratory QA/QC, the field measurements collected (pH, specific conductance, temperature and dissolved oxygen), a description of any statistically significant events (i.e. ASSI and/or CSSI), any resampling or additional sampling conducted as a result of a CSSI, and any additional actions proposed as a result of the reported data.

In addition to the quarterly reports, an annual summary report of surface water monitoring results must be submitted to the EGLE by March 1 of the following year. At a minimum, the annual report must contain a map showing all locations sampled, a tabular summary and discussion of the analytical data collected during the previous year, a description of any statistically significant

events (i.e. ASSI and/or CSSI), any resampling of additional sampling conducted as a result of a CSSI, and any additional actions proposed as a result of the reported data.

10.0 RECORD KEEPING REQUIREMENTS

All analytical data and quarterly and annual monitoring reports must be stored on site within the EHS filing system and be available for inspection as required.

Attachment A
Statistical Monitoring Plan for Surface Water Monitoring

Wayne Disposal, Inc., Site #2
MID 048 090 633

Revision 1.0, December 1994
Revision 1.1, October, 1999

Statistical Monitoring Plan for Surface Water Monitoring

WDI Site #2 Hazardous Waste Landfill
MID 048 090 633

Revision 1.0, December 94
Revision 1.1, October 99

I. Introduction

The following statistical monitoring plan provides a description of the statistical procedures to be used for identifying a statistically significant increase of monitoring parameters in the surface water monitoring program for the above referenced facility. The program is intended to determine if hazardous waste constituents may be entering the storm water run-off from non-contact areas of the facility.

II. Statistical Evaluation

The statistical program provides two procedures to be used together for each set of monitoring data. The first procedure applies to the volatile organic and PCB compounds only and is not a true statistical test. For these compounds, any occurrence above the reported detection limit (which is a statistical quantity to some degree) is considered statistically significant. The second procedure is a comparison of the overall inorganic surface water quality to the average quality during a background period by using the sign test. This procedure is described in detail below.

Statistical Sign Test - The purpose of this statistical analysis of the surface water is to determine whether the overall surface water quality during a monitoring event is statistically different compared to "background" surface water quality. To determine the statistical significance of differences between monitoring and background samples, a test know as the sign test is used. This test applies to all inorganic parameters, which will generally be present in detectable concentrations. The sign test determines if enough of these parameters are higher than the background averages to conclude that there is a statistically significant difference in water quality.

The sign test will be performed at the 0.05 significance level to determine if the number of parameters that are present in the monitoring samples in higher concentrations than the background is statistically significant. To perform the sign test, the concentration of each inorganic monitoring parameter is compared to the background concentration for that sampling event. The current background concentrations utilized for the sign test are presented on Table 2. If the monitoring concentration is higher, then a "+" is assigned to that parameter; if the background concentration is higher then a "-" is assigned for that parameter; and if the concentration are equal then a "0" is assigned for that parameter. The total number of "+" parameters and the total number if "+" and "-" parameters are then used with the binomial probability table, Table 1, attached to this plan. To determine if the number of "+"parameters is statistically significant, the table is entered at n, the total number of "+" and "-" parameters and the corresponding value for y is determined for the largest number for alpha that is less than or equal to 0.05. This number y is the smallest number of "-" parameters that can be obtained without a statistically significant increase (e.g. if there are any less "-" parameters then there will be too many "+" parameters.) So the number of pluses is statistically significant if it is greater than the total number of pluses and minuses less the quantity y determined form the table. For instance, if there are eight parameters, the largest value of y corresponding to a value of alpha less than 0.05 is 1. Therefore, 8 - 1 = 7 plus values (or 8 plus values) would result in a failure of the test.

TABLE 1
BINOMIAL DISTRIBUTION
Alpha = P[X<y] for b(X;n,0.050)

n	y	Alpha	n	y	Alpha	n	y	Alpha	n	y	Alpha
1	0	0.5000	8	0	0.0039	12	0	0.0002	15	0	0.0000
1	1	1.0000	8	1	0.0352	12	1	0.0032	15	1	0.0005
			8	2	0.1445	12	2	0.0193	15	2	0.0037
2	0	0.2500	8	3	0.3633	12	3	0.0730	15	3	0.0176
2	1	0.7500	8	4	0.6367	12	4	0.1938	15	4	0.0592
2	2	1.0000	8	5	0.8555	12	5	0.3872	15	5	0.1509
			8	6	0.9648	12	6	0.6128	15	6	0.3036
3	0	0.1250	8	7	0.9961	12	7	0.0862	15	7	0.5000
3	1	0.5000	8	8	1.0000	12	8	0.9270	15	8	0.6964
3	2	0.8750				12	9	0.9807	15	9	0.8491
3	3	1.0000	9	0	0.0028	12	10	0.9968	15	10	0.9408
			9	1	0.0195	12	11	0.9998	15	11	0.9824
4	0	0.0625	9	2	0.0898	12	12	1.0000	15	12	0.9963
4	1	0.3125	9	3	0.2539				15	13	0.9995
4	2	0.6875	9	4	0.5000	13	0	0.0001	15	14	1.0000
4	3	0.9375	9	5	0.7461	13	1	0.0017	15	15	1.0000
4	4	1.0000	9	6	0.9102	13	2	0.0112			
			9	7	0.9805	13	3	0.0461			
5	0	0.0313	9	8	0.9980	13	4	0.1334			
5	1	0.1875	9	9	1.0000	13	5	0.2905			
5	2	0.5000				13	6	0.5000			
5	3	0.8125	10	0	0.0010	13	7	0.7095			
5	4	0.9687	10	1	0.0107	13	8	0.8666			
5	5	1.0000	10	2	0.0547	13	9	0.9539			
			10	3	0.1719	13	10	0.9888			
6	0	0.0156	10	4	0.3770	13	11	0.9983			
6	1	0.1094	10	5	0.6230	13	12	0.9999			
6	2	0.3437	10	6	0.8281	13	13	1.0000			
6	3	0.6562	10	7	0.9453						
6	4	0.8906	10	8	0.9893	14	0	0.0001			
6	5	0.9844	10	9	0.9990	14	1	0.0009			
6	6	1.0000	10	10	1.0000	14	2	0.0065			
						14	3	0.0287			
7	0	0.0078	11	0	0.0005	14	4	0.0898			
7	1	0.0625	11	1	0.0059	14	5	0.2120			
7	2	0.2266	11	2	0.0327	14	6	0.3953			
7	3	0.5000	11	3	0.1133	14	7	0.6047			
7	4	0.7734	11	4	0.2744	14	8	0.7880			
7	5	0.9375	11	5	0.5000	14	9	0.9102			
7	6	0.9922	11	6	0.7256	14	10	0.9713			
7	7	1.0000	11	7	0.8867	14	11	0.9935			
			11	8	0.9673	14	12	0.9991			
			11	9	0.9941	14	13	0.9999			
			11	10	0.9995	14	14	1.0000			
			11	11	1.0000						

Table 2.
Sign Test Background Data for Surface Water
Wayne Disposal, Inc. Site No. 2

Parameter	Units	Number of Values	Mean
Arsenic	mg/l	24	0.015
Barium	mg/l	24	0.64
Cadmium	mg/l	24	0.017
Calcium	mg/l	24	304
Chromium (total)	mg/l	24	0.06
Chromium (hexavalent)	mg/l	24	0.009
Iron	mg/l	24	46.4
Magnesium	mg/l	24	66
Manganese	mg/l	24	1.19
Mercury	mg/l	24	0.0007
Selemum	mg/l	24	0.0043
Silver	mg/l	24	0.01
Sodium	mg/l	24	28
Zinc	mg/l	24	0.54
Alkalinity (total)	mg/l	24	187
Alkalinity (bircarbonate)	mg/l	24	187
Alkalinity (carbonate)	mg/l	24	18
Chloride	mg/l	24	54
Fecal Coliforms	Count/100 ml	24	9637
Nitrate	mg/l	24	0.76
pH	Stnd. Units	24	7.5
Sulfate	mg/l	24	213
Tot. Susp. Solids	mg/l	21	2797

Notes: Background data were complied from eight quarters during period from May 1989 to April 1991

Detection Limits values are used for data which are reported to be below the method detection limit.

LEGEND:

- 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
- SS 1 — SURFACE WATER SAMPLING LOCATION
- SS 11 — SURFACE WATER SAMPLING LOCATION – POST MC VI F/G CONSTRUCTION

NOTES:

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

SCALE 0' 100' 200' 400'

TIME PLOTTED: 4:02:35 PM
DATE PLOTTED: 10/4/2021
FILENAME: Z:\shared\proj\Projects\Commercial\US Ecology\WDI\CAD\Site\RECORD MONITORING PLANS\RECORD SURFACE WATER SAMPLING LOCATION MAP REV00.dgn

DRAWING SIZE: 24" X 36"

CTI and Associates, Inc.
28001 Cabot Drive, Ste. 250
Novi, Michigan 48377
248.486.5100 (fax)248.486.5050
www.cticompanies.com

DATE:	5-4-21
DESIGNED BY:	XZ
DRAWN BY:	BDA
CHECKED BY:	HS
APPROVED BY:	XZ

REV	DATE	REVISION DESCRIPTION	DRN	APP

REVISIONS

WAYNE DISPOSAL SITE NO. 2
WAYNE, MICHIGAN

SURFACE WATER SAMPLING LOCATION MAP

PROJECT NUMBER 1218070008.7

SCALE 1" = 200'

DRAWING NO 1

Figure 2. Sample Collection Log for Surface Water - WDI Site #2

Sample ID:	Sample Date:	Sample Time:
Sample Location:	**Sampling Method:**	**Sampler:**
Sample Description/Comments*:		
Field Measurements: pH _________ Specific Conductance__________ Temperature_______		

Sample ID:	Sample Date:	Sample Time:
Sample Location:	**Sampling Method:**	**Sampler:**
Sample Description/Comments*:		
Field Measurements: pH _________ Specific Conductance__________ Temperature_______		

Sample ID:	Sample Date:	Sample Time:
Sample Location:	**Sampling Method:**	**Sampler:**
Sample Description/Comments*:		
Field Measurements: pH _________ Specific Conductance__________ Temperature_______		

Sample ID:	Sample Date:	Sample Time:
Sample Location:	**Sampling Method:**	**Sampler:**
Sample Description/Comments*:		
Field Measurements: pH _________ Specific Conductance__________ Temperature_______		

* Note clarity of samples and any color, sheen, odor or other relevant characteristics of the sample

Table 1. Surface Water Monitoring Parameters

Parameters	MDL (mg/L)[3]	Sample Preparation Method	Analytical Method
Indicator Parameters			
Alkalinity	20	---	SM 2320B-11
Bicarbonate	20	---	SM 2320B-11
Carbonate	2	---	SM 2320B-11
Chloride	1	---	SM 4500-Cl E-11
Nitrate	0.01	---	SM 4500-NO3 F-11
pH	0.5-12.5	---	SM 4500-H+ B-11
Specific Conductance	5 (umhocs/cm)	2510B	SM 2510B-11
Sulfate	2	ASTM D516-90	SM-4500-SO4 E-11
Total Suspended Solids	4	2540D	SM-2540D-11
Total Phenolics	0.01	EPA 420.4	EPA 420.4
Total Cyanide	0.005	EPA 9410	EPA 9410
Amenable Cyanide	0.05	EPA 9410	EPA 9410
Metals			
Arsenic	0.001	EPA 3020A	EPA 6020A
Barium	0.005	EPA 3020A	EPA 6020A
Cadmium	0.0002	EPA 3020A	EPA 6020A
Calcium	1	EPA 3010A	EPA 6010C
Chromium (total)	0.001	EPA 3020A	EPA 6020A
Chromium (hexavalent)	0.005	---	EPA 7196A
Iron	0.02	EPA 3010A	EPA 6010C
Magnesium	1	EPA 3010A	EPA 6010C
Manganese	0.005	EPA 3020A	EPA 6020A
Mercury	0.0002	EPA 7470A	EPA 7470A
Selenium	0.001	EPA 3020A	EPA 6020A
Silver	0.0002	EPA 3020A	EPA 6020A
Sodium	1	EPA 3010A	EPA 6010C
Zinc	0.02	EPA 3020A	EPA 6020A
VOCs	0.001 to 0.005	---	EPA 8260B
PCBs	0.0001	EPA 3510C	EPA 8082A

EPA methods from TEST METHODS FOR EVALUATING SOLID WASTE, USEPA SW-846
SM methods from STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER
MDLs are Target Detection Limits per Op Memo OWMRP 111/115-8

Table 1 - Surface Water Monitoring Parameters

Parameters	MDL (mg/L)[3]	Sample Preparation Method	Analytical Method
Organic Parameters			
Benzene	0.001	---	EPA 8260B
Bromodichloromethane	0.001	---	EPA 8260B
Bromoform	0.001	---	EPA 8260B
Bromomethane	0.005	---	EPA 8260B
Carbon Tetrachloride	0.001	---	EPA 8260B
Chlorobezene	0.001	---	EPA 8260B
Chloroethane	0.005	---	EPA 8260B
2-Choroethylvinyl ether	0.005	---	EPA 8260B
Chloroform	0.001	---	EPA 8260B
Chloromethane	0.005	---	EPA 8260B
Dibromochloromethane	0.001	---	EPA 8260B
1,2 Dichlorobenzene	0.001	---	EPA 8260B
1,3 Dichlorobenzene	0.001	---	EPA 8260B
1,4 Dichlorobenze	0.001	---	EPA 8260B
1,1 Dichloroethane	0.001	---	EPA 8260B
1,2 Dichloroethane	0.001	---	EPA 8260B
1,1 Dichloroethaene	0.001	---	EPA 8260B
trans 1,2 Dichloroethene	0.001	---	EPA 8260B
1,2 Dichloropropane	0.001	---	EPA 8260B
cis 1,3 Dichloropropene	0.001	---	EPA 8260B
trans 1,3 Dichloropropene	0.001	---	EPA 8260B
Ethyl benzene	0.001	---	EPA 8260B
Methylene chloride	0.005	---	EPA 8260B
1,1,2,2 tetrachloroethane	0.001	---	EPA 8260B
Tetrachloroethene	0.001	---	EPA 8260B
Toluene	0.001	---	EPA 8260B
1,1,1 Trichloroethane	0.001	---	EPA 8260B
1,1,2 trichloroethene	0.001	---	EPA 8260B
Trichloroethene	0.001	---	EPA 8260B
Trichlorofluoromethane	0.001	---	EPA 8260B
Vinyl chloride	0.001	---	EPA 8260B
PCBs			
PCB-1016	0.0001	EPA 3510C	EPA 8082A
PCB-1221	0.0001	EPA 3510C	EPA 8082A
PCB-1232	0.0001	EPA 3510C	EPA 8082A
PCB-1242	0.0001	EPA 3510C	EPA 8082A
PCB-1248	0.0001	EPA 3510C	EPA 8082A
PCB-1254	0.0001	EPA 3510C	EPA 8082A
PCB-1260	0.0001	EPA 3510C	EPA 8082A

EPA methods from TEST METHODS FOR EVALUATING SOLID WASTE, USEPA SW-846
SM methods from STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER
MDLs are Target Detection Limits per Op Memo OWMRP 111/115-8