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New York State Department of Environmental Conservation (NYSDEC)
Division of Environmental Remediation
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Subject:
September 2018 Monthly Report
Fort Edward Landfill
NYSDEC Site No. 558001
Contract No. D007618-39

Date:
November 30, 2018

Contact:
Andy Vitolins

Dear Mr. Long:

Arcadis CE, Inc. (Arcadis) has prepared this letter report to summarize the leachate collection and treatment system operation, maintenance, and monitoring (OM&M) activities completed during the September 2018 reporting period at the above-referenced site.

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518.250.7300

Leachate Collection and Treatment System Operation and Maintenance

Email:
andy.vitolins@arcadis.com

The leachate treatment system was intermittently shut down the week September 10th and 17th for upgrades to the treatment system's program logic controller (PLC).

Our ref:
00266434.0000

A total of 244,190 gallons of leachate were collected and treated through the system during September 2018. The corresponding average leachate recovery rate for the month was approximately 5.7 gallons per minute (gpm).

The following O&M activities were completed during the September 2018 operating period:

- Arcadis furnished, programmed, installed, and tested a new programmable logic controller (PLC) to replace the two existing PLCs that were no longer adequate for the upgraded systems. Treatment system upgrades were performed by Arcadis and included installation of an air compressor dryer, filter, fan, and auto drain.
- Hour Electric was onsite to furnish, install, and start up the step transformer and all ancillary equipment required to increase the voltage (208 to 480) from the existing electrical power panel to the EW-4 pump

station. All electrical connections/terminations were also performed Hour Electric. The extraction well EW-4 electrical power service was upgraded to accommodate a higher leachate flow demand.

- Iron and solids sludge processing was performed throughout the month. In total, one 55-gallon drum of sludge was generated during September 2018.

System Sampling

The monthly samples were collected on September 25, 2018 from the following treatment system locations:

- Influent (i.e. combined flow from extraction wells EW-1, EW-2, EW-3, and EW-4);
- Clarifier Catch Tank discharge;
- Cell 3 Bypass (i.e. treatment Cell 3 discharge into the Cell 2/3 bypass pipe);
- Cell 2 Chamber (i.e. treatment Cell 2 discharge into the effluent collection chamber); and
- Polishing Pond Effluent.

Samples were also collected from extraction wells EW-1, EW-2, EW-3, and leachate collection well EW-4. Samples from these locations are collected on a quarterly basis and will be sampled again in the fourth quarter of 2018.

The monthly and quarterly samples were submitted to Con-Test Analytical for analysis of volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), metals, total dissolved solids (TDS), and total suspended solids (TSS).

The analytical results are discussed in the sections below and have been summarized in Table 1. The laboratory analytical data will be submitted to NYSDEC's EIMS Administrator in the required EQUIS EDD format.

Analytical Results

VOCs

As shown in Table 1, VOCs were detected in the EW-1, EW-2, and EW-3 samples at concentrations that exceeded the corresponding NYSDEC Class GA Standards. The highest concentrations of VOCs were reported in the samples from EW-1. As shown in Table 1, VOCs were detected in the Influent and Clarifier Catch Tank samples but did not exceed the corresponding NYSDEC Class GA Standards.

Based on data collected in 2017, Arcadis has temporarily ceased pumping from extraction well EW-1 (the primary contributor of VOCs and PCBs to the treatment plant). EW-1 will remain off until recommendations presented in the January 31, 2018 Remedial System Optimization Report (RSO) can be implemented and evaluated. These recommendations include VOC removal within the Inclined Plate Clarifier (IPC). Air diffusers placed in the IPC, for example, may volatilize VOCs before they are discharged to the CWTS. This would reduce contaminant loading of the CWTS and the potential for VOCs impacts to the Polishing Pond.

PCBs

PCB Aroclor 1016 was detected in the EW-1, EW-4, Influent, and Clarifier Catch Tank samples at concentrations greater than the respective NYSDEC GA Standards. PCBs were not detected in the EW-

2, EW-3, Cell 3 Bypass, Cell 2 Chamber, and Polishing Pond Effluent samples during the September 2018 sampling event (Table 1).

Metals

Iron and manganese were detected at one or more of the treatment system samples at concentrations greater than the corresponding NYSDEC Standards of 0.3 milligrams per liter (mg/L) and 0.6 mg/L, respectively. Iron concentration ranged from a maximum 53 mg/L (EW-3) to 0.58 mg/L (Clarifier Catch Tank). Manganese concentrations ranged from a maximum of 1.8 mg/L (EW-4) to 0.22 mg/L (EW-3), which are consistent with previous data.

TDS and TSS

The concentrations of TDS and TSS continue to fluctuate between sampling events. During the September sampling event, TDS concentrations ranged between 310 mg/L and 930 mg/L; TSS concentrations ranged from 6.0 mg/L and 110 mg/L. These data are consistent with the results from previous sampling events. Since September 2016, TDS and TSS have ranged from 210 to 4,900 mg/L and non-detect (ND) to 200 mg/L, respectively.

Next Reporting Period Planned Activities

The following activities are anticipated for October 2018:

- Upgrades to the EW-4 electrical panel and leachate pumps;
- Upgrades to the treatment system equipment and PLC;
- Continuation of iron and solids treatment and processing;
- Annual groundwater and surface water sampling; and
- Routine monthly system sampling;

If you have any questions, please do not hesitate to contact me or Jeremy Wyckoff.

Sincerely,

Arcadis CE, Inc.



Andy Vitolins, P.G.
Associate Vice President

Copies:

Jeremy Wyckoff, Arcadis
File

Enclosures:

NYSDEC Site No. 558001
Payson Long
November 30, 2018

Table 1 – September 2018 Treatment System Analytical Data

Table 1. September 2018 Treatment System Analytical Data, Fort Edward Landfill
Fort Edward, New York. NYSDEC Site No. 558001

Chemical Name	NYSDEC Class	NYSDEC Class GA	EW-1	EW-2	EW-3	EW-4	INFLUENT	CLARIFIER	CELL 3	CELL 2	EFFLUENT
	Standard	GW Effluent Limitation	9/25/2018	9/25/2018	9/25/2018	9/25/2018	9/25/2018	CATCH 9/25/2018	9/25/2018	9/25/2018	9/25/2018
Volatile Organic Compounds (ug/L)											
ACETONE	50	50	500 U	12 J	110	50 U	50 U	50 U	50 U	50 U	50 U
BENZENE	1	1	4.7 J	5.0	2.9	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BROMOCHLOROMETHANE	5	5	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BROMODICHLOROMETHANE	50	50	5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.3	0.5 U	0.5 U	0.5 U
BROMOFORM	50	50	20 U	1.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
BROMOMETHANE	5	5	20 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
2-BUTANONE (MEK)	50	50	200 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
CARBON DISULFIDE	60	60	40 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
CARBON TETRACHLORIDE	5	5	50 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
CHLOROBENZENE	5	5	3.7 J	1.6	21	1.0 U	0.25 J	0.3 J	1.0 U	1.0 U	1.0 U
CHLORODIBROMOMETHANE	50	--	5.0 U	0.5 U	0.5 U	0.5 U	0.5 U	0.73	0.5 U	0.5 U	0.5 U
CHLOROETHANE	5	5	20 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
CYCLOHEXANE	--	--	50 U	5.0 U	0.56 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2-DIBROMO-3-CHLOROPROPANE	0.04	0.04	50 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	0.0006	0.0006	5.0 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROETHYLENE	3	3	10 U	1.0 U	0.45 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-DICHLOROETHYLENE	3	3	10 U	1.0 U	0.32 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-DICHLOROETHYLENE	3	3	10 U	0.40 J	5.8	1.0 U	1.0 U	0.18 J	1.0 U	1.0 U	1.0 U
DICHLORODIFLUOROMETHANE	5	5	20 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1-DICHLOROETHANE	5	5	10 U	0.99 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
CIS-1,2-DICHLOROETHYLENE	5	5	890	0.5 J	1.0 U	1.0 U	0.16 J	1.0 U	1.0 U	1.0 U	1.0 U
TRANS-1,2-DICHLOROETHYLENE	5	5	8.3 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-DICHLOROETHANE	0.6	0.6	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-DICHLOROETHYLENE	5	5	5.1 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-DICHLOROPROPANE	1	1	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
CIS-1,3-DICHLOROPROPENE	0.4	0.4	5.0 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRANS-1,3-DICHLOROPROPENE	0.4	0.4	5.0 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,4-DIOXANE	--	--	500 U	38 J	52	50 U	50 U	50 U	50 U	50 U	50 U
ETHYLBENZENE	5	5	4.3 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-HEXANONE	50	50	100 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ISOPROPYLBENZENE (CUMENE)	5	5	1.3 J	0.38 J	0.84 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
METHYL ACETATE	--	--	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
METHYL TERT-BUTYL ETHER (MTBE)	10	10	3.8 J	0.84 J	0.46 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
METHYL CYCLOHEXANE	--	--	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
METHYLENE CHLORIDE	5	5	50 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	--	--	100 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
STYRENE	5	930	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1,2-TETRACHLOROETHANE	5	5	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TETRACHLOROETHYLENE (PCE)	5	5	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TOLUENE	5	5	5.5 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,3-TRICHLOROETHYLENE	5	5	50 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2,4-TRICHLOROETHYLENE	5	5	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-TRICHLOROETHANE	5	5	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-TRICHLOROETHANE	1	1	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TRICHLOROETHYLENE (TCE)	5	5	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.00 U	1.0 U	1.0 U	1.0 U
TRICHLOROFLUOROMETHANE	5	5	20 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	5	5	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
VINYL CHLORIDE	2	2	1700	0.35 J	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
M,P-XYLENES	5	5	13 J	1.1 J	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
O-XYLENE (1,2-DIMETHYLBENZENE)	5	5	1.6 J	0.15 J	0.17 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
XYLENES, TOTAL	5	5	13 J	1.1 J	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U

Notes:

Constituents detected above the NYSDEC Class GA GW Standard are in **bold**.

Constituents detected above the NYSDEC Class GA GW Effluent Limitation are highlighted in yellow.

NYSDEC Class GA GW Standard - New York State Department of Environmental Conservation Groundwater Standard and Guidance Value.

NYSDEC Class GA GW Effluent Limitation - New York State Department of Environmental Conservation Effluent Limitation.

U - The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

J - The concentration is an approximate value.

ug/L - micrograms per liter

mg/L - milligrams per liter

Table 1. September 2018 Treatment System Analytical Data, Fort Edward Landfill
Fort Edward, New York. NYSDEC Site No. 558001



Chemical Name	NYSDEC Class GA GW Standard	NYSDEC Class GA GW Effluent Limitation	EW-1	EW-2	EW-3	EW-4	INFLUENT	CLARIFIER CATCH	CELL 3	CELL 2	EFFLUENT
			9/25/2018	9/25/2018	9/25/2018	9/25/2018	9/25/2018	9/25/2018	9/25/2018	9/25/2018	9/25/2018
Polychlorinated Biphenyls (ug/L)											
PCB-1016 (AROCLOR 1016)	*	*	870	0.2 U	0.21 U	0.21	0.41	0.71	0.2 U	0.19 U	0.2 U
PCB-1221 (AROCLOR 1221)	*	*	190 U	0.2 U	0.21 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.2 U
PCB-1232 (AROCLOR 1232)	*	*	190 U	0.2 U	0.21 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.2 U
PCB-1242 (AROCLOR 1242)	*	*	190 U	0.2 U	0.21 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.2 U
PCB-1248 (AROCLOR 1248)	*	*	190 U	0.2 U	0.21 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.2 U
PCB-1254 (AROCLOR 1254)	*	*	190 U	0.2 U	0.21 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.2 U
PCB-1260 (AROCLOR 1260)	*	*	190 U	0.2 U	0.21 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.2 U
PCB-1262 (AROCLOR 1262)	*	*	190 U	0.2 U	0.21 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.2 U
PCB-1268 (AROCLOR 1268)	*	*	190 U	0.2 U	0.21 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.2 U
Metals (mg/L)											
ALUMINUM	--	2	0.094	0.18	0.12	0.05 U	0.05 U	0.7	0.072	0.14	0.059
ANTIMONY	0.003	0.006	0.05 U	0.05 U	0.05 U	0.05 U	0.005 U	0.05 U	0.05 U	0.05 U	0.05 U
ARSENIC	0.025	0.05	0.01 U	0.035	0.016	0.01 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U
BARIUM	1	2	0.45	0.15	0.32	0.05 U	0.05 U	0.05 U	0.05 U	0.063	0.059
BERYLLIUM	0.003	0.003	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
CADMIUM	0.005	0.01	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
CALCIUM	--	--	150	120	72	80	84	83	100	110	83
CHROMIUM, TOTAL	0.05	0.1	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
COBALT	--	--	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
COPPER	0.2	1	0.01 U	0.036	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
IRON	0.3	0.6	35	29	53	9.2	6.0	0.58	5.3	8.7	1.6
LEAD	0.025	0.05	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
MAGNESIUM	35	35	51	44	37	20	20	20	21	21	23
MANGANESE	0.3	0.6	1.7	0.95	0.22	1.8	1.7	1.5	1.7	1.6	0.72
MERCURY	0.0007	0.0014	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U
NICKEL	0.1	0.2	0.01 U	0.011	0.01 U	0.01 U	0.01 U	0.011	0.01 U	0.01 U	0.01 U
POTASSIUM	--	--	17	2.7	36	2.2	2.5	2.8	2.9	2.0 U	2.0
SELENIUM	0.01	0.02	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
SILVER	0.05	0.1	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SODIUM	20	--	120	110	77	48	48	62	52	51	43
THALLIUM	0.0005	0.0005	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
VANADIUM	--	--	0.012	0.011	0.02	0.01 U	0.01	0.01 U	0.01 U	0.01 U	0.01 U
ZINC	2	5	0.02 U	0.065	0.02 U	0.002 U	0.02 U	0.02	0.02 U	0.02 U	0.02 U
Conventional Chemistry (mg/L)											
TOTAL DISSOLVED SOLIDS	--	--	930	730	580	390	420	450	430	490	310
TOTAL SUSPENDED SOLIDS	--	--	72	63	110	15	11	6.0	13	7.1	7.7

Notes:

- Constituents detected above the NYSDEC Class GA GW Standard are in **bold**.
- Constituents detected above the NYSDEC Class GA GW Effluent Limitation are highlighted in yellow.
- * The NYSDEC Class GA GW Standard and Effluent Limitation for PCBs is 0.09 ug/L.
- NYSDEC Class GA GW Standard - New York State Department of Environmental Conservation Groundwater Standard and Guidance Value.
- NYSDEC Class GA GW Effluent Limitation - New York State Department of Environmental Conservation Effluent Limitation.
- U - The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J - The concentration is an approximate value.
- mg/L - milligrams per liter
- ug/L - micrograms per liter