ARCADIS Design & Consultancy for natural and built assets

Payson Long
New York State Department of Environmental Conservation (NYSDEC)
Division of Environmental Remediation
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Subject:
October 2017 Monthly Report
Fort Edward Landfill
NYSDEC Site No. 558001
Contract No. D007618-39

Date:
January 22, 2018

Contact:
Andy Vitolins

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518.250.7300

Email:
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Our ref:
00266434.0000

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 October 2017 reporting period.

Leachate Collection and Treatment System Operation and Maintenance

The leachate treatment system shut down on eight occasions in October 2017 due to discharge pump alarms reported by the program logic controller (PLC). The alarms indicated that a discharge pump(s) for the clarifier catch tank was being called to run, but the return signal indicating the pump was running, was intermittently not being received by the PLC. The system was restarted after each alarm event either remotely, via the PCL remote-access software, or locally during the weekly system inspections. Due to the intermittent nature of the alarms, the issue was not replicated during the October site inspections. Therefore, Arcadis will continue to assess the condition causing the alarms.

During the October 23, 2017 site inspection, a partial power interruption occurred that disrupted one phase of the three-phase power for the site. The phase loss resulted in a damaged motor starter for the air compressor. A new motor starter was ordered, and a temporary compressor was installed to maintain the air pressure required to activate the inlet valve for the treatment plant influent.

A total of 345,690 gallons of leachate were collected and treated through the system during October 2017. The corresponding average leachate recovery rate for the month was approximately 7.7 gallons per minute (gpm).

Iron and solids sludge processing was performed weekly up to the October 23rd power interruption. Due to the damaged motor starter for the air compressor, no sludge could be processed for the remainder of the month. In total, two 55-gallon drums of sludge were generated during October 2017.

System Sampling

The monthly treatment system samples were collected on October 30, 2017 from the following locations:

- Treatment System 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 discharge into the Cell 2/3 bypass pipe);
- Cell 2 Chamber (i.e. treatment cell discharge into the effluent collection chamber); and
- Polishing Pond Effluent.

Samples were also collected from extraction wells EW-1, EW-2, EW-3, and EW-4, which are currently sampled on a quarterly basis. The next scheduled sampling event for the extraction wells will be first quarter 2018.

All 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 samples from EW-1, EW-2, and EW-3 at concentrations that exceeded the corresponding NYSDEC Class GA Groundwater Standards. The highest concentrations of VOCs were reported in the samples from EW-1.

Table 1 shows that VOCs were detected at estimated concentrations and did not exceed NYSDEC Standards in the samples from EW-4, Treatment System Influent, Clarifier Catch Tank, Treatment Cells (Cell 3 bypass and Cell 2 chamber), or the Effluent sample from the Polishing Pond.

PCBs

PCB Aroclor 1016 was detected in the samples collected from EW-1, EW-4, Influent, Clarifier Catch Tank, and Cell 3 bypass at concentrations greater than the NYSDEC Class GA Groundwater Standard. PCBs were not detected in the effluent collection chamber samples at Cell 2 or the Polishing Pond Effluent sample during the October 2017 sampling event (Table 1).

Metals

Iron and manganese were detected at one or more of the sample locations at concentrations greater than the corresponding NYSDEC Class GA Groundwater Standard and Effluent Limitation of 0.3 mg/L and 0.6 mg/L, respectively. Magnesium was detected above the corresponding Groundwater Standard and Effluent Limitation in the samples collected from EW-1, EW-2, and EW-3. The highest concentration of iron and magnesium was detected in the sample from EW-1 at 82 mg/L and 56 mg/L, respectively. The highest concentration of manganese was detected at 1.8 mg/L in the samples collected from EW-4, Influent, and Clarifier Catch Tank. Table 1 also shows that the concentration of iron increased by an order of magnitude after being discharged from the Cell 3 bypass.

TDS and TSS

The concentrations of TDS and TSS continue to fluctuate between sampling events. During the October sampling event, TDS concentrations ranged between 420 mg/L and 1,300 mg/L; TSS concentrations ranged from non-detect and 81 mg/L. These data are consistent with the results from previous sampling events. Since September 2016, TDS and TSS have ranged from 210 to 1,300 mg/L and non-detect to 120 mg/L, respectively.

Next Reporting Period Planned Activities

The following activities are anticipated for November 2017:

- Annual landfill inspection;
- Continued evaluation of system alarms;
- Continuation of iron and solids treatment and processing; and
- Offsite transport and disposal of containerized filter sludge.

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

Sincerely,

Arcadis CE, Inc.

Andy Vitolins
Associate Vice President, P.G.

Copies:
Jeremy Wyckoff, Arcadis
File

Enclosures:
Table
1 October Treatment System Analytical Data

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

ARCADIS Design & Consultancy for natural and built assets

Chemical Name	NYSDEC Class GA GW Standard	NYSDEC Class GA GW Effluent Limitation	EW-1 10/30/2017	EW-2 10/30/2017	EW-3 10/30/2017	EW-4 10/30/2017	INFLUENT 10/30/2017	CLARIFIER CATCH 10/30/2017	CELL 3 10/30/2017	CELL 2 10/30/2017	EFFLUENT 10/30/2017	EFF-DUP 10/30/2017
Volatile Organic Compounds (ug/L)												
ACETONE	50	50	11 J	16 J	11 J	50 U	50 U	50 U	50 U	50 U	5.6 J	6.3 J
BENZENE	1	1	**9.9**	**5.4**	**3.9**	0.22 J	0.24 J	0.24 J	1.0 U	1.0 U	1.0 U	1.0 U
BROMOCHLOROMETHANE	5	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BROMODICHLOROMETHANE	50	50	0.5 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	0.5 U
BROMOFORM	50	50	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BROMOMETHANE	5	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
2-BUTANONE (MEK)	50	50	18 J	20 U	20 U	20 U	1.0 U	20 U	20 U	20 U	20 U	20 U
CARBON DISULFIDE	60	60	4.0 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	4.0 U
CARBON TETRACHLORIDE	5	5	5.0 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	5.0 U
CHLOROBENZENE	5	5	**8.9**	1.8	**23**	0.24 J	0.31 J	0.27 J	1.0 U	1.0 U	1.0 U	1.0 U
CHLORODIBROMOMETHANE	50	--	0.5 U	0.5 U	0.5 U	0.5 U	1.0 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROETHANE	5	5	0.33 J	0.28 J	0.72 J	0.39 J	0.55 J	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
CYCLOHEXANE	--	--	1.1 J	0.92 J	1.3 J	5.0 U	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	5.0 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	5.0 U
1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)	0.0006	0.0006	0.5 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	0.5 U
1,2-DICHLOROBENZENE	3	3	0.21 J	1.0 U	0.5 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-DICHLOROBENZENE	3	3	0.44 J	1.0 U	0.39 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-DICHLOROBENZENE	3	3	0.97 J	0.44 J	**6.1**	0.15 J	0.18 J	0.16 J	1.0 U	1.0 U	1.0 U	1.0 U
DICHLORODIFLUOROMETHANE	5	5	0.29 J	0.37 J	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	1.0 U	1.1	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-1,2-DICHLOROETHYLENE	5	5	**840**	0.7 J	1.0 U	0.25 J	0.19 J	0.3 J	0.19 J	1.6	1.0 U	1.0 U
TRANS-1,2-DICHLOROETHYLENE	5	5	**12**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-DICHLOROETHANE	0.6	0.6	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-DICHLOROETHYLENE	5	5	4.7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-DICHLOROPROPANE	1	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
CIS-1,3-DICHLOROPROPENE	0.4	0.4	0.5 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	0.5 U
TRANS-1,3-DICHLOROPROPENE	0.4	0.4	0.5 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	0.5 U
1,4-DIOXANE	--	--	120	49 J	71	50 U	50 U	50 U	50 U	50 U	50 U	50 U
ETHYLBENZENE	5	5	**6.2**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-HEXANONE	50	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ISOPROPYLBENZENE (CUMENE)	5	5	2.5	0.35 J	1.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
METHYL ACETATE	--	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
METHYL TERT-BUTYL ETHER (MTBE)	10	10	0.72	0.9 J	0.63 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
METHYL CYCLOHEXANE	--	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
METHYLENE CHLORIDE	5	5	5.0 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	5.0 U
METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	--	--	65	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
STYRENE	5	930	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1,2-TETRACHLOROETHANE	5	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TETRACHLOROETHYLENE (PCE)	5	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TOLUENE	5	5	**13**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,3-TRICHLOROBENZENE	5	5	5.0 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	5.0 U
1,2,4-TRICHLOROBENZENE	5	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-TRICHLOROETHANE	5	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-TRICHLOROETHANE	1	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TRICHLOROETHYLENE (TCE)	5	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TRICHLOROFLUOROMETHANE	5	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	5	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
VINYL CHLORIDE	2	2	**1,100**	0.34 J	2.0 U	2.0 U	2.0 U	0.21 J	2.0 U	0.41 J	2.0 U	2.0 U
M,P-XYLENES	5	5	**32**	2.0 U	0.29 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	**4.0**	0.2 J	0.2 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
XYLENES, TOTAL	5	5	**36**	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U

Notes:
Constitutents detected above the NYSDEC Class GA GW Standard are in **bold**.
Constitutents detected above the NYSDEC Class GA GW Effluent Limitation are highlighted in yellow.

Definitions:
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
NS - Not Sampled

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

ARCADIS Design & Consultancy for natural and built assets

Chemical Name	NYSDEC Class GA GW Standard	NYSDEC Class GA GW Effluent Limitation	EW-1 10/30/2017	EW-2 10/30/2017	EW-3 10/30/2017	EW-4 10/30/2017	INFLUENT 10/30/2017	CLARIFIER CATCH 10/30/2017	CELL 3 10/30/2017	CELL 2 10/30/2017	EFFLUENT 10/30/2017	EFF-DUP 10/30/2017
Polychlorinated Biphenyls (ug/L)												
PCB-1016 (AROCLOR 1016)	*	*	**3,300**	0.19 U	0.18 U	**0.37**	**2.2**	**3.3**	**0.53**	0.19 U	0.19 U	0.19 U
PCB-1221 (AROCLOR 1221)	*	*	480 U	0.19 U	0.18 U	0.18 U	0.19 U	0.77 U	0.19 U	0.19 U	0.19 U	0.19 U
PCB-1232 (AROCLOR 1232)	*	*	480 U	0.19 U	0.18 U	0.18 U	0.19 U	0.77 U	0.19 U	0.19 U	0.19 U	0.19 U
PCB-1242 (AROCLOR 1242)	*	*	480 U	0.19 U	0.18 U	0.18 U	0.19 U	0.77 U	0.19 U	0.19 U	0.19 U	0.19 U
PCB-1248 (AROCLOR 1248)	*	*	480 U	0.19 U	0.18 U	0.18 U	0.19 U	0.77 U	0.19 U	0.19 U	0.19 U	0.19 U
PCB-1254 (AROCLOR 1254)	*	*	480 U	0.19 U	0.18 U	0.18 U	0.19 U	0.77 U	0.19 U	0.19 U	0.19 U	0.19 U
PCB-1260 (AROCLOR 1260)	*	*	480 U	0.19 U	0.18 U	0.18 U	0.19 U	0.77 U	0.19 U	0.19 U	0.19 U	0.19 U
PCB-1262 (AROCLOR 1262)	*	*	480 U	0.19 U	0.18 U	0.18 U	0.19 U	0.77 U	0.19 U	0.19 U	0.19 U	0.19 U
PCB-1268 (AROCLOR 1268)	*	*	480 U	0.19 U	0.18 U	0.18 U	0.19 U	0.77 U	0.19 U	0.19 U	0.19 U	0.19 U
Metals (mg/L)												
ALUMINUM	--	2	0.05 U	0.05 U	0.11	0.05 U	0.05 U	0.33	0.05 U	0.072	0.053	0.05 U
ANTIMONY	0.003	0.006	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	0.05 U
ARSENIC	0.025	0.05	0.01 U	0.014	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
BARIUM	1	2	0.55	0.14	0.27	0.05 U	0.053	0.05 U	0.05 U	0.064	0.05 U	0.05 U
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	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	0.004 U
CALCIUM	--	--	160	120	73	86	87	86	89	110	79	79
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	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	0.05 U
COPPER	0.2	1	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.018	0.01 U	0.01 U	0.01 U	0.01 U
IRON	0.3	0.6	**82**	**40**	**38**	**21**	**25**	**11**	**0.55**	**10**	**1.4**	**1.4**
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	0.01 U
MAGNESIUM	35	35	**56**	**41**	**36**	20	19	20	20	21	20	20
MANGANESE	0.3	0.6	**1.1**	**0.93**	0.2	**1.8**	**1.8**	**1.8**	**0.35**	**1.2**	**0.53**	**0.52**
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	0.0001 U
NICKEL	0.1	0.2	0.021	0.011	0.01 U	0.01 U	0.01 U	0.051	0.01 U	0.01 U	0.01 U	0.01 U
POTASSIUM	--	--	37	3.9	42	3.5	3.1	3.3	3.1	2.0 U	6.6	6.6
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	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	0.005 U
SODIUM	20	--	**200**	**100**	**93**	**45**	**44**	**56**	**52**	**61**	**52**	**52**
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	0.05 U
VANADIUM	--	--	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	0.01 U
ZINC	2	5	0.036	0.02 U	0.02 U	0.02 U	0.02 U	0.15	0.02 U	0.02 U	0.02 U	0.02 U
Conventional Chemistry (mg/L)												
TOTAL DISSOLVED SOLIDS	--	--	1,300	870	660	420	530	460	480	600	500	520
TOTAL SUSPENDED SOLIDS	--	--	64	56	81	22	27	48	5 U	22	17	14

Notes:
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Constitutents 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.

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