Exhibit 5-5

Historical Sampling (2010-2011) Information Previously Sent to IEPA in July 2011

(Tables 5-5.1, 5-5.2, 5-5.3, 5-5.4)

Table 5-5.1

Supplemental Permit Condition 6b
Class I Concentrations
Closed Collinsville Landfill

Monitoring Location MW-1						
Compound	**Aug-10**	**Oct-10**	**Feb-11**	**May-11**	**Class I**	
List 1						
Temperature of Water (unfiltered F)	61.97	62.73	50.16	57.74	NA	
Spec Cond. (Unfiltered)	1.657	2.324	1.606	2.479	NA	
pH (Unfiltered units)	6.70	6.71	6.49	6.55	6.5-9.0	
Elev of GW Surf (ft ref MSL)	488.48	488.05	489.40	489.66	NA	
Depth of Water (ft below LS)	7.70	8.13	6.78	6.52	NA	
BTM Well Elev (ft ref MSL)	472.20	472.20	472.20	472.20	NA	
Depth to Water Fr Mea Pt (ft)	10.42	10.85	9.50	9.24	NA	
List 2 Filtered						
Ammonia as N Diss (mg/L)	0.15	<0.10	<0.10	0.11	NA	mg/L
Arsenic AS, Diss (ug/L)	<5.0	<5.0	<5.0	<5.0	50.0	ug/L
Cadmium Cd, Diss (ug/L)	<2.0	<2.0	<2.0	<2.0	5.0	ug/L
Chloride Diss (mg/L)	**288.0**	**327.0**	**327.0**	**353.0**	200.0	mg/L
Iron Fe, Diss (ug/L)	289.0	727.0	<40	2,660.0	5,000.0	ug/L
Lead Pb, Diss (ug/L)	<5.0	<5.0	<5.0	<5.0	8.0	ug/L
Manganese Mn, Diss (ug/L)	**2,760.0**	**3,080.0**	**1,490.0**	**5,110.0**	150.0	ug/L
Mercury Hg, Diss (ug/L)	<0.20	<0.20	<0.20	<0.20	2.0	ug/L
Sulfate SO4, Diss (mg/L)	95.0	98.0	96.0	112.0	400.0	mg/L
Total Dissolved Solids (TDS, mg/L)	**1,410.0**	**1,360.0**	**1,480.0**	**1,440.0**	1,200.0	mg/L
List 2 Unfiltered						
Cyanide CN, Total (mg/L)	<0.100	<0.104	<0.100	<0.104	0.20	mg/L
Phenols (Total Recoverable) (ug/L)	<15.0	<15.0	<15.0	<15	100.0	ug/L
Total Organic Carbon (TOC) (mg/L)	2.0	2.0	1.5	1.8	NA	mg/L
Total Organic Halogens (TOX) (ug/L)	40.8	38.0	156.2	150.0	NA	ug/L
List 3 Inorganic Parameters Unfiltered						
Antimony (ug/L)	--	--	--	<3.0	6.0	ug/L
Arsenic (ug/L)	--	--	--	<3.0	50.0	ug/L
Barium (ug/L)	--	--	--	238.0	2,000.0	ug/L
Beryllium (ug/L)	--	--	--	<2.0	4.0	ug/L
Boron (ug/L)	--	--	--	116.0	2,000.0	ug/L
Cadmium (ug/L)	--	--	--	<2.0	5.0	ug/L
Chloride (mg/L)	--	--	--	**357.0**	200.0	mg/L
Chromium (ug/L)	--	--	--	<7.0	100.0	ug/L
Cobalt (ug/L)	--	--	--	<50.0	1,000.0	ug/L
Copper (ug/L)	--	--	--	<20.0	650.0	ug/L
Cyanide (mg/L)	--	--	--	<0.104	0.20	mg/L
Fluoride (mg/L)	--	--	--	0.13	4.0	mg/L
Iron (ug/L)	--	--	--	3,040.0	5,000.0	ug/L
Lead (ug/L)	--	--	--	<5.0	7.5	ug/L
Manganese (ug/L)	--	--	--	**5,680.0**	150.0	ug/L
Mercury (ug/L)	--	--	--	<0.20	2.0	ug/L
Nickel (ug/L)	--	--	--	<40.0	100.0	ug/L
Nitrate as N (mg/L)	--	--	--	<1.0	10.0	mg/L
Selenium (ug/L)	--	--	--	<5.0	50.0	ug/L
Silver (ug/L)	--	--	--	<10.0	50.0	ug/L
Sulfate (mg/L)	--	--	--	118.0	400.0	ug/L
Thallium (ug/L)	--	--	--	<1.0	2.0	ug/L
Total Dissolved Solids (mg/L)	--	--	--	**1,550.0**	1,200.0	mg/L
Zinc (ug/L)	--	--	--	<20.0	5,000.0	ug/L

Table 5-5.1

Supplemental Permit Condition 6b
Class I Concentrations
Closed Collinsville Landfill

Monitoring Location MW-1						
Compound	**Aug-10**	**Oct-10**	**Feb-11**	**May-11**	**Class I**	
List 3 Organic Parameters Unfiltered						
Benzene (ug/L)	--	--	--	<0.15	5.0	ug/L
Dichloromethane (ug/L)	--	--	--	<0.15	5.0	ug/L
para-Dichlorobenzene (ug/L)	--	--	--	<0.25	75.0	ug/L
Monochlorobenzene (Chlorobenzene) (ug/L)	--	--	--	<0.25	100.0	ug/L
Pentachlorophenol (ug/L)	--	--	--	<0.069	1.0	ug/L
Picloram (ug/L)	--	--	--	<0.056	500.0	ug/L

NOTES:

All units are as noted

Bolded where the concentration exceeds Class I groundwater quality standards

<: Compound not detected at or above detection limit. Value shown is the detection limit of the compound for the analytical process.

-- : Not tested

* Indicates a lab error had occurred and the sample was resubmitted in March 2010

** Indicates a lab error had occurred and the sample was resubmitted in June 2010

R: RPD outside accepted recovery limits

S: Spike Recovery outside accepted recovery limits

ref: reference

MSL: Mean Sea Level

LS: Land Surface

Fr Meas Pt: From Measuring Point

Table 5-5.2

Supplemental Permit Condition 6b
Class I Concentrations
Closed Collinsville Landfill

Monitoring Location MW-2						
Compound	**Aug-10**	**Oct-10**	**Feb-11**	**May-11**	**Class I**	
List 1						
Temperature of Water (unfiltered F)	60.30	61.36	50.07	54.39	NA	
Spec Cond. (Unfiltered)	0.627	0.932	0.496	0.510	NA	
pH (Unfiltered units)	6.76	6.94	6.70	6.58	6.5-9.0	
Elev of GW Surf (ft ref MSL)	485.91	485.35	486.35	486.79	NA	
Depth of Water (ft below LS)	9.17	9.73	8.73	8.29	NA	
BTM Well Elev (ft ref MSL)	480.30	480.30	480.30	480.30	NA	
Depth to Water Fr Mea Pt (ft)	10.39	10.95	9.95	9.51	NA	
List 2 Filtered						
Ammonia as N Diss (mg/L)	<0.10	<0.10	<0.10	<0.10	NA	mg/L
Arsenic As, Diss (ug/L)	<5.0	<5.0	<5.0	<5.0	50.0	ug/L
Cadmium Cd, Diss (ug/L)	<2.0	<2.0	<2.0	<2.0	5.0	ug/L
Chloride Diss (mg/L)	20.0	25.0	23.0	9.0	200.0	mg/L
Iron Fe, Diss (ug/L)	<40	65.8	<40	<40.0	5,000.0	ug/L
Lead Pb, Diss (ug/L)	<5.0	<5.0	<5.0	<5.0	8.0	ug/L
Manganese Mn, Diss (ug/L)	48.8	131.0	<15	15.9	150.0	ug/L
Mercury Hg, Diss (ug/L)	<0.20	<0.20	<0.20	<0.20	2.0	ug/L
Sulfate SO4, Diss (mg/L)	101.0	112.0	96.0	77.0	400.0	mg/L
Total Dissolved Solids (TDS, mg/L)	482.0	492.0	440.0	308.0	1,200.0	mg/L
List 2 Unfiltered						
Cyanide CN, Total (mg/L)	<0.100	<0.100	<0.100	<0.110	0.20	mg/L
Phenols (Total Recoverable) (ug/L)	<15.0	<15.0	<15.0	<15.0	100.0	ug/L
Total Organic Carbon (TOC) (mg/L)	1.5	2.2	1.2	1.4	NA	mg/L
Total Organic Halogens (TOX) (ug/L)	20.0	<20	<20	39.0	NA	ug/L
List 3 Inorganic Parameters Unfiltered						
Antimony (ug/L)	--	--	--	<3.0	6.0	ug/L
Arsenic (ug/L)	--	--	--	4.2	50.0	ug/L
Barium (ug/L)	--	--	--	56.2	2,000.0	ug/L
Beryllium (ug/L)	--	--	--	<2.0	4.0	ug/L
Boron (ug/L)	--	--	--	52.6	2,000.0	ug/L
Cadmium (ug/L)	--	--	--	<2.0	5.0	ug/L
Chloride (mg/L)	--	--	--	9.0	200.0	mg/L
Chromium (ug/L)	--	--	--	<7.0	100.0	ug/L
Cobalt (ug/L)	--	--	--	<50.0	1,000.0	ug/L
Copper (ug/L)	--	--	--	<20.0	650.0	ug/L
Cyanide (mg/L)	--	--	--	<0.110	0.20	mg/L
Fluoride (mg/L)	--	--	--	0.20	4.0	mg/L
Iron (ug/L)	--	--	--	<40.0	5,000.0	ug/L
Lead (ug/L)	--	--	--	<5.0	7.5	ug/L
Manganese (ug/L)	--	--	--	<15.0	150.0	ug/L
Mercury (ug/L)	--	--	--	<0.20	2.0	ug/L
Nickel (ug/L)	--	--	--	<40.0	100.0	ug/L
Nitrate as N (mg/L)	--	--	--	<1.0	10.0	mg/L
Selenium (ug/L)	--	--	--	<5.0	50.0	ug/L
Silver (ug/L)	--	--	--	<10.0	50.0	ug/L
Sulfate (mg/L)	--	--	--	76.0	400.0	ug/L
Thallium (ug/L)	--	--	--	<1.0	2.0	ug/L
Total Dissolved Solids (mg/L)	--	--	--	320.0	1,200.0	mg/L
Zinc (ug/L)	--	--	--	<20.0	5,000.0	ug/L

Table 5-5.2

Supplemental Permit Condition 6b
Class I Concentrations
Closed Collinsville Landfill

Monitoring Location MW-2						
Compound	**Aug-10**	**Oct-10**	**Feb-11**	**May-11**	**Class I**	
List 3 Organic Parameters Unfiltered						
Benzene (ug/L)	--	--	--	<0.15	5.0	ug/L
para-Dichlorobenzene (ug/L)	--	--	--	<0.15	5.0	ug/L
para-Dichlorobenzene (ug/L)	--	--	--	<0.25	75.0	ug/L
Monochlorobenzene (Chlorobenzene) (ug/L)	--	--	--	<0.25	100.0	ug/L
Pentachlorophenol (ug/L)	--	--	--	<0.069	1.0	ug/L
Picloram (ug/L)	--	--	--	<0.056	500.0	ug/L

NOTES:

All units are as noted

Bolded where the concentration exceeds Class I groundwater quality standards

<: Compound not detected at or above detection limit. Value shown is the detection limit of the compound for the analytical process.

-- : Not tested

** Indicates a lab error had occurred and the sample was resubmitted in June 2010

S: Spike Recovery outside accepted recovery limits

ref: reference

MSL: Mean Sea Level

LS: Land Surface

Fr Meas Pt: From Measuring Point

Table 5-5.3

Supplemental Permit Condition 6b
Class I Concentrations
Closed Collinsville Landfill

Monitoring Location MW-4						
Compound	**Aug-10**	**Oct-10**	**Feb-11**	**May-11**	**Class I**	
List 1						
Temperature of Water (unfiltered F)	57.76	59.49	54.18	56.07	NA	
Spec Cond. (Unfiltered)	1.666	2.397	1.457	1.889	NA	
pH (Unfiltered units)	6.60	6.61	**6.43**	**6.42**	6.5-9.0	
Elev of GW Surf (ft ref MSL)	488.07	487.74	488.66	493.10	NA	
Depth of Water (ft below LS)	7.36	7.69	6.77	2.33	NA	
BTM Well Elev (ft ref MSL)	472.00	472.00	472.00	472.00	NA	
Depth to Water Fr Mea Pt (ft)	10.33	10.66	9.74	5.30	NA	
List 2 Filtered						
Ammonia as N Diss (mg/L)	<0.10	<0.10	0.10	<0.10	NA	mg/L
Arsenic AS, Diss (ug/L)	11.40	7.20	12.70	12.0	50.0	ug/L
Cadmium Cd, Diss (ug/L)	<2.0	<2.0	<2.0	<2.0	5.0	ug/L
Chloride Diss (mg/L)	**364.0**	**342.0**	**266.0**	**213.0**	200.0	mg/L
Iron Fe, Diss (ug/L)	**5,380.0**	4,830.0	**8,480.0**	**12,900.0**	5,000.0	ug/L
Lead Pb, Diss (ug/L)	<5.0	<5.0	<5.0	<5.0	8.0	ug/L
Manganese Mn, Diss (ug/L)	**7,690.0**	**7,460.0**	**11,200.0**	**13,600.0**	150.0	ug/L
Mercury Hg, Diss (ug/L)	<0.20	<0.20	<0.20	<0.20	2.0	ug/L
Sulfate SO4, Diss (mg/L)	111.0	117.0	74.0	73.0	400.0	mg/L
Total Dissolved Solids (TDS, mg/L)	**1,660.0**	**1,480.0**	**1,230.0**	1,100.0	1,200	mg/L
List 2 Unfiltered						
Cyanide CN, Total (mg/L)	<0.100	<0.100	<0.108	<0.112	0.20	mg/L
Phenols (Total Recoverable) (ug/L)	<15.0	<15.0	<15.0	<15.0	100.0	ug/L
Total Organic Carbon (TOC) (mg/L)	1.8	2.0	2.0	2.5	NA	mg/L
Total Organic Halogens (TOX) (ug/L)	36.5	37.7	26.1	230.0	NA	ug/L
List 3 Inorganic Parameters Unfiltered						
Antimony (ug/L)	--	--	--	<3.0	6.0	ug/L
Arsenic (ug/L)	--	--	--	14.2	50.0	ug/L
Barium (ug/L)	--	--	--	366.0	2,000.0	ug/L
Beryllium (ug/L)	--	--	--	<2.0	4.0	ug/L
Boron (ug/L)	--	--	--	107.0	2,000.0	ug/L
Cadmium (ug/L)	--	--	--	<2.0	5.0	ug/L
Chloride (mg/L)	--	--	--	**217.0**	200.0	mg/L
Chromium (ug/L)	--	--	--	<7.0	100.0	ug/L
Cobalt (ug/L)	--	--	--	<50.0	1,000.0	ug/L
Copper (ug/L)	--	--	--	<20.0	650.0	ug/L
Cyanide (mg/L)	--	--	--	<0.112	0.20	mg/L
Fluoride (mg/L)	--	--	--	0.20	4.0	mg/L
Iron (ug/L)	--	--	--	**13,900.0**	5,000	ug/L
Lead (ug/L)	--	--	--	<5.0	7.5	ug/L
Manganese (ug/L)	--	--	--	**14,600.0**	150.0	ug/L
Mercury (ug/L)	--	--	--	<0.20	2.0	ug/L
Nickel (ug/L)	--	--	--	<40.0	100.0	ug/L
Nitrate as N (mg/L)	--	--	--	<1.0	10.0	mg/L
Selenium (ug/L)	--	--	--	<5.0	50.0	ug/L
Silver (ug/L)	--	--	--	<10.0	50.0	ug/L
Sulfate (mg/L)	--	--	--	84.0	400.0	ug/L
Thallium (ug/L)	--	--	--	<1.0	2.0	ug/L
Total Dissolved Solids (mg/L)	--	--	--	1,140.0	1,200.0	mg/L
Zinc (ug/L)	--	--	--	<20.0	5,000.0	ug/L

Table 5-5.3

Supplemental Permit Condition 6b
Class I Concentrations
Closed Collinsville Landfill

Monitoring Location MW-4						
Compound	**Aug-10**	**Oct-10**	**Feb-11**	**May-11**	**Class I**	
List 3 Organic Parameters Unfiltered						
Benzene (ug/L)	--	--	--	<0.15	5.0	ug/L
Dichloromethane (ug/L)	--	--	--	<0.15	5.0	ug/L
para-Dichlorobenzene (ug/L)	--	--	--	<0.25	75.0	ug/L
Monochlorobenzene (Chlorobenzene) (ug/L)	--	--	--	<0.25	100.0	ug/L
Pentachlorophenol (ug/L)	--	--	--	<0.069	1.0	ug/L
Picloram (ug/L)	--	--	--	<0.056	500.0	ug/L

NOTES:

All units are as noted

Bolded where the concentration exceeds Class I groundwater quality standards

<: Compound not detected at or above detection limit. Value shown is the detection limit of the compound for the analytical process.

-- : Not tested

** Indicates a lab error had occurred and the sample was resubmitted in June 2010

R: RPD outside accepted recovery limits

S: Spike Recovery outside accepted recovery limits

ref: reference

MSL: Mean Sea Level

LS: Land Surface

Fr Meas Pt: From Measuring Point

Table 5-5-4

Supplemental Permit Condition 6b
Class I Concentrations
Closed Collinsville Landfill

Monitoring Location MW-6						
Compound	**Aug-10**	**Oct-10**	**Feb-11**	**May-11**	**Class I**	
List 1						
Temperature of Water (unfiltered F)	62.31	62.74	52.34	64.08	NA	
Spec Cond. (Unfiltered)	1.102	1.502	1.030	1.465	NA	
pH (Unfiltered units)	7.00	6.70	6.71	6.74	6.5-9.0	
Elev of GW Surf (ft ref MSL)	531.00	531.00	532.02	534.70	NA	
Depth of Water (ft below LS)	30.81	30.81	29.79	27.11	NA	
BTM Well Elev (ft ref MSL)	521.77	521.77	521.77	521.77	NA	
Depth to Water Fr Mea Pt (ft)	32.70	32.70	31.68	29.00	NA	
List 2 Filtered						
Ammonia as N Diss (mg/L)	<0.10	<0.10	<0.10	<0.10	NA	mg/L
Arsenic As, Diss (ug/L)	<5.0	<5.0	<5.0	<5.0	50.0	ug/L
Cadmium Cd, Diss (ug/L)	<2.0	<2.0	<2.0	<2.0	5.0	ug/L
Chloride Diss (mg/L)	64.0	68.0	65.0	66.0	200.0	mg/L
Iron Fe, Diss (ug/L)	<40	<40	<40	<40.0	5,000.0	ug/L
Lead Pb, Diss (ug/L)	<5.0	<5.0	<5.0	<5.0	8.0	ug/L
Manganese Mn, Diss (ug/L)	**190.0**	**229.0**	**199.0**	**206.0**	150.0	ug/L
Mercury Hg, Diss (ug/L)	<0.20	<0.20	<0.20	<0.20	2.0	ug/L
Sulfate SO4, Diss (mg/L)	88.0	82.0	80.0	82.0	400.0	mg/L
Total Dissolved Solids (TDS, mg/L)	912.0	864.0	892.0	920.0	1,200	mg/L
List 2 Unfiltered						
Cyanide CN, Total (mg/L)	<0.108	<0.104	<0.100	<0.100	0.20	mg/L
Phenols (Total Recoverable) (ug/L)	<15.0	<15.0	<15.0	<15.0	100.0	ug/L
Total Organic Carbon (TOC) (mg/L)	3.7	4.3	3.5	4.2	NA	mg/L
Total Organic Halogens (TOX) (ug/L)	40.3	37.9	36.6	98.0	NA	ug/L
List 3 Inorganic Parameters Unfiltered						
Antimony (ug/L)				<3.0	6.0	ug/L
Arsenic (ug/L)				<3.0	50.0	ug/L
Barium (ug/L)				105.0	2,000.0	ug/L
Beryllium (ug/L)				<2.0	4.0	ug/L
Boron (ug/L)				125.0	2,000.0	ug/L
Cadmium (ug/L)				<2.0	5.0	ug/L
Chloride (mg/L)				67.0	200.0	mg/L
Chromium (ug/L)				<7.0	100.0	ug/L
Cobalt (ug/L)				<50.0	1,000.0	ug/L
Copper (ug/L)				<20.0	650.0	ug/L
Cyanide (mg/L)				<0.100	0.20	mg/L
Fluoride (mg/L)				0.32	4.0	mg/L
Iron (ug/L)				<40.0	5,000	ug/L
Lead (ug/L)				<5.0	7.5	ug/L
Manganese (ug/L)				**213.0**	150.0	ug/L
Mercury (ug/L)				<0.20	2.0	ug/L
Nickel (ug/L)				<40.0	100.0	ug/L
Nitrate as N (mg/L)				<1.0	10.0	mg/L
Selenium (ug/L)				<5.0	50.0	ug/L
Silver (ug/L)				<10.0	50.0	ug/L
Sulfate (mg/L)				90.0	400.0	ug/L
Thallium (ug/L)				<1.0	2.0	ug/L
Total Dissolved Solids (mg/L)				924.0	1,200.0	mg/L
Zinc (ug/L)				<20.0	5,000.0	ug/L

Table 5-5-4

Supplemental Permit Condition 6b
Class I Concentrations
Closed Collinsville Landfill

Monitoring Location MW-6						
Compound	**Aug-10**	**Oct-10**	**Feb-11**	**May-11**	**Class I**	
List 3 Organic Parameters Unfiltered						
Benzene (ug/L)				<0.15	5.0	ug/L
Dichloromethane (ug/L)	--	--	--	<0.15	5.0	ug/L
para-Dichlorobenzene (ug/L)				<0.25	75.0	ug/L
Monochlorobenzene (Chlorobenzene) (ug/L)				<0.25	100.0	ug/L
Pentachlorophenol (ug/L)				<0.069	1.0	ug/L
Picloram (ug/L)				<0.056	500.0	ug/L

NOTES:

All units are as noted

Bolded where the concentration exceeds Class I groundwater quality standards

<: Compound not detected at or above detection limit. Value shown is the detection limit of the compound for the analytical process.

-- : Not tested

** Indicates a lab error had occurred and the sample was resubmitted in June 2010

B: Analyte detected in the associated Method Blank

R: RPD outside accepted recovery limits

ref: reference

MSL: Mean Sea Level

LS: Land Surface

Fr Meas Pt: From Measuring Point

Exhibit 5-6

Historical Sampling (2011-2012) Information Previously Sent to IEPA in July 2012

(Tables 5-6.1, 5-6.2, 5-6.3, 5-6.4)

Table 5-6.1

Supplemental Permit Condition 6b
Class I Concentrations
Closed Collinsville Landfill

Monitoring Location MW-1							
Compound	**Aug-11**	**Oct-11**	**Feb-12**	**May-12**	**Class I**		
List 1							
Temperature of Water (unfiltered F)	62.35	59.79	56.39	60.39	NA		
Spec Cond. (Unfiltered)	2.279	2.974	3.068	2.499	NA		
pH (Unfiltered units)	**6.39**	**6.24**	6.75	**6.32**	6.5-9.0		
Elev of GW Surf (ft ref MSL)	488.50	488.47	489.63	489.03	NA		
Depth of Water (ft below LS)	7.68	7.71	6.55	7.15	NA		
BTM Well Elev (ft ref MSL)	472.20	472.20	472.20	472.20	NA		
Depth to Water Fr Mea Pt (ft)	10.40	10.43	9.27	9.87	NA		
List 2 Filtered							
Ammonia as N Diss (mg/L)	0.16	0.10	<0.10	0.13	NA	mg/L	
Arsenic AS, Diss (ug/L)	<5.0	<5.0	<5.0	<5.0	50.0	ug/L	
Cadmium Cd, Diss (ug/L)	<2.0	<2.0	<2.0	<2.0	5.0	ug/L	
Chloride Diss (mg/L)	**339.0**	**349.0 S**	**363.0**	**331.0**	200.0	mg/L	
Iron Fe, Diss (ug/L)	337.0	188.0	76.0	1,060.0	5,000.0	ug/L	
Lead Pb, Diss (ug/L)	<5.0	<5.0	<5.0	<5.0	8.0	ug/L	
Manganese Mn, Diss (ug/L)	**3,060.0**	**3,010.0**	**1,170.0**	**4,710.0**	150.0	ug/L	
Mercury Hg, Diss (ug/L)	<0.20	<0.20	<0.20	<0.20	2.0	ug/L	
Sulfate SO4, Diss (mg/L)	103.0	89.0	104.0	67.0	400.0	mg/L	
Total Dissolved Solids (TDS, mg/L)	**1,450.0**	**1,410.0**	**1,510.0**	**1,470.0**	1,200.0	mg/L	
List 2 Unfiltered							
Cyanide CN, Total (mg/L)	<0.108	<0.100	<0.106	<0.100	0.20	mg/L	
Phenols (Total Recoverable) (ug/L)	<30.0	<15.0	<15.0	<15	100.0	ug/L	
Total Organic Carbon (TOC) (mg/L)	1.8	1.4	2.3	1.1	NA	mg/L	
Total Organic Halogens (TOX) (ug/L)	47.7	45.2	138.1	47.6	NA	ug/L	
List 3 Inorganic Parameters Unfiltered							
Antimony (ug/L)	--	--	--	<3.0	6.0	ug/L	
Arsenic (ug/L)	--	--	--	<3.0	50.0	ug/L	
Barium (ug/L)	--	--	--	232.0	2,000.0	ug/L	
Beryllium (ug/L)	--	--	--	<2.0	4.0	ug/L	
Boron (ug/L)	--	--	--	126.0	2,000.0	ug/L	
Cadmium (ug/L)	--	--	--	<2.0	5.0	ug/L	
Chloride (mg/L)	--	--	--	**352.0**	200.0	mg/L	*
Chromium (ug/L)	--	--	--	<7.0	100.0	ug/L	
Cobalt (ug/L)	--	--	--	<50.0	1,000.0	ug/L	
Copper (ug/L)	--	--	--	<20.0	650.0	ug/L	
Cyanide (mg/L)	--	--	--	<0.100	0.20	mg/L	*
Fluoride (mg/L)	--	--	--	0.17	4.0	mg/L	*
Iron (ug/L)	--	--	--	1,250.0	5,000.0	ug/L	
Lead (ug/L)	--	--	--	<5.0	7.5	ug/L	
Manganese (ug/L)	--	--	--	**5,060.0**	150.0	ug/L	
Mercury (ug/L)	--	--	--	<0.20	2.0	ug/L	
Nickel (ug/L)	--	--	--	<40.0	100.0	ug/L	
Nitrate as N (mg/L)	--	--	--	<1.0	10.0	mg/L	*
Selenium (ug/L)	--	--	--	<5.0	50.0	ug/L	
Silver (ug/L)	--	--	--	<10.0	50.0	ug/L	
Sulfate (mg/L)	--	--	--	85.0	400.0	ug/L	
Thallium (ug/L)	--	--	--	<1.0	2.0	ug/L	
Total Dissolved Solids (mg/L)	--	--	--	**1,460.0**	1,200.0	mg/L	
Zinc (ug/L)	--	--	--	<20.0	5,000.0	ug/L	

Table 5-6.1

Supplemental Permit Condition 6b
Class I Concentrations
Closed Collinsville Landfill

Monitoring Location MW-1						
Compound	**Aug-11**	**Oct-11**	**Feb-12**	**May-12**	**Class I**	
List 3 Organic Parameters Unfiltered						
Benzene (ug/L)	--	--	--	<0.15	5.0	ug/L
Dichloromethane (ug/L)	--	--	--	<0.15	5.0	ug/L
para-Dichlorobenzene (ug/L)	--	--	--	<0.25	75.0	ug/L
Monochlorobenzene (Chlorobenzene) (ug/L)	--	--	--	<0.25	100.0	ug/L
Pentachlorophenol (ug/L)	--	--	--	<0.069	1.0	ug/L
Picloram (ug/L)	--	--	--	<0.056	500.0	ug/L

NOTES:

All units are as noted

Bolded where the concentration exceeds Class I groundwater quality standards

<: Compound not detected at or above detection limit. Value shown is the detection limit of the compound for the analytical process.

-- : Not tested

S: Spike Recovery outside accepted recovery limits

ref: reference

MSL: Mean Sea Level

LS: Land Surface

Fr Meas Pt: From Measuring Point

Table 5-6.2

Supplemental Permit Condition 6b
Class I Concentrations
Closed Collinsville Landfill

Monitoring Location MW-2						
Compound	**Aug-11**	**Oct-11**	**Feb-12**	**May-12**	**Class I**	
List 1						
Temperature of Water (unfiltered F)	60.46	60.08	50.97	55.31	NA	
Spec Cond. (Unfiltered)	0.626	0.951	0.876	0.693	NA	
pH (Unfiltered units)	6.73	6.45	6.75	**6.36***	6.5-9.0	
Elev of GW Surf (ft ref MSL)	485.10	485.08	488.14	485.89	NA	
Depth of Water (ft below LS)	9.98	10.00	6.94	9.19	NA	
BTM Well Elev (ft ref MSL)	480.30	480.30	480.30	480.30	NA	
Depth to Water Fr Mea Pt (ft)	11.20	11.22	8.16	10.41	NA	
List 2 Filtered						
Ammonia as N Diss (mg/L)	<0.10	<0.10	<0.10	<0.10	NA	mg/L
Arsenic As, Diss (ug/L)	<5.0	<5.0	<5.0	<5.0	50.0	ug/L
Cadmium Cd, Diss (ug/L)	<2.0	<2.0	<2.0	<2.0	5.0	ug/L
Chloride Diss (mg/L)	17.0	23.0	21.0	22.0	200.0	mg/L
Iron Fe, Diss (ug/L)	<40	<40	<40	<40.0	5,000.0	ug/L
Lead Pb, Diss (ug/L)	<5.0	<5.0	<5.0	<5.0	8.0	ug/L
Manganese Mn, Diss (ug/L)	72.3	<15	<15	<15	150.0	ug/L
Mercury Hg, Diss (ug/L)	<0.20	<0.20	<0.20	<0.20	2.0	ug/L
Sulfate SO4, Diss (mg/L)	80.0	101.0	108.0	78.0	400.0	mg/L
Total Dissolved Solids (TDS, mg/L)	406.0	456.0	420.0	414.0	1,200.0	mg/L
List 2 Unfiltered						
Cyanide CN, Total (mg/L)	<0.112	<0.100	<0.100	<0.100	0.20	mg/L
Phenols (Total Recoverable) (ug/L)	<15.0	<15.0	<15.0	<15.0	100.0	ug/L
Total Organic Carbon (TOC) (mg/L)	1.6	1.8	3.0	1.1	NA	mg/L
Total Organic Halogens (TOX) (ug/L)	<20	<20	<20	<20	NA	ug/L
List 3 Inorganic Parameters Unfiltered						
Antimony (ug/L)	--	--	--	<3.0	6.0	ug/L
Arsenic (ug/L)	--	--	--	<3.0	50.0	ug/L
Barium (ug/L)	--	--	--	78.7	2,000.0	ug/L
Beryllium (ug/L)	--	--	--	<2.0	4.0	ug/L
Boron (ug/L)	--	--	--	63.2	2,000.0	ug/L
Cadmium (ug/L)	--	--	--	<2.0	5.0	ug/L
Chloride (mg/L)	--	--	--	21.0	200.0	mg/L
Chromium (ug/L)	--	--	--	<7.0	100.0	ug/L
Cobalt (ug/L)	--	--	--	<50.0	1,000.0	ug/L
Copper (ug/L)	--	--	--	<20.0	650.0	ug/L
Cyanide (mg/L)	--	--	--	<0.100	0.20	mg/L
Fluoride (mg/L)	--	--	--	0.25	4.0	mg/L
Iron (ug/L)	--	--	--	<40.0	5,000.0	ug/L
Lead (ug/L)	--	--	--	<5.0	7.5	ug/L
Manganese (ug/L)	--	--	--	<15.0	150.0	ug/L
Mercury (ug/L)	--	--	--	<0.20	2.0	ug/L
Nickel (ug/L)	--	--	--	<40.0	100.0	ug/L
Nitrate as N (mg/L)	--	--	--	<1.0	10.0	mg/L
Selenium (ug/L)	--	--	--	<5.0	50.0	ug/L
Silver (ug/L)	--	--	--	<10.0	50.0	ug/L
Sulfate (mg/L)	--	--	--	71 S	400.0	ug/L
Thallium (ug/L)	--	--	--	<1.0	2.0	ug/L
Total Dissolved Solids (mg/L)	--	--	--	414.0	1,200.0	mg/L
Zinc (ug/L)	--	--	--	<20.0	5,000.0	ug/L

Table 5-6.2

Supplemental Permit Condition 6b
Class I Concentrations
Closed Collinsville Landfill

Monitoring Location MW-2						
Compound	**Aug-11**	**Oct-11**	**Feb-12**	**May-12**	**Class I**	
List 3 Organic Parameters Unfiltered						
Benzene (ug/L)	--	--	--	<0.15	5.0	ug/L
Dichloromethane (ug/L)	--	--	--	<0.15	5.0	ug/L
para-Dichlorobenzene (ug/L)	--	--	--	<0.25	75.0	ug/L
Monochlorobenzene (Chlorobenzene) (ug/L)	--	--	--	<0.25	100.0	ug/L
Pentachlorophenol (ug/L)	--	--	--	<0.069	1.0	ug/L
Picloram (ug/L)	--	--	--	<0.056	500.0	ug/L

NOTES:

All units are as noted

Bolded where the concentration exceeds Class I groundwater quality standards

<: Compound not detected at or above detection limit. Value shown is the detection limit of the compound for the analytical process.

-- : Not tested

** Indicates a lab error had occurred and the sample was resubmitted in June 2010

S: Spike Recovery outside accepted recovery limits

ref: reference

MSL: Mean Sea Level

LS: Land Surface

Fr Meas Pt: From Measuring Point

*pH originally recorded as 5.73 on 5/22/12 and recollected on 6/12/12 as 6.36.

Table 5-6.3

Supplemental Permit Condition 6b
Class I Concentrations
Closed Collinsville Landfill

Monitoring Location MW-4						
Compound	**Aug-11**	**Oct-11**	**Feb-12**	**May-12**	**Class I**	
List 1						
Temperature of Water (unfiltered F)	58.87	58.86	55.40	57.79	NA	
Spec Cond. (Unfiltered)	2.296	3.025	2.102	2.465	NA	
pH (Unfiltered units)	**6.39**	**6.21**	6.68	**6.30**	6.5-9.0	
Elev of GW Surf (ft ref MSL)	487.70	487.46	489.46	488.26	NA	
Depth of Water (ft below LS)	7.73	7.97	5.97	7.17	NA	
BTM Well Elev (ft ref MSL)	472.00	472.00	472.00	472.00	NA	
Depth to Water Fr Mea Pt (ft)	10.70	10.94	8.94	10.14	NA	
List 2 Filtered						
Ammonia as N Diss (mg/L)	0.16	<0.10	0.14	0.13	NA	mg/L
Arsenic AS, Diss (ug/L)	9.60	8.50	18.10	14.4	50.0	ug/L
Cadmium Cd, Diss (ug/L)	<2.0	<2.0	<2.0	<2.0	5.0	ug/L
Chloride Diss (mg/L)	**358.0**	**360.0**	180.0	**371.0**	200.0	mg/L
Iron Fe, Diss (ug/L)	**8,530.0**	**5,830.0**	**12,400.0**	**11,000.0 S**	5,000.0	ug/L
Lead Pb, Diss (ug/L)	<5.0	<5.0	<5.0	<5.0	8.0	ug/L
Manganese Mn, Diss (ug/L)	**9,170.0**	**7,880.0**	**13,200.0**	**10,600.0 S**	150.0	ug/L
Mercury Hg, Diss (ug/L)	<0.20 S	<0.20	<0.20	<0.20	2.0	ug/L
Sulfate SO4, Diss (mg/L)	112.0	110.0	63.0	80.0	400.0	mg/L
Total Dissolved Solids (TDS, mg/L)	**1,460.0**	**1,490.0**	982.0	**1,490.0**	1,200	mg/L
List 2 Unfiltered						
Cyanide CN, Total (mg/L)	<0.100	<0.100	<0.100	<0.100	0.20	mg/L
Phenols (Total Recoverable) (ug/L)	<15.0	<15.0	<15.0	<15.0	100.0	ug/L
Total Organic Carbon (TOC) (mg/L)	1.8	1.3	3.2	1.0	NA	mg/L
Total Organic Halogens (TOX) (ug/L)	39.1	42.4	35.9	33.6	NA	ug/L
List 3 Inorganic Parameters Unfiltered						
Antimony (ug/L)	--	--	--	<3.0	6.0	ug/L
Arsenic (ug/L)	--	--	--	13.7	50.0	ug/L
Barium (ug/L)	--	--	--	387.0	2,000.0	ug/L
Beryllium (ug/L)	--	--	--	<2.0	4.0	ug/L
Boron (ug/L)	--	--	--	104.0	2,000.0	ug/L
Cadmium (ug/L)	--	--	--	<2.0	5.0	ug/L
Chloride (mg/L)	--	--	--	**365.0**	200.0	mg/L
Chromium (ug/L)	--	--	--	<7.0	100.0	ug/L
Cobalt (ug/L)	--	--	--	<50.0	1,000.0	ug/L
Copper (ug/L)	--	--	--	<20.0	650.0	ug/L
Cyanide (mg/L)	--	--	--	<0.100	0.20	mg/L
Fluoride (mg/L)	--	--	--	0.20	4.0	mg/L
Iron (ug/L)	--	--	--	**11,000.0**	5,000	ug/L
Lead (ug/L)	--	--	--	<5.0	7.5	ug/L
Manganese (ug/L)	--	--	--	**11,400.0**	150.0	ug/L
Mercury (ug/L)	--	--	--	<0.20	2.0	ug/L
Nickel (ug/L)	--	--	--	<40.0	100.0	ug/L
Nitrate as N (mg/L)	--	--	--	<1.0	10.0	mg/L
Selenium (ug/L)	--	--	--	<5.0	50.0	ug/L
Silver (ug/L)	--	--	--	<10.0	50.0	ug/L
Sulfate (mg/L)	--	--	--	83.0	400.0	ug/L
Thallium (ug/L)	--	--	--	<1.0	2.0	ug/L
Total Dissolved Solids (mg/L)	--	--	--	**1,460.0**	1,200.0	mg/L
Zinc (ug/L)	--	--	--	<20.0	5,000.0	ug/L

Table 5-6.3

Supplemental Permit Condition 6b
Class I Concentrations
Closed Collinsville Landfill

Monitoring Location MW-4						
Compound	**Aug-11**	**Oct-11**	**Feb-12**	**May-12**	**Class I**	
List 3 Organic Parameters Unfiltered						
Benzene (ug/L)	--	--	--	<0.15	5.0	ug/L
Dichloromethane (ug/L)	--	--	--	<0.15	5.0	ug/L
para-Dichlorobenzene (ug/L)	--	--	--	<0.25	75.0	ug/L
Monochlorobenzene (Chlorobenzene) (ug/L)	--	--	--	<0.25	100.0	ug/L
Pentachlorophenol (ug/L)	--	--	--	<0.069	1.0	ug/L
Picloram (ug/L)	--	--	--	<0.056	500.0	ug/L

NOTES:

All units are as noted

Bolded where the concentration exceeds Class I groundwater quality standards

<: Compound not detected at or above detection limit. Value shown is the detection limit of the compound for the analytical process.

-- : Not tested

** Indicates a lab error had occurred and the sample was resubmitted in June 2010

S: Spike Recovery outside accepted recovery limits

ref: reference

MSL: Mean Sea Level

LS: Land Surface

Fr Meas Pt: From Measuring Point

Table 5-6.4

Supplemental Permit Condition 6b
Class I Concentrations
Closed Collinsville Landfill

Monitoring Location MW-6						
Compound	**Aug-11**	**Oct-11**	**Feb-12**	**May-12**	**Class I**	
List 1						
Temperature of Water (unfiltered F)	63.61	60.44	59.97	62.28	NA	
Spec Cond. (Unfiltered)	1.391	1.796	1.883	1.520	NA	
pH (Unfiltered units)	6.76	**6.49**	6.84	6.56	6.5-9.0	
Elev of GW Surf (ft ref MSL)	533.56	532.04	532.08	533.45	NA	
Depth of Water (ft below LS)	28.25	29.77	29.73	28.36	NA	
BTM Well Elev (ft ref MSL)	521.77	521.77	521.77	521.77	NA	
Depth to Water Fr Mea Pt (ft)	30.14	31.66	31.62	30.25	NA	
List 2 Filtered						
Ammonia as N Diss (mg/L)	<0.10	0.14	<0.10	<0.10	NA	mg/L
Arsenic As, Diss (ug/L)	<5.0	<5.0	<5.0	<5.0	50.0	ug/L
Cadmium Cd, Diss (ug/L)	<2.0	<2.0	<2.0	<2.0	5.0	ug/L
Chloride Diss (mg/L)	64.0	72.0	74.0	67.0	200.0	mg/L
Iron Fe, Diss (ug/L)	<40	<40	<40	<40.0	5,000.0	ug/L
Lead Pb, Diss (ug/L)	<5.0	<5.0	<5.0	<5.0	8.0	ug/L
Manganese Mn, Diss (ug/L)	**176.0**	**187.0**	**172.0**	**205.0**	150.0	ug/L
Mercury Hg, Diss (ug/L)	<0.20	<0.20	<0.20	<0.20	2.0	ug/L
Sulfate SO4, Diss (mg/L)	71.0	68.0	73.0	52.0	400.0	mg/L
Total Dissolved Solids (TDS, mg/L)	890.0	918.0	930.0	922.0	1,200	mg/L
List 2 Unfiltered						
Cyanide CN, Total (mg/L)	<0.106	<0.100	<0.100	<0.100	0.20	mg/L
Phenols (Total Recoverable) (ug/L)	<15.0	<15.0	<15.0	<15.0	100.0	ug/L
Total Organic Carbon (TOC) (mg/L)	3.8	4.0	4.5	3.2	NA	mg/L
Total Organic Halogens (TOX) (ug/L)	46.5	38.6	35.9	35.2	NA	ug/L
List 3 Inorganic Parameters Unfiltered						
Antimony (ug/L)				<3.0	6.0	ug/L
Arsenic (ug/L)				<3.0	50.0	ug/L
Barium (ug/L)				109.0	2,000.0	ug/L
Beryllium (ug/L)				<2.0	4.0	ug/L
Boron (ug/L)				148.0	2,000.0	ug/L
Cadmium (ug/L)				<2.0	5.0	ug/L
Chloride (mg/L)				71.0	200.0	mg/L
Chromium (ug/L)				<7.0	100.0	ug/L
Cobalt (ug/L)				<50.0	1,000.0	ug/L
Copper (ug/L)				21.40	650.0	ug/L
Cyanide (mg/L)				<0.100	0.20	mg/L
Fluoride (mg/L)				0.36	4.0	mg/L
Iron (ug/L)				<40.0	5,000	ug/L
Lead (ug/L)				<5.0	7.5	ug/L
Manganese (ug/L)				**203.0**	150.0	ug/L
Mercury (ug/L)				<0.20	2.0	ug/L
Nickel (ug/L)				<40.0	100.0	ug/L
Nitrate as N (mg/L)				<1.0	10.0	mg/L
Selenium (ug/L)				<5.0	50.0	ug/L
Silver (ug/L)				<10.0	50.0	ug/L
Sulfate (mg/L)				55.0	400.0	ug/L
Thallium (ug/L)				<1.0	2.0	ug/L
Total Dissolved Solids (mg/L)				880.0	1,200.0	mg/L
Zinc (ug/L)				<20.0	5,000.0	ug/L

Table 5-6.4

Supplemental Permit Condition 6b
Class I Concentrations
Closed Collinsville Landfill

Monitoring Location MW-6						
Compound	**Aug-11**	**Oct-11**	**Feb-12**	**May-12**	**Class I**	
List 3 Organic Parameters Unfiltered						
Benzene (ug/L)				<0.15	5.0	ug/L
Dichloromethane (ug/L)	--	--	--	<0.15	5.0	ug/L
para-Dichlorobenzene (ug/L)				<0.25	75.0	ug/L
Monochlorobenzene (Chlorobenzene) (ug/L)				<0.25	100.0	ug/L
Pentachlorophenol (ug/L)				<0.069	1.0	ug/L
Picloram (ug/L)				<0.056	500.0	ug/L

NOTES:

All units are as noted

Bolded where the concentration exceeds Class I groundwater quality standards

<: Compound not detected at or above detection limit. Value shown is the detection limit of the compound for the analytical process.

-- : Not tested

ref: reference

MSL: Mean Sea Level

LS: Land Surface

Fr Meas Pt: From Measuring Point

Exhibit 5-7

Closed Collinsville Landfill- Permit No. 1972-71-OP, (Federal ID119428001), Assessment Monitoring Report for 2012-2013,
July 2013 Closed, Supplemental Permit No. 2013-313-SP

NOTE: This copy excludes the electronic data submitted to the IEPA as Appendix B, Appendix C Field Notes and Appendix D Chain of Custodies and Analytical Results of the above report that is provided in the data summary tables of this report.

2013 GROUNDWATER ASSESSMENT MONITORING REPORT
CLOSED COLLINSVILLE LANDFILL
COLLINSVILLE, ILLINOIS

JULY 2013

Prepared for:

CITY OF COLLINSVILLE
COLLINSVILLE, ILLINOIS 62234

PROJECT NUMBER: 28878

PREPARED BY:

TETRA TECH, INC.
1634 Eastport Plaza
Collinsville, Illinois 62234

TABLE OF CONTENTS

APPENDICES

ACRONYMS

2xPQL	two (2) times practical quantitation limit
bgs	below ground surface
CCA	Compliance Commitment Agreement
COC	chain of custody
DOT	Department of Transportation
IAC	Illinois Administrative Code
IDW	investigative derived waste
IEPA	Illinois Environmental Protection Agency
mg/L	milligrams per liter
PCB	polychlorinated biphenyls
PPE	personnel protective equipment
PQL	practical quantitation limit
SVOC	semi-volatile organic compounds
TDS	total dissolved solids
TOC	total organic carbon
TOX	total organic halogens
ug/L	micrograms per liter
USEPA	U.S. Environmental Protection Agency
VN	Violation Notice
VOC	volatile organic compounds

EXECUTIVE SUMMARY

Tetra Tech, Inc. (Tetra Tech) was retained by the City of Collinsville, Illinois (the City) to prepare this Groundwater Assessment Monitoring Report as an annual assessment of the Closed City of Collinsville Landfill's monitoring program for Illinois Environmental Protection Agency's (IEPA) review.

This investigation was prompted based on Violation Notice M-1998-00195, issued by the IEPA on October 6, 1998. This violation notice was a result of the IEPA's inspection of the landfill completed on April 22, 1998 that identified levels of chloride and Total Dissolved Solids (TDS) in monitoring well MW-1 had exceeded the Class I Groundwater Standards of 200 mg/L and 1,200 mg/L, respectively (35 Illinois Administrative Code (IAC) 620.420(a), except as provided in Section 620.450 or subsection (a)(3) or (d)).

In response to Violation Notice M-1998-00195, Tetra Tech performed several surface and subsurface investigations. The initial investigation was performed in 1999. In order to further assess the elevated concentrations of certain constituents, Tetra Tech prepared a Groundwater Assessment Plan dated May 2000 as a Supplemental Permit Application for the Closed Collinsville Landfill, pursuant to 35 Illinois Administrative Code Subtitle G, Part 807. The IEPA approved Supplemental Permit Number 2000-173-SP on January 3, 2001 to modify the groundwater monitoring program. The annual assessment of the groundwater at the Closed Collinsville Landfill was established under Supplemental Permit Number 2000-173-SP. Since 2000, the requirements of the groundwater monitoring program have been adjusted based on the findings of the 2006 assessment monitoring but, quarterly monitoring and an annual evaluation of the data continues under Supplemental Permit Number 2012-313-SP.

The subject of this report, submitted as a Supplemental Permit Application in accordance with Supplemental Permit Number 2012-313-SP, includes the yearly (August 2012 through May 2013) evaluation of the:

- Direction of groundwater flow;
- Hydraulic gradient; and
- Analytical results for the quarterly sampling events and comparison to the Class I Groundwater Quality Standards, background concentrations and site-specific organic concentrations.

1.0 INTRODUCTION

This annual Groundwater Assessment Monitoring Report has been prepared by Tetra Tech on behalf of the City for submittal to the IEPA for review and approval.

1.1 Purpose and Objective

According to the approved Supplemental Permit Number 2012-313-SP, the City shall prepare an annual assessment of the monitoring program. The objective of this report includes an evaluation of the August 2012 through May 2013 direction of groundwater flow, hydraulic gradient, analytical results from the quarterly sampling events, and comparison of the analytical data to Class I concentrations, background concentrations and site-specific organic concentrations.

1.2 Statutory Authority

Authority for responding to releases or threats of release from a landfill affecting groundwater quality is addressed in Title 35, Subtitle F, Chapter 1, Part 620 of the Illinois Environmental Protection Pollution Control Board. Under this act, the City or landfill owner is required to investigate, survey, test or gather other pertinent data to assess the existence, extent and nature of specified contaminants in groundwater. In addition, the City is authorized to undertake planning, engineering and other studies or investigations to prevent, limit, or mitigate the risk to human health or welfare and the environment.

2.0 SITE CHARACTERIZATION

The site, shown in Appendix A, Figure 1, is described as a closed sanitary landfill located along Lebanon Road due east and outside the city limits of Collinsville, Illinois. It is located in the northwest quarter of Section 36, Township 3 North, Range 8 West, Madison County, Illinois. The closed landfill is approximately 22 acres in area and was in operation under the 807 regulations from the early 1970's through 1984 under permit number 1972-71. The site was closed in October 1986. The IEPA certified the landfill was satisfactorily closed in a letter dated October 24, 1986. A leachate collection system was installed after closure. Under permit 2011-EP-1106, collected leachate is transported and discharged to the Collinsville Waste Water Treatment Plant.

Based on previous studies, shallow groundwater at the site is approximately 10 feet below ground surface (bgs) and appears to be flowing in a northwesterly direction from the landfill toward Canteen Creek (Mathes, 1991; Tetra Tech, 2004, Tetra Tech, 2008). The surface hydrology at the site is defined by ponds and creeks. Two small ponds/lakes are located near the landfill; both are considered upgradient of the landfill. One pond is located southeast of the landfill and the other lies southwest of the landfill. There are also two small creeks in the immediate vicinity of the site. The first creek, known as Canteen Creek, flows west along the northern edge of the landfill (between the landfill and Lebanon Road), and the other flows north along the western edge. The creeks merge at the northwest edge of the City's property. The creeks are sustained and recharged with groundwater (Tetra Tech, 2008).

Based on the results of the 2006-2007 assessment monitoring, the site and surrounding area was part of the Lumaghi Coal Company's Canteen Mine No.2. Aerial photographs and interviews with early landfill operators indicate that coal and coal gob were stored north and south of Canteen Creek from sometime prior to 1943. This area was incorporated into the area that later became the Collinsville Landfill (Tetra Tech, 2008).

3.0 PREVIOUS INVESTIGATIONS

3.1 1998 Violation Notice M-1998-00195

On April 22, 1998, the IEPA performed an inspection of the Closed Collinsville Landfill and sampled monitoring well MW-1 for inorganics, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, herbicides, and polychlorinated biphenyls (PCBs). Results indicated concentrations of inorganic parameters, chloride and TDS, were above Class I Groundwater Standards and the IEPA issued Violation Notice (VN) M-1998-00195 on October 6, 1998.

3.2 1999 Limited Surface and Subsurface Investigation

The 1998 violation prompted the City to perform a groundwater investigation. In March 1999, Tetra Tech performed a limited surface and subsurface investigation, which included the installation of one piezometer, P-2, and the collection of groundwater samples from the existing well MW-1 and piezometer P-2. MW-1 was located along the western toe of the landfill and piezometer P-2 was installed upgradient and southeast of the landfill. Levels of chloride (11 mg/L) and TDS (776 mg/L) in P-2 were below their respective Class I groundwater standards and higher concentrations were found in MW-1, located downgradient of the landfill.

During Tetra Tech's March 1999 investigation, multiple surface water samples were collected from nearby ponds and creeks. The surface water was tested for elevated concentrations of chloride and TDS. The limited investigation verified the presence of chloride and TDS in MW-1 above Class I groundwater standards adjacent to the landfill and identified the absence of elevated chloride and TDS in surface water samples and groundwater upgradient of the landfill.

3.3 2000-2007 Groundwater Monitoring and Groundwater Investigations

3.3.1 Quarterly Assessment Monitoring (Supplemental Permit 2000-173-SP)

Based on the March 1999 limited groundwater investigation, a Groundwater Assessment Plan (Supplemental Permit 2000-173-SP) was prepared to modify the groundwater monitoring program for the Closed Collinsville Landfill. The IEPA approved this supplemental permit on January 3, 2001. The purpose of the program was to monitor the groundwater and determine whether releases from the facility were occurring or whether constituents in the groundwater were below groundwater quality standards. The groundwater assessment program consisted of quarterly groundwater sampling and comparison of the results to groundwater quality standards cited in the IAC Section 35 Part 620.420(a). The list of parameters specified in the permit included List 1 Field Parameters, List 2 Routine Indicator Parameters, and List 3 Inorganic and Organic Annual Parameters. The list of parameters is identified in Appendix A. The landfill was monitored for List 1 and List 2 parameters on a quarterly basis and List 3 parameters annually.

3.3.2 2001-2002 Assessment Monitoring (Supplemental Permit 2001-468-SP)

In 2001, Tetra Tech installed additional piezometers (P-3, P-5, P-6, P7, and P-8) and monitoring wells MW-2 and MW-3. The piezometer and monitoring well locations are shown on Figure 2 in Appendix A. The investigation included an evaluation of the monitoring program and an assessment of groundwater flow and the hydraulic gradient. The annual 2001 Groundwater Assessment Monitoring Report was submitted in June 2003 as part of Supplemental Permit 2001-468-SP, which was approved by the IEPA on August 23, 2003.

The 2001 Groundwater Assessment Monitoring Report (revised in 2002 and 2003) noted several constituents above Class I groundwater standards at various locations. The elevated parameters included chloride, TDS, barium, beryllium, cadmium, chromium, iron, manganese, lead, and nickel. The report questioned the integrity of well MW-1 and further suggested that high turbidity or the presence of abandoned coal mines might account for the elevated levels.

3.3.3 2002-2006 Groundwater Monitoring (Supplemental Permits 2002-207-SP, 2002-347-SP, and 2003-417-SP)

Tetra Tech continued to perform quarterly monitoring under Supplemental Permit No. 2001-468-SP. Three Supplemental Permits were approved during the period 2002-2004. Supplemental Permits Nos. 2001-468-SP and 2002-207-SP were combined and approved on August 26, 2003. The combined permits entailed the submittal of a revised 2001 Groundwater Assessment Monitoring Report (Revised 2003). Supplemental Permit 2003-417-SP was approved on November 30, 2004 and adopted the revised background concentrations for specific non-detected organic parameters and established a contingency to re-establish the background concentrations for field parameters (List 1), filtered and unfiltered inorganic parameters and pentachlorophenol (parameters from Lists 2 and 3).

Since the third quarter 2002 groundwater sampling events, Tetra Tech performed groundwater sampling in accordance with low-flow sampling methods per guidance in the April 1998 U.S. Environmental Protection Agency (USEPA) Ground Water Issue for Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures. The presence of silt and clay particles in the sample (turbidity) was believed to contribute to elevated levels of inorganic constituents such as beryllium, chromium, and sulfate. In 2003, quarterly monitoring continued and monitoring well MW-1A was installed to evaluate the integrity of adjacent well MW-1. Monitoring well MW-1 was installed approximately twenty-five years ago and no well construction or boring logs were available for this well. Supplemental Permits 2001-468-SP and 2002-347-SP specified that MW-1 was to remain a part of the monitoring program until results demonstrated the well was improperly constructed or damaged.

In 2004, two surface water samples were added to the monitoring program and background concentrations were reestablished. The surface water locations were sampled quarterly for a year for chloride and TDS. The results of the 2004 quarterly monitoring of the creeks confirmed the low levels of TDS and chloride found in surface water samples in 1999. Concentrations present in Canteen Creek were higher than those found in the unnamed creek located along the western perimeter of the landfill.

In July 2005, Tetra Tech submitted the 2001-2004 results to reestablish the background concentrations for MW-3. The results included background 99% upper confidence limits (UCLs) and for pH, lower confidence limits (LCLs). The results were incorporated with the report that evaluated well turbidity and well integrity (Log Number 2005-167). The 2004 background confidence limits were approved under Supplemental Permit No. 2005-167-SP

Throughout 2003-2006, quarterly monitoring continued and Tetra Tech initially notified IEPA of a significant change in groundwater quality in the 2003 2nd Quarter Groundwater Monitoring Report submitted July 14, 2003. The significant change was a result of the presence of specific parameters at concentrations that exceeded Class 1 Groundwater Quality Standards, background concentrations or two times the practical quantitation limit (2 X PQL). Each year, Tetra Tech continued to notify the IEPA of a significant change in groundwater quality at the landfill in the Annual 2nd Quarter Groundwater Monitoring Reports. During the 2003-2006 monitoring period, the concentrations of the following parameters indicated a significant change in groundwater quality and resulted in the need for assessment monitoring:

- **2003** – Chloride (filtered and unfiltered), manganese (filtered and unfiltered), TDS (filtered and unfiltered), barium (unfiltered), total organic carbon (TOC), total organic halogens (TOX), sulfate (filtered), specific conductivity, and pentachlorophenol;
- **2004** – Chloride (filtered and unfiltered), pH, manganese (filtered and unfiltered), iron (filtered and unfiltered), arsenic (filtered), TDS (filtered and unfiltered), barium (unfiltered), TOC, TOX, sulfate (filtered and unfiltered), specific conductivity, phenols, and pentachlorophenol; and
- **2005** – Chloride (filtered and unfiltered), manganese (filtered and unfiltered), iron (filtered and unfiltered) arsenic (filtered and unfiltered), TDS (filtered and unfiltered), barium (unfiltered), TOC, TOX, sulfate (filtered and unfiltered), specific conductivity, picloram, and phenols.

3.3.4 2006-2009 Groundwater and Assessment Monitoring (Supplemental Permits 2005-272-SP, 2006-269-SP, 2006-499-SP, 2007-310-SP, 2008-019-SP, 2009-080-SP, and 2009-358-SP)

Three Supplemental Permits were approved during the period 2006-2007. Supplemental Permit 2005-272-SP, initially submitted in July 2005, was approved on June 22, 2006. The permit provided for routine quarterly sampling and implementation of the assessment monitoring activities for the facility specified in the Assessment Monitoring Plan. Monitoring well MW-1A was re-designated MW-4 in the permit. Supplemental Permit 2006-269-SP was approved October 12, 2006 and adopted additional assessment monitoring locations and sampling procedures. Supplemental Permit 2006-499-SP, approved on March 6, 2007, clarified the routine groundwater monitoring parameter lists and the additional assessment monitoring parameters.

From 2006-2007, Tetra Tech performed routine quarterly monitoring and assessment monitoring in accordance with Supplemental Permit 2006-499-SP. The Annual 2nd Quarter Groundwater Monitoring Report was submitted July 13, 2007 and was approved February 27, 2008 as Supplemental Permit 2007-310-SP.

Assessment monitoring activities commenced in November 2006 and included installation of three new wells (MW-5, MW-6, and MW-7), one new piezometer (P-14), nine borings, and collection of water samples from seven monitoring wells (MW-1 through MW-7) and seven surface water locations on a quarterly basis for one year. The nine borings were installed along the eastern and southwestern edge of the landfill to evaluate the boundary of the waste. The purpose of the assessment monitoring investigation was to evaluate the sources and extent of the following elevated unfiltered parameters: chloride, TDS, phenols, sulfate, pH, TOC, TOX, arsenic, thallium, barium, iron, manganese, phenols, pentachlorophenol, and picloram. The concentrations of these parameters had previously exceeded Class I or background confidence limits. The Assessment Monitoring Report was submitted to the IEPA on January 14, 2008 as Supplemental Permit Application 2006-499-SP (Log No. 2008-019).

The findings of the assessment monitoring investigation included the following:

- The area surrounding and including the Closed Collinsville Landfill was impacted by coal operations that took place from early 1900 to 1950.
- Coal and gob were present on the northern and southern side of Canteen Creek in the area that now contains the landfill.
- The coal gob present on the south side of Canteen Creek was incorporated into the landfill.
- Surface water samples located along the western and northern perimeter of the former gob storage area exceeded surface water criteria for iron and manganese. Exceedances of upstream concentrations were limited to barium, arsenic, conductivity, chloride, iron and manganese. Off-site locations did not exceed upstream concentrations or surface water criteria.
- MW-3 is located inside the landfill and is not an upgradient well. Groundwater collected from this well is leachate and not upgradient groundwater.
- Monitoring well MW-6 is upgradient of the landfill and Tetra Tech proposed that IEPA should designate MW-6 as the background well for the site.
- Canteen Creek is a gaining stream and groundwater in the vicinity of the landfill flows northeast and discharges to this creek. Groundwater within the landfill discharges to Canteen Creek and has not impacted downstream or downgradient locations.
- The source of the groundwater quality regarding low pH, chloride, TDS, TOX, arsenic, iron, thallium and manganese is the presence of gob and coal within the landfill.
- The source of the groundwater quality regarding high pH, sulfate, TOC, barium, conductivity, phenols, and pentachlorophenol was the use of MW-3 as an upgradient well, when the well is actually in the landfill.
- The source of picloram may be due to the widespread use of the herbicide in the surrounding area or may be the landfill.

Approval of the Assessment Monitoring Report was deferred until the assessment monitoring results and environmental closure were formally discussed with the IEPA at a meeting in Springfield, Illinois on July 16, 2008.

The Annual 2nd Quarter Groundwater Monitoring Report for 2007-2008 was submitted to the IEPA as a supplemental permit application on July 10, 2008 (Log Number 2008-283). Approval of this permit application was deferred pending the outcome of the July 2008 meeting. The permit was approved November 8, 2008 and MW-5, MW-7, and P-14 were designated as piezometers and were removed from the sampling network. Water levels are obtained from MW-5, MW-7 and P-14 on a quarterly basis, but no groundwater samples are collected.

During the July 2008 meeting, the assessment monitoring results were discussed and the path forward was evaluated. Meeting participants agreed that the most effective approach to closure was development of a petition for adjusted standards based on the impact of previous coal mining where the landfill is located. Following the City's development of the petition, IEPA's legal counsel would evaluate and comment on the petition before final revision and submittal to the Illinois Pollution Control Board.

Following the July 2008 meeting, IEPA's approval of the Assessment Monitoring Report was initially denied due to the need for supplemental data, withdrawal of specific recommendations for land use controls, and revisions of the statistical calculations for confidence limits established for the assessment monitoring parameters associated with the new background well MW-6. Addenda to the report were submitted on September 5, 2008, October 10, 2008, October 30, 2008 and November 5, 2008. Supplemental Permit Applications associated with the Assessment Monitoring Report (Log No. 2008-019) and the Annual Monitoring Report (Log No. 2008-283) were approved as Supplemental Permit 2008-019-SP on November 21, 2008. This permit approved the assessment monitoring results and the new background monitoring well MW-6 and included a requirement to establish the background confidence limits for List 2 and List 3 parameters not previously included in the assessment monitoring.

During the 2006-2009 monitoring years, Tetra Tech continued to notify IEPA of a significant change in groundwater quality in the annual reports for the following parameters:

- **2006** - Chloride (filtered and unfiltered), manganese (filtered and unfiltered), pH, iron (filtered and unfiltered), arsenic (filtered and unfiltered), TDS (filtered and unfiltered), barium (unfiltered), TOX, sulfate (filtered and unfiltered), thallium (unfiltered), cobalt (unfiltered), specific conductance, and phenols;
- **2007** - Chloride (filtered and unfiltered), manganese (filtered and unfiltered), pH, iron (filtered and unfiltered), arsenic (filtered and unfiltered), lead (filtered), antimony (unfiltered), TDS (filtered and unfiltered), barium (unfiltered), TOX, sulfate (filtered and unfiltered), specific conductance, and phenols;

- **2008** - Chloride (filtered and unfiltered), manganese (filtered and unfiltered), pH, iron (filtered and unfiltered), arsenic (filtered and unfiltered), TDS (filtered and unfiltered), barium (unfiltered), TOX, TOC, sulfate (filtered and unfiltered), specific conductance, and phenols.
- **2009** - Beginning in March 2009, Tetra Tech notified the IEPA of significant change in groundwater quality on a quarterly basis and in the annual report. The parameters that indicated a significant change in groundwater quality in 2009 were: chloride (filtered and unfiltered), manganese (filtered and unfiltered), pH, iron (filtered), arsenic (filtered and unfiltered), TDS (filtered and unfiltered), barium (unfiltered), TOX, sulfate (filtered and unfiltered), specific conductance, fluoride (unfiltered) and methylene chloride (unfiltered).

On February 13, 2009, a Supplemental Permit Application requesting a reduction in the List 3 Organic Parameters was submitted to IEPA (Log No. 2009-080). The request was based on the limited detection of organic parameters in previous leachate samples, samples collected from MW-3 (located in the landfill) and a temporary well installed in the center of the landfill on October 25, 2008. Addenda were submitted on April 22, 2009 and April 23, 2009. The application was approved as Supplemental Permit No. 2009-080-SP on May 1, 2009. With the exception of the quarterly sampling (for one year) to establish the new background well MW-6, List 3 organic parameters for the remaining wells (MW-1, MW-2, and MW-4) were limited to benzene, monochlorobenzene, dichloromethane, pentachlorophenol, para-dichlorobenzene and picloram. The Annual 2nd Quarter 2009 Groundwater Monitoring Report was submitted July 13, 2009 as a Supplemental Permit Application (Log No. 2009-358) and was approved as Supplemental Permit No. 2009-358-SP on November 10, 2009.

On March 10, 2009, IEPA issued VN M-2009-1006 to the City of Collinsville detailing 22 alleged violations of permit requirements associated with the Closed Collinsville Landfill. The alleged violations primarily concerned formal quarterly notification of a significant change in groundwater quality and receipt of electronic data and reports. In response to the violation notice, a meeting was held at the Regional IEPA office in Collinsville, Illinois and a proposed Compliance Commitment Agreement (CCA) was submitted to IEPA on May 4, 2009. IEPA approved the proposed CCA on May 26, 2009 pending receipt of the alleged missing data and reports within the proposed schedule. On January 27, 2010 the City of Collinsville received a letter from IEPA stating that the Closed Collinsville Landfill had returned to compliance for the alleged violations and IEPA had verified receipt of all missing data.

3.3.5 2010 VN M-2010-01006

On April 22, 2010, IEPA issued VN M-2010-01006 to the City of Collinsville detailing nine violations associated with the Closed Collinsville Landfill. The alleged violations primarily concerned the presence of seeps on the upper surface of the landfill. In response to the violation notice, The City of Collinsville repaired those areas where seeps may have been present. In addition, Tetra Tech prepared and submitted, on the behalf of the City of Collinsville, a CCA to IEPA on May 7, 2010 and prepared an inspection checklist for the City of Collinsville who now inspects the landfill on a monthly basis. On September 2010, IEPA issued a letter stating the Closed Collinsville Landfill had returned to compliance.

3.3.6 2010-2011 Groundwater and Assessment Monitoring (Supplemental Permits 2010-159-SP, 2010-342-SP, 2011-165-SP, and 2011-313-SP)

The Supplemental Permit 2010-159-SP was issued August 31, 2010 in response to the April 14, 2010 submittal of the 2010 Re-Establishment of the Background MW-6 Statistical Results, and subsequent Addendum submitted July 29, 2010. During the Assessment Monitoring investigation in 2006, results suggested that the former background well, MW3, was installed within the landfill. Therefore, MW3 was not a background or upgradient well. MW6 was installed during the 2006 investigation as an upgradient well and analytical, hydrogeologic, and probing results indicated that MW6 met qualifications for a background well for the landfill.

Supplemental Permit 2010-342-SP, initially submitted in July 2010, was approved on March 31, 2011. The permit provided for routine quarterly sampling. Supplemental Permit 2011-165-SP was approved September 23, 2011 and accepted the 2011 review of 12 months of data for MW-1, MW-2, and MW-4 and comparison of the data to the recently established background values for MW-6. Supplemental Permit 2011-313-SP, approved on October 6, 2011, provided for routine quarterly sampling.

During the 2010-2011 monitoring year, Tetra Tech prepared and notified IEPA of a significant change in groundwater quality basis for the following parameters: chloride (filtered and unfiltered), manganese (filtered and unfiltered), low pH, iron (filtered), ammonia as N, arsenic (filtered and unfiltered), TDS (filtered and unfiltered), barium (unfiltered), cyanide, TOX, sulfate (filtered and unfiltered), and boron (unfiltered).

3.3.7 2011-2012 Groundwater and Assessment Monitoring and Other Activities (Supplemental Permits 2012-336-SP, 2012-348-SP, and 2012-313-SP-SP)

3.3.7.1 Revised Petition for Adjusted Standards

In response to the presence of coal and gob beneath the northern half of the landfill, the City in partnership with the City's attorney for landfill closure and Tetra Tech, developed a Draft Petition for Adjusted Standards and supporting documentation. The purpose of the Petition was to move the landfill toward final environmental closure. The historic use, storage and impact of coal waste at the landfill and surrounding areas documented in the Assessment Monitoring Report was the basis for the Petition and was in accordance with 35 IAC 620.440(c). The Draft Petition was submitted to IEPA on July 2, 2009. A revised Draft Petition was submitted to IEPA on January 30, 2012 for review prior to submittal to the Illinois Water Pollution Control Board. Based on telephonic communications with IEPA, the Agency has completed their review, and the petition will be forwarded to IEPA Legal Counsel.

3.3.7.2 Violation Notice L-2012-MD-025

On March 27, 2012, Madison County Government Planning and Development Department issued Violation Notice L-2012-MD-025 to the City of Collinsville detailing six violations associated with the Closed Collinsville Landfill. The alleged violations concerned the presence of seeps along the northern toe of the landfill and trash and seeps on a steep bank of nearby Canteen Creek. The presence of seeps along the northern perimeter of the landfill had been the subject of the VN issued in 2010. On June 4, 2012, the City submitted a response to VN M-

2012-MD-025 and requested to enter into a CCA with the Madison County Planning and Development Department (Attachment 1). The issues and the proposed resolutions were:

1. Solution for Seeps – Installation of a supplemental leachate management system (French Drain).
2. Solution for Erosion along Canteen Creek – Longitudinal Peaked Stone Toe Protection (LPSTP).
3. Solution for Early Detection of Seeps and Erosion Issues in the Creek – Inspection of the Creek.

The Madison County Planning and Development Department issued a proposed CCA to the City on June 25, 2012 and the City signed the agreement on July 7, 2012. The CCA accepted the resolutions identified above.

Supplemental Leachate Management System - Tetra Tech submitted the plan and design for the supplemental leachate management system to IEPA as a Supplemental Permit Application on June 28, 2012 followed by Addendum 1 and Addendum 2. The application was approved on October 29, 2012 as Supplemental Permit 2012-313 SP. Construction of the French drain began in January 2013 and the installation was completed in June 2013. Construction of the pump house and installation of the pump in scheduled to begin during the summer months if weather permits. A Completion Report will be submitted following installation of the pump and optimization of the pump rate and depth of pump.

Installation of the LPSTP – Tetra Tech submitted the plan and design for installation of LTSTP along a portion of Canteen Creek to IEPA as a Supplemental Permit Application on July 20, 2012 and the application was approved on October 18, 2012 as Supplemental Permit 2012-348-SP. Construction began in November 2012 and the majority of the construction was completed in November. The willow stakes were installed in March and were sufficient growth was recorded in June 2013 to begin preparation of the Completion Report.

3.3.7.3 Groundwater Monitoring 2011-2013

Supplemental Permit 2012-336-SP was approved October 11, 2012 and accepted the 2012 review of 12 months of data for MW-1, MW-2, and MW-4 and comparison of the data to the recently established background values for MW-6. The most recently approved permit Supplemental Permit 2012-313-SP approved the design and plans for installation of the French drain and further provided for continuation of routine quarterly sampling.

During the 2011-2012 monitoring year, Tetra Tech prepared and notified IEPA of a significant change in groundwater quality basis for the following parameters: chloride (filtered and unfiltered), manganese (filtered and unfiltered), low pH, specific conductance, iron (filtered and dissolved), ammonia as N, arsenic (filtered and unfiltered), TDS (filtered and unfiltered), barium (unfiltered), sulfate, copper (unfiltered) and boron (unfiltered).

Tetra Tech continues to perform quarterly monitoring under Supplemental Permit 2012-313-SP and the monitoring results for the 2012-2013 monitoring year are presented and evaluated in Sections 4 and 5, respectively.

4.0 2012- 2013 QUARTERLY GROUNDWATER INVESTIGATION

Tetra Tech collected the 2012-2013 quarterly groundwater samples for MW-1, MW-2, MW-4, and MW-6 in accordance with the schedule and methodology for sample collection as identified in Supplemental Permit Number 2012-313-SP. Samples were collected on August 8, 2012, October 17, 2011, February 19, 2013, and May 7, 2013.

4.1 Sampling Procedures

In order to assess temporal variability in groundwater flow, Tetra Tech personnel recorded the static water levels on a quarterly basis during the 2012 – 2013 groundwater assessment period with an electronic water level indicator at locations P-6, P-14, MW-1, MW-2, MW-3, MW-4, MW-5, MW-6 and MW-7 as shown on Table 1 and Figure 2 (Appendix A).

In accordance with the Groundwater Assessment Plan and the April 1998 USEPA Groundwater Issue for Low-Flow (Minimal Drawdown) Groundwater Sampling Procedures, Tetra Tech purged and sampled the monitoring wells using the low-flow method with a peristaltic pump (MW-1, MW-2, and MW-4) and dedicated tubing or a whale pump (MW-6) with dedicated tubing. Tetra Tech monitored and recorded List 1 field parameters until they stabilized. In a letter to the IEPA dated May 15, 2006, Tetra Tech made a formal proposal to conduct low-flow sampling at the landfill, which was approved (Supplemental Permit 2005-272-SP) on June 22, 2006.

Purge water was placed into Department of Transportation (DOT) approved 55-gallon closed-top metal drums located inside the Leachate Extraction Building 01 near the northwestern boundary of the Closed Landfill. Disposition of the wastewater generated during this assessment is described in Section 4.4 – Investigative-Derived Waste (IDW) Management.

Groundwater collected during the third and fourth quarters 2011 and first quarter 2012 were analyzed for the List 1 – Field Parameters and List 2 – Filtered and Unfiltered Routine Indicator Parameters identified in Supplemental Permit No. 2011-313-SP. During the second quarter 2012, groundwater samples collected from MW-1, MW-2, MW-4, and MW-6 were analyzed for the List 1, List 2, and List 3 inorganic parameters and a limited number of List 3 organic parameters that included benzene, monochlorobenzene, dichloromethane, pentachlorophenol, para-dichlorobenzene and picloram identified in Supplemental Permit No. 2012-313-SP. The monitoring results were recorded on the IEPA's Chemical Analysis Form and submitted electronically. Copies of the electronic communications sent to IEPA along with the electronic data submittals are located in Appendix B.

Tetra Tech monitored and recorded the List 1 – Field Parameters with a YSI Model 556, an electronic water level indicator, and a Hach 2100 Turbidity Meter. The YSI 556 analyzes water quality parameters that include pH, specific conductance, dissolved oxygen, temperature, and oxidation reduction potential. List 1 – Field Parameters were recorded prior to the collection of groundwater samples. Copies of the field notes are located in Appendix C.

Groundwater samples for List 2 – Routine Indicator Parameters and List 3 – Inorganic and Organic Annual Parameters were collected using dedicated polyethylene tubing. The samples were collected after the field parameters stabilized. Groundwater samples were placed in the appropriate sample containers and delivered to the laboratory for analysis.

4.2 Sample Handling, Preservation, Shipping, Chain-of-Custody and Quality Control Samples

Field personnel used chemical resistant gloves while collecting groundwater samples. A clean pair of gloves was used for each sample collected. Approved USEPA sample containers were used throughout the project.

Groundwater samples were placed in the appropriate sample containers, sealed, and stored on ice in a thermally insulated shipping container for laboratory analysis. Samples were hand delivered by Tetra Tech to the NELAC-approved laboratory, Teklab, Inc. in Collinsville, Illinois.

A “Chain-of-Custody Record (COC)” maintained sample custody and a listing of samples. The COC form was placed within each shipping container. The COC record was completed at the site by the individual designated by the Project Manager as responsible for sample shipment. Original COCs, signed by the field samplers and laboratory personnel, were returned to Tetra Tech with the analytical results. Copies of the COCs and the laboratory analytical results are included in Appendix D.

Duplicate samples are quality control samples designed to evaluate the laboratories ability to reproduce analytical results. The field duplicate and the primary field sample are defined as two water samples collected independently at the same sampling location during a single act of sampling. Tetra Tech submitted "blind" to the laboratory sample “Field Dup” as a quality control sample. The groundwater sample “Field Dup” was collected independently with the groundwater sample from MW-1 for the third quarter 2011, fourth quarter 2011, first quarter 2012, and second quarter 2012.

4.3 Decontamination Procedures

During the groundwater sampling field activities, the field equipment was decontaminated with Alconox soap and rinsed with distilled water after each sampling location. Dedicated polyethylene tubing was used during the groundwater purging and sampling, therefore decontamination of groundwater sampling tubing was not required between sampling locations.

4.4 Investigative-Derived Waste (IDW) Management

IDW consisted of fluids from monitoring well purging activities and decontamination water. Decontamination and purge water was placed in DOT approved 55-gallon closed-top metal drums. The 55-gallon closed-top metal drums are located inside the Leachate Extraction Building 01 near the northwestern boundary of the Closed Collinsville Landfill. The City of Collinsville collects the water from the metal drums on a routine basis and transports the water for disposal at the City of Collinsville Waste Water Treatment Plant (2011-EP-1106).

Discarded materials, including personnel protective equipment (PPE), towels and plastic bags, were disposed of in accordance with applicable regulations at the end of each day or work shift.

5.0 2012-2013 QUARTERLY GROUNDWATER INVESTIGATION RESULTS

This section includes analytical results from the Third and Fourth 2012 Quarterly Monitoring Events and the First and Second Quarterly 2013 Monitoring Events at the Closed Collinsville Landfill.

Groundwater constituents at MW-1, MW-2, MW-4 and MW-6 were analyzed for List 1 and 2 inorganic parameters every quarter. On an annual basis, samples collected from the four wells were analyzed for the List 3 inorganic parameters and the following limited list of List 3 organic parameters identified in Supplemental Permit No. 2012-313-SP, Condition 21, Attachment A: benzene, monochlorobenzene, dichloromethane, pentachlorophenol, picloram and paradichlorobenzene. Groundwater samples were compared to regulatory standards as stated in Condition 6 of Permit Number 2012-313-SP Attachment A, "the permittee" shall conclude that a significant change in groundwater quality has occurred if the results of the evaluation indicate that the value for any parameter exceeds:

1. The background values established at monitoring well G108 (MW-6) for all parameters at the 99% confidence level as listed in Appendix 2 – Table E of the August 2, 2010 addendum to Application Log No. 2010-159 and Table 14 (version 3) in the same application for noted parameters;
2. The Class I Groundwater Quality Standards listed in Subpart D of 35 Ill. Adm. Code 620 Standards (Class I groundwater applies until an adequate demonstration has been made by the permittee that another class applies pursuant to Subpart B of 35 Ill. Adm. Code 620 Standards); or
3. For organic parameters two (2) times the Practical Quantitation Limit (PQL) for a single parameter or any two (2) or more parameters exceed the PQL in the same well.

5.1 Class I Groundwater Quality Standards

According to Supplemental Permit Number 2000-173-SP, analytical results are to be compared to Subpart D of 35 IAC Part 620.410, Groundwater Quality Standards for Class I: Potable Resource Groundwater until an adequate determination has been made to apply another groundwater class. Tetra Tech performed a groundwater classification assessment under Supplemental Permit Application Number 2001-468 (Groundwater Assessment Monitoring Report, July 2001, Revised August 2002, and Revised June 2003). The results of the groundwater classification assessment confirmed the classification of the Collinsville Landfill groundwater as Class I.

5.1.1 Parameters Exceeding Class I Standards in the Groundwater

The 2012 Assessment Monitoring Report (Tetra Tech, 2012) identified the presence of low pH, chloride, TDS, manganese, and iron at concentrations above Class I Standards. The above parameters continue to exceed Class I Standards. Tetra Tech evaluated the source of these parameters as part of the assessment monitoring program under Supplemental Permit 2006-499-

SP. Based on the results of the assessment monitoring, the primary source of the parameters present in the groundwater above Class I Standards is the presence of coal mining waste on the property for more than 30 years prior to the opening of the landfill. The Assessment Monitoring Report was submitted to the IEPA January 14, 2008 and was approved as Supplemental Permit 2008-019-SP. Adjusted standards have been developed in accordance with 35 IAC 620.440(c) based upon the historical impact of gob storage at the site that predates the landfill. Based on telephonic communications with IEPA, the Agency has completed their review, and the petition will be forwarded to IEPA Legal Counsel.

As shown in Table 2 (Appendix A), the samples collected from monitoring wells MW-1, MW-2, MW-4, and MW-6 were reported with concentrations of several parameters exceeding Class I Standards.

During Third Quarter 2012 sampling activities, MW-2 was dry and a groundwater sample was not collected. Third Quarter 2012 sampling results above Class 1 Standards are:

- **List 1** – Field parameters exceeding the Class I Standards: pH (6.39 in MW-1; 6.34 in MW-4).
- **List 2** – Filtered routine indicator parameters exceeding the Class I Standards: chloride (325 mg/L in MW-1; 358 mg/L in MW-4), manganese (3,300 ug/L in MW-1; 7,030 ug/L in MW-4; 204 ug/L in MW-6), iron (5,490 ug/L in MW-4), and TDS (1,530 mg/L in MW-1; 1,590 mg/L in MW-4).

Fourth Quarter 2012 sampling results above Class I Standards are:

- **List 1** – Field parameters exceeding the Class I Standards: pH (6.34 in MW-1; 6.19 in MW2 and 6.23 in MW-4).
- **List 2** – Filtered routine indicator parameters exceeding the Class I Standards: (chloride 375 mg/L in MW-1 and 372 mg/L in MW-4), manganese (3,530 ug/L in MW-1; 7,210 ug/L in MW-4; 180 ug/L in MW-6), and TDS (1,470 mg/L in MW-1 and 1,500 mg/L in MW-4).

First Quarter 2013 sampling results above Class I Standards are:

- **List 1** – Field parameters exceeding the Class I Standards: pH (6.40 in MW6).
- **List 2** – Filtered routine indicator parameters exceeding the Class I Standards: chloride (342 mg/L in MW-1), iron (10,000 ug/L in MW-4), manganese (3,620 ug/L in MW-1; 10,700 ug/L in MW-4; 171 ug/L in MW-6), and TDS (1,490 mg/L in MW-1).

Second Quarter 2013 sampling results above Class 1 Standards are:

- **List 1** – Field parameters exceeding the Class I Standards: pH (6.14 in MW-1; 5.49 in MW-2; and 6.19 in MW-4).
- **List 2** – Filtered routine indicator parameters exceeding the Class I Standards: chloride (451 mg/L in MW-1), iron (9,400 ug/L in MW-4), manganese (4,460 ug/L in MW-1; 8,960 ug/L in MW-4; and 168 ug/L in MW-6), and TDS (1,570 mg/L in MW-1).
- **List 3** – Inorganic and organic annual parameters exceeding the Class I Standards: chloride (422 mg/L in MW-1), iron (12,900 ug/L in MW-4); manganese (4,780 ug/L in MW-1 and 10,200 ug/L in MW-4), and TDS (1,620 mg/L in MW-1).

5.2 Background Concentrations

In order to evaluate the quality of the groundwater in the zone being monitored and detect any discharge of contaminants, the background groundwater quality was determined. Groundwater data from a location believed to be hydraulically upgradient of, and unaffected by, the site was gathered for one year.

The results of the 2006-2007 assessment monitoring investigation found that the established background well, MW-3, was located in the landfill and was not a background well. Supplemental Permit 2008-019-SP approved the new background monitoring well MW-6 and included a requirement to establish the background confidence limits for List 2 and List 3 parameters not previously included in the assessment monitoring. Tetra Tech established confidence limits for the new background well MW-6 in 2009-2010 and submitted the results as a Supplemental Permit Application to IEPA on April 14, 2010. The re-established background concentrations for the new well MW-6 were approved as Supplemental Permit 2010-159-SP.

5.2.1 Parameters Exceeding Background Concentrations in the Groundwater

The analytical data collected during the third and fourth quarterly sampling events of 2012 and first and second quarterly sampling events of 2013 were compared to the established background concentrations as stated above and listed on Table 3 (Appendix A) of this report. High conductivity, low pH, and concentrations of ammonia as N, chloride, TDS, iron, manganese, arsenic, barium (unfiltered), boron (unfiltered), and phenols exceeded background concentrations established for MW-6 (Tetra Tech, July 2011). The source of the chloride, TDS, iron, manganese, arsenic, and barium is the coal and coal waste that was incorporated into the northern half of the landfill near MW-1 and MW-4. Boron is present in coal, but is also found in fertilizers and organic matter. The presence of boron above background levels in MW-1 and MW-4 is most likely associated with coal, but near MW-6 the source of the boron is probably related to the use of fertilizer. MW-6 is located on residential property adjacent to the site. The property has manicured lawns, shrubs and plants. The source of the phenols found in the background well (MW-6) is most likely associated with the breakdown of pesticides. Phenols are also associated with poison ivy which is plentiful in the wooded areas surrounding the landfill. Phenols were not detected in wells downgradient of the landfill. Ammonia may be released during the decomposition of coal. However, the presence of ammonia in MW-1, MW-4 and MW-6 close to the reporting limits may represent slight instrument drift. Boron, phenols,

and ammonia were not detected in the background well (MW-6) during the 2009-2010 initial monitoring period. The background 99% UCL and LCL was based on the analytical results obtained during 2009-20010. Since 2009, phenols have been detected twice in MW-6 and ammonia once. Boron was detected in MW-6 above the 99% UCL once.

Due to the extensive drought in 2012, MW-2 was dry during Third Quarter 2012 and groundwater samples could not be collected. Third Quarter 2012 sampling results above background concentrations are:

- **List 1** – Field parameters exceeding the 99% confidence level of the background Concentrations: No List 1 Parameters exceeded the background concentrations.
- **List 2** – Filtered routine indicator parameters exceeding the 99% confidence level background concentrations: Arsenic (10.60 ug/L in MW-4), Chloride (325 mg/L in MW-1 and 358 mg/L in MW-4), Iron (522 ug/L in MW-1 and 5,490 ug/L in MW-4), Manganese (3,300 ug/L in MW-1 and 7,030 ug/L in MW-4), and TDS (1,530 mg/L in MW-1 and 1,590 mg/L in MW-4).

Fourth Quarter 2012 sampling results above background concentrations are:

- **List 1** – Field parameters exceeding the 99% confidence level of the background concentrations: specific conductivity (2.687 S/cm in MW-1 and 2.738 S/cm in MW-4) and pH (6.19 in MW-2 and 6.23 in MW-4).
- **List 2** – Filtered routine indicator parameters exceeding the 99% confidence level Background Concentrations: arsenic (8.00 ug/L in MW-4), chloride (375 mg/L in MW-1 and 372 mg/L in MW-4), iron (491 ug/L in MW-1 and 4,840 ug/L in MW-4), manganese (3,530 ug/L in MW-1 and 7,210 ug/L in MW-4), and TDS (1,470 mg/L in MW-1).

First Quarter 2013 sampling results above background concentrations are:

- **List 1** – Field parameters exceeding the 99% confidence level of the background concentrations: specific conductivity (2.626 S/cm in MW-1).
- **List 2** – Filtered routine indicator parameters exceeding the 99% confidence level Background Concentrations: ammonia as N (0.11 mg/L in MW-1 and 0.11 mg/L in MW-4), arsenic (15.1 mg/L in MW-4), chloride (342 mg/L in MW-1 and 98 mg/L in MW-4), iron (348 ug/L in MW-1 and 10,000 ug/L in MW-4), manganese (3,620 ug/L in MW-1 and 10,700 ug/L in MW-4), and TDS (1,490 mg/L in MW-1).

Second Quarter 2013 sampling results above background concentrations are:

- **List 1** – Field parameters exceeding the 99% confidence level of the background concentrations: specific conductivity (2.624 S/cm in MW-1) and pH (6.14 in MW-1; 5.49 in MW-2 and 6.19 in MW-4).
- **List 2** – Filtered routine indicator parameters exceeding the 99% confidence level background concentrations: ammonia as N (0.15 mg/L in MW-1; 0.21 mg/L in MW-4 and 0.14 mg/L in MW-6), arsenic (14.4 mg/L in MW-4), chloride (451 mg/L in MW-1 and 82 mg/L in MW-6), iron (1,320 ug/L in MW-1; 9,400 ug/L in MW-4), manganese (4,460 ug/L in MW-1; 8,960 ug/L in MW-4), and TDS (1,570 mg/L in MW-1).

- **List 3** – Unfiltered inorganic parameters exceeding the 99% confidence level background concentrations: arsenic (23.2 ug/L in MW-4), barium (305 ug/L in MW-4), boron (97.5 ug/L in MW-1 and 142 ug/L in MW-6), chloride (422 mg/L in MW-1 and 78 mg/L in MW-6), manganese (4,780 ug/L in MW-1; 10,200 ug/L in MW-4), and TDS (1,620 mg/L in MW-1).

5.3 Organic Parameters Two (2) Times the Practical Quantitation Limit

Condition 6c, Attachment A, Supplemental Permit Number 2012-313-SP compares the organic parameters to two (2) times the Practical Quantitation Limit (2xPQL) for a single parameter or any two (2) or more parameters exceeding the PQL in the same well.

5.3.1 Parameters Exceeding Organic Parameters Two (2) Times the Practical Quantitation Limit

The organic analytical data collected during the third and fourth quarterly 2012 events and first and second quarterly 2013 events were compared to the 2xPQL for a single parameter or any two (2) or more parameters exceeding the PQL in the same well and listed on Table 4 (Appendix A) of this report. Results for the Third Quarter 2012, the First Quarter 2013 and the Second Quarter 2013 did not exceed PQLs.

Fourth Quarter 2012 sampling results above 2xPQL are:

- **List 2** – Indicator parameters exceeding two times the PQL: phenols (37 ug/L in MW-6).
- **List 3** – Unfiltered organic Parameters exceeding two times the PQL: No List 3 Organic Parameters exceeded 2xPQL.

6.0 GROUNDWATER FLOW AND HYDRAULIC GRADIENT

Tetra Tech collected static water levels to evaluate the groundwater flow direction. Static water levels were recorded quarterly for one year at locations P-6, P-14, MW-1, MW-2, MW-3, MW-4, MW-5, MW-6 and MW-7 as shown on Table 1 and the potentiometric map included with this report as Figure 2 in Appendix A. Since April 2001, 54 sets of water levels have been collected to assess the average direction of groundwater movement at the Closed Collinsville Landfill. An average water level elevation for the past one year was calculated for each location and plotted on Figure 2 (Appendix A).

Based on the potentiometric map, the groundwater appears to be flowing in a northwesterly direction. The direction of groundwater flow in 2012-2013 is consistent with past water level information. The hydraulic gradient (the slope of the potentiometric surface measured as the change in water levels relative to the perpendicular distance between points along the flow path) in the southern half of the landfill is 0.04 ft/ft and is consistent with past gradients based on average water levels. However, the gradient in the northern half of the landfill is steeper and ranged from 0.125 ft/ft near MW1 and MW4 to a high of 1.25 ft/ft in the northeast corner of the landfill. The higher gradient is a reflection of the steeper topographic relief. Approximately 32.81 inches of rain were recorded between August 2012 and May 2013 and 25.34 inches were recorded between August 2011 and May 2012 (www.wunderground.com).

7.0 SUMMARY

This groundwater assessment was performed as a requirement of Supplemental Permit 2012-313-SP.

The objectives of this assessment were to:

- Evaluate the groundwater flow direction;
- Evaluate the groundwater gradient; and
- Compare analytical data to the Class I Standards, background concentrations, and for organic parameters, PQLs.

The annual Groundwater Assessment Monitoring Report documents field activities, sampling methodologies, analysis parameters and methods, and analytical results of the investigation.

Based on the above results, the direction of groundwater flow and the gradient are consistent with past results and concentrations of chloride, specific conductivity, TDS, low pH, TOX, arsenic, barium, iron, manganese, ammonia, and boron continue to exceed Class I Standards and/or background concentrations. Phenols, which have periodically exceeded 2xPQLs in the background well MW-6, exceeded the criteria once during the Third Quarter 2012. Based on the results of the Assessment Monitoring Program, the primary source of the elevated parameters is the presence of coal mining waste in the northern half of the landfill that predates the use of the area as a landfill. The waste was incorporated into the landfill. Tetra Tech submitted a re-evaluation of the assessment monitoring and routine groundwater analytical results using the new background values on May 5, 2011 as a Supplemental Permit Application. The re-evaluation supported the assessment monitoring results and concluded as above – the source of the exceedences is the presence of coal waste and stated that the assessment monitoring process was complete or nearly complete.

Based on the past 12 years of monitoring, no significant changes in groundwater quality have actually occurred, but concentrations of the above parameters continue to exceed criteria due to the presence of coal waste in the landfill. Adjusted standards for the site have been developed in accordance with 35 IAC 620.440(c) and was submitted to the IEPA in 2012. The IEPA has reviewed the petition and will forward the document to the Agency's Legal Counsel. The City intends to meet with IEPA in the next six months to discuss submittal of the petition to the Illinois Pollution Control Board.

8.0 REFERENCES

Groundwater Assessment Monitoring Report Second Quarter 2001 Sampling Results Closed Collinsville Landfill. Tetra Tech, Inc., 2001.

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Low-Flow (Minimal Draw-down) Groundwater Sampling Procedures. Puls, Robert W. and Michael J. Barcelona, 1996.

Revised Groundwater Assessment Monitoring Report Second Quarter 2001 Sampling Results Closed Collinsville Landfill. Tetra Tech, Inc., 2002.

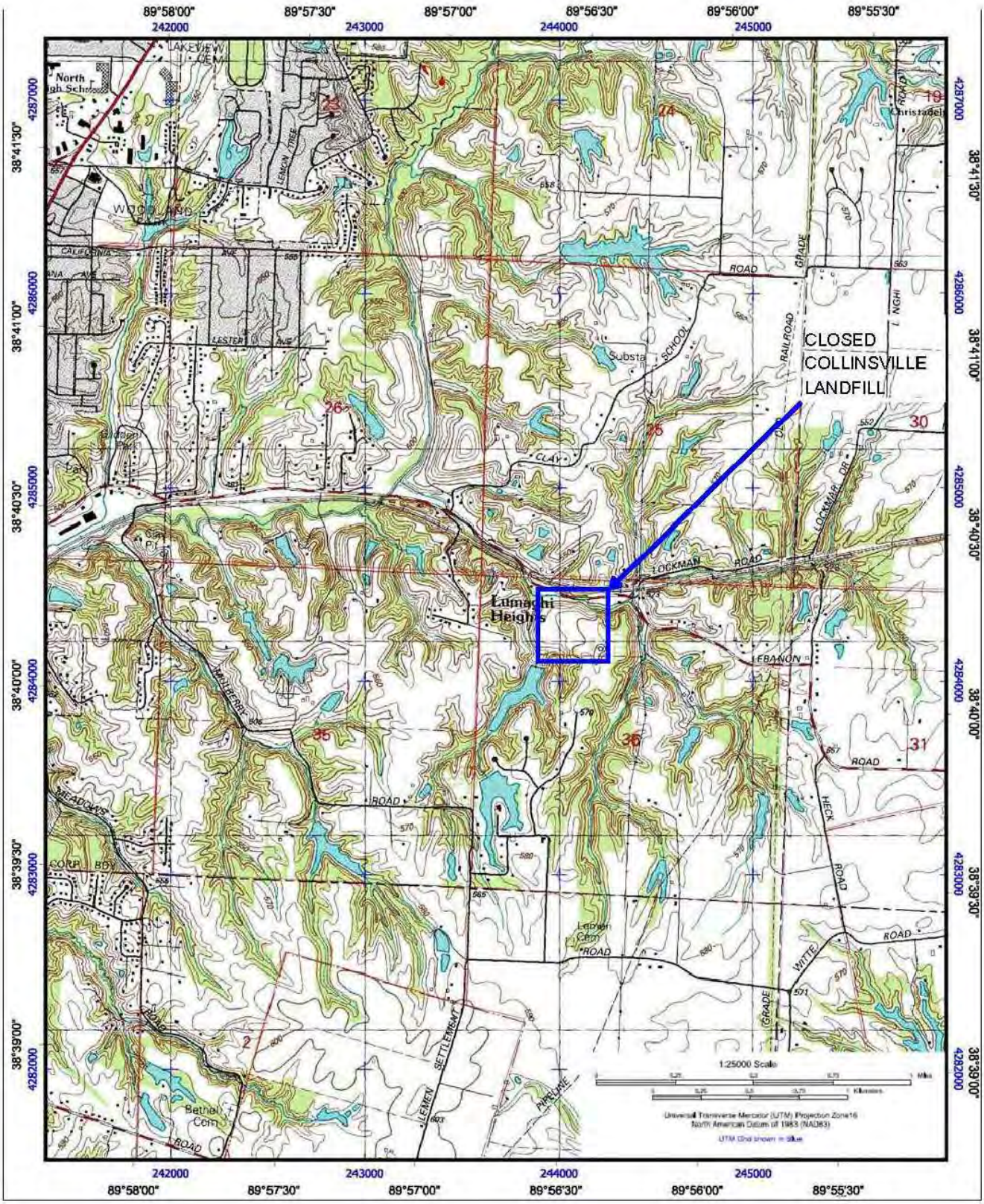
Title 35: Environmental Protection, Subtitle F: Public Water Supplies, Chapter I: Pollution Control Board, Part 620 Groundwater Quality.

Appendix A

Figures and Tables

FIGURES

TABLES

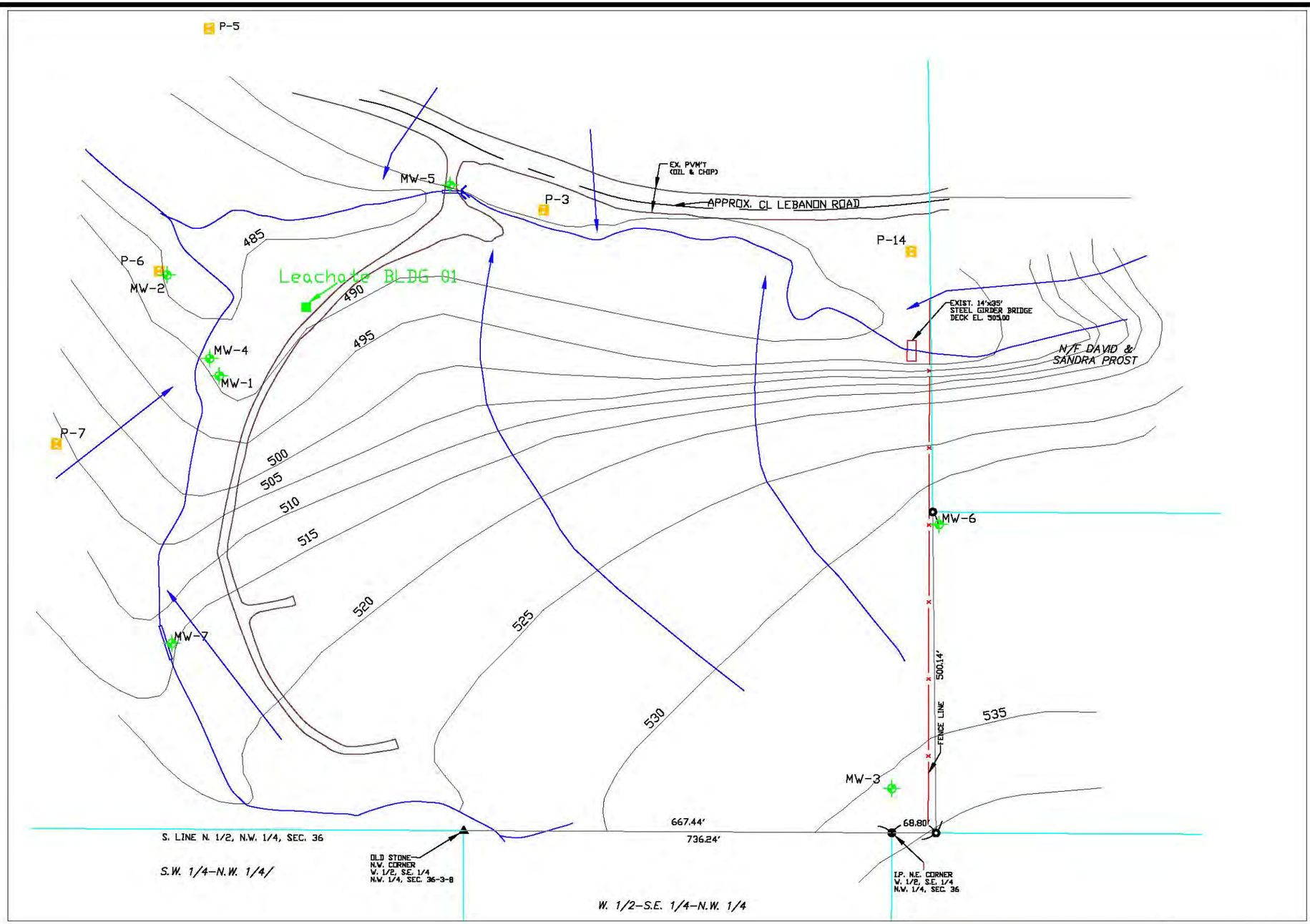


CLOSED COLLINSVILLE LANDFILL
COLLINSVILLE, ILLINOIS

CLOSED COLLINSVILLE LANDFILL

Tetra Tech, Inc.
Environmental Engineers & Scientists

FIGURE 1 | **JUNE 2013**



LEGEND

- Monitoring Well
- Peizometer
- Groundwater Contour
- Road
- Surface Water
- Fence
- Direction of Groundwater flow

Contour Interval = 5' above mean sea level

WATER TABLE ELEVATIONS (feet)

P–3	Inaccessible
P–5	Inaccessible
P–6	487.28
P–7	Inaccessible
P–14	493.56
MW–1	488.83
MW–2	484.44
MW–3	536.65
MW–4	488.31
MW–5	489.86
MW–6	531.91
MW–7	513.43

Contours are based on interpolation between widely spaced sample locations. Interpolated values within the contours are provided as an estimate only and do not represent the same level of accuracy as directly measured data.

100 0 50 100 200

SCALE IN FEET

TETRA TECH
www.tetratech.com
1634 Eastport Drive
Collinsville, IL 62234
PHONE: 618-345-0669 FAX: 618-345-1281

Drawing Description

Potentiometric Map

Collinsville Landfill
Madison County, Illinois

Project No.:	28878
Date:	July 2013
Drawn By:	RMN

Figure Number

2

Closed Collinsville Landfill
Petition for Adjusted Standards

Table 1
Groundwater Levels and Elevations
Closed Collinsville Landfill

Depth to Groundwater Levels

Well ID	8-Aug-12	17-Oct-12	19-Feb-13	7-May-13
P6	Dry	10.74	8.84	7.48
P14	11.78	9.44	5.10	4.66
MW-1	12.71	11.15	9.13	7.30
MW-2	15.02	13.00	10.27	9.17
MW-3	13.36	14.68	11.19	4.57
MW-4	13.09	11.36	8.79	7.14
MW-5	7.30	7.55	6.48	5.23
MW-6	32.28	32.69	32.37	29.84
MW-7	2.21	2.35	1.36	0.75

NOTES: Depth to Groundwater Levels are measured in Feet (ft)

Measurements represent level below top of casing (TOC)

Groundwater Elevations

Well ID	Surface Elevation	8-Aug-12	17-Oct-12	19-Feb-13	7-May-13	Average
P6	496.30	Dry	485.56	487.46	488.82	487.28
P14	501.30	489.52	491.86	496.20	496.64	493.56
MW-1	498.90	486.19	487.75	489.77	491.60	488.83
MW-2	496.30	481.28	483.30	486.03	487.13	484.44
MW-3	547.60	534.24	532.92	536.41	543.03	536.65
MW-4	498.40	485.31	487.04	489.61	491.26	488.31
MW-5	496.50	489.20	488.95	490.02	491.27	489.86
MW-6	563.70	531.42	531.01	531.33	533.86	531.91
MW-7	515.10	512.89	512.75	513.74	514.35	513.43
					Overall Average	501.58

Table 2
Supplemental Permit Condition 6b
Class I Concentrations
Closed Collinsville Landfill

Monitoring Location MW-1							
Compound	**Aug-12**	**Oct-12**	**Feb-13**	**May-13**	**Class I**		
List 1							
Temperature of Water (unfiltered F)	61.09	62.92	53.94	56.08	NA		
Spec Cond. (Unfiltered)	2.490	2.687	2.626	2.624	NA		
pH (Unfiltered units)	**6.39**	**6.34**	6.70	**6.14**	6.5-9.0		
Elev of GW Surf (ft ref MSL)	486.19	487.75	489.77	491.60	NA		
Depth of Water (ft below LS)	9.99	8.43	6.41	4.58	NA		
BTM Well Elev (ft ref MSL)	472.20	472.20	472.20	472.20	NA		
Depth to Water Fr Mea Pt (ft)	12.71	11.15	9.13	7.30	NA		
List 2 Filtered							
Ammonia as N Diss (mg/L)	<0.10	<0.10	0.11	0.15	NA	mg/L	
Arsenic AS, Diss (ug/L)	<5.0	<5.0	<5.0	<5.0	50.0	ug/L	
Cadmium Cd, Diss (ug/L)	<2.0	<2.0	<2.0	<2.0	5.0	ug/L	
Chloride Diss (mg/L)	**325.0**	**375.0**	**342.0**	**451.0**	200.0	mg/L	
Iron Fe, Diss (ug/L)	522.0	491.0	348.0	1,320.0	5,000.0	ug/L	
Lead Pb, Diss (ug/L)	<5.0	<5.0	<5.0	<5.0	8.0	ug/L	
Manganese Mn, Diss (ug/L)	**3,300.0**	**3,530.0**	**3,620.0**	**4460 S**	150.0	ug/L	
Mercury Hg, Diss (ug/L)	<0.20	<0.20	<0.20	<0.20	2.0	ug/L	
Sulfate SO4, Diss (mg/L)	75.0	94.0	87.0	97.0	400.0	mg/L	
Total Dissolved Solids (TDS, mg/L)	**1,530.0**	**1,470.0**	**1,490.0**	**1,570.0**	1,200.0	mg/L	
List 2 Unfiltered							
Cyanide CN, Total (mg/L)	<0.100	<0.100	<0.007	<0.10	0.20	mg/L	
Phenols (Total Recoverable) (ug/L)	<15	<15	<15	<15	100.0	ug/L	
Total Organic Carbon (TOC) (mg/L)	1.8	1.7	2 S	1.6	NA	mg/L	
Total Organic Halogens (TOX) (ug/L)	51.6	49.0	107.1	72.3	NA	ug/L	
List 3 Inorganic Parameters Unfiltered							
Antimony (ug/L)	--	--	--	<3.0	6.0	ug/L	
Arsenic (ug/L)	--	--	--	<5.0	50.0	ug/L	
Barium (ug/L)	--	--	--	222.0	2,000.0	ug/L	
Beryllium (ug/L)	--	--	--	<2.0	4.0	ug/L	
Boron (ug/L)	--	--	--	97.5	2,000.0	ug/L	
Cadmium (ug/L)	--	--	--	<2.0	5.0	ug/L	
Chloride (mg/L)	--	--	--	**422.0**	200.0	mg/L	*
Chromium (ug/L)	--	--	--	<7.0	100.0	ug/L	
Cobalt (ug/L)	--	--	--	<50.0	1,000.0	ug/L	
Copper (ug/L)	--	--	--	<20.0	650.0	ug/L	
Cyanide (mg/L)	--	--	--	--	0.20	mg/L	*
Fluoride (mg/L)	--	--	--	0.15	4.0	mg/L	*
Iron (ug/L)	--	--	--	3,020.0	5,000.0	ug/L	
Lead (ug/L)	--	--	--	<5.0	7.5	ug/L	
Manganese (ug/L)	--	--	--	**4,780.0**	150.0	ug/L	
Mercury (ug/L)	--	--	--	<0.2	2.0	ug/L	
Nickel (ug/L)	--	--	--	<40.0	100.0	ug/L	
Nitrate as N (mg/L)	--	--	--	<1.0	10.0	mg/L	*
Selenium (ug/L)	--	--	--	<5.0	50.0	ug/L	
Silver (ug/L)	--	--	--	<10.0	50.0	ug/L	
Sulfate (mg/L)	--	--	--	102.0	400.0	ug/L	
Thallium (ug/L)	--	--	--	<1.0	2.0	ug/L	
Total Dissolved Solids (mg/L)	--	--	--	**1,620.0**	1,200.0	mg/L	
Zinc (ug/L)	--	--	--	<20.0	5,000.0	ug/L	

Table 2
Supplemental Permit Condition 6b
Class I Concentrations
Closed Collinsville Landfill

Monitoring Location MW-1						
Compound	**Aug-12**	**Oct-12**	**Feb-13**	**May-13**	**Class I**	
List 3 Organic Parameters Unfiltered						
Benzene (ug/L)	--	--	--	<0.15	5.0	ug/L
Dichloromethane (ug/L)	--	--	--	<0.15	5.0	ug/L
para-Dichlorobenzene (ug/L)	--	--	--	<0.25	75.0	ug/L
Monochlorobenzene (Chlorobenzene) (ug/L)	--	--	--	<0.25	100.0	ug/L
Pentachlorophenol (ug/L)	--	--	--	<0.069	1.0	ug/L
Picloram (ug/L)	--	--	--	<0.056	500.0	ug/L

NOTES:

All units are as noted

Bolded where the concentration exceeds Class I groundwater quality standards

<: Compound not detected at or above detection limit. Value shown is the detection limit of the compound for the analytical process.

-- : Not tested

S: Spike Recovery outside accepted recovery limits

ref: reference

MSL: Mean Sea Level

LS: Land Surface

Fr Meas Pt: From Measuring Point

Table 2
Supplemental Permit Condition 6b
Class I Concentrations
Closed Collinsville Landfill

Monitoring Location MW-2						
Compound	**8/10/2012***	**Oct-12**	**Feb-13**	**May-13**	**Class I**	
List 1						
Temperature of Water (unfiltered F)	--	60.28	49.73	52.92	NA	
Spec Cond. (Unfiltered)	--	0.777	0.888	0.544	NA	
pH (Unfiltered units)	--	**6.19**	6.71	**5.49**	6.5-9.0	
Elev of GW Surf (ft ref MSL)	--	483.30	486.03	487.13	NA	
Depth of Water (ft below LS)	--	11.78	9.05	7.95	NA	
BTM Well Elev (ft ref MSL)	--	480.30	480.30	480.30	NA	
Depth to Water Fr Mea Pt (ft)	--	13.00	10.27	9.17	NA	
List 2 Filtered						
Ammonia as N Diss (mg/L)	--	0.10	<0.10	<0.10	NA	mg/L
Arsenic As, Diss (ug/L)	--	<5.0	<5.0	<5.0	50.0	ug/L
Cadmium Cd, Diss (ug/L)	--	<2.0	<2.0	<2.0	5.0	ug/L
Chloride Diss (mg/L)	--	17.0	31.0	11.0	200.0	mg/L
Iron Fe, Diss (ug/L)	--	<40	<40	<40.0	5,000.0	ug/L
Lead Pb, Diss (ug/L)	--	<5.0	<5.0	<5.0	8.0	ug/L
Manganese Mn, Diss (ug/L)	--	<15	<15	<15.0	150.0	ug/L
Mercury Hg, Diss (ug/L)	--	<0.20	<0.20	<0.20	2.0	ug/L
Sulfate SO4, Diss (mg/L)	--	87.0	126.0	77.0	400.0	mg/L
Total Dissolved Solids (TDS, mg/L)	--	474.0	522.0	358.0	1,200.0	mg/L
List 2 Unfiltered						
Cyanide CN, Total (mg/L)	--	<0.100	<0.007	<0.10	0.20	mg/L
Phenols (Total Recoverable) (ug/L)	--	<15.0	<15.0	<15.0	100.0	ug/L
Total Organic Carbon (TOC) (mg/L)	--	1.8	1.5	1.5	NA	mg/L
Total Organic Halogens (TOX) (ug/L)	--	<20	<20	<20	NA	ug/L
List 3 Inorganic Parameters Unfiltered						
Antimony (ug/L)	--	--	--	<3.0	6.0	ug/L
Arsenic (ug/L)	--	--	--	<5.0	50.0	ug/L
Barium (ug/L)	--	--	--	57.2	2,000.0	ug/L
Beryllium (ug/L)	--	--	--	<2.0	4.0	ug/L
Boron (ug/L)	--	--	--	<40.0	2,000.0	ug/L
Cadmium (ug/L)	--	--	--	<2.0	5.0	ug/L
Chloride (mg/L)	--	--	--	11.0	200.0	mg/L
Chromium (ug/L)	--	--	--	<7.0	100.0	ug/L
Cobalt (ug/L)	--	--	--	<50.0	1,000.0	ug/L
Copper (ug/L)	--	--	--	<20.0	650.0	ug/L
Cyanide (mg/L)	--	--	--	--	0.20	mg/L
Fluoride (mg/L)	--	--	--	0.20	4.0	mg/L
Iron (ug/L)	--	--	--	88.1	5,000.0	ug/L
Lead (ug/L)	--	--	--	<5.0	7.5	ug/L
Manganese (ug/L)	--	--	--	<15.0	150.0	ug/L
Mercury (ug/L)	--	--	--	<0.2	2.0	ug/L
Nickel (ug/L)	--	--	--	<40.0	100.0	ug/L
Nitrate as N (mg/L)	--	--	--	<1.0	10.0	mg/L
Selenium (ug/L)	--	--	--	<5.0	50.0	ug/L
Silver (ug/L)	--	--	--	<10.0	50.0	ug/L
Sulfate (mg/L)	--	--	--	73.0	400.0	ug/L
Thallium (ug/L)	--	--	--	<1.0	2.0	ug/L
Total Dissolved Solids (mg/L)	--	--	--	376.0	1,200.0	mg/L
Zinc (ug/L)	--	--	--	<20.0	5,000.0	ug/L

Table 2
Supplemental Permit Condition 6b
Class I Concentrations
Closed Collinsville Landfill

Monitoring Location MW-2						
Compound	**Aug-12**	**Oct-12**	**Feb-13**	**May-13**	**Class I**	
List 3 Organic Parameters Unfiltered						
Benzene (ug/L)	--	--	--	<0.15	5.0	ug/L
Dichloromethane (ug/L)	--	--	--	<0.15	5.0	ug/L
para-Dichlorobenzene (ug/L)	--	--	--	<0.25	75.0	ug/L
Monochlorobenzene (Chlorobenzene) (ug/L)	--	--	--	<0.25	100.0	ug/L
Pentachlorophenol (ug/L)	--	--	--	<0.069	1.0	ug/L
Picloram (ug/L)	--	--	--	<0.056	500.0	ug/L

NOTES:

All units are as noted

Bolded where the concentration exceeds Class I groundwater quality standards

<: Compound not detected at or above detection limit. Value shown is the detection limit of the compound for the analytical process.

-- : Not tested

** Indicates a lab error had occurred and the sample was resubmitted in June 2010

ref: reference

MSL: Mean Sea Level

LS: Land Surface

Fr Meas Pt: From Measuring Point

*Well Dry; no sample collected

Table 2
Supplemental Permit Condition 6b
Class I Concentrations
Closed Collinsville Landfill

Monitoring Location MW-4						
Compound	**Aug-12**	**Oct-12**	**Feb-13**	**May-13**	**Class I**	
List 1						
Temperature of Water (unfiltered F)	61.56	61.02	52.45	55.85	NA	
Spec Cond. (Unfiltered)	2.535	2.738	1.453	1.197	NA	
pH (Unfiltered units)	**6.34**	**6.23**	6.73	**6.19**	6.5-9.0	
Elev of GW Surf (ft ref MSL)	485.31	487.04	489.61	491.26	NA	
Depth of Water (ft below LS)	10.12	8.39	5.82	4.17	NA	
BTM Well Elev (ft ref MSL)	472.00	472.00	472.00	472.00	NA	
Depth to Water Fr Mea Pt (ft)	13.09	11.36	8.79	7.14	NA	
List 2 Filtered						
Ammonia as N Diss (mg/L)	<0.10	<0.10	0.11	0.21	NA	mg/L
Arsenic AS, Diss (ug/L)	10.60	8.00	15.10	14.4	50.0	ug/L
Cadmium Cd, Diss (ug/L)	<2.0	<2.0	<2.0	<2.0	5.0	ug/L
Chloride Diss (mg/L)	**358.0**	**372.0**	98.0	74.0	200.0	mg/L
Iron Fe, Diss (ug/L)	**5,490.0**	4,840.0	**10,000.0**	**9,400.0**	5,000.0	ug/L
Lead Pb, Diss (ug/L)	<5.0	<5.0	<5.0	<5.0	8.0	ug/L
Manganese Mn, Diss (ug/L)	**7,030.0**	**7,210.0**	**10,700.0**	**8,960.0**	150.0	ug/L
Mercury Hg, Diss (ug/L)	<0.20	<0.20	<0.20	<0.20	2.0	ug/L
Sulfate SO4, Diss (mg/L)	93.0	105.0	42.0	55.0	400.0	mg/L
Total Dissolved Solids (TDS, mg/L)	**1,590.0**	**1,500.0**	822.0	766.0	1,200	mg/L
List 2 Unfiltered						
Cyanide CN, Total (mg/L)	<0.100	<0.100	<0.007	<0.10	0.20	mg/L
Phenols (Total Recoverable) (ug/L)	<15.0	<15.0	<15.0	<15.0	100.0	ug/L
Total Organic Carbon (TOC) (mg/L)	1.7	1.5	3.3	3.7	NA	mg/L
Total Organic Halogens (TOX) (ug/L)	37.2	37.1	35.8 R	<20	NA	ug/L
List 3 Inorganic Parameters Unfiltered						
Antimony (ug/L)	--	--	--	<3.0	6.0	ug/L
Arsenic (ug/L)	--	--	--	23.2	50.0	ug/L
Barium (ug/L)	--	--	--	305.0	2,000.0	ug/L
Beryllium (ug/L)	--	--	--	<2.0	4.0	ug/L
Boron (ug/L)	--	--	--	92.3	2,000.0	ug/L
Cadmium (ug/L)	--	--	--	<2.0	5.0	ug/L
Chloride (mg/L)	--	--	--	69.0	200.0	mg/L
Chromium (ug/L)	--	--	--	<7.0	100.0	ug/L
Cobalt (ug/L)	--	--	--	<50.0	1,000.0	ug/L
Copper (ug/L)	--	--	--	<20.0	650.0	ug/L
Cyanide (mg/L)	--	--	--	--	0.20	mg/L
Fluoride (mg/L)	--	--	--	0.28	4.0	mg/L
Iron (ug/L)	--	--	--	**12,900.0**	5,000	ug/L
Lead (ug/L)	--	--	--	<5.0	7.5	ug/L
Manganese (ug/L)	--	--	--	**10,200.00 S**	150.0	ug/L
Mercury (ug/L)	--	--	--	<0.2	2.0	ug/L
Nickel (ug/L)	--	--	--	<40.0	100.0	ug/L
Nitrate as N (mg/L)	--	--	--	<1.0	10.0	mg/L
Selenium (ug/L)	--	--	--	<5.0	50.0	ug/L
Silver (ug/L)	--	--	--	<10.0	50.0	ug/L
Sulfate (mg/L)	--	--	--	57.0	400.0	ug/L
Thallium (ug/L)	--	--	--	<1.0	2.0	ug/L
Total Dissolved Solids (mg/L)	--	--	--	694.0	1,200.0	mg/L
Zinc (ug/L)	--	--	--	<20.0	5,000.0	ug/L

Table 2
Supplemental Permit Condition 6b
Class I Concentrations
Closed Collinsville Landfill

Monitoring Location MW-4						
Compound	**Aug-12**	**Oct-12**	**Feb-13**	**May-13**	**Class I**	
List 3 Organic Parameters Unfiltered						
Benzene (ug/L)	--	--	--	<0.15	5.0	ug/L
Dichloromethane (ug/L)	--	--	--	<0.15	5.0	ug/L
para-Dichlorobenzene (ug/L)	--	--	--	<0.25	75.0	ug/L
Monochlorobenzene (Chlorobenzene) (ug/L)	--	--	--	<0.25	100.0	ug/L
Pentachlorophenol (ug/L)	--	--	--	<0.069	1.0	ug/L
Picloram (ug/L)	--	--	--	<0.056	500.0	ug/L

NOTES:

All units are as noted

Bolded where the concentration exceeds Class I groundwater quality standards

<: Compound not detected at or above detection limit. Value shown is the detection limit of the compound for the analytical process.

-- : Not tested

** Indicates a lab error had occurred and the sample was resubmitted in June 2010

S: Spike Recovery outside accepted recovery limits

ref: reference

MSL: Mean Sea Level

LS: Land Surface

Fr Meas Pt: From Measuring Point

Table 2
Supplemental Permit Condition 6b
Class I Concentrations
Closed Collinsville Landfill

Monitoring Location MW-6						
Compound	**Aug-12**	**Oct-12**	**Feb-13**	**May-13**	**Class I**	
List 1						
Temperature of Water (unfiltered F)	67.21	61.88	54.07	62.47	NA	
Spec Cond. (Unfiltered)	1.540	1.678	1.579	1.566	NA	
pH (Unfiltered units)	6.62	6.72	**6.40**	6.70	6.5-9.0	
Elev of GW Surf (ft ref MSL)	531.42	531.01	531.33	533.86	NA	
Depth of Water (ft below LS)	30.39	30.80	30.48	27.95	NA	
BTM Well Elev (ft ref MSL)	521.77	521.77	521.77	521.77	NA	
Depth to Water Fr Mea Pt (ft)	32.28	32.69	32.37	29.84	NA	
List 2 Filtered						
Ammonia as N Diss (mg/L)	<0.20	<0.10	<0.10	0.14	NA	mg/L
Arsenic As, Diss (ug/L)	<5.0	<5.0	<5.0	<5.0	50.0	ug/L
Cadmium Cd, Diss (ug/L)	<2.0	<2.0	<2.0	<2.0	5.0	ug/L
Chloride Diss (mg/L)	74.0	74.0	69.0	82.0	200.0	mg/L
Iron Fe, Diss (ug/L)	<40	<40	<40	<40.0	5,000.0	ug/L
Lead Pb, Diss (ug/L)	<5.0	<5.0	<5.0	<5.0	8.0	ug/L
Manganese Mn, Diss (ug/L)	**204.0**	**180.0**	**171.0**	**168.0**	150.0	ug/L
Mercury Hg, Diss (ug/L)	<0.20	<0.20	<0.20	<0.20	2.0	ug/L
Sulfate SO4, Diss (mg/L)	62.0	64.0	62.0	71.0	400.0	mg/L
Total Dissolved Solids (TDS, mg/L)	936.0	920.0	920.0	934.0	1,200	mg/L
List 2 Unfiltered						
Cyanide CN, Total (mg/L)	<0.100	<0.100	<0.007	<0.10	0.20	mg/L
Phenols (Total Recoverable) (ug/L)	<15	37.00	<15	<15.0	100.0	ug/L
Total Organic Carbon (TOC) (mg/L)	3.8	3.6	3.6	3.2	NA	mg/L
Total Organic Halogens (TOX) (ug/L)	34.0	31.2	41.1	37.3	NA	ug/L
List 3 Inorganic Parameters Unfiltered						
Antimony (ug/L)	--	--	--	<3.0	6.0	ug/L
Arsenic (ug/L)	--	--	--	<5.0	50.0	ug/L
Barium (ug/L)	--	--	--	104.0	2,000.0	ug/L
Beryllium (ug/L)	--	--	--	<2.0	4.0	ug/L
Boron (ug/L)	--	--	--	142.0	2,000.0	ug/L
Cadmium (ug/L)	--	--	--	<2.0	5.0	ug/L
Chloride (mg/L)	--	--	--	78.0	200.0	mg/L
Chromium (ug/L)	--	--	--	<7.0	100.0	ug/L
Cobalt (ug/L)	--	--	--	<50.0	1,000.0	ug/L
Copper (ug/L)	--	--	--	<20.0	650.0	ug/L
Cyanide (mg/L)	--	--	--	--	0.20	mg/L
Fluoride (mg/L)	--	--	--	0.35	4.0	mg/L
Iron (ug/L)	--	--	--	<40.0	5,000	ug/L
Lead (ug/L)	--	--	--	<5.0	7.5	ug/L
Manganese (ug/L)	**--**	**--**	**--**	148.0	150.0	ug/L
Mercury (ug/L)	--	--	--	<0.2	2.0	ug/L
Nickel (ug/L)	--	--	--	<40.0	100.0	ug/L
Nitrate as N (mg/L)	--	--	--	<1.0	10.0	mg/L
Selenium (ug/L)	--	--	--	<5.0	50.0	ug/L
Silver (ug/L)	--	<10.0	<10.0	<10.0	50.0	ug/L
Sulfate (mg/L)	--	85.0	85.0	63.0	400.0	ug/L
Thallium (ug/L)	--	<1.0	<1.0	<1.0	2.0	ug/L
Total Dissolved Solids (mg/L)	--	1,460.0	1,460.0	954.0	1,200.0	mg/L
Zinc (ug/L)	--	<20.0	<20.0	<20.0	5,000.0	ug/L

Table 2
Supplemental Permit Condition 6b
Class I Concentrations
Closed Collinsville Landfill

Monitoring Location MW-6						
Compound	**Aug-12**	**Oct-12**	**Feb-13**	**May-13**	**Class I**	
List 3 Organic Parameters Unfiltered						
Benzene (ug/L)	<0.15	<0.15	<0.15	<0.15	5.0	ug/L
Dichloromethane (ug/L)	<0.15	<0.15	<0.15	<0.15	5.0	ug/L
para-Dichlorobenzene (ug/L)	<0.25	<0.25	<0.25	<0.25	75.0	ug/L
Monochlorobenzene (Chlorobenzene) (ug/L)	<0.25	<0.25	<0.25	<0.25	100.0	ug/L
Pentachlorophenol (ug/L)	<0.069	<0.069	<0.069	<0.069	1.0	ug/L
Picloram (ug/L)	<0.056	<0.056	<0.056	<0.056	500.0	ug/L

NOTES:

All units are as noted

Bolded where the concentration exceeds Class I groundwater quality standards

<: Compound not detected at or above detection limit. Value shown is the detection limit of the compound for the analytical process.

-- : Not tested

ref: reference

MSL: Mean Sea Level

LS: Land Surface

Fr Meas Pt: From Measuring Point

Table 3
Supplemental Permit Condition 6a
Background Concentrations, 99% Confidence Level
Closed Collinsville Landfill

Monitoring Location MW-1: Comparison to the 99% Confidence Limits					
Analytical Parameters	**MW-1**				**99%**
	Aug-12	**Oct-12**	**Feb-13**	**May-13**	**Confidence Limit**
List 1					
Temperature of Water (unfiltered F)	61.09	62.92	53.94	56.08	*77.77*
Spec Cond. (Unfiltered)	2.490	2.687	2.626	2.624	*2.59*
pH (Unfiltered units)	6.39	6.34	6.70	6.140	*6.25 - 7.47*
Elev of GW Surf (ft ref MSL)	486.19	487.75	489.77	491.60	*538.57*
Depth of Water (ft below LS)	9.99	8.43	6.41	4.58	*33.81*
BTM Well Elev (ft ref MSL)	472.20	472.20	472.20	472.20	*521.77*
Depth to Water Fr Mea Pt (ft)	12.71	11.15	9.13	7.30	*35.70*
List 2 Filtered					
Ammonia as N Diss (mg/L)	<0.10	<0.10	0.11	0.15	*0.10*
Arsenic AS, Diss (ug/L)	<5.0	<5.0	<5.0	<5.0	*5.00*
Cadmium Cd, Diss (ug/L)	<2.0	<2.0	<2.0	<2.0	*2.00*
Chloride Diss (mg/L)	325.00	375.0	342.0	451.0	*80.02*
Iron Fe, Diss (ug/L)	522.00	491.0	348.0	1,320.0	*40.00*
Lead Pb, Diss (ug/L)	<5.0	<5.0	<5.0	<5.0	*5.00*
Manganese Mn, Diss (ug/L)	3,300.00	3,530.0	3,620.0	4460 S	*292.03*
Mercury Hg, Diss (ug/L)	<0.20	<0.20	<0.20	<0.20	*0.20*
Sulfate SO4, Diss (mg/L)	75.00	94.0	87.0	97.0	*113.47*
Total Dissolved Solids (TDS, mg/L)	1,530.00	1,470.0	1,490.0	1,570.0	*1,000.92*
List 2 Unfiltered					
Cyanide CN, Total (mg/L)	<0.100	<0.100	<0.007	<0.10	*0.10*
Phenols (Total Recoverable) (ug/L)	<15	<15	<15	<15	*15.00*
Total Organic Carbon (TOC) (mg/L)	1.8	1.7	2 S	1.6	*8.20*
Total Organic Halogens (TOX) (ug/L)	51.6	49.0	107.1	72.3	*140.73*
List 3 Inorganic Parameters Unfiltered					
Antimony (ug/L)	--	--	--	<3.0	*5.00*
Arsenic (ug/L)	--	--	--	<5.0	*5.00*
Barium (ug/L)	--	--	--	222.0	*280.64*
Beryllium (ug/L)	--	--	--	<2.0	*2.00*
Boron (ug/L)	--	--	--	97.5	*95.93*
Cadmium (ug/L)	--	--	--	<2.0	*2.00*
Chloride (mg/L)	--	--	--	422.0	*75.58*
Chromium (ug/L)	--	--	--	<7.0	*10.00*
Cobalt (ug/L)	--	--	--	<50.0	*50.00*
Copper (ug/L)	--	--	--	<20.0	*20.00*
Cyanide (mg/L)	--	--	--	--	*0.10*
Fluoride (mg/L)	--	--	--	0.15	*0.47*
Iron (ug/L)	--	--	--	3,020.0	*69,000.00*
Lead (ug/L)	--	--	--	<5.0	*5.00*
Manganese (ug/L)	--	--	--	4,780.0	*506.84*
Mercury (ug/L)	--	--	--	<0.2	*0.20*
Nickel (ug/L)	--	--	--	<40.0	*40.00*
Nitrate as N (mg/L)	--	--	--	<1.0	*1.00*
Selenium (ug/L)	--	--	--	<5.0	*6.00*
Silver (ug/L)	--	--	--	<10.0	*10.00*
Sulfate (mg/L)	--	--	--	102.0	*154.05*
Thallium (ug/L)	--	--	--	<1.0	*1.20*
Total Dissolved Solids (mg/L)	--	--	--	1,620.0	*1,025.84*
Zinc (ug/L)	--	--	--	<20.0	*20.00*
List 3 Organic Parameters Unfiltered					
Benzene (ug/L)	--	--	--	<0.15	*0.60*
Dichloromethane (ug/L)	--	--	--	<0.15	*0.60*
para-Dichlorobenzene (ug/L)	--	--	--	<0.25	*5.00*
Monochlorobenzene (Chlorobenzene) (ug/L)	--	--	--	<0.25	*5.00*
Pentachlorophenol (ug/L)	--	--	--	<0.069	*0.10*
Picloram (ug/L)	--	--	--	<0.056	*0.94*

Notes:

All "<" results are listed in table as their respective Reporting Limit.

Highlighting indicates result exceeds the new background 99% CL for MW6 established/approved in 2009 and 2011.

<: Compound not detected at or above detection limit. Value shown is the detection limit of the compound for the analytical process.

CL = Confidence Limit - Background Confidence Limit is 99%.

ref: reference

MSL: Mean Sea Level

LS: Land Surface

Fr Meas Pt: From Measuring Point

Table 3
Supplemental Permit Condition 6a
Background Concentrations, 99% Confidence Level
Closed Collinsville Landfill

Monitoring Location MW-2: Comparison to the 99% Confidence Limits					
Analytical Parameters	**MW-2**				***99%***
	8/10/2012*	**Oct-12**	**Feb-13**	**May-13**	***Confidence Limit***
List 1					
Temperature of Water (unfiltered F)	--	60.28	49.73	52.92	*77.77*
Spec Cond. (Unfiltered)	--	0.777	0.888	0.544	*2.59*
pH (Unfiltered units)	--	6.19	6.71	5.49	*6.25 - 7.47*
Elev of GW Surf (ft ref MSL)	--	483.30	486.03	487.13	*538.57*
Depth of Water (ft below LS)	--	11.78	9.05	7.95	*33.81*
BTM Well Elev (ft ref MSL)	--	480.30	480.30	480.30	*521.77*
Depth to Water Fr Mea Pt (ft)	--	13.00	10.27	9.17	*35.70*
List 2 Filtered					
Ammonia as N Diss (mg/L)	--	0.10	<0.10	<0.10	*0.10*
Arsenic AS, Diss (ug/L)	--	<5.0	<5.0	<5.0	*5.00*
Cadmium Cd, Diss (ug/L)	--	<2.0	<2.0	<2.0	*2.00*
Chloride Diss (mg/L)	--	17.0	31.0	11.0	*80.02*
Iron Fe, Diss (ug/L)	--	<40	<40	<40.0	*40.00*
Lead Pb, Diss (ug/L)	--	<5.0	<5.0	<5.0	*5.00*
Manganese Mn, Diss (ug/L)	--	<15	<15	<15.0	*292.03*
Mercury Hg, Diss (ug/L)	--	<0.20	<0.20	<0.20	*0.20*
Sulfate SO4, Diss (mg/L)	--	87.0	126.0	77.0	*113.47*
Total Dissolved Solids (TDS, mg/L)	--	474.0	522.0	358.0	*1,000.92*
List 2 Unfiltered					
Cyanide CN, Total (mg/L)	--	<0.100	<0.007	<0.10	*0.10*
Phenols (Total Recoverable) (ug/L)	--	<15.0	<15.0	<15.0	*15.00*
Total Organic Carbon (TOC) (mg/L)	--	1.8	1.5	1.5	*8.20*
Total Organic Halogens (TOX) (ug/L)	--	<20	<20	<20	*140.73*
List 3 Inorganic Parameters Unfiltered					
Antimony (ug/L)	--	--	--	<3.0	*5.00*
Arsenic (ug/L)	--	--	--	<5.0	*5.00*
Barium (ug/L)	--	--	--	57.2	*280.64*
Beryllium (ug/L)	--	--	--	<2.0	*2.00*
Boron (ug/L)	--	--	--	<40.0	*95.93*
Cadmium (ug/L)	--	--	--	<2.0	*2.00*
Chloride (mg/L)	--	--	--	11.0	*75.58*
Chromium (ug/L)	--	--	--	<7.0	*10.00*
Cobalt (ug/L)	--	--	--	<50.0	*50.00*
Copper (ug/L)	--	--	--	<20.0	*20.00*
Cyanide (mg/L)	--	--	--	--	*0.10*
Fluoride (mg/L)	--	--	--	0.20	*0.47*
Iron (ug/L)	--	--	--	88.1	*69,000.00*
Lead (ug/L)	--	--	--	<5.0	*5.00*
Manganese (ug/L)	--	--	--	<15.0	*506.84*
Mercury (ug/L)	--	--	--	<0.2	*0.20*
Nickel (ug/L)	--	--	--	<40.0	*40.00*
Nitrate as N (mg/L)	--	--	--	<1.0	*1.00*
Selenium (ug/L)	--	--	--	<5.0	*6.00*
Silver (ug/L)	--	--	--	<10.0	*10.00*
Sulfate (mg/L)	--	--	--	73.0	*154.05*
Thallium (ug/L)	--	--	--	<1.0	*1.20*
Total Dissolved Solids (mg/L)	--	--	--	376.0	*1,025.84*
Zinc (ug/L)	--	--	--	<20.0	*20.00*
List 3 Organic Parameters Unfiltered					
Benzene (ug/L)	--	--	--	<0.15	*0.60*
Dichloromethane (ug/L)	--	--	--	<0.15	*0.60*
para-Dichlorobenzene (ug/L)	--	--	--	<0.25	*5.00*
Monochlorobenzene (Chlorobenzene) (ug/L)	--	--	--	<0.25	*5.00*
Pentachlorophenol (ug/L)	--	--	--	<0.069	*0.10*
Picloram (ug/L)	--	--	--	<0.056	*0.94*

Notes:

All "<" results are listed in table as their respective Reporting Limit.

Highlighting indicates result exceeds the new background 99% CL for MW6 established/approved in 2009 and 2011.

<: Compound not detected at or above detection limit. Value shown is the detection limit of the compound for the analytical process.

CL = Confidence Limit - Background Confidence Limit is 99%.

ref: reference

MSL: Mean Sea Level

LS: Land Surface

Fr Meas Pt: From Measuring Point

* Well Dry; no sample collected

Table 3
Supplemental Permit Condition 6a
Background Concentrations, 99% Confidence Level
Closed Collinsville Landfill

Monitoring Location MW-4: Comparison to the 99% Confidence Limits					
Analytical Parameters	**MW-4**				***99%***
	Aug-12	**Oct-12**	**Feb-13**	**May-13**	***Confidence Limit***
List 1					
Temperature of Water (unfiltered F)	61.56	61.02	52.45	55.85	*77.77*
Spec Cond. (Unfiltered)	2.535	2.738	1.453	1.197	*2.59*
pH (Unfiltered units)	6.34	6.23	6.73	6.19	*6.25 - 7.47**
Elev of GW Surf (ft ref MSL)	485.31	487.04	489.61	491.26	*538.57*
Depth of Water (ft below LS)	10.12	8.39	5.82	4.17	*33.81*
BTM Well Elev (ft ref MSL)	472.00	472.00	472.00	472.00	*521.77*
Depth to Water Fr Mea Pt (ft)	13.09	11.36	8.79	7.14	*35.70*
List 2 Filtered					
Ammonia as N Diss (mg/L)	<0.10	<0.10	0.11	0.21	*0.10*
Arsenic AS, Diss (ug/L)	10.60	8.00	15.10	14.4	*5.00*
Cadmium Cd, Diss (ug/L)	<2.0	<2.0	<2.0	<2.0	*2.00*
Chloride Diss (mg/L)	358.00	372.0	98.0	74.00	*80.02*
Iron Fe, Diss (ug/L)	5,490.00	4,840.0	10,000.0	9,400.0	*40.00*
Lead Pb, Diss (ug/L)	<5.0	<5.0	<5.0	<5.0	*5.00*
Manganese Mn, Diss (ug/L)	7,030.00	7,210.0	10,700.0	8,960.0	*292.03*
Mercury Hg, Diss (ug/L)	<0.20	<0.20	<0.20	<0.20	*0.20*
Sulfate SO4, Diss (mg/L)	93.00	105.0	42.0	55.0	*113.47*
Total Dissolved Solids (TDS, mg/L)	1,590.00	1,500.0	822.0	766.0	*1,000.92*
List 2 Unfiltered					
Cyanide CN, Total (mg/L)	<0.100	<0.100	<0.007	<0.10	*0.10*
Phenols (Total Recoverable) (ug/L)	<15.0	<15.0	<15.0	<15.0	*15.00*
Total Organic Carbon (TOC) (mg/L)	1.7	1.5	3.3	3.7	*8.20*
Total Organic Halogens (TOX) (ug/L)	37.2	37.1	35.8 R	<20	*140.73*
List 3 Inorganic Parameters Unfiltered					
Antimony (ug/L)	--	--	--	<3.0	*5.00*
Arsenic (ug/L)	--	--	--	23.2	*5.00*
Barium (ug/L)	--	--	--	305.0	*280.64*
Beryllium (ug/L)	--	--	--	<2.0	*2.00*
Boron (ug/L)	--	--	--	92.3	*95.93*
Cadmium (ug/L)	--	--	--	<2.0	*2.00*
Chloride (mg/L)	--	--	--	69.0	*75.58*
Chromium (ug/L)	--	--	--	<7.0	*10.00*
Cobalt (ug/L)	--	--	--	<50.0	*50.00*
Copper (ug/L)	--	--	--	<20.0	*20.00*
Cyanide (mg/L)	--	--	--	--	*0.10*
Fluoride (mg/L)	--	--	--	0.28	*0.47*
Iron (ug/L)	--	--	--	12,900.0	*69,000.00*
Lead (ug/L)	--	--	--	<5.0	*5.00*
Manganese (ug/L)	--	--	--	10,200.00 S	*506.84*
Mercury (ug/L)	--	--	--	<0.2	*0.20*
Nickel (ug/L)	--	--	--	<40.0	*40.00*
Nitrate as N (mg/L)	--	--	--	<1.0	*1.00*
Selenium (ug/L)	--	--	--	<5.0	*6.00*
Silver (ug/L)	--	--	--	<10.0	*10.00*
Sulfate (mg/L)	--	--	--	57.0	*154.05*
Thallium (ug/L)	--	--	--	<1.0	*1.20*
Total Dissolved Solids (mg/L)	--	--	--	694.0	*1,025.84*
Zinc (ug/L)	--	--	--	<20.0	*20.00*
List 3 Organic Parameters Unfiltered					
Benzene (ug/L)	--	--	--	<0.15	*0.60*
Dichloromethane (ug/L)	--	--	--	<0.15	*0.60*
para-Dichlorobenzene (ug/L)	--	--	--	<0.25	*5.00*
Monochlorobenzene (Chlorobenzene) (ug/L)	--	--	--	<0.25	*5.00*
Pentachlorophenol (ug/L)	--	--	--	<0.069	*0.10*
Picloram (ug/L)	--	--	--	<0.056	*0.94*

Notes:

All "<" results are listed in table as their respective Reporting Limit.

Highlighting indicates result exceeds the new background 99% CL for MW6 established/approved in 2009 and 2011.

<: Compound not detected at or above detection limit. Value shown is the detection limit of the compound for the analytical process.

CL = Confidence Limit - Background Confidence Limit is 99%.

ref: reference

MSL: Mean Sea Level

LS: Land Surface

Fr Meas Pt: From Measuring Point

Table 3
Supplemental Permit Condition 6a
Background Concentrations, 99% Confidence Level
Closed Collinsville Landfill

Monitoring Location MW-6: Comparison to the 99% Confidence Limits					
Analytical Parameters	**MW-6**				***99%***
	Aug-12	**Oct-12**	**Feb-13**	**May-13**	***Confidence Limit***
List 1					
Temperature of Water (unfiltered F)	67.21	61.88	54.07	62.47	*77.77*
Spec Cond. (Unfiltered)	1.540	1.678	1.579	1.566	*2.59*
pH (Unfiltered units)	6.62	6.72	6.40	6.70	*6.25 - 7.47*
Elev of GW Surf (ft ref MSL)	531.42	531.01	531.33	533.86	*538.57*
Depth of Water (ft below LS)	30.39	30.80	30.48	27.95	*33.81*
BTM Well Elev (ft ref MSL)	521.77	521.77	521.77	521.77	*521.77*
Depth to Water Fr Mea Pt (ft)	32.28	32.69	32.37	29.84	*35.70*
List 2 Filtered					
Ammonia as N Diss (mg/L)	<0.20	<0.10	<0.10	0.14	*0.10*
Arsenic AS, Diss (ug/L)	<5.0	<5.0	<5.0	<5.0	*5.00*
Cadmium Cd, Diss (ug/L)	<2.0	<2.0	<2.0	<2.0	*2.00*
Chloride Diss (mg/L)	74.0	74.0	69.0	82.0	*80.02*
Iron Fe, Diss (ug/L)	<40	<40	<40	<40.0	*40.00*
Lead Pb, Diss (ug/L)	<5.0	<5.0	<5.0	<5.0	*5.00*
Manganese Mn, Diss (ug/L)	204.0	180.0	171.0	168.0	*292.03*
Mercury Hg, Diss (ug/L)	<0.20	<0.20	<0.20	<0.20	*0.20*
Sulfate SO4, Diss (mg/L)	62.0	64.0	62.0	71.0	*113.47*
Total Dissolved Solids (TDS, mg/L)	936.0	920.0	920.0	934.0	*1,000.92*
List 2 Unfiltered					
Cyanide CN, Total (mg/L)	<0.100	<0.100	<0.007	<0.10	*0.10*
Phenols (Total Recoverable) (ug/L)	<15	37.00	<15	<15.0	*15.00*
Total Organic Carbon (TOC) (mg/L)	3.8	3.6	3.6	3.2	*8.20*
Total Organic Halogens (TOX) (ug/L)	34.0	31.2	41.1	37.3	*140.73*
List 3 Inorganic Parameters Unfiltered					
Antimony (ug/L)	--	--	--	<3.0	*5.00*
Arsenic (ug/L)	--	--	--	<5.0	*5.00*
Barium (ug/L)	--	--	--	104.0	*280.64*
Beryllium (ug/L)	--	--	--	<2.0	*2.00*
Boron (ug/L)	--	--	--	142.0	*95.93*
Cadmium (ug/L)	--	--	--	<2.0	*2.00*
Chloride (mg/L)	--	--	--	78.0	*75.58*
Chromium (ug/L)	--	--	--	<7.0	*10.00*
Cobalt (ug/L)	--	--	--	<50.0	*50.00*
Copper (ug/L)	--	--	--	<20.0	*20.00*
Cyanide (mg/L)	--	--	--	--	*0.10*
Fluoride (mg/L)	--	--	--	0.35	*0.47*
Iron (ug/L)	--	--	--	<40.0	*69,000.00*
Lead (ug/L)	--	--	--	<5.0	*5.00*
Manganese (ug/L)	--	--	--	148.0	*506.84*
Mercury (ug/L)	--	--	--	<0.2	*0.20*
Nickel (ug/L)	--	--	--	<40.0	*40.00*
Nitrate as N (mg/L)	--	--	--	<1.0	*1.00*
Selenium (ug/L)	--	--	--	<5.0	*6.00*
Silver (ug/L)	--	<10.0	<10.0	<10.0	*10.00*
Sulfate (mg/L)	--	85.00	85.00	63.0	*154.05*
Thallium (ug/L)	--	<1.0	<1.0	<1.0	*1.20*
Total Dissolved Solids (mg/L)	--	1,460.00	1,460.00	954.0	*1,025.84*
Zinc (ug/L)	--	<20.0	<20.0	<20.0	*20.00*
List 3 Organic Parameters Unfiltered					
Benzene (ug/L)	<0.15	<0.15	<0.15	<0.15	*0.60*
Dichloromethane (ug/L)	<0.15	<0.15	<0.15	<0.15	*0.60*
para-Dichlorobenzene (ug/L)	<0.25	<0.25	<0.25	<0.25	*5.00*
Monochlorobenzene (Chlorobenzene) (ug/L)	<0.25	<0.25	<0.25	<0.25	*5.00*
Pentachlorophenol (ug/L)	<0.069	<0.069	<0.069	<0.069	*0.10*
Picloram (ug/L)	<0.056	<0.056	<0.056	<0.056	*0.94*

Notes:

All "<" results are listed in table as their respective Reporting Limit.

Highlighting indicates result exceeds the new background 99% CL for MW6 established/approved in 2009 and 2011.

<: Compound not detected at or above detection limit. Value shown is the detection limit of the compound for the analytical process.

CL = Confidence Limit - Background Confidence Limit is 99%.

ref: reference

MSL: Mean Sea Level

LS: Land Surface

Fr Meas Pt: From Measuring Point

Table 4
Supplemental Permit Condition 6c
2xPQL
Closed Collinsville Landfill

Monitoring Location MW-1					
	Aug-12	**Oct-12**	**Feb-13**	**May-13**	**2x PQL**
List 2 Organic Parameters Unfiltered					
Cyanide CN, Total (mg/L)	<0.100	<0.100	<0.007	<0.10	0.20
Phenols (Total Recoverable) (ug/L)	<15	<15	<15	<15	30.0
Total Organic Carbon (TOC) (mg/L)	1.8	1.7	2 S	1.6	*
Total Organic Halogens (TOX) (ug/L)	51.6	49.0	107.1	72.3	*
List 3 Organic Parameters Unfiltered					
Benzene (ug/L)	--	--	--	<0.15	1.2
Dichloromethane (ug/L)	--	--	--	<0.15	0.5
para-Dichlorobenzene (ug/L)	--	--	--	<0.25	10.0
Monochlorobenzene (Chlorobenzene) (ug/L)	--	--	--	<0.25	10.0
Pentachlorophenol (ug/L)	--	--	--	<0.069	*
Picloram (ug/L)	--	--	--	<0.056	0.40

Notes:

* According to Supplemental Permit 2005-167-SP, the PQL has been deleted.

Bold entry where result exceeds 2x PQL

<: Compound not detected at or above detection limit. Value shown is the detection limit of the compound for the analytical process.

-- : Not tested

Table 4
Supplemental Permit Condition 6c
2xPQL
Closed Collinsville Landfill

Monitoring Location MW-2					
	8/10/2012*	**Oct-12**	**Feb-13**	**May-13**	**2x PQL**
List 2 Organic Parameters Unfiltered					
Cyanide CN, Total (mg/L)	--	<0.100	<0.007	<0.10	0.20
Phenols (Total Recoverable) (ug/L)	--	<15.0	<15.0	<15.0	30.0
Total Organic Carbon (TOC) (mg/L)	--	1.8	1.5	1.5	*
Total Organic Halogens (TOX) (ug/L)	--	<20	<20	<20	*
List 3 Organic Parameters Unfiltered					
Benzene (ug/L)	--	--	--	<0.15	1.2
Dichloromethane (ug/L)	--	--	--	<0.15	0.500
para-Dichlorobenzene (ug/L)	--	--	--	<0.25	10.0
Monochlorobenzene (Chlorobenzene) (ug/L)	--	--	--	<0.25	10.0
Pentachlorophenol (ug/L)	--	--	--	<0.069	*
Picloram (ug/L)	--	--	--	<0.056	0.40

NOTES:

* According to Supplemental Permit 2005-167-SP, the PQL has been deleted.

Bold entry where result exceeds 2x PQL

<: Compound not detected at or above detection limit. Value shown is the detection limit of the compound for the analytical process.

-- : Not tested

* Dry Well; no sample collected

R: Relative Percent Difference outside accepted recovery limits.

Table 4
Supplemental Permit Condition 6c
2xPQL
Closed Collinsville Landfill

Monitoring Location MW-4					
	Aug-12	**Oct-12**	**Feb-13**	**May-13**	**2x PQL**
List 2 Organic Parameters Unfiltered					
Cyanide CN, Total (mg/L)	<0.100	<0.100	<0.007	<0.10	0.2
Phenols (Total Recoverable) (ug/L)	<15.0	<15.0	<15.0	<15.0	30.0
Total Organic Carbon (TOC) (mg/L)	1.7	1.5	3.3	3.7	*
Total Organic Halogens (TOX) (ug/L)	37.2	37.1	35.8 R	<20	*
List 3 Organic Parameters Unfiltered					
Benzene (ug/L)	--	--	--	<0.15	1.2
Dichloromethane (ug/L)	--	--	--	<0.15	0.5
para-Dichlorobenzene (ug/L)	--	--	--	<0.25	10.0
Monochlorobenzene (Chlorobenzene) (ug/L)	--	--	--	<0.25	10.0
Pentachlorophenol (ug/L)	--	--	--	<0.069	*
Picloram (ug/L)	--	--	--	<0.056	0.40

NOTES:

* According to Supplemental Permit 2005-167-SP, the PQL has been deleted.

Bold entry where result exceeds 2x PQL

<: Compound not detected at or above detection limit. Value shown is the detection limit of the compound for the analytical process.

-- : Not tested

Table 4
Supplemental Permit Condition 6c
2xPQL
Closed Collinsville Landfill

Monitoring Location MW-6					
	Aug-12	**Oct-12**	**Feb-13**	**May-13**	**2x PQL**
List 2 Organic Parameters Unfiltered					
Cyanide CN, Total (mg/L)	<0.100	<0.100	<0.007	<0.10	0.2
Phenols (Total Recoverable) (ug/L)	<15	**37.00**	<15	<15.0	30.0
Total Organic Carbon (TOC) (mg/L)	3.8	3.6	3.6	3.2	*
Total Organic Halogens (TOX) (ug/L)	34.0	31.2	41.1	37.3	*
List 3 Organic Parameters Unfiltered					
Benzene (ug/L)	<0.15	<0.15	<0.15	<0.15	1.2
Dichloromethane (ug/L)	<0.15	<0.15	<0.15	<0.15	0.5
para-Dichlorobenzene (ug/L)	<0.25	<0.25	<0.25	<0.25	10.0
Monochlorobenzene (Chlorobenzene) (ug/L)	<0.25	<0.25	<0.25	<0.25	10.0
Pentachlorophenol (ug/L)	<0.069	<0.069	<0.069	<0.069	*
Picloram (ug/L)	<0.056	<0.056	<0.056	<0.056	0.40

NOTES:

* According to Supplemental Permit 2005-167-SP, the PQL has been deleted.

Bold entry where result exceeds 2x PQL

<: Compound not detected at or above detection limit. Value shown is the detection limit of the compound for the analytical process.

-- : Not tested

Exhibit 5-8

Recent Sampling Information for the 4th Quarter 2013 and 1st Quarter 2014, Electronically Submitted to IEPA on January 14, 2014 and April 15, 2014, Respectively

(Tables 5-8.1 and 5-8.2)

Table 5-8.1
4th Quarter Groundwater Monitoring Results - List 1, List 2 and 31 Additional Parameters under 35 IAC 620.410 a), b) and e)
Closed Collinsville Landfill

Comparison to Class 1 Groundwater Standards

Compound	MW1	MW1 (DUP)	MW2	MW4	MW6	Class I
List 1						
Temperature of Water (unfiltered F)	56.16	56.16	54.5	56.19	54.84	NA
Spec Cond. (Unfiltered)	2.500	2.500	0.862	2.562	1.478	NA
pH (Unfiltered units)	**6.44**	**6.44**	6.65	6.5	6.65	6.5-9.0
Elev of GW Surf (ft ref MSL)	488.29	488.29	485.28	487.67	531.85	NA
Depth of Water (ft below LS)	7.89	7.89	9.8	7.76	29.96	NA
BTM Well Elev (ft ref MSL)	472.2	472.2	480.3	472	521.77	NA
Depth to Water Fr Mea Pt (ft)	10.61	10.61	11.02	10.73	31.85	NA
List 2 Filtered						
Ammonia as N Diss (mg/L)	0.11	0.10	<0.10	<0.10	<0.10	NA
Arsenic AS, Diss (ug/L)	<3.0	<3.0	<3.0	**10.90**	<3.0	10.0
Cadmium Cd, Diss (ug/L)	<2.0	<2.0	<2.0	<2.0	<2.0	5.0
Chloride Diss (mg/L)	**365.0**	**355.0**	31.0	**403.0**	81.0	200.0
Iron Fe, Diss (ug/L)	1,460.0	1,730.0	<40.0	4,930.0	<40.0	5,000.0
Lead Pb, Diss (ug/L)	<5.0	<5.0	<5.0	<5.0	<5.0	8.0
Manganese Mn, Diss (ug/L)	**3,120.0**	**3,290.0**	<15.0	**7,340.0**	**224.0**	150.0
Mercury Hg, Diss (ug/L)	<0.20	<0.20	<0.20	<0.20	<0.20	2.0
Sulfate SO4, Diss (mg/L)	82.0	83.0	121.0	91.0	54.0	400.0
Total Dissolved Solids (TDS, mg/L)	**1,400.0**	**1,410.0**	524.0	**1,430.0**	868.0	1,200.0
List 2 Unfiltered						
Cyanide CN, Total (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.104	0.20
Phenols (Total Recoverable) (ug/L)	<15	<15.0	<15.0	<15.0	<15.0	100.0
Total Organic Carbon (TOC) (mg/L)	1.9	2.0	1.4	1.8	3.4	NA
Total Organic Halogens (TOX) (ug/L)	47.3	116.7	<20	97.4	59.9	NA
Additional Parameters Part 620.410 a), b) and e)						
Perchlorate (ug/L)	**40**	**36**	<4	**51**	**7.8**	4.90
Vanadium (ug/L)	<10	<10	<10	<10	<10	49.0
Acenaphthene (ug/L)	<0.1	<0.1	<0.1	<0.1	<0.1	420.0
Acetone (ug/L)	<5	<5	<5	<5	<5	6,300.0
Anthracene (ug/L)	<0.1	<0.1	<0.1	<0.1	<0.1	2,100.0
Benzo(a)anthracene (ug/L)	<0.1	<0.1	<0.1	<0.1	<0.1	0.13
Benzo(b)fluoranthene (ug/L)	<0.1	<0.1	<0.1	<0.1	<0.1	0.18
Benzo(k)fluoranthene (ug/L)	<0.1	<0.1	<0.1	<0.1	<0.1	0.17
Benzoic acid (ug/L)	<50	<50	<50	<50	<50	28,000.0
2-Butanone (MEK) (ug/L)	<5	<5	<5	<5	<5	4,200.0
Carbon disulfide (ug/L)	<2	<2	<2	<2	<2	700.0
Chloroform (ug/L)	<2	<2	<2	<2	<2	70.0
Chrysene (ug/L)	<0.1	<0.1	<0.1	<0.1	<0.1	12.0

Table 5-8.1
4th Quarter Groundwater Monitoring Results - List 1, List 2 and 31 Additional Parameters under 35 IAC 620.410 a), b) and e)
Closed Collinsville Landfill

Comparison to Class 1 Groundwater Standards

Compound	MW1	MW1 (DUP)	MW2	MW4	MW6	Class I
Additional Parameters Part 620.410 a), b) and e) Continued						
Dibenzo(a,h)anthracene (ug/L)	<0.1	<0.1	<0.1	<0.1	<0.1	0.30
Dicamba (ug/L)	<0.2	<0.2	<0.2	<0.2	<0.2	210.0
Dichlorodifluoromethane (ug/L)	<2	<2	<2	<2	<2	1,400.0
1,1-Dichloroethane (ug/L)	<2	<2	<2	<2	<2	1,400.0
Diethyl phthalate (ug/L)	<1	<1	<1	<1	<1	5,600.0
Di-n-butyl phthalate (ug/L)	<10	<10	<10	<10	<10	700.0
Fluoranthene (ug/L)	<0.1	<0.1	<0.1	<0.1	<0.1	280.0
Fluorene (ug/L)	<0.1	<0.1	<0.1	<0.1	<0.1	280.0
Indeno(1,2,3-cd)pyrene (ug/L)	<0.1	<0.1	<0.1	<0.1	<0.1	0.430
Isopropylbenzene (Cumene) (ug/L)	<2	<2	<2	<2	<2	700.0
MCPP (Mecoprop) (ug/L)	<7	**9.72**	<7	<7	<7	7.0
2-Methylnaphthalene (ug/L)	<0.1	<0.1	<0.1	<0.1	<0.1	28.0
2-Methylphenol (o-cresol) (ug/L)	<10	<10	<10	<10	<10	350.0
Naphthalene (ug/L)	<0.1	<0.1	<0.1	<0.1	<0.1	140.0
P-Dioxane (1,4-Dioxane) (ug/L)	5.15	4.3	<1	6.12	<1	7.70
Pyrene (ug/L)	<0.1	<0.1	<0.1	<0.1	<0.1	210.0
alpha-BHC (Alpha-Benzene) (ug/L)	<0.05	<0.05	<0.05	<0.05	<0.05	0.110
Trichlorofluoromethane (ug/L)	<2	<2	<2	<2	<2	2100.0

NOTES:

All units are as noted

Highlighted and Bolded where the concentration exceeds Class I groundwater quality standards

<: Compound not detected at or above detection limit. Value shown is the detection limit of the compound for the analytical process.

S: Spike Recovery outside accepted recovery limits

ref: reference

MSL: Mean Sea Level

LS: Land Surface

Fr Meas Pt: From Measuring Point

Table 5-8.2

1st Quarter 2014 and
Additional Parameters for Leachate Sample
Closed Collinsville Landfill

Comparison to Class 1 Groundwater Standards							
Compound	**MW1**	**MW1 (DUP)**	**MW2**	**MW4**	**MW6**	**Leachate***	**Class I**
	25-Feb-14	**25-Feb-14**	**25-Feb-14**	**25-Feb-14**	**26-Feb-14**	**26-Feb-14**	
List 1							
Temperature of Water (unfiltered F)	51.40	51.40	47.82	50.95	49.87	67.85	NA
Spec Cond. (Unfiltered)	2.476	2.476	0.848	1.626	1.527	1.999	NA
pH (Unfiltered units)	**5.64**	**5.64**	**5.37**	**5.66**	**6.23**	7.2	6.5-9.0
Elev of GW Surf (ft ref MSL)	489.43	489.43	485.99	489.11	531.44	NA	NA
Depth of Water (ft below LS)	6.75	6.75	9.09	6.32	30.37	NA	NA
BTM Well Elev (ft ref MSL)	472.2	472.2	480.3	472	521.77	NA	NA
Depth to Water Fr Mea Pt (ft)	9.47	9.47	10.31	9.29	32.26	NA	NA
List 2 Filtered							
Ammonia as N Diss (mg/L)	0.1 S	<0.10	<0.10	**0.16**	<0.10	10.80	NA
Arsenic As, Diss (ug/L)	<3.0	<3.0	<3.0	9.7	<3.0	<3.0	10.0
Cadmium Cd, Diss (ug/L)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	5.0
Chloride Diss (mg/L)	**389**	**374**	31	186	80	150	200
Iron Fe, Diss (ug/L)	55.9	55.5	<40.0	**11,700**	<40.0	**57,800**	5,000
Lead Pb, Diss (ug/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	8.0
Manganese Mn, Diss (ug/L)	**2,890**	**2,900**	<15.0	**12,200**	**204**	**8,070**	150
Mercury Hg, Diss (ug/L)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	2.0
Sulfate SO4, Diss (mg/L)	86	102	121	71	57	**649**	400
Total Dissolved Solids (TDS, mg/L)	**1,360**	**1,400**	482	1,010	884	**1,620**	1,200
List 2 Unfiltered							
Cyanide CN, Total (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.20
Phenols (Total Recoverable) (ug/L)	<15	<15.0	<15.0	<15.0	<15.0	<15.0	100
Total Organic Carbon (TOC) (mg/L)	1.9	1.6	1.3	2.5	3.2	8.7	NA
Total Organic Halogens (TOX) (ug/L)	161.5	278.6 S	<20	35.4	37.8	119.2	NA
New List 3 OrganicParameters Unfiltered Detected in the Monitoring Wells							
Perchlorate (ug/L)	<4.0	<4.0	<4.00	**11.0**	**15.0**	<4.00	4.90
MCPP (Mecoprop) (ug/L)	<7.00	<7.00	<7.00	<7.00	<7.00	<7.00	7.0
P-Dioxane (1,4-Dioxane) (ug/L)	**10.40**	**11.30**	<1.00	3.65	1.84	2.03	7.70
List 3 Inorganic Parameters Unfiltered							
Antimony (ug/L)	--	--	--	--	--	<3.0	6.0
Arsenic (ug/L)	--	--	--	--	--	<3.0	50.0
Barium (ug/L)	--	--	--	--	--	**160.0**	2,000.0
Beryllium (ug/L)	--	--	--	--	--	<1.0	4.0
Boron (ug/L)	--	--	--	--	--	483.0	2,000.0
Cadmium (ug/L)	--	--	--	--	--	<2.0	5.0
Chloride (mg/L)	--	--	--	--	--	108.0	200.0
Chromium (ug/L)	--	--	--	--	--	<10	100.0
Cobalt (ug/L)	--	--	--	--	--	<10	1,000.0
Copper (ug/L)	--	--	--	--	--	<10	650.0
Cyanide (mg/L)	--	--	--	--	--	<0.10	0.20
Fluoride (mg/L)	--	--	--	--	--	0.61	4.0
Iron (ug/L)	--	--	--	--	--	39,400.0	5,000.0
Lead (ug/L)	--	--	--	--	--	<2.0	7.5
Manganese (ug/L)	--	--	--	--	--	4,380.0	150
Mercury (ug/L)	--	--	--	--	--	<0.20	2.0
Nickel (ug/L)	--	--	--	--	--	21.3	100.0
Nitrate as N (mg/L)	--	--	--	--	--	<0.05	10.0
Selenium (ug/L)	--	--	--	--	--	<5.0 S	50.0
Silver (ug/L)	--	--	--	--	--	<10	50.0
Sulfate (mg/L)	--	--	--	--	--	450.00	400.0
Thallium (ug/L)	--	--	--	--	--	<1.0 S	2.0
Total Dissolved Solids (mg/L)	--	--	--	--	--	1,620.0	1,200.0
Zinc (ug/L)	--	--	--	--	--	<10	5,000.0
List 3 Organic Parameters Unfiltered							
Alachlor (ug/L)	--	--	--	--	--	<0.05	2.0
Aldicarb (ug/L)	--	--	--	--	--	<1.00	3.0
Atrazine (ug/L)	--	--	--	--	--	<0.05	3.0

Table 5-8.2

1st Quarter 2014 and
Additional Parameters for Leachate Sample
Closed Collinsville Landfill

Comparison to Class 1 Groundwater Standards							
Compound	**MW1**	**MW1 (DUP)**	**MW2**	**MW4**	**MW6**	**Leachate***	**Class I**
	25-Feb-14	**25-Feb-14**	**25-Feb-14**	**25-Feb-14**	**26-Feb-14**	**26-Feb-14**	
Benzene (ug/L)	--	--	--	--	--	<0.05	5.0
Benzo(a)pyrene (ug/L)	--	--	--	--	--	<0.20	0.20
Carbofuran (ug/L)	--	--	--	--	--	<2.00	40.0
Carbon Tetrachloride (ug/L)	--	--	--	--	--	<2.00	5.0
Chlordane (ug/L)	--	--	--	--	--	<0.15	2.0
Dalapon (ug/L)	--	--	--	--	--	<1.3	200.0
Dichloromethane (ug/L)	--	--	--	--	--	<0.50	5.0
Di(2-ethylhxyl)phthalate (ug/L)	--	--	--	--	--	<6.00	6.00
1,2-Dibromo-3-chloropropane (ug/L)	--	--	--	--	--	<0.50	0.2
Dinoseb (DNBP) (ug/L)	--	--	--	--	--	<0.2	7.0
Endothall (ug/L)	--	--	--	--	--	<10	100.0
Endrin (ug/L)	--	--	--	--	--	<0.05	2.0
Ethylene Dibromide (EDB) (ug/L)	--	--	--	--	--	<0.05	0.05
Heptachlor (ug/L)	--	--	--	--	--	<0.05	0.04
Heptachlor Epoxide (ug/L)	--	--	--	--	--	<0.05	0.20
Hexachlorocyclopentadiene (ug/L)	--	--	--	--	--	<4.00	50.0
Lindane (Gamma-Hexachlor cyclohexane)	--	--	--	--	--	<0.04	0.20
2,4 - D (ug/L)	--	--	--	--	--	<0.2	70.0
ortho-Dichlorobenzene (ug/L)	--	--	--	--	--	<5.00	600.0
para-Dichlorobenzene (ug/L)	--	--	--	--	--	<5.00	75.0
1,2-Dichloroethane (ug/L)	--	--	--	--	--	<5.00	5.0
1,1-Dichloroethylene (ug/L)	--	--	--	--	--	<5.00	7.0
cis-1,2-Dichloroethylene (ug/L)	--	--	--	--	--	<5.00	70.0
trans-1,2-Dichloroethylene (ug/L)	--	--	--	--	--	<5.00	100.0
1,2-Dichloropropane (ug/L)	--	--	--	--	--	<5.00	5.0
Ethylbenzene (ug/L)	--	--	--	--	--	<1.00	70.0
Methoxychlor (ug/L)	--	--	--	--	--	<0.05	40.0
Monochlorobenzene (Chlorobenzene) (ug/L)	--	--	--	--	--	72.40	100.0
Pentachlorophenol (ug/L)	--	--	--	--	--	0.356	1.0
Phenols (ug/L)	--	--	--	--	--	<15	100.0
Picloram (ug/L)	--	--	--	--	--	<0.200	500.0
Polychlorinated Biphenyls (PCBs) (ug/L)	--	--	--	--	--	<1.00	0.5
Simazine (ug/L)	--	--	--	--	--	<4.00	4.0
Styrene (ug/L)	--	--	--	--	--	<1.00	100.0
2,4,5-TP (Silvex) (ug/L)	--	--	--	--	--	<0.2	50.0
Tetrachloroethylene (ug/L)	--	--	--	--	--	<0.05	5.0
Toluene (ug/L)	--	--	--	--	--	<5.00	1,000.0
Toxaphene (ug/L)	--	--	--	--	--	<0.5	3.0
1,2,4-Trichlorobenzene (ug/L)	--	--	--	--	--	<10.0	70.0
1,1,1-Trichloroethane (ug/L)	--	--	--	--	--	<5.00	200.0
1,1,2-Trichloroethane (ug/L)	--	--	--	--	--	<0.50	5.0
Trichloroethylene (ug/L)	--	--	--	--	--	<1.00	5.0
Vinyl Chloride (ug/L)	--	--	--	--	--	<2.00	2.0
Xylenes (ug/L)	--	--	--	--	--	<1.00	10,000.0
Additional Parameters Part 620.410 a), b) and e)						--	
Perchlorate (ug/L)	<4.0	<4.0	<4.00	**11.0**	**15.0**	<4.00	4.90
Vanadium (ug/L)	--	--	--	--	--	<10	49.0
Acenaphthene (ug/L)	--	--	--	--	--	<0.1	420.0
Acetone (ug/L)	--	--	--	--	--	<5	6,300.0
Anthracene (ug/L)	--	--	--	--	--	<0.1	2,100.0
Benzo(a)anthracene (ug/L)	--	--	--	--	--	<0.1	0.13
Benzo(b)fluoranthene (ug/L)	--	--	--	--	--	<0.1	0.18
Benzo(k)fluoranthene (ug/L)	--	--	--	--	--	<0.1	0.17
Benzoic acid (ug/L)	--	--	--	--	--	<50	28,000.0
2-Butanone (MEK) (ug/L)	--	--	--	--	--	<5	4,200.0

Table 5-8.2

1st Quarter 2014 and
Additional Parameters for Leachate Sample
Closed Collinsville Landfill

Comparison to Class 1 Groundwater Standards							
Compound	**MW1**	**MW1 (DUP)**	**MW2**	**MW4**	**MW6**	**Leachate***	**Class I**
	25-Feb-14	**25-Feb-14**	**25-Feb-14**	**25-Feb-14**	**26-Feb-14**	**26-Feb-14**	
Carbon disulfide (ug/L)	--	--	--	--	--	<2	700.0
Chloroform (ug/L)	--	--	--	--	--	<2	70.0
Chrysene (ug/L)	--	--	--	--	--	<0.1	12.0
Dibenzo(a,h)anthracene (ug/L)	--	--	--	--	--	<0.1	0.30
Dicamba (ug/L)	--	--	--	--	--	<0.2	210.0
Dichlorodifluoromethane (ug/L)	--	--	--	--	--	<2	1,400.0
1,1-Dichloroethane (ug/L)	--	--	--	--	--	<2	1,400.0
Diethyl phthalate (ug/L)	--	--	--	--	--	<1	5,600.0
Di-n-butyl phthalate (ug/L)	--	--	--	--	--	<10	700.0
Fluoranthene (ug/L)	--	--	--	--	--	<0.1	280.0
Fluorene (ug/L)	--	--	--	--	--	<0.1	280.0
Indeno(1,2,3-cd)pyrene (ug/L)	--	--	--	--	--	<0.1	0.430
Isopropylbenzene (Cumene) (ug/L)	--	--	--	--	--	<2	700.0
MCPP (Mecoprop) (ug/L)	<7.00	<7.00	<7.00	<7.00	<7.00	<7.00	7.0
2-Methylnaphthalene (ug/L)	--	--	--	--	--	<0.1	28.0
2-Methylphenol (o-cresol) (ug/L)	--	--	--	--	--	<10	350.0
Naphthalene (ug/L)	--	--	--	--	--	<0.1	140.0
P-Dioxane (1,4-Dioxane) (ug/L)	**10.40**	**11.30**	<1.00	3.65	1.84	2.03	7.70
Pyrene (ug/L)	--	--	--	--	--	<0.1	210.0
alpha-BHC (Alpha-Benzene) (ug/L)	--	--	--	--	--	<0.05	0.110
Trichlorofluoromethane (ug/L)	--	--	--	--	--	<2	2100.0

NOTES:

All units are as noted

Yellow highlighted and bolded number indicates the groundwater concentration (sample from a monitoring well) exceeds Class I groundwater quality standards.

Orange highlighted and bolded number indicates the leachate concentration (not collected from a monitoring well) exceeds Class I groundwater quality standards.

<: Compound not detected at or above detection limit. Value shown is the detection limit of the compound for the analytical process.

-- : Not tested

*: Samples collected on 2/26/14 for List 1, List 2 and recently added parameters. The List 3 inorganic and remaining List 3 organic compounds were collected 3/19/14

ref: reference

MSL: Mean Sea Level

LS: Land Surface

Fr Meas Pt: From Measuring Point

NA = not applicapable