

**Table 1**  
**Leachate Analysis Summary**  
**Keystone Sanitary Landfill**  
**Earthres Project No: 091018.064**

Lab	HAWK MTN					ALS Environmental				PADEP TQLs
	Date Tested	3/8/2017	6/28/2017	9/20/2017	11/01/17	9/6/18	ALS Env RDL			
Parameter	Form 50	Form 50	Form 50	Form 50	Units	Hawk Mtn. Quant/Limit	Influent	Units	ALS Env RDL	PADEP TQLs
<b>POLLUTANT GROUP I</b>										
pH, Lab	7.77	8.26	8.76	8.56	S.U.	1.68	8.60	su		-
Hardness, Total					mg/l		685	mg/l	1.7	-
Biochemical Oxygen Demand					mg/l		88.60	mg/l	2.0	0.2
Chemical Oxygen Demand	1140	2640	5680	2870	mg/l	20.0	2170	mg/l	30	-
Total Organic Carbon	527	1390	1100	875	mg/l	1	580	mg/l	100	-
Total Suspended Solids					mg/l		202	mg/l	1	2.0
Total Dissolved Solids	3700	7800	6200	8600	mg/l	10	5000	mg/l	5	2.0
Ammonia-Nitrogen as N	339	792	1360	737	mg/l	0.2	803	mg/l	5.00	0.02
Oil & Grease*					mg/l		5.0	mg/l	2.20	5.0
Bromide					mg/l		2.8	mg/l	0.60	0.2
Fecal Coliform					CFU/100ml		2500	CFU/100mL	1	-
Chlorine, Total Residual					mg/l	<	0.10	mg/l	0.10	0.02
Color, Platinum-Cobalt					Pt-Co unit	<		Pt-Co unit		-
Nitrate as N	< 5	< 5	120	30.8	mg/l	0.5	1.2	mg/l	0.20	0.05
Nitrite as N					mg/l	<	0.20	mg/l	0.20	0.05
Fluoride	< 2.0	< 2.0	< 2.0	< 2.0	mg/l	0.20	0.56	mg/l	0.20	0.2
Chloride	1230	2930	3370	3360	mg/l	1	1840	mg/l	50.0	0.5
Nitrogen, Total Kjeldahl					mg/l		964	mg/l	10.0	1.0
Phosphorus					mg/l		5.8	mg/l	0.50	0.01
Sulfate	61.3	< 50.0	1240.0	1350.0	mg/l	5.0	96.3	mg/l	2.0	
Sulfide					mg/l		4.8	mg/l	1.0	-
Surfactants, MBAS					mg/l	<	0.1000	mg/l	0.1000	-
<b>POLLUTANT GROUP II</b>										
Aluminum, Total					mg/l			mg/l		0.010
Boron, Total					mg/l		9.6	mg/l	0.25	0.200
Cobalt, Total ICP-MS	0.0296	0.0424	0.119	0.0667	mg/l	0.001	0.039	mg/l	0.025	0.001
Iron, Total	8.0400	1.6	16.1	39.2	mg/l	0.020	7.0	mg/l	0.15	0.020
Iron, Dissolved					mg/l		5.7	mg/l	1.2	0.020
Manganese, Total	0.7630	0.410	0.092	0.715	mg/l	0.020	1.3	mg/l	0.025	0.002
Molybdenum, Total ICP-MS					mg/l	<	0.010	mg/l	0.010	0.004
Barium, Total	0.94	1.33	1.39	1.43	mg/l	0.00	0.96	mg/l	0.025	0.00
Antimony, Total ICP-MS	< 0.0200	< 0.1	0.118	< 0.05	mg/l	0.005	0.015	mg/l	0.010	0.002
Arsenic, Total ICP-MS	0.2530	0.395	1.55	0.812	mg/l	0.001	0.40	mg/l	0.015	0.003
Beryllium, Total ICP-MS	< 0.0100	< 0.02	< 0.02	< 0.01	mg/l	0.001	< 0.0050	mg/l	0.0050	0.001
Cadmium, Total ICP-MS	< 0.0100	< 0.0433	< 0.02	< 0.01	mg/l	0.001	< 0.0020	mg/l	0.0020	0.0002
Chromium, Total ICP-MS	0.1740	0.411	1.33	0.567	mg/l	0.001	0.29	mg/l	0.010	0.004
Chromium, Hexavalent					mg/l	<	0.00025	mg/l	0.00025	0.001
Copper, Total ICP-MS	0.0529	< 0.02	1.4	0.0484	mg/l	0.001	< 0.025	mg/l	0.025	0.004
Lead, Total ICP-MS	0.0127	< 0.02	< 0.02	0.0113	mg/l	0.001	< 0.010	mg/l	0.010	0.001
Mercury, Total	0.0002000	< 0.0005	0.00127	< 0.001	mg/l	0.001	0.0000359	mg/l	0.0000250	0.0002
Nickel, Total ICP-MS	0.1480	0.258	0.587	0.392	mg/l	0.001	0.18	mg/l	0.025	0.004
Selenium, Total ICP-MS	< 0.0500	< 0.107	< 0.1	0.0514	mg/l	0.005	< 0.020	mg/l	0.020	0.007
Silver, Total ICP-MS	< 0.0500	< 0.1	< 0.1	0.05	mg/l	0.005	< 0.0050	mg/l	0.0050	0.0004
Thallium, Total ICP-MS	< 0.0100	< 0.02	< 0.02	0.01	mg/l	0.001	< 0.0050	mg/l	0.0050	0.002
Zinc, Total ICP-MS	0.1190	< 0.1	0.641	0.195	mg/l	0.005	0.1400	mg/l	0.0250	0.005
Cyanide, Total					mg/l	<	0.050	mg/l	0.050	0.010
Cyanide, Free					mg/l			mg/l		0.001
Phenolics, Total Recoverable	33.3000	10.2000	3.57	3.14	mg/l	0.075	< 0.005	mg/l	0.005	0.005

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Parameter	Form 50	Form 50	Form 50	Form 50	Units	Hawk Mtn. Quant/Limit									
<b>POLLUTANT GROUP III</b>															
Acrolein					mg/l	<	0.0500	mg/l	0.0500	0.002					
Acrylonitrile	<	0.020	<	0.0200	<	0.1000	<	0.1000	mg/l	0.0020	<	0.0250	mg/l	0.0250	0.005
Benzene	<	0.010	<	0.01	<	0.05	<	0.05	mg/l	0.001	<	0.0050	mg/l	0.0050	0.0005
Bromoform	<	0.010	<	0.010	<	0.05	<	0.05	mg/l	0.001	<	0.0050	mg/l	0.0050	0.0005
Carbon Tetrachloride	<	0.010	<	0.010	<	0.05	<	0.05	mg/l	0.001	<	0.0050	mg/l	0.0050	0.0005
Chlorobenzene	<	0.010	<	0.01	<	0.05	<	0.05	mg/l	0.001	<	0.0050	mg/l	0.0050	0.0005
Dibromochloromethane*	<	0.010	<	0.010	<	0.05	<	0.05	mg/l	0.001	<	0.0050	mg/l	0.0050	0.0005
Chloroethane	<	0.010	<	0.01	<	0.05	<	0.05	mg/l	0.001	<	0.0050	mg/l	0.0050	0.0005
2-Chloroethyl Vinyl Ether					mg/l	<	0.0100	mg/l	0.0100	0.005					
Chloroform	<	0.010	<	0.031	<	0.05	<	0.05	mg/l	0.001	<	0.0050	mg/l	0.0050	0.0005
Dichlorobromoethane*	<	0.010	<	0.010	<	0.05	<	0.05	mg/l	0.001	<	0.0050	mg/l	0.0050	0.0005
1,1-Dichloroethane	<	0.010	<	0.010	<	0.05	<	0.05	mg/l	0.001	<	0.0050	mg/l	0.0050	0.0005
1,2-Dichloroethane	<	0.010	<	0.010	<	0.05	<	0.05	mg/l	0.001	<	0.0050	mg/l	0.0050	0.0005
1,1-Dichloroethylene	<	0.010	<	0.010	<	0.05	<	0.05	mg/l	0.001	<	0.0050	mg/l	0.0050	0.0005
1,2-Dichloropropane					mg/l	<	0.0050	mg/l	0.0050	0.0005					
1,3-Dichloropropylene					mg/l	<	0.0100	mg/l	0.0100	0.0005					
Ethylbenzene	<	0.010	<	0.010	<	0.0655	<	0.05	mg/l	0.001	<	0.0120	mg/l	0.0050	0.0005
Chloromethane	<	0.010	<	0.010	<	0.05	<	0.05	mg/l	0.001	<	0.0050	mg/l	0.0050	0.0005
Methylene Chloride	<	0.010	<	0.010	<	0.05	<	0.05	mg/l	<	<	0.0050	mg/l	0.0050	0.0005
1,1,2,2-Tetrachloroethane	<	0.0100	<	0.01	<	0.05	<	0.05	mg/l	<	<	0.0050	mg/l	0.0050	0.0005
Tetrachloroethylene	<	0.0100	<	0.01	<	0.05	<	0.05	mg/l	0.001	<	0.0050	mg/l	0.0050	0.0005
Toluene		0.0152		0.0198		0.0595	<	0.05	mg/l	0.001	<	0.0194	mg/l	0.0050	0.0005
1,2-Trans-Dichloroethylene					mg/l	<	0.0050	mg/l	0.0050	0.0005					
1,1,1-Trichloroethane	<	0.010	<	0.01	<	0.05	<	0.05	mg/l	0.001	<	0.0050	mg/l	0.0050	0.0005
1,1,2-Trichloroethane	<	0.010	<	0.01	<	0.05	<	0.05	mg/l	0.001	<	0.0050	mg/l	0.0050	0.0005
Trichloroethylene	<	0.010	<	0.01	<	0.05	<	0.05	mg/l	0.001	<	0.0050	mg/l	0.0050	0.0005
Vinyl Chloride	<	0.010	<	0.01	<	0.05	<	0.05	mg/l	0.001	<	0.0050	mg/l	0.0050	0.0005
<b>POLLUTANT GROUP IV</b>															
2-Chlorophenol					ug/l	<	3.1	ug/l	3.1	10					
2,4-Dichlorophenol					ug/l	<	3.1	ug/l	3.1	10					
2,4-Dimethylphenol					ug/l	<	3.1	ug/l	3.1	10					
4,6-Dinitro-o-Cresol	<	0.0400	<	0.0286	<	0.2	<	0.2	mg/l	0.004	<	6.3	ug/l	6.3	10
2,4-Dinitrophenol					ug/l	<	6.3	ug/l	6.3	10					
2-Nitrophenol					ug/l	<	3.1	ug/l	3.1	10					
4-Nitrophenol					ug/l	<	3.1	ug/l	3.1	10					
P-Chloro-m-Cresol					ug/l	<	3.1	ug/l	3.1	10					
Pentachlorophenol					ug/l	<	6.3	ug/l	6.3	10					
Phenol					ug/l	<	8.3	ug/l	8.3	10					
2,4,6-Trichlorophenol					ug/l	<	3.1	ug/l	3.1	10					

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Parameter	Form 50	Form 50	Form 50	Form 50	Units	Hawk Mtn. Quant/Limit	Influent	Units	ALS Env RDL	PADEP TQLs					
<b>POLLUTANT GROUP V</b>															
Acenaphthene					ug/l		8.5	ug/l	1.6	2.5					
Acenaphthylene					ug/l	<	1.6	ug/l	1.6	2.5					
Acrylamide					ug/l			ug/l							
Anthracene					ug/l	<	1.6	ug/l	1.6	2.5					
Benzidine					ug/l	<	8.3	ug/l	8.3	50					
Benzo(a)anthracene					ug/l	<	1.6	ug/l	1.6	2.5					
Benzo(a)pyrene					ug/l	<	1.6	ug/l	1.6	2.5					
3,4-Benzo-fluoranthene					ug/l	<	1.6	ug/l	1.6	2.5					
Benzo(g,h,i)perylene					ug/l	<	1.6	ug/l	1.6	2.5					
Benzo(K)fluoranthene					ug/l	<	1.6	ug/l	1.6	2.5					
Bis(2-chloroethoxy)methane					ug/l	<	3.1	ug/l	3.1	5.0					
Bis(2-chloroethyl)ether					ug/l	<	3.1	ug/l	3.1	5.0					
Bis(2-chloroisopropyl)ether					ug/l	<	3.1	ug/l	3.1	5.0					
Bis(2-ethylhexyl) phthalate					ug/l		13.4	ug/l	3.1	5.0					
4-Bromophenyl phenyl ether					ug/l	<	3.1	ug/l	3.1	5.0					
4-Chlorophenyl phenyl ether					ug/l	<	3.1	ug/l	3.1	5.0					
Butyl benzyl phthalate					ug/l	<	3.1	ug/l	3.1	5.0					
2-Chloronaphthalene					ug/l	<	3.1	ug/l	3.1	5.0					
Chrysene					ug/l	<	1.6	ug/l	1.6	2.5					
Dibenzo(a,h)anthracene					ug/l	<	1.6	ug/l	1.6	2.5					
1,2-Dichlorobenzene	<	0.0100	<	0.0100	<	0.0500	<	0.0500	mg/l	0.001	<	5.0	ug/l	5.0	2.5
1,3-Dichlorobenzene	<	0.0100	<	0.0100	<	0.0500	<	0.0500	mg/l	0.001	<	5.0	ug/l	5.0	2.5
1,4-Dichlorobenzene	<	0.0100	<	0.0100	<	0.0500	<	0.0500	mg/l	0.001	<	9.0	ug/l	5.0	2.5
3,3'-Dichlorobenzidine					ug/l	<	3.1	ug/l	3.1	5.0					
Diethyl phthalate					ug/l	<	3.1	ug/l	3.1	5.0					
Dimethyl Phthalate					ug/l	<	3.1	ug/l	3.1	5.0					
Di-N-Butyl Phthalate					ug/l	<	3.1	ug/l	3.1	5.0					
2,4-Dinitrotoluene					ug/l	<	3.1	ug/l	3.1	5.0					
2,6-Dinitrotoluene					ug/l	<	3.1	ug/l	3.1	5.0					
Di-N-octyl phthalate					ug/l	<	3.1	ug/l	3.1	5.0					
Fluoranthene					ug/l	<	1.6	ug/l	1.6	2.5					
Fluorene					ug/l		4.5	ug/l	1.6	2.5					
Hexachlorobenzene					ug/l	<	3.1	ug/l	3.1	5.0					
Hexachlorobutadiene					ug/l	<	3.1	ug/l	3.1	0.5					
Hexachlorocyclopentadiene					ug/l	<	3.1	ug/l	3.1	5.0					
Hexachloroethane					ug/l	<	3.1	ug/l	3.1	5.0					
Indeno(1,2,3-cd)pyrene					ug/l	<	1.6	ug/l	1.6	2.5					
Isophorone					ug/l	<	3.1	ug/l	3.1	5.0					
Naphthalene					ug/l		31.3	ug/l	1.6	0.5					
Nitrobenzene					ug/l	<	3.1	ug/l	3.1	5.0					
N-Nitrosodi-n-propylamine					ug/l	<	3.1	ug/l	3.1	5.0					
N-Nitrosodi-methylamine					ug/l	<	3.1	ug/l	3.1						
N-Nitrosodiphenylamine					ug/l	<	3.1	ug/l	3.1	5.0					
Phenanthrene					ug/l		3.5	ug/l	1.6	2.5					
Pyrene					ug/l	<	1.6	ug/l	1.6	2.5					
1,2,4-Trichlorobenzene					ug/l	<	3.1	ug/l	3.1	0.5					

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Parameter	Form 50	Form 50	Form 50	Form 50	Units	Hawk Mtn. Quant/Limit	Influent	Units	ALS Env RDL	PADEP TQLs
<b>POLLUTANT GROUP VI</b>										
Benzo (b) Fluroanthene					ug/l	<		ug/l		-
Aldrin					ug/l	<	0.040	ug/l	0.040	0.05
alpha-BHC					ug/l	<	0.040	ug/l	0.040	0.05
beta-BHC					ug/l	<	0.040	ug/l	0.040	0.05
gamma-BHC (Lindane)					ug/l	<	0.040	ug/l	0.040	0.05
delta-BHC					ug/l	<	0.040	ug/l	0.040	0.05
Chlordane					ug/l	<	0.40	ug/l	0.40	1.0
4,4'-DDT					ug/l	<	0.040	ug/l	0.040	0.05
4,4'-DDE					ug/l	<	0.040	ug/l	0.040	0.05
4,4'-DDD					ug/l	<	0.040	ug/l	0.040	0.05
Dieldrin					ug/l	<	0.040	ug/l	0.040	0.05
alpha-Endosulfan					ug/l	<	0.040	ug/l	0.040	0.05
beta-Endosulfan					ug/l	<	0.040	ug/l	0.040	0.05
Endosulfan Sulfate					ug/l	<	0.040	ug/l	0.040	0.05
Endrin					ug/l	<	0.040	ug/l	0.040	0.05
Endrin Aldehyde					ug/l	<	0.040	ug/l	0.040	0.05
Heptachlor					ug/l	<	0.040	ug/l	0.040	0.05
Heptachlor Epoxide					ug/l	<	0.040	ug/l	0.040	0.05
Toxaphene					ug/l	<	2.0	ug/l	2.0	0.5
PCB-1016					ug/l	<	1.0	ug/l	1.0	0.25
PCB-1221					ug/l	<	1.0	ug/l	1.0	0.25
PCB-1232					ug/l	<	1.0	ug/l	1.0	0.25
PCB-1242					ug/l	<	1.0	ug/l	1.0	0.25
PCB-1248					ug/l	<	1.0	ug/l	1.0	0.25
PCB-1254					ug/l	<	1.0	ug/l	1.0	0.25
PCB-1260					ug/l	<	1.0	ug/l	1.0	0.25
2,3,7,8-TCDD (Dioxin)					pg/l	<		pg/l		0.000005
2,3,7,8-TCDF (Dioxin)					pg/l	<		pg/l		0.000005
<b>POLLUTANT GROUP VII</b>										
Radiological, Gross Alpha					pCi/L	23.5		pCi/L		3
Radiological, Gross Beta					pCi/L	14.0		pCi/L		4
Radium 226					pCi/L	0.5		pCi/L		1
Radium 228					pCi/L	1.0		pCi/L		1
1,4-Dioxane					ug/l	-		ug/l		0.001
Uranium, Total					mg/l	0.002		mg/l		0.002
Strontium, Total					mg/l	0.1		mg/l		0.010
1,2-Diphenylhydrazine					ug/l	3.1	<	ug/l		10