Table 5
Summary of Exceedances
Solid Media - Freeway Dump
Site Investigation Report
Dakota County, Minnesota

Parameter	Analysis Location	Units	MPCA Screening Soil Leaching Values	MPCA Tier 2 Industrial Soil Reference Values	MPCA Tier 2 Recreational Soil Reference Values	FD-SB-A1 4/11/2018 3 - 6 ft Ash	FD-SB-A2 3/27/2018 10 - 20 ft Ash	FD-SB-A3 3/23/2018 30 - 35 ft Native Soil	FD-SB-A4 3/22/2018 26 - 32.5 ft Native Soil	FD-SB-A5 3/20/2018 15 - 17 ft Waste	FD-SB-B1 4/11/2018 11 - 13 ft Waste	FD-SB-B2 3/27/2018 12 - 21 ft Waste	FD-SB-B3 3/23/2018 5 - 26 ft Waste	FD-SB-B4 3/22/2018 3 - 20 ft Waste	FD-SB-B5 3/20/2018 11.5 - 23 ft Native Soil	FD-SB-C1 4/11/2018 5 - 8 ft Waste	FD-SB-C2 3/27/2018 5 - 17 ft Waste	FD-SB-C3 3/23/2018 5 - 20 ft Waste	FD-SB-C4 3/22/2018 5 - 20 ft Waste	FD-SB-C5 3/21/2018 15 - 17.5 ft Waste	FD-SB-D1 4/11/2018 11 - 16 ft Waste	FD-SB-D2 3/27/2018 3 - 12 ft Waste	FD-SB-D3 3/26/2018 4 - 16 ft Waste	FD-SB-D4 3/22/2018 5 - 20 ft Waste	FD-SB-D5 3/21/2018 5 - 16 ft Waste
Effective Date			06/01/2013	06/22/2009	06/22/2009																					
Exceedance Key			**Bold**	Underline	*Italic*																					
Metals																										
Antimony	Lab	mg/kg	**5.4**	100	*16*	--	--	--	--	***41.0 ****	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	Lab	mg/kg	**5.8**	20	*11*	***21.7***	***23.3***	--	--	***19.0***	--	***14.8***	***16.1***	***12.2***	**9.7**	**6.0**	***15.9***	**7.9**	**6.5**	***14.3***	**10.1**	--	--	***15.1***	***11.6***
Barium	Lab	mg/kg	1700	18000	*1100*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	Lab	mg/kg	**2.7**	230	75	**3.1**	**3.1**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	Lab	mg/kg	**62**	47000	8000	**265**	**238**	**524**	**742**	**238 ***	--	**196**	**216**	**112**	**296**	--	**85.7**	**75.4**	**87.4**	--	--	--	--	**62.7**	--
Cadmium	Lab	mg/kg	**8.8**	200	*35*	--	--	--	--	--	--	--	--	--	--	--	--	--	***46.2***	--	--	--	--	--	--	--
Cobalt	Lab	mg/kg	**27**	2600	800	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**37.4 ***	--	--	--	--	--	--
Copper	Lab	mg/kg	**700**	9000	*100*	--	--	--	--	*137 **	--	--	--	*474*	--	--	--	*119*	--	*228*	--	--	--	--	--	--
Iron	Lab	mg/kg		75000	*12000*	*23000*	*35100*	*15500 **	--	*99500 **	--	*27900*	*40200*	*32100*	*13600*	*16800*	*66500*	*47000*	*42300*	*15900 **	*19200*	--	*23000*	*65700*	*17600*
Lead	Lab	mg/kg	**2700**	700	*300*	--	--	*308 **	--	*453 **	--	--	--	*575*	--	--	*557*	--	*989*	*724 **	--	--	--	--	--	*369*
Manganese	Lab	mg/kg	**130**	8100	5000	**159**	**161**	**423**	**310**	**3260 ***	**238**	**250**	**141**	**270**	**435**	**264**	**520**	**951**	**645**	**249**	**594**	**277**	**353**	**532**	**263**
Mercury	Lab	mg/kg	**3.3 MC**	1.5	*1.2 MC*	--	--	--	--	***9.4***	--	--	--	--	--	--	--	--	***8.6***	--	--	--	--	--	--	--
Nickel	Lab	mg/kg	**180**	2500	*800*	--	--	--	--	***1480 ****	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	Lab	mg/kg	**2.6**	1300	200	--	**5.4**	--	--	--	--	**3.9**	**5.3**	**3.5**	--	--	--	--	--	--	--	--	--	**2.6**	--
Vanadium	Lab	mg/kg	**4.0**	250	*40*	***224***	***124***	**15.0**	**7.1**	**22.6**	**29.8**	***135***	***239***	***44.6***	**19.2**	**28.8**	***54.5***	**30.5**	**16.5**	**27.4**	**37.5**	**19.2**	**28.5**	***64.1***	**25.7**
Zinc	Lab	mg/kg	**3000**	75000	*12000*	--	--	--	--	**3030 ***	--	--	--	--	--	--	--	--	--	***86700 ****	--	--	--	--	--	--
Semivolatile Organic Compounds																										
3,4-Methylphenol (m,p cresols)	Lab	ug/kg	**42 MP**	59000 MP	11000 MP	--	--	--	--	--	--	--	**1120**	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-ethylhexyl)phthalate	Lab	ug/kg	**29000**	2100000	690000	--	--	--	--	**483000 ***	--	--	--	--	--	--	--	--	--	**247000**	--	--	**40000**	--	--
Butyl benzyl phthalate	Lab	ug/kg	**29000**	3700000	623000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	Lab	ug/kg	**4500**	28000	*24000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**7710**
Semivolatile Organic Compounds by Selected Ion Monitoring																										
B(a)P Equivalent, non-detects at 0, 2002 PEFs	Barr Calculation	ug/kg	**1400 T**	3000 T	*2000 T*	--	***17000***	--	--	--	--	--	***3900***	***3500***	***2100***	--	***21000***	--	--	***2200***	***5500***	**1400**	--	***5600***	--
B(a)P Equivalent, non-detects at 1/2, 2002 PEFs	Barr Calculation	ug/kg	**1400 T**	3000 T	*2000 T*	--	***17000***	--	--	--	--	--	***4100***	***3500***	***2100***	--	***21000***	--	--	***2400***	***5500***	**1400**	--	***6000***	--
B(a)P Equivalent, non-detects at 1x, 2002 PEFs	Barr Calculation	ug/kg	**1400 T**	3000 T	*2000 T*	--	***17000***	--	--	--	--	--	***4200***	***3500***	***2200***	--	***21000***	--	--	***2600***	***5500***	**1400**	--	***6400***	--
Naphthalene	Lab	ug/kg	**4500**	28000	*24000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**8120**	--
Volatile Organic Compounds																										
1,2,4-Trichlorobenzene	Lab	ug/kg	**230**	985000	290000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**298**	--	--
1,2,4-Trimethylbenzene	Lab	ug/kg	**2700**	25000	20000	--	--	--	--	**4970**	--	--	--	**6930**	--	--	--	--	**5820**	--	--	--	**5000**	**5480**	--
1,2-Dichlorobenzene	Lab	ug/kg	**11000**	75000	*63000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethylene, cis	Lab	ug/kg	**210**	22000	19000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	Lab	ug/kg	**2700**	10000	8000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	Lab	ug/kg	**170**	50000	72000	--	--	--	--	**1690**	--	--	--	**810**	--	--	--	--	**590**	**469**	--	--	**17100**	**262**	--
Benzene	Lab	ug/kg	**17**	10000	14000	--	--	**256**	**1370**	**981**	--	--	--	--	**277**	--	--	--	**70.9**	--	--	--	**199**	--	--
Chlorobenzene	Lab	ug/kg	**1200**	32000	*23000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	***26400***	--	--
Ethyl benzene	Lab	ug/kg	**1000**	200000	200000	--	--	--	--	**6520**	--	--	--	**1380**	--	--	--	--	**3310**	--	--	--	**1210**	--	--
Naphthalene	Lab	ug/kg	**4500**	28000	*24000*	--	--	--	--	**7650**	--	--	--	--	--	--	--	--	**5570**	--	--	**8480**	--	--	--
Tetrachloroethylene	Lab	ug/kg	**42**	131000	145000	--	--	--	--	**741**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	Lab	ug/kg	**2500**	305000	260000	--	--	--	--	**3680**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethylene (TCE)	Lab	ug/kg	**2.3**	46000	82000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Xylene, total	Lab	ug/kg	**5400 M**	130000 M	110000 M	--	--	--	--	**7840**	--	--	--	--	--	--	--	--	**6550**	--	--	--	--	**14900**	--
Polychlorinated Biphenyls																										
Polychlorinated biphenyls	Lab	ug/kg	**130**	8000	*1400*	--	--	--	--	**686**	--	--	**551**	***4220***	--	***1410***	**178**	**144**	***45200***	***2350***	--	--	***2190***	**398**	**1160**
Herbicides																										
Pentachlorophenol	Lab	mg/kg	**0.023**	120	80	--	**0.30**	--	--	--	--	--	--	--	--	--	--	--	**0.085**	--	--	--	--	--	--	--

Table 5
Summary of Exceedances
Solid Media - Freeway Dump
Site Investigation Report
Dakota County, Minnesota

						Location	FD-SB-E1	FD-SB-E2	FD-SB-E3	FD-SB-E4	FD-SB-E5	FD-SB-F1	FD-SB-F2	FD-SB-F3	FD-SB-F4	FD-SB-F5	FD-SB-G1	FD-SB-G2	FD-SB-G3	FD-SB-G4	FD-SB-G5
						Date	4/11/2018	3/27/2018	3/26/2018	3/22/2018	3/21/2018	4/12/2018	3/27/2018	3/26/2018	3/21/2018	3/21/2018	4/12/2018	3/26/2018	3/26/2018	3/26/2018	3/21/2018
						Depth	10 - 15 ft	11 - 21 ft	11 - 15.5 ft	3 - 21 ft	5 - 10 ft	10 - 14.5 ft	7 - 13 ft	3 - 11 ft	5 - 10 ft	3 - 11 ft	5 - 10 ft	10 - 12 ft	7 - 16 ft	15.5 - 17.5 ft	5 - 14 ft
						Sample Description	Waste	Ash	Ash	Waste	Waste	Ash	Waste	Waste	Waste	Waste	Fill Soil	Waste	Waste	Native Soil	Waste
Parameter	Analysis Location	Units	MPCA Screening Soil Leaching Values	MPCA Tier 2 Industrial Soil Reference Values	MPCA Tier 2 Recreational Soil Reference Values																
Effective Date			06/01/2013	06/22/2009	06/22/2009																
Exceedance Key			**Bold**	Underline	*Italic*																
Metals																					
Antimony	Lab	mg/kg	**5.4**	100	*16*	--	--	--	--	--	--	--	***17.1***	--	--	--	--	--	--	--	--
Arsenic	Lab	mg/kg	**5.8**	20	*11*	--	***21.1***	***16.9***	**9.7**	***11.3***	***22.5***	***20.9***	***20.6***	***12.1***	***21.9***	***13.3***	***28.4***	***13.8***	--	--	
Barium	Lab	mg/kg	1700	18000	*1100*	--	--	--	*1510*	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	Lab	mg/kg	**2.7**	230	75	--	--	**2.9**	--	--	--	**3.2**	--	--	--	**2.7**	--	**3.0**	--	--	--
Boron	Lab	mg/kg	**62**	47000	8000	--	**439**	**188**	**99.3**	**89.4**	**802**	**157**	**163**	**128**	**120**	--	**1930**	**163**	**124**	**114**	
Cadmium	Lab	mg/kg	**8.8**	200	*35*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt	Lab	mg/kg	**27**	2600	800	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	Lab	mg/kg	**700**	9000	*100*	--	--	--	*207*	--	--	--	--	--	*334*	--	--	--	--	--	*244*
Iron	Lab	mg/kg		75000	*12000*	*24800*	*31500*	*36000*	*28800*	*48700*	*34200*	*37700*	*43500*	*162000*	*31000*	--	*39400*	*42300*	--	*168000*	
Lead	Lab	mg/kg	**2700**	700	*300*	--	--	--	--	*1010*	--	--	*352*	*424*	--	--	--	*311*	--	--	
Manganese	Lab	mg/kg	**130**	8100	5000	**360**	**173**	**146**	**1640**	**521**	**185**	**330**	**230**	**1060**	**174**	**323**	**188**	**225**	**834**	**804**	
Mercury	Lab	mg/kg	**3.3 MC**	1.5	*1.2 MC*	--	--	--	--	--	--	--	--	*1.5*	--	--	--	--	--	*1.5*	
Nickel	Lab	mg/kg	**180**	2500	*800*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	Lab	mg/kg	**2.6**	1300	200	--	**5.1**	**5.6**	--	--	**5.7**	**4.9**	**4.2**	--	**6.2**	--	**7.4**	**3.5**	--	--	
Vanadium	Lab	mg/kg	**4.0**	250	*40*	**24.4**	***301***	***86.8***	***50.3***	**39.0**	***117***	***121***	***76.5***	**14.9**	***83.8***	**17.6**	***120***	***54.0***	**12.0**	**20.2**	
Zinc	Lab	mg/kg	**3000**	75000	*12000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Semivolatile Organic Compounds																					
3,4-Methylphenol (m,p cresols)	Lab	ug/kg	**42 MP**	59000 MP	11000 MP	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-ethylhexyl)phthalate	Lab	ug/kg	**29000**	2100000	690000	--	--	--	--	--	--	**118000**	--	--	--	--	--	--	**45300**	--	
Butyl benzyl phthalate	Lab	ug/kg	**29000**	3700000	623000	--	--	--	--	--	--	--	--	**468000**	--	--	--	--	--	--	--
Naphthalene	Lab	ug/kg	**4500**	28000	*24000*	--	--	--	--	**10800**	--	--	--	--	--	--	--	***66500***	--	--	
Semivolatile Organic Compounds by Selected Ion Monitoring																					
B(a)P Equivalent, non-detects at 0, 2002 PEFs	Barr Calculation	ug/kg	**1400 T**	3000 T	*2000 T*	--	--	--	--	***20000***	--	--	**1400**	***3200***	--	--	--	***110000***	--	--	
B(a)P Equivalent, non-detects at 1/2, 2002 PEFs	Barr Calculation	ug/kg	**1400 T**	3000 T	*2000 T*	--	--	--	--	***20000***	--	--	**1400**	***3700***	--	--	--	***110000***	--	--	
B(a)P Equivalent, non-detects at 1x, 2002 PEFs	Barr Calculation	ug/kg	**1400 T**	3000 T	*2000 T*	--	--	--	--	***20000***	--	--	**1400**	***4200***	--	--	--	***110000***	--	--	
Naphthalene	Lab	ug/kg	**4500**	28000	*24000*	--	--	--	--	**19600**	--	--	--	--	--	--	--	***42700***	--	--	
Volatile Organic Compounds																					
1,2,4-Trichlorobenzene	Lab	ug/kg	**230**	985000	290000	--	--	--	--	--	--	--	**4380**	--	**470**	--	--	--	--	--	--
1,2,4-Trimethylbenzene	Lab	ug/kg	**2700**	25000	20000	--	--	--	--	--	--	--	**17000**	--	**3200**	--	--	--	--	--	--
1,2-Dichlorobenzene	Lab	ug/kg	**11000**	75000	*63000*	--	--	--	--	--	--	--	***79700***	--	--	--	--	--	--	--	--
1,2-Dichloroethylene, cis	Lab	ug/kg	**210**	22000	19000	--	--	--	--	--	--	--	--	--	--	--	**263**	--	--	--	--
1,3,5-Trimethylbenzene	Lab	ug/kg	**2700**	10000	8000	--	--	--	--	--	--	--	**5920**	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	Lab	ug/kg	**170**	50000	72000	--	--	--	**192**	**433**	--	--	**32700**	--	**547**	--	--	--	--	--	--
Benzene	Lab	ug/kg	**17**	10000	14000	--	--	--	**211**	--	--	--	**142**	--	--	--	--	--	--	--	--
Chlorobenzene	Lab	ug/kg	**1200**	32000	*23000*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethyl benzene	Lab	ug/kg	**1000**	200000	200000	--	--	--	--	--	--	--	**12200**	--	--	--	--	--	--	--	--
Naphthalene	Lab	ug/kg	**4500**	28000	*24000*	--	--	--	--	--	--	--	***41000***	--	**11200**	--	--	--	--	--	--
Tetrachloroethylene	Lab	ug/kg	**42**	131000	145000	--	--	--	**125**	--	--	--	**5880**	--	--	--	**363**	--	--	--	--
Toluene	Lab	ug/kg	**2500**	305000	260000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethylene (TCE)	Lab	ug/kg	**2.3**	46000	82000	--	--	--	**82.5 ***	--	--	--	--	--	--	--	--	--	--	--	--
Xylene, total	Lab	ug/kg	**5400 M**	130000 M	110000 M	--	--	--	--	--	--	--	**13700**	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls																					
Polychlorinated biphenyls	Lab	ug/kg	**130**	8000	*1400*	**231**	--	--	**421**	***17900***	--	***1740***	***2200***	***2570***	***8510***	--	**134**	***1750***	**1020**	***15200***	
Herbicides																					
Pentachlorophenol	Lab	mg/kg	**0.023**	120	80	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 5
Summary of Exceedances
Solid Media - Freeway Dump
Site Investigation Report
Dakota County, Minnesota

					Location	FD-TT-01	FD-TT-02	FD-TT-03	FD-TT-05	FD-TT-06	FD-TT-07	FD-TT-08	FD-TT-09	FD-TT-10	FD-TT-11	FD-TT-12	FD-TT-13	FD-TT-14
					Date	4/11/2018	4/11/2018	4/11/2018	4/12/2018	4/12/2018	4/12/2018	4/12/2018	4/17/2018	4/17/2018	4/17/2018	4/17/2018	4/17/2018	4/18/2018
					Depth	10 - 12 ft	7 - 9 ft	2 - 5 ft	4 - 9 ft	2 - 5 ft	6 - 11 ft	5 - 12 ft	4 - 12 ft	2 - 10 ft	4 - 12 ft	3 - 12 ft	3 - 12 ft	2 - 12 ft
					Sample Description	Waste	Waste	Ash	Ash	Waste	Waste	Waste	Waste	Waste	Waste	Waste	Waste	Waste
Parameter	Analysis Location	Units	MPCA Screening Soil Leaching Values	MPCA Tier 2 Industrial Soil Reference Values	MPCA Tier 2 Recreational Soil Reference Values													
Effective Date			06/01/2013	06/22/2009	06/22/2009													
Exceedance Key			**Bold**	Underline	*Italic*													
Metals																		
Antimony	Lab	mg/kg	**5.4**	100	*16*	--	**13.3**	--	--	--	--	--	--	--	--	--	--	--
Arsenic	Lab	mg/kg	**5.8**	20	*11*	***11.6***	***22.8***	***24.9***	***14.8***	***18.3***	***12.6***	***37.0***	***12.7***	***13.6***	***13.6***	***17.3***	**5.8**	***12.7***
Barium	Lab	mg/kg	1700	18000	*1100*	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	Lab	mg/kg	**2.7**	230	75	--	--	**3.6**	--	--	--	--	--	--	--	**2.9**	--	--
Boron	Lab	mg/kg	**62**	47000	8000	**134**	**114**	**145**	**106**	**192**	**95.1**	**138**	**75.3**	**74.9**	**65.4**	**198**	**167**	**99.2**
Cadmium	Lab	mg/kg	**8.8**	200	*35*	--	--	--	--	--	--	**13.7**	--	--	--	--	--	--
Cobalt	Lab	mg/kg	**27**	2600	800	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	Lab	mg/kg	**700**	9000	*100*	--	*166*	--	--	***1660***	*507*	*193*	--	--	--	--	--	--
Iron	Lab	mg/kg		75000	*12000*	*36800*	*116000*	*35900*	*26400*	*31800*	*61000*	*53400*	*33200*	*22800*	*27800*	*38800*	*72600*	*31700*
Lead	Lab	mg/kg	**2700**	700	*300*	--	*578*	--	--	--	*338*	*558*	--	--	***6520***	--	--	--
Manganese	Lab	mg/kg	**130**	8100	5000	**291**	**868**	**194**	**365**	**251**	**447**	**382**	**328**	**293**	**238**	**145**	**806**	**408**
Mercury	Lab	mg/kg	**3.3 MC**	1.5	*1.2 MC*	--	--	--	--	*1.7*	--	--	--	--	--	--	--	--
Nickel	Lab	mg/kg	**180**	2500	*800*	--	--	--	--	**489**	--	--	--	--	--	--	--	--
Selenium	Lab	mg/kg	**2.6**	1300	200	**2.9**	--	--	--	**3.7**	--	**4.5**	--	--	--	**5.4**	--	**2.8**
Vanadium	Lab	mg/kg	**4.0**	250	*40*	***132***	***44.9***	***121***	***76.5***	***69.5***	***41.4***	***96.5***	***42.0***	***63.3***	***49.0***	***81.3***	**22.1**	***63.1***
Zinc	Lab	mg/kg	**3000**	75000	*12000*	--	--	--	--	--	--	--	--	--	--	--	--	--
Semivolatile Organic Compounds																		
3,4-Methylphenol (m,p cresols)	Lab	ug/kg	**42 MP**	59000 MP	11000 MP	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-ethylhexyl)phthalate	Lab	ug/kg	**29000**	2100000	690000	--	--	--	--	--	--	--	--	--	--	--	**125000**	--
Butyl benzyl phthalate	Lab	ug/kg	**29000**	3700000	623000	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	Lab	ug/kg	**4500**	28000	*24000*	--	--	--	--	--	--	--	--	--	--	--	--	**12200**
Semivolatile Organic Compounds by Selected Ion Monitoring																		
B(a)P Equivalent, non-detects at 0, 2002 PEFs	Barr Calculation	ug/kg	**1400 T**	3000 T	*2000 T*	--	--	--	--	--	**1700**	--	--	***2200***	***4300***	--	--	***36000***
B(a)P Equivalent, non-detects at 1/2, 2002 PEFs	Barr Calculation	ug/kg	**1400 T**	3000 T	*2000 T*	--	--	--	--	--	**1700**	--	--	***2200***	***4300***	--	--	***36000***
B(a)P Equivalent, non-detects at 1x, 2002 PEFs	Barr Calculation	ug/kg	**1400 T**	3000 T	*2000 T*	--	--	--	--	--	**1700**	--	--	***2200***	***4300***	--	--	***36000***
Naphthalene	Lab	ug/kg	**4500**	28000	*24000*	--	--	--	--	--	--	--	--	--	--	--	--	**14700**
Volatile Organic Compounds																		
1,2,4-Trichlorobenzene	Lab	ug/kg	**230**	985000	290000	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	Lab	ug/kg	**2700**	25000	20000	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	Lab	ug/kg	**11000**	75000	*63000*	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethylene, cis	Lab	ug/kg	**210**	22000	19000	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	Lab	ug/kg	**2700**	10000	8000	--	--	--	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	Lab	ug/kg	**170**	50000	72000	--	--	--	--	--	--	--	--	--	--	--	--	**194**
Benzene	Lab	ug/kg	**17**	10000	14000	--	--	--	--	--	--	**818**	--	**37.4**	--	**73.8**	--	--
Chlorobenzene	Lab	ug/kg	**1200**	32000	*23000*	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethyl benzene	Lab	ug/kg	**1000**	200000	200000	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	Lab	ug/kg	**4500**	28000	*24000*	--	--	--	--	--	--	--	--	--	--	--	--	**6210**
Tetrachloroethylene	Lab	ug/kg	**42**	131000	145000	**98.0**	**122**	--	--	--	--	--	--	**422**	--	--	--	--
Toluene	Lab	ug/kg	**2500**	305000	260000	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethylene (TCE)	Lab	ug/kg	**2.3**	46000	82000	--	--	--	--	--	--	--	--	--	--	--	--	--
Xylene, total	Lab	ug/kg	**5400 M**	130000 M	110000 M	--	--	--	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls																		
Polychlorinated biphenyls	Lab	ug/kg	**130**	8000	*1400*	**864**	***9040***	--	--	--	***3780***	***2880***	**545**	--	***61100***	**759**	***44200***	***3290***
Herbicides																		
Pentachlorophenol	Lab	mg/kg	**0.023**	120	80	--	--	--	--	--	--	--	--	--	--	--	--	--

Data Footnotes and Qualifiers

Barr Standard Footnotes and Qualifiers

--	Sample analyzed; result does not exceed criteria for this parameter
*	Estimated value, QA/QC criteria not met.

MPCA Screening Soil Leaching Values

CR6	Value represents the criteria for Chromium, hexavalent.
M	Value represents the criteria for mixed Xylenes.
MC	Mercury as Mercuric Chloride.
MP	Value represents the criteria for p-cresol.
T	Value represents a criteria for the total carcinogenic PAHs as BaP.

MPCA Tier 2 Industrial Soil Reference Values

CR6	Value represents the criteria for Chromium, hexavalent.
M	Value represents the criteria for mixed Xylenes.
MP	Value represents the criteria for p-cresol.
T	Value represents a criteria for the total carcinogenic PAHs as BaP.

MPCA Tier 2 Recreational Soil Reference Values

CR6	Value represents the criteria for Chromium, hexavalent.
M	Value represents the criteria for mixed Xylenes.
MC	Mercury as Mercuric Chloride.
MP	Value represents the criteria for p-cresol.
T	Value represents a criteria for the total carcinogenic PAHs as BaP.

Table 6
Summary of Exceedances
Water - Freeway Dump
Site Investigation Reports
Dakota County, Minnesota

								Location	FD-SB-A2	FD-SB-A3	FD-SB-A3	FD-SB-A4	FD-SB-A5	FD-SB-B3	FD-SB-B4	FD-SB-B4	FD-SB-B4	FD-SB-B5	FD-SB-D4	FD-SB-D5	FD-SB-D5		FD-SB-E5	FD-TT-06	FD-TT-10
								Date	3/28/2018	3/26/2018	3/29/2018	3/26/2018	3/21/2018	3/28/2018	3/23/2018	3/26/2018	3/29/2018	3/21/2018	3/23/2018	3/21/2018	3/29/2018		3/22/2018	4/12/2018	4/17/2018
								Sample Type	N	N	N	N	N	N	N	N	N	N	N	N	N	FR	N	N	N
				Drinking Water Standards		Surface Water Standards																				
Parameter	Total or Dissolved	Analysis Location	Units	EPA Maximum Contaminant Levels	MDH Human Health-Based Water Guidance Table	Minnesota Surface Water 2Bd Chronic 7050 - 360 Hardness	Minnesota Surface Water 2Bd Final Acute Value 7050 - 360 Hardness																			
Effective Date				04/01/2012	04/23/2018	01/24/2012	01/24/2012																			
Exceedance Key				**Bold**	*Italic*	Underline	*Shade*																			
General Parameters																										
Chlorine dioxide	NA	Lab	mg/l	**0.8 (11)**					ns	ns	ns	ns	--	--	ns	ns	ns	ns	ns	ns	**1.1 h**	**0.81 h**	--	**1.6 h**	ns
Cyanide	NA	Lab	ug/l	200		5.2 (5)	*45 (5)*		ns	17.3	ns	ns	*52.0*	26.8	ns	11.0	ns	12.4	26.0	20.6	ns	ns	13.2	--	13.4
Nitrogen, ammonia, as N	NA	Lab	mg/l			0.04 (3)			ns	46.9 44.2	ns	ns	72.7	32.8 *	32.4	ns	ns	8.1	99.2	15.5	ns	ns	2.0 *	5.4	0.11
Nitrogen, unionized ammonia, as N	NA	Lab	mg/l			0.04			ns	ns	ns	ns	ns	0.052	ns	ns	ns	ns	0.15	ns	ns	ns	ns	--	--
pH	NA	Lab	pH units			6.5 - 9.0			ns	--	ns	ns	--	--	--	ns	ns	--	--	--	ns	ns	--	--	--
pH	NA	Field	pH units			6.5 - 9.0			ns	ns	ns	ns	ns	--	ns	ns	ns	ns	--	ns	ns	ns	ns	--	5.9
Turbidity	NA	Lab	NTU	**5 (16)**		25			ns	**520**	ns	ns	**145**	**416**	**18400**	ns	ns	**200**	**309**	**302**	ns	ns	**5.0**	**315**	**388**
Metals																										
Aluminum	Dissolved	Lab	ug/l			125	2145		ns	--	ns	ns	--	--	--	ns	ns	--	--	--	ns	ns	--	1610	--
Arsenic	Dissolved	Lab	ug/l	10		2.0	720		ns	--	ns	ns	--	--	3.5	ns	ns	--	8.1	7.8	ns	ns	--	2.4	--
Beryllium	Dissolved	Lab	ug/l	4	*0.08 HRL93*				ns	--	ns	ns	--	--	--	ns	ns	--	--	--	ns	ns	--	*0.21*	--
Boron	Dissolved	Lab	ug/l		*500 RAA17*				ns	*33000*	ns	ns	*399000*	*51900*	*15200*	ns	ns	*10700*	*19500*	*15600*	ns	ns	*1690 *	*6600*	*7030*
Cadmium	Dissolved	Lab	ug/l	5	*0.5 HRL15 (1)*	2.8 HD CF	270 HD CF		ns	--	ns	ns	--	--	--	ns	ns	--	--	--	ns	ns	--	*0.65*	*0.93*
Chromium	Dissolved	Lab	ug/l	100	100 CR HRL93	11 CF CR6	31 CF CR6		ns	--	ns	ns	22.2	--	--	ns	ns	--	--	14.2	ns	ns	--	--	--
Cobalt	Dissolved	Lab	ug/l			2.8	872		ns	--	ns	ns	--	3.8	--	ns	ns	--	--	--	ns	ns	--	4.6	4.1
Copper	Dissolved	Lab	ug/l	1300 TT(12)		21 HD CF	110 HD CF		ns	--	ns	ns	--	--	--	ns	ns	--	--	--	ns	ns	--	54.1	26.6
Lead	Dissolved	Lab	ug/l	**15 TT(12)**		13 HD CF	6600 HD CF		ns	--	ns	ns	--	--	--	ns	ns	--	--	**64.8**	ns	ns	--	**21.5**	--
Manganese	Dissolved	Lab	ug/l		*100 HRL93 (1)*				ns	*623*	ns	ns	*267*	--	*1300*	ns	ns	*361*	*351*	*801*	ns	ns	*719*	*738*	*496*
Nickel	Dissolved	Lab	ug/l		*100 HRL93*	460 HD CF	8400 HD CF		ns	--	ns	ns	--	--	--	ns	ns	--	--	--	ns	ns	--	--	*159*
Selenium	Dissolved	Lab	ug/l	50	*30 HRL93*	5.0	*40*		ns	--	ns	ns	--	--	--	ns	ns	--	--	--	ns	ns	--	--	*44.0*
Thallium	Dissolved	Lab	ug/l	2	*0.6 HRL94*	0.28	128		ns	--	ns	ns	--	--	--	ns	ns	--	--	--	ns	ns	--	*0.61*	0.57
Vanadium	Dissolved	Lab	ug/l		*50 HRL94*				ns	--	ns	ns	*102*	--	--	ns	ns	--	--	--	ns	ns	--	--	--
Zinc	Dissolved	Lab	ug/l		2000 HRL94	310 HD CF	680 HD CF		ns	--	ns	ns	--	--	--	ns	ns	--	--	--	ns	ns	--	--	509
Chromium	Total	Lab	ug/l	100	100 CR HRL93	11 CR6	32 CR6		ns	--	ns	ns	ns	--	20.0	ns	ns	ns	--	ns	ns	ns	ns	14.6	22.7
Chromium, hexavalent	Total	Lab	mg/l	0.1 (14)	0.1 HRL93	0.011	*0.032*		ns	--	ns	ns	--	--	*0.060* **	ns	ns	--	--	--	ns	ns	--	0.011 **	--
Semivolatile Organic Compounds																										
1,4-Dioxane	NA	Lab	ug/l		*1 HRL13 (1)*				ns	*37*	ns	*40*	*160*	*79*	*87*	ns	ns	*10*	*22*	*11*	ns	ns	*8.0*	*8.4*	--
Volatile Organic Compounds																										
1,2-Dichloroethane	NA	Lab	ug/l	**5**	*1 HRL13 (1)*	3.8	90100 (1)		--	--	ns	--	--	***12***	--	ns	ns	--	--	--	ns	ns	--	--	--
Acrylamide	NA	Lab	ug/l	TT(2)	*0.2 HRL15 (1)*				ns	ns	ns	ns	--	--	ns	ns	ns	ns	ns	ns	*841*	--	--	--	--
Benzene	NA	Lab	ug/l	**5**	*2 HRL09 (1)*	6.0	8974 (1)		--	***9.8***	ns	***14***	***10***	***30***	***7.6***	ns	ns	--	***10***	--	ns	ns	--	*2.7*	--
Chlorobenzene	NA	Lab	ug/l	100	100 HRL93	20	846		--	--	ns	--	--	20	--	ns	ns	--	--	--	ns	ns	--	--	--
Ethyl benzene	NA	Lab	ug/l	**700**	*50 HRL11*	68	3717		--	--	ns	--	--	***1000***	--	ns	ns	--	--	--	ns	ns	--	--	--
Tetrahydrofuran	NA	Lab	ug/l		*600 HBV16*				--	--	ns	--	--	*4600*	--	ns	ns	--	--	--	ns	ns	--	--	--
Toluene	NA	Lab	ug/l	**1000**	*200 HRL11*	253	2703		--	--	ns	--	--	***1100***	--	ns	ns	--	--	--	ns	ns	--	--	--
Trichloroethylene (TCE)	NA	Lab	ug/l	5 (9)	*0.4 HRL15 (1)*	25	13976		--	--	ns	--	--	--	--	ns	ns	--	--	--	ns	ns	--	--	*1.0*
Vinyl chloride	NA	Lab	ug/l	2	*0.2 HRL09 (1)*	0.18	(1)		*0.68*	--	ns	--	*0.37*	*0.45*	--	ns	ns	--	--	--	ns	ns	--	--	--
Xylene, m & p	NA	Lab	ug/l	10000 (15)	*300 XYL HRL11 (1)*				--	--	ns	--	--	*3300*	--	ns	ns	--	--	--	ns	ns	--	--	--
Xylene, o	NA	Lab	ug/l	10000 (15)	*300 XYL HRL11 (1)*				--	--	ns	--	--	*870*	--	ns	ns	--	--	--	ns	ns	--	--	--
Radiochemical Parameters																										
Gross Alpha (radiation)	NA	Lab	pCi/l	**15**					ns	ns	ns	ns	--	--	ns	ns	ns	ns	ns	ns	--	--	--	--	**29.2 +/- 8.77**
Gross Beta (radiation)	NA	Lab	pCi/l	**50(+)**					ns	ns	ns	ns	**142 +/- 26.9**	**98.4 +/- 18.0**	ns	ns	ns	ns	ns	ns	**48.2 +/- 9.69**	**57.2 +/- 10.7**	--	--	--
Per- and Polyfluoroalkyl Substances																										
Perfluorooctanesulfonate (PFOS)	NA	Lab	ug/l		*0.027 HBV17*				ns	*0.48*	ns	*0.19*	*0.17*	*4.1*	*0.13*	ns	ns	--	*0.63*	*0.28*	ns	ns	--	*0.23*	*0.041*
Perfluorooctanoic acid (PFOA)	NA	Lab	ug/l		*0.035 HBV17*				ns	*1.5*	ns	*0.53*	*2.1*	*7.3*	*1.4*	ns	ns	*1.0*	*3.9*	*25*	ns	ns	*0.19*	*0.79*	--

Data Footnotes and Qualifiers

Barr Standard Footnotes and Qualifiers

--	Sample analyzed; result does not exceed the criteria for this parameter
FR	Sample Type: Field Replicate
N	Sample Type: Normal
NA	NA (not applicable) indicates that a fractional portion of the sample is not part of the analytical testing or field collection procedures.
*	Estimated value, QA/QC criteria not met.
**	Unusable value, QA/QC criteria not met.
h	EPA recommended sample preservation, extraction or analysis holding time was exceeded.
ns	Sample not analyzed for this parameter.

EPA Maximum Contaminant Levels

TT(2)	When Acrylamide is used in drinking water systems, the combination (or product) of dose and monomer level shall not exceed that equivalent to a polyacrylamide polymer containing 0.05% monomer dosed at 1 mg/l.
TT(12)	Copper action level 1.3 mg/l; lead action level 0.015 mg/l.
(9)	Under review.
(11)	1998 Final Rule for Disinfectants and Disinfection By-products: MRDLG=Maximum Residual Disinfection Level Goal; and MRDL=Maximum Residual Disinfection Level.
(14)	Based on the criteria for chromium, total.
(15)	Based on the criteria for xylenes, total.
(16)	At no time can turbidity go above 5 NTU.
(+)	This MCL is no longer an official regulatory level, but is still in use as a trigger for EPA. The actual MCL for Beta is 4 mrem/year but there is no simple conversion between a curie and a rem.

MDH Human Health-Based Water Guidance Table

(1)	Value is representative of the lowest exposure duration published in the Minnesota Department of Health Human Health Advisory Table.
CR	Value represents the criteria for Chromium, hexavalent.
HBV16	Health Based Value 2016.
HBV17	Health Based Value 2017.
HRL09	Health Risk Limit 2009.
HRL11	Health Risk Limit 2011.
HRL13	Health Risk Limit 2013.
HRL15	Health Risk Limit 2015.
HRL93	Health Risk Limit 1993.
HRL94	Health Risk Limit 1994.
RAA17	Risk Assessment Advice 2008.
XYL	Value shown is for the sum of the mixed o,m and p Xylene isomers.

Minnesota Surface Water 2Bd Chronic 7050 - 360 Hardness*

(3)	Value represents the criteria for Ammonia, unionized as N.
(5)	Value based on the criteria for cyanide, free.
CF	Conversion Factor.
CR6	Value represents the criteria for Hexavalent Chromium.
HD	Hardness Dependent.

* Estimated concentrations based on same underlying assumptions of conservative transport mechanisms and same source area. Minnesota River hardness data from MPCA, 2006. Working Draft, Surface Water Pathway Evaluation user's Guide, Appendix E.

Minnesota Surface Water 2Bd Final Acute Value 7050 - 360 Hardness*

(1)	Subpart 7, item E applies.
(5)	Value based on the criteria for cyanide, free.
CF	Conversion Factor.
CR6	Value represents the criteria for Hexavalent Chromium.
HD	Hardness Dependent.

* Estimated concentrations based on same underlying assumptions of conservative transport mechanisms and same source area. Minnesota River hardness data from MPCA, 2006. Working Draft, Surface Water Pathway Evaluation user's Guide, Appendix E.

Table 7
Summary of Exceedances
Solid Media - Freeway Landfill and Transfer Station
Site Investigation Reports
Dakota County, Minnesota

						Location	FL-TT-01	FL-TT-02	FL-TT-03	FL-TT-04	FL-TT-05	FL-TT-06	FL-TT-07	FL-TT-08	TS-SB-01	TS-SB-02	TS-SB-03	TS-SB-04	TS-SB-05	TS-SB-06	TS-SB-07	TS-SB-08
						Date	4/18/2018	4/18/2018	4/19/2018	4/19/2018	4/19/2018	4/19/2018	4/19/2018	4/20/2018	4/12/2018	4/12/2018	4/12/2018	4/13/2018	4/13/2018	4/13/2018	4/13/2018	4/13/2018
						Depth	3 - 11 ft	2 - 10.5 ft	2 - 10 ft	2 - 14 ft	5 - 15 ft	0 - 10 ft	1 - 5 ft	1 - 7 ft	5 - 8 ft	5 - 10 ft	1.5 - 3 ft	7 - 15 ft	5 - 7.5 ft	8 - 12 ft	15 - 18.5 ft	10 - 20 ft
						Sample Description	Waste	Waste	Waste	Waste	Waste	Native Soil	Native Soil	Waste	Waste	Fill Soil	Waste	Waste	Waste	Waste	Fill Soil	Waste
Parameter	Analysis Location	Units	MPCA Screening Soil Leaching Values	MPCA Tier 2 Industrial Soil Reference Values	MPCA Tier 2 Recreational Soil Reference Values																	
Effective Date			06/01/2013	06/22/2009	06/22/2009																	
Exceedance Key			**Bold**	Underline	*Italic*																	
Metals																						
Antimony	Lab	mg/kg	**5.4**			--	**6.4**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	Lab	mg/kg	**5.8**	20	*11*	--	***26.8***	***11.9***	**8.9**	**8.1**	--	**6.3**	--	--	--	--	--	--	***11.4***	--	--	--
Boron	Lab	mg/kg	**62**			--	**234**	**109 ***	--	**73.4**	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	Lab	mg/kg	**8.8**		*35*	--	--	***38.6***	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	Lab	mg/kg			*100*	--	*280*	*448 **	*102*	*175*	--	--	--	--	--	--	--	--	--	*341*	--	--
Iron	Lab	mg/kg		75000	*12000*	--	*107000*	*166000*	*26700*	*22000*	--	*23300*	*22500*	*12500*	--	--	--	--	*27600*	--	--	--
Lead	Lab	mg/kg			*300*	--	*611*	*691 **	--	--	--	--	--	--	--	--	--	--	*579*	*436*	--	--
Manganese	Lab	mg/kg	**130**			**402**	**994**	**596 ***	**531**	**522**	**498**	**999**	**470**	**455**	**258**	**282**	**318**	**723**	**247**	**300**	--	
Selenium	Lab	mg/kg	**2.6**			--	**2.8**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	Lab	mg/kg	**7.9**			--	--	**26.3**	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	Lab	mg/kg	**4.0**		*40*	**24.8**	***44.3***	***40.2***	**38.0**	**30.7**	**30.3**	**29.8**	**34.2**	**19.1**	**16.3**	**18.3**	**19.3**	**19.5**	**13.1**	**19.7**	--	
Semivolatile Organic Compounds																						
Bis(2-ethylhexyl)phthalate	Lab	ug/kg	**29000**			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**100000**
Butyl benzyl phthalate	Lab	ug/kg	**29000**	3700000	*623000*	--	--	***4230000***	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Semivolatile Organic Compounds by Selected Ion Monitoring																						
B(a)P Equivalent, non-detects at 0, 2002 PEFs	Barr Calculation	ug/kg	**1400 T**	3000 T	*2000 T*	***15000***	--	--	--	--	--	--	--	--	--	--	***2900***	--	--	***4400***	--	**1900**
B(a)P Equivalent, non-detects at 1/2, 2002 PEFs	Barr Calculation	ug/kg	**1400 T**	3000 T	*2000 T*	***15000***	--	--	--	--	--	--	--	--	--	--	***2900***	--	--	***4400***	--	**1900**
B(a)P Equivalent, non-detects at 1x, 2002 PEFs	Barr Calculation	ug/kg	**1400 T**	3000 T	*2000 T*	***15000***	--	--	--	--	--	--	--	--	--	--	***2900***	--	--	***4400***	--	**1900**
Volatile Organic Compounds																						
1,1,2,2-Tetrachloroethane	Lab	ug/kg	**12**			--	--	--	--	--	--	--	--	--	--	--	--	--	**138**	--	--	--
1,4-Dichlorobenzene	Lab	ug/kg	**170**			--	**255**	**175**	--	**443**	--	--	**415**	--	--	--	--	--	--	--	--	**512**
Benzene	Lab	ug/kg	**17**			--	**54.0**	--	--	--	--	--	--	--	--	--	--	**58.1**	--	--	--	--
Naphthalene	Lab	ug/kg	**4500**			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**4880**
Tetrachloroethylene	Lab	ug/kg	**42**			--	--	**178 ***	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls																						
Polychlorinated biphenyls	Lab	ug/kg	**130**	8000	*1400*	--	***4990***	***11300***	**633**	**1230**	--	--	--	--	--	--	**150**	--	--	--	--	--

Data Footnotes and Qualifiers

Barr Standard Footnotes and Qualifiers

--	Sample analyzed; result does not exceed the criteria for this parameter
*	Estimated value, QA/QC criteria not met.
**	Unusable value, QA/QC criteria not met.

MPCA Screening Soil Leaching Values

CR6	Value represents the criteria for Chromium, hexavalent.
T	Value represents a criteria for the total carcinogenic PAHs as BaP.

MPCA Tier 2 Industrial & Recreational Soil Reference Values

T	Value represents a criteria for the total carcinogenic PAHs as BaP.

Table 8
Summary of Exceedances
Water - Freeway Landfill and Transfer Station
Site Investigation Reports
Dakota County, Minnesota

								Location	FL-TT-02	FL-TT-03	FL-TT-04	FL-TT-05	FL-TT-07	FL-TT-08	TS-SB-02	TS-SB-05	TS-SB-07	TS-SB-08
								Date	4/18/2018	4/19/2018	4/19/2018	4/19/2018	4/19/2018	4/20/2018	4/12/2018	4/13/2018	4/13/2018	4/13/2018
				Drinking Water Standards		Surface Water Standards												
Parameter	Total or Dissolved	Analysis Location	Units	EPA Maximum Contaminant Levels	MDH Human Health-Based Water Guidance Table	Minnesota Surface Water 2Bd Chronic 7050 - 360 Hardness	Minnesota Surface Water 2Bd Final Acute Value 7050 - 360 Hardness											
Effective Date				04/01/2012	04/23/2018	01/24/2012	01/24/2012											
Exceedance Key				**Bold**	*Italic*	Underline	Shade											
General Parameters																		
Chloride	NA	Lab	mg/l			230	1720		--	--	--	--	--	ns	ns	ns	ns	820
Chlorine dioxide	NA	Lab	mg/l	**0.8 (11)**					--	**0.83 h**	**0.88 h**	**1.5 h**	--	ns	ns	ns	ns	--
Cyanide	NA	Lab	ug/l	200		5.2 (5)	45 (5)		22.0	--	--	--	--	16.3	ns	ns	ns	41.3
Nitrogen, ammonia, as N	NA	Lab	mg/l			0.04 (3)			10.6	5.0	7.8	4.5	9.7	11.1	ns	ns	ns	95.2
Nitrogen, unionized ammonia, as N	NA	Lab	mg/l			0.04			--	--	--	--	--	--	ns	ns	ns	0.18
pH	NA	Lab	pH units			6.5 - 9.0			6.3 h	--	--	--	--	--	ns	ns	ns	--
pH	NA	Field	pH units			6.5 - 9.0			5.9	5.6	5.9	6.3	6.2	6.0	ns	ns	ns	--
Turbidity	NA	Lab	NTU	**5 (16)**		25			**620**	**156**	**246**	**196**	**152**	**1460 ***	ns	ns	ns	**260**
Metals																		
Aluminum	Dissolved	Lab	ug/l			125	2145		--	--	--	--	358	350 *	--	3810	92800	--
Arsenic	Dissolved	Lab	ug/l	**10**		2.0	720		7.3	--	3.7	3.4	--	--	3.1	4.4	**71.2**	6.6
Barium	Dissolved	Lab	ug/l	**2000**	*2000 HRL93*				--	--	--	--	--	--	--	***2750***	***2810***	--
Beryllium	Dissolved	Lab	ug/l	4	*0.08 HRL93*				--	--	--	--	--	--	--	--	*2.8*	--
Boron	Dissolved	Lab	ug/l		*500 RAA17*				*536*	--	*1090*	--	*1610*	--	*582*	*859*	*889*	*6960*
Cadmium	Dissolved	Lab	ug/l	5	*0.5 HRL15 (1)*	2.8 HD CF	270 HD CF		--	--	--	--	--	--	--	--	*3.8*	--
Cobalt	Dissolved	Lab	ug/l			2.8	872		3.2	--	3.6	4.5	--	3.2	--	4.8	105	5.0
Copper	Dissolved	Lab	ug/l	1300 TT(12)		21 HD CF	110 HD CF		--	--	--	--	--	--	--	--	313	--
Lead	Dissolved	Lab	ug/l	**15 TT(12)**		13 HD CF	6600 HD CF		--	--	--	--	--	--	--	**24.3**	**113**	--
Manganese	Dissolved	Lab	ug/l		*100 HRL93 (1)*				*985*	*1120*	*1030*	*749*	*902*	*2290*	*722*	*2440*	*9940*	*226*
Nickel	Dissolved	Lab	ug/l		*100 HRL93*	460 HD CF	8400 HD CF		--	--	--	--	--	--	--	--	*215*	--
Thallium	Dissolved	Lab	ug/l	**2**	*0.6 HRL94*	0.28	128		--	--	--	--	--	--	--	--	***2.9***	--
Vanadium	Dissolved	Lab	ug/l		*50 HRL94*				--	--	--	--	--	--	--	--	*205*	--
Zinc	Dissolved	Lab	ug/l		2000 HRL94	310 HD CF	680 HD CF		--	--	--	--	--	--	--	--	492	--
Semivolatile Organic Compounds																		
1,4-Dioxane	NA	Lab	ug/l		*1 HRL13 (1)*				--	--	--	--	*1.2*	--	*2.2*	*36*	*11*	*120*
3,4-Methylphenol (m,p cresols)	NA	Lab	ug/l		*3 MP HRL94*				--	--	--	--	--	--	ns	*232*	--	--
Bis(2-ethylhexyl)phthalate	NA	Lab	ug/l	**6**	*7 HRL15 (1)*	1.9	(1)		***13.8***	--	--	***264***	--	--	ns	--	--	--
Volatile Organic Compounds																		
Benzene	NA	Lab	ug/l	5	*2 HRL09 (1)*	6.0	8974 (1)		*4.5*	--	--	--	--	--	--	--	--	*3.0*
Radiochemical Parameters																		
Gross Beta (radiation)	NA	Lab	pCi/l	**50(+)**					--	--	--	--	--	ns	ns	ns	ns	**98.0 +/- 19.5**
Per- and Polyfluoroalkyl Substances																		
Perfluorooctanesulfonate (PFOS)	NA	Lab	ug/l		*0.027 HBV17*				*0.051*	--	*0.14*	*0.12*	*0.048*	*0.14*	*0.042*	*0.30*	*0.50*	*0.33*
Perfluorooctanoic acid (PFOA)	NA	Lab	ug/l		*0.035 HBV17*				*0.12*	*0.041*	*0.22*	*0.15*	*0.27*	*0.21*	*0.084*	*0.35*	*0.24*	*1.6*

Data Footnotes and Qualifiers

Barr Standard Footnotes and Qualifiers

--	Sample analyzed; result does not exceed the criteria for this parameter
N	Sample Type: Normal
*	Estimated value, QA/QC criteria not met.
h	EPA recommended sample preservation, extraction or analysis holding time was exceeded.
ns	Sample not analyzed for this parameter.

EPA Maximum Contaminant Levels

(11)	1998 Final Rule for Disinfectants and Disinfection By-products: MRDLG=Maximum Residual Disinfection Level Goal; and MRDL=Maximum Residual Disinfection Level.
TT(12)	Copper action level 1.3 mg/l; lead action level 0.015 mg/l.
(16)	At no time can turbidity go above 5 NTU.
(+)	This MCL is no longer an official regulatory level, but is still in use as a trigger for EPA. The actual MCL for Beta is 4 mrem/year but there is no simple conversion between a curie and a rem.

MDH Human Health-Based Water Guidance Table

(1)	Value is representative of the lowest exposure duration published in the Minnesota Department of Health Human Health Advisory Table.
CR	Value represents the criteria for Chromium, hexavalent.
HBV17	Health Based Value 2017.
HRL09	Health Risk Limit 2009.
HRL13	Health Risk Limit 2013.
HRL15	Health Risk Limit 2015.
HRL94	Health Risk Limit 1994.
MP	Laboratory reports 3-methylphenol and 4-methylphenol as co-eluting compounds. The criteria in the table represents 4-methylphenol which is the more stringent criteria.
RAA17	Risk Assessment Advice 2008.

Minnesota Surface Water 2Bd Chronic 7050 - 360 Hardness*

(3)	Value represents the criteria for Ammonia, unionized as N.
(5)	Value based on the criteria for cyanide, free.
CF	Conversion Factor.
CR6	Value represents the criteria for Hexavalent Chromium.
HD	Hardness Dependent.

* Estimated concentrations based on same underlying assumptions of conservative transport mechanisms and same source area. Minnesota River hardness data from MPCA, 2006. Working Draft, Surface Water Pathway Evaluation user's Guide, Appendix E.

Minnesota Surface Water 2Bd Final Acute Value 7050 - 360 Hardness*

(1)	Subpart 7, item E applies.
(5)	Value based on the criteria for cyanide, free.
CF	Conversion Factor.
CR6	Value represents the criteria for Hexavalent Chromium.
HD	Hardness Dependent.

* Estimated concentrations based on same underlying assumptions of conservative transport mechanisms and same source area. Minnesota River hardness data from MPCA, 2006. Working Draft, Surface Water Pathway Evaluation user's Guide, Appendix E.

Figures