

**SHANKS WASTE MANAGEMENT LTD, PONTYPOOL HTI FACILITY**

**Appendix 10a : Hazard Index (HI) - Sediment  
Comparison of measured concentrations (PEC) with Predicted no effect concentrations (PNEC)**

Sample Identity	Background (Pontypool Concentration Range)	PEC							Method Code	LoD/Units	PNEC		PEC /PNEC (PEL) (1)					
		GS11	GS11	GS12	GS12	GS13	GS13	PNEC			Sources	Background	GS11	GS11	GS12	GS12	GS13	GS13
Sampled Date		29.09.05	05.05.06	29.09.05	05.05.06	29.09.05	05.05.06											
<b>METALS</b>																		
Total Sulphate BRE (Corrected to mg/l)		2090	650	1050	3940	910	440	440	mg/l	na	-							
Aluminium*		9100	9314	12800	15990	20100	7060	7060	mg/kg	na								
Arsenic	22-46	11.43	11	18.35	12	24.12	7	7	mg/kg	17	NOAA (PEL)	1.29-2.71	0.67	0.65	1.08	0.71	1.42	0.41
Barium		247.08	227.00	235.40	318.00	536.28	233.00	233	mg/kg	na								
Cadmium	<1	1.61	<1	3.08	<1	3.89	<1	<1	mg/kg	3.53	NOAA (PEL)	<0.28	0.46	0.28	0.87	0.28	1.10	0.28
Chromium*	100-600	20.29	14.00	19.51	30.00	19.88	15.00	15	mg/kg	90	NOAA (PEL)	1.11-6.67	0.23	0.16	0.22	0.33	0.22	0.17
Copper	42-160	19.55	37.00	34.11	98.00	56.88	36.00	36	mg/kg	197	NOAA (PEL)	0.21-0.81	0.10	0.19	0.17	0.50	0.29	0.18
Lead	110-1100	17.44	50.00	28.34	76.00	85.04	53.00	53	mg/kg	91.3	NOAA (PEL)	1.20-12.05	0.19	0.55	0.31	0.83	0.93	0.58
Mercury		0.22	<1.2	0.15	<1.2	0.17	<1.2	<1.2	mg/kg	0.486	NOAA (PEL)		0.45	<2.47	0.31	<2.47	0.35	<2.47
Nickel	52-110	34.93	36	47.37	35	64.15	39	39	mg/kg	35.9	NOAA (PEL)	1.45-3.06	0.97	1.00	1.32	0.97	1.79	1.09
Zinc	180-450	83.97	199	159.51	122	215.37	199		mg/kg	315	NOAA (PEL)	0.57-1.43	0.27	0.63	0.51	0.39	0.68	0.63
Sodium		1012	427	887	2202	733	258	TM08 <sup>d</sup>	<4 mg/kg	na	-							
Nitrate (soluble) as NO3		5	6	9	25	12	4	TM10 <sup>d</sup>	<1 mg/kg	na	-							
Acid Soluble Sulphide		83	<50	<50	<50	<50	67	TM105 <sup>d</sup>	<50 mg/kg	na	-							
Chloride (soluble)		52	50	56	116	21	26	TM097 <sup>d</sup> <sub>M</sub>	<5 mg/kg	na	-							
Bromide		3.1	<0.1	6.8	<0.1	<0.1	<0.1		<0.1 mg/kg	na	-							
pH Value		8.43	7.75	7.59	7.57	7.66	7.51	TM133 <sup>d</sup>	<1.00 pH Units	na	-							
<b>HYDROCARBONS</b>																		
TPH (Aliphatics and Aromatics C5-C35)		144960	293507	115074	122034	80808	40022	TM61/89 <sup>d</sup>	<100 ug/kg	5000000	VROM (intervention value)		0.29	0.06	0.02	0.02	0.02	0.01
<b>=E46/L46</b>																		
p,p'-DDT		<10	36	<1	<10	<1	<10	TM070 <sup>d</sup>	<1 ug/kg	4.77	CCME (PEL)		<2.09	7.55	<0.21	<2.10	<0.21	<2.10
<b>SVOC by GCMS</b>																		
<b>PAHS</b>																		
Benzo(a)anthracene		296	380	149	<100	325	<100	TM143	<100 ug/kg	385	CCME (PEL)		0.77	0.99	0.39	<0.26	0.84	<0.26
Benzo(a)pyrene		428	225	<100	<100	386	<100	TM143	<100 ug/kg	782	NOAA (PEL)		0.55	0.29	<0.13	<0.13	0.49	<0.13
Benzo(b)fluoranthene		279	183	<100	<100	223	<100	TM143	<100 ug/kg	782	CCME value for benzo(a)pyrene		0.36	0.23	<0.13	<0.13	0.29	<0.13
Benzo(ghi)perylene		282	<100	<100	<100	180	<100	TM143	<100 ug/kg	320	Ontario(Severe)		0.88	<0.31	<0.31	<0.31	0.56	<0.31
Benzo(k)fluoranthene		362	220	<100	<100	377	<100	TM143	<100 ug/kg	13400	Ontario(Severe)		0.03	0.02	<0.01	<0.01	0.03	<0.01
Chrysene		359	287	167	<100	363	<100	TM143	<100 ug/kg	862	NOAA (PEL)		0.42	0.33	0.19	<0.12	0.42	<0.12
Dibenzo(a,h)anthracene		<100	<100	<100	<100	130	<100	TM143	<100 ug/kg	135	CCME		<0.74	<0.74	<0.74	<0.74	0.96	<0.74
Fluoranthene		439	481	282	<100	545	178	TM143	<100 ug/kg	2355	NOAA (PEL)		0.19	0.20	0.12	<0.04	0.23	0.08
Indeno(1,2,3-cd)pyrene		249	<100	<100	<100	171	<100	TM143	<100 ug/kg	3200	Ontario(Severe)		0.08	<0.03	<0.03	<0.03	0.05	<0.03
Phenanthrene		327	254	199	<100	302	<100	TM143	<100 ug/kg	515	NOAA (PEL)		0.63	0.49	0.39	<0.19	0.59	<0.19
Pyrene		343	387	220	<100	397	164	TM143	<100 ug/kg	875	NOAA (PEL)		0.39	0.44	0.25	<0.11	0.45	0.19
<b>Volatile Organic Compounds</b>																		
cis-1-2-Dichloroethene		35	137	<1	<1	<1	<1	TM116 <sup>d</sup> <sub>M</sub>	<1 ug/kg	nz	-							
Notes:		na PNEC not available PEC/PNEC not calculated (PNEC not available) Concentration measured is equal to detection limit and hazard quotient higher than 1 PEC/PNEC > 1 in <i>italic</i> PEC/PNEC > 10 in <b>bold</b> <DL substituted by DL for HI estimations Where 0.00 is stated, this reflects a HI <0.004																

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**Appendix 10b : Hazard Index (HI) - Sediment  
Comparison of measured concentrations (PEC) with Predicted no effect concentrations (PNEC)  
Dioxins and Furan**

	Background levels (AEAT 1999)	PEC						PNEC		HI (PEC/PNEC)						
		GS12	GS11 (R3)	GS13	GS12 (R3)	GS14	GS13 (R3)	Screening Value	Background levels	GS12	GS11 (R3)	GS13	GS12 (R3)	GS14	GS13 (R3)	
Dioxins and furans (µg, TEQ 2378 TCDD/kg)	0.0167	0.0035	0.0011	0.0017	0.0011	0.0007	0.0023	0.0215	CCME PEL for freshwater (based on 2378 TCDD)	0.78	0.16	0.05	0.08	0.05	0.03	0.10

Notes

*PEC/PNEC > 1 in italic*  
**PEC/PNEC > 10 in bold**  
 PEC and PNEC as ng,TEQ/kg  
 Where 0.00 is stated, this reflects a HI <0.004