

**SUMMARISED RESULTS OF  
INITIAL WATER & SEDIMENT /  
SOIL SAMPLING AT THE UPL  
WAREHOUSE FIRE**



**Legend:**

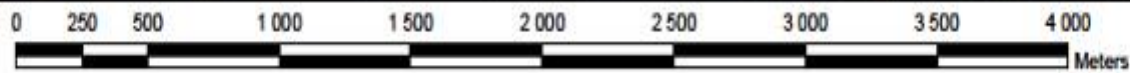
- Site Location
- Soil Sample
- Water Sample



2021-176 UPL  
WAREHOUSE FIRE

SAMPLING EVENT 1

DWG NO. 2021/176  
FIGURE 1.1



Digital Coverage from AfriGIS 2021

# Initial Sampling - Surface Water - Organic Determinants That Exceeded Chosen Screening Values

UIS Surface Water Results - 19-07-2021										
Determinant	Units	*RISC	Sample							
			WS 1 19/07/21	WS 2 19/07/21	WS 3 19/07/21	WS 4 19/07/21	WS 5 19/07/21	WS 6 19/07/21	WS 7 19/07/21	WS 8 19/07/21
<b>TOG</b>										
<b>Mono-Aromatic Hydrocarbons</b>										
Benzene	ppm	<b>0.22</b>	0.030	<b>1.400</b>	0.003	0.004	<0.001	<0.001	0.004	<0.001
Toluene	ppm	<b>11</b>	<0.100	<b>18.000</b>	0.013	0.019	<0.010	<0.010	0.017	<0.010
Ethyl Benzene	ppm	<b>3.6</b>	0.068	<b>14.000</b>	0.006	0.008	<0.002	<0.002	0.009	<0.002
m+p-Xylene	ppm	<b>6.6</b>	0.300	<b>66.000</b>	0.028	0.038	<0.004	<0.004	0.041	<0.004
o-Xylene	ppm		0.270	<b>79.000</b>	0.034	0.048	<0.002	<0.002	0.047	<0.002
1,2,4-Trimethyl Benzene	ppm	<b>1</b>	<b>2.400</b>	<b>950.000</b>	0.300	0.410	<0.002	<0.002	0.410	<0.002
<b>Bromo/Chlorobenzenes</b>										
Chlorobenzene	ppm	<b>1.2</b>	0.580	<b>72.000</b>	0.048	0.060	<0.002	<0.002	0.079	<0.002
<b>Polycyclic Aromatic Hydrocarbons</b>										
Napthalene	ppm	<b>0.76</b>	0.640	<b>130.000</b>	0.086	0.093	0.0003	0.0001	0.100	0.0001
Fluorene	ppm	<b>0.31</b>	<0.010	<b>0.780</b>	<0.001	<0.001	<0.0001	<0.0001	<0.001	<0.0001
Benzo(a)anthracene	ppm	<b>0.00027</b>	<0.010	<b>0.260</b>	<0.001	<0.001	<0.0001	<0.0001	<0.001	<0.0001

\*RISC - Water Used For Recreation (Carcinogenic risk / health hazard)

>Sol - Greater than solubility

NA - Not Analysed

# Initial Sampling - Surface Water - Inorganic Determinants That Exceeded Chosen Screening Values

UIS Surface Water Results - 19-07-2021										
Determinant	Units	*RISC	Sample							
			WS 1 19/07/21	WS 2 19/07/21	WS 3 19/07/21	WS 4 19/07/21	WS 5 19/07/21	WS 6 19/07/21	WS 7 19/07/21	WS 8 19/07/21
<b>Cations &amp; Metals</b>										
Arsenic (As) Carcinogenic Risk	ppm	<i>0.002</i>	<i>148.90</i>	<i>567.70</i>	<i>0.74</i>	<i>1.84</i>	<0.05	<0.05	<i>3.43</i>	<0.05
Arsenic (As) Hazard Risk	ppm	<i>0.12</i>	<i>148.90</i>	<i>567.70</i>	<i>0.74</i>	<i>1.84</i>	<0.05	<0.05	<i>3.43</i>	<0.05
Copper (Cu)	ppm	<i>16</i>	<i>18.16</i>	<i>138.80</i>	<0.5	0.53	0.07	<0.05	0.89	0.10
<b>Anions</b>										
Flouride (F)	ppm	<i>22</i>	<i>27.84</i>	<i>323.70</i>	<5	<5	<5	<5	<5	<5

\*RISC - Water Used For Recreation (Carcinogenic risk / health hazard)

UTD - Unable to Detect

# Initial Sampling – Soils / Sediments – Inorganic Determinants That Exceeded Chosen Screening Values

UIS Soil / Sediment Results -19-07-2021										
Determinant	Units	Standard limit		Sample						
		*DEA SSVs	**US EPA	SS 1	SS 2	SS 3	SS 4	SS 5	SS 6	SS 7
				19/07/21	19/07/21	19/07/21	19/07/21	19/07/21	19/07/21	19/07/21
<b>Mono-Aromatic Hydrocarbons</b>										
Benzene	ppm	0.03	0.00023	<2.000	<0.020	5.200	<0.020	<0.020	<0.200	<0.020
Toluene	ppm	25	0.76	<20.000	<0.200	22.000	<0.200	<0.200	<2.000	<0.200
Ethyl Benzene	ppm	26	0.0017	<4.000	<0.040	10.000	<0.040	<0.040	1.200	<0.040
m+p-Xylene	ppm	45	0.19	15.000	<0.080	51.000	<0.080	<0.080	5.600	<0.080
o-Xylene	ppm		0.19	14.000	0.041	72.000	<0.040	<0.040	6.100	<0.040
1,3,5-Trimethyl Benzene	ppm	NS	0.087	52.000	0.130	250.000	<0.040	<0.040	18.000	<0.040
1,2,4-Trimethyl Benzene	ppm	NS	0.081	230.000	0.560	930.000	<0.040	<0.040	74.000	<0.040
sec-Butylbenzene	ppm	NS	5.9	<4.000	<0.040	8.200	<0.040	<0.040	0.800	<0.040
<b>Bromo/Chlorobenzenes</b>										
Chlorobenzene	ppm	620	0.053	150.000	0.050	34.000	<0.040	<0.040	<0.400	<0.040
<b>Volatile Brominated/Chlorinated Hydrocarbons</b>										
Chloroform	ppm	0.11	0.00022	<10.000	<0.100	20.000	<0.100	<0.100	<1.000	<0.100
<b>Polycyclic Aromatic Hydrocarbons</b>										
Napthalene	ppm	28	0.000054	50.000	0.170	130.000	<0.004	<0.004	19.000	<0.004
Benzo(a)anthracene	ppm	NS	0.011	0.120	<0.004	0.500	<0.004	<0.004	<0.040	<0.004
Benzo(a)pyrene	ppm	NS	0.029	0.064	<0.004	<0.400	<0.004	0.005	<0.040	<0.004
<b>Chlorinated Compounds</b>										
1,2-Dichlorobenzene	ppm	89	0.3	0.240	<0.008	0.940	<0.008	<0.008	<0.080	<0.008
<b>Polar Compounds</b>										
Methanol	ppm	NS	4.1	NA	<20	NA	<20	<200	29	<20

\* RSA DEA SSVs for All Land-Uses Protective of the Water Resource (June 2017)

\*\*US EPA SSL Protection of Groundwater

NA - Not Analysed

# Initial Sampling – Soils / Sediments – Inorganic Determinants That Exceeded Chosen Screening Values

UIS Soil / Sediment Results 19-07-2021										
Determinant	Units	Standard limit		Sample						
		*DEA SSVs	**US EPA	SS 1	SS 2	SS 3	SS 4	SS 5	SS 6	SS 7
				19/07/21	19/07/21	19/07/21	19/07/21	19/07/21	19/07/21	19/07/21
<b>Cations &amp; Metals</b>										
Aluminium (Al)	ppm	NS	30 000	55 280.00	37560.00	27 260.00	3 520.00	27 026.00	20 383.00	2 171.00
Arsenic (As)	ppm	5.8	0.0015	143.60	49.36	320.000	<3.2	<3.2	15.930	<3.2
Cobalt (Co)	ppm	300	0.27	17.92	17.04	15.710	<3.2	14.63	11.21	<3.2
Copper (Cu)	ppm	16	28	107.40	62.49	224.200	4.34	17.96	90.88	<3.2
Iron (Fe)*	ppm	NS	350	74 023.00	54 174.00	38 079.00	3 054.00	36 649.00	26 585.00	2 721.00
Manganese (Mn)	ppm	740	28	527.60	534.60	529.00	46.52	454.40	293.60	61.72
Antimony (Sb)	ppm	NS	0.35	<3.2	<3.2	4.83	<3.2	<3.2	<3.2	<3.2
Vanadium (V)	ppm	150	86	113.300	79.36	82.63	7.76	83.07	66.14	6.21
<b>Anions</b>										
Flouride (F)	ppm	30	120	46.08	7.84	67.13	6.04	8.86	27.56	<5
Nitrate (NO3- as N)	ppm		NS	8.59	76.12	218.30	<5	66.92	<5	<50

\* RSA DEA SSVs for All Land-Uses Protective of the Water Resource (June 2017)

\*\*US EPA SSL Protection of Groundwater

UTD - Unable to Detect

\* Presence of Iron is Naturally Occurring

# Initial Summarised Findings:

- A number of organic compounds were present in the surface water, soil and sediment samples at levels which exceed the adopted Tier I human health screening values, e.g. benzene, these compounds however will naturally biodegrade.
- A number of inorganic compounds were present in the surface water, soil and sediment samples at levels which exceed the adopted Tier I human health screening values, e.g. arsenic, these compounds will not however biodegrade and will have to be physically removed as in addition to being toxic arsenic can bioaccumulate.
- Some of the inorganic compounds identified are naturally occurring e.g. iron and are not associated with the incident, the toxicologists assisting with the incident have also advised that the elevated levels of cobalt in some of the samples are not from the products / chemicals stored in the warehouse.
- The results of the organic, inorganic, pesticides and herbicides analysis from the second sampling event are still outstanding and the databases will be updated once received.
- The impacts identified so far are limited to the streamline immediately below the incident and not the downstream Umhlanga River.