

## **Addendum 3: TCEQ Analysis of TCEQ Contractor Surface Water Quality Sampling Data (Final Lab results)**

*The TCEQ previously reported its analysis of preliminary surface water quality data. The TCEQ has since received final water quality data. This TCEQ analysis is an addendum to the previous TCEQ Analysis of TCEQ Contractor Surface Water Quality Sampling Data.*

The Texas Commission on Environmental Quality (TCEQ) received surface water quality data for 129 constituents at four (4) different sites. One sample was collected at each site on March 19, 2019 by the TCEQ's contractor. The constituents consist of inorganics, organics, metals, nutrients, chemical oxygen demand (COD), and oil and grease in water. The sampling sites were the following:

- Dow Bridge at Tucker Bayou
- Tidal Rd at Gate 13
- Tidal Rd at Tucker Bayou
- Upstream Tucker Bayou

This assessment is based on final results received from the laboratory. As additional water quality sampling is completed, the data will be assessed, and results made available.

The TCEQ used the Texas Water Quality Standards and the Texas Risk Reduction Program as references for determining the known health protective concentration levels (PCLs) in surface water. PCLs are very conservative and below levels where we would expect any health impacts. The TCEQ is using these PCLs to evaluate impacts to aquatic life and human health. No public drinking water system draws its source water from the Houston Ship Channel. This methodology was also used for previously reviewed data from samples collected by ITC and will be used to review samples from the TCEQ contractor. The TCEQ used the PCLs listed in the tables below to assess the surface water quality data.

**Table 1: Assessment of Final Laboratory Results**

	Dow Bridge at Tucker Bayou	Tidal Rd at Gate 13	Tidal Rd at Tucker Bayou	Upstream Tucker Bayou
Number of Constituents	129	129	129	129
Number of constituents analyzed but not detected (not detected above the method detection limit or quantitation limit)	101	102	100	121
Number of constituents detected above the method detection limit or quantitation limit	28	27	29	8
Number of constituents detected but below their known PCLs	6	8	8	3
Number of constituents that exceeded their known PCLs	14	11	12	1
Number of constituents that are still pending further TCEQ evaluation	0	0	0	0
Number of constituents that do not have a PCL or are assessed with other constituents*	8	8	9	4

\*The water quality parameters ammonia nitrogen (as N), total Kjeldahl nitrogen, total phosphate, total organic nitrogen, total sulfides, and total suspended solids are not related to human health; therefore it is not appropriate to develop human health comparison values to evaluate these parameters.

Three chemicals on the laboratory target analyte list (4-bromophenyl phenyl ether, 4-chlorophenyl phenyl ether, and benzo(g,h,i)perylene) do not have surface water comparison values and consequently will not be evaluated. These water quality parameters and chemicals are not directly related to the ITC incident, and the TCEQ is evaluating the chemicals that are directly related to the ITC incident (benzene and toluene, for example).

C6-12, C12-28 and C28-35 range hydrocarbons, as well as total petroleum hydrocarbons, are included in the assessment of oil and grease. Therefore, these constituents are not assessed individually.

Below are tables of the constituents that exceeded their known PCL at each sampling site.

**Table 2: Dow Bridge at Tucker Bayou**

<b>Constituent</b>	<b>Maximum (micrograms/L)</b>	<b>PCL (micrograms/L)</b>
Arsenic	11.9	10
Benzene	11800	581
COD	480000	150000*
Copper	17.6	3.6
Cyanide, Total	7.73	5.6
Lead	7.71	3.83
2-Methylnaphthalene	67.1	30
2-Methylphenol	548	510
Napththalene	234	125
Oil and Grease, HEM	37700	28000
Phenolic	3050	0.29
Toluene	2890	1000
Xylenes, Total	6150	850
Zinc	609	84.2

**Table 3: Tidal Rd at Gate 13**

<b>Constituent</b>	<b>Maximum (micrograms/L)</b>	<b>PCL (micrograms/L)</b>
Benzene	11000	581
COD	740000	150000*
Copper	13.7	3.6
Cyanide, Total	6.4	5.6
Lead	4.43	3.83
Napththalene	183	125
Oil and Grease, HEM	51400	28000
Phenolic	2360	0.29
Toluene	2320	1000
Xylenes, Total	4200	850
Zinc	496	84.2

**Table 4: Tidal Rd at Tucker Bayou**

<b>Constituent</b>	<b>Maximum (micrograms/L)</b>	<b>PCL (micrograms/L)</b>
Benzene	9980	581
COD	1140000	150000*
Copper	15.2	3.6
Cyanide, Total	6.34	5.6
Lead	5.28	3.83
2-Methylnaphthalene	51.3	30
Napththalene	176	125
Oil and Grease, HEM	39700	28000
Phenolic	2020	0.29
Toluene	2330	1000
Xylenes, Total	3960	850
Zinc	494	84.2

**Table 5: Upstream Tucker Bayou**

<b>Constituent</b>	<b>Maximum (micrograms/L)</b>	<b>PCL (micrograms/L)</b>
Phenolic	2020	0.29

Footnote:

\*COD is a measure of the oxygen demand exerted by chemical constituents in water. There was not a known PCL for COD, therefore the permitted technology-based limit was used for comparison purposes. Although COD levels for treated process wastewater vary 150000 micrograms/L for noncontact stormwater was provided for comparison purposes.