

TCEQ Analysis of TCEQ Contractor Surface Water Quality Sampling Data Collected on April 1, 2019 (Final lab results)

The Texas Commission on Environmental Quality (TCEQ) received final surface water quality data for 128 constituents at four (4) different sites. One sample was collected at each site on April 1, 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:

- Upstream Tucker Bayou Clean
- Mouth of Tucker Bayou @ Buffalo Bayou
- Tidal Road @ Tucker Bayou
- Tidal Road @ Gate 13

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

	Upstream Tucker Bayou Clean	Mouth of Tucker Bayou @ Buffalo Bayou	Tidal Road @ Tucker Bayou	Tidal Road @ Gate 13
Number of Constituents	128 ²	128 ²	128	128 ^{1,3}
Number of constituents analyzed but not detected (not detected above the method detection limit or quantitation limit)	119	117	112	100
Number of constituents detected above the method detection limit or quantitation limit	8	10	16	17
Number of constituents detected but below their known PCLs	4	5	5	1
Number of constituents that exceeded their known PCLs	0	0	5	8
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 ¹	4	5	6	8

¹The 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.

²The samples collected at sites (Mouth of Tucker Bayou @ Buffalo Bayou and Upstream Tucker Bayou Clean) included constituents, phenolic and total Kjeldahl nitrogen, where the MS/MSD recovery was found to be outside of the laboratory control limit due to possible matrix/chemical interference, or a concentration of target analyte high enough to affect the

recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD. Therefore, they were excluded from the assessment of laboratory results.

³The sample had a significant amount of product/oil and the constituent oil and grease was reported as a percentage rather than a concentration and the constituents tin, lead, mercury, chromium, cobalt, nickel, copper, zinc, arsenic, and cadmium were reported in mg/kg rather than mg/L. These could not be evaluated against the PCLs and were not included in this assessment of laboratory results.

Table 2: Tidal Road @ Tucker Bayou

Constituent	Maximum (micrograms/L)	PCL (micrograms/L)
Benzene	15100	581
COD	580000	150000*
Phenolic	93.3	0.29
Toluene	3460	1000
Xylenes, Total	1080	850

Table 3: Tidal Road @ Gate 13

Constituent	Maximum (micrograms/L)	PCL (micrograms/L)
Benzene	178000	581
COD	7200000	150000*
Ethylbenzene	6200	1867
2-Methylnaphthalene	689	30
Naphthalene	1500	125
Phenolic	770	0.29
Toluene	81800	1000
Xylenes, Total	42400	850

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.