

Estuary Summary Statistics and Analysis

Nutrient Criteria Development Advisory Workgroup June 20, 2011
Texas Commission on Environmental Quality Water Quality Standards

Correlation results of all estuary data, across all segments, for the parameters total nitrogen calculated (TN) in milligrams per liter, total phosphorus (TP 00665) in milligrams per liter, chlorophyll *a* combine (Chl *a*) in micrograms per liter, chlorophyll *a* spectrophotometric method (Chl *a* 32211) in micrograms per liter, chlorophyll *a* fluorometric method (Chl *a* 70953) micrograms per liter, salinity calculated using specific conductance (Salinity) in parts per thousand, and Secchi transparency (Secchi) in meters. All data was pulled from the Surface Water Quality Monitoring Information System (SWQMIS). Samples include historical data up to December 20, 2010. The number of data pairs (N) that were available for each correlation is also shown.

The Spearman's rho statistic was used to measure the rank-order association between scale or ordinal variables, regardless of the distribution. This statistic measures the extent to which, as one variable increases, the other variable tends to increase, without requiring that increase to be represented by a linear relationship. All correlations were significant at the 0.05 level.

Spearman's rho Coefficient	TN	TP 00665	Chl <i>a</i>	Chl <i>a</i> 32211	Chl <i>a</i> 70953	Salinity	Secchi
TN Correlation	1.000	.322	.449	.450	.362	-.036	-.212
N	3510	3470	3338	3306	32	3316	3077
TP Correlation	.322	1.000	.309	.289**	.526	-.461	-.375
N	3470	15710	12636	11131	1505	14717	12290
Chl <i>a</i> Correlation	.449	.309	1.000	1.000	1.000	-.128	-.225
N	3338	12636	13060	11361	1699	12471	10436
Chl <i>a</i> 32211 Correlation	.450	.289	1.000	1.000	.	-.101	-.198
N	3306	11131	11361	11361	0	10812	8880
Chl <i>a</i> 70953 Correlation	.362	.526	1.000	.	1.000	-.338	-.401
N	32	1505	1699	0	1699	1659	1556
Salinity Correlation	-.036	-.461	-.128	-.101	-.338	1.000	.334
N	3316	14717	12471	10812	1659	17413	14132
Secchi Correlation	-.212	-.375	-.225	-.198	-.401	.334	1.000
N	3077	12290	10436	8880	1556	14132	14447

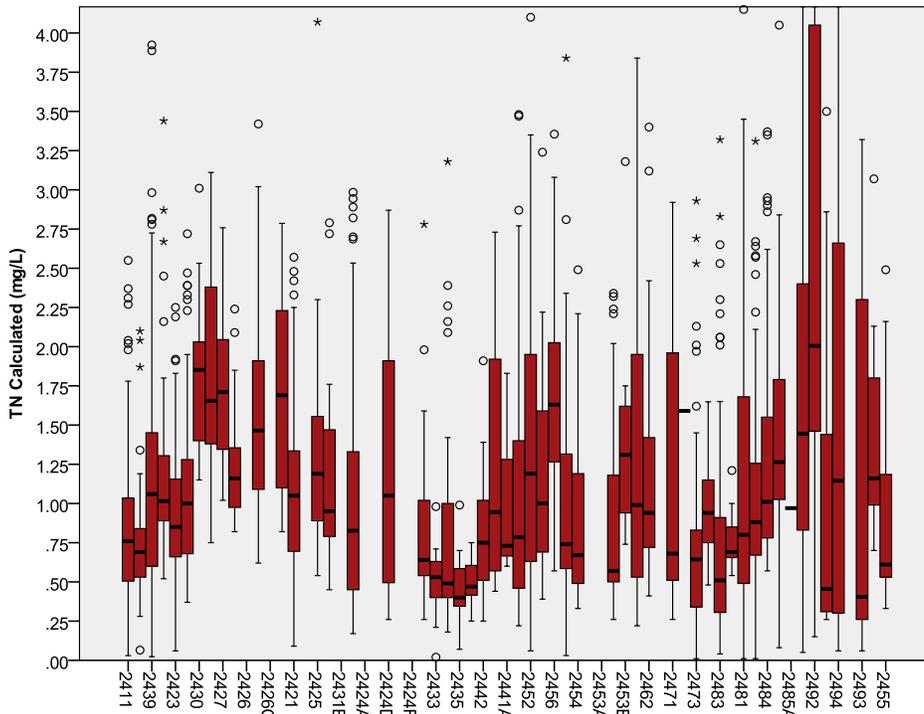


Figure 1 Estuary Box plots of the median and the upper (75th percentile) and lower (25th percentile) quartiles of total nitrogen (calculated TN in milligrams per liter) concentrations by segment.

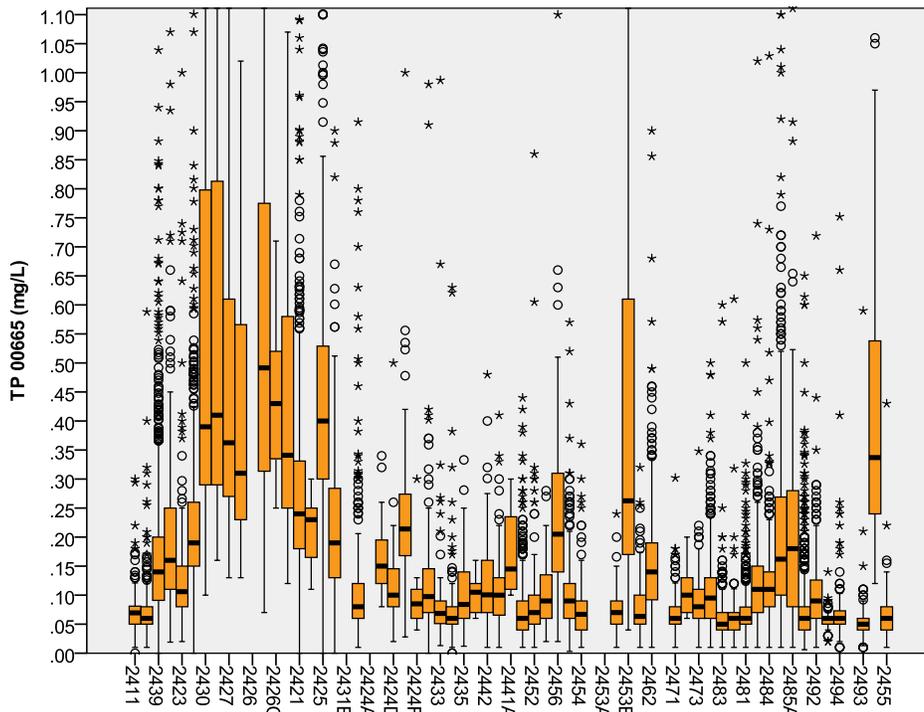


Figure 2 Estuary Box plots of the median and the upper (75th percentile) and lower (25th percentile) quartiles of total phosphorus (TP 00665 in milligrams per liter) concentrations by segment.

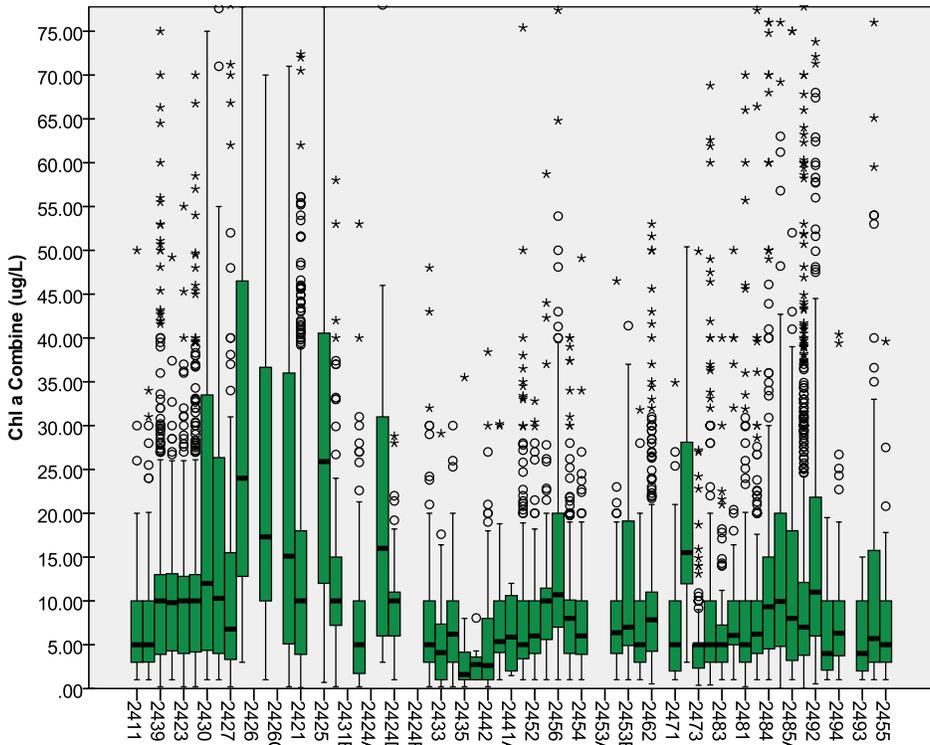


Figure 3 Estuary Box plots of the median and the upper (75th percentile) and lower (25th percentile) quartiles of chlorophyll *a* (combined Chl *a* in micrograms per liter) concentrations by segment.

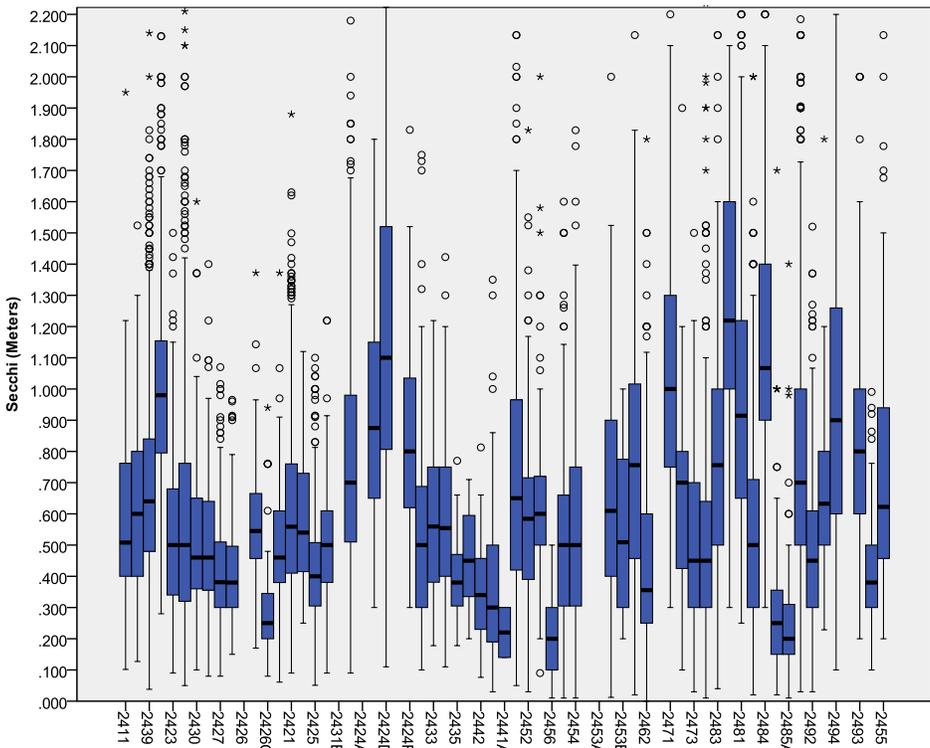


Figure 4 Estuary Box plots of the median and the upper (75th percentile) and lower (25th percentile) quartiles of Secchi transparency (Secchi in meters) values by segment.

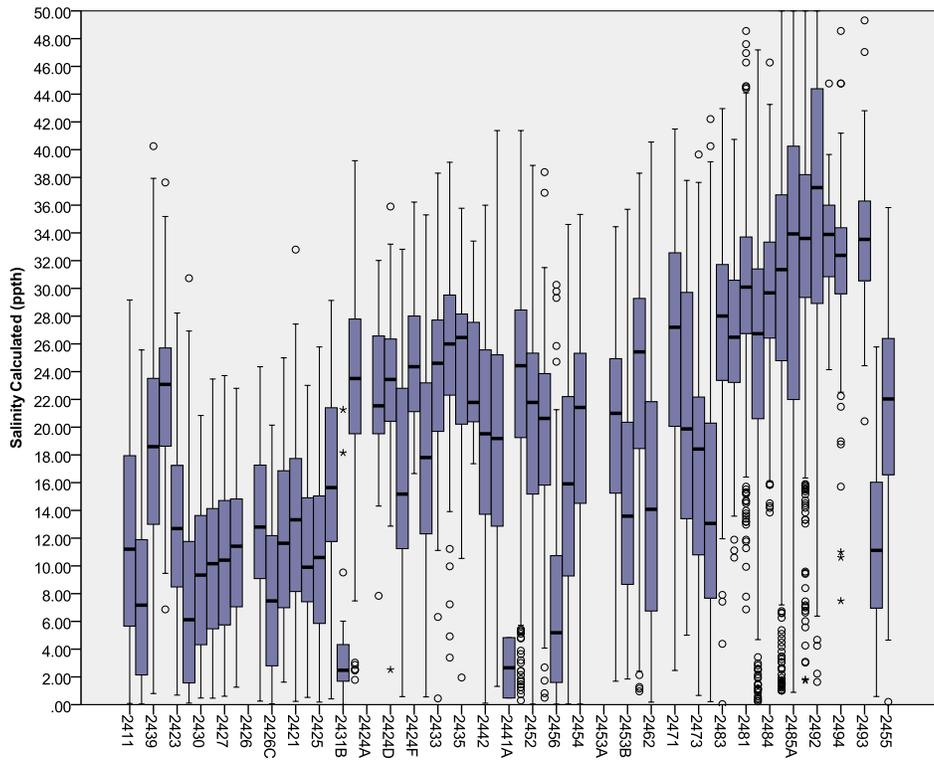


Figure 5 Estuary Box plots of the median and the upper (75th percentile) and lower (25th percentile) quartiles of salinity (calculated using conductivity in parts per thousand) concentrations by segment.