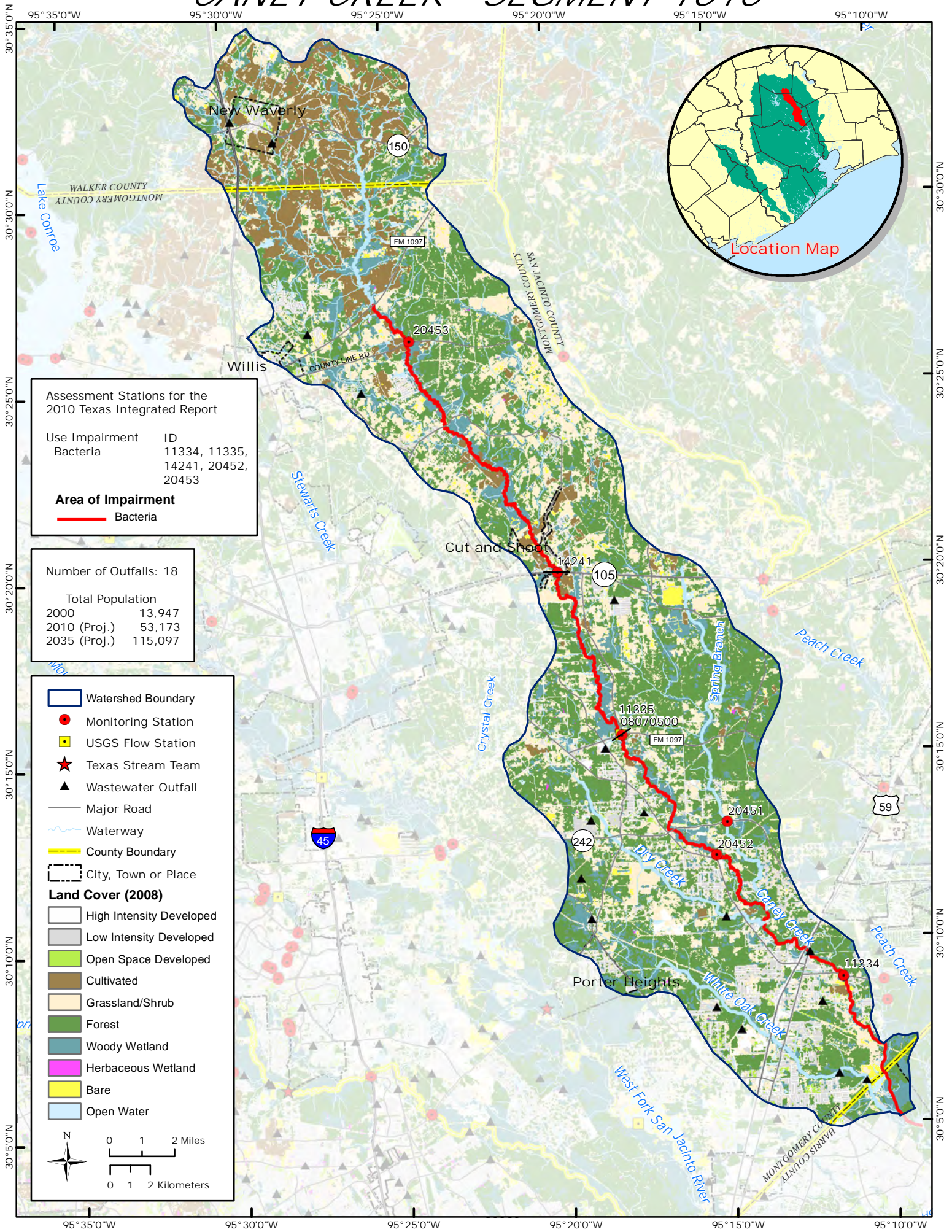


CANEY CREEK - SEGMENT 1010



Segment Number:	1010	Name:	Caney Creek			
Length:	57 miles	Watershed Area:	222 square miles	Designated Uses:	High Aquatic Life; Contact Recreation; Public Water Supply	
Number of Active Monitoring Stations:	5	Texas Stream Team Monitors:	0	Permitted Outfalls:	22	
Description:	<p>From the confluence with the East Fork San Jacinto River in Harris County to SH 150 in Walker County</p> <p>Sub-Segment 1010A: Dry Creek (unclassified water body)—Entire water body</p> <p>Sub-Segment 1010C: Spring Branch (unclassified water body)—From the Caney Creek confluence to a point 0.54 km (0.34 mi) upstream of SH 105</p>					

Degree of Impairment and Overall Trends						
Segment ID	Dissolved Oxygen	Bacteria	Nutrients	PCBs/Dioxin	Chlorophyll <i>a</i>	Other
1010		84				

Indicates general improvement
 Indicates general degradation
 Numbers indicate percent of segment impaired

FY 2011 Active Monitoring Stations				
Site ID	Site Description	Frequency	Monitoring Entity	Parameter Groups
11334	Caney Creek at FM 1485	Quarterly	TCEQ	Field, Conventional, Bacteria, Chlorophyll- <i>a</i> (Qtrly)
11334	Caney Creek at FM 1485	Bimonthly	COH / WQC	Field, Conventional, Bacteria, Chlorophyll- <i>a</i> (Qtrly)
14241	Caney Creek at SH 105	Bimonthly	COH / WQC	Field, Conventional, Bacteria
20451	Spring Branch at SH 242	Quarterly	H-GAC	Field, Conventional, Bacteria, Flow
20452	Caney Creek at Fire Tower Road	Quarterly	H-GAC	Field, Conventional, Bacteria, Flow
20453	Caney Creek at County Line Road in Montgomery County	Quarterly	H-GAC	Field, Conventional, Bacteria, Flow

Segment 1010

Standards

Temperature (°C):	32
Dissolved Oxygen (24-Hr Average) (mg/L):	5.0
Dissolved Oxygen (Absolute Minima) (mg/L):	3.0
pH (standard units):	6.5-9.0
<i>E. coli</i> (MPN/100 mL) (grab):	394
<i>E. coli</i> (MPN/100 mL) (geometric mean):	126
Chloride (mg/L as Cl):	50
Sulfate (mg/L as SO ₄):	50
Total Dissolved Solids (mg/L):	300

Screening Levels

Ammonia (mg/L):	0.33
Nitrate-N (mg/L):	1.95
Orthophosphate Phosphorus (mg/L):	0.37
Total Phosphorus (mg/L):	0.69
Chlorophyll- <i>a</i> (µg/L):	14.1

Water Quality Issues Summary

Issue	2008 Assessment	Draft 2010 Assessment	Affected Area	Possible Causes / Influences / Concerns Voiced by Stakeholders	Possible Solutions / Actions To Be Taken
Bacteria	I	I	1010_01 1010_02 1010_03	<ul style="list-style-type: none"> - Developments with septic tanks - Presence of feral hogs and other wild animals - Animal waste from agricultural production and domestic animal facilities - WWTP non-compliance, overflows, collection system by-passes - Small, privately-run WWTP - Rapid urbanization and increased impervious cover - Constructed storm water controls failing - Direct and dry weather discharges - Waste haulers illegal discharges/improper disposal - Improper or no pet waste disposal 	<ul style="list-style-type: none"> - Regionalize wastewater treatment to reduce septic tank dependency - Require larger portions of land in developments platted to use OSSF - More public education regarding OSSF operations and maintenance - Increase monitoring requirements for self-reporting - Impose new or stricter bacteria limits than those designated by TCEQ - Require all systems to develop and implement a utility asset management program and protect against power outages at lift stations or provide alternative power supplies during outages - More public education regarding pet waste - Improve storm water controls in new developments by adding bacteria reduction measures - Improve compliance and enforcement of existing storm water quality permits to minimize

					contaminated runoff - Improve construction oversight to minimize TSS discharges to waterways.
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Segment Discussion

Watershed Characteristics: This segment is primarily forested but development in the form of small ranches, ranchettes and hobby farms has become common throughout. Cleared lands for cattle grazing and hay production make up most of the agricultural activities. Timber harvesting is also a crop from the middle and upper portions. A few tracts of the Sam Houston National Forest lie in the very northern portion of the watershed. With the exception of the communities of New Waverly, Willis, and Cut and Shoot, most of the urbanized area is found in the lower portion of the watershed around U.S. Highway 59. Caney Creek flows into the East Fork San Jacinto River and then to Lake Houston, a public drinking water supply.

Water Quality Issues: Most of segment 1010 (Caney Creek) is not supporting its contact recreation use designation. Three of the four Caney Creek assessment units (1010_01, 1010_02, and 1010_03) are listed as impaired for bacteria in the *Draft* 2010 Texas Integrated Report (IR). Assessment units 1010_01 and 1010_03 were also listed as impaired in the 2008 assessment. In the data set from December 2001 through November 2008, 28% of the *E. coli* samples collected from the main channel (54 out of 190) exceeded the single grab criteria of 394 MPN. The geometric means for all segments exceeded the 126 MPN criteria. Even assessment unit 1010_04 and segment 1010C, which could not be fully assessed in 2010 due to having too few samples, show indications that they will not support contact recreation. Assessment unit 1010_03 had the greatest degree of exceedance with a geometric mean of 297 MPN.

Special Studies/Projects: In the past five years, this segment was included in the Lake Houston TMDL project for bacteria and is now part of the geographical area included in the Bacteria Implementation Plan which is currently being finalized. For more information, please refer to the detailed discussions of the Lake Houston TMDL project and the BIG located at the beginning of the water quality section of the 2011 Basin Summary Report.

Trends: Regression analysis of watershed-level data revealed statistically significant trends for six water quality parameters. The annual medians for all six parameters – chloride, chlorophyll *a*, pH, specific conductance, total dissolved solids (TDS), and total phosphate (TP) – are increasing over time. It should be noted that all six trends show very small incremental increases. For example, chloride data has only increased in concentration from about 10 mg/L to approximately 32 mg/L. Where chlorophyll *a* concentrations were less than 1.5 µg/L from 1995 through 2004, a mean concentration of 12.5 µg/L was measured in 2008. The parameter displaying the biggest increase was for TP. Concentrations were less than 0.06mg/L in the 1990s and doubled in the 2010. The source is probably related to the increased number of cattle, horses, and OSSFs found throughout the segment.

Regression analysis on data from six individual monitoring stations revealed significant trends. There were eight trends found at station 11334, the most downstream station, and all trends were increasing over time. Two trends are highlighted in this discussion. First, the chlorophyll *a* trend shows that a couple of the samples have exceeded the screening level of 14.1 µg/L between 2008 and 2009 indicating an algal bloom was probably occurring at the time of sampling. Since then, sample concentrations have been less than 10 µg/L. Increases in nutrient concentrations are probably the cause of these two algal blooms but further investigation is needed to confirm. There were only two nitrate results to exceed the segment nutrient screening level in the entire period of record for this segment. Second, the total suspended solids (TSS) are increasing at station 11334 because the maximum concentrations are getting larger. In the 1990s, the

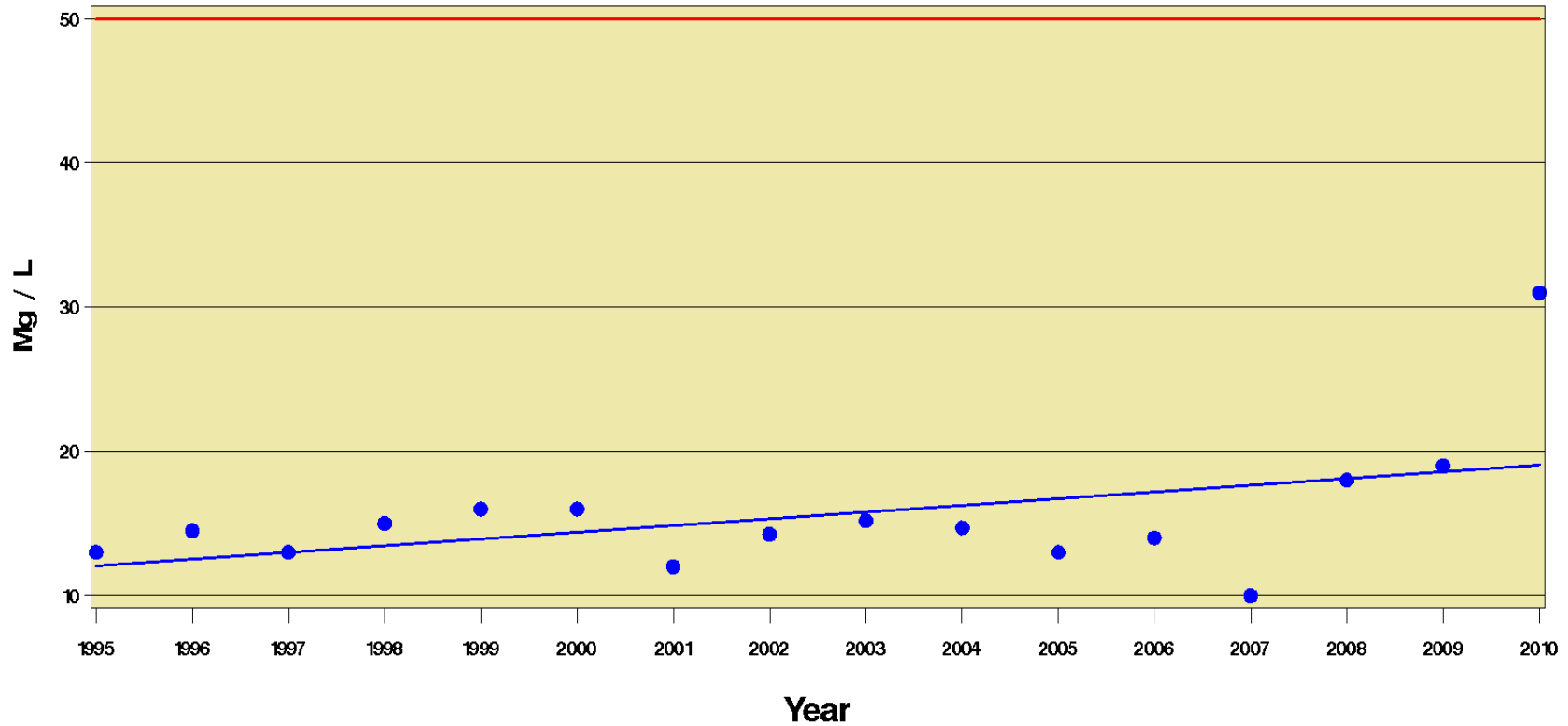
highest values were less than 75 mg/L. In late 2008, a sample concentration of 300 mg/L was measured. This indicates that there is more sediment flowing into the stream and it is probably due to construction and poor sediment controls. Another possibility would be higher rates of flow causing more bank erosion.

Recommendations:

- Address the various concerns found in this segment summary through stakeholder participation.
- Continue collecting water quality data to support actions associated with watershed protection plan development and future modeling.
- Pursue new local partners to Clean Rivers Project to collect additional data that would help better isolate problem areas.
- Work with local partner and contract labs to lower detection limits for nutrients

Caney Creek

Segment: 1010 Parameter: Chloride Annual Median
Water Body Type: Classified Freshwater Stream
2010 Water Quality Standard : 50 Mg / L



Trends are considered significant if the p-value is < 0.10

Trend is significant at p= 0.061 R-Square = 0.2287 T-Value = 2.037 Number of samples: 262

If present, the dashed red line indicates the 2010 2010 Water Quality Standard

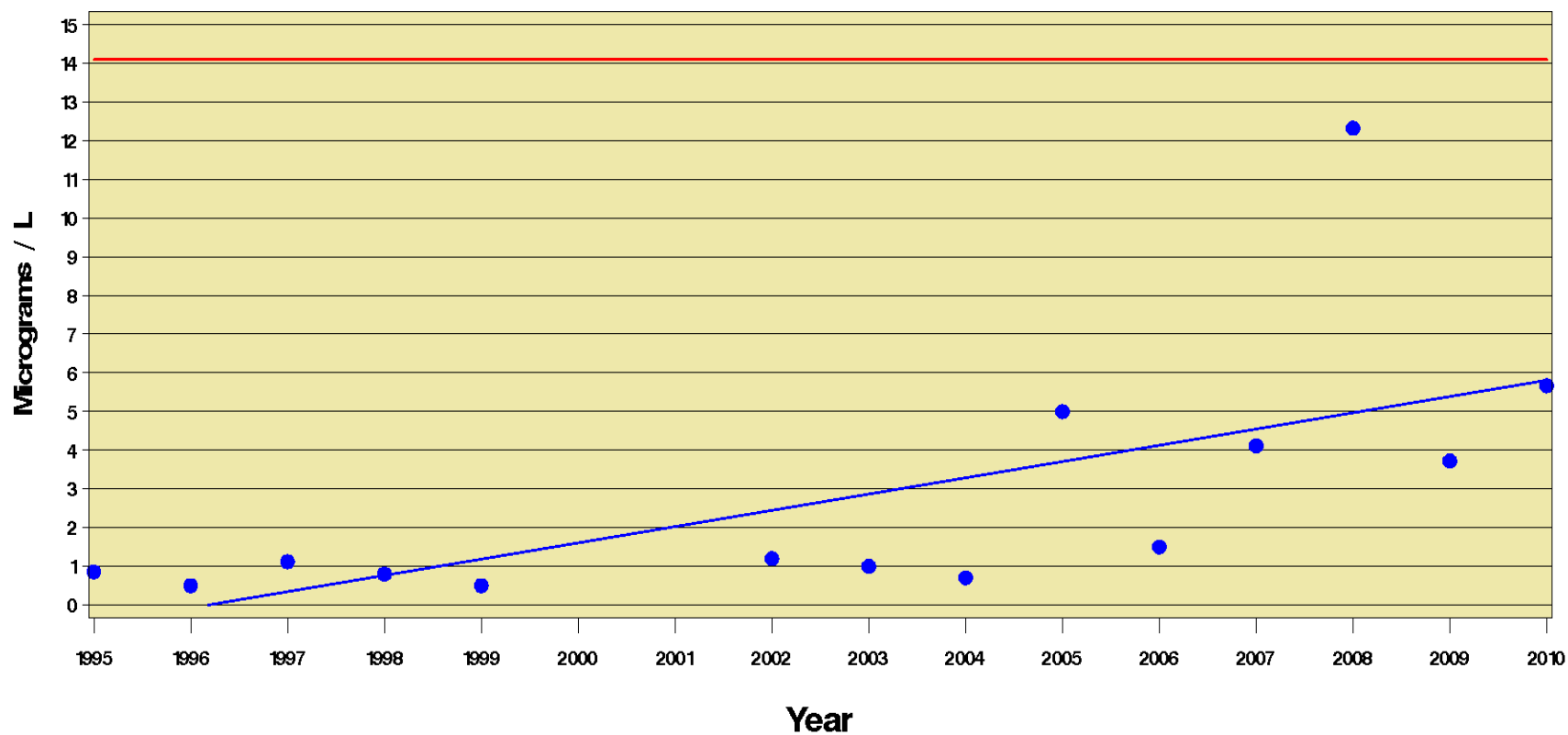
The regression analysis used to identify this water quality trend includes data submitted by the City of Houston Water Quality Control Laboratory for the period 2007 through 2009 that TCEQ has determined to be unsuitable for the Texas Integrated Report and other decision making purposes. The results are included here for illustrative purposes.

Caney Creek

Segment: 1010 Parameter: Chlorophyll a Annual Median

Water Body Type: Classified Freshwater Stream

2010 Nutrient Screening Level : 14.1 Micrograms / L



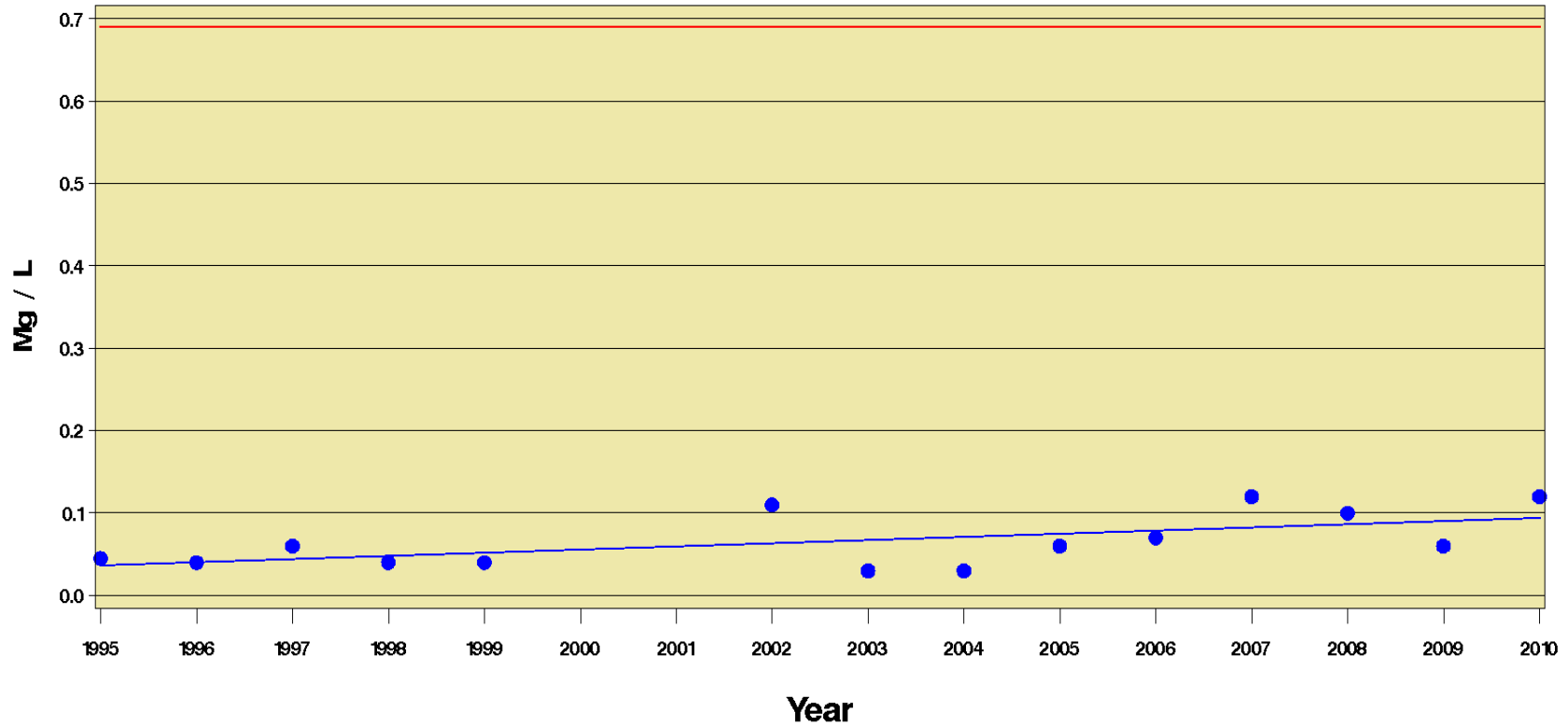
Trends are considered significant if the p-value is < 0.10

Trend is significant at p= 0.012 R-Square = 0.4218 T-Value = 2.959 Number of samples: 68

If present, the dashed red line indicates the 2010 Nutrient Screening Level

Caney Creek

Segment: 1010 Parameter: Total Phosphorus Annual Median
Water Body Type: Classified Freshwater Stream
2010 Nutrient Screening Level : 0.69 Mg / L



Trends are considered significant if the p-value is < 0.10

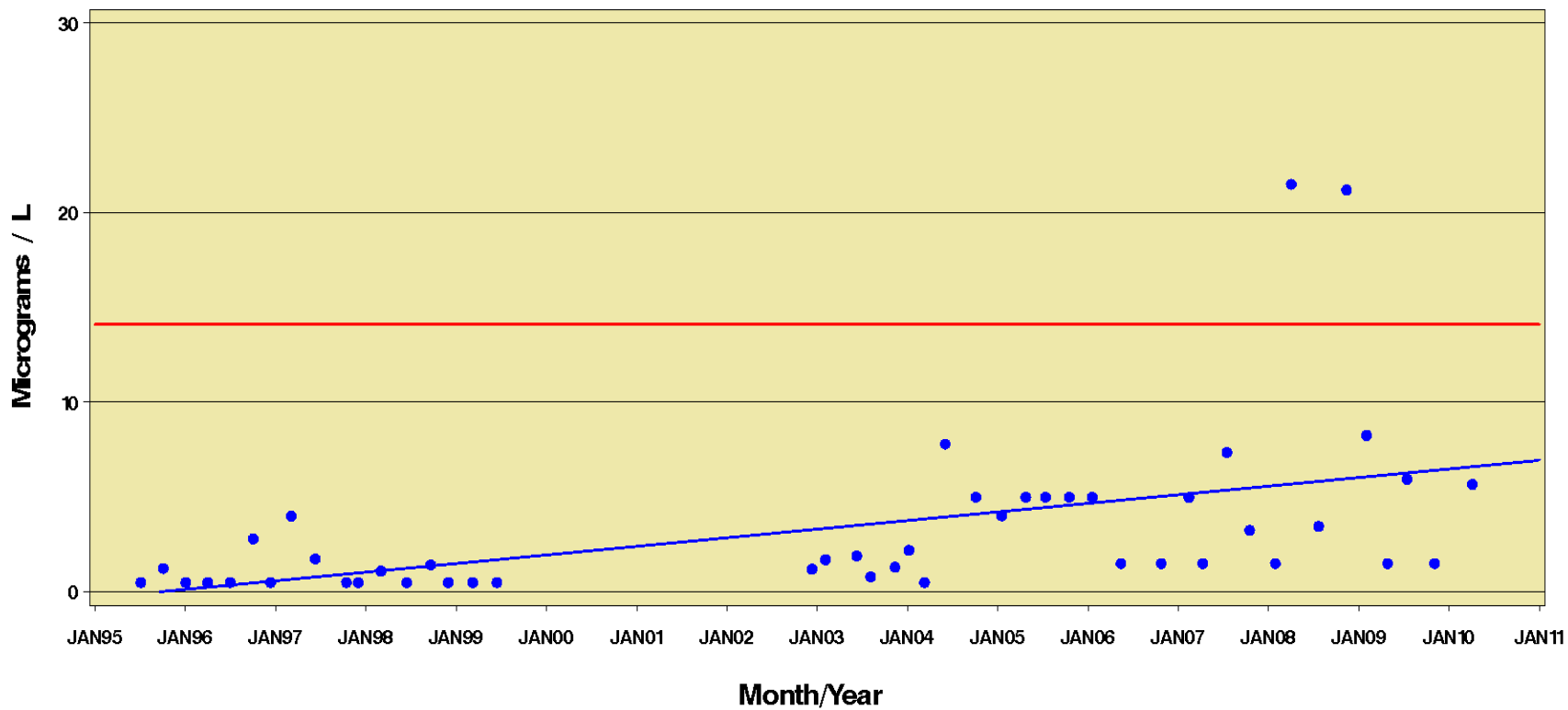
Trend is significant at p= 0.0272 R-Square = 0.3451 T-Value = 2.514 Number of samples: 157

If present, the dashed red line indicates the 2010 Nutrient Screening Level

The regression analysis used to identify this water quality trend includes data submitted by the City of Houston Water Quality Control Laboratory for the period 2007 through 2009 that TCEQ has determined to be unsuitable for the Texas Integrated Report and other decision making purposes. The results are included here for illustrative purposes.

Caney Creek

Station: 11334 Segment: 1010 Parameter: Chlorophyll a
2010 Nutrient Screening Level: 14.1 Micrograms / L
Assessment Unit: 1010_04



Trends are considered significant if the p-value is < 0.10

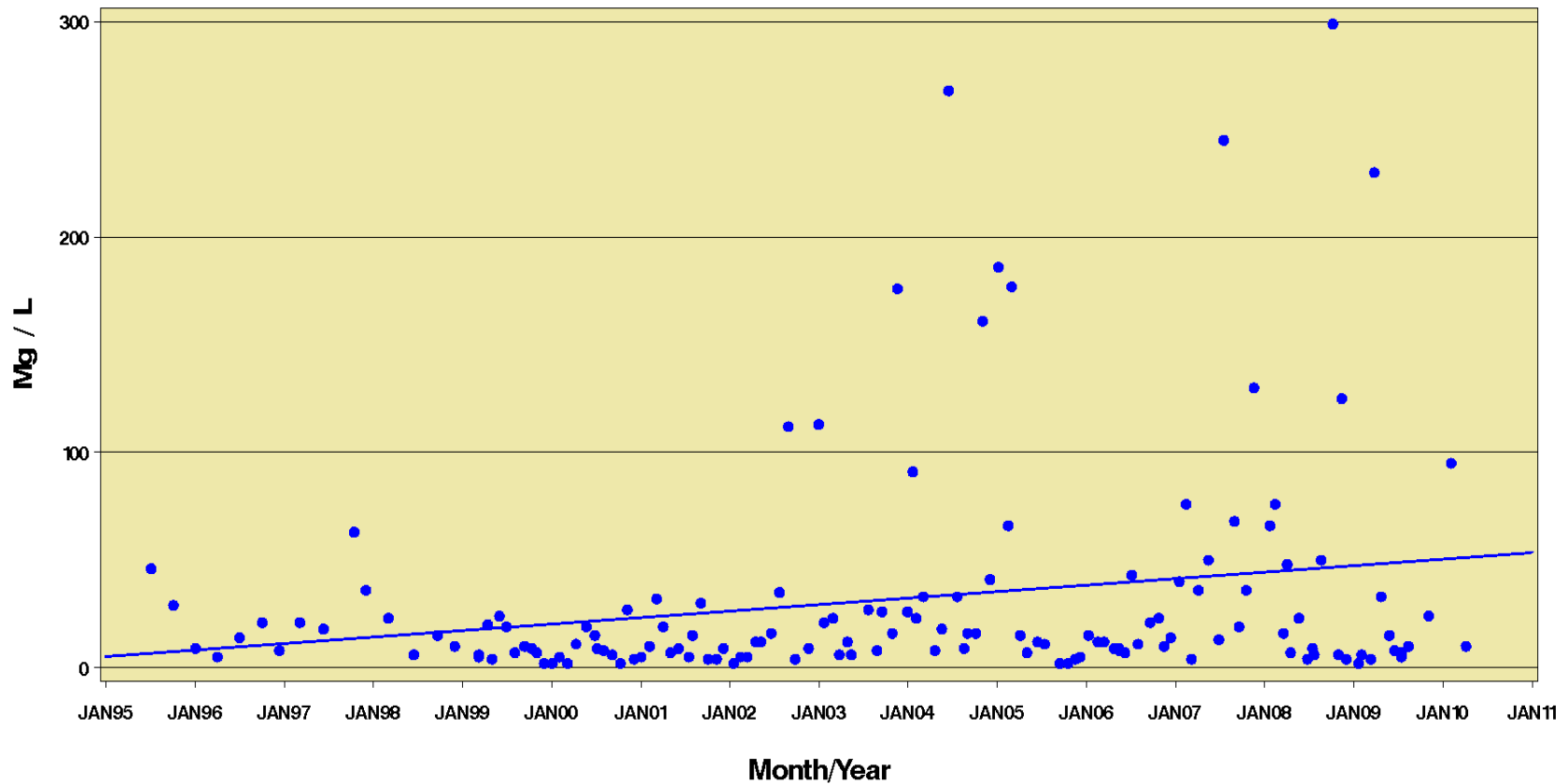
Trend is significant at p=0.0000 R-Square= 0.4538 T-Value= 6.0460 Number of Samples= 46

The blue regression line applies to the plot of actual values ; regression statistics are derived from regression of log-transformed data

Red line indicates the applicable 2010 Nutrient Screening Level

Caney Creek

Station: 11334 Segment: 1010 Parameter: Total Suspended Solids
Assessment Unit: 1010_04



Trends are considered significant if the p-value is < 0.10

Trend is significant at $p=0.0231$ R-Square= 0.0353 T-Value= 2.2960 Number of Samples= 146

The blue regression line applies to the plot of actual values ; regression statistics are derived from regression of log-transformed data

The regression analysis used to identify this water quality trend includes data submitted by the City of Houston Water Quality Control Laboratory for the period 2007 through 2009 that TCEQ has determined to be unsuitable for the Texas Integrated Report and other decision making purposes. The results are included here for illustrative purposes.