



Rationale for Reclassifying Plum Creek from Category 5 to Category 4b on the 2010 Texas Integrated Report

Utilizing a WPP in lieu of a TMDL

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WCSC
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Columbus, TX



Roadmap

- Framework for Water Quality Restoration in Texas
- WPPs and the 9 elements
- Category 4b Rationale (for Plum Creek)

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Water Quality in Texas

Texas Commission on Environmental Quality (TCEQ)

- General jurisdiction and responsibility for water quality in Texas
- Establish water quality standards
- Collect and assess data, report on water quality conditions [Integrated Report including 303(d) List]
- Issue permits for point sources (wastewater treatment facilities, concentrated animal feeding operations, urban stormwater)
- Prevent and abate urban, and other, nonpoint sources of pollution
- Regulatory enforcement of water quality standards and permits

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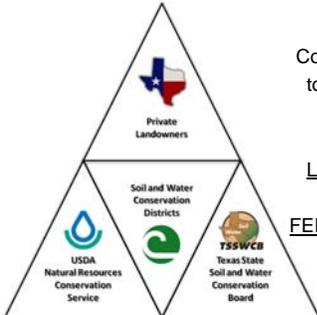
Water Quality in Texas

Texas State Soil and Water Conservation Board (TSSWCB)

- Lead agency in Texas responsible for planning, implementing and managing programs and practices for preventing and abating agricultural and silvicultural (forestry-related) nonpoint sources of water pollution (Texas Agriculture Code §201.026)
- Provides technical and financial assistance to landowners to develop and implement farm-level conservation plans on agricultural lands (Water Quality Management Plans)

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Texas Conservation Partnership



Providing Conservation Assistance to Private Landowners for 70+ Years

LOCAL = 216 SWCDs
STATE = TSSWCB
FEDERAL = USDA-NRCS

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2008 Texas 303(d) List

- 838 waterbody-pollutant combinations (impairments by AU)
- 387 individual waterbodies impaired
- Need to deal with magnitude of listings through any & all means
 - SWQM, UAA, WPP, TMDL

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Texas Nonpoint Source Management Program

Texas Commission on Environmental Quality | Texas State Soil and Water Conservation Board

- 5+ year strategic plan for managing NPS pollution in Texas
- Required by federal CWA in order for State to receive §319(h) grant funds from USEPA
- Currently being revised
- Jointly administered




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Watershed Approach

- Geographic focus based on hydrology rather than political boundaries
- Water quality objectives based on scientific data
- Coordinated priorities and integrated solutions
- Diverse, well-integrated partnerships

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Restore Water Quality

(tools to remove from 303(d) List)

- additional monitoring demonstrates now achieving water quality standards
- conduct a Use Attainability Analysis to change water quality standards
- develop Total Maximum Daily Load & Implementation Plan for adoption/approval
- develop a Watershed Protection Plan

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What is a TMDL?

- Total Maximum Daily Load
 - like a budget for pollution in the stream
 - defines the maximum amount (or load) of a pollutant that a waterbody can assimilate on a daily basis & still meet water quality standards
 - allocates pollutant loads between point sources & nonpoint sources
 - requires adoption by TCEQ & must be approved by USEPA

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What is a TMDL?

- Implementation Plan (I-Plan)
 - based on environmental target of TMDL, an I-Plan is developed
 - prescribes measures necessary to mitigate anthropogenic (human-caused) sources of that pollutant in that waterbody
 - specifies limits for point source dischargers & recommends best management practices for nonpoint sources
 - Only requires State approval
- together, the TMDL & the I-Plan serve as the mechanism to reduce the pollutant, restore the full use of the waterbody & remove it from the 303(d) List

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What is a WPP?

- Watershed Protection Plan
- Mechanisms for voluntarily addressing complex water quality problems that cross multiple jurisdictions
- Holistically address all of the sources and causes of impairments and threats to both surface and ground water resources within a watershed
- Coordinated frameworks for implementing prioritized and integrated protection and restoration strategies driven by environmental objectives

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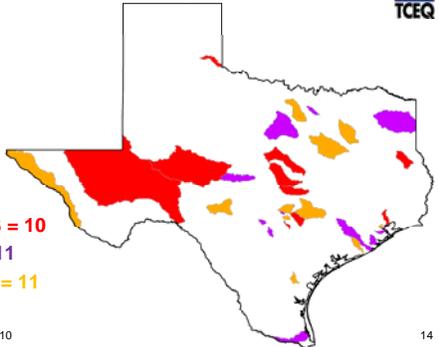
What is a WPP?

- Tools to better leverage the resources of individual landowners and citizens, local governments, state and federal agencies, and non-governmental organizations
- Developed and implemented through diverse, well integrated partnerships with decision-making founded at the local level
- Use adaptive management to modify the plan based on an ongoing science-based process involving monitoring and evaluating strategies and incorporating new knowledge into decision-making

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WPPs Across Texas



TSSWCB = 10
TCEQ = 11
3rd Party = 11

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Impetus for WPPs

- State gets ~\$9M in CWA §319(h) NPS grant monies @ year from USEPA
 - Equally split between TSSWCB & TCEQ
- USEPA 319(h) Grant Guidelines promulgated in 2003 describes WPPs & 9 elements
 - 68 Fed. Reg. 60653-60674 (October 23, 2003)
- ½ of 319(h) grant allocation must be used in development or implementation of WPPs for impaired waterbodies

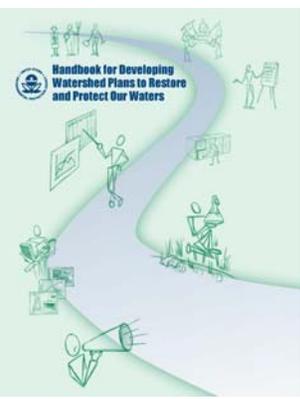
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9 Elements of a WPP

- Identification of the causes and sources of water quality problems
- Estimate of the load reductions expected to be achieved
- Description of management measures that will need to be implemented
- Estimate of technical and financial assistance needed to implement the plan
- Information/education component that will be used to enhance public understanding of the plan
- Schedule for implementing management measures
- Interim, measurable milestones for determining whether management measures are being implemented
- Set of criteria used to determine whether load reductions are being achieved
- Water quality monitoring component to evaluate effectiveness of implementation

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Handbook for Developing Watershed Plans to Restore and Protect Our Waters

- Handbook for Developing Watershed Plans to Restore and Protect Our Waters
- March 2008

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Consistency Review

- USEPA Region 6 Review Guide for Watershed-Based Plans (January 20, 2010)
 - Only 9 pages
 - Assist USEPA-R6 staff in reviewing WPPs and providing constructive feedback
 - Achieve consistency in USEPA-R6 reviews of WPPs
 - Assist States in understanding USEPA-R6's expectations for the 9 elements

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Consistency Review

- Review Guide based on
 - 2004 Guidelines
 - 2008 Handbook
- Review Guide includes
 - Description/interpretation of each element
 - Series of questions to probe WPP's attempt to satisfy each element

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Consistency Review

- Review is Conducted by USEPA-R6 Water Quality Protection Division Staff in
 - Ecosystems Protection Branch, Watershed Management Section
 - Brad Lamb
 - Assistance Programs Branch, State/Tribal Programs Section
 - Henry Brewer (TSSWCB)
 - Leslie Rauscher (TCEQ)

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Interaction between TMDLs and WPPs

- Where a TMDL for the affected waters has already been developed & approved or is being developed, the WPP must be designed to achieve the load reductions called for in the TMDL.
- However, where a TMDL has not yet been developed & approved or is not yet being developed for the waters, a WPP may be developed in the absence of the TMDL.
- If a TMDL is completed & approved, the WPP must be modified as appropriate to be consistent with the load allocation contained within the TMDL.

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TCEQ – TSSWCB MOA



- All WPPs, whether developed before, after, or simultaneously with development of a TMDL for one or more of same waters, will be written or modified to be consistent with load reductions described in TMDL & implementation strategies described in I-Plan
- That priority consideration should be given for development of WPPs in watersheds containing Category 5c impairments where a TMDL has not been initiated
- That a WPP under development or implementation will not preclude initiation, development, & establishment of a TMDL
- That TCEQ has a legal responsibility to establish TMDLs in impaired waterbodies & to do so in a timely manner. WPPs to address impairments on the 2006 & future 303(d) lists should be developed within six years after impairment is listed to allow for development of a TMDL within mandated timeframe, should one be necessary

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4b Process

- In some watersheds, development and implementation of a WPP may be a more viable approach to restoring water quality than through establishment of a TMDL
- Certain alternative pollution control measures, such as a WPP, may obviate the need for a TMDL
- Move from Category 5 to 4b on IR

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4b Process

- USEPA Region 6 Process for Review of Watershed-Based Plans in lieu of TMDLs (May 23, 2007)
 - Only 7 pages
 - Discusses national guidance and regulatory mechanisms governing process of reclassifying waterbodies to Category 4b
 - Assist States in understanding USEPA-R6's review and evaluation process and expectations

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4b Process

- Review Process based on
 - 2006 & 2008 IR Guidance
 - 2004 Guidelines (9 elements)
- Review Guide includes
 - Overview of Regulatory Mechanisms for 4b
 - Detail on how the 9 elements relate to the 4b elements
 - Specific process USEPA-R6 will use

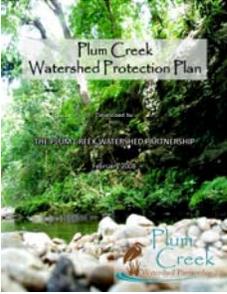
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4b Process

- Review is Conducted by USEPA-R6 Water Quality Protection Division Staff in
 - Ecosystems Protection Branch, Watershed Management Section
 - Brad Lamb
 - Ecosystems Protection Branch, Monitoring & Assessment Section
 - Mike Schaub
 - NPDES Permits Branch, TMDL Section
 - Brian Mueller
 - Assistance Programs Branch, State/Tribal Programs Section
 - Henry Brewer (TSSWCB)
 - Leslie Rauscher (TCEQ)

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- Published in February 2008
 - Developed by Plum Creek Watershed Partnership Steering Committee
 - Facilitated by Texas AgriLife Extension Service
 - Funded with 319(h) monies from TSSWCB
- USEPA-R6 concluded it is consistent with and satisfies expectations of the 9 elements (July 2009)

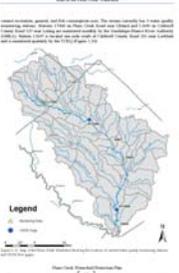
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4b Elements

- Identification of Segment and Statement of Problem Causing the Impairment
 - Segment Description
 - Impairment and Pollutant Causing Impairment
 - Sources of Pollutant Causing Impairment

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Map of the Plum Creek Watershed

Water quality goals and objectives for the watershed are based on the water quality standards for the protection of aquatic life, recreation, and agriculture. The water quality standards are based on the water quality criteria established in the Texas Water Quality Standards Act (Chapter 261, Texas Water Code).

Legend

- Watershed
- Subwatershed

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DRAFT 2008 Texas Water Quality Inventory: Assessment Results for Basin 18 - Guadalupe River (February 5, 2009)

Table with columns: Segment, Parameter, Units, 2008, 2007, 2006, 2005, 2004, 2003, 2002, 2001, 2000, 1999, 1998, 1997, 1996, 1995, 1994, 1993, 1992, 1991, 1990, 1989, 1988, 1987, 1986, 1985, 1984, 1983, 1982, 1981, 1980, 1979, 1978, 1977, 1976, 1975, 1974, 1973, 1972, 1971, 1970, 1969, 1968, 1967, 1966, 1965, 1964, 1963, 1962, 1961, 1960, 1959, 1958, 1957, 1956, 1955, 1954, 1953, 1952, 1951, 1950, 1949, 1948, 1947, 1946, 1945, 1944, 1943, 1942, 1941, 1940, 1939, 1938, 1937, 1936, 1935, 1934, 1933, 1932, 1931, 1930, 1929, 1928, 1927, 1926, 1925, 1924, 1923, 1922, 1921, 1920, 1919, 1918, 1917, 1916, 1915, 1914, 1913, 1912, 1911, 1910, 1909, 1908, 1907, 1906, 1905, 1904, 1903, 1902, 1901, 1900, 1899, 1898, 1897, 1896, 1895, 1894, 1893, 1892, 1891, 1890, 1889, 1888, 1887, 1886, 1885, 1884, 1883, 1882, 1881, 1880, 1879, 1878, 1877, 1876, 1875, 1874, 1873, 1872, 1871, 1870, 1869, 1868, 1867, 1866, 1865, 1864, 1863, 1862, 1861, 1860, 1859, 1858, 1857, 1856, 1855, 1854, 1853, 1852, 1851, 1850, 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Average Daily Predicted E. coli Load from Pasture



Map showing average daily predicted E. coli load from pasture. Includes a photo of a cow in a field.

Average Daily Predicted E. coli Load from Cattle



Map showing average daily predicted E. coli load from cattle. Includes a photo of a cow.

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Average Daily Predicted E. coli Load from Swine



Map showing average daily predicted E. coli load from swine. Includes a photo of a pig.

Total Average Daily Predicted E. coli Load



Map showing the total average daily predicted E. coli load from all sources.

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4b Elements

- Description of Pollution Controls and How They Will Achieve WQS
 - Water Quality Target
 - Point and Nonpoint Source Loadings That When Implemented Will Achieve WQS
 - Controls That Will Achieve WQS
 - Description of Requirements Under Which Pollution Controls Will Be Implemented

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E. coli Load and Reductions Monitoring Station 17406 (Uhland)

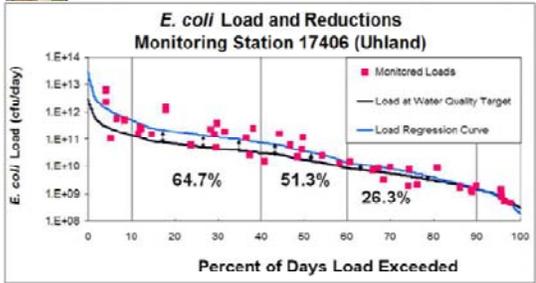


Figure 5.2. E. coli load duration curve for station 17406 near Uhland in Hays County. The graph shows E. coli Load (cfu/day) on a logarithmic scale from 1.E+08 to 1.E+14 versus Percent of Days Load Exceeded from 0 to 100. A regression curve is shown, with data points indicating 64.7%, 51.3%, and 26.3% load reductions.

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Plum Creek



Table 5.1. Annual load characteristics and E. coli reductions for each station (in billions of cfu)

Monitoring Station	Mean Annual E. coli Load (cfu/year)	Minimum 95% CI ¹	Maximum 95% CI ¹	Load Reduction (cfu/year)	Target Load (cfu/year)
Uhland (17406)	1.12E+05	8.74E+04	1.36E+05	7.28E+04	3.92E+04
Lockhart (12647)	4.26E+05	2.46E+05	6.06E+05	6.39E+04	3.62E+05
Luling (12640)	3.02E+07	1.04E+07	5.01E+07	1.24E+07	1.78E+07

¹ The 95% confidence interval for minimum and maximum nutrient loads.

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Goal to Address Contact Recreation Impairment in the Leon River Watershed

The WPP will reduce bacteria levels, where necessary, to achieve an instream concentration of E. coli that will not exceed a geometric mean of 206 cfu/100mL at an appropriate downstream SWQM station recommended for each subwatershed. Maintaining this instream concentration will involve various levels of implementation requiring reductions in bacteria loadings that range from 16 to 26 percent depending on the subwatershed.

Goal to Address Nutrient Concerns in the Leon River Watershed

Implementation of management strategies to achieve pollutant reduction goals for E. coli will have a direct corollary benefit on decreasing nutrient loads and subsequent chlorophyll-a and DO impacts.

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Leon River



Project Implementation

Management Measure	Project	Cost (\$)	Load Reduction (kg/yr)	Benefit (\$/yr)
...

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Table 10.3 Estimated regional pollutant load reductions expected upon full implementation of the Plum Creek Watershed Protection Plan

Management Measure	Expected Load Reduction								
	Umland			Lockhart			Luling		
	Ec ¹	N ²	P ³	Ec	N	P	Ec	N	P
Urban Stormwater Management Measures									
Per User Collection Stations	7.2E+12	170.8	9.2	7.2E+12	169.8	17.9	3.1E+14	1.4	N/A
Comprehensive Urban Stormwater Assessment									
Sanitary Sewer System Basins									
Watershed Stormwater Management Program	2.1E+13	531.7	19.1	1.9E+13	525.6	32.6	1.1E+14	7.8	N/A
Watershed Stormwater Assessment									
Wastewater Management Measures									
Watershed Upgrade (TSS Reduction)									
Watershed Upgrade (Inflow/Infiltration)									
Voluntary Monthly E. coli Monitoring									
Voluntary Monthly Phosphorus Monitoring									
Sanitary Sewer Site Assessment									
IR Station									
IR Station									
Sanitary Sewer Inspection Program									
Sanitary Sewer Inspection/Enforcement (New Position)									
Sanitary Sewer Repair									
Sanitary Sewer Replacement									
Sanitary Sewer Connection to Sewer									

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Management Measure	Expected Load Reduction								
	Umland			Lockhart			Luling		
	Ec ¹	N ²	P ³	Ec	N	P	Ec	N	P
Agricultural Management Measures									
WQMP Technician (New Position)									
Livestock Water Quality Management Plans	9.6E+12	5,472	827	2.1E+13	30,427	4,772	2.9E+15	542	N/A
Cropland Water Quality Management Plans									
Non-Domestic Animal and Wildlife Management Measures									
Feral Hog Control (New Position)									
Feral Hog Control (Equipment)	7.3E+12	1,616	327	1.2E+13	5,902	1,163	2.1E+15	106	N/A

¹ Ec: E. coli reduction indicated in cfu/year
² N: Nitrogen reduction in kg/year
³ P: Phosphorus reduction in kg/year

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- ## Requirements
- Texas NPS Management Program
 - Texas Water Code §5.013 & §26.0136
 - Texas Agriculture Code §201.026
 - 319(h) grant obligations between USEPA and TCEQ/TSSWCB plus contractual obligations between TCEQ/TSSWCB and collaborating entities
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4b Elements

- Estimate or Projection of Time When WQS Will Be Met

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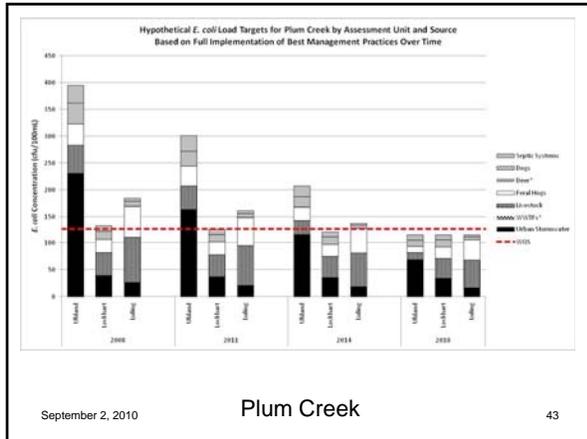
9 Measures of Success

Measures of Success

Minimum and Maximum Values

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4b Elements

- Schedule for Implementing Pollution Controls

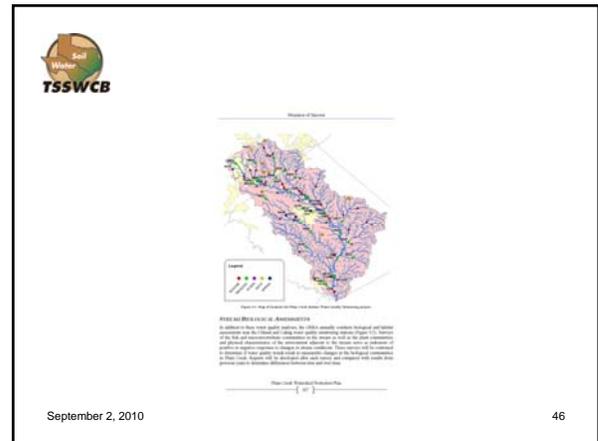
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4b Elements

- Monitoring Plan to Track Effectiveness of Pollution Controls

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4b Elements

- Commitment to Revise Pollution Controls as Necessary

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Adaptive Mangement

- a type of natural resource management in which decisions are made as part of an ongoing science-based process
- involves testing, monitoring, and evaluating applied strategies, and incorporating new knowledge into management approaches that are based on scientific findings and the needs of society
- Results are used to modify management policy, strategies, and practices
- 65 Fed. Reg. 62566-62572 (October 18, 2000)

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**Webpages
For More Information**

<http://www.tsswcb.state.tx.us/wpp>

&

<http://www.tsswcb.state.tx.us/watersheds>

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