Status of TCEQ Project: Indicator Bacteria TMDLs Upstream of Mountain Creek Lake

TCEQ TMDL Project Manager

Jason Leifester

Project Staff:

Todd Adams
Larry Hauck

Texas Institute for Applied Environmental Research (TIAER)
Tarleton State University
Stephenville, Texas

June 3, 2015

Acknowledgements

- Agency Lead:

  Texas Commission on Environmental Quality (TCEQ)

- Support Funding:

  U.S. Environmental Protection Agency (EPA)

Major Presentation Topics

- Previously completed TMDLs
- Overview & status of present TMDL projects
- Fundamentals of TMDL equation

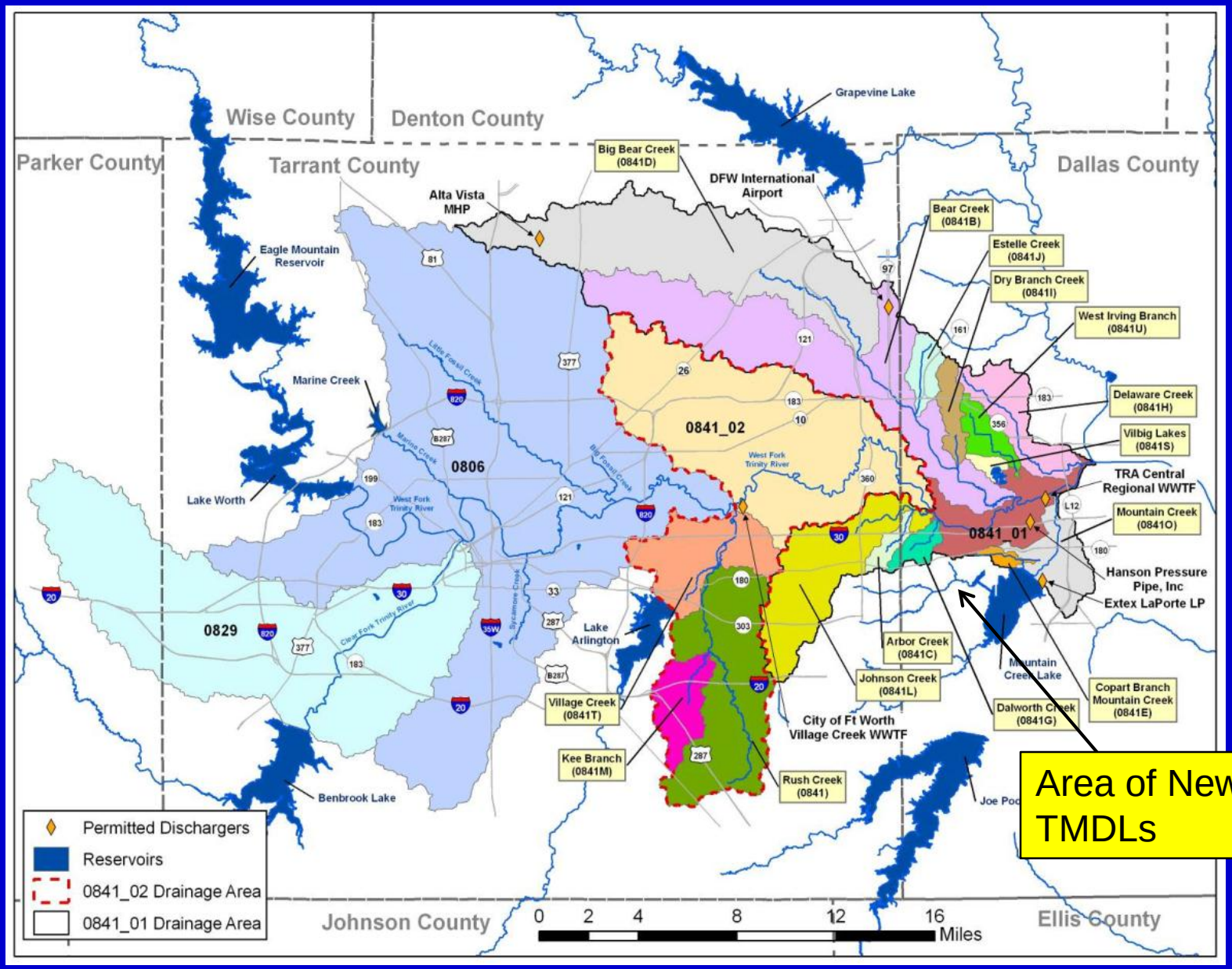
Fish Creek, Recon Trip – Jan. 9, 2015

Previously Completed Indicator Bacteria TMDLs for Lower West Fork Trinity River watershed

Adopted by TCEQ: Sept. 24, 2013; Approved by EPA: Nov. 7, 2013

- Lower West Fork Trinity River 0841_01;
- Lower West Fork Trinity River 0841_02;
- Bear Creek 0841B_01 (entire segment);
- Arbor Creek 0841C_01 (entire segment);
- Copart Branch Mountain Creek 0841E_01 (entire segment);
- Dalworth Creek 0841G_01 (entire segment);
- Delaware Creek 0841H_01 (entire segment);
- Estelle Creek 0841J_01 (entire segment);
- Johnson Creek 0841L_01 (entire segment);
- Kee Branch 0841M_01 (entire segment);
- Rush Creek 0841R_01 (entire segment);
- Village Creek 0841T_01 (entire segment); and
- West Irving Branch 0841U_01 (entire segment)

Previously Completed TMDLs: Lower West Fork Trinity River

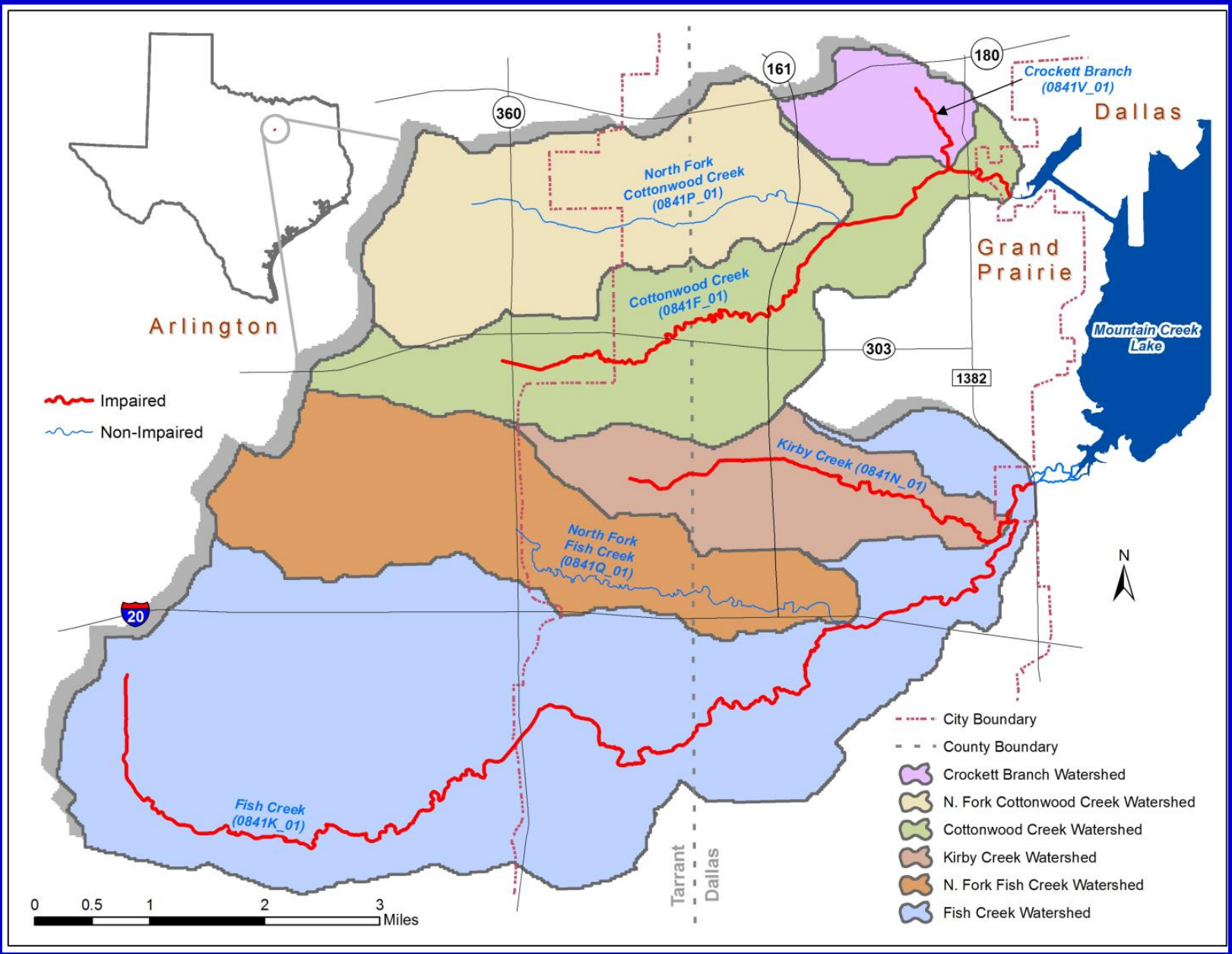


NEW PROJECT

TMDLs for Indicator Bacteria Listings Upstream of Mountain Creek Lake

- Project water bodies (segment and assessment unit)
  - Cottonwood Creek (0841F_01)
  - Fish Creek (0841K_01)
  - Kirby Creek (0841N_01)
  - Crockett Branch (0841V_01)
- Approach for TMDLS – FDCs/LDCs

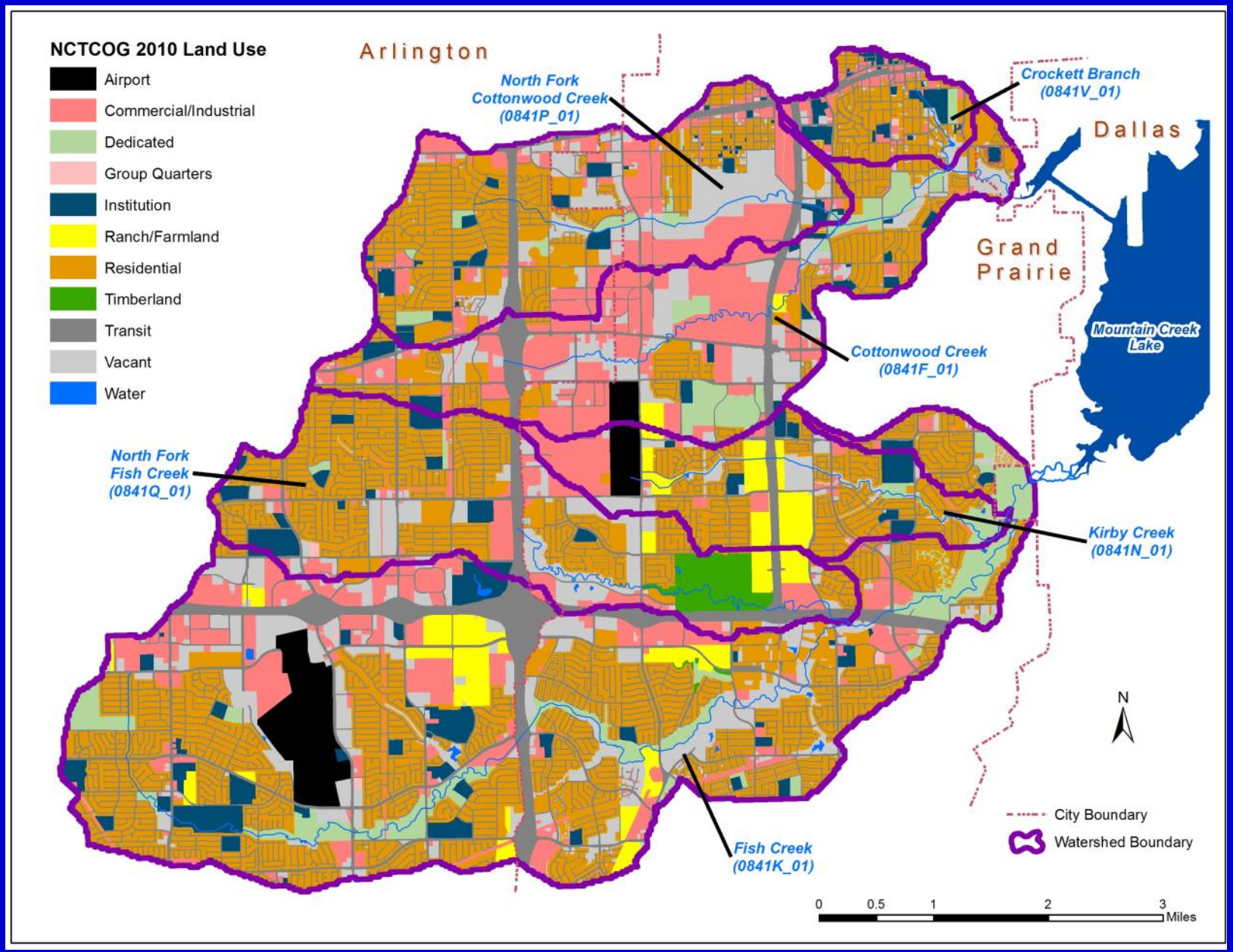
TMDL Project Area Water Bodies



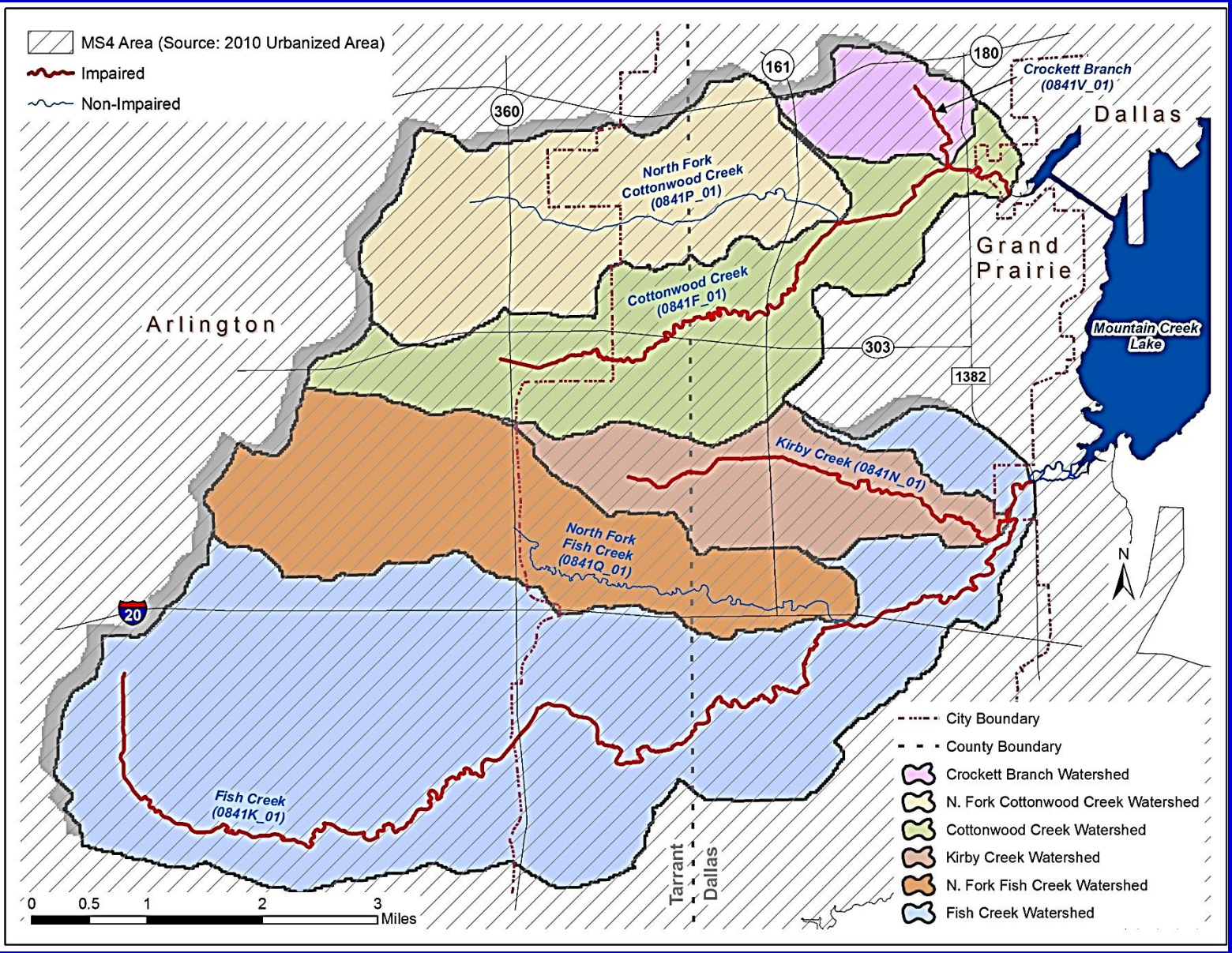
Summary 2012 & Draft 2014 Integrated Report Findings for *E. coli* Assessment (criterion = 126 MPN/100 mL)

Water Body	Assessment Unit (AU)	IR Year	No. of Samples	Geometric Mean (MPN/100 mL)
Cottonwood Cr.	0841F_01	2012	200	275
		2014	229	252
Fish Creek	0841K_01	2012	199	249
		2014	193	215
Kirby Creek	0841N_01	2012	99	621
		2014	100	582
Crockett Branch	0841V_01	2012	80	740
		2014	79	689

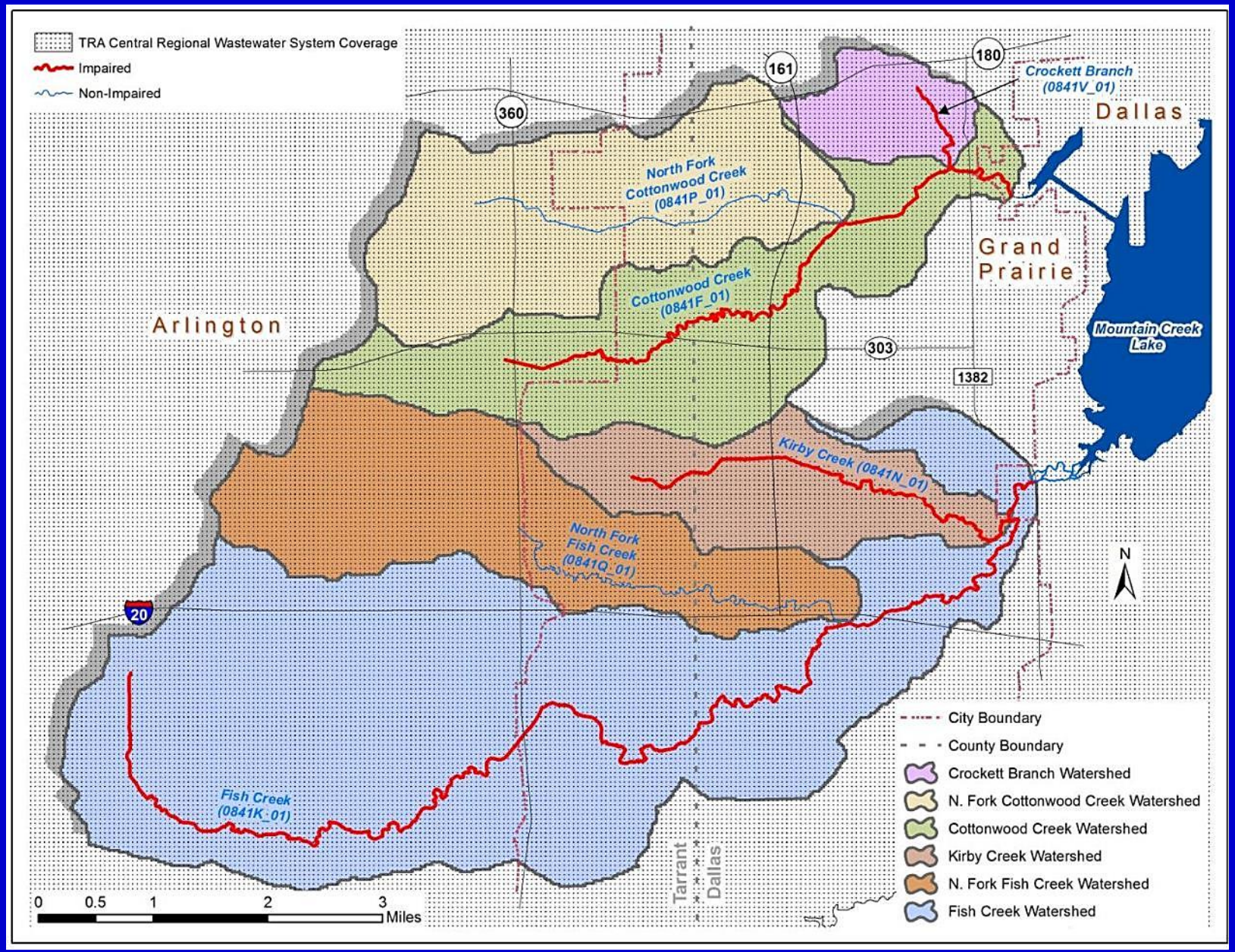
2010 Land Use/Land Cover (Source: NCTCOG)



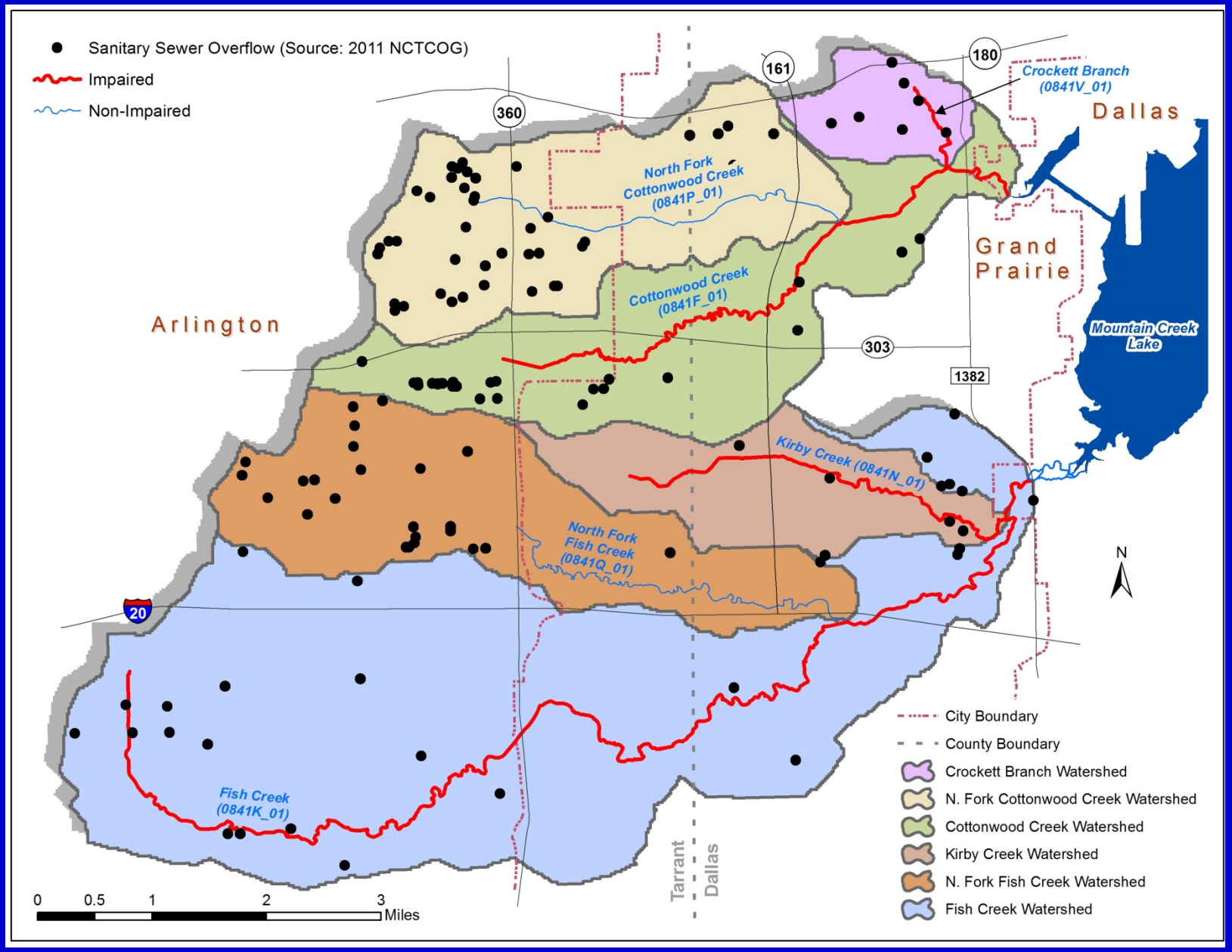
Municipal Separate Storm Sewer System Area (Source: US Census Bureau)



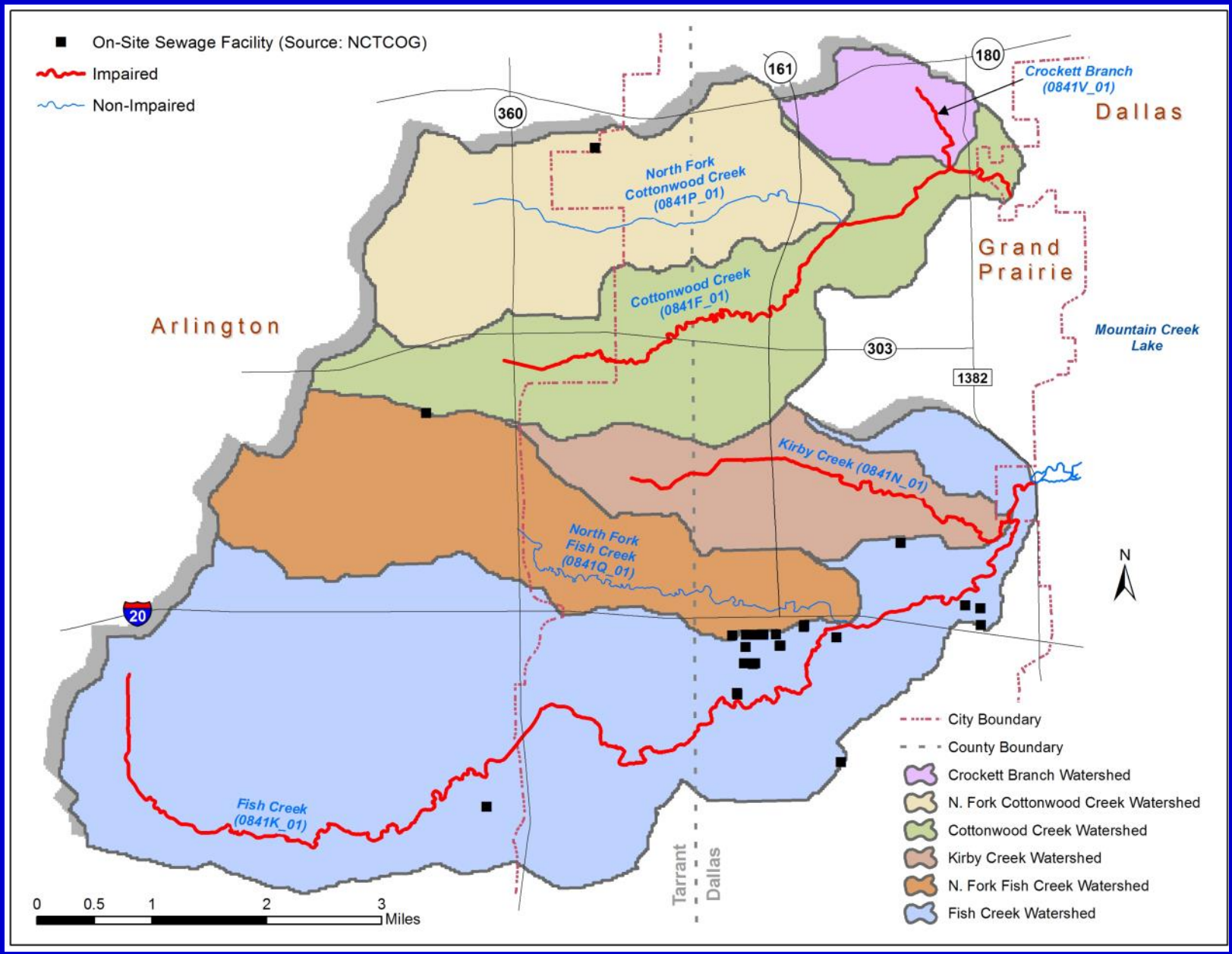
Wastewater Service Area – TRA Central Regional Facility



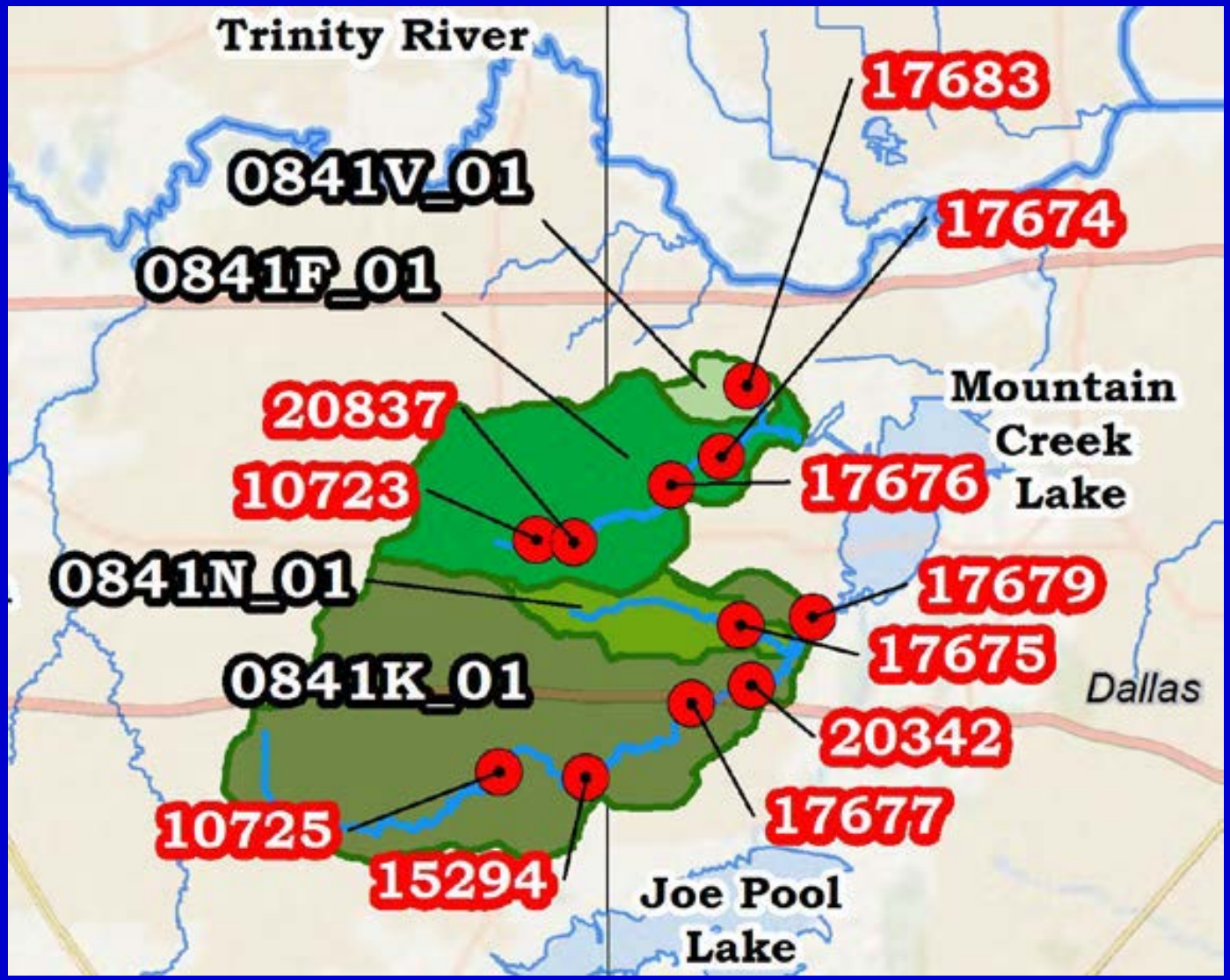
Reported Sanitary Sewer Overflows 2005 – 2010 (Source: NCTCOG)

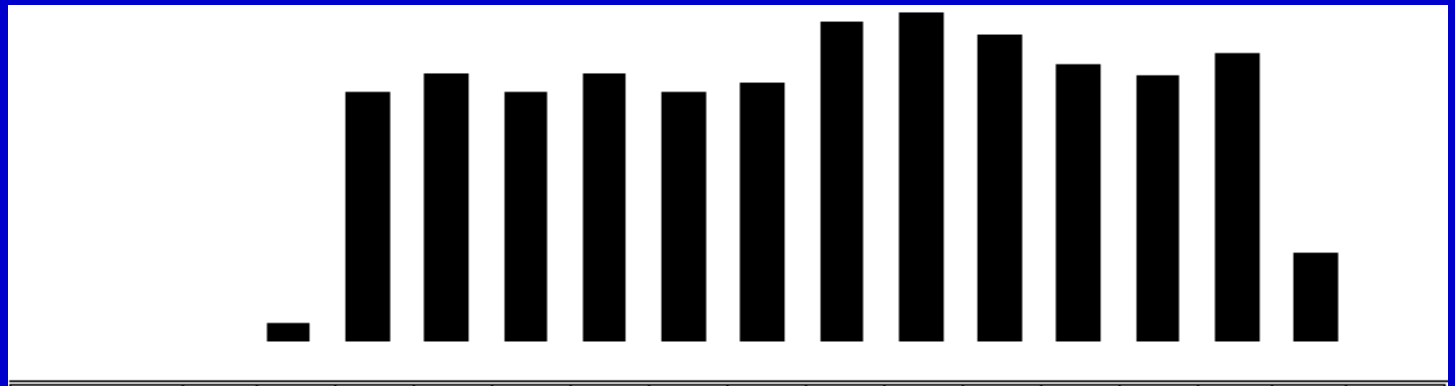


On-Site Sewage Facility Locations (Source: NCTCOG)



Historical Sampling Stations





STATION	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	TOTAL
Cottonwood Creek 0841F_01																
10723			4	4	4	4	4	4	2	2	4	2		2		36
17674		1	11	12	11	12	11	11	20	16	12	12	11	12	4	156
17676		1	11	12	11	12	12	12	12	12	12	12	13	12	4	148
20837										8	10	9	10	12	4	53
TOTAL		*2*	*26*	*28*	*26*	*28*	*27*	*27*	*34*	*38*	*38*	*35*	*34*	*38*	*12*	*393*
Fish Creek 0841K_01																
10724			4	4	4	4	3	4	2	2	4	2		2		35
10725			4	4	4	4	2	4	3	2	4	2		2		35
15294										10	12	12	12	12	4	62
17677		1	12	12	11	12	11	12	12							83
17679		1	9	12	11	12	12	12	12	10	12	12	13	12	4	144
20342									8	7						15
TOTAL		*2*	*29*	*32*	*30*	*32*	*28*	*32*	*37*	*31*	*32*	*28*	*25*	*28*	*8*	*374*
Kirby Creek 0841N_01																
17675		1	12	12	11	12	11	11	17	23	15	12	12	12	4	165
Crockett Branch 0810C_01																
17683		1	11	12	11	12	12	11	12	11	11	12	12	12	4	144

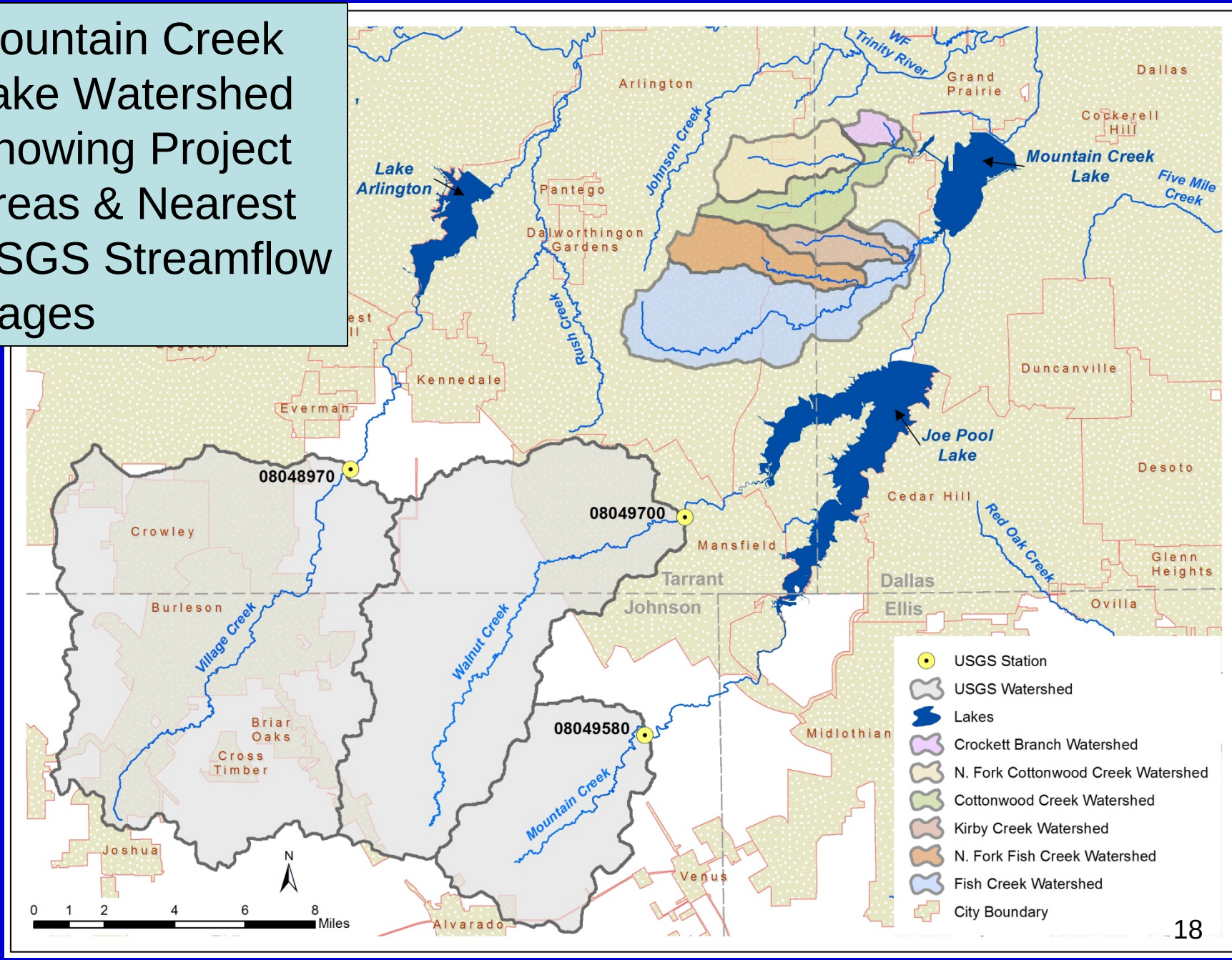
Overview
Fundamentals of TMDL
Pollutant Load Allocation Equation

TMDL Allocation Equation

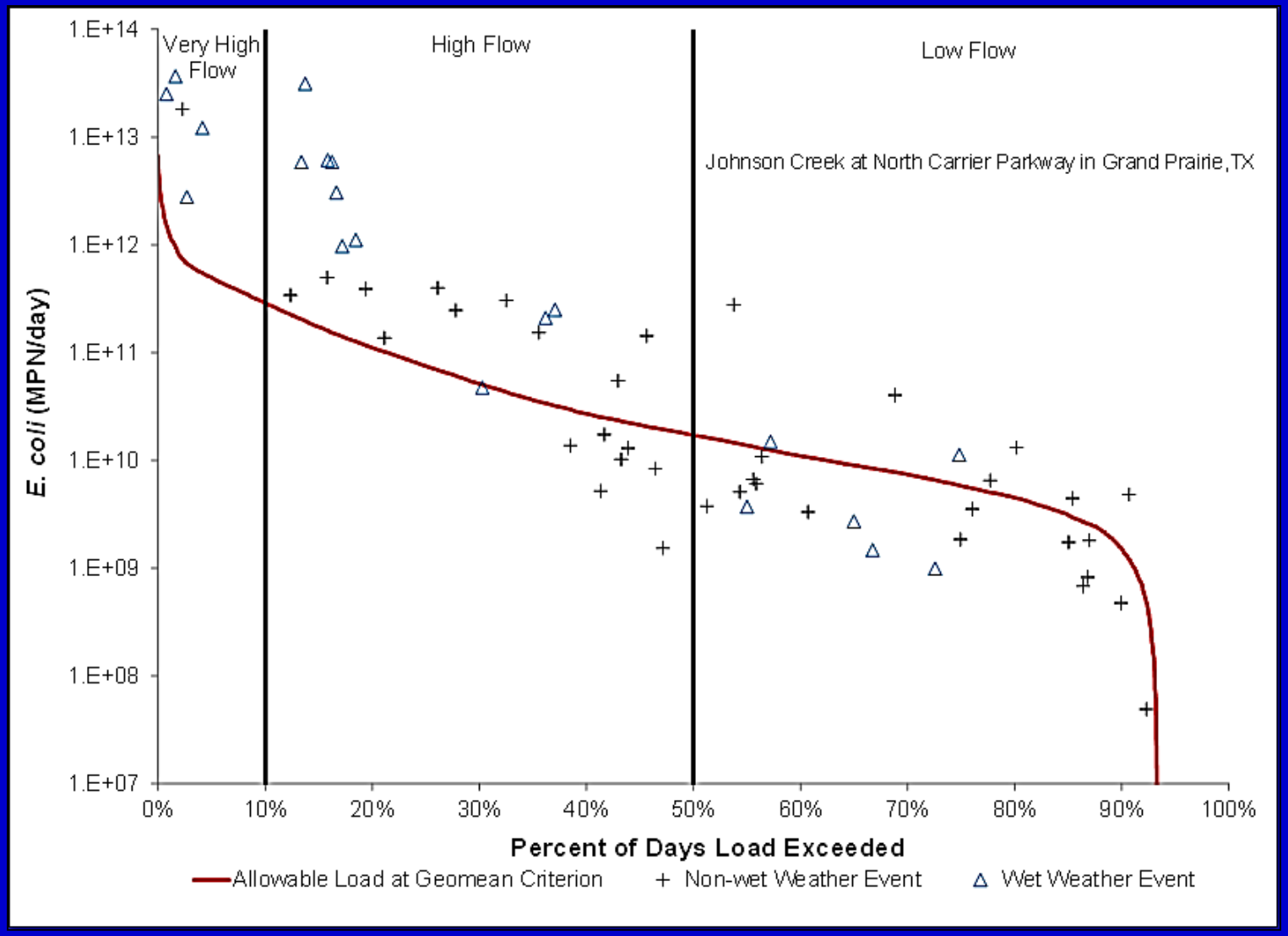
$$TMDL = \cancel{WLA_{WWTF}}^{\,0} + WLA_{SW} + \cancel{LA}^{\,0} + LA_{TRIB} + \cancel{FG}_{\,0} + MOS$$

- WLA_{WWTF} - Existing wastewater treatment discharges.
- WLA_{SW} - Construction, industrial and MS4 discharges stormwater loading.
- LA - Unregulated stormwater loading.
- LA_{TRIB} – Loading from TMDL tributary.
- FG – Future growth from potential permitted facilities.
- MOS - Margin of safety.

Mountain Creek Lake Watershed Showing Project Areas & Nearest USGS Streamflow Gages



Example Load Duration Curve for station 17664, Johnson Creek (0841L) (Source: TCEQ TMDL report)



Status of TMDLs for Indicator Bacteria Listings Upstream of Mountain Creek lake

- Technical Support Document (TSD) (due to TCEQ July/Aug 2015; soon thereafter made available to public on project website)
- TCEQ to use TSD to develop a TMDL report (TCEQ will notify TMDL Coordination Committee when this is available for public review and comment)

Thank You

Any Questions?

Larry Hauck
email: hauck@tiaer.tarleton.edu