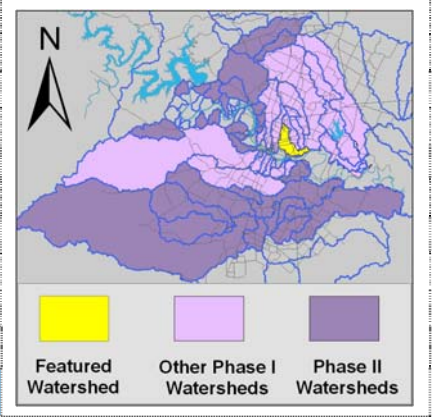


Boggy Creek (North) Watershed

Watershed Overview

Catchment	Total area				6 square miles			
	Area in recharge				none			
	Creek length				8 miles			
	Receiving water				Colorado River			
Demographics	2000 population				23,372			
	2030 projected population				35,728			
	30 year projected % increase				53 %			
Land Use	Impervious cover (2003 estimate)				42.4 %			
	Impervious cover (2013 estimate)				43.3 %			
Overall EII Scores	2000	2003	2006	2009	2011	2013	2015	
	56	58	57	61	56	59	64	



Flow Regime* for Sample Sites on Boggy Creek Upstream to Downstream

Site	2001		2003							2006					2009						2010	2011				2013					2015					
	Feb	Feb	Feb	Mar	Mar	May	Sep	Dec	Feb	May	Jul	Aug	Nov	Feb	May	May	Jun	Oct	Dec	Dec	Mar	Jun	Jun	Sep	Jan	Apr	May	Jun	Jun	Sep	Jan	Apr	May	Jul	Sep	
	WQ	Bio	WQ	WQ	Bio	WQ	WQ	WQ	WQ	WQ	Bio	WQ	WQ	WQ	WQ	Bio	Bio	WQ	WQ	WQ	WQ	WQ	WQ	Bio	WQ	WQ	Bio	WQ	WQ	WQ	WQ	WQ	WQ	WQ	WQ	
784	B	B																																		
853	B	B																																		
2754			B	B	B	B	B	B	B	B	B	n	B	B	B	B		B	B	B	B	B	B	B	B	B	B	B	B		B	B	B		B	B
837	B	B	B	B	B	B	B	B	B	B	B	n	B	B	B	B		B	B	B	B	B	B	B	B	B	B	B	B		B	B	B		B	B
493	B	B	B	B	B	B	B	n	n	n	B	n	n	n	B	B		B	B	n	B	n	n	n	B	B		B	B	n	B	B	B	B	B	B

* B = baseflow n = no flow S = storm flow blue = Samples were taken light blue = Samples were not taken blank = not visited

Index scores* for Boggy Creek (North) Sites by Year

Reach	Site	Site Name	Year	Water Quality	Sediment**	Contact Rec.	Non-Contact Rec.	Physical Integrity	Aquatic Life	Benthic subindex	Diatom subindex	Total EII Score
BOG1	493	North Boggy Creek @ Delwau Lane	2000	67	88	82	79	23	30	29	31	62
BOG2	837	North Boggy Creek @ Nile Street	2000	62	88	78	62	20	23	33	13	56
BOG3	784	North Boggy Creek @ Crestwood	2000	39	88	64	73	41	19	29	9	54
BOG3	853	Unnamed Trib of N Boggy Creek @ Banton Rd	2000		88		48	24	23	33	13	46
BOG1	493	North Boggy Creek @ Delwau Lane	2003	67	88	82	58	47	37	42	31	63
BOG2	837	North Boggy Creek @ Nile Street	2003	52	88	62	75	47	26	30	22	58
BOG3	2754	North Boggy Creek @ Manor Rd	2003	51	88	45	56	54	26	23	28	53
BOG1	493	North Boggy Creek @ Delwau Lane	2006		85		71	36	50	37	62	61
BOG2	837	North Boggy Creek @ Nile Street	2006	57	85	65	66	51	52	43	61	63
BOG3	2754	North Boggy Creek @ Manor Rd	2006	52	85	25	63	48	38	25	51	52
BOG1	493	North Boggy Creek @ Delwau Lane	2009	71	87	41	79	39	75	53	96	65
BOG2	837	North Boggy Creek @ Nile Street	2009	61	87	30	47	49	65	46	84	57
BOG3	2754	North Boggy Creek @ Manor Rd	2009	64	87	25	67	57	65	49	80	61
BOG1	493	North Boggy Creek @ Delwau Lane	2011	62	81	65	60	43				52
BOG2	837	North Boggy Creek @ Nile Street	2011	66	81	34	58	50	62	68	55	59
BOG3	2754	North Boggy Creek @ Manor Rd	2011	60	81	32	65	56	46	27	65	57
BOG1	493	North Boggy Creek @ Delwau Lane	2013	76	83	86	53	36	49	44	54	64
BOG2	837	North Boggy Creek @ Nile Street	2013	58	83	37	60	52	67	67	67	60
BOG3	2754	North Boggy Creek @ Manor Rd	2013	45	83	25	58	59	46	51	41	53
BOG1	493	North Boggy Creek @ Delwau Lane	2015	72	87	71	74	49	81	85	76	72
BOG2	837	North Boggy Creek @ Nile Street	2015	42	87	28	76	61	62	51	72	59
BOG3	2754	North Boggy Creek @ Manor Rd	2015	39	87	26	81	64	62	56	67	60

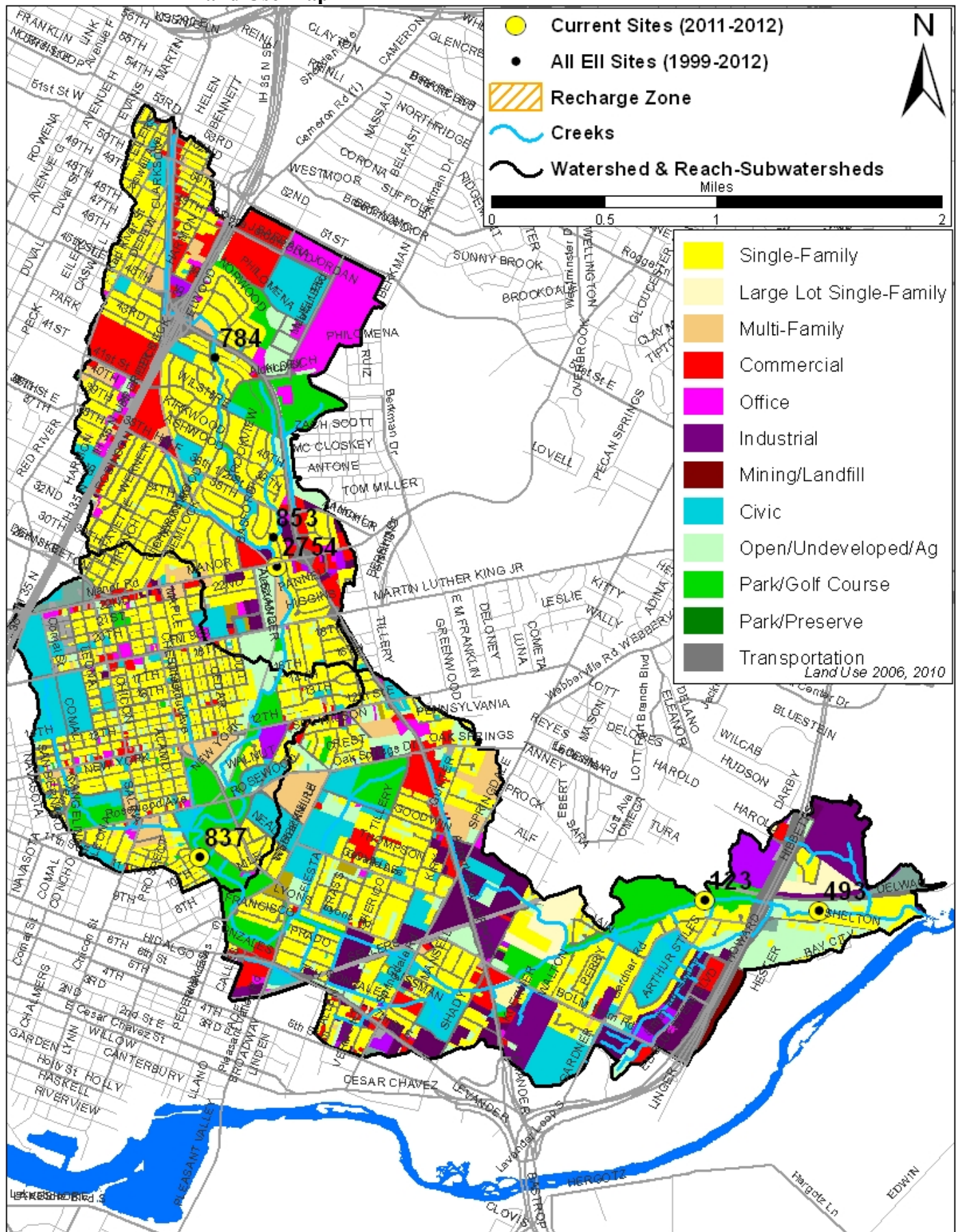
* blank cells indicate parameter was not collected, blank row indicate site was dropped

**sediment samples only collected at the downstream site

100-87.5 Excellent 87.5-75 V. Good 75-62.5 Good 62.5-50 Fair 50-37.5 Marginal 37.5-25 Poor 25-12.5 Bad 12.5-0 V. Bad

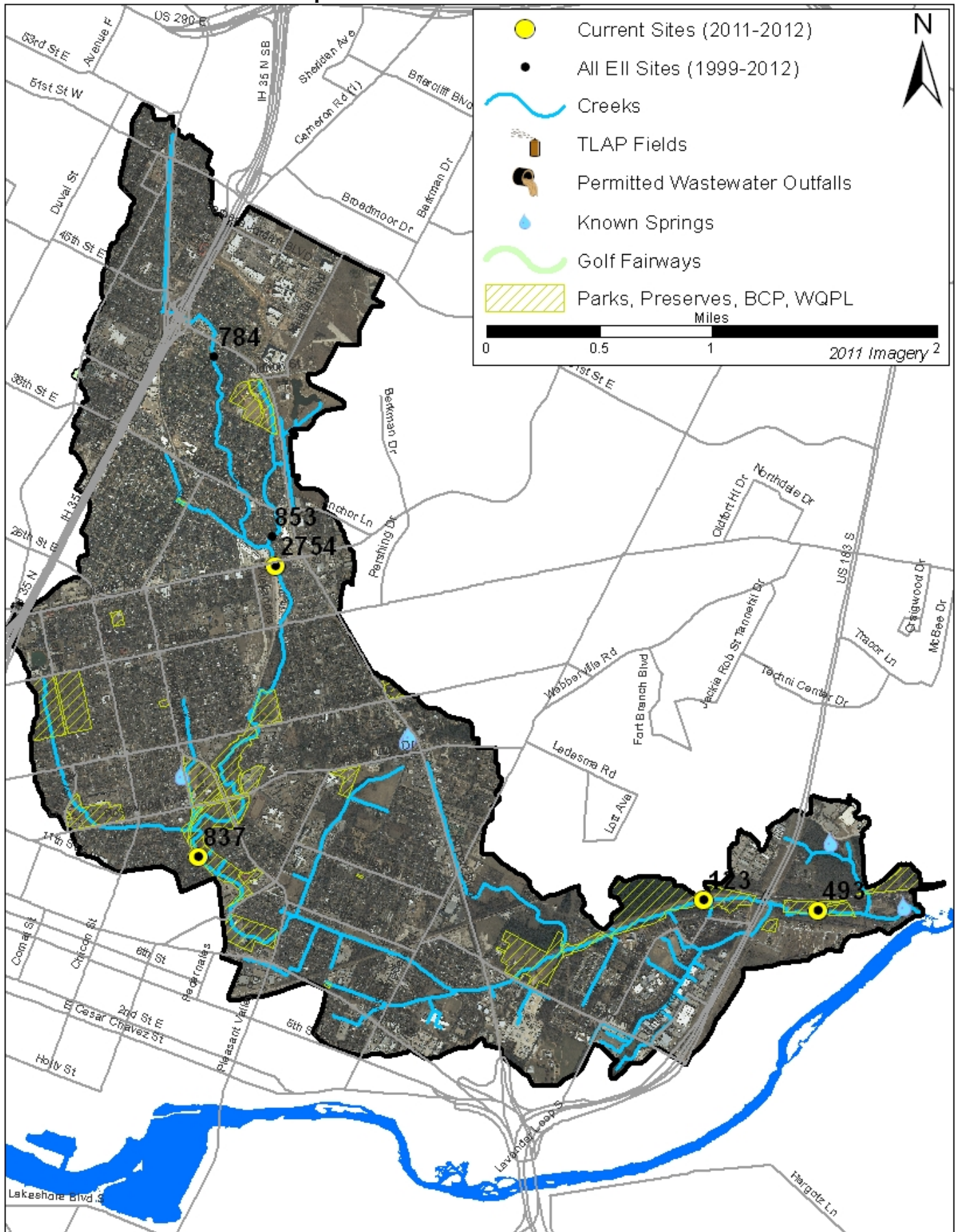
Boggy Creek (North) Watershed

Land Use Map



Boggy Creek (North) Watershed

Aerial Map



Boggy Creek (North) Watershed

Water Quality Data – Temperature, Conductivity, pH, Dissolved Oxygen & *E. coli* for 2013 Sample Sites (Downstream to Upstream)

Qualifiers to the left of the value	>	Greater than	Qualifiers to the right of the value	(blank)	Useable
	<	Less than		S	Exceeds standard range
	<J	Less than detected limit		R	Rejected, failed QC
	J	Estimated			

Watershed	Site	E.I.I. Reach	Date	Temp.	Cond.	pH	D.O.	E. Coli
				flag	flag	flag	flag	flag
Boggy	493	BOG1	01/14/2015	7.7	535	7.92	10.8	49.6
Boggy	493	BOG1	04/15/2015	28.0	640	8.11	9.0	85.5
Boggy	493	BOG1	05/04/2015	23.9	507	7.89	7.0	
Boggy	493	BOG1	07/14/2015	34.2	647	7.84	8.8	15.5
Boggy	493	BOG1	09/09/2015	28.8	534	7.27	4.3	38.4
BOG1 Mean				24.5	573	7.81	8.0	47.2
Boggy	837	BOG2	01/14/2015	7.9	714	7.92	12.8	435.2
Boggy	837	BOG2	4/15/2015	23.1	830	8.21	18.5	461.1
Boggy	837	BOG2	07/08/2015	25.7	888	7.67	5.0	
Boggy	837	BOG2	07/14/2015	28.8	911	7.91	7.8 R	387.3
Boggy	837	BOG2	09/09/2015	28.0	792	7.76	6.3	648.8
BOG2 Mean				22.7	827	7.89	10.1	483.1
Boggy	2754	BOG3	01/14/2015	8.2	770	7.88	11.2 R	410.6
Boggy	2754	BOG3	04/15/2015	19.2	965	7.86	8.3	980.4
Boggy	2754	BOG3	07/08/2015	25.2	1073	7.67	5.2	
Boggy	2754	BOG3	07/14/2015	25.8	1058	7.76	6.5	> 2419.6
Boggy	2754	BOG3	09/09/2015	26.3	889	7.65	5.2	1413.6
BOG3 Mean				21.0	951	7.76	7.3	1306.1
Boggy Mean				22.7	784	7.82	8.4	612.1

Gray highlighting indicates that the value exceeds one standard deviation from the mean of all E.I.I. sites combined.

Summary Statistics for all 2015-2016 E.I.I. Sites Combined					
Parameter	2015-2016 Average	2015-2016 Minimum	2015-2016 Maximum	1 Standard Deviation Above	1 Standard Deviation Below
Temperature (C°)	20.7	5.8	34.2	27.5	
Conductivity (uS/cm)	722	160	3549	955	
pH (Standard units)	7.86	5.85	10.25	8.24	7.47
D.O. (mg/l)	7.9	0.1	18.7	10.4	5.5
<i>E. Coli</i> (col/100ml)	316.1	1.0	2420.0	883.7	

Boggy Creek (North) Watershed

Water Quality Data – Ammonia, Nitrate / Nitrite, Ortho-Phosphorus, Total Suspended Solids & Turbidity for 2013 Sample Sites (Downstream to Upstream)

Qualifiers to the left of the value	>	Greater than	Qualifiers to the right of the value	(blank)	Useable
	<	Less than		S	Exceeds standard range
	<J	Less than detected limit		R	Rejected, failed QC
	J	Estimated			

Watershed	Site	EII Reach	Date	NH3-N		NO3/NO2		Ortho-P		T.S.S		Turb.	
				<>	flag	<>	flag	<>	flag	<>	flag	<>	flag
Boggy	493	BOG1	01/14/2015	<J	0.008		0.30	<J	0.004	<J	2.2	2.7	R
Boggy	493	BOG1	04/15/2015	<J	0.008	<J	0.01	<J	0.004		1.2	3.1	
Boggy	493	BOG1	05/04/2015										
Boggy	493	BOG1	07/14/2015		0.026		0.14	<J	0.004		2.2	1.9	R
Boggy	493	BOG1	09/09/2015		0.113	<J	0.01	<J	0.004		1.3	3.6	R
BOG1 Mean					0.029		0.11		0.004		1.7	2.8	
Boggy	837	BOG2	01/14/2015	<J	0.008		1.03		0.028		4.0	3.7	R
Boggy	837	BOG2	4/15/2015	<J	0.008		0.37	<J	0.004		3.4	3.5	
Boggy	837	BOG2	07/08/2015										
Boggy	837	BOG2	07/14/2015	<J	0.008		1.59		0.020		3.2	6.1	R
Boggy	837	BOG2	09/09/2015		0.027		1.58		0.027		3.1	3.7	R
BOG2 Mean					0.013		1.14		0.020		3.4	4.2	
Boggy	2754	BOG3	01/14/2015	<J	0.008		1.57		0.048		4.4	7.1	R
Boggy	2754	BOG3	04/15/2015		0.026		1.89		0.057		4.4	2.0	
Boggy	2754	BOG3	07/08/2015										
Boggy	2754	BOG3	07/14/2015	<J	0.008		5.15		0.031	<J	1.2	1.4	R
Boggy	2754	BOG3	09/09/2015	<J	0.008		3.02		0.078	<J	1.1	1.5	R
BOG3 Mean					0.012		2.90		0.053		2.8	3.0	
Boggy Mean					0.021		1.39		0.026		2.6	3.4	

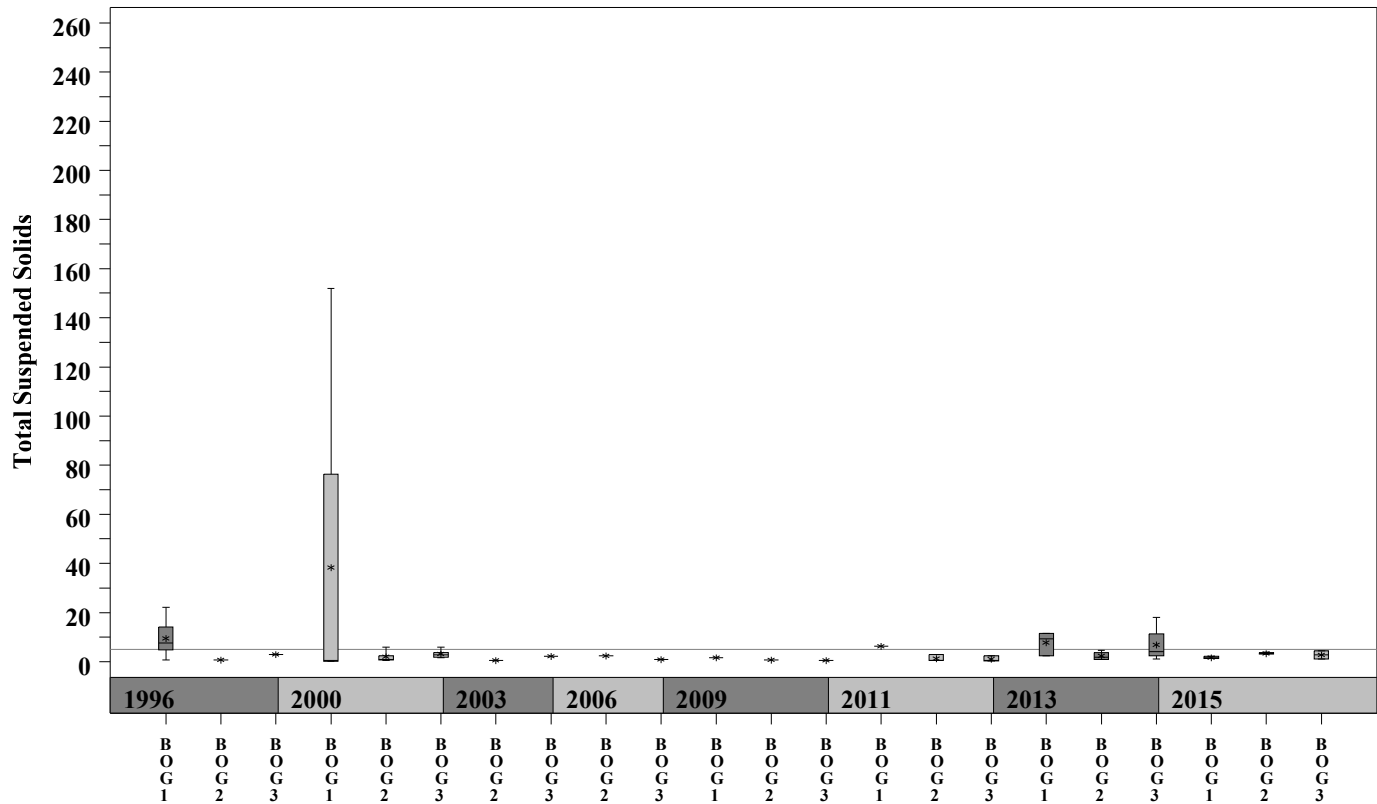
Gray highlighting indicates that the value exceeds one standard deviation from the mean of all E.I.I. sites combined.

Summary Statistics for all 2015-2016 E.I.I. Sites Combined				
Parameter	2015-2016 Average	2015-2016 Minimum	2015-2016 Maximum	1 Standard Deviation Above
NH3-N (mg/l)	0.018	0.008	0.881	0.085
NO3-N (mg/l)	1.14	0.01	12.0	3.16
Ortho-P (mg/l)	0.016	0.004	0.661	0.08
T.S.S. (mg/l)	3.7	1.0	58.2	9.7
Turbidity (NTU)	4.4	0.2	98.6	11.7

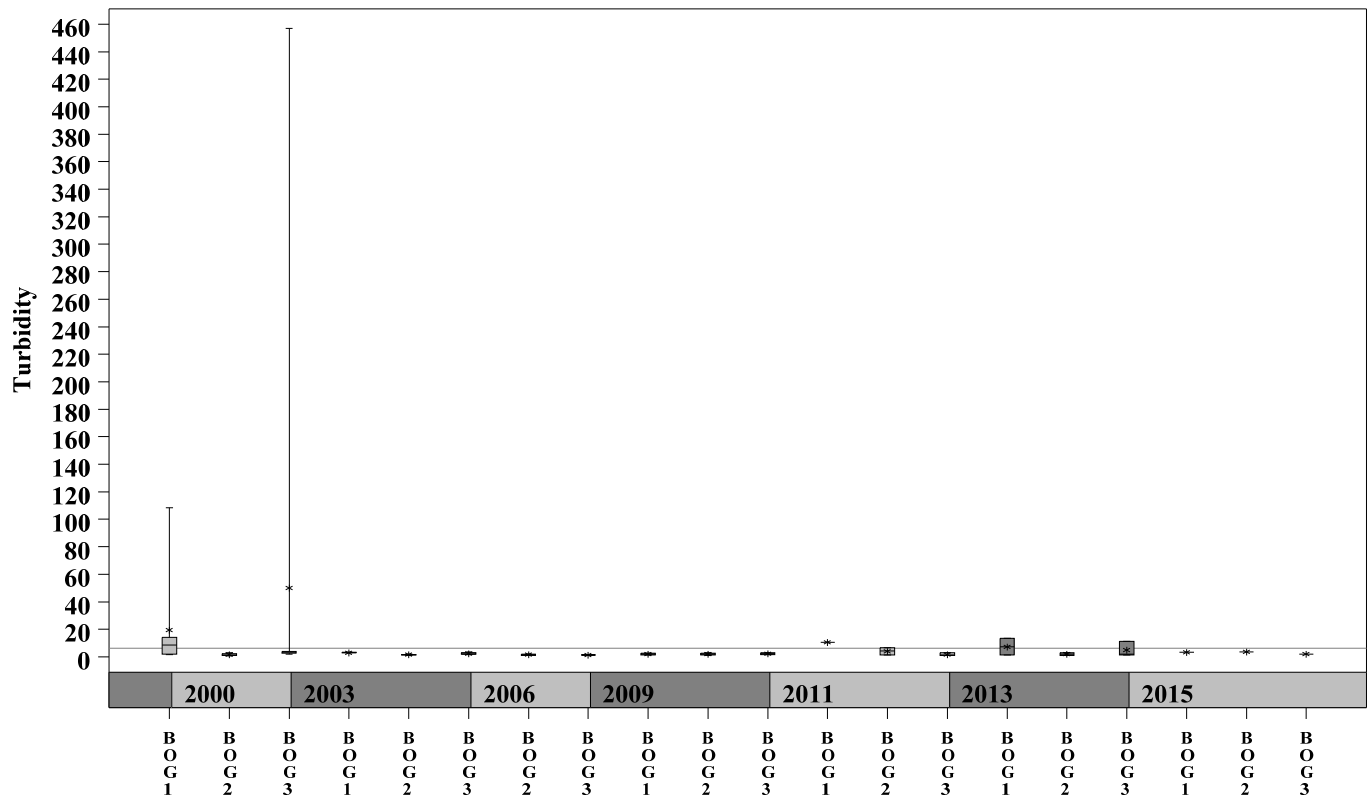
Boggy Creek (North) Watershed

Data Summary Graphs – Total Suspended Solids and Turbidity (Downstream to Upstream by Year)

Parameter = TOTAL SUSPENDED SOLIDS Unit = mg/L Watershed = Boggy



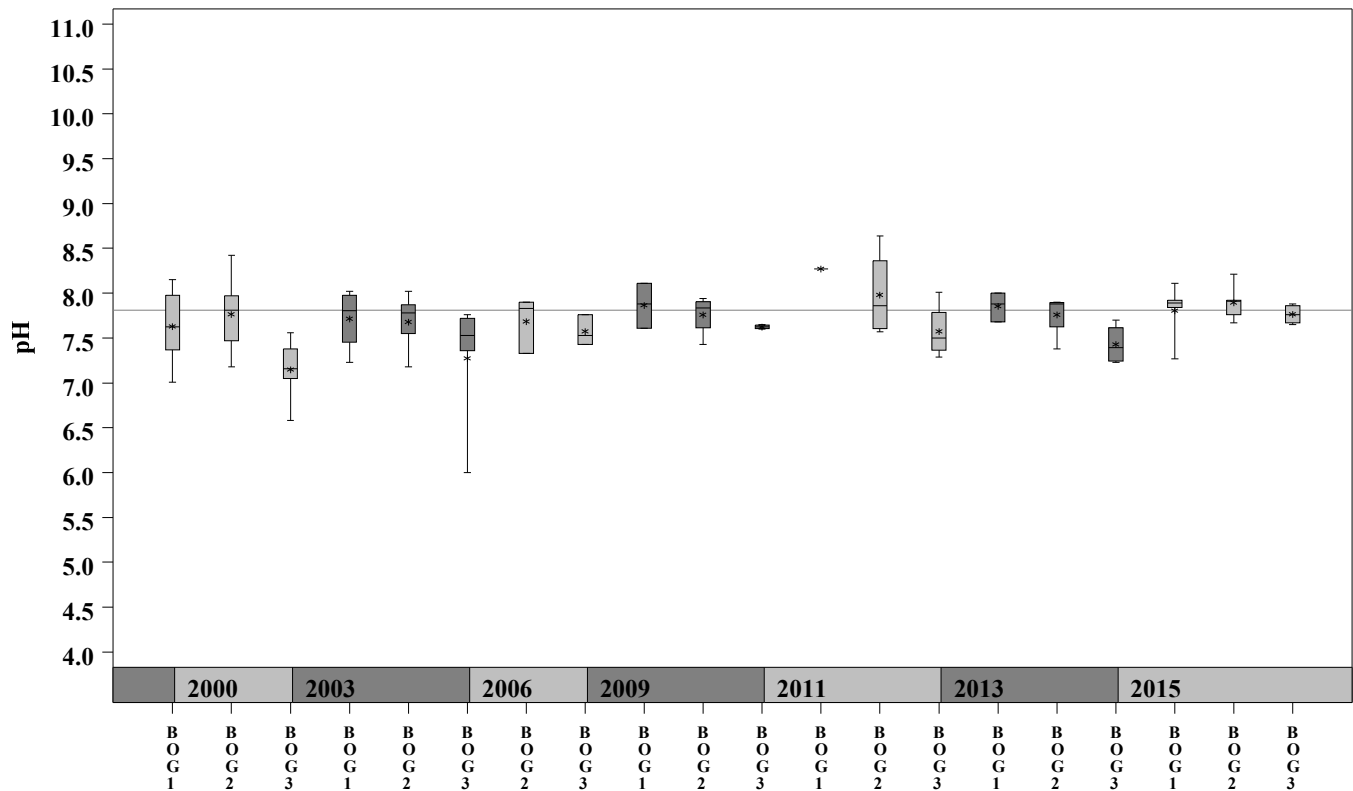
Parameter = TURBIDITY Unit = NTU Watershed = Boggy



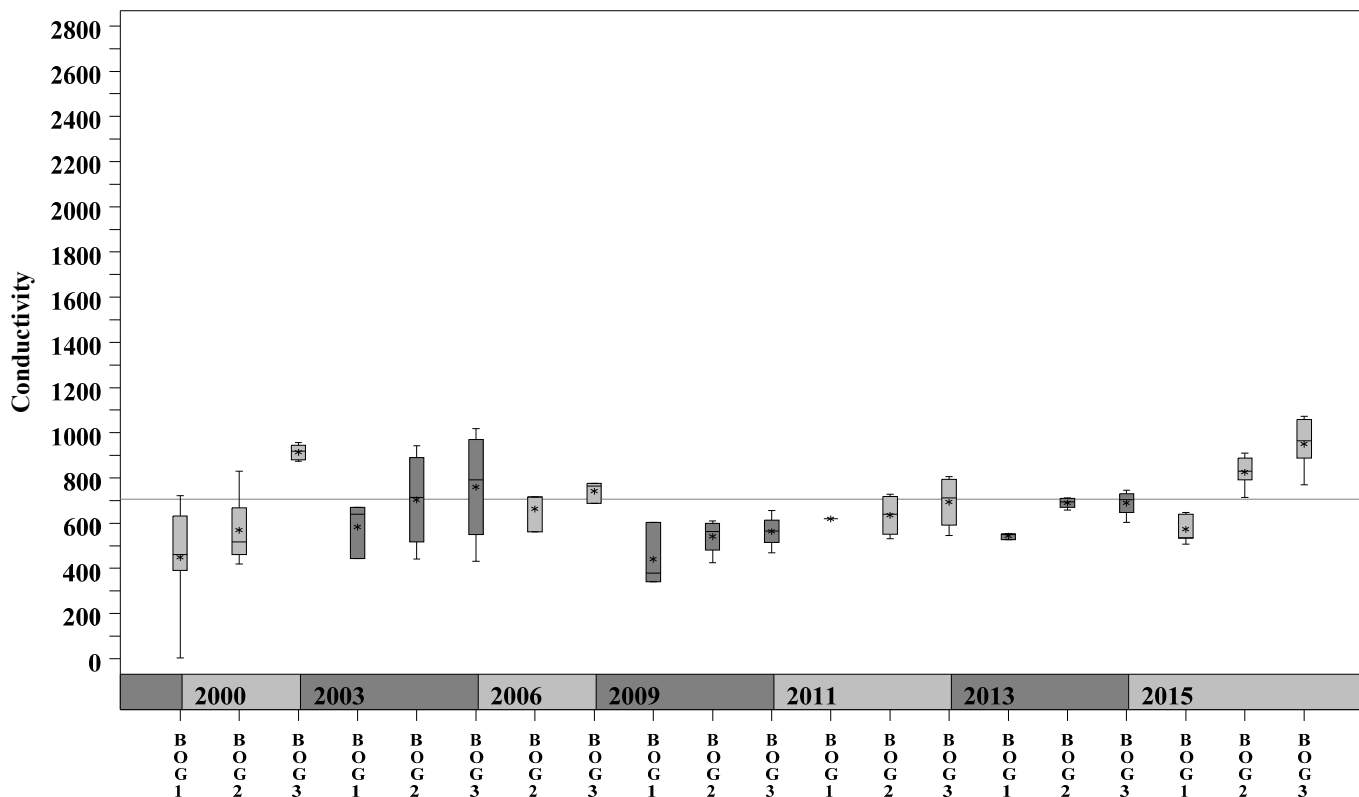
Boggy Creek (North) Watershed

Data Summary Graphs – pH and Conductivity (Downstream to Upstream by Year)

Parameter = pH Unit = Standard Units Watershed = Boggy



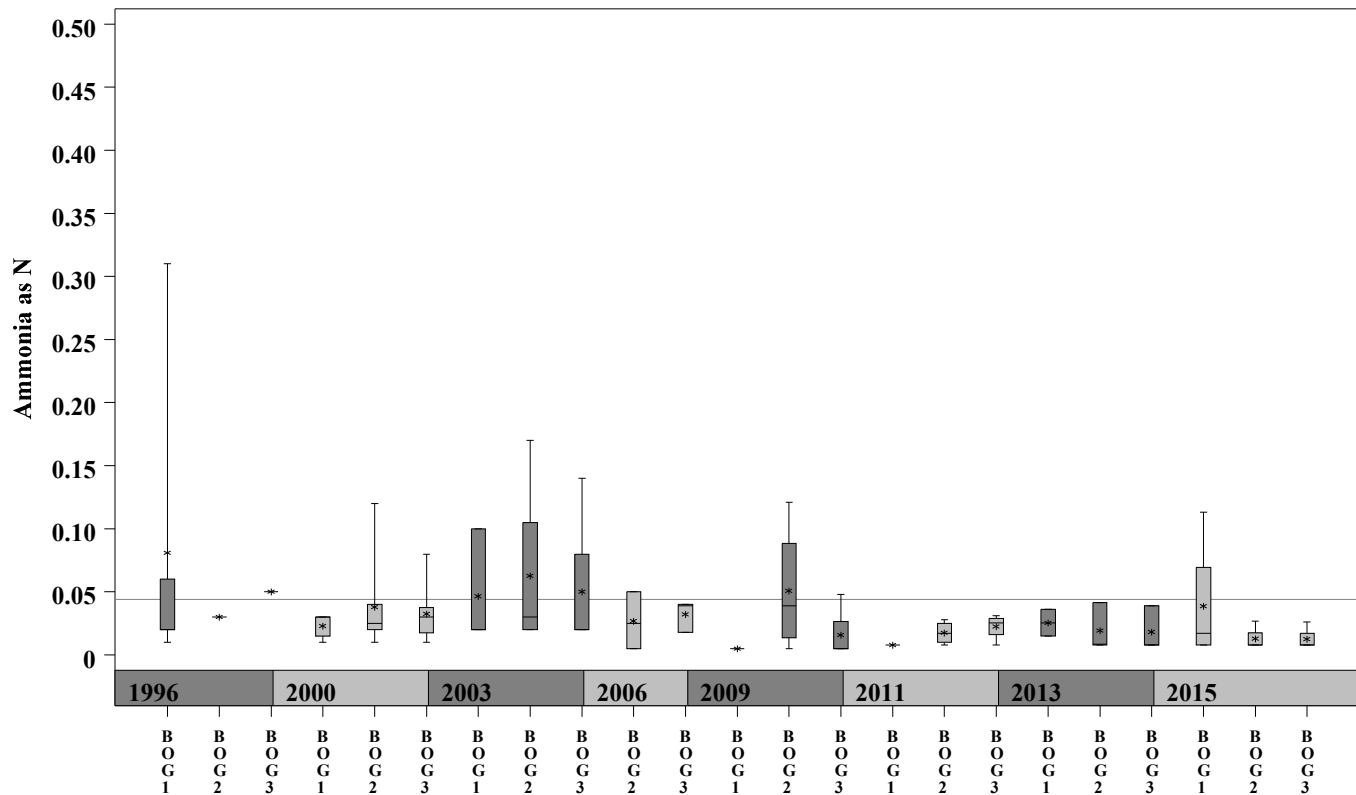
Parameter = CONDUCTIVITY Unit = uS/cm Watershed = Boggy



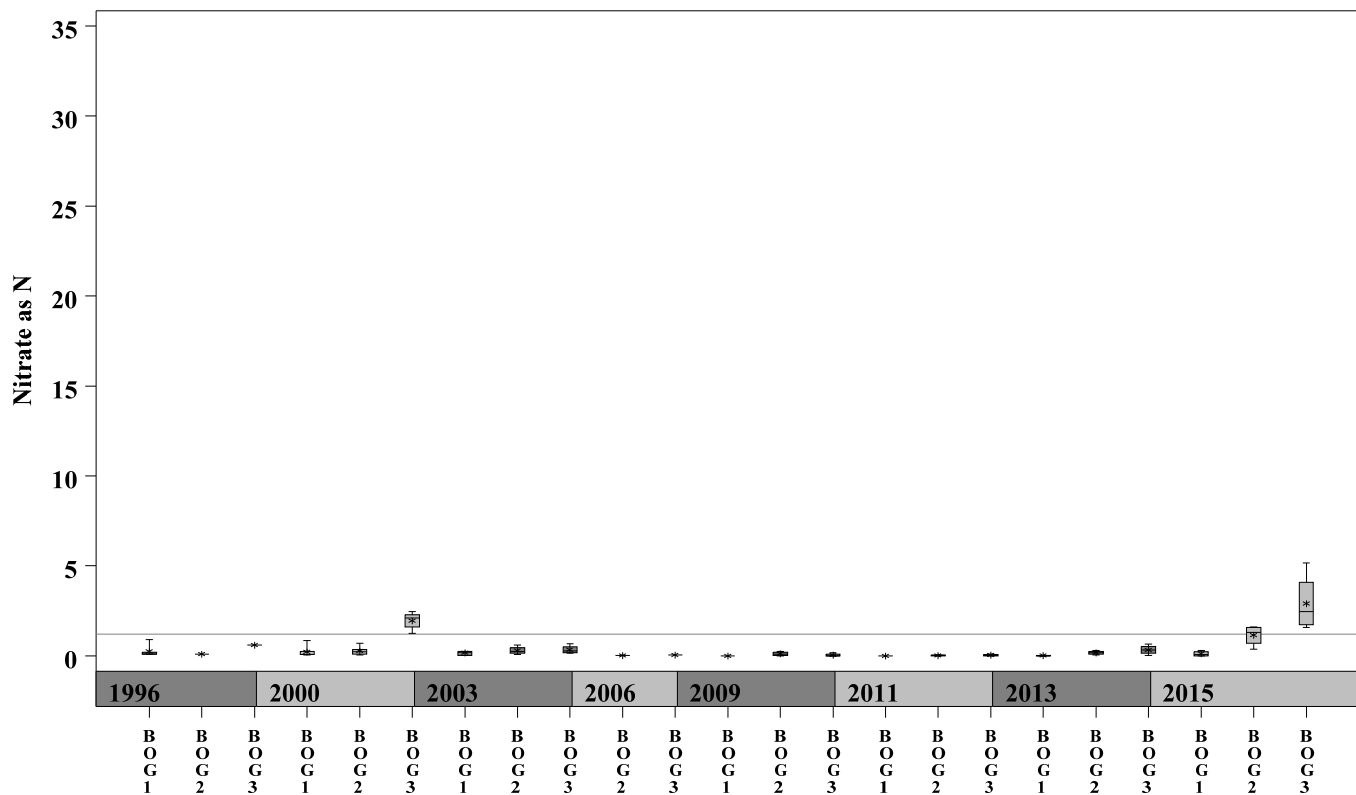
Boggy Creek (North) Watershed

Data Summary Graphs – Ammonia and Nitrate/Nitrite (Downstream to Upstream by Year)

Parameter = AMMONIA AS N Unit = mg/L Watershed = Boggy



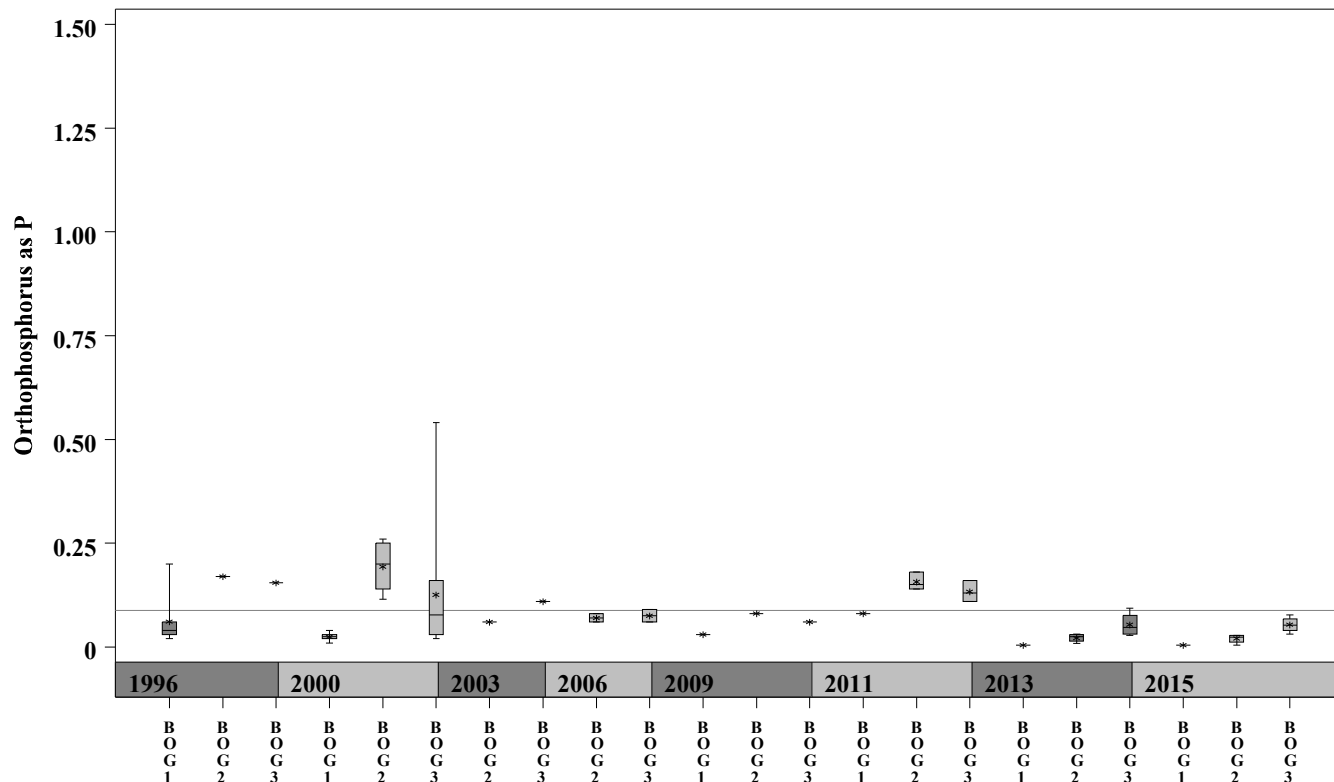
Parameter = NITRATE AS N Unit = mg/L Watershed = Boggy



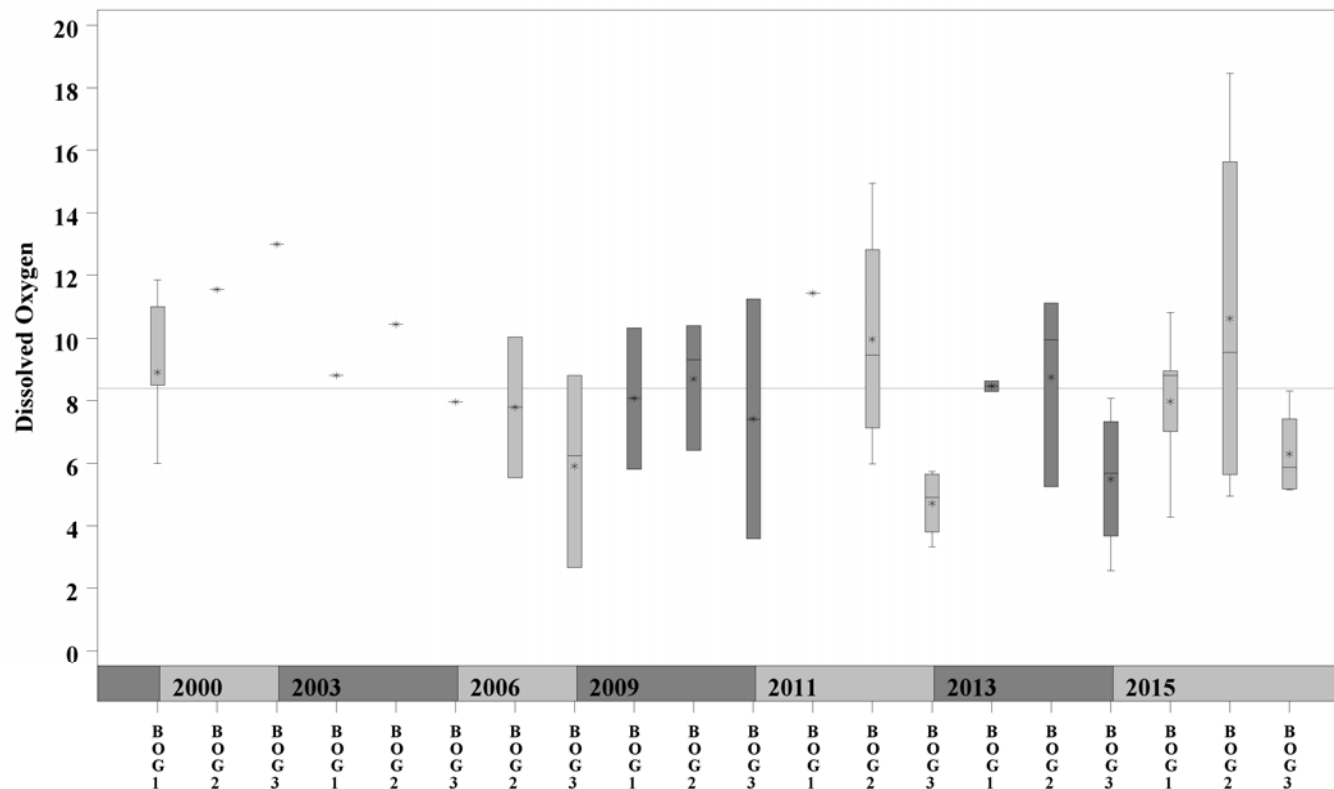
Boggy Creek (North) Watershed

Data Summary Graphs – Orthophosphate and Dissolved Oxygen (Downstream to Upstream by Year)

Parameter = ORTHOPHOSPHORUS AS P Unit = mg/L Watershed = Boggy

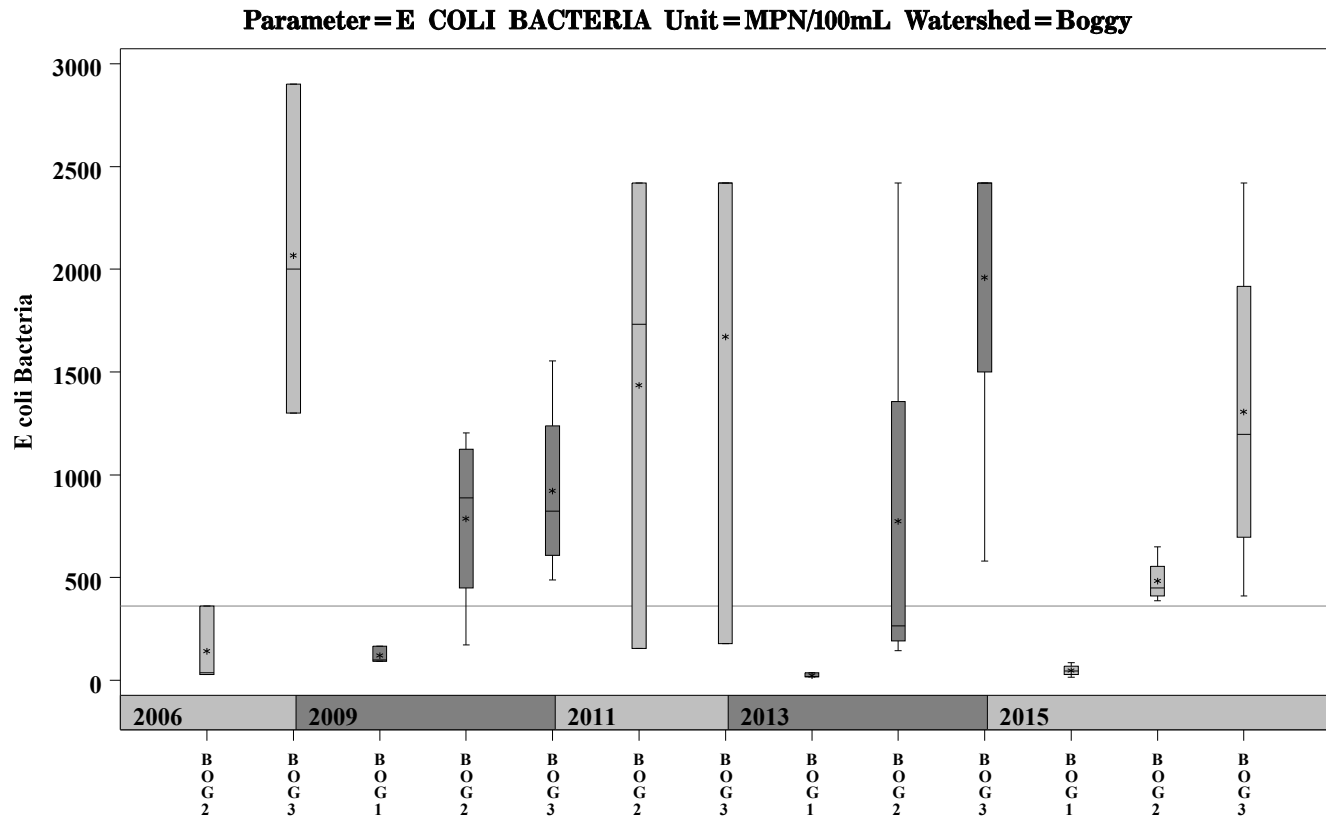


Parameter = DISSOLVED OXYGEN Unit = mg/L Watershed = Boggy



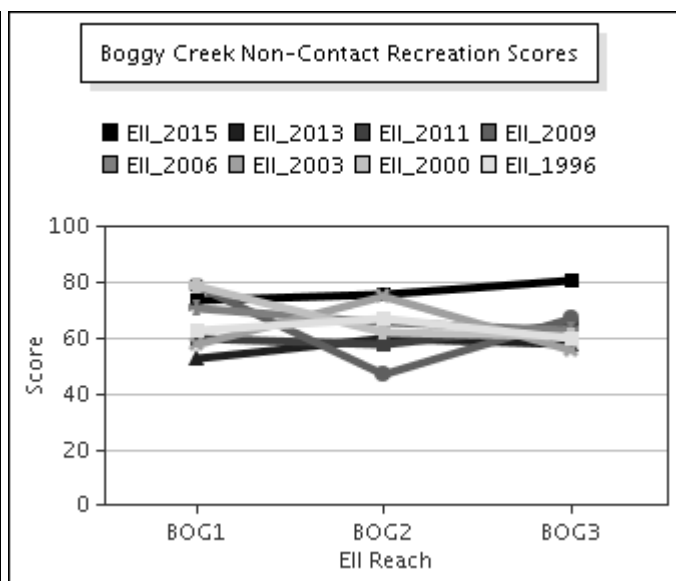
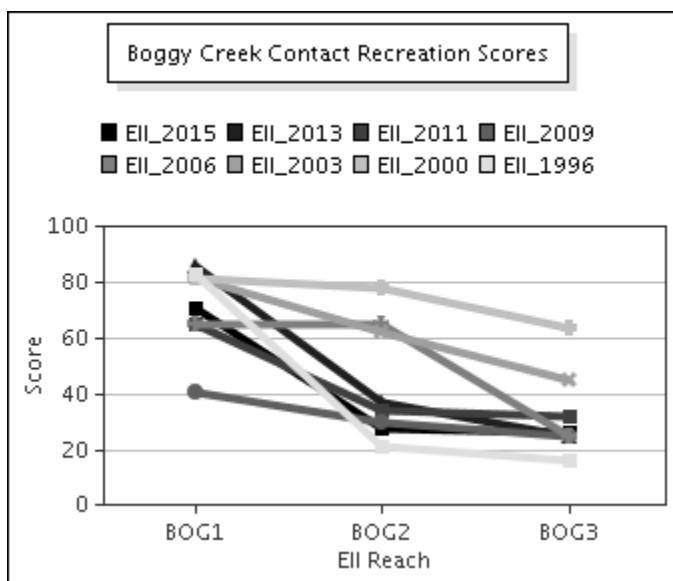
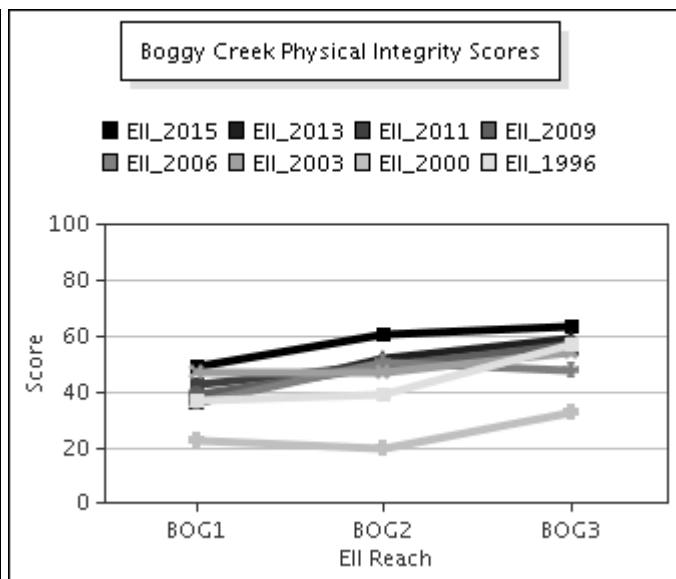
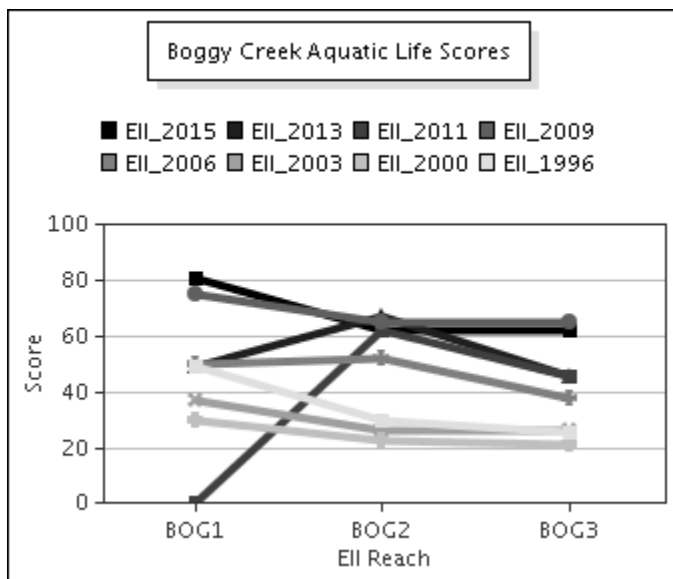
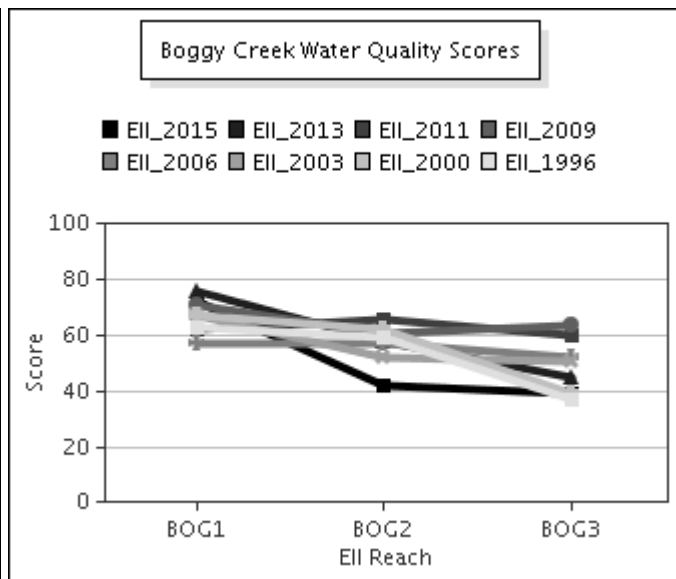
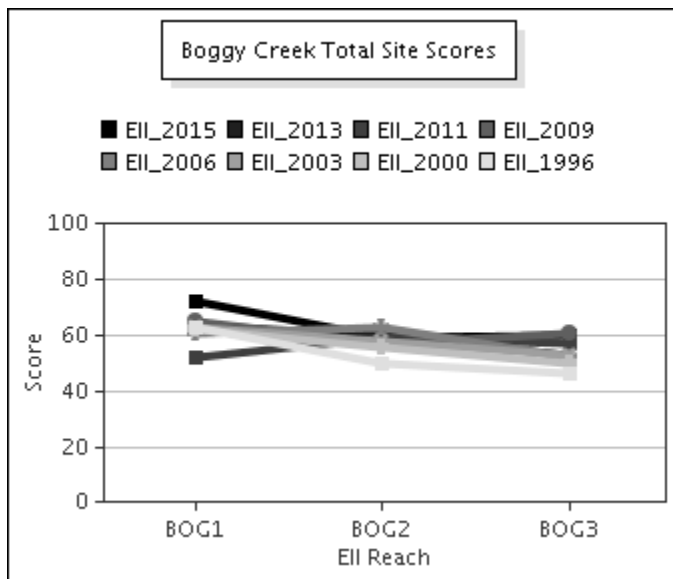
Boggy Creek (North) Watershed

Data Summary Graphs – E.coli (Downstream to Upstream by Year)



Boggy Creek (North) Watershed

Score Summary – Reach scores for each sample year



Boggy Creek (North) Watershed

Benthic Macroinvertebrates – Taxa List, Pollution Tolerance Index & Functional Feeding Group for 2015 Sample Sites (Downstream to Upstream)

Benthic Macroinvertebrates - Boggy Creek			BOG @ Manor Rd (2754) 07/08/2015 (WRE)	BOG @ Nile Rd (837) 07/08/2015 (WRE)	BOG @ Delwau (493) 05/04/2015 (WRE)
Benthic Macroinvertebrate ID	PTI	FFG			
Chimarra	2	FC	3	1	1
Camelobaetidius	4	CG	Â	Â	4
Fallceon	4	CG,SC	65	1	322
Neochoroterpes	4	CG	Â	1	7
Ostracoda	4	CG,FC	Â	9	Â
Psephenus	4	SC	Â	Â	1
Simulium	4	FC	Â	Â	59
Petrophila (Moth)	5	SC	Â	7	Â
Uvarus	5	P	Â	1	Â
Argia	6	P	17	34	Â
Cheumatopsyche	6	FC	87	Â	10
Chironomidae	6	FC,P	56	24	5
Microvelia	6	P	Â	1	Â
Tanypodinae	6	P	9	11	Â
Stenelmis	7	CG,SC	2	Â	Â
Hirudinea	8	P	Â	Â	1
Hyaella	8	CG,SH	Â	1	Â
Oligochaeta	8	CG	1	Â	Â
Physella	9	SC	1	Â	Â
Dugesia		CG,P	11	2	Â

Boggy Creek (North) Watershed

Site Photographs



493_t00-ds-02_13_2001



493-t00-ds-05-29-2009



784_t00-ds-02_13_2001



784_t00-us-02_13_2001



837_t00-ds-02_13_2001



837_t00-ds-07_06_2006

Boggy Creek (North) Watershed

Site Photographs



837_t00-us1-07_06_2006



837-t00-ur-06-02-2009



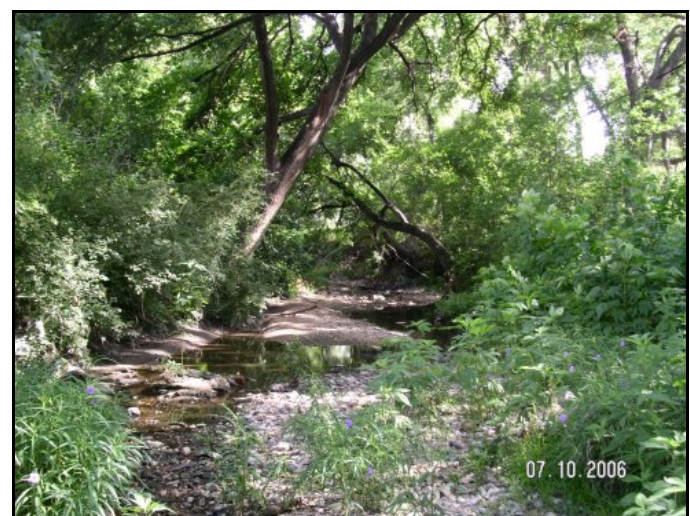
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2754_t00-us-03_14_2003



2754_t00-us1-07_10_2006