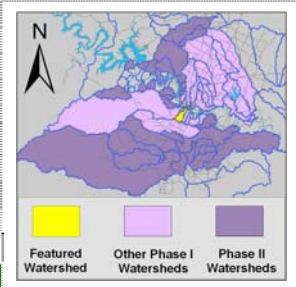


West Bouldin Creek Watershed

Watershed Overview

Catchment	Total area	3 square miles					
	Area in recharge	none					
	Creek length	4 miles					
	Receiving water	Town lake					
Demographics	2000 population	16,951					
	2030 projected population	19,337					
	30 year projected % increase	14 %					
Land Use	Impervious cover (2003 estimate)	45.9 %					
	Impervious cover (2013 estimate)	46.9 %					
Overall EII Scores	2000	2003	2006	2009	2011	2013	2015
	54	53	56	55	50	60	58



Flow Regime* for Sample Sites on West Bouldin Creek Upstream to Downstream

Site	2001		2003					2006					2009					2010	2011				2013					2015							
	Feb WQ	Feb Bio	Feb WQ	Mar WQ	Mar Bio	May WQ	Sep WQ	Dec WQ	Feb WQ	May WQ	Jul Bio	Aug WQ	Nov WQ	Feb WQ	May WQ	Jun Bio	Oct WQ	Dec WQ	Dec WQ	Mar WQ	Jun Bio	Jun Bio	Sep WQ	Jan WQ	Apr WQ	May Bio	Jun WQ	Sep WQ	Jan WQ	Apr WQ	May WQ	Jul WQ	Sep WQ		
846	B	B	B	B	B	n	n	n																											
3856									B	B	B	n	n	B	B	B	B	B	B	B	n	n	n	B	B	B	n	n	B	B			B	B	
845	B	B	B	B	B	n	n	n																											
878	B	B	B	B	B	B	B	B																											
3854									B	B	B	B	B	B	B	B	S	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
486	n																																		
2794			n	B	B	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n												
5399																																			

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

Index Scores* for West Bouldin Creek 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
WBO1	486	West Bouldin Creek @ Riverside Dr	1996		53		55	42				38
WBO2	845	West Bouldin Creek @ Guerrero Park	1996		53		45	51				37
WBO2	878	West Bouldin Creek @ Jewell	1996	76	53	87	72	47	31	37	24	61
WBO3	846	West Bouldin Creek @ S. Austin Park	1996		53		63	64				45
WBO1	486	West Bouldin Creek @ Riverside Dr	2000		80		40	19				35
WBO2	845	West Bouldin Creek @ Guerrero Park	2000	75	80	95	52	30	26	26	26	60
WBO2	878	West Bouldin Creek @ Jewell	2000	67	80	73	38	34	28	29	26	53
WBO3	846	West Bouldin Creek @ S. Austin Park	2000	60	80	76	46	44	31	25	36	56
WBO1	2794	West Bouldin @ Post Oak	2003		57		73	74	28	26	29	58
WBO2	845	West Bouldin Creek @ Guerrero Park	2003	56	57	25	80	44	29	26	31	49
WBO2	878	West Bouldin Creek @ Jewell	2003	69	57	83	58	40	31	27	34	56
WBO3	846	West Bouldin Creek @ S. Austin Park	2003	38	57	54	66	52	24	18	28	49
WBO1	2794	West Bouldin @ Post Oak	2006		52		62	75				47
WBO2	3854	West Bouldin Creek @ Oltorf Street	2006	58	52	48	77	52	69	82	56	59
WBO3	3856	West Bouldin @ Cardinal	2006	55	52	54	76	55	55	35	74	58
WBO1	2794	West Bouldin @ Post Oak	2009		70		45	65				45
WBO2	3854	West Bouldin Creek @ Oltorf Street	2009	58	70	28	73	51	77	66	88	60
WBO3	3856	West Bouldin @ Cardinal	2009	59	70	40	73	56	61	22	99	60
WBO1	2794	West Bouldin @ Post Oak	2011				43	49				37
WBO2	3854	West Bouldin Creek @ Oltorf Street	2011	56		29	67	59	54	43	65	53
WBO3	3856	West Bouldin @ Cardinal	2011	65		86	57	57				53
WBO1	5399	West Bouldin Creek @ Treadwell	2013	59	64	35	58	65	76	74	78	59
WBO2	3854	West Bouldin Creek @ Oltorf Street	2013	48	64	29	63	60	68	62	74	55
WBO3	3856	West Bouldin @ Cardinal	2013	69	64	49	76	68	63	75	51	65
WBO1	5399	West Bouldin Creek @ Treadwell	2015	55	63	43	70	67	71	71	70	62
WBO2	3854	West Bouldin Creek @ Oltorf Street	2015	46	63	27	73	48	75	93	57	55
WBO3	3856	West Bouldin @ Cardinal	2015	48	63	35	75	56	74	78	69	58

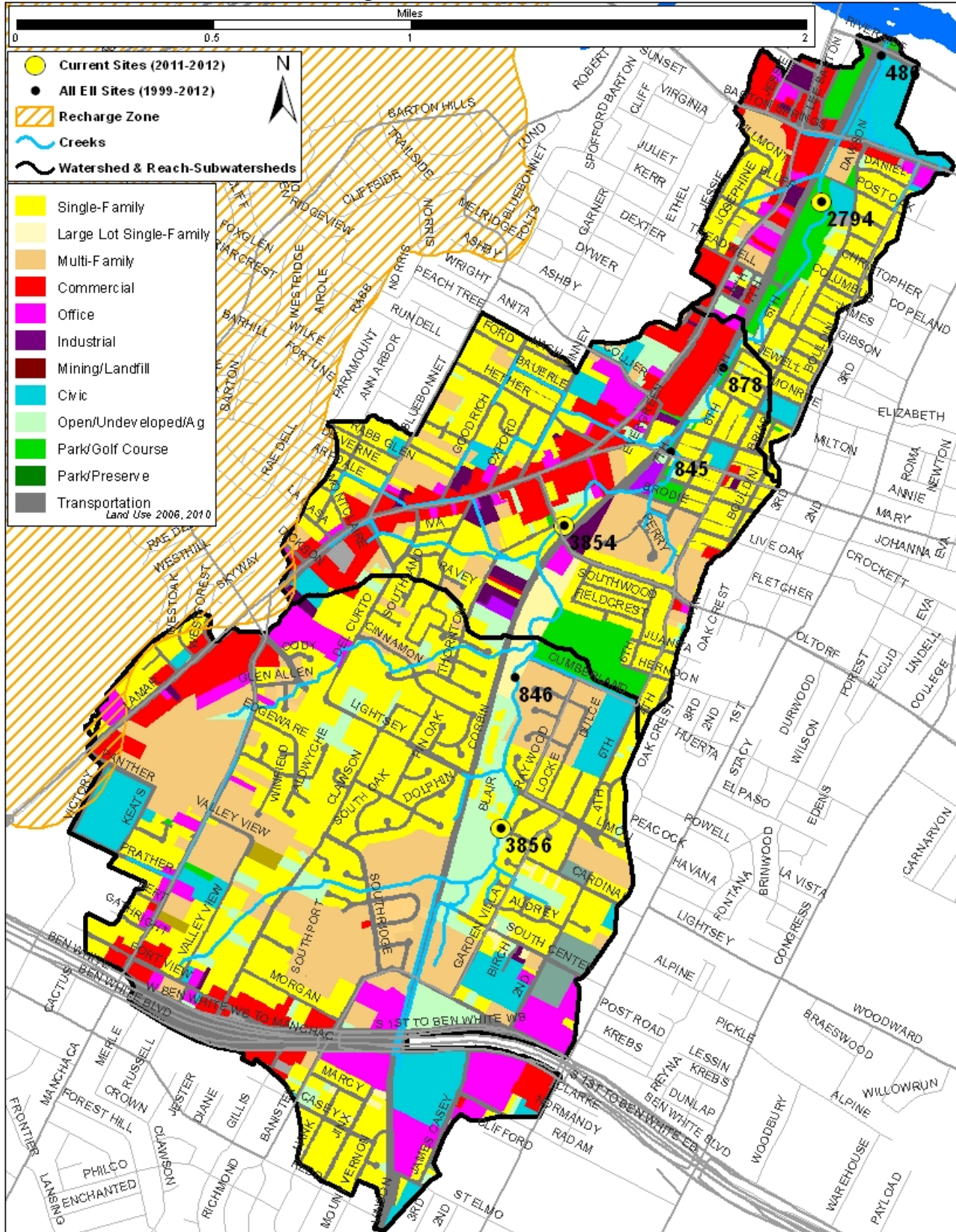
* blank cells indicate parameter was not collected, blank row indicate site was dropped

**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

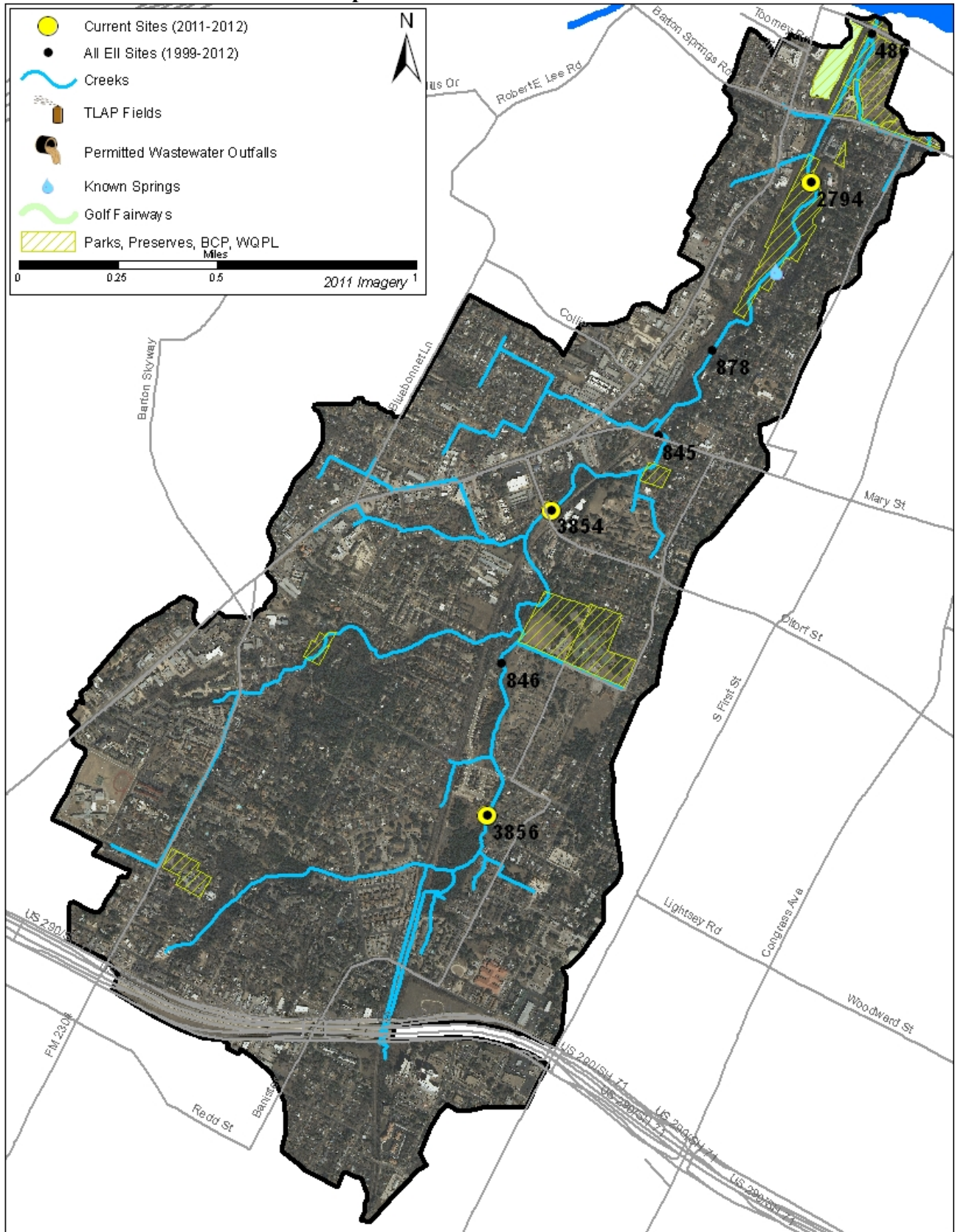
West Bouldin Creek Watershed

Land Use Map



West Bouldin Creek Watershed

Aerial Map



West Bouldin Creek Watershed

Water Quality Data – Temperature, Conductivity, pH, Dissolved Oxygen & *E. coli* for 2015 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	Temp. flag	Cond. flag	pH flag	D.O. flag	E. Coli flag
West Bouldin	5399	WBO1	01/14/2015	8.5	774	7.83	11.2	224.7
West Bouldin	5399	WBO1	04/15/2015	19.2	816	7.71	6.1	167.0
West Bouldin	5399	WBO1	05/05/2015	23.3	828	7.67	8.8	
West Bouldin	5399	WBO1	07/14/2015	26.3	847	7.59	5.1 R	155.3
WBO1 Mean				19.4	816	7.70	7.8	182.3
West Bouldin	3854	WBO2	01/14/2015	9.1	816	8.02	11.9	344.8
West Bouldin	3854	WBO2	04/15/2015	18.3	827	8.07	8.7	2419.6
West Bouldin	3854	WBO2	07/08/2015	28.8	788	8.04	10.4	
West Bouldin	3854	WBO2	07/14/2015	25.8	782	7.99	8.3 R	1203.3
West Bouldin	3854	WBO2	09/09/2015	27.3	566	7.85	5.5	980.4
WBO2 Mean				21.8	756	8.00	9.0	1237.0
West Bouldin	3856	WBO3	01/14/2015	8.6	848	7.80	11.4	81.6
West Bouldin	3856	WBO3	04/15/2015	17.3	855	7.89	7.0	378.4
West Bouldin	3856	WBO3	07/08/2015	30.6	764	8.16	12.5	
West Bouldin	3856	WBO3	07/14/2015	25.0	813	8.03	7.2 R	648.8
West Bouldin	3856	WBO3	09/09/2015	26.0	772	7.94	6.4	1119.9
WBO3 Mean				21.5	810	7.96	8.9	557.2
West Bouldin Mean				21.0	792	7.90	8.6	702.2

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	

West Bouldin Creek Watershed

Water Quality Data – Ammonia, Nitrate / Nitrite, Ortho-Phosphorus, Total Suspended Solids & Turbidity for 2015 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		
West Bouldin	5399	WBO1	01/14/2015	<J	0.008		1.59		0.027	R	<J	1.0	2.0	R	
West Bouldin	5399	WBO1	04/15/2015	<J	0.008		0.29		<J	0.004	<J	1.0		1.8	
West Bouldin	5399	WBO1	05/05/2015												
West Bouldin	5399	WBO1	07/14/2015	<J	0.008		0.52		0.017		<J	1.0		2.7	R
WBO1 Mean					0.008		0.80		0.016			1.0		2.1	
West Bouldin	3854	WBO2	01/14/2015	<J	0.008		1.32		0.026		<J	1.0		1.4	R
West Bouldin	3854	WBO2	04/15/2015		0.044		1.26		0.025		<J	2.1		1.8	
West Bouldin	3854	WBO2	07/08/2015												
West Bouldin	3854	WBO2	07/14/2015		0.021		2.00		0.016			1.0		1.8	R
West Bouldin	3854	WBO2	09/09/2015		0.020		0.39		0.066			1.9		1.2	R
WBO2 Mean					0.023		1.24		0.033			1.5		1.5	
West Bouldin	3856	WBO3	01/14/2015	<J	0.008		0.88		<J	0.004		58.2		3.1	R
West Bouldin	3856	WBO3	04/15/2015		0.038		0.71		<J	0.004		14.6		12.4	
West Bouldin	3856	WBO3	07/08/2015												
West Bouldin	3856	WBO3	07/14/2015	<J	0.008		1.92		<J	0.004		1.3		2.0	R
West Bouldin	3856	WBO3	09/09/2015	<J	0.008		<J	0.01	<J	0.004		1.3		1.8	R
WBO3 Mean					0.015		0.88		0.004			18.8		4.8	
West Bouldin Mean					0.016		0.99		0.018			7.7		2.9	

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

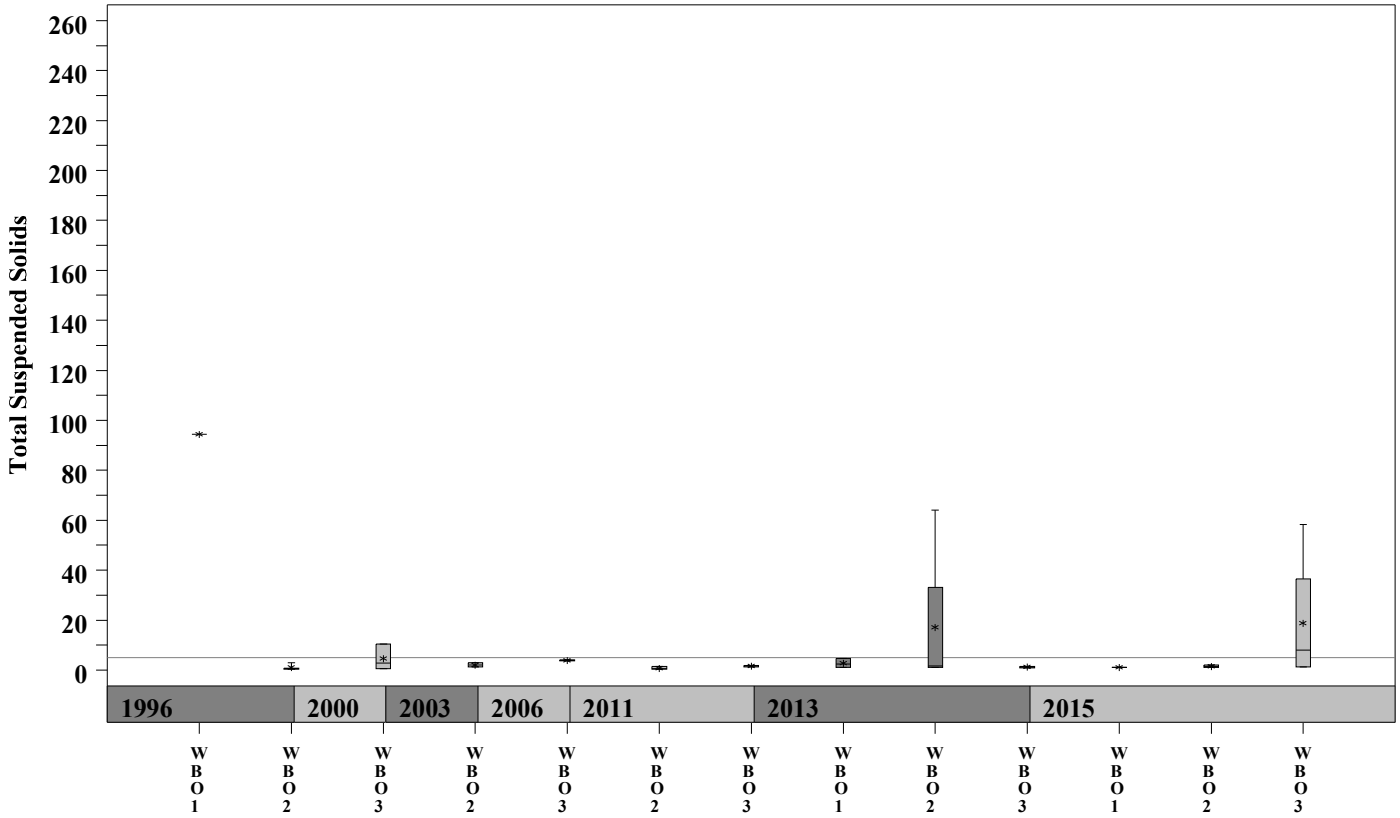
Summary Statistics for all 2015-2016 E.I.I. Sites Combined

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

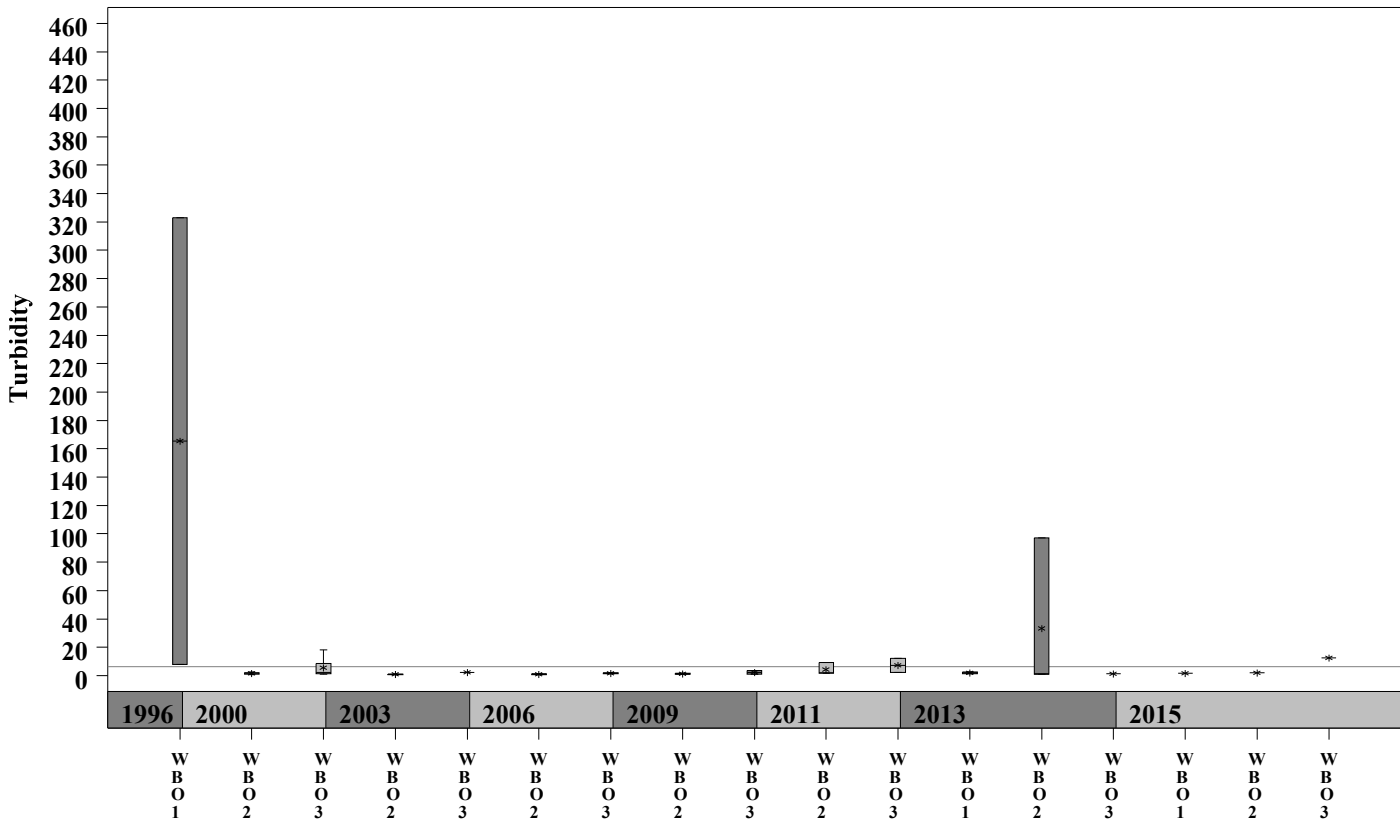
West Bouldin Creek Watershed

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

Parameter = TOTAL SUSPENDED SOLIDS Unit = mg/L Watershed = West Bouldin



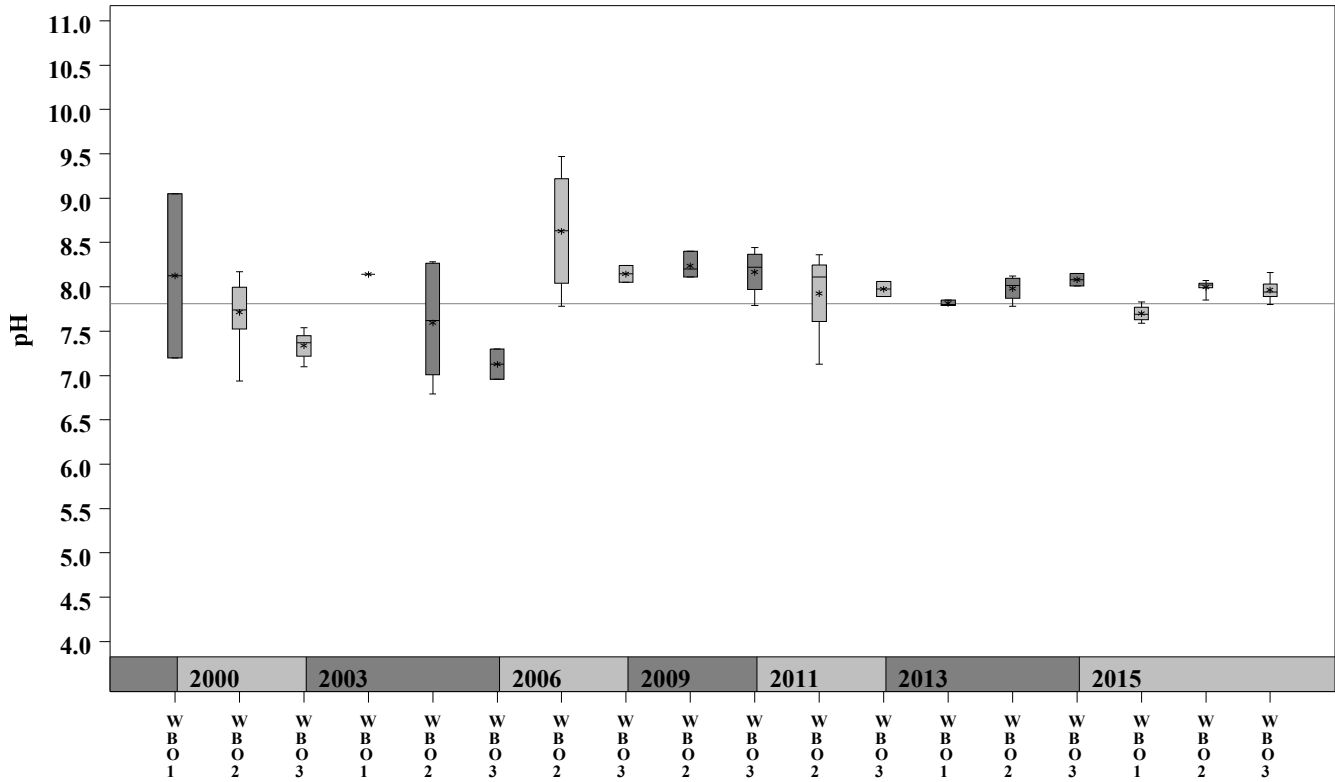
Parameter = TURBIDITY Unit = NTU Watershed = West Bouldin



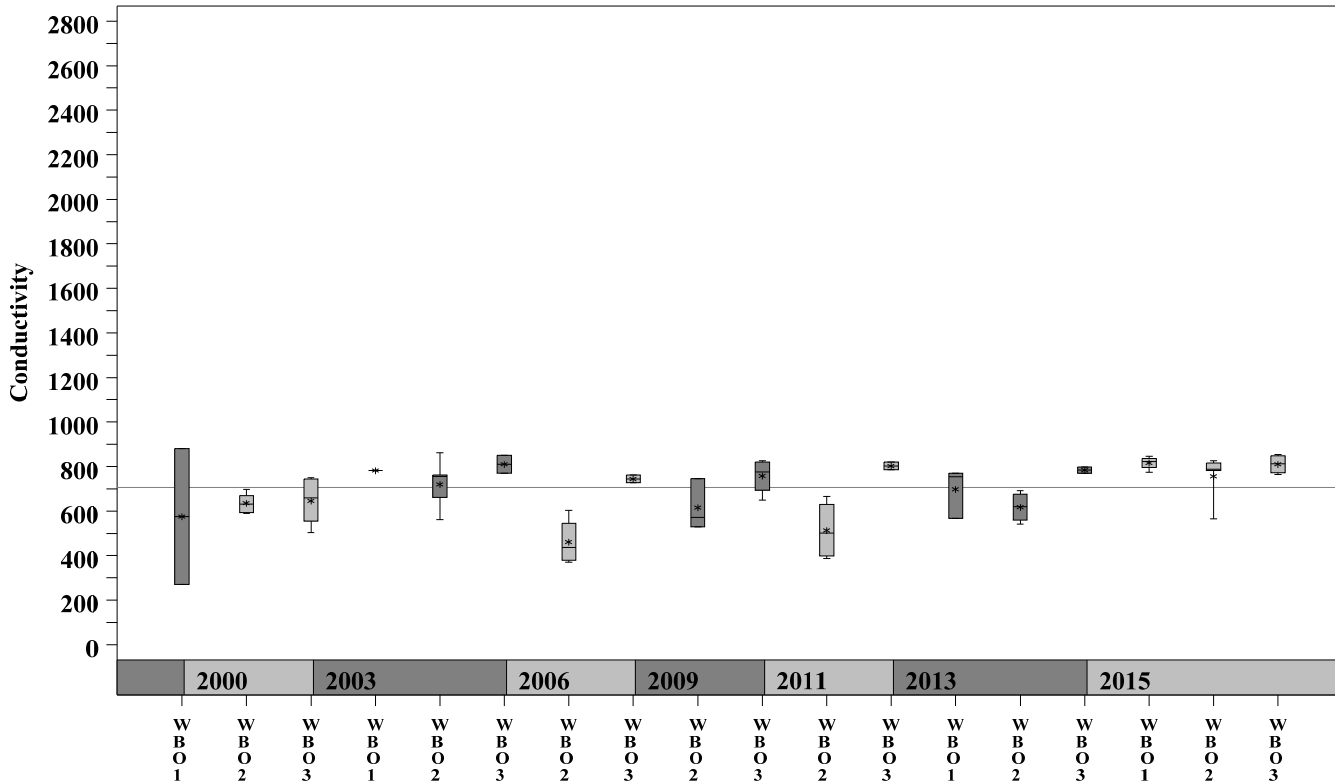
West Bouldin Creek Watershed

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

Parameter = pH Unit = Standard Units Watershed = West Bouldin



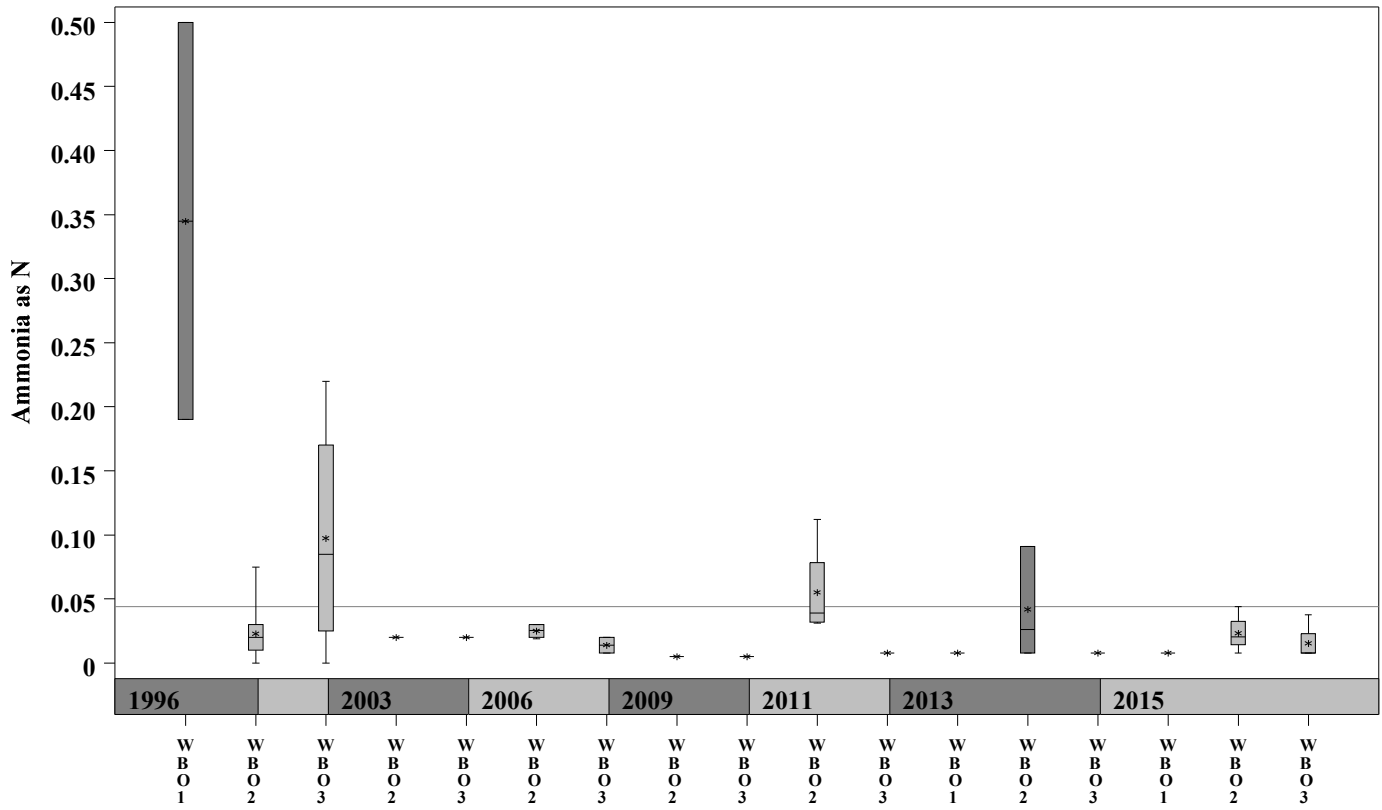
Parameter = CONDUCTIVITY Unit = uS/cm Watershed = West Bouldin



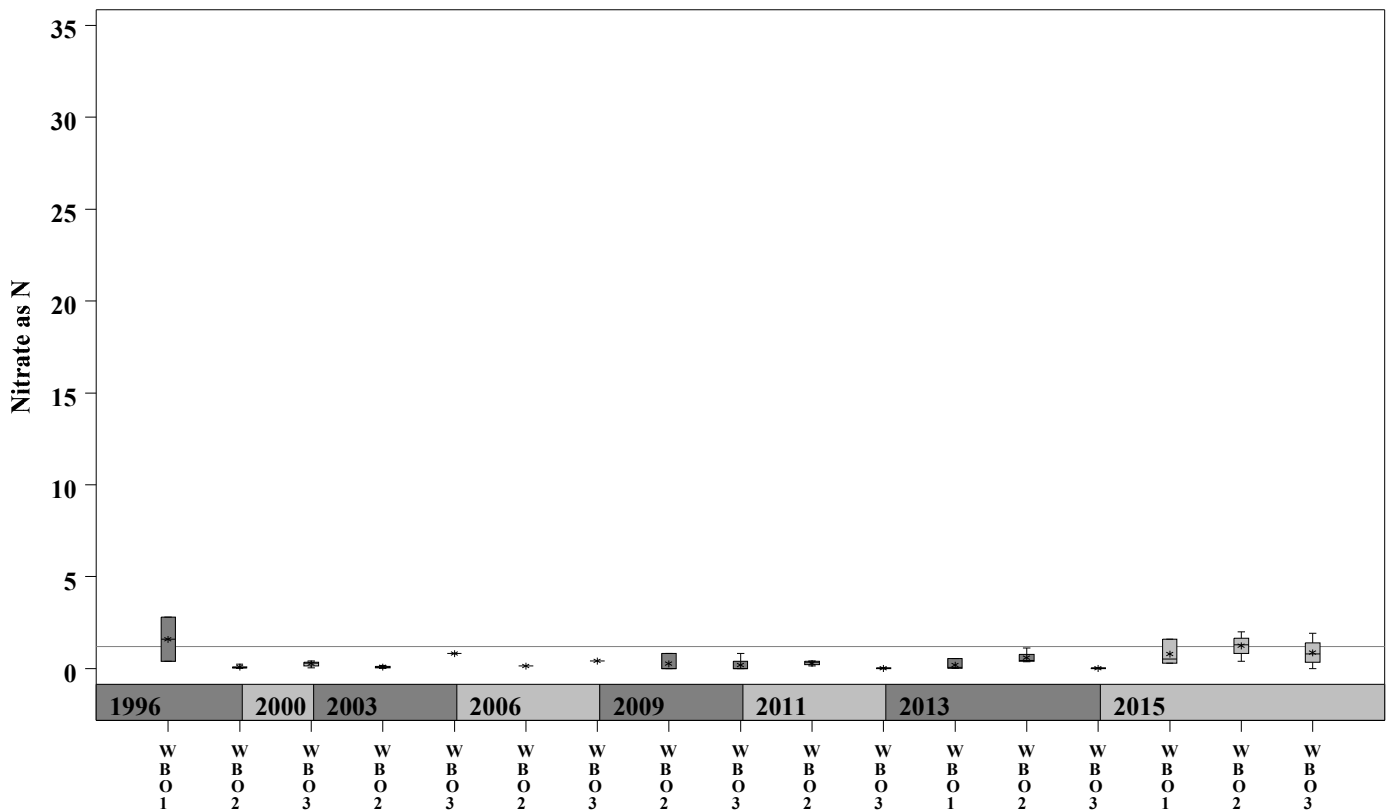
West Bouldin Creek Watershed

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

Parameter = AMMONIA AS N Unit = mg/L Watershed = West Bouldin



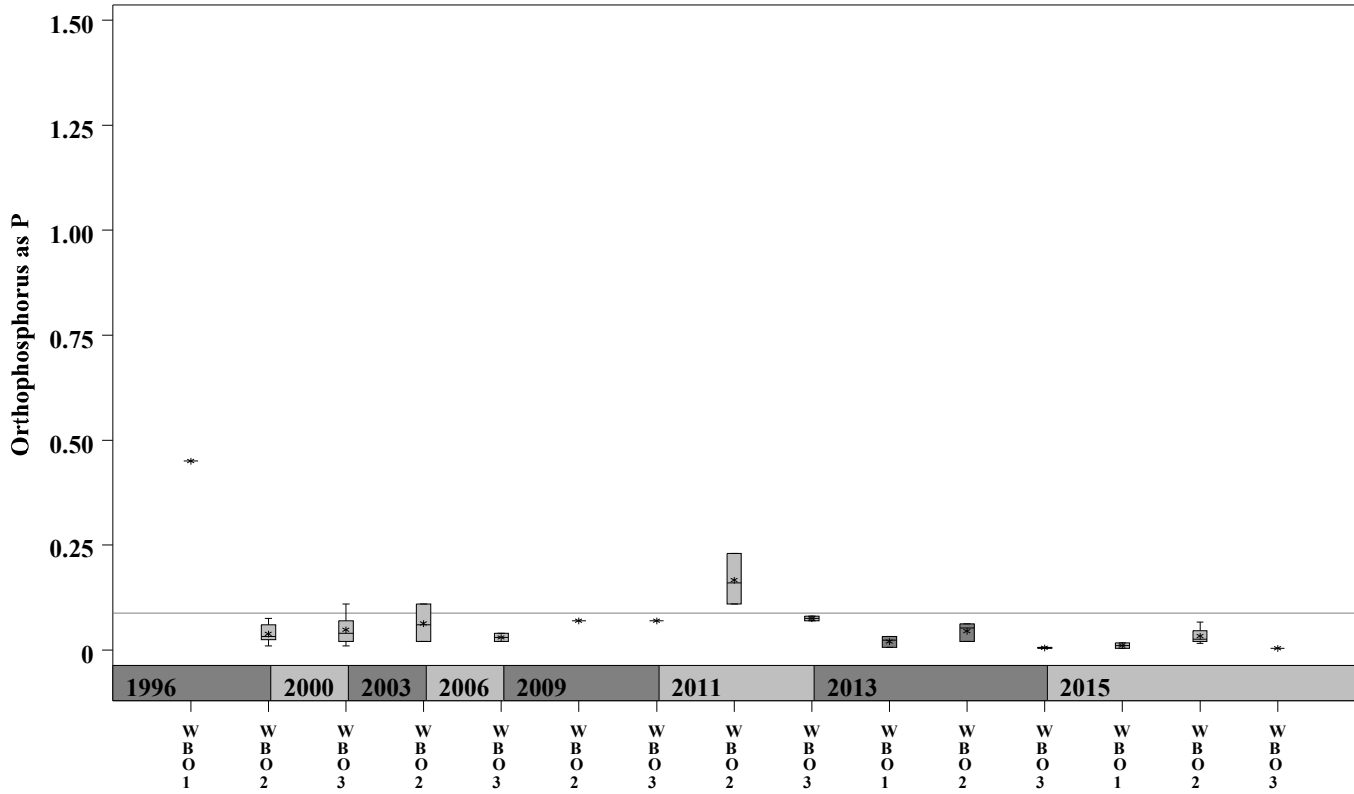
Parameter = NITRATE AS N Unit = mg/L Watershed = West Bouldin



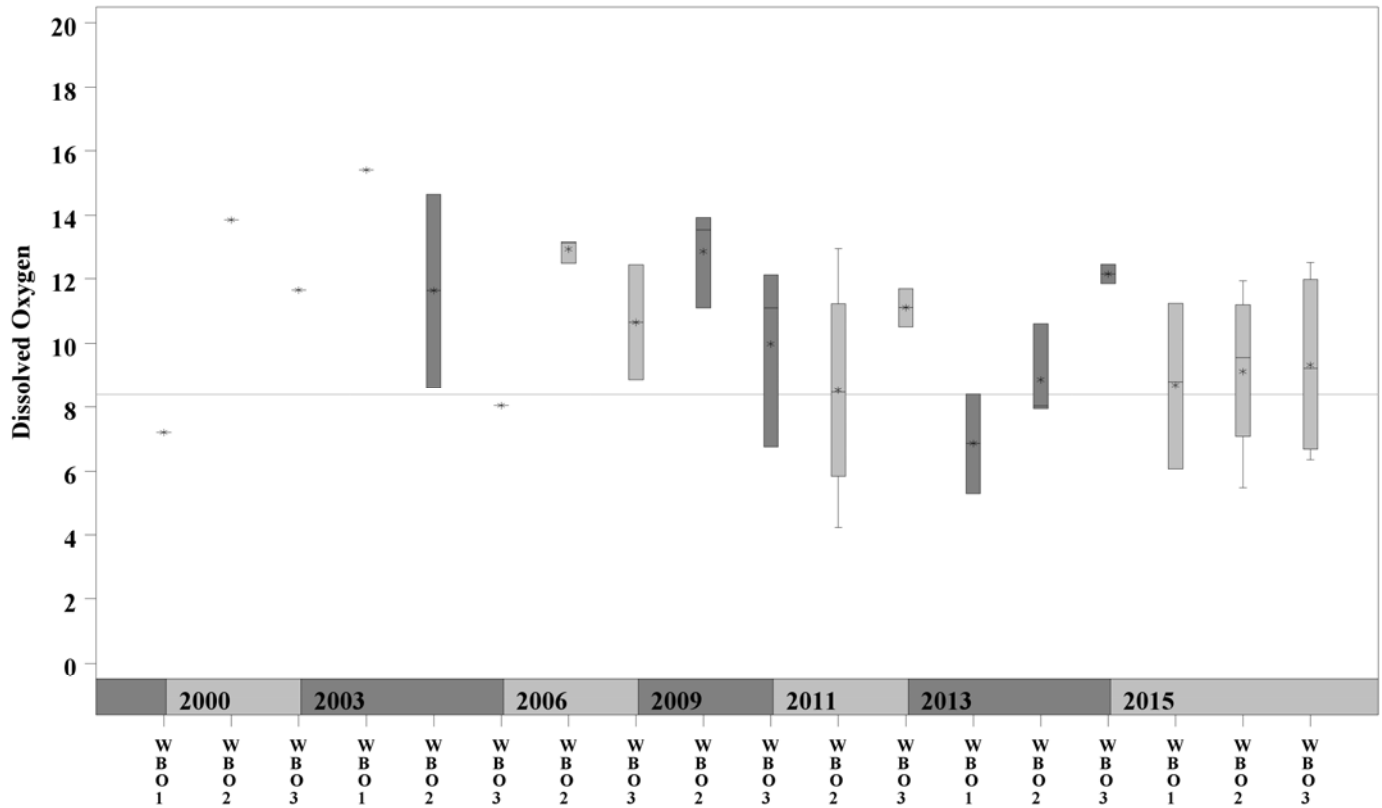
West Bouldin Creek Watershed

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

Parameter = ORTHOPHOSPHORUS AS P Unit = mg/L Watershed = West Bouldin



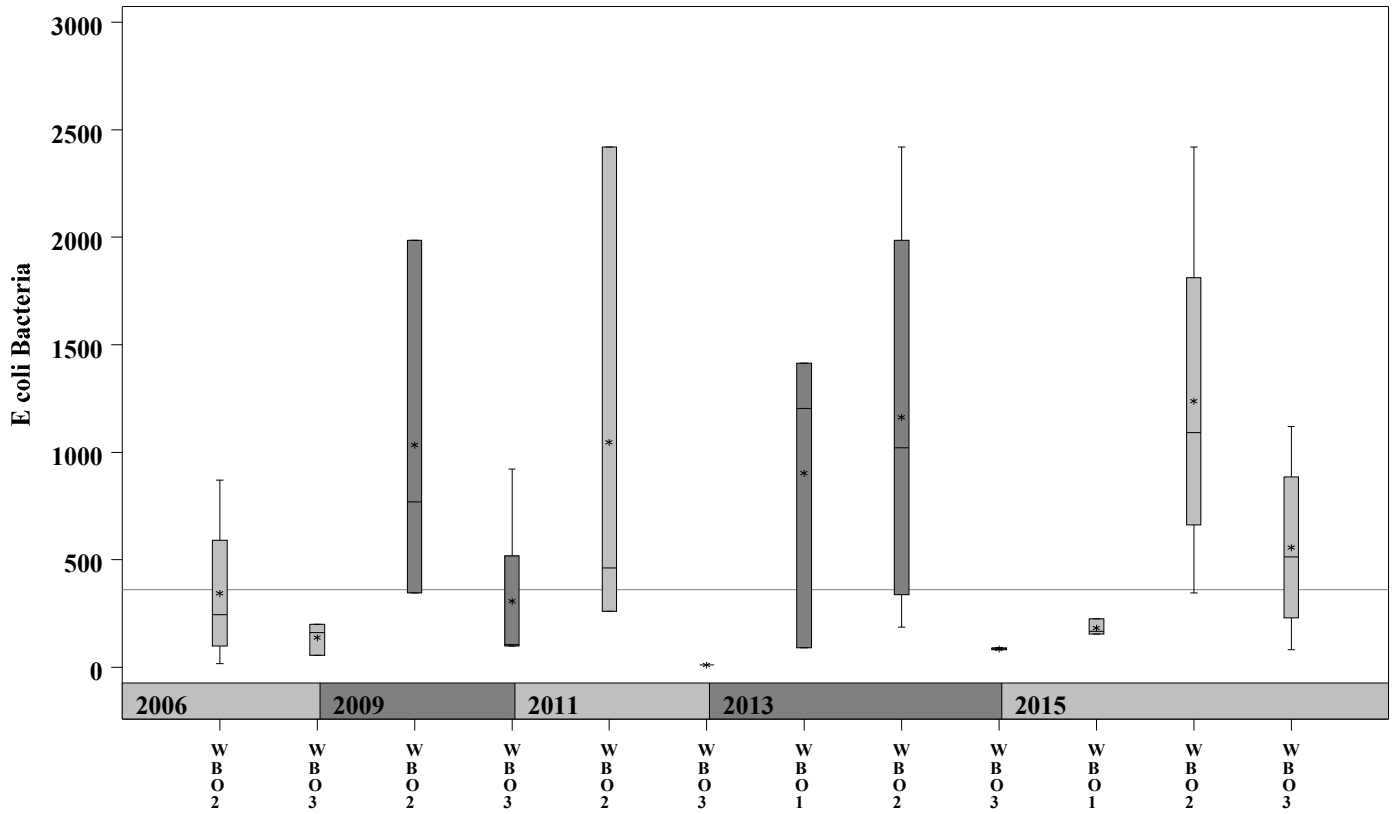
Parameter = DISSOLVED OXYGEN Unit = mg/L Watershed = West Bouldin



West Bouldin Creek Watershed

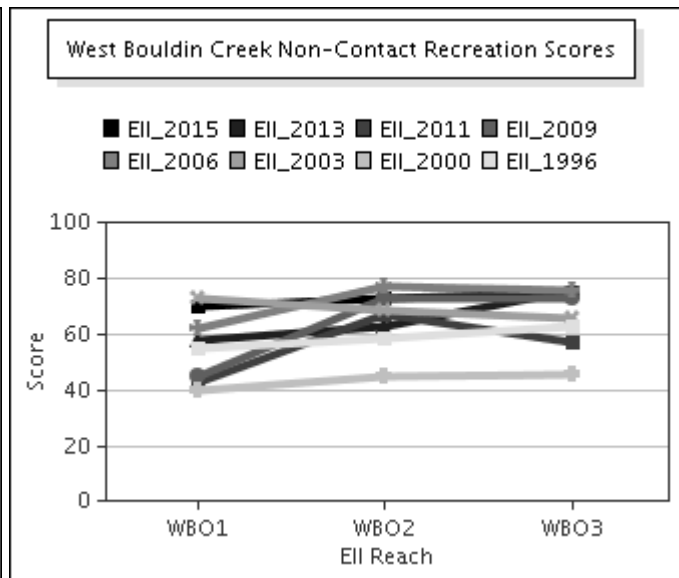
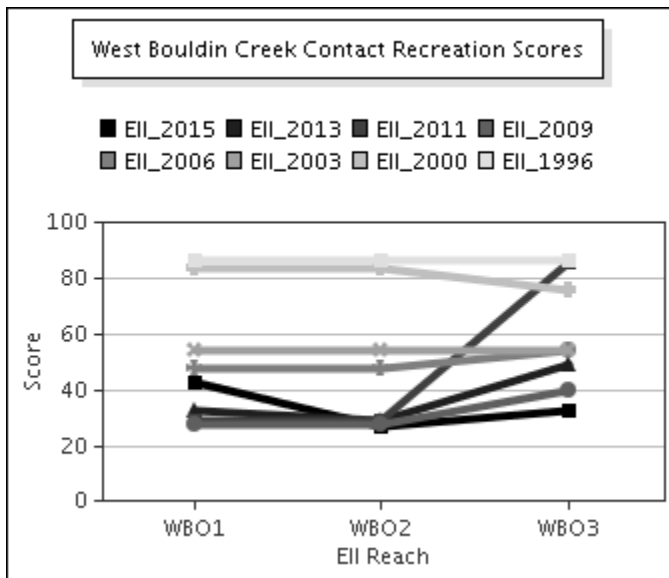
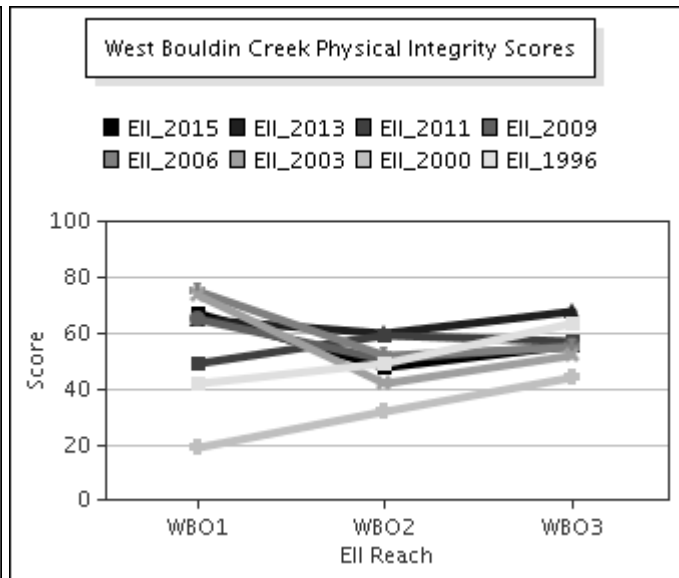
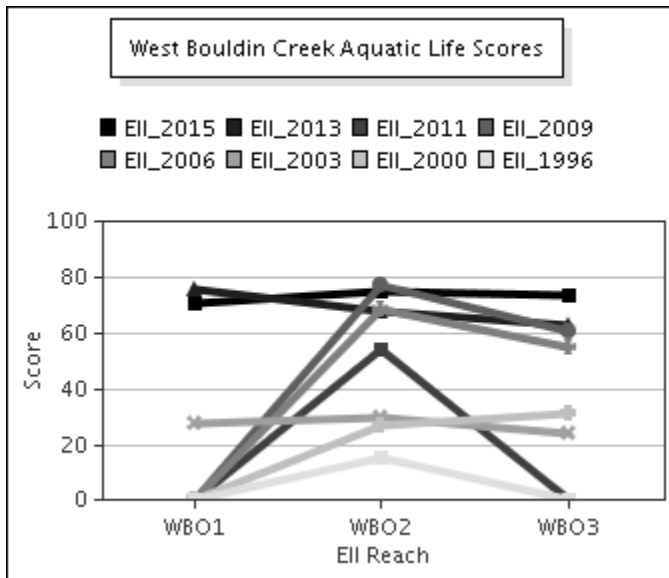
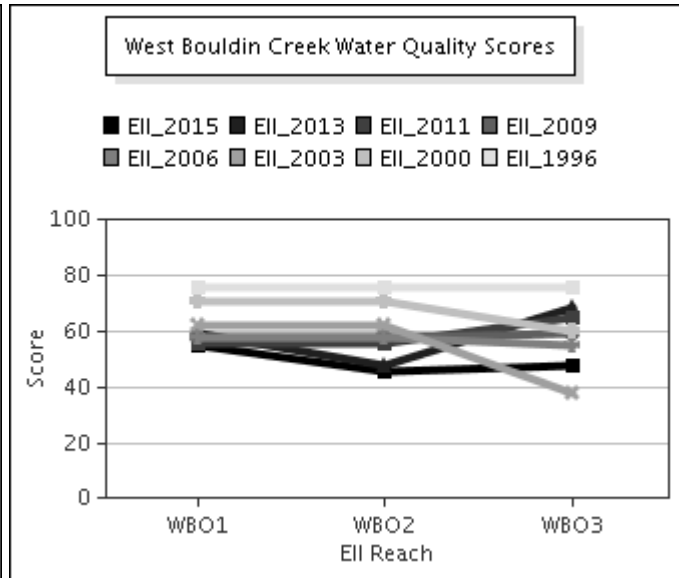
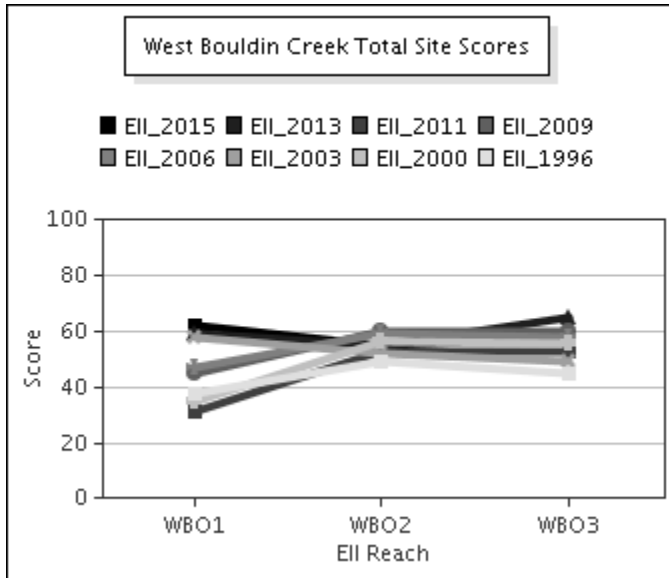
Data Summary Graphs – *E.coli* (Downstream to Upstream by Year)

Parameter = E COLI BACTERIA Unit = MPN/100mL Watershed = West Bouldin



West Bouldin Creek Watershed

Score Summary – Reach scores for each sample year



West Bouldin Creek Watershed

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

Benthic Macroinvertebrates - West Bouldin Creek			WBO @ Cardinal (3856) 07/08/2015 (WRE)	WBO @ Oltorf (3854) 07/08/2015 (WRE)	WBO @ Treadwell (5399) 05/05/2015 (WRE)
Benthic Macroinvertebrate ID	PTI	FFG			
Chimarra	2	FC	4	31	6
Hydroptila	2	PI,SC			2
Gammarus	3	CG,SH			4
Baetodes	4	SC		8	
Camelobaetidius	4	CG	9	38	
Fallceon	4	CG,SC	61	60	92
Ostracoda	4	CG,FC	1		
Simulium	4	FC		9	13
Aquarius	5	P	1		
Petrophila (Moth)	5	SC		4	
Argia	6	P	30	41	1
Brechmorhoga Mendax	6	P		6	
Cheumatopsyche	6	FC	90	72	156
Chironomidae	6	FC,P	19	21	17
Fossaria	6	SC	1		3
Hydracarina	6				2
Microvelia	6	P	1	1	
Neoporus	6	P		1	
Rhagovelia	6	P	10		
Tanypodinae	6	P	1	3	8
Ferrissia	7	SC		3	
Stenelmis	7	CG,SC	1		
Caloparyphus/Euparyphus	8	CG,SC		1	4
Hirudinea	8	P	1	1	
Oligochaeta	8	CG	1	1	
Copelatus	9	P	1		
Physella	9	SC	11		110
Dugesia		CG,P	2	14	5

West Bouldin Creek Watershed

Site Photographs



3856_t00-us-06_03_2009



3856_t00-ds-06_03_2009



846_t00-us-03_10_2003



846_t00-ds-03_10_2003



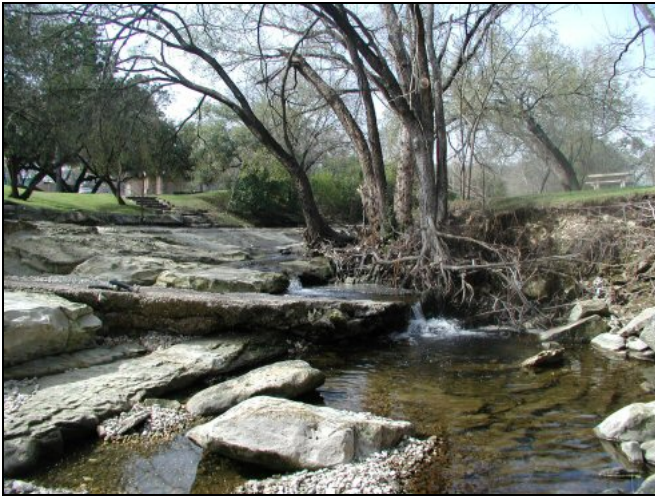
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3854_t00-ds-07_11_2006

West Bouldin Creek Watershed

Site Photographs



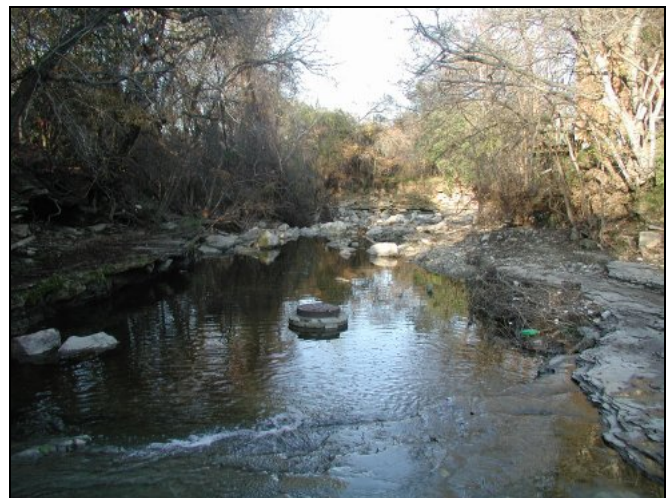
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845_t00-ds-03_10_2003



878_t00-ur-02_12_2001



878_t00-ds-12_18_2000



2794_t00-us-06_03_2009



2794_t00-ds-07_11_2006