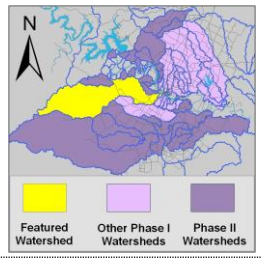
Barton Creek Watershed

Summary Sheet

Catchment	Total area	108.7 square miles				
	Area in recharge	7.8 square miles				
	Creek length	49.5 miles				
	Receiving water	Town Lake				
Demographics	2000 population	35,792				
	2030 projected population	52,000				
	30 year projected % increase	145 %				
Land Use	Impervious cover (2003 & 2013 estimates)	Yr 2003 = 3.8%			Yr 2013 = 8.0%	
Overall EII Scores	2000	2003	2006	2009	2011	2013
	77	87	75	77	77	79



Flow Regime* for Sample Sites on Barton Creek

Site	Site Name	2003						2004		2006					2009					2010	2011				2013					
		Feb	Mar	Mar	May	Sep	Dec	May	May	Feb	May	Jul	Aug	Nov	Feb	May	Jun	Oct	Dec	Dec	Mar	Jun	Jun	Sep	Jan	Apr	May	Jun	Jun	Sep
		WQ	WQ	Bio	WQ	WQ	WQ	WQ	Bio	WQ	WQ	Bio	WQ	WQ	WQ	WQ	Bio	WQ	WQ	WQ	WQ	WQ	Bio	WQ	WQ	WQ	Bio	WQ	Bio	WQ
44	Stark														n	n	n	B	B	B	B	B	B	n	B	B	B	B		B
46	Shield		B	B				B	B						n	n	n	B	B	B	B	B	B	n	B	B	B	B		n
48	Hwy71 ds LBA	B	B	B	B	B	B			B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		B	B	B
49	Ogletree	B	B	B	B	B	n			B		B	B							B	B	B	B	n	B	B		B	B	B
50	Leif Johnson														B	B	B	B	B											
51	Lost Ck									B	B	B	B	B	B	B	B	B	B	B	B	B	B	n	B	B		B	B	B
88	350m ds Lost Ck	B	B	B	B	B	B																							
879	btwn dam us BSP	B	B	B	B	B	n			n	B	n	n	n	n	n	n	B	B	B	B	B	n	n	n	n		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 Barton Creek Sites by Year

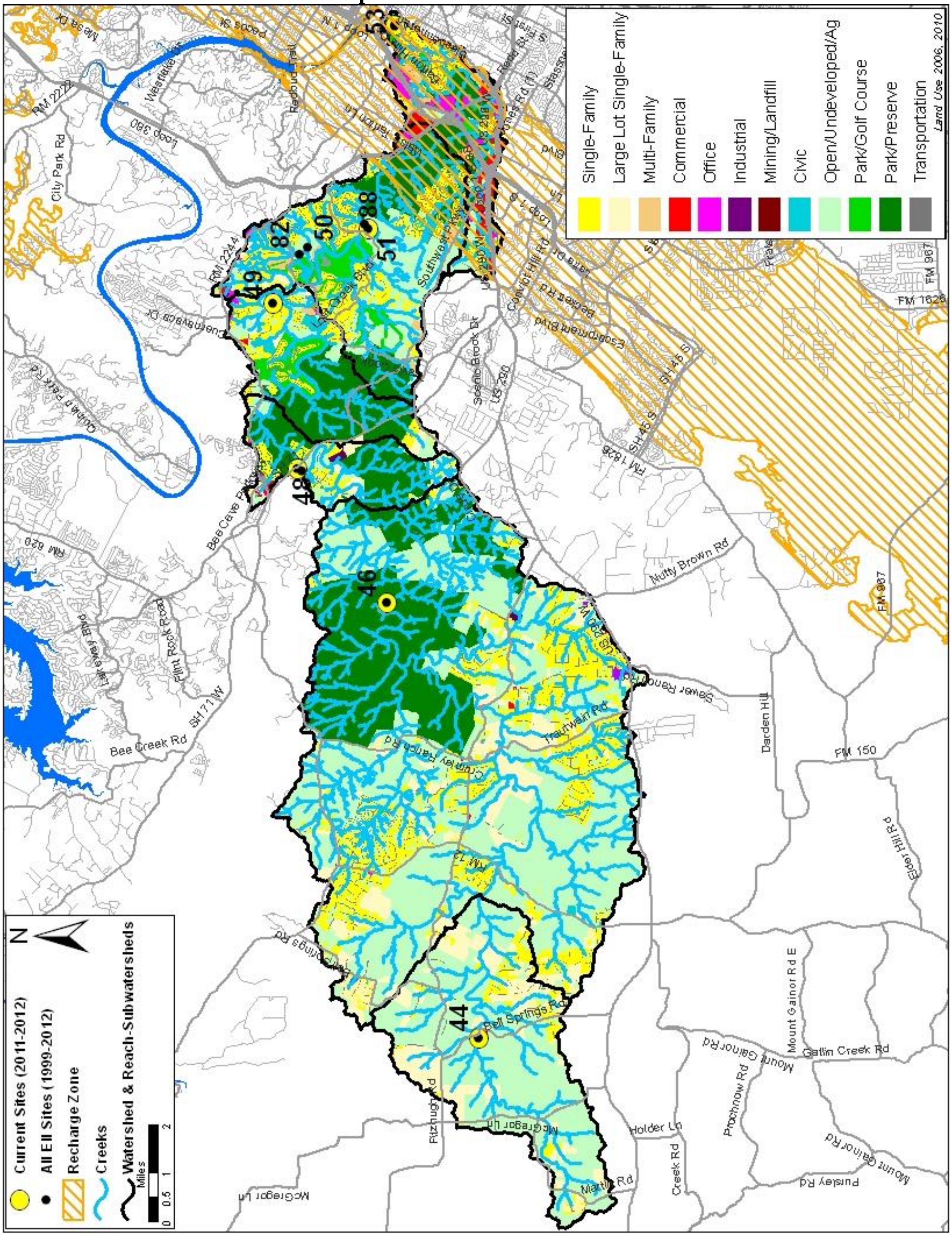
Reach	Site	Site Name	Year	Water Quality	Sediment **	Contact Rec.	Non-Contact Rec.	Physical Integrity	Aquatic Life	Benthic subindex	Diatom subindex	**Total EII Score**
BAR1	53	Barton Creek US of Barton Spring Pool	2000	74	65	99	81	55	69	45	93	74
BAR2	88	Barton Creek 350m ds of Lost Creek Blvd	2000	70	65	91	74	61	91	81	100	75
BAR3	49	Barton Creek @ Ogletree Pool	2000	73	65	97	90	62	84	76	91	79
BAR4	78	Barton Crk @ Hwy 71 us Little Barton (BC0)	2000	78	65	87	95	87	89	87	91	79
BAR5	46	Barton Creek @ Shield Ranch Pool	2000						92	90	94	92
BAR1	879	Barton Creek Between Dams US of Pool	2003	62	70	92	96	81	10	100	100	84
BAR2	88	Barton Creek 350m ds of Lost Creek Blvd	2003	75	70	97	93	95	81	72	90	85
BAR3	49	Barton Creek @ Ogletree Pool	2003	84	70	99	99	92	89	84	93	89
BAR4	48	Barton Creek @ Hwy 71 ds of Little Barton	2003	82	70	95	98	88	94	87	100	88
BAR1	879	Barton Creek Between Dams us of Pool	2006	68	75	50	60	62				53
BAR2	51	Barton Cree ds of Lost Creek Blvd	2006	59	75	93	82	86	88	81	94	81
BAR3	49	Barton Creek @ Ogletree Pool	2006	73	75	91	91	88	97	96	97	86
BAR4	48	Barton Creek @ Hwy 71 ds of Little Barton	2006	73	75	62	92	80	98	96	99	80
BAR1	879	Barton Creek Between Dams US of Pool	2009	67	82	67	47	71	54	54		65
BAR2	51	Barton Creek ds of Lost Creek Blvd	2009	75	82	88	86	72	97	100	93	83
BAR3	50	Barton Creek @ Leif Johnson Pool	2009	74	82	82	93	77	97	100	94	84
BAR4	48	Barton Creek @ Hwy 71 ds of Little Barton	2009	70	82	71	79	75	10	100	100	80
BAR5	46	Barton Creek @ Shield Ranch Pool	2009	69	82	60	72	83	74	74		73
BAR6	44	Barton Creek @ Stark Pool	2009	75	82	53	68	72	92	92		74
BAR1	879	Barton Creek Between Dams us of Pool	2011	60	70	72	58	77	68	48	87	68
BAR2	51	Barton Creek DS of Lost Creek Blvd	2011	68	70	66	84	82	92	97	87	77
BAR3	49	Barton Creek @ Ogletree Pool	2011	80	70	91	86	83	88	100	75	83
BAR4	48	Barton Creek @ Hwy 71 ds of Little Barton	2011	79	70	84	91	90	10	100	100	86
BAR5	46	Barton Creek @ Shield Ranch Pool	2011	81	70	79	88	72	91	90	91	80
BAR6	44	Barton Creek @ Stark Pool	2011	68	70	60	88	79	54	71	36	70
BAR1	879	Barton Creek Between Dams Upstream of Pool	2013	56	75	41	67	68	67	40	93	62
BAR2	51	Barton Creek Downstream of Lost Creek Blvd	2013	68	75	71	98	86	99	97	100	83
BAR3	49	Barton Creek @ Ogletree Pool	2013	80	75	94	99	92	97	100	93	90
BAR4	48	Barton Creek @ Hwy 71 Downstream of Little	2013	70	75	73	99	89	99	100	97	84
BAR5	46	Barton Creek @ Shield Ranch Pool	2013	76	75	78	100	92	93	94	91	86
BAR6	44	Barton Creek @ Stark Pool	2013	68	75	49	90	84	61	82	39	71

* 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

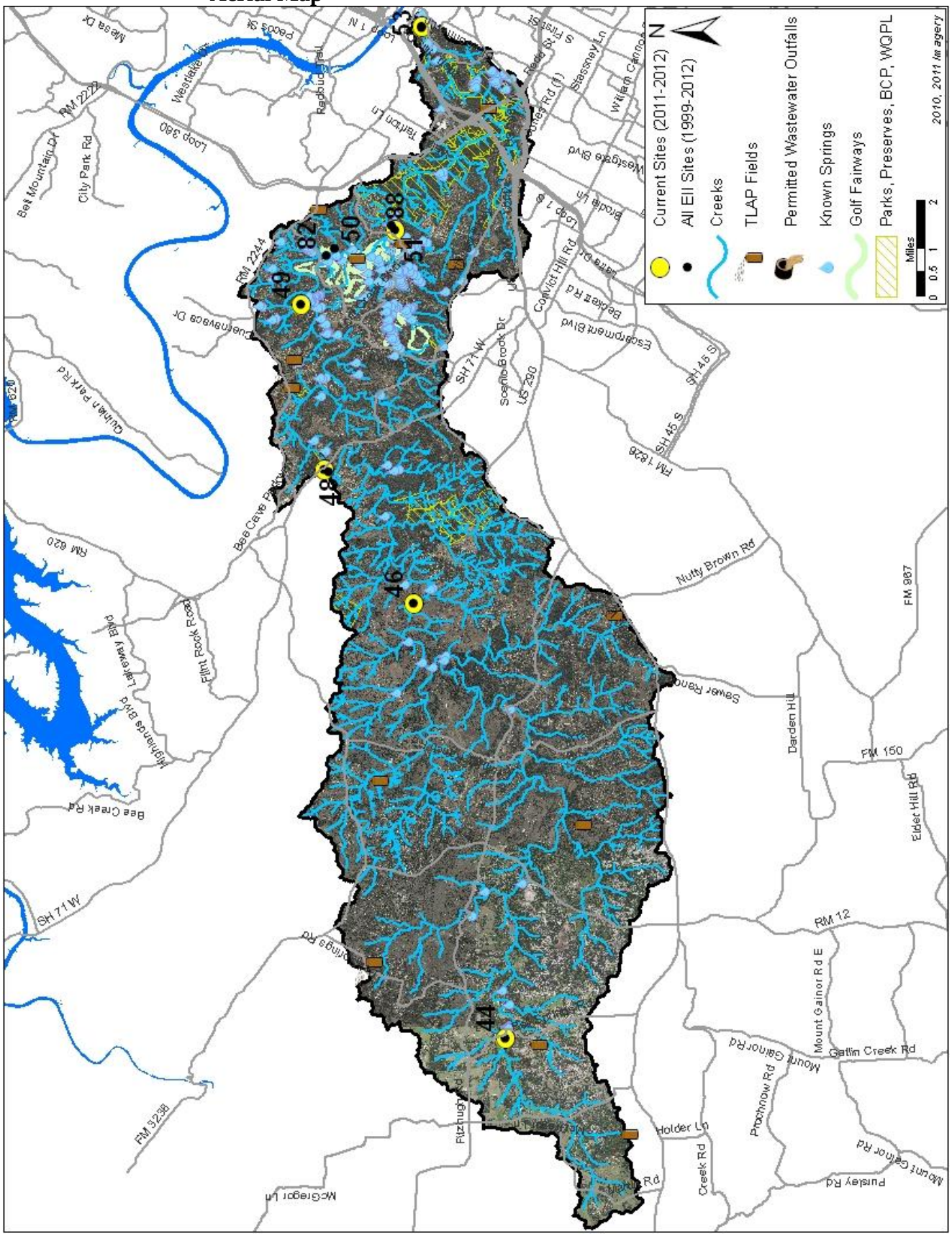
Barton Creek Watershed

Land Use Map



Barton Creek Watershed

Aerial Map



Barton Creek Watershed

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

Qualifiers to the left of value:			Qualifiers to the right of value:	
	>	greater than	(*blank*)	Useable
	<	less than	S	Exceeds standard range
	< J	less than detection limit	R	Rejected, failed QC
	J	Estimated		

Site Name	Site #	Reach	Date	Temp. <>	Value	flag	Cond. <>	Value	flag	pH <>	Value	flag	D.O. <>	Value	flag	*E.coli* <>	Value	flag
Barton us Barton Springs Pool	879	BAR1	06/26/2013		23.5			664			7.15			4.4	R		219.0	
Barton us Barton Springs Pool	879	BAR1	09/26/2013		23.5			570			7.50			5.8			214.0	
Site 879 Mean					23.5			617			7.33			5.1			216.5	
Barton ds Lost Creek Blvd	51	BAR2	01/22/2013		12.4			736			8.19			11.3			20.0	
Barton ds Lost Creek Blvd	51	BAR2	04/24/2013		18.2			766			7.88			8.7			37.0	
Barton ds Lost Creek Blvd	51	BAR2	06/26/2013		28.8			813			7.73			6.4	R		48.7	
Barton ds Lost Creek Blvd	51	BAR2	09/26/2013		25.2			662			7.82			7.2			68.3	
Site 51 Mean					21.1			744			7.91			8.4			43.5	
Barton @ Ogletree Pool	49	BAR3	01/22/2013		12.3			653			8.03			9.7			4.0	
Barton @ Ogletree Pool	49	BAR3	04/24/2013		18.3			718			7.94			7.6			13.0	
Barton @ Ogletree Pool	49	BAR3	06/26/2013		29.5			756			7.71			5.1	R		1.0	
Barton @ Ogletree Pool	49	BAR3	09/26/2013		25.6			644			7.75			5.7			23.8	
Site 49 Mean					21.4			693			7.86			7.0			10.5	
Barton @ HWY 71 ds Little Barton	48	BAR4	01/22/2013		12.6			804			8.27			11.9			37.0	
Barton @ HWY 71 ds Little Barton	48	BAR4	04/24/2013		17.3			734			7.85			8.7			14.0	
Barton @ HWY 71 ds Little Barton	48	BAR4	06/26/2013		28.7			735			7.89			7.3	R		42.8	
Barton @ HWY 71 ds Little Barton	48	BAR4	09/26/2013		23.8			681			7.96			7.8			105.0	
Site 48 Mean					20.6			738			7.99			8.9			49.7	
Barton @ Shield Ranch	46	BAR5	01/22/2013		12.9			695			7.93			8.9			1.0	
Barton @ Shield Ranch	46	BAR5	04/24/2013		19.0			694			7.67			6.9			328.0	
Barton @ Shield Ranch	46	BAR5	06/26/2013		28.5			782			7.38			1.7	R		5.1	
Site 46 Mean					20.1			724			7.66			5.9			111.4	
Barton @ Stark Pool	44	BAR6	01/22/2013		12.2			633			7.66			7.7			6.0	
Barton @ Stark Pool	44	BAR6	04/24/2013		14.9			644			7.42			6.4		>	2420.0	
Barton @ Stark Pool	44	BAR6	06/26/2013		25.5			667			7.56			3.6	R		83.6	
Barton @ Stark Pool	44	BAR6	09/26/2013		23.1			600			7.53			3.8			1730.0	
Site 44 Mean					18.9			636			7.54			5.4			1059.9	
Watershed Mean					20.7			698			7.75			7.0			258.2	

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

Summary Statistics for all 2013 – 2014 E.I.I. Sites Combined.					
Parameter	2013-2014 Average	2013-2014 Minimum	2013-2014 Maximum	1 Standard Deviation Above	1 Standard Deviation Below
Temperature (C°)	19.6	8.6	34.0	25.8	
Conductivity (uS/cm)	711	107	1783	942	
pH (Standard units)	7.86	6.96	8.97	8.19	7.52
D.O. (mg/l)	8.1	1.2	30.5	11.4	4.8
E.coli. (col/100ml)	435	1	4840	1127	

Barton Creek 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 value:			Qualifiers to the right of value:		
	>	greater than		(*blank*)	Useable
	<	less than		S	Exceeds standard range
	< J	less than detection limit		R	Rejected, failed QC
	J	Estimated			

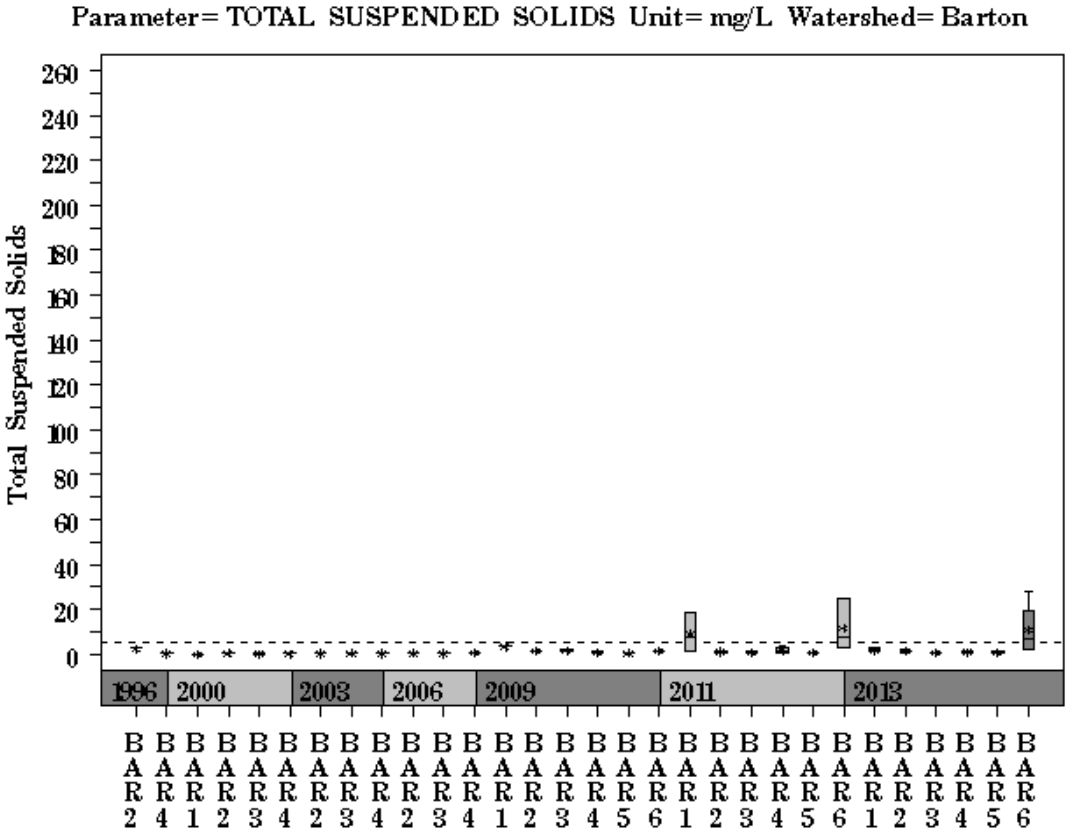
				NH3-N			NO3/NO2			Ortho-P			T.S.S.			Turb.		
Site Name	Site #	Reach	Date	< >	Value	flag	< >	Value	flag	< >	Value	flag	< >	Value	flag	< >	Value	flag
Barton us Barton Springs Pool	879	BAR1	06/26/2013		0.034			0.75		<J	0.004			1.3			1.1	
Barton us Barton Springs Pool	879	BAR1	09/26/2013	<J	0.008			0.28		<J	0.004			2.7			2.4	
Site 879 Mean					0.021			0.51			0.004			2.0			1.8	
Barton ds Lost Creek Blvd	51	BAR2	01/22/2013	<J	0.008			0.53		<J	0.004		<J	1.0			0.4	
Barton ds Lost Creek Blvd	51	BAR2	04/24/2013	<J	0.008	R		0.10		<J	0.004			1.4			1.1	R
Barton ds Lost Creek Blvd	51	BAR2	06/26/2013		0.035			0.03		<J	0.004			1.9			1.0	
Barton ds Lost Creek Blvd	51	BAR2	09/26/2013		0.015			0.05		<J	0.004			1.6			3.0	R
Site 51 Mean					0.017			0.18			0.004			1.5			1.4	
Barton @ Ogletree Pool	49	BAR3	01/22/2013	<J	0.008			0.41		<J	0.004		<J	1.0			0.4	
Barton @ Ogletree Pool	49	BAR3	04/24/2013	<J	0.008	R		0.10		<J	0.004		<J	1.0			0.5	R
Barton @ Ogletree Pool	49	BAR3	06/26/2013	<J	0.008			0.05		<J	0.004			1.0			1.3	
Barton @ Ogletree Pool	49	BAR3	09/26/2013	<J	0.008		<J	0.01		<J	0.004		<J	1.1			1.6	R
Site 49 Mean					0.008			0.14			0.004			1.0			0.9	
Barton @ HWY 71 ds Little Barton	48	BAR4	01/22/2013		0.022			4.29			0.179			1.0			0.6	
Barton @ HWY 71 ds Little Barton	48	BAR4	04/24/2013	J	0.016	R		0.05		<J	0.004		<J	1.0			0.7	R
Barton @ HWY 71 ds Little Barton	48	BAR4	06/26/2013	<J	0.008		<J	0.01		<J	0.004			1.1			0.8	
Barton @ HWY 71 ds Little Barton	48	BAR4	09/26/2013	<J	0.008		<J	0.01		<J	0.004			1.7			3.4	
Site 48 Mean					0.014			1.09			0.048			1.2			1.3	
Barton @ Shield Ranch	46	BAR5	01/22/2013	<J	0.008		J	0.02		<J	0.004		<J	1.0			0.1	
Barton @ Shield Ranch	46	BAR5	04/24/2013		0.040	R	<J	0.01		<J	0.004		<J	1.0			0.3	R
Barton @ Shield Ranch	46	BAR5	06/26/2013	<J	0.008			0.02		<J	0.004		<J	1.2			0.0	
Site 46 Mean					0.019			0.02			0.004			1.1			0.2	
Barton @ Stark Pool	44	BAR6	01/22/2013	<J	0.008		<J	0.01		<J	0.004			2.2			1.4	
Barton @ Stark Pool	44	BAR6	04/24/2013	<J	0.008	R	<J	0.01		<J	0.004			27.8			1.9	R
Barton @ Stark Pool	44	BAR6	06/26/2013	<J	0.008		<J	0.01		<J	0.004			10.6			3.3	
Barton @ Stark Pool	44	BAR6	09/26/2013	<J	0.008		<J	0.01		<J	0.004			2.6			3.9	
Site 44 Mean					0.008			0.01			0.004			10.8			2.6	
Watershed Mean					0.013			0.32			0.012			3.1			1.4	

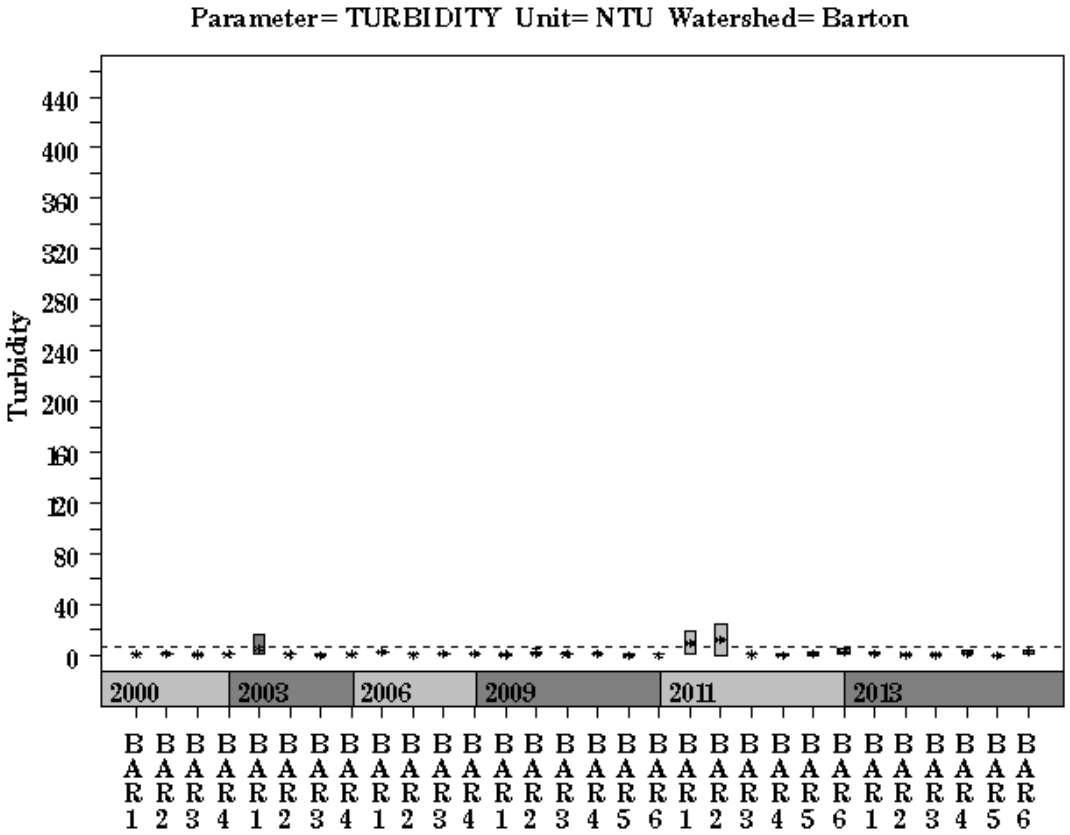
Orange highlighting indicates that the value exceeds one standard deviation from the mean of all E.I.I. sites combined.

Summary Statistics for all 2013 – 2014 E.I.I. Sites Combined.				
Parameter	2013-2014 Mean	2013-2014 Minimum	2013-2014 Maximum	1 Standard Deviation Above
NH3-M (mg/l)	0.031	0.008	2.250	0.150
NO3-N (mg/l)	1.16	0.01	16.30	4.02
Ortho-P (mg/l)	0.041	0.004	1.360	0.164
TSS (mg/l)	5.6	1.0	70.0	15.3
Turbidity (NTU)	4.5	0.0	97.1	13.2

Barton Creek Watershed

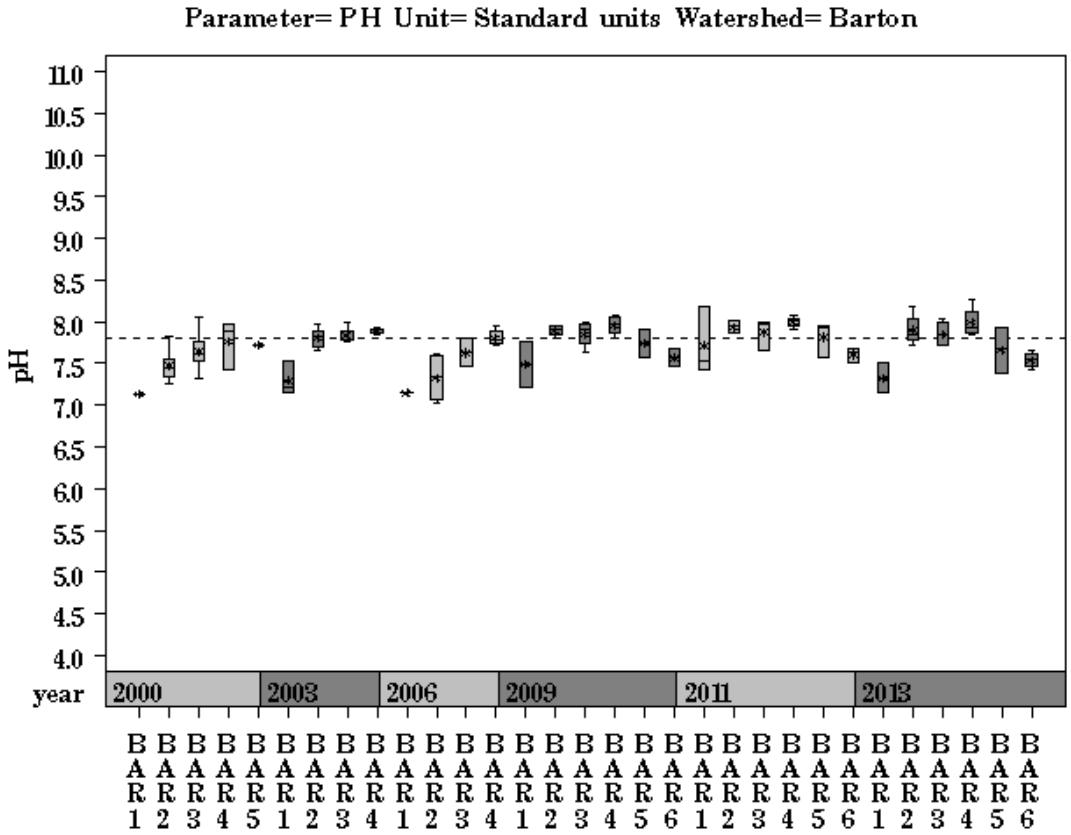
Data Summary Graphs – Total Suspended Solids and Turbidity (Downstream to Upstream by Year)

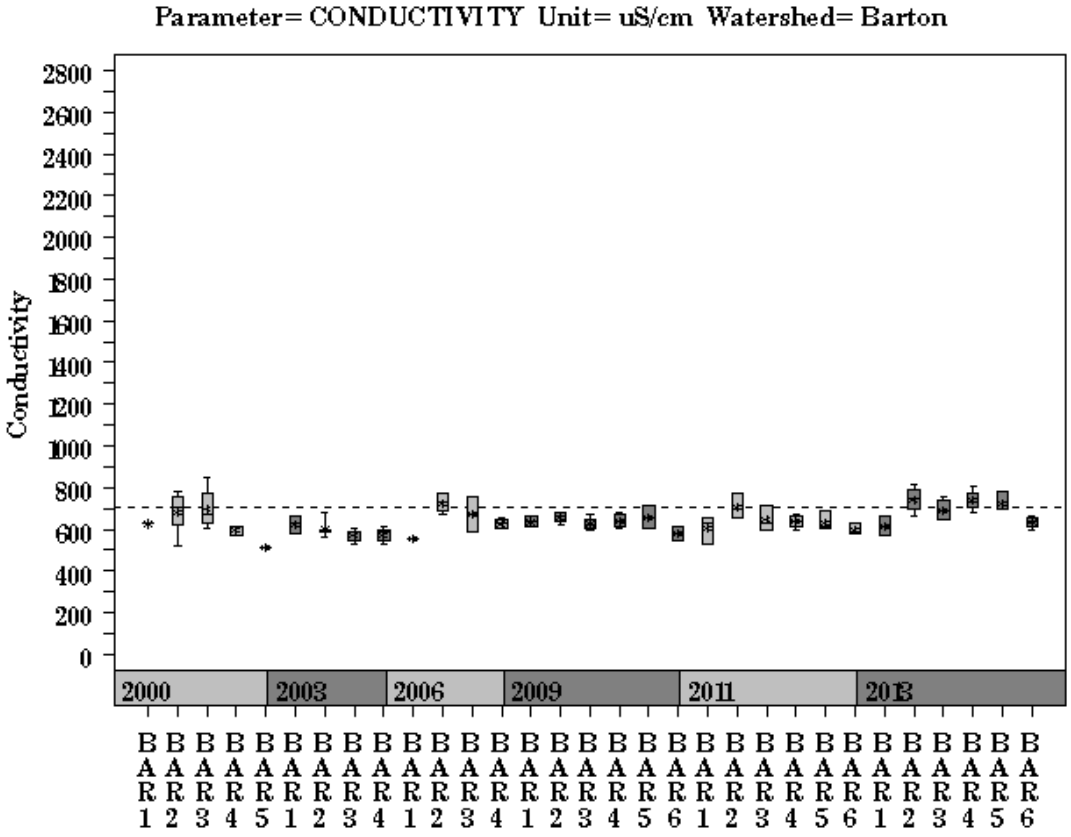




Barton Creek Watershed

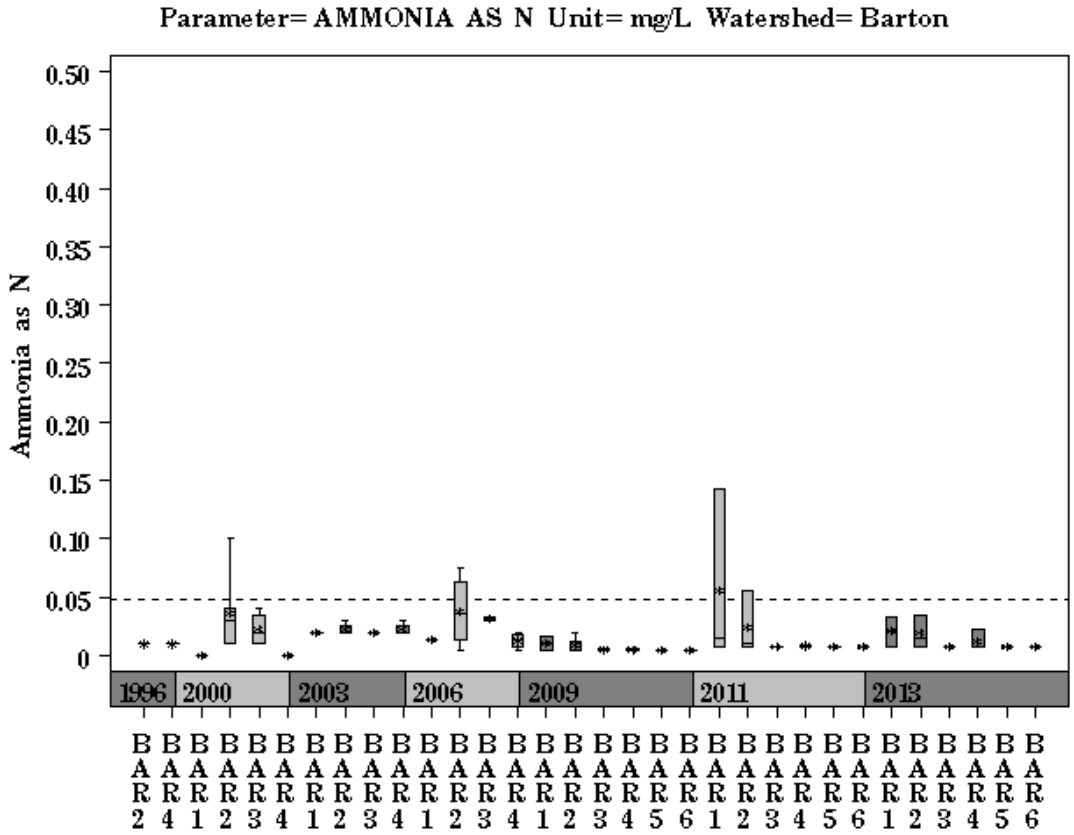
Data Summary Graphs – pH and Conductivity (Downstream to Upstream by Year)

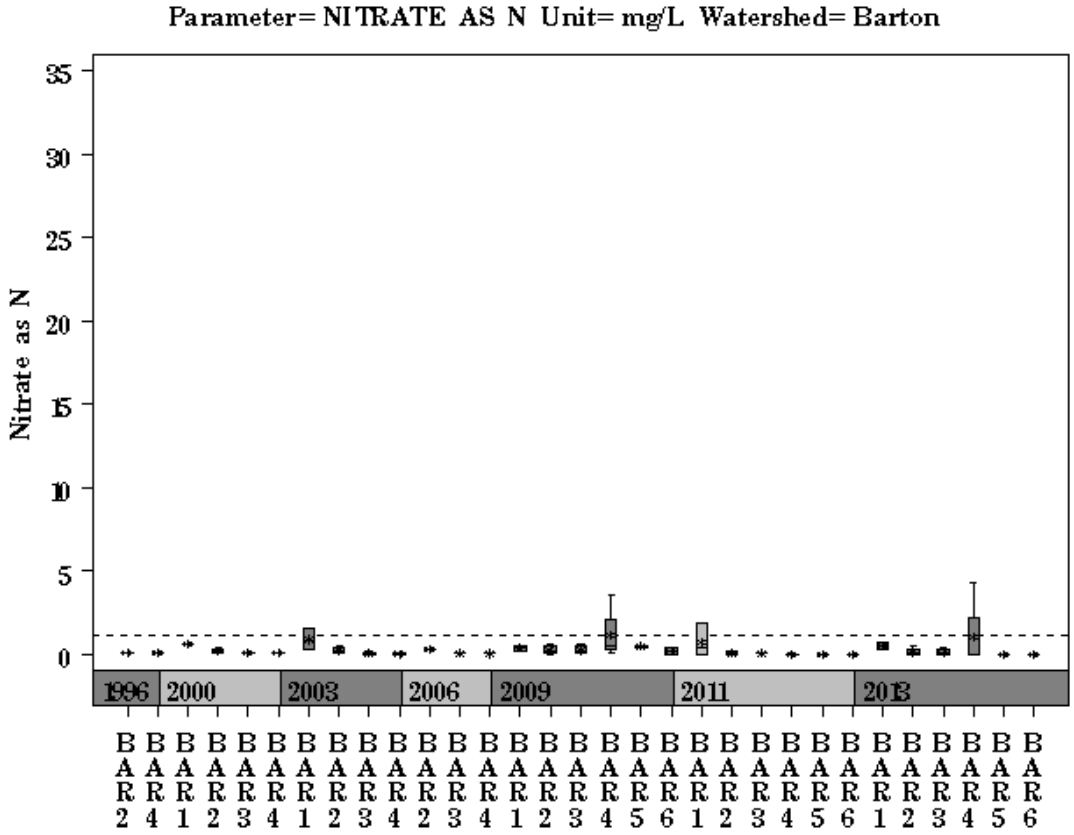




Barton Creek Watershed

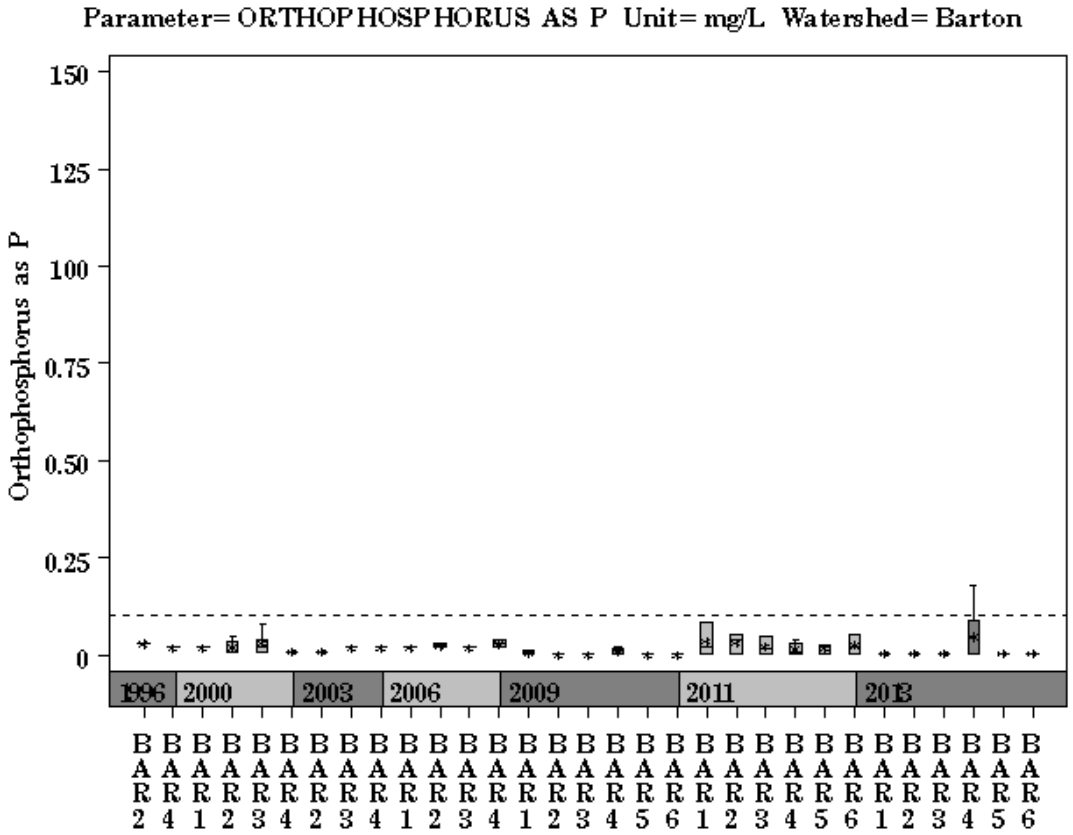
Data Summary Graphs – Ammonia and Nitrate/Nitrite (Downstream to Upstream by Year)

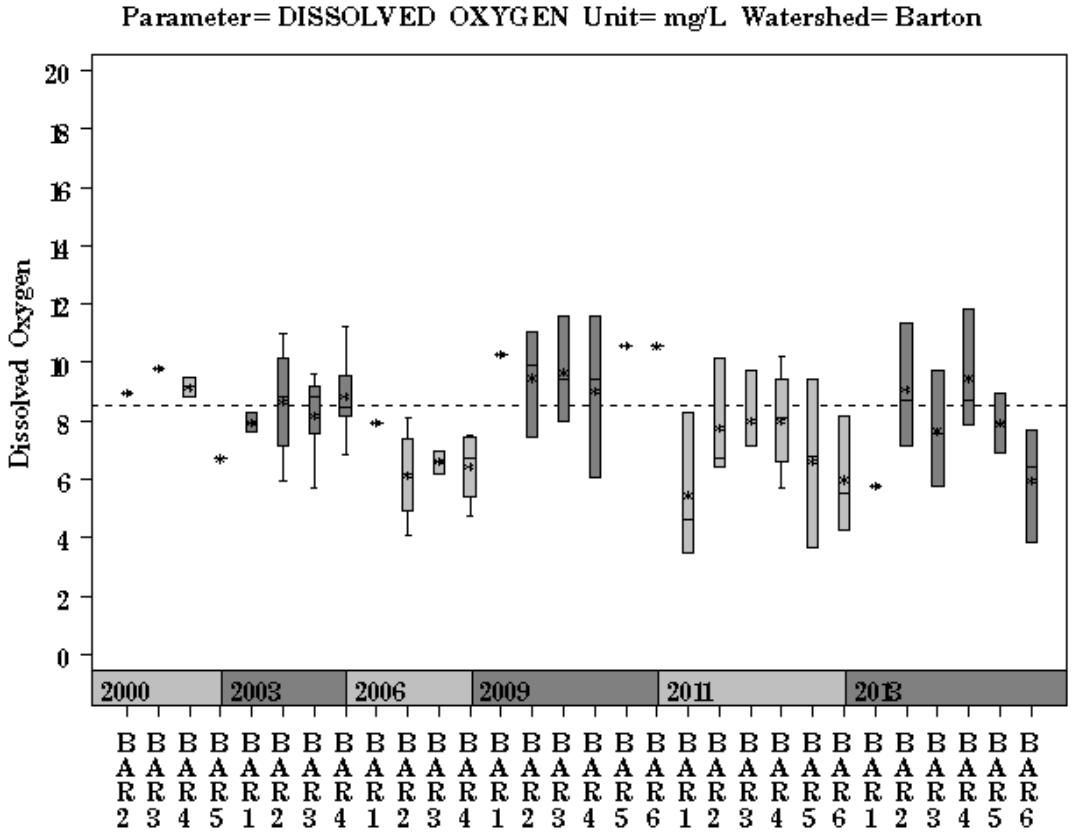




Barton Creek Watershed

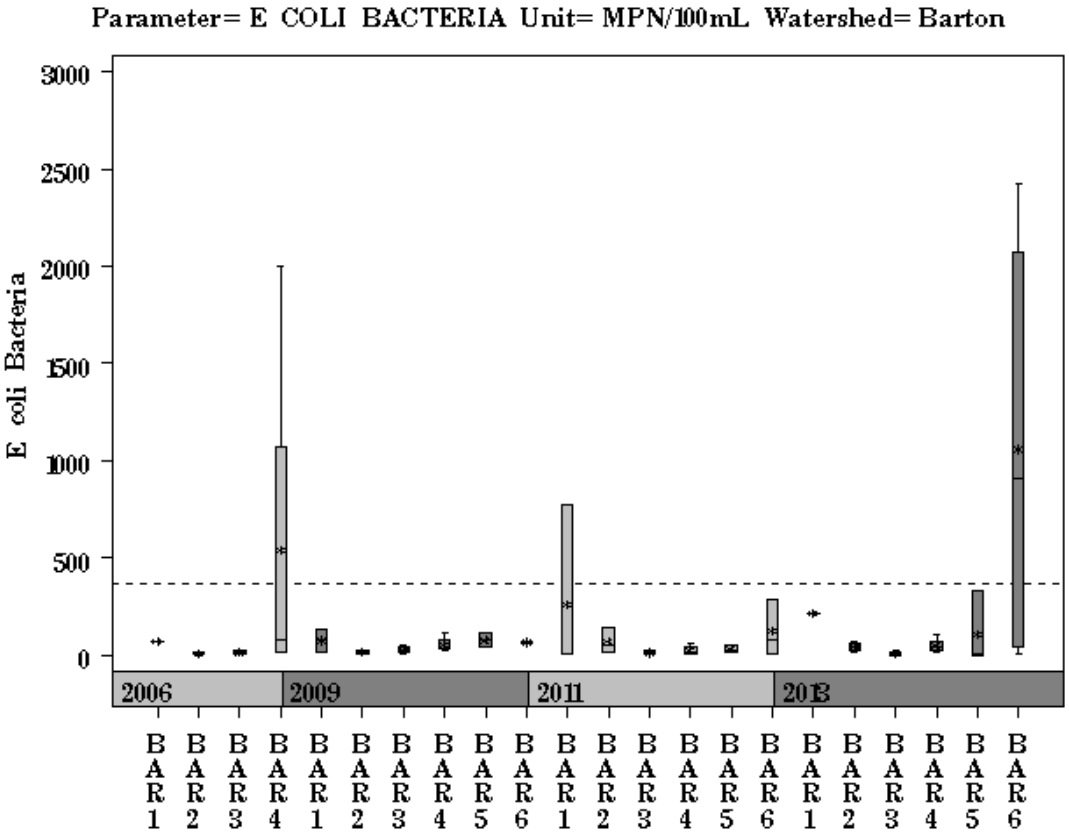
Data Summary Graphs – Orthophosphate and Dissolved Oxygen (Downstream to Upstream by Year)





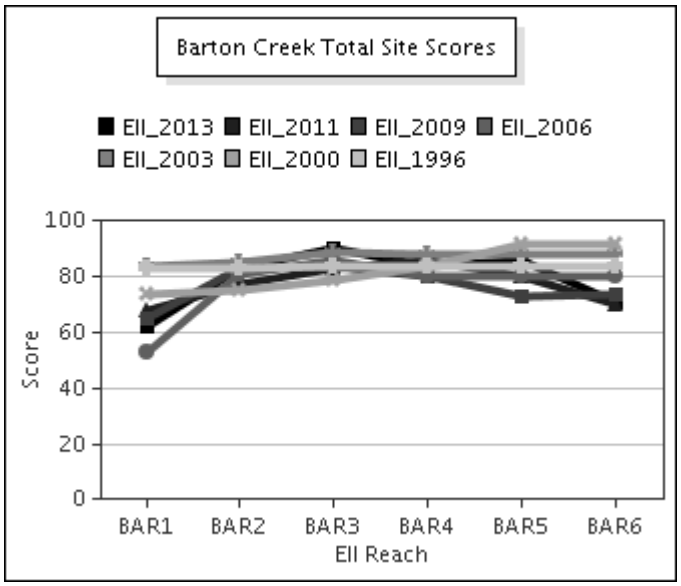
Barton Creek Watershed

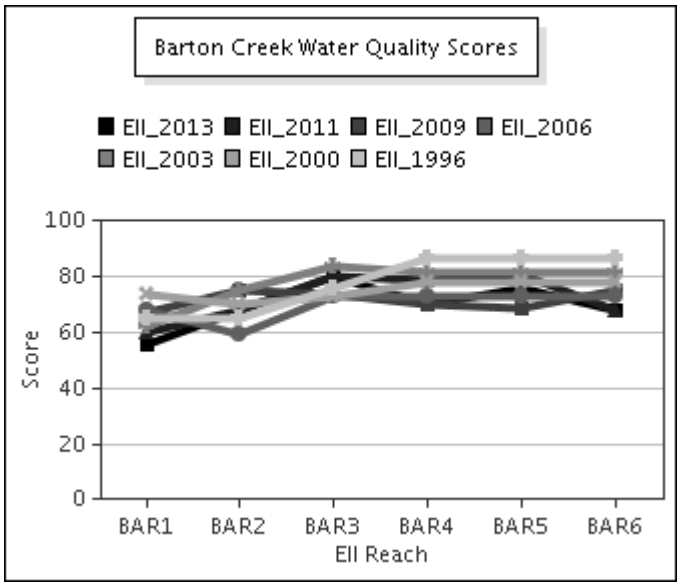
Data Summary Graphs – *E.coli* (Downstream to Upstream by Year)

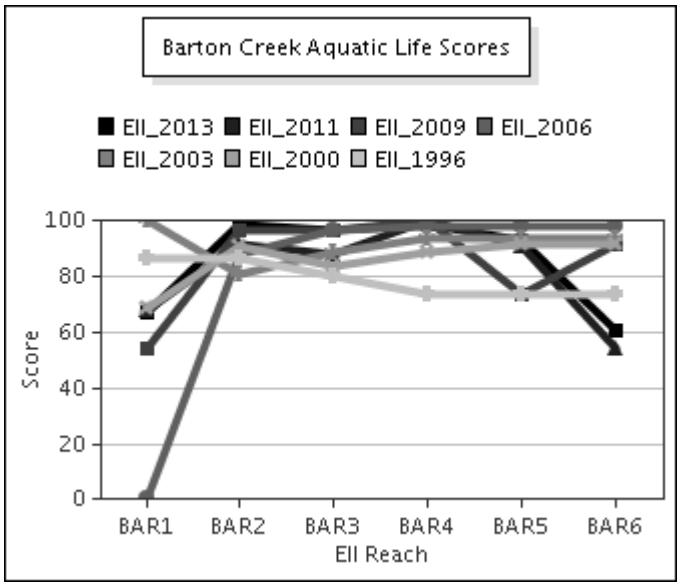


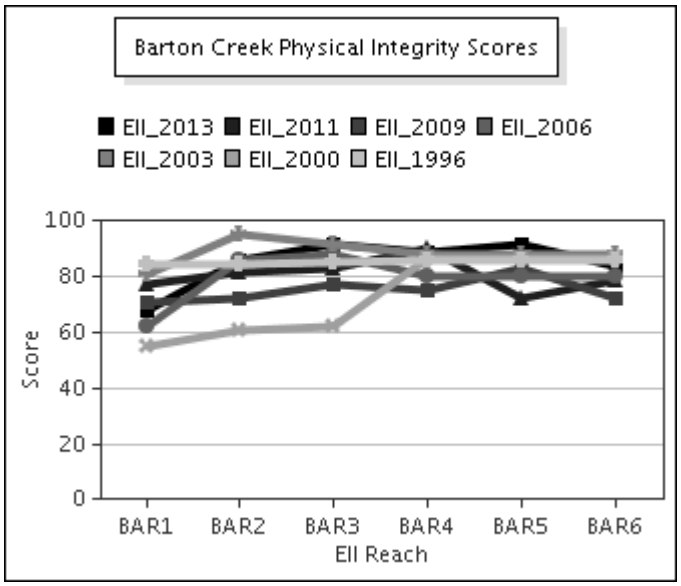
Barton Creek Watershed

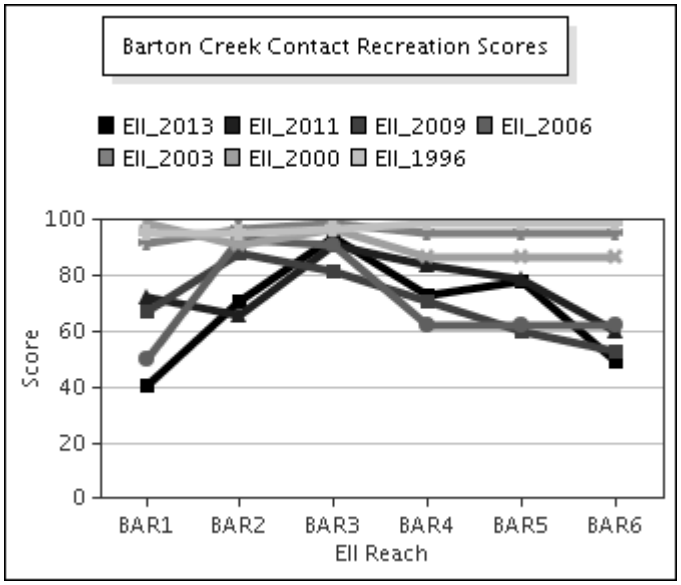
Score Summary – Reach scores for each sample year

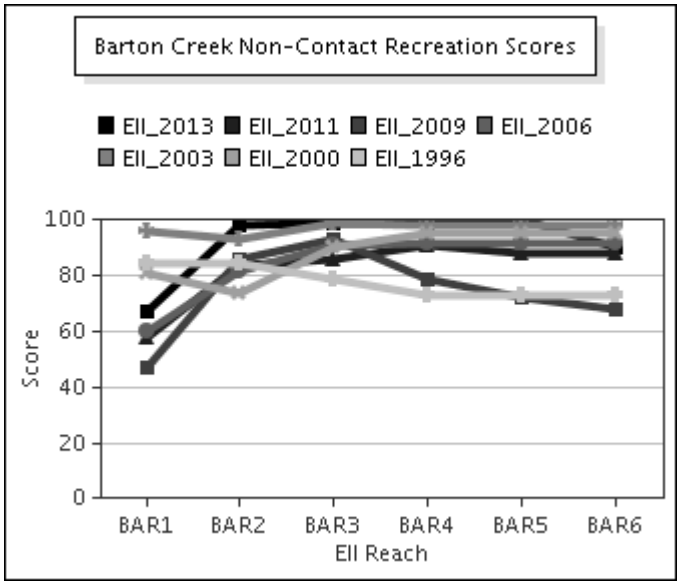












Barton Creek Watershed

Benthic Macroinvertebrates – Taxa List, Pollution Tolerance Index & Functional Feeding Group for 2013 Sample Sites (Downstream to Upstream)

Benthic Macroinvertebrate ID	PTI	FFG	Barton us Barton Spgs Pool (Site 879)	Barton ds Lost Creek (Site 51)	Barton @ Ogletree Pool (Site 49)	Barton @ hwy 71 ds Little Barton (Site 48)	Barton @ Shield Ranch (Site 46)	Barton @ Stark Pool (Site 44)
Perlesta sp.	0	P					13	1
Erpetogomphus sp.	1	P		1		2		2
Chimarra sp.	2	FC		60	79	16	37	
Hexacylloepus ferrugineus	2	SC,CG				3	1	
Hydroptila sp.	2	SC,PI				1	5	1
Microcylloepus pusillus	2	SC,CG				52	1	
Neoelmis caesa	2	SC,CG				2		
Thraulodes gonzalesi	2	SC,CG			13			
Isonychia sp.	3	FC				4		
Callibaetis sp.	4	CG	17					1
Camelobaetidius sp.	4	CG		6	23	4	18	
Fallceon quilleri	4	SC,CG		6	5	16	58	
Macrelmis sp.	4	SC,CG		4	1			
Neochoroterpes sp.	4	CG			6			
Ostracoda	4	FC,CG	1				2	1
Plauditus sp.	4	SC,CG		7	2			
Psephenus sp.	4	SC		6	7			
Simulium sp.	4	FC		2	95	13	177	2
Smicridea sp.	4	FC				2		
Vacupernius packeri	4	CG				1		
Agabus sp.	5	P						1
Ambrysus sp.	5	P		8		11		
Lutrochus sp.	5	CG					3	
Petrophila sp.	5	SC			1	1		
Tricorythodes sp.	5	CG		2	1	77		
Argia sp.	6	P		14	27	37	49	23
Brechmorhoga mendax	6	P			1	2		
Cheumatopsyche sp.	6	FC		22	55	22	6	
Chironomidae	6	P,FC	24	5	2	4	10	3
Corbicula fluminea	6	FC		3		6		
Corydalus cornutus	6	P			2	1		
Enallagma sp.	6	P		1				
Hexagenia sp.	6	CG						3
Hydracarina	6		10	1	1	3	3	
Microvelia sp.	6	P					1	
Neoporus sp.	6	P						11
Rhagovelia sp.	6	P			5	4	1	1
Stenonema femoratum	6	SC,CG			1		4	12
Tanypodinae	6	P	6				1	
Bezzia sp. / *Palpomyia* sp.	7	P,CG					2	
Caenis sp.	7	SC,CG						2
Gyraulus sp.	7	SC	1					
Stenelmis sp.	7	SC,CG		1				2
Anopheles sp.	8	FC						1
Cladocera	8	FC	5					
Cymbiodyta sp.	8	P						4
Hyalella sp.	8	SH,CG	70	1				
Oligochaeta	8	CG				1		3
Berosus sp.	9	CG					1	
Physella sp.	9	SC	1				3	
Cambaridae		CG						1
Dugesia sp.		P,CG	1	33	5	2		6

Barton Creek Watershed

Benthic Macroinvertebrates – Metric Summary for 2013 Sample Sites (Downstream to Upstream)

Scoring Metric	Barton us Barton Springs Pool (Site 879)	Barton ds Lost Creek Blvd (Site 51)	Barton @ Ogletree Pool (Site 49)	Barton @ HWY 71 ds Little Barton (Site 48)	Barton @ Shield Ranch (Site 46)	Barton @ Stark Pool (Site 44)
Number of Taxa *	9	18	20	24	20	20
Hilsenhoff Biotic Index *	6.9	3.9	4.0	4.3	4.1	5.9
Number of Ephemeroptera Taxa *	1	4	7	5	3	4
Percent of Total as Chironomidae *	22	3	1	1	3	4
Number of EPT Taxa *	1	6	9	9	7	6
Percent of Total as EPT *	13	57	56	51	36	25
Percent of Total as Predator *	23	34	13	22	19	64
Number of Intolerant Taxa *	2	8	10	12	9	6
Percent Dominance (Top 3 Taxa) *	82	64	69	59	72	57
EPT / EPT + Chironomidae	0	1	1	1	1	1
Number of Diptera Taxa	1	2	2	2	3	3
Number of Non-Insect Taxa	7	3	2	3	3	4
Number of Organisms	136	180	332	281	396	81
Percent Dominance (Top 1 Taxa)	51	33	29	27	45	28
Percent of Total as Collector / Gatherer	65	33	17	56	23	38
Percent of Total as Dominant Guild (FFG)	65	49	70	56	59	64
Percent of Total as Elmidae	0	3	0	20	1	2
Percent of Total as Filterers	26	49	70	22	59	9
Percent of Total as Grazers (PI & SC)	1	13	9	27	18	21
Percent of Total as Tolerant Organisms	1	0	0	0	1	0
Percent of Trichoptera as Hydropsychidae	0	27	41	59	13	0
Ratio of Intolerant : Tolerant Organisms	0.15	2.26	2.51	2.77	3.88	0.13
TCEQ Qualitative Aquatic Life Use Score	18	31	30	30	31	26
TCEQ Quantitative Aquatic Life Use Score	21	27	33	39	33	25

*** EII scoring parameter: Nine metric parameters are used in the calculation of the EII Benthic Subindex score. Other metrics are shown to supplement evaluation.**

1. # of Taxa: Higher diversity (number of taxa) correlates with greater biological integrity. The average number of taxa per site for 2013/2014 samples was 15; the lowest value was 5 and the highest value was 30.
2. Hilsenhoff Biotic Index (HBI): HBI values range from 0 to 10. Low HBI values reflect a higher abundance of taxa that are sensitive to organic (nutrient) pollution, thus a lower level of this type of pollution. The average HBI per site for 2013/2014 samples was 5.4; the lowest value was 3.7 and the highest value was 8.1.
3. # of Ephemeroptera taxa: A higher number of Ephemeroptera (mayfly) taxa correlates with greater biological integrity. The average number of taxa per site for 2013/2014 samples was 2; the lowest value was 0 and the highest value was 7.
4. % of total as Chironomidae: The percentage of the sample represented by the Dipteran family Chironomidae will increase with a decrease in biological integrity. The average percent Chironomidae per site for 2013/2014 samples was 16%; the lowest value was 0% and the highest value was 77%.
5. # of EPT Taxa: A higher number of Ephemeroptera (mayfly), Plecoptera (stonefly) and Trichoptera (caddisfly) taxa correlates with greater biological integrity. The average number of EPT taxa per site for 2013/2014 samples was 4; the lowest value was 0 and the highest value was 12.
6. % of total as EPT: The percentage of the sample represented by the insect orders Ephemeroptera (mayfly), Plecoptera (stonefly) and Trichoptera (caddisfly) will decrease with a decrease in biological integrity. The average percent EPT taxa per site for 2013/2014 samples was 46%; the lowest value was 0% and the highest value was 89%.
7. % of total as Predator: The percentage of the sample represented by predators is variable with regard to biological integrity. The average percent predator per site for 2013/2014 samples was 31%; the lowest value was 3% and the highest value was 82%.
8. # of Intolerant Taxa: A higher number of pollution intolerant taxa correlates with greater biological integrity. The average number of intolerant taxa per site for 2013/2014 samples was 5; the lowest value was 0 and the highest value was 15.
9. % Dominance (top 3 taxa): The percentage of the sample represented by the three most abundant taxa will increase with a decrease in biological integrity. The average percent of sample dominated by the top three taxa per site for 2013/2014 samples was 72%; the lowest value was 39% and the highest value was 96%.

Diatoms – Taxa List & Pollution Tolerance Index for 2013 Sample Sites (Downstream to Upstream)

Diatom Species Name	PTI	Barton us Barton Sps (Site 879)	Barton ds Lost Creek (Site 51)	Ogletree Pool (Site 49)	HWY 71 ds Little Barton (Site 48)	Shield Ranch Pool (Site 46)	Stark Pool (Site 44)
Amphora inariensis	4		21	3	28		
Brachysira neoexilis (*serians*)	4					2	
Diploneis oblongella	4		3				
Diploneis ovalis	4				2		
Eunotia formica	4		6				
Fragilaria acus	4	1	2	1			
Fragilaria tenera	4			10		10	
Neidium ampliatum	4				2		
Pseudostaurosira brevistriata	4	4	7	3	22		
Synedra nana	4					11	
Achnanthes exigua	3	4	2				
Achnanthidium minutissimum	3	96	66	12	50	22	
Achnanthidium pyrenaicum	3	56	32	75	17		
Amphipleura pellucida	3				1	17	
Amphora libyca	3	3			1		1
Amphora ovalis	3		13	1	7		
Amphora pediculus	3	9	56		118		
Brachysira vitrea	3	8	1	1		55	
Caloneis bacillum	3				3		
Caloneis schumanniana	3					1	
Caloneis ventricosa	3		1		1		3
Cocconeis pediculus	3		5		13		
Cymatopleura elliptica	3			1			
Cymbella affinis	3		2				
Cymbella hustedtii	3			2			
Cymbella laevis	3		5	44			
Cymbella neocistula	3					2	2
Denticula kuetzingii	3	54	6	9	8		1
Diploneis elliptica	3				2		
Diploneis puella	3		2				
Encyonema evergladianum	3	32	4	46	2	152	
Encyonema silesiacum	3	1	2	3		1	
Encyonopsis microcephala	3	16	6	24	2	25	
Epithemia turgida	3		11				1
Eunotia pectinalis	3		1			2	11
Fragilaria capucina	3	2	4		16	5	
Gomphonema affine	3						1
Gophonema angustum	3	2	1	1			1
Gomphonema clavatum	3	3	2		4		3
Gomphonema gracile	3		2				
Gyrosigma nodiferum	3		2		13		
Halamphora montana	3				1		
Mastogloia smithii	3			3		10	
Navicula cryptocephala	3					8	
Navicula cryptotenella	3	2	17		4		
Navicula kotschyi	3		6		19		
Navicula oblonga	3			1			4
Navicula radiosa	3	1	17	17	13	1	
Navicula rhynchocephala	3					1	
Navicula stroemii	3	2		12			
Navicula tridentula	3				2		
Nitzschia dissipata	3		1		7		
Nitzschia fonticola	3	6					
Nitzschia linearis	3				1		
Nitzschia recta	3				1		
Pinnularia gibba	3		1				
Pinnularia microstauron	3				2		1
Pinnularia viridis	3				2	2	6
Reimeria sinuata	3		15		5		
Rhoicosphenia abbreviata	3		2		3		
Rhopalodia gibba	3	1	4			7	2
Stauroneis phoenicenteron	3				1		
Staurosira construens	3	54	18				
Staurosira construens var. *venter*	3	52	10				

---------- This table is continued from the previous page ----------

Diatom Species Name	PTI	Barton us Barton Sps (Site 879)	Barton ds Lost Creek (Site 51)	Ogletree Pool (Site 49)	HWY 71 ds Little Barton (Site 48)	Shield Ranch Pool (Site 46)	Stark Pool (Site 44)
Synedra dilatata	3		1				
Tryblionella angustata	3		2		2		
Achnantheiopsis lanceolata	2		2				
Anomoeoneis sphaerophora	2			1			
Bacillaria paradoxa	2		11		3		
Campylodiscus hibernicus	2				1		
Cyclotella meneghiniana	2	12	2				
Cymatopleura solea	2				2		
Diadesmis confervacea	2		4				
Encyonema minutum	2		2		8		
Fallacia subhamulata	2				1		
Gomphonema angustatum	2					1	
Mastogloia elliptica	2					36	1
Melosira varians	2		1				
Navicula erifuga	2		4				
Navicula menisculus	2		1				
Navicula recens	2	4	6		24		
Navicula schroeterii	2				2		
Navicula symmetrica	2				7		
Navicula tenelloides	2		16		2		
Navicula veneta	2	4	2				
Nitzschia amphibia	2	23	10		7	2	
Nitzschia amphibioides	2	4	5	5	7		
Nitzschia inconspicua	2		2		3		
Nitzschia serpentiraphe	2					1	
Sellaphora laevissima	2	2			1		
Sellaphora pupula	2	2			1		
Synedra ulna	2	6	15	3	40	29	31
Tryblionella apiculata	2	2	1		3		
Tryblionella hungarica	2	2					
Gomphonema parvulum	1	2	2		2		1
Nitzschia palea	1	6				3	
Nitzschia solita	1	2					
Achnanthidium gracillimum		14		58	2	23	
Cocconeis placentula var. *lineata*			46		1		
Cymbella excisa					1		
Delicata delicatula		2	2	161	2	71	
Eolimna minima		4		2	1		
Gomphonema lateripunctatum				1			
Navicula rostellata			7				
Staurosira venter					4		

Diatoms – Metric Summary for 2013 Sample Sites (Downstream to Upstream)

Scoring Metric	us Barton Springs (Site 879)	ds Lost Creek (Site 51)	Ogletree (Site 49)	Hwy 71 (Site 48)	Shield Ranch (Site 46)	Stark (Site 44)
Cymbella Richness	3	7	5	5	4	1
Number of organisms	500	500	500	500	500	70
Number of taxa	38	59	27	57	27	16
Percent motile taxa	12	20	7	21	3	6
% similarity to ref. cond.	47	57	32	50	31	10
Pollution tolerance index	2.84	2.89	3.03	2.87	2.87	2.51

* **EII scoring parameter: Four metric parameters are used in the calculation of the EII Diatom Subindex score: *Cymbella* richness, percent motile taxa, percent similarity to reference condition and pollution tolerance index. Number of taxa is non-scoring, but is shown to supplement evaluation. The number of organisms is typically a sample of 500, but occasionally differs due to sample conditions.**

1. *Cymbella* Richness: The Cymbelloid taxa include species in the genus *Cymbella*, in addition to some species belonging to the genera *Cymbellopsis*, *Cymbopleura*, *Encyonema*, *Encyonemopsis*, *Navicymbula* and *Reimeria*. Their presence highlights the presence of sensitive species, especially with regard to impervious cover, and this value increases with an increase in overall water quality. The average number of Cymbelloid taxa per site for 2013/2014 samples was 3; the lowest value was 0 and the highest value was 7.
2. % Motile Taxa: This is a siltation index showing the relative abundance of genera that are able to move towards the surface if covered by silt. A higher percentage is indicative of a degraded condition caused by increased silt pollution. The average percent motile taxa per site for 2013/2014 samples was 16%; the lowest value was 0% and the highest value was 77%.
3. % similarity to reference condition: This percentage compares a site to reference sites that are selected based on having low percent impervious cover. A higher percentage reflects greater biological integrity. The average percent similarity per site for 2013/2014 samples was 31%; the lowest value was 6% and the highest value was 57%.
4. Pollution Tolerance Index (PTI): This is a total value for a sample, which is a function of the abundance of each taxon (usually species) in a sample and the individual PTI's for each of those taxa. Individual PTI's for each taxon range from 1 (most pollution tolerant) to 4 (most pollution sensitive), thus higher total PTI's for a site reflect greater biological integrity. The average PTI per site for 2013/2014 samples was 2.76; the lowest value was 1.70 and the highest value was 3.45.

44_t3-ds-10_03_2007

44_t03-ds-09_17_2008

46_t00-us-05_19_2004

46_t00-ds-06_01_2009

48_t3-ds-07_28_2005

48_t00-ds-06_01_2009

50_t3-ds-08_02_2005

50_t00-us-06_02_2009

51_t3-us-08_01_2006

51_t03-us-09_16_2008

879_t2-ds-08_01_2006

879_t00-ds-06_02_2009

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