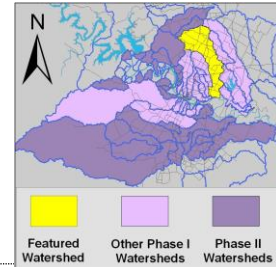


Walnut Creek Watershed

Summary Sheet

Catchment	Total area	43.5 square miles				
	Area in recharge	11.9 square miles				
	Creek length	22.3 miles				
	Receiving water	Colorado River				
Demographics	2000 population	93,934				
	2030 projected population	133,387				
	30 year projected % increase	42 %				
Land Use	Impervious cover (2003 estimate)	18.0 %				
	Impervious cover (2013 estimate)	30.5 %				
Overall EII Scores	2000	2003	2006	2009	2011	2013
	76	71	72	68	69	74



Flow Regime* for Sample Sites on Walnut Creek

Site	Site Name	2000	2001	2002	2003					2004	2006					2009					2010	2011				2013									
		Jun	Feb	Feb	Mar	Feb	Mar	Mar	May	Sep	Dec	May	May	Feb	May	Jul	Aug	Nov	Feb	May	May	Jun	Oct	Dec	Dec	Mar	Jun	Jun	Sep	Jan	Apr	May	Jun	Jun	Sep
		Bio	WQ	Bio	Bio	WQ	WQ	Bio	WQ	WQ	WQ	WQ	Bio	WQ	WQ	Bio	WQ	WQ	WQ	WQ	WQ	Bio	Bio	WQ	WQ	WQ	WQ	WQ	Bio	WQ	WQ	WQ	Bio	WQ	Bio
463	WLS @ Metro Pk													B	B	B	B	B	B	B	B		B	B	B	B	B	B	n	B	B	B	B		B
895	ds Metric					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
464	ds IH35		B	B	B	B	B	B	B	B	B			B	B	B	B	B	B	B	B		B	B	B	B	n	n	n	B	B	B	B		B
659	Lamar			B																															
465	Loyola		B	B		B	B	B	B	B	B																								
500	Springdale		B	B																															
502	Old Manor	B			B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		B	B	B	B	B	B	n	B	B	B	B		B
503	us Freescale		B	B		B	B	B	B	B	B			B	B	B	n	B	B	B		B	B	B	n	B	n	n	n	B	B		n	B	n

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

Index Scores* for Walnut Creek Sites by Year

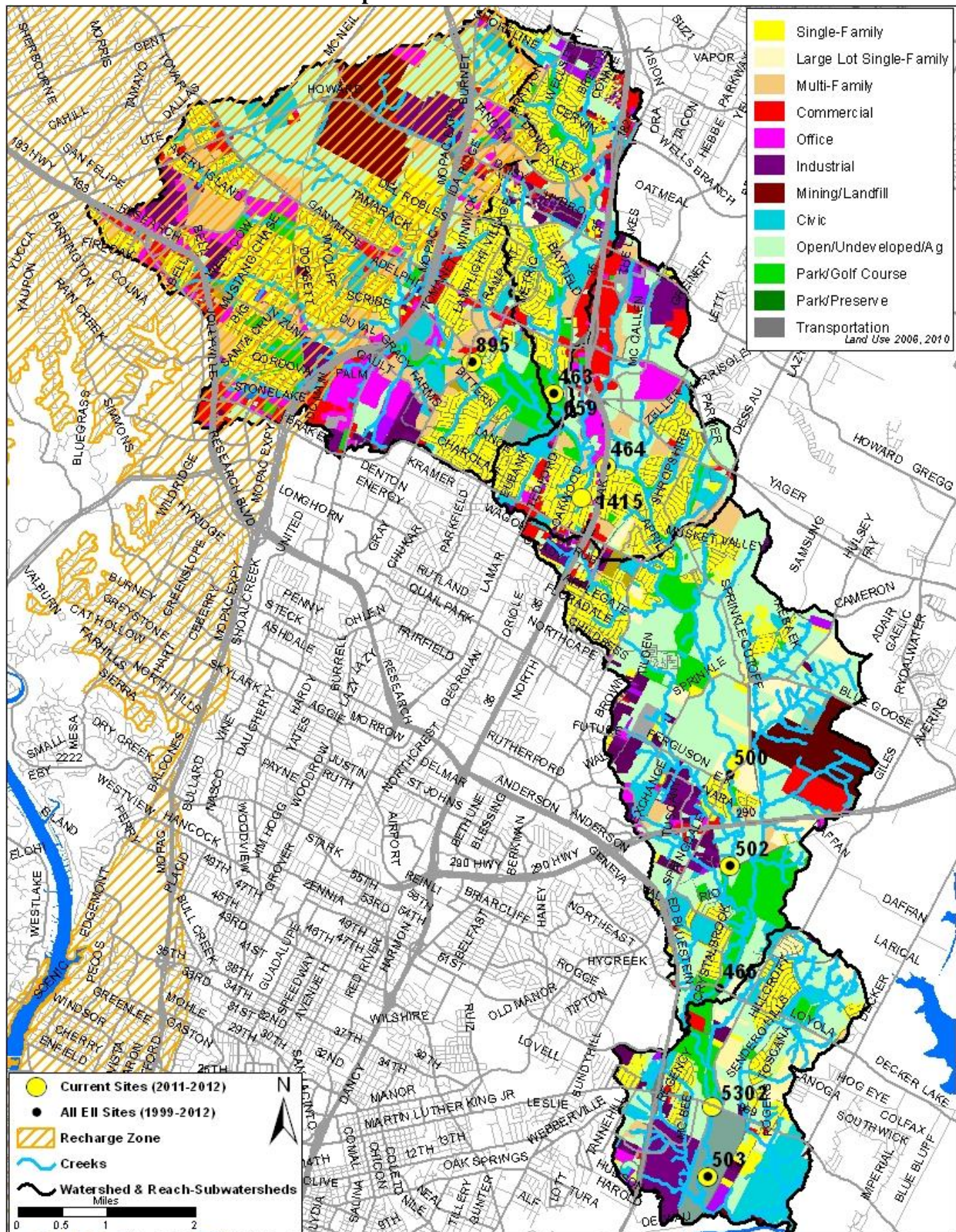
Reach	Site	Site Name	Year	Water Quality	Sediment **	Contact Rec.	Non-Contact Rec.	Physical Integrity	Aquatic Life	Benthic subindex	Diatom subindex	Total EII Score
WLN1	503	Walnut Creek US of Freescale	1996	30	84	73	78	41	74	86	62	63
WLN2	465	Walnut Creek @ Loyola Lane	1996	55	84	79	60	33	72	88	55	64
WLN2	500	Walnut Creek @ Springdale Rd	1996	63	84	23	86	44	81	100	61	64
WLN3	464	Walnut Creek DS of IH35	1996	52	84	53	80	54	75	79	70	66
WLN3	659	Walnut Creek @ Lamar Blvd	1996	58	84	93	73	65	86	85	86	77
WLN1	503	Walnut Creek US of Freescale	2000	51	95	91	68	35	67	75	58	68
WLN2	465	Walnut Creek @ Loyola Lane	2000	62	95	97	92	49	88	100	75	81
WLN2	500	Walnut Creek @ Springdale Rd	2000	73	95	97	96	40	79	100	57	80
WLN3	464	Walnut Creek DS of IH35	2000	67	95	90	72	50	72	87	57	74
WLN3	659	Walnut Creek @ Lamar Blvd	2000	66	95	87	80	52	72	71	72	75
WLN1	503	Walnut Creek US of Freescale	2003	64	75	86	78	48	56	69	42	68
WLN2	465	Walnut Creek @ Loyola Lane	2003	56	75	88	71	63	69	87	51	70
WLN2	502	Walnut Creek @ Old Manor Road	2003	61	75	88	73	64	66	84	47	71
WLN3	464	Walnut Creek DS of IH35	2003	59	75	72	82	75	79	97	60	74
WLN4	895	Walnut Creek DS of Metric Blvd	2003	64	75	51	78	74	76	88	63	70
WLN1	503	Walnut Creek US of Freescale	2006	58	82	54	70	63	100	100	99	71
WLN2	502	Walnut Creek @ Old Manor Road	2006	72	82	59	58	69	97	100	93	73
WLN3	464	Walnut Creek DS of IH35	2006	67	82	56	78	69	95	93	97	75
WLN4	895	Walnut Creek DS of Metric Blvd	2006	60	82	28	81	73	94	95	92	70
WLN5	463	Wells Branch Creek @ Walnut Metro Pk	2006	66	82	43	87	71	80	78	81	72
WLN1	503	Walnut Creek US of Freescale	2009	66	72	45	69	64	83	73	92	67
WLN2	502	Walnut Creek @ Old Manor Road	2009	65	72	34	82	57	96	97	95	68
WLN3	464	Walnut Creek DS of IH35	2009	67	72	37	79	71	96	100	91	70
WLN4	895	Walnut Creek DS of Metric Blvd	2009	61	72	25	74	79	81	83	79	65
WLN5	463	Wells Branch Creek @ Walnut Metro Pk	2009	64	72	40	83	74	92	93	91	71
WLN1	503	Walnut Creek US of Freescale	2011	74	78	72	47	41	65	80	50	63
WLN2	502	Walnut Creek @ Old Manor Road	2011	76	78	91	63	63	74	56	92	74
WLN3	464	Walnut Creek DS of IH35	2011	81	78	65	68	67	77	70	83	73
WLN4	895	Walnut Creek DS of Metric Blvd	2011	52	78	35	72	68	75	78	71	63
WLN5	463	Wells Branch Creek @ Walnut Metro Pk	2011	81	78	59	71	67	86	90	82	74
WLN1	503	Walnut Creek US of Freescale	2013	78	79	84	81	74	94	93	95	82
WLN2	502	Walnut Creek @ Old Manor Road	2013	74	79	58	75	62	96	91	100	74
WLN3	464	Walnut Creek DS of IH35	2013	76	79	43	72	77	95	92	98	74
WLN4	895	Walnut Creek DS of Metric Blvd	2013	57	79	29	70	76	95	92	97	68
WLN5	463	Wells Branch Creek @ Walnut Metro Pk	2013	72	79	46	78	78	88	79	96	74

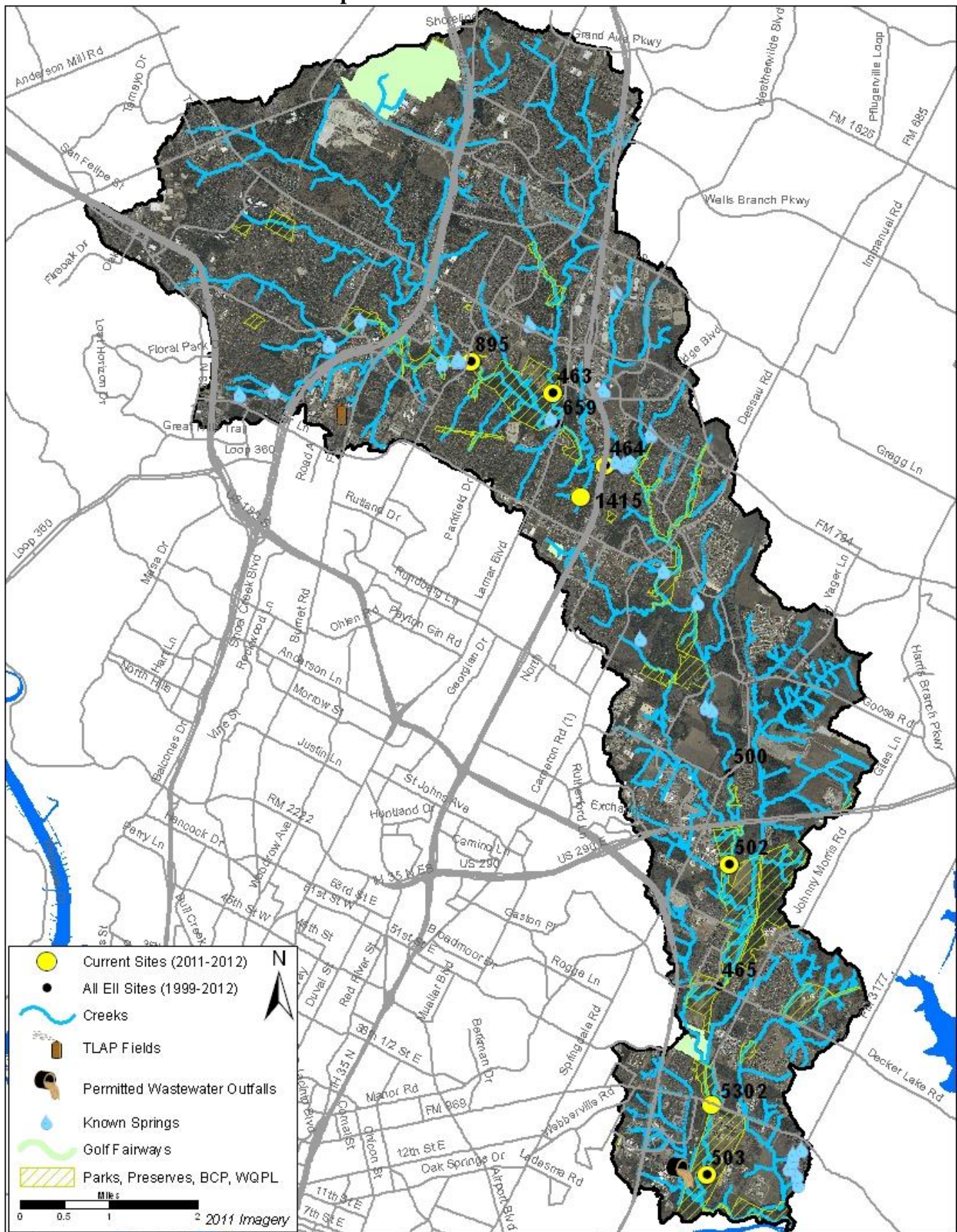
* blank cells indicate parameter was not collected, blank row indicate site was dropped

**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

Land Use Map





Walnut 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:	>	greater than	Qualifiers to the right of value:	(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	Temp. flag	Cond. Value	Cond. flag	pH Value	pH flag	D.O. Value	D.O. flag	E.coli Value	E.coli flag
Walnut us Freescale	503	WLN1	01/22/2013	12.7		548		8.32		10.8		31.0	
Walnut us Freescale	503	WLN1	04/24/2013	20.1		471		8.36		11.8		23.0	
Site 503 Mean				16.4		509		8.34		11.3		27.0	
Walnut @ Old Manor Rd	502	WLN2	01/22/2013	12.3		576		7.90		10.0		153.0	
Walnut @ Old Manor Rd	502	WLN2	04/24/2013	17.2		535		7.90		9.3		77.0	
Walnut @ Old Manor Rd	502	WLN2	06/26/2013	28.2		483		7.57		4.2		7.5	
Walnut @ Old Manor Rd	502	WLN2	09/26/2013	25.4		476		7.84		9.1		186.0	
Site 502 Mean				20.8		517		7.80		8.1		105.9	
Walnut ds IH35	464	WLN3	01/22/2013	10.6		501		8.17		12.4		99.0	
Walnut ds IH35	464	WLN3	04/24/2013	14.7		488		8.21		11.4		214.0	
Walnut ds IH35	464	WLN3	06/26/2013	27.9		352		8.31		9.6	R	130.0	
Walnut ds IH35	464	WLN3	09/26/2013	23.1		389		7.88		7.1		344.0	
Site 464 Mean				19.1		433		8.14		10.1		196.8	
Walnut ds Metric Blvd	895	WLN4	01/22/2013	13.6		643		7.89		12.6		548.0	
Walnut ds Metric Blvd	895	WLN4	04/24/2013	17.6		523		7.77		11.4		231.0	
Walnut ds Metric Blvd	895	WLN4	06/26/2013	26.1		529		7.72		10.7	R	613.0	
Walnut ds Metric Blvd	895	WLN4	09/26/2013	23.4		519		7.58		6.1		687.0	
Site 895 Mean				20.2		554		7.74		10.2		519.8	
Wells Branch @ Metro Park	463	WLN5	01/22/2013	11.5		647		7.97		8.4		218.7	
Wells Branch @ Metro Park	463	WLN5	04/24/2013	15.4		601		7.91		7.5		201.4	
Wells Branch @ Metro Park	463	WLN5	06/26/2013	26.8		427		7.92		26.8	R	75.4	
Wells Branch @ Metro Park	463	WLN5	09/26/2013	22.6		341		7.67		4.6		70.3	
Site 463 Mean				19.1		504		7.87		11.8		141.5	
Watershed Mean				19.4		503		7.94		10.2		217.2	

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
<i>E.coli.</i> (col/100ml)	435	1	4840	1127	

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

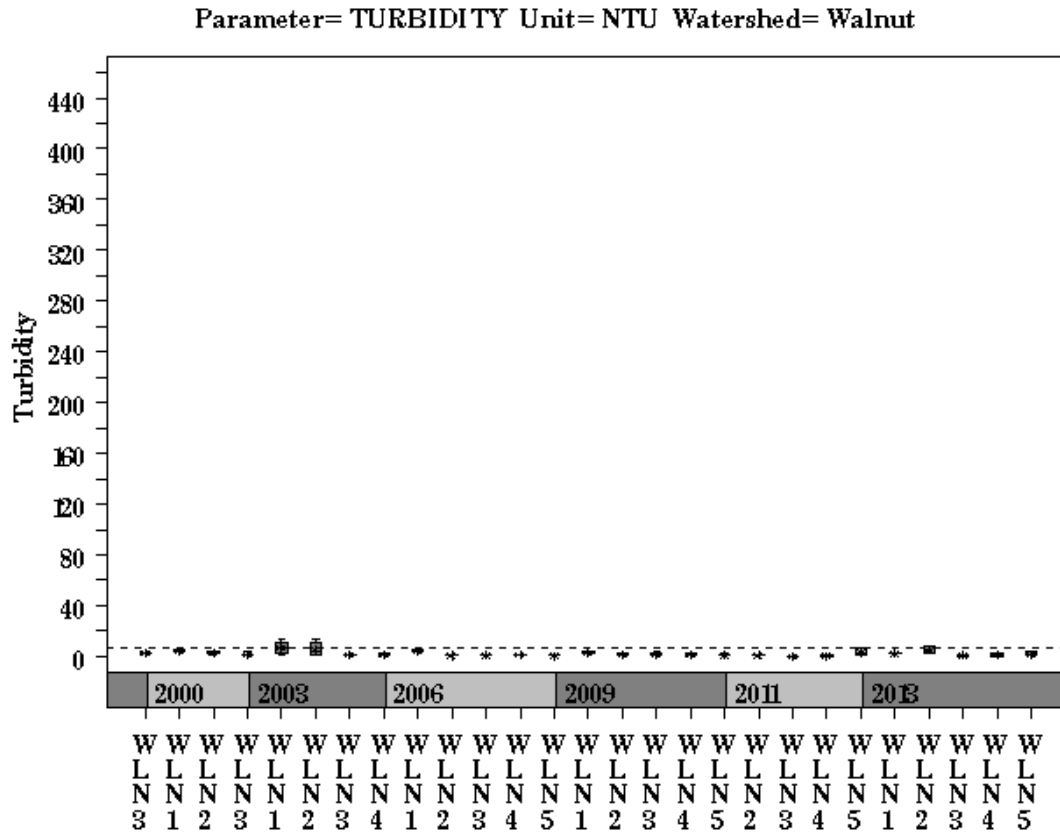
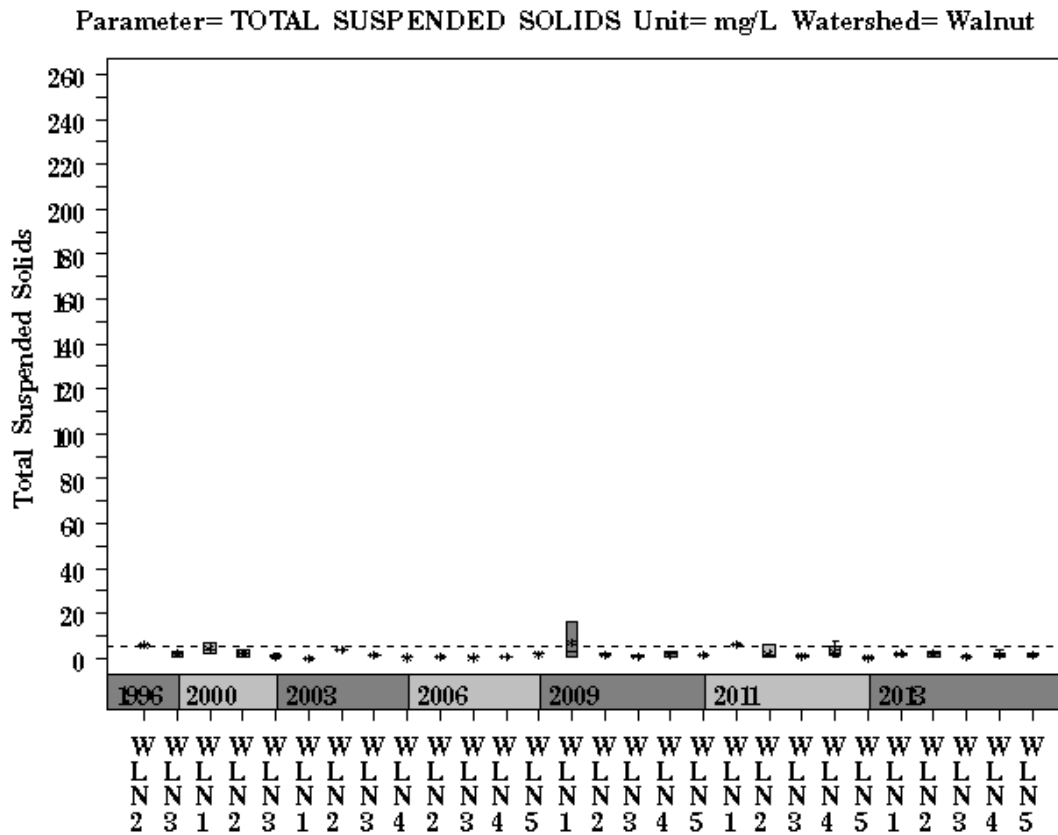
Site Name	Site #	Reach	Date	NH3-N <> Value flag	NO3/NO2 <> Value flag	Ortho-P <> Value flag	T.S.S. <> Value flag	Turb. <> Value flag
Walnut us Freescale	503	WLN1	01/22/2013	<J 0.008	0.13	<J 0.004	1.80	2.4
Walnut us Freescale	503	WLN1	04/24/2013	<J 0.008 R	<J 0.01	<J 0.004	2.40	3.7 R
Site 503 Mean				0.008	0.07	0.004	2.10	3.0
Walnut @ Old Manor Rd	502	WLN2	01/22/2013	<J 0.008	0.16	<J 0.004	3.10	3.2
Walnut @ Old Manor Rd	502	WLN2	04/24/2013	<J 0.008 R	0.11	<J 0.004	1.10	1.8 R
Walnut @ Old Manor Rd	502	WLN2	06/26/2013	0.035	0.04	<J 0.004	<J 1.04	3.3
Walnut @ Old Manor Rd	502	WLN2	09/26/2013	<J 0.008	0.03	<J 0.004	3.23	8.8
Site 502 Mean				0.015	0.08	0.004	2.12	4.3
Walnut ds IH35	464	WLN3	01/22/2013	0.049	0.18	<J 0.004	<J 1.10	1.6
Walnut ds IH35	464	WLN3	04/24/2013	<J 0.008 R	<J 0.01	<J 0.004	<J 1.00	0.8 R
Walnut ds IH35	464	WLN3	06/26/2013	0.022	<J 0.01	<J 0.004	1.03	0.5
Walnut ds IH35	464	WLN3	09/26/2013	<J 0.008	0.02	<J 0.004	<J 1.05	1.1
Site 464 Mean				0.022	0.05	0.004	1.05	1.0
Walnut ds Metric Blvd	895	WLN4	01/22/2013	0.033	0.94	<J 0.004	<J 1.00	0.5
Walnut ds Metric Blvd	895	WLN4	04/24/2013	<J 0.008 R	0.62	<J 0.004	<J 1.00	0.6 R
Walnut ds Metric Blvd	895	WLN4	06/26/2013	<J 0.008	1.35	<J 0.004	1.34	2.1
Walnut ds Metric Blvd	895	WLN4	09/26/2013	<J 0.008	0.50	<J 0.004	3.56	0.8
Site 895 Mean				0.014	0.85	0.004	1.73	1.0
Wells Branch @ Metro Park	463	WLN5	01/22/2013	<J 0.008	0.21	<J 0.004	<J 2.00	0.5
Wells Branch @ Metro Park	463	WLN5	04/24/2013	J 0.015 R	0.06	<J 0.004	<J 1.00	0.6 R
Wells Branch @ Metro Park	463	WLN5	06/26/2013	0.029	<J 0.01	<J 0.004	1.96	1.6
Wells Branch @ Metro Park	463	WLN5	09/26/2013	<J 0.008	0.01	0.005	1.33	3.6
Site 463 Mean				0.015	0.07	0.004	1.57	1.6
Watershed Mean				0.015	0.24	0.004	1.67	2.1

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

Walnut Creek Watershed

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



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

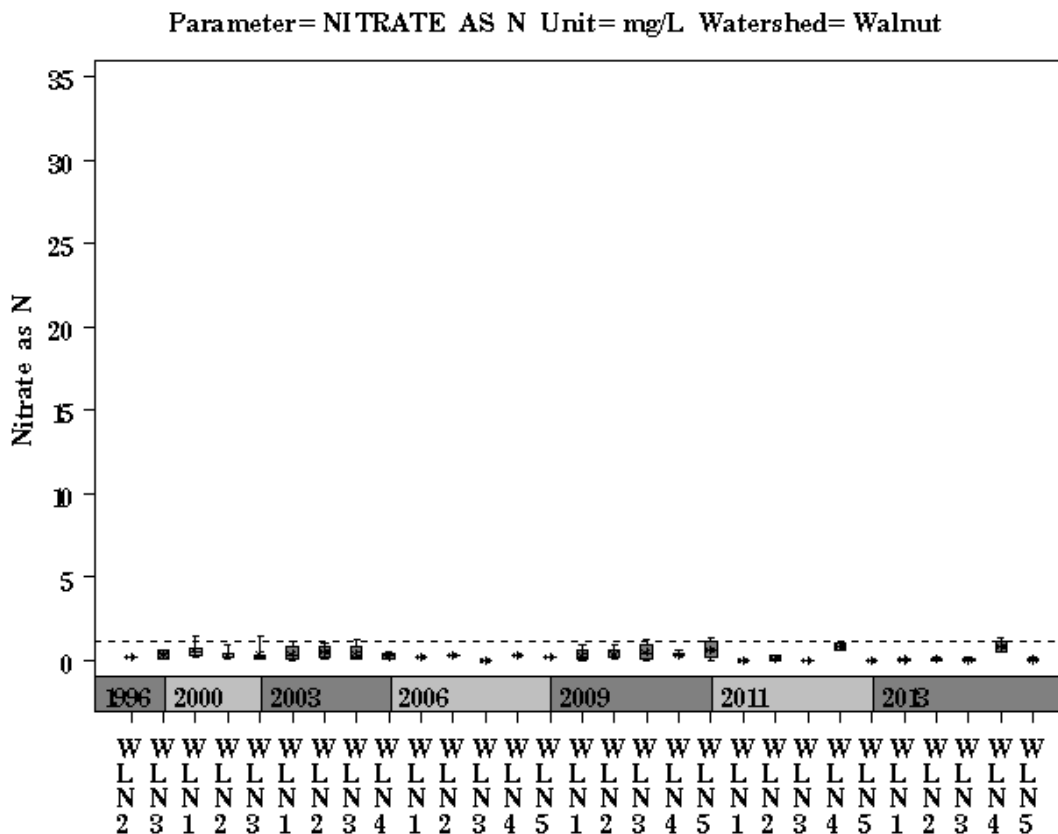
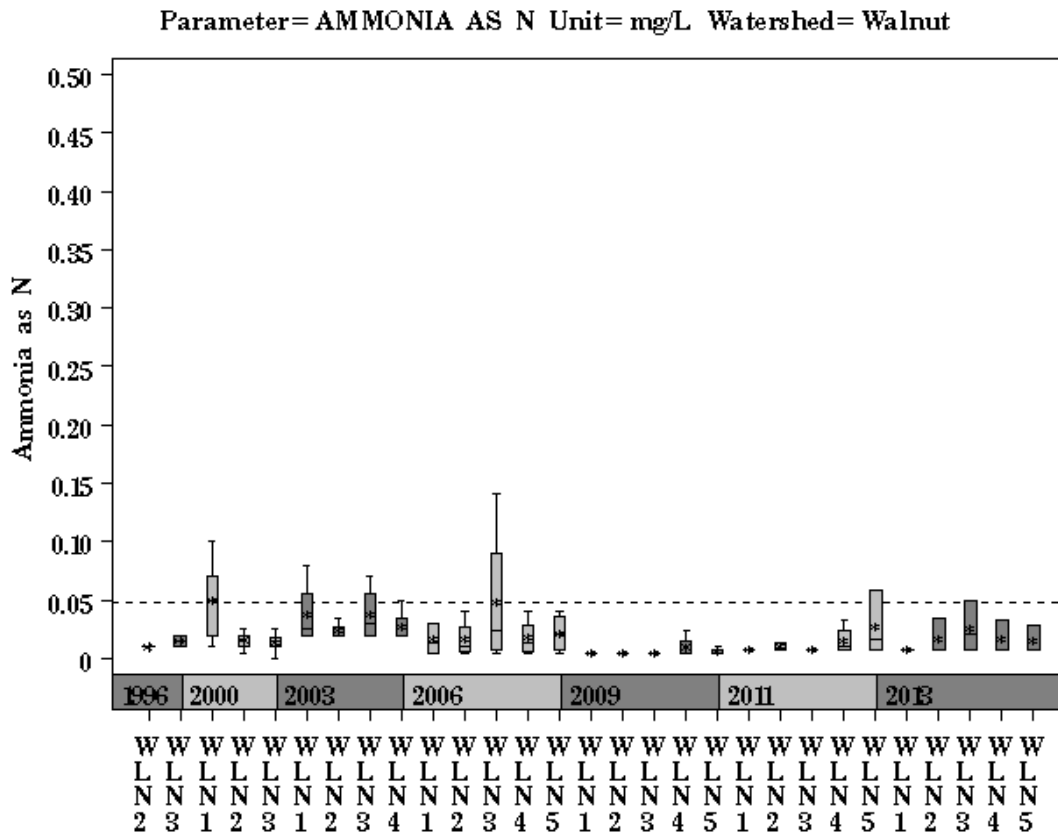
The figure is a box plot showing the distribution of pH values for various water samples (W, L, N) across different years (2000, 2003, 2006, 2009, 2011, 2013). The y-axis represents pH, ranging from 4.0 to 11.0. The x-axis shows the years and sample types. A dashed horizontal line is drawn at approximately pH 7.8. The plot shows that most samples have pH values between 7.5 and 8.5, with a notable outlier in 2006 (W, L, N) reaching a pH of about 9.5.

Year	Sample Type	Min	Q1	Median	Q3	Max	Outliers
2000	W	7.4	7.5	7.6	7.7	7.8	
	L	7.6	7.7	7.8	7.9	8.0	
	N	7.5	7.6	7.7	7.8	7.9	
	N	7.4	7.5	7.6	7.7	7.8	
2003	W	7.4	7.5	7.6	7.7	7.8	
	L	7.6	7.7	7.8	7.9	8.0	
	N	7.5	7.6	7.7	7.8	7.9	
	N	7.4	7.5	7.6	7.7	7.8	
2006	W	7.4	7.5	7.6	7.7	7.8	
	L	7.6	7.7	7.8	7.9	8.0	
	N	7.5	7.6	7.7	7.8	7.9	
	N	7.4	7.5	7.6	7.7	7.8	
2009	W	7.4	7.5	7.6	7.7	7.8	
	L	7.6	7.7	7.8	7.9	8.0	
	N	7.5	7.6	7.7	7.8	7.9	
	N	7.4	7.5	7.6	7.7	7.8	
2011	W	7.4	7.5	7.6	7.7	7.8	
	L	7.6	7.7	7.8	7.9	8.0	
	N	7.5	7.6	7.7	7.8	7.9	
	N	7.4	7.5	7.6	7.7	7.8	
2013	W	7.4	7.5	7.6	7.7	7.8	
	L	7.6	7.7	7.8	7.9	8.0	
	N	7.5	7.6	7.7	7.8	7.9	
	N	7.4	7.5	7.6	7.7	7.8	

A box plot showing the distribution of conductivity for various water samples. The y-axis is labeled 'Conductivity' and ranges from 0 to 2800 in increments of 200. The x-axis is divided into sections for the years 2000, 2003, 2006, 2009, 2011, and 2013. Each year section contains multiple box plots for different water samples, labeled with codes like W1, W2, W3, W4, W5, W6, W7, W8, W9, W10, W11, W12, W13, W14, W15, W16, W17, W18, W19, W20, W21, W22, W23, W24, W25, W26, W27, W28, W29, W30, W31, W32, W33, W34, W35, W36, W37, W38, W39, W40, W41, W42, W43, W44, W45, W46, W47, W48, W49, W50, W51, W52, W53, W54, W55, W56, W57, W58, W59, W60, W61, W62, W63, W64, W65, W66, W67, W68, W69, W70, W71, W72, W73, W74, W75, W76, W77, W78, W79, W80, W81, W82, W83, W84, W85, W86, W87, W88, W89, W90, W91, W92, W93, W94, W95, W96, W97, W98, W99, W100. The box plots show the median, quartiles, and range of conductivity for each sample. A dashed horizontal line is drawn at approximately 700 conductivity units.

Walnut Creek Watershed

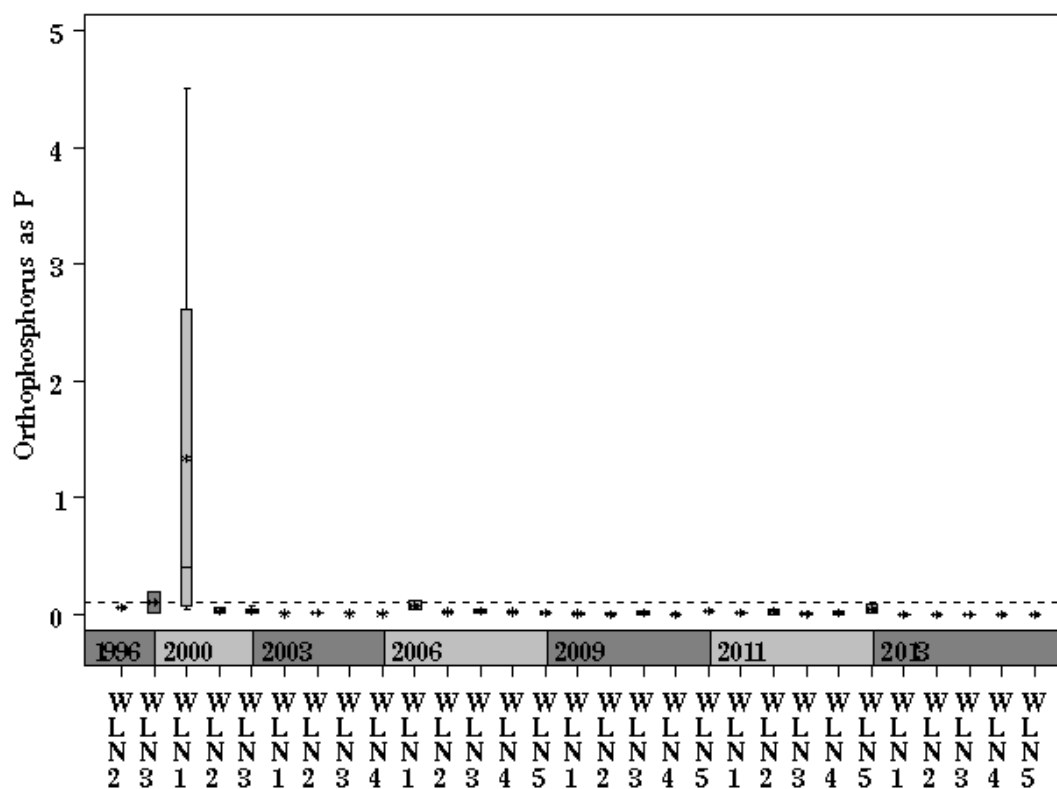
Data Summary Graphs – Ammonia and Nitrate/Nitrite (Downstream to Upstream by Year)



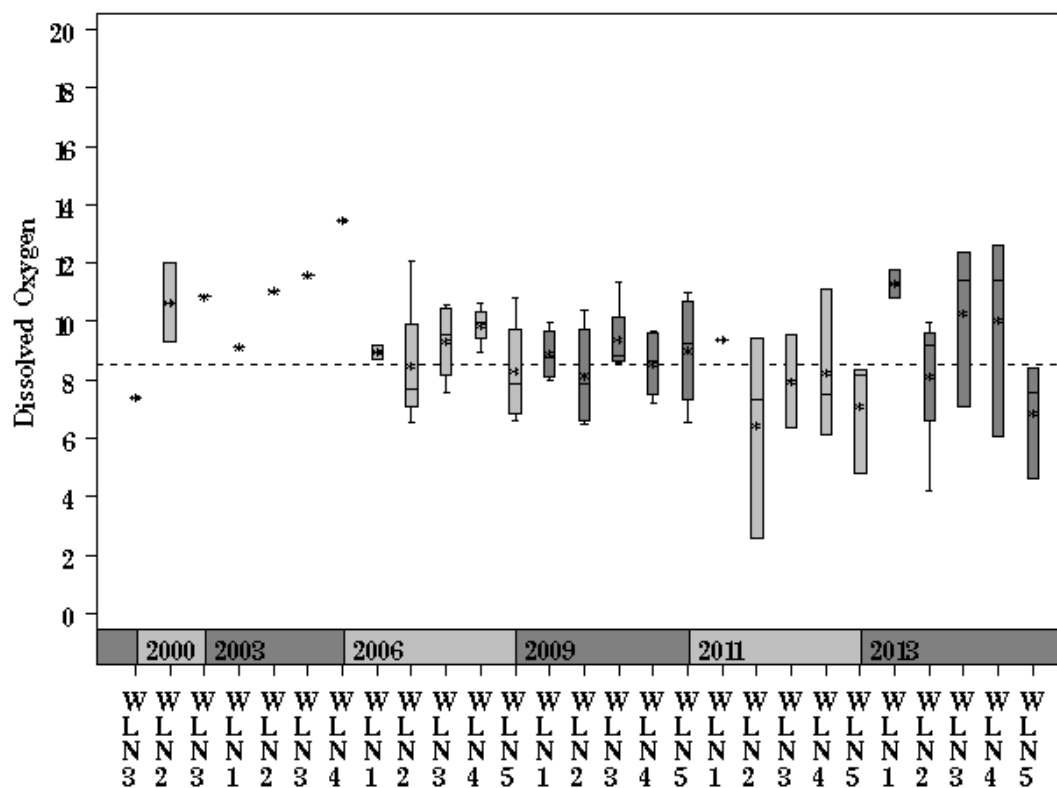
Walnut Creek Watershed

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

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

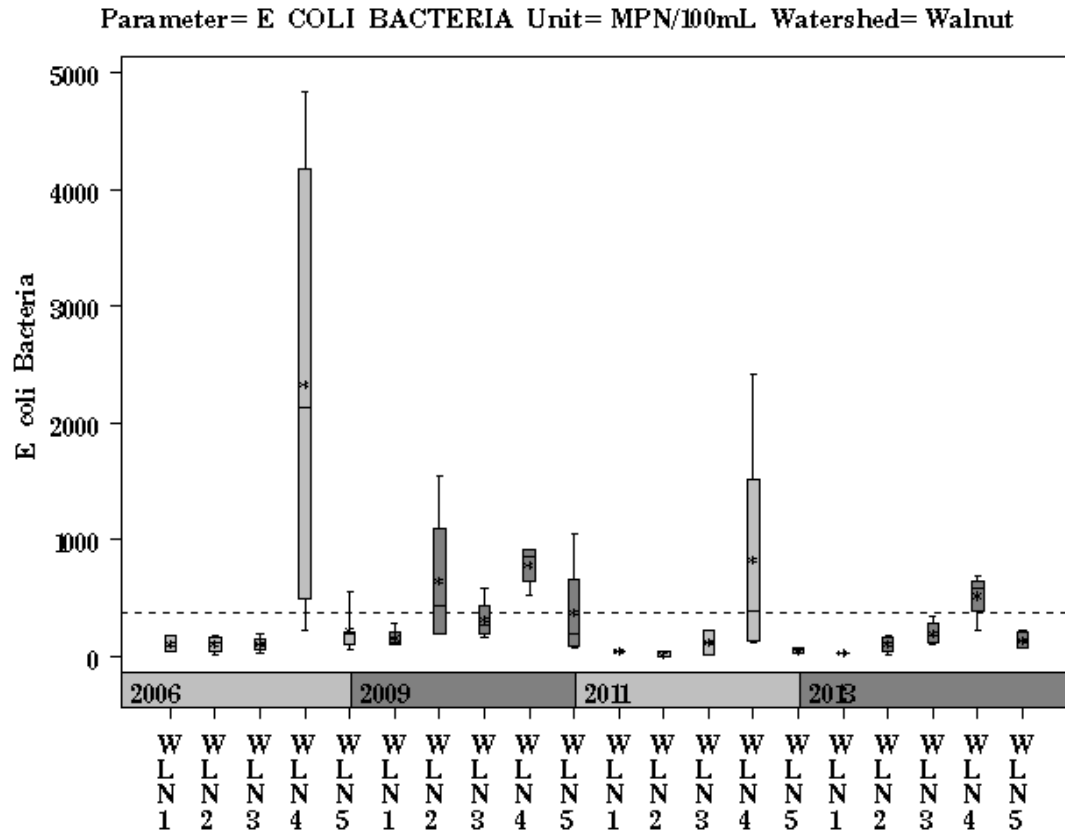


Parameter= DISSOLVED OXYGEN Unit= mg/L Watershed= Walnut



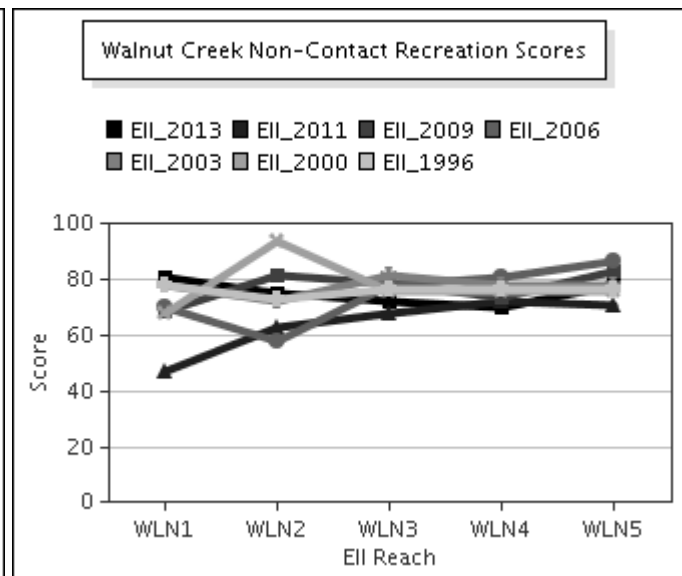
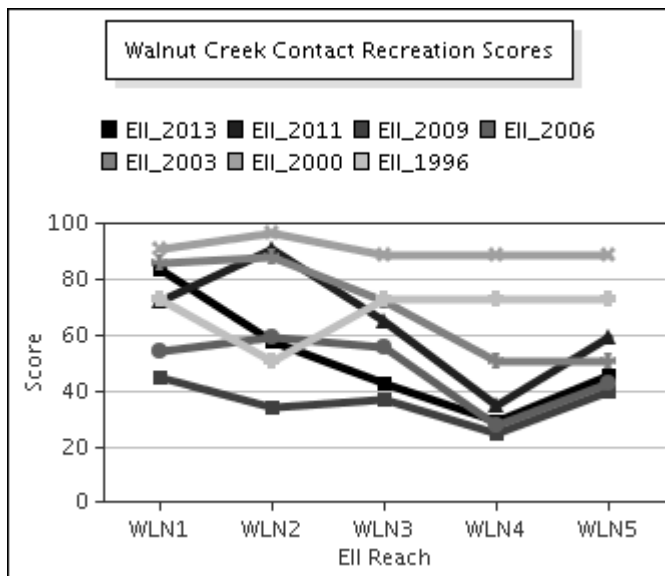
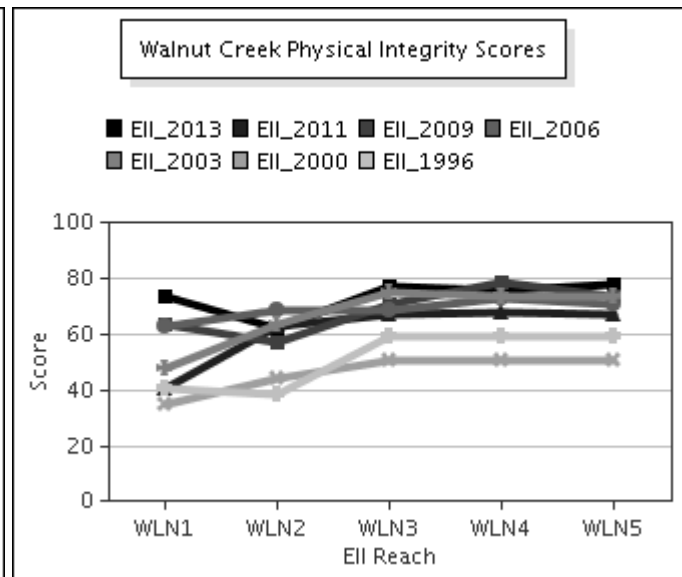
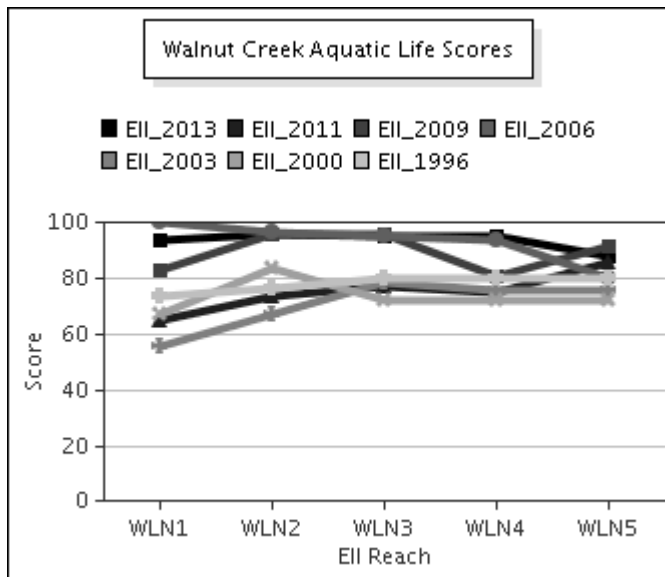
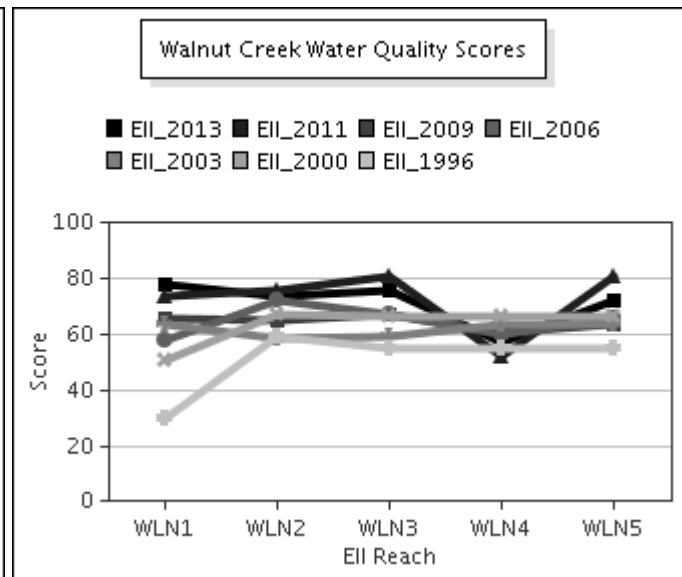
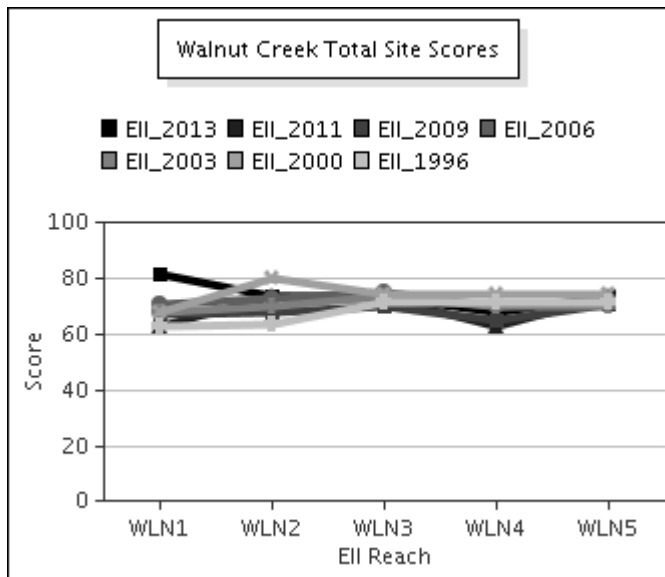
Walnut Creek Watershed

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



Walnut Creek Watershed

Score Summary – Reach scores for each sample year



Walnut Creek Watershed

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

Benthic Macroinvertebrate ID	PTI	FFG	Walnut us Freescale (Site 503)	Walnut @ Old Manor Rd (Site 502)	Walnut ds IH35 (Site 464)	Walnut ds Metric Blvd (Site 895)	Wells Branch @ Metro Park (Site 463)
<i>Marilia</i> sp.	0	SH				11	
<i>Perlesta</i> sp.	0	P		4			
<i>Chimarra</i> sp.	2	FC	2	116	81	96	5
<i>Helicopsyche</i> sp.	2	SC		8	4	11	
<i>Hydroptila</i> sp.	2	SC,PI	1	4		4	
<i>Microcylloepus pusillus</i>	2	SC,CG				1	1
<i>Camelobaetidius</i> sp.	4	CG		8	5		
<i>Fallceon quilleri</i>	4	SC,CG	94	76	45	63	19
<i>Macrelmis</i> sp.	4	SC,CG				18	
<i>Neochoroterpes</i> sp.	4	CG	13				1
Ostracoda	4	FC,CG		1	2	3	
<i>Psephenus</i> sp.	4	SC			1	7	
<i>Simulium</i> sp.	4	FC			24	1	6
<i>Stenacron</i> sp.	4	SC,CG	1				
<i>Cincinnatia cincinnatiensis</i>	5	SC				1	
<i>Lutrochus</i> sp.	5	CG					1
<i>Petrophila</i> sp.	5	SC		4		4	
<i>Tricorythodes</i> sp.	5	CG	2			1	
<i>Argia</i> sp.	6	P	4	3	5	21	9
<i>Brechmorhoga mendax</i>	6	P		1	1		2
<i>Cheumatopsyche</i> sp.	6	FC	6	175	46	310	18
Chironomidae	6	P,FC	10	57	22	152	41
<i>Corbicula fluminea</i>	6	FC				5	
<i>Hemerodromia</i> sp.	6	P,CG				1	
<i>Hetaerina</i> sp.	6	P					1
Hydracarina	6		5				
<i>Microvelia</i> sp.	6	P			3		
<i>Rhagovelia</i> sp.	6	P		9	5		7
<i>Sepedon</i> sp. / <i>Sepedomerus</i> sp.	6	P				1	
Tanypodinae	6	P	5			26	
<i>Bezzia</i> sp. / <i>Palpomyia</i> sp.	7	P,CG				1	
<i>Caenis</i> sp.	7	SC,CG	7			1	1
<i>Gyraulus</i> sp.	7	SC				1	
<i>Stenelmis</i> sp.	7	SC,CG		2	4	48	5
<i>Caloparyphus</i> sp. / <i>Euparyphus</i> sp.	8	SC,CG				17	
<i>Hyaella</i> sp.	8	SH,CG	1			5	
Oligochaeta	8	CG	1	1		1	
Tabanidae	8	P					1
<i>Berosus</i> sp.	9	CG	5				
<i>Physella</i> sp.	9	SC		1	1		
<i>Trepobates</i> sp.	10	P			1		1
<i>Dugesia</i> sp.		P,CG		109	52	146	14

Walnut Creek Watershed

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

Scoring Metric	Walnut us Freescall (Site 503)	Walnut @ Old Manor Rd (Site 502)	Walnut ds IH35 (Site 464)	Walnut ds Metric Blvd (Site 895)	Wells Branch @ Metro Park (Site 463)
Number of Taxa *	14	17	17	26	17
Hilsenhoff Biotic Index *	4.7	4.5	4.1	5.2	5.5
Number of Ephemeroptera Taxa *	5	2	2	3	3
Percent of Total as Chironomidae *	10	10	7	19	31
Number of EPT Taxa *	8	7	5	8	5
Percent of Total as EPT *	80	68	60	52	33
Percent of Total as Predator *	12	32	29	37	57
Number of Intolerant Taxa *	5	7	7	10	5
Percent Dominance (Top 3 Taxa) *	75	69	59	64	59
EPT / EPT + Chironomidae	1	1	1	1	1
Number of Diptera Taxa	1	1	2	6	3
Number of Non-Insect Taxa	3	4	3	6	1
Number of Organisms	157	579	302	952	133
Percent Dominance (Top 1 Taxa)	60	30	27	33	31
Percent of Total as Collector / Gatherer	79	34	36	32	32
Percent of Total as Dominant Guild (FFG)	79	60	58	62	57
Percent of Total as Elmidae	0	0	1	7	5
Percent of Total as Filterers	15	60	58	62	53
Percent of Total as Grazers (PI & SC)	66	16	18	18	20
Percent of Total as Tolerant Organisms	3	0	1	0	1
Percent of Trichoptera as Hydropsychidae	67	58	35	72	78
Ratio of Intolerant : Tolerant Organisms	2.56	0.88	1.84	0.37	0.38
TCEQ Qualitative Aquatic Life Use Score	23	26	30	27	21
TCEQ Quantitative Aquatic Life Use Score	33	29	31	35	29

* **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%.

Walnut Creek Watershed

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

Diatom Species Name	PTI	Walnut us Freescale (Site 503)	Walnut @ Old Manor Rd (Site 502)	Walnut ds IH35 (Site 464)	Walnut ds Metric Blvd (Site 895)	Wells Branch @ Metro Park (Site 463)
<i>Amphora inariensis</i>	4			4	13	15
<i>Fragilaria acus</i>	4	10		4		
<i>Fragilaria tenera</i>	4	1				
<i>Achnantheidium minutissimum</i>	3	169	235	97	68	99
<i>Achnantheidium pyrenaicum</i>	3		26			4
<i>Amphipleura pellucida</i>	3	13	1	3	1	
<i>Amphora libyca</i>	3			1		
<i>Amphora pediculus</i>	3		15	16	110	18
<i>Caloneis bacillum</i>	3	2	6			
<i>Caloneis schumanniana</i>	3		2			
<i>Caloneis ventricosa</i>	3	2				
<i>Cocconeis pediculus</i>	3		10	89	23	157
<i>Cymatopleura elliptica</i>	3		2			
<i>Cymbella affinis</i>	3	20	10	8	2	
<i>Cymbella hustedtii</i>	3	20	4		4	
<i>Cymbella laevis</i>	3		4			2
<i>Denticula kuetzingii</i>	3		3	13	28	12
<i>Encyonema silesiacum</i>	3	7	7	4	19	30
<i>Encyonopsis microcephala</i>	3		2			
<i>Epithemia turgida</i>	3		4	6	2	12
<i>Fragilaria capucina</i>	3	2	12	38		4
<i>Geisslera decussis</i>	3		1		2	
<i>Gomphonema acuminatum</i>	3		1			
<i>Gomphonema affine</i>	3					4
<i>Gomphonema clavatum</i>	3			2		
<i>Gomphonema gracile</i>	3				2	
<i>Gomphonema truncatum</i>	3			16	4	4
<i>Halamphora montana</i>	3	2				
<i>Navicula cryptocephala</i>	3		6		1	
<i>Navicula cryptotenella</i>	3	1	2			
<i>Navicula kotschy</i>	3		2		1	1
<i>Navicula radiosa</i>	3	4	30	27	18	19
<i>Nitzschia dissipata</i>	3	2	3	6	2	15
<i>Nitzschia linearis</i>	3	3	3			
<i>Nitzschia recta</i>	3		1			
<i>Reimeria sinuata</i>	3	62	33	36	44	10
<i>Rhoicosphenia abbreviata</i>	3		2		2	
<i>Rhopalodia gibba</i>	3	2		2		
<i>Tabularia fasciculata</i>	3			4	10	
<i>Tryblionella angustata</i>	3		3			
<i>Achnantheiopsis lanceolata</i>	2				2	2
<i>Amphora coffeaeformis</i>	2	4				
<i>Cyclotella meneghiniana</i>	2	4	6	12	1	2
<i>Cymatopleura solea</i>	2		1			
<i>Encyonema minutum</i>	2	14		12	51	16
<i>Gomphonema angustatum</i>	2			4		5
<i>Navicula menisculus</i>	2					1
<i>Navicula recens</i>	2	6				
<i>Navicula schroeterii</i>	2	1				
<i>Navicula tenelloides</i>	2	6				
<i>Nitzschia amphibia</i>	2	8	2	6	14	10
<i>Nitzschia inconspicua</i>	2	18	15		3	
<i>Surirella angusta</i>	2	2	3			
<i>Synedra ulna</i>	2	38	14	17	1	1
<i>Tryblionella apiculata</i>	2		1		1	
<i>Gomphonema parvulum</i>	1	24	4	26	31	36
<i>Navicula arvensis</i>	1	2				
<i>Nitzschia palea</i>	1			1		
<i>Nitzschia solita</i>	1		2			

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Walnut Creek Watershed

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

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

Diatom Species Name	PTI	Walnut us Freescale (Site 503)	Walnut @ Old Manor Rd (Site 502)	Walnut ds IH35 (Site 464)	Walnut ds Metric Blvd (Site 895)	Wells Branch @ Metro Park (Site 463)
<i>Achnanthyidium gracillimum</i>		5	2	15	8	
<i>Cocconeis placentula</i> var. <i>lineata</i>		21	2	31	20	8
<i>Cymbella excisa</i>		23				
<i>Cymbella subleptoceros</i>						1
<i>Eolimna minima</i>			16		12	12
<i>Navicula antonii</i>			2			
<i>Navicula rostellata</i>		2				

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

Scoring Metric	Walnut us Freescale (Site 503)	Walnut @ Old Manor Rd (Site 502)	Walnut ds IH35 (Site 464)	Walnut ds Metric Blvd (Site 895)	Wells Branch @ Metro Park (Site 463)
<i>Cymbella</i> Richness	6	6	4	5	5
Number of organisms	500	500	500	500	500
Number of taxa	33	41	28	31	27
Percent motile taxa	11	15	8	8	9
Percent similarity to reference condition	43	53	57	49	52
Pollution tolerance index	2.68	2.89	2.79	2.73	2.80

* **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*, *Cymbopileura*, *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.

Walnut Creek Watershed

Site Photographs



463_t00-us-05_29_2009



463_t00-ds-05_29_2009



895_t00-us1-07_07_2006



895_t00-ds-07_07_2006



464_t00-us-05_29_2009



464_t00-ds-05_29_2009

Walnut Creek Watershed

Site Photographs



502_t00-ds-07_11_2006



502_t00-us1-07_11_2006



465_t00-us-03_12_2002



465_t00-ds-12_07_2000



503_t3-ds-06_14_2006



503_t00-ds-03_12_2003

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