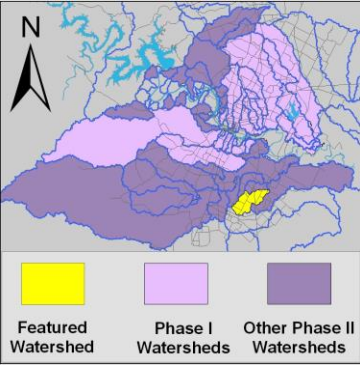


South Fork Dry Creek Watershed

Summary Sheet

Catchment	Total area	9 sq. miles					
	Area in recharge	0					
	Creek length	10 miles					
	Receiving water	Dry Creek					
Demographics	2000 population	1,276					
	2030 projected population	8,011					
	30 year projected % increase	628 %					
Land Use	Impervious cover (2003 estimate)	5.5 %					
	Impervious cover (2013 estimate)	4.1 %					
Overall EII Scores	1999	2002	2005	2008	2010	2012	2014
	51	59	50	58	66	59	63



Flow Regime* for Sample Sites on South Fork Dry Creek

Site	Site Name	2002					2005					2008					2010				2011	2012				2014				
		Feb	Feb	May	Aug	Nov	Mar	Jun	Jun	Sep	Dec	Feb	May	Jun	Sep	Dec	Mar	May	May	Oct	Dec	Mar	May	Jul	Sep	Jan	Apr	May	Jul	Sep
		WQ	Bio	WQ	WQ	WQ	WQ	WQ	Bio	WQ	WQ	WQ	WQ	Bio	WQ	WQ	WQ	WQ	Bio	WQ	WQ	WQ	Bio	WQ	WQ	WQ	WQ	Bio	WQ	WQ
1214	Rodriguez	B	B	n	n	B																								
1215	US183	B	B	n	n	B	B	n	n	n	n	n	n	n	n	n	B	n	n	n	n	B	n	n	n	B	B	n	B	n
1216	FM 812	B	B	n		B	B	B	n	n	B	B	B	n	B	B	B	B	S	B	B	B	B	B	n	B	B	B	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 South Fork Dry 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
SFD1	1216	South Fork Dry Creek @ FM812	1999	38	68	57	49	48				43
SFD2	1214	South Fork Dry Creek @ Rodriguez Rd	1999	69	68	98	43	55				56
SFD2	1215	South Fork Dry Creek @ US183	1999	60	68	96	54	45				54
SFD1	1216	South Fork Dry Creek @ FM812	2002	33	82	72	74	33	31	33	28	54
SFD2	1214	South Fork Dry Creek @ Rodriguez Rd	2002	64	82	96	73	29	19	37		60
SFD2	1215	South Fork Dry Creek @ US183	2002	61	82	86	67	28	53	49	57	63
SFD1	1216	South Fork Dry Creek @ FM812	2005	40	85	55	49	47				46
SFD2	1215	South Fork Dry Creek @ US183	2005	61	85	82	62	24				52
SFD1	1216	South Fork Dry Creek @ FM812	2008	53	78	53	49	53	63	63		58
SFD2	1215	South Fork Dry Creek @ US183	2008		78		48	55	57	57		60
SFD1	1216	South Fork Dry Creek @ FM812	2010	61	79	70	66	53	69	69		66
SFD2	1215	South Fork Dry Creek @ US183	2010	70	79	68	66	52	57	43	71	65
SFD1	1216	South Fork Dry Creek @ FM812	2012	56	79	49	51	44	73	85	60	59
SFD2	1215	South Fork Dry Creek @ US183	2012	66	79	24	58	51	76	65	86	59
SFD1	1216	South Fork Dry Creek @ FM812	2014	44	79	44	79	51	65	66	63	60
SFD2	1215	South Fork Dry Creek @ US183	2014	64	79	82	68	35	64	47	81	65

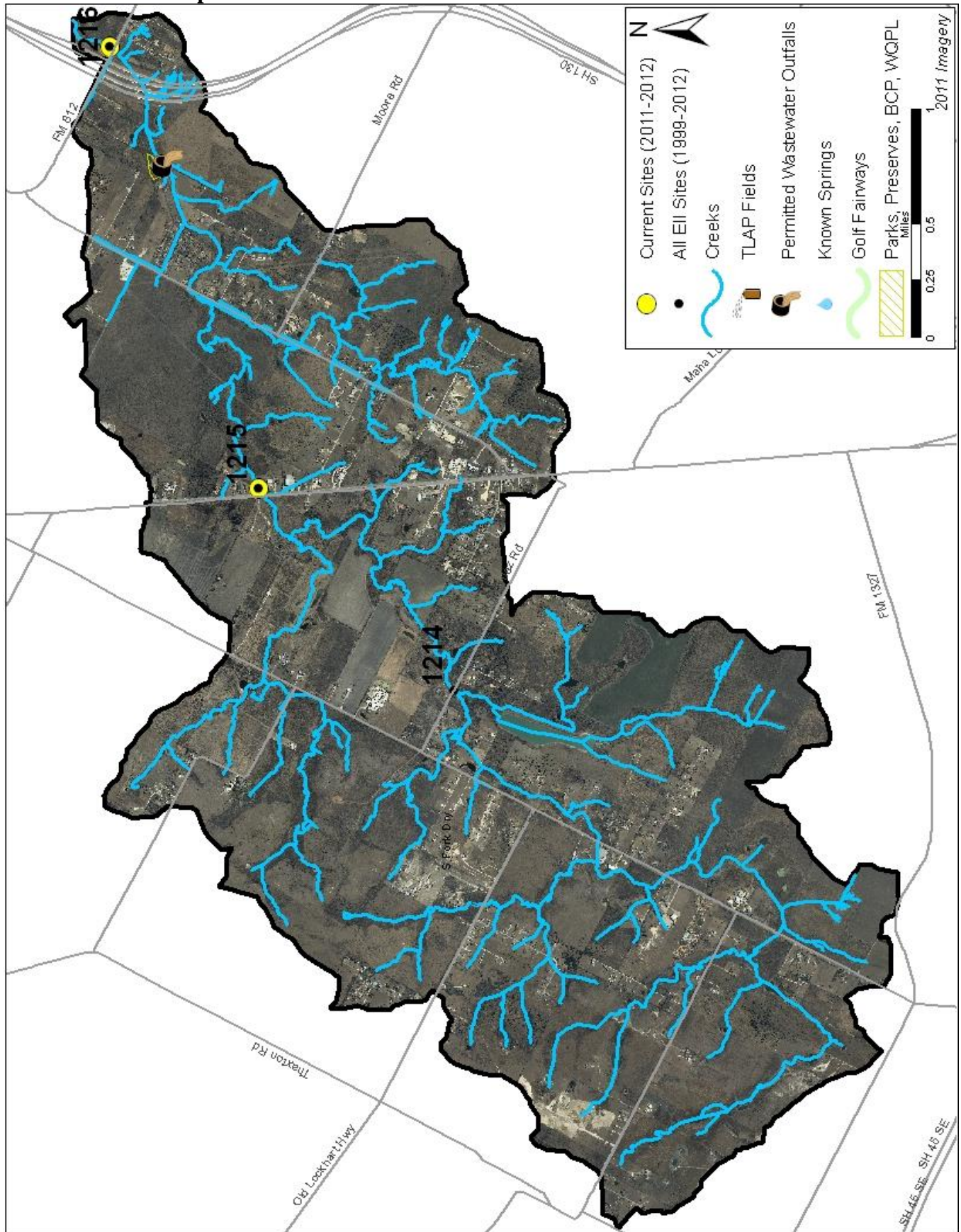
* blank cells indicate parameter was not collected, blank row indicate site was dropped

**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

South Fork Dry Creek Watershed

Aerial Map



South Fork Dry Creek Watershed

Water Quality Data – Temperature, Conductivity, pH, Dissolved Oxygen & E. coli for 2014 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
South Fork Dry East @ FM812	1216	SFD1	01/15/2014	10.1		551		8.63				39.3	
South Fork Dry East @ FM812	1216	SFD1	04/17/2014	16.6		680		7.87		4.8		365.4	
South Fork Dry East @ FM812	1216	SFD1	05/06/2014	22.3		716		7.23		3.3			
South Fork Dry East @ FM812	1216	SFD1	07/02/2014	28.3		601		7.80		6.8		> 2419.6	
Site 1216 Mean				19.3		637		7.88		5.0		941.4	
South Fork Dry East @ US183	1215	SFD2	01/15/2014	12.3		633		8.22				2.0	
South Fork Dry East @ US183	1215	SFD2	04/17/2014	17.7		835		8.23		6.2		98.8	
South Fork Dry East @ US183	1215	SFD2	07/02/2014	30.3		902		8.32		10.7		5.0	
Site 1215 Mean				20.1		790		8.26		8.5		35.3	
Watershed Mean				19.7		703		8.04		6.4		488.4	

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 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	

South Fork Dry Creek Watershed

Water Quality Data – Ammonia, Nitrate / Nitrite, Ortho-Phosphorus, Total Suspended Solids & Turbidity for 2014 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			

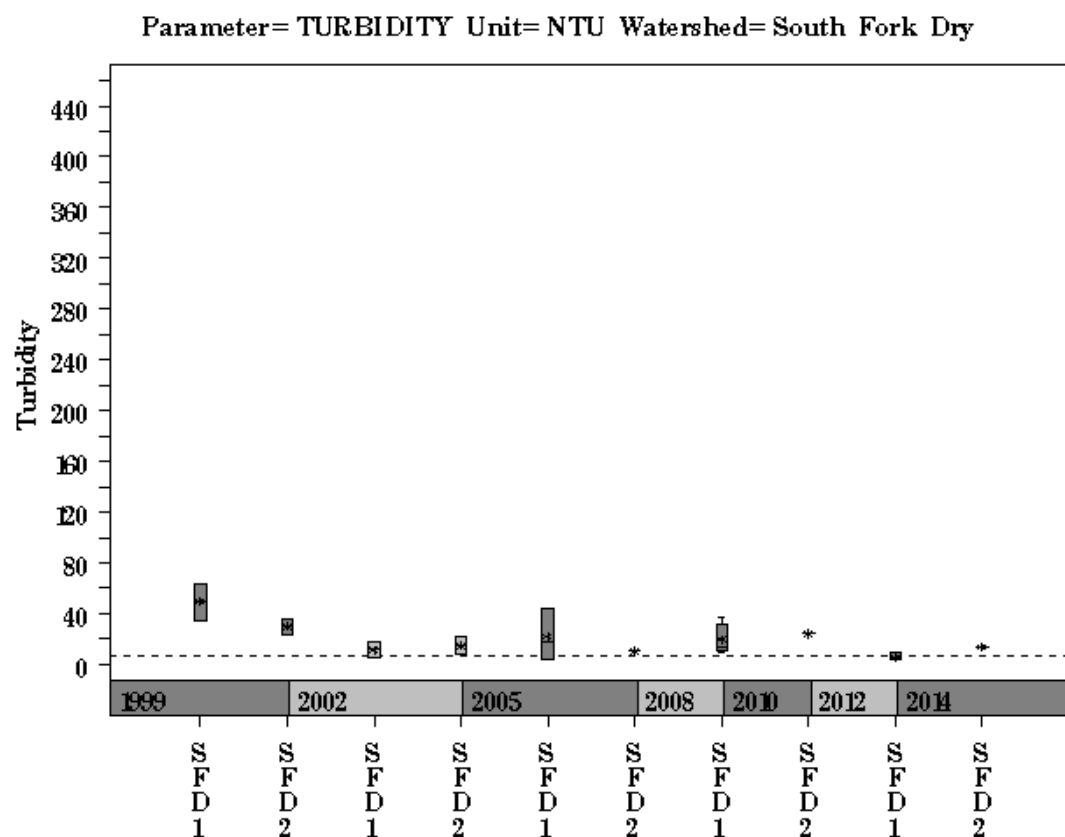
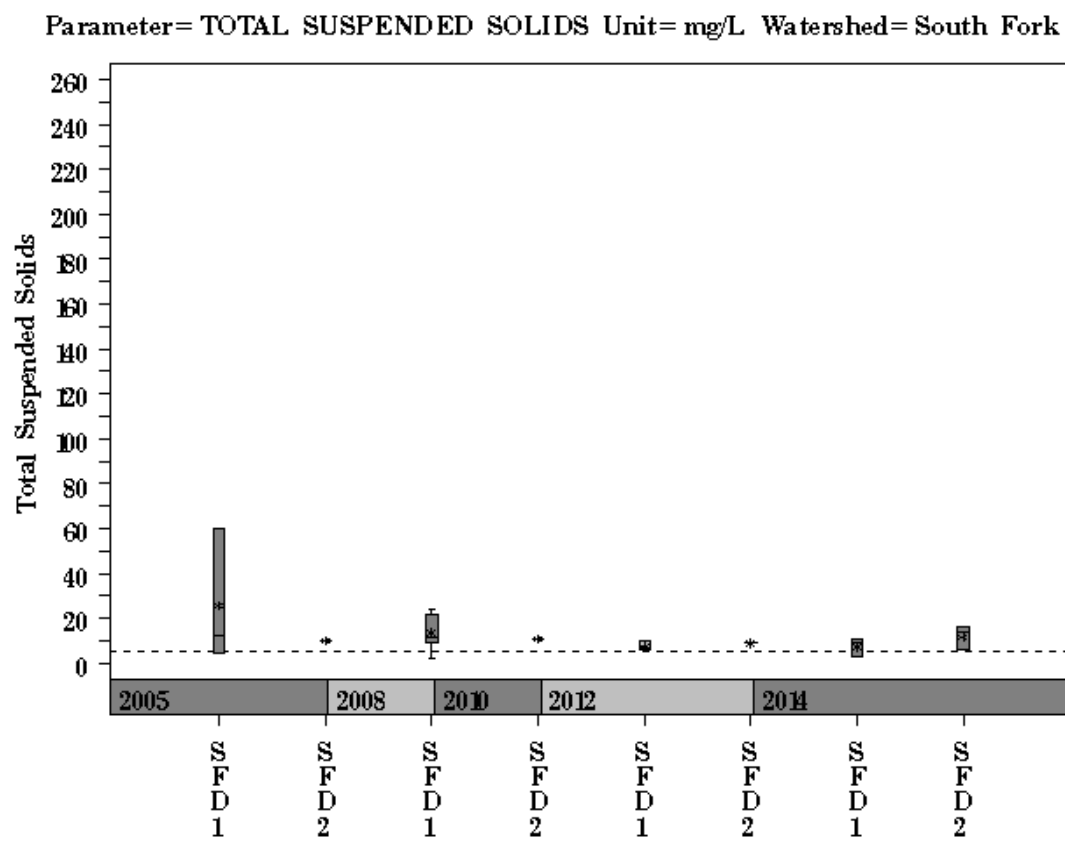
Site Name	Site #	Reach	Date	<>	NH3-N Value	flag	<>	NO3/NO2 Value	flag	<>	Ortho-P Value	flag	<>	T.S.S. Value	flag	<>	Turb. Value	flag
South Fork Dry East @ FM812	1216	SFD1	01/15/2014	<J	0.008			2.45			0.379			2.70			4.1	R
South Fork Dry East @ FM812	1216	SFD1	04/17/2014		0.042		<J	0.01			0.379			10.50			13.0	R
South Fork Dry East @ FM812	1216	SFD1	05/06/2014															
South Fork Dry East @ FM812	1216	SFD1	07/02/2014		0.053			5.96			0.187			9.40			9.0	
Site 1216 Mean					0.034			2.81			0.315			7.53			8.7	
South Fork Dry East @ US183	1215	SFD2	01/15/2014	<J	0.008		<J	0.01		<J	0.004			6.36			7.9	R
South Fork Dry East @ US183	1215	SFD2	04/17/2014		0.078			0.04						16.30			20.3	R
South Fork Dry East @ US183	1215	SFD2	07/02/2014	<J	0.008		<J	0.01		<J	0.004			13.60			14.3	
Site 1215 Mean					0.031			0.02			0.004			12.09			14.2	
Watershed Mean					0.033			1.41			0.191			9.81			11.4	

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

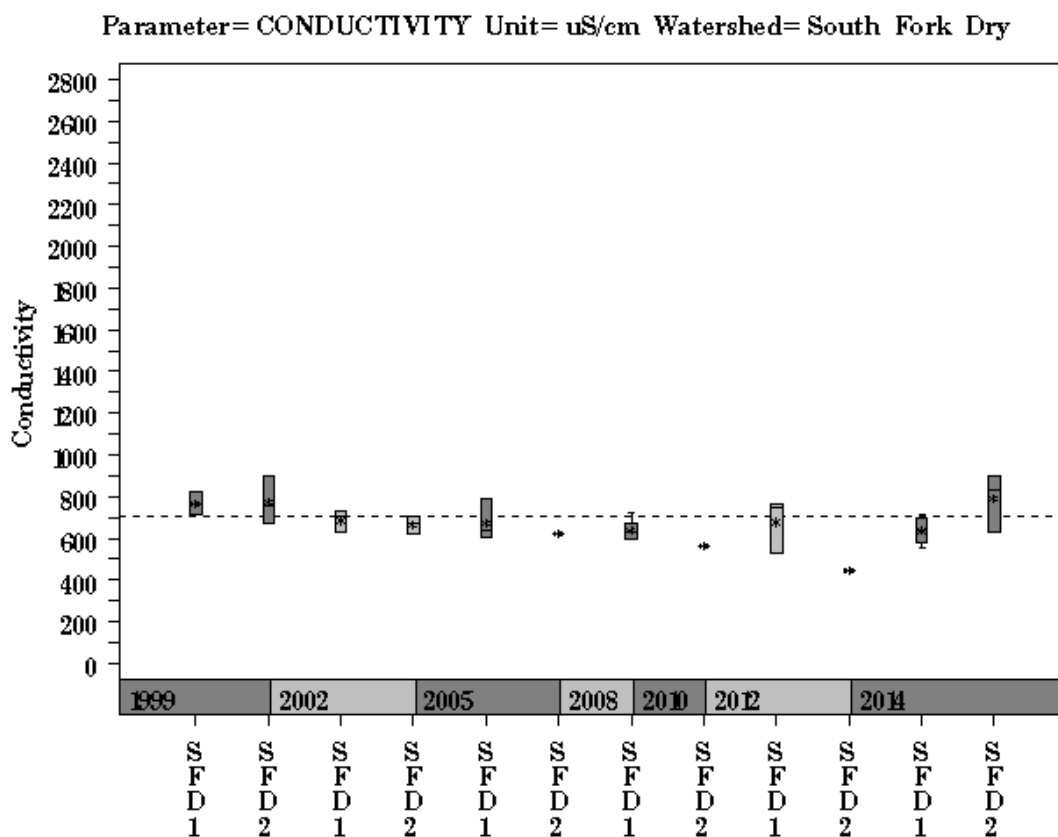
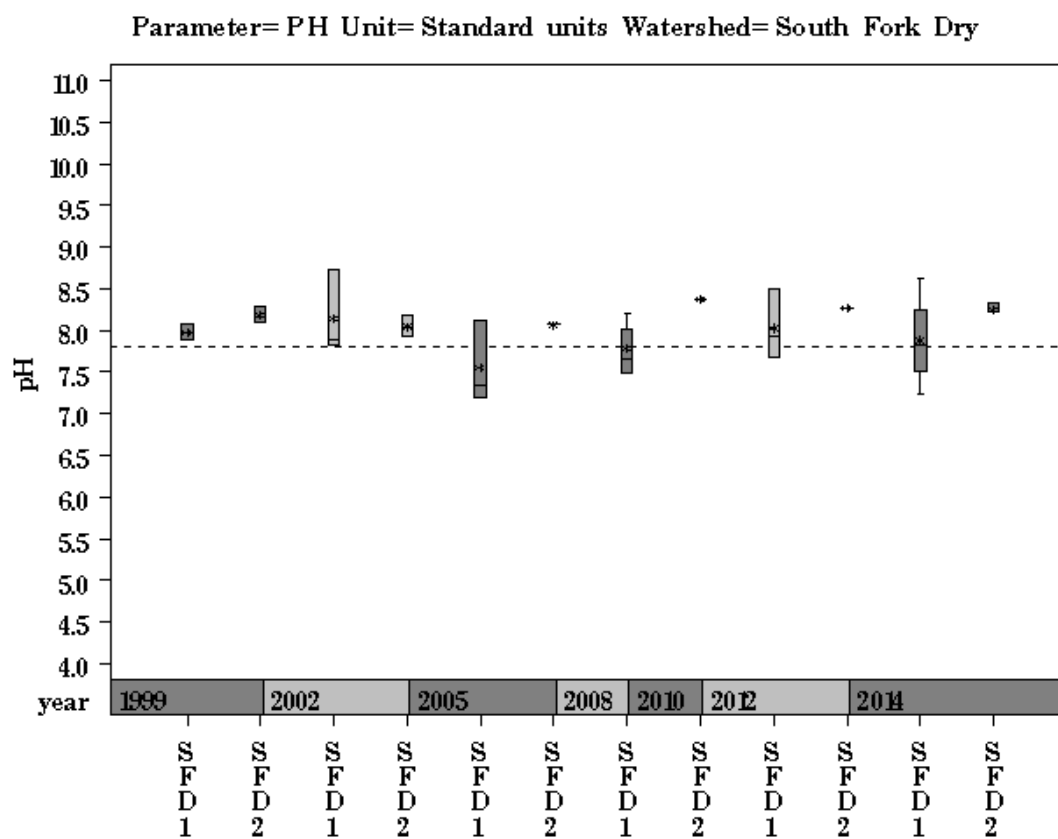
South Fork Dry Creek Watershed

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



South Fork Dry Creek Watershed

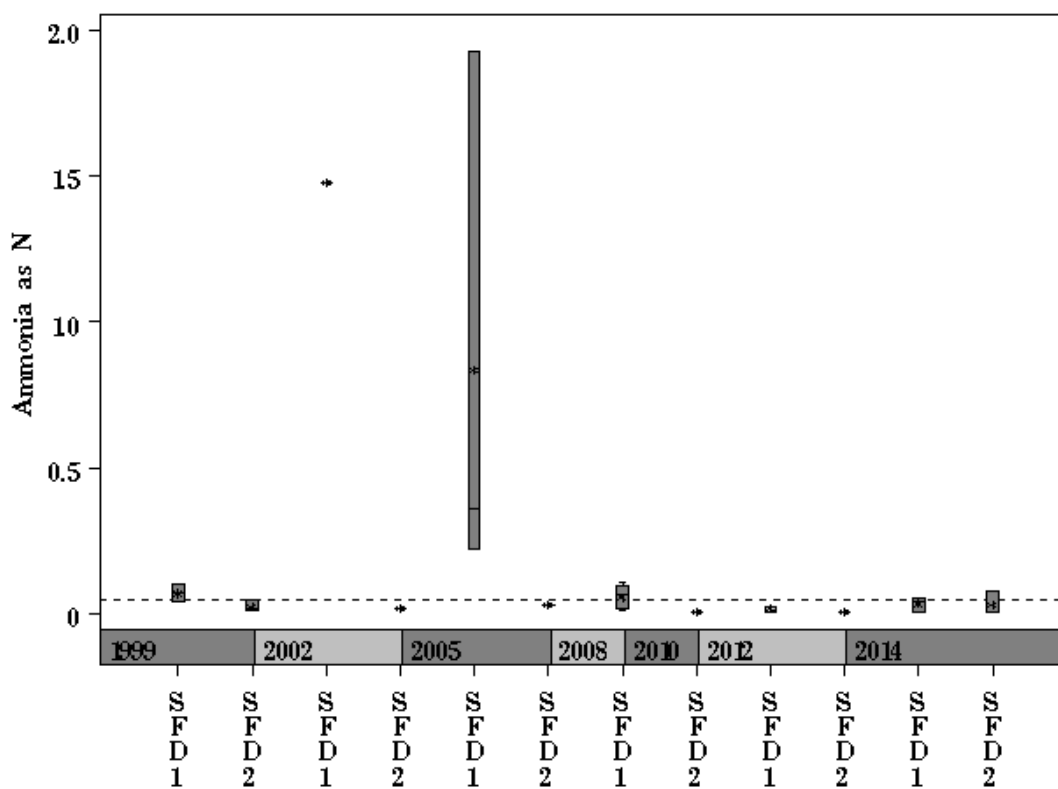
Data Summary Graphs – pH and Conductivity (Downstream to Upstream by Year)



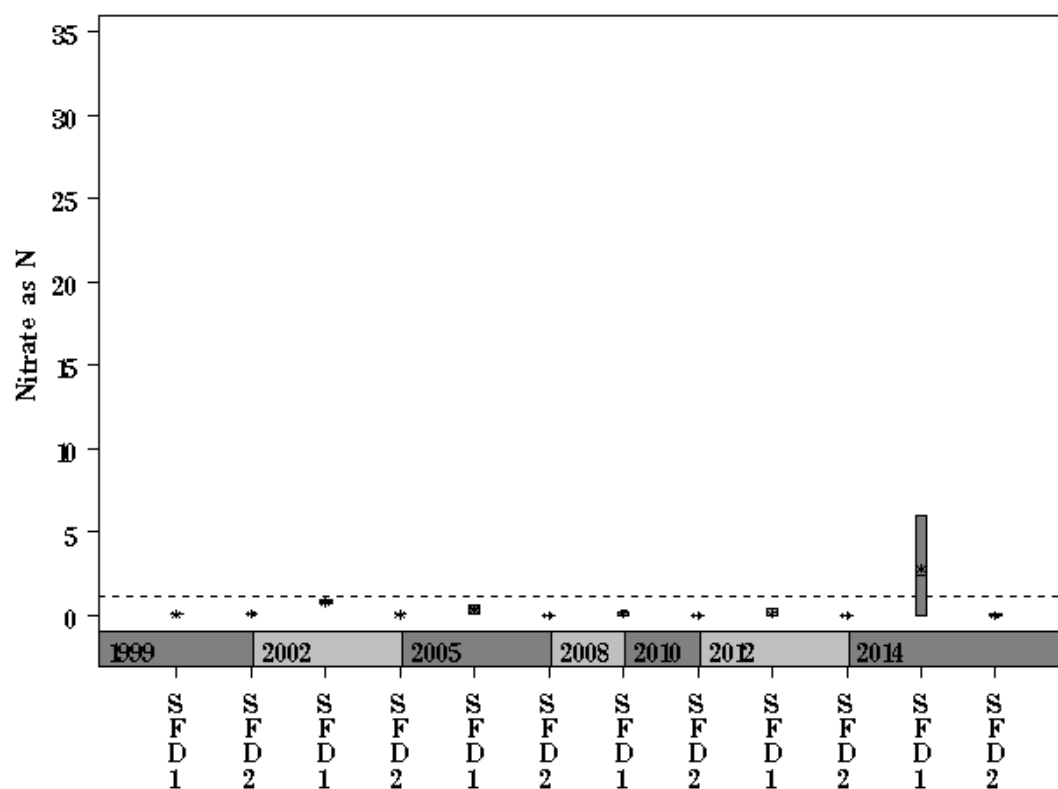
South Fork Dry Creek Watershed

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

Parameter= AMMONIA AS N Unit= mg/L Watershed= South Fork Dry



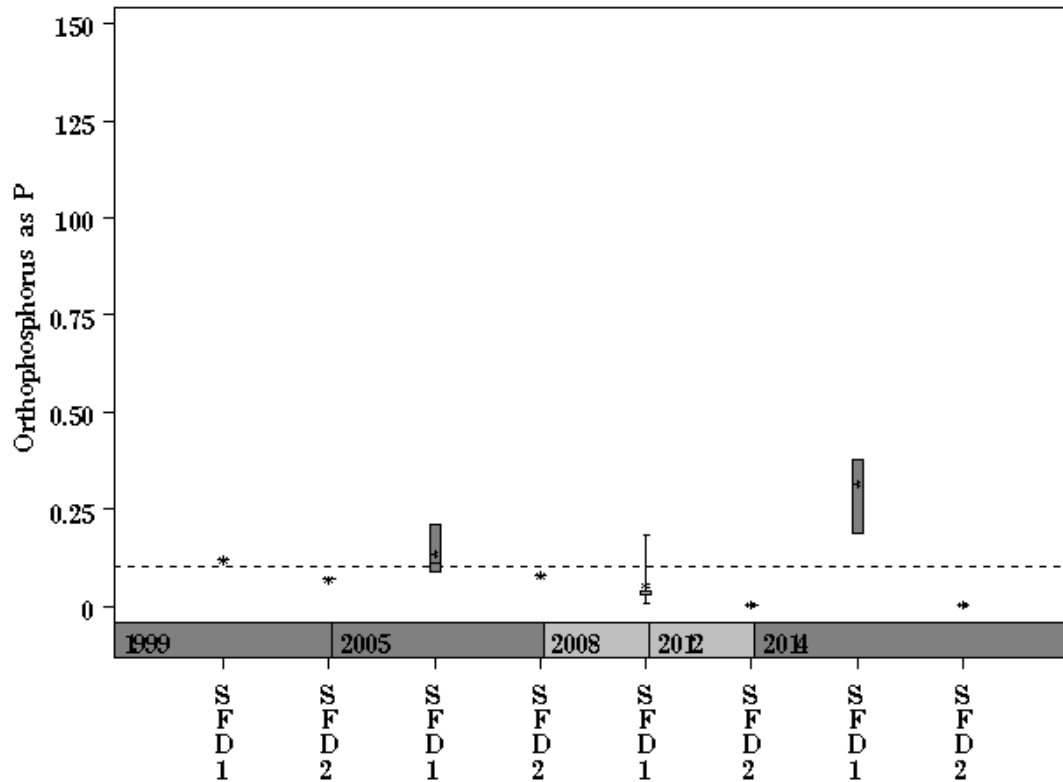
Parameter= NITRATE AS N Unit= mg/L Watershed= South Fork Dry



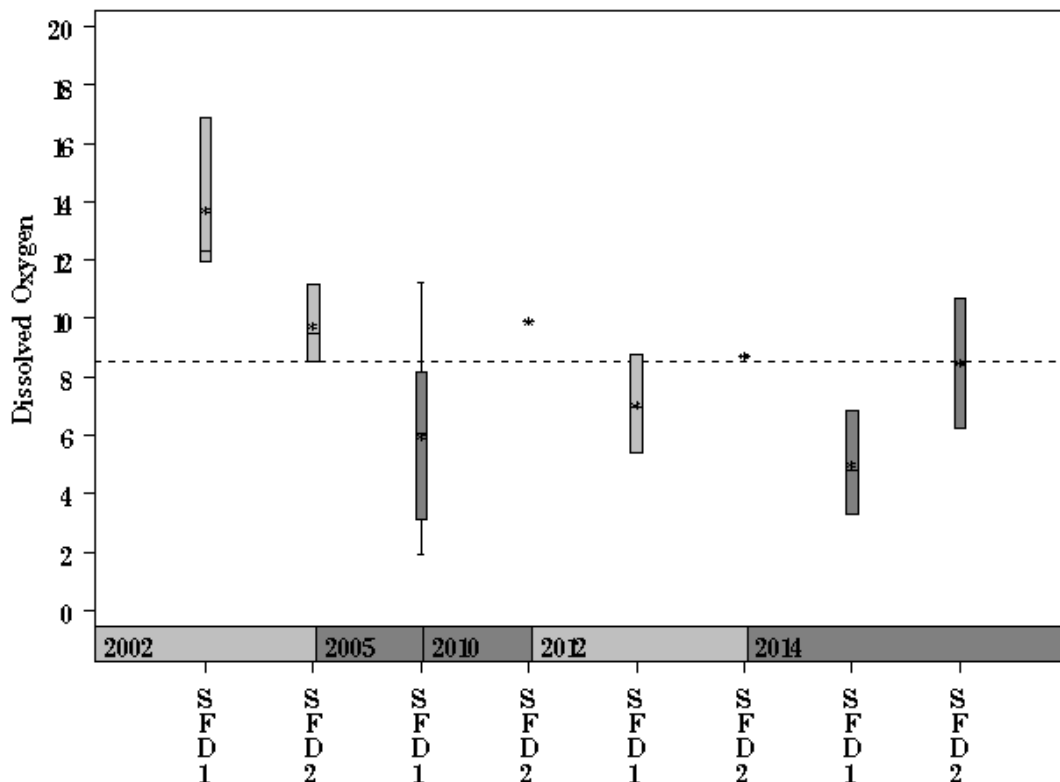
South Fork Dry Creek Watershed

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

Parameter= ORTHOPHOSPHORUS AS P Unit= mg/L Watershed= South Fork Dr

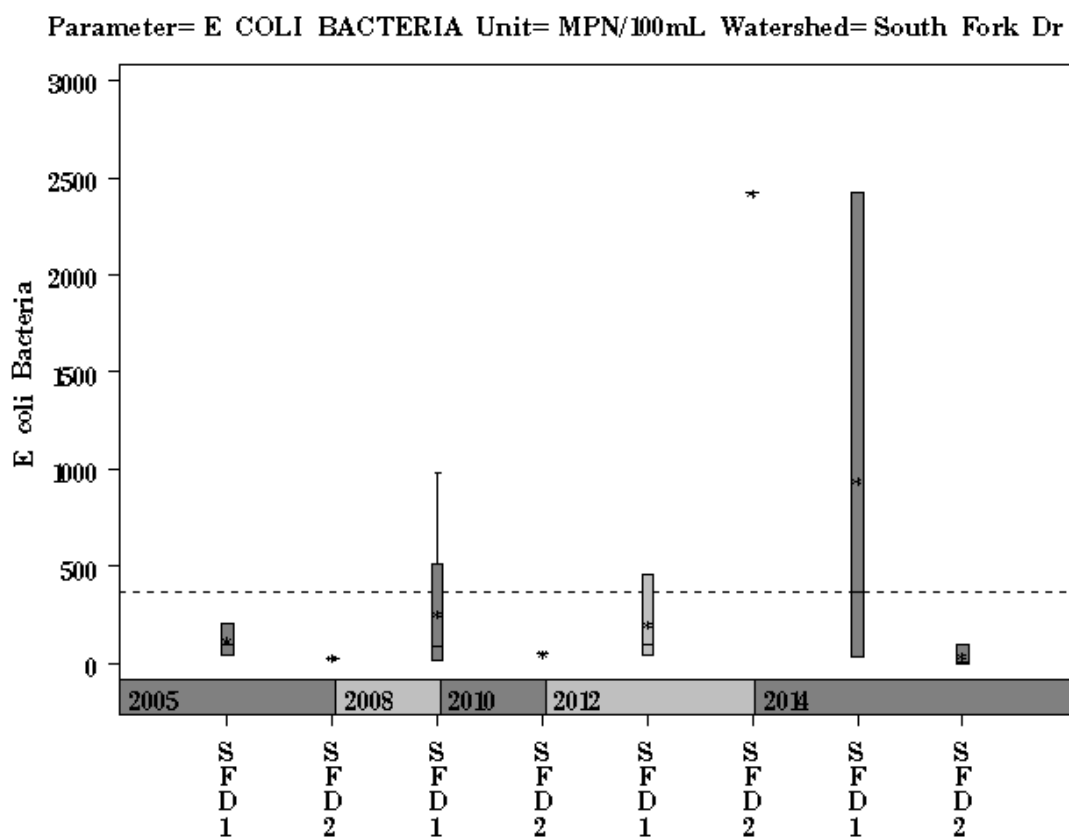


Parameter= DISSOLVED OXYGEN Unit= mg/L Watershed= South Fork Dry



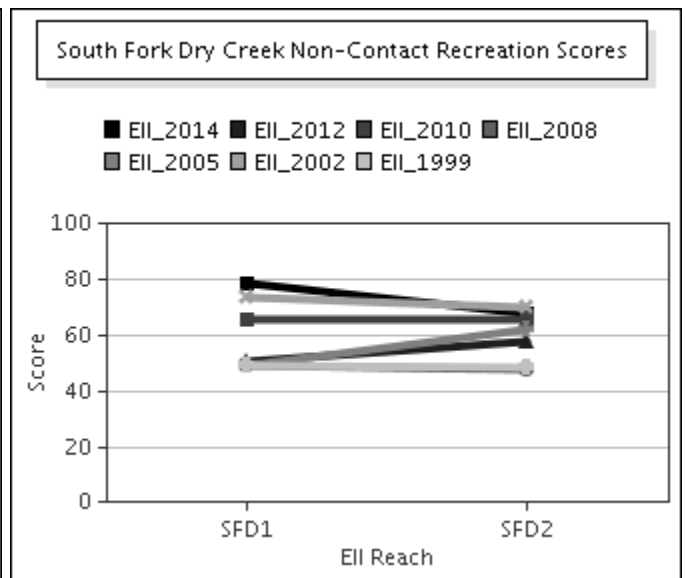
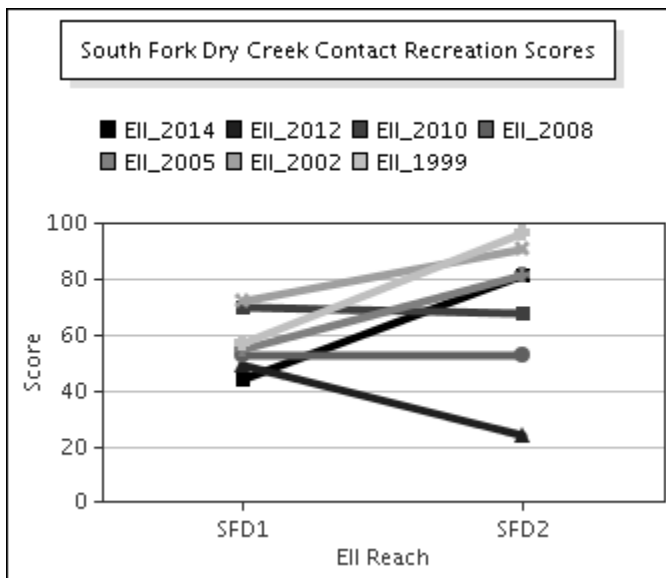
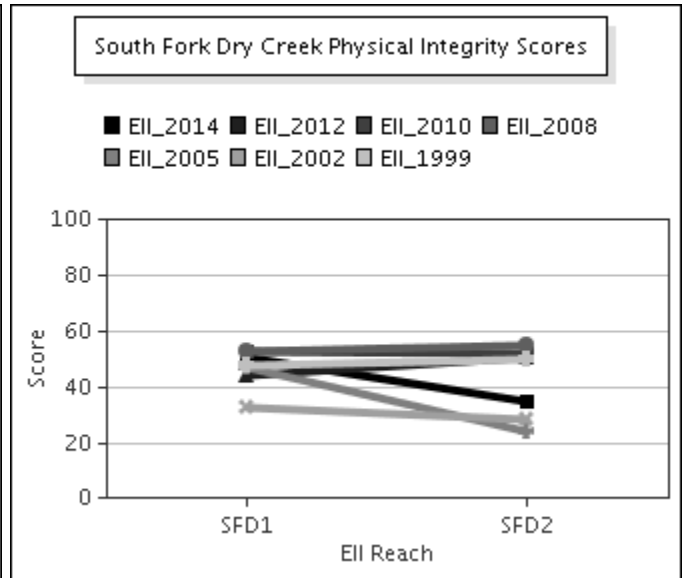
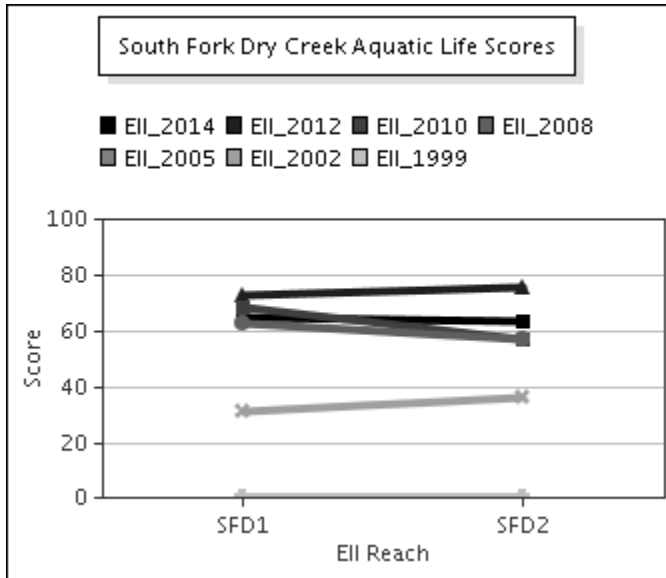
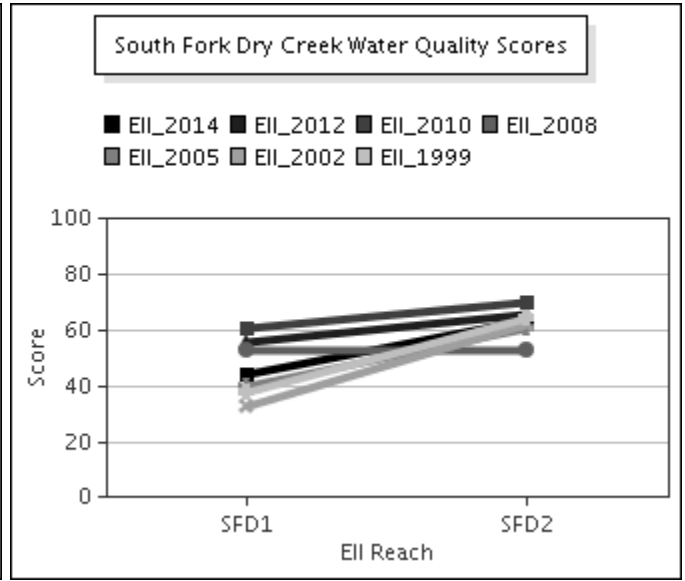
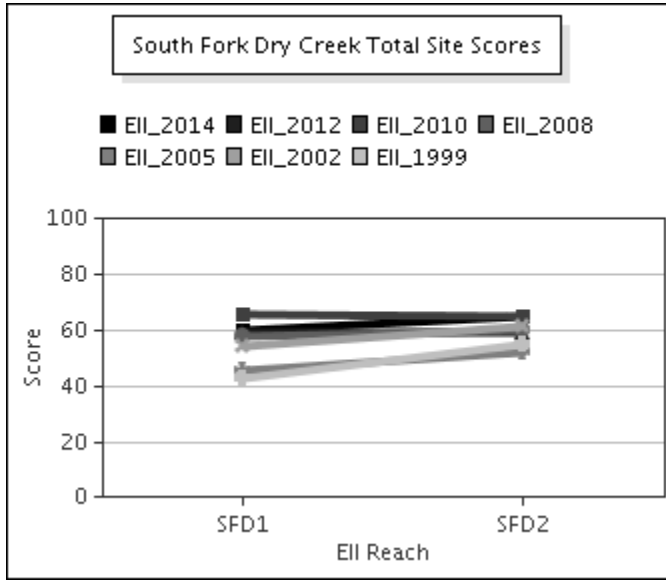
South Fork Dry Creek Watershed

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



South Fork Dry Creek Watershed

Score Summary – Reach scores for each sample year



South Fork Dry Creek Watershed

Benthic Macroinvertebrates – Taxa List, Pollution Tolerance Index & Functional Feeding Group for 2014 Sample Sites (Downstream to Upstream)

Benthic Macroinvertebrate ID	PTI	FFG	South Fork Dry East @ FM812 (Site 1216)	South Fork Dry East @ US183 (Site 1215)
<i>Chimarra</i> sp.	2	FC	75	
<i>Chaoborus</i> sp.	4			2
Ostracoda	4	FC,CG	1	
<i>Sphaerium</i> sp.	5	FC	8	
<i>Argia</i> sp.	6	P	8	
Chironomidae	6	P,FC	3	21
<i>Enallagma</i> sp.	6	P	3	1
Hydracarina	6			29
<i>Problezzia</i> sp.	6	P	1	5
Tanypodinae	6	P	1	8
<i>Caenis</i> sp.	7	SC,CG	1	40
<i>Helisoma trivolvis</i>	7	SC	1	1
Hirudinea	8	P	6	
<i>Hyalella</i> sp.	8	SH,CG	64	26
Oligochaeta	8	CG	1	
<i>Physella</i> sp.	9	SC	21	
<i>Pericoma</i> sp. / <i>Telmatoscopus</i> sp.	10	CG	1	
Cambaridae		CG	5	
<i>Ellipes minutus</i>				1

South Fork Dry Creek Watershed

Benthic Macroinvertebrates – Metric Summary for 2014 Sample Sites (Downstream to Upstream)

Scoring Metric	South Fork Dry East @ FM812 (Site 1216)	South Fork Dry East @ US183 (Site 1215)
Number of Taxa *	14	9
Hilsenhoff Biotic Index *	5.5	6.7
Number of Ephemeroptera Taxa *	1	1
Percent of Total as Chironomidae *	2	22
Number of EPT Taxa *	2	1
Percent of Total as EPT *	40	30
Percent of Total as Predator *	11	26
Number of Intolerant Taxa *	2	1
Percent Dominance (Top 3 Taxa) *	83	71
EPT / EPT + Chironomidae	1	1
Number of Diptera Taxa	3	3
Number of Non-Insect Taxa	7	3
Number of Organisms	192	134
Percent Dominance (Top 1 Taxa)	39	30
Percent of Total as Collector / Gatherer	38	49
Percent of Total as Dominant Guild (FFG)	42	49
Percent of Total as Elmidae	0	0
Percent of Total as Filterers	42	22
Percent of Total as Grazers (PI & SC)	12	31
Percent of Total as Tolerant Organisms	11	0
Percent of Trichoptera as Hydropsychidae	0	0
Ratio of Intolerant : Tolerant Organisms	0.68	0.01
TCEQ Qualitative Aquatic Life Use Score	26	18
TCEQ Quantitative Aquatic Life Use Score	23	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%.

South Fork Dry Creek Watershed

Diatoms – Taxa List & Pollution Tolerance Index for 2014 Sample Sites (Downstream to Upstream)

Diatom Species Name	PTI	South Fork Dry East @ FM812 (Site 1216)	South Fork Dry East @ US183 (Site 1215)
<i>Diploneis oblongella</i>	4		1
<i>Rhopalodia parallela</i>	3.2	2	
<i>Achnanthyidium alteragracillimum</i>	3		6
<i>Achnanthyidium minutissimum</i>	3		34
<i>Amphipleura pellucida</i>	3		7
<i>Caloneis bacillum</i>	3	2	10
<i>Caloneis schumanniana</i>	3		6
<i>Caloneis ventricosa</i>	3	1	52
<i>Cocconeis pediculus</i>	3	1	
<i>Cyclotella stelligera</i>	3		2
<i>Cymatopleura elliptica</i>	3	2	
<i>Denticula elegans</i>	3		2
<i>Diploneis parma</i>	3		12
<i>Diploneis puella</i>	3	6	101
<i>Encyonema silesiacum</i>	3	1	38
<i>Encyonema triangulum</i>	3		11
<i>Encyonopsis microcephala</i>	3		2
<i>Gomphonema affine</i>	3	4	6
<i>Gomphonema intricatum</i> var. <i>vibrio</i>	3		2
<i>Navicula cryptocephala</i>	3		2
<i>Navicula cryptotenella</i>	3		4
<i>Navicula reichardtiana</i>	3		2
<i>Reimeria sinuata</i>	3		2
<i>Rhopalodia gibba</i>	3		6
<i>Tryblionella angustata</i>	3		2
<i>Cyclotella meneghiniana</i>	2		2
<i>Fallacia pygmaea</i>	2		2
<i>Mastogloia elliptica</i>	2		28
<i>Navicula recens</i>	2		2
<i>Navicula trivialis</i>	2		22
<i>Navicula veneta</i>	2		25
<i>Nitzschia amphibia</i>	2		40
<i>Nitzschia filiformis</i>	2		12
<i>Surirella brebissonii</i>	2		2
<i>Tryblionella apiculata</i>	2		11
<i>Gomphonema parvulum</i>	1		4
<i>Nitzschia palea</i>	1		19
<i>Amphora copulata</i>		3	
<i>Aulacoseira valida</i>		1	
<i>Biremis circumtexta</i>			4
<i>Cocconeis placentula</i> var. <i>euglypta</i>		475	
<i>Encyonema semilanceolatum</i>			1
<i>Fragilaria sepes</i>			1
<i>Navicula cryptotenelloides</i>			3
<i>Navicula lanceolata</i>			10
<i>Ulnaria acus</i>			2
<i>Ulnaria ulna</i>		2	

South Fork Dry Creek Watershed

Diatoms – Metric Summary for 2014 Sample Sites (Downstream to Upstream)

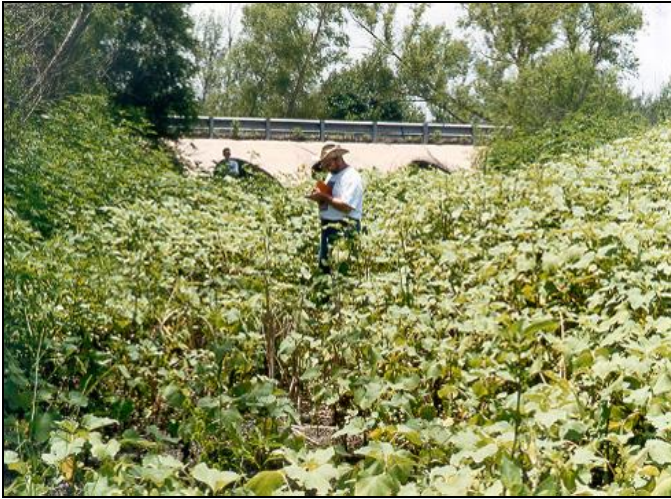
Scoring Metric	South Fork Dry East @ FM812 (Site 1216)	South Fork Dry East @ US183 (Site 1215)
<i>Cymbella</i> Richness	1	4
Number of organisms	500	500
Number of taxa	12	40
Percent motile taxa	0	29
Percent similarity to reference condition	10	20
Pollution tolerance index	3.02	2.60

* 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.

South Fork Dry Creek Watershed

Site Photographs



1214_t00-us1-06_21_2000



1214_t00-us-02_27_2002



1215_t00-ur-02_27_2002



1215_t00-ur-06_15_2005



1215_t00-ds-06_15_2005



1215_00-ur-05_19_2010

South Fork Dry Creek Watershed

Site Photographs



1216_t00-ur-02_27_2002



1216_t00-us-02_27_2002



1216_t00-ds-06_16_2005



1216_t0-na-06_17_2008



1216_00-ds-05_18_2010



1216_00-us-05_18_2010

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