

APPENDIX F: BACTERIA SOURCE LOAD CALCULATOR (BSLC) SPREADSHEETS

Animal Inventory from BSLC Spreadsheets

Please Enter the Numbers of the Following Animals for Each Subwatershed:

Add New Livestock Species...



Click Here When You Have Finished Entering Numbers

Subwatershed	Cattle			Chickens			Turkeys			Horses	Ewes	Goats
	Dairy			Layers	Broilers	Broiler Breeders	Toms	Hens	Breeders			
	M	D	H									
OSR Estuary				14	8	0				27	2	
Tem Slough				633	76	3				244	21	
Rec Canal				47	26	1				82	7	
Alisal Creek				1119	146	7				469	40	
Santa Rita				62	48	2				152	13	
Sal Riv Lagoon				30	16	1				52	4	
Sal Riv Main				1136	221	10				707	61	
Blanco Drain				11	153	48				153	13	
Gabilan Creek				1435	118	5				378	33	
Quail Creek				563	53	5				169	15	
Chualar Creek				1509	150	7				480	41	
Toro Creek				1774	119	5				382	33	
Towne Creek				129	9					28	2	
Natividad Creek				237	38	5				122	10	

Add New Wildlife Species...



Details...

Subwatershed	Deer	Raccoons	Muskrats	Beavers	Geese			Ducks			Wild Turkeys
					Peak	Season 2	Season 3	Peak	Season 2	Season 3	
OSR Estuary	13	11			11			109	55	55	2
Tem Slough	138	116			65			650	325	325	116
Rec Canal	40	34			5			51	25	25	7
Alisal Creek	255	215			12			120	60	60	196
Santa Rita	75	63			7			67	33	33	10
Sal Riv Lagoon	25	21			21			207	103	103	4
Sal Riv Main	349	294			23			226	113	113	169
Blanco Drain	75	63			7			70	35	35	2
Gabilan Creek	252	212			4			37	18	18	297
Quail Creek	101	85			2			22	11	11	106
Chualar Creek	280	236			7			70	35	35	278
Toro Creek	266	223			1			5	3	3	361
Towne Creek	23	19			0			0			31
Natividad Creek	67	56			3			33			45

Additional Animal Species Inventory for BSLC

	A	S	T	U
1	Number Special Wildlife:	Return to Animals Sheet		
2	Pheasant			
3	OSR Estuary	50		
4	Tem Slough	531		
5	Rec Canal	154		
6	Alisal Creek	983		
7	Santa Rita	288		
8	Sal Riv Lagoon	97		
9	Sal Riv Main	1345		
10	Blanco Drain	287		
11	Gabilan Creek	972		
12	Quail Creek	390		
13	Chualar Creek	1079		
14	Toro Creek	1024		
15				
16	Opossum			
17	OSR Estuary	11		
18	Tem Slough	112		
19	Rec Canal	32		
20	Alisal Creek	208		
21	Santa Rita	61		
22	Sal Riv Lagoon	21		
23	Sal Riv Main	284		
24	Blanco Drain	61		
25	Gabilan Creek	205		
26	Quail Creek	82		
27	Chualar Creek	228		
28	Toro Creek	216		
29				
30	Skunk			
31	OSR Estuary	11		
32	Tem Slough	120		
33	Rec Canal	35		
34	Alisal Creek	222		
35	Santa Rita	65		
36	Sal Riv Lagoon	22		
37	Sal Riv Main	303		
38	Blanco Drain	65		
39	Gabilan Creek	219		
40	Quail Creek	88		
41	Chualar Creek	243		
42	Toro Creek	231		
43				

	A	S	T	U
1	Number Special Wildlife:	Return to Animals Sheet		
2	Pheasant			
44	Coyote			
45	OSR Estuary	0		
46	Tem Slough	12		
47	Rec Canal	4		
48	Alisal Creek	20		
49	Santa Rita	1		
50	Sal Riv Lagoon	0		
51	Sal Riv Main	17		
52	Blanco Drain	0		
53	Gabilan Creek	30		
54	Quail Creek	11		
55	Chualar Creek	28		
56	Toro Creek	36		
57				
58	Feral Pig			
59	OSR Estuary	4		
60	Tem Slough	38		
61	Rec Canal	11		
62	Alisal Creek	71		
63	Santa Rita	21		
64	Sal Riv Lagoon	7		
65	Sal Riv Main	97		
66	Blanco Drain	21		
67	Gabilan Creek	70		
68	Quail Creek	28		
69	Chualar Creek	78		
70	Toro Creek	74		
71				
72	Other			
73	OSR Estuary	13		
74	Tem Slough	138		
75	Rec Canal	40		
76	Alisal Creek	255		
77	Santa Rita	75		
78	Sal Riv Lagoon	25		
79	Sal Riv Main	349		
80	Blanco Drain	75		
81	Gabilan Creek	252		
82	Quail Creek	101		
83	Chualar Creek	280		
84	Toro Creek	266		
85				
1	Number Special Wildlife:	Return to Animals Sheet		
2	Feral Pig			
3	Towne Creek	6		
4				
5	Opossum			
6	Towne Creek	19		
7				
8	Coyote			
9	Towne Creek	3		
10				
11	Skunk			
12	Towne Creek	20		
13				
14	Other			
15	Towne Creek	23		
16				
17	Pheasant			
18	Towne Creek	89		
19				

	A	BN	BO	BP
1	Number Special Livestock:	Return to Animals Sheet		
2	Hog	Population		
3	OSR Estuary	2		
4	Tem Slough	15		
5	Rec Canal	5		
6	Alisal Creek	29		
7	Santa Rita	10		
8	Sal Riv Lagoon	3		
9	Sal Riv Main	44		
10	Blanco Drain	10		
11	Gabilan Creek	24		
12	Quail Creek	11		
13	Chualar Creek	30		
14	Toro Creek	24		
15				

	A	BN	BO	BP
1	Number Special Livestock:	Return to Animals Sheet		
2	Hog	Population		
3	Towne Creek	2		
4				
5				

	A	S	T	U
1	Number Special Wildlife:	Return to Animals Sheet		
2	Feral Pig			
3	Natividad Creek		19	
4				
5				
6	Coyote			
7	Natividad Creek		4	
8				
9				
10	Opossum			
11	Natividad Creek		55	
12				
13				
14	Skunk			
15	Natividad Creek		58	
16				
17				
18	Pheasant			
19	Natividad Creek		259	
20				
21				
22	Other			
23	Natividad Creek		67	
24				

Land Use Data for BSLC Spreadsheets



Please Enter the Following Information About the Land Uses in Each SubWatershed:

Click Here When
You Have
Finished Entering
Numbers

Subwatershed	Total Forest Acreage	Total Cropland Acreage	Total Pasture Acreage	Loafing Lot Time		Pasture 1 Fraction of Total	Pasture 2 Fraction of Total	Pasture 3 Fraction of Total	Stream Access Pasture 1	Stream Access Pasture 2	Stream Access Pasture 3	Straight Pipes
				Dairy	Beef							
OSR Estuary	1	1205	155		0	1			0.2			0
Tem Slough	1985	5524	6946		0	1			0.2			0
Rec Canal	1	3669	513		0	1			0.2			0
Alisal Creek	2868	11645	12271		0	1			0.2			0
Santa Rita	72	7090	678		0	1			0.2			0
Sal Riv Lagoor	13	2307	327		0	1			0.2			0
Sal Riv Main	558	12457	12457		0	1			0.2			0
Blanco Drain	1	7702	117		0	1			0.2			0
Gabilan Creek	7167	3564	15740		0	1			0.2			0
Quail Creek	2030	2430	6172		0	1			0.2			0
Chualar Creek	4882	7953	16556		0	1			0.2			0
Toro Creek	8401	21	19458		0	1			0.2			0
Towne Creek	997	1.5	1417		0	1			0.2			0

References for BSLC Spreadsheets

Parameter	OSR Estuary	Units	Source
Beef Cow Parameters			
Average weight of beef cow	1000	lb	
Fecal coliform production by 1000-lb beef cow	1.00E+11	total cfu/day-animal	ASAE Standards, reported in USEPA (2001)
Ratio of beef cattle on:			Assumed to be 4:2:1 based on information gathered from beef extension specialists at Virginia Tech.
Pasture 1	4	ratio	
to Pasture 2	2	ratio	
to Pasture 3	1	ratio	
Manure excreted by beef cow	60	lb/day-animal	Livestock Waste Facilities Handbook, MWPS - 18
Fraction of cows defecating in stream as compared to the cows that are in/around streams (beef)	0.3	ratio	assumed
Sheep and Goat Parameters			
Ewe weight	60	lbs	ASAE 1998 Standards: D384.1 DEC93
Lamb weight	30	lbs	BPJ - 1/2 weight of ewes
Goat weight	140	lbs	ASAE 1998 Standards: D384.1 DEC93
How many lambs should be associated with each ewe?	2	lambs/ewe	BPJ
Ratio of sheep and goats on:			
Pasture 1	3	ratio	
to Pasture 2	2	ratio	
to Pasture 3	0	ratio	
Fraction of sheep defecating in stream as compared to the sheep that are in/around streams	0	ratio	
Fecal coliform production by 60-lb sheep	1.20E+10	total cfu/day-animal	ASAE 1998 Standards: D384.1 DEC93
Manure excreted by sheep	2.4	lb/day-animal	ASAE 1998 Standards: D384.1 DEC93
Horse Parameter			
Fecal coliform production by 1000-lb horse	4.20E+08	total cfu/day-animal	
Ratio of horses on:			Assume all are on pasture 1 right now
Pasture 1	1	ratio	
to Pasture 2	0	ratio	
to Pasture 3	0	ratio	
Fraction of horses defecating in stream as compared to the horses that are in/around streams	0	ratio	

Poultry Parameters			
Length of layer cycle (including down time)	336	days	
Length of broiler cycle (including down time)	56	days	
Length of turkey cycle (including down time)	70	days	
Manure production by layers	0.256	lb/day-bird	ASAE D384.1 DEC93
Manure production by broilers	0.168	lb/day-bird	ASAE D384.1 DEC93
Manure production by turkeys	0.705	lb/day-bird	ASAE D384.1 DEC93
Fecal coliform production by layers	1.40E+08	cfu/day-bird	ASAE D384.1 DEC93
Fecal coliform production by broilers	8.90E+07	cfu/day-bird	based on relative manure production of layers & broilers
Fecal coliform production by turkeys	9.30E+07	cfu/day-bird	ASAE D384.1 DEC93
Layer litter produced	30	lb/cycle-bird	Va. Nutrient Management Handbook
Broiler litter produced	2.6	lb/cycle-bird	Va. Nutrient Management Handbook
Turkey litter produced	18	lb/cycle-bird	Va. Nutrient Management Handbook
Occupancy Factor for layers	0.958	ratio	
Occupancy Factor for broilers	0.787	ratio	
Occupancy Factor for turkeys	0.865	ratio	
Die-off coefficient for poultry litter	0.035	1/day	Kimberly Panhorst's research
Survival Factor for poultry litter	0.099	factor	
Wildlife Parameters			
Deer fecal coliform produced	3.50E+08	total cfu/day-animal	Yagow (2001) FC and Harlow (1983) forage
Fraction of deer defecating in stream	0.01	ratio	
Raccoon fecal coliform produced	5.00E+07	total cfu/day-animal	
Fraction of raccoons defecating in stream	0.1	ratio	
Muskrat fecal coliform produced	2.50E+07	total cfu/day-animal	Mountain Run TMDL (Yagow, 2001)
Fraction of muskrats defecating in stream	0.25	ratio	
Goose fecal coliform produced	8.00E+08	total cfu/day-animal	Moyer and Hjer, 2003
Fraction of geese defecating in stream	0.25	ratio	
First Month of Goose Peak Season (mm format, e.g., Dec=12)	10	month number	
Last Month of Goose Peak Season (mm format, e.g., Dec=12)	3	month number	
Duck fecal coliform produced	2.40E+09	total cfu/day-animal	ASAE 1998 Standards: D384.1 DEC93
Fraction of ducks defecating in stream	0.25	ratio	
First Month of Duck Peak Season (mm format (e.g., Dec = 12))	9	month number	
Last Month of Duck Peak Season (mm format (e.g., Dec = 12))	2	month number	
Wild Turkey fecal coliform produced	9.30E+07	total cfu/day-animal	
Fraction of wild turkeys defecating in stream	0.01	ratio	

BSLC Spreadsheet Load Calculations

1	sub-watershed							
2	Old Sal River							
3		Land Use	Current conditions load (x 10 ⁸ cfu/year)	Load to land (mpn/yr)	delivery potential	Potential Load to surface water (mpn/yr)	pasture load from livestock (mpn/yr)	pasture load from wildlife (mpn/yr)
4	Load to Land	Cropland	187,884	1.88E+13	0.050	9.39E+11		
5		Pasture	7,201,221	7.20E+14	0.001	7.20E+11	7.18E+11	2.42E+09
6		Loafing Lots	0					
7		Forest	551,699	5.52E+13	0.007	3.86E+11		
8		Residential	326,917					
9		Total	8,267,721					
10								
11		Source	Current Conditions load (x 10 ⁸ cfu/year)	Load to Stream (mpn/yr)	delivery potential (100%)	Load to surface water (mpn/yr)		
12	Load from In-stream deposition	Cattle in Streams	28,866	2.89E+12		2.89E+12		
13		Other Livestock in Streams	0					
14		Wildlife in Streams	185,863	1.86E+13		1.86E+13		
15		Straight Pipes	22,938					
16		Total	237,667					
17								
20	sub-watershed							
21	Tem Slough							
22		Land Use	Current conditions load (x 10 ⁸ cfu/year)	Load to land (mpn/yr)	delivery potential	Potential Load to surface water (mpn/yr)	pasture load from livestock (mpn/yr)	pasture load from wildlife (mpn/yr)
23	Load from Land	Cropland	805,051	8.05E+13	0.050	4.03E+12		
24		Pasture	314,917,756	3.15E+16	0.001	3.15E+13	3.14E+13	1.03E+11
25		Loafing Lots	0					
26		Forest	3,580,406	3.58E+14	0.007	2.51E+12		
27		Residential	7,183,299					
28		Total	326,486,512					
29								
30		Source	Current Conditions load (x 10 ⁸ cfu/year)	Load to Stream (mpn/yr)	delivery potential (100%)	Load to surface water (mpn/yr)		
31	Load from In-stream deposition	Cattle in Streams	1,305,137	1.31E+14		1.31E+14		
32		Other Livestock in Streams	0					
33		Wildlife in Streams	1,115,688	1.12E+14		1.12E+14		
34		Straight Pipes	68,813					
35		Total	2,489,638					

145	sub-watershed							
146	Quail Creek							
147		Land Use	Current conditions load (x 10 ⁸ cfu/year)	Load to land (mpn/yr)	delivery potential	Potential Load to surface water (mpn/yr)	pasture load from livestock (mpn/yr)	pasture load from wildlife (mpn/yr)
148	Load from Land	Cropland	355,833	3.56E+13	0.050	1.78E+12		
149		Pasture	279,606,015	2.80E+16	0.001	2.80E+13	2.79E+13	9.17E+10
150		Loafing Lots	0					
151		Forest	426,042	4.26E+13	0.007	2.98E+11		
152		Residential	262,250					
153		Total	280,650,139					
154								
155		Source	Current Conditions load (x 10 ⁸ cfu/year)	Load to Stream (mpn/yr)	delivery potential (100%)	Load to surface water (mpn/yr)		
156	Load from In-stream deposition	Cattle in Streams	1,160,809	1.16E+14		1.16E+14		
157		Other Livestock in Streams	0					
158		Wildlife in Streams	56,345	5.63E+12		5.63E+12		
159		Straight Pipes	0					
160		Total	1,217,154					
161								
162	sub-watershed							
166	Towne Creek							
167		Land Use	Current conditions load (x 10 ⁸ cfu/year)	Load to land (mpn/yr)	delivery potential	Potential Load to surface water (mpn/yr)	pasture load from livestock (mpn/yr)	pasture load from wildlife (mpn/yr)
168	Load from Land	Cropland	209	2.09E+10	0.050	1.05E+09		
169		Pasture	58,336,273	5.83E+15	0.001	5.83E+12	5.81E+12	2.04E+10
170		Loafing Lots	0					
171		Forest	146,495	1.46E+13	0.007	1.03E+11		
172		Residential	0					
173		Total	58,482,977					
174								
175		Source	Current Conditions load (x 10 ⁸ cfu/year)	Load to Stream (mpn/yr)	delivery potential (100%)	Load to surface water (mpn/yr)		
176	Load from In-stream deposition	Cattle in Streams	259,017	2.59E+13	1.000	2.59E+13		
177		Other Livestock in Streams	0					
178		Wildlife in Streams	3,856	3.86E+11	1.000	3.86E+11		
179		Straight Pipes	0					
180		Total	262,873					

	A	B	C	D	E	F	G	H
182								
	sub-watershed		Current conditions load (x 10⁸ cfu/year)	Load to land (mpn/yr)	delivery potential	Potential Load to surface water (mpn/yr)	pasture load from livestock (mpn/yr)	pasture load from wildlife (mpn/yr)
183	Natividad Creek	Land Use						
184	Load from Land	Cropland	531,739	5.32E+13	0.050	2.66E+12		
185		Pasture	107,926,236	1.08E+16	0.001	1.08E+13	1.07E+13	1.08E+11
186		Loafing Lots	0					
187		Forest	348,137	3.48E+13	0.007	2.44E+11		
188		Residential	0					
189		Total	108,806,111					
190								
			Current Conditions load (x 10⁸ cfu/year)	Load to Stream (mpn/yr)	delivery potential (100%)	Load to surface water (mpn/yr)		
191	Load from In-stream deposition	Source						
192		Cattle in Streams	475,869	4.76E+13		4.76E+13		
193		Other Livestock in Streams	0					
194		Wildlife in Streams	49,977	5.00E+12		3.91E+12		
195		Straight Pipes	0					
196		Total	525,845					

	A	B	C	D	E	F	G	H
200								
	sub-watershed		Current conditions load (x 10⁸ cfu/year)	Load to land (mpn/yr)	delivery potential	Potential Load to surface water (mpn/yr)	pasture load from livestock (mpn/yr)	pasture load from wildlife (mpn/yr)
201	Chualar Creek	Land Use						
202	Load from Land	Cropland	1,170,361	1.17E+14	0.050	5.85E+12		
203		Pasture	683,557,291	6.83557E+16	0.001	6.84E+13	6.77E+13	6.84E+11
204		Loafing Lots	0					
205		Forest	1,973,968	1.97397E+14	0.007	1.38E+12		
206		Residential	0					
207		Total	686,701,619					
208								
			Current Conditions load (x 10⁸ cfu/year)	Load to Stream (mpn/yr)	delivery potential (100%)	Load to surface water (mpn/yr)		
209	Load from In-stream deposition	Source						
210		Cattle in Streams	3,029,898	3.03E+14		3.03E+14		
211		Other Livestock in Streams	0					
212		Wildlife in Streams	132,776	1.33E+13		8.79E+12		
213		Straight Pipes	0					
214		Total	3,162,674					