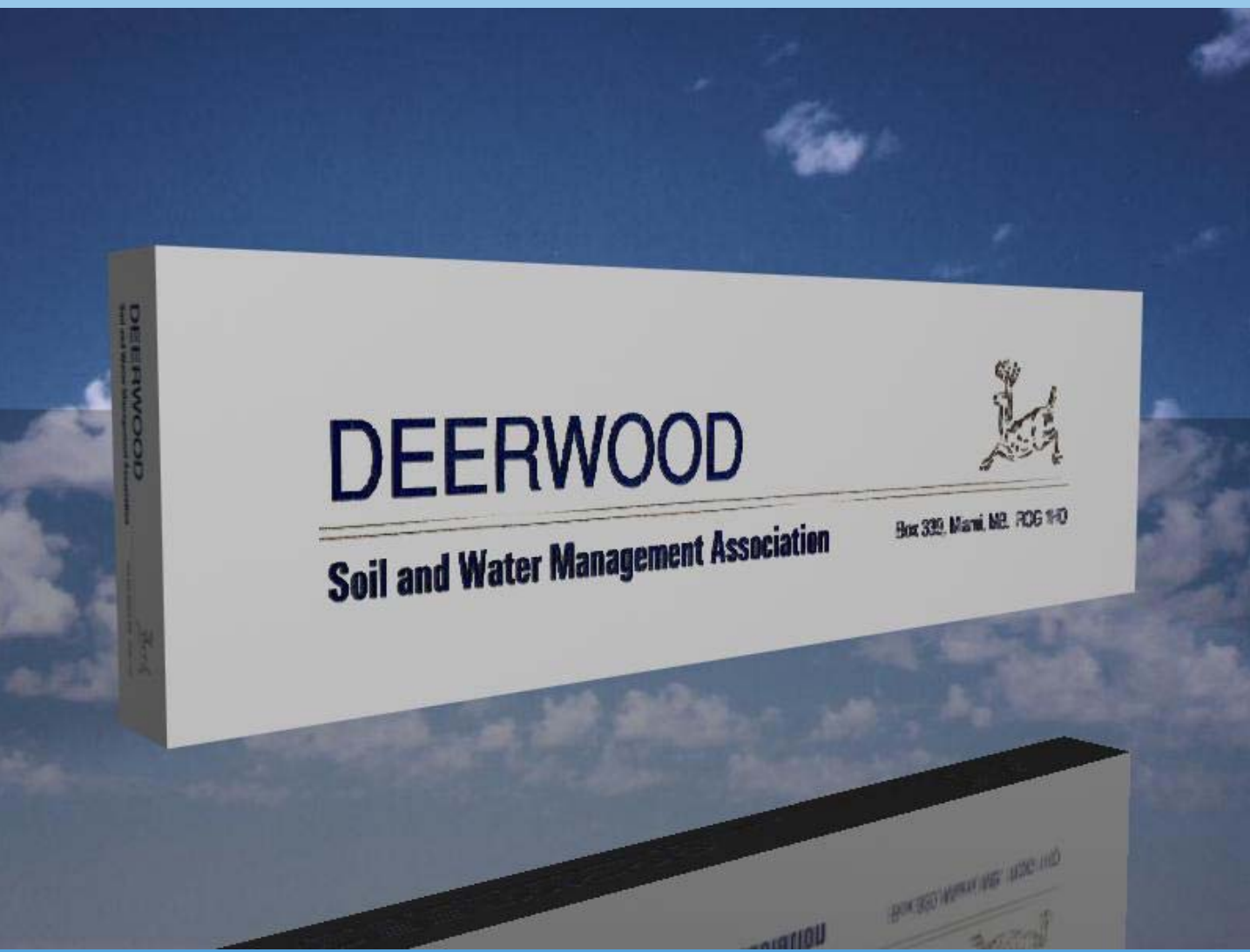
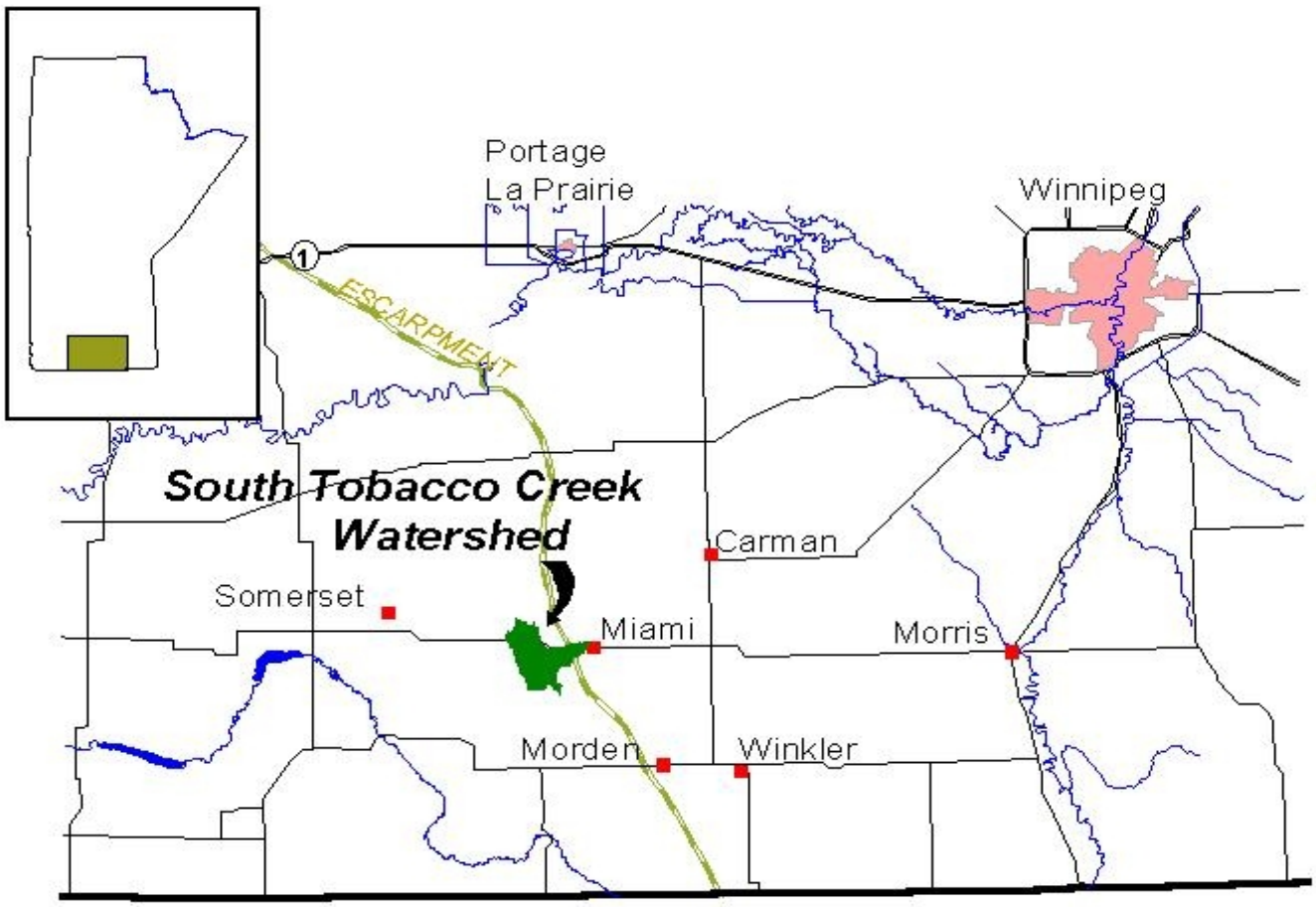

DEERWOOD
Soil and Water Management Association

DEERWOOD

Soil and Water Management Association



South Tobacco Creek Project


2004/09/21

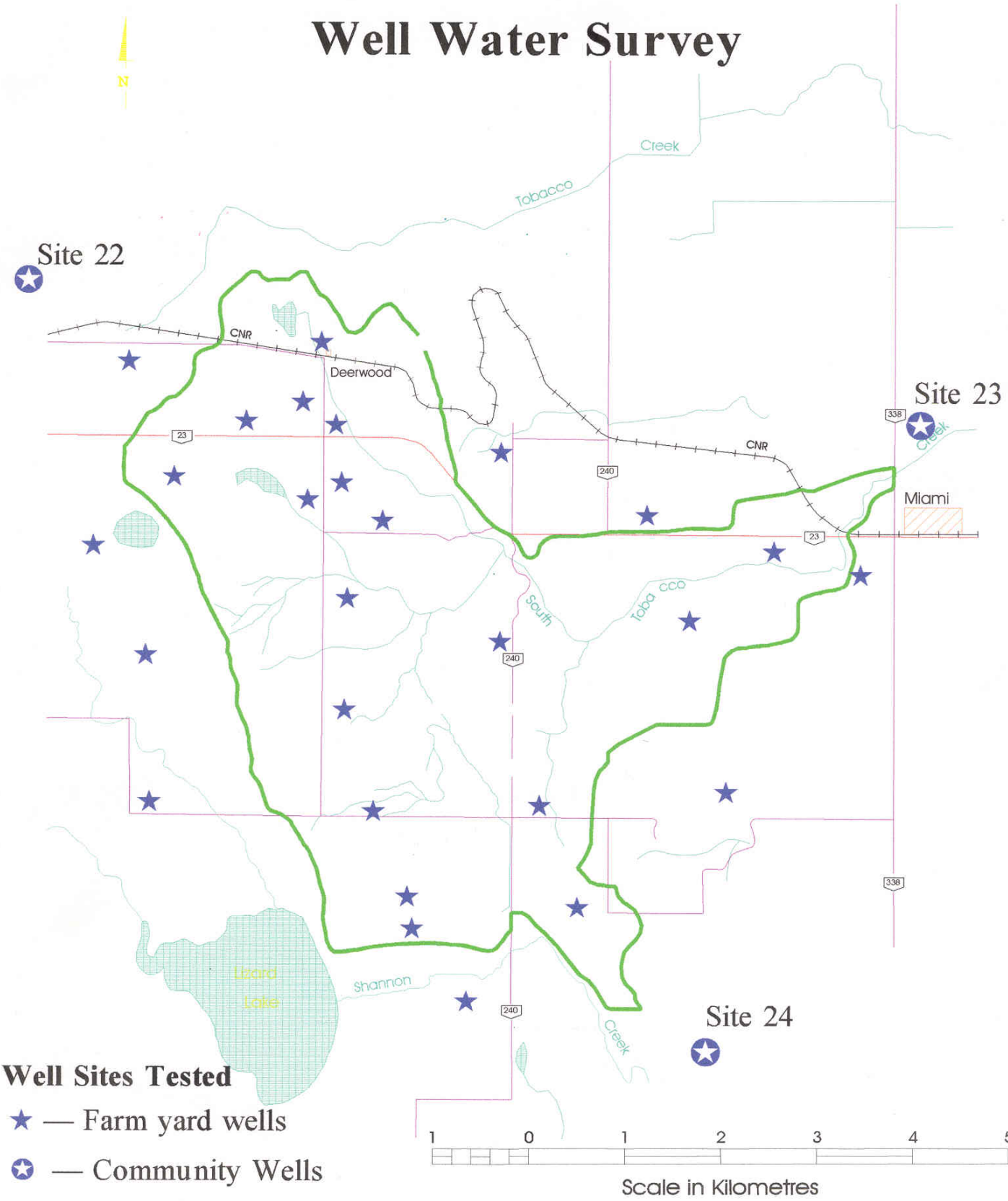
Water Evaluation of Beneficial Management Practices (WEBs)

- Zero Tillage vs. Conventional Tillage.
- Holding ponds to capture spring run off from cattle holding area .
- Conversion of cropped land in critical areas (eroded slopes) to forage.
- Development and enhancement of riparian areas around water courses.
- Stepplier and Madill dam reservoirs to reduce downstream nutrient runoff.

Partners:

- Land Owners
- Federal & Provincial Governments
- Ducks Unlimited
- University of Manitoba

South Tobacco Creek Project



2001 Community Well Water Analysis Program

	Units	St. Alphonse Raw	Bruxelles Raw	Swan Lake/ Somerset Raw	Altamont Raw	North Argyle Raw	South Argyle Raw
Sample Date		April 23/01	May 8/01	April 23/01	April 23/01	May 9/01	May 9/01
pH		7.6	8.09	7.81	7.55	8.05	8.27
Electrical Conductivity	uS/L	1040	514	753	1180	1240	707
Calcium	mg/L	129	67.8	63.3	92.2	78.6	61.7
Magnesium	mg/L	38.4	20.	29.0	55.4	39.4	22.7
Sodium	mg/L	59.2	9.07	74.4	119	141	63.1
Potassium	mg/L	4.3	2.3	3.3	10.7	11.8	3.0
Iron	mg/L	0.043	0.558	0.095	0.067	0.329	<0.02
Manganese	mg/L	0.772	1.41	0.491	0.600	0.626	0.098
Chloride	mg/L	76.9	1.7	15.5	6.7	24.6	7.2
Nitrate	mg/L	0.118	0.9	<0.004	<0.004		
Nitrite-N	mg/L	<0.002	Not Tested	<0.002	<0.002		
Nitrate and Nitrite-N	mg/L	0.118	0.9	<0.006	<0.006	<0.05	0.74
Sulphate	mg/L	193	58.2	76.7	241	181	57.3
Hydroxide	mg/L	<5	Not Tested	<5	<5		
Carbonate	mg/L	<6	<5	<6	<6	<5	<5
Bicarbonate	mg/L	392	244	423	608	546	372
P. Alkalinity	mg/L	<5	<0	<5	<5	<0	<0
T. Alkalinity	mg/L	321	200	347	498	448	305
Total Dissolved Solids	mg/L	694	329	1470	824	792	452
Hardness	mg/L	481	252	277	458	359	28
Ionic Balance	%	98	Not Tested	99	97		
E-Coli	CFU/100ml	<1	Not Tested	<1	Not Tested		
Total Coliforms	CFU/100ml	<1	Not Tested	<1	Not Tested		

mg/L = milligrams per litre uS/cm = microsiemens/cm

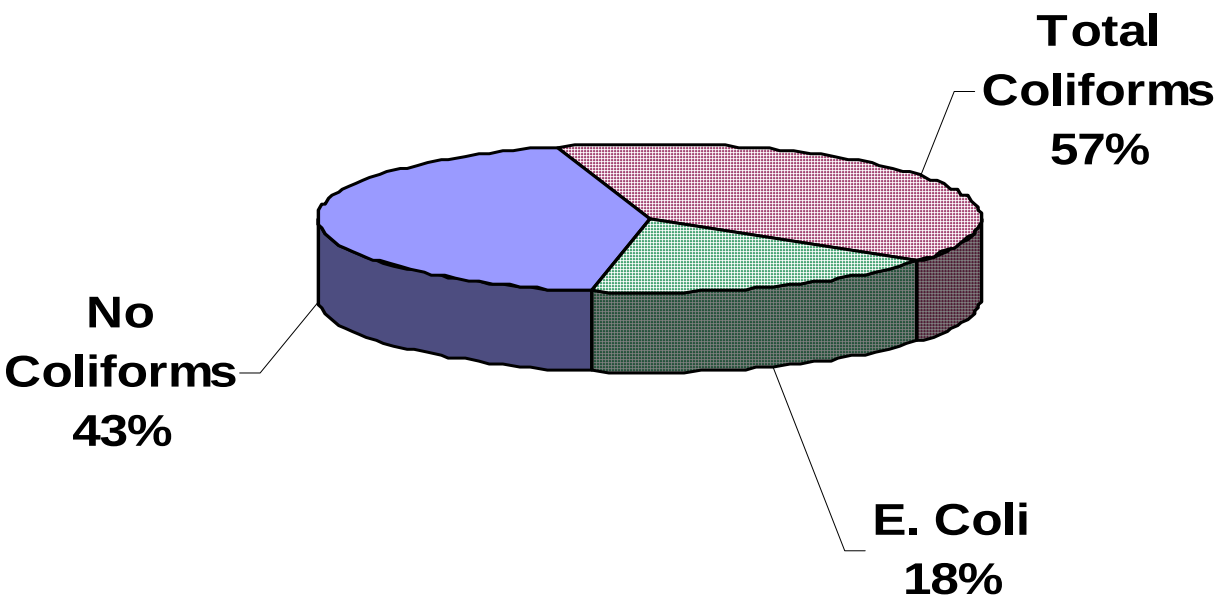
May 16, 2001

2005 PVCD

Well Site	Well Location	Flow Rate (gallons/minute)	pH	Electrical Conductivity (uS/cm)	Calcium (mg/L)	Magnesium (mg/L)	Sodium (mg/L)	Potassium (mg/L)	Iron (mg/L)	Manganese (mg/L)	Chloride (mg/L)	Nitrate/ Nitrite-N (mg/L)	Sulphate (mg/L)	Carbonate (mg/L)	Bicarbonate (mg/L)	T. Alkalinity (mg/L)	Total Dissolved Soils (mg/L)	Hardness (mg/L)
rne																		
Swan Lake	SE29-5-11	300	7.84	507	66.9	17.5	11.3	2.06	0.19	0.398	<9	0.25	52	<0.6	266	218	330	239
Altamont	NW23-5-8	100	7.41	1150	81.0	47.0	97.4	10.50	0.91	0.510	<9	0.02	205	<0.6	556	455	750	396
Somerset	NW11-6-10	400	7.66	823	65.5	29.9	70.1	3.30	2.24	0.551	17	<0.01	85	<0.6	438	359	530	287
St. Alphonse	NE34-5-12	120	7.44	1150	121.0	36.4	62.8	4.56	0.46	0.777	92	0.51	163	<0.6	385	315	750	452
Mariapolis		150	8.55	760	4.29	1.15	173	3.59	0.21	0.0478	<9	<0.01	44	14.8	421	370	490	15.4
mbina																		
Snowflake	NW31-1-9		7.94	5140	44.9	22.3	1110	17.30	0.45	0.201	697	<0.01	1070	<0.6	595	488	3340	204
La Riviere			7.63	780	70.4	22.6	58.9	9.17	<0.01	0.0022	21	0.36	182	<0.6	238	195	510	269
Kalieda	NW34-2-8	120	8.12	3830	21.7	7.95	831	10.60	0.02	0.0409	748	0.12	66	<0.6	1030	843	2490	86.8
Darlingford	SW4-2-9	100	7.58	873	97.8	32.0	50.9	4.96	0.18	0.683	15	0.54	143	<0.6	402	329	570	376
Darlingford Town	com.of Mtn & Pbn		7.40	2460	418.0	131	11.7	5.51	1.11	0.123	92	2.28	1210	<0.6	402	330	1600	1580
ompson																		
Miami	SW17-5-6	120	7.67	960	121.0	34.7	36.2	4.08	1.05	0.284	18	<0.01	198	<0.6	415	340	620	444
Rosebank	NW36-4-6	200	7.80	611	69.9	24.7	14.5	5.47	0.71	0.296	17	<0.01	98	<0.6	264	217	400	276
Opawaka	NW12-4-7	120	7.94	550	55.8	25.6	16.0	2.92	<0.01	<0.0002	<9	9.37	24	<0.6	278	228	360	245
uise																		
Pilot Mound	NE28-2-11		8.16	2660	20.6	6.52	581	8.43	0.09	0.112	123	0.19	807	<0.6	504	413	1730	78.3
Clearwater	#9-11th St. S.	200	7.68	1050	81.3	29.7	93.1	11.60	<0.01	0.141	59	0.14	184	<0.6	336	275	680	325
Louise	SW29-1-10	160	8.16	3620	27.3	9.15	811	11.20	0.04	0.130	68	<0.01	1460	<0.6	464	380	2350	106
nley																		
Friedensruh	SW23-2-4	50	7.68	1740	148.0	44.9	149	12.30	0.38	0.302	222	0.60	385	<0.6	318	261	1130	555
Jacob's	NE30-1-4	100	7.71	2400	197.0	59.0	242	16.90	0.52	0.216	244	0.39	706	<0.6	380	311	1560	734
Massey Pit	NW19-1-5	120	7.81	600	64.6	25.3	17.9	2.91	0.13	0.347	<9	0.02	48	<0.6	330	271	390	266
No Name	NW8-3-4	50	7.72	811	100.0	26.3	28.0	5.98	0.85	0.277	18	0.02	170	<0.6	313	257	530	358
Burwalde	NW19-3-4		7.71	932	114.0	38.5	26.1	4.94	1.20	0.256	15	<0.01	196	<0.6	398	326	610	443
Cheval Truck Fill	SE 12-3-6	100	8.16	1360	124.0	63.0	82.7	8.98	0.25	0.616	29	0.60	493	<0.6	299	245	880	570

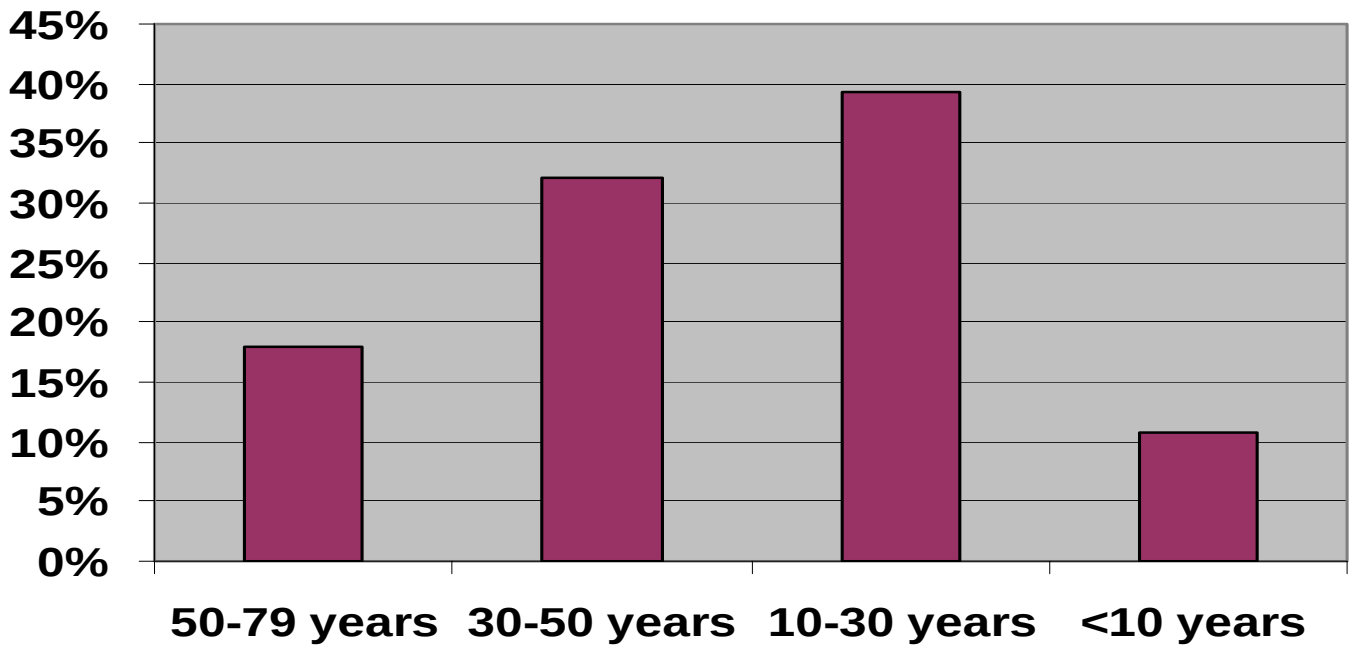
Deerwood Well Water Survey

Bacteria Test Results

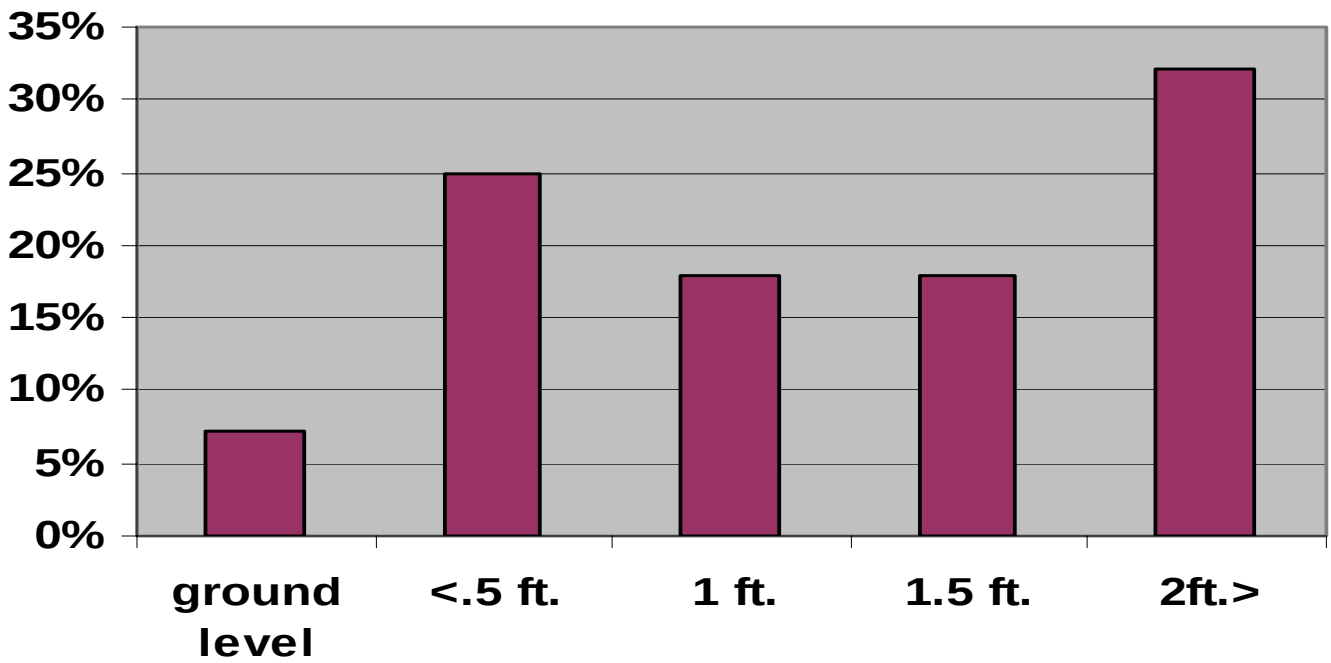


Deerwood Well Water Survey

Well Construction Period



Crib Above Ground Level

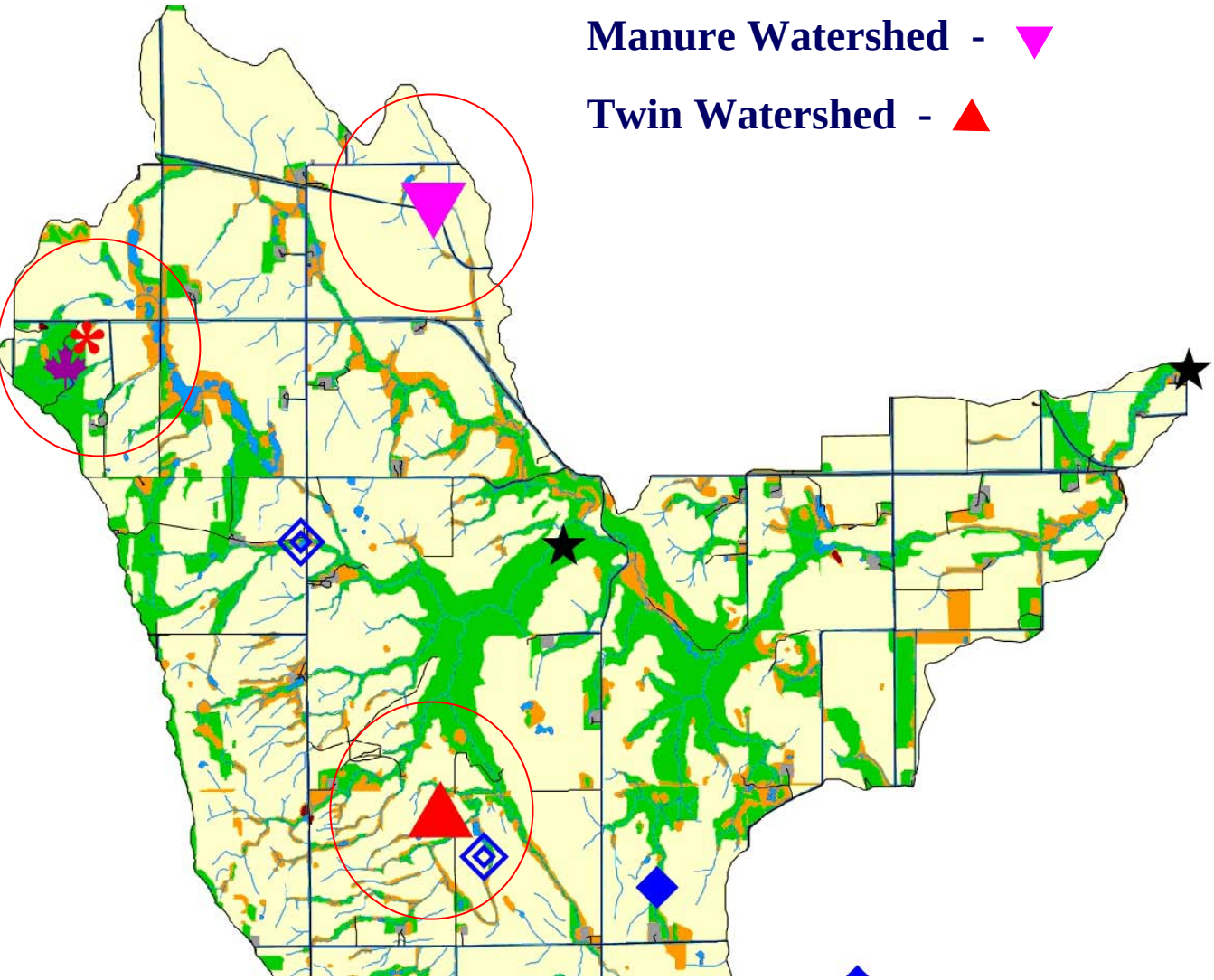


South Tobacco Creek Watershed
Monitoring and Sampling Activities

Background Area -

Manure Watershed - ▼

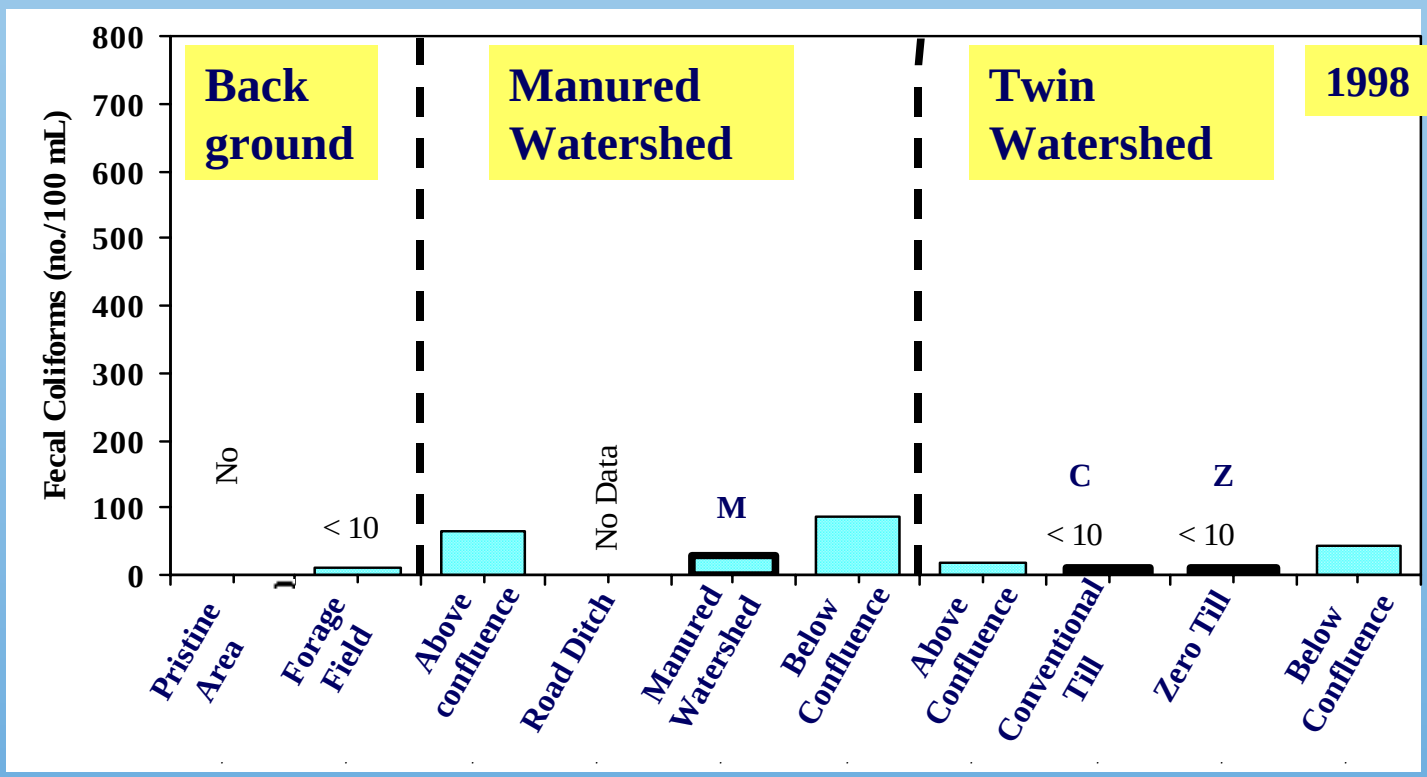
Twin Watershed - ▲

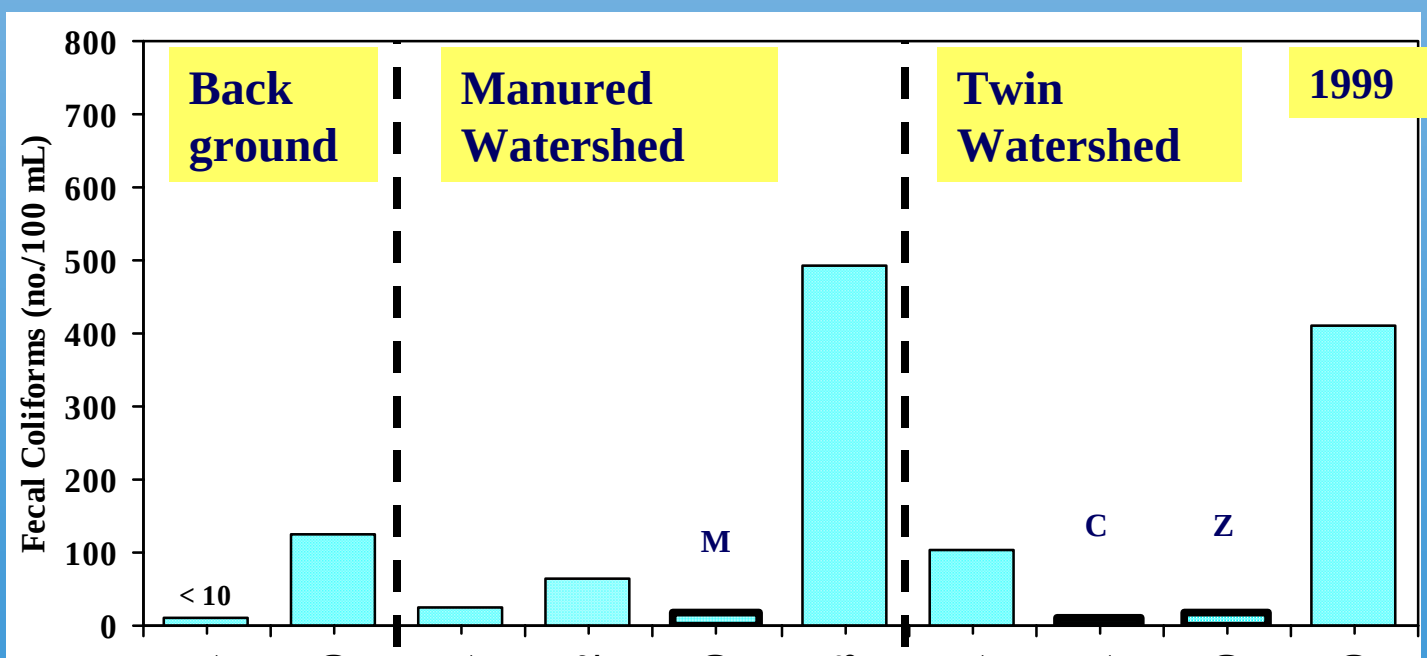


- **Hog manure broadcast and tillage incorporated,**
- **All crop nutrients supplied by manure.**

South Tobacco Creek Project

Manured Watershed (Fecal Coliforms)

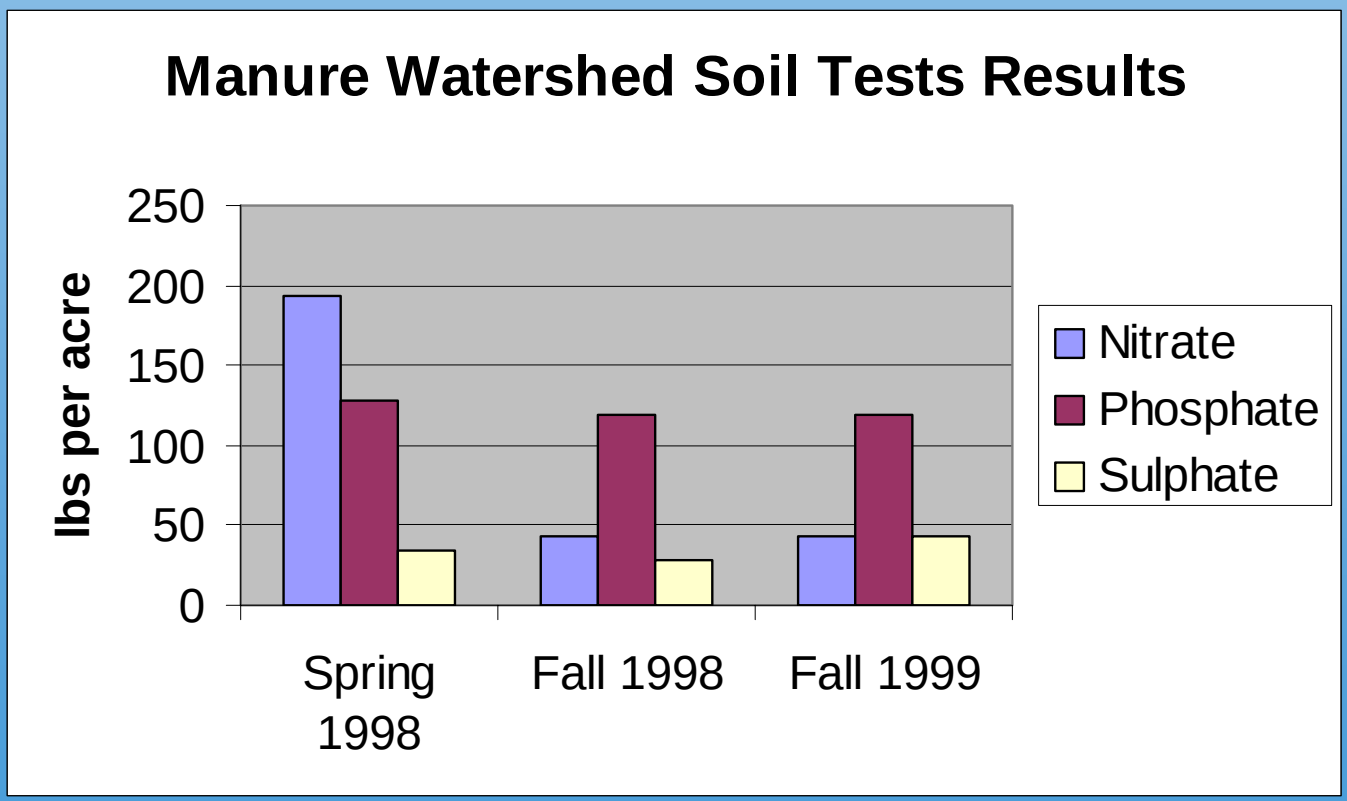




South Tobacco Creek Project

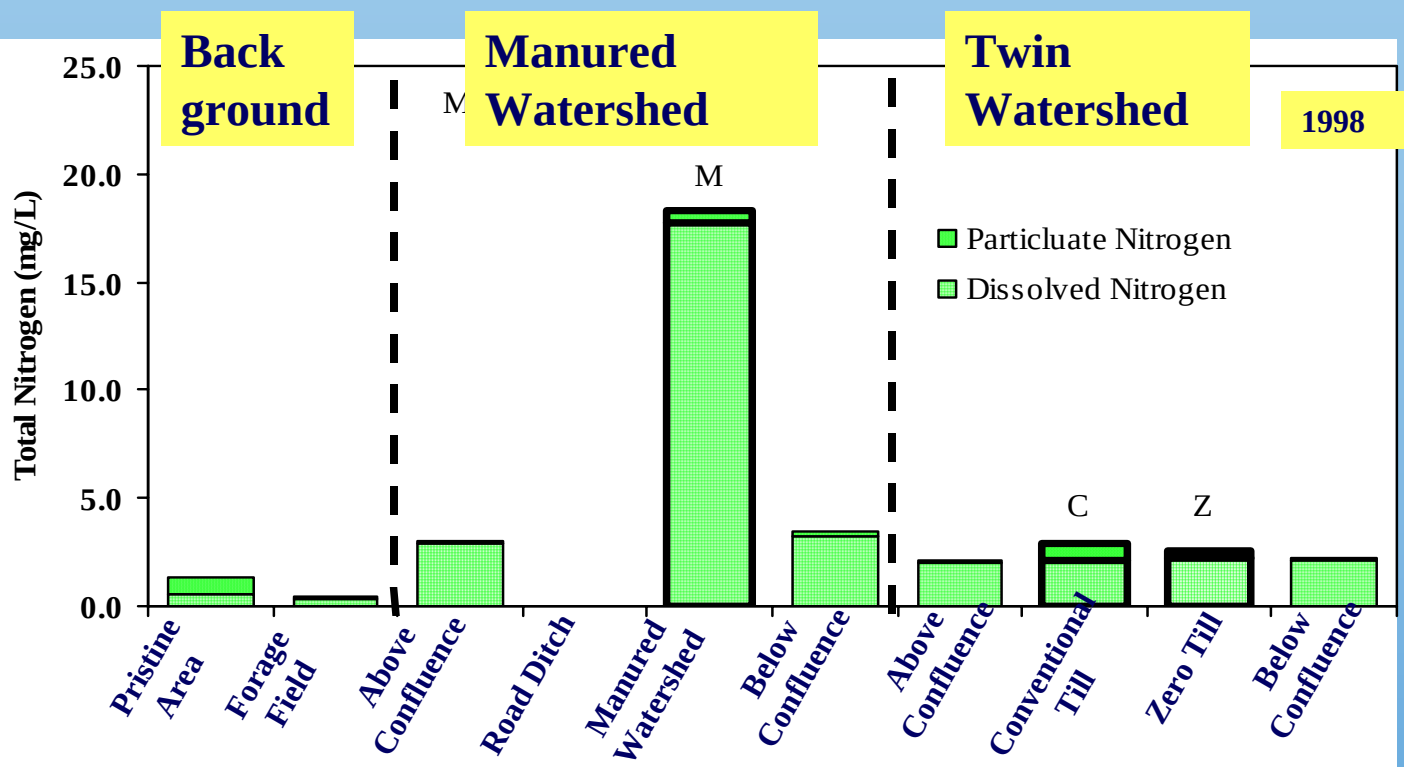
Manured Watershed

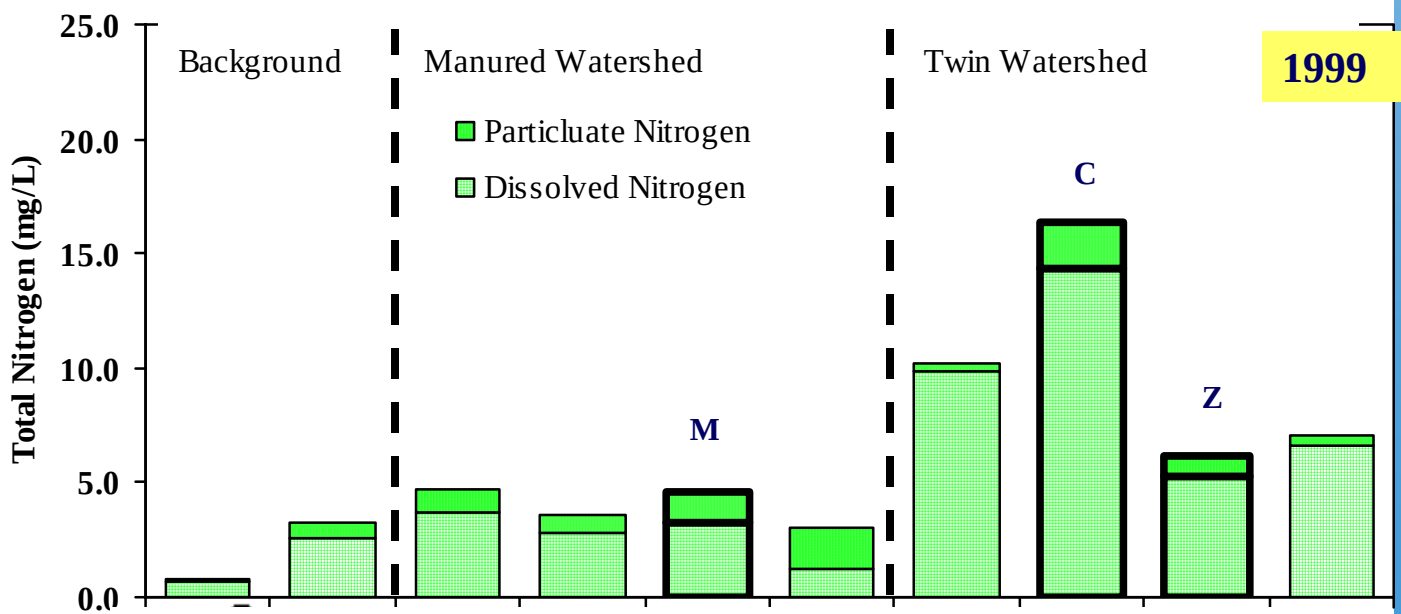
- Hog manure broadcast and tillage incorporated,
- Oct. 1997 - 4,600 gal/acre,
- Oct 1998 - 6,700 gal/acre
- All crop nutrients supplied by manure,



South Tobacco Creek Project

Manured Watershed (Total Nitrogen)

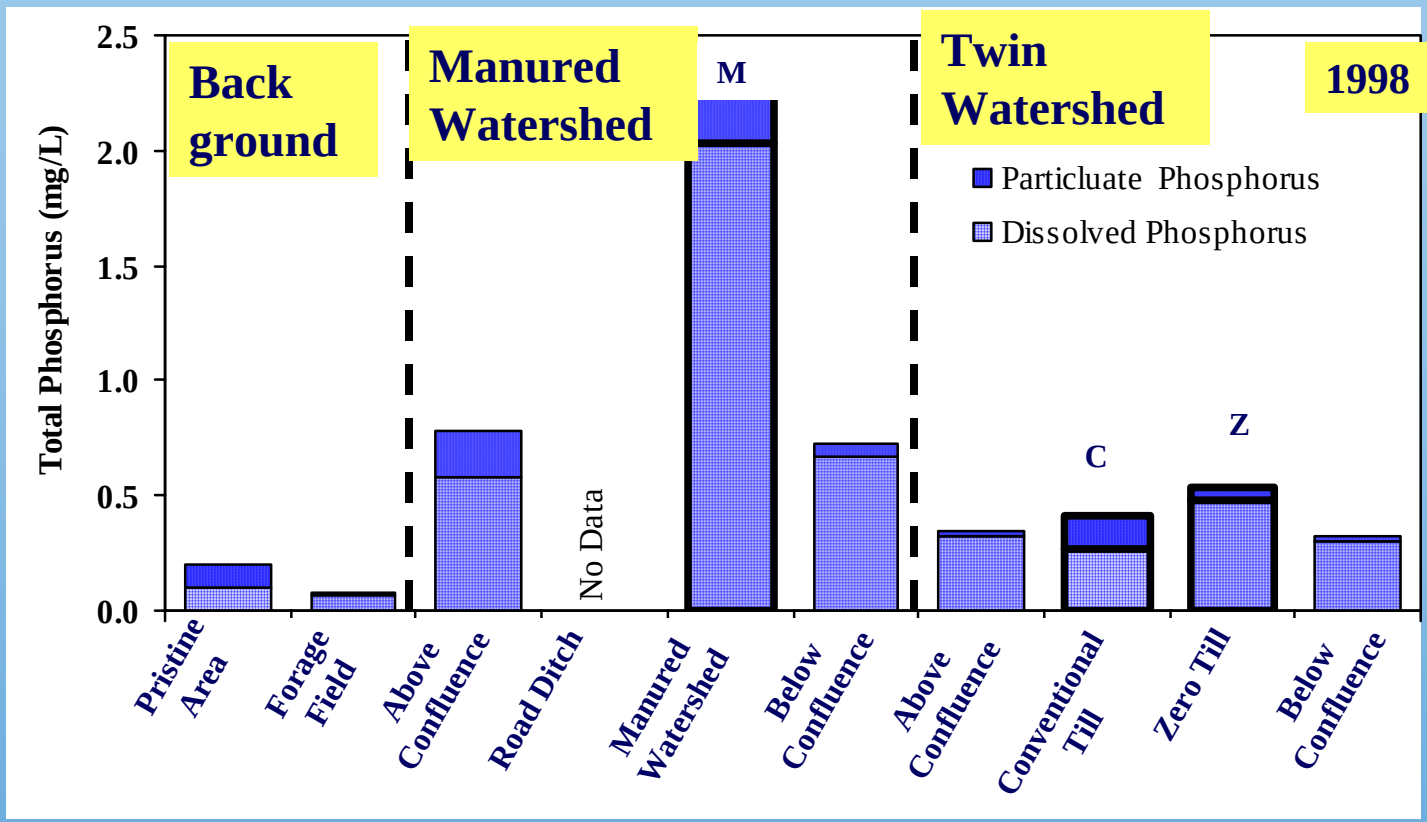


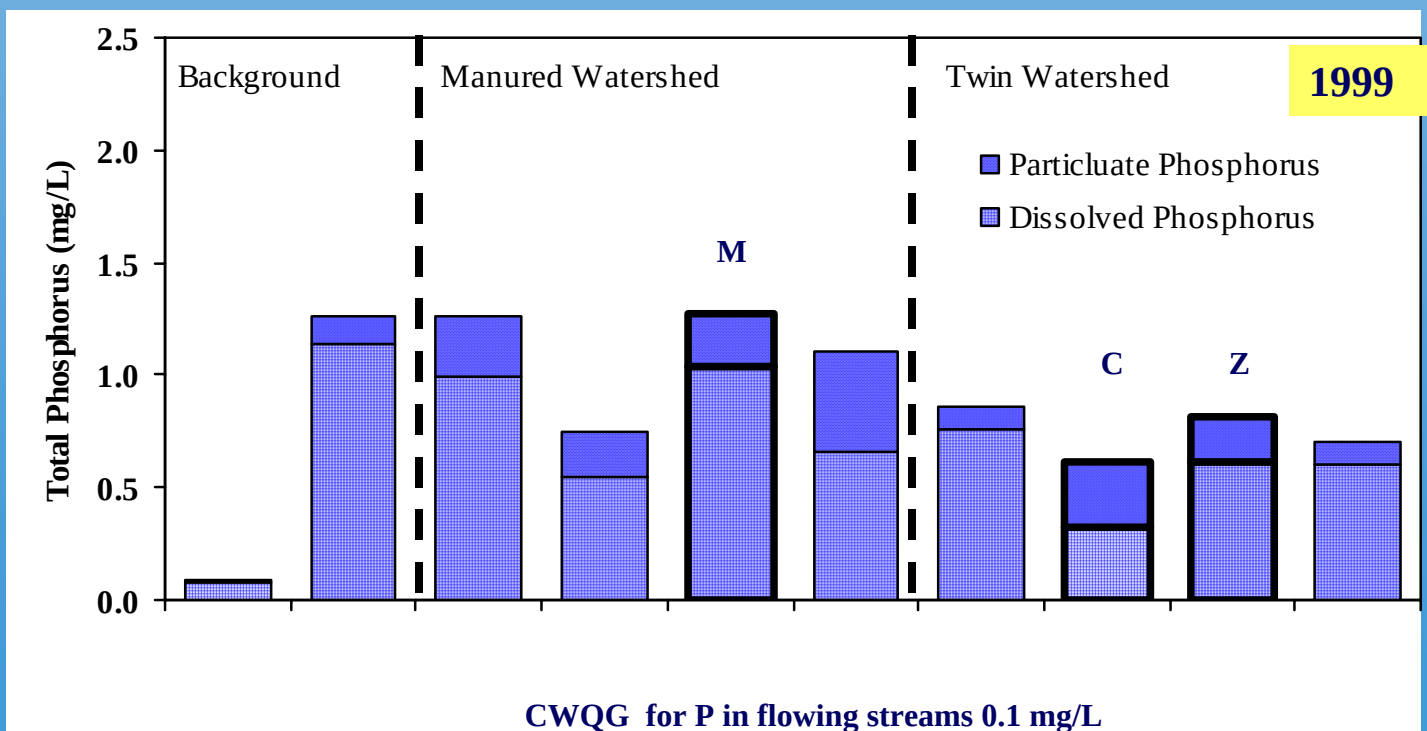


CWQG Drinking Water, Nitrate-Nitrite 10mg/L

South Tobacco Creek Project

Manured Watershed (Total Phosphorus)





CWQG for P in flowing streams 0.1 mg/L

STC Unit Area Load Comparison to Various Non-point Sources

Total Phosphorus Unit Area Loads (kg P/ha/yr)

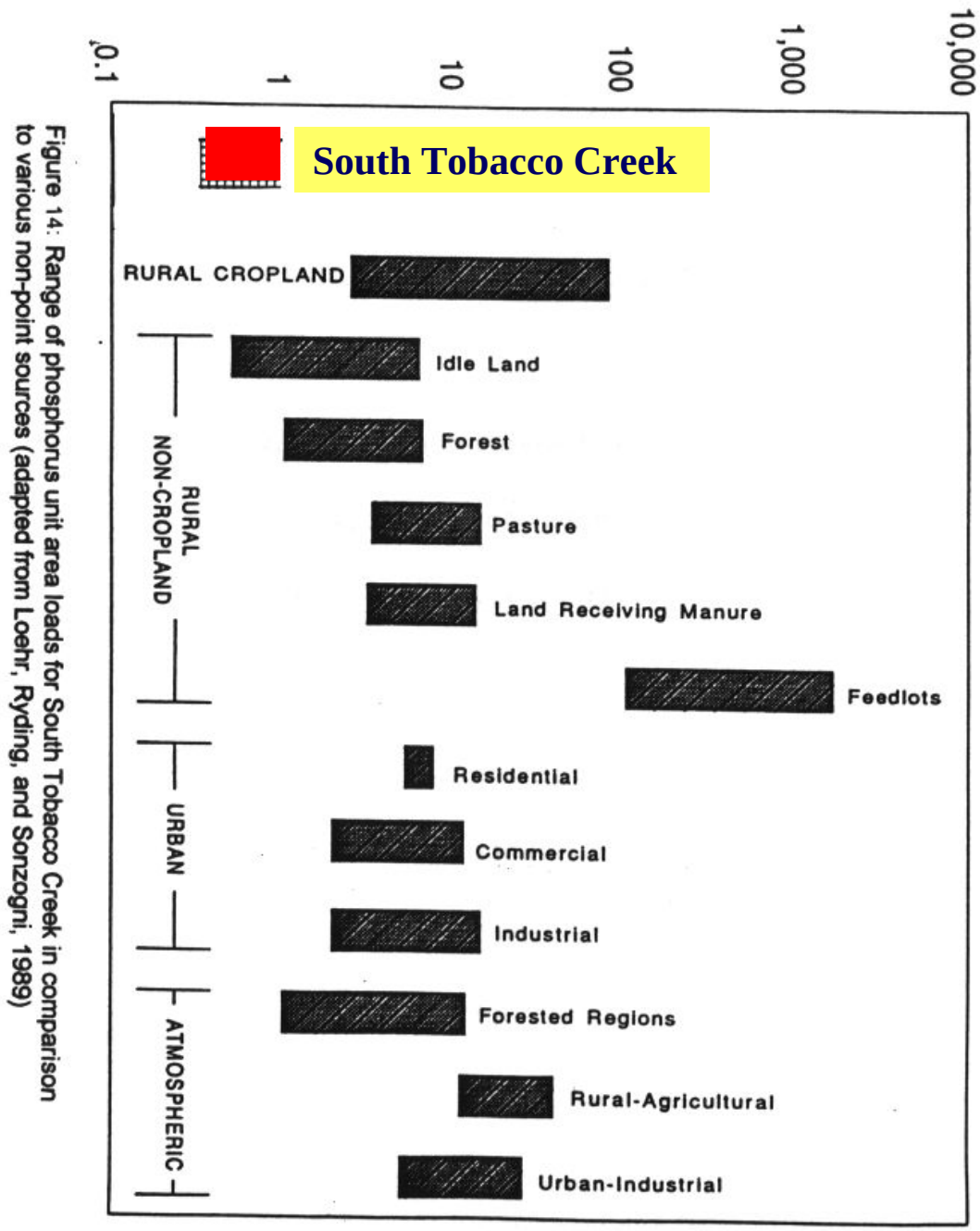


Figure 14: Range of phosphorus unit area loads for South Tobacco Creek in comparison to various non-point sources (adapted from Loehr, Ryding, and Sonzogni, 1989)

STC Unit Area Load Comparison to Various Non-point Sources

Total Nitrogen Unit Loads (kg N/ha/yr)

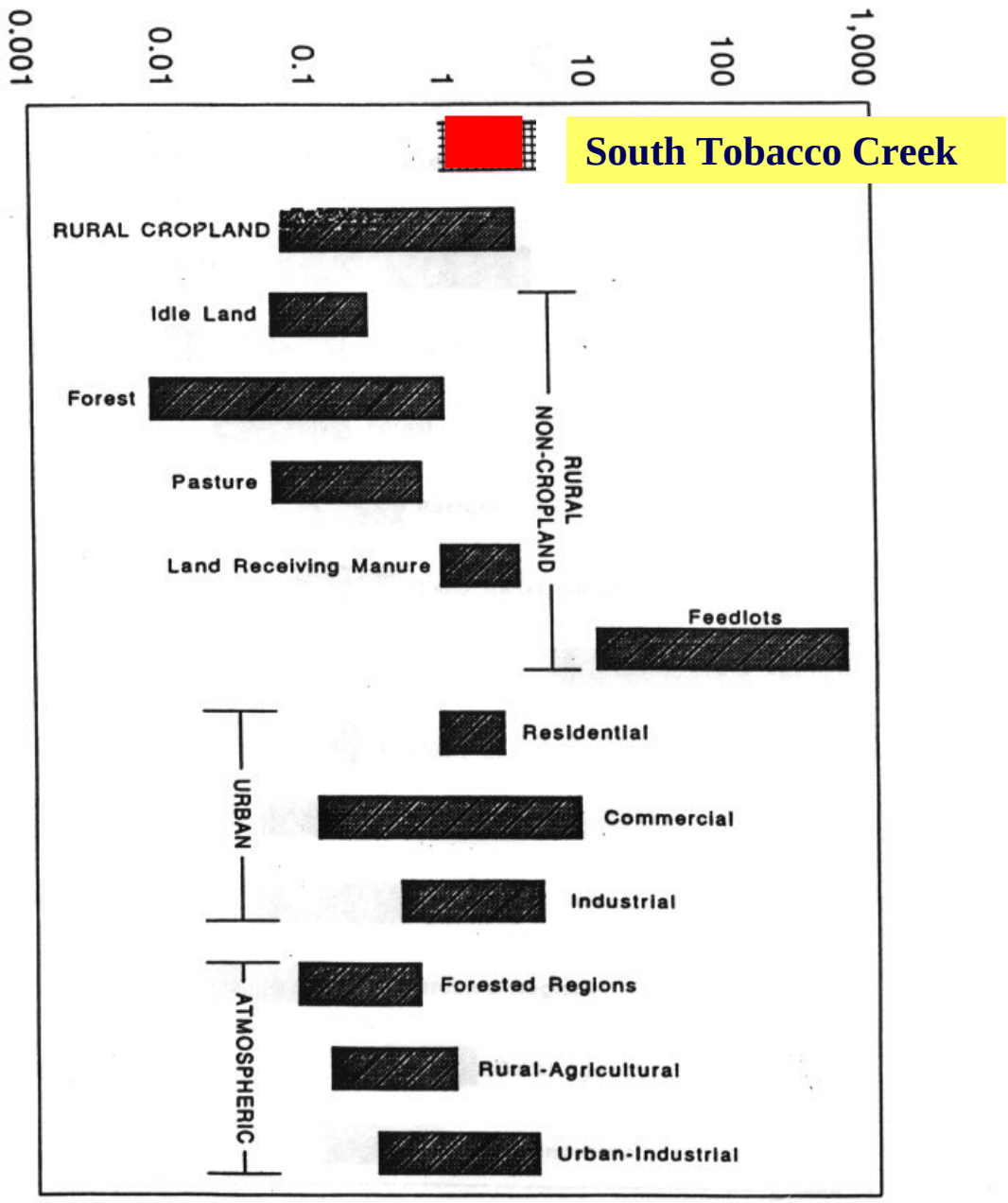
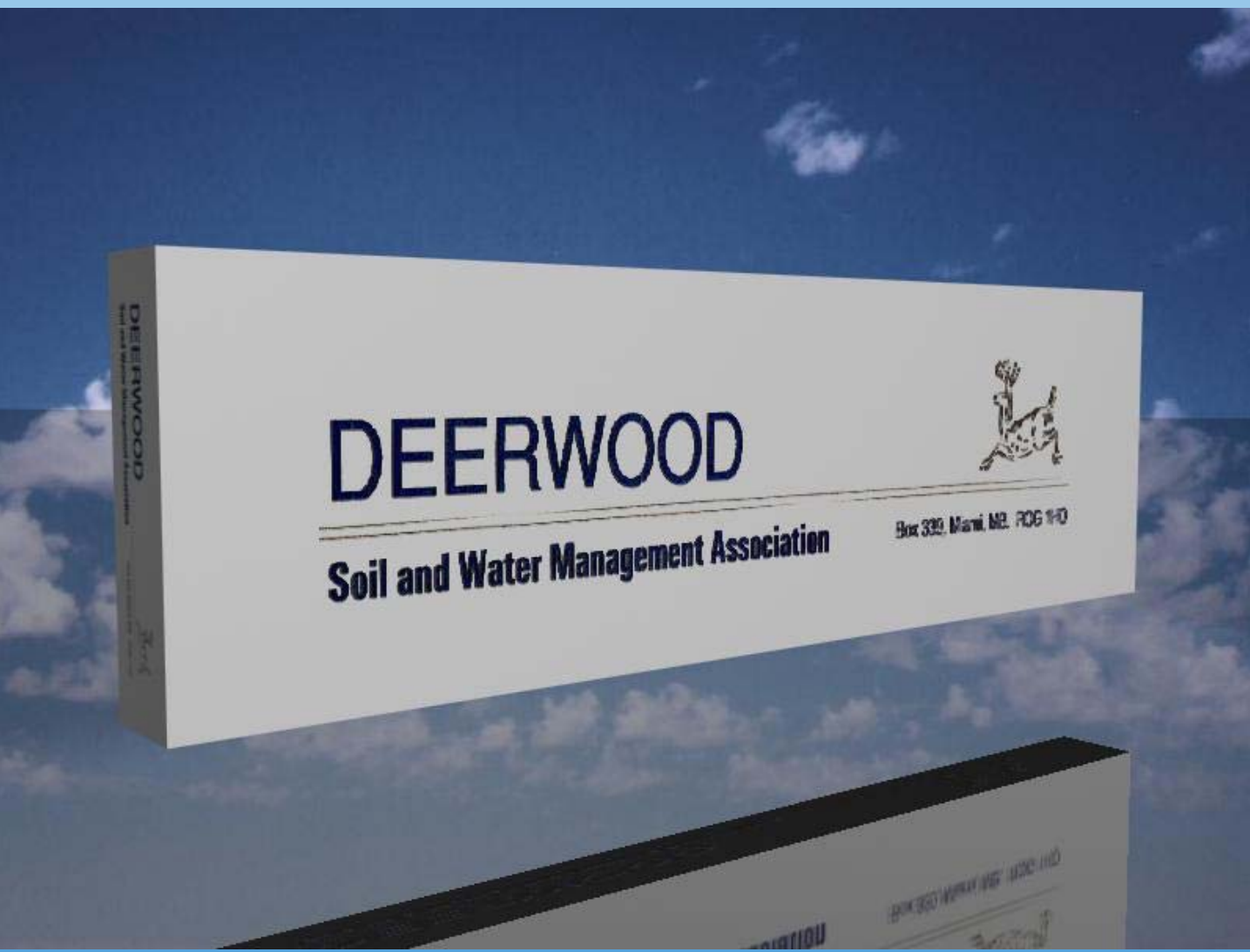


Figure 13: Range of nitrogen unit area loads for South Tobacco Creek in comparison to various non-point sources (adapted from Loehr, Ryding, and Sonzogni, 1989)


DEERWOOD
Soil and Water Management Association