

Fish Creek Watershed Assessment and Total Maximum Daily Load

September 25, 2007

Presented to Fish Creek WAG

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Review and Discuss WAG Review Documents

Fish Creek Watershed Assessment



Draft



Department of Environmental Quality

July 2007

Fish Creek Watershed Assessment

Fish Creek Temperature Total Maximum Daily Loads



DRAFT



Department of Environmental Quality

July 2007

Fish Creek Temperature TMDL

Nutrient Monitoring

- Fish Creek has been listed in the past on Idaho's 303(d) list for nutrient impairment
- Twin Lakes TMDL (2000) did allocate nutrient reductions for Fish Creek
- Nutrients monitored in 1985-1986 and summer of 2007

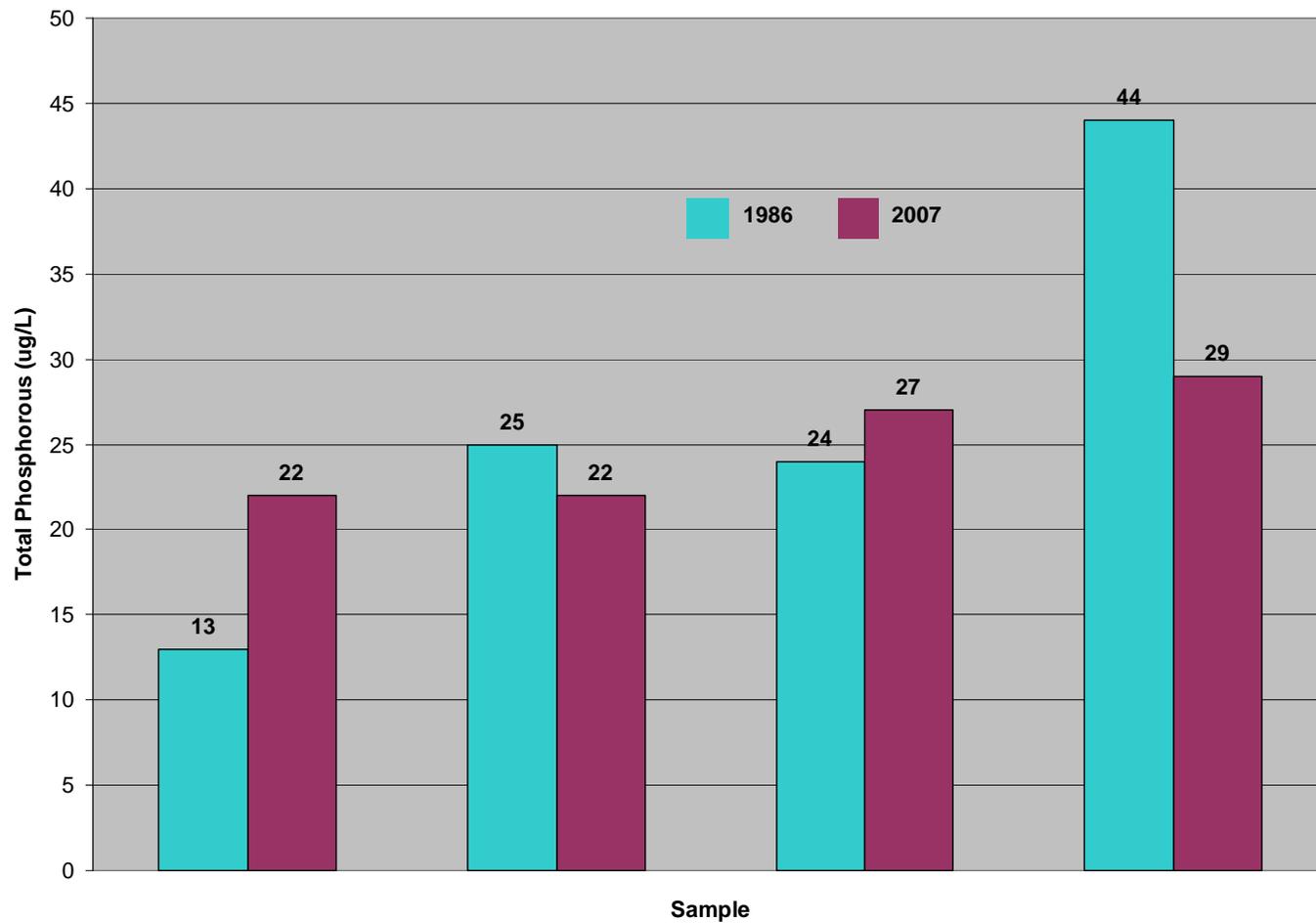
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Pages for which related information can be found in draft document

Nutrient Monitoring

Total Phosphorous 1986 and 2007

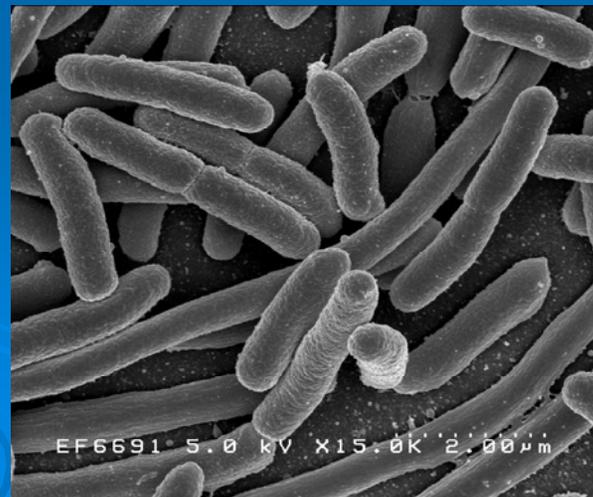


Fish Creek Nutrient Allocation

- *SBA and TMDL for Lakes and Streams Located on or Draining to the Rathdrum Prairie (DEQ 2000) did allocate a TP reduction to Fish Creek*
- Tributaries to Upper Twin Lake allocated a reduction of 271 kg/year (597.4 pounds/year) or 47.7%

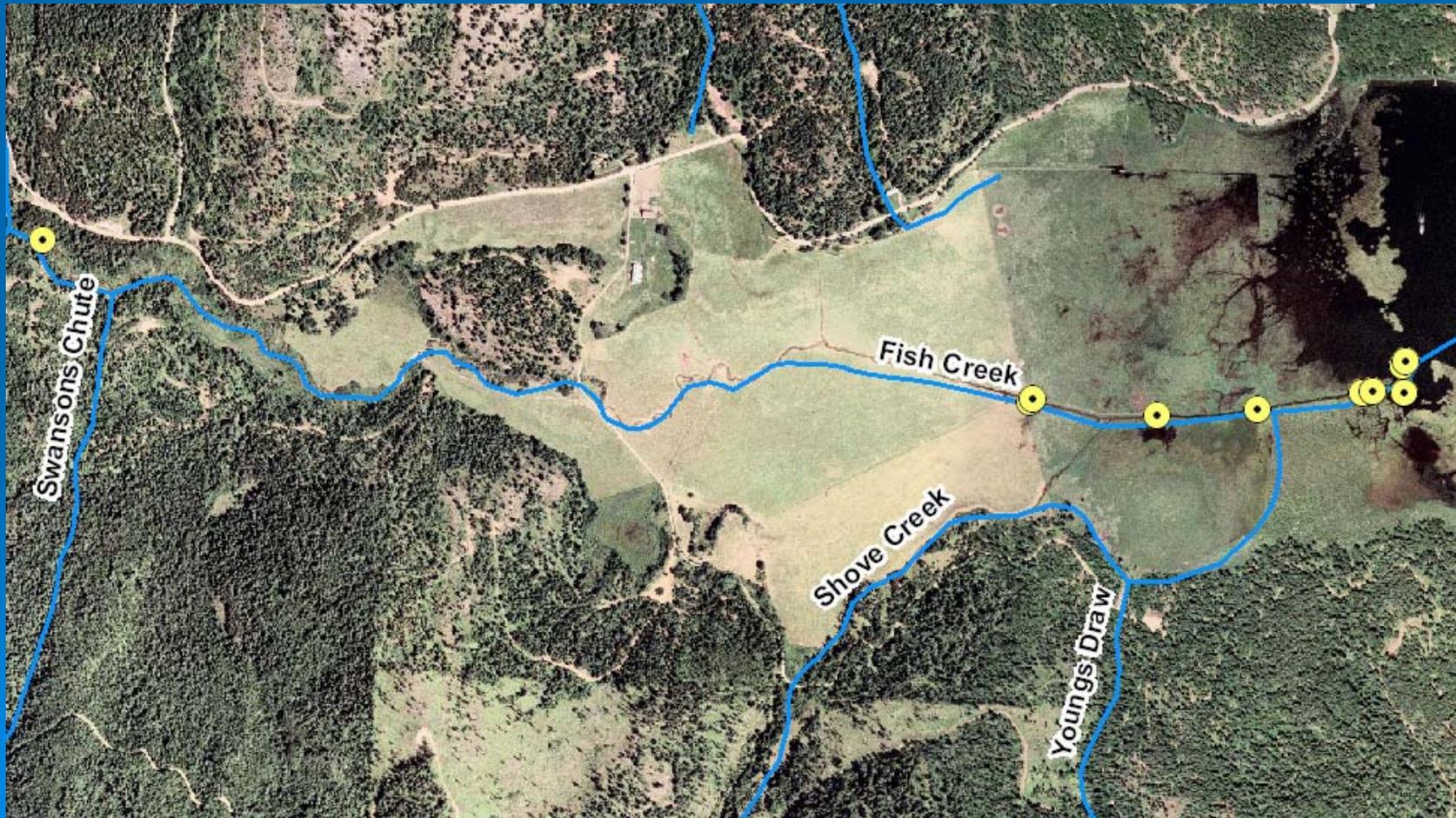
Bacteria

- Sampled in 1993 and 2007
- Standard change
 - 1993 – Fecal Coliform
 - 2007 – *E. Coli*
 - Violations of respective standard each year



Bacteria

➤ 2007 Sample Locations



2007 Bacteria Sampling Results

Table 10. *E. coli* concentrations in the Fish Creek watershed during summer 2007.

Location description	GPS Coordinates	Date	<i>E. coli</i> concentration (cfu/100ml)
Upper Twin Lake – near the mouth of Fish Creek	N 47° 53' 14.5" W -116° 55' 37.5"	August 28, 2007	6 <i>E. coli</i> /100 ml
Upper Twin Lake – near the mouth of Fish Creek	N 47° 53' 11.3" W -116° 55' 41.5"	August 24, 2007	1300 <i>E. coli</i> /100 ml
Upper Twin Lake – near the mouth of Fish Creek	N 47° 53' 9.1" W -116° 55' 41.6"	August 17, 2007	6 <i>E. coli</i> /100 ml
Upper Twin Lake – near the mouth of Fish Creek	N 47° 53' 9.1" W -116° 55' 41.6"	August 14, 2007	22 <i>E. coli</i> /100 ml
Fish Creek – forest	N 47° 53' 15.3" W -116° 58' 10.1"	August 14, 2007	1 <i>E. coli</i> /100 ml
Fish Creek – forest	N 47° 53' 15.3" W -116° 58' 10.1"	July 27, 2007	38 <i>E. coli</i> /100 ml
Fish Creek – adjacent to pastureland	N 47° 53' 7.4" W -116° 56' 20.9"	August 28, 2007	130 <i>E. coli</i> /100 ml ¹
Fish Creek – adjacent to pastureland	N 47° 53' 7.4" W -116° 56' 20.9"	August 24, 2007	260 <i>E. coli</i> /100 ml ¹
Fish Creek – adjacent to pastureland	N 47° 53' 7.4" W -116° 56' 20.9"	August 21, 2007	1300 <i>E. coli</i> /100 ml ¹
Fish Creek – adjacent to pastureland	N 47° 53' 7.4" W -116° 56' 20.9"	August 17, 2007	980 <i>E. coli</i> /100 ml ¹
Fish Creek – adjacent to pastureland	N 47° 53' 7.4" W -116° 56' 20.9"	August 14, 2007	1400 <i>E. coli</i> /100 ml ¹
Fish Creek – adjacent to pastureland	N 47° 53' 7.4" W -116° 56' 20.9"	July 27, 2007	>2400 <i>E. coli</i> /100 ml
5 sample geometric mean			570 <i>E. coli</i>/100 ml

¹ Sample used to calculate 5 sample geometric mean for evaluation and comparison to Idaho water quality criteria.

Bacteria TMDL Development

- Water Quality Standard = 126 cfu/100 ml *E. coli*
 - cfu = colony forming units

- Flow based calculation

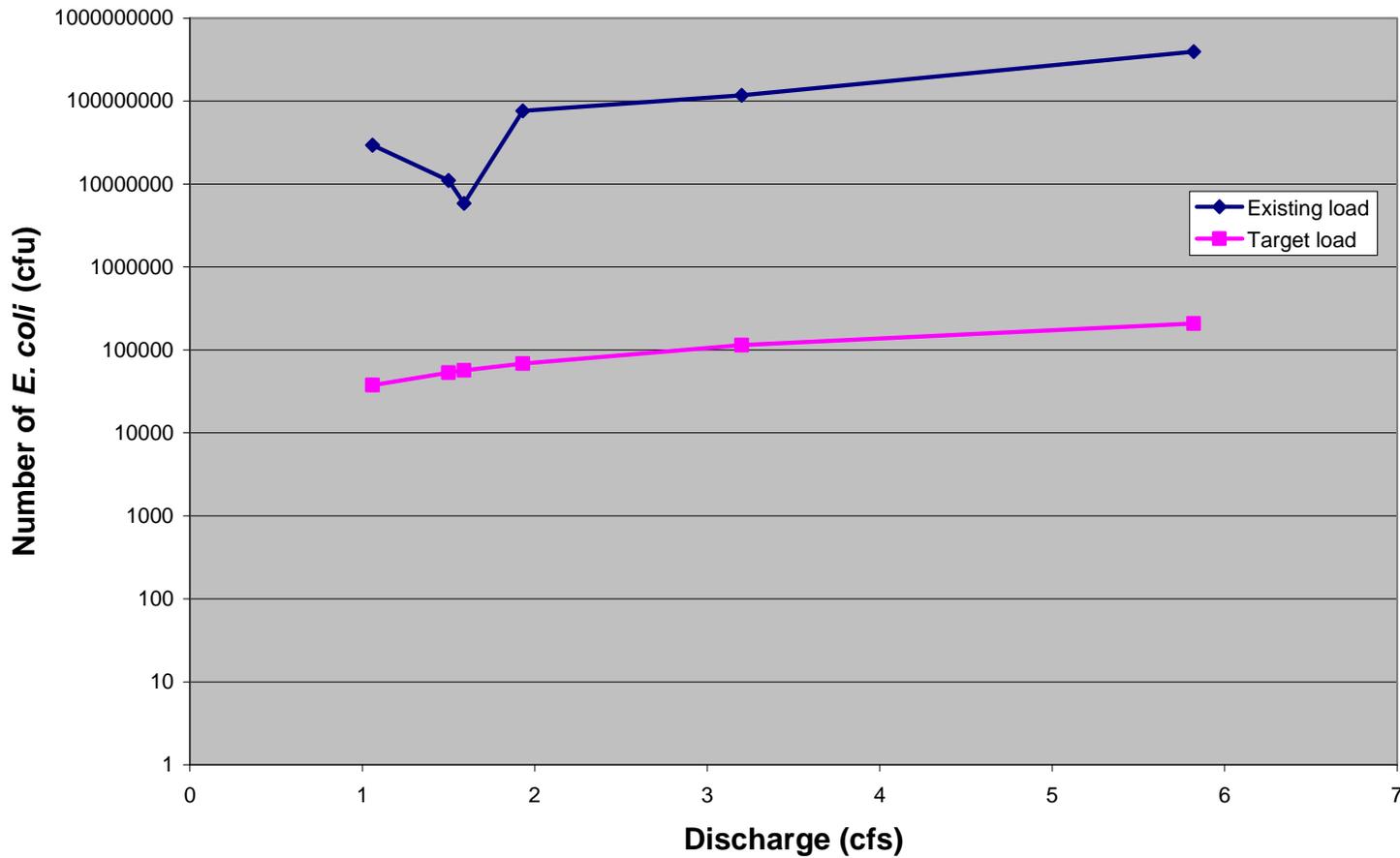
- A flow of 1 cfs can contain 35,679 cfu of *E. coli* at loading capacity

1 cubic foot	28,316.85 milliliters	126 cfu
	1 cubic foot	100 milliliters

= 35,679 cfu of *E. coli* per 1 cfs at loading capacity

Bacteria TMDL

E. Coli Concentrations in Fish Creek



Bacteria TMDL

Table 25. Numbers of *E. coli* colonies at target load capacity, current load, load reduction and percent load reduction for the Fish Creek watershed.

Measured <i>E. coli</i> concentration	Discharge (cfs) at sample collection	Load Capacity (at time of bacteria sampling cfu/100ml)	Current Load	Reduction	% Reduction
>2,400 ¹	5.82	207,653	395,529,761	395,322,108	190,376
1400	1.93	68,861	76,512,129	76,443,268	111,011
980	1.06	37,820	29,415,544	29,377,724	77,678
1300	3.2	114,174	117,798,096	117,683,922	103,075
260	1.5	53,519	11,043,572	10,990,053	20,535
130	1.59	56,730	5,853,093	5,796,363	10,217

¹ The upper bound of the lab reporting limit of *E. coli* is 2,400 cfu/100ml.

Break



Kajsa and Tyson sampling on Fish Creek

Mouth of Fish Creek looking from
Upper Twin Lake

