Water quality assessment / Categories 1-5

- **Category 1 – Meets tested standards for clean water.**
- **Category 2 – Waters of concern.**
- **Category 3 – No data available, so will be largely empty.**
- **Category 4 – Polluted waters that do not require a TMDL since the problems are being solved in one of three ways:**
  - **4a – Has an approved TMDL and it is being implemented**
  - **4b – Has a pollution control plan in place that should solve the problem**
  - **4c – Is impaired by a non-pollutant such as low water flow, dams, culverts**
- **Category 5 – Polluted waters that require a TMDL – the 303(d) list.**

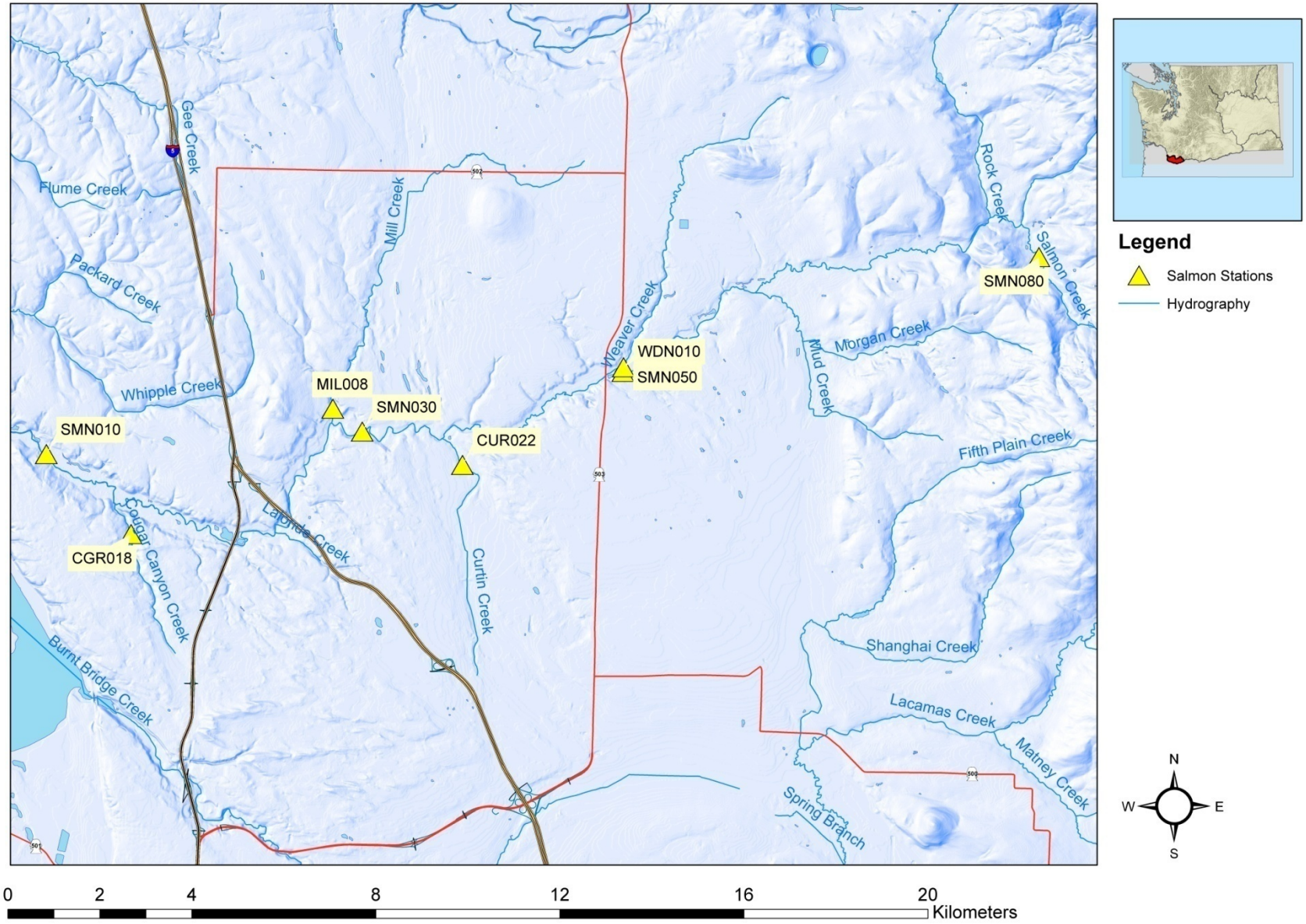
Salmon Creek study area waterbodies on the 2004 303(d) list for (parameter(s) and category.

Sample site	Site ID	Fecal[1] Coliform	Turbidity[1]	Temperature[2]	Dissolved oxygen	pH	NH_4-N
Salmon Creek (mouth) at 36th Ave	SMN010	4A	4A	5	5	5	
Salmon Creek (lower) at 112th Ave	SMN030	4A		2		2	
Salmon Creek (upper) at 122nd Ave	SMN050	4A		2	2	5	
Salmon Creek (headwaters) at 199th St.	SMN080	4A				5	
Cougar Creek at 119th St.	CGR020	4A			2	2	
Mill Creek at Salmon Creek Rd.	MIL010	4A			2	2	
Curtin Creek at 139th St.	CUR020	4A			5	5	
Weaver Creek at 122th Ave.	WDN	4A			4A		4A

[1]TMDL developed for parameter.

[2]Inovative TMDL currently under development.

Salmon Creek Monitoring Project Station Map



Salmon Creek drainage wet and dry season fecal coliform geometric means, 90th percentiles, and recommended reductions.

Station	First Criterion: GM<100				Second Criterion: 90% of samples <200				Recommended Target Levels			
	TMDL GM		% Reduction Needed		TMDL 90th %tile		% Reduction Needed		Target GM		Target % Reduction	
	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry
SMN010	313	129	68	23	1917	301	89	34	33	86	89	34
CGR020	722	899	86	89	9243	1803	98	89	16	100	98	89
SMN030	182	281	45	64	1261	806	84	75	29	70	84	75
MIL010	839	282	88	65	8763	1121	98	82	19	50	98	82
CUR020	1155	743	91	87	4409	2608	86	92	52	57	96	92
SMN050	234	751	57	87	1125	1404	82	86	42	100	82	87
WDN	534	857	81	88	9204	6509	98	97	12	26	98	97
SMN080	28	54	0	0	200	318	0	37	28	34	0	37

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Salmon Creek drainage wet and dry season average turbidity, 90th percentiles, and recommended reductions.

Station	90th % tile of Adjusted TMDL Data[1]		90th % tile of Adjusted Data minus LA of 5 NTU		Target Percent Reduction[2]	
	Wet	Dry	Wet	Dry	Wet	Dry
SMN010	13.4	3.7	8.4	-1.3	63	0
CGR020	20.1	1.9	15.1	-3.1	75	0
SMN030	12.8	1.8	7.8	-3.2	61	0
MIL010	21.1	3.5	16.1	-1.5	76	0
CUR020	5.9	2.8	0.9	-2.2	16	0
SMN050	8.2	3.2	3.2	-1.8	39	0
WDN	10.1	2.0	5.1	-3.0	51	0
SMN080	NA	NA	NA	NA	NA	NA

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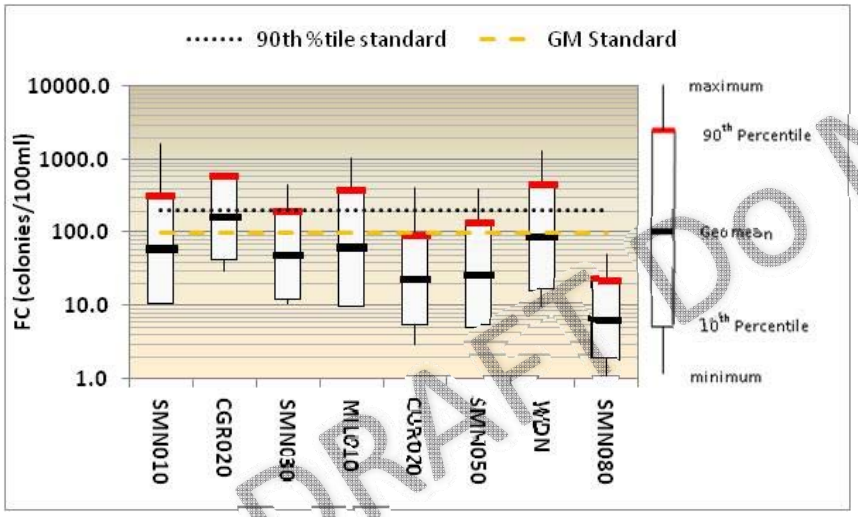
[1]Adjusted data equals site value minus background (site SMN080) value for each sampling event.

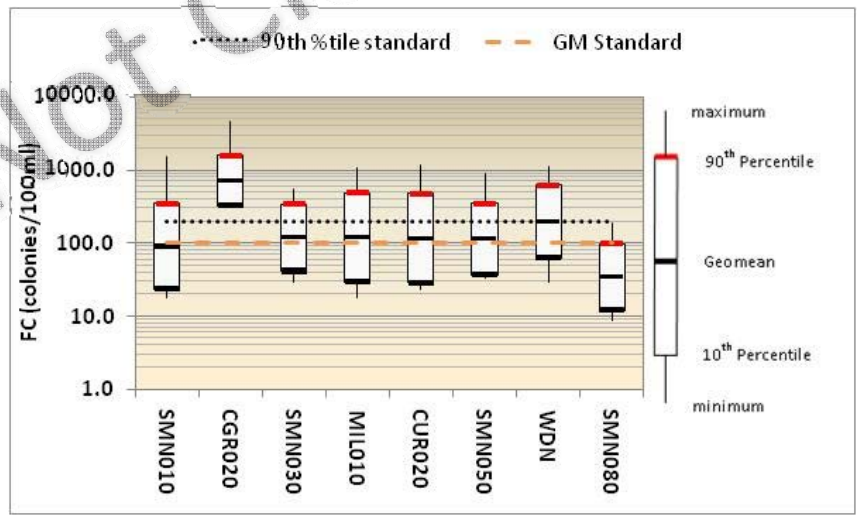
[2]Target reduction is the percent reduction required to reduce the 90th percentile of the adjusted data to 5 above background.

Wet Season Fecal coilform 2005-2007

Fecal Coliform Wet season 05-07



Fecal Coliform Dry season 05-07



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Fecal coliform geometric mean trend test results for monitoring stations.

Station	Z score			Trend increasing or decreasing			Have fecal coliform levels changed significantly?		
	Seasonal	Wet	Dry	Seasonal	Wet	Dry	Seasonal	Wet	Dry
SMN010	-3.20	-2.40	-1.58	↓	↓	↓	yes	yes	no
CGR020	-2.5	-2.86	-0.92	↓	↓	↓	yes	yes	no
SMN030	-3.61	-2.67	-2.47	↓	↓	↓	yes	yes	yes
MIL010	-2.38	-3.04	-1.77	↓	↓	↓	yes	yes	yes
CUR020	-3.84	-2.89	-2.99	↓	↓	↓	yes	yes	yes
SMN050	-3.91	-3.60	-3.22	↓	↓	↓	yes	yes	yes
WDN	-2.99	-1.97	-2.75	↓	↓	↓	yes	yes	yes
SMN080	-2.41	-1.58	-0.92	↓	↓	↓	yes	yes	no

↑ increasing trend
↓ decreasing trend

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Turbidity 90th % tile target levels for wet season.

Station	90th % tile of Adjusted Data minus Load Allocation of 5 NTU			
	TMDL Target[1] Turbidity	05-07[1] Turbidity	% change	Meets target?
SMN010	8.4	5	-63	Yes
CGR020	15.1	2	-90	Yes
SMN030	7.8	4	-69	Yes
MIL010	16.1	7	-67	Yes
CUR020	0.9	-3	-151	Yes
SMN050	3.2	3	-63	Yes
WDN	5.1	1	-90	Yes

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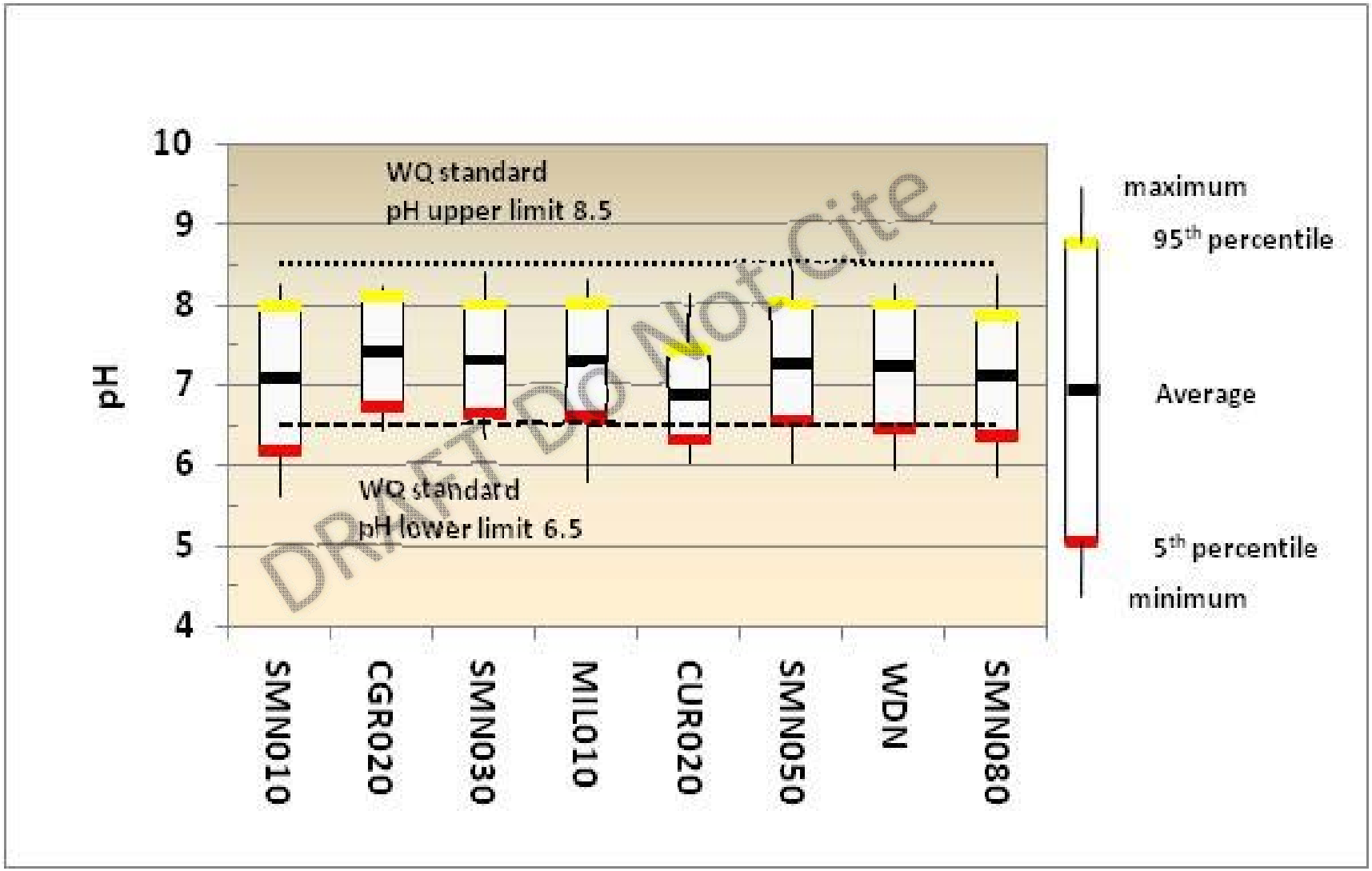
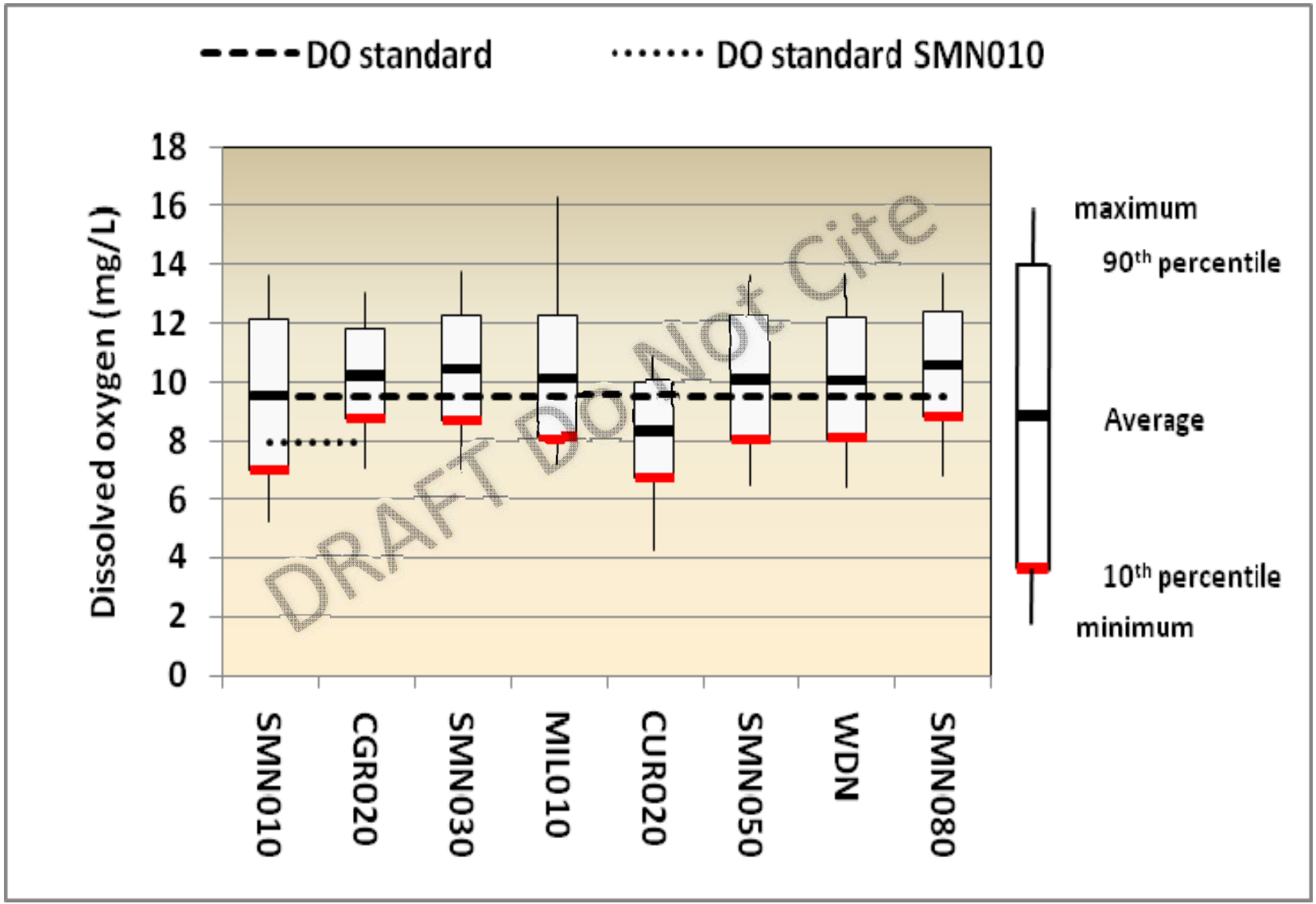
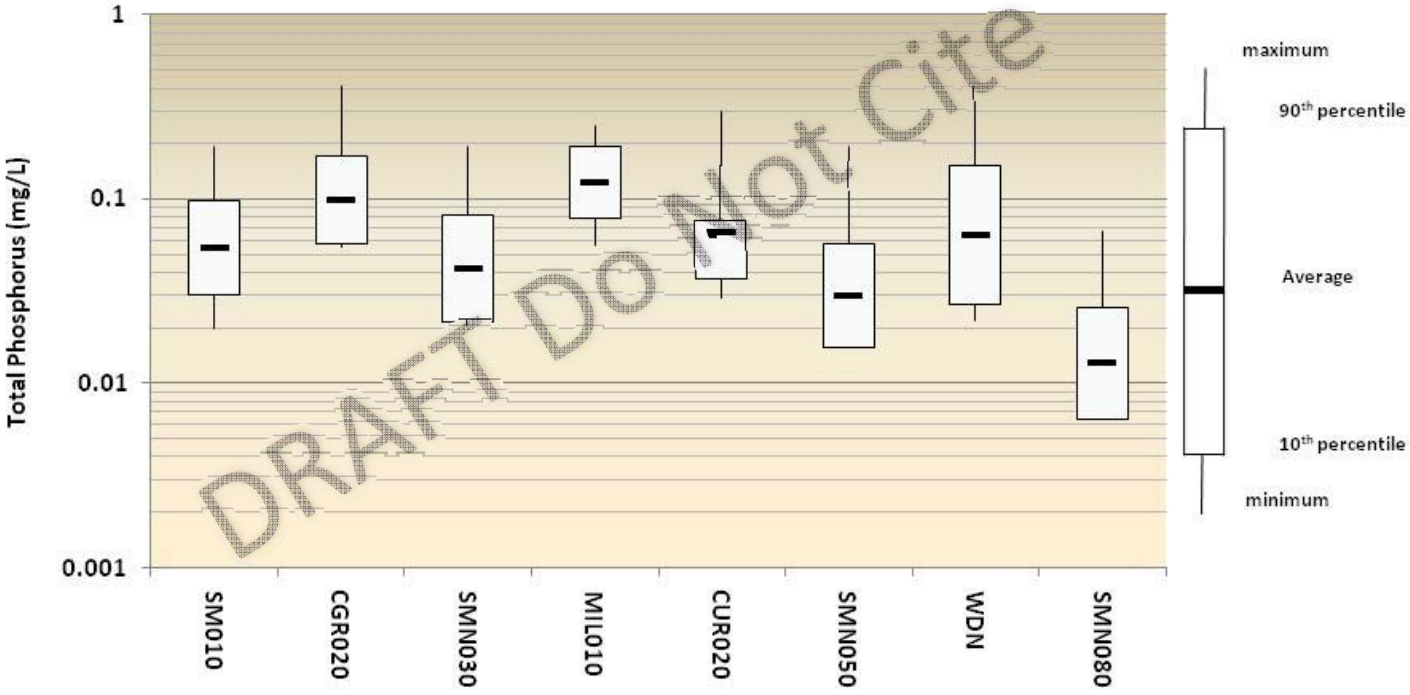
[1]Adjusted data equals each site value minus background (SMN080) value for each sampling event.

1997-2007


10
9
8
7
6
5
4
pH
WQ standard
pH upper limit 8.5
WQ standard
pH lower limit 6.5
SMN010
CGR020
SMN030
MIL010
CUR020
SMN050
WDN
SMN080
maximum
95th percentile
Average
5th percentile
minimum
DRAFT Do Not Cite

2003-2007


DO standard
DO standard SMN010
Dissolved oxygen (mg/L)
18
16
14
12
10
8
6
4
2
0
SMN010
CGR020
SMN030
MIL010
CUR020
SMN050
WDN
SMN080
maximum
90th percentile
Average
10th percentile
minimum
DRAFT Do Not Cite



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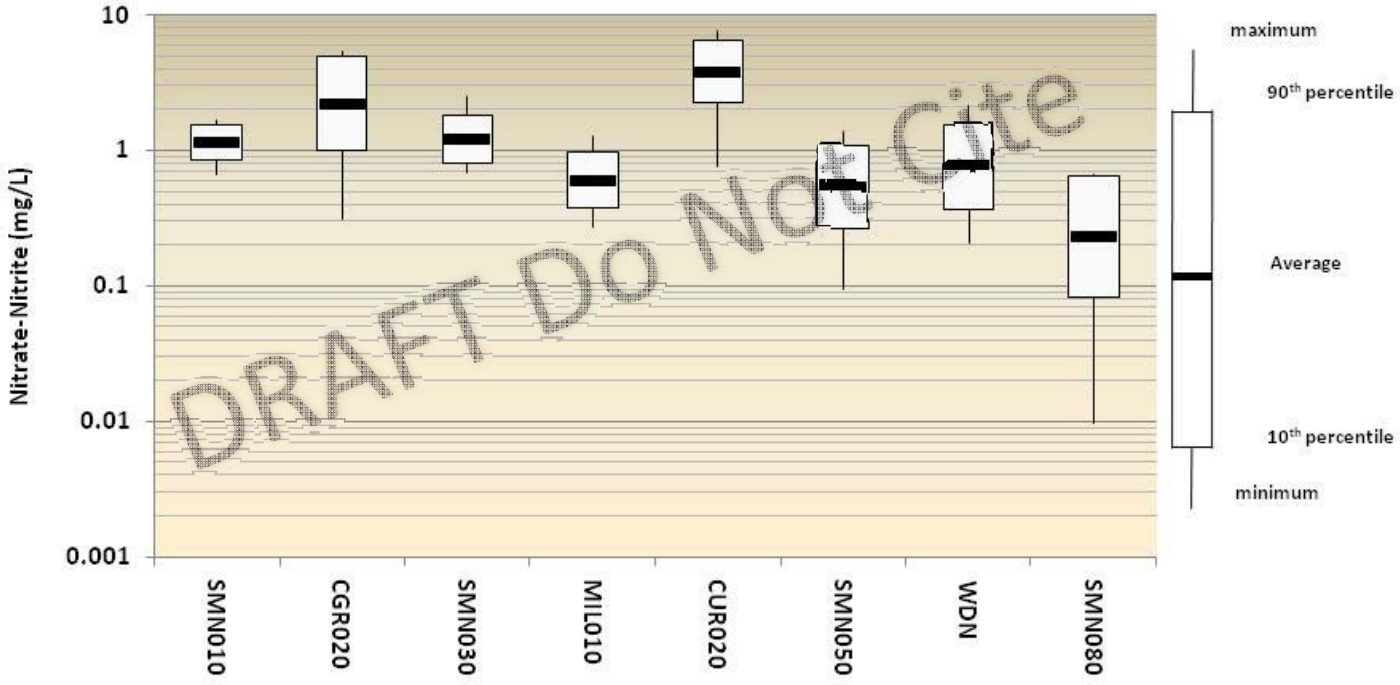

Nitrate-Nitrite (mg/L)
10
1
0.1
0.01
0.001
SMN010
CGR020
SMN030
MIL010
CUR020
SMN050
WDN
SMN080
maximum
90th percentile
Average
10th percentile
minimum
DRAFT Do Not Cite

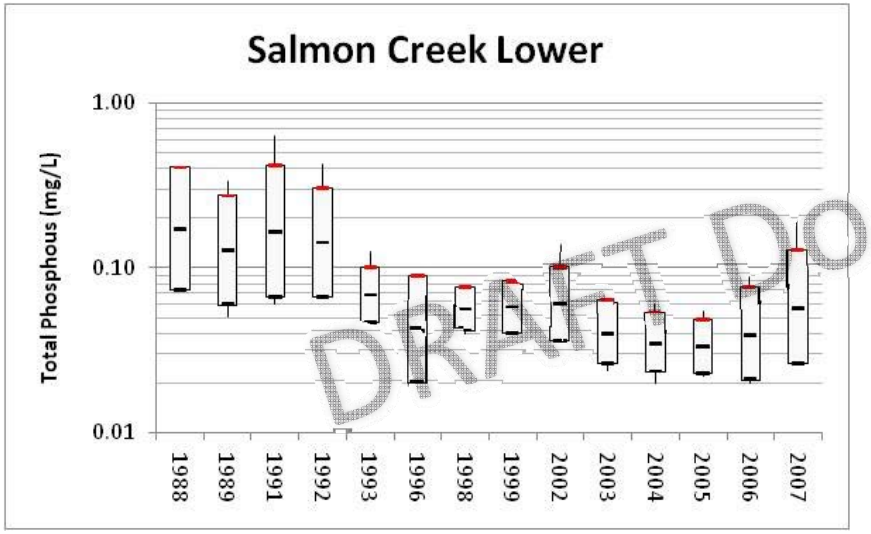
Trend test results for nutrients at Salmon Creek Watershed monitoring station.

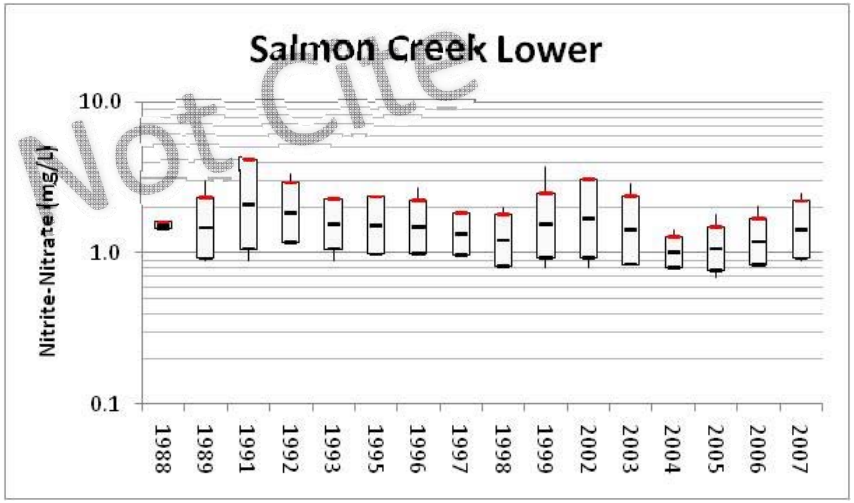
	Z score		Trend increasing or decreasing		Have nutrient levels changed significantly?	
	Nitrate-Nitrite	Total Phosphorus	Nitrate-Nitrite	Total Phosphorus	Nitrate-Nitrite	Total Phosphorus
SMN010	-2.30	-2.49	↓	↓	yes	yes
CGR020	0.99	-1.87	↑	↓	no	yes
SMN030	-2.39	-3.18	↓	↓	yes	yes
MIL010	-3.28	-1.87	↓	↓	yes	yes
CUR020	-1.42	-1.56	↓	↓	no	no
SMN050	-2.50	-1.85	↓	↓	yes	yes
WDN	-2.87	-2.14	↓	↓	yes	yes
SMN080	-1.19	1.45	↓	↑	no	no

↑ increasing trend
↓ decreasing trend

DRAFT Do Not Cite

Salmon Creek nutrients SMN030





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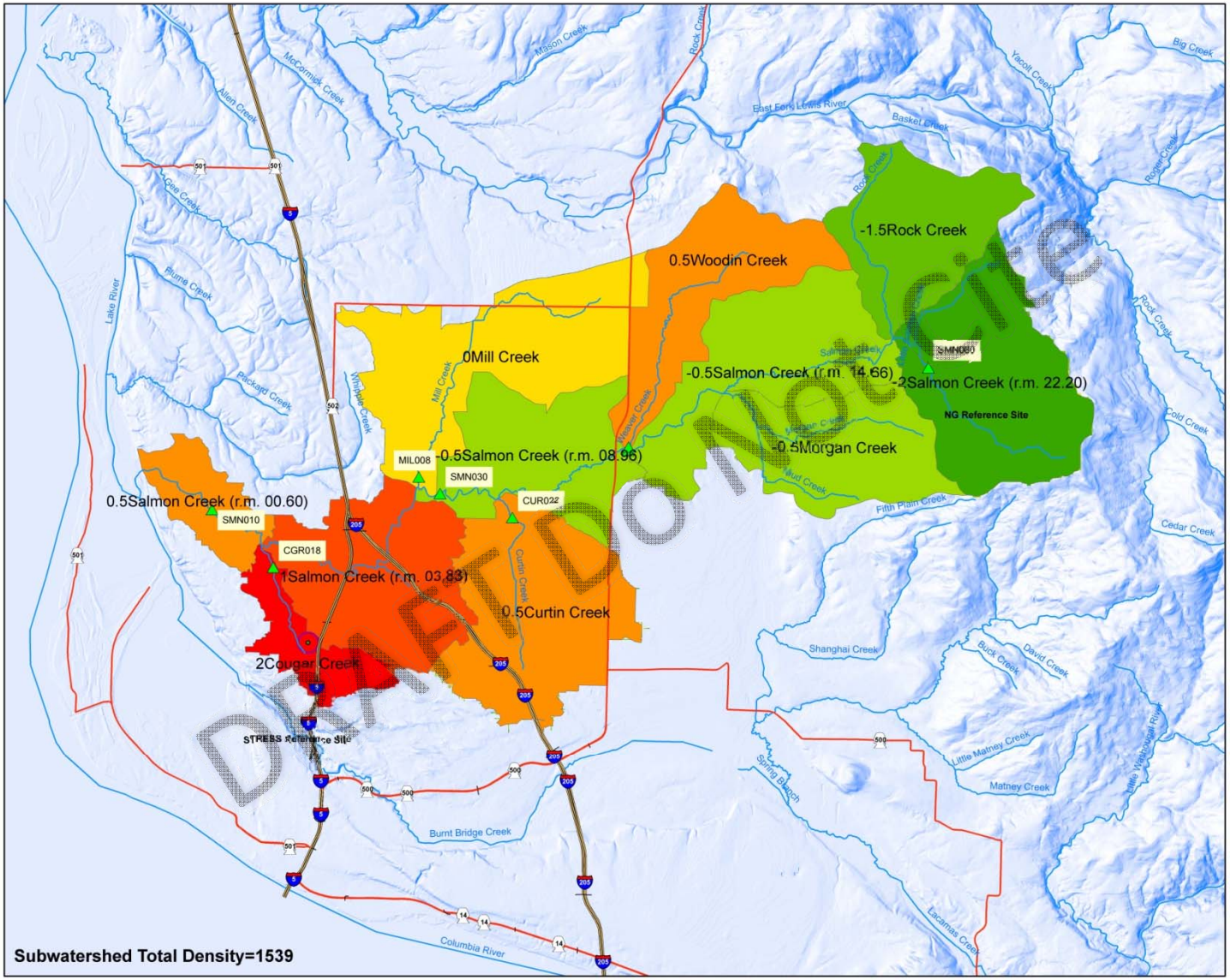
Salmon Creek Monitoring Project Density Analysis



Legend

- SALMON CK Stations
- Hydrography

Salmon CKSubwatershed

LD_Class

- -2
- -1.5
- -0.5
- -0.05
- 0
- 0.5
- 1
- 2

N W E S

0 3.5 7 14 21 28 35 Kilometers