

Supplemental Materials

to accompany

Impacts of chloride and urbanization on stream invertebrates: a 10-year citizen science field study of road salt in stormwater runoff

by

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Table S1. Site and watershed characteristics.

Site #	Stream (Site)	Watershed Area (km ²)	% Road	% Imper-vious	% Deve-loped	% Dev Lo Med Hi	% Dev Med Hi	% Forest Grass	Max Cl (n)	WQ Rating Max (n)
1	Black Cr	12.5	10.1	37.8	98.7	78.6	22.7	0.8	8000 (35)	4 (1)
3	Creve Coeur Cr A	76.5	7.1	27.6	80.3	58.5	15.9	13.8	246 (90)	17 (12)
4	Creve Coeur Cr B	69.9	7.4	29.2	85.3	62.2	16.6	13.8	1540 (151)	23 (14)
5	Creve Coeur Cr C	57.3	6.9	27.8	84.7	59.6	15.2	14.4	918 (58)	24 (6)
6	Creve Coeur Cr D	24.7	7.7	30.2	87.7	65.4	16.9	11.6	1732 (58)	22 (3)
7	Creve Coeur Cr E	14.2	7.4	29.2	90.1	64.1	15.1	9.5	2177 (57)	20 (1)
11	Deer Cr	31.1	6.1	28.6	99.4	62.3	12.6	0.3	3613 (40)	19 (4)
15	Engleholm Cr	0.9	1.7	30.6	89.6	58.5	24.5	7.6	445 (21)	17 (5)
17	Fishpot Cr	9.6	7.1	36.8	99	75.3	21.9	1	2101 (12)	10 (1)
19	Bonhomme Cr	5.5	4.3	13.3	37.8	24.5	12	61.3	275 (122)	22 (4)
21	Glaize Cr	6.9	8	29.2	88.3	64.3	14	11.7	623 (12)	20 (5)
22	Glaize Trib	2.8	2.8	11.4	37.9	23	6.7	61.4	400 (13)	21 (5)
26	Gr Glaize Cr D	8.9	5.9	31.7	99	78.2	9.9	1	4746 (130)	22 (10)
29	Gr Glaize Cr C	53.7	6.9	27.5	80.6	60.2	14.2	18.7	1517 (111)	22 (1)
30	Gr Glaize Cr A	61.2	6.8	27.4	78.9	59.4	15	19.2	1460 (87)	15 (1)
31	Gr Glaize Cr B	58.9	6.9	27.7	80	60.2	14.9	19.1	1262 (83)	17 (3)
32	Gravois Cr D	20.3	9.2	39.1	99.9	83.4	23.7	0.1	2669 (87)	18 (11)
33	Gravois Cr A	56.6	8.7	39	99.3	80.7	25.9	0.6	1257 (101)	21 (9)
34	Gravois Cr C	31.9	8.5	36.5	99.8	79.3	20.4	0.1	2210 (32)	6 (2)
35	Gravois Cr B	40.3	8.6	38.1	99	80	24.2	0.9	2099 (194)	19 (18)
37	Hamilton Cr	25.6	1.5	2	11.8	3.7	1.1	87.6	590 (55)	24 (12)
39	Kiefer Cr	16.8	4.2	13.5	37.8	26.8	10.5	61.8	393 (56)	17 (4)
40	Maline Cr	26.6	8.9	36.1	99.6	73.5	23.2	0.3	2722 (121)	22 (34)
42	Monsanto-Sunswept Cr	3.1	6.8	32.1	100	69.5	17.5	0	3514 (34)	18 (2)
43	R des Peres Trib	3.0	9.7	37.9	99.9	80.6	22.3	0	3831 (61)	8 (1)
44	R des Peres	18.4	8.9	46.7	99.9	86.5	37.8	0	3099 (69)	14 (4)
45	Sugar Cr B	4.1	7.5	24.8	80.6	64	6.7	19.3	1039 (48)	11 (3)
46	Sugar Cr A	13.2	8.2	26.9	83.3	62.2	12	16.5	1073 (76)	18 (10)
49	Watkins Cr	15.5	6.9	29.8	82.1	61.8	18.5	17.2	1621 (101)	26 (18)
50	Sugar Trib	4.2	9.7	35.7	95.7	73.6	22.2	4.2	1398 (29)	21 (10)
54	Wildhorse Cr	25.4	1.2	1	10.4	1.7	0.3	88.4	485 (14)	34 (2)
55	Williams Cr	16.1	2.3	5.1	20.5	11.3	2.6	78.5	124 (31)	7 (1)
56	Spring Br	5.4	2.1	3.3	17.3	6.4	1.7	82.4	184 (45)	17 (1)

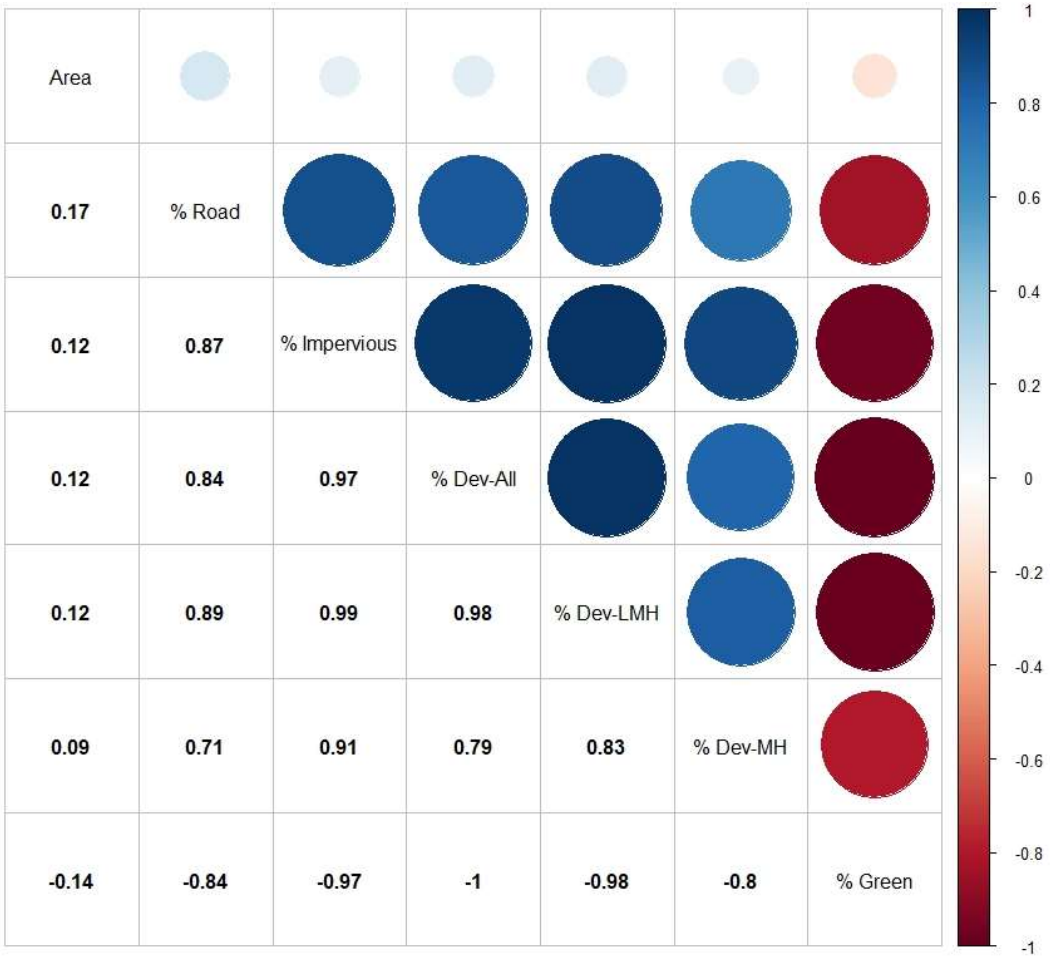


Figure S1. Correlations among watershed and land use variables.

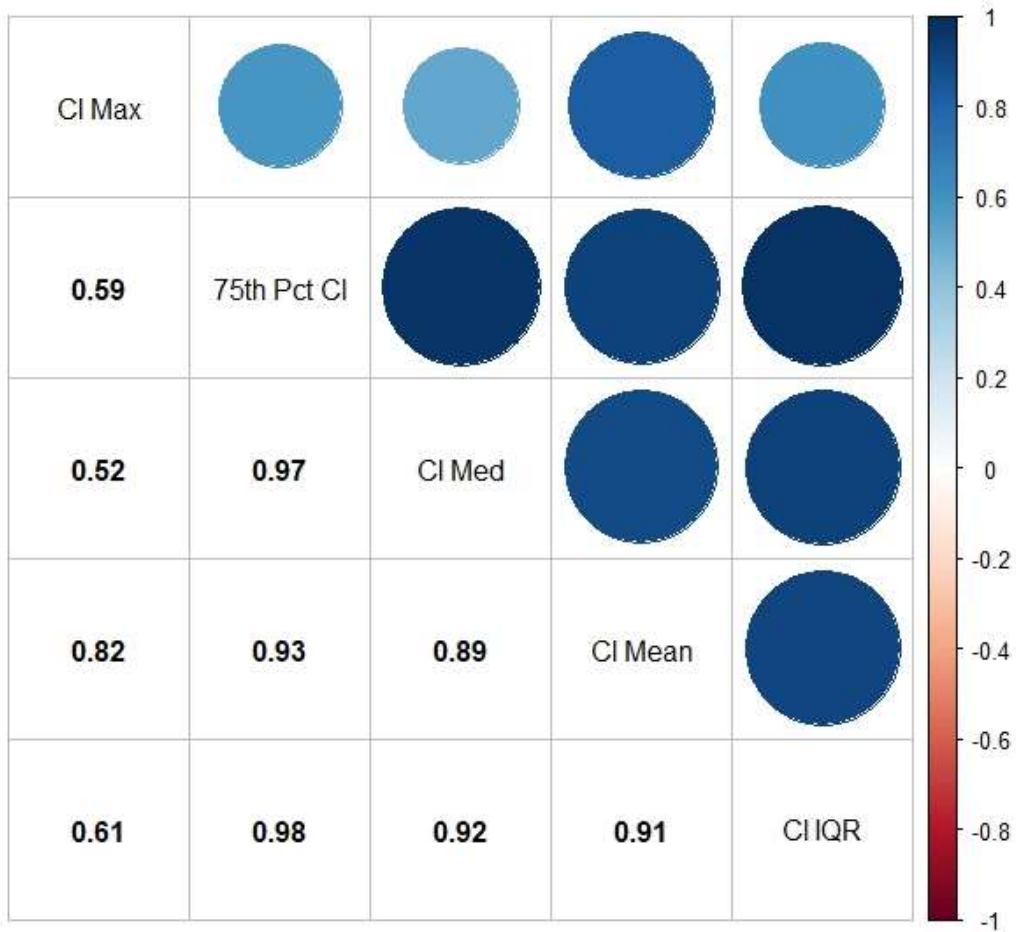


Figure S2. Correlations among chloride summary variables.

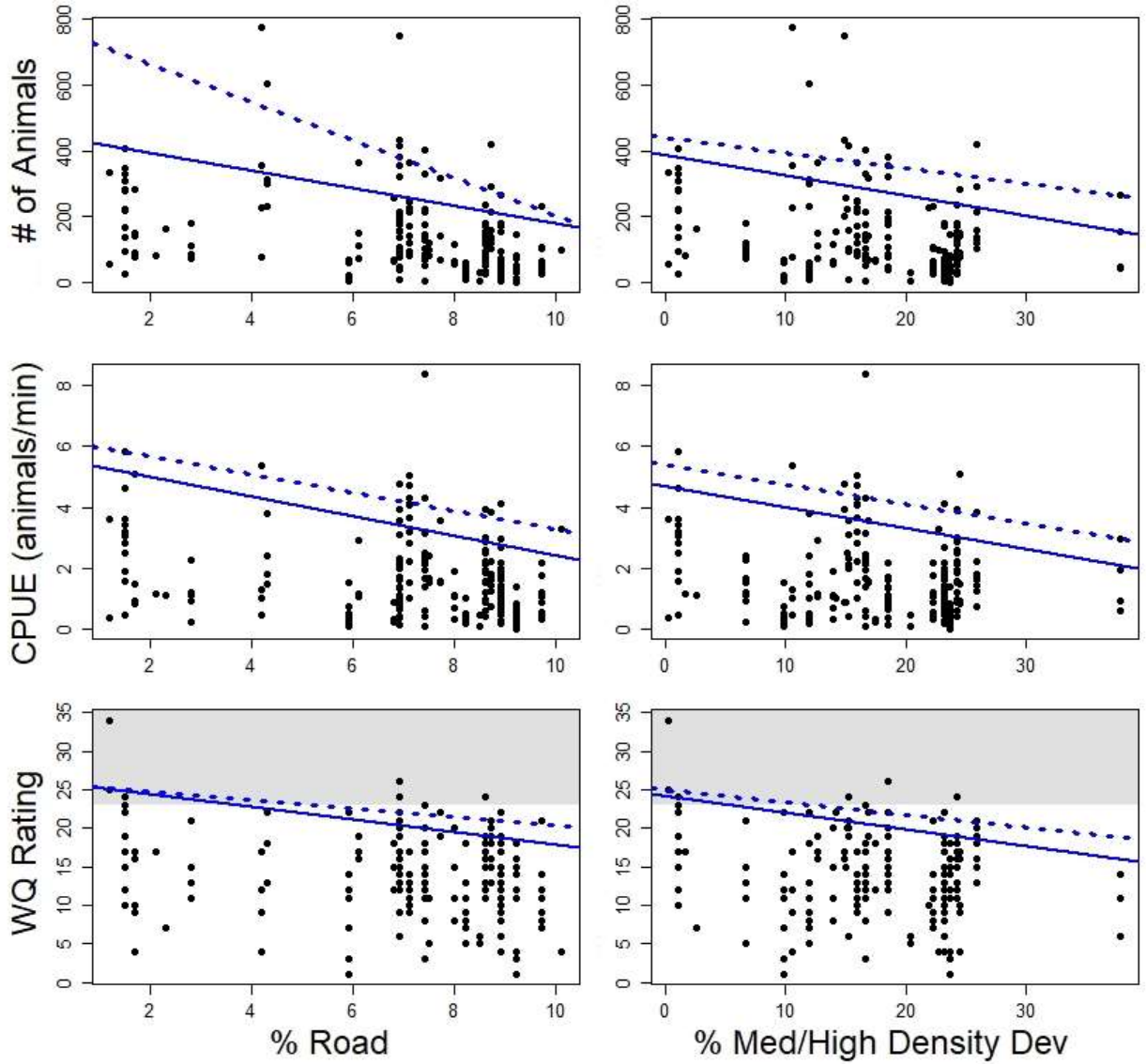


Figure S3. Quantile plots of invertebrate metrics on watershed development metrics. Solid blue line is the 90th quantile regression, dashed blue line is the 95th quantile regression.

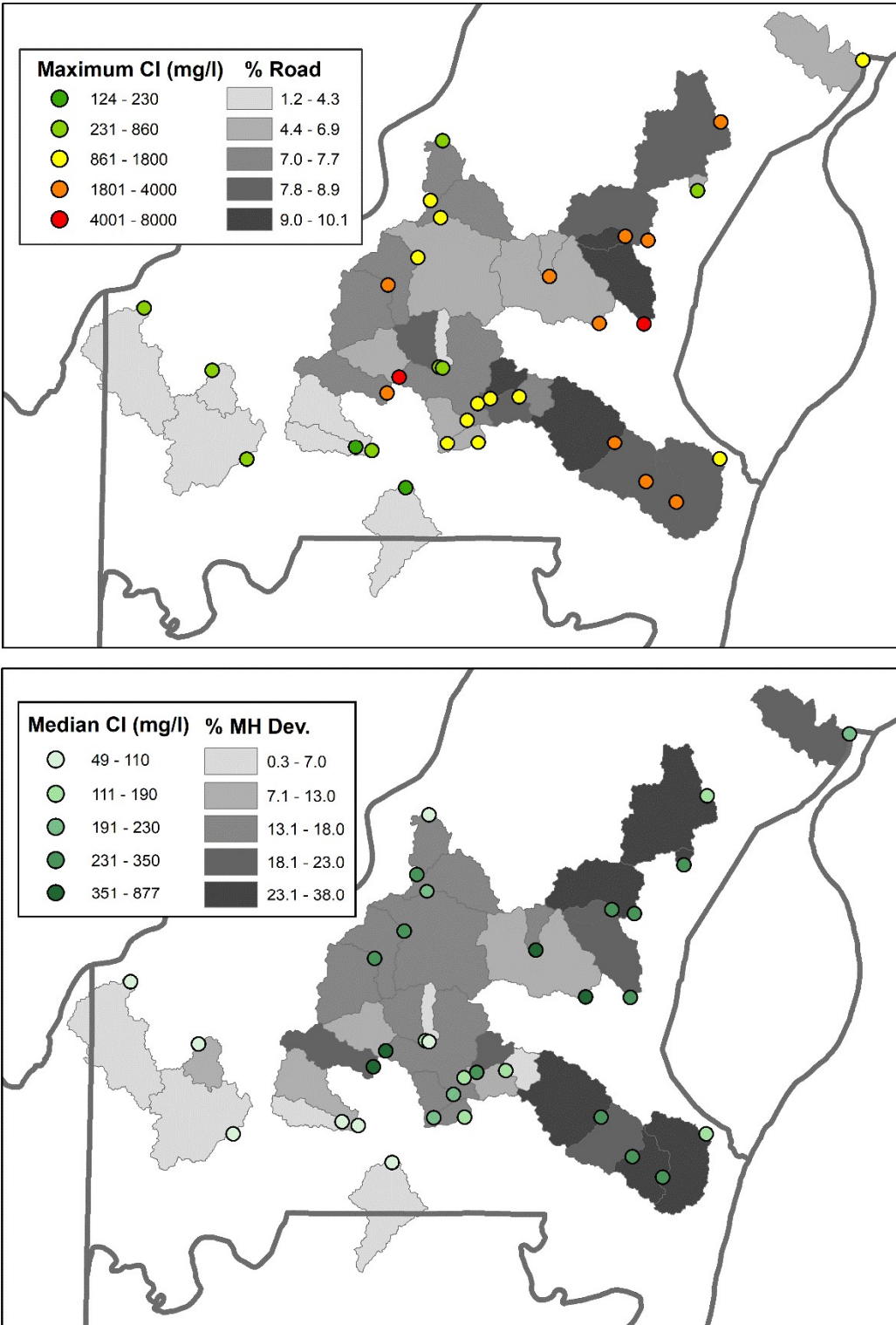


Figure S4. Relationship between (a) chloride max and % road and (b) median chloride and % MH intensity development in the watershed.

Personal Communication with Roland Biehl

from: **Roland Biehl**
to: Danelle H
date: Dec 21, 2020, 7:26 AM
subject: RE: Municipal salt info request

Does this help, slide from a recent presentation.

2019: 66,157 tons of road salt over 256,617 lane miles of roadway from January 1, 2019 through December 31, 2019

	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2018
Total reported storm events	332	339	572	238	398	699	605	338	274	426
Co-permittees reporting usage	46	51	48	53	55	55	52	55	54	54
Reported applied salt (tons)	37,668	48,147	73,117	19,737	36,827	94,385	47,838	26,763	17,973	28,988
Reported salted lane miles	98,085	147,937	239,981	70,825	132,840	318,077	171,885	104,112	72,113	150,627
Average application rate (lb/lane/mile)	768	651	609	557	554	593	557	514	498	385

Keep up the Good Work!