

Revised Aquatic Life Criteria for Lead



Delaware River Basin Commission
West Trenton, New Jersey
1995

Calculation of New Criteria for Lead

Acute Stream Quality Objective

LC50	Species	Loge(LC50)	SMAV
224000	Tanytarsus dissimilis	12.319	12.319
124	Gammarus pseudolimnaeus	4.820	4.881
140	Gammarus pseudolimnaeus	4.942	
1340	Aplexa hypnorum	7.200	7.200
31500	Carassius auratus	10.358	10.358
20600	Poecilla reticulata	9.933	9.933
612	D. magna	6.417	7.083
952	D. magna	6.859	
1910	D. magna	7.555	
1815	D. magna*	7.504	
2003	D. pulex*	7.602	7.602
5580	P. promelas	8.627	9.566
7330	P. promelas	8.900	
482000	P. promelas	13.086	
2100	P. promelas*	7.650	
23800	L. macrochirus	10.077	11.538
442000	L. macrochirus	12.999	
4100	S. fontinalis	8.319	8.319
542000	O. mykiss	13.203	11.110
471000	O. mykiss	13.063	
1170	O. mykiss	7.065	
1878	C. reticulata*	7.538	6.526
248	C. dubia*	5.513	
27600	Crangonyx pseudogracilus*	10.226	10.226

Species	GMAV	Ln(GMAV)	R	P
Gammarus	132	4.881	1	0.08
Ceriodaphnia	682	6.526	2	0.15
Aplexa	1340	7.200	3	0.23
Daphnia	1545	7.343	4	0.31
Salvelinus	4100	8.319	5	0.38
Pimephales	14264	9.566	6	0.46
Poecilla	20600	9.933	7	0.54
Crangonyx	27600	10.226	8	0.62
Carassius	31500	10.358	9	0.69
Oncorhynchus	66845	11.110	10	0.77
Lepomis	102565	11.538	11	0.85
Tanytarsus	224000	12.319	12	0.92

Species	GMAV
Gammarus	4.881
Ceriodaphnia	6.526
Aplexa	7.200
Daphnia	7.343

Sum of Squares	172.174
Sum of GMAV2 squared	673.404
Sum of Ps	0.769
Sum of Sqrt Ps	1.705
S squared -	89.397
S -	9.455
L -	2.458
A -	4.572
FAV -	96.8
CMC (FAV/2) -	48.4

CHRONIC STREAM QUALITY OBJECTIVE

Species	ChrV	GMChrV	SMChrV	ACR	Loge(SMAC R)	SMACR
D. magna	12.3	2.506	4.046	2.826	1.923	6.8
	118.8	4.777		1.483		
	128.1	4.853		1.460		
P. promelas*	329.0	5.796	5.796	1.650	1.650	5.2
S. fontinalis	83.1	4.420	4.420	1.882	1.882	6.6
O. mykiss	18.9	2.938	3.781	3.781	3.092	22.0
	101.8	4.623		2.403		
C. dubia*	52.0	3.951	3.951	1.652	1.652	5.2
M. bahia		25.08	3.222	3.222	2.498	2.498

Final Acute:Chronic Ratio - Use four species with the most sensitive GMAV and exclude O. mykiss and mysid ACR.

SMACR

D. magna	6.8405322
P. promelas	5.2087961
S. fontinalis	6.5676222
C.dubia*	5.2150822

Average (FACR)	5.9	CCC (FAV/FACR) -	16.4
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