

Spokane County Water Resources 2008 Annual Monitoring Report
Appendix H: Nitrate Trend Analysis

Station 5213B01	
Sen's test	
n	101 Number of datapoints
N'	5050 Number of slopes
S	-0.0021 Median slope (Sen's slope estimate)
var(S)	116146 variance of S
M1	2244.69 Rank M1
Q(2244.69)	-0.0039 Lower confidence level of slopes
M2	2805.31 Rank M2
Q(2805.31)	-0.0002 Upper confidence level of slopes
Result	Hypothesis of increasing trend rejected Hypothesis of decreasing trend accepted
Mann-Kendall test	
n	101 Number of datapoints
S	-646 Mann Kendall test statistic
Var(S)	116146 Variance
Z, z(1-a)	-1.8926, 1. Normal approximation
Probability	0.0292 Probability associated with S for
Result	Hypothesis of increasing trend rejected Hypothesis of decreasing trend accepted

Station 5304G01	
Sen's test	
n	36 Number of datapoints
N'	630 Number of slopes
S	0.0029 Median slope (Sen's slope estimate)
var(S)	5388 variance of S
M1	254.626 Rank M1
Q(254.626)	-0.0042 Lower confidence level of slopes
M2	375.374 Rank M2
Q(375.374)	0.01 Upper confidence level of slopes
Result	Hypothesis of increasing trend rejected Hypothesis of decreasing trend rejected
Mann-Kendall test	
n	36 Number of datapoints
S	43 Mann Kendall test statistic
Var(S)	5388 Variance
Z, z(1-a)	0.5722, 1. Normal approximation
Probability	0.2836 Probability associated with S for
Result	Hypothesis of increasing trend rejected Hypothesis of decreasing trend rejected

Station 5307M01	
Sen's test	
n	40 Number of datapoints
N'	780 Number of slopes
S	-0.0078 Median slope (Sen's slope estimate)
var(S)	7365.667 variance of S
M1	319.4102 Rank M1
Q(319.4102)	-0.01 Lower confidence level of slopes
M2	460.5898 Rank M2
Q(460.5898)	-0.0056 Upper confidence level of slopes
Result	Hypothesis of increasing trend rejected Hypothesis of decreasing trend accepted
Mann-Kendall test	
n	40 Number of datapoints
S	-402 Mann Kendall test statistic
Var(S)	7365.667 Variance
Z, z(1-a)	-4.6724, 1. Normal approximation
Probability	0 Probability associated with S for
Result	Hypothesis of increasing trend rejected Hypothesis of decreasing trend accepted

Station 5415E03	
# Sen's test	
n	11 Number of datapoints
N'	55 Number of slopes
S	0.007 Median slope (Sen's slope estimate)
var(S)	165 variance of S
M1	16.9348 Rank M1
Q(16.9348)	-0.012 Lower confidence level of slopes
M2	38.0652 Rank M2
Q(38.0652)	0.0279 Upper confidence level of slopes
Result	Hypothesis of increasing trend rejected Hypothesis of decreasing trend rejected
Mann-Kendall test	
n	11 Number of datapoints
S	11 Mann Kendall test statistic
Var(S)	165 Variance
Z, z(1-a)	0.7785, 1. Normal approximation
Probability	0.2182 Probability associated with S for
Result	Hypothesis of increasing trend rejected Hypothesis of decreasing trend rejected

Station 5426L01	
Sen's test	
n	121 Number of datapoints
N'	7260 Number of slopes
S	-0.0015 Median slope (Sen's slope estimate)
var(S)	199243.7 variance of S
M1	3262.863 Rank M1
Q(3262.863)	-0.0057 Lower confidence level of slopes
M2	3997.137 Rank M2
Q(3997.137)	0.0029 Upper confidence level of slopes
Result	Hypothesis of increasing trend rejected Hypothesis of decreasing trend rejected
Mann-Kendall test	
n	121 Number of datapoints
S	-256 Mann Kendall test statistic
Var(S)	199243.7 Variance
Z, z(1-a)	-0.5713, 1. Normal approximation
Probability	0.2839 Probability associated with S for
Result	Hypothesis of increasing trend rejected Hypothesis of decreasing trend rejected

Station 5427L01	
Sen's test	
n	77 Number of datapoints
N'	2926 Number of slopes
S	-0.0135 Median slope (Sen's slope estimate)
var(S)	51691.67 variance of S
M1	1275.998 Rank M1
Q(1275.998)	-0.0179 Lower confidence level of slopes
M2	1650.002 Rank M2
Q(1650.002)	-0.0084 Upper confidence level of slopes
Result	Hypothesis of increasing trend rejected Hypothesis of decreasing trend accepted
Mann-Kendall test	
n	77 Number of datapoints
S	-845 Mann Kendall test statistic
Var(S)	51691.67 Variance
Z, z(1-a)	-3.7122, 1. Normal approximation
Probability	0.0001 Probability associated with S for
Result	Hypothesis of increasing trend rejected Hypothesis of decreasing trend accepted

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Station 5308A02

Sen's test
n 91 Number of datapoints
N' 4095 Number of slopes
S -0.0052 Median slope (Sen's slope estimate)
var(S) 85082 variance of S
M1 1807.586 Rank M1
Q(1807.586) -0.0061 Lower confidence level of slopes
M2 2287.414 Rank M2
Q(2287.414) -0.0041 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Mann-Kendall test

n 91 Number of datapoints
S -2125 Mann Kendall test statistic
Var(S) 85082 Variance
Z, z(1-a) -7.2817, 1. Normal approximation
Probability 0 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Station 5308H01

Sen's test
n 42 Number of datapoints
N' 861 Number of slopes
S -0.0056 Median slope (Sen's slope estimate)
var(S) 8513.333 variance of S
M1 354.6098 Rank M1
Q(354.6098) -0.0091 Lower confidence level of slopes
M2 506.3902 Rank M2
Q(506.3902) -0.0018 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Mann-Kendall test

n 42 Number of datapoints
S -210 Mann Kendall test statistic
Var(S) 8513.333 Variance
Z, z(1-a) -2.2651, 1. Normal approximation
Probability 0.0118 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Station 5310Q10

Sen's test
n 23 Number of datapoints
N' 253 Number of slopes
S -0.008 Median slope (Sen's slope estimate)
var(S) 1433.667 variance of S
M1 95.357 Rank M1
Q(95.357) -0.0173 Lower confidence level of slopes
M2 157.643 Rank M2
Q(157.643) 0.0003 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected

Mann-Kendall test

n 23 Number of datapoints
S -56 Mann Kendall test statistic
Var(S) 1433.667 Variance
Z, z(1-a) -1.4526, 1. Normal approximation
Probability 0.0732 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected

Station 5505D01

Sen's test
n 47 Number of datapoints
N' 1081 Number of slopes
S 0.0073 Median slope (Sen's slope estimate)
var(S) 11891 variance of S
M1 450.8098 Rank M1
Q(450.8098) 0.002 Lower confidence level of slopes
M2 630.1902 Rank M2
Q(630.1902) 0.0128 Upper confidence level of slopes
Result Hypothesis of increasing trend accepted
Hypothesis of decreasing trend rejected

Mann-Kendall test

n 47 Number of datapoints
S 236 Mann Kendall test statistic
Var(S) 11891 Variance
Z, z(1-a) 2.1551, 1. Normal approximation
Probability 0.0156 Probability associated with S for
Result Hypothesis of increasing trend accepted
Hypothesis of decreasing trend rejected

Station 5507A04

Sen's test
n 50 Number of datapoints
N' 1225 Number of slopes
S -0.0027 Median slope (Sen's slope estimate)
var(S) 14286.67 variance of S
M1 514.1891 Rank M1
Q(514.1891) -0.0042 Lower confidence level of slopes
M2 710.8109 Rank M2
Q(710.8109) -0.0009 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Mann-Kendall test

n 50 Number of datapoints
S -298 Mann Kendall test statistic
Var(S) 14286.67 Variance
Z, z(1-a) -2.4848, 1. Normal approximation
Probability 0.0065 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Station 5507H01

Sen's test
n 48 Number of datapoints
N' 1128 Number of slopes
S 0 Median slope (Sen's slope estimate)
var(S) 12658.67 variance of S
M1 471.4599 Rank M1
Q(471.4599) -0.0016 Lower confidence level of slopes
M2 656.5401 Rank M2
Q(656.5401) 0.0015 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected

Mann-Kendall test

n 48 Number of datapoints
S -5 Mann Kendall test statistic
Var(S) 12658.67 Variance
Z, z(1-a) -0.0356, 1. Normal approximation
Probability 0.4858 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected

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Station 5311J05

Sen's test
n 55 Number of datapoints
N' 1485 Number of slopes
S -0.0028 Median slope (Sen's slope estimate)
var(S) 18972 variance of S
M1 629.2098 Rank M1
Q(629.2098) -0.0048 Lower confidence level of slopes
M2 855.7902 Rank M2
Q(855.7902) -0.0007 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted
Mann-Kendall test
n 55 Number of datapoints
S -296 Mann Kendall test statistic
Var(S) 18972 Variance
Z, z(1-a) -2.1417, 1. Normal approximation
Probability 0.0161 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Station 5311J07

Sen's test
n 52 Number of datapoints
N' 1326 Number of slopes
S -0.0025 Median slope (Sen's slope estimate)
var(S) 16057.33 variance of S
M1 558.7748 Rank M1
Q(558.7748) -0.0044 Lower confidence level of slopes
M2 767.2252 Rank M2
Q(767.2252) -0.0006 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted
Mann-Kendall test
n 52 Number of datapoints
S -277 Mann Kendall test statistic
Var(S) 16057.33 Variance
Z, z(1-a) -2.1781, 1. Normal approximation
Probability 0.0147 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Station 5312C01

Sen's test
n 43 Number of datapoints
N' 903 Number of slopes
S 0 Median slope (Sen's slope estimate)
var(S) 9130.333 variance of S
M1 372.9078 Rank M1
Q(372.9078) -0.0025 Lower confidence level of slopes
M2 530.0922 Rank M2
Q(530.0922) 0.0044 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected
Mann-Kendall test
n 43 Number of datapoints
S 3 Mann Kendall test statistic
Var(S) 9130.333 Variance
Z, z(1-a) 0.0209, 1. Normal approximation
Probability 0.4917 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected

Station 5508M01

Sen's test
n 49 Number of datapoints
N' 1176 Number of slopes
S 0 Median slope (Sen's slope estimate)
var(S) 13457.67 variance of S
M1 492.5841 Rank M1
Q(492.5841) -0.0006 Lower confidence level of slopes
M2 683.4159 Rank M2
Q(683.4159) 0.0005 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected
Mann-Kendall test
n 49 Number of datapoints
S -21 Mann Kendall test statistic
Var(S) 13457.67 Variance
Z, z(1-a) -0.1724, 1. Normal approximation
Probability 0.4316 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected

Station 5508M02

Sen's test
n 52 Number of datapoints
N' 1326 Number of slopes
S 0.0003 Median slope (Sen's slope estimate)
var(S) 16058.33 variance of S
M1 558.7716 Rank M1
Q(558.7716) -0.0003 Lower confidence level of slopes
M2 767.2284 Rank M2
Q(767.2284) 0.0009 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected
Mann-Kendall test
n 52 Number of datapoints
S 128 Mann Kendall test statistic
Var(S) 16058.33 Variance
Z, z(1-a) 1.0022, 1. Normal approximation
Probability 0.1581 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected

Station 5515C01

Sen's test
n 50 Number of datapoints
N' 1225 Number of slopes
S -0.0092 Median slope (Sen's slope estimate)
var(S) 14291.67 variance of S
M1 514.172 Rank M1
Q(514.172) -0.0164 Lower confidence level of slopes
M2 710.828 Rank M2
Q(710.828) -0.0027 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted
Mann-Kendall test
n 50 Number of datapoints
S -263 Mann Kendall test statistic
Var(S) 14291.67 Variance
Z, z(1-a) -2.1916, 1. Normal approximation
Probability 0.0142 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

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Station 5312H01

Sen's test
n 103 Number of datapoints
N' 5253 Number of slopes
S 0.0071 Median slope (Sen's slope estimate)
var(S) 123151.7 variance of S
M1 2337.86 Rank M1
Q(2337.86) 0.0056 Lower confidence level of slopes
M2 2915.14 Rank M2
Q(2915.14) 0.0088 Upper confidence level of slopes
Result Hypothesis of increasing trend accepted
Hypothesis of decreasing trend rejected

Mann-Kendall test

n 103 Number of datapoints
S 2421 Mann Kendall test statistic
Var(S) 123151.7 Variance
Z, z(1-a) 6.896, 1.64 Normal approximation
Probability 0 Probability associated with S for
Result Hypothesis of increasing trend accepted
Hypothesis of decreasing trend rejected

Station 5315L01

Sen's test
n 43 Number of datapoints
N' 903 Number of slopes
S -0.0156 Median slope (Sen's slope estimate)
var(S) 9130.333 variance of S
M1 372.9078 Rank M1
Q(372.9078) -0.0183 Lower confidence level of slopes
M2 530.0922 Rank M2
Q(530.0922) -0.0125 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Mann-Kendall test

n 43 Number of datapoints
S -546 Mann Kendall test statistic
Var(S) 9130.333 Variance
Z, z(1-a) -5.7037, 1. Normal approximation
Probability 0 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Station 5322A01

Sen's test
n 56 Number of datapoints
N' 1540 Number of slopes
S -0.0175 Median slope (Sen's slope estimate)
var(S) 20019 variance of S
M1 653.6257 Rank M1
Q(653.6257) -0.0218 Lower confidence level of slopes
M2 886.3743 Rank M2
Q(886.3743) -0.0127 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Mann-Kendall test

n 56 Number of datapoints
S -779 Mann Kendall test statistic
Var(S) 20019 Variance
Z, z(1-a) -5.4987, 1. Normal approximation
Probability 0 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Station 5517D05

Sen's test
n 60 Number of datapoints
N' 1770 Number of slopes
S -0.0052 Median slope (Sen's slope estimate)
var(S) 24582.33 variance of S
M1 756.0422 Rank M1
Q(756.0422) -0.0079 Lower confidence level of slopes
M2 1013.958 Rank M2
Q(1013.958) -0.003 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Mann-Kendall test

n 60 Number of datapoints
S -573 Mann Kendall test statistic
Var(S) 24582.33 Variance
Z, z(1-a) -3.6482, 1. Normal approximation
Probability 0.0001 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Station 5518R01

Sen's test
n 60 Number of datapoints
N' 1770 Number of slopes
S -0.0115 Median slope (Sen's slope estimate)
var(S) 24583.33 variance of S
M1 756.0396 Rank M1
Q(756.0396) -0.0161 Lower confidence level of slopes
M2 1013.96 Rank M2
Q(1013.96) -0.0066 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Mann-Kendall test

n 60 Number of datapoints
S -574 Mann Kendall test statistic
Var(S) 24583.33 Variance
Z, z(1-a) -3.6546, 1. Normal approximation
Probability 0.0001 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Station 6211K01

Sen's test
n 47 Number of datapoints
N' 1081 Number of slopes
S -0.0059 Median slope (Sen's slope estimate)
var(S) 11889 variance of S
M1 450.8173 Rank M1
Q(450.8173) -0.008 Lower confidence level of slopes
M2 630.1827 Rank M2
Q(630.1827) -0.0046 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Mann-Kendall test

n 47 Number of datapoints
S -570 Mann Kendall test statistic
Var(S) 11889 Variance
Z, z(1-a) -5.2184, 1. Normal approximation
Probability 0 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

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Station 5322A03

Sen's test
n 53 Number of datapoints
N' 1378 Number of slopes
S -0.0194 Median slope (Sen's slope estimate)
var(S) 16995.33 variance of S
M1 581.7739 Rank M1
Q(581.7739) -0.0227 Lower confidence level of slopes
M2 796.2261 Rank M2
Q(796.2261) -0.016 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Mann-Kendall test

n 53 Number of datapoints
S -792 Mann Kendall test statistic
Var(S) 16995.33 Variance
Z, z(1-a) -6.0675, 1. Normal approximation
Probability 0 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Station 5322F01

Sen's test
n 98 Number of datapoints
N' 4753 Number of slopes
S -0.0081 Median slope (Sen's slope estimate)
var(S) 106150.3 variance of S
M1 2108.524 Rank M1
Q(2108.524) -0.0125 Lower confidence level of slopes
M2 2644.476 Rank M2
Q(2644.476) -0.0046 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Mann-Kendall test

n 98 Number of datapoints
S -1176 Mann Kendall test statistic
Var(S) 106150.3 Variance
Z, z(1-a) -3.6064, 1. Normal approximation
Probability 0.0002 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Station 53230E01

Sen's test
n 37 Number of datapoints
N' 666 Number of slopes
S -0.04 Median slope (Sen's slope estimate)
var(S) 5846 variance of S
M1 270.1124 Rank M1
Q(270.1124) -0.0535 Lower confidence level of slopes
M2 395.8876 Rank M2
Q(395.8876) -0.0272 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Mann-Kendall test

n 37 Number of datapoints
S -301 Mann Kendall test statistic
Var(S) 5846 Variance
Z, z(1-a) -3.9237, 1. Normal approximation
Probability 0 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Station 6320D01

Sen's test
n 40 Number of datapoints
N' 780 Number of slopes
S -0.0022 Median slope (Sen's slope estimate)
var(S) 7363.667 variance of S
M1 319.4198 Rank M1
Q(319.4198) -0.0041 Lower confidence level of slopes
M2 460.5802 Rank M2
Q(460.5802) 0 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected

Mann-Kendall test

n 40 Number of datapoints
S -155 Mann Kendall test statistic
Var(S) 7363.667 Variance
Z, z(1-a) -1.7946, 1. Normal approximation
Probability 0.0364 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Station 6327N04

Sen's test
n 34 Number of datapoints
N' 561 Number of slopes
S -0.0178 Median slope (Sen's slope estimate)
var(S) 4550.333 variance of S
M1 225.0173 Rank M1
Q(225.0173) -0.0365 Lower confidence level of slopes
M2 335.9827 Rank M2
Q(335.9827) -0.0024 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Mann-Kendall test

n 34 Number of datapoints
S -141 Mann Kendall test statistic
Var(S) 4550.333 Variance
Z, z(1-a) -2.0754, 1. Normal approximation
Probability 0.019 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Station 6328H01

Sen's test
n 54 Number of datapoints
N' 1431 Number of slopes
S -0.0004 Median slope (Sen's slope estimate)
var(S) 17965 variance of S
M1 605.2574 Rank M1
Q(605.2574) -0.005 Lower confidence level of slopes
M2 825.7426 Rank M2
Q(825.7426) 0.0026 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected

Mann-Kendall test

n 54 Number of datapoints
S -44 Mann Kendall test statistic
Var(S) 17965 Variance
Z, z(1-a) -0.3208, 1. Normal approximation
Probability 0.3742 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected

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Station 5324G01

Sen's test
n 110 Number of datapoints
N' 5995 Number of slopes
S -0.005 Median slope (Sen's slope estimate)
var(S) 149874 variance of S
M1 2679.081 Rank M1
Q(2679.081) -0.009 Lower confidence level of slopes
M2 3315.919 Rank M2
Q(3315.919) -0.0006 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Mann-Kendall test

n 110 Number of datapoints
S -740 Mann Kendall test statistic
Var(S) 149874 Variance
Z, z(1-a) -1.9089, 1. Normal approximation
Probability 0.0281 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Station 5404A01

Sen's test
n 11 Number of datapoints
N' 55 Number of slopes
S 0.0013 Median slope (Sen's slope estimate)
var(S) 163 variance of S
M1 16.999 Rank M1
Q(16.999) -0.0023 Lower confidence level of slopes
M2 38.001 Rank M2
Q(38.001) 0.005 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected

Mann-Kendall test

n 11 Number of datapoints
S 15 Mann Kendall test statistic
Var(S) 163 Variance
Z, z(1-a) 1.0966, 1.6 Normal approximation
Probability 0.1364 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected

Station 5405K01

Sen's test
n 29 Number of datapoints
N' 406 Number of slopes
S -0.0043 Median slope (Sen's slope estimate)
var(S) 2842 variance of S
M1 159.1522 Rank M1
Q(159.1522) -0.0186 Lower confidence level of slopes
M2 246.8478 Rank M2
Q(246.8478) 0.0075 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected

Mann-Kendall test

n 29 Number of datapoints
S -27 Mann Kendall test statistic
Var(S) 2842 Variance
Z, z(1-a) -0.4877, 1. Normal approximation
Probability 0.3129 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected

Station 6330J01

Sen's test
n 39 Number of datapoints
N' 741 Number of slopes
S -0.0083 Median slope (Sen's slope estimate)
var(S) 6833.667 variance of S
M1 302.5072 Rank M1
Q(302.5072) -0.0127 Lower confidence level of slopes
M2 438.4928 Rank M2
Q(438.4928) -0.0048 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Mann-Kendall test

n 39 Number of datapoints
S -264 Mann Kendall test statistic
Var(S) 6833.667 Variance
Z, z(1-a) -3.1815, 1. Normal approximation
Probability 0.0007 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Station 6331J01

Sen's test
n 34 Number of datapoints
N' 561 Number of slopes
S -0.0069 Median slope (Sen's slope estimate)
var(S) 4550.333 variance of S
M1 225.0173 Rank M1
Q(225.0173) -0.0088 Lower confidence level of slopes
M2 335.9827 Rank M2
Q(335.9827) -0.005 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Mann-Kendall test

n 34 Number of datapoints
S -250 Mann Kendall test statistic
Var(S) 4550.333 Variance
Z, z(1-a) -3.6913, 1. Normal approximation
Probability 0.0001 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Station 6436N01

Sen's test
n 14 Number of datapoints
N' 91 Number of slopes
S 0.0327 Median slope (Sen's slope estimate)
var(S) 333.6667 variance of S
M1 30.4758 Rank M1
Q(30.4758) -0.22 Lower confidence level of slopes
M2 60.5242 Rank M2
Q(60.5242) 0.1633 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected

Mann-Kendall test

n 14 Number of datapoints
S 5 Mann Kendall test statistic
Var(S) 333.6667 Variance
Z, z(1-a) 0.219, 1.64 Normal approximation
Probability 0.4133 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected

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Station 5407C01

Sen's test
n 24 Number of datapoints
N' 276 Number of slopes
S 0.0296 Median slope (Sen's slope estimate)
var(S) 1625.333 variance of S
M1 104.8406 Rank M1
Q(104.8406) 0.0153 Lower confidence level of slopes
M2 171.1594 Rank M2
Q(171.1594) 0.0431 Upper confidence level of slopes
Result Hypothesis of increasing trend accepted
Hypothesis of decreasing trend rejected

Mann-Kendall test

n 24 Number of datapoints
S 130 Mann Kendall test statistic
Var(S) 1625.333 Variance
Z, z(1-a) 3.1998, 1.€ Normal approximation
Probability 0.0007 Probability associated with S for
Result Hypothesis of increasing trend accepted
Hypothesis of decreasing trend rejected

Station 5408N01

Sen's test
n 71 Number of datapoints
N' 2485 Number of slopes
S -0.0069 Median slope (Sen's slope estimate)
var(S) 40586.33 variance of S
M1 1076.799 Rank M1
Q(1076.799) -0.0089 Lower confidence level of slopes
M2 1408.201 Rank M2
Q(1408.201) -0.0045 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Mann-Kendall test

n 71 Number of datapoints
S -913 Mann Kendall test statistic
Var(S) 40586.33 Variance
Z, z(1-a) -4.5269, 1. Normal approximation
Probability 0 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Station 5409C02

Sen's test
n 26 Number of datapoints
N' 325 Number of slopes
S 0.0025 Median slope (Sen's slope estimate)
var(S) 2058.333 variance of S
M1 125.1841 Rank M1
Q(125.1841) -0.0032 Lower confidence level of slopes
M2 199.8159 Rank M2
Q(199.8159) 0.0053 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected

Mann-Kendall test

n 26 Number of datapoints
S 41 Mann Kendall test statistic
Var(S) 2058.333 Variance
Z, z(1-a) 0.8817, 1.€ Normal approximation
Probability 0.189 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected

Station 6524R01

Sen's test
n 40 Number of datapoints
N' 780 Number of slopes
S -0.0076 Median slope (Sen's slope estimate)
var(S) 7366.667 variance of S
M1 319.4054 Rank M1
Q(319.4054) -0.0164 Lower confidence level of slopes
M2 460.5946 Rank M2
Q(460.5946) 0.0004 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected

Mann-Kendall test

n 40 Number of datapoints
S -133 Mann Kendall test statistic
Var(S) 7366.667 Variance
Z, z(1-a) -1.5379, 1. Normal approximation
Probability 0.062 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected

Station 6525R01

Sen's test
n 48 Number of datapoints
N' 1128 Number of slopes
S -0.0054 Median slope (Sen's slope estimate)
var(S) 12658.67 variance of S
M1 471.4599 Rank M1
Q(471.4599) -0.0075 Lower confidence level of slopes
M2 656.5401 Rank M2
Q(656.5401) -0.0035 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Mann-Kendall test

n 48 Number of datapoints
S -448 Mann Kendall test statistic
Var(S) 12658.67 Variance
Z, z(1-a) -3.973, 1.6 Normal approximation
Probability 0 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Station 6631M04

Sen's test
n 72 Number of datapoints
N' 2556 Number of slopes
S -0.0004 Median slope (Sen's slope estimate)
var(S) 42314 variance of S
M1 1108.809 Rank M1
Q(1108.809) -0.0017 Lower confidence level of slopes
M2 1447.191 Rank M2
Q(1447.191) 0.0011 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected

Mann-Kendall test

n 72 Number of datapoints
S -114 Mann Kendall test statistic
Var(S) 42314 Variance
Z, z(1-a) -0.5493, 1. Normal approximation
Probability 0.2914 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected

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Station 5411R02

Sen's test
n 47 Number of datapoints
N' 1081 Number of slopes
S -0.0055 Median slope (Sen's slope estimate)
var(S) 11890 variance of S
M1 450.8135 Rank M1
Q(450.8135) -0.0074 Lower confidence level of slopes
M2 630.1865 Rank M2
Q(630.1865) -0.0034 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted
Mann-Kendall test
n 47 Number of datapoints
S -418 Mann Kendall test statistic
Var(S) 11890 Variance
Z, z(1-a) -3.8242, 1. Normal approximation
Probability 0.0001 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Station 5411R03

Sen's test
n 49 Number of datapoints
N' 1176 Number of slopes
S -0.0051 Median slope (Sen's slope estimate)
var(S) 13458.67 variance of S
M1 492.5805 Rank M1
Q(492.5805) -0.0076 Lower confidence level of slopes
M2 683.4194 Rank M2
Q(683.4194) -0.0026 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted
Mann-Kendall test
n 49 Number of datapoints
S -367 Mann Kendall test statistic
Var(S) 13458.67 Variance
Z, z(1-a) -3.1549, 1. Normal approximation
Probability 0.0008 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend accepted

Station 6631M07

Sen's test
n 49 Number of datapoints
N' 1176 Number of slopes
S -0.0014 Median slope (Sen's slope estimate)
var(S) 13457.67 variance of S
M1 492.5841 Rank M1
Q(492.5841) -0.0046 Lower confidence level of slopes
M2 683.4159 Rank M2
Q(683.4159) 0.001 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected
Mann-Kendall test
n 49 Number of datapoints
S -135 Mann Kendall test statistic
Var(S) 13457.67 Variance
Z, z(1-a) -1.1551, 1. Normal approximation
Probability 0.124 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected

Station 5411R04

Sen's test
n 48 Number of datapoints
N' 1128 Number of slopes
S -0.0012 Median slope (Sen's slope estimate)
var(S) 12658.67 variance of S
M1 471.4599 Rank M1
Q(471.4599) -0.0062 Lower confidence level of slopes
M2 656.5401 Rank M2
Q(656.5401) 0.0025 Upper confidence level of slopes
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected
Mann-Kendall test
n 48 Number of datapoints
S -59 Mann Kendall test statistic
Var(S) 12658.67 Variance
Z, z(1-a) -0.5155, 1. Normal approximation
Probability 0.3031 Probability associated with S for
Result Hypothesis of increasing trend rejected
Hypothesis of decreasing trend rejected