



SEMI-ANNUAL GROUNDWATER MONITORING REPORT

**HIGH PLAINS DISPOSAL – KERSEY
GREELEY, COLORADO**

SEPTEMBER 2019

Prepared for:

**HIGH PLAINS DISPOSAL
23360 Weld County Road 54
Greeley, Colorado 80631**

Prepared by:

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SEMI-ANNUAL GROUNDWATER MONITORING REPORT

KERSEY HIGH PLAINS DISPOSAL
GREELEY, COLORADO

Project Number: 036219003

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1.0 INTRODUCTION

This Semi-Annual Groundwater Monitoring Report was prepared by LT Environmental, Inc. (LTE) for High Plains Disposal (HPD) to document the groundwater sampling activities and analytical results at the Kersey injection well facility located at 23360 County Road 54, Greeley, Weld County, Colorado.

1.1 BACKGROUND

This report follows the format and procedures outlined in the HPD Kersey Groundwater Monitoring Plan (GMP) submitted to Weld County in 2009 and the Addenda for this facility and the HPD Platteville facility dated October 19, 2009 and approved by Weld County on November 2, 2009. The GMP and Addenda stipulated the quarterly groundwater monitoring and monthly leak detection monitoring procedures and reporting requirements for the HPD Kersey facility. On January 16, 2013, Weld County approved a revised sampling schedule. Semi-annually, the HPD Kersey facility is required to sample the seven existing facility monitoring wells. Quarterly, the facility is required to sample two of the monitoring wells nearest the vault and unloading areas. Reports are due to Weld County 60 days following the semi-annual sampling event.

1.2 SITE DESCRIPTION

The HPD Kersey facility address is 23360 County Road 54, Greeley, Weld County, Colorado. The facility is located on the south side of County Road 54, approximately 2.5 miles west-southwest of the town of Kersey. A site location map is presented as Figure 1. The facility consists of rangeland improved with a disposal (injection) well facility including an office, an unloading area, a covered concrete vault with a weir system, nine aboveground storage tanks (ASTs), and a pump house (Figure 2).

The facility provides services for the oil and gas exploration and production (E&P) industry. Activities included in the facility operations include, but are not limited to:

- Loading/unloading of trucks;
- Produced water processing;
- Skimming operations;
- Produced water storage;
- Crude oil storage; and
- Injection well operations.

The facility collects, stores, treats, and injects produced water into an injection well for disposal. The ASTs at the facility include six 750-barrel (bbl) ASTs for produced water storage, two 750-bbl ASTs for crude oil storage, and one 1,000-bbl gunbarrel separator tank.

The unloading area includes a series of grounded loading ports piped via a grated trench to the weir system. The covered concrete vault and weir system separates and settles the delivered fluids into the ASTs. Stored produced water is then pumped into the injection well for disposal.



1.3 SCOPE OF WORK

The scope of work for this project includes the following.

- Semi-annual groundwater sampling;
- Quarterly leak detection sampling;
- Laboratory analysis; and
- Data reporting.

A summary of field activities, analytical results from groundwater sampling, and conclusions are presented in the subsequent sections.



2.0 SUMMARY OF FIELD ACTIVITIES

2.1 GROUNDWATER SAMPLING

Semi-annual groundwater sampling activities were conducted by LTE personnel on July 29, 2019. Depth to groundwater measurements, which ranged from 4.39 feet below top of casing (btoc) in monitoring well MW-7 to 8.03 feet btoc in monitoring well MW-5, were used to calculate well-specific purge volumes. A groundwater elevation map illustrating relative groundwater elevations from the July sampling event is presented as Figure 3. Current and historical groundwater level measurements are summarized in Table 1. Field parameters were used to evaluate the stability of the monitoring wells during purging, including temperature, pH, and specific conductivity. Samples were not collected until field parameters were within a ten percent range difference. Field parameters are summarized in Table 2 and purge forms are presented in Appendix A.

Seven groundwater samples (MW-1 through MW-7) were collected and submitted under strict chain-of-custody protocol to Summit Scientific in Golden, Colorado, for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by United States Environmental Protection Agency (EPA) Method 8260B, sulfate by EPA Method 300.0, chlorides by EPA Method 300.0, and total dissolved solids (TDS) by Standard Method SM2540C.

2.2 LEAK DETECTION SAMPLING

Quarterly leak detection sampling activities were conducted by LTE personnel on April 29, 2019. Prior to sampling, groundwater level measurements were collected from two monitoring wells (MW-5 and MW-6, Table 1). Depth to groundwater measurements, which ranged from 11.24 feet btoc in monitoring well MW-6 to 11.30 feet btoc in monitoring well MW-5, were used to calculate well-specific purge volumes. Field parameters were used to evaluate the stability of the monitoring wells during purging, including temperature, pH, and specific conductivity. Samples were not collected until field parameters were within a ten percent range difference. Field parameters are summarized in Table 2 and purge forms are presented in Appendix A.

In April 2019, two wells were required to be sampled for leak detection purposes: MW-5 and MW-6. Groundwater samples were collected and submitted under strict chain-of-custody protocol to Summit Scientific of Golden, Colorado, for analysis of BTEX, sulfate, chlorides, and TDS using the same analytical methods listed above in Section 2.1.



3.0 LABORATORY ANALYTICAL RESULTS

Groundwater samples were collected to evaluate the groundwater quality. Current and historical groundwater sample analytical results are summarized in Table 3. Copies of the laboratory analytical reports are included in Appendix B.

3.1 GROUNDWATER SAMPLING

During the semi-annual July 2019 groundwater sampling event, BTEX constituents were not detected above the laboratory reporting limits in any of the wells. TDS concentrations ranged from 1,400 milligrams per liter (mg/L) in MW-5 to 1,590 mg/L in MW-7. Chloride concentrations ranged from <6 mg/L in MW-5 to 299 mg/L in MW-2. Sulfate concentrations ranged from 319 mg/L in MW-5 to 692 mg/L in MW-2.

3.2 LEAK DETECTION SAMPLING

During the April 2019 leak detection sampling event, BTEX was not detected above the laboratory reporting limits in either well sampled. TDS was detected at 1,570 mg/L in MW-6 to 1,580 mg/L in MW-5. Chloride was detected at 227 mg/L in MW-5 to 233 mg/L in MW-6. Sulfate concentrations ranged from 488 mg/L in MW-5 to 570 mg/L in MW-6.

Quality control (QC) samples were collected during both sampling events to ensure data integrity. These data were evaluated during the statistical analysis. Table 4 summarizes the QC sample data.



4.0 STATISTICAL ANALYSIS

In accordance with the GMP, groundwater analytical results were assessed using statistical methods. Descriptive statistical analyses (number of data points, number of non-detectable data points, mean, maximum, minimum, standard deviation, and description of outliers) are presented in Appendix C. Trend analyses have been performed historically using the Mann-Kendall test and Sen's slope estimator.

4.1 DESCRIPTIVE ANALYSIS

A descriptive analysis was performed for each monitoring well sampled in July 2019. Descriptive analysis includes calculation of the number of data points, number of non-detectable data points, mean, maximum, minimum, and standard deviation. Results of the descriptive analysis are presented in Table 5. When a result was reported as less than the practical quantitation limit (PQL), a value that is one half of the practical quantitation limit was used in the descriptive analysis.

As part of the descriptive analysis, an outlier test was performed on the data from each monitoring well. Results for the outlier analysis are presented in Appendix C and a summary is presented in Table 6. A statistical outlier is a value that is significantly different from other values in the data set. Once a value is identified as an outlier, it becomes suspect and should be checked for possible laboratory, field collection, or data entry errors. However, statistical outliers may exist naturally and should not necessarily be removed from the data set unless the value can be observed to be erroneous.

Based on a review of the July 2019 outliers listed in Appendix C, the following detected outliers were identified.

- Benzene was reported as an outlier in the following:
 - MW-4 in July 2018 at 1.7 µg/L.
 - MW-5 in July 2018 at 1.2 µg/L and in January 2019 at 1.9 µg/L.
 - MW-6 in January 2011 at 2 µg/L, in February 2011 at 3.5 µg/L, January 2016 at 3.9 µg/L, in January 2017 at 1.8 µg/L, in October 2017 at 1.9 µg/L, and in July 2018 at 15 µg/L.
- Toluene was reported as an outlier in the following:
 - MW-1 in April 2012 at 0.56 µg/L.
 - MW-4 in July 2018 at 1.5 µg/L.
 - MW-5 in January 2019 at 2.1 µg/L.
 - MW-6 in April 2015 at 1.7 µg/L, in January 2016 at 2.2 µg/L, in January 2017 at 1.8 µg/L, and in July 2018 at 14 µg/L.
- Total xylene was reported as an outlier in the following:
 - MW-6 in March 2011 at 1.6 µg/L, in April 2011 at 7.9 µg/L, and in July 2018 at 2.8 µg/L.
- Chloride was reported as an outlier in the following:
 - MW-1 in July 2015 at 646 mg/L and in January 2019 at 1,280 mg/L.



- MW-2 in July 2011 at 1 mg/L and January 2019 at 1,220 mg/L.
- MW-3 in January 2015 at 719 mg/L, in January 2018 at 435 mg/L and in January 2019 at 1,230 mg/L.
- MW-4 in January 2015 at 582 mg/L, in July 2015 at 421 mg/L, in January 2018 at 428 mg/L, in July 2018 at 439 mg/L and in January 2019 at 1,300 mg/L.
- MW-5 in January 2015 at 589 mg/L, in July 2018 at 505 mg/L, in January 2019 at 1,130 mg/L and in July 2019 at 3 mg/L.
- MW-6 in December 2010 at 5.3 mg/L, in January 2015 at 728 mg/L, in October 2016 at 60.1 mg/L, in October 2017 at 69 mg/L, in January 2018 at 526 mg/L, in July 2018 at 451 mg/L and in January 2019 at 989 mg/L.
- MW-7 in January 2018 at 576 mg/L and in January 2019 at 835 mg/L.
- Sulfate was reported as an outlier in the following:
 - MW-1 in July 2015 at 1,810 mg/L and in January 2019 at 3,410 mg/L.
 - MW-2 in November 2009 at 1,185 mg/L, in April 2010 at 670 mg/L, in January 2011 at 1,130 mg/L, in October 2012 at 545 mg/L, in July 2013 at 630 mg/L, in January 2014 at 579 mg/L, in January 2017 at 1,200 mg/L, in July 2017 at 593 mg/L and in January 2018 at 1,090 mg/L.
 - MW-3 in January 2015 at 338 mg/L, in January 2018 at 1,210 mg/L and in January 2019 at 3,180 mg/L.
 - MW-4 in January 2012 at 1,210 mg/L, in January 2014 at 458 mg/L, in January 2015 at 1,440 mg/L, in July 2015 at 1,090 mg/L, in January 2017 at 1,100 mg/L, in January 2018 at 1,180 mg/L and in January 2019 at 3,340 mg/L.
 - MW-5 in January 2019 at 2,910 mg/L.
 - MW-6 in December 2010 at 16.3 mg/L, in December 2011 at 2,310 mg/L, in January 2018 at 1,470 mg/L and in January 2019 at 2,520 mg/L.
 - MW-7 in January 2018 at 1,440 mg/L and in January 2019 at 1,900 mg/L.
- TDS was reported as an outlier in the following:
 - MW-3 in April 2010 at 3,850 mg/L and in January 2015 at 11.8 mg/L.
 - MW-6 in October 2014 at 6,160 mg/L.
 - MW-7 in April 2010 at 5,820 mg/L.

Data noted with an asterisk in Table 6 denotes a value not detected, that was represented as half the laboratory reporting limit for outlier analysis and are not summarized above. No changes to the analyses and conclusions in subsequent sections of this report are recommended to accommodate the outliers.

4.2 TREND ANALYSIS

A trend analysis was performed for parameters at each monitoring well using the Mann-Kendall test and Sen's slope estimator to evaluate statistically significant trends. Results for the Sen's slope estimator are presented in Appendix C and a summary table is presented in Table 7.



Using the Mann-Kendall test, a trend is significant at a 99 percent (%) confidence level if the absolute value of the z-score is greater than or equal to the absolute value of the critical value.

Using these criteria, statistically significant decreasing trends were reported for TDS in well MW-3. Statistically significant increasing trends were reported for benzene in MW-5, toluene in MW-5, ethylbenzene in MW-5 and MW-6 and chloride in wells MW-3, MW-4, and MW-5. No other significant trends were reported.

The statistically significant trends appear to be caused by the decrease in the laboratory detection limits for total xylenes following the October 2010 groundwater sampling event. Trend analyses results are presented as Appendix C.



5.0 SUMMARY AND CONCLUSIONS

Semi-annual groundwater monitoring activities at the HPD Kersey facility were conducted on July 29, 2019, and quarterly leak detection sampling was conducted on April 29, 2019.

During the April 2019 leak detection sampling, BTEX was not detected above the laboratory reporting limits in any of the wells. TDS was detected at 1,570 mg/L in MW-6 to 1,580 mg/L in MW-5. Chloride was detected at 227 mg/L in MW-5 to 233 mg/L in MW-6. Sulfate concentrations ranged from 488 mg/L in MW-5 to 570 mg/L in MW-6.

During the July 2019 sampling event, BTEX was not detected above the laboratory reporting limits in any of the wells. TDS concentrations ranged from 1,400 milligrams per liter (mg/L) in MW-1 to 1,590 mg/L in MW-7. Chloride concentrations ranged from <6 mg/L in MW-5 to 299 mg/L in MW-2. Sulfate concentrations ranged from 319 mg/L in MW-5 to 692 mg/L in MW-2.

Based on a qualitative review of the analytical results, the groundwater analytical results for TDS, chloride, and sulfate are assumed to be indicative of background conditions with the exception of MW-1, MW-2 and MW-4. When using the established background monitoring well MW-7, the July 2019 groundwater sample results were elevated above the CDPHE Water Quality Control Commission groundwater standards criteria of 1.25 times background. During the July 2019 groundwater sampling event, sulfate was measured in MW-2 at 2.33% above the background. Chloride was measured in MW-1 at 4.4%; MW-2 was measured at 13.9; and MW-4 was measured at 5.1% above the background.

The next semi-annual groundwater sampling event is scheduled for January 2020, and quarterly leak detection is scheduled for October 2019. A report will be submitted 60 days following the semi-annual sampling event to summarize the analytical data from the recent sampling events as well as from the historical program data.

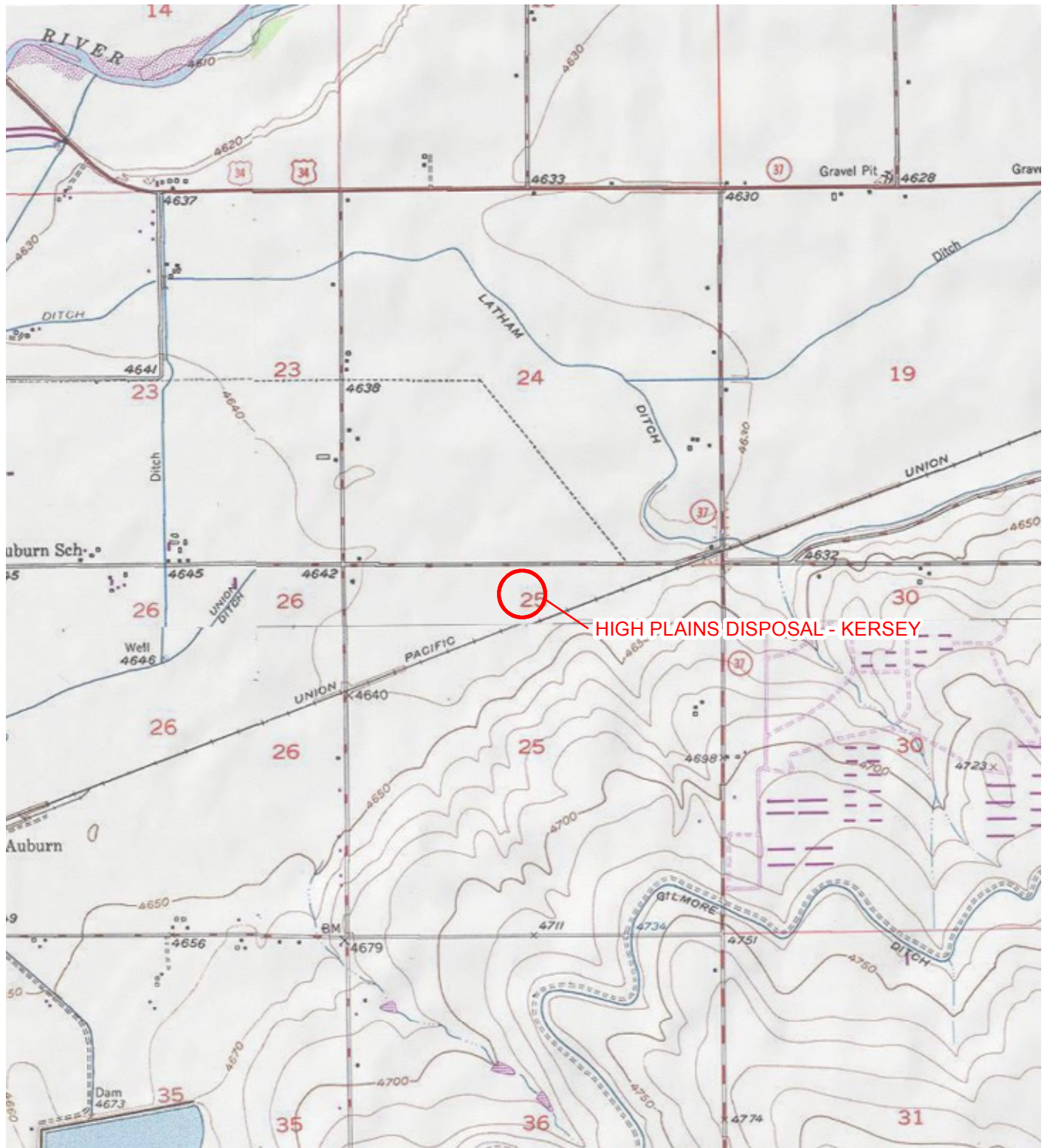


IMAGE COURTESY OF ESRI/USGS

LEGEND

○ SITE LOCATION

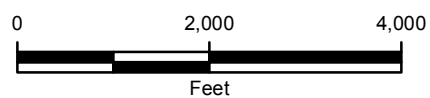
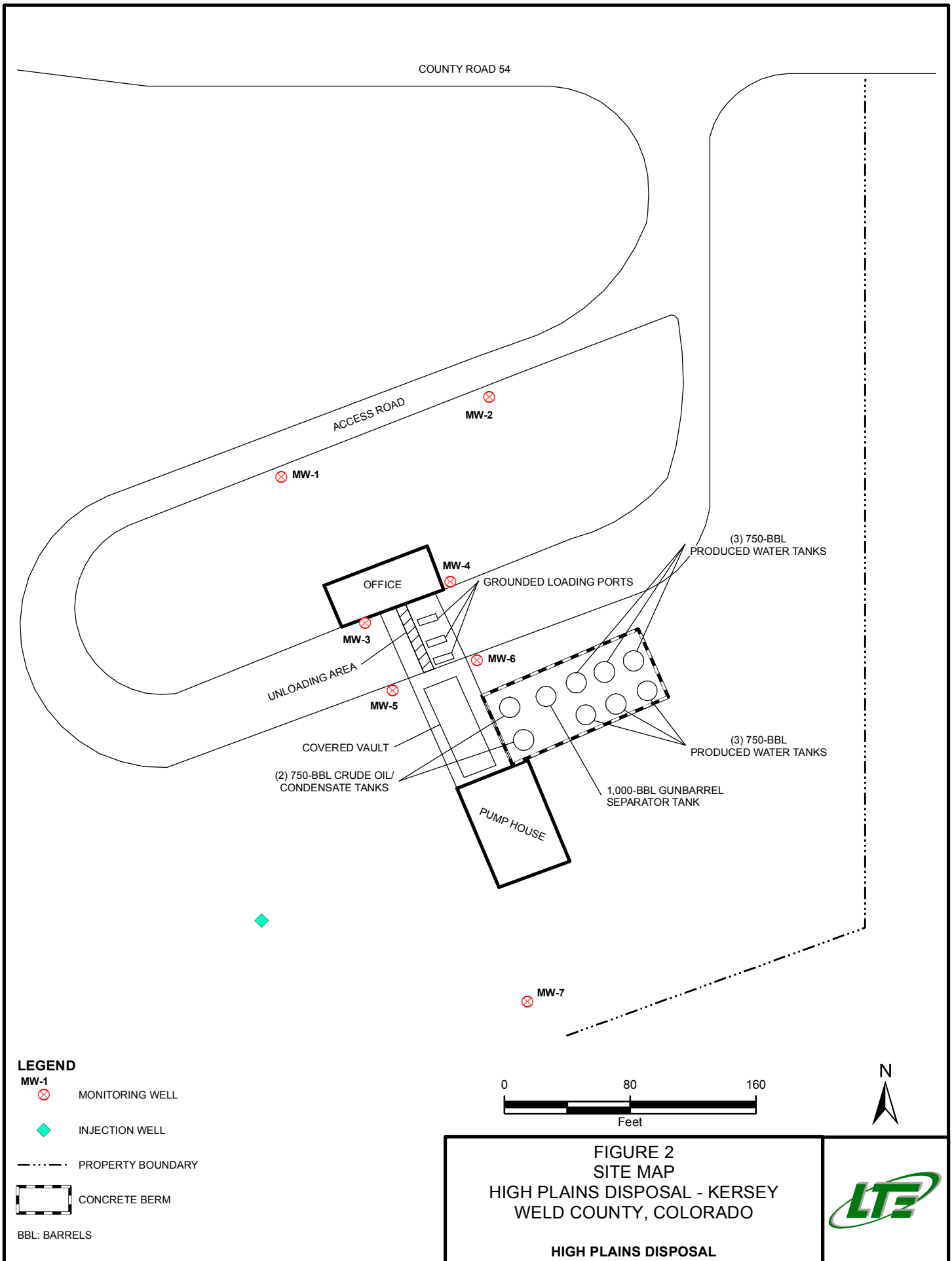


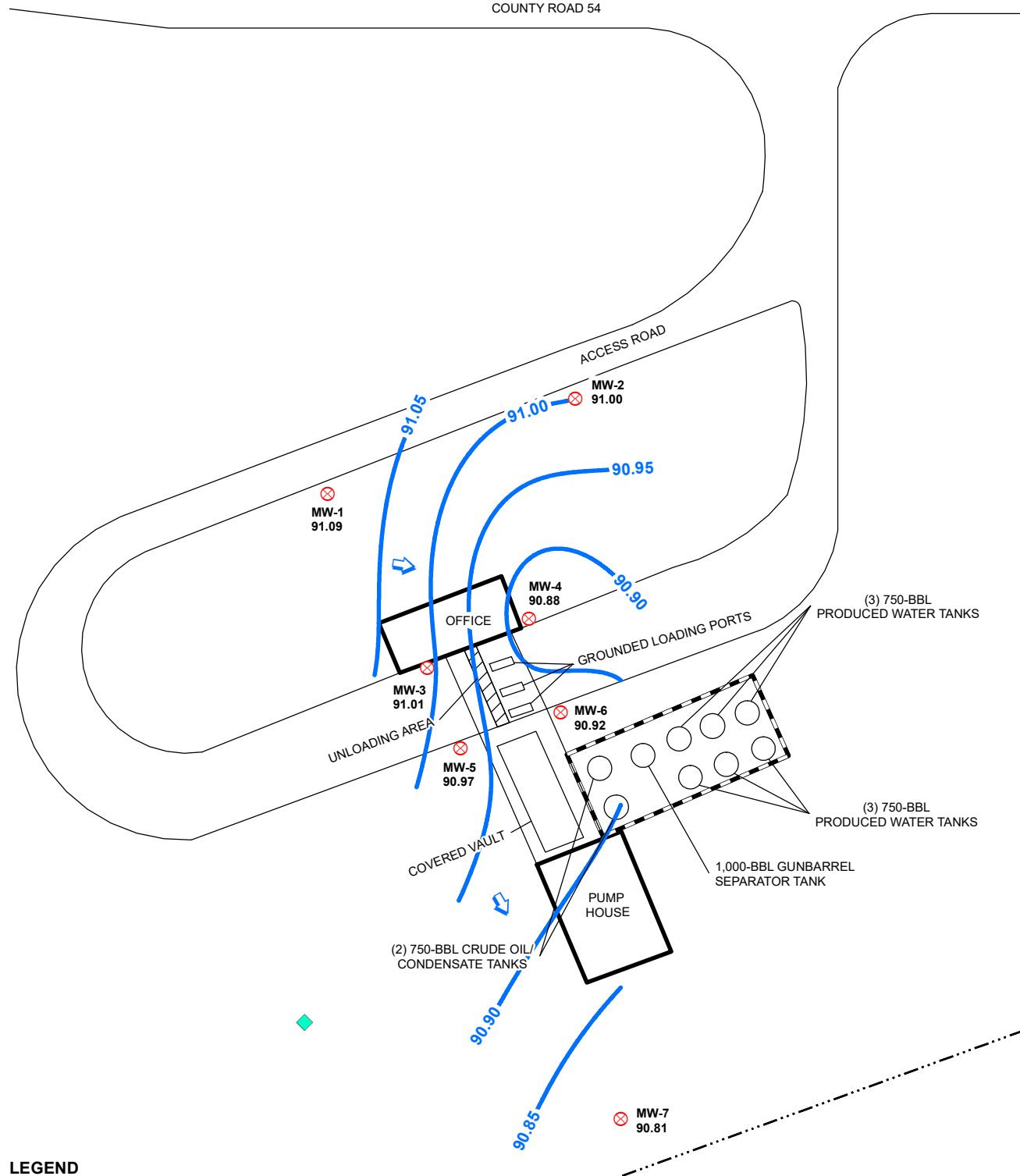
FIGURE 1
SITE LOCATION MAP
HIGH PLAINS DISPOSAL - KERSEY
WELD COUNTY, COLORADO

HIGH PLAINS DISPOSAL





COUNTY ROAD 54



LEGEND

MW-1
⊗ MONITORING WELL (RELATIVE GROUNDWATER ELEVATION IN FEET)

◆ INJECTION WELL

↑ ESTIMATED GROUNDWATER FLOW DIRECTION

--- PROPERTY BOUNDARY

— RELATIVE GROUNDWATER ELEVATION CONTOUR
CONTOUR INTERVAL = 0.05 FEET
GRADIENT = 0.0010 FEET/FOOT

BBL: BARRELS

CONCRETE BERM

0 80 160
Feet



FIGURE 3
RELATIVE GROUNDWATER ELEVATION MAP
JULY 2019
HIGH PLAINS DISPOSAL - KERSEY
WELD COUNTY, COLORADO
HIGH PLAINS DISPOSAL



GROUNDWATER ELEVATIONS WERE MEASURED IN
FEET BELOW TOP OF CASING ON JULY 29, 2019.

TABLE 1
GROUNDWATER ELEVATIONS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Well Name	Date Measured	TOC (feet)	DTW (feet)	Groundwater Elevation (feet)
MW-1	11/24/2009	96.1	3.87	92.23
	3/4/2010	96.1	7.9	88.20
	4/30/2010	96.1	7.53	88.57
	7/26/2010	96.1	3.96	92.14
	10/13/2010	96.1	1.99	94.11
	1/14/2011	96.1	5.67	90.43
	4/21/2011	96.1	7.32	88.78
	7/21/2011	96.1	3.36	92.74
	10/31/2011	96.1	2.88	93.22
	1/13/2012	96.1	5.49	90.61
	4/27/2012	96.1	7.75	88.35
	7/26/2012	96.1	5.4	90.70
	8/15/2012	96.1	4.61	91.49
	10/18/2012	96.1	5.15	90.95
	1/29/2013	96.1	7.21	88.89
	7/29/2013	96.1	6.65	89.45
	1/31/2014	96.1	6.44	89.66
	7/17/2014	96.1	4.95	91.15
	1/27/2015	96.1	6.3	89.80
	7/21/2015	96.1	3.98	92.12
	1/26/2016	96.1	5.66	90.44
	7/26/2016	96.1	4.24	91.86
	1/30/2017	96.1	6.75	89.35
	7/24/2017	96.1	4.24	91.86
	1/29/2018	96.1	6.3	89.80
	7/24/2018	96.1	4.95	91.15
	1/30/2019	96.1	6.73	89.37
	7/29/2019	96.1	5.01	91.09
MW-2	11/24/2009	96.4	4.45	91.95
	3/4/2010	96.4	7.42	88.98
	4/30/2010	96.4	8.05	88.35
	7/26/2010	96.4	4.32	92.08
	10/13/2010	96.4	2.54	93.86
	1/14/2011	96.4	6.19	90.21
	4/21/2011	96.4	7.76	88.64
	7/21/2011	96.4	3.79	92.61
	10/31/2011	96.4	3.45	92.95
	1/13/2012	96.4	5.99	90.41
	4/27/2012	96.4	7.57	88.83
	7/26/2012	96.4	5.7	90.70
	8/15/2012	96.4	4.95	91.45
	10/18/2012	96.4	5.32	91.08
	1/29/2013	96.4	7.73	88.67
	7/29/2013	96.4	6.92	89.48
	1/31/2014	96.4	6.93	89.47
	7/17/2014	96.4	5.36	91.04
	1/27/2015	96.4	6.85	89.55
	7/21/2015	96.4	4.43	91.97
	1/26/2016	96.4	6.18	90.22



TABLE 1
GROUNDWATER ELEVATIONS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Well Name	Date Measured	TOC (feet)	DTW (feet)	Groundwater Elevation (feet)
MW-2	7/26/2016	96.4	4.6	91.80
	1/30/2017	96.4	7.31	89.09
	7/24/2017	96.4	4.49	91.91
	1/29/2018	96.4	6.86	89.54
	7/24/2018	96.4	5.24	91.16
	1/30/2019	96.4	4.27	92.13
	7/29/2019	96.4	5.4	91.00
MW-3	11/24/2009	99.0	6.41	92.59
	3/4/2010	99.0	9.67	89.33
	4/30/2010	99.0	10.3	88.70
	7/26/2010	99.0	6.94	92.06
	10/13/2010	99.0	4.89	94.11
	1/14/2011	99.0	8.47	90.53
	4/21/2011	99.0	10.14	88.86
	7/21/2011	99.0	6.32	92.68
	10/31/2011	99.0	5.68	93.32
	1/13/2012	99.0	8.28	90.72
	4/27/2012	99.0	10.59	88.41
	7/26/2012	99.0	8.38	90.62
	8/15/2012	99.0	7.61	91.39
	9/11/2012	99.0	7.6	91.40
	10/18/2012	99.0	7.78	91.22
	11/14/2012	99.0	8.07	90.93
	12/5/2012	99.0	8.54	90.46
	1/29/2013	99.0	10	89.00
	7/29/2013	99.0	9.64	89.36
	1/31/2014	99.0	9.21	89.79
	7/17/2014	99.0	7.81	91.19
	1/27/2015	99.0	9.08	89.92
	7/21/2015	99.0	6.96	92.04
	1/26/2016	99.0	8.41	90.59
	7/26/2016	99.0	7.14	91.86
	1/30/2017	99.0	9.54	89.46
	7/24/2017	99.0	7.2	91.80
	1/29/2018	99.0	9.1	89.90
	7/24/2018	99.0	7.78	91.22
	1/30/2019	99.0	9.51	89.49
	7/29/2019	99.0	7.99	91.01
MW-4	11/24/2009	98.7	6.3	92.40
	3/4/2010	98.7	9.54	89.16
	4/30/2010	98.7	10.2	88.50
	7/26/2010	98.7	6.77	91.93
	10/13/2010	98.7	4.78	93.92
	1/14/2011	98.7	8.37	90.33
	4/21/2011	98.7	10	88.70
	7/21/2011	98.7	6.14	92.56
	10/31/2011	98.7	5.59	93.11
	1/13/2012	98.7	8.18	90.52
	4/27/2012	98.7	10.43	88.27



TABLE 1
GROUNDWATER ELEVATIONS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Well Name	Date Measured	TOC (feet)	DTW (feet)	Groundwater Elevation (feet)
MW-4	7/26/2012	98.7	8.16	90.54
	8/15/2012	98.7	7.42	91.28
	9/11/2012	98.7	7.39	91.31
	10/18/2012	98.7	7.68	91.02
	11/14/2012	98.7	8.04	90.66
	12/5/2012	98.7	8.42	90.28
	1/29/2013	98.7	9.9	88.80
	7/29/2013	98.7	9.4	89.30
	1/31/2014	98.7	9.12	89.58
	7/17/2014	98.7	7.66	91.04
	1/27/2015	98.7	8.97	89.73
	7/21/2015	98.7	6.83	91.87
	1/26/2016	98.7	8.33	90.37
	7/26/2016	98.7	6.97	91.73
	1/30/2017	98.7	9.44	89.26
	7/24/2017	98.7	6.98	91.72
	1/29/2018	98.7	8.98	89.72
	7/24/2018	98.7	8.1	90.60
	1/30/2019	98.7	9.41	89.29
	7/29/2019	98.7	7.82	90.88
MW-5	11/24/2009	99.0	6.5	92.50
	3/4/2010	99.0	9.6	89.40
	4/30/2010	99.0	10.24	88.76
	7/26/2010	99.0	7.01	91.99
	10/13/2010	99.0	4.87	94.13
	1/14/2011	99.0	8.42	90.58
	4/21/2011	99.0	10.11	88.89
	7/21/2011	99.0	6.33	92.67
	10/31/2011	99.0	5.64	93.36
	1/13/2012	99.0	8.24	90.76
	4/27/2012	99.0	10.58	88.42
	7/26/2012	99.0	8.45	90.55
	8/15/2012	99.0	7.7	91.30
	9/11/2012	99.0	7.68	91.32
	10/18/2012	99.0	7.76	91.24
	11/14/2012	99.0	8.02	90.98
	12/5/2012	99.0	8.52	90.48
	1/29/2013	99.0	9.97	89.03
	7/29/2013	99.0	9.71	89.29
	10/30/2013	99.0	6.89	92.11
	1/31/2014	99.0	9.18	89.82
	4/18/2014	99.0	11.02	87.98
	7/17/2014	99.0	7.82	91.18
	10/23/2014	99.0	5.71	93.29
	1/27/2015	99.0	9.04	89.96
	4/13/2015	99.0	11.06	87.94
	7/21/2015	99.0	7.01	91.99
	10/20/2015	99.0	5.7	93.30
	1/26/2016	99.0	8.41	90.59



TABLE 1
GROUNDWATER ELEVATIONS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Well Name	Date Measured	TOC (feet)	DTW (feet)	Groundwater Elevation (feet)
MW-5	4/26/2016	99.0	10.07	88.93
	7/26/2016	99.0	7.16	91.84
	10/31/2016	99.0	6.87	92.13
	1/30/2017	99.0	9.5	89.50
	4/27/2017	99.0	11.21	87.79
	7/24/2017	99.0	7.22	91.78
	10/27/2017	99.0	5.48	93.52
	1/29/2018	99.0	9.09	89.91
	4/12/2018	99.0	11	88.00
	7/24/2018	99.0	8	91.00
	10/29/2018	99.0	6.1	92.90
	1/30/2019	99.0	9.46	89.54
	4/29/2019	99.0	11.3	87.70
	7/29/2019	99.0	8.03	90.97
MW-6	11/24/2009	98.8	6.49	92.31
	3/4/2010	98.8	9.53	89.27
	4/30/2010	98.8	10.17	88.63
	7/26/2010	98.8	6.86	91.94
	10/13/2010	98.8	4.8	94.00
	1/14/2011	98.8	8.34	90.46
	4/21/2011	98.8	10.01	88.79
	7/21/2011	98.8	6.21	92.59
	10/31/2011	98.8	5.58	93.22
	1/13/2012	98.8	8.17	90.63
	4/27/2012	98.8	10.44	88.36
	7/26/2012	98.8	8.25	90.55
	8/15/2012	98.8	7.52	91.28
	9/11/2012	98.8	7.51	91.29
	10/18/2012	98.8	7.61	91.19
	11/14/2012	98.8	7.97	90.83
	12/5/2012	98.8	8.44	90.36
	1/29/2013	98.8	9.89	88.91
	7/29/2013	98.8	9.52	89.28
	10/30/2013	98.8	6.8	92.00
	1/31/2014	98.8	9.08	89.72
	4/18/2014	98.8	10.94	87.86
	7/17/2014	98.8	7.7	91.10
	10/23/2014	98.8	5.61	93.19
	1/27/2015	98.8	8.95	89.85
	4/13/2015	98.8	10.98	87.82
	7/21/2015	98.8	6.89	91.91
	10/20/2015	98.8	5.59	93.21
	1/26/2016	98.8	8.28	90.52
	4/26/2016	98.8	9.98	88.82
	7/26/2016	98.8	7	91.80
	10/31/2016	98.8	6.72	92.08
	1/30/2017	98.8	9.42	89.38
	4/27/2017	98.8	11.12	87.68
	7/24/2017	98.8	7.03	91.77



TABLE 1
GROUNDWATER ELEVATIONS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Well Name	Date Measured	TOC (feet)	DTW (feet)	Groundwater Elevation (feet)
MW-6	10/27/2017	98.8	5.38	93.42
	1/29/2018	98.8	9	89.80
	4/12/2018	98.8	10.97	87.83
	7/24/2018	98.8	7.92	90.88
	10/29/2018	98.8	6	92.80
	1/30/2019	98.8	9.38	89.42
	4/29/2019	98.8	11.24	87.56
	7/29/2019	98.8	7.88	90.92
MW-7	11/24/2009	95.2	2.46	92.74
	3/4/2010	95.2	5.57	89.63
	4/30/2010	95.2	6.19	89.01
	7/26/2010	95.2	3.5	91.70
	10/13/2010	95.2	0.95	94.25
	1/14/2011	95.2	4.43	90.77
	4/21/2011	95.2	6.2	89.00
	7/21/2011	95.2	2.75	92.45
	10/31/2011	95.2	1.64	93.56
	1/13/2012	95.2	4.25	90.95
	4/27/2012	95.2	6.74	88.46
	7/26/2012	95.2	4.98	90.22
	8/15/2012	95.2	4.3	90.90
	10/18/2012	95.2	3.83	91.37
	1/29/2013	95.2	5.92	89.28
	7/29/2013	95.2	6.28	88.92
	1/31/2014	95.2	5.15	90.05
	7/17/2014	95.2	4.02	91.18
	1/27/2015	95.2	4.96	90.24
	7/21/2015	95.2	3.42	91.78
	7/26/2016	95.2	3.45	91.75
	1/30/2017	95.2	5.43	89.77
	7/24/2017	95.2	3.68	91.52
	1/29/2018	95.2	5.02	90.18
	7/24/2018	95.2	4.75	90.45
	1/30/2019	95.2	5.39	89.81
	7/29/2019	95.2	4.39	90.81

Notes:

DTW = Depth to water measured in feet below TOC.

TOC = Top of well casing elevation, surveyed relative to an arbitrary 100-foot benchmark.

Groundwater elevation relative to an arbitrary 100-foot benchmark.



TABLE 2
FIELD PARAMETERS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Well Name	Sample Date	pH (s.u)	Temperature (°C)	Specific Conductance (µS/cm)
MW-1	11/24/2009	NA	NA	NA
	03/04/2010	NA	NA	NA
	04/30/2010	NA	NA	NA
	07/26/2010	NA	NA	NA
	10/13/2010	NA	NA	NA
	01/14/2011	NA	NA	NA
	04/21/2011	NA	NA	NA
	07/21/2011	NA	NA	NA
	10/31/2011	NA	NA	NA
	01/13/2012	NA	NA	NA
	04/27/2012	NA	NA	NA
	07/26/2012	NA	NA	NA
	10/18/2012	6.90	15.20	1,443
	01/29/2013	NM	9.52	2,706
	07/29/2013	7.06	14.85	2,433
	01/31/2014	6.86	9.10	2,418
	07/17/2014	7.25	14.46	2,657
	01/27/2015	7.76	10.95	3,772
	07/21/2015	7.11	14.00	2,932
	01/27/2016	7.18	10.13	2,690
	07/26/2016	7.15	17.01	3,322
	01/30/2017	7.06	11.74	3,039
	07/24/2017	7.10	16.88	3,289
	01/29/2018	8.50	9.62	3,033
	07/24/2018	7.81	17.95	2,636
	01/30/2019	7.45	9.40	3,023
	07/29/2019	5.27	16.00	2,938
MW-2	11/25/2009	NA	NA	NA
	03/04/2010	NA	NA	NA
	04/30/2010	NA	NA	NA
	07/26/2010	NA	NA	NA
	10/13/2010	NA	NA	NA
	01/14/2011	NA	NA	NA
	04/21/2011	NA	NA	NA
	07/21/2011	NA	NA	NA
	10/31/2011	NA	NA	NA
	01/13/2012	NA	NA	NA
	04/27/2012	NA	NA	NA
	07/26/2012	NA	NA	NA
	10/18/2012	7.09	15.98	1,345
	01/29/2013	NM	10.62	2,752
	07/29/2013	7.16	16.25	2,334
	01/31/2014	7.32	10.09	2,602
	07/17/2014	7.37	15.47	2,508



TABLE 2
FIELD PARAMETERS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Well Name	Sample Date	pH (s.u)	Temperature (°C)	Specific Conductance (µS/cm)
MW-2	01/27/2015	7.74	12.55	3,817
	07/21/2015	7.11	12.15	2,671
	01/27/2016	7.03	10.21	2,780
	07/26/2016	7.14	14.80	3,020
	01/30/2017	7.01	11.44	3,152
	07/24/2017	7.13	18.37	1,618
	01/29/2018	8.77	10.86	3,322
	07/24/2018	7.74	17.18	2,692
	01/30/2019	7.43	10.57	3,114
	07/29/2019	5.45	15.32	3,028
MW-3	11/24/2009	NA	NA	NA
	01/27/2010	NA	NA	NA
	03/02/2010	NA	NA	NA
	03/04/2010	NA	NA	NA
	04/09/2010	NA	NA	NA
	04/30/2010	NA	NA	NA
	05/06/2010	NA	NA	NA
	06/07/2010	NA	NA	NA
	07/26/2010	NA	NA	NA
	08/16/2010	NA	NA	NA
	09/17/2010	NA	NA	NA
	10/13/2010	NA	NA	NA
	11/16/2010	NA	NA	NA
	12/27/2010	NA	NA	NA
	01/14/2011	NA	NA	NA
	02/11/2011	NA	NA	NA
	03/23/2011	NA	NA	NA
	04/21/2011	NA	NA	NA
	05/16/2011	NA	NA	NA
	06/09/2011	NA	NA	NA
	07/21/2011	NA	NA	NA
	08/08/2011	NA	NA	NA
	09/12/2011	NA	NA	NA
	10/31/2011	NA	NA	NA
	11/15/2011	NA	NA	NA
	12/06/2011	NA	NA	NA
	01/13/2012	NA	NA	NA
	02/21/2012	NA	NA	NA
	03/20/2012	NA	NA	NA
	04/27/2012	NA	NA	NA
	05/24/2012	NA	NA	NA
	06/15/2012	NA	NA	NA
	07/26/2012	NA	NA	NA
	08/15/2012	NA	NA	NA



TABLE 2
FIELD PARAMETERS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Well Name	Sample Date	pH (s.u)	Temperature (°C)	Specific Conductance (µS/cm)
MW-3	09/11/2012	NA	NA	NA
	10/18/2012	7.17	17.60	1,539
	11/14/2012	8.04	16.17	1,961
	12/05/2012	7.48	14.3	2,055
	01/29/2013	NM	10.38	2,832
	07/29/2013	7.11	13.32	2,577
	01/31/2014	7.38	9.60	2,529
	07/17/2014	7.35	15.51	2,511
	01/27/2015	7.44	10.49	3,760
	07/21/2015	7.14	13.92	2,539
	01/27/2016	7.28	10.90	2,775
	07/26/2016	7.10	14.39	3,157
	01/30/2017	7.06	11.32	2,963
	07/24/2017	7.07	14.20	3,147
	01/29/2018	8.76	10.30	3,060
	07/24/2018	7.67	15.15	2,479
	01/30/2019	7.29	10.28	3,173
	07/29/2019	7.32	13.62	2,938
MW-4	11/24/2009	NA	NA	NA
	01/27/2010	NA	NA	NA
	03/02/2010	NA	NA	NA
	03/04/2010	NA	NA	NA
	04/09/2010	NA	NA	NA
	04/30/2010	NA	NA	NA
	05/06/2010	NA	NA	NA
	06/07/2010	NA	NA	NA
	07/26/2010	NA	NA	NA
	08/16/2010	NA	NA	NA
	09/17/2010	NA	NA	NA
	10/13/2010	NA	NA	NA
	11/16/2010	NA	NA	NA
	12/27/2010	NA	NA	NA
	01/14/2011	NA	NA	NA
	02/11/2011	NA	NA	NA
	03/23/2011	NA	NA	NA
	04/21/2011	NA	NA	NA
	05/16/2011	NA	NA	NA
	06/09/2011	NA	NA	NA
	07/21/2011	NA	NA	NA
	08/08/2011	NA	NA	NA
	09/12/2011	NA	NA	NA
	10/31/2011	NA	NA	NA
	11/15/2011	NA	NA	NA
	12/06/2011	NA	NA	NA



TABLE 2
FIELD PARAMETERS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Well Name	Sample Date	pH (s.u)	Temperature (°C)	Specific Conductance (µS/cm)
MW-4	01/13/2012	NA	NA	NA
	02/21/2012	NA	NA	NA
	03/20/2012	NA	NA	NA
	04/27/2012	NA	NA	NA
	05/24/2012	NA	NA	NA
	06/15/2012	NA	NA	NA
	07/26/2012	NA	NA	NA
	08/15/2012	NA	NA	NA
	09/11/2012	NA	NA	NA
	10/18/2012	7.38	16.69	1,537
	11/14/2012	7.66	16.22	1,952
	12/05/2012	7.35	14.9	2,110
	01/29/2013	NM	11.38	2,775
	07/29/2013	6.99	13.04	2,476
	01/31/2014	7.32	10.45	2,642
	07/17/2014	7.39	13.96	2,457
	01/27/2015	7.38	10.82	3,640
	07/21/2015	7.18	13.92	2,565
	01/27/2016	7.29	11.70	2,718
	07/26/2016	7.31	13.80	2,901
	01/30/2017	7.12	12.07	2,872
	07/24/2017	7.27	13.50	2,909
	01/29/2018	8.40	11.20	3,138
	07/24/2018	7.62	15.42	2,484
	01/30/2019	7.31	10.78	3,220
	07/29/2019	6.98	12.64	3,013
MW-5	11/24/2009	NA	NA	NA
	01/27/2010	NA	NA	NA
	03/02/2010	NA	NA	NA
	03/04/2010	NA	NA	NA
	04/09/2010	NA	NA	NA
	04/30/2010	NA	NA	NA
	05/06/2010	NA	NA	NA
	06/07/2010	NA	NA	NA
	07/26/2010	NA	NA	NA
	08/16/2010	NA	NA	NA
	09/17/2010	NA	NA	NA
	10/13/2010	NA	NA	NA
	11/16/2010	NA	NA	NA
	12/27/2010	NA	NA	NA
	01/14/2011	NA	NA	NA
	02/11/2011	NA	NA	NA
	03/23/2011	NA	NA	NA
	04/21/2011	NA	NA	NA



TABLE 2
FIELD PARAMETERS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Well Name	Sample Date	pH (s.u)	Temperature (°C)	Specific Conductance (µS/cm)
MW-5	05/16/2011	NA	NA	NA
	06/09/2011	NA	NA	NA
	07/21/2011	NA	NA	NA
	08/08/2011	NA	NA	NA
	09/12/2011	NA	NA	NA
	10/31/2011	NA	NA	NA
	11/15/2011	NA	NA	NA
	12/06/2011	NA	NA	NA
	01/13/2012	NA	NA	NA
	02/21/2012	NA	NA	NA
	03/20/2012	NA	NA	NA
	04/27/2012	NA	NA	NA
	05/24/2012	NA	NA	NA
	06/15/2012	NA	NA	NA
	07/26/2012	NA	NA	NA
	08/15/2012	NA	NA	NA
	09/11/2012	NA	NA	NA
	10/18/2012	7.29	17.66	1,615
	11/14/2012	7.49	16.42	1,992
	12/05/2012	7.26	14.9	2,123
	01/29/2013	NM	10.39	2,780
	04/17/2013	6.51	9.63	2,943
	07/29/2013	7.14	14.68	2,632
	10/30/2013	7.15	15.67	2,469
	01/31/2014	7.32	10.31	2,852
	04/18/2014	7.62	8.27	2,804
	07/17/2014	7.40	13.99	2,528
	10/23/2014	7.23	15.06	2,747
	01/27/2015	7.47	10.88	3,695
	04/13/2015	6.78	8.47	2,626
	07/21/2015	7.21	12.74	2,536
	10/20/2015	7.50	15.16	2,913
	01/27/2016	7.20	9.31	2,658
	04/26/2016	6.68	8.33	2,991
	07/26/2016	7.21	15.29	2,939
	10/31/2016	7.39	16.20	3,364
	01/30/2017	7.09	11.29	2,960
	04/27/2017	7.26	8.95	3,146
	07/24/2017	7.17	14.65	2,950
	10/27/2017	7.68	14.81	3,317
	01/29/2018	8.30	9.78	3,243
	04/12/2018	7.34	8.41	3,337
	07/24/2018	7.64	15.96	2,648
	10/29/2018	7.26	16.21	3,061



TABLE 2
FIELD PARAMETERS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Well Name	Sample Date	pH (s.u)	Temperature (°C)	Specific Conductance (μS/cm)
MW-5	01/30/2019	7.70	10.27	3,190
	04/29/2019	7.19	7.41	3,240
	07/29/2019	7.33	13.55	2,935
MW-6	11/24/2009	NA	NA	NA
	01/27/2010	NA	NA	NA
	03/02/2010	NA	NA	NA
	03/04/2010	NA	NA	NA
	04/09/2010	NA	NA	NA
	04/30/2010	NA	NA	NA
	05/06/2010	NA	NA	NA
	06/07/2010	NA	NA	NA
	07/26/2010	NA	NA	NA
	08/16/2010	NA	NA	NA
	09/17/2010	NA	NA	NA
	10/13/2010	NA	NA	NA
	11/16/2010	NA	NA	NA
	12/27/2010	NA	NA	NA
	01/14/2011	NA	NA	NA
	02/11/2011	NA	NA	NA
	03/23/2011	NA	NA	NA
	04/21/2011	NA	NA	NA
	05/16/2011	NA	NA	NA
	06/09/2011	NA	NA	NA
	07/21/2011	NA	NA	NA
	08/08/2011	NA	NA	NA
	09/12/2011	NA	NA	NA
	10/31/2011	NA	NA	NA
	11/15/2011	NA	NA	NA
	12/06/2011	NA	NA	NA
	01/13/2012	NA	NA	NA
	02/21/2012	NA	NA	NA
	03/20/2012	NA	NA	NA
	04/27/2012	NA	NA	NA
	05/24/2012	NA	NA	NA
	06/15/2012	NA	NA	NA
	07/26/2012	NA	NA	NA
	08/15/2012	NA	NA	NA
	09/11/2012	NA	NA	NA
	10/18/2012	7.35	17.65	1,626
	11/14/2012	7.48	17.51	2,008
	12/05/2012	7.26	15.7	2,202
	01/29/2013	NM	11.88	2,815
	04/17/2013	6.39	7.54	2,886
	07/29/2013	7.19	15.23	2,540



TABLE 2
FIELD PARAMETERS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Well Name	Sample Date	pH (s.u)	Temperature (°C)	Specific Conductance (µS/cm)
MW-6	10/30/2013	7.46	15.97	2,438
	01/31/2014	7.35	11.50	2,849
	04/18/2014	7.55	11.68	2,870
	07/17/2014	7.34	16.36	2,773
	10/23/2014	7.41	17.65	2,733
	01/27/2015	8.19	11.26	3,817
	04/13/2015	6.78	10.77	2,530
	07/21/2015	7.20	14.40	2,342
	10/20/2015	7.29	14.91	2,910
	01/27/2016	7.24	11.78	2,692
	04/26/2016	7.45	9.80	3,059
	07/26/2016	7.16	13.40	3,068
	10/31/2016	7.38	15.38	3,283
	01/30/2017	7.17	12.26	2,957
	04/27/2017	7.35	10.69	3,030
	07/24/2017	7.09	13.18	3,014
	10/27/2017	7.73	16.91	3,338
	01/29/2018	8.45	13.65	3,294
	04/12/2018	7.27	11.86	3,347
	07/24/2018	7.73	16.80	2,790
	10/29/2018	7.26	19.39	3,026
	01/30/2019	7.30	13.82	3,219
	04/29/2019	7.16	9.66	3,211
	07/29/2019	7.38	14.99	2,999
MW-7	11/25/2009	NA	NA	NA
	03/04/2010	NA	NA	NA
	04/30/2010	NA	NA	NA
	07/26/2010	NA	NA	NA
	10/13/2010	NA	NA	NA
	01/14/2011	NA	NA	NA
	04/21/2011	NA	NA	NA
	07/21/2011	NA	NA	NA
	10/31/2011	NA	NA	NA
	01/13/2012	NA	NA	NA
	04/27/2012	NA	NA	NA
	07/26/2012	NA	NA	NA
	10/18/2012	7.30	14.95	1,699
	01/29/2013	NM	8.45	2,951
	07/29/2013	7.10	13.54	2,710
	01/31/2014	7.30	8.18	2,655
	07/17/2014	7.35	13.77	2,596
	01/27/2015	6.74	8.85	3,792
	07/21/2015	6.92	12.15	3,160
	07/26/2016	6.60	13.50	3,424



TABLE 2
FIELD PARAMETERS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Well Name	Sample Date	pH (s.u)	Temperature (°C)	Specific Conductance (μS/cm)
MW-7	01/30/2017	6.85	8.60	2,912
	07/24/2017	6.60	13.92	3,475
	01/29/2018	8.91	8.34	3,403
	07/24/2018	8.12	13.95	2,630
	01/30/2019	7.36	7.92	3,361
	07/29/2019	7.44	13.12	3,216

Notes:

NA - not available

NM - not measured

s.u - standard units

°C - degrees celsius

μS/cm - microsiemens per centimeter



TABLE 3
GROUNDWATER ANALYTICAL RESULTS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Well Name	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TDS (mg/L)	Chloride (mg/L)	Sulfate (mg/L)
MW-1	11/24/2009	<1.0	<1.0	<1.0	<1.0	2100	257	853
	03/04/2010	<1.0	<1.0	<1.0	<3.0	1600	214	597
	04/30/2010	<1.0	<1.0	<1.0	<3.0	1620	233	634
	07/26/2010	<1.0	<1.0	<1.0	<3.0	1900	277	818
	10/13/2010	<1.0	<1.0	<1.0	<3.0	1980	274	703
	01/14/2011	<0.5	<0.5	<0.5	<1.5	1930	356	898
	04/21/2011	<0.5	<0.5	<0.5	<1.5	1770	245	587
	07/21/2011	<0.5	<0.5	<0.5	<1.5	2090	288	940
	10/31/2011	<0.5	<0.5	<0.5	<1.5	2070	306	950
	01/13/2012	<0.5	<0.5	<0.5	<1.5	1920	262	886
	04/27/2012	<0.5	0.56	<0.5	<1.5	1960	248	687
	07/26/2012	<0.5	<0.5	<0.5	<1.5	1810	219	673
	10/18/2012	<1.0	<1.0	<1.0	<1.0	1600	194	590
	01/29/2013	<1.0	<1.0	<1.0	<1.0	1300	255	757
	07/29/2013	<1.0	<1.0	<1.0	<1.0	1300	227	697
	01/31/2014	<1.0	<1.0	<1.0	<1.0	1800	227	684
	07/17/2014	<1.0	<1.0	<1.0	<1.0	1500	241	947
	01/27/2015	<1.0	<1.0	<1.0	<1.0	1090	284	723
	07/21/2015	<1.0	<1.0	<1.0	<1.0	2140	646	1810
	01/27/2016	<1.0	<1.0	<1.0	<1.0	2280	298	733
	07/26/2016	<1.0	<1.0	<1.0	<1.0	2530	308	845
	01/30/2017	<1.0	<1.0	<1.0	<1.0	1830	340	1050
	07/24/2017	<1.0	<1.0	<1.0	<2.0	1740	225	617
	01/29/2018	<1.0	<1.0	<1.0	<2.0	2320	382	993
	07/24/2018	<1.0	<1.0	<1.0	<2.0	1660	373	900
	01/30/2019	<1.0	<1.0	<1.0	<2.0	1480	1280	3410
	07/29/2019	<1.0	<1.0	<1.0	<2.0	1440	274	670
MW-2	11/25/2009	<1.0	<1.0	<1.0	<1.0	2310	403	1185
	03/04/2010	<1.0	<1.0	<1.0	<3.0	1610	251	723
	04/30/2010	<1.0	<1.0	<1.0	<3.0	1550	253	670
	07/26/2010	<1.0	<1.0	<1.0	<3.0	1790	256	774
	10/13/2010	<1.0	<1.0	<1.0	<3.0	2050	287	747
	01/14/2011	<0.5	<0.5	<0.5	<1.5	1930	351	1130
	04/21/2011	<0.5	<0.5	<0.5	<1.5	1780	253	674
	07/21/2011	<0.5	<0.5	<0.5	<1.5	1940	1	809
	10/31/2011	<0.5	<0.5	<0.5	<1.5	1760	238	696
	01/13/2012	<0.5	<0.5	<0.5	<1.5	1940	273	870
	04/27/2012	<0.5	<0.5	<0.5	<1.5	1960	248	719
	07/26/2012	<0.5	<0.5	<0.5	<1.5	1960	236	718
	10/18/2012	<1.0	<1.0	<1.0	<1.0	1500	171	545
	01/29/2013	<1.0	<1.0	<1.0	<1.0	1300	260	766
	07/29/2013	<1.0	<1.0	<1.0	<1.0	1200	209	630
	01/31/2014	<1.0	<1.0	<1.0	<1.0	1800	219	579
	07/17/2014	<1.0	<1.0	<1.0	<1.0	1400	244	736



TABLE 3
GROUNDWATER ANALYTICAL RESULTS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Well Name	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TDS (mg/L)	Chloride (mg/L)	Sulfate (mg/L)
MW-2	01/27/2015	<1.0	<1.0	<1.0	<1.0	1170	314	746
	07/21/2015	<1.0	<1.0	<1.0	<1.0	1900	309	781
	01/27/2016	<1.0	<1.0	<1.0	<1.0	2250	330	801
	07/26/2016	<1.0	<1.0	<1.0	<1.0	2330	292	743
	01/30/2017	<1.0	<1.0	<1.0	<1.0	1890	379	1200
	07/24/2017	<1.0	<1.0	<1.0	<2.0	1780	228	593
	01/29/2018	<1.0	<1.0	<1.0	<2.0	2560	402	1090
	07/24/2018	<1.0	<1.0	<1.0	<2.0	1720	406	967
	01/30/2019	<1.0	<1.0	<1.0	<2.0	1500	1220	3230
	07/29/2019	<1.0	<1.0	<1.0	<2.0	1450	299	692
MW-3	11/24/2009	<1.0	<1.0	<1.0	<1.0	1970	257	760
	01/27/2010	<1.0	<1.0	<1.0	<1.0	1810	190	551
	03/02/2010	<1.0	<2.0	<2.0	<4.0	NA	239	663
	03/04/2010	<1.0	<1.0	<1.0	<3.0	1670	210	589
	04/09/2010	<1.0	<1.0	<1.0	<1.0	NA	232	NA
	04/30/2010	<1.0	<1.0	<1.0	<3.0	3850	240	619
	05/06/2010	<1.0	<1.0	<1.0	<1.0	NA	259	724
	06/07/2010	<1.0	<1.0	<1.0	<1.0	NA	218	598
	07/26/2010	<1.0	<1.0	<1.0	<3.0	1740	265	787
	08/16/2010	<0.5	<0.5	<0.5	<1.5	NA	NA	870
	09/17/2010	<0.5	<0.5	<0.5	<1.5	NA	NA	812
	10/13/2010	<1.0	<1.0	<1.0	<3.0	1870	266	674
	11/16/2010	<0.5	<0.5	<0.5	<1.5	1880	278	813
	12/27/2010	<0.5	<0.5	<0.5	<1.5	1880	269	812
	01/14/2011	<0.5	<0.5	<0.5	<1.5	1870	359	1030
	02/11/2011	<0.5	<0.5	<0.5	<1.5	1940	300	860
	03/23/2011	<0.5	<0.5	<0.5	<1.5	1910	252	715
	04/21/2011	<0.5	<0.5	<0.5	<1.5	1790	246	595
	05/16/2011	<0.5	<0.5	<0.5	<1.5	1810	269	714
	06/09/2011	<0.5	<0.5	<0.5	<1.5	1820	243	640
	07/21/2011	<0.5	<0.5	<0.5	<1.5	1910	280	858
	08/08/2011	<0.5	<0.5	<0.5	<1.5	2020	269	712
	09/12/2011	<0.5	<0.5	<0.5	<1.5	1840	261	725
	10/31/2011	<0.5	<0.5	<0.5	<1.5	1760	254	759
	11/15/2011	<0.5	<0.5	<0.5	<1.5	1780	263	742
	12/06/2011	<0.5	<0.5	<0.5	<1.5	1820	260	695
	01/13/2012	<0.5	<0.5	<0.5	<1.5	1990	272	911
	02/21/2012	<0.5	<0.5	<0.5	<1.5	1780	259	749
	03/20/2012	<0.5	<0.5	<0.5	<1.5	1950	285	849
	04/27/2012	<0.5	<0.5	<0.5	<1.5	1980	282	766
	05/24/2012	<0.5	<0.5	<0.5	<1.5	992	271	765
	06/15/2012	<0.5	<0.5	<0.5	<1.5	1750	278	792
	07/26/2012	<0.5	<0.5	<0.5	<1.5	1870	240	715
	08/15/2012	<1.0	<1.0	<1.0	<1.0	1800	222	648



TABLE 3
GROUNDWATER ANALYTICAL RESULTS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Well Name	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TDS (mg/L)	Chloride (mg/L)	Sulfate (mg/L)
MW-3	09/11/2012	<1.0	<1.0	<1.0	<1.0	1600	188	581
	10/18/2012	<1.0	<1.0	<1.0	<1.0	1700	213	638
	11/14/2012	<1.0	<1.0	<1.0	<1.0	1800	231	676
	12/05/2012	<1.0	<1.0	<1.0	<1.0	1300	262	749
	01/29/2013	<1.0	<1.0	<1.0	<1.0	1400	260	768
	07/29/2013	<1.0	<1.0	<1.0	<1.0	1400	244	711
	01/31/2014	<1.0	<1.0	<1.0	<1.0	1800	169	590
	07/17/2014	<1.0	<1.0	<1.0	<1.0	1400	279	745
	01/27/2015	<1.0	<1.0	<1.0	<1.0	11.8	719	338
	07/21/2015	<1.0	<1.0	<1.0	<1.0	1800	317	829
	01/27/2016	<1.0	<1.0	<1.0	<1.0	2310	335	734
	07/26/2016	<1.0	<1.0	<1.0	<1.0	2410	298	758
	01/30/2017	<1.0	<1.0	<1.0	<1.0	1800	286	1090
	07/24/2017	<1.0	<1.0	<1.0	<2.0	1800	235	592
	01/29/2018	<1.0	<1.0	<1.0	<2.0	2270	435	1210
	07/24/2018	<1.0	<1.0	<1.0	<2.0	1690	382	902
	01/30/2019	<1.0	<1.0	<1.0	<2.0	1570	1230	3180
	07/29/2019	<1.0	<1.0	<1.0	<2.0	1440	248	620
MW-4	11/24/2009	<1.0	<1.0	<1.0	<1.0	1980	242	738
	01/27/2010	<1.0	<1.0	<1.0	<1.0	1870	208	606
	03/02/2010	<1.0	<2.0	<2.0	<4.0	NA	235	649
	03/04/2010	<1.0	<1.0	<1.0	<3.0	1610	207	575
	04/09/2010	<1.0	<1.0	<1.0	<1.0	NA	227	NA
	04/30/2010	<1.0	<1.0	<1.0	<3.0	1140	224	591
	05/06/2010	<1.0	<1.0	<1.0	<1.0	NA	252	691
	06/07/2010	<1.0	<1.0	<1.0	<1.0	NA	219	598
	07/26/2010	<1.0	<1.0	<1.0	<3.0	1750	247	728
	08/16/2010	<1.0	<1.0	<1.0	<3.0	NA	NA	846
	09/17/2010	<1.0	<1.0	<1.0	<3.0	NA	NA	859
	10/13/2010	<1.0	<1.0	<1.0	<3.0	1880	265	677
	11/16/2010	<0.5	<0.5	<0.5	<1.5	1820	285	832
	12/27/2010	<0.5	<0.5	<0.5	<1.5	1820	259	775
	01/14/2011	<0.5	<0.5	<0.5	<1.5	1840	247	912
	02/11/2011	<0.5	<0.5	<0.5	<1.5	1870	263	751
	03/23/2011	<0.5	<0.5	<0.5	<1.5	1820	253	720
	04/21/2011	<0.5	<0.5	<0.5	<1.5	1810	241	656
	05/16/2011	<0.5	<0.5	<0.5	<1.5	1810	256	687
	06/09/2011	<0.5	<0.5	<0.5	<1.5	1860	238	647
	07/21/2011	<0.5	<0.5	<0.5	<1.5	1980	261	776
	08/08/2011	<0.5	<0.5	<0.5	<1.5	1950	261	672
	09/12/2011	<0.5	<0.5	<0.5	<1.5	1800	255	720
	10/31/2011	<0.5	<0.5	<0.5	<1.5	1560	213	637
	11/15/2011	<0.5	<0.5	<0.5	<1.5	1730	258	723
	12/06/2011	<0.5	<0.5	<0.5	<1.5	1840	253	774



TABLE 3
GROUNDWATER ANALYTICAL RESULTS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Well Name	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TDS (mg/L)	Chloride (mg/L)	Sulfate (mg/L)
MW-4	01/13/2012	<0.5	<0.5	<0.5	<1.5	1880	261	1210
	02/21/2012	<0.5	<0.5	<0.5	<1.5	1830	256	726
	03/20/2012	<0.5	<0.5	<0.5	<1.5	1840	259	755
	04/27/2012	<0.5	<0.5	<0.5	<1.5	1860	272	743
	05/24/2012	<0.5	<0.5	<0.5	<1.5	1820	262	768
	06/15/2012	<0.5	<0.5	<0.5	<1.5	1840	265	749
	07/26/2012	<0.5	<0.5	<0.5	<1.5	1860	224	729
	08/15/2012	<1.0	<1.0	<1.0	<1.0	1800	222	654
	09/11/2012	<1.0	<1.0	<1.0	<1.0	1600	190	588
	10/18/2012	<1.0	<1.0	<1.0	<1.0	1700	211	628
	11/14/2012	<1.0	<1.0	<1.0	<1.0	1900	232	682
	12/05/2012	<1.0	<1.0	<1.0	<1.0	1300	270	765
	01/29/2013	<1.0	<1.0	<1.0	<1.0	1400	276	788
	07/29/2013	<1.0	<1.0	<1.0	<1.0	1300	232	684
	01/31/2014	<1.0	<1.0	<1.0	<1.0	1800	187	458
	07/17/2014	<1.0	<1.0	<1.0	<1.0	1400	243	740
	01/27/2015	<1.0	<1.0	<1.0	<1.0	1090	582	1440
	07/21/2015	<1.0	<1.0	<1.0	<1.0	1790	421	1090
	01/27/2016	<1.0	<1.0	<1.0	<1.0	2250	322	751
	07/26/2016	<1.0	<1.0	<1.0	<1.0	2190	302	722
	01/30/2017	<1.0	<1.0	<1.0	<1.0	1770	352	1100
	07/24/2017	<1.0	<1.0	<1.0	<2.0	1770	248	620
	01/29/2018	<1.0	<1.0	<1.0	<2.0	2400	428	1180
	07/24/2018	1.7	1.5	<1.0	<2.0	1730	439	1020
	01/30/2019	<1.0	<1.0	<1.0	<2.0	1580	1300	3340
	07/29/2019	<1.0	<1.0	<1.0	<2.0	1450	276	670
MW-5	11/24/2009	<1.0	<1.0	<1.0	<1.0	1990	261	792
	01/27/2010	<1.0	<1.0	<1.0	<1.0	1720	221	615
	03/02/2010	<1.0	<2.0	<2.0	<4.0	NA	238	669
	03/04/2010	<1.0	<1.0	<1.0	<3.0	1610	211	581
	04/09/2010	<1.0	<1.0	<1.0	<1.0	NA	263	NA
	04/30/2010	<1.0	<1.0	<1.0	<3.0	2740	256	647
	05/06/2010	<1.0	<1.0	<1.0	<1.0	NA	316	858
	06/07/2010	<1.0	<1.0	<1.0	<1.0	NA	259	668
	07/26/2010	<1.0	<1.0	<1.0	<3.0	1820	253	717
	08/16/2010	<1.0	<1.0	<1.0	<3.0	NA	NA	832
	09/17/2010	<1.0	<1.0	<1.0	<3.0	NA	NA	754
	10/13/2010	<1.0	<1.0	<1.0	<3.0	2030	277	710
	11/16/2010	<0.5	<0.5	<0.5	<1.5	1940	290	884
	12/27/2010	<0.5	<0.5	<0.5	<1.5	1800	260	804
	01/14/2011	<0.5	<0.5	<0.5	<1.5	1920	357	945
	02/11/2011	<0.5	<0.5	<0.5	<1.5	1880	283	786
	03/23/2011	<0.5	0.71	<0.5	<1.5	1950	284	779
	04/21/2011	<0.5	<0.5	<0.5	<1.5	1910	255	627



TABLE 3
GROUNDWATER ANALYTICAL RESULTS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Well Name	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TDS (mg/L)	Chloride (mg/L)	Sulfate (mg/L)
MW-5	05/16/2011	<0.5	<0.5	<0.5	<1.5	1820	273	701
	06/09/2011	<0.5	<0.5	<0.5	<1.5	1880	243	647
	07/21/2011	<0.5	<0.5	<0.5	<1.5	1950	279	773
	08/08/2011	<0.5	<0.5	<0.5	<1.5	1900	269	695
	09/12/2011	<0.5	<0.5	<0.5	<1.5	1840	266	730
	10/31/2011	<0.5	<0.5	<0.5	<1.5	1740	260	752
	11/15/2011	<0.5	<0.5	<0.5	<1.5	1740	262	755
	12/06/2011	<0.5	<0.5	<0.5	<1.5	1940	270	801
	01/13/2012	<0.5	<0.5	<0.5	<1.5	1880	313	956
	02/21/2012	<0.5	<0.5	<0.5	<1.5	1880	265	745
	03/20/2012	<0.5	<0.5	<0.5	<1.5	2010	274	786
	04/27/2012	<0.5	<0.5	<0.5	<1.5	2020	293	836
	05/24/2012	<0.5	<0.5	<0.5	<1.5	1670	267	774
	06/15/2012	<0.5	<0.5	<0.5	<1.5	1940	276	788
	07/26/2012	<0.5	<0.5	<0.5	<1.5	1790	233	726
	08/15/2012	<1.0	<1.0	<1.0	<1.0	1900	236	686
	09/11/2012	<1.0	<1.0	<1.0	<1.0	1700	207	621
	10/18/2012	<1.0	<1.0	<1.0	<1.0	1800	227	671
	11/14/2012	<1.0	<1.0	<1.0	<1.0	1800	233	677
	12/05/2012	<1.0	<1.0	<1.0	<1.0	1300	267	760
	01/29/2013	<1.0	<1.0	<1.0	<1.0	1300	265	788
	04/17/2013	<1.0	<1.0	<1.0	<1.0	1400	277	772
	07/29/2013	<1.0	<1.0	<1.0	<1.0	1500	256	726
	10/30/2013	<1.0	<1.0	<1.0	<1.0	1300	227	704
	01/31/2014	<1.0	<1.0	<1.0	<1.0	1800	219	595
	04/18/2014	<1.0	<1.0	<1.0	<1.0	2000	254	691
	07/17/2014	<1.0	<1.0	<1.0	<1.0	1400	267	745
	10/23/2014	<1.0	<1.0	<1.0	<1.0	2280	279	673
	01/27/2015	<1.0	<1.0	<1.0	<1.0	1260	589	349
	04/13/2015	<1.0	<1.0	<1.0	<1.0	1890	259	498
	07/21/2015	<1.0	<1.0	<1.0	<1.0	1780	315	796
	10/20/2015	<1.0	<1.0	<1.0	<1.0	1080	303.15	761.79
	01/27/2016	<1.0	<1.0	<1.0	<1.0	2110	313	722
	04/26/2016	<1.0	<1.0	<1.0	<1.0	2290	371	725
	07/26/2016	<1.0	<1.0	<1.0	<1.0	2250	270	650
	10/31/2016	<1.0	<1.0	<1.0	<1.0	1800	382	1050
	01/30/2017	<1.0	<1.0	<1.0	<1.0	1760	362	1070
	04/27/2017	<1.0	<1.0	<1.0	<2.0	2410	423	933
	07/24/2017	<1.0	<1.0	<1.0	<2.0	1780	207	498
	10/27/2017	<1.0	<1.0	<1.0	<2.0	2510	283	830
	01/29/2018	<1.0	<1.0	<1.0	<2.0	2460	454	1270
	04/12/2018	<1.0	<1.0	<1.0	<2.0	2570	362	1100
	07/24/2018	1.2	<1.0	<1.0	<2.0	1780	505	1160
	10/29/2018	<1.0	<1.0	<1.0	<2.0	1720	316	683



TABLE 3
GROUNDWATER ANALYTICAL RESULTS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Well Name	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TDS (mg/L)	Chloride (mg/L)	Sulfate (mg/L)
MW-5	01/30/2019	1.9	2.1	<1.0	<2.0	1580	1130	2910
	04/29/2019	<1.0	<1.0	<1.0	<2.0	1580	227	488
	07/29/2019	<1.0	<1.0	<1.0	<2.0	1400	<6.00	319
MW-6	11/24/2009	<1.0	<1.0	<1.0	<1.0	2290	304	986
	01/27/2010	<1.0	<1.0	<1.0	<1.0	1840	216	631
	03/02/2010	<1.0	<2.0	<2.0	<4.0	NA	262	738
	03/04/2010	<1.0	<1.0	<1.0	<3.0	1780	223	624
	04/09/2010	<1.0	<1.0	<1.0	<1.0	NA	268	NA
	04/30/2010	<1.0	<1.0	<1.0	<3.0	2820	258	678
	05/06/2010	<1.0	<1.0	<1.0	<1.0	NA	265	722
	06/07/2010	<1.0	<1.0	<1.0	<1.0	NA	293	790
	07/26/2010	<1.0	<1.0	<1.0	<3.0	1770	266	698
	08/16/2010	<1.0	<1.0	<1.0	<3.0	NA	NA	863
	09/17/2010	<1.0	<1.0	<1.0	<3.0	NA	NA	845
	10/13/2010	<1.0	<1.0	<1.0	<3.0	1960	256	684
	11/16/2010	<0.5	1	<0.5	1	1900	327	975
	12/27/2010	1	<0.5	<0.5	<1.5	1880	5.3	16.3
	01/14/2011	2	<0.5	<0.5	<1.5	2000	361	974
	02/11/2011	3.5	<0.5	<0.5	<1.5	1920	293	929
	03/23/2011	<0.5	1	<0.5	1.6	1930	289	781
	04/21/2011	<0.5	0.58	<0.5	7.9	1940	257	680
	05/16/2011	<0.5	<0.5	<0.5	<1.5	1820	265	687
	06/09/2011	<0.5	<0.5	<0.5	<1.5	1910	255	691
	07/21/2011	<0.5	<0.5	<0.5	<1.5	2170	298	838
	08/08/2011	<0.5	<0.5	<0.5	<1.5	2010	273	771
	09/12/2011	<0.5	<0.5	<0.5	<1.5	1920	283	809
	10/31/2011	<0.5	<0.5	<0.5	<1.5	1850	262	752
	11/15/2011	<0.5	<0.5	<0.5	<1.5	1770	271	769
	12/06/2011	<0.5	<0.5	<0.5	<1.5	1950	287	2310
	01/13/2012	1.2	<0.5	<0.5	<1.5	2030	336	1050
	02/21/2012	<0.5	<0.5	<0.5	<1.5	1950	276	780
	03/20/2012	<0.5	<0.5	<0.5	<1.5	2050	290	840
	04/27/2012	<0.5	<0.5	<0.5	<1.5	2020	263	733
	05/24/2012	<0.5	<0.5	<0.5	<1.5	1830	283	792
	06/15/2012	<0.5	<0.5	<0.5	<1.5	1920	291	845
	07/26/2012	<0.5	<0.5	<0.5	<1.5	1920	232	719
	08/15/2012	<1.0	<1.0	<1.0	<1.0	1900	239	700
	09/11/2012	<1.0	<1.0	<1.0	<1.0	1700	205	621
	10/18/2012	<1.0	<1.0	<1.0	<1.0	1800	225	669
	11/14/2012	<1.0	<1.0	<1.0	<1.0	1900	234	696
	12/05/2012	<1.0	<1.0	<1.0	<1.0	1300	272	789
	01/29/2013	<1.0	<1.0	<1.0	<1.0	1400	272	807
	04/17/2013	<1.0	<1.0	<1.0	<1.0	1400	277	777
	07/29/2013	<1.0	<1.0	<1.0	<1.0	1400	240	693



TABLE 3
GROUNDWATER ANALYTICAL RESULTS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Well Name	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TDS (mg/L)	Chloride (mg/L)	Sulfate (mg/L)
MW-6	10/30/2013	<1.0	<1.0	<1.0	<1.0	1200	223	693
	01/31/2014	<1.0	<1.0	<1.0	<1.0	1900	229	617
	04/18/2014	<1.0	<1.0	<1.0	<1.0	2000	253	707
	07/17/2014	<1.0	<1.0	<1.0	<1.0	1500	288	770
	10/23/2014	<1.0	<1.0	<1.0	<1.0	6160	283	725
	01/27/2015	<1.0	<1.0	<1.0	<1.0	1200	728	356
	04/13/2015	<1.0	1.7	<1.0	<1.0	1850	252	484
	07/21/2015	<1.0	<1.0	<1.0	<1.0	1800	274	599
	10/20/2015	<1.0	<1.0	<1.0	<1.0	1130	324.57	818.39
	01/27/2016	3.9	2.2	<1.0	<1.0	2250	312	718
	04/26/2016	<1.0	<1.0	<1.0	<1.0	2200	371	751
	07/26/2016	<1.0	<1.0	<1.0	<1.0	2340	264	550
	10/31/2016	<1.0	<1.0	<1.0	<1.0	1700	60.1	204
	01/30/2017	1.8	1.8	<1.0	<1.0	1780	387	1110
	04/27/2017	<1.0	<1.0	<1.0	<2.0	2350	358	812
	07/24/2017	<1.0	<1.0	<1.0	<2.0	1800	236	564
	10/27/2017	1.9	1.2	<1.0	<2.0	2510	69.0	167
	01/29/2018	<1.0	<1.0	<1.0	<2.0	2510	526	1470
	04/12/2018	<1.0	<1.0	<1.0	<2.0	2540	390	1130
	07/24/2018	15	14	<1.0	2.8	1840	451	1070
	10/29/2018	<1.0	<1.0	<1.0	<2.0	1720	269	602
	01/30/2019	1.0	<1.0	<1.0	<2.0	1560	989	2520
	04/29/2019	<1.0	<1.0	<1.0	<2.0	1570	233	570
	07/29/2019	<1.0	<1.0	<1.0	<2.0	1540	258	647
MW-7	11/25/2009	<1.0	<1.0	<1.0	<1.0	2360	358	950
	03/04/2010	<1.0	<1.0	<1.0	<3.0	1740	262	673
	04/30/2010	<1.0	<1.0	<1.0	<3.0	5820	286	683
	07/26/2010	<1.0	<1.0	<1.0	<3.0	2090	311	832
	10/13/2010	<1.0	<1.0	<1.0	<3.0	1940	285	678
	01/14/2011	<0.5	<0.5	<0.5	<1.5	1860	378	940
	04/21/2011	<0.5	<0.5	<0.5	<1.5	1820	239	562
	07/21/2011	<0.5	<0.5	<0.5	<1.5	2040	311	787
	10/31/2011	<0.5	<0.5	<0.5	<1.5	1820	271	732
	01/13/2012	<0.5	<0.5	<0.5	<1.5	1980	366	529
	04/27/2012	<0.5	<0.5	<0.5	<1.5	2070	306	790
	07/26/2012	<0.5	<0.5	<0.5	<1.5	2120	314	899
	10/18/2012	<1.0	<1.0	<1.0	<1.0	1900	256	721
	01/29/2013	<1.0	<1.0	<1.0	<1.0	1400	298	833
	07/29/2013	<1.0	<1.0	<1.0	<1.0	1500	279	718
	01/31/2014	<1.0	<1.0	<1.0	<1.0	2000	255	618
	07/17/2014	<1.0	<1.0	<1.0	<1.0	1400	273	769
	01/27/2015	<1.0	<1.0	<1.0	<1.0	1190	310	746
	07/21/2015	<1.0	<1.0	<1.0	<1.0	2270	359	894
	07/26/2016	<1.0	<1.0	<1.0	<1.0	2630	306	674



TABLE 3
GROUNDWATER ANALYTICAL RESULTS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Well Name	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TDS (mg/L)	Chloride (mg/L)	Sulfate (mg/L)
MW-7	01/30/2017	<1.0	<1.0	<1.0	<1.0	1730	318	988
	07/24/2017	<1.0	<1.0	<1.0	<2.0	1800	267	573
	01/29/2018	<1.0	<1.0	<1.0	<2.0	2610	576	1440
	07/24/2018	<1.0	<1.0	<1.0	<2.0	1850	400	851
	01/30/2019	<1.0	<1.0	<1.0	<2.0	1640	835	1900
	07/29/2019	<1.0	<1.0	<1.0	<2.0	1590	210	541
Table 910-1 GW Criteria		5	560	700	1400	1.25 x Background		

Notes:

< - less than

µg/L - micrograms per Liter

mg/L - milligrams per Liter

NA - Not Analyzed

Bold indicates result equaled or exceeded standard.

Table 910-1 GW Criteria - Colorado Oil and Gas Conservation Commission Regulation 908, Table 910-1 (May 30, 2011) for GW (groundwater).



TABLE 4
QUALITY CONTROL ANALYTICAL RESULTS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Well Name	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TDS (mg/L)	Chloride (mg/L)	Sulfate (mg/L)
Ambient Blank	03/23/2011	<0.5	0.57	<0.5	<1.5	NA	NA	NA
	04/21/2011	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	05/16/2011	0.87	1.4	<0.5	<1.5	NA	NA	NA
	06/09/2011	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	08/08/2011	0.6	1.1	<0.5	<1.5	NA	NA	NA
	09/12/2011	<0.5	<0.5	<0.5	<1.5	<5	<1	<1
	10/31/2011	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	11/15/2011	1	1.6	<0.5	<1.5	NA	NA	NA
	12/06/2011	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	01/13/2012	<0.5	0.56	<0.5	<1.5	NA	NA	NA
	02/21/2012	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	03/20/2012	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	04/27/2012	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	05/24/2012	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	06/15/2012	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	07/26/2012	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	08/15/2012	<1.0	<1.0	<1.0	<1.0	<1.0	<1.00	<1.00
	09/11/2012	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	10/18/2012	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	11/14/2012	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	12/05/2012	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	01/29/2013	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	04/17/2013	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	07/29/2013	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	10/30/2013	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	01/31/2014	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	04/18/2014	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	07/17/2014	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	10/23/2014	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	01/27/2015	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	04/13/2015	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	07/21/2015	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	10/20/2015	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	01/27/2016	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	04/26/2016	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	07/26/2016	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	10/31/2016	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	01/30/2017	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	04/27/2017	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
	07/24/2017	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
	10/27/2017	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
	01/29/2018	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
	04/12/2018	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
	07/24/2018	<1.0	<1.0	<1.0	<2.0	NA	NA	NA

TABLE 4
QUALITY CONTROL ANALYTICAL RESULTS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Well Name	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TDS (mg/L)	Chloride (mg/L)	Sulfate (mg/L)
Ambient Blank	10/29/2018	1.4	3.2	<1.0	<2.0	NA	NA	NA
	01/30/2019	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
	04/29/2019	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
	07/29/2019	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
Rinse Blank	02/11/2011	<0.5	0.66	<0.5	<1.5	NA	NA	NA
	03/23/2011	<0.5	0.81	<0.5	<1.5	NA	NA	NA
	04/21/2011	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	05/16/2011	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	06/09/2011	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	08/08/2011	<0.5	0.94	<0.5	<1.5	NA	NA	NA
	09/12/2011	<0.5	<0.5	<0.5	<1.5	6	<1	<1
	10/31/2011	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	11/15/2011	1	1.5	<0.5	<1.5	NA	NA	NA
	12/06/2011	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	01/13/2012	<0.5	0.53	<0.5	<1.5	NA	NA	NA
	02/21/2012	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	03/20/2012	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	04/27/2012	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	05/24/2012	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	06/15/2012	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	07/26/2012	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	08/15/2012	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	09/11/2012	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	11/14/2012	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	12/05/2012	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	01/29/2013	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	04/17/2013	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	07/29/2013	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	10/30/2013	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	01/31/2014	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	04/18/2014	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	07/17/2014	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	10/23/2014	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	01/27/2015	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	04/13/2015	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	07/21/2015	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	10/20/2015	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	01/27/2016	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	04/26/2016	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	07/26/2016	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	10/31/2016	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	01/30/2017	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	04/27/2017	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
	07/24/2017	<1.0	<1.0	<1.0	<2.0	NA	NA	NA

TABLE 4
QUALITY CONTROL ANALYTICAL RESULTS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Well Name	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TDS (mg/L)	Chloride (mg/L)	Sulfate (mg/L)
Rinse Blank	10/27/2017	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
	01/29/2018	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
	04/12/2018	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
	07/24/2018	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
	10/29/2018	1.5	3.3	<1.0	<2.0	NA	NA	NA
	01/30/2019	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
	04/29/2019	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
	07/29/2019	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
Trip Blank	02/11/2011	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	11/15/2011	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	12/06/2011	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	01/13/2012	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	02/21/2012	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	03/20/2012	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	04/27/2012	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	05/24/2012	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	06/15/2012	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	07/26/2012	<0.5	<0.5	<0.5	<1.5	NA	NA	NA
	08/15/2012	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	09/11/2012	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	10/18/2012	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	11/14/2012	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	12/05/2012	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	01/29/2013	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	04/17/2013	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	07/29/2013	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	10/30/2013	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	01/31/2014	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	04/18/2014	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	07/17/2014	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	10/23/2014	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	01/27/2015	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	04/13/2015	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	07/21/2015	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	10/20/2015	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	01/27/2016	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	04/26/2016	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	07/26/2016	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	10/31/2016	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	01/30/2017	<1.0	<1.0	<1.0	<1.0	NA	NA	NA
	04/27/2017	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
	10/27/2017	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
	04/12/2018	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
	07/24/2018	<1.0	<1.0	<1.0	<2.0	NA	NA	NA

TABLE 4
QUALITY CONTROL ANALYTICAL RESULTS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Well Name	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TDS (mg/L)	Chloride (mg/L)	Sulfate (mg/L)
Trip Blank	04/29/2019	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
	07/29/2019	<1.0	<1.0	<1.0	<2.0	NA	NA	NA
Table 910-1 GW Criteria		5	560	700	1400	1.25 x Background		

Notes:

< - less than

µg/L - micrograms per Liter

mg/L - milligrams per Liter

NA - Not Analyzed

Table 910-1 GW Criteria - Colorado Oil and Gas Conservation Commission Regulation 908, Table 910-1 (May 30, 2011) for GW (groundwater).



TABLE 5
DESCRIPTIVE ANALYSIS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Constituent Name	Well Name	Number of Observations	Mean	Standard Deviation	Minimum	Maximum	Number of NDs	% NDs
Benzene (ug/l)	MW-1	27	0.435	0.112	0.25	0.5	27	100
	MW-2	27	0.435	0.112	0.25	0.5	27	100
	MW-3	52	0.389	0.125	0.25	0.5	52	100
	MW-4	52	0.422	0.219	0.25	1.7	51	98
	MW-5	65	0.452	0.237	0.25	1.9	63	97
	MW-6	65	0.839	1.900	0.25	15	56	86
	MW-7	26	0.433	0.113	0.25	0.5	26	100
Chloride (mg/L)	MW-1	27	323.44	209.85	194	1280	0	0
	MW-2	27	308.59	199.79	1	1220	0	0
	MW-3	50	292.38	156.55	169	1230	0	0
	MW-4	50	288.02	161.58	187	1300	0	0
	MW-5	63	295.48	131.60	3	1130	1	2
	MW-6	63	290.48	130.10	5.3	989	0	0
	MW-7	26	331.88	124.09	210	835	0	0
Ethylbenzene (ug/L)	MW-1	27	0.435	0.112	0.25	0.5	27	100
	MW-2	27	0.435	0.112	0.25	0.5	27	100
	MW-3	52	0.399	0.151	0.25	1	52	100
	MW-4	52	0.409	0.149	0.25	1	52	100
	MW-5	65	0.427	0.138	0.25	1	65	100
	MW-6	65	0.427	0.138	0.25	1	65	100
	MW-7	26	0.433	0.113	0.25	0.5	26	100
Sulfate (mg/L)	MW-1	27	913.04	553.52	587	3410	0	0
	MW-2	27	882.00	501.26	545	3230	0	0
	MW-3	51	788.69	369.16	338	3180	0	0
	MW-4	51	812.55	402.10	458	3340	0	0
	MW-5	64	782.11	315.39	319	2910	0	0
	MW-6	64	787.60	365.10	16.3	2520	0	0
	MW-7	26	820.04	288.03	529	1900	0	0
TDS (mg/L)	MW-1	27	1,806	337.31	1090	2530	0	0
	MW-2	27	1,790	344.36	1170	2560	0	0
	MW-3	46	1,795	474.86	11.8	3850	0	0
	MW-4	46	1,758	252.26	1090	2400	0	0
	MW-5	59	1,844	325.98	1080	2740	0	0
	MW-6	59	1,947	648.25	1130	6160	0	0
	MW-7	26	2,045	842.98	1190	5820	0	0
Toluene (ug/l)	MW-1	27	0.447	0.108	0.25	0.56	26	96
	MW-2	27	0.435	0.112	0.25	0.5	27	100
	MW-3	52	0.399	0.151	0.25	1	52	100
	MW-4	52	0.428	0.212	0.25	1.5	51	98
	MW-5	65	0.459	0.250	0.25	2.1	63	97
	MW-6	65	0.738	1.709	0.25	14	57	88



TABLE 5
DESCRIPTIVE ANALYSIS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Constituent Name	Well Name	Number of Observations	Mean	Standard Deviation	Minimum	Maximum	Number of NDs	% NDs
Toluene (ug/l)	MW-7	26	0.433	0.113	0.25	0.5	26	100
Total Xylenes (ug/L)	MW-1	27	0.806	0.349	0.5	1.5	27	100
	MW-2	27	0.806	0.349	0.5	1.5	27	100
	MW-3	52	0.764	0.322	0.5	2	52	100
	MW-4	52	0.793	0.353	0.5	2	52	100
	MW-5	65	0.773	0.336	0.5	2	65	100
	MW-6	65	0.928	0.978	0.5	7.9	61	94
	MW-7	26	0.817	0.350	0.5	1.5	26	100

Notes:

NDs - Non-detectable concentrations.

Number of Observations - Includes all historical samples collected from November 2009 to present.

% - percent



TABLE 6
OUTLIER ANALYSIS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Constituent Name	Well Name	Outlier	Outlier Value	Date	Number	Mean	Standard Deviation
Benzene (µg/L)	MW-1	Yes	0.25* 0.25* 0.25* 0.25* 0.25* 0.25* 0.25*	1/14/11 4/21/11 7/24/11 10/31/11 1/13/12 4/27/12 7/26/12	27	0.435	0.112
Benzene (µg/L)	MW-2	Yes	0.25* 0.25* 0.25* 0.25* 0.25* 0.25* 0.25*	1/14/11 4/21/11 7/24/11 10/31/11 1/13/12 4/27/12 7/26/12	27	0.435	0.112
Benzene (µg/L)	MW-3	No	NA	NA	52	0.389	0.125
Benzene (µg/L)	MW-4	Yes	1.7	7/24/18	52	0.422	0.219
Benzene (µg/L)	MW-5	Yes	1.2 1.9	7/24/18 1/30/19	65	0.452	0.237
Benzene (µg/L)	MW-6	Yes	2 3.5 3.9 1.8 1.9 15	1/14/11 2/11/11 1/27/16 1/30/17 10/27/17 7/24/18	65	0.839	1.900
Benzene (µg/L)	MW-7 (bg)	Yes	0.25* 0.25* 0.25* 0.25* 0.25* 0.25* 0.25*	1/14/11 4/21/11 7/24/11 10/31/11 1/13/12 4/27/12 7/26/12	26	0.433	0.113
Toluene (µg/L)	MW-1	Yes	0.25* 0.25* 0.25* 0.25* 0.25* 0.56 0.25*	1/14/11 4/21/11 7/21/11 10/31/11 1/13/12 4/27/12 7/26/12	27	0.447	0.108



TABLE 6
OUTLIER ANALYSIS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Constituent Name	Well Name	Outlier	Outlier Value	Date	Number	Mean	Standard Deviation
Toluene (µg/L)	MW-2	Yes	0.25*	1/14/11	27	0.435	0.112
			0.25*	4/21/11			
			0.25*	7/21/11			
			0.25*	10/31/11			
			0.25*	1/13/12			
			0.25*	4/27/12			
			0.25*	7/26/12			
Toluene (µg/L)	MW-3	Yes	1*	3/2/10	52	0.399	0.151
Toluene (µg/L)	MW-4	Yes	1*	3/2/10	52	0.428	0.212
			1.5	7/24/18			
Toluene (µg/L)	MW-5	Yes	1*	3/2/10	65	0.459	0.250
			2.1	1/30/19			
Toluene (µg/L)	MW-6	Yes	1.7	4/13/15	65	0.738	1.709
			2.2	1/27/16			
			1.8	1/30/17			
			14	7/24/18			
Toluene (µg/L)	MW-7 (bg)	Yes	0.25*	1/14/11	26	0.433	0.113
			0.25*	4/21/11			
			0.25*	7/21/11			
			0.25*	10/31/11			
			0.25*	1/13/12			
			0.25*	4/27/12			
			0.25*	7/26/12			
Ethylbenzene (µg/L)	MW-1	Yes	0.25*	1/14/11	27	0.435	0.112
			0.25*	4/21/11			
			0.25*	7/21/11			
			0.25*	10/31/11			
			0.25*	1/13/12			
			0.25*	4/27/12			
			0.25*	7/26/12			
Ethylbenzene (µg/L)	MW-2	Yes	0.25*	1/14/11	27	0.435	0.112
			0.25*	4/21/11			
			0.25*	7/21/11			
			0.25*	10/31/11			
			0.25*	1/13/12			
			0.25*	4/27/12			
			0.25*	7/26/12			
Ethylbenzene (µg/L)	MW-3	Yes	1*	3/2/10	52	0.399	0.151
Ethylbenzene (µg/L)	MW-4	Yes	1*	3/2/10	52	0.409	0.149
Ethylbenzene (µg/L)	MW-5	Yes	1*	3/2/10	65	0.427	0.138



TABLE 6
OUTLIER ANALYSIS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Constituent Name	Well Name	Outlier	Outlier Value	Date	Number	Mean	Standard Deviation
Ethylbenzene (µg/L)	MW-6	Yes	1*	3/2/10	65	0.427	0.138
Ethylbenzene (µg/L)	MW-7 (bg)	Yes	0.25*	1/14/11	26	0.433	0.113
			0.25*	4/21/11			
			0.25*	7/21/11			
			0.25*	10/31/11			
			0.25*	1/13/12			
			0.25*	4/27/12			
			0.25*	7/26/12			
Xylenes (µg/L)	MW-1	No	NA	NA	27	0.806	0.349
Xylenes (µg/L)	MW-2	No	NA	NA	27	0.806	0.349
Xylenes (µg/L)	MW-3	Yes	2*	3/2/10	52	0.764	0.322
			1.5*	3/4/10			
			1.5*	4/30/10			
			1.5*	7/26/10			
			1.5*	10/13/10			
Xylenes (µg/L)	MW-4	Yes	2*	3/2/10	52	0.793	0.353
			1.5*	3/4/10			
			1.5*	4/30/10			
			1.5*	7/26/10			
			1.5*	8/16/10			
			1.5*	9/17/10			
			1.5*	10/13/10			
Xylenes (µg/L)	MW-5	Yes	2*	3/2/10	65	0.773	0.336
			1.5*	3/4/10			
			1.5*	4/30/10			
			1.5*	7/26/10			
			1.5*	8/16/10			
			1.5*	9/17/10			
			1.5*	10/13/10			
Xylenes (µg/L)	MW-6	Yes	2*	3/2/10	65	0.928	0.978
			1.5*	3/4/10			
			1.5*	4/30/10			
			1.5*	7/26/10			
			1.5*	8/16/10			
			1.5*	10/13/10			
			1.6	3/23/11			
			7.9	4/21/11			
			1.5*	9/17/11			
			2.8	7/24/18			



TABLE 6
OUTLIER ANALYSIS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Constituent Name	Well Name	Outlier	Outlier Value	Date	Number	Mean	Standard Deviation
Xylenes (µg/L)	MW-7 (bg)	No	NA	NA	26	0.817	0.350
Chloride (mg/L)	MW-1	Yes	646 1280	7/21/15 1/30/19	27	323.44	209.85
Chloride (mg/L)	MW-2	Yes	1 1220	7/21/11 1/30/19	27	308.59	199.79
Chloride (mg/L)	MW-3	Yes	719 435 1230	1/27/15 1/29/18 1/30/19	50	292.38	156.55
Chloride (mg/L)	MW-4	Yes	582 421 428 439 1300	1/27/15 7/21/15 1/29/18 7/24/18 1/30/19	50	288.02	161.58
Chloride (mg/L)	MW-5	Yes	589 505 1130 3	1/27/15 7/24/18 1/30/19 7/29/19	63	295.48	131.60
Chloride (mg/L)	MW-6	Yes	5.3 728 60.1 69 526 451 989	12/27/10 1/27/15 10/31/16 10/27/17 1/29/18 7/24/18 1/30/19	63	290.48	130.10
Chloride (mg/L)	MW-7 (bg)	Yes	576 835	1/29/18 1/30/19	26	331.88	124.09
Sulfate (mg/L)	MW-1	Yes	1810 3410	7/21/15 1/30/19	27	913.04	553.52
Sulfate (mg/L)	MW-2	Yes	1,185 670 1,130 545 630 579 1,200 593 1,090	11/25/09 4/30/10 1/14/11 10/18/12 7/29/13 1/31/14 1/30/17 7/24/17 1/29/18	27	882.00	501.26



TABLE 6
OUTLIER ANALYSIS
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Constituent Name	Well Name	Outlier	Outlier Value	Date	Number	Mean	Standard Deviation
Sulfate (mg/L)	MW-3	Yes	338	1/27/15	51	788.69	369.16
			1210	1/29/18			
			3180	1/30/19			
Sulfate (mg/L)	MW-4	Yes	1210	1/13/12	51	812.55	402.10
			458	1/31/14			
			1440	1/27/15			
			1090	7/21/15			
			1100	1/30/17			
			1180	1/29/18			
			3340	1/30/19			
Sulfate (mg/L)	MW-5	Yes	2910	1/30/19	64	782.11	315.39
Sulfate (mg/L)	MW-6	Yes	16.3	12/27/10	64	787.60	365.10
			2310	12/6/11			
			1470	1/29/18			
			2520	1/30/19			
Sulfate (mg/L)	MW-7 (bg)	Yes	1440	1/29/18	26	820.04	288.03
			1900	1/30/19			
TDS (mg/L)	MW-1	No	NA	NA	27	1,806	337.31
TDS (mg/L)	MW-2	No	NA	NA	27	1,790	344.36
TDS (mg/L)	MW-3	Yes	3850	4/30/10	46	1,795	474.86
			11.8	1/27/15			
TDS (mg/L)	MW-4	No	NA	NA	46	1,758	252.26
TDS (mg/L)	MW-5	No	NA	NA	59	1,844	325.98
TDS (mg/L)	MW-6	Yes	6160	10/23/14	59	1,947	648.25
TDS (mg/L)	MW-7 (bg)	Yes	5820	4/30/10	26	2,045	842.98

Notes:

* - value not detected and represented as one half the laboratory reporting limit.

NA - not applicable

µg/L - micrograms per liter

mg/L - milligrams per liter

bg - background

TABLE 7
SEN'S SLOPE ESTIMATOR SUMMARY
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Constituent Name	Well Name	Sen's Slope	Mann-Kendal Statistic	Z-Score	Critical Value	Trend
Benzene (µg/L)	MW-1	0	70	1.90883	2.32634	No
Benzene (µg/L)	MW-2	0	70	1.90883	2.32634	No
Benzene (µg/L)	MW-3	0	211	1.934550	2.32634	No
Benzene (µg/L)	MW-4	0	173	1.581980	2.32634	No
Benzene (µg/L)	MW-5	0	495	3.621000	2.32634	Increasing
Benzene (µg/L)	MW-6	0	350	2.289130	2.32634	No
Benzene (µg/L)	MW-7 (bg)	0	63	1.792030	2.32634	No
Toluene (µg/L)	MW-1	0	54	1.457310	2.32634	No
Toluene (µg/L)	MW-2	0	70	1.908830	2.32634	No
Toluene (µg/L)	MW-3	0	187	1.693450	2.32634	No
Toluene (µg/L)	MW-4	0	148	1.335220	2.32634	No
Toluene (µg/L)	MW-5	0	369	2.496100	2.32634	Increasing
Toluene (µg/L)	MW-6	0	361	2.315490	2.32634	No
Toluene (µg/L)	MW-7 (bg)	0	63	1.79203	2.32634	No
Ethylbenzene (µg/L)	MW-1	0	70	1.90883	2.32634	No
Ethylbenzene (µg/L)	MW-2	0	70	1.90883	2.32634	No
Ethylbenzene (µg/L)	MW-3	0	187	1.69345	2.32634	No
Ethylbenzene (µg/L)	MW-4	0	121	1.103710	2.32634	No
Ethylbenzene (µg/L)	MW-5	0	381	2.623940	2.32634	Increasing
Ethylbenzene (µg/L)	MW-6	0	381	2.623940	2.32634	Increasing
Ethylbenzene (µg/L)	MW-7 (bg)	0	63	1.79203	2.32634	No
Xylenes (µg/L)	MW-1	0	-57	-1.23194	2.32634	No
Xylenes (µg/L)	MW-2	0	-57	-1.23194	2.32634	No
Xylenes (µg/L)	MW-3	0	-198	-1.67799	2.32634	No
Xylenes (µg/L)	MW-4	0	-256	-2.14744	2.32634	No
Xylenes (µg/L)	MW-5	0	-235	-1.40727	2.32634	No
Xylenes (µg/L)	MW-6	0	-280	-1.66590	2.32634	No
Xylenes (µg/L)	MW-7 (bg)	0	-51	-1.15821	2.32634	No



TABLE 7
SEN'S SLOPE ESTIMATOR SUMMARY
HIGH PLAINS DISPOSAL - KERSEY
23360 COUNTY ROAD 54, GREELEY, COLORADO

Constituent Name	Well Name	Sen's Slope	Mann-Kendal Statistic	Z-Score	Critical Value	Trend
Chloride (mg/L)	MW-1	0.0278	97	2.00217	2.32634	No
Chloride (mg/L)	MW-2	0.0299	82	1.68897	2.32634	No
Chloride (mg/L)	MW-3	0.0216	308	2.5687	2.32634	Increasing
Chloride (mg/L)	MW-4	0.0293	426	3.55652	2.32634	Increasing
Chloride (mg/L)	MW-5	0.0175	416	2.46228	2.32634	Increasing
Chloride (mg/L)	MW-6	0.00932	184	1.08557	2.32634	No
Chloride (mg/L)	MW-7 (bg)	0.00945	33	0.705673	2.32634	No
Sulfate (mg/L)	MW-1	0.0531	75	1.54267	2.32634	No
Sulfate (mg/L)	MW-2	0.021	3	0.625407	2.32634	No
Sulfate (mg/L)	MW-3	0.0248	114	0.917901	2.32634	No
Sulfate (mg/L)	MW-4	0.0573	235	1.90072	2.32634	No
Sulfate (mg/L)	MW-5	0.00741	68	0.388212	2.32634	No
Sulfate (mg/L)	MW-6	-0.0267	-198	-1.14138	2.32634	No
Sulfate (mg/L)	MW-7 (bg)	0.0295	29	0.617163	2.32634	No
TDS (mg/L)	MW-1	-0.0626	-43	-0.875951	2.32634	No
TDS (mg/L)	MW-2	-0.0338	-37	-0.751142	2.32634	No
TDS (mg/L)	MW-3	-0.0864	-249	-2.35239	2.32634	Decreasing
TDS (mg/L)	MW-4	-0.0403	-191	-1.80159	2.32634	No
TDS (mg/L)	MW-5	-0.0426	-197	-1.283	2.32634	No
TDS (mg/L)	MW-6	-0.0585	-220	-1.43318	2.32634	No
TDS (mg/L)	MW-7 (bg)	-0.099	-69	-1.49955	2.32634	No

Notes:

µg/L - micrograms per liter

mg/L - milligrams per liter

bg - background





APPENDIX A: PURGE FORMS

WELL DEVELOPMENT/PURGING FORM

Project Name: HPD Kersey

Project Number: 036219007

Well ID: MW-5

Sampler's

Initials: ENT

Purging Method:

Pump

Bailer

Other

[illegible]

Casing Volume = 0.163 (for 2" diameter wells) x (Total Depth of Well from measuring point - Initial Water Depth) = _____ x 3 well volumes = _____
(Use 0.653 for 4" diameter wells or 1.469 for 6" diameter wells or 0.041 for 1" diameter wells)

Page ____ of ____

KER-TR Sampled @ 1000. Gray, odor
KER-VA Sampled @ 1020. Green, odor, sleet, sediment

Page ___ of ___



WELL DEVELOPMENT/PURGING FORM

Project Name: HPD - GW - KERSEY

Project Number: 69036219003

Well ID: MW-1

Developer's

Initials: RT

Purging Method:

Pump

Bailer

Other

Date	Time	Initial Water Depth (ft)	Total Depth (ft)	pH	Temp (C)	S.C. (u-S)	Dissolved Oxygen (mg/L)	Volume Removed (gallons)	Casing Volumes Removed	Comments (Color, Turbidity, Odor, NAPL)
7-29-19		5.01	16.41	5.44	19.83	2911	5.80	1.86	0	CNO
				5.39	16.95	2962	4.00	3.72	1	CNO
				5.49	16.43	2936	5.16	5.32	2	CNO
				5.27	16.00	2938	3.96	5.58	3	CNO
										* Sampled @ 1315. CNO

Casing Volume = 0.163 (for 2" diameter wells) x (Total Depth of Well from measuring point - Initial Water Depth) = _____ x 3 well volumes = _____
(Use 0.653 for 4" diameter wells or 1.469 for 6" diameter wells or 0.041 for 1" diameter wells)



WELL DEVELOPMENT/PURGING FORM

Project Name: HPD-GW-KERSEY

Project Number: 036219003

Well ID: MW-3

Developer's

Initials: RT

Purging Method:

Pump

Bailer

Other

Date	Time	Initial Water Depth (ft)	Total Depth (ft)	pH	Temp (C)	S.C. (u-S)	Dissolved Oxygen (mg/L)	Volume Removed (gallons)	Casing Volumes Removed	Comments (Color, Turbidity, Odor, NAPL)
7-29-19		7.99	18.67	7.35	14.17	3027	6.04	Ø	Ø	CNO
				7.34	14.01	2943	5.18	1.74	1	CNO
				7.32	13.61	2960	4.09	3.48	2	CNO
				7.32	13.62	2938	3.48	5.22	3	CNO
										* Sampled @ 1100. CNO

Casing Volume = 0.163 (for 2" diameter wells) x (Total Depth of Well from measuring point - Initial Water Depth) = ____ x 3 well volumes = ____
(Use 0.653 for 4" diameter wells or 1.469 for 6" diameter wells or 0.041 for 1" diameter wells)



WELL DEVELOPMENT/PURGING FORM

Project Name: HPD-GU-KERSEY

Project Number: 036219003

Well ID: MW-4

Developer's

Initials: RT

Purging Method:

Pump

Bailer

Other

Date	Time	Initial Water Depth (ft)	Total Depth (ft)	pH	Temp (C)	S.C. (u-S)	Dissolved Oxygen (mg/L)	Volume Removed (gallons)	Casing Volumes Removed	Comments (Color, Turbidity, Odor, NAPL)
7-29-19		7.82	18.35	6.67	16.09	3002	6.69	1.72	0	CNO
				6.86	14.00	3021	5.13	3.43	1	CNO
				6.90	13.16	3014	4.44	5.15	2	CNO
				6.98	12.64	3013	3.31		3	CNO
										*Sampled @ 1030. CNO.

Casing Volume = 0.163 (for 2" diameter wells) x (Total Depth of Well from measuring point - Initial Water Depth) = _____ x 3 well volumes = _____
(Use 0.653 for 4" diameter wells or 1.469 for 6" diameter wells or 0.041 for 1" diameter wells)



WELL DEVELOPMENT/PURGING FORM

Project Name: HPD-GW-KELSEY

Project Number: 036219003

Well ID: MW-S

Developer's

Initials: RT

Purging Method:

Pump

Bailer

Other

Date	Time	Initial Water Depth (ft)	Total Depth (ft)	pH	Temp (C)	S.C. (u-S)	Dissolved Oxygen (mg/L)	Volume Removed (gallons)	Casing Volumes Removed	Comments (Color, Turbidity, Odor, NAPL)
7-29-19		8.03	18.04	7.79	13.90	3130	5.10	1.63 _{ex}	0	CNO
				7.77	14.48	2902	4.17	3.26 _{ex}	1	CNO
				7.77	14.43	2862	4.01	3.26	2	CNO
				7.33	13.55	2935	3.09	4.89	3	CNO
										*sampled @ 1130. CNO

Casing Volume = 0.163 (for 2" diameter wells) x (Total Depth of Well from measuring point - Initial Water Depth) = ____ x 3 well volumes = ____
(Use 0.653 for 4" diameter wells or 1.469 for 6" diameter wells or 0.041 for 1" diameter wells)



WELL DEVELOPMENT/PURGING FORM

Project Name: HPD-GU-KERSEY

Project Number: 036219003

Well ID: MW-7

Developer's

Initials: RT

Purging Method:

Pump

Bailer

Other

Date	Time	Initial Water Depth (ft)	Total Depth (ft)	pH	Temp (C)	S.C. (u-S)	Dissolved Oxygen (mg/L)	Volume Removed (gallons)	Casing Volumes Removed	Comments (Color, Turbidity, Odor, NAPL)
7-29-19		4.39	16.85	7.57	12.77	3429	4.63	0	0	Brown, silty, N/S, N/O
				7.51	13.04	3262	3.47	2.03	1	cloudy, N/S, N/O
				7.49	13.16	3226	3.48	4.06	2	SAD
				7.44	13.12	3216	3.21	6.09	3	SAA
										* Sampled @ 1200. cloudy, no skin
										No odor

Casing Volume = 0.163 (for 2" diameter wells) x (Total Depth of Well from measuring point - Initial Water Depth) = _____ x 3 well volumes = _____
(Use 0.653 for 4" diameter wells or 1.469 for 6" diameter wells or 0.041 for 1" diameter wells)



Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

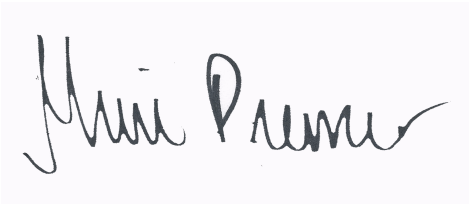
303.277.9310

May 03, 2019

Bryan Paraspolo
LT Environmental, Inc.
4600 West 60th Avenue
Arvada, CO 80003
RE: HPD - Kersey

Enclosed are the results of analyses for samples received by Summit Scientific on 04/29/19 15:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink on a light blue background. The signature is written in a cursive style and reads "Muri Premier".

Muri Premier For Ben Shrewsbury
Laboratory Manager



LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Kersey

Project Number: 036219003

Project Manager: Bryan Paraspolo

Reported:
05/03/19 10:33

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-5	1904379-01	Water	04/29/19 11:00	04/29/19 15:30
MW-6	1904379-02	Water	04/29/19 11:20	04/29/19 15:30
Ambient Blank	1904379-03	Water	04/29/19 11:25	04/29/19 15:30
Rinsate Blank	1904379-04	Water	04/29/19 11:30	04/29/19 15:30
Trip Blank	1904379-05	Water	04/29/19 00:00	04/29/19 15:30

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Summit Scientific

1904379

741 Corporate Circle Suite I ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Page 1 of 1

Client: LT Environmental, Inc.
Address: 4600 W. 60th Ave.
City/State/Zip: Arvada, Colorado 80003
Phone: 303-433-9788 Fax:
Sampler Name: Rachael Torg

Project Manager: Bryan Paraspolo
E-Mail: bparaspolo@ltenv.com
Project Name: HPD Kersey
Project Number: 036219003

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:								Special Instructions			
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	BTX	TDS	Chloride	Sulfate							
MW-S	4-29-19	1100	4	3		1							X	X	X	X						
MW-6	4-29-19	1120	4	3		1							X	X	X	X						
Ambient Blank	4-29-19	1125	2			2							X									
Rinse Blank	4-29-19	1130	2			2							X									
Trip blank	4-29-19	-	2			2							X									
Relinquished by: <u>Rachael T</u> Date/Time: <u>4-29-19</u>				Received by: <u>[Signature]</u> Date/Time: <u>4-29-19 15:30</u>				Turn Around Time (Check) Same Day <input type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 Hours <input type="checkbox"/>												Notes: <u>6.0°C</u> <u>on ice</u>		
Relinquished by: Date/Time:				Received by: Date/Time:				Sample Integrity: Temperature Upon Receipt: <u>6.0°C</u> Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														
Relinquished by: Date/Time:				Received in Lab by: Date/Time:																		

Sample Receipt Checklist

S2 Work Order 1904379

Client: LTE Client Project ID: HPD Kersey

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other Airbill #:

Matrix (check all that apply): Air Soil/Solid ✓ Water Other: (Describe)

Temp (°C) 6.0°C

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	✓			on ice
Were all samples received intact ⁽¹⁾ ?	✓			
Was adequate sample volume provided ⁽¹⁾ ?	✓			
If custody seals are present, are they intact ⁽¹⁾ ?	✓			
Are samples with holding times due within 48 hours sample due within 48 hours present?			✓	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	✓			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	✓			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	✓			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	✓			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		✓		
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	✓			HCL
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.			✓	
If dissolved metals are requested, were samples field filtered?				
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

Eric H
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

4-29-19 15:30
Date/Time



LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Kersey
Project Number: 036219003
Project Manager: Bryan Paraspolo

Reported:
05/03/19 10:33

MW-5
1904379-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/29/19 11:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	1905013	05/01/19	05/02/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/29/19 11:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		110 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		86.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.8 %	21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **04/29/19 11:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sulfate	488	150	mg/L	500	1904453	04/30/19	05/01/19	EPA 300.0	
Chloride	227	30.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **04/29/19 11:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Total Dissolved Solids	1580	10.0	mg/L	1	1905003	05/01/19	05/01/19	SM2540C	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Kersey
Project Number: 036219003
Project Manager: Bryan Paraspolo

Reported:
05/03/19 10:33

MW-6
1904379-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/29/19 11:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1905013	05/01/19	05/02/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/29/19 11:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		114 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		86.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **04/29/19 11:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chloride	233	30.0	mg/L	500	1904453	04/30/19	05/01/19	EPA 300.0	
Sulfate	570	150	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **04/29/19 11:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	1570	10.0	mg/L	1	1905003	05/01/19	05/01/19	SM2540C	

Summit Scientific

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Kersey
Project Number: 036219003
Project Manager: Bryan Paraspolo

Reported:
05/03/19 10:33

Ambient Blank
1904379-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/29/19 11:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1905013	05/01/19	05/02/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/29/19 11:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		88.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Kersey
Project Number: 036219003
Project Manager: Bryan Paraspolo

Reported:
05/03/19 10:33

Rinsate Blank
1904379-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/29/19 11:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1905013	05/01/19	05/02/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/29/19 11:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		88.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Kersey
Project Number: 036219003
Project Manager: Bryan Paraspolo

Reported:
05/03/19 10:33

Trip Blank
1904379-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/29/19 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1905013	05/01/19	05/02/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/29/19 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		86.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Kersey

Project Number: 036219003

Project Manager: Bryan Paraspolo

Reported:
05/03/19 10:33

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 1905013 - EPA 5030 Water MS

Blank (1905013-BLK1)

Prepared: 05/01/19 Analyzed: 05/02/19

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	14.5		"	13.3		109	23-173			
Surrogate: Toluene-d8	11.8		"	13.3		88.1	20-170			
Surrogate: 4-Bromofluorobenzene	13.6		"	13.3		102	21-167			

LCS (1905013-BS1)

Prepared: 05/01/19 Analyzed: 05/02/19

Benzene	31.6	1.0	ug/l	33.3		94.8	70-130			
Toluene	26.4	1.0	"	33.3		79.1	70-130			
Ethylbenzene	27.3	1.0	"	33.3		81.8	70-130			
m,p-Xylene	50.8	2.0	"	66.7		76.3	70-130			
o-Xylene	25.5	1.0	"	33.3		76.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	12.6		"	13.3		94.7	23-173			
Surrogate: Toluene-d8	13.7		"	13.3		103	20-170			
Surrogate: 4-Bromofluorobenzene	13.6		"	13.3		102	21-167			

Matrix Spike (1905013-MS1)

Source: 1904378-02

Prepared: 05/01/19 Analyzed: 05/02/19

Benzene	29.3	1.0	ug/l	33.3	ND	88.0	70-130			
Toluene	29.7	1.0	"	33.3	ND	89.1	70-130			
Ethylbenzene	26.3	1.0	"	33.3	ND	79.0	70-130			
m,p-Xylene	66.5	2.0	"	66.7	ND	99.8	70-130			
o-Xylene	29.9	1.0	"	33.3	ND	89.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	11.7		"	13.3		87.5	23-173			
Surrogate: Toluene-d8	12.7		"	13.3		95.1	20-170			
Surrogate: 4-Bromofluorobenzene	13.6		"	13.3		102	21-167			

Summit Scientific

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Kersey

Project Number: 036219003

Project Manager: Bryan Paraspolo

Reported:
05/03/19 10:33

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 1905013 - EPA 5030 Water MS

Matrix Spike Dup (1905013-MSD1)	Source: 1904378-02			Prepared: 05/01/19 Analyzed: 05/02/19						
Benzene	27.5	1.0	ug/l	33.3	ND	82.6	70-130	6.37	30	
Toluene	26.6	1.0	"	33.3	ND	79.7	70-130	11.1	30	
Ethylbenzene	27.6	1.0	"	33.3	ND	82.7	70-130	4.56	30	
m,p-Xylene	73.7	2.0	"	66.7	ND	111	70-130	10.3	30	
o-Xylene	27.9	1.0	"	33.3	ND	83.7	70-130	6.92	30	
Surrogate: 1,2-Dichloroethane-d4	13.8		"	13.3		103	23-173			
Surrogate: Toluene-d8	12.9		"	13.3		96.8	20-170			
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		99.8	21-167			

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Kersey

Project Number: 036219003

Project Manager: Bryan Paraspolo

Reported:
05/03/19 10:33

Anions by EPA Method 300.0 - Quality Control

Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 1904453 - General Preparation

Blank (1904453-BLK1)

Prepared & Analyzed: 04/30/19

Chloride	ND	0.0600	mg/L
Sulfate	ND	0.300	"

LCS (1904453-BS1)

Prepared & Analyzed: 04/30/19

Sulfate	15.5	0.300	mg/L	15.0	104	90-110
Chloride	3.23	0.0600	"	3.00	108	90-110

Duplicate (1904453-DUP1)

Source: 1904391-01

Prepared & Analyzed: 04/30/19

Sulfate	92.6	0.300	mg/L	71.7	25.4	20	QM-02
Chloride	29.1	0.0600	"	30.6	4.88	20	

Matrix Spike (1904453-MS1)

Source: 1904391-01

Prepared & Analyzed: 04/30/19

Sulfate	103	0.300	mg/L	15.0	71.7	208	80-120	QM-02
Chloride	29.8	0.0600	"	3.00	30.6	NR	80-120	QM-02

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Kersey

Project Number: 036219003

Project Manager: Bryan Paraspolo

Reported:
05/03/19 10:33

Total Dissolved Solids by SM2540C - Quality Control

Summit Scientific

Analyte	Result	Reporting			Spike	Source	%REC		RPD		
		Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes	

Batch 1905003 - General Preparation

Blank (1905003-BLK1)

Prepared & Analyzed: 05/01/19

Total Dissolved Solids ND 10.0 mg/L

Duplicate (1905003-DUP1)

Source: 1904366-01

Prepared & Analyzed: 05/01/19

Total Dissolved Solids 648 10.0 mg/L 649 0.231 20

Summit Scientific

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Kersey

Project Number: 036219003

Project Manager: Bryan Paraspolo

Reported:
05/03/19 10:33

Notes and Definitions

QM-02	The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 06, 2019

Bryan Paraspolo

LT Environmental, Inc.

4600 West 60th Avenue

Arvada, CO 80003

RE: HPD - Groundwater - Kersey

Work Order # 1907361

Enclosed are the results of analyses for samples received by Summit Scientific on 07/30/19 13:15. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink on a light blue background. The signature is written in a cursive style and appears to read "Muri Premier".

Muri Premier For Ben Shrewsbury

Laboratory Manager



LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Groundwater - Kersey

Project Number: 036219003
Project Manager: Bryan Paraspolo

Reported:
08/06/19 13:05

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	1907361-01	Water	07/29/19 13:15	07/30/19 13:15
MW-2	1907361-02	Water	07/29/19 14:00	07/30/19 13:15
MW-3	1907361-03	Water	07/29/19 11:00	07/30/19 13:15
MW-4	1907361-04	Water	07/29/19 10:30	07/30/19 13:15
MW-5	1907361-05	Water	07/29/19 11:30	07/30/19 13:15
MW-6	1907361-06	Water	07/29/19 12:30	07/30/19 13:15
MW-7	1907361-07	Water	07/29/19 12:00	07/30/19 13:15
Ambient Blank	1907361-08	Water	07/29/19 14:20	07/30/19 13:15
Rinsate	1907361-09	Water	07/29/19 14:10	07/30/19 13:15
Trip	1907361-10	Water	07/29/19 00:00	07/30/19 13:15

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S₂

1907361

4653 Table Mountain Drive ♦ Golden, Colorado 80403

303-277-9310 ♦ 303-374-5933 (f)

Page 1 of 1

Client: LT Environmental

Project Manager: Bryan Paraspolo

Address: 4600 West 60th Ave

E-Mail: B.P. BParaspolo@LTENV.com

City/State/Zip: Avada CO 8003

Phone: 303-433-9788

Project Name: HPD - Groundwater - KERSEY

Sampler Name: Rachael Tury

Project Number: ~~036218002~~ 036219003

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested				Special Instructions	
					HCl	HNO ₃	None	Other	Water	Soil	Air-Canister #	Other	BTE X	TDS	CHLORIDE	SULFATE		
1	MW-1	7-29-19	1315	4	X		X		X				X	X	X	X		
2	MW-2		1400	4	X		X		X				X	X	X	X		
3	MW-3		1100	4	X		X		X				X	X	X	X		
4	MW-4		1030	4	X		X		X				X	X	X	X		
5	MW-5		1130	4	X		X		X				X	X	X	X		
6	MW-6		1230	4	X		X		X				X	X	X	X		
7	MW-7		1200	4	X		X		X				X	X	X	X		
8	Ambient Blank		1420	2			X		X				X					
9	Rinsate		1410	2			X		X				X					
10	Trip	↓	NA	2			X		X				X					

Relinquished by:	Date/Time:	Received by:	Date/Time:	Turn Around Time	(Check)	Notes: TEMP BLANK -1.3°
<u>Rachael Tury</u>	<u>7-30-19/13:15</u>	<u>[Signature]</u>	<u>7-30-19 13:15</u>	Same Day	72 hours	
				24 hours	Standard	
				48 hours		
Relinquished by:	Date/Time:	Received by:	Date/Time:	Sample Integrity:		
				Temperature Upon Receipt:	<u>0.0</u>	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Samples Intact:	<u>Yes</u>	No

1907361

Sample Receipt Checklist

S2 Work Order _____

Client: LT EnvironmentalClient Project ID: HPD-Groundwater-KerseyShipped Via: H.D./P.U./FedEx/UPS/USPS/Other Airbill #: _____
☒ ☐ ☐ ☐ ☐
Matrix (check all that apply): ☐ Air ☐ Soil/Solid ☒ Water ☐ Other: _____
(Describe)

Temp (°C)	0.0
-----------	-----

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	On Ice
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	pH
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H ₂ SO ₄ , NaOH, HNO ₃ , ect	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	HCl
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Additional Comments (if any):

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

MP

Custodian Printed Name or Initials

Muri Premer

Signature of Custodian

7/30/19

Date/Time



LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Groundwater - Kersey

Project Number: 036219003
Project Manager: Bryan Paraspolo

Reported:
08/06/19 13:05

MW-1
1907361-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/29/19 13:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	1907434	07/31/19	08/01/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **07/29/19 13:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		85.4 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		93.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		90.8 %	21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **07/29/19 13:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sulfate	670	30.0	mg/L	100	1908046	08/05/19	08/05/19	EPA 300.0	
Chloride	274	6.00	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **07/29/19 13:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Total Dissolved Solids	1440	10.0	mg/L	1	1907432	07/31/19	07/31/19	SM2540C	

Summit Scientific

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Groundwater - Kersey

Project Number: 036219003
Project Manager: Bryan Paraspolo

Reported:
08/06/19 13:05

MW-2
1907361-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/29/19 14:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1907434	07/31/19	08/01/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **07/29/19 14:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		85.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		91.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		91.4 %	21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **07/29/19 14:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Sulfate	692	30.0	mg/L	100	1908046	08/05/19	08/05/19	EPA 300.0	
Chloride	299	6.00	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **07/29/19 14:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	1450	10.0	mg/L	1	1907432	07/31/19	07/31/19	SM2540C	

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Groundwater - Kersey

Project Number: 036219003
Project Manager: Bryan Paraspolo

Reported:
08/06/19 13:05

MW-3
1907361-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/29/19 11:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1907434	07/31/19	08/01/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **07/29/19 11:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		87.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		92.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		91.4 %	21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **07/29/19 11:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Sulfate	620	30.0	mg/L	100	1908046	08/05/19	08/05/19	EPA 300.0	
Chloride	248	6.00	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **07/29/19 11:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	1440	10.0	mg/L	1	1907432	07/31/19	07/31/19	SM2540C	

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Groundwater - Kersey

Project Number: 036219003
Project Manager: Bryan Paraspolo

Reported:
08/06/19 13:05

MW-4
1907361-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/29/19 10:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1907434	07/31/19	08/01/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **07/29/19 10:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		87.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		91.5 %	21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **07/29/19 10:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Sulfate	670	30.0	mg/L	100	1908046	08/05/19	08/05/19	EPA 300.0	
Chloride	276	6.00	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **07/29/19 10:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	1450	10.0	mg/L	1	1907432	07/31/19	07/31/19	SM2540C	

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Groundwater - Kersey

Project Number: 036219003
Project Manager: Bryan Paraspolo

Reported:
08/06/19 13:05

MW-5
1907361-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/29/19 11:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1907434	07/31/19	08/01/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **07/29/19 11:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		87.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		92.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		91.6 %	21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **07/29/19 11:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chloride	ND	6.00	mg/L	100	1908046	08/05/19	08/05/19	EPA 300.0	
Sulfate	319	30.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **07/29/19 11:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	1400	10.0	mg/L	1	1907432	07/31/19	07/31/19	SM2540C	

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Groundwater - Kersey

Project Number: 036219003
Project Manager: Bryan Paraspolo

Reported:
08/06/19 13:05

MW-6
1907361-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/29/19 12:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1907434	07/31/19	08/01/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **07/29/19 12:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		83.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		92.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		93.2 %	21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **07/29/19 12:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Sulfate	647	30.0	mg/L	100	1908046	08/05/19	08/05/19	EPA 300.0	
Chloride	258	6.00	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **07/29/19 12:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	1540	10.0	mg/L	1	1907432	07/31/19	07/31/19	SM2540C	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Groundwater - Kersey

Project Number: 036219003
Project Manager: Bryan Paraspolo

Reported:
08/06/19 13:05

MW-7
1907361-07 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/29/19 12:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1907434	07/31/19	08/01/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **07/29/19 12:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		84.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		93.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.9 %	21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **07/29/19 12:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Sulfate	541	30.0	mg/L	100	1908046	08/05/19	08/05/19	EPA 300.0	
Chloride	210	6.00	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **07/29/19 12:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	1590	10.0	mg/L	1	1907432	07/31/19	07/31/19	SM2540C	

Summit Scientific

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Groundwater - Kersey

Project Number: 036219003

Project Manager: Bryan Paraspolo

Reported:
08/06/19 13:05

Ambient Blank
1907361-08 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/29/19 14:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1907434	07/31/19	08/01/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **07/29/19 14:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		82.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		91.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.6 %	21-167		"	"	"	"	

Summit Scientific

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Groundwater - Kersey
Project Number: 036219003
Project Manager: Bryan Paraspolo

Reported:
08/06/19 13:05

Rinsate
1907361-09 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/29/19 14:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1907434	07/31/19	08/01/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **07/29/19 14:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		82.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		92.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.3 %	21-167		"	"	"	"	

Summit Scientific

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Groundwater - Kersey

Project Number: 036219003

Project Manager: Bryan Paraspolo

Reported:
08/06/19 13:05

Trip
1907361-10 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/29/19 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1907434	07/31/19	08/01/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **07/29/19 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		83.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		93.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		93.1 %	21-167		"	"	"	"	

Summit Scientific

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4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Groundwater - Kersey

Project Number: 036219003
Project Manager: Bryan Paraspolo

Reported:
08/06/19 13:05

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 1907434 - EPA 5030 Water MS

Blank (1907434-BLK1)

Prepared: 07/31/19 Analyzed: 08/01/19

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	11.3		"	13.3		85.1	23-173			
Surrogate: Toluene-d8	12.5		"	13.3		93.8	20-170			
Surrogate: 4-Bromofluorobenzene	12.2		"	13.3		91.5	21-167			

LCS (1907434-BS1)

Prepared: 07/31/19 Analyzed: 08/01/19

Benzene	25.6	1.0	ug/l	33.3		76.9	51-132			
Toluene	28.4	1.0	"	33.3		85.1	51-138			
Ethylbenzene	31.4	1.0	"	33.3		94.1	58-146			
m,p-Xylene	62.8	2.0	"	66.7		94.1	57-144			
o-Xylene	30.2	1.0	"	33.3		90.8	53-146			
Surrogate: 1,2-Dichloroethane-d4	12.1		"	13.3		90.6	23-173			
Surrogate: Toluene-d8	12.6		"	13.3		94.8	20-170			
Surrogate: 4-Bromofluorobenzene	12.7		"	13.3		95.2	21-167			

Matrix Spike (1907434-MS1)

Source: 1907361-01

Prepared: 07/31/19 Analyzed: 08/01/19

Benzene	26.2	1.0	ug/l	33.3	ND	78.7	34-141			
Toluene	28.8	1.0	"	33.3	ND	86.5	27-151			
Ethylbenzene	31.3	1.0	"	33.3	ND	94.0	29-160			
m,p-Xylene	62.2	2.0	"	66.7	ND	93.4	20-166			
o-Xylene	30.1	1.0	"	33.3	ND	90.3	33-159			
Surrogate: 1,2-Dichloroethane-d4	12.4		"	13.3		92.9	23-173			
Surrogate: Toluene-d8	12.8		"	13.3		96.3	20-170			
Surrogate: 4-Bromofluorobenzene	12.6		"	13.3		94.6	21-167			

Summit Scientific

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Groundwater - Kersey

Project Number: 036219003
Project Manager: Bryan Paraspolo

Reported:
08/06/19 13:05

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 1907434 - EPA 5030 Water MS

Matrix Spike Dup (1907434-MSD1)	Source: 1907361-01			Prepared: 07/31/19 Analyzed: 08/01/19						
Benzene	25.6	1.0	ug/l	33.3	ND	76.7	34-141	2.59	30	
Toluene	28.7	1.0	"	33.3	ND	86.1	27-151	0.382	30	
Ethylbenzene	30.9	1.0	"	33.3	ND	92.7	29-160	1.38	30	
m,p-Xylene	61.6	2.0	"	66.7	ND	92.5	20-166	0.969	30	
o-Xylene	29.6	1.0	"	33.3	ND	88.8	33-159	1.67	30	
Surrogate: 1,2-Dichloroethane-d4	12.4		"	13.3		93.3	23-173			
Surrogate: Toluene-d8	12.7		"	13.3		95.3	20-170			
Surrogate: 4-Bromofluorobenzene	12.6		"	13.3		94.4	21-167			

Summit Scientific

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Groundwater - Kersey

Project Number: 036219003
Project Manager: Bryan Paraspolo

Reported:
08/06/19 13:05

Anions by EPA Method 300.0 - Quality Control

Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 1908046 - General Preparation

Blank (1908046-BLK1)

Prepared: 08/05/19 Analyzed: 08/06/19

Chloride	ND	0.0600	mg/L
Sulfate	ND	0.300	"

LCS (1908046-BS1)

Prepared & Analyzed: 08/05/19

Sulfate	14.1	0.300	mg/L	15.0	93.7	90-110
Chloride	2.96	0.0600	"	3.00	98.6	90-110

Duplicate (1908046-DUP1)

Source: 1907361-01

Prepared & Analyzed: 08/05/19

Sulfate	670	30.0	mg/L	670	0.0299	20
Chloride	274	6.00	"	274	0.219	20

Matrix Spike (1908046-MS1)

Source: 1907361-01

Prepared & Analyzed: 08/05/19

Sulfate	1970	30.0	mg/L	1500	670	86.5	80-120
Chloride	561	6.00	"	300	274	95.6	80-120

Summit Scientific

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Groundwater - Kersey

Project Number: 036219003
Project Manager: Bryan Paraspolo

Reported:
08/06/19 13:05

Total Dissolved Solids by SM2540C - Quality Control
Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD	
		Limit	Units		Result	%REC	Limits	RPD	Limit	Notes

Batch 1907432 - General Preparation

Blank (1907432-BLK1)

Prepared & Analyzed: 07/31/19

Total Dissolved Solids ND 10.0 mg/L

Duplicate (1907432-DUP1)

Source: 1907346-01

Prepared & Analyzed: 07/31/19

Total Dissolved Solids 381 10.0 mg/L 381 0.0525 20

Summit Scientific

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: HPD - Groundwater - Kersey

Project Number: 036219003
Project Manager: Bryan Paraspolo

Reported:
08/06/19 13:05

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Rosner's Test for Outliers

Parameter: Benzene

Location: MW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.435185

10 most extreme of 27 measurements

by order of magnitude difference from the mean

1	1/13/2012	MW-1	ND<0.25 U	-0.185185
2	10/31/2011	MW-1	ND<0.25 U	-0.185185
3	7/26/2012	MW-1	ND<0.25 U	-0.185185
4	4/27/2012	MW-1	ND<0.25 U	-0.185185
5	1/14/2011	MW-1	ND<0.25 U	-0.185185
6	7/21/2011	MW-1	ND<0.25 U	-0.185185
7	4/21/2011	MW-1	ND<0.25 U	-0.185185
8	1/30/2019	MW-1	ND<0.5 U	0.0648148
9	7/29/2019	MW-1	ND<0.5 U	0.0648148
10	1/27/2015	MW-1	ND<0.5 U	0.0648148

Iteration i = 9

Mean of 18 measurements = 0.5

Std Dev = 0

$x(i+1) = 0.5$ from measurement 1/27/2015 from location MW-1

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(27, 10, 0.01) = 2.93$

$0 < 2.93$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 19 measurements = 0.5

Std Dev = 0

$x(i+1) = 0.5$ from measurement 7/29/2019 from location MW-1

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(27, 9, 0.01) = 2.962$

$0 < 2.962$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 20 measurements = 0.5

Std Dev = 0

$x(i+1) = 0.5$ from measurement 1/30/2019 from location MW-1

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(27, 8, 0.01) = 2.994$

$0 < 2.994$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 21 measurements = 0.488095

Std Dev = 0.0545545

$x(i+1) = 0.25$ from measurement 4/21/2011 from location MW-1

Rosner Statistic $R = |0.25 - 0.488095|/0.0545545 = 4.36436$

$\Lambda(27, 7, 0.01) = 3.026$

$4.36436 > 3.026$ -- Measurement 4/21/2011 for location MW-1 is an outlier

Iteration i = 5

Mean of 22 measurements = 0.477273

Std Dev = 0.0735612

$x(i+1) = 0.25$ from measurement 7/21/2011 from location MW-1

Rosner Statistic $R = |0.25 - 0.477273|/0.0735612 = 3.08957$

$\text{Lambda}(27, 6, 0.01) = 3.058$

Measurement 7/21/2011 for location MW-1 is an outlier

Iteration i = 4

Mean of 23 measurements = 0.467391

Std Dev = 0.0860876

$x(i+1) = 0.25$ from measurement 1/14/2011 from location MW-1

Rosner Statistic $R = |0.25 - 0.467391|/0.0860876 = 2.52523$

$\text{Lambda}(27, 5, 0.01) = 3.09$

Measurement 1/14/2011 for location MW-1 is an outlier

Iteration i = 3

Mean of 24 measurements = 0.458333

Std Dev = 0.0951734

$x(i+1) = 0.25$ from measurement 4/27/2012 from location MW-1

Rosner Statistic $R = |0.25 - 0.458333|/0.0951734 = 2.18899$

$\text{Lambda}(27, 4, 0.01) = 3.11$

Measurement 4/27/2012 for location MW-1 is an outlier

Iteration i = 2

Mean of 25 measurements = 0.45

Std Dev = 0.102062

$x(i+1) = 0.25$ from measurement 7/26/2012 from location MW-1

Rosner Statistic $R = |0.25 - 0.45|/0.102062 = 1.95959$

$\text{Lambda}(27, 3, 0.01) = 3.14$

Measurement 7/26/2012 for location MW-1 is an outlier

Iteration i = 1

Mean of 26 measurements = 0.442308

Std Dev = 0.107417

$x(i+1) = 0.25$ from measurement 10/31/2011 from location MW-1

Rosner Statistic $R = |0.25 - 0.442308|/0.107417 = 1.79029$

$\text{Lambda}(27, 2, 0.01) = 3.16$

Measurement 10/31/2011 for location MW-1 is an outlier

Iteration i = 0

Mean of 27 measurements = 0.435185

Std Dev = 0.111644

$x(i+1) = 0.25$ from measurement 1/13/2012 from location MW-1

Rosner Statistic $R = |0.25 - 0.435185|/0.111644 = 1.65871$

$\text{Lambda}(27, 1, 0.01) = 3.18$

Measurement 1/13/2012 for location MW-1 is an outlier

Rosner's Test for Outliers

Parameter: Benzene

Location: MW-2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.435185

10 most extreme of 27 measurements

by order of magnitude difference from the mean

1	1/13/2012	MW-2	ND<0.25 U	-0.185185
2	10/31/2011	MW-2	ND<0.25 U	-0.185185
3	7/26/2012	MW-2	ND<0.25 U	-0.185185
4	4/27/2012	MW-2	ND<0.25 U	-0.185185
5	1/14/2011	MW-2	ND<0.25 U	-0.185185
6	7/21/2011	MW-2	ND<0.25 U	-0.185185
7	4/21/2011	MW-2	ND<0.25 U	-0.185185
8	1/30/2019	MW-2	ND<0.5 U	0.0648148
9	7/29/2019	MW-2	ND<0.5 U	0.0648148
10	1/27/2015	MW-2	ND<0.5 U	0.0648148

Iteration i = 9

Mean of 18 measurements = 0.5

Std Dev = 0

$x(i+1)$ = 0.5 from measurement 1/27/2015 from location MW-2

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(27, 10, 0.01) = 2.93$

$0 < 2.93$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 19 measurements = 0.5

Std Dev = 0

$x(i+1)$ = 0.5 from measurement 7/29/2019 from location MW-2

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(27, 9, 0.01) = 2.962$

$0 < 2.962$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 20 measurements = 0.5

Std Dev = 0

$x(i+1)$ = 0.5 from measurement 1/30/2019 from location MW-2

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(27, 8, 0.01) = 2.994$

$0 < 2.994$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 21 measurements = 0.488095

Std Dev = 0.0545545

$x(i+1)$ = 0.25 from measurement 4/21/2011 from location MW-2

Rosner Statistic $R = |0.25 - 0.488095|/0.0545545 = 4.36436$

$\Lambda(27, 7, 0.01) = 3.026$

$4.36436 > 3.026$ -- Measurement 4/21/2011 for location MW-2 is an outlier

Iteration i = 5

Mean of 22 measurements = 0.477273

Std Dev = 0.0735612

$x(i+1) = 0.25$ from measurement 7/21/2011 from location MW-2

Rosner Statistic $R = |0.25 - 0.477273|/0.0735612 = 3.08957$

$\text{Lambda}(27, 6, 0.01) = 3.058$

Measurement 7/21/2011 for location MW-2 is an outlier

Iteration i = 4

Mean of 23 measurements = 0.467391

Std Dev = 0.0860876

$x(i+1) = 0.25$ from measurement 1/14/2011 from location MW-2

Rosner Statistic $R = |0.25 - 0.467391|/0.0860876 = 2.52523$

$\text{Lambda}(27, 5, 0.01) = 3.09$

Measurement 1/14/2011 for location MW-2 is an outlier

Iteration i = 3

Mean of 24 measurements = 0.458333

Std Dev = 0.0951734

$x(i+1) = 0.25$ from measurement 4/27/2012 from location MW-2

Rosner Statistic $R = |0.25 - 0.458333|/0.0951734 = 2.18899$

$\text{Lambda}(27, 4, 0.01) = 3.11$

Measurement 4/27/2012 for location MW-2 is an outlier

Iteration i = 2

Mean of 25 measurements = 0.45

Std Dev = 0.102062

$x(i+1) = 0.25$ from measurement 7/26/2012 from location MW-2

Rosner Statistic $R = |0.25 - 0.45|/0.102062 = 1.95959$

$\text{Lambda}(27, 3, 0.01) = 3.14$

Measurement 7/26/2012 for location MW-2 is an outlier

Iteration i = 1

Mean of 26 measurements = 0.442308

Std Dev = 0.107417

$x(i+1) = 0.25$ from measurement 10/31/2011 from location MW-2

Rosner Statistic $R = |0.25 - 0.442308|/0.107417 = 1.79029$

$\text{Lambda}(27, 2, 0.01) = 3.16$

Measurement 10/31/2011 for location MW-2 is an outlier

Iteration i = 0

Mean of 27 measurements = 0.435185

Std Dev = 0.111644

$x(i+1) = 0.25$ from measurement 1/13/2012 from location MW-2

Rosner Statistic $R = |0.25 - 0.435185|/0.111644 = 1.65871$

$\text{Lambda}(27, 1, 0.01) = 3.18$

Measurement 1/13/2012 for location MW-2 is an outlier

Rosner's Test for Outliers

Parameter: Benzene

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.389423

10 most extreme of 52 measurements

by order of magnitude difference from the mean

1	12/6/2011	MW-3	ND<0.25 U	-0.139423
2	9/17/2010	MW-3	ND<0.25 U	-0.139423
3	8/16/2010	MW-3	ND<0.25 U	-0.139423
4	9/12/2011	MW-3	ND<0.25 U	-0.139423
5	8/8/2011	MW-3	ND<0.25 U	-0.139423
6	7/21/2011	MW-3	ND<0.25 U	-0.139423
7	7/26/2012	MW-3	ND<0.25 U	-0.139423
8	6/15/2012	MW-3	ND<0.25 U	-0.139423
9	5/24/2012	MW-3	ND<0.25 U	-0.139423
10	4/27/2012	MW-3	ND<0.25 U	-0.139423

Iteration i = 9

Mean of 43 measurements = 0.418605

Std Dev = 0.118534

$x(i+1) = 0.25$ from measurement 4/27/2012 from location MW-3

Rosner Statistic $R = |0.25 - 0.418605|/0.118534 = 1.42241$

$\text{Lambda}(52, 10, 0.01) = 3.41$

$1.42241 < 3.41$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 44 measurements = 0.414773

Std Dev = 0.119874

$x(i+1) = 0.25$ from measurement 5/24/2012 from location MW-3

Rosner Statistic $R = |0.25 - 0.414773|/0.119874 = 1.37455$

$\text{Lambda}(52, 9, 0.01) = 3.4212$

$1.37455 < 3.4212$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 45 measurements = 0.411111

Std Dev = 0.121023

$x(i+1) = 0.25$ from measurement 6/15/2012 from location MW-3

Rosner Statistic $R = |0.25 - 0.411111|/0.121023 = 1.33125$

$\text{Lambda}(52, 8, 0.01) = 3.4324$

$1.33125 < 3.4324$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 46 measurements = 0.407609

Std Dev = 0.122005

$x(i+1) = 0.25$ from measurement 7/26/2012 from location MW-3

Rosner Statistic $R = |0.25 - 0.407609|/0.122005 = 1.29182$

$\text{Lambda}(52, 7, 0.01) = 3.4436$

$1.29182 < 3.4436$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 47 measurements = 0.404255

Std Dev = 0.122842

$x(i+1) = 0.25$ from measurement 7/21/2011 from location MW-3

Rosner Statistic $R = |0.25 - 0.404255|/0.122842 = 1.25572$

$\text{Lambda}(52, 6, 0.01) = 3.4548$

$1.25572 < 3.4548$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 48 measurements = 0.401042

Std Dev = 0.123551

$x(i+1) = 0.25$ from measurement 8/8/2011 from location MW-3

Rosner Statistic $R = |0.25 - 0.401042|/0.123551 = 1.2225$

$\text{Lambda}(52, 5, 0.01) = 3.466$

$1.2225 < 3.466$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 49 measurements = 0.397959

Std Dev = 0.124147

$x(i+1) = 0.25$ from measurement 9/12/2011 from location MW-3

Rosner Statistic $R = |0.25 - 0.397959|/0.124147 = 1.19181$

$\text{Lambda}(52, 4, 0.01) = 3.476$

$1.19181 < 3.476$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 50 measurements = 0.395

Std Dev = 0.124642

$x(i+1) = 0.25$ from measurement 8/16/2010 from location MW-3

Rosner Statistic $R = |0.25 - 0.395|/0.124642 = 1.16333$

$\text{Lambda}(52, 3, 0.01) = 3.478$

$1.16333 < 3.478$ -- No outliers detected for $i = 2$

Iteration i = 1

Mean of 51 measurements = 0.392157

Std Dev = 0.125049

$x(i+1) = 0.25$ from measurement 9/17/2010 from location MW-3

Rosner Statistic $R = |0.25 - 0.392157|/0.125049 = 1.13681$

$\text{Lambda}(52, 2, 0.01) = 3.486$

$1.13681 < 3.486$ -- No outliers detected for $i = 1$

Iteration i = 0

Mean of 52 measurements = 0.389423

Std Dev = 0.125377

$x(i+1) = 0.25$ from measurement 12/6/2011 from location MW-3

Rosner Statistic $R = |0.25 - 0.389423|/0.125377 = 1.11204$

$\text{Lambda}(52, 1, 0.01) = 3.496$

$1.11204 < 3.496$ -- No outliers detected for $i = 0$

Rosner's Test for Outliers

Parameter: Benzene

Location: MW-4

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.422115

10 most extreme of 52 measurements

by order of magnitude difference from the mean

1	7/24/2018	MW-4	1.7	1.27788
2	12/6/2011	MW-4	ND<0.25 U	-0.172115
3	11/15/2011	MW-4	ND<0.25 U	-0.172115
4	9/12/2011	MW-4	ND<0.25 U	-0.172115
5	8/8/2011	MW-4	ND<0.25 U	-0.172115
6	7/21/2011	MW-4	ND<0.25 U	-0.172115
7	7/26/2012	MW-4	ND<0.25 U	-0.172115
8	6/15/2012	MW-4	ND<0.25 U	-0.172115
9	5/24/2012	MW-4	ND<0.25 U	-0.172115
10	4/27/2012	MW-4	ND<0.25 U	-0.172115

Iteration i = 9

Mean of 43 measurements = 0.424419

Std Dev = 0.116175

$x(i+1) = 0.25$ from measurement 4/27/2012 from location MW-4

Rosner Statistic $R = |0.25 - 0.424419|/0.116175 = 1.50134$

$\Lambda(52, 10, 0.01) = 3.41$

$1.50134 < 3.41$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 44 measurements = 0.420455

Std Dev = 0.117789

$x(i+1) = 0.25$ from measurement 5/24/2012 from location MW-4

Rosner Statistic $R = |0.25 - 0.420455|/0.117789 = 1.44712$

$\Lambda(52, 9, 0.01) = 3.4212$

$1.44712 < 3.4212$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 45 measurements = 0.416667

Std Dev = 0.119183

$x(i+1) = 0.25$ from measurement 6/15/2012 from location MW-4

Rosner Statistic $R = |0.25 - 0.416667|/0.119183 = 1.39841$

$\Lambda(52, 8, 0.01) = 3.4324$

$1.39841 < 3.4324$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 46 measurements = 0.413043

Std Dev = 0.120386

$x(i+1) = 0.25$ from measurement 7/26/2012 from location MW-4

Rosner Statistic $R = |0.25 - 0.413043|/0.120386 = 1.35434$

$\Lambda(52, 7, 0.01) = 3.4436$

$1.35434 < 3.4436$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 47 measurements = 0.409574

Std Dev = 0.121422

$x(i+1) = 0.25$ from measurement 7/21/2011 from location MW-4

Rosner Statistic $R = |0.25 - 0.409574|/0.121422 = 1.31421$

$\text{Lambda}(52, 6, 0.01) = 3.4548$

$1.31421 < 3.4548$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 48 measurements = 0.40625

Std Dev = 0.122312

$x(i+1) = 0.25$ from measurement 8/8/2011 from location MW-4

Rosner Statistic $R = |0.25 - 0.40625|/0.122312 = 1.27748$

$\text{Lambda}(52, 5, 0.01) = 3.466$

$1.27748 < 3.466$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 49 measurements = 0.403061

Std Dev = 0.123072

$x(i+1) = 0.25$ from measurement 9/12/2011 from location MW-4

Rosner Statistic $R = |0.25 - 0.403061|/0.123072 = 1.24367$

$\text{Lambda}(52, 4, 0.01) = 3.476$

$1.24367 < 3.476$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 50 measurements = 0.4

Std Dev = 0.123718

$x(i+1) = 0.25$ from measurement 11/15/2011 from location MW-4

Rosner Statistic $R = |0.25 - 0.4|/0.123718 = 1.21244$

$\text{Lambda}(52, 3, 0.01) = 3.478$

$1.21244 < 3.478$ -- No outliers detected for $i = 2$

Iteration i = 1

Mean of 51 measurements = 0.397059

Std Dev = 0.124263

$x(i+1) = 0.25$ from measurement 12/6/2011 from location MW-4

Rosner Statistic $R = |0.25 - 0.397059|/0.124263 = 1.18345$

$\text{Lambda}(52, 2, 0.01) = 3.486$

$1.18345 < 3.486$ -- No outliers detected for $i = 1$

Iteration i = 0

Mean of 52 measurements = 0.422115

Std Dev = 0.218599

$x(i+1) = 1.7$ from measurement 7/24/2018 from location MW-4

Rosner Statistic $R = |1.7 - 0.422115|/0.218599 = 5.84579$

$\text{Lambda}(52, 1, 0.01) = 3.496$

$5.84579 > 3.496$ -- Measurement 7/24/2018 for location MW-4 is an outlier

Rosner's Test for Outliers

Parameter: Benzene

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.451538

10 most extreme of 65 measurements

by order of magnitude difference from the mean

1	1/30/2019	MW-5	1.9	1.44846
2	7/24/2018	MW-5	1.2	0.748462
3	10/31/2011	MW-5	ND<0.25 U	-0.201538
4	8/8/2011	MW-5	ND<0.25 U	-0.201538
5	11/15/2011	MW-5	ND<0.25 U	-0.201538
6	6/9/2011	MW-5	ND<0.25 U	-0.201538
7	5/16/2011	MW-5	ND<0.25 U	-0.201538
8	4/21/2011	MW-5	ND<0.25 U	-0.201538
9	3/23/2011	MW-5	ND<0.25 U	-0.201538
10	2/11/2011	MW-5	ND<0.25 U	-0.201538

Iteration i = 9

Mean of 56 measurements = 0.4375

Std Dev = 0.109233

$x(i+1) = 0.25$ from measurement 2/11/2011 from location MW-5

Rosner Statistic $R = |0.25 - 0.4375|/0.109233 = 1.71652$

$\text{Lambda}(65, 10, 0.01) = 3.53$

$1.71652 < 3.53$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 57 measurements = 0.434211

Std Dev = 0.111065

$x(i+1) = 0.25$ from measurement 3/23/2011 from location MW-5

Rosner Statistic $R = |0.25 - 0.434211|/0.111065 = 1.65858$

$\text{Lambda}(65, 9, 0.01) = 3.537$

$1.65858 < 3.537$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 58 measurements = 0.431034

Std Dev = 0.112713

$x(i+1) = 0.25$ from measurement 4/21/2011 from location MW-5

Rosner Statistic $R = |0.25 - 0.431034|/0.112713 = 1.60616$

$\text{Lambda}(65, 8, 0.01) = 3.544$

$1.60616 < 3.544$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 59 measurements = 0.427966

Std Dev = 0.114196

$x(i+1) = 0.25$ from measurement 5/16/2011 from location MW-5

Rosner Statistic $R = |0.25 - 0.427966|/0.114196 = 1.55843$

$\text{Lambda}(65, 7, 0.01) = 3.551$

$1.55843 < 3.551$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 60 measurements = 0.425

Std Dev = 0.115531

$x(i+1)$ = 0.25 from measurement 6/9/2011 from location MW-5

Rosner Statistic $R = |0.25 - 0.425|/0.115531 = 1.51474$

$\text{Lambda}(65, 6, 0.01) = 3.558$

$1.51474 < 3.558$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 61 measurements = 0.422131

Std Dev = 0.116735

$x(i+1)$ = 0.25 from measurement 11/15/2011 from location MW-5

Rosner Statistic $R = |0.25 - 0.422131|/0.116735 = 1.47455$

$\text{Lambda}(65, 5, 0.01) = 3.565$

$1.47455 < 3.565$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 62 measurements = 0.419355

Std Dev = 0.11782

$x(i+1)$ = 0.25 from measurement 8/8/2011 from location MW-5

Rosner Statistic $R = |0.25 - 0.419355|/0.11782 = 1.4374$

$\text{Lambda}(65, 4, 0.01) = 3.57$

$1.4374 < 3.57$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 63 measurements = 0.416667

Std Dev = 0.118798

$x(i+1)$ = 0.25 from measurement 10/31/2011 from location MW-5

Rosner Statistic $R = |0.25 - 0.416667|/0.118798 = 1.40294$

$\text{Lambda}(65, 3, 0.01) = 3.58$

$1.40294 < 3.58$ -- No outliers detected for $i = 2$

Iteration i = 1

Mean of 64 measurements = 0.428906

Std Dev = 0.153221

$x(i+1)$ = 1.2 from measurement 7/24/2018 from location MW-5

Rosner Statistic $R = |1.2 - 0.428906|/0.153221 = 5.03257$

$\text{Lambda}(65, 2, 0.01) = 3.585$

$5.03257 > 3.585$ -- Measurement 7/24/2018 for location MW-5 is an outlier

Iteration i = 0

Mean of 65 measurements = 0.451538

Std Dev = 0.237495

$x(i+1)$ = 1.9 from measurement 1/30/2019 from location MW-5

Rosner Statistic $R = |1.9 - 0.451538|/0.237495 = 6.09892$

$\text{Lambda}(65, 1, 0.01) = 3.59$

Measurement 1/30/2019 for location MW-5 is an outlier

Rosner's Test for Outliers

Parameter: Benzene

Location: MW-6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.839231

10 most extreme of 65 measurements

by order of magnitude difference from the mean

1	7/24/2018	MW-6	15	14.1608
2	1/27/2016	MW-6	3.9	3.06077
3	2/11/2011	MW-6	3.5	2.66077
4	1/14/2011	MW-6	2	1.16077
5	10/27/2017	MW-6	1.9	1.06077
6	1/30/2017	MW-6	1.8	0.960769
7	11/15/2011	MW-6	ND<0.25 U	-0.589231
8	9/12/2011	MW-6	ND<0.25 U	-0.589231
9	3/23/2011	MW-6	ND<0.25 U	-0.589231
10	6/9/2011	MW-6	ND<0.25 U	-0.589231

Iteration i = 9

Mean of 56 measurements = 0.458929

Std Dev = 0.166271

$x(i+1) = 0.25$ from measurement 6/9/2011 from location MW-6

Rosner Statistic $R = |0.25 - 0.458929|/0.166271 = 1.25655$

$\text{Lambda}(65, 10, 0.01) = 3.53$

$1.25655 < 3.53$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 57 measurements = 0.455263

Std Dev = 0.167088

$x(i+1) = 0.25$ from measurement 3/23/2011 from location MW-6

Rosner Statistic $R = |0.25 - 0.455263|/0.167088 = 1.22848$

$\text{Lambda}(65, 9, 0.01) = 3.537$

$1.22848 < 3.537$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 58 measurements = 0.451724

Std Dev = 0.167794

$x(i+1) = 0.25$ from measurement 9/12/2011 from location MW-6

Rosner Statistic $R = |0.25 - 0.451724|/0.167794 = 1.20221$

$\text{Lambda}(65, 8, 0.01) = 3.544$

$1.20221 < 3.544$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 59 measurements = 0.448305

Std Dev = 0.168402

$x(i+1) = 0.25$ from measurement 11/15/2011 from location MW-6

Rosner Statistic $R = |0.25 - 0.448305|/0.168402 = 1.17757$

$\text{Lambda}(65, 7, 0.01) = 3.551$

$1.17757 < 3.551$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 60 measurements = 0.470833

Std Dev = 0.241516

$x(i+1) = 1.8$ from measurement 1/30/2017 from location MW-6

Rosner Statistic $R = |1.8 - 0.470833|/0.241516 = 5.50344$

$\text{Lambda}(65, 6, 0.01) = 3.558$

5.50344 > 3.558 -- Measurement 1/30/2017 for location MW-6 is an outlier

Iteration i = 4

Mean of 61 measurements = 0.494262

Std Dev = 0.301399

$x(i+1) = 1.9$ from measurement 10/27/2017 from location MW-6

Rosner Statistic $R = |1.9 - 0.494262|/0.301399 = 4.66404$

$\text{Lambda}(65, 5, 0.01) = 3.565$

Measurement 10/27/2017 for location MW-6 is an outlier

Iteration i = 3

Mean of 62 measurements = 0.518548

Std Dev = 0.354853

$x(i+1) = 2$ from measurement 1/14/2011 from location MW-6

Rosner Statistic $R = |2 - 0.518548|/0.354853 = 4.17483$

$\text{Lambda}(65, 4, 0.01) = 3.57$

Measurement 1/14/2011 for location MW-6 is an outlier

Iteration i = 2

Mean of 63 measurements = 0.565873

Std Dev = 0.514768

$x(i+1) = 3.5$ from measurement 2/11/2011 from location MW-6

Rosner Statistic $R = |3.5 - 0.565873|/0.514768 = 5.6999$

$\text{Lambda}(65, 3, 0.01) = 3.58$

Measurement 2/11/2011 for location MW-6 is an outlier

Iteration i = 1

Mean of 64 measurements = 0.617969

Std Dev = 0.659146

$x(i+1) = 3.9$ from measurement 1/27/2016 from location MW-6

Rosner Statistic $R = |3.9 - 0.617969|/0.659146 = 4.97922$

$\text{Lambda}(65, 2, 0.01) = 3.585$

Measurement 1/27/2016 for location MW-6 is an outlier

Iteration i = 0

Mean of 65 measurements = 0.839231

Std Dev = 1.89997

$x(i+1) = 15$ from measurement 7/24/2018 from location MW-6

Rosner Statistic $R = |15 - 0.839231|/1.89997 = 7.45316$

$\text{Lambda}(65, 1, 0.01) = 3.59$

Measurement 7/24/2018 for location MW-6 is an outlier

Rosner's Test for Outliers

Parameter: Benzene

Location: MW-7

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.432692

10 most extreme of 26 measurements

by order of magnitude difference from the mean

1	10/31/2011	MW-7	ND<0.25 U	-0.182692
2	7/26/2012	MW-7	ND<0.25 U	-0.182692
3	4/27/2012	MW-7	ND<0.25 U	-0.182692
4	1/13/2012	MW-7	ND<0.25 U	-0.182692
5	7/21/2011	MW-7	ND<0.25 U	-0.182692
6	4/21/2011	MW-7	ND<0.25 U	-0.182692
7	1/14/2011	MW-7	ND<0.25 U	-0.182692
8	7/29/2019	MW-7	ND<0.5 U	0.0673077
9	1/27/2015	MW-7	ND<0.5 U	0.0673077
10	7/17/2014	MW-7	ND<0.5 U	0.0673077

Iteration i = 9

Mean of 17 measurements = 0.5

Std Dev = 0

$x(i+1)$ = 0.5 from measurement 7/17/2014 from location MW-7

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(26, 10, 0.01) = 2.89$

$0 < 2.89$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 18 measurements = 0.5

Std Dev = 0

$x(i+1)$ = 0.5 from measurement 1/27/2015 from location MW-7

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(26, 9, 0.01) = 2.924$

$0 < 2.924$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 19 measurements = 0.5

Std Dev = 0

$x(i+1)$ = 0.5 from measurement 7/29/2019 from location MW-7

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(26, 8, 0.01) = 2.958$

$0 < 2.958$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 20 measurements = 0.4875

Std Dev = 0.0559017

$x(i+1)$ = 0.25 from measurement 1/14/2011 from location MW-7

Rosner Statistic $R = |0.25 - 0.4875|/0.0559017 = 4.24853$

$\Lambda(26, 7, 0.01) = 2.992$

$4.24853 > 2.992$ -- Measurement 1/14/2011 for location MW-7 is an outlier

Iteration i = 5

Mean of 21 measurements = 0.47619

Std Dev = 0.0751982

$x(i+1) = 0.25$ from measurement 4/21/2011 from location MW-7

Rosner Statistic $R = |0.25 - 0.47619|/0.0751982 = 3.00793$

$\text{Lambda}(26, 6, 0.01) = 3.026$

Measurement 4/21/2011 for location MW-7 is an outlier

Iteration i = 4

Mean of 22 measurements = 0.465909

Std Dev = 0.0878125

$x(i+1) = 0.25$ from measurement 7/21/2011 from location MW-7

Rosner Statistic $R = |0.25 - 0.465909|/0.0878125 = 2.45875$

$\text{Lambda}(26, 5, 0.01) = 3.06$

Measurement 7/21/2011 for location MW-7 is an outlier

Iteration i = 3

Mean of 23 measurements = 0.456522

Std Dev = 0.0968883

$x(i+1) = 0.25$ from measurement 1/13/2012 from location MW-7

Rosner Statistic $R = |0.25 - 0.456522|/0.0968883 = 2.13154$

$\text{Lambda}(26, 4, 0.01) = 3.09$

Measurement 1/13/2012 for location MW-7 is an outlier

Iteration i = 2

Mean of 24 measurements = 0.447917

Std Dev = 0.103713

$x(i+1) = 0.25$ from measurement 4/27/2012 from location MW-7

Rosner Statistic $R = |0.25 - 0.447917|/0.103713 = 1.90832$

$\text{Lambda}(26, 3, 0.01) = 3.11$

Measurement 4/27/2012 for location MW-7 is an outlier

Iteration i = 1

Mean of 25 measurements = 0.44

Std Dev = 0.108972

$x(i+1) = 0.25$ from measurement 7/26/2012 from location MW-7

Rosner Statistic $R = |0.25 - 0.44|/0.108972 = 1.74356$

$\text{Lambda}(26, 2, 0.01) = 3.14$

Measurement 7/26/2012 for location MW-7 is an outlier

Iteration i = 0

Mean of 26 measurements = 0.432692

Std Dev = 0.113086

$x(i+1) = 0.25$ from measurement 10/31/2011 from location MW-7

Rosner Statistic $R = |0.25 - 0.432692|/0.113086 = 1.61552$

$\text{Lambda}(26, 1, 0.01) = 3.16$

Measurement 10/31/2011 for location MW-7 is an outlier

Rosner's Test for Outliers

Parameter: Toluene

Location: MW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.446667

10 most extreme of 27 measurements

by order of magnitude difference from the mean

1	1/13/2012	MW-1	ND<0.25 U	-0.196667
2	10/31/2011	MW-1	ND<0.25 U	-0.196667
3	7/26/2012	MW-1	ND<0.25 U	-0.196667
4	4/21/2011	MW-1	ND<0.25 U	-0.196667
5	1/14/2011	MW-1	ND<0.25 U	-0.196667
6	7/21/2011	MW-1	ND<0.25 U	-0.196667
7	4/27/2012	MW-1	0.56	0.113333
8	1/30/2019	MW-1	ND<0.5 U	0.0533333
9	7/29/2019	MW-1	ND<0.5 U	0.0533333
10	1/27/2015	MW-1	ND<0.5 U	0.0533333

Iteration i = 9

Mean of 18 measurements = 0.5

Std Dev = 0

$x(i+1)$ = 0.5 from measurement 1/27/2015 from location MW-1

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(27, 10, 0.01) = 2.93$

$0 < 2.93$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 19 measurements = 0.5

Std Dev = 0

$x(i+1)$ = 0.5 from measurement 7/29/2019 from location MW-1

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(27, 9, 0.01) = 2.962$

$0 < 2.962$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 20 measurements = 0.5

Std Dev = 0

$x(i+1)$ = 0.5 from measurement 1/30/2019 from location MW-1

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(27, 8, 0.01) = 2.994$

$0 < 2.994$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 21 measurements = 0.502857

Std Dev = 0.0130931

$x(i+1)$ = 0.56 from measurement 4/27/2012 from location MW-1

Rosner Statistic $R = |0.56 - 0.502857|/0.0130931 = 4.36436$

$\Lambda(27, 7, 0.01) = 3.026$

$4.36436 > 3.026$ -- Measurement 4/27/2012 for location MW-1 is an outlier

Iteration i = 5

Mean of 22 measurements = 0.491364

Std Dev = 0.0554029

$x(i+1) = 0.25$ from measurement 7/21/2011 from location MW-1

Rosner Statistic $R = |0.25 - 0.491364|/0.0554029 = 4.35652$

$\text{Lambda}(27, 6, 0.01) = 3.058$

Measurement 7/21/2011 for location MW-1 is an outlier

Iteration i = 4

Mean of 23 measurements = 0.48087

Std Dev = 0.0739111

$x(i+1) = 0.25$ from measurement 1/14/2011 from location MW-1

Rosner Statistic $R = |0.25 - 0.48087|/0.0739111 = 3.12361$

$\text{Lambda}(27, 5, 0.01) = 3.09$

Measurement 1/14/2011 for location MW-1 is an outlier

Iteration i = 3

Mean of 24 measurements = 0.47125

Std Dev = 0.0862913

$x(i+1) = 0.25$ from measurement 4/21/2011 from location MW-1

Rosner Statistic $R = |0.25 - 0.47125|/0.0862913 = 2.56399$

$\text{Lambda}(27, 4, 0.01) = 3.11$

Measurement 4/21/2011 for location MW-1 is an outlier

Iteration i = 2

Mean of 25 measurements = 0.4624

Std Dev = 0.0953625

$x(i+1) = 0.25$ from measurement 7/26/2012 from location MW-1

Rosner Statistic $R = |0.25 - 0.4624|/0.0953625 = 2.22729$

$\text{Lambda}(27, 3, 0.01) = 3.14$

Measurement 7/26/2012 for location MW-1 is an outlier

Iteration i = 1

Mean of 26 measurements = 0.454231

Std Dev = 0.1023

$x(i+1) = 0.25$ from measurement 10/31/2011 from location MW-1

Rosner Statistic $R = |0.25 - 0.454231|/0.1023 = 1.99638$

$\text{Lambda}(27, 2, 0.01) = 3.16$

Measurement 10/31/2011 for location MW-1 is an outlier

Iteration i = 0

Mean of 27 measurements = 0.446667

Std Dev = 0.107739

$x(i+1) = 0.25$ from measurement 1/13/2012 from location MW-1

Rosner Statistic $R = |0.25 - 0.446667|/0.107739 = 1.8254$

$\text{Lambda}(27, 1, 0.01) = 3.18$

Measurement 1/13/2012 for location MW-1 is an outlier

Rosner's Test for Outliers

Parameter: Toluene

Location: MW-2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.435185

10 most extreme of 27 measurements

by order of magnitude difference from the mean

1	1/13/2012	MW-2	ND<0.25 U	-0.185185
2	10/31/2011	MW-2	ND<0.25 U	-0.185185
3	7/26/2012	MW-2	ND<0.25 U	-0.185185
4	4/27/2012	MW-2	ND<0.25 U	-0.185185
5	1/14/2011	MW-2	ND<0.25 U	-0.185185
6	7/21/2011	MW-2	ND<0.25 U	-0.185185
7	4/21/2011	MW-2	ND<0.25 U	-0.185185
8	1/30/2019	MW-2	ND<0.5 U	0.0648148
9	7/29/2019	MW-2	ND<0.5 U	0.0648148
10	1/27/2015	MW-2	ND<0.5 U	0.0648148

Iteration i = 9

Mean of 18 measurements = 0.5

Std Dev = 0

$x(i+1)$ = 0.5 from measurement 1/27/2015 from location MW-2

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(27, 10, 0.01) = 2.93$

$0 < 2.93$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 19 measurements = 0.5

Std Dev = 0

$x(i+1)$ = 0.5 from measurement 7/29/2019 from location MW-2

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(27, 9, 0.01) = 2.962$

$0 < 2.962$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 20 measurements = 0.5

Std Dev = 0

$x(i+1)$ = 0.5 from measurement 1/30/2019 from location MW-2

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(27, 8, 0.01) = 2.994$

$0 < 2.994$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 21 measurements = 0.488095

Std Dev = 0.0545545

$x(i+1)$ = 0.25 from measurement 4/21/2011 from location MW-2

Rosner Statistic $R = |0.25 - 0.488095|/0.0545545 = 4.36436$

$\Lambda(27, 7, 0.01) = 3.026$

$4.36436 > 3.026$ -- Measurement 4/21/2011 for location MW-2 is an outlier

Iteration i = 5

Mean of 22 measurements = 0.477273

Std Dev = 0.0735612

$x(i+1) = 0.25$ from measurement 7/21/2011 from location MW-2

Rosner Statistic $R = |0.25 - 0.477273|/0.0735612 = 3.08957$

$\text{Lambda}(27, 6, 0.01) = 3.058$

Measurement 7/21/2011 for location MW-2 is an outlier

Iteration i = 4

Mean of 23 measurements = 0.467391

Std Dev = 0.0860876

$x(i+1) = 0.25$ from measurement 1/14/2011 from location MW-2

Rosner Statistic $R = |0.25 - 0.467391|/0.0860876 = 2.52523$

$\text{Lambda}(27, 5, 0.01) = 3.09$

Measurement 1/14/2011 for location MW-2 is an outlier

Iteration i = 3

Mean of 24 measurements = 0.458333

Std Dev = 0.0951734

$x(i+1) = 0.25$ from measurement 4/27/2012 from location MW-2

Rosner Statistic $R = |0.25 - 0.458333|/0.0951734 = 2.18899$

$\text{Lambda}(27, 4, 0.01) = 3.11$

Measurement 4/27/2012 for location MW-2 is an outlier

Iteration i = 2

Mean of 25 measurements = 0.45

Std Dev = 0.102062

$x(i+1) = 0.25$ from measurement 7/26/2012 from location MW-2

Rosner Statistic $R = |0.25 - 0.45|/0.102062 = 1.95959$

$\text{Lambda}(27, 3, 0.01) = 3.14$

Measurement 7/26/2012 for location MW-2 is an outlier

Iteration i = 1

Mean of 26 measurements = 0.442308

Std Dev = 0.107417

$x(i+1) = 0.25$ from measurement 10/31/2011 from location MW-2

Rosner Statistic $R = |0.25 - 0.442308|/0.107417 = 1.79029$

$\text{Lambda}(27, 2, 0.01) = 3.16$

Measurement 10/31/2011 for location MW-2 is an outlier

Iteration i = 0

Mean of 27 measurements = 0.435185

Std Dev = 0.111644

$x(i+1) = 0.25$ from measurement 1/13/2012 from location MW-2

Rosner Statistic $R = |0.25 - 0.435185|/0.111644 = 1.65871$

$\text{Lambda}(27, 1, 0.01) = 3.18$

Measurement 1/13/2012 for location MW-2 is an outlier

Rosner's Test for Outliers

Parameter: Toluene

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.399038

10 most extreme of 52 measurements

by order of magnitude difference from the mean

1	3/2/2010	MW-3	ND<1 U	0.600962
2	12/6/2011	MW-3	ND<0.25 U	-0.149038
3	8/16/2010	MW-3	ND<0.25 U	-0.149038
4	9/12/2011	MW-3	ND<0.25 U	-0.149038
5	8/8/2011	MW-3	ND<0.25 U	-0.149038
6	9/17/2010	MW-3	ND<0.25 U	-0.149038
7	7/26/2012	MW-3	ND<0.25 U	-0.149038
8	6/15/2012	MW-3	ND<0.25 U	-0.149038
9	5/24/2012	MW-3	ND<0.25 U	-0.149038
10	7/21/2011	MW-3	ND<0.25 U	-0.149038

Iteration i = 9

Mean of 43 measurements = 0.412791

Std Dev = 0.120561

$x(i+1)$ = 0.25 from measurement 7/21/2011 from location MW-3

Rosner Statistic $R = |0.25 - 0.412791|/0.120561 = 1.35028$

$\Lambda(52, 10, 0.01) = 3.41$

$1.35028 < 3.41$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 44 measurements = 0.409091

Std Dev = 0.121652

$x(i+1)$ = 0.25 from measurement 5/24/2012 from location MW-3

Rosner Statistic $R = |0.25 - 0.409091|/0.121652 = 1.30776$

$\Lambda(52, 9, 0.01) = 3.4212$

$1.30776 < 3.4212$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 45 measurements = 0.405556

Std Dev = 0.122578

$x(i+1)$ = 0.25 from measurement 6/15/2012 from location MW-3

Rosner Statistic $R = |0.25 - 0.405556|/0.122578 = 1.26904$

$\Lambda(52, 8, 0.01) = 3.4324$

$1.26904 < 3.4324$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 46 measurements = 0.402174

Std Dev = 0.123359

$x(i+1)$ = 0.25 from measurement 7/26/2012 from location MW-3

Rosner Statistic $R = |0.25 - 0.402174|/0.123359 = 1.23359$

$\Lambda(52, 7, 0.01) = 3.4436$

$1.23359 < 3.4436$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 47 measurements = 0.398936

Std Dev = 0.124013

$x(i+1) = 0.25$ from measurement 9/17/2010 from location MW-3

Rosner Statistic $R = |0.25 - 0.398936|/0.124013 = 1.20097$

$\text{Lambda}(52, 6, 0.01) = 3.4548$

$1.20097 < 3.4548$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 48 measurements = 0.395833

Std Dev = 0.124556

$x(i+1) = 0.25$ from measurement 8/8/2011 from location MW-3

Rosner Statistic $R = |0.25 - 0.395833|/0.124556 = 1.17083$

$\text{Lambda}(52, 5, 0.01) = 3.466$

$1.17083 < 3.466$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 49 measurements = 0.392857

Std Dev = 0.125

$x(i+1) = 0.25$ from measurement 9/12/2011 from location MW-3

Rosner Statistic $R = |0.25 - 0.392857|/0.125 = 1.14286$

$\text{Lambda}(52, 4, 0.01) = 3.476$

$1.14286 < 3.476$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 50 measurements = 0.39

Std Dev = 0.125357

$x(i+1) = 0.25$ from measurement 8/16/2010 from location MW-3

Rosner Statistic $R = |0.25 - 0.39|/0.125357 = 1.11681$

$\text{Lambda}(52, 3, 0.01) = 3.478$

$1.11681 < 3.478$ -- No outliers detected for $i = 2$

Iteration i = 1

Mean of 51 measurements = 0.387255

Std Dev = 0.125636

$x(i+1) = 0.25$ from measurement 12/6/2011 from location MW-3

Rosner Statistic $R = |0.25 - 0.387255|/0.125636 = 1.09248$

$\text{Lambda}(52, 2, 0.01) = 3.486$

$1.09248 < 3.486$ -- No outliers detected for $i = 1$

Iteration i = 0

Mean of 52 measurements = 0.399038

Std Dev = 0.150649

$x(i+1) = 1$ from measurement 3/2/2010 from location MW-3

Rosner Statistic $R = |1 - 0.399038|/0.150649 = 3.98915$

$\text{Lambda}(52, 1, 0.01) = 3.496$

$3.98915 > 3.496$ -- Measurement 3/2/2010 for location MW-3 is an outlier

Rosner's Test for Outliers

Parameter: Toluene

Location: MW-4

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.427885

10 most extreme of 52 measurements

by order of magnitude difference from the mean

1	7/24/2018	MW-4	1.5	1.07212
2	3/2/2010	MW-4	ND<1 U	0.572115
3	12/6/2011	MW-4	ND<0.25 U	-0.177885
4	9/12/2011	MW-4	ND<0.25 U	-0.177885
5	8/8/2011	MW-4	ND<0.25 U	-0.177885
6	11/15/2011	MW-4	ND<0.25 U	-0.177885
7	7/26/2012	MW-4	ND<0.25 U	-0.177885
8	6/15/2012	MW-4	ND<0.25 U	-0.177885
9	5/24/2012	MW-4	ND<0.25 U	-0.177885
10	7/21/2011	MW-4	ND<0.25 U	-0.177885

Iteration i = 9

Mean of 43 measurements = 0.418605

Std Dev = 0.118534

$x(i+1) = 0.25$ from measurement 7/21/2011 from location MW-4

Rosner Statistic $R = |0.25 - 0.418605|/0.118534 = 1.42241$

$\text{Lambda}(52, 10, 0.01) = 3.41$

$1.42241 < 3.41$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 44 measurements = 0.414773

Std Dev = 0.119874

$x(i+1) = 0.25$ from measurement 5/24/2012 from location MW-4

Rosner Statistic $R = |0.25 - 0.414773|/0.119874 = 1.37455$

$\text{Lambda}(52, 9, 0.01) = 3.4212$

$1.37455 < 3.4212$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 45 measurements = 0.411111

Std Dev = 0.121023

$x(i+1) = 0.25$ from measurement 6/15/2012 from location MW-4

Rosner Statistic $R = |0.25 - 0.411111|/0.121023 = 1.33125$

$\text{Lambda}(52, 8, 0.01) = 3.4324$

$1.33125 < 3.4324$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 46 measurements = 0.407609

Std Dev = 0.122005

$x(i+1) = 0.25$ from measurement 7/26/2012 from location MW-4

Rosner Statistic $R = |0.25 - 0.407609|/0.122005 = 1.29182$

$\text{Lambda}(52, 7, 0.01) = 3.4436$

$1.29182 < 3.4436$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 47 measurements = 0.404255

Std Dev = 0.122842

$x(i+1) = 0.25$ from measurement 11/15/2011 from location MW-4

Rosner Statistic $R = |0.25 - 0.404255|/0.122842 = 1.25572$

$\text{Lambda}(52, 6, 0.01) = 3.4548$

$1.25572 < 3.4548$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 48 measurements = 0.401042

Std Dev = 0.123551

$x(i+1) = 0.25$ from measurement 8/8/2011 from location MW-4

Rosner Statistic $R = |0.25 - 0.401042|/0.123551 = 1.2225$

$\text{Lambda}(52, 5, 0.01) = 3.466$

$1.2225 < 3.466$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 49 measurements = 0.397959

Std Dev = 0.124147

$x(i+1) = 0.25$ from measurement 9/12/2011 from location MW-4

Rosner Statistic $R = |0.25 - 0.397959|/0.124147 = 1.19181$

$\text{Lambda}(52, 4, 0.01) = 3.476$

$1.19181 < 3.476$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 50 measurements = 0.395

Std Dev = 0.124642

$x(i+1) = 0.25$ from measurement 12/6/2011 from location MW-4

Rosner Statistic $R = |0.25 - 0.395|/0.124642 = 1.16333$

$\text{Lambda}(52, 3, 0.01) = 3.478$

$1.16333 < 3.478$ -- No outliers detected for $i = 2$

Iteration i = 1

Mean of 51 measurements = 0.406863

Std Dev = 0.149673

$x(i+1) = 1$ from measurement 3/2/2010 from location MW-4

Rosner Statistic $R = |1 - 0.406863|/0.149673 = 3.96289$

$\text{Lambda}(52, 2, 0.01) = 3.486$

$3.96289 > 3.486$ -- Measurement 3/2/2010 for location MW-4 is an outlier

Iteration i = 0

Mean of 52 measurements = 0.427885

Std Dev = 0.211996

$x(i+1) = 1.5$ from measurement 7/24/2018 from location MW-4

Rosner Statistic $R = |1.5 - 0.427885|/0.211996 = 5.05723$

$\text{Lambda}(52, 1, 0.01) = 3.496$

Measurement 7/24/2018 for location MW-4 is an outlier

Rosner's Test for Outliers

Parameter: Toluene

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.458615

10 most extreme of 65 measurements

by order of magnitude difference from the mean

1	1/30/2019	MW-5	2.1	1.64138
2	3/2/2010	MW-5	ND<1 U	0.541385
3	3/23/2011	MW-5	0.71	0.251385
4	8/8/2011	MW-5	ND<0.25 U	-0.208615
5	11/15/2011	MW-5	ND<0.25 U	-0.208615
6	10/31/2011	MW-5	ND<0.25 U	-0.208615
7	5/16/2011	MW-5	ND<0.25 U	-0.208615
8	4/21/2011	MW-5	ND<0.25 U	-0.208615
9	7/21/2011	MW-5	ND<0.25 U	-0.208615
10	6/9/2011	MW-5	ND<0.25 U	-0.208615

Iteration i = 9

Mean of 56 measurements = 0.4375

Std Dev = 0.109233

$x(i+1)$ = 0.25 from measurement 6/9/2011 from location MW-5

Rosner Statistic $R = |0.25 - 0.4375|/0.109233 = 1.71652$

$\Lambda(65, 10, 0.01) = 3.53$

$1.71652 < 3.53$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 57 measurements = 0.434211

Std Dev = 0.111065

$x(i+1)$ = 0.25 from measurement 7/21/2011 from location MW-5

Rosner Statistic $R = |0.25 - 0.434211|/0.111065 = 1.65858$

$\Lambda(65, 9, 0.01) = 3.537$

$1.65858 < 3.537$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 58 measurements = 0.431034

Std Dev = 0.112713

$x(i+1)$ = 0.25 from measurement 4/21/2011 from location MW-5

Rosner Statistic $R = |0.25 - 0.431034|/0.112713 = 1.60616$

$\Lambda(65, 8, 0.01) = 3.544$

$1.60616 < 3.544$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 59 measurements = 0.427966

Std Dev = 0.114196

$x(i+1)$ = 0.25 from measurement 5/16/2011 from location MW-5

Rosner Statistic $R = |0.25 - 0.427966|/0.114196 = 1.55843$

$\Lambda(65, 7, 0.01) = 3.551$

$1.55843 < 3.551$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 60 measurements = 0.425

Std Dev = 0.115531

$x(i+1)$ = 0.25 from measurement 10/31/2011 from location MW-5

Rosner Statistic $R = |0.25 - 0.425|/0.115531 = 1.51474$

$\text{Lambda}(65, 6, 0.01) = 3.558$

$1.51474 < 3.558$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 61 measurements = 0.422131

Std Dev = 0.116735

$x(i+1)$ = 0.25 from measurement 11/15/2011 from location MW-5

Rosner Statistic $R = |0.25 - 0.422131|/0.116735 = 1.47455$

$\text{Lambda}(65, 5, 0.01) = 3.565$

$1.47455 < 3.565$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 62 measurements = 0.419355

Std Dev = 0.11782

$x(i+1)$ = 0.25 from measurement 8/8/2011 from location MW-5

Rosner Statistic $R = |0.25 - 0.419355|/0.11782 = 1.4374$

$\text{Lambda}(65, 4, 0.01) = 3.57$

$1.4374 < 3.57$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 63 measurements = 0.423968

Std Dev = 0.122468

$x(i+1)$ = 0.71 from measurement 3/23/2011 from location MW-5

Rosner Statistic $R = |0.71 - 0.423968|/0.122468 = 2.33556$

$\text{Lambda}(65, 3, 0.01) = 3.58$

$2.33556 < 3.58$ -- No outliers detected for $i = 2$

Iteration i = 1

Mean of 64 measurements = 0.432969

Std Dev = 0.141227

$x(i+1)$ = 1 from measurement 3/2/2010 from location MW-5

Rosner Statistic $R = |1 - 0.432969|/0.141227 = 4.01504$

$\text{Lambda}(65, 2, 0.01) = 3.585$

$4.01504 > 3.585$ -- Measurement 3/2/2010 for location MW-5 is an outlier

Iteration i = 0

Mean of 65 measurements = 0.458615

Std Dev = 0.249774

$x(i+1)$ = 2.1 from measurement 1/30/2019 from location MW-5

Rosner Statistic $R = |2.1 - 0.458615|/0.249774 = 6.57148$

$\text{Lambda}(65, 1, 0.01) = 3.59$

Measurement 1/30/2019 for location MW-5 is an outlier

Rosner's Test for Outliers

Parameter: Toluene

Location: MW-6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.738154

10 most extreme of 65 measurements

by order of magnitude difference from the mean

1	7/24/2018	MW-6	14	13.2618
2	1/27/2016	MW-6	2.2	1.46185
3	1/30/2017	MW-6	1.8	1.06185
4	4/13/2015	MW-6	1.7	0.961846
5	8/8/2011	MW-6	ND<0.25 U	-0.488154
6	11/15/2011	MW-6	ND<0.25 U	-0.488154
7	9/12/2011	MW-6	ND<0.25 U	-0.488154
8	6/15/2012	MW-6	ND<0.25 U	-0.488154
9	5/24/2012	MW-6	ND<0.25 U	-0.488154
10	6/9/2011	MW-6	ND<0.25 U	-0.488154

Iteration i = 9

Mean of 56 measurements = 0.482679

Std Dev = 0.192689

$x(i+1)$ = 0.25 from measurement 6/9/2011 from location MW-6

Rosner Statistic $R = |0.25 - 0.482679|/0.192689 = 1.20753$

$\Lambda(65, 10, 0.01) = 3.53$

$1.20753 < 3.53$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 57 measurements = 0.478596

Std Dev = 0.193432

$x(i+1)$ = 0.25 from measurement 5/24/2012 from location MW-6

Rosner Statistic $R = |0.25 - 0.478596|/0.193432 = 1.18179$

$\Lambda(65, 9, 0.01) = 3.537$

$1.18179 < 3.537$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 58 measurements = 0.474655

Std Dev = 0.194063

$x(i+1)$ = 0.25 from measurement 6/15/2012 from location MW-6

Rosner Statistic $R = |0.25 - 0.474655|/0.194063 = 1.15764$

$\Lambda(65, 8, 0.01) = 3.544$

$1.15764 < 3.544$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 59 measurements = 0.470847

Std Dev = 0.194593

$x(i+1)$ = 0.25 from measurement 9/12/2011 from location MW-6

Rosner Statistic $R = |0.25 - 0.470847|/0.194593 = 1.13492$

$\Lambda(65, 7, 0.01) = 3.551$

$1.13492 < 3.551$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 60 measurements = 0.467167

Std Dev = 0.195032

$x(i+1)$ = 0.25 from measurement 11/15/2011 from location MW-6

Rosner Statistic $R = |0.25 - 0.467167|/0.195032 = 1.11349$

$\text{Lambda}(65, 6, 0.01) = 3.558$

$1.11349 < 3.558$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 61 measurements = 0.463607

Std Dev = 0.195389

$x(i+1)$ = 0.25 from measurement 8/8/2011 from location MW-6

Rosner Statistic $R = |0.25 - 0.463607|/0.195389 = 1.09324$

$\text{Lambda}(65, 5, 0.01) = 3.565$

$1.09324 < 3.565$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 62 measurements = 0.483548

Std Dev = 0.249413

$x(i+1)$ = 1.7 from measurement 4/13/2015 from location MW-6

Rosner Statistic $R = |1.7 - 0.483548|/0.249413 = 4.87726$

$\text{Lambda}(65, 4, 0.01) = 3.57$

$4.87726 > 3.57$ -- Measurement 4/13/2015 for location MW-6 is an outlier

Iteration i = 2

Mean of 63 measurements = 0.504444

Std Dev = 0.297846

$x(i+1)$ = 1.8 from measurement 1/30/2017 from location MW-6

Rosner Statistic $R = |1.8 - 0.504444|/0.297846 = 4.34975$

$\text{Lambda}(65, 3, 0.01) = 3.58$

Measurement 1/30/2017 for location MW-6 is an outlier

Iteration i = 1

Mean of 64 measurements = 0.530937

Std Dev = 0.363627

$x(i+1)$ = 2.2 from measurement 1/27/2016 from location MW-6

Rosner Statistic $R = |2.2 - 0.530937|/0.363627 = 4.59004$

$\text{Lambda}(65, 2, 0.01) = 3.585$

Measurement 1/27/2016 for location MW-6 is an outlier

Iteration i = 0

Mean of 65 measurements = 0.738154

Std Dev = 1.70914

$x(i+1)$ = 14 from measurement 7/24/2018 from location MW-6

Rosner Statistic $R = |14 - 0.738154|/1.70914 = 7.75936$

$\text{Lambda}(65, 1, 0.01) = 3.59$

Measurement 7/24/2018 for location MW-6 is an outlier

Rosner's Test for Outliers

Parameter: Toluene

Location: MW-7

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.432692

10 most extreme of 26 measurements

by order of magnitude difference from the mean

1	10/31/2011	MW-7	ND<0.25 U	-0.182692
2	7/26/2012	MW-7	ND<0.25 U	-0.182692
3	4/27/2012	MW-7	ND<0.25 U	-0.182692
4	1/13/2012	MW-7	ND<0.25 U	-0.182692
5	7/21/2011	MW-7	ND<0.25 U	-0.182692
6	4/21/2011	MW-7	ND<0.25 U	-0.182692
7	1/14/2011	MW-7	ND<0.25 U	-0.182692
8	7/29/2019	MW-7	ND<0.5 U	0.0673077
9	1/27/2015	MW-7	ND<0.5 U	0.0673077
10	7/17/2014	MW-7	ND<0.5 U	0.0673077

Iteration i = 9

Mean of 17 measurements = 0.5

Std Dev = 0

$x(i+1)$ = 0.5 from measurement 7/17/2014 from location MW-7

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(26, 10, 0.01) = 2.89$

$0 < 2.89$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 18 measurements = 0.5

Std Dev = 0

$x(i+1)$ = 0.5 from measurement 1/27/2015 from location MW-7

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(26, 9, 0.01) = 2.924$

$0 < 2.924$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 19 measurements = 0.5

Std Dev = 0

$x(i+1)$ = 0.5 from measurement 7/29/2019 from location MW-7

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(26, 8, 0.01) = 2.958$

$0 < 2.958$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 20 measurements = 0.4875

Std Dev = 0.0559017

$x(i+1)$ = 0.25 from measurement 1/14/2011 from location MW-7

Rosner Statistic $R = |0.25 - 0.4875|/0.0559017 = 4.24853$

$\Lambda(26, 7, 0.01) = 2.992$

$4.24853 > 2.992$ -- Measurement 1/14/2011 for location MW-7 is an outlier

Iteration i = 5

Mean of 21 measurements = 0.47619

Std Dev = 0.0751982

$x(i+1) = 0.25$ from measurement 4/21/2011 from location MW-7

Rosner Statistic $R = |0.25 - 0.47619|/0.0751982 = 3.00793$

$\text{Lambda}(26, 6, 0.01) = 3.026$

Measurement 4/21/2011 for location MW-7 is an outlier

Iteration i = 4

Mean of 22 measurements = 0.465909

Std Dev = 0.0878125

$x(i+1) = 0.25$ from measurement 7/21/2011 from location MW-7

Rosner Statistic $R = |0.25 - 0.465909|/0.0878125 = 2.45875$

$\text{Lambda}(26, 5, 0.01) = 3.06$

Measurement 7/21/2011 for location MW-7 is an outlier

Iteration i = 3

Mean of 23 measurements = 0.456522

Std Dev = 0.0968883

$x(i+1) = 0.25$ from measurement 1/13/2012 from location MW-7

Rosner Statistic $R = |0.25 - 0.456522|/0.0968883 = 2.13154$

$\text{Lambda}(26, 4, 0.01) = 3.09$

Measurement 1/13/2012 for location MW-7 is an outlier

Iteration i = 2

Mean of 24 measurements = 0.447917

Std Dev = 0.103713

$x(i+1) = 0.25$ from measurement 4/27/2012 from location MW-7

Rosner Statistic $R = |0.25 - 0.447917|/0.103713 = 1.90832$

$\text{Lambda}(26, 3, 0.01) = 3.11$

Measurement 4/27/2012 for location MW-7 is an outlier

Iteration i = 1

Mean of 25 measurements = 0.44

Std Dev = 0.108972

$x(i+1) = 0.25$ from measurement 7/26/2012 from location MW-7

Rosner Statistic $R = |0.25 - 0.44|/0.108972 = 1.74356$

$\text{Lambda}(26, 2, 0.01) = 3.14$

Measurement 7/26/2012 for location MW-7 is an outlier

Iteration i = 0

Mean of 26 measurements = 0.432692

Std Dev = 0.113086

$x(i+1) = 0.25$ from measurement 10/31/2011 from location MW-7

Rosner Statistic $R = |0.25 - 0.432692|/0.113086 = 1.61552$

$\text{Lambda}(26, 1, 0.01) = 3.16$

Measurement 10/31/2011 for location MW-7 is an outlier

Rosner's Test for Outliers

Parameter: Ethylbenzene

Location: MW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.435185

10 most extreme of 27 measurements

by order of magnitude difference from the mean

1	1/13/2012	MW-1	ND<0.25 U	-0.185185
2	10/31/2011	MW-1	ND<0.25 U	-0.185185
3	7/26/2012	MW-1	ND<0.25 U	-0.185185
4	4/27/2012	MW-1	ND<0.25 U	-0.185185
5	1/14/2011	MW-1	ND<0.25 U	-0.185185
6	7/21/2011	MW-1	ND<0.25 U	-0.185185
7	4/21/2011	MW-1	ND<0.25 U	-0.185185
8	1/30/2019	MW-1	ND<0.5 U	0.0648148
9	7/29/2019	MW-1	ND<0.5 U	0.0648148
10	1/27/2015	MW-1	ND<0.5 U	0.0648148

Iteration i = 9

Mean of 18 measurements = 0.5

Std Dev = 0

$x(i+1)$ = 0.5 from measurement 1/27/2015 from location MW-1

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(27, 10, 0.01) = 2.93$

$0 < 2.93$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 19 measurements = 0.5

Std Dev = 0

$x(i+1)$ = 0.5 from measurement 7/29/2019 from location MW-1

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(27, 9, 0.01) = 2.962$

$0 < 2.962$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 20 measurements = 0.5

Std Dev = 0

$x(i+1)$ = 0.5 from measurement 1/30/2019 from location MW-1

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(27, 8, 0.01) = 2.994$

$0 < 2.994$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 21 measurements = 0.488095

Std Dev = 0.0545545

$x(i+1)$ = 0.25 from measurement 4/21/2011 from location MW-1

Rosner Statistic $R = |0.25 - 0.488095|/0.0545545 = 4.36436$

$\Lambda(27, 7, 0.01) = 3.026$

$4.36436 > 3.026$ -- Measurement 4/21/2011 for location MW-1 is an outlier

Iteration i = 5

Mean of 22 measurements = 0.477273

Std Dev = 0.0735612

$x(i+1) = 0.25$ from measurement 7/21/2011 from location MW-1

Rosner Statistic $R = |0.25 - 0.477273|/0.0735612 = 3.08957$

$\text{Lambda}(27, 6, 0.01) = 3.058$

Measurement 7/21/2011 for location MW-1 is an outlier

Iteration i = 4

Mean of 23 measurements = 0.467391

Std Dev = 0.0860876

$x(i+1) = 0.25$ from measurement 1/14/2011 from location MW-1

Rosner Statistic $R = |0.25 - 0.467391|/0.0860876 = 2.52523$

$\text{Lambda}(27, 5, 0.01) = 3.09$

Measurement 1/14/2011 for location MW-1 is an outlier

Iteration i = 3

Mean of 24 measurements = 0.458333

Std Dev = 0.0951734

$x(i+1) = 0.25$ from measurement 4/27/2012 from location MW-1

Rosner Statistic $R = |0.25 - 0.458333|/0.0951734 = 2.18899$

$\text{Lambda}(27, 4, 0.01) = 3.11$

Measurement 4/27/2012 for location MW-1 is an outlier

Iteration i = 2

Mean of 25 measurements = 0.45

Std Dev = 0.102062

$x(i+1) = 0.25$ from measurement 7/26/2012 from location MW-1

Rosner Statistic $R = |0.25 - 0.45|/0.102062 = 1.95959$

$\text{Lambda}(27, 3, 0.01) = 3.14$

Measurement 7/26/2012 for location MW-1 is an outlier

Iteration i = 1

Mean of 26 measurements = 0.442308

Std Dev = 0.107417

$x(i+1) = 0.25$ from measurement 10/31/2011 from location MW-1

Rosner Statistic $R = |0.25 - 0.442308|/0.107417 = 1.79029$

$\text{Lambda}(27, 2, 0.01) = 3.16$

Measurement 10/31/2011 for location MW-1 is an outlier

Iteration i = 0

Mean of 27 measurements = 0.435185

Std Dev = 0.111644

$x(i+1) = 0.25$ from measurement 1/13/2012 from location MW-1

Rosner Statistic $R = |0.25 - 0.435185|/0.111644 = 1.65871$

$\text{Lambda}(27, 1, 0.01) = 3.18$

Measurement 1/13/2012 for location MW-1 is an outlier

Rosner's Test for Outliers

Parameter: Ethylbenzene

Location: MW-2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.435185

10 most extreme of 27 measurements

by order of magnitude difference from the mean

1	1/13/2012	MW-2	ND<0.25 U	-0.185185
2	10/31/2011	MW-2	ND<0.25 U	-0.185185
3	7/26/2012	MW-2	ND<0.25 U	-0.185185
4	4/27/2012	MW-2	ND<0.25 U	-0.185185
5	1/14/2011	MW-2	ND<0.25 U	-0.185185
6	7/21/2011	MW-2	ND<0.25 U	-0.185185
7	4/21/2011	MW-2	ND<0.25 U	-0.185185
8	1/30/2019	MW-2	ND<0.5 U	0.0648148
9	7/29/2019	MW-2	ND<0.5 U	0.0648148
10	1/27/2015	MW-2	ND<0.5 U	0.0648148

Iteration i = 9

Mean of 18 measurements = 0.5

Std Dev = 0

$x(i+1)$ = 0.5 from measurement 1/27/2015 from location MW-2

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(27, 10, 0.01) = 2.93$

$0 < 2.93$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 19 measurements = 0.5

Std Dev = 0

$x(i+1)$ = 0.5 from measurement 7/29/2019 from location MW-2

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(27, 9, 0.01) = 2.962$

$0 < 2.962$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 20 measurements = 0.5

Std Dev = 0

$x(i+1)$ = 0.5 from measurement 1/30/2019 from location MW-2

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(27, 8, 0.01) = 2.994$

$0 < 2.994$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 21 measurements = 0.488095

Std Dev = 0.0545545

$x(i+1)$ = 0.25 from measurement 4/21/2011 from location MW-2

Rosner Statistic $R = |0.25 - 0.488095|/0.0545545 = 4.36436$

$\Lambda(27, 7, 0.01) = 3.026$

$4.36436 > 3.026$ -- Measurement 4/21/2011 for location MW-2 is an outlier

Iteration i = 5

Mean of 22 measurements = 0.477273

Std Dev = 0.0735612

$x(i+1) = 0.25$ from measurement 7/21/2011 from location MW-2

Rosner Statistic $R = |0.25 - 0.477273|/0.0735612 = 3.08957$

$\text{Lambda}(27, 6, 0.01) = 3.058$

Measurement 7/21/2011 for location MW-2 is an outlier

Iteration i = 4

Mean of 23 measurements = 0.467391

Std Dev = 0.0860876

$x(i+1) = 0.25$ from measurement 1/14/2011 from location MW-2

Rosner Statistic $R = |0.25 - 0.467391|/0.0860876 = 2.52523$

$\text{Lambda}(27, 5, 0.01) = 3.09$

Measurement 1/14/2011 for location MW-2 is an outlier

Iteration i = 3

Mean of 24 measurements = 0.458333

Std Dev = 0.0951734

$x(i+1) = 0.25$ from measurement 4/27/2012 from location MW-2

Rosner Statistic $R = |0.25 - 0.458333|/0.0951734 = 2.18899$

$\text{Lambda}(27, 4, 0.01) = 3.11$

Measurement 4/27/2012 for location MW-2 is an outlier

Iteration i = 2

Mean of 25 measurements = 0.45

Std Dev = 0.102062

$x(i+1) = 0.25$ from measurement 7/26/2012 from location MW-2

Rosner Statistic $R = |0.25 - 0.45|/0.102062 = 1.95959$

$\text{Lambda}(27, 3, 0.01) = 3.14$

Measurement 7/26/2012 for location MW-2 is an outlier

Iteration i = 1

Mean of 26 measurements = 0.442308

Std Dev = 0.107417

$x(i+1) = 0.25$ from measurement 10/31/2011 from location MW-2

Rosner Statistic $R = |0.25 - 0.442308|/0.107417 = 1.79029$

$\text{Lambda}(27, 2, 0.01) = 3.16$

Measurement 10/31/2011 for location MW-2 is an outlier

Iteration i = 0

Mean of 27 measurements = 0.435185

Std Dev = 0.111644

$x(i+1) = 0.25$ from measurement 1/13/2012 from location MW-2

Rosner Statistic $R = |0.25 - 0.435185|/0.111644 = 1.65871$

$\text{Lambda}(27, 1, 0.01) = 3.18$

Measurement 1/13/2012 for location MW-2 is an outlier

Rosner's Test for Outliers

Parameter: Ethylbenzene

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.399038

10 most extreme of 52 measurements

by order of magnitude difference from the mean

1	3/2/2010	MW-3	ND<1 U	0.600962
2	12/6/2011	MW-3	ND<0.25 U	-0.149038
3	8/16/2010	MW-3	ND<0.25 U	-0.149038
4	9/12/2011	MW-3	ND<0.25 U	-0.149038
5	8/8/2011	MW-3	ND<0.25 U	-0.149038
6	9/17/2010	MW-3	ND<0.25 U	-0.149038
7	7/26/2012	MW-3	ND<0.25 U	-0.149038
8	6/15/2012	MW-3	ND<0.25 U	-0.149038
9	5/24/2012	MW-3	ND<0.25 U	-0.149038
10	7/21/2011	MW-3	ND<0.25 U	-0.149038

Iteration i = 9

Mean of 43 measurements = 0.412791

Std Dev = 0.120561

$x(i+1)$ = 0.25 from measurement 7/21/2011 from location MW-3

Rosner Statistic $R = |0.25 - 0.412791|/0.120561 = 1.35028$

$\text{Lambda}(52, 10, 0.01) = 3.41$

$1.35028 < 3.41$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 44 measurements = 0.409091

Std Dev = 0.121652

$x(i+1)$ = 0.25 from measurement 5/24/2012 from location MW-3

Rosner Statistic $R = |0.25 - 0.409091|/0.121652 = 1.30776$

$\text{Lambda}(52, 9, 0.01) = 3.4212$

$1.30776 < 3.4212$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 45 measurements = 0.405556

Std Dev = 0.122578

$x(i+1)$ = 0.25 from measurement 6/15/2012 from location MW-3

Rosner Statistic $R = |0.25 - 0.405556|/0.122578 = 1.26904$

$\text{Lambda}(52, 8, 0.01) = 3.4324$

$1.26904 < 3.4324$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 46 measurements = 0.402174

Std Dev = 0.123359

$x(i+1)$ = 0.25 from measurement 7/26/2012 from location MW-3

Rosner Statistic $R = |0.25 - 0.402174|/0.123359 = 1.23359$

$\text{Lambda}(52, 7, 0.01) = 3.4436$

$1.23359 < 3.4436$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 47 measurements = 0.398936

Std Dev = 0.124013

$x(i+1) = 0.25$ from measurement 9/17/2010 from location MW-3

Rosner Statistic $R = |0.25 - 0.398936|/0.124013 = 1.20097$

$\text{Lambda}(52, 6, 0.01) = 3.4548$

$1.20097 < 3.4548$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 48 measurements = 0.395833

Std Dev = 0.124556

$x(i+1) = 0.25$ from measurement 8/8/2011 from location MW-3

Rosner Statistic $R = |0.25 - 0.395833|/0.124556 = 1.17083$

$\text{Lambda}(52, 5, 0.01) = 3.466$

$1.17083 < 3.466$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 49 measurements = 0.392857

Std Dev = 0.125

$x(i+1) = 0.25$ from measurement 9/12/2011 from location MW-3

Rosner Statistic $R = |0.25 - 0.392857|/0.125 = 1.14286$

$\text{Lambda}(52, 4, 0.01) = 3.476$

$1.14286 < 3.476$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 50 measurements = 0.39

Std Dev = 0.125357

$x(i+1) = 0.25$ from measurement 8/16/2010 from location MW-3

Rosner Statistic $R = |0.25 - 0.39|/0.125357 = 1.11681$

$\text{Lambda}(52, 3, 0.01) = 3.478$

$1.11681 < 3.478$ -- No outliers detected for $i = 2$

Iteration i = 1

Mean of 51 measurements = 0.387255

Std Dev = 0.125636

$x(i+1) = 0.25$ from measurement 12/6/2011 from location MW-3

Rosner Statistic $R = |0.25 - 0.387255|/0.125636 = 1.09248$

$\text{Lambda}(52, 2, 0.01) = 3.486$

$1.09248 < 3.486$ -- No outliers detected for $i = 1$

Iteration i = 0

Mean of 52 measurements = 0.399038

Std Dev = 0.150649

$x(i+1) = 1$ from measurement 3/2/2010 from location MW-3

Rosner Statistic $R = |1 - 0.399038|/0.150649 = 3.98915$

$\text{Lambda}(52, 1, 0.01) = 3.496$

$3.98915 > 3.496$ -- Measurement 3/2/2010 for location MW-3 is an outlier

Rosner's Test for Outliers

Parameter: Ethylbenzene

Location: MW-4

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.408654

10 most extreme of 52 measurements

by order of magnitude difference from the mean

1	3/2/2010	MW-4	ND<1 U	0.591346
2	12/6/2011	MW-4	ND<0.25 U	-0.158654
3	10/31/2011	MW-4	ND<0.25 U	-0.158654
4	9/12/2011	MW-4	ND<0.25 U	-0.158654
5	8/8/2011	MW-4	ND<0.25 U	-0.158654
6	11/15/2011	MW-4	ND<0.25 U	-0.158654
7	7/26/2012	MW-4	ND<0.25 U	-0.158654
8	6/15/2012	MW-4	ND<0.25 U	-0.158654
9	5/24/2012	MW-4	ND<0.25 U	-0.158654
10	7/21/2011	MW-4	ND<0.25 U	-0.158654

Iteration i = 9

Mean of 43 measurements = 0.424419

Std Dev = 0.116175

$x(i+1) = 0.25$ from measurement 7/21/2011 from location MW-4

Rosner Statistic $R = |0.25 - 0.424419|/0.116175 = 1.50134$

$\text{Lambda}(52, 10, 0.01) = 3.41$

$1.50134 < 3.41$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 44 measurements = 0.420455

Std Dev = 0.117789

$x(i+1) = 0.25$ from measurement 5/24/2012 from location MW-4

Rosner Statistic $R = |0.25 - 0.420455|/0.117789 = 1.44712$

$\text{Lambda}(52, 9, 0.01) = 3.4212$

$1.44712 < 3.4212$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 45 measurements = 0.416667

Std Dev = 0.119183

$x(i+1) = 0.25$ from measurement 6/15/2012 from location MW-4

Rosner Statistic $R = |0.25 - 0.416667|/0.119183 = 1.39841$

$\text{Lambda}(52, 8, 0.01) = 3.4324$

$1.39841 < 3.4324$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 46 measurements = 0.413043

Std Dev = 0.120386

$x(i+1) = 0.25$ from measurement 7/26/2012 from location MW-4

Rosner Statistic $R = |0.25 - 0.413043|/0.120386 = 1.35434$

$\text{Lambda}(52, 7, 0.01) = 3.4436$

$1.35434 < 3.4436$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 47 measurements = 0.409574

Std Dev = 0.121422

$x(i+1) = 0.25$ from measurement 11/15/2011 from location MW-4

Rosner Statistic $R = |0.25 - 0.409574|/0.121422 = 1.31421$

$\text{Lambda}(52, 6, 0.01) = 3.4548$

$1.31421 < 3.4548$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 48 measurements = 0.40625

Std Dev = 0.122312

$x(i+1) = 0.25$ from measurement 8/8/2011 from location MW-4

Rosner Statistic $R = |0.25 - 0.40625|/0.122312 = 1.27748$

$\text{Lambda}(52, 5, 0.01) = 3.466$

$1.27748 < 3.466$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 49 measurements = 0.403061

Std Dev = 0.123072

$x(i+1) = 0.25$ from measurement 9/12/2011 from location MW-4

Rosner Statistic $R = |0.25 - 0.403061|/0.123072 = 1.24367$

$\text{Lambda}(52, 4, 0.01) = 3.476$

$1.24367 < 3.476$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 50 measurements = 0.4

Std Dev = 0.123718

$x(i+1) = 0.25$ from measurement 10/31/2011 from location MW-4

Rosner Statistic $R = |0.25 - 0.4|/0.123718 = 1.21244$

$\text{Lambda}(52, 3, 0.01) = 3.478$

$1.21244 < 3.478$ -- No outliers detected for $i = 2$

Iteration i = 1

Mean of 51 measurements = 0.397059

Std Dev = 0.124263

$x(i+1) = 0.25$ from measurement 12/6/2011 from location MW-4

Rosner Statistic $R = |0.25 - 0.397059|/0.124263 = 1.18345$

$\text{Lambda}(52, 2, 0.01) = 3.486$

$1.18345 < 3.486$ -- No outliers detected for $i = 1$

Iteration i = 0

Mean of 52 measurements = 0.408654

Std Dev = 0.14876

$x(i+1) = 1$ from measurement 3/2/2010 from location MW-4

Rosner Statistic $R = |1 - 0.408654|/0.14876 = 3.97517$

$\text{Lambda}(52, 1, 0.01) = 3.496$

$3.97517 > 3.496$ -- Measurement 3/2/2010 for location MW-4 is an outlier

Rosner's Test for Outliers

Parameter: Ethylbenzene

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.426923

10 most extreme of 65 measurements

by order of magnitude difference from the mean

1	3/2/2010	MW-5	ND<1 U	0.573077
2	11/15/2011	MW-5	ND<0.25 U	-0.176923
3	9/12/2011	MW-5	ND<0.25 U	-0.176923
4	8/8/2011	MW-5	ND<0.25 U	-0.176923
5	7/21/2011	MW-5	ND<0.25 U	-0.176923
6	10/31/2011	MW-5	ND<0.25 U	-0.176923
7	5/16/2011	MW-5	ND<0.25 U	-0.176923
8	4/21/2011	MW-5	ND<0.25 U	-0.176923
9	3/23/2011	MW-5	ND<0.25 U	-0.176923
10	6/9/2011	MW-5	ND<0.25 U	-0.176923

Iteration i = 9

Mean of 56 measurements = 0.441964

Std Dev = 0.106505

$x(i+1)$ = 0.25 from measurement 6/9/2011 from location MW-5

Rosner Statistic $R = |0.25 - 0.441964|/0.106505 = 1.80239$

$\Lambda(65, 10, 0.01) = 3.53$

$1.80239 < 3.53$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 57 measurements = 0.438596

Std Dev = 0.108569

$x(i+1)$ = 0.25 from measurement 3/23/2011 from location MW-5

Rosner Statistic $R = |0.25 - 0.438596|/0.108569 = 1.73711$

$\Lambda(65, 9, 0.01) = 3.537$

$1.73711 < 3.537$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 58 measurements = 0.435345

Std Dev = 0.110425

$x(i+1)$ = 0.25 from measurement 4/21/2011 from location MW-5

Rosner Statistic $R = |0.25 - 0.435345|/0.110425 = 1.67846$

$\Lambda(65, 8, 0.01) = 3.544$

$1.67846 < 3.544$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 59 measurements = 0.432203

Std Dev = 0.112097

$x(i+1)$ = 0.25 from measurement 5/16/2011 from location MW-5

Rosner Statistic $R = |0.25 - 0.432203|/0.112097 = 1.62541$

$\Lambda(65, 7, 0.01) = 3.551$

$1.62541 < 3.551$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 60 measurements = 0.429167

Std Dev = 0.113605

$x(i+1) = 0.25$ from measurement 10/31/2011 from location MW-5

Rosner Statistic $R = |0.25 - 0.429167|/0.113605 = 1.5771$

$\text{Lambda}(65, 6, 0.01) = 3.558$

$1.5771 < 3.558$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 61 measurements = 0.42623

Std Dev = 0.114966

$x(i+1) = 0.25$ from measurement 7/21/2011 from location MW-5

Rosner Statistic $R = |0.25 - 0.42623|/0.114966 = 1.53288$

$\text{Lambda}(65, 5, 0.01) = 3.565$

$1.53288 < 3.565$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 62 measurements = 0.423387

Std Dev = 0.116196

$x(i+1) = 0.25$ from measurement 8/8/2011 from location MW-5

Rosner Statistic $R = |0.25 - 0.423387|/0.116196 = 1.4922$

$\text{Lambda}(65, 4, 0.01) = 3.57$

$1.4922 < 3.57$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 63 measurements = 0.420635

Std Dev = 0.117307

$x(i+1) = 0.25$ from measurement 9/12/2011 from location MW-5

Rosner Statistic $R = |0.25 - 0.420635|/0.117307 = 1.4546$

$\text{Lambda}(65, 3, 0.01) = 3.58$

$1.4546 < 3.58$ -- No outliers detected for $i = 2$

Iteration i = 1

Mean of 64 measurements = 0.417969

Std Dev = 0.118311

$x(i+1) = 0.25$ from measurement 11/15/2011 from location MW-5

Rosner Statistic $R = |0.25 - 0.417969|/0.118311 = 1.41973$

$\text{Lambda}(65, 2, 0.01) = 3.585$

$1.41973 < 3.585$ -- No outliers detected for $i = 1$

Iteration i = 0

Mean of 65 measurements = 0.426923

Std Dev = 0.137806

$x(i+1) = 1$ from measurement 3/2/2010 from location MW-5

Rosner Statistic $R = |1 - 0.426923|/0.137806 = 4.15859$

$\text{Lambda}(65, 1, 0.01) = 3.59$

$4.15859 > 3.59$ -- Measurement 3/2/2010 for location MW-5 is an outlier

Rosner's Test for Outliers

Parameter: Ethylbenzene

Location: MW-6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.426923

10 most extreme of 65 measurements

by order of magnitude difference from the mean

1	3/2/2010	MW-6	ND<1 U	0.573077
2	11/15/2011	MW-6	ND<0.25 U	-0.176923
3	9/12/2011	MW-6	ND<0.25 U	-0.176923
4	8/8/2011	MW-6	ND<0.25 U	-0.176923
5	7/21/2011	MW-6	ND<0.25 U	-0.176923
6	10/31/2011	MW-6	ND<0.25 U	-0.176923
7	5/16/2011	MW-6	ND<0.25 U	-0.176923
8	4/21/2011	MW-6	ND<0.25 U	-0.176923
9	3/23/2011	MW-6	ND<0.25 U	-0.176923
10	6/9/2011	MW-6	ND<0.25 U	-0.176923

Iteration i = 9

Mean of 56 measurements = 0.441964

Std Dev = 0.106505

$x(i+1)$ = 0.25 from measurement 6/9/2011 from location MW-6

Rosner Statistic $R = |0.25 - 0.441964|/0.106505 = 1.80239$

$\Lambda(65, 10, 0.01) = 3.53$

$1.80239 < 3.53$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 57 measurements = 0.438596

Std Dev = 0.108569

$x(i+1)$ = 0.25 from measurement 3/23/2011 from location MW-6

Rosner Statistic $R = |0.25 - 0.438596|/0.108569 = 1.73711$

$\Lambda(65, 9, 0.01) = 3.537$

$1.73711 < 3.537$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 58 measurements = 0.435345

Std Dev = 0.110425

$x(i+1)$ = 0.25 from measurement 4/21/2011 from location MW-6

Rosner Statistic $R = |0.25 - 0.435345|/0.110425 = 1.67846$

$\Lambda(65, 8, 0.01) = 3.544$

$1.67846 < 3.544$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 59 measurements = 0.432203

Std Dev = 0.112097

$x(i+1)$ = 0.25 from measurement 5/16/2011 from location MW-6

Rosner Statistic $R = |0.25 - 0.432203|/0.112097 = 1.62541$

$\Lambda(65, 7, 0.01) = 3.551$

$1.62541 < 3.551$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 60 measurements = 0.429167

Std Dev = 0.113605

$x(i+1) = 0.25$ from measurement 10/31/2011 from location MW-6

Rosner Statistic $R = |0.25 - 0.429167|/0.113605 = 1.5771$

$\text{Lambda}(65, 6, 0.01) = 3.558$

$1.5771 < 3.558$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 61 measurements = 0.42623

Std Dev = 0.114966

$x(i+1) = 0.25$ from measurement 7/21/2011 from location MW-6

Rosner Statistic $R = |0.25 - 0.42623|/0.114966 = 1.53288$

$\text{Lambda}(65, 5, 0.01) = 3.565$

$1.53288 < 3.565$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 62 measurements = 0.423387

Std Dev = 0.116196

$x(i+1) = 0.25$ from measurement 8/8/2011 from location MW-6

Rosner Statistic $R = |0.25 - 0.423387|/0.116196 = 1.4922$

$\text{Lambda}(65, 4, 0.01) = 3.57$

$1.4922 < 3.57$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 63 measurements = 0.420635

Std Dev = 0.117307

$x(i+1) = 0.25$ from measurement 9/12/2011 from location MW-6

Rosner Statistic $R = |0.25 - 0.420635|/0.117307 = 1.4546$

$\text{Lambda}(65, 3, 0.01) = 3.58$

$1.4546 < 3.58$ -- No outliers detected for $i = 2$

Iteration i = 1

Mean of 64 measurements = 0.417969

Std Dev = 0.118311

$x(i+1) = 0.25$ from measurement 11/15/2011 from location MW-6

Rosner Statistic $R = |0.25 - 0.417969|/0.118311 = 1.41973$

$\text{Lambda}(65, 2, 0.01) = 3.585$

$1.41973 < 3.585$ -- No outliers detected for $i = 1$

Iteration i = 0

Mean of 65 measurements = 0.426923

Std Dev = 0.137806

$x(i+1) = 1$ from measurement 3/2/2010 from location MW-6

Rosner Statistic $R = |1 - 0.426923|/0.137806 = 4.15859$

$\text{Lambda}(65, 1, 0.01) = 3.59$

$4.15859 > 3.59$ -- Measurement 3/2/2010 for location MW-6 is an outlier

Rosner's Test for Outliers

Parameter: Ethylbenzene

Location: MW-7

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.432692

10 most extreme of 26 measurements

by order of magnitude difference from the mean

1	10/31/2011	MW-7	ND<0.25 U	-0.182692
2	7/26/2012	MW-7	ND<0.25 U	-0.182692
3	4/27/2012	MW-7	ND<0.25 U	-0.182692
4	1/13/2012	MW-7	ND<0.25 U	-0.182692
5	7/21/2011	MW-7	ND<0.25 U	-0.182692
6	4/21/2011	MW-7	ND<0.25 U	-0.182692
7	1/14/2011	MW-7	ND<0.25 U	-0.182692
8	7/29/2019	MW-7	ND<0.5 U	0.0673077
9	1/27/2015	MW-7	ND<0.5 U	0.0673077
10	7/17/2014	MW-7	ND<0.5 U	0.0673077

Iteration i = 9

Mean of 17 measurements = 0.5

Std Dev = 0

$x(i+1)$ = 0.5 from measurement 7/17/2014 from location MW-7

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(26, 10, 0.01) = 2.89$

$0 < 2.89$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 18 measurements = 0.5

Std Dev = 0

$x(i+1)$ = 0.5 from measurement 1/27/2015 from location MW-7

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(26, 9, 0.01) = 2.924$

$0 < 2.924$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 19 measurements = 0.5

Std Dev = 0

$x(i+1)$ = 0.5 from measurement 7/29/2019 from location MW-7

Rosner Statistic $R = |0.5 - 0.5|/0 = 0$

$\Lambda(26, 8, 0.01) = 2.958$

$0 < 2.958$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 20 measurements = 0.4875

Std Dev = 0.0559017

$x(i+1)$ = 0.25 from measurement 1/14/2011 from location MW-7

Rosner Statistic $R = |0.25 - 0.4875|/0.0559017 = 4.24853$

$\Lambda(26, 7, 0.01) = 2.992$

$4.24853 > 2.992$ -- Measurement 1/14/2011 for location MW-7 is an outlier

Iteration i = 5

Mean of 21 measurements = 0.47619

Std Dev = 0.0751982

$x(i+1)$ = 0.25 from measurement 4/21/2011 from location MW-7

Rosner Statistic $R = |0.25 - 0.47619|/0.0751982 = 3.00793$

$\text{Lambda}(26, 6, 0.01) = 3.026$

Measurement 4/21/2011 for location MW-7 is an outlier

Iteration i = 4

Mean of 22 measurements = 0.465909

Std Dev = 0.0878125

$x(i+1)$ = 0.25 from measurement 7/21/2011 from location MW-7

Rosner Statistic $R = |0.25 - 0.465909|/0.0878125 = 2.45875$

$\text{Lambda}(26, 5, 0.01) = 3.06$

Measurement 7/21/2011 for location MW-7 is an outlier

Iteration i = 3

Mean of 23 measurements = 0.456522

Std Dev = 0.0968883

$x(i+1)$ = 0.25 from measurement 1/13/2012 from location MW-7

Rosner Statistic $R = |0.25 - 0.456522|/0.0968883 = 2.13154$

$\text{Lambda}(26, 4, 0.01) = 3.09$

Measurement 1/13/2012 for location MW-7 is an outlier

Iteration i = 2

Mean of 24 measurements = 0.447917

Std Dev = 0.103713

$x(i+1)$ = 0.25 from measurement 4/27/2012 from location MW-7

Rosner Statistic $R = |0.25 - 0.447917|/0.103713 = 1.90832$

$\text{Lambda}(26, 3, 0.01) = 3.11$

Measurement 4/27/2012 for location MW-7 is an outlier

Iteration i = 1

Mean of 25 measurements = 0.44

Std Dev = 0.108972

$x(i+1)$ = 0.25 from measurement 7/26/2012 from location MW-7

Rosner Statistic $R = |0.25 - 0.44|/0.108972 = 1.74356$

$\text{Lambda}(26, 2, 0.01) = 3.14$

Measurement 7/26/2012 for location MW-7 is an outlier

Iteration i = 0

Mean of 26 measurements = 0.432692

Std Dev = 0.113086

$x(i+1)$ = 0.25 from measurement 10/31/2011 from location MW-7

Rosner Statistic $R = |0.25 - 0.432692|/0.113086 = 1.61552$

$\text{Lambda}(26, 1, 0.01) = 3.16$

Measurement 10/31/2011 for location MW-7 is an outlier

Rosner's Test for Outliers

Parameter: Total Xylenes

Location: MW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.805556

10 most extreme of 27 measurements

by order of magnitude difference from the mean

1	3/4/2010	MW-1	ND<1.5 U	0.694444
2	10/13/2010	MW-1	ND<1.5 U	0.694444
3	7/26/2010	MW-1	ND<1.5 U	0.694444
4	4/30/2010	MW-1	ND<1.5 U	0.694444
5	1/29/2013	MW-1	ND<0.5 U	-0.305556
6	10/18/2012	MW-1	ND<0.5 U	-0.305556
7	7/26/2016	MW-1	ND<0.5 U	-0.305556
8	1/27/2016	MW-1	ND<0.5 U	-0.305556
9	7/21/2015	MW-1	ND<0.5 U	-0.305556
10	1/30/2017	MW-1	ND<0.5 U	-0.305556

Iteration i = 9

Mean of 18 measurements = 0.736111

Std Dev = 0.200591

$x(i+1)$ = 0.5 from measurement 1/30/2017 from location MW-1

Rosner Statistic $R = |0.5 - 0.736111|/0.200591 = 1.17707$

$\Lambda(27, 10, 0.01) = 2.93$

$1.17707 < 2.93$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 19 measurements = 0.723684

Std Dev = 0.202326

$x(i+1)$ = 0.5 from measurement 7/21/2015 from location MW-1

Rosner Statistic $R = |0.5 - 0.723684|/0.202326 = 1.10557$

$\Lambda(27, 9, 0.01) = 2.962$

$1.10557 < 2.962$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 20 measurements = 0.7125

Std Dev = 0.203182

$x(i+1)$ = 0.5 from measurement 1/27/2016 from location MW-1

Rosner Statistic $R = |0.5 - 0.7125|/0.203182 = 1.04586$

$\Lambda(27, 8, 0.01) = 2.994$

$1.04586 < 2.994$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 21 measurements = 0.702381

Std Dev = 0.203394

$x(i+1)$ = 0.5 from measurement 7/26/2016 from location MW-1

Rosner Statistic $R = |0.5 - 0.702381|/0.203394 = 0.99502$

$\Lambda(27, 7, 0.01) = 3.026$

$0.99502 < 3.026$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 22 measurements = 0.693182

Std Dev = 0.203128

$x(i+1) = 0.5$ from measurement 10/18/2012 from location MW-1

Rosner Statistic $R = |0.5 - 0.693182|/0.203128 = 0.951037$

$\text{Lambda}(27, 6, 0.01) = 3.058$

$0.951037 < 3.058$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 23 measurements = 0.684783

Std Dev = 0.202504

$x(i+1) = 0.5$ from measurement 1/29/2013 from location MW-1

Rosner Statistic $R = |0.5 - 0.684783|/0.202504 = 0.912488$

$\text{Lambda}(27, 5, 0.01) = 3.09$

$0.912488 < 3.09$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 24 measurements = 0.71875

Std Dev = 0.258681

$x(i+1) = 1.5$ from measurement 4/30/2010 from location MW-1

Rosner Statistic $R = |1.5 - 0.71875|/0.258681 = 3.02013$

$\text{Lambda}(27, 4, 0.01) = 3.11$

$3.02013 < 3.11$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 25 measurements = 0.75

Std Dev = 0.29756

$x(i+1) = 1.5$ from measurement 7/26/2010 from location MW-1

Rosner Statistic $R = |1.5 - 0.75|/0.29756 = 2.5205$

$\text{Lambda}(27, 3, 0.01) = 3.14$

$2.5205 < 3.14$ -- No outliers detected for $i = 2$

Iteration i = 1

Mean of 26 measurements = 0.778846

Std Dev = 0.32655

$x(i+1) = 1.5$ from measurement 10/13/2010 from location MW-1

Rosner Statistic $R = |1.5 - 0.778846|/0.32655 = 2.20841$

$\text{Lambda}(27, 2, 0.01) = 3.16$

$2.20841 < 3.16$ -- No outliers detected for $i = 1$

Iteration i = 0

Mean of 27 measurements = 0.805556

Std Dev = 0.348991

$x(i+1) = 1.5$ from measurement 3/4/2010 from location MW-1

Rosner Statistic $R = |1.5 - 0.805556|/0.348991 = 1.98986$

$\text{Lambda}(27, 1, 0.01) = 3.18$

$1.98986 < 3.18$ -- No outliers detected for $i = 0$

Rosner's Test for Outliers

Parameter: Total Xylenes

Location: MW-2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.805556

10 most extreme of 27 measurements

by order of magnitude difference from the mean

1	3/4/2010	MW-2	ND<1.5 U	0.694444
2	10/13/2010	MW-2	ND<1.5 U	0.694444
3	7/26/2010	MW-2	ND<1.5 U	0.694444
4	4/30/2010	MW-2	ND<1.5 U	0.694444
5	1/29/2013	MW-2	ND<0.5 U	-0.305556
6	10/18/2012	MW-2	ND<0.5 U	-0.305556
7	7/26/2016	MW-2	ND<0.5 U	-0.305556
8	1/27/2016	MW-2	ND<0.5 U	-0.305556
9	7/21/2015	MW-2	ND<0.5 U	-0.305556
10	1/30/2017	MW-2	ND<0.5 U	-0.305556

Iteration i = 9

Mean of 18 measurements = 0.736111

Std Dev = 0.200591

$x(i+1)$ = 0.5 from measurement 1/30/2017 from location MW-2

Rosner Statistic $R = |0.5 - 0.736111|/0.200591 = 1.17707$

$\Lambda(27, 10, 0.01) = 2.93$

$1.17707 < 2.93$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 19 measurements = 0.723684

Std Dev = 0.202326

$x(i+1)$ = 0.5 from measurement 7/21/2015 from location MW-2

Rosner Statistic $R = |0.5 - 0.723684|/0.202326 = 1.10557$

$\Lambda(27, 9, 0.01) = 2.962$

$1.10557 < 2.962$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 20 measurements = 0.7125

Std Dev = 0.203182

$x(i+1)$ = 0.5 from measurement 1/27/2016 from location MW-2

Rosner Statistic $R = |0.5 - 0.7125|/0.203182 = 1.04586$

$\Lambda(27, 8, 0.01) = 2.994$

$1.04586 < 2.994$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 21 measurements = 0.702381

Std Dev = 0.203394

$x(i+1)$ = 0.5 from measurement 7/26/2016 from location MW-2

Rosner Statistic $R = |0.5 - 0.702381|/0.203394 = 0.99502$

$\Lambda(27, 7, 0.01) = 3.026$

$0.99502 < 3.026$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 22 measurements = 0.693182

Std Dev = 0.203128

$x(i+1) = 0.5$ from measurement 10/18/2012 from location MW-2

Rosner Statistic $R = |0.5 - 0.693182|/0.203128 = 0.951037$

$\text{Lambda}(27, 6, 0.01) = 3.058$

$0.951037 < 3.058$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 23 measurements = 0.684783

Std Dev = 0.202504

$x(i+1) = 0.5$ from measurement 1/29/2013 from location MW-2

Rosner Statistic $R = |0.5 - 0.684783|/0.202504 = 0.912488$

$\text{Lambda}(27, 5, 0.01) = 3.09$

$0.912488 < 3.09$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 24 measurements = 0.71875

Std Dev = 0.258681

$x(i+1) = 1.5$ from measurement 4/30/2010 from location MW-2

Rosner Statistic $R = |1.5 - 0.71875|/0.258681 = 3.02013$

$\text{Lambda}(27, 4, 0.01) = 3.11$

$3.02013 < 3.11$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 25 measurements = 0.75

Std Dev = 0.29756

$x(i+1) = 1.5$ from measurement 7/26/2010 from location MW-2

Rosner Statistic $R = |1.5 - 0.75|/0.29756 = 2.5205$

$\text{Lambda}(27, 3, 0.01) = 3.14$

$2.5205 < 3.14$ -- No outliers detected for $i = 2$

Iteration i = 1

Mean of 26 measurements = 0.778846

Std Dev = 0.32655

$x(i+1) = 1.5$ from measurement 10/13/2010 from location MW-2

Rosner Statistic $R = |1.5 - 0.778846|/0.32655 = 2.20841$

$\text{Lambda}(27, 2, 0.01) = 3.16$

$2.20841 < 3.16$ -- No outliers detected for $i = 1$

Iteration i = 0

Mean of 27 measurements = 0.805556

Std Dev = 0.348991

$x(i+1) = 1.5$ from measurement 3/4/2010 from location MW-2

Rosner Statistic $R = |1.5 - 0.805556|/0.348991 = 1.98986$

$\text{Lambda}(27, 1, 0.01) = 3.18$

$1.98986 < 3.18$ -- No outliers detected for $i = 0$

Rosner's Test for Outliers

Parameter: Total Xylenes

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.764423

10 most extreme of 52 measurements

by order of magnitude difference from the mean

1	3/2/2010	MW-3	ND<2 U	1.23558
2	10/13/2010	MW-3	ND<1.5 U	0.735577
3	4/30/2010	MW-3	ND<1.5 U	0.735577
4	7/26/2010	MW-3	ND<1.5 U	0.735577
5	3/4/2010	MW-3	ND<1.5 U	0.735577
6	12/5/2012	MW-3	ND<0.5 U	-0.264423
7	11/14/2012	MW-3	ND<0.5 U	-0.264423
8	1/27/2016	MW-3	ND<0.5 U	-0.264423
9	6/7/2010	MW-3	ND<0.5 U	-0.264423
10	1/30/2017	MW-3	ND<0.5 U	-0.264423

Iteration i = 9

Mean of 43 measurements = 0.69186

Std Dev = 0.162177

$x(i+1)$ = 0.5 from measurement 1/30/2017 from location MW-3

Rosner Statistic $R = |0.5 - 0.69186|/0.162177 = 1.18303$

$\text{Lambda}(52, 10, 0.01) = 3.41$

$1.18303 < 3.41$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 44 measurements = 0.6875

Std Dev = 0.162869

$x(i+1)$ = 0.5 from measurement 6/7/2010 from location MW-3

Rosner Statistic $R = |0.5 - 0.6875|/0.162869 = 1.15124$

$\text{Lambda}(52, 9, 0.01) = 3.4212$

$1.15124 < 3.4212$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 45 measurements = 0.683333

Std Dev = 0.163415

$x(i+1)$ = 0.5 from measurement 1/27/2016 from location MW-3

Rosner Statistic $R = |0.5 - 0.683333|/0.163415 = 1.12189$

$\text{Lambda}(52, 8, 0.01) = 3.4324$

$1.12189 < 3.4324$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 46 measurements = 0.679348

Std Dev = 0.163835

$x(i+1)$ = 0.5 from measurement 11/14/2012 from location MW-3

Rosner Statistic $R = |0.5 - 0.679348|/0.163835 = 1.09469$

$\text{Lambda}(52, 7, 0.01) = 3.4436$

$1.09469 < 3.4436$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 47 measurements = 0.675532

Std Dev = 0.164142

$x(i+1) = 0.5$ from measurement 12/5/2012 from location MW-3

Rosner Statistic $R = |0.5 - 0.675532|/0.164142 = 1.06939$

$\text{Lambda}(52, 6, 0.01) = 3.4548$

$1.06939 < 3.4548$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 48 measurements = 0.692708

Std Dev = 0.201323

$x(i+1) = 1.5$ from measurement 3/4/2010 from location MW-3

Rosner Statistic $R = |1.5 - 0.692708|/0.201323 = 4.00994$

$\text{Lambda}(52, 5, 0.01) = 3.466$

$4.00994 > 3.466$ -- Measurement 3/4/2010 for location MW-3 is an outlier

Iteration i = 3

Mean of 49 measurements = 0.709184

Std Dev = 0.230189

$x(i+1) = 1.5$ from measurement 7/26/2010 from location MW-3

Rosner Statistic $R = |1.5 - 0.709184|/0.230189 = 3.43551$

$\text{Lambda}(52, 4, 0.01) = 3.476$

Measurement 7/26/2010 for location MW-3 is an outlier

Iteration i = 2

Mean of 50 measurements = 0.725

Std Dev = 0.253798

$x(i+1) = 1.5$ from measurement 4/30/2010 from location MW-3

Rosner Statistic $R = |1.5 - 0.725|/0.253798 = 3.05361$

$\text{Lambda}(52, 3, 0.01) = 3.478$

Measurement 4/30/2010 for location MW-3 is an outlier

Iteration i = 1

Mean of 51 measurements = 0.740196

Std Dev = 0.273682

$x(i+1) = 1.5$ from measurement 10/13/2010 from location MW-3

Rosner Statistic $R = |1.5 - 0.740196|/0.273682 = 2.77623$

$\text{Lambda}(52, 2, 0.01) = 3.486$

Measurement 10/13/2010 for location MW-3 is an outlier

Iteration i = 0

Mean of 52 measurements = 0.764423

Std Dev = 0.32242

$x(i+1) = 2$ from measurement 3/2/2010 from location MW-3

Rosner Statistic $R = |2 - 0.764423|/0.32242 = 3.8322$

$\text{Lambda}(52, 1, 0.01) = 3.496$

Measurement 3/2/2010 for location MW-3 is an outlier

Rosner's Test for Outliers

Parameter: Total Xylenes

Location: MW-4

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.793269

10 most extreme of 52 measurements

by order of magnitude difference from the mean

1	3/2/2010	MW-4	ND<2 U	1.20673
2	10/13/2010	MW-4	ND<1.5 U	0.706731
3	8/16/2010	MW-4	ND<1.5 U	0.706731
4	7/26/2010	MW-4	ND<1.5 U	0.706731
5	3/4/2010	MW-4	ND<1.5 U	0.706731
6	9/17/2010	MW-4	ND<1.5 U	0.706731
7	4/30/2010	MW-4	ND<1.5 U	0.706731
8	1/27/2016	MW-4	ND<0.5 U	-0.293269
9	6/7/2010	MW-4	ND<0.5 U	-0.293269
10	1/30/2017	MW-4	ND<0.5 U	-0.293269

Iteration i = 9

Mean of 43 measurements = 0.680233

Std Dev = 0.166597

$x(i+1)$ = 0.5 from measurement 1/30/2017 from location MW-4

Rosner Statistic $R = |0.5 - 0.680233|/0.166597 = 1.08184$

$\text{Lambda}(52, 10, 0.01) = 3.41$

$1.08184 < 3.41$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 44 measurements = 0.676136

Std Dev = 0.166876

$x(i+1)$ = 0.5 from measurement 6/7/2010 from location MW-4

Rosner Statistic $R = |0.5 - 0.676136|/0.166876 = 1.05549$

$\text{Lambda}(52, 9, 0.01) = 3.4212$

$1.05549 < 3.4212$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 45 measurements = 0.672222

Std Dev = 0.167045

$x(i+1)$ = 0.5 from measurement 1/27/2016 from location MW-4

Rosner Statistic $R = |0.5 - 0.672222|/0.167045 = 1.03099$

$\text{Lambda}(52, 8, 0.01) = 3.4324$

$1.03099 < 3.4324$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 46 measurements = 0.690217

Std Dev = 0.205378

$x(i+1)$ = 1.5 from measurement 4/30/2010 from location MW-4

Rosner Statistic $R = |1.5 - 0.690217|/0.205378 = 3.9429$

$\text{Lambda}(52, 7, 0.01) = 3.4436$

$3.9429 > 3.4436$ -- Measurement 4/30/2010 for location MW-4 is an outlier

Iteration i = 5

Mean of 47 measurements = 0.707447

Std Dev = 0.234979

$x(i+1) = 1.5$ from measurement 9/17/2010 from location MW-4

Rosner Statistic $R = |1.5 - 0.707447|/0.234979 = 3.37287$

$\text{Lambda}(52, 6, 0.01) = 3.4548$

Measurement 9/17/2010 for location MW-4 is an outlier

Iteration i = 4

Mean of 48 measurements = 0.723958

Std Dev = 0.259088

$x(i+1) = 1.5$ from measurement 3/4/2010 from location MW-4

Rosner Statistic $R = |1.5 - 0.723958|/0.259088 = 2.99528$

$\text{Lambda}(52, 5, 0.01) = 3.466$

Measurement 3/4/2010 for location MW-4 is an outlier

Iteration i = 3

Mean of 49 measurements = 0.739796

Std Dev = 0.279318

$x(i+1) = 1.5$ from measurement 7/26/2010 from location MW-4

Rosner Statistic $R = |1.5 - 0.739796|/0.279318 = 2.72164$

$\text{Lambda}(52, 4, 0.01) = 3.476$

Measurement 7/26/2010 for location MW-4 is an outlier

Iteration i = 2

Mean of 50 measurements = 0.755

Std Dev = 0.296622

$x(i+1) = 1.5$ from measurement 8/16/2010 from location MW-4

Rosner Statistic $R = |1.5 - 0.755|/0.296622 = 2.51161$

$\text{Lambda}(52, 3, 0.01) = 3.478$

Measurement 8/16/2010 for location MW-4 is an outlier

Iteration i = 1

Mean of 51 measurements = 0.769608

Std Dev = 0.311621

$x(i+1) = 1.5$ from measurement 10/13/2010 from location MW-4

Rosner Statistic $R = |1.5 - 0.769608|/0.311621 = 2.34385$

$\text{Lambda}(52, 2, 0.01) = 3.486$

Measurement 10/13/2010 for location MW-4 is an outlier

Iteration i = 0

Mean of 52 measurements = 0.793269

Std Dev = 0.352586

$x(i+1) = 2$ from measurement 3/2/2010 from location MW-4

Rosner Statistic $R = |2 - 0.793269|/0.352586 = 3.42252$

$\text{Lambda}(52, 1, 0.01) = 3.496$

Measurement 3/2/2010 for location MW-4 is an outlier

Rosner's Test for Outliers

Parameter: Total Xylenes

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.773077

10 most extreme of 65 measurements

by order of magnitude difference from the mean

1	3/2/2010	MW-5	ND<2 U	1.22692
2	10/13/2010	MW-5	ND<1.5 U	0.726923
3	8/16/2010	MW-5	ND<1.5 U	0.726923
4	7/26/2010	MW-5	ND<1.5 U	0.726923
5	3/4/2010	MW-5	ND<1.5 U	0.726923
6	9/17/2010	MW-5	ND<1.5 U	0.726923
7	4/30/2010	MW-5	ND<1.5 U	0.726923
8	7/17/2014	MW-5	ND<0.5 U	-0.273077
9	4/13/2015	MW-5	ND<0.5 U	-0.273077
10	1/27/2015	MW-5	ND<0.5 U	-0.273077

Iteration i = 9

Mean of 56 measurements = 0.683036

Std Dev = 0.187635

$x(i+1)$ = 0.5 from measurement 1/27/2015 from location MW-5

Rosner Statistic $R = |0.5 - 0.683036|/0.187635 = 0.975487$

$\Lambda(65, 10, 0.01) = 3.53$

$0.975487 < 3.53$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 57 measurements = 0.679825

Std Dev = 0.187526

$x(i+1)$ = 0.5 from measurement 4/13/2015 from location MW-5

Rosner Statistic $R = |0.5 - 0.679825|/0.187526 = 0.958931$

$\Lambda(65, 9, 0.01) = 3.537$

$0.958931 < 3.537$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 58 measurements = 0.676724

Std Dev = 0.187368

$x(i+1)$ = 0.5 from measurement 7/17/2014 from location MW-5

Rosner Statistic $R = |0.5 - 0.676724|/0.187368 = 0.943195$

$\Lambda(65, 8, 0.01) = 3.544$

$0.943195 < 3.544$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 59 measurements = 0.690678

Std Dev = 0.214451

$x(i+1)$ = 1.5 from measurement 4/30/2010 from location MW-5

Rosner Statistic $R = |1.5 - 0.690678|/0.214451 = 3.77393$

$\Lambda(65, 7, 0.01) = 3.551$

$3.77393 > 3.551$ -- Measurement 4/30/2010 for location MW-5 is an outlier

Iteration i = 5

Mean of 60 measurements = 0.704167

Std Dev = 0.23691

$x(i+1) = 1.5$ from measurement 9/17/2010 from location MW-5

Rosner Statistic $R = |1.5 - 0.704167|/0.23691 = 3.35922$

$\text{Lambda}(65, 6, 0.01) = 3.558$

Measurement 9/17/2010 for location MW-5 is an outlier

Iteration i = 4

Mean of 61 measurements = 0.717213

Std Dev = 0.256074

$x(i+1) = 1.5$ from measurement 3/4/2010 from location MW-5

Rosner Statistic $R = |1.5 - 0.717213|/0.256074 = 3.05688$

$\text{Lambda}(65, 5, 0.01) = 3.565$

Measurement 3/4/2010 for location MW-5 is an outlier

Iteration i = 3

Mean of 62 measurements = 0.729839

Std Dev = 0.272731

$x(i+1) = 1.5$ from measurement 7/26/2010 from location MW-5

Rosner Statistic $R = |1.5 - 0.729839|/0.272731 = 2.82389$

$\text{Lambda}(65, 4, 0.01) = 3.57$

Measurement 7/26/2010 for location MW-5 is an outlier

Iteration i = 2

Mean of 63 measurements = 0.742063

Std Dev = 0.287397

$x(i+1) = 1.5$ from measurement 8/16/2010 from location MW-5

Rosner Statistic $R = |1.5 - 0.742063|/0.287397 = 2.63724$

$\text{Lambda}(65, 3, 0.01) = 3.58$

Measurement 8/16/2010 for location MW-5 is an outlier

Iteration i = 1

Mean of 64 measurements = 0.753906

Std Dev = 0.300437

$x(i+1) = 1.5$ from measurement 10/13/2010 from location MW-5

Rosner Statistic $R = |1.5 - 0.753906|/0.300437 = 2.48336$

$\text{Lambda}(65, 2, 0.01) = 3.585$

Measurement 10/13/2010 for location MW-5 is an outlier

Iteration i = 0

Mean of 65 measurements = 0.773077

Std Dev = 0.335768

$x(i+1) = 2$ from measurement 3/2/2010 from location MW-5

Rosner Statistic $R = |2 - 0.773077|/0.335768 = 3.65408$

$\text{Lambda}(65, 1, 0.01) = 3.59$

Measurement 3/2/2010 for location MW-5 is an outlier

Rosner's Test for Outliers

Parameter: Total Xylenes

Location: MW-6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.927692

10 most extreme of 65 measurements

by order of magnitude difference from the mean

1	4/21/2011	MW-6	7.9	6.97231
2	7/24/2018	MW-6	2.8	1.87231
3	3/2/2010	MW-6	ND<2 U	1.07231
4	3/23/2011	MW-6	1.6	0.672308
5	8/16/2010	MW-6	ND<1.5 U	0.572308
6	9/17/2010	MW-6	ND<1.5 U	0.572308
7	4/30/2010	MW-6	ND<1.5 U	0.572308
8	7/26/2010	MW-6	ND<1.5 U	0.572308
9	10/13/2010	MW-6	ND<1.5 U	0.572308
10	3/4/2010	MW-6	ND<1.5 U	0.572308

Iteration i = 9

Mean of 56 measurements = 0.6875

Std Dev = 0.219762

$x(i+1)$ = 1.5 from measurement 3/4/2010 from location MW-6

Rosner Statistic $R = |1.5 - 0.6875|/0.219762 = 3.69718$

$\Lambda(65, 10, 0.01) = 3.53$

3.69718 > 3.53 -- Measurement 3/4/2010 for location MW-6 is an outlier

Iteration i = 8

Mean of 57 measurements = 0.701754

Std Dev = 0.242929

$x(i+1)$ = 1.5 from measurement 10/13/2010 from location MW-6

Rosner Statistic $R = |1.5 - 0.701754|/0.242929 = 3.28592$

$\Lambda(65, 9, 0.01) = 3.537$

Measurement 10/13/2010 for location MW-6 is an outlier

Iteration i = 7

Mean of 58 measurements = 0.715517

Std Dev = 0.262613

$x(i+1)$ = 1.5 from measurement 7/26/2010 from location MW-6

Rosner Statistic $R = |1.5 - 0.715517|/0.262613 = 2.98722$

$\Lambda(65, 8, 0.01) = 3.544$

Measurement 7/26/2010 for location MW-6 is an outlier

Iteration i = 6

Mean of 59 measurements = 0.728814

Std Dev = 0.279655

$x(i+1)$ = 1.5 from measurement 4/30/2010 from location MW-6

Rosner Statistic $R = |1.5 - 0.728814|/0.279655 = 2.75763$

$\Lambda(65, 7, 0.01) = 3.551$

Measurement 4/30/2010 for location MW-6 is an outlier

Iteration i = 5

Mean of 60 measurements = 0.741667

Std Dev = 0.294608

$x(i+1) = 1.5$ from measurement 9/17/2010 from location MW-6

Rosner Statistic $R = |1.5 - 0.741667|/0.294608 = 2.57404$

$\text{Lambda}(65, 6, 0.01) = 3.558$

Measurement 9/17/2010 for location MW-6 is an outlier

Iteration i = 4

Mean of 61 measurements = 0.754098

Std Dev = 0.307855

$x(i+1) = 1.5$ from measurement 8/16/2010 from location MW-6

Rosner Statistic $R = |1.5 - 0.754098|/0.307855 = 2.4229$

$\text{Lambda}(65, 5, 0.01) = 3.565$

Measurement 8/16/2010 for location MW-6 is an outlier

Iteration i = 3

Mean of 62 measurements = 0.767742

Std Dev = 0.32367

$x(i+1) = 1.6$ from measurement 3/23/2011 from location MW-6

Rosner Statistic $R = |1.6 - 0.767742|/0.32367 = 2.57132$

$\text{Lambda}(65, 4, 0.01) = 3.57$

Measurement 3/23/2011 for location MW-6 is an outlier

Iteration i = 2

Mean of 63 measurements = 0.787302

Std Dev = 0.356616

$x(i+1) = 2$ from measurement 3/2/2010 from location MW-6

Rosner Statistic $R = |2 - 0.787302|/0.356616 = 3.40057$

$\text{Lambda}(65, 3, 0.01) = 3.58$

Measurement 3/2/2010 for location MW-6 is an outlier

Iteration i = 1

Mean of 64 measurements = 0.81875

Std Dev = 0.434111

$x(i+1) = 2.8$ from measurement 7/24/2018 from location MW-6

Rosner Statistic $R = |2.8 - 0.81875|/0.434111 = 4.56392$

$\text{Lambda}(65, 2, 0.01) = 3.585$

Measurement 7/24/2018 for location MW-6 is an outlier

Iteration i = 0

Mean of 65 measurements = 0.927692

Std Dev = 0.978241

$x(i+1) = 7.9$ from measurement 4/21/2011 from location MW-6

Rosner Statistic $R = |7.9 - 0.927692|/0.978241 = 7.12739$

$\text{Lambda}(65, 1, 0.01) = 3.59$

Measurement 4/21/2011 for location MW-6 is an outlier

Rosner's Test for Outliers

Parameter: Total Xylenes

Location: MW-7

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 0.817308

10 most extreme of 26 measurements

by order of magnitude difference from the mean

1	10/13/2010	MW-7	ND<1.5 U	0.682692
2	7/26/2010	MW-7	ND<1.5 U	0.682692
3	4/30/2010	MW-7	ND<1.5 U	0.682692
4	3/4/2010	MW-7	ND<1.5 U	0.682692
5	10/18/2012	MW-7	ND<0.5 U	-0.317308
6	1/30/2017	MW-7	ND<0.5 U	-0.317308
7	7/26/2016	MW-7	ND<0.5 U	-0.317308
8	7/21/2015	MW-7	ND<0.5 U	-0.317308
9	1/29/2013	MW-7	ND<0.5 U	-0.317308
10	1/27/2015	MW-7	ND<0.5 U	-0.317308

Iteration i = 9

Mean of 17 measurements = 0.75

Std Dev = 0.197642

$x(i+1)$ = 0.5 from measurement 1/27/2015 from location MW-7

Rosner Statistic $R = |0.5 - 0.75|/0.197642 = 1.26491$

$\Lambda(26, 10, 0.01) = 2.89$

$1.26491 < 2.89$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 18 measurements = 0.736111

Std Dev = 0.200591

$x(i+1)$ = 0.5 from measurement 1/29/2013 from location MW-7

Rosner Statistic $R = |0.5 - 0.736111|/0.200591 = 1.17707$

$\Lambda(26, 9, 0.01) = 2.924$

$1.17707 < 2.924$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 19 measurements = 0.723684

Std Dev = 0.202326

$x(i+1)$ = 0.5 from measurement 7/21/2015 from location MW-7

Rosner Statistic $R = |0.5 - 0.723684|/0.202326 = 1.10557$

$\Lambda(26, 8, 0.01) = 2.958$

$1.10557 < 2.958$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 20 measurements = 0.7125

Std Dev = 0.203182

$x(i+1)$ = 0.5 from measurement 7/26/2016 from location MW-7

Rosner Statistic $R = |0.5 - 0.7125|/0.203182 = 1.04586$

$\Lambda(26, 7, 0.01) = 2.992$

$1.04586 < 2.992$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 21 measurements = 0.702381

Std Dev = 0.203394

$x(i+1) = 0.5$ from measurement 1/30/2017 from location MW-7

Rosner Statistic $R = |0.5 - 0.702381|/0.203394 = 0.99502$

$\text{Lambda}(26, 6, 0.01) = 3.026$

$0.99502 < 3.026$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 22 measurements = 0.693182

Std Dev = 0.203128

$x(i+1) = 0.5$ from measurement 10/18/2012 from location MW-7

Rosner Statistic $R = |0.5 - 0.693182|/0.203128 = 0.951037$

$\text{Lambda}(26, 5, 0.01) = 3.06$

$0.951037 < 3.06$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 23 measurements = 0.728261

Std Dev = 0.260169

$x(i+1) = 1.5$ from measurement 3/4/2010 from location MW-7

Rosner Statistic $R = |1.5 - 0.728261|/0.260169 = 2.9663$

$\text{Lambda}(26, 4, 0.01) = 3.09$

$2.9663 < 3.09$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 24 measurements = 0.760417

Std Dev = 0.299267

$x(i+1) = 1.5$ from measurement 4/30/2010 from location MW-7

Rosner Statistic $R = |1.5 - 0.760417|/0.299267 = 2.47132$

$\text{Lambda}(26, 3, 0.01) = 3.11$

$2.47132 < 3.11$ -- No outliers detected for $i = 2$

Iteration i = 1

Mean of 25 measurements = 0.79

Std Dev = 0.328189

$x(i+1) = 1.5$ from measurement 7/26/2010 from location MW-7

Rosner Statistic $R = |1.5 - 0.79|/0.328189 = 2.16338$

$\text{Lambda}(26, 2, 0.01) = 3.14$

$2.16338 < 3.14$ -- No outliers detected for $i = 1$

Iteration i = 0

Mean of 26 measurements = 0.817308

Std Dev = 0.350412

$x(i+1) = 1.5$ from measurement 10/13/2010 from location MW-7

Rosner Statistic $R = |1.5 - 0.817308|/0.350412 = 1.94826$

$\text{Lambda}(26, 1, 0.01) = 3.16$

$1.94826 < 3.16$ -- No outliers detected for $i = 0$

Rosner's Test for Outliers

Parameter: Chloride

Location: MW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 323.444

10 most extreme of 27 measurements

by order of magnitude difference from the mean

1	1/30/2019	MW-1	1280	956.556
2	7/21/2015	MW-1	646	322.556
3	10/18/2012	MW-1	194	-129.444
4	3/4/2010	MW-1	214	-109.444
5	7/26/2012	MW-1	219	-104.444
6	7/24/2017	MW-1	225	-98.4444
7	1/31/2014	MW-1	227	-96.4444
8	7/29/2013	MW-1	227	-96.4444
9	4/30/2010	MW-1	233	-90.4444
10	7/17/2014	MW-1	241	-82.4444

Iteration i = 9

Mean of 18 measurements = 292.667

Std Dev = 43.8809

$x(i+1)$ = 241 from measurement 7/17/2014 from location MW-1

Rosner Statistic $R = |241 - 292.667|/43.8809 = 1.17743$

$\text{Lambda}(27, 10, 0.01) = 2.93$

$1.17743 < 2.93$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 19 measurements = 289.526

Std Dev = 44.7876

$x(i+1)$ = 233 from measurement 4/30/2010 from location MW-1

Rosner Statistic $R = |233 - 289.526|/44.7876 = 1.2621$

$\text{Lambda}(27, 9, 0.01) = 2.962$

$1.2621 < 2.962$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 20 measurements = 286.4

Std Dev = 45.7803

$x(i+1)$ = 227 from measurement 7/29/2013 from location MW-1

Rosner Statistic $R = |227 - 286.4|/45.7803 = 1.2975$

$\text{Lambda}(27, 8, 0.01) = 2.994$

$1.2975 < 2.994$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 21 measurements = 283.571

Std Dev = 46.4657

$x(i+1)$ = 227 from measurement 1/31/2014 from location MW-1

Rosner Statistic $R = |227 - 283.571|/46.4657 = 1.21749$

$\text{Lambda}(27, 7, 0.01) = 3.026$

$1.21749 < 3.026$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 22 measurements = 280.909

Std Dev = 47.0338

$x(i+1)$ = 225 from measurement 7/24/2017 from location MW-1

Rosner Statistic $R = |225 - 280.909|/47.0338 = 1.1887$

$\text{Lambda}(27, 6, 0.01) = 3.058$

$1.1887 < 3.058$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 23 measurements = 278.217

Std Dev = 47.7312

$x(i+1)$ = 219 from measurement 7/26/2012 from location MW-1

Rosner Statistic $R = |219 - 278.217|/47.7312 = 1.24064$

$\text{Lambda}(27, 5, 0.01) = 3.09$

$1.24064 < 3.09$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 24 measurements = 275.542

Std Dev = 48.4875

$x(i+1)$ = 214 from measurement 3/4/2010 from location MW-1

Rosner Statistic $R = |214 - 275.542|/48.4875 = 1.26923$

$\text{Lambda}(27, 4, 0.01) = 3.11$

$1.26923 < 3.11$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 25 measurements = 272.28

Std Dev = 50.1901

$x(i+1)$ = 194 from measurement 10/18/2012 from location MW-1

Rosner Statistic $R = |194 - 272.28|/50.1901 = 1.55967$

$\text{Lambda}(27, 3, 0.01) = 3.14$

$1.55967 < 3.14$ -- No outliers detected for $i = 2$

Iteration i = 1

Mean of 26 measurements = 286.654

Std Dev = 88.2614

$x(i+1)$ = 646 from measurement 7/21/2015 from location MW-1

Rosner Statistic $R = |646 - 286.654|/88.2614 = 4.07138$

$\text{Lambda}(27, 2, 0.01) = 3.16$

$4.07138 > 3.16$ -- Measurement 7/21/2015 for location MW-1 is an outlier

Iteration i = 0

Mean of 27 measurements = 323.444

Std Dev = 209.848

$x(i+1)$ = 1280 from measurement 1/30/2019 from location MW-1

Rosner Statistic $R = |1280 - 323.444|/209.848 = 4.55832$

$\text{Lambda}(27, 1, 0.01) = 3.18$

Measurement 1/30/2019 for location MW-1 is an outlier

Rosner's Test for Outliers

Parameter: Chloride

Location: MW-2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 308.593

10 most extreme of 27 measurements

by order of magnitude difference from the mean

1	1/30/2019	MW-2	1220	911.407
2	7/21/2011	MW-2	1	-307.593
3	10/18/2012	MW-2	171	-137.593
4	7/29/2013	MW-2	209	-99.5926
5	7/24/2018	MW-2	406	97.4074
6	11/25/2009	MW-2	403	94.4074
7	1/29/2018	MW-2	402	93.4074
8	1/31/2014	MW-2	219	-89.5926
9	7/24/2017	MW-2	228	-80.5926
10	7/26/2012	MW-2	236	-72.5926

Iteration i = 9

Mean of 18 measurements = 281.833

Std Dev = 41.4278

$x(i+1)$ = 236 from measurement 7/26/2012 from location MW-2

Rosner Statistic $R = |236 - 281.833|/41.4278 = 1.10634$

$\Lambda(27, 10, 0.01) = 2.93$

$1.10634 < 2.93$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 19 measurements = 279

Std Dev = 42.1123

$x(i+1)$ = 228 from measurement 7/24/2017 from location MW-2

Rosner Statistic $R = |228 - 279|/42.1123 = 1.21105$

$\Lambda(27, 9, 0.01) = 2.962$

$1.21105 < 2.962$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 20 measurements = 276

Std Dev = 43.1289

$x(i+1)$ = 219 from measurement 1/31/2014 from location MW-2

Rosner Statistic $R = |219 - 276|/43.1289 = 1.32162$

$\Lambda(27, 8, 0.01) = 2.994$

$1.32162 < 2.994$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 21 measurements = 282

Std Dev = 50.2305

$x(i+1)$ = 402 from measurement 1/29/2018 from location MW-2

Rosner Statistic $R = |402 - 282|/50.2305 = 2.38899$

$\Lambda(27, 7, 0.01) = 3.026$

$2.38899 < 3.026$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 22 measurements = 287.5

Std Dev = 55.3936

$x(i+1)$ = 403 from measurement 11/25/2009 from location MW-2

Rosner Statistic $R = |403 - 287.5|/55.3936 = 2.08508$

$\text{Lambda}(27, 6, 0.01) = 3.058$

$2.08508 < 3.058$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 23 measurements = 292.652

Std Dev = 59.4938

$x(i+1)$ = 406 from measurement 7/24/2018 from location MW-2

Rosner Statistic $R = |406 - 292.652|/59.4938 = 1.9052$

$\text{Lambda}(27, 5, 0.01) = 3.09$

$1.9052 < 3.09$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 24 measurements = 289.167

Std Dev = 60.6398

$x(i+1)$ = 209 from measurement 7/29/2013 from location MW-2

Rosner Statistic $R = |209 - 289.167|/60.6398 = 1.32201$

$\text{Lambda}(27, 4, 0.01) = 3.11$

$1.32201 < 3.11$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 25 measurements = 284.44

Std Dev = 63.8945

$x(i+1)$ = 171 from measurement 10/18/2012 from location MW-2

Rosner Statistic $R = |171 - 284.44|/63.8945 = 1.77543$

$\text{Lambda}(27, 3, 0.01) = 3.14$

$1.77543 < 3.14$ -- No outliers detected for $i = 2$

Iteration i = 1

Mean of 26 measurements = 273.538

Std Dev = 83.7206

$x(i+1)$ = 1 from measurement 7/21/2011 from location MW-2

Rosner Statistic $R = |1 - 273.538|/83.7206 = 3.25533$

$\text{Lambda}(27, 2, 0.01) = 3.16$

$3.25533 > 3.16$ -- Measurement 7/21/2011 for location MW-2 is an outlier

Iteration i = 0

Mean of 27 measurements = 308.593

Std Dev = 199.792

$x(i+1)$ = 1220 from measurement 1/30/2019 from location MW-2

Rosner Statistic $R = |1220 - 308.593|/199.792 = 4.56178$

$\text{Lambda}(27, 1, 0.01) = 3.18$

Measurement 1/30/2019 for location MW-2 is an outlier

Rosner's Test for Outliers

Parameter: Chloride

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 292.38

10 most extreme of 50 measurements

by order of magnitude difference from the mean

1	1/30/2019	MW-3	1230	937.62
2	1/27/2015	MW-3	719	426.62
3	1/29/2018	MW-3	435	142.62
4	1/31/2014	MW-3	169	-123.38
5	9/11/2012	MW-3	188	-104.38
6	1/27/2010	MW-3	190	-102.38
7	7/24/2018	MW-3	382	89.62
8	3/4/2010	MW-3	210	-82.38
9	10/18/2012	MW-3	213	-79.38
10	6/7/2010	MW-3	218	-74.38

Iteration i = 9

Mean of 41 measurements = 265.439

Std Dev = 28.2746

$x(i+1)$ = 218 from measurement 6/7/2010 from location MW-3

Rosner Statistic $R = |218 - 265.439|/28.2746 = 1.6778$

$\Lambda(50, 10, 0.01) = 3.39$

$1.6778 < 3.39$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 42 measurements = 264.19

Std Dev = 29.0762

$x(i+1)$ = 213 from measurement 10/18/2012 from location MW-3

Rosner Statistic $R = |213 - 264.19|/29.0762 = 1.76056$

$\Lambda(50, 9, 0.01) = 3.402$

$1.76056 < 3.402$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 43 measurements = 262.93

Std Dev = 29.893

$x(i+1)$ = 210 from measurement 3/4/2010 from location MW-3

Rosner Statistic $R = |210 - 262.93|/29.893 = 1.77066$

$\Lambda(50, 8, 0.01) = 3.414$

$1.77066 < 3.414$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 44 measurements = 265.636

Std Dev = 34.5692

$x(i+1)$ = 382 from measurement 7/24/2018 from location MW-3

Rosner Statistic $R = |382 - 265.636|/34.5692 = 3.36611$

$\Lambda(50, 7, 0.01) = 3.426$

$3.36611 < 3.426$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 45 measurements = 263.956

Std Dev = 35.9861

$x(i+1)$ = 190 from measurement 1/27/2010 from location MW-3

Rosner Statistic $R = |190 - 263.956|/35.9861 = 2.05512$

$\text{Lambda}(50, 6, 0.01) = 3.438$

$2.05512 < 3.438$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 46 measurements = 262.304

Std Dev = 37.3047

$x(i+1)$ = 188 from measurement 9/11/2012 from location MW-3

Rosner Statistic $R = |188 - 262.304|/37.3047 = 1.99182$

$\text{Lambda}(50, 5, 0.01) = 3.45$

$1.99182 < 3.45$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 47 measurements = 260.319

Std Dev = 39.327

$x(i+1)$ = 169 from measurement 1/31/2014 from location MW-3

Rosner Statistic $R = |169 - 260.319|/39.327 = 2.32205$

$\text{Lambda}(50, 4, 0.01) = 3.46$

$2.32205 < 3.46$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 48 measurements = 263.958

Std Dev = 46.3616

$x(i+1)$ = 435 from measurement 1/29/2018 from location MW-3

Rosner Statistic $R = |435 - 263.958|/46.3616 = 3.68929$

$\text{Lambda}(50, 3, 0.01) = 3.46$

$3.68929 > 3.46$ -- Measurement 1/29/2018 for location MW-3 is an outlier

Iteration i = 1

Mean of 49 measurements = 273.245

Std Dev = 79.5638

$x(i+1)$ = 719 from measurement 1/27/2015 from location MW-3

Rosner Statistic $R = |719 - 273.245|/79.5638 = 5.60249$

$\text{Lambda}(50, 2, 0.01) = 3.47$

Measurement 1/27/2015 for location MW-3 is an outlier

Iteration i = 0

Mean of 50 measurements = 292.38

Std Dev = 156.553

$x(i+1)$ = 1230 from measurement 1/30/2019 from location MW-3

Rosner Statistic $R = |1230 - 292.38|/156.553 = 5.98916$

$\text{Lambda}(50, 1, 0.01) = 3.48$

Measurement 1/30/2019 for location MW-3 is an outlier

Rosner's Test for Outliers

Parameter: Chloride

Location: MW-4

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 288.02

10 most extreme of 50 measurements

by order of magnitude difference from the mean

1	1/30/2019	MW-4	1300	1011.98
2	1/27/2015	MW-4	582	293.98
3	7/24/2018	MW-4	439	150.98
4	1/29/2018	MW-4	428	139.98
5	7/21/2015	MW-4	421	132.98
6	1/31/2014	MW-4	187	-101.02
7	9/11/2012	MW-4	190	-98.02
8	3/4/2010	MW-4	207	-81.02
9	1/27/2010	MW-4	208	-80.02
10	10/18/2012	MW-4	211	-77.02

Iteration i = 9

Mean of 41 measurements = 254.61

Std Dev = 27.4325

$x(i+1)$ = 211 from measurement 10/18/2012 from location MW-4

Rosner Statistic $R = |211 - 254.61|/27.4325 = 1.58971$

$\Lambda(50, 10, 0.01) = 3.39$

$1.58971 < 3.39$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 42 measurements = 253.5

Std Dev = 28.0342

$x(i+1)$ = 208 from measurement 1/27/2010 from location MW-4

Rosner Statistic $R = |208 - 253.5|/28.0342 = 1.62302$

$\Lambda(50, 9, 0.01) = 3.402$

$1.62302 < 3.402$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 43 measurements = 252.419

Std Dev = 28.5917

$x(i+1)$ = 207 from measurement 3/4/2010 from location MW-4

Rosner Statistic $R = |207 - 252.419|/28.5917 = 1.58852$

$\Lambda(50, 8, 0.01) = 3.414$

$1.58852 < 3.414$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 44 measurements = 251

Std Dev = 29.7829

$x(i+1)$ = 190 from measurement 9/11/2012 from location MW-4

Rosner Statistic $R = |190 - 251|/29.7829 = 2.04815$

$\Lambda(50, 7, 0.01) = 3.426$

$2.04815 < 3.426$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 45 measurements = 249.578

Std Dev = 30.9497

$x(i+1)$ = 187 from measurement 1/31/2014 from location MW-4

Rosner Statistic $R = |187 - 249.578|/30.9497 = 2.02192$

$\text{Lambda}(50, 6, 0.01) = 3.438$

$2.02192 < 3.438$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 46 measurements = 253.304

Std Dev = 39.6915

$x(i+1)$ = 421 from measurement 7/21/2015 from location MW-4

Rosner Statistic $R = |421 - 253.304|/39.6915 = 4.22497$

$\text{Lambda}(50, 5, 0.01) = 3.45$

$4.22497 > 3.45$ -- Measurement 7/21/2015 for location MW-4 is an outlier

Iteration i = 3

Mean of 47 measurements = 257.021

Std Dev = 46.8028

$x(i+1)$ = 428 from measurement 1/29/2018 from location MW-4

Rosner Statistic $R = |428 - 257.021|/46.8028 = 3.65318$

$\text{Lambda}(50, 4, 0.01) = 3.46$

Measurement 1/29/2018 for location MW-4 is an outlier

Iteration i = 2

Mean of 48 measurements = 260.813

Std Dev = 53.2336

$x(i+1)$ = 439 from measurement 7/24/2018 from location MW-4

Rosner Statistic $R = |439 - 260.813|/53.2336 = 3.34728$

$\text{Lambda}(50, 3, 0.01) = 3.46$

Measurement 7/24/2018 for location MW-4 is an outlier

Iteration i = 1

Mean of 49 measurements = 267.367

Std Dev = 69.8578

$x(i+1)$ = 582 from measurement 1/27/2015 from location MW-4

Rosner Statistic $R = |582 - 267.367|/69.8578 = 4.5039$

$\text{Lambda}(50, 2, 0.01) = 3.47$

Measurement 1/27/2015 for location MW-4 is an outlier

Iteration i = 0

Mean of 50 measurements = 288.02

Std Dev = 161.577

$x(i+1)$ = 1300 from measurement 1/30/2019 from location MW-4

Rosner Statistic $R = |1300 - 288.02|/161.577 = 6.26314$

$\text{Lambda}(50, 1, 0.01) = 3.48$

Measurement 1/30/2019 for location MW-4 is an outlier

Rosner's Test for Outliers

Parameter: Chloride

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 295.479

10 most extreme of 63 measurements

by order of magnitude difference from the mean

1	1/30/2019	MW-5	1130	834.521
2	1/27/2015	MW-5	589	293.521
3	7/29/2019	MW-5	ND<3 U	-292.479
4	7/24/2018	MW-5	505	209.521
5	1/29/2018	MW-5	454	158.521
6	4/27/2017	MW-5	423	127.521
7	7/24/2017	MW-5	207	-88.4786
8	9/11/2012	MW-5	207	-88.4786
9	10/31/2016	MW-5	382	86.5214
10	3/4/2010	MW-5	211	-84.4786

Iteration i = 9

Mean of 54 measurements = 272.503

Std Dev = 36.0206

$x(i+1)$ = 211 from measurement 3/4/2010 from location MW-5

Rosner Statistic $R = |211 - 272.503|/36.0206 = 1.70743$

$\text{Lambda}(63, 10, 0.01) = 3.514$

$1.70743 < 3.514$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 55 measurements = 274.494

Std Dev = 38.6193

$x(i+1)$ = 382 from measurement 10/31/2016 from location MW-5

Rosner Statistic $R = |382 - 274.494|/38.6193 = 2.78375$

$\text{Lambda}(63, 9, 0.01) = 3.5214$

$2.78375 < 3.5214$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 56 measurements = 273.288

Std Dev = 39.3151

$x(i+1)$ = 207 from measurement 9/11/2012 from location MW-5

Rosner Statistic $R = |207 - 273.288|/39.3151 = 1.68608$

$\text{Lambda}(63, 8, 0.01) = 3.5288$

$1.68608 < 3.5288$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 57 measurements = 272.125

Std Dev = 39.9396

$x(i+1)$ = 207 from measurement 7/24/2017 from location MW-5

Rosner Statistic $R = |207 - 272.125|/39.9396 = 1.6306$

$\text{Lambda}(63, 7, 0.01) = 3.5362$

$1.6306 < 3.5362$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 58 measurements = 274.727

Std Dev = 44.2679

$x(i+1)$ = 423 from measurement 4/27/2017 from location MW-5

Rosner Statistic $R = |423 - 274.727|/44.2679 = 3.34945$

$\text{Lambda}(63, 6, 0.01) = 3.5436$

$3.34945 < 3.5436$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 59 measurements = 277.765

Std Dev = 49.705

$x(i+1)$ = 454 from measurement 1/29/2018 from location MW-5

Rosner Statistic $R = |454 - 277.765|/49.705 = 3.54561$

$\text{Lambda}(63, 5, 0.01) = 3.551$

$3.54561 < 3.551$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 60 measurements = 281.553

Std Dev = 57.3525

$x(i+1)$ = 505 from measurement 7/24/2018 from location MW-5

Rosner Statistic $R = |505 - 281.553|/57.3525 = 3.89604$

$\text{Lambda}(63, 4, 0.01) = 3.558$

$3.89604 > 3.558$ -- Measurement 7/24/2018 for location MW-5 is an outlier

Iteration i = 2

Mean of 61 measurements = 276.986

Std Dev = 67.1303

$x(i+1)$ = 3 from measurement 7/29/2019 from location MW-5

Rosner Statistic $R = |3 - 276.986|/67.1303 = 4.08141$

$\text{Lambda}(63, 3, 0.01) = 3.568$

Measurement 7/29/2019 for location MW-5 is an outlier

Iteration i = 1

Mean of 62 measurements = 282.019

Std Dev = 77.4778

$x(i+1)$ = 589 from measurement 1/27/2015 from location MW-5

Rosner Statistic $R = |589 - 282.019|/77.4778 = 3.96219$

$\text{Lambda}(63, 2, 0.01) = 3.571$

Measurement 1/27/2015 for location MW-5 is an outlier

Iteration i = 0

Mean of 63 measurements = 295.479

Std Dev = 131.605

$x(i+1)$ = 1130 from measurement 1/30/2019 from location MW-5

Rosner Statistic $R = |1130 - 295.479|/131.605 = 6.34111$

$\text{Lambda}(63, 1, 0.01) = 3.578$

Measurement 1/30/2019 for location MW-5 is an outlier

Rosner's Test for Outliers

Parameter: Chloride

Location: MW-6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 290.476

10 most extreme of 63 measurements

by order of magnitude difference from the mean

1	1/30/2019	MW-6	989	698.524
2	1/27/2015	MW-6	728	437.524
3	12/27/2010	MW-6	5.3	-285.176
4	1/29/2018	MW-6	526	235.524
5	10/31/2016	MW-6	60.1	-230.376
6	10/27/2017	MW-6	69	-221.476
7	7/24/2018	MW-6	451	160.524
8	4/12/2018	MW-6	390	99.5243
9	1/30/2017	MW-6	387	96.5243
10	9/11/2012	MW-6	205	-85.4757

Iteration i = 9

Mean of 54 measurements = 272.122

Std Dev = 35.8021

$x(i+1)$ = 205 from measurement 9/11/2012 from location MW-6

Rosner Statistic $R = |205 - 272.122|/35.8021 = 1.8748$

$\text{Lambda}(63, 10, 0.01) = 3.514$

$1.8748 < 3.514$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 55 measurements = 274.21

Std Dev = 38.704

$x(i+1)$ = 387 from measurement 1/30/2017 from location MW-6

Rosner Statistic $R = |387 - 274.21|/38.704 = 2.91416$

$\text{Lambda}(63, 9, 0.01) = 3.5214$

$2.91416 < 3.5214$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 56 measurements = 276.278

Std Dev = 41.3543

$x(i+1)$ = 390 from measurement 4/12/2018 from location MW-6

Rosner Statistic $R = |390 - 276.278|/41.3543 = 2.74994$

$\text{Lambda}(63, 8, 0.01) = 3.5288$

$2.74994 < 3.5288$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 57 measurements = 279.343

Std Dev = 47.066

$x(i+1)$ = 451 from measurement 7/24/2018 from location MW-6

Rosner Statistic $R = |451 - 279.343|/47.066 = 3.64714$

$\text{Lambda}(63, 7, 0.01) = 3.5362$

$3.64714 > 3.5362$ -- Measurement 7/24/2018 for location MW-6 is an outlier

Iteration i = 5

Mean of 58 measurements = 275.717

Std Dev = 54.2142

$x(i+1)$ = 69 from measurement 10/27/2017 from location MW-6

Rosner Statistic $R = |69 - 275.717|/54.2142 = 3.81296$

$\text{Lambda}(63, 6, 0.01) = 3.5436$

Measurement 10/27/2017 for location MW-6 is an outlier

Iteration i = 4

Mean of 59 measurements = 272.062

Std Dev = 60.634

$x(i+1)$ = 60.1 from measurement 10/31/2016 from location MW-6

Rosner Statistic $R = |60.1 - 272.062|/60.634 = 3.49576$

$\text{Lambda}(63, 5, 0.01) = 3.551$

Measurement 10/31/2016 for location MW-6 is an outlier

Iteration i = 3

Mean of 60 measurements = 276.294

Std Dev = 68.4756

$x(i+1)$ = 526 from measurement 1/29/2018 from location MW-6

Rosner Statistic $R = |526 - 276.294|/68.4756 = 3.64663$

$\text{Lambda}(63, 4, 0.01) = 3.558$

Measurement 1/29/2018 for location MW-6 is an outlier

Iteration i = 2

Mean of 61 measurements = 271.852

Std Dev = 76.2539

$x(i+1)$ = 5.3 from measurement 12/27/2010 from location MW-6

Rosner Statistic $R = |5.3 - 271.852|/76.2539 = 3.49558$

$\text{Lambda}(63, 3, 0.01) = 3.568$

Measurement 12/27/2010 for location MW-6 is an outlier

Iteration i = 1

Mean of 62 measurements = 279.209

Std Dev = 95.2645

$x(i+1)$ = 728 from measurement 1/27/2015 from location MW-6

Rosner Statistic $R = |728 - 279.209|/95.2645 = 4.711$

$\text{Lambda}(63, 2, 0.01) = 3.571$

Measurement 1/27/2015 for location MW-6 is an outlier

Iteration i = 0

Mean of 63 measurements = 290.476

Std Dev = 130.099

$x(i+1)$ = 989 from measurement 1/30/2019 from location MW-6

Rosner Statistic $R = |989 - 290.476|/130.099 = 5.36916$

$\text{Lambda}(63, 1, 0.01) = 3.578$

Measurement 1/30/2019 for location MW-6 is an outlier

Rosner's Test for Outliers

Parameter: Chloride

Location: MW-7

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 331.885

10 most extreme of 26 measurements

by order of magnitude difference from the mean

1	1/30/2019	MW-7	835	503.115
2	1/29/2018	MW-7	576	244.115
3	7/29/2019	MW-7	210	-121.885
4	4/21/2011	MW-7	239	-92.8846
5	1/31/2014	MW-7	255	-76.8846
6	10/18/2012	MW-7	256	-75.8846
7	3/4/2010	MW-7	262	-69.8846
8	7/24/2018	MW-7	400	68.1154
9	7/24/2017	MW-7	267	-64.8846
10	10/31/2011	MW-7	271	-60.8846

Iteration i = 9

Mean of 17 measurements = 313.471

Std Dev = 33.1382

$x(i+1)$ = 271 from measurement 10/31/2011 from location MW-7

Rosner Statistic $R = |271 - 313.471|/33.1382 = 1.28162$

$\Lambda(26, 10, 0.01) = 2.89$

$1.28162 < 2.89$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 18 measurements = 310.889

Std Dev = 33.9635

$x(i+1)$ = 267 from measurement 7/24/2017 from location MW-7

Rosner Statistic $R = |267 - 310.889|/33.9635 = 1.29224$

$\Lambda(26, 9, 0.01) = 2.924$

$1.29224 < 2.924$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 19 measurements = 315.579

Std Dev = 38.8248

$x(i+1)$ = 400 from measurement 7/24/2018 from location MW-7

Rosner Statistic $R = |400 - 315.579|/38.8248 = 2.17441$

$\Lambda(26, 8, 0.01) = 2.958$

$2.17441 < 2.958$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 20 measurements = 312.9

Std Dev = 39.643

$x(i+1)$ = 262 from measurement 3/4/2010 from location MW-7

Rosner Statistic $R = |262 - 312.9|/39.643 = 1.28396$

$\Lambda(26, 7, 0.01) = 2.992$

$1.28396 < 2.992$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 21 measurements = 310.19

Std Dev = 40.5852

$x(i+1)$ = 256 from measurement 10/18/2012 from location MW-7

Rosner Statistic $R = |256 - 310.19|/40.5852 = 1.33523$

$\text{Lambda}(26, 6, 0.01) = 3.026$

$1.33523 < 3.026$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 22 measurements = 307.682

Std Dev = 41.318

$x(i+1)$ = 255 from measurement 1/31/2014 from location MW-7

Rosner Statistic $R = |255 - 307.682|/41.318 = 1.27503$

$\text{Lambda}(26, 5, 0.01) = 3.06$

$1.27503 < 3.06$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 23 measurements = 304.696

Std Dev = 42.8331

$x(i+1)$ = 239 from measurement 4/21/2011 from location MW-7

Rosner Statistic $R = |239 - 304.696|/42.8331 = 1.53376$

$\text{Lambda}(26, 4, 0.01) = 3.09$

$1.53376 < 3.09$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 24 measurements = 300.75

Std Dev = 46.1361

$x(i+1)$ = 210 from measurement 7/29/2019 from location MW-7

Rosner Statistic $R = |210 - 300.75|/46.1361 = 1.967$

$\text{Lambda}(26, 3, 0.01) = 3.11$

$1.967 < 3.11$ -- No outliers detected for $i = 2$

Iteration i = 1

Mean of 25 measurements = 311.76

Std Dev = 71.2064

$x(i+1)$ = 576 from measurement 1/29/2018 from location MW-7

Rosner Statistic $R = |576 - 311.76|/71.2064 = 3.7109$

$\text{Lambda}(26, 2, 0.01) = 3.14$

$3.7109 > 3.14$ -- Measurement 1/29/2018 for location MW-7 is an outlier

Iteration i = 0

Mean of 26 measurements = 331.885

Std Dev = 124.087

$x(i+1)$ = 835 from measurement 1/30/2019 from location MW-7

Rosner Statistic $R = |835 - 331.885|/124.087 = 4.05454$

$\text{Lambda}(26, 1, 0.01) = 3.16$

Measurement 1/30/2019 for location MW-7 is an outlier

Rosner's Test for Outliers

Parameter: Sulfate

Location: MW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 913.037

10 most extreme of 27 measurements

by order of magnitude difference from the mean

1	1/30/2019	MW-1	3410	2496.96
2	7/21/2015	MW-1	1810	896.963
3	4/21/2011	MW-1	587	-326.037
4	10/18/2012	MW-1	590	-323.037
5	3/4/2010	MW-1	597	-316.037
6	7/24/2017	MW-1	617	-296.037
7	4/30/2010	MW-1	634	-279.037
8	7/29/2019	MW-1	670	-243.037
9	7/26/2012	MW-1	673	-240.037
10	1/31/2014	MW-1	684	-229.037

Iteration i = 9

Mean of 18 measurements = 836.889

Std Dev = 116.223

$x(i+1)$ = 684 from measurement 1/31/2014 from location MW-1

Rosner Statistic $R = |684 - 836.889|/116.223 = 1.31548$

$\text{Lambda}(27, 10, 0.01) = 2.93$

$1.31548 < 2.93$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 19 measurements = 828.263

Std Dev = 119.042

$x(i+1)$ = 673 from measurement 7/26/2012 from location MW-1

Rosner Statistic $R = |673 - 828.263|/119.042 = 1.30427$

$\text{Lambda}(27, 9, 0.01) = 2.962$

$1.30427 < 2.962$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 20 measurements = 820.35

Std Dev = 121.151

$x(i+1)$ = 670 from measurement 7/29/2019 from location MW-1

Rosner Statistic $R = |670 - 820.35|/121.151 = 1.24102$

$\text{Lambda}(27, 8, 0.01) = 2.994$

$1.24102 < 2.994$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 21 measurements = 811.476

Std Dev = 124.889

$x(i+1)$ = 634 from measurement 4/30/2010 from location MW-1

Rosner Statistic $R = |634 - 811.476|/124.889 = 1.42107$

$\text{Lambda}(27, 7, 0.01) = 3.026$

$1.42107 < 3.026$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 22 measurements = 802.636

Std Dev = 128.739

$x(i+1)$ = 617 from measurement 7/24/2017 from location MW-1

Rosner Statistic $R = |617 - 802.636|/128.739 = 1.44196$

$\text{Lambda}(27, 6, 0.01) = 3.058$

$1.44196 < 3.058$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 23 measurements = 793.696

Std Dev = 132.887

$x(i+1)$ = 597 from measurement 3/4/2010 from location MW-1

Rosner Statistic $R = |597 - 793.696|/132.887 = 1.48018$

$\text{Lambda}(27, 5, 0.01) = 3.09$

$1.48018 < 3.09$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 24 measurements = 785.208

Std Dev = 136.455

$x(i+1)$ = 590 from measurement 10/18/2012 from location MW-1

Rosner Statistic $R = |590 - 785.208|/136.455 = 1.43057$

$\text{Lambda}(27, 4, 0.01) = 3.11$

$1.43057 < 3.11$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 25 measurements = 777.28

Std Dev = 139.34

$x(i+1)$ = 587 from measurement 4/21/2011 from location MW-1

Rosner Statistic $R = |587 - 777.28|/139.34 = 1.36558$

$\text{Lambda}(27, 3, 0.01) = 3.14$

$1.36558 < 3.14$ -- No outliers detected for $i = 2$

Iteration i = 1

Mean of 26 measurements = 817

Std Dev = 244.251

$x(i+1)$ = 1810 from measurement 7/21/2015 from location MW-1

Rosner Statistic $R = |1810 - 817|/244.251 = 4.06549$

$\text{Lambda}(27, 2, 0.01) = 3.16$

$4.06549 > 3.16$ -- Measurement 7/21/2015 for location MW-1 is an outlier

Iteration i = 0

Mean of 27 measurements = 913.037

Std Dev = 553.523

$x(i+1)$ = 3410 from measurement 1/30/2019 from location MW-1

Rosner Statistic $R = |3410 - 913.037|/553.523 = 4.51104$

$\text{Lambda}(27, 1, 0.01) = 3.18$

Measurement 1/30/2019 for location MW-1 is an outlier

Rosner's Test for Outliers

Parameter: Sulfate

Location: MW-2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 882

10 most extreme of 27 measurements

by order of magnitude difference from the mean

1	1/30/2019	MW-2	3230	2348
2	10/18/2012	MW-2	545	-337
3	1/30/2017	MW-2	1200	318
4	11/25/2009	MW-2	1185	303
5	1/31/2014	MW-2	579	-303
6	7/24/2017	MW-2	593	-289
7	7/29/2013	MW-2	630	-252
8	1/14/2011	MW-2	1130	248
9	4/30/2010	MW-2	670	-212
10	1/29/2018	MW-2	1090	208

Iteration i = 9

Mean of 18 measurements = 780.667

Std Dev = 103.775

$x(i+1)$ = 1090 from measurement 1/29/2018 from location MW-2

Rosner Statistic $R = |1090 - 780.667|/103.775 = 2.98082$

$\Lambda(27, 10, 0.01) = 2.93$

2.98082 > 2.93 -- Measurement 1/29/2018 for location MW-2 is an outlier

Iteration i = 8

Mean of 19 measurements = 774.842

Std Dev = 103.997

$x(i+1)$ = 670 from measurement 4/30/2010 from location MW-2

Rosner Statistic $R = |670 - 774.842|/103.997 = 1.00812$

$\Lambda(27, 9, 0.01) = 2.962$

Measurement 4/30/2010 for location MW-2 is an outlier

Iteration i = 7

Mean of 20 measurements = 792.6

Std Dev = 128.659

$x(i+1)$ = 1130 from measurement 1/14/2011 from location MW-2

Rosner Statistic $R = |1130 - 792.6|/128.659 = 2.62244$

$\Lambda(27, 8, 0.01) = 2.994$

Measurement 1/14/2011 for location MW-2 is an outlier

Iteration i = 6

Mean of 21 measurements = 784.857

Std Dev = 130.324

$x(i+1)$ = 630 from measurement 7/29/2013 from location MW-2

Rosner Statistic $R = |630 - 784.857|/130.324 = 1.18824$

$\Lambda(27, 7, 0.01) = 3.026$

Measurement 7/29/2013 for location MW-2 is an outlier

Iteration i = 5

Mean of 22 measurements = 776.136

Std Dev = 133.599

$x(i+1)$ = 593 from measurement 7/24/2017 from location MW-2

Rosner Statistic $R = |593 - 776.136|/133.599 = 1.37079$

$\text{Lambda}(27, 6, 0.01) = 3.058$

Measurement 7/24/2017 for location MW-2 is an outlier

Iteration i = 4

Mean of 23 measurements = 767.565

Std Dev = 136.847

$x(i+1)$ = 579 from measurement 1/31/2014 from location MW-2

Rosner Statistic $R = |579 - 767.565|/136.847 = 1.37792$

$\text{Lambda}(27, 5, 0.01) = 3.09$

Measurement 1/31/2014 for location MW-2 is an outlier

Iteration i = 3

Mean of 24 measurements = 784.958

Std Dev = 158.661

$x(i+1)$ = 1185 from measurement 11/25/2009 from location MW-2

Rosner Statistic $R = |1185 - 784.958|/158.661 = 2.52136$

$\text{Lambda}(27, 4, 0.01) = 3.11$

Measurement 11/25/2009 for location MW-2 is an outlier

Iteration i = 2

Mean of 25 measurements = 801.56

Std Dev = 176.111

$x(i+1)$ = 1200 from measurement 1/30/2017 from location MW-2

Rosner Statistic $R = |1200 - 801.56|/176.111 = 2.26244$

$\text{Lambda}(27, 3, 0.01) = 3.14$

Measurement 1/30/2017 for location MW-2 is an outlier

Iteration i = 1

Mean of 26 measurements = 791.692

Std Dev = 179.739

$x(i+1)$ = 545 from measurement 10/18/2012 from location MW-2

Rosner Statistic $R = |545 - 791.692|/179.739 = 1.37251$

$\text{Lambda}(27, 2, 0.01) = 3.16$

Measurement 10/18/2012 for location MW-2 is an outlier

Iteration i = 0

Mean of 27 measurements = 882

Std Dev = 501.26

$x(i+1)$ = 3230 from measurement 1/30/2019 from location MW-2

Rosner Statistic $R = |3230 - 882|/501.26 = 4.6842$

$\text{Lambda}(27, 1, 0.01) = 3.18$

Measurement 1/30/2019 for location MW-2 is an outlier

Rosner's Test for Outliers

Parameter: Sulfate

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 788.686

10 most extreme of 51 measurements

by order of magnitude difference from the mean

1	1/30/2019	MW-3	3180	2391.31
2	1/27/2015	MW-3	338	-450.686
3	1/29/2018	MW-3	1210	421.314
4	1/30/2017	MW-3	1090	301.314
5	1/14/2011	MW-3	1030	241.314
6	1/27/2010	MW-3	551	-237.686
7	9/11/2012	MW-3	581	-207.686
8	3/4/2010	MW-3	589	-199.686
9	1/31/2014	MW-3	590	-198.686
10	7/24/2017	MW-3	592	-196.686

Iteration i = 9

Mean of 42 measurements = 739.619

Std Dev = 83.5131

$x(i+1)$ = 592 from measurement 7/24/2017 from location MW-3

Rosner Statistic $R = |592 - 739.619|/83.5131 = 1.76762$

$\Lambda(51, 10, 0.01) = 3.4$

$1.76762 < 3.4$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 43 measurements = 736.14

Std Dev = 85.6095

$x(i+1)$ = 590 from measurement 1/31/2014 from location MW-3

Rosner Statistic $R = |590 - 736.14|/85.6095 = 1.70705$

$\Lambda(51, 9, 0.01) = 3.4116$

$1.70705 < 3.4116$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 44 measurements = 732.795

Std Dev = 87.4676

$x(i+1)$ = 589 from measurement 3/4/2010 from location MW-3

Rosner Statistic $R = |589 - 732.795|/87.4676 = 1.64398$

$\Lambda(51, 8, 0.01) = 3.4232$

$1.64398 < 3.4232$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 45 measurements = 729.422

Std Dev = 89.3798

$x(i+1)$ = 581 from measurement 9/11/2012 from location MW-3

Rosner Statistic $R = |581 - 729.422|/89.3798 = 1.66058$

$\Lambda(51, 7, 0.01) = 3.4348$

$1.66058 < 3.4348$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 46 measurements = 725.543

Std Dev = 92.2132

$x(i+1)$ = 551 from measurement 1/27/2010 from location MW-3

Rosner Statistic $R = |551 - 725.543|/92.2132 = 1.89283$

$\text{Lambda}(51, 6, 0.01) = 3.4464$

$1.89283 < 3.4464$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 47 measurements = 732.021

Std Dev = 101.443

$x(i+1)$ = 1030 from measurement 1/14/2011 from location MW-3

Rosner Statistic $R = |1030 - 732.021|/101.443 = 2.93741$

$\text{Lambda}(51, 5, 0.01) = 3.458$

$2.93741 < 3.458$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 48 measurements = 739.479

Std Dev = 112.878

$x(i+1)$ = 1090 from measurement 1/30/2017 from location MW-3

Rosner Statistic $R = |1090 - 739.479|/112.878 = 3.10531$

$\text{Lambda}(51, 4, 0.01) = 3.468$

$3.10531 < 3.468$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 49 measurements = 749.082

Std Dev = 130.362

$x(i+1)$ = 1210 from measurement 1/29/2018 from location MW-3

Rosner Statistic $R = |1210 - 749.082|/130.362 = 3.53569$

$\text{Lambda}(51, 3, 0.01) = 3.469$

$3.53569 > 3.469$ -- Measurement 1/29/2018 for location MW-3 is an outlier

Iteration i = 1

Mean of 50 measurements = 740.86

Std Dev = 141.517

$x(i+1)$ = 338 from measurement 1/27/2015 from location MW-3

Rosner Statistic $R = |338 - 740.86|/141.517 = 2.84672$

$\text{Lambda}(51, 2, 0.01) = 3.478$

Measurement 1/27/2015 for location MW-3 is an outlier

Iteration i = 0

Mean of 51 measurements = 788.686

Std Dev = 369.163

$x(i+1)$ = 3180 from measurement 1/30/2019 from location MW-3

Rosner Statistic $R = |3180 - 788.686|/369.163 = 6.47766$

$\text{Lambda}(51, 1, 0.01) = 3.488$

Measurement 1/30/2019 for location MW-3 is an outlier

Rosner's Test for Outliers

Parameter: Sulfate

Location: MW-4

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 812.549

10 most extreme of 51 measurements

by order of magnitude difference from the mean

1	1/30/2019	MW-4	3340	2527.45
2	1/27/2015	MW-4	1440	627.451
3	1/13/2012	MW-4	1210	397.451
4	1/29/2018	MW-4	1180	367.451
5	1/31/2014	MW-4	458	-354.549
6	1/30/2017	MW-4	1100	287.451
7	7/21/2015	MW-4	1090	277.451
8	3/4/2010	MW-4	575	-237.549
9	9/11/2012	MW-4	588	-224.549
10	4/30/2010	MW-4	591	-221.549

Iteration i = 9

Mean of 42 measurements = 725.214

Std Dev = 85.1035

$x(i+1) = 591$ from measurement 4/30/2010 from location MW-4

Rosner Statistic $R = |591 - 725.214|/85.1035 = 1.57707$

$\text{Lambda}(51, 10, 0.01) = 3.4$

$1.57707 < 3.4$ -- No outliers detected for i = 9

Iteration i = 8

Mean of 43 measurements = 722.023

Std Dev = 86.6489

$x(i+1) = 588$ from measurement 9/11/2012 from location MW-4

Rosner Statistic $R = |588 - 722.023|/86.6489 = 1.54674$

$\text{Lambda}(51, 9, 0.01) = 3.4116$

$1.54674 < 3.4116$ -- No outliers detected for i = 8

Iteration i = 7

Mean of 44 measurements = 718.682

Std Dev = 88.4573

$x(i+1) = 575$ from measurement 3/4/2010 from location MW-4

Rosner Statistic $R = |575 - 718.682|/88.4573 = 1.62431$

$\text{Lambda}(51, 8, 0.01) = 3.4232$

$1.62431 < 3.4232$ -- No outliers detected for i = 7

Iteration i = 6

Mean of 45 measurements = 726.933

Std Dev = 103.493

$x(i+1) = 1090$ from measurement 7/21/2015 from location MW-4

Rosner Statistic $R = |1090 - 726.933|/103.493 = 3.50813$

$\text{Lambda}(51, 7, 0.01) = 3.4348$

$3.50813 > 3.4348$ -- Measurement 7/21/2015 for location MW-4 is an outlier

Iteration i = 5

Mean of 46 measurements = 735.043

Std Dev = 116.183

$x(i+1)$ = 1100 from measurement 1/30/2017 from location MW-4

Rosner Statistic $R = |1100 - 735.043|/116.183 = 3.14123$

$\text{Lambda}(51, 6, 0.01) = 3.4464$

Measurement 1/30/2017 for location MW-4 is an outlier

Iteration i = 4

Mean of 47 measurements = 729.149

Std Dev = 121.811

$x(i+1)$ = 458 from measurement 1/31/2014 from location MW-4

Rosner Statistic $R = |458 - 729.149|/121.811 = 2.22597$

$\text{Lambda}(51, 5, 0.01) = 3.458$

Measurement 1/31/2014 for location MW-4 is an outlier

Iteration i = 3

Mean of 48 measurements = 738.542

Std Dev = 136.956

$x(i+1)$ = 1180 from measurement 1/29/2018 from location MW-4

Rosner Statistic $R = |1180 - 738.542|/136.956 = 3.22335$

$\text{Lambda}(51, 4, 0.01) = 3.468$

Measurement 1/29/2018 for location MW-4 is an outlier

Iteration i = 2

Mean of 49 measurements = 748.163

Std Dev = 151.335

$x(i+1)$ = 1210 from measurement 1/13/2012 from location MW-4

Rosner Statistic $R = |1210 - 748.163|/151.335 = 3.05174$

$\text{Lambda}(51, 3, 0.01) = 3.469$

Measurement 1/13/2012 for location MW-4 is an outlier

Iteration i = 1

Mean of 50 measurements = 762

Std Dev = 178.907

$x(i+1)$ = 1440 from measurement 1/27/2015 from location MW-4

Rosner Statistic $R = |1440 - 762|/178.907 = 3.78967$

$\text{Lambda}(51, 2, 0.01) = 3.478$

Measurement 1/27/2015 for location MW-4 is an outlier

Iteration i = 0

Mean of 51 measurements = 812.549

Std Dev = 402.098

$x(i+1)$ = 3340 from measurement 1/30/2019 from location MW-4

Rosner Statistic $R = |3340 - 812.549|/402.098 = 6.28566$

$\text{Lambda}(51, 1, 0.01) = 3.488$

Measurement 1/30/2019 for location MW-4 is an outlier

Rosner's Test for Outliers

Parameter: Sulfate

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 782.106

10 most extreme of 64 measurements

by order of magnitude difference from the mean

1	1/30/2019	MW-5	2910	2127.89
2	1/29/2018	MW-5	1270	487.894
3	7/29/2019	MW-5	319	-463.106
4	1/27/2015	MW-5	349	-433.106
5	7/24/2018	MW-5	1160	377.894
6	4/12/2018	MW-5	1100	317.894
7	4/29/2019	MW-5	488	-294.106
8	1/30/2017	MW-5	1070	287.894
9	7/24/2017	MW-5	498	-284.106
10	4/13/2015	MW-5	498	-284.106

Iteration i = 9

Mean of 55 measurements = 743.469

Std Dev = 98.3879

$x(i+1)$ = 498 from measurement 4/13/2015 from location MW-5

Rosner Statistic $R = |498 - 743.469|/98.3879 = 2.49491$

$\text{Lambda}(64, 10, 0.01) = 3.522$

$2.49491 < 3.522$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 56 measurements = 739.086

Std Dev = 102.86

$x(i+1)$ = 498 from measurement 7/24/2017 from location MW-5

Rosner Statistic $R = |498 - 739.086|/102.86 = 2.34382$

$\text{Lambda}(64, 9, 0.01) = 3.5292$

$2.34382 < 3.5292$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 57 measurements = 744.891

Std Dev = 110.961

$x(i+1)$ = 1070 from measurement 1/30/2017 from location MW-5

Rosner Statistic $R = |1070 - 744.891|/110.961 = 2.92994$

$\text{Lambda}(64, 8, 0.01) = 3.5364$

$2.92994 < 3.5364$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 58 measurements = 740.462

Std Dev = 115.04

$x(i+1)$ = 488 from measurement 4/29/2019 from location MW-5

Rosner Statistic $R = |488 - 740.462|/115.04 = 2.19456$

$\text{Lambda}(64, 7, 0.01) = 3.5436$

$2.19456 < 3.5436$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 59 measurements = 746.556

Std Dev = 123.276

$x(i+1)$ = 1100 from measurement 4/12/2018 from location MW-5

Rosner Statistic $R = |1100 - 746.556|/123.276 = 2.8671$

$\text{Lambda}(64, 6, 0.01) = 3.5508$

$2.8671 < 3.5508$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 60 measurements = 753.447

Std Dev = 133.373

$x(i+1)$ = 1160 from measurement 7/24/2018 from location MW-5

Rosner Statistic $R = |1160 - 753.447|/133.373 = 3.04825$

$\text{Lambda}(64, 5, 0.01) = 3.558$

$3.04825 < 3.558$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 61 measurements = 746.816

Std Dev = 142.033

$x(i+1)$ = 349 from measurement 1/27/2015 from location MW-5

Rosner Statistic $R = |349 - 746.816|/142.033 = 2.80087$

$\text{Lambda}(64, 4, 0.01) = 3.564$

$2.80087 < 3.564$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 62 measurements = 739.916

Std Dev = 150.979

$x(i+1)$ = 319 from measurement 7/29/2019 from location MW-5

Rosner Statistic $R = |319 - 739.916|/150.979 = 2.7879$

$\text{Lambda}(64, 3, 0.01) = 3.574$

$2.7879 < 3.574$ -- No outliers detected for $i = 2$

Iteration i = 1

Mean of 63 measurements = 748.33

Std Dev = 163.973

$x(i+1)$ = 1270 from measurement 1/29/2018 from location MW-5

Rosner Statistic $R = |1270 - 748.33|/163.973 = 3.18143$

$\text{Lambda}(64, 2, 0.01) = 3.578$

$3.18143 < 3.578$ -- No outliers detected for $i = 1$

Iteration i = 0

Mean of 64 measurements = 782.106

Std Dev = 315.394

$x(i+1)$ = 2910 from measurement 1/30/2019 from location MW-5

Rosner Statistic $R = |2910 - 782.106|/315.394 = 6.74678$

$\text{Lambda}(64, 1, 0.01) = 3.584$

$6.74678 > 3.584$ -- Measurement 1/30/2019 for location MW-5 is an outlier

Rosner's Test for Outliers

Parameter: Sulfate

Location: MW-6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 787.605

10 most extreme of 64 measurements

by order of magnitude difference from the mean

1	1/30/2019	MW-6	2520	1732.4
2	12/6/2011	MW-6	2310	1522.4
3	12/27/2010	MW-6	16.3	-771.305
4	1/29/2018	MW-6	1470	682.395
5	10/27/2017	MW-6	167	-620.605
6	10/31/2016	MW-6	204	-583.605
7	1/27/2015	MW-6	356	-431.605
8	4/12/2018	MW-6	1130	342.395
9	1/30/2017	MW-6	1110	322.395
10	4/13/2015	MW-6	484	-303.605

Iteration i = 9

Mean of 55 measurements = 747.698

Std Dev = 121.52

$x(i+1)$ = 484 from measurement 4/13/2015 from location MW-6

Rosner Statistic $R = |484 - 747.698|/121.52 = 2.17$

$\Lambda(64, 10, 0.01) = 3.522$

$2.17 < 3.522$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 56 measurements = 754.168

Std Dev = 129.779

$x(i+1)$ = 1110 from measurement 1/30/2017 from location MW-6

Rosner Statistic $R = |1110 - 754.168|/129.779 = 2.74184$

$\Lambda(64, 9, 0.01) = 3.5292$

$2.74184 < 3.5292$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 57 measurements = 760.761

Std Dev = 137.912

$x(i+1)$ = 1130 from measurement 4/12/2018 from location MW-6

Rosner Statistic $R = |1130 - 760.761|/137.912 = 2.67734$

$\Lambda(64, 8, 0.01) = 3.5364$

$2.67734 < 3.5364$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 58 measurements = 753.783

Std Dev = 146.666

$x(i+1)$ = 356 from measurement 1/27/2015 from location MW-6

Rosner Statistic $R = |356 - 753.783|/146.666 = 2.71217$

$\Lambda(64, 7, 0.01) = 3.5436$

$2.71217 < 3.5436$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 59 measurements = 744.464

Std Dev = 162.059

$x(i+1)$ = 204 from measurement 10/31/2016 from location MW-6

Rosner Statistic $R = |204 - 744.464|/162.059 = 3.33499$

$\text{Lambda}(64, 6, 0.01) = 3.5508$

$3.33499 < 3.5508$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 60 measurements = 734.84

Std Dev = 177.132

$x(i+1)$ = 167 from measurement 10/27/2017 from location MW-6

Rosner Statistic $R = |167 - 734.84|/177.132 = 3.20575$

$\text{Lambda}(64, 5, 0.01) = 3.558$

$3.20575 < 3.558$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 61 measurements = 746.892

Std Dev = 199.281

$x(i+1)$ = 1470 from measurement 1/29/2018 from location MW-6

Rosner Statistic $R = |1470 - 746.892|/199.281 = 3.6286$

$\text{Lambda}(64, 4, 0.01) = 3.564$

$3.6286 > 3.564$ -- Measurement 1/29/2018 for location MW-6 is an outlier

Iteration i = 2

Mean of 62 measurements = 735.108

Std Dev = 218.336

$x(i+1)$ = 16.3 from measurement 12/27/2010 from location MW-6

Rosner Statistic $R = |16.3 - 735.108|/218.336 = 3.2922$

$\text{Lambda}(64, 3, 0.01) = 3.574$

Measurement 12/27/2010 for location MW-6 is an outlier

Iteration i = 1

Mean of 63 measurements = 760.106

Std Dev = 293.72

$x(i+1)$ = 2310 from measurement 12/6/2011 from location MW-6

Rosner Statistic $R = |2310 - 760.106|/293.72 = 5.27677$

$\text{Lambda}(64, 2, 0.01) = 3.578$

Measurement 12/6/2011 for location MW-6 is an outlier

Iteration i = 0

Mean of 64 measurements = 787.605

Std Dev = 365.098

$x(i+1)$ = 2520 from measurement 1/30/2019 from location MW-6

Rosner Statistic $R = |2520 - 787.605|/365.098 = 4.74502$

$\text{Lambda}(64, 1, 0.01) = 3.584$

Measurement 1/30/2019 for location MW-6 is an outlier

Rosner's Test for Outliers

Parameter: Sulfate

Location: MW-7

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 820.038

10 most extreme of 26 measurements

by order of magnitude difference from the mean

1	1/30/2019	MW-7	1900	1079.96
2	1/29/2018	MW-7	1440	619.962
3	1/13/2012	MW-7	529	-291.038
4	7/29/2019	MW-7	541	-279.038
5	4/21/2011	MW-7	562	-258.038
6	7/24/2017	MW-7	573	-247.038
7	1/31/2014	MW-7	618	-202.038
8	1/30/2017	MW-7	988	167.962
9	3/4/2010	MW-7	673	-147.038
10	7/26/2016	MW-7	674	-146.038

Iteration i = 9

Mean of 17 measurements = 793.941

Std Dev = 90.4886

$x(i+1)$ = 674 from measurement 7/26/2016 from location MW-7

Rosner Statistic $R = |674 - 793.941|/90.4886 = 1.32548$

$\text{Lambda}(26, 10, 0.01) = 2.89$

$1.32548 < 2.89$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 18 measurements = 787.222

Std Dev = 92.2991

$x(i+1)$ = 673 from measurement 3/4/2010 from location MW-7

Rosner Statistic $R = |673 - 787.222|/92.2991 = 1.23752$

$\text{Lambda}(26, 9, 0.01) = 2.924$

$1.23752 < 2.924$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 19 measurements = 797.789

Std Dev = 100.834

$x(i+1)$ = 988 from measurement 1/30/2017 from location MW-7

Rosner Statistic $R = |988 - 797.789|/100.834 = 1.88637$

$\text{Lambda}(26, 8, 0.01) = 2.958$

$1.88637 < 2.958$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 20 measurements = 788.8

Std Dev = 106.059

$x(i+1)$ = 618 from measurement 1/31/2014 from location MW-7

Rosner Statistic $R = |618 - 788.8|/106.059 = 1.61042$

$\text{Lambda}(26, 7, 0.01) = 2.992$

$1.61042 < 2.992$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 21 measurements = 778.524

Std Dev = 113.595

$x(i+1)$ = 573 from measurement 7/24/2017 from location MW-7

Rosner Statistic $R = |573 - 778.524|/113.595 = 1.80927$

$\text{Lambda}(26, 6, 0.01) = 3.026$

$1.80927 < 3.026$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 22 measurements = 768.682

Std Dev = 120.085

$x(i+1)$ = 562 from measurement 4/21/2011 from location MW-7

Rosner Statistic $R = |562 - 768.682|/120.085 = 1.72113$

$\text{Lambda}(26, 5, 0.01) = 3.06$

$1.72113 < 3.06$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 23 measurements = 758.783

Std Dev = 126.565

$x(i+1)$ = 541 from measurement 7/29/2019 from location MW-7

Rosner Statistic $R = |541 - 758.783|/126.565 = 1.72072$

$\text{Lambda}(26, 4, 0.01) = 3.09$

$1.72072 < 3.09$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 24 measurements = 749.208

Std Dev = 132.372

$x(i+1)$ = 529 from measurement 1/13/2012 from location MW-7

Rosner Statistic $R = |529 - 749.208|/132.372 = 1.66356$

$\text{Lambda}(26, 3, 0.01) = 3.11$

$1.66356 < 3.11$ -- No outliers detected for $i = 2$

Iteration i = 1

Mean of 25 measurements = 776.84

Std Dev = 189.42

$x(i+1)$ = 1440 from measurement 1/29/2018 from location MW-7

Rosner Statistic $R = |1440 - 776.84|/189.42 = 3.50101$

$\text{Lambda}(26, 2, 0.01) = 3.14$

$3.50101 > 3.14$ -- Measurement 1/29/2018 for location MW-7 is an outlier

Iteration i = 0

Mean of 26 measurements = 820.038

Std Dev = 288.034

$x(i+1)$ = 1900 from measurement 1/30/2019 from location MW-7

Rosner Statistic $R = |1900 - 820.038|/288.034 = 3.74943$

$\text{Lambda}(26, 1, 0.01) = 3.16$

Measurement 1/30/2019 for location MW-7 is an outlier

Rosner's Test for Outliers

Parameter: Total Dissolved Solids

Location: MW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 1805.93

10 most extreme of 27 measurements

by order of magnitude difference from the mean

1	7/26/2016	MW-1	2530	724.074
2	1/27/2015	MW-1	1090	-715.926
3	1/29/2018	MW-1	2320	514.074
4	1/29/2013	MW-1	1300	-505.926
5	7/29/2013	MW-1	1300	-505.926
6	1/27/2016	MW-1	2280	474.074
7	7/29/2019	MW-1	1440	-365.926
8	7/21/2015	MW-1	2140	334.074
9	1/30/2019	MW-1	1480	-325.926
10	7/17/2014	MW-1	1500	-305.926

Iteration i = 9

Mean of 18 measurements = 1826.67

Std Dev = 181.659

$x(i+1) = 1500$ from measurement 7/17/2014 from location MW-1

Rosner Statistic $R = |1500 - 1826.67|/181.659 = 1.79824$

$\text{Lambda}(27, 10, 0.01) = 2.93$

$1.79824 < 2.93$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 19 measurements = 1808.42

Std Dev = 193.628

$x(i+1) = 1480$ from measurement 1/30/2019 from location MW-1

Rosner Statistic $R = |1480 - 1808.42|/193.628 = 1.69614$

$\text{Lambda}(27, 9, 0.01) = 2.962$

$1.69614 < 2.962$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 20 measurements = 1825

Std Dev = 202.524

$x(i+1) = 2140$ from measurement 7/21/2015 from location MW-1

Rosner Statistic $R = |2140 - 1825|/202.524 = 1.55537$

$\text{Lambda}(27, 8, 0.01) = 2.994$

$1.55537 < 2.994$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 21 measurements = 1806.67

Std Dev = 214.53

$x(i+1) = 1440$ from measurement 7/29/2019 from location MW-1

Rosner Statistic $R = |1440 - 1806.67|/214.53 = 1.70916$

$\text{Lambda}(27, 7, 0.01) = 3.026$

$1.70916 < 3.026$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 22 measurements = 1828.18

Std Dev = 232.413

$x(i+1)$ = 2280 from measurement 1/27/2016 from location MW-1

Rosner Statistic $R = |2280 - 1828.18|/232.413 = 1.94404$

$\text{Lambda}(27, 6, 0.01) = 3.058$

$1.94404 < 3.058$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 23 measurements = 1805.22

Std Dev = 252.368

$x(i+1)$ = 1300 from measurement 7/29/2013 from location MW-1

Rosner Statistic $R = |1300 - 1805.22|/252.368 = 2.00191$

$\text{Lambda}(27, 5, 0.01) = 3.09$

$2.00191 < 3.09$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 24 measurements = 1784.17

Std Dev = 267.499

$x(i+1)$ = 1300 from measurement 1/29/2013 from location MW-1

Rosner Statistic $R = |1300 - 1784.17|/267.499 = 1.80997$

$\text{Lambda}(27, 4, 0.01) = 3.11$

$1.80997 < 3.11$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 25 measurements = 1805.6

Std Dev = 282.947

$x(i+1)$ = 2320 from measurement 1/29/2018 from location MW-1

Rosner Statistic $R = |2320 - 1805.6|/282.947 = 1.81801$

$\text{Lambda}(27, 3, 0.01) = 3.14$

$1.81801 < 3.14$ -- No outliers detected for $i = 2$

Iteration i = 1

Mean of 26 measurements = 1778.08

Std Dev = 310.728

$x(i+1)$ = 1090 from measurement 1/27/2015 from location MW-1

Rosner Statistic $R = |1090 - 1778.08|/310.728 = 2.2144$

$\text{Lambda}(27, 2, 0.01) = 3.16$

$2.2144 < 3.16$ -- No outliers detected for $i = 1$

Iteration i = 0

Mean of 27 measurements = 1805.93

Std Dev = 337.311

$x(i+1)$ = 2530 from measurement 7/26/2016 from location MW-1

Rosner Statistic $R = |2530 - 1805.93|/337.311 = 2.1466$

$\text{Lambda}(27, 1, 0.01) = 3.18$

$2.1466 < 3.18$ -- No outliers detected for $i = 0$

Rosner's Test for Outliers

Parameter: Total Dissolved Solids

Location: MW-2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 1790

10 most extreme of 27 measurements

by order of magnitude difference from the mean

1	1/29/2018	MW-2	2560	770
2	1/27/2015	MW-2	1170	-620
3	7/29/2013	MW-2	1200	-590
4	7/26/2016	MW-2	2330	540
5	11/25/2009	MW-2	2310	520
6	1/29/2013	MW-2	1300	-490
7	1/27/2016	MW-2	2250	460
8	7/17/2014	MW-2	1400	-390
9	7/29/2019	MW-2	1450	-340
10	1/30/2019	MW-2	1500	-290

Iteration i = 9

Mean of 18 measurements = 1797.78

Std Dev = 167.211

$x(i+1)$ = 1500 from measurement 1/30/2019 from location MW-2

Rosner Statistic $R = |1500 - 1797.78|/167.211 = 1.78085$

$\text{Lambda}(27, 10, 0.01) = 2.93$

$1.78085 < 2.93$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 19 measurements = 1779.47

Std Dev = 181.03

$x(i+1)$ = 1450 from measurement 7/29/2019 from location MW-2

Rosner Statistic $R = |1450 - 1779.47|/181.03 = 1.81999$

$\text{Lambda}(27, 9, 0.01) = 2.962$

$1.81999 < 2.962$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 20 measurements = 1760.5

Std Dev = 195.569

$x(i+1)$ = 1400 from measurement 7/17/2014 from location MW-2

Rosner Statistic $R = |1400 - 1760.5|/195.569 = 1.84334$

$\text{Lambda}(27, 8, 0.01) = 2.994$

$1.84334 < 2.994$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 21 measurements = 1783.81

Std Dev = 218.506

$x(i+1)$ = 2250 from measurement 1/27/2016 from location MW-2

Rosner Statistic $R = |2250 - 1783.81|/218.506 = 2.13354$

$\text{Lambda}(27, 7, 0.01) = 3.026$

$2.13354 < 3.026$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 22 measurements = 1761.82

Std Dev = 236.877

$x(i+1)$ = 1300 from measurement 1/29/2013 from location MW-2

Rosner Statistic $R = |1300 - 1761.82|/236.877 = 1.94961$

$\text{Lambda}(27, 6, 0.01) = 3.058$

$1.94961 < 3.058$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 23 measurements = 1785.65

Std Dev = 258.12

$x(i+1)$ = 2310 from measurement 11/25/2009 from location MW-2

Rosner Statistic $R = |2310 - 1785.65|/258.12 = 2.03141$

$\text{Lambda}(27, 5, 0.01) = 3.09$

$2.03141 < 3.09$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 24 measurements = 1808.33

Std Dev = 275.818

$x(i+1)$ = 2330 from measurement 7/26/2016 from location MW-2

Rosner Statistic $R = |2330 - 1808.33|/275.818 = 1.89135$

$\text{Lambda}(27, 4, 0.01) = 3.11$

$1.89135 < 3.11$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 25 measurements = 1784

Std Dev = 296.156

$x(i+1)$ = 1200 from measurement 7/29/2013 from location MW-2

Rosner Statistic $R = |1200 - 1784|/296.156 = 1.97193$

$\text{Lambda}(27, 3, 0.01) = 3.14$

$1.97193 < 3.14$ -- No outliers detected for $i = 2$

Iteration i = 1

Mean of 26 measurements = 1760.38

Std Dev = 314.165

$x(i+1)$ = 1170 from measurement 1/27/2015 from location MW-2

Rosner Statistic $R = |1170 - 1760.38|/314.165 = 1.87922$

$\text{Lambda}(27, 2, 0.01) = 3.16$

$1.87922 < 3.16$ -- No outliers detected for $i = 1$

Iteration i = 0

Mean of 27 measurements = 1790

Std Dev = 344.361

$x(i+1)$ = 2560 from measurement 1/29/2018 from location MW-2

Rosner Statistic $R = |2560 - 1790|/344.361 = 2.23602$

$\text{Lambda}(27, 1, 0.01) = 3.18$

$2.23602 < 3.18$ -- No outliers detected for $i = 0$

Rosner's Test for Outliers

Parameter: Total Dissolved Solids

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 1794.65

10 most extreme of 46 measurements

by order of magnitude difference from the mean

1	4/30/2010	MW-3	3850	2055.35
2	1/27/2015	MW-3	11.8	-1782.85
3	5/24/2012	MW-3	992	-802.648
4	7/26/2016	MW-3	2410	615.352
5	1/27/2016	MW-3	2310	515.352
6	12/5/2012	MW-3	1300	-494.648
7	1/29/2018	MW-3	2270	475.352
8	1/29/2013	MW-3	1400	-394.648
9	7/29/2013	MW-3	1400	-394.648
10	7/17/2014	MW-3	1400	-394.648

Iteration i = 9

Mean of 37 measurements = 1800.27

Std Dev = 136.656

$x(i+1) = 1400$ from measurement 7/17/2014 from location MW-3

Rosner Statistic $R = |1400 - 1800.27|/136.656 = 2.92903$

$\text{Lambda}(46, 10, 0.01) = 3.34$

$2.92903 < 3.34$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 38 measurements = 1789.74

Std Dev = 149.621

$x(i+1) = 1400$ from measurement 7/29/2013 from location MW-3

Rosner Statistic $R = |1400 - 1789.74|/149.621 = 2.60483$

$\text{Lambda}(46, 9, 0.01) = 3.352$

$2.60483 < 3.352$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 39 measurements = 1779.74

Std Dev = 160.287

$x(i+1) = 1400$ from measurement 1/29/2013 from location MW-3

Rosner Statistic $R = |1400 - 1779.74|/160.287 = 2.36914$

$\text{Lambda}(46, 8, 0.01) = 3.364$

$2.36914 < 3.364$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 40 measurements = 1792

Std Dev = 176.188

$x(i+1) = 2270$ from measurement 1/29/2018 from location MW-3

Rosner Statistic $R = |2270 - 1792|/176.188 = 2.71302$

$\text{Lambda}(46, 7, 0.01) = 3.376$

$2.71302 < 3.376$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 41 measurements = 1780

Std Dev = 190.184

$x(i+1)$ = 1300 from measurement 12/5/2012 from location MW-3

Rosner Statistic $R = |1300 - 1780|/190.184 = 2.52387$

$\text{Lambda}(46, 6, 0.01) = 3.388$

$2.52387 < 3.388$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 42 measurements = 1792.62

Std Dev = 204.88

$x(i+1)$ = 2310 from measurement 1/27/2016 from location MW-3

Rosner Statistic $R = |2310 - 1792.62|/204.88 = 2.52529$

$\text{Lambda}(46, 5, 0.01) = 3.4$

$2.52529 < 3.4$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 43 measurements = 1806.98

Std Dev = 223.25

$x(i+1)$ = 2410 from measurement 7/26/2016 from location MW-3

Rosner Statistic $R = |2410 - 1806.98|/223.25 = 2.70111$

$\text{Lambda}(46, 4, 0.01) = 3.41$

$2.70111 < 3.41$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 44 measurements = 1788.45

Std Dev = 252.541

$x(i+1)$ = 992 from measurement 5/24/2012 from location MW-3

Rosner Statistic $R = |992 - 1788.45|/252.541 = 3.15377$

$\text{Lambda}(46, 3, 0.01) = 3.43$

$3.15377 < 3.43$ -- No outliers detected for $i = 2$

Iteration i = 1

Mean of 45 measurements = 1748.97

Std Dev = 363.967

$x(i+1)$ = 11.8 from measurement 1/27/2015 from location MW-3

Rosner Statistic $R = |11.8 - 1748.97|/363.967 = 4.77289$

$\text{Lambda}(46, 2, 0.01) = 3.44$

$4.77289 > 3.44$ -- Measurement 1/27/2015 for location MW-3 is an outlier

Iteration i = 0

Mean of 46 measurements = 1794.65

Std Dev = 474.859

$x(i+1)$ = 3850 from measurement 4/30/2010 from location MW-3

Rosner Statistic $R = |3850 - 1794.65|/474.859 = 4.32834$

$\text{Lambda}(46, 1, 0.01) = 3.45$

Measurement 4/30/2010 for location MW-3 is an outlier

Rosner's Test for Outliers

Parameter: Total Dissolved Solids

Location: MW-4

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 1758.48

10 most extreme of 46 measurements

by order of magnitude difference from the mean

1	1/27/2015	MW-4	1090	-668.478
2	1/29/2018	MW-4	2400	641.522
3	4/30/2010	MW-4	1140	-618.478
4	1/27/2016	MW-4	2250	491.522
5	7/29/2013	MW-4	1300	-458.478
6	12/5/2012	MW-4	1300	-458.478
7	7/26/2016	MW-4	2190	431.522
8	1/29/2013	MW-4	1400	-358.478
9	7/17/2014	MW-4	1400	-358.478
10	7/29/2019	MW-4	1450	-308.478

Iteration i = 9

Mean of 37 measurements = 1795.14

Std Dev = 113.984

$x(i+1) = 1450$ from measurement 7/29/2019 from location MW-4

Rosner Statistic $R = |1450 - 1795.14|/113.984 = 3.02793$

$\text{Lambda}(46, 10, 0.01) = 3.34$

$3.02793 < 3.34$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 38 measurements = 1784.74

Std Dev = 129.422

$x(i+1) = 1400$ from measurement 7/17/2014 from location MW-4

Rosner Statistic $R = |1400 - 1784.74|/129.422 = 2.97274$

$\text{Lambda}(46, 9, 0.01) = 3.352$

$2.97274 < 3.352$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 39 measurements = 1774.87

Std Dev = 141.791

$x(i+1) = 1400$ from measurement 1/29/2013 from location MW-4

Rosner Statistic $R = |1400 - 1774.87|/141.791 = 2.64384$

$\text{Lambda}(46, 8, 0.01) = 3.364$

$2.64384 < 3.364$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 40 measurements = 1785.25

Std Dev = 154.588

$x(i+1) = 2190$ from measurement 7/26/2016 from location MW-4

Rosner Statistic $R = |2190 - 1785.25|/154.588 = 2.61825$

$\text{Lambda}(46, 7, 0.01) = 3.376$

$2.61825 < 3.376$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 41 measurements = 1773.41

Std Dev = 170.42

$x(i+1)$ = 1300 from measurement 12/5/2012 from location MW-4

Rosner Statistic $R = |1300 - 1773.41|/170.42 = 2.77793$

$\text{Lambda}(46, 6, 0.01) = 3.388$

$2.77793 < 3.388$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 42 measurements = 1762.14

Std Dev = 183.496

$x(i+1)$ = 1300 from measurement 7/29/2013 from location MW-4

Rosner Statistic $R = |1300 - 1762.14|/183.496 = 2.51854$

$\text{Lambda}(46, 5, 0.01) = 3.4$

$2.51854 < 3.4$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 43 measurements = 1773.49

Std Dev = 195.97

$x(i+1)$ = 2250 from measurement 1/27/2016 from location MW-4

Rosner Statistic $R = |2250 - 1773.49|/195.97 = 2.43155$

$\text{Lambda}(46, 4, 0.01) = 3.41$

$2.43155 < 3.41$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 44 measurements = 1759.09

Std Dev = 215.944

$x(i+1)$ = 1140 from measurement 4/30/2010 from location MW-4

Rosner Statistic $R = |1140 - 1759.09|/215.944 = 2.86691$

$\text{Lambda}(46, 3, 0.01) = 3.43$

$2.86691 < 3.43$ -- No outliers detected for $i = 2$

Iteration i = 1

Mean of 45 measurements = 1773.33

Std Dev = 233.88

$x(i+1)$ = 2400 from measurement 1/29/2018 from location MW-4

Rosner Statistic $R = |2400 - 1773.33|/233.88 = 2.67943$

$\text{Lambda}(46, 2, 0.01) = 3.44$

$2.67943 < 3.44$ -- No outliers detected for $i = 1$

Iteration i = 0

Mean of 46 measurements = 1758.48

Std Dev = 252.261

$x(i+1)$ = 1090 from measurement 1/27/2015 from location MW-4

Rosner Statistic $R = |1090 - 1758.48|/252.261 = 2.64995$

$\text{Lambda}(46, 1, 0.01) = 3.45$

$2.64995 < 3.45$ -- No outliers detected for $i = 0$

Rosner's Test for Outliers

Parameter: Total Dissolved Solids

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 1844.07

10 most extreme of 59 measurements

by order of magnitude difference from the mean

1	4/30/2010	MW-5	2740	895.932
2	10/20/2015	MW-5	1080	-764.068
3	4/12/2018	MW-5	2570	725.932
4	10/27/2017	MW-5	2510	665.932
5	1/29/2018	MW-5	2460	615.932
6	1/27/2015	MW-5	1260	-584.068
7	4/27/2017	MW-5	2410	565.932
8	1/29/2013	MW-5	1300	-544.068
9	12/5/2012	MW-5	1300	-544.068
10	10/30/2013	MW-5	1300	-544.068

Iteration i = 9

Mean of 50 measurements = 1823.4

Std Dev = 209.583

$x(i+1)$ = 1300 from measurement 10/30/2013 from location MW-5

Rosner Statistic $R = |1300 - 1823.4|/209.583 = 2.49734$

$\Lambda(59, 10, 0.01) = 3.48$

$2.49734 < 3.48$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 51 measurements = 1813.14

Std Dev = 220.041

$x(i+1)$ = 1300 from measurement 12/5/2012 from location MW-5

Rosner Statistic $R = |1300 - 1813.14|/220.041 = 2.33201$

$\Lambda(59, 9, 0.01) = 3.4884$

$2.33201 < 3.4884$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 52 measurements = 1803.27

Std Dev = 229.199

$x(i+1)$ = 1300 from measurement 1/29/2013 from location MW-5

Rosner Statistic $R = |1300 - 1803.27|/229.199 = 2.19577$

$\Lambda(59, 8, 0.01) = 3.4968$

$2.19577 < 3.4968$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 53 measurements = 1814.72

Std Dev = 241.801

$x(i+1)$ = 2410 from measurement 4/27/2017 from location MW-5

Rosner Statistic $R = |2410 - 1814.72|/241.801 = 2.46187$

$\Lambda(59, 7, 0.01) = 3.5052$

$2.46187 < 3.5052$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 54 measurements = 1804.44

Std Dev = 251.123

$x(i+1)$ = 1260 from measurement 1/27/2015 from location MW-5

Rosner Statistic $R = |1260 - 1804.44|/251.123 = 2.16804$

$\text{Lambda}(59, 6, 0.01) = 3.5136$

$2.16804 < 3.5136$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 55 measurements = 1816.36

Std Dev = 264.024

$x(i+1)$ = 2460 from measurement 1/29/2018 from location MW-5

Rosner Statistic $R = |2460 - 1816.36|/264.024 = 2.43779$

$\text{Lambda}(59, 5, 0.01) = 3.522$

$2.43779 < 3.522$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 56 measurements = 1828.75

Std Dev = 277.548

$x(i+1)$ = 2510 from measurement 10/27/2017 from location MW-5

Rosner Statistic $R = |2510 - 1828.75|/277.548 = 2.45453$

$\text{Lambda}(59, 4, 0.01) = 3.532$

$2.45453 < 3.532$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 57 measurements = 1841.75

Std Dev = 292.056

$x(i+1)$ = 2570 from measurement 4/12/2018 from location MW-5

Rosner Statistic $R = |2570 - 1841.75|/292.056 = 2.49351$

$\text{Lambda}(59, 3, 0.01) = 3.541$

$2.49351 < 3.541$ -- No outliers detected for $i = 2$

Iteration i = 1

Mean of 58 measurements = 1828.62

Std Dev = 306.276

$x(i+1)$ = 1080 from measurement 10/20/2015 from location MW-5

Rosner Statistic $R = |1080 - 1828.62|/306.276 = 2.44427$

$\text{Lambda}(59, 2, 0.01) = 3.542$

$2.44427 < 3.542$ -- No outliers detected for $i = 1$

Iteration i = 0

Mean of 59 measurements = 1844.07

Std Dev = 325.985

$x(i+1)$ = 2740 from measurement 4/30/2010 from location MW-5

Rosner Statistic $R = |2740 - 1844.07|/325.985 = 2.74839$

$\text{Lambda}(59, 1, 0.01) = 3.552$

$2.74839 < 3.552$ -- No outliers detected for $i = 0$

Rosner's Test for Outliers

Parameter: Total Dissolved Solids

Location: MW-6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 1947.46

10 most extreme of 59 measurements

by order of magnitude difference from the mean

1	10/23/2014	MW-6	6160	4212.54
2	4/30/2010	MW-6	2820	872.542
3	10/20/2015	MW-6	1130	-817.458
4	1/27/2015	MW-6	1200	-747.458
5	10/30/2013	MW-6	1200	-747.458
6	12/5/2012	MW-6	1300	-647.458
7	4/12/2018	MW-6	2540	592.542
8	10/27/2017	MW-6	2510	562.542
9	1/29/2018	MW-6	2510	562.542
10	1/29/2013	MW-6	1400	-547.458

Iteration i = 9

Mean of 50 measurements = 1870.6

Std Dev = 220.486

$x(i+1)$ = 1400 from measurement 1/29/2013 from location MW-6

Rosner Statistic $R = |1400 - 1870.6|/220.486 = 2.13438$

$\text{Lambda}(59, 10, 0.01) = 3.48$

$2.13438 < 3.48$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 51 measurements = 1883.14

Std Dev = 235.919

$x(i+1)$ = 2510 from measurement 1/29/2018 from location MW-6

Rosner Statistic $R = |2510 - 1883.14|/235.919 = 2.65711$

$\text{Lambda}(59, 9, 0.01) = 3.4884$

$2.65711 < 3.4884$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 52 measurements = 1895.19

Std Dev = 249.246

$x(i+1)$ = 2510 from measurement 10/27/2017 from location MW-6

Rosner Statistic $R = |2510 - 1895.19|/249.246 = 2.46667$

$\text{Lambda}(59, 8, 0.01) = 3.4968$

$2.46667 < 3.4968$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 53 measurements = 1907.36

Std Dev = 262.247

$x(i+1)$ = 2540 from measurement 4/12/2018 from location MW-6

Rosner Statistic $R = |2540 - 1907.36|/262.247 = 2.41239$

$\text{Lambda}(59, 7, 0.01) = 3.5052$

$2.41239 < 3.5052$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 54 measurements = 1896.11

Std Dev = 272.594

$x(i+1)$ = 1300 from measurement 12/5/2012 from location MW-6

Rosner Statistic $R = |1300 - 1896.11|/272.594 = 2.18681$

$\text{Lambda}(59, 6, 0.01) = 3.5136$

$2.18681 < 3.5136$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 55 measurements = 1883.45

Std Dev = 285.905

$x(i+1)$ = 1200 from measurement 10/30/2013 from location MW-6

Rosner Statistic $R = |1200 - 1883.45|/285.905 = 2.3905$

$\text{Lambda}(59, 5, 0.01) = 3.522$

$2.3905 < 3.522$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 56 measurements = 1871.25

Std Dev = 297.652

$x(i+1)$ = 1200 from measurement 1/27/2015 from location MW-6

Rosner Statistic $R = |1200 - 1871.25|/297.652 = 2.25515$

$\text{Lambda}(59, 4, 0.01) = 3.532$

$2.25515 < 3.532$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 57 measurements = 1858.25

Std Dev = 310.892

$x(i+1)$ = 1130 from measurement 10/20/2015 from location MW-6

Rosner Statistic $R = |1130 - 1858.25|/310.892 = 2.34244$

$\text{Lambda}(59, 3, 0.01) = 3.541$

$2.34244 < 3.541$ -- No outliers detected for $i = 2$

Iteration i = 1

Mean of 58 measurements = 1874.83

Std Dev = 333.026

$x(i+1)$ = 2820 from measurement 4/30/2010 from location MW-6

Rosner Statistic $R = |2820 - 1874.83|/333.026 = 2.83814$

$\text{Lambda}(59, 2, 0.01) = 3.542$

$2.83814 < 3.542$ -- No outliers detected for $i = 1$

Iteration i = 0

Mean of 59 measurements = 1947.46

Std Dev = 648.249

$x(i+1)$ = 6160 from measurement 10/23/2014 from location MW-6

Rosner Statistic $R = |6160 - 1947.46|/648.249 = 6.49834$

$\text{Lambda}(59, 1, 0.01) = 3.552$

$6.49834 > 3.552$ -- Measurement 10/23/2014 for location MW-6 is an outlier

Rosner's Test for Outliers

Parameter: Total Dissolved Solids

Location: MW-7

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Data set mean = 2045

10 most extreme of 26 measurements

by order of magnitude difference from the mean

1	4/30/2010	MW-7	5820	3775
2	1/27/2015	MW-7	1190	-855
3	7/17/2014	MW-7	1400	-645
4	1/29/2013	MW-7	1400	-645
5	7/26/2016	MW-7	2630	585
6	1/29/2018	MW-7	2610	565
7	7/29/2013	MW-7	1500	-545
8	7/29/2019	MW-7	1590	-455
9	1/30/2019	MW-7	1640	-405
10	1/30/2017	MW-7	1730	-315

Iteration i = 9

Mean of 17 measurements = 1964.12

Std Dev = 178.713

$x(i+1)$ = 1730 from measurement 1/30/2017 from location MW-7

Rosner Statistic $R = |1730 - 1964.12|/178.713 = 1.31002$

$\text{Lambda}(26, 10, 0.01) = 2.89$

$1.31002 < 2.89$ -- No outliers detected for $i = 9$

Iteration i = 8

Mean of 18 measurements = 1946.11

Std Dev = 189.462

$x(i+1)$ = 1640 from measurement 1/30/2019 from location MW-7

Rosner Statistic $R = |1640 - 1946.11|/189.462 = 1.61569$

$\text{Lambda}(26, 9, 0.01) = 2.924$

$1.61569 < 2.924$ -- No outliers detected for $i = 8$

Iteration i = 7

Mean of 19 measurements = 1927.37

Std Dev = 201.435

$x(i+1)$ = 1590 from measurement 7/29/2019 from location MW-7

Rosner Statistic $R = |1590 - 1927.37|/201.435 = 1.67483$

$\text{Lambda}(26, 8, 0.01) = 2.958$

$1.67483 < 2.958$ -- No outliers detected for $i = 7$

Iteration i = 6

Mean of 20 measurements = 1906

Std Dev = 218.112

$x(i+1)$ = 1500 from measurement 7/29/2013 from location MW-7

Rosner Statistic $R = |1500 - 1906|/218.112 = 1.86143$

$\text{Lambda}(26, 7, 0.01) = 2.992$

$1.86143 < 2.992$ -- No outliers detected for $i = 6$

Iteration i = 5

Mean of 21 measurements = 1939.52

Std Dev = 262.288

$x(i+1)$ = 2610 from measurement 1/29/2018 from location MW-7

Rosner Statistic $R = |2610 - 1939.52|/262.288 = 2.55626$

$\text{Lambda}(26, 6, 0.01) = 3.026$

$2.55626 < 3.026$ -- No outliers detected for $i = 5$

Iteration i = 4

Mean of 22 measurements = 1970.91

Std Dev = 295.279

$x(i+1)$ = 2630 from measurement 7/26/2016 from location MW-7

Rosner Statistic $R = |2630 - 1970.91|/295.279 = 2.2321$

$\text{Lambda}(26, 5, 0.01) = 3.06$

$2.2321 < 3.06$ -- No outliers detected for $i = 4$

Iteration i = 3

Mean of 23 measurements = 1946.09

Std Dev = 312.086

$x(i+1)$ = 1400 from measurement 1/29/2013 from location MW-7

Rosner Statistic $R = |1400 - 1946.09|/312.086 = 1.7498$

$\text{Lambda}(26, 4, 0.01) = 3.09$

$1.7498 < 3.09$ -- No outliers detected for $i = 3$

Iteration i = 2

Mean of 24 measurements = 1923.33

Std Dev = 324.944

$x(i+1)$ = 1400 from measurement 7/17/2014 from location MW-7

Rosner Statistic $R = |1400 - 1923.33|/324.944 = 1.61054$

$\text{Lambda}(26, 3, 0.01) = 3.11$

$1.61054 < 3.11$ -- No outliers detected for $i = 2$

Iteration i = 1

Mean of 25 measurements = 1894

Std Dev = 350.286

$x(i+1)$ = 1190 from measurement 1/27/2015 from location MW-7

Rosner Statistic $R = |1190 - 1894|/350.286 = 2.00979$

$\text{Lambda}(26, 2, 0.01) = 3.14$

$2.00979 < 3.14$ -- No outliers detected for $i = 1$

Iteration i = 0

Mean of 26 measurements = 2045

Std Dev = 842.982

$x(i+1)$ = 5820 from measurement 4/30/2010 from location MW-7

Rosner Statistic $R = |5820 - 2045|/842.982 = 4.47815$

$\text{Lambda}(26, 1, 0.01) = 3.16$

$4.47815 > 3.16$ -- Measurement 4/30/2010 for location MW-7 is an outlier

Theil-Sen Trend Test Analysis

User Selected Options
Date/Time of Computation 8/9/2019 3:31:18 PM
From File KerseyData_3Q19_a.xls
Full Precision OFF
Average Replicates Replicates at sampling events will be averaged!
Confidence Coefficient 0.99
Level of Significance 0.01

RESULT-Benzene (MW-1)

Approximate inference for Theil-Sen Trend Test

Number of Slopes 351
Theil-Sen Slope 0
Theil-Sen Intercept 0.5
M1 128.9
M2 222.1
99% LCL of Slope (0.005) 0
99% UCL of Slope (0.995) 0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Benzene (MW-2)

Approximate inference for Theil-Sen Trend Test

Number of Slopes 351
Theil-Sen Slope 0
Theil-Sen Intercept 0.5
M1 128.9
M2 222.1
99% LCL of Slope (0.005) 0
99% UCL of Slope (0.995) 0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Benzene (MW-3)

Approximate inference for Theil-Sen Trend Test

Number of Slopes 1326
Theil-Sen Slope 0
Theil-Sen Intercept 0.5
M1 523.2
M2 802.8
99% LCL of Slope (0.005) 0
99% UCL of Slope (0.995) 0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Benzene (MW-4)

Approximate inference for Theil-Sen Trend Test

Number of Slopes 1326
Theil-Sen Slope 0
Theil-Sen Intercept 0.5
M1 523
M2 803
99% LCL of Slope (0.005) 0
99% UCL of Slope (0.995) 0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Benzene (MW-5)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	2080
Theil-Sen Slope	0
Theil-Sen Intercept	0.5
M1	850.8
M2	1229
99% LCL of Slope (0.005)	0
99% UCL of Slope (0.995)	0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Benzene (MW-6)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	2080
Theil-Sen Slope	0
Theil-Sen Intercept	0.5
M1	843.6
M2	1236
99% LCL of Slope (0.005)	0
99% UCL of Slope (0.995)	0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Benzene (MW-7)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	325
Theil-Sen Slope	0
Theil-Sen Intercept	0.5
M1	117.9
M2	207.1
99% LCL of Slope (0.005)	0
99% UCL of Slope (0.995)	0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Toluene (MW-1)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	351
Theil-Sen Slope	0
Theil-Sen Intercept	0.5
M1	128.7
M2	222.3
99% LCL of Slope (0.005)	0
99% UCL of Slope (0.995)	0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Toluene (MW-2)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	351
Theil-Sen Slope	0
Theil-Sen Intercept	0.5
M1	128.9
M2	222.1
99% LCL of Slope (0.005)	0
99% UCL of Slope (0.995)	0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Toluene (MW-3)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	1326
Theil-Sen Slope	0
Theil-Sen Intercept	0.5
M1	521.5
M2	804.5
99% LCL of Slope (0.005)	0
99% UCL of Slope (0.995)	0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Toluene (MW-4)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	1326
Theil-Sen Slope	0
Theil-Sen Intercept	0.5
M1	521.2
M2	804.8
99% LCL of Slope (0.005)	0
99% UCL of Slope (0.995)	0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Toluene (MW-5)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	2080
Theil-Sen Slope	0
Theil-Sen Intercept	0.5
M1	850.1
M2	1230
99% LCL of Slope (0.005)	0
99% UCL of Slope (0.995)	0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Toluene (MW-6)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	2080
Theil-Sen Slope	0
Theil-Sen Intercept	0.5
M1	839.8
M2	1240
99% LCL of Slope (0.005)	0
99% UCL of Slope (0.995)	0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Toluene (MW-7)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	325
Theil-Sen Slope	0
Theil-Sen Intercept	0.5
M1	117.9
M2	207.1
99% LCL of Slope (0.005)	0
99% UCL of Slope (0.995)	0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Ethylbenzene (MW-1)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	351
Theil-Sen Slope	0
Theil-Sen Intercept	0.5
M1	128.9
M2	222.1
99% LCL of Slope (0.005)	0
99% UCL of Slope (0.995)	0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Ethylbenzene (MW-2)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	351
Theil-Sen Slope	0
Theil-Sen Intercept	0.5
M1	128.9
M2	222.1
99% LCL of Slope (0.005)	0
99% UCL of Slope (0.995)	0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Ethylbenzene (MW-3)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	1326
Theil-Sen Slope	0
Theil-Sen Intercept	0.5
M1	521.5
M2	804.5
99% LCL of Slope (0.005)	0
99% UCL of Slope (0.995)	0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Ethylbenzene (MW-4)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	1326
Theil-Sen Slope	0
Theil-Sen Intercept	0.5
M1	523
M2	803
99% LCL of Slope (0.005)	0
99% UCL of Slope (0.995)	0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Ethylbenzene (MW-5)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	2080
Theil-Sen Slope	0
Theil-Sen Intercept	0.5
M1	853.5
M2	1227
99% LCL of Slope (0.005)	0
99% UCL of Slope (0.995)	0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Ethylbenzene (MW-6)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	2080
Theil-Sen Slope	0
Theil-Sen Intercept	0.5
M1	853.5
M2	1227
99% LCL of Slope (0.005)	0
99% UCL of Slope (0.995)	0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Ethylbenzene (MW-7)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	325
Theil-Sen Slope	0
Theil-Sen Intercept	0.5
M1	117.9
M2	207.1
99% LCL of Slope (0.005)	0
99% UCL of Slope (0.995)	0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Total xylenes (MW-1)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	351
Theil-Sen Slope	0
Theil-Sen Intercept	0.75
M1	117
M2	234
99% LCL of Slope (0.005)	-1.854E-4
99% UCL of Slope (0.995)	0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Total xylenes (MW-2)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	351
Theil-Sen Slope	0
Theil-Sen Intercept	0.75
M1	117
M2	234
99% LCL of Slope (0.005)	-1.854E-4
99% UCL of Slope (0.995)	0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Total xylenes (MW-3)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	1326
Theil-Sen Slope	0
Theil-Sen Intercept	0.75
M1	511.8
M2	814.2
99% LCL of Slope (0.005)	-1.357E-4
99% UCL of Slope (0.995)	0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Total xylenes (MW-4)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	1326
Theil-Sen Slope	0
Theil-Sen Intercept	0.75
M1	510.1
M2	815.9
99% LCL of Slope (0.005)	-1.675E-4
99% UCL of Slope (0.995)	0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Total xylenes (MW-5)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	2080
Theil-Sen Slope	0
Theil-Sen Intercept	0.75
M1	825.8
M2	1254
99% LCL of Slope (0.005)	-1.259E-4
99% UCL of Slope (0.995)	0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Total xylenes (MW-6)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	2080
Theil-Sen Slope	0
Theil-Sen Intercept	0.75
M1	824.3
M2	1256
99% LCL of Slope (0.005)	-1.541E-4
99% UCL of Slope (0.995)	0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Total xylenes (MW-7)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	325
Theil-Sen Slope	0
Theil-Sen Intercept	0.75
M1	106.9
M2	218.1
99% LCL of Slope (0.005)	-1.954E-4
99% UCL of Slope (0.995)	0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Chloride (MW-1)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	351
Theil-Sen Slope	0.0278
Theil-Sen Intercept	241.7
M1	113.7
M2	237.3
99% LCL of Slope (0.005)	-0.0076
99% UCL of Slope (0.995)	0.0637

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Chloride (MW-2)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	351
Theil-Sen Slope	0.0299
Theil-Sen Intercept	225.2
M1	113.7
M2	237.3
99% LCL of Slope (0.005)	-0.0117
99% UCL of Slope (0.995)	0.072

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Chloride (MW-3)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	1225
Theil-Sen Slope	0.0216
Theil-Sen Intercept	244.3
M1'	473.5
One-sided 99% lower limit of Slope	0.00202
99% LCL of Slope (0.005)	0
99% UCL of Slope (0.995)	0.0443

Statistically significant evidence of an increasing trend at the specified level of significance.

RESULT-Chloride (MW-4)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	1225
Theil-Sen Slope	0.0293
Theil-Sen Intercept	232.1
M1'	473.5
One-sided 99% lower limit of Slope	0.0106
99% LCL of Slope (0.005)	0.00821
99% UCL of Slope (0.995)	0.0527

Statistically significant evidence of an increasing trend at the specified level of significance.

RESULT-Chloride (MW-5)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	1953
Theil-Sen Slope	0.0175
Theil-Sen Intercept	249.6
M1	759.4
M2	1194
99% LCL of Slope (0.005)	-2.360E-4
99% UCL of Slope (0.995)	0.0383

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Chloride (MW-6)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	1953
Theil-Sen Slope	0.00932
Theil-Sen Intercept	261.7
M1	759.4
M2	1194
99% LCL of Slope (0.005)	-0.0101
99% UCL of Slope (0.995)	0.0337

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Chloride (MW-7)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	325
Theil-Sen Slope	0.00945
Theil-Sen Intercept	295.5
M1	104.1
M2	220.9
99% LCL of Slope (0.005)	-0.0234
99% UCL of Slope (0.995)	0.0508

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Sulfate (MW-1)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	351
Theil-Sen Slope	0.0531
Theil-Sen Intercept	695.3
M1	113.7
M2	237.3
99% LCL of Slope (0.005)	-0.0366
99% UCL of Slope (0.995)	0.153

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Sulfate (MW-2)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	351
Theil-Sen Slope	0.021
Theil-Sen Intercept	721.6
M1	113.7
M2	237.3
99% LCL of Slope (0.005)	-0.066
99% UCL of Slope (0.995)	0.119

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Sulfate (MW-3)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	1275
Theil-Sen Slope	0.0248
Theil-Sen Intercept	722.7
M1	478.9
M2	796.1
99% LCL of Slope (0.005)	-0.0416
99% UCL of Slope (0.995)	0.109

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Sulfate (MW-4)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	1275
Theil-Sen Slope	0.0573
Theil-Sen Intercept	683.3
M1	478.9
M2	796.1
99% LCL of Slope (0.005)	-0.0145
99% UCL of Slope (0.995)	0.147

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Sulfate (MW-5)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	2016
Theil-Sen Slope	0.00741
Theil-Sen Intercept	737.7
M1	785.7
M2	1230
99% LCL of Slope (0.005)	-0.0483
99% UCL of Slope (0.995)	0.0751

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Sulfate (MW-6)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	2016
Theil-Sen Slope	-0.0267
Theil-Sen Intercept	761.8
M1	785.7
M2	1230
99% LCL of Slope (0.005)	-0.0878
99% UCL of Slope (0.995)	0.0388

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Sulfate (MW-7)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	325
Theil-Sen Slope	0.0295
Theil-Sen Intercept	724.7
M1	104.1
M2	220.9
99% LCL of Slope (0.005)	-0.0759
99% UCL of Slope (0.995)	0.149

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Total dissolved solids (MW-1)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	351
Theil-Sen Slope	-0.0626
Theil-Sen Intercept	1883
M1	113.7
M2	237.3
99% LCL of Slope (0.005)	-0.233
99% UCL of Slope (0.995)	0.152

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Total dissolved solids (MW-2)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	351
Theil-Sen Slope	-0.0338
Theil-Sen Intercept	1829
M1	113.8
M2	237.2
99% LCL of Slope (0.005)	-0.201
99% UCL of Slope (0.995)	0.182

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Total dissolved solids (MW-3)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	1035
Theil-Sen Slope	-0.0864
Theil-Sen Intercept	1875
M1	381.7
M2	653.3
99% LCL of Slope (0.005)	-0.234
99% UCL of Slope (0.995)	0

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Total dissolved solids (MW-4)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	1035
Theil-Sen Slope	-0.0403
Theil-Sen Intercept	1850
M1	381.7
M2	653.3
99% LCL of Slope (0.005)	-0.118
99% UCL of Slope (0.995)	0.0432

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Total dissolved solids (MW-5)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	1711
Theil-Sen Slope	-0.0426
Theil-Sen Intercept	1865
M1	658.7
M2	1052
99% LCL of Slope (0.005)	-0.129
99% UCL of Slope (0.995)	0.0851

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Total dissolved solids (MW-6)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	1711
Theil-Sen Slope	-0.0585
Theil-Sen Intercept	1962
M1	658.7
M2	1052
99% LCL of Slope (0.005)	-0.143
99% UCL of Slope (0.995)	0.0749

Insufficient evidence to identify a significant trend at the specified level of significance.

RESULT-Total dissolved solids (MW-7)

Approximate inference for Theil-Sen Trend Test

Number of Slopes	325
Theil-Sen Slope	-0.099
Theil-Sen Intercept	1990
M1	104.1
M2	220.9
99% LCL of Slope (0.005)	-0.359
99% UCL of Slope (0.995)	0.144

Insufficient evidence to identify a significant trend at the specified level of significance.

[illegible]

ND<0.25 U	ND<0.5 U	-0.25	0	31
ND<0.25 U	ND<0.5 U	-0.25	0	32
ND<0.25 U	ND<0.5 U	-0.25	0	33
ND<0.25 U	ND<0.5 U	-0.25	0	34
ND<0.25 U	ND<0.5 U	-0.25	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.5 U	ND<0.25 U	0.25	1	35
ND<0.5 U	ND<0.25 U	0.25	2	35
ND<0.5 U	ND<0.25 U	0.25	3	35
ND<0.5 U	ND<0.25 U	0.25	4	35
ND<0.5 U	ND<0.25 U	0.25	5	35
ND<0.5 U	ND<0.25 U	0.25	6	35
ND<0.5 U	ND<0.25 U	0.25	7	35
ND<0.5 U	ND<0.25 U	0.25	8	35
ND<0.5 U	ND<0.25 U	0.25	9	35
ND<0.5 U	ND<0.25 U	0.25	10	35
ND<0.5 U	ND<0.25 U	0.25	11	35
ND<0.5 U	ND<0.25 U	0.25	12	35
ND<0.5 U	ND<0.25 U	0.25	13	35
ND<0.5 U	ND<0.25 U	0.25	14	35
ND<0.5 U	ND<0.25 U	0.25	15	35
ND<0.25 U	ND<0.25 U	0	15	35
ND<0.25 U	ND<0.25 U	0	15	35
ND<0.25 U	ND<0.25 U	0	15	35
ND<0.25 U	ND<0.25 U	0	15	35
ND<0.25 U	ND<0.25 U	0	15	35
ND<0.5 U	ND<0.25 U	0.25	16	35
ND<0.5 U	ND<0.25 U	0.25	17	35
ND<0.5 U	ND<0.25 U	0.25	18	35
ND<0.5 U	ND<0.25 U	0.25	19	35
ND<0.5 U	ND<0.25 U	0.25	20	35
ND<0.5 U	ND<0.25 U	0.25	21	35
ND<0.5 U	ND<0.25 U	0.25	22	35
ND<0.5 U	ND<0.25 U	0.25	23	35
ND<0.5 U	ND<0.25 U	0.25	24	35

ND<0.5 U	ND<0.25 U	0.25	25	35
ND<0.5 U	ND<0.25 U	0.25	26	35
ND<0.5 U	ND<0.25 U	0.25	27	35
ND<0.5 U	ND<0.25 U	0.25	28	35
ND<0.5 U	ND<0.25 U	0.25	29	35
ND<0.5 U	ND<0.25 U	0.25	30	35
ND<0.25 U	ND<0.25 U	0	30	35
ND<0.25 U	ND<0.25 U	0	30	35
ND<0.25 U	ND<0.25 U	0	30	35
ND<0.25 U	ND<0.25 U	0	30	35
ND<0.5 U	ND<0.25 U	0.25	31	35
ND<0.5 U	ND<0.25 U	0.25	32	35
ND<0.5 U	ND<0.25 U	0.25	33	35
ND<0.5 U	ND<0.25 U	0.25	34	35
ND<0.5 U	ND<0.25 U	0.25	35	35
ND<0.5 U	ND<0.25 U	0.25	36	35
ND<0.5 U	ND<0.25 U	0.25	37	35
ND<0.5 U	ND<0.25 U	0.25	38	35
ND<0.5 U	ND<0.25 U	0.25	39	35
ND<0.5 U	ND<0.25 U	0.25	40	35
ND<0.5 U	ND<0.25 U	0.25	41	35
ND<0.5 U	ND<0.25 U	0.25	42	35
ND<0.5 U	ND<0.25 U	0.25	43	35
ND<0.5 U	ND<0.25 U	0.25	44	35
ND<0.5 U	ND<0.25 U	0.25	45	35
ND<0.25 U	ND<0.25 U	0	45	35
ND<0.25 U	ND<0.25 U	0	45	35
ND<0.25 U	ND<0.25 U	0	45	35
ND<0.5 U	ND<0.25 U	0.25	46	35
ND<0.5 U	ND<0.25 U	0.25	47	35
ND<0.5 U	ND<0.25 U	0.25	48	35
ND<0.5 U	ND<0.25 U	0.25	49	35
ND<0.5 U	ND<0.25 U	0.25	50	35
ND<0.5 U	ND<0.25 U	0.25	51	35
ND<0.5 U	ND<0.25 U	0.25	52	35
ND<0.5 U	ND<0.25 U	0.25	53	35
ND<0.5 U	ND<0.25 U	0.25	54	35
ND<0.5 U	ND<0.25 U	0.25	55	35
ND<0.5 U	ND<0.25 U	0.25	56	35
ND<0.5 U	ND<0.25 U	0.25	57	35
ND<0.5 U	ND<0.25 U	0.25	58	35
ND<0.5 U	ND<0.25 U	0.25	59	35
ND<0.5 U	ND<0.25 U	0.25	60	35
ND<0.25 U	ND<0.25 U	0	60	35
ND<0.25 U	ND<0.25 U	0	60	35
ND<0.5 U	ND<0.25 U	0.25	61	35
ND<0.5 U	ND<0.25 U	0.25	62	35
ND<0.5 U	ND<0.25 U	0.25	63	35
ND<0.5 U	ND<0.25 U	0.25	64	35
ND<0.5 U	ND<0.25 U	0.25	65	35
ND<0.5 U	ND<0.25 U	0.25	66	35
ND<0.5 U	ND<0.25 U	0.25	67	35
ND<0.5 U	ND<0.25 U	0.25	68	35
ND<0.5 U	ND<0.25 U	0.25	69	35

[illegible]

[illegible]

[illegible]
$$S \text{ Statistic} = 105 - 35 = 70$$

Tied Group	Value	Members
1	0.5	20
2	0.25	7

Time Period	Observations
11/24/2009	1
3/4/2010	1
4/30/2010	1
7/26/2010	1

10/13/2010	1
1/14/2011	1
4/21/2011	1
7/21/2011	1
10/31/2011	1
1/13/2012	1
4/27/2012	1
7/26/2012	1
10/18/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 17898

B = 0

C = 7050

D = 0

E = 422

F = 0

a = 41418

b = 157950

c = 1404

Group Variance = 1306.67

Z-Score = 1.90883

Comparison Level at 1.0 - $(0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)

|1.90883| <= 2.32634 indicating no evidence of a trend

ND<0.5 U	ND<0.5 U	0	0	14
ND<0.5 U	ND<0.5 U	0	0	14
ND<0.5 U	ND<0.5 U	0	0	14
ND<0.5 U	ND<0.5 U	0	0	14
ND<0.5 U	ND<0.5 U	0	0	14
ND<0.5 U	ND<0.5 U	0	0	14
ND<0.5 U	ND<0.5 U	0	0	14
ND<0.25 U	ND<0.5 U	-0.25	0	15
ND<0.25 U	ND<0.5 U	-0.25	0	16
ND<0.25 U	ND<0.5 U	-0.25	0	17
ND<0.25 U	ND<0.5 U	-0.25	0	18
ND<0.25 U	ND<0.5 U	-0.25	0	19
ND<0.25 U	ND<0.5 U	-0.25	0	20
ND<0.25 U	ND<0.5 U	-0.25	0	21
ND<0.5 U	ND<0.5 U	0	0	21
ND<0.5 U	ND<0.5 U	0	0	21
ND<0.5 U	ND<0.5 U	0	0	21
ND<0.5 U	ND<0.5 U	0	0	21
ND<0.5 U	ND<0.5 U	0	0	21
ND<0.5 U	ND<0.5 U	0	0	21
ND<0.5 U	ND<0.5 U	0	0	21
ND<0.5 U	ND<0.5 U	0	0	21
ND<0.5 U	ND<0.5 U	0	0	21
ND<0.5 U	ND<0.5 U	0	0	21
ND<0.5 U	ND<0.5 U	0	0	21
ND<0.5 U	ND<0.5 U	0	0	21
ND<0.5 U	ND<0.5 U	0	0	21
ND<0.25 U	ND<0.5 U	-0.25	0	22
ND<0.25 U	ND<0.5 U	-0.25	0	23
ND<0.25 U	ND<0.5 U	-0.25	0	24
ND<0.25 U	ND<0.5 U	-0.25	0	25
ND<0.25 U	ND<0.5 U	-0.25	0	26
ND<0.25 U	ND<0.5 U	-0.25	0	27
ND<0.25 U	ND<0.5 U	-0.25	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.25 U	ND<0.5 U	-0.25	0	29
ND<0.25 U	ND<0.5 U	-0.25	0	30

ND<0.25 U	ND<0.5 U	-0.25	0	31
ND<0.25 U	ND<0.5 U	-0.25	0	32
ND<0.25 U	ND<0.5 U	-0.25	0	33
ND<0.25 U	ND<0.5 U	-0.25	0	34
ND<0.25 U	ND<0.5 U	-0.25	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.5 U	ND<0.25 U	0.25	1	35
ND<0.5 U	ND<0.25 U	0.25	2	35
ND<0.5 U	ND<0.25 U	0.25	3	35
ND<0.5 U	ND<0.25 U	0.25	4	35
ND<0.5 U	ND<0.25 U	0.25	5	35
ND<0.5 U	ND<0.25 U	0.25	6	35
ND<0.5 U	ND<0.25 U	0.25	7	35
ND<0.5 U	ND<0.25 U	0.25	8	35
ND<0.5 U	ND<0.25 U	0.25	9	35
ND<0.5 U	ND<0.25 U	0.25	10	35
ND<0.5 U	ND<0.25 U	0.25	11	35
ND<0.5 U	ND<0.25 U	0.25	12	35
ND<0.5 U	ND<0.25 U	0.25	13	35
ND<0.5 U	ND<0.25 U	0.25	14	35
ND<0.5 U	ND<0.25 U	0.25	15	35
ND<0.25 U	ND<0.25 U	0	15	35
ND<0.25 U	ND<0.25 U	0	15	35
ND<0.25 U	ND<0.25 U	0	15	35
ND<0.25 U	ND<0.25 U	0	15	35
ND<0.25 U	ND<0.25 U	0	15	35
ND<0.5 U	ND<0.25 U	0.25	16	35
ND<0.5 U	ND<0.25 U	0.25	17	35
ND<0.5 U	ND<0.25 U	0.25	18	35
ND<0.5 U	ND<0.25 U	0.25	19	35
ND<0.5 U	ND<0.25 U	0.25	20	35
ND<0.5 U	ND<0.25 U	0.25	21	35
ND<0.5 U	ND<0.25 U	0.25	22	35
ND<0.5 U	ND<0.25 U	0.25	23	35
ND<0.5 U	ND<0.25 U	0.25	24	35

ND<0.5 U	ND<0.25 U	0.25	25	35
ND<0.5 U	ND<0.25 U	0.25	26	35
ND<0.5 U	ND<0.25 U	0.25	27	35
ND<0.5 U	ND<0.25 U	0.25	28	35
ND<0.5 U	ND<0.25 U	0.25	29	35
ND<0.5 U	ND<0.25 U	0.25	30	35
ND<0.25 U	ND<0.25 U	0	30	35
ND<0.25 U	ND<0.25 U	0	30	35
ND<0.25 U	ND<0.25 U	0	30	35
ND<0.25 U	ND<0.25 U	0	30	35
ND<0.5 U	ND<0.25 U	0.25	31	35
ND<0.5 U	ND<0.25 U	0.25	32	35
ND<0.5 U	ND<0.25 U	0.25	33	35
ND<0.5 U	ND<0.25 U	0.25	34	35
ND<0.5 U	ND<0.25 U	0.25	35	35
ND<0.5 U	ND<0.25 U	0.25	36	35
ND<0.5 U	ND<0.25 U	0.25	37	35
ND<0.5 U	ND<0.25 U	0.25	38	35
ND<0.5 U	ND<0.25 U	0.25	39	35
ND<0.5 U	ND<0.25 U	0.25	40	35
ND<0.5 U	ND<0.25 U	0.25	41	35
ND<0.5 U	ND<0.25 U	0.25	42	35
ND<0.5 U	ND<0.25 U	0.25	43	35
ND<0.5 U	ND<0.25 U	0.25	44	35
ND<0.5 U	ND<0.25 U	0.25	45	35
ND<0.25 U	ND<0.25 U	0	45	35
ND<0.25 U	ND<0.25 U	0	45	35
ND<0.25 U	ND<0.25 U	0	45	35
ND<0.5 U	ND<0.25 U	0.25	46	35
ND<0.5 U	ND<0.25 U	0.25	47	35
ND<0.5 U	ND<0.25 U	0.25	48	35
ND<0.5 U	ND<0.25 U	0.25	49	35
ND<0.5 U	ND<0.25 U	0.25	50	35
ND<0.5 U	ND<0.25 U	0.25	51	35
ND<0.5 U	ND<0.25 U	0.25	52	35
ND<0.5 U	ND<0.25 U	0.25	53	35
ND<0.5 U	ND<0.25 U	0.25	54	35
ND<0.5 U	ND<0.25 U	0.25	55	35
ND<0.5 U	ND<0.25 U	0.25	56	35
ND<0.5 U	ND<0.25 U	0.25	57	35
ND<0.5 U	ND<0.25 U	0.25	58	35
ND<0.5 U	ND<0.25 U	0.25	59	35
ND<0.5 U	ND<0.25 U	0.25	60	35
ND<0.25 U	ND<0.25 U	0	60	35
ND<0.25 U	ND<0.25 U	0	60	35
ND<0.5 U	ND<0.25 U	0.25	61	35
ND<0.5 U	ND<0.25 U	0.25	62	35
ND<0.5 U	ND<0.25 U	0.25	63	35
ND<0.5 U	ND<0.25 U	0.25	64	35
ND<0.5 U	ND<0.25 U	0.25	65	35
ND<0.5 U	ND<0.25 U	0.25	66	35
ND<0.5 U	ND<0.25 U	0.25	67	35
ND<0.5 U	ND<0.25 U	0.25	68	35
ND<0.5 U	ND<0.25 U	0.25	69	35

[illegible]

[illegible]

[illegible]
$$S \text{ Statistic} = 105 - 35 = 70$$

Tied Group	Value	Members
1	0.5	20
2	0.25	7

Time Period	Observations
11/25/2009	1
3/4/2010	1
4/30/2010	1
7/26/2010	1

10/13/2010	1
1/14/2011	1
4/21/2011	1
7/21/2011	1
10/31/2011	1
1/13/2012	1
4/27/2012	1
7/26/2012	1
10/18/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 17898

B = 0

C = 7050

D = 0

E = 422

F = 0

a = 41418

b = 157950

c = 1404

Group Variance = 1306.67

Z-Score = 1.90883

Comparison Level at 1.0 - $(0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)

|1.90883| <= 2.32634 indicating no evidence of a trend

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[illegible]

[illegible]

[illegible]

Page 8

[illegible]

Page 11

Page 12

[illegible]

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ND<0.5 U	ND<0.25 U	0.25	297	228
ND<0.5 U	ND<0.25 U	0.25	298	228
ND<0.5 U	ND<0.25 U	0.25	299	228
ND<0.5 U	ND<0.25 U	0.25	300	228
ND<0.5 U	ND<0.25 U	0.25	301	228
ND<0.5 U	ND<0.25 U	0.25	302	228
ND<0.5 U	ND<0.25 U	0.25	303	228
ND<0.5 U	ND<0.25 U	0.25	304	228
ND<0.5 U	ND<0.25 U	0.25	305	228
ND<0.5 U	ND<0.25 U	0.25	306	228
ND<0.25 U	ND<0.25 U	0	306	228
ND<0.25 U	ND<0.25 U	0	306	228
ND<0.25 U	ND<0.25 U	0	306	228
ND<0.25 U	ND<0.25 U	0	306	228
ND<0.25 U	ND<0.25 U	0	306	228
ND<0.25 U	ND<0.25 U	0	306	228
ND<0.5 U	ND<0.25 U	0.25	307	228
ND<0.5 U	ND<0.25 U	0.25	308	228
ND<0.5 U	ND<0.25 U	0.25	309	228
ND<0.5 U	ND<0.25 U	0.25	310	228
ND<0.5 U	ND<0.25 U	0.25	311	228
ND<0.5 U	ND<0.25 U	0.25	312	228
ND<0.5 U	ND<0.25 U	0.25	313	228
ND<0.5 U	ND<0.25 U	0.25	314	228
ND<0.5 U	ND<0.25 U	0.25	315	228
ND<0.5 U	ND<0.25 U	0.25	316	228
ND<0.5 U	ND<0.25 U	0.25	317	228
ND<0.5 U	ND<0.25 U	0.25	318	228
ND<0.5 U	ND<0.25 U	0.25	319	228
ND<0.5 U	ND<0.25 U	0.25	320	228
ND<0.5 U	ND<0.25 U	0.25	321	228
ND<0.5 U	ND<0.25 U	0.25	322	228
ND<0.5 U	ND<0.25 U	0.25	323	228
ND<0.5 U	ND<0.25 U	0.25	324	228
ND<0.5 U	ND<0.25 U	0.25	325	228
ND<0.25 U	ND<0.25 U	0	325	228
ND<0.25 U	ND<0.25 U	0	325	228
ND<0.25 U	ND<0.25 U	0	325	228
ND<0.25 U	ND<0.25 U	0	325	228
ND<0.25 U	ND<0.25 U	0	325	228
ND<0.5 U	ND<0.25 U	0.25	326	228
ND<0.5 U	ND<0.25 U	0.25	327	228
ND<0.5 U	ND<0.25 U	0.25	328	228
ND<0.5 U	ND<0.25 U	0.25	329	228
ND<0.5 U	ND<0.25 U	0.25	330	228
ND<0.5 U	ND<0.25 U	0.25	331	228
ND<0.5 U	ND<0.25 U	0.25	332	228
ND<0.5 U	ND<0.25 U	0.25	333	228
ND<0.5 U	ND<0.25 U	0.25	334	228
ND<0.5 U	ND<0.25 U	0.25	335	228
ND<0.5 U	ND<0.25 U	0.25	336	228
ND<0.5 U	ND<0.25 U	0.25	337	228
ND<0.5 U	ND<0.25 U	0.25	338	228
ND<0.5 U	ND<0.25 U	0.25	339	228
ND<0.5 U	ND<0.25 U	0.25	340	228

ND<0.5 U	ND<0.25 U	0.25	341	228
ND<0.5 U	ND<0.25 U	0.25	342	228
ND<0.5 U	ND<0.25 U	0.25	343	228
ND<0.5 U	ND<0.25 U	0.25	344	228
ND<0.25 U	ND<0.25 U	0	344	228
ND<0.25 U	ND<0.25 U	0	344	228
ND<0.25 U	ND<0.25 U	0	344	228
ND<0.25 U	ND<0.25 U	0	344	228
ND<0.5 U	ND<0.25 U	0.25	345	228
ND<0.5 U	ND<0.25 U	0.25	346	228
ND<0.5 U	ND<0.25 U	0.25	347	228
ND<0.5 U	ND<0.25 U	0.25	348	228
ND<0.5 U	ND<0.25 U	0.25	349	228
ND<0.5 U	ND<0.25 U	0.25	350	228
ND<0.5 U	ND<0.25 U	0.25	351	228
ND<0.5 U	ND<0.25 U	0.25	352	228
ND<0.5 U	ND<0.25 U	0.25	353	228
ND<0.5 U	ND<0.25 U	0.25	354	228
ND<0.5 U	ND<0.25 U	0.25	355	228
ND<0.5 U	ND<0.25 U	0.25	356	228
ND<0.5 U	ND<0.25 U	0.25	357	228
ND<0.5 U	ND<0.25 U	0.25	358	228
ND<0.5 U	ND<0.25 U	0.25	359	228
ND<0.5 U	ND<0.25 U	0.25	360	228
ND<0.5 U	ND<0.25 U	0.25	361	228
ND<0.5 U	ND<0.25 U	0.25	362	228
ND<0.5 U	ND<0.25 U	0.25	363	228
ND<0.25 U	ND<0.25 U	0	363	228
ND<0.25 U	ND<0.25 U	0	363	228
ND<0.25 U	ND<0.25 U	0	363	228
ND<0.5 U	ND<0.25 U	0.25	364	228
ND<0.5 U	ND<0.25 U	0.25	365	228
ND<0.5 U	ND<0.25 U	0.25	366	228
ND<0.5 U	ND<0.25 U	0.25	367	228
ND<0.5 U	ND<0.25 U	0.25	368	228
ND<0.5 U	ND<0.25 U	0.25	369	228
ND<0.5 U	ND<0.25 U	0.25	370	228
ND<0.5 U	ND<0.25 U	0.25	371	228
ND<0.5 U	ND<0.25 U	0.25	372	228
ND<0.5 U	ND<0.25 U	0.25	373	228
ND<0.5 U	ND<0.25 U	0.25	374	228
ND<0.5 U	ND<0.25 U	0.25	375	228
ND<0.5 U	ND<0.25 U	0.25	376	228
ND<0.5 U	ND<0.25 U	0.25	377	228
ND<0.5 U	ND<0.25 U	0.25	378	228
ND<0.5 U	ND<0.25 U	0.25	379	228
ND<0.5 U	ND<0.25 U	0.25	380	228
ND<0.5 U	ND<0.25 U	0.25	381	228
ND<0.5 U	ND<0.25 U	0.25	382	228
ND<0.25 U	ND<0.25 U	0	382	228
ND<0.25 U	ND<0.25 U	0	382	228
ND<0.5 U	ND<0.25 U	0.25	383	228
ND<0.5 U	ND<0.25 U	0.25	384	228
ND<0.5 U	ND<0.25 U	0.25	385	228

ND<0.5 U	ND<0.5 U	0	439	228
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[illegible]

ND<0.5 U	ND<0.5 U	0	439	228
ND<0.5 U	ND<0.5 U	0	439	228
ND<0.5 U	ND<0.5 U	0	439	228
ND<0.5 U	ND<0.5 U	0	439	228
ND<0.5 U	ND<0.5 U	0	439	228
ND<0.5 U	ND<0.5 U	0	439	228
ND<0.5 U	ND<0.5 U	0	439	228
ND<0.5 U	ND<0.5 U	0	439	228
ND<0.5 U	ND<0.5 U	0	439	228
ND<0.5 U	ND<0.5 U	0	439	228
ND<0.5 U	ND<0.5 U	0	439	228
ND<0.5 U	ND<0.5 U	0	439	228
ND<0.5 U	ND<0.5 U	0	439	228
ND<0.5 U	ND<0.5 U	0	439	228
ND<0.5 U	ND<0.5 U	0	439	228

S Statistic = 439 - 228 = 211

Tied Group	Value	Members
1	0.5	29
2	0.25	23

Time Period	Observations
11/24/2009	1
1/27/2010	1
3/2/2010	1
3/4/2010	1
4/9/2010	1
4/30/2010	1
5/6/2010	1
6/7/2010	1
7/26/2010	1
8/16/2010	1
9/17/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1
1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1
12/6/2011	1
1/13/2012	1
2/21/2012	1
3/20/2012	1
4/27/2012	1

5/24/2012	1
6/15/2012	1
7/26/2012	1
8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 76962

B = 0

C = 32550

D = 0

E = 1318

F = 0

a = 289068

b = 1.1934e+006

c = 5304

Group Variance = 11783.7

Z-Score = 1.93455

Comparison Level at 1.0 - (0.02 / 2) = 99% confidence level = 2.32634 (two-tailed)

|1.93455| <= 2.32634 indicating no evidence of a trend

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

ND<0.5 U	ND<0.5 U	0	10	231
ND<0.5 U	ND<0.5 U	0	10	231
ND<0.5 U	ND<0.5 U	0	10	231
ND<0.5 U	ND<0.5 U	0	10	231
ND<0.5 U	ND<0.5 U	0	10	231
ND<0.5 U	ND<0.5 U	0	10	231
ND<0.5 U	ND<0.5 U	0	10	231
ND<0.5 U	ND<0.5 U	0	10	231
ND<0.5 U	ND<0.5 U	0	10	231
ND<0.5 U	ND<0.5 U	0	10	231
1.7	ND<0.5 U	1.2	11	231
ND<0.5 U	ND<0.5 U	0	11	231
ND<0.5 U	ND<0.5 U	0	11	231
ND<0.25 U	ND<0.5 U	-0.25	11	232
ND<0.25 U	ND<0.5 U	-0.25	11	233
ND<0.25 U	ND<0.5 U	-0.25	11	234
ND<0.25 U	ND<0.5 U	-0.25	11	235
ND<0.25 U	ND<0.5 U	-0.25	11	236
ND<0.25 U	ND<0.5 U	-0.25	11	237
ND<0.25 U	ND<0.5 U	-0.25	11	238
ND<0.25 U	ND<0.5 U	-0.25	11	239
ND<0.25 U	ND<0.5 U	-0.25	11	240
ND<0.25 U	ND<0.5 U	-0.25	11	241
ND<0.25 U	ND<0.5 U	-0.25	11	242
ND<0.25 U	ND<0.5 U	-0.25	11	243
ND<0.25 U	ND<0.5 U	-0.25	11	244
ND<0.25 U	ND<0.5 U	-0.25	11	245
ND<0.25 U	ND<0.5 U	-0.25	11	246
ND<0.25 U	ND<0.5 U	-0.25	11	247
ND<0.25 U	ND<0.5 U	-0.25	11	248
ND<0.25 U	ND<0.5 U	-0.25	11	249
ND<0.25 U	ND<0.5 U	-0.25	11	250
ND<0.25 U	ND<0.5 U	-0.25	11	251
ND<0.25 U	ND<0.5 U	-0.25	11	252
ND<0.5 U	ND<0.5 U	0	11	252
ND<0.5 U	ND<0.5 U	0	11	252
ND<0.5 U	ND<0.5 U	0	11	252
ND<0.5 U	ND<0.5 U	0	11	252
ND<0.5 U	ND<0.5 U	0	11	252
ND<0.5 U	ND<0.5 U	0	11	252
ND<0.5 U	ND<0.5 U	0	11	252
ND<0.5 U	ND<0.5 U	0	11	252
ND<0.5 U	ND<0.5 U	0	11	252
ND<0.5 U	ND<0.5 U	0	11	252
ND<0.5 U	ND<0.5 U	0	11	252
ND<0.5 U	ND<0.5 U	0	11	252
1.7	ND<0.5 U	1.2	12	252
ND<0.5 U	ND<0.5 U	0	12	252
ND<0.5 U	ND<0.5 U	0	12	252
ND<0.25 U	ND<0.25 U	0	12	252
ND<0.25 U	ND<0.25 U	0	12	252

[illegible]

ND<0.5 U	ND<0.25 U	0.25	32	252
ND<0.5 U	ND<0.25 U	0.25	33	252
ND<0.5 U	ND<0.25 U	0.25	34	252
ND<0.5 U	ND<0.25 U	0.25	35	252
ND<0.5 U	ND<0.25 U	0.25	36	252
ND<0.5 U	ND<0.25 U	0.25	37	252
ND<0.5 U	ND<0.25 U	0.25	38	252
ND<0.5 U	ND<0.25 U	0.25	39	252
ND<0.5 U	ND<0.25 U	0.25	40	252
ND<0.5 U	ND<0.25 U	0.25	41	252
ND<0.5 U	ND<0.25 U	0.25	42	252
ND<0.5 U	ND<0.25 U	0.25	43	252
ND<0.5 U	ND<0.25 U	0.25	44	252
ND<0.5 U	ND<0.25 U	0.25	45	252
ND<0.5 U	ND<0.25 U	0.25	46	252
ND<0.5 U	ND<0.25 U	0.25	47	252
1.7	ND<0.25 U	1.45	48	252
ND<0.5 U	ND<0.25 U	0.25	49	252
ND<0.5 U	ND<0.25 U	0.25	50	252
ND<0.25 U	ND<0.25 U	0	50	252
ND<0.25 U	ND<0.25 U	0	50	252
ND<0.25 U	ND<0.25 U	0	50	252
ND<0.25 U	ND<0.25 U	0	50	252
ND<0.25 U	ND<0.25 U	0	50	252
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ND<0.25 U	ND<0.25 U	0	50	252
ND<0.25 U	ND<0.25 U	0	50	252
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ND<0.25 U	ND<0.25 U	0	50	252
ND<0.25 U	ND<0.25 U	0	50	252
ND<0.25 U	ND<0.25 U	0	50	252
ND<0.25 U	ND<0.25 U	0	50	252
ND<0.25 U	ND<0.25 U	0	50	252
ND<0.25 U	ND<0.25 U	0	50	252
ND<0.5 U	ND<0.25 U	0.25	51	252
ND<0.5 U	ND<0.25 U	0.25	52	252
ND<0.5 U	ND<0.25 U	0.25	53	252
ND<0.5 U	ND<0.25 U	0.25	54	252
ND<0.5 U	ND<0.25 U	0.25	55	252
ND<0.5 U	ND<0.25 U	0.25	56	252
ND<0.5 U	ND<0.25 U	0.25	57	252
ND<0.5 U	ND<0.25 U	0.25	58	252
ND<0.5 U	ND<0.25 U	0.25	59	252
ND<0.5 U	ND<0.25 U	0.25	60	252
ND<0.5 U	ND<0.25 U	0.25	61	252
ND<0.5 U	ND<0.25 U	0.25	62	252
ND<0.5 U	ND<0.25 U	0.25	63	252
ND<0.5 U	ND<0.25 U	0.25	64	252
ND<0.5 U	ND<0.25 U	0.25	65	252
ND<0.5 U	ND<0.25 U	0.25	66	252
1.7	ND<0.25 U	1.45	67	252
ND<0.5 U	ND<0.25 U	0.25	68	252
ND<0.5 U	ND<0.25 U	0.25	69	252

[illegible]

ND<0.5 U	ND<0.25 U	0.25	92	252
ND<0.5 U	ND<0.25 U	0.25	93	252
ND<0.5 U	ND<0.25 U	0.25	94	252
ND<0.5 U	ND<0.25 U	0.25	95	252
ND<0.5 U	ND<0.25 U	0.25	96	252
ND<0.5 U	ND<0.25 U	0.25	97	252
ND<0.5 U	ND<0.25 U	0.25	98	252
ND<0.5 U	ND<0.25 U	0.25	99	252
ND<0.5 U	ND<0.25 U	0.25	100	252
ND<0.5 U	ND<0.25 U	0.25	101	252
ND<0.5 U	ND<0.25 U	0.25	102	252
ND<0.5 U	ND<0.25 U	0.25	103	252
ND<0.5 U	ND<0.25 U	0.25	104	252
1.7	ND<0.25 U	1.45	105	252
ND<0.5 U	ND<0.25 U	0.25	106	252
ND<0.5 U	ND<0.25 U	0.25	107	252
ND<0.25 U	ND<0.25 U	0	107	252
ND<0.25 U	ND<0.25 U	0	107	252
ND<0.25 U	ND<0.25 U	0	107	252
ND<0.25 U	ND<0.25 U	0	107	252
ND<0.25 U	ND<0.25 U	0	107	252
ND<0.25 U	ND<0.25 U	0	107	252
ND<0.25 U	ND<0.25 U	0	107	252
ND<0.25 U	ND<0.25 U	0	107	252
ND<0.25 U	ND<0.25 U	0	107	252
ND<0.25 U	ND<0.25 U	0	107	252
ND<0.25 U	ND<0.25 U	0	107	252
ND<0.25 U	ND<0.25 U	0	107	252
ND<0.25 U	ND<0.25 U	0	107	252
ND<0.25 U	ND<0.25 U	0	107	252
ND<0.5 U	ND<0.25 U	0.25	108	252
ND<0.5 U	ND<0.25 U	0.25	109	252
ND<0.5 U	ND<0.25 U	0.25	110	252
ND<0.5 U	ND<0.25 U	0.25	111	252
ND<0.5 U	ND<0.25 U	0.25	112	252
ND<0.5 U	ND<0.25 U	0.25	113	252
ND<0.5 U	ND<0.25 U	0.25	114	252
ND<0.5 U	ND<0.25 U	0.25	115	252
ND<0.5 U	ND<0.25 U	0.25	116	252
ND<0.5 U	ND<0.25 U	0.25	117	252
ND<0.5 U	ND<0.25 U	0.25	118	252
ND<0.5 U	ND<0.25 U	0.25	119	252
ND<0.5 U	ND<0.25 U	0.25	120	252
ND<0.5 U	ND<0.25 U	0.25	121	252
ND<0.5 U	ND<0.25 U	0.25	122	252
ND<0.5 U	ND<0.25 U	0.25	123	252
1.7	ND<0.25 U	1.45	124	252
ND<0.5 U	ND<0.25 U	0.25	125	252
ND<0.5 U	ND<0.25 U	0.25	126	252
ND<0.25 U	ND<0.25 U	0	126	252
ND<0.25 U	ND<0.25 U	0	126	252
ND<0.25 U	ND<0.25 U	0	126	252
ND<0.25 U	ND<0.25 U	0	126	252
ND<0.25 U	ND<0.25 U	0	126	252

ND<0.25 U	ND<0.25 U	0	126	252
ND<0.25 U	ND<0.25 U	0	126	252
ND<0.25 U	ND<0.25 U	0	126	252
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1.7	ND<0.25 U	1.45	409	252
ND<0.5 U	ND<0.25 U	0.25	410	252
ND<0.5 U	ND<0.25 U	0.25	411	252

[illegible]

[illegible]

ND<0.5 U	ND<0.5 U	0	418	252
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1.7	ND<0.5 U	1.2	421	252
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ND<0.5 U	ND<0.5 U	0	421	252
ND<0.5 U	ND<0.5 U	0	421	252
1.7	ND<0.5 U	1.2	422	252
ND<0.5 U	ND<0.5 U	0	422	252
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1.7	ND<0.5 U	1.2	427	252
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ND<0.5 U	1.7	-1.2	427	253
ND<0.5 U	1.7	-1.2	427	254
ND<0.5 U	ND<0.5 U	0	427	254

S Statistic = 427 - 254 = 173

Tied Group	Value	Members
1	0.5	30
2	0.25	21

Time Period	Observations
11/24/2009	1
1/27/2010	1
3/2/2010	1
3/4/2010	1
4/9/2010	1
4/30/2010	1
5/6/2010	1
6/7/2010	1
7/26/2010	1
8/16/2010	1
9/17/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1
1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1
12/6/2011	1
1/13/2012	1
2/21/2012	1
3/20/2012	1
4/27/2012	1

5/24/2012	1
6/15/2012	1
7/26/2012	1
8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 76290

B = 0

C = 32340

D = 0

E = 1290

F = 0

a = 289068

b = 1.1934e+006

c = 5304

Group Variance = 11821

Z-Score = 1.58198

Comparison Level at 1.0 - (0.02 / 2) = 99% confidence level = 2.32634 (two-tailed)

|1.58198| <= 2.32634 indicating no evidence of a trend

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

ND<0.25 U	ND<0.25 U	0	24	252
ND<0.25 U	ND<0.25 U	0	24	252
ND<0.25 U	ND<0.25 U	0	24	252
ND<0.5 U	ND<0.25 U	0.25	25	252
ND<0.5 U	ND<0.25 U	0.25	26	252
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1.2	ND<0.25 U	0.95	52	252
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1.9	ND<0.25 U	1.65	54	252
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ND<0.5 U	ND<0.25 U	0.25	175	252

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[illegible]

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1.2	ND<0.25 U	0.95	596	252
ND<0.5 U	ND<0.25 U	0.25	597	252
1.9	ND<0.25 U	1.65	598	252
ND<0.5 U	ND<0.25 U	0.25	599	252
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ND<0.25 U	ND<0.25 U	0	600	252
ND<0.5 U	ND<0.25 U	0.25	601	252
ND<0.5 U	ND<0.25 U	0.25	602	252
ND<0.5 U	ND<0.25 U	0.25	603	252
ND<0.5 U	ND<0.25 U	0.25	604	252
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ND<0.5 U	ND<0.25 U	0.25	606	252
ND<0.5 U	ND<0.25 U	0.25	607	252
ND<0.5 U	ND<0.25 U	0.25	608	252
ND<0.5 U	ND<0.25 U	0.25	609	252
ND<0.5 U	ND<0.25 U	0.25	610	252
ND<0.5 U	ND<0.25 U	0.25	611	252
ND<0.5 U	ND<0.25 U	0.25	612	252

ND<0.5 U	ND<0.25 U	0.25	613	252
ND<0.5 U	ND<0.25 U	0.25	614	252
ND<0.5 U	ND<0.25 U	0.25	615	252
ND<0.5 U	ND<0.25 U	0.25	616	252
ND<0.5 U	ND<0.25 U	0.25	617	252
ND<0.5 U	ND<0.25 U	0.25	618	252
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ND<0.5 U	ND<0.25 U	0.25	625	252
ND<0.5 U	ND<0.25 U	0.25	626	252
ND<0.5 U	ND<0.25 U	0.25	627	252
1.2	ND<0.25 U	0.95	628	252
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1.9	ND<0.25 U	1.65	630	252
ND<0.5 U	ND<0.25 U	0.25	631	252
ND<0.5 U	ND<0.25 U	0.25	632	252
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ND<0.5 U	ND<0.25 U	0.25	656	252
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ND<0.5 U	ND<0.25 U	0.25	659	252
1.2	ND<0.25 U	0.95	660	252
ND<0.5 U	ND<0.25 U	0.25	661	252
1.9	ND<0.25 U	1.65	662	252
ND<0.5 U	ND<0.25 U	0.25	663	252
ND<0.5 U	ND<0.25 U	0.25	664	252
ND<0.5 U	ND<0.25 U	0.25	665	252
ND<0.5 U	ND<0.25 U	0.25	666	252

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ND<0.5 U	ND<0.5 U	0	724	252
1.2	ND<0.5 U	0.7	725	252
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1.9	ND<0.5 U	1.4	726	252
ND<0.5 U	ND<0.5 U	0	726	252
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ND<0.5 U	ND<0.5 U	0	726	252
ND<0.5 U	ND<0.5 U	0	726	252
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1.2	ND<0.5 U	0.7	727	252
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1.9	ND<0.5 U	1.4	728	252
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1.9	ND<0.5 U	1.4	730	252
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ND<0.5 U	ND<0.5 U	0	730	252
1.2	ND<0.5 U	0.7	731	252
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1.9	ND<0.5 U	1.4	732	252
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ND<0.5 U	ND<0.5 U	0	732	252

ND<0.5 U	ND<0.5 U	0	732	252
ND<0.5 U	ND<0.5 U	0	732	252
ND<0.5 U	ND<0.5 U	0	732	252
ND<0.5 U	ND<0.5 U	0	732	252
ND<0.5 U	ND<0.5 U	0	732	252
ND<0.5 U	ND<0.5 U	0	732	252
1.2	ND<0.5 U	0.7	733	252
ND<0.5 U	ND<0.5 U	0	733	252
1.9	ND<0.5 U	1.4	734	252
ND<0.5 U	ND<0.5 U	0	734	252
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ND<0.5 U	ND<0.5 U	0	734	252
ND<0.5 U	ND<0.5 U	0	734	252
ND<0.5 U	ND<0.5 U	0	734	252
ND<0.5 U	ND<0.5 U	0	734	252
ND<0.5 U	ND<0.5 U	0	734	252
ND<0.5 U	ND<0.5 U	0	734	252
ND<0.5 U	ND<0.5 U	0	734	252
1.2	ND<0.5 U	0.7	735	252
ND<0.5 U	ND<0.5 U	0	735	252
1.9	ND<0.5 U	1.4	736	252
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ND<0.5 U	ND<0.5 U	0	736	252
ND<0.5 U	ND<0.5 U	0	736	252
ND<0.5 U	ND<0.5 U	0	736	252
ND<0.5 U	ND<0.5 U	0	736	252
ND<0.5 U	ND<0.5 U	0	736	252
1.2	ND<0.5 U	0.7	737	252
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ND<0.5 U	ND<0.5 U	0	738	252
ND<0.5 U	ND<0.5 U	0	738	252
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ND<0.5 U	ND<0.5 U	0	738	252
1.2	ND<0.5 U	0.7	739	252
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1.9	ND<0.5 U	1.4	740	252
ND<0.5 U	ND<0.5 U	0	740	252
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1.9	ND<0.5 U	1.4	742	252
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ND<0.5 U	ND<0.5 U	0	742	252

ND<0.5 U	ND<0.5 U	0	742	252
ND<0.5 U	ND<0.5 U	0	742	252
ND<0.5 U	ND<0.5 U	0	742	252
1.2	ND<0.5 U	0.7	743	252
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1.9	ND<0.5 U	1.4	744	252
ND<0.5 U	ND<0.5 U	0	744	252
ND<0.5 U	ND<0.5 U	0	744	252
ND<0.5 U	ND<0.5 U	0	744	252
ND<0.5 U	ND<0.5 U	0	744	252
1.2	ND<0.5 U	0.7	745	252
ND<0.5 U	ND<0.5 U	0	745	252
1.9	ND<0.5 U	1.4	746	252
ND<0.5 U	ND<0.5 U	0	746	252
ND<0.5 U	ND<0.5 U	0	746	252
ND<0.5 U	ND<0.5 U	0	746	252
1.2	ND<0.5 U	0.7	747	252
ND<0.5 U	ND<0.5 U	0	747	252
1.9	ND<0.5 U	1.4	748	252
ND<0.5 U	ND<0.5 U	0	748	252
ND<0.5 U	ND<0.5 U	0	748	252
1.2	ND<0.5 U	0.7	749	252
ND<0.5 U	ND<0.5 U	0	749	252
1.9	ND<0.5 U	1.4	750	252
ND<0.5 U	ND<0.5 U	0	750	252
ND<0.5 U	ND<0.5 U	0	750	252
ND<0.5 U	1.2	-0.7	750	253
1.9	1.2	0.7	751	253
ND<0.5 U	1.2	-0.7	751	254
ND<0.5 U	1.2	-0.7	751	255
1.9	ND<0.5 U	1.4	752	255
ND<0.5 U	ND<0.5 U	0	752	255
ND<0.5 U	ND<0.5 U	0	752	255
ND<0.5 U	1.9	-1.4	752	256
ND<0.5 U	1.9	-1.4	752	257
ND<0.5 U	ND<0.5 U	0	752	257

S Statistic = 752 - 257 = 495

Tied Group	Value	Members
1	0.5	42
2	0.25	21

Time Period	Observations
11/24/2009	1
1/27/2010	1
3/2/2010	1
3/4/2010	1

4/9/2010	1
4/30/2010	1
5/6/2010	1
6/7/2010	1
7/26/2010	1
8/16/2010	1
9/17/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1
1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1
12/6/2011	1
1/13/2012	1
2/21/2012	1
3/20/2012	1
4/27/2012	1
5/24/2012	1
6/15/2012	1
7/26/2012	1
8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1
1/29/2013	1
4/17/2013	1
7/29/2013	1
10/30/2013	1
1/31/2014	1
4/18/2014	1
7/17/2014	1
10/23/2014	1
1/27/2015	1
4/13/2015	1
7/21/2015	1
10/20/2015	1
1/27/2016	1
4/26/2016	1
7/26/2016	1
10/31/2016	1
1/30/2017	1
4/27/2017	1
7/24/2017	1
10/27/2017	1
1/29/2018	1
4/12/2018	1
7/24/2018	1

10/29/2018	1
1/30/2019	1
4/29/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 172998
B = 0
C = 76860
D = 0
E = 2142
F = 0
a = 561600
b = 2.35872e+006
c = 8320
Group Variance = 21589
Z-Score = 3.3621
Comparison Level at $1.0 - (0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)
|3.3621| > 2.32634 indicating a trend

Mann-Kendall Trend Analysis

Parameter: Benzene

Location: MW-6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
ND<0.5 U	ND<0.5 U	0	0	0
ND<0.5 U	ND<0.5 U	0	0	0
ND<0.5 U	ND<0.5 U	0	0	0
ND<0.5 U	ND<0.5 U	0	0	0
ND<0.5 U	ND<0.5 U	0	0	0
ND<0.5 U	ND<0.5 U	0	0	0
ND<0.5 U	ND<0.5 U	0	0	0
ND<0.5 U	ND<0.5 U	0	0	0
ND<0.5 U	ND<0.5 U	0	0	0
ND<0.5 U	ND<0.5 U	0	0	0
ND<0.25 U	ND<0.5 U	-0.25	0	1
1	ND<0.5 U	0.5	1	1
2	ND<0.5 U	1.5	2	1
3.5	ND<0.5 U	3	3	1
ND<0.25 U	ND<0.5 U	-0.25	3	2
ND<0.25 U	ND<0.5 U	-0.25	3	3
ND<0.25 U	ND<0.5 U	-0.25	3	4
ND<0.25 U	ND<0.5 U	-0.25	3	5
ND<0.25 U	ND<0.5 U	-0.25	3	6
ND<0.25 U	ND<0.5 U	-0.25	3	7
ND<0.25 U	ND<0.5 U	-0.25	3	8
ND<0.25 U	ND<0.5 U	-0.25	3	9
ND<0.25 U	ND<0.5 U	-0.25	3	10
ND<0.25 U	ND<0.5 U	-0.25	3	11
1.2	ND<0.5 U	0.7	4	11
ND<0.25 U	ND<0.5 U	-0.25	4	12
ND<0.25 U	ND<0.5 U	-0.25	4	13
ND<0.25 U	ND<0.5 U	-0.25	4	14
ND<0.25 U	ND<0.5 U	-0.25	4	15
ND<0.25 U	ND<0.5 U	-0.25	4	16
ND<0.25 U	ND<0.5 U	-0.25	4	17
ND<0.5 U	ND<0.5 U	0	4	17
ND<0.5 U	ND<0.5 U	0	4	17
ND<0.5 U	ND<0.5 U	0	4	17
ND<0.5 U	ND<0.5 U	0	4	17
ND<0.5 U	ND<0.5 U	0	4	17
ND<0.5 U	ND<0.5 U	0	4	17
ND<0.5 U	ND<0.5 U	0	4	17
ND<0.5 U	ND<0.5 U	0	4	17
ND<0.5 U	ND<0.5 U	0	4	17
ND<0.5 U	ND<0.5 U	0	4	17
ND<0.5 U	ND<0.5 U	0	4	17
ND<0.5 U	ND<0.5 U	0	4	17
ND<0.5 U	ND<0.5 U	0	4	17
ND<0.5 U	ND<0.5 U	0	4	17
ND<0.5 U	ND<0.5 U	0	4	17
ND<0.5 U	ND<0.5 U	0	4	17

ND<0.5 U	ND<0.5 U	0	20	51
ND<0.5 U	ND<0.5 U	0	20	51
ND<0.5 U	ND<0.5 U	0	20	51
ND<0.5 U	ND<0.5 U	0	20	51
ND<0.5 U	ND<0.5 U	0	20	51
ND<0.5 U	ND<0.5 U	0	20	51
ND<0.5 U	ND<0.5 U	0	20	51
ND<0.5 U	ND<0.5 U	0	20	51
ND<0.5 U	ND<0.5 U	0	20	51
ND<0.5 U	ND<0.5 U	0	20	51
ND<0.5 U	ND<0.5 U	0	20	51
ND<0.5 U	ND<0.5 U	0	20	51
ND<0.5 U	ND<0.5 U	0	20	51
ND<0.5 U	ND<0.5 U	0	20	51
3.9	ND<0.5 U	3.4	21	51
ND<0.5 U	ND<0.5 U	0	21	51
ND<0.5 U	ND<0.5 U	0	21	51
ND<0.5 U	ND<0.5 U	0	21	51
1.8	ND<0.5 U	1.3	22	51
ND<0.5 U	ND<0.5 U	0	22	51
ND<0.5 U	ND<0.5 U	0	22	51
1.9	ND<0.5 U	1.4	23	51
ND<0.5 U	ND<0.5 U	0	23	51
ND<0.5 U	ND<0.5 U	0	23	51
15	ND<0.5 U	14.5	24	51
ND<0.5 U	ND<0.5 U	0	24	51
ND<0.5 U	ND<0.5 U	0	24	51
ND<0.5 U	ND<0.5 U	0	24	51
ND<0.5 U	ND<0.5 U	0	24	51
ND<0.5 U	ND<0.5 U	0	24	51
ND<0.5 U	ND<0.5 U	0	24	51
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ND<0.5 U	ND<0.5 U	0	24	51
ND<0.5 U	ND<0.5 U	0	24	51
ND<0.5 U	ND<0.5 U	0	24	51
ND<0.5 U	ND<0.5 U	0	24	51
ND<0.5 U	ND<0.5 U	0	24	51
ND<0.5 U	ND<0.5 U	0	24	51
ND<0.25 U	ND<0.5 U	-0.25	24	52
1	ND<0.5 U	0.5	25	52
2	ND<0.5 U	1.5	26	52
3.5	ND<0.5 U	3	27	52
ND<0.25 U	ND<0.5 U	-0.25	27	53
ND<0.25 U	ND<0.5 U	-0.25	27	54
ND<0.25 U	ND<0.5 U	-0.25	27	55
ND<0.25 U	ND<0.5 U	-0.25	27	56
ND<0.25 U	ND<0.5 U	-0.25	27	57
ND<0.25 U	ND<0.5 U	-0.25	27	58
ND<0.25 U	ND<0.5 U	-0.25	27	59
ND<0.25 U	ND<0.5 U	-0.25	27	60
ND<0.25 U	ND<0.5 U	-0.25	27	61
ND<0.25 U	ND<0.5 U	-0.25	27	62
1.2	ND<0.5 U	0.7	28	62
ND<0.25 U	ND<0.5 U	-0.25	28	63
ND<0.25 U	ND<0.5 U	-0.25	28	64
ND<0.25 U	ND<0.5 U	-0.25	28	65

[illegible]

ND<0.25 U	ND<0.5 U	-0.25	43	94
ND<0.25 U	ND<0.5 U	-0.25	43	95
ND<0.25 U	ND<0.5 U	-0.25	43	96
1.2	ND<0.5 U	0.7	44	96
ND<0.25 U	ND<0.5 U	-0.25	44	97
ND<0.25 U	ND<0.5 U	-0.25	44	98
ND<0.25 U	ND<0.5 U	-0.25	44	99
ND<0.25 U	ND<0.5 U	-0.25	44	100
ND<0.25 U	ND<0.5 U	-0.25	44	101
ND<0.25 U	ND<0.5 U	-0.25	44	102
ND<0.5 U	ND<0.5 U	0	44	102
ND<0.5 U	ND<0.5 U	0	44	102
ND<0.5 U	ND<0.5 U	0	44	102
ND<0.5 U	ND<0.5 U	0	44	102
ND<0.5 U	ND<0.5 U	0	44	102
ND<0.5 U	ND<0.5 U	0	44	102
ND<0.5 U	ND<0.5 U	0	44	102
ND<0.5 U	ND<0.5 U	0	44	102
ND<0.5 U	ND<0.5 U	0	44	102
ND<0.5 U	ND<0.5 U	0	44	102
ND<0.5 U	ND<0.5 U	0	44	102
ND<0.5 U	ND<0.5 U	0	44	102
ND<0.5 U	ND<0.5 U	0	44	102
ND<0.5 U	ND<0.5 U	0	44	102
ND<0.5 U	ND<0.5 U	0	44	102
3.9	ND<0.5 U	3.4	45	102
ND<0.5 U	ND<0.5 U	0	45	102
ND<0.5 U	ND<0.5 U	0	45	102
ND<0.5 U	ND<0.5 U	0	45	102
1.8	ND<0.5 U	1.3	46	102
ND<0.5 U	ND<0.5 U	0	46	102
ND<0.5 U	ND<0.5 U	0	46	102
1.9	ND<0.5 U	1.4	47	102
ND<0.5 U	ND<0.5 U	0	47	102
ND<0.5 U	ND<0.5 U	0	47	102
15	ND<0.5 U	14.5	48	102
ND<0.5 U	ND<0.5 U	0	48	102
ND<0.5 U	ND<0.5 U	0	48	102
ND<0.5 U	ND<0.5 U	0	48	102
ND<0.5 U	ND<0.5 U	0	48	102
ND<0.5 U	ND<0.5 U	0	48	102
ND<0.5 U	ND<0.5 U	0	48	102
ND<0.5 U	ND<0.5 U	0	48	102
ND<0.5 U	ND<0.5 U	0	48	102
ND<0.5 U	ND<0.5 U	0	48	102
ND<0.25 U	ND<0.5 U	-0.25	48	103
1	ND<0.5 U	0.5	49	103
2	ND<0.5 U	1.5	50	103
3.5	ND<0.5 U	3	51	103
ND<0.25 U	ND<0.5 U	-0.25	51	104
ND<0.25 U	ND<0.5 U	-0.25	51	105
ND<0.25 U	ND<0.5 U	-0.25	51	106
ND<0.25 U	ND<0.5 U	-0.25	51	107
ND<0.25 U	ND<0.5 U	-0.25	51	108

ND<0.25 U	ND<0.5 U	-0.25	51	109
ND<0.25 U	ND<0.5 U	-0.25	51	110
ND<0.25 U	ND<0.5 U	-0.25	51	111
ND<0.25 U	ND<0.5 U	-0.25	51	112
ND<0.25 U	ND<0.5 U	-0.25	51	113
1.2	ND<0.5 U	0.7	52	113
ND<0.25 U	ND<0.5 U	-0.25	52	114
ND<0.25 U	ND<0.5 U	-0.25	52	115
ND<0.25 U	ND<0.5 U	-0.25	52	116
ND<0.25 U	ND<0.5 U	-0.25	52	117
ND<0.25 U	ND<0.5 U	-0.25	52	118
ND<0.25 U	ND<0.5 U	-0.25	52	119
ND<0.5 U	ND<0.5 U	0	52	119
ND<0.5 U	ND<0.5 U	0	52	119
ND<0.5 U	ND<0.5 U	0	52	119
ND<0.5 U	ND<0.5 U	0	52	119
ND<0.5 U	ND<0.5 U	0	52	119
ND<0.5 U	ND<0.5 U	0	52	119
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ND<0.5 U	ND<0.5 U	0	52	119
ND<0.5 U	ND<0.5 U	0	52	119
ND<0.5 U	ND<0.5 U	0	52	119
ND<0.5 U	ND<0.5 U	0	52	119
ND<0.5 U	ND<0.5 U	0	52	119
ND<0.5 U	ND<0.5 U	0	52	119
ND<0.5 U	ND<0.5 U	0	52	119
ND<0.5 U	ND<0.5 U	0	52	119
ND<0.5 U	ND<0.5 U	0	52	119
ND<0.5 U	ND<0.5 U	0	52	119
3.9	ND<0.5 U	3.4	53	119
ND<0.5 U	ND<0.5 U	0	53	119
ND<0.5 U	ND<0.5 U	0	53	119
ND<0.5 U	ND<0.5 U	0	53	119
1.8	ND<0.5 U	1.3	54	119
ND<0.5 U	ND<0.5 U	0	54	119
ND<0.5 U	ND<0.5 U	0	54	119
1.9	ND<0.5 U	1.4	55	119
ND<0.5 U	ND<0.5 U	0	55	119
ND<0.5 U	ND<0.5 U	0	55	119
15	ND<0.5 U	14.5	56	119
ND<0.5 U	ND<0.5 U	0	56	119
ND<0.5 U	ND<0.5 U	0	56	119
ND<0.5 U	ND<0.5 U	0	56	119
ND<0.5 U	ND<0.5 U	0	56	119
ND<0.5 U	ND<0.5 U	0	56	119
ND<0.5 U	ND<0.5 U	0	56	119
ND<0.5 U	ND<0.5 U	0	56	119
ND<0.5 U	ND<0.5 U	0	56	119
ND<0.5 U	ND<0.5 U	0	56	119
ND<0.25 U	ND<0.5 U	-0.25	56	120
1	ND<0.5 U	0.5	57	120
2	ND<0.5 U	1.5	58	120
3.5	ND<0.5 U	3	59	120
ND<0.25 U	ND<0.5 U	-0.25	59	121
ND<0.25 U	ND<0.5 U	-0.25	59	122
ND<0.25 U	ND<0.5 U	-0.25	59	123
ND<0.25 U	ND<0.5 U	-0.25	59	124

ND<0.25 U	ND<0.5 U	-0.25	59	125
ND<0.25 U	ND<0.5 U	-0.25	59	126
ND<0.25 U	ND<0.5 U	-0.25	59	127
ND<0.25 U	ND<0.5 U	-0.25	59	128
ND<0.25 U	ND<0.5 U	-0.25	59	129
ND<0.25 U	ND<0.5 U	-0.25	59	130
1.2	ND<0.5 U	0.7	60	130
ND<0.25 U	ND<0.5 U	-0.25	60	131
ND<0.25 U	ND<0.5 U	-0.25	60	132
ND<0.25 U	ND<0.5 U	-0.25	60	133
ND<0.25 U	ND<0.5 U	-0.25	60	134
ND<0.25 U	ND<0.5 U	-0.25	60	135
ND<0.25 U	ND<0.5 U	-0.25	60	136
ND<0.5 U	ND<0.5 U	0	60	136
ND<0.5 U	ND<0.5 U	0	60	136
ND<0.5 U	ND<0.5 U	0	60	136
ND<0.5 U	ND<0.5 U	0	60	136
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ND<0.5 U	ND<0.5 U	0	60	136
ND<0.5 U	ND<0.5 U	0	60	136
ND<0.5 U	ND<0.5 U	0	60	136
ND<0.5 U	ND<0.5 U	0	60	136
3.9	ND<0.5 U	3.4	61	136
ND<0.5 U	ND<0.5 U	0	61	136
ND<0.5 U	ND<0.5 U	0	61	136
ND<0.5 U	ND<0.5 U	0	61	136
1.8	ND<0.5 U	1.3	62	136
ND<0.5 U	ND<0.5 U	0	62	136
ND<0.5 U	ND<0.5 U	0	62	136
1.9	ND<0.5 U	1.4	63	136
ND<0.5 U	ND<0.5 U	0	63	136
ND<0.5 U	ND<0.5 U	0	63	136
15	ND<0.5 U	14.5	64	136
ND<0.5 U	ND<0.5 U	0	64	136
ND<0.5 U	ND<0.5 U	0	64	136
ND<0.5 U	ND<0.5 U	0	64	136
ND<0.5 U	ND<0.5 U	0	64	136
ND<0.5 U	ND<0.5 U	0	64	136
ND<0.5 U	ND<0.5 U	0	64	136
ND<0.5 U	ND<0.5 U	0	64	136
ND<0.5 U	ND<0.5 U	0	64	136
ND<0.5 U	ND<0.5 U	0	64	136
ND<0.25 U	ND<0.5 U	-0.25	64	137
1	ND<0.5 U	0.5	65	137
2	ND<0.5 U	1.5	66	137
3.5	ND<0.5 U	3	67	137
ND<0.25 U	ND<0.5 U	-0.25	67	138
ND<0.25 U	ND<0.5 U	-0.25	67	139
ND<0.25 U	ND<0.5 U	-0.25	67	140
ND<0.25 U	ND<0.5 U	-0.25	67	141

ND<0.25 U	ND<0.5 U	-0.25	67	142
ND<0.25 U	ND<0.5 U	-0.25	67	143
ND<0.25 U	ND<0.5 U	-0.25	67	144
ND<0.25 U	ND<0.5 U	-0.25	67	145
ND<0.25 U	ND<0.5 U	-0.25	67	146
ND<0.25 U	ND<0.5 U	-0.25	67	147
1.2	ND<0.5 U	0.7	68	147
ND<0.25 U	ND<0.5 U	-0.25	68	148
ND<0.25 U	ND<0.5 U	-0.25	68	149
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ND<0.25 U	ND<0.5 U	-0.25	68	152
ND<0.25 U	ND<0.5 U	-0.25	68	153
ND<0.5 U	ND<0.5 U	0	68	153
ND<0.5 U	ND<0.5 U	0	68	153
ND<0.5 U	ND<0.5 U	0	68	153
ND<0.5 U	ND<0.5 U	0	68	153
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ND<0.5 U	ND<0.5 U	0	68	153
ND<0.5 U	ND<0.5 U	0	68	153
ND<0.5 U	ND<0.5 U	0	68	153
3.9	ND<0.5 U	3.4	69	153
ND<0.5 U	ND<0.5 U	0	69	153
ND<0.5 U	ND<0.5 U	0	69	153
ND<0.5 U	ND<0.5 U	0	69	153
1.8	ND<0.5 U	1.3	70	153
ND<0.5 U	ND<0.5 U	0	70	153
ND<0.5 U	ND<0.5 U	0	70	153
1.9	ND<0.5 U	1.4	71	153
ND<0.5 U	ND<0.5 U	0	71	153
ND<0.5 U	ND<0.5 U	0	71	153
15	ND<0.5 U	14.5	72	153
ND<0.5 U	ND<0.5 U	0	72	153
ND<0.5 U	ND<0.5 U	0	72	153
ND<0.5 U	ND<0.5 U	0	72	153
ND<0.5 U	ND<0.5 U	0	72	153
ND<0.5 U	ND<0.5 U	0	72	153
ND<0.5 U	ND<0.5 U	0	72	153
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1	ND<0.5 U	0.5	73	154
2	ND<0.5 U	1.5	74	154
3.5	ND<0.5 U	3	75	154
ND<0.25 U	ND<0.5 U	-0.25	75	155
ND<0.25 U	ND<0.5 U	-0.25	75	156
ND<0.25 U	ND<0.5 U	-0.25	75	157
ND<0.25 U	ND<0.5 U	-0.25	75	158
ND<0.25 U	ND<0.5 U	-0.25	75	159

[illegible]

ND<0.25 U	ND<0.5 U	-0.25	83	179
ND<0.25 U	ND<0.5 U	-0.25	83	180
ND<0.25 U	ND<0.5 U	-0.25	83	181
1.2	ND<0.5 U	0.7	84	181
ND<0.25 U	ND<0.5 U	-0.25	84	182
ND<0.25 U	ND<0.5 U	-0.25	84	183
ND<0.25 U	ND<0.5 U	-0.25	84	184
ND<0.25 U	ND<0.5 U	-0.25	84	185
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ND<0.5 U	ND<0.5 U	0	84	187
ND<0.5 U	ND<0.5 U	0	84	187
ND<0.5 U	ND<0.5 U	0	84	187
3.9	ND<0.5 U	3.4	85	187
ND<0.5 U	ND<0.5 U	0	85	187
ND<0.5 U	ND<0.5 U	0	85	187
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1.8	ND<0.5 U	1.3	86	187
ND<0.5 U	ND<0.5 U	0	86	187
ND<0.5 U	ND<0.5 U	0	86	187
1.9	ND<0.5 U	1.4	87	187
ND<0.5 U	ND<0.5 U	0	87	187
ND<0.5 U	ND<0.5 U	0	87	187
15	ND<0.5 U	14.5	88	187
ND<0.5 U	ND<0.5 U	0	88	187
ND<0.5 U	ND<0.5 U	0	88	187
ND<0.5 U	ND<0.5 U	0	88	187
ND<0.5 U	ND<0.5 U	0	88	187
ND<0.25 U	ND<0.5 U	-0.25	88	188
1	ND<0.5 U	0.5	89	188
2	ND<0.5 U	1.5	90	188
3.5	ND<0.5 U	3	91	188
ND<0.25 U	ND<0.5 U	-0.25	91	189
ND<0.25 U	ND<0.5 U	-0.25	91	190
ND<0.25 U	ND<0.5 U	-0.25	91	191
ND<0.25 U	ND<0.5 U	-0.25	91	192
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ND<0.25 U	ND<0.5 U	-0.25	91	194
ND<0.25 U	ND<0.5 U	-0.25	91	195
ND<0.25 U	ND<0.5 U	-0.25	91	196
ND<0.25 U	ND<0.5 U	-0.25	91	197
ND<0.25 U	ND<0.5 U	-0.25	91	198

ND<0.25 U	ND<0.25 U	0	100	204
ND<0.25 U	ND<0.25 U	0	100	204
ND<0.25 U	ND<0.25 U	0	100	204
ND<0.5 U	ND<0.25 U	0.25	101	204
ND<0.5 U	ND<0.25 U	0.25	102	204
ND<0.5 U	ND<0.25 U	0.25	103	204
ND<0.5 U	ND<0.25 U	0.25	104	204
ND<0.5 U	ND<0.25 U	0.25	105	204
ND<0.5 U	ND<0.25 U	0.25	106	204
ND<0.5 U	ND<0.25 U	0.25	107	204
ND<0.5 U	ND<0.25 U	0.25	108	204
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ND<0.5 U	ND<0.25 U	0.25	113	204
ND<0.5 U	ND<0.25 U	0.25	114	204
ND<0.5 U	ND<0.25 U	0.25	115	204
ND<0.5 U	ND<0.25 U	0.25	116	204
ND<0.5 U	ND<0.25 U	0.25	117	204
3.9	ND<0.25 U	3.65	118	204
ND<0.5 U	ND<0.25 U	0.25	119	204
ND<0.5 U	ND<0.25 U	0.25	120	204
ND<0.5 U	ND<0.25 U	0.25	121	204
1.8	ND<0.25 U	1.55	122	204
ND<0.5 U	ND<0.25 U	0.25	123	204
ND<0.5 U	ND<0.25 U	0.25	124	204
1.9	ND<0.25 U	1.65	125	204
ND<0.5 U	ND<0.25 U	0.25	126	204
ND<0.5 U	ND<0.25 U	0.25	127	204
15	ND<0.25 U	14.75	128	204
ND<0.5 U	ND<0.25 U	0.25	129	204
ND<0.5 U	ND<0.25 U	0.25	130	204
ND<0.5 U	ND<0.25 U	0.25	131	204
ND<0.5 U	ND<0.25 U	0.25	132	204
2	1	1	133	204
3.5	1	2.5	134	204
ND<0.25 U	1	-0.75	134	205
ND<0.25 U	1	-0.75	134	206
ND<0.25 U	1	-0.75	134	207
ND<0.25 U	1	-0.75	134	208
ND<0.25 U	1	-0.75	134	209
ND<0.25 U	1	-0.75	134	210
ND<0.25 U	1	-0.75	134	211
ND<0.25 U	1	-0.75	134	212
ND<0.25 U	1	-0.75	134	213
ND<0.25 U	1	-0.75	134	214
1.2	1	0.2	135	214
ND<0.25 U	1	-0.75	135	215
ND<0.25 U	1	-0.75	135	216
ND<0.25 U	1	-0.75	135	217
ND<0.25 U	1	-0.75	135	218
ND<0.25 U	1	-0.75	135	219
ND<0.25 U	1	-0.75	135	220
ND<0.5 U	1	-0.5	135	221
ND<0.5 U	1	-0.5	135	222

ND<0.5 U	1	-0.5	135	223
ND<0.5 U	1	-0.5	135	224
ND<0.5 U	1	-0.5	135	225
ND<0.5 U	1	-0.5	135	226
ND<0.5 U	1	-0.5	135	227
ND<0.5 U	1	-0.5	135	228
ND<0.5 U	1	-0.5	135	229
ND<0.5 U	1	-0.5	135	230
ND<0.5 U	1	-0.5	135	231
ND<0.5 U	1	-0.5	135	232
ND<0.5 U	1	-0.5	135	233
ND<0.5 U	1	-0.5	135	234
ND<0.5 U	1	-0.5	135	235
ND<0.5 U	1	-0.5	135	236
ND<0.5 U	1	-0.5	135	237
3.9	1	2.9	136	237
ND<0.5 U	1	-0.5	136	238
ND<0.5 U	1	-0.5	136	239
ND<0.5 U	1	-0.5	136	240
1.8	1	0.8	137	240
ND<0.5 U	1	-0.5	137	241
ND<0.5 U	1	-0.5	137	242
1.9	1	0.9	138	242
ND<0.5 U	1	-0.5	138	243
ND<0.5 U	1	-0.5	138	244
15	1	14	139	244
ND<0.5 U	1	-0.5	139	245
ND<0.5 U	1	-0.5	139	246
ND<0.5 U	1	-0.5	139	247
ND<0.5 U	1	-0.5	139	248
3.5	2	1.5	140	248
ND<0.25 U	2	-1.75	140	249
ND<0.25 U	2	-1.75	140	250
ND<0.25 U	2	-1.75	140	251
ND<0.25 U	2	-1.75	140	252
ND<0.25 U	2	-1.75	140	253
ND<0.25 U	2	-1.75	140	254
ND<0.25 U	2	-1.75	140	255
ND<0.25 U	2	-1.75	140	256
ND<0.25 U	2	-1.75	140	257
ND<0.25 U	2	-1.75	140	258
1.2	2	-0.8	140	259
ND<0.25 U	2	-1.75	140	260
ND<0.25 U	2	-1.75	140	261
ND<0.25 U	2	-1.75	140	262
ND<0.25 U	2	-1.75	140	263
ND<0.25 U	2	-1.75	140	264
ND<0.25 U	2	-1.75	140	265
ND<0.5 U	2	-1.5	140	266
ND<0.5 U	2	-1.5	140	267
ND<0.5 U	2	-1.5	140	268
ND<0.5 U	2	-1.5	140	269
ND<0.5 U	2	-1.5	140	270
ND<0.5 U	2	-1.5	140	271
ND<0.5 U	2	-1.5	140	272
ND<0.5 U	2	-1.5	140	273

ND<0.5 U	2	-1.5	140	274
ND<0.5 U	2	-1.5	140	275
ND<0.5 U	2	-1.5	140	276
ND<0.5 U	2	-1.5	140	277
ND<0.5 U	2	-1.5	140	278
ND<0.5 U	2	-1.5	140	279
ND<0.5 U	2	-1.5	140	280
ND<0.5 U	2	-1.5	140	281
ND<0.5 U	2	-1.5	140	282
3.9	2	1.9	141	282
ND<0.5 U	2	-1.5	141	283
ND<0.5 U	2	-1.5	141	284
ND<0.5 U	2	-1.5	141	285
1.8	2	-0.2	141	286
ND<0.5 U	2	-1.5	141	287
ND<0.5 U	2	-1.5	141	288
1.9	2	-0.1	141	289
ND<0.5 U	2	-1.5	141	290
ND<0.5 U	2	-1.5	141	291
15	2	13	142	291
ND<0.5 U	2	-1.5	142	292
ND<0.5 U	2	-1.5	142	293
ND<0.5 U	2	-1.5	142	294
ND<0.5 U	2	-1.5	142	295
ND<0.25 U	3.5	-3.25	142	296
ND<0.25 U	3.5	-3.25	142	297
ND<0.25 U	3.5	-3.25	142	298
ND<0.25 U	3.5	-3.25	142	299
ND<0.25 U	3.5	-3.25	142	300
ND<0.25 U	3.5	-3.25	142	301
ND<0.25 U	3.5	-3.25	142	302
ND<0.25 U	3.5	-3.25	142	303
ND<0.25 U	3.5	-3.25	142	304
ND<0.25 U	3.5	-3.25	142	305
1.2	3.5	-2.3	142	306
ND<0.25 U	3.5	-3.25	142	307
ND<0.25 U	3.5	-3.25	142	308
ND<0.25 U	3.5	-3.25	142	309
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ND<0.5 U	3.5	-3	142	313
ND<0.5 U	3.5	-3	142	314
ND<0.5 U	3.5	-3	142	315
ND<0.5 U	3.5	-3	142	316
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ND<0.5 U	3.5	-3	142	318
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ND<0.5 U	3.5	-3	142	320
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ND<0.5 U	3.5	-3	142	322
ND<0.5 U	3.5	-3	142	323
ND<0.5 U	3.5	-3	142	324
ND<0.5 U	3.5	-3	142	325
ND<0.5 U	3.5	-3	142	326
ND<0.5 U	3.5	-3	142	327

ND<0.5 U	3.5	-3	142	328
ND<0.5 U	3.5	-3	142	329
3.9	3.5	0.4	143	329
ND<0.5 U	3.5	-3	143	330
ND<0.5 U	3.5	-3	143	331
ND<0.5 U	3.5	-3	143	332
1.8	3.5	-1.7	143	333
ND<0.5 U	3.5	-3	143	334
ND<0.5 U	3.5	-3	143	335
1.9	3.5	-1.6	143	336
ND<0.5 U	3.5	-3	143	337
ND<0.5 U	3.5	-3	143	338
15	3.5	11.5	144	338
ND<0.5 U	3.5	-3	144	339
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1.9	ND<0.25 U	1.65	368	342
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15	ND<0.25 U	14.75	371	342
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ND<0.5 U	ND<0.5 U	0	670	376
ND<0.5 U	ND<0.5 U	0	670	376
ND<0.5 U	ND<0.5 U	0	670	376
ND<0.5 U	ND<0.5 U	0	670	376
ND<0.5 U	ND<0.5 U	0	670	376
ND<0.5 U	ND<0.5 U	0	670	376
ND<0.5 U	ND<0.5 U	0	670	376
ND<0.5 U	ND<0.5 U	0	670	376
ND<0.5 U	ND<0.5 U	0	670	376
3.9	ND<0.5 U	3.4	671	376
ND<0.5 U	ND<0.5 U	0	671	376
ND<0.5 U	ND<0.5 U	0	671	376
ND<0.5 U	ND<0.5 U	0	671	376
1.8	ND<0.5 U	1.3	672	376
ND<0.5 U	ND<0.5 U	0	672	376
ND<0.5 U	ND<0.5 U	0	672	376
1.9	ND<0.5 U	1.4	673	376
ND<0.5 U	ND<0.5 U	0	673	376
ND<0.5 U	ND<0.5 U	0	673	376

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[illegible]

ND<0.5 U	ND<0.5 U	0	706	376
ND<0.5 U	ND<0.5 U	0	706	376
ND<0.5 U	ND<0.5 U	0	706	376
ND<0.5 U	ND<0.5 U	0	706	376
ND<0.5 U	ND<0.5 U	0	706	376
3.9	ND<0.5 U	3.4	707	376
ND<0.5 U	ND<0.5 U	0	707	376
ND<0.5 U	ND<0.5 U	0	707	376
ND<0.5 U	ND<0.5 U	0	707	376
1.8	ND<0.5 U	1.3	708	376
ND<0.5 U	ND<0.5 U	0	708	376
ND<0.5 U	ND<0.5 U	0	708	376
1.9	ND<0.5 U	1.4	709	376
ND<0.5 U	ND<0.5 U	0	709	376
ND<0.5 U	ND<0.5 U	0	709	376
15	ND<0.5 U	14.5	710	376
ND<0.5 U	ND<0.5 U	0	710	376
ND<0.5 U	ND<0.5 U	0	710	376
ND<0.5 U	ND<0.5 U	0	710	376
ND<0.5 U	ND<0.5 U	0	710	376
ND<0.5 U	ND<0.5 U	0	710	376
ND<0.5 U	ND<0.5 U	0	710	376
ND<0.5 U	ND<0.5 U	0	710	376
ND<0.5 U	ND<0.5 U	0	710	376
ND<0.5 U	ND<0.5 U	0	710	376
3.9	ND<0.5 U	3.4	711	376
ND<0.5 U	ND<0.5 U	0	711	376
ND<0.5 U	ND<0.5 U	0	711	376
ND<0.5 U	ND<0.5 U	0	711	376
1.8	ND<0.5 U	1.3	712	376
ND<0.5 U	ND<0.5 U	0	712	376
ND<0.5 U	ND<0.5 U	0	712	376
1.9	ND<0.5 U	1.4	713	376
ND<0.5 U	ND<0.5 U	0	713	376
ND<0.5 U	ND<0.5 U	0	713	376
15	ND<0.5 U	14.5	714	376
ND<0.5 U	ND<0.5 U	0	714	376
ND<0.5 U	ND<0.5 U	0	714	376
ND<0.5 U	ND<0.5 U	0	714	376
ND<0.5 U	ND<0.5 U	0	714	376
ND<0.5 U	ND<0.5 U	0	714	376
ND<0.5 U	ND<0.5 U	0	714	376
ND<0.5 U	ND<0.5 U	0	714	376
ND<0.5 U	ND<0.5 U	0	714	376
ND<0.5 U	ND<0.5 U	0	714	376
3.9	ND<0.5 U	3.4	715	376
ND<0.5 U	ND<0.5 U	0	715	376
ND<0.5 U	ND<0.5 U	0	715	376
ND<0.5 U	ND<0.5 U	0	715	376
1.8	ND<0.5 U	1.3	716	376
ND<0.5 U	ND<0.5 U	0	716	376
ND<0.5 U	ND<0.5 U	0	716	376
1.9	ND<0.5 U	1.4	717	376
ND<0.5 U	ND<0.5 U	0	717	376

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ND<0.5 U	ND<0.5 U	0	729	376
15	ND<0.5 U	14.5	730	376
ND<0.5 U	ND<0.5 U	0	730	376
ND<0.5 U	ND<0.5 U	0	730	376
ND<0.5 U	ND<0.5 U	0	730	376
ND<0.5 U	ND<0.5 U	0	730	376
ND<0.5 U	ND<0.5 U	0	730	376
3.9	ND<0.5 U	3.4	731	376
ND<0.5 U	ND<0.5 U	0	731	376
ND<0.5 U	ND<0.5 U	0	731	376
ND<0.5 U	ND<0.5 U	0	731	376
1.8	ND<0.5 U	1.3	732	376
ND<0.5 U	ND<0.5 U	0	732	376
ND<0.5 U	ND<0.5 U	0	732	376
1.9	ND<0.5 U	1.4	733	376
ND<0.5 U	ND<0.5 U	0	733	376
ND<0.5 U	ND<0.5 U	0	733	376
15	ND<0.5 U	14.5	734	376
ND<0.5 U	ND<0.5 U	0	734	376
ND<0.5 U	ND<0.5 U	0	734	376
ND<0.5 U	ND<0.5 U	0	734	376
ND<0.5 U	ND<0.5 U	0	734	376
3.9	ND<0.5 U	3.4	735	376
ND<0.5 U	ND<0.5 U	0	735	376
ND<0.5 U	ND<0.5 U	0	735	376
ND<0.5 U	ND<0.5 U	0	735	376
1.8	ND<0.5 U	1.3	736	376
ND<0.5 U	ND<0.5 U	0	736	376
ND<0.5 U	ND<0.5 U	0	736	376
1.9	ND<0.5 U	1.4	737	376
ND<0.5 U	ND<0.5 U	0	737	376
ND<0.5 U	ND<0.5 U	0	737	376
15	ND<0.5 U	14.5	738	376
ND<0.5 U	ND<0.5 U	0	738	376
ND<0.5 U	ND<0.5 U	0	738	376
ND<0.5 U	ND<0.5 U	0	738	376
ND<0.5 U	ND<0.5 U	0	738	376
ND<0.5 U	3.9	-3.4	738	377
ND<0.5 U	3.9	-3.4	738	378
ND<0.5 U	3.9	-3.4	738	379
1.8	3.9	-2.1	738	380
ND<0.5 U	3.9	-3.4	738	381
ND<0.5 U	3.9	-3.4	738	382
1.9	3.9	-2	738	383
ND<0.5 U	3.9	-3.4	738	384
ND<0.5 U	3.9	-3.4	738	385
15	3.9	11.1	739	385
ND<0.5 U	3.9	-3.4	739	386
ND<0.5 U	3.9	-3.4	739	387
ND<0.5 U	3.9	-3.4	739	388
ND<0.5 U	3.9	-3.4	739	389
ND<0.5 U	ND<0.5 U	0	739	389
ND<0.5 U	ND<0.5 U	0	739	389

1.8	ND<0.5 U	1.3	740	389
ND<0.5 U	ND<0.5 U	0	740	389
ND<0.5 U	ND<0.5 U	0	740	389
1.9	ND<0.5 U	1.4	741	389
ND<0.5 U	ND<0.5 U	0	741	389
ND<0.5 U	ND<0.5 U	0	741	389
15	ND<0.5 U	14.5	742	389
ND<0.5 U	ND<0.5 U	0	742	389
ND<0.5 U	ND<0.5 U	0	742	389
ND<0.5 U	ND<0.5 U	0	742	389
ND<0.5 U	ND<0.5 U	0	742	389
ND<0.5 U	ND<0.5 U	0	742	389
1.8	ND<0.5 U	1.3	743	389
ND<0.5 U	ND<0.5 U	0	743	389
ND<0.5 U	ND<0.5 U	0	743	389
1.9	ND<0.5 U	1.4	744	389
ND<0.5 U	ND<0.5 U	0	744	389
ND<0.5 U	ND<0.5 U	0	744	389
15	ND<0.5 U	14.5	745	389
ND<0.5 U	ND<0.5 U	0	745	389
ND<0.5 U	ND<0.5 U	0	745	389
ND<0.5 U	ND<0.5 U	0	745	389
ND<0.5 U	ND<0.5 U	0	745	389
1.8	ND<0.5 U	1.3	746	389
ND<0.5 U	ND<0.5 U	0	746	389
ND<0.5 U	ND<0.5 U	0	746	389
1.9	ND<0.5 U	1.4	747	389
ND<0.5 U	ND<0.5 U	0	747	389
ND<0.5 U	ND<0.5 U	0	747	389
15	ND<0.5 U	14.5	748	389
ND<0.5 U	ND<0.5 U	0	748	389
ND<0.5 U	ND<0.5 U	0	748	389
ND<0.5 U	ND<0.5 U	0	748	389
ND<0.5 U	ND<0.5 U	0	748	389
ND<0.5 U	1.8	-1.3	748	390
ND<0.5 U	1.8	-1.3	748	391
1.9	1.8	0.1	749	391
ND<0.5 U	1.8	-1.3	749	392
ND<0.5 U	1.8	-1.3	749	393
15	1.8	13.2	750	393
ND<0.5 U	1.8	-1.3	750	394
ND<0.5 U	1.8	-1.3	750	395
ND<0.5 U	1.8	-1.3	750	396
ND<0.5 U	1.8	-1.3	750	397
ND<0.5 U	ND<0.5 U	0	750	397
1.9	ND<0.5 U	1.4	751	397
ND<0.5 U	ND<0.5 U	0	751	397
ND<0.5 U	ND<0.5 U	0	751	397
15	ND<0.5 U	14.5	752	397
ND<0.5 U	ND<0.5 U	0	752	397
ND<0.5 U	ND<0.5 U	0	752	397
ND<0.5 U	ND<0.5 U	0	752	397
ND<0.5 U	ND<0.5 U	0	752	397

1.9	ND<0.5 U	1.4	753	397
ND<0.5 U	ND<0.5 U	0	753	397
ND<0.5 U	ND<0.5 U	0	753	397
15	ND<0.5 U	14.5	754	397
ND<0.5 U	ND<0.5 U	0	754	397
ND<0.5 U	ND<0.5 U	0	754	397
ND<0.5 U	ND<0.5 U	0	754	397
ND<0.5 U	ND<0.5 U	0	754	397
ND<0.5 U	1.9	-1.4	754	398
ND<0.5 U	1.9	-1.4	754	399
15	1.9	13.1	755	399
ND<0.5 U	1.9	-1.4	755	400
ND<0.5 U	1.9	-1.4	755	401
ND<0.5 U	1.9	-1.4	755	402
ND<0.5 U	1.9	-1.4	755	403
ND<0.5 U	ND<0.5 U	0	755	403
15	ND<0.5 U	14.5	756	403
ND<0.5 U	ND<0.5 U	0	756	403
ND<0.5 U	ND<0.5 U	0	756	403
ND<0.5 U	ND<0.5 U	0	756	403
ND<0.5 U	ND<0.5 U	0	756	403
15	ND<0.5 U	14.5	757	403
ND<0.5 U	ND<0.5 U	0	757	403
ND<0.5 U	ND<0.5 U	0	757	403
ND<0.5 U	ND<0.5 U	0	757	403
ND<0.5 U	ND<0.5 U	0	757	403
ND<0.5 U	15	-14.5	757	404
ND<0.5 U	15	-14.5	757	405
ND<0.5 U	15	-14.5	757	406
ND<0.5 U	15	-14.5	757	407
ND<0.5 U	ND<0.5 U	0	757	407
ND<0.5 U	ND<0.5 U	0	757	407
ND<0.5 U	ND<0.5 U	0	757	407
ND<0.5 U	ND<0.5 U	0	757	407
ND<0.5 U	ND<0.5 U	0	757	407
ND<0.5 U	ND<0.5 U	0	757	407
ND<0.5 U	ND<0.5 U	0	757	407

S Statistic = 757 - 407 = 350

Tied Group	Value	Members
1	0.5	40
2	0.25	17

Time Period	Observations
11/24/2009	1
1/27/2010	1
3/2/2010	1
3/4/2010	1

4/9/2010	1
4/30/2010	1
5/6/2010	1
6/7/2010	1
7/26/2010	1
8/16/2010	1
9/17/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1
1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1
12/6/2011	1
1/13/2012	1
2/21/2012	1
3/20/2012	1
4/27/2012	1
5/24/2012	1
6/15/2012	1
7/26/2012	1
8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1
1/29/2013	1
4/17/2013	1
7/29/2013	1
10/30/2013	1
1/31/2014	1
4/18/2014	1
7/17/2014	1
10/23/2014	1
1/27/2015	1
4/13/2015	1
7/21/2015	1
10/20/2015	1
1/27/2016	1
4/26/2016	1
7/26/2016	1
10/31/2016	1
1/30/2017	1
4/27/2017	1
7/24/2017	1
10/27/2017	1
1/29/2018	1
4/12/2018	1
7/24/2018	1

10/29/2018	1
1/30/2019	1
4/29/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 143208
B = 0
C = 63360
D = 0
E = 1832
F = 0
a = 561600
b = 2.35872e+006
c = 8320
Group Variance = 23244
Z-Score = 2.28913
Comparison Level at $1.0 - (0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)
|2.28913| <= 2.32634 indicating no evidence of a trend

[illegible]

ND<0.25 U	ND<0.5 U	-0.25	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.5 U	ND<0.25 U	0.25	1	35
ND<0.5 U	ND<0.25 U	0.25	2	35
ND<0.5 U	ND<0.25 U	0.25	3	35
ND<0.5 U	ND<0.25 U	0.25	4	35
ND<0.5 U	ND<0.25 U	0.25	5	35
ND<0.5 U	ND<0.25 U	0.25	6	35
ND<0.5 U	ND<0.25 U	0.25	7	35
ND<0.5 U	ND<0.25 U	0.25	8	35
ND<0.5 U	ND<0.25 U	0.25	9	35
ND<0.5 U	ND<0.25 U	0.25	10	35
ND<0.5 U	ND<0.25 U	0.25	11	35
ND<0.5 U	ND<0.25 U	0.25	12	35
ND<0.5 U	ND<0.25 U	0.25	13	35
ND<0.5 U	ND<0.25 U	0.25	14	35
ND<0.25 U	ND<0.25 U	0	14	35
ND<0.25 U	ND<0.25 U	0	14	35
ND<0.25 U	ND<0.25 U	0	14	35
ND<0.25 U	ND<0.25 U	0	14	35
ND<0.25 U	ND<0.25 U	0	14	35
ND<0.5 U	ND<0.25 U	0.25	15	35
ND<0.5 U	ND<0.25 U	0.25	16	35
ND<0.5 U	ND<0.25 U	0.25	17	35
ND<0.5 U	ND<0.25 U	0.25	18	35
ND<0.5 U	ND<0.25 U	0.25	19	35
ND<0.5 U	ND<0.25 U	0.25	20	35
ND<0.5 U	ND<0.25 U	0.25	21	35
ND<0.5 U	ND<0.25 U	0.25	22	35
ND<0.5 U	ND<0.25 U	0.25	23	35
ND<0.5 U	ND<0.25 U	0.25	24	35
ND<0.5 U	ND<0.25 U	0.25	25	35
ND<0.5 U	ND<0.25 U	0.25	26	35
ND<0.5 U	ND<0.25 U	0.25	27	35
ND<0.5 U	ND<0.25 U	0.25	28	35

ND<0.25 U	ND<0.25 U	0	28	35
ND<0.25 U	ND<0.25 U	0	28	35
ND<0.25 U	ND<0.25 U	0	28	35
ND<0.25 U	ND<0.25 U	0	28	35
ND<0.5 U	ND<0.25 U	0.25	29	35
ND<0.5 U	ND<0.25 U	0.25	30	35
ND<0.5 U	ND<0.25 U	0.25	31	35
ND<0.5 U	ND<0.25 U	0.25	32	35
ND<0.5 U	ND<0.25 U	0.25	33	35
ND<0.5 U	ND<0.25 U	0.25	34	35
ND<0.5 U	ND<0.25 U	0.25	35	35
ND<0.5 U	ND<0.25 U	0.25	36	35
ND<0.5 U	ND<0.25 U	0.25	37	35
ND<0.5 U	ND<0.25 U	0.25	38	35
ND<0.5 U	ND<0.25 U	0.25	39	35
ND<0.5 U	ND<0.25 U	0.25	40	35
ND<0.5 U	ND<0.25 U	0.25	41	35
ND<0.5 U	ND<0.25 U	0.25	42	35
ND<0.25 U	ND<0.25 U	0	42	35
ND<0.25 U	ND<0.25 U	0	42	35
ND<0.25 U	ND<0.25 U	0	42	35
ND<0.5 U	ND<0.25 U	0.25	43	35
ND<0.5 U	ND<0.25 U	0.25	44	35
ND<0.5 U	ND<0.25 U	0.25	45	35
ND<0.5 U	ND<0.25 U	0.25	46	35
ND<0.5 U	ND<0.25 U	0.25	47	35
ND<0.5 U	ND<0.25 U	0.25	48	35
ND<0.5 U	ND<0.25 U	0.25	49	35
ND<0.5 U	ND<0.25 U	0.25	50	35
ND<0.5 U	ND<0.25 U	0.25	51	35
ND<0.5 U	ND<0.25 U	0.25	52	35
ND<0.5 U	ND<0.25 U	0.25	53	35
ND<0.5 U	ND<0.25 U	0.25	54	35
ND<0.5 U	ND<0.25 U	0.25	55	35
ND<0.5 U	ND<0.25 U	0.25	56	35
ND<0.25 U	ND<0.25 U	0	56	35
ND<0.25 U	ND<0.25 U	0	56	35
ND<0.5 U	ND<0.25 U	0.25	57	35
ND<0.5 U	ND<0.25 U	0.25	58	35
ND<0.5 U	ND<0.25 U	0.25	59	35
ND<0.5 U	ND<0.25 U	0.25	60	35
ND<0.5 U	ND<0.25 U	0.25	61	35
ND<0.5 U	ND<0.25 U	0.25	62	35
ND<0.5 U	ND<0.25 U	0.25	63	35
ND<0.5 U	ND<0.25 U	0.25	64	35
ND<0.5 U	ND<0.25 U	0.25	65	35
ND<0.5 U	ND<0.25 U	0.25	66	35
ND<0.5 U	ND<0.25 U	0.25	67	35
ND<0.5 U	ND<0.25 U	0.25	68	35
ND<0.5 U	ND<0.25 U	0.25	69	35
ND<0.5 U	ND<0.25 U	0.25	70	35
ND<0.25 U	ND<0.25 U	0	70	35
ND<0.5 U	ND<0.25 U	0.25	71	35
ND<0.5 U	ND<0.25 U	0.25	72	35

[illegible]

ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35

ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35

S Statistic = 98 - 35 = 63

Tied Group	Value	Members
1	0.5	19
2	0.25	7

Time Period	Observations
11/25/2009	1
3/4/2010	1
4/30/2010	1
7/26/2010	1
10/13/2010	1
1/14/2011	1
4/21/2011	1
7/21/2011	1
10/31/2011	1
1/13/2012	1
4/27/2012	1
7/26/2012	1
10/18/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 15504

B = 0

C = 6024

D = 0
E = 384
F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 1197
Z-Score = 1.79203
Comparison Level at $1.0 - (0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)
 $|1.79203| \leq 2.32634$ indicating no evidence of a trend

ND<0.5 U	ND<0.5 U	0	2	12
ND<0.5 U	ND<0.5 U	0	2	12
ND<0.5 U	ND<0.5 U	0	2	12
ND<0.5 U	ND<0.5 U	0	2	12
ND<0.5 U	ND<0.5 U	0	2	12
ND<0.5 U	ND<0.5 U	0	2	12
ND<0.5 U	ND<0.5 U	0	2	12
ND<0.25 U	ND<0.5 U	-0.25	2	13
ND<0.25 U	ND<0.5 U	-0.25	2	14
ND<0.25 U	ND<0.5 U	-0.25	2	15
ND<0.25 U	ND<0.5 U	-0.25	2	16
ND<0.25 U	ND<0.5 U	-0.25	2	17
0.56	ND<0.5 U	0.06	3	17
ND<0.25 U	ND<0.5 U	-0.25	3	18
ND<0.5 U	ND<0.5 U	0	3	18
ND<0.5 U	ND<0.5 U	0	3	18
ND<0.5 U	ND<0.5 U	0	3	18
ND<0.5 U	ND<0.5 U	0	3	18
ND<0.5 U	ND<0.5 U	0	3	18
ND<0.5 U	ND<0.5 U	0	3	18
ND<0.5 U	ND<0.5 U	0	3	18
ND<0.5 U	ND<0.5 U	0	3	18
ND<0.5 U	ND<0.5 U	0	3	18
ND<0.5 U	ND<0.5 U	0	3	18
ND<0.5 U	ND<0.5 U	0	3	18
ND<0.5 U	ND<0.5 U	0	3	18
ND<0.5 U	ND<0.5 U	0	3	18
ND<0.5 U	ND<0.5 U	0	3	18
ND<0.25 U	ND<0.5 U	-0.25	3	19
ND<0.25 U	ND<0.5 U	-0.25	3	20
ND<0.25 U	ND<0.5 U	-0.25	3	21
ND<0.25 U	ND<0.5 U	-0.25	3	22
ND<0.25 U	ND<0.5 U	-0.25	3	23
0.56	ND<0.5 U	0.06	4	23
ND<0.25 U	ND<0.5 U	-0.25	4	24
ND<0.5 U	ND<0.5 U	0	4	24
ND<0.5 U	ND<0.5 U	0	4	24
ND<0.5 U	ND<0.5 U	0	4	24
ND<0.5 U	ND<0.5 U	0	4	24
ND<0.5 U	ND<0.5 U	0	4	24
ND<0.5 U	ND<0.5 U	0	4	24
ND<0.5 U	ND<0.5 U	0	4	24
ND<0.5 U	ND<0.5 U	0	4	24
ND<0.5 U	ND<0.5 U	0	4	24
ND<0.5 U	ND<0.5 U	0	4	24
ND<0.5 U	ND<0.5 U	0	4	24
ND<0.5 U	ND<0.5 U	0	4	24
ND<0.5 U	ND<0.5 U	0	4	24
ND<0.5 U	ND<0.5 U	0	4	24
ND<0.5 U	ND<0.5 U	0	4	24
ND<0.25 U	ND<0.5 U	-0.25	4	25
ND<0.25 U	ND<0.5 U	-0.25	4	26

ND<0.25 U	ND<0.5 U	-0.25	4	27
ND<0.25 U	ND<0.5 U	-0.25	4	28
ND<0.25 U	ND<0.5 U	-0.25	4	29
0.56	ND<0.5 U	0.06	5	29
ND<0.25 U	ND<0.5 U	-0.25	5	30
ND<0.5 U	ND<0.5 U	0	5	30
ND<0.5 U	ND<0.5 U	0	5	30
ND<0.5 U	ND<0.5 U	0	5	30
ND<0.5 U	ND<0.5 U	0	5	30
ND<0.5 U	ND<0.5 U	0	5	30
ND<0.5 U	ND<0.5 U	0	5	30
ND<0.5 U	ND<0.5 U	0	5	30
ND<0.5 U	ND<0.5 U	0	5	30
ND<0.5 U	ND<0.5 U	0	5	30
ND<0.5 U	ND<0.5 U	0	5	30
ND<0.5 U	ND<0.5 U	0	5	30
ND<0.5 U	ND<0.5 U	0	5	30
ND<0.5 U	ND<0.5 U	0	5	30
ND<0.5 U	ND<0.5 U	0	5	30
ND<0.5 U	ND<0.5 U	0	5	30
ND<0.5 U	ND<0.5 U	0	5	30
ND<0.5 U	ND<0.5 U	0	5	30
ND<0.5 U	ND<0.5 U	0	5	30
ND<0.25 U	ND<0.25 U	0	5	30
ND<0.25 U	ND<0.25 U	0	5	30
ND<0.25 U	ND<0.25 U	0	5	30
ND<0.25 U	ND<0.25 U	0	5	30
0.56	ND<0.25 U	0.31	6	30
ND<0.25 U	ND<0.25 U	0	6	30
ND<0.5 U	ND<0.25 U	0.25	7	30
ND<0.5 U	ND<0.25 U	0.25	8	30
ND<0.5 U	ND<0.25 U	0.25	9	30
ND<0.5 U	ND<0.25 U	0.25	10	30
ND<0.5 U	ND<0.25 U	0.25	11	30
ND<0.5 U	ND<0.25 U	0.25	12	30
ND<0.5 U	ND<0.25 U	0.25	13	30
ND<0.5 U	ND<0.25 U	0.25	14	30
ND<0.5 U	ND<0.25 U	0.25	15	30
ND<0.5 U	ND<0.25 U	0.25	16	30
ND<0.5 U	ND<0.25 U	0.25	17	30
ND<0.5 U	ND<0.25 U	0.25	18	30
ND<0.5 U	ND<0.25 U	0.25	19	30
ND<0.5 U	ND<0.25 U	0.25	20	30
ND<0.5 U	ND<0.25 U	0.25	21	30
ND<0.25 U	ND<0.25 U	0	21	30
ND<0.25 U	ND<0.25 U	0	21	30
ND<0.25 U	ND<0.25 U	0	21	30
0.56	ND<0.25 U	0.31	22	30
ND<0.25 U	ND<0.25 U	0	22	30
ND<0.5 U	ND<0.25 U	0.25	23	30
ND<0.5 U	ND<0.25 U	0.25	24	30
ND<0.5 U	ND<0.25 U	0.25	25	30
ND<0.5 U	ND<0.25 U	0.25	26	30
ND<0.5 U	ND<0.25 U	0.25	27	30
ND<0.5 U	ND<0.25 U	0.25	28	30
ND<0.5 U	ND<0.25 U	0.25	29	30
ND<0.5 U	ND<0.25 U	0.25	30	30
ND<0.5 U	ND<0.25 U	0.25	31	30

ND<0.5 U	ND<0.25 U	0.25	32	30
ND<0.5 U	ND<0.25 U	0.25	33	30
ND<0.5 U	ND<0.25 U	0.25	34	30
ND<0.5 U	ND<0.25 U	0.25	35	30
ND<0.5 U	ND<0.25 U	0.25	36	30
ND<0.5 U	ND<0.25 U	0.25	37	30
ND<0.25 U	ND<0.25 U	0	37	30
ND<0.25 U	ND<0.25 U	0	37	30
0.56	ND<0.25 U	0.31	38	30
ND<0.25 U	ND<0.25 U	0	38	30
ND<0.5 U	ND<0.25 U	0.25	39	30
ND<0.5 U	ND<0.25 U	0.25	40	30
ND<0.5 U	ND<0.25 U	0.25	41	30
ND<0.5 U	ND<0.25 U	0.25	42	30
ND<0.5 U	ND<0.25 U	0.25	43	30
ND<0.5 U	ND<0.25 U	0.25	44	30
ND<0.5 U	ND<0.25 U	0.25	45	30
ND<0.5 U	ND<0.25 U	0.25	46	30
ND<0.5 U	ND<0.25 U	0.25	47	30
ND<0.5 U	ND<0.25 U	0.25	48	30
ND<0.5 U	ND<0.25 U	0.25	49	30
ND<0.5 U	ND<0.25 U	0.25	50	30
ND<0.5 U	ND<0.25 U	0.25	51	30
ND<0.5 U	ND<0.25 U	0.25	52	30
ND<0.5 U	ND<0.25 U	0.25	53	30
ND<0.25 U	ND<0.25 U	0	53	30
0.56	ND<0.25 U	0.31	54	30
ND<0.25 U	ND<0.25 U	0	54	30
ND<0.5 U	ND<0.25 U	0.25	55	30
ND<0.5 U	ND<0.25 U	0.25	56	30
ND<0.5 U	ND<0.25 U	0.25	57	30
ND<0.5 U	ND<0.25 U	0.25	58	30
ND<0.5 U	ND<0.25 U	0.25	59	30
ND<0.5 U	ND<0.25 U	0.25	60	30
ND<0.5 U	ND<0.25 U	0.25	61	30
ND<0.5 U	ND<0.25 U	0.25	62	30
ND<0.5 U	ND<0.25 U	0.25	63	30
ND<0.5 U	ND<0.25 U	0.25	64	30
ND<0.5 U	ND<0.25 U	0.25	65	30
ND<0.5 U	ND<0.25 U	0.25	66	30
ND<0.5 U	ND<0.25 U	0.25	67	30
ND<0.5 U	ND<0.25 U	0.25	68	30
ND<0.5 U	ND<0.25 U	0.25	69	30
0.56	ND<0.25 U	0.31	70	30
ND<0.25 U	ND<0.25 U	0	70	30
ND<0.5 U	ND<0.25 U	0.25	71	30
ND<0.5 U	ND<0.25 U	0.25	72	30
ND<0.5 U	ND<0.25 U	0.25	73	30
ND<0.5 U	ND<0.25 U	0.25	74	30
ND<0.5 U	ND<0.25 U	0.25	75	30
ND<0.5 U	ND<0.25 U	0.25	76	30
ND<0.5 U	ND<0.25 U	0.25	77	30
ND<0.5 U	ND<0.25 U	0.25	78	30
ND<0.5 U	ND<0.25 U	0.25	79	30

[illegible]

[illegible]

[illegible]
$$S \text{ Statistic} = 100 - 46 = 54$$

Tied Group	Value	Members
1	0.5	20
2	0.25	6

Time Period	Observations
11/24/2009	1
3/4/2010	1
4/30/2010	1
7/26/2010	1

10/13/2010	1
1/14/2011	1
4/21/2011	1
7/21/2011	1
10/31/2011	1
1/13/2012	1
4/27/2012	1
7/26/2012	1
10/18/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 17610

B = 0

C = 6960

D = 0

E = 410

F = 0

a = 41418

b = 157950

c = 1404

Group Variance = 1322.67

Z-Score = 1.45731

Comparison Level at 1.0 - $(0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)

|1.45731| <= 2.32634 indicating no evidence of a trend

[illegible]

ND<0.25 U	ND<0.5 U	-0.25	0	31
ND<0.25 U	ND<0.5 U	-0.25	0	32
ND<0.25 U	ND<0.5 U	-0.25	0	33
ND<0.25 U	ND<0.5 U	-0.25	0	34
ND<0.25 U	ND<0.5 U	-0.25	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.5 U	ND<0.25 U	0.25	1	35
ND<0.5 U	ND<0.25 U	0.25	2	35
ND<0.5 U	ND<0.25 U	0.25	3	35
ND<0.5 U	ND<0.25 U	0.25	4	35
ND<0.5 U	ND<0.25 U	0.25	5	35
ND<0.5 U	ND<0.25 U	0.25	6	35
ND<0.5 U	ND<0.25 U	0.25	7	35
ND<0.5 U	ND<0.25 U	0.25	8	35
ND<0.5 U	ND<0.25 U	0.25	9	35
ND<0.5 U	ND<0.25 U	0.25	10	35
ND<0.5 U	ND<0.25 U	0.25	11	35
ND<0.5 U	ND<0.25 U	0.25	12	35
ND<0.5 U	ND<0.25 U	0.25	13	35
ND<0.5 U	ND<0.25 U	0.25	14	35
ND<0.5 U	ND<0.25 U	0.25	15	35
ND<0.25 U	ND<0.25 U	0	15	35
ND<0.25 U	ND<0.25 U	0	15	35
ND<0.25 U	ND<0.25 U	0	15	35
ND<0.25 U	ND<0.25 U	0	15	35
ND<0.25 U	ND<0.25 U	0	15	35
ND<0.5 U	ND<0.25 U	0.25	16	35
ND<0.5 U	ND<0.25 U	0.25	17	35
ND<0.5 U	ND<0.25 U	0.25	18	35
ND<0.5 U	ND<0.25 U	0.25	19	35
ND<0.5 U	ND<0.25 U	0.25	20	35
ND<0.5 U	ND<0.25 U	0.25	21	35
ND<0.5 U	ND<0.25 U	0.25	22	35
ND<0.5 U	ND<0.25 U	0.25	23	35
ND<0.5 U	ND<0.25 U	0.25	24	35

ND<0.5 U	ND<0.25 U	0.25	25	35
ND<0.5 U	ND<0.25 U	0.25	26	35
ND<0.5 U	ND<0.25 U	0.25	27	35
ND<0.5 U	ND<0.25 U	0.25	28	35
ND<0.5 U	ND<0.25 U	0.25	29	35
ND<0.5 U	ND<0.25 U	0.25	30	35
ND<0.25 U	ND<0.25 U	0	30	35
ND<0.25 U	ND<0.25 U	0	30	35
ND<0.25 U	ND<0.25 U	0	30	35
ND<0.25 U	ND<0.25 U	0	30	35
ND<0.5 U	ND<0.25 U	0.25	31	35
ND<0.5 U	ND<0.25 U	0.25	32	35
ND<0.5 U	ND<0.25 U	0.25	33	35
ND<0.5 U	ND<0.25 U	0.25	34	35
ND<0.5 U	ND<0.25 U	0.25	35	35
ND<0.5 U	ND<0.25 U	0.25	36	35
ND<0.5 U	ND<0.25 U	0.25	37	35
ND<0.5 U	ND<0.25 U	0.25	38	35
ND<0.5 U	ND<0.25 U	0.25	39	35
ND<0.5 U	ND<0.25 U	0.25	40	35
ND<0.5 U	ND<0.25 U	0.25	41	35
ND<0.5 U	ND<0.25 U	0.25	42	35
ND<0.5 U	ND<0.25 U	0.25	43	35
ND<0.5 U	ND<0.25 U	0.25	44	35
ND<0.5 U	ND<0.25 U	0.25	45	35
ND<0.25 U	ND<0.25 U	0	45	35
ND<0.25 U	ND<0.25 U	0	45	35
ND<0.25 U	ND<0.25 U	0	45	35
ND<0.5 U	ND<0.25 U	0.25	46	35
ND<0.5 U	ND<0.25 U	0.25	47	35
ND<0.5 U	ND<0.25 U	0.25	48	35
ND<0.5 U	ND<0.25 U	0.25	49	35
ND<0.5 U	ND<0.25 U	0.25	50	35
ND<0.5 U	ND<0.25 U	0.25	51	35
ND<0.5 U	ND<0.25 U	0.25	52	35
ND<0.5 U	ND<0.25 U	0.25	53	35
ND<0.5 U	ND<0.25 U	0.25	54	35
ND<0.5 U	ND<0.25 U	0.25	55	35
ND<0.5 U	ND<0.25 U	0.25	56	35
ND<0.5 U	ND<0.25 U	0.25	57	35
ND<0.5 U	ND<0.25 U	0.25	58	35
ND<0.5 U	ND<0.25 U	0.25	59	35
ND<0.5 U	ND<0.25 U	0.25	60	35
ND<0.25 U	ND<0.25 U	0	60	35
ND<0.25 U	ND<0.25 U	0	60	35
ND<0.5 U	ND<0.25 U	0.25	61	35
ND<0.5 U	ND<0.25 U	0.25	62	35
ND<0.5 U	ND<0.25 U	0.25	63	35
ND<0.5 U	ND<0.25 U	0.25	64	35
ND<0.5 U	ND<0.25 U	0.25	65	35
ND<0.5 U	ND<0.25 U	0.25	66	35
ND<0.5 U	ND<0.25 U	0.25	67	35
ND<0.5 U	ND<0.25 U	0.25	68	35
ND<0.5 U	ND<0.25 U	0.25	69	35

[illegible]

[illegible]

[illegible]
$$S \text{ Statistic} = 105 - 35 = 70$$

Tied Group	Value	Members
1	0.5	20
2	0.25	7

Time Period	Observations
11/25/2009	1
3/4/2010	1
4/30/2010	1
7/26/2010	1

10/13/2010	1
1/14/2011	1
4/21/2011	1
7/21/2011	1
10/31/2011	1
1/13/2012	1
4/27/2012	1
7/26/2012	1
10/18/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 17898

B = 0

C = 7050

D = 0

E = 422

F = 0

a = 41418

b = 157950

c = 1404

Group Variance = 1306.67

Z-Score = 1.90883

Comparison Level at 1.0 - $(0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)

|1.90883| <= 2.32634 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Toluene

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
ND<0.5 U	ND<0.5 U	0	0	0
ND<1 U	ND<0.5 U	0.5	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.25 U	ND<0.5 U	-0.25	1	1
ND<0.25 U	ND<0.5 U	-0.25	1	2
ND<0.5 U	ND<0.5 U	0	1	2
ND<0.25 U	ND<0.5 U	-0.25	1	3
ND<0.25 U	ND<0.5 U	-0.25	1	4
ND<0.25 U	ND<0.5 U	-0.25	1	5
ND<0.25 U	ND<0.5 U	-0.25	1	6
ND<0.25 U	ND<0.5 U	-0.25	1	7
ND<0.25 U	ND<0.5 U	-0.25	1	8
ND<0.25 U	ND<0.5 U	-0.25	1	9
ND<0.25 U	ND<0.5 U	-0.25	1	10
ND<0.25 U	ND<0.5 U	-0.25	1	11
ND<0.25 U	ND<0.5 U	-0.25	1	12
ND<0.25 U	ND<0.5 U	-0.25	1	13
ND<0.25 U	ND<0.5 U	-0.25	1	14
ND<0.25 U	ND<0.5 U	-0.25	1	15
ND<0.25 U	ND<0.5 U	-0.25	1	16
ND<0.25 U	ND<0.5 U	-0.25	1	17
ND<0.25 U	ND<0.5 U	-0.25	1	18
ND<0.25 U	ND<0.5 U	-0.25	1	19
ND<0.25 U	ND<0.5 U	-0.25	1	20
ND<0.25 U	ND<0.5 U	-0.25	1	21
ND<0.25 U	ND<0.5 U	-0.25	1	22
ND<0.25 U	ND<0.5 U	-0.25	1	23
ND<0.5 U	ND<0.5 U	0	1	23
ND<0.5 U	ND<0.5 U	0	1	23
ND<0.5 U	ND<0.5 U	0	1	23
ND<0.5 U	ND<0.5 U	0	1	23
ND<0.5 U	ND<0.5 U	0	1	23
ND<0.5 U	ND<0.5 U	0	1	23
ND<0.5 U	ND<0.5 U	0	1	23
ND<0.5 U	ND<0.5 U	0	1	23
ND<0.5 U	ND<0.5 U	0	1	23
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ND<0.5 U	ND<0.5 U	0	1	23
ND<0.5 U	ND<0.5 U	0	1	23
ND<0.5 U	ND<0.5 U	0	1	23
ND<0.5 U	ND<0.5 U	0	1	23
ND<0.5 U	ND<0.5 U	0	1	23
ND<0.5 U	ND<0.5 U	0	1	23
ND<0.5 U	ND<0.5 U	0	1	23

[illegible]

ND<0.5 U	ND<1 U	-0.5	2	48
ND<0.5 U	ND<1 U	-0.5	2	49
ND<0.5 U	ND<1 U	-0.5	2	50
ND<0.5 U	ND<1 U	-0.5	2	51
ND<0.5 U	ND<1 U	-0.5	2	52
ND<0.25 U	ND<1 U	-0.75	2	53
ND<0.25 U	ND<1 U	-0.75	2	54
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ND<0.25 U	ND<1 U	-0.75	2	57
ND<0.25 U	ND<1 U	-0.75	2	58
ND<0.25 U	ND<1 U	-0.75	2	59
ND<0.25 U	ND<1 U	-0.75	2	60
ND<0.25 U	ND<1 U	-0.75	2	61
ND<0.25 U	ND<1 U	-0.75	2	62
ND<0.25 U	ND<1 U	-0.75	2	63
ND<0.25 U	ND<1 U	-0.75	2	64
ND<0.25 U	ND<1 U	-0.75	2	65
ND<0.25 U	ND<1 U	-0.75	2	66
ND<0.25 U	ND<1 U	-0.75	2	67
ND<0.25 U	ND<1 U	-0.75	2	68
ND<0.25 U	ND<1 U	-0.75	2	69
ND<0.25 U	ND<1 U	-0.75	2	70
ND<0.25 U	ND<1 U	-0.75	2	71
ND<0.25 U	ND<1 U	-0.75	2	72
ND<0.25 U	ND<1 U	-0.75	2	73
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ND<0.25 U	ND<1 U	-0.75	2	75
ND<0.25 U	ND<1 U	-0.75	2	76
ND<0.5 U	ND<1 U	-0.5	2	77
ND<0.5 U	ND<1 U	-0.5	2	78
ND<0.5 U	ND<1 U	-0.5	2	79
ND<0.5 U	ND<1 U	-0.5	2	80
ND<0.5 U	ND<1 U	-0.5	2	81
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ND<0.5 U	ND<1 U	-0.5	2	83
ND<0.5 U	ND<1 U	-0.5	2	84
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ND<0.5 U	ND<1 U	-0.5	2	93
ND<0.5 U	ND<1 U	-0.5	2	94
ND<0.5 U	ND<1 U	-0.5	2	95
ND<0.5 U	ND<0.5 U	0	2	95
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ND<0.25 U	ND<0.5 U	-0.25	2	97
ND<0.5 U	ND<0.5 U	0	2	97

[illegible]

[illegible]

[illegible]

Page 11

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ND<0.5 U	ND<0.25 U	0.25	63	254
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[illegible]

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ND<0.25 U	ND<0.25 U	0	156	254
ND<0.25 U	ND<0.25 U	0	156	254

[illegible]

Page 18

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[illegible]

ND<0.5 U	ND<0.5 U	0	441	254
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[illegible]

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ND<0.5 U	ND<0.5 U	0	441	254

S Statistic = 441 - 254 = 187

Tied Group	Value	Members
1	0.5	28
2	0.25	23

Time Period	Observations
11/24/2009	1
1/27/2010	1
3/2/2010	1
3/4/2010	1
4/9/2010	1
4/30/2010	1
5/6/2010	1
6/7/2010	1
7/26/2010	1
8/16/2010	1
9/17/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1
1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1
12/6/2011	1
1/13/2012	1
2/21/2012	1
3/20/2012	1
4/27/2012	1

5/24/2012	1
6/15/2012	1
7/26/2012	1
8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 71922

B = 0

C = 30282

D = 0

E = 1262

F = 0

a = 289068

b = 1.1934e+006

c = 5304

Group Variance = 12063.7

Z-Score = 1.69345

Comparison Level at 1.0 - (0.02 / 2) = 99% confidence level = 2.32634 (two-tailed)

|1.69345| <= 2.32634 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Toluene

Location: MW-4

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
ND<0.5 U	ND<0.5 U	0	0	0
ND<1 U	ND<0.5 U	0.5	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.25 U	ND<0.5 U	-0.25	1	1
ND<0.25 U	ND<0.5 U	-0.25	1	2
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ND<0.25 U	ND<0.5 U	-0.25	1	4
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ND<0.25 U	ND<0.5 U	-0.25	1	7
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ND<0.25 U	ND<0.5 U	-0.25	1	19
ND<0.25 U	ND<0.5 U	-0.25	1	20
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ND<0.5 U	ND<0.5 U	0	1	21
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ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21

ND<0.5 U	ND<0.5 U	0	1	21
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ND<0.5 U	ND<0.5 U	0	2	21
ND<0.5 U	ND<0.5 U	0	2	21
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[illegible]

[illegible]

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S Statistic = 429 - 281 = 148

Tied Group	Value	Members
1	0.5	29
2	0.25	21

Time Period	Observations
11/24/2009	1
1/27/2010	1
3/2/2010	1
3/4/2010	1
4/9/2010	1
4/30/2010	1
5/6/2010	1
6/7/2010	1
7/26/2010	1
8/16/2010	1
9/17/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1
1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1
12/6/2011	1
1/13/2012	1
2/21/2012	1
3/20/2012	1
4/27/2012	1

5/24/2012	1
6/15/2012	1
7/26/2012	1
8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 70896

B = 0

C = 29904

D = 0

E = 1232

F = 0

a = 289068

b = 1.1934e+006

c = 5304

Group Variance = 12120.7

Z-Score = 1.33522

Comparison Level at 1.0 - (0.02 / 2) = 99% confidence level = 2.32634 (two-tailed)

|1.33522| <= 2.32634 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Toluene

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
ND<0.5 U	ND<0.5 U	0	0	0
ND<1 U	ND<0.5 U	0.5	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.25 U	ND<0.5 U	-0.25	1	1
ND<0.25 U	ND<0.5 U	-0.25	1	2
ND<0.25 U	ND<0.5 U	-0.25	1	3
ND<0.25 U	ND<0.5 U	-0.25	1	4
0.71	ND<0.5 U	0.21	2	4
ND<0.25 U	ND<0.5 U	-0.25	2	5
ND<0.25 U	ND<0.5 U	-0.25	2	6
ND<0.25 U	ND<0.5 U	-0.25	2	7
ND<0.25 U	ND<0.5 U	-0.25	2	8
ND<0.25 U	ND<0.5 U	-0.25	2	9
ND<0.25 U	ND<0.5 U	-0.25	2	10
ND<0.25 U	ND<0.5 U	-0.25	2	11
ND<0.25 U	ND<0.5 U	-0.25	2	12
ND<0.25 U	ND<0.5 U	-0.25	2	13
ND<0.25 U	ND<0.5 U	-0.25	2	14
ND<0.25 U	ND<0.5 U	-0.25	2	15
ND<0.25 U	ND<0.5 U	-0.25	2	16
ND<0.25 U	ND<0.5 U	-0.25	2	17
ND<0.25 U	ND<0.5 U	-0.25	2	18
ND<0.25 U	ND<0.5 U	-0.25	2	19
ND<0.25 U	ND<0.5 U	-0.25	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20

ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
ND<0.5 U	ND<0.5 U	0	2	20
2.1	ND<0.5 U	1.6	3	20
ND<0.5 U	ND<0.5 U	0	3	20
ND<0.5 U	ND<0.5 U	0	3	20
ND<1 U	ND<0.5 U	0.5	4	20
ND<0.5 U	ND<0.5 U	0	4	20
ND<0.5 U	ND<0.5 U	0	4	20
ND<0.5 U	ND<0.5 U	0	4	20
ND<0.5 U	ND<0.5 U	0	4	20
ND<0.5 U	ND<0.5 U	0	4	20
ND<0.5 U	ND<0.5 U	0	4	20
ND<0.5 U	ND<0.5 U	0	4	20
ND<0.5 U	ND<0.5 U	0	4	20
ND<0.5 U	ND<0.5 U	0	4	20
ND<0.25 U	ND<0.5 U	-0.25	4	21
ND<0.25 U	ND<0.5 U	-0.25	4	22
ND<0.25 U	ND<0.5 U	-0.25	4	23
ND<0.25 U	ND<0.5 U	-0.25	4	24
0.71	ND<0.5 U	0.21	5	24
ND<0.25 U	ND<0.5 U	-0.25	5	25
ND<0.25 U	ND<0.5 U	-0.25	5	26
ND<0.25 U	ND<0.5 U	-0.25	5	27
ND<0.25 U	ND<0.5 U	-0.25	5	28
ND<0.25 U	ND<0.5 U	-0.25	5	29
ND<0.25 U	ND<0.5 U	-0.25	5	30
ND<0.25 U	ND<0.5 U	-0.25	5	31
ND<0.25 U	ND<0.5 U	-0.25	5	32
ND<0.25 U	ND<0.5 U	-0.25	5	33
ND<0.25 U	ND<0.5 U	-0.25	5	34
ND<0.25 U	ND<0.5 U	-0.25	5	35
ND<0.25 U	ND<0.5 U	-0.25	5	36
ND<0.25 U	ND<0.5 U	-0.25	5	37
ND<0.25 U	ND<0.5 U	-0.25	5	38
ND<0.25 U	ND<0.5 U	-0.25	5	39
ND<0.25 U	ND<0.5 U	-0.25	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40

ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
ND<0.5 U	ND<0.5 U	0	5	40
2.1	ND<0.5 U	1.6	6	40
ND<0.5 U	ND<0.5 U	0	6	40
ND<0.5 U	ND<0.5 U	0	6	40
ND<0.5 U	ND<1 U	-0.5	6	41
ND<0.5 U	ND<1 U	-0.5	6	42
ND<0.5 U	ND<1 U	-0.5	6	43
ND<0.5 U	ND<1 U	-0.5	6	44
ND<0.5 U	ND<1 U	-0.5	6	45
ND<0.5 U	ND<1 U	-0.5	6	46
ND<0.5 U	ND<1 U	-0.5	6	47
ND<0.5 U	ND<1 U	-0.5	6	48
ND<0.5 U	ND<1 U	-0.5	6	49
ND<0.25 U	ND<1 U	-0.75	6	50
ND<0.25 U	ND<1 U	-0.75	6	51
ND<0.25 U	ND<1 U	-0.75	6	52
ND<0.25 U	ND<1 U	-0.75	6	53
0.71	ND<1 U	-0.29	6	54
ND<0.25 U	ND<1 U	-0.75	6	55
ND<0.25 U	ND<1 U	-0.75	6	56
ND<0.25 U	ND<1 U	-0.75	6	57
ND<0.25 U	ND<1 U	-0.75	6	58
ND<0.25 U	ND<1 U	-0.75	6	59
ND<0.25 U	ND<1 U	-0.75	6	60
ND<0.25 U	ND<1 U	-0.75	6	61
ND<0.25 U	ND<1 U	-0.75	6	62
ND<0.25 U	ND<1 U	-0.75	6	63
ND<0.25 U	ND<1 U	-0.75	6	64
ND<0.25 U	ND<1 U	-0.75	6	65
ND<0.25 U	ND<1 U	-0.75	6	66
ND<0.25 U	ND<1 U	-0.75	6	67
ND<0.25 U	ND<1 U	-0.75	6	68
ND<0.25 U	ND<1 U	-0.75	6	69
ND<0.25 U	ND<1 U	-0.75	6	70
ND<0.5 U	ND<1 U	-0.5	6	71
ND<0.5 U	ND<1 U	-0.5	6	72

ND<0.5 U	ND<1 U	-0.5	6	73
ND<0.5 U	ND<1 U	-0.5	6	74
ND<0.5 U	ND<1 U	-0.5	6	75
ND<0.5 U	ND<1 U	-0.5	6	76
ND<0.5 U	ND<1 U	-0.5	6	77
ND<0.5 U	ND<1 U	-0.5	6	78
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ND<0.5 U	ND<1 U	-0.5	6	80
ND<0.5 U	ND<1 U	-0.5	6	81
ND<0.5 U	ND<1 U	-0.5	6	82
ND<0.5 U	ND<1 U	-0.5	6	83
ND<0.5 U	ND<1 U	-0.5	6	84
ND<0.5 U	ND<1 U	-0.5	6	85
ND<0.5 U	ND<1 U	-0.5	6	86
ND<0.5 U	ND<1 U	-0.5	6	87
ND<0.5 U	ND<1 U	-0.5	6	88
ND<0.5 U	ND<1 U	-0.5	6	89
ND<0.5 U	ND<1 U	-0.5	6	90
ND<0.5 U	ND<1 U	-0.5	6	91
ND<0.5 U	ND<1 U	-0.5	6	92
ND<0.5 U	ND<1 U	-0.5	6	93
ND<0.5 U	ND<1 U	-0.5	6	94
ND<0.5 U	ND<1 U	-0.5	6	95
ND<0.5 U	ND<1 U	-0.5	6	96
ND<0.5 U	ND<1 U	-0.5	6	97
ND<0.5 U	ND<1 U	-0.5	6	98
ND<0.5 U	ND<1 U	-0.5	6	99
2.1	ND<1 U	1.1	7	99
ND<0.5 U	ND<1 U	-0.5	7	100
ND<0.5 U	ND<1 U	-0.5	7	101
ND<0.5 U	ND<0.5 U	0	7	101
ND<0.5 U	ND<0.5 U	0	7	101
ND<0.5 U	ND<0.5 U	0	7	101
ND<0.5 U	ND<0.5 U	0	7	101
ND<0.5 U	ND<0.5 U	0	7	101
ND<0.5 U	ND<0.5 U	0	7	101
ND<0.5 U	ND<0.5 U	0	7	101
ND<0.25 U	ND<0.5 U	-0.25	7	102
ND<0.25 U	ND<0.5 U	-0.25	7	103
ND<0.25 U	ND<0.5 U	-0.25	7	104
ND<0.25 U	ND<0.5 U	-0.25	7	105
0.71	ND<0.5 U	0.21	8	105
ND<0.25 U	ND<0.5 U	-0.25	8	106
ND<0.25 U	ND<0.5 U	-0.25	8	107
ND<0.25 U	ND<0.5 U	-0.25	8	108
ND<0.25 U	ND<0.5 U	-0.25	8	109
ND<0.25 U	ND<0.5 U	-0.25	8	110
ND<0.25 U	ND<0.5 U	-0.25	8	111
ND<0.25 U	ND<0.5 U	-0.25	8	112
ND<0.25 U	ND<0.5 U	-0.25	8	113
ND<0.25 U	ND<0.5 U	-0.25	8	114
ND<0.25 U	ND<0.5 U	-0.25	8	115
ND<0.25 U	ND<0.5 U	-0.25	8	116
ND<0.25 U	ND<0.5 U	-0.25	8	117
ND<0.25 U	ND<0.5 U	-0.25	8	118

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ND<0.25 U	ND<0.25 U	0	26	281
ND<0.25 U	ND<0.25 U	0	26	281
ND<0.25 U	ND<0.25 U	0	26	281
ND<0.5 U	ND<0.25 U	0.25	27	281
ND<0.5 U	ND<0.25 U	0.25	28	281
ND<0.5 U	ND<0.25 U	0.25	29	281
ND<0.5 U	ND<0.25 U	0.25	30	281
ND<0.5 U	ND<0.25 U	0.25	31	281
ND<0.5 U	ND<0.25 U	0.25	32	281
ND<0.5 U	ND<0.25 U	0.25	33	281
ND<0.5 U	ND<0.25 U	0.25	34	281
ND<0.5 U	ND<0.25 U	0.25	35	281
ND<0.5 U	ND<0.25 U	0.25	36	281
ND<0.5 U	ND<0.25 U	0.25	37	281
ND<0.5 U	ND<0.25 U	0.25	38	281
ND<0.5 U	ND<0.25 U	0.25	39	281
ND<0.5 U	ND<0.25 U	0.25	40	281
ND<0.5 U	ND<0.25 U	0.25	41	281
ND<0.5 U	ND<0.25 U	0.25	42	281
ND<0.5 U	ND<0.25 U	0.25	43	281
ND<0.5 U	ND<0.25 U	0.25	44	281
ND<0.5 U	ND<0.25 U	0.25	45	281
ND<0.5 U	ND<0.25 U	0.25	46	281
ND<0.5 U	ND<0.25 U	0.25	47	281
ND<0.5 U	ND<0.25 U	0.25	48	281
ND<0.5 U	ND<0.25 U	0.25	49	281
ND<0.5 U	ND<0.25 U	0.25	50	281
ND<0.5 U	ND<0.25 U	0.25	51	281
ND<0.5 U	ND<0.25 U	0.25	52	281
ND<0.5 U	ND<0.25 U	0.25	53	281
ND<0.5 U	ND<0.25 U	0.25	54	281
ND<0.5 U	ND<0.25 U	0.25	55	281
2.1	ND<0.25 U	1.85	56	281
ND<0.5 U	ND<0.25 U	0.25	57	281
ND<0.5 U	ND<0.25 U	0.25	58	281
ND<0.25 U	ND<0.25 U	0	58	281
ND<0.25 U	ND<0.25 U	0	58	281
0.71	ND<0.25 U	0.46	59	281
ND<0.25 U	ND<0.25 U	0	59	281
ND<0.25 U	ND<0.25 U	0	59	281
ND<0.25 U	ND<0.25 U	0	59	281
ND<0.25 U	ND<0.25 U	0	59	281
ND<0.25 U	ND<0.25 U	0	59	281
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ND<0.25 U	ND<0.25 U	0	59	281
ND<0.25 U	ND<0.25 U	0	59	281
ND<0.25 U	ND<0.25 U	0	59	281
ND<0.25 U	ND<0.25 U	0	59	281
ND<0.25 U	ND<0.25 U	0	59	281
ND<0.25 U	ND<0.25 U	0	59	281
ND<0.25 U	ND<0.25 U	0	59	281
ND<0.25 U	ND<0.25 U	0	59	281
ND<0.25 U	ND<0.25 U	0	59	281
ND<0.5 U	ND<0.25 U	0.25	60	281
ND<0.5 U	ND<0.25 U	0.25	61	281

ND<0.5 U	ND<0.25 U	0.25	62	281
ND<0.5 U	ND<0.25 U	0.25	63	281
ND<0.5 U	ND<0.25 U	0.25	64	281
ND<0.5 U	ND<0.25 U	0.25	65	281
ND<0.5 U	ND<0.25 U	0.25	66	281
ND<0.5 U	ND<0.25 U	0.25	67	281
ND<0.5 U	ND<0.25 U	0.25	68	281
ND<0.5 U	ND<0.25 U	0.25	69	281
ND<0.5 U	ND<0.25 U	0.25	70	281
ND<0.5 U	ND<0.25 U	0.25	71	281
ND<0.5 U	ND<0.25 U	0.25	72	281
ND<0.5 U	ND<0.25 U	0.25	73	281
ND<0.5 U	ND<0.25 U	0.25	74	281
ND<0.5 U	ND<0.25 U	0.25	75	281
ND<0.5 U	ND<0.25 U	0.25	76	281
ND<0.5 U	ND<0.25 U	0.25	77	281
ND<0.5 U	ND<0.25 U	0.25	78	281
ND<0.5 U	ND<0.25 U	0.25	79	281
ND<0.5 U	ND<0.25 U	0.25	80	281
ND<0.5 U	ND<0.25 U	0.25	81	281
ND<0.5 U	ND<0.25 U	0.25	82	281
ND<0.5 U	ND<0.25 U	0.25	83	281
ND<0.5 U	ND<0.25 U	0.25	84	281
ND<0.5 U	ND<0.25 U	0.25	85	281
ND<0.5 U	ND<0.25 U	0.25	86	281
ND<0.5 U	ND<0.25 U	0.25	87	281
ND<0.5 U	ND<0.25 U	0.25	88	281
2.1	ND<0.25 U	1.85	89	281
ND<0.5 U	ND<0.25 U	0.25	90	281
ND<0.5 U	ND<0.25 U	0.25	91	281
ND<0.25 U	ND<0.25 U	0	91	281
0.71	ND<0.25 U	0.46	92	281
ND<0.25 U	ND<0.25 U	0	92	281
ND<0.25 U	ND<0.25 U	0	92	281
ND<0.25 U	ND<0.25 U	0	92	281
ND<0.25 U	ND<0.25 U	0	92	281
ND<0.25 U	ND<0.25 U	0	92	281
ND<0.25 U	ND<0.25 U	0	92	281
ND<0.25 U	ND<0.25 U	0	92	281
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ND<0.25 U	ND<0.25 U	0	92	281
ND<0.25 U	ND<0.25 U	0	92	281
ND<0.25 U	ND<0.25 U	0	92	281
ND<0.25 U	ND<0.25 U	0	92	281
ND<0.25 U	ND<0.25 U	0	92	281
ND<0.25 U	ND<0.25 U	0	92	281
ND<0.5 U	ND<0.25 U	0.25	93	281
ND<0.5 U	ND<0.25 U	0.25	94	281
ND<0.5 U	ND<0.25 U	0.25	95	281
ND<0.5 U	ND<0.25 U	0.25	96	281
ND<0.5 U	ND<0.25 U	0.25	97	281
ND<0.5 U	ND<0.25 U	0.25	98	281
ND<0.5 U	ND<0.25 U	0.25	99	281
ND<0.5 U	ND<0.25 U	0.25	100	281

ND<0.5 U	ND<0.25 U	0.25	101	281
ND<0.5 U	ND<0.25 U	0.25	102	281
ND<0.5 U	ND<0.25 U	0.25	103	281
ND<0.5 U	ND<0.25 U	0.25	104	281
ND<0.5 U	ND<0.25 U	0.25	105	281
ND<0.5 U	ND<0.25 U	0.25	106	281
ND<0.5 U	ND<0.25 U	0.25	107	281
ND<0.5 U	ND<0.25 U	0.25	108	281
ND<0.5 U	ND<0.25 U	0.25	109	281
ND<0.5 U	ND<0.25 U	0.25	110	281
ND<0.5 U	ND<0.25 U	0.25	111	281
ND<0.5 U	ND<0.25 U	0.25	112	281
ND<0.5 U	ND<0.25 U	0.25	113	281
ND<0.5 U	ND<0.25 U	0.25	114	281
ND<0.5 U	ND<0.25 U	0.25	115	281
ND<0.5 U	ND<0.25 U	0.25	116	281
ND<0.5 U	ND<0.25 U	0.25	117	281
ND<0.5 U	ND<0.25 U	0.25	118	281
ND<0.5 U	ND<0.25 U	0.25	119	281
ND<0.5 U	ND<0.25 U	0.25	120	281
ND<0.5 U	ND<0.25 U	0.25	121	281
2.1	ND<0.25 U	1.85	122	281
ND<0.5 U	ND<0.25 U	0.25	123	281
ND<0.5 U	ND<0.25 U	0.25	124	281
0.71	ND<0.25 U	0.46	125	281
ND<0.25 U	ND<0.25 U	0	125	281
ND<0.25 U	ND<0.25 U	0	125	281
ND<0.25 U	ND<0.25 U	0	125	281
ND<0.25 U	ND<0.25 U	0	125	281
ND<0.25 U	ND<0.25 U	0	125	281
ND<0.25 U	ND<0.25 U	0	125	281
ND<0.25 U	ND<0.25 U	0	125	281
ND<0.25 U	ND<0.25 U	0	125	281
ND<0.25 U	ND<0.25 U	0	125	281
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ND<0.25 U	ND<0.25 U	0	125	281
ND<0.25 U	ND<0.25 U	0	125	281
ND<0.25 U	ND<0.25 U	0	125	281
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2.1	ND<0.25 U	1.85	604	328
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ND<0.5 U	ND<0.25 U	0.25	639	328
ND<0.5 U	ND<0.25 U	0.25	640	328

[illegible]

[illegible]

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ND<0.5 U	ND<0.5 U	0	684	328
ND<0.5 U	ND<0.5 U	0	684	328
ND<0.5 U	ND<0.5 U	0	684	328
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2.1	ND<0.5 U	1.6	687	328
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[illegible]

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ND<0.5 U	ND<0.5 U	0	693	328
2.1	ND<0.5 U	1.6	694	328
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2.1	ND<0.5 U	1.6	695	328
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2.1	ND<0.5 U	1.6	696	328
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ND<0.5 U	ND<0.5 U	0	696	328
ND<0.5 U	ND<0.5 U	0	696	328
2.1	ND<0.5 U	1.6	697	328
ND<0.5 U	ND<0.5 U	0	697	328
ND<0.5 U	ND<0.5 U	0	697	328
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2.1	ND<0.5 U	1.6	698	328
ND<0.5 U	ND<0.5 U	0	698	328
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2.1	ND<0.5 U	1.6	699	328
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ND<0.5 U	2.1	-1.6	699	329
ND<0.5 U	2.1	-1.6	699	330
ND<0.5 U	ND<0.5 U	0	699	330

S Statistic = 699 - 330 = 369

Tied Group	Value	Members
1	0.5	42
2	0.25	20

Time Period	Observations
11/24/2009	1
1/27/2010	1
3/2/2010	1
3/4/2010	1

4/9/2010	1
4/30/2010	1
5/6/2010	1
6/7/2010	1
7/26/2010	1
8/16/2010	1
9/17/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1
1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1
12/6/2011	1
1/13/2012	1
2/21/2012	1
3/20/2012	1
4/27/2012	1
5/24/2012	1
6/15/2012	1
7/26/2012	1
8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1
1/29/2013	1
4/17/2013	1
7/29/2013	1
10/30/2013	1
1/31/2014	1
4/18/2014	1
7/17/2014	1
10/23/2014	1
1/27/2015	1
4/13/2015	1
7/21/2015	1
10/20/2015	1
1/27/2016	1
4/26/2016	1
7/26/2016	1
10/31/2016	1
1/30/2017	1
4/27/2017	1
7/24/2017	1
10/27/2017	1
1/29/2018	1
4/12/2018	1
7/24/2018	1

10/29/2018	1
1/30/2019	1
4/29/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 170358
B = 0
C = 75720
D = 0
E = 2102
F = 0
a = 561600
b = 2.35872e+006
c = 8320
Group Variance = 21735.7
Z-Score = 2.4961
Comparison Level at $1.0 - (0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)
|2.4961| > 2.32634 indicating a trend

Mann-Kendall Trend Analysis

Parameter: Toluene

Location: MW-6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
ND<0.5 U	ND<0.5 U	0	0	0
ND<1 U	ND<0.5 U	0.5	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
1	ND<0.5 U	0.5	2	0
ND<0.25 U	ND<0.5 U	-0.25	2	1
ND<0.25 U	ND<0.5 U	-0.25	2	2
ND<0.25 U	ND<0.5 U	-0.25	2	3
1	ND<0.5 U	0.5	3	3
0.58	ND<0.5 U	0.08	4	3
ND<0.25 U	ND<0.5 U	-0.25	4	4
ND<0.25 U	ND<0.5 U	-0.25	4	5
ND<0.25 U	ND<0.5 U	-0.25	4	6
ND<0.25 U	ND<0.5 U	-0.25	4	7
ND<0.25 U	ND<0.5 U	-0.25	4	8
ND<0.25 U	ND<0.5 U	-0.25	4	9
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ND<0.25 U	ND<0.5 U	-0.25	4	17
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ND<0.5 U	ND<0.5 U	0	4	18
ND<0.5 U	ND<0.5 U	0	4	18
ND<0.5 U	ND<0.5 U	0	4	18
ND<0.5 U	ND<0.5 U	0	4	18
ND<0.5 U	ND<0.5 U	0	4	18
ND<0.5 U	ND<0.5 U	0	4	18
ND<0.5 U	ND<0.5 U	0	4	18
ND<0.5 U	ND<0.5 U	0	4	18
ND<0.5 U	ND<0.5 U	0	4	18
ND<0.5 U	ND<0.5 U	0	4	18
ND<0.5 U	ND<0.5 U	0	4	18
ND<0.5 U	ND<0.5 U	0	4	18
1.7	ND<0.5 U	1.2	5	18

ND<0.5 U	ND<0.5 U	0	5	18
ND<0.5 U	ND<0.5 U	0	5	18
2.2	ND<0.5 U	1.7	6	18
ND<0.5 U	ND<0.5 U	0	6	18
ND<0.5 U	ND<0.5 U	0	6	18
ND<0.5 U	ND<0.5 U	0	6	18
1.8	ND<0.5 U	1.3	7	18
ND<0.5 U	ND<0.5 U	0	7	18
ND<0.5 U	ND<0.5 U	0	7	18
1.2	ND<0.5 U	0.7	8	18
ND<0.5 U	ND<0.5 U	0	8	18
ND<0.5 U	ND<0.5 U	0	8	18
14	ND<0.5 U	13.5	9	18
ND<0.5 U	ND<0.5 U	0	9	18
ND<0.5 U	ND<0.5 U	0	9	18
ND<0.5 U	ND<0.5 U	0	9	18
ND<0.5 U	ND<0.5 U	0	9	18
ND<1 U	ND<0.5 U	0.5	10	18
ND<0.5 U	ND<0.5 U	0	10	18
ND<0.5 U	ND<0.5 U	0	10	18
ND<0.5 U	ND<0.5 U	0	10	18
ND<0.5 U	ND<0.5 U	0	10	18
ND<0.5 U	ND<0.5 U	0	10	18
ND<0.5 U	ND<0.5 U	0	10	18
ND<0.5 U	ND<0.5 U	0	10	18
1	ND<0.5 U	0.5	11	18
ND<0.25 U	ND<0.5 U	-0.25	11	19
ND<0.25 U	ND<0.5 U	-0.25	11	20
ND<0.25 U	ND<0.5 U	-0.25	11	21
1	ND<0.5 U	0.5	12	21
0.58	ND<0.5 U	0.08	13	21
ND<0.25 U	ND<0.5 U	-0.25	13	22
ND<0.25 U	ND<0.5 U	-0.25	13	23
ND<0.25 U	ND<0.5 U	-0.25	13	24
ND<0.25 U	ND<0.5 U	-0.25	13	25
ND<0.25 U	ND<0.5 U	-0.25	13	26
ND<0.25 U	ND<0.5 U	-0.25	13	27
ND<0.25 U	ND<0.5 U	-0.25	13	28
ND<0.25 U	ND<0.5 U	-0.25	13	29
ND<0.25 U	ND<0.5 U	-0.25	13	30
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ND<0.25 U	ND<0.5 U	-0.25	13	32
ND<0.25 U	ND<0.5 U	-0.25	13	33
ND<0.25 U	ND<0.5 U	-0.25	13	34
ND<0.25 U	ND<0.5 U	-0.25	13	35
ND<0.25 U	ND<0.5 U	-0.25	13	36
ND<0.5 U	ND<0.5 U	0	13	36
ND<0.5 U	ND<0.5 U	0	13	36
ND<0.5 U	ND<0.5 U	0	13	36
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ND<0.5 U	ND<0.5 U	0	13	36
ND<0.5 U	ND<0.5 U	0	13	36
ND<0.5 U	ND<0.5 U	0	13	36
ND<0.5 U	ND<0.5 U	0	13	36

ND<0.5 U	ND<0.5 U	0	13	36
ND<0.5 U	ND<0.5 U	0	13	36
ND<0.5 U	ND<0.5 U	0	13	36
ND<0.5 U	ND<0.5 U	0	13	36
ND<0.5 U	ND<0.5 U	0	13	36
ND<0.5 U	ND<0.5 U	0	13	36
1.7	ND<0.5 U	1.2	14	36
ND<0.5 U	ND<0.5 U	0	14	36
ND<0.5 U	ND<0.5 U	0	14	36
2.2	ND<0.5 U	1.7	15	36
ND<0.5 U	ND<0.5 U	0	15	36
ND<0.5 U	ND<0.5 U	0	15	36
ND<0.5 U	ND<0.5 U	0	15	36
1.8	ND<0.5 U	1.3	16	36
ND<0.5 U	ND<0.5 U	0	16	36
ND<0.5 U	ND<0.5 U	0	16	36
1.2	ND<0.5 U	0.7	17	36
ND<0.5 U	ND<0.5 U	0	17	36
ND<0.5 U	ND<0.5 U	0	17	36
14	ND<0.5 U	13.5	18	36
ND<0.5 U	ND<0.5 U	0	18	36
ND<0.5 U	ND<0.5 U	0	18	36
ND<0.5 U	ND<0.5 U	0	18	36
ND<0.5 U	ND<0.5 U	0	18	36
ND<0.5 U	ND<1 U	-0.5	18	37
ND<0.5 U	ND<1 U	-0.5	18	38
ND<0.5 U	ND<1 U	-0.5	18	39
ND<0.5 U	ND<1 U	-0.5	18	40
ND<0.5 U	ND<1 U	-0.5	18	41
ND<0.5 U	ND<1 U	-0.5	18	42
ND<0.5 U	ND<1 U	-0.5	18	43
ND<0.5 U	ND<1 U	-0.5	18	44
ND<0.5 U	ND<1 U	-0.5	18	45
1	ND<1 U	0	18	45
ND<0.25 U	ND<1 U	-0.75	18	46
ND<0.25 U	ND<1 U	-0.75	18	47
ND<0.25 U	ND<1 U	-0.75	18	48
1	ND<1 U	0	18	48
0.58	ND<1 U	-0.42	18	49
ND<0.25 U	ND<1 U	-0.75	18	50
ND<0.25 U	ND<1 U	-0.75	18	51
ND<0.25 U	ND<1 U	-0.75	18	52
ND<0.25 U	ND<1 U	-0.75	18	53
ND<0.25 U	ND<1 U	-0.75	18	54
ND<0.25 U	ND<1 U	-0.75	18	55
ND<0.25 U	ND<1 U	-0.75	18	56
ND<0.25 U	ND<1 U	-0.75	18	57
ND<0.25 U	ND<1 U	-0.75	18	58
ND<0.25 U	ND<1 U	-0.75	18	59
ND<0.25 U	ND<1 U	-0.75	18	60
ND<0.25 U	ND<1 U	-0.75	18	61
ND<0.25 U	ND<1 U	-0.75	18	62
ND<0.25 U	ND<1 U	-0.75	18	63
ND<0.25 U	ND<1 U	-0.75	18	64
ND<0.5 U	ND<1 U	-0.5	18	65
ND<0.5 U	ND<1 U	-0.5	18	66

ND<0.5 U	ND<1 U	-0.5	18	67
ND<0.5 U	ND<1 U	-0.5	18	68
ND<0.5 U	ND<1 U	-0.5	18	69
ND<0.5 U	ND<1 U	-0.5	18	70
ND<0.5 U	ND<1 U	-0.5	18	71
ND<0.5 U	ND<1 U	-0.5	18	72
ND<0.5 U	ND<1 U	-0.5	18	73
ND<0.5 U	ND<1 U	-0.5	18	74
ND<0.5 U	ND<1 U	-0.5	18	75
ND<0.5 U	ND<1 U	-0.5	18	76
ND<0.5 U	ND<1 U	-0.5	18	77
ND<0.5 U	ND<1 U	-0.5	18	78
1.7	ND<1 U	0.7	19	78
ND<0.5 U	ND<1 U	-0.5	19	79
ND<0.5 U	ND<1 U	-0.5	19	80
2.2	ND<1 U	1.2	20	80
ND<0.5 U	ND<1 U	-0.5	20	81
ND<0.5 U	ND<1 U	-0.5	20	82
ND<0.5 U	ND<1 U	-0.5	20	83
1.8	ND<1 U	0.8	21	83
ND<0.5 U	ND<1 U	-0.5	21	84
ND<0.5 U	ND<1 U	-0.5	21	85
1.2	ND<1 U	0.2	22	85
ND<0.5 U	ND<1 U	-0.5	22	86
ND<0.5 U	ND<1 U	-0.5	22	87
14	ND<1 U	13	23	87
ND<0.5 U	ND<1 U	-0.5	23	88
ND<0.5 U	ND<1 U	-0.5	23	89
ND<0.5 U	ND<1 U	-0.5	23	90
ND<0.5 U	ND<1 U	-0.5	23	91
ND<0.5 U	ND<0.5 U	0	23	91
ND<0.5 U	ND<0.5 U	0	23	91
ND<0.5 U	ND<0.5 U	0	23	91
ND<0.5 U	ND<0.5 U	0	23	91
ND<0.5 U	ND<0.5 U	0	23	91
ND<0.5 U	ND<0.5 U	0	23	91
1	ND<0.5 U	0.5	24	91
ND<0.25 U	ND<0.5 U	-0.25	24	92
ND<0.25 U	ND<0.5 U	-0.25	24	93
ND<0.25 U	ND<0.5 U	-0.25	24	94
1	ND<0.5 U	0.5	25	94
0.58	ND<0.5 U	0.08	26	94
ND<0.25 U	ND<0.5 U	-0.25	26	95
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ND<0.25 U	ND<0.5 U	-0.25	26	101
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ND<0.25 U	ND<0.5 U	-0.25	26	104
ND<0.25 U	ND<0.5 U	-0.25	26	105
ND<0.25 U	ND<0.5 U	-0.25	26	106

ND<0.25 U	ND<0.5 U	-0.25	34	121
ND<0.25 U	ND<0.5 U	-0.25	34	122
ND<0.25 U	ND<0.5 U	-0.25	34	123
ND<0.25 U	ND<0.5 U	-0.25	34	124
ND<0.25 U	ND<0.5 U	-0.25	34	125
ND<0.25 U	ND<0.5 U	-0.25	34	126
ND<0.25 U	ND<0.5 U	-0.25	34	127
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ND<0.5 U	ND<0.5 U	0	34	127
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ND<0.5 U	ND<0.5 U	0	34	127
ND<0.5 U	ND<0.5 U	0	34	127
1.7	ND<0.5 U	1.2	35	127
ND<0.5 U	ND<0.5 U	0	35	127
ND<0.5 U	ND<0.5 U	0	35	127
2.2	ND<0.5 U	1.7	36	127
ND<0.5 U	ND<0.5 U	0	36	127
ND<0.5 U	ND<0.5 U	0	36	127
ND<0.5 U	ND<0.5 U	0	36	127
1.8	ND<0.5 U	1.3	37	127
ND<0.5 U	ND<0.5 U	0	37	127
ND<0.5 U	ND<0.5 U	0	37	127
1.2	ND<0.5 U	0.7	38	127
ND<0.5 U	ND<0.5 U	0	38	127
ND<0.5 U	ND<0.5 U	0	38	127
14	ND<0.5 U	13.5	39	127
ND<0.5 U	ND<0.5 U	0	39	127
ND<0.5 U	ND<0.5 U	0	39	127
ND<0.5 U	ND<0.5 U	0	39	127
ND<0.5 U	ND<0.5 U	0	39	127
ND<0.5 U	ND<0.5 U	0	39	127
ND<0.5 U	ND<0.5 U	0	39	127
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ND<0.5 U	ND<0.5 U	0	39	127
ND<0.5 U	ND<0.5 U	0	39	127
ND<0.5 U	ND<0.5 U	0	39	127
1	ND<0.5 U	0.5	40	127
ND<0.25 U	ND<0.5 U	-0.25	40	128
ND<0.25 U	ND<0.5 U	-0.25	40	129
ND<0.25 U	ND<0.5 U	-0.25	40	130
1	ND<0.5 U	0.5	41	130
0.58	ND<0.5 U	0.08	42	130
ND<0.25 U	ND<0.5 U	-0.25	42	131
ND<0.25 U	ND<0.5 U	-0.25	42	132
ND<0.25 U	ND<0.5 U	-0.25	42	133
ND<0.25 U	ND<0.5 U	-0.25	42	134
ND<0.25 U	ND<0.5 U	-0.25	42	135

[illegible]

[illegible]

[illegible]

ND<0.25 U	ND<0.5 U	-0.25	90	247
ND<0.25 U	ND<0.5 U	-0.25	90	248
ND<0.25 U	ND<0.5 U	-0.25	90	249
ND<0.25 U	ND<0.5 U	-0.25	90	250
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ND<0.5 U	ND<0.5 U	0	90	253
ND<0.5 U	ND<0.5 U	0	90	253
ND<0.5 U	ND<0.5 U	0	90	253
ND<0.5 U	ND<0.5 U	0	90	253
ND<0.5 U	ND<0.5 U	0	90	253
ND<0.5 U	ND<0.5 U	0	90	253
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ND<0.5 U	ND<0.5 U	0	90	253
ND<0.5 U	ND<0.5 U	0	90	253
ND<0.5 U	ND<0.5 U	0	90	253
1.7	ND<0.5 U	1.2	91	253
ND<0.5 U	ND<0.5 U	0	91	253
ND<0.5 U	ND<0.5 U	0	91	253
2.2	ND<0.5 U	1.7	92	253
ND<0.5 U	ND<0.5 U	0	92	253
ND<0.5 U	ND<0.5 U	0	92	253
ND<0.5 U	ND<0.5 U	0	92	253
1.8	ND<0.5 U	1.3	93	253
ND<0.5 U	ND<0.5 U	0	93	253
ND<0.5 U	ND<0.5 U	0	93	253
1.2	ND<0.5 U	0.7	94	253
ND<0.5 U	ND<0.5 U	0	94	253
ND<0.5 U	ND<0.5 U	0	94	253
14	ND<0.5 U	13.5	95	253
ND<0.5 U	ND<0.5 U	0	95	253
ND<0.5 U	ND<0.5 U	0	95	253
ND<0.5 U	ND<0.5 U	0	95	253
ND<0.5 U	ND<0.5 U	0	95	253
ND<0.25 U	1	-0.75	95	254
ND<0.25 U	1	-0.75	95	255
ND<0.25 U	1	-0.75	95	256
1	1	0	95	256
0.58	1	-0.42	95	257
ND<0.25 U	1	-0.75	95	258
ND<0.25 U	1	-0.75	95	259
ND<0.25 U	1	-0.75	95	260
ND<0.25 U	1	-0.75	95	261
ND<0.25 U	1	-0.75	95	262
ND<0.25 U	1	-0.75	95	263
ND<0.25 U	1	-0.75	95	264
ND<0.25 U	1	-0.75	95	265
ND<0.25 U	1	-0.75	95	266
ND<0.25 U	1	-0.75	95	267
ND<0.25 U	1	-0.75	95	268
ND<0.25 U	1	-0.75	95	269

ND<0.25 U	1	-0.75	95	270
ND<0.25 U	1	-0.75	95	271
ND<0.25 U	1	-0.75	95	272
ND<0.5 U	1	-0.5	95	273
ND<0.5 U	1	-0.5	95	274
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ND<0.5 U	1	-0.5	95	282
ND<0.5 U	1	-0.5	95	283
ND<0.5 U	1	-0.5	95	284
ND<0.5 U	1	-0.5	95	285
ND<0.5 U	1	-0.5	95	286
1.7	1	0.7	96	286
ND<0.5 U	1	-0.5	96	287
ND<0.5 U	1	-0.5	96	288
2.2	1	1.2	97	288
ND<0.5 U	1	-0.5	97	289
ND<0.5 U	1	-0.5	97	290
ND<0.5 U	1	-0.5	97	291
1.8	1	0.8	98	291
ND<0.5 U	1	-0.5	98	292
ND<0.5 U	1	-0.5	98	293
1.2	1	0.2	99	293
ND<0.5 U	1	-0.5	99	294
ND<0.5 U	1	-0.5	99	295
14	1	13	100	295
ND<0.5 U	1	-0.5	100	296
ND<0.5 U	1	-0.5	100	297
ND<0.5 U	1	-0.5	100	298
ND<0.5 U	1	-0.5	100	299
ND<0.25 U	ND<0.25 U	0	100	299
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1	ND<0.25 U	0.75	101	299
0.58	ND<0.25 U	0.33	102	299
ND<0.25 U	ND<0.25 U	0	102	299
ND<0.25 U	ND<0.25 U	0	102	299
ND<0.25 U	ND<0.25 U	0	102	299
ND<0.25 U	ND<0.25 U	0	102	299
ND<0.25 U	ND<0.25 U	0	102	299
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ND<0.25 U	ND<0.25 U	0	102	299
ND<0.25 U	ND<0.25 U	0	102	299
ND<0.5 U	ND<0.25 U	0.25	103	299
ND<0.5 U	ND<0.25 U	0.25	104	299

ND<0.5 U	ND<0.25 U	0.25	105	299
ND<0.5 U	ND<0.25 U	0.25	106	299
ND<0.5 U	ND<0.25 U	0.25	107	299
ND<0.5 U	ND<0.25 U	0.25	108	299
ND<0.5 U	ND<0.25 U	0.25	109	299
ND<0.5 U	ND<0.25 U	0.25	110	299
ND<0.5 U	ND<0.25 U	0.25	111	299
ND<0.5 U	ND<0.25 U	0.25	112	299
ND<0.5 U	ND<0.25 U	0.25	113	299
ND<0.5 U	ND<0.25 U	0.25	114	299
ND<0.5 U	ND<0.25 U	0.25	115	299
ND<0.5 U	ND<0.25 U	0.25	116	299
1.7	ND<0.25 U	1.45	117	299
ND<0.5 U	ND<0.25 U	0.25	118	299
ND<0.5 U	ND<0.25 U	0.25	119	299
2.2	ND<0.25 U	1.95	120	299
ND<0.5 U	ND<0.25 U	0.25	121	299
ND<0.5 U	ND<0.25 U	0.25	122	299
ND<0.5 U	ND<0.25 U	0.25	123	299
1.8	ND<0.25 U	1.55	124	299
ND<0.5 U	ND<0.25 U	0.25	125	299
ND<0.5 U	ND<0.25 U	0.25	126	299
1.2	ND<0.25 U	0.95	127	299
ND<0.5 U	ND<0.25 U	0.25	128	299
ND<0.5 U	ND<0.25 U	0.25	129	299
14	ND<0.25 U	13.75	130	299
ND<0.5 U	ND<0.25 U	0.25	131	299
ND<0.5 U	ND<0.25 U	0.25	132	299
ND<0.5 U	ND<0.25 U	0.25	133	299
ND<0.5 U	ND<0.25 U	0.25	134	299
ND<0.25 U	ND<0.25 U	0	134	299
1	ND<0.25 U	0.75	135	299
0.58	ND<0.25 U	0.33	136	299
ND<0.25 U	ND<0.25 U	0	136	299
ND<0.25 U	ND<0.25 U	0	136	299
ND<0.25 U	ND<0.25 U	0	136	299
ND<0.25 U	ND<0.25 U	0	136	299
ND<0.25 U	ND<0.25 U	0	136	299
ND<0.25 U	ND<0.25 U	0	136	299
ND<0.25 U	ND<0.25 U	0	136	299
ND<0.25 U	ND<0.25 U	0	136	299
ND<0.25 U	ND<0.25 U	0	136	299
ND<0.25 U	ND<0.25 U	0	136	299
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ND<0.5 U	ND<0.25 U	0.25	137	299
ND<0.5 U	ND<0.25 U	0.25	138	299
ND<0.5 U	ND<0.25 U	0.25	139	299
ND<0.5 U	ND<0.25 U	0.25	140	299
ND<0.5 U	ND<0.25 U	0.25	141	299
ND<0.5 U	ND<0.25 U	0.25	142	299
ND<0.5 U	ND<0.25 U	0.25	143	299
ND<0.5 U	ND<0.25 U	0.25	144	299

ND<0.5 U	ND<0.25 U	0.25	145	299
ND<0.5 U	ND<0.25 U	0.25	146	299
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1.7	ND<0.25 U	1.45	151	299
ND<0.5 U	ND<0.25 U	0.25	152	299
ND<0.5 U	ND<0.25 U	0.25	153	299
2.2	ND<0.25 U	1.95	154	299
ND<0.5 U	ND<0.25 U	0.25	155	299
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1.8	ND<0.25 U	1.55	158	299
ND<0.5 U	ND<0.25 U	0.25	159	299
ND<0.5 U	ND<0.25 U	0.25	160	299
1.2	ND<0.25 U	0.95	161	299
ND<0.5 U	ND<0.25 U	0.25	162	299
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14	ND<0.25 U	13.75	164	299
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1	ND<0.25 U	0.75	169	299
0.58	ND<0.25 U	0.33	170	299
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1.7	ND<0.25 U	1.45	185	299

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2.2	ND<0.25 U	1.95	188	299
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1.2	ND<0.25 U	0.95	195	299
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14	ND<0.25 U	13.75	198	299
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0.58	1	-0.42	202	300
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1.7	1	0.7	203	329
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2.2	1	1.2	204	331
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1.8	1	0.8	205	334
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1.2	1	0.2	206	336
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14	1	13	207	338
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1.7	0.58	1.12	208	371
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ND<0.5 U	0.58	-0.08	208	373
2.2	0.58	1.62	209	373
ND<0.5 U	0.58	-0.08	209	374
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ND<0.5 U	0.58	-0.08	209	376
1.8	0.58	1.22	210	376
ND<0.5 U	0.58	-0.08	210	377
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1.2	0.58	0.62	211	378
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ND<0.5 U	0.58	-0.08	211	380
14	0.58	13.42	212	380
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1.7	ND<0.25 U	1.45	291	384
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1.2	ND<0.25 U	0.95	301	384
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2.2	ND<0.25 U	1.95	326	384
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1.8	ND<0.25 U	1.55	330	384
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1.2	ND<0.25 U	0.95	333	384
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1.2	ND<0.25 U	0.95	365	384
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14	ND<0.25 U	13.75	368	384
ND<0.5 U	ND<0.25 U	0.25	369	384
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ND<0.5 U	ND<0.25 U	0.25	689	384
ND<0.5 U	ND<0.25 U	0.25	690	384
ND<0.5 U	ND<0.25 U	0.25	691	384
ND<0.5 U	ND<0.25 U	0.25	692	384
ND<0.5 U	ND<0.5 U	0	692	384
ND<0.5 U	ND<0.5 U	0	692	384
ND<0.5 U	ND<0.5 U	0	692	384
ND<0.5 U	ND<0.5 U	0	692	384
ND<0.5 U	ND<0.5 U	0	692	384
ND<0.5 U	ND<0.5 U	0	692	384
ND<0.5 U	ND<0.5 U	0	692	384
ND<0.5 U	ND<0.5 U	0	692	384
ND<0.5 U	ND<0.5 U	0	692	384
ND<0.5 U	ND<0.5 U	0	692	384
1.7	ND<0.5 U	1.2	693	384
ND<0.5 U	ND<0.5 U	0	693	384
ND<0.5 U	ND<0.5 U	0	693	384
2.2	ND<0.5 U	1.7	694	384
ND<0.5 U	ND<0.5 U	0	694	384
ND<0.5 U	ND<0.5 U	0	694	384
ND<0.5 U	ND<0.5 U	0	694	384
1.8	ND<0.5 U	1.3	695	384
ND<0.5 U	ND<0.5 U	0	695	384
ND<0.5 U	ND<0.5 U	0	695	384
1.2	ND<0.5 U	0.7	696	384
ND<0.5 U	ND<0.5 U	0	696	384
ND<0.5 U	ND<0.5 U	0	696	384

14	ND<0.5 U	13.5	697	384
ND<0.5 U	ND<0.5 U	0	697	384
ND<0.5 U	ND<0.5 U	0	697	384
ND<0.5 U	ND<0.5 U	0	697	384
ND<0.5 U	ND<0.5 U	0	697	384
ND<0.5 U	ND<0.5 U	0	697	384
ND<0.5 U	ND<0.5 U	0	697	384
ND<0.5 U	ND<0.5 U	0	697	384
ND<0.5 U	ND<0.5 U	0	697	384
ND<0.5 U	ND<0.5 U	0	697	384
ND<0.5 U	ND<0.5 U	0	697	384
ND<0.5 U	ND<0.5 U	0	697	384
ND<0.5 U	ND<0.5 U	0	697	384
ND<0.5 U	ND<0.5 U	0	697	384
1.7	ND<0.5 U	1.2	698	384
ND<0.5 U	ND<0.5 U	0	698	384
ND<0.5 U	ND<0.5 U	0	698	384
2.2	ND<0.5 U	1.7	699	384
ND<0.5 U	ND<0.5 U	0	699	384
ND<0.5 U	ND<0.5 U	0	699	384
ND<0.5 U	ND<0.5 U	0	699	384
1.8	ND<0.5 U	1.3	700	384
ND<0.5 U	ND<0.5 U	0	700	384
ND<0.5 U	ND<0.5 U	0	700	384
1.2	ND<0.5 U	0.7	701	384
ND<0.5 U	ND<0.5 U	0	701	384
ND<0.5 U	ND<0.5 U	0	701	384
14	ND<0.5 U	13.5	702	384
ND<0.5 U	ND<0.5 U	0	702	384
ND<0.5 U	ND<0.5 U	0	702	384
ND<0.5 U	ND<0.5 U	0	702	384
ND<0.5 U	ND<0.5 U	0	702	384
ND<0.5 U	ND<0.5 U	0	702	384
ND<0.5 U	ND<0.5 U	0	702	384
ND<0.5 U	ND<0.5 U	0	702	384
ND<0.5 U	ND<0.5 U	0	702	384
ND<0.5 U	ND<0.5 U	0	702	384
1.7	ND<0.5 U	1.2	703	384
ND<0.5 U	ND<0.5 U	0	703	384
ND<0.5 U	ND<0.5 U	0	703	384
2.2	ND<0.5 U	1.7	704	384
ND<0.5 U	ND<0.5 U	0	704	384
ND<0.5 U	ND<0.5 U	0	704	384
ND<0.5 U	ND<0.5 U	0	704	384
1.8	ND<0.5 U	1.3	705	384
ND<0.5 U	ND<0.5 U	0	705	384

ND<0.5 U	ND<0.5 U	0	705	384
1.2	ND<0.5 U	0.7	706	384
ND<0.5 U	ND<0.5 U	0	706	384
ND<0.5 U	ND<0.5 U	0	706	384
14	ND<0.5 U	13.5	707	384
ND<0.5 U	ND<0.5 U	0	707	384
ND<0.5 U	ND<0.5 U	0	707	384
ND<0.5 U	ND<0.5 U	0	707	384
ND<0.5 U	ND<0.5 U	0	707	384
ND<0.5 U	ND<0.5 U	0	707	384
ND<0.5 U	ND<0.5 U	0	707	384
ND<0.5 U	ND<0.5 U	0	707	384
ND<0.5 U	ND<0.5 U	0	707	384
ND<0.5 U	ND<0.5 U	0	707	384
ND<0.5 U	ND<0.5 U	0	707	384
ND<0.5 U	ND<0.5 U	0	707	384
ND<0.5 U	ND<0.5 U	0	707	384
ND<0.5 U	ND<0.5 U	0	707	384
ND<0.5 U	ND<0.5 U	0	707	384
1.7	ND<0.5 U	1.2	708	384
ND<0.5 U	ND<0.5 U	0	708	384
ND<0.5 U	ND<0.5 U	0	708	384
2.2	ND<0.5 U	1.7	709	384
ND<0.5 U	ND<0.5 U	0	709	384
ND<0.5 U	ND<0.5 U	0	709	384
ND<0.5 U	ND<0.5 U	0	709	384
1.8	ND<0.5 U	1.3	710	384
ND<0.5 U	ND<0.5 U	0	710	384
ND<0.5 U	ND<0.5 U	0	710	384
1.2	ND<0.5 U	0.7	711	384
ND<0.5 U	ND<0.5 U	0	711	384
ND<0.5 U	ND<0.5 U	0	711	384
14	ND<0.5 U	13.5	712	384
ND<0.5 U	ND<0.5 U	0	712	384
ND<0.5 U	ND<0.5 U	0	712	384
ND<0.5 U	ND<0.5 U	0	712	384
ND<0.5 U	ND<0.5 U	0	712	384
ND<0.5 U	ND<0.5 U	0	712	384
ND<0.5 U	ND<0.5 U	0	712	384
ND<0.5 U	ND<0.5 U	0	712	384
ND<0.5 U	ND<0.5 U	0	712	384
ND<0.5 U	ND<0.5 U	0	712	384
ND<0.5 U	ND<0.5 U	0	712	384
ND<0.5 U	ND<0.5 U	0	712	384
ND<0.5 U	ND<0.5 U	0	712	384
1.7	ND<0.5 U	1.2	713	384
ND<0.5 U	ND<0.5 U	0	713	384
ND<0.5 U	ND<0.5 U	0	713	384
2.2	ND<0.5 U	1.7	714	384
ND<0.5 U	ND<0.5 U	0	714	384
ND<0.5 U	ND<0.5 U	0	714	384
ND<0.5 U	ND<0.5 U	0	714	384
1.8	ND<0.5 U	1.3	715	384
ND<0.5 U	ND<0.5 U	0	715	384

ND<0.5 U	ND<0.5 U	0	715	384
1.2	ND<0.5 U	0.7	716	384
ND<0.5 U	ND<0.5 U	0	716	384
ND<0.5 U	ND<0.5 U	0	716	384
14	ND<0.5 U	13.5	717	384
ND<0.5 U	ND<0.5 U	0	717	384
ND<0.5 U	ND<0.5 U	0	717	384
ND<0.5 U	ND<0.5 U	0	717	384
ND<0.5 U	ND<0.5 U	0	717	384
ND<0.5 U	ND<0.5 U	0	717	384
ND<0.5 U	ND<0.5 U	0	717	384
ND<0.5 U	ND<0.5 U	0	717	384
1.7	ND<0.5 U	1.2	718	384
ND<0.5 U	ND<0.5 U	0	718	384
ND<0.5 U	ND<0.5 U	0	718	384
2.2	ND<0.5 U	1.7	719	384
ND<0.5 U	ND<0.5 U	0	719	384
ND<0.5 U	ND<0.5 U	0	719	384
ND<0.5 U	ND<0.5 U	0	719	384
1.8	ND<0.5 U	1.3	720	384
ND<0.5 U	ND<0.5 U	0	720	384
ND<0.5 U	ND<0.5 U	0	720	384
1.2	ND<0.5 U	0.7	721	384
ND<0.5 U	ND<0.5 U	0	721	384
ND<0.5 U	ND<0.5 U	0	721	384
14	ND<0.5 U	13.5	722	384
ND<0.5 U	ND<0.5 U	0	722	384
ND<0.5 U	ND<0.5 U	0	722	384
ND<0.5 U	ND<0.5 U	0	722	384
ND<0.5 U	ND<0.5 U	0	722	384
ND<0.5 U	ND<0.5 U	0	722	384
ND<0.5 U	ND<0.5 U	0	722	384
1.7	ND<0.5 U	1.2	723	384
ND<0.5 U	ND<0.5 U	0	723	384
ND<0.5 U	ND<0.5 U	0	723	384
2.2	ND<0.5 U	1.7	724	384
ND<0.5 U	ND<0.5 U	0	724	384
ND<0.5 U	ND<0.5 U	0	724	384
ND<0.5 U	ND<0.5 U	0	724	384
1.8	ND<0.5 U	1.3	725	384
ND<0.5 U	ND<0.5 U	0	725	384
ND<0.5 U	ND<0.5 U	0	725	384
1.2	ND<0.5 U	0.7	726	384
ND<0.5 U	ND<0.5 U	0	726	384
ND<0.5 U	ND<0.5 U	0	726	384

ND<0.5 U	ND<0.5 U	0	751	384
14	ND<0.5 U	13.5	752	384
ND<0.5 U	ND<0.5 U	0	752	384
ND<0.5 U	ND<0.5 U	0	752	384
ND<0.5 U	ND<0.5 U	0	752	384
ND<0.5 U	ND<0.5 U	0	752	384
ND<0.5 U	ND<0.5 U	0	752	384
ND<0.5 U	ND<0.5 U	0	752	384
1.7	ND<0.5 U	1.2	753	384
ND<0.5 U	ND<0.5 U	0	753	384
ND<0.5 U	ND<0.5 U	0	753	384
2.2	ND<0.5 U	1.7	754	384
ND<0.5 U	ND<0.5 U	0	754	384
ND<0.5 U	ND<0.5 U	0	754	384
ND<0.5 U	ND<0.5 U	0	754	384
1.8	ND<0.5 U	1.3	755	384
ND<0.5 U	ND<0.5 U	0	755	384
ND<0.5 U	ND<0.5 U	0	755	384
1.2	ND<0.5 U	0.7	756	384
ND<0.5 U	ND<0.5 U	0	756	384
ND<0.5 U	ND<0.5 U	0	756	384
14	ND<0.5 U	13.5	757	384
ND<0.5 U	ND<0.5 U	0	757	384
ND<0.5 U	ND<0.5 U	0	757	384
ND<0.5 U	ND<0.5 U	0	757	384
ND<0.5 U	ND<0.5 U	0	757	384
1.7	ND<0.5 U	1.2	758	384
ND<0.5 U	ND<0.5 U	0	758	384
ND<0.5 U	ND<0.5 U	0	758	384
2.2	ND<0.5 U	1.7	759	384
ND<0.5 U	ND<0.5 U	0	759	384
ND<0.5 U	ND<0.5 U	0	759	384
ND<0.5 U	ND<0.5 U	0	759	384
1.8	ND<0.5 U	1.3	760	384
ND<0.5 U	ND<0.5 U	0	760	384
ND<0.5 U	ND<0.5 U	0	760	384
1.2	ND<0.5 U	0.7	761	384
ND<0.5 U	ND<0.5 U	0	761	384
ND<0.5 U	ND<0.5 U	0	761	384
14	ND<0.5 U	13.5	762	384
ND<0.5 U	ND<0.5 U	0	762	384
ND<0.5 U	ND<0.5 U	0	762	384
ND<0.5 U	ND<0.5 U	0	762	384
ND<0.5 U	ND<0.5 U	0	762	384
ND<0.5 U	1.7	-1.2	762	385
ND<0.5 U	1.7	-1.2	762	386
2.2	1.7	0.5	763	386
ND<0.5 U	1.7	-1.2	763	387
ND<0.5 U	1.7	-1.2	763	388
ND<0.5 U	1.7	-1.2	763	389
1.8	1.7	0.1	764	389
ND<0.5 U	1.7	-1.2	764	390
ND<0.5 U	1.7	-1.2	764	391
1.2	1.7	-0.5	764	392
ND<0.5 U	1.7	-1.2	764	393

ND<0.5 U	1.7	-1.2	764	394
14	1.7	12.3	765	394
ND<0.5 U	1.7	-1.2	765	395
ND<0.5 U	1.7	-1.2	765	396
ND<0.5 U	1.7	-1.2	765	397
ND<0.5 U	1.7	-1.2	765	398
ND<0.5 U	ND<0.5 U	0	765	398
2.2	ND<0.5 U	1.7	766	398
ND<0.5 U	ND<0.5 U	0	766	398
ND<0.5 U	ND<0.5 U	0	766	398
ND<0.5 U	ND<0.5 U	0	766	398
1.8	ND<0.5 U	1.3	767	398
ND<0.5 U	ND<0.5 U	0	767	398
ND<0.5 U	ND<0.5 U	0	767	398
1.2	ND<0.5 U	0.7	768	398
ND<0.5 U	ND<0.5 U	0	768	398
ND<0.5 U	ND<0.5 U	0	768	398
14	ND<0.5 U	13.5	769	398
ND<0.5 U	ND<0.5 U	0	769	398
ND<0.5 U	ND<0.5 U	0	769	398
ND<0.5 U	ND<0.5 U	0	769	398
ND<0.5 U	ND<0.5 U	0	769	398
2.2	ND<0.5 U	1.7	770	398
ND<0.5 U	ND<0.5 U	0	770	398
ND<0.5 U	ND<0.5 U	0	770	398
ND<0.5 U	ND<0.5 U	0	770	398
1.8	ND<0.5 U	1.3	771	398
ND<0.5 U	ND<0.5 U	0	771	398
ND<0.5 U	ND<0.5 U	0	771	398
1.2	ND<0.5 U	0.7	772	398
ND<0.5 U	ND<0.5 U	0	772	398
ND<0.5 U	ND<0.5 U	0	772	398
14	ND<0.5 U	13.5	773	398
ND<0.5 U	ND<0.5 U	0	773	398
ND<0.5 U	ND<0.5 U	0	773	398
ND<0.5 U	ND<0.5 U	0	773	398
ND<0.5 U	ND<0.5 U	0	773	398
ND<0.5 U	2.2	-1.7	773	399
ND<0.5 U	2.2	-1.7	773	400
ND<0.5 U	2.2	-1.7	773	401
1.8	2.2	-0.4	773	402
ND<0.5 U	2.2	-1.7	773	403
ND<0.5 U	2.2	-1.7	773	404
1.2	2.2	-1	773	405
ND<0.5 U	2.2	-1.7	773	406
ND<0.5 U	2.2	-1.7	773	407
14	2.2	11.8	774	407
ND<0.5 U	2.2	-1.7	774	408
ND<0.5 U	2.2	-1.7	774	409
ND<0.5 U	2.2	-1.7	774	410
ND<0.5 U	2.2	-1.7	774	411
ND<0.5 U	ND<0.5 U	0	774	411
ND<0.5 U	ND<0.5 U	0	774	411

1.8	ND<0.5 U	1.3	775	411
ND<0.5 U	ND<0.5 U	0	775	411
ND<0.5 U	ND<0.5 U	0	775	411
1.2	ND<0.5 U	0.7	776	411
ND<0.5 U	ND<0.5 U	0	776	411
ND<0.5 U	ND<0.5 U	0	776	411
14	ND<0.5 U	13.5	777	411
ND<0.5 U	ND<0.5 U	0	777	411
ND<0.5 U	ND<0.5 U	0	777	411
ND<0.5 U	ND<0.5 U	0	777	411
ND<0.5 U	ND<0.5 U	0	777	411
ND<0.5 U	ND<0.5 U	0	777	411
1.8	ND<0.5 U	1.3	778	411
ND<0.5 U	ND<0.5 U	0	778	411
ND<0.5 U	ND<0.5 U	0	778	411
ND<0.5 U	ND<0.5 U	0	778	411
1.2	ND<0.5 U	0.7	779	411
ND<0.5 U	ND<0.5 U	0	779	411
ND<0.5 U	ND<0.5 U	0	779	411
14	ND<0.5 U	13.5	780	411
ND<0.5 U	ND<0.5 U	0	780	411
ND<0.5 U	ND<0.5 U	0	780	411
ND<0.5 U	ND<0.5 U	0	780	411
ND<0.5 U	ND<0.5 U	0	780	411
1.8	ND<0.5 U	1.3	781	411
ND<0.5 U	ND<0.5 U	0	781	411
ND<0.5 U	ND<0.5 U	0	781	411
1.2	ND<0.5 U	0.7	782	411
ND<0.5 U	ND<0.5 U	0	782	411
ND<0.5 U	ND<0.5 U	0	782	411
ND<0.5 U	ND<0.5 U	0	782	411
14	ND<0.5 U	13.5	783	411
ND<0.5 U	ND<0.5 U	0	783	411
ND<0.5 U	ND<0.5 U	0	783	411
ND<0.5 U	ND<0.5 U	0	783	411
ND<0.5 U	ND<0.5 U	0	783	411
ND<0.5 U	1.8	-1.3	783	412
ND<0.5 U	1.8	-1.3	783	413
1.2	1.8	-0.6	783	414
ND<0.5 U	1.8	-1.3	783	415
ND<0.5 U	1.8	-1.3	783	416
14	1.8	12.2	784	416
ND<0.5 U	1.8	-1.3	784	417
ND<0.5 U	1.8	-1.3	784	418
ND<0.5 U	1.8	-1.3	784	419
ND<0.5 U	1.8	-1.3	784	420
ND<0.5 U	ND<0.5 U	0	784	420
1.2	ND<0.5 U	0.7	785	420
ND<0.5 U	ND<0.5 U	0	785	420
ND<0.5 U	ND<0.5 U	0	785	420
14	ND<0.5 U	13.5	786	420
ND<0.5 U	ND<0.5 U	0	786	420
ND<0.5 U	ND<0.5 U	0	786	420
ND<0.5 U	ND<0.5 U	0	786	420
ND<0.5 U	ND<0.5 U	0	786	420

1.2	ND<0.5 U	0.7	787	420
ND<0.5 U	ND<0.5 U	0	787	420
ND<0.5 U	ND<0.5 U	0	787	420
14	ND<0.5 U	13.5	788	420
ND<0.5 U	ND<0.5 U	0	788	420
ND<0.5 U	ND<0.5 U	0	788	420
ND<0.5 U	ND<0.5 U	0	788	420
ND<0.5 U	ND<0.5 U	0	788	420
ND<0.5 U	1.2	-0.7	788	421
ND<0.5 U	1.2	-0.7	788	422
14	1.2	12.8	789	422
ND<0.5 U	1.2	-0.7	789	423
ND<0.5 U	1.2	-0.7	789	424
ND<0.5 U	1.2	-0.7	789	425
ND<0.5 U	1.2	-0.7	789	426
ND<0.5 U	ND<0.5 U	0	789	426
14	ND<0.5 U	13.5	790	426
ND<0.5 U	ND<0.5 U	0	790	426
ND<0.5 U	ND<0.5 U	0	790	426
ND<0.5 U	ND<0.5 U	0	790	426
ND<0.5 U	ND<0.5 U	0	790	426
14	ND<0.5 U	13.5	791	426
ND<0.5 U	ND<0.5 U	0	791	426
ND<0.5 U	ND<0.5 U	0	791	426
ND<0.5 U	ND<0.5 U	0	791	426
ND<0.5 U	ND<0.5 U	0	791	426
ND<0.5 U	14	-13.5	791	427
ND<0.5 U	14	-13.5	791	428
ND<0.5 U	14	-13.5	791	429
ND<0.5 U	14	-13.5	791	430
ND<0.5 U	ND<0.5 U	0	791	430
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ND<0.5 U	ND<0.5 U	0	791	430
ND<0.5 U	ND<0.5 U	0	791	430
ND<0.5 U	ND<0.5 U	0	791	430
ND<0.5 U	ND<0.5 U	0	791	430

S Statistic = 791 - 430 = 361

Tied Group	Value	Members
1	0.5	38
2	1	3
3	0.25	18

Time Period	Observations
11/24/2009	1
1/27/2010	1
3/2/2010	1

3/4/2010	1
4/9/2010	1
4/30/2010	1
5/6/2010	1
6/7/2010	1
7/26/2010	1
8/16/2010	1
9/17/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1
1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1
12/6/2011	1
1/13/2012	1
2/21/2012	1
3/20/2012	1
4/27/2012	1
5/24/2012	1
6/15/2012	1
7/26/2012	1
8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1
1/29/2013	1
4/17/2013	1
7/29/2013	1
10/30/2013	1
1/31/2014	1
4/18/2014	1
7/17/2014	1
10/23/2014	1
1/27/2015	1
4/13/2015	1
7/21/2015	1
10/20/2015	1
1/27/2016	1
4/26/2016	1
7/26/2016	1
10/31/2016	1
1/30/2017	1
4/27/2017	1
7/24/2017	1
10/27/2017	1
1/29/2018	1
4/12/2018	1

7/24/2018	1
10/29/2018	1
1/30/2019	1
4/29/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 126498
B = 0
C = 55518
D = 0
E = 1718
F = 0
a = 561600
b = 2.35872e+006
c = 8320
Group Variance = 24172.3
Z-Score = 2.31549
Comparison Level at $1.0 - (0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)
|2.31549| <= 2.32634 indicating no evidence of a trend

Non-Detects Replaced with Detection Limit

[illegible]

ND<0.25 U	ND<0.5 U	-0.25	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.5 U	ND<0.25 U	0.25	1	35
ND<0.5 U	ND<0.25 U	0.25	2	35
ND<0.5 U	ND<0.25 U	0.25	3	35
ND<0.5 U	ND<0.25 U	0.25	4	35
ND<0.5 U	ND<0.25 U	0.25	5	35
ND<0.5 U	ND<0.25 U	0.25	6	35
ND<0.5 U	ND<0.25 U	0.25	7	35
ND<0.5 U	ND<0.25 U	0.25	8	35
ND<0.5 U	ND<0.25 U	0.25	9	35
ND<0.5 U	ND<0.25 U	0.25	10	35
ND<0.5 U	ND<0.25 U	0.25	11	35
ND<0.5 U	ND<0.25 U	0.25	12	35
ND<0.5 U	ND<0.25 U	0.25	13	35
ND<0.5 U	ND<0.25 U	0.25	14	35
ND<0.25 U	ND<0.25 U	0	14	35
ND<0.25 U	ND<0.25 U	0	14	35
ND<0.25 U	ND<0.25 U	0	14	35
ND<0.25 U	ND<0.25 U	0	14	35
ND<0.25 U	ND<0.25 U	0	14	35
ND<0.5 U	ND<0.25 U	0.25	15	35
ND<0.5 U	ND<0.25 U	0.25	16	35
ND<0.5 U	ND<0.25 U	0.25	17	35
ND<0.5 U	ND<0.25 U	0.25	18	35
ND<0.5 U	ND<0.25 U	0.25	19	35
ND<0.5 U	ND<0.25 U	0.25	20	35
ND<0.5 U	ND<0.25 U	0.25	21	35
ND<0.5 U	ND<0.25 U	0.25	22	35
ND<0.5 U	ND<0.25 U	0.25	23	35
ND<0.5 U	ND<0.25 U	0.25	24	35
ND<0.5 U	ND<0.25 U	0.25	25	35
ND<0.5 U	ND<0.25 U	0.25	26	35
ND<0.5 U	ND<0.25 U	0.25	27	35
ND<0.5 U	ND<0.25 U	0.25	28	35

ND<0.25 U	ND<0.25 U	0	28	35
ND<0.25 U	ND<0.25 U	0	28	35
ND<0.25 U	ND<0.25 U	0	28	35
ND<0.25 U	ND<0.25 U	0	28	35
ND<0.5 U	ND<0.25 U	0.25	29	35
ND<0.5 U	ND<0.25 U	0.25	30	35
ND<0.5 U	ND<0.25 U	0.25	31	35
ND<0.5 U	ND<0.25 U	0.25	32	35
ND<0.5 U	ND<0.25 U	0.25	33	35
ND<0.5 U	ND<0.25 U	0.25	34	35
ND<0.5 U	ND<0.25 U	0.25	35	35
ND<0.5 U	ND<0.25 U	0.25	36	35
ND<0.5 U	ND<0.25 U	0.25	37	35
ND<0.5 U	ND<0.25 U	0.25	38	35
ND<0.5 U	ND<0.25 U	0.25	39	35
ND<0.5 U	ND<0.25 U	0.25	40	35
ND<0.5 U	ND<0.25 U	0.25	41	35
ND<0.5 U	ND<0.25 U	0.25	42	35
ND<0.25 U	ND<0.25 U	0	42	35
ND<0.25 U	ND<0.25 U	0	42	35
ND<0.25 U	ND<0.25 U	0	42	35
ND<0.5 U	ND<0.25 U	0.25	43	35
ND<0.5 U	ND<0.25 U	0.25	44	35
ND<0.5 U	ND<0.25 U	0.25	45	35
ND<0.5 U	ND<0.25 U	0.25	46	35
ND<0.5 U	ND<0.25 U	0.25	47	35
ND<0.5 U	ND<0.25 U	0.25	48	35
ND<0.5 U	ND<0.25 U	0.25	49	35
ND<0.5 U	ND<0.25 U	0.25	50	35
ND<0.5 U	ND<0.25 U	0.25	51	35
ND<0.5 U	ND<0.25 U	0.25	52	35
ND<0.5 U	ND<0.25 U	0.25	53	35
ND<0.5 U	ND<0.25 U	0.25	54	35
ND<0.5 U	ND<0.25 U	0.25	55	35
ND<0.5 U	ND<0.25 U	0.25	56	35
ND<0.25 U	ND<0.25 U	0	56	35
ND<0.25 U	ND<0.25 U	0	56	35
ND<0.5 U	ND<0.25 U	0.25	57	35
ND<0.5 U	ND<0.25 U	0.25	58	35
ND<0.5 U	ND<0.25 U	0.25	59	35
ND<0.5 U	ND<0.25 U	0.25	60	35
ND<0.5 U	ND<0.25 U	0.25	61	35
ND<0.5 U	ND<0.25 U	0.25	62	35
ND<0.5 U	ND<0.25 U	0.25	63	35
ND<0.5 U	ND<0.25 U	0.25	64	35
ND<0.5 U	ND<0.25 U	0.25	65	35
ND<0.5 U	ND<0.25 U	0.25	66	35
ND<0.5 U	ND<0.25 U	0.25	67	35
ND<0.5 U	ND<0.25 U	0.25	68	35
ND<0.5 U	ND<0.25 U	0.25	69	35
ND<0.5 U	ND<0.25 U	0.25	70	35
ND<0.25 U	ND<0.25 U	0	70	35
ND<0.5 U	ND<0.25 U	0.25	71	35
ND<0.5 U	ND<0.25 U	0.25	72	35

[illegible]

ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35

S Statistic = 98 - 35 = 63

Tied Group	Value	Members
1	0.5	19
2	0.25	7

Time Period	Observations
11/25/2009	1
3/4/2010	1
4/30/2010	1
7/26/2010	1
10/13/2010	1
1/14/2011	1
4/21/2011	1
7/21/2011	1
10/31/2011	1
1/13/2012	1
4/27/2012	1
7/26/2012	1
10/18/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 15504

B = 0

C = 6024

D = 0
E = 384
F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 1197
Z-Score = 1.79203
Comparison Level at $1.0 - (0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)
 $|1.79203| \leq 2.32634$ indicating no evidence of a trend

ND<0.5 U	ND<0.5 U	0	0	14
ND<0.5 U	ND<0.5 U	0	0	14
ND<0.5 U	ND<0.5 U	0	0	14
ND<0.5 U	ND<0.5 U	0	0	14
ND<0.5 U	ND<0.5 U	0	0	14
ND<0.5 U	ND<0.5 U	0	0	14
ND<0.5 U	ND<0.5 U	0	0	14
ND<0.25 U	ND<0.5 U	-0.25	0	15
ND<0.25 U	ND<0.5 U	-0.25	0	16
ND<0.25 U	ND<0.5 U	-0.25	0	17
ND<0.25 U	ND<0.5 U	-0.25	0	18
ND<0.25 U	ND<0.5 U	-0.25	0	19
ND<0.25 U	ND<0.5 U	-0.25	0	20
ND<0.25 U	ND<0.5 U	-0.25	0	21
ND<0.5 U	ND<0.5 U	0	0	21
ND<0.5 U	ND<0.5 U	0	0	21
ND<0.5 U	ND<0.5 U	0	0	21
ND<0.5 U	ND<0.5 U	0	0	21
ND<0.5 U	ND<0.5 U	0	0	21
ND<0.5 U	ND<0.5 U	0	0	21
ND<0.5 U	ND<0.5 U	0	0	21
ND<0.5 U	ND<0.5 U	0	0	21
ND<0.5 U	ND<0.5 U	0	0	21
ND<0.5 U	ND<0.5 U	0	0	21
ND<0.5 U	ND<0.5 U	0	0	21
ND<0.5 U	ND<0.5 U	0	0	21
ND<0.5 U	ND<0.5 U	0	0	21
ND<0.25 U	ND<0.5 U	-0.25	0	22
ND<0.25 U	ND<0.5 U	-0.25	0	23
ND<0.25 U	ND<0.5 U	-0.25	0	24
ND<0.25 U	ND<0.5 U	-0.25	0	25
ND<0.25 U	ND<0.5 U	-0.25	0	26
ND<0.25 U	ND<0.5 U	-0.25	0	27
ND<0.25 U	ND<0.5 U	-0.25	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.5 U	ND<0.5 U	0	0	28
ND<0.25 U	ND<0.5 U	-0.25	0	29
ND<0.25 U	ND<0.5 U	-0.25	0	30

ND<0.25 U	ND<0.5 U	-0.25	0	31
ND<0.25 U	ND<0.5 U	-0.25	0	32
ND<0.25 U	ND<0.5 U	-0.25	0	33
ND<0.25 U	ND<0.5 U	-0.25	0	34
ND<0.25 U	ND<0.5 U	-0.25	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.5 U	ND<0.25 U	0.25	1	35
ND<0.5 U	ND<0.25 U	0.25	2	35
ND<0.5 U	ND<0.25 U	0.25	3	35
ND<0.5 U	ND<0.25 U	0.25	4	35
ND<0.5 U	ND<0.25 U	0.25	5	35
ND<0.5 U	ND<0.25 U	0.25	6	35
ND<0.5 U	ND<0.25 U	0.25	7	35
ND<0.5 U	ND<0.25 U	0.25	8	35
ND<0.5 U	ND<0.25 U	0.25	9	35
ND<0.5 U	ND<0.25 U	0.25	10	35
ND<0.5 U	ND<0.25 U	0.25	11	35
ND<0.5 U	ND<0.25 U	0.25	12	35
ND<0.5 U	ND<0.25 U	0.25	13	35
ND<0.5 U	ND<0.25 U	0.25	14	35
ND<0.5 U	ND<0.25 U	0.25	15	35
ND<0.25 U	ND<0.25 U	0	15	35
ND<0.25 U	ND<0.25 U	0	15	35
ND<0.25 U	ND<0.25 U	0	15	35
ND<0.25 U	ND<0.25 U	0	15	35
ND<0.25 U	ND<0.25 U	0	15	35
ND<0.5 U	ND<0.25 U	0.25	16	35
ND<0.5 U	ND<0.25 U	0.25	17	35
ND<0.5 U	ND<0.25 U	0.25	18	35
ND<0.5 U	ND<0.25 U	0.25	19	35
ND<0.5 U	ND<0.25 U	0.25	20	35
ND<0.5 U	ND<0.25 U	0.25	21	35
ND<0.5 U	ND<0.25 U	0.25	22	35
ND<0.5 U	ND<0.25 U	0.25	23	35
ND<0.5 U	ND<0.25 U	0.25	24	35

ND<0.5 U	ND<0.25 U	0.25	25	35
ND<0.5 U	ND<0.25 U	0.25	26	35
ND<0.5 U	ND<0.25 U	0.25	27	35
ND<0.5 U	ND<0.25 U	0.25	28	35
ND<0.5 U	ND<0.25 U	0.25	29	35
ND<0.5 U	ND<0.25 U	0.25	30	35
ND<0.25 U	ND<0.25 U	0	30	35
ND<0.25 U	ND<0.25 U	0	30	35
ND<0.25 U	ND<0.25 U	0	30	35
ND<0.25 U	ND<0.25 U	0	30	35
ND<0.5 U	ND<0.25 U	0.25	31	35
ND<0.5 U	ND<0.25 U	0.25	32	35
ND<0.5 U	ND<0.25 U	0.25	33	35
ND<0.5 U	ND<0.25 U	0.25	34	35
ND<0.5 U	ND<0.25 U	0.25	35	35
ND<0.5 U	ND<0.25 U	0.25	36	35
ND<0.5 U	ND<0.25 U	0.25	37	35
ND<0.5 U	ND<0.25 U	0.25	38	35
ND<0.5 U	ND<0.25 U	0.25	39	35
ND<0.5 U	ND<0.25 U	0.25	40	35
ND<0.5 U	ND<0.25 U	0.25	41	35
ND<0.5 U	ND<0.25 U	0.25	42	35
ND<0.5 U	ND<0.25 U	0.25	43	35
ND<0.5 U	ND<0.25 U	0.25	44	35
ND<0.5 U	ND<0.25 U	0.25	45	35
ND<0.25 U	ND<0.25 U	0	45	35
ND<0.25 U	ND<0.25 U	0	45	35
ND<0.25 U	ND<0.25 U	0	45	35
ND<0.5 U	ND<0.25 U	0.25	46	35
ND<0.5 U	ND<0.25 U	0.25	47	35
ND<0.5 U	ND<0.25 U	0.25	48	35
ND<0.5 U	ND<0.25 U	0.25	49	35
ND<0.5 U	ND<0.25 U	0.25	50	35
ND<0.5 U	ND<0.25 U	0.25	51	35
ND<0.5 U	ND<0.25 U	0.25	52	35
ND<0.5 U	ND<0.25 U	0.25	53	35
ND<0.5 U	ND<0.25 U	0.25	54	35
ND<0.5 U	ND<0.25 U	0.25	55	35
ND<0.5 U	ND<0.25 U	0.25	56	35
ND<0.5 U	ND<0.25 U	0.25	57	35
ND<0.5 U	ND<0.25 U	0.25	58	35
ND<0.5 U	ND<0.25 U	0.25	59	35
ND<0.5 U	ND<0.25 U	0.25	60	35
ND<0.25 U	ND<0.25 U	0	60	35
ND<0.25 U	ND<0.25 U	0	60	35
ND<0.5 U	ND<0.25 U	0.25	61	35
ND<0.5 U	ND<0.25 U	0.25	62	35
ND<0.5 U	ND<0.25 U	0.25	63	35
ND<0.5 U	ND<0.25 U	0.25	64	35
ND<0.5 U	ND<0.25 U	0.25	65	35
ND<0.5 U	ND<0.25 U	0.25	66	35
ND<0.5 U	ND<0.25 U	0.25	67	35
ND<0.5 U	ND<0.25 U	0.25	68	35
ND<0.5 U	ND<0.25 U	0.25	69	35

[illegible]

[illegible]

[illegible]
$$S \text{ Statistic} = 105 - 35 = 70$$

Tied Group	Value	Members
1	0.5	20
2	0.25	7

Time Period	Observations
11/24/2009	1
3/4/2010	1
4/30/2010	1
7/26/2010	1

10/13/2010	1
1/14/2011	1
4/21/2011	1
7/21/2011	1
10/31/2011	1
1/13/2012	1
4/27/2012	1
7/26/2012	1
10/18/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 17898

B = 0

C = 7050

D = 0

E = 422

F = 0

a = 41418

b = 157950

c = 1404

Group Variance = 1306.67

Z-Score = 1.90883

Comparison Level at 1.0 - $(0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)

|1.90883| <= 2.32634 indicating no evidence of a trend

[illegible]

ND<0.25 U	ND<0.5 U	-0.25	0	31
ND<0.25 U	ND<0.5 U	-0.25	0	32
ND<0.25 U	ND<0.5 U	-0.25	0	33
ND<0.25 U	ND<0.5 U	-0.25	0	34
ND<0.25 U	ND<0.5 U	-0.25	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.5 U	ND<0.25 U	0.25	1	35
ND<0.5 U	ND<0.25 U	0.25	2	35
ND<0.5 U	ND<0.25 U	0.25	3	35
ND<0.5 U	ND<0.25 U	0.25	4	35
ND<0.5 U	ND<0.25 U	0.25	5	35
ND<0.5 U	ND<0.25 U	0.25	6	35
ND<0.5 U	ND<0.25 U	0.25	7	35
ND<0.5 U	ND<0.25 U	0.25	8	35
ND<0.5 U	ND<0.25 U	0.25	9	35
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ND<0.25 U	ND<0.25 U	0	15	35
ND<0.25 U	ND<0.25 U	0	15	35
ND<0.25 U	ND<0.25 U	0	15	35
ND<0.25 U	ND<0.25 U	0	15	35
ND<0.25 U	ND<0.25 U	0	15	35
ND<0.5 U	ND<0.25 U	0.25	16	35
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ND<0.5 U	ND<0.25 U	0.25	20	35
ND<0.5 U	ND<0.25 U	0.25	21	35
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ND<0.5 U	ND<0.25 U	0.25	24	35

ND<0.5 U	ND<0.25 U	0.25	25	35
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ND<0.5 U	ND<0.25 U	0.25	27	35
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ND<0.5 U	ND<0.25 U	0.25	29	35
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ND<0.25 U	ND<0.25 U	0	30	35
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ND<0.5 U	ND<0.25 U	0.25	39	35
ND<0.5 U	ND<0.25 U	0.25	40	35
ND<0.5 U	ND<0.25 U	0.25	41	35
ND<0.5 U	ND<0.25 U	0.25	42	35
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ND<0.5 U	ND<0.25 U	0.25	48	35
ND<0.5 U	ND<0.25 U	0.25	49	35
ND<0.5 U	ND<0.25 U	0.25	50	35
ND<0.5 U	ND<0.25 U	0.25	51	35
ND<0.5 U	ND<0.25 U	0.25	52	35
ND<0.5 U	ND<0.25 U	0.25	53	35
ND<0.5 U	ND<0.25 U	0.25	54	35
ND<0.5 U	ND<0.25 U	0.25	55	35
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ND<0.5 U	ND<0.25 U	0.25	57	35
ND<0.5 U	ND<0.25 U	0.25	58	35
ND<0.5 U	ND<0.25 U	0.25	59	35
ND<0.5 U	ND<0.25 U	0.25	60	35
ND<0.25 U	ND<0.25 U	0	60	35
ND<0.25 U	ND<0.25 U	0	60	35
ND<0.5 U	ND<0.25 U	0.25	61	35
ND<0.5 U	ND<0.25 U	0.25	62	35
ND<0.5 U	ND<0.25 U	0.25	63	35
ND<0.5 U	ND<0.25 U	0.25	64	35
ND<0.5 U	ND<0.25 U	0.25	65	35
ND<0.5 U	ND<0.25 U	0.25	66	35
ND<0.5 U	ND<0.25 U	0.25	67	35
ND<0.5 U	ND<0.25 U	0.25	68	35
ND<0.5 U	ND<0.25 U	0.25	69	35

[illegible]

[illegible]

[illegible]
$$S \text{ Statistic} = 105 - 35 = 70$$

Tied Group	Value	Members
1	0.5	20
2	0.25	7

Time Period	Observations
11/25/2009	1
3/4/2010	1
4/30/2010	1
7/26/2010	1

10/13/2010	1
1/14/2011	1
4/21/2011	1
7/21/2011	1
10/31/2011	1
1/13/2012	1
4/27/2012	1
7/26/2012	1
10/18/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 17898

B = 0

C = 7050

D = 0

E = 422

F = 0

a = 41418

b = 157950

c = 1404

Group Variance = 1306.67

Z-Score = 1.90883

Comparison Level at 1.0 - $(0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)

|1.90883| <= 2.32634 indicating no evidence of a trend

[illegible]

ND<0.5 U	ND<1 U	-0.5	2	48
ND<0.5 U	ND<1 U	-0.5	2	49
ND<0.5 U	ND<1 U	-0.5	2	50
ND<0.5 U	ND<1 U	-0.5	2	51
ND<0.5 U	ND<1 U	-0.5	2	52
ND<0.25 U	ND<1 U	-0.75	2	53
ND<0.25 U	ND<1 U	-0.75	2	54
ND<0.5 U	ND<1 U	-0.5	2	55
ND<0.25 U	ND<1 U	-0.75	2	56
ND<0.25 U	ND<1 U	-0.75	2	57
ND<0.25 U	ND<1 U	-0.75	2	58
ND<0.25 U	ND<1 U	-0.75	2	59
ND<0.25 U	ND<1 U	-0.75	2	60
ND<0.25 U	ND<1 U	-0.75	2	61
ND<0.25 U	ND<1 U	-0.75	2	62
ND<0.25 U	ND<1 U	-0.75	2	63
ND<0.25 U	ND<1 U	-0.75	2	64
ND<0.25 U	ND<1 U	-0.75	2	65
ND<0.25 U	ND<1 U	-0.75	2	66
ND<0.25 U	ND<1 U	-0.75	2	67
ND<0.25 U	ND<1 U	-0.75	2	68
ND<0.25 U	ND<1 U	-0.75	2	69
ND<0.25 U	ND<1 U	-0.75	2	70
ND<0.25 U	ND<1 U	-0.75	2	71
ND<0.25 U	ND<1 U	-0.75	2	72
ND<0.25 U	ND<1 U	-0.75	2	73
ND<0.25 U	ND<1 U	-0.75	2	74
ND<0.25 U	ND<1 U	-0.75	2	75
ND<0.25 U	ND<1 U	-0.75	2	76
ND<0.5 U	ND<1 U	-0.5	2	77
ND<0.5 U	ND<1 U	-0.5	2	78
ND<0.5 U	ND<1 U	-0.5	2	79
ND<0.5 U	ND<1 U	-0.5	2	80
ND<0.5 U	ND<1 U	-0.5	2	81
ND<0.5 U	ND<1 U	-0.5	2	82
ND<0.5 U	ND<1 U	-0.5	2	83
ND<0.5 U	ND<1 U	-0.5	2	84
ND<0.5 U	ND<1 U	-0.5	2	85
ND<0.5 U	ND<1 U	-0.5	2	86
ND<0.5 U	ND<1 U	-0.5	2	87
ND<0.5 U	ND<1 U	-0.5	2	88
ND<0.5 U	ND<1 U	-0.5	2	89
ND<0.5 U	ND<1 U	-0.5	2	90
ND<0.5 U	ND<1 U	-0.5	2	91
ND<0.5 U	ND<1 U	-0.5	2	92
ND<0.5 U	ND<1 U	-0.5	2	93
ND<0.5 U	ND<1 U	-0.5	2	94
ND<0.5 U	ND<1 U	-0.5	2	95
ND<0.5 U	ND<0.5 U	0	2	95
ND<0.5 U	ND<0.5 U	0	2	95
ND<0.5 U	ND<0.5 U	0	2	95
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ND<0.5 U	ND<0.5 U	0	2	95
ND<0.25 U	ND<0.5 U	-0.25	2	96
ND<0.25 U	ND<0.5 U	-0.25	2	97
ND<0.5 U	ND<0.5 U	0	2	97

[illegible]

[illegible]

[illegible]

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ND<0.5 U	ND<0.25 U	0.25	62	254
ND<0.5 U	ND<0.25 U	0.25	63	254
ND<0.5 U	ND<0.25 U	0.25	64	254
ND<0.5 U	ND<0.25 U	0.25	65	254
ND<0.5 U	ND<0.25 U	0.25	66	254
ND<0.5 U	ND<0.25 U	0.25	67	254
ND<0.5 U	ND<0.25 U	0.25	68	254
ND<0.5 U	ND<0.25 U	0.25	69	254
ND<0.5 U	ND<0.25 U	0.25	70	254
ND<0.5 U	ND<0.25 U	0.25	71	254
ND<0.5 U	ND<0.25 U	0.25	72	254
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ND<0.5 U	ND<0.25 U	0.25	77	254
ND<0.5 U	ND<0.25 U	0.25	78	254
ND<0.5 U	ND<0.25 U	0.25	79	254
ND<0.5 U	ND<0.25 U	0.25	80	254

[illegible]

ND<0.25 U	ND<0.25 U	0	156	254
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ND<0.25 U	ND<0.25 U	0	156	254
ND<0.25 U	ND<0.25 U	0	156	254

[illegible]

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Page 18

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[illegible]

ND<0.5 U	ND<0.5 U	0	441	254
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ND<0.5 U	ND<0.5 U	0	441	254
ND<0.5 U	ND<0.5 U	0	441	254
ND<0.5 U	ND<0.5 U	0	441	254

S Statistic = 441 - 254 = 187

Tied Group	Value	Members
1	0.5	28
2	0.25	23

Time Period	Observations
11/24/2009	1
1/27/2010	1
3/2/2010	1
3/4/2010	1
4/9/2010	1
4/30/2010	1
5/6/2010	1
6/7/2010	1
7/26/2010	1
8/16/2010	1
9/17/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1
1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1
12/6/2011	1
1/13/2012	1
2/21/2012	1
3/20/2012	1
4/27/2012	1

5/24/2012	1
6/15/2012	1
7/26/2012	1
8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 71922

B = 0

C = 30282

D = 0

E = 1262

F = 0

a = 289068

b = 1.1934e+006

c = 5304

Group Variance = 12063.7

Z-Score = 1.69345

Comparison Level at 1.0 - (0.02 / 2) = 99% confidence level = 2.32634 (two-tailed)

|1.69345| <= 2.32634 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Ethylbenzene

Location: MW-4

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
ND<0.5 U	ND<0.5 U	0	0	0
ND<1 U	ND<0.5 U	0.5	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.25 U	ND<0.5 U	-0.25	1	1
ND<0.25 U	ND<0.5 U	-0.25	1	2
ND<0.25 U	ND<0.5 U	-0.25	1	3
ND<0.25 U	ND<0.5 U	-0.25	1	4
ND<0.25 U	ND<0.5 U	-0.25	1	5
ND<0.25 U	ND<0.5 U	-0.25	1	6
ND<0.25 U	ND<0.5 U	-0.25	1	7
ND<0.25 U	ND<0.5 U	-0.25	1	8
ND<0.25 U	ND<0.5 U	-0.25	1	9
ND<0.25 U	ND<0.5 U	-0.25	1	10
ND<0.25 U	ND<0.5 U	-0.25	1	11
ND<0.25 U	ND<0.5 U	-0.25	1	12
ND<0.25 U	ND<0.5 U	-0.25	1	13
ND<0.25 U	ND<0.5 U	-0.25	1	14
ND<0.25 U	ND<0.5 U	-0.25	1	15
ND<0.25 U	ND<0.5 U	-0.25	1	16
ND<0.25 U	ND<0.5 U	-0.25	1	17
ND<0.25 U	ND<0.5 U	-0.25	1	18
ND<0.25 U	ND<0.5 U	-0.25	1	19
ND<0.25 U	ND<0.5 U	-0.25	1	20
ND<0.25 U	ND<0.5 U	-0.25	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21

[illegible]

ND<0.5 U	ND<1 U	-0.5	2	44
ND<0.5 U	ND<1 U	-0.5	2	45
ND<0.5 U	ND<1 U	-0.5	2	46
ND<0.5 U	ND<1 U	-0.5	2	47
ND<0.5 U	ND<1 U	-0.5	2	48
ND<0.5 U	ND<1 U	-0.5	2	49
ND<0.5 U	ND<1 U	-0.5	2	50
ND<0.5 U	ND<1 U	-0.5	2	51
ND<0.25 U	ND<1 U	-0.75	2	52
ND<0.25 U	ND<1 U	-0.75	2	53
ND<0.25 U	ND<1 U	-0.75	2	54
ND<0.25 U	ND<1 U	-0.75	2	55
ND<0.25 U	ND<1 U	-0.75	2	56
ND<0.25 U	ND<1 U	-0.75	2	57
ND<0.25 U	ND<1 U	-0.75	2	58
ND<0.25 U	ND<1 U	-0.75	2	59
ND<0.25 U	ND<1 U	-0.75	2	60
ND<0.25 U	ND<1 U	-0.75	2	61
ND<0.25 U	ND<1 U	-0.75	2	62
ND<0.25 U	ND<1 U	-0.75	2	63
ND<0.25 U	ND<1 U	-0.75	2	64
ND<0.25 U	ND<1 U	-0.75	2	65
ND<0.25 U	ND<1 U	-0.75	2	66
ND<0.25 U	ND<1 U	-0.75	2	67
ND<0.25 U	ND<1 U	-0.75	2	68
ND<0.25 U	ND<1 U	-0.75	2	69
ND<0.25 U	ND<1 U	-0.75	2	70
ND<0.25 U	ND<1 U	-0.75	2	71
ND<0.25 U	ND<1 U	-0.75	2	72
ND<0.5 U	ND<1 U	-0.5	2	73
ND<0.5 U	ND<1 U	-0.5	2	74
ND<0.5 U	ND<1 U	-0.5	2	75
ND<0.5 U	ND<1 U	-0.5	2	76
ND<0.5 U	ND<1 U	-0.5	2	77
ND<0.5 U	ND<1 U	-0.5	2	78
ND<0.5 U	ND<1 U	-0.5	2	79
ND<0.5 U	ND<1 U	-0.5	2	80
ND<0.5 U	ND<1 U	-0.5	2	81
ND<0.5 U	ND<1 U	-0.5	2	82
ND<0.5 U	ND<1 U	-0.5	2	83
ND<0.5 U	ND<1 U	-0.5	2	84
ND<0.5 U	ND<1 U	-0.5	2	85
ND<0.5 U	ND<1 U	-0.5	2	86
ND<0.5 U	ND<1 U	-0.5	2	87
ND<0.5 U	ND<1 U	-0.5	2	88
ND<0.5 U	ND<1 U	-0.5	2	89
ND<0.5 U	ND<1 U	-0.5	2	90
ND<0.5 U	ND<1 U	-0.5	2	91
ND<0.5 U	ND<0.5 U	0	2	91
ND<0.5 U	ND<0.5 U	0	2	91
ND<0.5 U	ND<0.5 U	0	2	91
ND<0.5 U	ND<0.5 U	0	2	91
ND<0.5 U	ND<0.5 U	0	2	91
ND<0.5 U	ND<0.5 U	0	2	91
ND<0.5 U	ND<0.5 U	0	2	91
ND<0.5 U	ND<0.5 U	0	2	91

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

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[illegible]

ND<0.5 U	ND<0.25 U	0.25	259	280
ND<0.5 U	ND<0.25 U	0.25	260	280
ND<0.5 U	ND<0.25 U	0.25	261	280
ND<0.5 U	ND<0.25 U	0.25	262	280
ND<0.5 U	ND<0.25 U	0.25	263	280
ND<0.5 U	ND<0.25 U	0.25	264	280
ND<0.5 U	ND<0.25 U	0.25	265	280
ND<0.5 U	ND<0.25 U	0.25	266	280
ND<0.5 U	ND<0.25 U	0.25	267	280
ND<0.5 U	ND<0.25 U	0.25	268	280
ND<0.25 U	ND<0.25 U	0	268	280
ND<0.25 U	ND<0.25 U	0	268	280
ND<0.25 U	ND<0.25 U	0	268	280
ND<0.25 U	ND<0.25 U	0	268	280
ND<0.25 U	ND<0.25 U	0	268	280
ND<0.25 U	ND<0.25 U	0	268	280
ND<0.5 U	ND<0.25 U	0.25	269	280
ND<0.5 U	ND<0.25 U	0.25	270	280
ND<0.5 U	ND<0.25 U	0.25	271	280
ND<0.5 U	ND<0.25 U	0.25	272	280
ND<0.5 U	ND<0.25 U	0.25	273	280
ND<0.5 U	ND<0.25 U	0.25	274	280
ND<0.5 U	ND<0.25 U	0.25	275	280
ND<0.5 U	ND<0.25 U	0.25	276	280
ND<0.5 U	ND<0.25 U	0.25	277	280
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ND<0.5 U	ND<0.25 U	0.25	280	280
ND<0.5 U	ND<0.25 U	0.25	281	280
ND<0.5 U	ND<0.25 U	0.25	282	280
ND<0.5 U	ND<0.25 U	0.25	283	280
ND<0.5 U	ND<0.25 U	0.25	284	280
ND<0.5 U	ND<0.25 U	0.25	285	280
ND<0.5 U	ND<0.25 U	0.25	286	280
ND<0.5 U	ND<0.25 U	0.25	287	280
ND<0.25 U	ND<0.25 U	0	287	280
ND<0.25 U	ND<0.25 U	0	287	280
ND<0.25 U	ND<0.25 U	0	287	280
ND<0.25 U	ND<0.25 U	0	287	280
ND<0.25 U	ND<0.25 U	0	287	280
ND<0.5 U	ND<0.25 U	0.25	288	280
ND<0.5 U	ND<0.25 U	0.25	289	280
ND<0.5 U	ND<0.25 U	0.25	290	280
ND<0.5 U	ND<0.25 U	0.25	291	280
ND<0.5 U	ND<0.25 U	0.25	292	280
ND<0.5 U	ND<0.25 U	0.25	293	280
ND<0.5 U	ND<0.25 U	0.25	294	280
ND<0.5 U	ND<0.25 U	0.25	295	280
ND<0.5 U	ND<0.25 U	0.25	296	280
ND<0.5 U	ND<0.25 U	0.25	297	280
ND<0.5 U	ND<0.25 U	0.25	298	280
ND<0.5 U	ND<0.25 U	0.25	299	280
ND<0.5 U	ND<0.25 U	0.25	300	280
ND<0.5 U	ND<0.25 U	0.25	301	280
ND<0.5 U	ND<0.25 U	0.25	302	280

ND<0.5 U	ND<0.25 U	0.25	303	280
ND<0.5 U	ND<0.25 U	0.25	304	280
ND<0.5 U	ND<0.25 U	0.25	305	280
ND<0.5 U	ND<0.25 U	0.25	306	280
ND<0.25 U	ND<0.25 U	0	306	280
ND<0.25 U	ND<0.25 U	0	306	280
ND<0.25 U	ND<0.25 U	0	306	280
ND<0.25 U	ND<0.25 U	0	306	280
ND<0.5 U	ND<0.25 U	0.25	307	280
ND<0.5 U	ND<0.25 U	0.25	308	280
ND<0.5 U	ND<0.25 U	0.25	309	280
ND<0.5 U	ND<0.25 U	0.25	310	280
ND<0.5 U	ND<0.25 U	0.25	311	280
ND<0.5 U	ND<0.25 U	0.25	312	280
ND<0.5 U	ND<0.25 U	0.25	313	280
ND<0.5 U	ND<0.25 U	0.25	314	280
ND<0.5 U	ND<0.25 U	0.25	315	280
ND<0.5 U	ND<0.25 U	0.25	316	280
ND<0.5 U	ND<0.25 U	0.25	317	280
ND<0.5 U	ND<0.25 U	0.25	318	280
ND<0.5 U	ND<0.25 U	0.25	319	280
ND<0.5 U	ND<0.25 U	0.25	320	280
ND<0.5 U	ND<0.25 U	0.25	321	280
ND<0.5 U	ND<0.25 U	0.25	322	280
ND<0.5 U	ND<0.25 U	0.25	323	280
ND<0.5 U	ND<0.25 U	0.25	324	280
ND<0.5 U	ND<0.25 U	0.25	325	280
ND<0.25 U	ND<0.25 U	0	325	280
ND<0.25 U	ND<0.25 U	0	325	280
ND<0.25 U	ND<0.25 U	0	325	280
ND<0.5 U	ND<0.25 U	0.25	326	280
ND<0.5 U	ND<0.25 U	0.25	327	280
ND<0.5 U	ND<0.25 U	0.25	328	280
ND<0.5 U	ND<0.25 U	0.25	329	280
ND<0.5 U	ND<0.25 U	0.25	330	280
ND<0.5 U	ND<0.25 U	0.25	331	280
ND<0.5 U	ND<0.25 U	0.25	332	280
ND<0.5 U	ND<0.25 U	0.25	333	280
ND<0.5 U	ND<0.25 U	0.25	334	280
ND<0.5 U	ND<0.25 U	0.25	335	280
ND<0.5 U	ND<0.25 U	0.25	336	280
ND<0.5 U	ND<0.25 U	0.25	337	280
ND<0.5 U	ND<0.25 U	0.25	338	280
ND<0.5 U	ND<0.25 U	0.25	339	280
ND<0.5 U	ND<0.25 U	0.25	340	280
ND<0.5 U	ND<0.25 U	0.25	341	280
ND<0.5 U	ND<0.25 U	0.25	342	280
ND<0.5 U	ND<0.25 U	0.25	343	280
ND<0.5 U	ND<0.25 U	0.25	344	280
ND<0.25 U	ND<0.25 U	0	344	280
ND<0.25 U	ND<0.25 U	0	344	280
ND<0.5 U	ND<0.25 U	0.25	345	280
ND<0.5 U	ND<0.25 U	0.25	346	280
ND<0.5 U	ND<0.25 U	0.25	347	280

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[illegible]

ND<0.5 U	ND<0.5 U	0	401	280
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[illegible]

ND<0.5 U	ND<0.5 U	0	401	280
ND<0.5 U	ND<0.5 U	0	401	280
ND<0.5 U	ND<0.5 U	0	401	280
ND<0.5 U	ND<0.5 U	0	401	280
ND<0.5 U	ND<0.5 U	0	401	280
ND<0.5 U	ND<0.5 U	0	401	280
ND<0.5 U	ND<0.5 U	0	401	280
ND<0.5 U	ND<0.5 U	0	401	280
ND<0.5 U	ND<0.5 U	0	401	280
ND<0.5 U	ND<0.5 U	0	401	280
ND<0.5 U	ND<0.5 U	0	401	280
ND<0.5 U	ND<0.5 U	0	401	280
ND<0.5 U	ND<0.5 U	0	401	280
ND<0.5 U	ND<0.5 U	0	401	280
ND<0.5 U	ND<0.5 U	0	401	280

S Statistic = 401 - 280 = 121

Tied Group	Value	Members
1	0.5	30
2	0.25	21

Time Period	Observations
11/24/2009	1
1/27/2010	1
3/2/2010	1
3/4/2010	1
4/9/2010	1
4/30/2010	1
5/6/2010	1
6/7/2010	1
7/26/2010	1
8/16/2010	1
9/17/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1
1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1
12/6/2011	1
1/13/2012	1
2/21/2012	1
3/20/2012	1
4/27/2012	1

5/24/2012	1
6/15/2012	1
7/26/2012	1
8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 76290

B = 0

C = 32340

D = 0

E = 1290

F = 0

a = 289068

b = 1.1934e+006

c = 5304

Group Variance = 11821

Z-Score = 1.10371

Comparison Level at 1.0 - (0.02 / 2) = 99% confidence level = 2.32634 (two-tailed)

|1.10371| <= 2.32634 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Ethylbenzene

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
ND<0.5 U	ND<0.5 U	0	0	0
ND<1 U	ND<0.5 U	0.5	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.25 U	ND<0.5 U	-0.25	1	1
ND<0.25 U	ND<0.5 U	-0.25	1	2
ND<0.25 U	ND<0.5 U	-0.25	1	3
ND<0.25 U	ND<0.5 U	-0.25	1	4
ND<0.25 U	ND<0.5 U	-0.25	1	5
ND<0.25 U	ND<0.5 U	-0.25	1	6
ND<0.25 U	ND<0.5 U	-0.25	1	7
ND<0.25 U	ND<0.5 U	-0.25	1	8
ND<0.25 U	ND<0.5 U	-0.25	1	9
ND<0.25 U	ND<0.5 U	-0.25	1	10
ND<0.25 U	ND<0.5 U	-0.25	1	11
ND<0.25 U	ND<0.5 U	-0.25	1	12
ND<0.25 U	ND<0.5 U	-0.25	1	13
ND<0.25 U	ND<0.5 U	-0.25	1	14
ND<0.25 U	ND<0.5 U	-0.25	1	15
ND<0.25 U	ND<0.5 U	-0.25	1	16
ND<0.25 U	ND<0.5 U	-0.25	1	17
ND<0.25 U	ND<0.5 U	-0.25	1	18
ND<0.25 U	ND<0.5 U	-0.25	1	19
ND<0.25 U	ND<0.5 U	-0.25	1	20
ND<0.25 U	ND<0.5 U	-0.25	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21

ND<0.5 U	ND<1 U	-0.5	2	75
ND<0.5 U	ND<1 U	-0.5	2	76
ND<0.5 U	ND<1 U	-0.5	2	77
ND<0.5 U	ND<1 U	-0.5	2	78
ND<0.5 U	ND<1 U	-0.5	2	79
ND<0.5 U	ND<1 U	-0.5	2	80
ND<0.5 U	ND<1 U	-0.5	2	81
ND<0.5 U	ND<1 U	-0.5	2	82
ND<0.5 U	ND<1 U	-0.5	2	83
ND<0.5 U	ND<1 U	-0.5	2	84
ND<0.5 U	ND<1 U	-0.5	2	85
ND<0.5 U	ND<1 U	-0.5	2	86
ND<0.5 U	ND<1 U	-0.5	2	87
ND<0.5 U	ND<1 U	-0.5	2	88
ND<0.5 U	ND<1 U	-0.5	2	89
ND<0.5 U	ND<1 U	-0.5	2	90
ND<0.5 U	ND<1 U	-0.5	2	91
ND<0.5 U	ND<1 U	-0.5	2	92
ND<0.5 U	ND<1 U	-0.5	2	93
ND<0.5 U	ND<1 U	-0.5	2	94
ND<0.5 U	ND<1 U	-0.5	2	95
ND<0.5 U	ND<1 U	-0.5	2	96
ND<0.5 U	ND<1 U	-0.5	2	97
ND<0.5 U	ND<1 U	-0.5	2	98
ND<0.5 U	ND<1 U	-0.5	2	99
ND<0.5 U	ND<1 U	-0.5	2	100
ND<0.5 U	ND<1 U	-0.5	2	101
ND<0.5 U	ND<1 U	-0.5	2	102
ND<0.5 U	ND<1 U	-0.5	2	103
ND<0.5 U	ND<1 U	-0.5	2	104
ND<0.5 U	ND<0.5 U	0	2	104
ND<0.5 U	ND<0.5 U	0	2	104
ND<0.5 U	ND<0.5 U	0	2	104
ND<0.5 U	ND<0.5 U	0	2	104
ND<0.5 U	ND<0.5 U	0	2	104
ND<0.5 U	ND<0.5 U	0	2	104
ND<0.5 U	ND<0.5 U	0	2	104
ND<0.5 U	ND<0.5 U	0	2	104
ND<0.25 U	ND<0.5 U	-0.25	2	105
ND<0.25 U	ND<0.5 U	-0.25	2	106
ND<0.25 U	ND<0.5 U	-0.25	2	107
ND<0.25 U	ND<0.5 U	-0.25	2	108
ND<0.25 U	ND<0.5 U	-0.25	2	109
ND<0.25 U	ND<0.5 U	-0.25	2	110
ND<0.25 U	ND<0.5 U	-0.25	2	111
ND<0.25 U	ND<0.5 U	-0.25	2	112
ND<0.25 U	ND<0.5 U	-0.25	2	113
ND<0.25 U	ND<0.5 U	-0.25	2	114
ND<0.25 U	ND<0.5 U	-0.25	2	115
ND<0.25 U	ND<0.5 U	-0.25	2	116
ND<0.25 U	ND<0.5 U	-0.25	2	117
ND<0.25 U	ND<0.5 U	-0.25	2	118
ND<0.25 U	ND<0.5 U	-0.25	2	119
ND<0.25 U	ND<0.5 U	-0.25	2	120
ND<0.25 U	ND<0.5 U	-0.25	2	121
ND<0.25 U	ND<0.5 U	-0.25	2	122

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ND<0.5 U	ND<0.25 U	0.25	541	293
ND<0.5 U	ND<0.25 U	0.25	542	293
ND<0.5 U	ND<0.25 U	0.25	543	293
ND<0.5 U	ND<0.25 U	0.25	544	293
ND<0.5 U	ND<0.25 U	0.25	545	293
ND<0.5 U	ND<0.25 U	0.25	546	293
ND<0.25 U	ND<0.25 U	0	546	293
ND<0.25 U	ND<0.25 U	0	546	293
ND<0.25 U	ND<0.25 U	0	546	293
ND<0.5 U	ND<0.25 U	0.25	547	293
ND<0.5 U	ND<0.25 U	0.25	548	293
ND<0.5 U	ND<0.25 U	0.25	549	293
ND<0.5 U	ND<0.25 U	0.25	550	293
ND<0.5 U	ND<0.25 U	0.25	551	293
ND<0.5 U	ND<0.25 U	0.25	552	293
ND<0.5 U	ND<0.25 U	0.25	553	293
ND<0.5 U	ND<0.25 U	0.25	554	293
ND<0.5 U	ND<0.25 U	0.25	555	293
ND<0.5 U	ND<0.25 U	0.25	556	293
ND<0.5 U	ND<0.25 U	0.25	557	293
ND<0.5 U	ND<0.25 U	0.25	558	293
ND<0.5 U	ND<0.25 U	0.25	559	293
ND<0.5 U	ND<0.25 U	0.25	560	293
ND<0.5 U	ND<0.25 U	0.25	561	293
ND<0.5 U	ND<0.25 U	0.25	562	293
ND<0.5 U	ND<0.25 U	0.25	563	293
ND<0.5 U	ND<0.25 U	0.25	564	293
ND<0.5 U	ND<0.25 U	0.25	565	293
ND<0.5 U	ND<0.25 U	0.25	566	293
ND<0.5 U	ND<0.25 U	0.25	567	293
ND<0.5 U	ND<0.25 U	0.25	568	293
ND<0.5 U	ND<0.25 U	0.25	569	293
ND<0.5 U	ND<0.25 U	0.25	570	293
ND<0.5 U	ND<0.25 U	0.25	571	293
ND<0.5 U	ND<0.25 U	0.25	572	293
ND<0.5 U	ND<0.25 U	0.25	573	293
ND<0.5 U	ND<0.25 U	0.25	574	293
ND<0.5 U	ND<0.25 U	0.25	575	293
ND<0.5 U	ND<0.25 U	0.25	576	293
ND<0.5 U	ND<0.25 U	0.25	577	293
ND<0.5 U	ND<0.25 U	0.25	578	293
ND<0.25 U	ND<0.25 U	0	578	293
ND<0.25 U	ND<0.25 U	0	578	293
ND<0.5 U	ND<0.25 U	0.25	579	293
ND<0.5 U	ND<0.25 U	0.25	580	293
ND<0.5 U	ND<0.25 U	0.25	581	293
ND<0.5 U	ND<0.25 U	0.25	582	293
ND<0.5 U	ND<0.25 U	0.25	583	293
ND<0.5 U	ND<0.25 U	0.25	584	293
ND<0.5 U	ND<0.25 U	0.25	585	293
ND<0.5 U	ND<0.25 U	0.25	586	293
ND<0.5 U	ND<0.25 U	0.25	587	293
ND<0.5 U	ND<0.25 U	0.25	588	293
ND<0.5 U	ND<0.25 U	0.25	589	293
ND<0.5 U	ND<0.25 U	0.25	590	293

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$$S \text{ Statistic} = 674 - 293 = 381$$

Tied Group	Value	Members
1	0.5	43
2	0.25	21

Time Period	Observations
11/24/2009	1
1/27/2010	1
3/2/2010	1
3/4/2010	1

4/9/2010	1
4/30/2010	1
5/6/2010	1
6/7/2010	1
7/26/2010	1
8/16/2010	1
9/17/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1
1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1
12/6/2011	1
1/13/2012	1
2/21/2012	1
3/20/2012	1
4/27/2012	1
5/24/2012	1
6/15/2012	1
7/26/2012	1
8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1
1/29/2013	1
4/17/2013	1
7/29/2013	1
10/30/2013	1
1/31/2014	1
4/18/2014	1
7/17/2014	1
10/23/2014	1
1/27/2015	1
4/13/2015	1
7/21/2015	1
10/20/2015	1
1/27/2016	1
4/26/2016	1
7/26/2016	1
10/31/2016	1
1/30/2017	1
4/27/2017	1
7/24/2017	1
10/27/2017	1
1/29/2018	1
4/12/2018	1
7/24/2018	1

10/29/2018	1
1/30/2019	1
4/29/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 184086
B = 0
C = 82026
D = 0
E = 2226
F = 0
a = 561600
b = 2.35872e+006
c = 8320
Group Variance = 20973
Z-Score = 2.62394
Comparison Level at $1.0 - (0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)
|2.62394| > 2.32634 indicating a trend

Mann-Kendall Trend Analysis

Parameter: Ethylbenzene

Location: MW-6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
ND<0.5 U	ND<0.5 U	0	0	0
ND<1 U	ND<0.5 U	0.5	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.5 U	ND<0.5 U	0	1	0
ND<0.25 U	ND<0.5 U	-0.25	1	1
ND<0.25 U	ND<0.5 U	-0.25	1	2
ND<0.25 U	ND<0.5 U	-0.25	1	3
ND<0.25 U	ND<0.5 U	-0.25	1	4
ND<0.25 U	ND<0.5 U	-0.25	1	5
ND<0.25 U	ND<0.5 U	-0.25	1	6
ND<0.25 U	ND<0.5 U	-0.25	1	7
ND<0.25 U	ND<0.5 U	-0.25	1	8
ND<0.25 U	ND<0.5 U	-0.25	1	9
ND<0.25 U	ND<0.5 U	-0.25	1	10
ND<0.25 U	ND<0.5 U	-0.25	1	11
ND<0.25 U	ND<0.5 U	-0.25	1	12
ND<0.25 U	ND<0.5 U	-0.25	1	13
ND<0.25 U	ND<0.5 U	-0.25	1	14
ND<0.25 U	ND<0.5 U	-0.25	1	15
ND<0.25 U	ND<0.5 U	-0.25	1	16
ND<0.25 U	ND<0.5 U	-0.25	1	17
ND<0.25 U	ND<0.5 U	-0.25	1	18
ND<0.25 U	ND<0.5 U	-0.25	1	19
ND<0.25 U	ND<0.5 U	-0.25	1	20
ND<0.25 U	ND<0.5 U	-0.25	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21
ND<0.5 U	ND<0.5 U	0	1	21

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ND<0.5 U	ND<1 U	-0.5	2	43
ND<0.5 U	ND<1 U	-0.5	2	44
ND<0.5 U	ND<1 U	-0.5	2	45
ND<0.5 U	ND<1 U	-0.5	2	46
ND<0.5 U	ND<1 U	-0.5	2	47
ND<0.5 U	ND<1 U	-0.5	2	48
ND<0.5 U	ND<1 U	-0.5	2	49
ND<0.5 U	ND<1 U	-0.5	2	50
ND<0.5 U	ND<1 U	-0.5	2	51
ND<0.25 U	ND<1 U	-0.75	2	52
ND<0.25 U	ND<1 U	-0.75	2	53
ND<0.25 U	ND<1 U	-0.75	2	54
ND<0.25 U	ND<1 U	-0.75	2	55
ND<0.25 U	ND<1 U	-0.75	2	56
ND<0.25 U	ND<1 U	-0.75	2	57
ND<0.25 U	ND<1 U	-0.75	2	58
ND<0.25 U	ND<1 U	-0.75	2	59
ND<0.25 U	ND<1 U	-0.75	2	60
ND<0.25 U	ND<1 U	-0.75	2	61
ND<0.25 U	ND<1 U	-0.75	2	62
ND<0.25 U	ND<1 U	-0.75	2	63
ND<0.25 U	ND<1 U	-0.75	2	64
ND<0.25 U	ND<1 U	-0.75	2	65
ND<0.25 U	ND<1 U	-0.75	2	66
ND<0.25 U	ND<1 U	-0.75	2	67
ND<0.25 U	ND<1 U	-0.75	2	68
ND<0.25 U	ND<1 U	-0.75	2	69
ND<0.25 U	ND<1 U	-0.75	2	70
ND<0.25 U	ND<1 U	-0.75	2	71
ND<0.25 U	ND<1 U	-0.75	2	72
ND<0.5 U	ND<1 U	-0.5	2	73
ND<0.5 U	ND<1 U	-0.5	2	74

ND<0.5 U	ND<1 U	-0.5	2	75
ND<0.5 U	ND<1 U	-0.5	2	76
ND<0.5 U	ND<1 U	-0.5	2	77
ND<0.5 U	ND<1 U	-0.5	2	78
ND<0.5 U	ND<1 U	-0.5	2	79
ND<0.5 U	ND<1 U	-0.5	2	80
ND<0.5 U	ND<1 U	-0.5	2	81
ND<0.5 U	ND<1 U	-0.5	2	82
ND<0.5 U	ND<1 U	-0.5	2	83
ND<0.5 U	ND<1 U	-0.5	2	84
ND<0.5 U	ND<1 U	-0.5	2	85
ND<0.5 U	ND<1 U	-0.5	2	86
ND<0.5 U	ND<1 U	-0.5	2	87
ND<0.5 U	ND<1 U	-0.5	2	88
ND<0.5 U	ND<1 U	-0.5	2	89
ND<0.5 U	ND<1 U	-0.5	2	90
ND<0.5 U	ND<1 U	-0.5	2	91
ND<0.5 U	ND<1 U	-0.5	2	92
ND<0.5 U	ND<1 U	-0.5	2	93
ND<0.5 U	ND<1 U	-0.5	2	94
ND<0.5 U	ND<1 U	-0.5	2	95
ND<0.5 U	ND<1 U	-0.5	2	96
ND<0.5 U	ND<1 U	-0.5	2	97
ND<0.5 U	ND<1 U	-0.5	2	98
ND<0.5 U	ND<1 U	-0.5	2	99
ND<0.5 U	ND<1 U	-0.5	2	100
ND<0.5 U	ND<1 U	-0.5	2	101
ND<0.5 U	ND<1 U	-0.5	2	102
ND<0.5 U	ND<1 U	-0.5	2	103
ND<0.5 U	ND<1 U	-0.5	2	104
ND<0.5 U	ND<0.5 U	0	2	104
ND<0.5 U	ND<0.5 U	0	2	104
ND<0.5 U	ND<0.5 U	0	2	104
ND<0.5 U	ND<0.5 U	0	2	104
ND<0.5 U	ND<0.5 U	0	2	104
ND<0.5 U	ND<0.5 U	0	2	104
ND<0.5 U	ND<0.5 U	0	2	104
ND<0.5 U	ND<0.5 U	0	2	104
ND<0.25 U	ND<0.5 U	-0.25	2	105
ND<0.25 U	ND<0.5 U	-0.25	2	106
ND<0.25 U	ND<0.5 U	-0.25	2	107
ND<0.25 U	ND<0.5 U	-0.25	2	108
ND<0.25 U	ND<0.5 U	-0.25	2	109
ND<0.25 U	ND<0.5 U	-0.25	2	110
ND<0.25 U	ND<0.5 U	-0.25	2	111
ND<0.25 U	ND<0.5 U	-0.25	2	112
ND<0.25 U	ND<0.5 U	-0.25	2	113
ND<0.25 U	ND<0.5 U	-0.25	2	114
ND<0.25 U	ND<0.5 U	-0.25	2	115
ND<0.25 U	ND<0.5 U	-0.25	2	116
ND<0.25 U	ND<0.5 U	-0.25	2	117
ND<0.25 U	ND<0.5 U	-0.25	2	118
ND<0.25 U	ND<0.5 U	-0.25	2	119
ND<0.25 U	ND<0.5 U	-0.25	2	120
ND<0.25 U	ND<0.5 U	-0.25	2	121
ND<0.25 U	ND<0.5 U	-0.25	2	122

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ND<0.5 U	ND<0.25 U	0.25	541	293
ND<0.5 U	ND<0.25 U	0.25	542	293
ND<0.5 U	ND<0.25 U	0.25	543	293
ND<0.5 U	ND<0.25 U	0.25	544	293
ND<0.5 U	ND<0.25 U	0.25	545	293
ND<0.5 U	ND<0.25 U	0.25	546	293
ND<0.25 U	ND<0.25 U	0	546	293
ND<0.25 U	ND<0.25 U	0	546	293
ND<0.25 U	ND<0.25 U	0	546	293
ND<0.5 U	ND<0.25 U	0.25	547	293
ND<0.5 U	ND<0.25 U	0.25	548	293
ND<0.5 U	ND<0.25 U	0.25	549	293
ND<0.5 U	ND<0.25 U	0.25	550	293
ND<0.5 U	ND<0.25 U	0.25	551	293
ND<0.5 U	ND<0.25 U	0.25	552	293
ND<0.5 U	ND<0.25 U	0.25	553	293
ND<0.5 U	ND<0.25 U	0.25	554	293
ND<0.5 U	ND<0.25 U	0.25	555	293
ND<0.5 U	ND<0.25 U	0.25	556	293
ND<0.5 U	ND<0.25 U	0.25	557	293
ND<0.5 U	ND<0.25 U	0.25	558	293
ND<0.5 U	ND<0.25 U	0.25	559	293
ND<0.5 U	ND<0.25 U	0.25	560	293
ND<0.5 U	ND<0.25 U	0.25	561	293
ND<0.5 U	ND<0.25 U	0.25	562	293
ND<0.5 U	ND<0.25 U	0.25	563	293
ND<0.5 U	ND<0.25 U	0.25	564	293
ND<0.5 U	ND<0.25 U	0.25	565	293
ND<0.5 U	ND<0.25 U	0.25	566	293
ND<0.5 U	ND<0.25 U	0.25	567	293
ND<0.5 U	ND<0.25 U	0.25	568	293
ND<0.5 U	ND<0.25 U	0.25	569	293
ND<0.5 U	ND<0.25 U	0.25	570	293
ND<0.5 U	ND<0.25 U	0.25	571	293
ND<0.5 U	ND<0.25 U	0.25	572	293
ND<0.5 U	ND<0.25 U	0.25	573	293
ND<0.5 U	ND<0.25 U	0.25	574	293
ND<0.5 U	ND<0.25 U	0.25	575	293
ND<0.5 U	ND<0.25 U	0.25	576	293
ND<0.5 U	ND<0.25 U	0.25	577	293
ND<0.5 U	ND<0.25 U	0.25	578	293
ND<0.25 U	ND<0.25 U	0	578	293
ND<0.25 U	ND<0.25 U	0	578	293
ND<0.5 U	ND<0.25 U	0.25	579	293
ND<0.5 U	ND<0.25 U	0.25	580	293
ND<0.5 U	ND<0.25 U	0.25	581	293
ND<0.5 U	ND<0.25 U	0.25	582	293
ND<0.5 U	ND<0.25 U	0.25	583	293
ND<0.5 U	ND<0.25 U	0.25	584	293
ND<0.5 U	ND<0.25 U	0.25	585	293
ND<0.5 U	ND<0.25 U	0.25	586	293
ND<0.5 U	ND<0.25 U	0.25	587	293
ND<0.5 U	ND<0.25 U	0.25	588	293
ND<0.5 U	ND<0.25 U	0.25	589	293
ND<0.5 U	ND<0.25 U	0.25	590	293

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[illegible]

4/9/2010	1
4/30/2010	1
5/6/2010	1
6/7/2010	1
7/26/2010	1
8/16/2010	1
9/17/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1
1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
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12/6/2011	1
1/13/2012	1
2/21/2012	1
3/20/2012	1
4/27/2012	1
5/24/2012	1
6/15/2012	1
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4/27/2017	1
7/24/2017	1
10/27/2017	1
1/29/2018	1
4/12/2018	1
7/24/2018	1

10/29/2018	1
1/30/2019	1
4/29/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 184086
B = 0
C = 82026
D = 0
E = 2226
F = 0
a = 561600
b = 2.35872e+006
c = 8320
Group Variance = 20973
Z-Score = 2.62394
Comparison Level at $1.0 - (0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)
|2.62394| > 2.32634 indicating a trend

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ND<0.25 U	ND<0.5 U	-0.25	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.5 U	ND<0.5 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.25 U	ND<0.25 U	0	0	35
ND<0.5 U	ND<0.25 U	0.25	1	35
ND<0.5 U	ND<0.25 U	0.25	2	35
ND<0.5 U	ND<0.25 U	0.25	3	35
ND<0.5 U	ND<0.25 U	0.25	4	35
ND<0.5 U	ND<0.25 U	0.25	5	35
ND<0.5 U	ND<0.25 U	0.25	6	35
ND<0.5 U	ND<0.25 U	0.25	7	35
ND<0.5 U	ND<0.25 U	0.25	8	35
ND<0.5 U	ND<0.25 U	0.25	9	35
ND<0.5 U	ND<0.25 U	0.25	10	35
ND<0.5 U	ND<0.25 U	0.25	11	35
ND<0.5 U	ND<0.25 U	0.25	12	35
ND<0.5 U	ND<0.25 U	0.25	13	35
ND<0.5 U	ND<0.25 U	0.25	14	35
ND<0.25 U	ND<0.25 U	0	14	35
ND<0.25 U	ND<0.25 U	0	14	35
ND<0.25 U	ND<0.25 U	0	14	35
ND<0.25 U	ND<0.25 U	0	14	35
ND<0.25 U	ND<0.25 U	0	14	35
ND<0.5 U	ND<0.25 U	0.25	15	35
ND<0.5 U	ND<0.25 U	0.25	16	35
ND<0.5 U	ND<0.25 U	0.25	17	35
ND<0.5 U	ND<0.25 U	0.25	18	35
ND<0.5 U	ND<0.25 U	0.25	19	35
ND<0.5 U	ND<0.25 U	0.25	20	35
ND<0.5 U	ND<0.25 U	0.25	21	35
ND<0.5 U	ND<0.25 U	0.25	22	35
ND<0.5 U	ND<0.25 U	0.25	23	35
ND<0.5 U	ND<0.25 U	0.25	24	35
ND<0.5 U	ND<0.25 U	0.25	25	35
ND<0.5 U	ND<0.25 U	0.25	26	35
ND<0.5 U	ND<0.25 U	0.25	27	35
ND<0.5 U	ND<0.25 U	0.25	28	35

ND<0.25 U	ND<0.25 U	0	28	35
ND<0.25 U	ND<0.25 U	0	28	35
ND<0.25 U	ND<0.25 U	0	28	35
ND<0.25 U	ND<0.25 U	0	28	35
ND<0.5 U	ND<0.25 U	0.25	29	35
ND<0.5 U	ND<0.25 U	0.25	30	35
ND<0.5 U	ND<0.25 U	0.25	31	35
ND<0.5 U	ND<0.25 U	0.25	32	35
ND<0.5 U	ND<0.25 U	0.25	33	35
ND<0.5 U	ND<0.25 U	0.25	34	35
ND<0.5 U	ND<0.25 U	0.25	35	35
ND<0.5 U	ND<0.25 U	0.25	36	35
ND<0.5 U	ND<0.25 U	0.25	37	35
ND<0.5 U	ND<0.25 U	0.25	38	35
ND<0.5 U	ND<0.25 U	0.25	39	35
ND<0.5 U	ND<0.25 U	0.25	40	35
ND<0.5 U	ND<0.25 U	0.25	41	35
ND<0.5 U	ND<0.25 U	0.25	42	35
ND<0.25 U	ND<0.25 U	0	42	35
ND<0.25 U	ND<0.25 U	0	42	35
ND<0.25 U	ND<0.25 U	0	42	35
ND<0.5 U	ND<0.25 U	0.25	43	35
ND<0.5 U	ND<0.25 U	0.25	44	35
ND<0.5 U	ND<0.25 U	0.25	45	35
ND<0.5 U	ND<0.25 U	0.25	46	35
ND<0.5 U	ND<0.25 U	0.25	47	35
ND<0.5 U	ND<0.25 U	0.25	48	35
ND<0.5 U	ND<0.25 U	0.25	49	35
ND<0.5 U	ND<0.25 U	0.25	50	35
ND<0.5 U	ND<0.25 U	0.25	51	35
ND<0.5 U	ND<0.25 U	0.25	52	35
ND<0.5 U	ND<0.25 U	0.25	53	35
ND<0.5 U	ND<0.25 U	0.25	54	35
ND<0.5 U	ND<0.25 U	0.25	55	35
ND<0.5 U	ND<0.25 U	0.25	56	35
ND<0.25 U	ND<0.25 U	0	56	35
ND<0.25 U	ND<0.25 U	0	56	35
ND<0.5 U	ND<0.25 U	0.25	57	35
ND<0.5 U	ND<0.25 U	0.25	58	35
ND<0.5 U	ND<0.25 U	0.25	59	35
ND<0.5 U	ND<0.25 U	0.25	60	35
ND<0.5 U	ND<0.25 U	0.25	61	35
ND<0.5 U	ND<0.25 U	0.25	62	35
ND<0.5 U	ND<0.25 U	0.25	63	35
ND<0.5 U	ND<0.25 U	0.25	64	35
ND<0.5 U	ND<0.25 U	0.25	65	35
ND<0.5 U	ND<0.25 U	0.25	66	35
ND<0.5 U	ND<0.25 U	0.25	67	35
ND<0.5 U	ND<0.25 U	0.25	68	35
ND<0.5 U	ND<0.25 U	0.25	69	35
ND<0.5 U	ND<0.25 U	0.25	70	35
ND<0.25 U	ND<0.25 U	0	70	35
ND<0.5 U	ND<0.25 U	0.25	71	35
ND<0.5 U	ND<0.25 U	0.25	72	35

ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35

ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35
ND<0.5 U	ND<0.5 U	0	98	35

S Statistic = 98 - 35 = 63

Tied Group	Value	Members
1	0.5	19
2	0.25	7

Time Period	Observations
11/25/2009	1
3/4/2010	1
4/30/2010	1
7/26/2010	1
10/13/2010	1
1/14/2011	1
4/21/2011	1
7/21/2011	1
10/31/2011	1
1/13/2012	1
4/27/2012	1
7/26/2012	1
10/18/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 15504

B = 0

C = 6024

D = 0
E = 384
F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 1197
Z-Score = 1.79203
Comparison Level at $1.0 - (0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)
 $|1.79203| \leq 2.32634$ indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Total Xylenes

Location: MW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
ND<1.5 U	ND<0.5 U	1	1	0
ND<1.5 U	ND<0.5 U	1	2	0
ND<1.5 U	ND<0.5 U	1	3	0
ND<1.5 U	ND<0.5 U	1	4	0
ND<0.75 U	ND<0.5 U	0.25	5	0
ND<0.75 U	ND<0.5 U	0.25	6	0
ND<0.75 U	ND<0.5 U	0.25	7	0
ND<0.75 U	ND<0.5 U	0.25	8	0
ND<0.75 U	ND<0.5 U	0.25	9	0
ND<0.75 U	ND<0.5 U	0.25	10	0
ND<0.75 U	ND<0.5 U	0.25	11	0
ND<0.5 U	ND<0.5 U	0	11	0
ND<0.5 U	ND<0.5 U	0	11	0
ND<0.5 U	ND<0.5 U	0	11	0
ND<0.5 U	ND<0.5 U	0	11	0
ND<0.5 U	ND<0.5 U	0	11	0
ND<0.5 U	ND<0.5 U	0	11	0
ND<0.5 U	ND<0.5 U	0	11	0
ND<0.5 U	ND<0.5 U	0	11	0
ND<0.5 U	ND<0.5 U	0	11	0
ND<1 U	ND<0.5 U	0.5	12	0
ND<1 U	ND<0.5 U	0.5	13	0
ND<1 U	ND<0.5 U	0.5	14	0
ND<1 U	ND<0.5 U	0.5	15	0
ND<1 U	ND<0.5 U	0.5	16	0
ND<1.5 U	ND<1.5 U	0	16	0
ND<1.5 U	ND<1.5 U	0	16	0
ND<1.5 U	ND<1.5 U	0	16	0
ND<0.75 U	ND<1.5 U	-0.75	16	1
ND<0.75 U	ND<1.5 U	-0.75	16	2
ND<0.75 U	ND<1.5 U	-0.75	16	3
ND<0.75 U	ND<1.5 U	-0.75	16	4
ND<0.75 U	ND<1.5 U	-0.75	16	5
ND<0.75 U	ND<1.5 U	-0.75	16	6
ND<0.75 U	ND<1.5 U	-0.75	16	7
ND<0.5 U	ND<1.5 U	-1	16	8
ND<0.5 U	ND<1.5 U	-1	16	9
ND<0.5 U	ND<1.5 U	-1	16	10
ND<0.5 U	ND<1.5 U	-1	16	11
ND<0.5 U	ND<1.5 U	-1	16	12
ND<0.5 U	ND<1.5 U	-1	16	13
ND<0.5 U	ND<1.5 U	-1	16	14
ND<0.5 U	ND<1.5 U	-1	16	15
ND<0.5 U	ND<1.5 U	-1	16	16
ND<0.5 U	ND<1.5 U	-1	16	17

ND<1 U	ND<1.5 U	-0.5	16	18
ND<1 U	ND<1.5 U	-0.5	16	19
ND<1 U	ND<1.5 U	-0.5	16	20
ND<1 U	ND<1.5 U	-0.5	16	21
ND<1 U	ND<1.5 U	-0.5	16	22
ND<1.5 U	ND<1.5 U	0	16	22
ND<1.5 U	ND<1.5 U	0	16	22
ND<0.75 U	ND<1.5 U	-0.75	16	23
ND<0.75 U	ND<1.5 U	-0.75	16	24
ND<0.75 U	ND<1.5 U	-0.75	16	25
ND<0.75 U	ND<1.5 U	-0.75	16	26
ND<0.75 U	ND<1.5 U	-0.75	16	27
ND<0.75 U	ND<1.5 U	-0.75	16	28
ND<0.75 U	ND<1.5 U	-0.75	16	29
ND<0.5 U	ND<1.5 U	-1	16	30
ND<0.5 U	ND<1.5 U	-1	16	31
ND<0.5 U	ND<1.5 U	-1	16	32
ND<0.5 U	ND<1.5 U	-1	16	33
ND<0.5 U	ND<1.5 U	-1	16	34
ND<0.5 U	ND<1.5 U	-1	16	35
ND<0.5 U	ND<1.5 U	-1	16	36
ND<0.5 U	ND<1.5 U	-1	16	37
ND<0.5 U	ND<1.5 U	-1	16	38
ND<0.5 U	ND<1.5 U	-1	16	39
ND<1 U	ND<1.5 U	-0.5	16	40
ND<1 U	ND<1.5 U	-0.5	16	41
ND<1 U	ND<1.5 U	-0.5	16	42
ND<1 U	ND<1.5 U	-0.5	16	43
ND<1 U	ND<1.5 U	-0.5	16	44
ND<1.5 U	ND<1.5 U	0	16	44
ND<0.75 U	ND<1.5 U	-0.75	16	45
ND<0.75 U	ND<1.5 U	-0.75	16	46
ND<0.75 U	ND<1.5 U	-0.75	16	47
ND<0.75 U	ND<1.5 U	-0.75	16	48
ND<0.75 U	ND<1.5 U	-0.75	16	49
ND<0.75 U	ND<1.5 U	-0.75	16	50
ND<0.75 U	ND<1.5 U	-0.75	16	51
ND<0.5 U	ND<1.5 U	-1	16	52
ND<0.5 U	ND<1.5 U	-1	16	53
ND<0.5 U	ND<1.5 U	-1	16	54
ND<0.5 U	ND<1.5 U	-1	16	55
ND<0.5 U	ND<1.5 U	-1	16	56
ND<0.5 U	ND<1.5 U	-1	16	57
ND<0.5 U	ND<1.5 U	-1	16	58
ND<0.5 U	ND<1.5 U	-1	16	59
ND<0.5 U	ND<1.5 U	-1	16	60
ND<0.5 U	ND<1.5 U	-1	16	61
ND<1 U	ND<1.5 U	-0.5	16	62
ND<1 U	ND<1.5 U	-0.5	16	63
ND<1 U	ND<1.5 U	-0.5	16	64
ND<1 U	ND<1.5 U	-0.5	16	65
ND<1 U	ND<1.5 U	-0.5	16	66
ND<0.75 U	ND<1.5 U	-0.75	16	67
ND<0.75 U	ND<1.5 U	-0.75	16	68

ND<0.75 U	ND<1.5 U	-0.75	16	69
ND<0.75 U	ND<1.5 U	-0.75	16	70
ND<0.75 U	ND<1.5 U	-0.75	16	71
ND<0.75 U	ND<1.5 U	-0.75	16	72
ND<0.75 U	ND<1.5 U	-0.75	16	73
ND<0.5 U	ND<1.5 U	-1	16	74
ND<0.5 U	ND<1.5 U	-1	16	75
ND<0.5 U	ND<1.5 U	-1	16	76
ND<0.5 U	ND<1.5 U	-1	16	77
ND<0.5 U	ND<1.5 U	-1	16	78
ND<0.5 U	ND<1.5 U	-1	16	79
ND<0.5 U	ND<1.5 U	-1	16	80
ND<0.5 U	ND<1.5 U	-1	16	81
ND<0.5 U	ND<1.5 U	-1	16	82
ND<0.5 U	ND<1.5 U	-1	16	83
ND<1 U	ND<1.5 U	-0.5	16	84
ND<1 U	ND<1.5 U	-0.5	16	85
ND<1 U	ND<1.5 U	-0.5	16	86
ND<1 U	ND<1.5 U	-0.5	16	87
ND<1 U	ND<1.5 U	-0.5	16	88
ND<0.75 U	ND<0.75 U	0	16	88
ND<0.75 U	ND<0.75 U	0	16	88
ND<0.75 U	ND<0.75 U	0	16	88
ND<0.75 U	ND<0.75 U	0	16	88
ND<0.75 U	ND<0.75 U	0	16	88
ND<0.75 U	ND<0.75 U	0	16	88
ND<0.5 U	ND<0.75 U	-0.25	16	89
ND<0.5 U	ND<0.75 U	-0.25	16	90
ND<0.5 U	ND<0.75 U	-0.25	16	91
ND<0.5 U	ND<0.75 U	-0.25	16	92
ND<0.5 U	ND<0.75 U	-0.25	16	93
ND<0.5 U	ND<0.75 U	-0.25	16	94
ND<0.5 U	ND<0.75 U	-0.25	16	95
ND<0.5 U	ND<0.75 U	-0.25	16	96
ND<0.5 U	ND<0.75 U	-0.25	16	97
ND<0.5 U	ND<0.75 U	-0.25	16	98
ND<1 U	ND<0.75 U	0.25	17	98
ND<1 U	ND<0.75 U	0.25	18	98
ND<1 U	ND<0.75 U	0.25	19	98
ND<1 U	ND<0.75 U	0.25	20	98
ND<1 U	ND<0.75 U	0.25	21	98
ND<0.75 U	ND<0.75 U	0	21	98
ND<0.75 U	ND<0.75 U	0	21	98
ND<0.75 U	ND<0.75 U	0	21	98
ND<0.75 U	ND<0.75 U	0	21	98
ND<0.75 U	ND<0.75 U	0	21	98
ND<0.5 U	ND<0.75 U	-0.25	21	99
ND<0.5 U	ND<0.75 U	-0.25	21	100
ND<0.5 U	ND<0.75 U	-0.25	21	101
ND<0.5 U	ND<0.75 U	-0.25	21	102
ND<0.5 U	ND<0.75 U	-0.25	21	103
ND<0.5 U	ND<0.75 U	-0.25	21	104
ND<0.5 U	ND<0.75 U	-0.25	21	105
ND<0.5 U	ND<0.75 U	-0.25	21	106
ND<0.5 U	ND<0.75 U	-0.25	21	107

ND<0.5 U	ND<0.75 U	-0.25	21	108
ND<1 U	ND<0.75 U	0.25	22	108
ND<1 U	ND<0.75 U	0.25	23	108
ND<1 U	ND<0.75 U	0.25	24	108
ND<1 U	ND<0.75 U	0.25	25	108
ND<1 U	ND<0.75 U	0.25	26	108
ND<0.75 U	ND<0.75 U	0	26	108
ND<0.75 U	ND<0.75 U	0	26	108
ND<0.75 U	ND<0.75 U	0	26	108
ND<0.75 U	ND<0.75 U	0	26	108
ND<0.5 U	ND<0.75 U	-0.25	26	109
ND<0.5 U	ND<0.75 U	-0.25	26	110
ND<0.5 U	ND<0.75 U	-0.25	26	111
ND<0.5 U	ND<0.75 U	-0.25	26	112
ND<0.5 U	ND<0.75 U	-0.25	26	113
ND<0.5 U	ND<0.75 U	-0.25	26	114
ND<0.5 U	ND<0.75 U	-0.25	26	115
ND<0.5 U	ND<0.75 U	-0.25	26	116
ND<0.5 U	ND<0.75 U	-0.25	26	117
ND<0.5 U	ND<0.75 U	-0.25	26	118
ND<1 U	ND<0.75 U	0.25	27	118
ND<1 U	ND<0.75 U	0.25	28	118
ND<1 U	ND<0.75 U	0.25	29	118
ND<1 U	ND<0.75 U	0.25	30	118
ND<1 U	ND<0.75 U	0.25	31	118
ND<0.75 U	ND<0.75 U	0	31	118
ND<0.75 U	ND<0.75 U	0	31	118
ND<0.75 U	ND<0.75 U	0	31	118
ND<0.5 U	ND<0.75 U	-0.25	31	119
ND<0.5 U	ND<0.75 U	-0.25	31	120
ND<0.5 U	ND<0.75 U	-0.25	31	121
ND<0.5 U	ND<0.75 U	-0.25	31	122
ND<0.5 U	ND<0.75 U	-0.25	31	123
ND<0.5 U	ND<0.75 U	-0.25	31	124
ND<0.5 U	ND<0.75 U	-0.25	31	125
ND<0.5 U	ND<0.75 U	-0.25	31	126
ND<0.5 U	ND<0.75 U	-0.25	31	127
ND<0.5 U	ND<0.75 U	-0.25	31	128
ND<1 U	ND<0.75 U	0.25	32	128
ND<1 U	ND<0.75 U	0.25	33	128
ND<1 U	ND<0.75 U	0.25	34	128
ND<1 U	ND<0.75 U	0.25	35	128
ND<1 U	ND<0.75 U	0.25	36	128
ND<0.75 U	ND<0.75 U	0	36	128
ND<0.75 U	ND<0.75 U	0	36	128
ND<0.5 U	ND<0.75 U	-0.25	36	129
ND<0.5 U	ND<0.75 U	-0.25	36	130
ND<0.5 U	ND<0.75 U	-0.25	36	131
ND<0.5 U	ND<0.75 U	-0.25	36	132
ND<0.5 U	ND<0.75 U	-0.25	36	133
ND<0.5 U	ND<0.75 U	-0.25	36	134
ND<0.5 U	ND<0.75 U	-0.25	36	135
ND<0.5 U	ND<0.75 U	-0.25	36	136
ND<0.5 U	ND<0.75 U	-0.25	36	137

ND<0.5 U	ND<0.75 U	-0.25	36	138
ND<1 U	ND<0.75 U	0.25	37	138
ND<1 U	ND<0.75 U	0.25	38	138
ND<1 U	ND<0.75 U	0.25	39	138
ND<1 U	ND<0.75 U	0.25	40	138
ND<1 U	ND<0.75 U	0.25	41	138
ND<0.75 U	ND<0.75 U	0	41	138
ND<0.5 U	ND<0.75 U	-0.25	41	139
ND<0.5 U	ND<0.75 U	-0.25	41	140
ND<0.5 U	ND<0.75 U	-0.25	41	141
ND<0.5 U	ND<0.75 U	-0.25	41	142
ND<0.5 U	ND<0.75 U	-0.25	41	143
ND<0.5 U	ND<0.75 U	-0.25	41	144
ND<0.5 U	ND<0.75 U	-0.25	41	145
ND<0.5 U	ND<0.75 U	-0.25	41	146
ND<0.5 U	ND<0.75 U	-0.25	41	147
ND<0.5 U	ND<0.75 U	-0.25	41	148
ND<1 U	ND<0.75 U	0.25	42	148
ND<1 U	ND<0.75 U	0.25	43	148
ND<1 U	ND<0.75 U	0.25	44	148
ND<1 U	ND<0.75 U	0.25	45	148
ND<1 U	ND<0.75 U	0.25	46	148
ND<0.5 U	ND<0.75 U	-0.25	46	149
ND<0.5 U	ND<0.75 U	-0.25	46	150
ND<0.5 U	ND<0.75 U	-0.25	46	151
ND<0.5 U	ND<0.75 U	-0.25	46	152
ND<0.5 U	ND<0.75 U	-0.25	46	153
ND<0.5 U	ND<0.75 U	-0.25	46	154
ND<0.5 U	ND<0.75 U	-0.25	46	155
ND<0.5 U	ND<0.75 U	-0.25	46	156
ND<0.5 U	ND<0.75 U	-0.25	46	157
ND<0.5 U	ND<0.75 U	-0.25	46	158
ND<1 U	ND<0.75 U	0.25	47	158
ND<1 U	ND<0.75 U	0.25	48	158
ND<1 U	ND<0.75 U	0.25	49	158
ND<1 U	ND<0.75 U	0.25	50	158
ND<1 U	ND<0.75 U	0.25	51	158
ND<0.5 U	ND<0.5 U	0	51	158
ND<0.5 U	ND<0.5 U	0	51	158
ND<0.5 U	ND<0.5 U	0	51	158
ND<0.5 U	ND<0.5 U	0	51	158
ND<0.5 U	ND<0.5 U	0	51	158
ND<0.5 U	ND<0.5 U	0	51	158
ND<0.5 U	ND<0.5 U	0	51	158
ND<0.5 U	ND<0.5 U	0	51	158
ND<0.5 U	ND<0.5 U	0	51	158
ND<1 U	ND<0.5 U	0.5	52	158
ND<1 U	ND<0.5 U	0.5	53	158
ND<1 U	ND<0.5 U	0.5	54	158
ND<1 U	ND<0.5 U	0.5	55	158
ND<1 U	ND<0.5 U	0.5	56	158
ND<0.5 U	ND<0.5 U	0	56	158
ND<0.5 U	ND<0.5 U	0	56	158

ND<0.5 U	ND<0.5 U	0	56	158
ND<0.5 U	ND<0.5 U	0	56	158
ND<0.5 U	ND<0.5 U	0	56	158
ND<0.5 U	ND<0.5 U	0	56	158
ND<0.5 U	ND<0.5 U	0	56	158
ND<0.5 U	ND<0.5 U	0	56	158
ND<1 U	ND<0.5 U	0.5	57	158
ND<1 U	ND<0.5 U	0.5	58	158
ND<1 U	ND<0.5 U	0.5	59	158
ND<1 U	ND<0.5 U	0.5	60	158
ND<1 U	ND<0.5 U	0.5	61	158
ND<0.5 U	ND<0.5 U	0	61	158
ND<0.5 U	ND<0.5 U	0	61	158
ND<0.5 U	ND<0.5 U	0	61	158
ND<0.5 U	ND<0.5 U	0	61	158
ND<0.5 U	ND<0.5 U	0	61	158
ND<0.5 U	ND<0.5 U	0	61	158
ND<0.5 U	ND<0.5 U	0	61	158
ND<1 U	ND<0.5 U	0.5	62	158
ND<1 U	ND<0.5 U	0.5	63	158
ND<1 U	ND<0.5 U	0.5	64	158
ND<1 U	ND<0.5 U	0.5	65	158
ND<1 U	ND<0.5 U	0.5	66	158
ND<0.5 U	ND<0.5 U	0	66	158
ND<0.5 U	ND<0.5 U	0	66	158
ND<0.5 U	ND<0.5 U	0	66	158
ND<0.5 U	ND<0.5 U	0	66	158
ND<0.5 U	ND<0.5 U	0	66	158
ND<0.5 U	ND<0.5 U	0	66	158
ND<1 U	ND<0.5 U	0.5	67	158
ND<1 U	ND<0.5 U	0.5	68	158
ND<1 U	ND<0.5 U	0.5	69	158
ND<1 U	ND<0.5 U	0.5	70	158
ND<1 U	ND<0.5 U	0.5	71	158
ND<0.5 U	ND<0.5 U	0	71	158
ND<0.5 U	ND<0.5 U	0	71	158
ND<0.5 U	ND<0.5 U	0	71	158
ND<0.5 U	ND<0.5 U	0	71	158
ND<0.5 U	ND<0.5 U	0	71	158
ND<1 U	ND<0.5 U	0.5	72	158
ND<1 U	ND<0.5 U	0.5	73	158
ND<1 U	ND<0.5 U	0.5	74	158
ND<1 U	ND<0.5 U	0.5	75	158
ND<1 U	ND<0.5 U	0.5	76	158
ND<0.5 U	ND<0.5 U	0	76	158
ND<0.5 U	ND<0.5 U	0	76	158
ND<0.5 U	ND<0.5 U	0	76	158
ND<0.5 U	ND<0.5 U	0	76	158
ND<1 U	ND<0.5 U	0.5	77	158
ND<1 U	ND<0.5 U	0.5	78	158
ND<1 U	ND<0.5 U	0.5	79	158
ND<1 U	ND<0.5 U	0.5	80	158
ND<1 U	ND<0.5 U	0.5	81	158

ND<0.5 U	ND<0.5 U	0	81	158
ND<0.5 U	ND<0.5 U	0	81	158
ND<0.5 U	ND<0.5 U	0	81	158
ND<1 U	ND<0.5 U	0.5	82	158
ND<1 U	ND<0.5 U	0.5	83	158
ND<1 U	ND<0.5 U	0.5	84	158
ND<1 U	ND<0.5 U	0.5	85	158
ND<1 U	ND<0.5 U	0.5	86	158
ND<0.5 U	ND<0.5 U	0	86	158
ND<0.5 U	ND<0.5 U	0	86	158
ND<1 U	ND<0.5 U	0.5	87	158
ND<1 U	ND<0.5 U	0.5	88	158
ND<1 U	ND<0.5 U	0.5	89	158
ND<1 U	ND<0.5 U	0.5	90	158
ND<1 U	ND<0.5 U	0.5	91	158
ND<0.5 U	ND<0.5 U	0	91	158
ND<1 U	ND<0.5 U	0.5	92	158
ND<1 U	ND<0.5 U	0.5	93	158
ND<1 U	ND<0.5 U	0.5	94	158
ND<1 U	ND<0.5 U	0.5	95	158
ND<1 U	ND<0.5 U	0.5	96	158
ND<1 U	ND<0.5 U	0.5	97	158
ND<1 U	ND<0.5 U	0.5	98	158
ND<1 U	ND<0.5 U	0.5	99	158
ND<1 U	ND<0.5 U	0.5	100	158
ND<1 U	ND<0.5 U	0.5	101	158
ND<1 U	ND<1 U	0	101	158
ND<1 U	ND<1 U	0	101	158
ND<1 U	ND<1 U	0	101	158
ND<1 U	ND<1 U	0	101	158
ND<1 U	ND<1 U	0	101	158
ND<1 U	ND<1 U	0	101	158
ND<1 U	ND<1 U	0	101	158
ND<1 U	ND<1 U	0	101	158
ND<1 U	ND<1 U	0	101	158
ND<1 U	ND<1 U	0	101	158

S Statistic = 101 - 158 = -57

Tied Group	Value	Members
1	0.5	11
2	1.5	4
3	0.75	7
4	1	5

Time Period	Observations
11/24/2009	1
3/4/2010	1

4/30/2010	1
7/26/2010	1
10/13/2010	1
1/14/2011	1
4/21/2011	1
7/21/2011	1
10/31/2011	1
1/13/2012	1
4/27/2012	1
7/26/2012	1
10/18/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 4224

B = 0

C = 1284

D = 0

E = 184

F = 0

a = 41418

b = 157950

c = 1404

Group Variance = 2066.33

Z-Score = -1.23194

Comparison Level at 1.0 - $(0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)

$|-1.23194| \leq 2.32634$ indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Total Xylenes

Location: MW-2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
ND<1.5 U	ND<0.5 U	1	1	0
ND<1.5 U	ND<0.5 U	1	2	0
ND<1.5 U	ND<0.5 U	1	3	0
ND<1.5 U	ND<0.5 U	1	4	0
ND<0.75 U	ND<0.5 U	0.25	5	0
ND<0.75 U	ND<0.5 U	0.25	6	0
ND<0.75 U	ND<0.5 U	0.25	7	0
ND<0.75 U	ND<0.5 U	0.25	8	0
ND<0.75 U	ND<0.5 U	0.25	9	0
ND<0.75 U	ND<0.5 U	0.25	10	0
ND<0.75 U	ND<0.5 U	0.25	11	0
ND<0.5 U	ND<0.5 U	0	11	0
ND<0.5 U	ND<0.5 U	0	11	0
ND<0.5 U	ND<0.5 U	0	11	0
ND<0.5 U	ND<0.5 U	0	11	0
ND<0.5 U	ND<0.5 U	0	11	0
ND<0.5 U	ND<0.5 U	0	11	0
ND<0.5 U	ND<0.5 U	0	11	0
ND<0.5 U	ND<0.5 U	0	11	0
ND<0.5 U	ND<0.5 U	0	11	0
ND<1 U	ND<0.5 U	0.5	12	0
ND<1 U	ND<0.5 U	0.5	13	0
ND<1 U	ND<0.5 U	0.5	14	0
ND<1 U	ND<0.5 U	0.5	15	0
ND<1 U	ND<0.5 U	0.5	16	0
ND<1.5 U	ND<1.5 U	0	16	0
ND<1.5 U	ND<1.5 U	0	16	0
ND<1.5 U	ND<1.5 U	0	16	0
ND<0.75 U	ND<1.5 U	-0.75	16	1
ND<0.75 U	ND<1.5 U	-0.75	16	2
ND<0.75 U	ND<1.5 U	-0.75	16	3
ND<0.75 U	ND<1.5 U	-0.75	16	4
ND<0.75 U	ND<1.5 U	-0.75	16	5
ND<0.75 U	ND<1.5 U	-0.75	16	6
ND<0.75 U	ND<1.5 U	-0.75	16	7
ND<0.5 U	ND<1.5 U	-1	16	8
ND<0.5 U	ND<1.5 U	-1	16	9
ND<0.5 U	ND<1.5 U	-1	16	10
ND<0.5 U	ND<1.5 U	-1	16	11
ND<0.5 U	ND<1.5 U	-1	16	12
ND<0.5 U	ND<1.5 U	-1	16	13
ND<0.5 U	ND<1.5 U	-1	16	14
ND<0.5 U	ND<1.5 U	-1	16	15
ND<0.5 U	ND<1.5 U	-1	16	16
ND<0.5 U	ND<1.5 U	-1	16	17

ND<1 U	ND<1.5 U	-0.5	16	18
ND<1 U	ND<1.5 U	-0.5	16	19
ND<1 U	ND<1.5 U	-0.5	16	20
ND<1 U	ND<1.5 U	-0.5	16	21
ND<1 U	ND<1.5 U	-0.5	16	22
ND<1.5 U	ND<1.5 U	0	16	22
ND<1.5 U	ND<1.5 U	0	16	22
ND<0.75 U	ND<1.5 U	-0.75	16	23
ND<0.75 U	ND<1.5 U	-0.75	16	24
ND<0.75 U	ND<1.5 U	-0.75	16	25
ND<0.75 U	ND<1.5 U	-0.75	16	26
ND<0.75 U	ND<1.5 U	-0.75	16	27
ND<0.75 U	ND<1.5 U	-0.75	16	28
ND<0.75 U	ND<1.5 U	-0.75	16	29
ND<0.5 U	ND<1.5 U	-1	16	30
ND<0.5 U	ND<1.5 U	-1	16	31
ND<0.5 U	ND<1.5 U	-1	16	32
ND<0.5 U	ND<1.5 U	-1	16	33
ND<0.5 U	ND<1.5 U	-1	16	34
ND<0.5 U	ND<1.5 U	-1	16	35
ND<0.5 U	ND<1.5 U	-1	16	36
ND<0.5 U	ND<1.5 U	-1	16	37
ND<0.5 U	ND<1.5 U	-1	16	38
ND<0.5 U	ND<1.5 U	-1	16	39
ND<1 U	ND<1.5 U	-0.5	16	40
ND<1 U	ND<1.5 U	-0.5	16	41
ND<1 U	ND<1.5 U	-0.5	16	42
ND<1 U	ND<1.5 U	-0.5	16	43
ND<1 U	ND<1.5 U	-0.5	16	44
ND<1.5 U	ND<1.5 U	0	16	44
ND<0.75 U	ND<1.5 U	-0.75	16	45
ND<0.75 U	ND<1.5 U	-0.75	16	46
ND<0.75 U	ND<1.5 U	-0.75	16	47
ND<0.75 U	ND<1.5 U	-0.75	16	48
ND<0.75 U	ND<1.5 U	-0.75	16	49
ND<0.75 U	ND<1.5 U	-0.75	16	50
ND<0.75 U	ND<1.5 U	-0.75	16	51
ND<0.5 U	ND<1.5 U	-1	16	52
ND<0.5 U	ND<1.5 U	-1	16	53
ND<0.5 U	ND<1.5 U	-1	16	54
ND<0.5 U	ND<1.5 U	-1	16	55
ND<0.5 U	ND<1.5 U	-1	16	56
ND<0.5 U	ND<1.5 U	-1	16	57
ND<0.5 U	ND<1.5 U	-1	16	58
ND<0.5 U	ND<1.5 U	-1	16	59
ND<0.5 U	ND<1.5 U	-1	16	60
ND<0.5 U	ND<1.5 U	-1	16	61
ND<1 U	ND<1.5 U	-0.5	16	62
ND<1 U	ND<1.5 U	-0.5	16	63
ND<1 U	ND<1.5 U	-0.5	16	64
ND<1 U	ND<1.5 U	-0.5	16	65
ND<1 U	ND<1.5 U	-0.5	16	66
ND<0.75 U	ND<1.5 U	-0.75	16	67
ND<0.75 U	ND<1.5 U	-0.75	16	68

ND<0.75 U	ND<1.5 U	-0.75	16	69
ND<0.75 U	ND<1.5 U	-0.75	16	70
ND<0.75 U	ND<1.5 U	-0.75	16	71
ND<0.75 U	ND<1.5 U	-0.75	16	72
ND<0.75 U	ND<1.5 U	-0.75	16	73
ND<0.5 U	ND<1.5 U	-1	16	74
ND<0.5 U	ND<1.5 U	-1	16	75
ND<0.5 U	ND<1.5 U	-1	16	76
ND<0.5 U	ND<1.5 U	-1	16	77
ND<0.5 U	ND<1.5 U	-1	16	78
ND<0.5 U	ND<1.5 U	-1	16	79
ND<0.5 U	ND<1.5 U	-1	16	80
ND<0.5 U	ND<1.5 U	-1	16	81
ND<0.5 U	ND<1.5 U	-1	16	82
ND<0.5 U	ND<1.5 U	-1	16	83
ND<1 U	ND<1.5 U	-0.5	16	84
ND<1 U	ND<1.5 U	-0.5	16	85
ND<1 U	ND<1.5 U	-0.5	16	86
ND<1 U	ND<1.5 U	-0.5	16	87
ND<1 U	ND<1.5 U	-0.5	16	88
ND<0.75 U	ND<0.75 U	0	16	88
ND<0.75 U	ND<0.75 U	0	16	88
ND<0.75 U	ND<0.75 U	0	16	88
ND<0.75 U	ND<0.75 U	0	16	88
ND<0.75 U	ND<0.75 U	0	16	88
ND<0.75 U	ND<0.75 U	0	16	88
ND<0.5 U	ND<0.75 U	-0.25	16	89
ND<0.5 U	ND<0.75 U	-0.25	16	90
ND<0.5 U	ND<0.75 U	-0.25	16	91
ND<0.5 U	ND<0.75 U	-0.25	16	92
ND<0.5 U	ND<0.75 U	-0.25	16	93
ND<0.5 U	ND<0.75 U	-0.25	16	94
ND<0.5 U	ND<0.75 U	-0.25	16	95
ND<0.5 U	ND<0.75 U	-0.25	16	96
ND<0.5 U	ND<0.75 U	-0.25	16	97
ND<0.5 U	ND<0.75 U	-0.25	16	98
ND<1 U	ND<0.75 U	0.25	17	98
ND<1 U	ND<0.75 U	0.25	18	98
ND<1 U	ND<0.75 U	0.25	19	98
ND<1 U	ND<0.75 U	0.25	20	98
ND<1 U	ND<0.75 U	0.25	21	98
ND<0.75 U	ND<0.75 U	0	21	98
ND<0.75 U	ND<0.75 U	0	21	98
ND<0.75 U	ND<0.75 U	0	21	98
ND<0.75 U	ND<0.75 U	0	21	98
ND<0.75 U	ND<0.75 U	0	21	98
ND<0.5 U	ND<0.75 U	-0.25	21	99
ND<0.5 U	ND<0.75 U	-0.25	21	100
ND<0.5 U	ND<0.75 U	-0.25	21	101
ND<0.5 U	ND<0.75 U	-0.25	21	102
ND<0.5 U	ND<0.75 U	-0.25	21	103
ND<0.5 U	ND<0.75 U	-0.25	21	104
ND<0.5 U	ND<0.75 U	-0.25	21	105
ND<0.5 U	ND<0.75 U	-0.25	21	106
ND<0.5 U	ND<0.75 U	-0.25	21	107

ND<0.5 U	ND<0.75 U	-0.25	21	108
ND<1 U	ND<0.75 U	0.25	22	108
ND<1 U	ND<0.75 U	0.25	23	108
ND<1 U	ND<0.75 U	0.25	24	108
ND<1 U	ND<0.75 U	0.25	25	108
ND<1 U	ND<0.75 U	0.25	26	108
ND<0.75 U	ND<0.75 U	0	26	108
ND<0.75 U	ND<0.75 U	0	26	108
ND<0.75 U	ND<0.75 U	0	26	108
ND<0.75 U	ND<0.75 U	0	26	108
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ND<0.5 U	ND<0.75 U	-0.25	26	110
ND<0.5 U	ND<0.75 U	-0.25	26	111
ND<0.5 U	ND<0.75 U	-0.25	26	112
ND<0.5 U	ND<0.75 U	-0.25	26	113
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ND<0.5 U	ND<0.75 U	-0.25	26	116
ND<0.5 U	ND<0.75 U	-0.25	26	117
ND<0.5 U	ND<0.75 U	-0.25	26	118
ND<1 U	ND<0.75 U	0.25	27	118
ND<1 U	ND<0.75 U	0.25	28	118
ND<1 U	ND<0.75 U	0.25	29	118
ND<1 U	ND<0.75 U	0.25	30	118
ND<1 U	ND<0.75 U	0.25	31	118
ND<0.75 U	ND<0.75 U	0	31	118
ND<0.75 U	ND<0.75 U	0	31	118
ND<0.75 U	ND<0.75 U	0	31	118
ND<0.5 U	ND<0.75 U	-0.25	31	119
ND<0.5 U	ND<0.75 U	-0.25	31	120
ND<0.5 U	ND<0.75 U	-0.25	31	121
ND<0.5 U	ND<0.75 U	-0.25	31	122
ND<0.5 U	ND<0.75 U	-0.25	31	123
ND<0.5 U	ND<0.75 U	-0.25	31	124
ND<0.5 U	ND<0.75 U	-0.25	31	125
ND<0.5 U	ND<0.75 U	-0.25	31	126
ND<0.5 U	ND<0.75 U	-0.25	31	127
ND<0.5 U	ND<0.75 U	-0.25	31	128
ND<1 U	ND<0.75 U	0.25	32	128
ND<1 U	ND<0.75 U	0.25	33	128
ND<1 U	ND<0.75 U	0.25	34	128
ND<1 U	ND<0.75 U	0.25	35	128
ND<1 U	ND<0.75 U	0.25	36	128
ND<0.75 U	ND<0.75 U	0	36	128
ND<0.75 U	ND<0.75 U	0	36	128
ND<0.5 U	ND<0.75 U	-0.25	36	129
ND<0.5 U	ND<0.75 U	-0.25	36	130
ND<0.5 U	ND<0.75 U	-0.25	36	131
ND<0.5 U	ND<0.75 U	-0.25	36	132
ND<0.5 U	ND<0.75 U	-0.25	36	133
ND<0.5 U	ND<0.75 U	-0.25	36	134
ND<0.5 U	ND<0.75 U	-0.25	36	135
ND<0.5 U	ND<0.75 U	-0.25	36	136
ND<0.5 U	ND<0.75 U	-0.25	36	137

ND<0.5 U	ND<0.75 U	-0.25	36	138
ND<1 U	ND<0.75 U	0.25	37	138
ND<1 U	ND<0.75 U	0.25	38	138
ND<1 U	ND<0.75 U	0.25	39	138
ND<1 U	ND<0.75 U	0.25	40	138
ND<1 U	ND<0.75 U	0.25	41	138
ND<0.75 U	ND<0.75 U	0	41	138
ND<0.5 U	ND<0.75 U	-0.25	41	139
ND<0.5 U	ND<0.75 U	-0.25	41	140
ND<0.5 U	ND<0.75 U	-0.25	41	141
ND<0.5 U	ND<0.75 U	-0.25	41	142
ND<0.5 U	ND<0.75 U	-0.25	41	143
ND<0.5 U	ND<0.75 U	-0.25	41	144
ND<0.5 U	ND<0.75 U	-0.25	41	145
ND<0.5 U	ND<0.75 U	-0.25	41	146
ND<0.5 U	ND<0.75 U	-0.25	41	147
ND<0.5 U	ND<0.75 U	-0.25	41	148
ND<1 U	ND<0.75 U	0.25	42	148
ND<1 U	ND<0.75 U	0.25	43	148
ND<1 U	ND<0.75 U	0.25	44	148
ND<1 U	ND<0.75 U	0.25	45	148
ND<1 U	ND<0.75 U	0.25	46	148
ND<0.5 U	ND<0.75 U	-0.25	46	149
ND<0.5 U	ND<0.75 U	-0.25	46	150
ND<0.5 U	ND<0.75 U	-0.25	46	151
ND<0.5 U	ND<0.75 U	-0.25	46	152
ND<0.5 U	ND<0.75 U	-0.25	46	153
ND<0.5 U	ND<0.75 U	-0.25	46	154
ND<0.5 U	ND<0.75 U	-0.25	46	155
ND<0.5 U	ND<0.75 U	-0.25	46	156
ND<0.5 U	ND<0.75 U	-0.25	46	157
ND<0.5 U	ND<0.75 U	-0.25	46	158
ND<1 U	ND<0.75 U	0.25	47	158
ND<1 U	ND<0.75 U	0.25	48	158
ND<1 U	ND<0.75 U	0.25	49	158
ND<1 U	ND<0.75 U	0.25	50	158
ND<1 U	ND<0.75 U	0.25	51	158
ND<0.5 U	ND<0.5 U	0	51	158
ND<0.5 U	ND<0.5 U	0	51	158
ND<0.5 U	ND<0.5 U	0	51	158
ND<0.5 U	ND<0.5 U	0	51	158
ND<0.5 U	ND<0.5 U	0	51	158
ND<0.5 U	ND<0.5 U	0	51	158
ND<0.5 U	ND<0.5 U	0	51	158
ND<0.5 U	ND<0.5 U	0	51	158
ND<0.5 U	ND<0.5 U	0	51	158
ND<1 U	ND<0.5 U	0.5	52	158
ND<1 U	ND<0.5 U	0.5	53	158
ND<1 U	ND<0.5 U	0.5	54	158
ND<1 U	ND<0.5 U	0.5	55	158
ND<1 U	ND<0.5 U	0.5	56	158
ND<0.5 U	ND<0.5 U	0	56	158
ND<0.5 U	ND<0.5 U	0	56	158

ND<0.5 U	ND<0.5 U	0	56	158
ND<0.5 U	ND<0.5 U	0	56	158
ND<0.5 U	ND<0.5 U	0	56	158
ND<0.5 U	ND<0.5 U	0	56	158
ND<0.5 U	ND<0.5 U	0	56	158
ND<0.5 U	ND<0.5 U	0	56	158
ND<1 U	ND<0.5 U	0.5	57	158
ND<1 U	ND<0.5 U	0.5	58	158
ND<1 U	ND<0.5 U	0.5	59	158
ND<1 U	ND<0.5 U	0.5	60	158
ND<1 U	ND<0.5 U	0.5	61	158
ND<0.5 U	ND<0.5 U	0	61	158
ND<0.5 U	ND<0.5 U	0	61	158
ND<0.5 U	ND<0.5 U	0	61	158
ND<0.5 U	ND<0.5 U	0	61	158
ND<0.5 U	ND<0.5 U	0	61	158
ND<0.5 U	ND<0.5 U	0	61	158
ND<0.5 U	ND<0.5 U	0	61	158
ND<1 U	ND<0.5 U	0.5	62	158
ND<1 U	ND<0.5 U	0.5	63	158
ND<1 U	ND<0.5 U	0.5	64	158
ND<1 U	ND<0.5 U	0.5	65	158
ND<1 U	ND<0.5 U	0.5	66	158
ND<0.5 U	ND<0.5 U	0	66	158
ND<0.5 U	ND<0.5 U	0	66	158
ND<0.5 U	ND<0.5 U	0	66	158
ND<0.5 U	ND<0.5 U	0	66	158
ND<0.5 U	ND<0.5 U	0	66	158
ND<0.5 U	ND<0.5 U	0	66	158
ND<1 U	ND<0.5 U	0.5	67	158
ND<1 U	ND<0.5 U	0.5	68	158
ND<1 U	ND<0.5 U	0.5	69	158
ND<1 U	ND<0.5 U	0.5	70	158
ND<1 U	ND<0.5 U	0.5	71	158
ND<0.5 U	ND<0.5 U	0	71	158
ND<0.5 U	ND<0.5 U	0	71	158
ND<0.5 U	ND<0.5 U	0	71	158
ND<0.5 U	ND<0.5 U	0	71	158
ND<0.5 U	ND<0.5 U	0	71	158
ND<1 U	ND<0.5 U	0.5	72	158
ND<1 U	ND<0.5 U	0.5	73	158
ND<1 U	ND<0.5 U	0.5	74	158
ND<1 U	ND<0.5 U	0.5	75	158
ND<1 U	ND<0.5 U	0.5	76	158
ND<0.5 U	ND<0.5 U	0	76	158
ND<0.5 U	ND<0.5 U	0	76	158
ND<0.5 U	ND<0.5 U	0	76	158
ND<0.5 U	ND<0.5 U	0	76	158
ND<1 U	ND<0.5 U	0.5	77	158
ND<1 U	ND<0.5 U	0.5	78	158
ND<1 U	ND<0.5 U	0.5	79	158
ND<1 U	ND<0.5 U	0.5	80	158
ND<1 U	ND<0.5 U	0.5	81	158

ND<0.5 U	ND<0.5 U	0	81	158
ND<0.5 U	ND<0.5 U	0	81	158
ND<0.5 U	ND<0.5 U	0	81	158
ND<1 U	ND<0.5 U	0.5	82	158
ND<1 U	ND<0.5 U	0.5	83	158
ND<1 U	ND<0.5 U	0.5	84	158
ND<1 U	ND<0.5 U	0.5	85	158
ND<1 U	ND<0.5 U	0.5	86	158
ND<0.5 U	ND<0.5 U	0	86	158
ND<0.5 U	ND<0.5 U	0	86	158
ND<1 U	ND<0.5 U	0.5	87	158
ND<1 U	ND<0.5 U	0.5	88	158
ND<1 U	ND<0.5 U	0.5	89	158
ND<1 U	ND<0.5 U	0.5	90	158
ND<1 U	ND<0.5 U	0.5	91	158
ND<0.5 U	ND<0.5 U	0	91	158
ND<1 U	ND<0.5 U	0.5	92	158
ND<1 U	ND<0.5 U	0.5	93	158
ND<1 U	ND<0.5 U	0.5	94	158
ND<1 U	ND<0.5 U	0.5	95	158
ND<1 U	ND<0.5 U	0.5	96	158
ND<1 U	ND<0.5 U	0.5	97	158
ND<1 U	ND<0.5 U	0.5	98	158
ND<1 U	ND<0.5 U	0.5	99	158
ND<1 U	ND<0.5 U	0.5	100	158
ND<1 U	ND<0.5 U	0.5	101	158
ND<1 U	ND<1 U	0	101	158
ND<1 U	ND<1 U	0	101	158
ND<1 U	ND<1 U	0	101	158
ND<1 U	ND<1 U	0	101	158
ND<1 U	ND<1 U	0	101	158
ND<1 U	ND<1 U	0	101	158
ND<1 U	ND<1 U	0	101	158
ND<1 U	ND<1 U	0	101	158
ND<1 U	ND<1 U	0	101	158
ND<1 U	ND<1 U	0	101	158

S Statistic = 101 - 158 = -57

Tied Group	Value	Members
1	0.5	11
2	1.5	4
3	0.75	7
4	1	5

Time Period	Observations
11/25/2009	1
3/4/2010	1

4/30/2010	1
7/26/2010	1
10/13/2010	1
1/14/2011	1
4/21/2011	1
7/21/2011	1
10/31/2011	1
1/13/2012	1
4/27/2012	1
7/26/2012	1
10/18/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 4224

B = 0

C = 1284

D = 0

E = 184

F = 0

a = 41418

b = 157950

c = 1404

Group Variance = 2066.33

Z-Score = -1.23194

Comparison Level at 1.0 - $(0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)

$|-1.23194| \leq 2.32634$ indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Total Xylenes

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
ND<0.5 U	ND<0.5 U	0	0	0
ND<2 U	ND<0.5 U	1.5	1	0
ND<1.5 U	ND<0.5 U	1	2	0
ND<0.5 U	ND<0.5 U	0	2	0
ND<1.5 U	ND<0.5 U	1	3	0
ND<0.5 U	ND<0.5 U	0	3	0
ND<0.5 U	ND<0.5 U	0	3	0
ND<1.5 U	ND<0.5 U	1	4	0
ND<0.75 U	ND<0.5 U	0.25	5	0
ND<0.75 U	ND<0.5 U	0.25	6	0
ND<1.5 U	ND<0.5 U	1	7	0
ND<0.75 U	ND<0.5 U	0.25	8	0
ND<0.75 U	ND<0.5 U	0.25	9	0
ND<0.75 U	ND<0.5 U	0.25	10	0
ND<0.75 U	ND<0.5 U	0.25	11	0
ND<0.75 U	ND<0.5 U	0.25	12	0
ND<0.75 U	ND<0.5 U	0.25	13	0
ND<0.75 U	ND<0.5 U	0.25	14	0
ND<0.75 U	ND<0.5 U	0.25	15	0
ND<0.75 U	ND<0.5 U	0.25	16	0
ND<0.75 U	ND<0.5 U	0.25	17	0
ND<0.75 U	ND<0.5 U	0.25	18	0
ND<0.75 U	ND<0.5 U	0.25	19	0
ND<0.75 U	ND<0.5 U	0.25	20	0
ND<0.75 U	ND<0.5 U	0.25	21	0
ND<0.75 U	ND<0.5 U	0.25	22	0
ND<0.75 U	ND<0.5 U	0.25	23	0
ND<0.75 U	ND<0.5 U	0.25	24	0
ND<0.75 U	ND<0.5 U	0.25	25	0
ND<0.75 U	ND<0.5 U	0.25	26	0
ND<0.75 U	ND<0.5 U	0.25	27	0
ND<0.75 U	ND<0.5 U	0.25	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<1 U	ND<0.5 U	0.5	29	0

ND<1 U	ND<0.5 U	0.5	30	0
ND<1 U	ND<0.5 U	0.5	31	0
ND<1 U	ND<0.5 U	0.5	32	0
ND<1 U	ND<0.5 U	0.5	33	0
ND<2 U	ND<0.5 U	1.5	34	0
ND<1.5 U	ND<0.5 U	1	35	0
ND<0.5 U	ND<0.5 U	0	35	0
ND<1.5 U	ND<0.5 U	1	36	0
ND<0.5 U	ND<0.5 U	0	36	0
ND<0.5 U	ND<0.5 U	0	36	0
ND<1.5 U	ND<0.5 U	1	37	0
ND<0.75 U	ND<0.5 U	0.25	38	0
ND<0.75 U	ND<0.5 U	0.25	39	0
ND<1.5 U	ND<0.5 U	1	40	0
ND<0.75 U	ND<0.5 U	0.25	41	0
ND<0.75 U	ND<0.5 U	0.25	42	0
ND<0.75 U	ND<0.5 U	0.25	43	0
ND<0.75 U	ND<0.5 U	0.25	44	0
ND<0.75 U	ND<0.5 U	0.25	45	0
ND<0.75 U	ND<0.5 U	0.25	46	0
ND<0.75 U	ND<0.5 U	0.25	47	0
ND<0.75 U	ND<0.5 U	0.25	48	0
ND<0.75 U	ND<0.5 U	0.25	49	0
ND<0.75 U	ND<0.5 U	0.25	50	0
ND<0.75 U	ND<0.5 U	0.25	51	0
ND<0.75 U	ND<0.5 U	0.25	52	0
ND<0.75 U	ND<0.5 U	0.25	53	0
ND<0.75 U	ND<0.5 U	0.25	54	0
ND<0.75 U	ND<0.5 U	0.25	55	0
ND<0.75 U	ND<0.5 U	0.25	56	0
ND<0.75 U	ND<0.5 U	0.25	57	0
ND<0.75 U	ND<0.5 U	0.25	58	0
ND<0.75 U	ND<0.5 U	0.25	59	0
ND<0.75 U	ND<0.5 U	0.25	60	0
ND<0.75 U	ND<0.5 U	0.25	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<1 U	ND<0.5 U	0.5	62	0
ND<1 U	ND<0.5 U	0.5	63	0
ND<1 U	ND<0.5 U	0.5	64	0
ND<1 U	ND<0.5 U	0.5	65	0
ND<1 U	ND<0.5 U	0.5	66	0
ND<1.5 U	ND<2 U	-0.5	66	1

ND<0.5 U	ND<2 U	-1.5	66	2
ND<1.5 U	ND<2 U	-0.5	66	3
ND<0.5 U	ND<2 U	-1.5	66	4
ND<0.5 U	ND<2 U	-1.5	66	5
ND<1.5 U	ND<2 U	-0.5	66	6
ND<0.75 U	ND<2 U	-1.25	66	7
ND<0.75 U	ND<2 U	-1.25	66	8
ND<1.5 U	ND<2 U	-0.5	66	9
ND<0.75 U	ND<2 U	-1.25	66	10
ND<0.75 U	ND<2 U	-1.25	66	11
ND<0.75 U	ND<2 U	-1.25	66	12
ND<0.75 U	ND<2 U	-1.25	66	13
ND<0.75 U	ND<2 U	-1.25	66	14
ND<0.75 U	ND<2 U	-1.25	66	15
ND<0.75 U	ND<2 U	-1.25	66	16
ND<0.75 U	ND<2 U	-1.25	66	17
ND<0.75 U	ND<2 U	-1.25	66	18
ND<0.75 U	ND<2 U	-1.25	66	19
ND<0.75 U	ND<2 U	-1.25	66	20
ND<0.75 U	ND<2 U	-1.25	66	21
ND<0.75 U	ND<2 U	-1.25	66	22
ND<0.75 U	ND<2 U	-1.25	66	23
ND<0.75 U	ND<2 U	-1.25	66	24
ND<0.75 U	ND<2 U	-1.25	66	25
ND<0.75 U	ND<2 U	-1.25	66	26
ND<0.75 U	ND<2 U	-1.25	66	27
ND<0.75 U	ND<2 U	-1.25	66	28
ND<0.75 U	ND<2 U	-1.25	66	29
ND<0.75 U	ND<2 U	-1.25	66	30
ND<0.5 U	ND<2 U	-1.5	66	31
ND<0.5 U	ND<2 U	-1.5	66	32
ND<0.5 U	ND<2 U	-1.5	66	33
ND<0.5 U	ND<2 U	-1.5	66	34
ND<0.5 U	ND<2 U	-1.5	66	35
ND<0.5 U	ND<2 U	-1.5	66	36
ND<0.5 U	ND<2 U	-1.5	66	37
ND<0.5 U	ND<2 U	-1.5	66	38
ND<0.5 U	ND<2 U	-1.5	66	39
ND<0.5 U	ND<2 U	-1.5	66	40
ND<0.5 U	ND<2 U	-1.5	66	41
ND<0.5 U	ND<2 U	-1.5	66	42
ND<0.5 U	ND<2 U	-1.5	66	43
ND<0.5 U	ND<2 U	-1.5	66	44
ND<1 U	ND<2 U	-1	66	45
ND<1 U	ND<2 U	-1	66	46
ND<1 U	ND<2 U	-1	66	47
ND<1 U	ND<2 U	-1	66	48
ND<1 U	ND<2 U	-1	66	49
ND<0.5 U	ND<1.5 U	-1	66	50
ND<1.5 U	ND<1.5 U	0	66	50
ND<0.5 U	ND<1.5 U	-1	66	51
ND<0.5 U	ND<1.5 U	-1	66	52
ND<1.5 U	ND<1.5 U	0	66	52
ND<0.75 U	ND<1.5 U	-0.75	66	53
ND<0.75 U	ND<1.5 U	-0.75	66	54
ND<1.5 U	ND<1.5 U	0	66	54

ND<0.75 U	ND<1.5 U	-0.75	66	55
ND<0.75 U	ND<1.5 U	-0.75	66	56
ND<0.75 U	ND<1.5 U	-0.75	66	57
ND<0.75 U	ND<1.5 U	-0.75	66	58
ND<0.75 U	ND<1.5 U	-0.75	66	59
ND<0.75 U	ND<1.5 U	-0.75	66	60
ND<0.75 U	ND<1.5 U	-0.75	66	61
ND<0.75 U	ND<1.5 U	-0.75	66	62
ND<0.75 U	ND<1.5 U	-0.75	66	63
ND<0.75 U	ND<1.5 U	-0.75	66	64
ND<0.75 U	ND<1.5 U	-0.75	66	65
ND<0.75 U	ND<1.5 U	-0.75	66	66
ND<0.75 U	ND<1.5 U	-0.75	66	67
ND<0.75 U	ND<1.5 U	-0.75	66	68
ND<0.75 U	ND<1.5 U	-0.75	66	69
ND<0.75 U	ND<1.5 U	-0.75	66	70
ND<0.75 U	ND<1.5 U	-0.75	66	71
ND<0.75 U	ND<1.5 U	-0.75	66	72
ND<0.75 U	ND<1.5 U	-0.75	66	73
ND<0.75 U	ND<1.5 U	-0.75	66	74
ND<0.75 U	ND<1.5 U	-0.75	66	75
ND<0.5 U	ND<1.5 U	-1	66	76
ND<0.5 U	ND<1.5 U	-1	66	77
ND<0.5 U	ND<1.5 U	-1	66	78
ND<0.5 U	ND<1.5 U	-1	66	79
ND<0.5 U	ND<1.5 U	-1	66	80
ND<0.5 U	ND<1.5 U	-1	66	81
ND<0.5 U	ND<1.5 U	-1	66	82
ND<0.5 U	ND<1.5 U	-1	66	83
ND<0.5 U	ND<1.5 U	-1	66	84
ND<0.5 U	ND<1.5 U	-1	66	85
ND<0.5 U	ND<1.5 U	-1	66	86
ND<0.5 U	ND<1.5 U	-1	66	87
ND<0.5 U	ND<1.5 U	-1	66	88
ND<0.5 U	ND<1.5 U	-1	66	89
ND<1 U	ND<1.5 U	-0.5	66	90
ND<1 U	ND<1.5 U	-0.5	66	91
ND<1 U	ND<1.5 U	-0.5	66	92
ND<1 U	ND<1.5 U	-0.5	66	93
ND<1 U	ND<1.5 U	-0.5	66	94
ND<1.5 U	ND<0.5 U	1	67	94
ND<0.5 U	ND<0.5 U	0	67	94
ND<0.5 U	ND<0.5 U	0	67	94
ND<1.5 U	ND<0.5 U	1	68	94
ND<0.75 U	ND<0.5 U	0.25	69	94
ND<0.75 U	ND<0.5 U	0.25	70	94
ND<1.5 U	ND<0.5 U	1	71	94
ND<0.75 U	ND<0.5 U	0.25	72	94
ND<0.75 U	ND<0.5 U	0.25	73	94
ND<0.75 U	ND<0.5 U	0.25	74	94
ND<0.75 U	ND<0.5 U	0.25	75	94
ND<0.75 U	ND<0.5 U	0.25	76	94
ND<0.75 U	ND<0.5 U	0.25	77	94
ND<0.75 U	ND<0.5 U	0.25	78	94
ND<0.75 U	ND<0.5 U	0.25	79	94
ND<0.75 U	ND<0.5 U	0.25	80	94

ND<0.75 U	ND<0.5 U	0.25	81	94
ND<0.75 U	ND<0.5 U	0.25	82	94
ND<0.75 U	ND<0.5 U	0.25	83	94
ND<0.75 U	ND<0.5 U	0.25	84	94
ND<0.75 U	ND<0.5 U	0.25	85	94
ND<0.75 U	ND<0.5 U	0.25	86	94
ND<0.75 U	ND<0.5 U	0.25	87	94
ND<0.75 U	ND<0.5 U	0.25	88	94
ND<0.75 U	ND<0.5 U	0.25	89	94
ND<0.75 U	ND<0.5 U	0.25	90	94
ND<0.75 U	ND<0.5 U	0.25	91	94
ND<0.75 U	ND<0.5 U	0.25	92	94
ND<0.5 U	ND<0.5 U	0	92	94
ND<0.5 U	ND<0.5 U	0	92	94
ND<0.5 U	ND<0.5 U	0	92	94
ND<0.5 U	ND<0.5 U	0	92	94
ND<0.5 U	ND<0.5 U	0	92	94
ND<0.5 U	ND<0.5 U	0	92	94
ND<0.5 U	ND<0.5 U	0	92	94
ND<0.5 U	ND<0.5 U	0	92	94
ND<0.5 U	ND<0.5 U	0	92	94
ND<0.5 U	ND<0.5 U	0	92	94
ND<0.5 U	ND<0.5 U	0	92	94
ND<0.5 U	ND<0.5 U	0	92	94
ND<0.5 U	ND<0.5 U	0	92	94
ND<0.5 U	ND<0.5 U	0	92	94
ND<0.5 U	ND<0.5 U	0	92	94
ND<0.5 U	ND<0.5 U	0	92	94
ND<1 U	ND<0.5 U	0.5	93	94
ND<1 U	ND<0.5 U	0.5	94	94
ND<1 U	ND<0.5 U	0.5	95	94
ND<1 U	ND<0.5 U	0.5	96	94
ND<1 U	ND<0.5 U	0.5	97	94

ND<0.75 U	ND<1.5 U	-0.75	97	118
ND<0.75 U	ND<1.5 U	-0.75	97	119
ND<0.5 U	ND<1.5 U	-1	97	120
ND<0.5 U	ND<1.5 U	-1	97	121
ND<0.5 U	ND<1.5 U	-1	97	122
ND<0.5 U	ND<1.5 U	-1	97	123
ND<0.5 U	ND<1.5 U	-1	97	124
ND<0.5 U	ND<1.5 U	-1	97	125
ND<0.5 U	ND<1.5 U	-1	97	126
ND<0.5 U	ND<1.5 U	-1	97	127
ND<0.5 U	ND<1.5 U	-1	97	128
ND<0.5 U	ND<1.5 U	-1	97	129
ND<0.5 U	ND<1.5 U	-1	97	130
ND<0.5 U	ND<1.5 U	-1	97	131
ND<0.5 U	ND<1.5 U	-1	97	132
ND<0.5 U	ND<1.5 U	-1	97	133
ND<1 U	ND<1.5 U	-0.5	97	134
ND<1 U	ND<1.5 U	-0.5	97	135
ND<1 U	ND<1.5 U	-0.5	97	136
ND<1 U	ND<1.5 U	-0.5	97	137
ND<1 U	ND<1.5 U	-0.5	97	138
ND<0.5 U	ND<0.5 U	0	97	138
ND<1.5 U	ND<0.5 U	1	98	138
ND<0.75 U	ND<0.5 U	0.25	99	138
ND<0.75 U	ND<0.5 U	0.25	100	138
ND<1.5 U	ND<0.5 U	1	101	138
ND<0.75 U	ND<0.5 U	0.25	102	138
ND<0.75 U	ND<0.5 U	0.25	103	138
ND<0.75 U	ND<0.5 U	0.25	104	138
ND<0.75 U	ND<0.5 U	0.25	105	138
ND<0.75 U	ND<0.5 U	0.25	106	138
ND<0.75 U	ND<0.5 U	0.25	107	138
ND<0.75 U	ND<0.5 U	0.25	108	138
ND<0.75 U	ND<0.5 U	0.25	109	138
ND<0.75 U	ND<0.5 U	0.25	110	138
ND<0.75 U	ND<0.5 U	0.25	111	138
ND<0.75 U	ND<0.5 U	0.25	112	138
ND<0.75 U	ND<0.5 U	0.25	113	138
ND<0.75 U	ND<0.5 U	0.25	114	138
ND<0.75 U	ND<0.5 U	0.25	115	138
ND<0.75 U	ND<0.5 U	0.25	116	138
ND<0.75 U	ND<0.5 U	0.25	117	138
ND<0.75 U	ND<0.5 U	0.25	118	138
ND<0.75 U	ND<0.5 U	0.25	119	138
ND<0.75 U	ND<0.5 U	0.25	120	138
ND<0.75 U	ND<0.5 U	0.25	121	138
ND<0.75 U	ND<0.5 U	0.25	122	138
ND<0.5 U	ND<0.5 U	0	122	138
ND<0.5 U	ND<0.5 U	0	122	138
ND<0.5 U	ND<0.5 U	0	122	138
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ND<0.5 U	ND<0.5 U	0	122	138
ND<0.5 U	ND<0.5 U	0	122	138
ND<0.5 U	ND<0.5 U	0	122	138
ND<0.5 U	ND<0.5 U	0	122	138

ND<0.5 U	ND<0.5 U	0	122	138
ND<0.5 U	ND<0.5 U	0	122	138
ND<0.5 U	ND<0.5 U	0	122	138
ND<0.5 U	ND<0.5 U	0	122	138
ND<0.5 U	ND<0.5 U	0	122	138
ND<1 U	ND<0.5 U	0.5	123	138
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ND<1 U	ND<0.5 U	0.5	125	138
ND<1 U	ND<0.5 U	0.5	126	138
ND<1 U	ND<0.5 U	0.5	127	138
ND<1.5 U	ND<0.5 U	1	128	138
ND<0.75 U	ND<0.5 U	0.25	129	138
ND<0.75 U	ND<0.5 U	0.25	130	138
ND<1.5 U	ND<0.5 U	1	131	138
ND<0.75 U	ND<0.5 U	0.25	132	138
ND<0.75 U	ND<0.5 U	0.25	133	138
ND<0.75 U	ND<0.5 U	0.25	134	138
ND<0.75 U	ND<0.5 U	0.25	135	138
ND<0.75 U	ND<0.5 U	0.25	136	138
ND<0.75 U	ND<0.5 U	0.25	137	138
ND<0.75 U	ND<0.5 U	0.25	138	138
ND<0.75 U	ND<0.5 U	0.25	139	138
ND<0.75 U	ND<0.5 U	0.25	140	138
ND<0.75 U	ND<0.5 U	0.25	141	138
ND<0.75 U	ND<0.5 U	0.25	142	138
ND<0.75 U	ND<0.5 U	0.25	143	138
ND<0.75 U	ND<0.5 U	0.25	144	138
ND<0.75 U	ND<0.5 U	0.25	145	138
ND<0.75 U	ND<0.5 U	0.25	146	138
ND<0.75 U	ND<0.5 U	0.25	147	138
ND<0.75 U	ND<0.5 U	0.25	148	138
ND<0.75 U	ND<0.5 U	0.25	149	138
ND<0.75 U	ND<0.5 U	0.25	150	138
ND<0.75 U	ND<0.5 U	0.25	151	138
ND<0.75 U	ND<0.5 U	0.25	152	138
ND<0.5 U	ND<0.5 U	0	152	138
ND<0.5 U	ND<0.5 U	0	152	138
ND<0.5 U	ND<0.5 U	0	152	138
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ND<0.5 U	ND<0.5 U	0	152	138
ND<0.5 U	ND<0.5 U	0	152	138
ND<1 U	ND<0.5 U	0.5	153	138
ND<1 U	ND<0.5 U	0.5	154	138
ND<1 U	ND<0.5 U	0.5	155	138
ND<1 U	ND<0.5 U	0.5	156	138
ND<1 U	ND<0.5 U	0.5	157	138
ND<0.75 U	ND<1.5 U	-0.75	157	139

ND<0.75 U	ND<1.5 U	-0.75	157	140
ND<1.5 U	ND<1.5 U	0	157	140
ND<0.75 U	ND<1.5 U	-0.75	157	141
ND<0.75 U	ND<1.5 U	-0.75	157	142
ND<0.75 U	ND<1.5 U	-0.75	157	143
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ND<0.75 U	ND<1.5 U	-0.75	157	145
ND<0.75 U	ND<1.5 U	-0.75	157	146
ND<0.75 U	ND<1.5 U	-0.75	157	147
ND<0.75 U	ND<1.5 U	-0.75	157	148
ND<0.75 U	ND<1.5 U	-0.75	157	149
ND<0.75 U	ND<1.5 U	-0.75	157	150
ND<0.75 U	ND<1.5 U	-0.75	157	151
ND<0.75 U	ND<1.5 U	-0.75	157	152
ND<0.75 U	ND<1.5 U	-0.75	157	153
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ND<0.75 U	ND<1.5 U	-0.75	157	156
ND<0.75 U	ND<1.5 U	-0.75	157	157
ND<0.75 U	ND<1.5 U	-0.75	157	158
ND<0.75 U	ND<1.5 U	-0.75	157	159
ND<0.75 U	ND<1.5 U	-0.75	157	160
ND<0.75 U	ND<1.5 U	-0.75	157	161
ND<0.5 U	ND<1.5 U	-1	157	162
ND<0.5 U	ND<1.5 U	-1	157	163
ND<0.5 U	ND<1.5 U	-1	157	164
ND<0.5 U	ND<1.5 U	-1	157	165
ND<0.5 U	ND<1.5 U	-1	157	166
ND<0.5 U	ND<1.5 U	-1	157	167
ND<0.5 U	ND<1.5 U	-1	157	168
ND<0.5 U	ND<1.5 U	-1	157	169
ND<0.5 U	ND<1.5 U	-1	157	170
ND<0.5 U	ND<1.5 U	-1	157	171
ND<0.5 U	ND<1.5 U	-1	157	172
ND<0.5 U	ND<1.5 U	-1	157	173
ND<0.5 U	ND<1.5 U	-1	157	174
ND<0.5 U	ND<1.5 U	-1	157	175
ND<1 U	ND<1.5 U	-0.5	157	176
ND<1 U	ND<1.5 U	-0.5	157	177
ND<1 U	ND<1.5 U	-0.5	157	178
ND<1 U	ND<1.5 U	-0.5	157	179
ND<1 U	ND<1.5 U	-0.5	157	180
ND<0.75 U	ND<0.75 U	0	157	180
ND<1.5 U	ND<0.75 U	0.75	158	180
ND<0.75 U	ND<0.75 U	0	158	180
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ND<0.75 U	ND<0.75 U	0	158	180
ND<0.75 U	ND<0.75 U	0	158	180
ND<0.75 U	ND<0.75 U	0	158	180

[illegible]

ND<0.5 U	ND<0.75 U	-0.25	164	201
ND<0.5 U	ND<0.75 U	-0.25	164	202
ND<0.5 U	ND<0.75 U	-0.25	164	203
ND<0.5 U	ND<0.75 U	-0.25	164	204
ND<0.5 U	ND<0.75 U	-0.25	164	205
ND<0.5 U	ND<0.75 U	-0.25	164	206
ND<0.5 U	ND<0.75 U	-0.25	164	207
ND<0.5 U	ND<0.75 U	-0.25	164	208
ND<1 U	ND<0.75 U	0.25	165	208
ND<1 U	ND<0.75 U	0.25	166	208
ND<1 U	ND<0.75 U	0.25	167	208
ND<1 U	ND<0.75 U	0.25	168	208
ND<1 U	ND<0.75 U	0.25	169	208
ND<0.75 U	ND<1.5 U	-0.75	169	209
ND<0.75 U	ND<1.5 U	-0.75	169	210
ND<0.75 U	ND<1.5 U	-0.75	169	211
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ND<0.75 U	ND<1.5 U	-0.75	169	213
ND<0.75 U	ND<1.5 U	-0.75	169	214
ND<0.75 U	ND<1.5 U	-0.75	169	215
ND<0.75 U	ND<1.5 U	-0.75	169	216
ND<0.75 U	ND<1.5 U	-0.75	169	217
ND<0.75 U	ND<1.5 U	-0.75	169	218
ND<0.75 U	ND<1.5 U	-0.75	169	219
ND<0.75 U	ND<1.5 U	-0.75	169	220
ND<0.75 U	ND<1.5 U	-0.75	169	221
ND<0.75 U	ND<1.5 U	-0.75	169	222
ND<0.75 U	ND<1.5 U	-0.75	169	223
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ND<0.5 U	ND<1.5 U	-1	169	231
ND<0.5 U	ND<1.5 U	-1	169	232
ND<0.5 U	ND<1.5 U	-1	169	233
ND<0.5 U	ND<1.5 U	-1	169	234
ND<0.5 U	ND<1.5 U	-1	169	235
ND<0.5 U	ND<1.5 U	-1	169	236
ND<0.5 U	ND<1.5 U	-1	169	237
ND<0.5 U	ND<1.5 U	-1	169	238
ND<0.5 U	ND<1.5 U	-1	169	239
ND<0.5 U	ND<1.5 U	-1	169	240
ND<0.5 U	ND<1.5 U	-1	169	241
ND<0.5 U	ND<1.5 U	-1	169	242
ND<0.5 U	ND<1.5 U	-1	169	243
ND<1 U	ND<1.5 U	-0.5	169	244
ND<1 U	ND<1.5 U	-0.5	169	245
ND<1 U	ND<1.5 U	-0.5	169	246
ND<1 U	ND<1.5 U	-0.5	169	247
ND<1 U	ND<1.5 U	-0.5	169	248
ND<0.75 U	ND<0.75 U	0	169	248
ND<0.75 U	ND<0.75 U	0	169	248

ND<0.5 U	ND<0.75 U	-0.25	174	263
ND<0.5 U	ND<0.75 U	-0.25	174	264
ND<0.5 U	ND<0.75 U	-0.25	174	265
ND<0.5 U	ND<0.75 U	-0.25	174	266
ND<0.5 U	ND<0.75 U	-0.25	174	267
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ND<0.5 U	ND<0.75 U	-0.25	174	274
ND<0.5 U	ND<0.75 U	-0.25	174	275
ND<0.5 U	ND<0.75 U	-0.25	174	276
ND<1 U	ND<0.75 U	0.25	175	276
ND<1 U	ND<0.75 U	0.25	176	276
ND<1 U	ND<0.75 U	0.25	177	276
ND<1 U	ND<0.75 U	0.25	178	276
ND<1 U	ND<0.75 U	0.25	179	276
ND<0.75 U	ND<0.75 U	0	179	276
ND<0.75 U	ND<0.75 U	0	179	276
ND<0.75 U	ND<0.75 U	0	179	276
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ND<0.75 U	ND<0.75 U	0	179	276
ND<0.75 U	ND<0.75 U	0	179	276
ND<0.5 U	ND<0.75 U	-0.25	179	277
ND<0.5 U	ND<0.75 U	-0.25	179	278
ND<0.5 U	ND<0.75 U	-0.25	179	279
ND<0.5 U	ND<0.75 U	-0.25	179	280
ND<0.5 U	ND<0.75 U	-0.25	179	281
ND<0.5 U	ND<0.75 U	-0.25	179	282
ND<0.5 U	ND<0.75 U	-0.25	179	283
ND<0.5 U	ND<0.75 U	-0.25	179	284
ND<0.5 U	ND<0.75 U	-0.25	179	285
ND<0.5 U	ND<0.75 U	-0.25	179	286
ND<0.5 U	ND<0.75 U	-0.25	179	287
ND<0.5 U	ND<0.75 U	-0.25	179	288
ND<0.5 U	ND<0.75 U	-0.25	179	289
ND<0.5 U	ND<0.75 U	-0.25	179	290
ND<1 U	ND<0.75 U	0.25	180	290
ND<1 U	ND<0.75 U	0.25	181	290
ND<1 U	ND<0.75 U	0.25	182	290
ND<1 U	ND<0.75 U	0.25	183	290
ND<1 U	ND<0.75 U	0.25	184	290

[illegible]

ND<0.5 U	ND<0.75 U	-0.25	189	308
ND<0.5 U	ND<0.75 U	-0.25	189	309
ND<0.5 U	ND<0.75 U	-0.25	189	310
ND<0.5 U	ND<0.75 U	-0.25	189	311
ND<0.5 U	ND<0.75 U	-0.25	189	312
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ND<0.5 U	ND<0.75 U	-0.25	189	314
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ND<0.5 U	ND<0.75 U	-0.25	189	316
ND<0.5 U	ND<0.75 U	-0.25	189	317
ND<0.5 U	ND<0.75 U	-0.25	189	318
ND<1 U	ND<0.75 U	0.25	190	318
ND<1 U	ND<0.75 U	0.25	191	318
ND<1 U	ND<0.75 U	0.25	192	318
ND<1 U	ND<0.75 U	0.25	193	318
ND<1 U	ND<0.75 U	0.25	194	318
ND<0.75 U	ND<0.75 U	0	194	318
ND<0.75 U	ND<0.75 U	0	194	318
ND<0.75 U	ND<0.75 U	0	194	318
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ND<0.75 U	ND<0.75 U	0	194	318
ND<0.75 U	ND<0.75 U	0	194	318
ND<0.5 U	ND<0.75 U	-0.25	194	319
ND<0.5 U	ND<0.75 U	-0.25	194	320
ND<0.5 U	ND<0.75 U	-0.25	194	321
ND<0.5 U	ND<0.75 U	-0.25	194	322
ND<0.5 U	ND<0.75 U	-0.25	194	323
ND<0.5 U	ND<0.75 U	-0.25	194	324
ND<0.5 U	ND<0.75 U	-0.25	194	325
ND<0.5 U	ND<0.75 U	-0.25	194	326
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ND<0.5 U	ND<0.75 U	-0.25	194	330
ND<0.5 U	ND<0.75 U	-0.25	194	331
ND<0.5 U	ND<0.75 U	-0.25	194	332
ND<1 U	ND<0.75 U	0.25	195	332
ND<1 U	ND<0.75 U	0.25	196	332
ND<1 U	ND<0.75 U	0.25	197	332
ND<1 U	ND<0.75 U	0.25	198	332
ND<1 U	ND<0.75 U	0.25	199	332
ND<0.75 U	ND<0.75 U	0	199	332
ND<0.75 U	ND<0.75 U	0	199	332
ND<0.75 U	ND<0.75 U	0	199	332
ND<0.75 U	ND<0.75 U	0	199	332
ND<0.75 U	ND<0.75 U	0	199	332

ND<0.75 U	ND<0.75 U	0	199	332
ND<0.75 U	ND<0.75 U	0	199	332
ND<0.75 U	ND<0.75 U	0	199	332
ND<0.75 U	ND<0.75 U	0	199	332
ND<0.75 U	ND<0.75 U	0	199	332
ND<0.75 U	ND<0.75 U	0	199	332
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ND<0.5 U	ND<0.75 U	-0.25	269	537
ND<0.5 U	ND<0.75 U	-0.25	269	538
ND<0.5 U	ND<0.75 U	-0.25	269	539
ND<0.5 U	ND<0.75 U	-0.25	269	540
ND<0.5 U	ND<0.75 U	-0.25	269	541
ND<0.5 U	ND<0.75 U	-0.25	269	542
ND<1 U	ND<0.75 U	0.25	270	542
ND<1 U	ND<0.75 U	0.25	271	542
ND<1 U	ND<0.75 U	0.25	272	542
ND<1 U	ND<0.75 U	0.25	273	542
ND<1 U	ND<0.75 U	0.25	274	542

[illegible]

ND<0.5 U	ND<0.5 U	0	309	542
ND<0.5 U	ND<0.5 U	0	309	542
ND<0.5 U	ND<0.5 U	0	309	542
ND<0.5 U	ND<0.5 U	0	309	542
ND<0.5 U	ND<0.5 U	0	309	542
ND<1 U	ND<0.5 U	0.5	310	542
ND<1 U	ND<0.5 U	0.5	311	542
ND<1 U	ND<0.5 U	0.5	312	542
ND<1 U	ND<0.5 U	0.5	313	542
ND<1 U	ND<0.5 U	0.5	314	542
ND<0.5 U	ND<0.5 U	0	314	542
ND<0.5 U	ND<0.5 U	0	314	542
ND<0.5 U	ND<0.5 U	0	314	542
ND<0.5 U	ND<0.5 U	0	314	542
ND<0.5 U	ND<0.5 U	0	314	542
ND<1 U	ND<0.5 U	0.5	315	542
ND<1 U	ND<0.5 U	0.5	316	542
ND<1 U	ND<0.5 U	0.5	317	542
ND<1 U	ND<0.5 U	0.5	318	542
ND<1 U	ND<0.5 U	0.5	319	542
ND<0.5 U	ND<0.5 U	0	319	542
ND<0.5 U	ND<0.5 U	0	319	542
ND<0.5 U	ND<0.5 U	0	319	542
ND<0.5 U	ND<0.5 U	0	319	542
ND<1 U	ND<0.5 U	0.5	320	542
ND<1 U	ND<0.5 U	0.5	321	542
ND<1 U	ND<0.5 U	0.5	322	542
ND<1 U	ND<0.5 U	0.5	323	542
ND<1 U	ND<0.5 U	0.5	324	542
ND<0.5 U	ND<0.5 U	0	324	542
ND<0.5 U	ND<0.5 U	0	324	542
ND<0.5 U	ND<0.5 U	0	324	542
ND<1 U	ND<0.5 U	0.5	325	542
ND<1 U	ND<0.5 U	0.5	326	542
ND<1 U	ND<0.5 U	0.5	327	542
ND<1 U	ND<0.5 U	0.5	328	542
ND<1 U	ND<0.5 U	0.5	329	542
ND<0.5 U	ND<0.5 U	0	329	542
ND<0.5 U	ND<0.5 U	0	329	542
ND<1 U	ND<0.5 U	0.5	330	542
ND<1 U	ND<0.5 U	0.5	331	542
ND<1 U	ND<0.5 U	0.5	332	542
ND<1 U	ND<0.5 U	0.5	333	542
ND<1 U	ND<0.5 U	0.5	334	542
ND<0.5 U	ND<0.5 U	0	334	542
ND<1 U	ND<0.5 U	0.5	335	542
ND<1 U	ND<0.5 U	0.5	336	542
ND<1 U	ND<0.5 U	0.5	337	542
ND<1 U	ND<0.5 U	0.5	338	542
ND<1 U	ND<0.5 U	0.5	339	542
ND<1 U	ND<0.5 U	0.5	340	542

ND<1 U	ND<0.5 U	0.5	341	542
ND<1 U	ND<0.5 U	0.5	342	542
ND<1 U	ND<0.5 U	0.5	343	542
ND<1 U	ND<0.5 U	0.5	344	542
ND<1 U	ND<1 U	0	344	542
ND<1 U	ND<1 U	0	344	542
ND<1 U	ND<1 U	0	344	542
ND<1 U	ND<1 U	0	344	542
ND<1 U	ND<1 U	0	344	542
ND<1 U	ND<1 U	0	344	542
ND<1 U	ND<1 U	0	344	542
ND<1 U	ND<1 U	0	344	542
ND<1 U	ND<1 U	0	344	542

S Statistic = 344 - 542 = -198

Tied Group	Value	Members
1	0.5	19
2	1.5	4
3	0.75	23
4	1	5

Time Period	Observations
11/24/2009	1
1/27/2010	1
3/2/2010	1
3/4/2010	1
4/9/2010	1
4/30/2010	1
5/6/2010	1
6/7/2010	1
7/26/2010	1
8/16/2010	1
9/17/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1
1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1
12/6/2011	1
1/13/2012	1
2/21/2012	1

3/20/2012	1
4/27/2012	1
5/24/2012	1
6/15/2012	1
7/26/2012	1
8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 40968

B = 0

C = 16524

D = 0

E = 880

F = 0

a = 289068

b = 1.1934e+006

c = 5304

Group Variance = 13783.3

Z-Score = -1.67799

Comparison Level at 1.0 - $(0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)

$|-1.67799| \leq 2.32634$ indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Total Xylenes

Location: MW-4

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
ND<0.5 U	ND<0.5 U	0	0	0
ND<2 U	ND<0.5 U	1.5	1	0
ND<1.5 U	ND<0.5 U	1	2	0
ND<0.5 U	ND<0.5 U	0	2	0
ND<1.5 U	ND<0.5 U	1	3	0
ND<0.5 U	ND<0.5 U	0	3	0
ND<0.5 U	ND<0.5 U	0	3	0
ND<1.5 U	ND<0.5 U	1	4	0
ND<1.5 U	ND<0.5 U	1	5	0
ND<1.5 U	ND<0.5 U	1	6	0
ND<1.5 U	ND<0.5 U	1	7	0
ND<0.75 U	ND<0.5 U	0.25	8	0
ND<0.75 U	ND<0.5 U	0.25	9	0
ND<0.75 U	ND<0.5 U	0.25	10	0
ND<0.75 U	ND<0.5 U	0.25	11	0
ND<0.75 U	ND<0.5 U	0.25	12	0
ND<0.75 U	ND<0.5 U	0.25	13	0
ND<0.75 U	ND<0.5 U	0.25	14	0
ND<0.75 U	ND<0.5 U	0.25	15	0
ND<0.75 U	ND<0.5 U	0.25	16	0
ND<0.75 U	ND<0.5 U	0.25	17	0
ND<0.75 U	ND<0.5 U	0.25	18	0
ND<0.75 U	ND<0.5 U	0.25	19	0
ND<0.75 U	ND<0.5 U	0.25	20	0
ND<0.75 U	ND<0.5 U	0.25	21	0
ND<0.75 U	ND<0.5 U	0.25	22	0
ND<0.75 U	ND<0.5 U	0.25	23	0
ND<0.75 U	ND<0.5 U	0.25	24	0
ND<0.75 U	ND<0.5 U	0.25	25	0
ND<0.75 U	ND<0.5 U	0.25	26	0
ND<0.75 U	ND<0.5 U	0.25	27	0
ND<0.75 U	ND<0.5 U	0.25	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<1 U	ND<0.5 U	0.5	29	0

ND<1 U	ND<0.5 U	0.5	30	0
ND<1 U	ND<0.5 U	0.5	31	0
ND<1 U	ND<0.5 U	0.5	32	0
ND<1 U	ND<0.5 U	0.5	33	0
ND<2 U	ND<0.5 U	1.5	34	0
ND<1.5 U	ND<0.5 U	1	35	0
ND<0.5 U	ND<0.5 U	0	35	0
ND<1.5 U	ND<0.5 U	1	36	0
ND<0.5 U	ND<0.5 U	0	36	0
ND<0.5 U	ND<0.5 U	0	36	0
ND<1.5 U	ND<0.5 U	1	37	0
ND<1.5 U	ND<0.5 U	1	38	0
ND<1.5 U	ND<0.5 U	1	39	0
ND<1.5 U	ND<0.5 U	1	40	0
ND<0.75 U	ND<0.5 U	0.25	41	0
ND<0.75 U	ND<0.5 U	0.25	42	0
ND<0.75 U	ND<0.5 U	0.25	43	0
ND<0.75 U	ND<0.5 U	0.25	44	0
ND<0.75 U	ND<0.5 U	0.25	45	0
ND<0.75 U	ND<0.5 U	0.25	46	0
ND<0.75 U	ND<0.5 U	0.25	47	0
ND<0.75 U	ND<0.5 U	0.25	48	0
ND<0.75 U	ND<0.5 U	0.25	49	0
ND<0.75 U	ND<0.5 U	0.25	50	0
ND<0.75 U	ND<0.5 U	0.25	51	0
ND<0.75 U	ND<0.5 U	0.25	52	0
ND<0.75 U	ND<0.5 U	0.25	53	0
ND<0.75 U	ND<0.5 U	0.25	54	0
ND<0.75 U	ND<0.5 U	0.25	55	0
ND<0.75 U	ND<0.5 U	0.25	56	0
ND<0.75 U	ND<0.5 U	0.25	57	0
ND<0.75 U	ND<0.5 U	0.25	58	0
ND<0.75 U	ND<0.5 U	0.25	59	0
ND<0.75 U	ND<0.5 U	0.25	60	0
ND<0.75 U	ND<0.5 U	0.25	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<0.5 U	ND<0.5 U	0	61	0
ND<1 U	ND<0.5 U	0.5	62	0
ND<1 U	ND<0.5 U	0.5	63	0
ND<1 U	ND<0.5 U	0.5	64	0
ND<1 U	ND<0.5 U	0.5	65	0
ND<1 U	ND<0.5 U	0.5	66	0
ND<1.5 U	ND<2 U	-0.5	66	1

ND<0.5 U	ND<2 U	-1.5	66	2
ND<1.5 U	ND<2 U	-0.5	66	3
ND<0.5 U	ND<2 U	-1.5	66	4
ND<0.5 U	ND<2 U	-1.5	66	5
ND<1.5 U	ND<2 U	-0.5	66	6
ND<1.5 U	ND<2 U	-0.5	66	7
ND<1.5 U	ND<2 U	-0.5	66	8
ND<1.5 U	ND<2 U	-0.5	66	9
ND<0.75 U	ND<2 U	-1.25	66	10
ND<0.75 U	ND<2 U	-1.25	66	11
ND<0.75 U	ND<2 U	-1.25	66	12
ND<0.75 U	ND<2 U	-1.25	66	13
ND<0.75 U	ND<2 U	-1.25	66	14
ND<0.75 U	ND<2 U	-1.25	66	15
ND<0.75 U	ND<2 U	-1.25	66	16
ND<0.75 U	ND<2 U	-1.25	66	17
ND<0.75 U	ND<2 U	-1.25	66	18
ND<0.75 U	ND<2 U	-1.25	66	19
ND<0.75 U	ND<2 U	-1.25	66	20
ND<0.75 U	ND<2 U	-1.25	66	21
ND<0.75 U	ND<2 U	-1.25	66	22
ND<0.75 U	ND<2 U	-1.25	66	23
ND<0.75 U	ND<2 U	-1.25	66	24
ND<0.75 U	ND<2 U	-1.25	66	25
ND<0.75 U	ND<2 U	-1.25	66	26
ND<0.75 U	ND<2 U	-1.25	66	27
ND<0.75 U	ND<2 U	-1.25	66	28
ND<0.75 U	ND<2 U	-1.25	66	29
ND<0.75 U	ND<2 U	-1.25	66	30
ND<0.5 U	ND<2 U	-1.5	66	31
ND<0.5 U	ND<2 U	-1.5	66	32
ND<0.5 U	ND<2 U	-1.5	66	33
ND<0.5 U	ND<2 U	-1.5	66	34
ND<0.5 U	ND<2 U	-1.5	66	35
ND<0.5 U	ND<2 U	-1.5	66	36
ND<0.5 U	ND<2 U	-1.5	66	37
ND<0.5 U	ND<2 U	-1.5	66	38
ND<0.5 U	ND<2 U	-1.5	66	39
ND<0.5 U	ND<2 U	-1.5	66	40
ND<0.5 U	ND<2 U	-1.5	66	41
ND<0.5 U	ND<2 U	-1.5	66	42
ND<0.5 U	ND<2 U	-1.5	66	43
ND<0.5 U	ND<2 U	-1.5	66	44
ND<1 U	ND<2 U	-1	66	45
ND<1 U	ND<2 U	-1	66	46
ND<1 U	ND<2 U	-1	66	47
ND<1 U	ND<2 U	-1	66	48
ND<1 U	ND<2 U	-1	66	49
ND<0.5 U	ND<1.5 U	-1	66	50
ND<1.5 U	ND<1.5 U	0	66	50
ND<0.5 U	ND<1.5 U	-1	66	51
ND<0.5 U	ND<1.5 U	-1	66	52
ND<1.5 U	ND<1.5 U	0	66	52
ND<1.5 U	ND<1.5 U	0	66	52
ND<1.5 U	ND<1.5 U	0	66	52
ND<1.5 U	ND<1.5 U	0	66	52

ND<0.75 U	ND<1.5 U	-0.75	66	53
ND<0.75 U	ND<1.5 U	-0.75	66	54
ND<0.75 U	ND<1.5 U	-0.75	66	55
ND<0.75 U	ND<1.5 U	-0.75	66	56
ND<0.75 U	ND<1.5 U	-0.75	66	57
ND<0.75 U	ND<1.5 U	-0.75	66	58
ND<0.75 U	ND<1.5 U	-0.75	66	59
ND<0.75 U	ND<1.5 U	-0.75	66	60
ND<0.75 U	ND<1.5 U	-0.75	66	61
ND<0.75 U	ND<1.5 U	-0.75	66	62
ND<0.75 U	ND<1.5 U	-0.75	66	63
ND<0.75 U	ND<1.5 U	-0.75	66	64
ND<0.75 U	ND<1.5 U	-0.75	66	65
ND<0.75 U	ND<1.5 U	-0.75	66	66
ND<0.75 U	ND<1.5 U	-0.75	66	67
ND<0.75 U	ND<1.5 U	-0.75	66	68
ND<0.75 U	ND<1.5 U	-0.75	66	69
ND<0.75 U	ND<1.5 U	-0.75	66	70
ND<0.75 U	ND<1.5 U	-0.75	66	71
ND<0.75 U	ND<1.5 U	-0.75	66	72
ND<0.75 U	ND<1.5 U	-0.75	66	73
ND<0.5 U	ND<1.5 U	-1	66	74
ND<0.5 U	ND<1.5 U	-1	66	75
ND<0.5 U	ND<1.5 U	-1	66	76
ND<0.5 U	ND<1.5 U	-1	66	77
ND<0.5 U	ND<1.5 U	-1	66	78
ND<0.5 U	ND<1.5 U	-1	66	79
ND<0.5 U	ND<1.5 U	-1	66	80
ND<0.5 U	ND<1.5 U	-1	66	81
ND<0.5 U	ND<1.5 U	-1	66	82
ND<0.5 U	ND<1.5 U	-1	66	83
ND<0.5 U	ND<1.5 U	-1	66	84
ND<0.5 U	ND<1.5 U	-1	66	85
ND<0.5 U	ND<1.5 U	-1	66	86
ND<0.5 U	ND<1.5 U	-1	66	87
ND<1 U	ND<1.5 U	-0.5	66	88
ND<1 U	ND<1.5 U	-0.5	66	89
ND<1 U	ND<1.5 U	-0.5	66	90
ND<1 U	ND<1.5 U	-0.5	66	91
ND<1 U	ND<1.5 U	-0.5	66	92
ND<1.5 U	ND<0.5 U	1	67	92
ND<0.5 U	ND<0.5 U	0	67	92
ND<0.5 U	ND<0.5 U	0	67	92
ND<1.5 U	ND<0.5 U	1	68	92
ND<1.5 U	ND<0.5 U	1	69	92
ND<1.5 U	ND<0.5 U	1	70	92
ND<1.5 U	ND<0.5 U	1	71	92
ND<0.75 U	ND<0.5 U	0.25	72	92
ND<0.75 U	ND<0.5 U	0.25	73	92
ND<0.75 U	ND<0.5 U	0.25	74	92
ND<0.75 U	ND<0.5 U	0.25	75	92
ND<0.75 U	ND<0.5 U	0.25	76	92
ND<0.75 U	ND<0.5 U	0.25	77	92
ND<0.75 U	ND<0.5 U	0.25	78	92
ND<0.75 U	ND<0.5 U	0.25	79	92
ND<0.75 U	ND<0.5 U	0.25	80	92

ND<0.75 U	ND<0.5 U	0.25	81	92
ND<0.75 U	ND<0.5 U	0.25	82	92
ND<0.75 U	ND<0.5 U	0.25	83	92
ND<0.75 U	ND<0.5 U	0.25	84	92
ND<0.75 U	ND<0.5 U	0.25	85	92
ND<0.75 U	ND<0.5 U	0.25	86	92
ND<0.75 U	ND<0.5 U	0.25	87	92
ND<0.75 U	ND<0.5 U	0.25	88	92
ND<0.75 U	ND<0.5 U	0.25	89	92
ND<0.75 U	ND<0.5 U	0.25	90	92
ND<0.75 U	ND<0.5 U	0.25	91	92
ND<0.75 U	ND<0.5 U	0.25	92	92
ND<0.5 U	ND<0.5 U	0	92	92
ND<0.5 U	ND<0.5 U	0	92	92
ND<0.5 U	ND<0.5 U	0	92	92
ND<0.5 U	ND<0.5 U	0	92	92
ND<0.5 U	ND<0.5 U	0	92	92
ND<0.5 U	ND<0.5 U	0	92	92
ND<0.5 U	ND<0.5 U	0	92	92
ND<0.5 U	ND<0.5 U	0	92	92
ND<0.5 U	ND<0.5 U	0	92	92
ND<0.5 U	ND<0.5 U	0	92	92
ND<0.5 U	ND<0.5 U	0	92	92
ND<0.5 U	ND<0.5 U	0	92	92
ND<0.5 U	ND<0.5 U	0	92	92
ND<0.5 U	ND<0.5 U	0	92	92
ND<0.5 U	ND<0.5 U	0	92	92
ND<0.5 U	ND<0.5 U	0	92	92
ND<0.5 U	ND<0.5 U	0	92	92
ND<0.5 U	ND<0.5 U	0	92	92
ND<0.5 U	ND<0.5 U	0	92	92
ND<1 U	ND<0.5 U	0.5	93	92
ND<1 U	ND<0.5 U	0.5	94	92
ND<1 U	ND<0.5 U	0.5	95	92
ND<1 U	ND<0.5 U	0.5	96	92
ND<1 U	ND<0.5 U	0.5	97	92
ND<0.5 U	ND<1.5 U	-1	97	93
ND<0.5 U	ND<1.5 U	-1	97	94
ND<1.5 U	ND<1.5 U	0	97	94
ND<1.5 U	ND<1.5 U	0	97	94
ND<1.5 U	ND<1.5 U	0	97	94
ND<1.5 U	ND<1.5 U	0	97	94
ND<0.75 U	ND<1.5 U	-0.75	97	95
ND<0.75 U	ND<1.5 U	-0.75	97	96
ND<0.75 U	ND<1.5 U	-0.75	97	97
ND<0.75 U	ND<1.5 U	-0.75	97	98
ND<0.75 U	ND<1.5 U	-0.75	97	99
ND<0.75 U	ND<1.5 U	-0.75	97	100
ND<0.75 U	ND<1.5 U	-0.75	97	101
ND<0.75 U	ND<1.5 U	-0.75	97	102
ND<0.75 U	ND<1.5 U	-0.75	97	103
ND<0.75 U	ND<1.5 U	-0.75	97	104
ND<0.75 U	ND<1.5 U	-0.75	97	105
ND<0.75 U	ND<1.5 U	-0.75	97	106
ND<0.75 U	ND<1.5 U	-0.75	97	107
ND<0.75 U	ND<1.5 U	-0.75	97	108
ND<0.75 U	ND<1.5 U	-0.75	97	109
ND<0.75 U	ND<1.5 U	-0.75	97	110
ND<0.75 U	ND<1.5 U	-0.75	97	111
ND<0.75 U	ND<1.5 U	-0.75	97	112
ND<0.75 U	ND<1.5 U	-0.75	97	113

ND<0.75 U	ND<1.5 U	-0.75	97	114
ND<0.75 U	ND<1.5 U	-0.75	97	115
ND<0.5 U	ND<1.5 U	-1	97	116
ND<0.5 U	ND<1.5 U	-1	97	117
ND<0.5 U	ND<1.5 U	-1	97	118
ND<0.5 U	ND<1.5 U	-1	97	119
ND<0.5 U	ND<1.5 U	-1	97	120
ND<0.5 U	ND<1.5 U	-1	97	121
ND<0.5 U	ND<1.5 U	-1	97	122
ND<0.5 U	ND<1.5 U	-1	97	123
ND<0.5 U	ND<1.5 U	-1	97	124
ND<0.5 U	ND<1.5 U	-1	97	125
ND<0.5 U	ND<1.5 U	-1	97	126
ND<0.5 U	ND<1.5 U	-1	97	127
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ND<0.5 U	ND<1.5 U	-1	97	129
ND<1 U	ND<1.5 U	-0.5	97	130
ND<1 U	ND<1.5 U	-0.5	97	131
ND<1 U	ND<1.5 U	-0.5	97	132
ND<1 U	ND<1.5 U	-0.5	97	133
ND<1 U	ND<1.5 U	-0.5	97	134
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ND<0.75 U	ND<0.5 U	0.25	110	134
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ND<1 U	ND<0.5 U	0.5	157	134
ND<1.5 U	ND<1.5 U	0	157	134

ND<1.5 U	ND<1.5 U	0	157	134
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ND<0.75 U	ND<1.5 U	-0.75	157	154
ND<0.75 U	ND<1.5 U	-0.75	157	155
ND<0.5 U	ND<1.5 U	-1	157	156
ND<0.5 U	ND<1.5 U	-1	157	157
ND<0.5 U	ND<1.5 U	-1	157	158
ND<0.5 U	ND<1.5 U	-1	157	159
ND<0.5 U	ND<1.5 U	-1	157	160
ND<0.5 U	ND<1.5 U	-1	157	161
ND<0.5 U	ND<1.5 U	-1	157	162
ND<0.5 U	ND<1.5 U	-1	157	163
ND<0.5 U	ND<1.5 U	-1	157	164
ND<0.5 U	ND<1.5 U	-1	157	165
ND<0.5 U	ND<1.5 U	-1	157	166
ND<0.5 U	ND<1.5 U	-1	157	167
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ND<1 U	ND<1.5 U	-0.5	157	170
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ND<1 U	ND<1.5 U	-0.5	157	172
ND<1 U	ND<1.5 U	-0.5	157	173
ND<1 U	ND<1.5 U	-0.5	157	174
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ND<1.5 U	ND<1.5 U	0	157	174
ND<0.75 U	ND<1.5 U	-0.75	157	175
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ND<0.75 U	ND<1.5 U	-0.75	157	178
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ND<0.75 U	ND<1.5 U	-0.75	157	180
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ND<0.75 U	ND<1.5 U	-0.75	157	186

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ND<0.75 U	ND<1.5 U	-0.75	157	191
ND<0.75 U	ND<1.5 U	-0.75	157	192
ND<0.75 U	ND<1.5 U	-0.75	157	193
ND<0.75 U	ND<1.5 U	-0.75	157	194
ND<0.75 U	ND<1.5 U	-0.75	157	195
ND<0.5 U	ND<1.5 U	-1	157	196
ND<0.5 U	ND<1.5 U	-1	157	197
ND<0.5 U	ND<1.5 U	-1	157	198
ND<0.5 U	ND<1.5 U	-1	157	199
ND<0.5 U	ND<1.5 U	-1	157	200
ND<0.5 U	ND<1.5 U	-1	157	201
ND<0.5 U	ND<1.5 U	-1	157	202
ND<0.5 U	ND<1.5 U	-1	157	203
ND<0.5 U	ND<1.5 U	-1	157	204
ND<0.5 U	ND<1.5 U	-1	157	205
ND<0.5 U	ND<1.5 U	-1	157	206
ND<0.5 U	ND<1.5 U	-1	157	207
ND<0.5 U	ND<1.5 U	-1	157	208
ND<0.5 U	ND<1.5 U	-1	157	209
ND<1 U	ND<1.5 U	-0.5	157	210
ND<1 U	ND<1.5 U	-0.5	157	211
ND<1 U	ND<1.5 U	-0.5	157	212
ND<1 U	ND<1.5 U	-0.5	157	213
ND<1 U	ND<1.5 U	-0.5	157	214
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ND<0.75 U	ND<1.5 U	-0.75	157	216
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ND<0.75 U	ND<1.5 U	-0.75	157	220
ND<0.75 U	ND<1.5 U	-0.75	157	221
ND<0.75 U	ND<1.5 U	-0.75	157	222
ND<0.75 U	ND<1.5 U	-0.75	157	223
ND<0.75 U	ND<1.5 U	-0.75	157	224
ND<0.75 U	ND<1.5 U	-0.75	157	225
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ND<0.75 U	ND<1.5 U	-0.75	157	229
ND<0.75 U	ND<1.5 U	-0.75	157	230
ND<0.75 U	ND<1.5 U	-0.75	157	231
ND<0.75 U	ND<1.5 U	-0.75	157	232
ND<0.75 U	ND<1.5 U	-0.75	157	233
ND<0.75 U	ND<1.5 U	-0.75	157	234
ND<0.75 U	ND<1.5 U	-0.75	157	235
ND<0.5 U	ND<1.5 U	-1	157	236
ND<0.5 U	ND<1.5 U	-1	157	237
ND<0.5 U	ND<1.5 U	-1	157	238
ND<0.5 U	ND<1.5 U	-1	157	239
ND<0.5 U	ND<1.5 U	-1	157	240
ND<0.5 U	ND<1.5 U	-1	157	241

ND<0.5 U	ND<1.5 U	-1	157	242
ND<0.5 U	ND<1.5 U	-1	157	243
ND<0.5 U	ND<1.5 U	-1	157	244
ND<0.5 U	ND<1.5 U	-1	157	245
ND<0.5 U	ND<1.5 U	-1	157	246
ND<0.5 U	ND<1.5 U	-1	157	247
ND<0.5 U	ND<1.5 U	-1	157	248
ND<0.5 U	ND<1.5 U	-1	157	249
ND<1 U	ND<1.5 U	-0.5	157	250
ND<1 U	ND<1.5 U	-0.5	157	251
ND<1 U	ND<1.5 U	-0.5	157	252
ND<1 U	ND<1.5 U	-0.5	157	253
ND<1 U	ND<1.5 U	-0.5	157	254
ND<0.75 U	ND<1.5 U	-0.75	157	255
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ND<0.5 U	ND<1.5 U	-1	157	277
ND<0.5 U	ND<1.5 U	-1	157	278
ND<0.5 U	ND<1.5 U	-1	157	279
ND<0.5 U	ND<1.5 U	-1	157	280
ND<0.5 U	ND<1.5 U	-1	157	281
ND<0.5 U	ND<1.5 U	-1	157	282
ND<0.5 U	ND<1.5 U	-1	157	283
ND<0.5 U	ND<1.5 U	-1	157	284
ND<0.5 U	ND<1.5 U	-1	157	285
ND<0.5 U	ND<1.5 U	-1	157	286
ND<0.5 U	ND<1.5 U	-1	157	287
ND<0.5 U	ND<1.5 U	-1	157	288
ND<0.5 U	ND<1.5 U	-1	157	289
ND<1 U	ND<1.5 U	-0.5	157	290
ND<1 U	ND<1.5 U	-0.5	157	291
ND<1 U	ND<1.5 U	-0.5	157	292
ND<1 U	ND<1.5 U	-0.5	157	293
ND<1 U	ND<1.5 U	-0.5	157	294
ND<0.75 U	ND<0.75 U	0	157	294
ND<0.75 U	ND<0.75 U	0	157	294

[illegible]

ND<0.5 U	ND<0.75 U	-0.25	162	309
ND<0.5 U	ND<0.75 U	-0.25	162	310
ND<0.5 U	ND<0.75 U	-0.25	162	311
ND<0.5 U	ND<0.75 U	-0.25	162	312
ND<0.5 U	ND<0.75 U	-0.25	162	313
ND<0.5 U	ND<0.75 U	-0.25	162	314
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ND<0.5 U	ND<0.75 U	-0.25	162	322
ND<1 U	ND<0.75 U	0.25	163	322
ND<1 U	ND<0.75 U	0.25	164	322
ND<1 U	ND<0.75 U	0.25	165	322
ND<1 U	ND<0.75 U	0.25	166	322
ND<1 U	ND<0.75 U	0.25	167	322
ND<0.75 U	ND<0.75 U	0	167	322
ND<0.75 U	ND<0.75 U	0	167	322
ND<0.75 U	ND<0.75 U	0	167	322
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ND<0.75 U	ND<0.75 U	0	167	322
ND<0.75 U	ND<0.75 U	0	167	322
ND<0.5 U	ND<0.75 U	-0.25	167	323
ND<0.5 U	ND<0.75 U	-0.25	167	324
ND<0.5 U	ND<0.75 U	-0.25	167	325
ND<0.5 U	ND<0.75 U	-0.25	167	326
ND<0.5 U	ND<0.75 U	-0.25	167	327
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ND<0.5 U	ND<0.75 U	-0.25	167	330
ND<0.5 U	ND<0.75 U	-0.25	167	331
ND<0.5 U	ND<0.75 U	-0.25	167	332
ND<0.5 U	ND<0.75 U	-0.25	167	333
ND<0.5 U	ND<0.75 U	-0.25	167	334
ND<0.5 U	ND<0.75 U	-0.25	167	335
ND<0.5 U	ND<0.75 U	-0.25	167	336
ND<1 U	ND<0.75 U	0.25	168	336
ND<1 U	ND<0.75 U	0.25	169	336
ND<1 U	ND<0.75 U	0.25	170	336
ND<1 U	ND<0.75 U	0.25	171	336
ND<1 U	ND<0.75 U	0.25	172	336

[illegible]

ND<0.5 U	ND<0.75 U	-0.25	177	354
ND<0.5 U	ND<0.75 U	-0.25	177	355
ND<0.5 U	ND<0.75 U	-0.25	177	356
ND<0.5 U	ND<0.75 U	-0.25	177	357
ND<0.5 U	ND<0.75 U	-0.25	177	358
ND<0.5 U	ND<0.75 U	-0.25	177	359
ND<0.5 U	ND<0.75 U	-0.25	177	360
ND<0.5 U	ND<0.75 U	-0.25	177	361
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ND<0.75 U	ND<0.75 U	0	247	546
ND<0.75 U	ND<0.75 U	0	247	546
ND<0.5 U	ND<0.75 U	-0.25	247	547
ND<0.5 U	ND<0.75 U	-0.25	247	548
ND<0.5 U	ND<0.75 U	-0.25	247	549

ND<0.5 U	ND<0.75 U	-0.25	247	550
ND<0.5 U	ND<0.75 U	-0.25	247	551
ND<0.5 U	ND<0.75 U	-0.25	247	552
ND<0.5 U	ND<0.75 U	-0.25	247	553
ND<0.5 U	ND<0.75 U	-0.25	247	554
ND<0.5 U	ND<0.75 U	-0.25	247	555
ND<0.5 U	ND<0.75 U	-0.25	247	556
ND<0.5 U	ND<0.75 U	-0.25	247	557
ND<0.5 U	ND<0.75 U	-0.25	247	558
ND<0.5 U	ND<0.75 U	-0.25	247	559
ND<0.5 U	ND<0.75 U	-0.25	247	560
ND<1 U	ND<0.75 U	0.25	248	560
ND<1 U	ND<0.75 U	0.25	249	560
ND<1 U	ND<0.75 U	0.25	250	560
ND<1 U	ND<0.75 U	0.25	251	560
ND<1 U	ND<0.75 U	0.25	252	560
ND<0.75 U	ND<0.75 U	0	252	560
ND<0.5 U	ND<0.75 U	-0.25	252	561
ND<0.5 U	ND<0.75 U	-0.25	252	562
ND<0.5 U	ND<0.75 U	-0.25	252	563
ND<0.5 U	ND<0.75 U	-0.25	252	564
ND<0.5 U	ND<0.75 U	-0.25	252	565
ND<0.5 U	ND<0.75 U	-0.25	252	566
ND<0.5 U	ND<0.75 U	-0.25	252	567
ND<0.5 U	ND<0.75 U	-0.25	252	568
ND<0.5 U	ND<0.75 U	-0.25	252	569
ND<0.5 U	ND<0.75 U	-0.25	252	570
ND<0.5 U	ND<0.75 U	-0.25	252	571
ND<0.5 U	ND<0.75 U	-0.25	252	572
ND<0.5 U	ND<0.75 U	-0.25	252	573
ND<0.5 U	ND<0.75 U	-0.25	252	574
ND<1 U	ND<0.75 U	0.25	253	574
ND<1 U	ND<0.75 U	0.25	254	574
ND<1 U	ND<0.75 U	0.25	255	574
ND<1 U	ND<0.75 U	0.25	256	574
ND<1 U	ND<0.75 U	0.25	257	574
ND<0.5 U	ND<0.75 U	-0.25	257	575
ND<0.5 U	ND<0.75 U	-0.25	257	576
ND<0.5 U	ND<0.75 U	-0.25	257	577
ND<0.5 U	ND<0.75 U	-0.25	257	578
ND<0.5 U	ND<0.75 U	-0.25	257	579
ND<0.5 U	ND<0.75 U	-0.25	257	580
ND<0.5 U	ND<0.75 U	-0.25	257	581
ND<0.5 U	ND<0.75 U	-0.25	257	582
ND<0.5 U	ND<0.75 U	-0.25	257	583
ND<0.5 U	ND<0.75 U	-0.25	257	584
ND<0.5 U	ND<0.75 U	-0.25	257	585
ND<0.5 U	ND<0.75 U	-0.25	257	586
ND<0.5 U	ND<0.75 U	-0.25	257	587
ND<0.5 U	ND<0.75 U	-0.25	257	588
ND<1 U	ND<0.75 U	0.25	258	588
ND<1 U	ND<0.75 U	0.25	259	588
ND<1 U	ND<0.75 U	0.25	260	588
ND<1 U	ND<0.75 U	0.25	261	588
ND<1 U	ND<0.75 U	0.25	262	588

[illegible]

[illegible]

ND<0.5 U	ND<0.5 U	0	297	588
ND<0.5 U	ND<0.5 U	0	297	588
ND<0.5 U	ND<0.5 U	0	297	588
ND<0.5 U	ND<0.5 U	0	297	588
ND<0.5 U	ND<0.5 U	0	297	588
ND<1 U	ND<0.5 U	0.5	298	588
ND<1 U	ND<0.5 U	0.5	299	588
ND<1 U	ND<0.5 U	0.5	300	588
ND<1 U	ND<0.5 U	0.5	301	588
ND<1 U	ND<0.5 U	0.5	302	588
ND<0.5 U	ND<0.5 U	0	302	588
ND<0.5 U	ND<0.5 U	0	302	588
ND<0.5 U	ND<0.5 U	0	302	588
ND<0.5 U	ND<0.5 U	0	302	588
ND<0.5 U	ND<0.5 U	0	302	588
ND<1 U	ND<0.5 U	0.5	303	588
ND<1 U	ND<0.5 U	0.5	304	588
ND<1 U	ND<0.5 U	0.5	305	588
ND<1 U	ND<0.5 U	0.5	306	588
ND<1 U	ND<0.5 U	0.5	307	588
ND<0.5 U	ND<0.5 U	0	307	588
ND<0.5 U	ND<0.5 U	0	307	588
ND<0.5 U	ND<0.5 U	0	307	588
ND<0.5 U	ND<0.5 U	0	307	588
ND<1 U	ND<0.5 U	0.5	308	588
ND<1 U	ND<0.5 U	0.5	309	588
ND<1 U	ND<0.5 U	0.5	310	588
ND<1 U	ND<0.5 U	0.5	311	588
ND<1 U	ND<0.5 U	0.5	312	588
ND<0.5 U	ND<0.5 U	0	312	588
ND<0.5 U	ND<0.5 U	0	312	588
ND<0.5 U	ND<0.5 U	0	312	588
ND<1 U	ND<0.5 U	0.5	313	588
ND<1 U	ND<0.5 U	0.5	314	588
ND<1 U	ND<0.5 U	0.5	315	588
ND<1 U	ND<0.5 U	0.5	316	588
ND<1 U	ND<0.5 U	0.5	317	588
ND<0.5 U	ND<0.5 U	0	317	588
ND<0.5 U	ND<0.5 U	0	317	588
ND<1 U	ND<0.5 U	0.5	318	588
ND<1 U	ND<0.5 U	0.5	319	588
ND<1 U	ND<0.5 U	0.5	320	588
ND<1 U	ND<0.5 U	0.5	321	588
ND<1 U	ND<0.5 U	0.5	322	588
ND<0.5 U	ND<0.5 U	0	322	588
ND<1 U	ND<0.5 U	0.5	323	588
ND<1 U	ND<0.5 U	0.5	324	588
ND<1 U	ND<0.5 U	0.5	325	588
ND<1 U	ND<0.5 U	0.5	326	588
ND<1 U	ND<0.5 U	0.5	327	588
ND<1 U	ND<0.5 U	0.5	328	588

ND<1 U	ND<0.5 U	0.5	329	588
ND<1 U	ND<0.5 U	0.5	330	588
ND<1 U	ND<0.5 U	0.5	331	588
ND<1 U	ND<0.5 U	0.5	332	588
ND<1 U	ND<1 U	0	332	588
ND<1 U	ND<1 U	0	332	588
ND<1 U	ND<1 U	0	332	588
ND<1 U	ND<1 U	0	332	588
ND<1 U	ND<1 U	0	332	588
ND<1 U	ND<1 U	0	332	588
ND<1 U	ND<1 U	0	332	588
ND<1 U	ND<1 U	0	332	588
ND<1 U	ND<1 U	0	332	588

S Statistic = 332 - 588 = -256

Tied Group	Value	Members
1	0.5	19
2	1.5	6
3	0.75	21
4	1	5

Time Period	Observations
11/24/2009	1
1/27/2010	1
3/2/2010	1
3/4/2010	1
4/9/2010	1
4/30/2010	1
5/6/2010	1
6/7/2010	1
7/26/2010	1
8/16/2010	1
9/17/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1
1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1
12/6/2011	1
1/13/2012	1
2/21/2012	1

3/20/2012	1
4/27/2012	1
5/24/2012	1
6/15/2012	1
7/26/2012	1
8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 35256

B = 0

C = 13974

D = 0

E = 812

F = 0

a = 289068

b = 1.1934e+006

c = 5304

Group Variance = 14100.7

Z-Score = -2.14744

Comparison Level at 1.0 - (0.02 / 2) = 99% confidence level = 2.32634 (two-tailed)

$|-2.14744| \leq 2.32634$ indicating no evidence of a trend

ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<1 U	ND<0.5 U	0.5	29	0
ND<1 U	ND<0.5 U	0.5	30	0
ND<1 U	ND<0.5 U	0.5	31	0
ND<1 U	ND<0.5 U	0.5	32	0
ND<1 U	ND<0.5 U	0.5	33	0
ND<1 U	ND<0.5 U	0.5	34	0
ND<1 U	ND<0.5 U	0.5	35	0
ND<1 U	ND<0.5 U	0.5	36	0
ND<1 U	ND<0.5 U	0.5	37	0
ND<1 U	ND<0.5 U	0.5	38	0
ND<2 U	ND<0.5 U	1.5	39	0
ND<1.5 U	ND<0.5 U	1	40	0
ND<0.5 U	ND<0.5 U	0	40	0
ND<1.5 U	ND<0.5 U	1	41	0
ND<0.5 U	ND<0.5 U	0	41	0
ND<0.5 U	ND<0.5 U	0	41	0
ND<1.5 U	ND<0.5 U	1	42	0
ND<1.5 U	ND<0.5 U	1	43	0
ND<1.5 U	ND<0.5 U	1	44	0
ND<1.5 U	ND<0.5 U	1	45	0
ND<0.75 U	ND<0.5 U	0.25	46	0
ND<0.75 U	ND<0.5 U	0.25	47	0
ND<0.75 U	ND<0.5 U	0.25	48	0
ND<0.75 U	ND<0.5 U	0.25	49	0
ND<0.75 U	ND<0.5 U	0.25	50	0
ND<0.75 U	ND<0.5 U	0.25	51	0
ND<0.75 U	ND<0.5 U	0.25	52	0
ND<0.75 U	ND<0.5 U	0.25	53	0
ND<0.75 U	ND<0.5 U	0.25	54	0
ND<0.75 U	ND<0.5 U	0.25	55	0
ND<0.75 U	ND<0.5 U	0.25	56	0
ND<0.75 U	ND<0.5 U	0.25	57	0
ND<0.75 U	ND<0.5 U	0.25	58	0
ND<0.75 U	ND<0.5 U	0.25	59	0
ND<0.75 U	ND<0.5 U	0.25	60	0
ND<0.75 U	ND<0.5 U	0.25	61	0
ND<0.75 U	ND<0.5 U	0.25	62	0
ND<0.75 U	ND<0.5 U	0.25	63	0
ND<0.75 U	ND<0.5 U	0.25	64	0
ND<0.75 U	ND<0.5 U	0.25	65	0
ND<0.75 U	ND<0.5 U	0.25	66	0
ND<0.5 U	ND<0.5 U	0	66	0
ND<0.5 U	ND<0.5 U	0	66	0
ND<0.5 U	ND<0.5 U	0	66	0
ND<0.5 U	ND<0.5 U	0	66	0
ND<0.5 U	ND<0.5 U	0	66	0
ND<0.5 U	ND<0.5 U	0	66	0
ND<0.5 U	ND<0.5 U	0	66	0
ND<0.5 U	ND<0.5 U	0	66	0

ND<0.5 U	ND<0.5 U	0	66	0
ND<0.5 U	ND<0.5 U	0	66	0
ND<0.5 U	ND<0.5 U	0	66	0
ND<0.5 U	ND<0.5 U	0	66	0
ND<0.5 U	ND<0.5 U	0	66	0
ND<0.5 U	ND<0.5 U	0	66	0
ND<0.5 U	ND<0.5 U	0	66	0
ND<0.5 U	ND<0.5 U	0	66	0
ND<0.5 U	ND<0.5 U	0	66	0
ND<0.5 U	ND<0.5 U	0	66	0
ND<0.5 U	ND<0.5 U	0	66	0
ND<0.5 U	ND<0.5 U	0	66	0
ND<0.5 U	ND<0.5 U	0	66	0
ND<0.5 U	ND<0.5 U	0	66	0
ND<1 U	ND<0.5 U	0.5	67	0
ND<1 U	ND<0.5 U	0.5	68	0
ND<1 U	ND<0.5 U	0.5	69	0
ND<1 U	ND<0.5 U	0.5	70	0
ND<1 U	ND<0.5 U	0.5	71	0
ND<1 U	ND<0.5 U	0.5	72	0
ND<1 U	ND<0.5 U	0.5	73	0
ND<1 U	ND<0.5 U	0.5	74	0
ND<1 U	ND<0.5 U	0.5	75	0
ND<1 U	ND<0.5 U	0.5	76	0
ND<1.5 U	ND<2 U	-0.5	76	1
ND<0.5 U	ND<2 U	-1.5	76	2
ND<1.5 U	ND<2 U	-0.5	76	3
ND<0.5 U	ND<2 U	-1.5	76	4
ND<0.5 U	ND<2 U	-1.5	76	5
ND<1.5 U	ND<2 U	-0.5	76	6
ND<1.5 U	ND<2 U	-0.5	76	7
ND<1.5 U	ND<2 U	-0.5	76	8
ND<1.5 U	ND<2 U	-0.5	76	9
ND<0.75 U	ND<2 U	-1.25	76	10
ND<0.75 U	ND<2 U	-1.25	76	11
ND<0.75 U	ND<2 U	-1.25	76	12
ND<0.75 U	ND<2 U	-1.25	76	13
ND<0.75 U	ND<2 U	-1.25	76	14
ND<0.75 U	ND<2 U	-1.25	76	15
ND<0.75 U	ND<2 U	-1.25	76	16
ND<0.75 U	ND<2 U	-1.25	76	17
ND<0.75 U	ND<2 U	-1.25	76	18
ND<0.75 U	ND<2 U	-1.25	76	19
ND<0.75 U	ND<2 U	-1.25	76	20
ND<0.75 U	ND<2 U	-1.25	76	21
ND<0.75 U	ND<2 U	-1.25	76	22
ND<0.75 U	ND<2 U	-1.25	76	23
ND<0.75 U	ND<2 U	-1.25	76	24
ND<0.75 U	ND<2 U	-1.25	76	25
ND<0.75 U	ND<2 U	-1.25	76	26
ND<0.75 U	ND<2 U	-1.25	76	27
ND<0.75 U	ND<2 U	-1.25	76	28
ND<0.75 U	ND<2 U	-1.25	76	29
ND<0.75 U	ND<2 U	-1.25	76	30
ND<0.5 U	ND<2 U	-1.5	76	31
ND<0.5 U	ND<2 U	-1.5	76	32

ND<0.5 U	ND<2 U	-1.5	76	33
ND<0.5 U	ND<2 U	-1.5	76	34
ND<0.5 U	ND<2 U	-1.5	76	35
ND<0.5 U	ND<2 U	-1.5	76	36
ND<0.5 U	ND<2 U	-1.5	76	37
ND<0.5 U	ND<2 U	-1.5	76	38
ND<0.5 U	ND<2 U	-1.5	76	39
ND<0.5 U	ND<2 U	-1.5	76	40
ND<0.5 U	ND<2 U	-1.5	76	41
ND<0.5 U	ND<2 U	-1.5	76	42
ND<0.5 U	ND<2 U	-1.5	76	43
ND<0.5 U	ND<2 U	-1.5	76	44
ND<0.5 U	ND<2 U	-1.5	76	45
ND<0.5 U	ND<2 U	-1.5	76	46
ND<0.5 U	ND<2 U	-1.5	76	47
ND<0.5 U	ND<2 U	-1.5	76	48
ND<0.5 U	ND<2 U	-1.5	76	49
ND<0.5 U	ND<2 U	-1.5	76	50
ND<0.5 U	ND<2 U	-1.5	76	51
ND<0.5 U	ND<2 U	-1.5	76	52
ND<1 U	ND<2 U	-1	76	53
ND<1 U	ND<2 U	-1	76	54
ND<1 U	ND<2 U	-1	76	55
ND<1 U	ND<2 U	-1	76	56
ND<1 U	ND<2 U	-1	76	57
ND<1 U	ND<2 U	-1	76	58
ND<1 U	ND<2 U	-1	76	59
ND<1 U	ND<2 U	-1	76	60
ND<1 U	ND<2 U	-1	76	61
ND<1 U	ND<2 U	-1	76	62
ND<0.5 U	ND<1.5 U	-1	76	63
ND<1.5 U	ND<1.5 U	0	76	63
ND<0.5 U	ND<1.5 U	-1	76	64
ND<0.5 U	ND<1.5 U	-1	76	65
ND<1.5 U	ND<1.5 U	0	76	65
ND<1.5 U	ND<1.5 U	0	76	65
ND<1.5 U	ND<1.5 U	0	76	65
ND<1.5 U	ND<1.5 U	0	76	65
ND<0.75 U	ND<1.5 U	-0.75	76	66
ND<0.75 U	ND<1.5 U	-0.75	76	67
ND<0.75 U	ND<1.5 U	-0.75	76	68
ND<0.75 U	ND<1.5 U	-0.75	76	69
ND<0.75 U	ND<1.5 U	-0.75	76	70
ND<0.75 U	ND<1.5 U	-0.75	76	71
ND<0.75 U	ND<1.5 U	-0.75	76	72
ND<0.75 U	ND<1.5 U	-0.75	76	73
ND<0.75 U	ND<1.5 U	-0.75	76	74
ND<0.75 U	ND<1.5 U	-0.75	76	75
ND<0.75 U	ND<1.5 U	-0.75	76	76
ND<0.75 U	ND<1.5 U	-0.75	76	77
ND<0.75 U	ND<1.5 U	-0.75	76	78
ND<0.75 U	ND<1.5 U	-0.75	76	79
ND<0.75 U	ND<1.5 U	-0.75	76	80
ND<0.75 U	ND<1.5 U	-0.75	76	81
ND<0.75 U	ND<1.5 U	-0.75	76	82
ND<0.75 U	ND<1.5 U	-0.75	76	83

ND<0.75 U	ND<1.5 U	-0.75	76	84
ND<0.75 U	ND<1.5 U	-0.75	76	85
ND<0.75 U	ND<1.5 U	-0.75	76	86
ND<0.5 U	ND<1.5 U	-1	76	87
ND<0.5 U	ND<1.5 U	-1	76	88
ND<0.5 U	ND<1.5 U	-1	76	89
ND<0.5 U	ND<1.5 U	-1	76	90
ND<0.5 U	ND<1.5 U	-1	76	91
ND<0.5 U	ND<1.5 U	-1	76	92
ND<0.5 U	ND<1.5 U	-1	76	93
ND<0.5 U	ND<1.5 U	-1	76	94
ND<0.5 U	ND<1.5 U	-1	76	95
ND<0.5 U	ND<1.5 U	-1	76	96
ND<0.5 U	ND<1.5 U	-1	76	97
ND<0.5 U	ND<1.5 U	-1	76	98
ND<0.5 U	ND<1.5 U	-1	76	99
ND<0.5 U	ND<1.5 U	-1	76	100
ND<0.5 U	ND<1.5 U	-1	76	101
ND<0.5 U	ND<1.5 U	-1	76	102
ND<0.5 U	ND<1.5 U	-1	76	103
ND<0.5 U	ND<1.5 U	-1	76	104
ND<0.5 U	ND<1.5 U	-1	76	105
ND<0.5 U	ND<1.5 U	-1	76	106
ND<0.5 U	ND<1.5 U	-1	76	107
ND<0.5 U	ND<1.5 U	-1	76	108
ND<1 U	ND<1.5 U	-0.5	76	109
ND<1 U	ND<1.5 U	-0.5	76	110
ND<1 U	ND<1.5 U	-0.5	76	111
ND<1 U	ND<1.5 U	-0.5	76	112
ND<1 U	ND<1.5 U	-0.5	76	113
ND<1 U	ND<1.5 U	-0.5	76	114
ND<1 U	ND<1.5 U	-0.5	76	115
ND<1 U	ND<1.5 U	-0.5	76	116
ND<1 U	ND<1.5 U	-0.5	76	117
ND<1 U	ND<1.5 U	-0.5	76	118
ND<1.5 U	ND<0.5 U	1	77	118
ND<0.5 U	ND<0.5 U	0	77	118
ND<0.5 U	ND<0.5 U	0	77	118
ND<1.5 U	ND<0.5 U	1	78	118
ND<1.5 U	ND<0.5 U	1	79	118
ND<1.5 U	ND<0.5 U	1	80	118
ND<1.5 U	ND<0.5 U	1	81	118
ND<0.75 U	ND<0.5 U	0.25	82	118
ND<0.75 U	ND<0.5 U	0.25	83	118
ND<0.75 U	ND<0.5 U	0.25	84	118
ND<0.75 U	ND<0.5 U	0.25	85	118
ND<0.75 U	ND<0.5 U	0.25	86	118
ND<0.75 U	ND<0.5 U	0.25	87	118
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Page 16

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$$S \text{ Statistic} = 612 - 847 = -235$$

Tied Group	Value	Members
1	0.5	27
2	1.5	6
3	0.75	21
4	1	10

Time Period	Observations
11/24/2009	1
1/27/2010	1

3/2/2010	1
3/4/2010	1
4/9/2010	1
4/30/2010	1
5/6/2010	1
6/7/2010	1
7/26/2010	1
8/16/2010	1
9/17/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1
1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1
12/6/2011	1
1/13/2012	1
2/21/2012	1
3/20/2012	1
4/27/2012	1
5/24/2012	1
6/15/2012	1
7/26/2012	1
8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1
1/29/2013	1
4/17/2013	1
7/29/2013	1
10/30/2013	1
1/31/2014	1
4/18/2014	1
7/17/2014	1
10/23/2014	1
1/27/2015	1
4/13/2015	1
7/21/2015	1
10/20/2015	1
1/27/2016	1
4/26/2016	1
7/26/2016	1
10/31/2016	1
1/30/2017	1
4/27/2017	1
7/24/2017	1
10/27/2017	1
1/29/2018	1

4/12/2018	1
7/24/2018	1
10/29/2018	1
1/30/2019	1
4/29/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 63918

B = 0

C = 26370

D = 0

E = 1242

F = 0

a = 561600

b = 2.35872e+006

c = 8320

Group Variance = 27649

Z-Score = -1.40727

Comparison Level at $1.0 - (0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)

$|-1.40727| \leq 2.32634$ indicating no evidence of a trend

ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
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ND<0.5 U	ND<0.5 U	0	28	0
ND<0.5 U	ND<0.5 U	0	28	0
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2.8	ND<0.5 U	2.3	34	0
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1	ND<0.5 U	0.5	46	0
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ND<0.75 U	ND<0.5 U	0.25	49	0
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7.9	ND<0.5 U	7.4	51	0
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ND<1 U	ND<0.5 U	0.5	67	0
ND<1 U	ND<0.5 U	0.5	68	0
ND<1 U	ND<0.5 U	0.5	69	0
ND<1 U	ND<0.5 U	0.5	70	0
ND<1 U	ND<0.5 U	0.5	71	0
2.8	ND<0.5 U	2.3	72	0
ND<1 U	ND<0.5 U	0.5	73	0
ND<1 U	ND<0.5 U	0.5	74	0
ND<1 U	ND<0.5 U	0.5	75	0
ND<1 U	ND<0.5 U	0.5	76	0
ND<1.5 U	ND<2 U	-0.5	76	1
ND<0.5 U	ND<2 U	-1.5	76	2
ND<1.5 U	ND<2 U	-0.5	76	3
ND<0.5 U	ND<2 U	-1.5	76	4
ND<0.5 U	ND<2 U	-1.5	76	5
ND<1.5 U	ND<2 U	-0.5	76	6
ND<1.5 U	ND<2 U	-0.5	76	7
ND<1.5 U	ND<2 U	-0.5	76	8
ND<1.5 U	ND<2 U	-0.5	76	9
1	ND<2 U	-1	76	10
ND<0.75 U	ND<2 U	-1.25	76	11
ND<0.75 U	ND<2 U	-1.25	76	12
ND<0.75 U	ND<2 U	-1.25	76	13
1.6	ND<2 U	-0.4	76	14
7.9	ND<2 U	5.9	77	14
ND<0.75 U	ND<2 U	-1.25	77	15
ND<0.75 U	ND<2 U	-1.25	77	16
ND<0.75 U	ND<2 U	-1.25	77	17
ND<0.75 U	ND<2 U	-1.25	77	18
ND<0.75 U	ND<2 U	-1.25	77	19
ND<0.75 U	ND<2 U	-1.25	77	20
ND<0.75 U	ND<2 U	-1.25	77	21
ND<0.75 U	ND<2 U	-1.25	77	22
ND<0.75 U	ND<2 U	-1.25	77	23
ND<0.75 U	ND<2 U	-1.25	77	24
ND<0.75 U	ND<2 U	-1.25	77	25
ND<0.75 U	ND<2 U	-1.25	77	26
ND<0.75 U	ND<2 U	-1.25	77	27
ND<0.75 U	ND<2 U	-1.25	77	28
ND<0.75 U	ND<2 U	-1.25	77	29
ND<0.5 U	ND<2 U	-1.5	77	30
ND<0.5 U	ND<2 U	-1.5	77	31

ND<0.5 U	ND<2 U	-1.5	77	32
ND<0.5 U	ND<2 U	-1.5	77	33
ND<0.5 U	ND<2 U	-1.5	77	34
ND<0.5 U	ND<2 U	-1.5	77	35
ND<0.5 U	ND<2 U	-1.5	77	36
ND<0.5 U	ND<2 U	-1.5	77	37
ND<0.5 U	ND<2 U	-1.5	77	38
ND<0.5 U	ND<2 U	-1.5	77	39
ND<0.5 U	ND<2 U	-1.5	77	40
ND<0.5 U	ND<2 U	-1.5	77	41
ND<0.5 U	ND<2 U	-1.5	77	42
ND<0.5 U	ND<2 U	-1.5	77	43
ND<0.5 U	ND<2 U	-1.5	77	44
ND<0.5 U	ND<2 U	-1.5	77	45
ND<0.5 U	ND<2 U	-1.5	77	46
ND<0.5 U	ND<2 U	-1.5	77	47
ND<0.5 U	ND<2 U	-1.5	77	48
ND<0.5 U	ND<2 U	-1.5	77	49
ND<0.5 U	ND<2 U	-1.5	77	50
ND<0.5 U	ND<2 U	-1.5	77	51
ND<1 U	ND<2 U	-1	77	52
ND<1 U	ND<2 U	-1	77	53
ND<1 U	ND<2 U	-1	77	54
ND<1 U	ND<2 U	-1	77	55
ND<1 U	ND<2 U	-1	77	56
2.8	ND<2 U	0.8	78	56
ND<1 U	ND<2 U	-1	78	57
ND<1 U	ND<2 U	-1	78	58
ND<1 U	ND<2 U	-1	78	59
ND<1 U	ND<2 U	-1	78	60
ND<0.5 U	ND<1.5 U	-1	78	61
ND<1.5 U	ND<1.5 U	0	78	61
ND<0.5 U	ND<1.5 U	-1	78	62
ND<0.5 U	ND<1.5 U	-1	78	63
ND<1.5 U	ND<1.5 U	0	78	63
ND<1.5 U	ND<1.5 U	0	78	63
ND<1.5 U	ND<1.5 U	0	78	63
ND<1.5 U	ND<1.5 U	0	78	63
1	ND<1.5 U	-0.5	78	64
ND<0.75 U	ND<1.5 U	-0.75	78	65
ND<0.75 U	ND<1.5 U	-0.75	78	66
ND<0.75 U	ND<1.5 U	-0.75	78	67
1.6	ND<1.5 U	0.1	79	67
7.9	ND<1.5 U	6.4	80	67
ND<0.75 U	ND<1.5 U	-0.75	80	68
ND<0.75 U	ND<1.5 U	-0.75	80	69
ND<0.75 U	ND<1.5 U	-0.75	80	70
ND<0.75 U	ND<1.5 U	-0.75	80	71
ND<0.75 U	ND<1.5 U	-0.75	80	72
ND<0.75 U	ND<1.5 U	-0.75	80	73
ND<0.75 U	ND<1.5 U	-0.75	80	74
ND<0.75 U	ND<1.5 U	-0.75	80	75
ND<0.75 U	ND<1.5 U	-0.75	80	76
ND<0.75 U	ND<1.5 U	-0.75	80	77
ND<0.75 U	ND<1.5 U	-0.75	80	78
ND<0.75 U	ND<1.5 U	-0.75	80	79

ND<0.75 U	ND<1.5 U	-0.75	80	80
ND<0.75 U	ND<1.5 U	-0.75	80	81
ND<0.75 U	ND<1.5 U	-0.75	80	82
ND<0.5 U	ND<1.5 U	-1	80	83
ND<0.5 U	ND<1.5 U	-1	80	84
ND<0.5 U	ND<1.5 U	-1	80	85
ND<0.5 U	ND<1.5 U	-1	80	86
ND<0.5 U	ND<1.5 U	-1	80	87
ND<0.5 U	ND<1.5 U	-1	80	88
ND<0.5 U	ND<1.5 U	-1	80	89
ND<0.5 U	ND<1.5 U	-1	80	90
ND<0.5 U	ND<1.5 U	-1	80	91
ND<0.5 U	ND<1.5 U	-1	80	92
ND<0.5 U	ND<1.5 U	-1	80	93
ND<0.5 U	ND<1.5 U	-1	80	94
ND<0.5 U	ND<1.5 U	-1	80	95
ND<0.5 U	ND<1.5 U	-1	80	96
ND<0.5 U	ND<1.5 U	-1	80	97
ND<0.5 U	ND<1.5 U	-1	80	98
ND<0.5 U	ND<1.5 U	-1	80	99
ND<0.5 U	ND<1.5 U	-1	80	100
ND<0.5 U	ND<1.5 U	-1	80	101
ND<0.5 U	ND<1.5 U	-1	80	102
ND<0.5 U	ND<1.5 U	-1	80	103
ND<0.5 U	ND<1.5 U	-1	80	104
ND<1 U	ND<1.5 U	-0.5	80	105
ND<1 U	ND<1.5 U	-0.5	80	106
ND<1 U	ND<1.5 U	-0.5	80	107
ND<1 U	ND<1.5 U	-0.5	80	108
ND<1 U	ND<1.5 U	-0.5	80	109
2.8	ND<1.5 U	1.3	81	109
ND<1 U	ND<1.5 U	-0.5	81	110
ND<1 U	ND<1.5 U	-0.5	81	111
ND<1 U	ND<1.5 U	-0.5	81	112
ND<1 U	ND<1.5 U	-0.5	81	113
ND<1.5 U	ND<0.5 U	1	82	113
ND<0.5 U	ND<0.5 U	0	82	113
ND<0.5 U	ND<0.5 U	0	82	113
ND<1.5 U	ND<0.5 U	1	83	113
ND<1.5 U	ND<0.5 U	1	84	113
ND<1.5 U	ND<0.5 U	1	85	113
ND<1.5 U	ND<0.5 U	1	86	113
1	ND<0.5 U	0.5	87	113
ND<0.75 U	ND<0.5 U	0.25	88	113
ND<0.75 U	ND<0.5 U	0.25	89	113
ND<0.75 U	ND<0.5 U	0.25	90	113
1.6	ND<0.5 U	1.1	91	113
7.9	ND<0.5 U	7.4	92	113
ND<0.75 U	ND<0.5 U	0.25	93	113
ND<0.75 U	ND<0.5 U	0.25	94	113
ND<0.75 U	ND<0.5 U	0.25	95	113
ND<0.75 U	ND<0.5 U	0.25	96	113
ND<0.75 U	ND<0.5 U	0.25	97	113
ND<0.75 U	ND<0.5 U	0.25	98	113
ND<0.75 U	ND<0.5 U	0.25	99	113
ND<0.75 U	ND<0.5 U	0.25	100	113

[illegible]

ND<0.75 U	ND<1.5 U	-0.75	119	125
ND<0.75 U	ND<1.5 U	-0.75	119	126
ND<0.75 U	ND<1.5 U	-0.75	119	127
ND<0.75 U	ND<1.5 U	-0.75	119	128
ND<0.75 U	ND<1.5 U	-0.75	119	129
ND<0.75 U	ND<1.5 U	-0.75	119	130
ND<0.75 U	ND<1.5 U	-0.75	119	131
ND<0.75 U	ND<1.5 U	-0.75	119	132
ND<0.75 U	ND<1.5 U	-0.75	119	133
ND<0.75 U	ND<1.5 U	-0.75	119	134
ND<0.5 U	ND<1.5 U	-1	119	135
ND<0.5 U	ND<1.5 U	-1	119	136
ND<0.5 U	ND<1.5 U	-1	119	137
ND<0.5 U	ND<1.5 U	-1	119	138
ND<0.5 U	ND<1.5 U	-1	119	139
ND<0.5 U	ND<1.5 U	-1	119	140
ND<0.5 U	ND<1.5 U	-1	119	141
ND<0.5 U	ND<1.5 U	-1	119	142
ND<0.5 U	ND<1.5 U	-1	119	143
ND<0.5 U	ND<1.5 U	-1	119	144
ND<0.5 U	ND<1.5 U	-1	119	145
ND<0.5 U	ND<1.5 U	-1	119	146
ND<0.5 U	ND<1.5 U	-1	119	147
ND<0.5 U	ND<1.5 U	-1	119	148
ND<0.5 U	ND<1.5 U	-1	119	149
ND<0.5 U	ND<1.5 U	-1	119	150
ND<0.5 U	ND<1.5 U	-1	119	151
ND<0.5 U	ND<1.5 U	-1	119	152
ND<0.5 U	ND<1.5 U	-1	119	153
ND<0.5 U	ND<1.5 U	-1	119	154
ND<0.5 U	ND<1.5 U	-1	119	155
ND<0.5 U	ND<1.5 U	-1	119	156
ND<1 U	ND<1.5 U	-0.5	119	157
ND<1 U	ND<1.5 U	-0.5	119	158
ND<1 U	ND<1.5 U	-0.5	119	159
ND<1 U	ND<1.5 U	-0.5	119	160
ND<1 U	ND<1.5 U	-0.5	119	161
2.8	ND<1.5 U	1.3	120	161
ND<1 U	ND<1.5 U	-0.5	120	162
ND<1 U	ND<1.5 U	-0.5	120	163
ND<1 U	ND<1.5 U	-0.5	120	164
ND<1 U	ND<1.5 U	-0.5	120	165
ND<0.5 U	ND<0.5 U	0	120	165
ND<1.5 U	ND<0.5 U	1	121	165
ND<1.5 U	ND<0.5 U	1	122	165
ND<1.5 U	ND<0.5 U	1	123	165
ND<1.5 U	ND<0.5 U	1	124	165
1	ND<0.5 U	0.5	125	165
ND<0.75 U	ND<0.5 U	0.25	126	165
ND<0.75 U	ND<0.5 U	0.25	127	165
ND<0.75 U	ND<0.5 U	0.25	128	165
1.6	ND<0.5 U	1.1	129	165
7.9	ND<0.5 U	7.4	130	165
ND<0.75 U	ND<0.5 U	0.25	131	165
ND<0.75 U	ND<0.5 U	0.25	132	165
ND<0.75 U	ND<0.5 U	0.25	133	165

ND<0.75 U	ND<0.5 U	0.25	134	165
ND<0.75 U	ND<0.5 U	0.25	135	165
ND<0.75 U	ND<0.5 U	0.25	136	165
ND<0.75 U	ND<0.5 U	0.25	137	165
ND<0.75 U	ND<0.5 U	0.25	138	165
ND<0.75 U	ND<0.5 U	0.25	139	165
ND<0.75 U	ND<0.5 U	0.25	140	165
ND<0.75 U	ND<0.5 U	0.25	141	165
ND<0.75 U	ND<0.5 U	0.25	142	165
ND<0.75 U	ND<0.5 U	0.25	143	165
ND<0.75 U	ND<0.5 U	0.25	144	165
ND<0.75 U	ND<0.5 U	0.25	145	165
ND<0.5 U	ND<0.5 U	0	145	165
ND<0.5 U	ND<0.5 U	0	145	165
ND<0.5 U	ND<0.5 U	0	145	165
ND<0.5 U	ND<0.5 U	0	145	165
ND<0.5 U	ND<0.5 U	0	145	165
ND<0.5 U	ND<0.5 U	0	145	165
ND<0.5 U	ND<0.5 U	0	145	165
ND<0.5 U	ND<0.5 U	0	145	165
ND<0.5 U	ND<0.5 U	0	145	165
ND<0.5 U	ND<0.5 U	0	145	165
ND<0.5 U	ND<0.5 U	0	145	165
ND<0.5 U	ND<0.5 U	0	145	165
ND<0.5 U	ND<0.5 U	0	145	165
ND<0.5 U	ND<0.5 U	0	145	165
ND<0.5 U	ND<0.5 U	0	145	165
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ND<0.5 U	ND<0.5 U	0	145	165
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ND<0.5 U	ND<0.5 U	0	145	165
ND<0.5 U	ND<0.5 U	0	145	165
ND<0.5 U	ND<0.5 U	0	145	165
ND<1 U	ND<0.5 U	0.5	146	165
ND<1 U	ND<0.5 U	0.5	147	165
ND<1 U	ND<0.5 U	0.5	148	165
ND<1 U	ND<0.5 U	0.5	149	165
ND<1 U	ND<0.5 U	0.5	150	165
2.8	ND<0.5 U	2.3	151	165
ND<1 U	ND<0.5 U	0.5	152	165
ND<1 U	ND<0.5 U	0.5	153	165
ND<1 U	ND<0.5 U	0.5	154	165
ND<1 U	ND<0.5 U	0.5	155	165
ND<1.5 U	ND<0.5 U	1	156	165
ND<1.5 U	ND<0.5 U	1	157	165
ND<1.5 U	ND<0.5 U	1	158	165
ND<1.5 U	ND<0.5 U	1	159	165
1	ND<0.5 U	0.5	160	165
ND<0.75 U	ND<0.5 U	0.25	161	165
ND<0.75 U	ND<0.5 U	0.25	162	165
ND<0.75 U	ND<0.5 U	0.25	163	165
1.6	ND<0.5 U	1.1	164	165
7.9	ND<0.5 U	7.4	165	165
ND<0.75 U	ND<0.5 U	0.25	166	165
ND<0.75 U	ND<0.5 U	0.25	167	165

[illegible]

ND<0.75 U	ND<1.5 U	-0.75	192	172
ND<0.75 U	ND<1.5 U	-0.75	192	173
ND<0.75 U	ND<1.5 U	-0.75	192	174
ND<0.75 U	ND<1.5 U	-0.75	192	175
ND<0.75 U	ND<1.5 U	-0.75	192	176
ND<0.75 U	ND<1.5 U	-0.75	192	177
ND<0.75 U	ND<1.5 U	-0.75	192	178
ND<0.75 U	ND<1.5 U	-0.75	192	179
ND<0.75 U	ND<1.5 U	-0.75	192	180
ND<0.75 U	ND<1.5 U	-0.75	192	181
ND<0.75 U	ND<1.5 U	-0.75	192	182
ND<0.75 U	ND<1.5 U	-0.75	192	183
ND<0.75 U	ND<1.5 U	-0.75	192	184
ND<0.5 U	ND<1.5 U	-1	192	185
ND<0.5 U	ND<1.5 U	-1	192	186
ND<0.5 U	ND<1.5 U	-1	192	187
ND<0.5 U	ND<1.5 U	-1	192	188
ND<0.5 U	ND<1.5 U	-1	192	189
ND<0.5 U	ND<1.5 U	-1	192	190
ND<0.5 U	ND<1.5 U	-1	192	191
ND<0.5 U	ND<1.5 U	-1	192	192
ND<0.5 U	ND<1.5 U	-1	192	193
ND<0.5 U	ND<1.5 U	-1	192	194
ND<0.5 U	ND<1.5 U	-1	192	195
ND<0.5 U	ND<1.5 U	-1	192	196
ND<0.5 U	ND<1.5 U	-1	192	197
ND<0.5 U	ND<1.5 U	-1	192	198
ND<0.5 U	ND<1.5 U	-1	192	199
ND<0.5 U	ND<1.5 U	-1	192	200
ND<0.5 U	ND<1.5 U	-1	192	201
ND<0.5 U	ND<1.5 U	-1	192	202
ND<0.5 U	ND<1.5 U	-1	192	203
ND<0.5 U	ND<1.5 U	-1	192	204
ND<0.5 U	ND<1.5 U	-1	192	205
ND<0.5 U	ND<1.5 U	-1	192	206
ND<1 U	ND<1.5 U	-0.5	192	207
ND<1 U	ND<1.5 U	-0.5	192	208
ND<1 U	ND<1.5 U	-0.5	192	209
ND<1 U	ND<1.5 U	-0.5	192	210
ND<1 U	ND<1.5 U	-0.5	192	211
2.8	ND<1.5 U	1.3	193	211
ND<1 U	ND<1.5 U	-0.5	193	212
ND<1 U	ND<1.5 U	-0.5	193	213
ND<1 U	ND<1.5 U	-0.5	193	214
ND<1 U	ND<1.5 U	-0.5	193	215
ND<1.5 U	ND<1.5 U	0	193	215
ND<1.5 U	ND<1.5 U	0	193	215
1	ND<1.5 U	-0.5	193	216
ND<0.75 U	ND<1.5 U	-0.75	193	217
ND<0.75 U	ND<1.5 U	-0.75	193	218
ND<0.75 U	ND<1.5 U	-0.75	193	219
1.6	ND<1.5 U	0.1	194	219
7.9	ND<1.5 U	6.4	195	219
ND<0.75 U	ND<1.5 U	-0.75	195	220
ND<0.75 U	ND<1.5 U	-0.75	195	221
ND<0.75 U	ND<1.5 U	-0.75	195	222

ND<0.75 U	ND<1.5 U	-0.75	195	223
ND<0.75 U	ND<1.5 U	-0.75	195	224
ND<0.75 U	ND<1.5 U	-0.75	195	225
ND<0.75 U	ND<1.5 U	-0.75	195	226
ND<0.75 U	ND<1.5 U	-0.75	195	227
ND<0.75 U	ND<1.5 U	-0.75	195	228
ND<0.75 U	ND<1.5 U	-0.75	195	229
ND<0.75 U	ND<1.5 U	-0.75	195	230
ND<0.75 U	ND<1.5 U	-0.75	195	231
ND<0.75 U	ND<1.5 U	-0.75	195	232
ND<0.75 U	ND<1.5 U	-0.75	195	233
ND<0.75 U	ND<1.5 U	-0.75	195	234
ND<0.5 U	ND<1.5 U	-1	195	235
ND<0.5 U	ND<1.5 U	-1	195	236
ND<0.5 U	ND<1.5 U	-1	195	237
ND<0.5 U	ND<1.5 U	-1	195	238
ND<0.5 U	ND<1.5 U	-1	195	239
ND<0.5 U	ND<1.5 U	-1	195	240
ND<0.5 U	ND<1.5 U	-1	195	241
ND<0.5 U	ND<1.5 U	-1	195	242
ND<0.5 U	ND<1.5 U	-1	195	243
ND<0.5 U	ND<1.5 U	-1	195	244
ND<0.5 U	ND<1.5 U	-1	195	245
ND<0.5 U	ND<1.5 U	-1	195	246
ND<0.5 U	ND<1.5 U	-1	195	247
ND<0.5 U	ND<1.5 U	-1	195	248
ND<0.5 U	ND<1.5 U	-1	195	249
ND<0.5 U	ND<1.5 U	-1	195	250
ND<0.5 U	ND<1.5 U	-1	195	251
ND<0.5 U	ND<1.5 U	-1	195	252
ND<0.5 U	ND<1.5 U	-1	195	253
ND<0.5 U	ND<1.5 U	-1	195	254
ND<0.5 U	ND<1.5 U	-1	195	255
ND<0.5 U	ND<1.5 U	-1	195	256
ND<1 U	ND<1.5 U	-0.5	195	257
ND<1 U	ND<1.5 U	-0.5	195	258
ND<1 U	ND<1.5 U	-0.5	195	259
ND<1 U	ND<1.5 U	-0.5	195	260
ND<1 U	ND<1.5 U	-0.5	195	261
2.8	ND<1.5 U	1.3	196	261
ND<1 U	ND<1.5 U	-0.5	196	262
ND<1 U	ND<1.5 U	-0.5	196	263
ND<1 U	ND<1.5 U	-0.5	196	264
ND<1 U	ND<1.5 U	-0.5	196	265
ND<1.5 U	ND<1.5 U	0	196	265
1	ND<1.5 U	-0.5	196	266
ND<0.75 U	ND<1.5 U	-0.75	196	267
ND<0.75 U	ND<1.5 U	-0.75	196	268
ND<0.75 U	ND<1.5 U	-0.75	196	269
1.6	ND<1.5 U	0.1	197	269
7.9	ND<1.5 U	6.4	198	269
ND<0.75 U	ND<1.5 U	-0.75	198	270
ND<0.75 U	ND<1.5 U	-0.75	198	271
ND<0.75 U	ND<1.5 U	-0.75	198	272
ND<0.75 U	ND<1.5 U	-0.75	198	273
ND<0.75 U	ND<1.5 U	-0.75	198	274

ND<0.75 U	ND<1.5 U	-0.75	198	275
ND<0.75 U	ND<1.5 U	-0.75	198	276
ND<0.75 U	ND<1.5 U	-0.75	198	277
ND<0.75 U	ND<1.5 U	-0.75	198	278
ND<0.75 U	ND<1.5 U	-0.75	198	279
ND<0.75 U	ND<1.5 U	-0.75	198	280
ND<0.75 U	ND<1.5 U	-0.75	198	281
ND<0.75 U	ND<1.5 U	-0.75	198	282
ND<0.75 U	ND<1.5 U	-0.75	198	283
ND<0.75 U	ND<1.5 U	-0.75	198	284
ND<0.5 U	ND<1.5 U	-1	198	285
ND<0.5 U	ND<1.5 U	-1	198	286
ND<0.5 U	ND<1.5 U	-1	198	287
ND<0.5 U	ND<1.5 U	-1	198	288
ND<0.5 U	ND<1.5 U	-1	198	289
ND<0.5 U	ND<1.5 U	-1	198	290
ND<0.5 U	ND<1.5 U	-1	198	291
ND<0.5 U	ND<1.5 U	-1	198	292
ND<0.5 U	ND<1.5 U	-1	198	293
ND<0.5 U	ND<1.5 U	-1	198	294
ND<0.5 U	ND<1.5 U	-1	198	295
ND<0.5 U	ND<1.5 U	-1	198	296
ND<0.5 U	ND<1.5 U	-1	198	297
ND<0.5 U	ND<1.5 U	-1	198	298
ND<0.5 U	ND<1.5 U	-1	198	299
ND<0.5 U	ND<1.5 U	-1	198	300
ND<0.5 U	ND<1.5 U	-1	198	301
ND<0.5 U	ND<1.5 U	-1	198	302
ND<0.5 U	ND<1.5 U	-1	198	303
ND<0.5 U	ND<1.5 U	-1	198	304
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ND<0.5 U	ND<1.5 U	-1	198	306
ND<1 U	ND<1.5 U	-0.5	198	307
ND<1 U	ND<1.5 U	-0.5	198	308
ND<1 U	ND<1.5 U	-0.5	198	309
ND<1 U	ND<1.5 U	-0.5	198	310
ND<1 U	ND<1.5 U	-0.5	198	311
2.8	ND<1.5 U	1.3	199	311
ND<1 U	ND<1.5 U	-0.5	199	312
ND<1 U	ND<1.5 U	-0.5	199	313
ND<1 U	ND<1.5 U	-0.5	199	314
ND<1 U	ND<1.5 U	-0.5	199	315
1	ND<1.5 U	-0.5	199	316
ND<0.75 U	ND<1.5 U	-0.75	199	317
ND<0.75 U	ND<1.5 U	-0.75	199	318
ND<0.75 U	ND<1.5 U	-0.75	199	319
1.6	ND<1.5 U	0.1	200	319
7.9	ND<1.5 U	6.4	201	319
ND<0.75 U	ND<1.5 U	-0.75	201	320
ND<0.75 U	ND<1.5 U	-0.75	201	321
ND<0.75 U	ND<1.5 U	-0.75	201	322
ND<0.75 U	ND<1.5 U	-0.75	201	323
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ND<0.75 U	ND<1.5 U	-0.75	201	326
ND<0.75 U	ND<1.5 U	-0.75	201	327

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ND<0.75 U	ND<1.5 U	-0.75	201	333
ND<0.75 U	ND<1.5 U	-0.75	201	334
ND<0.5 U	ND<1.5 U	-1	201	335
ND<0.5 U	ND<1.5 U	-1	201	336
ND<0.5 U	ND<1.5 U	-1	201	337
ND<0.5 U	ND<1.5 U	-1	201	338
ND<0.5 U	ND<1.5 U	-1	201	339
ND<0.5 U	ND<1.5 U	-1	201	340
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ND<0.5 U	ND<1.5 U	-1	201	345
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ND<0.5 U	ND<1.5 U	-1	201	348
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ND<1 U	ND<1.5 U	-0.5	201	358
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ND<1 U	ND<1.5 U	-0.5	201	360
ND<1 U	ND<1.5 U	-0.5	201	361
2.8	ND<1.5 U	1.3	202	361
ND<1 U	ND<1.5 U	-0.5	202	362
ND<1 U	ND<1.5 U	-0.5	202	363
ND<1 U	ND<1.5 U	-0.5	202	364
ND<1 U	ND<1.5 U	-0.5	202	365
ND<0.75 U	1	-0.25	202	366
ND<0.75 U	1	-0.25	202	367
ND<0.75 U	1	-0.25	202	368
1.6	1	0.6	203	368
7.9	1	6.9	204	368
ND<0.75 U	1	-0.25	204	369
ND<0.75 U	1	-0.25	204	370
ND<0.75 U	1	-0.25	204	371
ND<0.75 U	1	-0.25	204	372
ND<0.75 U	1	-0.25	204	373
ND<0.75 U	1	-0.25	204	374
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ND<0.75 U	1	-0.25	204	380

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ND<1 U	1	0	204	405
ND<1 U	1	0	204	405
ND<1 U	1	0	204	405
ND<1 U	1	0	204	405
ND<1 U	1	0	204	405
2.8	1	1.8	205	405
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ND<1 U	1	0	205	405
ND<1 U	1	0	205	405
ND<0.75 U	ND<0.75 U	0	205	405
ND<0.75 U	ND<0.75 U	0	205	405
1.6	ND<0.75 U	0.85	206	405
7.9	ND<0.75 U	7.15	207	405
ND<0.75 U	ND<0.75 U	0	207	405
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2.8	ND<0.75 U	2.05	213	427
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1.6	ND<0.75 U	0.85	218	427
7.9	ND<0.75 U	7.15	219	427
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2.8	ND<0.75 U	2.05	225	449
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1.6	ND<0.75 U	0.85	230	449
7.9	ND<0.75 U	7.15	231	449
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2.8	ND<0.75 U	2.05	237	471
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7.9	1.6	6.3	242	471
ND<0.75 U	1.6	-0.85	242	472
ND<0.75 U	1.6	-0.85	242	473
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ND<0.75 U	1.6	-0.85	242	484
ND<0.75 U	1.6	-0.85	242	485
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ND<0.5 U	1.6	-1.1	242	507
ND<0.5 U	1.6	-1.1	242	508
ND<1 U	1.6	-0.6	242	509

ND<1 U	1.6	-0.6	242	510
ND<1 U	1.6	-0.6	242	511
ND<1 U	1.6	-0.6	242	512
ND<1 U	1.6	-0.6	242	513
2.8	1.6	1.2	243	513
ND<1 U	1.6	-0.6	243	514
ND<1 U	1.6	-0.6	243	515
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ND<0.75 U	7.9	-7.15	243	519
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ND<0.75 U	7.9	-7.15	243	521
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ND<1 U	7.9	-6.9	243	555
ND<1 U	7.9	-6.9	243	556
ND<1 U	7.9	-6.9	243	557
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ND<1 U	7.9	-6.9	243	559
2.8	7.9	-5.1	243	560
ND<1 U	7.9	-6.9	243	561
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ND<1 U	7.9	-6.9	243	563
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[illegible]

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2.8	ND<0.5 U	2.3	509	894
ND<1 U	ND<0.5 U	0.5	510	894
ND<1 U	ND<0.5 U	0.5	511	894
ND<1 U	ND<0.5 U	0.5	512	894
ND<1 U	ND<0.5 U	0.5	513	894
ND<0.5 U	ND<0.5 U	0	513	894
ND<0.5 U	ND<0.5 U	0	513	894
ND<0.5 U	ND<0.5 U	0	513	894
ND<0.5 U	ND<0.5 U	0	513	894
ND<0.5 U	ND<0.5 U	0	513	894
ND<0.5 U	ND<0.5 U	0	513	894
ND<0.5 U	ND<0.5 U	0	513	894
ND<0.5 U	ND<0.5 U	0	513	894
ND<0.5 U	ND<0.5 U	0	513	894
ND<1 U	ND<0.5 U	0.5	514	894
ND<1 U	ND<0.5 U	0.5	515	894
ND<1 U	ND<0.5 U	0.5	516	894
ND<1 U	ND<0.5 U	0.5	517	894
ND<1 U	ND<0.5 U	0.5	518	894
2.8	ND<0.5 U	2.3	519	894
ND<1 U	ND<0.5 U	0.5	520	894
ND<1 U	ND<0.5 U	0.5	521	894
ND<1 U	ND<0.5 U	0.5	522	894
ND<1 U	ND<0.5 U	0.5	523	894
ND<0.5 U	ND<0.5 U	0	523	894
ND<0.5 U	ND<0.5 U	0	523	894
ND<0.5 U	ND<0.5 U	0	523	894
ND<0.5 U	ND<0.5 U	0	523	894
ND<0.5 U	ND<0.5 U	0	523	894
ND<0.5 U	ND<0.5 U	0	523	894
ND<0.5 U	ND<0.5 U	0	523	894
ND<0.5 U	ND<0.5 U	0	523	894
ND<1 U	ND<0.5 U	0.5	524	894
ND<1 U	ND<0.5 U	0.5	525	894
ND<1 U	ND<0.5 U	0.5	526	894
ND<1 U	ND<0.5 U	0.5	527	894
ND<1 U	ND<0.5 U	0.5	528	894
2.8	ND<0.5 U	2.3	529	894
ND<1 U	ND<0.5 U	0.5	530	894
ND<1 U	ND<0.5 U	0.5	531	894
ND<1 U	ND<0.5 U	0.5	532	894
ND<1 U	ND<0.5 U	0.5	533	894
ND<0.5 U	ND<0.5 U	0	533	894
ND<0.5 U	ND<0.5 U	0	533	894
ND<0.5 U	ND<0.5 U	0	533	894
ND<0.5 U	ND<0.5 U	0	533	894
ND<0.5 U	ND<0.5 U	0	533	894
ND<0.5 U	ND<0.5 U	0	533	894
ND<0.5 U	ND<0.5 U	0	533	894
ND<1 U	ND<0.5 U	0.5	534	894
ND<1 U	ND<0.5 U	0.5	535	894
ND<1 U	ND<0.5 U	0.5	536	894
ND<1 U	ND<0.5 U	0.5	537	894

ND<1 U	ND<0.5 U	0.5	538	894
2.8	ND<0.5 U	2.3	539	894
ND<1 U	ND<0.5 U	0.5	540	894
ND<1 U	ND<0.5 U	0.5	541	894
ND<1 U	ND<0.5 U	0.5	542	894
ND<1 U	ND<0.5 U	0.5	543	894
ND<0.5 U	ND<0.5 U	0	543	894
ND<0.5 U	ND<0.5 U	0	543	894
ND<0.5 U	ND<0.5 U	0	543	894
ND<0.5 U	ND<0.5 U	0	543	894
ND<0.5 U	ND<0.5 U	0	543	894
ND<0.5 U	ND<0.5 U	0	543	894
ND<1 U	ND<0.5 U	0.5	544	894
ND<1 U	ND<0.5 U	0.5	545	894
ND<1 U	ND<0.5 U	0.5	546	894
ND<1 U	ND<0.5 U	0.5	547	894
ND<1 U	ND<0.5 U	0.5	548	894
2.8	ND<0.5 U	2.3	549	894
ND<1 U	ND<0.5 U	0.5	550	894
ND<1 U	ND<0.5 U	0.5	551	894
ND<1 U	ND<0.5 U	0.5	552	894
ND<1 U	ND<0.5 U	0.5	553	894
ND<0.5 U	ND<0.5 U	0	553	894
ND<0.5 U	ND<0.5 U	0	553	894
ND<0.5 U	ND<0.5 U	0	553	894
ND<0.5 U	ND<0.5 U	0	553	894
ND<0.5 U	ND<0.5 U	0	553	894
ND<1 U	ND<0.5 U	0.5	554	894
ND<1 U	ND<0.5 U	0.5	555	894
ND<1 U	ND<0.5 U	0.5	556	894
ND<1 U	ND<0.5 U	0.5	557	894
ND<1 U	ND<0.5 U	0.5	558	894
2.8	ND<0.5 U	2.3	559	894
ND<1 U	ND<0.5 U	0.5	560	894
ND<1 U	ND<0.5 U	0.5	561	894
ND<1 U	ND<0.5 U	0.5	562	894
ND<1 U	ND<0.5 U	0.5	563	894
ND<0.5 U	ND<0.5 U	0	563	894
ND<0.5 U	ND<0.5 U	0	563	894
ND<0.5 U	ND<0.5 U	0	563	894
ND<0.5 U	ND<0.5 U	0	563	894
ND<1 U	ND<0.5 U	0.5	564	894
ND<1 U	ND<0.5 U	0.5	565	894
ND<1 U	ND<0.5 U	0.5	566	894
ND<1 U	ND<0.5 U	0.5	567	894
ND<1 U	ND<0.5 U	0.5	568	894
2.8	ND<0.5 U	2.3	569	894
ND<1 U	ND<0.5 U	0.5	570	894
ND<1 U	ND<0.5 U	0.5	571	894
ND<1 U	ND<0.5 U	0.5	572	894
ND<1 U	ND<0.5 U	0.5	573	894
ND<0.5 U	ND<0.5 U	0	573	894
ND<0.5 U	ND<0.5 U	0	573	894

ND<0.5 U	ND<0.5 U	0	573	894
ND<1 U	ND<0.5 U	0.5	574	894
ND<1 U	ND<0.5 U	0.5	575	894
ND<1 U	ND<0.5 U	0.5	576	894
ND<1 U	ND<0.5 U	0.5	577	894
ND<1 U	ND<0.5 U	0.5	578	894
2.8	ND<0.5 U	2.3	579	894
ND<1 U	ND<0.5 U	0.5	580	894
ND<1 U	ND<0.5 U	0.5	581	894
ND<1 U	ND<0.5 U	0.5	582	894
ND<1 U	ND<0.5 U	0.5	583	894
ND<0.5 U	ND<0.5 U	0	583	894
ND<0.5 U	ND<0.5 U	0	583	894
ND<1 U	ND<0.5 U	0.5	584	894
ND<1 U	ND<0.5 U	0.5	585	894
ND<1 U	ND<0.5 U	0.5	586	894
ND<1 U	ND<0.5 U	0.5	587	894
ND<1 U	ND<0.5 U	0.5	588	894
2.8	ND<0.5 U	2.3	589	894
ND<1 U	ND<0.5 U	0.5	590	894
ND<1 U	ND<0.5 U	0.5	591	894
ND<1 U	ND<0.5 U	0.5	592	894
ND<1 U	ND<0.5 U	0.5	593	894
ND<0.5 U	ND<0.5 U	0	593	894
ND<1 U	ND<0.5 U	0.5	594	894
ND<1 U	ND<0.5 U	0.5	595	894
ND<1 U	ND<0.5 U	0.5	596	894
ND<1 U	ND<0.5 U	0.5	597	894
ND<1 U	ND<0.5 U	0.5	598	894
2.8	ND<0.5 U	2.3	599	894
ND<1 U	ND<0.5 U	0.5	600	894
ND<1 U	ND<0.5 U	0.5	601	894
ND<1 U	ND<0.5 U	0.5	602	894
ND<1 U	ND<0.5 U	0.5	603	894
ND<1 U	ND<0.5 U	0.5	604	894
ND<1 U	ND<0.5 U	0.5	605	894
ND<1 U	ND<0.5 U	0.5	606	894
ND<1 U	ND<0.5 U	0.5	607	894
ND<1 U	ND<0.5 U	0.5	608	894
2.8	ND<0.5 U	2.3	609	894
ND<1 U	ND<0.5 U	0.5	610	894
ND<1 U	ND<0.5 U	0.5	611	894
ND<1 U	ND<0.5 U	0.5	612	894
ND<1 U	ND<0.5 U	0.5	613	894
ND<1 U	ND<1 U	0	613	894
ND<1 U	ND<1 U	0	613	894
ND<1 U	ND<1 U	0	613	894
ND<1 U	ND<1 U	0	613	894
2.8	ND<1 U	1.8	614	894
ND<1 U	ND<1 U	0	614	894
ND<1 U	ND<1 U	0	614	894
ND<1 U	ND<1 U	0	614	894
ND<1 U	ND<1 U	0	614	894

$$S \text{ Statistic} = 618 - 898 = -280$$

Tied Group	Value	Members
1	0.5	27
2	1.5	6
3	1	10
4	0.75	18

Time Period	Observations
11/24/2009	1
1/27/2010	1

3/2/2010	1
3/4/2010	1
4/9/2010	1
4/30/2010	1
5/6/2010	1
6/7/2010	1
7/26/2010	1
8/16/2010	1
9/17/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1
1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1
12/6/2011	1
1/13/2012	1
2/21/2012	1
3/20/2012	1
4/27/2012	1
5/24/2012	1
6/15/2012	1
7/26/2012	1
8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1
1/29/2013	1
4/17/2013	1
7/29/2013	1
10/30/2013	1
1/31/2014	1
4/18/2014	1
7/17/2014	1
10/23/2014	1
1/27/2015	1
4/13/2015	1
7/21/2015	1
10/20/2015	1
1/27/2016	1
4/26/2016	1
7/26/2016	1
10/31/2016	1
1/30/2017	1
4/27/2017	1
7/24/2017	1
10/27/2017	1
1/29/2018	1

4/12/2018	1
7/24/2018	1
10/29/2018	1
1/30/2019	1
4/29/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 56724

B = 0

C = 23286

D = 0

E = 1128

F = 0

a = 561600

b = 2.35872e+006

c = 8320

Group Variance = 28048.7

Z-Score = -1.6659

Comparison Level at 1.0 - $(0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)

$|-1.6659| \leq 2.32634$ indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Total Xylenes

Location: MW-7

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
ND<1.5 U	ND<0.5 U	1	1	0
ND<1.5 U	ND<0.5 U	1	2	0
ND<1.5 U	ND<0.5 U	1	3	0
ND<1.5 U	ND<0.5 U	1	4	0
ND<0.75 U	ND<0.5 U	0.25	5	0
ND<0.75 U	ND<0.5 U	0.25	6	0
ND<0.75 U	ND<0.5 U	0.25	7	0
ND<0.75 U	ND<0.5 U	0.25	8	0
ND<0.75 U	ND<0.5 U	0.25	9	0
ND<0.75 U	ND<0.5 U	0.25	10	0
ND<0.75 U	ND<0.5 U	0.25	11	0
ND<0.5 U	ND<0.5 U	0	11	0
ND<0.5 U	ND<0.5 U	0	11	0
ND<0.5 U	ND<0.5 U	0	11	0
ND<0.5 U	ND<0.5 U	0	11	0
ND<0.5 U	ND<0.5 U	0	11	0
ND<0.5 U	ND<0.5 U	0	11	0
ND<0.5 U	ND<0.5 U	0	11	0
ND<0.5 U	ND<0.5 U	0	11	0
ND<1 U	ND<0.5 U	0.5	12	0
ND<1 U	ND<0.5 U	0.5	13	0
ND<1 U	ND<0.5 U	0.5	14	0
ND<1 U	ND<0.5 U	0.5	15	0
ND<1 U	ND<0.5 U	0.5	16	0
ND<1.5 U	ND<1.5 U	0	16	0
ND<1.5 U	ND<1.5 U	0	16	0
ND<1.5 U	ND<1.5 U	0	16	0
ND<0.75 U	ND<1.5 U	-0.75	16	1
ND<0.75 U	ND<1.5 U	-0.75	16	2
ND<0.75 U	ND<1.5 U	-0.75	16	3
ND<0.75 U	ND<1.5 U	-0.75	16	4
ND<0.75 U	ND<1.5 U	-0.75	16	5
ND<0.75 U	ND<1.5 U	-0.75	16	6
ND<0.75 U	ND<1.5 U	-0.75	16	7
ND<0.5 U	ND<1.5 U	-1	16	8
ND<0.5 U	ND<1.5 U	-1	16	9
ND<0.5 U	ND<1.5 U	-1	16	10
ND<0.5 U	ND<1.5 U	-1	16	11
ND<0.5 U	ND<1.5 U	-1	16	12
ND<0.5 U	ND<1.5 U	-1	16	13
ND<0.5 U	ND<1.5 U	-1	16	14
ND<0.5 U	ND<1.5 U	-1	16	15
ND<0.5 U	ND<1.5 U	-1	16	16
ND<1 U	ND<1.5 U	-0.5	16	17
ND<1 U	ND<1.5 U	-0.5	16	18

ND<1 U	ND<1.5 U	-0.5	16	19
ND<1 U	ND<1.5 U	-0.5	16	20
ND<1 U	ND<1.5 U	-0.5	16	21
ND<1.5 U	ND<1.5 U	0	16	21
ND<1.5 U	ND<1.5 U	0	16	21
ND<0.75 U	ND<1.5 U	-0.75	16	22
ND<0.75 U	ND<1.5 U	-0.75	16	23
ND<0.75 U	ND<1.5 U	-0.75	16	24
ND<0.75 U	ND<1.5 U	-0.75	16	25
ND<0.75 U	ND<1.5 U	-0.75	16	26
ND<0.75 U	ND<1.5 U	-0.75	16	27
ND<0.75 U	ND<1.5 U	-0.75	16	28
ND<0.5 U	ND<1.5 U	-1	16	29
ND<0.5 U	ND<1.5 U	-1	16	30
ND<0.5 U	ND<1.5 U	-1	16	31
ND<0.5 U	ND<1.5 U	-1	16	32
ND<0.5 U	ND<1.5 U	-1	16	33
ND<0.5 U	ND<1.5 U	-1	16	34
ND<0.5 U	ND<1.5 U	-1	16	35
ND<0.5 U	ND<1.5 U	-1	16	36
ND<0.5 U	ND<1.5 U	-1	16	37
ND<1 U	ND<1.5 U	-0.5	16	38
ND<1 U	ND<1.5 U	-0.5	16	39
ND<1 U	ND<1.5 U	-0.5	16	40
ND<1 U	ND<1.5 U	-0.5	16	41
ND<1 U	ND<1.5 U	-0.5	16	42
ND<1.5 U	ND<1.5 U	0	16	42
ND<0.75 U	ND<1.5 U	-0.75	16	43
ND<0.75 U	ND<1.5 U	-0.75	16	44
ND<0.75 U	ND<1.5 U	-0.75	16	45
ND<0.75 U	ND<1.5 U	-0.75	16	46
ND<0.75 U	ND<1.5 U	-0.75	16	47
ND<0.75 U	ND<1.5 U	-0.75	16	48
ND<0.75 U	ND<1.5 U	-0.75	16	49
ND<0.5 U	ND<1.5 U	-1	16	50
ND<0.5 U	ND<1.5 U	-1	16	51
ND<0.5 U	ND<1.5 U	-1	16	52
ND<0.5 U	ND<1.5 U	-1	16	53
ND<0.5 U	ND<1.5 U	-1	16	54
ND<0.5 U	ND<1.5 U	-1	16	55
ND<0.5 U	ND<1.5 U	-1	16	56
ND<0.5 U	ND<1.5 U	-1	16	57
ND<0.5 U	ND<1.5 U	-1	16	58
ND<1 U	ND<1.5 U	-0.5	16	59
ND<1 U	ND<1.5 U	-0.5	16	60
ND<1 U	ND<1.5 U	-0.5	16	61
ND<1 U	ND<1.5 U	-0.5	16	62
ND<1 U	ND<1.5 U	-0.5	16	63
ND<0.75 U	ND<1.5 U	-0.75	16	64
ND<0.75 U	ND<1.5 U	-0.75	16	65
ND<0.75 U	ND<1.5 U	-0.75	16	66
ND<0.75 U	ND<1.5 U	-0.75	16	67
ND<0.75 U	ND<1.5 U	-0.75	16	68
ND<0.75 U	ND<1.5 U	-0.75	16	69

ND<0.75 U	ND<1.5 U	-0.75	16	70
ND<0.5 U	ND<1.5 U	-1	16	71
ND<0.5 U	ND<1.5 U	-1	16	72
ND<0.5 U	ND<1.5 U	-1	16	73
ND<0.5 U	ND<1.5 U	-1	16	74
ND<0.5 U	ND<1.5 U	-1	16	75
ND<0.5 U	ND<1.5 U	-1	16	76
ND<0.5 U	ND<1.5 U	-1	16	77
ND<0.5 U	ND<1.5 U	-1	16	78
ND<0.5 U	ND<1.5 U	-1	16	79
ND<1 U	ND<1.5 U	-0.5	16	80
ND<1 U	ND<1.5 U	-0.5	16	81
ND<1 U	ND<1.5 U	-0.5	16	82
ND<1 U	ND<1.5 U	-0.5	16	83
ND<1 U	ND<1.5 U	-0.5	16	84
ND<0.75 U	ND<0.75 U	0	16	84
ND<0.75 U	ND<0.75 U	0	16	84
ND<0.75 U	ND<0.75 U	0	16	84
ND<0.75 U	ND<0.75 U	0	16	84
ND<0.75 U	ND<0.75 U	0	16	84
ND<0.75 U	ND<0.75 U	0	16	84
ND<0.5 U	ND<0.75 U	-0.25	16	85
ND<0.5 U	ND<0.75 U	-0.25	16	86
ND<0.5 U	ND<0.75 U	-0.25	16	87
ND<0.5 U	ND<0.75 U	-0.25	16	88
ND<0.5 U	ND<0.75 U	-0.25	16	89
ND<0.5 U	ND<0.75 U	-0.25	16	90
ND<0.5 U	ND<0.75 U	-0.25	16	91
ND<0.5 U	ND<0.75 U	-0.25	16	92
ND<0.5 U	ND<0.75 U	-0.25	16	93
ND<1 U	ND<0.75 U	0.25	17	93
ND<1 U	ND<0.75 U	0.25	18	93
ND<1 U	ND<0.75 U	0.25	19	93
ND<1 U	ND<0.75 U	0.25	20	93
ND<1 U	ND<0.75 U	0.25	21	93
ND<0.75 U	ND<0.75 U	0	21	93
ND<0.75 U	ND<0.75 U	0	21	93
ND<0.75 U	ND<0.75 U	0	21	93
ND<0.75 U	ND<0.75 U	0	21	93
ND<0.75 U	ND<0.75 U	0	21	93
ND<0.5 U	ND<0.75 U	-0.25	21	94
ND<0.5 U	ND<0.75 U	-0.25	21	95
ND<0.5 U	ND<0.75 U	-0.25	21	96
ND<0.5 U	ND<0.75 U	-0.25	21	97
ND<0.5 U	ND<0.75 U	-0.25	21	98
ND<0.5 U	ND<0.75 U	-0.25	21	99
ND<0.5 U	ND<0.75 U	-0.25	21	100
ND<0.5 U	ND<0.75 U	-0.25	21	101
ND<0.5 U	ND<0.75 U	-0.25	21	102
ND<1 U	ND<0.75 U	0.25	22	102
ND<1 U	ND<0.75 U	0.25	23	102
ND<1 U	ND<0.75 U	0.25	24	102
ND<1 U	ND<0.75 U	0.25	25	102
ND<1 U	ND<0.75 U	0.25	26	102

ND<0.75 U	ND<0.75 U	0	26	102
ND<0.75 U	ND<0.75 U	0	26	102
ND<0.75 U	ND<0.75 U	0	26	102
ND<0.75 U	ND<0.75 U	0	26	102
ND<0.5 U	ND<0.75 U	-0.25	26	103
ND<0.5 U	ND<0.75 U	-0.25	26	104
ND<0.5 U	ND<0.75 U	-0.25	26	105
ND<0.5 U	ND<0.75 U	-0.25	26	106
ND<0.5 U	ND<0.75 U	-0.25	26	107
ND<0.5 U	ND<0.75 U	-0.25	26	108
ND<0.5 U	ND<0.75 U	-0.25	26	109
ND<0.5 U	ND<0.75 U	-0.25	26	110
ND<0.5 U	ND<0.75 U	-0.25	26	111
ND<1 U	ND<0.75 U	0.25	27	111
ND<1 U	ND<0.75 U	0.25	28	111
ND<1 U	ND<0.75 U	0.25	29	111
ND<1 U	ND<0.75 U	0.25	30	111
ND<1 U	ND<0.75 U	0.25	31	111
ND<0.75 U	ND<0.75 U	0	31	111
ND<0.75 U	ND<0.75 U	0	31	111
ND<0.75 U	ND<0.75 U	0	31	111
ND<0.5 U	ND<0.75 U	-0.25	31	112
ND<0.5 U	ND<0.75 U	-0.25	31	113
ND<0.5 U	ND<0.75 U	-0.25	31	114
ND<0.5 U	ND<0.75 U	-0.25	31	115
ND<0.5 U	ND<0.75 U	-0.25	31	116
ND<0.5 U	ND<0.75 U	-0.25	31	117
ND<0.5 U	ND<0.75 U	-0.25	31	118
ND<0.5 U	ND<0.75 U	-0.25	31	119
ND<0.5 U	ND<0.75 U	-0.25	31	120
ND<1 U	ND<0.75 U	0.25	32	120
ND<1 U	ND<0.75 U	0.25	33	120
ND<1 U	ND<0.75 U	0.25	34	120
ND<1 U	ND<0.75 U	0.25	35	120
ND<1 U	ND<0.75 U	0.25	36	120
ND<0.75 U	ND<0.75 U	0	36	120
ND<0.75 U	ND<0.75 U	0	36	120
ND<0.5 U	ND<0.75 U	-0.25	36	121
ND<0.5 U	ND<0.75 U	-0.25	36	122
ND<0.5 U	ND<0.75 U	-0.25	36	123
ND<0.5 U	ND<0.75 U	-0.25	36	124
ND<0.5 U	ND<0.75 U	-0.25	36	125
ND<0.5 U	ND<0.75 U	-0.25	36	126
ND<0.5 U	ND<0.75 U	-0.25	36	127
ND<0.5 U	ND<0.75 U	-0.25	36	128
ND<0.5 U	ND<0.75 U	-0.25	36	129
ND<1 U	ND<0.75 U	0.25	37	129
ND<1 U	ND<0.75 U	0.25	38	129
ND<1 U	ND<0.75 U	0.25	39	129
ND<1 U	ND<0.75 U	0.25	40	129
ND<1 U	ND<0.75 U	0.25	41	129
ND<0.75 U	ND<0.75 U	0	41	129
ND<0.5 U	ND<0.75 U	-0.25	41	130
ND<0.5 U	ND<0.75 U	-0.25	41	131

ND<0.5 U	ND<0.75 U	-0.25	41	132
ND<0.5 U	ND<0.75 U	-0.25	41	133
ND<0.5 U	ND<0.75 U	-0.25	41	134
ND<0.5 U	ND<0.75 U	-0.25	41	135
ND<0.5 U	ND<0.75 U	-0.25	41	136
ND<0.5 U	ND<0.75 U	-0.25	41	137
ND<0.5 U	ND<0.75 U	-0.25	41	138
ND<1 U	ND<0.75 U	0.25	42	138
ND<1 U	ND<0.75 U	0.25	43	138
ND<1 U	ND<0.75 U	0.25	44	138
ND<1 U	ND<0.75 U	0.25	45	138
ND<1 U	ND<0.75 U	0.25	46	138
ND<0.5 U	ND<0.75 U	-0.25	46	139
ND<0.5 U	ND<0.75 U	-0.25	46	140
ND<0.5 U	ND<0.75 U	-0.25	46	141
ND<0.5 U	ND<0.75 U	-0.25	46	142
ND<0.5 U	ND<0.75 U	-0.25	46	143
ND<0.5 U	ND<0.75 U	-0.25	46	144
ND<0.5 U	ND<0.75 U	-0.25	46	145
ND<0.5 U	ND<0.75 U	-0.25	46	146
ND<0.5 U	ND<0.75 U	-0.25	46	147
ND<1 U	ND<0.75 U	0.25	47	147
ND<1 U	ND<0.75 U	0.25	48	147
ND<1 U	ND<0.75 U	0.25	49	147
ND<1 U	ND<0.75 U	0.25	50	147
ND<1 U	ND<0.75 U	0.25	51	147
ND<0.5 U	ND<0.5 U	0	51	147
ND<0.5 U	ND<0.5 U	0	51	147
ND<0.5 U	ND<0.5 U	0	51	147
ND<0.5 U	ND<0.5 U	0	51	147
ND<0.5 U	ND<0.5 U	0	51	147
ND<0.5 U	ND<0.5 U	0	51	147
ND<0.5 U	ND<0.5 U	0	51	147
ND<0.5 U	ND<0.5 U	0	51	147
ND<1 U	ND<0.5 U	0.5	52	147
ND<1 U	ND<0.5 U	0.5	53	147
ND<1 U	ND<0.5 U	0.5	54	147
ND<1 U	ND<0.5 U	0.5	55	147
ND<1 U	ND<0.5 U	0.5	56	147
ND<0.5 U	ND<0.5 U	0	56	147
ND<0.5 U	ND<0.5 U	0	56	147
ND<0.5 U	ND<0.5 U	0	56	147
ND<0.5 U	ND<0.5 U	0	56	147
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ND<0.5 U	ND<0.5 U	0	56	147
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ND<1 U	ND<0.5 U	0.5	58	147
ND<1 U	ND<0.5 U	0.5	59	147
ND<1 U	ND<0.5 U	0.5	60	147
ND<1 U	ND<0.5 U	0.5	61	147
ND<0.5 U	ND<0.5 U	0	61	147
ND<0.5 U	ND<0.5 U	0	61	147

ND<0.5 U	ND<0.5 U	0	61	147
ND<0.5 U	ND<0.5 U	0	61	147
ND<0.5 U	ND<0.5 U	0	61	147
ND<0.5 U	ND<0.5 U	0	61	147
ND<1 U	ND<0.5 U	0.5	62	147
ND<1 U	ND<0.5 U	0.5	63	147
ND<1 U	ND<0.5 U	0.5	64	147
ND<1 U	ND<0.5 U	0.5	65	147
ND<1 U	ND<0.5 U	0.5	66	147
ND<0.5 U	ND<0.5 U	0	66	147
ND<0.5 U	ND<0.5 U	0	66	147
ND<0.5 U	ND<0.5 U	0	66	147
ND<0.5 U	ND<0.5 U	0	66	147
ND<0.5 U	ND<0.5 U	0	66	147
ND<1 U	ND<0.5 U	0.5	67	147
ND<1 U	ND<0.5 U	0.5	68	147
ND<1 U	ND<0.5 U	0.5	69	147
ND<1 U	ND<0.5 U	0.5	70	147
ND<1 U	ND<0.5 U	0.5	71	147
ND<0.5 U	ND<0.5 U	0	71	147
ND<0.5 U	ND<0.5 U	0	71	147
ND<0.5 U	ND<0.5 U	0	71	147
ND<0.5 U	ND<0.5 U	0	71	147
ND<1 U	ND<0.5 U	0.5	72	147
ND<1 U	ND<0.5 U	0.5	73	147
ND<1 U	ND<0.5 U	0.5	74	147
ND<1 U	ND<0.5 U	0.5	75	147
ND<1 U	ND<0.5 U	0.5	76	147
ND<0.5 U	ND<0.5 U	0	76	147
ND<0.5 U	ND<0.5 U	0	76	147
ND<0.5 U	ND<0.5 U	0	76	147
ND<1 U	ND<0.5 U	0.5	77	147
ND<1 U	ND<0.5 U	0.5	78	147
ND<1 U	ND<0.5 U	0.5	79	147
ND<1 U	ND<0.5 U	0.5	80	147
ND<1 U	ND<0.5 U	0.5	81	147
ND<0.5 U	ND<0.5 U	0	81	147
ND<0.5 U	ND<0.5 U	0	81	147
ND<1 U	ND<0.5 U	0.5	82	147
ND<1 U	ND<0.5 U	0.5	83	147
ND<1 U	ND<0.5 U	0.5	84	147
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ND<1 U	ND<0.5 U	0.5	86	147
ND<0.5 U	ND<0.5 U	0	86	147
ND<1 U	ND<0.5 U	0.5	87	147
ND<1 U	ND<0.5 U	0.5	88	147
ND<1 U	ND<0.5 U	0.5	89	147
ND<1 U	ND<0.5 U	0.5	90	147
ND<1 U	ND<0.5 U	0.5	91	147
ND<1 U	ND<0.5 U	0.5	92	147
ND<1 U	ND<0.5 U	0.5	93	147

ND<1 U	ND<0.5 U	0.5	94	147
ND<1 U	ND<0.5 U	0.5	95	147
ND<1 U	ND<0.5 U	0.5	96	147
ND<1 U	ND<1 U	0	96	147
ND<1 U	ND<1 U	0	96	147
ND<1 U	ND<1 U	0	96	147
ND<1 U	ND<1 U	0	96	147
ND<1 U	ND<1 U	0	96	147
ND<1 U	ND<1 U	0	96	147
ND<1 U	ND<1 U	0	96	147
ND<1 U	ND<1 U	0	96	147
ND<1 U	ND<1 U	0	96	147

S Statistic = 96 - 147 = -51

Tied Group	Value	Members
1	0.5	10
2	1.5	4
3	0.75	7
4	1	5

Time Period	Observations
11/25/2009	1
3/4/2010	1
4/30/2010	1
7/26/2010	1
10/13/2010	1
1/14/2011	1
4/21/2011	1
7/21/2011	1
10/31/2011	1
1/13/2012	1
4/27/2012	1
7/26/2012	1
10/18/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 3504

B = 0
C = 1014
D = 0
E = 164
F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 1863.67
Z-Score = -1.15821
Comparison Level at $1.0 - (0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)
|-1.15821| <= 2.32634 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: MW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
214	257	-43	0	1
233	257	-24	0	2
277	257	20	1	2
274	257	17	2	2
356	257	99	3	2
245	257	-12	3	3
288	257	31	4	3
306	257	49	5	3
262	257	5	6	3
248	257	-9	6	4
219	257	-38	6	5
194	257	-63	6	6
255	257	-2	6	7
227	257	-30	6	8
227	257	-30	6	9
241	257	-16	6	10
284	257	27	7	10
646	257	389	8	10
298	257	41	9	10
308	257	51	10	10
340	257	83	11	10
225	257	-32	11	11
382	257	125	12	11
373	257	116	13	11
1280	257	1023	14	11
274	257	17	15	11
233	214	19	16	11
277	214	63	17	11
274	214	60	18	11
356	214	142	19	11
245	214	31	20	11
288	214	74	21	11
306	214	92	22	11
262	214	48	23	11
248	214	34	24	11
219	214	5	25	11
194	214	-20	25	12
255	214	41	26	12
227	214	13	27	12
227	214	13	28	12
241	214	27	29	12
284	214	70	30	12
646	214	432	31	12
298	214	84	32	12
308	214	94	33	12
340	214	126	34	12

225	214	11	35	12
382	214	168	36	12
373	214	159	37	12
1280	214	1066	38	12
274	214	60	39	12
277	233	44	40	12
274	233	41	41	12
356	233	123	42	12
245	233	12	43	12
288	233	55	44	12
306	233	73	45	12
262	233	29	46	12
248	233	15	47	12
219	233	-14	47	13
194	233	-39	47	14
255	233	22	48	14
227	233	-6	48	15
227	233	-6	48	16
241	233	8	49	16
284	233	51	50	16
646	233	413	51	16
298	233	65	52	16
308	233	75	53	16
340	233	107	54	16
225	233	-8	54	17
382	233	149	55	17
373	233	140	56	17
1280	233	1047	57	17
274	233	41	58	17
274	277	-3	58	18
356	277	79	59	18
245	277	-32	59	19
288	277	11	60	19
306	277	29	61	19
262	277	-15	61	20
248	277	-29	61	21
219	277	-58	61	22
194	277	-83	61	23
255	277	-22	61	24
227	277	-50	61	25
227	277	-50	61	26
241	277	-36	61	27
284	277	7	62	27
646	277	369	63	27
298	277	21	64	27
308	277	31	65	27
340	277	63	66	27
225	277	-52	66	28
382	277	105	67	28
373	277	96	68	28
1280	277	1003	69	28
274	277	-3	69	29
356	274	82	70	29
245	274	-29	70	30

288	274	14	71	30
306	274	32	72	30
262	274	-12	72	31
248	274	-26	72	32
219	274	-55	72	33
194	274	-80	72	34
255	274	-19	72	35
227	274	-47	72	36
227	274	-47	72	37
241	274	-33	72	38
284	274	10	73	38
646	274	372	74	38
298	274	24	75	38
308	274	34	76	38
340	274	66	77	38
225	274	-49	77	39
382	274	108	78	39
373	274	99	79	39
1280	274	1006	80	39
274	274	0	80	39

245	356	-111	80	40
288	356	-68	80	41
306	356	-50	80	42
262	356	-94	80	43
248	356	-108	80	44
219	356	-137	80	45
194	356	-162	80	46
255	356	-101	80	47
227	356	-129	80	48
227	356	-129	80	49
241	356	-115	80	50
284	356	-72	80	51
646	356	290	81	51
298	356	-58	81	52
308	356	-48	81	53
340	356	-16	81	54
225	356	-131	81	55
382	356	26	82	55
373	356	17	83	55
1280	356	924	84	55
274	356	-82	84	56

288	245	43	85	56
306	245	61	86	56
262	245	17	87	56
248	245	3	88	56
219	245	-26	88	57
194	245	-51	88	58
255	245	10	89	58
227	245	-18	89	59
227	245	-18	89	60
241	245	-4	89	61
284	245	39	90	61
646	245	401	91	61
298	245	53	92	61
308	245	63	93	61

340	245	95	94	61
225	245	-20	94	62
382	245	137	95	62
373	245	128	96	62
1280	245	1035	97	62
274	245	29	98	62
306	288	18	99	62
262	288	-26	99	63
248	288	-40	99	64
219	288	-69	99	65
194	288	-94	99	66
255	288	-33	99	67
227	288	-61	99	68
227	288	-61	99	69
241	288	-47	99	70
284	288	-4	99	71
646	288	358	100	71
298	288	10	101	71
308	288	20	102	71
340	288	52	103	71
225	288	-63	103	72
382	288	94	104	72
373	288	85	105	72
1280	288	992	106	72
274	288	-14	106	73
262	306	-44	106	74
248	306	-58	106	75
219	306	-87	106	76
194	306	-112	106	77
255	306	-51	106	78
227	306	-79	106	79
227	306	-79	106	80
241	306	-65	106	81
284	306	-22	106	82
646	306	340	107	82
298	306	-8	107	83
308	306	2	108	83
340	306	34	109	83
225	306	-81	109	84
382	306	76	110	84
373	306	67	111	84
1280	306	974	112	84
274	306	-32	112	85
248	262	-14	112	86
219	262	-43	112	87
194	262	-68	112	88
255	262	-7	112	89
227	262	-35	112	90
227	262	-35	112	91
241	262	-21	112	92
284	262	22	113	92
646	262	384	114	92
298	262	36	115	92
308	262	46	116	92

340	262	78	117	92
225	262	-37	117	93
382	262	120	118	93
373	262	111	119	93
1280	262	1018	120	93
274	262	12	121	93
219	248	-29	121	94
194	248	-54	121	95
255	248	7	122	95
227	248	-21	122	96
227	248	-21	122	97
241	248	-7	122	98
284	248	36	123	98
646	248	398	124	98
298	248	50	125	98
308	248	60	126	98
340	248	92	127	98
225	248	-23	127	99
382	248	134	128	99
373	248	125	129	99
1280	248	1032	130	99
274	248	26	131	99
194	219	-25	131	100
255	219	36	132	100
227	219	8	133	100
227	219	8	134	100
241	219	22	135	100
284	219	65	136	100
646	219	427	137	100
298	219	79	138	100
308	219	89	139	100
340	219	121	140	100
225	219	6	141	100
382	219	163	142	100
373	219	154	143	100
1280	219	1061	144	100
274	219	55	145	100
255	194	61	146	100
227	194	33	147	100
227	194	33	148	100
241	194	47	149	100
284	194	90	150	100
646	194	452	151	100
298	194	104	152	100
308	194	114	153	100
340	194	146	154	100
225	194	31	155	100
382	194	188	156	100
373	194	179	157	100
1280	194	1086	158	100
274	194	80	159	100
227	255	-28	159	101
227	255	-28	159	102

241	255	-14	159	103
284	255	29	160	103
646	255	391	161	103
298	255	43	162	103
308	255	53	163	103
340	255	85	164	103
225	255	-30	164	104
382	255	127	165	104
373	255	118	166	104
1280	255	1025	167	104
274	255	19	168	104
227	227	0	168	104
241	227	14	169	104
284	227	57	170	104
646	227	419	171	104
298	227	71	172	104
308	227	81	173	104
340	227	113	174	104
225	227	-2	174	105
382	227	155	175	105
373	227	146	176	105
1280	227	1053	177	105
274	227	47	178	105
241	227	14	179	105
284	227	57	180	105
646	227	419	181	105
298	227	71	182	105
308	227	81	183	105
340	227	113	184	105
225	227	-2	184	106
382	227	155	185	106
373	227	146	186	106
1280	227	1053	187	106
274	227	47	188	106
284	241	43	189	106
646	241	405	190	106
298	241	57	191	106
308	241	67	192	106
340	241	99	193	106
225	241	-16	193	107
382	241	141	194	107
373	241	132	195	107
1280	241	1039	196	107
274	241	33	197	107
646	284	362	198	107
298	284	14	199	107
308	284	24	200	107
340	284	56	201	107
225	284	-59	201	108
382	284	98	202	108
373	284	89	203	108
1280	284	996	204	108
274	284	-10	204	109

298	646	-348	204	110
308	646	-338	204	111
340	646	-306	204	112
225	646	-421	204	113
382	646	-264	204	114
373	646	-273	204	115
1280	646	634	205	115
274	646	-372	205	116
308	298	10	206	116
340	298	42	207	116
225	298	-73	207	117
382	298	84	208	117
373	298	75	209	117
1280	298	982	210	117
274	298	-24	210	118
340	308	32	211	118
225	308	-83	211	119
382	308	74	212	119
373	308	65	213	119
1280	308	972	214	119
274	308	-34	214	120
225	340	-115	214	121
382	340	42	215	121
373	340	33	216	121
1280	340	940	217	121
274	340	-66	217	122
382	225	157	218	122
373	225	148	219	122
1280	225	1055	220	122
274	225	49	221	122
373	382	-9	221	123
1280	382	898	222	123
274	382	-108	222	124
1280	373	907	223	124
274	373	-99	223	125
274	1280	-1006	223	126

S Statistic = 223 - 126 = 97

Tied Group	Value	Members
1	274	2
2	227	2

Time Period	Observations
11/24/2009	1
3/4/2010	1
4/30/2010	1
7/26/2010	1

10/13/2010	1
1/14/2011	1
4/21/2011	1
7/21/2011	1
10/31/2011	1
1/13/2012	1
4/27/2012	1
7/26/2012	1
10/18/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 36

B = 0

C = 0

D = 0

E = 4

F = 0

a = 41418

b = 157950

c = 1404

Group Variance = 2299

Z-Score = 2.00217

Comparison Level at 1.0 - (0.02 / 2) = 99% confidence level = 2.32634 (two-tailed)

|2.00217| <= 2.32634 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: MW-2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
251	403	-152	0	1
253	403	-150	0	2
256	403	-147	0	3
287	403	-116	0	4
351	403	-52	0	5
253	403	-150	0	6
1	403	-402	0	7
238	403	-165	0	8
273	403	-130	0	9
248	403	-155	0	10
236	403	-167	0	11
171	403	-232	0	12
260	403	-143	0	13
209	403	-194	0	14
219	403	-184	0	15
244	403	-159	0	16
314	403	-89	0	17
309	403	-94	0	18
330	403	-73	0	19
292	403	-111	0	20
379	403	-24	0	21
228	403	-175	0	22
402	403	-1	0	23
406	403	3	1	23
1220	403	817	2	23
299	403	-104	2	24
253	251	2	3	24
256	251	5	4	24
287	251	36	5	24
351	251	100	6	24
253	251	2	7	24
1	251	-250	7	25
238	251	-13	7	26
273	251	22	8	26
248	251	-3	8	27
236	251	-15	8	28
171	251	-80	8	29
260	251	9	9	29
209	251	-42	9	30
219	251	-32	9	31
244	251	-7	9	32
314	251	63	10	32
309	251	58	11	32
330	251	79	12	32
292	251	41	13	32
379	251	128	14	32

228	251	-23	14	33
402	251	151	15	33
406	251	155	16	33
1220	251	969	17	33
299	251	48	18	33
256	253	3	19	33
287	253	34	20	33
351	253	98	21	33
253	253	0	21	33
1	253	-252	21	34
238	253	-15	21	35
273	253	20	22	35
248	253	-5	22	36
236	253	-17	22	37
171	253	-82	22	38
260	253	7	23	38
209	253	-44	23	39
219	253	-34	23	40
244	253	-9	23	41
314	253	61	24	41
309	253	56	25	41
330	253	77	26	41
292	253	39	27	41
379	253	126	28	41
228	253	-25	28	42
402	253	149	29	42
406	253	153	30	42
1220	253	967	31	42
299	253	46	32	42
287	256	31	33	42
351	256	95	34	42
253	256	-3	34	43
1	256	-255	34	44
238	256	-18	34	45
273	256	17	35	45
248	256	-8	35	46
236	256	-20	35	47
171	256	-85	35	48
260	256	4	36	48
209	256	-47	36	49
219	256	-37	36	50
244	256	-12	36	51
314	256	58	37	51
309	256	53	38	51
330	256	74	39	51
292	256	36	40	51
379	256	123	41	51
228	256	-28	41	52
402	256	146	42	52
406	256	150	43	52
1220	256	964	44	52
299	256	43	45	52
351	287	64	46	52
253	287	-34	46	53

1	287	-286	46	54
238	287	-49	46	55
273	287	-14	46	56
248	287	-39	46	57
236	287	-51	46	58
171	287	-116	46	59
260	287	-27	46	60
209	287	-78	46	61
219	287	-68	46	62
244	287	-43	46	63
314	287	27	47	63
309	287	22	48	63
330	287	43	49	63
292	287	5	50	63
379	287	92	51	63
228	287	-59	51	64
402	287	115	52	64
406	287	119	53	64
1220	287	933	54	64
299	287	12	55	64
253	351	-98	55	65
1	351	-350	55	66
238	351	-113	55	67
273	351	-78	55	68
248	351	-103	55	69
236	351	-115	55	70
171	351	-180	55	71
260	351	-91	55	72
209	351	-142	55	73
219	351	-132	55	74
244	351	-107	55	75
314	351	-37	55	76
309	351	-42	55	77
330	351	-21	55	78
292	351	-59	55	79
379	351	28	56	79
228	351	-123	56	80
402	351	51	57	80
406	351	55	58	80
1220	351	869	59	80
299	351	-52	59	81
1	253	-252	59	82
238	253	-15	59	83
273	253	20	60	83
248	253	-5	60	84
236	253	-17	60	85
171	253	-82	60	86
260	253	7	61	86
209	253	-44	61	87
219	253	-34	61	88
244	253	-9	61	89
314	253	61	62	89
309	253	56	63	89
330	253	77	64	89
292	253	39	65	89

379	253	126	66	89
228	253	-25	66	90
402	253	149	67	90
406	253	153	68	90
1220	253	967	69	90
299	253	46	70	90
238	1	237	71	90
273	1	272	72	90
248	1	247	73	90
236	1	235	74	90
171	1	170	75	90
260	1	259	76	90
209	1	208	77	90
219	1	218	78	90
244	1	243	79	90
314	1	313	80	90
309	1	308	81	90
330	1	329	82	90
292	1	291	83	90
379	1	378	84	90
228	1	227	85	90
402	1	401	86	90
406	1	405	87	90
1220	1	1219	88	90
299	1	298	89	90
273	238	35	90	90
248	238	10	91	90
236	238	-2	91	91
171	238	-67	91	92
260	238	22	92	92
209	238	-29	92	93
219	238	-19	92	94
244	238	6	93	94
314	238	76	94	94
309	238	71	95	94
330	238	92	96	94
292	238	54	97	94
379	238	141	98	94
228	238	-10	98	95
402	238	164	99	95
406	238	168	100	95
1220	238	982	101	95
299	238	61	102	95
248	273	-25	102	96
236	273	-37	102	97
171	273	-102	102	98
260	273	-13	102	99
209	273	-64	102	100
219	273	-54	102	101
244	273	-29	102	102
314	273	41	103	102
309	273	36	104	102
330	273	57	105	102
292	273	19	106	102

379	273	106	107	102
228	273	-45	107	103
402	273	129	108	103
406	273	133	109	103
1220	273	947	110	103
299	273	26	111	103
236	248	-12	111	104
171	248	-77	111	105
260	248	12	112	105
209	248	-39	112	106
219	248	-29	112	107
244	248	-4	112	108
314	248	66	113	108
309	248	61	114	108
330	248	82	115	108
292	248	44	116	108
379	248	131	117	108
228	248	-20	117	109
402	248	154	118	109
406	248	158	119	109
1220	248	972	120	109
299	248	51	121	109
171	236	-65	121	110
260	236	24	122	110
209	236	-27	122	111
219	236	-17	122	112
244	236	8	123	112
314	236	78	124	112
309	236	73	125	112
330	236	94	126	112
292	236	56	127	112
379	236	143	128	112
228	236	-8	128	113
402	236	166	129	113
406	236	170	130	113
1220	236	984	131	113
299	236	63	132	113
260	171	89	133	113
209	171	38	134	113
219	171	48	135	113
244	171	73	136	113
314	171	143	137	113
309	171	138	138	113
330	171	159	139	113
292	171	121	140	113
379	171	208	141	113
228	171	57	142	113
402	171	231	143	113
406	171	235	144	113
1220	171	1049	145	113
299	171	128	146	113
209	260	-51	146	114
219	260	-41	146	115

244	260	-16	146	116
314	260	54	147	116
309	260	49	148	116
330	260	70	149	116
292	260	32	150	116
379	260	119	151	116
228	260	-32	151	117
402	260	142	152	117
406	260	146	153	117
1220	260	960	154	117
299	260	39	155	117
219	209	10	156	117
244	209	35	157	117
314	209	105	158	117
309	209	100	159	117
330	209	121	160	117
292	209	83	161	117
379	209	170	162	117
228	209	19	163	117
402	209	193	164	117
406	209	197	165	117
1220	209	1011	166	117
299	209	90	167	117
244	219	25	168	117
314	219	95	169	117
309	219	90	170	117
330	219	111	171	117
292	219	73	172	117
379	219	160	173	117
228	219	9	174	117
402	219	183	175	117
406	219	187	176	117
1220	219	1001	177	117
299	219	80	178	117
314	244	70	179	117
309	244	65	180	117
330	244	86	181	117
292	244	48	182	117
379	244	135	183	117
228	244	-16	183	118
402	244	158	184	118
406	244	162	185	118
1220	244	976	186	118
299	244	55	187	118
309	314	-5	187	119
330	314	16	188	119
292	314	-22	188	120
379	314	65	189	120
228	314	-86	189	121
402	314	88	190	121
406	314	92	191	121
1220	314	906	192	121
299	314	-15	192	122

330	309	21	193	122
292	309	-17	193	123
379	309	70	194	123
228	309	-81	194	124
402	309	93	195	124
406	309	97	196	124
1220	309	911	197	124
299	309	-10	197	125
292	330	-38	197	126
379	330	49	198	126
228	330	-102	198	127
402	330	72	199	127
406	330	76	200	127
1220	330	890	201	127
299	330	-31	201	128
379	292	87	202	128
228	292	-64	202	129
402	292	110	203	129
406	292	114	204	129
1220	292	928	205	129
299	292	7	206	129
228	379	-151	206	130
402	379	23	207	130
406	379	27	208	130
1220	379	841	209	130
299	379	-80	209	131
402	228	174	210	131
406	228	178	211	131
1220	228	992	212	131
299	228	71	213	131
406	402	4	214	131
1220	402	818	215	131
299	402	-103	215	132
1220	406	814	216	132
299	406	-107	216	133
299	1220	-921	216	134

S Statistic = 216 - 134 = 82

Tied Group	Value	Members
1	253	2

Time Period	Observations
11/25/2009	1
3/4/2010	1
4/30/2010	1
7/26/2010	1
10/13/2010	1

1/14/2011	1
4/21/2011	1
7/21/2011	1
10/31/2011	1
1/13/2012	1
4/27/2012	1
7/26/2012	1
10/18/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 18

B = 0

C = 0

D = 0

E = 2

F = 0

a = 41418

b = 157950

c = 1404

Group Variance = 2300

Z-Score = 1.68897

Comparison Level at $1.0 - (0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)

|1.68897| <= 2.32634 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
190	257	-67	0	1
239	257	-18	0	2
210	257	-47	0	3
232	257	-25	0	4
240	257	-17	0	5
259	257	2	1	5
218	257	-39	1	6
265	257	8	2	6
266	257	9	3	6
278	257	21	4	6
269	257	12	5	6
359	257	102	6	6
300	257	43	7	6
252	257	-5	7	7
246	257	-11	7	8
269	257	12	8	8
243	257	-14	8	9
280	257	23	9	9
269	257	12	10	9
261	257	4	11	9
254	257	-3	11	10
263	257	6	12	10
260	257	3	13	10
272	257	15	14	10
259	257	2	15	10
285	257	28	16	10
282	257	25	17	10
271	257	14	18	10
278	257	21	19	10
240	257	-17	19	11
222	257	-35	19	12
188	257	-69	19	13
213	257	-44	19	14
231	257	-26	19	15
262	257	5	20	15
260	257	3	21	15
244	257	-13	21	16
169	257	-88	21	17
279	257	22	22	17
719	257	462	23	17
317	257	60	24	17
335	257	78	25	17
298	257	41	26	17
286	257	29	27	17
235	257	-22	27	18
435	257	178	28	18
382	257	125	29	18

1230	257	973	30	18
248	257	-9	30	19
239	190	49	31	19
210	190	20	32	19
232	190	42	33	19
240	190	50	34	19
259	190	69	35	19
218	190	28	36	19
265	190	75	37	19
266	190	76	38	19
278	190	88	39	19
269	190	79	40	19
359	190	169	41	19
300	190	110	42	19
252	190	62	43	19
246	190	56	44	19
269	190	79	45	19
243	190	53	46	19
280	190	90	47	19
269	190	79	48	19
261	190	71	49	19
254	190	64	50	19
263	190	73	51	19
260	190	70	52	19
272	190	82	53	19
259	190	69	54	19
285	190	95	55	19
282	190	92	56	19
271	190	81	57	19
278	190	88	58	19
240	190	50	59	19
222	190	32	60	19
188	190	-2	60	20
213	190	23	61	20
231	190	41	62	20
262	190	72	63	20
260	190	70	64	20
244	190	54	65	20
169	190	-21	65	21
279	190	89	66	21
719	190	529	67	21
317	190	127	68	21
335	190	145	69	21
298	190	108	70	21
286	190	96	71	21
235	190	45	72	21
435	190	245	73	21
382	190	192	74	21
1230	190	1040	75	21
248	190	58	76	21
210	239	-29	76	22
232	239	-7	76	23
240	239	1	77	23
259	239	20	78	23
218	239	-21	78	24

265	239	26	79	24
266	239	27	80	24
278	239	39	81	24
269	239	30	82	24
359	239	120	83	24
300	239	61	84	24
252	239	13	85	24
246	239	7	86	24
269	239	30	87	24
243	239	4	88	24
280	239	41	89	24
269	239	30	90	24
261	239	22	91	24
254	239	15	92	24
263	239	24	93	24
260	239	21	94	24
272	239	33	95	24
259	239	20	96	24
285	239	46	97	24
282	239	43	98	24
271	239	32	99	24
278	239	39	100	24
240	239	1	101	24
222	239	-17	101	25
188	239	-51	101	26
213	239	-26	101	27
231	239	-8	101	28
262	239	23	102	28
260	239	21	103	28
244	239	5	104	28
169	239	-70	104	29
279	239	40	105	29
719	239	480	106	29
317	239	78	107	29
335	239	96	108	29
298	239	59	109	29
286	239	47	110	29
235	239	-4	110	30
435	239	196	111	30
382	239	143	112	30
1230	239	991	113	30
248	239	9	114	30
232	210	22	115	30
240	210	30	116	30
259	210	49	117	30
218	210	8	118	30
265	210	55	119	30
266	210	56	120	30
278	210	68	121	30
269	210	59	122	30
359	210	149	123	30
300	210	90	124	30
252	210	42	125	30
246	210	36	126	30
269	210	59	127	30
243	210	33	128	30

280	210	70	129	30
269	210	59	130	30
261	210	51	131	30
254	210	44	132	30
263	210	53	133	30
260	210	50	134	30
272	210	62	135	30
259	210	49	136	30
285	210	75	137	30
282	210	72	138	30
271	210	61	139	30
278	210	68	140	30
240	210	30	141	30
222	210	12	142	30
188	210	-22	142	31
213	210	3	143	31
231	210	21	144	31
262	210	52	145	31
260	210	50	146	31
244	210	34	147	31
169	210	-41	147	32
279	210	69	148	32
719	210	509	149	32
317	210	107	150	32
335	210	125	151	32
298	210	88	152	32
286	210	76	153	32
235	210	25	154	32
435	210	225	155	32
382	210	172	156	32
1230	210	1020	157	32
248	210	38	158	32
240	232	8	159	32
259	232	27	160	32
218	232	-14	160	33
265	232	33	161	33
266	232	34	162	33
278	232	46	163	33
269	232	37	164	33
359	232	127	165	33
300	232	68	166	33
252	232	20	167	33
246	232	14	168	33
269	232	37	169	33
243	232	11	170	33
280	232	48	171	33
269	232	37	172	33
261	232	29	173	33
254	232	22	174	33
263	232	31	175	33
260	232	28	176	33
272	232	40	177	33
259	232	27	178	33
285	232	53	179	33
282	232	50	180	33
271	232	39	181	33

278	232	46	182	33
240	232	8	183	33
222	232	-10	183	34
188	232	-44	183	35
213	232	-19	183	36
231	232	-1	183	37
262	232	30	184	37
260	232	28	185	37
244	232	12	186	37
169	232	-63	186	38
279	232	47	187	38
719	232	487	188	38
317	232	85	189	38
335	232	103	190	38
298	232	66	191	38
286	232	54	192	38
235	232	3	193	38
435	232	203	194	38
382	232	150	195	38
1230	232	998	196	38
248	232	16	197	38
259	240	19	198	38
218	240	-22	198	39
265	240	25	199	39
266	240	26	200	39
278	240	38	201	39
269	240	29	202	39
359	240	119	203	39
300	240	60	204	39
252	240	12	205	39
246	240	6	206	39
269	240	29	207	39
243	240	3	208	39
280	240	40	209	39
269	240	29	210	39
261	240	21	211	39
254	240	14	212	39
263	240	23	213	39
260	240	20	214	39
272	240	32	215	39
259	240	19	216	39
285	240	45	217	39
282	240	42	218	39
271	240	31	219	39
278	240	38	220	39
240	240	0	220	39
222	240	-18	220	40
188	240	-52	220	41
213	240	-27	220	42
231	240	-9	220	43
262	240	22	221	43
260	240	20	222	43
244	240	4	223	43
169	240	-71	223	44
279	240	39	224	44
719	240	479	225	44

317	240	77	226	44
335	240	95	227	44
298	240	58	228	44
286	240	46	229	44
235	240	-5	229	45
435	240	195	230	45
382	240	142	231	45
1230	240	990	232	45
248	240	8	233	45
218	259	-41	233	46
265	259	6	234	46
266	259	7	235	46
278	259	19	236	46
269	259	10	237	46
359	259	100	238	46
300	259	41	239	46
252	259	-7	239	47
246	259	-13	239	48
269	259	10	240	48
243	259	-16	240	49
280	259	21	241	49
269	259	10	242	49
261	259	2	243	49
254	259	-5	243	50
263	259	4	244	50
260	259	1	245	50
272	259	13	246	50
259	259	0	246	50
285	259	26	247	50
282	259	23	248	50
271	259	12	249	50
278	259	19	250	50
240	259	-19	250	51
222	259	-37	250	52
188	259	-71	250	53
213	259	-46	250	54
231	259	-28	250	55
262	259	3	251	55
260	259	1	252	55
244	259	-15	252	56
169	259	-90	252	57
279	259	20	253	57
719	259	460	254	57
317	259	58	255	57
335	259	76	256	57
298	259	39	257	57
286	259	27	258	57
235	259	-24	258	58
435	259	176	259	58
382	259	123	260	58
1230	259	971	261	58
248	259	-11	261	59
265	218	47	262	59
266	218	48	263	59
278	218	60	264	59

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298	278	20	619	403
286	278	8	620	403
235	278	-43	620	404
435	278	157	621	404
382	278	104	622	404
1230	278	952	623	404
248	278	-30	623	405
222	240	-18	623	406
188	240	-52	623	407
213	240	-27	623	408
231	240	-9	623	409
262	240	22	624	409
260	240	20	625	409
244	240	4	626	409
169	240	-71	626	410

279	240	39	627	410
719	240	479	628	410
317	240	77	629	410
335	240	95	630	410
298	240	58	631	410
286	240	46	632	410
235	240	-5	632	411
435	240	195	633	411
382	240	142	634	411
1230	240	990	635	411
248	240	8	636	411
188	222	-34	636	412
213	222	-9	636	413
231	222	9	637	413
262	222	40	638	413
260	222	38	639	413
244	222	22	640	413
169	222	-53	640	414
279	222	57	641	414
719	222	497	642	414
317	222	95	643	414
335	222	113	644	414
298	222	76	645	414
286	222	64	646	414
235	222	13	647	414
435	222	213	648	414
382	222	160	649	414
1230	222	1008	650	414
248	222	26	651	414
213	188	25	652	414
231	188	43	653	414
262	188	74	654	414
260	188	72	655	414
244	188	56	656	414
169	188	-19	656	415
279	188	91	657	415
719	188	531	658	415
317	188	129	659	415
335	188	147	660	415
298	188	110	661	415
286	188	98	662	415
235	188	47	663	415
435	188	247	664	415
382	188	194	665	415
1230	188	1042	666	415
248	188	60	667	415
231	213	18	668	415
262	213	49	669	415
260	213	47	670	415
244	213	31	671	415
169	213	-44	671	416
279	213	66	672	416
719	213	506	673	416
317	213	104	674	416

335	213	122	675	416
298	213	85	676	416
286	213	73	677	416
235	213	22	678	416
435	213	222	679	416
382	213	169	680	416
1230	213	1017	681	416
248	213	35	682	416
262	231	31	683	416
260	231	29	684	416
244	231	13	685	416
169	231	-62	685	417
279	231	48	686	417
719	231	488	687	417
317	231	86	688	417
335	231	104	689	417
298	231	67	690	417
286	231	55	691	417
235	231	4	692	417
435	231	204	693	417
382	231	151	694	417
1230	231	999	695	417
248	231	17	696	417
260	262	-2	696	418
244	262	-18	696	419
169	262	-93	696	420
279	262	17	697	420
719	262	457	698	420
317	262	55	699	420
335	262	73	700	420
298	262	36	701	420
286	262	24	702	420
235	262	-27	702	421
435	262	173	703	421
382	262	120	704	421
1230	262	968	705	421
248	262	-14	705	422
244	260	-16	705	423
169	260	-91	705	424
279	260	19	706	424
719	260	459	707	424
317	260	57	708	424
335	260	75	709	424
298	260	38	710	424
286	260	26	711	424
235	260	-25	711	425
435	260	175	712	425
382	260	122	713	425
1230	260	970	714	425
248	260	-12	714	426
169	244	-75	714	427
279	244	35	715	427
719	244	475	716	427

317	244	73	717	427
335	244	91	718	427
298	244	54	719	427
286	244	42	720	427
235	244	-9	720	428
435	244	191	721	428
382	244	138	722	428
1230	244	986	723	428
248	244	4	724	428
279	169	110	725	428
719	169	550	726	428
317	169	148	727	428
335	169	166	728	428
298	169	129	729	428
286	169	117	730	428
235	169	66	731	428
435	169	266	732	428
382	169	213	733	428
1230	169	1061	734	428
248	169	79	735	428
719	279	440	736	428
317	279	38	737	428
335	279	56	738	428
298	279	19	739	428
286	279	7	740	428
235	279	-44	740	429
435	279	156	741	429
382	279	103	742	429
1230	279	951	743	429
248	279	-31	743	430
317	719	-402	743	431
335	719	-384	743	432
298	719	-421	743	433
286	719	-433	743	434
235	719	-484	743	435
435	719	-284	743	436
382	719	-337	743	437
1230	719	511	744	437
248	719	-471	744	438
335	317	18	745	438
298	317	-19	745	439
286	317	-31	745	440
235	317	-82	745	441
435	317	118	746	441
382	317	65	747	441
1230	317	913	748	441
248	317	-69	748	442
298	335	-37	748	443
286	335	-49	748	444
235	335	-100	748	445
435	335	100	749	445
382	335	47	750	445

1230	335	895	751	445
248	335	-87	751	446
286	298	-12	751	447
235	298	-63	751	448
435	298	137	752	448
382	298	84	753	448
1230	298	932	754	448
248	298	-50	754	449
235	286	-51	754	450
435	286	149	755	450
382	286	96	756	450
1230	286	944	757	450
248	286	-38	757	451
435	235	200	758	451
382	235	147	759	451
1230	235	995	760	451
248	235	13	761	451
382	435	-53	761	452
1230	435	795	762	452
248	435	-187	762	453
1230	382	848	763	453
248	382	-134	763	454
248	1230	-982	763	455

S Statistic = 763 - 455 = 308

Tied Group	Value	Members
1	240	2
2	259	2
3	278	2
4	269	3
5	260	2

Time Period	Observations
11/24/2009	1
1/27/2010	1
3/2/2010	1
3/4/2010	1
4/9/2010	1
4/30/2010	1
5/6/2010	1
6/7/2010	1
7/26/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1
1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1

5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1
12/6/2011	1
1/13/2012	1
2/21/2012	1
3/20/2012	1
4/27/2012	1
5/24/2012	1
6/15/2012	1
7/26/2012	1
8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 138

B = 0

C = 6

D = 0

E = 14

F = 0

a = 257250

b = 1.0584e+006

c = 4900

Group Variance = 14284

Z-Score = 2.5687

Comparison Level at 1.0 - (0.02 / 2) = 99% confidence level = 2.32634 (two-tailed)

|2.5687| > 2.32634 indicating a trend

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: MW-4

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
208	242	-34	0	1
235	242	-7	0	2
207	242	-35	0	3
227	242	-15	0	4
224	242	-18	0	5
252	242	10	1	5
219	242	-23	1	6
247	242	5	2	6
265	242	23	3	6
285	242	43	4	6
259	242	17	5	6
247	242	5	6	6
263	242	21	7	6
253	242	11	8	6
241	242	-1	8	7
256	242	14	9	7
238	242	-4	9	8
261	242	19	10	8
261	242	19	11	8
255	242	13	12	8
213	242	-29	12	9
258	242	16	13	9
253	242	11	14	9
261	242	19	15	9
256	242	14	16	9
259	242	17	17	9
272	242	30	18	9
262	242	20	19	9
265	242	23	20	9
224	242	-18	20	10
222	242	-20	20	11
190	242	-52	20	12
211	242	-31	20	13
232	242	-10	20	14
270	242	28	21	14
276	242	34	22	14
232	242	-10	22	15
187	242	-55	22	16
243	242	1	23	16
582	242	340	24	16
421	242	179	25	16
322	242	80	26	16
302	242	60	27	16
352	242	110	28	16
248	242	6	29	16
428	242	186	30	16
439	242	197	31	16

1300	242	1058	32	16
276	242	34	33	16
235	208	27	34	16
207	208	-1	34	17
227	208	19	35	17
224	208	16	36	17
252	208	44	37	17
219	208	11	38	17
247	208	39	39	17
265	208	57	40	17
285	208	77	41	17
259	208	51	42	17
247	208	39	43	17
263	208	55	44	17
253	208	45	45	17
241	208	33	46	17
256	208	48	47	17
238	208	30	48	17
261	208	53	49	17
261	208	53	50	17
255	208	47	51	17
213	208	5	52	17
258	208	50	53	17
253	208	45	54	17
261	208	53	55	17
256	208	48	56	17
259	208	51	57	17
272	208	64	58	17
262	208	54	59	17
265	208	57	60	17
224	208	16	61	17
222	208	14	62	17
190	208	-18	62	18
211	208	3	63	18
232	208	24	64	18
270	208	62	65	18
276	208	68	66	18
232	208	24	67	18
187	208	-21	67	19
243	208	35	68	19
582	208	374	69	19
421	208	213	70	19
322	208	114	71	19
302	208	94	72	19
352	208	144	73	19
248	208	40	74	19
428	208	220	75	19
439	208	231	76	19
1300	208	1092	77	19
276	208	68	78	19
207	235	-28	78	20
227	235	-8	78	21
224	235	-11	78	22
252	235	17	79	22
219	235	-16	79	23

247	235	12	80	23
265	235	30	81	23
285	235	50	82	23
259	235	24	83	23
247	235	12	84	23
263	235	28	85	23
253	235	18	86	23
241	235	6	87	23
256	235	21	88	23
238	235	3	89	23
261	235	26	90	23
261	235	26	91	23
255	235	20	92	23
213	235	-22	92	24
258	235	23	93	24
253	235	18	94	24
261	235	26	95	24
256	235	21	96	24
259	235	24	97	24
272	235	37	98	24
262	235	27	99	24
265	235	30	100	24
224	235	-11	100	25
222	235	-13	100	26
190	235	-45	100	27
211	235	-24	100	28
232	235	-3	100	29
270	235	35	101	29
276	235	41	102	29
232	235	-3	102	30
187	235	-48	102	31
243	235	8	103	31
582	235	347	104	31
421	235	186	105	31
322	235	87	106	31
302	235	67	107	31
352	235	117	108	31
248	235	13	109	31
428	235	193	110	31
439	235	204	111	31
1300	235	1065	112	31
276	235	41	113	31
227	207	20	114	31
224	207	17	115	31
252	207	45	116	31
219	207	12	117	31
247	207	40	118	31
265	207	58	119	31
285	207	78	120	31
259	207	52	121	31
247	207	40	122	31
263	207	56	123	31
253	207	46	124	31
241	207	34	125	31
256	207	49	126	31
238	207	31	127	31

261	207	54	128	31
261	207	54	129	31
255	207	48	130	31
213	207	6	131	31
258	207	51	132	31
253	207	46	133	31
261	207	54	134	31
256	207	49	135	31
259	207	52	136	31
272	207	65	137	31
262	207	55	138	31
265	207	58	139	31
224	207	17	140	31
222	207	15	141	31
190	207	-17	141	32
211	207	4	142	32
232	207	25	143	32
270	207	63	144	32
276	207	69	145	32
232	207	25	146	32
187	207	-20	146	33
243	207	36	147	33
582	207	375	148	33
421	207	214	149	33
322	207	115	150	33
302	207	95	151	33
352	207	145	152	33
248	207	41	153	33
428	207	221	154	33
439	207	232	155	33
1300	207	1093	156	33
276	207	69	157	33
224	227	-3	157	34
252	227	25	158	34
219	227	-8	158	35
247	227	20	159	35
265	227	38	160	35
285	227	58	161	35
259	227	32	162	35
247	227	20	163	35
263	227	36	164	35
253	227	26	165	35
241	227	14	166	35
256	227	29	167	35
238	227	11	168	35
261	227	34	169	35
261	227	34	170	35
255	227	28	171	35
213	227	-14	171	36
258	227	31	172	36
253	227	26	173	36
261	227	34	174	36
256	227	29	175	36
259	227	32	176	36
272	227	45	177	36
262	227	35	178	36

265	227	38	179	36
224	227	-3	179	37
222	227	-5	179	38
190	227	-37	179	39
211	227	-16	179	40
232	227	5	180	40
270	227	43	181	40
276	227	49	182	40
232	227	5	183	40
187	227	-40	183	41
243	227	16	184	41
582	227	355	185	41
421	227	194	186	41
322	227	95	187	41
302	227	75	188	41
352	227	125	189	41
248	227	21	190	41
428	227	201	191	41
439	227	212	192	41
1300	227	1073	193	41
276	227	49	194	41
252	224	28	195	41
219	224	-5	195	42
247	224	23	196	42
265	224	41	197	42
285	224	61	198	42
259	224	35	199	42
247	224	23	200	42
263	224	39	201	42
253	224	29	202	42
241	224	17	203	42
256	224	32	204	42
238	224	14	205	42
261	224	37	206	42
261	224	37	207	42
255	224	31	208	42
213	224	-11	208	43
258	224	34	209	43
253	224	29	210	43
261	224	37	211	43
256	224	32	212	43
259	224	35	213	43
272	224	48	214	43
262	224	38	215	43
265	224	41	216	43
224	224	0	216	43
222	224	-2	216	44
190	224	-34	216	45
211	224	-13	216	46
232	224	8	217	46
270	224	46	218	46
276	224	52	219	46
232	224	8	220	46
187	224	-37	220	47
243	224	19	221	47
582	224	358	222	47

421	224	197	223	47
322	224	98	224	47
302	224	78	225	47
352	224	128	226	47
248	224	24	227	47
428	224	204	228	47
439	224	215	229	47
1300	224	1076	230	47
276	224	52	231	47
219	252	-33	231	48
247	252	-5	231	49
265	252	13	232	49
285	252	33	233	49
259	252	7	234	49
247	252	-5	234	50
263	252	11	235	50
253	252	1	236	50
241	252	-11	236	51
256	252	4	237	51
238	252	-14	237	52
261	252	9	238	52
261	252	9	239	52
255	252	3	240	52
213	252	-39	240	53
258	252	6	241	53
253	252	1	242	53
261	252	9	243	53
256	252	4	244	53
259	252	7	245	53
272	252	20	246	53
262	252	10	247	53
265	252	13	248	53
224	252	-28	248	54
222	252	-30	248	55
190	252	-62	248	56
211	252	-41	248	57
232	252	-20	248	58
270	252	18	249	58
276	252	24	250	58
232	252	-20	250	59
187	252	-65	250	60
243	252	-9	250	61
582	252	330	251	61
421	252	169	252	61
322	252	70	253	61
302	252	50	254	61
352	252	100	255	61
248	252	-4	255	62
428	252	176	256	62
439	252	187	257	62
1300	252	1048	258	62
276	252	24	259	62
247	219	28	260	62
265	219	46	261	62
285	219	66	262	62

259	219	40	263	62
247	219	28	264	62
263	219	44	265	62
253	219	34	266	62
241	219	22	267	62
256	219	37	268	62
238	219	19	269	62
261	219	42	270	62
261	219	42	271	62
255	219	36	272	62
213	219	-6	272	63
258	219	39	273	63
253	219	34	274	63
261	219	42	275	63
256	219	37	276	63
259	219	40	277	63
272	219	53	278	63
262	219	43	279	63
265	219	46	280	63
224	219	5	281	63
222	219	3	282	63
190	219	-29	282	64
211	219	-8	282	65
232	219	13	283	65
270	219	51	284	65
276	219	57	285	65
232	219	13	286	65
187	219	-32	286	66
243	219	24	287	66
582	219	363	288	66
421	219	202	289	66
322	219	103	290	66
302	219	83	291	66
352	219	133	292	66
248	219	29	293	66
428	219	209	294	66
439	219	220	295	66
1300	219	1081	296	66
276	219	57	297	66
265	247	18	298	66
285	247	38	299	66
259	247	12	300	66
247	247	0	300	66
263	247	16	301	66
253	247	6	302	66
241	247	-6	302	67
256	247	9	303	67
238	247	-9	303	68
261	247	14	304	68
261	247	14	305	68
255	247	8	306	68
213	247	-34	306	69
258	247	11	307	69
253	247	6	308	69
261	247	14	309	69
256	247	9	310	69

259	247	12	311	69
272	247	25	312	69
262	247	15	313	69
265	247	18	314	69
224	247	-23	314	70
222	247	-25	314	71
190	247	-57	314	72
211	247	-36	314	73
232	247	-15	314	74
270	247	23	315	74
276	247	29	316	74
232	247	-15	316	75
187	247	-60	316	76
243	247	-4	316	77
582	247	335	317	77
421	247	174	318	77
322	247	75	319	77
302	247	55	320	77
352	247	105	321	77
248	247	1	322	77
428	247	181	323	77
439	247	192	324	77
1300	247	1053	325	77
276	247	29	326	77
285	265	20	327	77
259	265	-6	327	78
247	265	-18	327	79
263	265	-2	327	80
253	265	-12	327	81
241	265	-24	327	82
256	265	-9	327	83
238	265	-27	327	84
261	265	-4	327	85
261	265	-4	327	86
255	265	-10	327	87
213	265	-52	327	88
258	265	-7	327	89
253	265	-12	327	90
261	265	-4	327	91
256	265	-9	327	92
259	265	-6	327	93
272	265	7	328	93
262	265	-3	328	94
265	265	0	328	94
224	265	-41	328	95
222	265	-43	328	96
190	265	-75	328	97
211	265	-54	328	98
232	265	-33	328	99
270	265	5	329	99
276	265	11	330	99
232	265	-33	330	100
187	265	-78	330	101
243	265	-22	330	102
582	265	317	331	102
421	265	156	332	102

322	265	57	333	102
302	265	37	334	102
352	265	87	335	102
248	265	-17	335	103
428	265	163	336	103
439	265	174	337	103
1300	265	1035	338	103
276	265	11	339	103
259	285	-26	339	104
247	285	-38	339	105
263	285	-22	339	106
253	285	-32	339	107
241	285	-44	339	108
256	285	-29	339	109
238	285	-47	339	110
261	285	-24	339	111
261	285	-24	339	112
255	285	-30	339	113
213	285	-72	339	114
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421	187	234	780	371
322	187	135	781	371
302	187	115	782	371
352	187	165	783	371
248	187	61	784	371
428	187	241	785	371
439	187	252	786	371
1300	187	1113	787	371
276	187	89	788	371

582	243	339	789	371
421	243	178	790	371
322	243	79	791	371
302	243	59	792	371
352	243	109	793	371
248	243	5	794	371
428	243	185	795	371
439	243	196	796	371
1300	243	1057	797	371
276	243	33	798	371

421	582	-161	798	372
322	582	-260	798	373
302	582	-280	798	374
352	582	-230	798	375
248	582	-334	798	376
428	582	-154	798	377
439	582	-143	798	378
1300	582	718	799	378
276	582	-306	799	379

322	421	-99	799	380
302	421	-119	799	381
352	421	-69	799	382
248	421	-173	799	383
428	421	7	800	383
439	421	18	801	383
1300	421	879	802	383
276	421	-145	802	384

302	322	-20	802	385
352	322	30	803	385
248	322	-74	803	386
428	322	106	804	386
439	322	117	805	386

1300	322	978	806	386
276	322	-46	806	387
352	302	50	807	387
248	302	-54	807	388
428	302	126	808	388
439	302	137	809	388
1300	302	998	810	388
276	302	-26	810	389
248	352	-104	810	390
428	352	76	811	390
439	352	87	812	390
1300	352	948	813	390
276	352	-76	813	391
428	248	180	814	391
439	248	191	815	391
1300	248	1052	816	391
276	248	28	817	391
439	428	11	818	391
1300	428	872	819	391
276	428	-152	819	392
1300	439	861	820	392
276	439	-163	820	393
276	1300	-1024	820	394

S Statistic = 820 - 394 = 426

Tied Group	Value	Members
1	224	2
2	247	2
3	265	2
4	259	2
5	253	2
6	256	2
7	261	3
8	232	2
9	276	2

Time Period	Observations
11/24/2009	1
1/27/2010	1
3/2/2010	1
3/4/2010	1
4/9/2010	1
4/30/2010	1
5/6/2010	1
6/7/2010	1
7/26/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1

1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1
12/6/2011	1
1/13/2012	1
2/21/2012	1
3/20/2012	1
4/27/2012	1
5/24/2012	1
6/15/2012	1
7/26/2012	1
8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 210

B = 0

C = 6

D = 0

E = 22

F = 0

a = 257250

b = 1.0584e+006

c = 4900

Group Variance = 14280

Z-Score = 3.55652

Comparison Level at 1.0 - (0.02 / 2) = 99% confidence level = 2.32634 (two-tailed)

|3.55652| > 2.32634 indicating a trend

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
221	261	-40	0	1
238	261	-23	0	2
211	261	-50	0	3
263	261	2	1	3
256	261	-5	1	4
316	261	55	2	4
259	261	-2	2	5
253	261	-8	2	6
277	261	16	3	6
290	261	29	4	6
260	261	-1	4	7
357	261	96	5	7
283	261	22	6	7
284	261	23	7	7
255	261	-6	7	8
273	261	12	8	8
243	261	-18	8	9
279	261	18	9	9
269	261	8	10	9
266	261	5	11	9
260	261	-1	11	10
262	261	1	12	10
270	261	9	13	10
313	261	52	14	10
265	261	4	15	10
274	261	13	16	10
293	261	32	17	10
267	261	6	18	10
276	261	15	19	10
233	261	-28	19	11
236	261	-25	19	12
207	261	-54	19	13
227	261	-34	19	14
233	261	-28	19	15
267	261	6	20	15
265	261	4	21	15
277	261	16	22	15
256	261	-5	22	16
227	261	-34	22	17
219	261	-42	22	18
254	261	-7	22	19
267	261	6	23	19
279	261	18	24	19
589	261	328	25	19
259	261	-2	25	20
315	261	54	26	20
303.15	261	42.15	27	20

313	261	52	28	20
371	261	110	29	20
270	261	9	30	20
382	261	121	31	20
362	261	101	32	20
423	261	162	33	20
207	261	-54	33	21
283	261	22	34	21
454	261	193	35	21
362	261	101	36	21
505	261	244	37	21
316	261	55	38	21
1130	261	869	39	21
227	261	-34	39	22
ND<3 U	261	-258	39	23
238	221	17	40	23
211	221	-10	40	24
263	221	42	41	24
256	221	35	42	24
316	221	95	43	24
259	221	38	44	24
253	221	32	45	24
277	221	56	46	24
290	221	69	47	24
260	221	39	48	24
357	221	136	49	24
283	221	62	50	24
284	221	63	51	24
255	221	34	52	24
273	221	52	53	24
243	221	22	54	24
279	221	58	55	24
269	221	48	56	24
266	221	45	57	24
260	221	39	58	24
262	221	41	59	24
270	221	49	60	24
313	221	92	61	24
265	221	44	62	24
274	221	53	63	24
293	221	72	64	24
267	221	46	65	24
276	221	55	66	24
233	221	12	67	24
236	221	15	68	24
207	221	-14	68	25
227	221	6	69	25
233	221	12	70	25
267	221	46	71	25
265	221	44	72	25
277	221	56	73	25
256	221	35	74	25
227	221	6	75	25
219	221	-2	75	26
254	221	33	76	26
267	221	46	77	26

279	221	58	78	26
589	221	368	79	26
259	221	38	80	26
315	221	94	81	26
303.15	221	82.15	82	26
313	221	92	83	26
371	221	150	84	26
270	221	49	85	26
382	221	161	86	26
362	221	141	87	26
423	221	202	88	26
207	221	-14	88	27
283	221	62	89	27
454	221	233	90	27
362	221	141	91	27
505	221	284	92	27
316	221	95	93	27
1130	221	909	94	27
227	221	6	95	27
ND<3 U	221	-218	95	28
211	238	-27	95	29
263	238	25	96	29
256	238	18	97	29
316	238	78	98	29
259	238	21	99	29
253	238	15	100	29
277	238	39	101	29
290	238	52	102	29
260	238	22	103	29
357	238	119	104	29
283	238	45	105	29
284	238	46	106	29
255	238	17	107	29
273	238	35	108	29
243	238	5	109	29
279	238	41	110	29
269	238	31	111	29
266	238	28	112	29
260	238	22	113	29
262	238	24	114	29
270	238	32	115	29
313	238	75	116	29
265	238	27	117	29
274	238	36	118	29
293	238	55	119	29
267	238	29	120	29
276	238	38	121	29
233	238	-5	121	30
236	238	-2	121	31
207	238	-31	121	32
227	238	-11	121	33
233	238	-5	121	34
267	238	29	122	34
265	238	27	123	34
277	238	39	124	34
256	238	18	125	34

227	238	-11	125	35
219	238	-19	125	36
254	238	16	126	36
267	238	29	127	36
279	238	41	128	36
589	238	351	129	36
259	238	21	130	36
315	238	77	131	36
303.15	238	65.15	132	36
313	238	75	133	36
371	238	133	134	36
270	238	32	135	36
382	238	144	136	36
362	238	124	137	36
423	238	185	138	36
207	238	-31	138	37
283	238	45	139	37
454	238	216	140	37
362	238	124	141	37
505	238	267	142	37
316	238	78	143	37
1130	238	892	144	37
227	238	-11	144	38
ND<3 U	238	-235	144	39
263	211	52	145	39
256	211	45	146	39
316	211	105	147	39
259	211	48	148	39
253	211	42	149	39
277	211	66	150	39
290	211	79	151	39
260	211	49	152	39
357	211	146	153	39
283	211	72	154	39
284	211	73	155	39
255	211	44	156	39
273	211	62	157	39
243	211	32	158	39
279	211	68	159	39
269	211	58	160	39
266	211	55	161	39
260	211	49	162	39
262	211	51	163	39
270	211	59	164	39
313	211	102	165	39
265	211	54	166	39
274	211	63	167	39
293	211	82	168	39
267	211	56	169	39
276	211	65	170	39
233	211	22	171	39
236	211	25	172	39
207	211	-4	172	40
227	211	16	173	40
233	211	22	174	40
267	211	56	175	40

265	211	54	176	40
277	211	66	177	40
256	211	45	178	40
227	211	16	179	40
219	211	8	180	40
254	211	43	181	40
267	211	56	182	40
279	211	68	183	40
589	211	378	184	40
259	211	48	185	40
315	211	104	186	40
303.15	211	92.15	187	40
313	211	102	188	40
371	211	160	189	40
270	211	59	190	40
382	211	171	191	40
362	211	151	192	40
423	211	212	193	40
207	211	-4	193	41
283	211	72	194	41
454	211	243	195	41
362	211	151	196	41
505	211	294	197	41
316	211	105	198	41
1130	211	919	199	41
227	211	16	200	41
ND<3 U	211	-208	200	42
256	263	-7	200	43
316	263	53	201	43
259	263	-4	201	44
253	263	-10	201	45
277	263	14	202	45
290	263	27	203	45
260	263	-3	203	46
357	263	94	204	46
283	263	20	205	46
284	263	21	206	46
255	263	-8	206	47
273	263	10	207	47
243	263	-20	207	48
279	263	16	208	48
269	263	6	209	48
266	263	3	210	48
260	263	-3	210	49
262	263	-1	210	50
270	263	7	211	50
313	263	50	212	50
265	263	2	213	50
274	263	11	214	50
293	263	30	215	50
267	263	4	216	50
276	263	13	217	50
233	263	-30	217	51
236	263	-27	217	52
207	263	-56	217	53
227	263	-36	217	54

233	263	-30	217	55
267	263	4	218	55
265	263	2	219	55
277	263	14	220	55
256	263	-7	220	56
227	263	-36	220	57
219	263	-44	220	58
254	263	-9	220	59
267	263	4	221	59
279	263	16	222	59
589	263	326	223	59
259	263	-4	223	60
315	263	52	224	60
303.15	263	40.15	225	60
313	263	50	226	60
371	263	108	227	60
270	263	7	228	60
382	263	119	229	60
362	263	99	230	60
423	263	160	231	60
207	263	-56	231	61
283	263	20	232	61
454	263	191	233	61
362	263	99	234	61
505	263	242	235	61
316	263	53	236	61
1130	263	867	237	61
227	263	-36	237	62
ND<3 U	263	-260	237	63
316	256	60	238	63
259	256	3	239	63
253	256	-3	239	64
277	256	21	240	64
290	256	34	241	64
260	256	4	242	64
357	256	101	243	64
283	256	27	244	64
284	256	28	245	64
255	256	-1	245	65
273	256	17	246	65
243	256	-13	246	66
279	256	23	247	66
269	256	13	248	66
266	256	10	249	66
260	256	4	250	66
262	256	6	251	66
270	256	14	252	66
313	256	57	253	66
265	256	9	254	66
274	256	18	255	66
293	256	37	256	66
267	256	11	257	66
276	256	20	258	66
233	256	-23	258	67
236	256	-20	258	68
207	256	-49	258	69

227	256	-29	258	70
233	256	-23	258	71
267	256	11	259	71
265	256	9	260	71
277	256	21	261	71
256	256	0	261	71
227	256	-29	261	72
219	256	-37	261	73
254	256	-2	261	74
267	256	11	262	74
279	256	23	263	74
589	256	333	264	74
259	256	3	265	74
315	256	59	266	74
303.15	256	47.15	267	74
313	256	57	268	74
371	256	115	269	74
270	256	14	270	74
382	256	126	271	74
362	256	106	272	74
423	256	167	273	74
207	256	-49	273	75
283	256	27	274	75
454	256	198	275	75
362	256	106	276	75
505	256	249	277	75
316	256	60	278	75
1130	256	874	279	75
227	256	-29	279	76
ND<3 U	256	-253	279	77
259	316	-57	279	78
253	316	-63	279	79
277	316	-39	279	80
290	316	-26	279	81
260	316	-56	279	82
357	316	41	280	82
283	316	-33	280	83
284	316	-32	280	84
255	316	-61	280	85
273	316	-43	280	86
243	316	-73	280	87
279	316	-37	280	88
269	316	-47	280	89
266	316	-50	280	90
260	316	-56	280	91
262	316	-54	280	92
270	316	-46	280	93
313	316	-3	280	94
265	316	-51	280	95
274	316	-42	280	96
293	316	-23	280	97
267	316	-49	280	98
276	316	-40	280	99
233	316	-83	280	100
236	316	-80	280	101
207	316	-109	280	102

227	316	-89	280	103
233	316	-83	280	104
267	316	-49	280	105
265	316	-51	280	106
277	316	-39	280	107
256	316	-60	280	108
227	316	-89	280	109
219	316	-97	280	110
254	316	-62	280	111
267	316	-49	280	112
279	316	-37	280	113
589	316	273	281	113
259	316	-57	281	114
315	316	-1	281	115
303.15	316	-12.85	281	116
313	316	-3	281	117
371	316	55	282	117
270	316	-46	282	118
382	316	66	283	118
362	316	46	284	118
423	316	107	285	118
207	316	-109	285	119
283	316	-33	285	120
454	316	138	286	120
362	316	46	287	120
505	316	189	288	120
316	316	0	288	120
1130	316	814	289	120
227	316	-89	289	121
ND<3 U	316	-313	289	122
253	259	-6	289	123
277	259	18	290	123
290	259	31	291	123
260	259	1	292	123
357	259	98	293	123
283	259	24	294	123
284	259	25	295	123
255	259	-4	295	124
273	259	14	296	124
243	259	-16	296	125
279	259	20	297	125
269	259	10	298	125
266	259	7	299	125
260	259	1	300	125
262	259	3	301	125
270	259	11	302	125
313	259	54	303	125
265	259	6	304	125
274	259	15	305	125
293	259	34	306	125
267	259	8	307	125
276	259	17	308	125
233	259	-26	308	126
236	259	-23	308	127
207	259	-52	308	128
227	259	-32	308	129

233	259	-26	308	130
267	259	8	309	130
265	259	6	310	130
277	259	18	311	130
256	259	-3	311	131
227	259	-32	311	132
219	259	-40	311	133
254	259	-5	311	134
267	259	8	312	134
279	259	20	313	134
589	259	330	314	134
259	259	0	314	134
315	259	56	315	134
303.15	259	44.15	316	134
313	259	54	317	134
371	259	112	318	134
270	259	11	319	134
382	259	123	320	134
362	259	103	321	134
423	259	164	322	134
207	259	-52	322	135
283	259	24	323	135
454	259	195	324	135
362	259	103	325	135
505	259	246	326	135
316	259	57	327	135
1130	259	871	328	135
227	259	-32	328	136
ND<3 U	259	-256	328	137
277	253	24	329	137
290	253	37	330	137
260	253	7	331	137
357	253	104	332	137
283	253	30	333	137
284	253	31	334	137
255	253	2	335	137
273	253	20	336	137
243	253	-10	336	138
279	253	26	337	138
269	253	16	338	138
266	253	13	339	138
260	253	7	340	138
262	253	9	341	138
270	253	17	342	138
313	253	60	343	138
265	253	12	344	138
274	253	21	345	138
293	253	40	346	138
267	253	14	347	138
276	253	23	348	138
233	253	-20	348	139
236	253	-17	348	140
207	253	-46	348	141
227	253	-26	348	142
233	253	-20	348	143
267	253	14	349	143

265	253	12	350	143
277	253	24	351	143
256	253	3	352	143
227	253	-26	352	144
219	253	-34	352	145
254	253	1	353	145
267	253	14	354	145
279	253	26	355	145
589	253	336	356	145
259	253	6	357	145
315	253	62	358	145
303.15	253	50.15	359	145
313	253	60	360	145
371	253	118	361	145
270	253	17	362	145
382	253	129	363	145
362	253	109	364	145
423	253	170	365	145
207	253	-46	365	146
283	253	30	366	146
454	253	201	367	146
362	253	109	368	146
505	253	252	369	146
316	253	63	370	146
1130	253	877	371	146
227	253	-26	371	147
ND<3 U	253	-250	371	148
290	277	13	372	148
260	277	-17	372	149
357	277	80	373	149
283	277	6	374	149
284	277	7	375	149
255	277	-22	375	150
273	277	-4	375	151
243	277	-34	375	152
279	277	2	376	152
269	277	-8	376	153
266	277	-11	376	154
260	277	-17	376	155
262	277	-15	376	156
270	277	-7	376	157
313	277	36	377	157
265	277	-12	377	158
274	277	-3	377	159
293	277	16	378	159
267	277	-10	378	160
276	277	-1	378	161
233	277	-44	378	162
236	277	-41	378	163
207	277	-70	378	164
227	277	-50	378	165
233	277	-44	378	166
267	277	-10	378	167
265	277	-12	378	168
277	277	0	378	168
256	277	-21	378	169

227	277	-50	378	170
219	277	-58	378	171
254	277	-23	378	172
267	277	-10	378	173
279	277	2	379	173
589	277	312	380	173
259	277	-18	380	174
315	277	38	381	174
303.15	277	26.15	382	174
313	277	36	383	174
371	277	94	384	174
270	277	-7	384	175
382	277	105	385	175
362	277	85	386	175
423	277	146	387	175
207	277	-70	387	176
283	277	6	388	176
454	277	177	389	176
362	277	85	390	176
505	277	228	391	176
316	277	39	392	176
1130	277	853	393	176
227	277	-50	393	177
ND<3 U	277	-274	393	178
260	290	-30	393	179
357	290	67	394	179
283	290	-7	394	180
284	290	-6	394	181
255	290	-35	394	182
273	290	-17	394	183
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ND<3 U	283	-280	1169	744
362	454	-92	1169	745
505	454	51	1170	745
316	454	-138	1170	746
1130	454	676	1171	746
227	454	-227	1171	747
ND<3 U	454	-451	1171	748
505	362	143	1172	748
316	362	-46	1172	749
1130	362	768	1173	749
227	362	-135	1173	750
ND<3 U	362	-359	1173	751
316	505	-189	1173	752
1130	505	625	1174	752
227	505	-278	1174	753
ND<3 U	505	-502	1174	754
1130	316	814	1175	754
227	316	-89	1175	755
ND<3 U	316	-313	1175	756
227	1130	-903	1175	757
ND<3 U	1130	-1127	1175	758
ND<3 U	227	-224	1175	759

S Statistic = 1175 - 759 = 416

Tied Group	Value	Members
1	256	2
2	316	2
3	259	2
4	277	2
5	260	2
6	283	2
7	279	2
8	270	2
9	313	2
10	265	2
11	267	3
12	233	2
13	207	2
14	227	3
15	362	2

Time Period	Observations
11/24/2009	1
1/27/2010	1
3/2/2010	1
3/4/2010	1
4/9/2010	1
4/30/2010	1

5/6/2010	1
6/7/2010	1
7/26/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1
1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1
12/6/2011	1
1/13/2012	1
2/21/2012	1
3/20/2012	1
4/27/2012	1
5/24/2012	1
6/15/2012	1
7/26/2012	1
8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1
1/29/2013	1
4/17/2013	1
7/29/2013	1
10/30/2013	1
1/31/2014	1
4/18/2014	1
7/17/2014	1
10/23/2014	1
1/27/2015	1
4/13/2015	1
7/21/2015	1
10/20/2015	1
1/27/2016	1
4/26/2016	1
7/26/2016	1
10/31/2016	1
1/30/2017	1
4/27/2017	1
7/24/2017	1
10/27/2017	1
1/29/2018	1
4/12/2018	1
7/24/2018	1
10/29/2018	1
1/30/2019	1
4/29/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 366
B = 0
C = 12
D = 0
E = 38
F = 0
a = 511686
b = 2.14439e+006
c = 7812
Group Variance = 28406.7
Z-Score = 2.46228
Comparison Level at $1.0 - (0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)
|2.46228| > 2.32634 indicating a trend

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: MW-6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
216	304	-88	0	1
262	304	-42	0	2
223	304	-81	0	3
268	304	-36	0	4
258	304	-46	0	5
265	304	-39	0	6
293	304	-11	0	7
266	304	-38	0	8
256	304	-48	0	9
327	304	23	1	9
5.3	304	-298.7	1	10
361	304	57	2	10
293	304	-11	2	11
289	304	-15	2	12
257	304	-47	2	13
265	304	-39	2	14
255	304	-49	2	15
298	304	-6	2	16
273	304	-31	2	17
283	304	-21	2	18
262	304	-42	2	19
271	304	-33	2	20
287	304	-17	2	21
336	304	32	3	21
276	304	-28	3	22
290	304	-14	3	23
263	304	-41	3	24
283	304	-21	3	25
291	304	-13	3	26
232	304	-72	3	27
239	304	-65	3	28
205	304	-99	3	29
225	304	-79	3	30
234	304	-70	3	31
272	304	-32	3	32
272	304	-32	3	33
277	304	-27	3	34
240	304	-64	3	35
223	304	-81	3	36
229	304	-75	3	37
253	304	-51	3	38
288	304	-16	3	39
283	304	-21	3	40
728	304	424	4	40
252	304	-52	4	41
274	304	-30	4	42
324.57	304	20.57	5	42

312	304	8	6	42
371	304	67	7	42
264	304	-40	7	43
60.1	304	-243.9	7	44
387	304	83	8	44
358	304	54	9	44
236	304	-68	9	45
69	304	-235	9	46
526	304	222	10	46
390	304	86	11	46
451	304	147	12	46
269	304	-35	12	47
989	304	685	13	47
233	304	-71	13	48
258	304	-46	13	49
262	216	46	14	49
223	216	7	15	49
268	216	52	16	49
258	216	42	17	49
265	216	49	18	49
293	216	77	19	49
266	216	50	20	49
256	216	40	21	49
327	216	111	22	49
5.3	216	-210.7	22	50
361	216	145	23	50
293	216	77	24	50
289	216	73	25	50
257	216	41	26	50
265	216	49	27	50
255	216	39	28	50
298	216	82	29	50
273	216	57	30	50
283	216	67	31	50
262	216	46	32	50
271	216	55	33	50
287	216	71	34	50
336	216	120	35	50
276	216	60	36	50
290	216	74	37	50
263	216	47	38	50
283	216	67	39	50
291	216	75	40	50
232	216	16	41	50
239	216	23	42	50
205	216	-11	42	51
225	216	9	43	51
234	216	18	44	51
272	216	56	45	51
272	216	56	46	51
277	216	61	47	51
240	216	24	48	51
223	216	7	49	51
229	216	13	50	51
253	216	37	51	51
288	216	72	52	51

283	216	67	53	51
728	216	512	54	51
252	216	36	55	51
274	216	58	56	51
324.57	216	108.57	57	51
312	216	96	58	51
371	216	155	59	51
264	216	48	60	51
60.1	216	-155.9	60	52
387	216	171	61	52
358	216	142	62	52
236	216	20	63	52
69	216	-147	63	53
526	216	310	64	53
390	216	174	65	53
451	216	235	66	53
269	216	53	67	53
989	216	773	68	53
233	216	17	69	53
258	216	42	70	53
223	262	-39	70	54
268	262	6	71	54
258	262	-4	71	55
265	262	3	72	55
293	262	31	73	55
266	262	4	74	55
256	262	-6	74	56
327	262	65	75	56
5.3	262	-256.7	75	57
361	262	99	76	57
293	262	31	77	57
289	262	27	78	57
257	262	-5	78	58
265	262	3	79	58
255	262	-7	79	59
298	262	36	80	59
273	262	11	81	59
283	262	21	82	59
262	262	0	82	59
271	262	9	83	59
287	262	25	84	59
336	262	74	85	59
276	262	14	86	59
290	262	28	87	59
263	262	1	88	59
283	262	21	89	59
291	262	29	90	59
232	262	-30	90	60
239	262	-23	90	61
205	262	-57	90	62
225	262	-37	90	63
234	262	-28	90	64
272	262	10	91	64
272	262	10	92	64
277	262	15	93	64
240	262	-22	93	65

223	262	-39	93	66
229	262	-33	93	67
253	262	-9	93	68
288	262	26	94	68
283	262	21	95	68
728	262	466	96	68
252	262	-10	96	69
274	262	12	97	69
324.57	262	62.57	98	69
312	262	50	99	69
371	262	109	100	69
264	262	2	101	69
60.1	262	-201.9	101	70
387	262	125	102	70
358	262	96	103	70
236	262	-26	103	71
69	262	-193	103	72
526	262	264	104	72
390	262	128	105	72
451	262	189	106	72
269	262	7	107	72
989	262	727	108	72
233	262	-29	108	73
258	262	-4	108	74
268	223	45	109	74
258	223	35	110	74
265	223	42	111	74
293	223	70	112	74
266	223	43	113	74
256	223	33	114	74
327	223	104	115	74
5.3	223	-217.7	115	75
361	223	138	116	75
293	223	70	117	75
289	223	66	118	75
257	223	34	119	75
265	223	42	120	75
255	223	32	121	75
298	223	75	122	75
273	223	50	123	75
283	223	60	124	75
262	223	39	125	75
271	223	48	126	75
287	223	64	127	75
336	223	113	128	75
276	223	53	129	75
290	223	67	130	75
263	223	40	131	75
283	223	60	132	75
291	223	68	133	75
232	223	9	134	75
239	223	16	135	75
205	223	-18	135	76
225	223	2	136	76
234	223	11	137	76
272	223	49	138	76

272	223	49	139	76
277	223	54	140	76
240	223	17	141	76
223	223	0	141	76
229	223	6	142	76
253	223	30	143	76
288	223	65	144	76
283	223	60	145	76
728	223	505	146	76
252	223	29	147	76
274	223	51	148	76
324.57	223	101.57	149	76
312	223	89	150	76
371	223	148	151	76
264	223	41	152	76
60.1	223	-162.9	152	77
387	223	164	153	77
358	223	135	154	77
236	223	13	155	77
69	223	-154	155	78
526	223	303	156	78
390	223	167	157	78
451	223	228	158	78
269	223	46	159	78
989	223	766	160	78
233	223	10	161	78
258	223	35	162	78
258	268	-10	162	79
265	268	-3	162	80
293	268	25	163	80
266	268	-2	163	81
256	268	-12	163	82
327	268	59	164	82
5.3	268	-262.7	164	83
361	268	93	165	83
293	268	25	166	83
289	268	21	167	83
257	268	-11	167	84
265	268	-3	167	85
255	268	-13	167	86
298	268	30	168	86
273	268	5	169	86
283	268	15	170	86
262	268	-6	170	87
271	268	3	171	87
287	268	19	172	87
336	268	68	173	87
276	268	8	174	87
290	268	22	175	87
263	268	-5	175	88
283	268	15	176	88
291	268	23	177	88
232	268	-36	177	89
239	268	-29	177	90
205	268	-63	177	91
225	268	-43	177	92

234	268	-34	177	93
272	268	4	178	93
272	268	4	179	93
277	268	9	180	93
240	268	-28	180	94
223	268	-45	180	95
229	268	-39	180	96
253	268	-15	180	97
288	268	20	181	97
283	268	15	182	97
728	268	460	183	97
252	268	-16	183	98
274	268	6	184	98
324.57	268	56.57	185	98
312	268	44	186	98
371	268	103	187	98
264	268	-4	187	99
60.1	268	-207.9	187	100
387	268	119	188	100
358	268	90	189	100
236	268	-32	189	101
69	268	-199	189	102
526	268	258	190	102
390	268	122	191	102
451	268	183	192	102
269	268	1	193	102
989	268	721	194	102
233	268	-35	194	103
258	268	-10	194	104
265	258	7	195	104
293	258	35	196	104
266	258	8	197	104
256	258	-2	197	105
327	258	69	198	105
5.3	258	-252.7	198	106
361	258	103	199	106
293	258	35	200	106
289	258	31	201	106
257	258	-1	201	107
265	258	7	202	107
255	258	-3	202	108
298	258	40	203	108
273	258	15	204	108
283	258	25	205	108
262	258	4	206	108
271	258	13	207	108
287	258	29	208	108
336	258	78	209	108
276	258	18	210	108
290	258	32	211	108
263	258	5	212	108
283	258	25	213	108
291	258	33	214	108
232	258	-26	214	109
239	258	-19	214	110
205	258	-53	214	111

225	258	-33	214	112
234	258	-24	214	113
272	258	14	215	113
272	258	14	216	113
277	258	19	217	113
240	258	-18	217	114
223	258	-35	217	115
229	258	-29	217	116
253	258	-5	217	117
288	258	30	218	117
283	258	25	219	117
728	258	470	220	117
252	258	-6	220	118
274	258	16	221	118
324.57	258	66.57	222	118
312	258	54	223	118
371	258	113	224	118
264	258	6	225	118
60.1	258	-197.9	225	119
387	258	129	226	119
358	258	100	227	119
236	258	-22	227	120
69	258	-189	227	121
526	258	268	228	121
390	258	132	229	121
451	258	193	230	121
269	258	11	231	121
989	258	731	232	121
233	258	-25	232	122
258	258	0	232	122
293	265	28	233	122
266	265	1	234	122
256	265	-9	234	123
327	265	62	235	123
5.3	265	-259.7	235	124
361	265	96	236	124
293	265	28	237	124
289	265	24	238	124
257	265	-8	238	125
265	265	0	238	125
255	265	-10	238	126
298	265	33	239	126
273	265	8	240	126
283	265	18	241	126
262	265	-3	241	127
271	265	6	242	127
287	265	22	243	127
336	265	71	244	127
276	265	11	245	127
290	265	25	246	127
263	265	-2	246	128
283	265	18	247	128
291	265	26	248	128
232	265	-33	248	129
239	265	-26	248	130
205	265	-60	248	131

225	265	-40	248	132
234	265	-31	248	133
272	265	7	249	133
272	265	7	250	133
277	265	12	251	133
240	265	-25	251	134
223	265	-42	251	135
229	265	-36	251	136
253	265	-12	251	137
288	265	23	252	137
283	265	18	253	137
728	265	463	254	137
252	265	-13	254	138
274	265	9	255	138
324.57	265	59.57	256	138
312	265	47	257	138
371	265	106	258	138
264	265	-1	258	139
60.1	265	-204.9	258	140
387	265	122	259	140
358	265	93	260	140
236	265	-29	260	141
69	265	-196	260	142
526	265	261	261	142
390	265	125	262	142
451	265	186	263	142
269	265	4	264	142
989	265	724	265	142
233	265	-32	265	143
258	265	-7	265	144
266	293	-27	265	145
256	293	-37	265	146
327	293	34	266	146
5.3	293	-287.7	266	147
361	293	68	267	147
293	293	0	267	147
289	293	-4	267	148
257	293	-36	267	149
265	293	-28	267	150
255	293	-38	267	151
298	293	5	268	151
273	293	-20	268	152
283	293	-10	268	153
262	293	-31	268	154
271	293	-22	268	155
287	293	-6	268	156
336	293	43	269	156
276	293	-17	269	157
290	293	-3	269	158
263	293	-30	269	159
283	293	-10	269	160
291	293	-2	269	161
232	293	-61	269	162
239	293	-54	269	163
205	293	-88	269	164
225	293	-68	269	165

234	293	-59	269	166
272	293	-21	269	167
272	293	-21	269	168
277	293	-16	269	169
240	293	-53	269	170
223	293	-70	269	171
229	293	-64	269	172
253	293	-40	269	173
288	293	-5	269	174
283	293	-10	269	175
728	293	435	270	175
252	293	-41	270	176
274	293	-19	270	177
324.57	293	31.57	271	177
312	293	19	272	177
371	293	78	273	177
264	293	-29	273	178
60.1	293	-232.9	273	179
387	293	94	274	179
358	293	65	275	179
236	293	-57	275	180
69	293	-224	275	181
526	293	233	276	181
390	293	97	277	181
451	293	158	278	181
269	293	-24	278	182
989	293	696	279	182
233	293	-60	279	183
258	293	-35	279	184
256	266	-10	279	185
327	266	61	280	185
5.3	266	-260.7	280	186
361	266	95	281	186
293	266	27	282	186
289	266	23	283	186
257	266	-9	283	187
265	266	-1	283	188
255	266	-11	283	189
298	266	32	284	189
273	266	7	285	189
283	266	17	286	189
262	266	-4	286	190
271	266	5	287	190
287	266	21	288	190
336	266	70	289	190
276	266	10	290	190
290	266	24	291	190
263	266	-3	291	191
283	266	17	292	191
291	266	25	293	191
232	266	-34	293	192
239	266	-27	293	193
205	266	-61	293	194
225	266	-41	293	195
234	266	-32	293	196
272	266	6	294	196

272	266	6	295	196
277	266	11	296	196
240	266	-26	296	197
223	266	-43	296	198
229	266	-37	296	199
253	266	-13	296	200
288	266	22	297	200
283	266	17	298	200
728	266	462	299	200
252	266	-14	299	201
274	266	8	300	201
324.57	266	58.57	301	201
312	266	46	302	201
371	266	105	303	201
264	266	-2	303	202
60.1	266	-205.9	303	203
387	266	121	304	203
358	266	92	305	203
236	266	-30	305	204
69	266	-197	305	205
526	266	260	306	205
390	266	124	307	205
451	266	185	308	205
269	266	3	309	205
989	266	723	310	205
233	266	-33	310	206
258	266	-8	310	207
327	256	71	311	207
5.3	256	-250.7	311	208
361	256	105	312	208
293	256	37	313	208
289	256	33	314	208
257	256	1	315	208
265	256	9	316	208
255	256	-1	316	209
298	256	42	317	209
273	256	17	318	209
283	256	27	319	209
262	256	6	320	209
271	256	15	321	209
287	256	31	322	209
336	256	80	323	209
276	256	20	324	209
290	256	34	325	209
263	256	7	326	209
283	256	27	327	209
291	256	35	328	209
232	256	-24	328	210
239	256	-17	328	211
205	256	-51	328	212
225	256	-31	328	213
234	256	-22	328	214
272	256	16	329	214
272	256	16	330	214
277	256	21	331	214
240	256	-16	331	215

223	256	-33	331	216
229	256	-27	331	217
253	256	-3	331	218
288	256	32	332	218
283	256	27	333	218
728	256	472	334	218
252	256	-4	334	219
274	256	18	335	219
324.57	256	68.57	336	219
312	256	56	337	219
371	256	115	338	219
264	256	8	339	219
60.1	256	-195.9	339	220
387	256	131	340	220
358	256	102	341	220
236	256	-20	341	221
69	256	-187	341	222
526	256	270	342	222
390	256	134	343	222
451	256	195	344	222
269	256	13	345	222
989	256	733	346	222
233	256	-23	346	223
258	256	2	347	223
5.3	327	-321.7	347	224
361	327	34	348	224
293	327	-34	348	225
289	327	-38	348	226
257	327	-70	348	227
265	327	-62	348	228
255	327	-72	348	229
298	327	-29	348	230
273	327	-54	348	231
283	327	-44	348	232
262	327	-65	348	233
271	327	-56	348	234
287	327	-40	348	235
336	327	9	349	235
276	327	-51	349	236
290	327	-37	349	237
263	327	-64	349	238
283	327	-44	349	239
291	327	-36	349	240
232	327	-95	349	241
239	327	-88	349	242
205	327	-122	349	243
225	327	-102	349	244
234	327	-93	349	245
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277	327	-50	349	248
240	327	-87	349	249
223	327	-104	349	250
229	327	-98	349	251
253	327	-74	349	252
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283	327	-44	349	254
728	327	401	350	254
252	327	-75	350	255
274	327	-53	350	256
324.57	327	-2.43	350	257
312	327	-15	350	258
371	327	44	351	258
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387	327	60	352	260
358	327	31	353	260
236	327	-91	353	261
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526	327	199	354	262
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451	327	124	356	262
269	327	-58	356	263
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233	327	-94	357	264
258	327	-69	357	265
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255	5.3	249.7	363	265
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273	5.3	267.7	365	265
283	5.3	277.7	366	265
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271	5.3	265.7	368	265
287	5.3	281.7	369	265
336	5.3	330.7	370	265
276	5.3	270.7	371	265
290	5.3	284.7	372	265
263	5.3	257.7	373	265
283	5.3	277.7	374	265
291	5.3	285.7	375	265
232	5.3	226.7	376	265
239	5.3	233.7	377	265
205	5.3	199.7	378	265
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223	5.3	217.7	385	265
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253	5.3	247.7	387	265
288	5.3	282.7	388	265
283	5.3	277.7	389	265
728	5.3	722.7	390	265
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274	5.3	268.7	392	265
324.57	5.3	319.27	393	265

312	5.3	306.7	394	265
371	5.3	365.7	395	265
264	5.3	258.7	396	265
60.1	5.3	54.8	397	265
387	5.3	381.7	398	265
358	5.3	352.7	399	265
236	5.3	230.7	400	265
69	5.3	63.7	401	265
526	5.3	520.7	402	265
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276	293	-17	417	318
290	293	-3	417	319
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239	293	-54	417	324
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277	293	-16	417	330
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223	293	-70	417	332
229	293	-64	417	333
253	293	-40	417	334
288	293	-5	417	335
283	293	-10	417	336
728	293	435	418	336
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274	293	-19	418	338
324.57	293	31.57	419	338
312	293	19	420	338
371	293	78	421	338
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60.1	293	-232.9	421	340
387	293	94	422	340
358	293	65	423	340
236	293	-57	423	341
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526	293	233	424	342
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451	293	158	426	342
269	293	-24	426	343
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233	293	-60	427	344
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265	289	-24	427	347
255	289	-34	427	348
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273	289	-16	428	349
283	289	-6	428	350
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287	289	-2	428	353
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276	289	-13	429	354
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263	289	-26	430	355
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232	289	-57	431	357
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225	289	-64	431	360
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229	289	-60	431	367
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288	289	-1	431	369
283	289	-6	431	370
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274	289	-15	432	372
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312	289	23	434	372
371	289	82	435	372
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387	289	98	436	374
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69	289	-220	437	376
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225	257	-32	454	384
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272	257	15	455	385
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223	257	-34	457	387
229	257	-28	457	388
253	257	-4	457	389
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233	257	-24	472	394
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273	265	8	475	395
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271	265	6	477	396
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276	265	11	480	396
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263	265	-2	481	397
283	265	18	482	397
291	265	26	483	397
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277	265	12	486	402
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223	265	-42	486	404
229	265	-36	486	405
253	265	-12	486	406
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283	265	18	488	406
728	265	463	489	406
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274	265	9	490	407
324.57	265	59.57	491	407
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371	265	106	493	407
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387	265	122	494	409
358	265	93	495	409
236	265	-29	495	410
69	265	-196	495	411
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989	265	724	500	411
233	265	-32	500	412
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273	255	18	502	413
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229	255	-26	515	421
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387	255	132	524	424
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69	255	-186	525	426
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269	255	14	529	426
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233	255	-22	530	427
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283	298	-15	532	451
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274	298	-24	533	453
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312	298	14	535	453
371	298	73	536	453
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60.1	298	-237.9	536	455
387	298	89	537	455
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526	298	228	539	457
390	298	92	540	457
451	298	153	541	457
269	298	-29	541	458
989	298	691	542	458
233	298	-65	542	459
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276	273	3	546	462
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283	273	10	548	463
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232	273	-41	549	464
239	273	-34	549	465
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225	273	-48	549	467
234	273	-39	549	468
272	273	-1	549	469
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223	273	-50	550	472
229	273	-44	550	473
253	273	-20	550	474
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252	273	-21	553	475
274	273	1	554	475
324.57	273	51.57	555	475
312	273	39	556	475
371	273	98	557	475
264	273	-9	557	476
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387	273	114	558	477
358	273	85	559	477
236	273	-37	559	478
69	273	-204	559	479
526	273	253	560	479
390	273	117	561	479
451	273	178	562	479
269	273	-4	562	480
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233	273	-40	563	481
258	273	-15	563	482
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271	283	-12	563	484
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276	283	-7	565	485
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291	283	8	567	486
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239	283	-44	567	488
205	283	-78	567	489
225	283	-58	567	490
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277	283	-6	567	494
240	283	-43	567	495
223	283	-60	567	496
229	283	-54	567	497
253	283	-30	567	498
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272	271	1	611	528
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277	271	6	613	528
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223	271	-48	613	530
229	271	-42	613	531
253	271	-18	613	532
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387	271	116	621	535
358	271	87	622	535
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283	287	-4	628	543
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239	287	-48	629	545
205	287	-82	629	546
225	287	-62	629	547
234	287	-53	629	548
272	287	-15	629	549
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277	287	-10	629	551
240	287	-47	629	552
223	287	-64	629	553
229	287	-58	629	554
253	287	-34	629	555
288	287	1	630	555
283	287	-4	630	556
728	287	441	631	556
252	287	-35	631	557
274	287	-13	631	558
324.57	287	37.57	632	558
312	287	25	633	558
371	287	84	634	558
264	287	-23	634	559
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387	287	100	635	560
358	287	71	636	560
236	287	-51	636	561
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526	287	239	637	562
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451	287	164	639	562
269	287	-18	639	563
989	287	702	640	563
233	287	-54	640	564
258	287	-29	640	565
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263	336	-73	640	568
283	336	-53	640	569
291	336	-45	640	570
232	336	-104	640	571
239	336	-97	640	572
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272	336	-64	640	576
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277	336	-59	640	578
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223	336	-113	640	580
229	336	-107	640	581
253	336	-83	640	582
288	336	-48	640	583
283	336	-53	640	584
728	336	392	641	584
252	336	-84	641	585
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312	336	-24	641	588
371	336	35	642	588
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387	336	51	643	590
358	336	22	644	590
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283	276	7	650	596
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223	276	-53	652	605
229	276	-47	652	606
253	276	-23	652	607
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312	276	36	657	609
371	276	95	658	609
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387	276	111	659	611
358	276	82	660	611
236	276	-40	660	612
69	276	-207	660	613
526	276	250	661	613
390	276	114	662	613
451	276	175	663	613
269	276	-7	663	614
989	276	713	664	614
233	276	-43	664	615
258	276	-18	664	616
263	290	-27	664	617
283	290	-7	664	618
291	290	1	665	618
232	290	-58	665	619
239	290	-51	665	620
205	290	-85	665	621
225	290	-65	665	622
234	290	-56	665	623
272	290	-18	665	624
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277	290	-13	665	626
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229	290	-61	665	629
253	290	-37	665	630
288	290	-2	665	631
283	290	-7	665	632
728	290	438	666	632
252	290	-38	666	633
274	290	-16	666	634
324.57	290	34.57	667	634
312	290	22	668	634
371	290	81	669	634
264	290	-26	669	635
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387	290	97	670	636
358	290	68	671	636
236	290	-54	671	637
69	290	-221	671	638
526	290	236	672	638
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269	290	-21	674	639
989	290	699	675	639
233	290	-57	675	640
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232	263	-31	677	642
239	263	-24	677	643
205	263	-58	677	644
225	263	-38	677	645
234	263	-29	677	646
272	263	9	678	646

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277	263	14	680	646
240	263	-23	680	647
223	263	-40	680	648
229	263	-34	680	649
253	263	-10	680	650
288	263	25	681	650
283	263	20	682	650
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252	263	-11	683	651
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312	263	49	686	651
371	263	108	687	651
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387	263	124	689	652
358	263	95	690	652
236	263	-27	690	653
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526	263	263	691	654
390	263	127	692	654
451	263	188	693	654
269	263	6	694	654
989	263	726	695	654
233	263	-30	695	655
258	263	-5	695	656
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232	283	-51	696	657
239	283	-44	696	658
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225	283	-58	696	660
234	283	-49	696	661
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277	283	-6	696	664
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229	283	-54	696	667
253	283	-30	696	668
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283	283	0	697	668
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358	283	75	703	672
236	283	-47	703	673
69	283	-214	703	674
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989	283	706	707	675
233	283	-50	707	676
258	283	-25	707	677
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239	291	-52	707	679
205	291	-86	707	680
225	291	-66	707	681
234	291	-57	707	682
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223	291	-68	707	687
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253	291	-38	707	689
288	291	-3	707	690
283	291	-8	707	691
728	291	437	708	691
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274	291	-17	708	693
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312	291	21	710	693
371	291	80	711	693
264	291	-27	711	694
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387	291	96	712	695
358	291	67	713	695
236	291	-55	713	696
69	291	-222	713	697
526	291	235	714	697
390	291	99	715	697
451	291	160	716	697
269	291	-22	716	698
989	291	698	717	698
233	291	-58	717	699
258	291	-33	717	700
239	232	7	718	700
205	232	-27	718	701
225	232	-7	718	702
234	232	2	719	702
272	232	40	720	702
272	232	40	721	702
277	232	45	722	702
240	232	8	723	702
223	232	-9	723	703
229	232	-3	723	704
253	232	21	724	704
288	232	56	725	704
283	232	51	726	704
728	232	496	727	704
252	232	20	728	704
274	232	42	729	704
324.57	232	92.57	730	704

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371	232	139	732	704
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387	232	155	734	705
358	232	126	735	705
236	232	4	736	705
69	232	-163	736	706
526	232	294	737	706
390	232	158	738	706
451	232	219	739	706
269	232	37	740	706
989	232	757	741	706
233	232	1	742	706
258	232	26	743	706
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225	239	-14	743	708
234	239	-5	743	709
272	239	33	744	709
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277	239	38	746	709
240	239	1	747	709
223	239	-16	747	710
229	239	-10	747	711
253	239	14	748	711
288	239	49	749	711
283	239	44	750	711
728	239	489	751	711
252	239	13	752	711
274	239	35	753	711
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312	239	73	755	711
371	239	132	756	711
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387	239	148	758	712
358	239	119	759	712
236	239	-3	759	713
69	239	-170	759	714
526	239	287	760	714
390	239	151	761	714
451	239	212	762	714
269	239	30	763	714
989	239	750	764	714
233	239	-6	764	715
258	239	19	765	715
225	205	20	766	715
234	205	29	767	715
272	205	67	768	715
272	205	67	769	715
277	205	72	770	715
240	205	35	771	715
223	205	18	772	715
229	205	24	773	715
253	205	48	774	715

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283	205	78	776	715
728	205	523	777	715
252	205	47	778	715
274	205	69	779	715
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312	205	107	781	715
371	205	166	782	715
264	205	59	783	715
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387	205	182	784	716
358	205	153	785	716
236	205	31	786	716
69	205	-136	786	717
526	205	321	787	717
390	205	185	788	717
451	205	246	789	717
269	205	64	790	717
989	205	784	791	717
233	205	28	792	717
258	205	53	793	717
234	225	9	794	717
272	225	47	795	717
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277	225	52	797	717
240	225	15	798	717
223	225	-2	798	718
229	225	4	799	718
253	225	28	800	718
288	225	63	801	718
283	225	58	802	718
728	225	503	803	718
252	225	27	804	718
274	225	49	805	718
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312	225	87	807	718
371	225	146	808	718
264	225	39	809	718
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387	225	162	810	719
358	225	133	811	719
236	225	11	812	719
69	225	-156	812	720
526	225	301	813	720
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451	225	226	815	720
269	225	44	816	720
989	225	764	817	720
233	225	8	818	720
258	225	33	819	720
272	234	38	820	720
272	234	38	821	720
277	234	43	822	720
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229	234	-5	823	722
253	234	19	824	722
288	234	54	825	722
283	234	49	826	722
728	234	494	827	722
252	234	18	828	722
274	234	40	829	722
324.57	234	90.57	830	722
312	234	78	831	722
371	234	137	832	722
264	234	30	833	722
60.1	234	-173.9	833	723
387	234	153	834	723
358	234	124	835	723
236	234	2	836	723
69	234	-165	836	724
526	234	292	837	724
390	234	156	838	724
451	234	217	839	724
269	234	35	840	724
989	234	755	841	724
233	234	-1	841	725
258	234	24	842	725
272	272	0	842	725
277	272	5	843	725
240	272	-32	843	726
223	272	-49	843	727
229	272	-43	843	728
253	272	-19	843	729
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283	272	11	845	729
728	272	456	846	729
252	272	-20	846	730
274	272	2	847	730
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312	272	40	849	730
371	272	99	850	730
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387	272	115	851	732
358	272	86	852	732
236	272	-36	852	733
69	272	-203	852	734
526	272	254	853	734
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451	272	179	855	734
269	272	-3	855	735
989	272	717	856	735
233	272	-39	856	736
258	272	-14	856	737
277	272	5	857	737
240	272	-32	857	738
223	272	-49	857	739
229	272	-43	857	740
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283	272	11	859	741
728	272	456	860	741
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274	272	2	861	742
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312	272	40	863	742
371	272	99	864	742
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387	272	115	865	744
358	272	86	866	744
236	272	-36	866	745
69	272	-203	866	746
526	272	254	867	746
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451	272	179	869	746
269	272	-3	869	747
989	272	717	870	747
233	272	-39	870	748
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240	277	-37	870	750
223	277	-54	870	751
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253	277	-24	870	753
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283	277	6	872	753
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274	277	-3	873	755
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312	277	35	875	755
371	277	94	876	755
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358	277	81	878	757
236	277	-41	878	758
69	277	-208	878	759
526	277	249	879	759
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451	277	174	881	759
269	277	-8	881	760
989	277	712	882	760
233	277	-44	882	761
258	277	-19	882	762
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229	240	-11	882	764
253	240	13	883	764
288	240	48	884	764
283	240	43	885	764
728	240	488	886	764
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371	240	131	891	764
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387	240	147	893	765
358	240	118	894	765
236	240	-4	894	766
69	240	-171	894	767
526	240	286	895	767
390	240	150	896	767
451	240	211	897	767
269	240	29	898	767
989	240	749	899	767
233	240	-7	899	768
258	240	18	900	768
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253	223	30	902	768
288	223	65	903	768
283	223	60	904	768
728	223	505	905	768
252	223	29	906	768
274	223	51	907	768
324.57	223	101.57	908	768
312	223	89	909	768
371	223	148	910	768
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387	223	164	912	769
358	223	135	913	769
236	223	13	914	769
69	223	-154	914	770
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390	223	167	916	770
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269	223	46	918	770
989	223	766	919	770
233	223	10	920	770
258	223	35	921	770
253	229	24	922	770
288	229	59	923	770
283	229	54	924	770
728	229	499	925	770
252	229	23	926	770
274	229	45	927	770
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312	229	83	929	770
371	229	142	930	770
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358	229	129	933	771
236	229	7	934	771
69	229	-160	934	772
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390	229	161	936	772

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269	229	40	938	772
989	229	760	939	772
233	229	4	940	772
258	229	29	941	772
288	253	35	942	772
283	253	30	943	772
728	253	475	944	772
252	253	-1	944	773
274	253	21	945	773
324.57	253	71.57	946	773
312	253	59	947	773
371	253	118	948	773
264	253	11	949	773
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387	253	134	950	774
358	253	105	951	774
236	253	-17	951	775
69	253	-184	951	776
526	253	273	952	776
390	253	137	953	776
451	253	198	954	776
269	253	16	955	776
989	253	736	956	776
233	253	-20	956	777
258	253	5	957	777
283	288	-5	957	778
728	288	440	958	778
252	288	-36	958	779
274	288	-14	958	780
324.57	288	36.57	959	780
312	288	24	960	780
371	288	83	961	780
264	288	-24	961	781
60.1	288	-227.9	961	782
387	288	99	962	782
358	288	70	963	782
236	288	-52	963	783
69	288	-219	963	784
526	288	238	964	784
390	288	102	965	784
451	288	163	966	784
269	288	-19	966	785
989	288	701	967	785
233	288	-55	967	786
258	288	-30	967	787
728	283	445	968	787
252	283	-31	968	788
274	283	-9	968	789
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312	283	29	970	789
371	283	88	971	789
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387	283	104	972	791
358	283	75	973	791
236	283	-47	973	792
69	283	-214	973	793
526	283	243	974	793
390	283	107	975	793
451	283	168	976	793
269	283	-14	976	794
989	283	706	977	794
233	283	-50	977	795
258	283	-25	977	796
252	728	-476	977	797
274	728	-454	977	798
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312	728	-416	977	800
371	728	-357	977	801
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387	728	-341	977	804
358	728	-370	977	805
236	728	-492	977	806
69	728	-659	977	807
526	728	-202	977	808
390	728	-338	977	809
451	728	-277	977	810
269	728	-459	977	811
989	728	261	978	811
233	728	-495	978	812
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312	252	60	981	813
371	252	119	982	813
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60.1	252	-191.9	983	814
387	252	135	984	814
358	252	106	985	814
236	252	-16	985	815
69	252	-183	985	816
526	252	274	986	816
390	252	138	987	816
451	252	199	988	816
269	252	17	989	816
989	252	737	990	816
233	252	-19	990	817
258	252	6	991	817
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312	274	38	993	817
371	274	97	994	817
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387	274	113	995	819
358	274	84	996	819
236	274	-38	996	820

69	274	-205	996	821
526	274	252	997	821
390	274	116	998	821
451	274	177	999	821
269	274	-5	999	822
989	274	715	1000	822
233	274	-41	1000	823
258	274	-16	1000	824
312	324.57	-12.57	1000	825
371	324.57	46.43	1001	825
264	324.57	-60.57	1001	826
60.1	324.57	-264.47	1001	827
387	324.57	62.43	1002	827
358	324.57	33.43	1003	827
236	324.57	-88.57	1003	828
69	324.57	-255.57	1003	829
526	324.57	201.43	1004	829
390	324.57	65.43	1005	829
451	324.57	126.43	1006	829
269	324.57	-55.57	1006	830
989	324.57	664.43	1007	830
233	324.57	-91.57	1007	831
258	324.57	-66.57	1007	832
371	312	59	1008	832
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387	312	75	1009	834
358	312	46	1010	834
236	312	-76	1010	835
69	312	-243	1010	836
526	312	214	1011	836
390	312	78	1012	836
451	312	139	1013	836
269	312	-43	1013	837
989	312	677	1014	837
233	312	-79	1014	838
258	312	-54	1014	839
264	371	-107	1014	840
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387	371	16	1015	841
358	371	-13	1015	842
236	371	-135	1015	843
69	371	-302	1015	844
526	371	155	1016	844
390	371	19	1017	844
451	371	80	1018	844
269	371	-102	1018	845
989	371	618	1019	845
233	371	-138	1019	846
258	371	-113	1019	847
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387	264	123	1020	848
358	264	94	1021	848

236	264	-28	1021	849
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526	264	262	1022	850
390	264	126	1023	850
451	264	187	1024	850
269	264	5	1025	850
989	264	725	1026	850
233	264	-31	1026	851
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358	60.1	297.9	1028	852
236	60.1	175.9	1029	852
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526	60.1	465.9	1031	852
390	60.1	329.9	1032	852
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269	60.1	208.9	1034	852
989	60.1	928.9	1035	852
233	60.1	172.9	1036	852
258	60.1	197.9	1037	852
358	387	-29	1037	853
236	387	-151	1037	854
69	387	-318	1037	855
526	387	139	1038	855
390	387	3	1039	855
451	387	64	1040	855
269	387	-118	1040	856
989	387	602	1041	856
233	387	-154	1041	857
258	387	-129	1041	858
236	358	-122	1041	859
69	358	-289	1041	860
526	358	168	1042	860
390	358	32	1043	860
451	358	93	1044	860
269	358	-89	1044	861
989	358	631	1045	861
233	358	-125	1045	862
258	358	-100	1045	863
69	236	-167	1045	864
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390	236	154	1047	864
451	236	215	1048	864
269	236	33	1049	864
989	236	753	1050	864
233	236	-3	1050	865
258	236	22	1051	865
526	69	457	1052	865
390	69	321	1053	865
451	69	382	1054	865
269	69	200	1055	865
989	69	920	1056	865

233	69	164	1057	865
258	69	189	1058	865
390	526	-136	1058	866
451	526	-75	1058	867
269	526	-257	1058	868
989	526	463	1059	868
233	526	-293	1059	869
258	526	-268	1059	870
451	390	61	1060	870
269	390	-121	1060	871
989	390	599	1061	871
233	390	-157	1061	872
258	390	-132	1061	873
269	451	-182	1061	874
989	451	538	1062	874
233	451	-218	1062	875
258	451	-193	1062	876
989	269	720	1063	876
233	269	-36	1063	877
258	269	-11	1063	878
233	989	-756	1063	879
258	989	-731	1063	880
258	233	25	1064	880

S Statistic = 1064 - 880 = 184

Tied Group	Value	Members
1	262	2
2	223	2
3	258	2
4	265	2
5	293	2
6	283	3
7	272	2

Time Period	Observations
11/24/2009	1
1/27/2010	1
3/2/2010	1
3/4/2010	1
4/9/2010	1
4/30/2010	1
5/6/2010	1
6/7/2010	1
7/26/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1
1/14/2011	1
2/11/2011	1

3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1
12/6/2011	1
1/13/2012	1
2/21/2012	1
3/20/2012	1
4/27/2012	1
5/24/2012	1
6/15/2012	1
7/26/2012	1
8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1
1/29/2013	1
4/17/2013	1
7/29/2013	1
10/30/2013	1
1/31/2014	1
4/18/2014	1
7/17/2014	1
10/23/2014	1
1/27/2015	1
4/13/2015	1
7/21/2015	1
10/20/2015	1
1/27/2016	1
4/26/2016	1
7/26/2016	1
10/31/2016	1
1/30/2017	1
4/27/2017	1
7/24/2017	1
10/27/2017	1
1/29/2018	1
4/12/2018	1
7/24/2018	1
10/29/2018	1
1/30/2019	1
4/29/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 174
 B = 0
 C = 6
 D = 0
 E = 18
 F = 0

a = 511686

b = 2.14439e+006

c = 7812

Group Variance = 28417.3

Z-Score = 1.08557

Comparison Level at $1.0 - (0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)

|1.08557| \leq 2.32634 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: MW-7

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
262	358	-96	0	1
286	358	-72	0	2
311	358	-47	0	3
285	358	-73	0	4
378	358	20	1	4
239	358	-119	1	5
311	358	-47	1	6
271	358	-87	1	7
366	358	8	2	7
306	358	-52	2	8
314	358	-44	2	9
256	358	-102	2	10
298	358	-60	2	11
279	358	-79	2	12
255	358	-103	2	13
273	358	-85	2	14
310	358	-48	2	15
359	358	1	3	15
306	358	-52	3	16
318	358	-40	3	17
267	358	-91	3	18
576	358	218	4	18
400	358	42	5	18
835	358	477	6	18
210	358	-148	6	19
286	262	24	7	19
311	262	49	8	19
285	262	23	9	19
378	262	116	10	19
239	262	-23	10	20
311	262	49	11	20
271	262	9	12	20
366	262	104	13	20
306	262	44	14	20
314	262	52	15	20
256	262	-6	15	21
298	262	36	16	21
279	262	17	17	21
255	262	-7	17	22
273	262	11	18	22
310	262	48	19	22
359	262	97	20	22
306	262	44	21	22
318	262	56	22	22
267	262	5	23	22
576	262	314	24	22

400	262	138	25	22
835	262	573	26	22
210	262	-52	26	23
311	286	25	27	23
285	286	-1	27	24
378	286	92	28	24
239	286	-47	28	25
311	286	25	29	25
271	286	-15	29	26
366	286	80	30	26
306	286	20	31	26
314	286	28	32	26
256	286	-30	32	27
298	286	12	33	27
279	286	-7	33	28
255	286	-31	33	29
273	286	-13	33	30
310	286	24	34	30
359	286	73	35	30
306	286	20	36	30
318	286	32	37	30
267	286	-19	37	31
576	286	290	38	31
400	286	114	39	31
835	286	549	40	31
210	286	-76	40	32
285	311	-26	40	33
378	311	67	41	33
239	311	-72	41	34
311	311	0	41	34
271	311	-40	41	35
366	311	55	42	35
306	311	-5	42	36
314	311	3	43	36
256	311	-55	43	37
298	311	-13	43	38
279	311	-32	43	39
255	311	-56	43	40
273	311	-38	43	41
310	311	-1	43	42
359	311	48	44	42
306	311	-5	44	43
318	311	7	45	43
267	311	-44	45	44
576	311	265	46	44
400	311	89	47	44
835	311	524	48	44
210	311	-101	48	45
378	285	93	49	45
239	285	-46	49	46
311	285	26	50	46
271	285	-14	50	47
366	285	81	51	47
306	285	21	52	47

314	285	29	53	47
256	285	-29	53	48
298	285	13	54	48
279	285	-6	54	49
255	285	-30	54	50
273	285	-12	54	51
310	285	25	55	51
359	285	74	56	51
306	285	21	57	51
318	285	33	58	51
267	285	-18	58	52
576	285	291	59	52
400	285	115	60	52
835	285	550	61	52
210	285	-75	61	53
239	378	-139	61	54
311	378	-67	61	55
271	378	-107	61	56
366	378	-12	61	57
306	378	-72	61	58
314	378	-64	61	59
256	378	-122	61	60
298	378	-80	61	61
279	378	-99	61	62
255	378	-123	61	63
273	378	-105	61	64
310	378	-68	61	65
359	378	-19	61	66
306	378	-72	61	67
318	378	-60	61	68
267	378	-111	61	69
576	378	198	62	69
400	378	22	63	69
835	378	457	64	69
210	378	-168	64	70
311	239	72	65	70
271	239	32	66	70
366	239	127	67	70
306	239	67	68	70
314	239	75	69	70
256	239	17	70	70
298	239	59	71	70
279	239	40	72	70
255	239	16	73	70
273	239	34	74	70
310	239	71	75	70
359	239	120	76	70
306	239	67	77	70
318	239	79	78	70
267	239	28	79	70
576	239	337	80	70
400	239	161	81	70
835	239	596	82	70
210	239	-29	82	71

271	311	-40	82	72
366	311	55	83	72
306	311	-5	83	73
314	311	3	84	73
256	311	-55	84	74
298	311	-13	84	75
279	311	-32	84	76
255	311	-56	84	77
273	311	-38	84	78
310	311	-1	84	79
359	311	48	85	79
306	311	-5	85	80
318	311	7	86	80
267	311	-44	86	81
576	311	265	87	81
400	311	89	88	81
835	311	524	89	81
210	311	-101	89	82

366	271	95	90	82
306	271	35	91	82
314	271	43	92	82
256	271	-15	92	83
298	271	27	93	83
279	271	8	94	83
255	271	-16	94	84
273	271	2	95	84
310	271	39	96	84
359	271	88	97	84
306	271	35	98	84
318	271	47	99	84
267	271	-4	99	85
576	271	305	100	85
400	271	129	101	85
835	271	564	102	85
210	271	-61	102	86

306	366	-60	102	87
314	366	-52	102	88
256	366	-110	102	89
298	366	-68	102	90
279	366	-87	102	91
255	366	-111	102	92
273	366	-93	102	93
310	366	-56	102	94
359	366	-7	102	95
306	366	-60	102	96
318	366	-48	102	97
267	366	-99	102	98
576	366	210	103	98
400	366	34	104	98
835	366	469	105	98
210	366	-156	105	99

314	306	8	106	99
256	306	-50	106	100
298	306	-8	106	101

279	306	-27	106	102
255	306	-51	106	103
273	306	-33	106	104
310	306	4	107	104
359	306	53	108	104
306	306	0	108	104
318	306	12	109	104
267	306	-39	109	105
576	306	270	110	105
400	306	94	111	105
835	306	529	112	105
210	306	-96	112	106
256	314	-58	112	107
298	314	-16	112	108
279	314	-35	112	109
255	314	-59	112	110
273	314	-41	112	111
310	314	-4	112	112
359	314	45	113	112
306	314	-8	113	113
318	314	4	114	113
267	314	-47	114	114
576	314	262	115	114
400	314	86	116	114
835	314	521	117	114
210	314	-104	117	115
298	256	42	118	115
279	256	23	119	115
255	256	-1	119	116
273	256	17	120	116
310	256	54	121	116
359	256	103	122	116
306	256	50	123	116
318	256	62	124	116
267	256	11	125	116
576	256	320	126	116
400	256	144	127	116
835	256	579	128	116
210	256	-46	128	117
279	298	-19	128	118
255	298	-43	128	119
273	298	-25	128	120
310	298	12	129	120
359	298	61	130	120
306	298	8	131	120
318	298	20	132	120
267	298	-31	132	121
576	298	278	133	121
400	298	102	134	121
835	298	537	135	121
210	298	-88	135	122
255	279	-24	135	123
273	279	-6	135	124

310	279	31	136	124
359	279	80	137	124
306	279	27	138	124
318	279	39	139	124
267	279	-12	139	125
576	279	297	140	125
400	279	121	141	125
835	279	556	142	125
210	279	-69	142	126
273	255	18	143	126
310	255	55	144	126
359	255	104	145	126
306	255	51	146	126
318	255	63	147	126
267	255	12	148	126
576	255	321	149	126
400	255	145	150	126
835	255	580	151	126
210	255	-45	151	127
310	273	37	152	127
359	273	86	153	127
306	273	33	154	127
318	273	45	155	127
267	273	-6	155	128
576	273	303	156	128
400	273	127	157	128
835	273	562	158	128
210	273	-63	158	129
359	310	49	159	129
306	310	-4	159	130
318	310	8	160	130
267	310	-43	160	131
576	310	266	161	131
400	310	90	162	131
835	310	525	163	131
210	310	-100	163	132
306	359	-53	163	133
318	359	-41	163	134
267	359	-92	163	135
576	359	217	164	135
400	359	41	165	135
835	359	476	166	135
210	359	-149	166	136
318	306	12	167	136
267	306	-39	167	137
576	306	270	168	137
400	306	94	169	137
835	306	529	170	137
210	306	-96	170	138
267	318	-51	170	139
576	318	258	171	139

400	318	82	172	139
835	318	517	173	139
210	318	-108	173	140
576	267	309	174	140
400	267	133	175	140
835	267	568	176	140
210	267	-57	176	141
400	576	-176	176	142
835	576	259	177	142
210	576	-366	177	143
835	400	435	178	143
210	400	-190	178	144
210	835	-625	178	145

S Statistic = 178 - 145 = 33

Tied Group	Value	Members
1	311	2
2	306	2

Time Period	Observations
11/25/2009	1
3/4/2010	1
4/30/2010	1
7/26/2010	1
10/13/2010	1
1/14/2011	1
4/21/2011	1
7/21/2011	1
10/31/2011	1
1/13/2012	1
4/27/2012	1
7/26/2012	1
10/18/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 36

B = 0

C = 0

D = 0

E = 4

F = 0

a = 37050

b = 140400

c = 1300

Group Variance = 2056.33

Z-Score = 0.705673

Comparison Level at $1.0 - (0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)

|0.705673| <= 2.32634 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Sulfate

Location: MW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
597	853	-256	0	1
634	853	-219	0	2
818	853	-35	0	3
703	853	-150	0	4
898	853	45	1	4
587	853	-266	1	5
940	853	87	2	5
950	853	97	3	5
886	853	33	4	5
687	853	-166	4	6
673	853	-180	4	7
590	853	-263	4	8
757	853	-96	4	9
697	853	-156	4	10
684	853	-169	4	11
947	853	94	5	11
723	853	-130	5	12
1810	853	957	6	12
733	853	-120	6	13
845	853	-8	6	14
1050	853	197	7	14
617	853	-236	7	15
993	853	140	8	15
900	853	47	9	15
3410	853	2557	10	15
670	853	-183	10	16
634	597	37	11	16
818	597	221	12	16
703	597	106	13	16
898	597	301	14	16
587	597	-10	14	17
940	597	343	15	17
950	597	353	16	17
886	597	289	17	17
687	597	90	18	17
673	597	76	19	17
590	597	-7	19	18
757	597	160	20	18
697	597	100	21	18
684	597	87	22	18
947	597	350	23	18
723	597	126	24	18
1810	597	1213	25	18
733	597	136	26	18
845	597	248	27	18
1050	597	453	28	18

617	597	20	29	18
993	597	396	30	18
900	597	303	31	18
3410	597	2813	32	18
670	597	73	33	18
818	634	184	34	18
703	634	69	35	18
898	634	264	36	18
587	634	-47	36	19
940	634	306	37	19
950	634	316	38	19
886	634	252	39	19
687	634	53	40	19
673	634	39	41	19
590	634	-44	41	20
757	634	123	42	20
697	634	63	43	20
684	634	50	44	20
947	634	313	45	20
723	634	89	46	20
1810	634	1176	47	20
733	634	99	48	20
845	634	211	49	20
1050	634	416	50	20
617	634	-17	50	21
993	634	359	51	21
900	634	266	52	21
3410	634	2776	53	21
670	634	36	54	21
703	818	-115	54	22
898	818	80	55	22
587	818	-231	55	23
940	818	122	56	23
950	818	132	57	23
886	818	68	58	23
687	818	-131	58	24
673	818	-145	58	25
590	818	-228	58	26
757	818	-61	58	27
697	818	-121	58	28
684	818	-134	58	29
947	818	129	59	29
723	818	-95	59	30
1810	818	992	60	30
733	818	-85	60	31
845	818	27	61	31
1050	818	232	62	31
617	818	-201	62	32
993	818	175	63	32
900	818	82	64	32
3410	818	2592	65	32
670	818	-148	65	33
898	703	195	66	33
587	703	-116	66	34

940	703	237	67	34
950	703	247	68	34
886	703	183	69	34
687	703	-16	69	35
673	703	-30	69	36
590	703	-113	69	37
757	703	54	70	37
697	703	-6	70	38
684	703	-19	70	39
947	703	244	71	39
723	703	20	72	39
1810	703	1107	73	39
733	703	30	74	39
845	703	142	75	39
1050	703	347	76	39
617	703	-86	76	40
993	703	290	77	40
900	703	197	78	40
3410	703	2707	79	40
670	703	-33	79	41
587	898	-311	79	42
940	898	42	80	42
950	898	52	81	42
886	898	-12	81	43
687	898	-211	81	44
673	898	-225	81	45
590	898	-308	81	46
757	898	-141	81	47
697	898	-201	81	48
684	898	-214	81	49
947	898	49	82	49
723	898	-175	82	50
1810	898	912	83	50
733	898	-165	83	51
845	898	-53	83	52
1050	898	152	84	52
617	898	-281	84	53
993	898	95	85	53
900	898	2	86	53
3410	898	2512	87	53
670	898	-228	87	54
940	587	353	88	54
950	587	363	89	54
886	587	299	90	54
687	587	100	91	54
673	587	86	92	54
590	587	3	93	54
757	587	170	94	54
697	587	110	95	54
684	587	97	96	54
947	587	360	97	54
723	587	136	98	54
1810	587	1223	99	54
733	587	146	100	54
845	587	258	101	54

1050	587	463	102	54
617	587	30	103	54
993	587	406	104	54
900	587	313	105	54
3410	587	2823	106	54
670	587	83	107	54
950	940	10	108	54
886	940	-54	108	55
687	940	-253	108	56
673	940	-267	108	57
590	940	-350	108	58
757	940	-183	108	59
697	940	-243	108	60
684	940	-256	108	61
947	940	7	109	61
723	940	-217	109	62
1810	940	870	110	62
733	940	-207	110	63
845	940	-95	110	64
1050	940	110	111	64
617	940	-323	111	65
993	940	53	112	65
900	940	-40	112	66
3410	940	2470	113	66
670	940	-270	113	67
886	950	-64	113	68
687	950	-263	113	69
673	950	-277	113	70
590	950	-360	113	71
757	950	-193	113	72
697	950	-253	113	73
684	950	-266	113	74
947	950	-3	113	75
723	950	-227	113	76
1810	950	860	114	76
733	950	-217	114	77
845	950	-105	114	78
1050	950	100	115	78
617	950	-333	115	79
993	950	43	116	79
900	950	-50	116	80
3410	950	2460	117	80
670	950	-280	117	81
687	886	-199	117	82
673	886	-213	117	83
590	886	-296	117	84
757	886	-129	117	85
697	886	-189	117	86
684	886	-202	117	87
947	886	61	118	87
723	886	-163	118	88
1810	886	924	119	88
733	886	-153	119	89
845	886	-41	119	90

1050	886	164	120	90
617	886	-269	120	91
993	886	107	121	91
900	886	14	122	91
3410	886	2524	123	91
670	886	-216	123	92
673	687	-14	123	93
590	687	-97	123	94
757	687	70	124	94
697	687	10	125	94
684	687	-3	125	95
947	687	260	126	95
723	687	36	127	95
1810	687	1123	128	95
733	687	46	129	95
845	687	158	130	95
1050	687	363	131	95
617	687	-70	131	96
993	687	306	132	96
900	687	213	133	96
3410	687	2723	134	96
670	687	-17	134	97
590	673	-83	134	98
757	673	84	135	98
697	673	24	136	98
684	673	11	137	98
947	673	274	138	98
723	673	50	139	98
1810	673	1137	140	98
733	673	60	141	98
845	673	172	142	98
1050	673	377	143	98
617	673	-56	143	99
993	673	320	144	99
900	673	227	145	99
3410	673	2737	146	99
670	673	-3	146	100
757	590	167	147	100
697	590	107	148	100
684	590	94	149	100
947	590	357	150	100
723	590	133	151	100
1810	590	1220	152	100
733	590	143	153	100
845	590	255	154	100
1050	590	460	155	100
617	590	27	156	100
993	590	403	157	100
900	590	310	158	100
3410	590	2820	159	100
670	590	80	160	100
697	757	-60	160	101
684	757	-73	160	102

947	757	190	161	102
723	757	-34	161	103
1810	757	1053	162	103
733	757	-24	162	104
845	757	88	163	104
1050	757	293	164	104
617	757	-140	164	105
993	757	236	165	105
900	757	143	166	105
3410	757	2653	167	105
670	757	-87	167	106
684	697	-13	167	107
947	697	250	168	107
723	697	26	169	107
1810	697	1113	170	107
733	697	36	171	107
845	697	148	172	107
1050	697	353	173	107
617	697	-80	173	108
993	697	296	174	108
900	697	203	175	108
3410	697	2713	176	108
670	697	-27	176	109
947	684	263	177	109
723	684	39	178	109
1810	684	1126	179	109
733	684	49	180	109
845	684	161	181	109
1050	684	366	182	109
617	684	-67	182	110
993	684	309	183	110
900	684	216	184	110
3410	684	2726	185	110
670	684	-14	185	111
723	947	-224	185	112
1810	947	863	186	112
733	947	-214	186	113
845	947	-102	186	114
1050	947	103	187	114
617	947	-330	187	115
993	947	46	188	115
900	947	-47	188	116
3410	947	2463	189	116
670	947	-277	189	117
1810	723	1087	190	117
733	723	10	191	117
845	723	122	192	117
1050	723	327	193	117
617	723	-106	193	118
993	723	270	194	118
900	723	177	195	118
3410	723	2687	196	118
670	723	-53	196	119

733	1810	-1077	196	120
845	1810	-965	196	121
1050	1810	-760	196	122
617	1810	-1193	196	123
993	1810	-817	196	124
900	1810	-910	196	125
3410	1810	1600	197	125
670	1810	-1140	197	126
845	733	112	198	126
1050	733	317	199	126
617	733	-116	199	127
993	733	260	200	127
900	733	167	201	127
3410	733	2677	202	127
670	733	-63	202	128
1050	845	205	203	128
617	845	-228	203	129
993	845	148	204	129
900	845	55	205	129
3410	845	2565	206	129
670	845	-175	206	130
617	1050	-433	206	131
993	1050	-57	206	132
900	1050	-150	206	133
3410	1050	2360	207	133
670	1050	-380	207	134
993	617	376	208	134
900	617	283	209	134
3410	617	2793	210	134
670	617	53	211	134
900	993	-93	211	135
3410	993	2417	212	135
670	993	-323	212	136
3410	900	2510	213	136
670	900	-230	213	137
670	3410	-2740	213	138

S Statistic = 213 - 138 = 75

Tied Group	Value	Members
Time Period		Observations
11/24/2009		1
3/4/2010		1
4/30/2010		1
7/26/2010		1
10/13/2010		1
1/14/2011		1

4/21/2011	1
7/21/2011	1
10/31/2011	1
1/13/2012	1
4/27/2012	1
7/26/2012	1
10/18/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 0

B = 0

C = 0

D = 0

E = 0

F = 0

a = 41418

b = 157950

c = 1404

Group Variance = 2301

Z-Score = 1.54267

Comparison Level at 1.0 - (0.02 / 2) = 99% confidence level = 2.32634 (two-tailed)

|1.54267| <= 2.32634 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Sulfate

Location: MW-2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
723	1185	-462	0	1
670	1185	-515	0	2
774	1185	-411	0	3
747	1185	-438	0	4
1130	1185	-55	0	5
674	1185	-511	0	6
809	1185	-376	0	7
696	1185	-489	0	8
870	1185	-315	0	9
719	1185	-466	0	10
718	1185	-467	0	11
545	1185	-640	0	12
766	1185	-419	0	13
630	1185	-555	0	14
579	1185	-606	0	15
736	1185	-449	0	16
746	1185	-439	0	17
781	1185	-404	0	18
801	1185	-384	0	19
743	1185	-442	0	20
1200	1185	15	1	20
593	1185	-592	1	21
1090	1185	-95	1	22
967	1185	-218	1	23
3230	1185	2045	2	23
692	1185	-493	2	24
670	723	-53	2	25
774	723	51	3	25
747	723	24	4	25
1130	723	407	5	25
674	723	-49	5	26
809	723	86	6	26
696	723	-27	6	27
870	723	147	7	27
719	723	-4	7	28
718	723	-5	7	29
545	723	-178	7	30
766	723	43	8	30
630	723	-93	8	31
579	723	-144	8	32
736	723	13	9	32
746	723	23	10	32
781	723	58	11	32
801	723	78	12	32
743	723	20	13	32
1200	723	477	14	32

593	723	-130	14	33
1090	723	367	15	33
967	723	244	16	33
3230	723	2507	17	33
692	723	-31	17	34
774	670	104	18	34
747	670	77	19	34
1130	670	460	20	34
674	670	4	21	34
809	670	139	22	34
696	670	26	23	34
870	670	200	24	34
719	670	49	25	34
718	670	48	26	34
545	670	-125	26	35
766	670	96	27	35
630	670	-40	27	36
579	670	-91	27	37
736	670	66	28	37
746	670	76	29	37
781	670	111	30	37
801	670	131	31	37
743	670	73	32	37
1200	670	530	33	37
593	670	-77	33	38
1090	670	420	34	38
967	670	297	35	38
3230	670	2560	36	38
692	670	22	37	38
747	774	-27	37	39
1130	774	356	38	39
674	774	-100	38	40
809	774	35	39	40
696	774	-78	39	41
870	774	96	40	41
719	774	-55	40	42
718	774	-56	40	43
545	774	-229	40	44
766	774	-8	40	45
630	774	-144	40	46
579	774	-195	40	47
736	774	-38	40	48
746	774	-28	40	49
781	774	7	41	49
801	774	27	42	49
743	774	-31	42	50
1200	774	426	43	50
593	774	-181	43	51
1090	774	316	44	51
967	774	193	45	51
3230	774	2456	46	51
692	774	-82	46	52
1130	747	383	47	52
674	747	-73	47	53

809	747	62	48	53
696	747	-51	48	54
870	747	123	49	54
719	747	-28	49	55
718	747	-29	49	56
545	747	-202	49	57
766	747	19	50	57
630	747	-117	50	58
579	747	-168	50	59
736	747	-11	50	60
746	747	-1	50	61
781	747	34	51	61
801	747	54	52	61
743	747	-4	52	62
1200	747	453	53	62
593	747	-154	53	63
1090	747	343	54	63
967	747	220	55	63
3230	747	2483	56	63
692	747	-55	56	64
674	1130	-456	56	65
809	1130	-321	56	66
696	1130	-434	56	67
870	1130	-260	56	68
719	1130	-411	56	69
718	1130	-412	56	70
545	1130	-585	56	71
766	1130	-364	56	72
630	1130	-500	56	73
579	1130	-551	56	74
736	1130	-394	56	75
746	1130	-384	56	76
781	1130	-349	56	77
801	1130	-329	56	78
743	1130	-387	56	79
1200	1130	70	57	79
593	1130	-537	57	80
1090	1130	-40	57	81
967	1130	-163	57	82
3230	1130	2100	58	82
692	1130	-438	58	83
809	674	135	59	83
696	674	22	60	83
870	674	196	61	83
719	674	45	62	83
718	674	44	63	83
545	674	-129	63	84
766	674	92	64	84
630	674	-44	64	85
579	674	-95	64	86
736	674	62	65	86
746	674	72	66	86
781	674	107	67	86
801	674	127	68	86
743	674	69	69	86

1200	674	526	70	86
593	674	-81	70	87
1090	674	416	71	87
967	674	293	72	87
3230	674	2556	73	87
692	674	18	74	87
696	809	-113	74	88
870	809	61	75	88
719	809	-90	75	89
718	809	-91	75	90
545	809	-264	75	91
766	809	-43	75	92
630	809	-179	75	93
579	809	-230	75	94
736	809	-73	75	95
746	809	-63	75	96
781	809	-28	75	97
801	809	-8	75	98
743	809	-66	75	99
1200	809	391	76	99
593	809	-216	76	100
1090	809	281	77	100
967	809	158	78	100
3230	809	2421	79	100
692	809	-117	79	101
870	696	174	80	101
719	696	23	81	101
718	696	22	82	101
545	696	-151	82	102
766	696	70	83	102
630	696	-66	83	103
579	696	-117	83	104
736	696	40	84	104
746	696	50	85	104
781	696	85	86	104
801	696	105	87	104
743	696	47	88	104
1200	696	504	89	104
593	696	-103	89	105
1090	696	394	90	105
967	696	271	91	105
3230	696	2534	92	105
692	696	-4	92	106
719	870	-151	92	107
718	870	-152	92	108
545	870	-325	92	109
766	870	-104	92	110
630	870	-240	92	111
579	870	-291	92	112
736	870	-134	92	113
746	870	-124	92	114
781	870	-89	92	115
801	870	-69	92	116
743	870	-127	92	117

1200	870	330	93	117
593	870	-277	93	118
1090	870	220	94	118
967	870	97	95	118
3230	870	2360	96	118
692	870	-178	96	119
718	719	-1	96	120
545	719	-174	96	121
766	719	47	97	121
630	719	-89	97	122
579	719	-140	97	123
736	719	17	98	123
746	719	27	99	123
781	719	62	100	123
801	719	82	101	123
743	719	24	102	123
1200	719	481	103	123
593	719	-126	103	124
1090	719	371	104	124
967	719	248	105	124
3230	719	2511	106	124
692	719	-27	106	125
545	718	-173	106	126
766	718	48	107	126
630	718	-88	107	127
579	718	-139	107	128
736	718	18	108	128
746	718	28	109	128
781	718	63	110	128
801	718	83	111	128
743	718	25	112	128
1200	718	482	113	128
593	718	-125	113	129
1090	718	372	114	129
967	718	249	115	129
3230	718	2512	116	129
692	718	-26	116	130
766	545	221	117	130
630	545	85	118	130
579	545	34	119	130
736	545	191	120	130
746	545	201	121	130
781	545	236	122	130
801	545	256	123	130
743	545	198	124	130
1200	545	655	125	130
593	545	48	126	130
1090	545	545	127	130
967	545	422	128	130
3230	545	2685	129	130
692	545	147	130	130
630	766	-136	130	131
579	766	-187	130	132

736	766	-30	130	133
746	766	-20	130	134
781	766	15	131	134
801	766	35	132	134
743	766	-23	132	135
1200	766	434	133	135
593	766	-173	133	136
1090	766	324	134	136
967	766	201	135	136
3230	766	2464	136	136
692	766	-74	136	137
579	630	-51	136	138
736	630	106	137	138
746	630	116	138	138
781	630	151	139	138
801	630	171	140	138
743	630	113	141	138
1200	630	570	142	138
593	630	-37	142	139
1090	630	460	143	139
967	630	337	144	139
3230	630	2600	145	139
692	630	62	146	139
736	579	157	147	139
746	579	167	148	139
781	579	202	149	139
801	579	222	150	139
743	579	164	151	139
1200	579	621	152	139
593	579	14	153	139
1090	579	511	154	139
967	579	388	155	139
3230	579	2651	156	139
692	579	113	157	139
746	736	10	158	139
781	736	45	159	139
801	736	65	160	139
743	736	7	161	139
1200	736	464	162	139
593	736	-143	162	140
1090	736	354	163	140
967	736	231	164	140
3230	736	2494	165	140
692	736	-44	165	141
781	746	35	166	141
801	746	55	167	141
743	746	-3	167	142
1200	746	454	168	142
593	746	-153	168	143
1090	746	344	169	143
967	746	221	170	143
3230	746	2484	171	143
692	746	-54	171	144

801	781	20	172	144
743	781	-38	172	145
1200	781	419	173	145
593	781	-188	173	146
1090	781	309	174	146
967	781	186	175	146
3230	781	2449	176	146
692	781	-89	176	147
743	801	-58	176	148
1200	801	399	177	148
593	801	-208	177	149
1090	801	289	178	149
967	801	166	179	149
3230	801	2429	180	149
692	801	-109	180	150
1200	743	457	181	150
593	743	-150	181	151
1090	743	347	182	151
967	743	224	183	151
3230	743	2487	184	151
692	743	-51	184	152
593	1200	-607	184	153
1090	1200	-110	184	154
967	1200	-233	184	155
3230	1200	2030	185	155
692	1200	-508	185	156
1090	593	497	186	156
967	593	374	187	156
3230	593	2637	188	156
692	593	99	189	156
967	1090	-123	189	157
3230	1090	2140	190	157
692	1090	-398	190	158
3230	967	2263	191	158
692	967	-275	191	159
692	3230	-2538	191	160

S Statistic = 191 - 160 = 31

Tied Group	Value	Members
Time Period		Observations
11/25/2009		1
3/4/2010		1
4/30/2010		1
7/26/2010		1
10/13/2010		1
1/14/2011		1

4/21/2011	1
7/21/2011	1
10/31/2011	1
1/13/2012	1
4/27/2012	1
7/26/2012	1
10/18/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 0

B = 0

C = 0

D = 0

E = 0

F = 0

a = 41418

b = 157950

c = 1404

Group Variance = 2301

Z-Score = 0.625407

Comparison Level at 1.0 - $(0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)

[0.625407] <= 2.32634 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Sulfate

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
551	760	-209	0	1
663	760	-97	0	2
589	760	-171	0	3
619	760	-141	0	4
724	760	-36	0	5
598	760	-162	0	6
787	760	27	1	6
870	760	110	2	6
812	760	52	3	6
674	760	-86	3	7
813	760	53	4	7
812	760	52	5	7
1030	760	270	6	7
860	760	100	7	7
715	760	-45	7	8
595	760	-165	7	9
714	760	-46	7	10
640	760	-120	7	11
858	760	98	8	11
712	760	-48	8	12
725	760	-35	8	13
759	760	-1	8	14
742	760	-18	8	15
695	760	-65	8	16
911	760	151	9	16
749	760	-11	9	17
849	760	89	10	17
766	760	6	11	17
765	760	5	12	17
792	760	32	13	17
715	760	-45	13	18
648	760	-112	13	19
581	760	-179	13	20
638	760	-122	13	21
676	760	-84	13	22
749	760	-11	13	23
768	760	8	14	23
711	760	-49	14	24
590	760	-170	14	25
745	760	-15	14	26
338	760	-422	14	27
829	760	69	15	27
734	760	-26	15	28
758	760	-2	15	29
1090	760	330	16	29
592	760	-168	16	30
1210	760	450	17	30

902	760	142	18	30
3180	760	2420	19	30
620	760	-140	19	31
663	551	112	20	31
589	551	38	21	31
619	551	68	22	31
724	551	173	23	31
598	551	47	24	31
787	551	236	25	31
870	551	319	26	31
812	551	261	27	31
674	551	123	28	31
813	551	262	29	31
812	551	261	30	31
1030	551	479	31	31
860	551	309	32	31
715	551	164	33	31
595	551	44	34	31
714	551	163	35	31
640	551	89	36	31
858	551	307	37	31
712	551	161	38	31
725	551	174	39	31
759	551	208	40	31
742	551	191	41	31
695	551	144	42	31
911	551	360	43	31
749	551	198	44	31
849	551	298	45	31
766	551	215	46	31
765	551	214	47	31
792	551	241	48	31
715	551	164	49	31
648	551	97	50	31
581	551	30	51	31
638	551	87	52	31
676	551	125	53	31
749	551	198	54	31
768	551	217	55	31
711	551	160	56	31
590	551	39	57	31
745	551	194	58	31
338	551	-213	58	32
829	551	278	59	32
734	551	183	60	32
758	551	207	61	32
1090	551	539	62	32
592	551	41	63	32
1210	551	659	64	32
902	551	351	65	32
3180	551	2629	66	32
620	551	69	67	32
589	663	-74	67	33
619	663	-44	67	34
724	663	61	68	34

598	663	-65	68	35
787	663	124	69	35
870	663	207	70	35
812	663	149	71	35
674	663	11	72	35
813	663	150	73	35
812	663	149	74	35
1030	663	367	75	35
860	663	197	76	35
715	663	52	77	35
595	663	-68	77	36
714	663	51	78	36
640	663	-23	78	37
858	663	195	79	37
712	663	49	80	37
725	663	62	81	37
759	663	96	82	37
742	663	79	83	37
695	663	32	84	37
911	663	248	85	37
749	663	86	86	37
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638	663	-25	91	40
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812	589	223	112	44
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725	589	136	121	44
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765	598	167	237	71
792	598	194	238	71
715	598	117	239	71
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768	598	170	244	72
711	598	113	245	72
590	598	-8	245	73
745	598	147	246	73
338	598	-260	246	74
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592	598	-6	250	75
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812	787	25	256	75
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715	787	-72	260	77
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714	787	-73	260	79
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792	870	-78	271	123
715	870	-155	271	124
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725	812	-87	279	146
759	812	-53	279	147
742	812	-70	279	148
695	812	-117	279	149
911	812	99	280	149
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849	812	37	281	150
766	812	-46	281	151
765	812	-47	281	152
792	812	-20	281	153
715	812	-97	281	154
648	812	-164	281	155

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638	812	-174	281	157
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768	812	-44	281	160
711	812	-101	281	161
590	812	-222	281	162
745	812	-67	281	163
338	812	-474	281	164
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758	812	-54	282	166
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592	812	-220	283	167
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813	674	139	287	168
812	674	138	288	168
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714	674	40	292	169
640	674	-34	292	170
858	674	184	293	170
712	674	38	294	170
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742	674	68	297	170
695	674	21	298	170
911	674	237	299	170
749	674	75	300	170
849	674	175	301	170
766	674	92	302	170
765	674	91	303	170
792	674	118	304	170
715	674	41	305	170
648	674	-26	305	171
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638	674	-36	305	173
676	674	2	306	173
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768	674	94	308	173
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745	674	71	310	174
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745	813	-68	322	201
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676	714	-38	406	324
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768	714	54	408	324
711	714	-3	408	325
590	714	-124	408	326
745	714	31	409	326
338	714	-376	409	327
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734	714	20	411	327
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590	858	-268	443	354
745	858	-113	443	355
338	858	-520	443	356
829	858	-29	443	357
734	858	-124	443	358
758	858	-100	443	359
1090	858	232	444	359
592	858	-266	444	360
1210	858	352	445	360
902	858	44	446	360
3180	858	2322	447	360
620	858	-238	447	361
725	712	13	448	361
759	712	47	449	361
742	712	30	450	361
695	712	-17	450	362
911	712	199	451	362
749	712	37	452	362
849	712	137	453	362
766	712	54	454	362
765	712	53	455	362
792	712	80	456	362
715	712	3	457	362
648	712	-64	457	363
581	712	-131	457	364
638	712	-74	457	365
676	712	-36	457	366

749	712	37	458	366
768	712	56	459	366
711	712	-1	459	367
590	712	-122	459	368
745	712	33	460	368
338	712	-374	460	369
829	712	117	461	369
734	712	22	462	369
758	712	46	463	369
1090	712	378	464	369
592	712	-120	464	370
1210	712	498	465	370
902	712	190	466	370
3180	712	2468	467	370
620	712	-92	467	371
759	725	34	468	371
742	725	17	469	371
695	725	-30	469	372
911	725	186	470	372
749	725	24	471	372
849	725	124	472	372
766	725	41	473	372
765	725	40	474	372
792	725	67	475	372
715	725	-10	475	373
648	725	-77	475	374
581	725	-144	475	375
638	725	-87	475	376
676	725	-49	475	377
749	725	24	476	377
768	725	43	477	377
711	725	-14	477	378
590	725	-135	477	379
745	725	20	478	379
338	725	-387	478	380
829	725	104	479	380
734	725	9	480	380
758	725	33	481	380
1090	725	365	482	380
592	725	-133	482	381
1210	725	485	483	381
902	725	177	484	381
3180	725	2455	485	381
620	725	-105	485	382
742	759	-17	485	383
695	759	-64	485	384
911	759	152	486	384
749	759	-10	486	385
849	759	90	487	385
766	759	7	488	385
765	759	6	489	385
792	759	33	490	385
715	759	-44	490	386
648	759	-111	490	387
581	759	-178	490	388

638	759	-121	490	389
676	759	-83	490	390
749	759	-10	490	391
768	759	9	491	391
711	759	-48	491	392
590	759	-169	491	393
745	759	-14	491	394
338	759	-421	491	395
829	759	70	492	395
734	759	-25	492	396
758	759	-1	492	397
1090	759	331	493	397
592	759	-167	493	398
1210	759	451	494	398
902	759	143	495	398
3180	759	2421	496	398
620	759	-139	496	399
695	742	-47	496	400
911	742	169	497	400
749	742	7	498	400
849	742	107	499	400
766	742	24	500	400
765	742	23	501	400
792	742	50	502	400
715	742	-27	502	401
648	742	-94	502	402
581	742	-161	502	403
638	742	-104	502	404
676	742	-66	502	405
749	742	7	503	405
768	742	26	504	405
711	742	-31	504	406
590	742	-152	504	407
745	742	3	505	407
338	742	-404	505	408
829	742	87	506	408
734	742	-8	506	409
758	742	16	507	409
1090	742	348	508	409
592	742	-150	508	410
1210	742	468	509	410
902	742	160	510	410
3180	742	2438	511	410
620	742	-122	511	411
911	695	216	512	411
749	695	54	513	411
849	695	154	514	411
766	695	71	515	411
765	695	70	516	411
792	695	97	517	411
715	695	20	518	411
648	695	-47	518	412
581	695	-114	518	413
638	695	-57	518	414
676	695	-19	518	415

749	695	54	519	415
768	695	73	520	415
711	695	16	521	415
590	695	-105	521	416
745	695	50	522	416
338	695	-357	522	417
829	695	134	523	417
734	695	39	524	417
758	695	63	525	417
1090	695	395	526	417
592	695	-103	526	418
1210	695	515	527	418
902	695	207	528	418
3180	695	2485	529	418
620	695	-75	529	419

749	911	-162	529	420
849	911	-62	529	421
766	911	-145	529	422
765	911	-146	529	423
792	911	-119	529	424
715	911	-196	529	425
648	911	-263	529	426
581	911	-330	529	427
638	911	-273	529	428
676	911	-235	529	429
749	911	-162	529	430
768	911	-143	529	431
711	911	-200	529	432
590	911	-321	529	433
745	911	-166	529	434
338	911	-573	529	435
829	911	-82	529	436
734	911	-177	529	437
758	911	-153	529	438
1090	911	179	530	438
592	911	-319	530	439
1210	911	299	531	439
902	911	-9	531	440
3180	911	2269	532	440
620	911	-291	532	441

849	749	100	533	441
766	749	17	534	441
765	749	16	535	441
792	749	43	536	441
715	749	-34	536	442
648	749	-101	536	443
581	749	-168	536	444
638	749	-111	536	445
676	749	-73	536	446
749	749	0	536	446
768	749	19	537	446
711	749	-38	537	447
590	749	-159	537	448
745	749	-4	537	449
338	749	-411	537	450

829	749	80	538	450
734	749	-15	538	451
758	749	9	539	451
1090	749	341	540	451
592	749	-157	540	452
1210	749	461	541	452
902	749	153	542	452
3180	749	2431	543	452
620	749	-129	543	453
766	849	-83	543	454
765	849	-84	543	455
792	849	-57	543	456
715	849	-134	543	457
648	849	-201	543	458
581	849	-268	543	459
638	849	-211	543	460
676	849	-173	543	461
749	849	-100	543	462
768	849	-81	543	463
711	849	-138	543	464
590	849	-259	543	465
745	849	-104	543	466
338	849	-511	543	467
829	849	-20	543	468
734	849	-115	543	469
758	849	-91	543	470
1090	849	241	544	470
592	849	-257	544	471
1210	849	361	545	471
902	849	53	546	471
3180	849	2331	547	471
620	849	-229	547	472
765	766	-1	547	473
792	766	26	548	473
715	766	-51	548	474
648	766	-118	548	475
581	766	-185	548	476
638	766	-128	548	477
676	766	-90	548	478
749	766	-17	548	479
768	766	2	549	479
711	766	-55	549	480
590	766	-176	549	481
745	766	-21	549	482
338	766	-428	549	483
829	766	63	550	483
734	766	-32	550	484
758	766	-8	550	485
1090	766	324	551	485
592	766	-174	551	486
1210	766	444	552	486
902	766	136	553	486
3180	766	2414	554	486
620	766	-146	554	487

792	765	27	555	487
715	765	-50	555	488
648	765	-117	555	489
581	765	-184	555	490
638	765	-127	555	491
676	765	-89	555	492
749	765	-16	555	493
768	765	3	556	493
711	765	-54	556	494
590	765	-175	556	495
745	765	-20	556	496
338	765	-427	556	497
829	765	64	557	497
734	765	-31	557	498
758	765	-7	557	499
1090	765	325	558	499
592	765	-173	558	500
1210	765	445	559	500
902	765	137	560	500
3180	765	2415	561	500
620	765	-145	561	501
715	792	-77	561	502
648	792	-144	561	503
581	792	-211	561	504
638	792	-154	561	505
676	792	-116	561	506
749	792	-43	561	507
768	792	-24	561	508
711	792	-81	561	509
590	792	-202	561	510
745	792	-47	561	511
338	792	-454	561	512
829	792	37	562	512
734	792	-58	562	513
758	792	-34	562	514
1090	792	298	563	514
592	792	-200	563	515
1210	792	418	564	515
902	792	110	565	515
3180	792	2388	566	515
620	792	-172	566	516
648	715	-67	566	517
581	715	-134	566	518
638	715	-77	566	519
676	715	-39	566	520
749	715	34	567	520
768	715	53	568	520
711	715	-4	568	521
590	715	-125	568	522
745	715	30	569	522
338	715	-377	569	523
829	715	114	570	523
734	715	19	571	523
758	715	43	572	523
1090	715	375	573	523

592	715	-123	573	524
1210	715	495	574	524
902	715	187	575	524
3180	715	2465	576	524
620	715	-95	576	525
581	648	-67	576	526
638	648	-10	576	527
676	648	28	577	527
749	648	101	578	527
768	648	120	579	527
711	648	63	580	527
590	648	-58	580	528
745	648	97	581	528
338	648	-310	581	529
829	648	181	582	529
734	648	86	583	529
758	648	110	584	529
1090	648	442	585	529
592	648	-56	585	530
1210	648	562	586	530
902	648	254	587	530
3180	648	2532	588	530
620	648	-28	588	531
638	581	57	589	531
676	581	95	590	531
749	581	168	591	531
768	581	187	592	531
711	581	130	593	531
590	581	9	594	531
745	581	164	595	531
338	581	-243	595	532
829	581	248	596	532
734	581	153	597	532
758	581	177	598	532
1090	581	509	599	532
592	581	11	600	532
1210	581	629	601	532
902	581	321	602	532
3180	581	2599	603	532
620	581	39	604	532
676	638	38	605	532
749	638	111	606	532
768	638	130	607	532
711	638	73	608	532
590	638	-48	608	533
745	638	107	609	533
338	638	-300	609	534
829	638	191	610	534
734	638	96	611	534
758	638	120	612	534
1090	638	452	613	534
592	638	-46	613	535
1210	638	572	614	535
902	638	264	615	535

3180	638	2542	616	535
620	638	-18	616	536
749	676	73	617	536
768	676	92	618	536
711	676	35	619	536
590	676	-86	619	537
745	676	69	620	537
338	676	-338	620	538
829	676	153	621	538
734	676	58	622	538
758	676	82	623	538
1090	676	414	624	538
592	676	-84	624	539
1210	676	534	625	539
902	676	226	626	539
3180	676	2504	627	539
620	676	-56	627	540
768	749	19	628	540
711	749	-38	628	541
590	749	-159	628	542
745	749	-4	628	543
338	749	-411	628	544
829	749	80	629	544
734	749	-15	629	545
758	749	9	630	545
1090	749	341	631	545
592	749	-157	631	546
1210	749	461	632	546
902	749	153	633	546
3180	749	2431	634	546
620	749	-129	634	547
711	768	-57	634	548
590	768	-178	634	549
745	768	-23	634	550
338	768	-430	634	551
829	768	61	635	551
734	768	-34	635	552
758	768	-10	635	553
1090	768	322	636	553
592	768	-176	636	554
1210	768	442	637	554
902	768	134	638	554
3180	768	2412	639	554
620	768	-148	639	555
590	711	-121	639	556
745	711	34	640	556
338	711	-373	640	557
829	711	118	641	557
734	711	23	642	557
758	711	47	643	557
1090	711	379	644	557
592	711	-119	644	558
1210	711	499	645	558

902	711	191	646	558
3180	711	2469	647	558
620	711	-91	647	559
745	590	155	648	559
338	590	-252	648	560
829	590	239	649	560
734	590	144	650	560
758	590	168	651	560
1090	590	500	652	560
592	590	2	653	560
1210	590	620	654	560
902	590	312	655	560
3180	590	2590	656	560
620	590	30	657	560
338	745	-407	657	561
829	745	84	658	561
734	745	-11	658	562
758	745	13	659	562
1090	745	345	660	562
592	745	-153	660	563
1210	745	465	661	563
902	745	157	662	563
3180	745	2435	663	563
620	745	-125	663	564
829	338	491	664	564
734	338	396	665	564
758	338	420	666	564
1090	338	752	667	564
592	338	254	668	564
1210	338	872	669	564
902	338	564	670	564
3180	338	2842	671	564
620	338	282	672	564
734	829	-95	672	565
758	829	-71	672	566
1090	829	261	673	566
592	829	-237	673	567
1210	829	381	674	567
902	829	73	675	567
3180	829	2351	676	567
620	829	-209	676	568
758	734	24	677	568
1090	734	356	678	568
592	734	-142	678	569
1210	734	476	679	569
902	734	168	680	569
3180	734	2446	681	569
620	734	-114	681	570
1090	758	332	682	570
592	758	-166	682	571
1210	758	452	683	571

902	758	144	684	571
3180	758	2422	685	571
620	758	-138	685	572
592	1090	-498	685	573
1210	1090	120	686	573
902	1090	-188	686	574
3180	1090	2090	687	574
620	1090	-470	687	575
1210	592	618	688	575
902	592	310	689	575
3180	592	2588	690	575
620	592	28	691	575
902	1210	-308	691	576
3180	1210	1970	692	576
620	1210	-590	692	577
3180	902	2278	693	577
620	902	-282	693	578
620	3180	-2560	693	579

S Statistic = 693 - 579 = 114

Tied Group	Value	Members
1	812	2
2	715	2
3	749	2

Time Period	Observations
11/24/2009	1
1/27/2010	1
3/2/2010	1
3/4/2010	1
4/30/2010	1
5/6/2010	1
6/7/2010	1
7/26/2010	1
8/16/2010	1
9/17/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1
1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1

12/6/2011	1
1/13/2012	1
2/21/2012	1
3/20/2012	1
4/27/2012	1
5/24/2012	1
6/15/2012	1
7/26/2012	1
8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 54

B = 0

C = 0

D = 0

E = 6

F = 0

a = 272850

b = 1.12455e+006

c = 5100

Group Variance = 15155.3

Z-Score = 0.917901

Comparison Level at 1.0 - (0.02 / 2) = 99% confidence level = 2.32634 (two-tailed)

[0.917901] <= 2.32634 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Sulfate

Location: MW-4

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
606	738	-132	0	1
649	738	-89	0	2
575	738	-163	0	3
591	738	-147	0	4
691	738	-47	0	5
598	738	-140	0	6
728	738	-10	0	7
846	738	108	1	7
859	738	121	2	7
677	738	-61	2	8
832	738	94	3	8
775	738	37	4	8
912	738	174	5	8
751	738	13	6	8
720	738	-18	6	9
656	738	-82	6	10
687	738	-51	6	11
647	738	-91	6	12
776	738	38	7	12
672	738	-66	7	13
720	738	-18	7	14
637	738	-101	7	15
723	738	-15	7	16
774	738	36	8	16
1210	738	472	9	16
726	738	-12	9	17
755	738	17	10	17
743	738	5	11	17
768	738	30	12	17
749	738	11	13	17
729	738	-9	13	18
654	738	-84	13	19
588	738	-150	13	20
628	738	-110	13	21
682	738	-56	13	22
765	738	27	14	22
788	738	50	15	22
684	738	-54	15	23
458	738	-280	15	24
740	738	2	16	24
1440	738	702	17	24
1090	738	352	18	24
751	738	13	19	24
722	738	-16	19	25
1100	738	362	20	25
620	738	-118	20	26
1180	738	442	21	26

1020	738	282	22	26
3340	738	2602	23	26
670	738	-68	23	27
649	606	43	24	27
575	606	-31	24	28
591	606	-15	24	29
691	606	85	25	29
598	606	-8	25	30
728	606	122	26	30
846	606	240	27	30
859	606	253	28	30
677	606	71	29	30
832	606	226	30	30
775	606	169	31	30
912	606	306	32	30
751	606	145	33	30
720	606	114	34	30
656	606	50	35	30
687	606	81	36	30
647	606	41	37	30
776	606	170	38	30
672	606	66	39	30
720	606	114	40	30
637	606	31	41	30
723	606	117	42	30
774	606	168	43	30
1210	606	604	44	30
726	606	120	45	30
755	606	149	46	30
743	606	137	47	30
768	606	162	48	30
749	606	143	49	30
729	606	123	50	30
654	606	48	51	30
588	606	-18	51	31
628	606	22	52	31
682	606	76	53	31
765	606	159	54	31
788	606	182	55	31
684	606	78	56	31
458	606	-148	56	32
740	606	134	57	32
1440	606	834	58	32
1090	606	484	59	32
751	606	145	60	32
722	606	116	61	32
1100	606	494	62	32
620	606	14	63	32
1180	606	574	64	32
1020	606	414	65	32
3340	606	2734	66	32
670	606	64	67	32
575	649	-74	67	33
591	649	-58	67	34
691	649	42	68	34

598	649	-51	68	35
728	649	79	69	35
846	649	197	70	35
859	649	210	71	35
677	649	28	72	35
832	649	183	73	35
775	649	126	74	35
912	649	263	75	35
751	649	102	76	35
720	649	71	77	35
656	649	7	78	35
687	649	38	79	35
647	649	-2	79	36
776	649	127	80	36
672	649	23	81	36
720	649	71	82	36
637	649	-12	82	37
723	649	74	83	37
774	649	125	84	37
1210	649	561	85	37
726	649	77	86	37
755	649	106	87	37
743	649	94	88	37
768	649	119	89	37
749	649	100	90	37
729	649	80	91	37
654	649	5	92	37
588	649	-61	92	38
628	649	-21	92	39
682	649	33	93	39
765	649	116	94	39
788	649	139	95	39
684	649	35	96	39
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722	649	73	101	40
1100	649	451	102	40
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846	575	271	111	41
859	575	284	112	41
677	575	102	113	41
832	575	257	114	41
775	575	200	115	41
912	575	337	116	41
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687	575	112	120	41
647	575	72	121	41
776	575	201	122	41
672	575	97	123	41
720	575	145	124	41
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726	575	151	129	41
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722	575	147	146	42
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677	591	86	158	42
832	591	241	159	42
775	591	184	160	42
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637	591	46	170	42
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768	591	177	177	42
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755	691	64	211	51
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654	691	-37	215	52
588	691	-103	215	53
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751	728	23	274	62
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656	728	-72	274	64
687	728	-41	274	65
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672	728	-56	275	67
720	728	-8	275	68
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775	846	-71	293	83
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832	859	-27	301	115
775	859	-84	301	116
912	859	53	302	116
751	859	-108	302	117
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656	859	-203	302	119
687	859	-172	302	120
647	859	-212	302	121
776	859	-83	302	122
672	859	-187	302	123
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637	859	-222	302	125
723	859	-136	302	126
774	859	-85	302	127
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726	859	-133	303	128
755	859	-104	303	129
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768	859	-91	303	131
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775	677	98	311	146
912	677	235	312	146
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656	677	-21	314	147
687	677	10	315	147
647	677	-30	315	148
776	677	99	316	148
672	677	-5	316	149
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637	677	-40	317	150
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774	677	97	319	150
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726	677	49	321	150
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743	677	66	323	150
768	677	91	324	150
749	677	72	325	150
729	677	52	326	150
654	677	-23	326	151
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682	677	5	327	153
765	677	88	328	153
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684	677	7	330	153
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740	677	63	331	154
1440	677	763	332	154
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751	677	74	334	154
722	677	45	335	154
1100	677	423	336	154
620	677	-57	336	155
1180	677	503	337	155
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775	832	-57	339	157
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751	832	-81	340	158
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647	832	-185	340	162
776	832	-56	340	163
672	832	-160	340	164
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637	832	-195	340	166
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774	832	-58	340	168
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588	832	-244	341	176
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751	832	-81	343	184
722	832	-110	343	185
1100	832	268	344	185
620	832	-212	344	186
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687	775	-88	348	191
647	775	-128	348	192
776	775	1	349	192
672	775	-103	349	193
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774	775	-1	349	197
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749	775	-26	350	202
729	775	-46	350	203
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628	775	-147	350	206
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751	775	-24	353	212
722	775	-53	353	213
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672	912	-240	357	222
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722	912	-190	360	243
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672	751	-79	365	250
720	751	-31	365	251
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774	751	23	366	253
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726	751	-25	367	254
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768	751	17	369	255
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687	720	-33	377	269
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768	720	48	385	272

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588	720	-132	387	274
628	720	-92	387	275
682	720	-38	387	276
765	720	45	388	276
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722	720	2	394	278
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588	672	-84	492	329
628	672	-44	492	330
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740	672	68	497	331
1440	672	768	498	331
1090	672	418	499	331
751	672	79	500	331
722	672	50	501	331
1100	672	428	502	331
620	672	-52	502	332
1180	672	508	503	332
1020	672	348	504	332
3340	672	2668	505	332
670	672	-2	505	333
637	720	-83	505	334
723	720	3	506	334
774	720	54	507	334
1210	720	490	508	334
726	720	6	509	334
755	720	35	510	334
743	720	23	511	334
768	720	48	512	334
749	720	29	513	334
729	720	9	514	334
654	720	-66	514	335
588	720	-132	514	336
628	720	-92	514	337
682	720	-38	514	338
765	720	45	515	338
788	720	68	516	338
684	720	-36	516	339
458	720	-262	516	340
740	720	20	517	340
1440	720	720	518	340
1090	720	370	519	340
751	720	31	520	340
722	720	2	521	340
1100	720	380	522	340
620	720	-100	522	341
1180	720	460	523	341
1020	720	300	524	341
3340	720	2620	525	341
670	720	-50	525	342
723	637	86	526	342
774	637	137	527	342
1210	637	573	528	342
726	637	89	529	342
755	637	118	530	342
743	637	106	531	342
768	637	131	532	342
749	637	112	533	342
729	637	92	534	342
654	637	17	535	342
588	637	-49	535	343

628	637	-9	535	344
682	637	45	536	344
765	637	128	537	344
788	637	151	538	344
684	637	47	539	344
458	637	-179	539	345
740	637	103	540	345
1440	637	803	541	345
1090	637	453	542	345
751	637	114	543	345
722	637	85	544	345
1100	637	463	545	345
620	637	-17	545	346
1180	637	543	546	346
1020	637	383	547	346
3340	637	2703	548	346
670	637	33	549	346
774	723	51	550	346
1210	723	487	551	346
726	723	3	552	346
755	723	32	553	346
743	723	20	554	346
768	723	45	555	346
749	723	26	556	346
729	723	6	557	346
654	723	-69	557	347
588	723	-135	557	348
628	723	-95	557	349
682	723	-41	557	350
765	723	42	558	350
788	723	65	559	350
684	723	-39	559	351
458	723	-265	559	352
740	723	17	560	352
1440	723	717	561	352
1090	723	367	562	352
751	723	28	563	352
722	723	-1	563	353
1100	723	377	564	353
620	723	-103	564	354
1180	723	457	565	354
1020	723	297	566	354
3340	723	2617	567	354
670	723	-53	567	355
1210	774	436	568	355
726	774	-48	568	356
755	774	-19	568	357
743	774	-31	568	358
768	774	-6	568	359
749	774	-25	568	360
729	774	-45	568	361
654	774	-120	568	362
588	774	-186	568	363
628	774	-146	568	364
682	774	-92	568	365

765	774	-9	568	366
788	774	14	569	366
684	774	-90	569	367
458	774	-316	569	368
740	774	-34	569	369
1440	774	666	570	369
1090	774	316	571	369
751	774	-23	571	370
722	774	-52	571	371
1100	774	326	572	371
620	774	-154	572	372
1180	774	406	573	372
1020	774	246	574	372
3340	774	2566	575	372
670	774	-104	575	373
726	1210	-484	575	374
755	1210	-455	575	375
743	1210	-467	575	376
768	1210	-442	575	377
749	1210	-461	575	378
729	1210	-481	575	379
654	1210	-556	575	380
588	1210	-622	575	381
628	1210	-582	575	382
682	1210	-528	575	383
765	1210	-445	575	384
788	1210	-422	575	385
684	1210	-526	575	386
458	1210	-752	575	387
740	1210	-470	575	388
1440	1210	230	576	388
1090	1210	-120	576	389
751	1210	-459	576	390
722	1210	-488	576	391
1100	1210	-110	576	392
620	1210	-590	576	393
1180	1210	-30	576	394
1020	1210	-190	576	395
3340	1210	2130	577	395
670	1210	-540	577	396
755	726	29	578	396
743	726	17	579	396
768	726	42	580	396
749	726	23	581	396
729	726	3	582	396
654	726	-72	582	397
588	726	-138	582	398
628	726	-98	582	399
682	726	-44	582	400
765	726	39	583	400
788	726	62	584	400
684	726	-42	584	401
458	726	-268	584	402
740	726	14	585	402
1440	726	714	586	402

1090	726	364	587	402
751	726	25	588	402
722	726	-4	588	403
1100	726	374	589	403
620	726	-106	589	404
1180	726	454	590	404
1020	726	294	591	404
3340	726	2614	592	404
670	726	-56	592	405
743	755	-12	592	406
768	755	13	593	406
749	755	-6	593	407
729	755	-26	593	408
654	755	-101	593	409
588	755	-167	593	410
628	755	-127	593	411
682	755	-73	593	412
765	755	10	594	412
788	755	33	595	412
684	755	-71	595	413
458	755	-297	595	414
740	755	-15	595	415
1440	755	685	596	415
1090	755	335	597	415
751	755	-4	597	416
722	755	-33	597	417
1100	755	345	598	417
620	755	-135	598	418
1180	755	425	599	418
1020	755	265	600	418
3340	755	2585	601	418
670	755	-85	601	419
768	743	25	602	419
749	743	6	603	419
729	743	-14	603	420
654	743	-89	603	421
588	743	-155	603	422
628	743	-115	603	423
682	743	-61	603	424
765	743	22	604	424
788	743	45	605	424
684	743	-59	605	425
458	743	-285	605	426
740	743	-3	605	427
1440	743	697	606	427
1090	743	347	607	427
751	743	8	608	427
722	743	-21	608	428
1100	743	357	609	428
620	743	-123	609	429
1180	743	437	610	429
1020	743	277	611	429
3340	743	2597	612	429
670	743	-73	612	430

749	768	-19	612	431
729	768	-39	612	432
654	768	-114	612	433
588	768	-180	612	434
628	768	-140	612	435
682	768	-86	612	436
765	768	-3	612	437
788	768	20	613	437
684	768	-84	613	438
458	768	-310	613	439
740	768	-28	613	440
1440	768	672	614	440
1090	768	322	615	440
751	768	-17	615	441
722	768	-46	615	442
1100	768	332	616	442
620	768	-148	616	443
1180	768	412	617	443
1020	768	252	618	443
3340	768	2572	619	443
670	768	-98	619	444
729	749	-20	619	445
654	749	-95	619	446
588	749	-161	619	447
628	749	-121	619	448
682	749	-67	619	449
765	749	16	620	449
788	749	39	621	449
684	749	-65	621	450
458	749	-291	621	451
740	749	-9	621	452
1440	749	691	622	452
1090	749	341	623	452
751	749	2	624	452
722	749	-27	624	453
1100	749	351	625	453
620	749	-129	625	454
1180	749	431	626	454
1020	749	271	627	454
3340	749	2591	628	454
670	749	-79	628	455
654	729	-75	628	456
588	729	-141	628	457
628	729	-101	628	458
682	729	-47	628	459
765	729	36	629	459
788	729	59	630	459
684	729	-45	630	460
458	729	-271	630	461
740	729	11	631	461
1440	729	711	632	461
1090	729	361	633	461
751	729	22	634	461
722	729	-7	634	462
1100	729	371	635	462

620	729	-109	635	463
1180	729	451	636	463
1020	729	291	637	463
3340	729	2611	638	463
670	729	-59	638	464
588	654	-66	638	465
628	654	-26	638	466
682	654	28	639	466
765	654	111	640	466
788	654	134	641	466
684	654	30	642	466
458	654	-196	642	467
740	654	86	643	467
1440	654	786	644	467
1090	654	436	645	467
751	654	97	646	467
722	654	68	647	467
1100	654	446	648	467
620	654	-34	648	468
1180	654	526	649	468
1020	654	366	650	468
3340	654	2686	651	468
670	654	16	652	468
628	588	40	653	468
682	588	94	654	468
765	588	177	655	468
788	588	200	656	468
684	588	96	657	468
458	588	-130	657	469
740	588	152	658	469
1440	588	852	659	469
1090	588	502	660	469
751	588	163	661	469
722	588	134	662	469
1100	588	512	663	469
620	588	32	664	469
1180	588	592	665	469
1020	588	432	666	469
3340	588	2752	667	469
670	588	82	668	469
682	628	54	669	469
765	628	137	670	469
788	628	160	671	469
684	628	56	672	469
458	628	-170	672	470
740	628	112	673	470
1440	628	812	674	470
1090	628	462	675	470
751	628	123	676	470
722	628	94	677	470
1100	628	472	678	470
620	628	-8	678	471
1180	628	552	679	471
1020	628	392	680	471

3340	628	2712	681	471
670	628	42	682	471
765	682	83	683	471
788	682	106	684	471
684	682	2	685	471
458	682	-224	685	472
740	682	58	686	472
1440	682	758	687	472
1090	682	408	688	472
751	682	69	689	472
722	682	40	690	472
1100	682	418	691	472
620	682	-62	691	473
1180	682	498	692	473
1020	682	338	693	473
3340	682	2658	694	473
670	682	-12	694	474
788	765	23	695	474
684	765	-81	695	475
458	765	-307	695	476
740	765	-25	695	477
1440	765	675	696	477
1090	765	325	697	477
751	765	-14	697	478
722	765	-43	697	479
1100	765	335	698	479
620	765	-145	698	480
1180	765	415	699	480
1020	765	255	700	480
3340	765	2575	701	480
670	765	-95	701	481
684	788	-104	701	482
458	788	-330	701	483
740	788	-48	701	484
1440	788	652	702	484
1090	788	302	703	484
751	788	-37	703	485
722	788	-66	703	486
1100	788	312	704	486
620	788	-168	704	487
1180	788	392	705	487
1020	788	232	706	487
3340	788	2552	707	487
670	788	-118	707	488
458	684	-226	707	489
740	684	56	708	489
1440	684	756	709	489
1090	684	406	710	489
751	684	67	711	489
722	684	38	712	489
1100	684	416	713	489
620	684	-64	713	490
1180	684	496	714	490

1020	684	336	715	490
3340	684	2656	716	490
670	684	-14	716	491
740	458	282	717	491
1440	458	982	718	491
1090	458	632	719	491
751	458	293	720	491
722	458	264	721	491
1100	458	642	722	491
620	458	162	723	491
1180	458	722	724	491
1020	458	562	725	491
3340	458	2882	726	491
670	458	212	727	491
1440	740	700	728	491
1090	740	350	729	491
751	740	11	730	491
722	740	-18	730	492
1100	740	360	731	492
620	740	-120	731	493
1180	740	440	732	493
1020	740	280	733	493
3340	740	2600	734	493
670	740	-70	734	494
1090	1440	-350	734	495
751	1440	-689	734	496
722	1440	-718	734	497
1100	1440	-340	734	498
620	1440	-820	734	499
1180	1440	-260	734	500
1020	1440	-420	734	501
3340	1440	1900	735	501
670	1440	-770	735	502
751	1090	-339	735	503
722	1090	-368	735	504
1100	1090	10	736	504
620	1090	-470	736	505
1180	1090	90	737	505
1020	1090	-70	737	506
3340	1090	2250	738	506
670	1090	-420	738	507
722	751	-29	738	508
1100	751	349	739	508
620	751	-131	739	509
1180	751	429	740	509
1020	751	269	741	509
3340	751	2589	742	509
670	751	-81	742	510
1100	722	378	743	510
620	722	-102	743	511
1180	722	458	744	511

1020	722	298	745	511
3340	722	2618	746	511
670	722	-52	746	512
620	1100	-480	746	513
1180	1100	80	747	513
1020	1100	-80	747	514
3340	1100	2240	748	514
670	1100	-430	748	515
1180	620	560	749	515
1020	620	400	750	515
3340	620	2720	751	515
670	620	50	752	515
1020	1180	-160	752	516
3340	1180	2160	753	516
670	1180	-510	753	517
3340	1020	2320	754	517
670	1020	-350	754	518
670	3340	-2670	754	519

S Statistic = 754 - 519 = 235

Tied Group	Value	Members
1	751	2
2	720	2

Time Period	Observations
11/24/2009	1
1/27/2010	1
3/2/2010	1
3/4/2010	1
4/30/2010	1
5/6/2010	1
6/7/2010	1
7/26/2010	1
8/16/2010	1
9/17/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1
1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1
12/6/2011	1

1/13/2012	1
2/21/2012	1
3/20/2012	1
4/27/2012	1
5/24/2012	1
6/15/2012	1
7/26/2012	1
8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 36

B = 0

C = 0

D = 0

E = 4

F = 0

a = 272850

b = 1.12455e+006

c = 5100

Group Variance = 15156.3

Z-Score = 1.90072

Comparison Level at 1.0 - (0.02 / 2) = 99% confidence level = 2.32634 (two-tailed)

[1.90072] <= 2.32634 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Sulfate

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
615	792	-177	0	1
669	792	-123	0	2
581	792	-211	0	3
647	792	-145	0	4
858	792	66	1	4
668	792	-124	1	5
717	792	-75	1	6
832	792	40	2	6
754	792	-38	2	7
710	792	-82	2	8
884	792	92	3	8
804	792	12	4	8
945	792	153	5	8
786	792	-6	5	9
779	792	-13	5	10
627	792	-165	5	11
701	792	-91	5	12
647	792	-145	5	13
773	792	-19	5	14
695	792	-97	5	15
730	792	-62	5	16
752	792	-40	5	17
755	792	-37	5	18
801	792	9	6	18
956	792	164	7	18
745	792	-47	7	19
786	792	-6	7	20
836	792	44	8	20
774	792	-18	8	21
788	792	-4	8	22
726	792	-66	8	23
686	792	-106	8	24
621	792	-171	8	25
671	792	-121	8	26
677	792	-115	8	27
760	792	-32	8	28
788	792	-4	8	29
772	792	-20	8	30
726	792	-66	8	31
704	792	-88	8	32
595	792	-197	8	33
691	792	-101	8	34
745	792	-47	8	35
673	792	-119	8	36
349	792	-443	8	37
498	792	-294	8	38
796	792	4	9	38

761.79	792	-30.21	9	39
722	792	-70	9	40
725	792	-67	9	41
650	792	-142	9	42
1050	792	258	10	42
1070	792	278	11	42
933	792	141	12	42
498	792	-294	12	43
830	792	38	13	43
1270	792	478	14	43
1100	792	308	15	43
1160	792	368	16	43
683	792	-109	16	44
2910	792	2118	17	44
488	792	-304	17	45
319	792	-473	17	46
669	615	54	18	46
581	615	-34	18	47
647	615	32	19	47
858	615	243	20	47
668	615	53	21	47
717	615	102	22	47
832	615	217	23	47
754	615	139	24	47
710	615	95	25	47
884	615	269	26	47
804	615	189	27	47
945	615	330	28	47
786	615	171	29	47
779	615	164	30	47
627	615	12	31	47
701	615	86	32	47
647	615	32	33	47
773	615	158	34	47
695	615	80	35	47
730	615	115	36	47
752	615	137	37	47
755	615	140	38	47
801	615	186	39	47
956	615	341	40	47
745	615	130	41	47
786	615	171	42	47
836	615	221	43	47
774	615	159	44	47
788	615	173	45	47
726	615	111	46	47
686	615	71	47	47
621	615	6	48	47
671	615	56	49	47
677	615	62	50	47
760	615	145	51	47
788	615	173	52	47
772	615	157	53	47
726	615	111	54	47
704	615	89	55	47
595	615	-20	55	48

691	615	76	56	48
745	615	130	57	48
673	615	58	58	48
349	615	-266	58	49
498	615	-117	58	50
796	615	181	59	50
761.79	615	146.79	60	50
722	615	107	61	50
725	615	110	62	50
650	615	35	63	50
1050	615	435	64	50
1070	615	455	65	50
933	615	318	66	50
498	615	-117	66	51
830	615	215	67	51
1270	615	655	68	51
1100	615	485	69	51
1160	615	545	70	51
683	615	68	71	51
2910	615	2295	72	51
488	615	-127	72	52
319	615	-296	72	53
581	669	-88	72	54
647	669	-22	72	55
858	669	189	73	55
668	669	-1	73	56
717	669	48	74	56
832	669	163	75	56
754	669	85	76	56
710	669	41	77	56
884	669	215	78	56
804	669	135	79	56
945	669	276	80	56
786	669	117	81	56
779	669	110	82	56
627	669	-42	82	57
701	669	32	83	57
647	669	-22	83	58
773	669	104	84	58
695	669	26	85	58
730	669	61	86	58
752	669	83	87	58
755	669	86	88	58
801	669	132	89	58
956	669	287	90	58
745	669	76	91	58
786	669	117	92	58
836	669	167	93	58
774	669	105	94	58
788	669	119	95	58
726	669	57	96	58
686	669	17	97	58
621	669	-48	97	59
671	669	2	98	59
677	669	8	99	59
760	669	91	100	59

788	669	119	101	59
772	669	103	102	59
726	669	57	103	59
704	669	35	104	59
595	669	-74	104	60
691	669	22	105	60
745	669	76	106	60
673	669	4	107	60
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498	669	-171	107	62
796	669	127	108	62
761.79	669	92.79	109	62
722	669	53	110	62
725	669	56	111	62
650	669	-19	111	63
1050	669	381	112	63
1070	669	401	113	63
933	669	264	114	63
498	669	-171	114	64
830	669	161	115	64
1270	669	601	116	64
1100	669	431	117	64
1160	669	491	118	64
683	669	14	119	64
2910	669	2241	120	64
488	669	-181	120	65
319	669	-350	120	66
647	581	66	121	66
858	581	277	122	66
668	581	87	123	66
717	581	136	124	66
832	581	251	125	66
754	581	173	126	66
710	581	129	127	66
884	581	303	128	66
804	581	223	129	66
945	581	364	130	66
786	581	205	131	66
779	581	198	132	66
627	581	46	133	66
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773	581	192	136	66
695	581	114	137	66
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752	581	171	139	66
755	581	174	140	66
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956	581	375	142	66
745	581	164	143	66
786	581	205	144	66
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774	581	193	146	66
788	581	207	147	66
726	581	145	148	66
686	581	105	149	66

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677	581	96	152	66
760	581	179	153	66
788	581	207	154	66
772	581	191	155	66
726	581	145	156	66
704	581	123	157	66
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691	581	110	159	66
745	581	164	160	66
673	581	92	161	66
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796	581	215	162	68
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722	581	141	164	68
725	581	144	165	68
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1270	581	689	171	69
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1160	581	579	173	69
683	581	102	174	69
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488	581	-93	175	70
319	581	-262	175	71
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717	647	70	178	71
832	647	185	179	71
754	647	107	180	71
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884	647	237	182	71
804	647	157	183	71
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755	647	108	192	72
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686	647	39	201	72
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671	647	24	202	73
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726	647	79	207	73
704	647	57	208	73
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722	647	75	214	76
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319	647	-328	225	79
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717	858	-141	225	81
832	858	-26	225	82
754	858	-104	225	83
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884	858	26	226	84
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786	858	-72	227	86
779	858	-79	227	87
627	858	-231	227	88
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647	858	-211	227	90
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755	858	-103	227	95
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745	858	-113	228	97
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726	858	-132	228	102
686	858	-172	228	103
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671	858	-187	228	105
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788	858	-70	228	108
772	858	-86	228	109
726	858	-132	228	110
704	858	-154	228	111
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691	858	-167	228	113
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722	858	-136	228	120
725	858	-133	228	121
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754	668	86	238	127
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779	668	111	244	127
627	668	-41	244	128
701	668	33	245	128
647	668	-21	245	129
773	668	105	246	129
695	668	27	247	129
730	668	62	248	129
752	668	84	249	129
755	668	87	250	129
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956	668	288	252	129
745	668	77	253	129

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804	717	87	286	138
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786	717	69	288	138
779	717	62	289	138
627	717	-90	289	139
701	717	-16	289	140
647	717	-70	289	141
773	717	56	290	141
695	717	-22	290	142
730	717	13	291	142
752	717	35	292	142
755	717	38	293	142
801	717	84	294	142
956	717	239	295	142
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774	717	57	299	142
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726	717	9	301	142
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671	717	-46	301	145
677	717	-40	301	146
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772	717	55	304	146
726	717	9	305	146
704	717	-13	305	147
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691	717	-26	305	149
745	717	28	306	149
673	717	-44	306	150
349	717	-368	306	151
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796	717	79	307	152
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722	717	5	309	152
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488	717	-229	318	156
319	717	-398	318	157
754	832	-78	318	158
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804	832	-28	319	160
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786	832	-46	320	161
779	832	-53	320	162
627	832	-205	320	163
701	832	-131	320	164
647	832	-185	320	165
773	832	-59	320	166
695	832	-137	320	167
730	832	-102	320	168
752	832	-80	320	169
755	832	-77	320	170
801	832	-31	320	171
956	832	124	321	171
745	832	-87	321	172
786	832	-46	321	173

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686	832	-146	322	177
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671	832	-161	322	179
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772	832	-60	322	183
726	832	-106	322	184
704	832	-128	322	185
595	832	-237	322	186
691	832	-141	322	187
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673	832	-159	322	189
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722	832	-110	322	194
725	832	-107	322	195
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683	832	-149	328	199
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319	832	-513	329	201
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804	754	50	331	202
945	754	191	332	202
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779	754	25	334	202
627	754	-127	334	203
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671	754	-83	342	213
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772	754	18	345	214
726	754	-28	345	215
704	754	-50	345	216
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691	754	-63	345	218
745	754	-9	345	219
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796	754	42	346	222
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722	754	-32	347	223
725	754	-29	347	224
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319	754	-435	355	229
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627	710	-83	360	230
701	710	-9	360	231
647	710	-63	360	232
773	710	63	361	232
695	710	-15	361	233
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752	710	42	363	233
755	710	45	364	233
801	710	91	365	233
956	710	246	366	233
745	710	35	367	233
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774	710	64	370	233
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671	710	-39	372	236
677	710	-33	372	237
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772	710	62	375	237
726	710	16	376	237
704	710	-6	376	238
595	710	-115	376	239
691	710	-19	376	240
745	710	35	377	240
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725	710	15	381	243
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319	710	-391	389	248
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779	884	-105	390	251
627	884	-257	390	252
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647	884	-237	390	254
773	884	-111	390	255
695	884	-189	390	256
730	884	-154	390	257
752	884	-132	390	258
755	884	-129	390	259
801	884	-83	390	260
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745	884	-139	391	261
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774	884	-110	391	264
788	884	-96	391	265
726	884	-158	391	266
686	884	-198	391	267
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726	884	-158	391	274
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691	884	-193	391	277
745	884	-139	391	278
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773	804	-31	399	297
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755	804	-49	399	301
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745	804	-59	400	303
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686	804	-118	401	308
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722	804	-82	401	325
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830	804	26	405	328
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683	804	-121	408	329
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488	804	-316	409	330
319	804	-485	409	331
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779	945	-166	409	333
627	945	-318	409	334
701	945	-244	409	335
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773	945	-172	409	337
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755	945	-190	409	341
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745	945	-200	410	343
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774	945	-171	410	346
788	945	-157	410	347
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745	945	-200	410	360
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796	945	-149	410	364

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725	945	-220	410	367
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683	945	-262	415	372
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488	945	-457	416	373
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627	786	-159	416	376
701	786	-85	416	377
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773	786	-13	416	379
695	786	-91	416	380
730	786	-56	416	381
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755	786	-31	416	383
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745	786	-41	418	384
786	786	0	418	384
836	786	50	419	384
774	786	-12	419	385
788	786	2	420	385
726	786	-60	420	386
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621	786	-165	420	388
671	786	-115	420	389
677	786	-109	420	390
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691	786	-95	421	396
745	786	-41	421	397
673	786	-113	421	398
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722	786	-64	422	402
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1100	786	314	428	405
1160	786	374	429	405
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488	786	-298	430	407
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722	647	75	542	468
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691	773	-82	560	487
745	773	-28	560	488
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774	695	79	578	499
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683	752	-69	640	551
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745	755	-10	643	554
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671	755	-84	647	558
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673	801	-128	662	592
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722	801	-79	662	597
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722	956	-234	670	627
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726	788	-62	723	737
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722	788	-66	724	746
725	788	-63	724	747
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671	726	-55	732	755
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722	726	-4	738	763
725	726	-1	738	764
650	726	-76	738	765
1050	726	324	739	765
1070	726	344	740	765
933	726	207	741	765
498	726	-228	741	766
830	726	104	742	766
1270	726	544	743	766
1100	726	374	744	766
1160	726	434	745	766
683	726	-43	745	767
2910	726	2184	746	767
488	726	-238	746	768
319	726	-407	746	769
621	686	-65	746	770
671	686	-15	746	771
677	686	-9	746	772
760	686	74	747	772
788	686	102	748	772
772	686	86	749	772
726	686	40	750	772
704	686	18	751	772
595	686	-91	751	773
691	686	5	752	773
745	686	59	753	773
673	686	-13	753	774
349	686	-337	753	775
498	686	-188	753	776
796	686	110	754	776
761.79	686	75.79	755	776
722	686	36	756	776
725	686	39	757	776
650	686	-36	757	777
1050	686	364	758	777
1070	686	384	759	777
933	686	247	760	777
498	686	-188	760	778
830	686	144	761	778
1270	686	584	762	778
1100	686	414	763	778
1160	686	474	764	778
683	686	-3	764	779
2910	686	2224	765	779
488	686	-198	765	780
319	686	-367	765	781
671	621	50	766	781
677	621	56	767	781

760	621	139	768	781
788	621	167	769	781
772	621	151	770	781
726	621	105	771	781
704	621	83	772	781
595	621	-26	772	782
691	621	70	773	782
745	621	124	774	782
673	621	52	775	782
349	621	-272	775	783
498	621	-123	775	784
796	621	175	776	784
761.79	621	140.79	777	784
722	621	101	778	784
725	621	104	779	784
650	621	29	780	784
1050	621	429	781	784
1070	621	449	782	784
933	621	312	783	784
498	621	-123	783	785
830	621	209	784	785
1270	621	649	785	785
1100	621	479	786	785
1160	621	539	787	785
683	621	62	788	785
2910	621	2289	789	785
488	621	-133	789	786
319	621	-302	789	787
677	671	6	790	787
760	671	89	791	787
788	671	117	792	787
772	671	101	793	787
726	671	55	794	787
704	671	33	795	787
595	671	-76	795	788
691	671	20	796	788
745	671	74	797	788
673	671	2	798	788
349	671	-322	798	789
498	671	-173	798	790
796	671	125	799	790
761.79	671	90.79	800	790
722	671	51	801	790
725	671	54	802	790
650	671	-21	802	791
1050	671	379	803	791
1070	671	399	804	791
933	671	262	805	791
498	671	-173	805	792
830	671	159	806	792
1270	671	599	807	792
1100	671	429	808	792
1160	671	489	809	792
683	671	12	810	792
2910	671	2239	811	792
488	671	-183	811	793

319	671	-352	811	794
760	677	83	812	794
788	677	111	813	794
772	677	95	814	794
726	677	49	815	794
704	677	27	816	794
595	677	-82	816	795
691	677	14	817	795
745	677	68	818	795
673	677	-4	818	796
349	677	-328	818	797
498	677	-179	818	798
796	677	119	819	798
761.79	677	84.79	820	798
722	677	45	821	798
725	677	48	822	798
650	677	-27	822	799
1050	677	373	823	799
1070	677	393	824	799
933	677	256	825	799
498	677	-179	825	800
830	677	153	826	800
1270	677	593	827	800
1100	677	423	828	800
1160	677	483	829	800
683	677	6	830	800
2910	677	2233	831	800
488	677	-189	831	801
319	677	-358	831	802
788	760	28	832	802
772	760	12	833	802
726	760	-34	833	803
704	760	-56	833	804
595	760	-165	833	805
691	760	-69	833	806
745	760	-15	833	807
673	760	-87	833	808
349	760	-411	833	809
498	760	-262	833	810
796	760	36	834	810
761.79	760	1.79	835	810
722	760	-38	835	811
725	760	-35	835	812
650	760	-110	835	813
1050	760	290	836	813
1070	760	310	837	813
933	760	173	838	813
498	760	-262	838	814
830	760	70	839	814
1270	760	510	840	814
1100	760	340	841	814
1160	760	400	842	814
683	760	-77	842	815
2910	760	2150	843	815
488	760	-272	843	816

319	760	-441	843	817
772	788	-16	843	818
726	788	-62	843	819
704	788	-84	843	820
595	788	-193	843	821
691	788	-97	843	822
745	788	-43	843	823
673	788	-115	843	824
349	788	-439	843	825
498	788	-290	843	826
796	788	8	844	826
761.79	788	-26.21	844	827
722	788	-66	844	828
725	788	-63	844	829
650	788	-138	844	830
1050	788	262	845	830
1070	788	282	846	830
933	788	145	847	830
498	788	-290	847	831
830	788	42	848	831
1270	788	482	849	831
1100	788	312	850	831
1160	788	372	851	831
683	788	-105	851	832
2910	788	2122	852	832
488	788	-300	852	833
319	788	-469	852	834
726	772	-46	852	835
704	772	-68	852	836
595	772	-177	852	837
691	772	-81	852	838
745	772	-27	852	839
673	772	-99	852	840
349	772	-423	852	841
498	772	-274	852	842
796	772	24	853	842
761.79	772	-10.21	853	843
722	772	-50	853	844
725	772	-47	853	845
650	772	-122	853	846
1050	772	278	854	846
1070	772	298	855	846
933	772	161	856	846
498	772	-274	856	847
830	772	58	857	847
1270	772	498	858	847
1100	772	328	859	847
1160	772	388	860	847
683	772	-89	860	848
2910	772	2138	861	848
488	772	-284	861	849
319	772	-453	861	850
704	726	-22	861	851
595	726	-131	861	852

691	726	-35	861	853
745	726	19	862	853
673	726	-53	862	854
349	726	-377	862	855
498	726	-228	862	856
796	726	70	863	856
761.79	726	35.79	864	856
722	726	-4	864	857
725	726	-1	864	858
650	726	-76	864	859
1050	726	324	865	859
1070	726	344	866	859
933	726	207	867	859
498	726	-228	867	860
830	726	104	868	860
1270	726	544	869	860
1100	726	374	870	860
1160	726	434	871	860
683	726	-43	871	861
2910	726	2184	872	861
488	726	-238	872	862
319	726	-407	872	863
595	704	-109	872	864
691	704	-13	872	865
745	704	41	873	865
673	704	-31	873	866
349	704	-355	873	867
498	704	-206	873	868
796	704	92	874	868
761.79	704	57.79	875	868
722	704	18	876	868
725	704	21	877	868
650	704	-54	877	869
1050	704	346	878	869
1070	704	366	879	869
933	704	229	880	869
498	704	-206	880	870
830	704	126	881	870
1270	704	566	882	870
1100	704	396	883	870
1160	704	456	884	870
683	704	-21	884	871
2910	704	2206	885	871
488	704	-216	885	872
319	704	-385	885	873
691	595	96	886	873
745	595	150	887	873
673	595	78	888	873
349	595	-246	888	874
498	595	-97	888	875
796	595	201	889	875
761.79	595	166.79	890	875
722	595	127	891	875
725	595	130	892	875
650	595	55	893	875

1050	595	455	894	875
1070	595	475	895	875
933	595	338	896	875
498	595	-97	896	876
830	595	235	897	876
1270	595	675	898	876
1100	595	505	899	876
1160	595	565	900	876
683	595	88	901	876
2910	595	2315	902	876
488	595	-107	902	877
319	595	-276	902	878
745	691	54	903	878
673	691	-18	903	879
349	691	-342	903	880
498	691	-193	903	881
796	691	105	904	881
761.79	691	70.79	905	881
722	691	31	906	881
725	691	34	907	881
650	691	-41	907	882
1050	691	359	908	882
1070	691	379	909	882
933	691	242	910	882
498	691	-193	910	883
830	691	139	911	883
1270	691	579	912	883
1100	691	409	913	883
1160	691	469	914	883
683	691	-8	914	884
2910	691	2219	915	884
488	691	-203	915	885
319	691	-372	915	886
673	745	-72	915	887
349	745	-396	915	888
498	745	-247	915	889
796	745	51	916	889
761.79	745	16.79	917	889
722	745	-23	917	890
725	745	-20	917	891
650	745	-95	917	892
1050	745	305	918	892
1070	745	325	919	892
933	745	188	920	892
498	745	-247	920	893
830	745	85	921	893
1270	745	525	922	893
1100	745	355	923	893
1160	745	415	924	893
683	745	-62	924	894
2910	745	2165	925	894
488	745	-257	925	895
319	745	-426	925	896
349	673	-324	925	897

498	673	-175	925	898
796	673	123	926	898
761.79	673	88.79	927	898
722	673	49	928	898
725	673	52	929	898
650	673	-23	929	899
1050	673	377	930	899
1070	673	397	931	899
933	673	260	932	899
498	673	-175	932	900
830	673	157	933	900
1270	673	597	934	900
1100	673	427	935	900
1160	673	487	936	900
683	673	10	937	900
2910	673	2237	938	900
488	673	-185	938	901
319	673	-354	938	902
498	349	149	939	902
796	349	447	940	902
761.79	349	412.79	941	902
722	349	373	942	902
725	349	376	943	902
650	349	301	944	902
1050	349	701	945	902
1070	349	721	946	902
933	349	584	947	902
498	349	149	948	902
830	349	481	949	902
1270	349	921	950	902
1100	349	751	951	902
1160	349	811	952	902
683	349	334	953	902
2910	349	2561	954	902
488	349	139	955	902
319	349	-30	955	903
796	498	298	956	903
761.79	498	263.79	957	903
722	498	224	958	903
725	498	227	959	903
650	498	152	960	903
1050	498	552	961	903
1070	498	572	962	903
933	498	435	963	903
498	498	0	963	903
830	498	332	964	903
1270	498	772	965	903
1100	498	602	966	903
1160	498	662	967	903
683	498	185	968	903
2910	498	2412	969	903
488	498	-10	969	904
319	498	-179	969	905
761.79	796	-34.21	969	906

722	796	-74	969	907
725	796	-71	969	908
650	796	-146	969	909
1050	796	254	970	909
1070	796	274	971	909
933	796	137	972	909
498	796	-298	972	910
830	796	34	973	910
1270	796	474	974	910
1100	796	304	975	910
1160	796	364	976	910
683	796	-113	976	911
2910	796	2114	977	911
488	796	-308	977	912
319	796	-477	977	913
722	761.79	-39.79	977	914
725	761.79	-36.79	977	915
650	761.79	-111.79	977	916
1050	761.79	288.21	978	916
1070	761.79	308.21	979	916
933	761.79	171.21	980	916
498	761.79	-263.79	980	917
830	761.79	68.21	981	917
1270	761.79	508.21	982	917
1100	761.79	338.21	983	917
1160	761.79	398.21	984	917
683	761.79	-78.79	984	918
2910	761.79	2148.21	985	918
488	761.79	-273.79	985	919
319	761.79	-442.79	985	920
725	722	3	986	920
650	722	-72	986	921
1050	722	328	987	921
1070	722	348	988	921
933	722	211	989	921
498	722	-224	989	922
830	722	108	990	922
1270	722	548	991	922
1100	722	378	992	922
1160	722	438	993	922
683	722	-39	993	923
2910	722	2188	994	923
488	722	-234	994	924
319	722	-403	994	925
650	725	-75	994	926
1050	725	325	995	926
1070	725	345	996	926
933	725	208	997	926
498	725	-227	997	927
830	725	105	998	927
1270	725	545	999	927
1100	725	375	1000	927
1160	725	435	1001	927
683	725	-42	1001	928

2910	725	2185	1002	928
488	725	-237	1002	929
319	725	-406	1002	930
1050	650	400	1003	930
1070	650	420	1004	930
933	650	283	1005	930
498	650	-152	1005	931
830	650	180	1006	931
1270	650	620	1007	931
1100	650	450	1008	931
1160	650	510	1009	931
683	650	33	1010	931
2910	650	2260	1011	931
488	650	-162	1011	932
319	650	-331	1011	933
1070	1050	20	1012	933
933	1050	-117	1012	934
498	1050	-552	1012	935
830	1050	-220	1012	936
1270	1050	220	1013	936
1100	1050	50	1014	936
1160	1050	110	1015	936
683	1050	-367	1015	937
2910	1050	1860	1016	937
488	1050	-562	1016	938
319	1050	-731	1016	939
933	1070	-137	1016	940
498	1070	-572	1016	941
830	1070	-240	1016	942
1270	1070	200	1017	942
1100	1070	30	1018	942
1160	1070	90	1019	942
683	1070	-387	1019	943
2910	1070	1840	1020	943
488	1070	-582	1020	944
319	1070	-751	1020	945
498	933	-435	1020	946
830	933	-103	1020	947
1270	933	337	1021	947
1100	933	167	1022	947
1160	933	227	1023	947
683	933	-250	1023	948
2910	933	1977	1024	948
488	933	-445	1024	949
319	933	-614	1024	950
830	498	332	1025	950
1270	498	772	1026	950
1100	498	602	1027	950
1160	498	662	1028	950
683	498	185	1029	950
2910	498	2412	1030	950
488	498	-10	1030	951

319	498	-179	1030	952
1270	830	440	1031	952
1100	830	270	1032	952
1160	830	330	1033	952
683	830	-147	1033	953
2910	830	2080	1034	953
488	830	-342	1034	954
319	830	-511	1034	955
1100	1270	-170	1034	956
1160	1270	-110	1034	957
683	1270	-587	1034	958
2910	1270	1640	1035	958
488	1270	-782	1035	959
319	1270	-951	1035	960
1160	1100	60	1036	960
683	1100	-417	1036	961
2910	1100	1810	1037	961
488	1100	-612	1037	962
319	1100	-781	1037	963
683	1160	-477	1037	964
2910	1160	1750	1038	964
488	1160	-672	1038	965
319	1160	-841	1038	966
2910	683	2227	1039	966
488	683	-195	1039	967
319	683	-364	1039	968
488	2910	-2422	1039	969
319	2910	-2591	1039	970
319	488	-169	1039	971

S Statistic = 1039 - 971 = 68

Tied Group	Value	Members
1	647	2
2	786	2
3	745	2
4	788	2
5	726	2
6	498	2

Time Period	Observations
11/24/2009	1
1/27/2010	1
3/2/2010	1
3/4/2010	1
4/30/2010	1
5/6/2010	1
6/7/2010	1
7/26/2010	1

8/16/2010	1
9/17/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1
1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1
12/6/2011	1
1/13/2012	1
2/21/2012	1
3/20/2012	1
4/27/2012	1
5/24/2012	1
6/15/2012	1
7/26/2012	1
8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1
1/29/2013	1
4/17/2013	1
7/29/2013	1
10/30/2013	1
1/31/2014	1
4/18/2014	1
7/17/2014	1
10/23/2014	1
1/27/2015	1
4/13/2015	1
7/21/2015	1
10/20/2015	1
1/27/2016	1
4/26/2016	1
7/26/2016	1
10/31/2016	1
1/30/2017	1
4/27/2017	1
7/24/2017	1
10/27/2017	1
1/29/2018	1
4/12/2018	1
7/24/2018	1
10/29/2018	1
1/30/2019	1
4/29/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 108
B = 0
C = 0
D = 0
E = 12
F = 0
a = 536256
b = 2.24986e+006
c = 8064
Group Variance = 29786
Z-Score = 0.388212
Comparison Level at $1.0 - (0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)
|0.388212| <= 2.32634 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Sulfate

Location: MW-6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
631	986	-355	0	1
738	986	-248	0	2
624	986	-362	0	3
678	986	-308	0	4
722	986	-264	0	5
790	986	-196	0	6
698	986	-288	0	7
863	986	-123	0	8
845	986	-141	0	9
684	986	-302	0	10
975	986	-11	0	11
16.3	986	-969.7	0	12
974	986	-12	0	13
929	986	-57	0	14
781	986	-205	0	15
680	986	-306	0	16
687	986	-299	0	17
691	986	-295	0	18
838	986	-148	0	19
771	986	-215	0	20
809	986	-177	0	21
752	986	-234	0	22
769	986	-217	0	23
2310	986	1324	1	23
1050	986	64	2	23
780	986	-206	2	24
840	986	-146	2	25
733	986	-253	2	26
792	986	-194	2	27
845	986	-141	2	28
719	986	-267	2	29
700	986	-286	2	30
621	986	-365	2	31
669	986	-317	2	32
696	986	-290	2	33
789	986	-197	2	34
807	986	-179	2	35
777	986	-209	2	36
693	986	-293	2	37
693	986	-293	2	38
617	986	-369	2	39
707	986	-279	2	40
770	986	-216	2	41
725	986	-261	2	42
356	986	-630	2	43
484	986	-502	2	44
599	986	-387	2	45

818.39	986	-167.61	2	46
718	986	-268	2	47
751	986	-235	2	48
550	986	-436	2	49
204	986	-782	2	50
1110	986	124	3	50
812	986	-174	3	51
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680	631	49	20	58
687	631	56	21	58
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771	631	140	24	58
809	631	178	25	58
752	631	121	26	58
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792	631	161	33	58
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719	631	88	35	58
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669	631	38	37	59
696	631	65	38	59
789	631	158	39	59
807	631	176	40	59
777	631	146	41	59
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678	738	-60	56	71
722	738	-16	56	72
790	738	52	57	72
698	738	-40	57	73
863	738	125	58	73
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684	738	-54	59	74
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16.3	738	-721.7	60	75
974	738	236	61	75
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687	738	-51	63	77
691	738	-47	63	78
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707	738	-31	77	88
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696	624	72	116	102
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807	624	183	118	102
777	624	153	119	102
693	624	69	120	102
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617	624	-7	121	103
707	624	83	122	103
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669	678	-9	161	115
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789	678	111	163	115
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777	678	99	165	115
693	678	15	166	115
693	678	15	167	115
617	678	-61	167	116
707	678	29	168	116
770	678	92	169	116
725	678	47	170	116
356	678	-322	170	117
484	678	-194	170	118
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718	678	40	172	119
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863	722	141	181	127
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687	722	-35	186	131
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777	722	55	201	137
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617	722	-105	201	140
707	722	-15	201	141
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484	722	-238	203	143
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812	722	90	207	147
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602	722	-120	210	150
2520	722	1798	211	150
570	722	-152	211	151
647	722	-75	211	152
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16.3	790	-773.7	214	155
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929	790	139	216	155
781	790	-9	216	156
680	790	-110	216	157
687	790	-103	216	158
691	790	-99	216	159
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707	790	-83	224	175
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484	790	-306	224	179
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602	790	-188	230	187
2520	790	1730	231	187
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691	698	-7	237	194
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781	863	-82	269	214
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780	845	-65	281	267
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599	975	-376	326	347
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718	975	-257	326	349
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781	16.3	764.7	334	358
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845	16.3	828.7	349	358
719	16.3	702.7	350	358
700	16.3	683.7	351	358
621	16.3	604.7	352	358
669	16.3	652.7	353	358
696	16.3	679.7	354	358
789	16.3	772.7	355	358
807	16.3	790.7	356	358
777	16.3	760.7	357	358
693	16.3	676.7	358	358
693	16.3	676.7	359	358
617	16.3	600.7	360	358

707	16.3	690.7	361	358
770	16.3	753.7	362	358
725	16.3	708.7	363	358
356	16.3	339.7	364	358
484	16.3	467.7	365	358
599	16.3	582.7	366	358
818.39	16.3	802.09	367	358
718	16.3	701.7	368	358
751	16.3	734.7	369	358
550	16.3	533.7	370	358
204	16.3	187.7	371	358
1110	16.3	1093.7	372	358
812	16.3	795.7	373	358
564	16.3	547.7	374	358
167	16.3	150.7	375	358
1470	16.3	1453.7	376	358
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1070	16.3	1053.7	378	358
602	16.3	585.7	379	358
2520	16.3	2503.7	380	358
570	16.3	553.7	381	358
647	16.3	630.7	382	358
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680	974	-294	382	361
687	974	-287	382	362
691	974	-283	382	363
838	974	-136	382	364
771	974	-203	382	365
809	974	-165	382	366
752	974	-222	382	367
769	974	-205	382	368
2310	974	1336	383	368
1050	974	76	384	368
780	974	-194	384	369
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792	974	-182	384	372
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696	974	-278	384	378
789	974	-185	384	379
807	974	-167	384	380
777	974	-197	384	381
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617	974	-357	384	384
707	974	-267	384	385
770	974	-204	384	386
725	974	-249	384	387
356	974	-618	384	388
484	974	-490	384	389
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718	974	-256	384	392
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204	974	-770	384	395
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812	974	-162	385	396
564	974	-410	385	397
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781	929	-148	389	402
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687	929	-242	389	404
691	929	-238	389	405
838	929	-91	389	406
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792	929	-137	391	414
845	929	-84	391	415
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700	929	-229	391	417
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669	929	-260	391	419
696	929	-233	391	420
789	929	-140	391	421
807	929	-122	391	422
777	929	-152	391	423
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617	929	-312	391	426
707	929	-222	391	427
770	929	-159	391	428
725	929	-204	391	429
356	929	-573	391	430
484	929	-445	391	431
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718	929	-211	391	434
751	929	-178	391	435
550	929	-379	391	436
204	929	-725	391	437
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812	929	-117	392	438

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167	929	-762	392	440
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647	929	-282	396	443
680	781	-101	396	444
687	781	-94	396	445
691	781	-90	396	446
838	781	57	397	446
771	781	-10	397	447
809	781	28	398	447
752	781	-29	398	448
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2310	781	1529	399	449
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733	781	-48	401	451
792	781	11	402	451
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700	781	-81	403	453
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669	781	-112	403	455
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789	781	8	404	456
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777	781	-4	405	457
693	781	-88	405	458
693	781	-88	405	459
617	781	-164	405	460
707	781	-74	405	461
770	781	-11	405	462
725	781	-56	405	463
356	781	-425	405	464
484	781	-297	405	465
599	781	-182	405	466
818.39	781	37.39	406	466
718	781	-63	406	467
751	781	-30	406	468
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204	781	-577	406	470
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812	781	31	408	470
564	781	-217	408	471
167	781	-614	408	472
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1070	781	289	411	472
602	781	-179	411	473
2520	781	1739	412	473
570	781	-211	412	474

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687	680	7	413	475
691	680	11	414	475
838	680	158	415	475
771	680	91	416	475
809	680	129	417	475
752	680	72	418	475
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792	680	112	425	475
845	680	165	426	475
719	680	39	427	475
700	680	20	428	475
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669	680	-11	428	477
696	680	16	429	477
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807	680	127	431	477
777	680	97	432	477
693	680	13	433	477
693	680	13	434	477
617	680	-63	434	478
707	680	27	435	478
770	680	90	436	478
725	680	45	437	478
356	680	-324	437	479
484	680	-196	437	480
599	680	-81	437	481
818.39	680	138.39	438	481
718	680	38	439	481
751	680	71	440	481
550	680	-130	440	482
204	680	-476	440	483
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812	680	132	442	483
564	680	-116	442	484
167	680	-513	442	485
1470	680	790	443	485
1130	680	450	444	485
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602	680	-78	445	486
2520	680	1840	446	486
570	680	-110	446	487
647	680	-33	446	488
691	687	4	447	488
838	687	151	448	488
771	687	84	449	488
809	687	122	450	488
752	687	65	451	488
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792	687	105	458	488
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719	687	32	460	488
700	687	13	461	488
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696	687	9	462	490
789	687	102	463	490
807	687	120	464	490
777	687	90	465	490
693	687	6	466	490
693	687	6	467	490
617	687	-70	467	491
707	687	20	468	491
770	687	83	469	491
725	687	38	470	491
356	687	-331	470	492
484	687	-203	470	493
599	687	-88	470	494
818.39	687	131.39	471	494
718	687	31	472	494
751	687	64	473	494
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204	687	-483	473	496
1110	687	423	474	496
812	687	125	475	496
564	687	-123	475	497
167	687	-520	475	498
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602	687	-85	478	499
2520	687	1833	479	499
570	687	-117	479	500
647	687	-40	479	501
838	691	147	480	501
771	691	80	481	501
809	691	118	482	501
752	691	61	483	501
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2310	691	1619	485	501
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780	691	89	487	501
840	691	149	488	501
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792	691	101	490	501
845	691	154	491	501
719	691	28	492	501
700	691	9	493	501
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777	691	86	497	503
693	691	2	498	503
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617	691	-74	499	504
707	691	16	500	504
770	691	79	501	504
725	691	34	502	504
356	691	-335	502	505
484	691	-207	502	506
599	691	-92	502	507
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718	691	27	504	507
751	691	60	505	507
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204	691	-487	505	509
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812	691	121	507	509
564	691	-127	507	510
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647	691	-44	511	514
771	838	-67	511	515
809	838	-29	511	516
752	838	-86	511	517
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789	838	-49	515	527
807	838	-31	515	528
777	838	-61	515	529
693	838	-145	515	530
693	838	-145	515	531
617	838	-221	515	532
707	838	-131	515	533
770	838	-68	515	534
725	838	-113	515	535
356	838	-482	515	536
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718	838	-120	515	540
751	838	-87	515	541
550	838	-288	515	542
204	838	-634	515	543
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812	838	-26	516	544
564	838	-274	516	545
167	838	-671	516	546
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602	838	-236	519	547
2520	838	1682	520	547
570	838	-268	520	548
647	838	-191	520	549
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769	771	-2	521	551
2310	771	1539	522	551
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780	771	9	524	551
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792	771	21	526	552
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719	771	-52	527	553
700	771	-71	527	554
621	771	-150	527	555
669	771	-102	527	556
696	771	-75	527	557
789	771	18	528	557
807	771	36	529	557
777	771	6	530	557
693	771	-78	530	558
693	771	-78	530	559
617	771	-154	530	560
707	771	-64	530	561
770	771	-1	530	562
725	771	-46	530	563
356	771	-415	530	564
484	771	-287	530	565
599	771	-172	530	566
818.39	771	47.39	531	566
718	771	-53	531	567
751	771	-20	531	568
550	771	-221	531	569
204	771	-567	531	570
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812	771	41	533	570
564	771	-207	533	571
167	771	-604	533	572
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1130	771	359	535	572
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602	771	-169	536	573

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570	771	-201	537	574
647	771	-124	537	575
752	809	-57	537	576
769	809	-40	537	577
2310	809	1501	538	577
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780	809	-29	539	578
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792	809	-17	540	580
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719	809	-90	541	581
700	809	-109	541	582
621	809	-188	541	583
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696	809	-113	541	585
789	809	-20	541	586
807	809	-2	541	587
777	809	-32	541	588
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617	809	-192	541	591
707	809	-102	541	592
770	809	-39	541	593
725	809	-84	541	594
356	809	-453	541	595
484	809	-325	541	596
599	809	-210	541	597
818.39	809	9.39	542	597
718	809	-91	542	598
751	809	-58	542	599
550	809	-259	542	600
204	809	-605	542	601
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812	809	3	544	601
564	809	-245	544	602
167	809	-642	544	603
1470	809	661	545	603
1130	809	321	546	603
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602	809	-207	547	604
2520	809	1711	548	604
570	809	-239	548	605
647	809	-162	548	606
769	752	17	549	606
2310	752	1558	550	606
1050	752	298	551	606
780	752	28	552	606
840	752	88	553	606
733	752	-19	553	607
792	752	40	554	607
845	752	93	555	607
719	752	-33	555	608
700	752	-52	555	609

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696	752	-56	555	612
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807	752	55	557	612
777	752	25	558	612
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707	752	-45	558	616
770	752	18	559	616
725	752	-27	559	617
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718	752	-34	560	621
751	752	-1	560	622
550	752	-202	560	623
204	752	-548	560	624
1110	752	358	561	624
812	752	60	562	624
564	752	-188	562	625
167	752	-585	562	626
1470	752	718	563	626
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2310	769	1541	567	629
1050	769	281	568	629
780	769	11	569	629
840	769	71	570	629
733	769	-36	570	630
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845	769	76	572	630
719	769	-50	572	631
700	769	-69	572	632
621	769	-148	572	633
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696	769	-73	572	635
789	769	20	573	635
807	769	38	574	635
777	769	8	575	635
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617	769	-152	575	638
707	769	-62	575	639
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356	769	-413	576	641
484	769	-285	576	642
599	769	-170	576	643
818.39	769	49.39	577	643

718	769	-51	577	644
751	769	-18	577	645
550	769	-219	577	646
204	769	-565	577	647
1110	769	341	578	647
812	769	43	579	647
564	769	-205	579	648
167	769	-602	579	649
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602	769	-167	582	650
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840	2310	-1470	583	655
733	2310	-1577	583	656
792	2310	-1518	583	657
845	2310	-1465	583	658
719	2310	-1591	583	659
700	2310	-1610	583	660
621	2310	-1689	583	661
669	2310	-1641	583	662
696	2310	-1614	583	663
789	2310	-1521	583	664
807	2310	-1503	583	665
777	2310	-1533	583	666
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617	2310	-1693	583	669
707	2310	-1603	583	670
770	2310	-1540	583	671
725	2310	-1585	583	672
356	2310	-1954	583	673
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599	2310	-1711	583	675
818.39	2310	-1491.61	583	676
718	2310	-1592	583	677
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550	2310	-1760	583	679
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1130	2310	-1180	583	686
1070	2310	-1240	583	687
602	2310	-1708	583	688
2520	2310	210	584	688
570	2310	-1740	584	689
647	2310	-1663	584	690
780	1050	-270	584	691

840	1050	-210	584	692
733	1050	-317	584	693
792	1050	-258	584	694
845	1050	-205	584	695
719	1050	-331	584	696
700	1050	-350	584	697
621	1050	-429	584	698
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696	1050	-354	584	700
789	1050	-261	584	701
807	1050	-243	584	702
777	1050	-273	584	703
693	1050	-357	584	704
693	1050	-357	584	705
617	1050	-433	584	706
707	1050	-343	584	707
770	1050	-280	584	708
725	1050	-325	584	709
356	1050	-694	584	710
484	1050	-566	584	711
599	1050	-451	584	712
818.39	1050	-231.61	584	713
718	1050	-332	584	714
751	1050	-299	584	715
550	1050	-500	584	716
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2520	1050	1470	589	721
570	1050	-480	589	722
647	1050	-403	589	723
840	780	60	590	723
733	780	-47	590	724
792	780	12	591	724
845	780	65	592	724
719	780	-61	592	725
700	780	-80	592	726
621	780	-159	592	727
669	780	-111	592	728
696	780	-84	592	729
789	780	9	593	729
807	780	27	594	729
777	780	-3	594	730
693	780	-87	594	731
693	780	-87	594	732
617	780	-163	594	733
707	780	-73	594	734
770	780	-10	594	735
725	780	-55	594	736
356	780	-424	594	737

484	780	-296	594	738
599	780	-181	594	739
818.39	780	38.39	595	739
718	780	-62	595	740
751	780	-29	595	741
550	780	-230	595	742
204	780	-576	595	743
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707	733	-26	612	787
770	733	37	613	787
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707	792	-85	623	810
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707	693	14	751	989
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770	707	63	776	1008
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812	1110	-298	881	1079
564	1110	-546	881	1080
167	1110	-943	881	1081
1470	1110	360	882	1081
1130	1110	20	883	1081
1070	1110	-40	883	1082
602	1110	-508	883	1083
2520	1110	1410	884	1083
570	1110	-540	884	1084
647	1110	-463	884	1085
564	812	-248	884	1086
167	812	-645	884	1087
1470	812	658	885	1087
1130	812	318	886	1087
1070	812	258	887	1087
602	812	-210	887	1088
2520	812	1708	888	1088
570	812	-242	888	1089
647	812	-165	888	1090
167	564	-397	888	1091
1470	564	906	889	1091
1130	564	566	890	1091
1070	564	506	891	1091
602	564	38	892	1091
2520	564	1956	893	1091
570	564	6	894	1091

647	564	83	895	1091
1470	167	1303	896	1091
1130	167	963	897	1091
1070	167	903	898	1091
602	167	435	899	1091
2520	167	2353	900	1091
570	167	403	901	1091
647	167	480	902	1091
1130	1470	-340	902	1092
1070	1470	-400	902	1093
602	1470	-868	902	1094
2520	1470	1050	903	1094
570	1470	-900	903	1095
647	1470	-823	903	1096
1070	1130	-60	903	1097
602	1130	-528	903	1098
2520	1130	1390	904	1098
570	1130	-560	904	1099
647	1130	-483	904	1100
602	1070	-468	904	1101
2520	1070	1450	905	1101
570	1070	-500	905	1102
647	1070	-423	905	1103
2520	602	1918	906	1103
570	602	-32	906	1104
647	602	45	907	1104
570	2520	-1950	907	1105
647	2520	-1873	907	1106
647	570	77	908	1106

S Statistic = 908 - 1106 = -198

Tied Group	Value	Members
1	845	2
2	693	2

Time Period	Observations
11/24/2009	1
1/27/2010	1
3/2/2010	1
3/4/2010	1
4/30/2010	1
5/6/2010	1
6/7/2010	1
7/26/2010	1
8/16/2010	1
9/17/2010	1
10/13/2010	1
11/16/2010	1

12/27/2010	1
1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1
12/6/2011	1
1/13/2012	1
2/21/2012	1
3/20/2012	1
4/27/2012	1
5/24/2012	1
6/15/2012	1
7/26/2012	1
8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1
1/29/2013	1
4/17/2013	1
7/29/2013	1
10/30/2013	1
1/31/2014	1
4/18/2014	1
7/17/2014	1
10/23/2014	1
1/27/2015	1
4/13/2015	1
7/21/2015	1
10/20/2015	1
1/27/2016	1
4/26/2016	1
7/26/2016	1
10/31/2016	1
1/30/2017	1
4/27/2017	1
7/24/2017	1
10/27/2017	1
1/29/2018	1
4/12/2018	1
7/24/2018	1
10/29/2018	1
1/30/2019	1
4/29/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 36
B = 0
C = 0

D = 0
E = 4
F = 0
a = 536256
b = 2.24986e+006
c = 8064
Group Variance = 29790
Z-Score = -1.14138
Comparison Level at 1.0 - (0.02 / 2) = 99% confidence level = 2.32634 (two-tailed)
|-1.14138| <= 2.32634 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Sulfate

Location: MW-7

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
673	950	-277	0	1
683	950	-267	0	2
832	950	-118	0	3
678	950	-272	0	4
940	950	-10	0	5
562	950	-388	0	6
787	950	-163	0	7
732	950	-218	0	8
529	950	-421	0	9
790	950	-160	0	10
899	950	-51	0	11
721	950	-229	0	12
833	950	-117	0	13
718	950	-232	0	14
618	950	-332	0	15
769	950	-181	0	16
746	950	-204	0	17
894	950	-56	0	18
674	950	-276	0	19
988	950	38	1	19
573	950	-377	1	20
1440	950	490	2	20
851	950	-99	2	21
1900	950	950	3	21
541	950	-409	3	22
683	673	10	4	22
832	673	159	5	22
678	673	5	6	22
940	673	267	7	22
562	673	-111	7	23
787	673	114	8	23
732	673	59	9	23
529	673	-144	9	24
790	673	117	10	24
899	673	226	11	24
721	673	48	12	24
833	673	160	13	24
718	673	45	14	24
618	673	-55	14	25
769	673	96	15	25
746	673	73	16	25
894	673	221	17	25
674	673	1	18	25
988	673	315	19	25
573	673	-100	19	26
1440	673	767	20	26

851	673	178	21	26
1900	673	1227	22	26
541	673	-132	22	27
832	683	149	23	27
678	683	-5	23	28
940	683	257	24	28
562	683	-121	24	29
787	683	104	25	29
732	683	49	26	29
529	683	-154	26	30
790	683	107	27	30
899	683	216	28	30
721	683	38	29	30
833	683	150	30	30
718	683	35	31	30
618	683	-65	31	31
769	683	86	32	31
746	683	63	33	31
894	683	211	34	31
674	683	-9	34	32
988	683	305	35	32
573	683	-110	35	33
1440	683	757	36	33
851	683	168	37	33
1900	683	1217	38	33
541	683	-142	38	34
678	832	-154	38	35
940	832	108	39	35
562	832	-270	39	36
787	832	-45	39	37
732	832	-100	39	38
529	832	-303	39	39
790	832	-42	39	40
899	832	67	40	40
721	832	-111	40	41
833	832	1	41	41
718	832	-114	41	42
618	832	-214	41	43
769	832	-63	41	44
746	832	-86	41	45
894	832	62	42	45
674	832	-158	42	46
988	832	156	43	46
573	832	-259	43	47
1440	832	608	44	47
851	832	19	45	47
1900	832	1068	46	47
541	832	-291	46	48
940	678	262	47	48
562	678	-116	47	49
787	678	109	48	49
732	678	54	49	49
529	678	-149	49	50
790	678	112	50	50

899	678	221	51	50
721	678	43	52	50
833	678	155	53	50
718	678	40	54	50
618	678	-60	54	51
769	678	91	55	51
746	678	68	56	51
894	678	216	57	51
674	678	-4	57	52
988	678	310	58	52
573	678	-105	58	53
1440	678	762	59	53
851	678	173	60	53
1900	678	1222	61	53
541	678	-137	61	54
562	940	-378	61	55
787	940	-153	61	56
732	940	-208	61	57
529	940	-411	61	58
790	940	-150	61	59
899	940	-41	61	60
721	940	-219	61	61
833	940	-107	61	62
718	940	-222	61	63
618	940	-322	61	64
769	940	-171	61	65
746	940	-194	61	66
894	940	-46	61	67
674	940	-266	61	68
988	940	48	62	68
573	940	-367	62	69
1440	940	500	63	69
851	940	-89	63	70
1900	940	960	64	70
541	940	-399	64	71
787	562	225	65	71
732	562	170	66	71
529	562	-33	66	72
790	562	228	67	72
899	562	337	68	72
721	562	159	69	72
833	562	271	70	72
718	562	156	71	72
618	562	56	72	72
769	562	207	73	72
746	562	184	74	72
894	562	332	75	72
674	562	112	76	72
988	562	426	77	72
573	562	11	78	72
1440	562	878	79	72
851	562	289	80	72
1900	562	1338	81	72
541	562	-21	81	73

732	787	-55	81	74
529	787	-258	81	75
790	787	3	82	75
899	787	112	83	75
721	787	-66	83	76
833	787	46	84	76
718	787	-69	84	77
618	787	-169	84	78
769	787	-18	84	79
746	787	-41	84	80
894	787	107	85	80
674	787	-113	85	81
988	787	201	86	81
573	787	-214	86	82
1440	787	653	87	82
851	787	64	88	82
1900	787	1113	89	82
541	787	-246	89	83

529	732	-203	89	84
790	732	58	90	84
899	732	167	91	84
721	732	-11	91	85
833	732	101	92	85
718	732	-14	92	86
618	732	-114	92	87
769	732	37	93	87
746	732	14	94	87
894	732	162	95	87
674	732	-58	95	88
988	732	256	96	88
573	732	-159	96	89
1440	732	708	97	89
851	732	119	98	89
1900	732	1168	99	89
541	732	-191	99	90

790	529	261	100	90
899	529	370	101	90
721	529	192	102	90
833	529	304	103	90
718	529	189	104	90
618	529	89	105	90
769	529	240	106	90
746	529	217	107	90
894	529	365	108	90
674	529	145	109	90
988	529	459	110	90
573	529	44	111	90
1440	529	911	112	90
851	529	322	113	90
1900	529	1371	114	90
541	529	12	115	90

899	790	109	116	90
721	790	-69	116	91
833	790	43	117	91

718	790	-72	117	92
618	790	-172	117	93
769	790	-21	117	94
746	790	-44	117	95
894	790	104	118	95
674	790	-116	118	96
988	790	198	119	96
573	790	-217	119	97
1440	790	650	120	97
851	790	61	121	97
1900	790	1110	122	97
541	790	-249	122	98
721	899	-178	122	99
833	899	-66	122	100
718	899	-181	122	101
618	899	-281	122	102
769	899	-130	122	103
746	899	-153	122	104
894	899	-5	122	105
674	899	-225	122	106
988	899	89	123	106
573	899	-326	123	107
1440	899	541	124	107
851	899	-48	124	108
1900	899	1001	125	108
541	899	-358	125	109
833	721	112	126	109
718	721	-3	126	110
618	721	-103	126	111
769	721	48	127	111
746	721	25	128	111
894	721	173	129	111
674	721	-47	129	112
988	721	267	130	112
573	721	-148	130	113
1440	721	719	131	113
851	721	130	132	113
1900	721	1179	133	113
541	721	-180	133	114
718	833	-115	133	115
618	833	-215	133	116
769	833	-64	133	117
746	833	-87	133	118
894	833	61	134	118
674	833	-159	134	119
988	833	155	135	119
573	833	-260	135	120
1440	833	607	136	120
851	833	18	137	120
1900	833	1067	138	120
541	833	-292	138	121
618	718	-100	138	122
769	718	51	139	122

746	718	28	140	122
894	718	176	141	122
674	718	-44	141	123
988	718	270	142	123
573	718	-145	142	124
1440	718	722	143	124
851	718	133	144	124
1900	718	1182	145	124
541	718	-177	145	125
769	618	151	146	125
746	618	128	147	125
894	618	276	148	125
674	618	56	149	125
988	618	370	150	125
573	618	-45	150	126
1440	618	822	151	126
851	618	233	152	126
1900	618	1282	153	126
541	618	-77	153	127
746	769	-23	153	128
894	769	125	154	128
674	769	-95	154	129
988	769	219	155	129
573	769	-196	155	130
1440	769	671	156	130
851	769	82	157	130
1900	769	1131	158	130
541	769	-228	158	131
894	746	148	159	131
674	746	-72	159	132
988	746	242	160	132
573	746	-173	160	133
1440	746	694	161	133
851	746	105	162	133
1900	746	1154	163	133
541	746	-205	163	134
674	894	-220	163	135
988	894	94	164	135
573	894	-321	164	136
1440	894	546	165	136
851	894	-43	165	137
1900	894	1006	166	137
541	894	-353	166	138
988	674	314	167	138
573	674	-101	167	139
1440	674	766	168	139
851	674	177	169	139
1900	674	1226	170	139
541	674	-133	170	140
573	988	-415	170	141
1440	988	452	171	141

851	988	-137	171	142
1900	988	912	172	142
541	988	-447	172	143
1440	573	867	173	143
851	573	278	174	143
1900	573	1327	175	143
541	573	-32	175	144
851	1440	-589	175	145
1900	1440	460	176	145
541	1440	-899	176	146
1900	851	1049	177	146
541	851	-310	177	147
541	1900	-1359	177	148

S Statistic = 177 - 148 = 29

Tied Group	Value	Members
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Time Period	Observations
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11/25/2009	1
3/4/2010	1
4/30/2010	1
7/26/2010	1
10/13/2010	1
1/14/2011	1
4/21/2011	1
7/21/2011	1
10/31/2011	1
1/13/2012	1
4/27/2012	1
7/26/2012	1
10/18/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0

F = 0
a = 37050
b = 140400
c = 1300
Group Variance = 2058.33
Z-Score = 0.617163
Comparison Level at 1.0 - (0.02 / 2) = 99% confidence level = 2.32634 (two-tailed)
|0.617163| <= 2.32634 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Total Dissolved Solids

Location: MW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
1600	2100	-500	0	1
1620	2100	-480	0	2
1900	2100	-200	0	3
1980	2100	-120	0	4
1930	2100	-170	0	5
1770	2100	-330	0	6
2090	2100	-10	0	7
2070	2100	-30	0	8
1920	2100	-180	0	9
1960	2100	-140	0	10
1810	2100	-290	0	11
1600	2100	-500	0	12
1300	2100	-800	0	13
1300	2100	-800	0	14
1800	2100	-300	0	15
1500	2100	-600	0	16
1090	2100	-1010	0	17
2140	2100	40	1	17
2280	2100	180	2	17
2530	2100	430	3	17
1830	2100	-270	3	18
1740	2100	-360	3	19
2320	2100	220	4	19
1660	2100	-440	4	20
1480	2100	-620	4	21
1440	2100	-660	4	22
1620	1600	20	5	22
1900	1600	300	6	22
1980	1600	380	7	22
1930	1600	330	8	22
1770	1600	170	9	22
2090	1600	490	10	22
2070	1600	470	11	22
1920	1600	320	12	22
1960	1600	360	13	22
1810	1600	210	14	22
1600	1600	0	14	22
1300	1600	-300	14	23
1300	1600	-300	14	24
1800	1600	200	15	24
1500	1600	-100	15	25
1090	1600	-510	15	26
2140	1600	540	16	26
2280	1600	680	17	26
2530	1600	930	18	26
1830	1600	230	19	26

1740	1600	140	20	26
2320	1600	720	21	26
1660	1600	60	22	26
1480	1600	-120	22	27
1440	1600	-160	22	28
1900	1620	280	23	28
1980	1620	360	24	28
1930	1620	310	25	28
1770	1620	150	26	28
2090	1620	470	27	28
2070	1620	450	28	28
1920	1620	300	29	28
1960	1620	340	30	28
1810	1620	190	31	28
1600	1620	-20	31	29
1300	1620	-320	31	30
1300	1620	-320	31	31
1800	1620	180	32	31
1500	1620	-120	32	32
1090	1620	-530	32	33
2140	1620	520	33	33
2280	1620	660	34	33
2530	1620	910	35	33
1830	1620	210	36	33
1740	1620	120	37	33
2320	1620	700	38	33
1660	1620	40	39	33
1480	1620	-140	39	34
1440	1620	-180	39	35
1980	1900	80	40	35
1930	1900	30	41	35
1770	1900	-130	41	36
2090	1900	190	42	36
2070	1900	170	43	36
1920	1900	20	44	36
1960	1900	60	45	36
1810	1900	-90	45	37
1600	1900	-300	45	38
1300	1900	-600	45	39
1300	1900	-600	45	40
1800	1900	-100	45	41
1500	1900	-400	45	42
1090	1900	-810	45	43
2140	1900	240	46	43
2280	1900	380	47	43
2530	1900	630	48	43
1830	1900	-70	48	44
1740	1900	-160	48	45
2320	1900	420	49	45
1660	1900	-240	49	46
1480	1900	-420	49	47
1440	1900	-460	49	48
1930	1980	-50	49	49
1770	1980	-210	49	50

2090	1980	110	50	50
2070	1980	90	51	50
1920	1980	-60	51	51
1960	1980	-20	51	52
1810	1980	-170	51	53
1600	1980	-380	51	54
1300	1980	-680	51	55
1300	1980	-680	51	56
1800	1980	-180	51	57
1500	1980	-480	51	58
1090	1980	-890	51	59
2140	1980	160	52	59
2280	1980	300	53	59
2530	1980	550	54	59
1830	1980	-150	54	60
1740	1980	-240	54	61
2320	1980	340	55	61
1660	1980	-320	55	62
1480	1980	-500	55	63
1440	1980	-540	55	64
1770	1930	-160	55	65
2090	1930	160	56	65
2070	1930	140	57	65
1920	1930	-10	57	66
1960	1930	30	58	66
1810	1930	-120	58	67
1600	1930	-330	58	68
1300	1930	-630	58	69
1300	1930	-630	58	70
1800	1930	-130	58	71
1500	1930	-430	58	72
1090	1930	-840	58	73
2140	1930	210	59	73
2280	1930	350	60	73
2530	1930	600	61	73
1830	1930	-100	61	74
1740	1930	-190	61	75
2320	1930	390	62	75
1660	1930	-270	62	76
1480	1930	-450	62	77
1440	1930	-490	62	78
2090	1770	320	63	78
2070	1770	300	64	78
1920	1770	150	65	78
1960	1770	190	66	78
1810	1770	40	67	78
1600	1770	-170	67	79
1300	1770	-470	67	80
1300	1770	-470	67	81
1800	1770	30	68	81
1500	1770	-270	68	82
1090	1770	-680	68	83
2140	1770	370	69	83
2280	1770	510	70	83
2530	1770	760	71	83

1830	1770	60	72	83
1740	1770	-30	72	84
2320	1770	550	73	84
1660	1770	-110	73	85
1480	1770	-290	73	86
1440	1770	-330	73	87
2070	2090	-20	73	88
1920	2090	-170	73	89
1960	2090	-130	73	90
1810	2090	-280	73	91
1600	2090	-490	73	92
1300	2090	-790	73	93
1300	2090	-790	73	94
1800	2090	-290	73	95
1500	2090	-590	73	96
1090	2090	-1000	73	97
2140	2090	50	74	97
2280	2090	190	75	97
2530	2090	440	76	97
1830	2090	-260	76	98
1740	2090	-350	76	99
2320	2090	230	77	99
1660	2090	-430	77	100
1480	2090	-610	77	101
1440	2090	-650	77	102
1920	2070	-150	77	103
1960	2070	-110	77	104
1810	2070	-260	77	105
1600	2070	-470	77	106
1300	2070	-770	77	107
1300	2070	-770	77	108
1800	2070	-270	77	109
1500	2070	-570	77	110
1090	2070	-980	77	111
2140	2070	70	78	111
2280	2070	210	79	111
2530	2070	460	80	111
1830	2070	-240	80	112
1740	2070	-330	80	113
2320	2070	250	81	113
1660	2070	-410	81	114
1480	2070	-590	81	115
1440	2070	-630	81	116
1960	1920	40	82	116
1810	1920	-110	82	117
1600	1920	-320	82	118
1300	1920	-620	82	119
1300	1920	-620	82	120
1800	1920	-120	82	121
1500	1920	-420	82	122
1090	1920	-830	82	123
2140	1920	220	83	123
2280	1920	360	84	123
2530	1920	610	85	123

1830	1920	-90	85	124
1740	1920	-180	85	125
2320	1920	400	86	125
1660	1920	-260	86	126
1480	1920	-440	86	127
1440	1920	-480	86	128
1810	1960	-150	86	129
1600	1960	-360	86	130
1300	1960	-660	86	131
1300	1960	-660	86	132
1800	1960	-160	86	133
1500	1960	-460	86	134
1090	1960	-870	86	135
2140	1960	180	87	135
2280	1960	320	88	135
2530	1960	570	89	135
1830	1960	-130	89	136
1740	1960	-220	89	137
2320	1960	360	90	137
1660	1960	-300	90	138
1480	1960	-480	90	139
1440	1960	-520	90	140
1600	1810	-210	90	141
1300	1810	-510	90	142
1300	1810	-510	90	143
1800	1810	-10	90	144
1500	1810	-310	90	145
1090	1810	-720	90	146
2140	1810	330	91	146
2280	1810	470	92	146
2530	1810	720	93	146
1830	1810	20	94	146
1740	1810	-70	94	147
2320	1810	510	95	147
1660	1810	-150	95	148
1480	1810	-330	95	149
1440	1810	-370	95	150
1300	1600	-300	95	151
1300	1600	-300	95	152
1800	1600	200	96	152
1500	1600	-100	96	153
1090	1600	-510	96	154
2140	1600	540	97	154
2280	1600	680	98	154
2530	1600	930	99	154
1830	1600	230	100	154
1740	1600	140	101	154
2320	1600	720	102	154
1660	1600	60	103	154
1480	1600	-120	103	155
1440	1600	-160	103	156
1300	1300	0	103	156
1800	1300	500	104	156

1500	1300	200	105	156
1090	1300	-210	105	157
2140	1300	840	106	157
2280	1300	980	107	157
2530	1300	1230	108	157
1830	1300	530	109	157
1740	1300	440	110	157
2320	1300	1020	111	157
1660	1300	360	112	157
1480	1300	180	113	157
1440	1300	140	114	157
1800	1300	500	115	157
1500	1300	200	116	157
1090	1300	-210	116	158
2140	1300	840	117	158
2280	1300	980	118	158
2530	1300	1230	119	158
1830	1300	530	120	158
1740	1300	440	121	158
2320	1300	1020	122	158
1660	1300	360	123	158
1480	1300	180	124	158
1440	1300	140	125	158
1500	1800	-300	125	159
1090	1800	-710	125	160
2140	1800	340	126	160
2280	1800	480	127	160
2530	1800	730	128	160
1830	1800	30	129	160
1740	1800	-60	129	161
2320	1800	520	130	161
1660	1800	-140	130	162
1480	1800	-320	130	163
1440	1800	-360	130	164
1090	1500	-410	130	165
2140	1500	640	131	165
2280	1500	780	132	165
2530	1500	1030	133	165
1830	1500	330	134	165
1740	1500	240	135	165
2320	1500	820	136	165
1660	1500	160	137	165
1480	1500	-20	137	166
1440	1500	-60	137	167
2140	1090	1050	138	167
2280	1090	1190	139	167
2530	1090	1440	140	167
1830	1090	740	141	167
1740	1090	650	142	167
2320	1090	1230	143	167
1660	1090	570	144	167
1480	1090	390	145	167
1440	1090	350	146	167

2280	2140	140	147	167
2530	2140	390	148	167
1830	2140	-310	148	168
1740	2140	-400	148	169
2320	2140	180	149	169
1660	2140	-480	149	170
1480	2140	-660	149	171
1440	2140	-700	149	172
2530	2280	250	150	172
1830	2280	-450	150	173
1740	2280	-540	150	174
2320	2280	40	151	174
1660	2280	-620	151	175
1480	2280	-800	151	176
1440	2280	-840	151	177
1830	2530	-700	151	178
1740	2530	-790	151	179
2320	2530	-210	151	180
1660	2530	-870	151	181
1480	2530	-1050	151	182
1440	2530	-1090	151	183
1740	1830	-90	151	184
2320	1830	490	152	184
1660	1830	-170	152	185
1480	1830	-350	152	186
1440	1830	-390	152	187
2320	1740	580	153	187
1660	1740	-80	153	188
1480	1740	-260	153	189
1440	1740	-300	153	190
1660	2320	-660	153	191
1480	2320	-840	153	192
1440	2320	-880	153	193
1480	1660	-180	153	194
1440	1660	-220	153	195
1440	1480	-40	153	196

S Statistic = 153 - 196 = -43

Tied Group	Value	Members
1	1600	2
2	1300	2

Time Period	Observations
11/24/2009	1
3/4/2010	1
4/30/2010	1
7/26/2010	1

10/13/2010	1
1/14/2011	1
4/21/2011	1
7/21/2011	1
10/31/2011	1
1/13/2012	1
4/27/2012	1
7/26/2012	1
10/18/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 36

B = 0

C = 0

D = 0

E = 4

F = 0

a = 41418

b = 157950

c = 1404

Group Variance = 2299

Z-Score = -0.875951

Comparison Level at 1.0 - (0.02 / 2) = 99% confidence level = 2.32634 (two-tailed)

$|-0.875951| \leq 2.32634$ indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Total Dissolved Solids

Location: MW-2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
1610	2310	-700	0	1
1550	2310	-760	0	2
1790	2310	-520	0	3
2050	2310	-260	0	4
1930	2310	-380	0	5
1780	2310	-530	0	6
1940	2310	-370	0	7
1760	2310	-550	0	8
1940	2310	-370	0	9
1960	2310	-350	0	10
1960	2310	-350	0	11
1500	2310	-810	0	12
1300	2310	-1010	0	13
1200	2310	-1110	0	14
1800	2310	-510	0	15
1400	2310	-910	0	16
1170	2310	-1140	0	17
1900	2310	-410	0	18
2250	2310	-60	0	19
2330	2310	20	1	19
1890	2310	-420	1	20
1780	2310	-530	1	21
2560	2310	250	2	21
1720	2310	-590	2	22
1500	2310	-810	2	23
1450	2310	-860	2	24
1550	1610	-60	2	25
1790	1610	180	3	25
2050	1610	440	4	25
1930	1610	320	5	25
1780	1610	170	6	25
1940	1610	330	7	25
1760	1610	150	8	25
1940	1610	330	9	25
1960	1610	350	10	25
1960	1610	350	11	25
1500	1610	-110	11	26
1300	1610	-310	11	27
1200	1610	-410	11	28
1800	1610	190	12	28
1400	1610	-210	12	29
1170	1610	-440	12	30
1900	1610	290	13	30
2250	1610	640	14	30
2330	1610	720	15	30
1890	1610	280	16	30

1780	1610	170	17	30
2560	1610	950	18	30
1720	1610	110	19	30
1500	1610	-110	19	31
1450	1610	-160	19	32
1790	1550	240	20	32
2050	1550	500	21	32
1930	1550	380	22	32
1780	1550	230	23	32
1940	1550	390	24	32
1760	1550	210	25	32
1940	1550	390	26	32
1960	1550	410	27	32
1960	1550	410	28	32
1500	1550	-50	28	33
1300	1550	-250	28	34
1200	1550	-350	28	35
1800	1550	250	29	35
1400	1550	-150	29	36
1170	1550	-380	29	37
1900	1550	350	30	37
2250	1550	700	31	37
2330	1550	780	32	37
1890	1550	340	33	37
1780	1550	230	34	37
2560	1550	1010	35	37
1720	1550	170	36	37
1500	1550	-50	36	38
1450	1550	-100	36	39
2050	1790	260	37	39
1930	1790	140	38	39
1780	1790	-10	38	40
1940	1790	150	39	40
1760	1790	-30	39	41
1940	1790	150	40	41
1960	1790	170	41	41
1960	1790	170	42	41
1500	1790	-290	42	42
1300	1790	-490	42	43
1200	1790	-590	42	44
1800	1790	10	43	44
1400	1790	-390	43	45
1170	1790	-620	43	46
1900	1790	110	44	46
2250	1790	460	45	46
2330	1790	540	46	46
1890	1790	100	47	46
1780	1790	-10	47	47
2560	1790	770	48	47
1720	1790	-70	48	48
1500	1790	-290	48	49
1450	1790	-340	48	50
1930	2050	-120	48	51
1780	2050	-270	48	52

1940	2050	-110	48	53
1760	2050	-290	48	54
1940	2050	-110	48	55
1960	2050	-90	48	56
1960	2050	-90	48	57
1500	2050	-550	48	58
1300	2050	-750	48	59
1200	2050	-850	48	60
1800	2050	-250	48	61
1400	2050	-650	48	62
1170	2050	-880	48	63
1900	2050	-150	48	64
2250	2050	200	49	64
2330	2050	280	50	64
1890	2050	-160	50	65
1780	2050	-270	50	66
2560	2050	510	51	66
1720	2050	-330	51	67
1500	2050	-550	51	68
1450	2050	-600	51	69
1780	1930	-150	51	70
1940	1930	10	52	70
1760	1930	-170	52	71
1940	1930	10	53	71
1960	1930	30	54	71
1960	1930	30	55	71
1500	1930	-430	55	72
1300	1930	-630	55	73
1200	1930	-730	55	74
1800	1930	-130	55	75
1400	1930	-530	55	76
1170	1930	-760	55	77
1900	1930	-30	55	78
2250	1930	320	56	78
2330	1930	400	57	78
1890	1930	-40	57	79
1780	1930	-150	57	80
2560	1930	630	58	80
1720	1930	-210	58	81
1500	1930	-430	58	82
1450	1930	-480	58	83
1940	1780	160	59	83
1760	1780	-20	59	84
1940	1780	160	60	84
1960	1780	180	61	84
1960	1780	180	62	84
1500	1780	-280	62	85
1300	1780	-480	62	86
1200	1780	-580	62	87
1800	1780	20	63	87
1400	1780	-380	63	88
1170	1780	-610	63	89
1900	1780	120	64	89
2250	1780	470	65	89
2330	1780	550	66	89

1890	1780	110	67	89
1780	1780	0	67	89
2560	1780	780	68	89
1720	1780	-60	68	90
1500	1780	-280	68	91
1450	1780	-330	68	92
1760	1940	-180	68	93
1940	1940	0	68	93
1960	1940	20	69	93
1960	1940	20	70	93
1500	1940	-440	70	94
1300	1940	-640	70	95
1200	1940	-740	70	96
1800	1940	-140	70	97
1400	1940	-540	70	98
1170	1940	-770	70	99
1900	1940	-40	70	100
2250	1940	310	71	100
2330	1940	390	72	100
1890	1940	-50	72	101
1780	1940	-160	72	102
2560	1940	620	73	102
1720	1940	-220	73	103
1500	1940	-440	73	104
1450	1940	-490	73	105
1940	1760	180	74	105
1960	1760	200	75	105
1960	1760	200	76	105
1500	1760	-260	76	106
1300	1760	-460	76	107
1200	1760	-560	76	108
1800	1760	40	77	108
1400	1760	-360	77	109
1170	1760	-590	77	110
1900	1760	140	78	110
2250	1760	490	79	110
2330	1760	570	80	110
1890	1760	130	81	110
1780	1760	20	82	110
2560	1760	800	83	110
1720	1760	-40	83	111
1500	1760	-260	83	112
1450	1760	-310	83	113
1960	1940	20	84	113
1960	1940	20	85	113
1500	1940	-440	85	114
1300	1940	-640	85	115
1200	1940	-740	85	116
1800	1940	-140	85	117
1400	1940	-540	85	118
1170	1940	-770	85	119
1900	1940	-40	85	120
2250	1940	310	86	120
2330	1940	390	87	120

1890	1940	-50	87	121
1780	1940	-160	87	122
2560	1940	620	88	122
1720	1940	-220	88	123
1500	1940	-440	88	124
1450	1940	-490	88	125
1960	1960	0	88	125
1500	1960	-460	88	126
1300	1960	-660	88	127
1200	1960	-760	88	128
1800	1960	-160	88	129
1400	1960	-560	88	130
1170	1960	-790	88	131
1900	1960	-60	88	132
2250	1960	290	89	132
2330	1960	370	90	132
1890	1960	-70	90	133
1780	1960	-180	90	134
2560	1960	600	91	134
1720	1960	-240	91	135
1500	1960	-460	91	136
1450	1960	-510	91	137
1500	1960	-460	91	138
1300	1960	-660	91	139
1200	1960	-760	91	140
1800	1960	-160	91	141
1400	1960	-560	91	142
1170	1960	-790	91	143
1900	1960	-60	91	144
2250	1960	290	92	144
2330	1960	370	93	144
1890	1960	-70	93	145
1780	1960	-180	93	146
2560	1960	600	94	146
1720	1960	-240	94	147
1500	1960	-460	94	148
1450	1960	-510	94	149
1300	1500	-200	94	150
1200	1500	-300	94	151
1800	1500	300	95	151
1400	1500	-100	95	152
1170	1500	-330	95	153
1900	1500	400	96	153
2250	1500	750	97	153
2330	1500	830	98	153
1890	1500	390	99	153
1780	1500	280	100	153
2560	1500	1060	101	153
1720	1500	220	102	153
1500	1500	0	102	153
1450	1500	-50	102	154
1200	1300	-100	102	155
1800	1300	500	103	155

1400	1300	100	104	155
1170	1300	-130	104	156
1900	1300	600	105	156
2250	1300	950	106	156
2330	1300	1030	107	156
1890	1300	590	108	156
1780	1300	480	109	156
2560	1300	1260	110	156
1720	1300	420	111	156
1500	1300	200	112	156
1450	1300	150	113	156
1800	1200	600	114	156
1400	1200	200	115	156
1170	1200	-30	115	157
1900	1200	700	116	157
2250	1200	1050	117	157
2330	1200	1130	118	157
1890	1200	690	119	157
1780	1200	580	120	157
2560	1200	1360	121	157
1720	1200	520	122	157
1500	1200	300	123	157
1450	1200	250	124	157
1400	1800	-400	124	158
1170	1800	-630	124	159
1900	1800	100	125	159
2250	1800	450	126	159
2330	1800	530	127	159
1890	1800	90	128	159
1780	1800	-20	128	160
2560	1800	760	129	160
1720	1800	-80	129	161
1500	1800	-300	129	162
1450	1800	-350	129	163
1170	1400	-230	129	164
1900	1400	500	130	164
2250	1400	850	131	164
2330	1400	930	132	164
1890	1400	490	133	164
1780	1400	380	134	164
2560	1400	1160	135	164
1720	1400	320	136	164
1500	1400	100	137	164
1450	1400	50	138	164
1900	1170	730	139	164
2250	1170	1080	140	164
2330	1170	1160	141	164
1890	1170	720	142	164
1780	1170	610	143	164
2560	1170	1390	144	164
1720	1170	550	145	164
1500	1170	330	146	164
1450	1170	280	147	164

2250	1900	350	148	164
2330	1900	430	149	164
1890	1900	-10	149	165
1780	1900	-120	149	166
2560	1900	660	150	166
1720	1900	-180	150	167
1500	1900	-400	150	168
1450	1900	-450	150	169
2330	2250	80	151	169
1890	2250	-360	151	170
1780	2250	-470	151	171
2560	2250	310	152	171
1720	2250	-530	152	172
1500	2250	-750	152	173
1450	2250	-800	152	174
1890	2330	-440	152	175
1780	2330	-550	152	176
2560	2330	230	153	176
1720	2330	-610	153	177
1500	2330	-830	153	178
1450	2330	-880	153	179
1780	1890	-110	153	180
2560	1890	670	154	180
1720	1890	-170	154	181
1500	1890	-390	154	182
1450	1890	-440	154	183
2560	1780	780	155	183
1720	1780	-60	155	184
1500	1780	-280	155	185
1450	1780	-330	155	186
1720	2560	-840	155	187
1500	2560	-1060	155	188
1450	2560	-1110	155	189
1500	1720	-220	155	190
1450	1720	-270	155	191
1450	1500	-50	155	192

S Statistic = 155 - 192 = -37

Tied Group	Value	Members
1	1780	2
2	1940	2
3	1960	2
4	1500	2

Time Period	Observations
11/25/2009	1
3/4/2010	1

4/30/2010	1
7/26/2010	1
10/13/2010	1
1/14/2011	1
4/21/2011	1
7/21/2011	1
10/31/2011	1
1/13/2012	1
4/27/2012	1
7/26/2012	1
10/18/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 72

B = 0

C = 0

D = 0

E = 8

F = 0

a = 41418

b = 157950

c = 1404

Group Variance = 2297

Z-Score = -0.751142

Comparison Level at 1.0 - $(0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)

$|-0.751142| \leq 2.32634$ indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Total Dissolved Solids

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
1810	1970	-160	0	1
1670	1970	-300	0	2
3850	1970	1880	1	2
1740	1970	-230	1	3
1870	1970	-100	1	4
1880	1970	-90	1	5
1880	1970	-90	1	6
1870	1970	-100	1	7
1940	1970	-30	1	8
1910	1970	-60	1	9
1790	1970	-180	1	10
1810	1970	-160	1	11
1820	1970	-150	1	12
1910	1970	-60	1	13
2020	1970	50	2	13
1840	1970	-130	2	14
1760	1970	-210	2	15
1780	1970	-190	2	16
1820	1970	-150	2	17
1990	1970	20	3	17
1780	1970	-190	3	18
1950	1970	-20	3	19
1980	1970	10	4	19
992	1970	-978	4	20
1750	1970	-220	4	21
1870	1970	-100	4	22
1800	1970	-170	4	23
1600	1970	-370	4	24
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1800	1760	40	212	420
1600	1760	-160	212	421
1700	1760	-60	212	422
1800	1760	40	213	422
1300	1760	-460	213	423
1400	1760	-360	213	424
1400	1760	-360	213	425
1800	1760	40	214	425
1400	1760	-360	214	426
11.8	1760	-1748.2	214	427
1800	1760	40	215	427
2310	1760	550	216	427
2410	1760	650	217	427
1800	1760	40	218	427
1800	1760	40	219	427
2270	1760	510	220	427
1690	1760	-70	220	428
1570	1760	-190	220	429
1440	1760	-320	220	430

1820	1780	40	221	430
1990	1780	210	222	430
1780	1780	0	222	430
1950	1780	170	223	430
1980	1780	200	224	430
992	1780	-788	224	431
1750	1780	-30	224	432
1870	1780	90	225	432
1800	1780	20	226	432
1600	1780	-180	226	433
1700	1780	-80	226	434
1800	1780	20	227	434
1300	1780	-480	227	435
1400	1780	-380	227	436
1400	1780	-380	227	437
1800	1780	20	228	437
1400	1780	-380	228	438
11.8	1780	-1768.2	228	439
1800	1780	20	229	439
2310	1780	530	230	439
2410	1780	630	231	439
1800	1780	20	232	439
1800	1780	20	233	439
2270	1780	490	234	439
1690	1780	-90	234	440
1570	1780	-210	234	441
1440	1780	-340	234	442
1990	1820	170	235	442
1780	1820	-40	235	443
1950	1820	130	236	443
1980	1820	160	237	443
992	1820	-828	237	444
1750	1820	-70	237	445
1870	1820	50	238	445
1800	1820	-20	238	446
1600	1820	-220	238	447
1700	1820	-120	238	448
1800	1820	-20	238	449
1300	1820	-520	238	450
1400	1820	-420	238	451
1400	1820	-420	238	452
1800	1820	-20	238	453
1400	1820	-420	238	454
11.8	1820	-1808.2	238	455
1800	1820	-20	238	456
2310	1820	490	239	456
2410	1820	590	240	456
1800	1820	-20	240	457
1800	1820	-20	240	458
2270	1820	450	241	458
1690	1820	-130	241	459
1570	1820	-250	241	460
1440	1820	-380	241	461
1780	1990	-210	241	462

1950	1990	-40	241	463
1980	1990	-10	241	464
992	1990	-998	241	465
1750	1990	-240	241	466
1870	1990	-120	241	467
1800	1990	-190	241	468
1600	1990	-390	241	469
1700	1990	-290	241	470
1800	1990	-190	241	471
1300	1990	-690	241	472
1400	1990	-590	241	473
1400	1990	-590	241	474
1800	1990	-190	241	475
1400	1990	-590	241	476
11.8	1990	-1978.2	241	477
1800	1990	-190	241	478
2310	1990	320	242	478
2410	1990	420	243	478
1800	1990	-190	243	479
1800	1990	-190	243	480
2270	1990	280	244	480
1690	1990	-300	244	481
1570	1990	-420	244	482
1440	1990	-550	244	483
1950	1780	170	245	483
1980	1780	200	246	483
992	1780	-788	246	484
1750	1780	-30	246	485
1870	1780	90	247	485
1800	1780	20	248	485
1600	1780	-180	248	486
1700	1780	-80	248	487
1800	1780	20	249	487
1300	1780	-480	249	488
1400	1780	-380	249	489
1400	1780	-380	249	490
1800	1780	20	250	490
1400	1780	-380	250	491
11.8	1780	-1768.2	250	492
1800	1780	20	251	492
2310	1780	530	252	492
2410	1780	630	253	492
1800	1780	20	254	492
1800	1780	20	255	492
2270	1780	490	256	492
1690	1780	-90	256	493
1570	1780	-210	256	494
1440	1780	-340	256	495
1980	1950	30	257	495
992	1950	-958	257	496
1750	1950	-200	257	497
1870	1950	-80	257	498
1800	1950	-150	257	499
1600	1950	-350	257	500
1700	1950	-250	257	501

1800	1950	-150	257	502
1300	1950	-650	257	503
1400	1950	-550	257	504
1400	1950	-550	257	505
1800	1950	-150	257	506
1400	1950	-550	257	507
11.8	1950	-1938.2	257	508
1800	1950	-150	257	509
2310	1950	360	258	509
2410	1950	460	259	509
1800	1950	-150	259	510
1800	1950	-150	259	511
2270	1950	320	260	511
1690	1950	-260	260	512
1570	1950	-380	260	513
1440	1950	-510	260	514
992	1980	-988	260	515
1750	1980	-230	260	516
1870	1980	-110	260	517
1800	1980	-180	260	518
1600	1980	-380	260	519
1700	1980	-280	260	520
1800	1980	-180	260	521
1300	1980	-680	260	522
1400	1980	-580	260	523
1400	1980	-580	260	524
1800	1980	-180	260	525
1400	1980	-580	260	526
11.8	1980	-1968.2	260	527
1800	1980	-180	260	528
2310	1980	330	261	528
2410	1980	430	262	528
1800	1980	-180	262	529
1800	1980	-180	262	530
2270	1980	290	263	530
1690	1980	-290	263	531
1570	1980	-410	263	532
1440	1980	-540	263	533
1750	992	758	264	533
1870	992	878	265	533
1800	992	808	266	533
1600	992	608	267	533
1700	992	708	268	533
1800	992	808	269	533
1300	992	308	270	533
1400	992	408	271	533
1400	992	408	272	533
1800	992	808	273	533
1400	992	408	274	533
11.8	992	-980.2	274	534
1800	992	808	275	534
2310	992	1318	276	534
2410	992	1418	277	534
1800	992	808	278	534
1800	992	808	279	534

2270	992	1278	280	534
1690	992	698	281	534
1570	992	578	282	534
1440	992	448	283	534
1870	1750	120	284	534
1800	1750	50	285	534
1600	1750	-150	285	535
1700	1750	-50	285	536
1800	1750	50	286	536
1300	1750	-450	286	537
1400	1750	-350	286	538
1400	1750	-350	286	539
1800	1750	50	287	539
1400	1750	-350	287	540
11.8	1750	-1738.2	287	541
1800	1750	50	288	541
2310	1750	560	289	541
2410	1750	660	290	541
1800	1750	50	291	541
1800	1750	50	292	541
2270	1750	520	293	541
1690	1750	-60	293	542
1570	1750	-180	293	543
1440	1750	-310	293	544
1800	1870	-70	293	545
1600	1870	-270	293	546
1700	1870	-170	293	547
1800	1870	-70	293	548
1300	1870	-570	293	549
1400	1870	-470	293	550
1400	1870	-470	293	551
1800	1870	-70	293	552
1400	1870	-470	293	553
11.8	1870	-1858.2	293	554
1800	1870	-70	293	555
2310	1870	440	294	555
2410	1870	540	295	555
1800	1870	-70	295	556
1800	1870	-70	295	557
2270	1870	400	296	557
1690	1870	-180	296	558
1570	1870	-300	296	559
1440	1870	-430	296	560
1600	1800	-200	296	561
1700	1800	-100	296	562
1800	1800	0	296	562
1300	1800	-500	296	563
1400	1800	-400	296	564
1400	1800	-400	296	565
1800	1800	0	296	565
1400	1800	-400	296	566
11.8	1800	-1788.2	296	567
1800	1800	0	296	567
2310	1800	510	297	567

2410	1800	610	298	567
1800	1800	0	298	567
1800	1800	0	298	567
2270	1800	470	299	567
1690	1800	-110	299	568
1570	1800	-230	299	569
1440	1800	-360	299	570
1700	1600	100	300	570
1800	1600	200	301	570
1300	1600	-300	301	571
1400	1600	-200	301	572
1400	1600	-200	301	573
1800	1600	200	302	573
1400	1600	-200	302	574
11.8	1600	-1588.2	302	575
1800	1600	200	303	575
2310	1600	710	304	575
2410	1600	810	305	575
1800	1600	200	306	575
1800	1600	200	307	575
2270	1600	670	308	575
1690	1600	90	309	575
1570	1600	-30	309	576
1440	1600	-160	309	577
1800	1700	100	310	577
1300	1700	-400	310	578
1400	1700	-300	310	579
1400	1700	-300	310	580
1800	1700	100	311	580
1400	1700	-300	311	581
11.8	1700	-1688.2	311	582
1800	1700	100	312	582
2310	1700	610	313	582
2410	1700	710	314	582
1800	1700	100	315	582
1800	1700	100	316	582
2270	1700	570	317	582
1690	1700	-10	317	583
1570	1700	-130	317	584
1440	1700	-260	317	585
1300	1800	-500	317	586
1400	1800	-400	317	587
1400	1800	-400	317	588
1800	1800	0	317	588
1400	1800	-400	317	589
11.8	1800	-1788.2	317	590
1800	1800	0	317	590
2310	1800	510	318	590
2410	1800	610	319	590
1800	1800	0	319	590
1800	1800	0	319	590
2270	1800	470	320	590
1690	1800	-110	320	591
1570	1800	-230	320	592

1440	1800	-360	320	593
1400	1300	100	321	593
1400	1300	100	322	593
1800	1300	500	323	593
1400	1300	100	324	593
11.8	1300	-1288.2	324	594
1800	1300	500	325	594
2310	1300	1010	326	594
2410	1300	1110	327	594
1800	1300	500	328	594
1800	1300	500	329	594
2270	1300	970	330	594
1690	1300	390	331	594
1570	1300	270	332	594
1440	1300	140	333	594
1400	1400	0	333	594
1800	1400	400	334	594
1400	1400	0	334	594
11.8	1400	-1388.2	334	595
1800	1400	400	335	595
2310	1400	910	336	595
2410	1400	1010	337	595
1800	1400	400	338	595
1800	1400	400	339	595
2270	1400	870	340	595
1690	1400	290	341	595
1570	1400	170	342	595
1440	1400	40	343	595
1800	1400	400	344	595
1400	1400	0	344	595
11.8	1400	-1388.2	344	596
1800	1400	400	345	596
2310	1400	910	346	596
2410	1400	1010	347	596
1800	1400	400	348	596
1800	1400	400	349	596
2270	1400	870	350	596
1690	1400	290	351	596
1570	1400	170	352	596
1440	1400	40	353	596
1400	1800	-400	353	597
11.8	1800	-1788.2	353	598
1800	1800	0	353	598
2310	1800	510	354	598
2410	1800	610	355	598
1800	1800	0	355	598
1800	1800	0	355	598
2270	1800	470	356	598
1690	1800	-110	356	599
1570	1800	-230	356	600
1440	1800	-360	356	601
11.8	1400	-1388.2	356	602

1800	1400	400	357	602
2310	1400	910	358	602
2410	1400	1010	359	602
1800	1400	400	360	602
1800	1400	400	361	602
2270	1400	870	362	602
1690	1400	290	363	602
1570	1400	170	364	602
1440	1400	40	365	602
1800	11.8	1788.2	366	602
2310	11.8	2298.2	367	602
2410	11.8	2398.2	368	602
1800	11.8	1788.2	369	602
1800	11.8	1788.2	370	602
2270	11.8	2258.2	371	602
1690	11.8	1678.2	372	602
1570	11.8	1558.2	373	602
1440	11.8	1428.2	374	602
2310	1800	510	375	602
2410	1800	610	376	602
1800	1800	0	376	602
1800	1800	0	376	602
2270	1800	470	377	602
1690	1800	-110	377	603
1570	1800	-230	377	604
1440	1800	-360	377	605
2410	2310	100	378	605
1800	2310	-510	378	606
1800	2310	-510	378	607
2270	2310	-40	378	608
1690	2310	-620	378	609
1570	2310	-740	378	610
1440	2310	-870	378	611
1800	2410	-610	378	612
1800	2410	-610	378	613
2270	2410	-140	378	614
1690	2410	-720	378	615
1570	2410	-840	378	616
1440	2410	-970	378	617
1800	1800	0	378	617
2270	1800	470	379	617
1690	1800	-110	379	618
1570	1800	-230	379	619
1440	1800	-360	379	620
2270	1800	470	380	620
1690	1800	-110	380	621
1570	1800	-230	380	622
1440	1800	-360	380	623
1690	2270	-580	380	624
1570	2270	-700	380	625

1440	2270	-830	380	626
1570	1690	-120	380	627
1440	1690	-250	380	628
1440	1570	-130	380	629

S Statistic = 380 - 629 = -249

Tied Group	Value	Members
1	1810	2
2	1870	3
3	1880	2
4	1910	2
5	1820	2
6	1780	2
7	1800	6
8	1400	3

Time Period	Observations
11/24/2009	1
1/27/2010	1
3/4/2010	1
4/30/2010	1
7/26/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1
1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1
12/6/2011	1
1/13/2012	1
2/21/2012	1
3/20/2012	1
4/27/2012	1
5/24/2012	1
6/15/2012	1
7/26/2012	1
8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1

1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 732

B = 0

C = 132

D = 0

E = 52

F = 0

a = 200790

b = 819720

c = 4140

Group Variance = 11114.3

Z-Score = -2.35239

Comparison Level at $1.0 - (0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)

$|-2.35239| > 2.32634$ indicating a trend

Mann-Kendall Trend Analysis

Parameter: Total Dissolved Solids

Location: MW-4

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
1870	1980	-110	0	1
1610	1980	-370	0	2
1140	1980	-840	0	3
1750	1980	-230	0	4
1880	1980	-100	0	5
1820	1980	-160	0	6
1820	1980	-160	0	7
1840	1980	-140	0	8
1870	1980	-110	0	9
1820	1980	-160	0	10
1810	1980	-170	0	11
1810	1980	-170	0	12
1860	1980	-120	0	13
1980	1980	0	0	13
1950	1980	-30	0	14
1800	1980	-180	0	15
1560	1980	-420	0	16
1730	1980	-250	0	17
1840	1980	-140	0	18
1880	1980	-100	0	19
1830	1980	-150	0	20
1840	1980	-140	0	21
1860	1980	-120	0	22
1820	1980	-160	0	23
1840	1980	-140	0	24
1860	1980	-120	0	25
1800	1980	-180	0	26
1600	1980	-380	0	27
1700	1980	-280	0	28
1900	1980	-80	0	29
1300	1980	-680	0	30
1400	1980	-580	0	31
1300	1980	-680	0	32
1800	1980	-180	0	33
1400	1980	-580	0	34
1090	1980	-890	0	35
1790	1980	-190	0	36
2250	1980	270	1	36
2190	1980	210	2	36
1770	1980	-210	2	37
1770	1980	-210	2	38
2400	1980	420	3	38
1730	1980	-250	3	39
1580	1980	-400	3	40
1450	1980	-530	3	41
1610	1870	-260	3	42

1140	1870	-730	3	43
1750	1870	-120	3	44
1880	1870	10	4	44
1820	1870	-50	4	45
1820	1870	-50	4	46
1840	1870	-30	4	47
1870	1870	0	4	47
1820	1870	-50	4	48
1810	1870	-60	4	49
1810	1870	-60	4	50
1860	1870	-10	4	51
1980	1870	110	5	51
1950	1870	80	6	51
1800	1870	-70	6	52
1560	1870	-310	6	53
1730	1870	-140	6	54
1840	1870	-30	6	55
1880	1870	10	7	55
1830	1870	-40	7	56
1840	1870	-30	7	57
1860	1870	-10	7	58
1820	1870	-50	7	59
1840	1870	-30	7	60
1860	1870	-10	7	61
1800	1870	-70	7	62
1600	1870	-270	7	63
1700	1870	-170	7	64
1900	1870	30	8	64
1300	1870	-570	8	65
1400	1870	-470	8	66
1300	1870	-570	8	67
1800	1870	-70	8	68
1400	1870	-470	8	69
1090	1870	-780	8	70
1790	1870	-80	8	71
2250	1870	380	9	71
2190	1870	320	10	71
1770	1870	-100	10	72
1770	1870	-100	10	73
2400	1870	530	11	73
1730	1870	-140	11	74
1580	1870	-290	11	75
1450	1870	-420	11	76
1140	1610	-470	11	77
1750	1610	140	12	77
1880	1610	270	13	77
1820	1610	210	14	77
1820	1610	210	15	77
1840	1610	230	16	77
1870	1610	260	17	77
1820	1610	210	18	77
1810	1610	200	19	77
1810	1610	200	20	77
1860	1610	250	21	77
1980	1610	370	22	77
1950	1610	340	23	77

1800	1610	190	24	77
1560	1610	-50	24	78
1730	1610	120	25	78
1840	1610	230	26	78
1880	1610	270	27	78
1830	1610	220	28	78
1840	1610	230	29	78
1860	1610	250	30	78
1820	1610	210	31	78
1840	1610	230	32	78
1860	1610	250	33	78
1800	1610	190	34	78
1600	1610	-10	34	79
1700	1610	90	35	79
1900	1610	290	36	79
1300	1610	-310	36	80
1400	1610	-210	36	81
1300	1610	-310	36	82
1800	1610	190	37	82
1400	1610	-210	37	83
1090	1610	-520	37	84
1790	1610	180	38	84
2250	1610	640	39	84
2190	1610	580	40	84
1770	1610	160	41	84
1770	1610	160	42	84
2400	1610	790	43	84
1730	1610	120	44	84
1580	1610	-30	44	85
1450	1610	-160	44	86
1750	1140	610	45	86
1880	1140	740	46	86
1820	1140	680	47	86
1820	1140	680	48	86
1840	1140	700	49	86
1870	1140	730	50	86
1820	1140	680	51	86
1810	1140	670	52	86
1810	1140	670	53	86
1860	1140	720	54	86
1980	1140	840	55	86
1950	1140	810	56	86
1800	1140	660	57	86
1560	1140	420	58	86
1730	1140	590	59	86
1840	1140	700	60	86
1880	1140	740	61	86
1830	1140	690	62	86
1840	1140	700	63	86
1860	1140	720	64	86
1820	1140	680	65	86
1840	1140	700	66	86
1860	1140	720	67	86
1800	1140	660	68	86
1600	1140	460	69	86
1700	1140	560	70	86

1900	1140	760	71	86
1300	1140	160	72	86
1400	1140	260	73	86
1300	1140	160	74	86
1800	1140	660	75	86
1400	1140	260	76	86
1090	1140	-50	76	87
1790	1140	650	77	87
2250	1140	1110	78	87
2190	1140	1050	79	87
1770	1140	630	80	87
1770	1140	630	81	87
2400	1140	1260	82	87
1730	1140	590	83	87
1580	1140	440	84	87
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1800	1860	-60	303	461
1600	1860	-260	303	462
1700	1860	-160	303	463
1900	1860	40	304	463
1300	1860	-560	304	464
1400	1860	-460	304	465
1300	1860	-560	304	466
1800	1860	-60	304	467
1400	1860	-460	304	468
1090	1860	-770	304	469
1790	1860	-70	304	470
2250	1860	390	305	470
2190	1860	330	306	470
1770	1860	-90	306	471
1770	1860	-90	306	472
2400	1860	540	307	472
1730	1860	-130	307	473
1580	1860	-280	307	474
1450	1860	-410	307	475
1840	1820	20	308	475
1860	1820	40	309	475
1800	1820	-20	309	476
1600	1820	-220	309	477
1700	1820	-120	309	478
1900	1820	80	310	478
1300	1820	-520	310	479
1400	1820	-420	310	480
1300	1820	-520	310	481
1800	1820	-20	310	482
1400	1820	-420	310	483
1090	1820	-730	310	484
1790	1820	-30	310	485
2250	1820	430	311	485
2190	1820	370	312	485
1770	1820	-50	312	486
1770	1820	-50	312	487

2400	1820	580	313	487
1730	1820	-90	313	488
1580	1820	-240	313	489
1450	1820	-370	313	490
1860	1840	20	314	490
1800	1840	-40	314	491
1600	1840	-240	314	492
1700	1840	-140	314	493
1900	1840	60	315	493
1300	1840	-540	315	494
1400	1840	-440	315	495
1300	1840	-540	315	496
1800	1840	-40	315	497
1400	1840	-440	315	498
1090	1840	-750	315	499
1790	1840	-50	315	500
2250	1840	410	316	500
2190	1840	350	317	500
1770	1840	-70	317	501
1770	1840	-70	317	502
2400	1840	560	318	502
1730	1840	-110	318	503
1580	1840	-260	318	504
1450	1840	-390	318	505
1800	1860	-60	318	506
1600	1860	-260	318	507
1700	1860	-160	318	508
1900	1860	40	319	508
1300	1860	-560	319	509
1400	1860	-460	319	510
1300	1860	-560	319	511
1800	1860	-60	319	512
1400	1860	-460	319	513
1090	1860	-770	319	514
1790	1860	-70	319	515
2250	1860	390	320	515
2190	1860	330	321	515
1770	1860	-90	321	516
1770	1860	-90	321	517
2400	1860	540	322	517
1730	1860	-130	322	518
1580	1860	-280	322	519
1450	1860	-410	322	520
1600	1800	-200	322	521
1700	1800	-100	322	522
1900	1800	100	323	522
1300	1800	-500	323	523
1400	1800	-400	323	524
1300	1800	-500	323	525
1800	1800	0	323	525
1400	1800	-400	323	526
1090	1800	-710	323	527
1790	1800	-10	323	528
2250	1800	450	324	528

2190	1800	390	325	528
1770	1800	-30	325	529
1770	1800	-30	325	530
2400	1800	600	326	530
1730	1800	-70	326	531
1580	1800	-220	326	532
1450	1800	-350	326	533
1700	1600	100	327	533
1900	1600	300	328	533
1300	1600	-300	328	534
1400	1600	-200	328	535
1300	1600	-300	328	536
1800	1600	200	329	536
1400	1600	-200	329	537
1090	1600	-510	329	538
1790	1600	190	330	538
2250	1600	650	331	538
2190	1600	590	332	538
1770	1600	170	333	538
1770	1600	170	334	538
2400	1600	800	335	538
1730	1600	130	336	538
1580	1600	-20	336	539
1450	1600	-150	336	540
1900	1700	200	337	540
1300	1700	-400	337	541
1400	1700	-300	337	542
1300	1700	-400	337	543
1800	1700	100	338	543
1400	1700	-300	338	544
1090	1700	-610	338	545
1790	1700	90	339	545
2250	1700	550	340	545
2190	1700	490	341	545
1770	1700	70	342	545
1770	1700	70	343	545
2400	1700	700	344	545
1730	1700	30	345	545
1580	1700	-120	345	546
1450	1700	-250	345	547
1300	1900	-600	345	548
1400	1900	-500	345	549
1300	1900	-600	345	550
1800	1900	-100	345	551
1400	1900	-500	345	552
1090	1900	-810	345	553
1790	1900	-110	345	554
2250	1900	350	346	554
2190	1900	290	347	554
1770	1900	-130	347	555
1770	1900	-130	347	556
2400	1900	500	348	556
1730	1900	-170	348	557
1580	1900	-320	348	558

1450	1900	-450	348	559
1400	1300	100	349	559
1300	1300	0	349	559
1800	1300	500	350	559
1400	1300	100	351	559
1090	1300	-210	351	560
1790	1300	490	352	560
2250	1300	950	353	560
2190	1300	890	354	560
1770	1300	470	355	560
1770	1300	470	356	560
2400	1300	1100	357	560
1730	1300	430	358	560
1580	1300	280	359	560
1450	1300	150	360	560
1300	1400	-100	360	561
1800	1400	400	361	561
1400	1400	0	361	561
1090	1400	-310	361	562
1790	1400	390	362	562
2250	1400	850	363	562
2190	1400	790	364	562
1770	1400	370	365	562
1770	1400	370	366	562
2400	1400	1000	367	562
1730	1400	330	368	562
1580	1400	180	369	562
1450	1400	50	370	562
1800	1300	500	371	562
1400	1300	100	372	562
1090	1300	-210	372	563
1790	1300	490	373	563
2250	1300	950	374	563
2190	1300	890	375	563
1770	1300	470	376	563
1770	1300	470	377	563
2400	1300	1100	378	563
1730	1300	430	379	563
1580	1300	280	380	563
1450	1300	150	381	563
1400	1800	-400	381	564
1090	1800	-710	381	565
1790	1800	-10	381	566
2250	1800	450	382	566
2190	1800	390	383	566
1770	1800	-30	383	567
1770	1800	-30	383	568
2400	1800	600	384	568
1730	1800	-70	384	569
1580	1800	-220	384	570
1450	1800	-350	384	571
1090	1400	-310	384	572

1790	1400	390	385	572
2250	1400	850	386	572
2190	1400	790	387	572
1770	1400	370	388	572
1770	1400	370	389	572
2400	1400	1000	390	572
1730	1400	330	391	572
1580	1400	180	392	572
1450	1400	50	393	572
1790	1090	700	394	572
2250	1090	1160	395	572
2190	1090	1100	396	572
1770	1090	680	397	572
1770	1090	680	398	572
2400	1090	1310	399	572
1730	1090	640	400	572
1580	1090	490	401	572
1450	1090	360	402	572
2250	1790	460	403	572
2190	1790	400	404	572
1770	1790	-20	404	573
1770	1790	-20	404	574
2400	1790	610	405	574
1730	1790	-60	405	575
1580	1790	-210	405	576
1450	1790	-340	405	577
2190	2250	-60	405	578
1770	2250	-480	405	579
1770	2250	-480	405	580
2400	2250	150	406	580
1730	2250	-520	406	581
1580	2250	-670	406	582
1450	2250	-800	406	583
1770	2190	-420	406	584
1770	2190	-420	406	585
2400	2190	210	407	585
1730	2190	-460	407	586
1580	2190	-610	407	587
1450	2190	-740	407	588
1770	1770	0	407	588
2400	1770	630	408	588
1730	1770	-40	408	589
1580	1770	-190	408	590
1450	1770	-320	408	591
2400	1770	630	409	591
1730	1770	-40	409	592
1580	1770	-190	409	593
1450	1770	-320	409	594
1730	2400	-670	409	595
1580	2400	-820	409	596

1450	2400	-950	409	597
1580	1730	-150	409	598
1450	1730	-280	409	599
1450	1580	-130	409	600

S Statistic = 409 - 600 = -191

Tied Group	Value	Members
1	1980	2
2	1870	2
3	1880	2
4	1820	4
5	1840	4
6	1810	2
7	1860	3
8	1800	3
9	1730	2
10	1300	2
11	1400	2
12	1770	2

Time Period	Observations
11/24/2009	1
1/27/2010	1
3/4/2010	1
4/30/2010	1
7/26/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1
1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1
12/6/2011	1
1/13/2012	1
2/21/2012	1
3/20/2012	1
4/27/2012	1
5/24/2012	1
6/15/2012	1
7/26/2012	1
8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1

1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
1/27/2016	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 588

B = 0

C = 60

D = 0

E = 52

F = 0

a = 200790

b = 819720

c = 4140

Group Variance = 11122.3

Z-Score = -1.80159

Comparison Level at 1.0 - $(0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)

$|-1.80159| \leq 2.32634$ indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Total Dissolved Solids

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
1720	1990	-270	0	1
1610	1990	-380	0	2
2740	1990	750	1	2
1820	1990	-170	1	3
2030	1990	40	2	3
1940	1990	-50	2	4
1800	1990	-190	2	5
1920	1990	-70	2	6
1880	1990	-110	2	7
1950	1990	-40	2	8
1910	1990	-80	2	9
1820	1990	-170	2	10
1880	1990	-110	2	11
1950	1990	-40	2	12
1900	1990	-90	2	13
1840	1990	-150	2	14
1740	1990	-250	2	15
1740	1990	-250	2	16
1940	1990	-50	2	17
1880	1990	-110	2	18
1880	1990	-110	2	19
2010	1990	20	3	19
2020	1990	30	4	19
1670	1990	-320	4	20
1940	1990	-50	4	21
1790	1990	-200	4	22
1900	1990	-90	4	23
1700	1990	-290	4	24
1800	1990	-190	4	25
1800	1990	-190	4	26
1300	1990	-690	4	27
1300	1990	-690	4	28
1400	1990	-590	4	29
1500	1990	-490	4	30
1300	1990	-690	4	31
1800	1990	-190	4	32
2000	1990	10	5	32
1400	1990	-590	5	33
2280	1990	290	6	33
1260	1990	-730	6	34
1890	1990	-100	6	35
1780	1990	-210	6	36
1080	1990	-910	6	37
2110	1990	120	7	37
2290	1990	300	8	37
2250	1990	260	9	37
1800	1990	-190	9	38

1760	1990	-230	9	39
2410	1990	420	10	39
1780	1990	-210	10	40
2510	1990	520	11	40
2460	1990	470	12	40
2570	1990	580	13	40
1780	1990	-210	13	41
1720	1990	-270	13	42
1580	1990	-410	13	43
1580	1990	-410	13	44
1400	1990	-590	13	45
1610	1720	-110	13	46
2740	1720	1020	14	46
1820	1720	100	15	46
2030	1720	310	16	46
1940	1720	220	17	46
1800	1720	80	18	46
1920	1720	200	19	46
1880	1720	160	20	46
1950	1720	230	21	46
1910	1720	190	22	46
1820	1720	100	23	46
1880	1720	160	24	46
1950	1720	230	25	46
1900	1720	180	26	46
1840	1720	120	27	46
1740	1720	20	28	46
1740	1720	20	29	46
1940	1720	220	30	46
1880	1720	160	31	46
1880	1720	160	32	46
2010	1720	290	33	46
2020	1720	300	34	46
1670	1720	-50	34	47
1940	1720	220	35	47
1790	1720	70	36	47
1900	1720	180	37	47
1700	1720	-20	37	48
1800	1720	80	38	48
1800	1720	80	39	48
1300	1720	-420	39	49
1300	1720	-420	39	50
1400	1720	-320	39	51
1500	1720	-220	39	52
1300	1720	-420	39	53
1800	1720	80	40	53
2000	1720	280	41	53
1400	1720	-320	41	54
2280	1720	560	42	54
1260	1720	-460	42	55
1890	1720	170	43	55
1780	1720	60	44	55
1080	1720	-640	44	56
2110	1720	390	45	56
2290	1720	570	46	56
2250	1720	530	47	56

1800	1720	80	48	56
1760	1720	40	49	56
2410	1720	690	50	56
1780	1720	60	51	56
2510	1720	790	52	56
2460	1720	740	53	56
2570	1720	850	54	56
1780	1720	60	55	56
1720	1720	0	55	56
1580	1720	-140	55	57
1580	1720	-140	55	58
1400	1720	-320	55	59
2740	1610	1130	56	59
1820	1610	210	57	59
2030	1610	420	58	59
1940	1610	330	59	59
1800	1610	190	60	59
1920	1610	310	61	59
1880	1610	270	62	59
1950	1610	340	63	59
1910	1610	300	64	59
1820	1610	210	65	59
1880	1610	270	66	59
1950	1610	340	67	59
1900	1610	290	68	59
1840	1610	230	69	59
1740	1610	130	70	59
1740	1610	130	71	59
1940	1610	330	72	59
1880	1610	270	73	59
1880	1610	270	74	59
2010	1610	400	75	59
2020	1610	410	76	59
1670	1610	60	77	59
1940	1610	330	78	59
1790	1610	180	79	59
1900	1610	290	80	59
1700	1610	90	81	59
1800	1610	190	82	59
1800	1610	190	83	59
1300	1610	-310	83	60
1300	1610	-310	83	61
1400	1610	-210	83	62
1500	1610	-110	83	63
1300	1610	-310	83	64
1800	1610	190	84	64
2000	1610	390	85	64
1400	1610	-210	85	65
2280	1610	670	86	65
1260	1610	-350	86	66
1890	1610	280	87	66
1780	1610	170	88	66
1080	1610	-530	88	67
2110	1610	500	89	67
2290	1610	680	90	67
2250	1610	640	91	67

1800	1610	190	92	67
1760	1610	150	93	67
2410	1610	800	94	67
1780	1610	170	95	67
2510	1610	900	96	67
2460	1610	850	97	67
2570	1610	960	98	67
1780	1610	170	99	67
1720	1610	110	100	67
1580	1610	-30	100	68
1580	1610	-30	100	69
1400	1610	-210	100	70
1820	2740	-920	100	71
2030	2740	-710	100	72
1940	2740	-800	100	73
1800	2740	-940	100	74
1920	2740	-820	100	75
1880	2740	-860	100	76
1950	2740	-790	100	77
1910	2740	-830	100	78
1820	2740	-920	100	79
1880	2740	-860	100	80
1950	2740	-790	100	81
1900	2740	-840	100	82
1840	2740	-900	100	83
1740	2740	-1000	100	84
1740	2740	-1000	100	85
1940	2740	-800	100	86
1880	2740	-860	100	87
1880	2740	-860	100	88
2010	2740	-730	100	89
2020	2740	-720	100	90
1670	2740	-1070	100	91
1940	2740	-800	100	92
1790	2740	-950	100	93
1900	2740	-840	100	94
1700	2740	-1040	100	95
1800	2740	-940	100	96
1800	2740	-940	100	97
1300	2740	-1440	100	98
1300	2740	-1440	100	99
1400	2740	-1340	100	100
1500	2740	-1240	100	101
1300	2740	-1440	100	102
1800	2740	-940	100	103
2000	2740	-740	100	104
1400	2740	-1340	100	105
2280	2740	-460	100	106
1260	2740	-1480	100	107
1890	2740	-850	100	108
1780	2740	-960	100	109
1080	2740	-1660	100	110
2110	2740	-630	100	111
2290	2740	-450	100	112
2250	2740	-490	100	113
1800	2740	-940	100	114

1760	2740	-980	100	115
2410	2740	-330	100	116
1780	2740	-960	100	117
2510	2740	-230	100	118
2460	2740	-280	100	119
2570	2740	-170	100	120
1780	2740	-960	100	121
1720	2740	-1020	100	122
1580	2740	-1160	100	123
1580	2740	-1160	100	124
1400	2740	-1340	100	125
2030	1820	210	101	125
1940	1820	120	102	125
1800	1820	-20	102	126
1920	1820	100	103	126
1880	1820	60	104	126
1950	1820	130	105	126
1910	1820	90	106	126
1820	1820	0	106	126
1880	1820	60	107	126
1950	1820	130	108	126
1900	1820	80	109	126
1840	1820	20	110	126
1740	1820	-80	110	127
1740	1820	-80	110	128
1940	1820	120	111	128
1880	1820	60	112	128
1880	1820	60	113	128
2010	1820	190	114	128
2020	1820	200	115	128
1670	1820	-150	115	129
1940	1820	120	116	129
1790	1820	-30	116	130
1900	1820	80	117	130
1700	1820	-120	117	131
1800	1820	-20	117	132
1800	1820	-20	117	133
1300	1820	-520	117	134
1300	1820	-520	117	135
1400	1820	-420	117	136
1500	1820	-320	117	137
1300	1820	-520	117	138
1800	1820	-20	117	139
2000	1820	180	118	139
1400	1820	-420	118	140
2280	1820	460	119	140
1260	1820	-560	119	141
1890	1820	70	120	141
1780	1820	-40	120	142
1080	1820	-740	120	143
2110	1820	290	121	143
2290	1820	470	122	143
2250	1820	430	123	143
1800	1820	-20	123	144
1760	1820	-60	123	145
2410	1820	590	124	145

1780	1820	-40	124	146
2510	1820	690	125	146
2460	1820	640	126	146
2570	1820	750	127	146
1780	1820	-40	127	147
1720	1820	-100	127	148
1580	1820	-240	127	149
1580	1820	-240	127	150
1400	1820	-420	127	151
1940	2030	-90	127	152
1800	2030	-230	127	153
1920	2030	-110	127	154
1880	2030	-150	127	155
1950	2030	-80	127	156
1910	2030	-120	127	157
1820	2030	-210	127	158
1880	2030	-150	127	159
1950	2030	-80	127	160
1900	2030	-130	127	161
1840	2030	-190	127	162
1740	2030	-290	127	163
1740	2030	-290	127	164
1940	2030	-90	127	165
1880	2030	-150	127	166
1880	2030	-150	127	167
2010	2030	-20	127	168
2020	2030	-10	127	169
1670	2030	-360	127	170
1940	2030	-90	127	171
1790	2030	-240	127	172
1900	2030	-130	127	173
1700	2030	-330	127	174
1800	2030	-230	127	175
1800	2030	-230	127	176
1300	2030	-730	127	177
1300	2030	-730	127	178
1400	2030	-630	127	179
1500	2030	-530	127	180
1300	2030	-730	127	181
1800	2030	-230	127	182
2000	2030	-30	127	183
1400	2030	-630	127	184
2280	2030	250	128	184
1260	2030	-770	128	185
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2020	1920	100	179	264
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1900	1920	-20	180	267
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1800	1920	-120	180	276
2000	1920	80	181	276
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1700	2010	-310	404	629

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1580	1890	-310	685	859
1400	1890	-490	685	860
1080	1780	-700	685	861
2110	1780	330	686	861
2290	1780	510	687	861
2250	1780	470	688	861
1800	1780	20	689	861
1760	1780	-20	689	862
2410	1780	630	690	862
1780	1780	0	690	862
2510	1780	730	691	862
2460	1780	680	692	862
2570	1780	790	693	862
1780	1780	0	693	862
1720	1780	-60	693	863
1580	1780	-200	693	864
1580	1780	-200	693	865
1400	1780	-380	693	866
2110	1080	1030	694	866
2290	1080	1210	695	866
2250	1080	1170	696	866
1800	1080	720	697	866
1760	1080	680	698	866
2410	1080	1330	699	866
1780	1080	700	700	866
2510	1080	1430	701	866
2460	1080	1380	702	866

2570	1080	1490	703	866
1780	1080	700	704	866
1720	1080	640	705	866
1580	1080	500	706	866
1580	1080	500	707	866
1400	1080	320	708	866
2290	2110	180	709	866
2250	2110	140	710	866
1800	2110	-310	710	867
1760	2110	-350	710	868
2410	2110	300	711	868
1780	2110	-330	711	869
2510	2110	400	712	869
2460	2110	350	713	869
2570	2110	460	714	869
1780	2110	-330	714	870
1720	2110	-390	714	871
1580	2110	-530	714	872
1580	2110	-530	714	873
1400	2110	-710	714	874
2250	2290	-40	714	875
1800	2290	-490	714	876
1760	2290	-530	714	877
2410	2290	120	715	877
1780	2290	-510	715	878
2510	2290	220	716	878
2460	2290	170	717	878
2570	2290	280	718	878
1780	2290	-510	718	879
1720	2290	-570	718	880
1580	2290	-710	718	881
1580	2290	-710	718	882
1400	2290	-890	718	883
1800	2250	-450	718	884
1760	2250	-490	718	885
2410	2250	160	719	885
1780	2250	-470	719	886
2510	2250	260	720	886
2460	2250	210	721	886
2570	2250	320	722	886
1780	2250	-470	722	887
1720	2250	-530	722	888
1580	2250	-670	722	889
1580	2250	-670	722	890
1400	2250	-850	722	891
1760	1800	-40	722	892
2410	1800	610	723	892
1780	1800	-20	723	893
2510	1800	710	724	893
2460	1800	660	725	893
2570	1800	770	726	893
1780	1800	-20	726	894
1720	1800	-80	726	895

1580	1800	-220	726	896
1580	1800	-220	726	897
1400	1800	-400	726	898
2410	1760	650	727	898
1780	1760	20	728	898
2510	1760	750	729	898
2460	1760	700	730	898
2570	1760	810	731	898
1780	1760	20	732	898
1720	1760	-40	732	899
1580	1760	-180	732	900
1580	1760	-180	732	901
1400	1760	-360	732	902
1780	2410	-630	732	903
2510	2410	100	733	903
2460	2410	50	734	903
2570	2410	160	735	903
1780	2410	-630	735	904
1720	2410	-690	735	905
1580	2410	-830	735	906
1580	2410	-830	735	907
1400	2410	-1010	735	908
2510	1780	730	736	908
2460	1780	680	737	908
2570	1780	790	738	908
1780	1780	0	738	908
1720	1780	-60	738	909
1580	1780	-200	738	910
1580	1780	-200	738	911
1400	1780	-380	738	912
2460	2510	-50	738	913
2570	2510	60	739	913
1780	2510	-730	739	914
1720	2510	-790	739	915
1580	2510	-930	739	916
1580	2510	-930	739	917
1400	2510	-1110	739	918
2570	2460	110	740	918
1780	2460	-680	740	919
1720	2460	-740	740	920
1580	2460	-880	740	921
1580	2460	-880	740	922
1400	2460	-1060	740	923
1780	2570	-790	740	924
1720	2570	-850	740	925
1580	2570	-990	740	926
1580	2570	-990	740	927
1400	2570	-1170	740	928
1720	1780	-60	740	929
1580	1780	-200	740	930

1580	1780	-200	740	931
1400	1780	-380	740	932
1580	1720	-140	740	933
1580	1720	-140	740	934
1400	1720	-320	740	935
1580	1580	0	740	935
1400	1580	-180	740	936
1400	1580	-180	740	937

S Statistic = 740 - 937 = -197

Tied Group	Value	Members
1	1720	2
2	1820	2
3	1940	3
4	1800	5
5	1880	4
6	1950	2
7	1900	2
8	1740	2
9	1300	3
10	1400	3
11	1780	3
12	1580	2

Time Period	Observations
11/24/2009	1
1/27/2010	1
3/4/2010	1
4/30/2010	1
7/26/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1
1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1
12/6/2011	1
1/13/2012	1
2/21/2012	1
3/20/2012	1
4/27/2012	1
5/24/2012	1
6/15/2012	1
7/26/2012	1

8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1
1/29/2013	1
4/17/2013	1
7/29/2013	1
10/30/2013	1
1/31/2014	1
4/18/2014	1
7/17/2014	1
10/23/2014	1
1/27/2015	1
4/13/2015	1
7/21/2015	1
10/20/2015	1
1/27/2016	1
4/26/2016	1
7/26/2016	1
10/31/2016	1
1/30/2017	1
4/27/2017	1
7/24/2017	1
10/27/2017	1
1/29/2018	1
4/12/2018	1
7/24/2018	1
10/29/2018	1
1/30/2019	1
4/29/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 828

B = 0

C = 108

D = 0

E = 68

F = 0

a = 420906

b = 1.75549e+006

c = 6844

Group Variance = 23337.7

Z-Score = -1.283

Comparison Level at 1.0 - $(0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)

$|-1.283| \leq 2.32634$ indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Total Dissolved Solids

Location: MW-6

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
1840	2290	-450	0	1
1780	2290	-510	0	2
2820	2290	530	1	2
1770	2290	-520	1	3
1960	2290	-330	1	4
1900	2290	-390	1	5
1880	2290	-410	1	6
2000	2290	-290	1	7
1920	2290	-370	1	8
1930	2290	-360	1	9
1940	2290	-350	1	10
1820	2290	-470	1	11
1910	2290	-380	1	12
2170	2290	-120	1	13
2010	2290	-280	1	14
1920	2290	-370	1	15
1850	2290	-440	1	16
1770	2290	-520	1	17
1950	2290	-340	1	18
2030	2290	-260	1	19
1950	2290	-340	1	20
2050	2290	-240	1	21
2020	2290	-270	1	22
1830	2290	-460	1	23
1920	2290	-370	1	24
1920	2290	-370	1	25
1900	2290	-390	1	26
1700	2290	-590	1	27
1800	2290	-490	1	28
1900	2290	-390	1	29
1300	2290	-990	1	30
1400	2290	-890	1	31
1400	2290	-890	1	32
1400	2290	-890	1	33
1200	2290	-1090	1	34
1900	2290	-390	1	35
2000	2290	-290	1	36
1500	2290	-790	1	37
6160	2290	3870	2	37
1200	2290	-1090	2	38
1850	2290	-440	2	39
1800	2290	-490	2	40
1130	2290	-1160	2	41
2250	2290	-40	2	42
2200	2290	-90	2	43
2340	2290	50	3	43
1700	2290	-590	3	44

1780	2290	-510	3	45
2350	2290	60	4	45
1800	2290	-490	4	46
2510	2290	220	5	46
2510	2290	220	6	46
2540	2290	250	7	46
1840	2290	-450	7	47
1720	2290	-570	7	48
1560	2290	-730	7	49
1570	2290	-720	7	50
1540	2290	-750	7	51
1780	1840	-60	7	52
2820	1840	980	8	52
1770	1840	-70	8	53
1960	1840	120	9	53
1900	1840	60	10	53
1880	1840	40	11	53
2000	1840	160	12	53
1920	1840	80	13	53
1930	1840	90	14	53
1940	1840	100	15	53
1820	1840	-20	15	54
1910	1840	70	16	54
2170	1840	330	17	54
2010	1840	170	18	54
1920	1840	80	19	54
1850	1840	10	20	54
1770	1840	-70	20	55
1950	1840	110	21	55
2030	1840	190	22	55
1950	1840	110	23	55
2050	1840	210	24	55
2020	1840	180	25	55
1830	1840	-10	25	56
1920	1840	80	26	56
1920	1840	80	27	56
1900	1840	60	28	56
1700	1840	-140	28	57
1800	1840	-40	28	58
1900	1840	60	29	58
1300	1840	-540	29	59
1400	1840	-440	29	60
1400	1840	-440	29	61
1400	1840	-440	29	62
1200	1840	-640	29	63
1900	1840	60	30	63
2000	1840	160	31	63
1500	1840	-340	31	64
6160	1840	4320	32	64
1200	1840	-640	32	65
1850	1840	10	33	65
1800	1840	-40	33	66
1130	1840	-710	33	67
2250	1840	410	34	67
2200	1840	360	35	67
2340	1840	500	36	67

1700	1840	-140	36	68
1780	1840	-60	36	69
2350	1840	510	37	69
1800	1840	-40	37	70
2510	1840	670	38	70
2510	1840	670	39	70
2540	1840	700	40	70
1840	1840	0	40	70
1720	1840	-120	40	71
1560	1840	-280	40	72
1570	1840	-270	40	73
1540	1840	-300	40	74
2820	1780	1040	41	74
1770	1780	-10	41	75
1960	1780	180	42	75
1900	1780	120	43	75
1880	1780	100	44	75
2000	1780	220	45	75
1920	1780	140	46	75
1930	1780	150	47	75
1940	1780	160	48	75
1820	1780	40	49	75
1910	1780	130	50	75
2170	1780	390	51	75
2010	1780	230	52	75
1920	1780	140	53	75
1850	1780	70	54	75
1770	1780	-10	54	76
1950	1780	170	55	76
2030	1780	250	56	76
1950	1780	170	57	76
2050	1780	270	58	76
2020	1780	240	59	76
1830	1780	50	60	76
1920	1780	140	61	76
1920	1780	140	62	76
1900	1780	120	63	76
1700	1780	-80	63	77
1800	1780	20	64	77
1900	1780	120	65	77
1300	1780	-480	65	78
1400	1780	-380	65	79
1400	1780	-380	65	80
1400	1780	-380	65	81
1200	1780	-580	65	82
1900	1780	120	66	82
2000	1780	220	67	82
1500	1780	-280	67	83
6160	1780	4380	68	83
1200	1780	-580	68	84
1850	1780	70	69	84
1800	1780	20	70	84
1130	1780	-650	70	85
2250	1780	470	71	85
2200	1780	420	72	85
2340	1780	560	73	85

1700	1780	-80	73	86
1780	1780	0	73	86
2350	1780	570	74	86
1800	1780	20	75	86
2510	1780	730	76	86
2510	1780	730	77	86
2540	1780	760	78	86
1840	1780	60	79	86
1720	1780	-60	79	87
1560	1780	-220	79	88
1570	1780	-210	79	89
1540	1780	-240	79	90
1770	2820	-1050	79	91
1960	2820	-860	79	92
1900	2820	-920	79	93
1880	2820	-940	79	94
2000	2820	-820	79	95
1920	2820	-900	79	96
1930	2820	-890	79	97
1940	2820	-880	79	98
1820	2820	-1000	79	99
1910	2820	-910	79	100
2170	2820	-650	79	101
2010	2820	-810	79	102
1920	2820	-900	79	103
1850	2820	-970	79	104
1770	2820	-1050	79	105
1950	2820	-870	79	106
2030	2820	-790	79	107
1950	2820	-870	79	108
2050	2820	-770	79	109
2020	2820	-800	79	110
1830	2820	-990	79	111
1920	2820	-900	79	112
1920	2820	-900	79	113
1900	2820	-920	79	114
1700	2820	-1120	79	115
1800	2820	-1020	79	116
1900	2820	-920	79	117
1300	2820	-1520	79	118
1400	2820	-1420	79	119
1400	2820	-1420	79	120
1400	2820	-1420	79	121
1200	2820	-1620	79	122
1900	2820	-920	79	123
2000	2820	-820	79	124
1500	2820	-1320	79	125
6160	2820	3340	80	125
1200	2820	-1620	80	126
1850	2820	-970	80	127
1800	2820	-1020	80	128
1130	2820	-1690	80	129
2250	2820	-570	80	130
2200	2820	-620	80	131
2340	2820	-480	80	132
1700	2820	-1120	80	133

1780	2820	-1040	80	134
2350	2820	-470	80	135
1800	2820	-1020	80	136
2510	2820	-310	80	137
2510	2820	-310	80	138
2540	2820	-280	80	139
1840	2820	-980	80	140
1720	2820	-1100	80	141
1560	2820	-1260	80	142
1570	2820	-1250	80	143
1540	2820	-1280	80	144
1960	1770	190	81	144
1900	1770	130	82	144
1880	1770	110	83	144
2000	1770	230	84	144
1920	1770	150	85	144
1930	1770	160	86	144
1940	1770	170	87	144
1820	1770	50	88	144
1910	1770	140	89	144
2170	1770	400	90	144
2010	1770	240	91	144
1920	1770	150	92	144
1850	1770	80	93	144
1770	1770	0	93	144
1950	1770	180	94	144
2030	1770	260	95	144
1950	1770	180	96	144
2050	1770	280	97	144
2020	1770	250	98	144
1830	1770	60	99	144
1920	1770	150	100	144
1920	1770	150	101	144
1900	1770	130	102	144
1700	1770	-70	102	145
1800	1770	30	103	145
1900	1770	130	104	145
1300	1770	-470	104	146
1400	1770	-370	104	147
1400	1770	-370	104	148
1400	1770	-370	104	149
1200	1770	-570	104	150
1900	1770	130	105	150
2000	1770	230	106	150
1500	1770	-270	106	151
6160	1770	4390	107	151
1200	1770	-570	107	152
1850	1770	80	108	152
1800	1770	30	109	152
1130	1770	-640	109	153
2250	1770	480	110	153
2200	1770	430	111	153
2340	1770	570	112	153
1700	1770	-70	112	154
1780	1770	10	113	154
2350	1770	580	114	154

1800	1770	30	115	154
2510	1770	740	116	154
2510	1770	740	117	154
2540	1770	770	118	154
1840	1770	70	119	154
1720	1770	-50	119	155
1560	1770	-210	119	156
1570	1770	-200	119	157
1540	1770	-230	119	158
1900	1960	-60	119	159
1880	1960	-80	119	160
2000	1960	40	120	160
1920	1960	-40	120	161
1930	1960	-30	120	162
1940	1960	-20	120	163
1820	1960	-140	120	164
1910	1960	-50	120	165
2170	1960	210	121	165
2010	1960	50	122	165
1920	1960	-40	122	166
1850	1960	-110	122	167
1770	1960	-190	122	168
1950	1960	-10	122	169
2030	1960	70	123	169
1950	1960	-10	123	170
2050	1960	90	124	170
2020	1960	60	125	170
1830	1960	-130	125	171
1920	1960	-40	125	172
1920	1960	-40	125	173
1900	1960	-60	125	174
1700	1960	-260	125	175
1800	1960	-160	125	176
1900	1960	-60	125	177
1300	1960	-660	125	178
1400	1960	-560	125	179
1400	1960	-560	125	180
1400	1960	-560	125	181
1200	1960	-760	125	182
1900	1960	-60	125	183
2000	1960	40	126	183
1500	1960	-460	126	184
6160	1960	4200	127	184
1200	1960	-760	127	185
1850	1960	-110	127	186
1800	1960	-160	127	187
1130	1960	-830	127	188
2250	1960	290	128	188
2200	1960	240	129	188
2340	1960	380	130	188
1700	1960	-260	130	189
1780	1960	-180	130	190
2350	1960	390	131	190
1800	1960	-160	131	191
2510	1960	550	132	191
2510	1960	550	133	191

2540	1960	580	134	191
1840	1960	-120	134	192
1720	1960	-240	134	193
1560	1960	-400	134	194
1570	1960	-390	134	195
1540	1960	-420	134	196
1880	1900	-20	134	197
2000	1900	100	135	197
1920	1900	20	136	197
1930	1900	30	137	197
1940	1900	40	138	197
1820	1900	-80	138	198
1910	1900	10	139	198
2170	1900	270	140	198
2010	1900	110	141	198
1920	1900	20	142	198
1850	1900	-50	142	199
1770	1900	-130	142	200
1950	1900	50	143	200
2030	1900	130	144	200
1950	1900	50	145	200
2050	1900	150	146	200
2020	1900	120	147	200
1830	1900	-70	147	201
1920	1900	20	148	201
1920	1900	20	149	201
1900	1900	0	149	201
1700	1900	-200	149	202
1800	1900	-100	149	203
1900	1900	0	149	203
1300	1900	-600	149	204
1400	1900	-500	149	205
1400	1900	-500	149	206
1400	1900	-500	149	207
1200	1900	-700	149	208
1900	1900	0	149	208
2000	1900	100	150	208
1500	1900	-400	150	209
6160	1900	4260	151	209
1200	1900	-700	151	210
1850	1900	-50	151	211
1800	1900	-100	151	212
1130	1900	-770	151	213
2250	1900	350	152	213
2200	1900	300	153	213
2340	1900	440	154	213
1700	1900	-200	154	214
1780	1900	-120	154	215
2350	1900	450	155	215
1800	1900	-100	155	216
2510	1900	610	156	216
2510	1900	610	157	216
2540	1900	640	158	216
1840	1900	-60	158	217
1720	1900	-180	158	218
1560	1900	-340	158	219

1570	1900	-330	158	220
1540	1900	-360	158	221
2000	1880	120	159	221
1920	1880	40	160	221
1930	1880	50	161	221
1940	1880	60	162	221
1820	1880	-60	162	222
1910	1880	30	163	222
2170	1880	290	164	222
2010	1880	130	165	222
1920	1880	40	166	222
1850	1880	-30	166	223
1770	1880	-110	166	224
1950	1880	70	167	224
2030	1880	150	168	224
1950	1880	70	169	224
2050	1880	170	170	224
2020	1880	140	171	224
1830	1880	-50	171	225
1920	1880	40	172	225
1920	1880	40	173	225
1900	1880	20	174	225
1700	1880	-180	174	226
1800	1880	-80	174	227
1900	1880	20	175	227
1300	1880	-580	175	228
1400	1880	-480	175	229
1400	1880	-480	175	230
1400	1880	-480	175	231
1200	1880	-680	175	232
1900	1880	20	176	232
2000	1880	120	177	232
1500	1880	-380	177	233
6160	1880	4280	178	233
1200	1880	-680	178	234
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2250	1880	370	179	237
2200	1880	320	180	237
2340	1880	460	181	237
1700	1880	-180	181	238
1780	1880	-100	181	239
2350	1880	470	182	239
1800	1880	-80	182	240
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1560	1880	-320	185	243
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1540	1880	-340	185	245
1920	2000	-80	185	246
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2170	2000	170	186	250
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1920	2000	-80	187	251
1850	2000	-150	187	252
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2030	2000	30	188	254
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1850	2000	-150	191	271
1800	2000	-200	191	272
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2200	2000	200	193	273
2340	2000	340	194	273
1700	2000	-300	194	274
1780	2000	-220	194	275
2350	2000	350	195	275
1800	2000	-200	195	276
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1720	2000	-280	198	278
1560	2000	-440	198	279
1570	2000	-430	198	280
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1820	1920	-100	200	282
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2010	1920	90	202	283
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1770	1920	-150	202	285
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2030	1920	110	204	285
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2020	1920	100	207	285
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1200	1920	-720	207	295
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2000	1920	80	208	296
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1850	1920	-70	209	299
1800	1920	-120	209	300
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2250	1920	330	210	301
2200	1920	280	211	301
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2350	1920	430	213	303
1800	1920	-120	213	304
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2540	1920	620	216	304
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1720	1920	-200	216	306
1560	1920	-360	216	307
1570	1920	-350	216	308
1540	1920	-380	216	309
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1820	1930	-110	217	310
1910	1930	-20	217	311
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2010	1930	80	219	311
1920	1930	-10	219	312
1850	1930	-80	219	313
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1700	1930	-230	224	319
1800	1930	-130	224	320
1900	1930	-30	224	321
1300	1930	-630	224	322
1400	1930	-530	224	323
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1200	1930	-730	224	326
1900	1930	-30	224	327
2000	1930	70	225	327
1500	1930	-430	225	328
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1200	1930	-730	226	329
1850	1930	-80	226	330
1800	1930	-130	226	331
1130	1930	-800	226	332
2250	1930	320	227	332
2200	1930	270	228	332
2340	1930	410	229	332
1700	1930	-230	229	333
1780	1930	-150	229	334
2350	1930	420	230	334
1800	1930	-130	230	335
2510	1930	580	231	335
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2540	1930	610	233	335
1840	1930	-90	233	336
1720	1930	-210	233	337
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1570	1930	-360	233	339
1540	1930	-390	233	340
1820	1940	-120	233	341
1910	1940	-30	233	342
2170	1940	230	234	342
2010	1940	70	235	342
1920	1940	-20	235	343
1850	1940	-90	235	344
1770	1940	-170	235	345
1950	1940	10	236	345
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1920	1940	-20	240	347
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1800	1940	-140	240	351
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1300	1940	-640	240	353
1400	1940	-540	240	354
1400	1940	-540	240	355
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1900	1940	-40	240	358
2000	1940	60	241	358
1500	1940	-440	241	359
6160	1940	4220	242	359
1200	1940	-740	242	360
1850	1940	-90	242	361
1800	1940	-140	242	362
1130	1940	-810	242	363
2250	1940	310	243	363
2200	1940	260	244	363
2340	1940	400	245	363
1700	1940	-240	245	364
1780	1940	-160	245	365
2350	1940	410	246	365
1800	1940	-140	246	366
2510	1940	570	247	366
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2540	1940	600	249	366
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1720	1940	-220	249	368
1560	1940	-380	249	369
1570	1940	-370	249	370
1540	1940	-400	249	371
1910	1820	90	250	371
2170	1820	350	251	371
2010	1820	190	252	371
1920	1820	100	253	371
1850	1820	30	254	371
1770	1820	-50	254	372
1950	1820	130	255	372
2030	1820	210	256	372
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1300	1820	-520	264	375
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1400	1820	-420	264	377
1400	1820	-420	264	378
1200	1820	-620	264	379
1900	1820	80	265	379
2000	1820	180	266	379
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6160	1820	4340	267	380
1200	1820	-620	267	381
1850	1820	30	268	381
1800	1820	-20	268	382
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2340	1820	520	271	383
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1780	1820	-40	271	385
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1800	1820	-20	272	386
2510	1820	690	273	386
2510	1820	690	274	386
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1920	1910	10	285	393
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1800	1910	-110	286	396
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1800	1910	-110	292	411
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2540	1910	630	295	411
1840	1910	-70	295	412
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1900	2170	-270	295	429
1700	2170	-470	295	430
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1300	2170	-870	295	433
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1200	2170	-970	295	437
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1800	2170	-370	296	443
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1800	2170	-370	300	447
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1840	2170	-330	303	448
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2030	2010	20	304	456
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2050	2010	40	305	457
2020	2010	10	306	457

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1900	2010	-110	306	461
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1300	2010	-710	306	465
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1200	2010	-810	306	469
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1850	2010	-160	307	474
1800	2010	-210	307	475
1130	2010	-880	307	476
2250	2010	240	308	476
2200	2010	190	309	476
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1700	2010	-310	310	477
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2350	2010	340	311	478
1800	2010	-210	311	479
2510	2010	500	312	479
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2540	2010	530	314	479
1840	2010	-170	314	480
1720	2010	-290	314	481
1560	2010	-450	314	482
1570	2010	-440	314	483
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1850	1920	-70	314	485
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1400	1920	-520	319	493
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1200	1920	-720	319	496
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1800	1920	-120	321	501
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2200	1920	280	323	502
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1800	1920	-120	325	505
2510	1920	590	326	505
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1720	1920	-200	328	507
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2050	1850	200	332	511
2020	1850	170	333	511
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2200	1770	430	365	540
2340	1770	570	366	540
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1780	1770	10	367	541
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1800	1770	30	369	541
2510	1770	740	370	541
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2540	1770	770	372	541
1840	1770	70	373	541
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1570	1770	-200	373	544
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2020	1950	70	376	545
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1200	1950	-750	376	557
1900	1950	-50	376	558
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1700	1950	-250	381	564
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2350	1950	400	382	565
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2510	1950	560	383	566
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1200	2030	-830	386	585
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6160	2030	4130	387	588
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1200	1950	-750	396	612
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2350	1950	400	402	620
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1720	1950	-230	405	623
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1560	2350	-790	725	922
1570	2350	-780	725	923
1540	2350	-810	725	924
2510	1800	710	726	924
2510	1800	710	727	924
2540	1800	740	728	924
1840	1800	40	729	924
1720	1800	-80	729	925
1560	1800	-240	729	926
1570	1800	-230	729	927
1540	1800	-260	729	928
2510	2510	0	729	928
2540	2510	30	730	928
1840	2510	-670	730	929
1720	2510	-790	730	930
1560	2510	-950	730	931
1570	2510	-940	730	932
1540	2510	-970	730	933
2540	2510	30	731	933
1840	2510	-670	731	934
1720	2510	-790	731	935
1560	2510	-950	731	936
1570	2510	-940	731	937
1540	2510	-970	731	938
1840	2540	-700	731	939
1720	2540	-820	731	940
1560	2540	-980	731	941
1570	2540	-970	731	942
1540	2540	-1000	731	943
1720	1840	-120	731	944
1560	1840	-280	731	945

1570	1840	-270	731	946
1540	1840	-300	731	947
1560	1720	-160	731	948
1570	1720	-150	731	949
1540	1720	-180	731	950
1570	1560	10	732	950
1540	1560	-20	732	951
1540	1570	-30	732	952

S Statistic = 732 - 952 = -220

Tied Group	Value	Members
1	1840	2
2	1780	2
3	1770	2
4	1900	4
5	2000	2
6	1920	4
7	1850	2
8	1950	2
9	1700	2
10	1800	3
11	1400	3
12	1200	2
13	2510	2

Time Period	Observations
11/24/2009	1
1/27/2010	1
3/4/2010	1
4/30/2010	1
7/26/2010	1
10/13/2010	1
11/16/2010	1
12/27/2010	1
1/14/2011	1
2/11/2011	1
3/23/2011	1
4/21/2011	1
5/16/2011	1
6/9/2011	1
7/21/2011	1
8/8/2011	1
9/12/2011	1
10/31/2011	1
11/15/2011	1
12/6/2011	1
1/13/2012	1
2/21/2012	1
3/20/2012	1
4/27/2012	1
5/24/2012	1
6/15/2012	1

7/26/2012	1
8/15/2012	1
9/11/2012	1
10/18/2012	1
11/14/2012	1
12/5/2012	1
1/29/2013	1
4/17/2013	1
7/29/2013	1
10/30/2013	1
1/31/2014	1
4/18/2014	1
7/17/2014	1
10/23/2014	1
1/27/2015	1
4/13/2015	1
7/21/2015	1
10/20/2015	1
1/27/2016	1
4/26/2016	1
7/26/2016	1
10/31/2016	1
1/30/2017	1
4/27/2017	1
7/24/2017	1
10/27/2017	1
1/29/2018	1
4/12/2018	1
7/24/2018	1
10/29/2018	1
1/30/2019	1
4/29/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 606

B = 0

C = 60

D = 0

E = 54

F = 0

a = 420906

b = 1.75549e+006

c = 6844

Group Variance = 23350

Z-Score = -1.43318

Comparison Level at 1.0 - (0.02 / 2) = 99% confidence level = 2.32634 (two-tailed)

$|-1.43318| \leq 2.32634$ indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Total Dissolved Solids

Location: MW-7

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

98% Confidence Level

Xj	Xk	Xj - Xk	Positives	Negatives
1740	2360	-620	0	1
5820	2360	3460	1	1
2090	2360	-270	1	2
1940	2360	-420	1	3
1860	2360	-500	1	4
1820	2360	-540	1	5
2040	2360	-320	1	6
1820	2360	-540	1	7
1980	2360	-380	1	8
2070	2360	-290	1	9
2120	2360	-240	1	10
1900	2360	-460	1	11
1400	2360	-960	1	12
1500	2360	-860	1	13
2000	2360	-360	1	14
1400	2360	-960	1	15
1190	2360	-1170	1	16
2270	2360	-90	1	17
2630	2360	270	2	17
1730	2360	-630	2	18
1800	2360	-560	2	19
2610	2360	250	3	19
1850	2360	-510	3	20
1640	2360	-720	3	21
1590	2360	-770	3	22
5820	1740	4080	4	22
2090	1740	350	5	22
1940	1740	200	6	22
1860	1740	120	7	22
1820	1740	80	8	22
2040	1740	300	9	22
1820	1740	80	10	22
1980	1740	240	11	22
2070	1740	330	12	22
2120	1740	380	13	22
1900	1740	160	14	22
1400	1740	-340	14	23
1500	1740	-240	14	24
2000	1740	260	15	24
1400	1740	-340	15	25
1190	1740	-550	15	26
2270	1740	530	16	26
2630	1740	890	17	26
1730	1740	-10	17	27
1800	1740	60	18	27
2610	1740	870	19	27

1850	1740	110	20	27
1640	1740	-100	20	28
1590	1740	-150	20	29
2090	5820	-3730	20	30
1940	5820	-3880	20	31
1860	5820	-3960	20	32
1820	5820	-4000	20	33
2040	5820	-3780	20	34
1820	5820	-4000	20	35
1980	5820	-3840	20	36
2070	5820	-3750	20	37
2120	5820	-3700	20	38
1900	5820	-3920	20	39
1400	5820	-4420	20	40
1500	5820	-4320	20	41
2000	5820	-3820	20	42
1400	5820	-4420	20	43
1190	5820	-4630	20	44
2270	5820	-3550	20	45
2630	5820	-3190	20	46
1730	5820	-4090	20	47
1800	5820	-4020	20	48
2610	5820	-3210	20	49
1850	5820	-3970	20	50
1640	5820	-4180	20	51
1590	5820	-4230	20	52
1940	2090	-150	20	53
1860	2090	-230	20	54
1820	2090	-270	20	55
2040	2090	-50	20	56
1820	2090	-270	20	57
1980	2090	-110	20	58
2070	2090	-20	20	59
2120	2090	30	21	59
1900	2090	-190	21	60
1400	2090	-690	21	61
1500	2090	-590	21	62
2000	2090	-90	21	63
1400	2090	-690	21	64
1190	2090	-900	21	65
2270	2090	180	22	65
2630	2090	540	23	65
1730	2090	-360	23	66
1800	2090	-290	23	67
2610	2090	520	24	67
1850	2090	-240	24	68
1640	2090	-450	24	69
1590	2090	-500	24	70
1860	1940	-80	24	71
1820	1940	-120	24	72
2040	1940	100	25	72
1820	1940	-120	25	73
1980	1940	40	26	73
2070	1940	130	27	73

2120	1940	180	28	73
1900	1940	-40	28	74
1400	1940	-540	28	75
1500	1940	-440	28	76
2000	1940	60	29	76
1400	1940	-540	29	77
1190	1940	-750	29	78
2270	1940	330	30	78
2630	1940	690	31	78
1730	1940	-210	31	79
1800	1940	-140	31	80
2610	1940	670	32	80
1850	1940	-90	32	81
1640	1940	-300	32	82
1590	1940	-350	32	83

1820	1860	-40	32	84
2040	1860	180	33	84
1820	1860	-40	33	85
1980	1860	120	34	85
2070	1860	210	35	85
2120	1860	260	36	85
1900	1860	40	37	85
1400	1860	-460	37	86
1500	1860	-360	37	87
2000	1860	140	38	87
1400	1860	-460	38	88
1190	1860	-670	38	89
2270	1860	410	39	89
2630	1860	770	40	89
1730	1860	-130	40	90
1800	1860	-60	40	91
2610	1860	750	41	91
1850	1860	-10	41	92
1640	1860	-220	41	93
1590	1860	-270	41	94

2040	1820	220	42	94
1820	1820	0	42	94
1980	1820	160	43	94
2070	1820	250	44	94
2120	1820	300	45	94
1900	1820	80	46	94
1400	1820	-420	46	95
1500	1820	-320	46	96
2000	1820	180	47	96
1400	1820	-420	47	97
1190	1820	-630	47	98
2270	1820	450	48	98
2630	1820	810	49	98
1730	1820	-90	49	99
1800	1820	-20	49	100
2610	1820	790	50	100
1850	1820	30	51	100
1640	1820	-180	51	101
1590	1820	-230	51	102

1820	2040	-220	51	103
1980	2040	-60	51	104
2070	2040	30	52	104
2120	2040	80	53	104
1900	2040	-140	53	105
1400	2040	-640	53	106
1500	2040	-540	53	107
2000	2040	-40	53	108
1400	2040	-640	53	109
1190	2040	-850	53	110
2270	2040	230	54	110
2630	2040	590	55	110
1730	2040	-310	55	111
1800	2040	-240	55	112
2610	2040	570	56	112
1850	2040	-190	56	113
1640	2040	-400	56	114
1590	2040	-450	56	115
1980	1820	160	57	115
2070	1820	250	58	115
2120	1820	300	59	115
1900	1820	80	60	115
1400	1820	-420	60	116
1500	1820	-320	60	117
2000	1820	180	61	117
1400	1820	-420	61	118
1190	1820	-630	61	119
2270	1820	450	62	119
2630	1820	810	63	119
1730	1820	-90	63	120
1800	1820	-20	63	121
2610	1820	790	64	121
1850	1820	30	65	121
1640	1820	-180	65	122
1590	1820	-230	65	123
2070	1980	90	66	123
2120	1980	140	67	123
1900	1980	-80	67	124
1400	1980	-580	67	125
1500	1980	-480	67	126
2000	1980	20	68	126
1400	1980	-580	68	127
1190	1980	-790	68	128
2270	1980	290	69	128
2630	1980	650	70	128
1730	1980	-250	70	129
1800	1980	-180	70	130
2610	1980	630	71	130
1850	1980	-130	71	131
1640	1980	-340	71	132
1590	1980	-390	71	133
2120	2070	50	72	133
1900	2070	-170	72	134
1400	2070	-670	72	135

1500	2070	-570	72	136
2000	2070	-70	72	137
1400	2070	-670	72	138
1190	2070	-880	72	139
2270	2070	200	73	139
2630	2070	560	74	139
1730	2070	-340	74	140
1800	2070	-270	74	141
2610	2070	540	75	141
1850	2070	-220	75	142
1640	2070	-430	75	143
1590	2070	-480	75	144
1900	2120	-220	75	145
1400	2120	-720	75	146
1500	2120	-620	75	147
2000	2120	-120	75	148
1400	2120	-720	75	149
1190	2120	-930	75	150
2270	2120	150	76	150
2630	2120	510	77	150
1730	2120	-390	77	151
1800	2120	-320	77	152
2610	2120	490	78	152
1850	2120	-270	78	153
1640	2120	-480	78	154
1590	2120	-530	78	155
1400	1900	-500	78	156
1500	1900	-400	78	157
2000	1900	100	79	157
1400	1900	-500	79	158
1190	1900	-710	79	159
2270	1900	370	80	159
2630	1900	730	81	159
1730	1900	-170	81	160
1800	1900	-100	81	161
2610	1900	710	82	161
1850	1900	-50	82	162
1640	1900	-260	82	163
1590	1900	-310	82	164
1500	1400	100	83	164
2000	1400	600	84	164
1400	1400	0	84	164
1190	1400	-210	84	165
2270	1400	870	85	165
2630	1400	1230	86	165
1730	1400	330	87	165
1800	1400	400	88	165
2610	1400	1210	89	165
1850	1400	450	90	165
1640	1400	240	91	165
1590	1400	190	92	165
2000	1500	500	93	165
1400	1500	-100	93	166

1190	1500	-310	93	167
2270	1500	770	94	167
2630	1500	1130	95	167
1730	1500	230	96	167
1800	1500	300	97	167
2610	1500	1110	98	167
1850	1500	350	99	167
1640	1500	140	100	167
1590	1500	90	101	167
1400	2000	-600	101	168
1190	2000	-810	101	169
2270	2000	270	102	169
2630	2000	630	103	169
1730	2000	-270	103	170
1800	2000	-200	103	171
2610	2000	610	104	171
1850	2000	-150	104	172
1640	2000	-360	104	173
1590	2000	-410	104	174
1190	1400	-210	104	175
2270	1400	870	105	175
2630	1400	1230	106	175
1730	1400	330	107	175
1800	1400	400	108	175
2610	1400	1210	109	175
1850	1400	450	110	175
1640	1400	240	111	175
1590	1400	190	112	175
2270	1190	1080	113	175
2630	1190	1440	114	175
1730	1190	540	115	175
1800	1190	610	116	175
2610	1190	1420	117	175
1850	1190	660	118	175
1640	1190	450	119	175
1590	1190	400	120	175
2630	2270	360	121	175
1730	2270	-540	121	176
1800	2270	-470	121	177
2610	2270	340	122	177
1850	2270	-420	122	178
1640	2270	-630	122	179
1590	2270	-680	122	180
1730	2630	-900	122	181
1800	2630	-830	122	182
2610	2630	-20	122	183
1850	2630	-780	122	184
1640	2630	-990	122	185
1590	2630	-1040	122	186
1800	1730	70	123	186
2610	1730	880	124	186

1850	1730	120	125	186
1640	1730	-90	125	187
1590	1730	-140	125	188
2610	1800	810	126	188
1850	1800	50	127	188
1640	1800	-160	127	189
1590	1800	-210	127	190
1850	2610	-760	127	191
1640	2610	-970	127	192
1590	2610	-1020	127	193
1640	1850	-210	127	194
1590	1850	-260	127	195
1590	1640	-50	127	196

S Statistic = 127 - 196 = -69

Tied Group	Value	Members
1	1820	2
2	1400	2

Time Period	Observations
11/25/2009	1
3/4/2010	1
4/30/2010	1
7/26/2010	1
10/13/2010	1
1/14/2011	1
4/21/2011	1
7/21/2011	1
10/31/2011	1
1/13/2012	1
4/27/2012	1
7/26/2012	1
10/18/2012	1
1/29/2013	1
7/29/2013	1
1/31/2014	1
7/17/2014	1
1/27/2015	1
7/21/2015	1
7/26/2016	1
1/30/2017	1
7/24/2017	1
1/29/2018	1
7/24/2018	1
1/30/2019	1
7/29/2019	1

There are 0 time periods with multiple data

A = 36

B = 0

C = 0

D = 0

E = 4

F = 0

a = 37050

b = 140400

c = 1300

Group Variance = 2056.33

Z-Score = -1.49955

Comparison Level at $1.0 - (0.02 / 2) = 99\%$ confidence level = 2.32634 (two-tailed)

$|-1.49955| \leq 2.32634$ indicating no evidence of a trend