



Westinghouse Electric Company LLC
Hematite Decommissioning Project
3300 State Road P
Festus, MO 63028
USA

ATTN: Document Control Desk
Director, Office of Federal and State Materials and
Environmental Management Programs
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Direct tel: 314-810-3353
E-mail: pallagke@westinghouse.com
Our ref: HEM-17-53
Date: August 24, 2017

Subject: Westinghouse Hematite Decommissioning Project - Request for NRC Review of
Final Status Survey Final Report Volume 6, Chapter 8, Post-remediation
Groundwater Monitoring 5th Quarter Results (License No. SNM-00033, Docket
No. 070-00036)

The purpose of this letter is to provide for the U.S. Nuclear Regulatory Commission (NRC)
review of the Final Status Survey document Final Status Survey Final Report Volume 6, Chapter
8, Post-remediation Groundwater Monitoring 5th Quarter Results.

Attachment 1 contains Final Status Survey Final Report Volume 6, Chapter 8.

Please contact me at 314-810-3353, should you have questions or need additional information.

Sincerely,

A handwritten signature in black ink, appearing to read 'Kenneth E. Pallagi'.

Kenneth E. Pallagi
Licensing Manager,
Hematite Decommissioning Project

Attachment: 1) Final Status Survey Final Report Volume 6, Chapter 8, Post-remediation
Groundwater Monitoring 5th Quarter Results (HDP-RPT-FSS-508)

NM5520

cc: J. W. Smetanka, Westinghouse
S. S. Koenick, NRC/DUWP/MDB
J. A. Smith, NRC/DUWP/MDB

Attachment 1

**Final Status Survey Final Report Volume 6, Chapter 8
Post-remediation Groundwater Monitoring 5th Quarter Results**

Westinghouse Electric Company LLC, Hematite Decommissioning Project

Docket No. 070-00036



Final Status Survey Report

Hematite Decommissioning Project

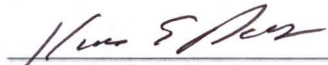
Final Status Survey Final Report Volume 6, Chapter 8

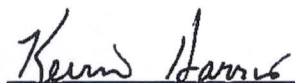
TITLE: Post-remediation Groundwater Monitoring 5th Quarter Results

REVISION: 0

EFFECTIVE DATE: AUG 24 2017

Approvals:

Author:  08-24-2017
Kenneth E. Pallagi. Date

Reviewed By:  8/24/2017
Kevin M. Harris, P.E. Date

Owner/Manager:  8/24/17
W. Clark Evers, CHP Date

Table of Contents

1.0	INTRODUCTION.....	1
2.0	BACKGROUND	1
3.0	POST-REMEDIATION GROUNDWATER MONITORING WELL NETWORK	2
4.0	POST-REMEDIATION GROUNDWATER MONITORING 5TH QUARTER SAMPLE RESULTS.....	3
4.1	Jefferson City-Cotter HSU Data Set	3
4.2	Roubidoux HSU Data Set	4
4.3	Sand/Gravel HSU Data Set.....	5
4.4	HSU Groundwater Elevation Contour Maps	6
5.0	SUMMARY	6

LIST OF ATTACHMENTS

Attachment 1: Post-remediation Groundwater Monitoring 5 th Quarter Results	7
Attachment 2: Mann-Kendall Analysis and Sample Results Graphs	10
Attachment 3: Quarterly Groundwater Elevation Contour Maps.....	73

LIST OF TABLES

3.1	Post-remediation Groundwater Monitoring Wells.....	2
4.1	Mann-Kendell Trend Analysis Results – Jefferson City-Cotter HSU	4
4.2	Mann-Kendell Trend Analysis Results – Roubidoux HSU	5
4.3	Mann-Kendell Trend Analysis Results – Sand Gravel HSU	5

LIST OF FIGURES

Figure 1-1 Post-remediation Groundwater Monitoring Well Network 77

LIST OF ACRONYMS AND SYMBOLS

EPA	U.S. Environmental Protection Agency
FSSFR	Final Status Survey Final Report
HDP	Hematite Decommissioning Project
HSU	Hydrostratigraphic Unit
MCL	Maximum Contaminant Level
msl	mean sea level
NRC	U.S. Nuclear Regulatory Commission
pCi/L	picocuries per liter
ROC	Radionuclides of Concern
Tc	Technetium
U	Uranium

1.0 INTRODUCTION

The purpose of this document, Final Status Survey Final Report (FSSFR) Volume 6, Chapter 8, *Post-remediation Groundwater Monitoring 5th Quarter Results*, is to provide the radiological groundwater sampling results from the monitoring that was conducted for the Hematite Decommissioning Project (HDP) for the 5th Quarter post-remediation groundwater monitoring.

As described in the FSSFR Volume 6, Chapter 7, the analytical data from sampling for the four quarters post-remediation completion demonstrated that remediation activities did not impact groundwater and that the estimated dose from groundwater sources has shown the dose contribution from groundwater to be less than 4 mrem/year.

As discussed in FSSFR Volume 6, Chapter 1, the data provided in this chapter is intended to support the conclusion reached in FSSFR Volume 6, Chapter 7 that remediation activities at HDP did not impact groundwater (Jefferson City-Cotter Hydrostratigraphic Unit (HSU), and the Roubidoux HSUs).

2.0 BACKGROUND

FSSFR Volume 6, Chapter 1 provides the basis for post-remediation groundwater monitoring, the objectives of post-remediation groundwater monitoring, and the summary of data collected. Westinghouse indicated in FSSFR Volume 6, Chapter 1 that that “*monitoring would be discontinued when it could be determined that the radioactivity concentrations did not pose an unacceptable potential for dose.*” and “*at the completion of the fourth quarter of post-remediation monitoring, an evaluation of the groundwater sample data will be performed to determine if the concentrations are stable, or are showing an increasing or decreasing trend as compared to historical data (2009 – 2015).*”

FSSFR Volume 6, Chapter 1 also provided that “*As there are no previous sample analysis results with indication of radionuclide contamination in the groundwater (Jefferson City-Cotter HSU, and the Roubidoux HSUs) exceeding MCLs or a dose limit of 4 mrem/year, the purpose of post-remediation sampling is to verify that remediation of the source area had not contributed radionuclide contamination to the groundwater.*”

In Westinghouse letter HEM-17-48 to the U.S. Nuclear Regulatory Commission (NRC), dated August 9, 2017, Westinghouse communicated that it had completed the post-remediation groundwater monitoring period and the subsequent evaluation of the groundwater sample data. The evaluation concluded that there were no indications of Radionuclides of Concern (ROC) above the U.S. Environmental Protection Agency (EPA) Maximum Contaminant Levels (MCLs) in any of the HSUs at the Westinghouse Hematite Facility during the post-remediation monitoring period.

As communicated to the NRC, although the post-remediation groundwater monitoring period concluded with the determination that there were no indications of any ROC above the EPA MCLs in any of the HSU, that until such time that Westinghouse submits the request to terminate NRC License SNM-33 that quarterly monitoring would continue. The supplemental data

provided in this chapter further validates that groundwater has not been impacted by remedial activities, and that the groundwater dose contribution determined in FSSFR Volume 6, Chapter 7 remains at 0.68 mrem/year or less.

3.0 POST-REMEDATION GROUNDWATER MONITORING WELL NETWORK

The post-remediation monitoring well network is composed of 18 monitoring wells screened in the sand/gravel HSU, eight wells screened in the Jefferson City-Cotter HSU, and five wells screened in the Roubidoux HSU. New monitoring wells were installed prior to initiation of the post-remediation groundwater monitoring, with seven in the sand/gravel HSU and seven in the Jefferson City-Cotter HSU. Figure 1-1, *Post-remediation Groundwater Monitoring Well Network*, provides the locations of all monitoring wells that are monitored for radiological purposes post-remediation. Table 3-1 below lists the wells included in the sampling network. A Mann-Kendall analysis will be performed at the conclusion of each quarterly sampling, using a minimum of four data points, on each of the wells to evaluate trends in sample results. For existing wells, a 2 year (8 quarter) Mann-Kendall analysis will be performed at the conclusion of each quarterly sampling event as well.

The location and purpose of each monitoring well has been discussed in previous FSSFR Volume 6, Chapters 3, 4, 5, 6, and 7; and is not included here.

**Table 3-1
Post-remediation Groundwater Monitoring Wells**

Well ID No.	HSU	Post-remediation Protocol			Existing or New*
		Purpose	Parameters	Sample Frequency	
GW-BB	Sand/Gravel	Burial Pit	Tc-99, Isotopic U	Quarterly	Existing
GW-EE	Sand/Gravel	Burial Pit	Tc-99, Isotopic U	Quarterly	New
GW-FF	Sand/Gravel	Burial Pit	Tc-99, Isotopic U	Quarterly	New
GW-GG	Sand/Gravel	Burial Pit	Tc-99, Isotopic U	Quarterly	New
GW-W	Sand/Gravel	Burial Pit	Tc-99, Isotopic U	Quarterly	Existing
NB-71	Sand/Gravel	Burial Pit	Tc-99, Isotopic U	Quarterly	Existing
NB-80	Sand/Gravel	Burial Pit	Tc-99, Isotopic U	Quarterly	Existing
GW-V	Sand/Gravel	Former Building Slabs	Tc-99, Isotopic U	Quarterly	Existing
GW-DD	Sand/Gravel	Former Building Slabs	Tc-99, Isotopic U	Quarterly	New
GW-II	Sand/Gravel	Former Building Slabs	Tc-99, Isotopic U	Quarterly	New
GW-JJ	Sand/Gravel	Former Building Slabs	Tc-99, Isotopic U	Quarterly	Existing
GW-CC	Sand/Gravel	Evaporation Pond	Tc-99, Isotopic U	Quarterly	New
GW-X	Sand/Gravel	Evaporation Pond	Tc-99, Isotopic U	Quarterly	Existing

Well ID No.	HSU	Post-remediation Protocol			Existing or New*
		Purpose	Parameters	Sample Frequency	
GW-Y	Sand/Gravel	Evaporation Pond	Tc-99, Isotopic U	Quarterly	Existing
NB-34	Sand/Gravel	Evaporation Pond	Tc-99, Isotopic U	Quarterly	Existing
NB-35	Sand/Gravel	Evaporation Pond	Tc-99, Isotopic U	Quarterly	Existing
PZ-02	Sand/Gravel	Evaporation Pond	Tc-99, Isotopic U	Quarterly	Existing
GW-HH	Sand/Gravel	Red Room Rood Burial Area	Tc-99, Isotopic U	Quarterly	New
BR-04-JC	Jefferson City Cotter	Burial Pit	Tc-99, Isotopic U	Quarterly	Existing
BR-13-JC	Jefferson City Cotter	Former Building Slabs	Tc-99, Isotopic U	Quarterly	New
BR-14-JC	Jefferson City Cotter	Burial Pit	Tc-99, Isotopic U	Quarterly	New
BR-15-JC	Jefferson City Cotter	Burial Pit	Tc-99, Isotopic U	Quarterly	New
BR-16-JC	Jefferson City Cotter	Former Building Slabs	Tc-99, Isotopic U	Quarterly	New
BR-17-JC	Jefferson City Cotter	Former Building Slabs	Tc-99, Isotopic U	Quarterly	New
BR-18-JC	Jefferson City Cotter	Burial Pit	Tc-99, Isotopic U	Quarterly	New
BR-19-JC	Jefferson City Cotter	Evaporation Pond	Tc-99, Isotopic U	Quarterly	New
BR-04-RB	Roubidoux	Deep Bedrock	Tc-99, Isotopic U	Quarterly	Existing
BR-08-RB	Roubidoux	Deep Bedrock	Tc-99, Isotopic U	Quarterly	Existing
BR-10-RB	Roubidoux	Deep Bedrock	Tc-99, Isotopic U	Quarterly	Existing
BR-03R-RB	Roubidoux	Deep Bedrock	Tc-99, Isotopic U	Quarterly	Existing
WS-04	Roubidoux	Deep Bedrock	Tc-99, Isotopic U	Quarterly	Existing

* Indicates if the well was an existing well or a new well installed for post-remediation monitoring.

4.0 POST-REMEDIATION GROUNDWATER MONITORING 5TH QUARTER SAMPLE RESULTS

4.1 Jefferson City-Cotter HSU Data Set

The post-remediation groundwater monitoring wells which monitor the Jefferson City-Cotter HSU were sampled for the 5th quarter between May 15 and May 31, 2017. The data set is provided in Attachment 1, *Post-Remediation Groundwater Monitoring 5th Quarter Results*. In Attachment 2, the data set for each constituent has been graphed for each well versus the respective MCL, along with the Mann-Kendell trend graph.

A review of the data set indicates that none of the groundwater monitoring well sampling results for any radiological constituent approached or was near the MCL.

The results of the Mann-Kendell trend analysis for the Jefferson City-Cotter HSU are provided in

the Table 4-1 below. The Tc-99 results in BR-04-JC and the Total Uranium results from BR-18-JC continue to indicate downward trends in concentrations. There was no change in the trend data from the 4th quarter trend data.

**Table 4-1
Mann-Kendell Trend Analysis Results – Jefferson City-Cotter HSU**

Well ID	Tc-99	Total U
BR-04-JC	Downward Trend	No Trend
BR-13-JC	No Trend	No Trend
BR-14-JC	No Trend	No Trend
BR-15-JC	No Trend	No Trend
BR-16-JC	No Trend	No Trend
BR-17-JC	No Trend	No Trend
BR-18-JC	No Trend	Downward Trend
BR-19-JC	No Trend	No Trend

4.2 Roubidoux HSU Data Set

The post-remediation monitoring wells which monitor the Roubidoux HSU were sampled for the 5th quarter between May 15 and May 31, 2017. The data set is provided in Attachment 1, *Post-Remediation Groundwater Monitoring 5th Quarter Results*. In Attachment 2, the data set for each constituent has been graphed for each well versus the respective MCL along with the Mann-Kendell trend graph.

A review of the data set indicates that none of the monitoring well sampling results for any radiological constituent approached or was near the MCL.

The results of the Mann-Kendell trend analysis for the Jefferson City-Cotter HSU are provided in the Table 4-2 below. The Total Uranium result in monitoring well BR-10-RB continues to indicate a downward trend. There was no change in the trend data from the 4th quarter trend data.

**Table 4-2
Mann-Kendell Trend Analysis Results – Roubidoux HSU**

Well ID	Tc-99	Total U
BR-03R-RB	No Trend	No Trend
BR-04-RB	No Trend	No Trend
BR-08-RB	No Trend	No Trend
BR-10-RB	No Trend	Downward Trend
WS-04	No Trend	No Trend

*Data requirement is four quarters of monitoring results.

4.3 Sand/Gravel HSU Data Set

The post-remediation monitoring wells which monitor the Sand/Gravel HSU were sampled for the 5th quarter between May 15 and May 31, 2017. The data set is provided in Attachment 1, *Post-Remediation Groundwater Monitoring 5th Quarter Results*. In Attachment 2, the data set for each constituent has been graphed for each well versus the respective MCL along with the Mann-Kendell trend graph.

A review of the data set indicates that none of the groundwater monitoring well sampling results for any radiological constituent approached or was near the MCL.

The results of the Mann-Kendell trend analysis for the Jefferson City-Cotter HSU are provided in the Table 4-3 below. There was no change in the trend data from the 4th quarter trend data.

**Table 4-3
Mann-Kendell Trend Analysis Results – Sand Gravel HSU**

Well ID	Tc-99	Total U
GW-BB	No Trend	No Trend
GW-CC	No Trend	Downward Trend
GW-DD	No Trend	No Trend
GW-EE	No Trend	No Trend
GW-FF	No Trend	No Trend
GW-GG	No Trend	No Trend
GW-HH	No Trend	No Trend

Well ID	Tc-99	Total U
GW-II	No Trend	No Trend
GW-JJ	No Trend	Downward Trend
GW-V	No Trend	No Trend
GW-W	No Trend	No Trend
GW-X	Downward Trend	No Trend
GW-Y	No Trend	No Trend
NB-34	No Trend	No Trend
NB-35	No Trend	Downward Trend
NB-71	No Trend	No Trend
NB-80	No Trend	Downward Trend
PZ-02	No Trend	No Trend

4.4 HSU Groundwater Elevation Contour Maps

The groundwater elevation contour maps for the Jefferson City-Cotter HSU, Roubidoux HSU and the Sand/Gravel HSU for the 5th quarter post-remediation monitoring period are provided in Attachment 3.

5.0 SUMMARY

There were no indications of ROCs above the MCLs in the Jefferson City-Cotter HSU and the Roubidoux HSU.

There was no indication of ROCs above the MCL in the Sand/Gravel HSU. As summarized in FSSFR Volume 6, Chapter 1, Revision 1, the Sand/Gravel HSU contains contamination in the form of leachate which is not usable groundwater. As the source term has been removed in the Sand/Gravel HSU during the remediation of the site it is not anticipated that there will be an overall upward trend and the conclusion of the post-remediation groundwater monitoring period. The sample data for the sampling that was conducted prior to and during the remediation of the site currently support the conclusion that remediation activities did not impact groundwater

Attachment 1

Post-remediation Groundwater Monitoring 5th Quarter Results

**Attachment 1
Post-remediation Groundwater Monitoring 5th Quarter Results**

JEFFERSON CITY – COTTER HSU

Well ID	Tc-99 pCi/L			U-233/234 pCi/L			U-235/236 pCi/L			U-238 pCi/L		
	Result	MDC	Error	Result	MDC	Error	Result	MDC	Error	Result	MDC	Error
BR-04-JC	-0.908	1.9	1.09	2.9	0.0289	0.413	0.002	0.0788	0.0278	0.305	0.0709	0.114
BR-13-JC	-1.17	1.91	1.08	4.03	0.0852	0.535	0.00987	0.0971	0.0418	0.308	0.0694	0.119
BR-14-JC	-1.14	1.87	1.06	2.92	0.114	0.499	0.0896	0.111	0.0904	0.607	0.107	0.206
BR-15-JC	-0.712	2.1	1.2	1.49	0.0629	0.271	0.0189	0.0658	0.0352	0.201	0.0287	0.0891
BR-16-JC	-0.359	1.93	1.12	4.24	0.0931	0.548	0.0704	0.0697	0.0629	0.804	0.0559	0.193
BR-17-JC	-0.0475	2.03	1.19	3.4	0.0664	0.469	0.0126	0.0377	0.0252	0.343	0.0302	0.121
BR-18-JC	0.063	1.89	1.11	1.99	0.0614	0.32	0.0232	0.0348	0.0329	0.0986	0.0515	0.0628
BR-19-JC	-0.684	1.82	1.05	5.81	0.0576	0.694	0.0465	0.0717	0.0532	0.614	0.0312	0.168

ROUBIDOUX HSU

Well ID	Tc-99 pCi/L			U-233/234 pCi/L			U-235/236 pCi/L			U-238 pCi/L		
	Result	MDC	Error	Result	MDC	Error	Result	MDC	Error	Result	MDC	Error
BR-03R-RB	-0.982	1.93	1.1	1.66	0.0652	0.313	-0.00612	0.0812	0.0123	0.0844	0.0774	0.0684
BR-04-RB	-0.685	2.15	1.24	2.42	0.0636	0.368	0.0241	0.0361	0.0341	0.237	0.0533	0.0988
BR-08-RB	-0.192	2.01	1.18	6.51	0.084	0.772	0.0283	0.0425	0.0401	0.489	0.0341	0.155
BR-10-RB	-0.261	1.88	1.1	3.12	0.0667	0.395	0.0291	0.0545	0.0362	0.171	0.0532	0.073
WS-04	-1.01	2.23	1.27	1.1	0.0914	0.237	0.0395	0.0395	0.0457	0.512	0.0583	0.154

**Attachment 1
Post-remediation Groundwater Monitoring 5th Quarter Results**

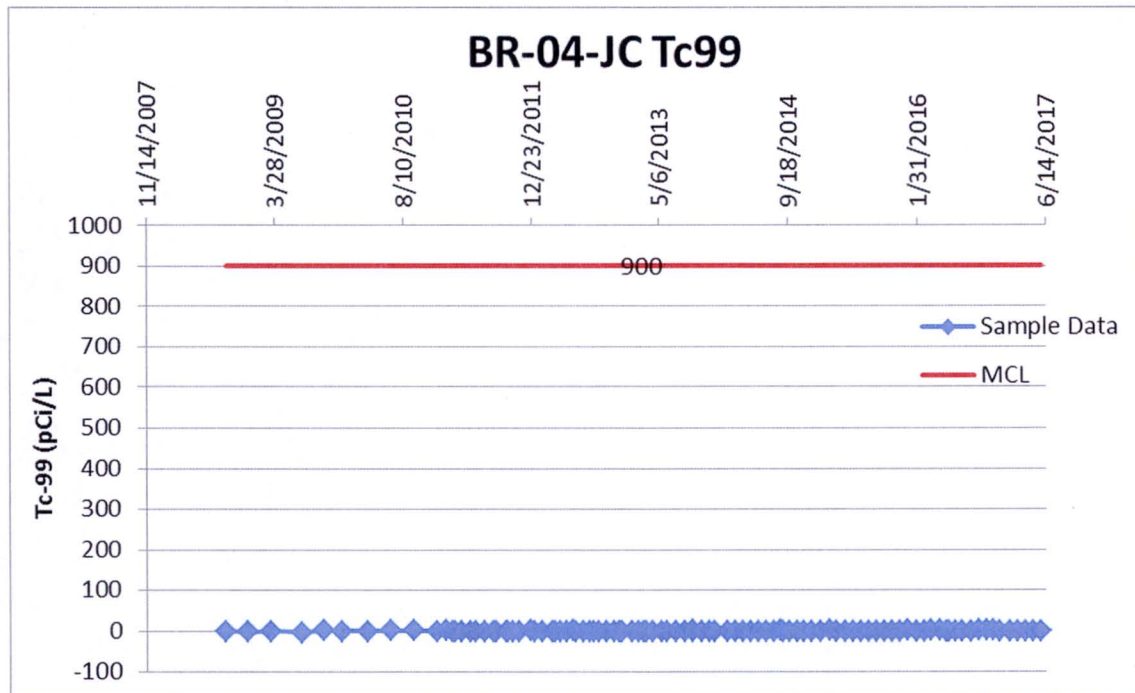
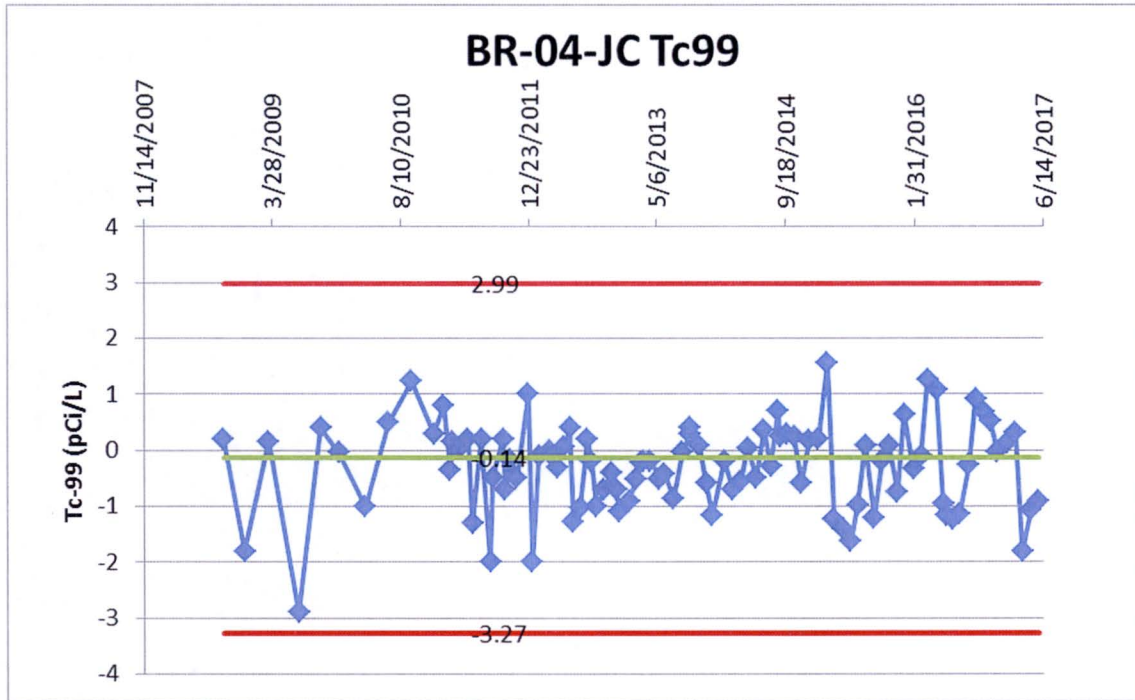
SAND/GRAVEL HSU

Well ID	Tc-99 pCi/L			U-233/234 pCi/L			U-235/236 pCi/L			U-238 pCi/L		
	Result	MDC	Error	Result	MDC	Error	Result	MDC	Error	Result	MDC	Error
GW-BB	-1.21	1.92	1.09	0.0483	0.151	0.0838	-0.0301	0.15	0.0247	-0.0241	0.142	0.041
GW-CC	4.33	2.13	1.46	0.766	0.0291	0.184	0.0362	0.0362	0.0419	0.509	0.0535	0.147
GW-DD	2.28	1.89	1.22	0.032	0.0665	0.0423	0	0.0378	0.0105	0.016	0.0558	0.0298
GW-EE	0.649	3.42	2.07	0.574	0.5	0.402	0.0357	0.339	0.133	0.27	0.452	0.296
GW-FF	1.93	1.97	1.25	0.837	0.0675	0.215	0.0152	0.0456	0.0304	0.244	0.0365	0.111
GW-GG	-0.0664	2.02	1.18	0.00308	0.0743	0.0303	0.0067	0.0635	0.0249	0.0184	0.0276	0.0261
GW-HH	-0.498	2.08	1.2	5.32	0.0908	0.664	0.0643	0.0775	0.064	1.18	0.0739	0.252
GW-II	-0.529	2.05	1.18	0.0246	0.066	0.0381	0.0111	0.0334	0.0223	0.0179	0.0268	0.0253
GW-JJ	4.1	1.89	1.32	0.0652	0.0548	0.0533	0	0.037	0.0103	0.00577	0.0546	0.0214
GW-V	2.86	1.91	1.26	-0.00807	0.0637	0.0114	0.0191	0.0666	0.0356	0.0386	0.029	0.0388
GW-W	0.0679	2.03	1.2	0.0146	0.109	0.0526	0.0136	0.0408	0.0272	-0.0546	0.164	0.0632
GW-X	63.2	1.9	6.59	0.0345	0.0717	0.0456	0.0407	0.0407	0.0472	0.00635	0.0602	0.0236
GW-Y	1.49	1.95	1.21	0.304	0.0735	0.112	0	0.0341	0.00947	0.264	0.0273	0.101
NB-34	0.716	1.84	1.11	0.0618	0.0985	0.0652	0.0126	0.0379	0.0253	0.0321	0.0667	0.0424
NB-35	2.02	1.9	1.2	-0.0268	0.0986	0.022	0.00779	0.0738	0.0289	0.017	0.0592	0.0316
NB-71	0.054	1.91	1.12	0.0391	0.0693	0.0442	0.00828	0.0248	0.0166	0.0291	0.0419	0.0309
NB-80	-1.32	2.07	1.17	0.0199	0.0899	0.0459	0.0129	0.0388	0.0259	0.00605	0.0573	0.0225
PZ-02	2.21	1.88	1.21	0.0259	0.0696	0.0402	0.00196	0.0772	0.0273	0.0377	0.0283	0.0378

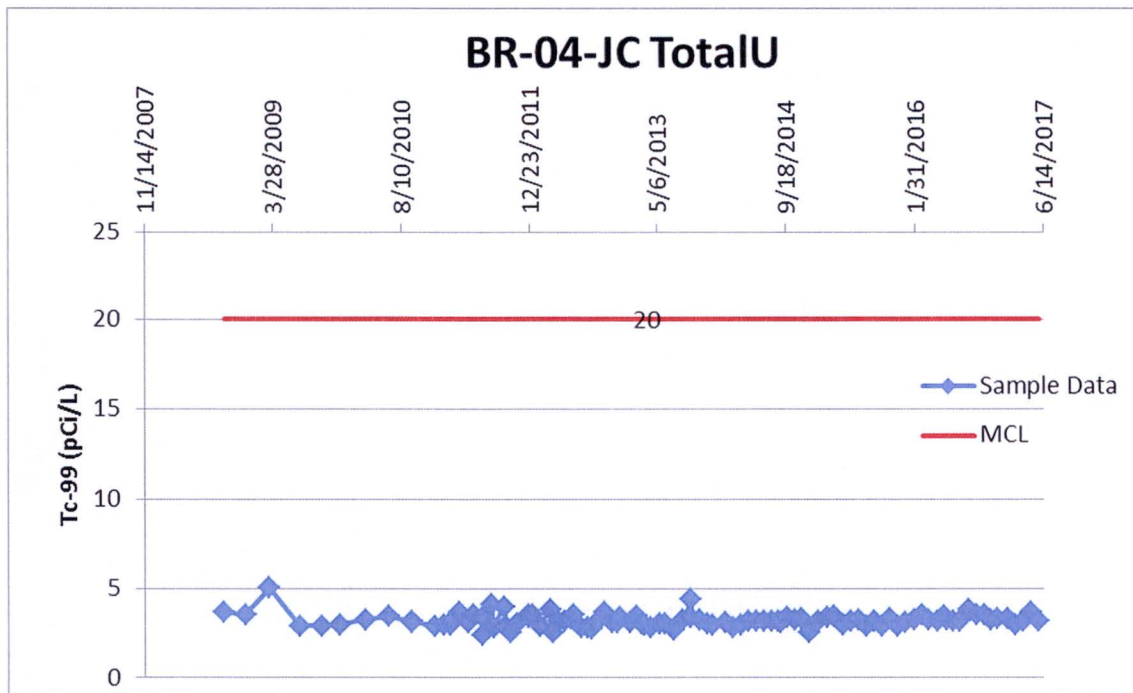
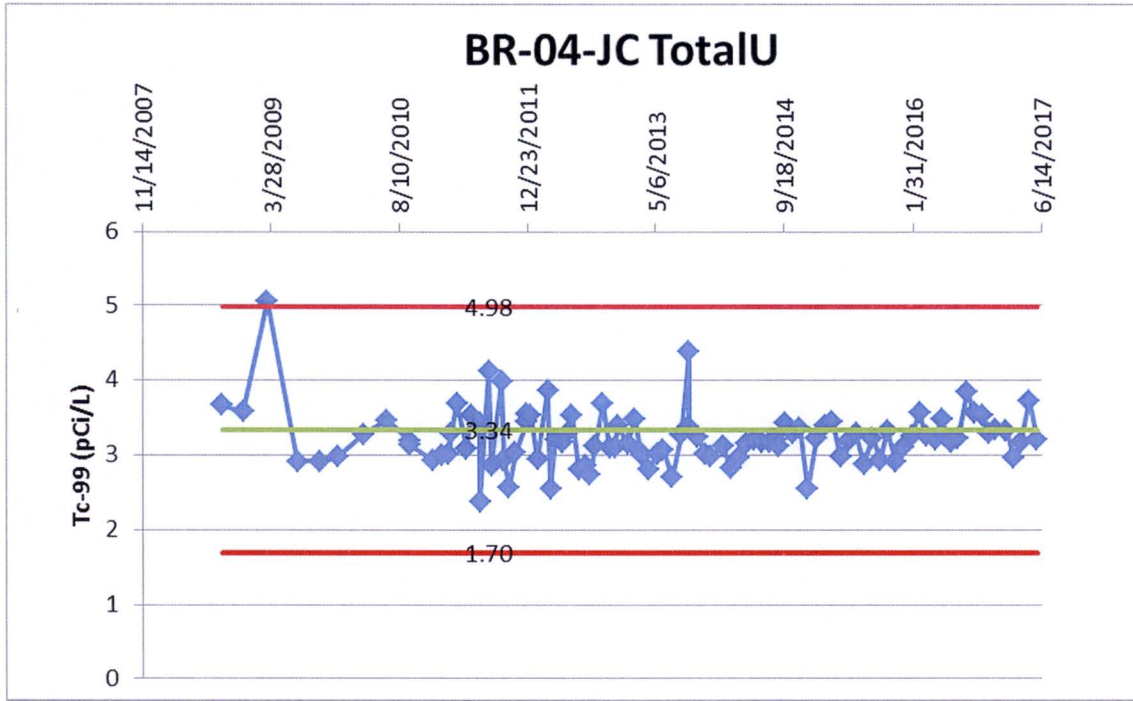
Attachment 2

Mann-Kendall Analysis and Sample Results Graphs

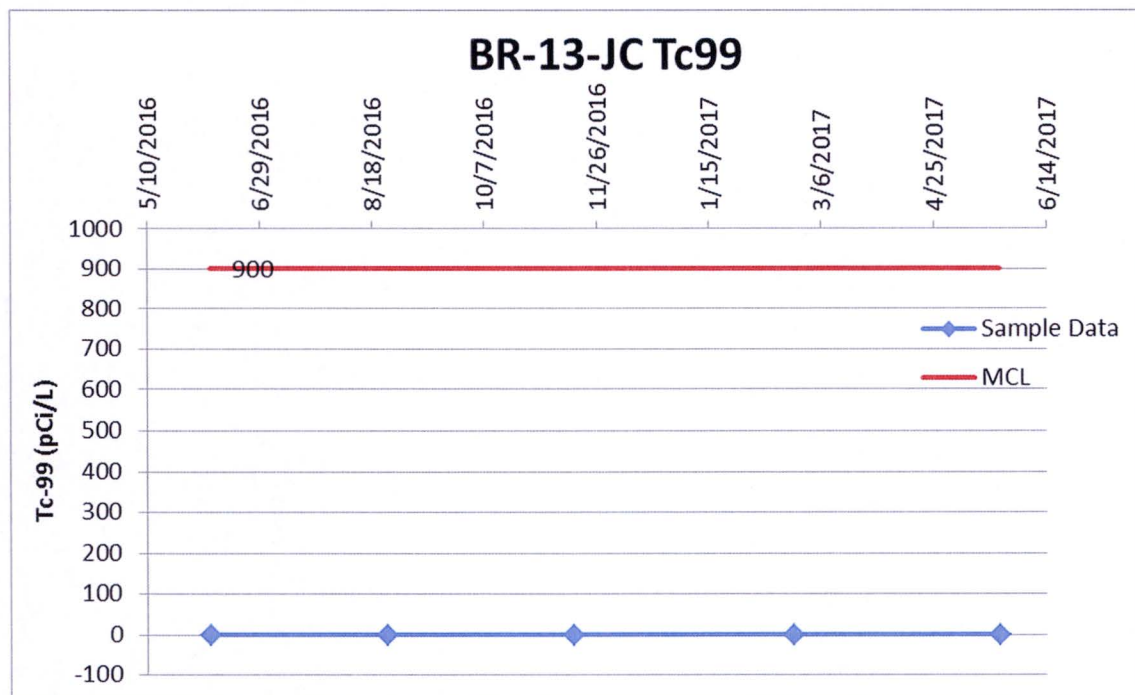
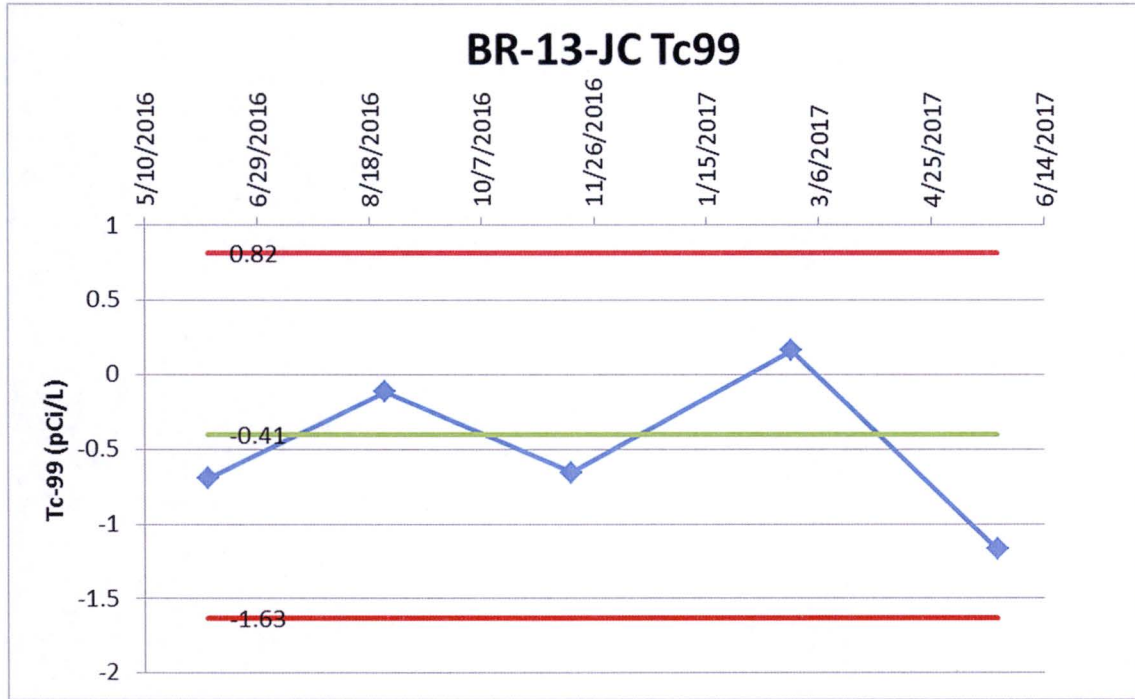
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU



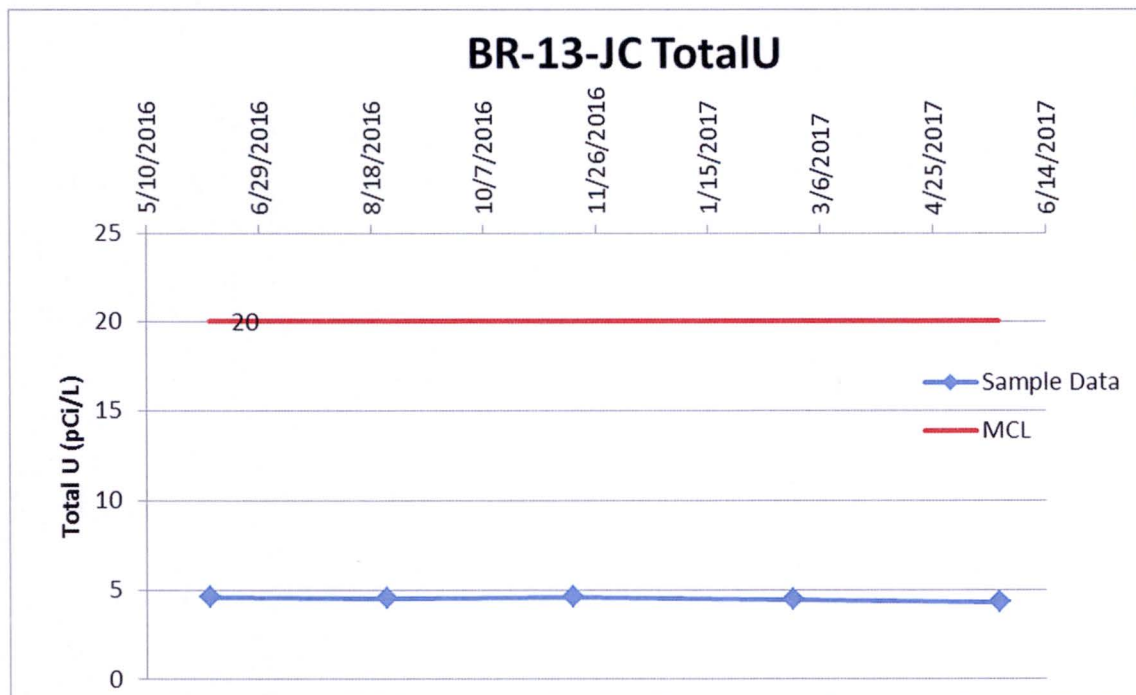
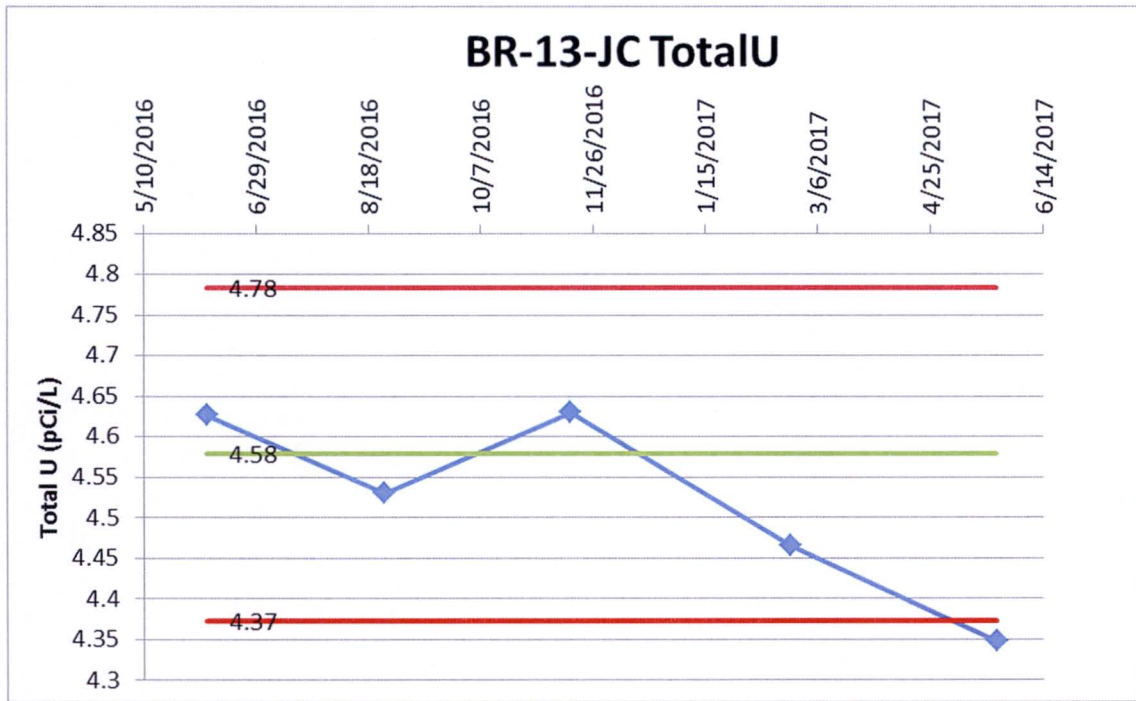
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU



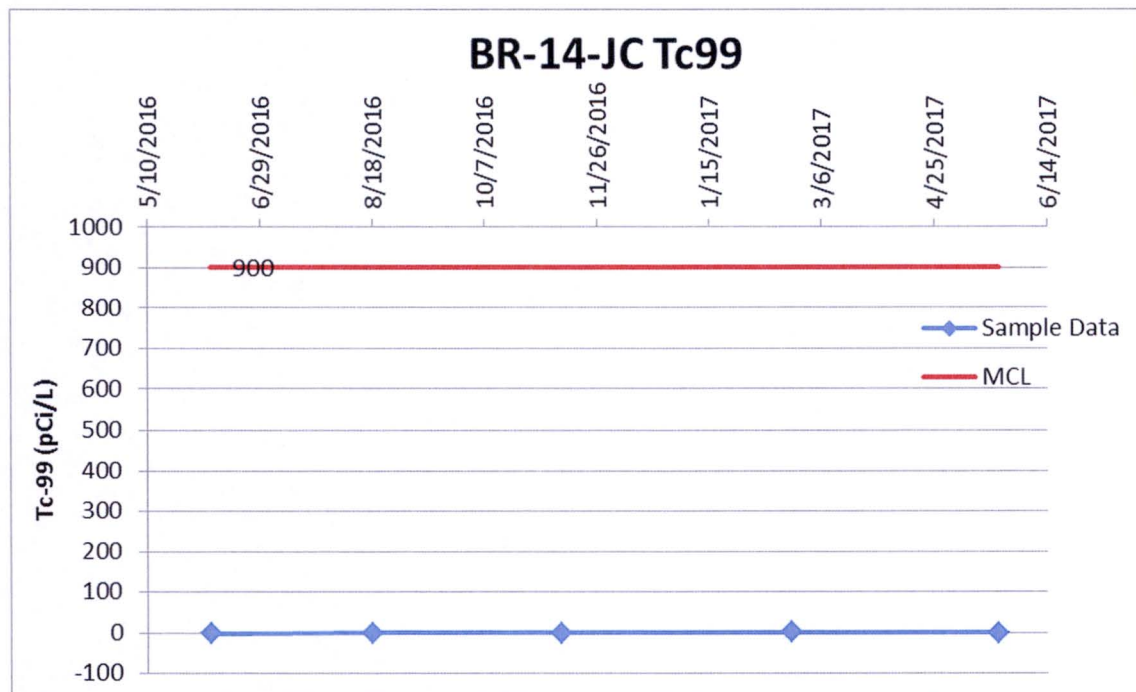
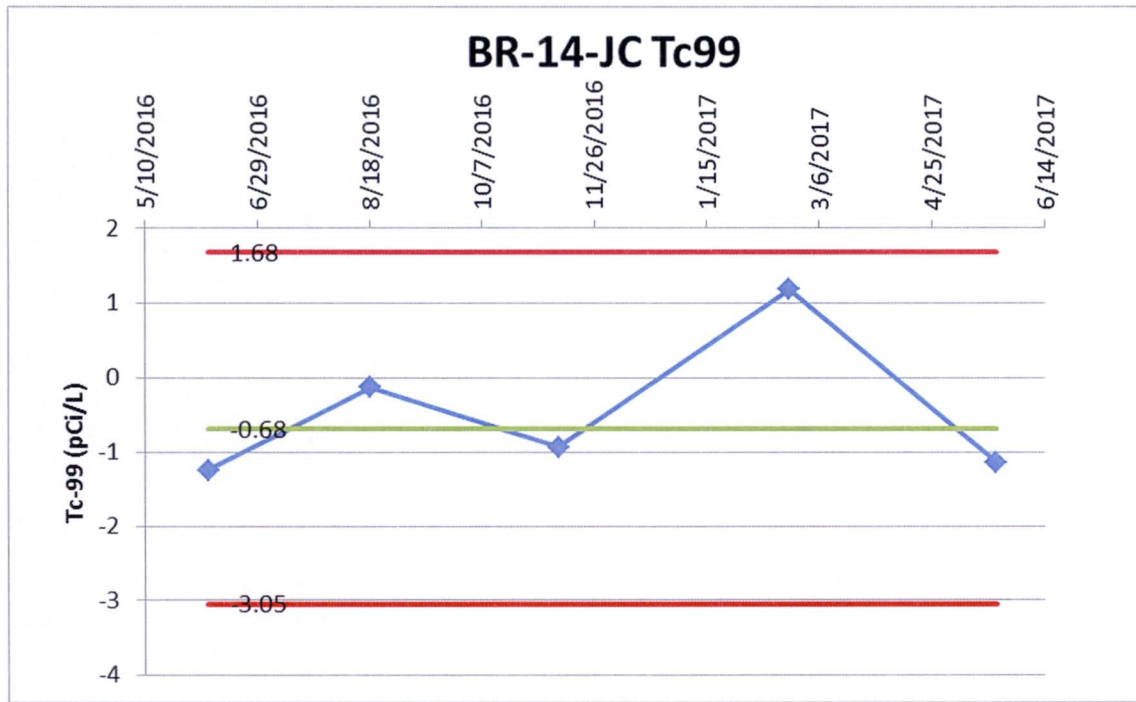
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU



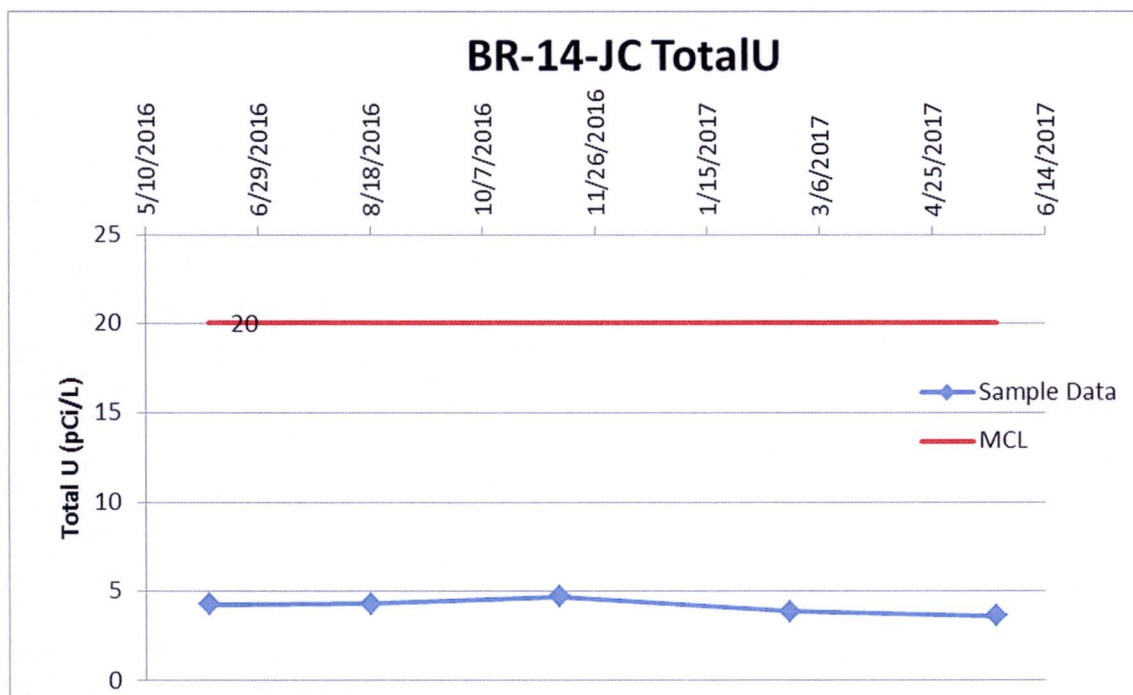
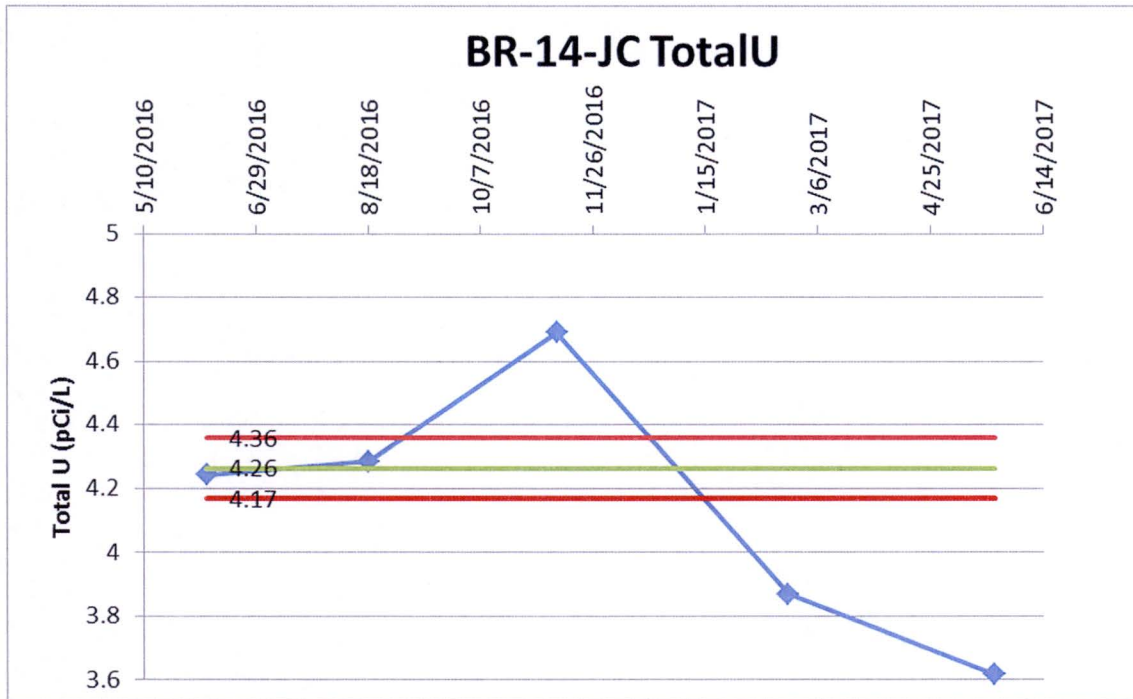
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU



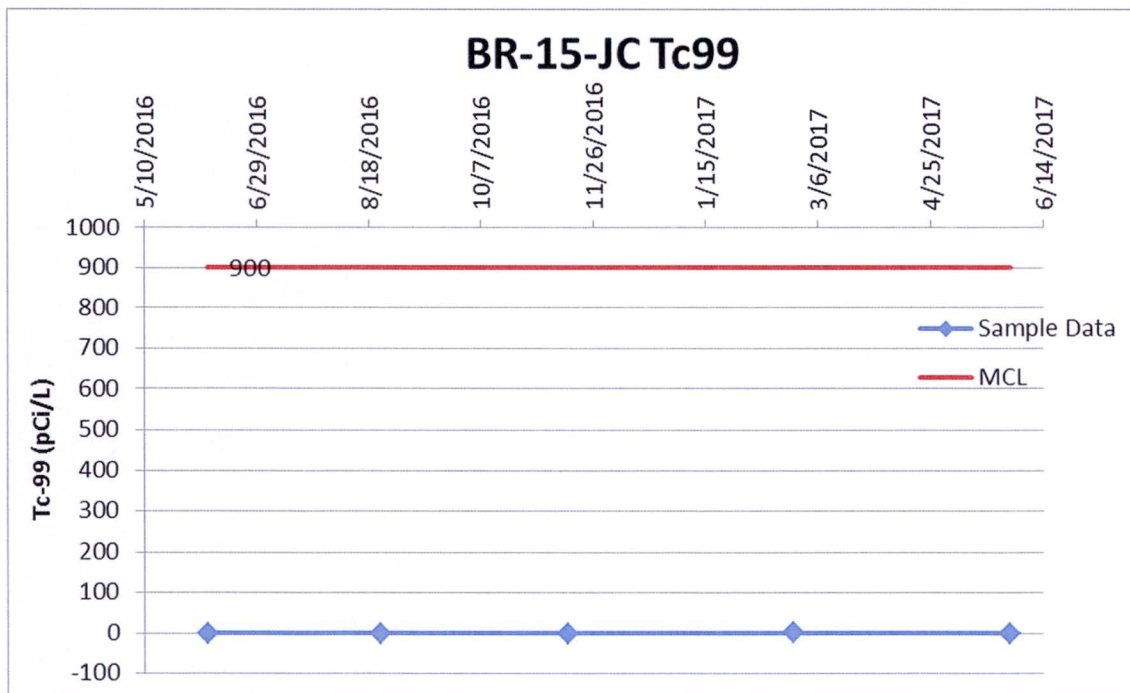
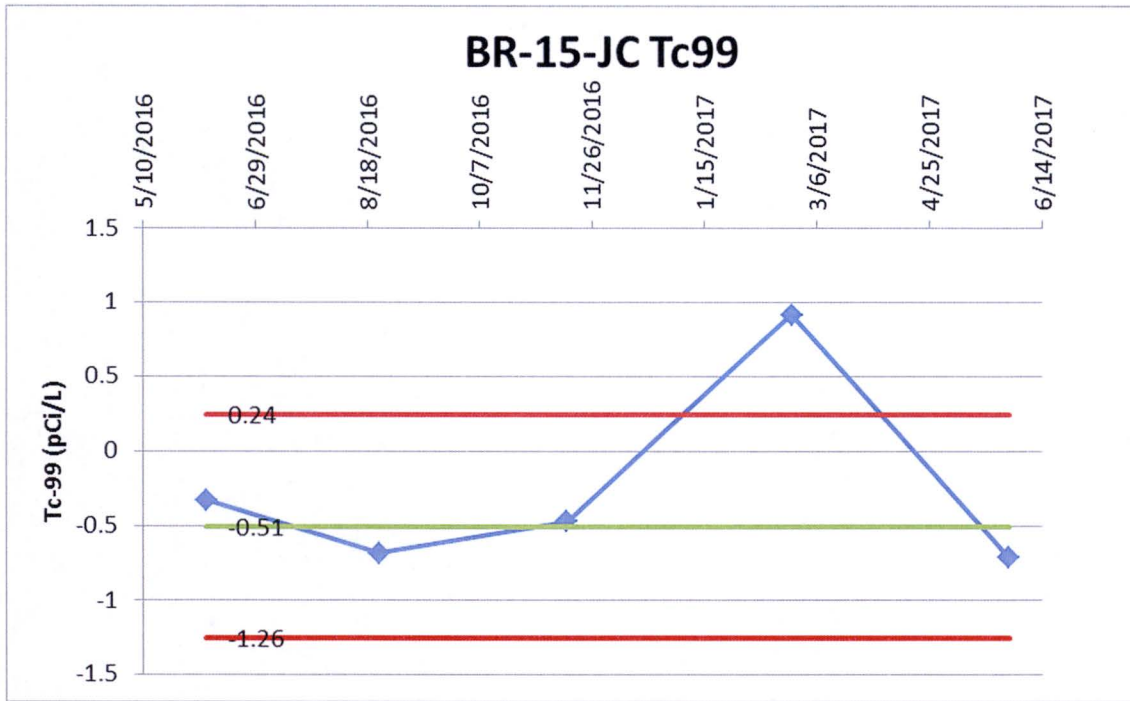
**Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU**



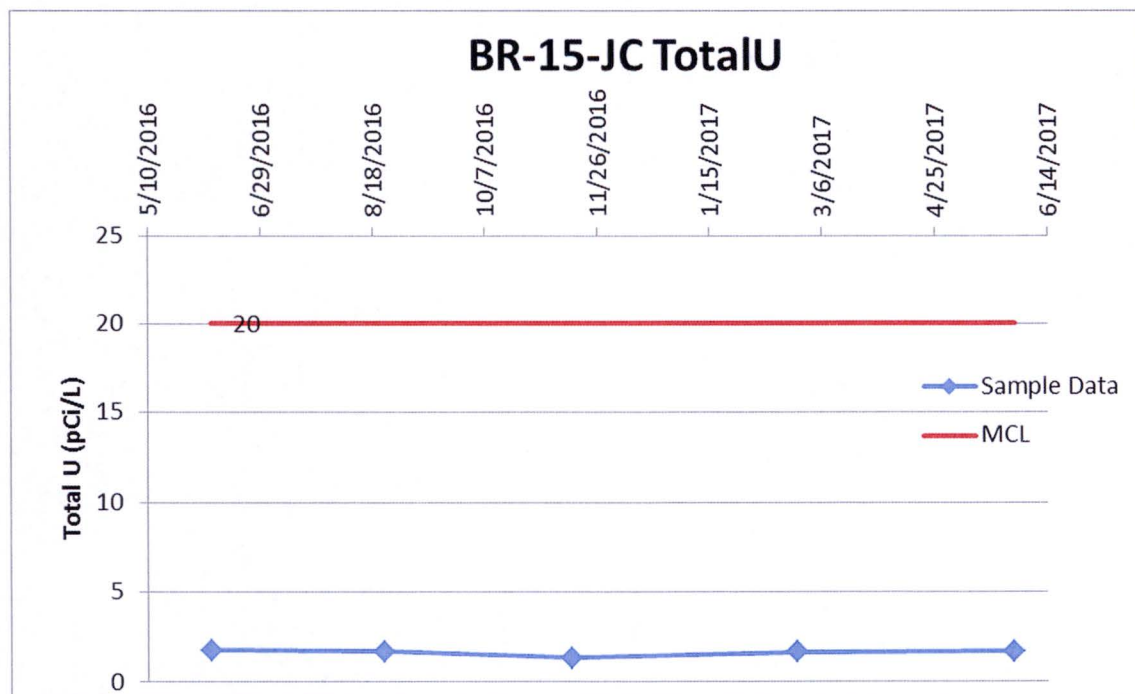
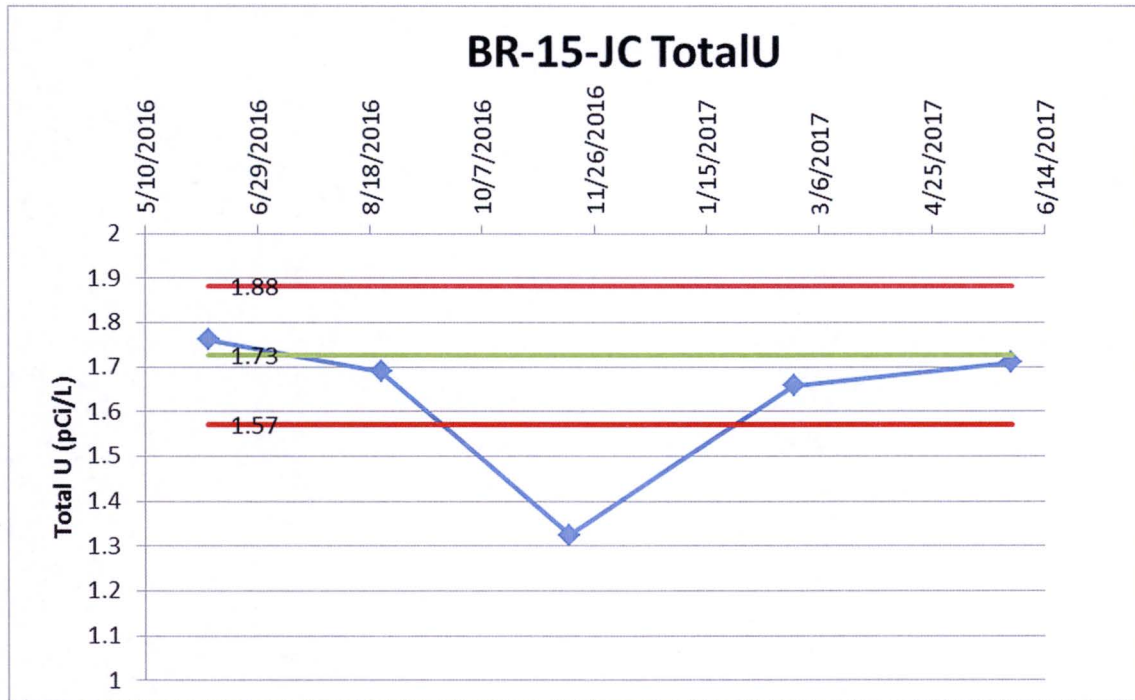
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU



Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU

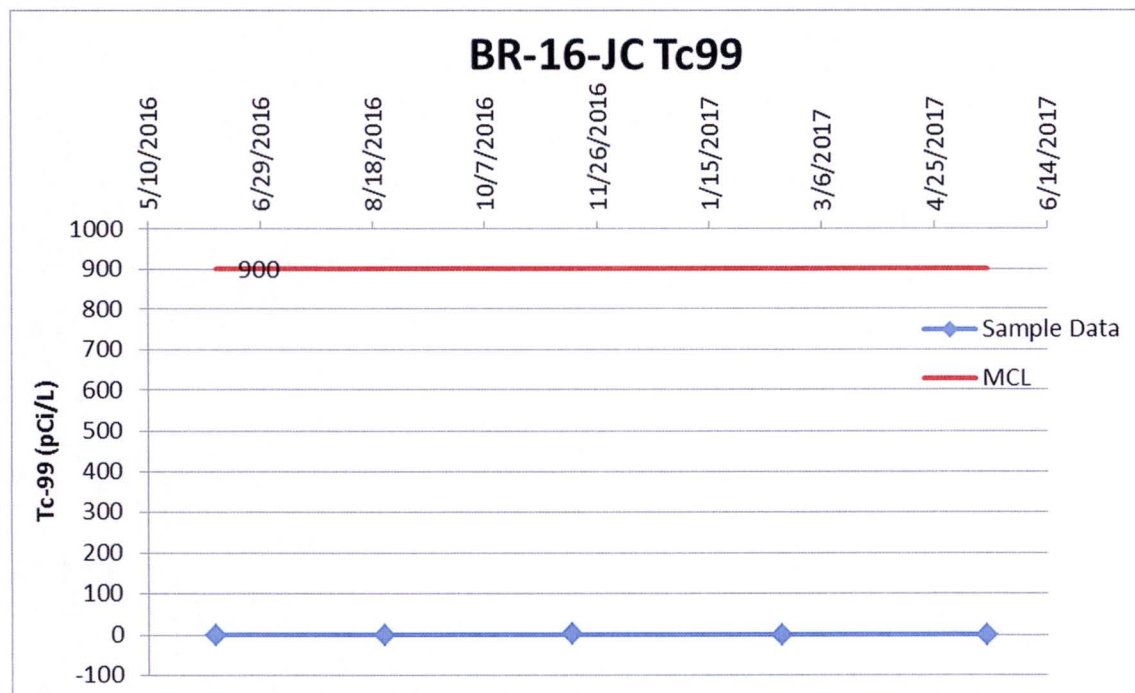
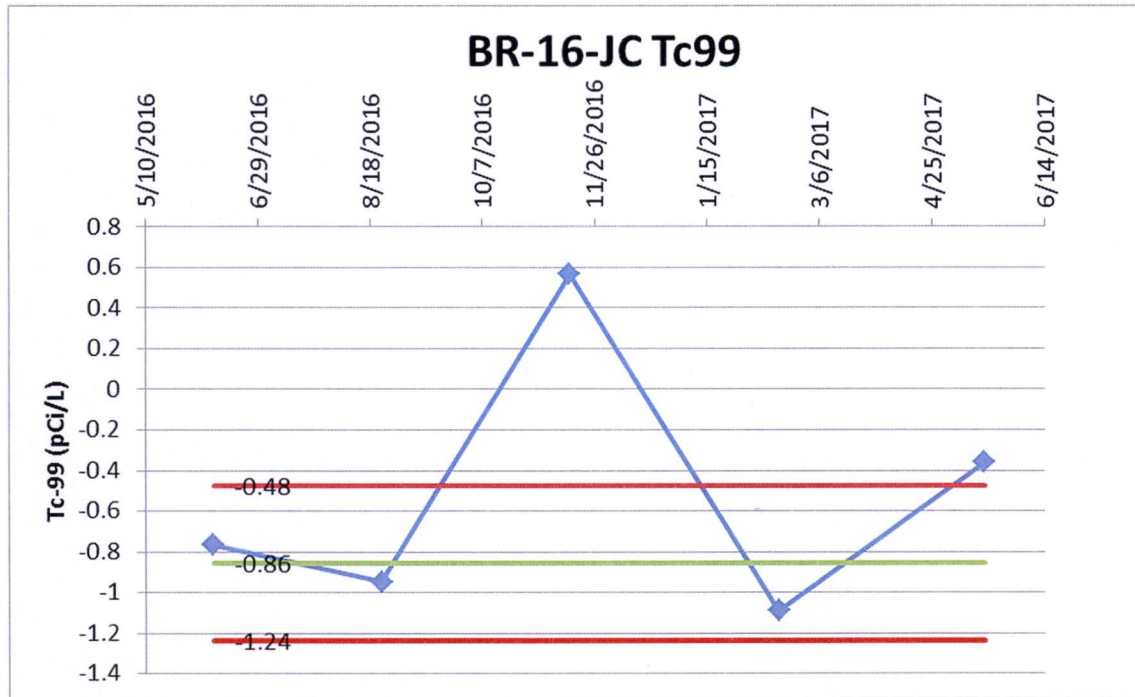


Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU

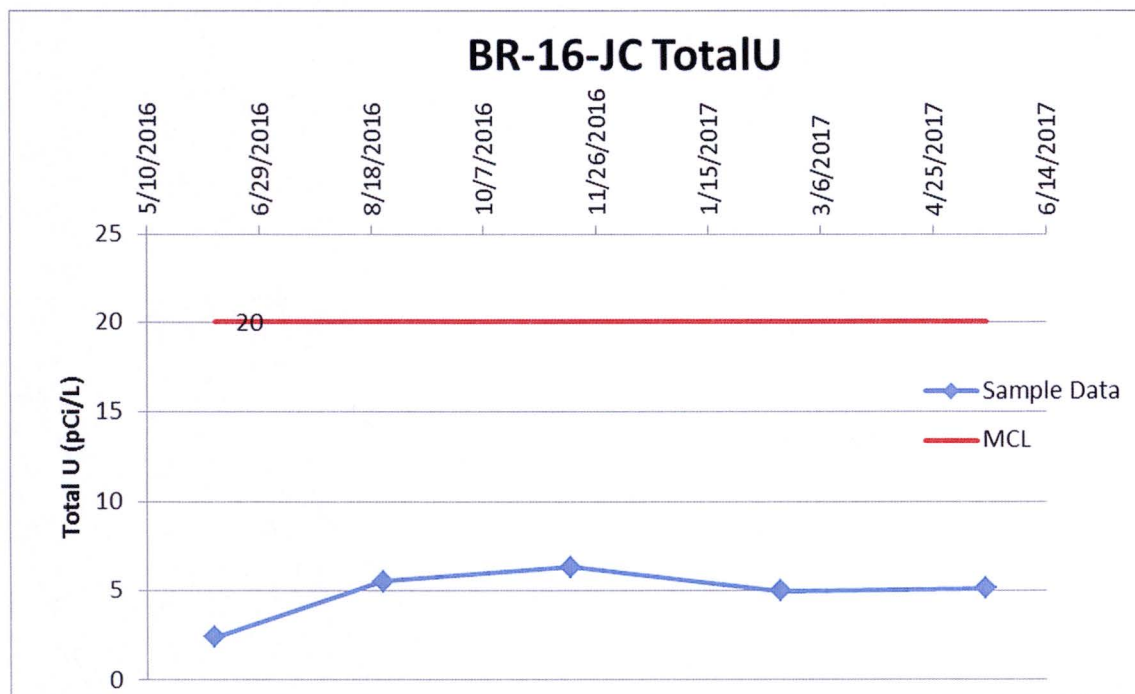
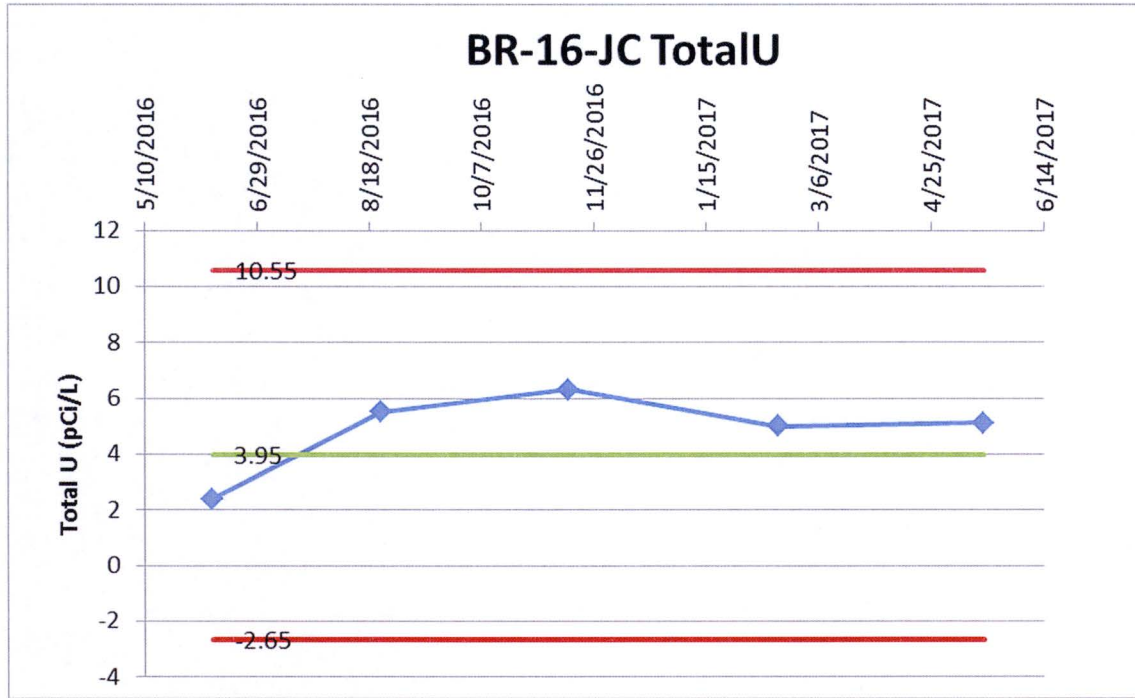


**Attachment 2
Mann-Kendall Analysis and Sample Results Graphs**

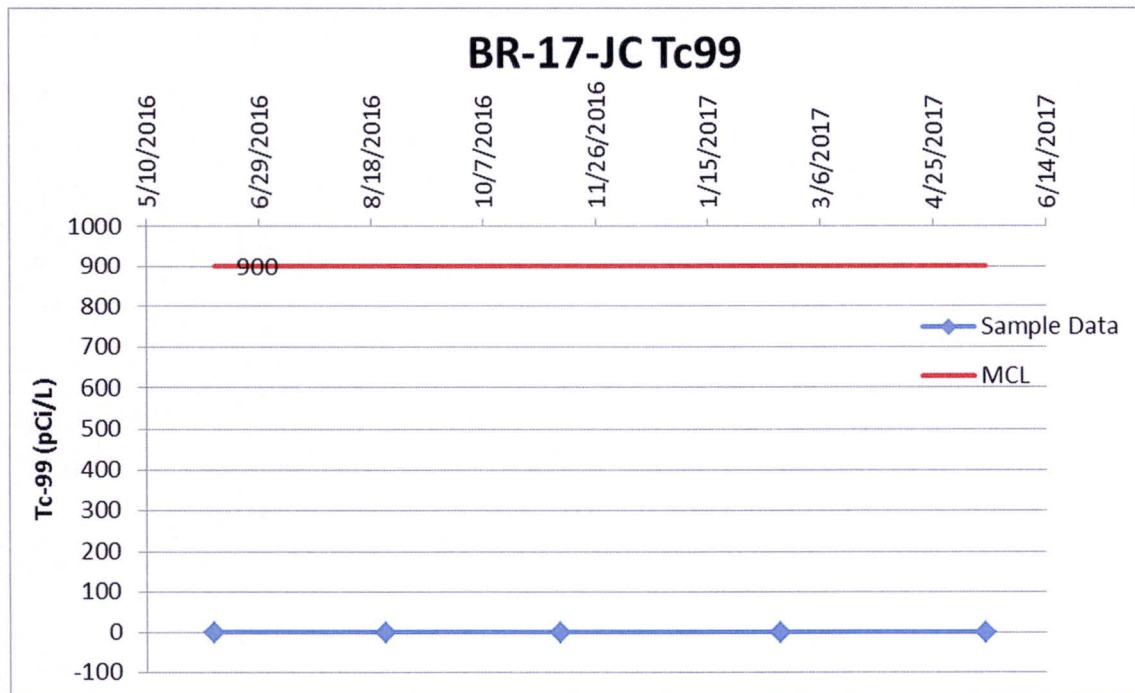
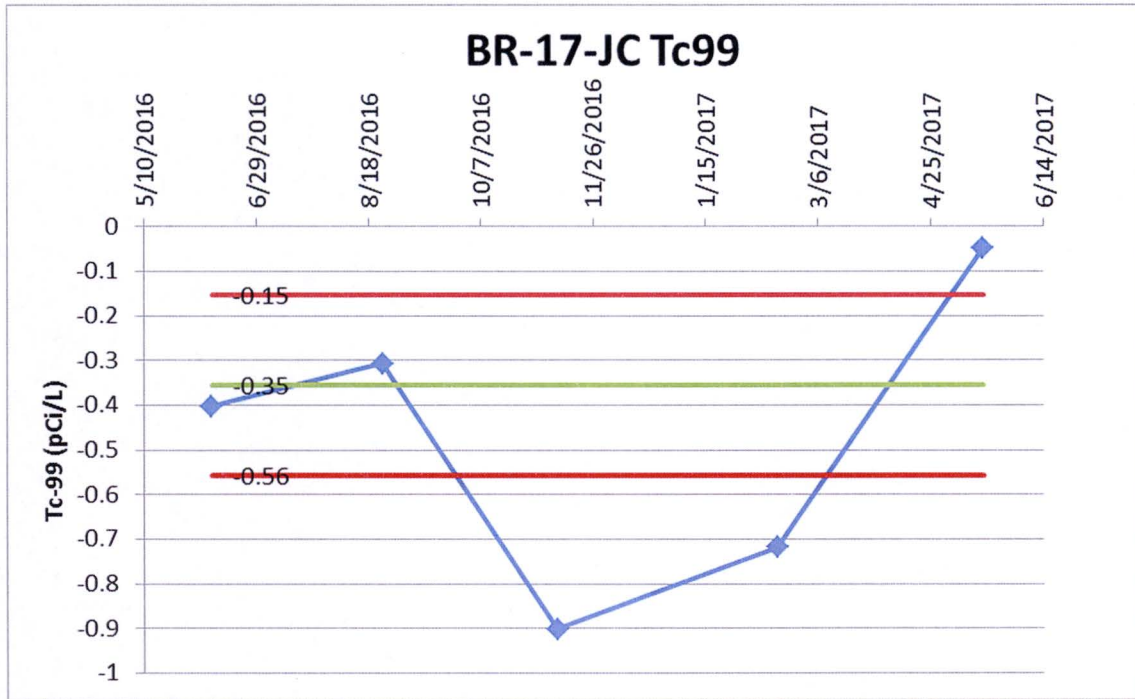
JEFFERSON CITY – COTTER HSU



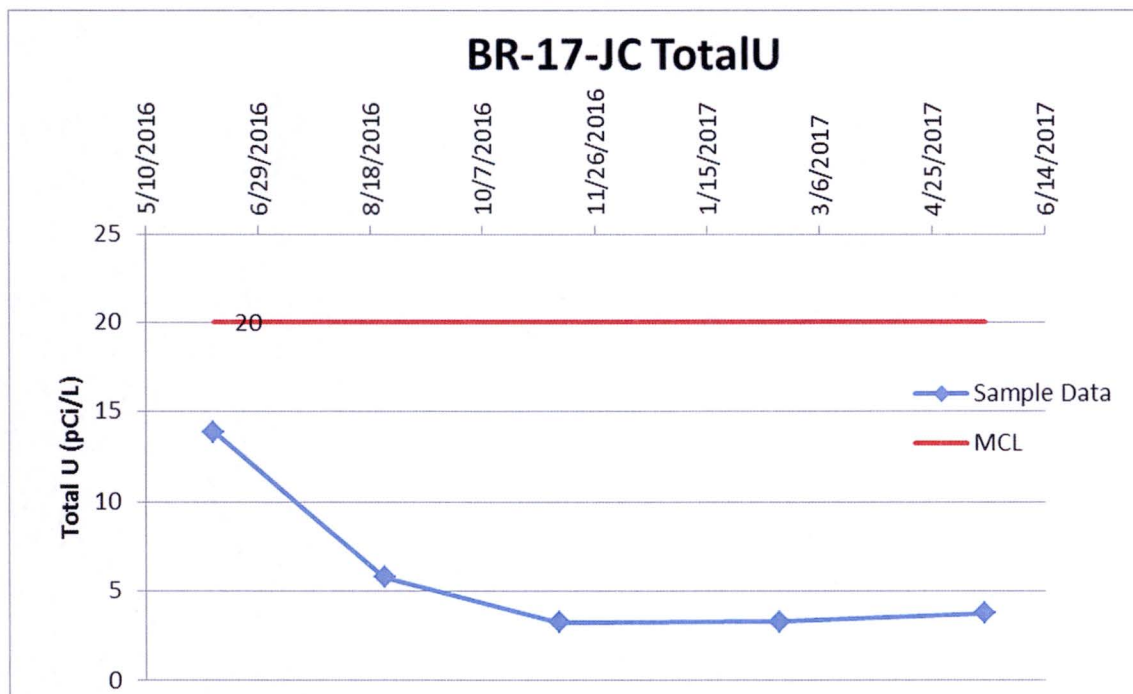
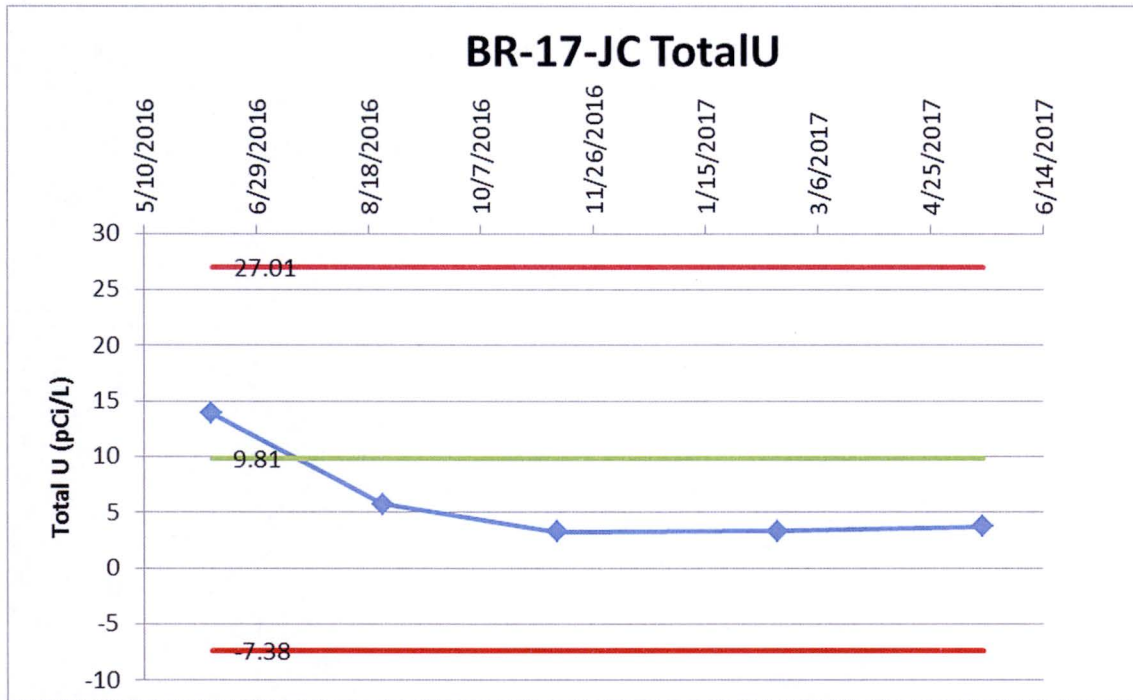
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU



Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU

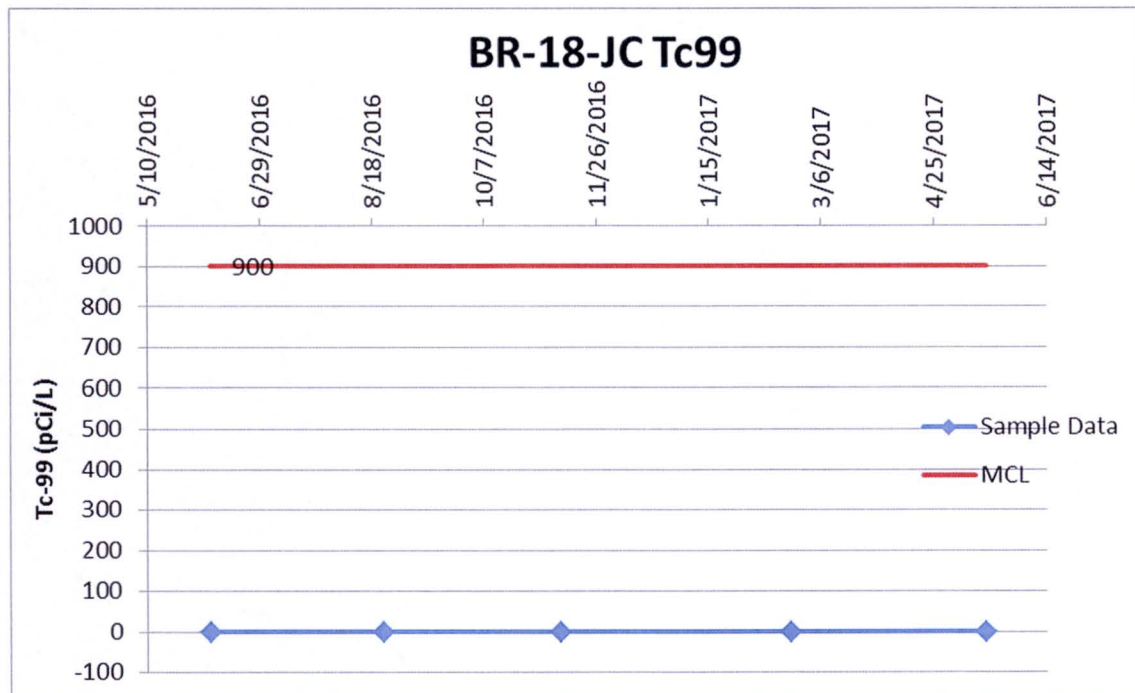
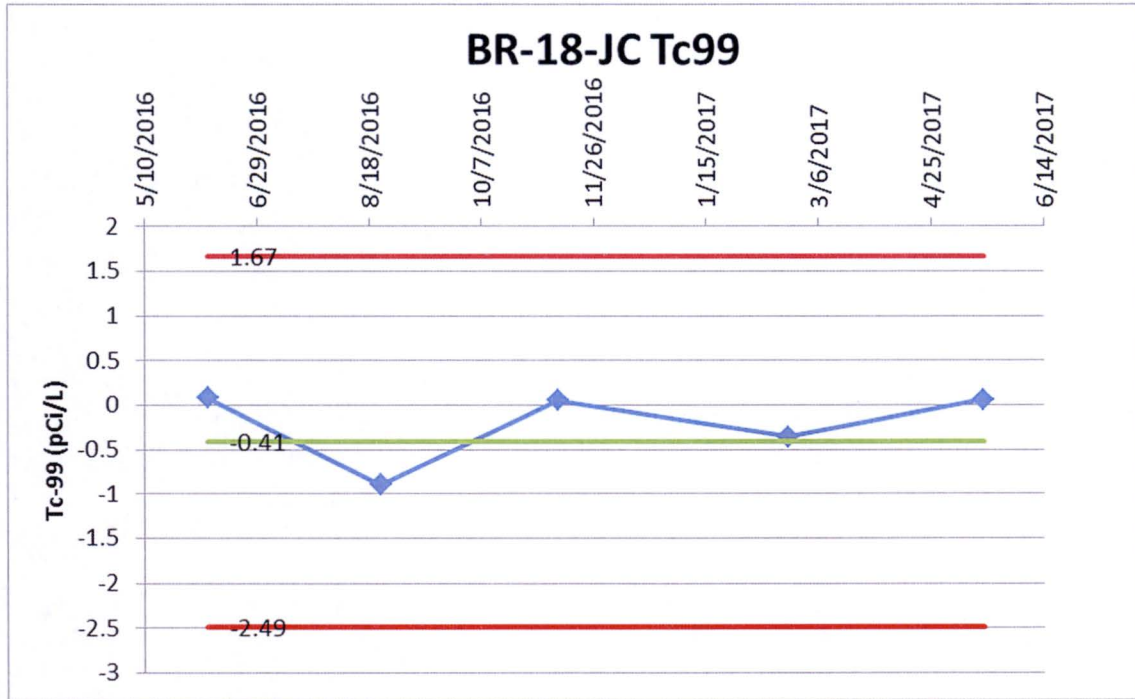


Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU

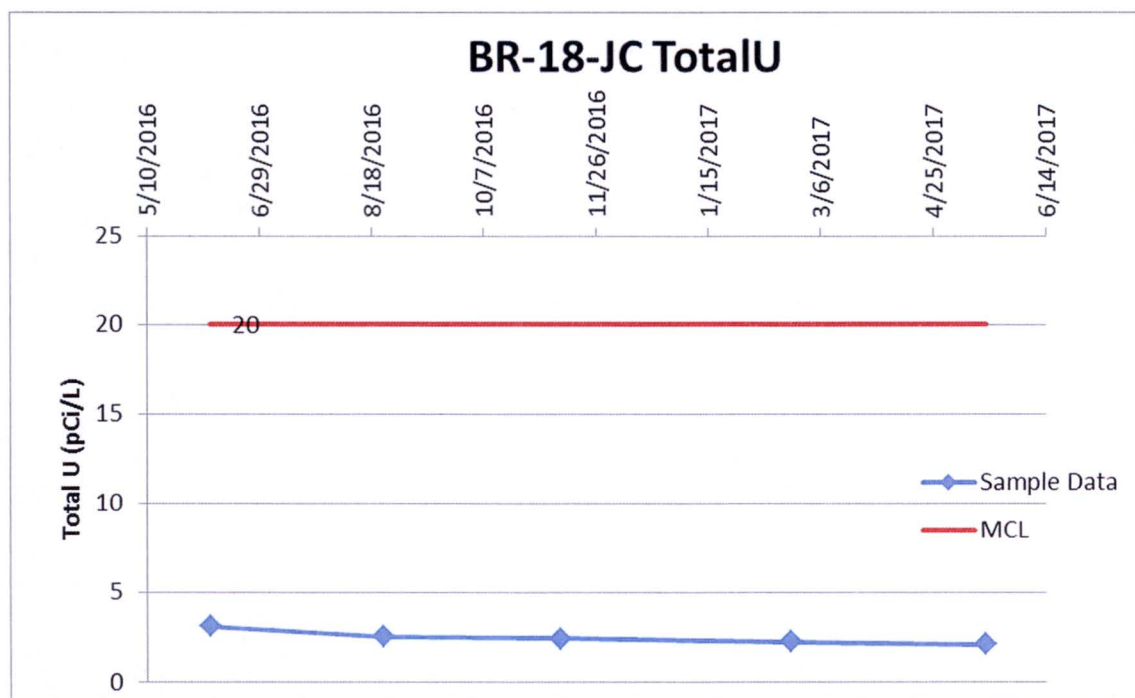
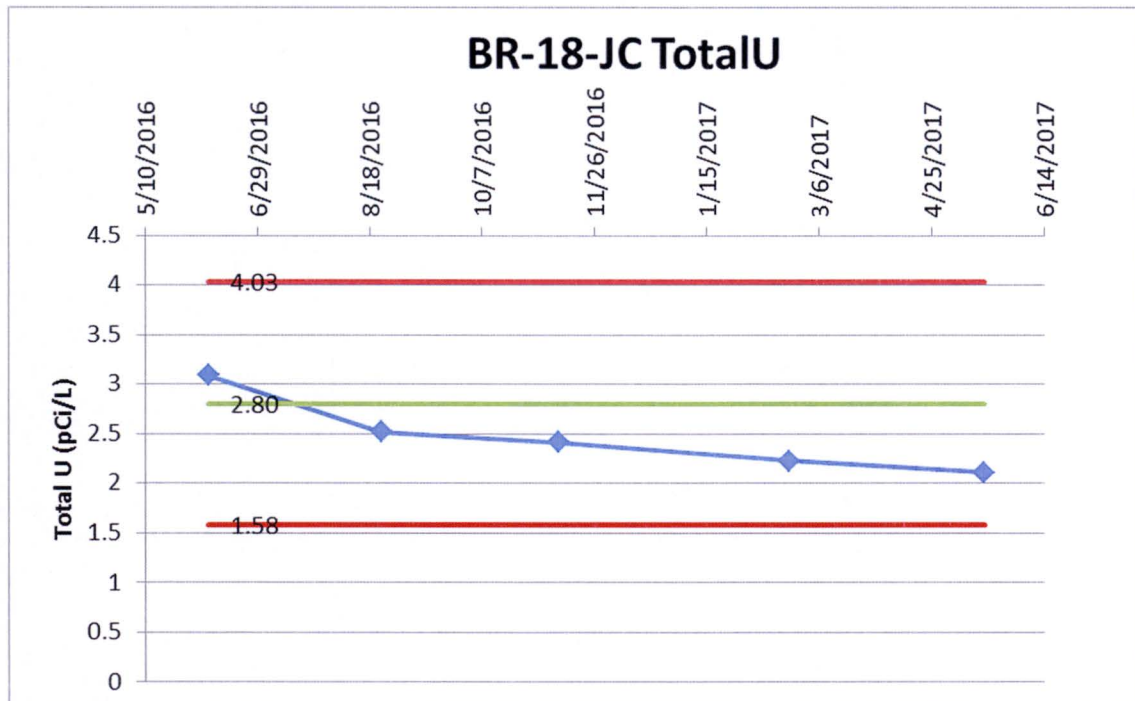


**Attachment 2
Mann-Kendall Analysis and Sample Results Graphs**

JEFFERSON CITY – COTTER HSU

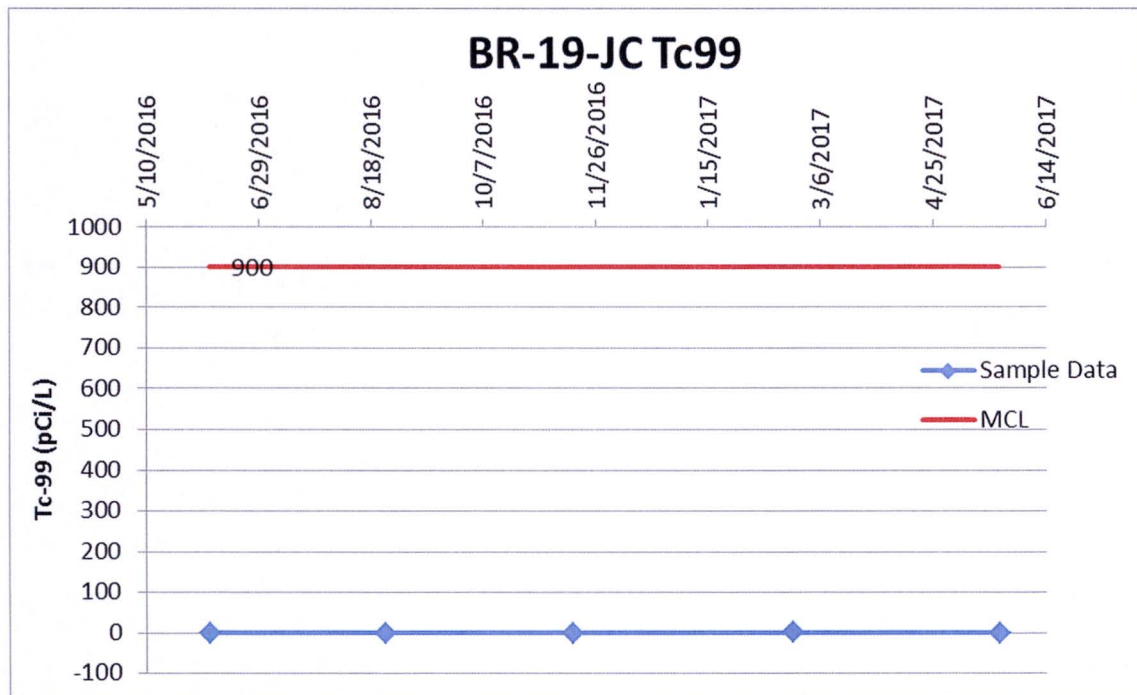
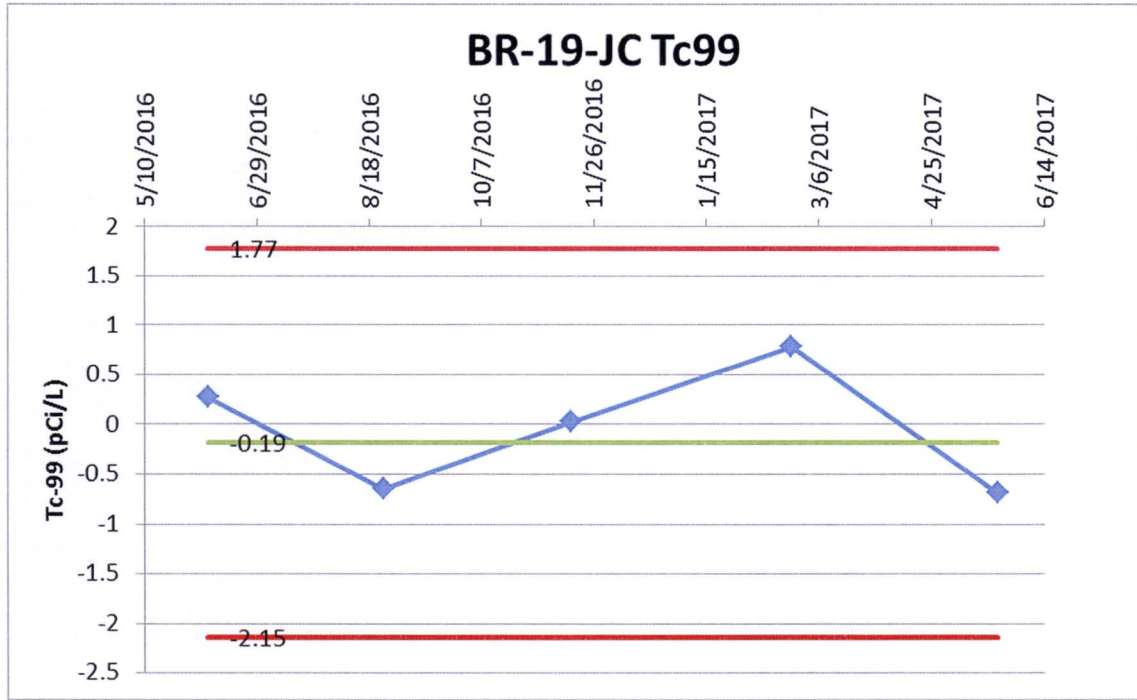


Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU

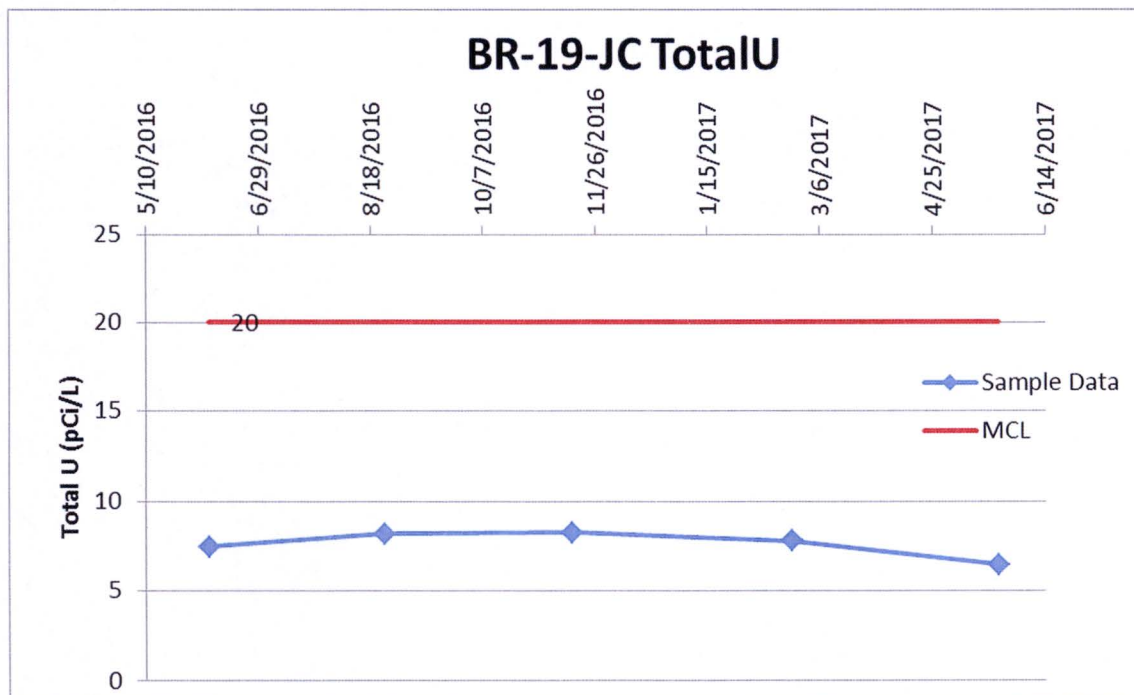
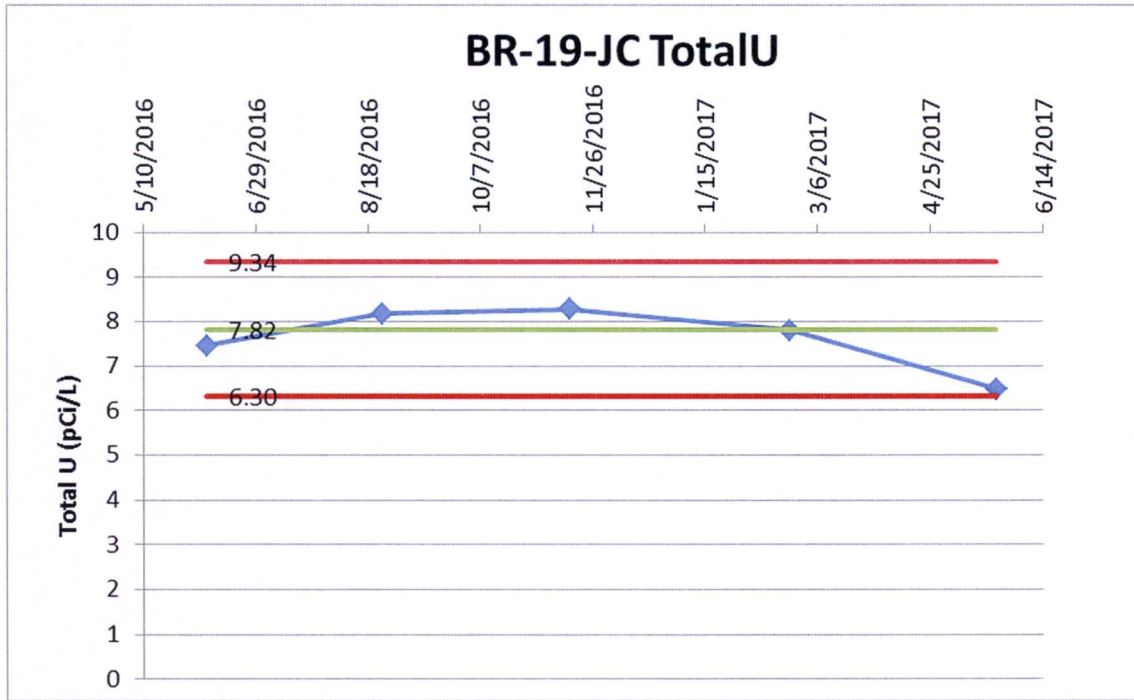


**Attachment 2
Mann-Kendall Analysis and Sample Results Graphs**

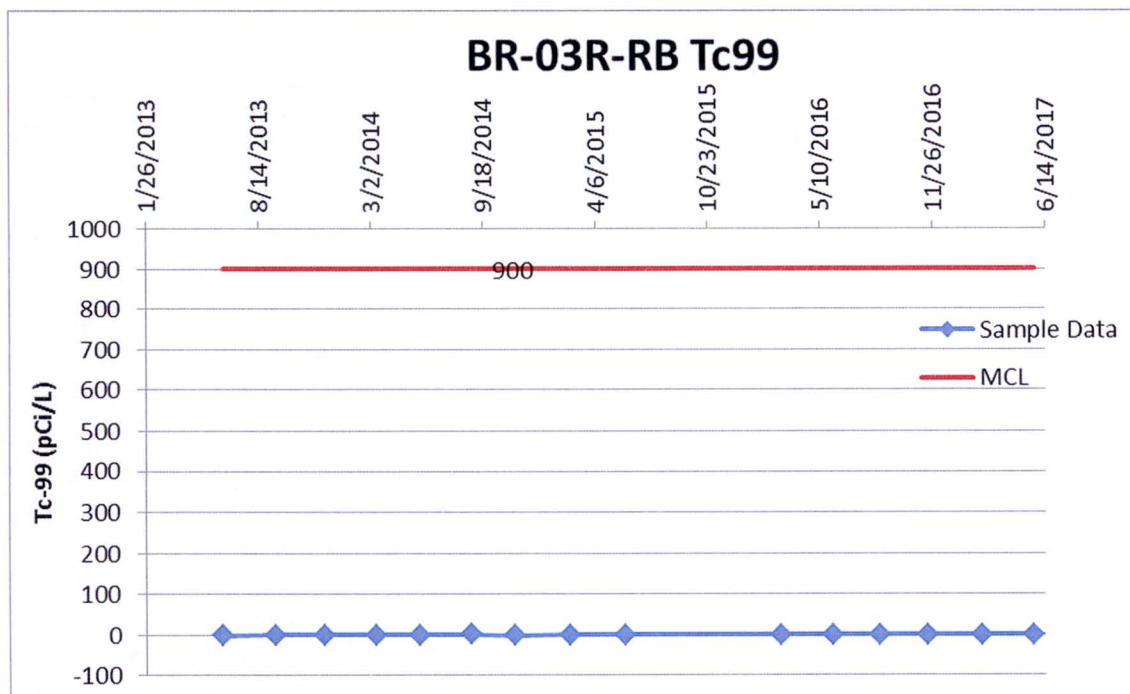
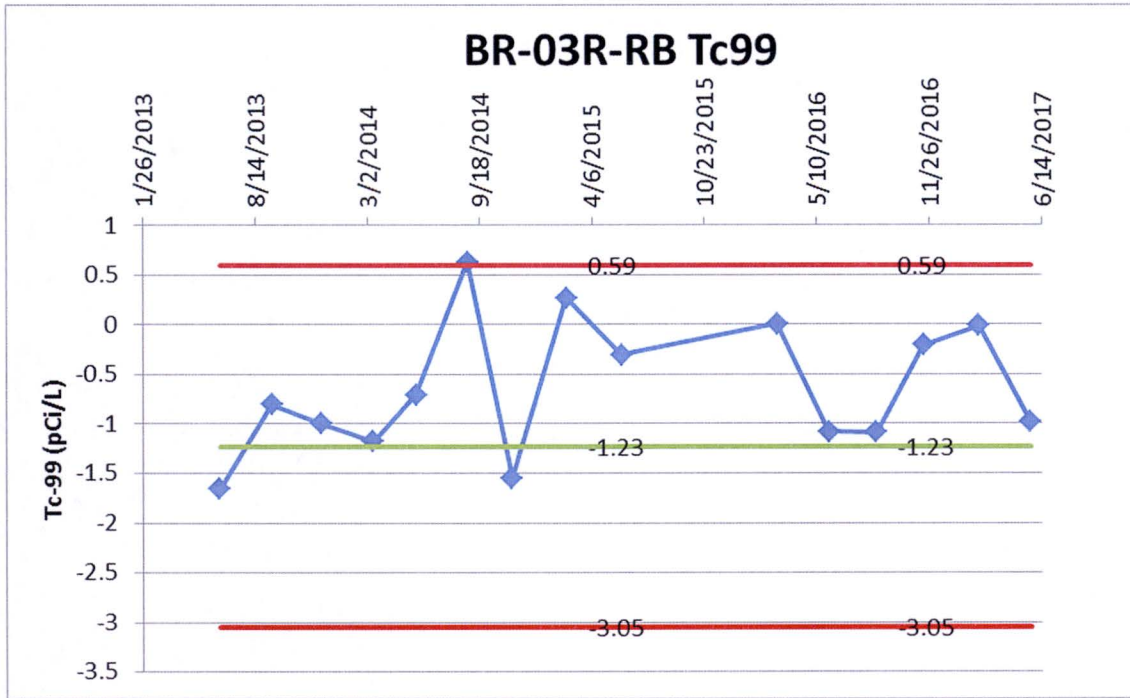
JEFFERSON CITY – COTTER HSU



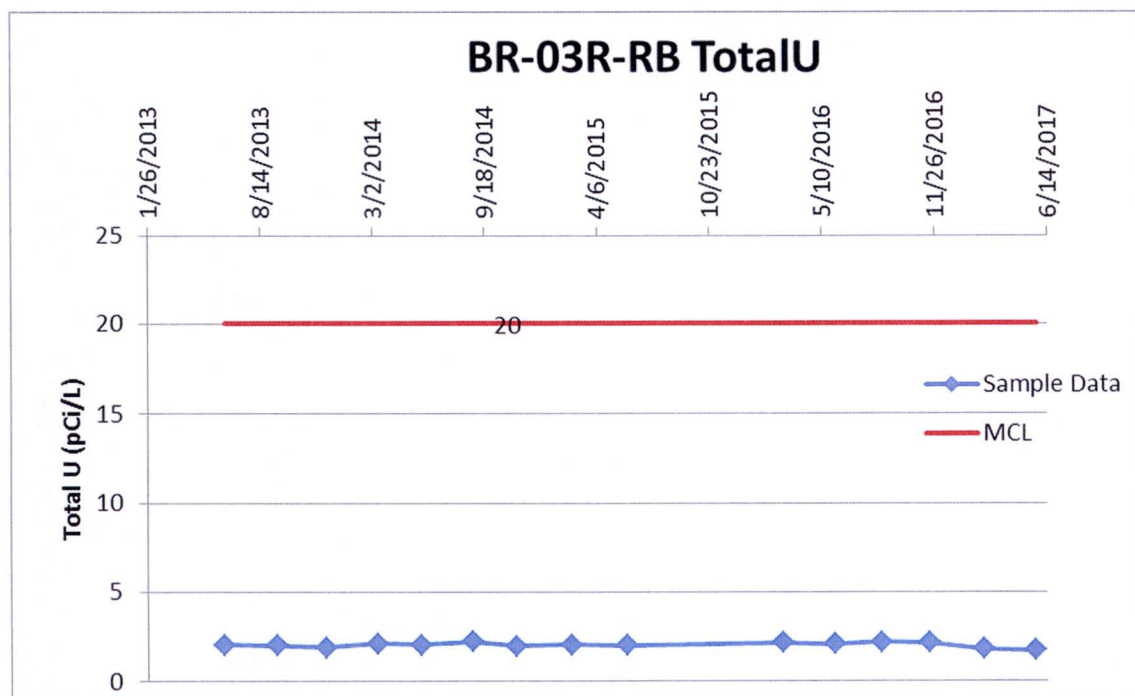
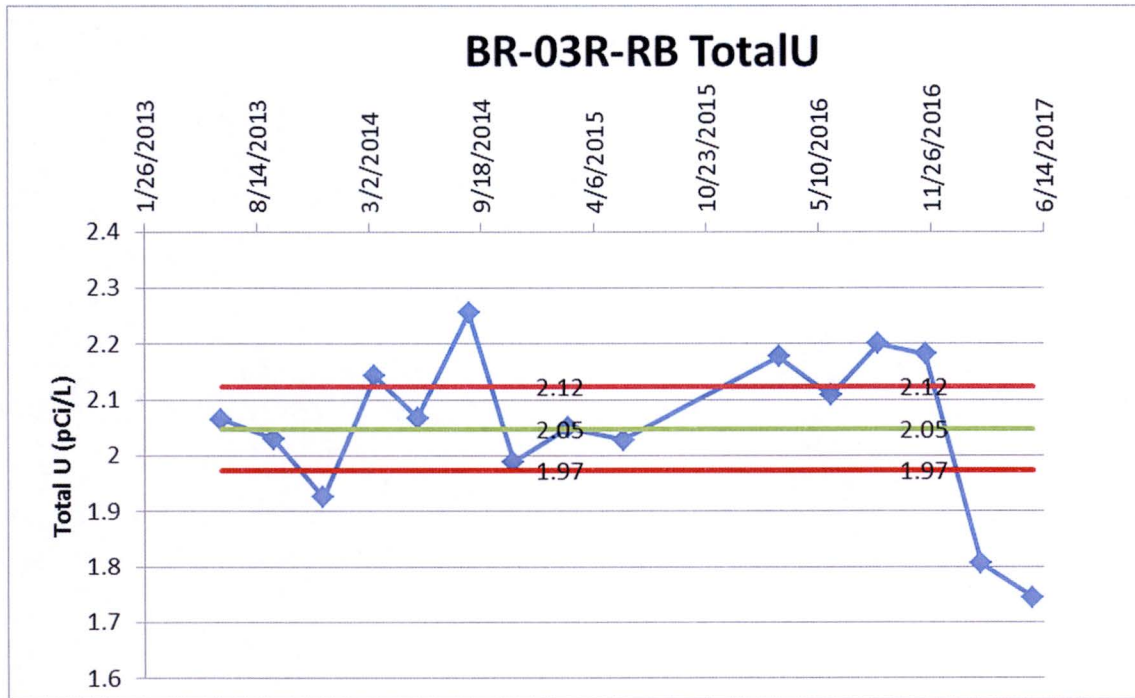
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU



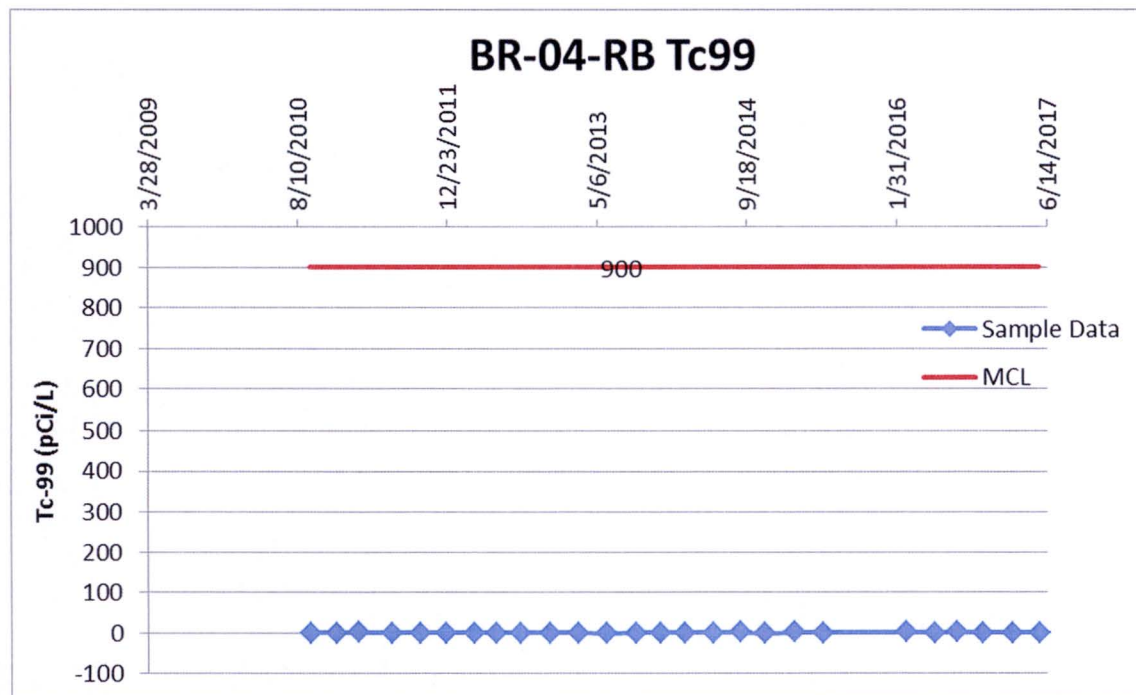
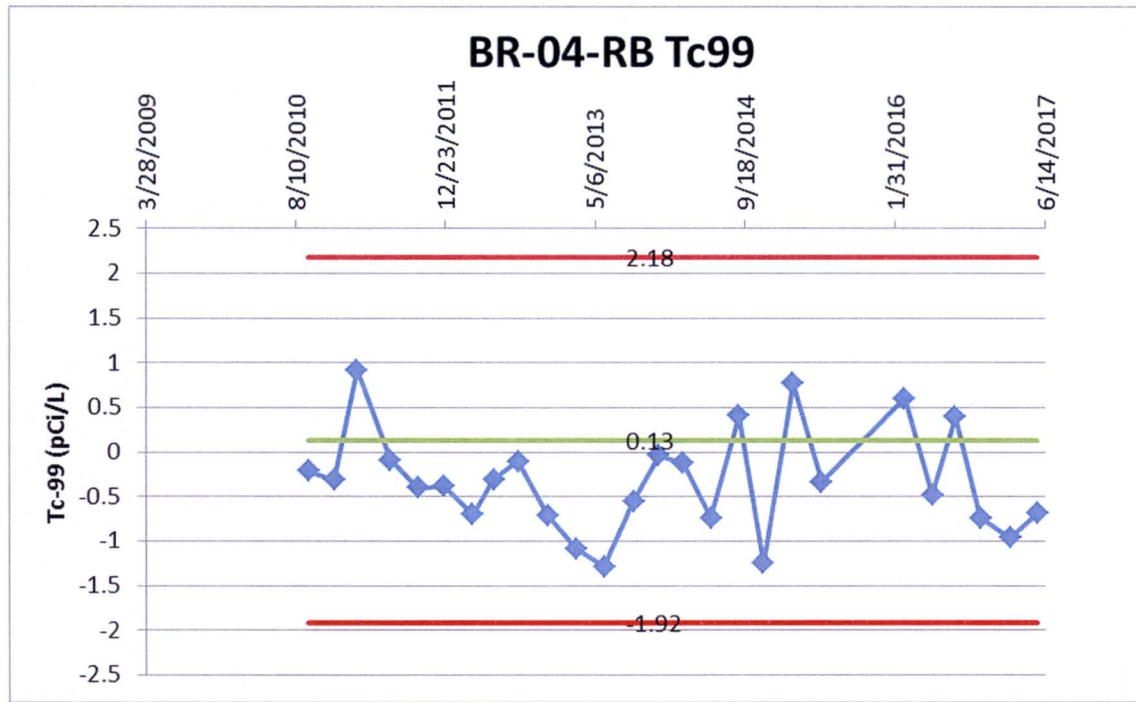
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
ROUBIDOUX HSU



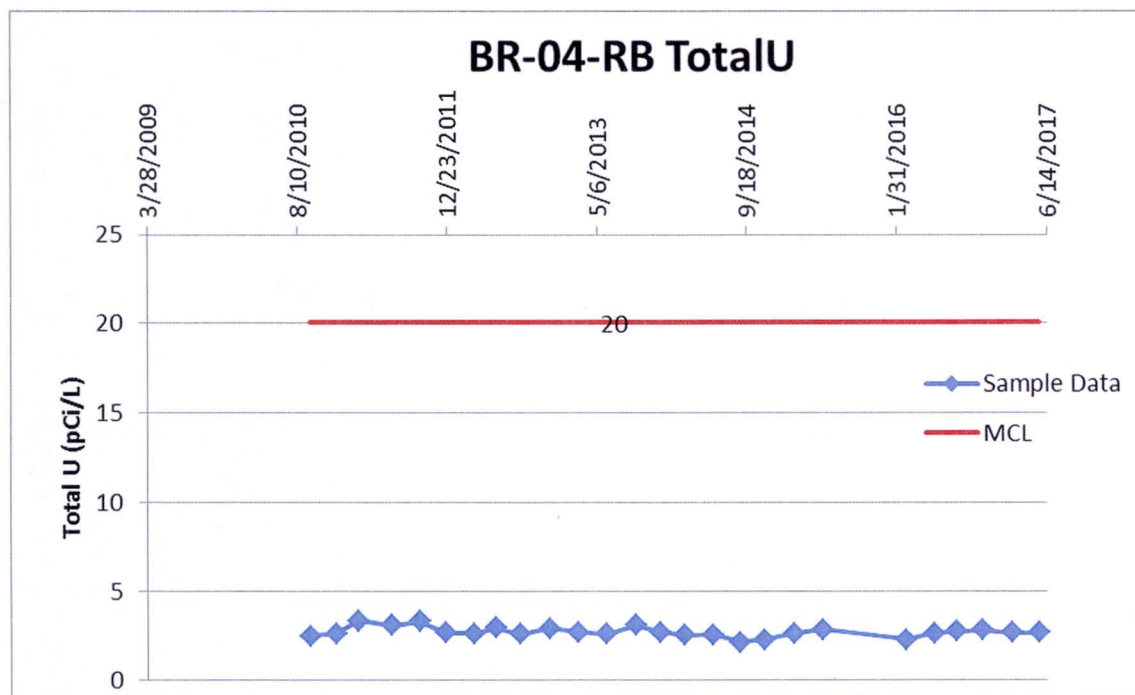
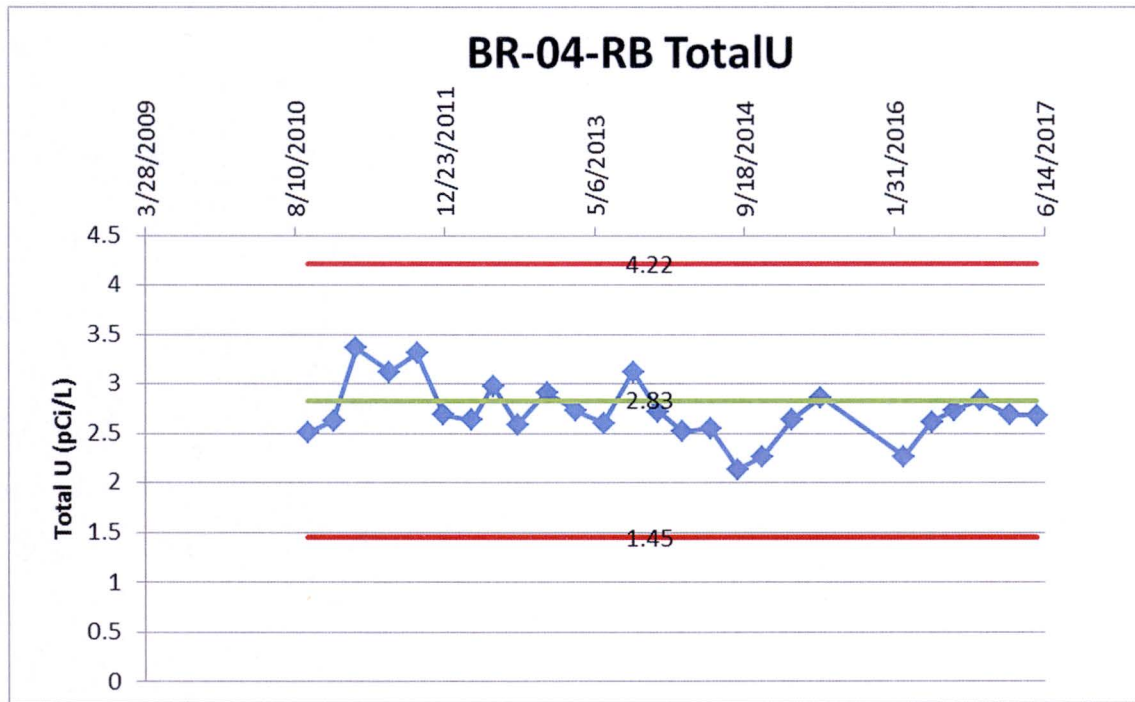
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
ROUBIDOUX HSU



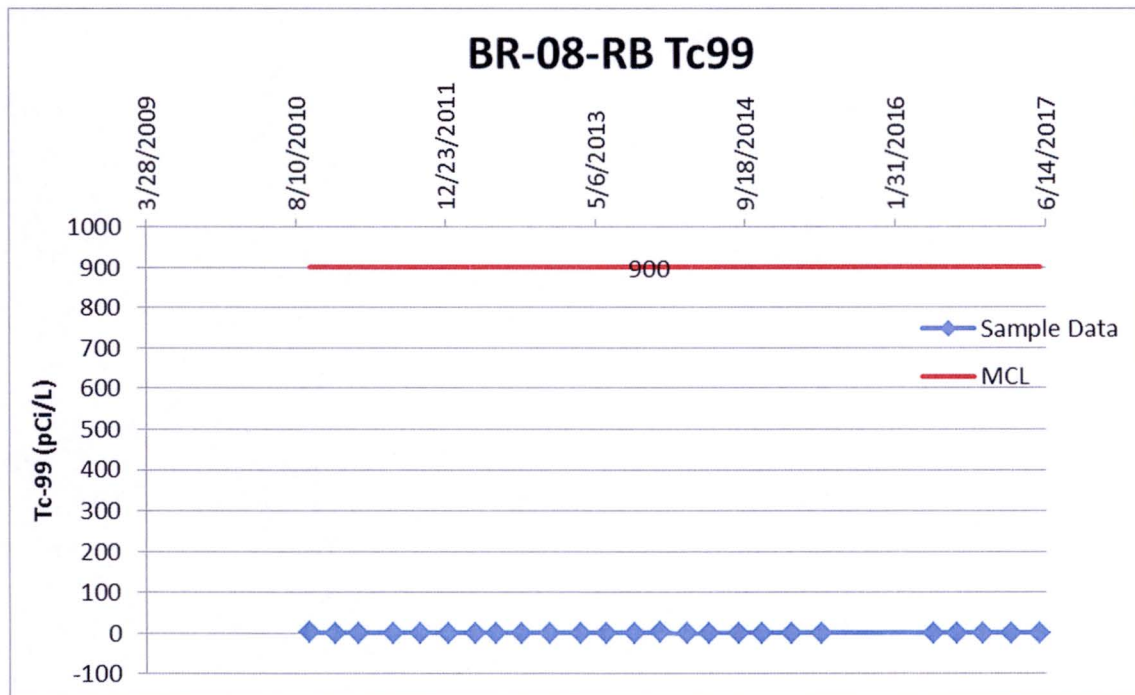
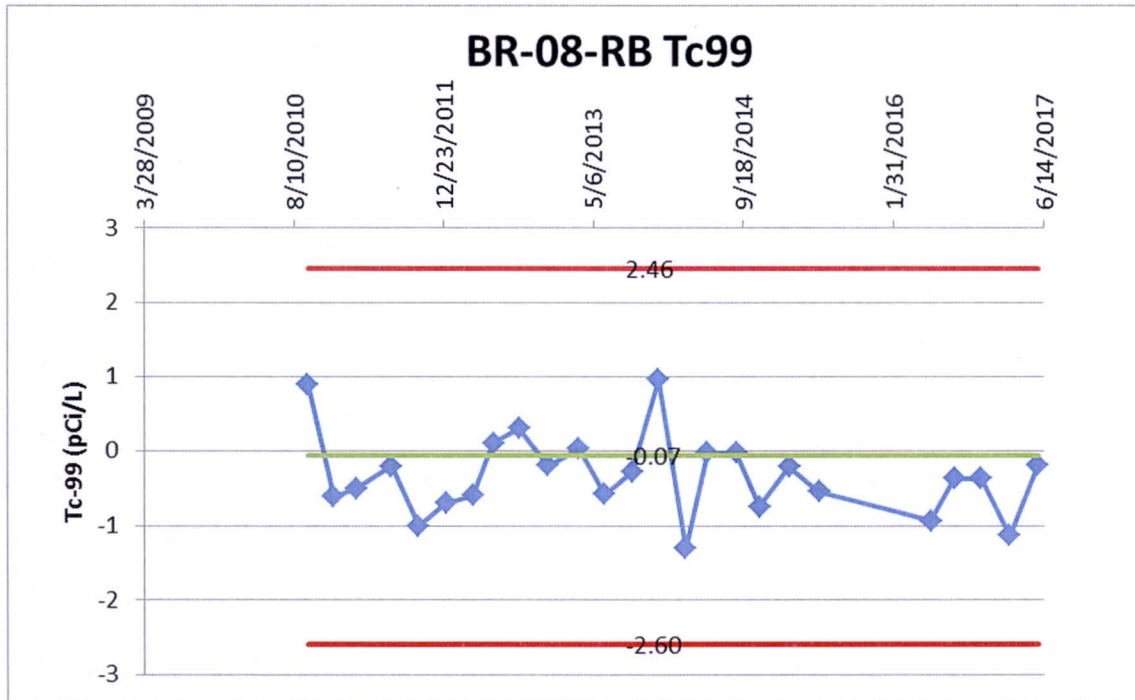
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
ROUBIDOUX HSU



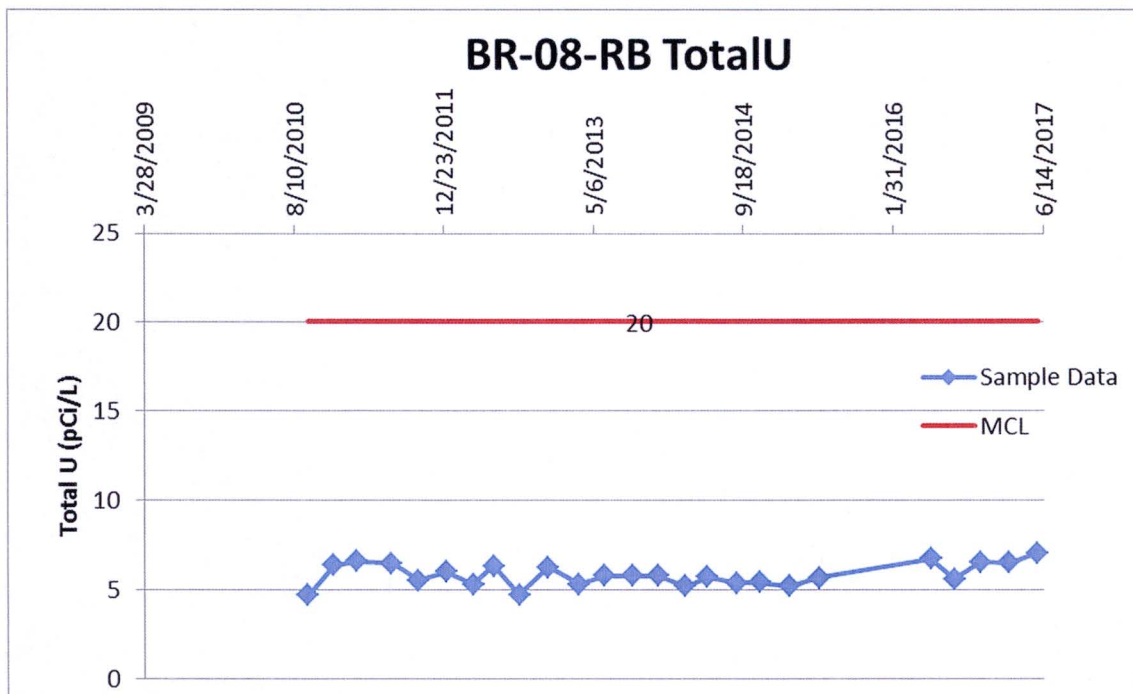
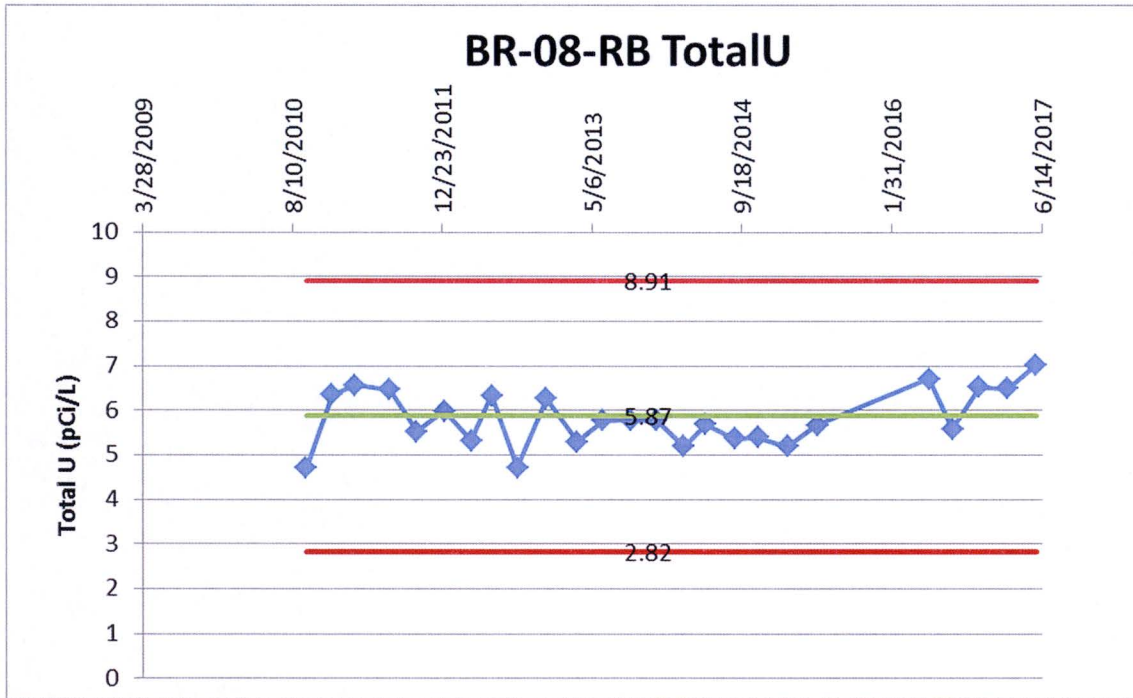
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
ROUBIDOUX HSU



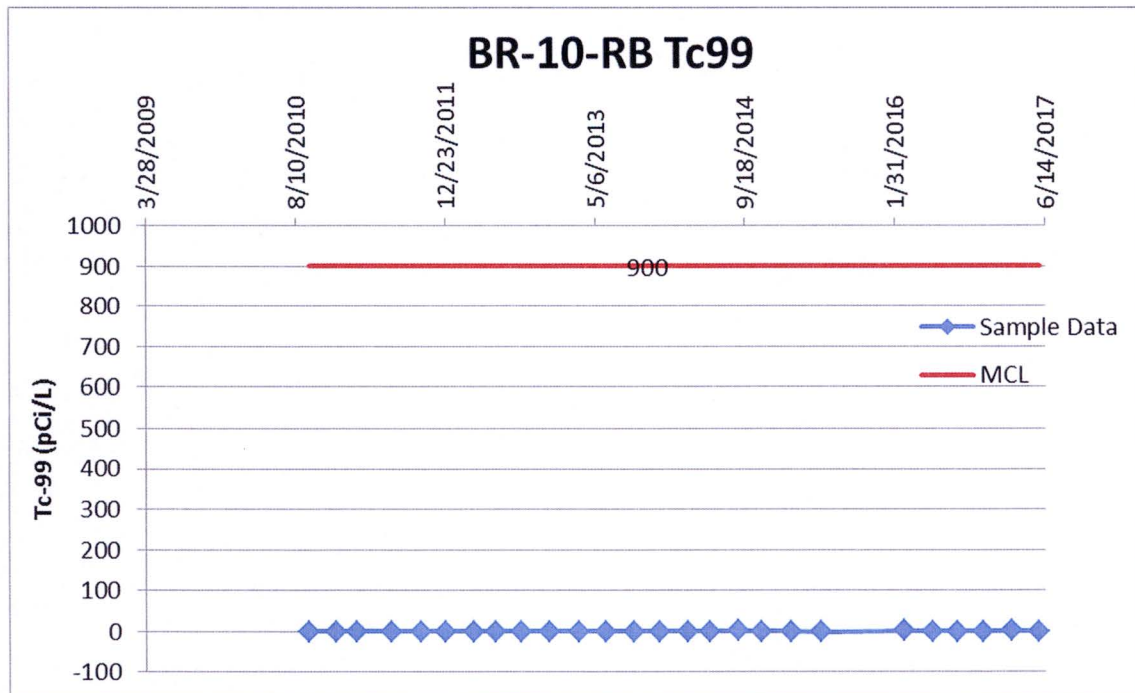
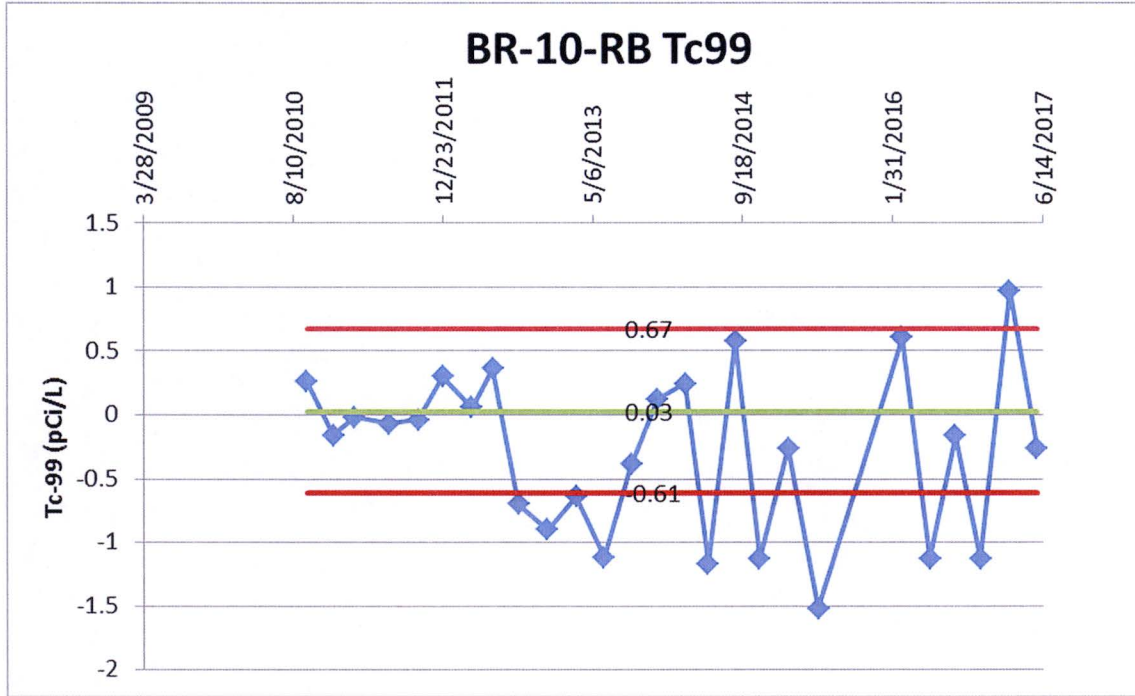
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
ROUBIDOUX HSU



Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
ROUBIDOUX HSU

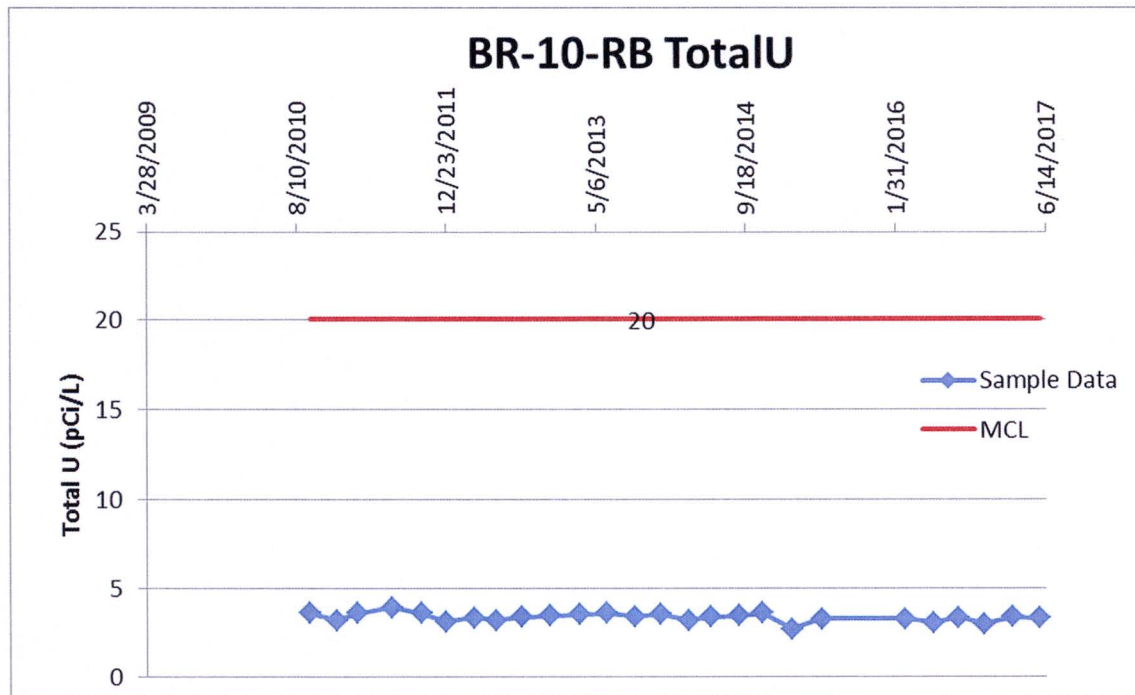
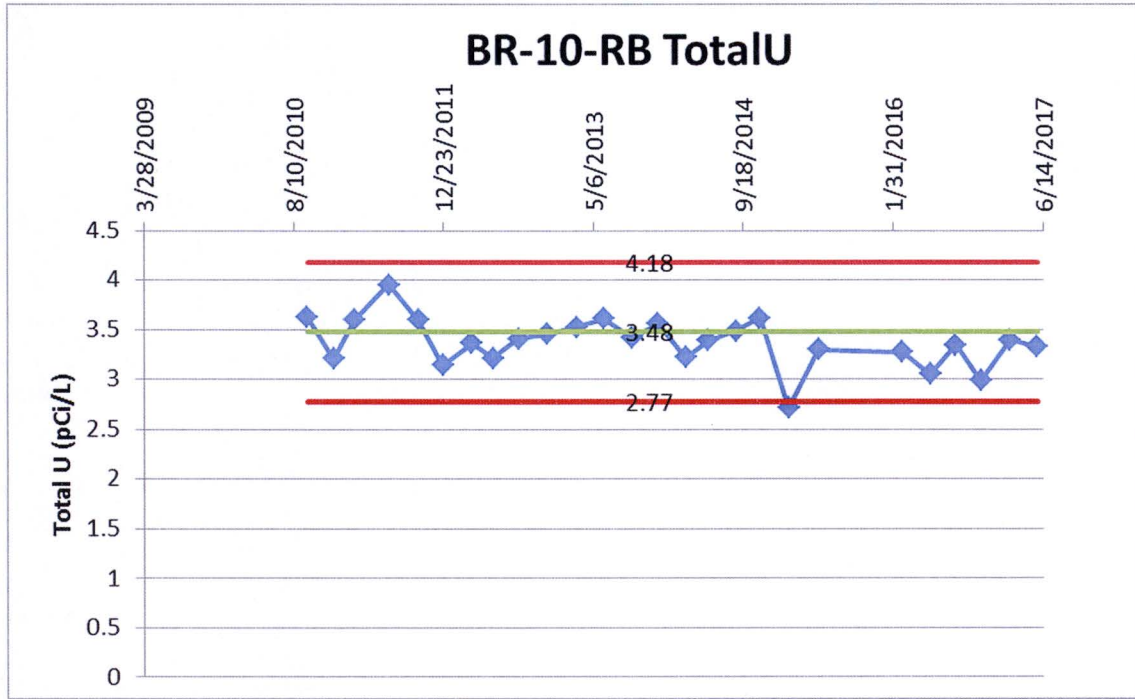


Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
ROUBIDOUX HSU

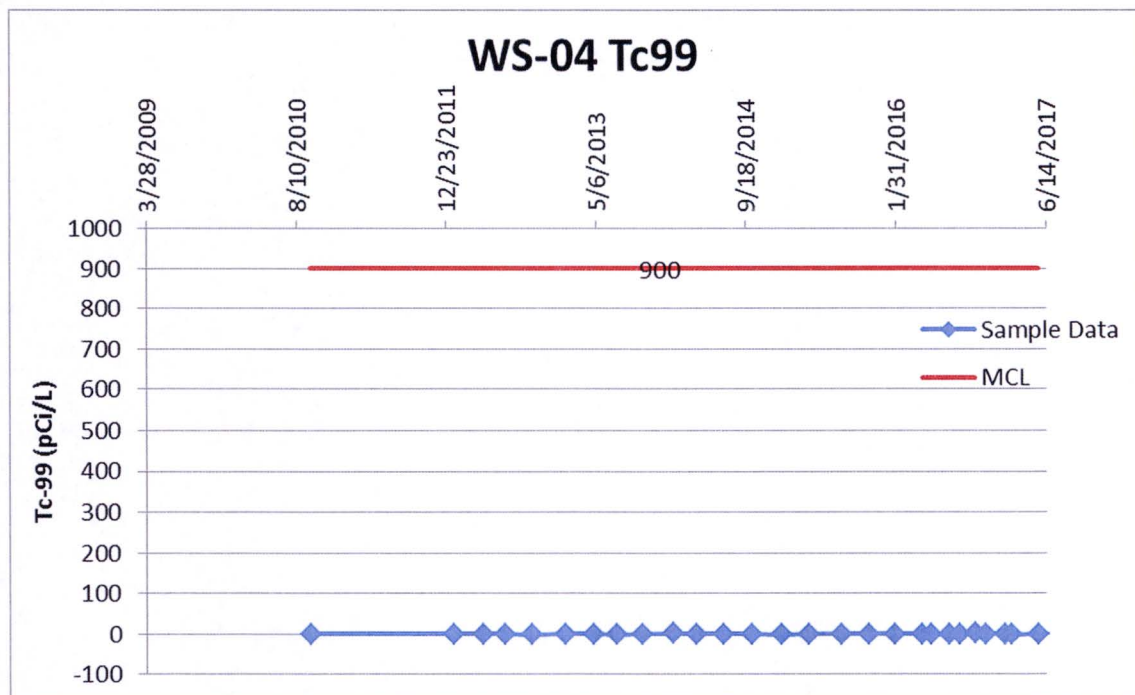
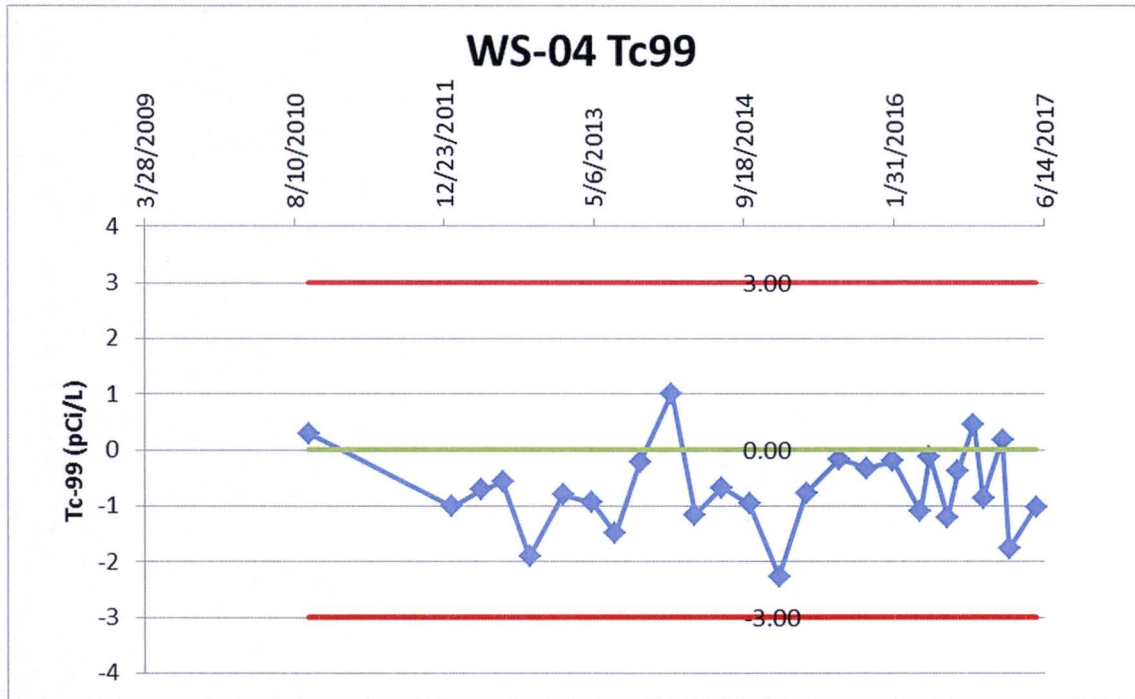


**Attachment 2
Mann-Kendall Analysis and Sample Results Graphs**

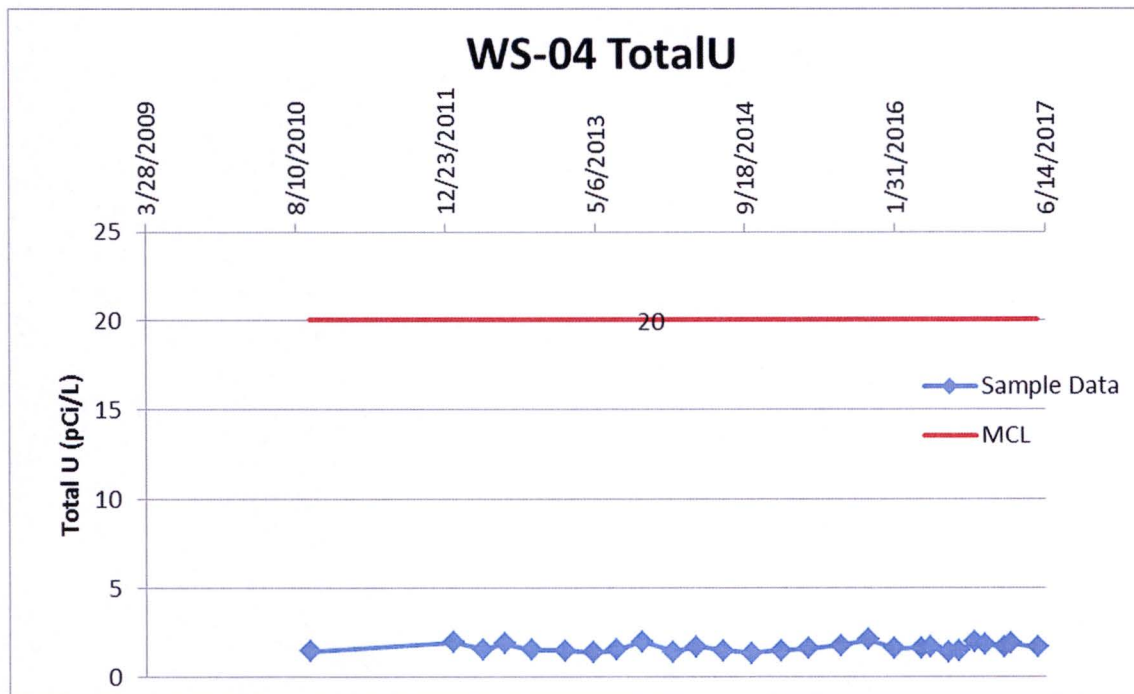
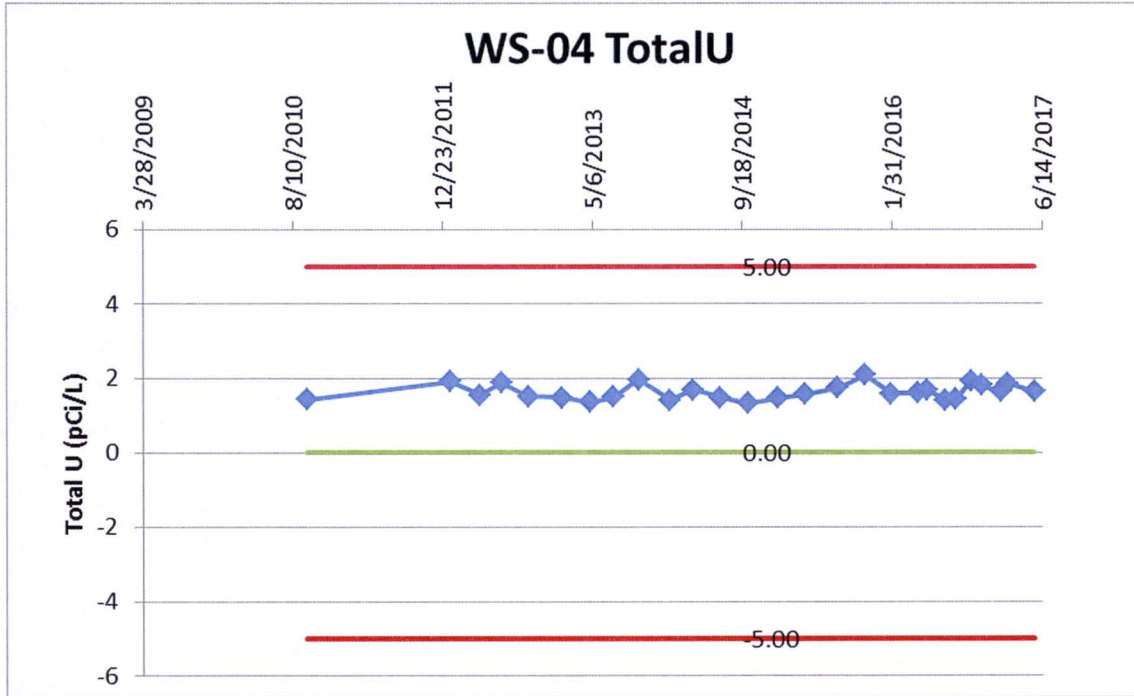
ROUBIDOUX HSU



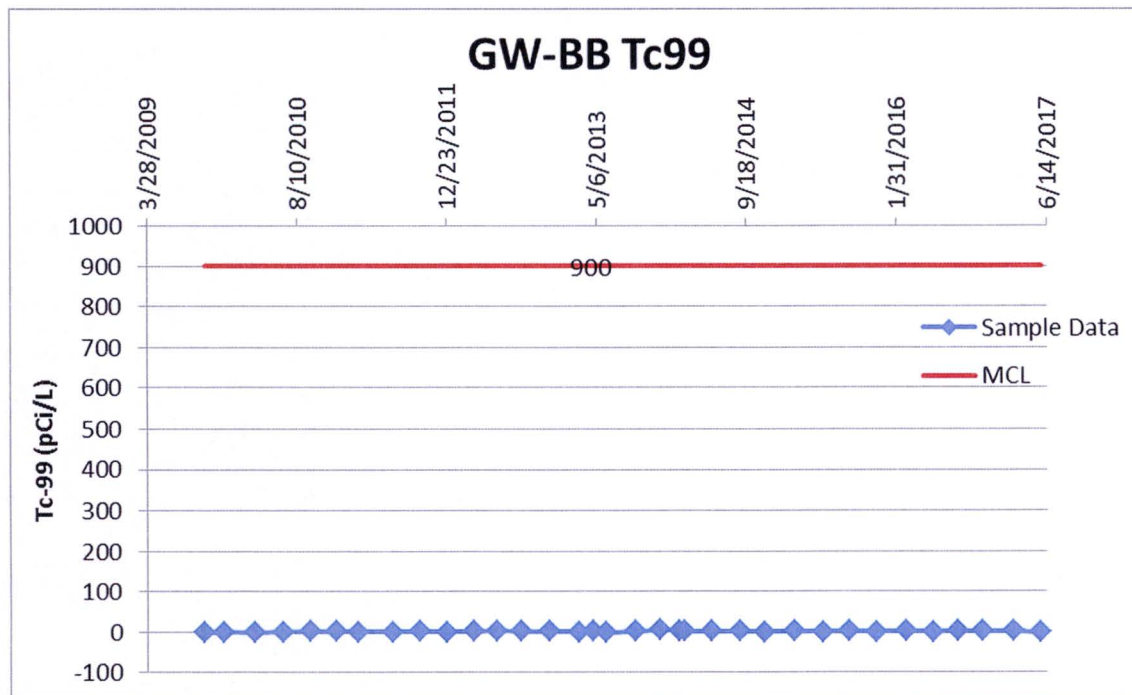
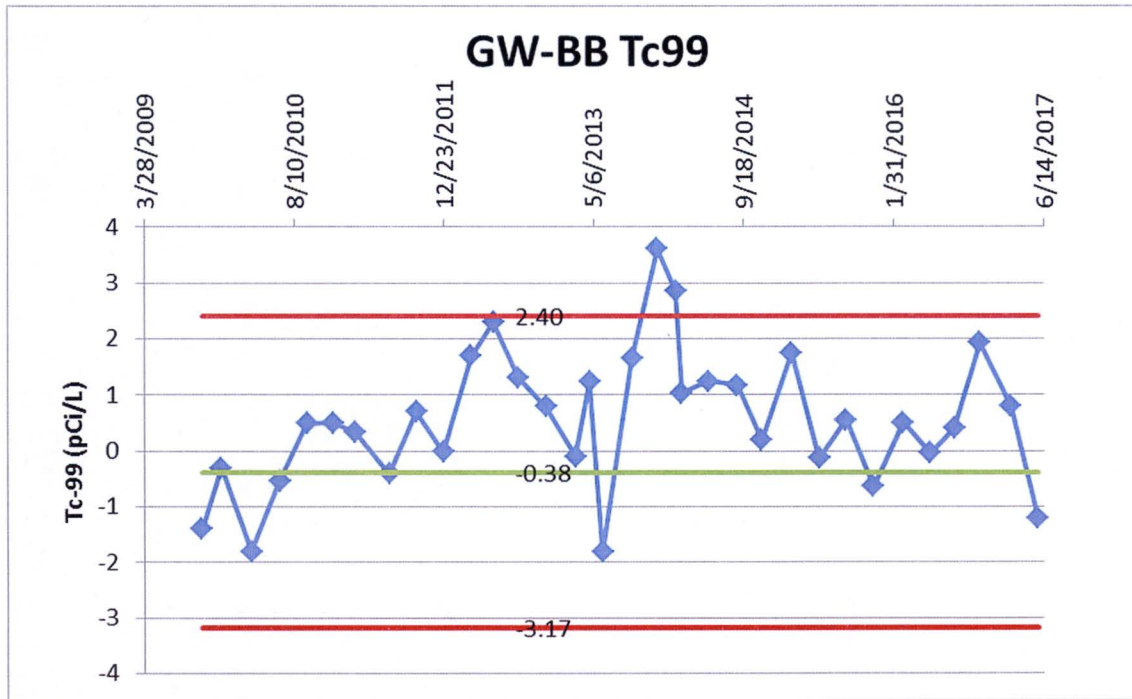
**Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
ROUBIDOUX HSU**



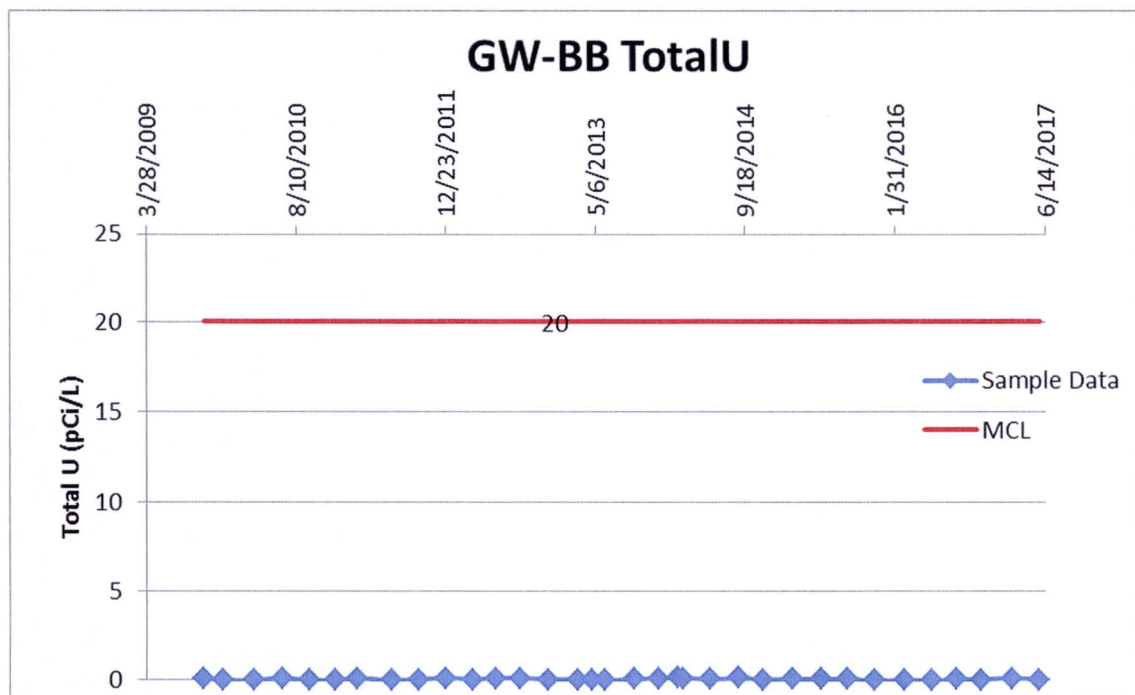
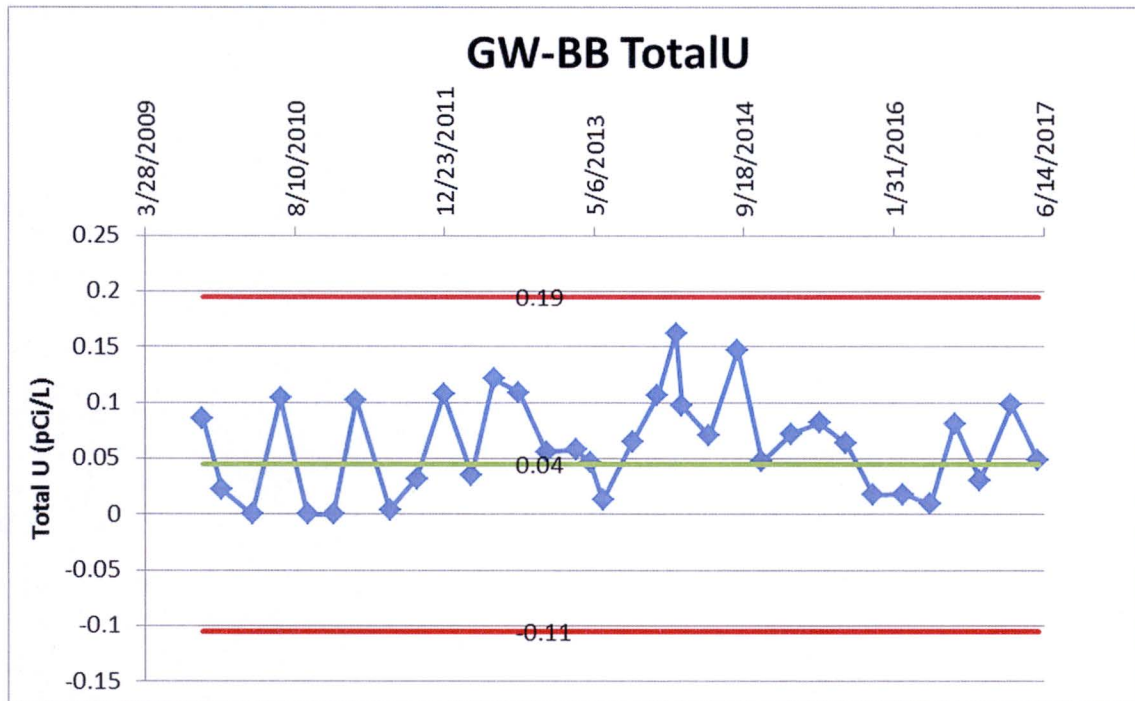
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
ROUBIDOUX HSU



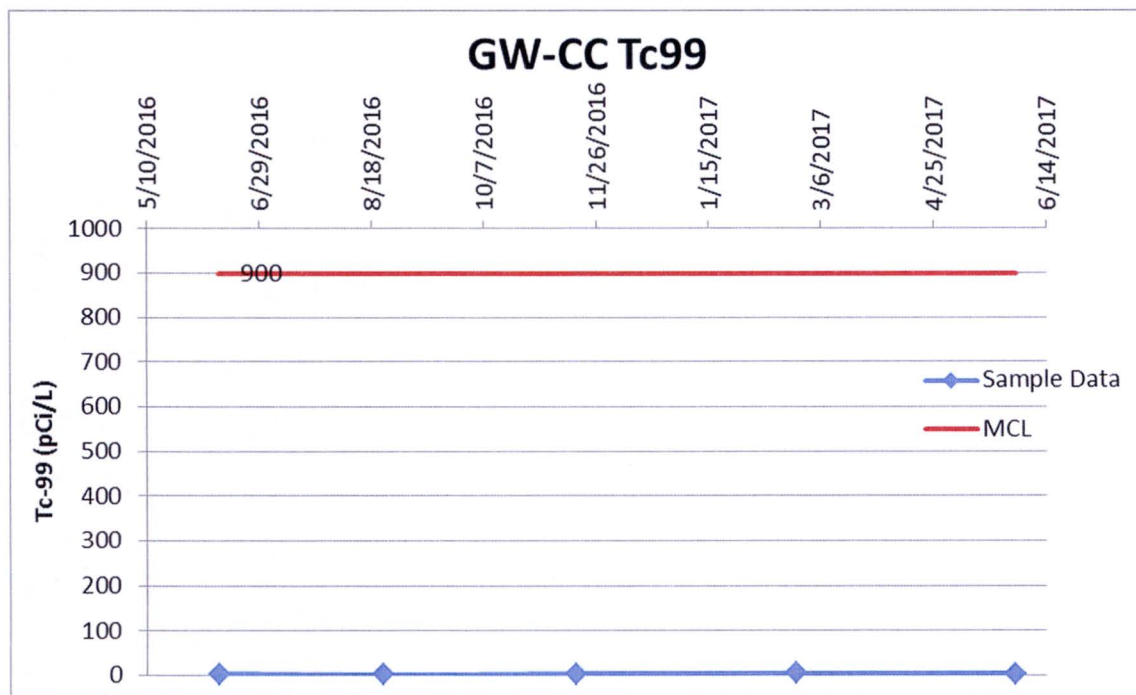
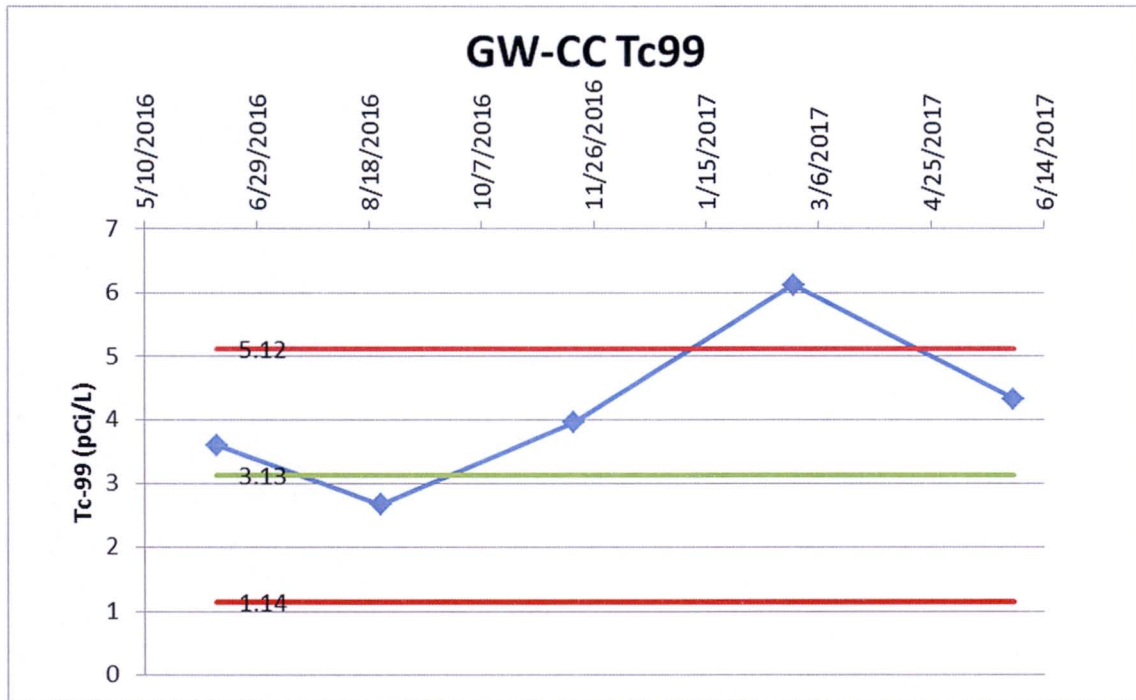
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



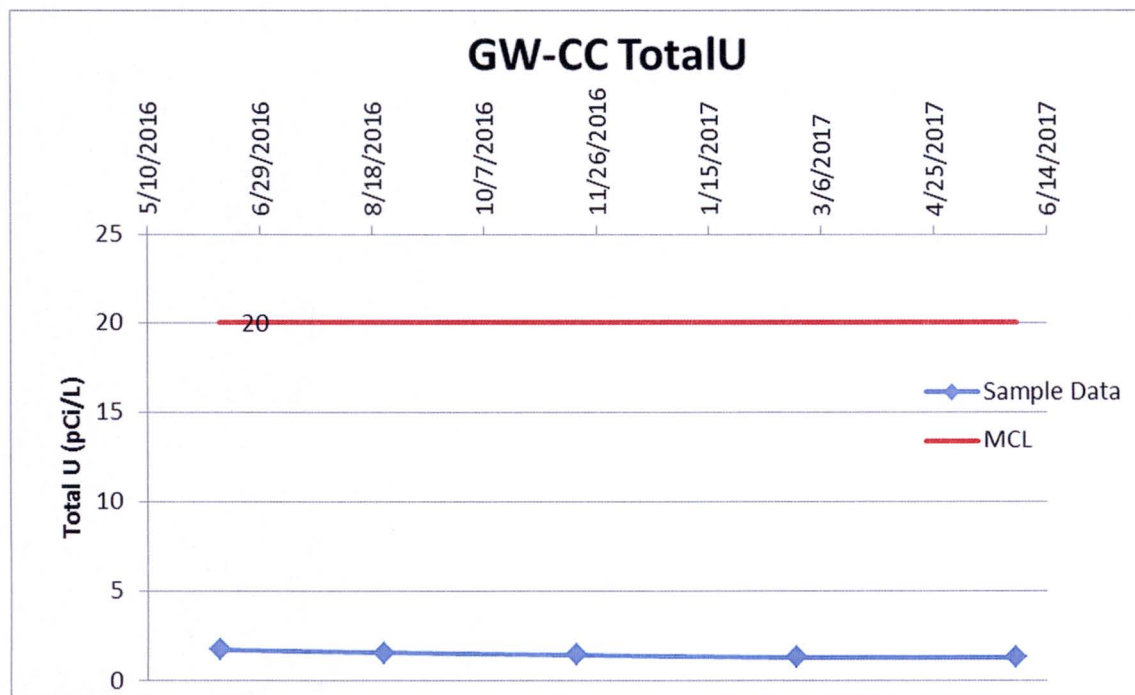
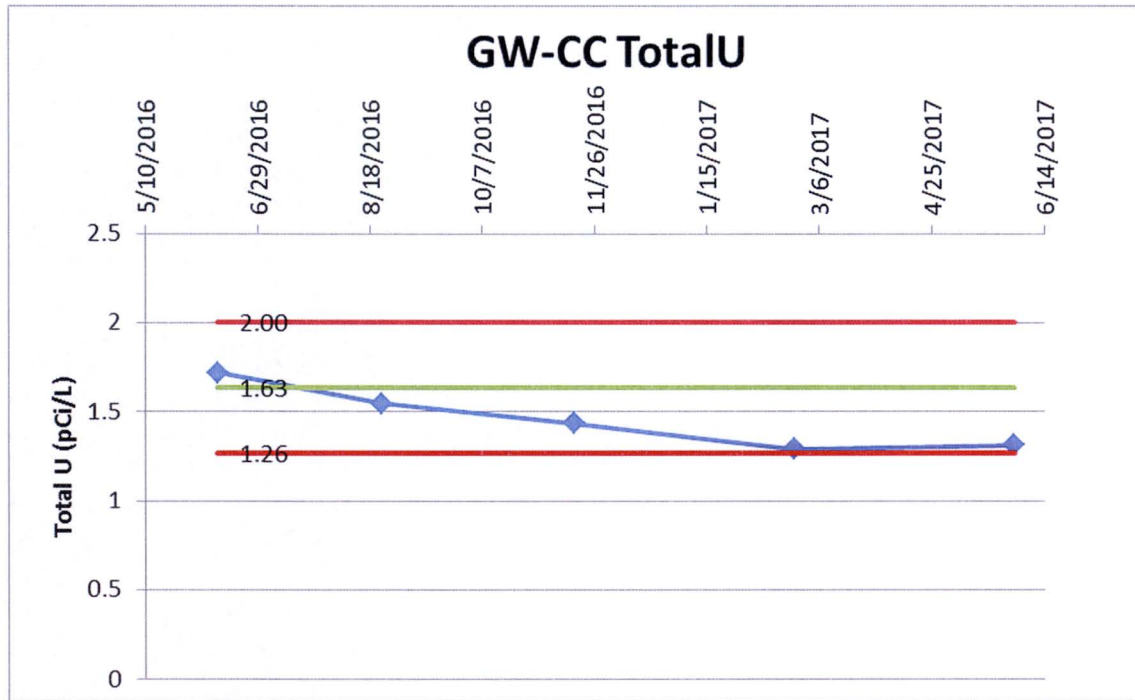
**Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU**



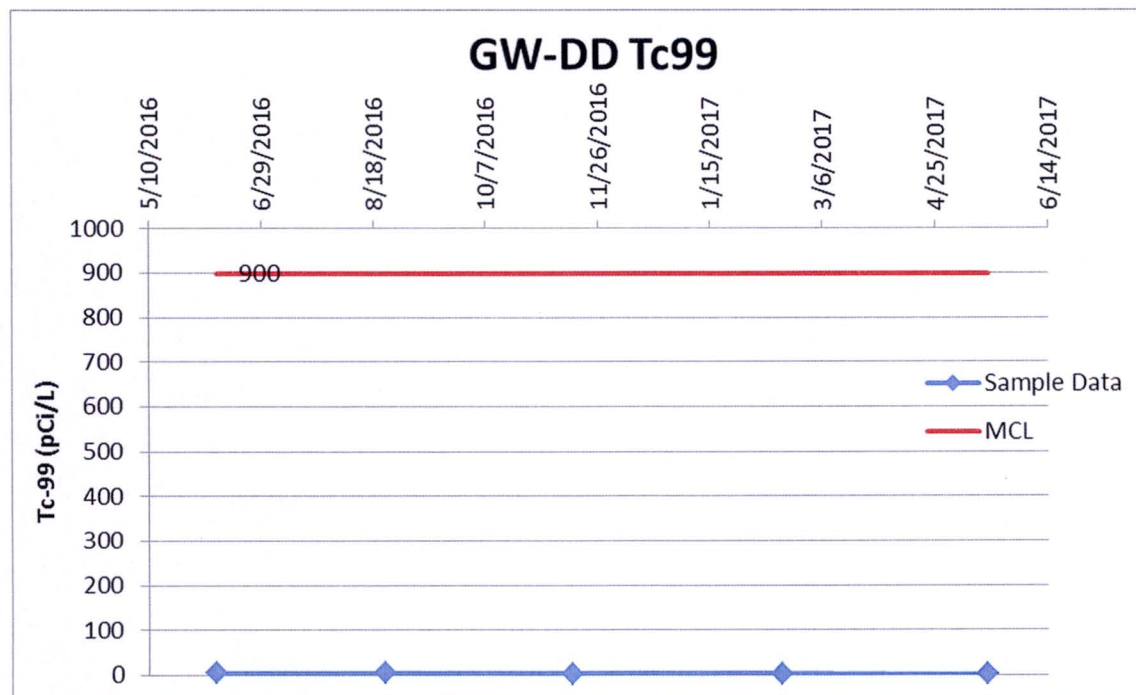
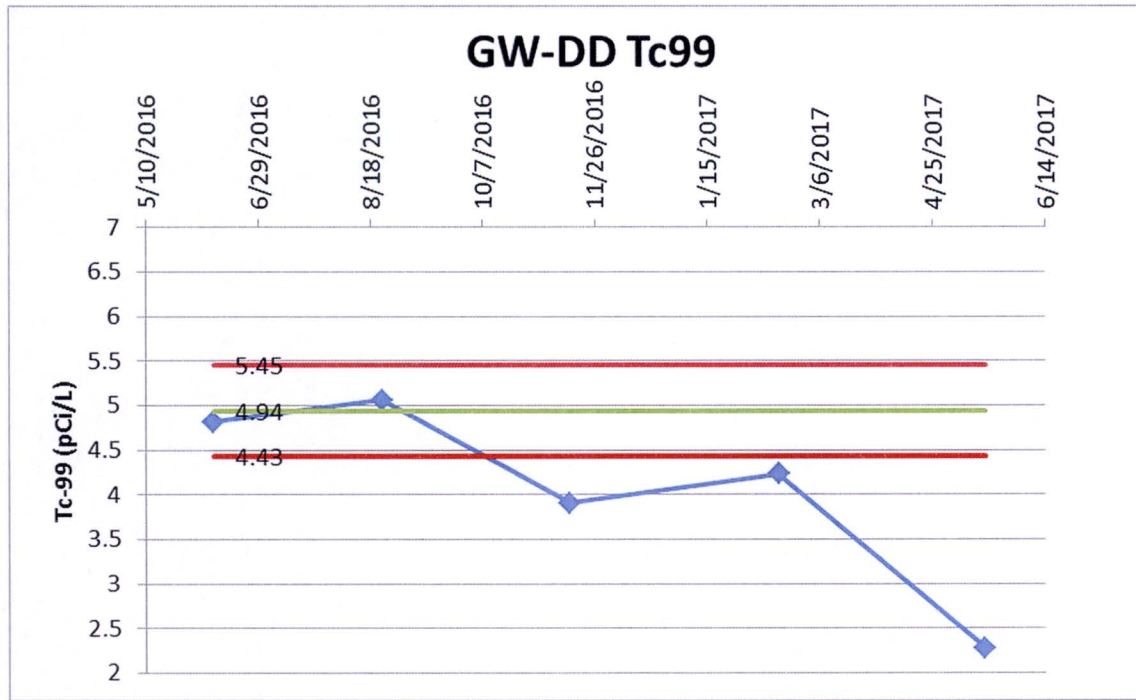
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



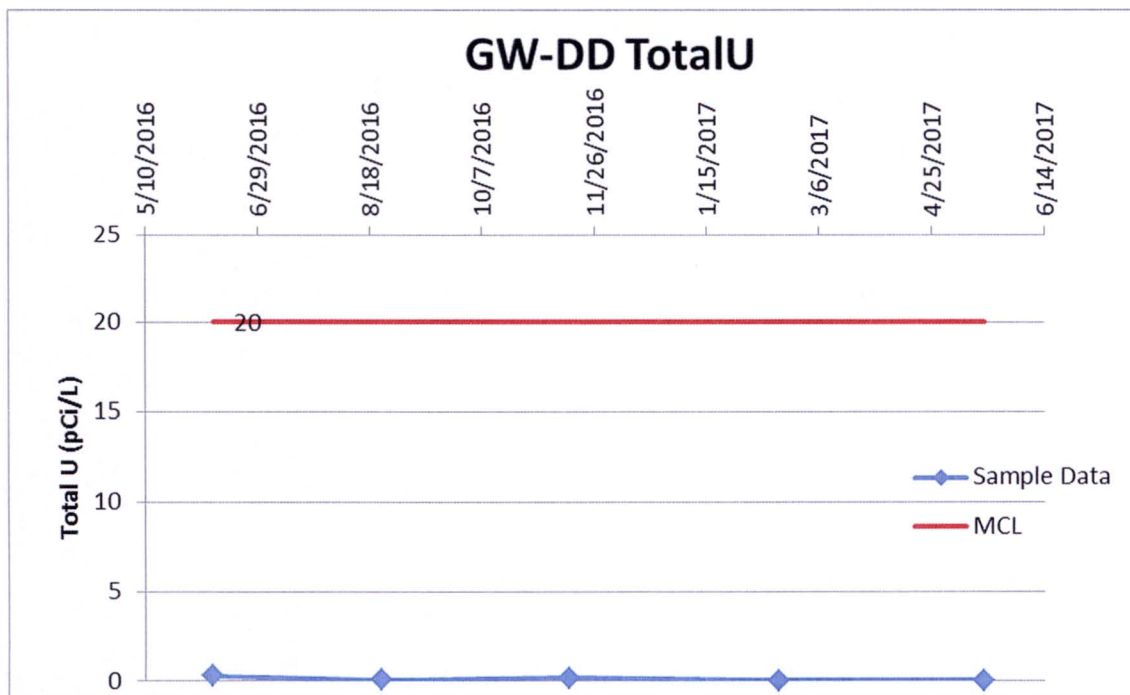
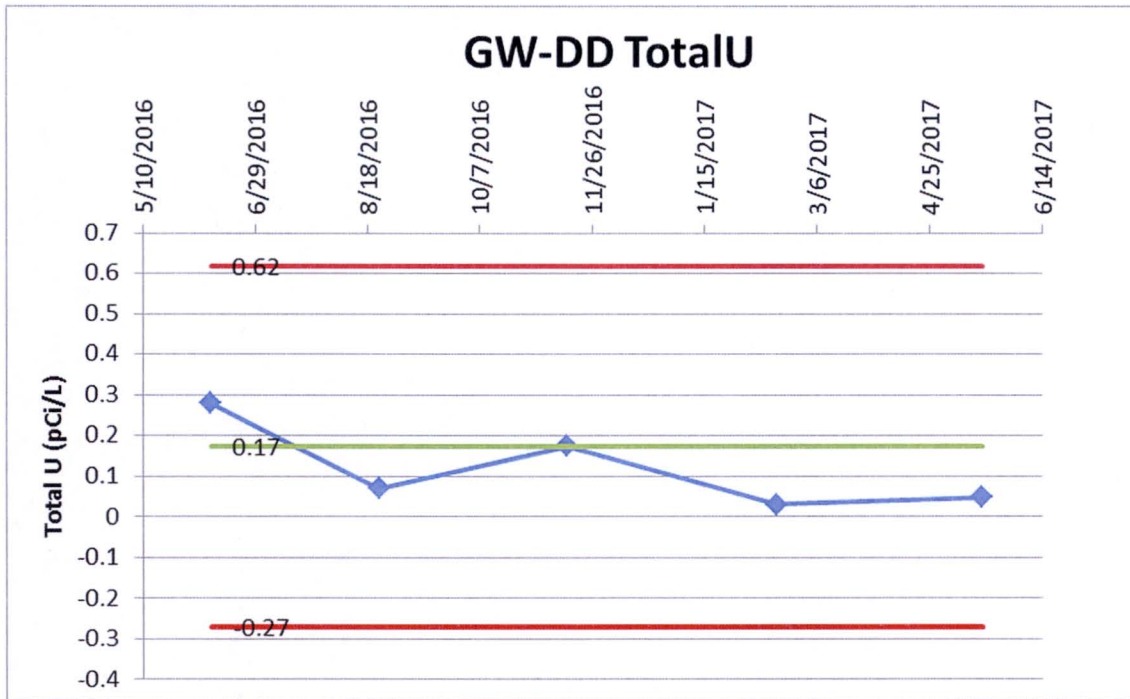
**Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU**



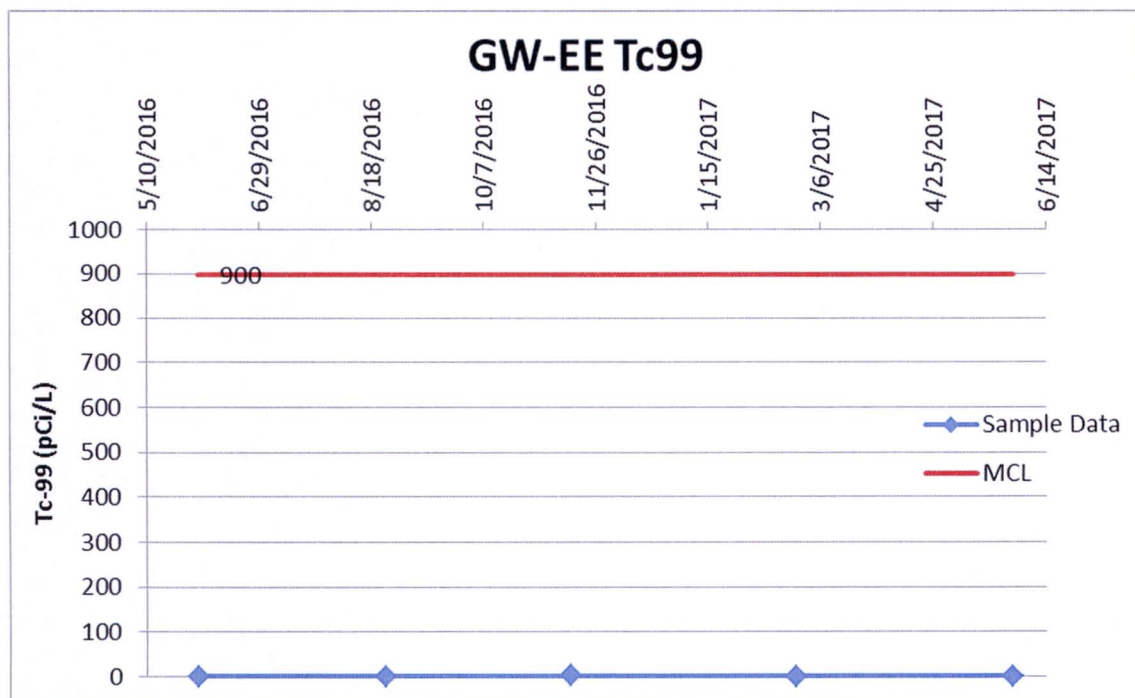
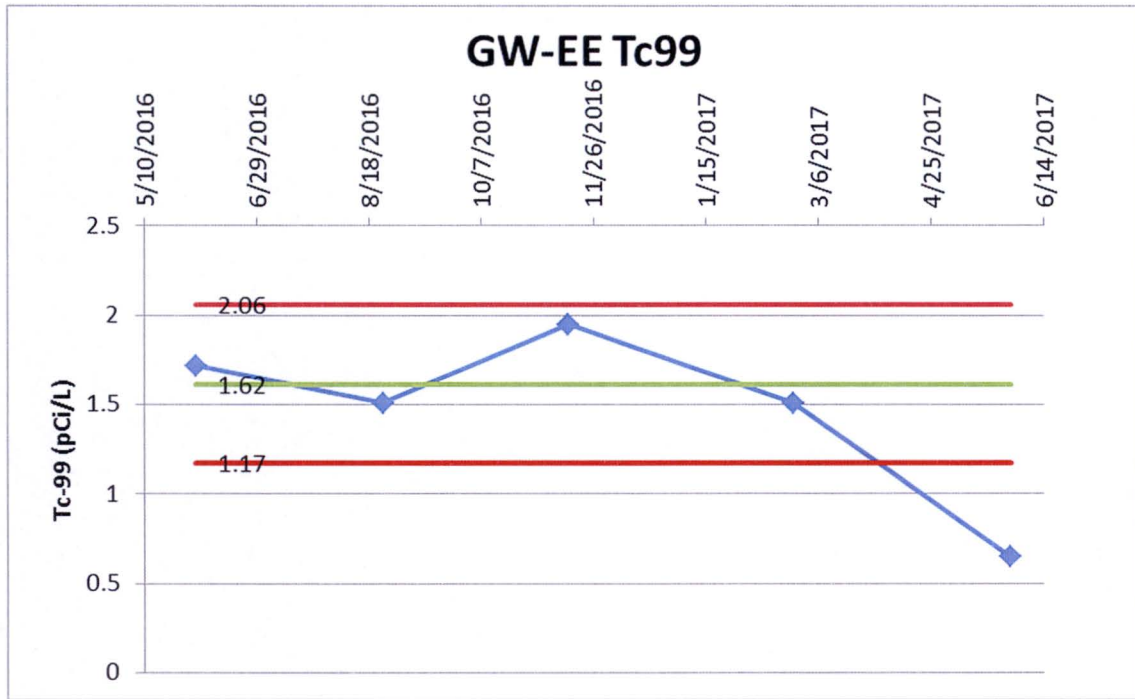
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



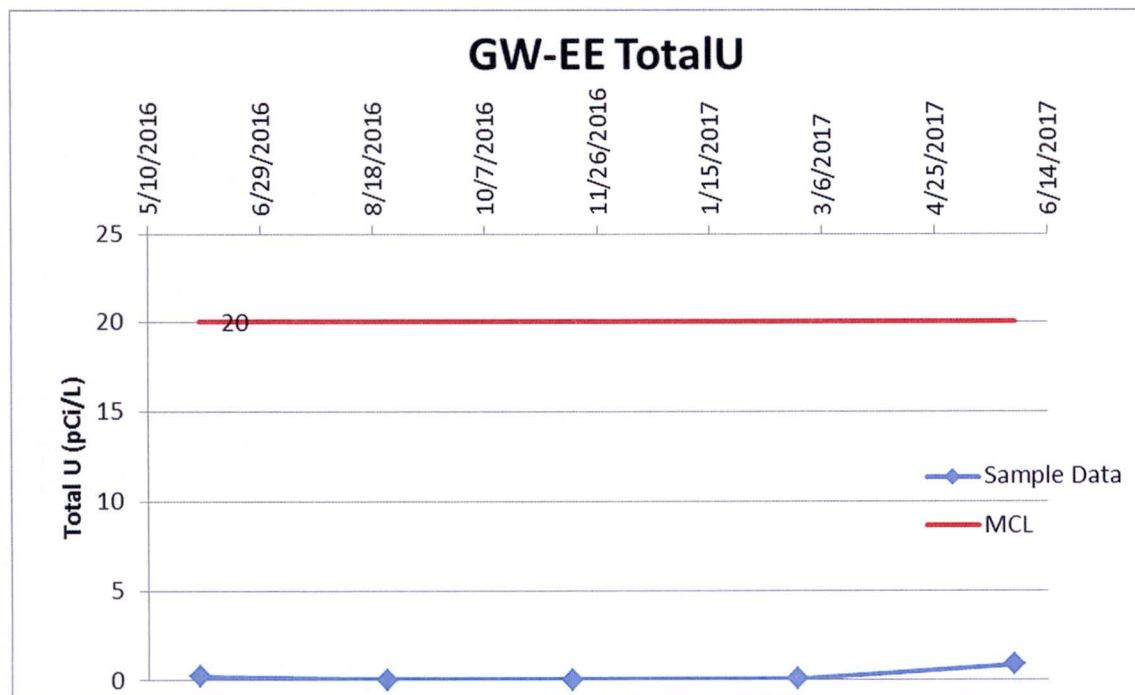
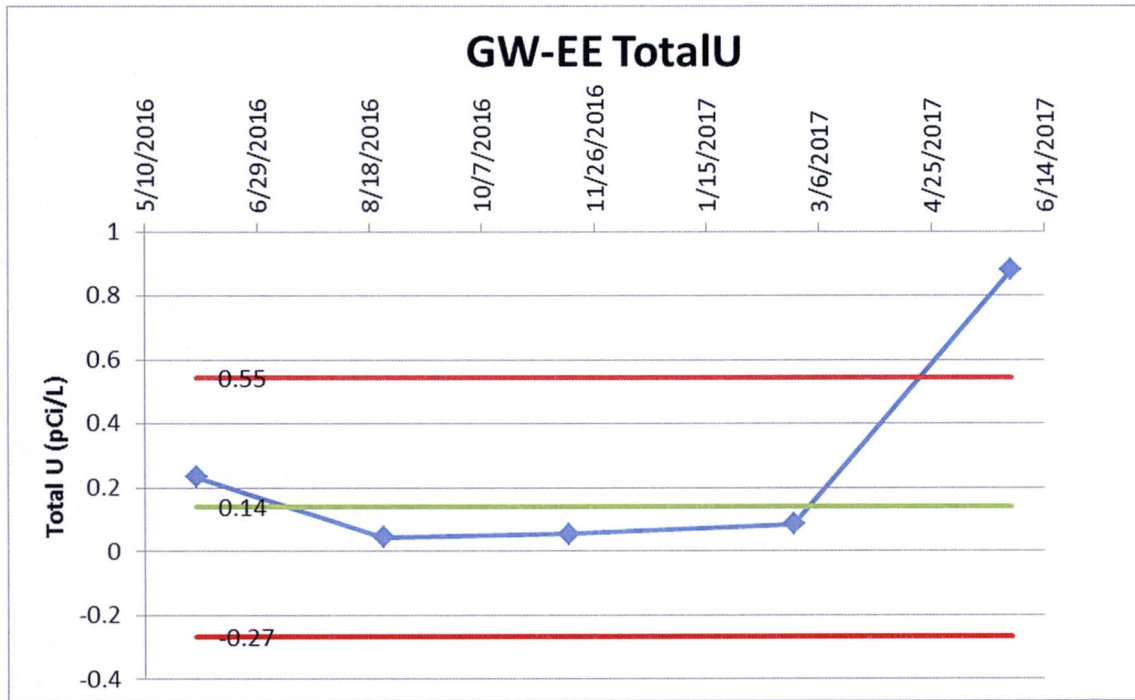
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



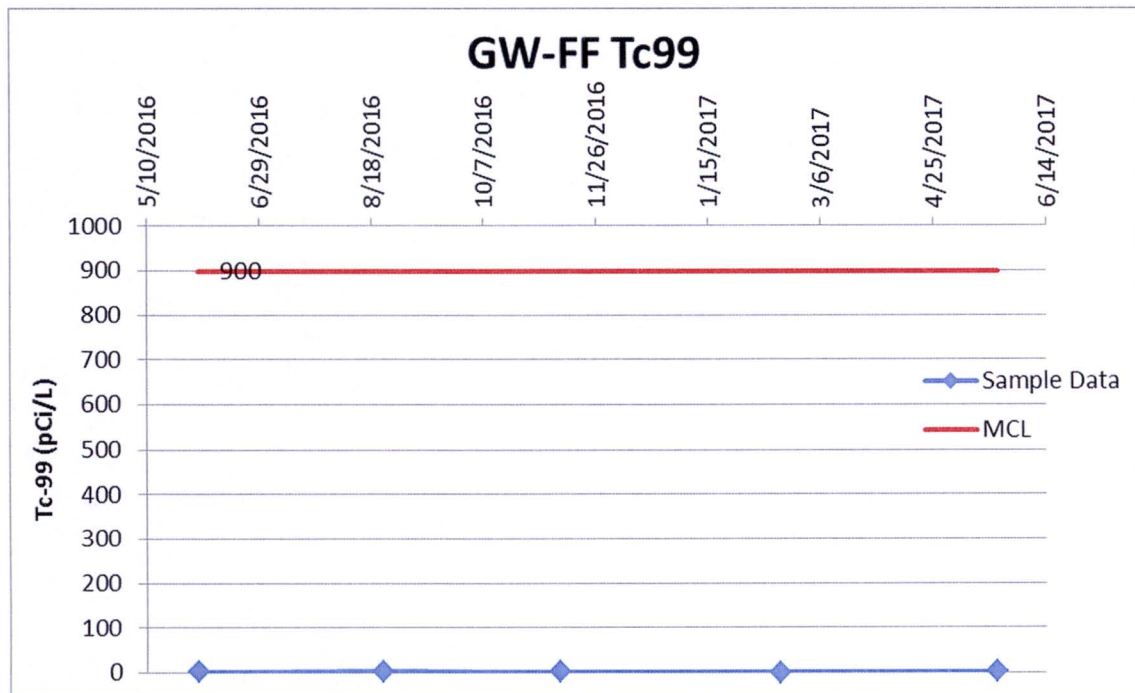
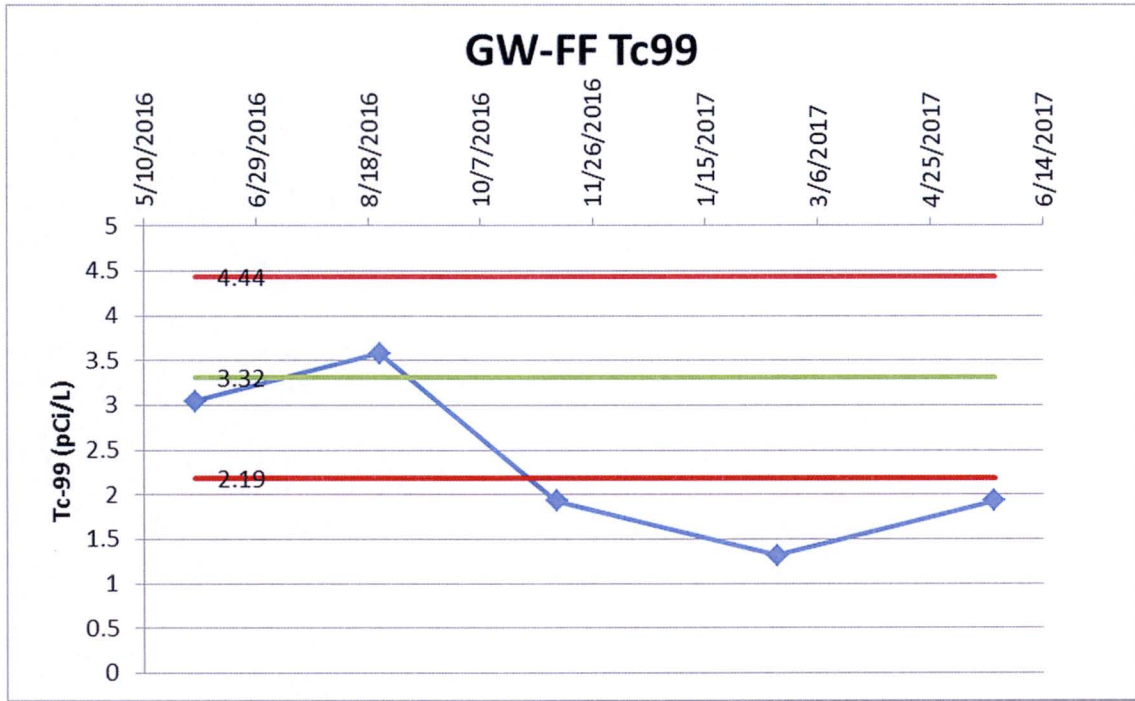
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



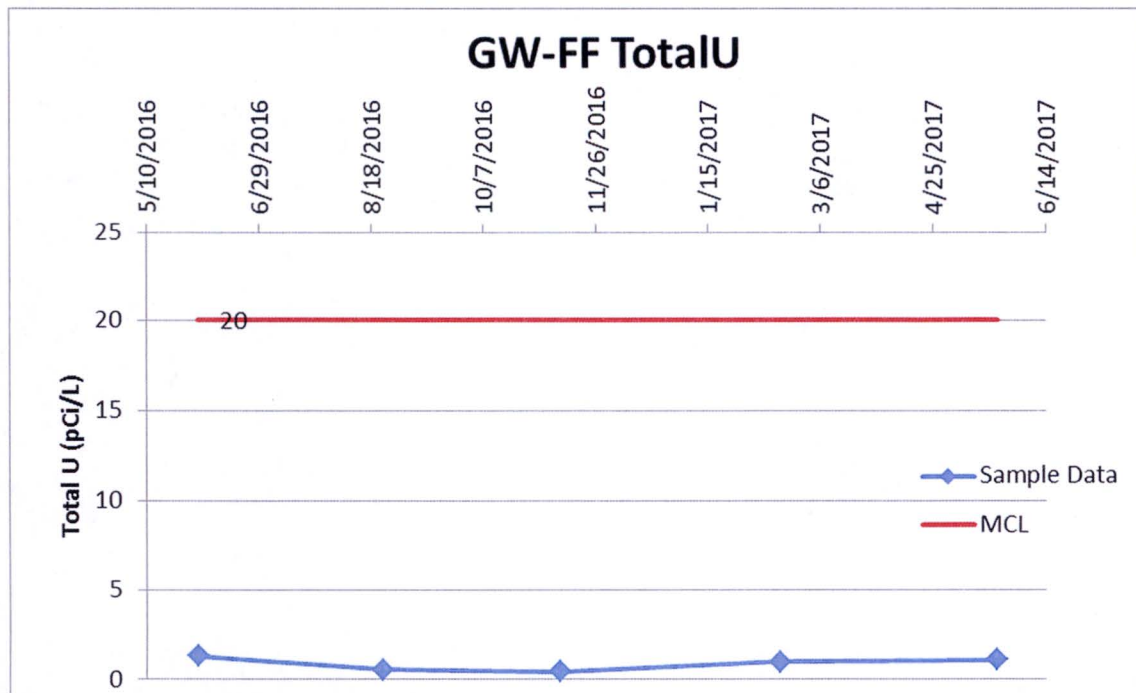
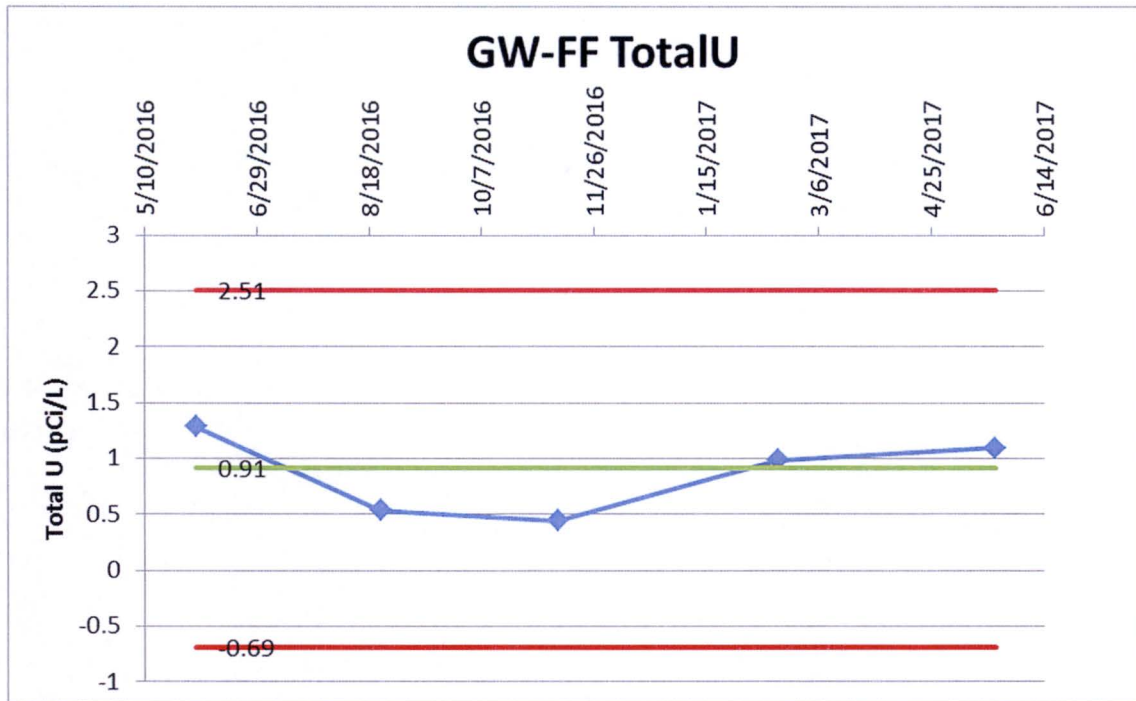
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



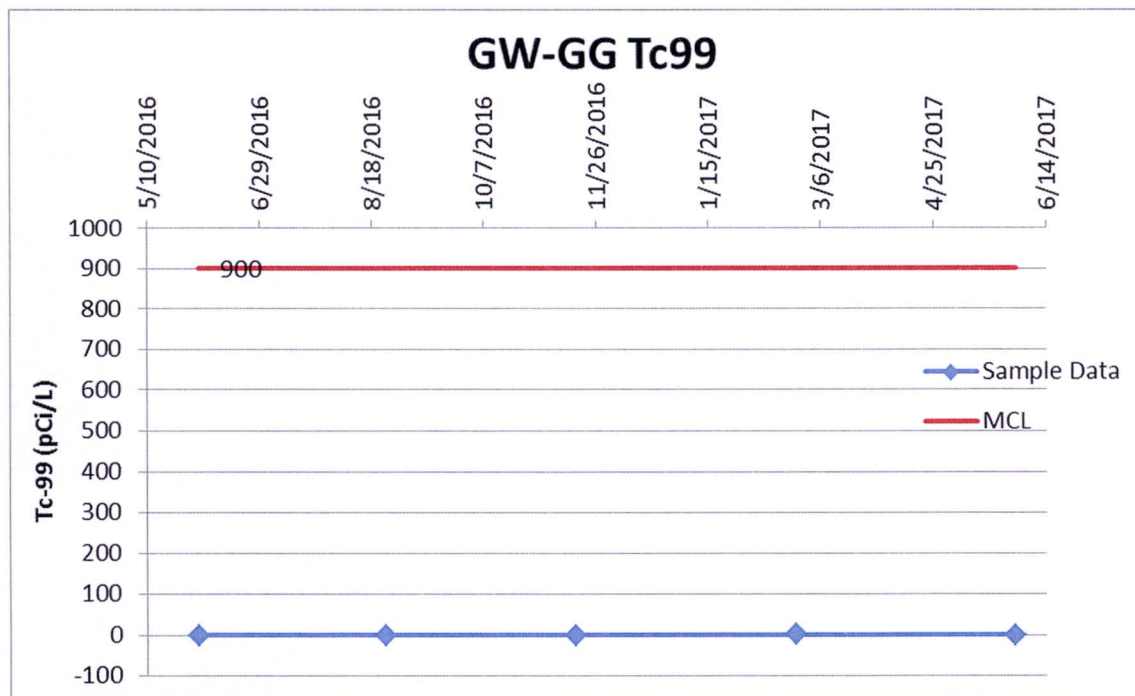
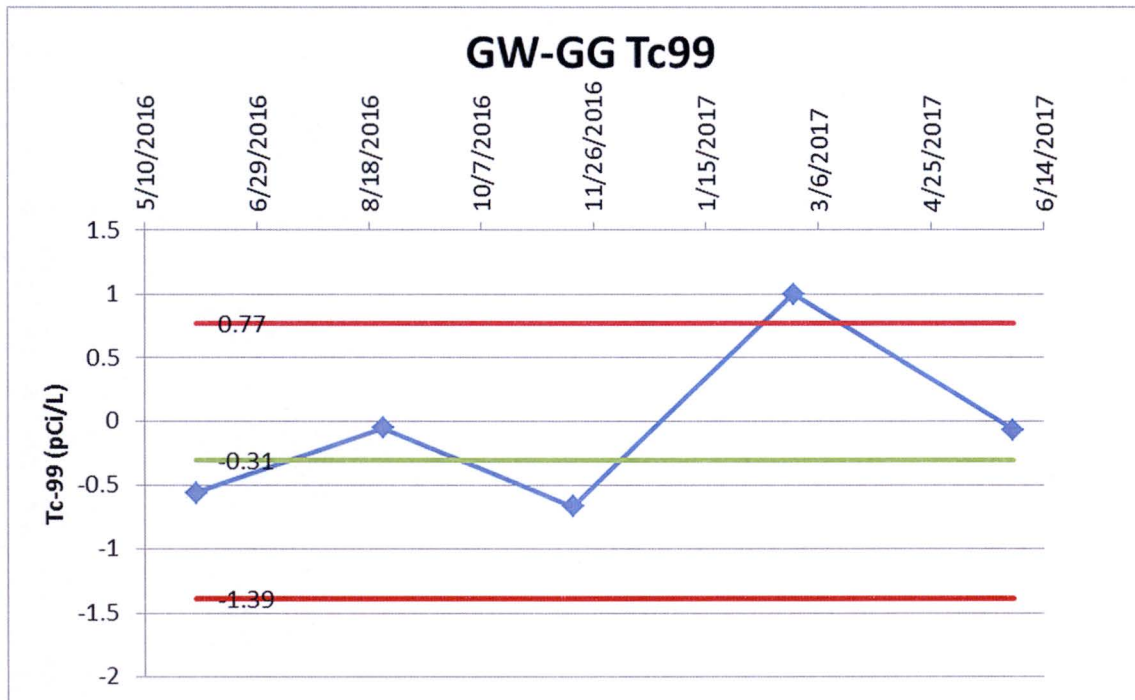
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



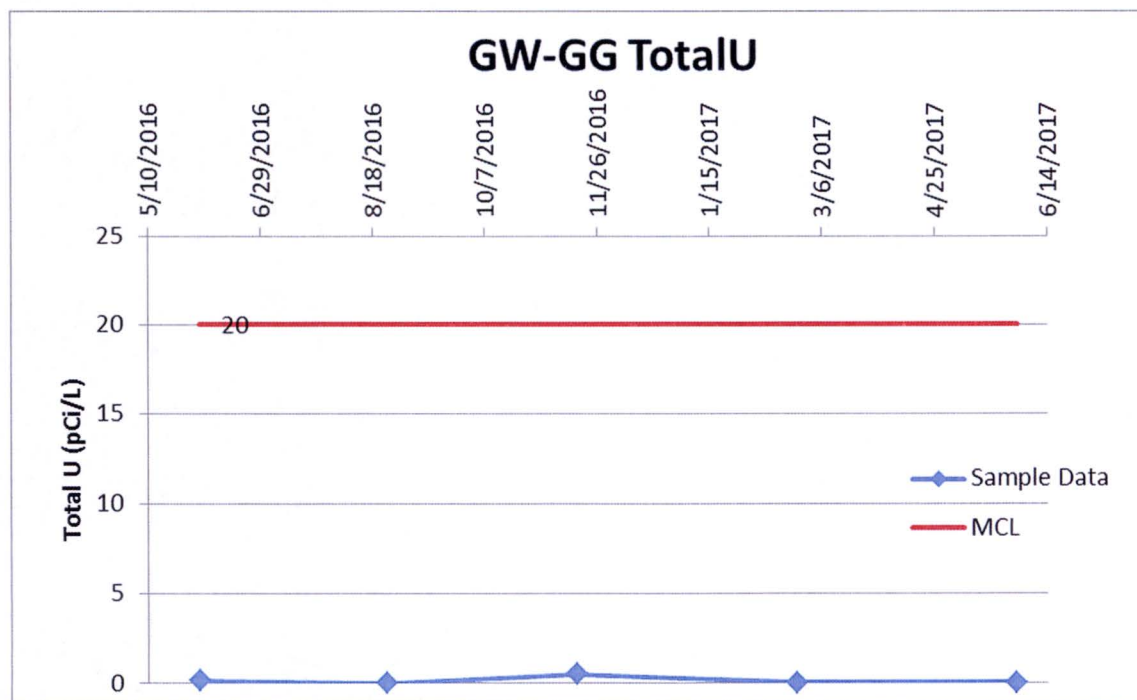
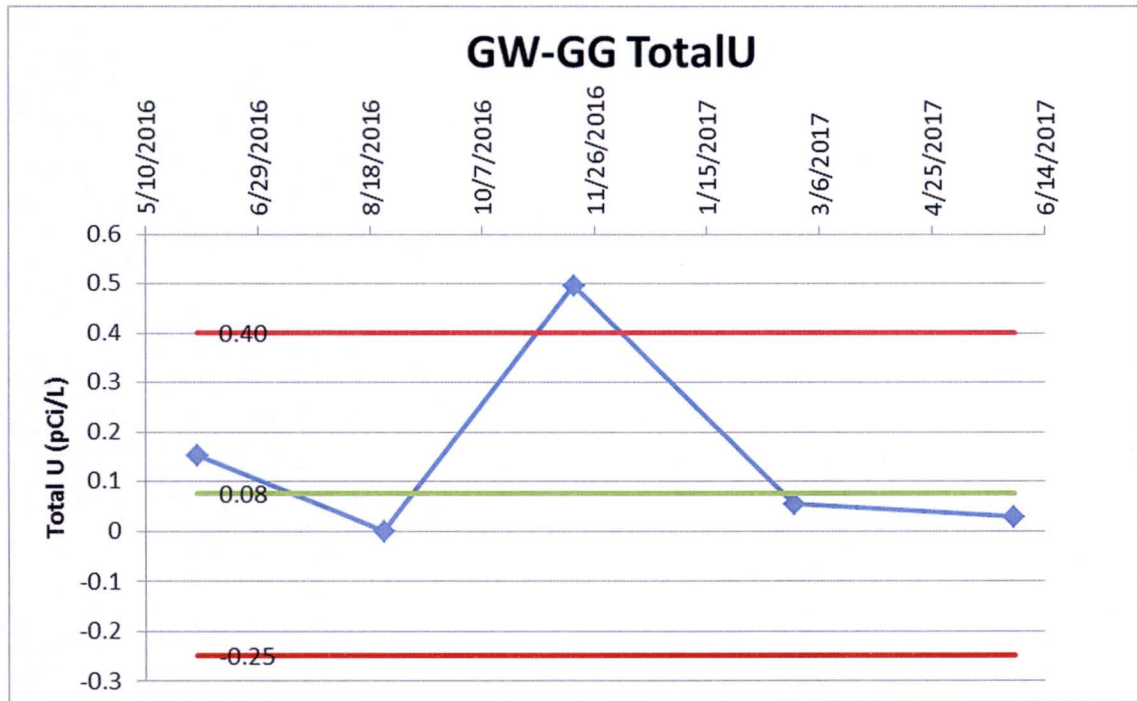
**Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU**



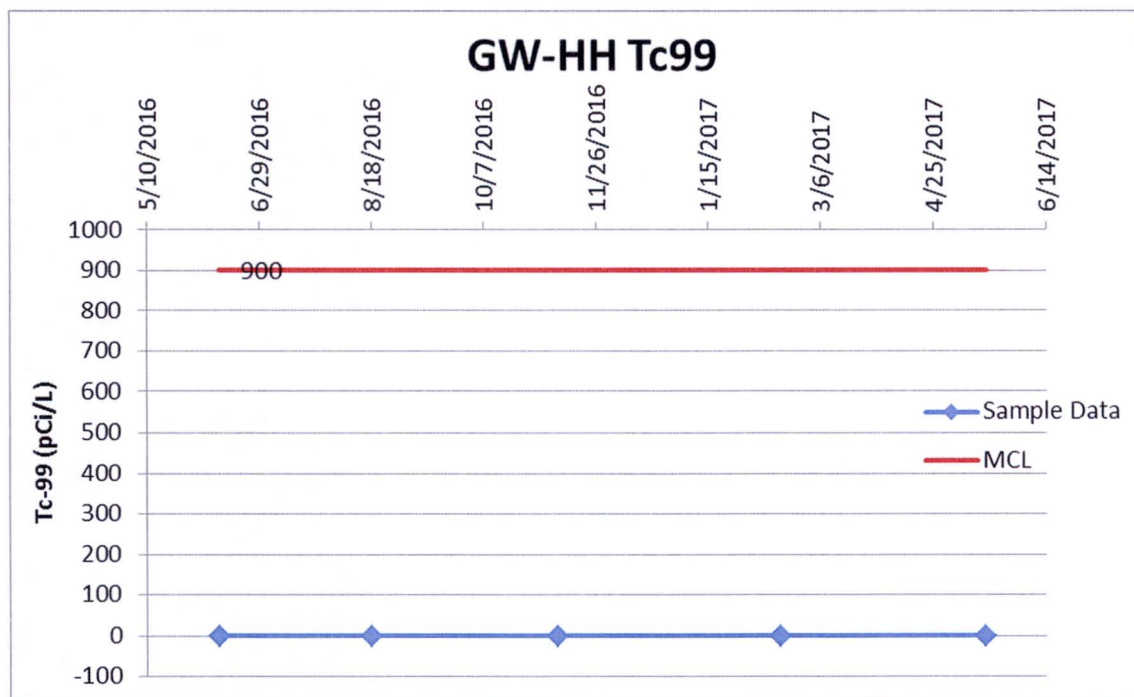
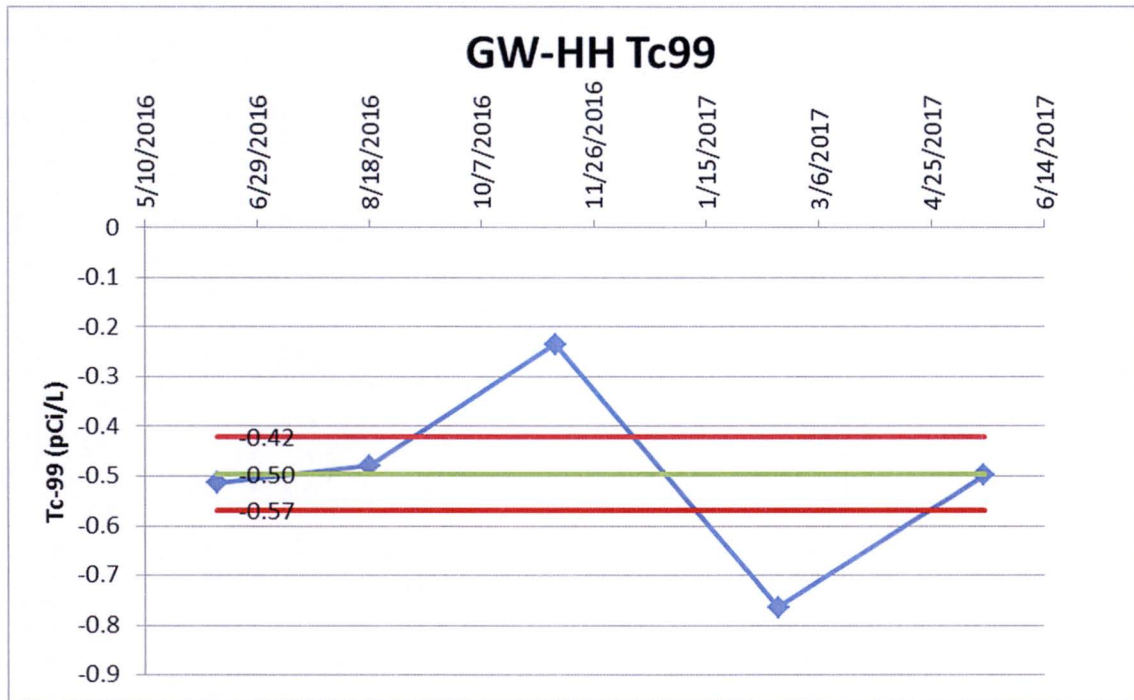
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



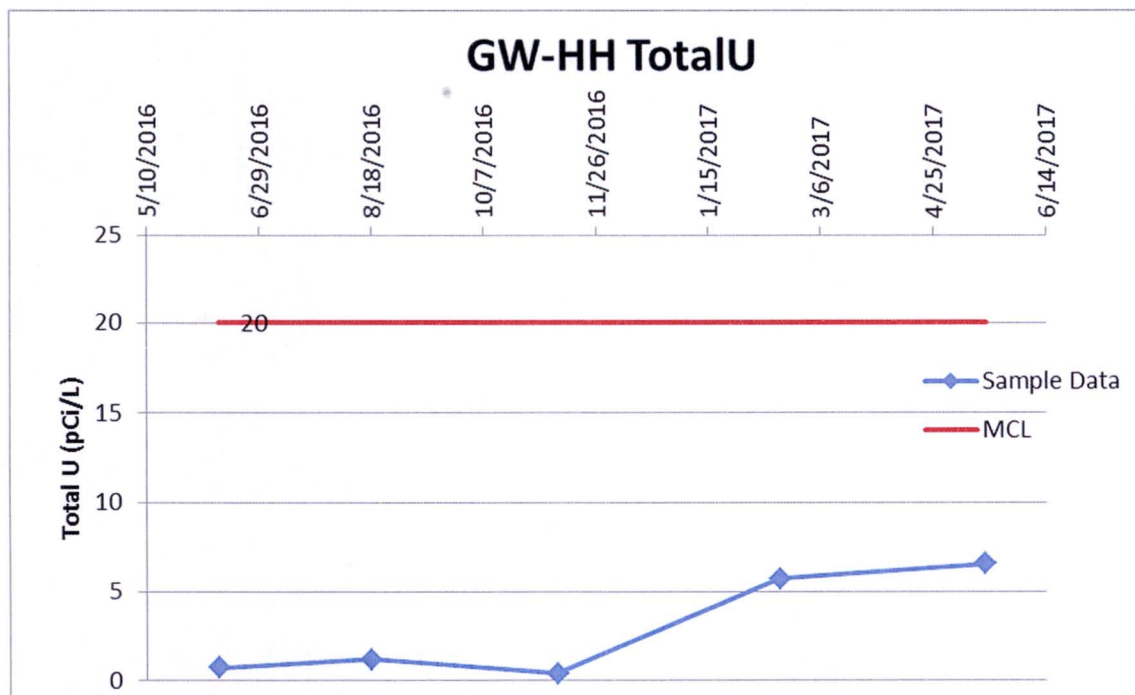
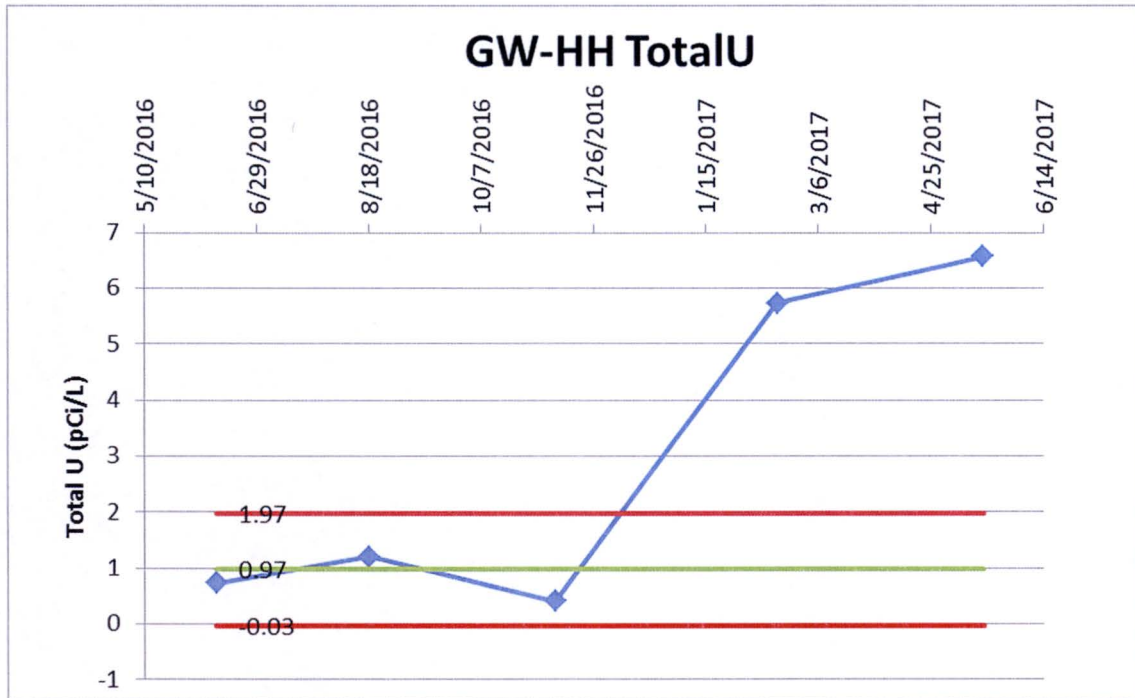
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



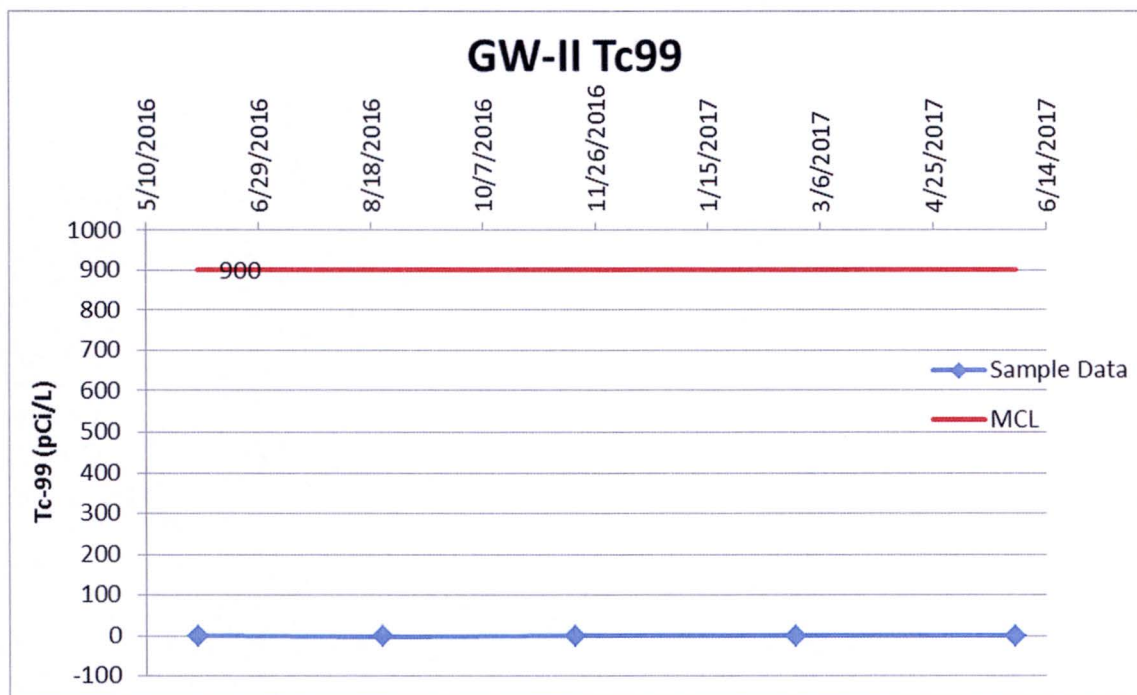
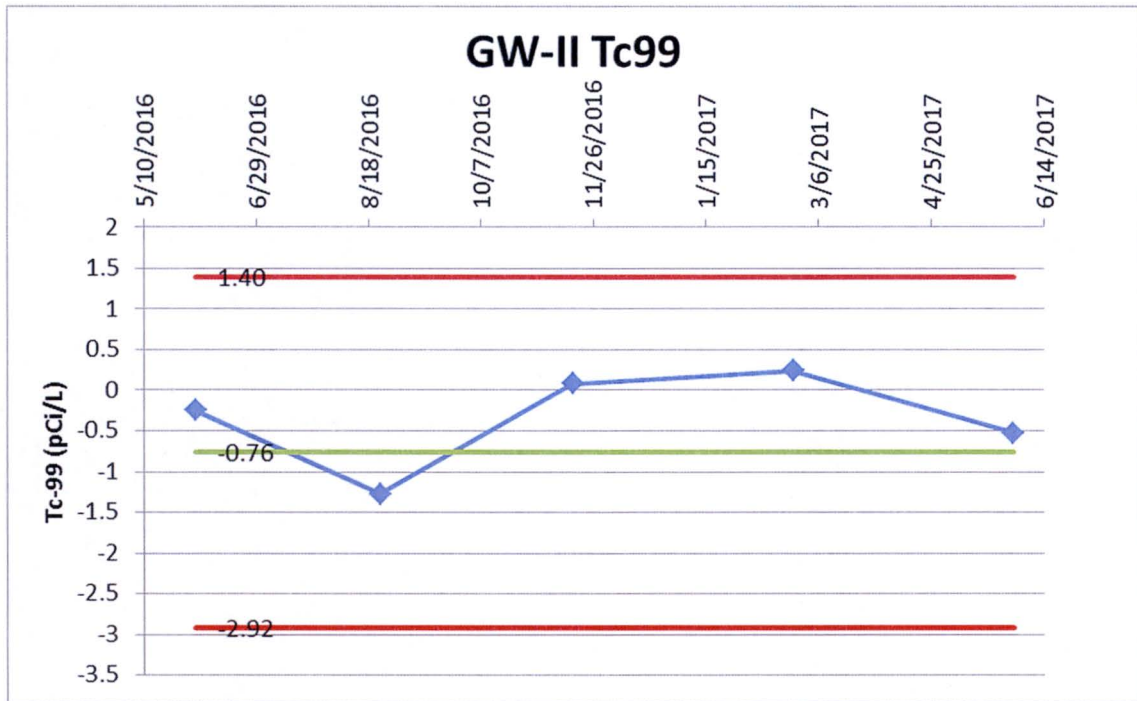
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



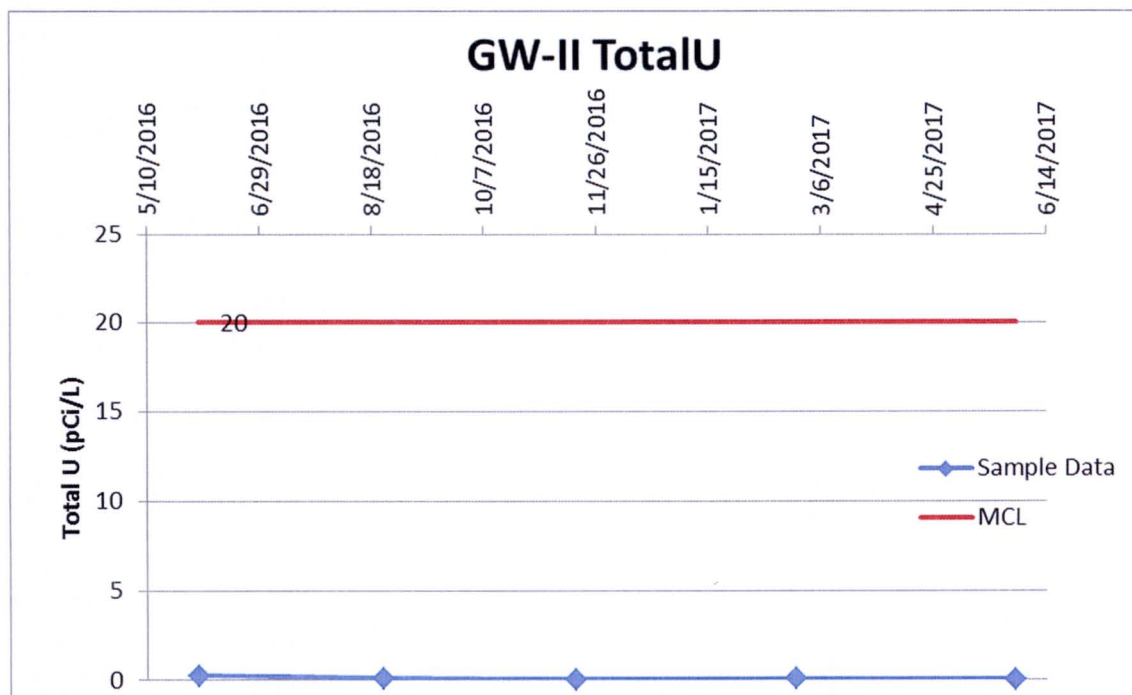
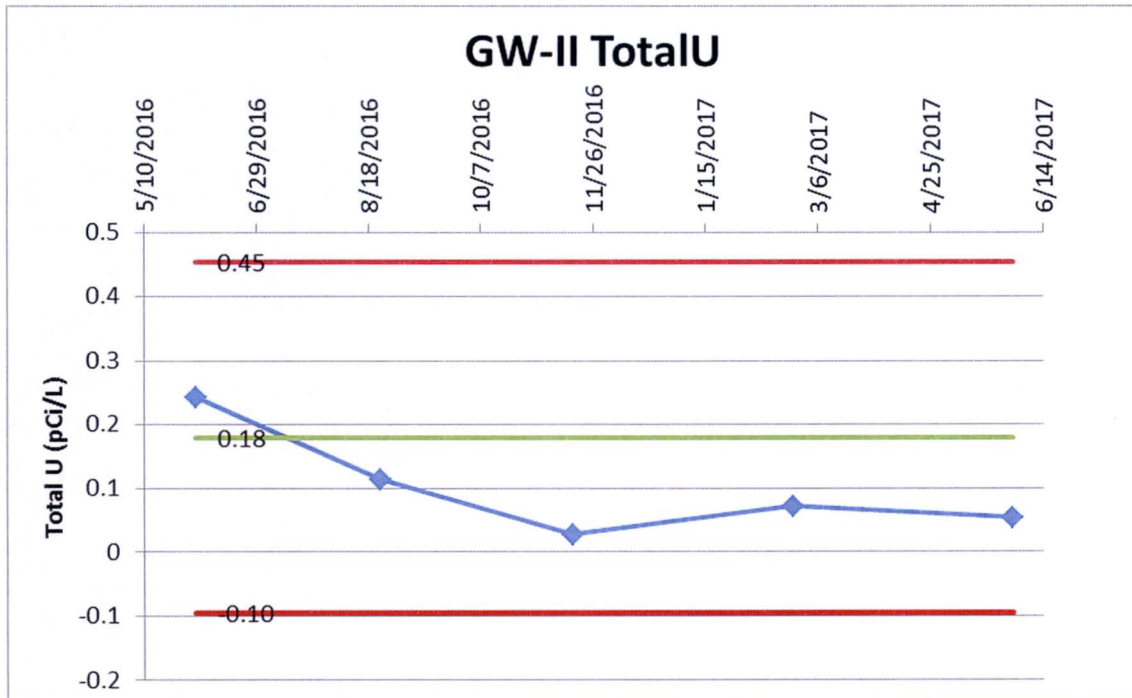
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



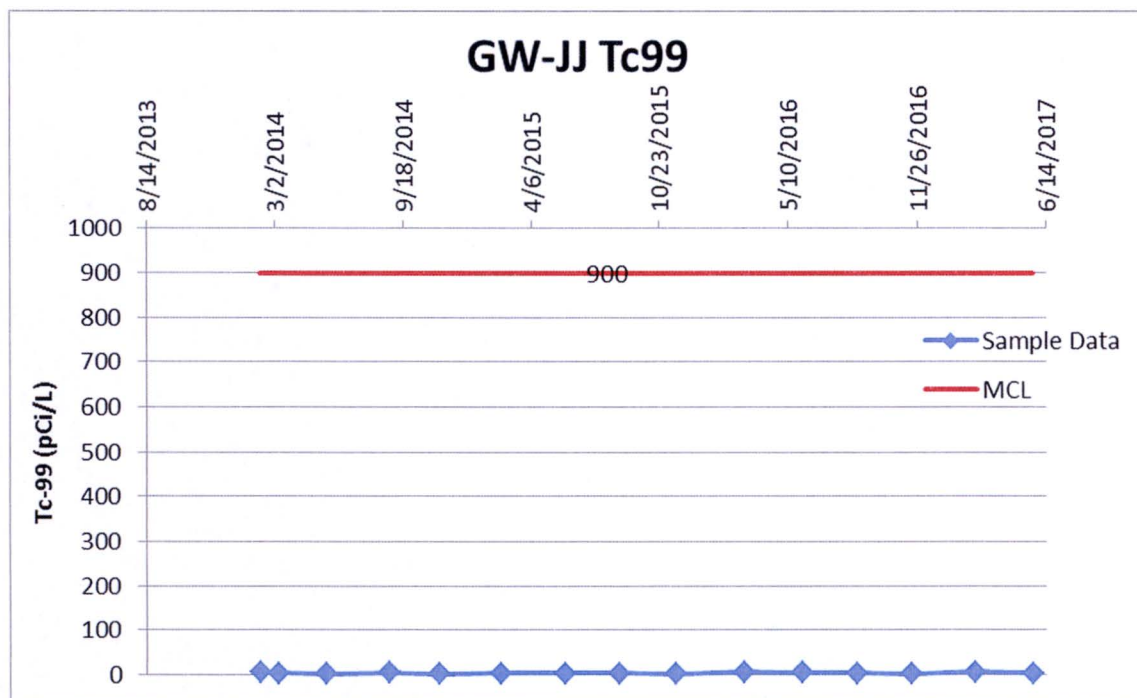
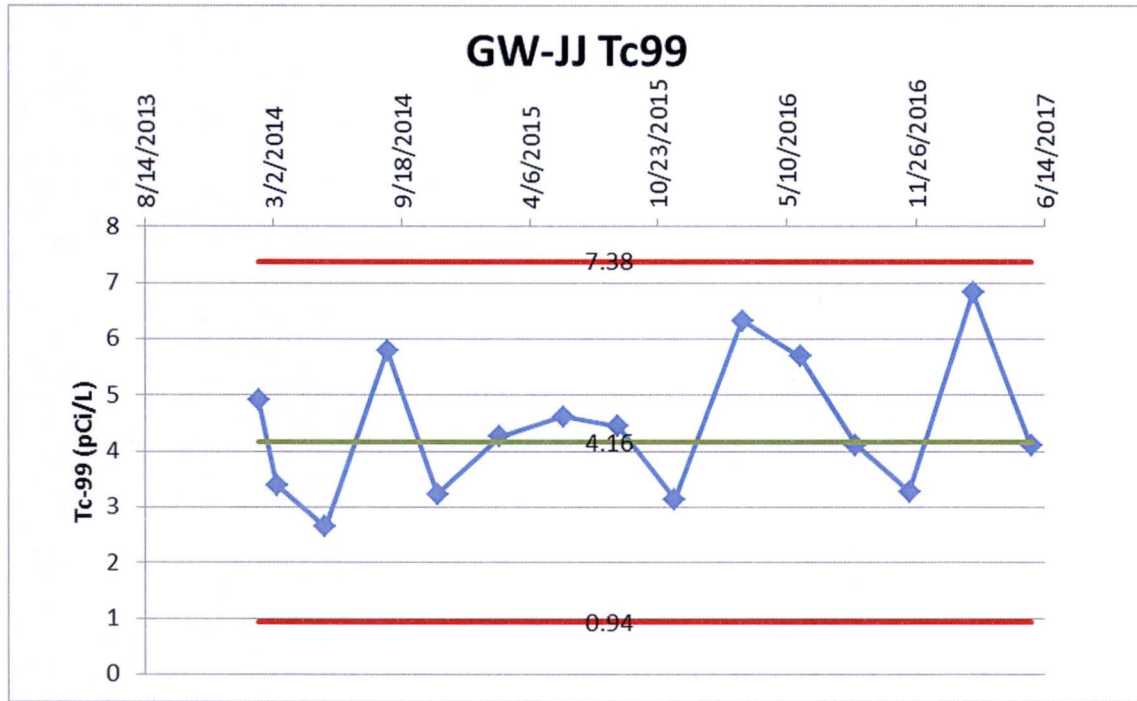
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



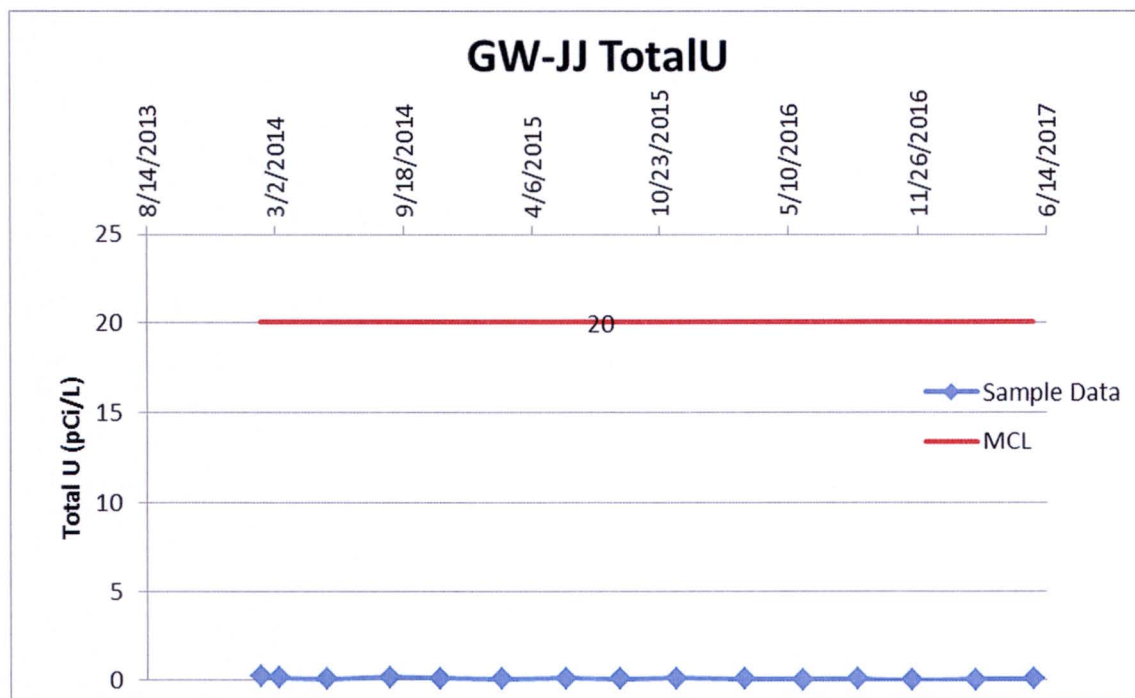
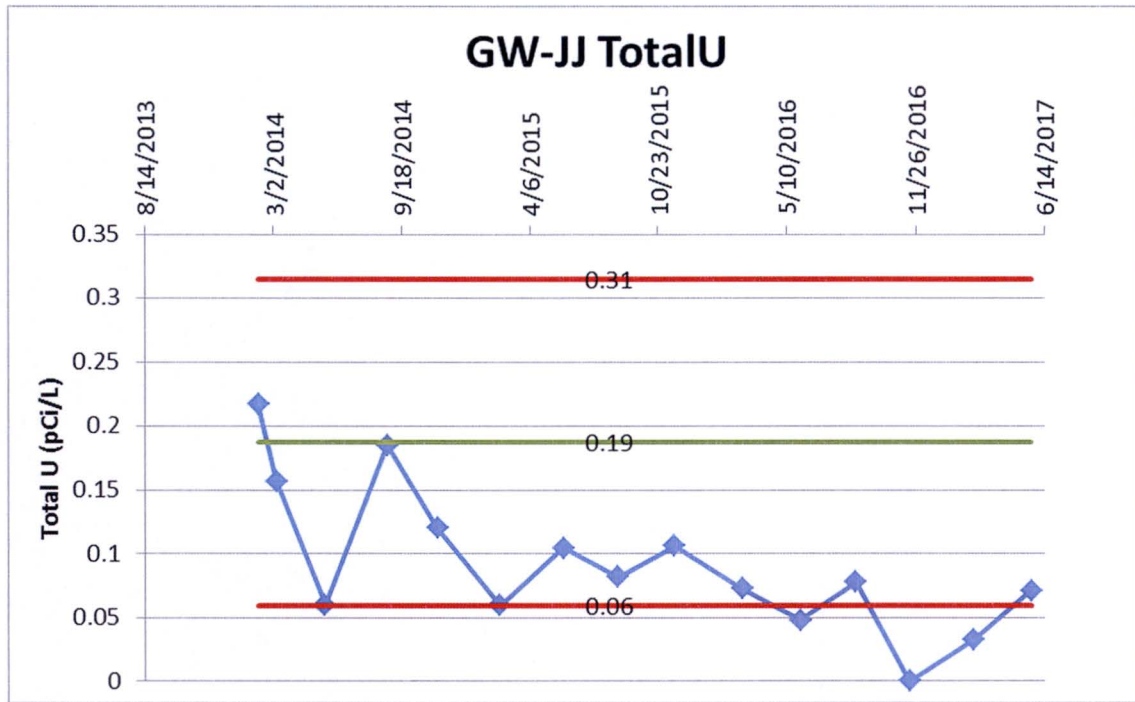
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



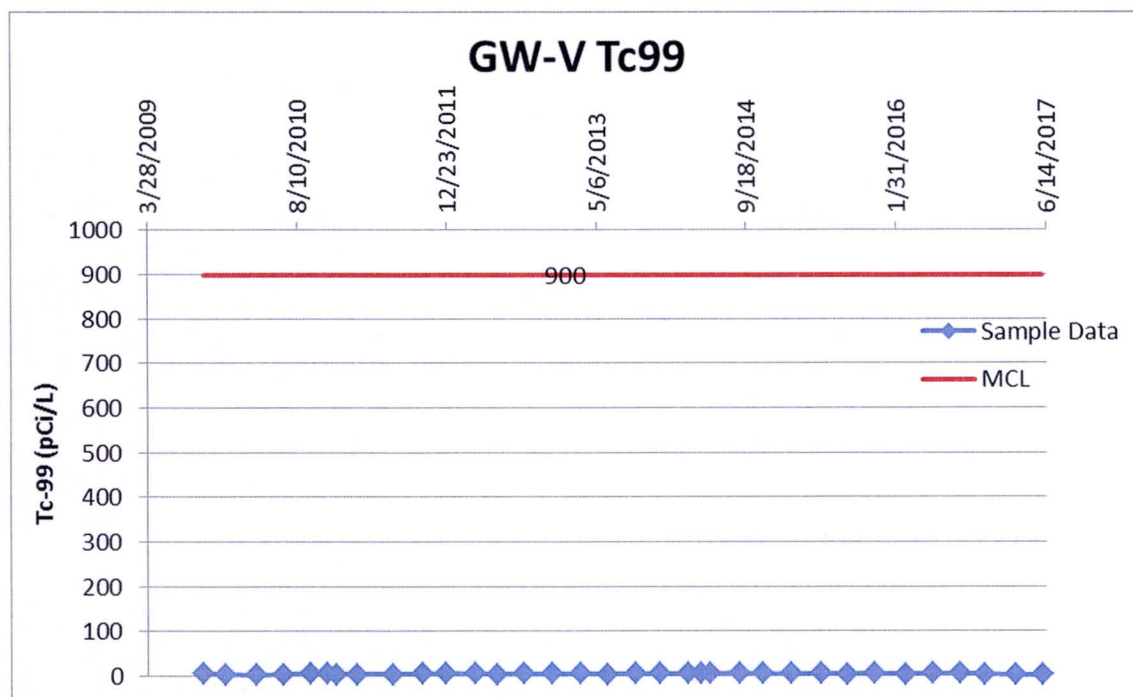
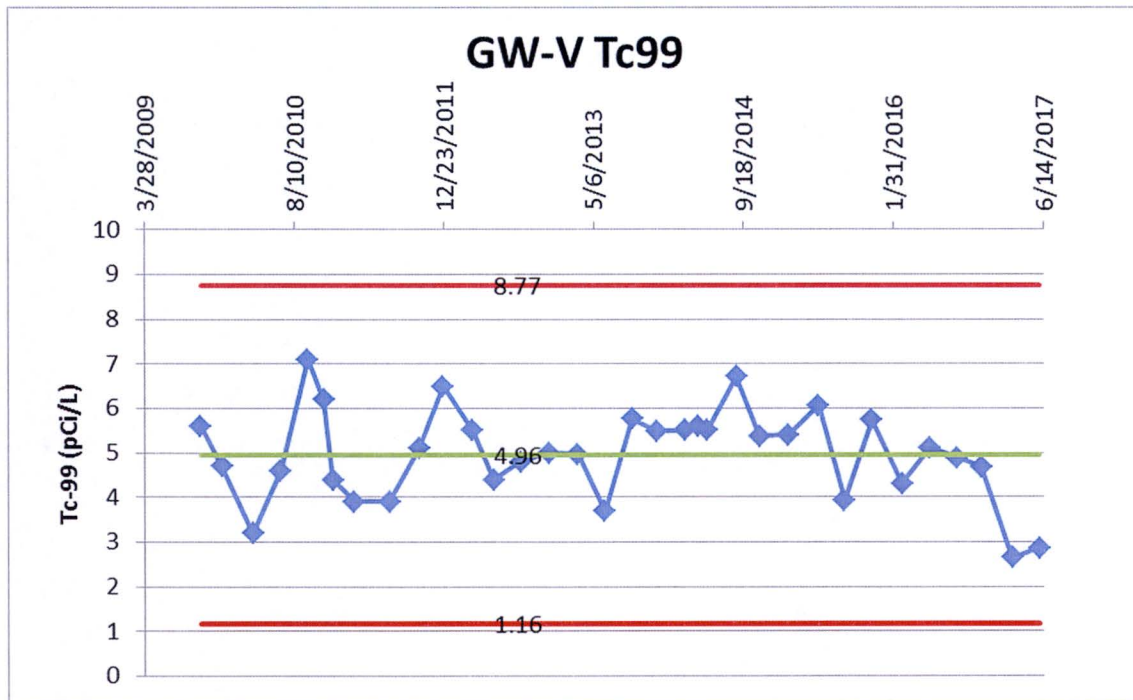
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



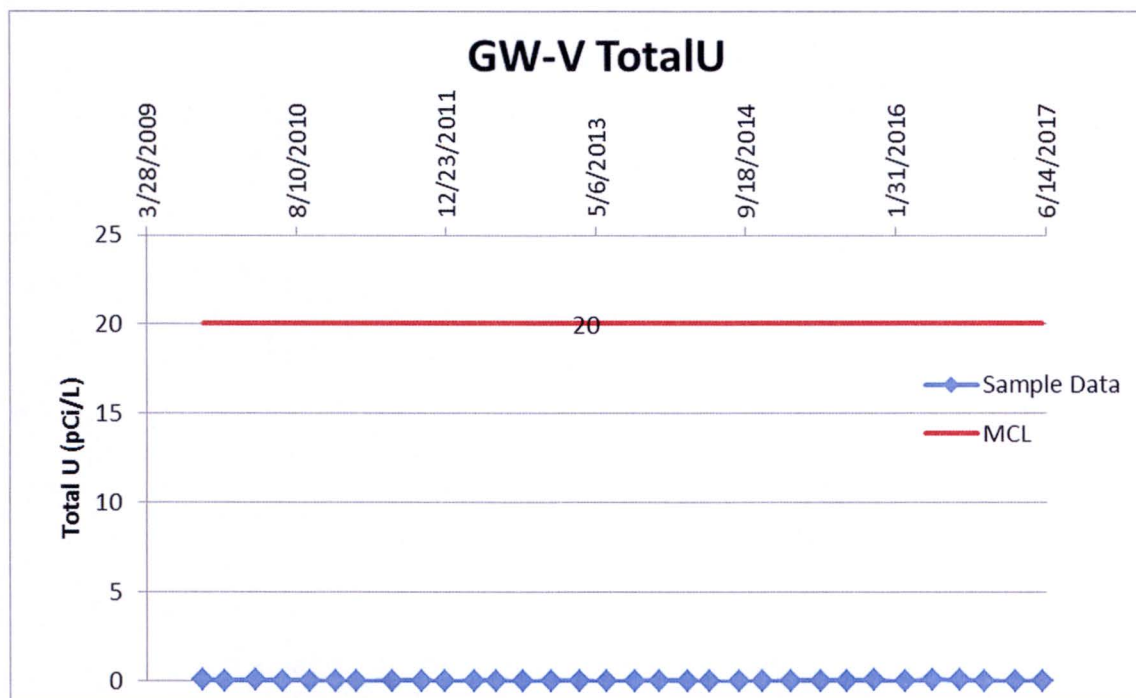
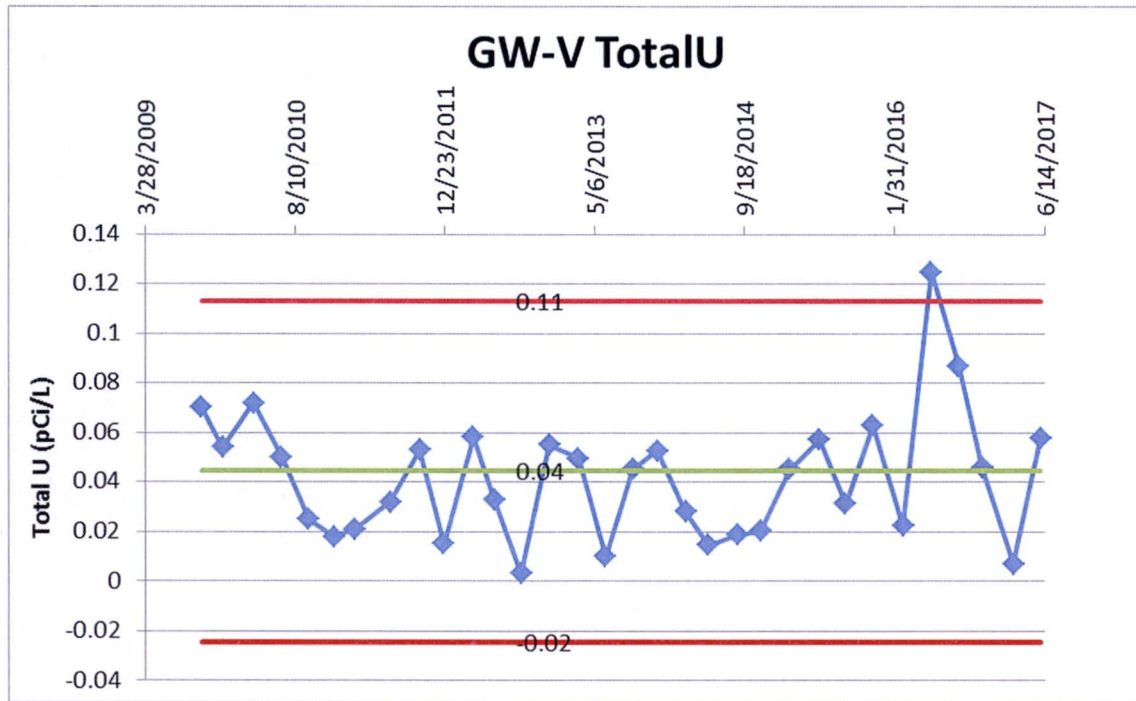
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



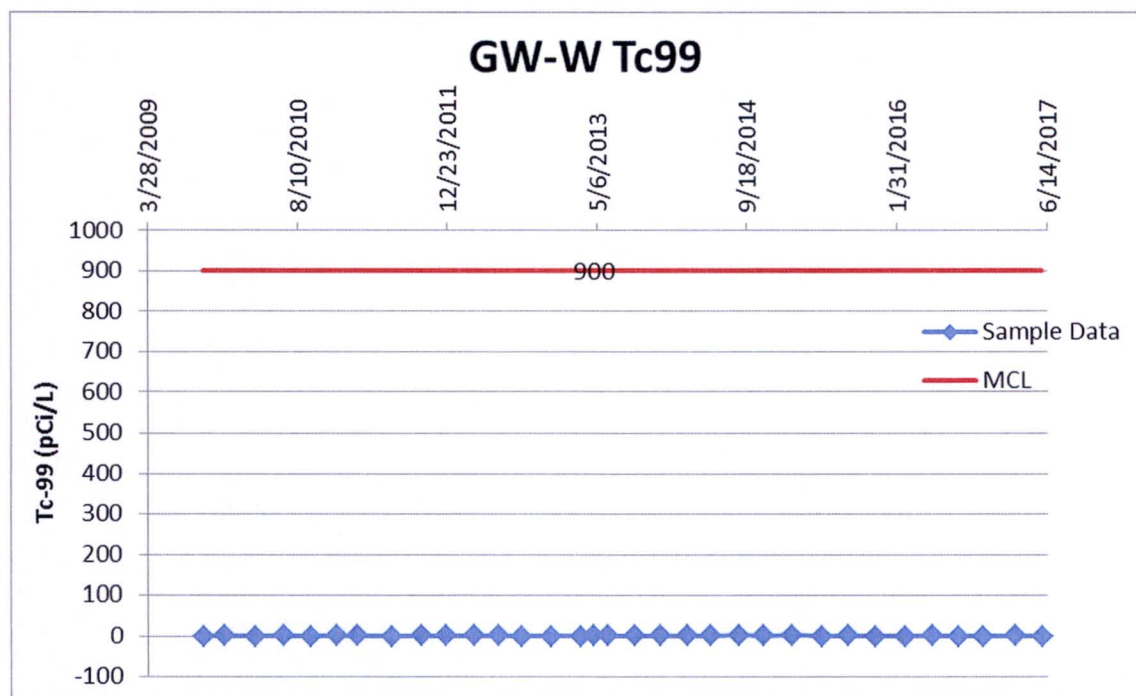
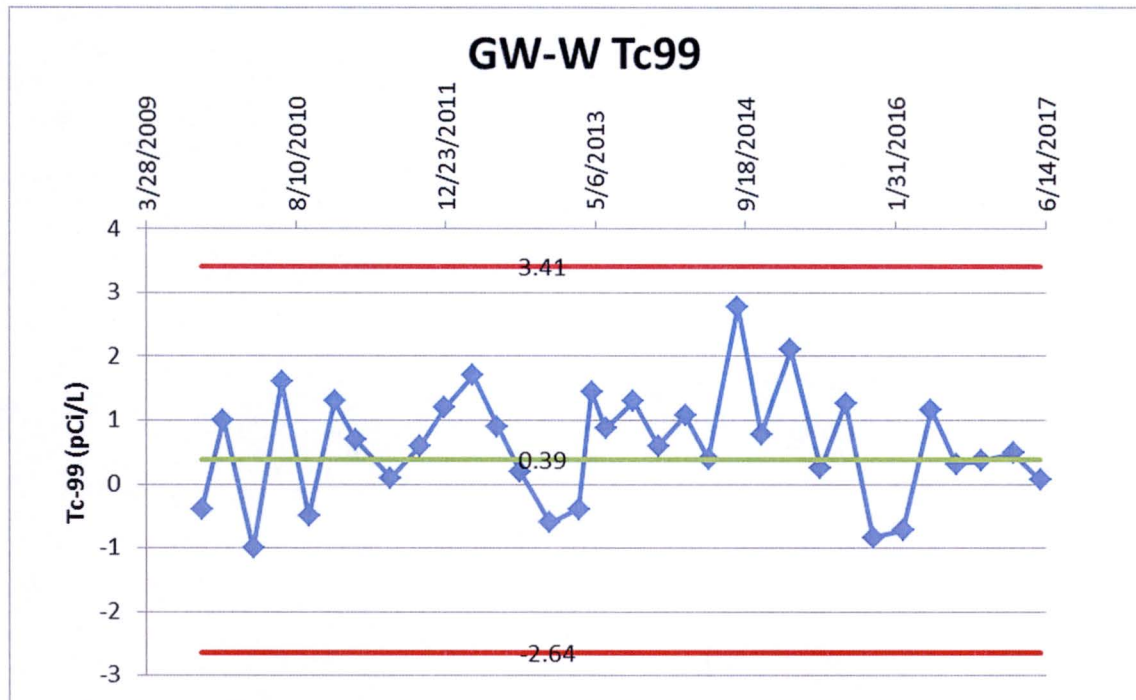
**Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU**



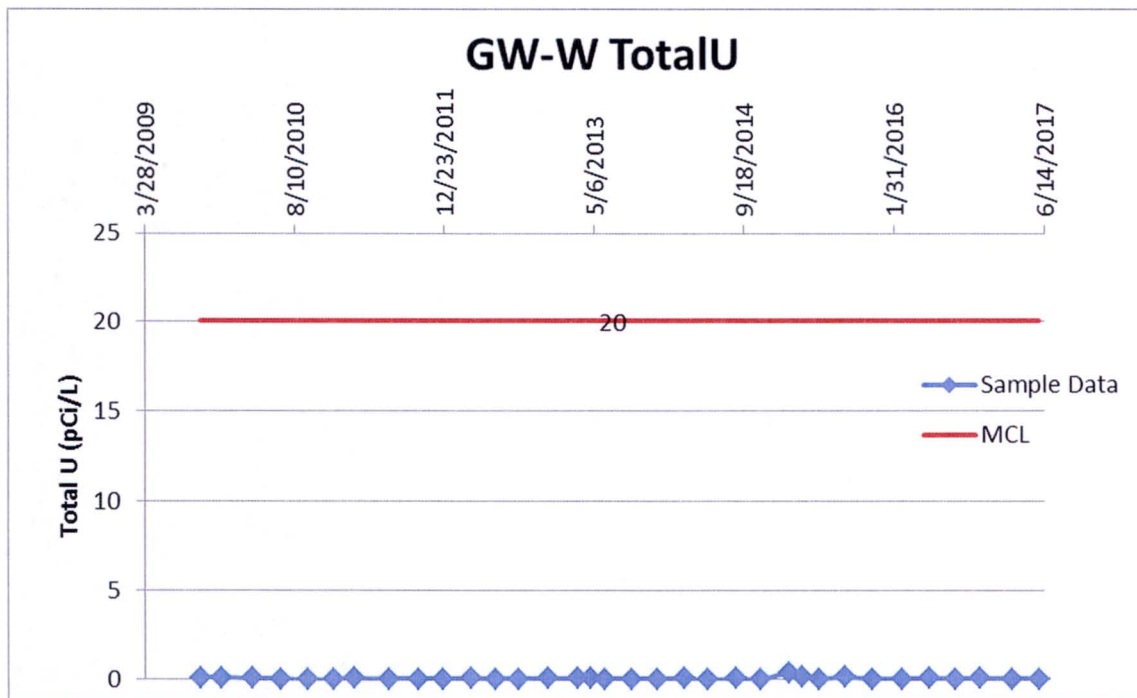
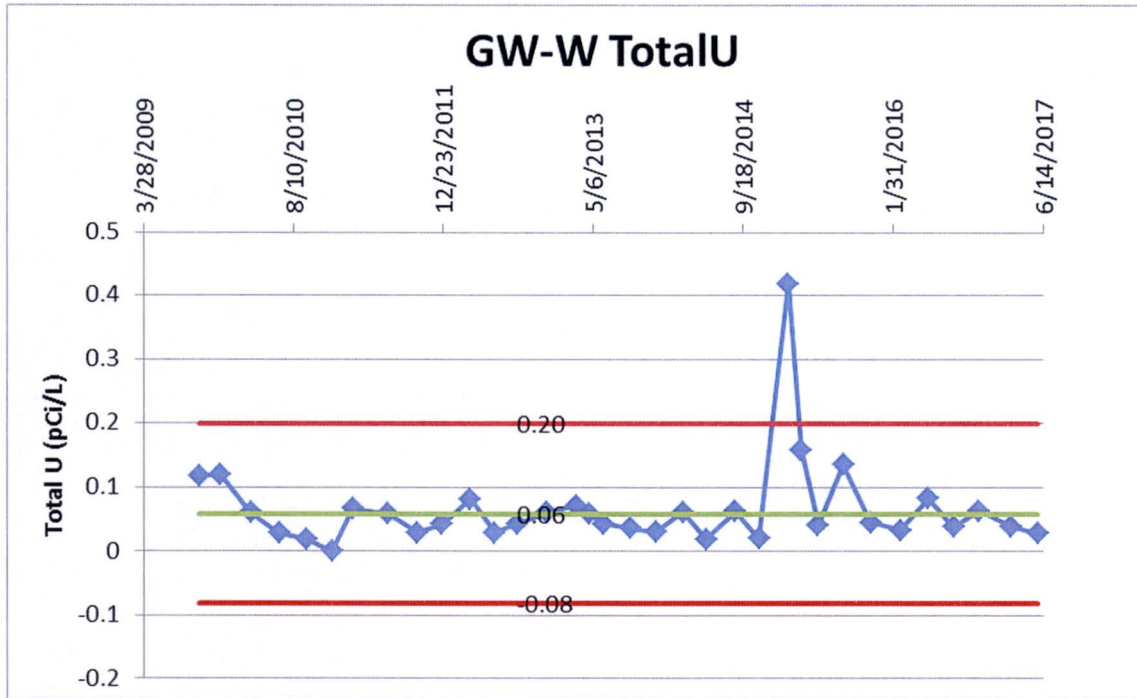
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



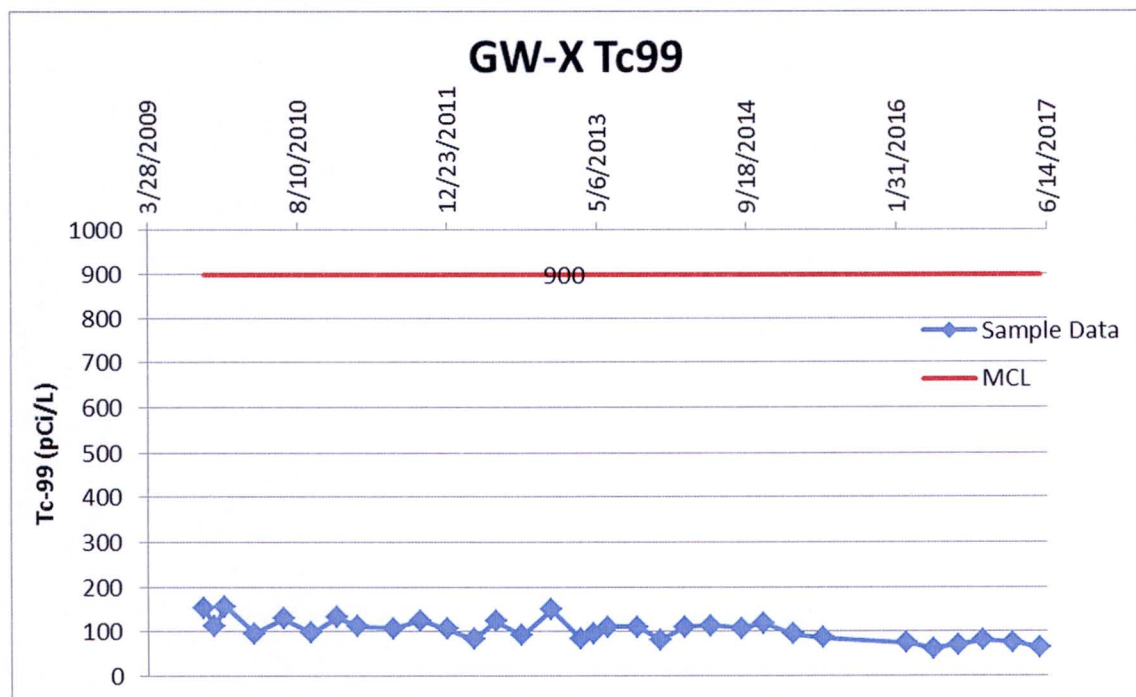
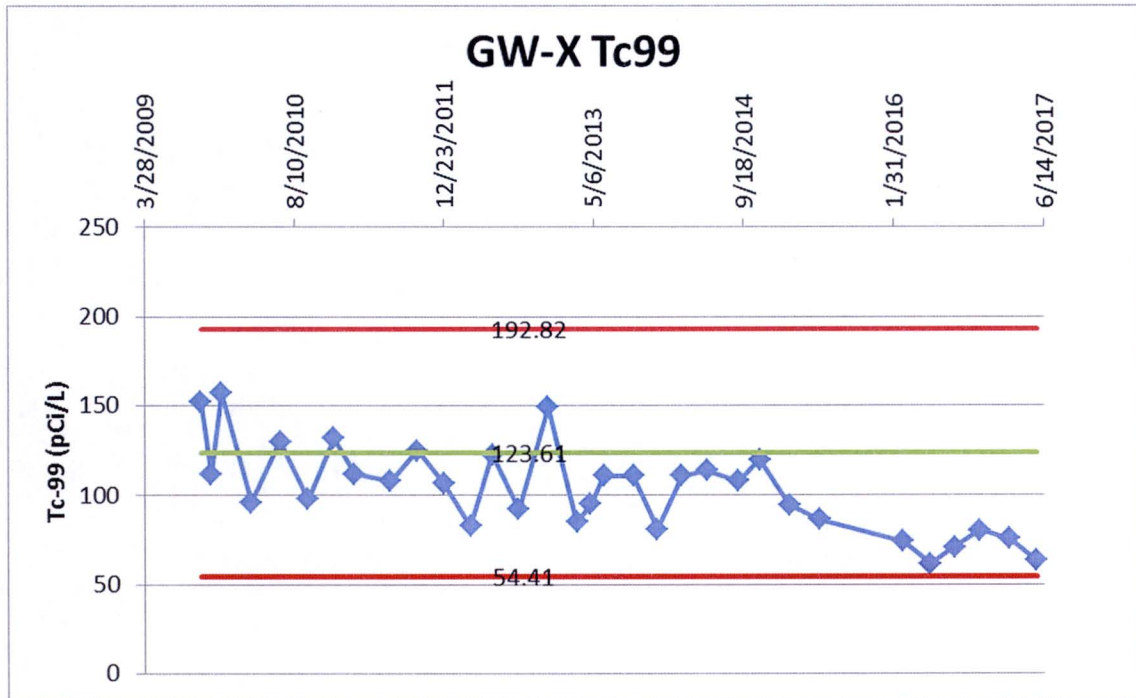
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



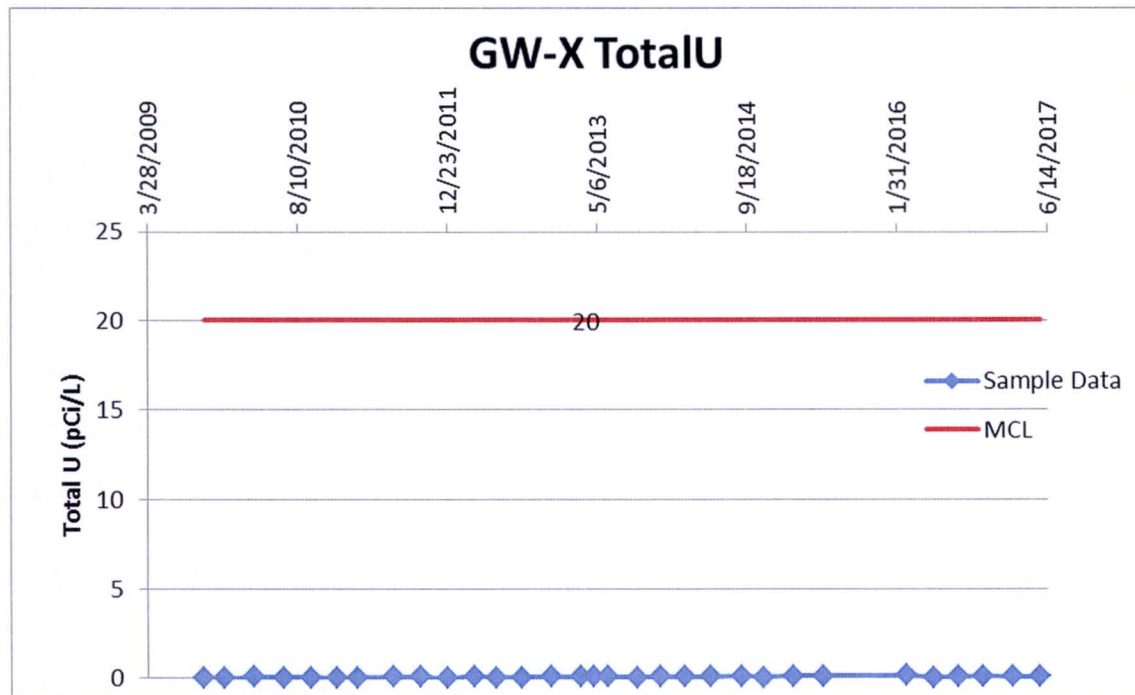
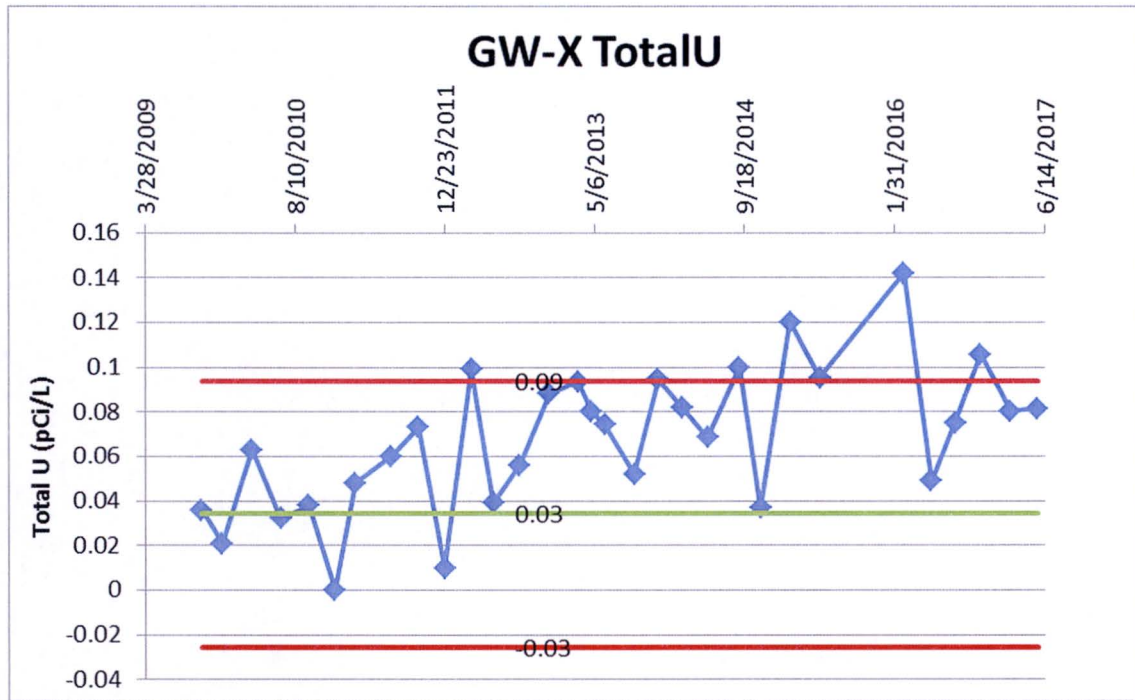
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



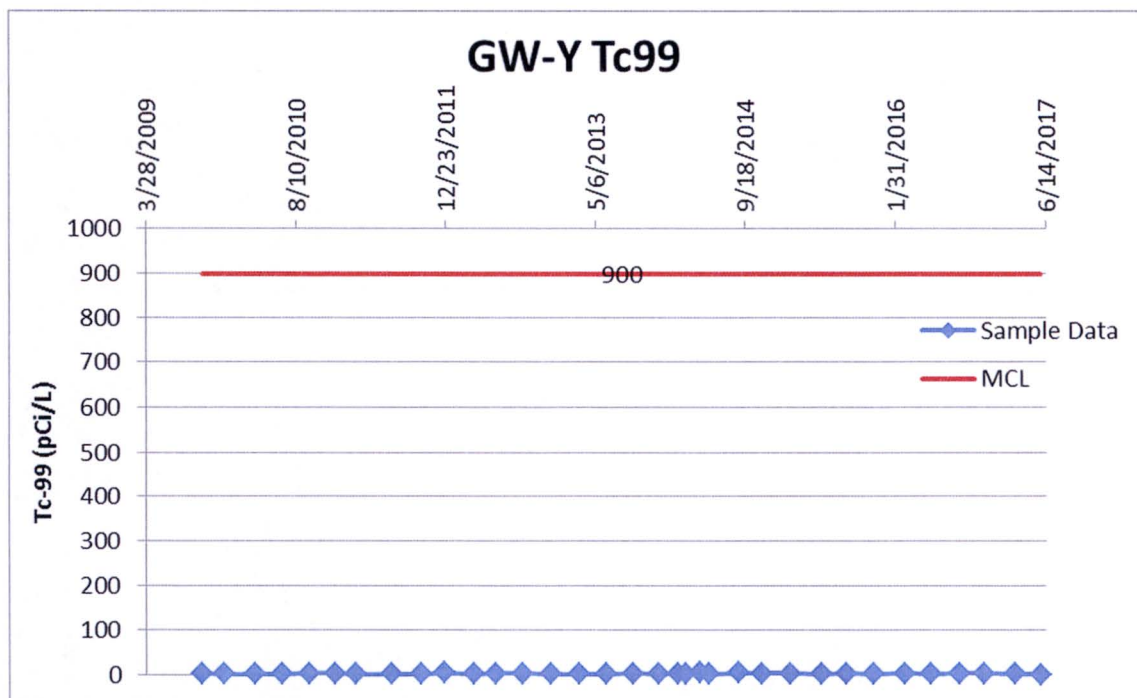
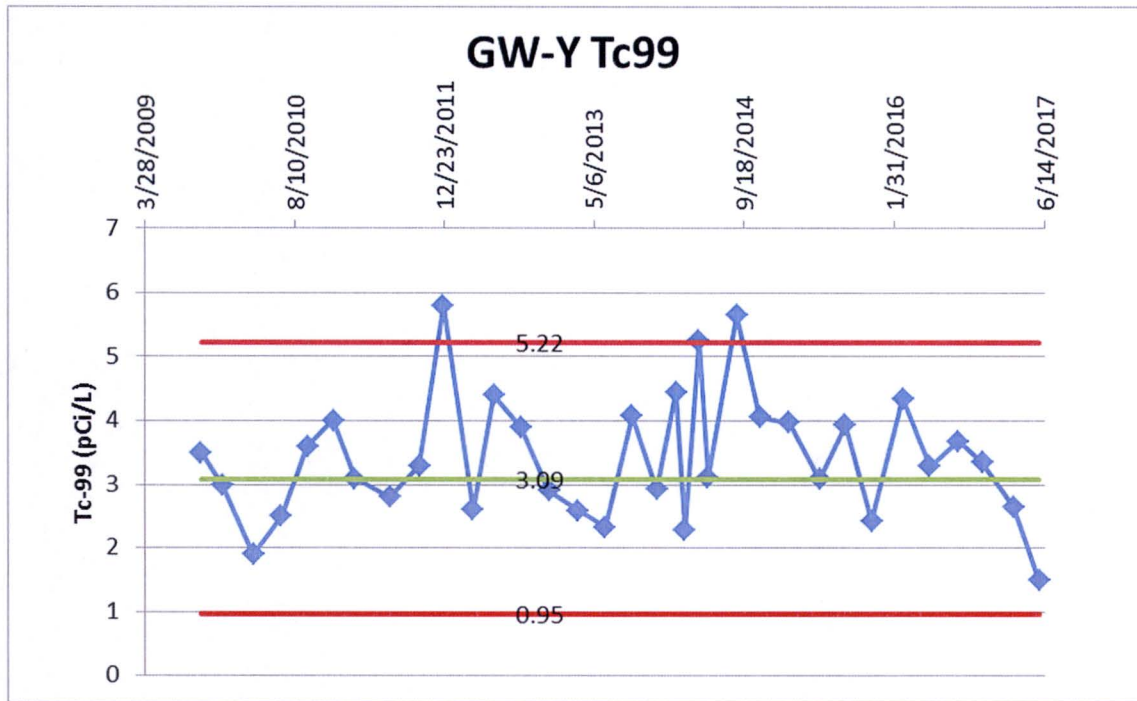
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



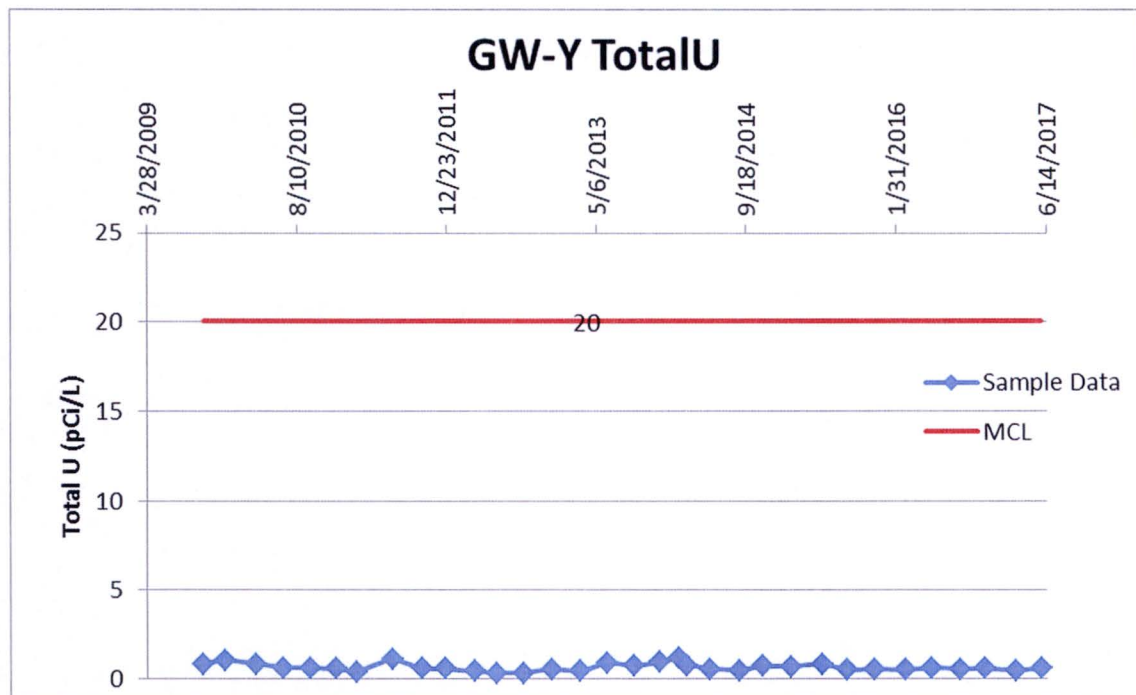
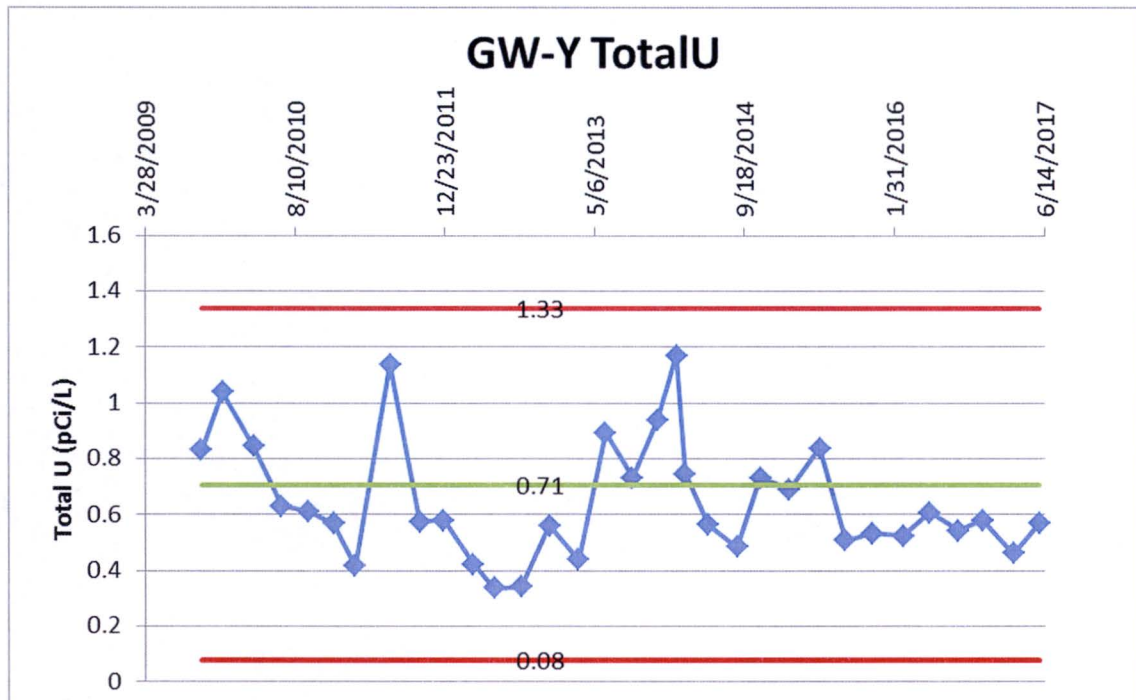
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



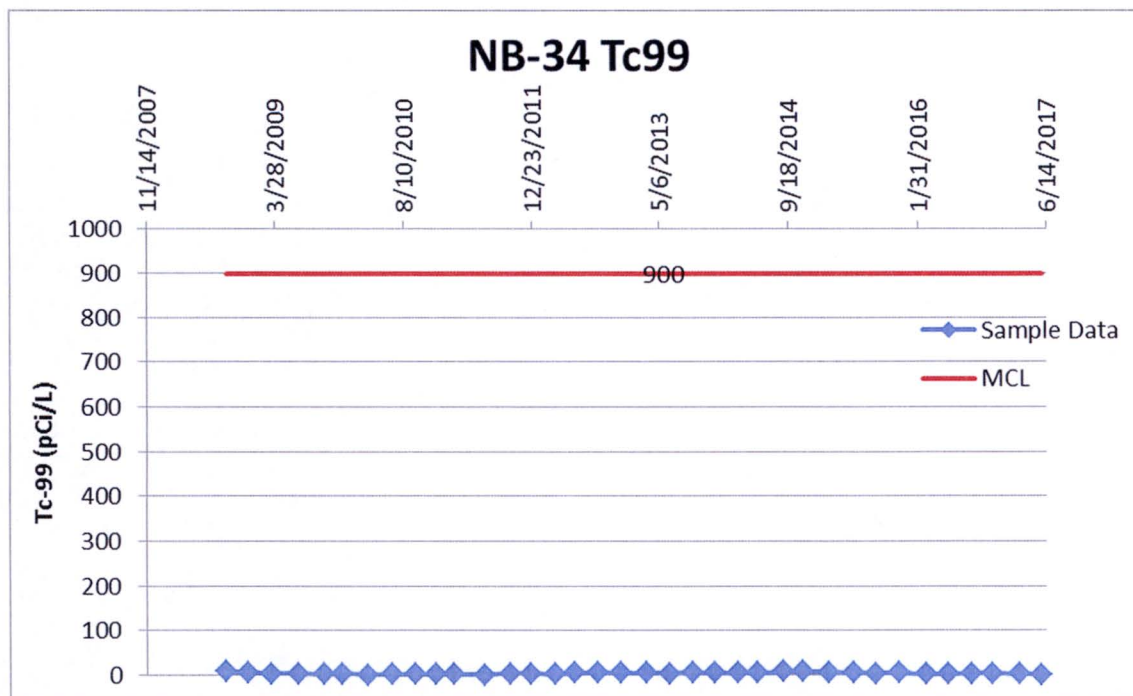
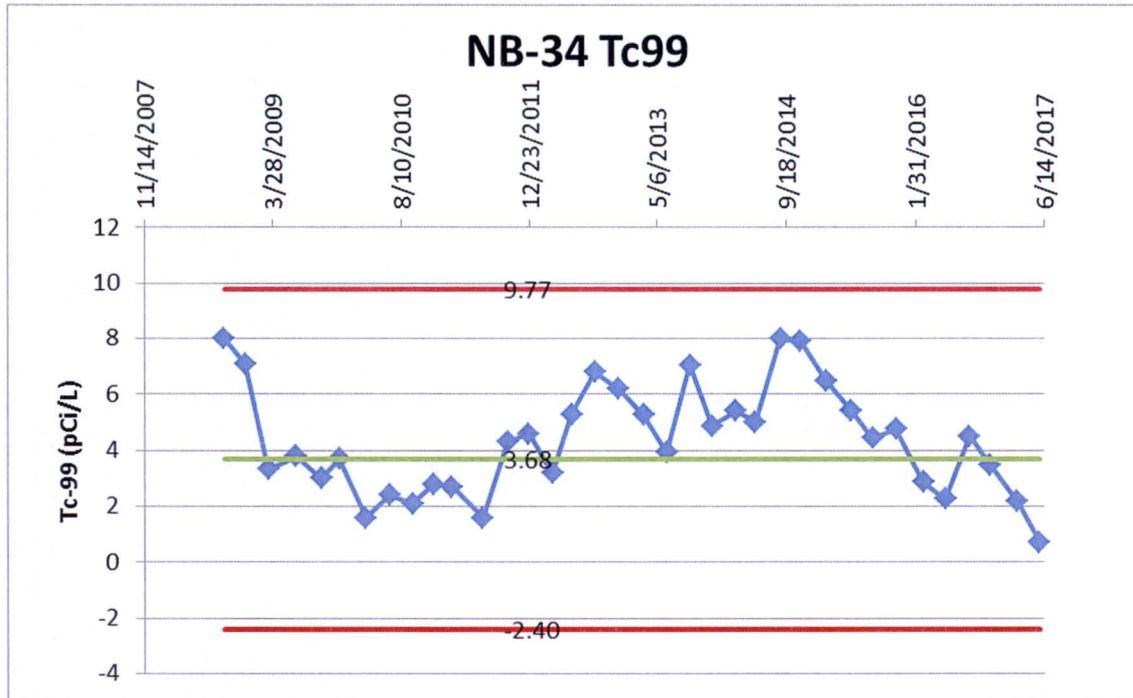
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



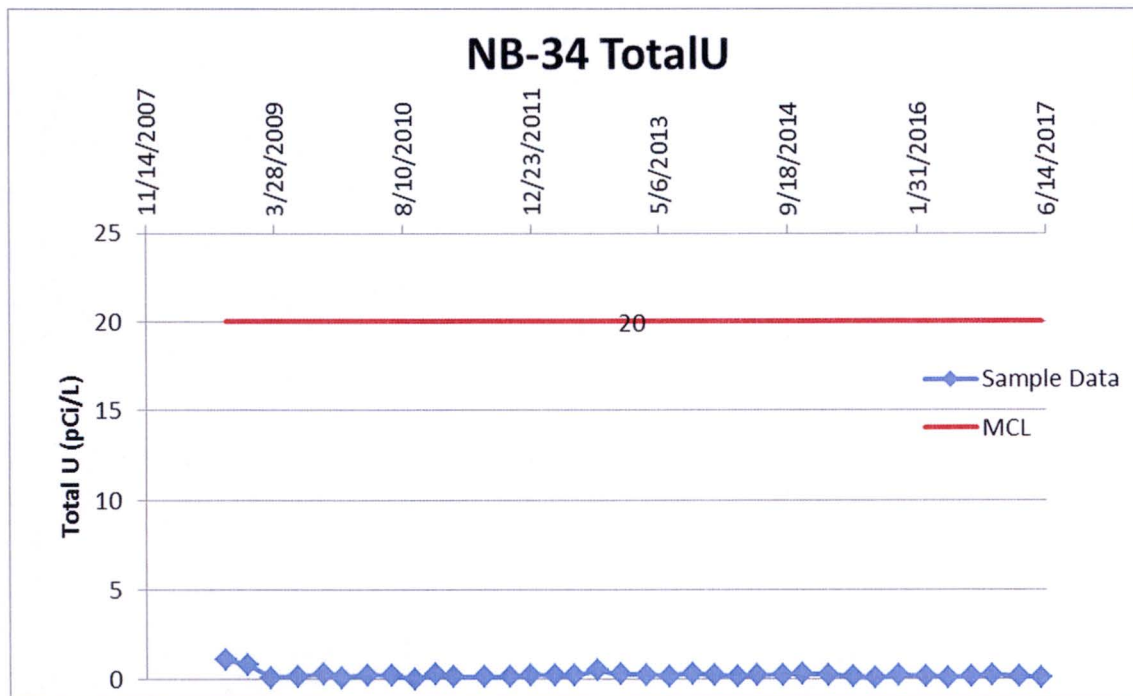
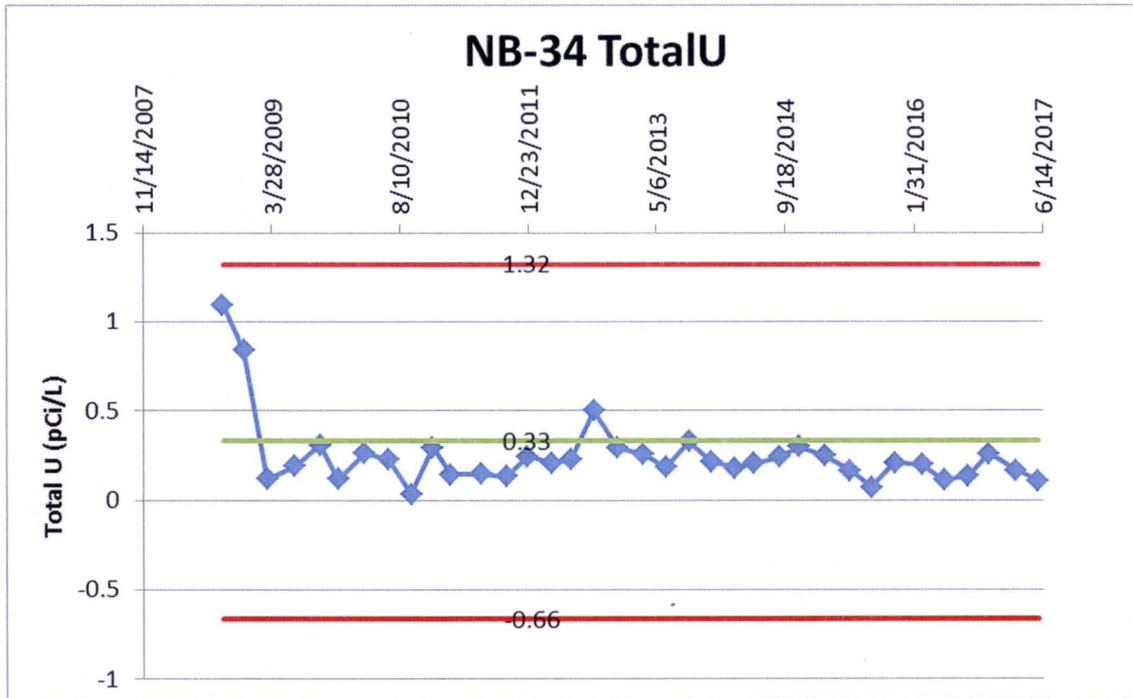
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



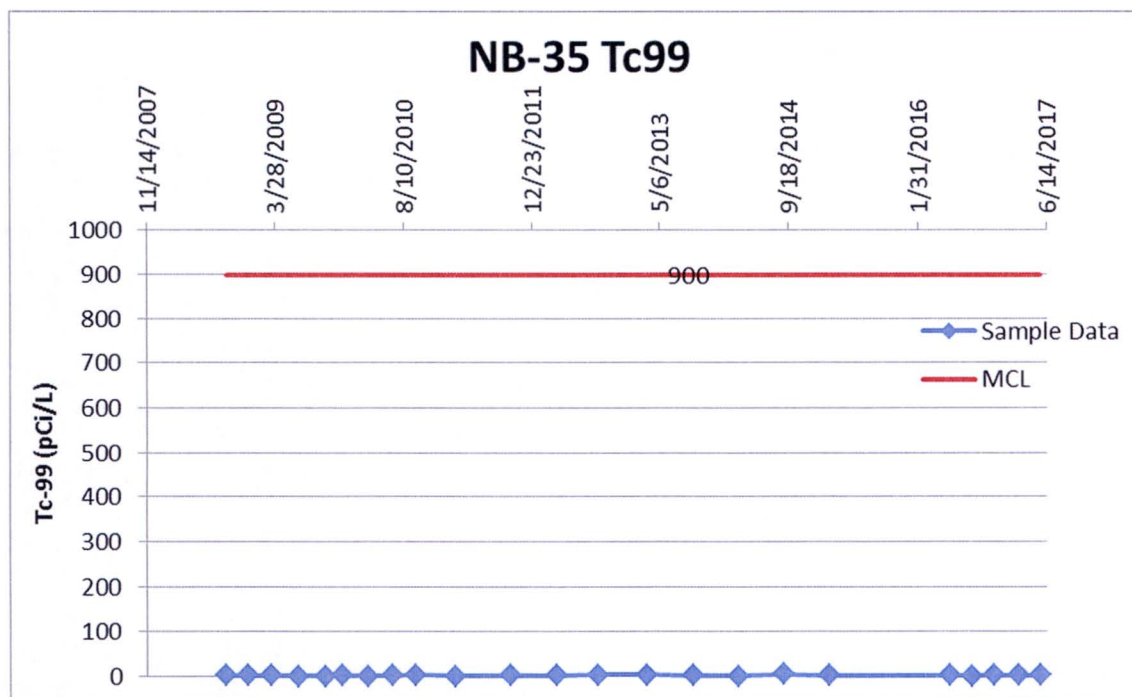
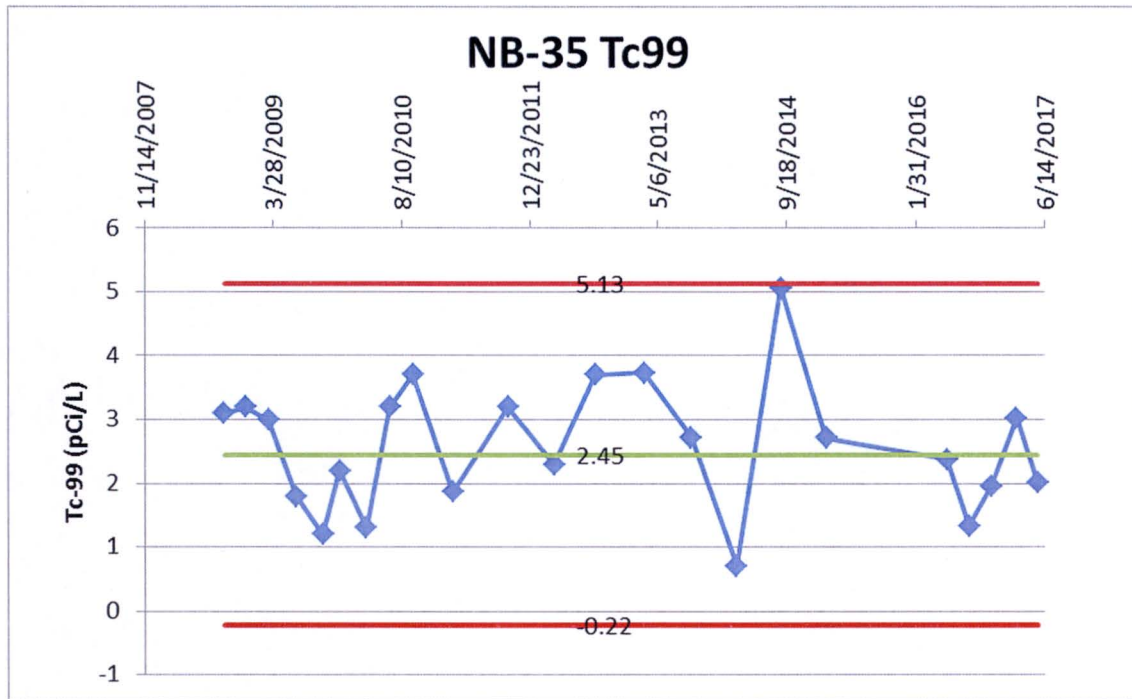
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



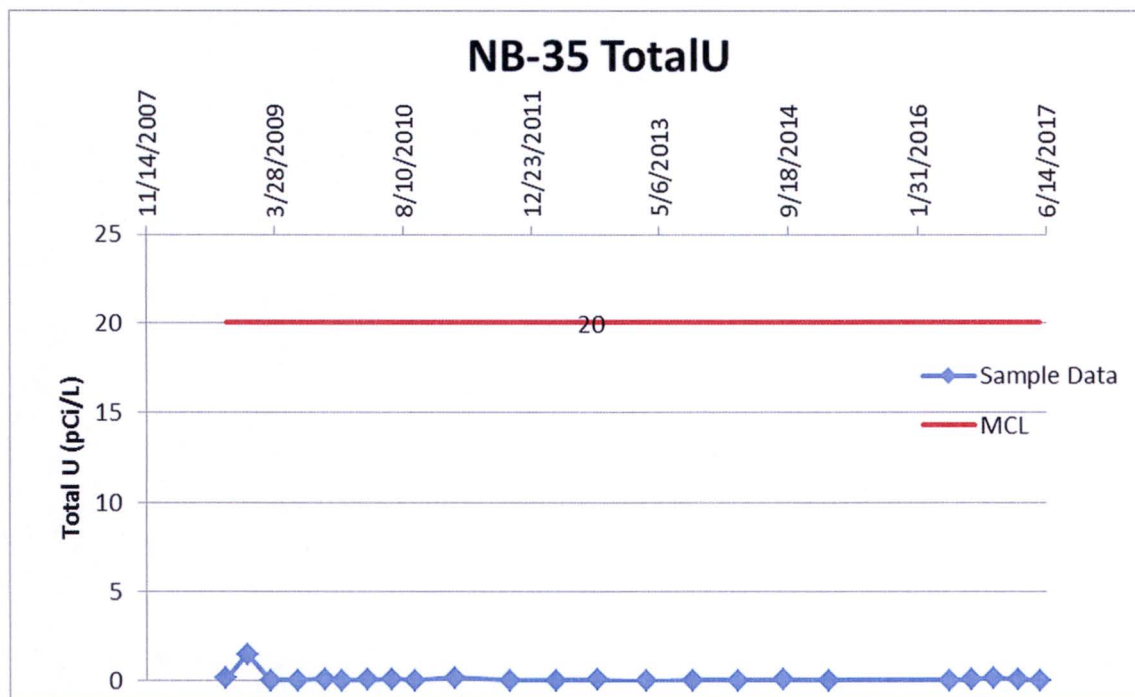
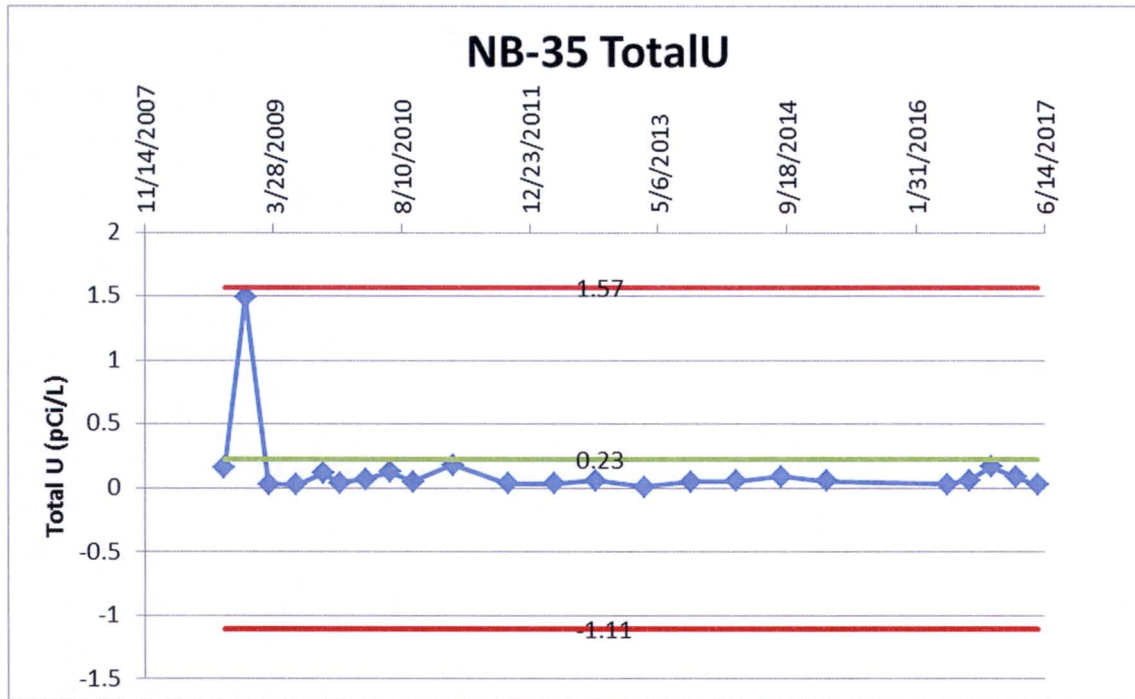
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



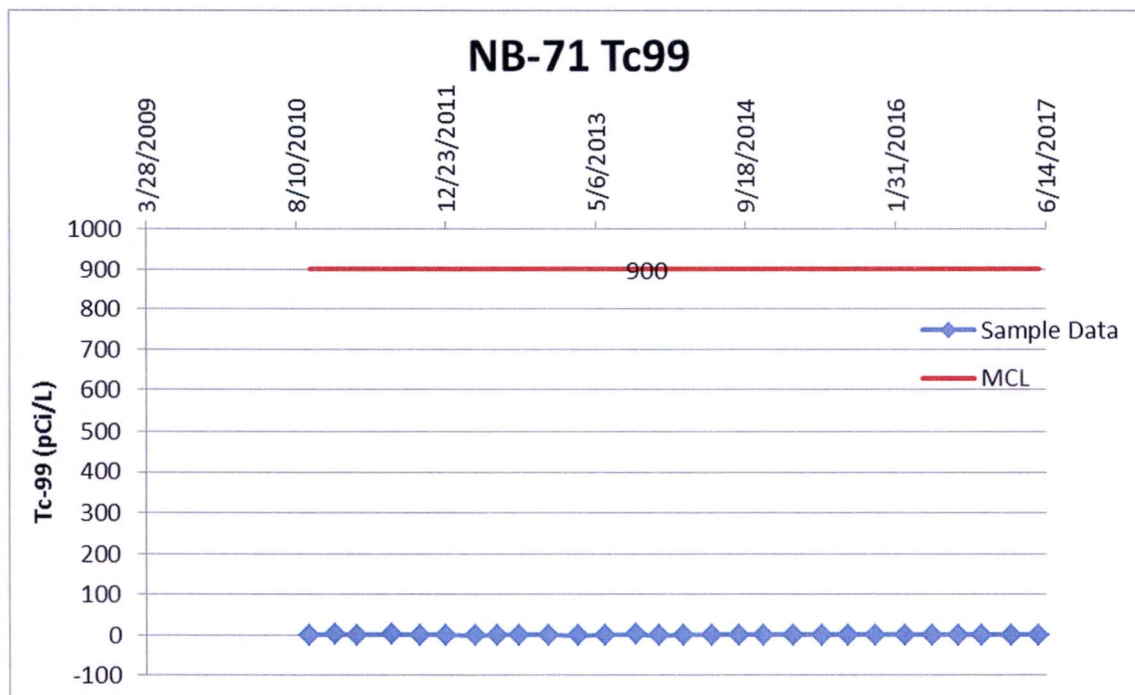
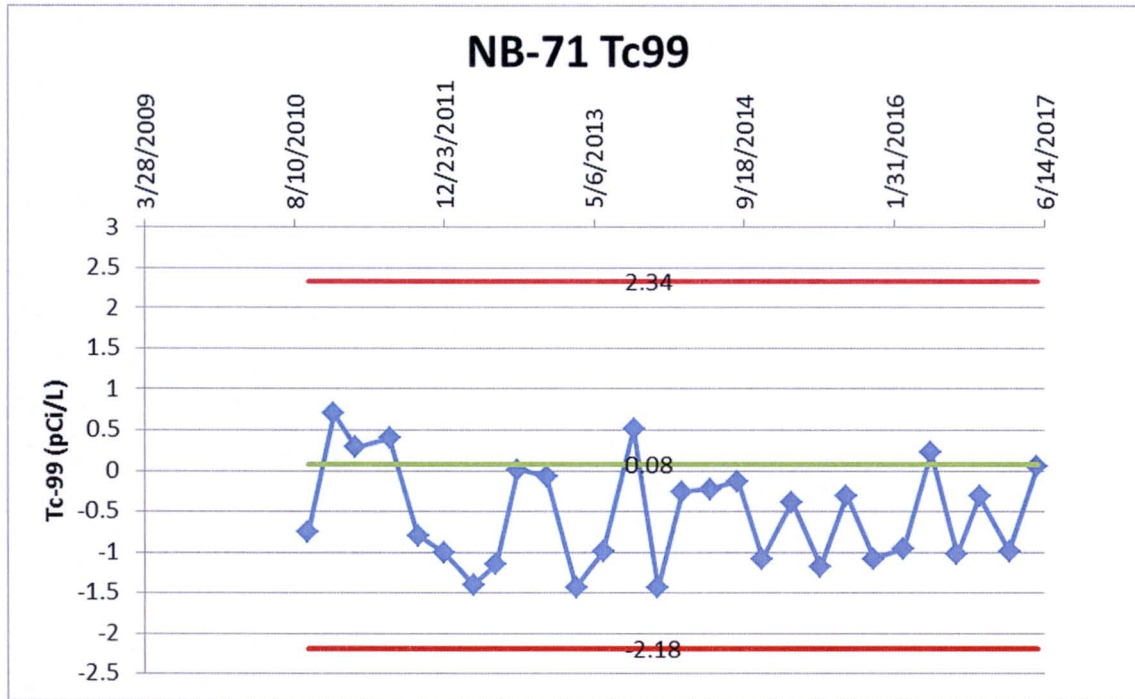
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



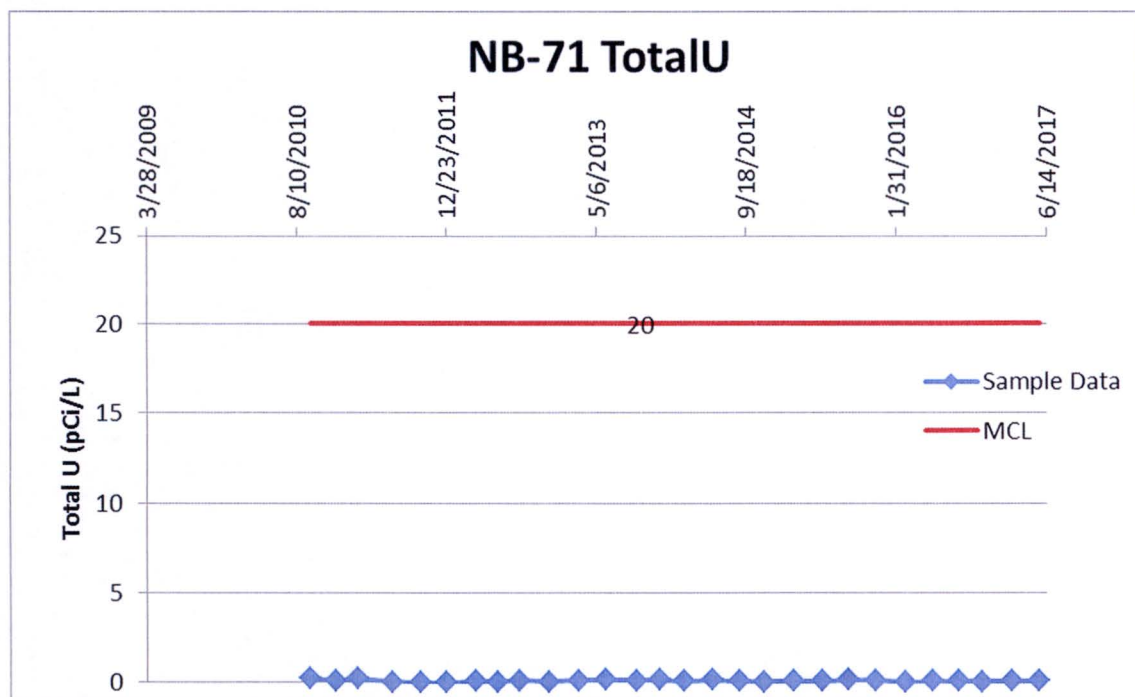
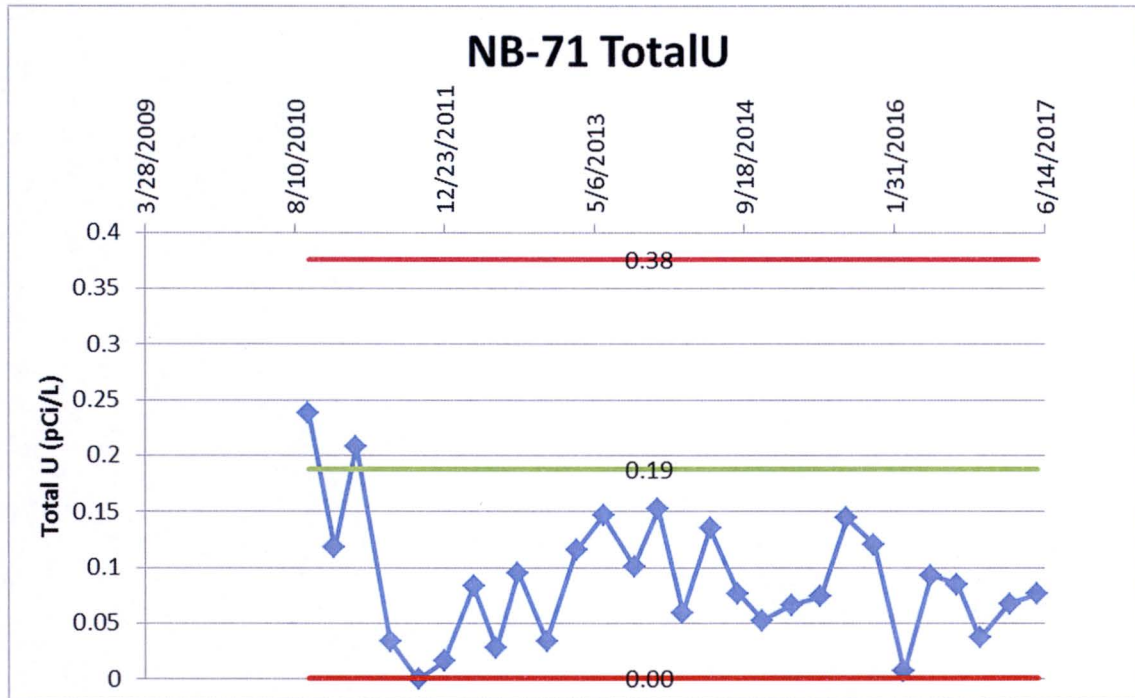
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



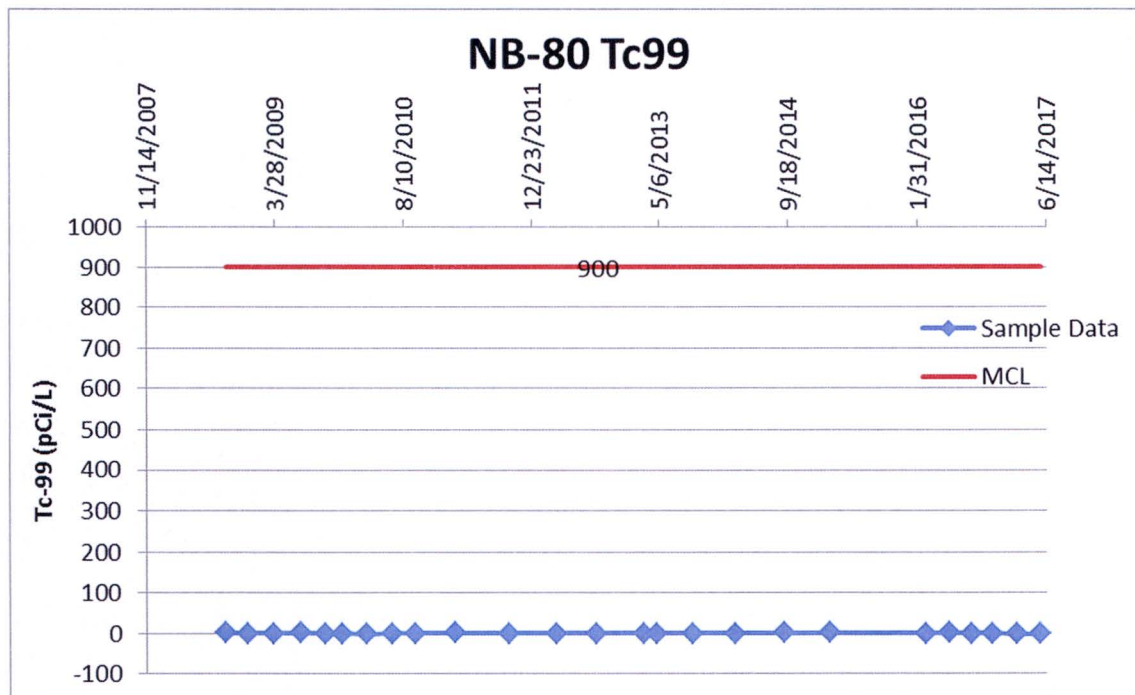
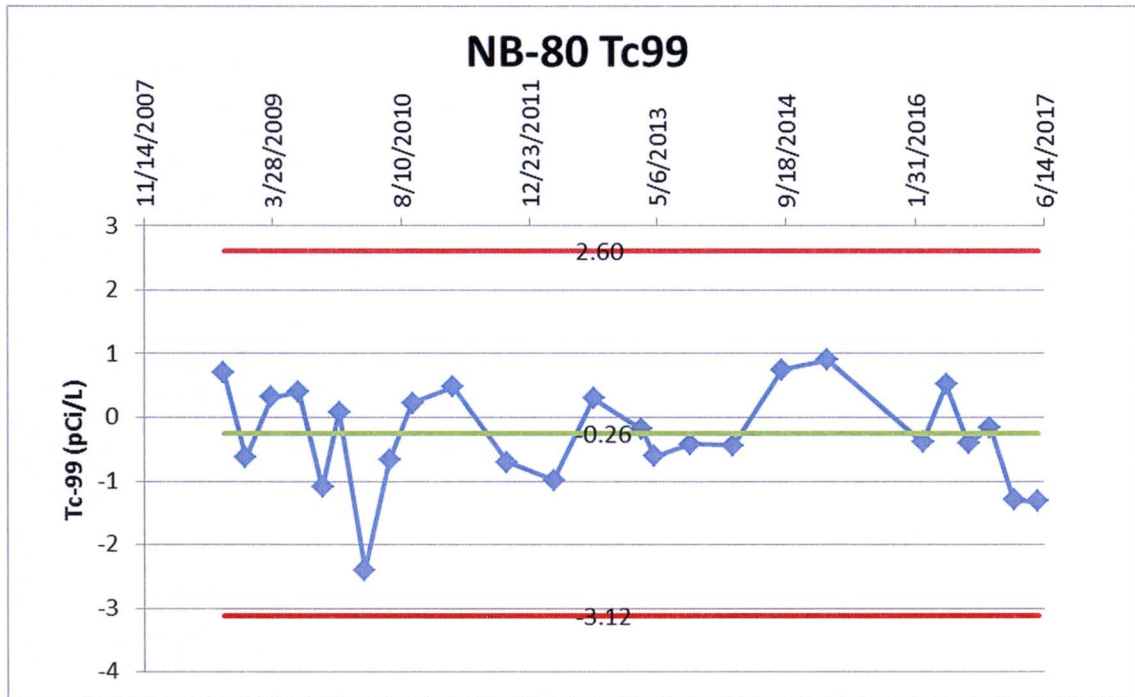
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



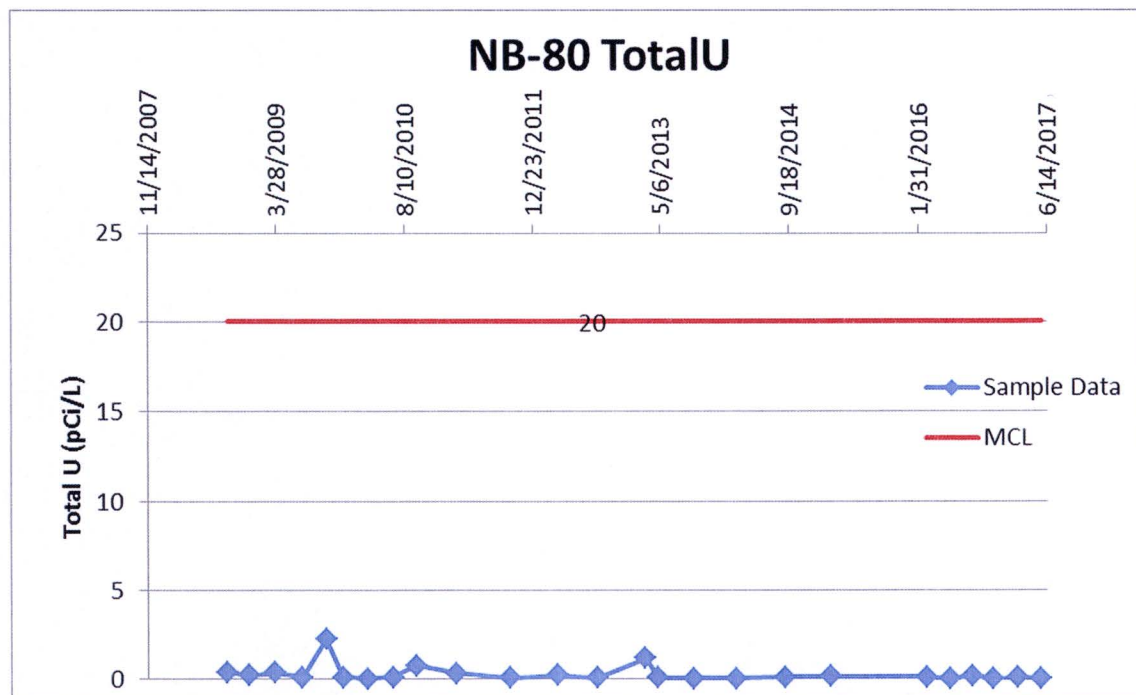
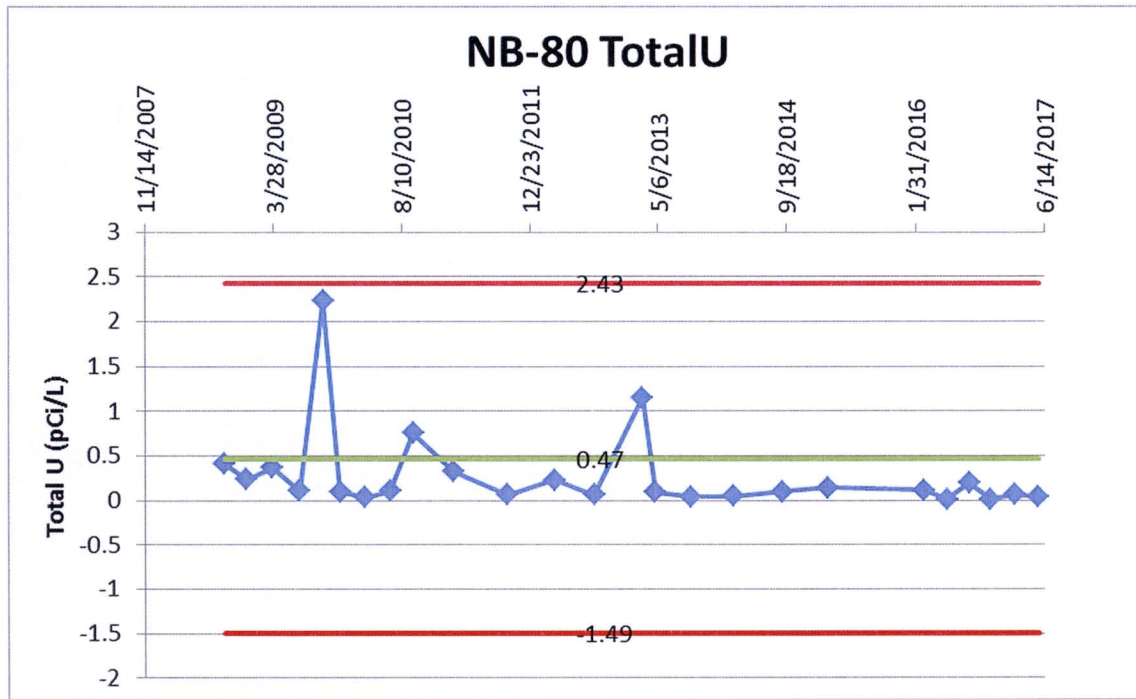
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



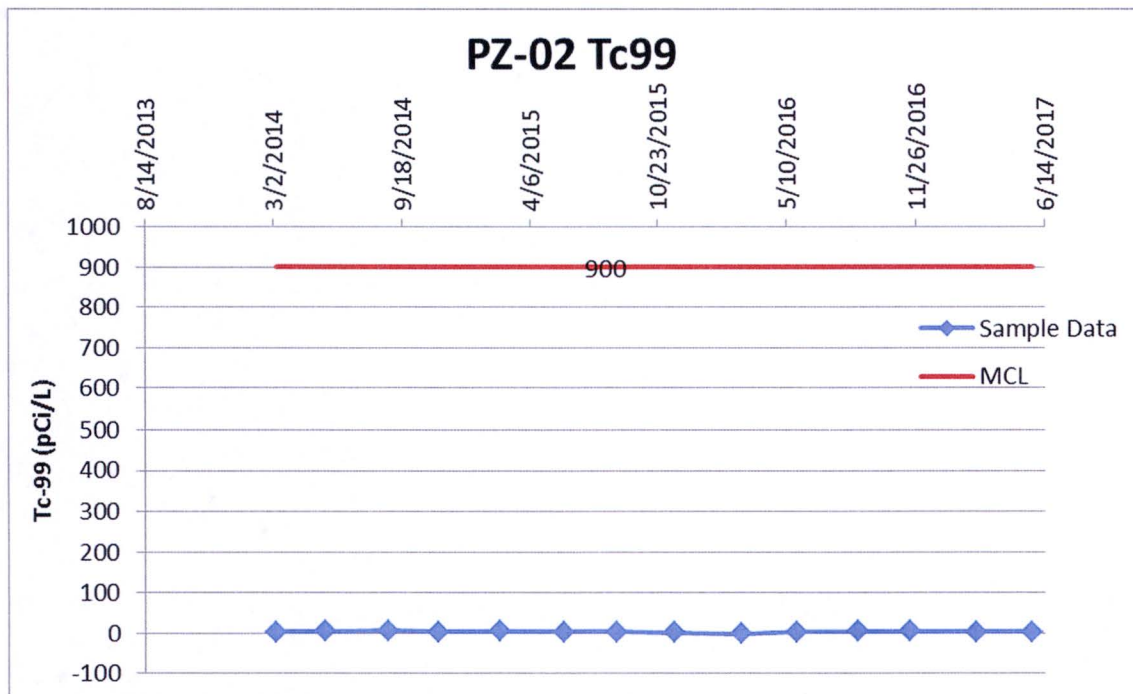
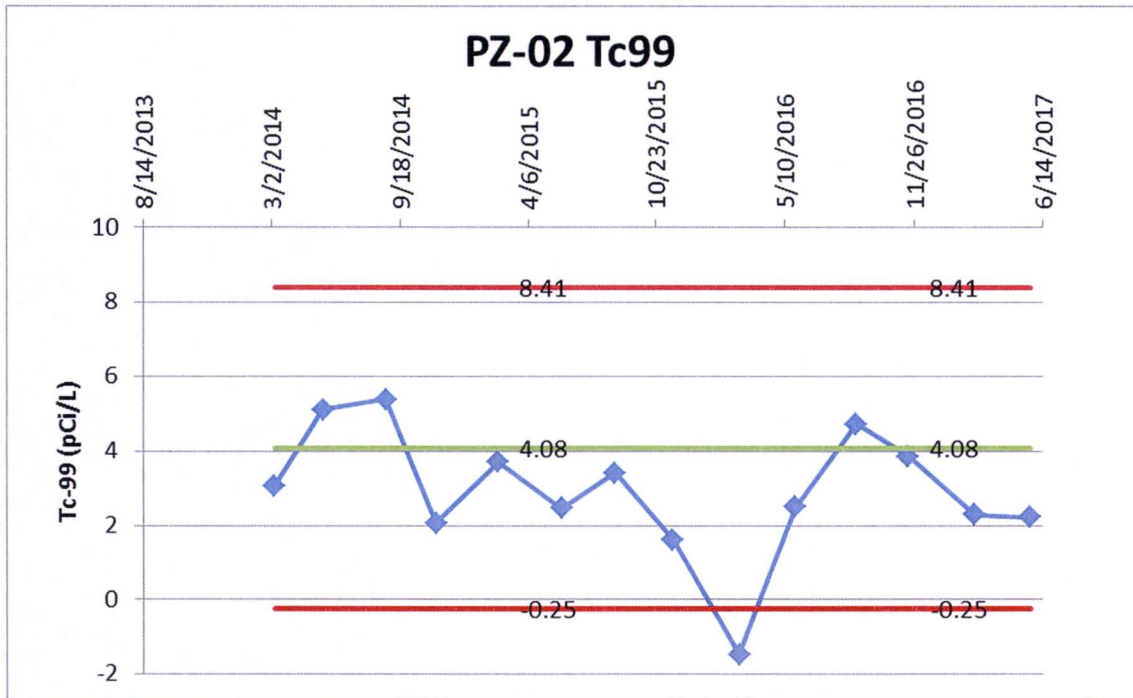
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



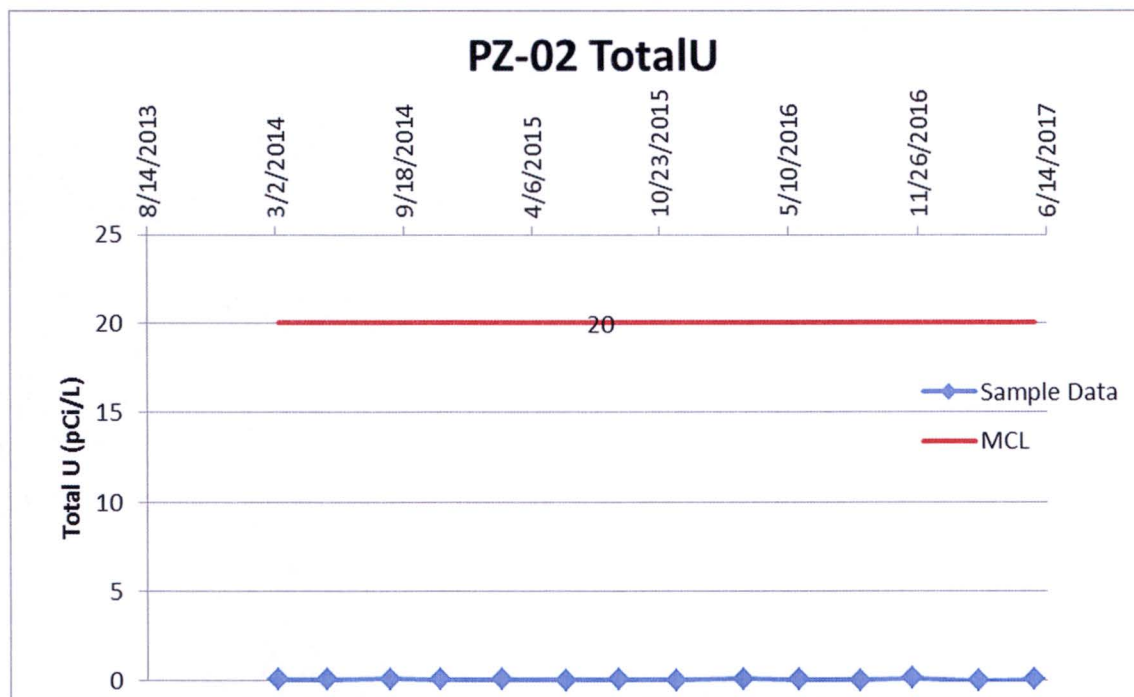
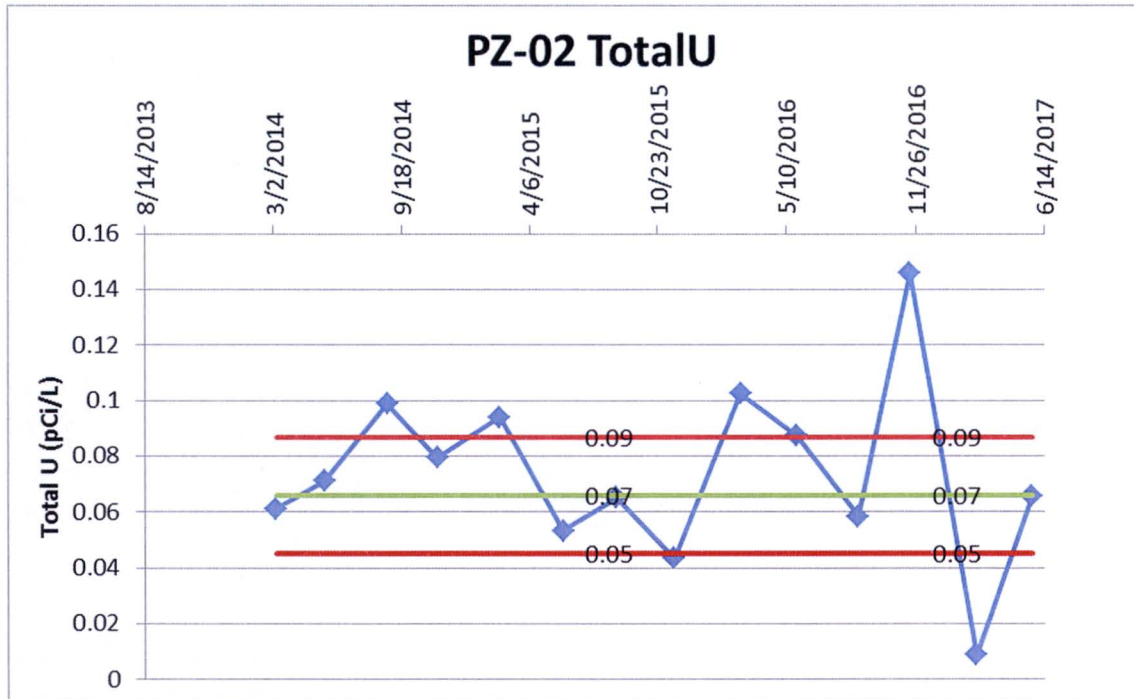
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



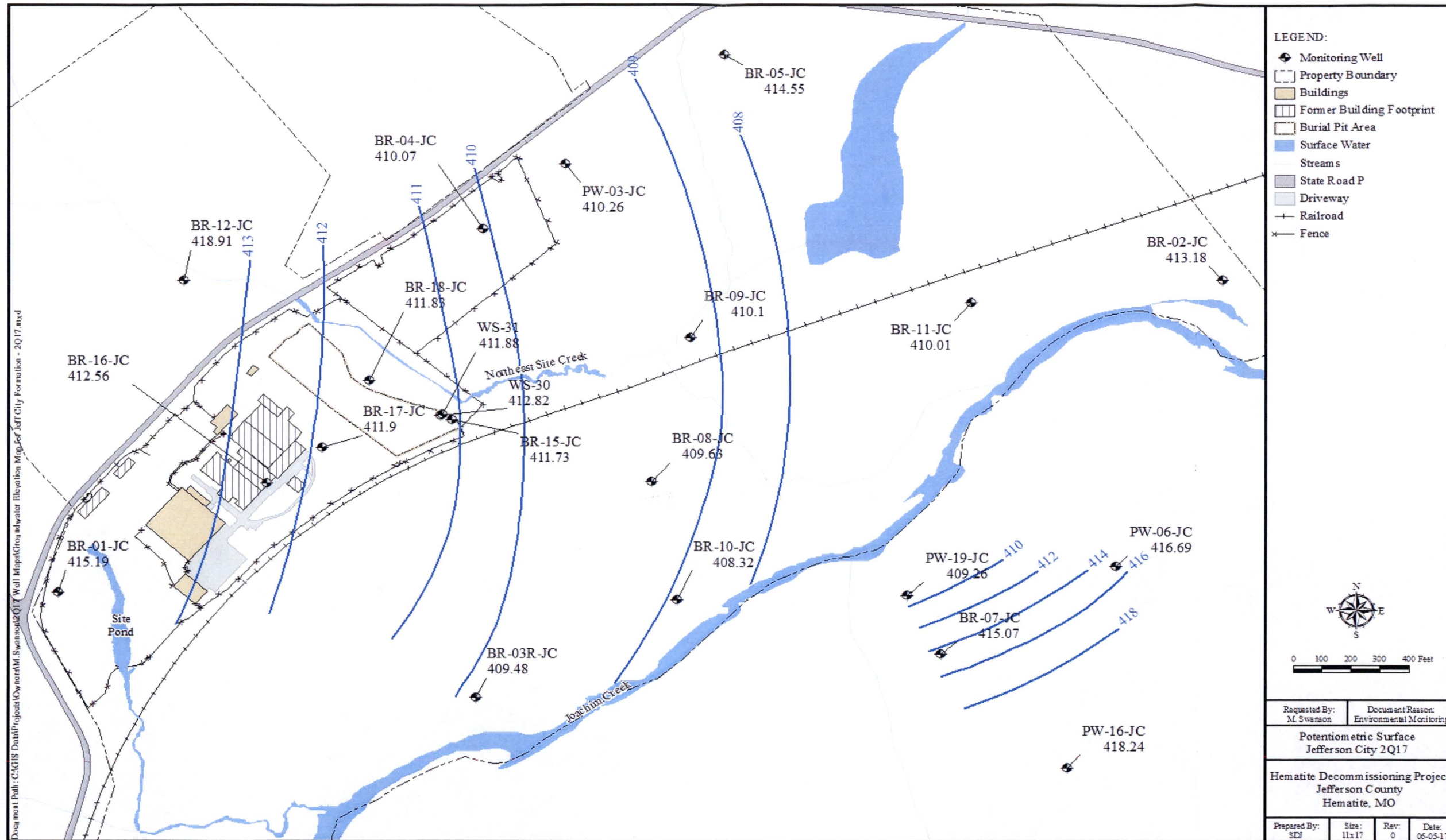
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



Attachment 3

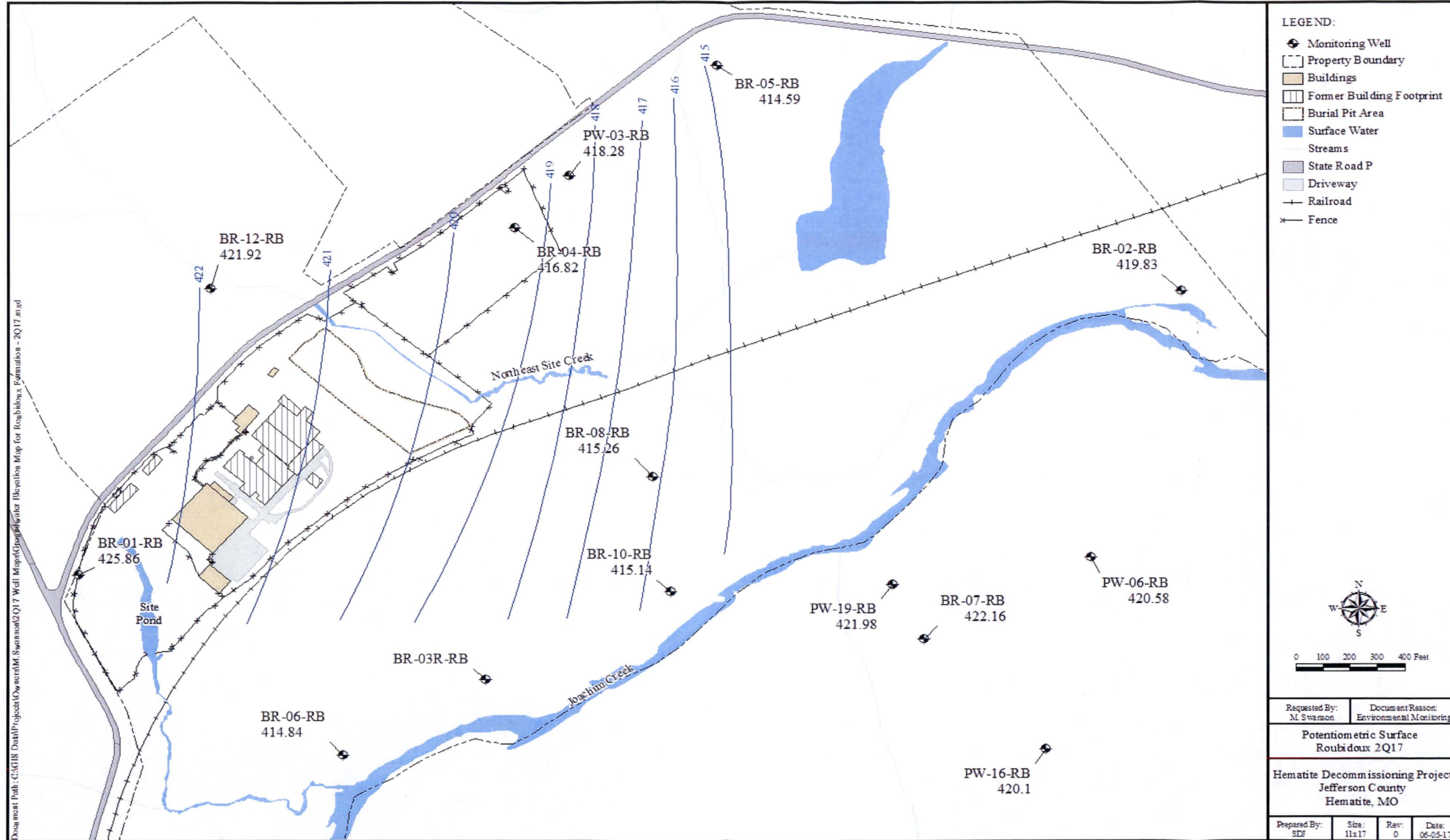
Quarterly Groundwater Elevation Contour Maps

5th Quarter Post-remediation Groundwater Elevation Contour Map
JEFFERSON CITY – COTTER HSU



Document Path: C:\GIS\ Data\Projects\Owens\MI_Swanson\2017 Well Maps\Groundwater Elevation Maps\Jeff City Formation - 2017.mxd

5th Quarter Post-remediation Groundwater Elevation Contour Map ROUBIDOUX HSU



5th Quarter Post-remediation Groundwater Elevation Contour Map
SAND/GRAVEL HSU

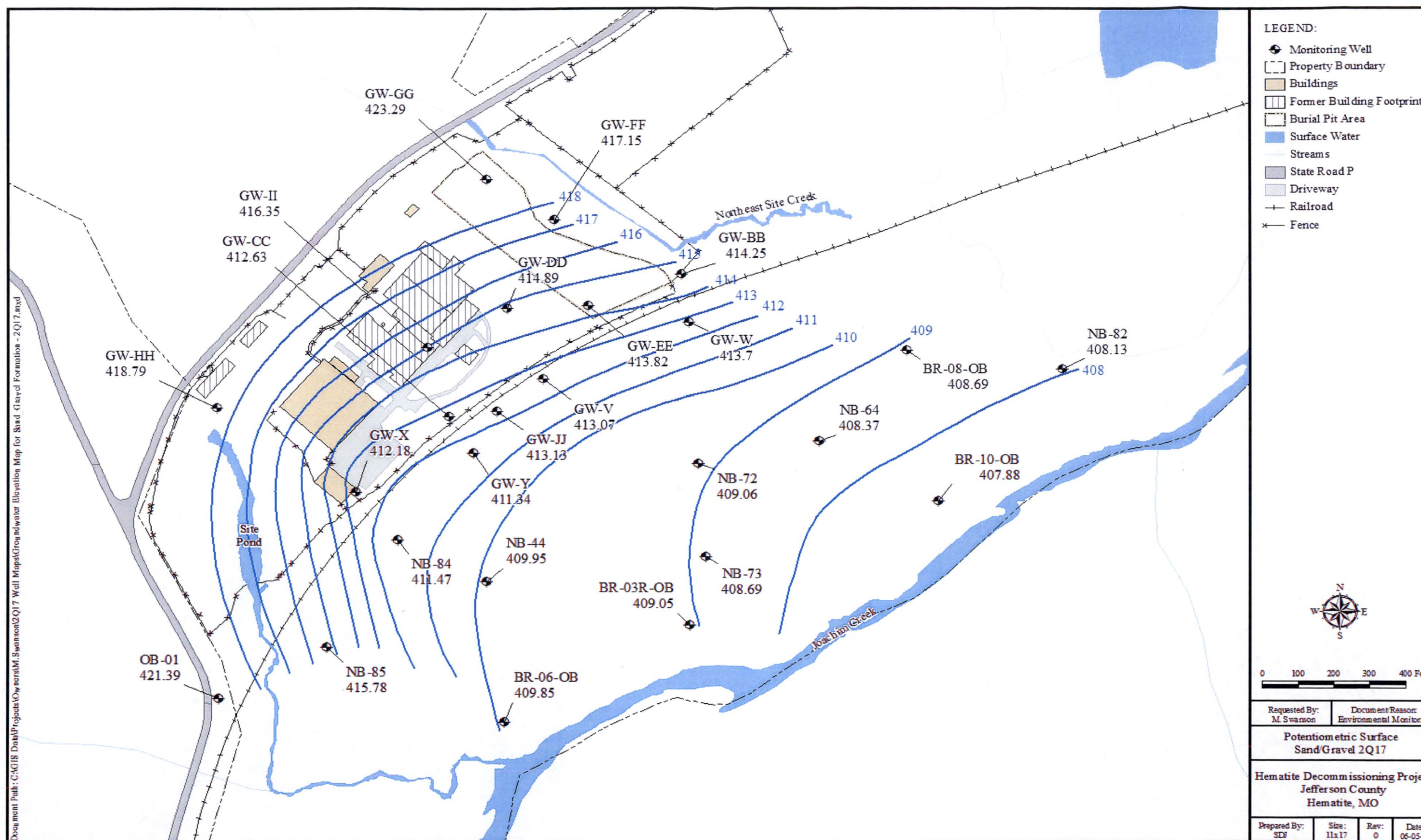


Figure 1-1
Post-remediation Groundwater Monitoring Well Network

