

Attachment 2

Final Status Survey Final Report Volume 6, Chapter 4

Post-remediation Groundwater Monitoring 2nd 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 4

TITLE: Post-remediation Groundwater Monitoring 2nd
Quarter Results

REVISION: 0

EFFECTIVE DATE: NOV 16 2016

Approvals:

Author: *Kenneth E. Pallagi* 11-16-2016
Kenneth E. Pallagi. Date

Reviewed By: *Kevin M. Harris for K. Harris* 11-16-2016
Kevin M. Harris, P.E. Date

Owner/Manager: *W. Clark Evers* 11/16/16
W. Clark Evers, CHP Date

Table of Contents

1.0	INTRODUCTION.....	1
2.0	BACKGROUND	1
3.0	POST-REMEDIATION GROUNDWATER MONITORING WELL NETWORK	1
4.0	POST-REMEDIATION GROUNDWATER MONITORING 2ND QUARTER SAMPLE RESULTS.....	4
4.1	Jefferson City-Cotter HSU Data Set	4
4.2	Roubidoux HSU Data Set	5
4.3	Sand/Gravel HSU Data Set	6
4.4	HSU Groundwater Elevation Contour Maps	7
5.0	SUMMARY	7

LIST OF ATTACHMENTS

Attachment 1: Post-remediation Groundwater Monitoring 2 nd Quarter Results	8
Attachment 2: Mann-Kendall Analysis and Sample Results Graphs	11
Attachment 3: Quarterly Groundwater Elevation Contour Maps.....	74

LIST OF TABLES

3.1	Jefferson City-Cotter HSU Data Set.....	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	6

LIST OF FIGURES

Figure 1-1	Post-remediation Groundwater Monitoring Well Network	78
------------	--	----

LIST OF ACRONYMS AND SYMBOLS

FSSFR	Final Status Survey Final Report
HDP	Hematite Decommissioning Project
HSU	Hydrostratigraphic Unit
MCL	Maximum Contaminant Level
msl	mean sea level
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 4, *Post-remediation Groundwater Monitoring 2nd Quarter Results*, is to provide the radiological groundwater sampling results from the monitoring that was conducted for the Hematite Decommissioning Project (HDP) for the 2nd quarter post-remediation groundwater monitoring.

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.*”

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

3.0 POST-REMEDIATION 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 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 quarterly sampling, using a minimum of four data points, on each of the wells to evaluate trends in sample results (Note that the new wells currently have only one data point). For existing wells, a 2 year (8 quarter) Mann-Kendall analysis will be performed at the conclusion of each quarterly sampling event as well.

Monitoring wells GW-BB, GW-EE, GW-FF, GW-GG, GW-W, NB-71, and NB-10 are positioned down gradient (northeast, east, and southeast) of the former burial pits to assess ground water quality following removal of contaminated soil/materials from this area.

Monitoring wells GW-DD, GW-II, GW-JJ, and GW-V are positioned down gradient (southeast) of the Process Building to assess groundwater quality following building demolition and removal of contaminated soil from this area.

Primary wells GW-CC, GW-X, GW-Y, NB-34, NB-35 and PZ-02 are positioned down gradient (southeast) of the Evaporation Ponds and former Leach Field to assess groundwater quality following removal of contaminated soil from these areas.

Primary well GW-HH is positioned down gradient (southeast) of the Red Room Roof Burial Area and Cistern/Burn Pit to assess groundwater quality following removal of contaminated soil and materials from these areas.

Three new monitoring wells (BR-14-JC, BR-15-JC, and BR-18-JC) have been installed in the Jefferson City-Cotter HSU down gradient of the Burial Pit and Tc-99 source areas. The wells are placed at locations to the south and east of the Documented Burial Pit Area. These wells are located closer to the central tract than the previously sampled wells and are located in areas that, if contaminant migration is occurring, will identify the degradation of the water within the post-remediation monitoring timeframe.

Post-remediation monitoring of the Jefferson City-Cotter HSU in the vicinity of the former Process Building is accomplished by monitoring three newly installed monitoring wells (BR-13-JC, BR-16-JC, and BR-17-JC) within the source and down gradient of the areas beneath the former Process Buildings where the highest levels of contamination were removed. These wells are being used to evaluate the potential for contaminant migration from the overburden into the shallow bedrock.

Post-remediation monitoring of the Jefferson City-Cotter HSU in the vicinity of the former Evaporation Ponds is accomplished by monitoring of a newly installed monitoring well (BR-19-JC) at a location down gradient of the primary (deep) Evaporation Pond.

Post-remediation monitoring of the Roubidoux HSU is being or will be conducted using the sentry wells designated as BR-03-RB, BR-04-RB, BR-08-RB, and BR-10-RB. In addition, a background well (WS-04), which is located off-site at the Hematite Post Office is being monitored.

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

Well ID No.	HSU	Post-remediation Protocol			Existing or New*
		Purpose	Parameters	Sample Frequency	
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
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 Road 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 2ND QUARTER SAMPLE RESULTS**4.1 Jefferson City-Cotter HSU Data Set**

The post-remediation monitoring wells which monitor the Jefferson City-Cotter HSU were sampled for the 2nd quarter between August 17 and August 29, 2016. The data set is provided in Attachment 1, *Post-Remediation Groundwater Monitoring 2nd 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 below.

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

Well ID	Tc-99	Total U
BR-04-JC	No Trend	No Trend
BR-13-JC	Insufficient Data Points*	Insufficient Data Points*
BR-14-JC	Insufficient Data Points*	Insufficient Data Points*
BR-15-JC	Insufficient Data Points*	Insufficient Data Points*
BR-16-JC	Insufficient Data Points*	Insufficient Data Points*
BR-17-JC	Insufficient Data Points*	Insufficient Data Points*
BR-18-JC	Insufficient Data Points*	Insufficient Data Points*
BR-19-JC	Insufficient Data Points*	Insufficient Data Points*

*Data requirement is four quarters of monitoring results.

4.2 Roubidoux HSU Data Set

The post-remediation monitoring wells which monitor the Roubidoux HSU were sampled for the 2nd quarter between August 17 and August 29, 2016. The data set is provided in Attachment 1, *Post-Remediation Groundwater Monitoring 2nd 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 below.

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	Downward Trend
BR-08-RB	No Trend	No Trend
BR-10-RB	No Trend	No Trend
WS-04	No Trend	No Trend

4.3 Sand/Gravel HSU Data Set

The post-remediation monitoring wells which monitor the Sand/Gravel HSU were sampled for the 2nd quarter between August 17 and August 29, 2016. The data set is provided in Attachment 1, *Post-Remediation Groundwater Monitoring 2nd 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 below. The upward trends that were indicated for total Uranium in monitoring wells GW-X and NB-71 during the 1st Quarter sampling are no longer evident.

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	Insufficient Data Points*	Insufficient Data Points*
GW-DD	Insufficient Data Points*	Insufficient Data Points*
GW-EE	Insufficient Data Points*	Insufficient Data Points*
GW-FF	Insufficient Data Points*	Insufficient Data Points*
GW-GG	Insufficient Data Points*	Insufficient Data Points*
GW-HH	Insufficient Data Points*	Insufficient Data Points*
GW-II	Insufficient Data Points*	Insufficient Data Points*
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

Well ID	Tc-99	Total U
NB-71	No Trend	No Trend
NB-80	No Trend	Downward Trend
PZ-02	No Trend	No Trend

*Data requirement is four quarters of monitoring results

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 2nd quarter post-remediation monitoring period are provided in Attachment 3.

5.0 SUMMARY

There were no indications of Radionuclides of Concern (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 {ML16287A528}, 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 2nd Quarter Results

Attachment 1
Post-remediation Groundwater Monitoring 2nd 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	-0.266	1.9	1.1	3.32	0.0931	0.516	0.0705	0.0529	0.0707	0.461	0.0781	0.167
BR-13-JC	-0.117	1.8	1.05	4.16	0.0504	0.49	0.0709	0.0266	0.0505	0.299	0.0213	0.0955
BR-14-JC	-0.126	1.87	1.08	3.56	0.0991	0.476	0.0474	0.0355	0.0476	0.678	0.06	0.171
BR-15-JC	-0.683	2.38	1.38	1.33	0.0859	0.27	0.0139	0.0417	0.0278	0.345	0.0334	0.127
BR-16-JC	-0.946	2.17	1.24	4.59	0.0744	0.572	0.0286	0.076	0.0444	0.888	0.029	0.2
BR-17-JC	-0.307	2.05	1.19	4.91	0.0976	0.609	0.0221	0.097	0.0491	0.828	0.105	0.201
BR-18-JC	-0.899	2.01	1.15	2.25	0.0862	0.354	0.0491	0.0368	0.0492	0.216	0.0295	0.0941
BR-19-JC	-0.648	1.99	1.14	7.02	0.0906	0.783	0.0468	0.0351	0.047	1.11	0.0282	0.224

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	-1.09	2.07	1.18	2	0.0869	0.346	0.0422	0.0422	0.0489	0.158	0.0338	0.0855
BR-04-RB	0.394	2.11	1.26	2.45	0.0613	0.371	0	0.0362	0.0151	0.281	0.0291	0.107
BR-08-RB	-0.37	3.12	1.83	5.21	0.061	0.627	0.0722	0.0361	0.0592	0.306	0.0742	0.115
BR-10-RB	-0.162	1.8	1.05	3.21	0.07	0.404	0.00867	0.026	0.0174	0.125	0.0209	0.0599
WS-04	-0.37	2.32	1.35	0.936	0.0984	0.271	0.0222	0.0665	0.0444	0.508	0.0982	0.197

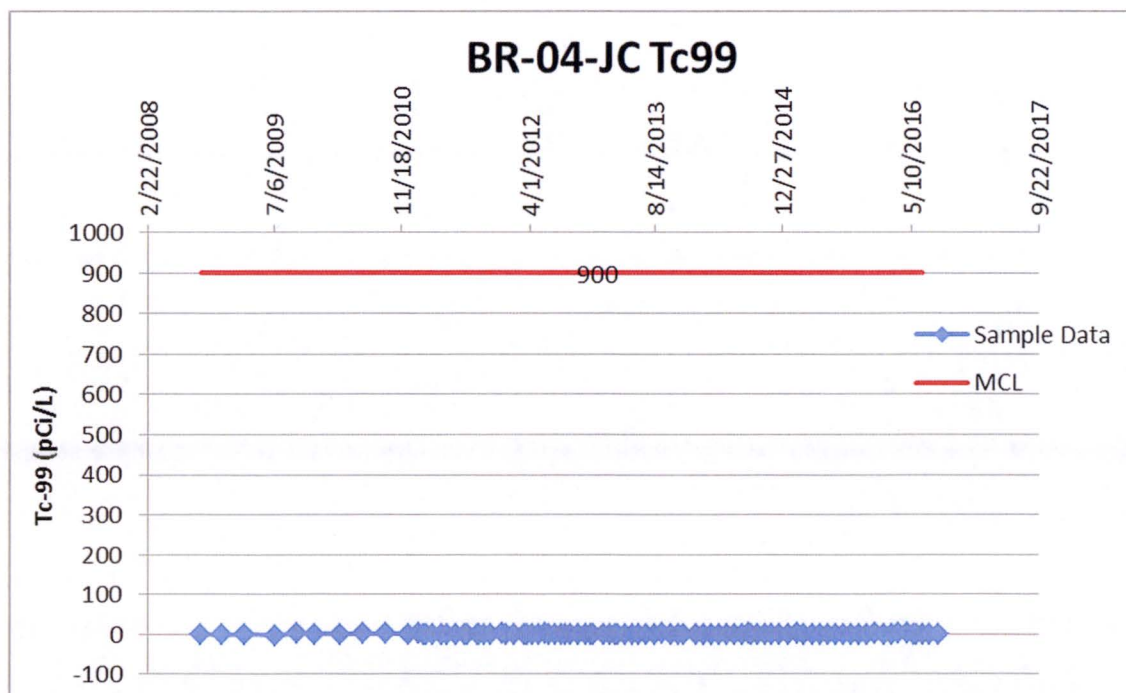
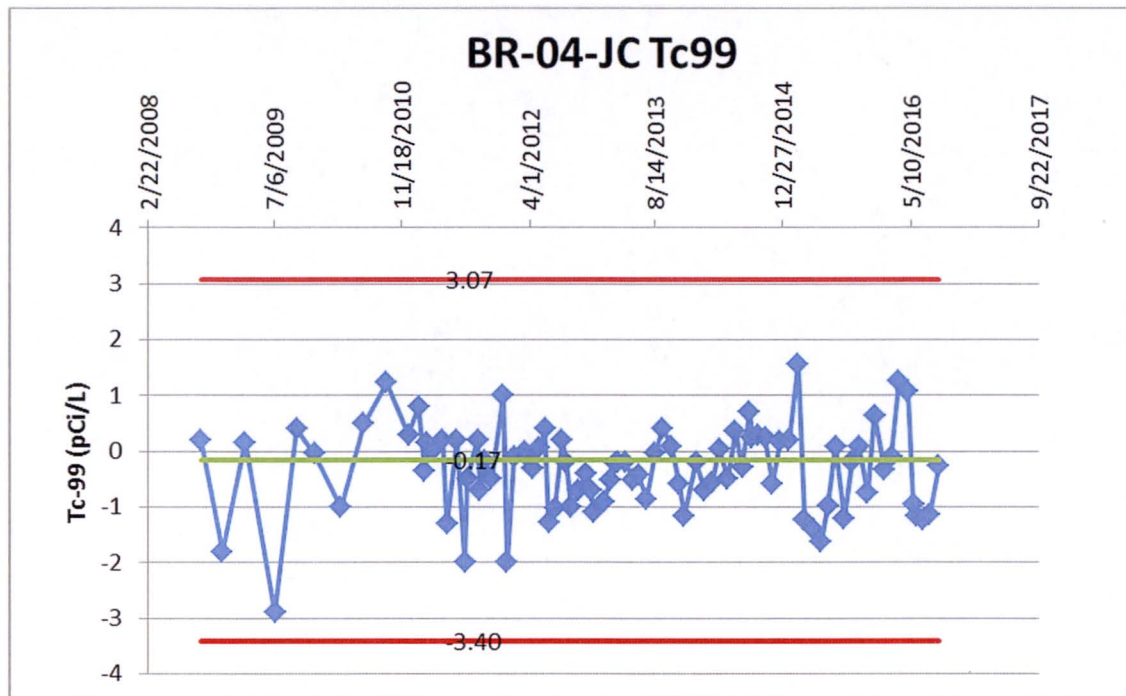
Attachment 1
Post-remediation Groundwater Monitoring 2nd Quarter Results

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	0.405	1.79	1.07	0.0251	0.0966	0.0514	0.0125	0.0375	0.025	0.0438	0.0632	0.0466
GW-CC	2.66	2.29	1.46	0.928	0.0804	0.214	0.013	0.0391	0.0261	0.606	0.0313	0.167
GW-DD	5.06	2.18	1.53	0.0422	0.137	0.0764	0.00543	0.0915	0.0342	0.0218	0.121	0.0613
GW-EE	1.51	2.08	1.29	0.0392	0.0733	0.0487	0	0.0433	0.0181	0.00434	0.0731	0.0273
GW-FF	3.58	2.08	1.39	0.366	0.0673	0.13	0.0398	0.0398	0.046	0.128	0.0319	0.0744
GW-GG	-0.0554	2.03	1.19	0	0.123	0.0566	-0.1	0.185	0.0563	-0.0111	0.103	0.0394
GW-HH	-0.478	1.81	1.04	1.02	0.0293	0.218	0	0.0364	0.0152	0.185	0.0292	0.0863
GW-II	-1.27	2.12	1.2	0.0406	0.0304	0.0407	0.0126	0.0379	0.0253	0.0607	0.0304	0.0498
GW-JJ	4.12	1.91	1.34	0.00882	0.0836	0.0328	0	0.0565	0.0157	0.0692	0.0835	0.0689
GW-V	4.88	1.9	1.38	0.0645	0.0892	0.0627	0.00211	0.0896	0.033	0.0203	0.0305	0.0288
GW-W	0.322	1.95	1.16	0.0225	0.0867	0.0461	-0.007	0.0707	0.014	0.0157	0.069	0.0349
GW-X	71	1.8	7.32	0.0188	0.0828	0.0419	0.0134	0.0402	0.0268	0.043	0.0322	0.0431
GW-Y	3.68	1.83	1.26	0.287	0.116	0.115	0.0227	0.0739	0.0402	0.233	0.101	0.102
NB-34	4.5	1.8	1.3	0.0621	0.0964	0.0669	-0.00677	0.0899	0.0136	0.0728	0.0721	0.0651
NB-35	1.33	2.01	1.23	0.0275	0.0731	0.0427	0.0054	0.0909	0.034	0.0274	0.0729	0.0426
NB-71	-1.03	2.13	1.22	0.0536	0.0915	0.06	-0.00814	0.0823	0.0163	0.0313	0.0313	0.0363
NB-80	-0.414	2.08	1.21	0.118	0.0559	0.0679	-0.00688	0.0696	0.0138	0.0773	0.0679	0.0584
PZ-02	4.73	1.95	1.4	0.0247	0.0551	0.0338	-0.00808	0.0686	0.0162	0.0337	0.0681	0.0424

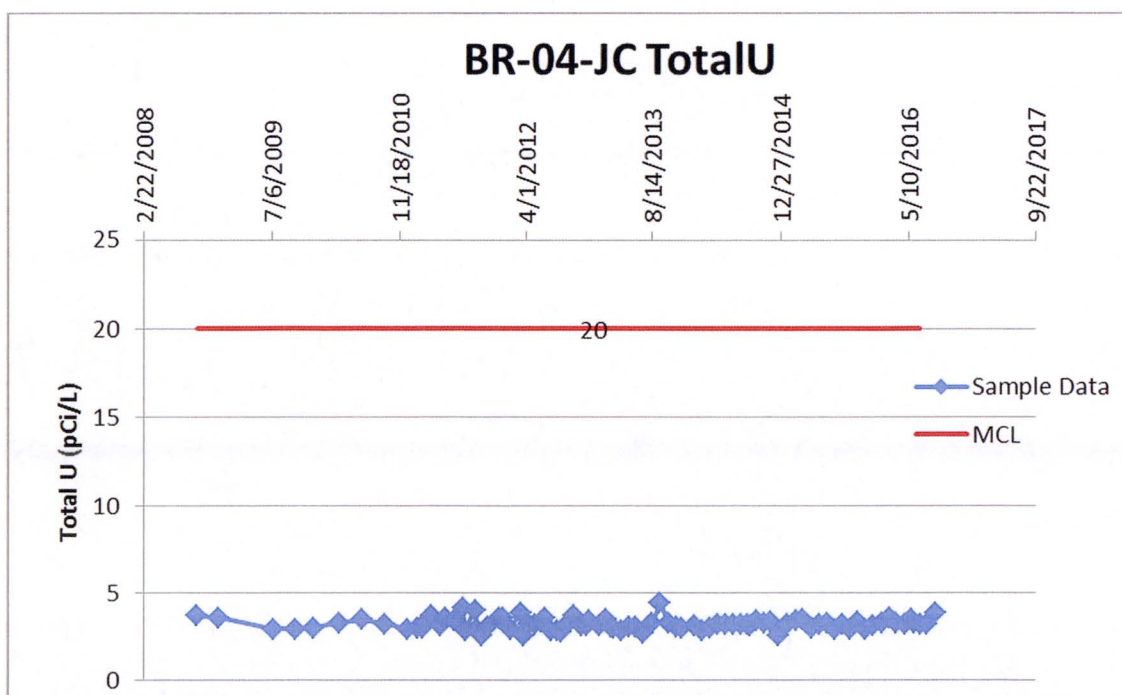
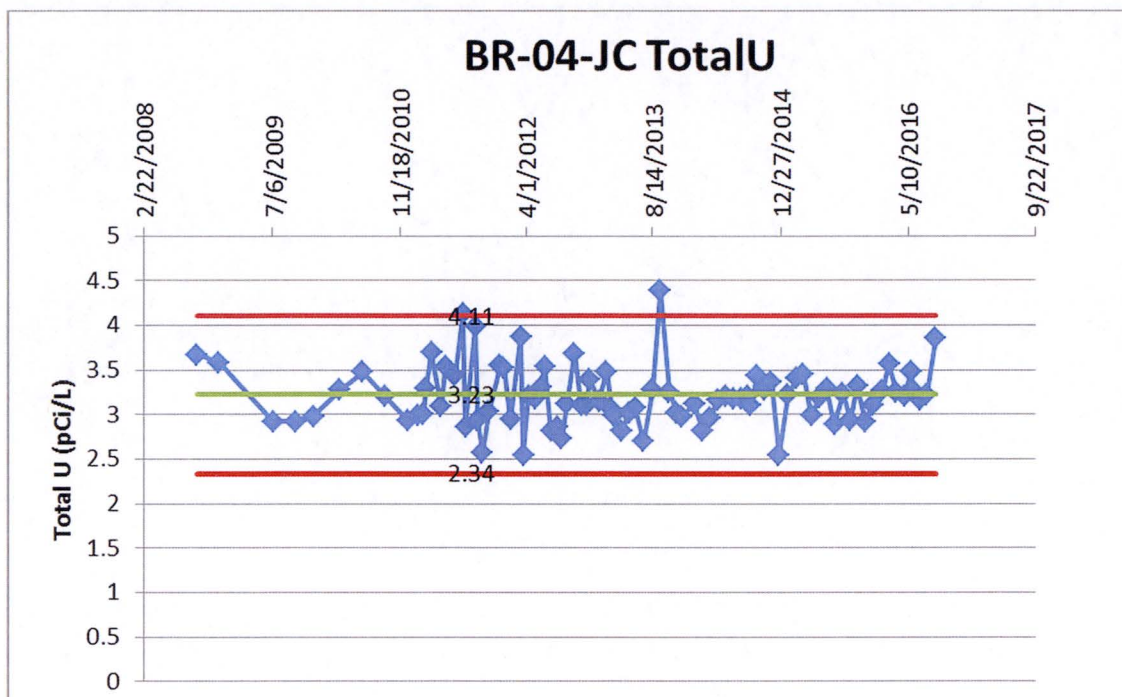
Attachment 2

Mann-Kendall Analysis and Sample Results Graphs

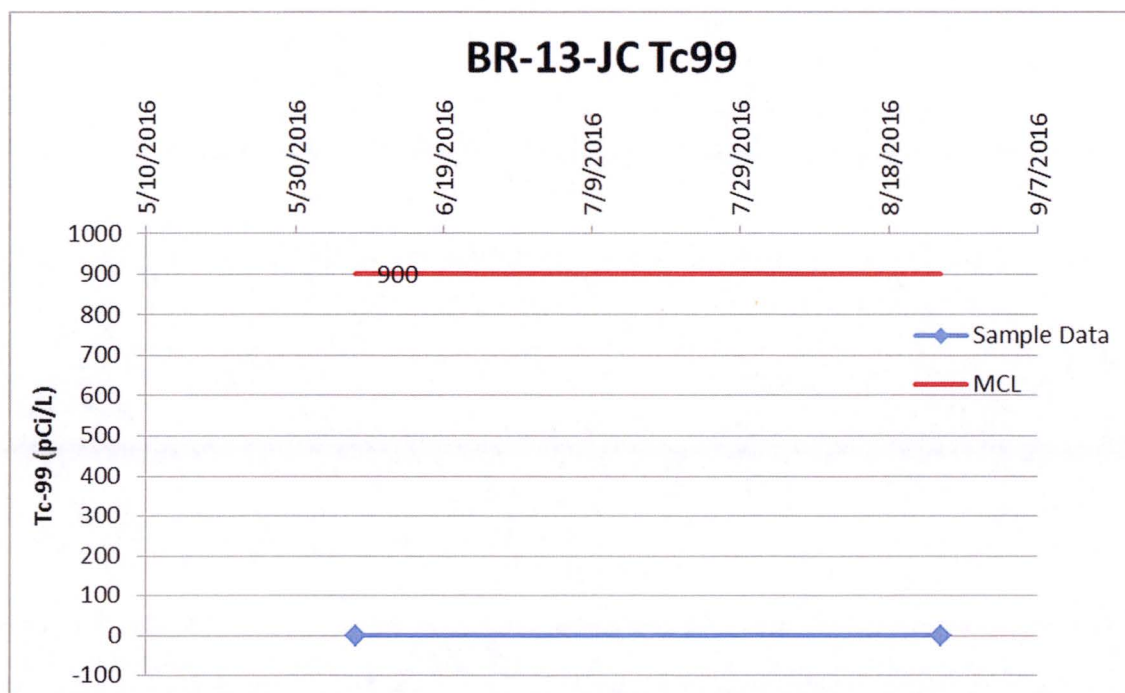
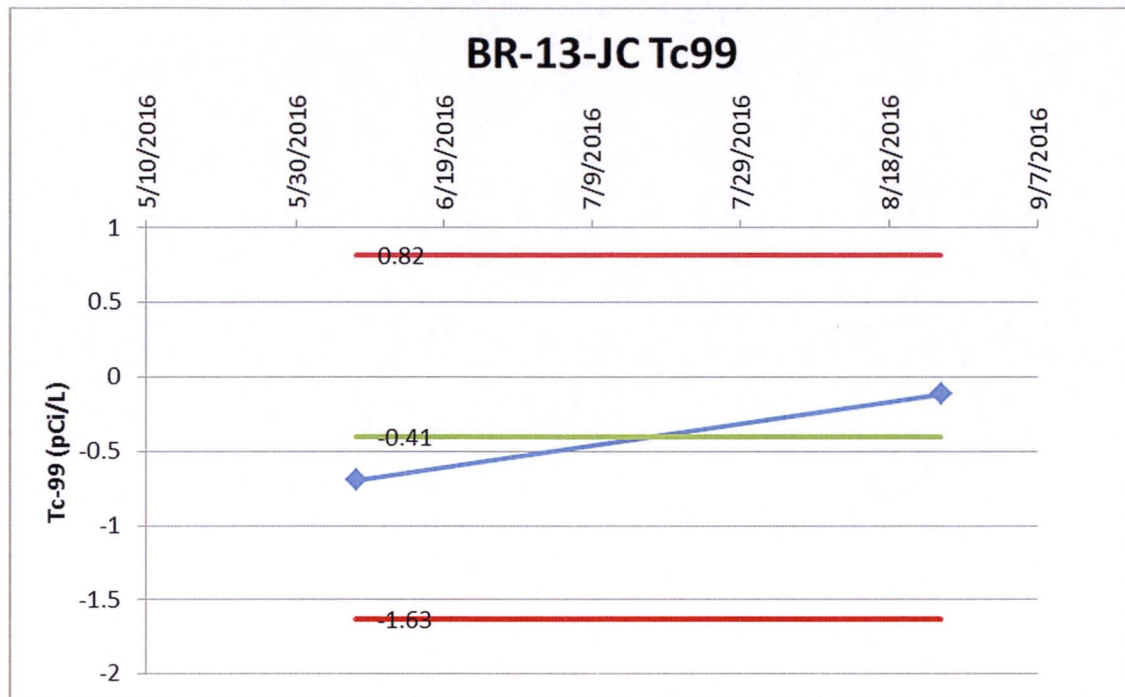
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU



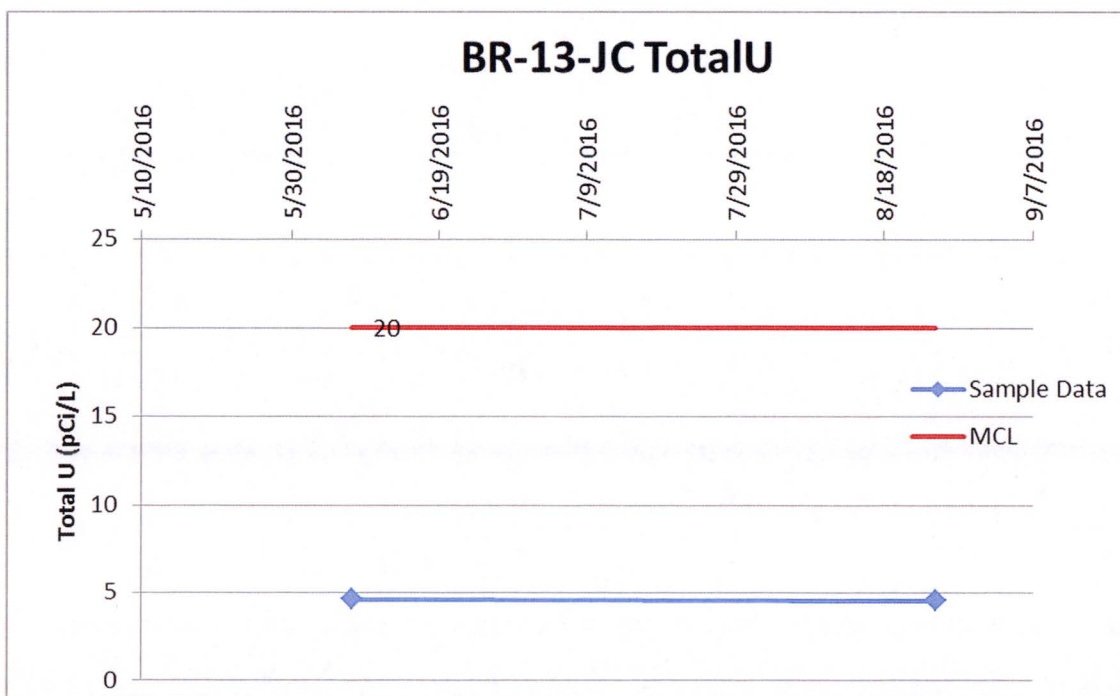
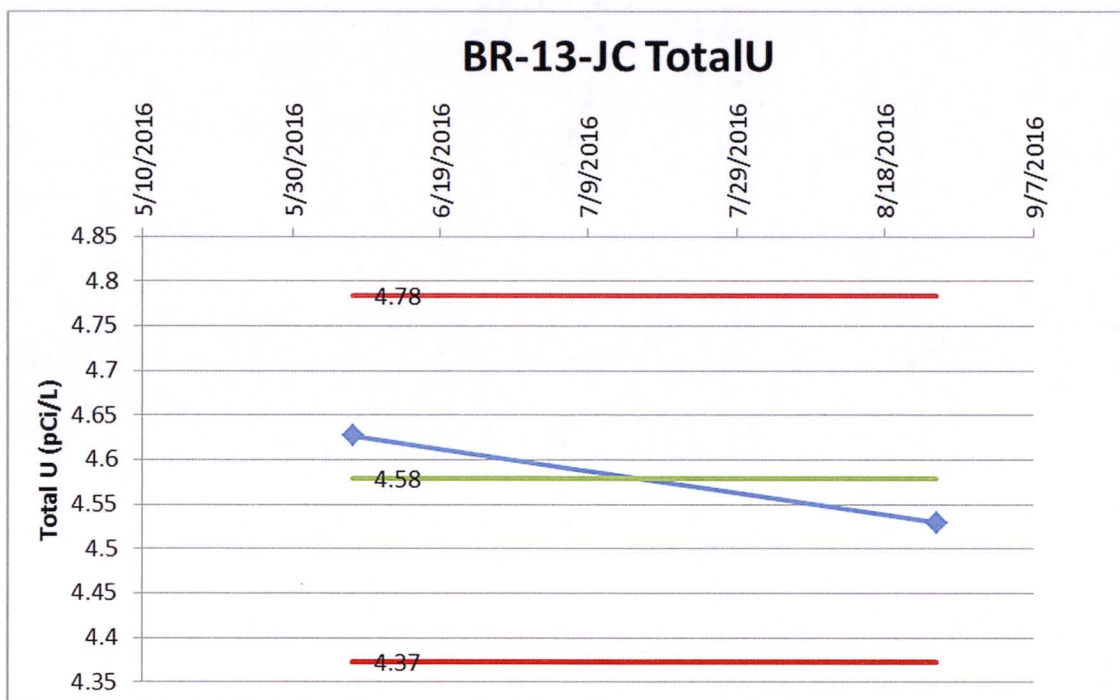
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU



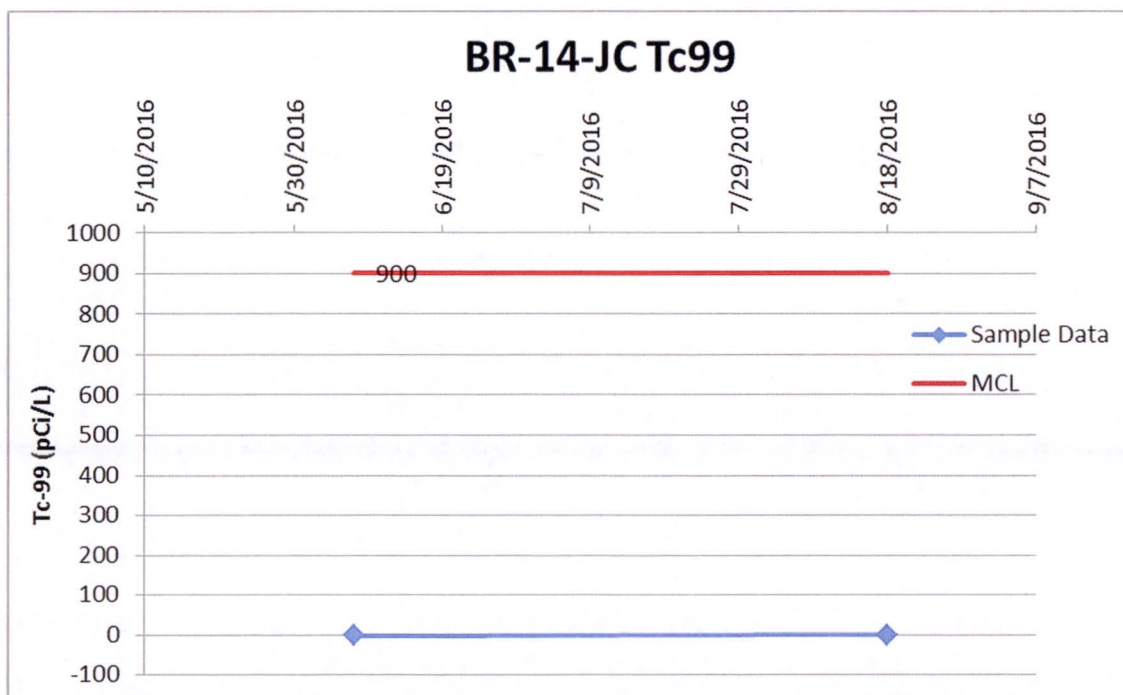
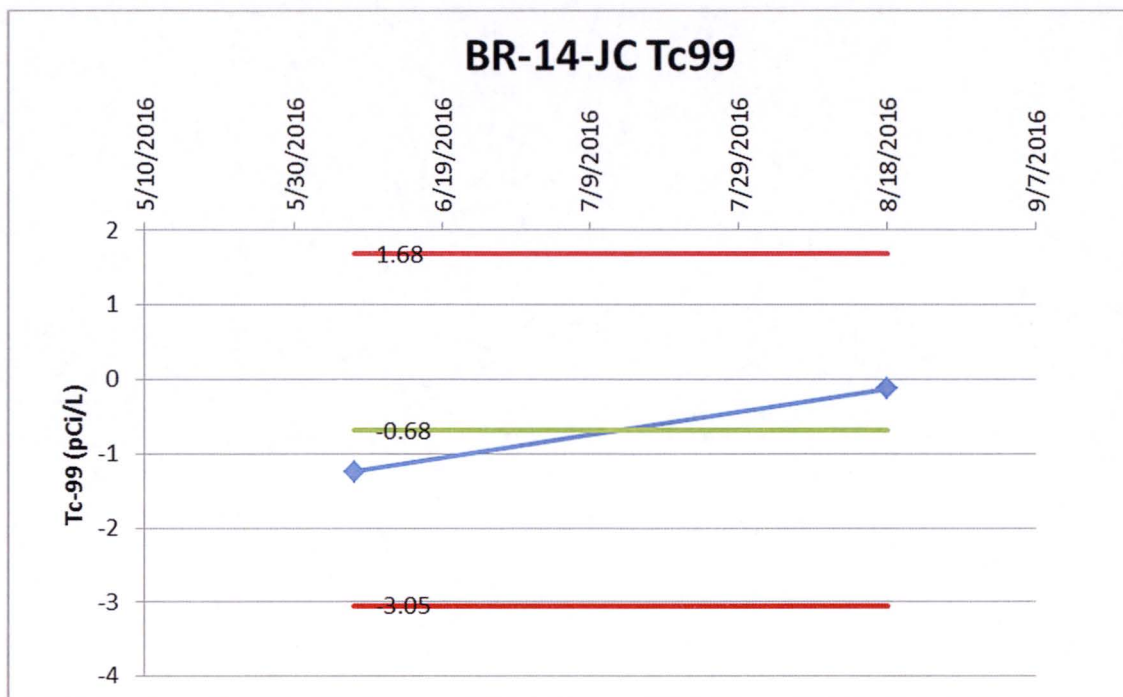
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU



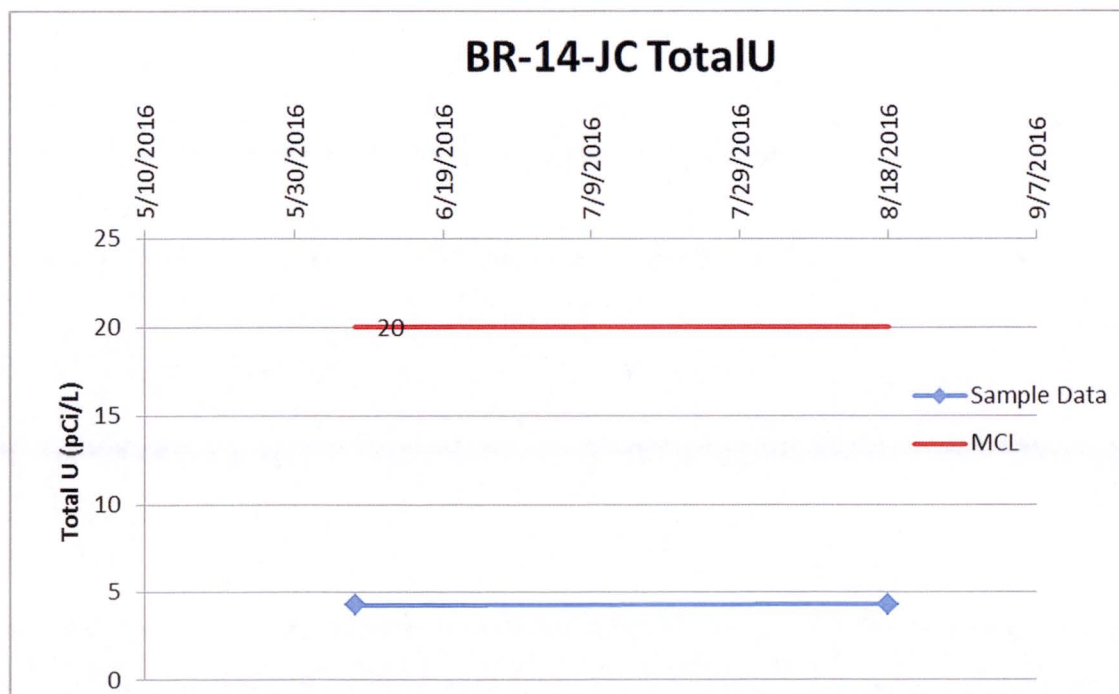
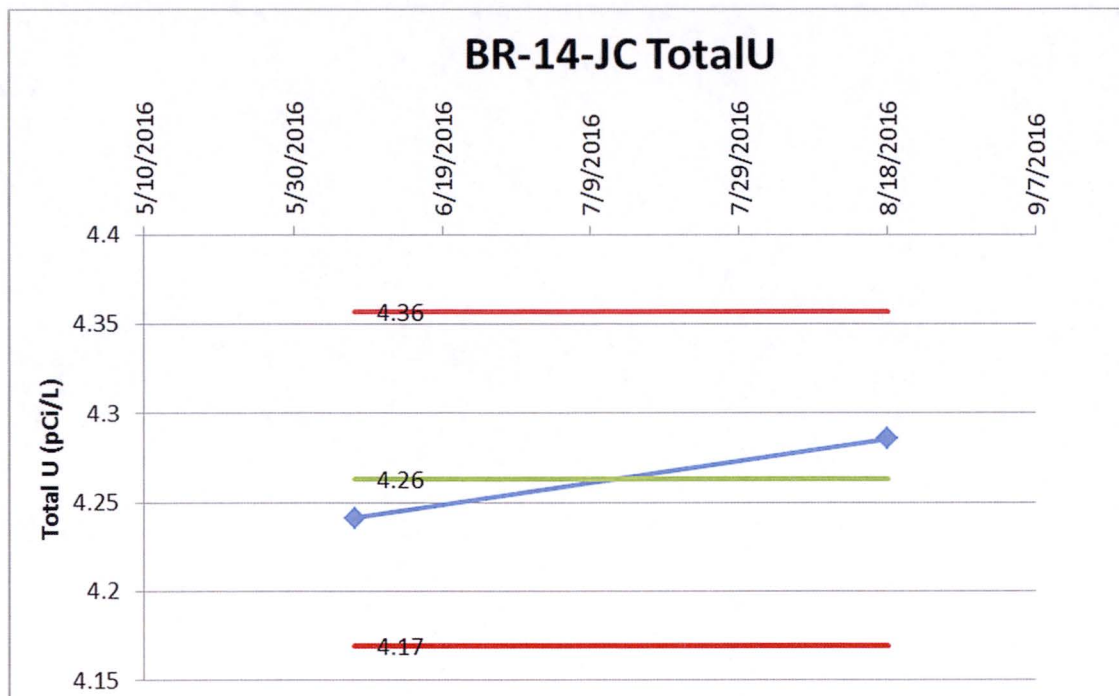
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU



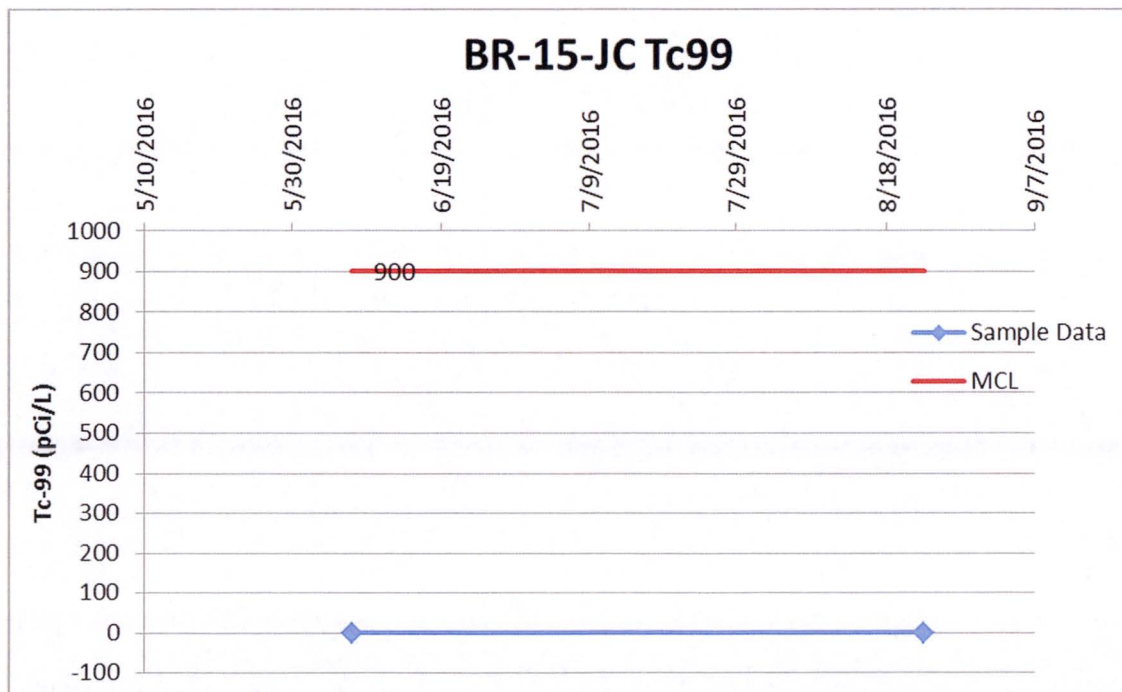
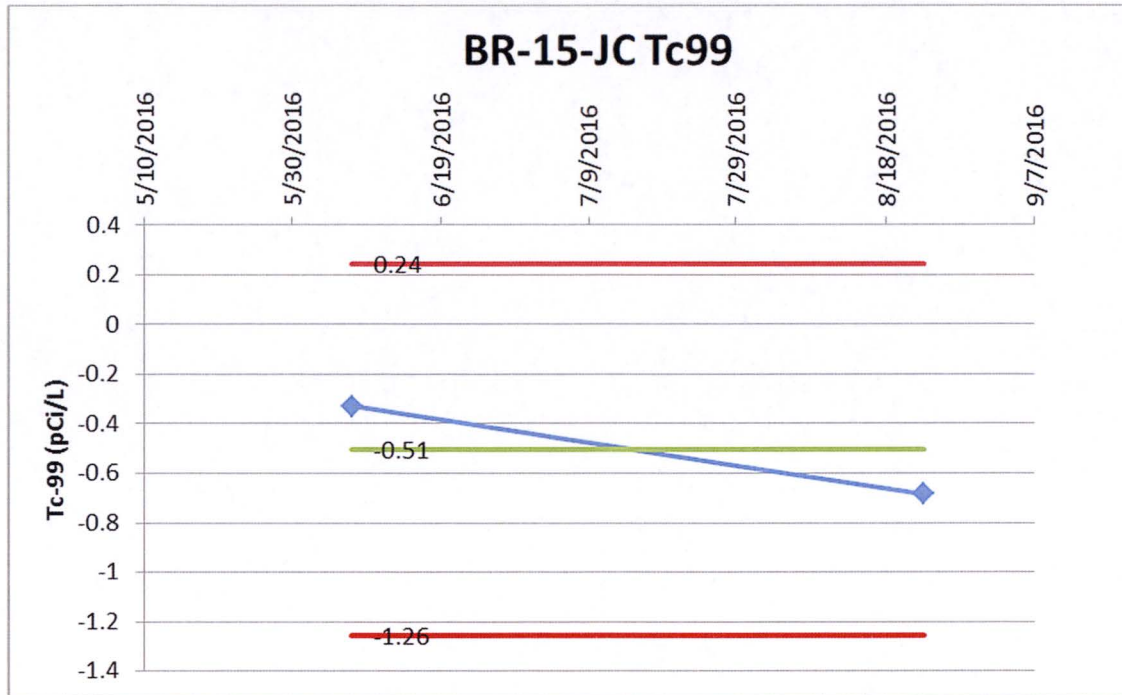
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU



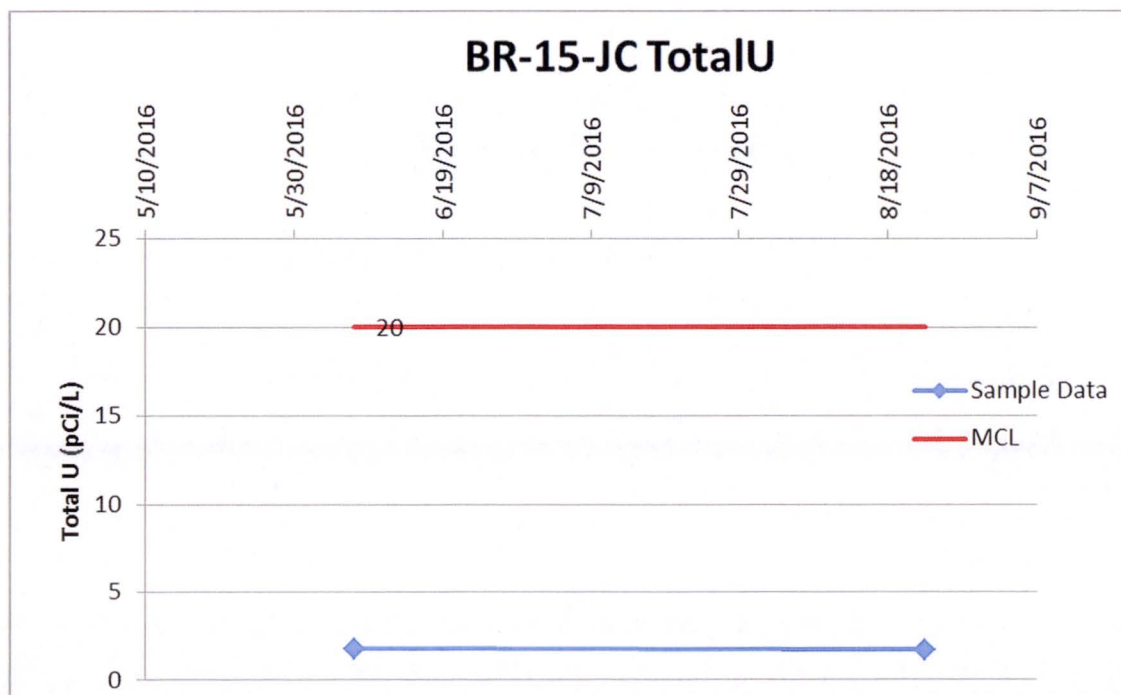
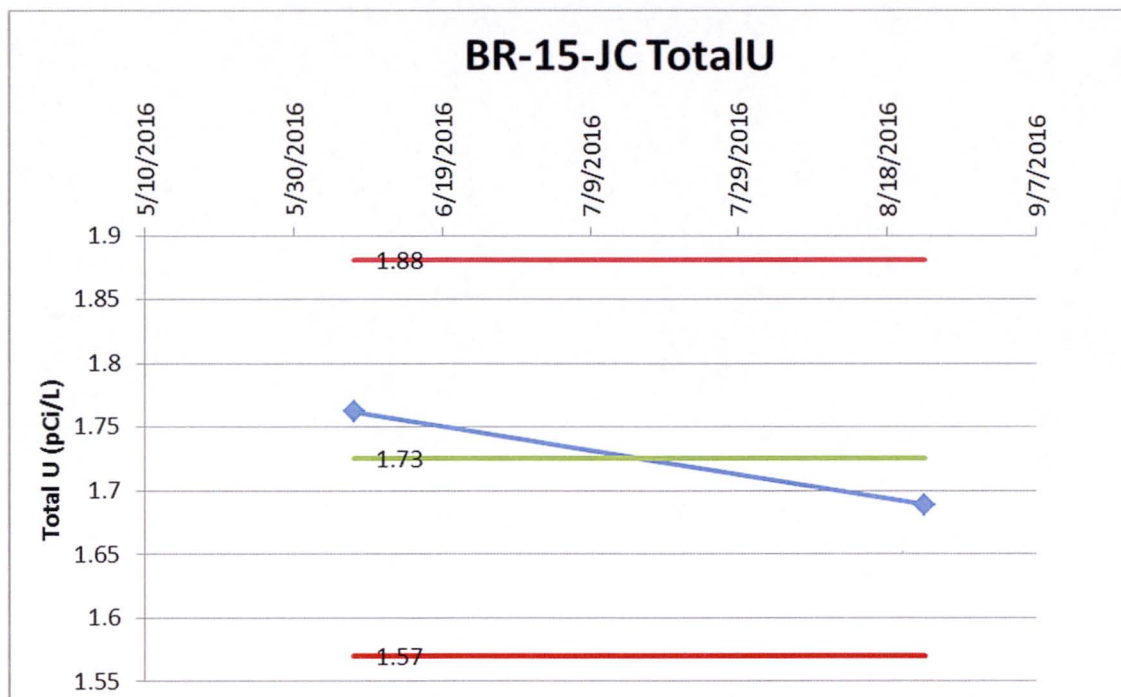
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU



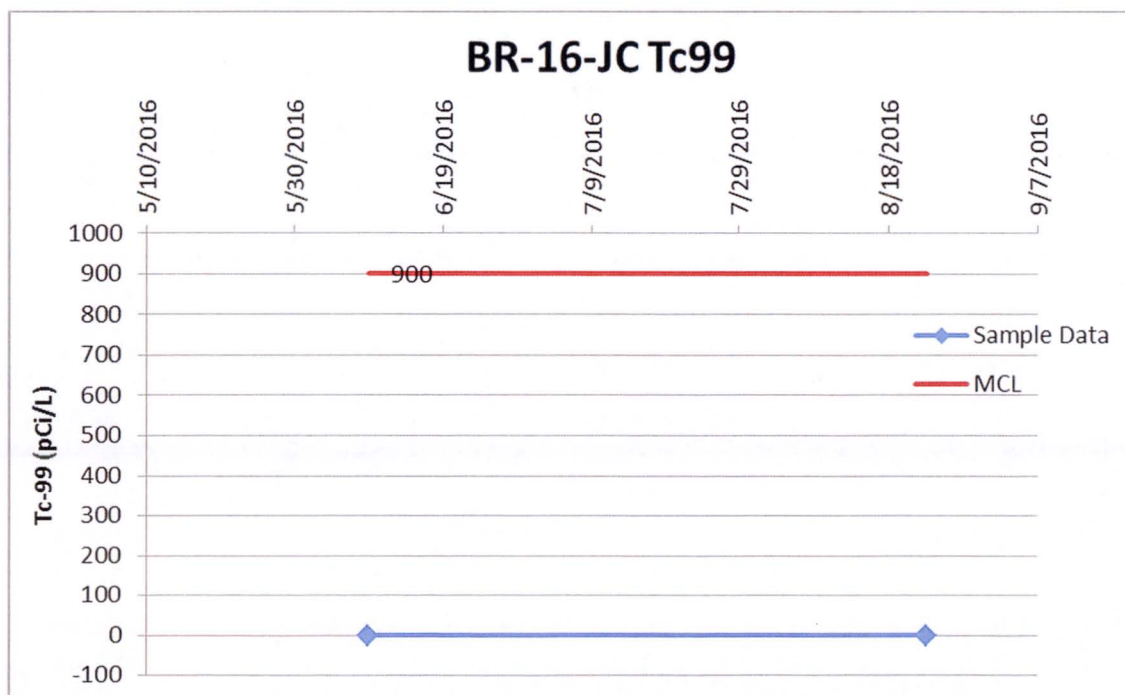
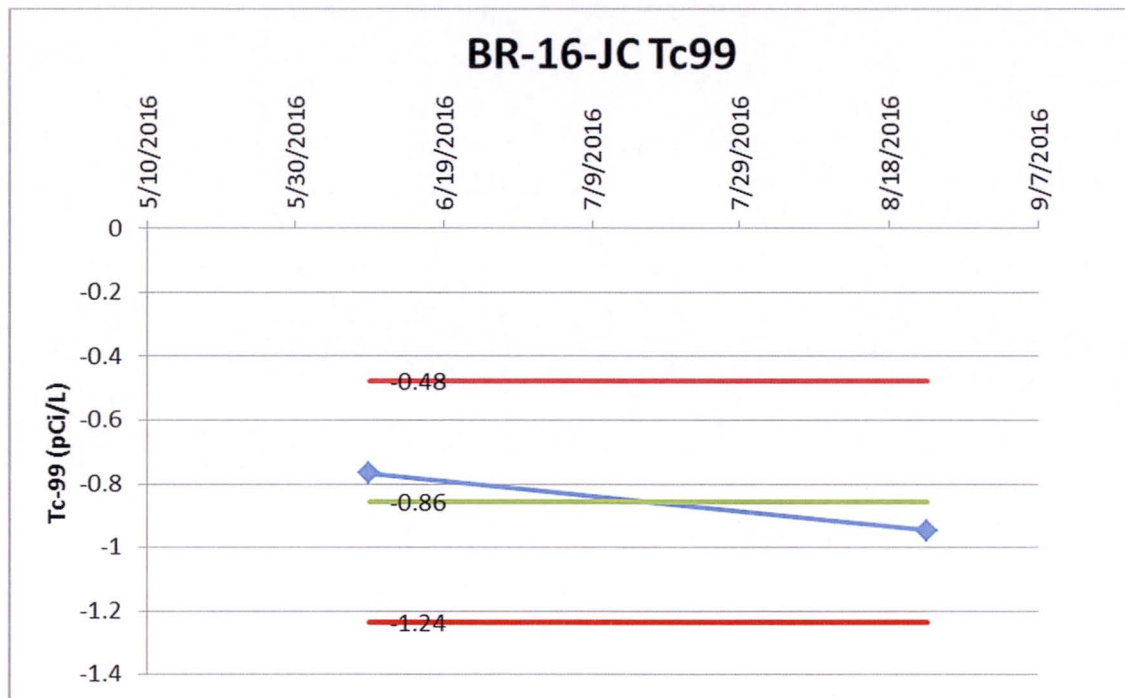
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU



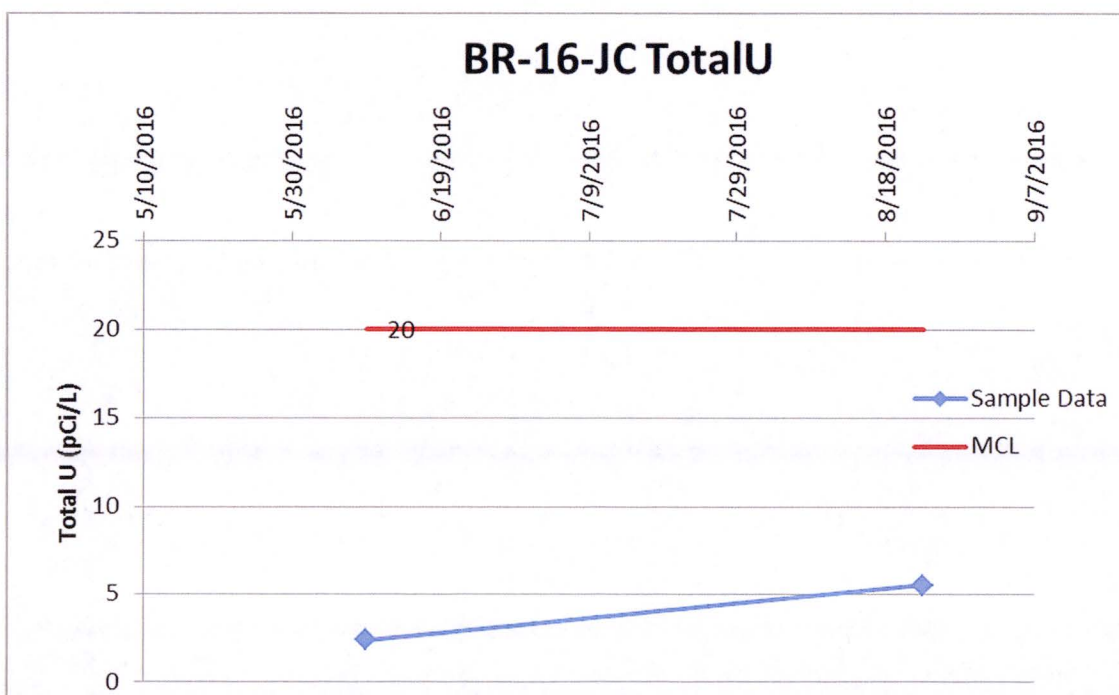
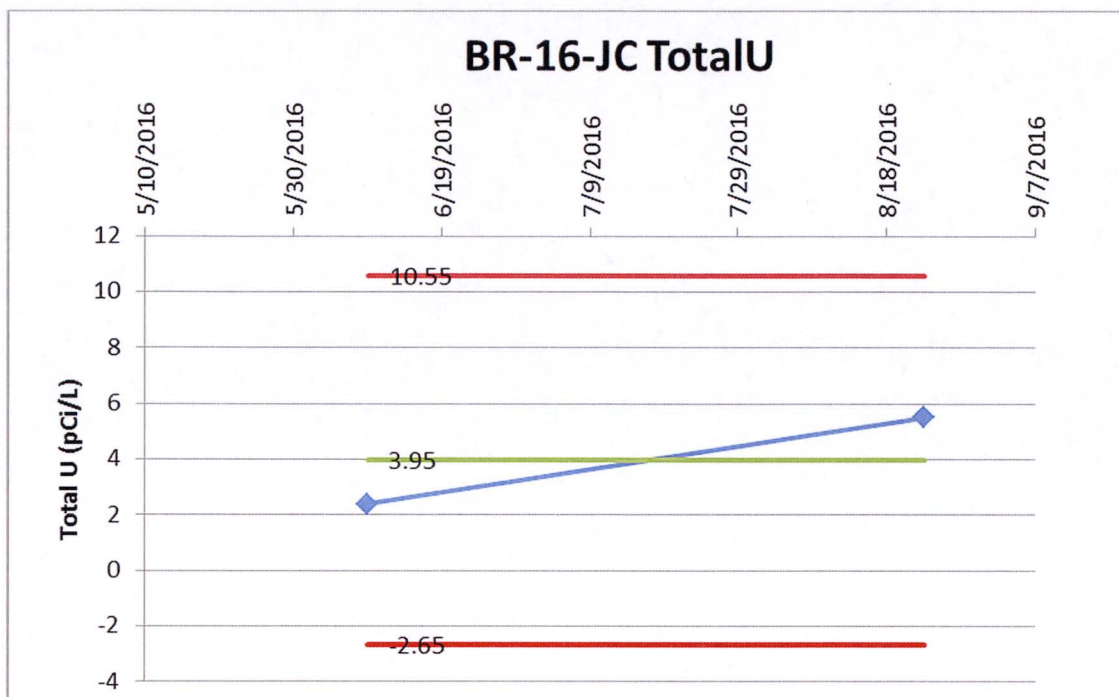
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU



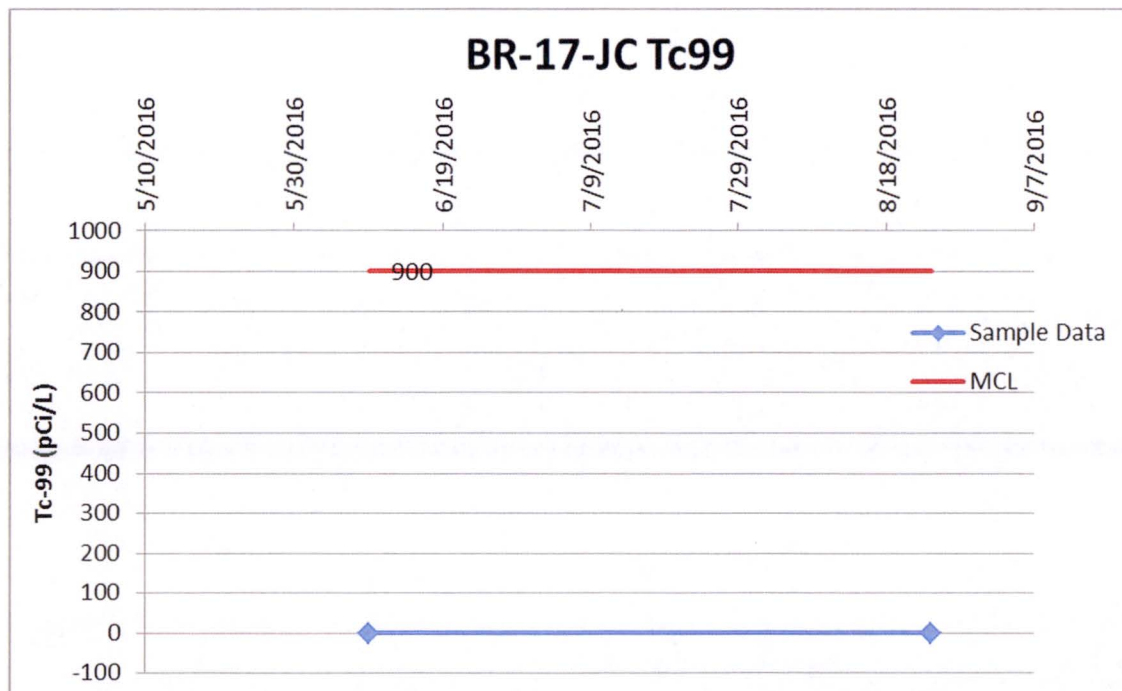
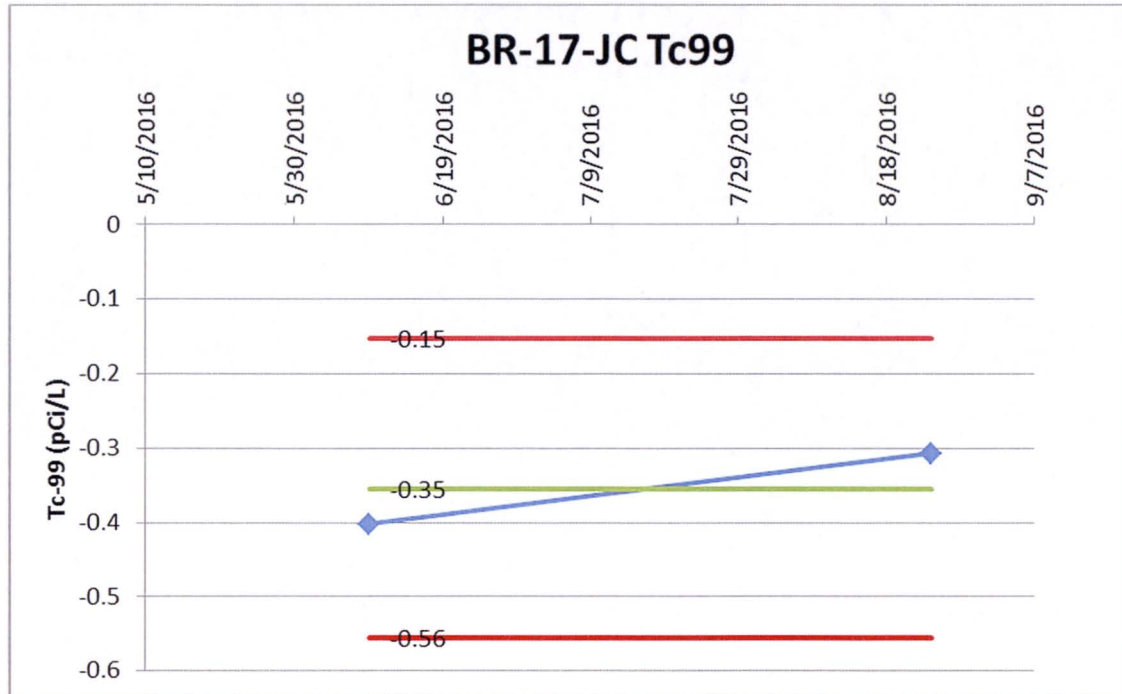
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU



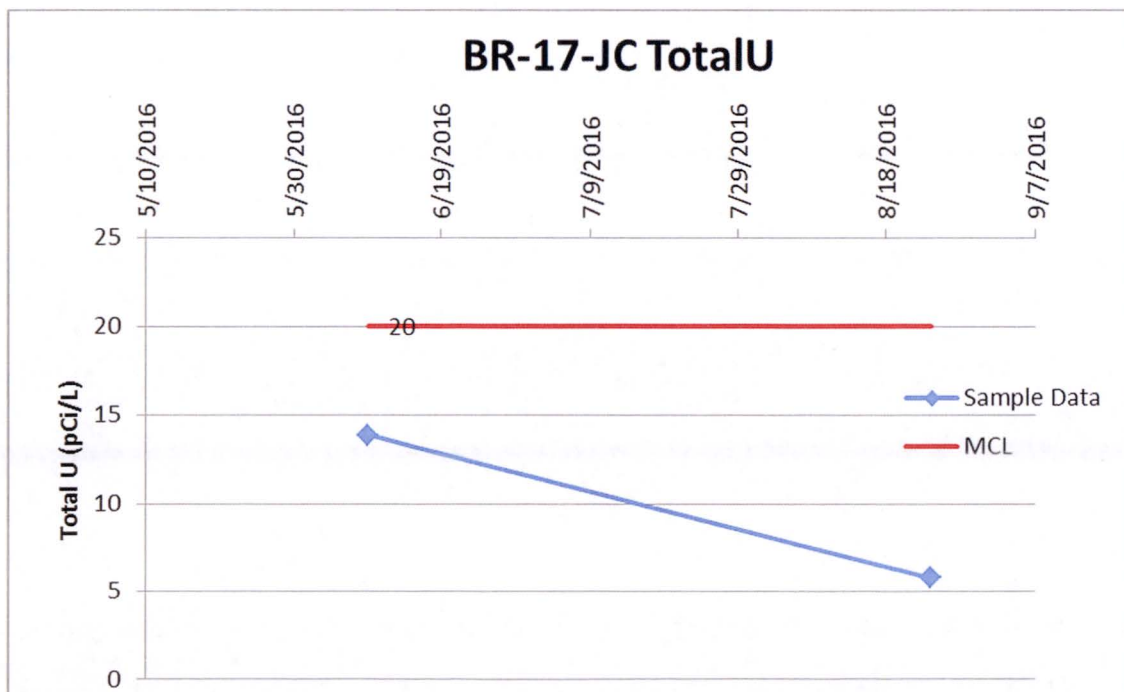
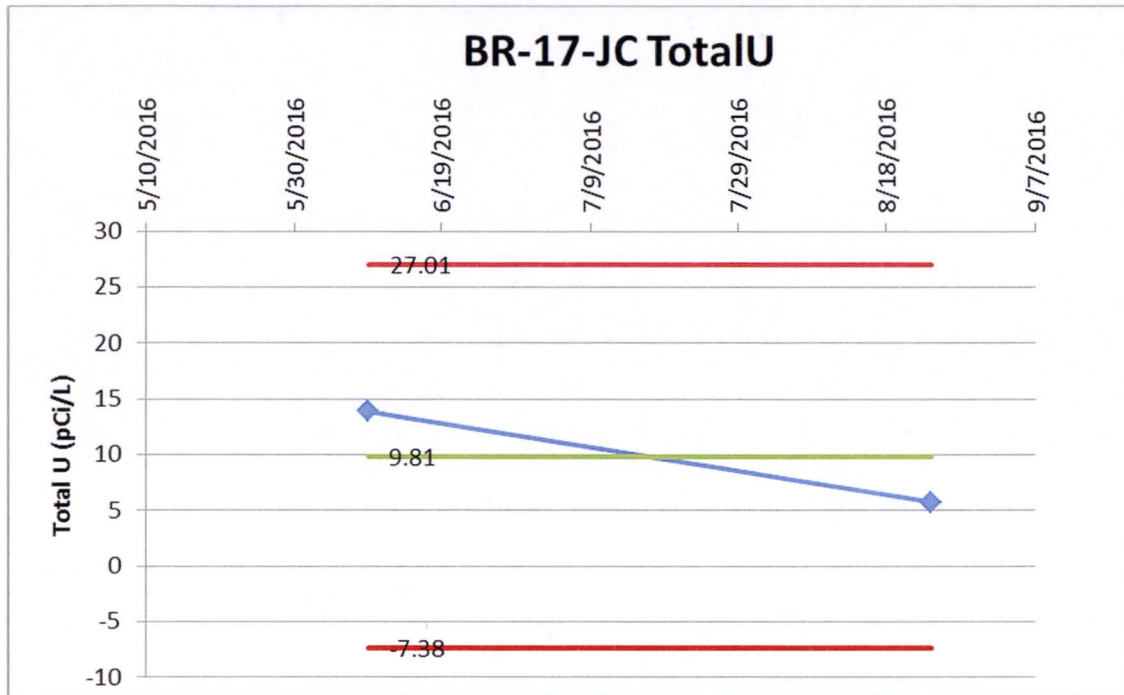
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU



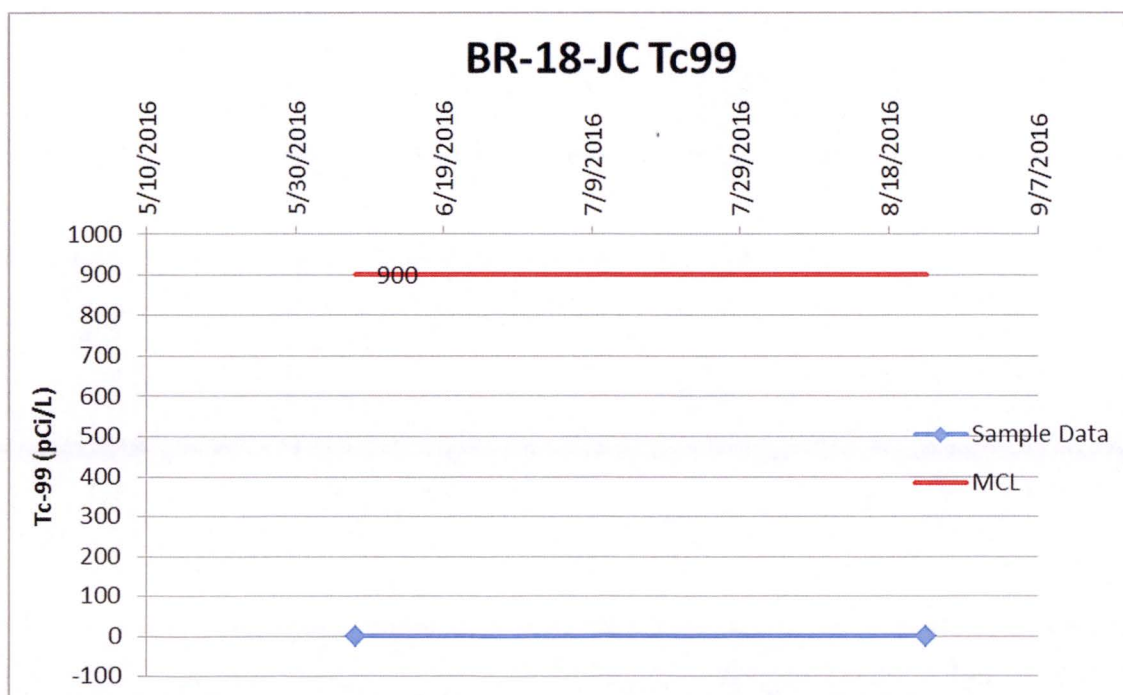
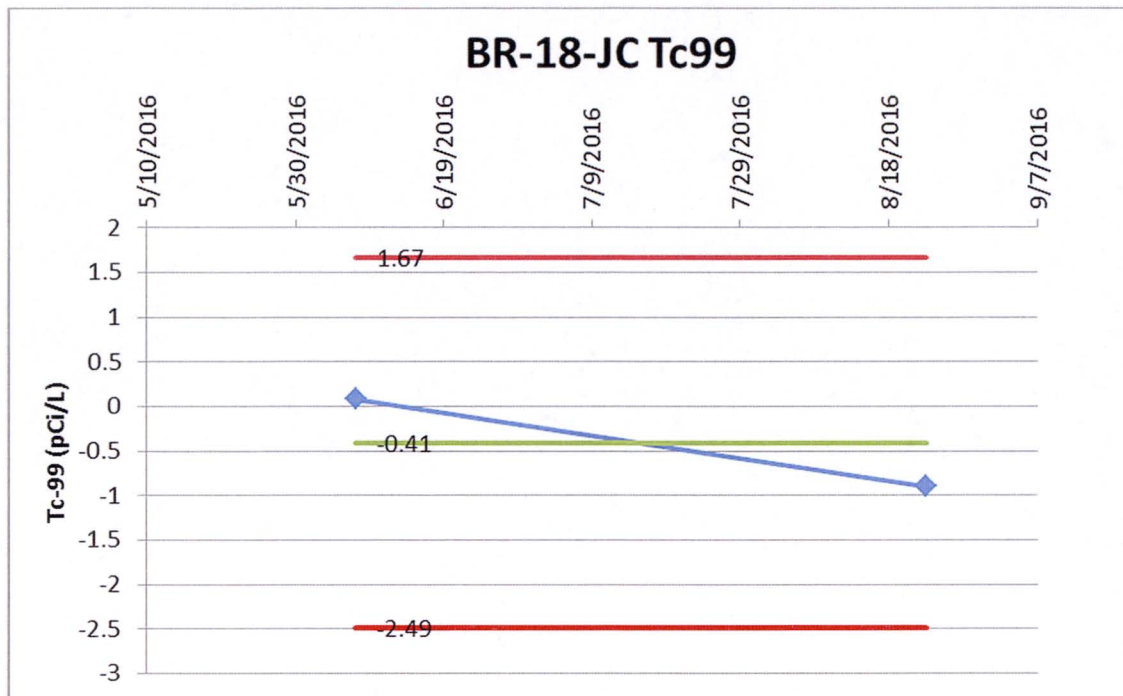
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU



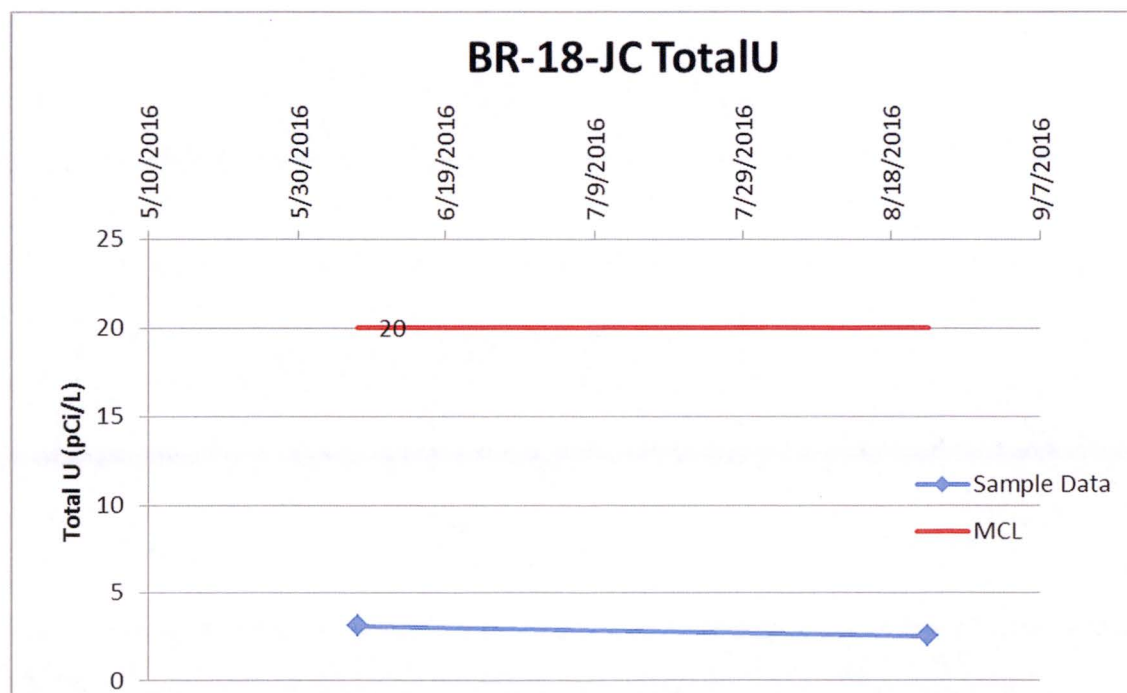
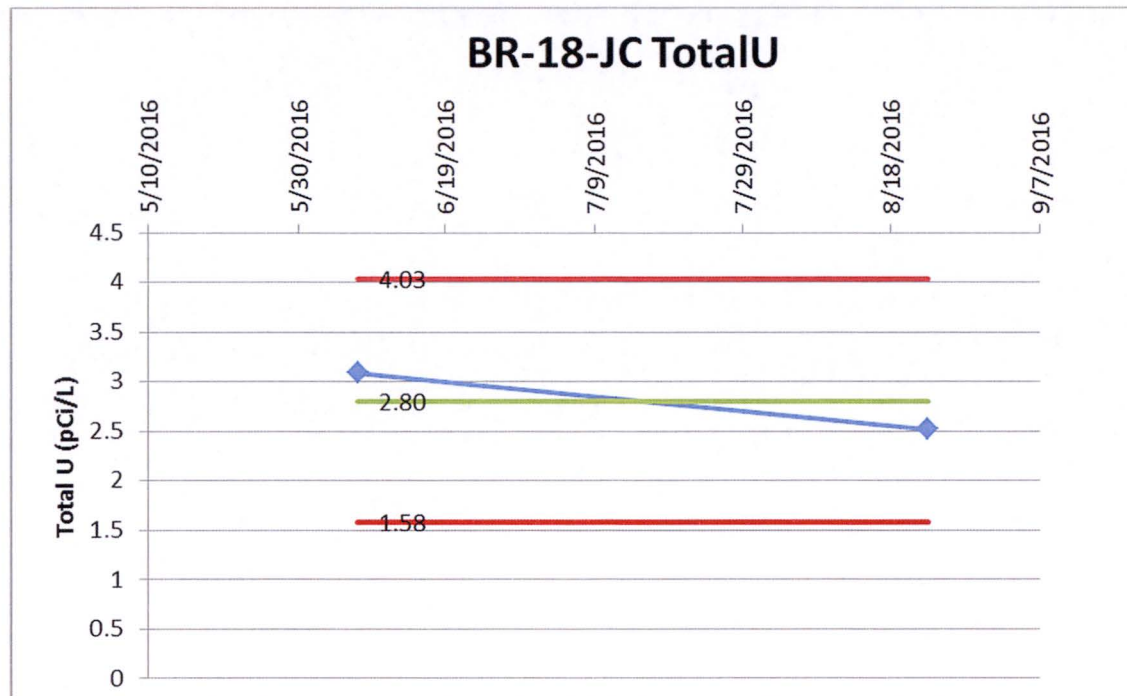
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU



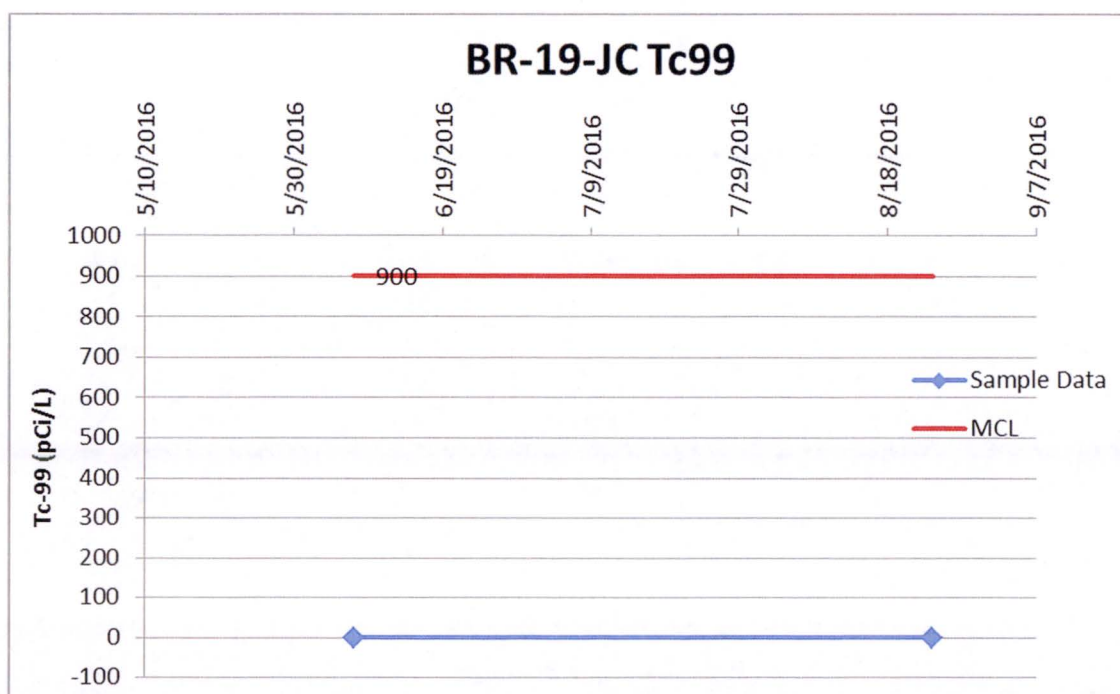
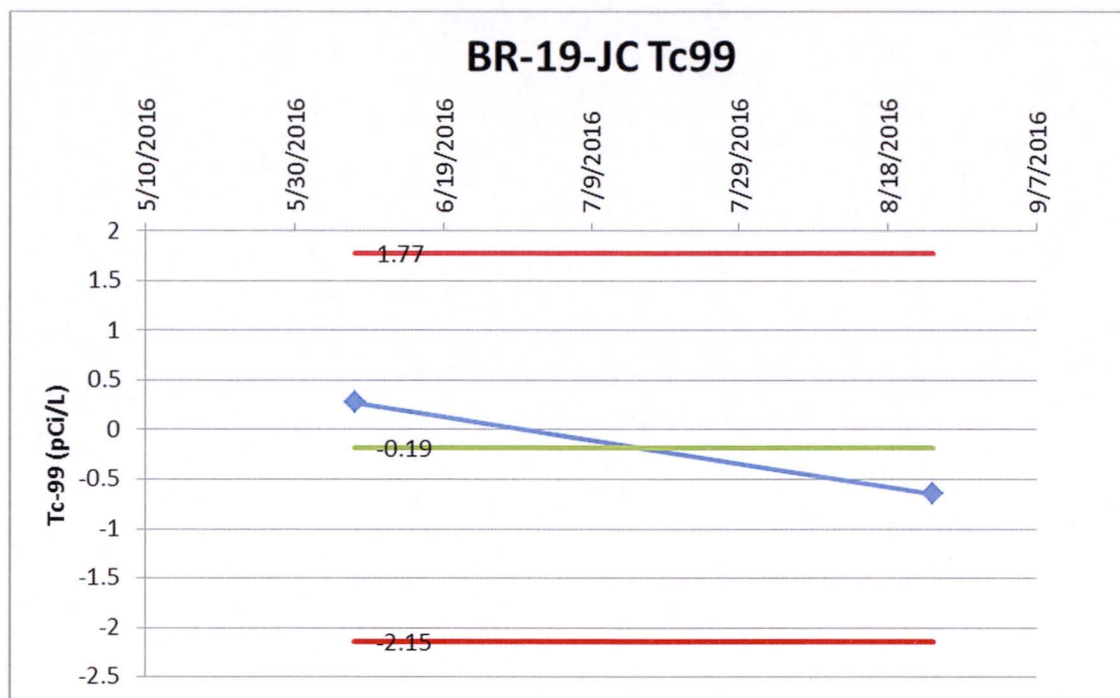
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU



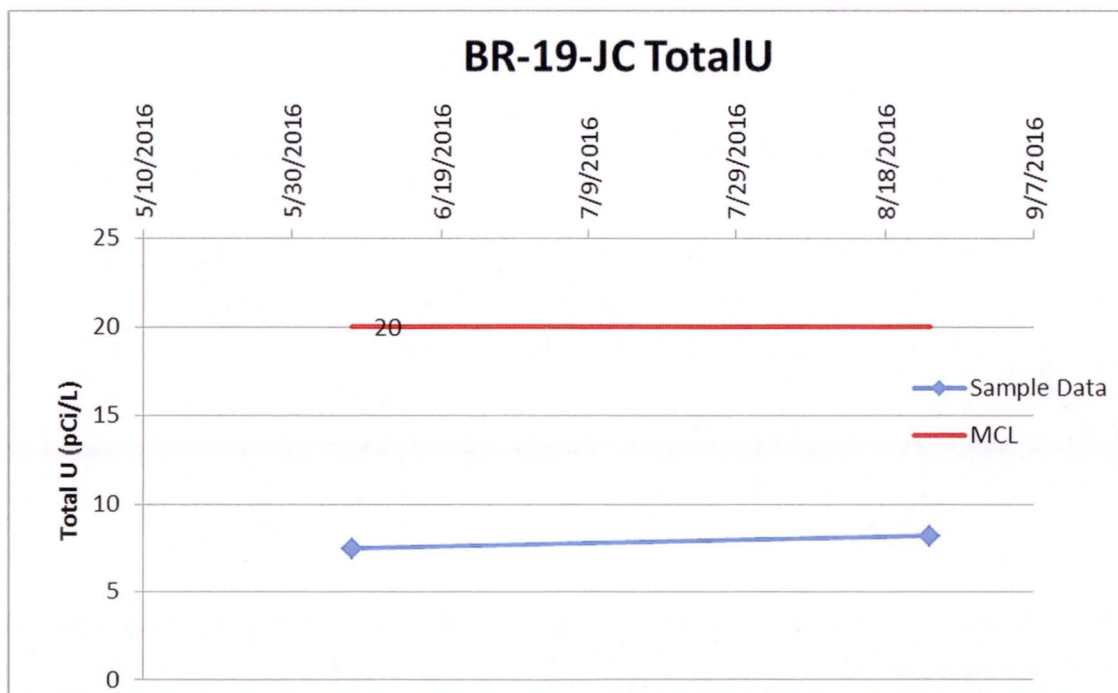
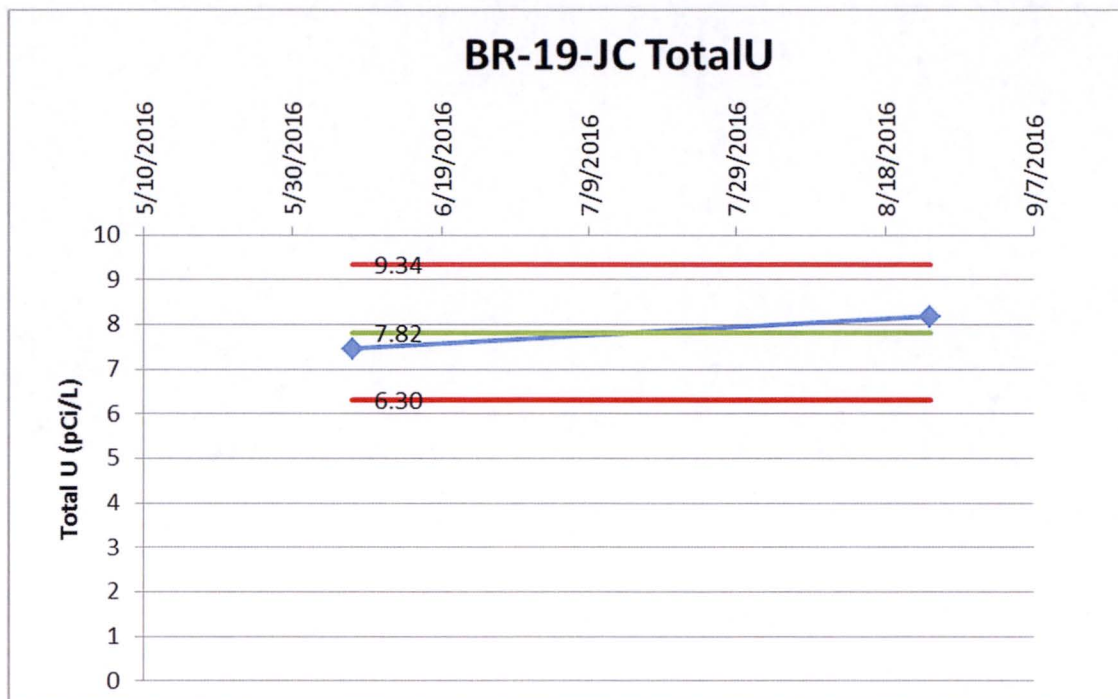
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU



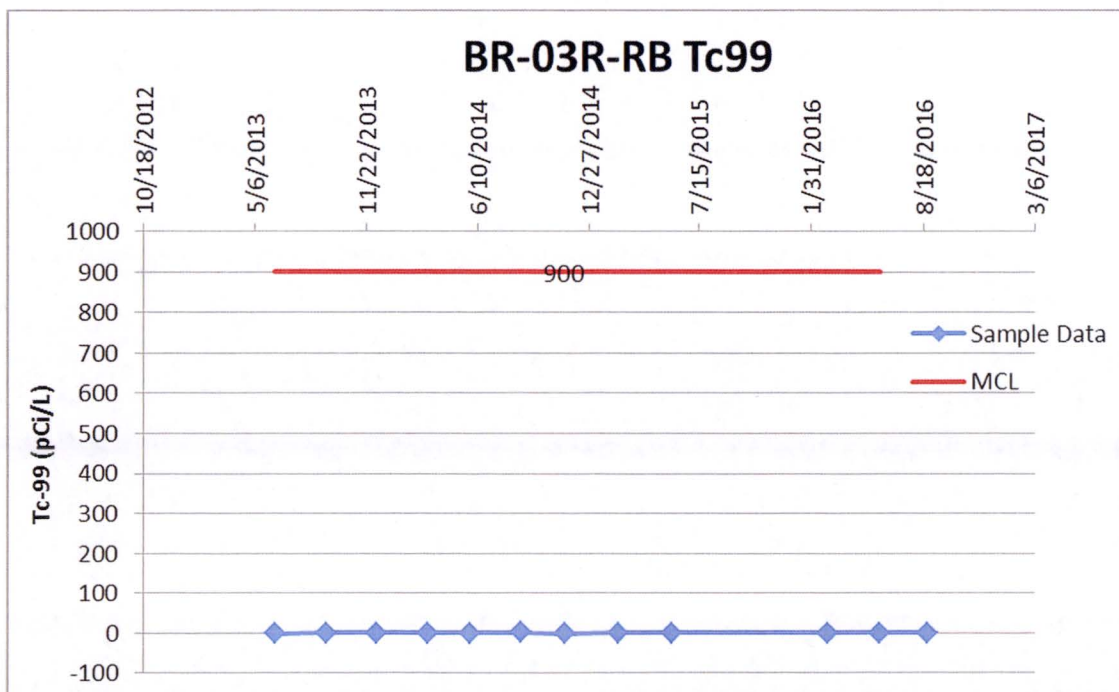
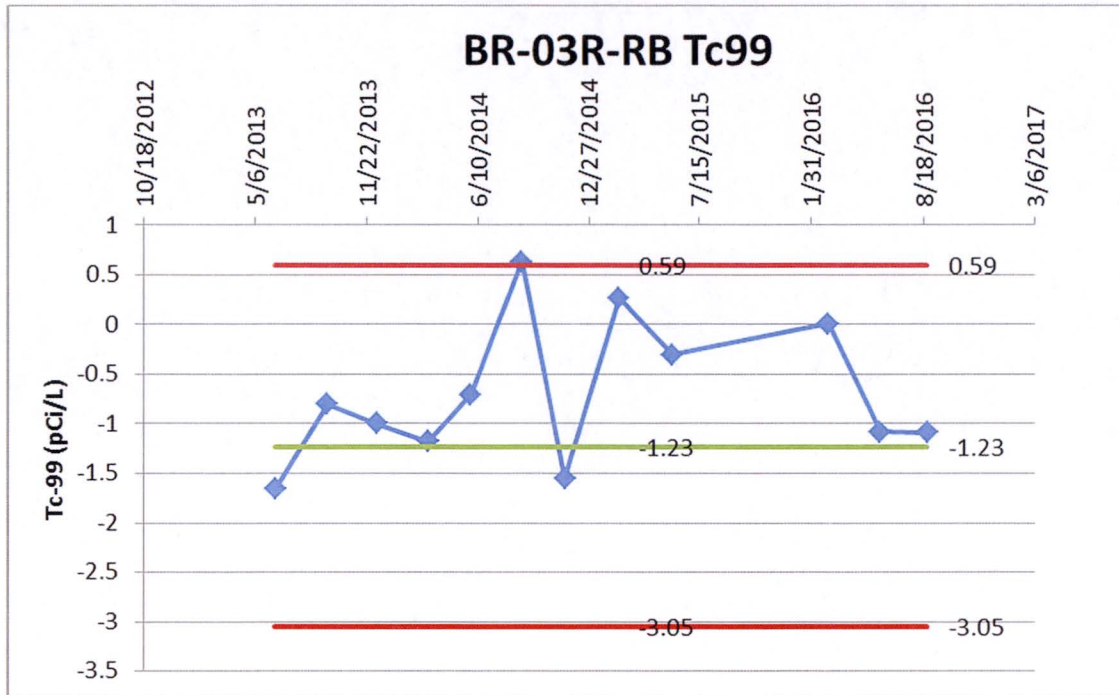
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU



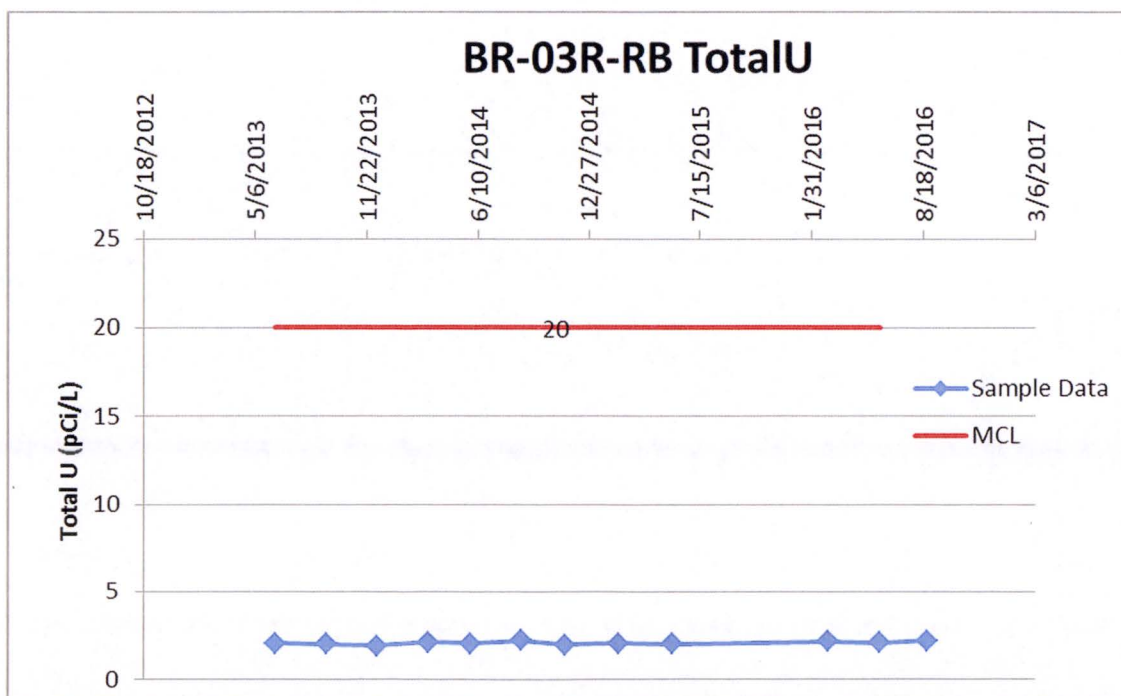
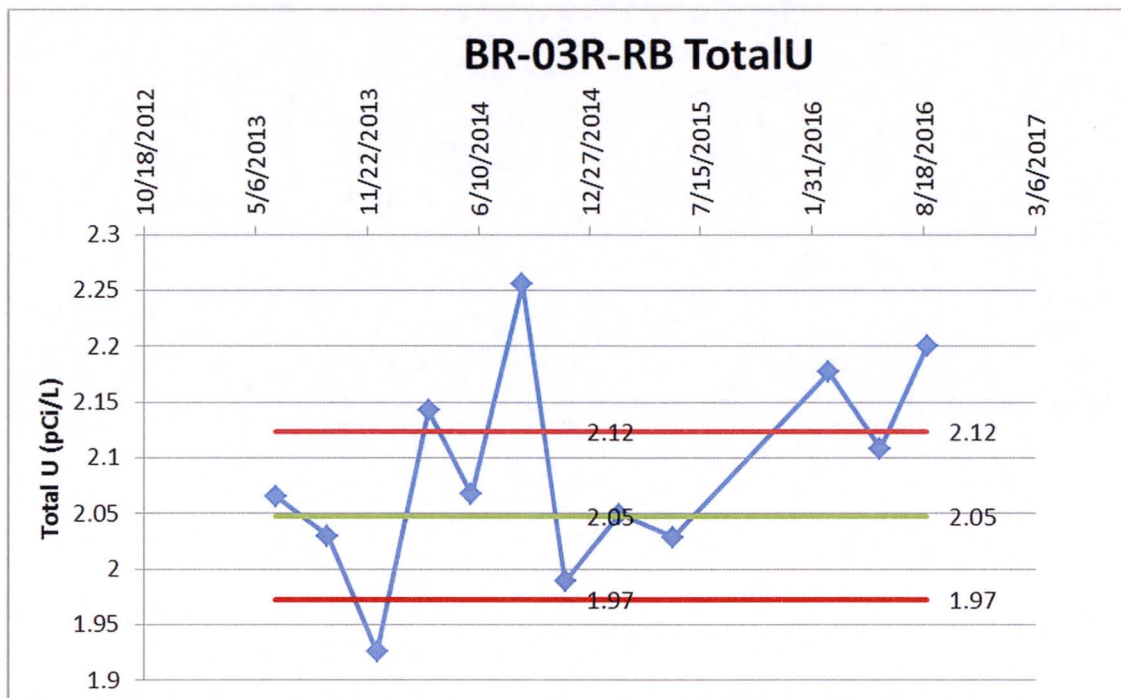
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
JEFFERSON CITY – COTTER HSU



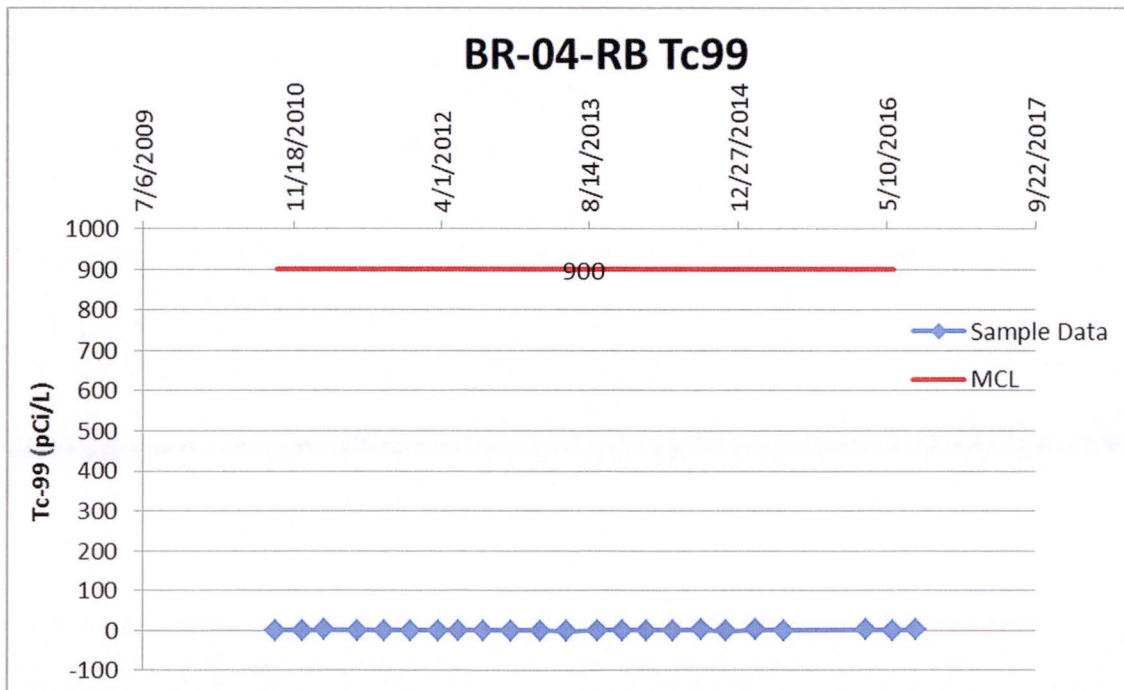
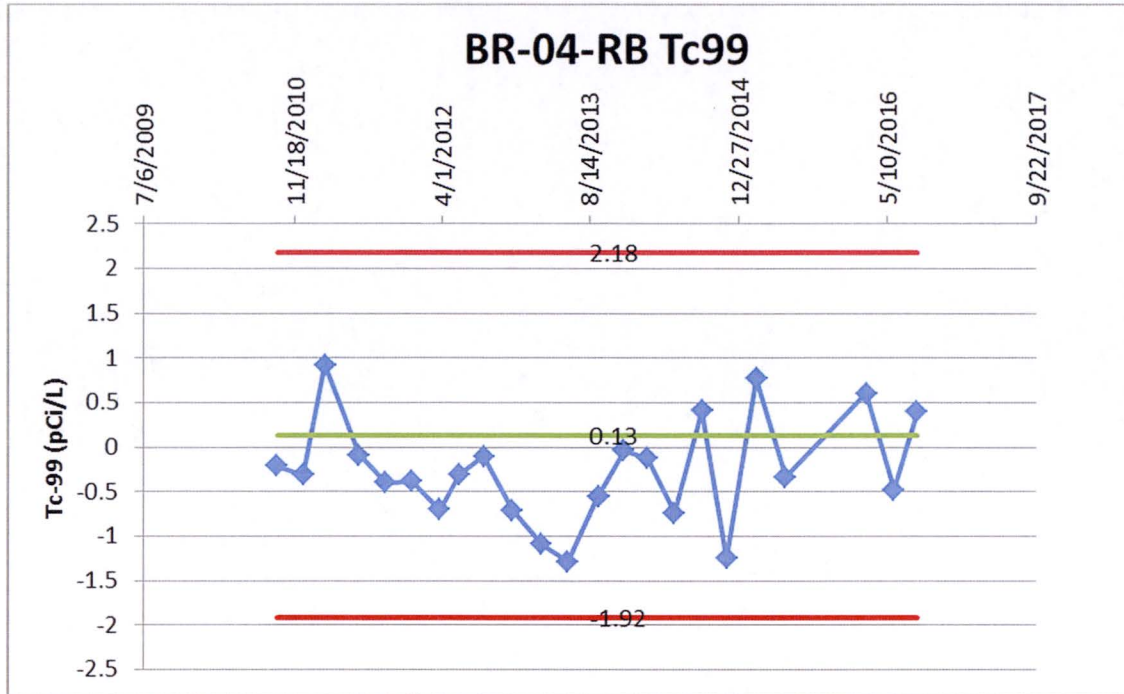
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
ROUBIDOUX HSU



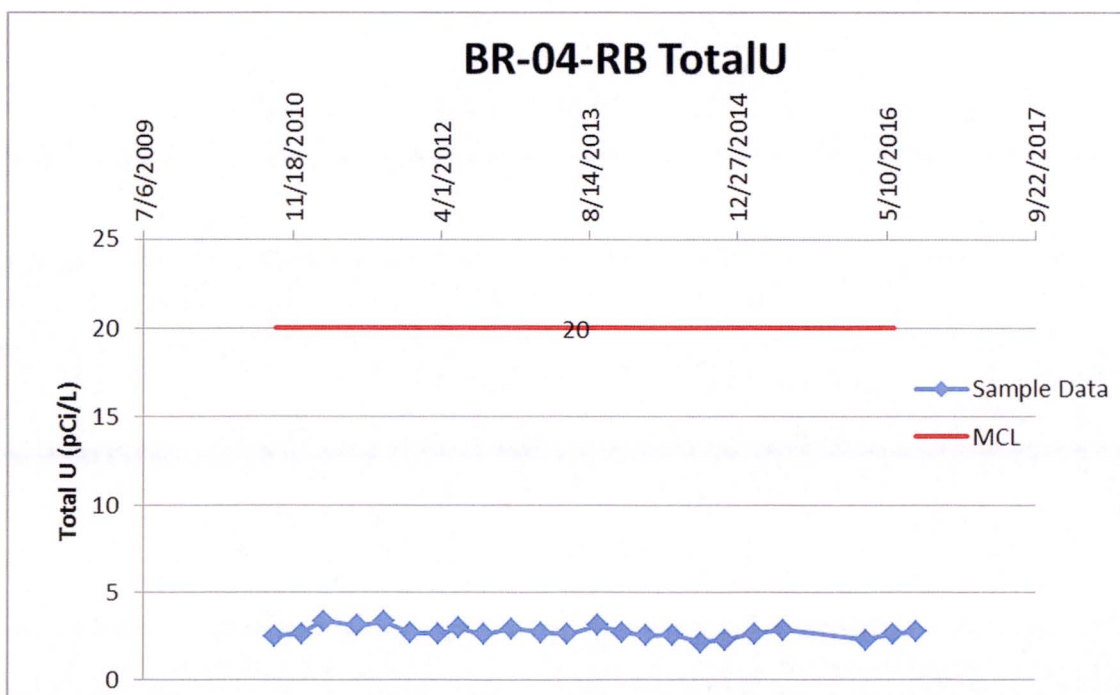
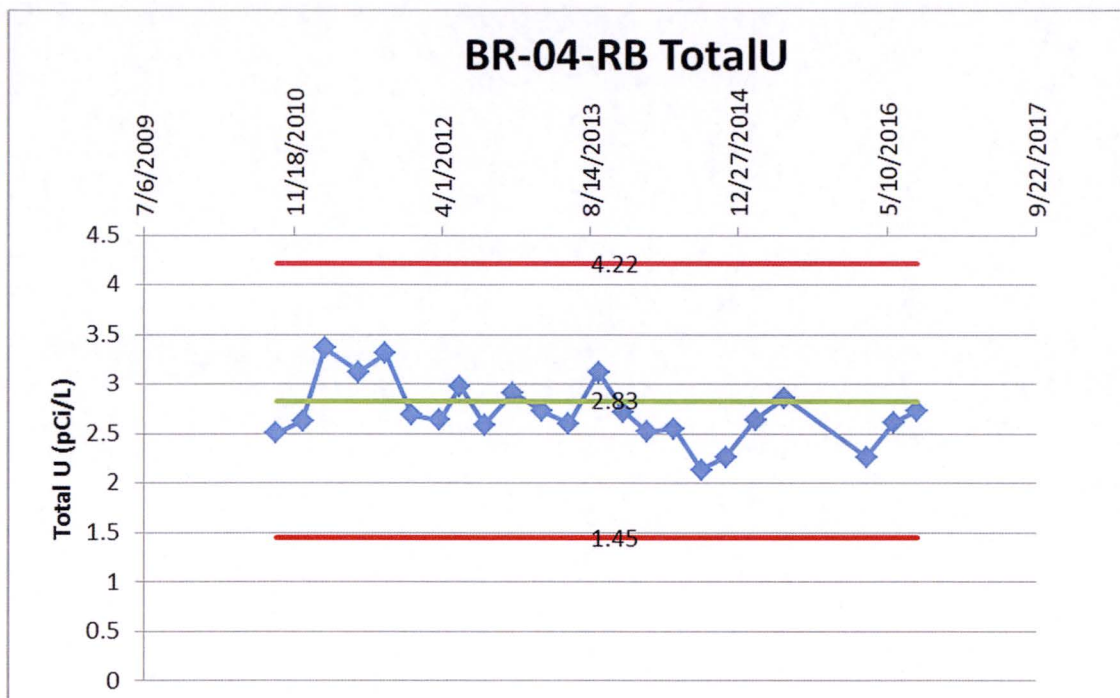
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
ROUBIDOUX HSU



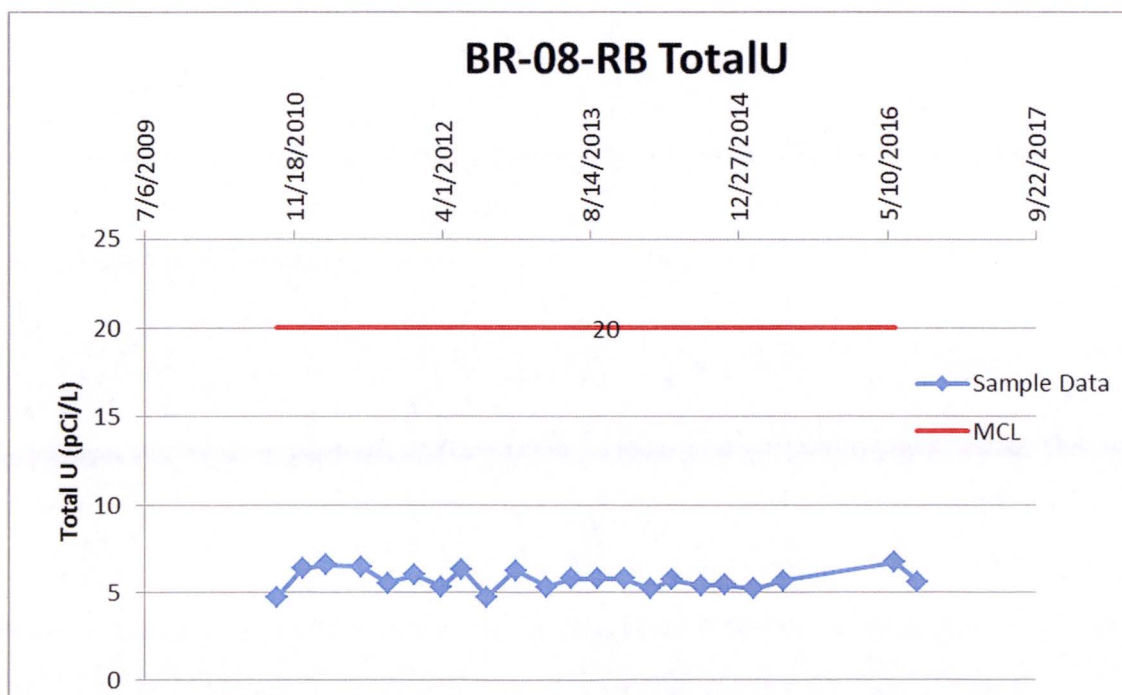
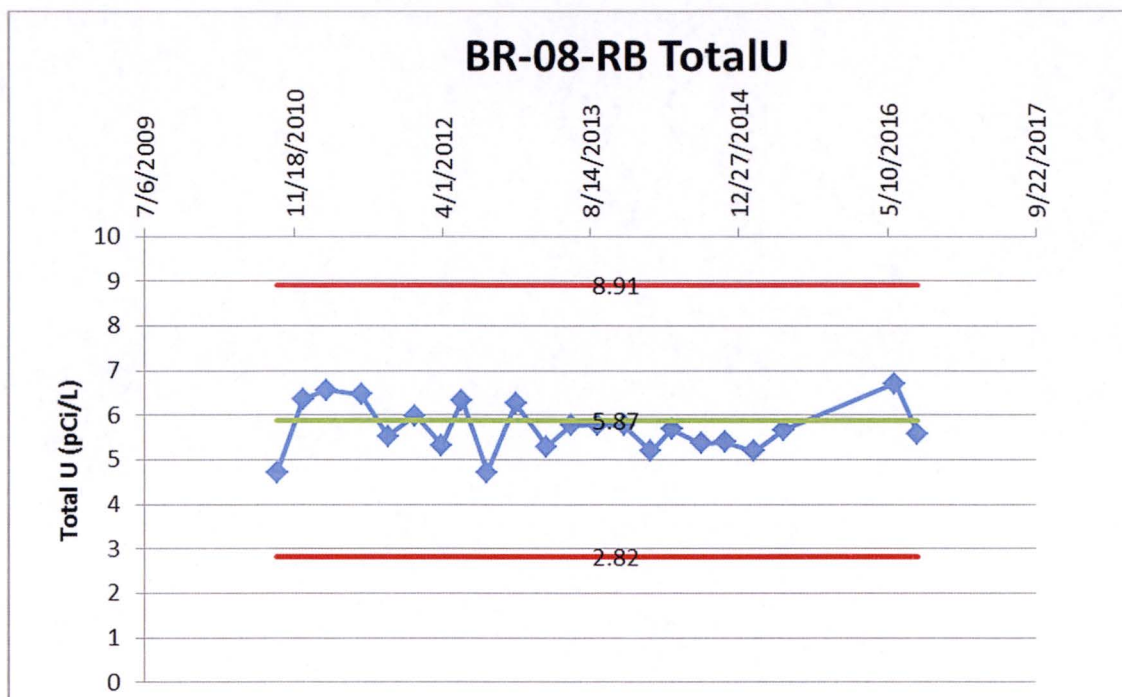
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
ROUBIDOUX HSU



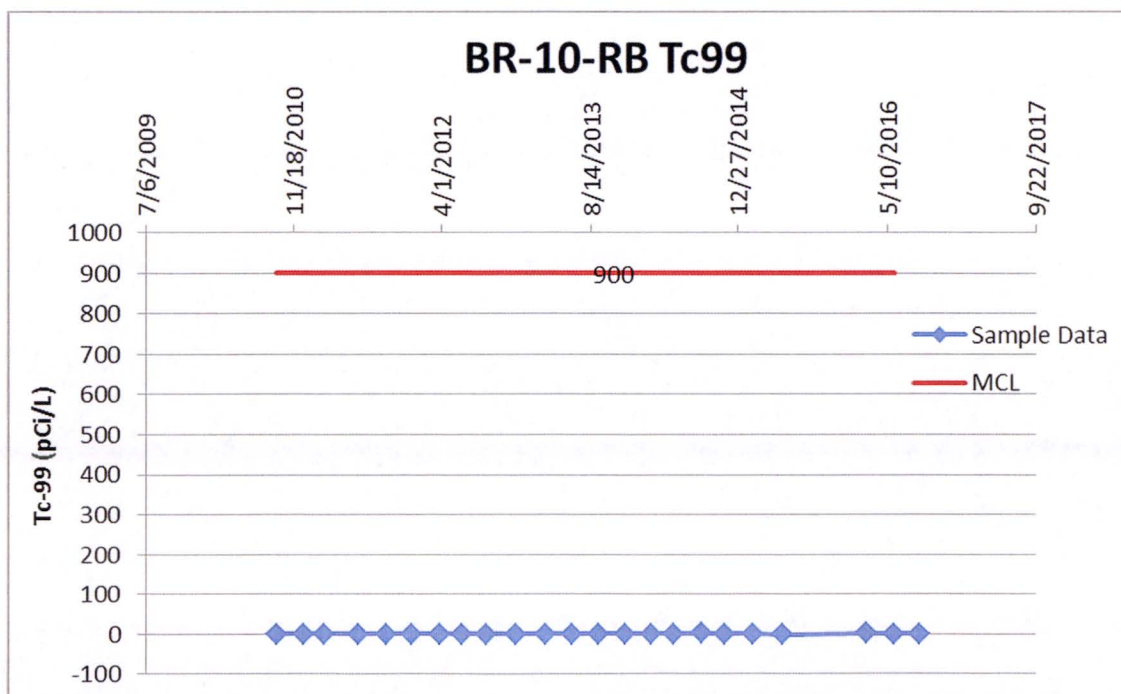
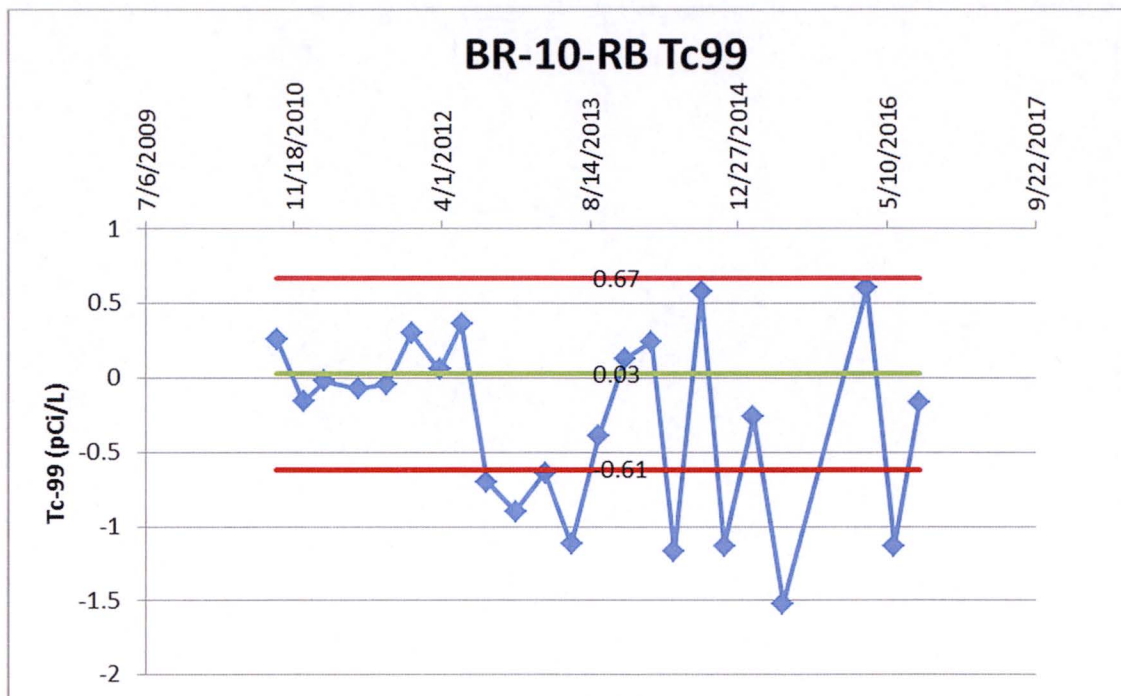
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
ROUBIDOUX HSU



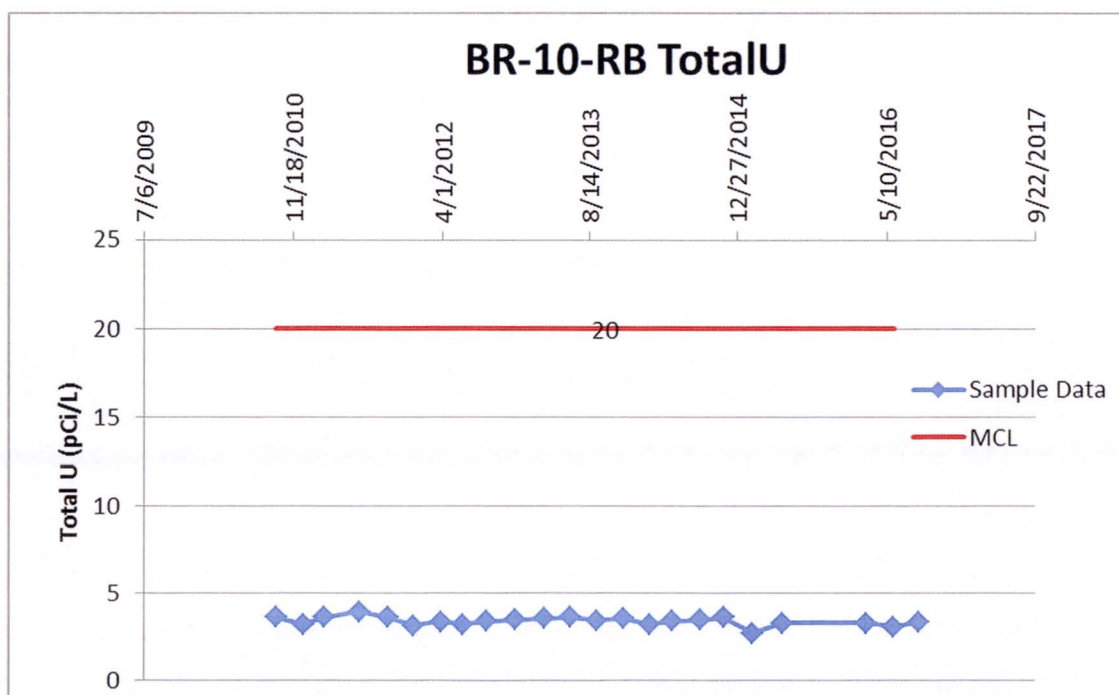
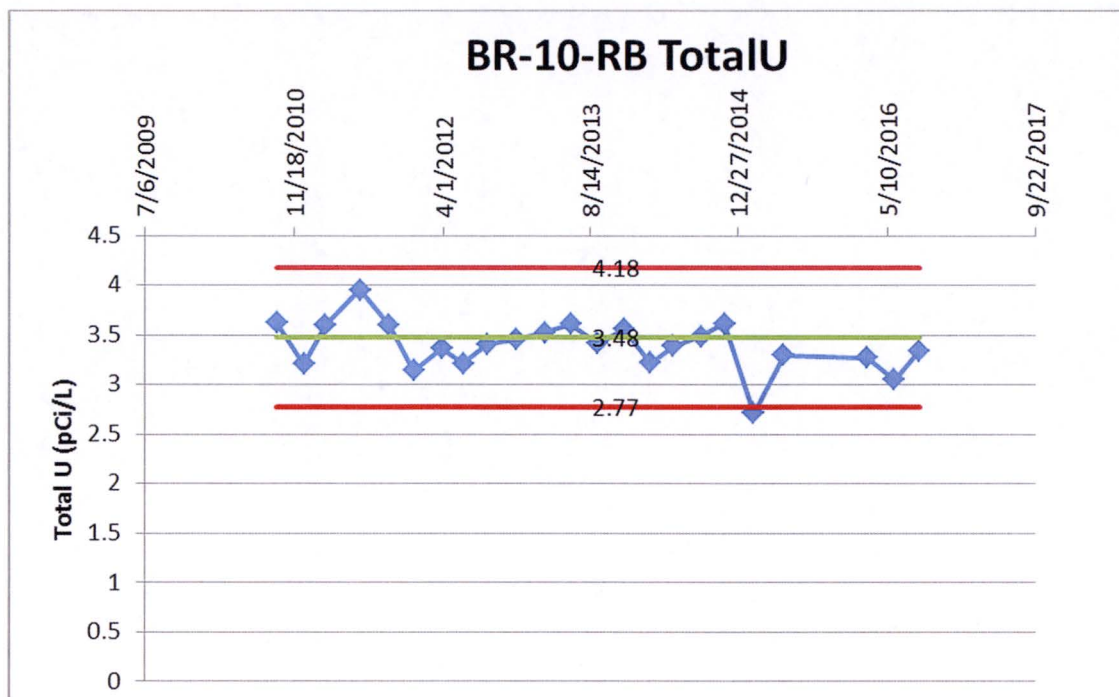
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
ROUBIDOUX HSU



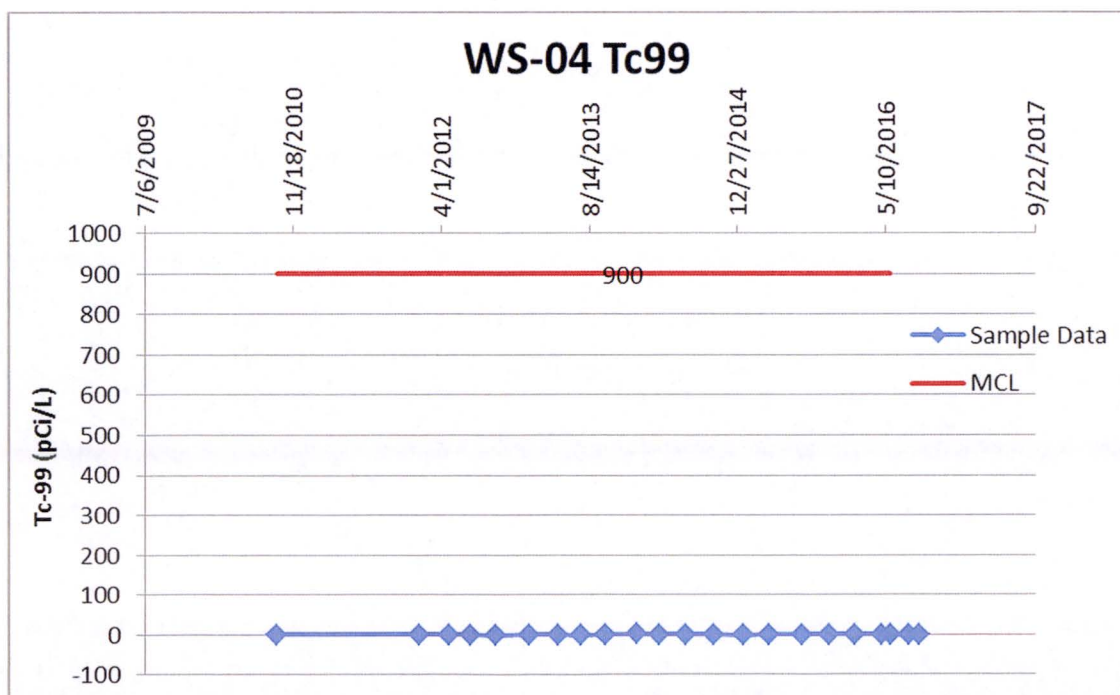
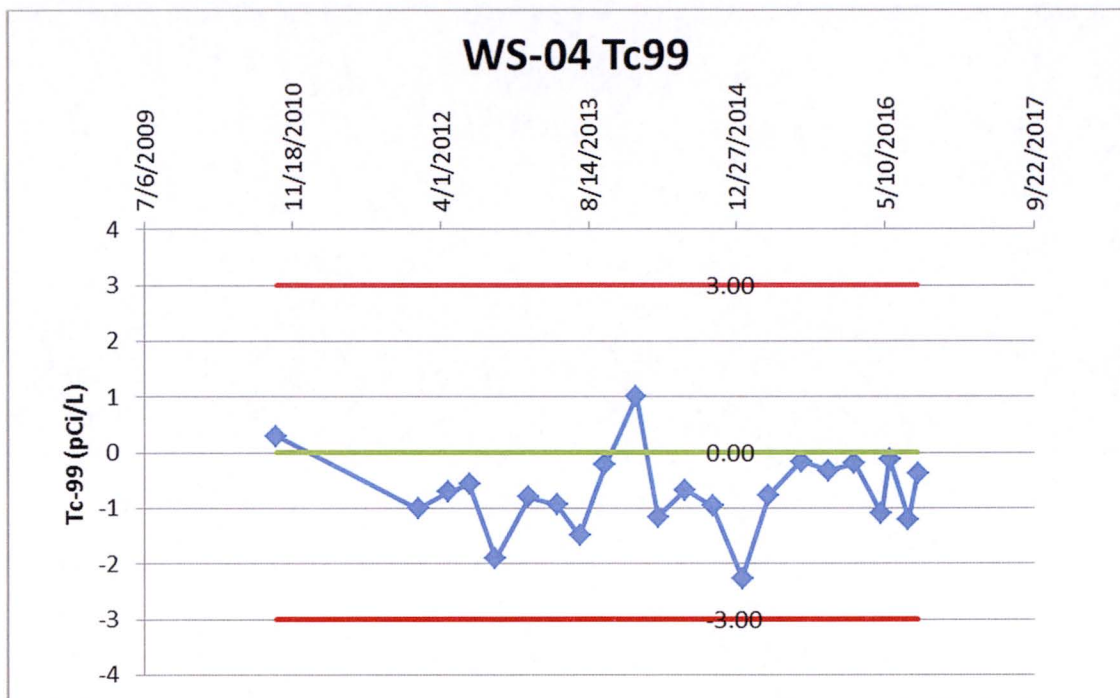
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
ROUBIDOUX HSU



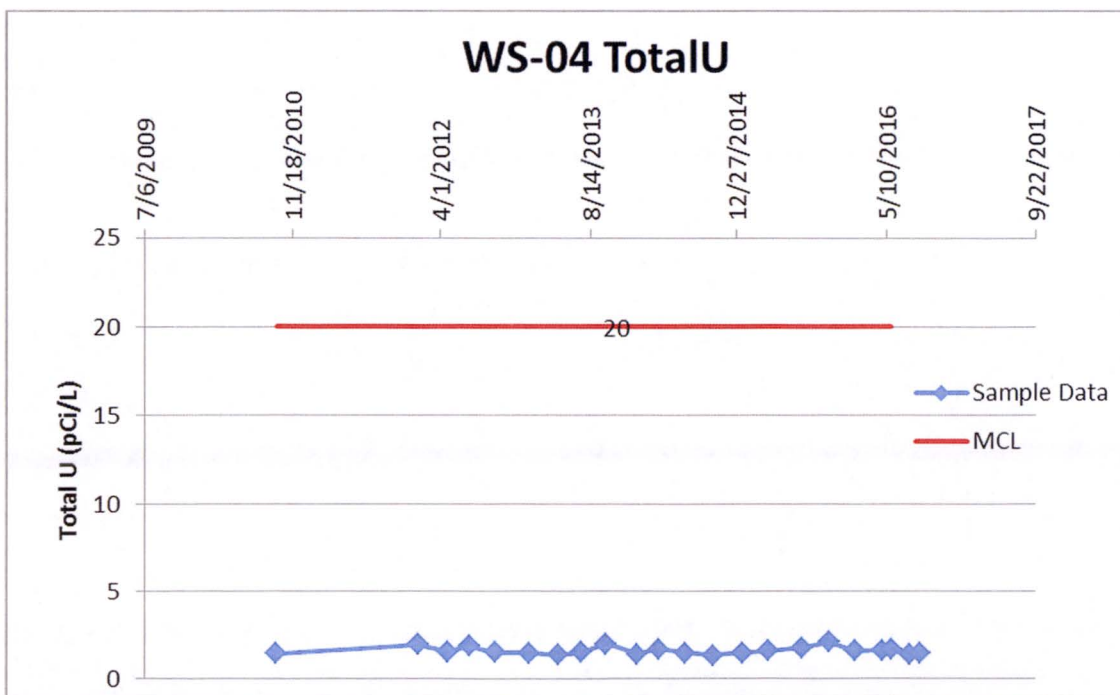
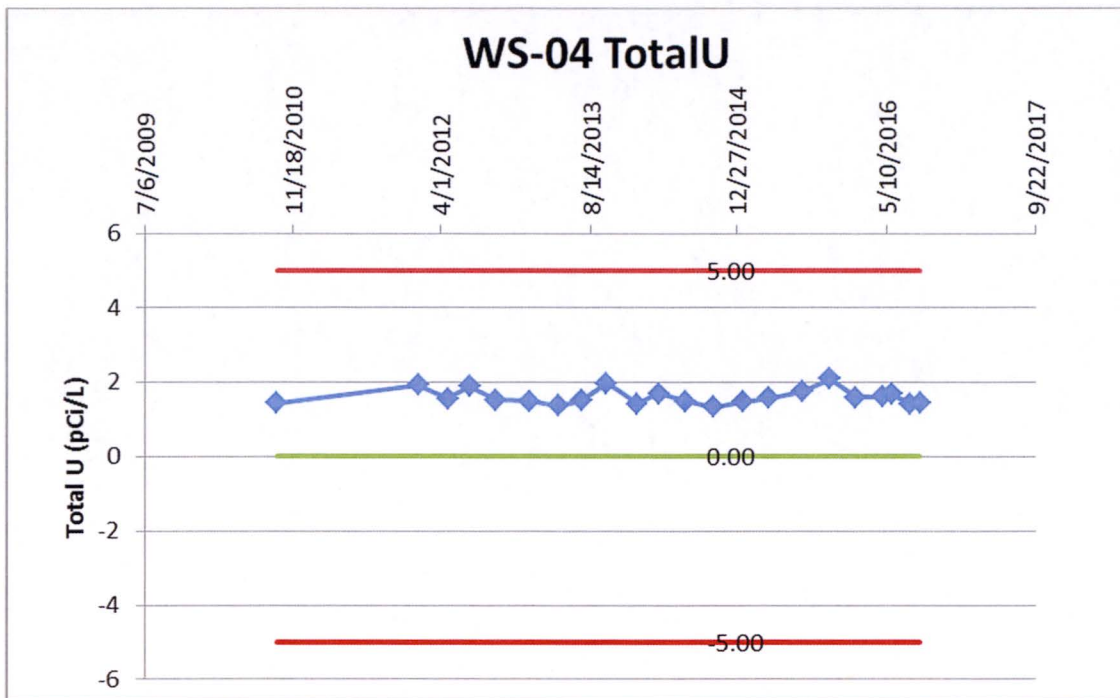
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
ROUBIDOUX HSU



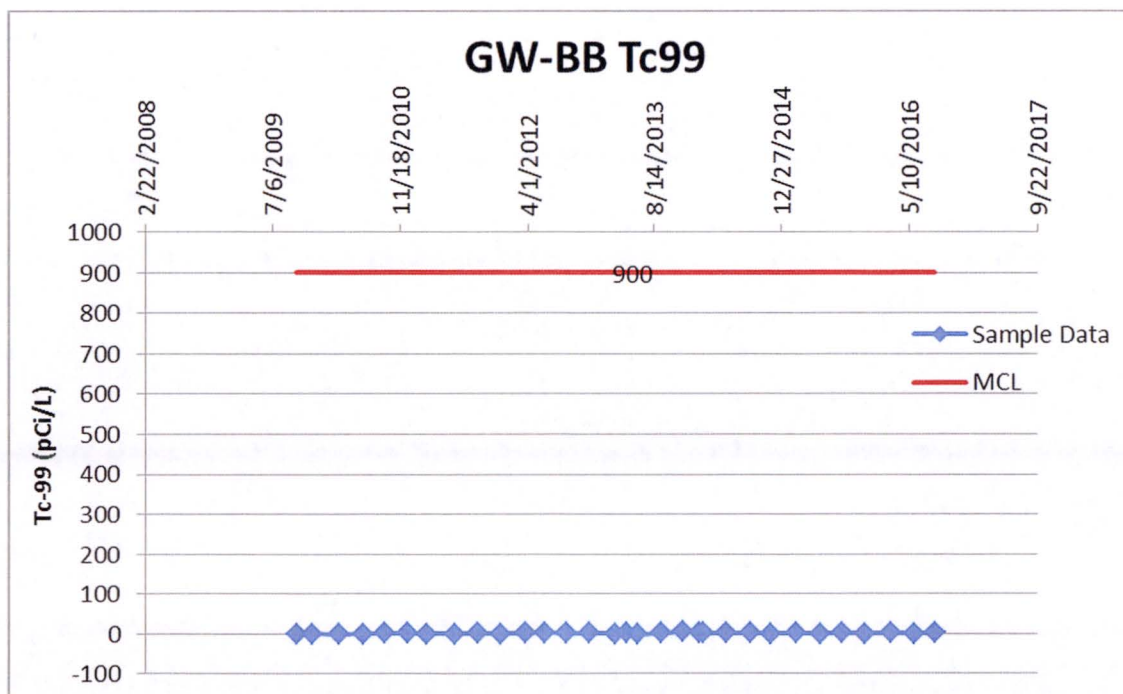
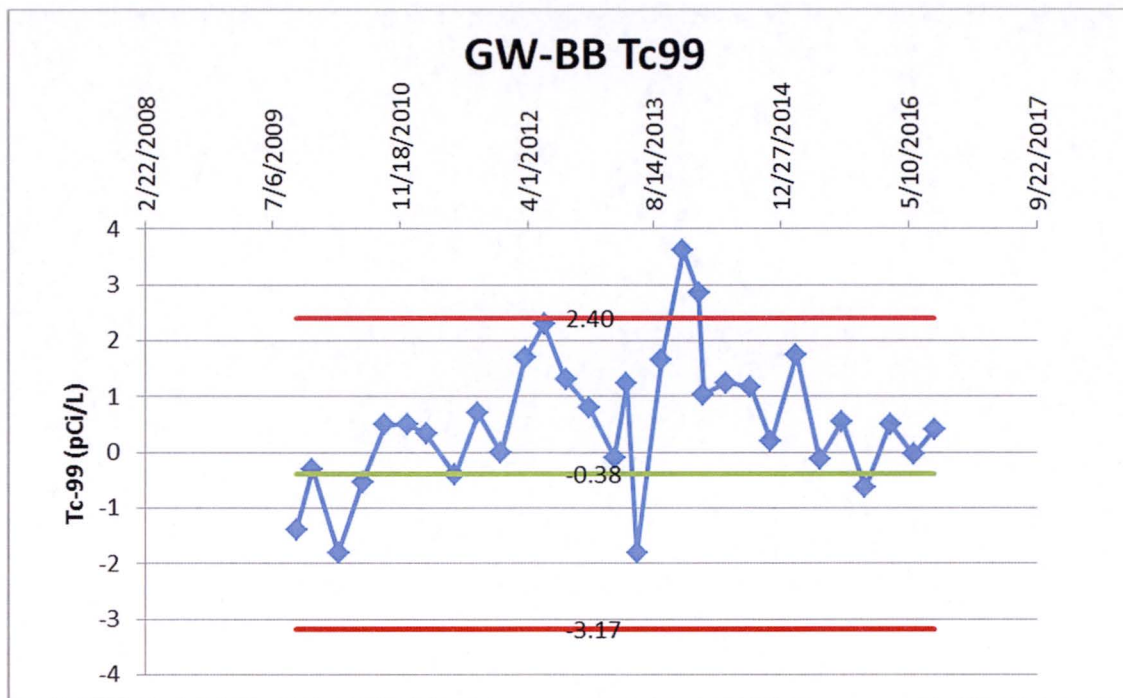
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
ROUBIDOUX HSU



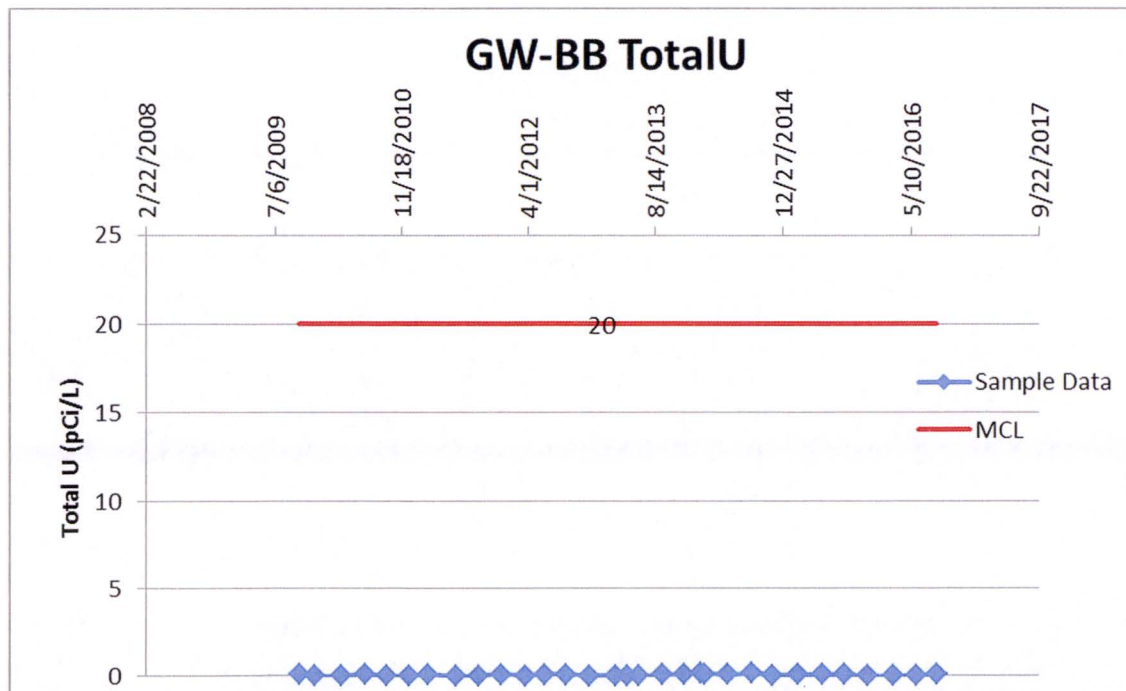
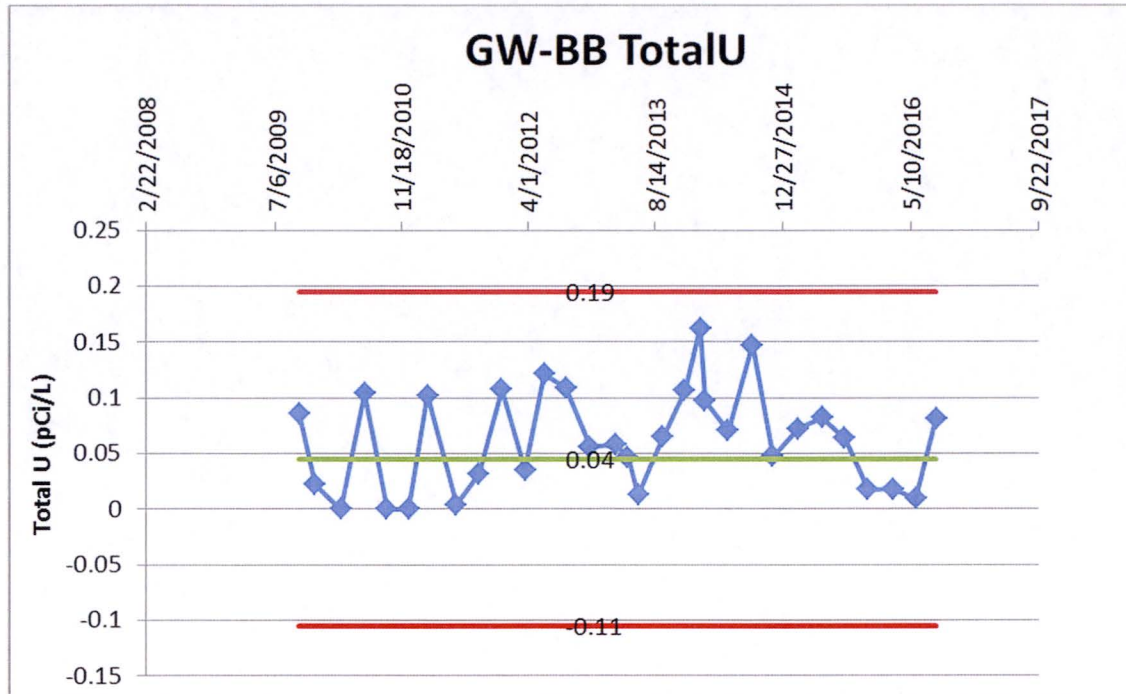
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
ROUBIDOUX HSU



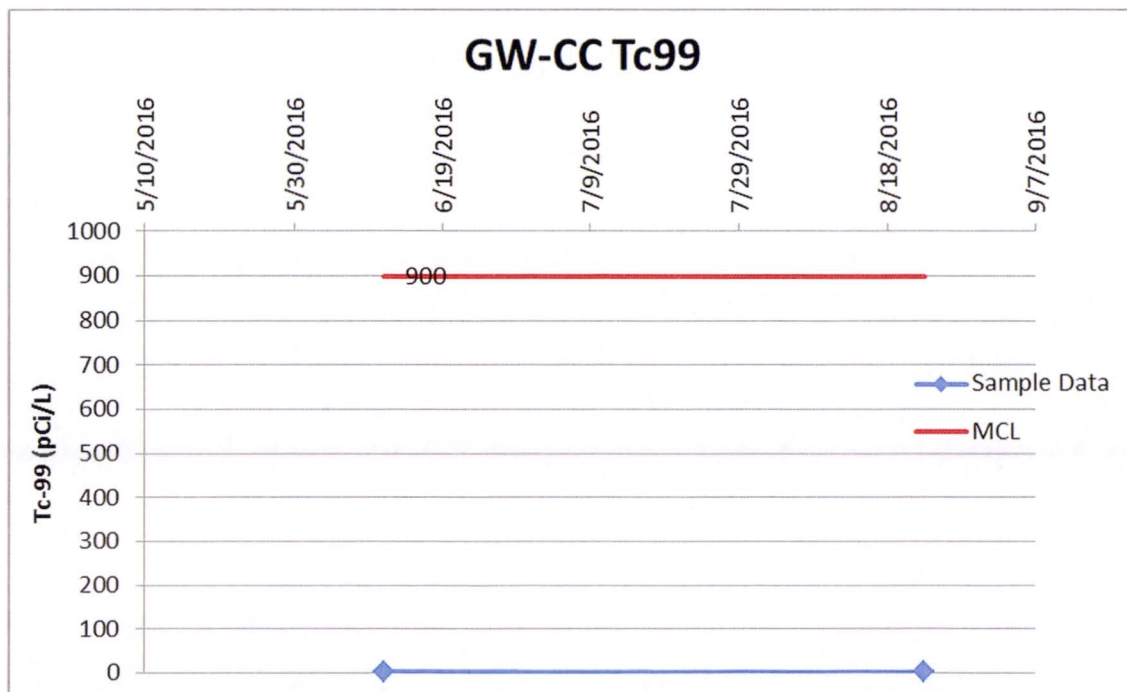
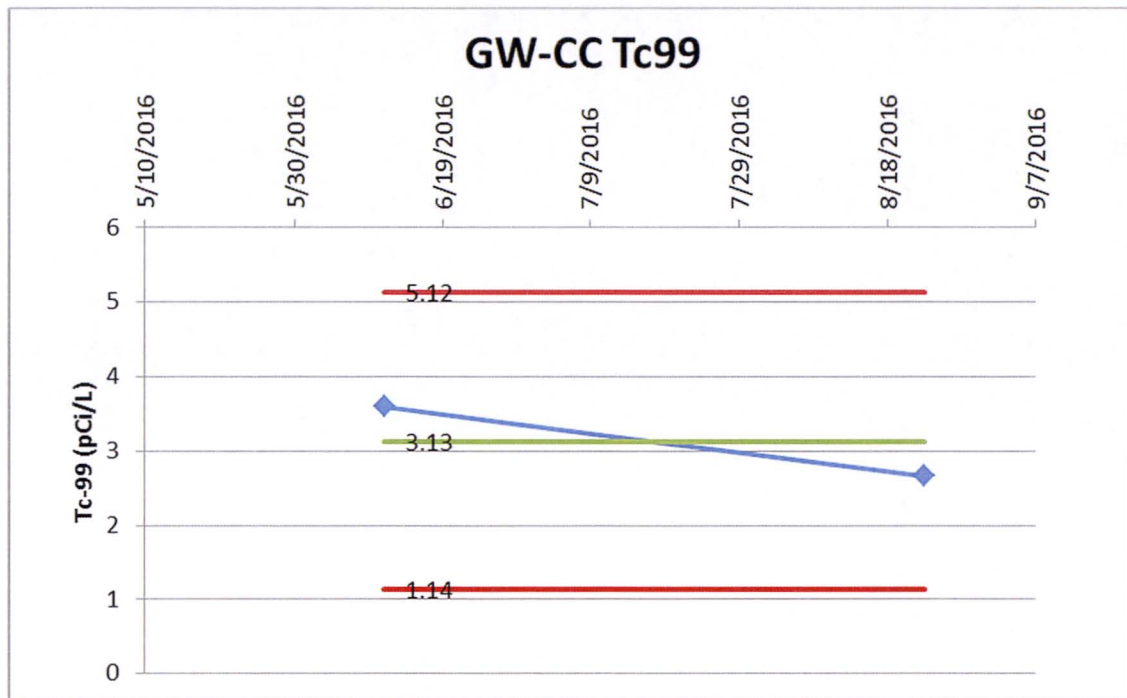
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



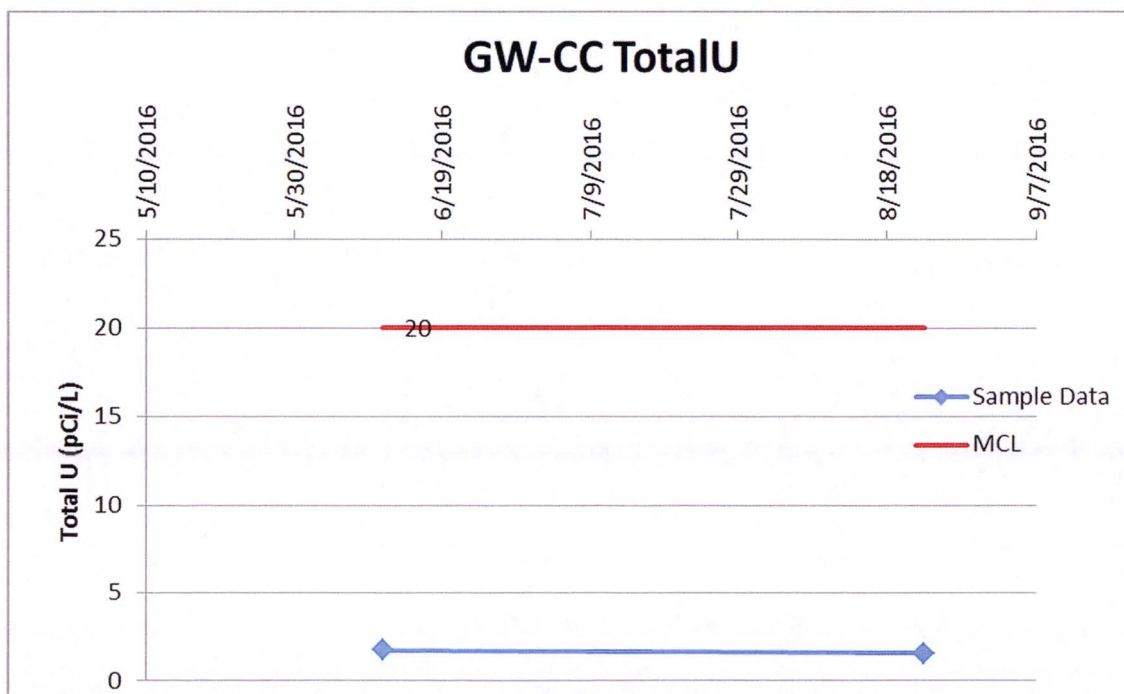
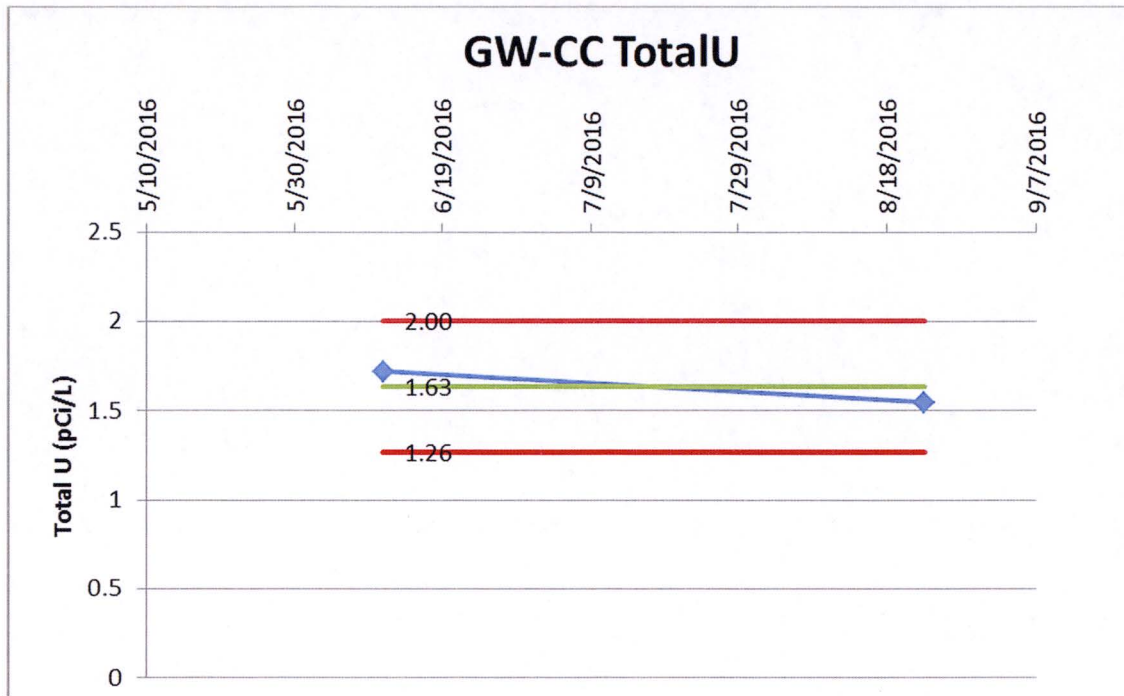
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



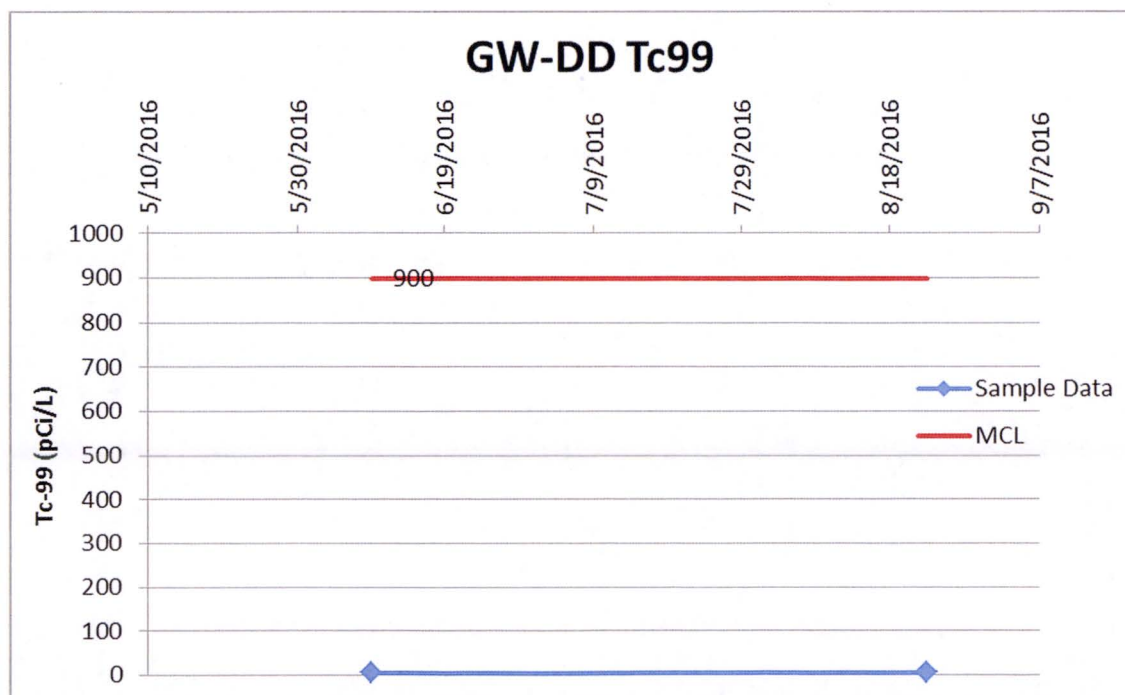
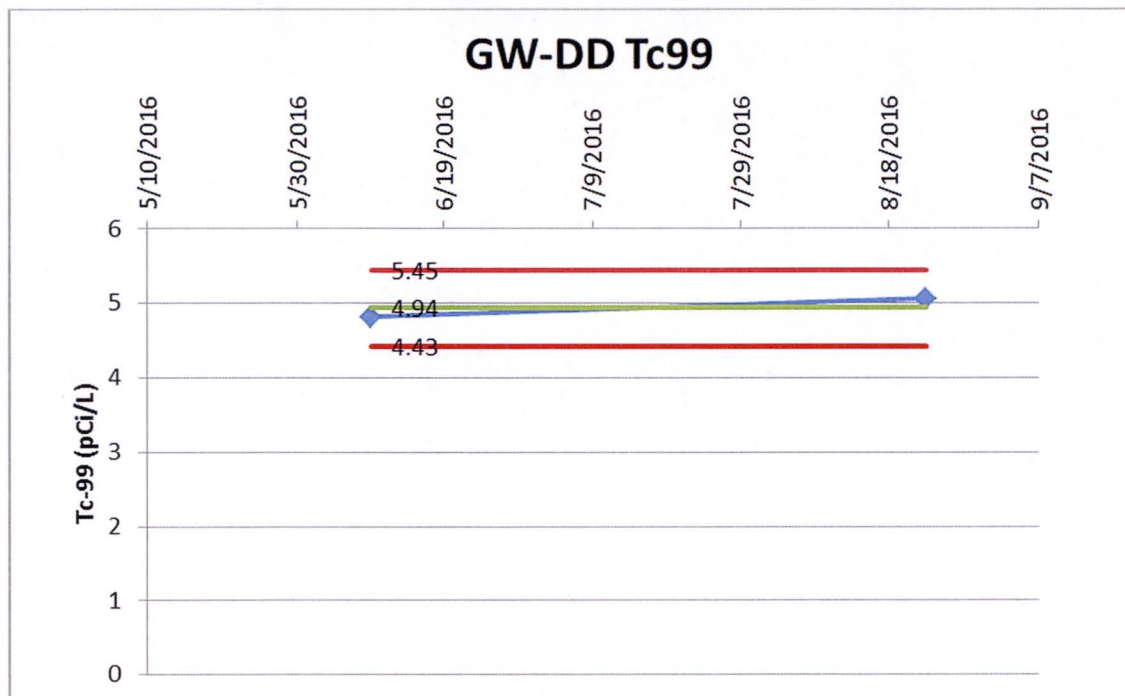
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



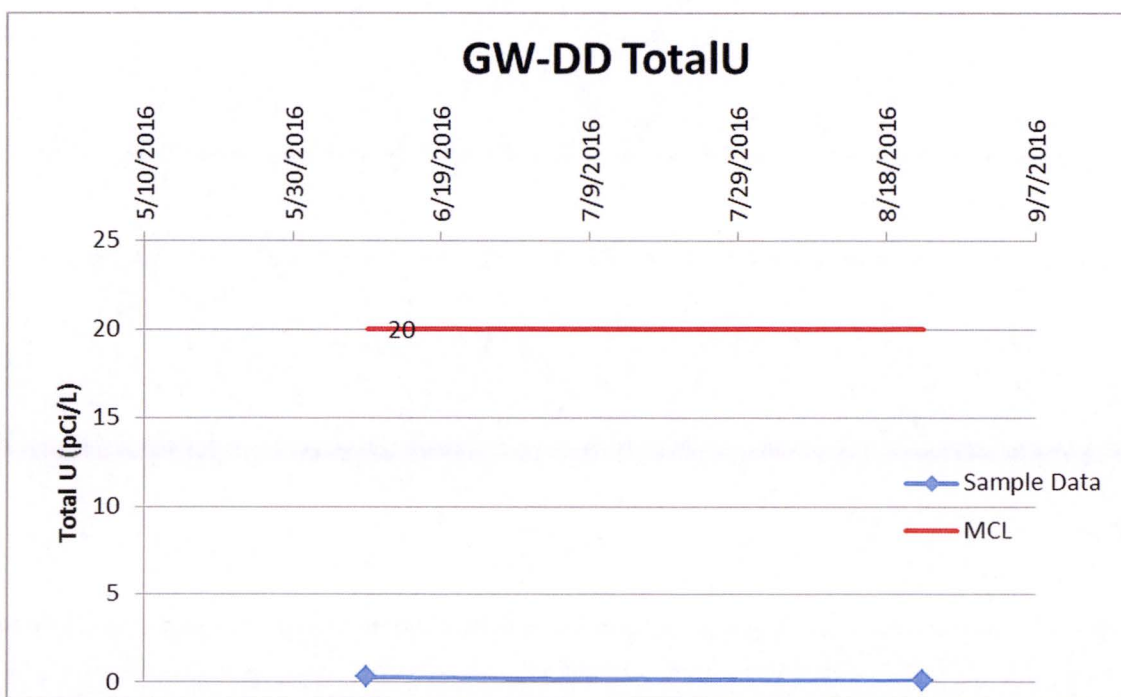
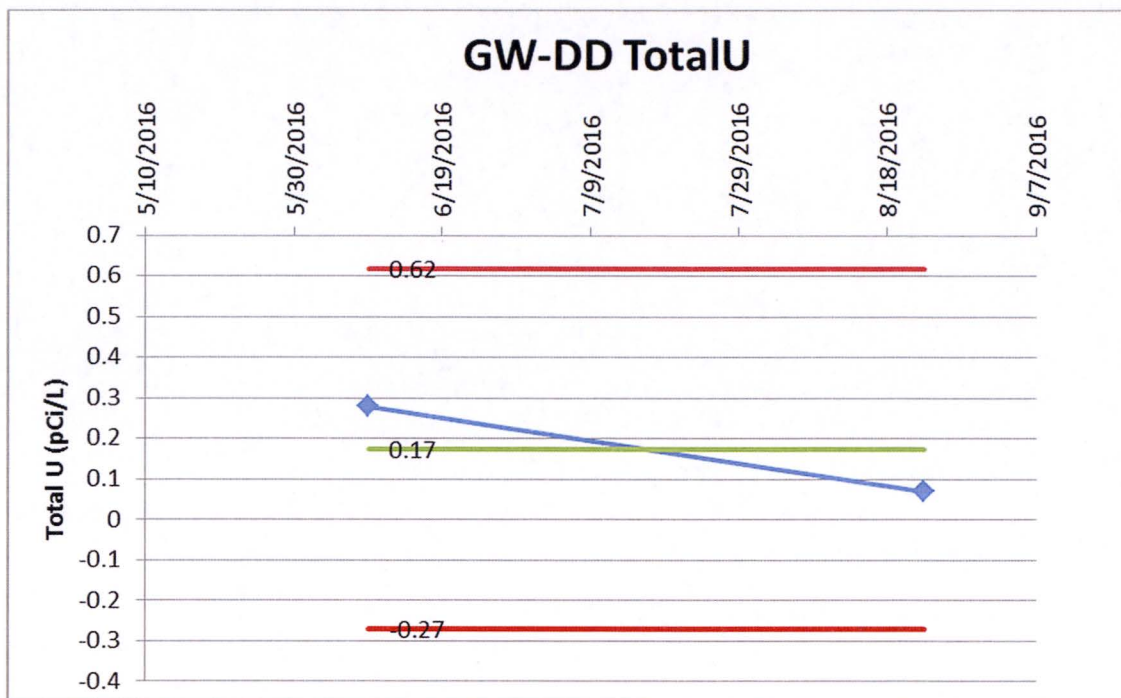
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



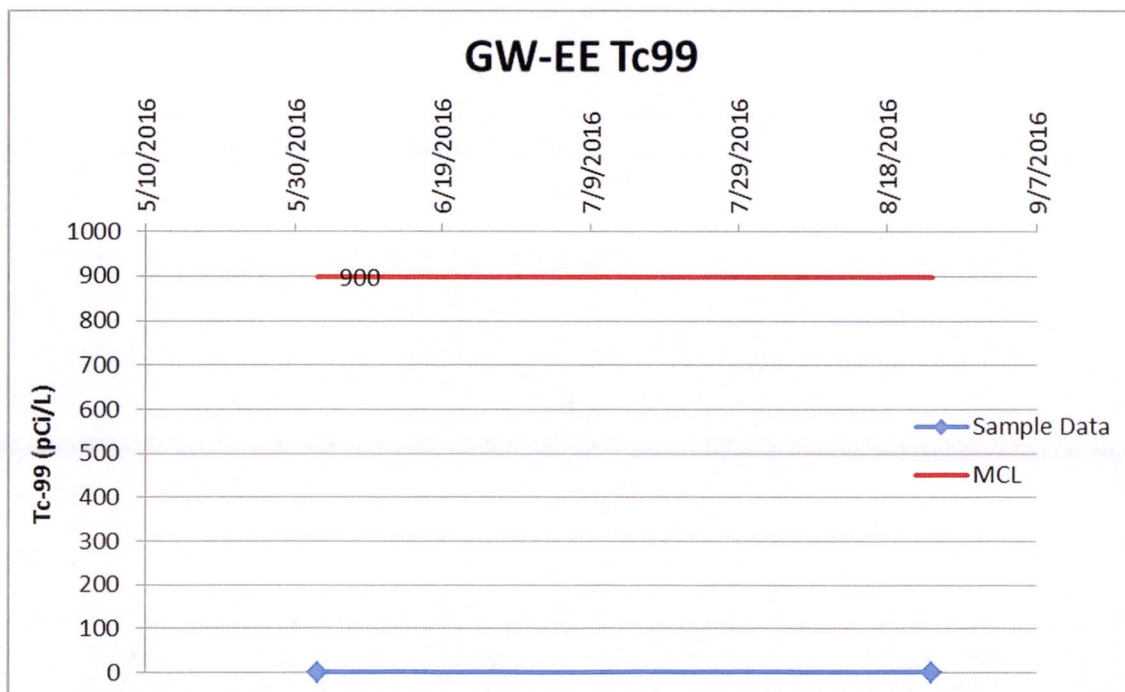
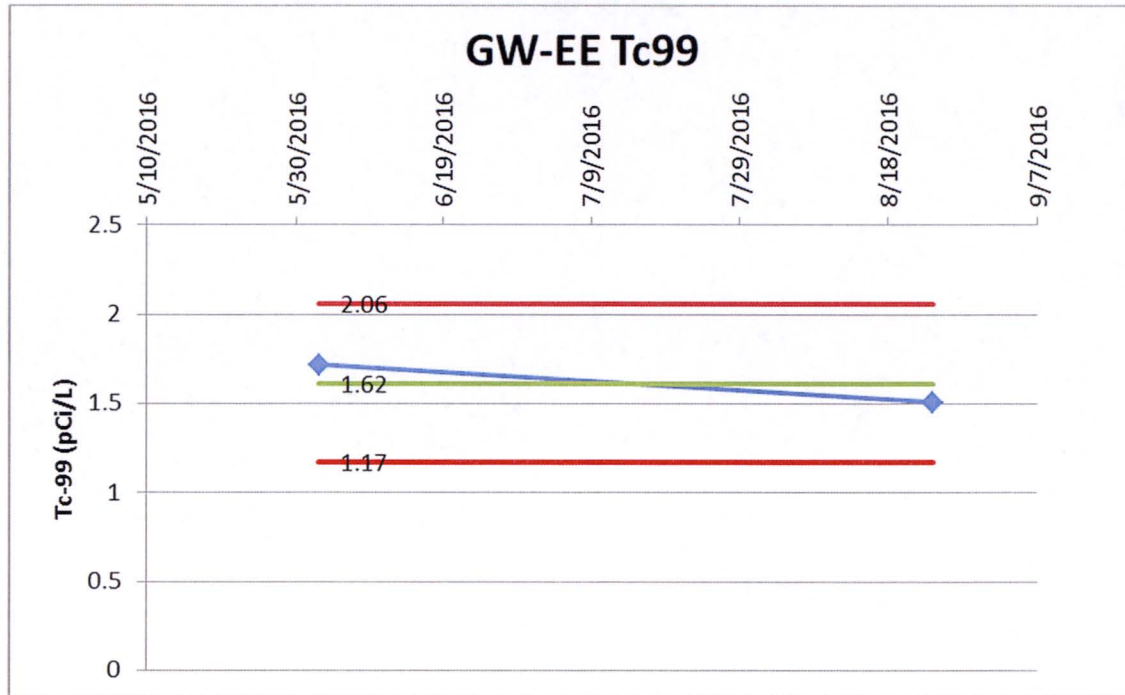
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



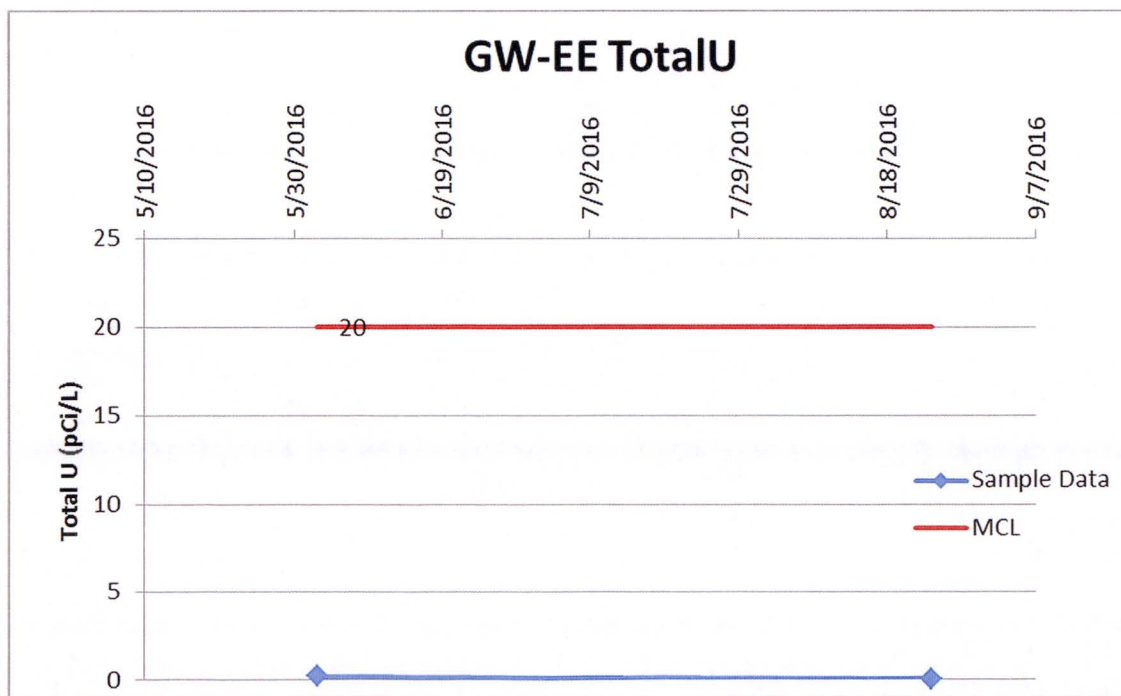
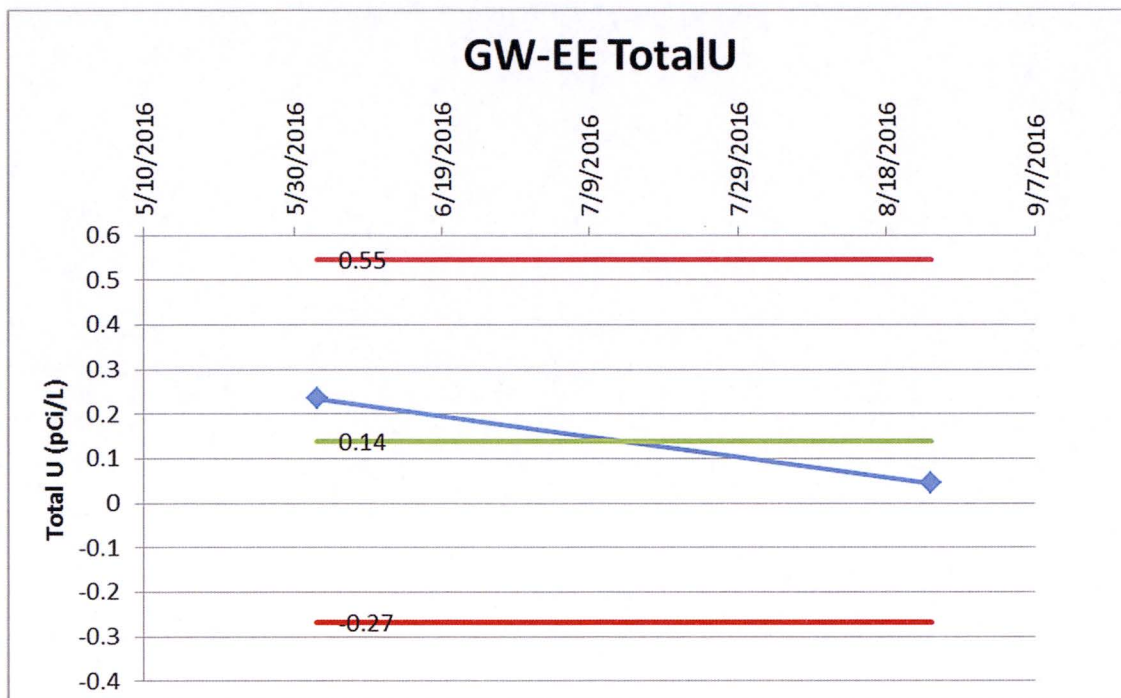
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



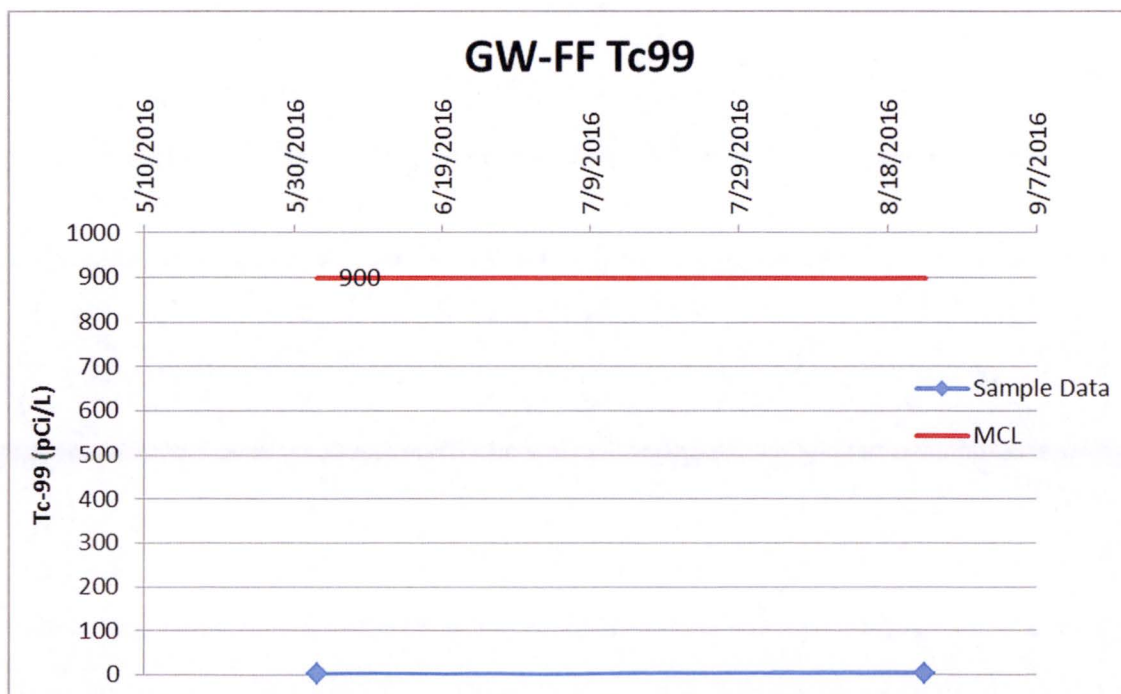
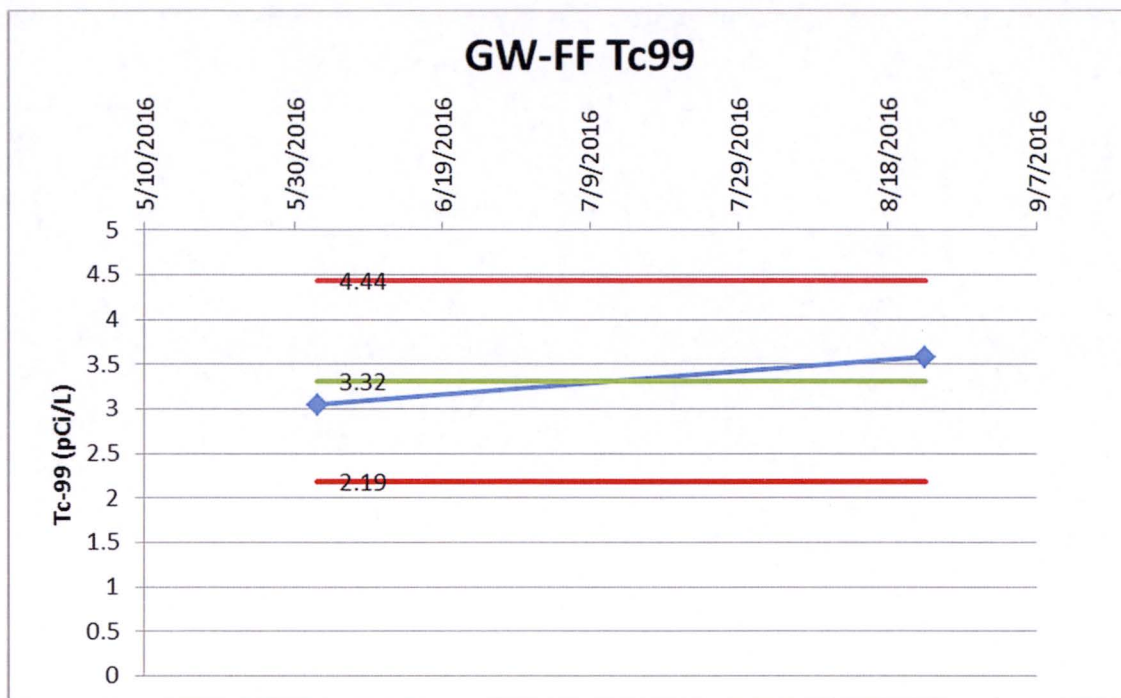
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



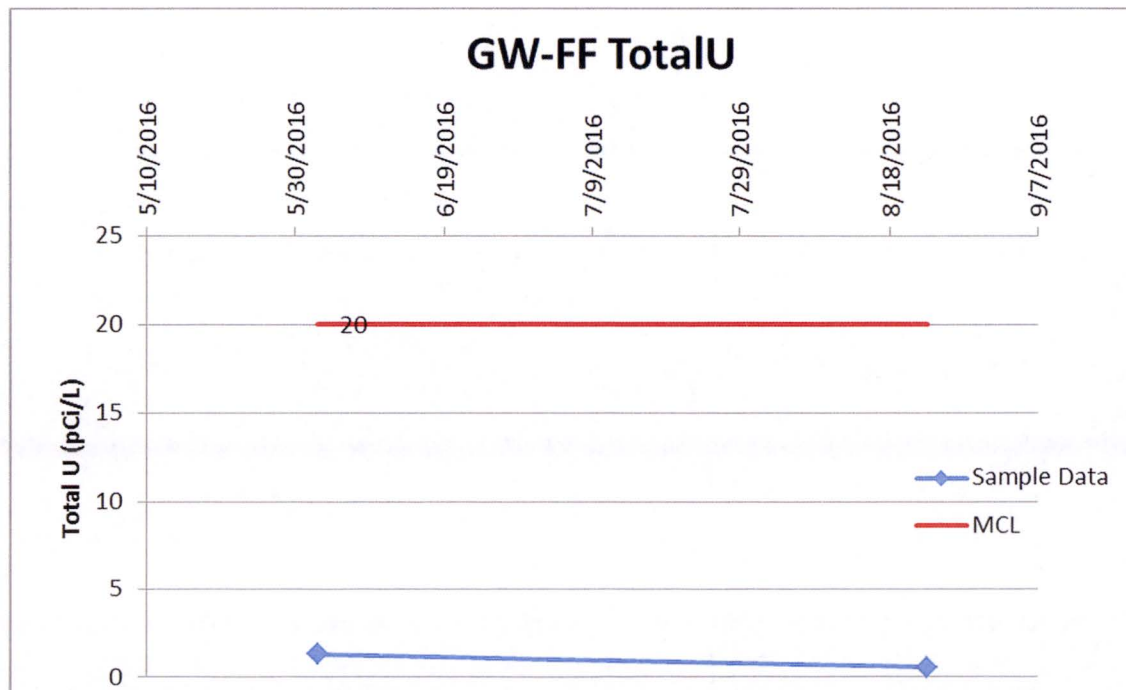
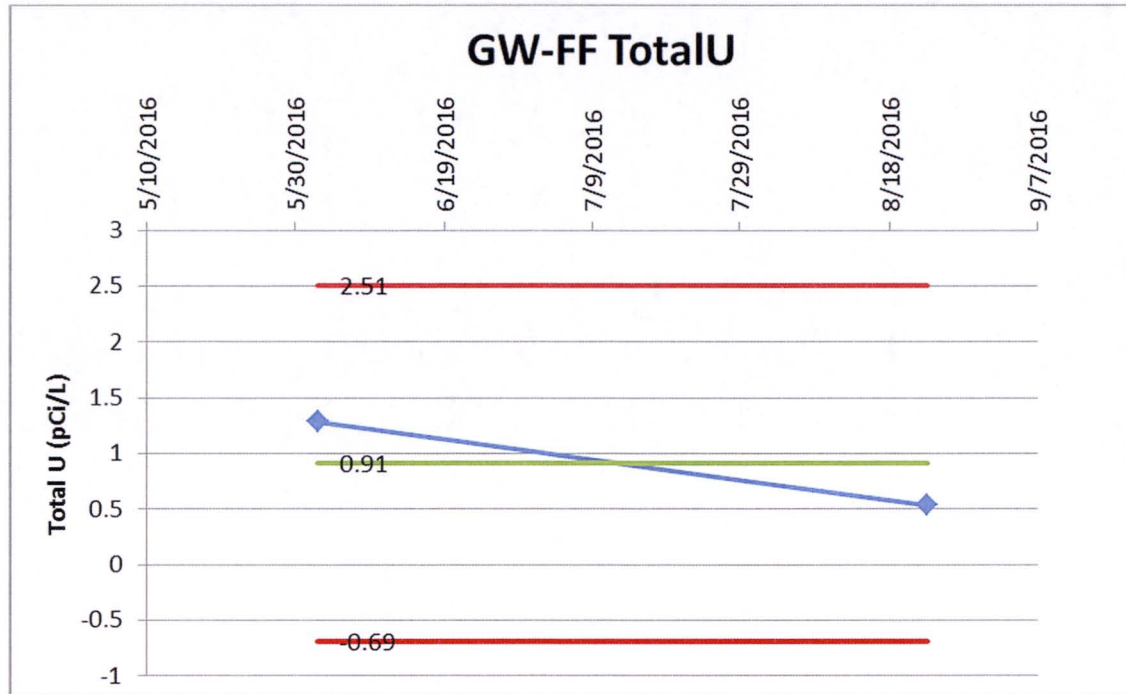
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



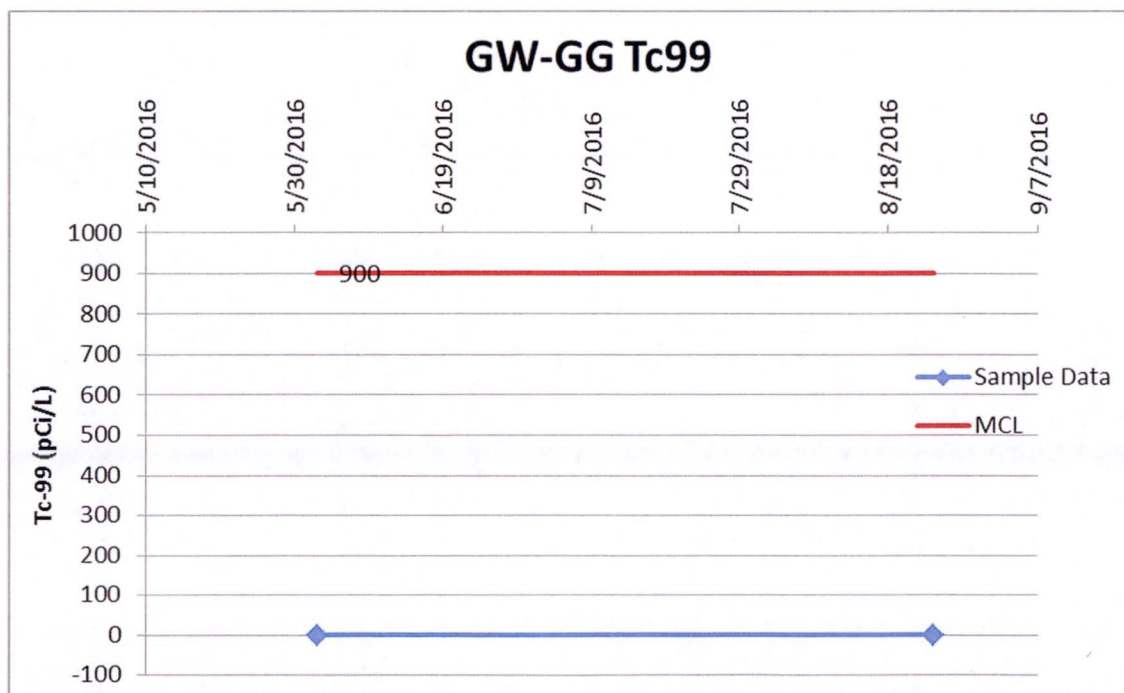
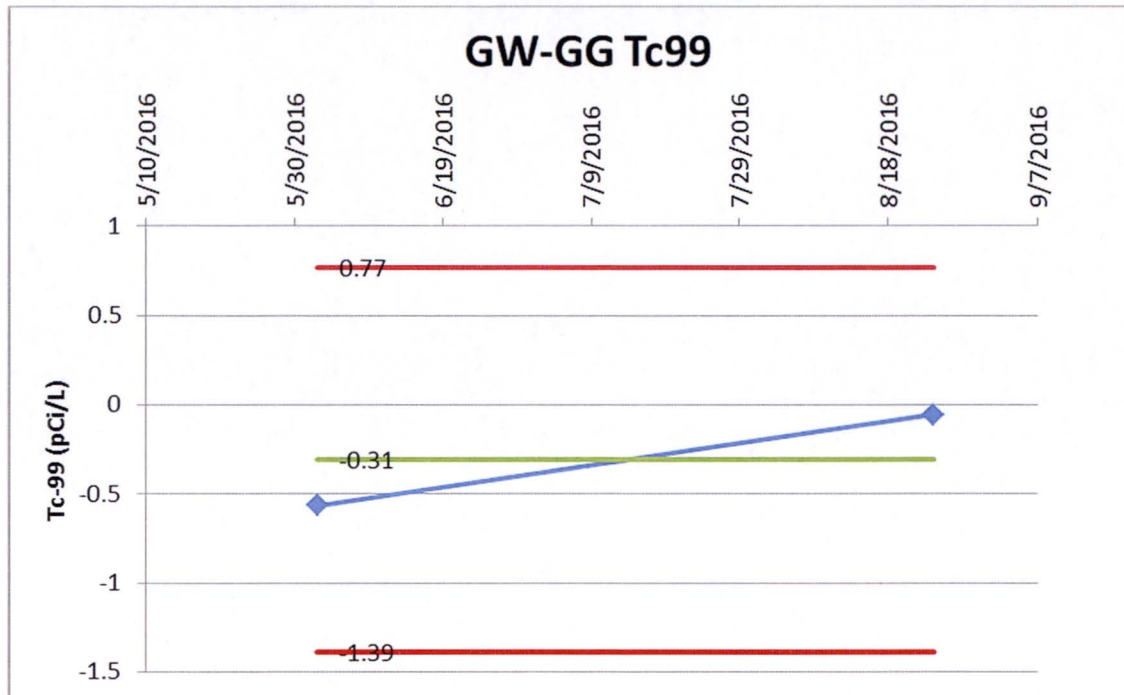
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



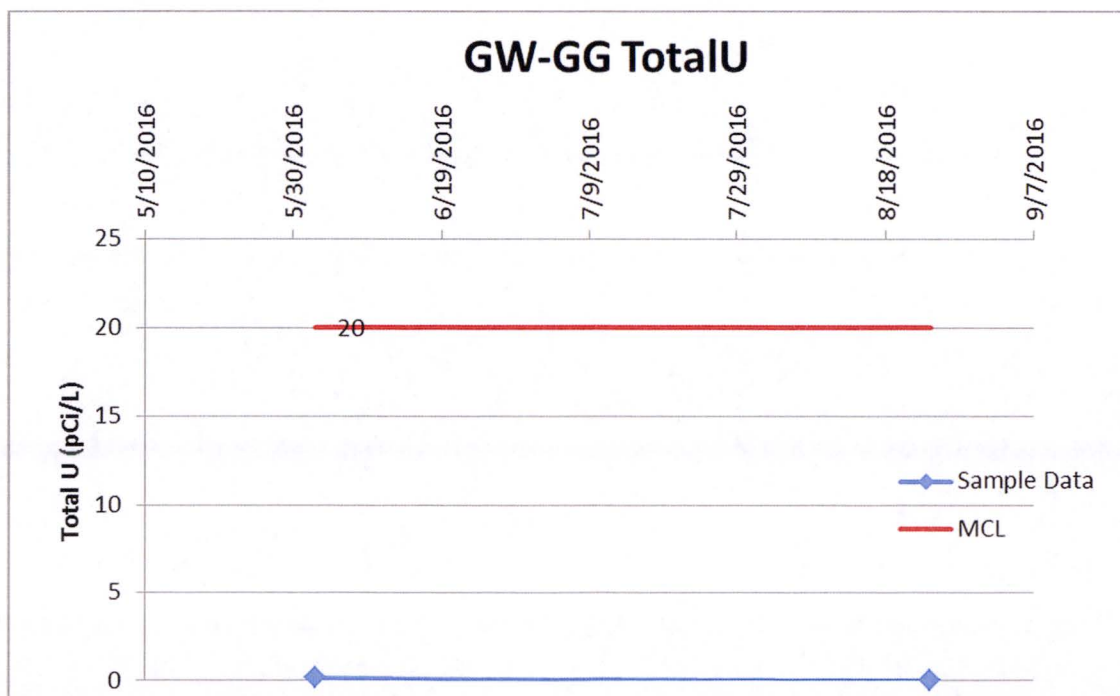
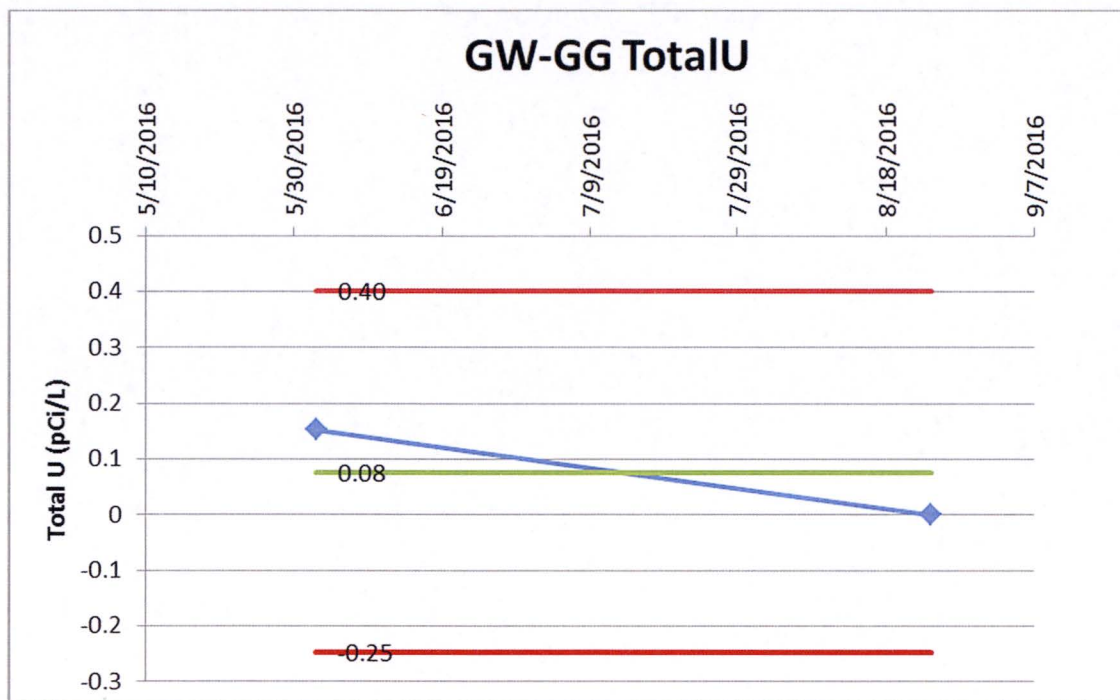
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



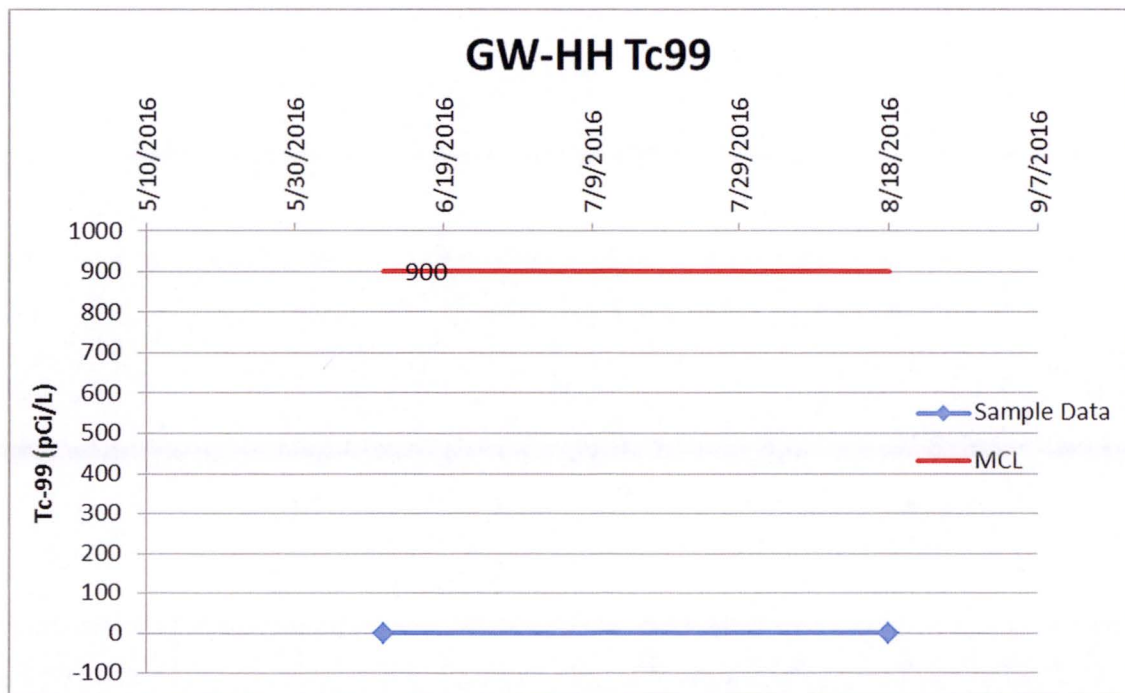
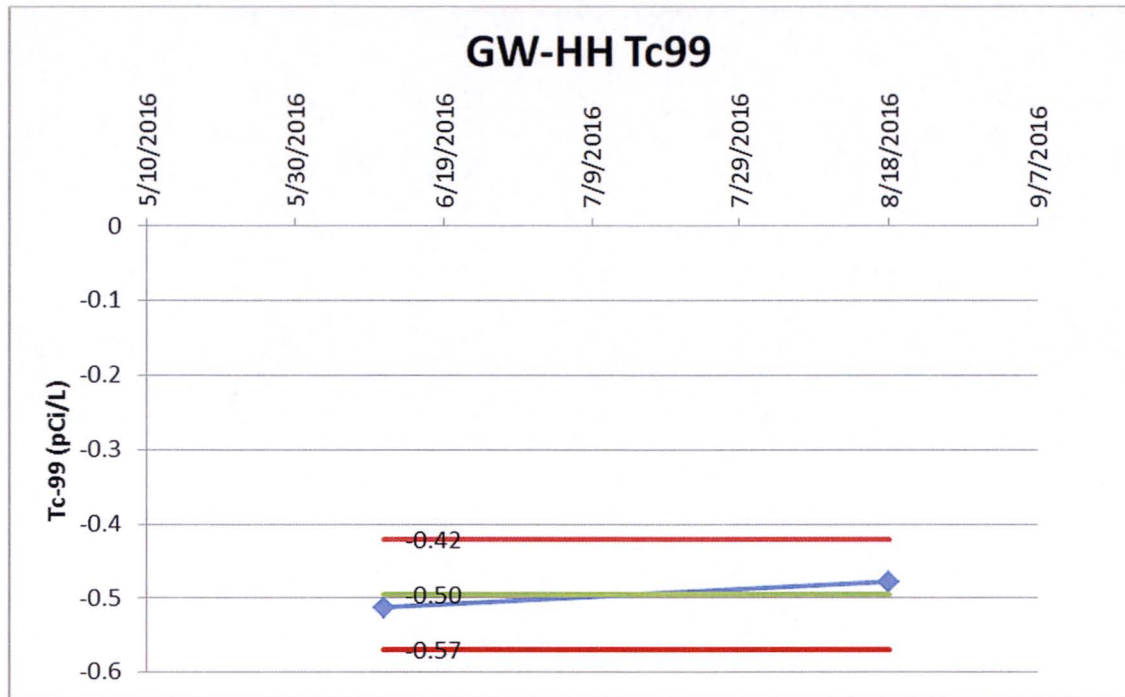
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



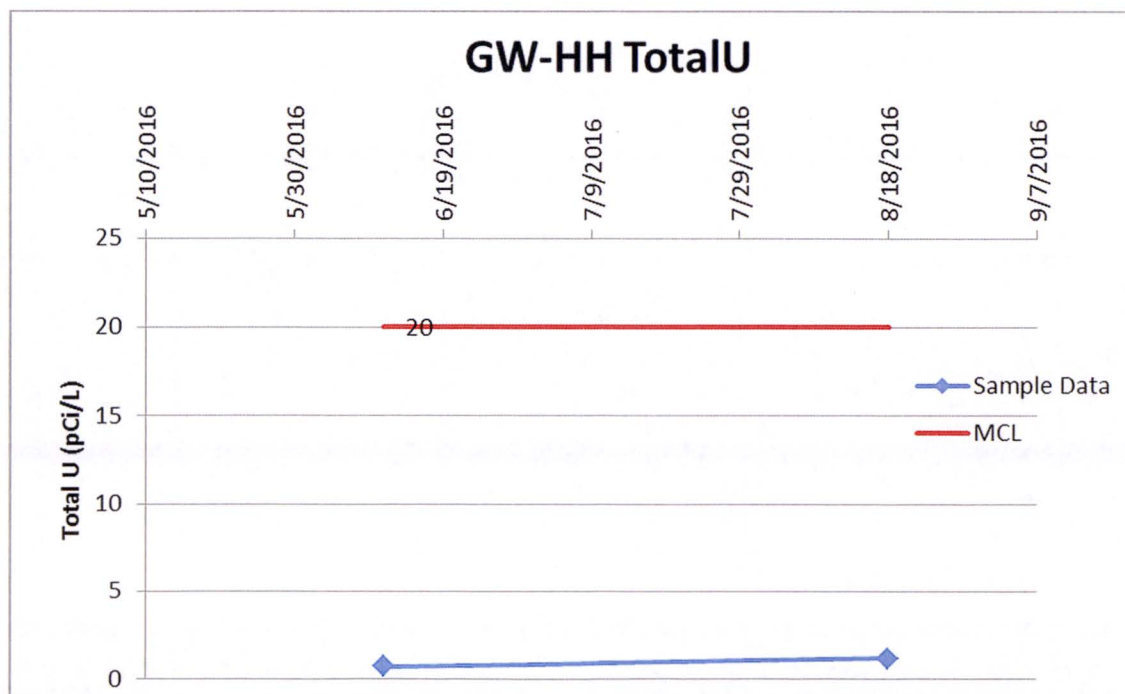
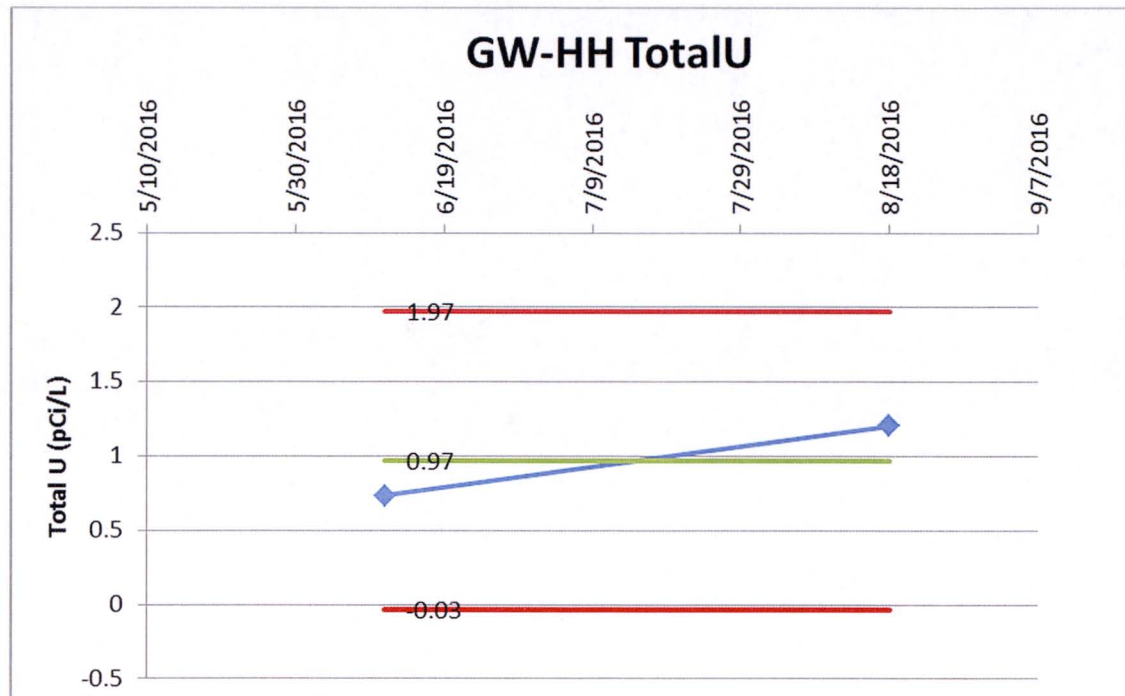
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



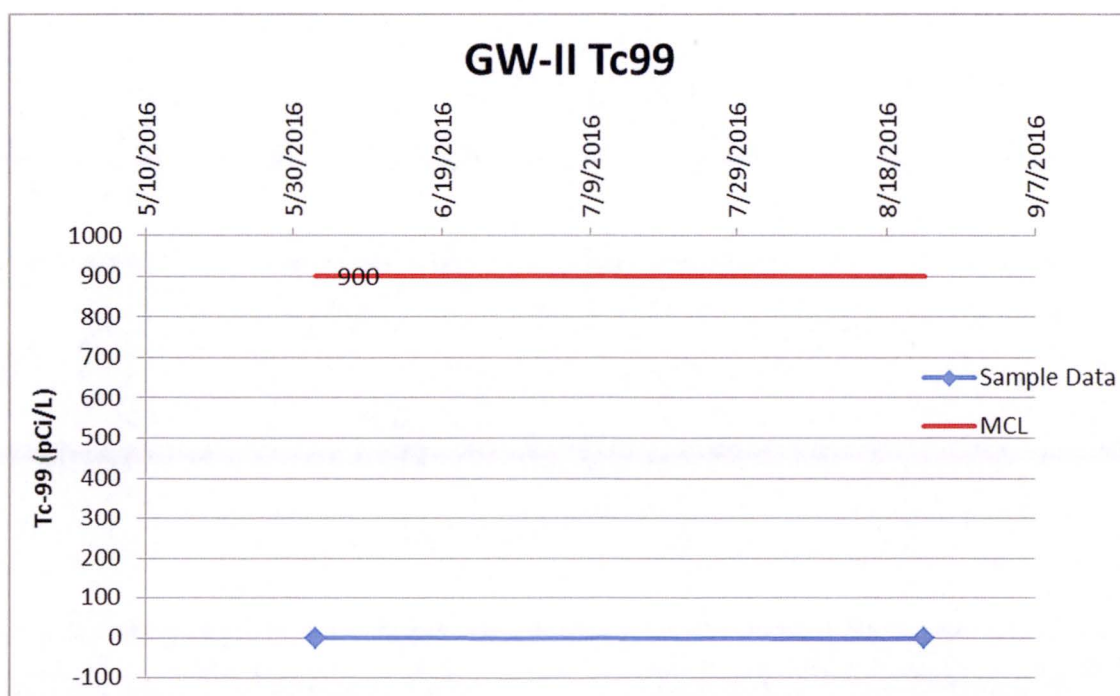
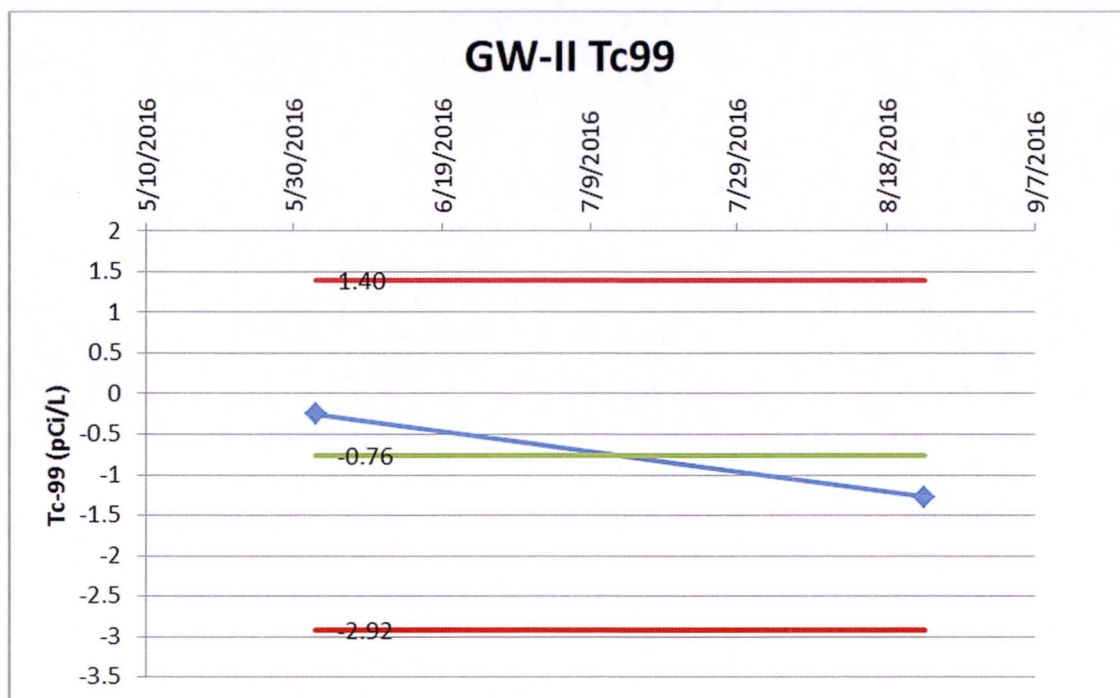
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



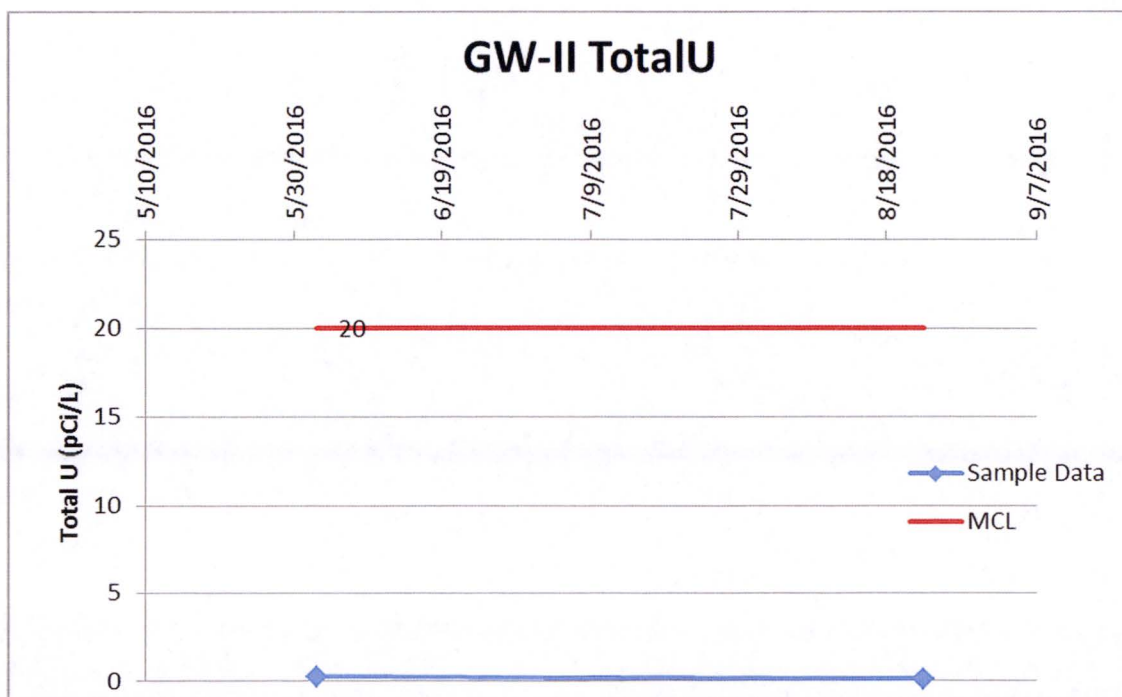
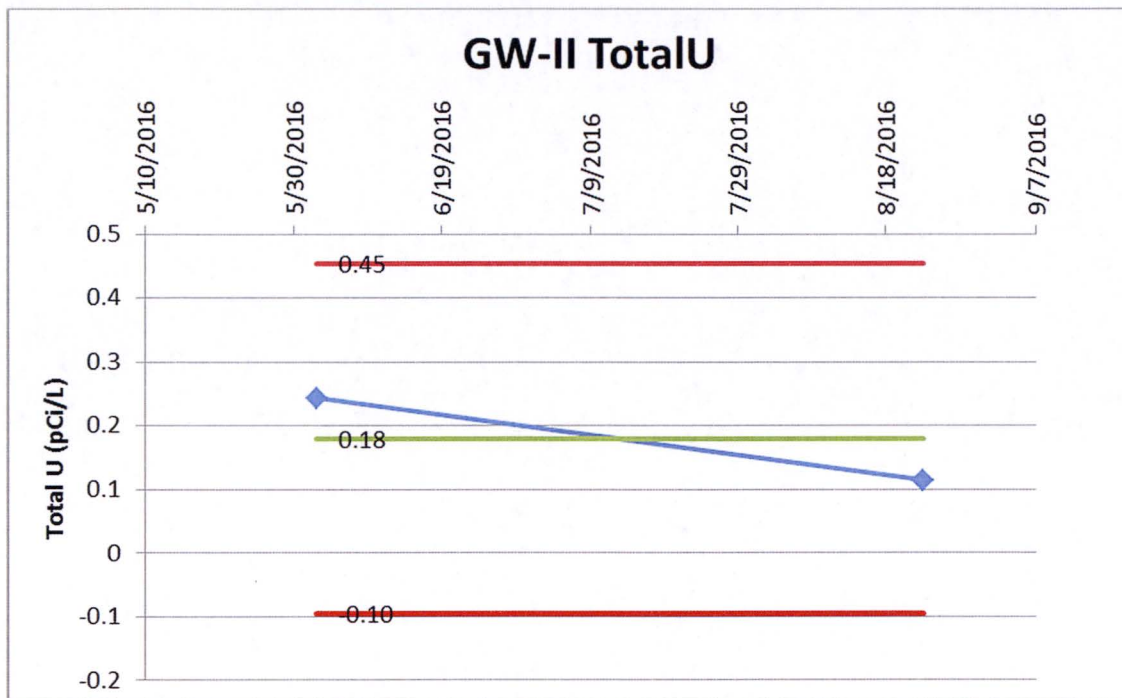
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



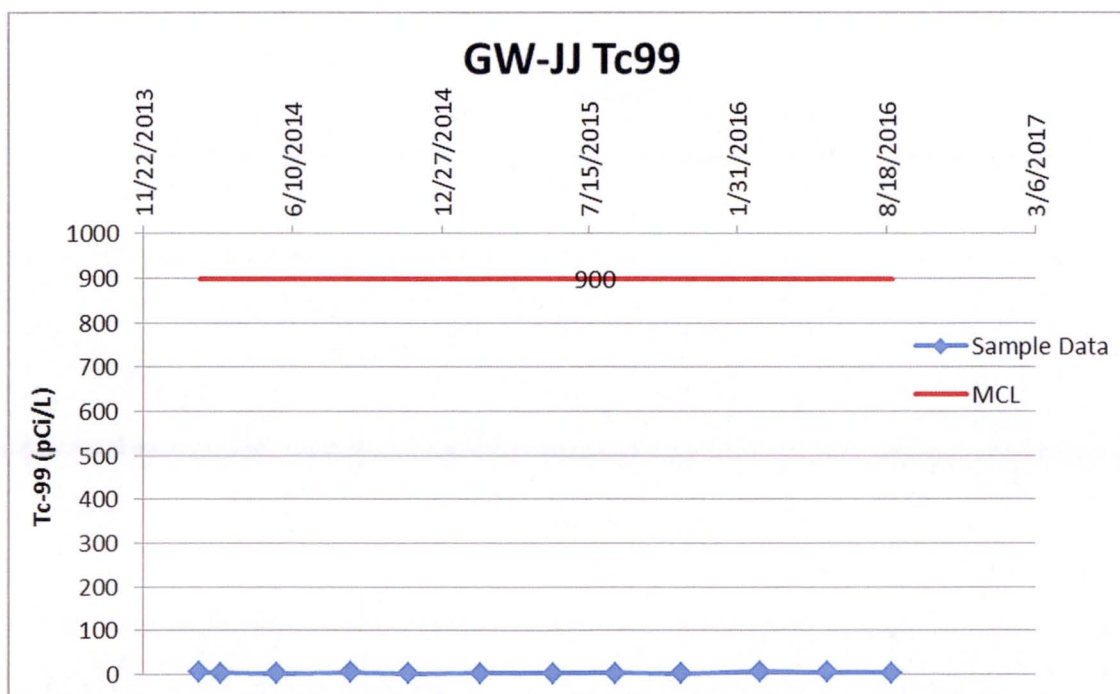
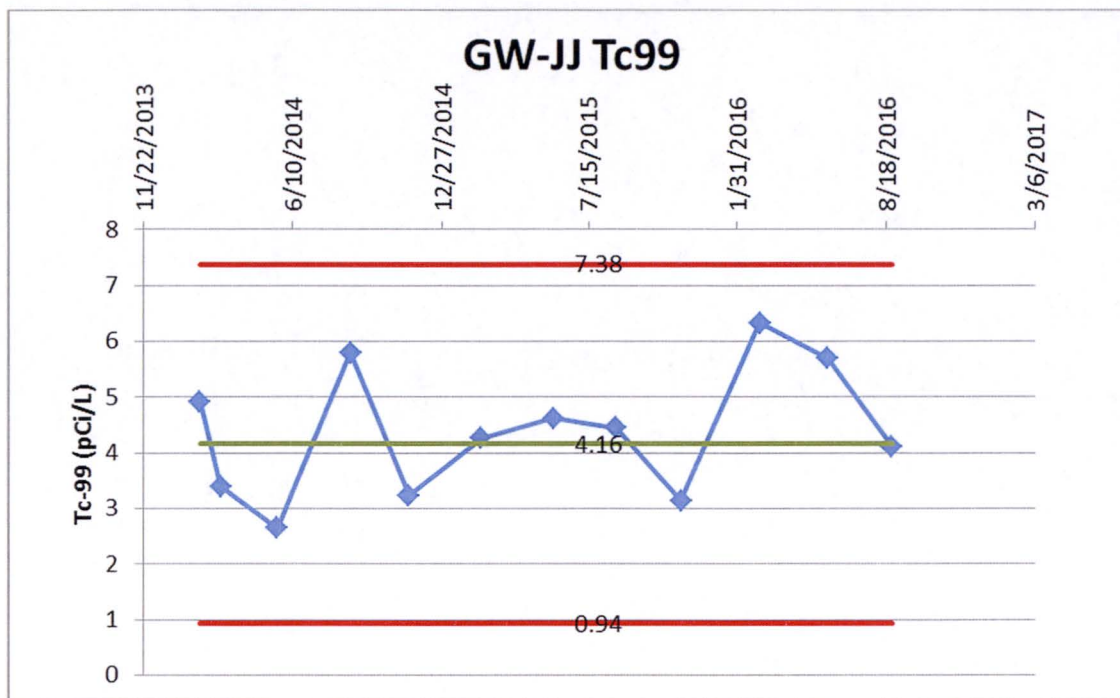
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



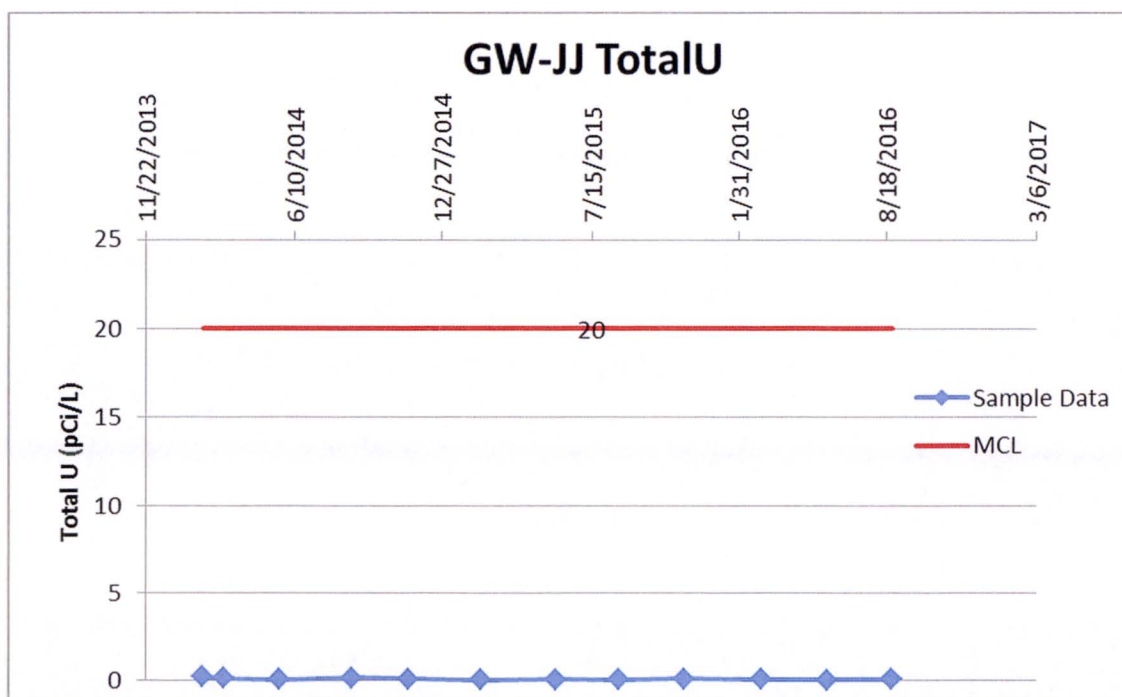
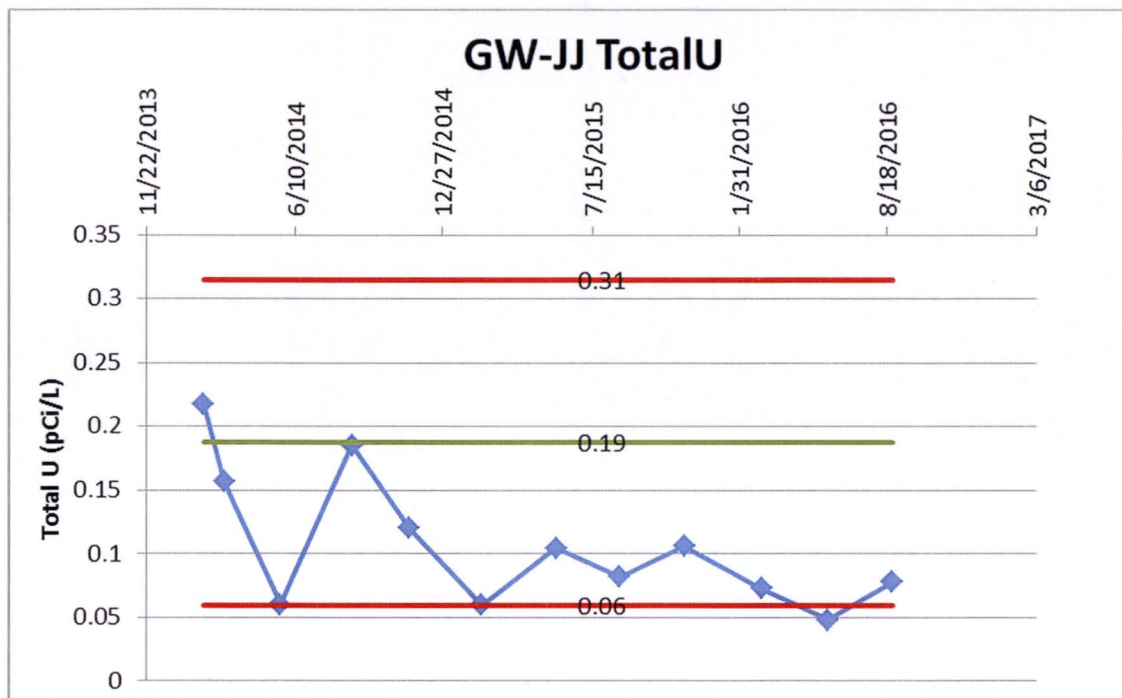
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



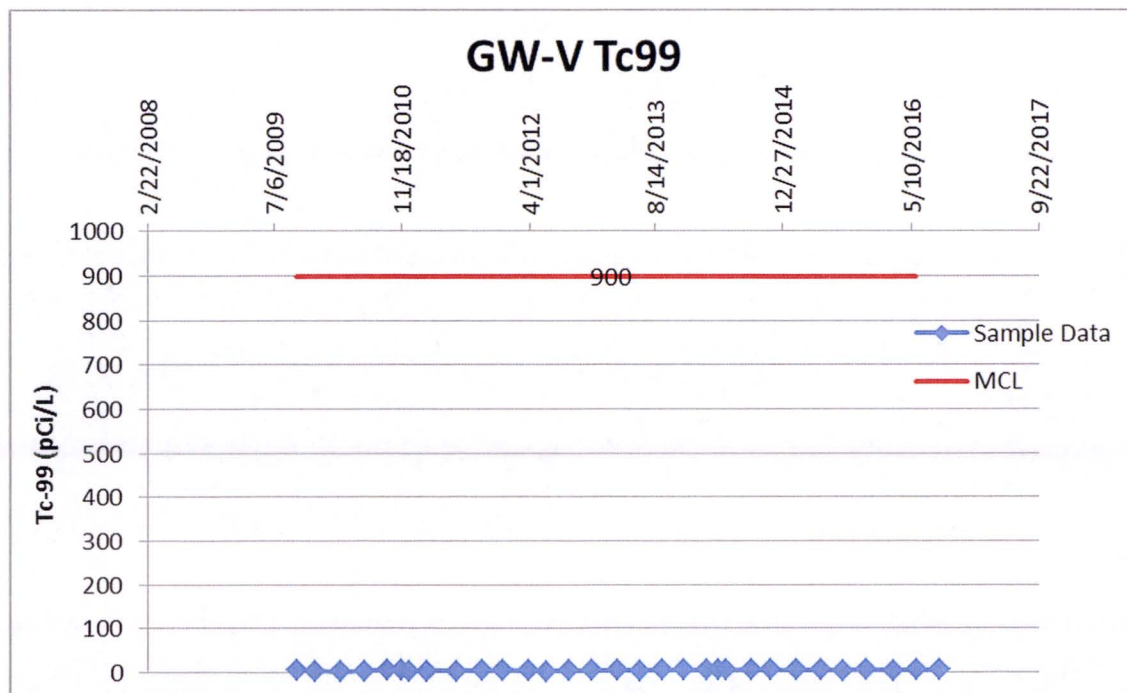
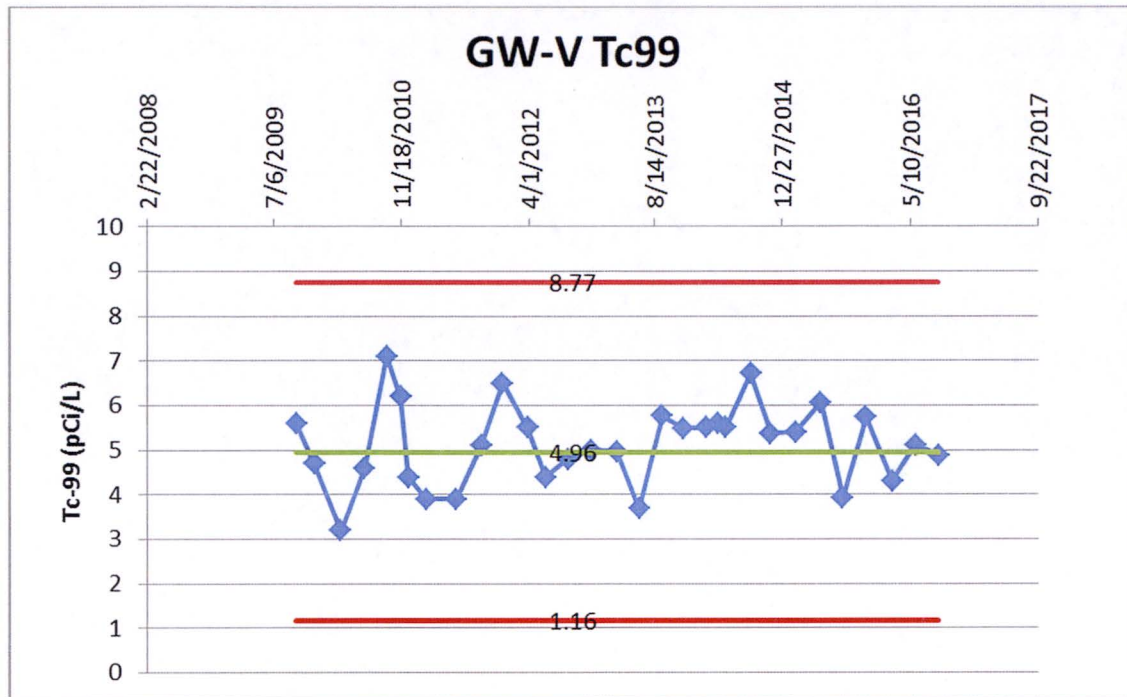
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



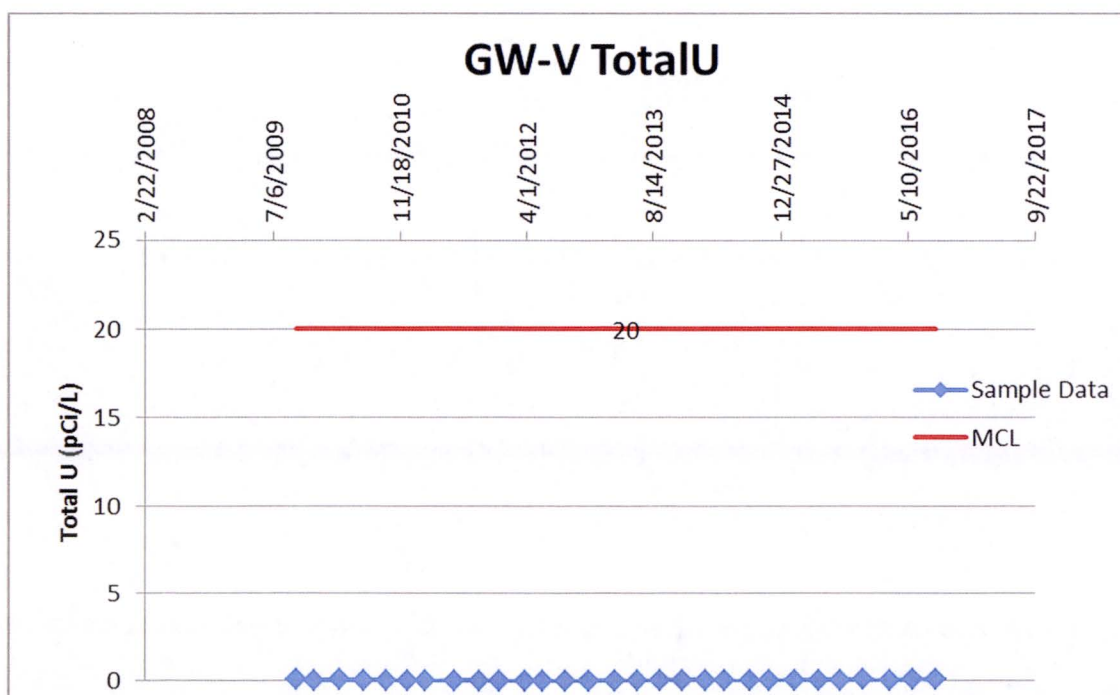
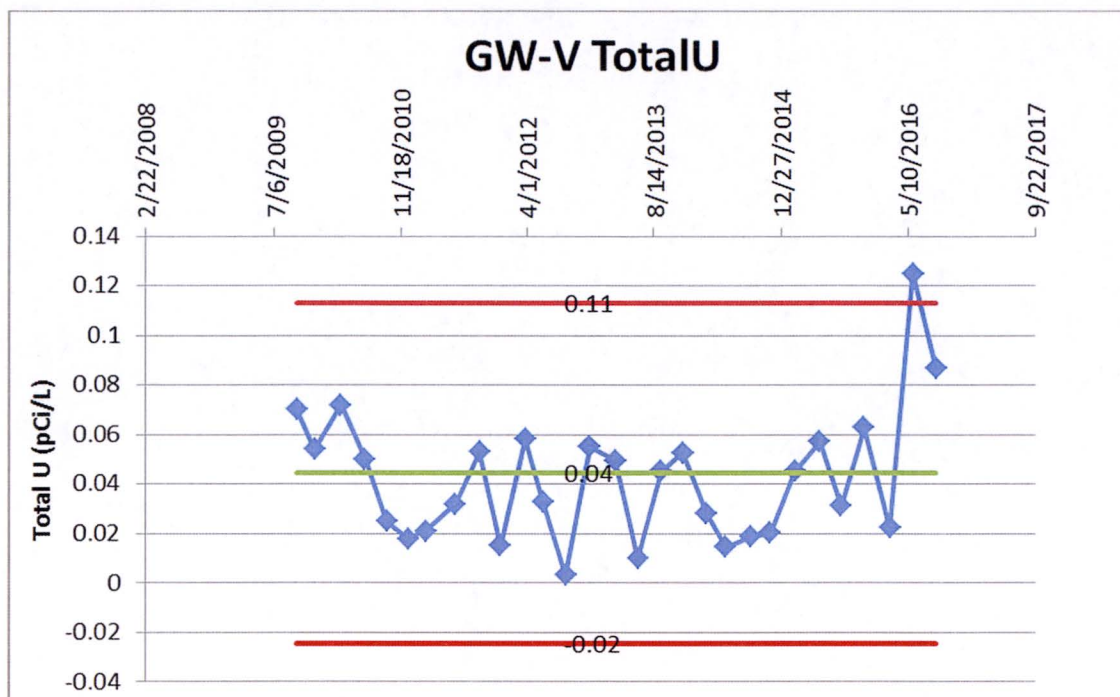
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



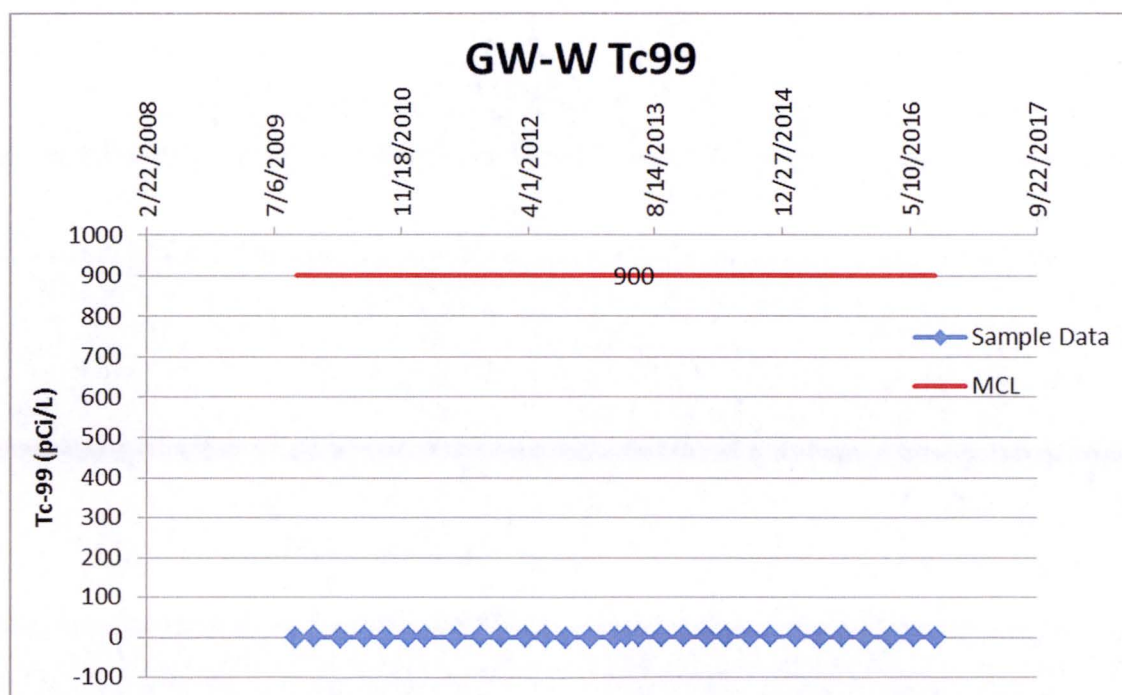
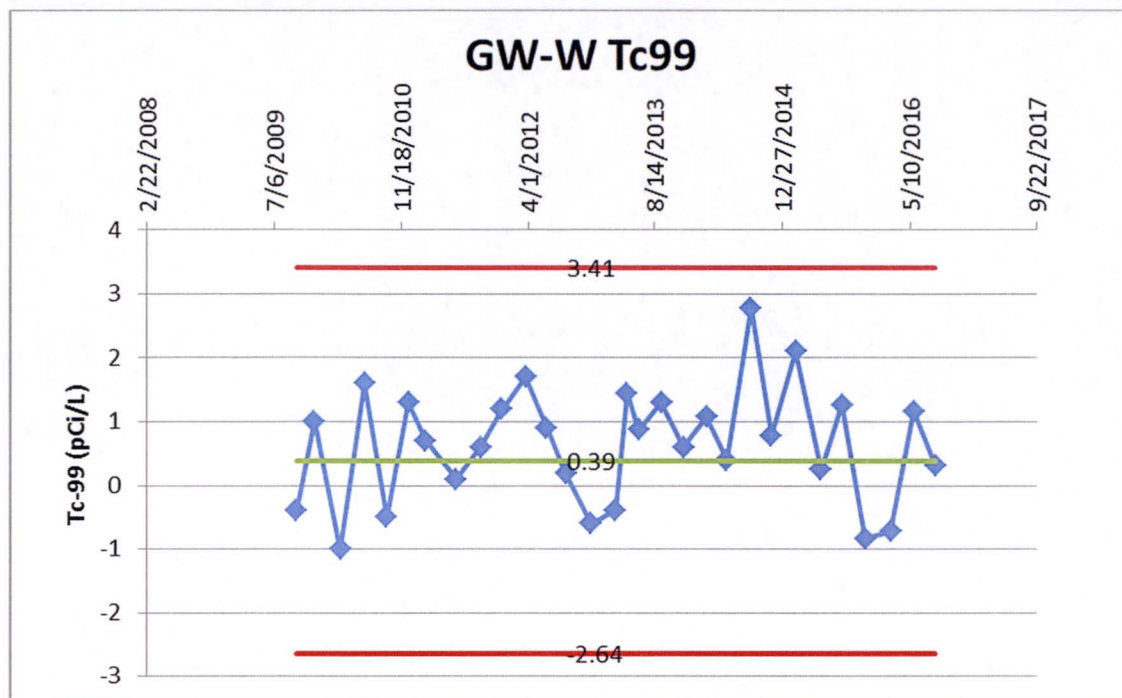
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



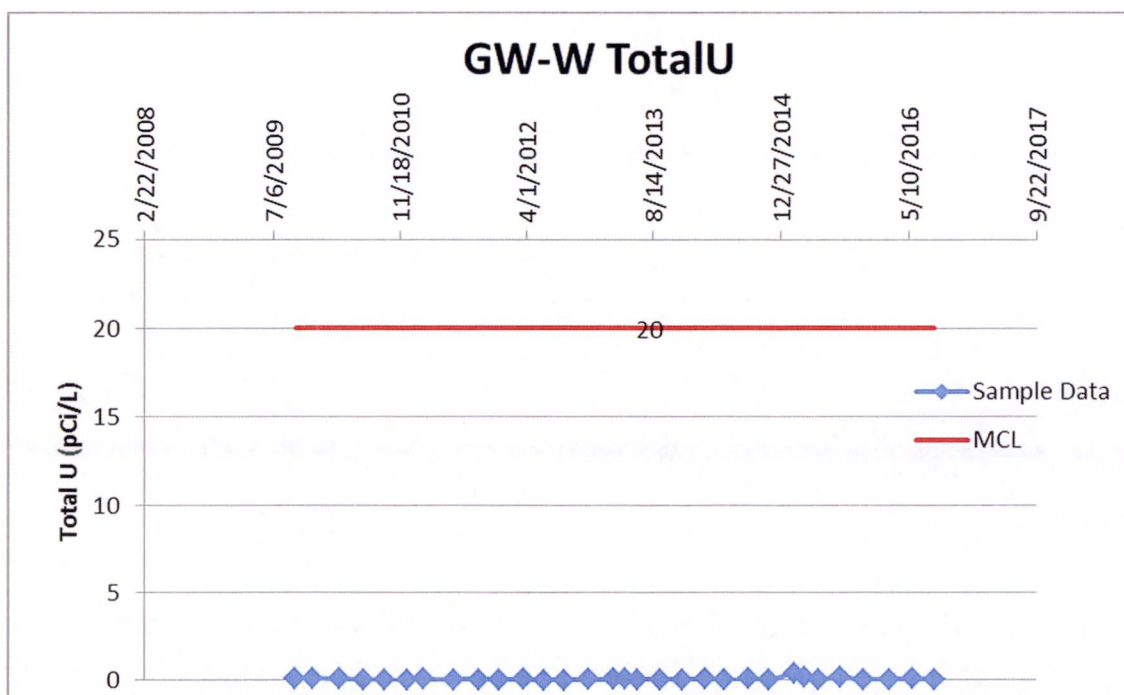
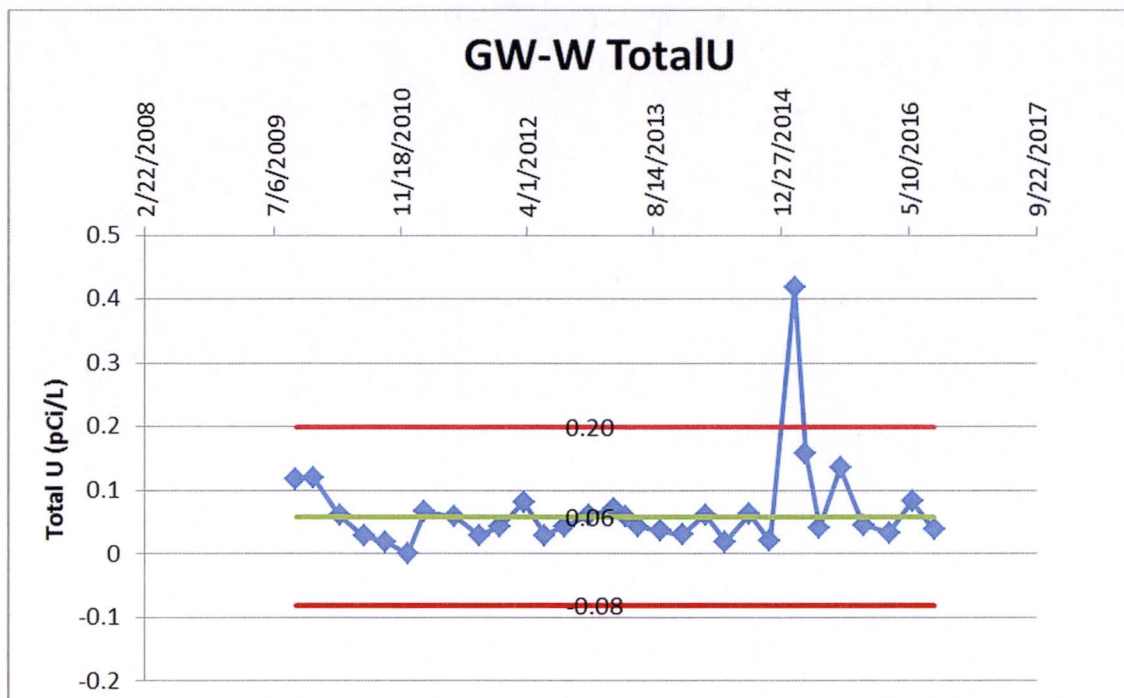
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



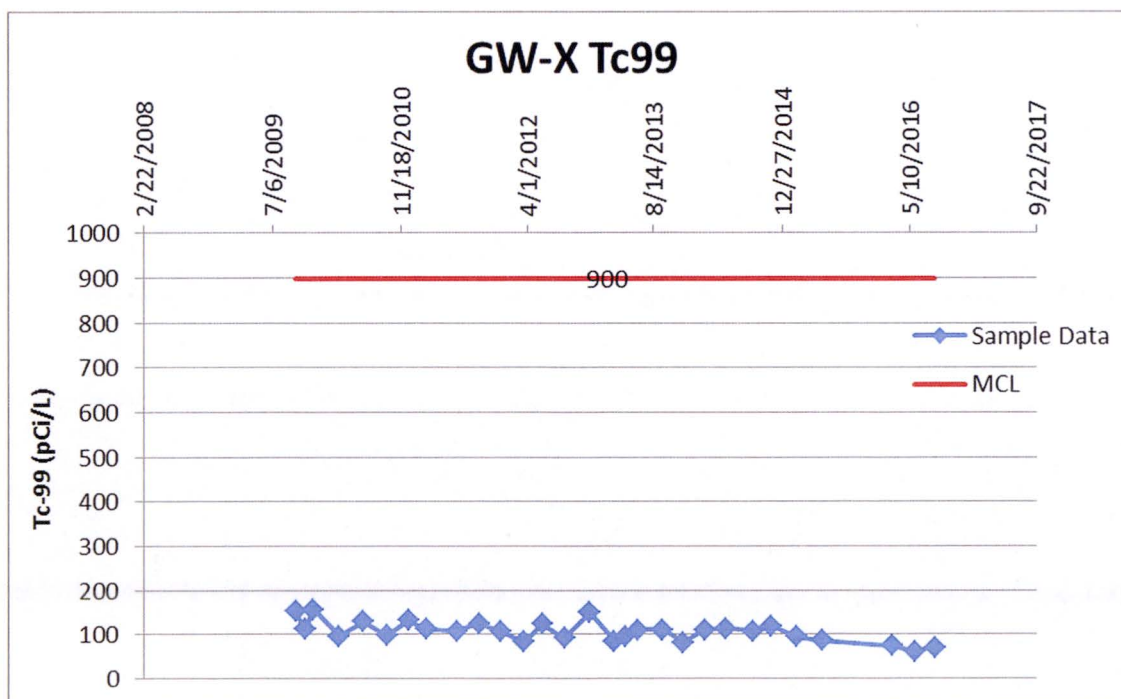
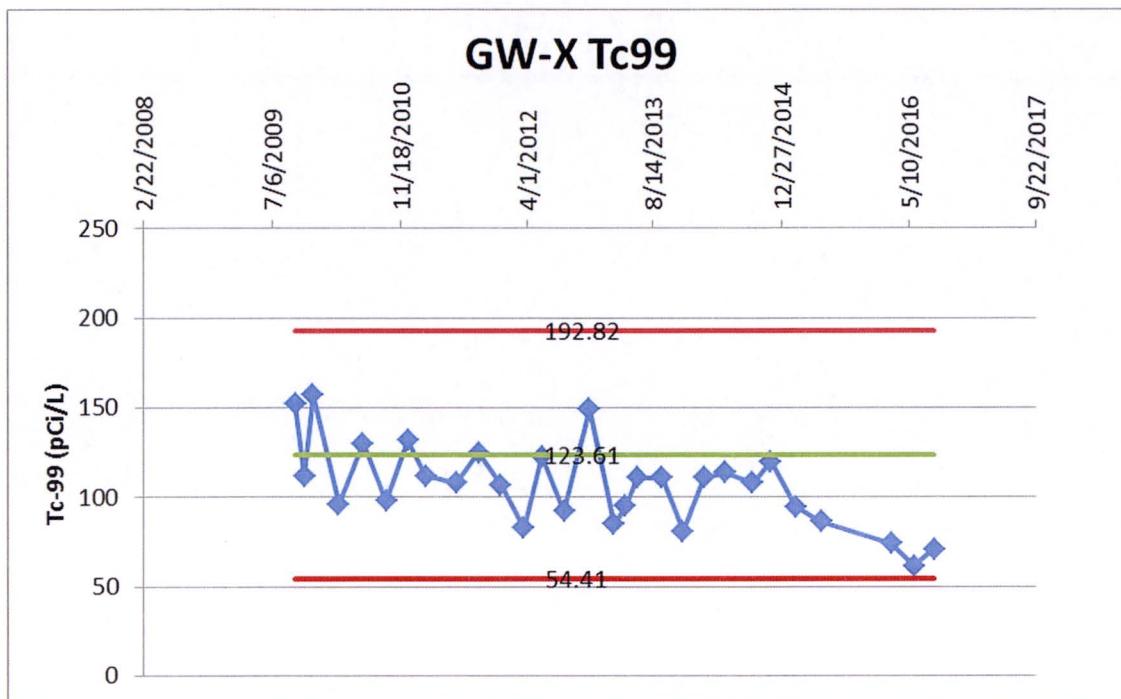
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



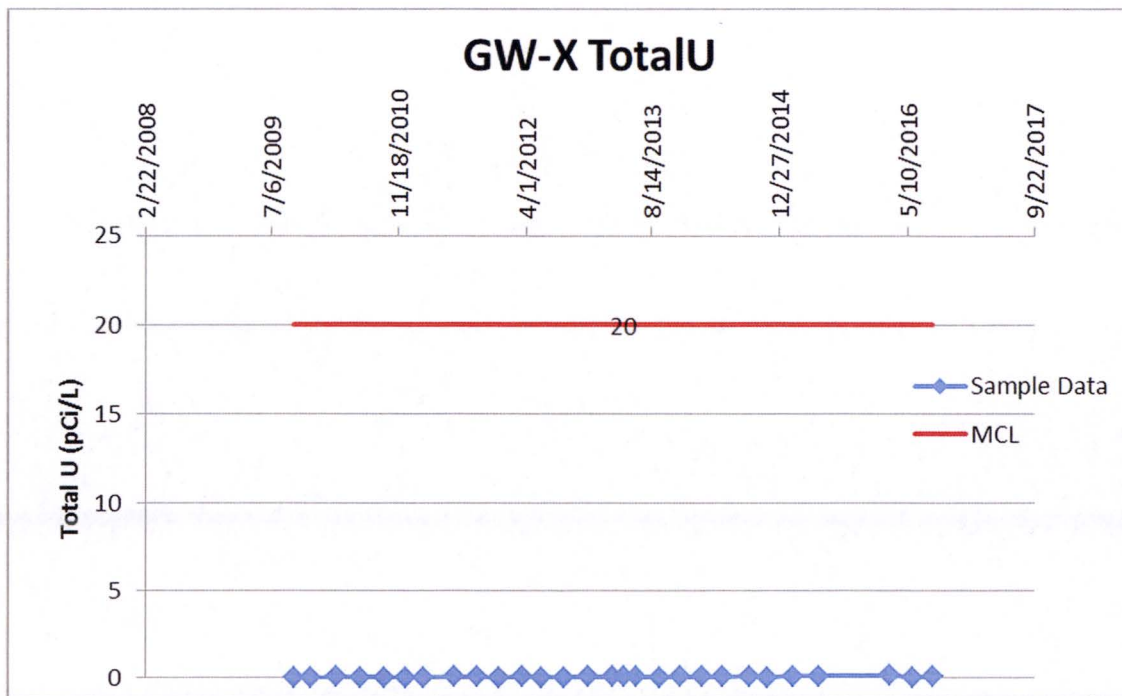
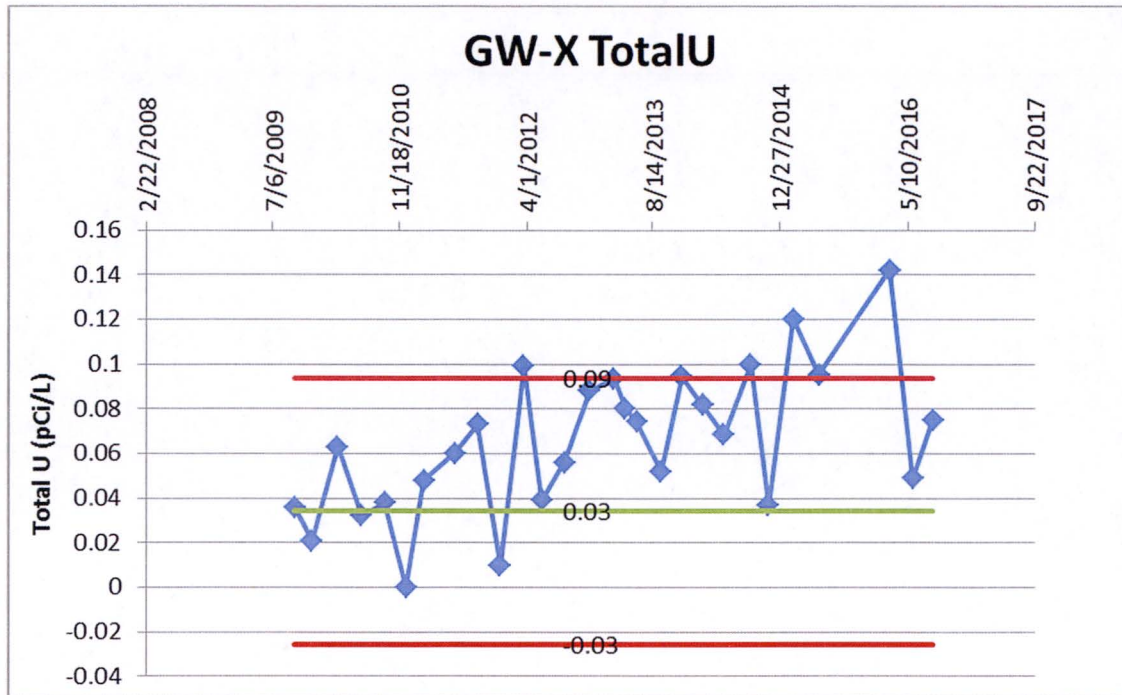
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



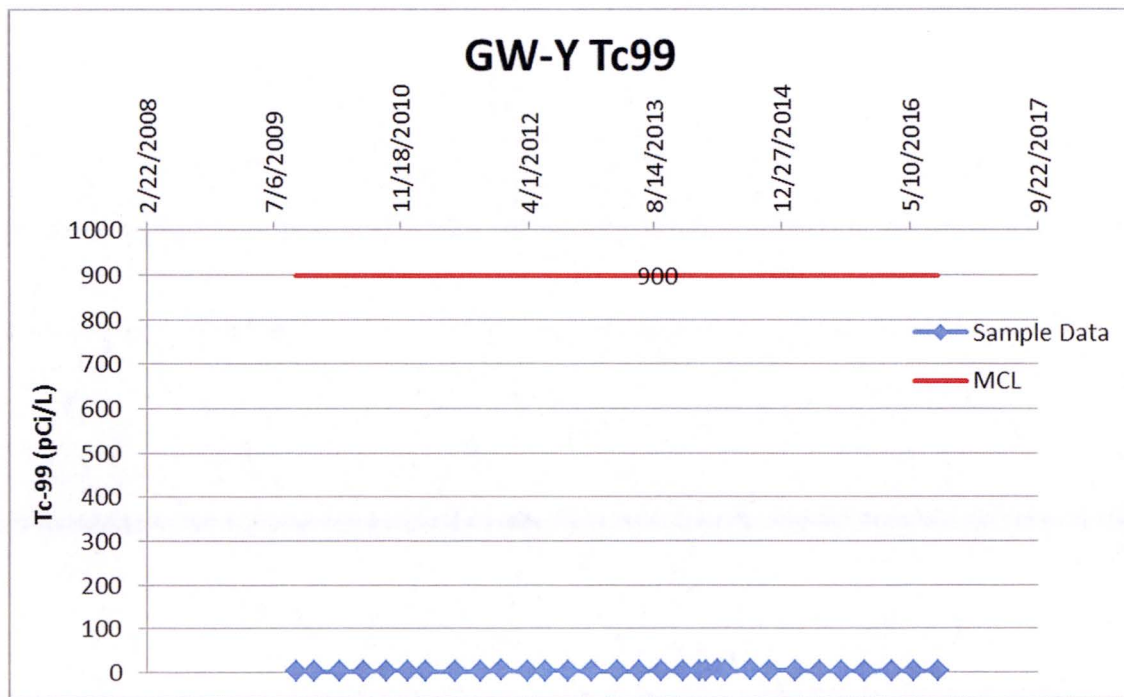
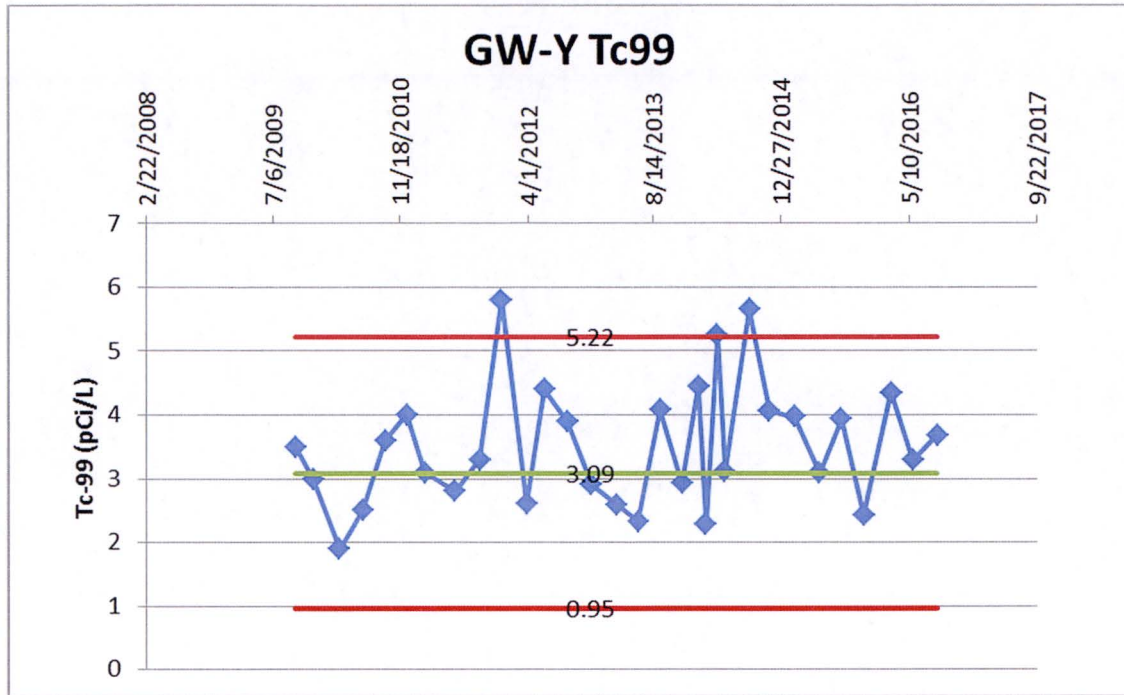
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



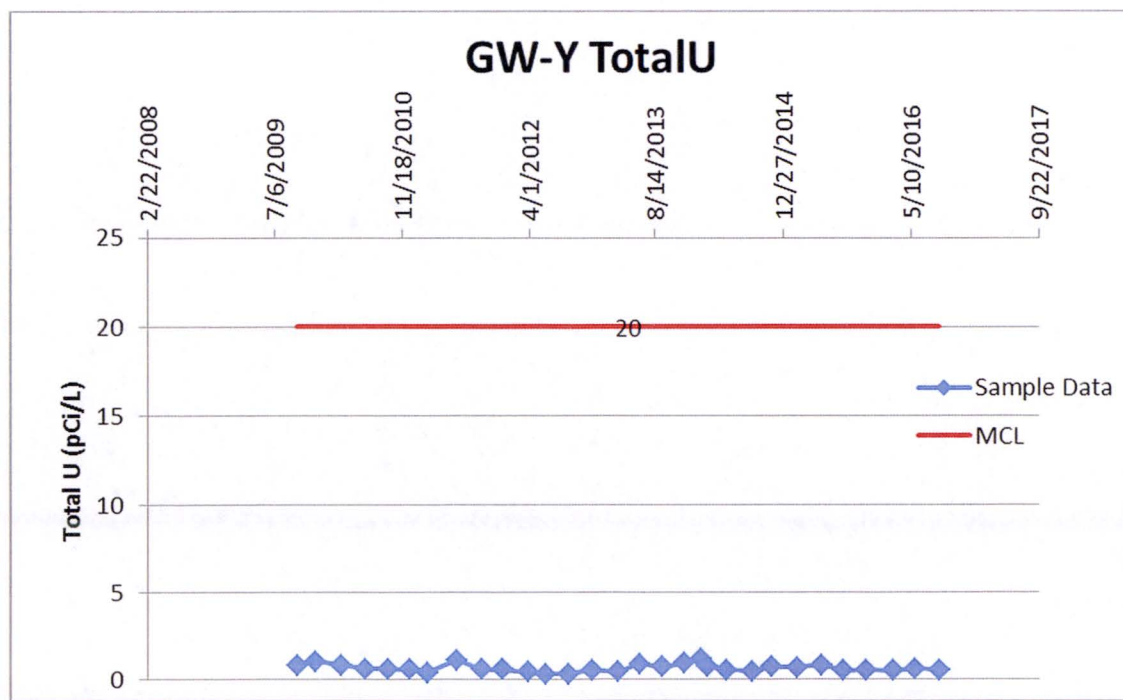
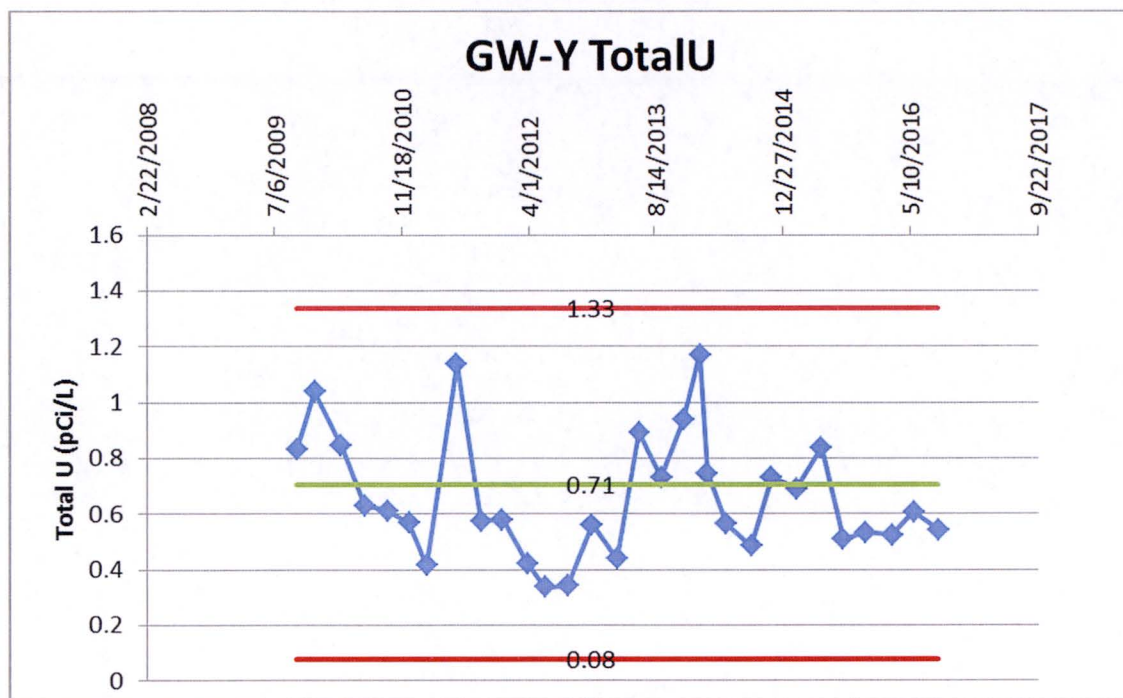
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



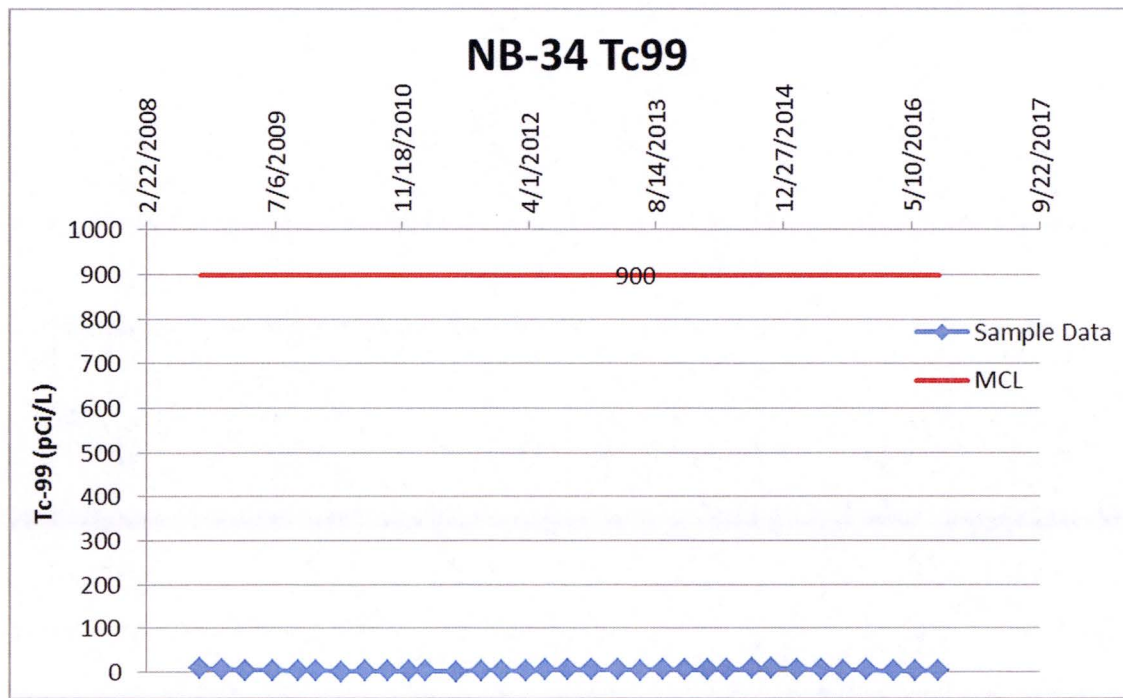
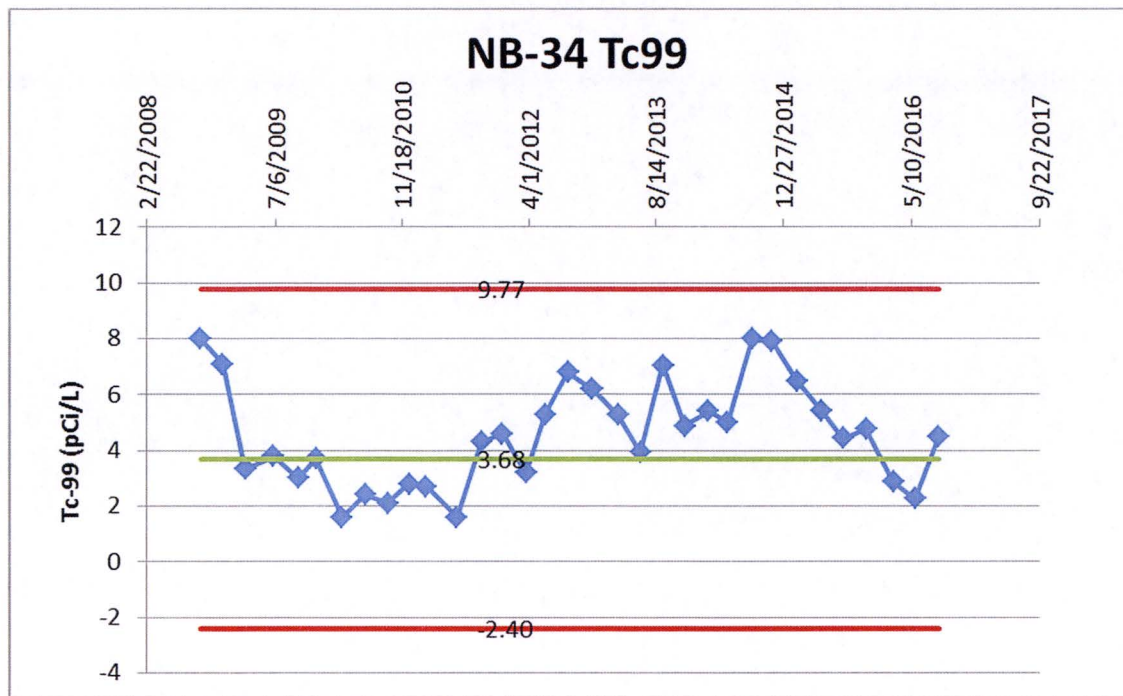
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



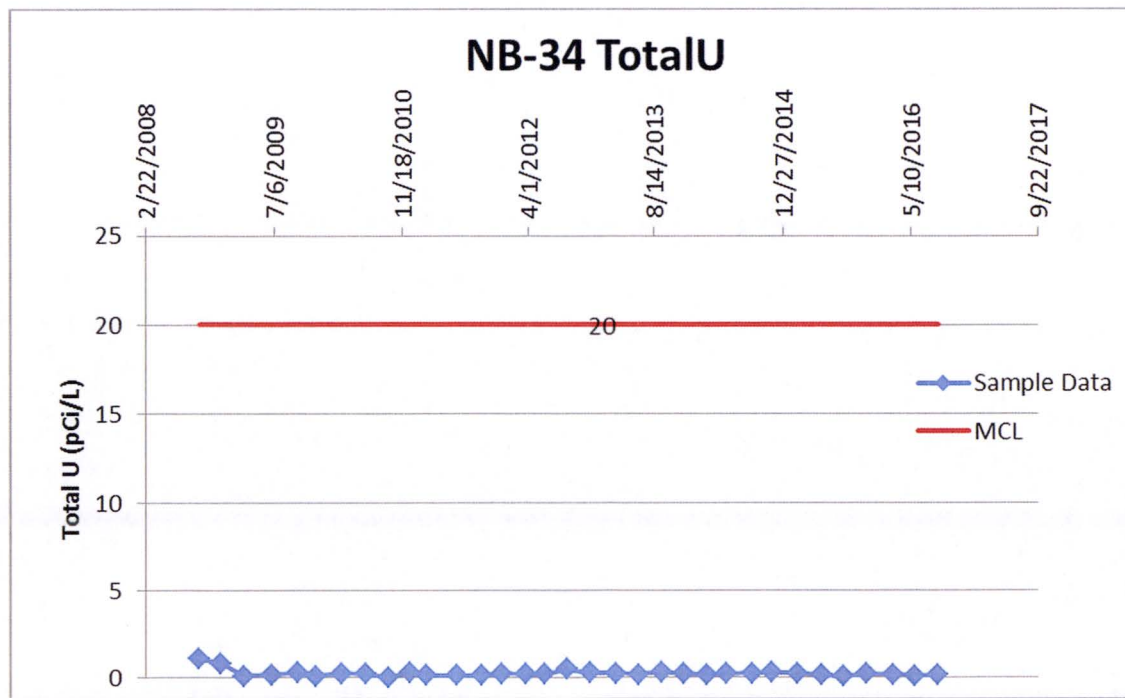
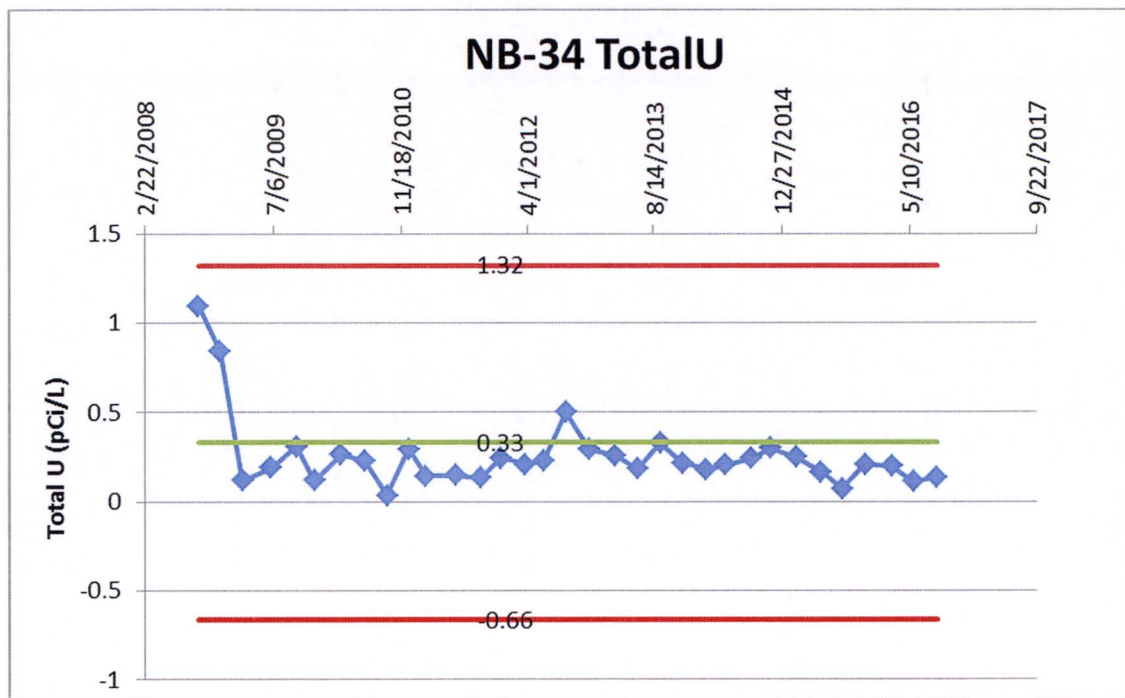
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



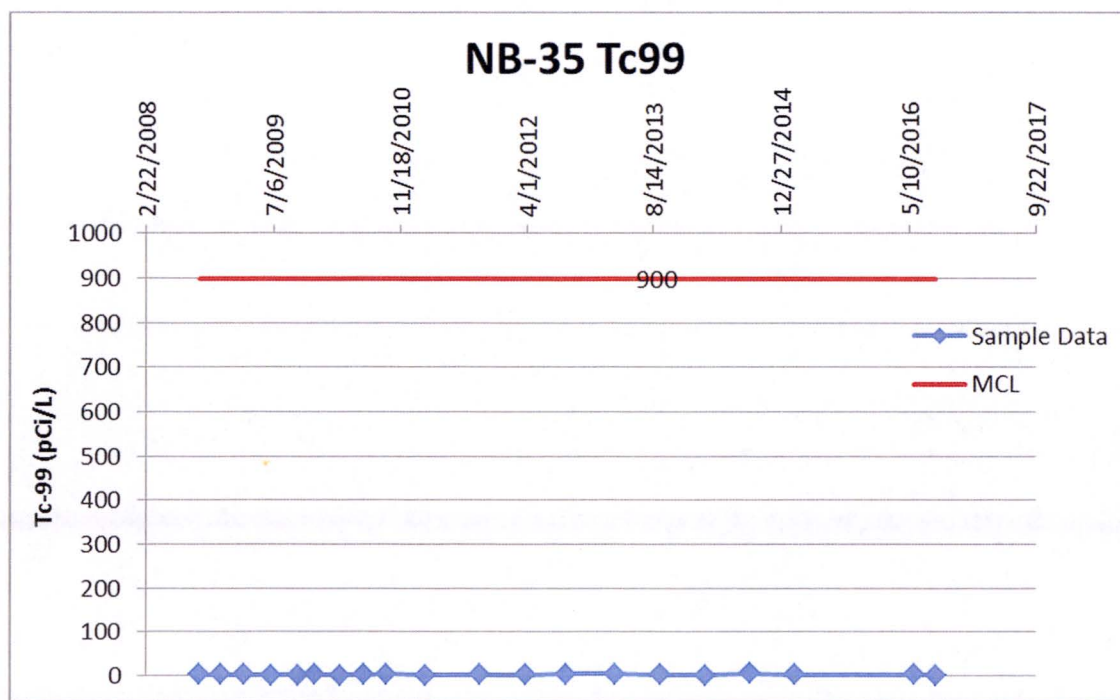
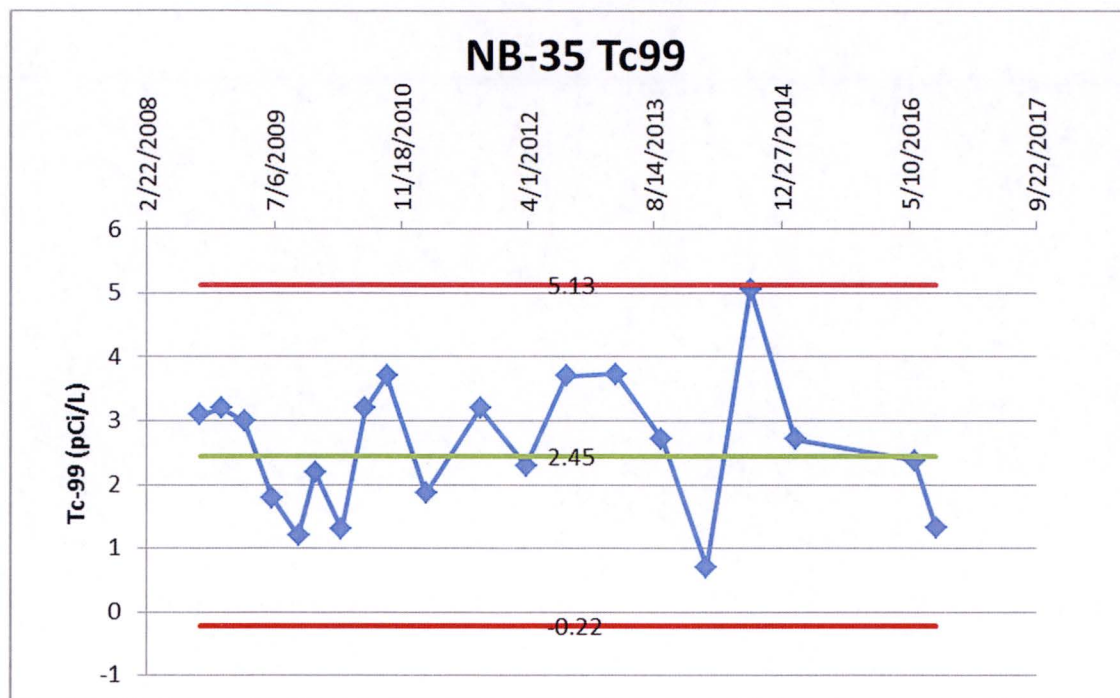
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



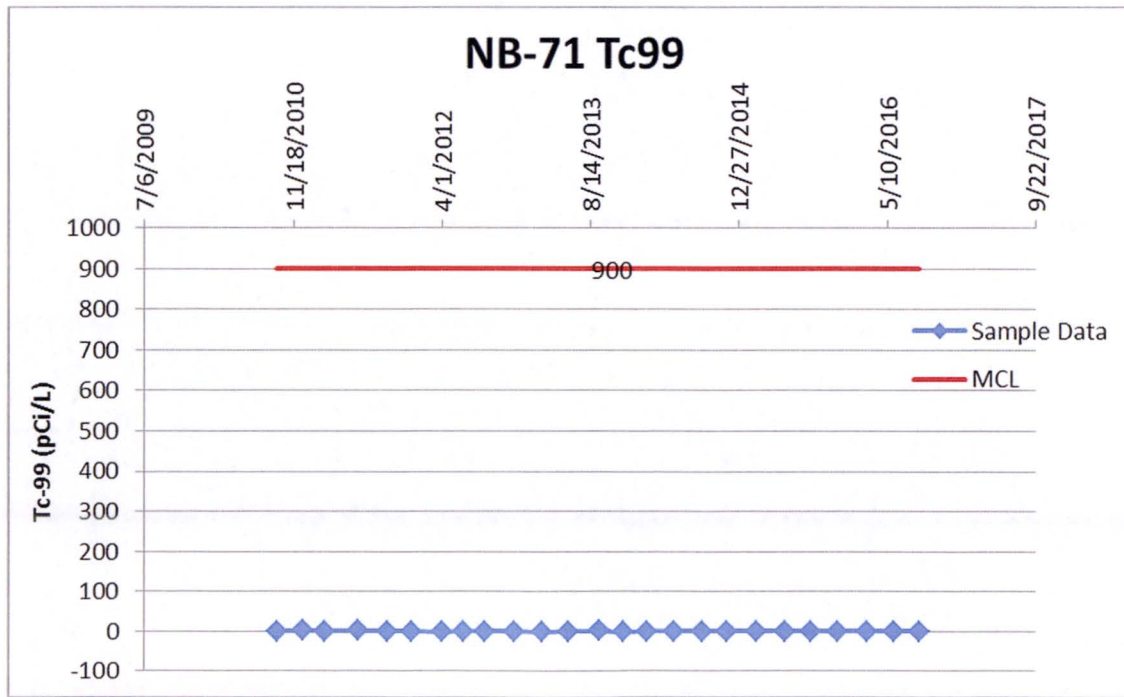
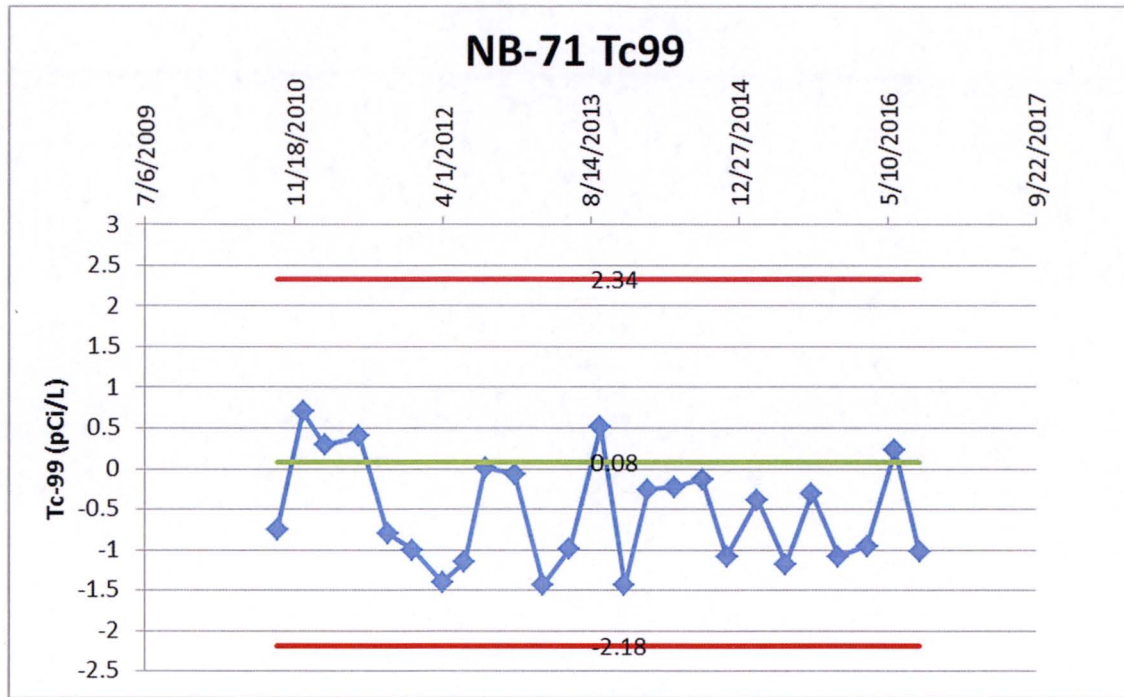
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



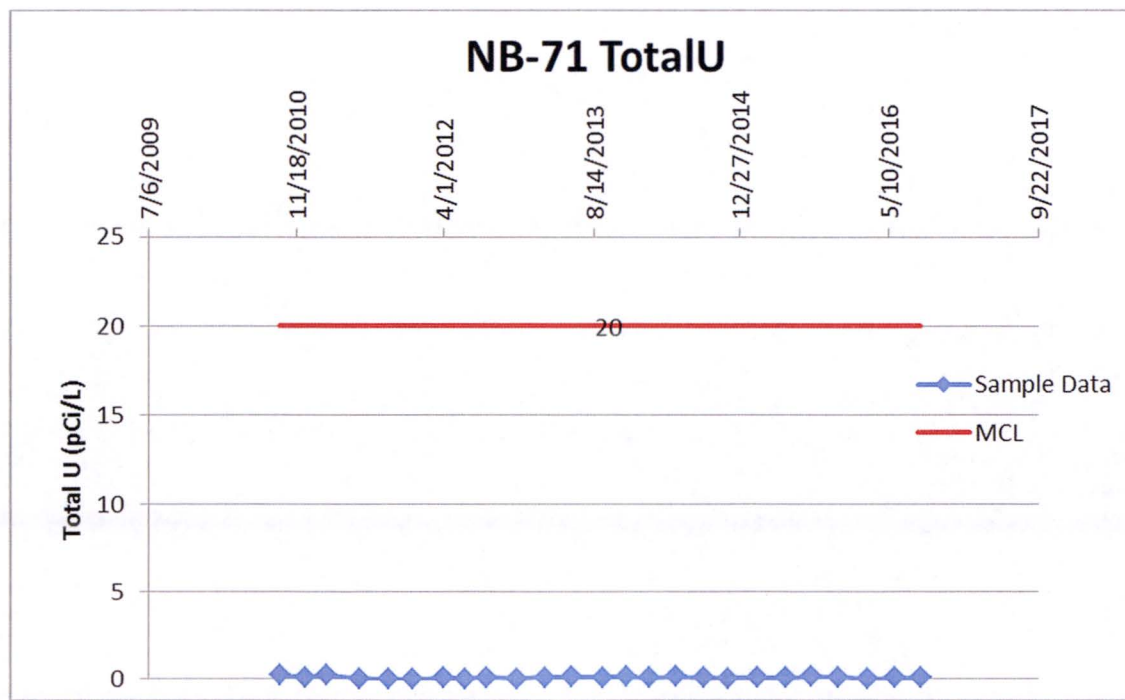
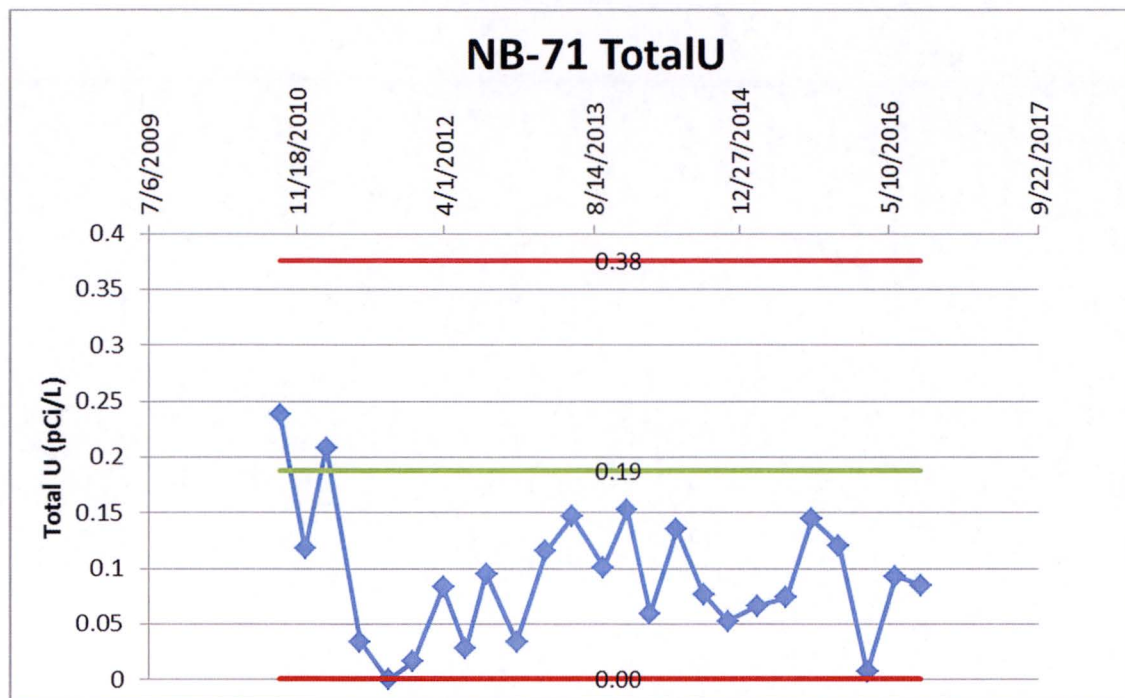
Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



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

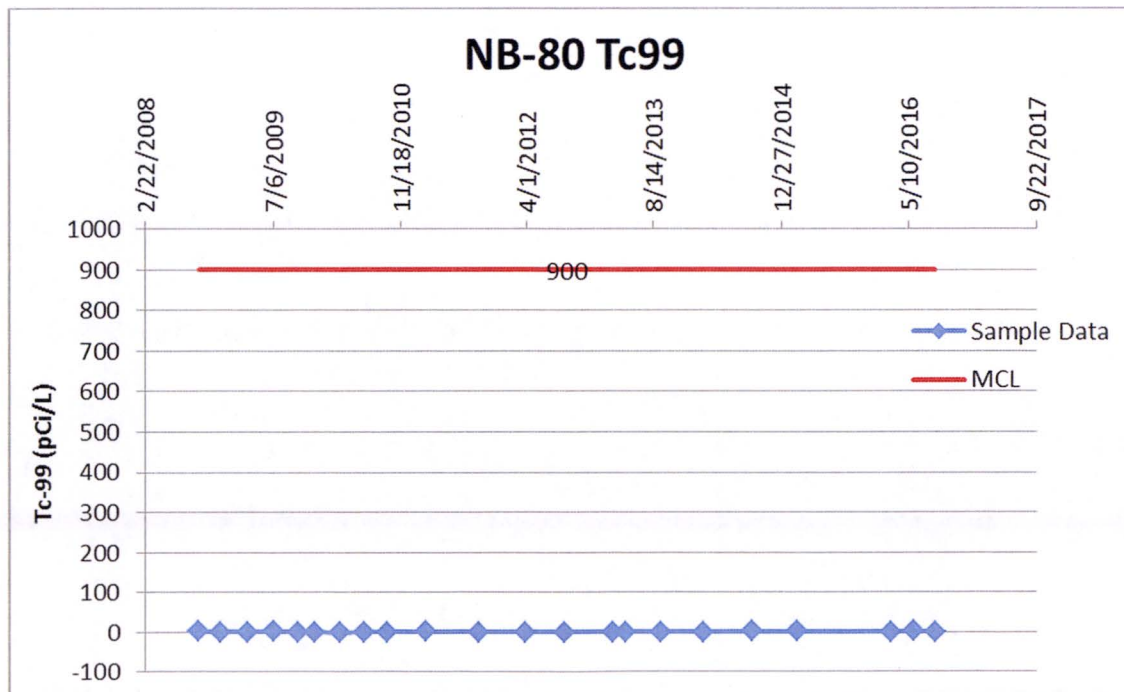
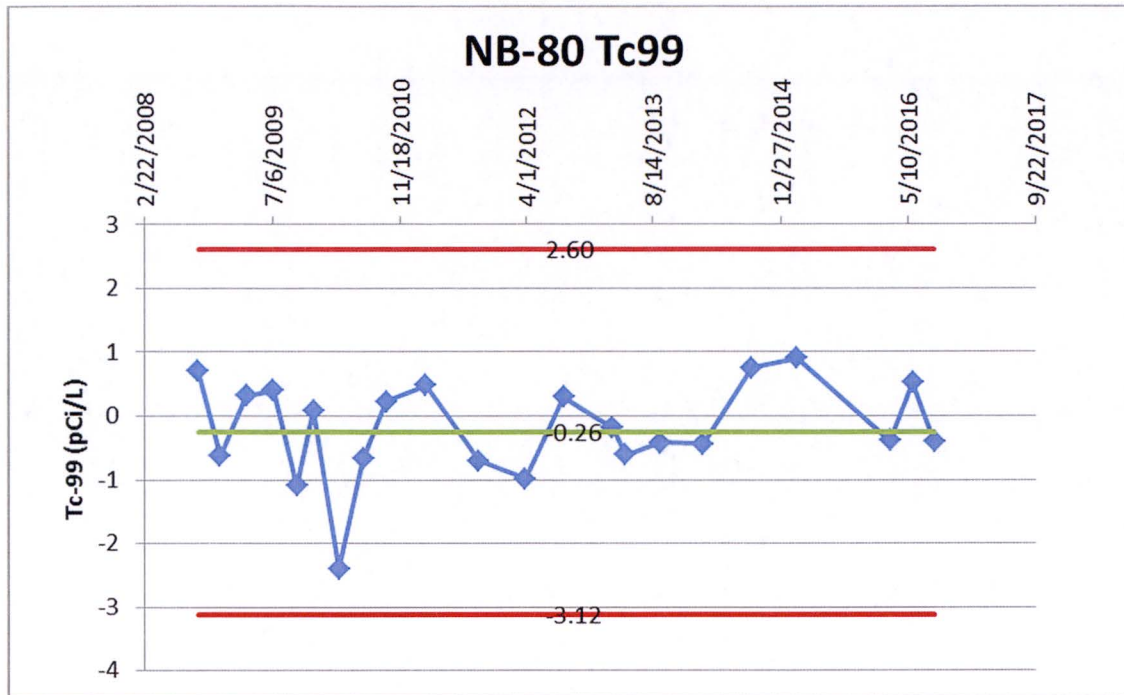


Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU

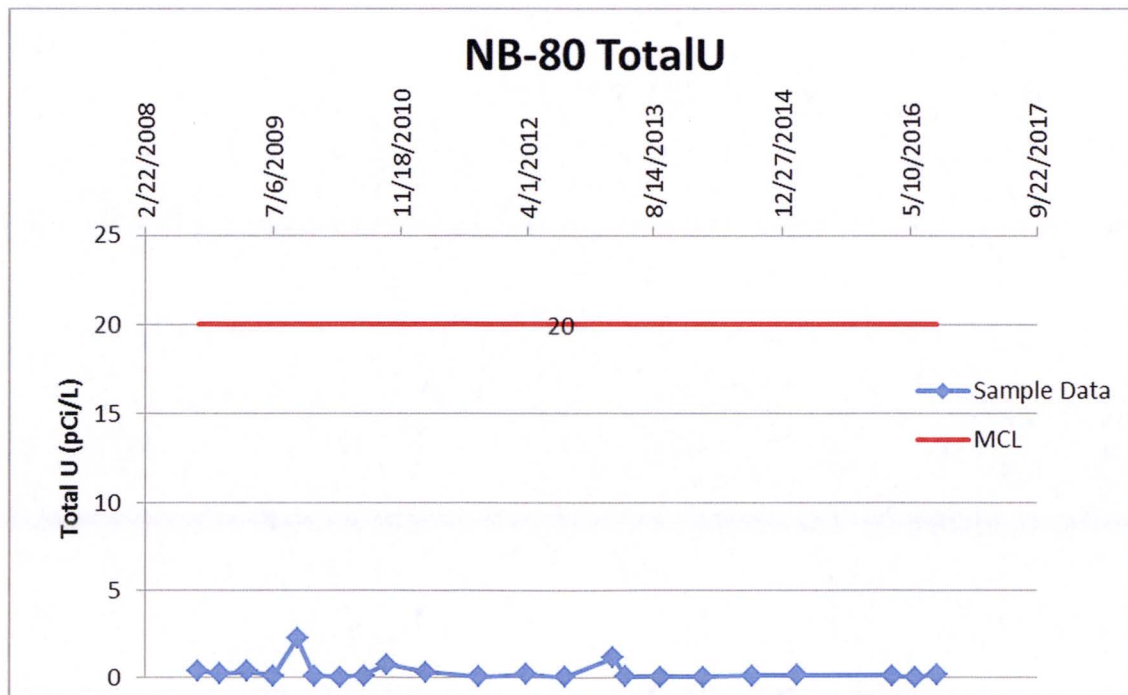
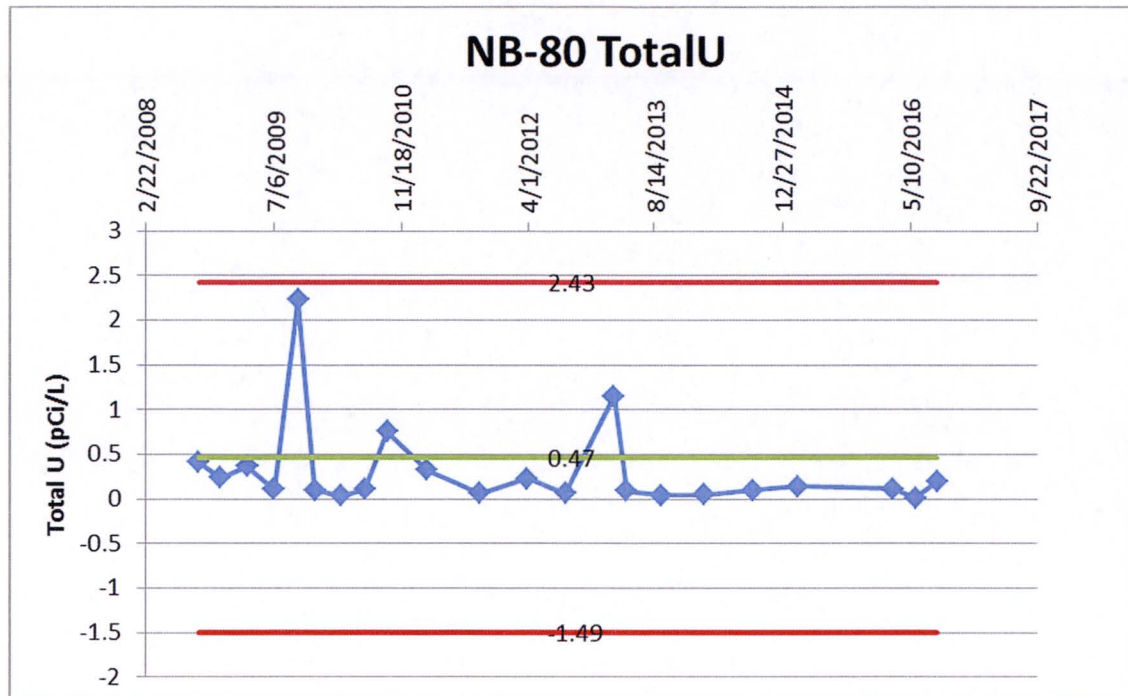


Attachment 2
Mann-Kendall Analysis and Sample Results Graphs

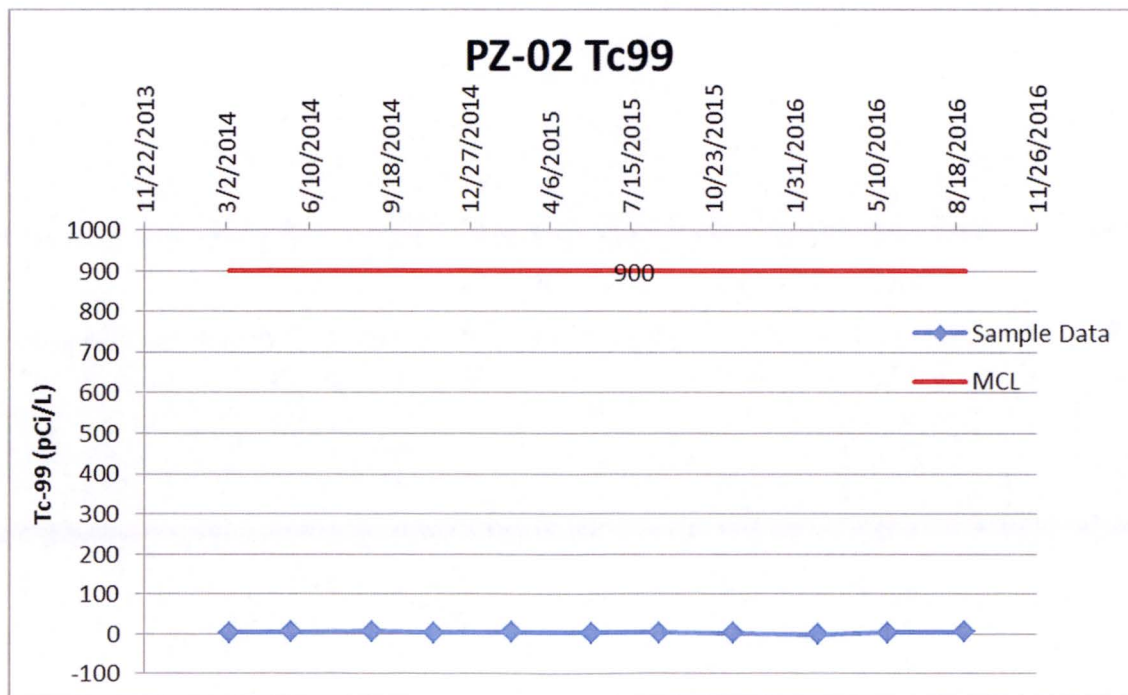
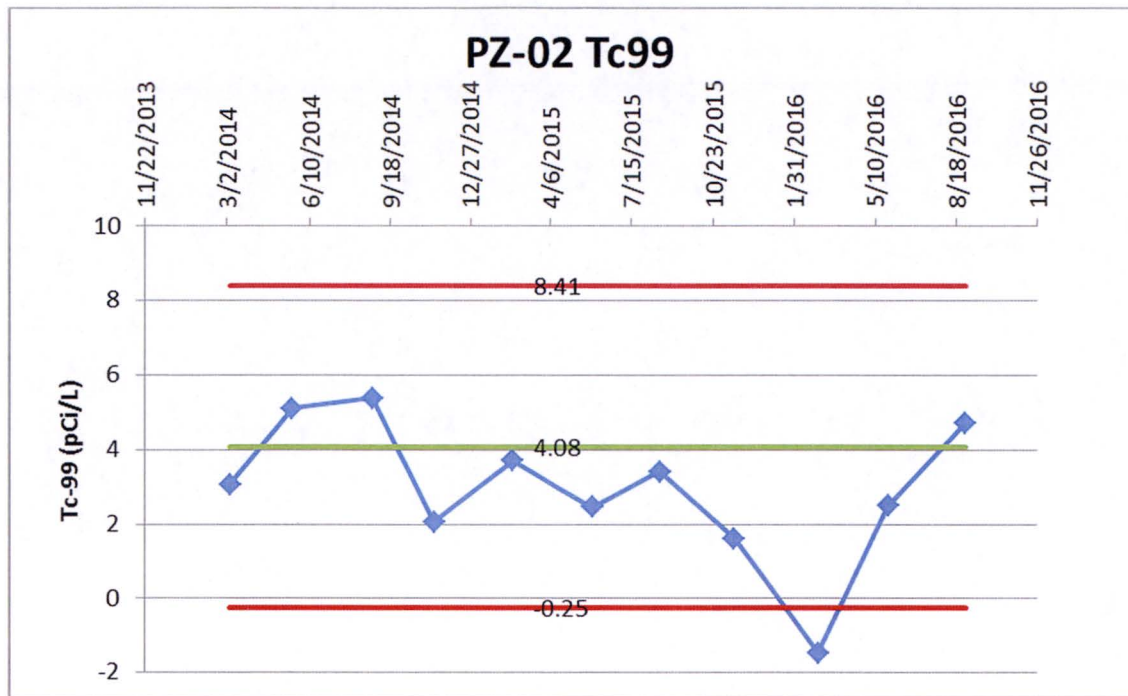
SAND/GRAVEL HSU



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

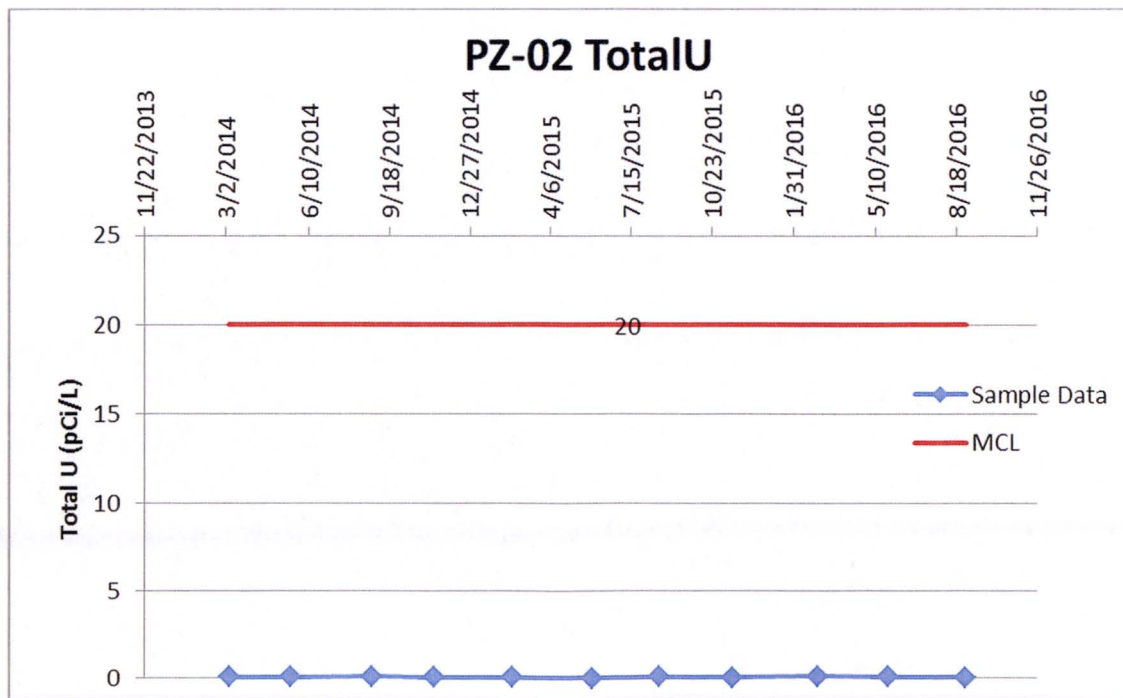
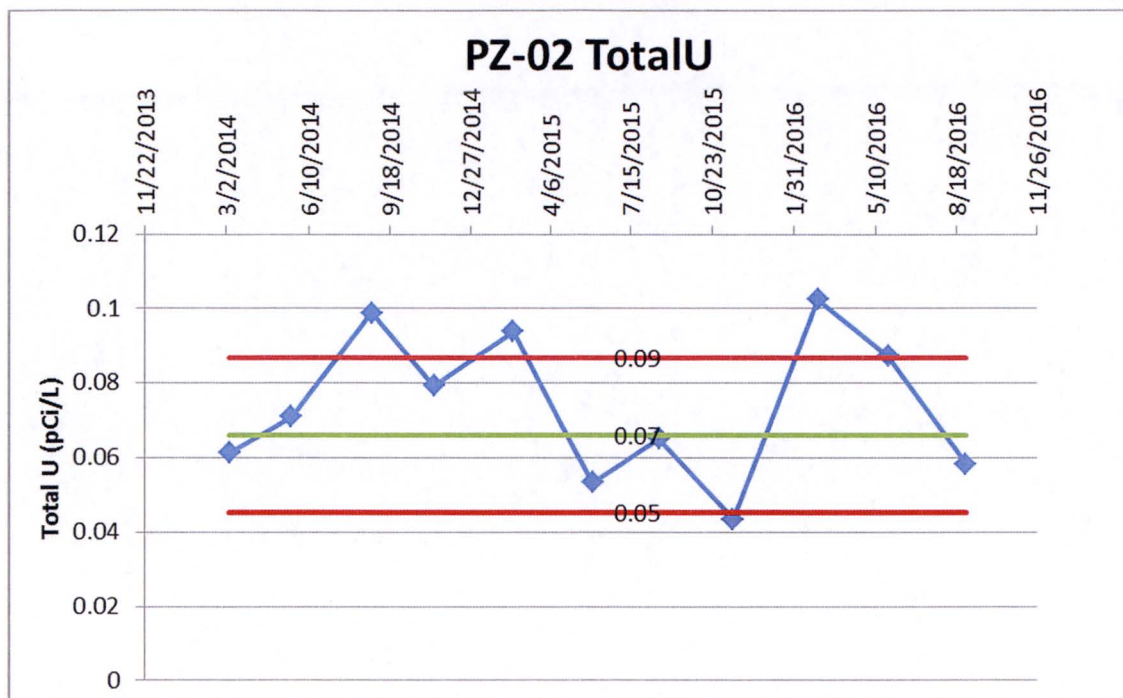


Attachment 2
Mann-Kendall Analysis and Sample Results Graphs
SAND/GRAVEL HSU



Attachment 2
Mann-Kendall Analysis and Sample Results Graphs

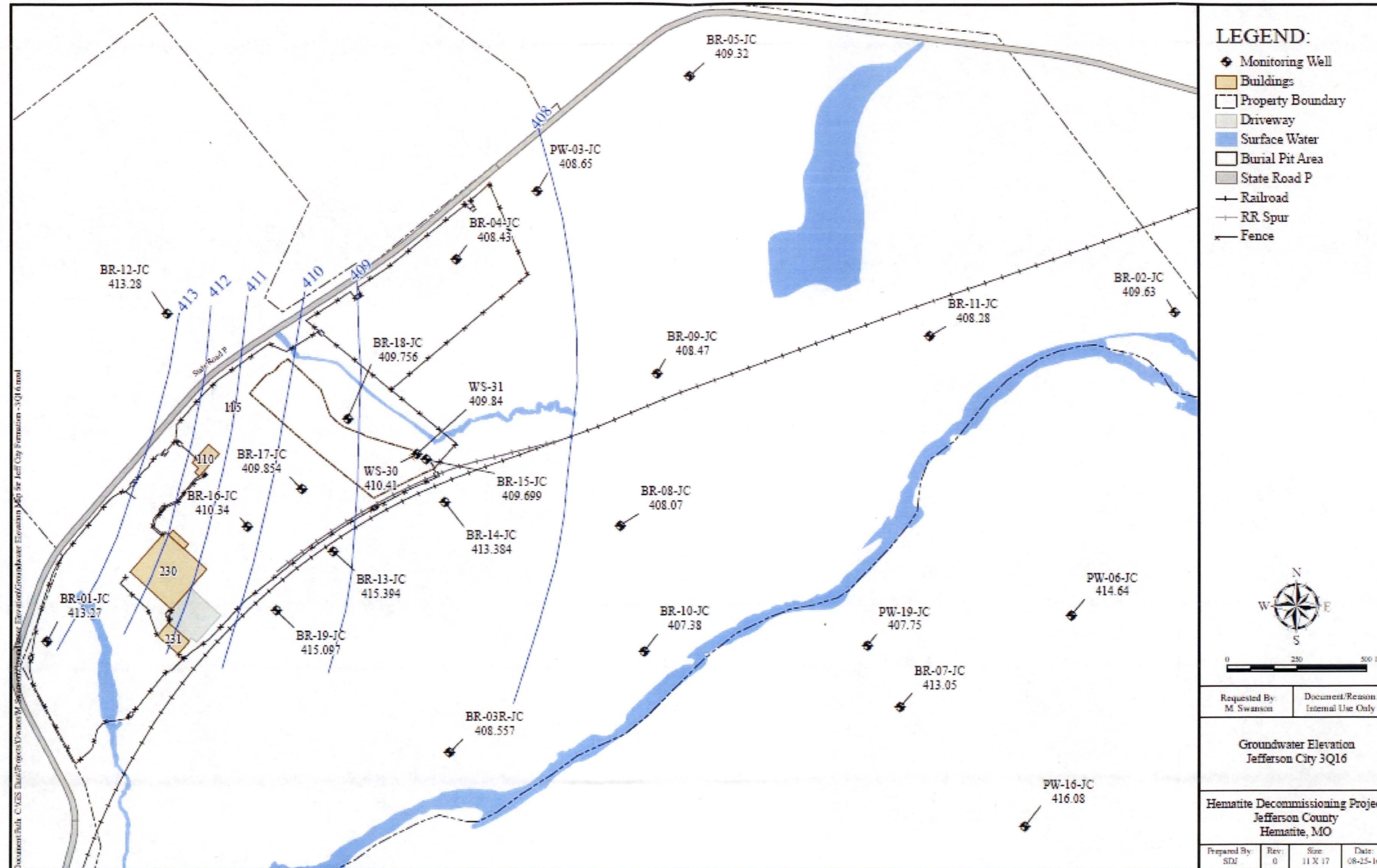
SAND/GRAVEL HSU



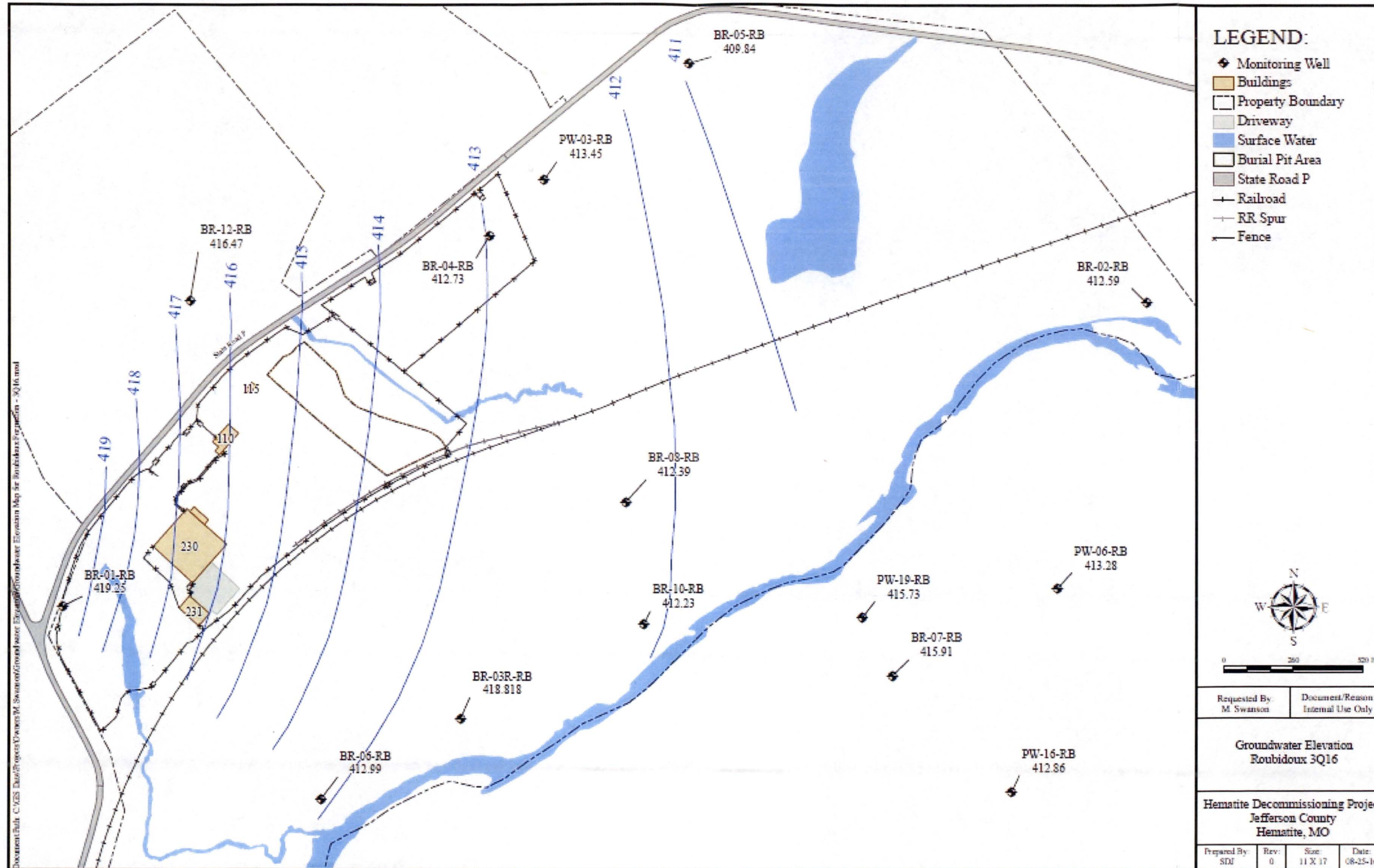
Attachment 3

Quarterly Groundwater Elevation Contour Maps

2nd Quarter Post-remediation Groundwater Elevation Contour Map
JEFFERSON CITY – COTTER HSU



2nd Quarter Post-remediation Groundwater Elevation Contour Map
ROUBIDOUX HSU



2nd Quarter Post-remediation Groundwater Elevation Contour Map
SAND/GRAVEL HSU

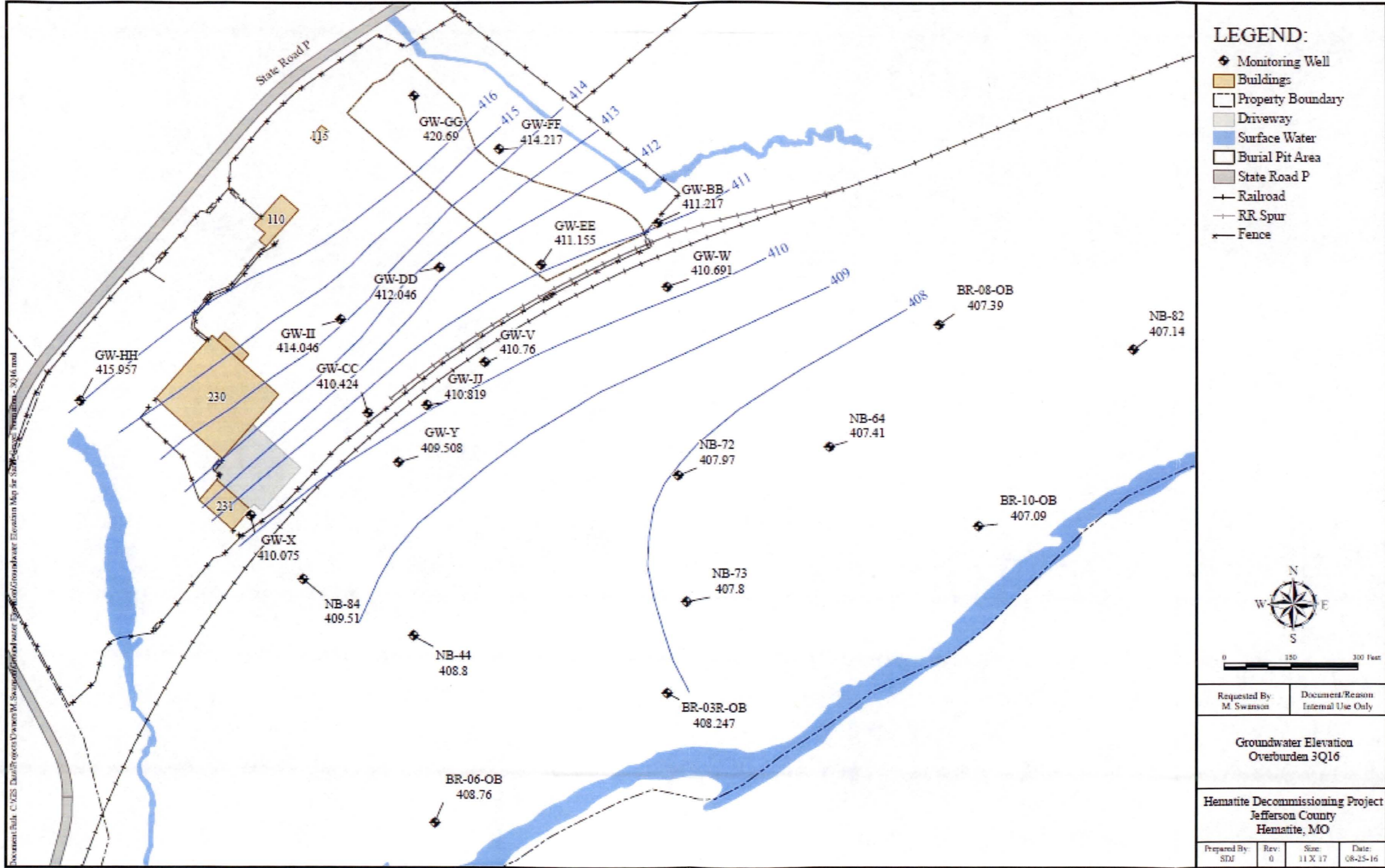


Figure 1-1
Post-remediation Groundwater Monitoring Well Network

