

**Monitoring Report Submittal Transmittal Form**

Attn: Guy Childs (916) 464-4648  
Central Valley Regional Water Quality Control Board  
11020 Sun Center Drive #200  
Rancho Cordova, CA 95670-6114

Discharger: The Morning Star Packing Company, LP and Fred Gobel  
Name of Facility: Williams Facility  
WDRs Order Number: R5-2013-0144  
WDID: 5A062005001  
County: Colusa

I am hereby submitting to the Central Valley Water Board the following information:

**Check all that apply:**

Monthly Monitoring Report for the month of \_\_\_\_\_  
1st / 2nd / 3rd / 4th (**circle one**) Quarterly Monitoring Report for the year of \_\_\_\_\_  
1st / 2nd (**circle one**) Semi-annual Monitoring Report for the year \_\_\_\_\_  
Annual Monitoring Report for the year 2014

**Violation Notification**

During the monitoring period, there were / were not (circle one) any violations of the WDRs.

1. The violations were: *(add extra pages as needed)*

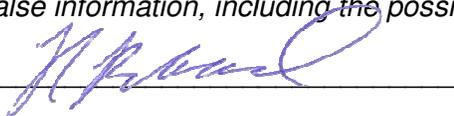
Settling pond was drained by November 1, 2014, however, accumulated sludge and sediment cannot be removed until May/June 2015.

2. Have the violations been corrected? Yes  No  If no, what will be done to correct the violations: *(add extra pages as needed)*

The settling pond will be excavated and applied to LAA in May/June 2015.

**Certification Statement**

*"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."*

Signature:  Phone: (530) 219-6892

Printed Name: Hilary Reinhard, PE Date: January 30, 2015

January 30, 2015

Mr. Guy Childs  
Central Valley Regional Water Quality Control Board  
11020 Sun Center Drive #200  
Rancho Cordova, CA 95670-6114

Subject: Letter Report, Annual Report, Morning Star Packing, Inc.

Dear Mr. Childs:

Enclosed is the annual report prepared in accordance with Order No. R5-2013-0144.

**The following items were requested in the Annual Monitoring Report in Monitoring and Reporting Program R5-2013-0144:**

1. *A description of the following work conducted after the end of the processing season:*
  - a. *Irrigation/tailwater ditch draining procedures prior to the release of storm water runoff from the LAAs;*

At this time, no storm water has been allowed to leave the LAA. At the end of the season, washwater in the irrigation system head ditches was pumped out with a portable pump onto the LAA. Tailwater was pumped out of the tailwater collection system ditches using the in-place lift pumps and was applied to the LAA.

- b. *Depth of total precipitation between dates of last discharge and first off-site release of storm water runoff from the LAAs;*

No storm water has been released from the facility at this time.

- c. *Draining and cleaning of the Settling Pond, including the disposal method and location of the off-site and/or onsite disposal.*

The settling pond was cleaned between June 3<sup>rd</sup> and June 12<sup>th</sup> of 2014. Settling pond soil was spread on MS5, MS6, MS15, MS16 and MS21. No soil was disposed of off-site.



*4. Total hydraulic loading rate and total nitrogen loading rate applied to each LAA field for the calendar year with supporting data and calculations and comparison to crop evapotranspiration rate and nitrogen demand.*

A summary of the Facility's 2014 hydraulic loading including precipitation, fresh water applied prior to the processing season and washwater with a comparison to crop evapotranspiration is provided in **Attachment A**.

Hydraulic loading for the fields was generally less than the crop water requirements with most fields having no deep percolation. MS1 was not irrigated with washwater this year.

Annual nitrogen loadings are provided in **Attachment B**. All nitrogen loadings were less than crop demands.

*5. A nitrogen mass balance (from all sources for the calendar year with supporting data and calculations. Include descriptions of the types of crops planted and dates of planting and harvest for each crop. For each LAA field used for pasture, include description of the number of grazing cattle, start and finish dates of grazing operations, agricultural practices of the pasture land including types of crops planted and total nitrogen applied and comparison of the loading limits of the WDRs. If the mass balance indicates that nitrogen has been applied in excess of the agronomic rate, include a discussion of any corrective action performed during the year and a detailed plan and schedule for additional corrective actions that will be implemented to ensure future compliance with the land application area specifications of the WDRs.*

A nitrogen mass balance including the types of crops planted and dates of planting and harvest for each crop is provided in **Attachment B**.

No cattle were grazed during 2014.

All fields within the LAA had nitrogen application rates that were under the crop uptake rates.

*6. Concentration vs. time graphs for each monitored constituent using all historic groundwater monitoring data. Each graph shall show the background groundwater concentration range, the trigger concentration specified above (where applicable), and the Groundwater Limitation as horizontal lines at the applicable concentration.*

Concentration vs. time graphs for the groundwater wells are provided in **Attachment C**.

*7. An evaluation of groundwater quality beneath the site and determination of whether any trigger concentrations were exceeded in any compliance well at any time during the*

*calendar year. This shall be determined by comparing the annual average concentration for each well during the calendar year to the corresponding trigger concentration specified above. If any groundwater trigger concentrations were exceeded, including acknowledgement that the technical report described in the Groundwater Concentrations section of this MRP will be submitted in accordance with the specified schedule.*

Table 3. Comparison of Compliance Wells Annual Average with Trigger Concentrations

Constituent	Compliance Well	Trigger Concentration (mg/L)	2014 Average (mg/L)
TDS	MW2	700	480
	MW3	700	535
	MW6	1,200	748
	MW7	1,200	689
	MW8	1,200	920
	MW9	1,200	1,079
Iron	MW2	0.2	0.2
	MW3	0.2	0.2
	MW6	0.2	0.1
	MW7	0.2	0.1
	MW8	0.2	0.2
	MW9	0.2	0.2

No groundwater trigger concentrations were exceeded during 2014.

*8. An evaluation of the groundwater quality beneath the site and the determination of Compliance with Groundwater Limitation E.1 of the WDRs based on statistical analysis for each constituent monitored for each compliance well in accordance with the approved Groundwater Limitations Compliance Assessment Plan. Include all calculations and data input/analysis tables derived from the use of statistical software as applicable.*

The *Groundwater Limitations Compliance Assessment Plan (GLCAP)* was submitted on July 1, 2014. Regional Board comments from this plan have not been received. A statistical analysis performed in accordance with the submitted GLCAP is included as **Attachment D**. The analysis was performed using ProUCL software developed by the Environmental Protection Agency (EPA). All of the compliance wells were in compliance with the exception of manganese in MW7 and MW8. When samples obtained during the past two years were compared with the historical results, the average was found to be higher. Due to the limited sample size of the current data, this could be an anomaly. Further test results will be analyzed and reviewed in conjunction with the required workplan to determine if further action is required.

*9. A discussion of compliance and corrective actions taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements.*

During 2014, the facility began collecting flow information on the GCID and well water applied to establish crops during the spring off-season. This information was submitted in monthly reports to the Regional Board.

Additionally, MS24 was divided into four smaller fields prior to the start of the processing season. MS18 and MS20 were also split into two additional fields. This allows better irrigation efficiencies and will help to spread the washwater over the cropped area more evenly.

The WDRs require the following:

*At the end of each processing season and no later than **15 November** each year, the Settling Pond shall be drained and accumulated sludge and sediments shall be removed.*

The settling pond was drained by November 1<sup>st</sup>. The accumulated sediment cannot be removed until May/June in order to allow the solids to dry out and allow handling. The 2013 settling pond solids were removed between June 3<sup>rd</sup> and June 12<sup>th</sup>, 2014.

*10. A discussion of the following:*

- a. Waste constituent reduction efforts implemented in accordance with any required workplan;*

At this point, no required workplans have been submitted.

- b. Other treatment control measures implemented during the calendar year either voluntarily or pursuant to the WDRs, this MRP, or any other Order;*

While the Facility continues to investigate methods of reducing wastes, no specific projects were performed during the 2014 season.

- c. Based on monitoring data, an evaluation of the effectiveness of the treatment or control measures implemented to date.*

During the 2014 season, the irrigation scheduling and field layout was modified to help more evenly distribute the washwater to the LAA.

The Facility is continuing to investigate methods of increasing the irrigation efficiency of the LAA and will implement more changes as warranted.

*11. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program.*

The MRP requires that the monthly monitoring reports include the planting, anticipated harvest and actual harvest dates. Submitting this information monthly is redundant. Submitting the planting and harvest dates in the annual report reduces this redundancy and reduces paperwork while still providing the information.

Respectfully,

Hilary A. Reinhard, P.E.



Monthly Hydraulic Loading for 2014						
Reclamation Area	Crop	Month	Etc <sup>1</sup> (in)	Hydraulic Loading (in)	Deep Percolation (in)	
MS 1	Rice	NA				
MS 2	Oats	January	2.54	0.02	-2.52	
		February	2.01	5.61	3.60	
		March	4.06	1.77	-2.29	
		April	3.49	0.51	-2.98	
		May	0.31	0.04	-0.27	
		Sudan Grass	June	3.57	3.87	0.30
		July	5.96	0.00	-5.96	
		August	7.04	6.59	-0.45	
		September	4.96	3.16	-1.80	
		October	4.08	2.08	-2.00	
	<b>Total</b>		<b>38.02</b>	<b>23.65</b>	<b>-14.37</b>	
MS 3	Oats	January	2.54	0.02	-2.52	
		February	2.01	6.05	4.04	
		March	4.06	1.77	-2.29	
		April	3.49	0.51	-2.98	
		May	0.31	0.04	-0.27	
		Sudan Grass	June	3.57	10.59	7.02
		July	5.96	0.00	-5.96	
		August	7.04	5.53	-1.51	
		September	4.96	3.77	-1.19	
		October	4.08	1.73	-2.35	
	<b>Total</b>		<b>38.02</b>	<b>30.01</b>	<b>-8.01</b>	
MS 5	Pasture	January	2.32	0.02	-2.30	
		February	1.84	3.43	1.59	
		March	3.73	1.77	-1.96	
		April	5.52	0.51	-5.01	
		May	7.73	0.04	-7.69	
		June	0.00	0.00	0.00	
		Sudan Grass	July	4.08	11.00	6.92
		August	6.52	3.97	-2.55	
		September	4.74	5.02	0.28	
		October	4.09	0.24	-3.85	
	<b>Total</b>		<b>40.57</b>	<b>26.01</b>	<b>-14.56</b>	
MS 6	Oats	January	2.54	0.02	-2.52	
		February	2.01	3.43	1.42	
		March	4.06	1.77	-2.29	
		April	3.49	0.51	-2.98	
		May	0.31	0.04	-0.27	
		June	0.00	0.00	0.00	
		July	4.08	1.38	-2.70	
		August	6.52	6.31	-0.21	
		September	4.74	9.30	4.56	
		October	4.09	1.39	-2.70	
	<b>Total</b>		<b>31.84</b>	<b>24.16</b>	<b>-7.68</b>	

Monthly Hydraulic Loading for 2014					
Reclamation Area	Crop	Month	Etc <sup>1</sup> (in)	Hydraulic Loading (in)	Deep Percolation (in)
MS 11	Wheat Grass	January	2.54	0.02	-2.52
		February	2.01	3.43	1.42
		March	4.08	5.90	1.82
		April	4.19	0.51	-3.68
		May	0.33	0.04	-0.29
	Sudan Grass	June	0.91	6.23	5.32
		July	4.54	8.31	3.77
		August	6.41	2.96	-3.45
		September	5.30	8.82	3.52
		October	4.09	3.37	-0.72
	<b>Total</b>		<b>34.40</b>	<b>39.60</b>	<b>5.20</b>
MS 14	Rye Grass	January	2.54	5.42	2.88
		February	2.01	5.55	3.54
		March	4.08	1.77	-2.31
		April	4.19	0.51	-3.68
		May	0.33	0.04	-0.29
		June	3.22	0.00	-3.22
		July	7.87	2.32	-5.55
		August	6.46	4.82	-1.64
		September	5.13	2.01	-3.12
		October	3.56	1.01	-2.55
	<b>Total</b>		<b>39.39</b>	<b>23.45</b>	<b>-15.94</b>
MS 15	Pasture	January	2.32	0.02	-2.30
		February	1.84	3.43	1.59
		March	3.73	1.77	-1.96
		April	5.52	0.51	-5.01
		May	7.73	0.04	-7.69
	Sudan Grass	June	0.15	0.00	-0.15
		July	4.13	9.66	5.53
		August	6.49	3.34	-3.15
		September	4.71	7.54	2.83
		October	4.09	1.53	-2.56
	<b>Total</b>		<b>40.71</b>	<b>27.84</b>	<b>-12.87</b>
MS 16	Oats	January	2.54	0.02	-2.52
		February	2.01	3.43	1.42
		March	4.06	1.77	-2.29
		April	3.49	0.51	-2.98
		May	0.31	0.04	-0.27
	Sudan Grass	June	0.00	0.00	0.00
		July	4.08	7.69	3.61
		August	6.52	4.07	-2.45
		September	4.74	3.84	-0.90
		October	4.09	2.26	-1.83
	<b>Total</b>		<b>31.84</b>	<b>23.64</b>	<b>-8.20</b>

Monthly Hydraulic Loading for 2014					
Reclamation Area	Crop	Month	Etc <sup>1</sup> (in)	Hydraulic Loading (in)	Deep Percolation (in)
MS 18 a	Pasture	January	2.32	0.02	-2.30
		February	1.84	3.43	1.59
		March	3.73	1.77	-1.96
		April	5.52	0.51	-5.01
		May	7.73	0.04	-7.69
	Sudan Grass	June	1.05	5.91	4.86
		July	4.63	6.38	1.75
		August	5.68	1.72	-3.96
		September	5.90	4.60	-1.30
		October	3.67	2.24	-1.43
	<b>Total</b>		<b>42.07</b>	<b>26.63</b>	<b>-15.44</b>
MS 18 b	Pasture	January	2.32	1.84	-0.48
		February	1.84	7.01	5.17
		March	3.73	1.77	-1.96
		April	5.52	0.51	-5.01
		May	7.73	0.04	-7.69
	Sudan Grass	June	1.05	4.64	3.59
		July	4.63	1.61	-3.02
		August	5.68	2.87	-2.81
		September	5.90	3.37	-2.53
		October	3.67	1.93	-1.74
	<b>Total</b>		<b>42.07</b>	<b>25.58</b>	<b>-16.49</b>
MS 20 a	Oats	January	2.54	3.76	1.22
		February	2.01	3.43	1.42
		March	4.06	1.77	-2.29
		April	3.49	0.51	-2.98
		May	0.31	0.04	-0.27
	Sudan Grass	June	2.84	7.45	4.61
		July	6.35	4.97	-1.38
		August	5.97	4.57	-1.40
		September	5.48	3.21	-2.27
		October	3.64	1.50	-2.14
	<b>Total</b>		<b>36.69</b>	<b>31.21</b>	<b>-5.48</b>
MS 20 b	Oats	January	2.54	1.84	-0.70
		February	2.01	7.01	5.00
		March	4.06	1.77	-2.29
		April	3.49	0.51	-2.98
		May	0.31	0.04	-0.27
	Sudan Grass	June	2.84	4.64	1.80
		July	6.35	1.61	-4.74
		August	5.97	2.87	-3.10
		September	5.90	3.37	-2.53
		October	4.04	1.93	-2.11
	<b>Total</b>		<b>37.51</b>	<b>25.58</b>	<b>-11.93</b>

Monthly Hydraulic Loading for 2014					
Reclamation Area	Crop	Month	Etc <sup>1</sup> (in)	Hydraulic Loading (in)	Deep Percolation (in)
MS 21	Wheat Grass	January	2.54	0.02	-2.52
		February	2.01	3.43	1.42
		March	4.08	7.32	3.24
		April	4.19	0.51	-3.68
		May	0.33	0.04	-0.29
	Sudan Grass	June	0.15	0.00	-0.15
		July	4.13	8.43	4.30
		August	6.49	5.13	-1.36
		September	4.71	7.99	3.28
		October	4.09	0.35	-3.74
	<b>Total</b>		<b>32.72</b>	<b>33.23</b>	<b>0.51</b>
MS 24 a	Pasture	January	2.32	0.02	-2.30
		February	1.84	3.43	1.59
		March	3.73	1.77	-1.96
		April	5.52	0.51	-5.01
		May	7.73	0.04	-7.69
	Sudan Grass	June	2.15	7.37	5.22
		July	5.12	3.81	-1.31
		August	6.52	6.34	-0.18
		September	5.90	2.76	-3.14
		October	3.11	5.88	2.77
	<b>Total</b>		<b>43.94</b>	<b>31.94</b>	<b>-12.00</b>
MS 24 b	Pasture	January	2.32	0.02	-2.30
		February	1.84	3.43	1.59
		March	3.73	1.77	-1.96
		April	5.52	0.51	-5.01
		May	7.73	0.04	-7.69
	Sudan Grass	June	2.15	5.22	3.07
		July	5.12	1.16	-3.96
		August	6.52	6.37	-0.15
		September	5.90	4.99	-0.91
		October	3.11	2.01	-1.10
	<b>Total</b>		<b>43.94</b>	<b>25.52</b>	<b>-18.42</b>
MS 24 c	Pasture	January	2.32	0.00	-2.32
		February	1.84	0.00	-1.84
		March	3.73	0.00	-3.73
		April	5.52	0.00	-5.52
		May	7.73	0.00	-7.73
	Sudan Grass	June	2.15	5.38	3.23
		July	5.12	3.09	-2.03
		August	6.52	5.11	-1.41
		September	5.90	2.22	-3.68
		October	3.11	4.58	1.47
	<b>Total</b>		<b>43.94</b>	<b>20.37</b>	<b>-23.57</b>

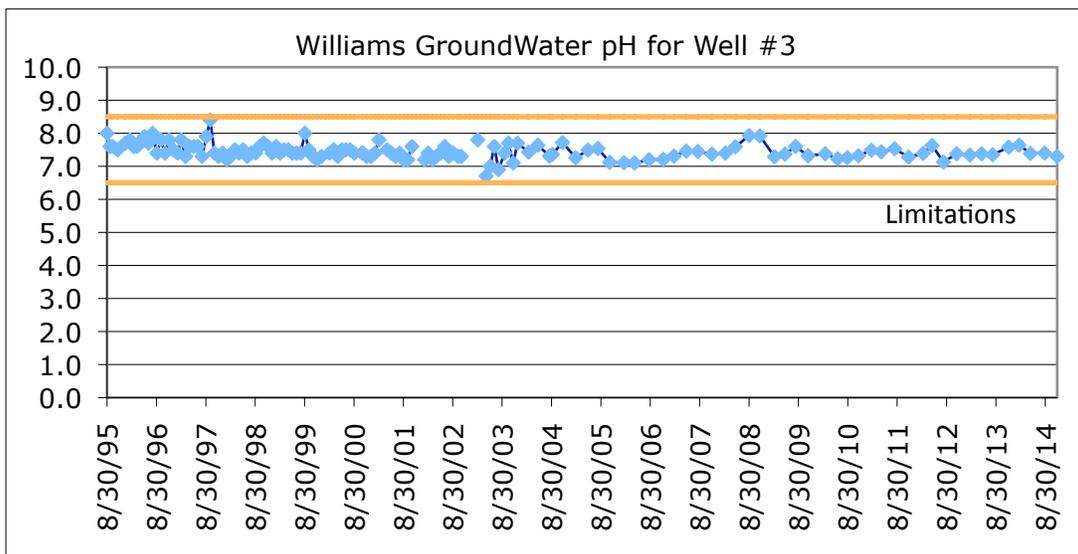
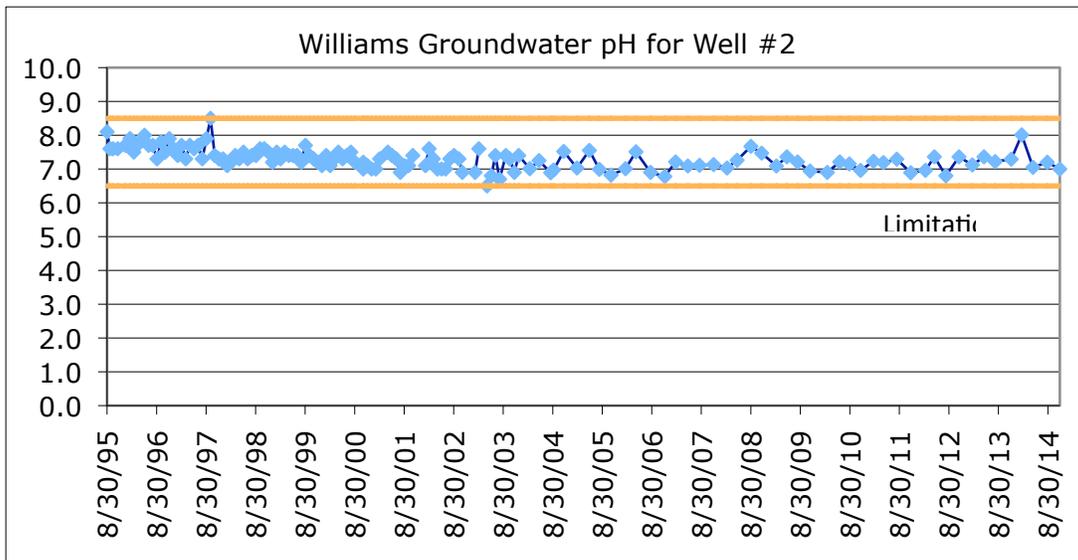
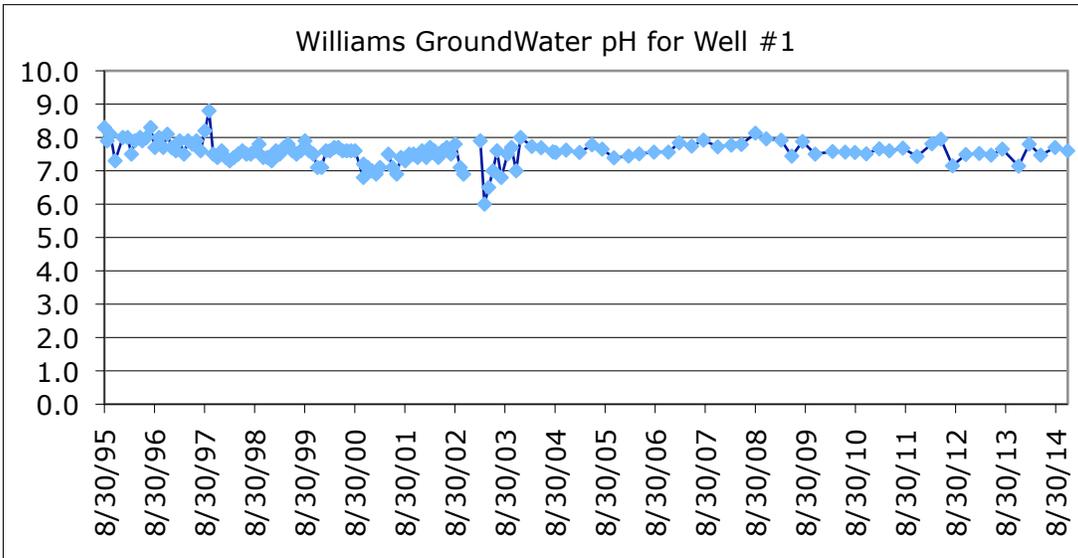
Monthly Hydraulic Loading for 2014					
Reclamation Area	Crop	Month	Etc <sup>1</sup> (in)	Hydraulic Loading (in)	Deep Percolation (in)
MS 24 d	Pasture	January	2.32	0.02	-2.30
		February	1.84	3.43	1.59
		March	3.73	1.77	-1.96
		April	5.52	0.51	-5.01
		May	7.73	0.04	-7.69
	Sudan Grass	June	2.15	5.55	3.40
		July	5.12	1.22	-3.90
		August	6.52	6.59	0.07
		September	5.90	4.96	-0.94
		October	3.11	1.96	-1.15
	<b>Total</b>		<b>43.94</b>	<b>26.05</b>	<b>-17.89</b>

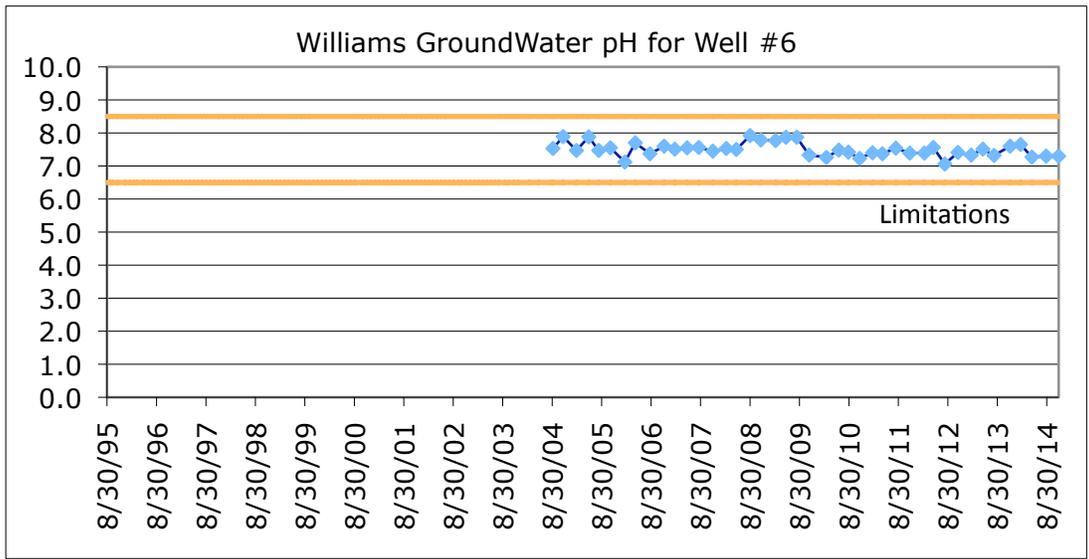
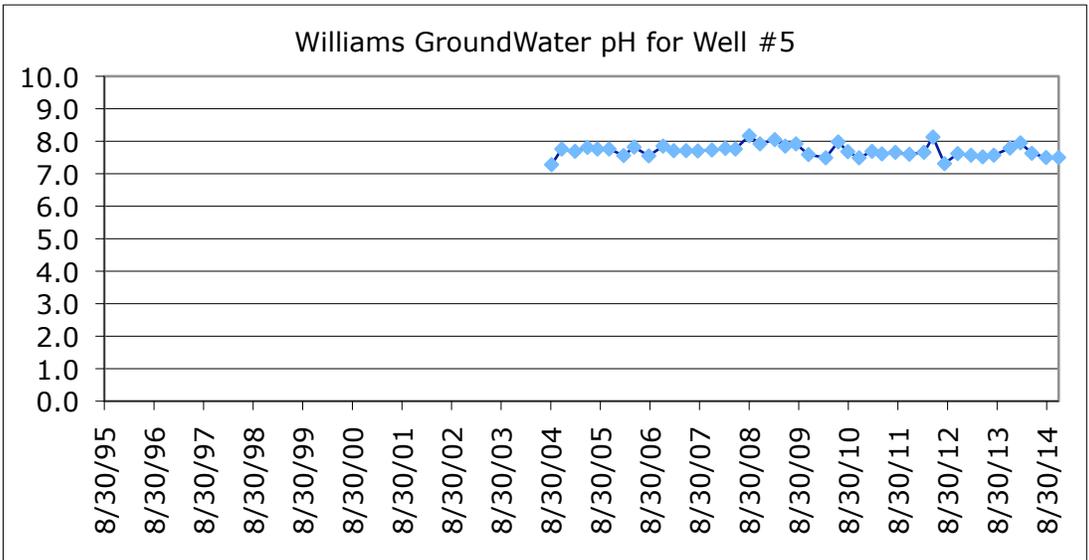
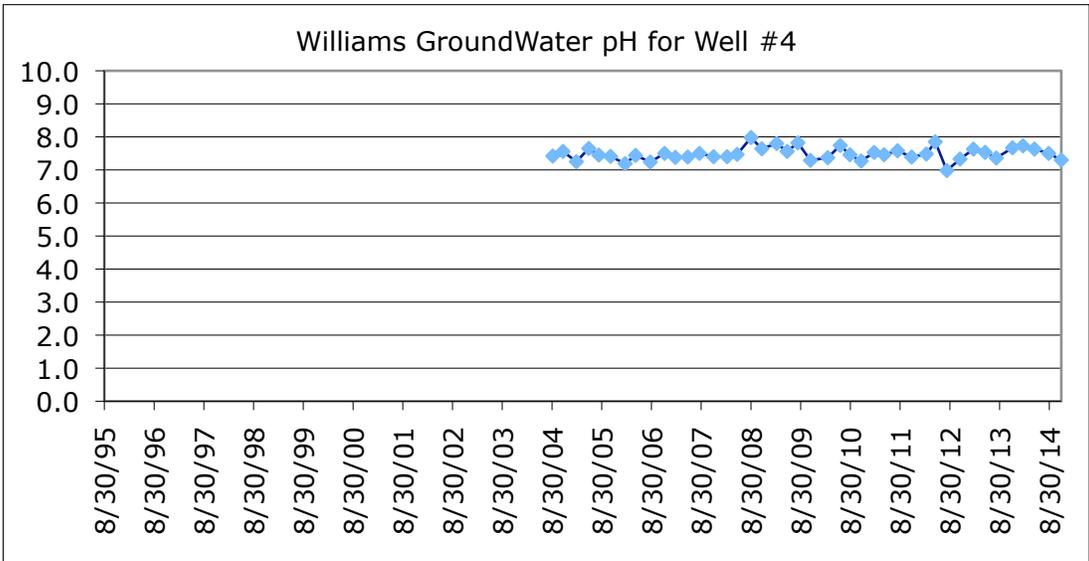
## Nitrogen Balance

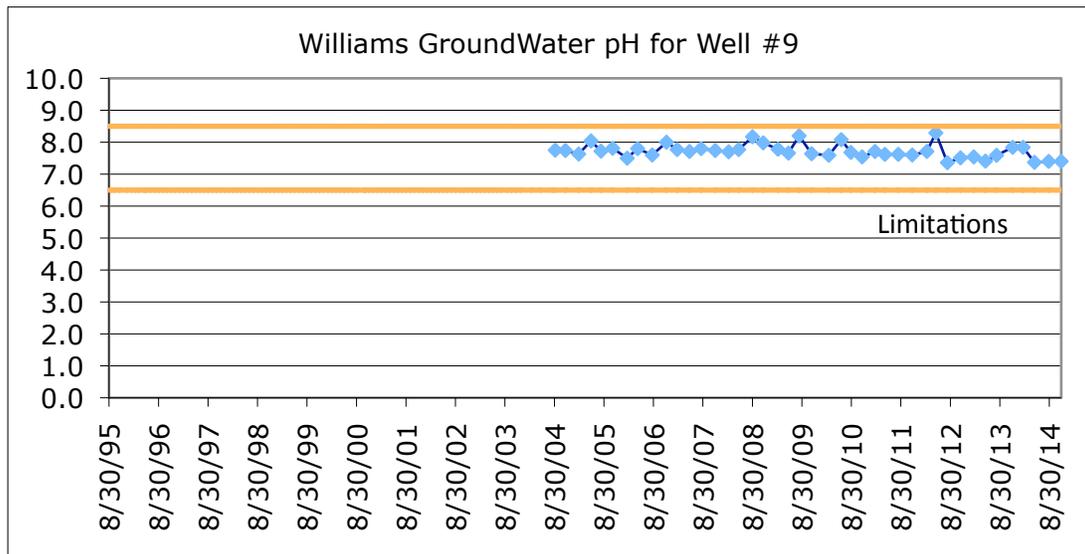
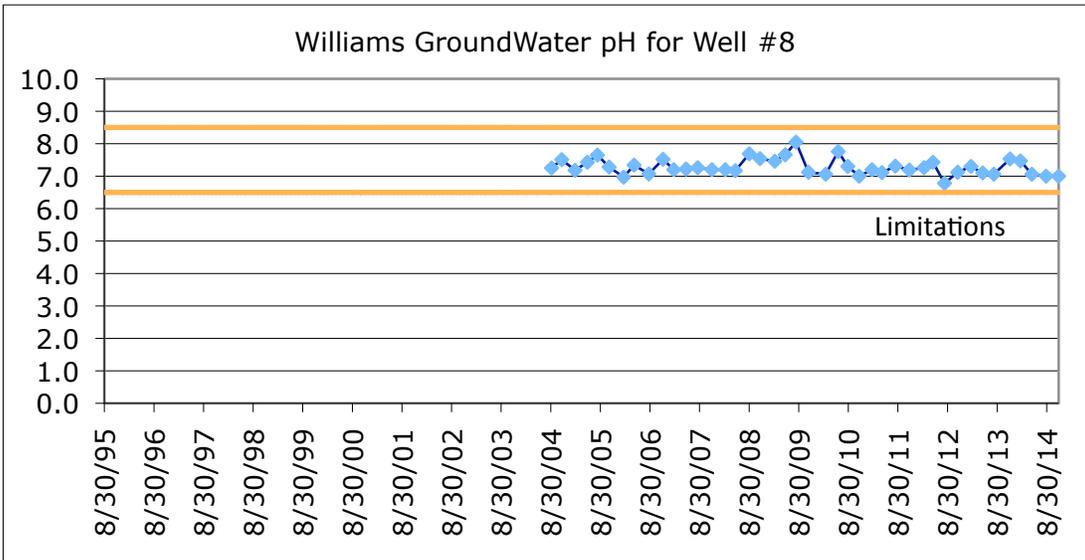
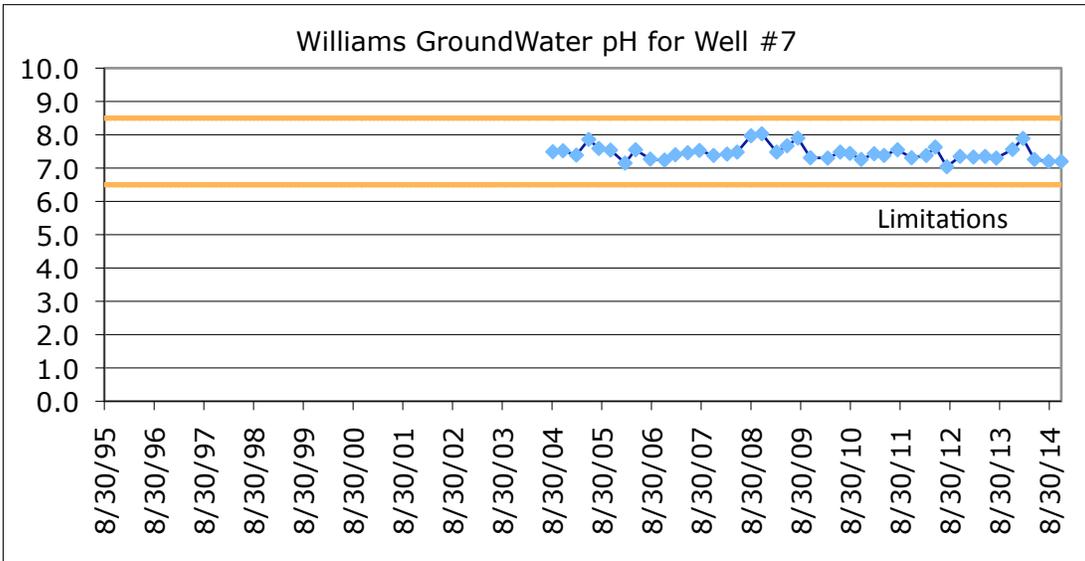
LAA Field	MS 1 *	MS 2	MS 3	MS 5	MS 6	MS 11	MS 14	MS 15	MS 16	MS 18a	MS 18b	MS 20a	MS 20b	MS 21	MS 24a	MS 24b	MS 24c	MS 24d
2014 Cropping	Rice	Oats/ Sudan	Oats/ Sudan	Pasture/Sudan Grass	Oats/ Sudan	Wheat Grass/ Sudan	Rye Grass/ Grass Hay	Pasture/Sudan	Oats/ Sudan	Pasture/Sudan	Pasture/Sudan	Oats/ Sudan	Oats/ Sudan	Wheat Grass/Sudan	Pasture/Sudan	Pasture/Sudan	Pasture/Sudan	Pasture/Sudan
Planting Dates	N/A	11/15/13, 6/4/14	11/15/13, 6/5/14	2007, 7/1/14	11/15/13, 7/1/14	11/15/13, 6/24/14	2008, 6/19/14	2007, 6/30/14	11/15/13, 7/1/14	2007, 6/23/14	2007, 6/23/14	11/15/13, 6/10/14	11/15/13, 6/10/14	11/15/13, 6/28/14	2007, 6/15/14	2007, 6/15/14	2007, 6/15/14	2007, 6/15/14
Harvest Dates	N/A	5/6/14, 7/24, 9/16	5/6, 7/24, 9/16	9/9	5/6, 8/23	8/25	5/6, 7/10, 9/10	8/26	5/6, 9/8	8/13, 10/22	8/13, 10/22	5/6, 8/5, 9/25	5/6, 8/5	8/21	7/28, 9/29	7/28, 9/30	7/28, 9/23	7/28, 9/29
Total Nitrogen Loading from Wastewater (lbs/ac/year)	0	82	80	173	142	236	98	164	126	161	79	67	55	192	80	89	80	91
Total Nitrogen Loading from Cattle (lbs/ac/year)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Nitrogen Loading from Commercial Fertilizers (lbs/ac/year)	0	56	14		63	14	63	0	0	82	82	119	119	0	82	82	82	82
Total Nitrogen Loading from Settling Pond Solids (lbs/ac/year)	0	0	0	123	123	0	0	123	123	0	0	0	0	123	0	0	0	0
Cumulative Annual Total Nitrogen Value	0	138	94	296	328	250	161	287	249	243	161	186	174	315	162	171	162	173
Annual Crop Demand (lbs/ac/year)	110	440	440	475	440	500	480	475	440	475	475	440	440	500	475	475	475	475

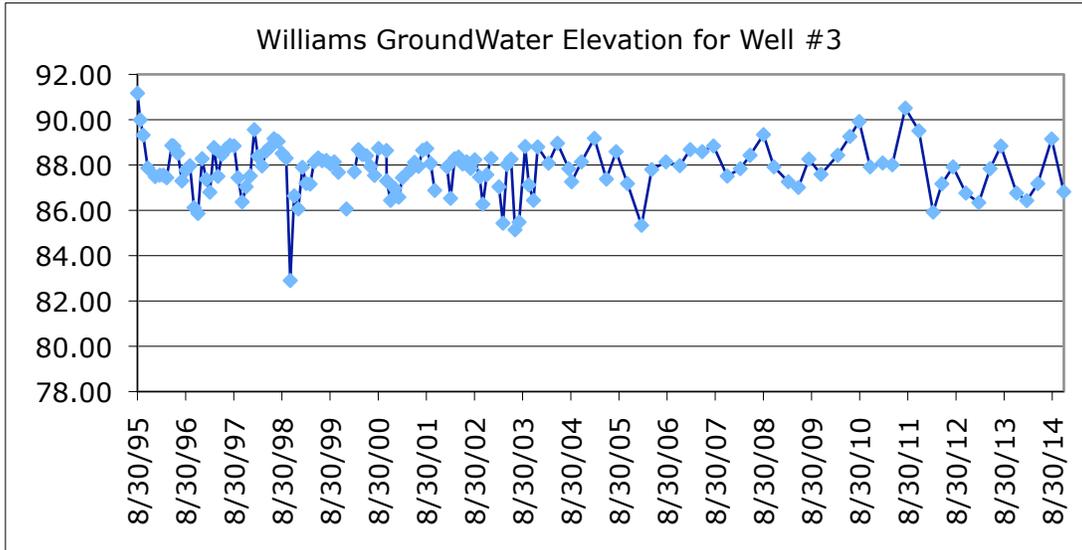
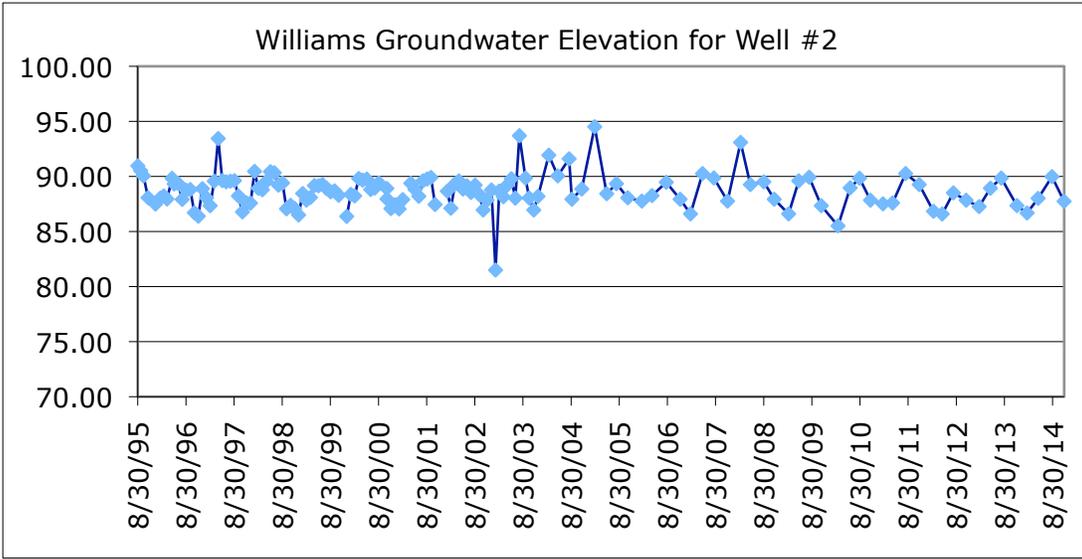
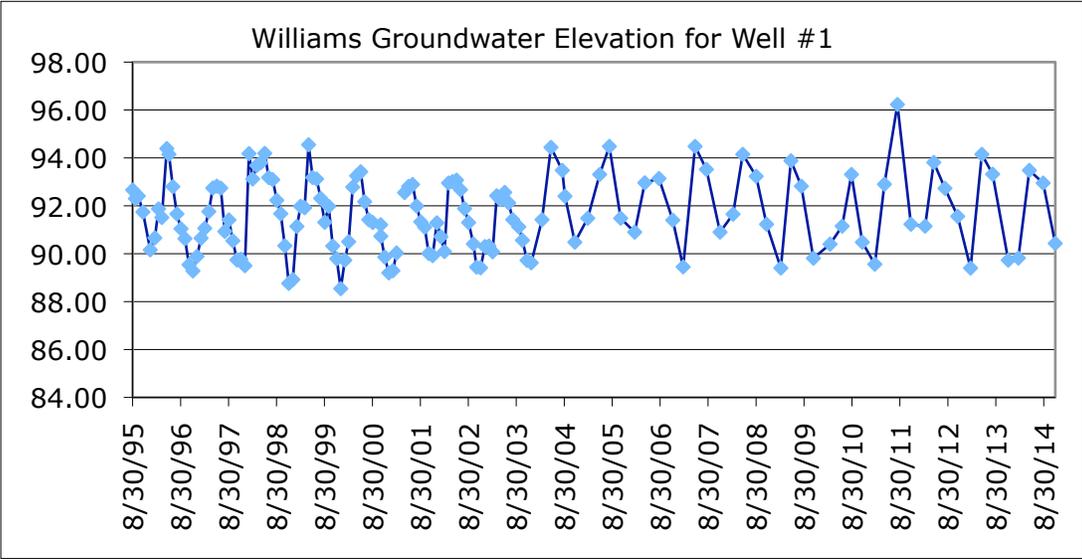
\*MS1 not irrigated with washwater.

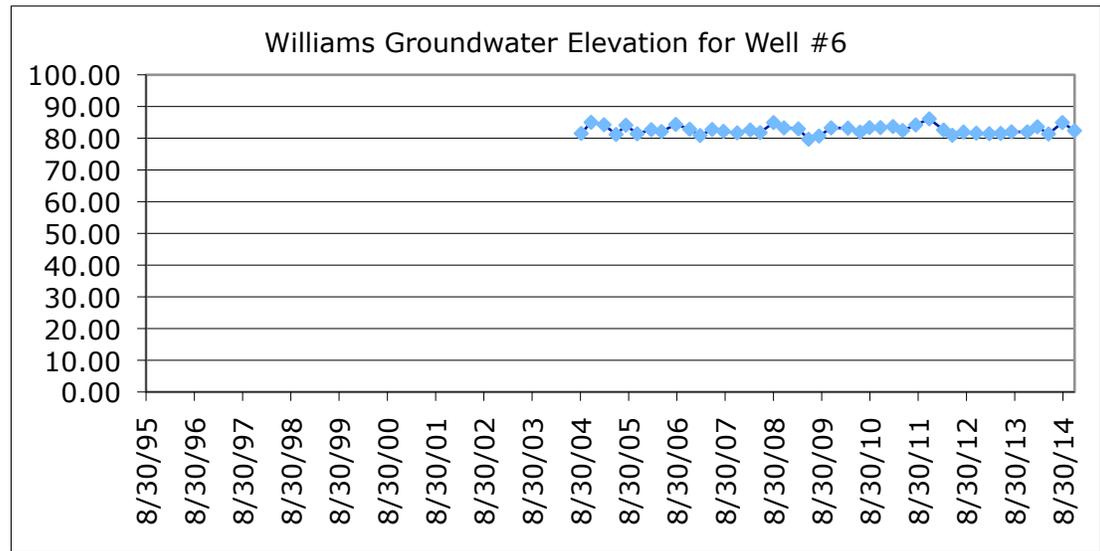
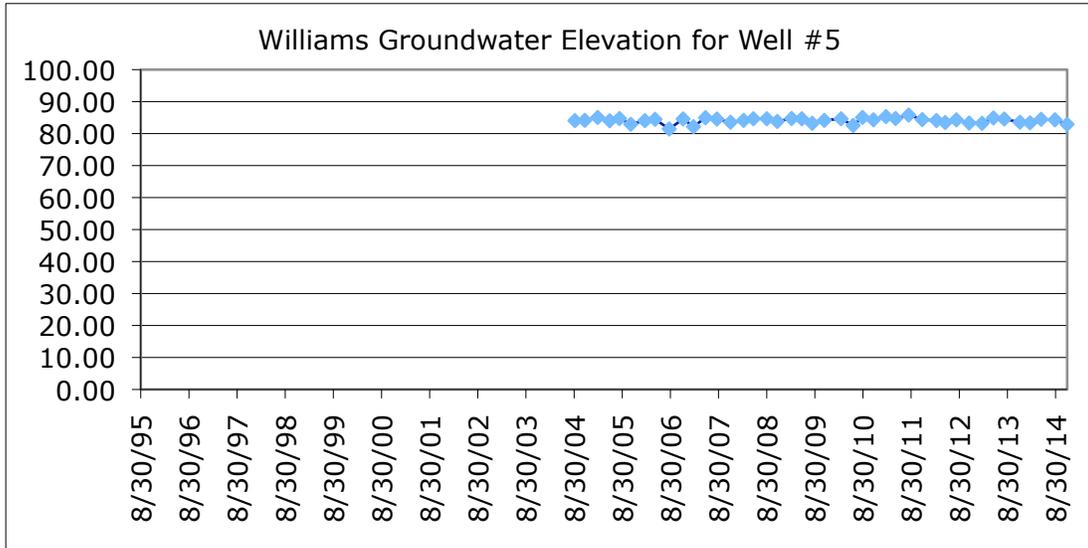
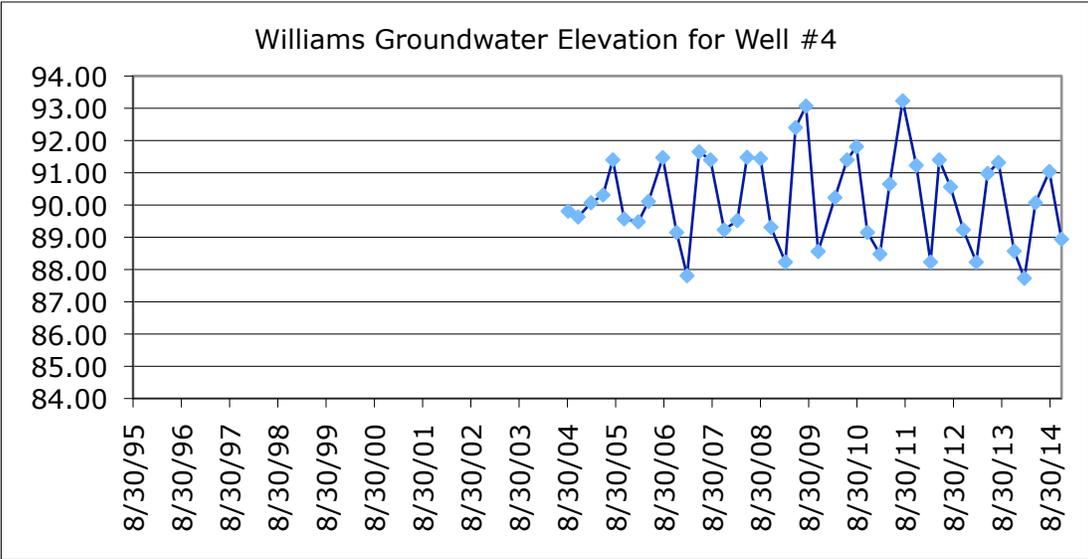
## **Attachment C**

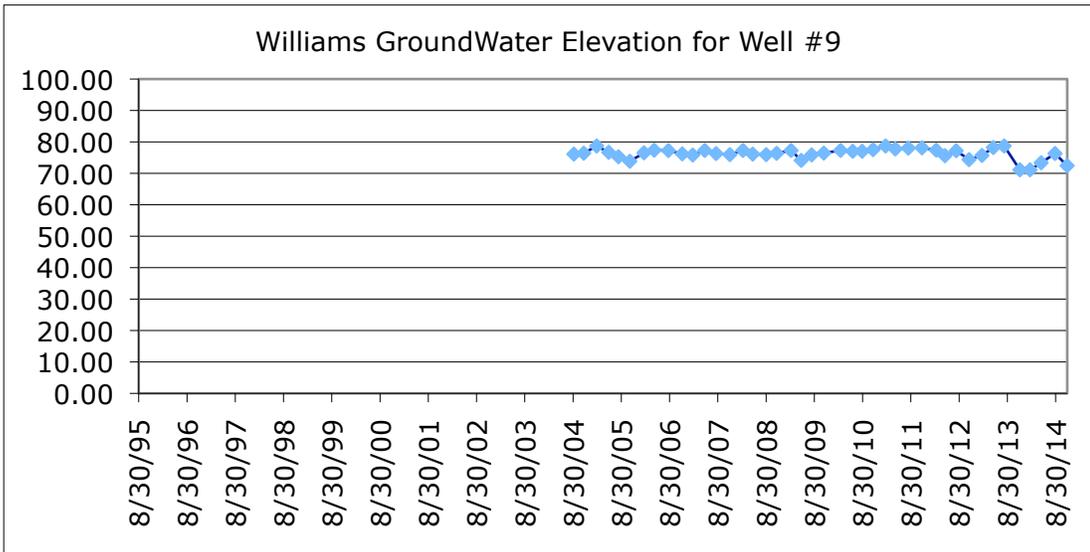
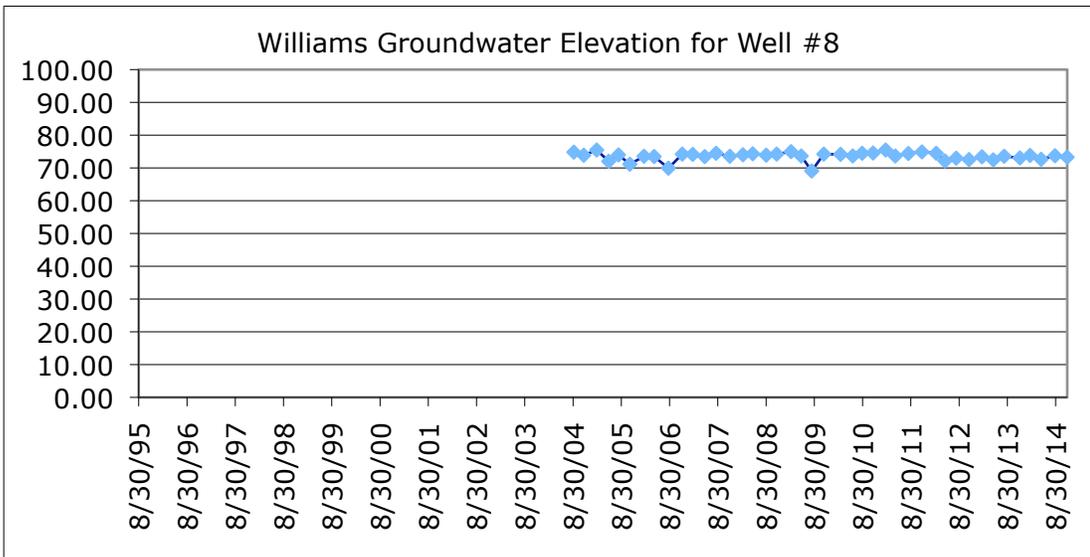
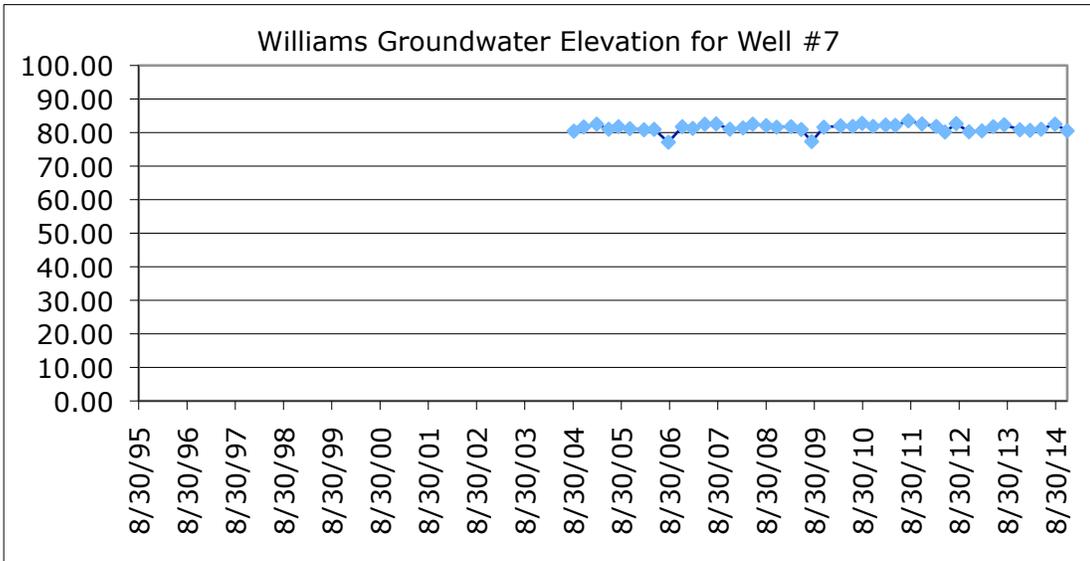


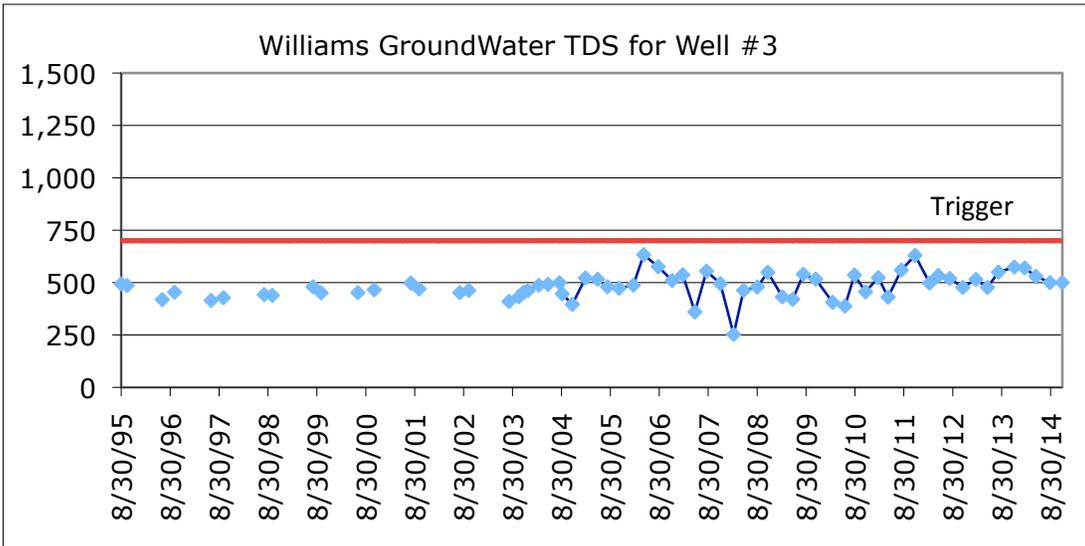
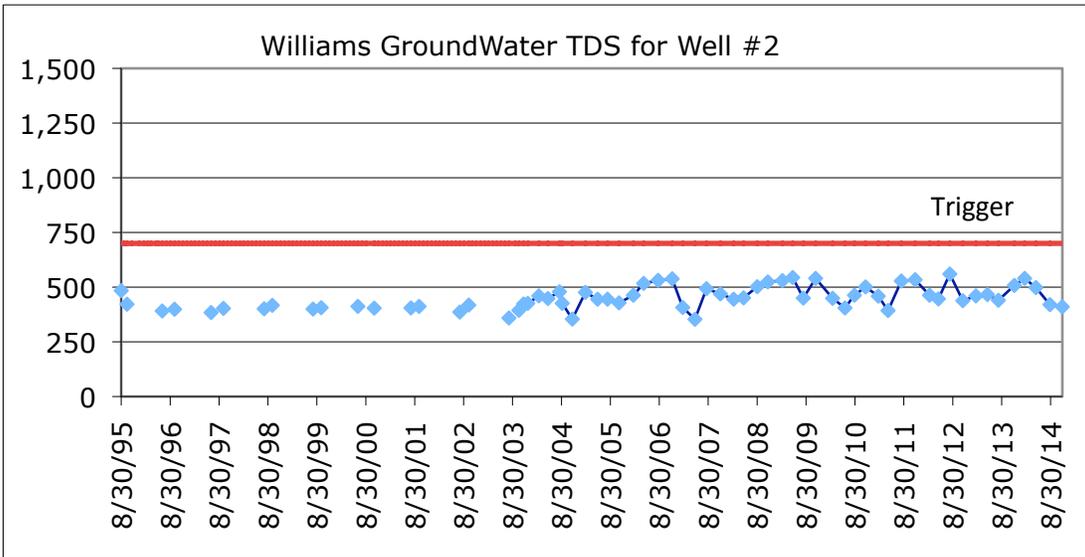
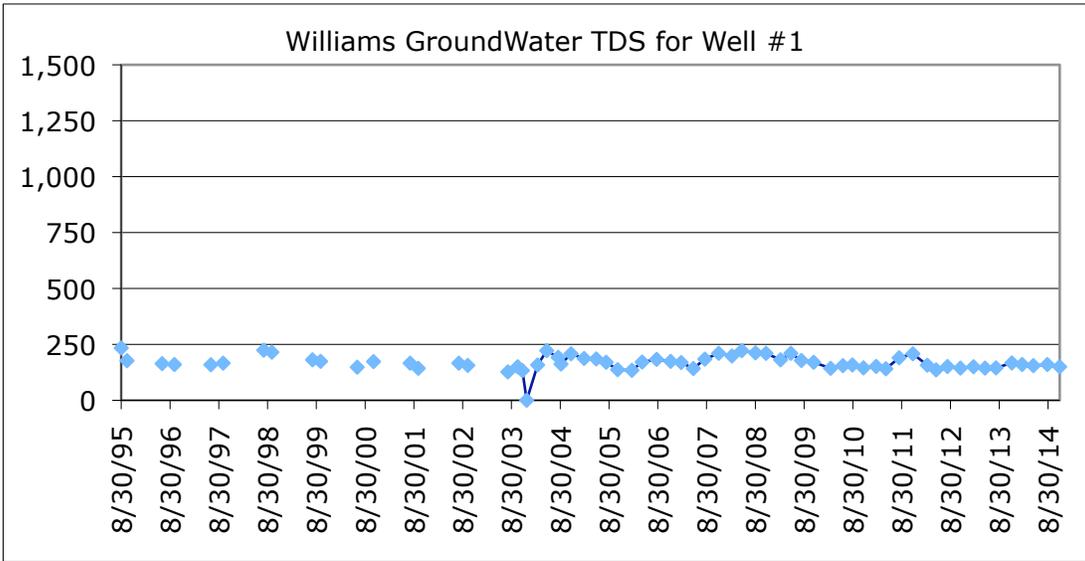


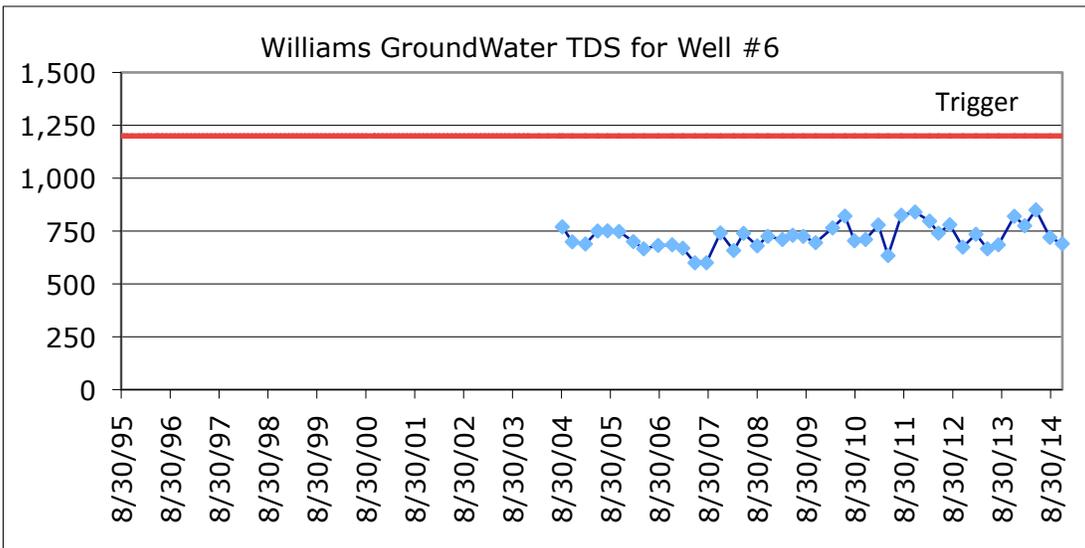
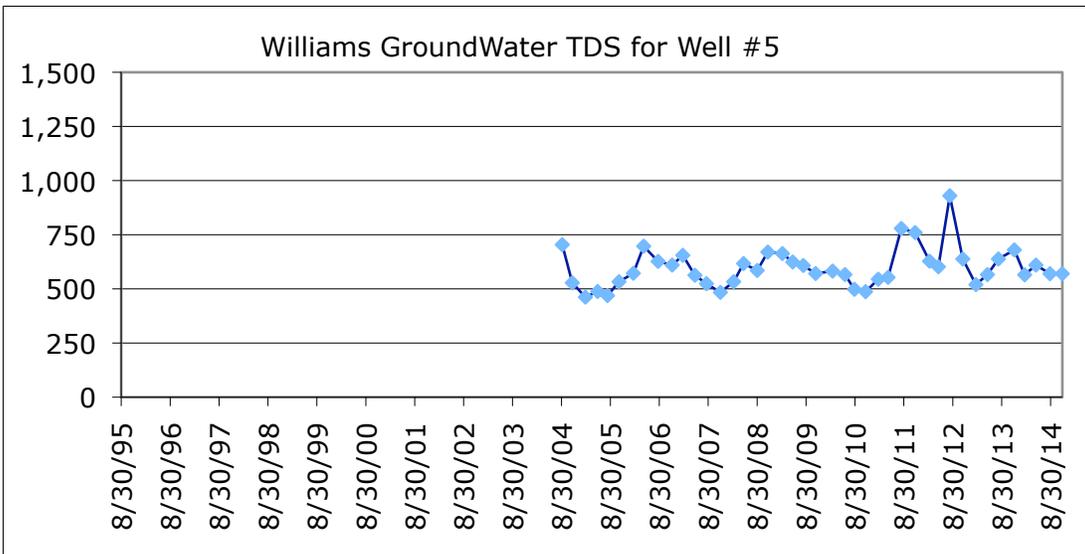
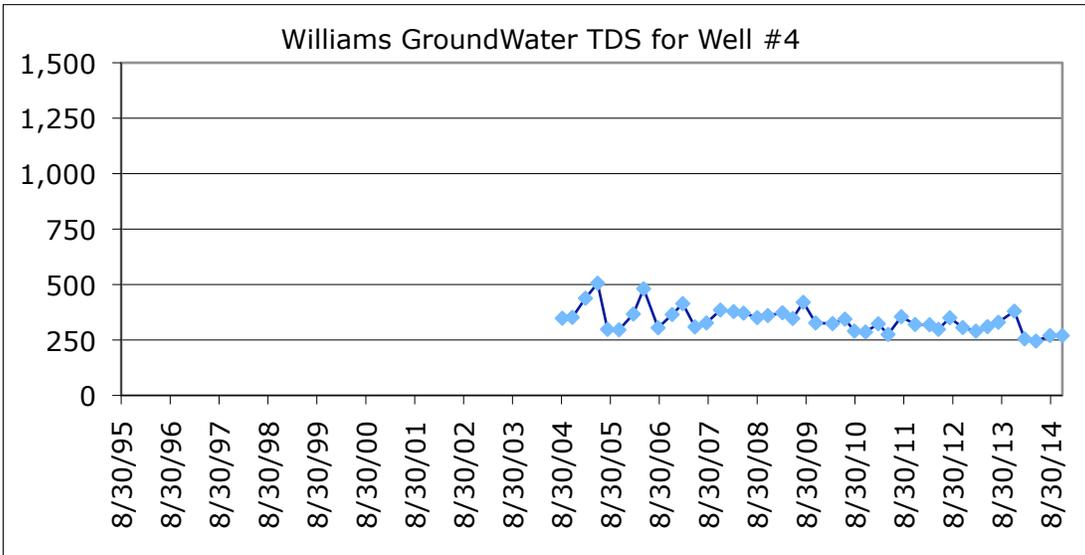


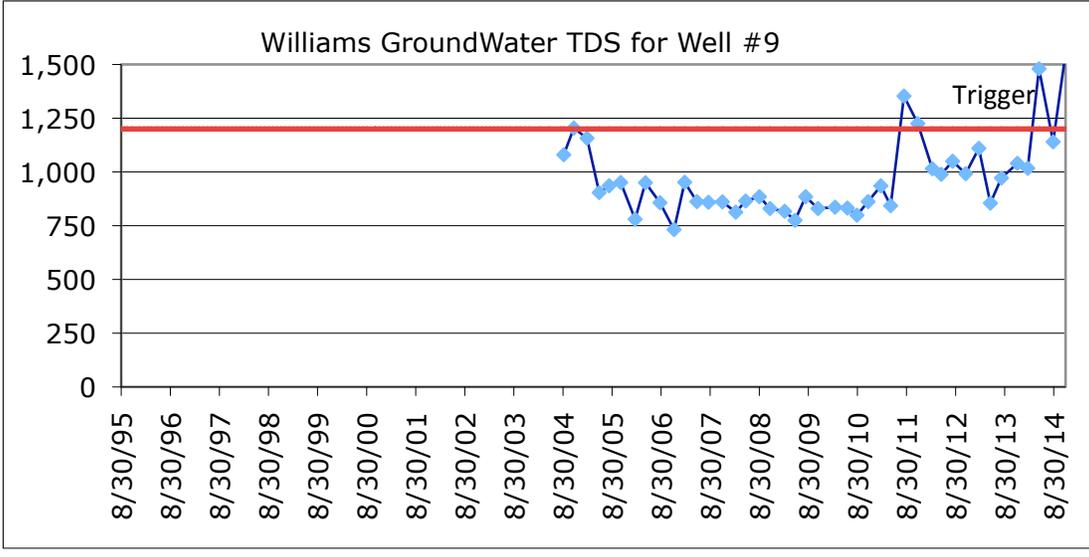
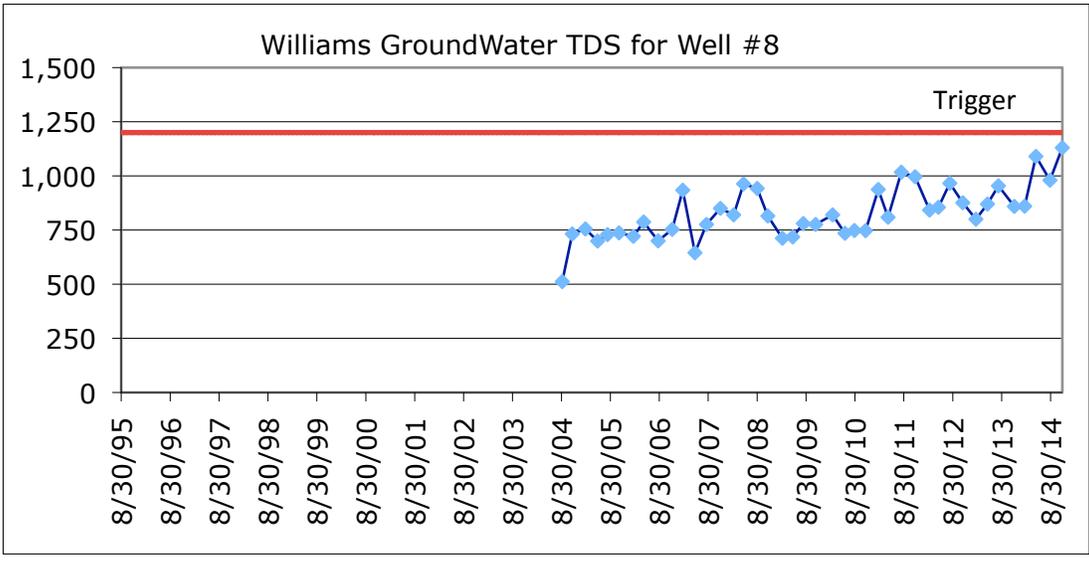
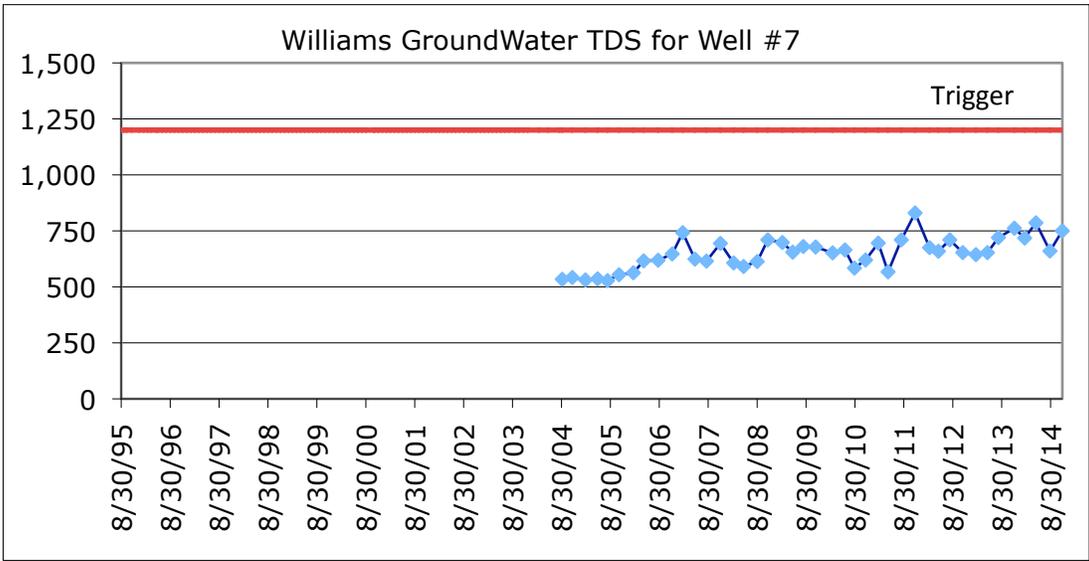


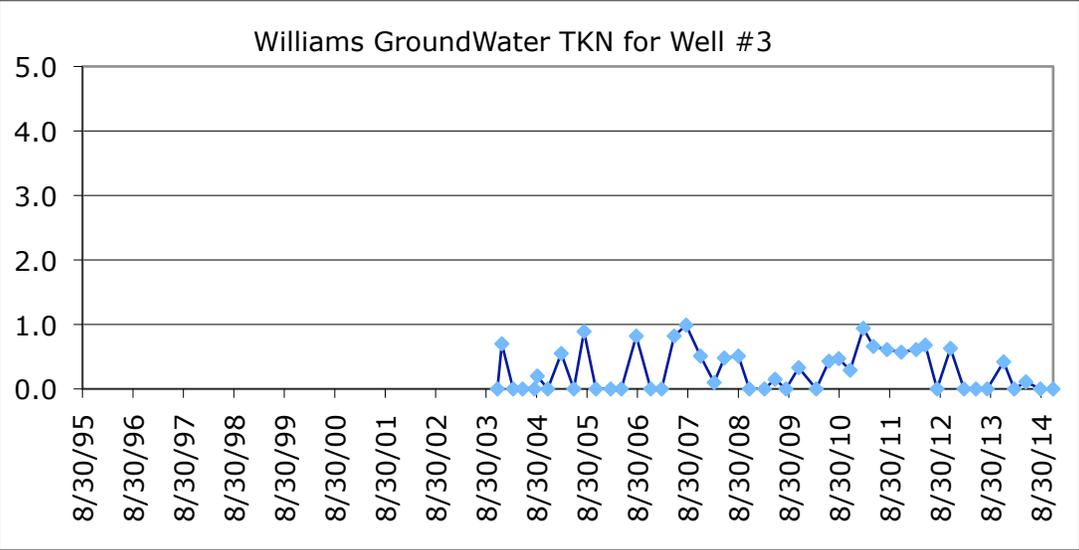
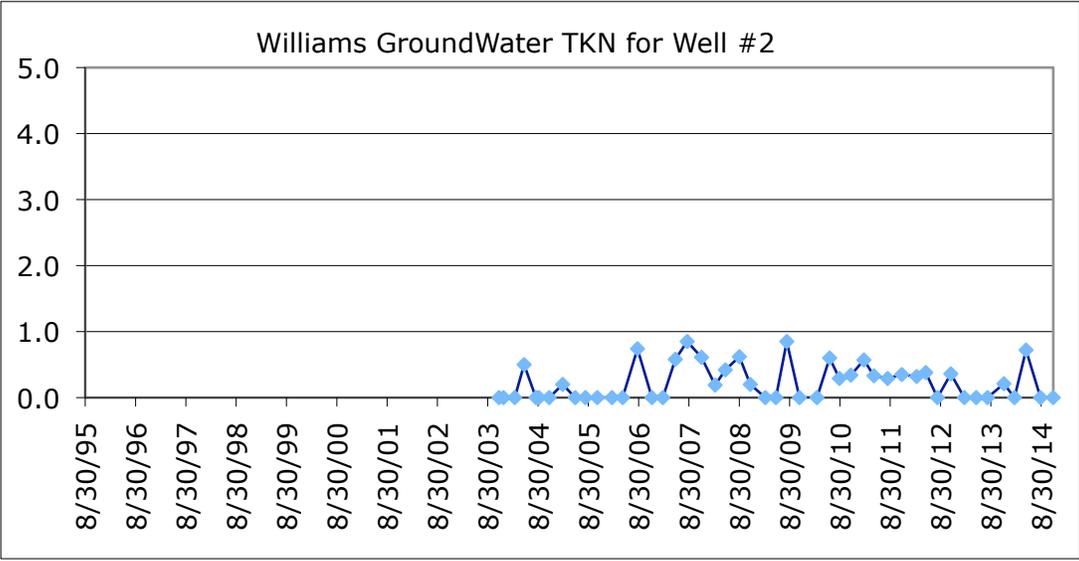
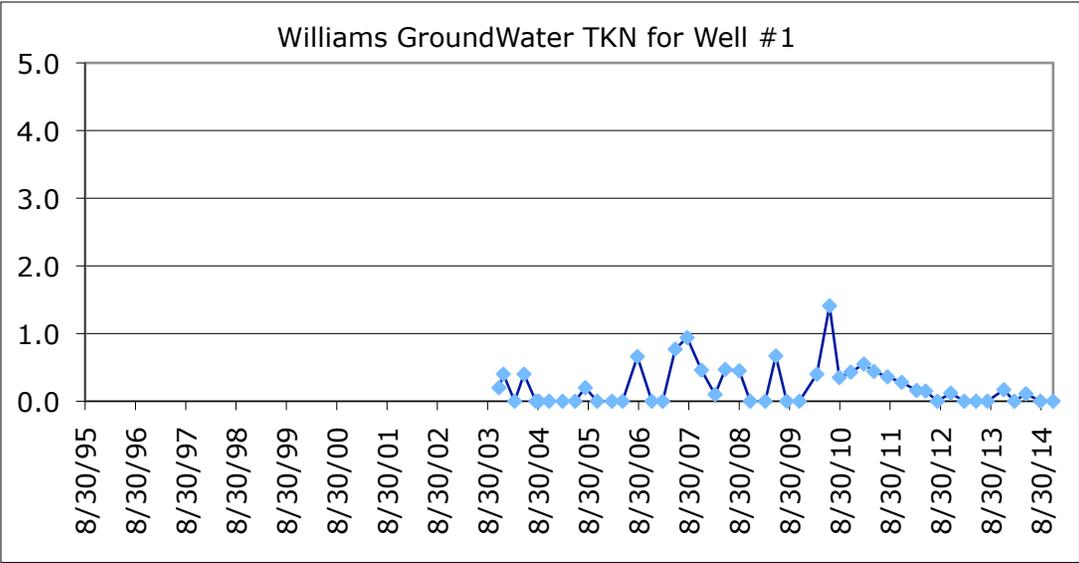


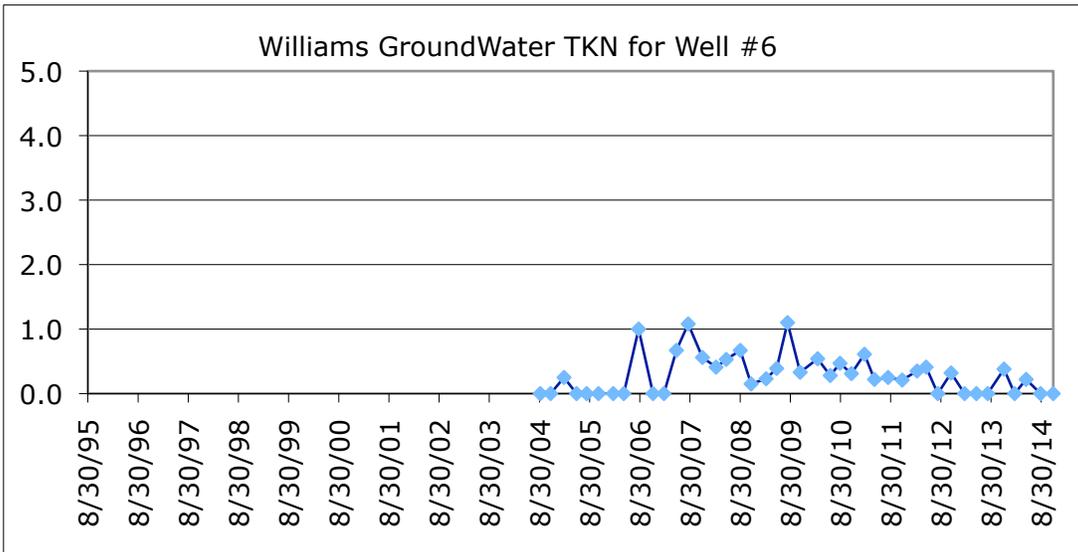
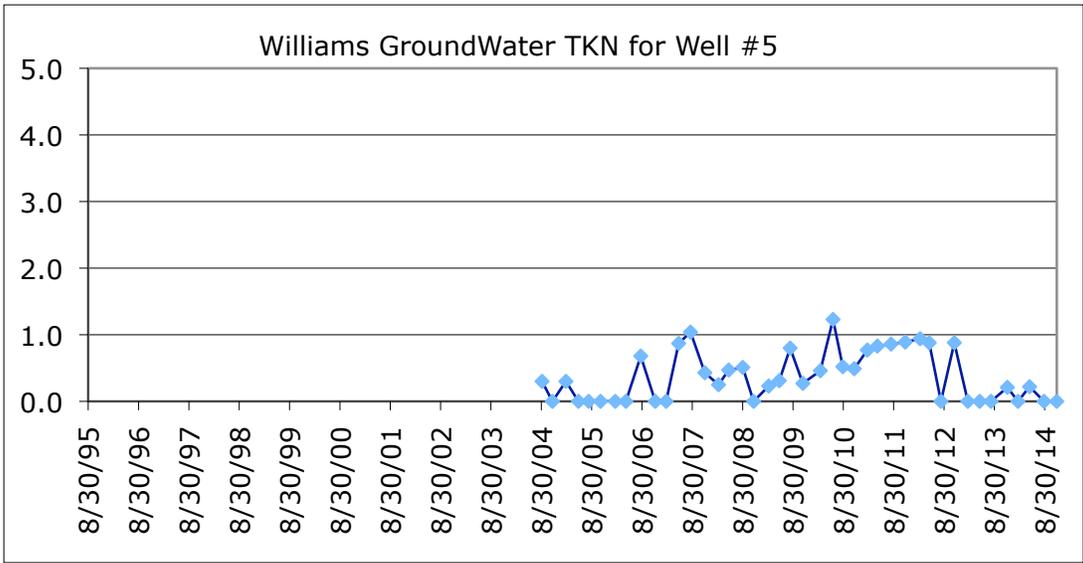
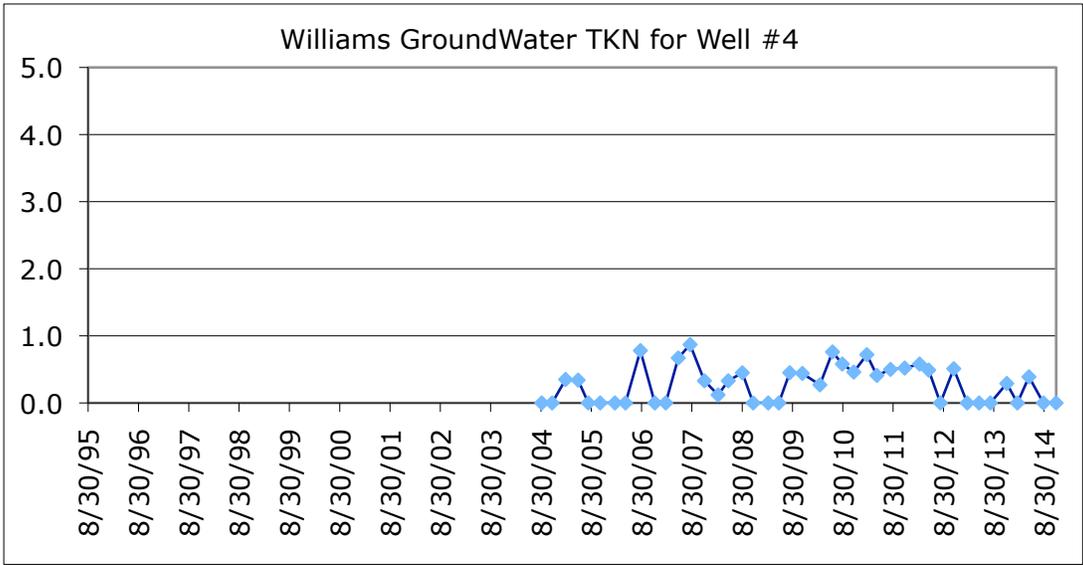


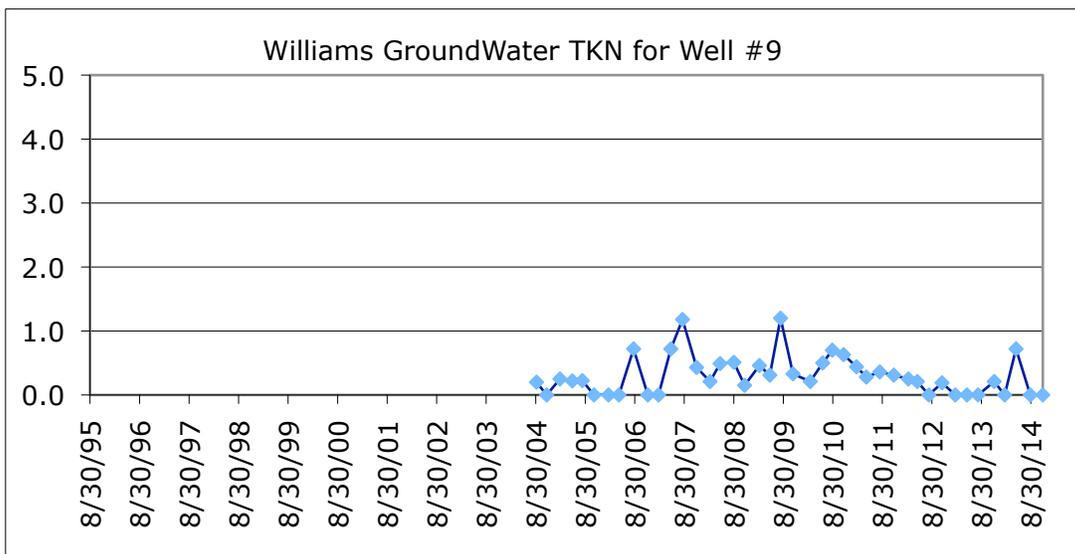
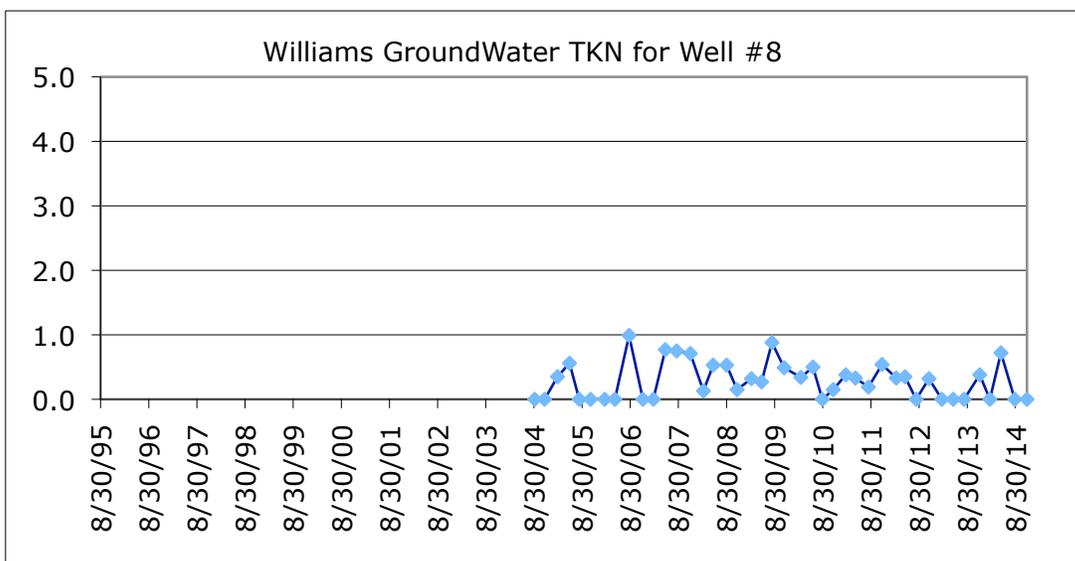
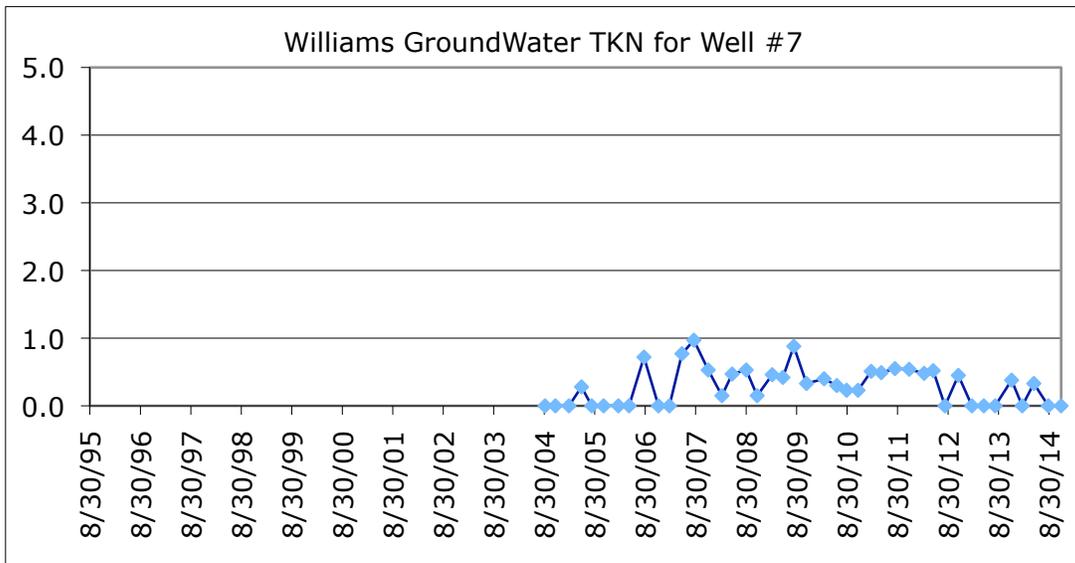


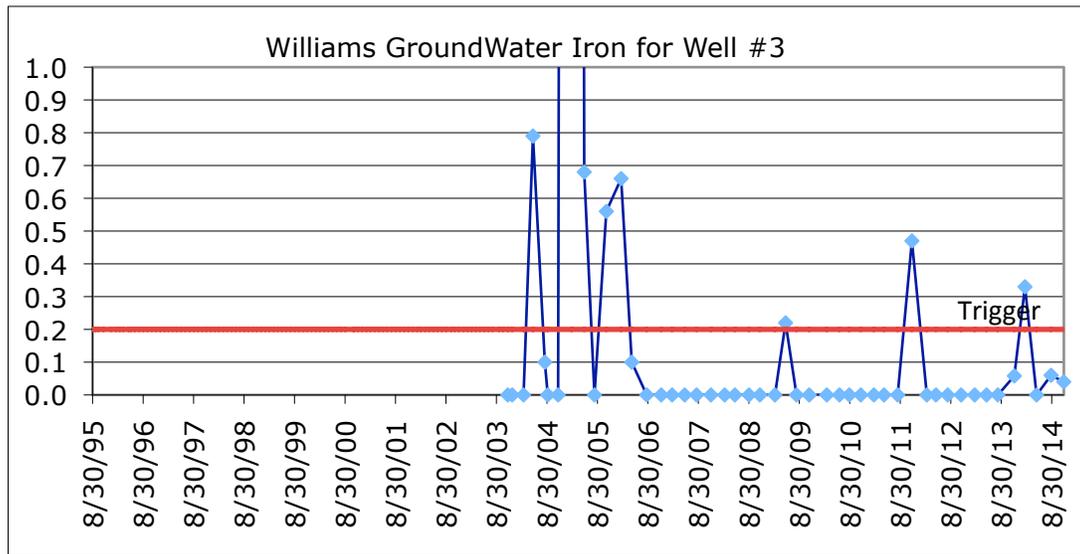
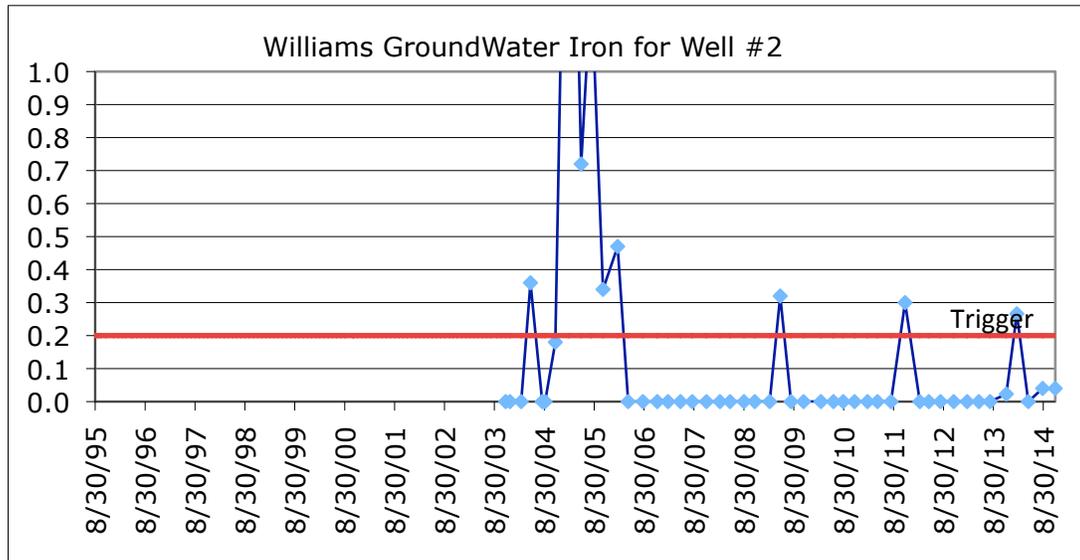
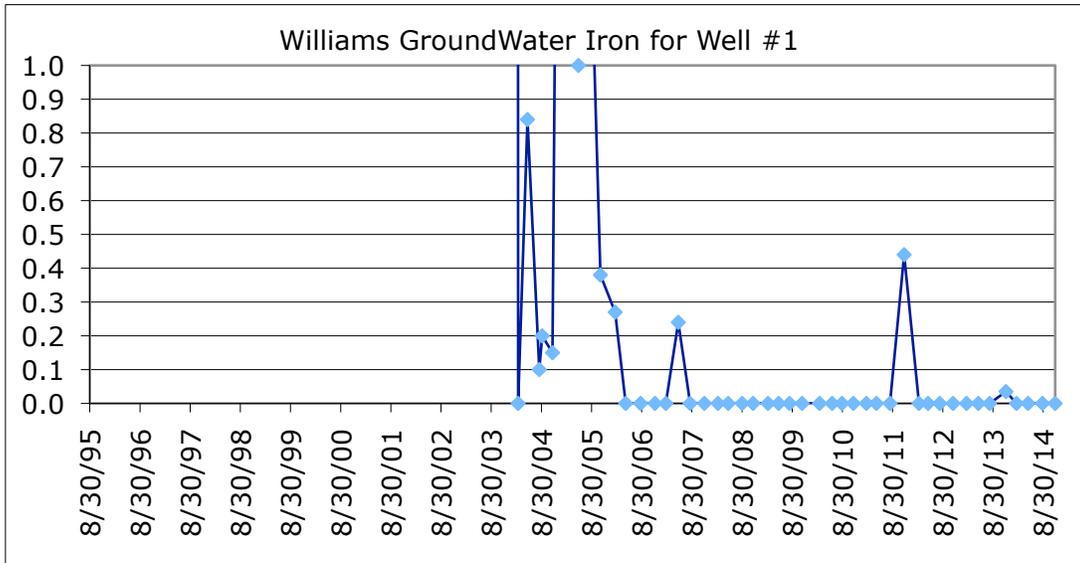


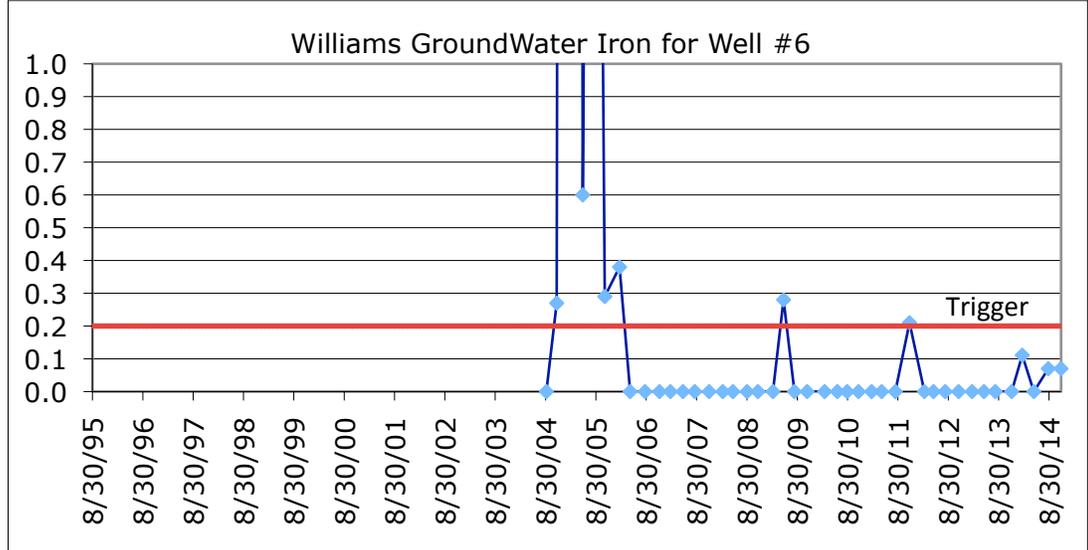
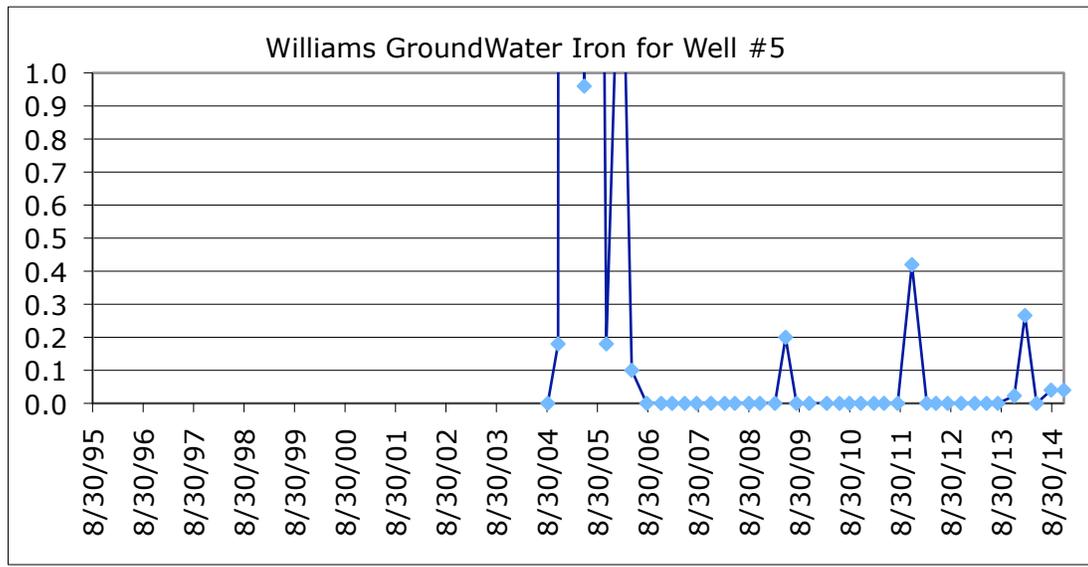
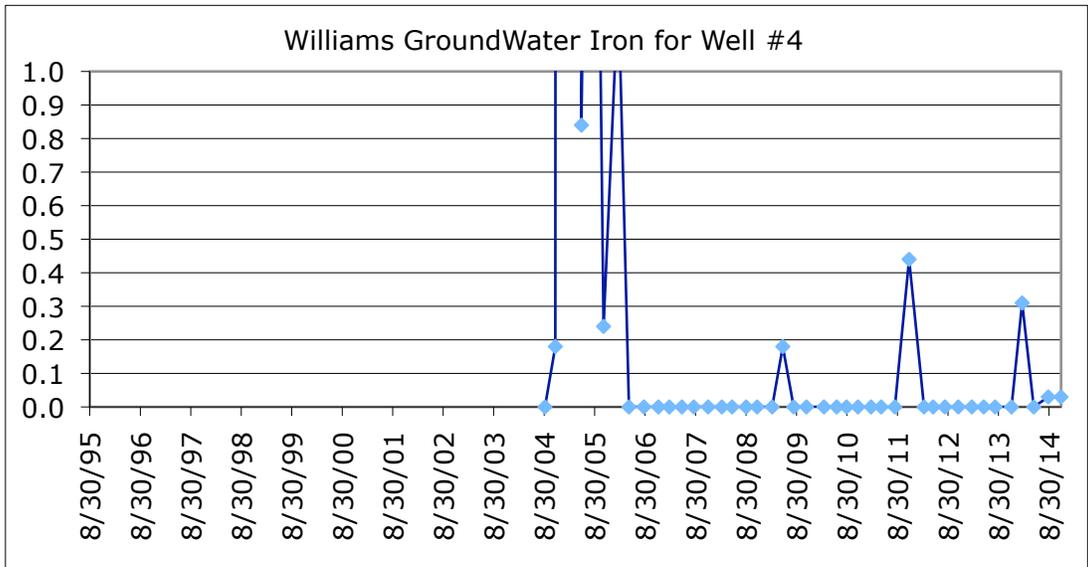


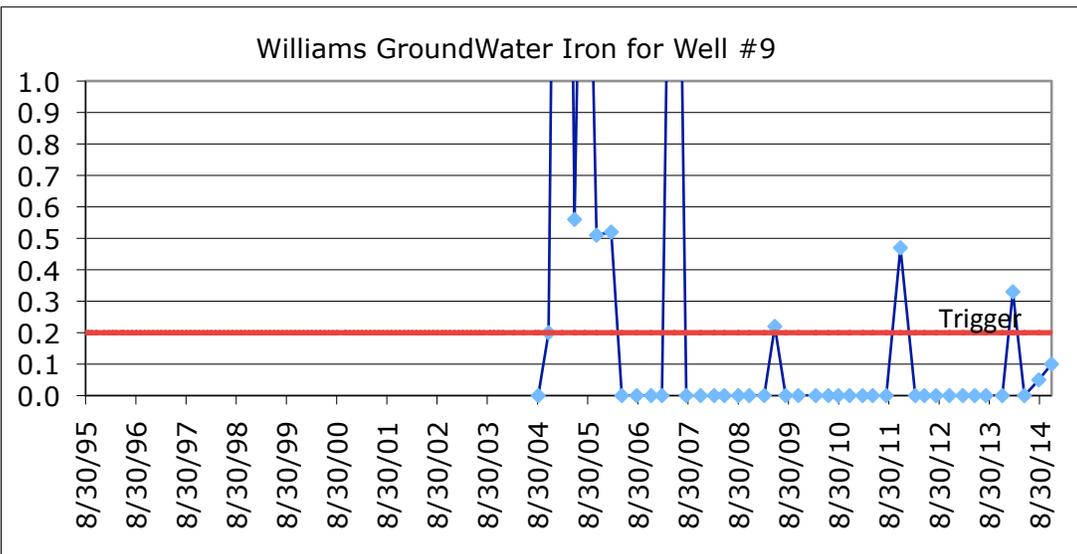
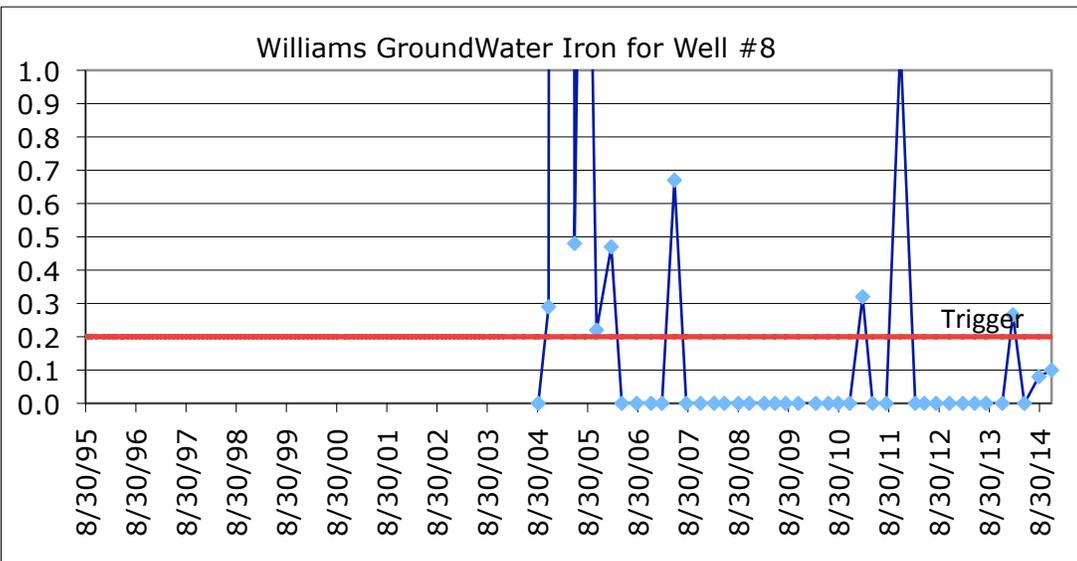
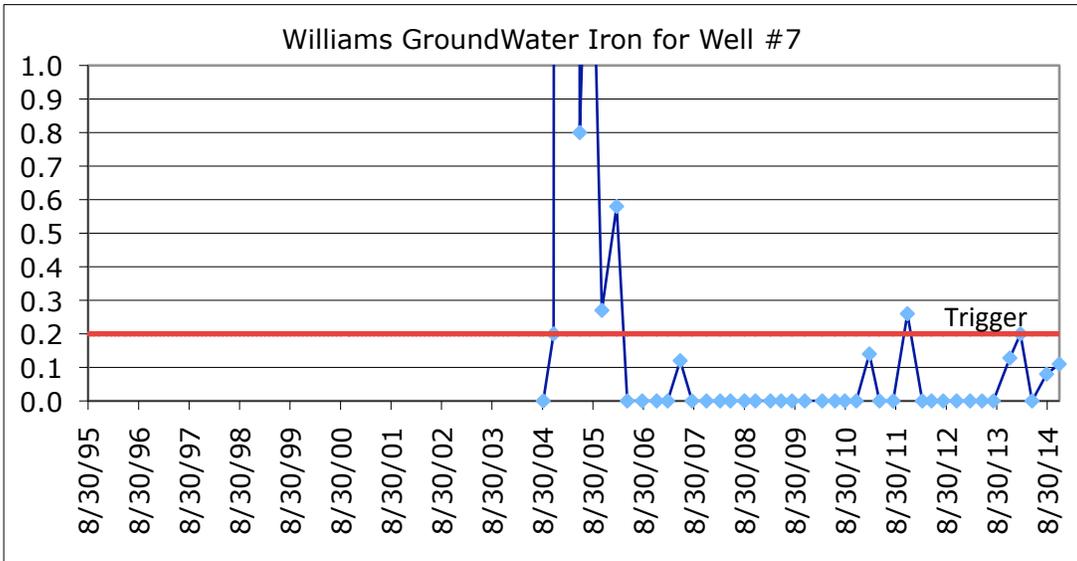


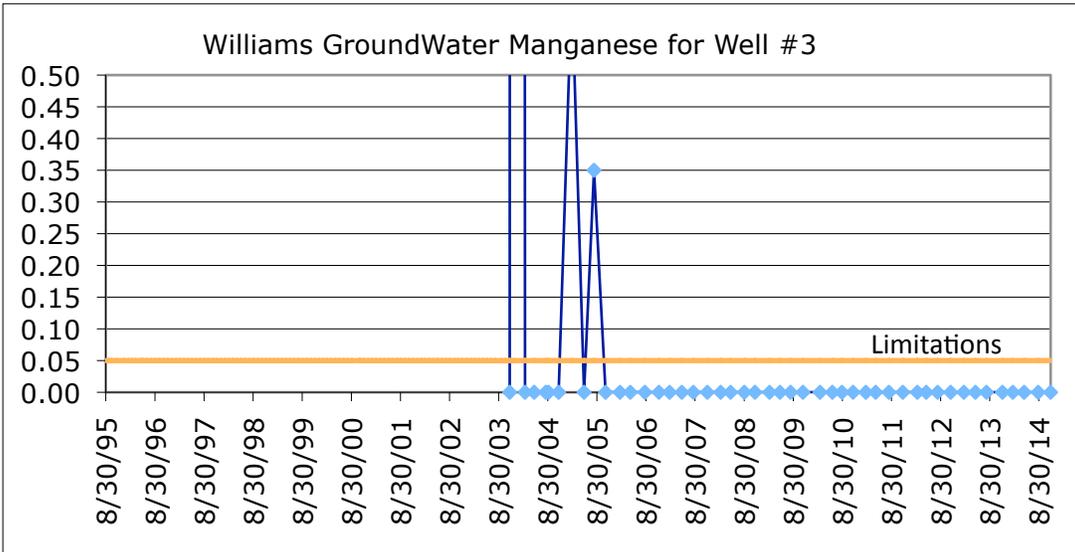
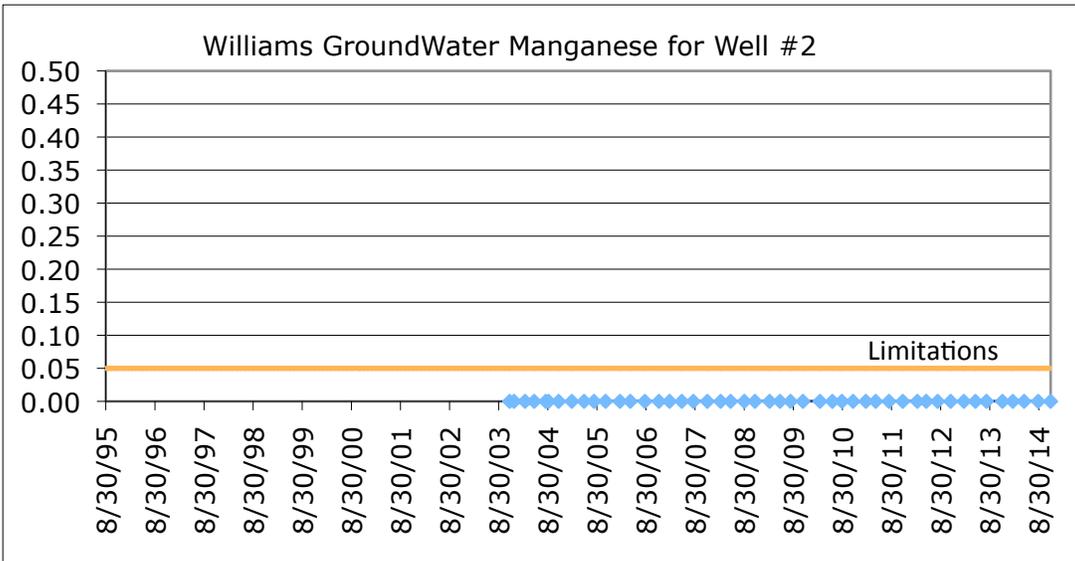
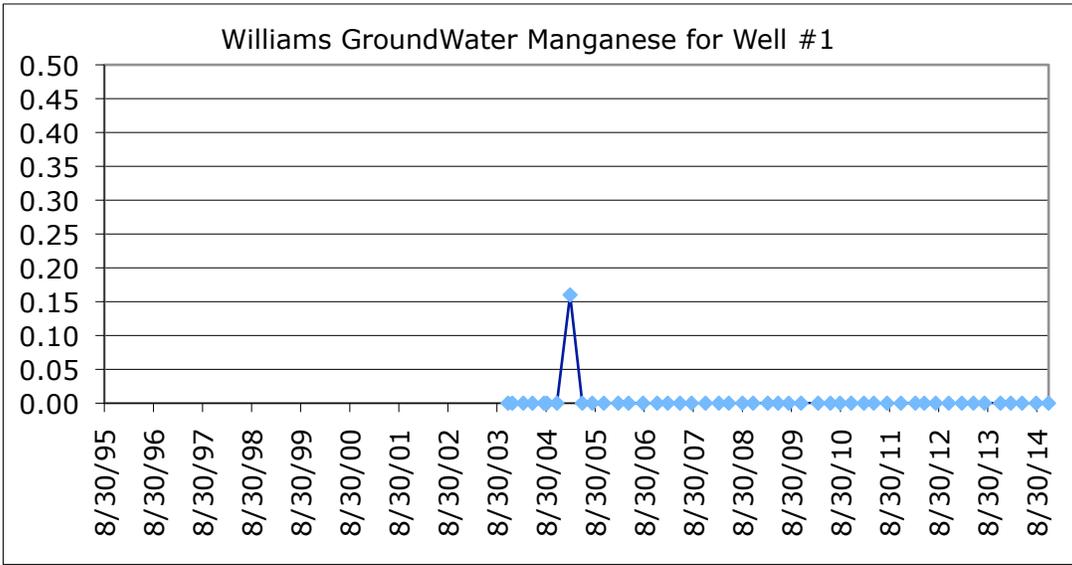


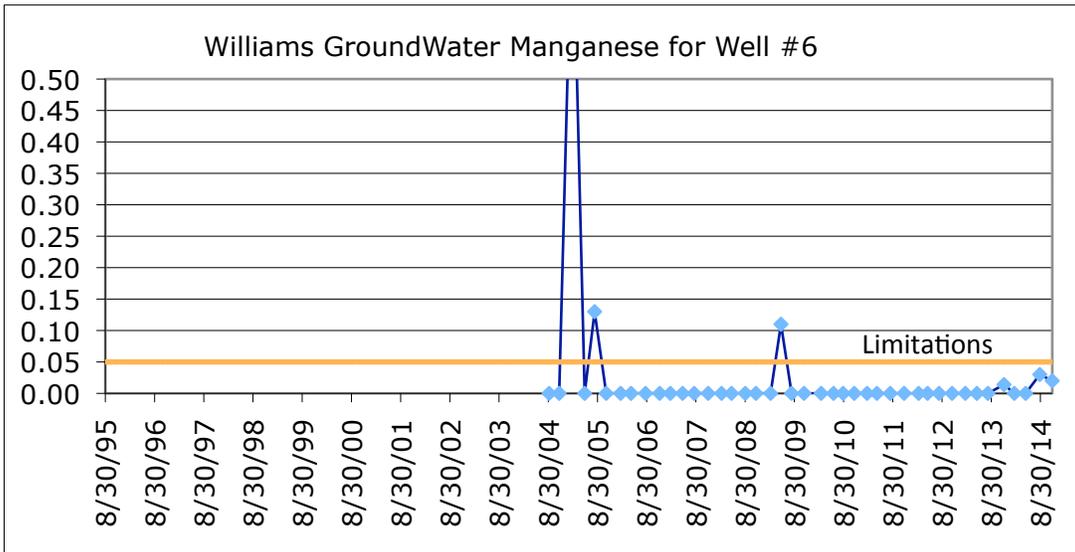
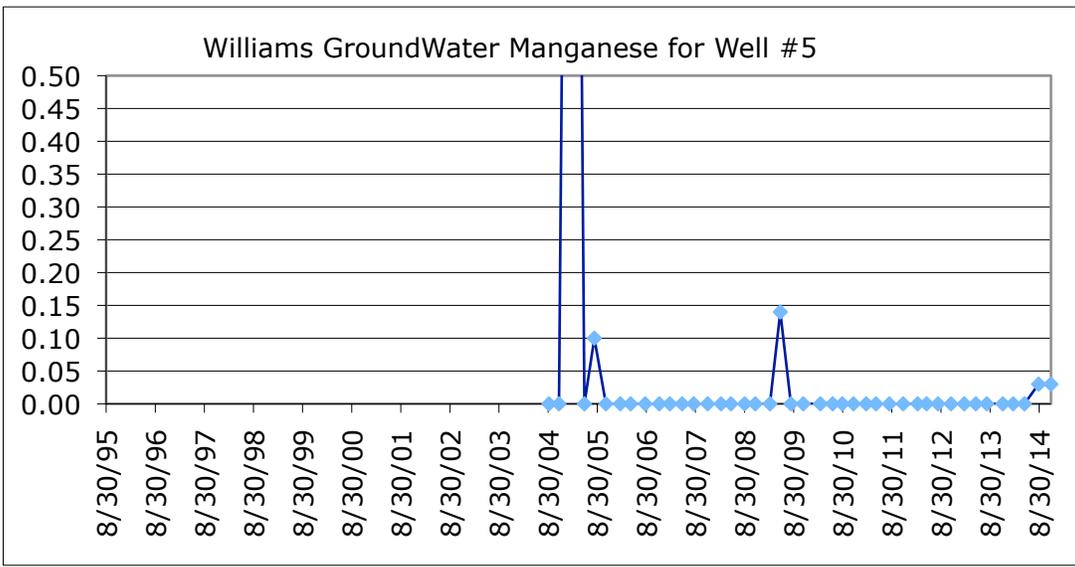
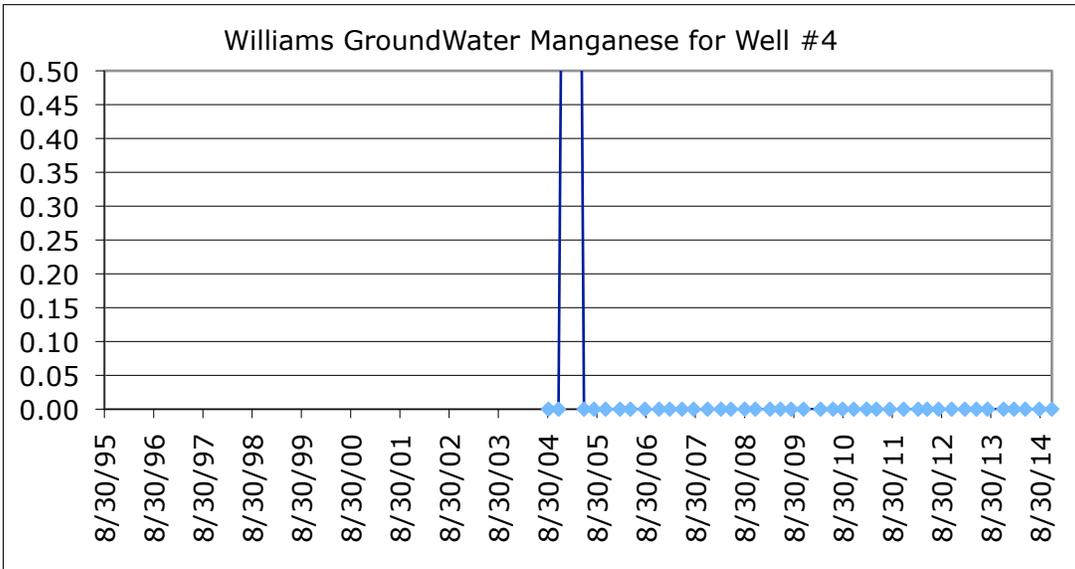




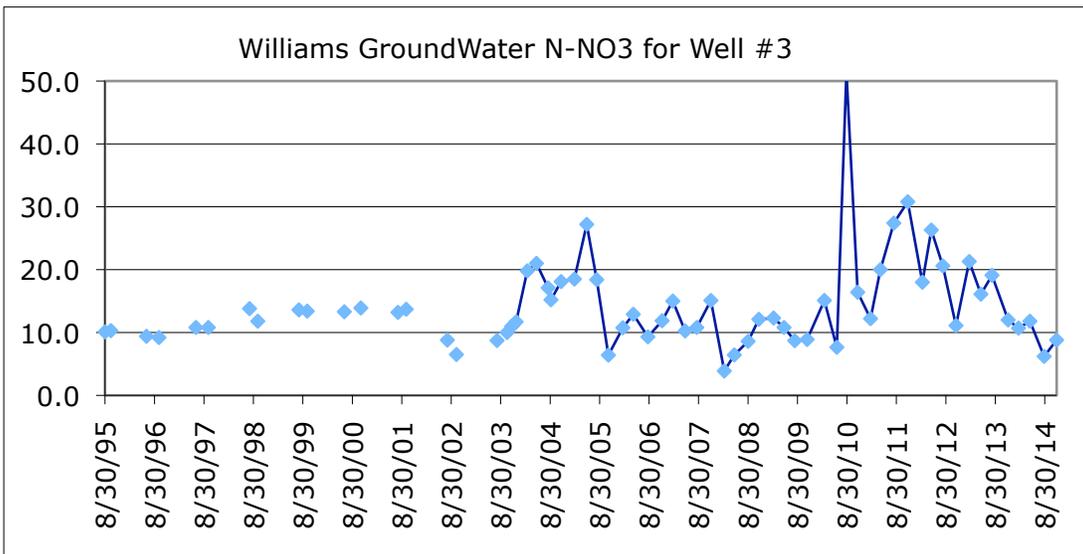
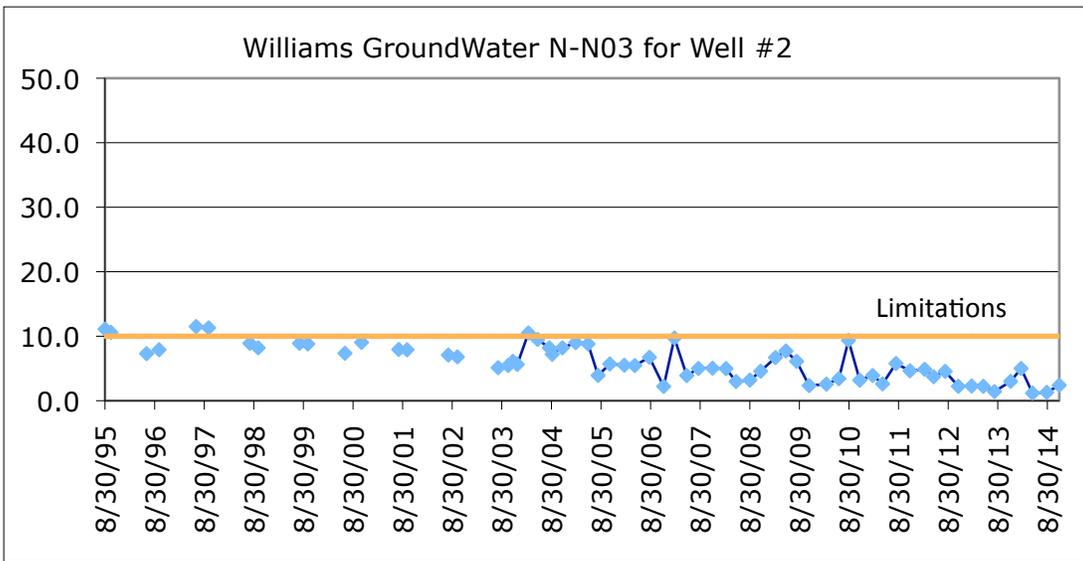
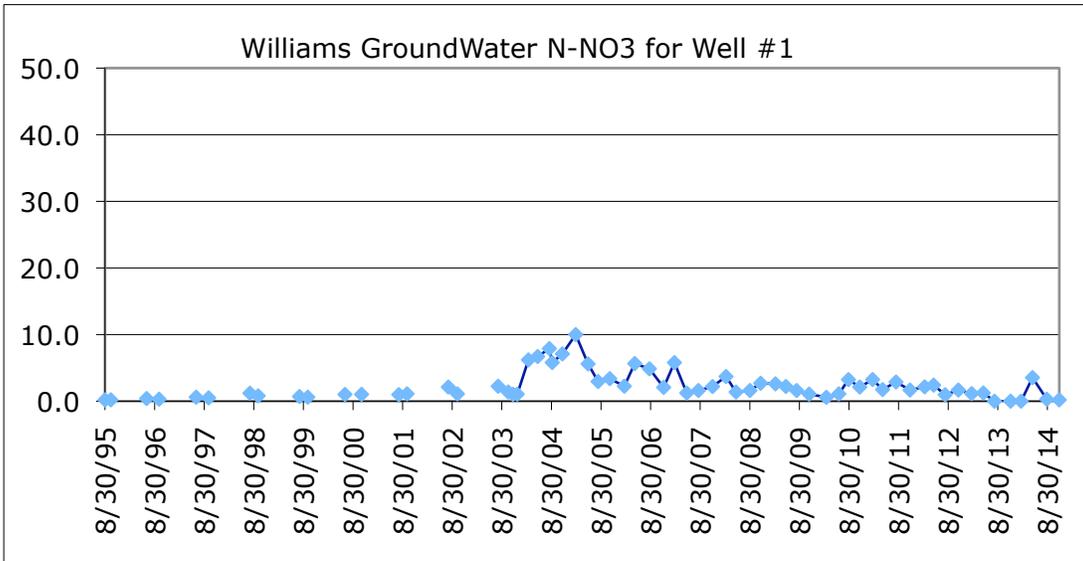


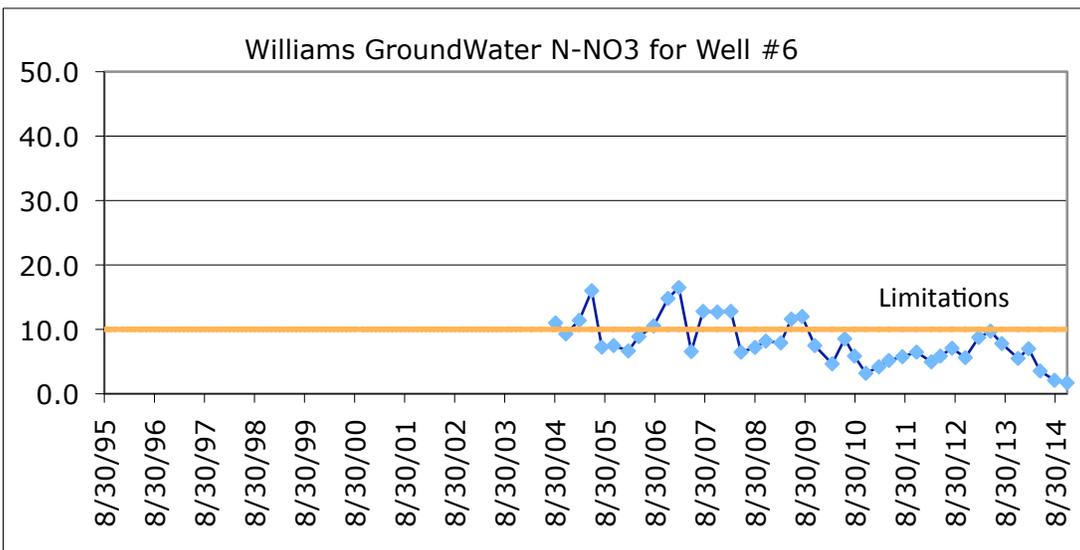
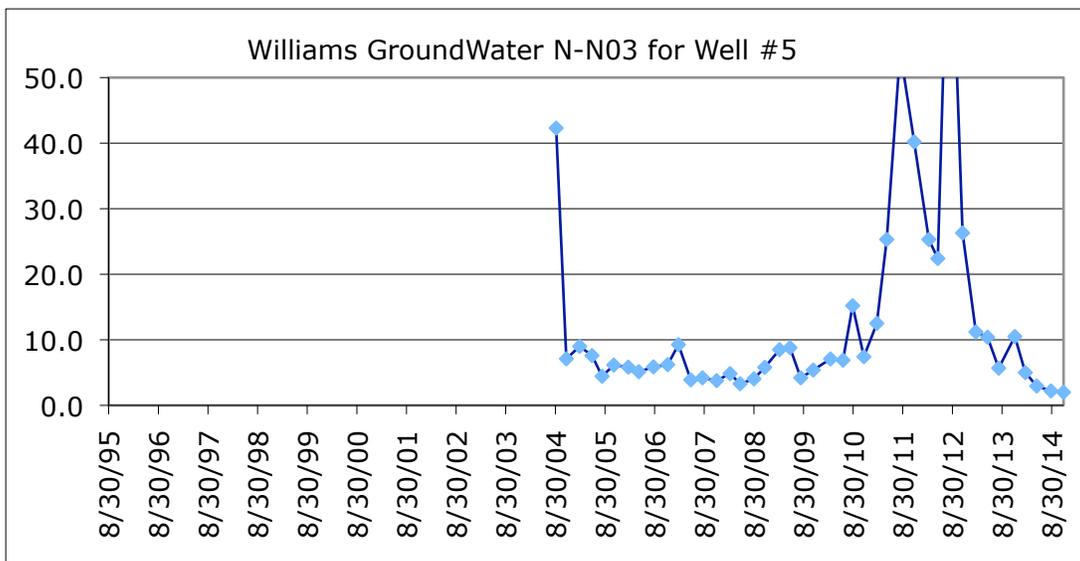
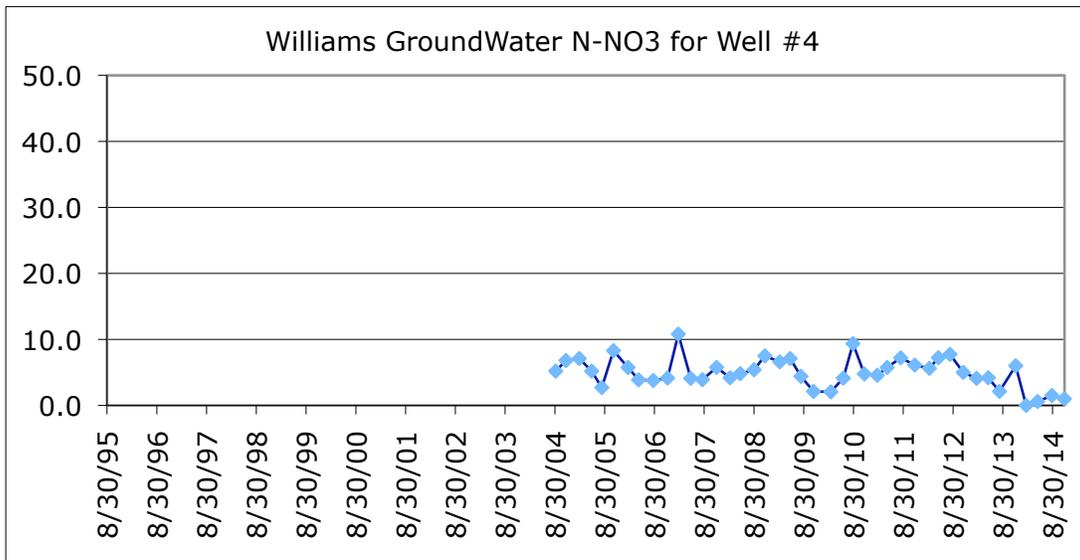


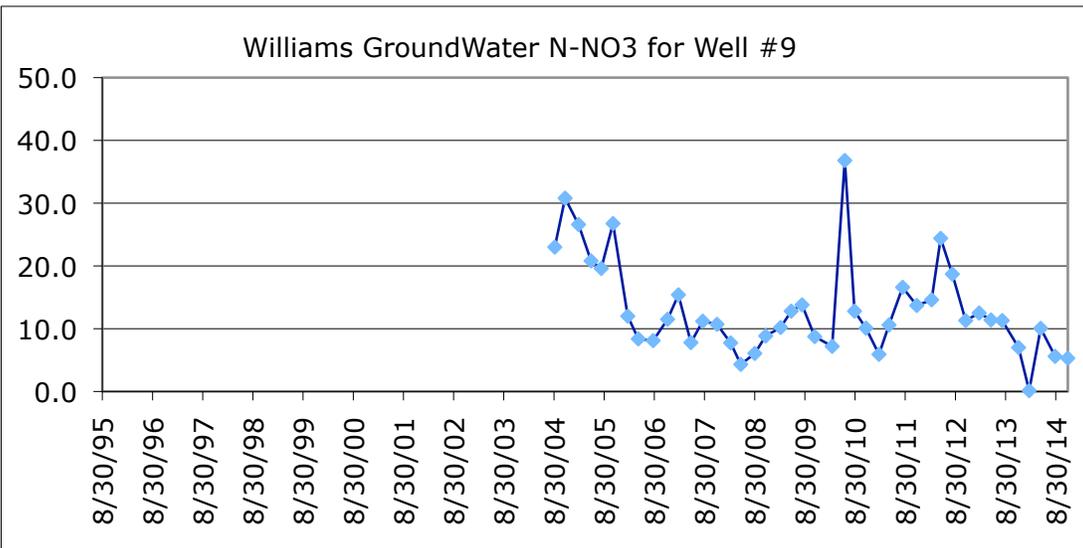
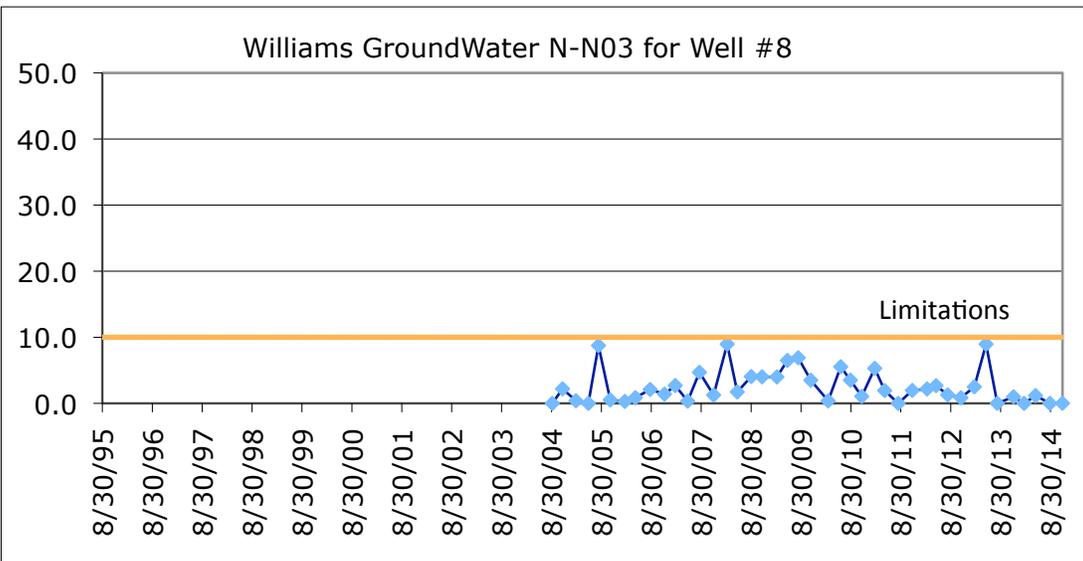
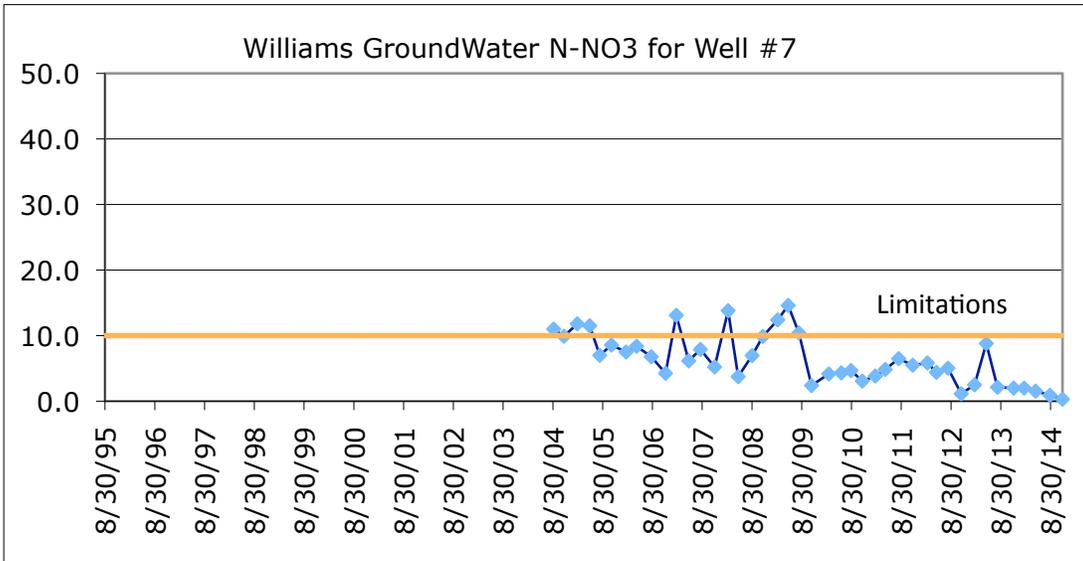












**Attachment D**

	A	B	C	D	E	F	G	H	I	J	K	L
1	<b>One Sample t-Test for Uncensored Full Data Sets without NDs</b>											
2												
3	User Selected Options											
4	Date/Time of Computation		1/4/2015 9:20:32 PM									
5	From File		WorkSheet.xls									
6	Full Precision		OFF									
7	Confidence Coefficient		95%									
8	Substantial Difference		0.000									
9	Action Level		10.000									
10	Selected Null Hypothesis		Mean <= Action Level (Form 1)									
11	Alternative Hypothesis		Mean > the Action Level									
12												
13	<b>MW2 NO3 Current</b>											
14												
15	<b>One Sample t-Test</b>											
16												
17	<b>Raw Statistics</b>											
18	Number of Valid Observations		4									
19	Number of Distinct Observations		4									
20	Minimum		1.2									
21	Maximum		5									
22	Mean		2.475									
23	Median		1.85									
24	SD		1.769									
25	SE of Mean		0.884									
26												
27	<b>H0: Sample Mean &lt;= 10 (Form 1)</b>											
28												
29	Test Value		-8.508									
30	Degrees of Freedom		3									
31	Critical Value (0.05)		2.353									
32	P-Value		0.998									
33												
34	<b>Conclusion with Alpha = 0.05</b>											
35	Do Not Reject H0, Conclude Mean <= 10											
36	P-Value > Alpha (0.05)											
37												

	A	B	C	D	E	F	G	H	I	J	K	L
1	Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensor Full Data Sets without NDs											
2												
3	User Selected Options											
4	Date/Time of Computation		1/4/2015 9:28:28 PM									
5	From File		WorkSheet.xls									
6	Full Precision		OFF									
7	Confidence Coefficient		95%									
8	Substantial Difference		0.000									
9	Selected Null Hypothesis		Sample 1 Mean/Median = Sample 2 Mean/Median (Two Sided Alternative)									
10	Alternative Hypothesis		Sample 1 Mean/Median <> Sample 2 Mean/Median									
11												
12												
13	Sample 1 Data: Sample 1											
14	Sample 2 Data: Sample 2											
15												
16	Raw Statistics											
17			Sample 1	Sample 2								
18	Number of Valid Observations		61	4								
19	Number of Distinct Observations		53	4								
20	Minimum		3.9	6.2								
21	Maximum		51.4	11.8								
22	Mean		14.41	9.375								
23	Median		12.3	9.75								
24	SD		7.293	2.453								
25	SE of Mean		0.934	1.226								
26												
27	Wilcoxon-Mann-Whitney (WMW) Test											
28												
29	H0: Mean/Median of Sample 1 = Mean/Median of Sample 2											
30												
31	Sample 1 Rank Sum W-Stat		2083									
32	WMW U-Stat		192									
33	Standardized WMW U-Stat		1.911									
34	Mean (U)		122									
35	SD(U) - Adj ties		36.62									
36	Lower Approximate U-Stat Critical Value (0.025)		-1.96									
37	Upper Approximate U-Stat Critical Value (0.975)		1.96									
38	P-Value (Adjusted for Ties)		0.056									
39												
40	Conclusion with Alpha = 0.05											
41	Do Not Reject H0, Conclude Sample 1 = Sample 2											
42												
43	P-Value >= alpha (0.05)											
44												

	A	B	C	D	E	F	G	H	I	J	K	L
1	One Sample t-Test for Uncensored Full Data Sets without NDs											
2												
3	User Selected Options											
4	Date/Time of Computation		1/4/2015 9:30:53 PM									
5	From File		WorkSheet.xls									
6	Full Precision		OFF									
7	Confidence Coefficient		95%									
8	Substantial Difference		0.000									
9	Action Level		10.000									
10	Selected Null Hypothesis		Mean <= Action Level (Form 1)									
11	Alternative Hypothesis		Mean > the Action Level									
12												
13	MW6 NO3 Current											
14												
15	One Sample t-Test											
16												
17	Raw Statistics											
18	Number of Valid Observations		4									
19	Number of Distinct Observations		4									
20	Minimum		1.7									
21	Maximum		7									
22	Mean		3.575									
23	Median		2.8									
24	SD		2.41									
25	SE of Mean		1.205									
26												
27	H0: Sample Mean <= 10 (Form 1)											
28												
29	Test Value		-5.331									
30	Degrees of Freedom		3									
31	Critical Value (0.05)		2.353									
32	P-Value		0.994									
33												
34	Conclusion with Alpha = 0.05											
35	Do Not Reject H0, Conclude Mean <= 10											
36	P-Value > Alpha (0.05)											
37												

	A	B	C	D	E	F	G	H	I	J	K	L
1	Tarone-Ware Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects											
2												
3	User Selected Options											
4	Date/Time of Computation		1/4/2015 9:53:03 PM									
5	From File		WorkSheet.xls									
6	Full Precision		OFF									
7	Confidence Coefficient		95%									
8	Selected Null Hypothesis		Sample 1 Mean/Median = Sample 2 Mean/Median (Two Sided Alternative)									
9	Alternative Hypothesis		Sample 1 Mean/Median <> Sample 2 Mean/Median									
10												
11												
12	Sample 1 Data: MW7 Mn Historical											
13	Sample 2 Data: MW7 Current											
14												
15	Raw Statistics											
16			Sample 1	Sample 2								
17	Number of Valid Data		38	4								
18	Number of Non-Detects		20	0								
19	Number of Detects		18	4								
20	Minimum Non-Detect		0	N/A								
21	Maximum Non-Detect		0	N/A								
22	Percent Non-detects		52.63%	0.00%								
23	Minimum Detect		0.08	0.24								
24	Maximum Detect		2.2	0.31								
25	Mean of Detects		0.418	0.27								
26	Median of Detects		0.175	0.265								
27	SD of Detects		0.52	0.0294								
28												
29	Sample 1 vs Sample 2 Tarone-Ware Test											
30												
31	H0: Mean/Median of Sample 1 = Mean/Median of Sample 2											
32												
33	TW Statistic		-2.896									
34	Lower TW Critical Value(0.025)		-1.96									
35	Upper TW Critical Value (0.975)		1.96									
36	P-Value		0.00378									
37												
38	Conclusion with Alpha = 0.05											
39	Reject H0, Conclude Sample 1 <> Sample 2											
40	P-Value < alpha (0.05)											
41												

	A	B	C	D	E	F	G	H	I	J	K	L
1	One Sample t-Test for Uncensored Full Data Sets without NDs											
2												
3	User Selected Options											
4	Date/Time of Computation		1/4/2015 9:32:26 PM									
5	From File		WorkSheet.xls									
6	Full Precision		OFF									
7	Confidence Coefficient		95%									
8	Substantial Difference		0.000									
9	Action Level		10.000									
10	Selected Null Hypothesis		Mean <= Action Level (Form 1)									
11	Alternative Hypothesis		Mean > the Action Level									
12												
13	MW7 NO3 Current											
14												
15	One Sample t-Test											
16												
17	Raw Statistics											
18	Number of Valid Observations		4									
19	Number of Distinct Observations		4									
20	Minimum		0.3									
21	Maximum		2									
22	Mean		1.175									
23	Median		1.2									
24	SD		0.737									
25	SE of Mean		0.368									
26												
27	H0: Sample Mean <= 10 (Form 1)											
28												
29	Test Value		-23.96									
30	Degrees of Freedom		3									
31	Critical Value (0.05)		2.353									
32	P-Value		1									
33												
34	Conclusion with Alpha = 0.05											
35	Do Not Reject H0, Conclude Mean <= 10											
36	P-Value > Alpha (0.05)											
37												

	A	B	C	D	E	F	G	H	I	J	K	L
1	Tarone-Ware Sample 1 vs Sample 2 Comparison Hypothesis Test for Data Sets with Non-Detects											
2												
3	User Selected Options											
4	Date/Time of Computation		1/4/2015 10:02:41 PM									
5	From File		WorkSheet.xls									
6	Full Precision		OFF									
7	Confidence Coefficient		95%									
8	Selected Null Hypothesis		Sample 1 Mean/Median = Sample 2 Mean/Median (Two Sided Alternative)									
9	Alternative Hypothesis		Sample 1 Mean/Median <> Sample 2 Mean/Median									
10												
11												
12	Sample 1 Data: MW8 Hisorical Mn											
13	Sample 2 Data: MW8 Current Mn											
14												
15	Raw Statistics											
16			Sample 1	Sample 2								
17	Number of Valid Data		38	4								
18	Number of Non-Detects		17	0								
19	Number of Detects		21	4								
20	Minimum Non-Detect		0	N/A								
21	Maximum Non-Detect		0	N/A								
22	Percent Non-detects		44.74%	0.00%								
23	Minimum Detect		0.15	1.15								
24	Maximum Detect		1.9	1.64								
25	Mean of Detects		0.73	1.325								
26	Median of Detects		0.65	1.255								
27	SD of Detects		0.428	0.224								
28												
29	Sample 1 vs Sample 2 Tarone-Ware Test											
30												
31	H0: Mean/Median of Sample 1 = Mean/Median of Sample 2											
32												
33	TW Statistic		-5.197									
34	Lower TW Critical Value(0.025)		-1.96									
35	Upper TW Critical Value (0.975)		1.96									
36	P-Value		2.0276E-7									
37												
38	Conclusion with Alpha = 0.05											
39	Reject H0, Conclude Sample 1 <> Sample 2											
40	P-Value < alpha (0.05)											
41												

	A	B	C	D	E	F	G	H	I	J	K	L
1	One Sample t-Test for Uncensored Full Data Sets without NDs											
2												
3	User Selected Options											
4	Date/Time of Computation		1/4/2015 9:35:21 PM									
5	From File		WorkSheet.xls									
6	Full Precision		OFF									
7	Confidence Coefficient		95%									
8	Substantial Difference		0.000									
9	Action Level		10.000									
10	Selected Null Hypothesis		Mean <= Action Level (Form 1)									
11	Alternative Hypothesis		Mean > the Action Level									
12												
13	MW8 NO3 Current											
14												
15	One Sample t-Test											
16												
17	Raw Statistics											
18	Number of Valid Observations		4									
19	Number of Distinct Observations		2									
20	Minimum		0									
21	Maximum		1.2									
22	Mean		0.3									
23	Median		0									
24	SD		0.6									
25	SE of Mean		0.3									
26												
27	H0: Sample Mean <= 10 (Form 1)											
28												
29	Test Value		-32.33									
30	Degrees of Freedom		3									
31	Critical Value (0.05)		2.353									
32	P-Value		1									
33												
34	Conclusion with Alpha = 0.05											
35	Do Not Reject H0, Conclude Mean <= 10											
36	P-Value > Alpha (0.05)											
37												

	A	B	C	D	E	F	G	H	I	J	K	L
1	One Sample Wilcoxon Signed Rank Test for Data Sets with Non-Detects											
2												
3	User Selected Options											
4	Date/Time of Computation		1/4/2015 10:05:28 PM									
5	From File		WorkSheet.xls									
6	Full Precision		OFF									
7	Confidence Coefficient		95%									
8	Action Level		0.050									
9	Selected Null Hypothesis		Mean/Median <= Action Level (Form 1)									
10	Alternative Hypothesis		Mean/Median > the Action Level									
11												
12	MW9 Mn Current											
13												
14	One Sample Wilcoxon Signed Rank Test											
15												
16	Raw Statistics											
17	Number of Valid Data		4									
18	Number of Distinct Data		3									
19	Number of Non-Detects		0									
20	Number of Detects		4									
21	Percent Non-Detects		0.00%									
22	Minimum Non-detect		N/A									
23	Maximum Non-detect		N/A									
24	Minimum Detect		0.1									
25	Maximum Detect		0.32									
26	Mean of Detects		0.178									
27	Median of Detects		0.145									
28	SD of Detects		0.104									
29	Median of Processed Data used in WSR		0.145									
30	Number Above Action Level		4									
31	Number Equal Action Level		0									
32	Number Below Action Level		0									
33	T-plus		10									
34	T-minus		0									
35												
36	H0: Sample Median <= 0.05 (Form 1)											
37												
38	Exact Test Statistic		10									
39	Critical Value (0.05)		11									
40	P-Value		N/A									
41												
42	Conclusion with Alpha = 0.05											
43	Do Not Reject H0, Conclude Mean/Median <= 0.05											
44	Do Not Reject H0, Conclude Mean/Median <= 0.05											
45												
46	All NDs are replaced by their respective DL/2											