HLW Engineering Group
Engineering Management

July 3, 2025

Mr. Michael Smith, P.E.
Land Quality Bureau - Iowa Department of Natural Resources
6200 Park Avenue, Suite 200
Des Moines, Iowa 50321

RE: 2025 Semi-Annual Water Quality Notification
SCISWA Sanitary Landfill 63-SDP-02-77P

Dear Mr. Smith:

Note for Spring 2025

The laboratory experienced an equipment failure in March 2025, which led to a delay in reporting the water quality testing results. The laboratory digested the metals samples upon receipt but did not analyze the sample until the new equipment was certified by the State laboratory. Any questions related to the emergency equipment replacement should be directed to Microbac Laboratory, Newton, Iowa.

The timeline for reporting for this site is as follows:

Sample collection: March 25, 2025
Delivery to laboratory: March 26, 2025
Metals sample digested: April 17, 2025
Metals Analyses: June 16, 2025
Results reported by laboratory: June 19, 2025
Statistical Report Completed: June 20, 2025

The delays consumed 84 calendar days (March 25, 2025 - June 19, 2025).

Hydrologic Monitoring System Plan (HMSP)
At the SCISWA Sanitary Landfill the following monitoring wells are included in the HMSP for the facility (per the Permit Revision #2 dated October 8, 2024 (Doc #111018)):

<u>Background Wells</u>
MW-307
MW-312
MW-390

<u>Downgradient Wells/Points</u>
MW-300 (Detection Monitoring Program)
MW-303 (Detection Monitoring Program)
MW-304 (Detection Monitoring Program)
MW-313 (Detection Monitoring Program)
MW-335 (Detection Monitoring Program)
MW-344 (***Assessment*** Monitoring Program)
MW-380 (Detection Monitoring Program)

MW-381 (Detection Monitoring Program)
MW-382R (***Assessment*** Monitoring Program)
MW-601 (Detection Monitoring Program)*
MW-602 (Detection Monitoring Program)*
MW-604 (Detection Monitoring Program)**
MW-605 (Detection Monitoring Program)**
GU-4A (Detection Monitoring Program)

* MW-601 and MW-602 have been sampled semi-annually since March 9, 2020 to establish background prior to waste disposal. Analytical testing has also included AMD parameters. Statistical evaluations are by both interwell and intrawell methods.

** MW-604 and MW-605 were installed prior to waste acceptance in the Cell NW1/NW2 Expansion. Analytical testing has included detection monitoring and AMD parameters. Statistical evaluations are by both interwell and intrawell methods.

<u>Alternate Source Demonstration (ASD) Acid Mine Drainage (AMD) Parameters</u>
MW-300
MW-303
MW-304
MW-313
MW-335
MW-344
MW-380
MW-381
MW-382R
MW-601
MW-602
MW-604
MW-605
GU-4A
Surface Water SW-1

<u>Baseline Water Quality Monitoring Prior to Landfill Expansion</u>
MW-603 - sampled semi-annually since March 9, 2020

Detection and assessment monitoring continues in accordance with the HMSP as approved in Special Provision 4 of the Permit Revision #2 dated October 8, 2024 (Doc #111018).

Alternate Source Demonstration related to Acid Mine Drainage
An Alternate Source Demonstration (ASD) related to metals was completed in 2014 (Doc #79861). The ASD indicates that acid mine drainage (AMD) is the contributing factor associated with the inorganic groundwater impacts historically identified in most monitoring well locations, making spatial variability impractical to sufficiently quantify. AMD is characterized by low pH levels combined with elevated metals and elevated sulfate concentrations in groundwater. With IDNR approval, intrawell statistical evaluations (along with interwell statistical methods) are employed. It is recognized that the intrawell control limits and the interwell prediction limits are at times elevated above the groundwater protection

standards (GWPS) published in Iowa Administrative Code (IAC) 567, Chapter 137. In these instances, Site-Specific GWPS are developed and are equal to the elevated control/prediction limit value.

Based on the ASD, continued acid mine drainage constituent monitoring is required and Assessment of Corrective Measures activities are not required at wells impacted by AMD. Statistically Significant Increases (SSI) and Significantly Significant Levels (SSL) for inorganic constituents would only be realized in monitoring points where AMD effects are minor (below SSI/SSL levels) and where both SSI/SSL are identified by both intrawell and interwell statistical methods at a monitoring point. The AMD impacts are addressed in Special Provision 4.k. of the Permit Revision #2 dated October 8, 2024 (Doc #111018).

AMD is evaluated using the water quality parameters alkalinity (as calcium carbonate), aluminum, iron, sulfate, and pH at site monitoring wells, at GU-4A, and at SW-1. The Spring, 2025 Acid Mine Drainage constituents are summarized in the Table below. Based on the AMD testing results summarized below, all wells demonstrate the impacts of AMD. It follows that Assessment of Corrective Action for inorganic compounds is again deferred based on the on-going AMD effects and the resulting absence of verified inorganic SSI and/or SSL.

Results of the AMD (yellow highlights indicate a value that exceeds a standard):

Monitoring Location	**pH**	**Alkalinity ($CaCO_3$)**	**Aluminum**	**Iron**	**Sulfate**
	(S.U.)	**(mg/L)**	**(ug/L)**	**(ug/L)**	**(mg/L)**
MW-300	5.7	73	569	181,000	2,450
MW-303	6.4	554	99	1,760	89.9
MW-304	6.8	378	<50	1,410	45.6
MW-307	5.6	<10	278	257,000	2,030
MW-312	6.1	334	95	7,040	361
MW-313	6.7	404	149	9,220	1,660
MW-335	6.2	524	303	13,100	2,370
MW-344	5.7	200	180	14,900	2,180
MW-380	4.7	12	1,660	38,600	1,380
MW-381	6.5	191	172	105	657
MW-382R	6.6	382	132	<100	1,030
MW-390	6.0	99	179	133,000	1,820
GU-4A	5.9	<10	220	196,000	2,350
SW-1	7.1	81	115	717	2,380
MW-601	6.6	163	106	133	771
MW-602	5.5	<10	172	63,700	1,810
MW-603	6.3	378	186	47,600	2,670
MW-604	5.9	55	159	78,900	2,100
MW-605	Dry	Dry	Dry	Dry	Dry
Limit	≤ 6.5	1000	100	300	100

Time Series Plots of AMD constituents through March 2025 are attached.

Review of the Time Series Plots of the AMD constituents indicates the following trends:

Sulfate demonstrates decreasing trends at MW-307, MW-335, MW-380, and MW-381.

Sulfate demonstrates an increasing trend at MW-603.

Aluminum demonstrates increasing trends at MW-300 and MW-602.

Alkalinity demonstrates an increasing trend at MW-382R.

Alkalinity demonstrates a decreasing trend at MW-603.

Iron demonstrates a decreasing trend at MW-307.

pH indicates decreasing trends at MW-312 and MW-602.

Notification of Results of Spring Sampling, Analysis, and Statistical Evaluation
Well in the Detection Monitoring System
Verified *Intrawell Control Limit* exceedances **for inorganic** compounds:
MW-300 - beryllium, cobalt, nickel
MW-312 - barium

Verified *Interwell Prediction Limit* exceedances **for inorganic** compounds:
MW-300 - beryllium, cobalt, nickel
MW-303 - barium
MW-304 - barium
MW-380 - cadmium, nickel
MW-602 - cobalt, nickel

Verified *Interwell Prediction Limit (double quantification rule)* exceedances **for VOC** include:
None

Well in the Assessment Monitoring System
Verified *Intrawell Control Limit* exceedances **for inorganic** compounds:
None
Verified *Interwell Prediction Limit* exceedances **for inorganic** compounds:
MW-344 - cobalt, nickel
Verified *Interwell Prediction Limit (double quantification rule)* exceedances **for VOC** include:
MW-344 – cis-1,2-dichloroethene (1.6 ug/L)
MW-382R – None

Historic Appendix II Compound Detections (green highlights = full Appendix II events):

Dichlorodifluoromethane (ug/L)
(*green highlights =a full Appendix II sample*)

Date	MW-344	MW-382R
Mar-2012	<3	**3.11**
Sep-2012	<3	<5
Mar-2013	NT	**2.4J**
Sep-2013	<3	**2.73J**
Apr-2014	NT	**2.14J**
Sep-2014	NT	**2.7J**
Mar-2015	NT	**1.59J**
Sep-2016	NT	<3
Mar-2016	NT	<1
Oct-2016	NT	**1.77J**
Mar-2017	NT	**1.86J**
Sep-2017	NT	**0.898J**
Mar-2018	NT	**1.11J**
Oct-2018	<3	**0.962J**
Mar-2019	NT	NT
Sep-2019	NT	NT
Mar-2020	NT	NT
Sep-2020	NT	NT
Apr-2021	NT	NT
Oct-2021	NT	NT
Apr-2022	NT	NT
9/1/2022	NT	NT
3/6/2023	NT	NT
9/29/2023	<1	<1
3/19/2024	NT	NT
10/3/2024	NT	NT
3/25/2025	NT	NT

Bis(2-ethylhexyl)phthalate (ug/L)
(*green highlights =a full Appendix II sample*)

Date	MW-344	MW-382R
Mar-2012	<10	<10
Sep-2012	<10	<10
Mar-2013	NT	NT
Sep-2013	<10	<10
Apr-2014	NT	NT
Sep-2014	NT	NT
Mar-2015	NT	NT
Sep-2016	NT	NT
Mar-2016	NT	NT
Oct-2016	NT	NT
Mar-2017	NT	NT
Sep-2017	NT	NT
Mar-2018	NT	NT
Oct-2018	<6	<6
Mar-2019	NT	NT
Sep-2019	NT	NT
Mar-2020	NT	NT
Sep-2020	NT	NT
Apr-2021	NT	NT
Oct-2021	NT	NT
Apr-2022	NT	NT
9/1/2022	NT	NT
3/6/2023	NT	NT
9/29/2023	<6	**16.0**
3/19/2024	NT	<6
10/3/2024	NT	<6
3/25/2025	NT	NT

Tin (mg/L)
(*green highlights =a full Appendix II sample*)

Date	MW-344	MW-382R
Mar-2012	<0.1	<0.1
Sep-2012	<0.1	<0.1
Mar-2013	NT	NT
Sep-2013	**0.605**	**0.606**
Apr-2014	<0.1	<0.1
Sep-2014	**0.0935J**	**0.153**
Mar-2015	**0.0815**	**0.0377**
Sep-2016	<0.2	<0.1
Mar-2016	<0.000255	<0.00255
Oct-2016	<0.000832	<0.00832
Mar-2017	NT	<0.00162
Sep-2017	<0.00162	<0.00162
Mar-2018	<0.00648	**0.015J**
Oct-2018	<0.00130	<0.00130
Mar-2019	<0.00180	NT
Sep-2019	NT	NT
Mar-2020	NT	NT
Sep-2020	NT	NT
Apr-2021	NT	NT
Oct-2021	NT	NT
Apr-2022	NT	NT
9/1/2022	NT	NT
3/6/2023	NT	NT
9/29/2023	<0.020	<0.020
3/19/2024	NT	NT
10/3/2024	NT	NT
3/25/2025	NT	NT

Current Appendix II Compound Detections:
None

Corrective Actions Summary:
Conditions confirm that acid mine drainage impacts are endemic to the site and the approved alternate source demonstrated for the *inorganic compound* concentrations continues to be appropriately applied at this site. Corrective Actions for VOC are not required at MW-344 or MW-382R based on the evaluation of the 95% Lower Confidence Limits at MW-344 and MW-382R.

Wells returning to detection monitoring:
None.

This notification is intended to satisfy requirements of Iowa Administrative Code (IAC) 567-113.10(5)"c"(1); 113.10(6)"d"(1); and 113.10(6)"g".

The water quality results for the Spring of 2025 will be fully evaluated in the Annual Water Quality Report (AWQR) in accordance with IAC 567-113.10(10) due January 31, 2026.

Please feel free to contact our office at (515) 733-4144 with any questions you may have.

Sincerely,
HLW Engineering Group

Todd Whipple, CPG
Project Manager

cc: Rick Hurt, Executive Director6

Results of the Ground Water Statistics

for South Central Iowa Solid Waste Agency Landfill

First Semi-Annual Monitoring Events in 2025

Prepared for:
South Central Iowa Solid Waste Agency Landfill
1736 Highway T17
Tracy, IA

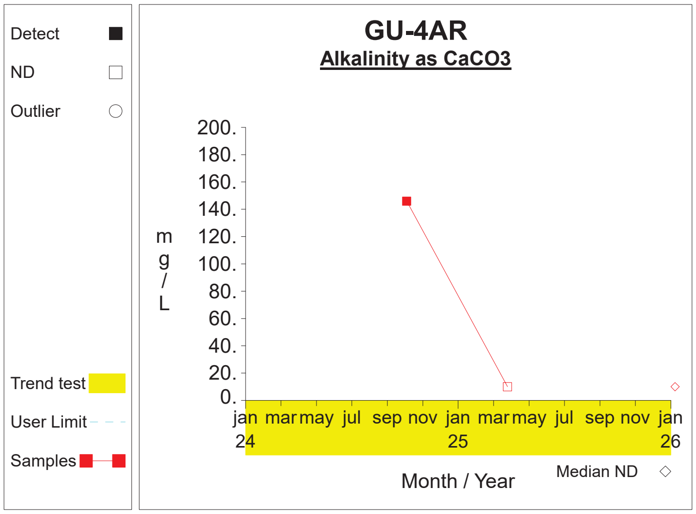
Prepared by:
Jeffrey A. Holmgren
Otter Creek Environmental Services, L.L.C.
Elgin, IL
(847) 464-1355

June 2025

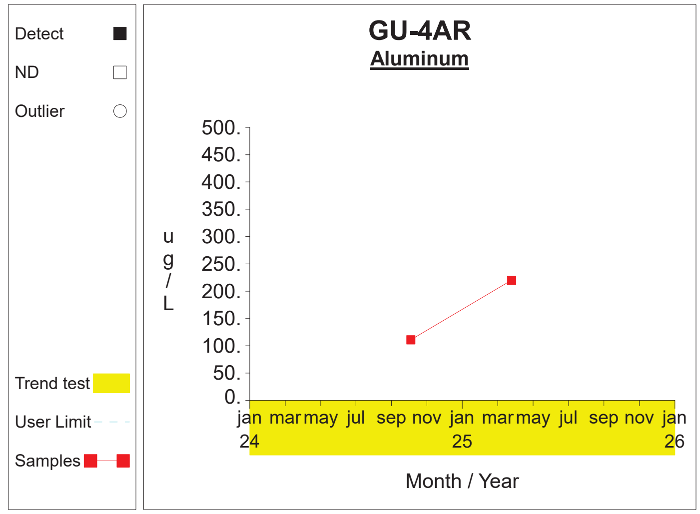
Attachment G

Time Series Plots of Inorganics

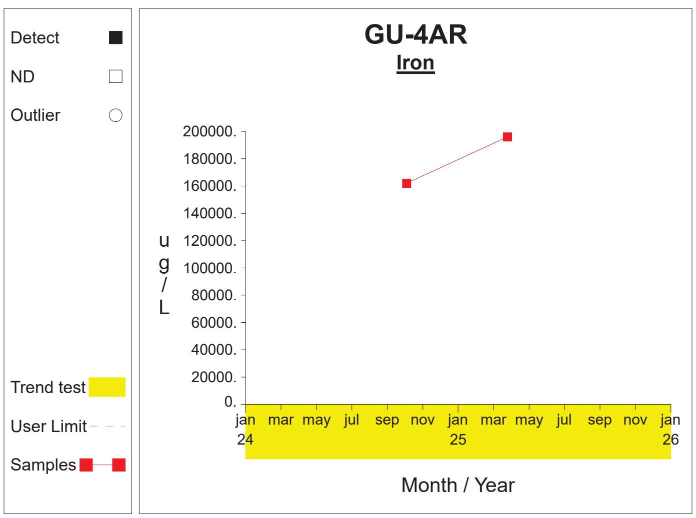
Time Series



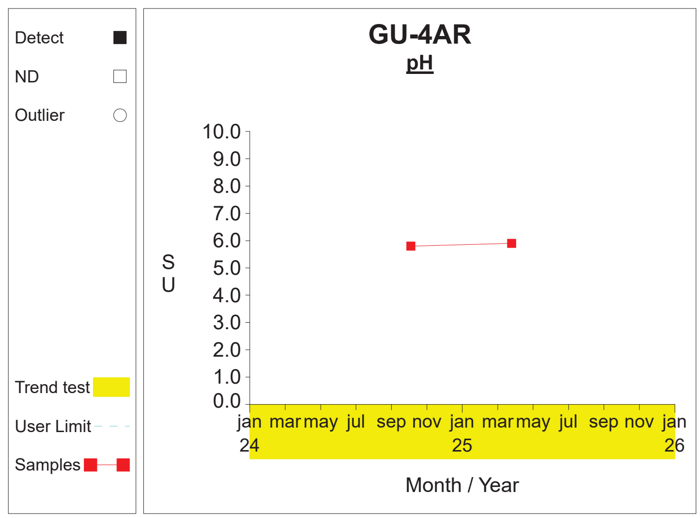
Graph 1



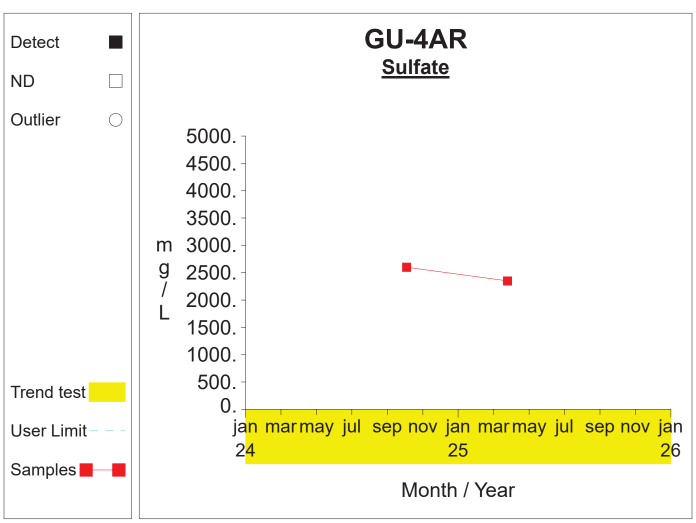
Graph 2



Graph 3

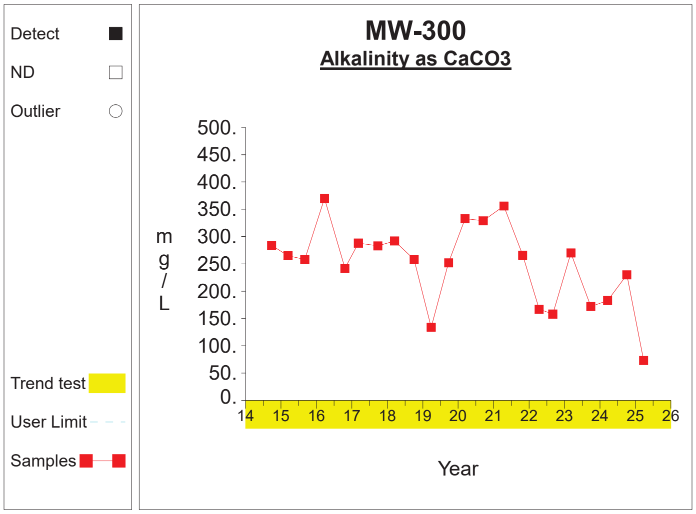


Graph 4

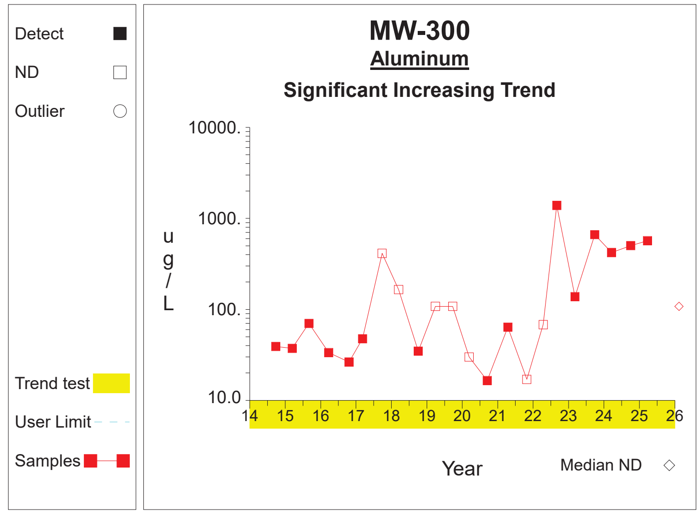


Graph 5

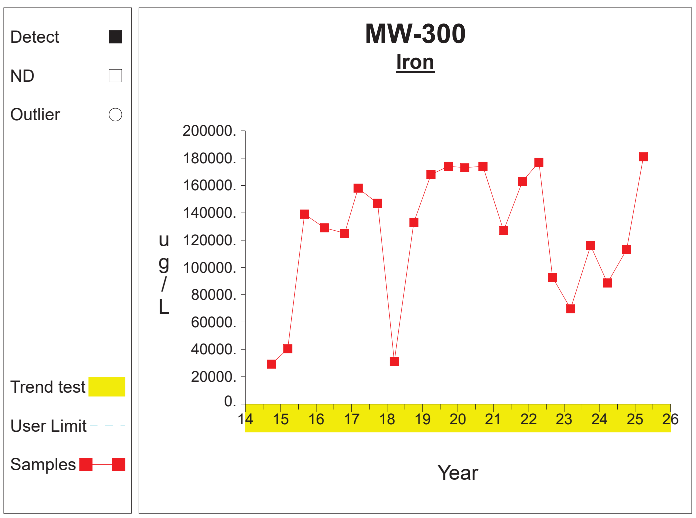
Time Series



Graph 6



Graph 7



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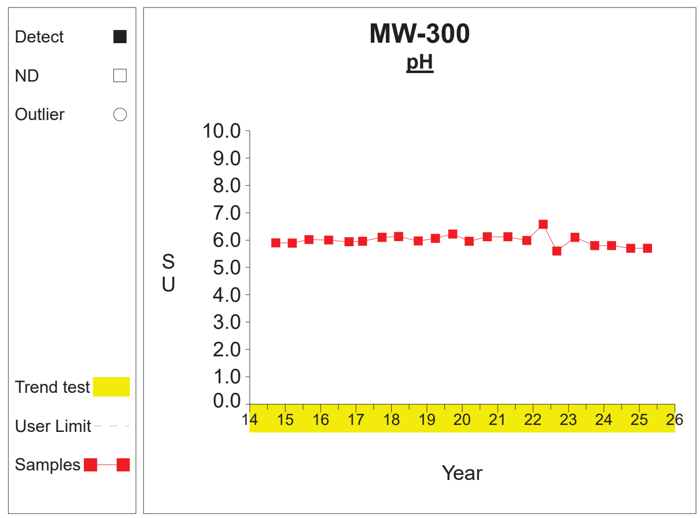
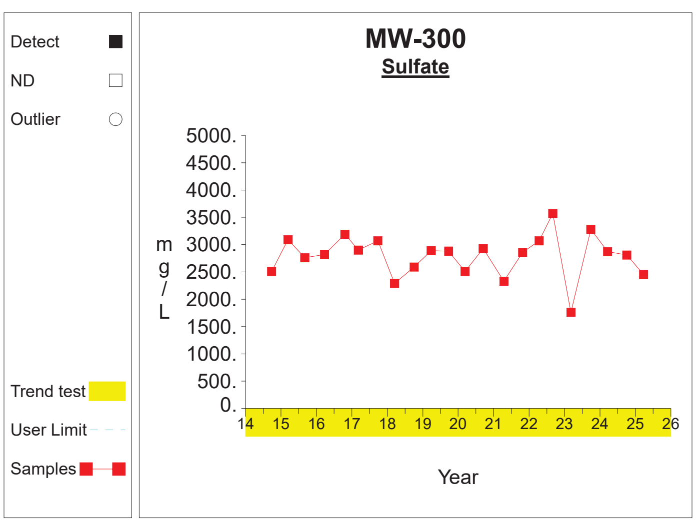
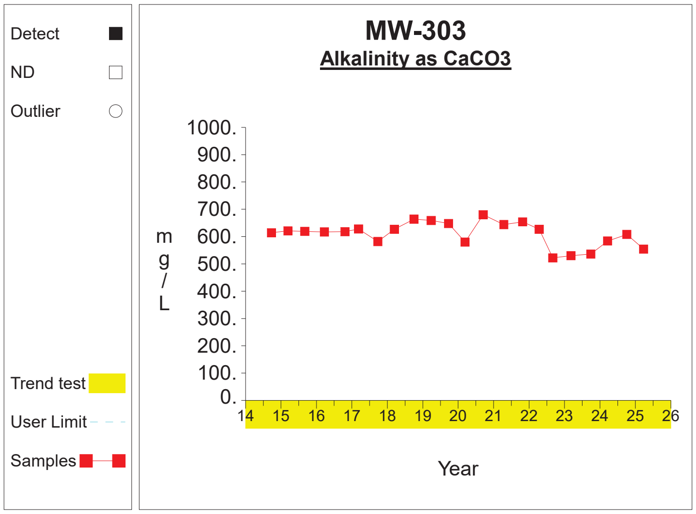


Graph 9

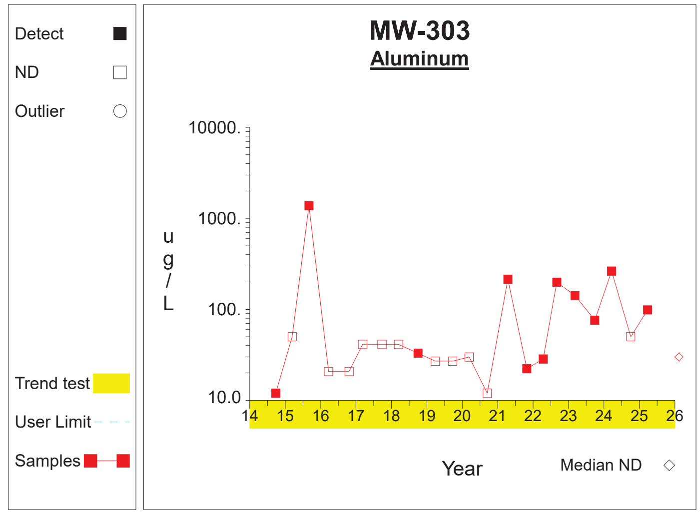


Graph 10

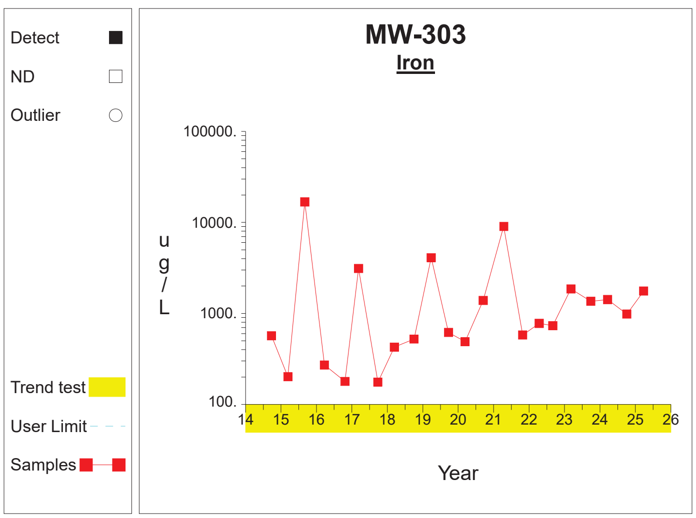
Time Series



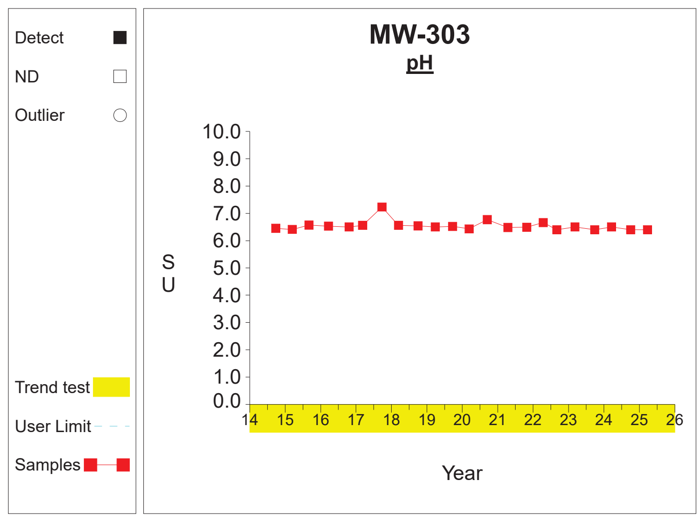
Graph 11



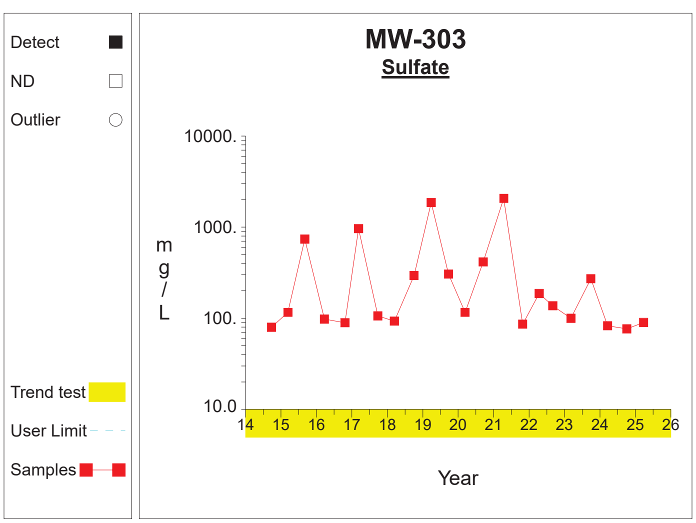
Graph 12



Graph 13

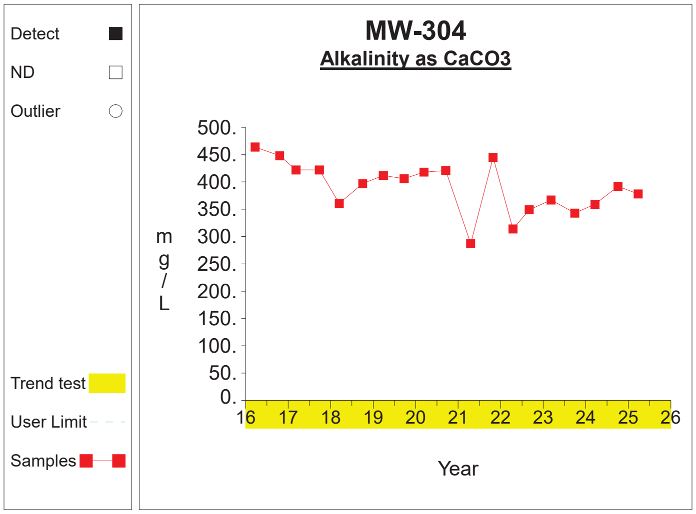


Graph 14

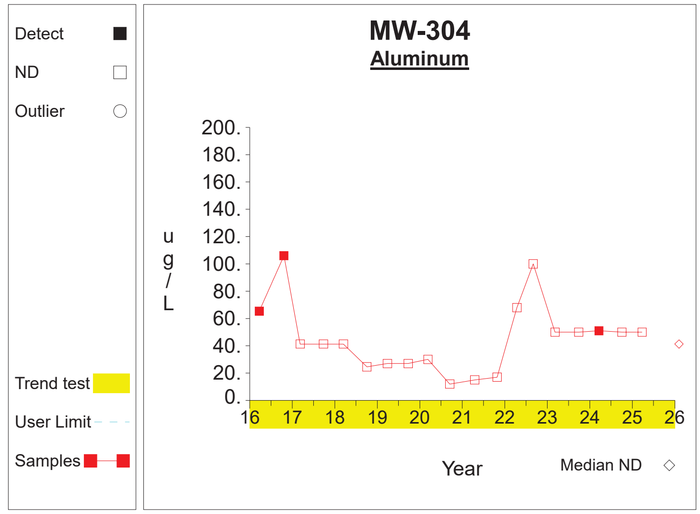


Graph 15

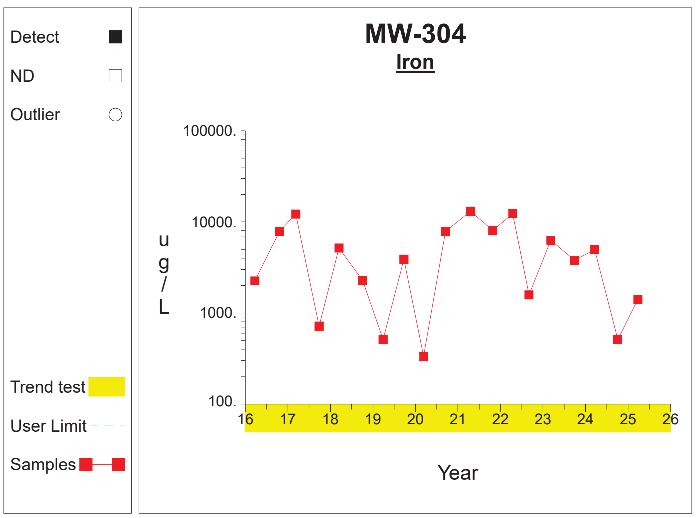
Time Series



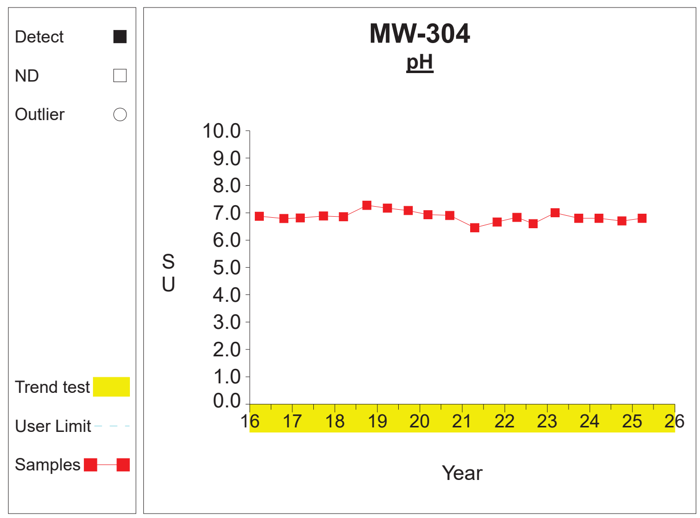
Graph 16



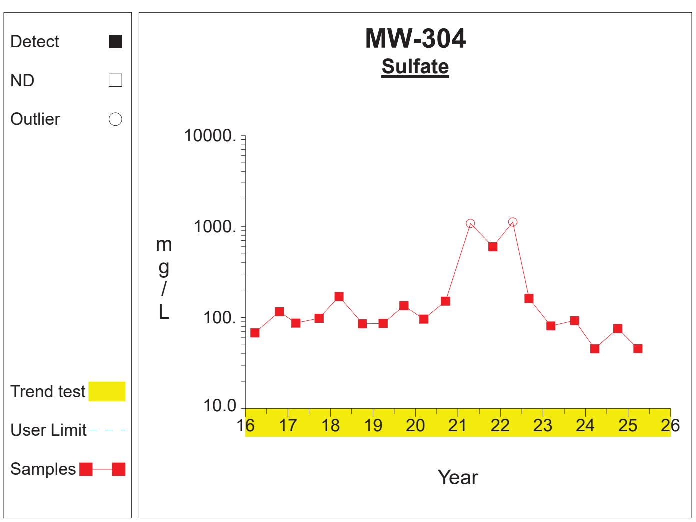
Graph 17



Graph 18

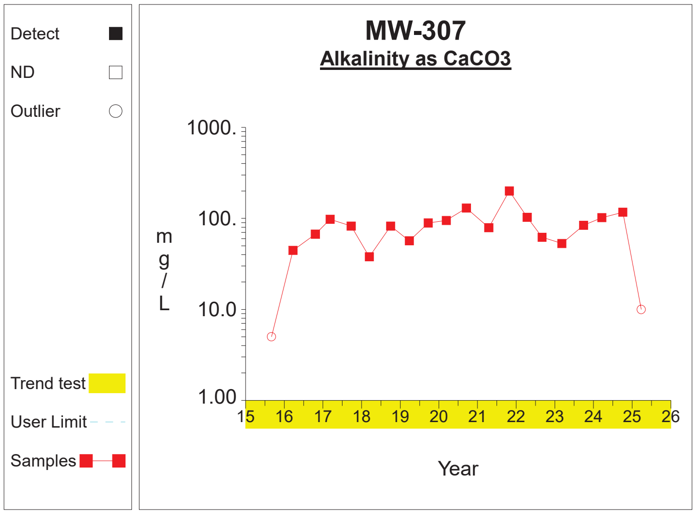


Graph 19

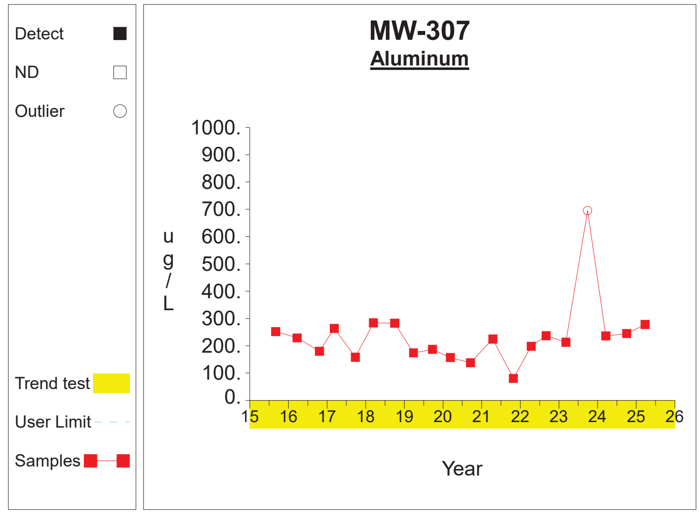


Graph 20

Time Series



Graph 21



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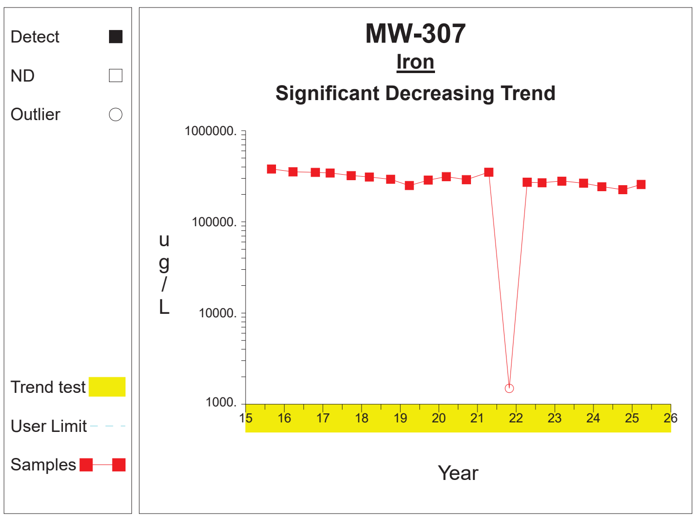
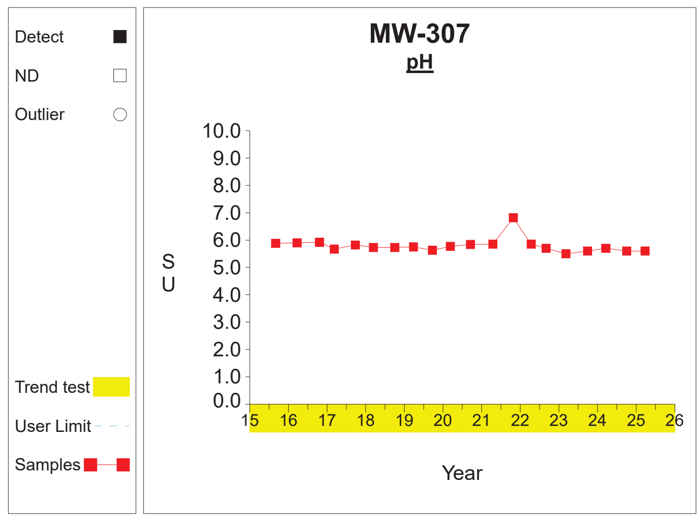
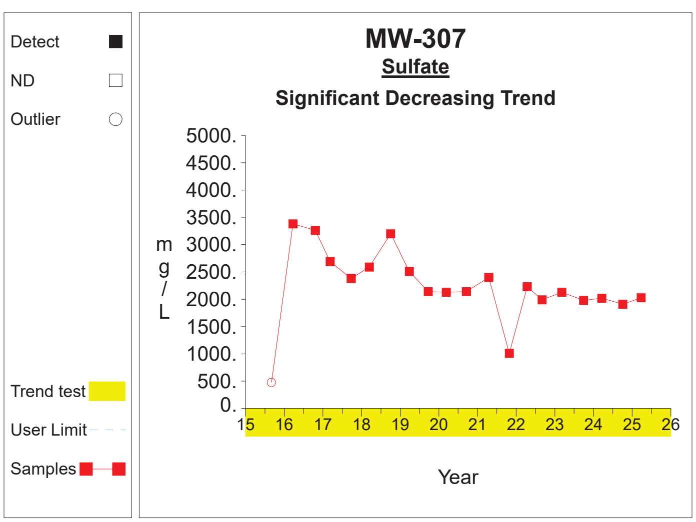


Graph 23

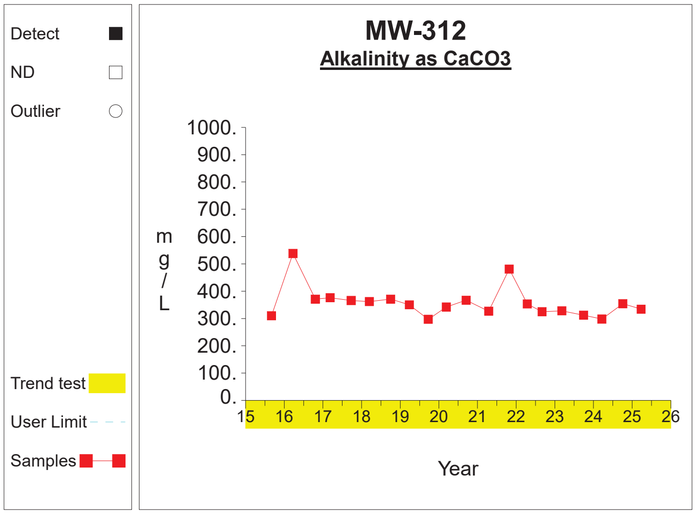


Graph 24

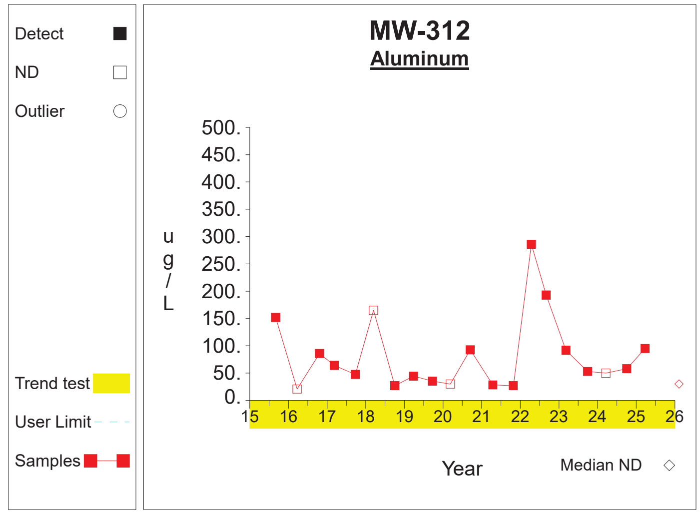


Graph 25

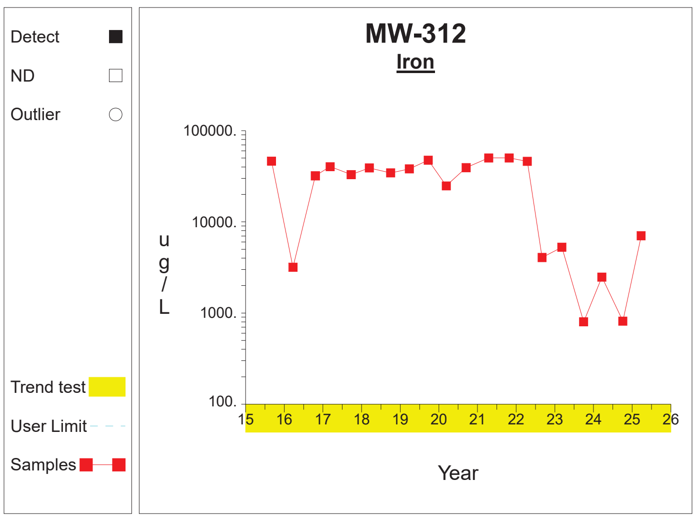
Time Series



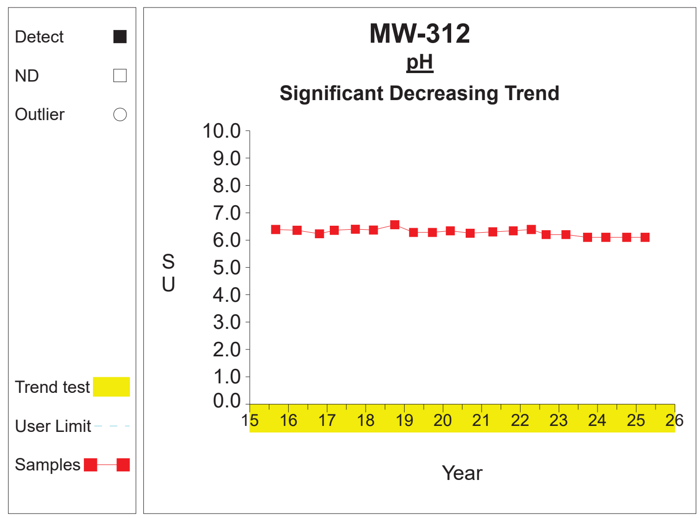
Graph 26



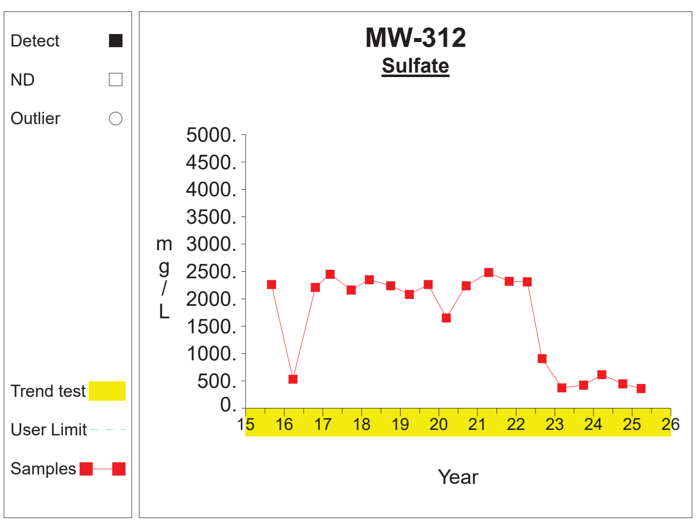
Graph 27



Graph 28

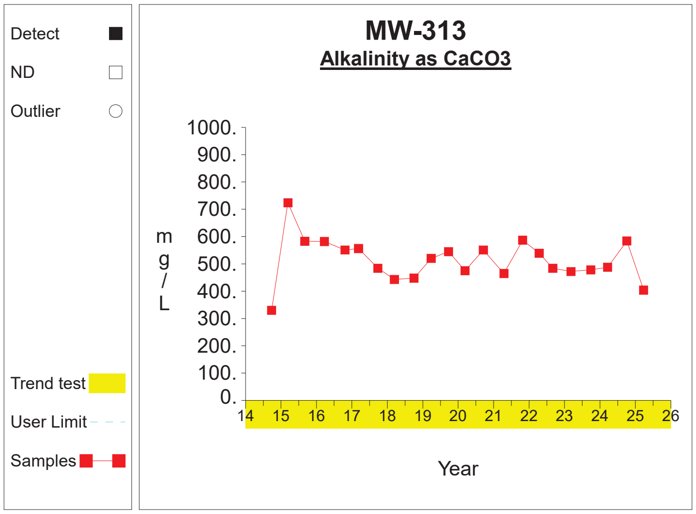


Graph 29

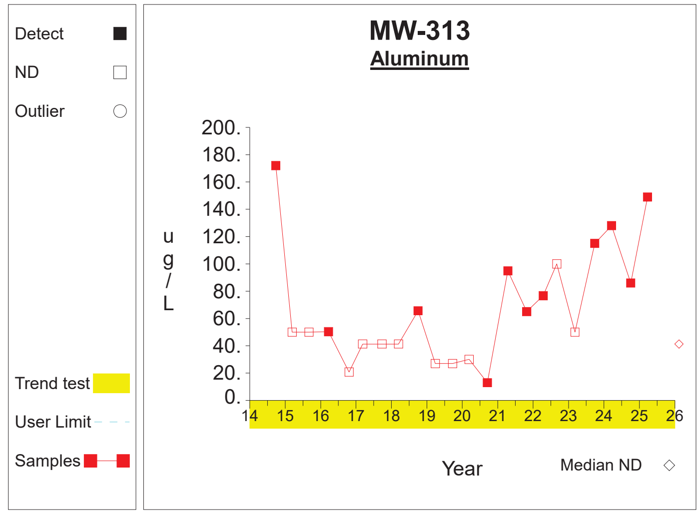


Graph 30

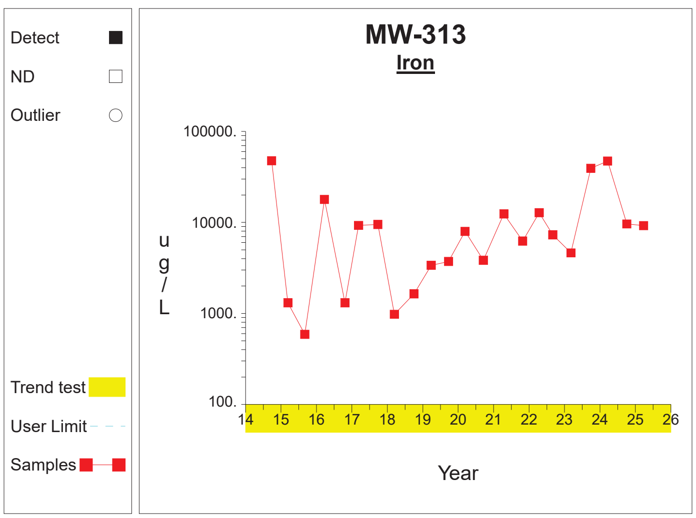
Time Series



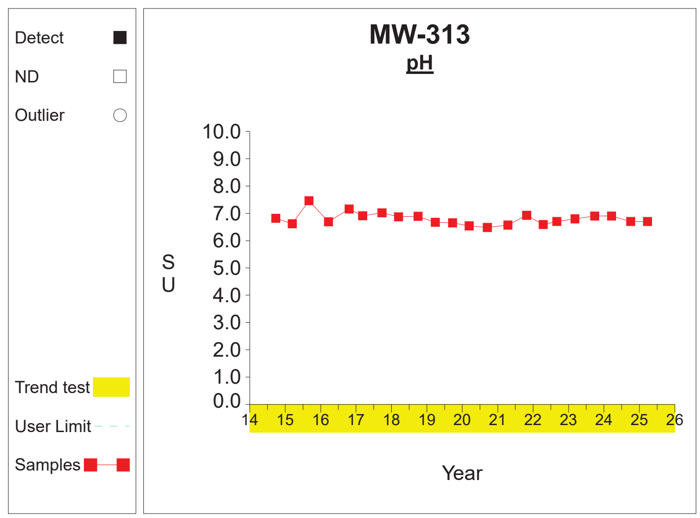
Graph 31



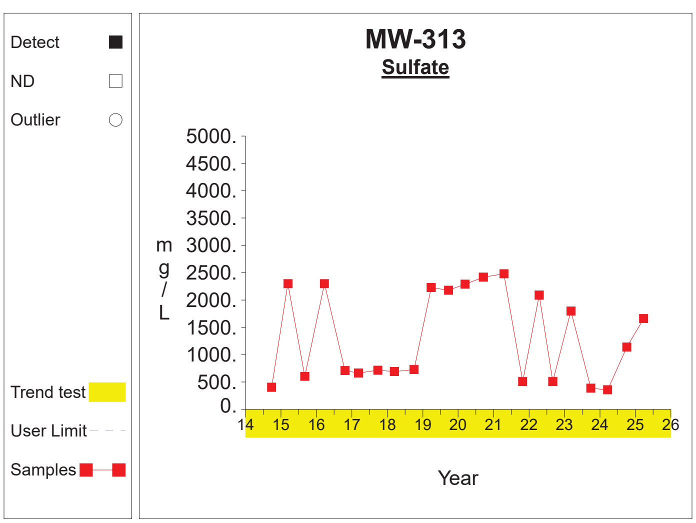
Graph 32



Graph 33

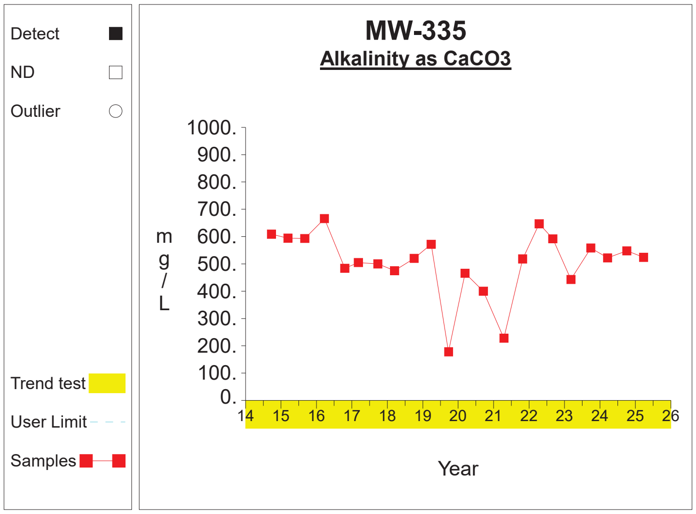


Graph 34

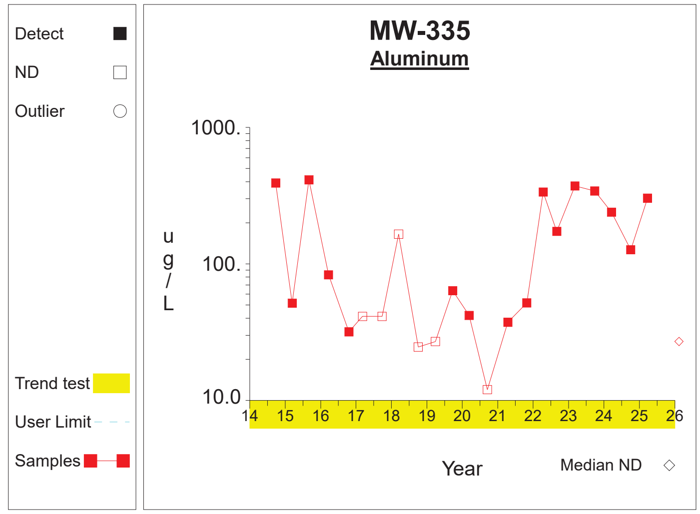


Graph 35

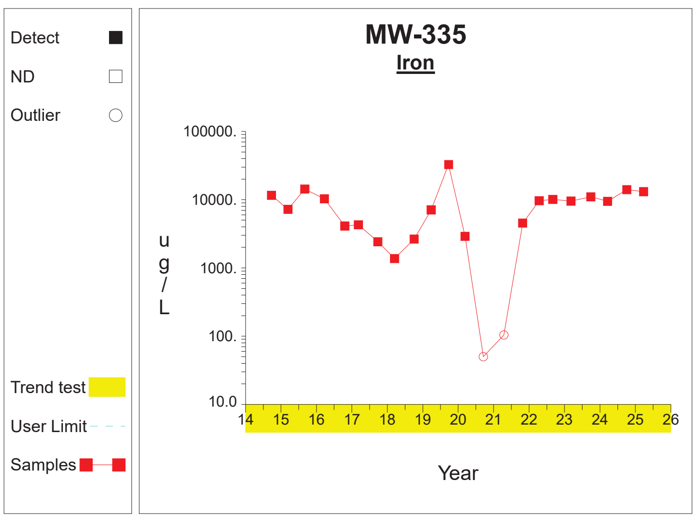
Time Series



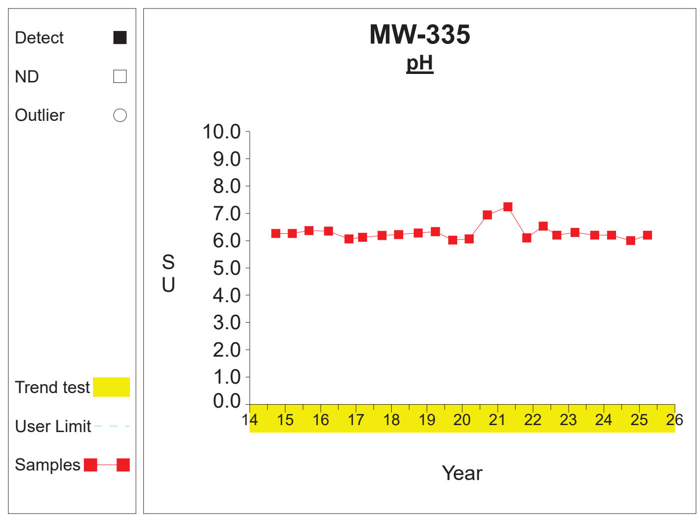
Graph 36



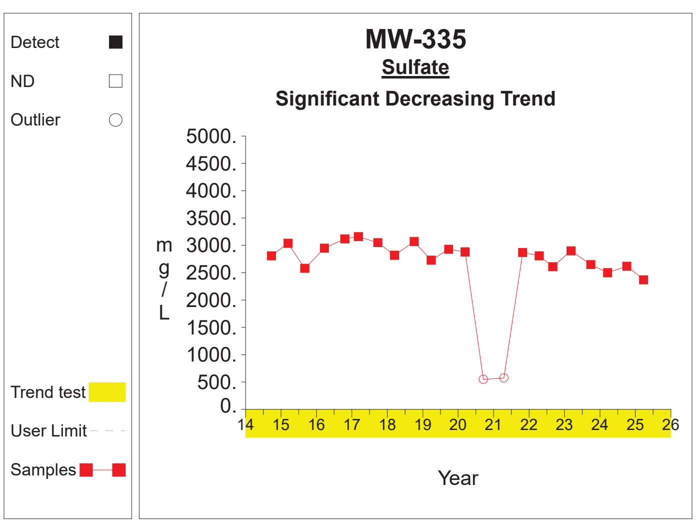
Graph 37



Graph 38

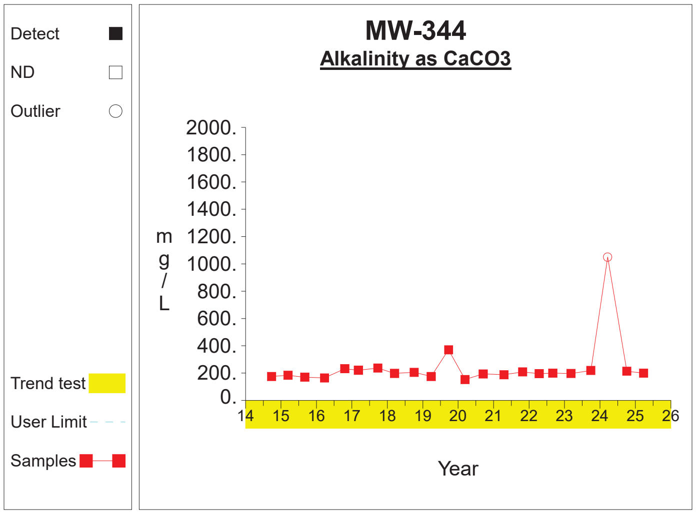


Graph 39

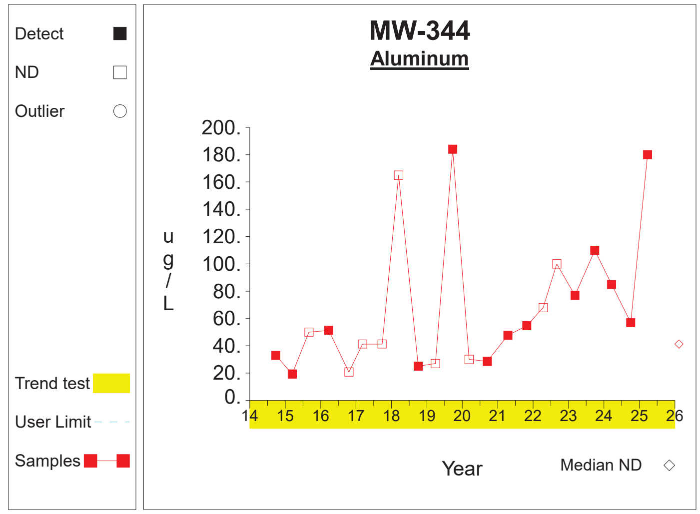


Graph 40

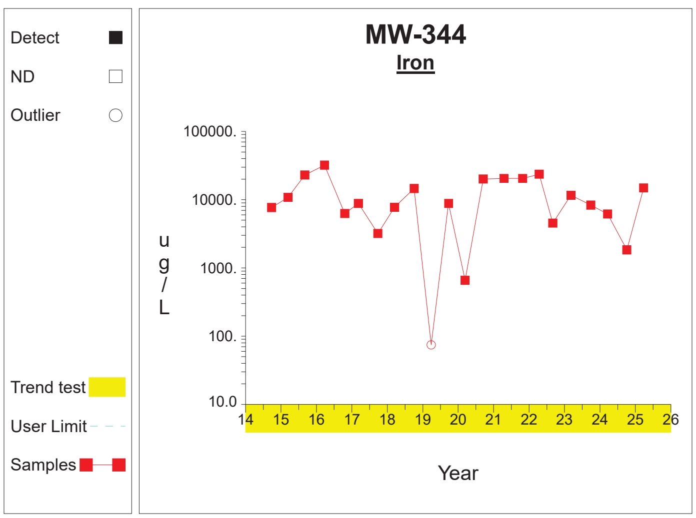
Time Series



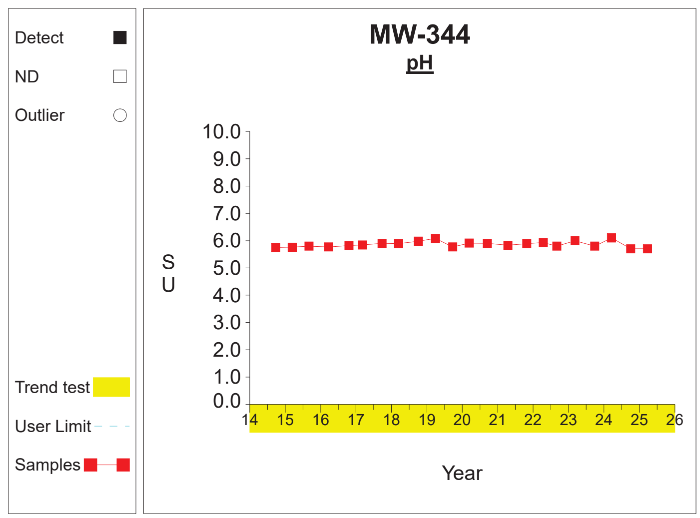
Graph 41



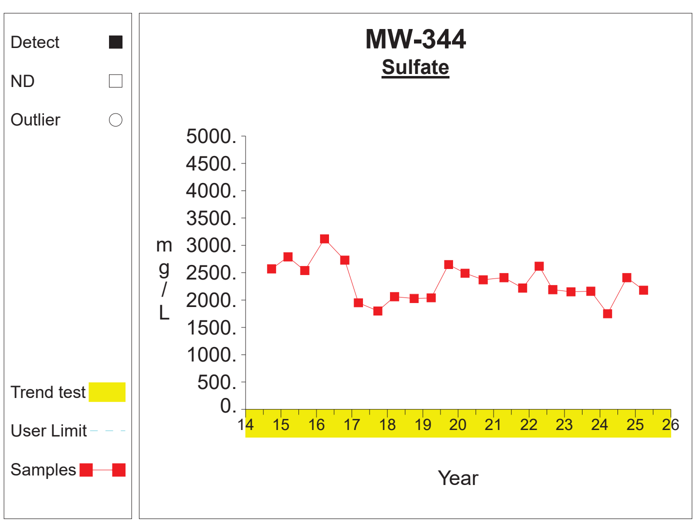
Graph 42



Graph 43

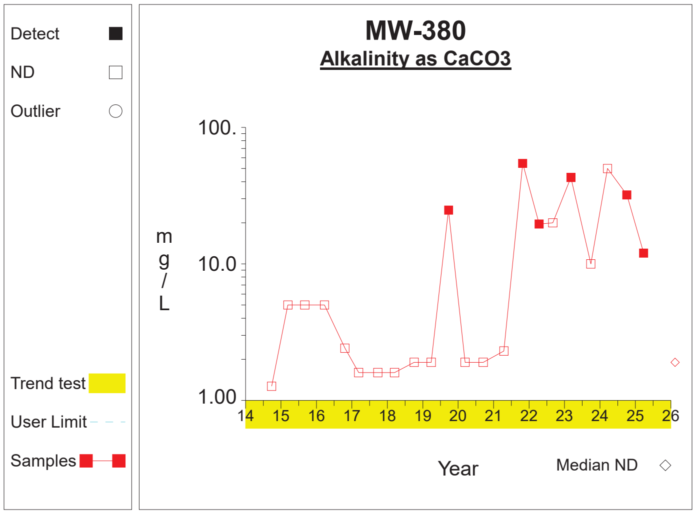


Graph 44

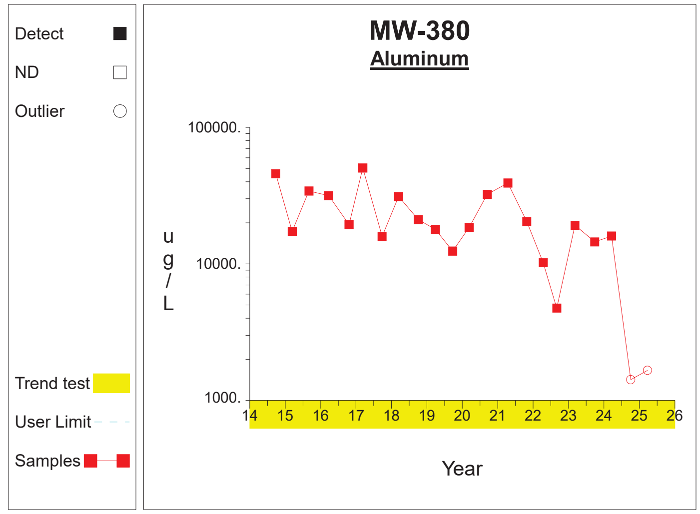


Graph 45

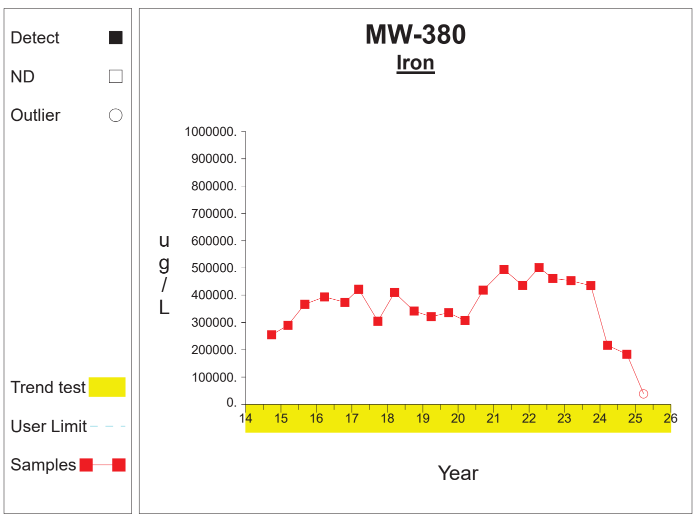
Time Series



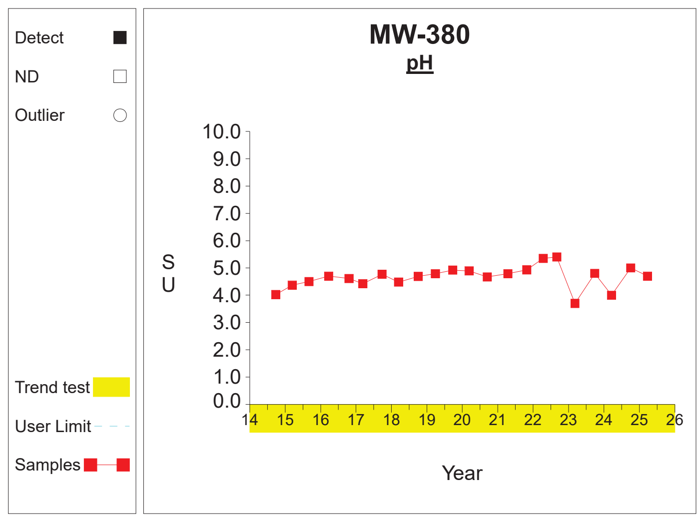
Graph 46



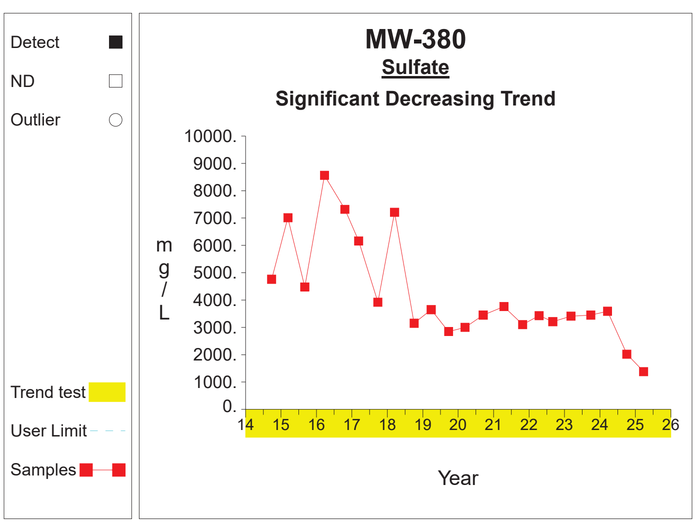
Graph 47



Graph 48

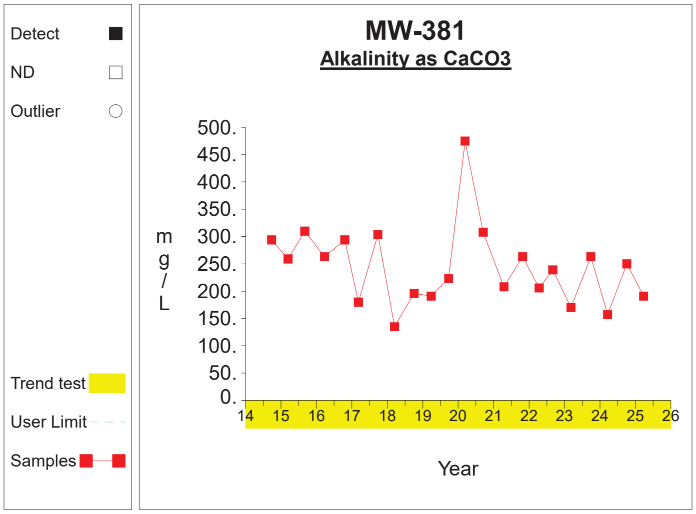


Graph 49

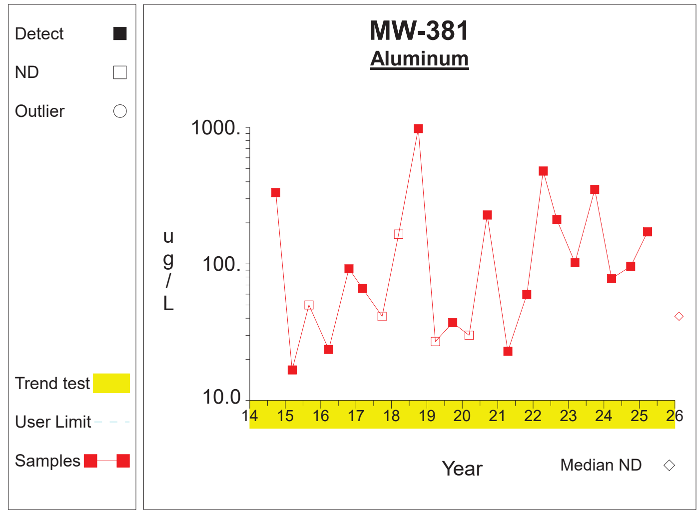


Graph 50

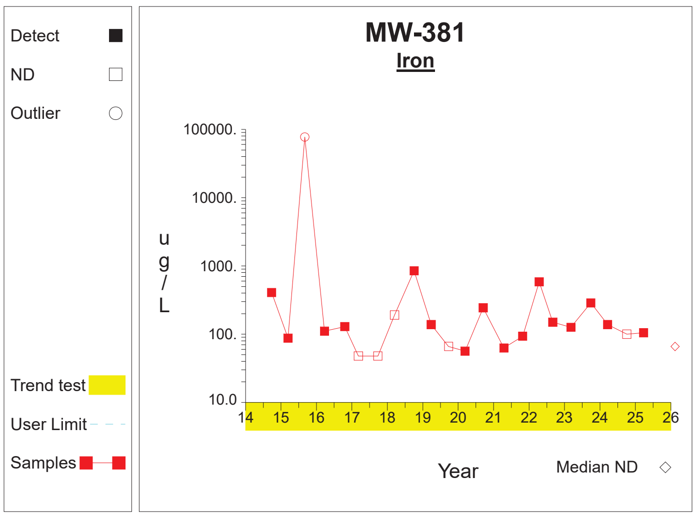
Time Series



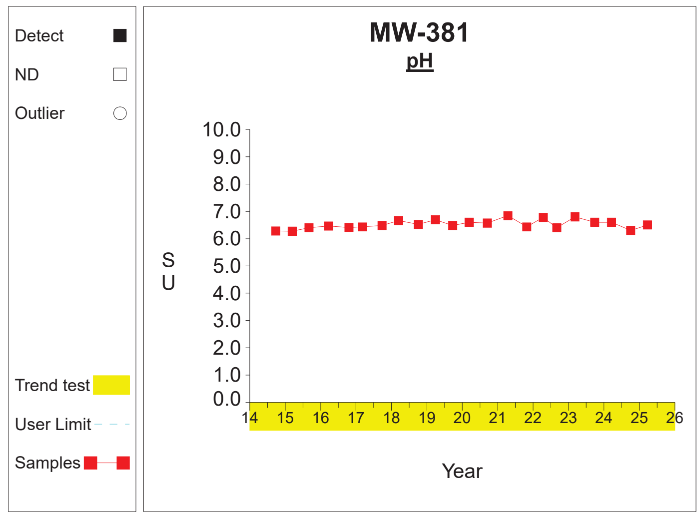
Graph 51



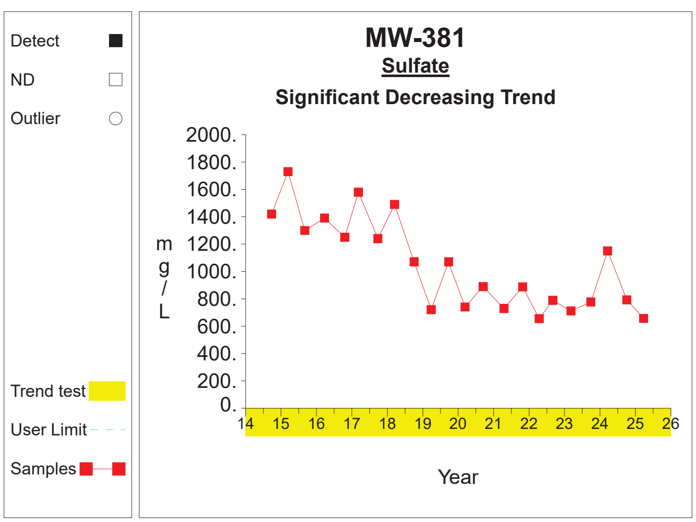
Graph 52



Graph 53

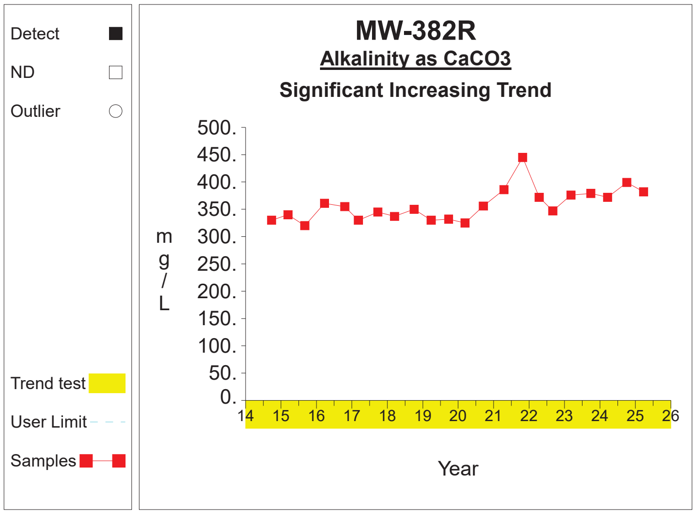


Graph 54

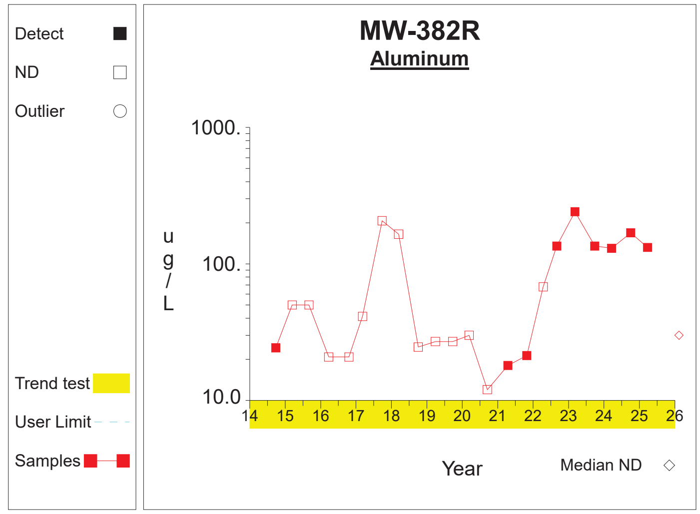


Graph 55

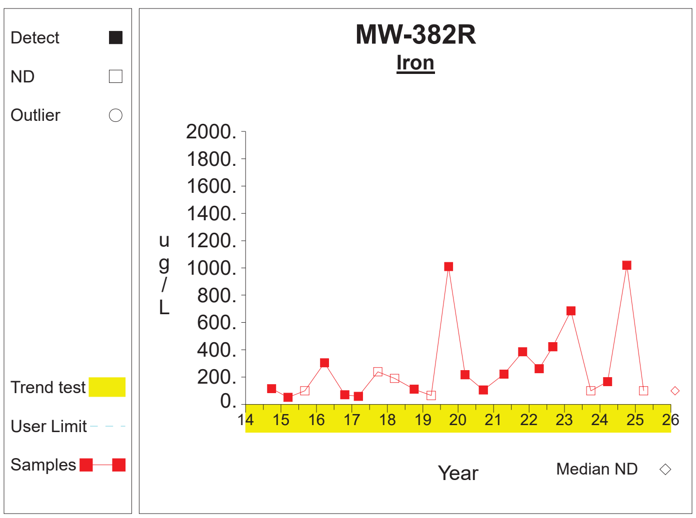
Time Series



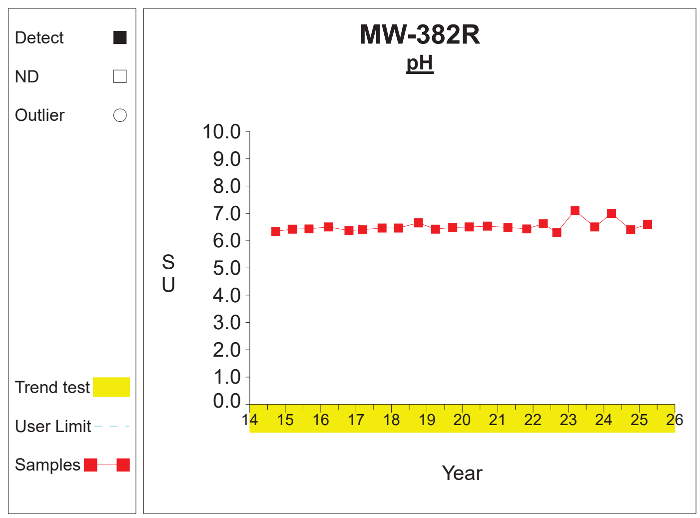
Graph 56



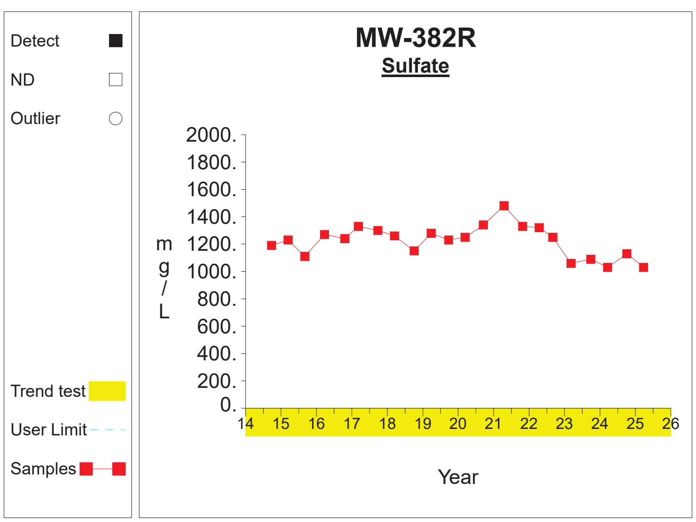
Graph 57



Graph 58

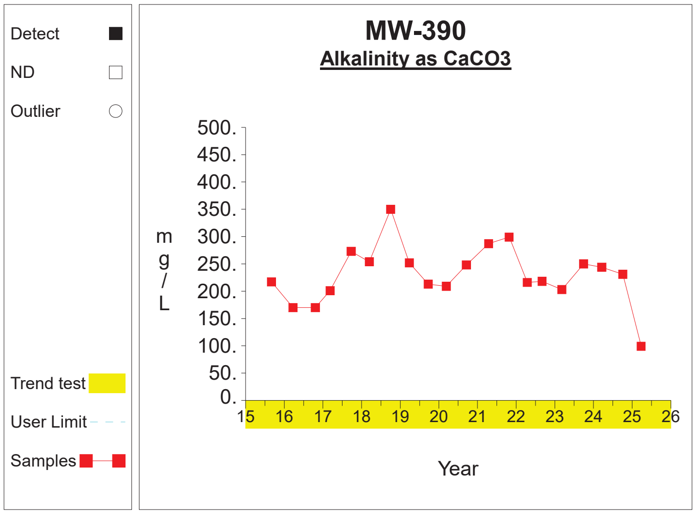


Graph 59

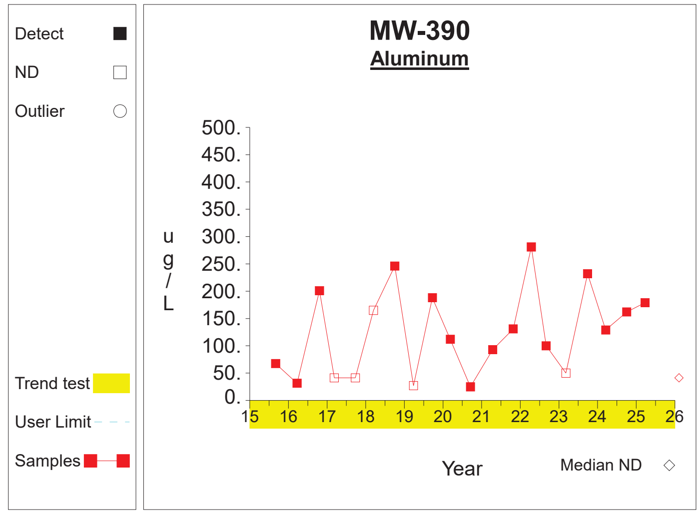


Graph 60

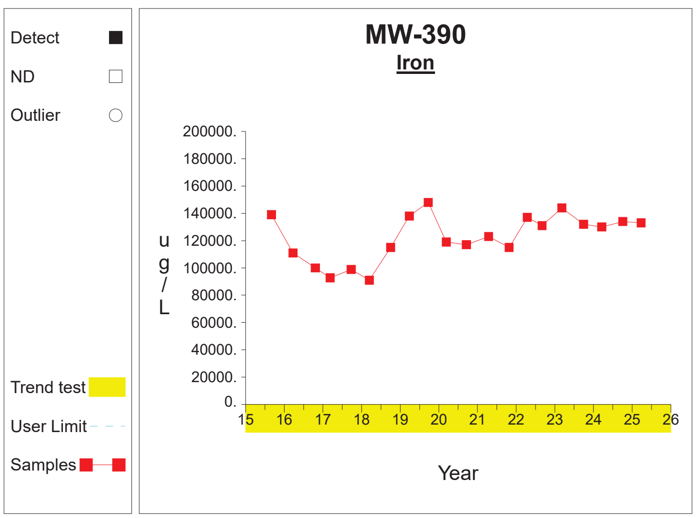
Time Series



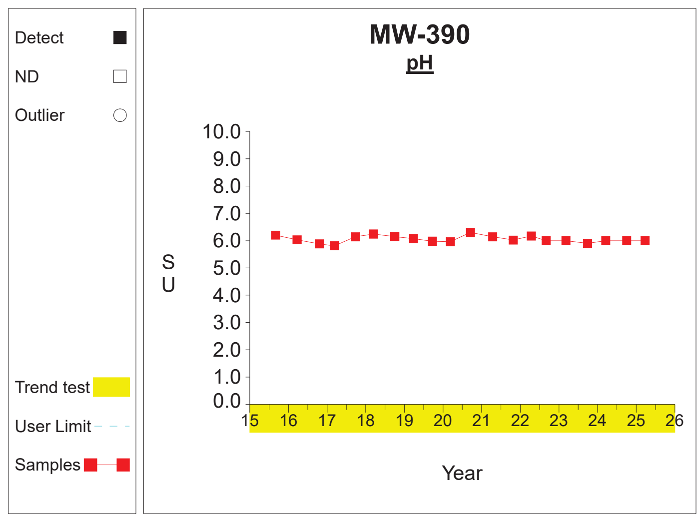
Graph 61



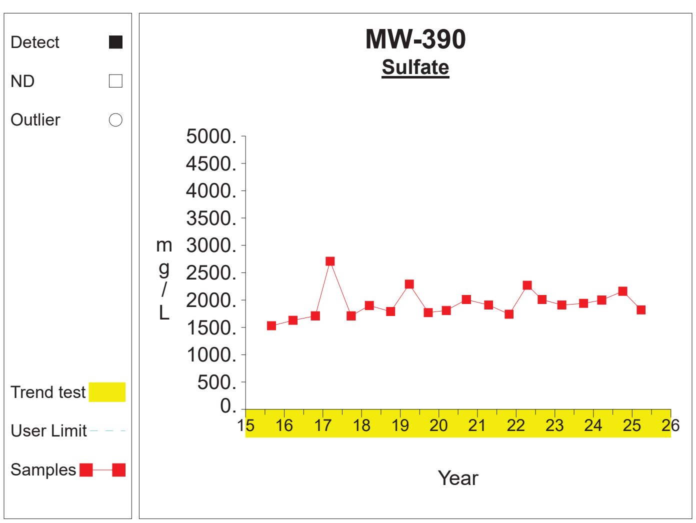
Graph 62



Graph 63

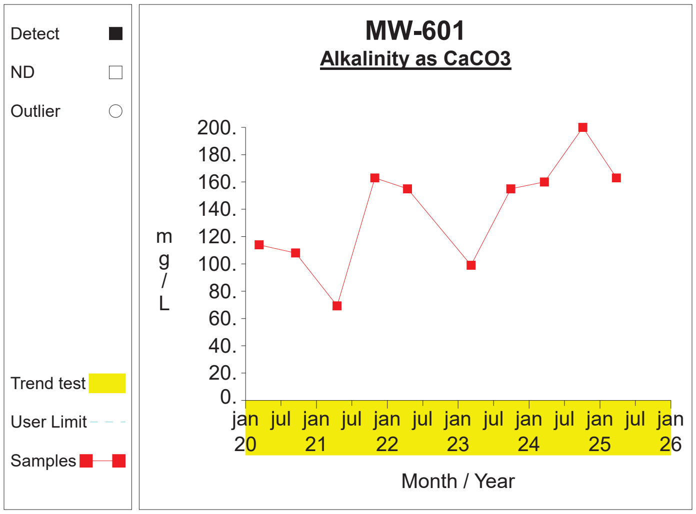


Graph 64

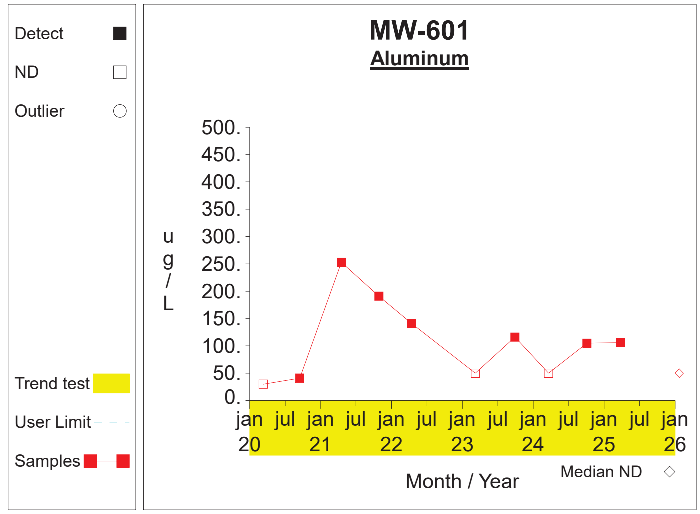


Graph 65

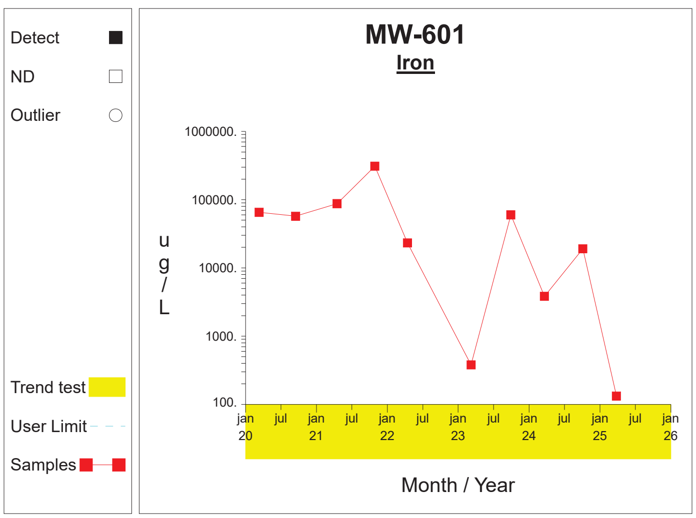
Time Series



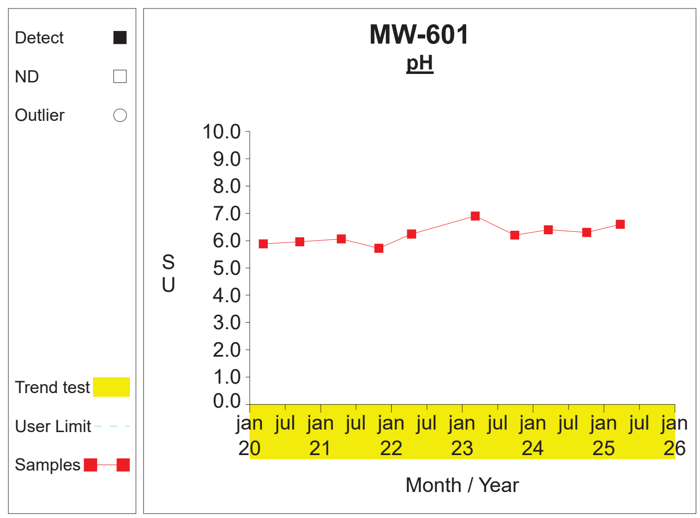
Graph 66



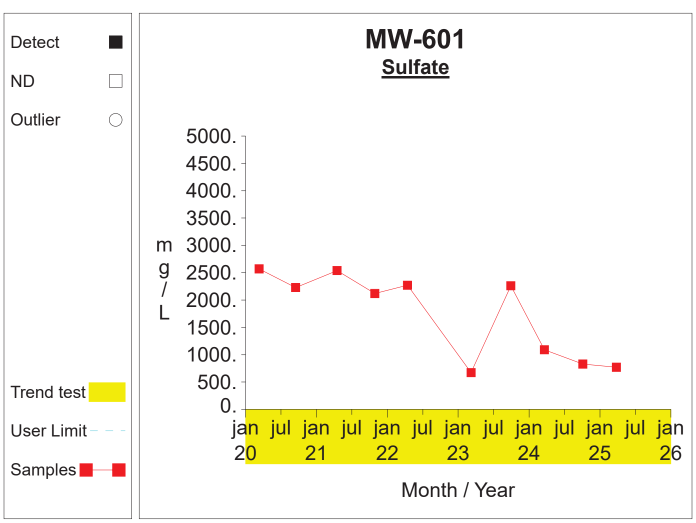
Graph 67



Graph 68

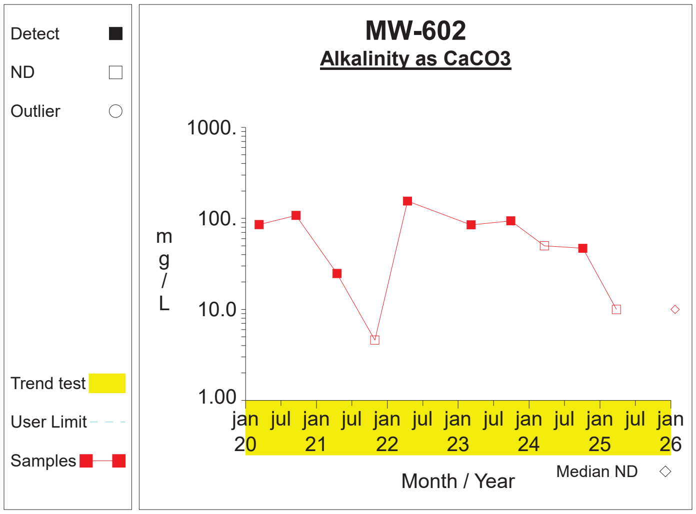


Graph 69

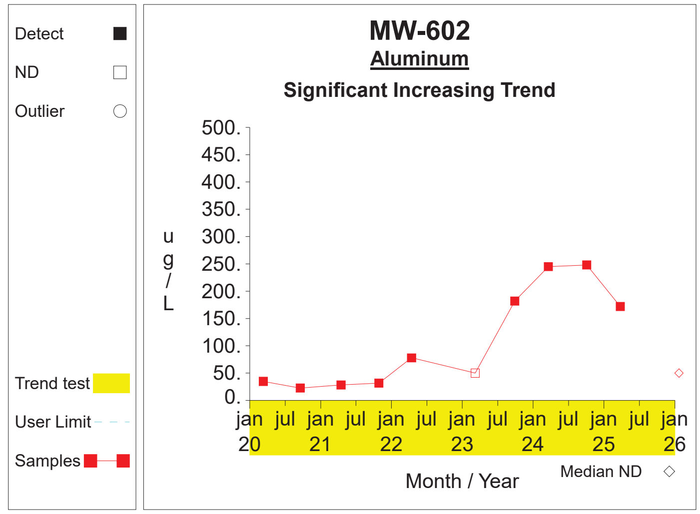


Graph 70

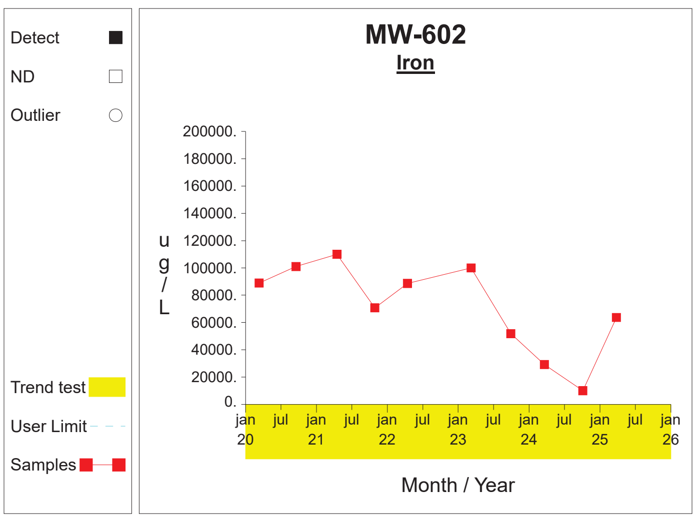
Time Series



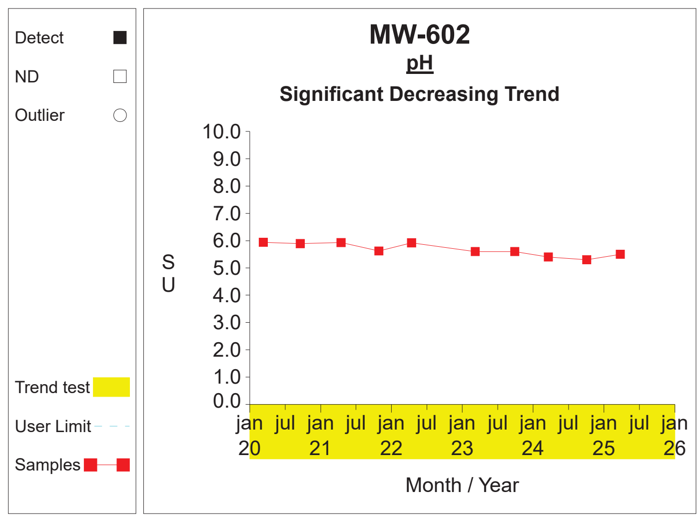
Graph 71



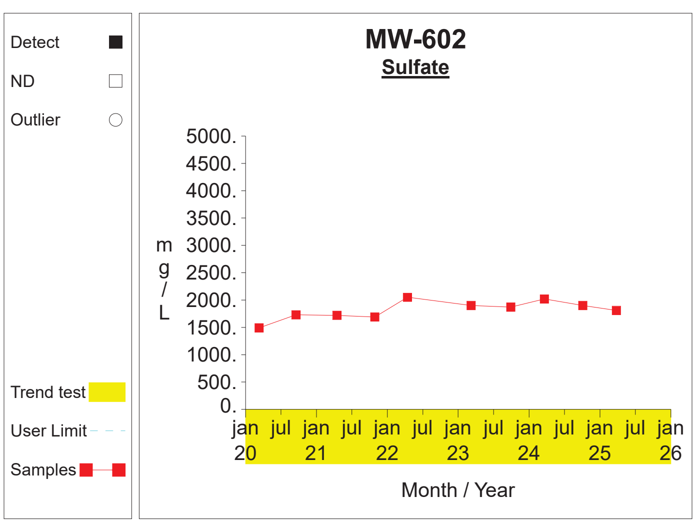
Graph 72



Graph 73

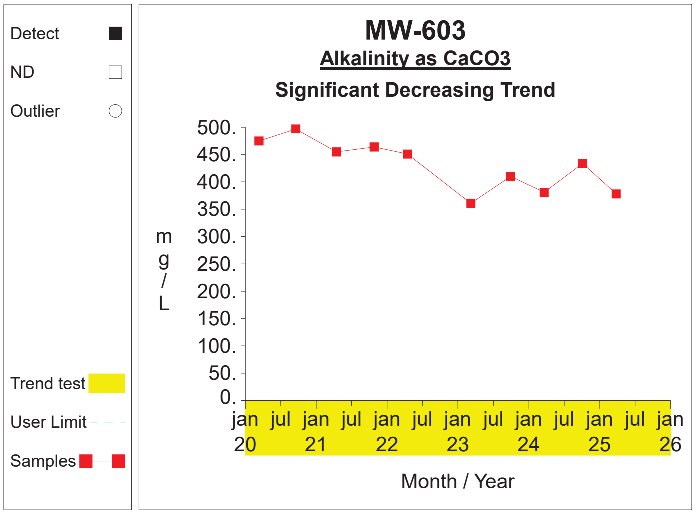


Graph 74

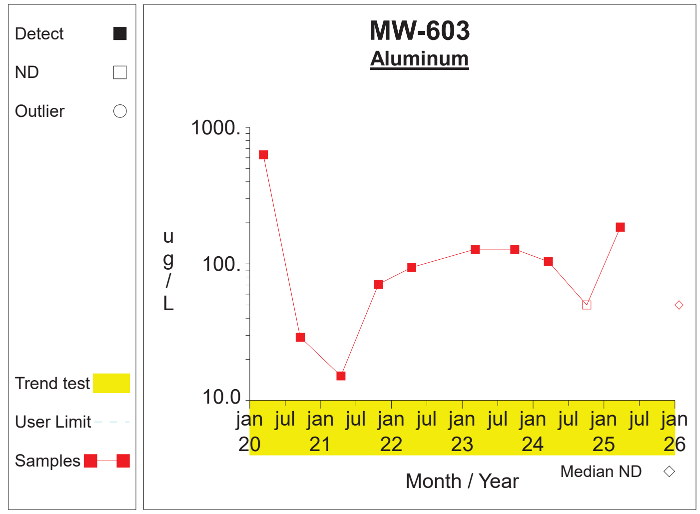


Graph 75

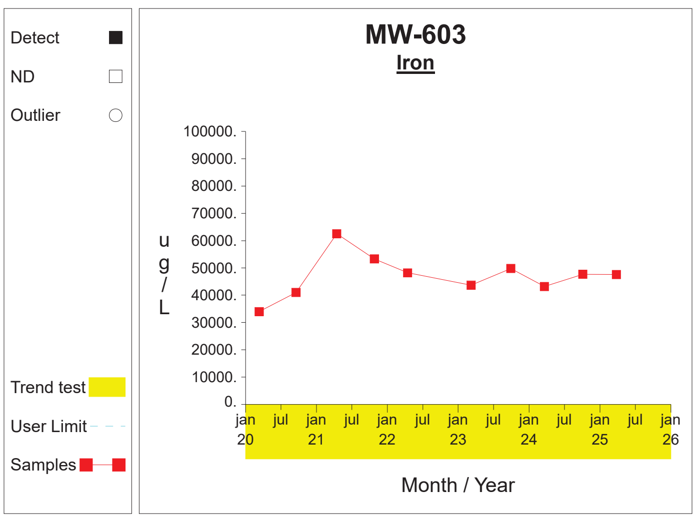
Time Series



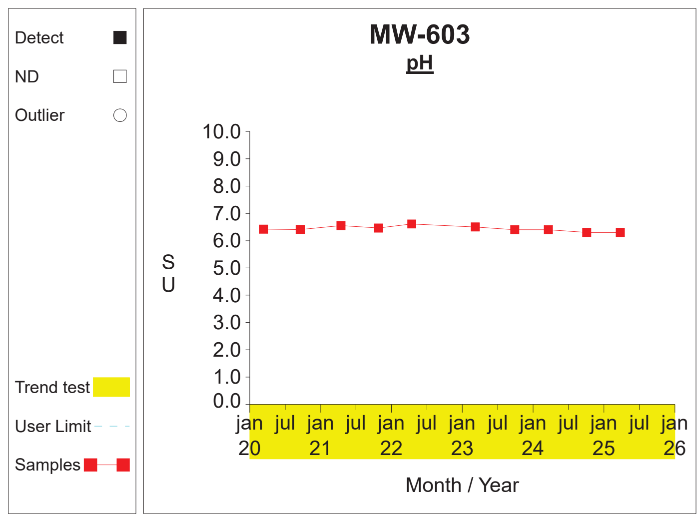
Graph 76



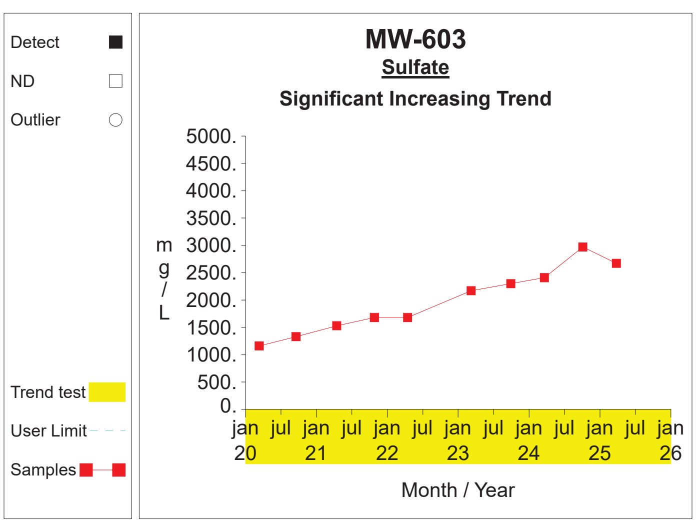
Graph 77



Graph 78

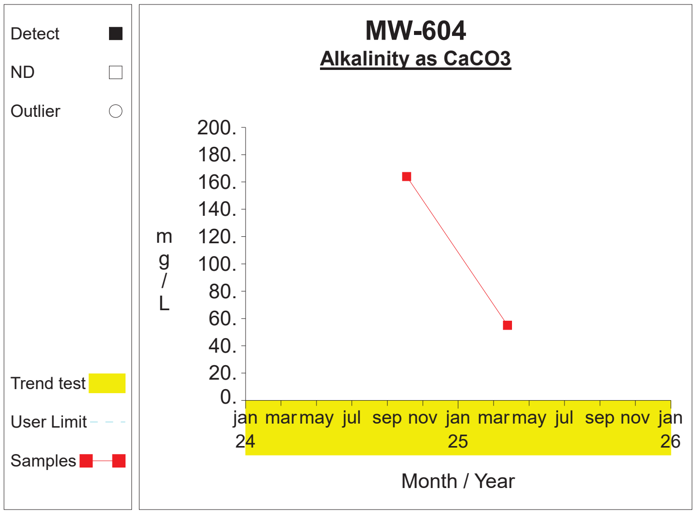


Graph 79

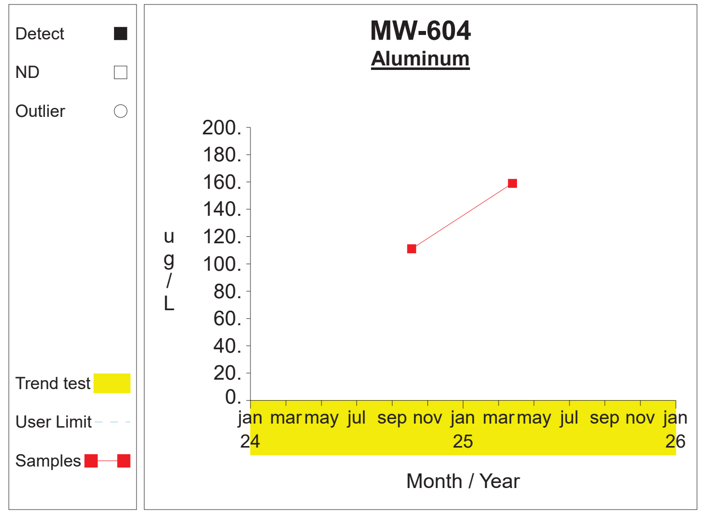


Graph 80

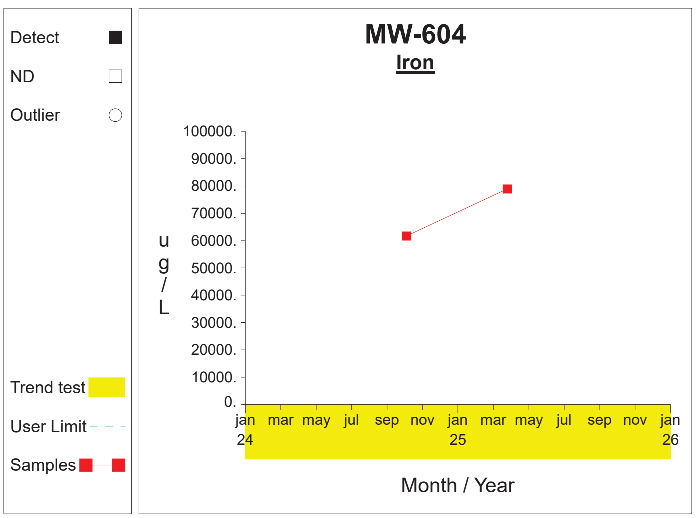
Time Series



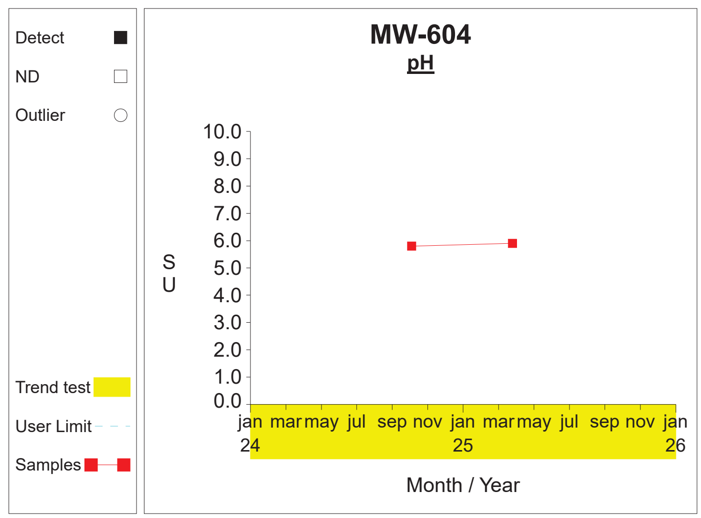
Graph 81



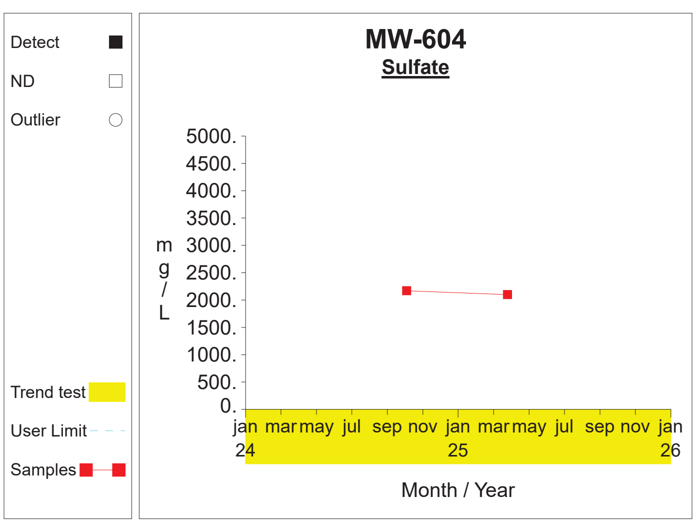
Graph 82



Graph 83

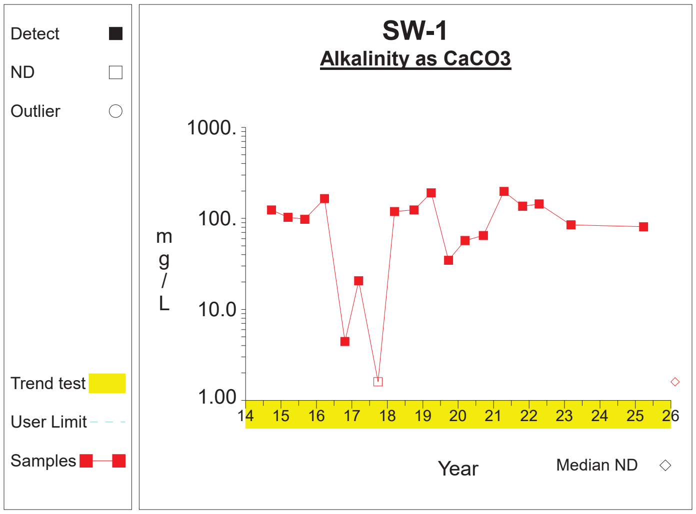


Graph 84

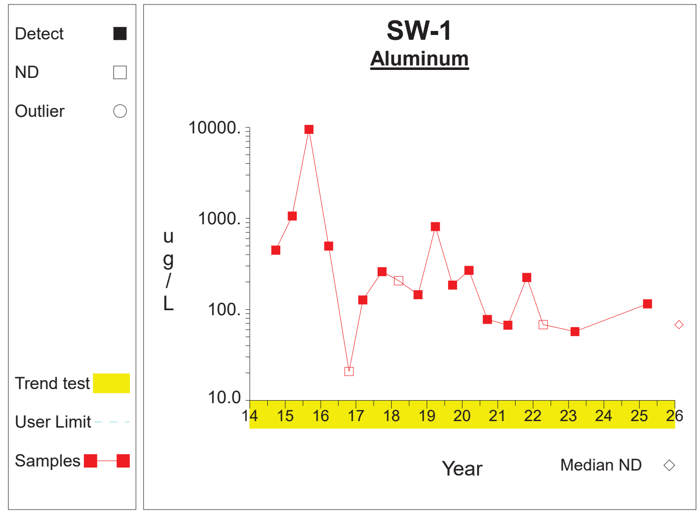


Graph 85

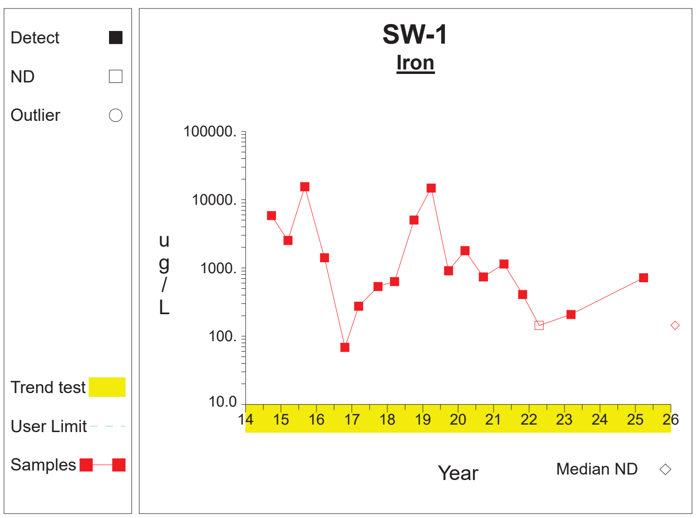
Time Series



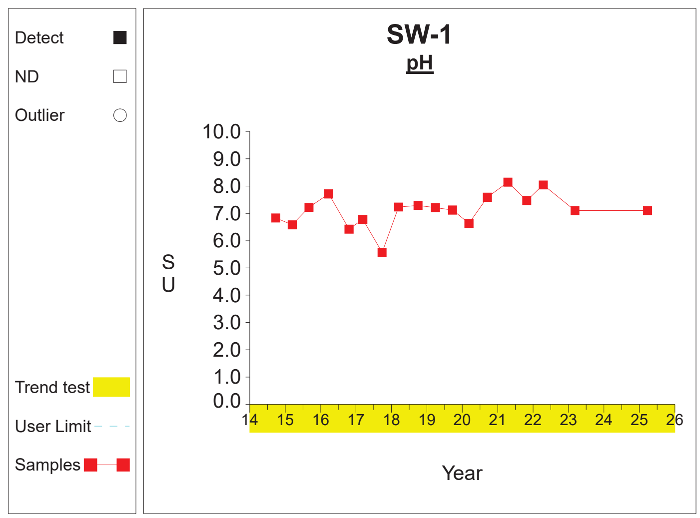
Graph 86



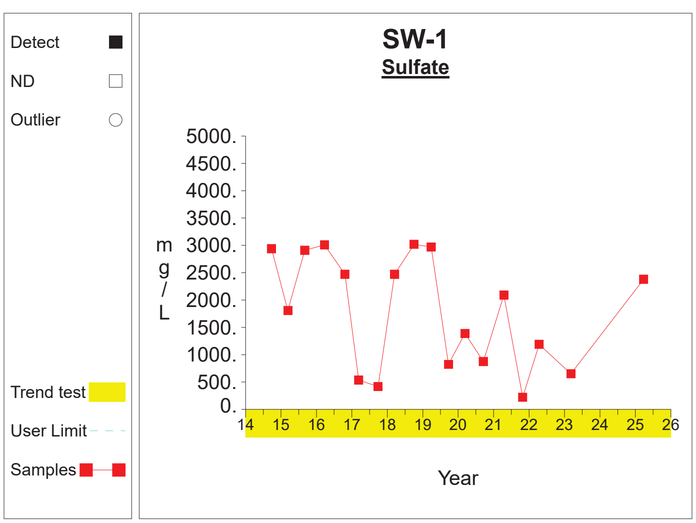
Graph 87



Graph 88



Graph 89



Graph 90