Transmittal Letter

ARCADIS

TO
Ellen Jackson
Eastern Region Supervisor
Maryland Department of Environment (MDE)
1800 Washington Blvd.
Remediation Division – Oil Control Program (OCP)
Baltimore, MD 21230

FROM
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FL Geology License #GB564

COPIES TO
Regan O'Brien – ExxonMobil Environmental and Property Solutions (E&PS)

DATE
May 22, 2025

PROJECT NUMBER
30253077

SUBJECT
Former XOM 14489 Case No. 1986-1205-CE, Mann-Kendall Analysis

We are sending you:

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ARCADIS

Ellen Jackson
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Baltimore, MD 21230

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www.arcadis.com

Date: May 22, 2025
Our Ref: 30253077
Subject: Former XOM 14489 Case No. 1986-1205-CE, Mann-Kendall Analysis

Dear Ms. Jackson,

On behalf of ExxonMobil Environmental, Property and Solutions (E&PS), Arcadis, U.S., Inc. (Arcadis) has completed a Mann-Kendall study of the subject site groundwater analytical data, as requested by the MDE, in a letter dated February 20, 2025.

Specifically, a Mann-Kendall analysis was performed on the concentrations of benzene, ethylbenzene, MTBE, naphthalene, toluene, and total xylenes in monitoring wells MW-1A, MW-2A, MW-5A, MW-11, and MW-12.

Mann-Kendall is a non-parametric statistical analysis used to evaluate trends over time. The Mann-Kendall test statistic (sum of trend [S]) is the difference between the number of strictly positive differences and the number of strictly negative differences. If S is positive, an increasing trend is indicated; if S is negative, a decreasing trend is indicated; and if S is near zero, no trend is apparent. The statistical significance of the trend is indicated by the p-value. Where p values are less than 0.05 (95 percent confidence), trends were accepted as statistically significant. Mann Kendall analyses were conducted for monitoring wells MW-1A, MW-2A, MW-5A, MW-11, MW-12 and benzene, ethylbenzene, MTBE, naphthalene, toluene, and total xylenes where there was at least one detection since 2014. A total of 25 trend analyses were conducted.

The Mann-Kendall analysis results indicate no increasing trends in any of the wells or for any of the constituents that were analyzed. Most exhibited a decreasing trend, with a few that had no statistically significant trend. For this study, trend observations by constituent are as follows:

- Benzene concentration trends were decreasing in four wells (MW-1A, MW-2A, MW-5A, MW-11). There were no detections of benzene in well MW-12, so a trend analysis was not performed.
- Ethylbenzene concentrations in three wells (MW-1A, MW-5A, MW-11) showed decreasing trends. Ethylbenzene exhibited no significant trend in MW-2A. There were no detections of ethylbenzene in well MW-12, so a trend analysis was not performed.
- Trends in MTBE concentrations were decreasing in four wells (MW-1A, MW-2A, MW-11, MW-12). There were no detections of MTBE in well MW-5A, so a trend analysis was not performed.
- Naphthalene exhibited a decreasing trend in one well (MW-5A). Naphthalene exhibited no significant trends in MW-1A, MW-2A, or MW-11. There were no detections of naphthalene in well MW-12, so a trend analysis was not performed.

- Toluene concentrations in four wells (MW-1A, MW-2A, MW-5A, MW-11) showed decreasing trends. Toluene exhibited no significant trend in MW-12.
- Trends in total xylenes concentrations were decreasing in three wells (MW-1A, MW-2A, MW-5A). Total xylenes exhibited no significant rend in MW-11. There were no detections of total xylenes in well MW-12, so a trend analysis was not performed.

Overall, of the 25 trend analyses performed, not one of the wells or analytes exhibited increasing trends. A total of 19 exhibited downward trends, meaning that concentrations are decreasing over time. Six (6) results exhibited no significant trends. For 5 of the well/analyte combinations that exhibited no significant trends, the frequency of detection was 79-100%. It appears for these wells that concentrations are fluctuating over time and so a clear trend is not evident (MW-1A for naphthalene, MW-2A for ethylbenzene, MW-2A for Naphthalene, MW-11 for Naphthalene, MW-11 for total xylenes). However, it should be noted that concentrations of total xylenes in MW-11 have consistently been significantly below the MEAT Groundwater Standard. In addition, for one well/analyte combination that exhibited no significant trend (toluene concentrations in MW-12), the frequency of detection was low (7%). Here, there was one detection or “spike” in the data (on 8-16-2016) that was normally non-detect over time. In this case, it is reported as exhibiting no clear trend; however, this is due to the one anomaly present in one round of groundwater samples, where the toluene data is otherwise non-detect.

Trend analysis results and corresponding charts showing concentrations over time for each monitoring well are presented in Attachment A. If you have any questions or comments about this study, please contact Ruben Lopez by email at ruben.lopez@arcadis.com or call at 713.953.4731.

Sincerely,
Arcadis U.S., Inc.

Ruben Lopez
Project Manager

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Direct Line: 713.953.4731

Kacie Clark
Project Environmental Scientist

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Direct Line: 919.328.5582

Copies:
Regan O’Brien – ExxonMobil Environmental and Property Solutions (E&PS)

Attachments:
Table A-1
Figures A-1 to A-25

Attachments

TABLE A-1
Summary Statistics and Trend Results
Former ExxonMobil Facility #14489
May, 2025

Well ID	Analyte	Date Range	Figure	FOD	Detected Results Summary [1]				Mann-Kendall Test [2]				Sen's Estimator of Slope [2]			
					Range	Mean	Median	SD	Result[4]	MK Result Note	P-Value	S Value	Result[4]	Sen's Result Note	Slope (Units/Day)	95% CI (Units/Day)
MW-1A	Benzene	03/14 - 07/24	A-1	25 / 28	2.4 - 76.7	25.1	18	20.2	DWN	--	0.001	-154	DWN	--	-0.00960	-0.0158 to -0.00424
MW-1A	Ethylbenzene	03/14 - 07/24	A-2	28 / 28	120 - 980	529	518.5	237	DWN	--	0.022	-103	DWN	--	-0.0810	-0.171 to -0.00492
MW-1A	MTBE	03/14 - 07/24	A-3	3 / 28	2.3 - 4.7	3.4	3.07	1.2	DWN	5b	0.014	-60	NT	5c	0	0 to 0
MW-1A	Naphthalene	03/14 - 07/24	A-4	27 / 28	54 - 378	158	160	60.4	NST	--	0.422	11	NST	--	0.00243	-0.0186 to 0.0169
MW-1A	Toluene	03/14 - 07/24	A-5	27 / 28	25 - 2310	664	550	595	DWN	--	<0.001	-161	DWN	--	-0.259	-0.448 to -0.109
MW-1A	Total Xylenes	03/14 - 07/24	A-6	28 / 28	270 - 4410	1960	1920	1060	DWN	--	<0.001	-171	DWN	--	-0.565	-0.823 to -0.289
MW-2A	Benzene	03/14 - 07/24	A-7	26 / 28	7.8 - 174	72.5	55.6	52.4	DWN	--	<0.001	-241	DWN	--	-0.0366	-0.0484 to -0.0229
MW-2A	Ethylbenzene	03/14 - 07/24	A-8	28 / 28	421 - 2000	1170	1130	403	NST	--	0.220	-40	NST	--	-0.0547	-0.198 to 0.109
MW-2A	MTBE	03/14 - 07/24	A-9	21 / 28	3.1 - 90.8	40.4	27.5	30.7	DWN	--	<0.001	-244	DWN	--	-0.0190	-0.0267 to -0.0105
MW-2A	Naphthalene	03/14 - 07/24	A-10	28 / 28	83 - 600	266	244.5	107	NST	--	0.096	67	NST	--	0.0255	-0.0121 to 0.0611
MW-2A	Toluene	03/14 - 07/24	A-11	28 / 28	28 - 630	225	180	166	DWN	--	<0.001	-266	DWN	--	-0.112	-0.149 to -0.0836
MW-2A	Total Xylenes	03/14 - 07/24	A-12	28 / 28	180 - 4450	1810	1550	1110	DWN	--	<0.001	-243	DWN	--	-0.751	-0.985 to -0.535
MW-5A	Benzene	03/14 - 07/24	A-13	18 / 27	2.5 - 26.4	11.4	7.415	7.9	DWN	--	0.002	-133	DWN	--	-0.00358	-0.00641 to -0.000510
MW-5A	Ethylbenzene	03/14 - 07/24	A-14	27 / 27	270 - 892	552	529	174	DWN	--	<0.001	-171	DWN	--	-0.105	-0.142 to -0.0507
MW-5A	Naphthalene	03/14 - 07/24	A-15	27 / 27	87.4 - 321	176	160	57.2	DWN	--	0.028	-92	NT	--	-0.0193	-0.0375 to 0
MW-5A	Toluene	03/14 - 07/24	A-16	26 / 27	5.2 - 240	66.1	44.15	64.6	DWN	--	<0.001	-203	DWN	--	-0.0338	-0.0544 to -0.0158
MW-5A	Total Xylenes	03/14 - 07/24	A-17	27 / 27	625 - 2720	1460	1300	592	DWN	--	<0.001	-198	DWN	--	-0.381	-0.532 to -0.207
MW-11	Benzene	03/14 - 07/24	A-18	10 / 28	0.56 - 13.8	4.9	3.1	4.8	DWN	--	0.003	-121	NT	5c	0	-0.000418 to 0
MW-11	Ethylbenzene	03/14 - 07/24	A-19	23 / 28	1.4 - 304	53.6	14	81.8	DWN	--	0.006	-128	DWN	--	-0.00442	-0.0183 to -0.000753
MW-11	MTBE	03/14 - 07/24	A-20	15 / 28	0.76 - 46.5	12.9	3.44	16.4	DWN	--	0.042	-84	NT	--	-0.0000714	-0.00191 to 0
MW-11	Naphthalene	03/14 - 07/24	A-21	22 / 28	0.5 - 93.7	22.4	10.03	28.8	NST	--	0.360	-19	NST	--	-0.000453	-0.00541 to 0.000935
MW-11	Toluene	03/14 - 07/24	A-22	11 / 28	1.1 - 11.8	3.9	1.5	3.8	DWN	--	0.002	-132	NT	5c	0	-0.000547 to 0
MW-11	Total Xylenes	03/14 - 07/24	A-23	22 / 28	0.7 - 328	57.5	14.55	89.9	NST	--	0.061	-79	NST	--	-0.00358	-0.0123 to 0.000209
MW-12	MTBE	03/14 - 05/17	A-24	12 / 14	1.2 - 15.2	5.3	5.01	4.1	DWN	--	0.001	-56	DWN	--	-0.00769	-0.0134 to -0.00316
MW-12	Toluene	03/14 - 05/17	A-25	1 / 14	16.6 - 16.6	16.6	16.6	0	NST	5b	0.228	7	NT	5c	0	0 to 0

Abbreviations:

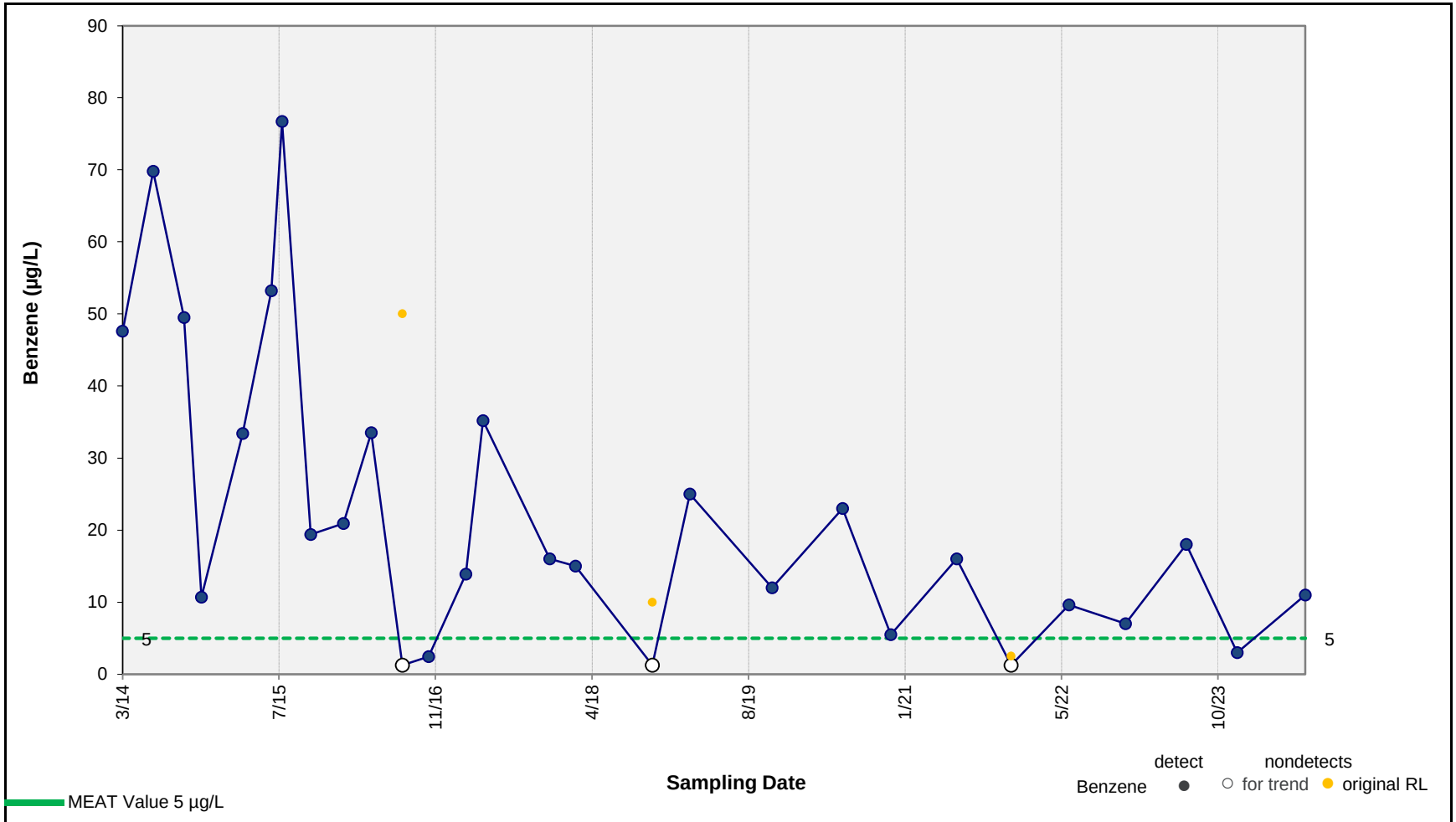
-- = insufficient data for calculating statistics (n < 4) or not available
FOD = frequency of detection (# detects / # samples)
mean = arithmetic mean
SD = standard deviation
NST = no significant trend
NT = no trend
DWN = downward trend
UP = upward trend
H_0 = null hypothesis: no significant trend (slope = 0)
H_a = alternative hypothesis: significant trend (slope ≠ 0)
95% CI = 95% confidence interval

Notes:

1. All analytical results are in µg/L. Result values less than 10 are reported to 2 significant figures; values greater than 10 are reported to 3 significant figures.
   P-values are reported to 3 decimal places.
2. Trend results are presented when at least four samples and one detected value are available. Significance of trends evaluated at 95% confidence (alpha = 0.05).
3. Non-detects were assigned a common value less than the minimum detected value, equal to half the minimum reporting limit (RL) in the dataset (USEPA, 2009).
   If half the minimum RL was greater than the minimum detected value, then half the minimum detect was assigned.
4. Statistically significant trend defined as having p-value ≤ 0.05, or 95% confidence.
5a. MK and Sen's Trend results for datasets with fewer than 8 samples may not be reliable and should be treated with caution.
5b. MK Trend results for datasets with an FOD <=20% may not be reliable and should be treated with caution.
5c. Sen's Trend results for datasets with an FOD <=50% may not be reliable and should be treated with caution.
5d. MK and Sen's Trend results for datasets with more than 100 samples are not shown.

Reference:

USEPA. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities. Unified Guidance. EPA/530/R-09/007, 2009.



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

p value = 0.001 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **DECREASING TREND**

Median Slope Estimate = -9.6E-03 µg/L Per Day

95% Confidence Interval = -1.6E-02 to -4.2E-03 µg/L Per Day

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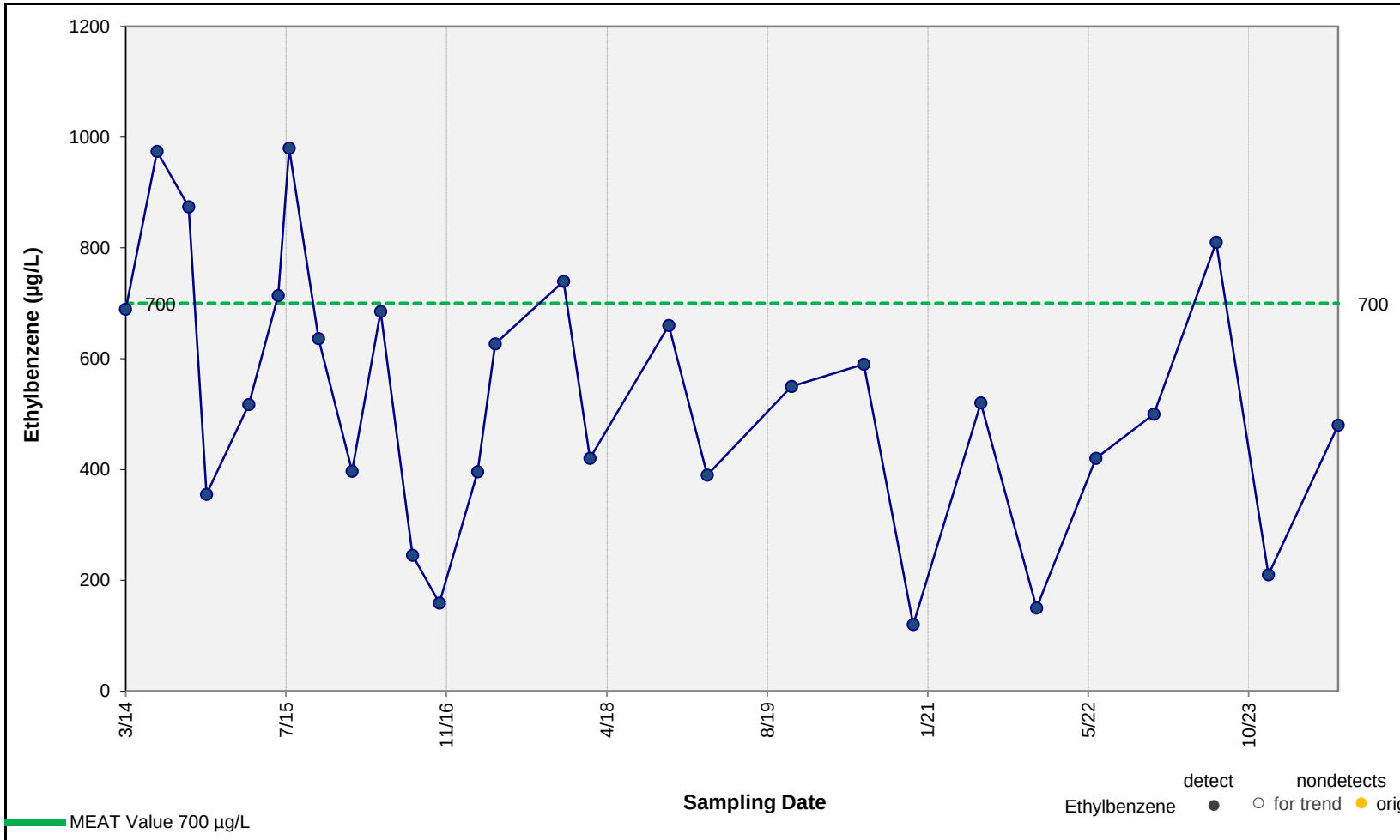
Concentration vs. Time Plot – Benzene in Well MW-1A

Former ExxonMobil Facility #14489

Figure A-1



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

p value = 0.022 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **DECREASING TREND**

Median Slope Estimate = -8.1E-02 µg/L Per Day

95% Confidence Interval = -1.7E-01 to -4.9E-03 µg/L Per Day

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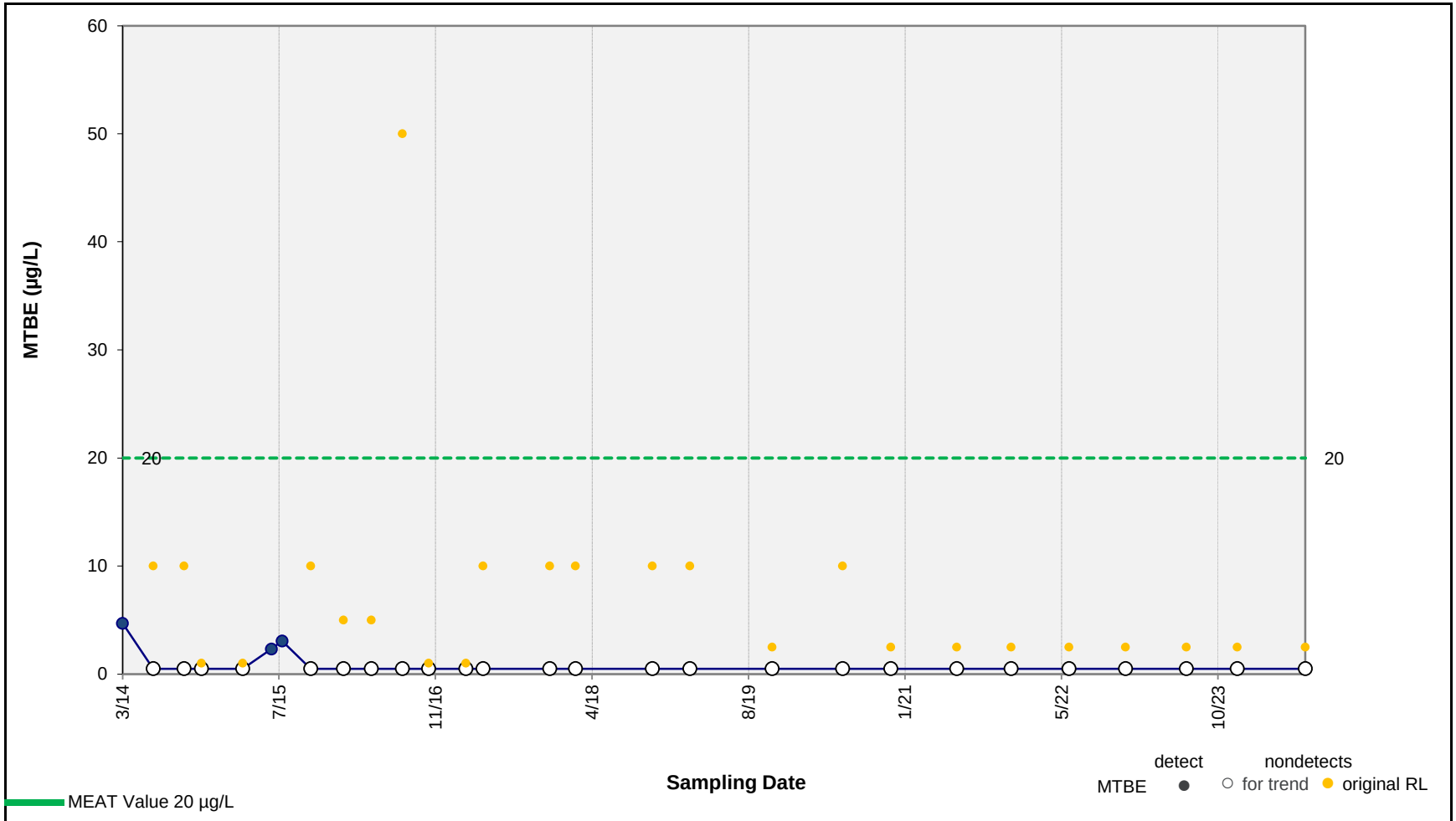
Concentration vs. Time Plot – Ethylbenzene in Well MW-1A

Former ExxonMobil Facility #14489

Figure A-2



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

p value = 0.014 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **No trend**

Median Slope Estimate = 0.0E+00 µg/L Per Day

95% Confidence Interval = 0.0E+00 to 0.0E+00 µg/L Per Day

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Concentration vs. Time Plot – MTBE in Well MW-1A

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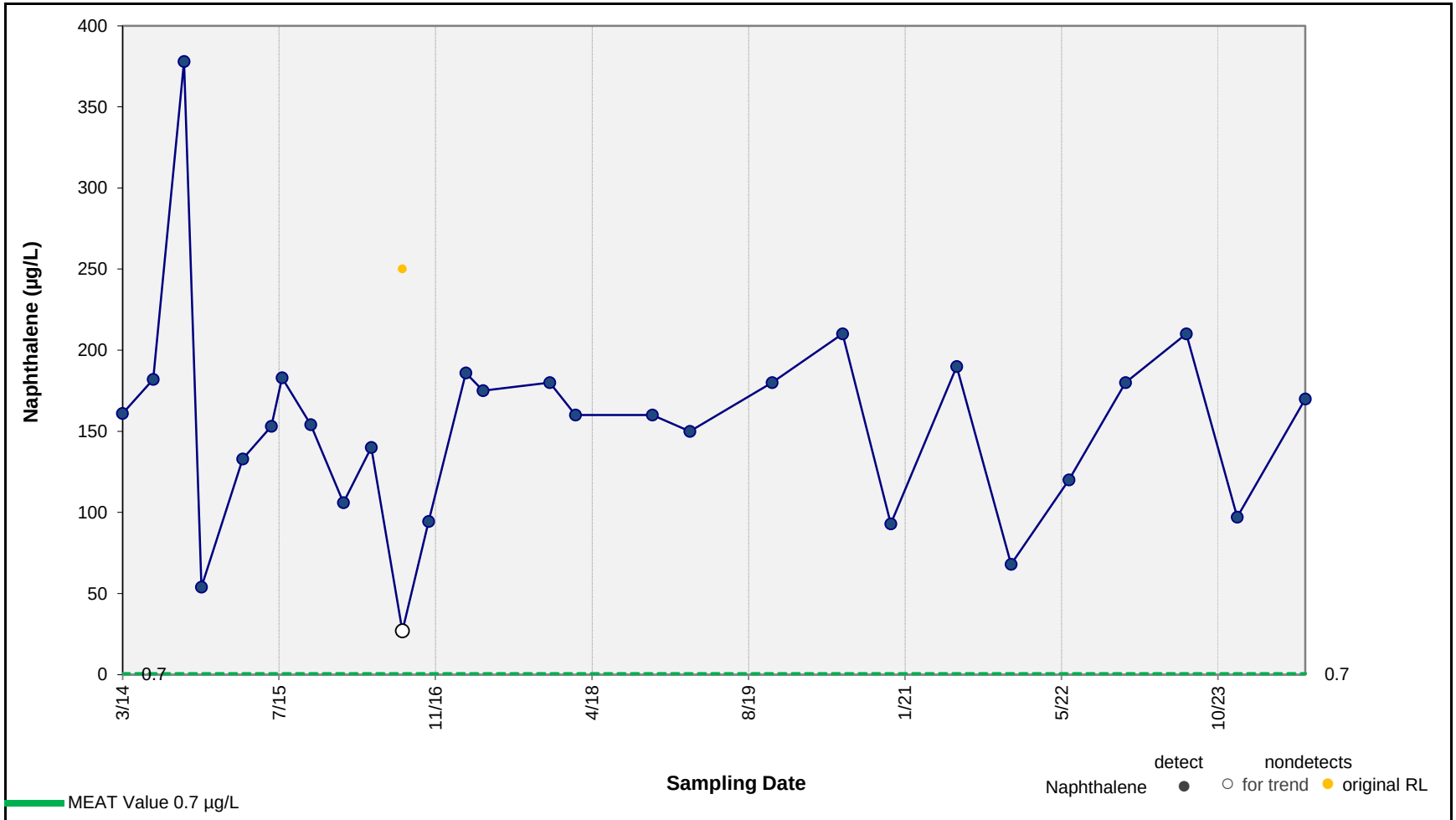
Figure A-3



Results of Mann-Kendall Test for Trend: **No Significant Trend**

p value = 0.422 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **No Significant Trend**

Median Slope Estimate = 2.4E-03 µg/L Per Day

95% Confidence Interval = -1.9E-02 to 1.7E-02 µg/L Per Day

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Concentration vs. Time Plot – Naphthalene in Well MW-1A

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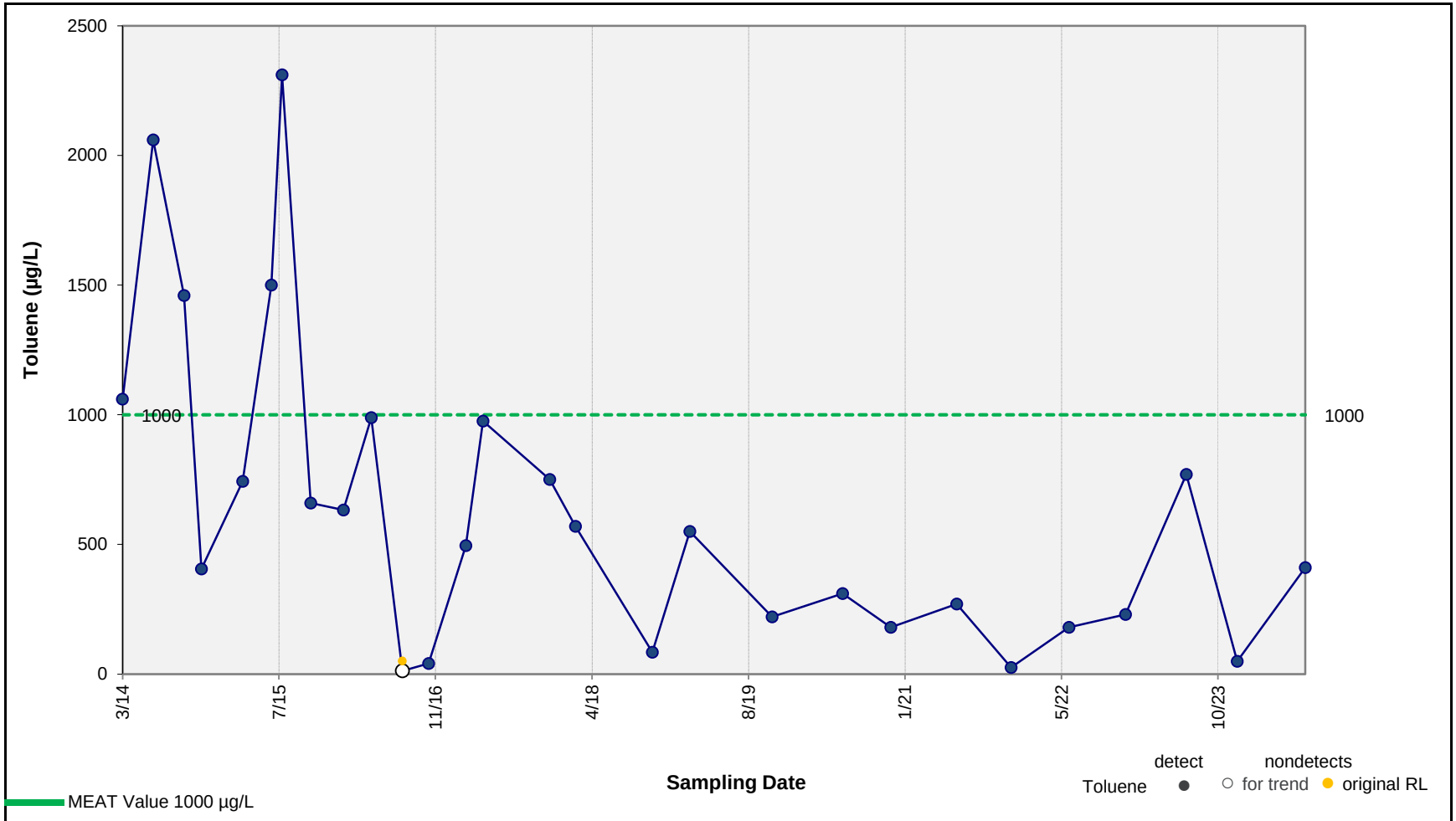
Figure A-4



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

p value = <0.001 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **DECREASING TREND**

Median Slope Estimate = -2.6E-01 µg/L Per Day

95% Confidence Interval = -4.5E-01 to -1.1E-01 µg/L Per Day

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Concentration vs. Time Plot – Toluene in Well MW-1A

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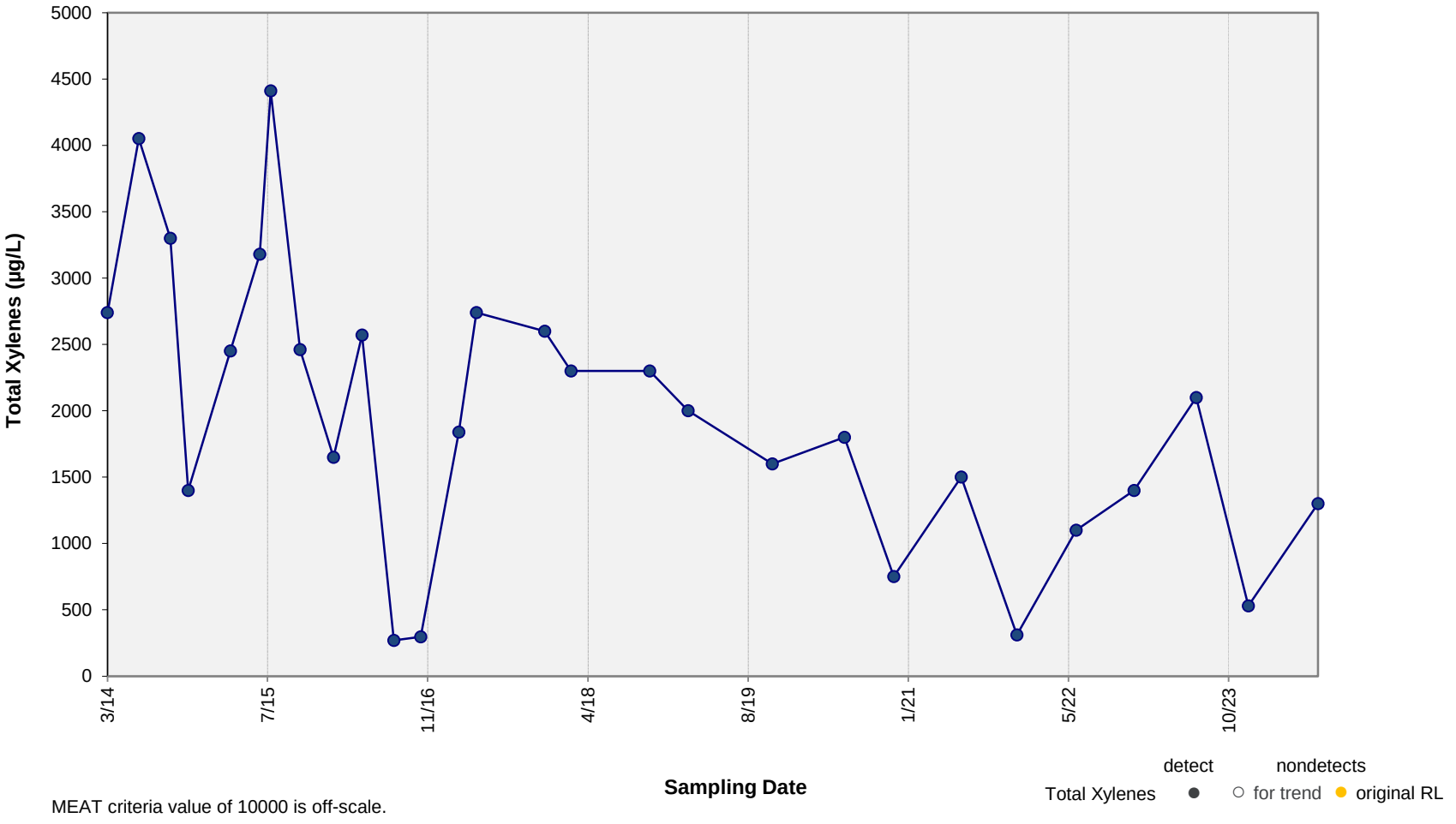
Figure A-5



MEAT criteria value of 10000 is off-scale.

Results of Mann-Kendall Test for Trend: **DECREASING TREND**

p value = <0.001 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **DECREASING TREND**

Median Slope Estimate = -5.7E-01 µg/L Per Day

95% Confidence Interval = -8.2E-01 to -2.9E-01 µg/L Per Day

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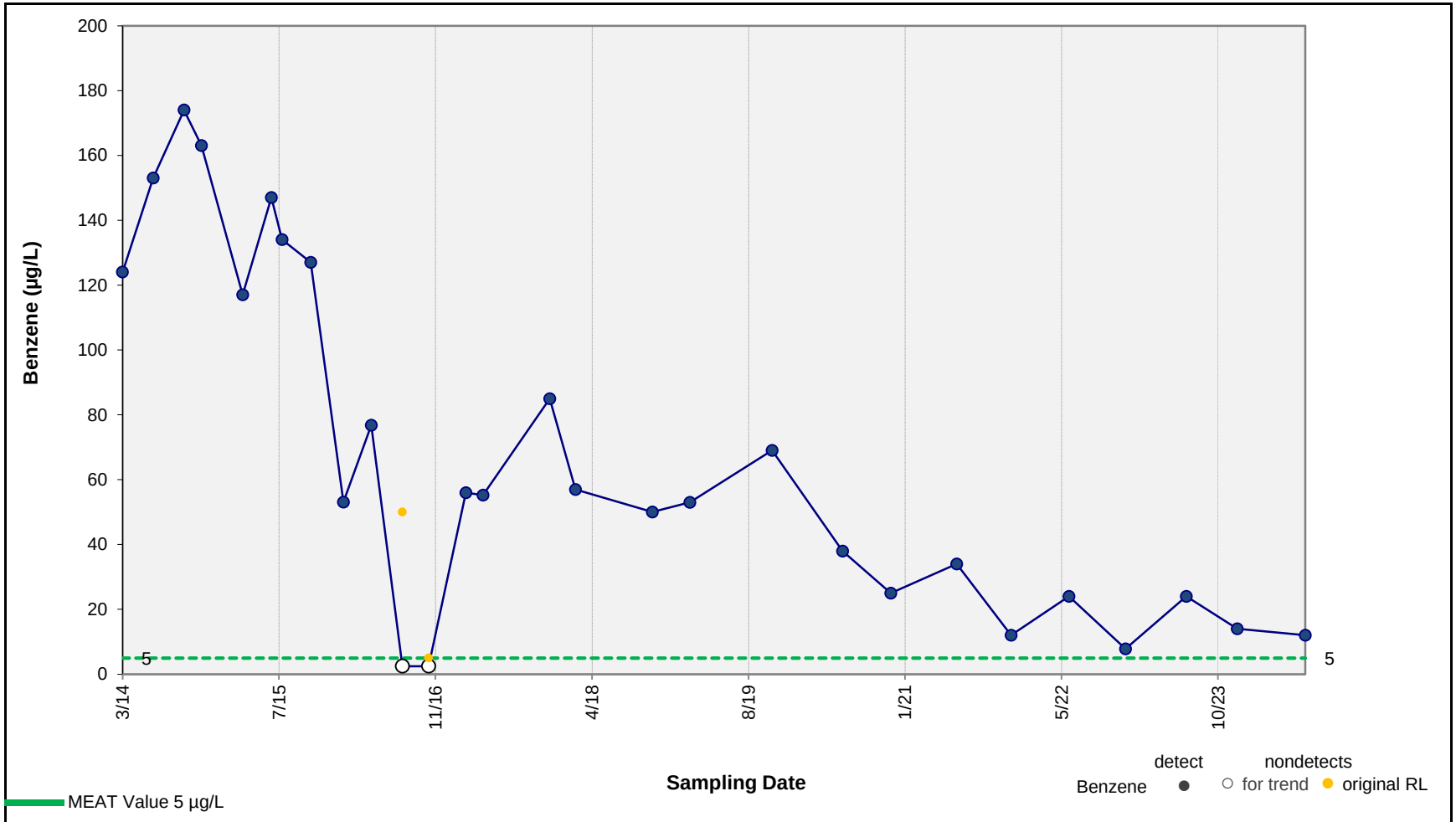
Concentration vs. Time Plot – Total Xylenes in Well MW-1A

Former ExxonMobil Facility #14489

Figure A-6



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

p value = <0.001 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **DECREASING TREND**

Median Slope Estimate = -3.7E-02 µg/L Per Day

95% Confidence Interval = -4.8E-02 to -2.3E-02 µg/L Per Day

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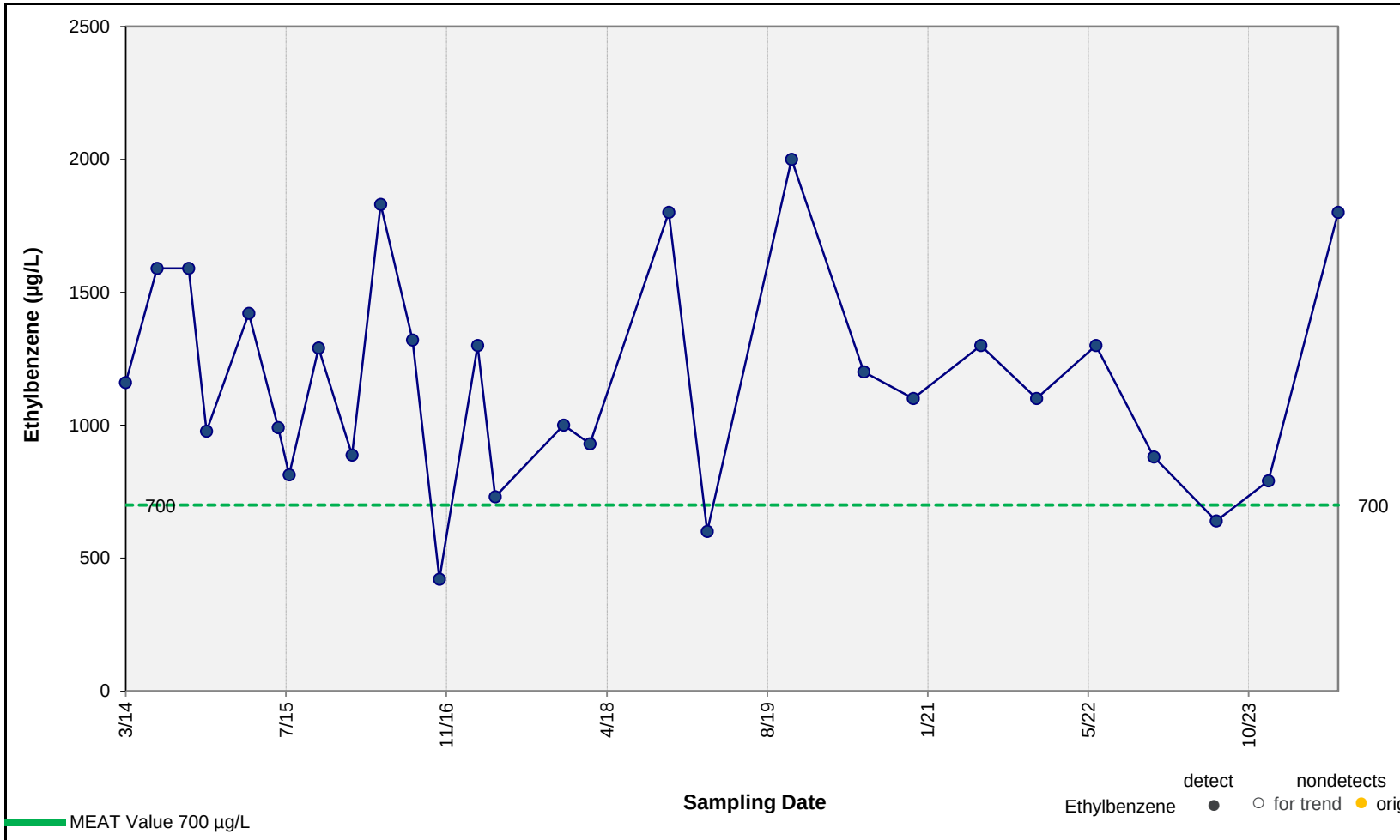
Concentration vs. Time Plot – Benzene in Well MW-2A

Former ExxonMobil Facility #14489

Figure A-7



Results of Mann-Kendall Test for Trend: **No Significant Trend**

p value = 0.220 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **No Significant Trend**

Median Slope Estimate = -5.5E-02 µg/L Per Day

95% Confidence Interval = -2.0E-01 to 1.1E-01 µg/L Per Day

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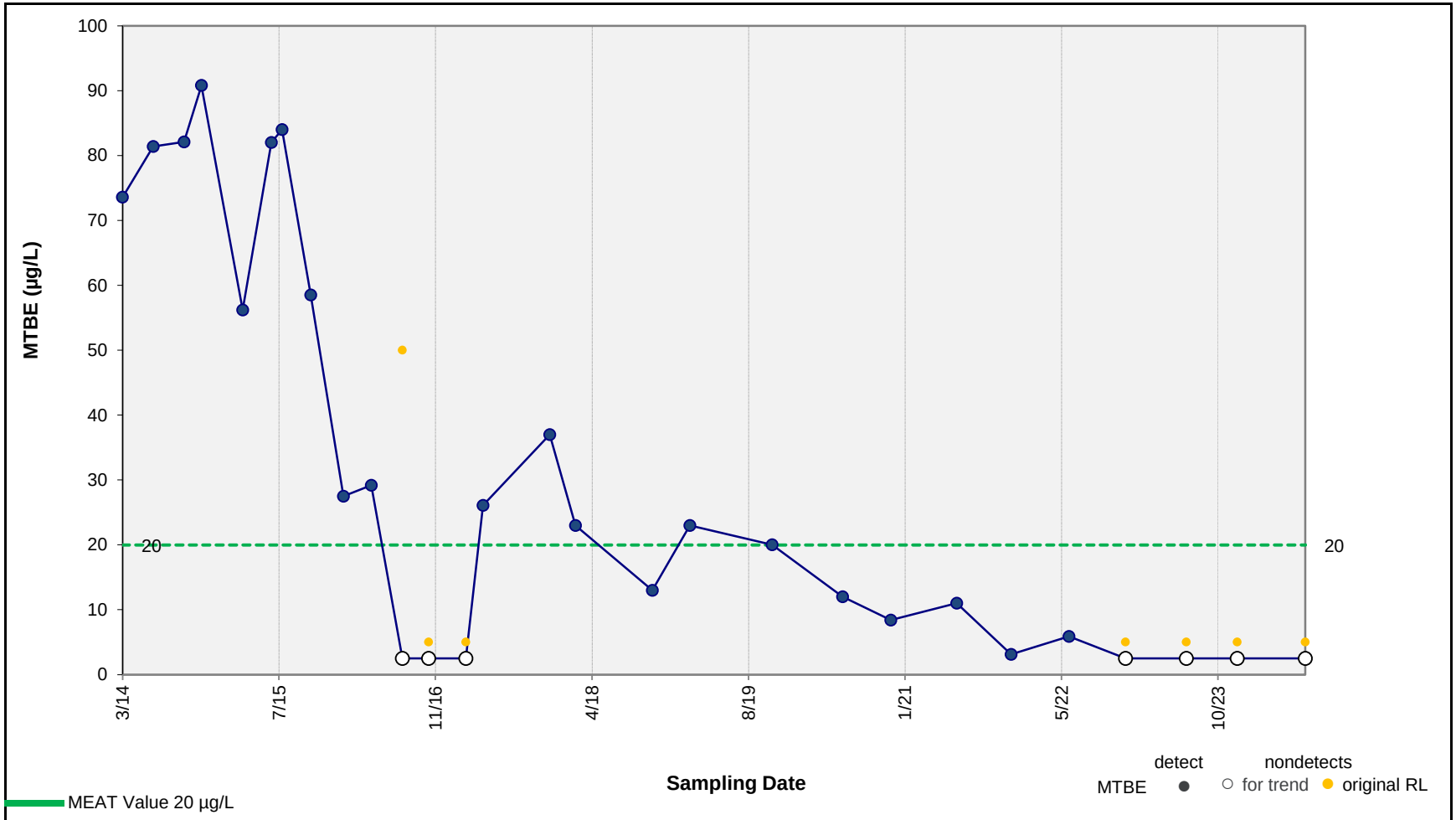
Concentration vs. Time Plot – Ethylbenzene in Well MW-2A

Former ExxonMobil Facility #14489

Figure A-8



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

p value = <0.001 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **DECREASING TREND**

Median Slope Estimate = -1.9E-02 µg/L Per Day

95% Confidence Interval = -2.7E-02 to -1.1E-02 µg/L Per Day

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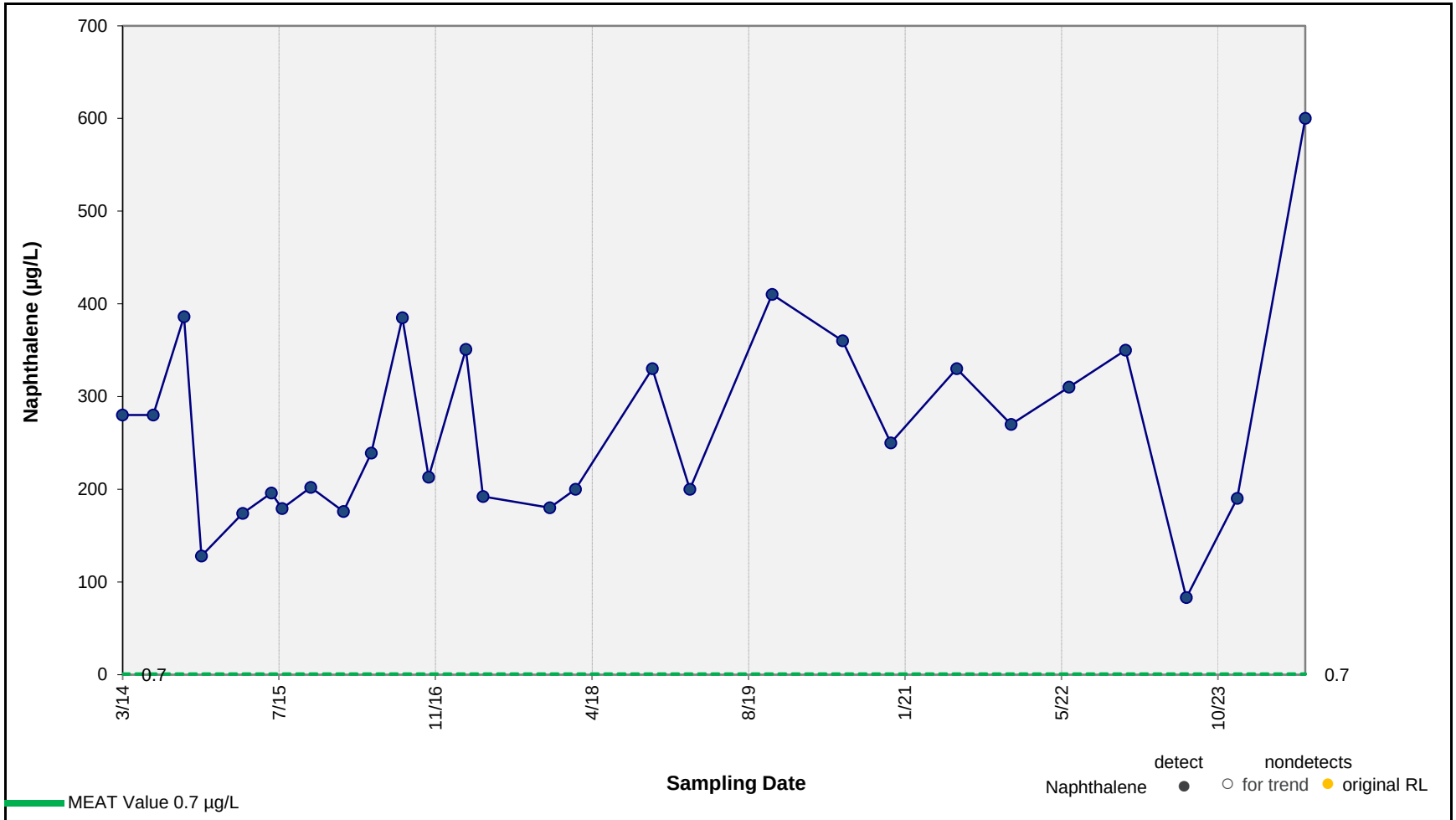
Concentration vs. Time Plot – MTBE in Well MW-2A

Former ExxonMobil Facility #14489

Figure A-9



Results of Mann-Kendall Test for Trend: **No Significant Trend**

p value = 0.096 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **No Significant Trend**

Median Slope Estimate = 2.5E-02 µg/L Per Day

95% Confidence Interval = -1.2E-02 to 6.1E-02 µg/L Per Day

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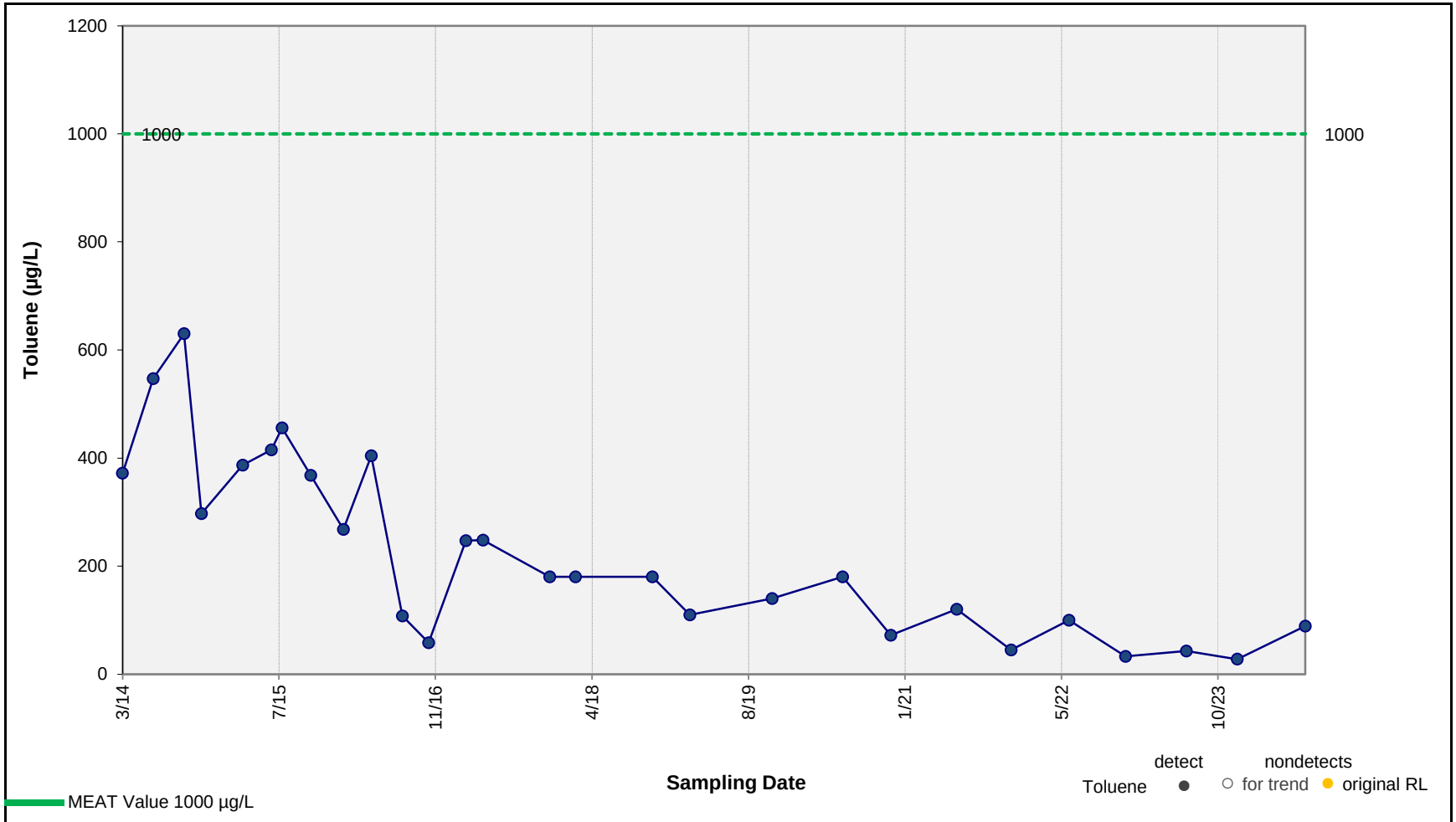
Concentration vs. Time Plot – Naphthalene in Well MW-2A

Former ExxonMobil Facility #14489

Figure A-10



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

p value = <0.001 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **DECREASING TREND**

Median Slope Estimate = -1.1E-01 µg/L Per Day

95% Confidence Interval = -1.5E-01 to -8.4E-02 µg/L Per Day

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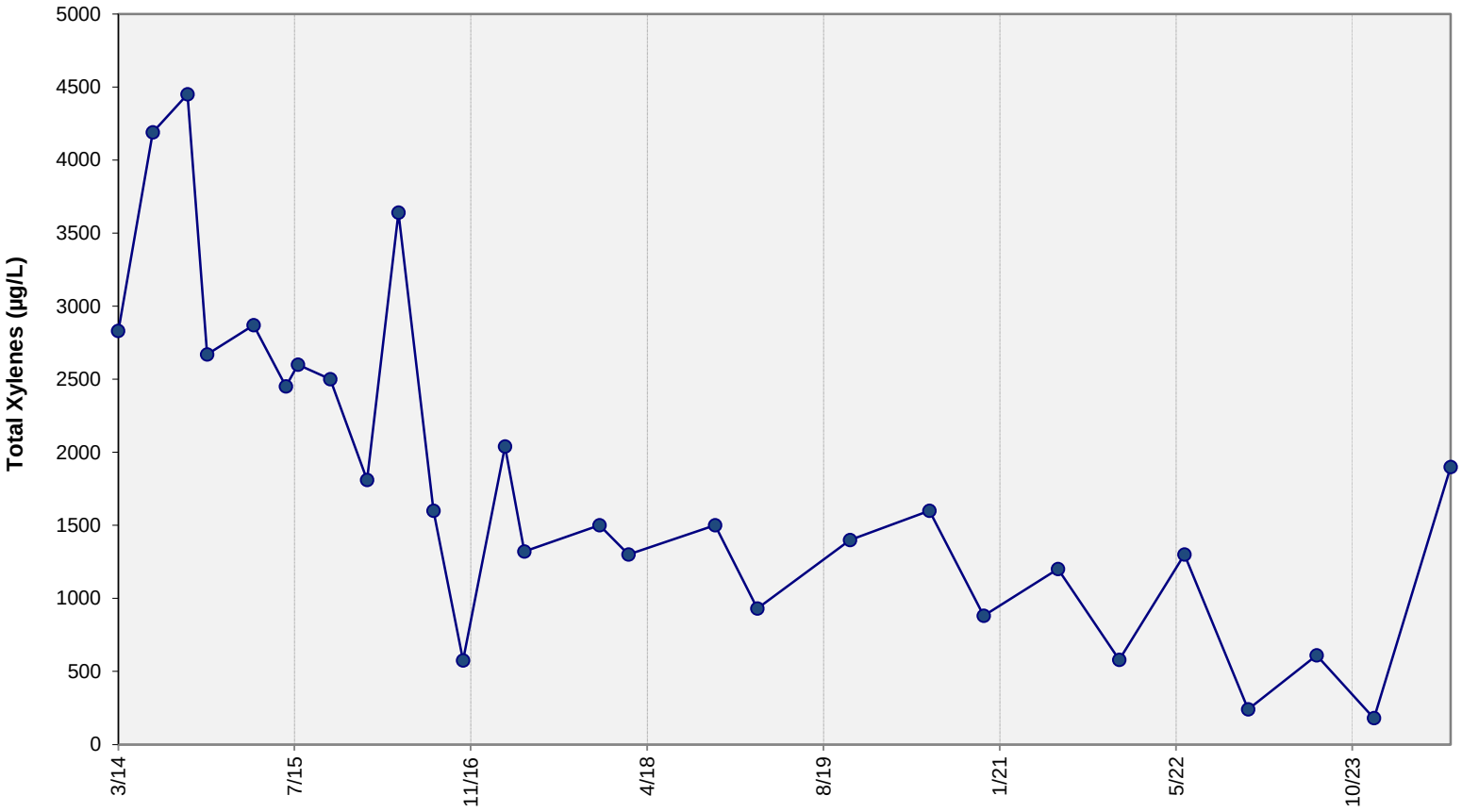
Concentration vs. Time Plot – Toluene in Well MW-2A

Former ExxonMobil Facility #14489

Figure A-11



MEAT criteria value of 10000 is off-scale.

Results of Mann-Kendall Test for Trend: **DECREASING TREND**

p value = <0.001 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **DECREASING TREND**

Median Slope Estimate = -7.5E-01 µg/L Per Day

95% Confidence Interval = -9.9E-01 to -5.4E-01 µg/L Per Day

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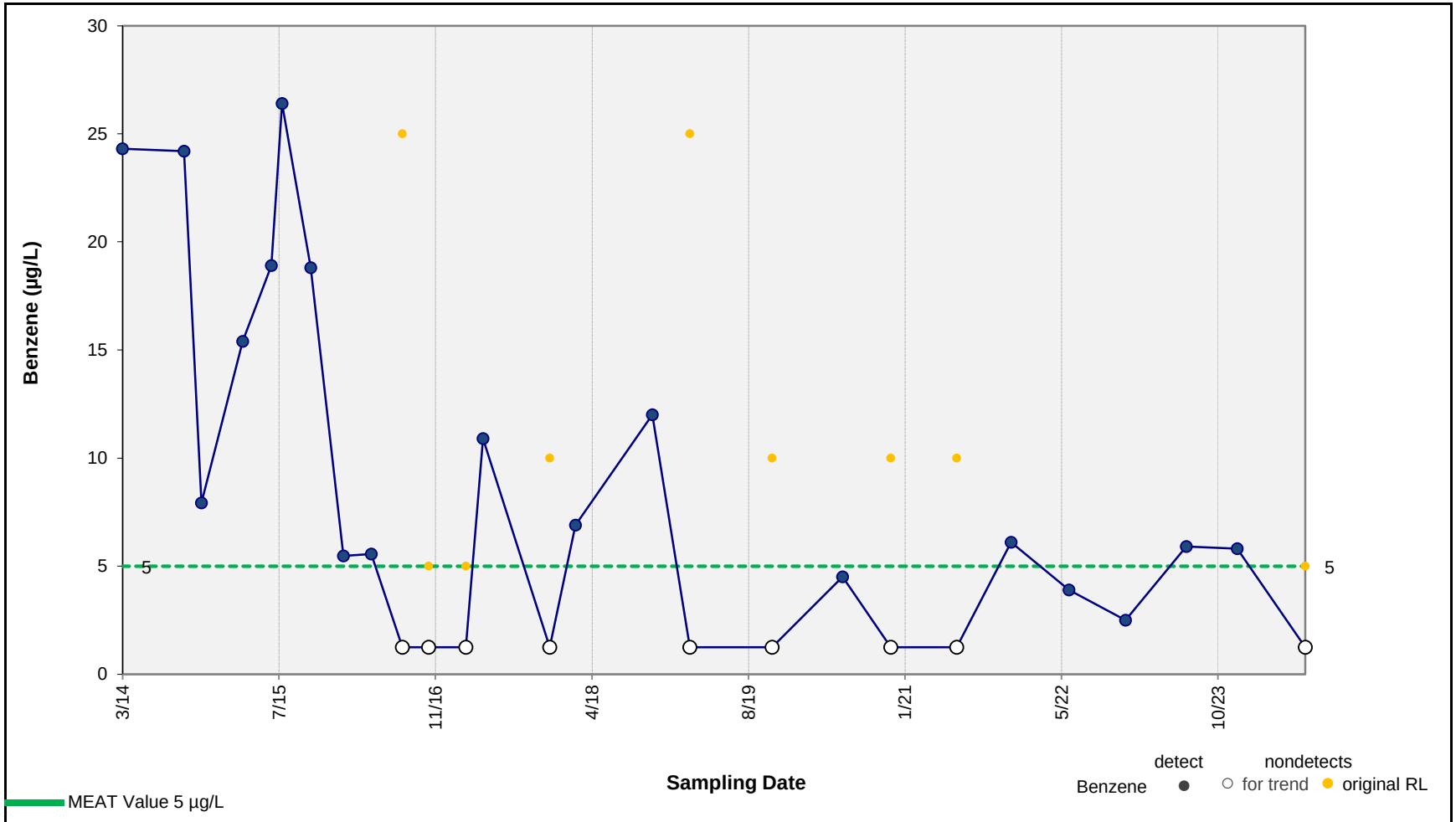
Concentration vs. Time Plot – Total Xylenes in Well MW-2A

Former ExxonMobil Facility #14489

Figure A-12



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

p value = 0.002 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **DECREASING TREND**

Median Slope Estimate = -3.6E-03 µg/L Per Day

95% Confidence Interval = -6.4E-03 to -5.1E-04 µg/L Per Day

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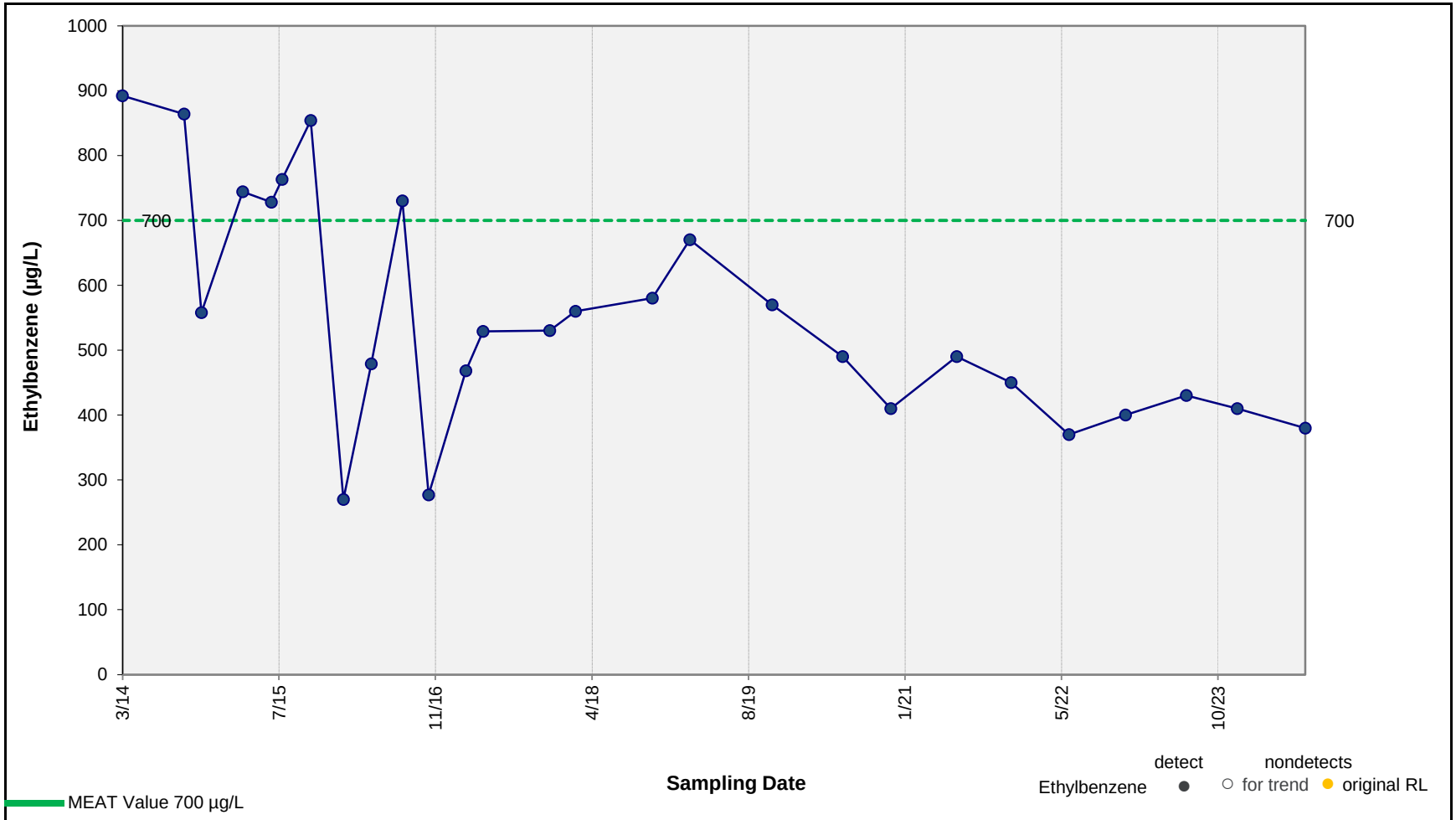
Concentration vs. Time Plot – Benzene in Well MW-5A

Former ExxonMobil Facility #14489

Figure A-13



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

p value = <0.001 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **DECREASING TREND**

Median Slope Estimate = -1.1E-01 µg/L Per Day

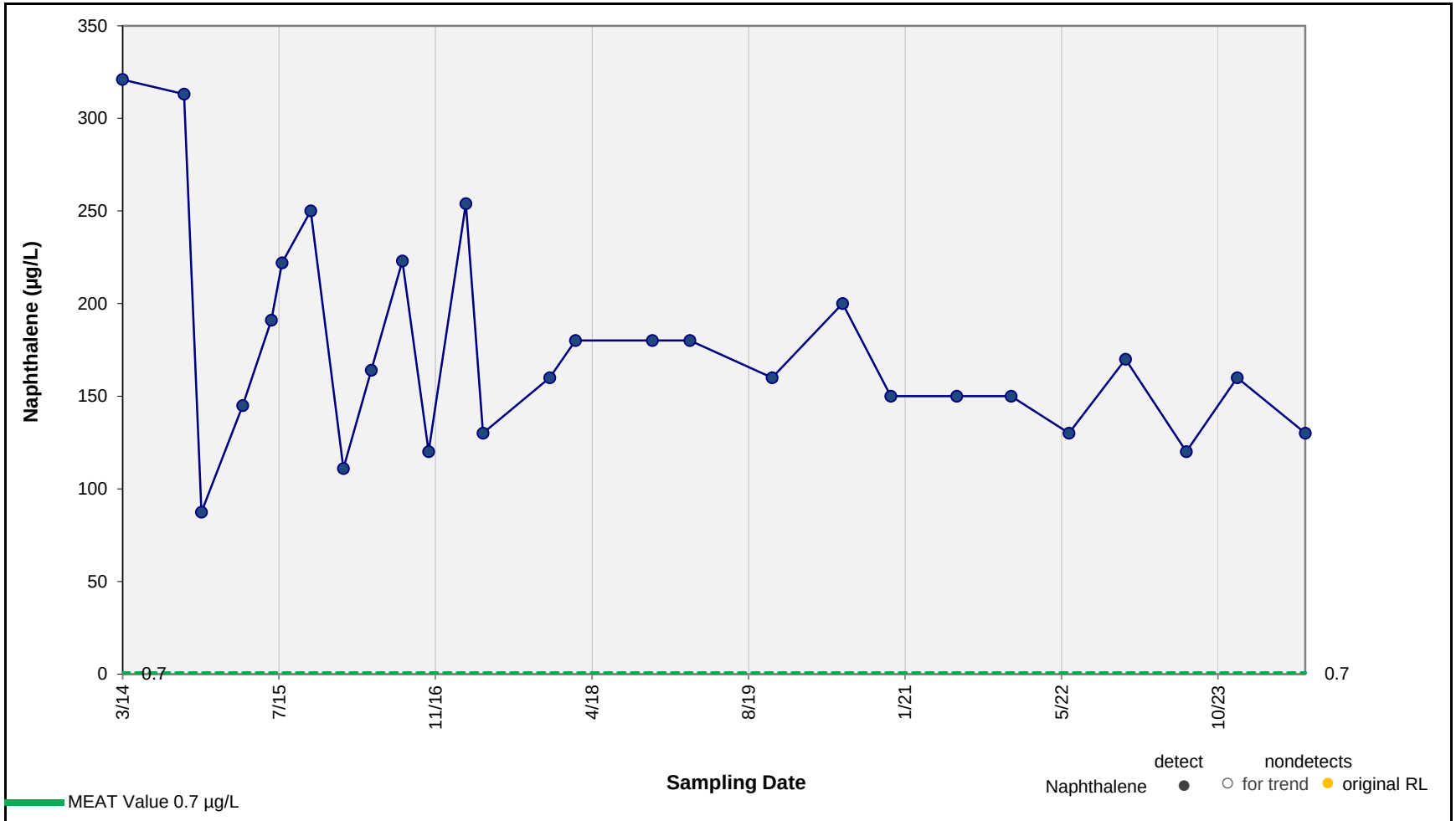
95% Confidence Interval = -1.4E-01 to -5.1E-02 µg/L Per Day

ARCADIS

Concentration vs. Time Plot – Ethylbenzene in Well MW-5A

Former ExxonMobil Facility #14489

Figure A-14



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

p value = 0.028 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **No trend**

Median Slope Estimate = -1.9E-02 µg/L Per Day

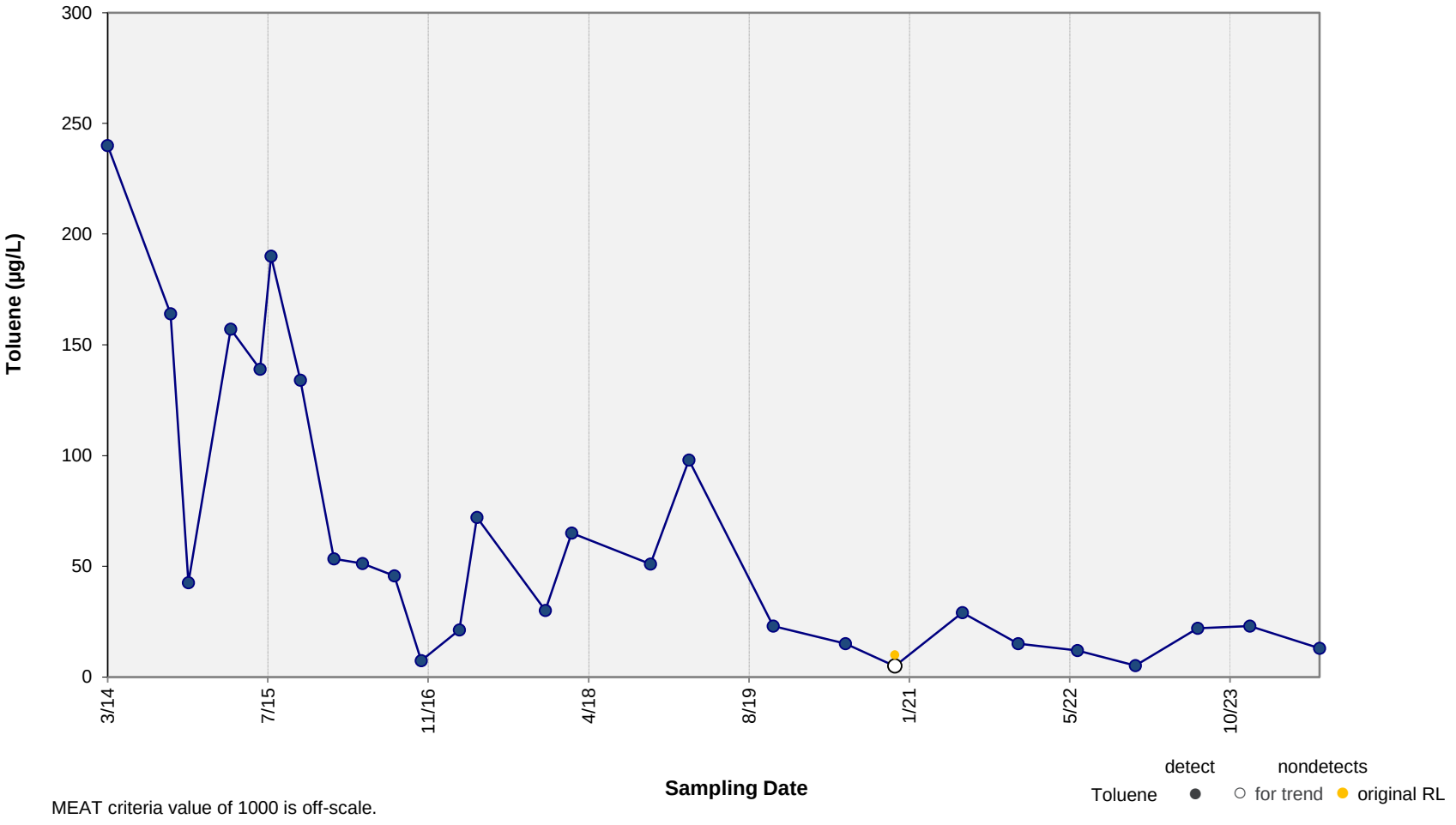
95% Confidence Interval = -3.8E-02 to 0.0E+00 µg/L Per Day

ARCADIS

Concentration vs. Time Plot – Naphthalene in Well MW-5A

Former ExxonMobil Facility #14489

Figure A-15



MEAT criteria value of 1000 is off-scale.

Results of Mann-Kendall Test for Trend: **DECREASING TREND**

p value = <0.001 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **DECREASING TREND**

Median Slope Estimate = -3.4E-02 µg/L Per Day

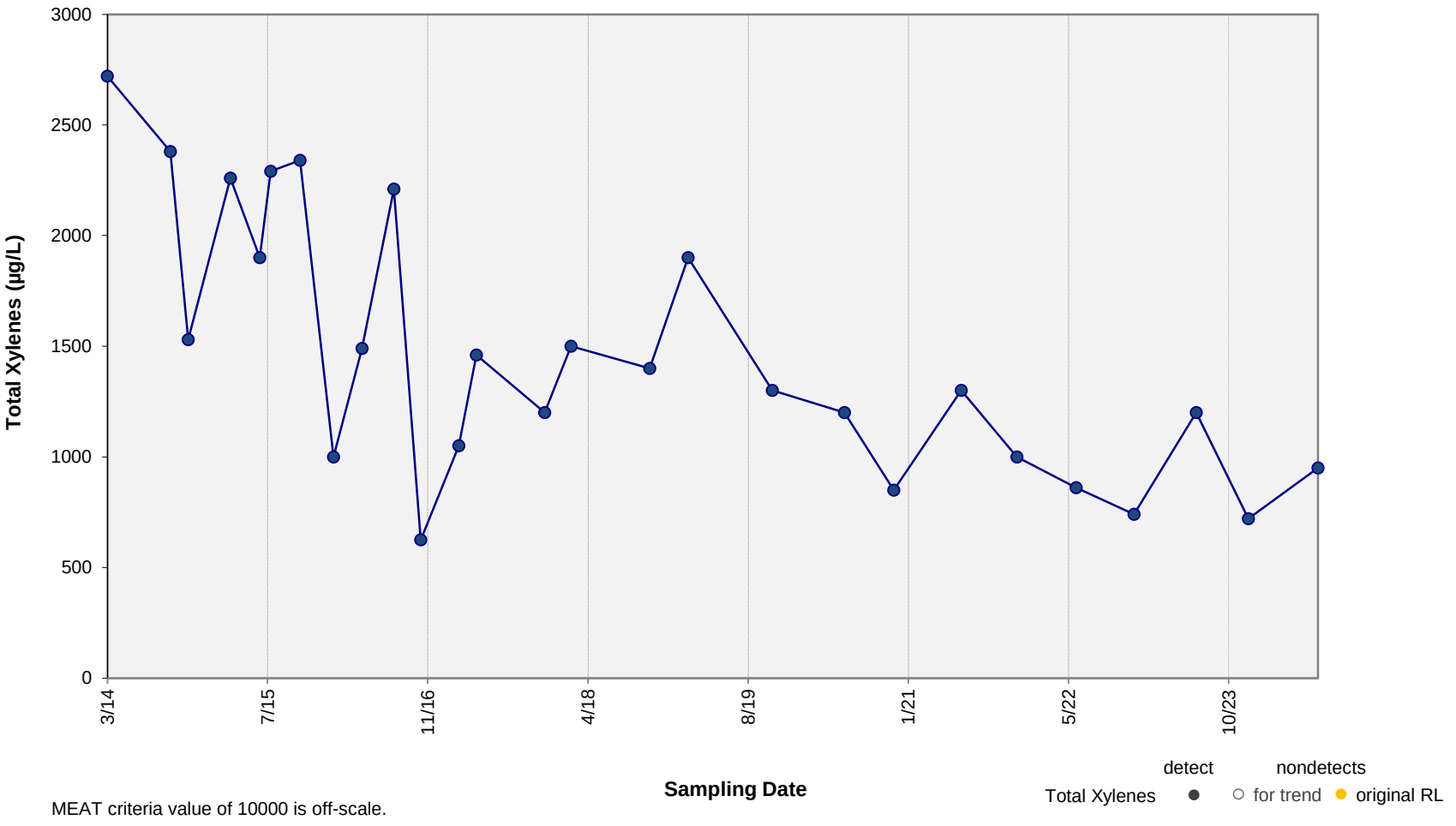
95% Confidence Interval = -5.4E-02 to -1.6E-02 µg/L Per Day

ARCADIS

Concentration vs. Time Plot – Toluene in Well MW-5A

Former ExxonMobil Facility #14489

Figure A-16



MEAT criteria value of 10000 is off-scale.

Results of Mann-Kendall Test for Trend: **DECREASING TREND**

p value = <0.001 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **DECREASING TREND**

Median Slope Estimate = -3.8E-01 µg/L Per Day

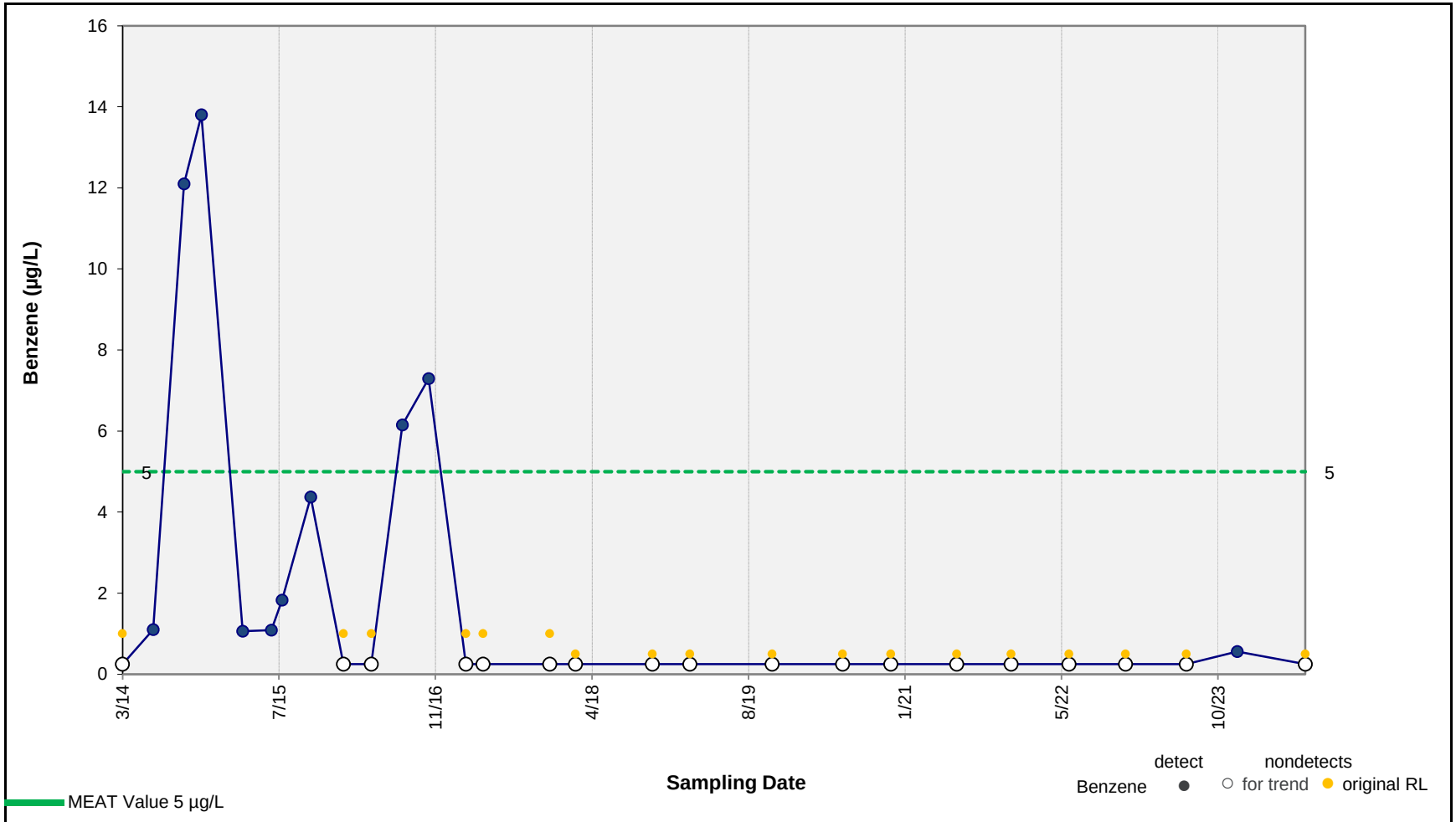
95% Confidence Interval = -5.3E-01 to -2.1E-01 µg/L Per Day

ARCADIS

Concentration vs. Time Plot – Total Xylenes in Well MW-5A

Former ExxonMobil Facility #14489

Figure A-17



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

p value = 0.003 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **No trend**

Median Slope Estimate = 0.0E+00 µg/L Per Day

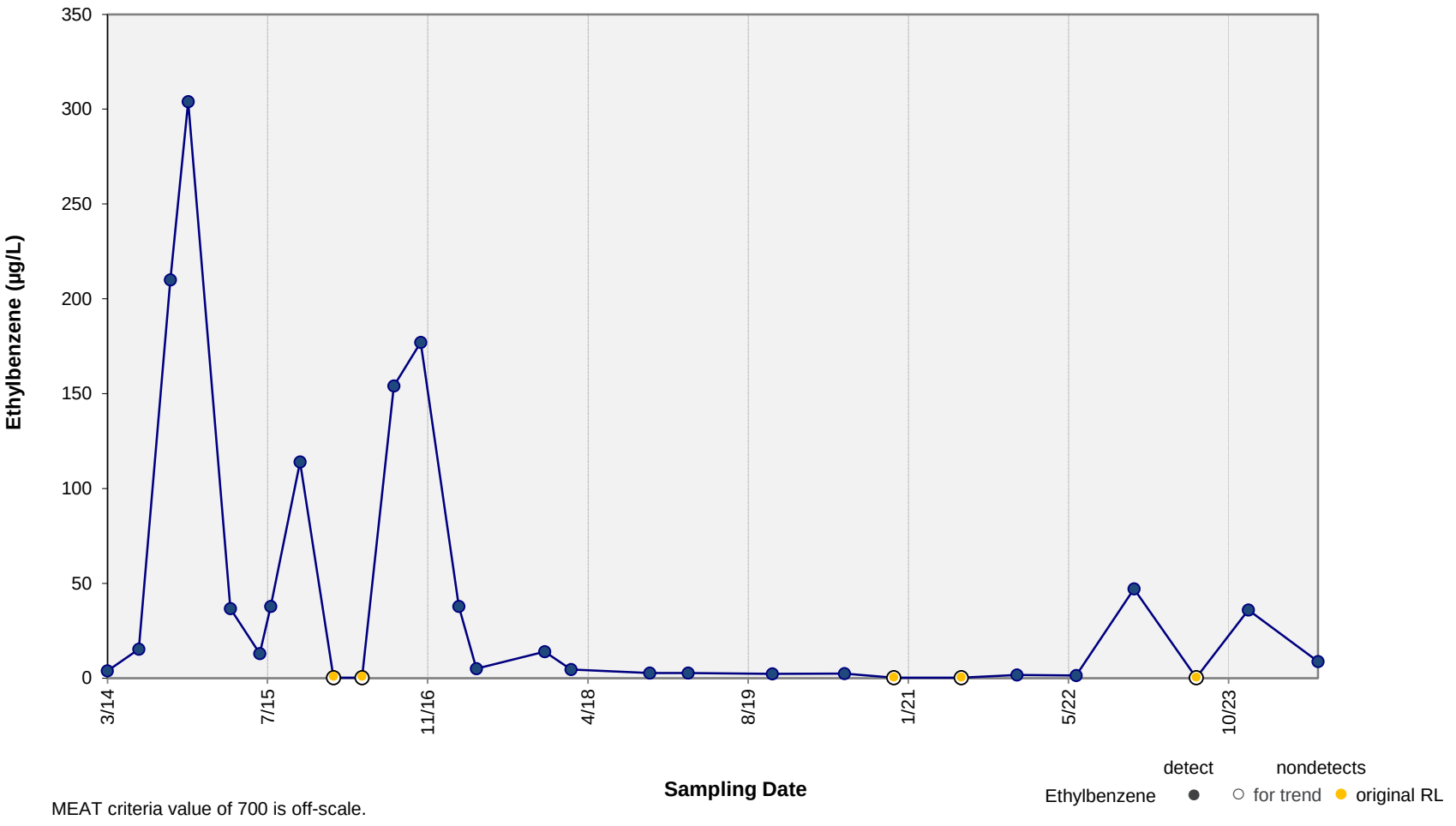
95% Confidence Interval = -4.2E-04 to 0.0E+00 µg/L Per Day

ARCADIS

Concentration vs. Time Plot – Benzene in Well MW-11

Former ExxonMobil Facility #14489

Figure A-18



MEAT criteria value of 700 is off-scale.

Results of Mann-Kendall Test for Trend: **DECREASING TREND**

p value = 0.006 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **DECREASING TREND**

Median Slope Estimate = -4.4E-03 µg/L Per Day

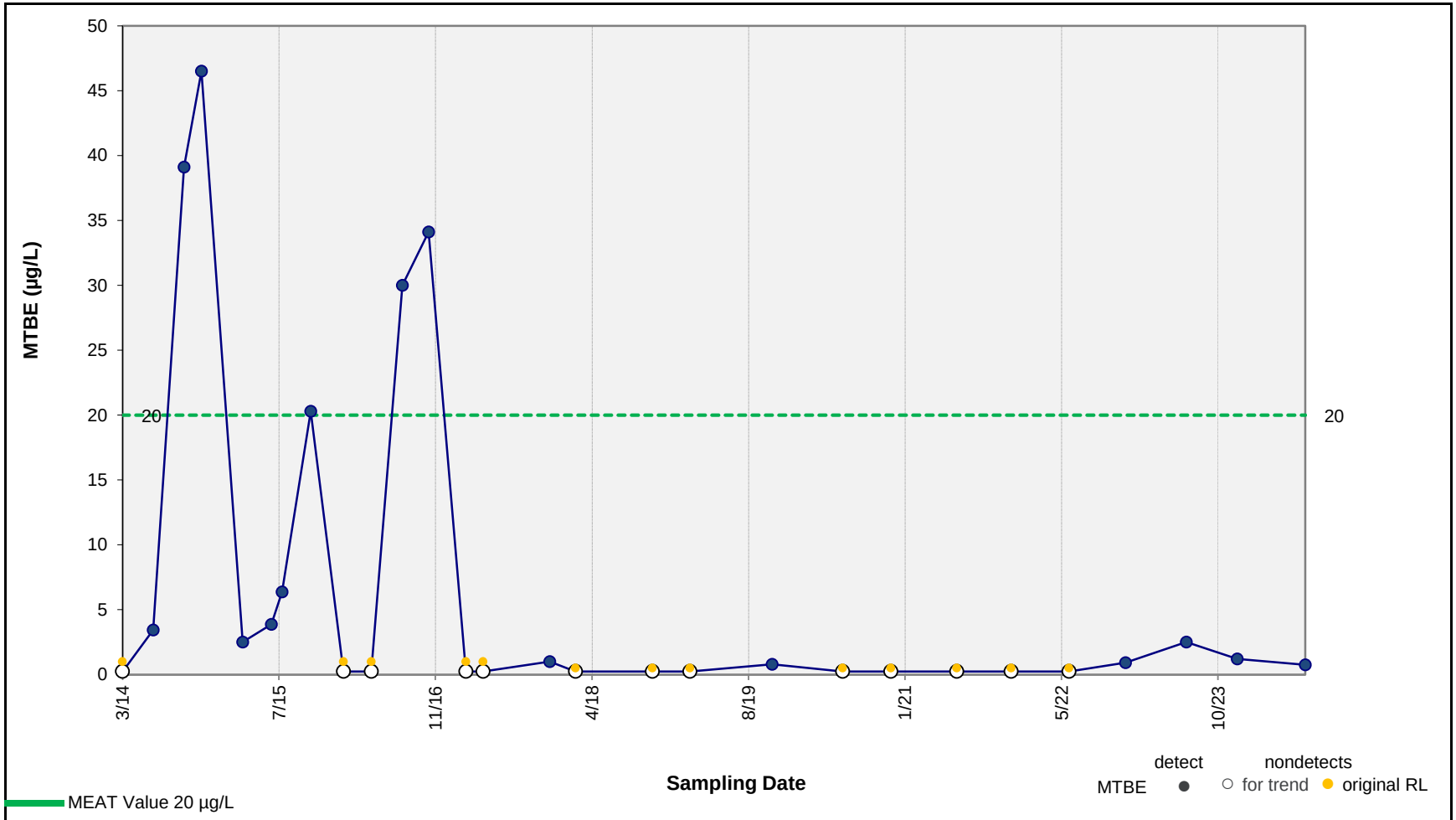
95% Confidence Interval = -1.8E-02 to -7.5E-04 µg/L Per Day

ARCADIS

Concentration vs. Time Plot – Ethylbenzene in Well MW-11

Former ExxonMobil Facility #14489

Figure A-19



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

p value = 0.042 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **No trend**

Median Slope Estimate = -7.1E-05 µg/L Per Day

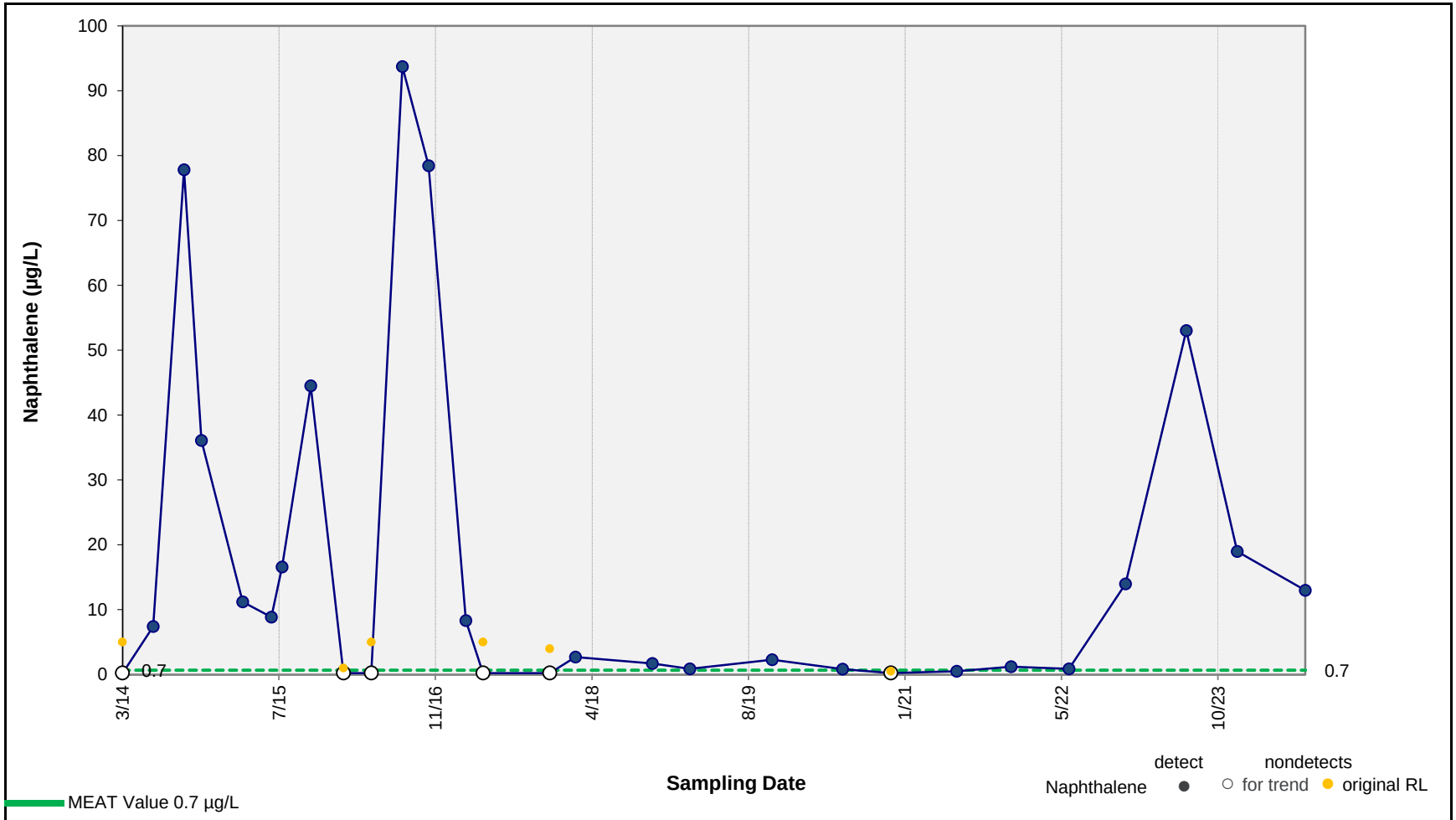
95% Confidence Interval = -1.9E-03 to 0.0E+00 µg/L Per Day

ARCADIS

Concentration vs. Time Plot – MTBE in Well MW-11

Former ExxonMobil Facility #14489

Figure A-20



Results of Mann-Kendall Test for Trend: **No Significant Trend**

p value = 0.360 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **No Significant Trend**

Median Slope Estimate = -4.5E-04 µg/L Per Day

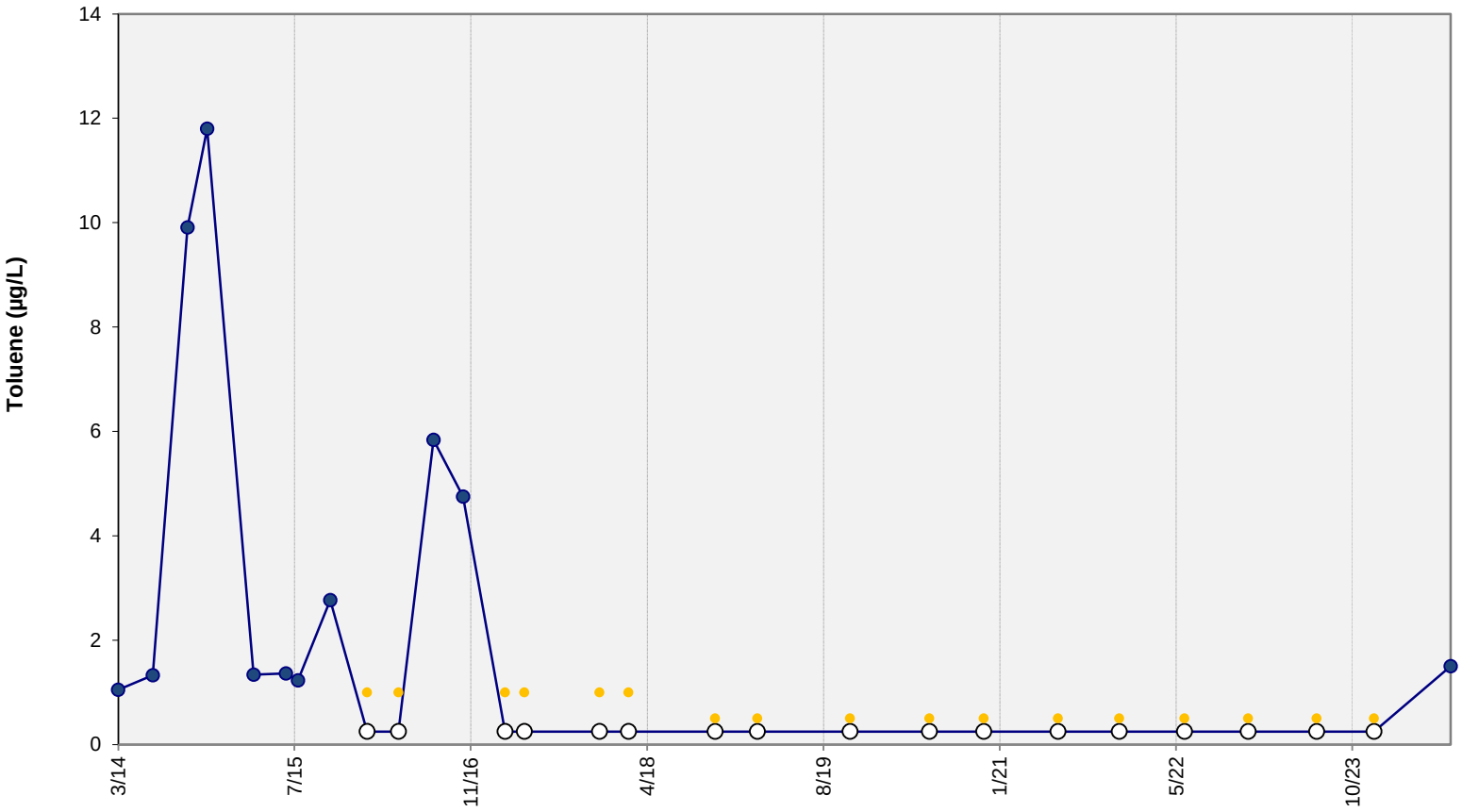
95% Confidence Interval = -5.4E-03 to 9.3E-04 µg/L Per Day

ARCADIS

Concentration vs. Time Plot – Naphthalene in Well MW-11

Former ExxonMobil Facility #14489

Figure A-21



MEAT criteria value of 1000 is off-scale.

Results of Mann-Kendall Test for Trend: **DECREASING TREND**

p value = 0.002 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **No trend**

Median Slope Estimate = 0.0E+00 µg/L Per Day

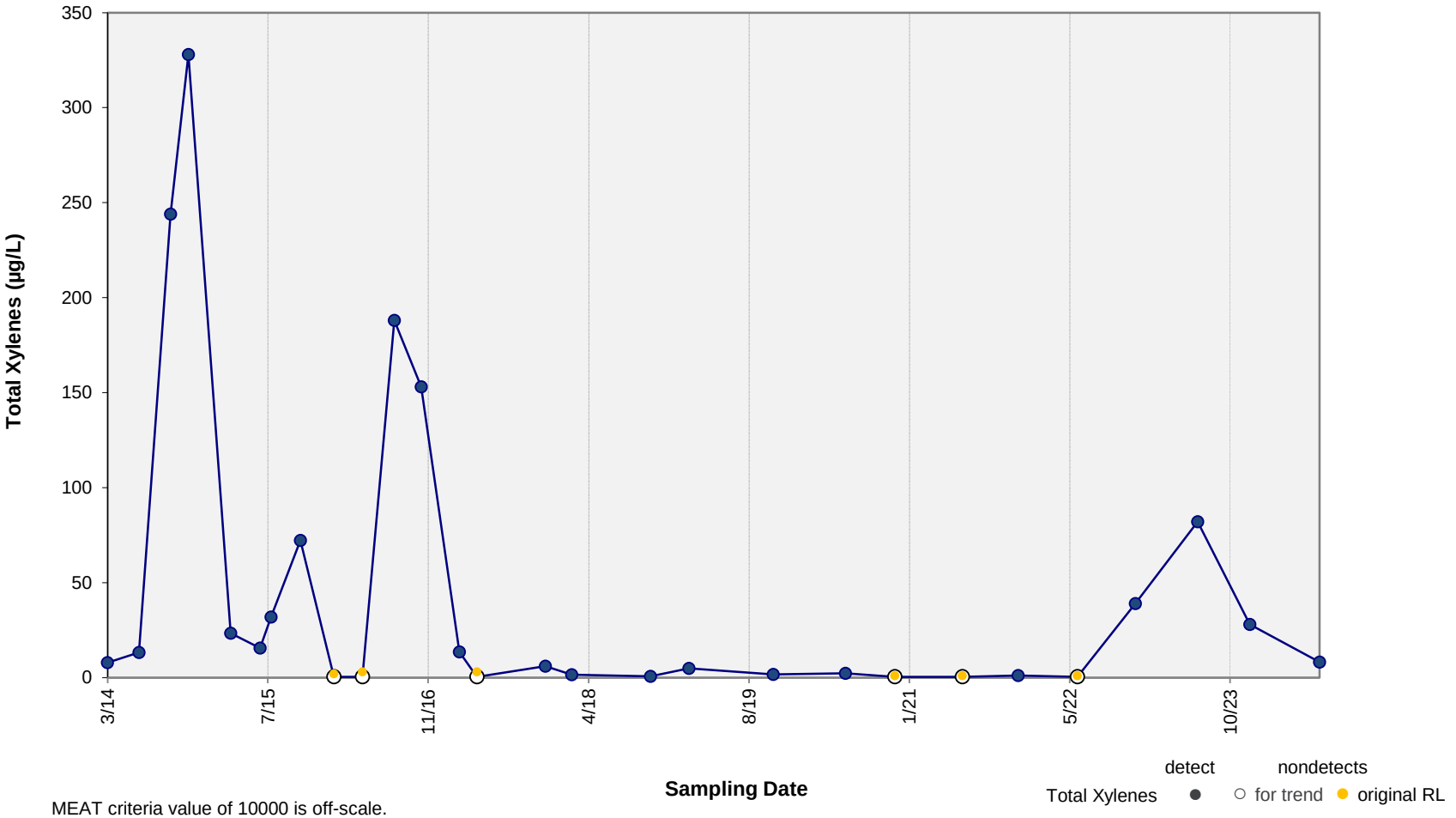
95% Confidence Interval = -5.5E-04 to 0.0E+00 µg/L Per Day

ARCADIS

Concentration vs. Time Plot – Toluene in Well MW-11

Former ExxonMobil Facility #14489

Figure A-22



MEAT criteria value of 10000 is off-scale.

Results of Mann-Kendall Test for Trend: **No Significant Trend**

p value = 0.061 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **No Significant Trend**

Median Slope Estimate = -3.6E-03 µg/L Per Day

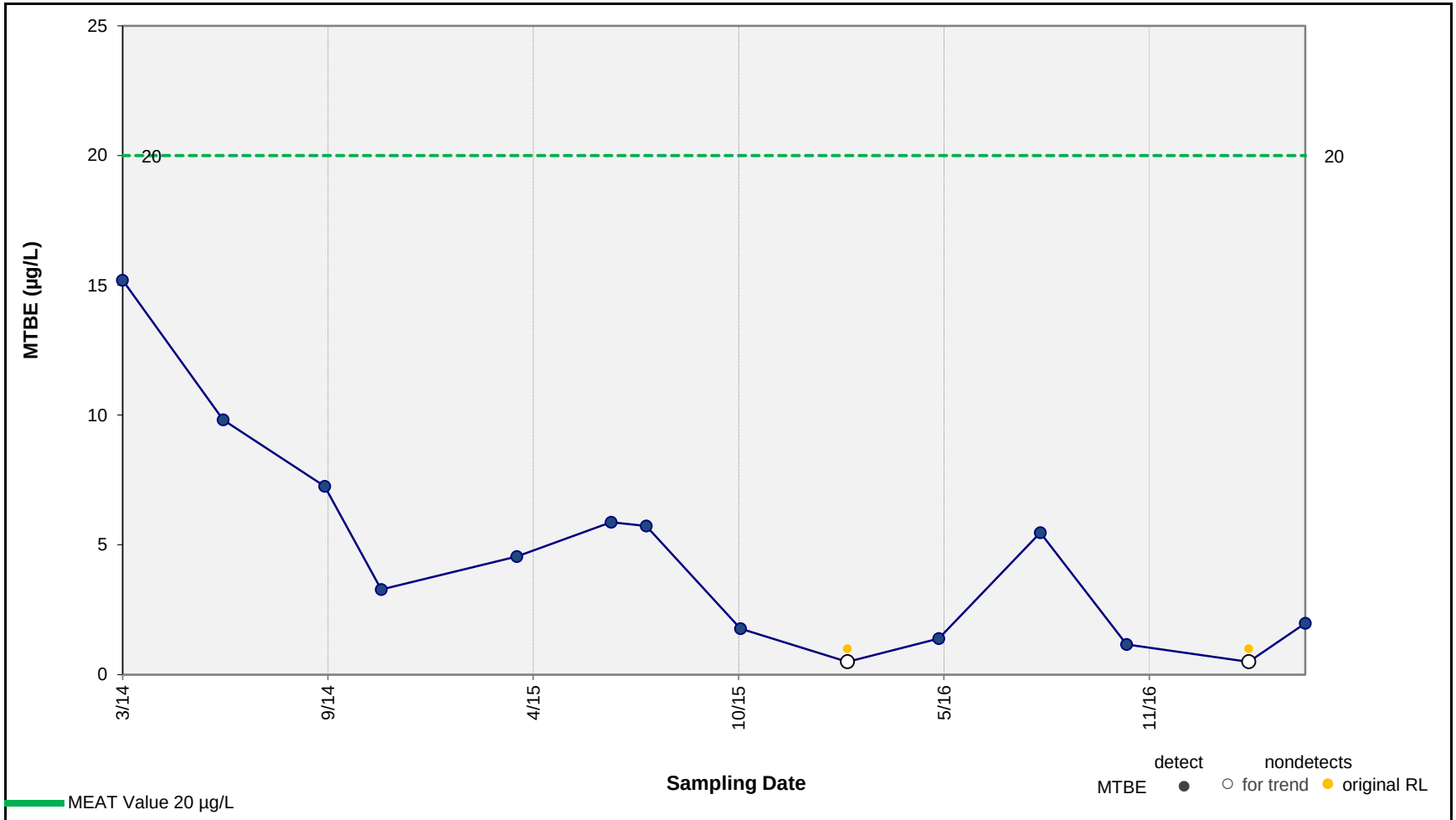
95% Confidence Interval = -1.2E-02 to 2.1E-04 µg/L Per Day

ARCADIS

Concentration vs. Time Plot – Total Xylenes in Well MW-11

Former ExxonMobil Facility #14489

Figure A-23



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

p value = 0.001 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **DECREASING TREND**

Median Slope Estimate = -7.7E-03 µg/L Per Day

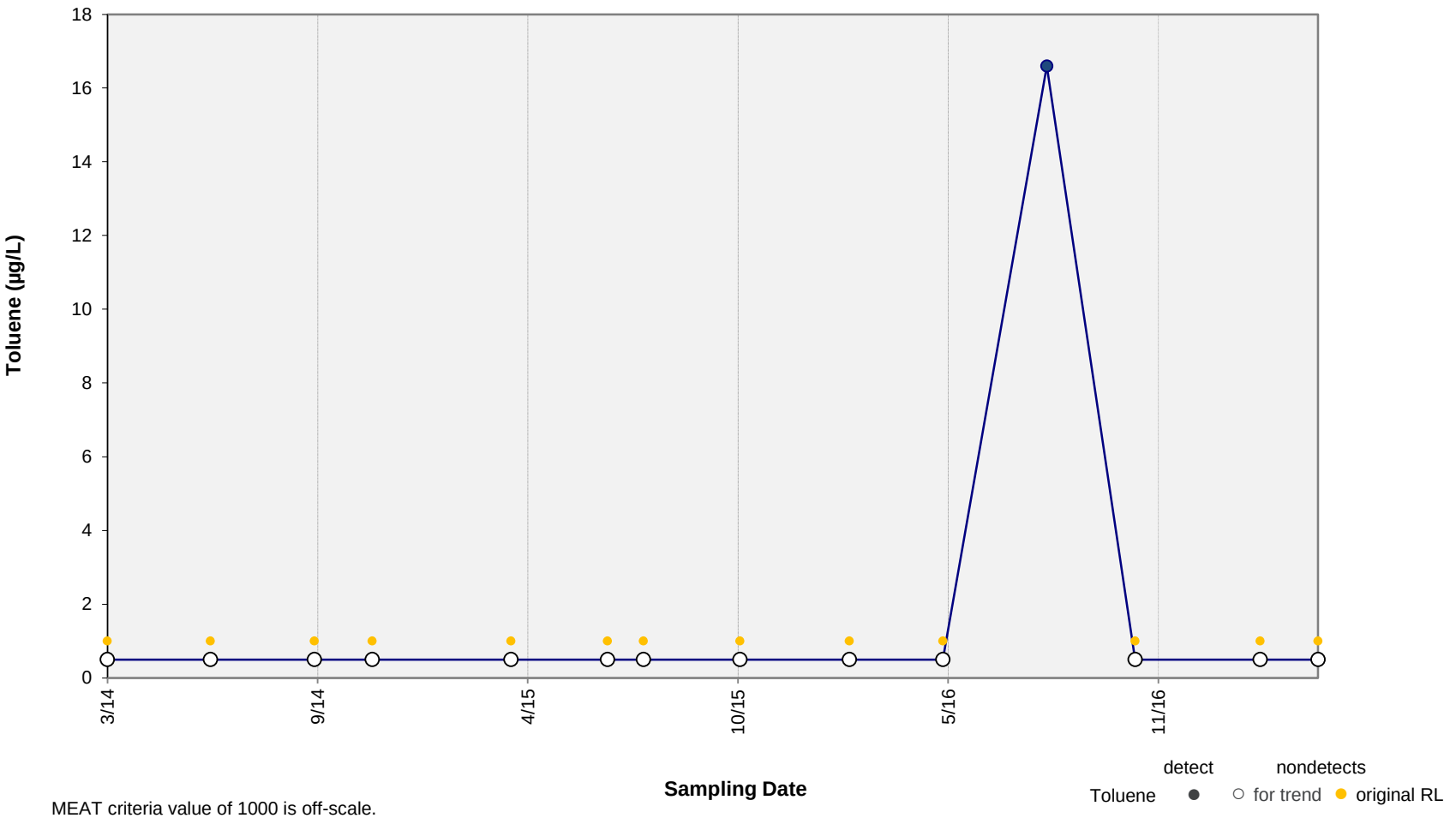
95% Confidence Interval = -1.3E-02 to -3.2E-03 µg/L Per Day

ARCADIS

Concentration vs. Time Plot – MTBE in Well MW-12

Former ExxonMobil Facility #14489

Figure A-24



MEAT criteria value of 1000 is off-scale.

Results of Mann-Kendall Test for Trend: **No Significant Trend**

p value = 0.228 Note: p value < 0.05 indicates a statistically significant trend (95% confidence level).

Results of Sen's Estimator of Slope: **No trend**

Median Slope Estimate = 0.0E+00 µg/L Per Day

95% Confidence Interval = 0.0E+00 to 0.0E+00 µg/L Per Day

ARCADIS

Concentration vs. Time Plot – Toluene in Well MW-12

Former ExxonMobil Facility #14489

Figure A-25

February 20, 2025

Ms. Regan O'Brien
Project Manager
ExxonMobil Environmental & Property Solutions Company
100 Walnut Avenue, Suite 210
Clark, NJ 07066

RE: REQUEST FOR INFORMATION
Case No. 1986-1205-CE
Former Bayview Mobil Service Station (Former ExxonMobil #14489)
285 Old Bayview Road, North East
Cecil County, Maryland
Facility I.D. No. 2615

Dear Ms. O'Brien:

The Maryland Department of the Environment's (MDE) Oil Control Program (OCP) completed a review of the case file for the above-referenced property, including the *Case Closure Request,* dated June 7, 2024, the *Semi-Annual Groundwater Monitoring Report - 2024,* dated August 15, 2024, and the *Half Mile Radius Water Use Survey*, dated September 27, 2024, all prepared by Arcadis, Inc. Since May 31, 2017, groundwater monitoring at this site has been conducted through a network of seven on-site monitoring wells. Private supply well samples have been collected at numerous off-site properties at select intervals throughout the duration of this case.

The monitoring wells were most recently sampled on July 10, 2024, and the samples collected were analyzed for full-suite volatile organic compounds (VOCs), including fuel oxygenates and naphthalene, using EPA Method 8260 and total petroleum hydrocarbons – diesel and gasoline range organics (TPH-DRO and TPH-GRO) using EPA Method 8015. The sampling results were either non-detect or below MDE's groundwater standards with the following exceptions.

- Benzene was detected in MW-1A and MW-2A at concentrations ranging from 11 to 12 parts per billion (ppb), which exceed the 5 ppb groundwater standard.
- Ethylbenzene was detected in MW-2A at 1,800 ppb, which exceeds the 700 ppb groundwater standard.
- Naphthalene was detected in MW-1A, MW-2A, MW-5A, and MW-11 at concentrations ranging from 13 to 600 ppb, which exceed the 0.17 ppb groundwater standard.

Before the OCP can finalize the review for the requested case closure, the following are required:

1. Conduct a Mann-Kendall analysis of the groundwater data provided (2014 to present) for monitoring wells MW-1A, MW-2A, MW-5A, MW-11, and MW-12, to include the following

petroleum constituents: benzene, toluene, ethylbenzene, xylenes, methyl tertiary butyl ether (MTBE), and naphthalene.

2. **By no later than April 21, 2025**, conduct an updated off-site drinking water sampling event to ensure that recent changes shift to public water did not present a risk to the remaining off-site receptors.

   a. The addresses to be sampled are: 215, 223, 233, 237, 243, 246, 265, 269, 280, 282, and 284 Old Bayview Road.
   b. All drinking water samples are to be collected by a Maryland-certified drinking water sampler, prior to any treatment systems present, and analyzed for full-suite VOCs, including fuel oxygenates and naphthalene, using EPA Method 524.2.

3. **Within 45 days of completing the sampling event**, submit a report to include the sampling data and Mann-Kendall analysis. While this supplemental data is being collected and evaluated, OCP hereby authorizes a hold on collecting additional groundwater samples from the on-site monitoring wells.

Upon receipt of the above supplemental data, the OCP will review the status of this case. When submitting documentation to OCP, provide two hard copies and one electronic copy (pdf). If you have any questions, please contact the case manager, Ms. Lindley Campbell at 410-537-3387 (lindley.campbell1@maryland.gov) or me at 410-537-3482 (ellen.jackson@maryland.gov).

Sincerely,

Ellen Jackson, Eastern Region Supervisor
Remediation Division
Oil Control Program

cc: Mr. Ruben Lopez, Project Manager, Arcadis U.S., Inc.
Mr. Ed Arellano, Director of Environmental Health Services, Cecil County Health Dept.
Ms. Lindley Campbell, Case Manager, Remediation Division, Oil Control Program
Mrs. Susan R. Bull, Division Chief, Remediation Division, Oil Control Program
Mr. Christopher H. Ralston, Program Manager, Oil Control Program