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R-Area Groundwater (NBN) Biennial Effectiveness Monitoring Report in Support of R-Area Operable Unit (U)

January 2017 through December 2018

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LIST OF ABBREVIATIONS AND ACRONYMS

~	approximately
<	less than
cDCE	cis-1,2-dichloroethylene
cm	centimeter
EMP	Effectiveness Monitoring Plan
EMR	Effectiveness Monitoring Report
ft	feet
in	inch
ISD	*In situ* decommissioning
J	Result between Method Detection Limit and Practical Quantitation Limit, indicating it was detected but the actual concentration is of higher uncertainty.
L	liter
LAZ	lower aquifer zone
LUCs	land use controls
m	meters
MAZ	middle aquifer zone
MCL	maximum contaminant level
MDL	method detection limit
µg	microgram
mL	milliliter
MNA	monitored natural attenuation
msl	mean sea level
NA	not applicable
pCi	picocurie
PQL	practical quantitation limit
PRG	preliminary remedial goal
RAOU	R-Area Operable Unit
RAGW	R-Area Groundwater
RBC	R-Reactor Building Complex (105-R)
RCOC	refined constituents of concern
ROD	Record of Decision
SRNS	Savannah River Nuclear Solutions, LLC
SRS	Savannah River Site
TCE	trichloroethylene
TCCZ	Tan Clay Confining Zone
TZ	Transmissive Zone
UTM	universal transverse mercator
UTRA	Upper Three Runs Aquifer
VC	vinyl chloride
VOC	volatile organic compound
yr	year

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1.0 INTRODUCTION

This Effectiveness Monitoring Report (EMR) documents and summarizes R-Area Groundwater (RAGW) monitoring well and surface water data collected from January 2017 through December 2018 in compliance with the Effectiveness Monitoring Plan (EMP) for the R-Area Operable Unit (RAOU) and subsequent agreements. The primary goal of the RAGW EMR for the RAOU is to evaluate groundwater and surface water monitoring data for Monitored Natural Attenuation (MNA) of tritium and volatile organic compound (VOC) groundwater plumes (SRNS 2011).

R Area is located in the east central area of the Savannah River Site (SRS) (Figure 1). R-Reactor achieved criticality in December 1953 and was shut down in 1964 due to reduced requirements for defense-related products. During R-Reactor operations, releases of tritium and VOCs contaminated the groundwater in R Area.

The RAGW is a subunit of the RAOU and encompasses three tritium plumes and one VOC groundwater plume that resulted from past activities within R Area. MNA was selected as the remedial alternative for the groundwater in R Area (SRNS 2010a). Historical groundwater data collected from 2007 through 2010 was used to estimate the extent of the four groundwater plumes (Figure 2).

2.0 REMEDIAL ACTIONS

As stated in the Record of Decision (SRNS 2010a), the final remedial action for the RAOU consists of Land Use Controls (LUCs) for the entire RAOU and MNA for the RAGW Subunit. The MNA portion of the remedy includes both groundwater and surface water monitoring as described in the EMP (SRNS 2011) in order to evaluate the effectiveness of the MNA remedy.

The long-term remedial action objective for the RAGW Subunit of the RAOU is to restore contaminated groundwater in the Upper Three Runs Aquifer (UTRA) to below regulatory limits. Based on a conservative estimate for the source concentrations, and not taking credit for dilution, dispersion, and diffusion, estimates to reach maximum contaminant levels (MCLs) in the four plumes ranged from 26 to 124 years (SRNS 2010b).

3.0 MONITORING

3.1 RAGW Monitoring

The groundwater monitoring network currently includes twenty-eight wells, four seepline locations, and nine surface water locations (Figure 3) (Table 1).

Monitoring wells RAG013 and RAG014 were installed in 2011 to expand the groundwater monitoring network (Figure 3). In 2013, the Core Team convened and decided that a new plume boundary well (RBP011B) should be installed downgradient of well RAG008B. Well RBP011B was installed in September of 2014 to monitor the Eastern VOC plume and is co-located with wells RBP 11DL and RBP 11DU (Figure 3). SRS will conduct normal maintenance on the wells as needed. Any maintenance work that changes any of the well information (e.g. reference elevation) will be discussed in the next report.

In accordance with the 2011 EMP, the initial twenty-five wells were scheduled to be monitored annually for the first five years (SRNS 2011). Any additional wells would be monitored semi-annually for the first two years, then annually for three years. For this reason, newer wells RAG013 and RAG014 were sampled semi-annually during 2012 and 2013 and sampled annually since 2014. Well RBP011B was sampled on a semi-annual sampling schedule in 2014 and 2015. Well RBP011B now follows the annual sampling schedule consistent with the other RAGW monitoring wells. Five years of new data and each well's historical data should provide sufficient data to establish whether refined constituents of concern (RCOC) concentrations are trending upward, downward, or are steady state. If the observed trend is steady-state or downward after five years, SRS will reduce the monitoring frequency to biennial (two-year) with agreement from the Core Team (i.e., representatives from the United States Department of Energy, United States Environmental Protection Agency, and South Carolina Department of Health and Environmental Control). Sampling is performed as described in the most current version of Manual 3Q1, *Environmental Requirements and Program Documents* (SRNS 2010c). The analytical suite for the VOC plume wells includes carbon tetrachloride, chloroform, trichloroethylene (TCE), cis-1,2-dichloroethylene (cDCE), and vinyl chloride (VC). Tritium is the only contaminant sampled and analyzed for in the wells monitoring the RAGW tritium plumes.

Three surface water stations along Joyce Branch (JBSW-01, JBSW-02 and JBSW-03) and two seepline groundwater wells (JBS005A and JBS005B) monitor the Eastern Tritium and VOC plumes (Figure 3) (Table 1). Four surface water stations (MCSW-03 through MCSW-06) and two seepline groundwater wells (MCS002A and MCS002B) monitor the Northern Tritium plume along Mill Creek. Two surface water locations (PASL-01 and PASL-02) monitor the Northern Tritium plume along Pond A (Figure 3) (Table 1). Surface water stations are used as LUC boundary stations for the Eastern VOC, Eastern Tritium, and Northern Tritium plumes. The surface water and seepline stations are monitored annually.

The analytical suite for the stations along Joyce Branch includes tritium, carbon tetrachloride, chloroform, TCE, cDCE, and VC. Only tritium is sampled and analyzed for at Mill Creek and Pond A sample locations. All surface water samples are collected according to Manual 3Q1, Procedure 3001A (SRNS 2010c).

3.2 ISD Monitoring

The *In situ* decommissioning (ISD) remedy for the R-Reactor Building (105-R) Complex is designed to significantly reduce contaminant mobility and allow for radioactive decay of contaminants. The ISD remedy included grouting of all below-grade areas of the building, grouting and stabilization of disassembly basin and reactor vessel contaminants, demolition associated with the disassembly basin above-ground structure and stack, and construction of a cover system over the grouted disassembly basin and reactor vessel.

The ISD monitoring wells were installed to verify the remedial action for the R-Reactor Building Complex (105-R) [RBC] is functioning as designed and the wells are sampled every five years according to the 2011 EMP (SRNS 2011) to demonstrate that the ISD remedy remains effective in preventing impact to groundwater. The ISD monitoring wells are shown in Figure 4 and listed in Table 1.

The monitoring network consists of ten wells. Wells RDB005C, RDB 3D, RDB 1D, RPS004C, RAG003DU, RAG003DL, RSE032D, and RSE033D are used to monitor the RBC. Two wells (RDB003DU and RPS004DU) were installed in 2011 for additional ISD monitoring of the RBC. ISD monitoring well RPS004DU was observed to have a warped casing in one section and was abandoned per Manual 3Q1 (SRNS 2010c). Replacement well RPS004DUR was installed in 2012 to monitor the RBC and serves as a replacement well for RPS004DU. Well RPS004DUR was sampled in 2012 and will be sampled every five years per the ISD sampling schedule. In 2017, carbon-14 was detected in the groundwater near the RBC at well RDB 3D. SRS notified the Core Team and elected to sample for carbon-14 and tritium annually for five years at five monitoring wells (RDB 1D, RDB 2D, RDB 3D, RDB003DU, and RDB005C) near the RBC (Figure 5). Well RDB 2D is not one of the ten wells identified as an ISD monitoring well in the RAOU EMP, so it is identified as an auxiliary ISD monitoring well.

The ISD wells are sampled once every five years for the three most mobile contaminant migration constituents of concern (Carbon-14, Chlorine-36, and Iodine-129) and tritium. The next round of ISD sampling at all 11 wells will be conducted in 2022.

3.3 Groundwater Flow Directions

The 30-year (yr) average (1986 through 2016) for SRS rainfall is 118.4 centimeter per year (cm/yr [46.6 inches per year {in./yr}]), based on data from the SRS 700-A rain gauge (SRNL 2017). In 2017, SRS received 138.2 cm (54.4 in.) of rainfall, based on data from the 700-A rain gauge (SRNL 2017). In 2018, SRS received 140.6 cm (55.37 in.) of rainfall, based on data from the Savannah River Technology Center (773-A) rain gauge (SRNL 2018). The average groundwater recharge is estimated at 31.8 cm (12.5 in./yr), while the remainder is lost to evapotranspiration or run-off to surface water (WSRC 2000). Years with greater than average rainfall will tend to provide more groundwater recharge, and the water table will tend to rise. Years with lower than average rainfall will tend to provide less groundwater recharge, and the water table will tend to fall.

Historic water elevations, extending from 1984 to present, are displayed as hydrographs in Appendix B. The potentiometric surfaces were mapped using fourth quarter 2018 water elevations for the Transmissive Zone (TZ), and the Lower Aquifer Zone (LAZ) (Appendix E). The Middle Aquifer Zone (MAZ) was not contoured due to the limited number of wells within the aquifer.

Within the RAOU LUC boundary, groundwater in the TZ was demonstrated to flow radially from a local mounded area centered to the northeast of the RBC (Figure 2) (SRNS 2011). In 2018, the water table elevation in this mounded area is approximately (~) 88.4-meters (m [~290-feet {ft}]) mean sea level (msl), and the groundwater flows toward Mill Creek (~79.3-m [~260-ft] msl) to the north, Joyce Branch (~65.5-m [~215-ft] msl) to the west, and Pond 4 (~73.0-m [~239.4-ft] msl) to the south (Figure 2 and Appendix E). Beneath the TZ lies the Tan Clay Confining Zone (TCCZ), which overlies the LAZ. Groundwater in the LAZ flows to the northeast toward Joyce Branch (Appendix E).

3.4 RAGW Compliance

Key source area monitoring wells were identified in the EMP (SRNS 2011) for each plume and are sampled annually (Table 1). If observed tritium or TCE concentrations in these wells exceed an Action Limit (i.e., 150% of the observed maximum between 2002 and 2010) (Table 2), then a confirmation sample will be collected, and the frequency of sampling will be increased to quarterly for one year. A best fit line will be applied to the value that exceeded the trigger limit and subsequent data, and if the line has a positive slope then an increasing trend is present. If an increasing trend is observed, a Core Team meeting will be convened to discuss the results and determine if other remediation alternatives should be considered. No source area monitoring wells have exceeded an Action Limit.

LUC boundary stations for the plumes are identified in Table 1. These stations verify tritium and VOC concentrations are below MCLs outside the LUC boundary, and that the plumes are not expanding horizontally. If the tritium or VOC concentration in any LUC boundary station exceeds an MCL and is verified by a confirmation sample, then the Core Team will be convened to discuss necessary actions (e.g., expansion of the LUC boundary or additional monitoring).

Plume boundary wells (vertical extent) for all plumes are identified in Table 1. If the tritium or VOC concentration in any plume boundary well sample exceeds an MCL and is verified by a confirmation sample, then an additional well will be installed downgradient of the boundary well, if determined to be needed by the Core Team. Groundwater samples from plume boundary well RAG008B exceeded the MCL (5 microgram per liter [µg/L]) for TCE; therefore, the Core Team decided to add a new well (RBP011B). RBP011B was installed in September 2014 to become the new plume boundary well for the Eastern VOC Plume. Well RAG008B is now a plume definition well. The plume definition wells (Table 1) will be used to monitor the contaminants within the plume and are expected to exceed MCLs. With the approval of the Core Team, SRS may suspend monitoring on any station with stable or decreasing RCOC concentrations that are below MCLs for six consecutive years (SRNS 2011).

If the MCL for tritium or a VOC is exceeded in a surface water sample, a confirmation sample will be collected. If the exceedance is confirmed, a Core Team meeting will be convened to discuss a path forward.

3.5 ISD Compliance

The monitoring network consists of ten wells identified in the EMP (SRNS 2011) and are sampled every five years (Table 1). If observed contaminant concentrations in a monitoring well exceed MCLs/preliminary remediation goals (PRGs), a confirmation sample will be collected for that contaminant. If the confirmation sample concentration also exceeds the MCL/PRG and background levels, then a Core Team meeting will be convened to discuss the results and a path forward.

It is important to note that the 2017 ISD sampling event at well RDB 3D had carbon-14 results above the practical quantitation limit (PQL) but less than the MCL. Well RDB 3D also had elevated tritium results in comparison to historical data. As a result, SRS will monitor for carbon-14 and tritium at five of the ISD monitoring wells (RDB 1D, RDB 2D, RDB 3D, RDB003DU, and RDB005C) annually for five years (2018 through 2022). Well RDB 2D will be an auxiliary ISD monitoring well during this time period.

4.0 RESULTS

4.1 RAGW Subunit MNA Results

Appendix A provides the results for RAGW groundwater and surface water sampling during 2017 and 2018. Appendix C provides time-series plots for the RAGW wells. Appendix D contains plume maps for each groundwater plume. Table 2 identifies the 2018 maximum concentrations for each RCOC for each plume.

The RCOCs that exceeded their specific MCLs in 2017 are tritium and TCE. There were two results above the PQL for cDCE in the 2017 sampling event, but neither exceeded the MCL (70 µg/L). There was one result above the PQL for VC during the 2017 sampling period, but the result was less the MCL (2 µg/L). There was also one result above the PQL for carbon-14 during the 2017 sampling period, but the result was less the MCL (2,000 µg/L). Carbon tetrachloride and chloroform results were below their detection limits in all of the monitoring wells and surface water locations in 2017.

The RCOCs that exceeded their specific MCLs in 2018 are tritium, TCE, and VC. There were two results above the PQL for cDCE in the 2018 sampling period, but none of them exceeded the MCL (70 µg/L). There was one result above the PQL for carbon-14 during the 2018 sampling period, but that result was less the MCL (2,000 µg/L). Carbon tetrachloride and chloroform results were below their detection limits in all of the monitoring wells and surface water locations during the 2017 and 2018 sampling period.

4.1.1 Eastern VOC Plume

The Eastern VOC plume emanates about 280 m (919 ft) from the northeast side of the R-Reactor Building (105-R) and extends east towards Joyce Branch (Figure 3). VOCs are constrained vertically to the upper portion of the UTRA, primarily in the TZ (Figure 8), but TCE results above the MCL (5 µg/L) have been confirmed in the lower portion of the UTRA, the LAZ, at plume definition well RAG008B. TCE is the predominant VOC and is used to depict the 2018 Eastern VOC Plume that has decreased in size and concentration relative to the 2010 TCE plume (Figure 6).

Due to a shipping error in the second half of the 2018 sampling event, volatile samples arrived at the laboratory beyond the time required to properly run the analytical procedures. The samples were held past the required hold time and therefore, qualified as estimated ("J-qualified") for results above their detection limits, and rejected ("REJ") for results below their detection limits. To gather more accurate data these wells were resampled, and the results are included in Appendix A, Table A-2.

During the 2017 and 2018 monitoring period three wells (RAG008DL, RAG008B, and RBP 11DL) in the mid-plume area exceeded the TCE MCL (5 µg/L). One well (RPS004C) also exceeded the VC MCL (2 µg/L) in 2018. Key source area well RWT003C remained below the MCL for TCE during the 2017 and 2018 sampling events and continues to show a decreasing trend.

In the upper portion of the UTRA, well RAG008DL exceeded the TCE MCL (5 µg/L) in 2017 and 2018 but continues to show a decreasing trend for TCE since 2010. Long term (2002 through 2018) results from plume definition well RBP 11DL continues to show a decreasing trend for TCE in the groundwater although concentrations continue to remain above the TCE MCL (5 µg/L).

In the LAZ the current TCE concentration (22.1 µg/L) in plume definition well RAG008B reflects the increasing trend since 2010 and is the highest observed TCE concentration at that well. Plume boundary well RBP 11B continues to show a steady trend with TCE concentrations less than the PQL.

Down gradient seepline samples at wells JBS005A and JBS005B were below the detection limit or less than the PQL for TCE during the 2017 and 2018 sampling events.

All three Joyce Branch surface water samples (JBSW-01, JBSW-02, and JBSW-03) remained below the detection limit for TCE during 2017 and 2018.

Plume definition well RPS004C was the only monitoring station that had a VC groundwater concentration (2.69 µg/L) above the MCL (2 µg/L) in 2018, an increase from the 2017 sampling event of 1.88 µg/L, which was below the MCL. Although, VC concentrations at well RSP004C indicate a decreasing trend since sampling began in 2007.

Concentrations of cDCE did not exceed the MCL (70 µg/L) at any monitoring station in 2017 or 2018. Groundwater at well RPS004C had the highest cDCE concentration (17.2 µg/L) in 2018. The cDCE concentrations in the groundwater at well RPS004C represent an overall decreasing trend since monitoring began in 2007 when the groundwater concentration of cDCE was 29.3 µg/L. Concentrations of carbon tetrachloride and chloroform were below the detection limits in all wells during the 2017 and 2018 sampling events.

4.1.2 Eastern Tritium Plume

The Eastern Tritium plume emanates from the southeast corner of the RBC, near the former location of the moderator distillation columns, and extends east to Joyce Branch (Figure 3). Tritium is primarily constrained vertically to the upper portion of the UTRA, primarily in the TZ (Figure 9), only sporadic results above the PQLs have been observed in the LAZ. The 2018 Eastern Tritium Plume has decreased in size and concentration relative to the 2010 tritium plume (Figure 7).

In 2017 and 2018 key source area well RPS004C yielded tritium results above the MCL (20 pCi/mL), although concentrations are below the Action Limit (2,610 picocuries per milliliter [pCi/mL]) for tritium at this well (Table 2). A decreasing trend is evident at well RPS004C, which had a maximum tritium concentration of 1,740 pCi/mL in March 2008 and a tritium concentration of 264 pCi/mL during the 2018 sampling period.

In the upper portion of the UTRA, long term results (2002 through 2018) from plume definition wells RBP 11DL and RBP 11DU continue to indicate decreasing trends for groundwater tritium concentrations. Plume definition well RCS003C continues to show a stable trend since first sampled in 2007. The tritium concentrations in the groundwater at plume definition well RAM009C have shown an overall increase from the 2007 sample, which was less than the PQL, but are on a downward trend since 2015 and are still well below the MCL (20 pCi/L).

In the LAZ, tritium remains stable and below the detection limit in groundwater during the 2017 and 2018 sampling events at plume definition wells RAG006B and RAG008B. Tritium concentrations at plume boundary well RBP011B continue to remain stable, either below the detection limit or less than the PQL during the 2017 and 2018 sampling events. Collectively, these groundwater data indicate the tritium plume is not expanding vertically.

Tritium concentrations in downgradient seepline well JBS005A have decreased to 1.53 pCi/mL by 2018, relative to the 2012 sample (3.98 pCi/mL). Seepline well JBS005B tritium concentrations remained below the detection limit during the 2017 and 2018 sampling events.

Tritium concentrations for all three Joyce Branch surface water station samples (JBSW-01, JBSW-02, and JBSW-03) were either below the detection limit or less than the PQLs in 2017 and 2018.

4.1.3 Western Tritium Plume

The Western Tritium plume emanates from the southwest corner of the RBC and extends south-by-southeast before reaching the R-Area Concrete Lakes (186-R/190-R) (Figure 3). The Western Tritium plume is constrained vertically to the upper portion of the UTRA in the TZ (Figure 10). The 2018 Western Tritium plume has decreased in size and concentration relative to the 2010 tritium plume (Figure 7).

The key source area well RDB005C tritium concentrations remained stable and above the MCL (20 pCi/ml) during the 2017 and 2018 sampling event, but below the Action Limit (76.8 pCi/mL) for tritium at this well.

In the TZ, the tritium concentration in groundwater at plume definition well RAG004DL decreased slightly in 2017 to 3.96 pCi/mL and again in 2018 to 3.41 pCi/mL. Tritium concentrations in well RAG004DL demonstrate an overall decreasing trend since monitoring began in 2007. Tritium concentrations in groundwater at the plume boundary well RDB004DL remain stable and concentrations are either below the detection limit or less than the PQLs indicating that the plume is not expanding horizontally.

In the LAZ, tritium remains stable and below the detection limit in the groundwater at plume definition well RAG004B, signifying the plume is not expanding vertically.

4.1.4 Northern Tritium Plume

The Northern Tritium plume emanates about 300-m (984-ft) northwest of the RBC and extends to the north up to the LUC boundary (Figure 3). To the north and northeast, the tritium is constrained vertically to the upper portion of the UTRA (Figure 11); however, results above the MCL (20 pCi/mL) have been confirmed in the lower portion of the UTRA, the LAZ in the past. The 2018 Northern Tritium Plume has decreased in size and concentration relative to the 2010 tritium plume (Figure 7).

Groundwater tritium concentration at key source area well (RSE 10DU) decreased below the tritium MCL (20 pCi/mL) in 2017 and increased back above the MCL in 2018. Concentrations in this well have an overall decreasing trend since monitoring began in September 2002 when the tritium concentration was 161 pCi/mL. The December 2018 groundwater tritium concentration of 33.4 pCi/mL for RSE 10DU is well below the Action Limit (252 pCi/mL) for this well.

In the upper portion of the UTRA, the groundwater at the northeast plume definition well RAG009DU was 12.7 pCi/mL in 2018, which is about the same as the 2017 sample (11.9 pCi/mL). Tritium concentrations in well RAG009DU indicate a decreasing trend since sampling started in 2010. Concentrations at other plume definition wells (RAG009DL, RAG013, RAG014, RGW 2D, RPC 2D, RSE027C, and RSP 5DL) remain relatively low or below detection limits. The highest observed concentration for these wells during the 2017 and 2018 sampling event was a tritium concentration of 2.57 pCi/mL in well RGW 2D in 2018. The tritium concentrations in the groundwater at LUC plume boundary wells MCS002A and MCS002B have remained essentially constant, as the tritium concentrations have been below the detection limit or less than the PQL since 2008.

In the LAZ, all tritium results since 2001 have been below the detection limit at plume boundary well RPC 19C. Likewise, all tritium results have remained very low or less than the detection limit at plume definition wells RGW 2C, RPC 2CU, and RPC 2CL. The highest observed tritium concentration in these wells during the 2017 and 2018 sampling event was 3.47 pCi/mL in well RPC 2CU in 2017. These wells indicate the plume is not expanding vertically into the LAZ as it moves northward.

All Mill Creek surface water stations continue to remain well below the MCL, with a maximum observed concentration of 4.82 pCi/mL in well MCSW-04 in October 2017. MCSW-03 was not sampled due to dry conditions in 2017. The two surface water locations PASL-01 and PASL-02 along Pond A were also not sampled in 2017 and 2018 due to dry conditions at these locations.

4.2 ISD Results

4.2.1 2017 ISD Results

In 2017 the ISD wells underwent the routine five-year sampling event. Results are shown in Appendix A, Table A-1. Concentrations of carbon-14 in well RDB 3D were above the PQL but less than the MCL, all other wells were below the detection limits for carbon-14. Well RDB 3D contained elevated concentration of tritium in comparison to historical data. All other wells show stable or decreasing concentrations of tritium. Water elevations in RDB 3D were 87.1-m (285.8-ft) msl in 2017, ~0.9-m (3-ft) above the average water elevation (86.1-m [282.5-ft] msl) in this well. Comparatively, the water elevation in 2003 for well RDB 3D reached a height of 285.2 ft msl which resulted in an increase in tritium concentrations until 2005 (Appendix B, Figure B-16 and Appendix C, Figure C-54). Wells within the vicinity of the well RDB 3D do not show an increase in concentrations due to the increase in water table elevations. For these reasons the elevated water levels at RDB 3D may have allowed detection of a small shallow legacy spill near the R-Reactor Disassembly Basin. Concentrations of chlorine-36 and iodine-129 were below the detection limits for every well. Due to the results in well RDB 3D, SRS plans to monitor for carbon-14 and tritium at five of the ISD monitoring wells (RDB 1D, RDB 2D, RDB 3D, RDB003DU, and RDB005C) annually for five years starting in 2018.

4.2.2 2018 ISD Results

In 2018 the ISD monitoring wells (RDB 1D, RDB 2D, RDB 3D, RDB003DU, and RDB005C) were sampled for cabon-14 and tritium. Concentrations in well RDB 3D decreased from

1,930 pCi/mL in 2017 to 335 pCi/mL in 2018 (Appendix A, Table A-1 and A-2). Cabon-14 concentrations in well RDB 3D also decreased from 141 pCi/mL to 95.9 pCi/mL (Appendix A, Table A-1 and A-2). All other wells remained relatively stable.

5.0 CONCLUSIONS

5.1 RAGW MNA Conclusions

Data from source area monitoring wells in the Eastern VOC, Eastern Tritium, and Northern Tritium plumes indicate stable or decreasing trends for VOCs and tritium in the source areas (Appendix C) and support the time estimates for the concentrations to be below MCLs. These data indicate MNA continues to be an effective remedy for the RAGW tritium and VOC plumes.

5.1.1 Eastern VOC Plume

Based on the 2017 and 2018 monitoring data, MNA continues to be an effective remedy for the RAGW Eastern VOC Plume. The key source area well RWT003C and all plume definition wells except for RAG008B show decreasing VOC trends (Figure 12). The new plume boundary well RBP011B had TCE results as an estimated value, <1 µg/L, which is below the MCL of 5 µg/L. All Joyce Branch surface water station samples remain below the detection limit for TCE.

5.1.2 Eastern Tritium Plume

Based on the 2017 and 2018 monitoring data, MNA continues to be an effective remedy for the RAGW Eastern Tritium Plume. The key source area well (RPS004C) shows a decreasing trend, and all other wells are below the MCL (Figure 13). The plume boundary well (RBP011B) remains below the detection limit or less than the PQL. The Joyce Branch surface water stations continue to be stable with tritium concentrations less than the PQL.

5.1.3 Western Tritium Plume

Based on the 2017 and 2018 monitoring data, MNA continues to be an effective remedy for the RAGW Western Tritium Plume. The source area monitoring well (RDB005C) has had a fairly steady tritium concentration since 2009 (Figure 14). However, the plume definition well

RAG004DL indicates a decreasing tritium trend for the Western Tritium Plume since 2007 (Figure 14) and supports the time estimate for concentrations to be below MCLs (SRNS 2010b). The plume boundary well RDB004DL remains below the detection limit or less than the PQL

5.1.4 Northern Tritium Plume

Based on the 2017 and 2018 monitoring data, MNA continues to be an effective remedy for the RAGW Northern Tritium Plume. The groundwater at the key source area well RSE 10DU shows an overall decreasing trend for tritium since 2002 (Figure 15). RSE 10DU is the only well remaining above the MCL. Likewise, there is an overall decreasing trend for tritium at plume definition well RAG009DU since monitoring began in 2010 (Figure 15). The data from all northern plume definition and plume boundary wells indicate the plume is not expanding. All Mill Creek and Pond A surface water stations continue to remain well below the MCL.

5.2 ISD Conclusions

Although an elevated level of tritium and detectable levels of carbon-14 were present at ISD monitoring well RDB 3D in 2017 , concentrations decreased in 2018. All other wells remain stable or have decreasing concentrations of tritium. It appears the 2017 increase in tritium and carbon-14 at well RDB 3D may be due to mobilization of a small shallow legacy spill near the disassembly basin, related to the recent high-water table levels. The 2017-2018 data indicate the ISD remedial action implemented, pursuant to the approved RAOU ROD, (i.e., grouting of below-grade areas, grouting and stabilization of disassembly basin and reactor vessel contaminants, demolition of the disassembly basin above-ground structure and stack, and construction of a cover system over the grouted disassembly basin and reactor vessel) for the RBC is functioning as designed and the ISD remedy remains effective in preventing impact to groundwater.

6.0 RECOMMENDATIONS

SRS recommends continued annual sampling for carbon-14 and tritium for another four years (2019 through 2022) at five monitoring wells (RDB 1D, RDB 2D, RDB 3D, RDB003DU, and RDB005C) near the RBC to verify carbon-14 and tritium concentrations continue to decrease.

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SRNS, 2010c. *Environmental Requirements and Program Documents*, Manual 3Q1, latest revisions, Savannah River Nuclear Solutions, LLC, Savannah River Site, Aiken, SC

SRNS, 2011. *Effectiveness Monitoring Plan for the R-Area Operable Unit (U),* SRNS-RP-2010-01259, Revision 1, April 2011, Savannah River Nuclear Solutions, LLC, Savannah River Site, Aiken, SC

WSRC, 2000. *Groundwater Flow Modeling for C-Area Groundwater Operable Unit (U)*, WSRC-RP-2000-4096, Revision 0, Westinghouse Savannah River Company, Savannah River Site, Aiken, SC

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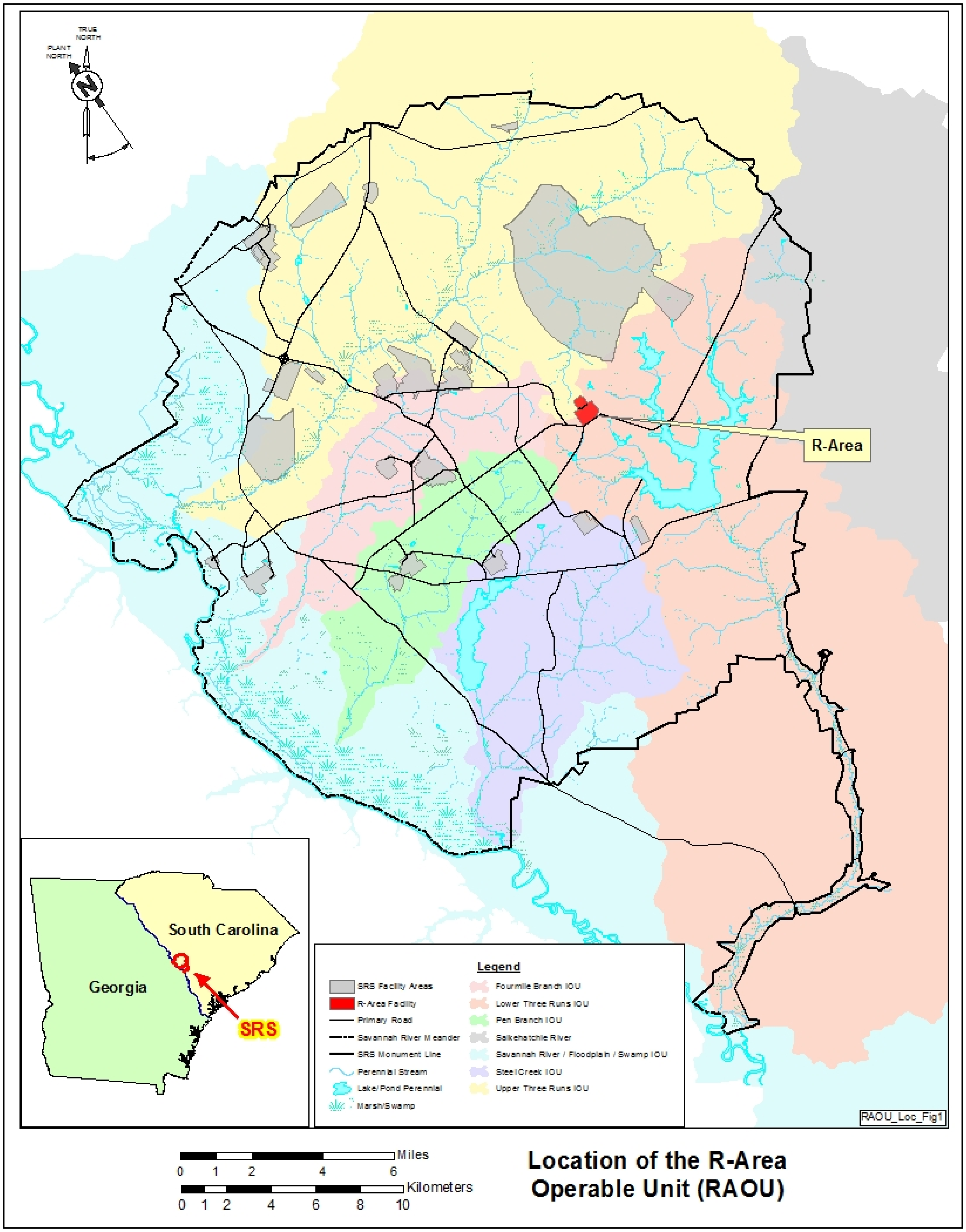

Figure 1. RAOU Location

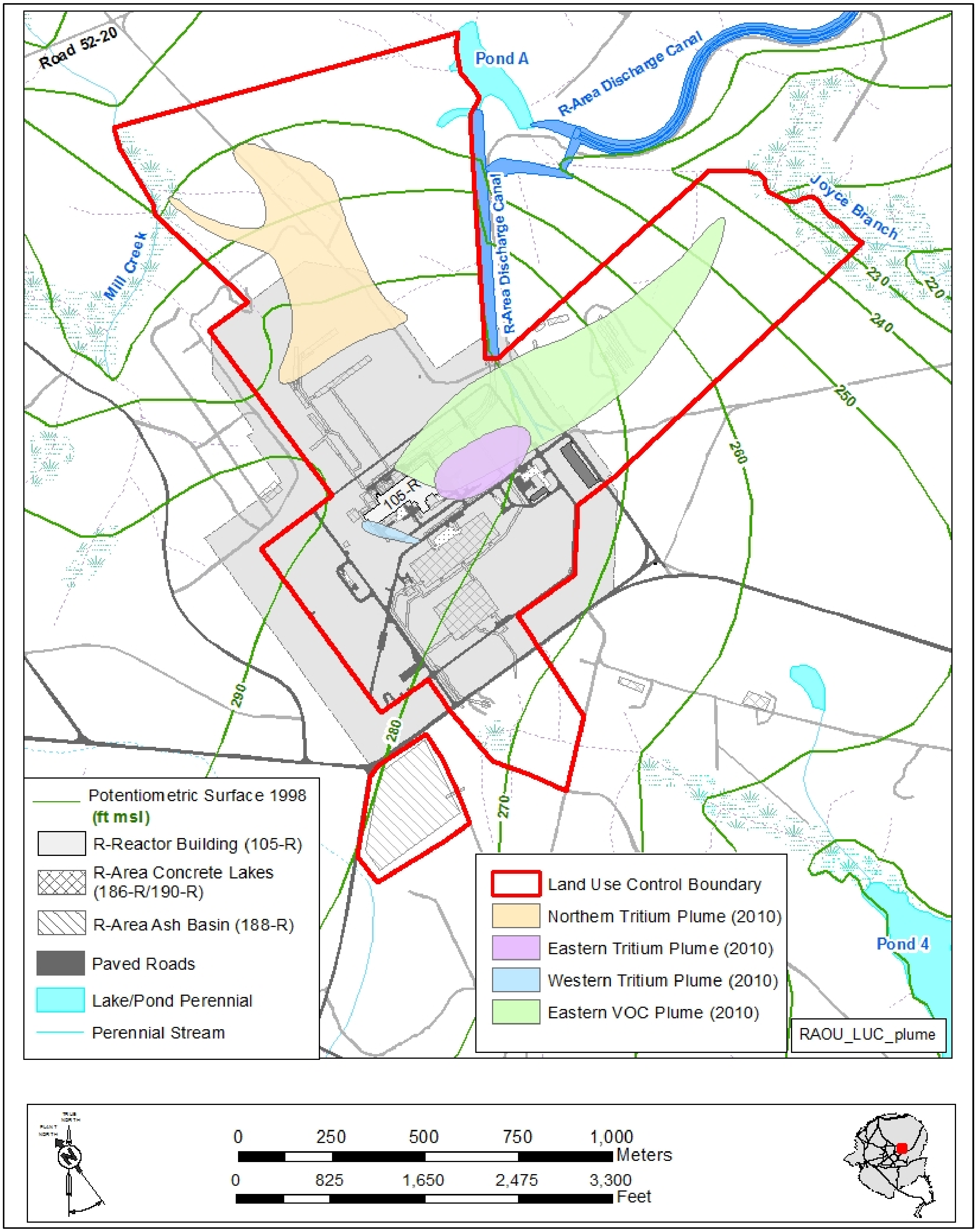

Figure 2. RAGW Groundwater Plumes (2010) and LUC Boundary

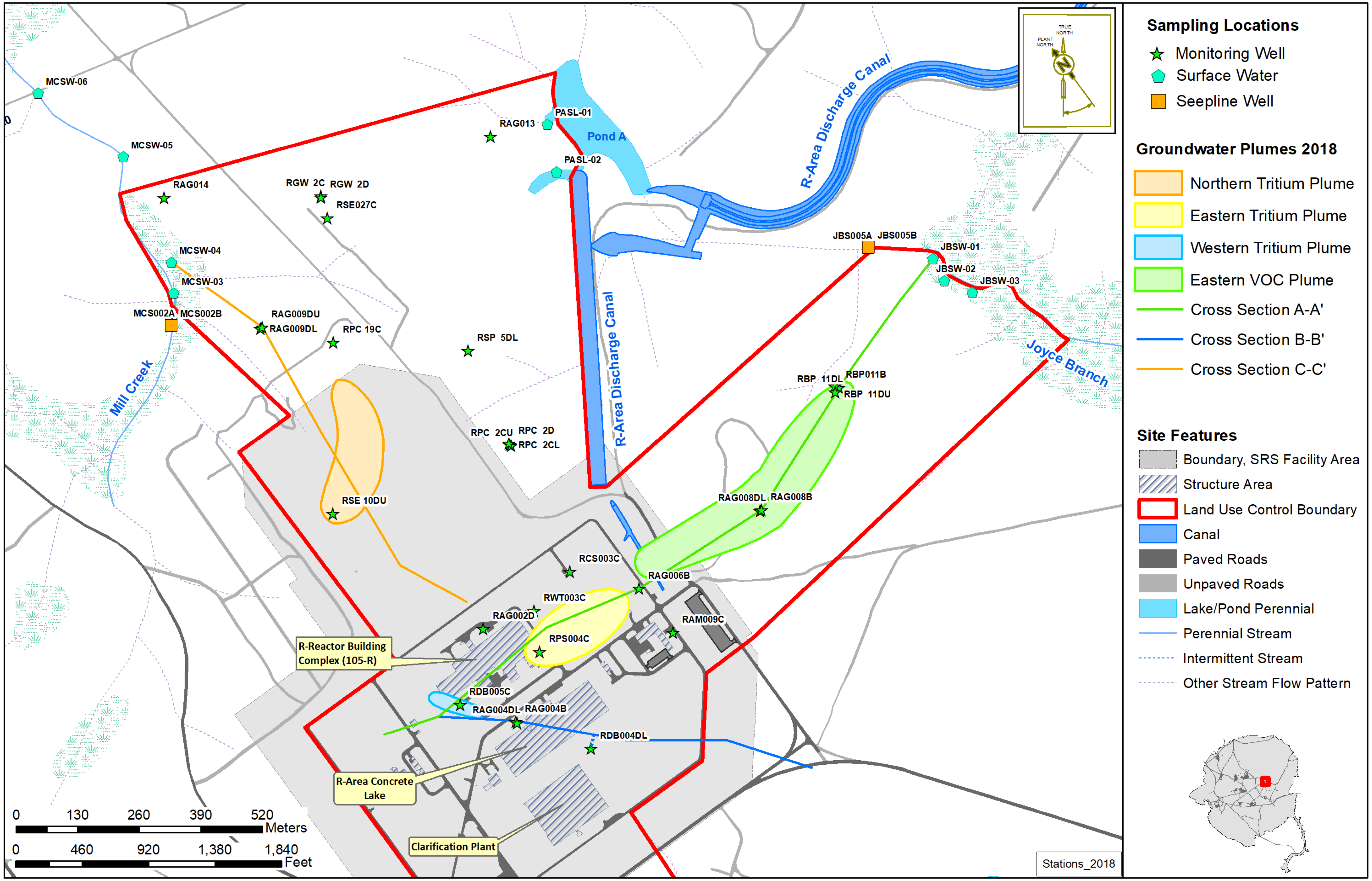

Figure 3. RAGW Monitoring Stations and 2018 Groundwater Plumes

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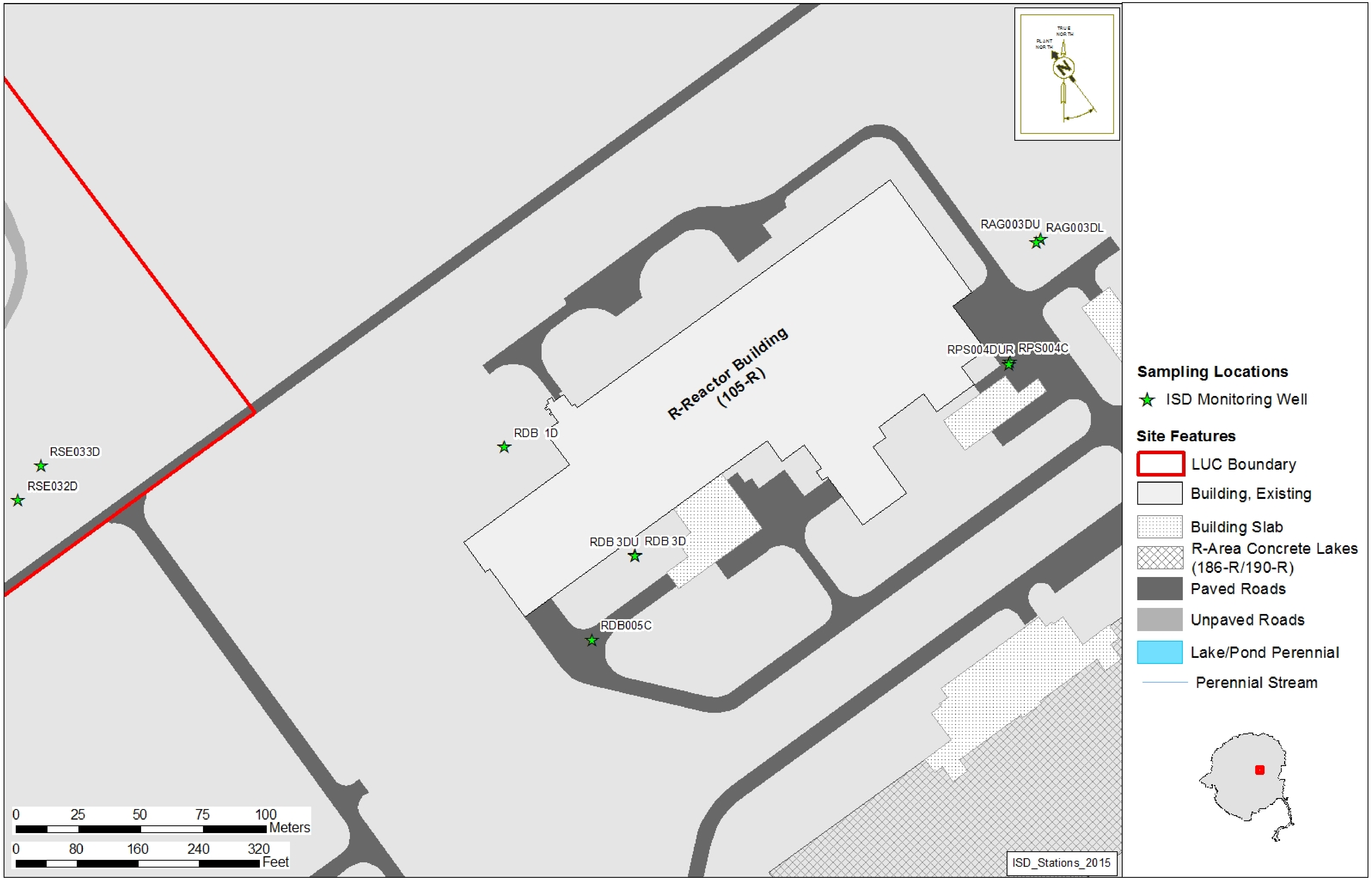

Figure 4. ISD Monitoring Wells (5-yr)

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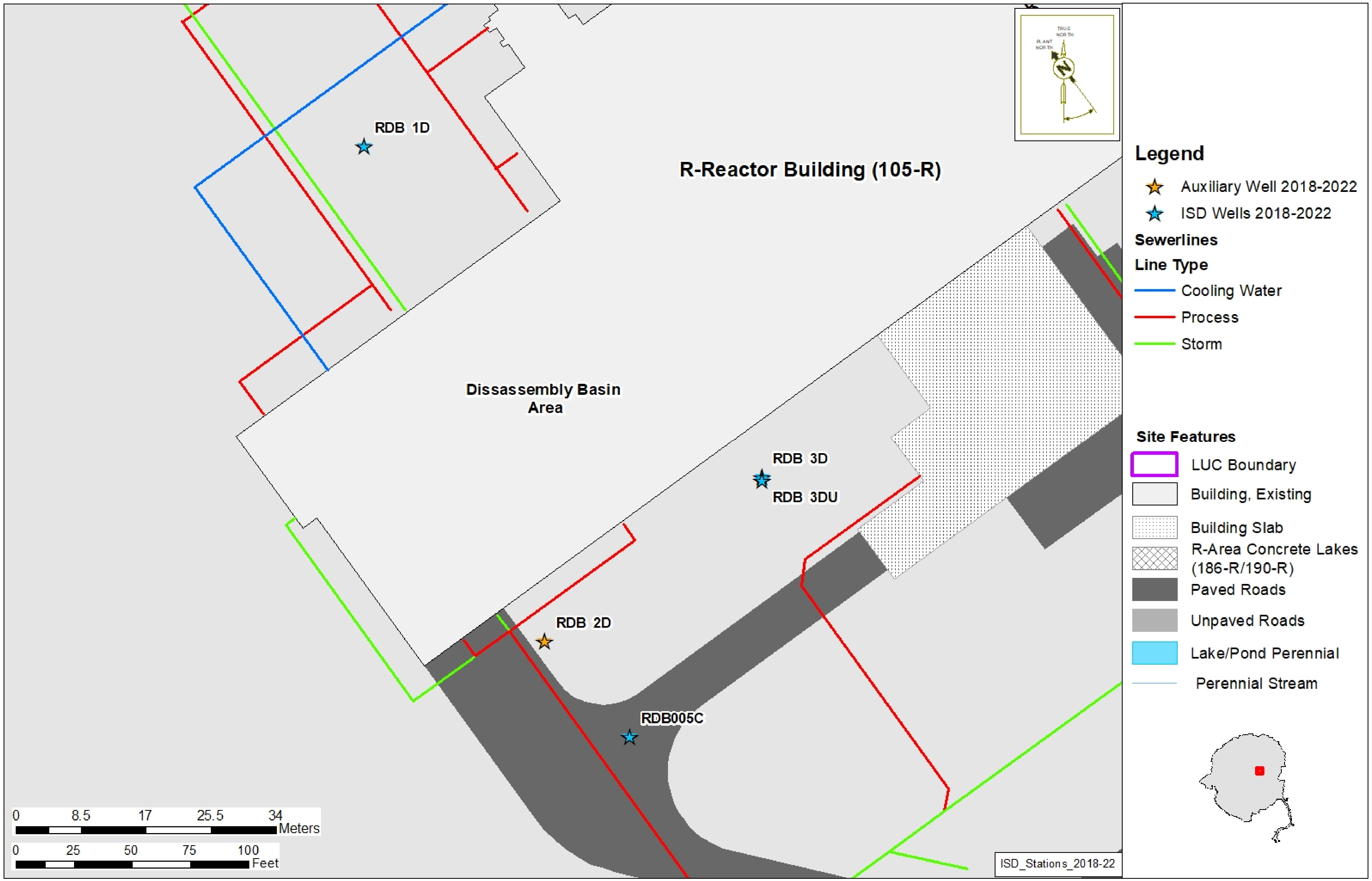

Figure 5. Annual ISD Monitoring Wells (2018 through 2022)

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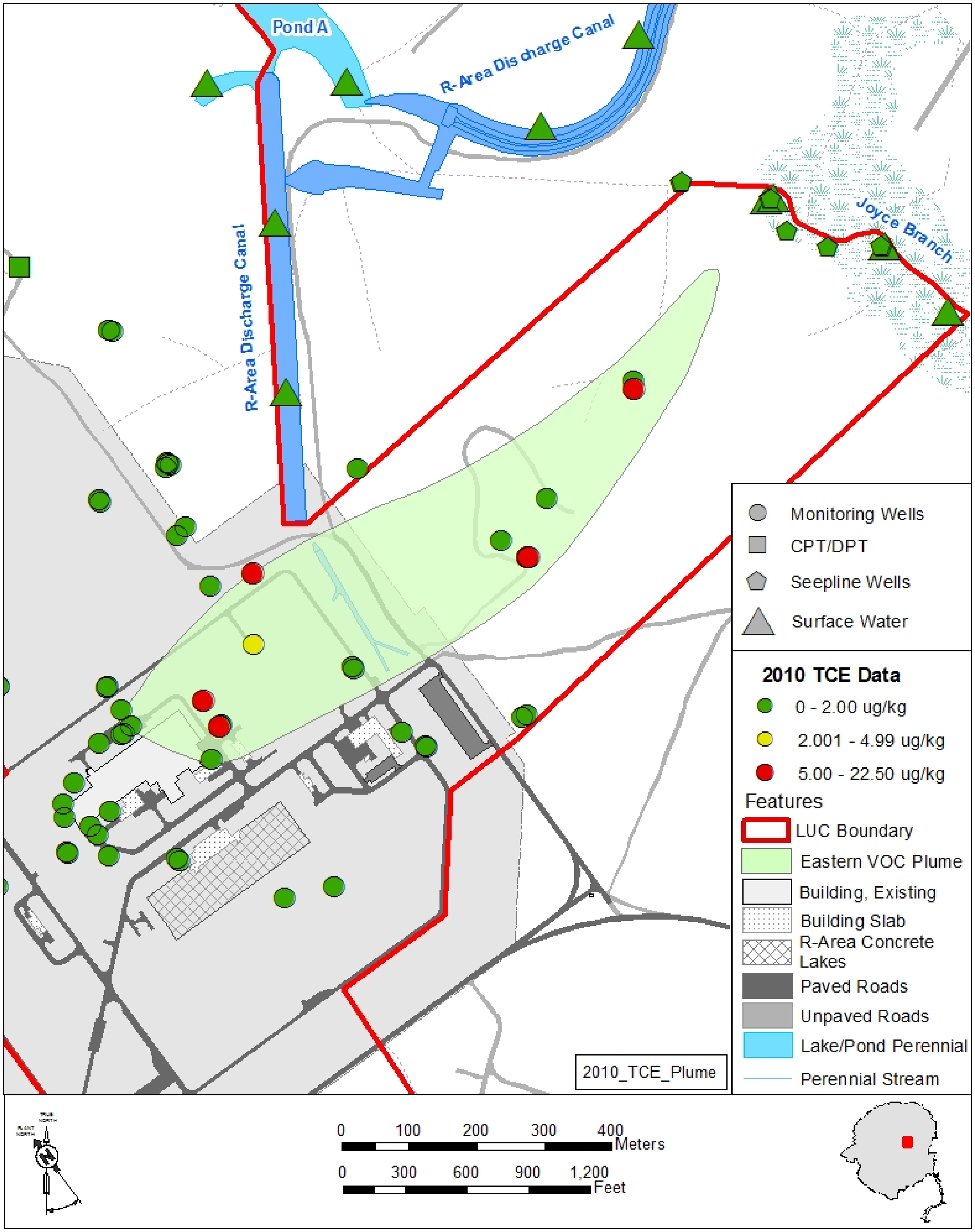

Figure 6. RAGW Eastern VOC Plume 2010 Data

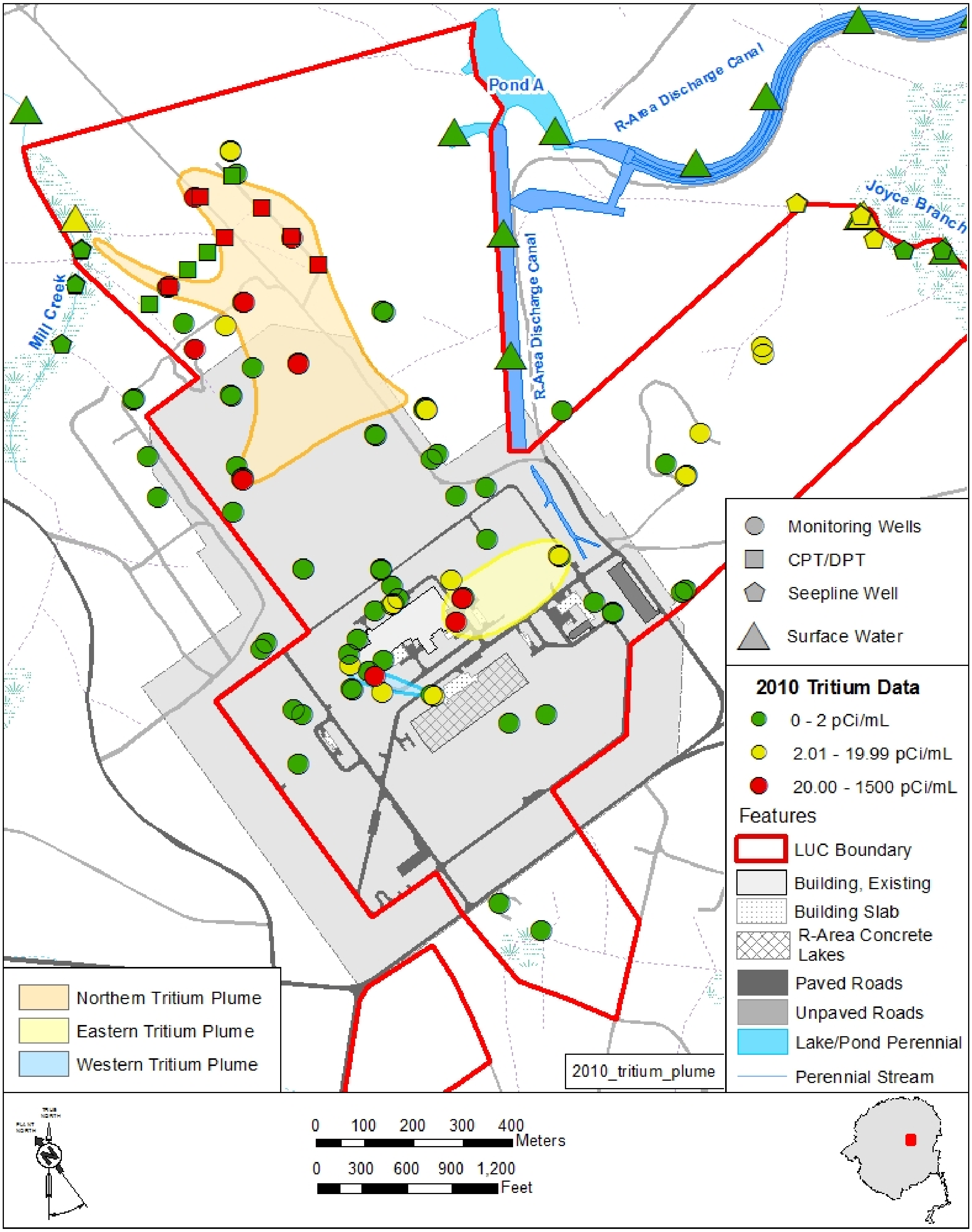

Figure 7. RAGW Tritium Plumes 2010 Data

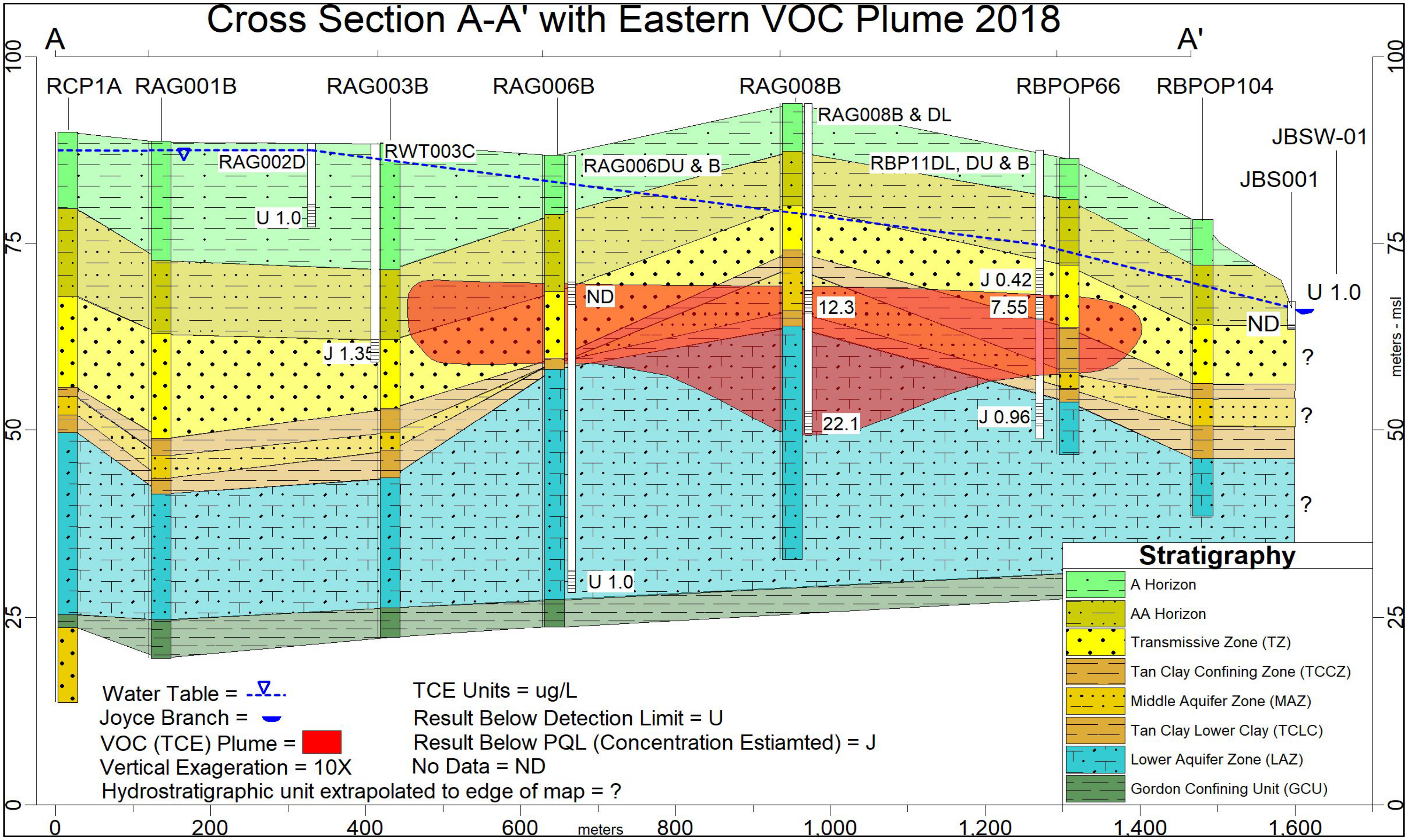

Figure 8. R-Area Cross-Section with RAGW Eastern VOC Plume 2018

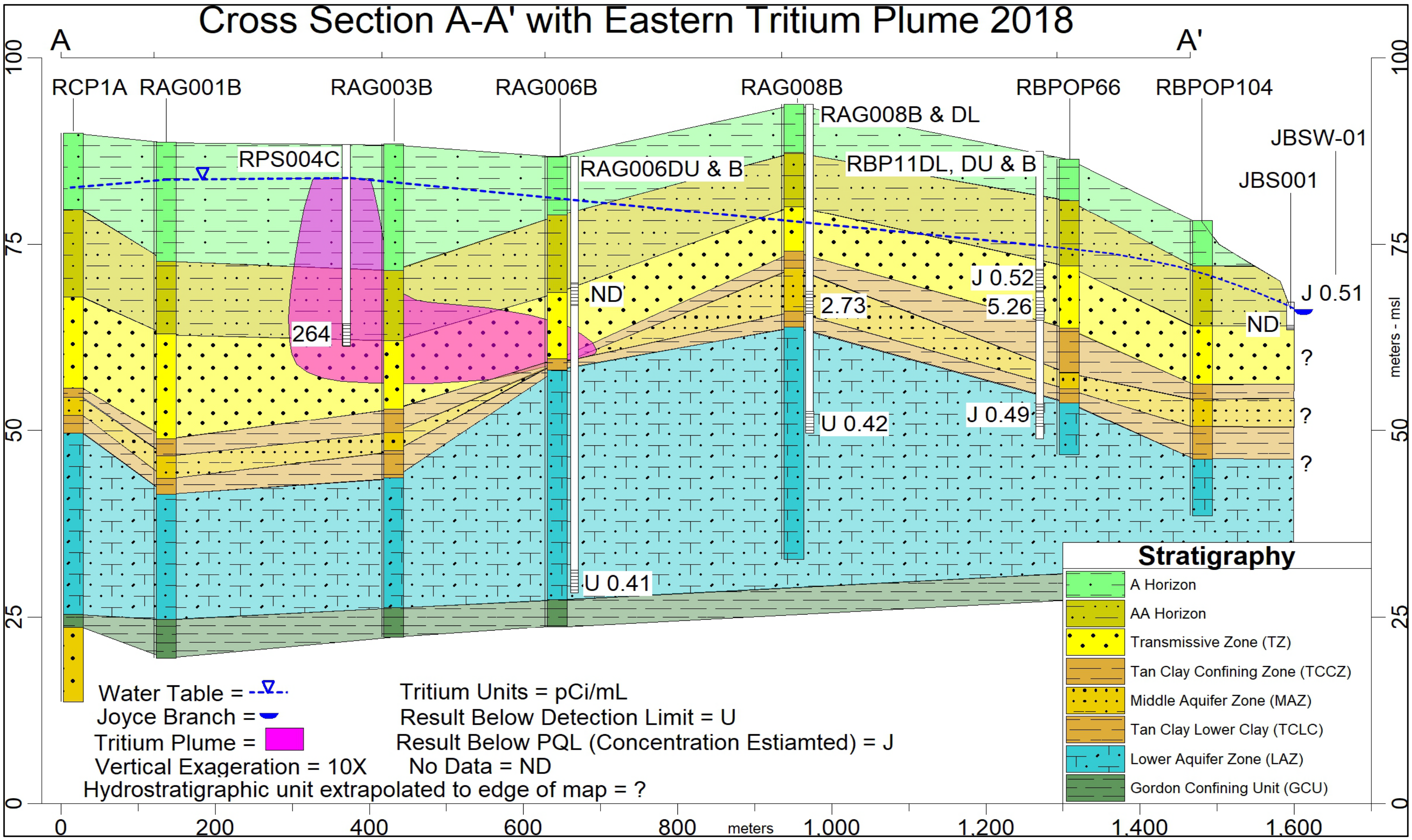

Figure 9. R-Area Cross-Section with RAGW Eastern Tritium Plume 2018

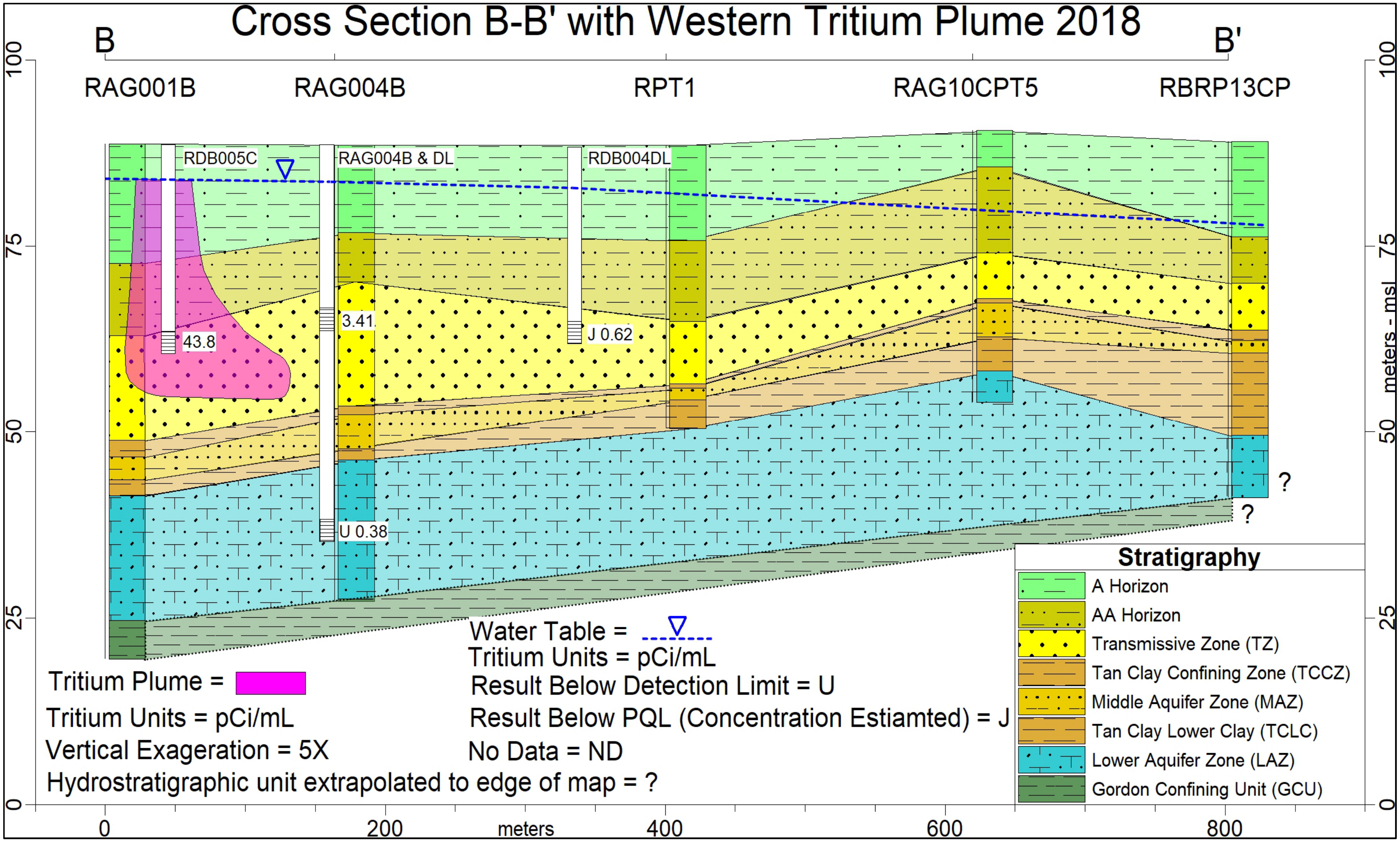

Figure 10. R-Area Cross-Section with RAGW Western Tritium Plume 2018

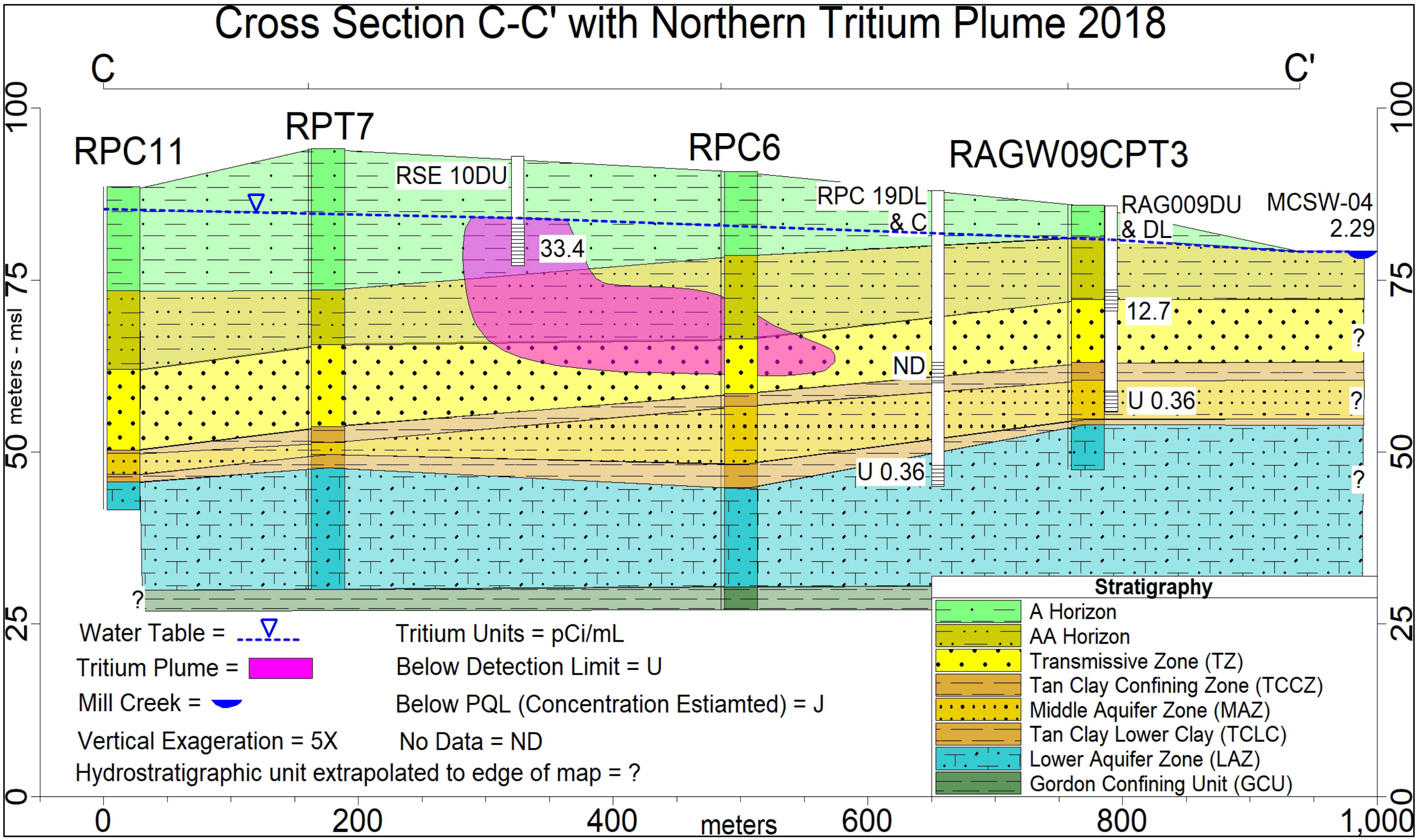

Figure 11. R-Area Cross-Section with RAGW Northern Tritium Plume 2018

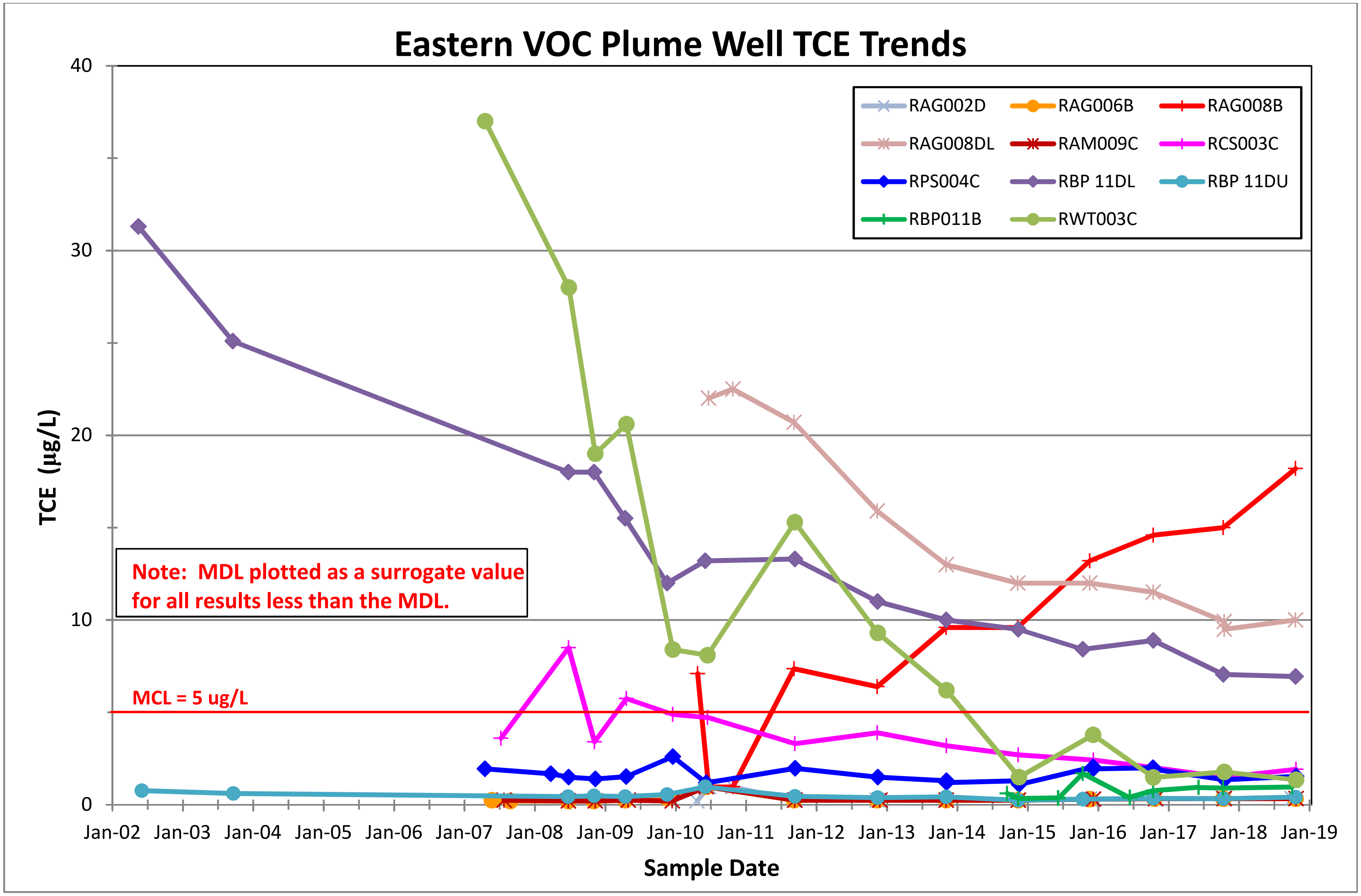

Figure 12. RAGW Eastern VOC Plume Wells

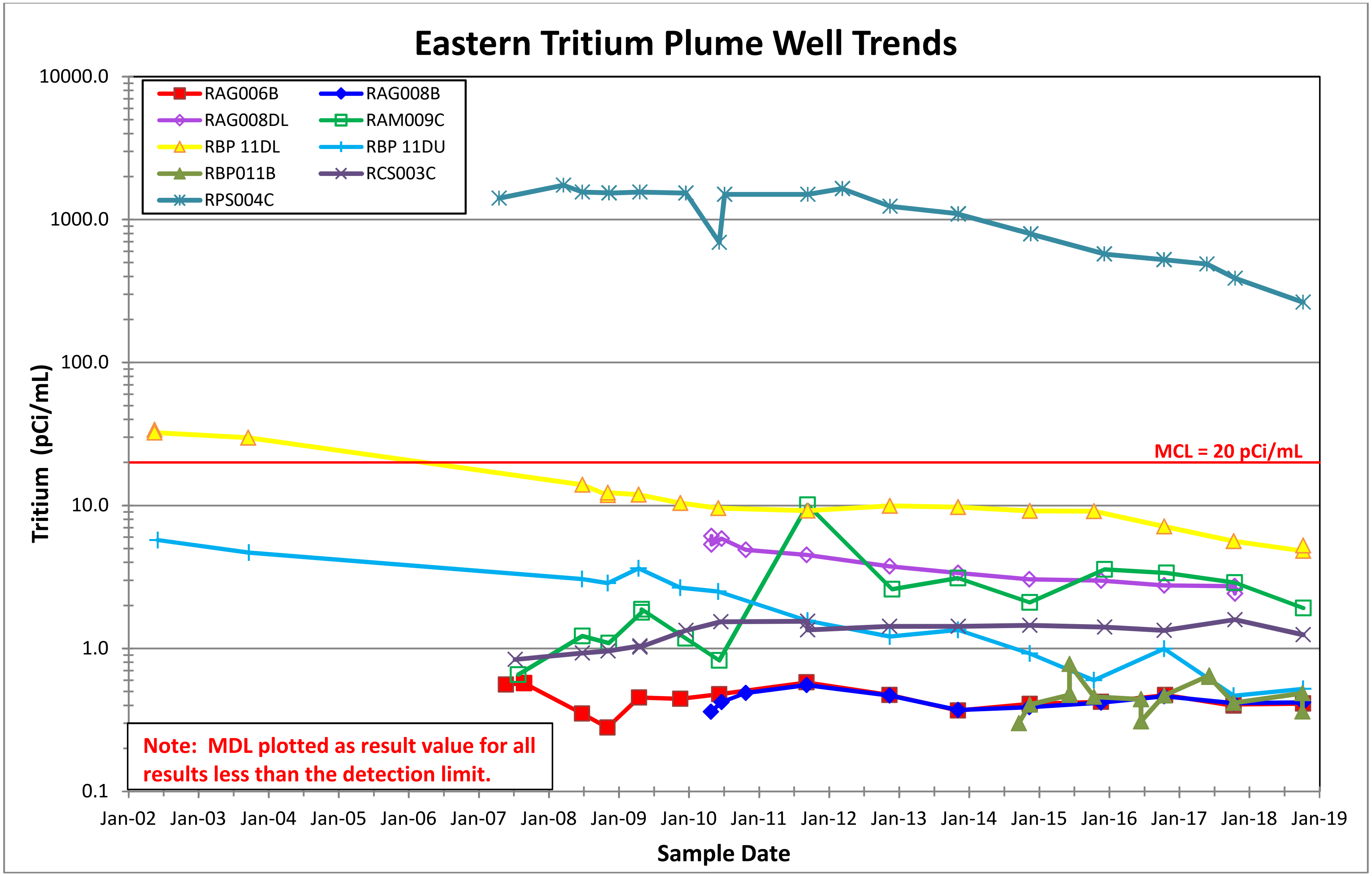

Figure 13. **RAGW Eastern Tritium Plume Wells**

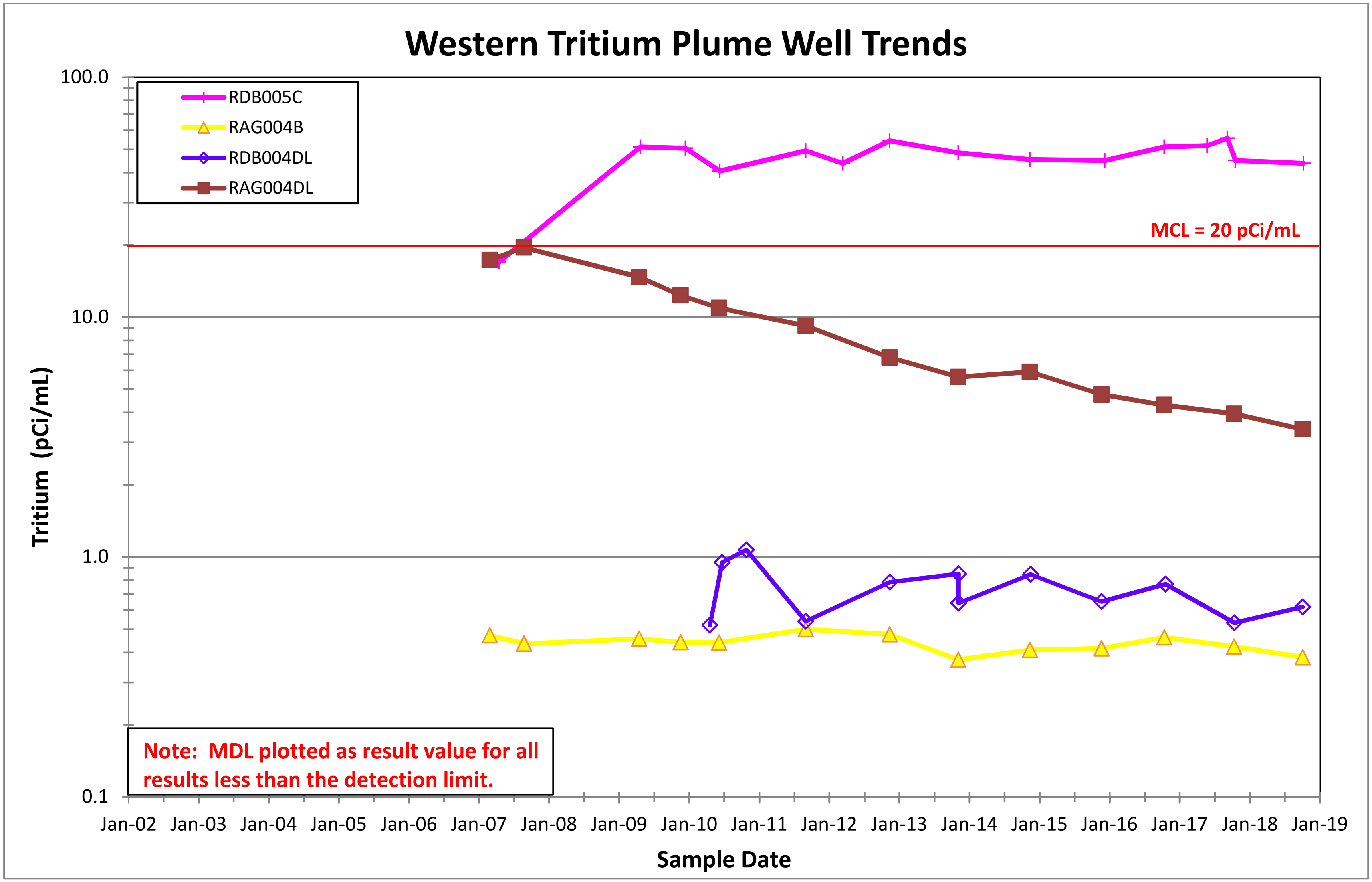

Figure 10. RAGW Western Tritium Plume Wells

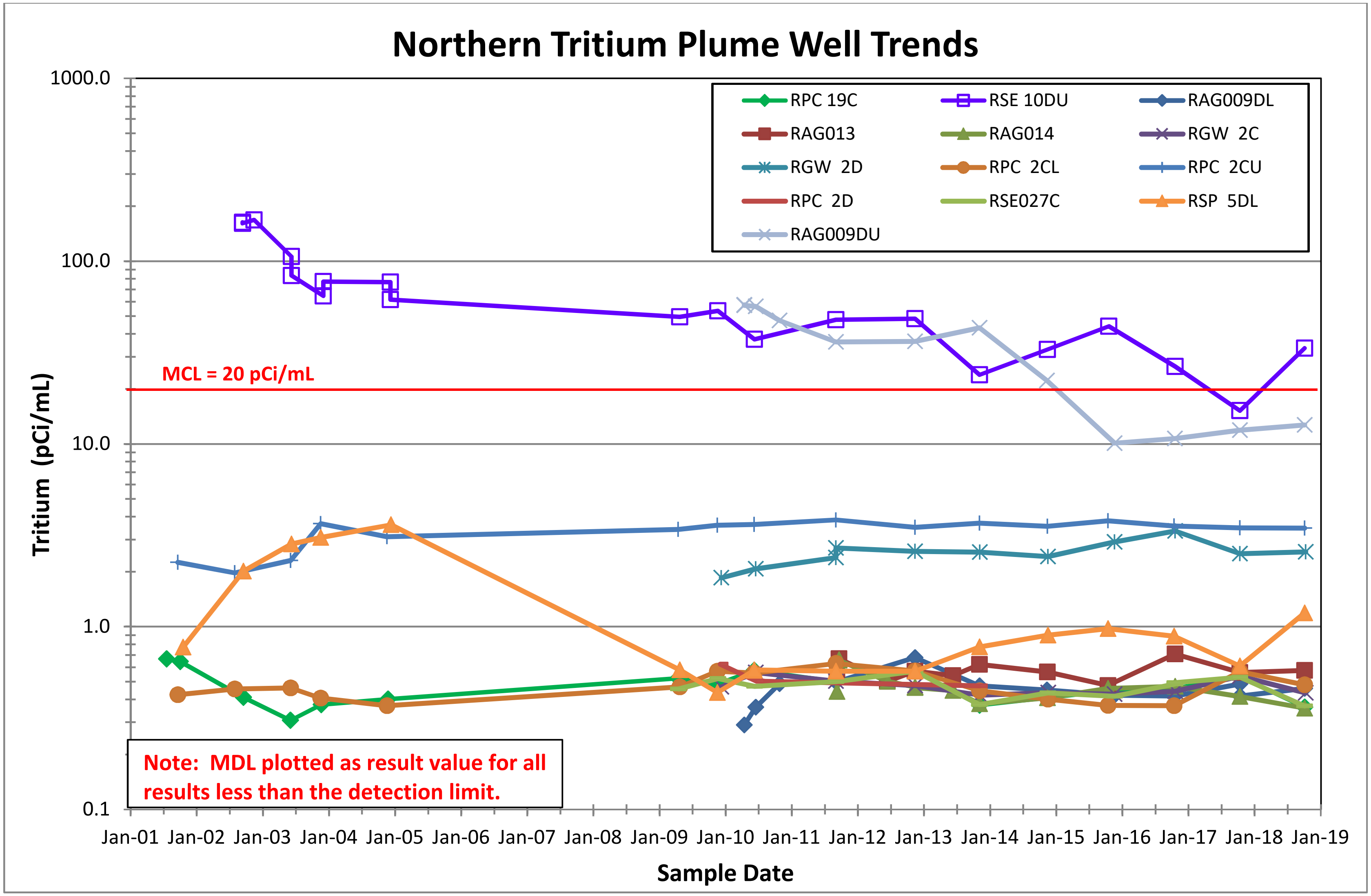

Figure 11. RAGW Northern Tritium Plume Wells

Table 1. RAGW Monitoring Stations

Plume	Station ID	Aquifer Zone	Purpose	UTM-N	UTM-E	Top of Casing	Screen Top Elevation	Screen Bottom Elevation
						(ft msl)		
Eastern VOC	RAG002D	A/AA	Plume Definition Monitoring Well	3681720.40	446009.30	293.15	263.15	253.15
Eastern VOC	RWT003C	TZ	Source Area Monitoring Well	3681758.00	446116.35	292.46	204.00	194.00
Eastern VOC and Tritium	JBS005A	TZ	LUC Boundary Seepline Well	3682523.90	446822.19	228.80	220.30	217.80
Eastern VOC and Tritium	JBS005B	TZ	LUC Boundary Seepline Well	3682524.90	446823.38	222.70	215.20	212.70
Eastern VOC and Tritium	JBSW-01	NA	LUC Boundary Surface Water	3682501.80	446958.40	NA	NA	NA
Eastern VOC and Tritium	JBSW-02	NA	LUC Boundary Surface Water	3682455.00	446982.80	NA	NA	NA
Eastern VOC and Tritium	JBSW-03	NA	LUC Boundary Surface Water	3682430.00	447042.20	NA	NA	NA
Eastern VOC and Tritium	RAG006B	LAZ	Plume Definition Monitoring Well	3681805.30	446338.11	287.05	102.80	92.80
Eastern VOC and Tritium	RAG008B	LAZ	Plume Definition Monitoring Well	3681970.60	446596.74	309.84	172.83	162.83
Eastern VOC and Tritium	RAG008DL	TZ	Plume Definition Monitoring Well	3681968.80	446594.12	310.08	225.45	215.45
Eastern VOC and Tritium	RAM009C	TZ	Plume Definition Monitoring Well	3681712.18	446409.86	290.67	197.20	187.20
Eastern VOC and Tritium	RBP 11DL	TZ	Plume Definition Monitoring Well	3682219.05	446752.89	290.07	222.59	212.59
Eastern VOC and Tritium	RBP 11DU	A/AA	Plume Definition Monitoring Well	3682232.04	446751.49	289.43	231.87	221.80
Eastern VOC and Tritium	RBP011B	LAZ	Plume Boundary Monitoring Well	3682219.00	446753.00	286.20	175.71	165.70
Eastern VOC and Tritium	RCS003C	TZ	Plume Definition Monitoring Well	3681841.00	446191.38	292.12	202.12	192.12
Eastern VOC and Tritium, and ISD Performance	RPS004C	TZ	Source Area Monitoring Well, ISD Source Well	3681671.76	446128.19	292.90	211.30	201.30
Northern Tritium	MCS002A	A/AA	LUC Boundary Seepline Well	3682360.70	445350.21	263.30	260.30	254.80
Northern Tritium	MCS002B	A/AA	LUC Boundary Seepline Well	3682359.10	445350.70	263.40	255.90	253.40
Northern Tritium	MCSW-03	NA	LUC Boundary Surface Water	3682428.70	445355.00	NA	NA	NA
Northern Tritium	MCSW-04	NA	LUC Boundary Surface Water	3682493.70	445350.70	NA	NA	NA
Northern Tritium	MCSW-05	NA	LUC Boundary Surface Water	3682716.00	445249.00	NA	NA	NA
Northern Tritium	MCSW-06	NA	LUC Boundary Surface Water	3682852.00	445067.00	NA	NA	NA
Northern Tritium	PASL-01	NA	LUC Boundary Surface Water	3682785.38	446144.36	NA	NA	NA

Table 1. RAGW Monitoring Stations *(Continued/End)*

Plume	Station ID	Aquifer Zone	Purpose	UTM-N	UTM-E	Top of Casing	Screen Top Elevation	Screen Bottom Elevation
						(ft msl)		
Northern Tritium	PASL-02	NA	LUC Boundary Surface Water	3682684.51	446163.32	NA	NA	NA
Northern Tritium	RAG009DL	TZ	Plume Definition Monitoring Well	3682353.32	445538.11	283.72	193.10	183.10
Northern Tritium	RAG009DU	A/AA	Plume Definition Monitoring Well	3682356.13	445542.13	283.66	241.13	231.13
Northern Tritium	RAG013	TZ	Plume Definition Monitoring Well	3682760.27	446022.85	266.10	202.50	192.50
Northern Tritium	RAG014	TZ	Plume Definition Monitoring Well	3682629.87	445337.18	278.00	201.00	191.00
Northern Tritium	RGW 2C	LAZ	Plume Definition Monitoring Well	3682633.20	445665.82	306.83	151.83	141.83
Northern Tritium	RGW 2D	TZ	Plume Definition Monitoring Well	3682629.97	445666.21	307.48	200.00	190.00
Northern Tritium	RPC 2CL	LAZ	Plume Definition Monitoring Well	3682107.95	446064.67	294.85	107.35	97.35
Northern Tritium	RPC 2CU	LAZ	Plume Definition Monitoring Well	3682106.22	446067.51	294.87	158.67	148.67
Northern Tritium	RPC 2D	A/AA	Plume Definition Monitoring Well	3682111.08	446063.41	294.60	279.39	259.39
Northern Tritium	RPC 19C	LAZ	Plume Boundary Monitoring Well	3682324.35	445692.68	304.22	160.22	150.22
Northern Tritium	RSE 10DU	A/AA	Source Area Monitoring Well	3681962.80	445691.31	283.72	273.10	253.00
Northern Tritium	RSE027C	MAZ	Plume Definition Monitoring Well	3682586.20	445679.59	308.52	178.94	168.94
Northern Tritium	RSP 5DL	TZ	Plume Definition Monitoring Well	3682306.51	445976.95	296.82	186.52	176.52
Western Tritium	RAG004B	LAZ	Plume Boundary Monitoring Well	3681524.54	446077.40	293.05	125.56	115.56
Western Tritium	RAG004DL	TZ	Plume Definition Monitoring Well	3681521.36	446080.81	293.49	218.80	208.80
Western Tritium	RDB004DL	TZ	Plume Boundary Monitoring Well	3681467.14	446236.70	294.11	213.40	203.40
Western Tritium, ISD Performance	RDB005C	TZ	Source Area Monitoring Well, ISD Source Well	3681560.48	445960.77	293.49	208.60	198.60
ISD Performance	RSE032D	A/AA	ISD Background Well	3681616.50	445731.16	301.9	262.6	252.6
ISD Performance	RSE033D	TZ	ISD Background Well	3681630.20	445740.30	302.5	221.1	211.1
ISD Performance	RAG003DL	TZ	ISD Source Well	3681719.82	446138.79	292.7	195.9	185.9
ISD Performance	RAG003DU	A/AA	ISD Source Well	3681721.20	446140.70	292.5	237.9	227.9
ISD Performance	RDB 1D	A/AA	ISD Source Well	3681637.70	445925.99	292.7	285.5	265.5
ISD Performance	RDB 2D	A/AA	ISD Auxiliary	3681572.94	445949.65	292.9	285.7	265.7
ISD Performance	RDB 3D	A/AA	ISD Source Well	3681594.41	445978.05	293.0	285.8	265.8
ISD Performance	RDB003DU	A/AA	ISD Source Well	3681589.92	445981.24	293.1	238.7	228.7
ISD Performance	RPS004DUR	A/AA	ISD Source Well	3681676.74	446134.42	293.0	238.2	228.2

Table 2. RCOC Maximum Results for 2018 by Plume

Station ID	Plume Name	Contaminant of Concern	Maximum Detected Concentration	Action Limit[a]	Units	MCL	Units
RDB005C	Western Tritium	Tritium	43.8	76.8	pCi/mL	20	pCi/mL
RSE 10DU	Northern Tritium	Tritium	33.4	168	pCi/mL	20	pCi/mL
RPS004C	Eastern Tritium	Tritium	264	2610	pCi/mL	20	pCi/mL
RPS004C	Eastern VOC	cis-1,2-Dichloroethylene	17.2	NA	µg/L	70	µg/L
RPS004C	Eastern VOC	Vinyl Chloride	2.69	NA	µg/L	2	µg/L
All[b]	Eastern VOC	Carbon Tetrachloride	U 1.00	NA	µg/L	5	µg/L
All[b]	Eastern VOC	Chloroform	U 1.00	NA	µg/L	70	µg/L
RAG008B	Eastern VOC	Trichloroethylene	22.1	37	µg/L	70	µg/L

U = Result below method detection limit.
NA = Not Applicable.
a) Action Limits shown for key source area zone monitoring wells for tritium or TCE.
b) There were no results above the detection limit.

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APPENDIX A

RAGW Data 2017 and 2018

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Table A-1. RAOU EMR Monitoring Wells 2017

Station	Well Use	Aquifer Zone	Field Data: SAMPLE COLLECTION DATE	OXIDATION/REDUCTION POTENTIAL	OXYGEN	SAMPLING EVENT WATER ELEVATION	SPECIFIC CONDUCTANCE	TURBIDITY	WATER TEMPERATURE	FIELD CONDITIONS	Constituent	RAOU ISD Analytes: Radionuclides: CARBON-14	CHLORINE-36	IODINE-129	TRITIUM	RAOU Refined Constituents of Concern: Organics: CARBON TETRACHLORIDE	CHLOROETHENE (VINYL CHLORIDE)	CHLOROFORM	CIS-1,2-DICHLOROETHYLENE	TRICHLOROETHYLENE (TCE)	Radionuclides: TRITIUM
			day-month-year	mV	mg/L	ft	uS/cm	NTU	degC		**Unit**	pCi/L	pCi/L	pCi/L	pCi/mL	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/mL
								15			**GWPS**	2000	700	1	20	5	2	70	70	5	20
RAG004B	Plume Boundary Well	LAZ_UTRAU	11-Oct-2017	212	6.32	254.41	38	2.3	20.6	No Comments		NS	NS	NS	NS	NS	NS	NS	NS	NS	<PQL (0.879)
RBP011B	Plume Boundary Well	LAZ_UTRAU	06-Jun-2017	239	0.36	227.86	204	3.7	20	No Comments		NS	NS	NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	[0.94]	<PQL (1.38)
			11-Oct-2017	307	3.89	226.45	204	56.2	20.1	No Comments		NS	NS	NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	[0.9]	<PQL (0.93)
RDB004DL	Plume Boundary Well	TZ_UAZ_UTRAU	12-Oct-2017	294	0.84	270.48	39	2.1	19	No Comments		NS	NS	NS	NS	NS	NS	NS	NS	NS	<PQL (1.18)
RPC 19C	Plume Boundary Well	LAZ_UTRAU	12-Oct-2017	278	3.51	253.57	28	1.2	21	No Comments		NS	NS	NS	NS	NS	NS	NS	NS	NS	<PQL (1.11)
RAG002D	Plume Definition Well	A_UAZ_UTRAU	11-Oct-2017	-23	6.35	283.55	190	13.2	22.8	No Comments		NS	NS	NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	NS
RAG004DL	Plume Definition Well	TZ_UAZ_UTRAU	11-Oct-2017	209	2.32	272.56	39	1.1	20.4	No Comments		NS	NS	NS	NS	NS	NS	NS	NS	NS	3.96
RAG006B	Plume Definition Well	LAZ_UTRAU	11-Oct-2017	119	2.55	235.43	220	0.9	20.4	No Comments		NS	NS	NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (0.876)
RAG008B	Plume Definition Well	LAZ_UTRAU	11-Oct-2017	36	4.08	227.12	222	1.6	20.7	No Comments		NS	NS	NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	15	<PQL (0.913)
RAG008DL	Plume Definition Well	MAZ_UTRAU	17-Oct-2017	315	6.43	237.33	30	0.4	18.9	No Comments		NS	NS	NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	10	2.76
RAG009DL	Plume Definition Well	TZ_UAZ_UTRAU	11-Oct-2017	216	5.03	266.46	34	19.7	20.2	No Comments		NS	NS	NS	NS	NS	NS	NS	NS	NS	[0.459]
																					<PQL (0.915)
RAG009DU	Plume Definition Well	A_UAZ_UTRAU	11-Oct-2017	331	4.16	265.04	29	3.2	19.7	No Comments		NS	NS	NS	NS	NS	NS	NS	NS	NS	11.9
RAG013	Plume Definition Well	TZ_UAZ_UTRAU	11-Oct-2017	263	3.68	258.26	22	7.3	21.4	No Comments		NS	NS	NS	NS	NS	NS	NS	NS	NS	[0.561]
RAG014	Plume Definition Well	TZ_UAZ_UTRAU	11-Oct-2017	273	4.1	254.06	42	1.3	21.3	No Comments		NS	NS	NS	NS	NS	NS	NS	NS	NS	<PQL (0.912)
RAM009C	Plume Definition Well	TZ_UAZ_UTRAU	16-Oct-2017	219	5.64	254.77	41	1000	22.6	No Comments		NS	NS	NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	1.43	<PQL (1)	2.89
RBP 11DL	Plume Definition Well	TZ_UAZ_UTRAU	11-Oct-2017	243	3.18	245.69	33	0.6	21.5	No Comments		NS	NS	NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	[0.58]	7.06	5.62
RBP 11DU	Plume Definition Well	A_UAZ_UTRAU	11-Oct-2017	413	3.52	245.33	35	0.4	19	No Comments		NS	NS	NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	[0.467]
RCS003C	Plume Definition Well	TZ_UAZ_UTRAU	18-Oct-2017	NS	NS	269.62	23	151	18.4	No Comments		NS	NS	NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	1.49	1.59
RGW 2C	Plume Definition Well	LAZ_UTRAU	12-Oct-2017	281	3.91	254.61	80	40.8	19.1	No Comments		NS	NS	NS	NS	NS	NS	NS	NS	NS	<PQL (1.13)

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Table A-1. RAOU EMR Monitoring Wells 2017 (continued)

			Field Data									RAOU ISD Analytes				RAOU Refined Constituents of Concern					
												Radionuclides				Organics					Radionuclides
			SAMPLE COLLECTION DATE	OXIDATION/REDUCTION POTENTIAL	OXYGEN	SAMPLING EVENT WATER ELEVATION	SPECIFIC CONDUCTANCE	TURBIDITY	WATER TEMPERATURE	FIELD CONDITIONS	Constituent	CARBON-14	CHLORINE-36	IODINE-129	TRITIUM	CARBON TETRACHLORIDE	CHLOROETHENE (VINYL CHLORIDE)	CHLOROFORM	CIS-1,2-DICHLOROETHYLENE	TRICHLOROETHYLENE (TCE)	TRITIUM
			day-month-year	mV	mg/L	ft	uS/cm	NTU	degC		Unit	pCi/L	pCi/L	pCi/L	pCi/mL	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/mL
Station	Well Use	Aquifer Zone						15			GWPS	2000	700	1	20	5	2	70	70	5	20
RGW 2D	Plume Definition Well	TZ_UAZ_UTRAU	12-Oct-2017	280	5.11	261.28	27	11	19.1	No Comments		NS	NS	NS	NS	NS	NS	NS	NS	NS	2.51
RPC 2CL	Plume Definition Well	LAZ_UTRAU	11-Oct-2017	-23	4.38	247.29	2621	3.1	20.2	No Comments		NS	NS	NS	NS	NS	NS	NS	NS	NS	<PQL (0.898)
RPC 2CU	Plume Definition Well	LAZ_UTRAU	12-Oct-2017	312	3.99	256.94	21	0.8	20.9	No Comments		NS	NS	NS	NS	NS	NS	NS	NS	NS	3.47
RPC 2D	Plume Definition Well	TZ_UAZ_UTRAU	12-Oct-2017	316	4.01	269.3	17	7.1	20.4	No Comments		NS	NS	NS	NS	NS	NS	NS	NS	NS	<PQL (1.13)
																					<PQL (1.12)
RSE027C	Plume Definition Well	MAZ_UTRAU	12-Oct-2017	330	3.99	260.64	22	5.8	20.8	No Comments		NS	NS	NS	NS	NS	NS	NS	NS	NS	<PQL (1.12)
RSP 5DL	Plume Definition Well	TZ_UAZ_UTRAU	12-Oct-2017	167	5.32	263.98	98	24.5	20.3	No Comments		NS	NS	NS	NS	NS	NS	NS	NS	NS	[0.609]
RSE 10DU	Source Area Monitoring Well	A_UAZ_UTRAU	12-Oct-2017	251	0.98	276.82	92	1.9	26.3	No Comments		NS	NS	NS	NS	NS	NS	NS	NS	NS	15.2
RWT003C	Source Area Monitoring Well	TZ_UAZ_UTRAU	16-Oct-2017	234	3.12	271.38	28	47	22.7	No Comments		NS	NS	NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	[0.62]	1.77	NS
RDB005C	Source Area Monitoring Well_ISD Source Well	TZ_UAZ_UTRAU	24-May-2017	NS	NS	268.89	20	1000	21.1	No Comments		<PQL (69.5)	<PQL (182)	<PQL (1.52)	51.8	NS	NS	NS	NS	NS	NS
														<PQL (2.3)							
			18-Oct-2017	NS	NS	270.39	21	440	19	No Comments		NS	NS	NS	NS	NS	NS	NS	NS	NS	45
RPS004C	Source Area Monitoring Well_ISD Source Well	TZ_UAZ_UTRAU	24-May-2017	NS	NS	272.9	78	62	21.3	No Comments		<PQL (68.6)	<PQL (197)	<PQL (1.89)	488	NS	NS	NS	NS	NS	NS
			18-Oct-2017	NS	NS	271.5	76	14.2	21.6	No Comments		NS	NS	NS	NS	<PQL (1)	1.88	<PQL (1)	16.5	1.36	389
RSE032D	ISD Background Well	A_UAZ_UTRAU	23-May-2017	NS	NS	278.93	25	2.1	19.5	No Comments		<PQL (70)	<PQL (193)	<PQL (2.51)	<PQL (1.3)	NS	NS	NS	NS	NS	NS
RSE033D	ISD Background Well	TZ_UAZ_UTRAU	23-May-2017	NS	NS	278.76	27	6	19.3	No Comments		<PQL (69.2)	<PQL (174)	<PQL (1.8)	<PQL (1.35)	NS	NS	NS	NS	NS	NS
RAG003DL	ISD Monitoring Well	TZ_UAZ_UTRAU	23-May-2017	NS	NS	273.77	87	10.6	20.4	No Comments		<PQL (70.7)	<PQL (188)	<PQL (1.13)	76.2	NS	NS	NS	NS	NS	NS
RAG003DU	ISD Monitoring Well	A_UAZ_UTRAU	23-May-2017	NS	NS	274.82	37	4.2	20.4	No Comments		<PQL (69.4)	<PQL (184)	<PQL (2.2)	[1.12]	NS	NS	NS	NS	NS	NS
RDB 1D	ISD Monitoring Well	A_UAZ_UTRAU	23-May-2017	NS	NS	288.5	214	7.1	23	No Comments		<PQL (69.4)	<PQL (176)	<PQL (2.24)	[0.78]	NS	NS	NS	NS	NS	NS
RDB 3D	ISD Monitoring Well	A_UAZ_UTRAU	23-May-2017	NS	NS	285.8	306	14.3	21.3	No Comments		141	<PQL (174)	<PQL (1.64)	1930	NS	NS	NS	NS	NS	NS
												131									
RDB003DU	ISD Monitoring Well	A_UAZ_UTRAU	23-May-2017	NS	NS	279.8	22	1.7	20.3	No Comments		<PQL (69.8)	<PQL (183)	<PQL (1.68)	2.92	NS	NS	NS	NS	NS	NS
															2.74						
RPS004DUR	ISD Monitoring Well	A_UAZ_UTRAU	23-May-2017	NS	NS	272.3	176	35.1	21.6	No Comments		<PQL (68.8)	<PQL (174)	<PQL (1.89)	865	NS	NS	NS	NS	NS	NS

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Table A-1. RAOU EMR Monitoring Wells 2017 (continued/end)

			Field Data									RAOU ISD Analytes – Radionuclides				RAOU Refined Constituents of Concern – Organics					RAOU Refined Constituents of Concern – Radionuclides
			SAMPLE COLLECTION DATE	OXIDATION/REDUCTION POTENTIAL	OXYGEN	SAMPLING EVENT WATER ELEVATION	SPECIFIC CONDUCTANCE	TURBIDITY	WATER TEMPERATURE	FIELD CONDITIONS	**Constituent**	CARBON-14	CHLORINE-36	IODINE-129	TRITIUM	CARBON TETRACHLORIDE	CHLOROETHENE (VINYL CHLORIDE)	CHLOROFORM	CIS-1,2-DICHLOROETHYLENE	TRICHLOROETHYLENE (TCE)	TRITIUM
			day-month-year	mV	mg/L	ft	uS/cm	NTU	degC		**Unit**	pCi/L	pCi/L	pCi/L	pCi/mL	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/mL
Station	**Well Use**	**Aquifer Zone**						15			**GWPS**	2000	700	1	20	5	2	70	70	5	20
JBS005A	LUC Boundary Seepline Well	TZ_UAZ_UTRAU	18-Oct-2017	136	5.36	219.72	33	14.6	18.5	No Comments		NS	NS	NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	[0.36]	1.62
JBS005B	LUC Boundary Seepline Well	TZ_UAZ_UTRAU	18-Oct-2017	227	5.05	219.54	13	3	18.8	No Comments		NS	NS	NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (0.954)
MCS002A	LUC Boundary Seepline Well	A_UAZ_UTRAU	17-Oct-2017	130	2.81	260.7	61	580	19	No Comments		NS	NS	NS	NS	NS	NS	NS	NS	NS	<PQL (1.31)
MCS002B	LUC Boundary Seepline Well	A_UAZ_UTRAU	17-Oct-2017	88	4.3	260.79	29	470	19.3	No Comments		NS	NS	NS	NS	NS	NS	NS	NS	NS	<PQL (1.06)
JBSW-01	LUC Boundary Surface Water	Unknown	18-Oct-2017	25	12.8	4.9	NS	5.7	151	No Comments		NS	NS	NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	[0.618]
JBSW-02	LUC Boundary Surface Water	Unknown	18-Oct-2017	24	12.9	4.4	NS	5.88	137	No Comments		NS	NS	NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	[0.585]
JBSW-03	LUC Boundary Surface Water	Unknown	18-Oct-2017	24	15.4	4.6	NS	6.01	145	No Comments		NS	NS	NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	[0.531]
MCSW-03	LUC Boundary Surface Water	Unknown	17-Oct-2017	NS	NS	NS	NS	NS	NS	D		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MCSW-04	LUC Boundary Surface Water	Unknown	17-Oct-2017	215	2.03	NS	25	12.1	18.7	No Comments		NS	NS	NS	NS	NS	NS	NS	NS	NS	4.82
MCSW-05	LUC Boundary Surface Water	Unknown	17-Oct-2017	290	6.04	NS	19	19.1	16.3	No Comments		NS	NS	NS	NS	NS	NS	NS	NS	NS	<PQL (1.08)
MCSW-06	LUC Boundary Surface Water	Unknown	17-Oct-2017	276	2.34	NS	24	4.6	19.7	No Comments		NS	NS	NS	NS	NS	NS	NS	NS	NS	[0.734]
PASL-01	LUC Boundary Surface Water	Unknown	18-Oct-2017	NS	NS	NS	NS	NS	NS	D		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
PASL-02	LUC Boundary Surface Water	Unknown	18-Oct-2017	NS	NS	NS	NS	NS	NS	D		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Table A-1 Abbreviations and Definitions	
[##]	EPA Functional Guideline Code of 'J' was applied to the result, indicating an estimated quanity.
<EQL(##)	Constituent was below detection. The sample-specific Estimated Quantitation Limit is in parentheses.
	Result exceeds applicable limit.
REJ	Result Rejected.
	Result is less than the applicable limit and without EPA Functional Guidline qualifiers.
NS	Requested to be sampled but was not. See comments as to why not.
Blue Text	Not a required sample analysis.

Table A-1 EPA Storet Qualifier	
21	Result is above detection, but less than PQL

Table A-1 Field Comments	
D	Dry Well No Sample Collected

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Table A-2. RAOU EMR Monitoring Wells, 2018

			Field Data									RAOU ISD Analytes Radionuclides		RAOU Refined Constituents of Concern Organics					Radionuclides
			SAMPLE COLLECTION DATE	OXIDATION/REDUCTION POTENTIAL	OXYGEN	SAMPLING EVENT WATER ELEVATION	SPECIFIC CONDUCTANCE	TURBIDITY	WATER TEMPERATURE	FIELD CONDITIONS	**Constituent**	CARBON-14	TRITIUM	CARBON TETRACHLORIDE	CHLOROETHENE (VINYL CHLORIDE)	CHLOROFORM	CIS-1,2-DICHLOROETHYLENE	TRICHLOROETHYLENE (TCE)	TRITIUM
			day-month-year	mV	mg/L	ft	uS/cm	NTU	degC		**Unit**	pCi/L	pCi/mL	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/mL
Station	**Well Use**	**Aquifer Zone**						15			**GWPS**		20	5	2	70	70	5	20
RAG004B	Plume Boundary Well	LAZ_UTRAU	04-Oct-2018	221	3.37	253.49	38	1.2	20.7	No Comments		NS	NS	NS	NS	NS	NS	NS	<PQL (0.819)
RBP011B	Plume Boundary Well	LAZ_UTRAU	04-Oct-2018	308	5.1	225.36	206	11.3	18.8	No Comments		NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	[0.96]	[0.487]
																			<PQL (0.828)
RDB004DL	Plume Boundary Well	TZ_UAZ_UTRAU	04-Oct-2018	245	6.08	268.86	38	2	18.4	No Comments		NS	NS	NS	NS	NS	NS	NS	[0.62]
RPC 19C	Plume Boundary Well	LAZ_UTRAU	04-Oct-2018	223	8.58	253.1	28	0.3	19.6	No Comments		NS	NS	NS	NS	NS	NS	NS	<PQL (0.803)
RAG002D	Plume Definition Well	A_UAZ_UTRAU	04-Oct-2018	-18	5.28	284.99	167	7	23	No Comments		NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	[0.45]	<PQL (1)	NS
RAG004DL	Plume Definition Well	TZ_UAZ_UTRAU	04-Oct-2018	213	4.59	272.19	40	0.5	21.3	No Comments		NS	NS	NS	NS	NS	NS	NS	3.41
RAG006B	Plume Definition Well	LAZ_UTRAU	08-Oct-2018	166	10.05	234.27	224	0.4	19.5	No Comments		NS	NS	REJ	REJ	REJ	REJ	REJ	<PQL (0.859)
			22-Oct-2018	231	3.92	234.41	224	0.5	16.3	No Comments		NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	NS
RAG008B	Plume Definition Well	LAZ_UTRAU	08-Oct-2018	59	10.04	225.84	219	1.7	19.7	No Comments		NS	NS	REJ	REJ	REJ	REJ	[18.2]	<PQL (0.908)
			22-Oct-2018	236	4.89	225.92	210	1.4	16	No Comments		NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	22.1	NS
RAG008DL	Plume Definition Well	MAZ_UTRAU	08-Oct-2018	261	7.48	235.38	30	2.9	19.3	No Comments		NS	NS	REJ	REJ	REJ	REJ	[11.2]	2.42
			22-Oct-2018	255	3.93	235.4	33	3.2	16.1	No Comments		NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	[0.41]	12.3	NS
RAG009DL	Plume Definition Well	TZ_UAZ_UTRAU	04-Oct-2018	307	2.13	265.29	15	29.2	19.8	No Comments		NS	NS	NS	NS	NS	NS	NS	<PQL (0.81)
RAG009DU	Plume Definition Well	A_UAZ_UTRAU	04-Oct-2018	337	2.67	266.66	27	1.7	20.8	No Comments		NS	NS	NS	NS	NS	NS	NS	12.7
RAG013	Plume Definition Well	TZ_UAZ_UTRAU	04-Oct-2018	166	3.31	257.7	19	2.9	19.4	No Comments		NS	NS	NS	NS	NS	NS	NS	[0.576]
RAG014	Plume Definition Well	TZ_UAZ_UTRAU	04-Oct-2018	169	2.69	253.28	41	0.9	19.5	No Comments		NS	NS	NS	NS	NS	NS	NS	<PQL (0.802)
RAM009C	Plume Definition Well	TZ_UAZ_UTRAU	09-Oct-2018	164	5.3	242.36	36	1000	24.6	No Comments		NS	NS	REJ	REJ	REJ	[0.71]	REJ	1.92
			24-Oct-2018	332	4.46	242.17	41	291	18.2	No Comments		NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	1.12	<PQL (1)	NS
RBP 11DL	Plume Definition Well	TZ_UAZ_UTRAU	08-Oct-2018	253	4.43	242.04	32	0.2	19.1	No Comments		NS	NS	REJ	REJ	REJ	[0.6]	[6.94]	5.26
																			4.81
			22-Oct-2018	275	3.22	242.27	33	0.3	19.9	No Comments		NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	[0.77]	7.55	NS

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Table A-2. RAOU EMR Monitoring Wells, 2018 (continued)

			Field Data									RAOU ISD Analytes Radionuclides		RAOU Refined Constituents of Concern Organics					Radionuclides
			SAMPLE COLLECTION DATE	OXIDATION/REDUCTION POTENTIAL	OXYGEN	SAMPLING EVENT WATER ELEVATION	SPECIFIC CONDUCTANCE	TURBIDITY	WATER TEMPERATURE	FIELD CONDITIONS	**Constituent**	CARBON-14	TRITIUM	CARBON TETRACHLORIDE	CHLOROETHENE (VINYL CHLORIDE)	CHLOROFORM	CIS-1,2-DICHLOROETHYLENE	TRICHLOROETHYLENE (TCE)	TRITIUM
			day-month-year	mV	mg/L	ft	uS/cm	NTU	degC		**Unit**	pCi/L	pCi/mL	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/mL
Station	**Well Use**	**Aquifer Zone**						15			**GWPS**		20	5	2	70	70	5	20
RBP 11DU	Plume Definition Well	A_UAZ_UTRAU	08-Oct-2018	298	12.25	241.65	32	0.3	18.9	No Comments		NS	NS	REJ	REJ	REJ	REJ	[0.42]	[0.522]
			22-Oct-2018	306	5.16	241.64	32	0.4	20.1	No Comments		NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	NS
RCS003C	Plume Definition Well	TZ_UAZ_UTRAU	08-Oct-2018	272	5.38	267.42	23	222	20.5	No Comments		NS	NS	REJ	REJ	REJ	REJ	[1.91]	1.25
			24-Oct-2018	363	5.23	269.68	24	189	18.1	No Comments		NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	1.48	NS
RGW 2C	Plume Definition Well	LAZ_UTRAU	10-Oct-2018	199	4.89	253.99	78	6.5	19.2	No Comments		NS	NS	NS	NS	NS	NS	NS	<PQL (0.927)
RGW 2D	Plume Definition Well	TZ_UAZ_UTRAU	10-Oct-2018	220	5.07	261.13	24	9.4	19.4	No Comments		NS	NS	NS	NS	NS	NS	NS	2.57
RPC 2CL	Plume Definition Well	LAZ_UTRAU	04-Oct-2018	-46	1.65	248.65	2656	1	18.9	No Comments		NS	NS	NS	NS	NS	NS	NS	<PQL (0.837)
RPC 2CU	Plume Definition Well	LAZ_UTRAU	04-Oct-2018	266	6.2	256.57	21	5.3	20	No Comments		NS	NS	NS	NS	NS	NS	NS	3.46
RPC 2D	Plume Definition Well	TZ_UAZ_UTRAU	04-Oct-2018	181	2.99	269.75	17	1.5	23.2	No Comments		NS	NS	NS	NS	NS	NS	NS	<PQL (0.815)
RSE027C	Plume Definition Well	MAZ_UTRAU	04-Oct-2018	274	7.67	260.59	20	5.4	19	No Comments		NS	NS	NS	NS	NS	NS	NS	<PQL (0.821)
RSP 5DL	Plume Definition Well	TZ_UAZ_UTRAU	04-Oct-2018	163	1.99	263.62	65	0.9	18.9	No Comments		NS	NS	NS	NS	NS	NS	NS	1.19
RSE 10DU	Source Area Monitoring Well	A_UAZ_UTRAU	04-Oct-2018	237	4.97	276.85	68	1.8	26.6	No Comments		NS	NS	NS	NS	NS	NS	NS	33.4
RWT003C	Source Area Monitoring Well	TZ_UAZ_UTRAU	08-Oct-2018	261	2.43	271.36	28	66.1	22.1	No Comments		NS	NS	REJ	REJ	REJ	[0.43]	[1.35]	NS
			24-Oct-2018	230	4.77	271.34	29	21.6	19.1	No Comments		NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	[0.43]	NS
RDB005C	Source Area Monitoring/ISD Source Well	TZ_UAZ_UTRAU	08-Oct-2018	261	2.86	273.93	22	256	23.5	No Comments		<PQL (23.6)	43.8	NS	NS	NS	NS	NS	43.8
RPS004C	Source Area Monitoring/ISD Source Well	TZ_UAZ_UTRAU	08-Oct-2018	192	3.64	272.9	75	24.9	23.5	No Comments		NS	NS	REJ	[2.53]	REJ	[15.4]	[1.54]	264
			24-Oct-2018	220	4.6	272.94	75	11.2	21.1	No Comments		NS	NS	<PQL (1)	2.69	<PQL (1)	17.2	1.31	NS
RDB 2D	ISD Monitoring Well	AA_UAZ_UTRAU	04-Oct-2018	215	4.8	287.5	215	14.2	26	No Comments		<PQL (25.8)	3.23	NS	NS	NS	NS	NS	NS
RDB 1D	ISD Monitoring Well	A_UAZ_UTRAU	04-Oct-2018	316	4.3	288.2	239	7.2	26.4	No Comments		<PQL (23.8)	<PQL (0.787)	NS	NS	NS	NS	NS	NS
RDB 3D	ISD Monitoring Well	A_UAZ_UTRAU	04-Oct-2018	249	4.9	285.4	268	13.9	25.2	No Comments		95.9	335	NS	NS	NS	NS	NS	NS
RDB003DU	ISD Monitoring Well	A_UAZ_UTRAU	04-Oct-2018	271	4.2	279.6	24	1.5	21.8	No Comments		<PQL (23.9)	2.2	NS	NS	NS	NS	NS	NS
JBS005A	LUC Boundary Seepline Well	TZ_UAZ_UTRAU	09-Oct-2018	110	1.37	219.8	44	66.4	21.4	No Comments		NS	NS	REJ	REJ	REJ	REJ	[0.37]	1.53
			22-Oct-2018	171	1.65	219.8	32	15.4	19.7	No Comments		NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	NS

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Table A-2. RAOU EMR Monitoring Wells, 2018 (continued/end)

			Field Data									RAOU ISD Analytes – Radionuclides		RAOU Refined Constituents of Concern – Organics					Radionuclides
			SAMPLE COLLECTION DATE	OXIDATION/REDUCTION POTENTIAL	OXYGEN	SAMPLING EVENT WATER ELEVATIO	SPECIFIC CONDUCTANCE	TURBIDITY	WATER TEMPERATURE	FIELD CONDITIONS	**Constituent**	CARBON-14	TRITIUM	CARBON TETRACHLORIDE	CHLOROETHENE (VINYL CHLORIDE)	CHLOROFORM	CIS-1,2-DICHLOROETHYLENE	TRICHLOROETHYLENE (TCE)	TRITIUM
			day-month-year	mV	mg/L	ft	uS/cm	NTU	degC		**Unit**	pCi/L	pCi/mL	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/mL
Station	**Well Use**	**Aquifer Zone**						15			**GWPS**		20	5	2	70	70	5	20
JBS005B	LUC Boundary Seepline Well	TZ_UAZ_UTRAU	09-Oct-2018	198	3.01	219.7	14	1.3	20.3	No Comments		NS	NS	REJ	REJ	REJ	REJ	REJ	<PQL (0.91)
			22-Oct-2018	213	3.43	219.7	13	1.7	19.2	No Comments		NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	NS
MCS002A	LUC Boundary Seepline Well	A_UAZ_UTRAU	08-Oct-2018	58	2.36	259.7	41	360	23	No Comments		NS	NS	NS	NS	NS	NS	NS	<PQL (1.03)
MCS002B	LUC Boundary Seepline Well	A_UAZ_UTRAU	08-Oct-2018	144	6.05	259.4	21	30.2	23.1	No Comments		NS	NS	NS	NS	NS	NS	NS	<PQL (0.911)
JBSW-01	LUC Boundary Surface Water	Unknown	09-Oct-2018	85	3.25	NS	26	6.8	22.4	No Comments		NS	NS	REJ	REJ	REJ	REJ	REJ	[0.51]
			22-Oct-2018	107	3.12	NS	24	7.6	10.1	No Comments		NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	NS
JBSW-02	LUC Boundary Surface Water	Unknown	09-Oct-2018	102	3.43	NS	25	7.3	22.1	No Comments		NS	NS	REJ	REJ	REJ	REJ	REJ	<PQL (1.01)
			22-Oct-2018	120	2.28	NS	25	5.8	10.1	No Comments		NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	NS
JBSW-03	LUC Boundary Surface Water	Unknown	09-Oct-2018	110	3.35	NS	25	7.9	22.2	No Comments		NS	NS	REJ	REJ	REJ	REJ	REJ	[0.549]
			22-Oct-2018	173	2.1	NS	77	9.4	9.7	No Comments		NS	NS	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	<PQL (1)	NS
MCSW-03	LUC Boundary Surface Water	Unknown	08-Oct-2018	17	2.27	NS	58	5.2	22.7	No Comments		NS	NS	NS	NS	NS	NS	NS	<PQL (1.12)
MCSW-04	LUC Boundary Surface Water	Unknown	08-Oct-2018	116	2.11	NS	35	3.9	22.8	No Comments		NS	NS	NS	NS	NS	NS	NS	2.29
MCSW-05	LUC Boundary Surface Water	Unknown	08-Oct-2018	145	3.2	NS	31	3.8	22.8	No Comments		NS	NS	NS	NS	NS	NS	NS	[0.892]
MCSW-06	LUC Boundary Surface Water	Unknown	08-Oct-2018	214	3.24	NS	24	6.3	24	No Comments		NS	NS	NS	NS	NS	NS	NS	[0.703]
PASL-01	LUC Boundary Surface Water	Unknown	08-Oct-2018	NS	NS	NS	NS	NS	NS	D		NS	NS	NS	NS	NS	NS	NS	NS
PASL-02	LUC Boundary Surface Water	Unknown	08-Oct-2018	NS	NS	NS	NS	NS	NS	D		NS	NS	NS	NS	NS	NS	NS	NS

Table A-2 Abbreviations and Definitions	
[##]	EPA Functional Guideline Code of 'J' was applied to the result, indicating an estimated quanity.
<PQL(##)	Constituent was below detection. The sample-specific Practical Quantitation Limit is in parentheses.
	Result exceeds applicable limit.
REJ	Result Rejected.
	Result is less than the applicable limit and without EPA Functional Guidline qualifiers.
NS	Requested to be sampled but was not. See comments as to why not.
Blue Text	Not a required sample analysis.

Table A-2 EPA Storet Qualifier	
21	Result is above detection, but less than PQL
Y	The result is from an upreserved or incorrectly preserved sample,
Q	The sample was held beyond the normal holding time prior to anal

Table A-2 Field Comments	
D	Dry Well No Sample Collected

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APPENDIX B

Hydrographs

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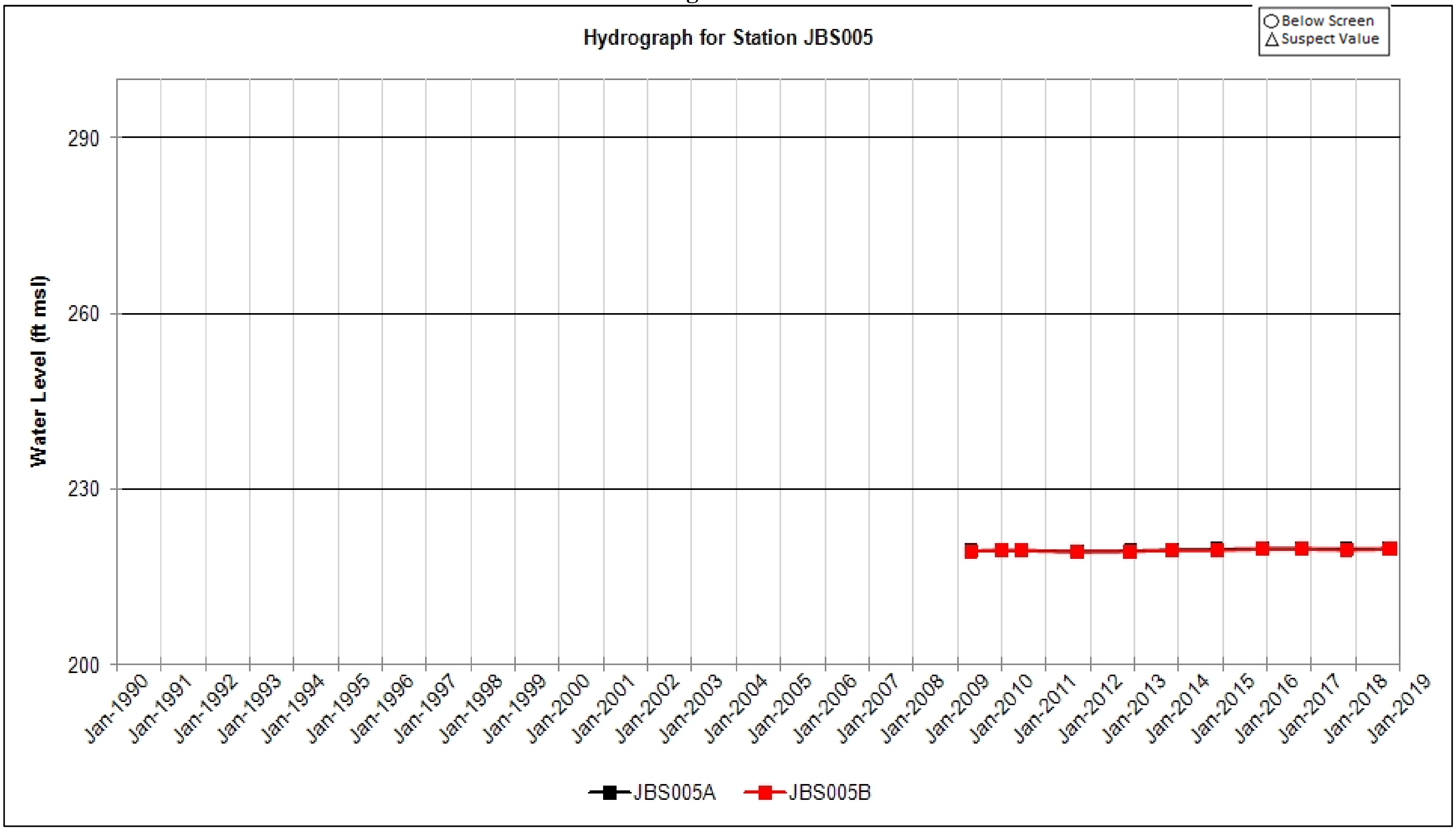
Figure B-1.


Hydrograph for Station JBS005
Below Screen
Suspect Value
Water Level (ft msl)
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Jan-1991
Jan-1992
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Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
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Jan-2015
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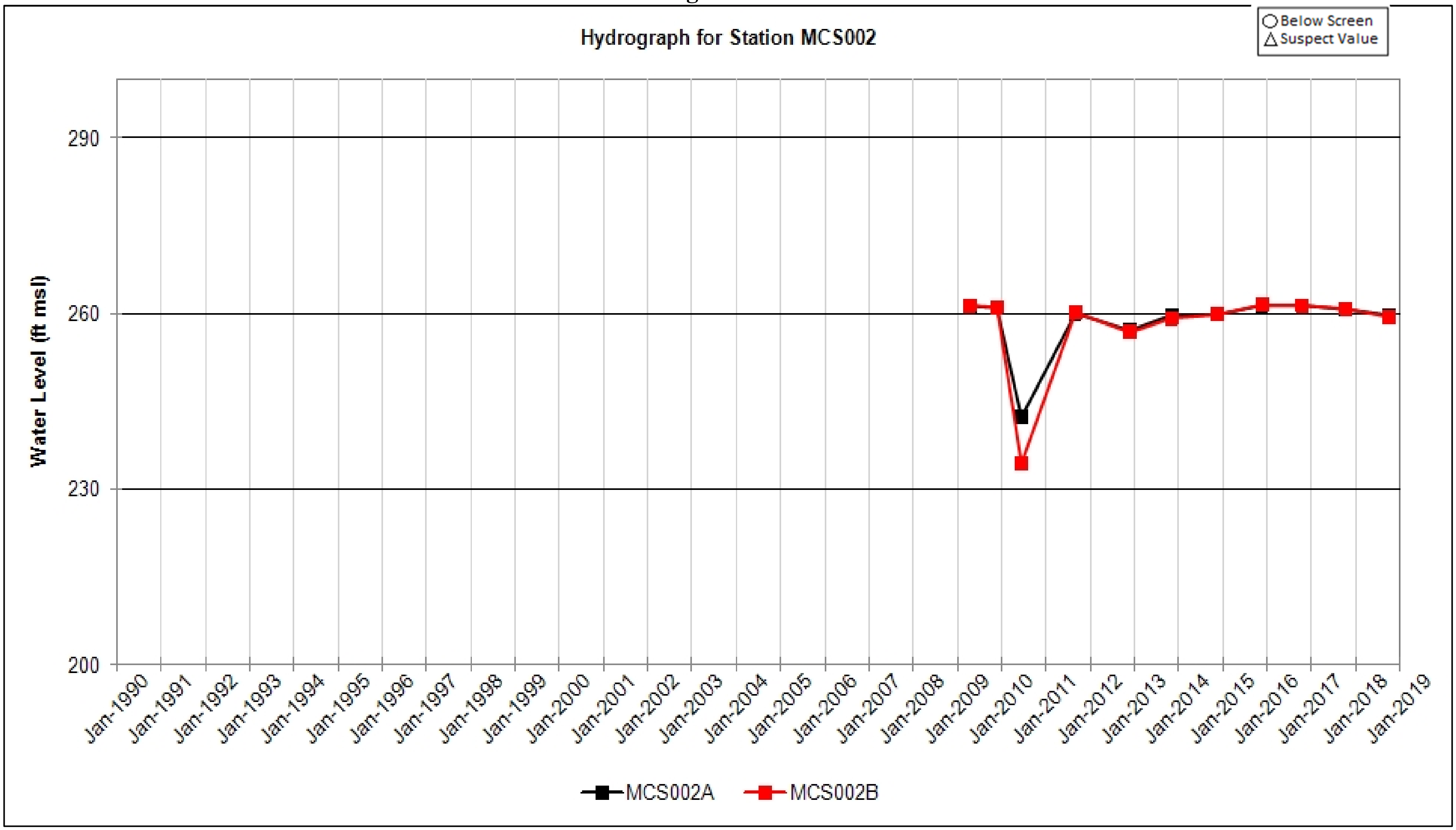
Jan-2017
Jan-2018
Jan-2019
JBS005A
JBS005B

Figure B-2.


Hydrograph for Station MCS002
Below Screen
Suspect Value
Water Level (ft msl)
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260
230
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MCS002A
MCS002B

Figure B-3.

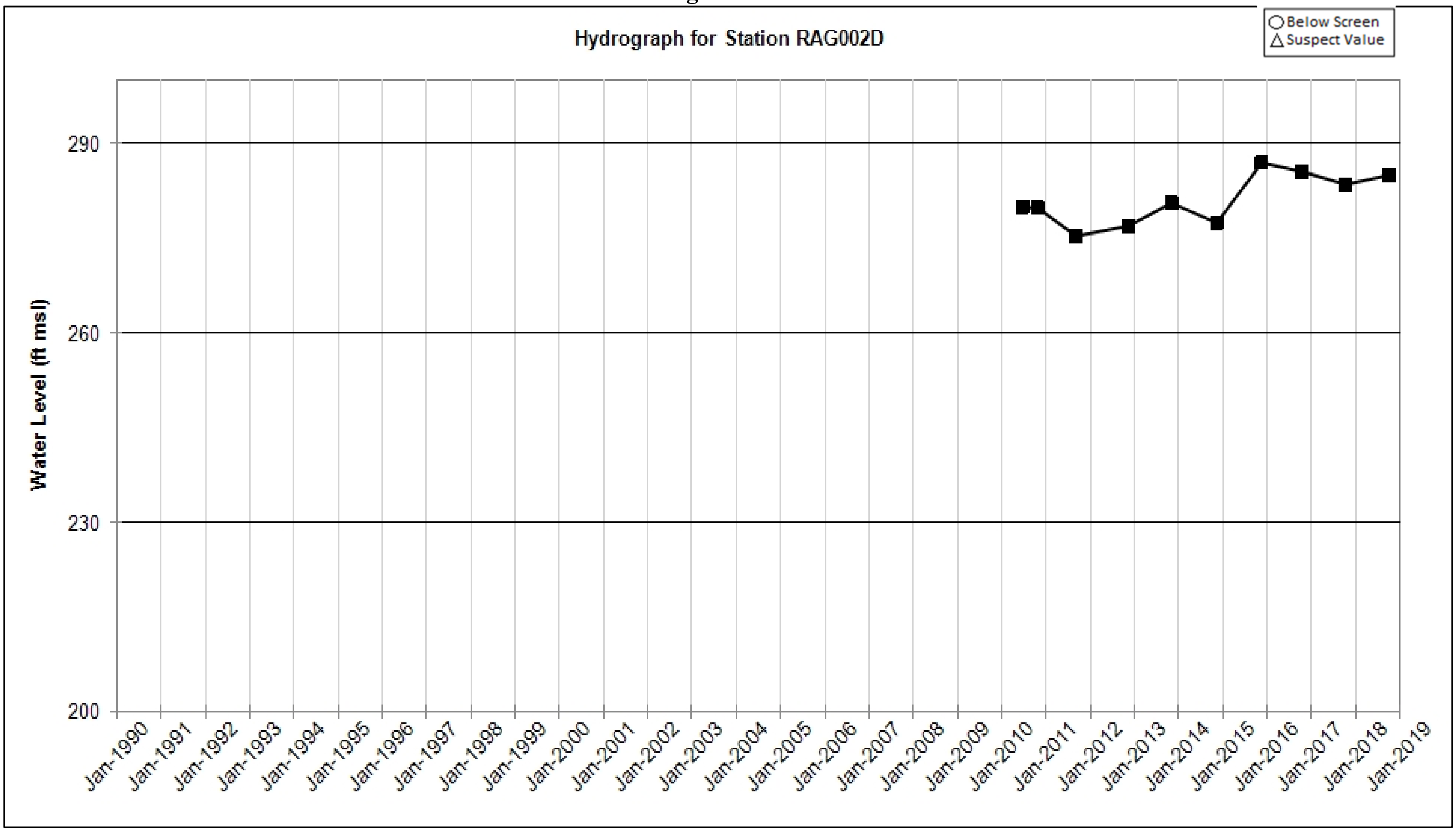
Hydrograph for Station RAG002D
Below Screen
Suspect Value
Water Level (ft msl)
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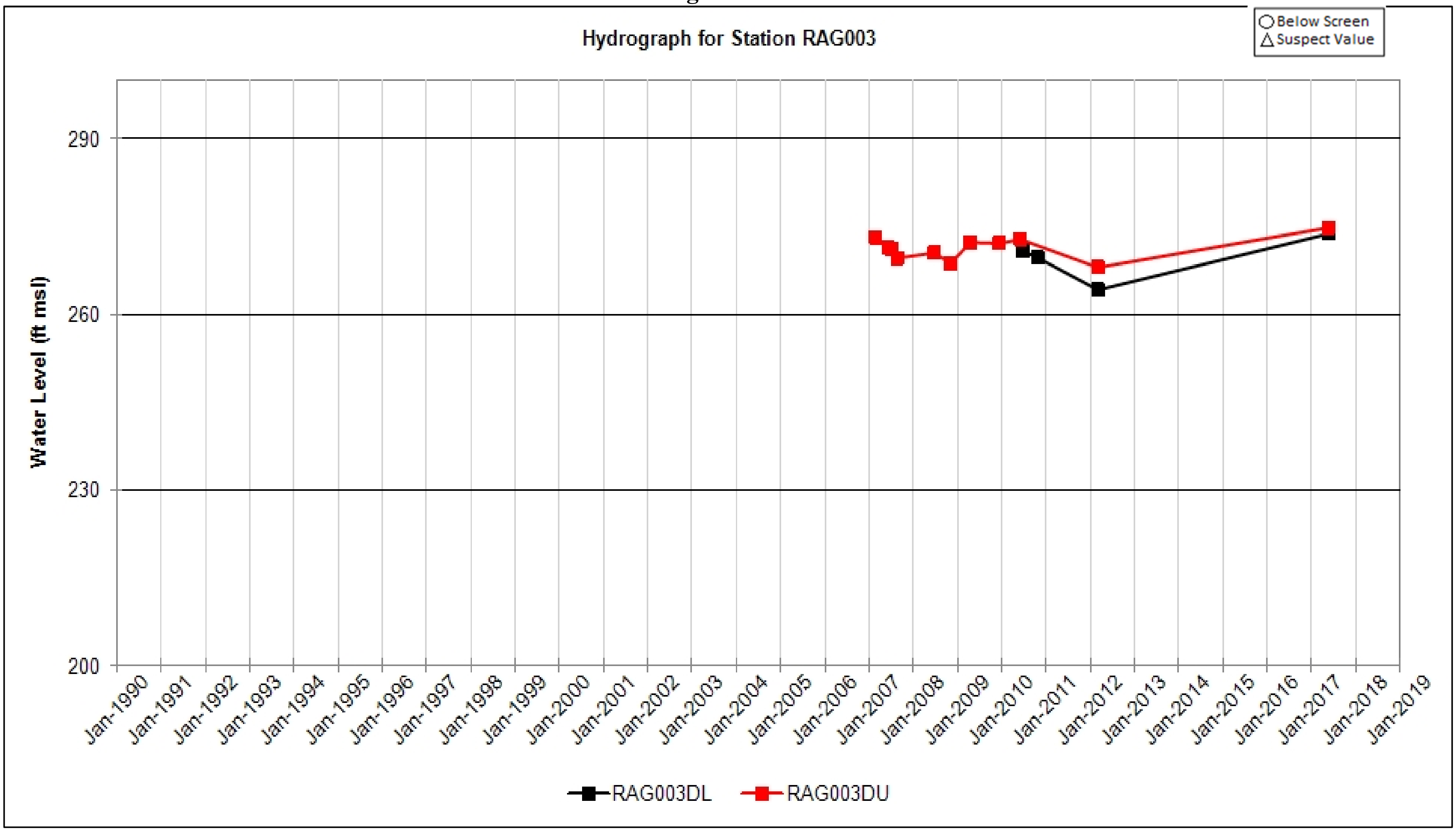
Figure B-4.


Hydrograph for Station RAG003
Below Screen
Suspect Value
Water Level (ft msl)
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230
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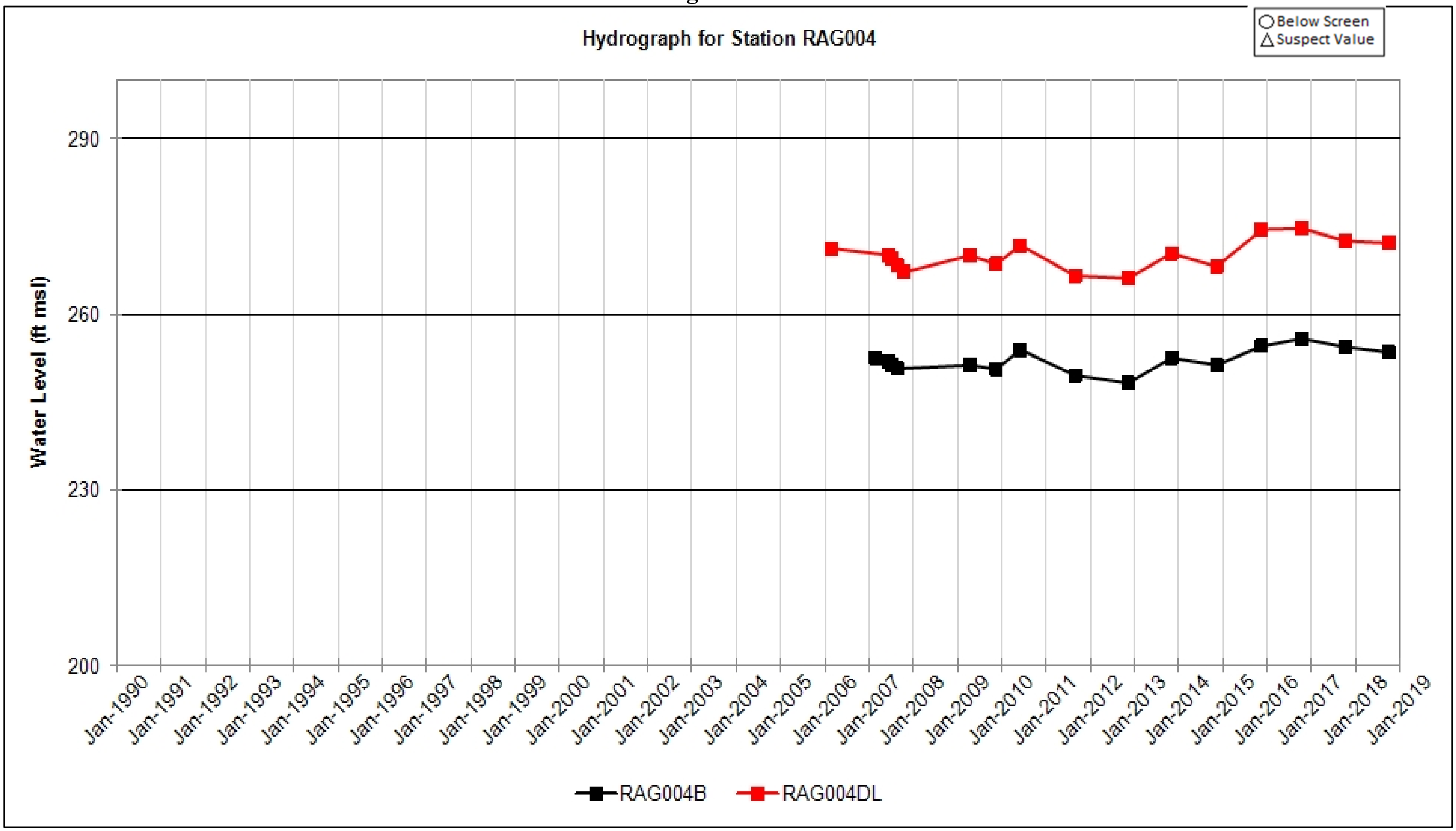
RAG003DL
RAG003DU

Figure B-5.


Below Screen
Suspect Value
Hydrograph for Station RAG004
Water Level (ft msl)
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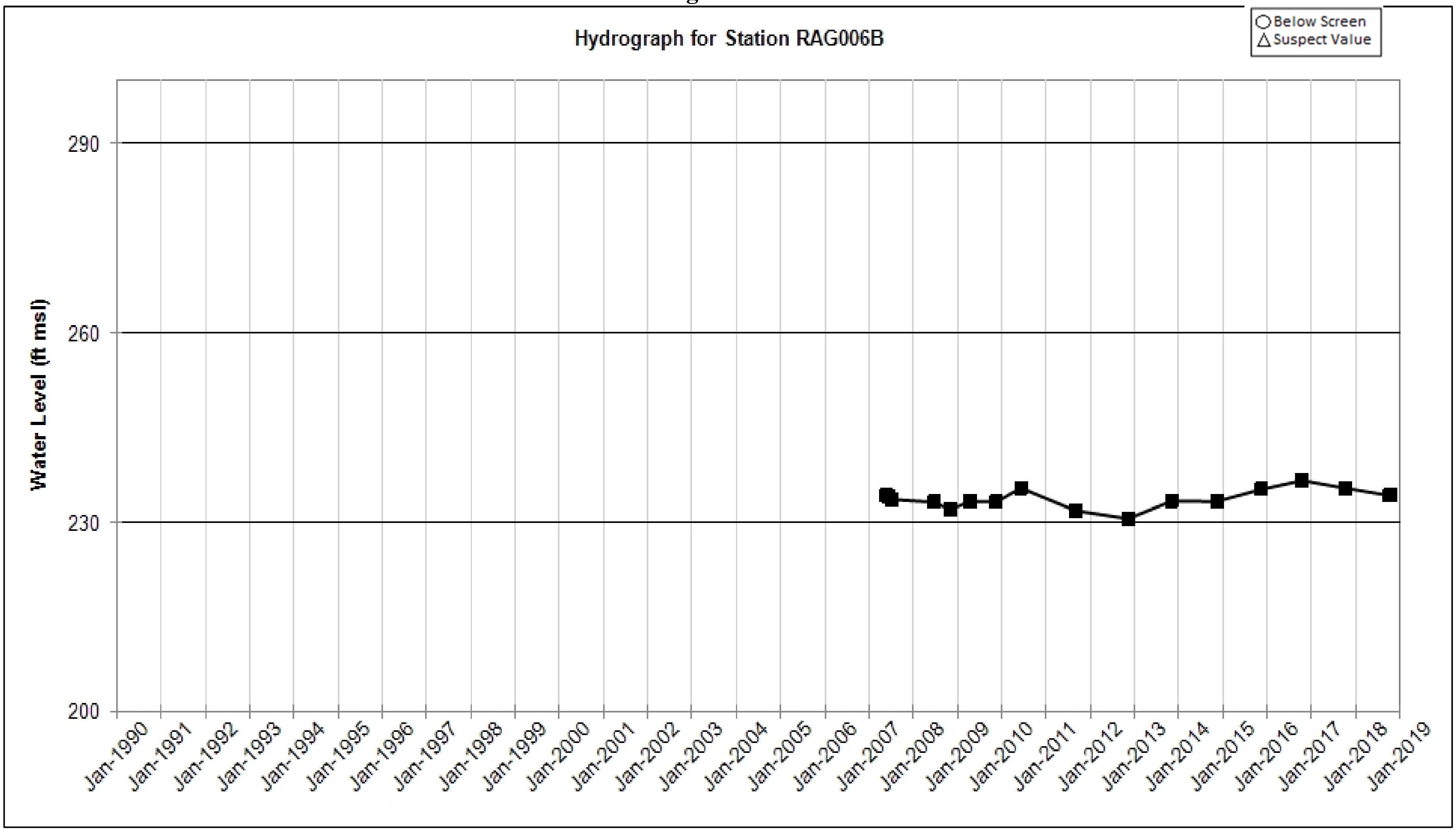
RAG004B
RAG004DL

Figure B-6.


Hydrograph for Station RAG006B
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Suspect Value
Water Level (ft msl)
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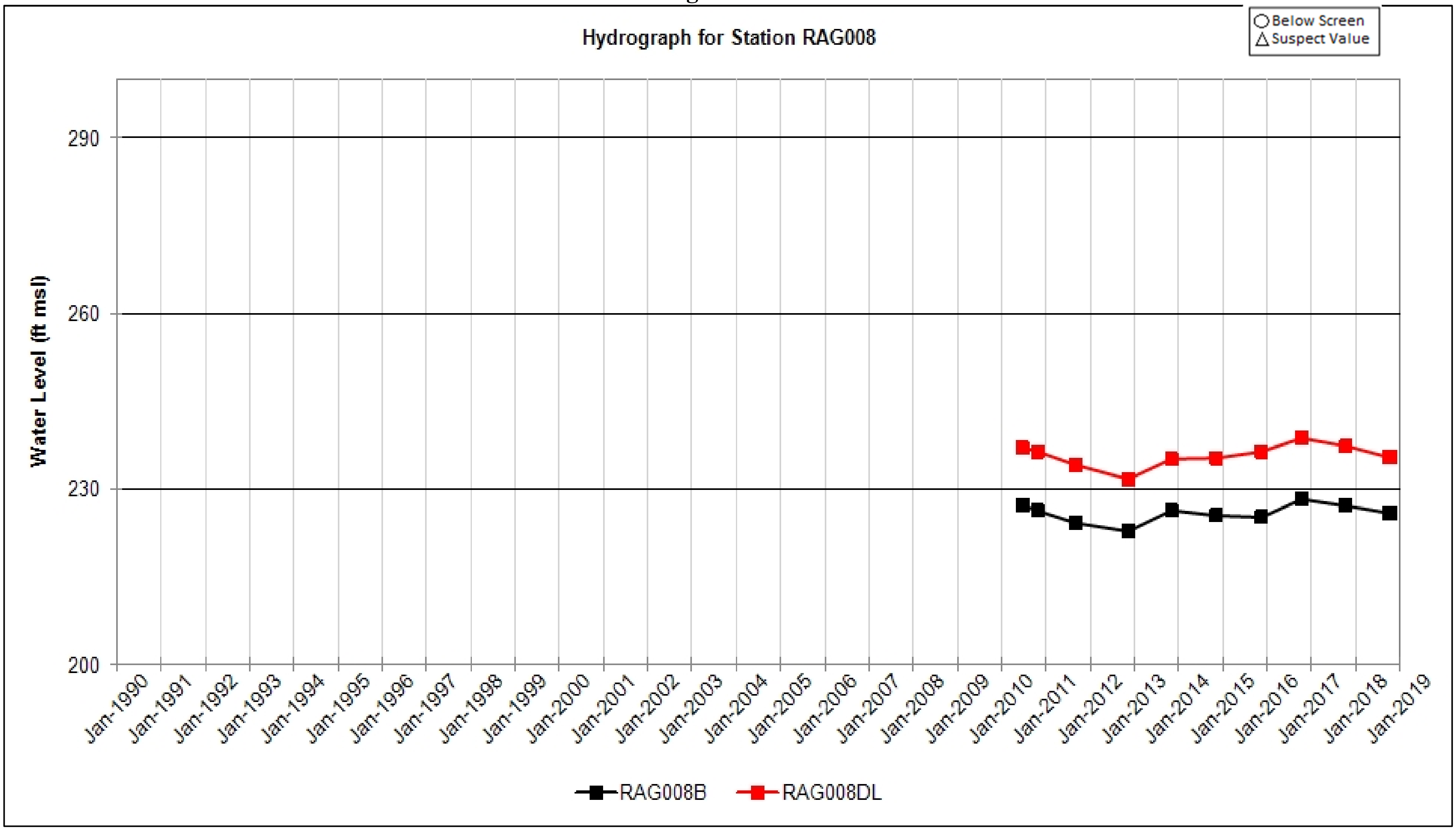
Figure B-7.


Below Screen
Suspect Value
Hydrograph for Station RAG008
Water Level (ft msl)
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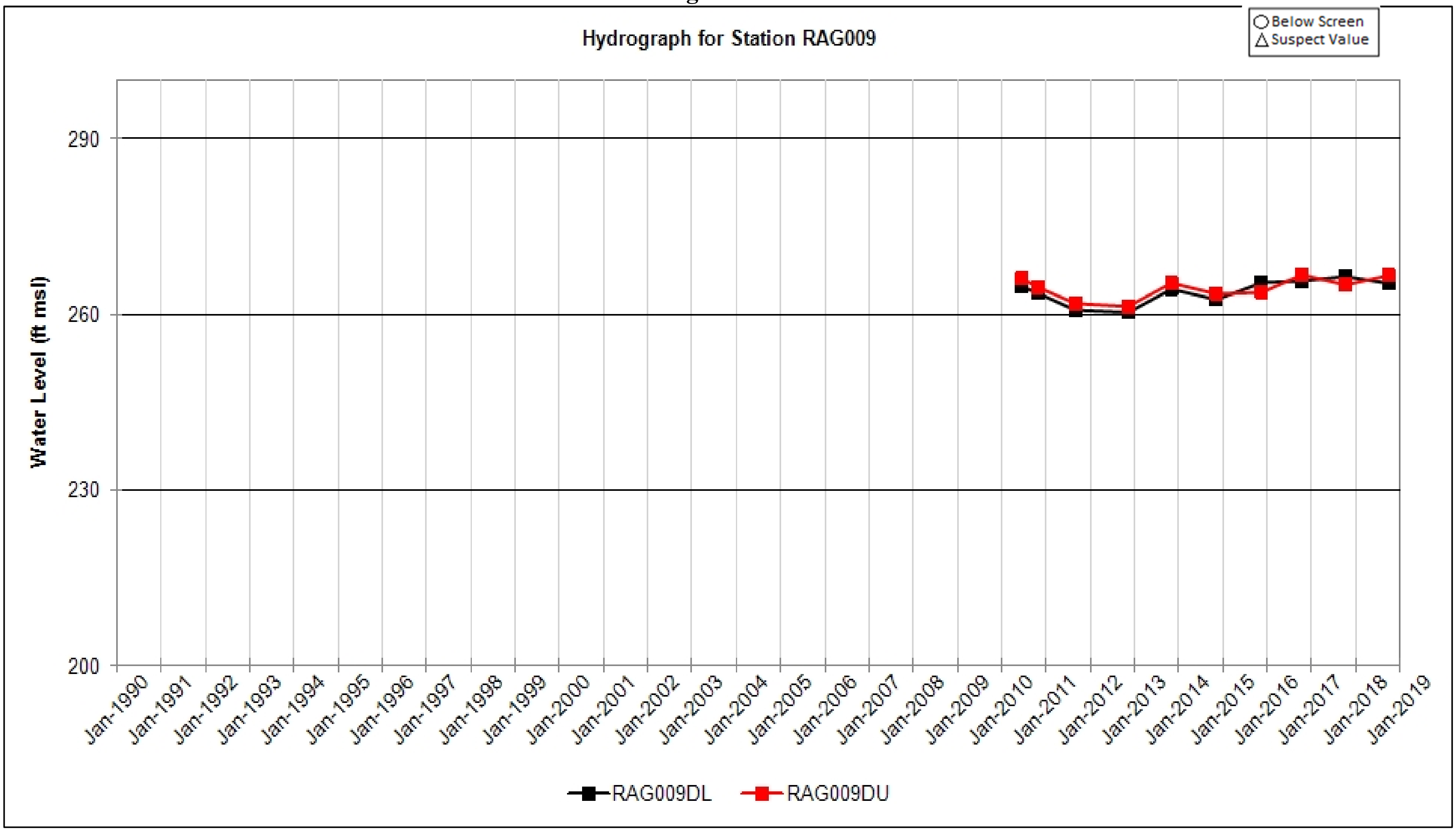
RAG008B
RAG008DL

Figure B-8.


Below Screen
Suspect Value
Hydrograph for Station RAG009
Water Level (ft msl)
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RAG009DL
RAG009DU

Figure B-9

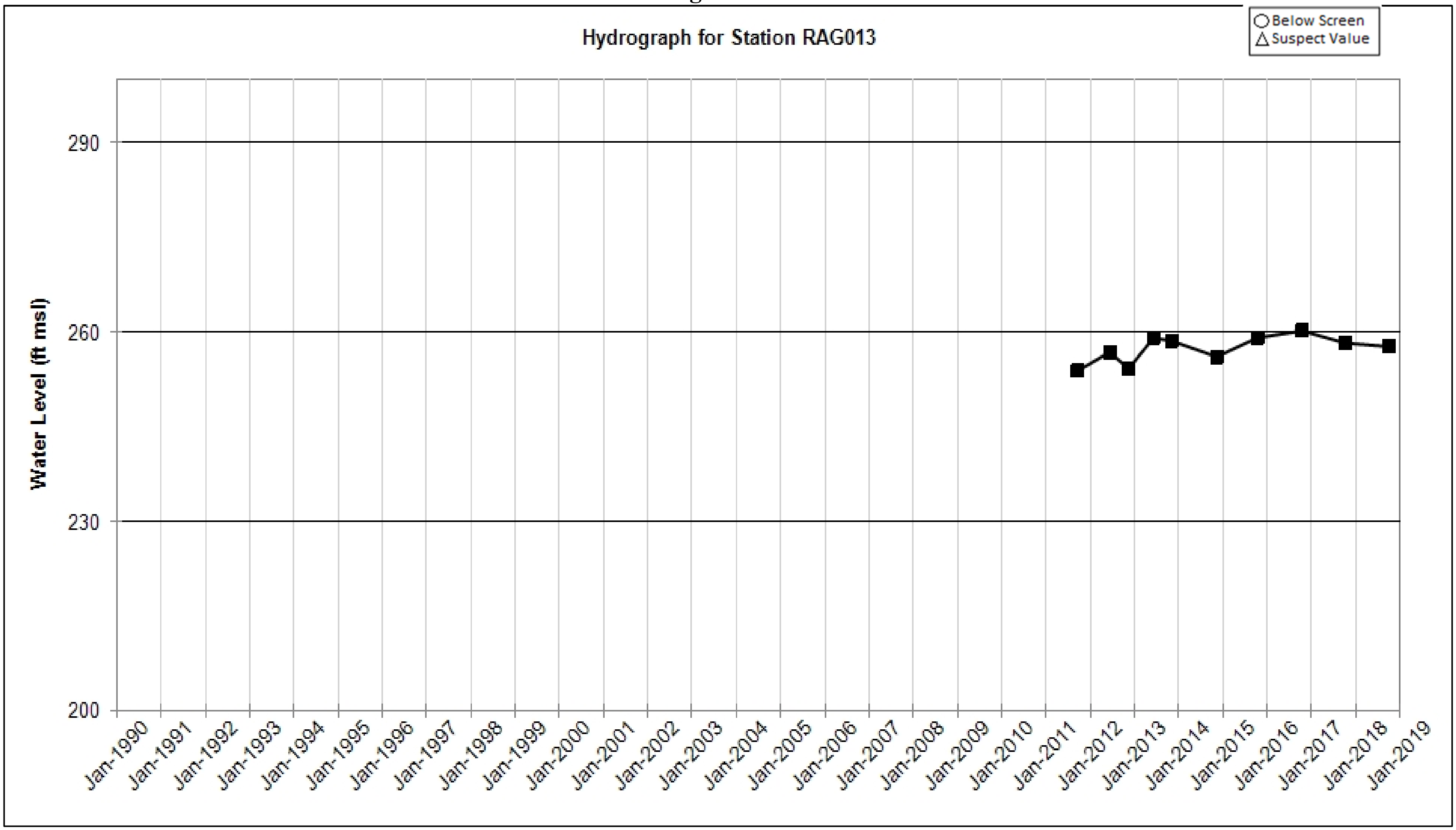
Hydrograph for Station RAG013
Below Screen
Suspect Value
Water Level (ft msl)
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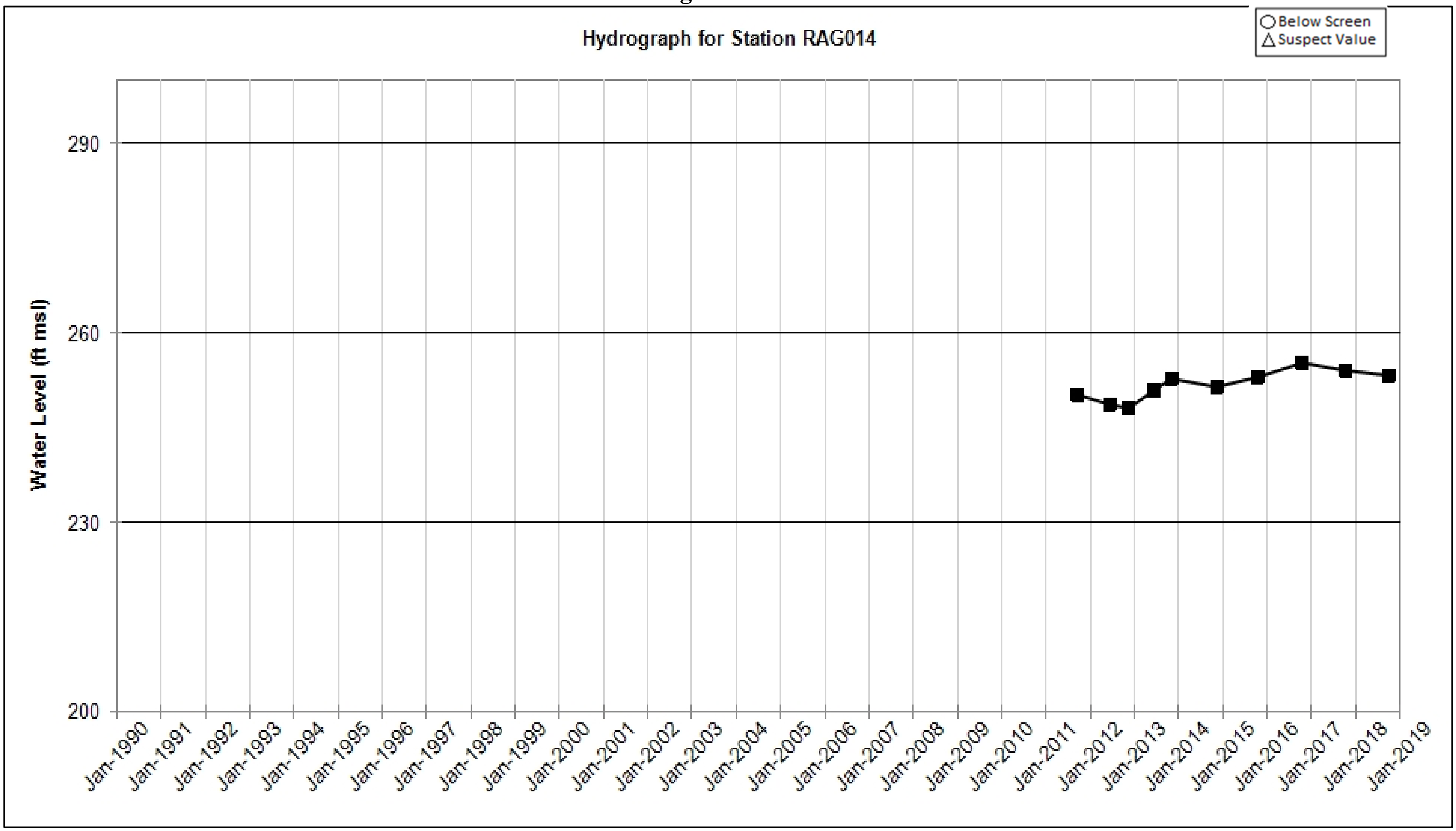
Figure B-10.


Hydrograph for Station RAG014
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Suspect Value
Water Level (ft msl)
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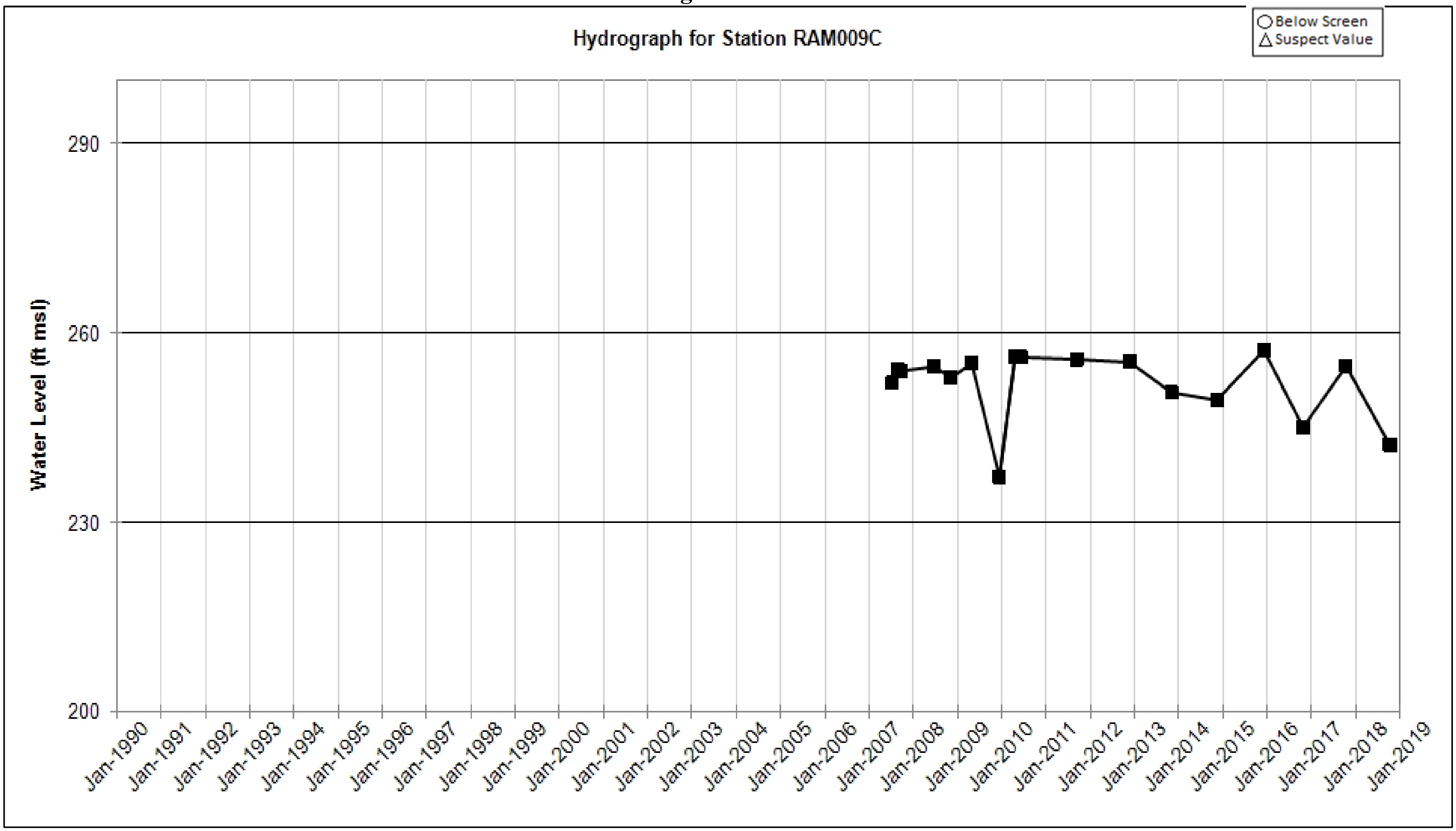
Figure B-11.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Suspect Value
Hydrograph for Station RAM009C
Water Level (ft msl)
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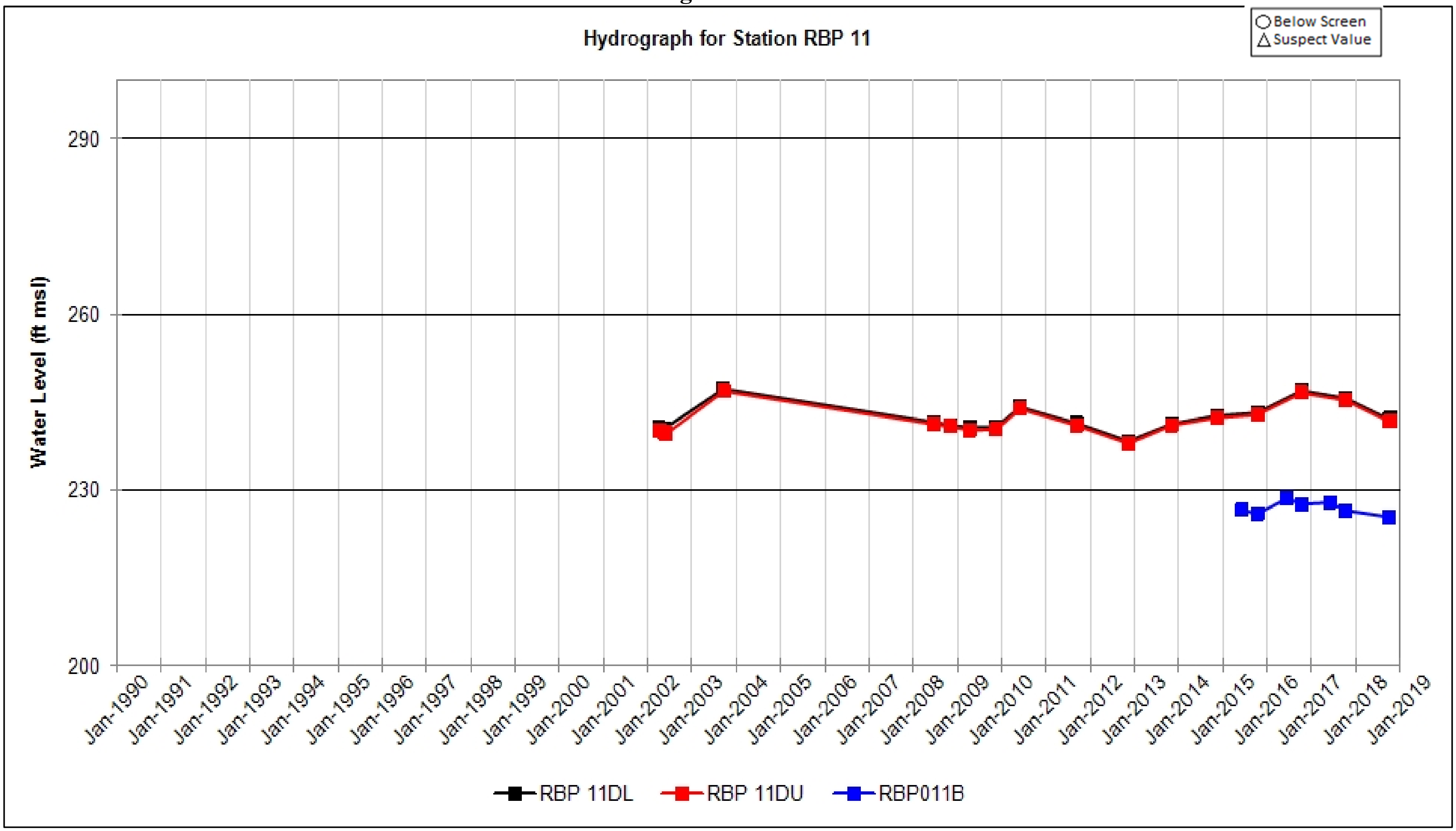
Figure B-12.


Hydrograph for Station RBP 11
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Suspect Value
Water Level (ft msl)
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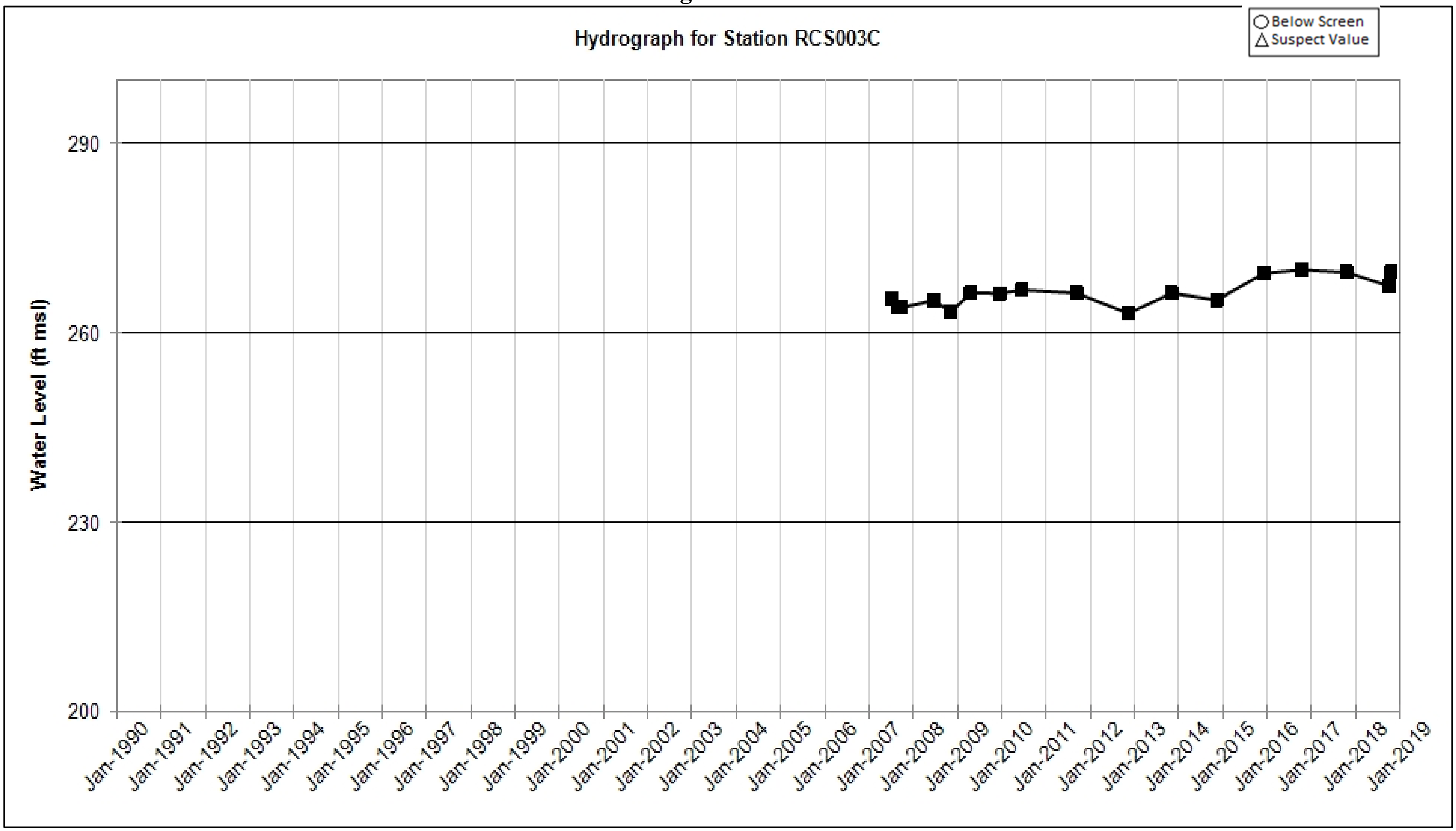
RBP 11DL
RBP 11DU
RBP011B

Figure B-13.


Hydrograph for Station RCS003C
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Suspect Value
Water Level (ft msl)
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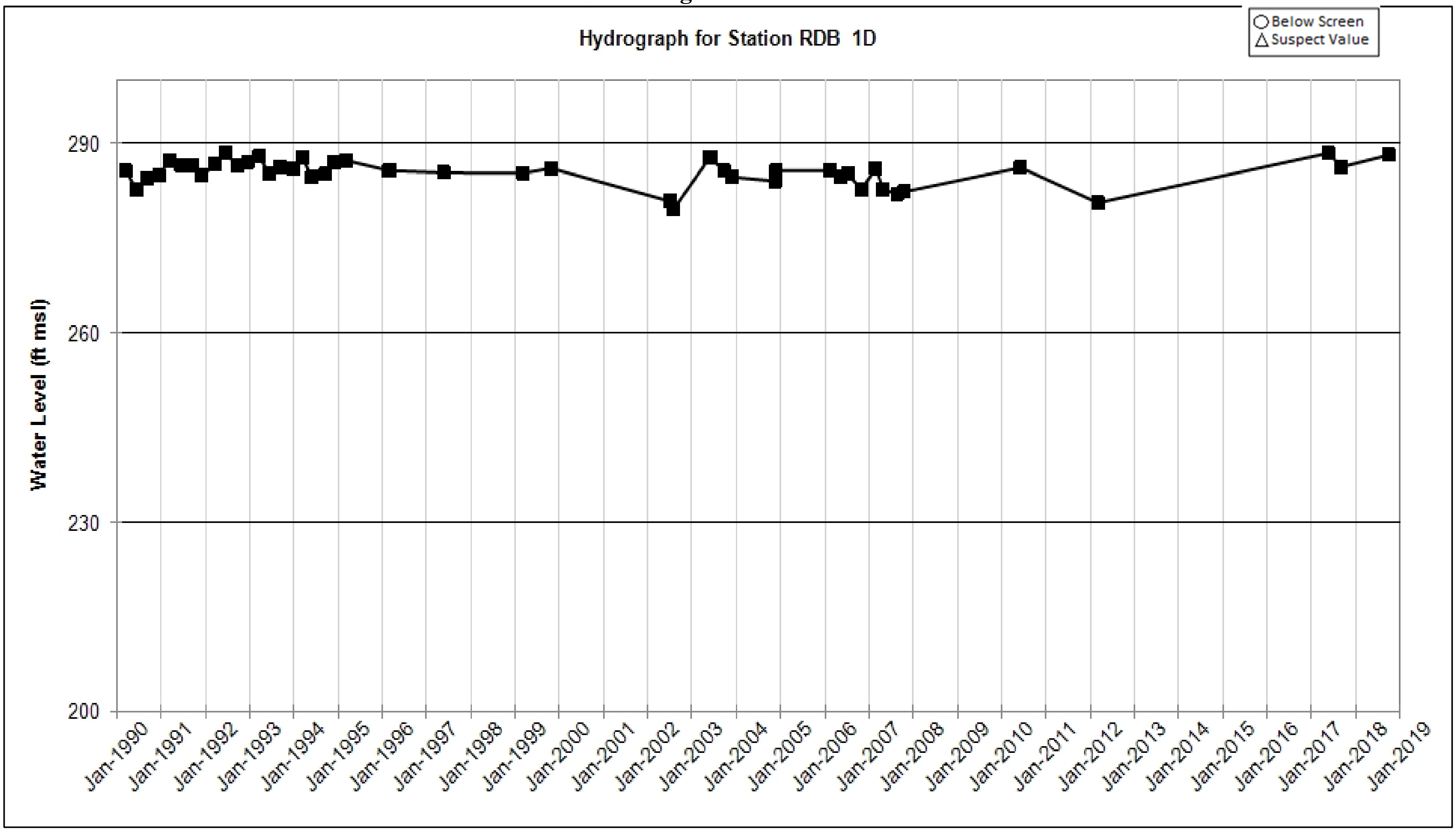
Figure B-14.


Hydrograph for Station RDB 1D
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Suspect Value
Water Level (ft msl)
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Figure B-15.

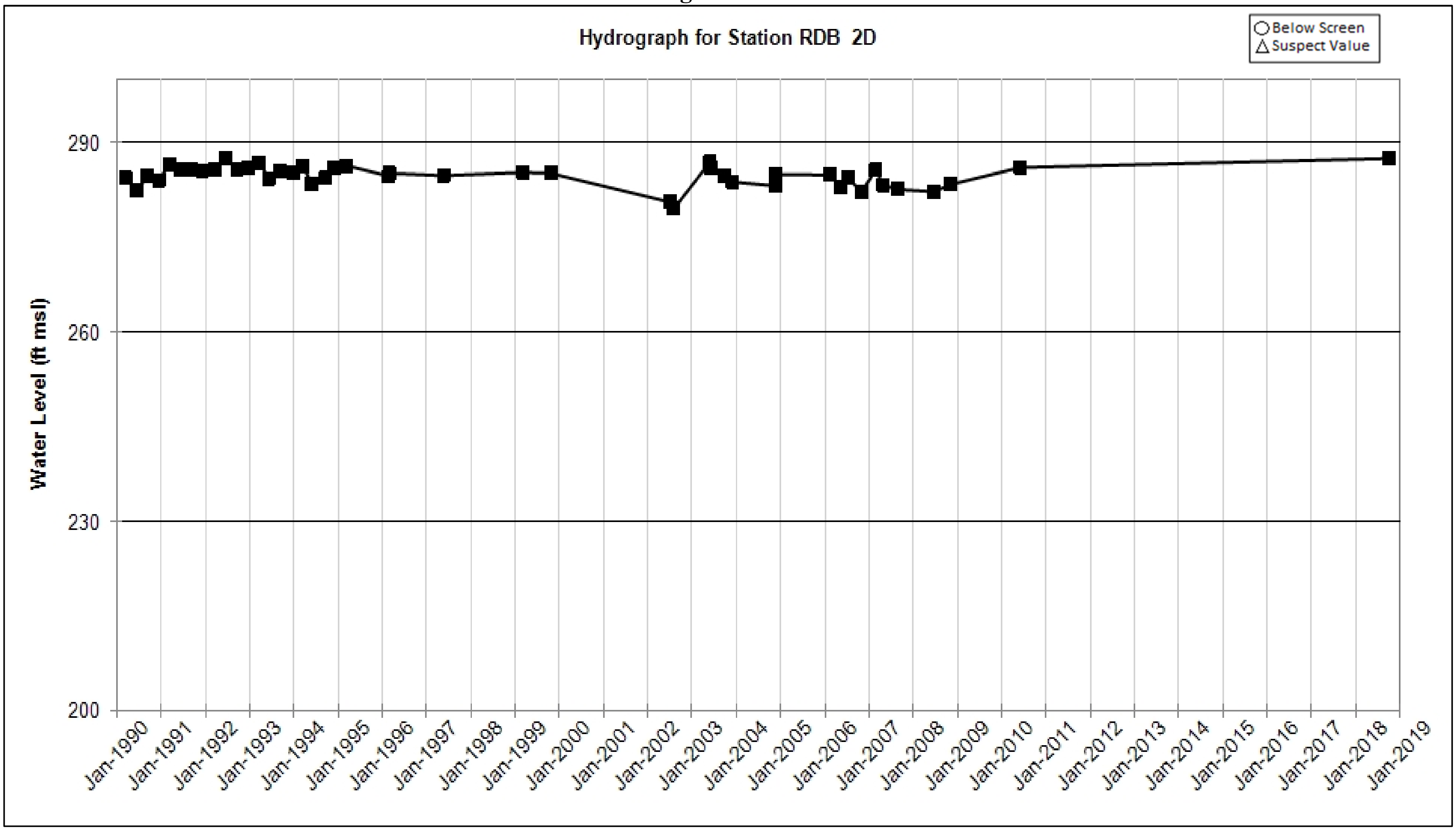
Hydrograph for Station RDB 2D
Below Screen
Suspect Value
Water Level (ft msl)
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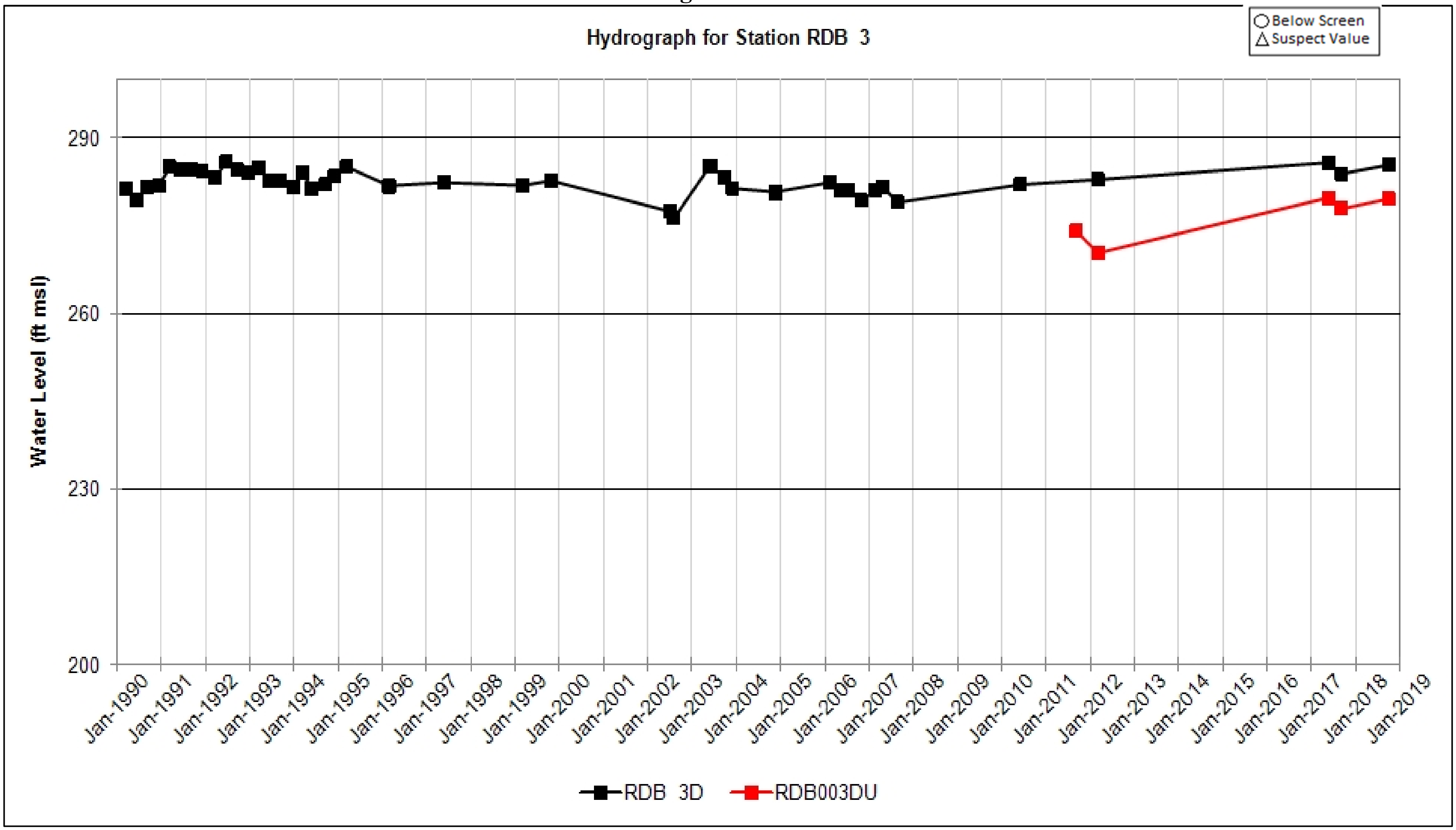
Figure B-16.


Hydrograph for Station RDB 3
Below Screen
Suspect Value
Water Level (ft msl)
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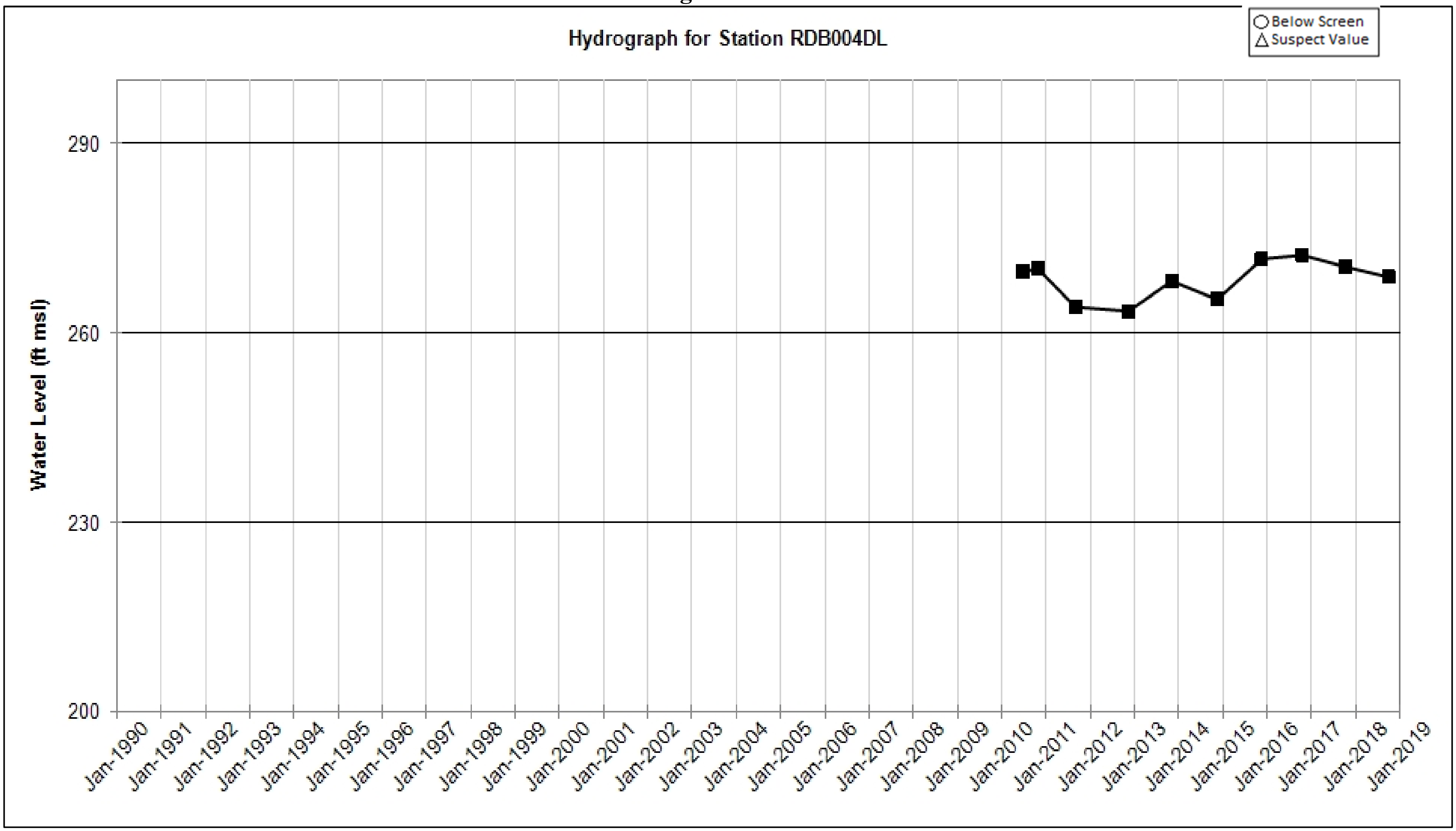
RDB 3D
RDB003DU

Figure B-17.


Hydrograph for Station RDB004DL
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Suspect Value
Water Level (ft msl)
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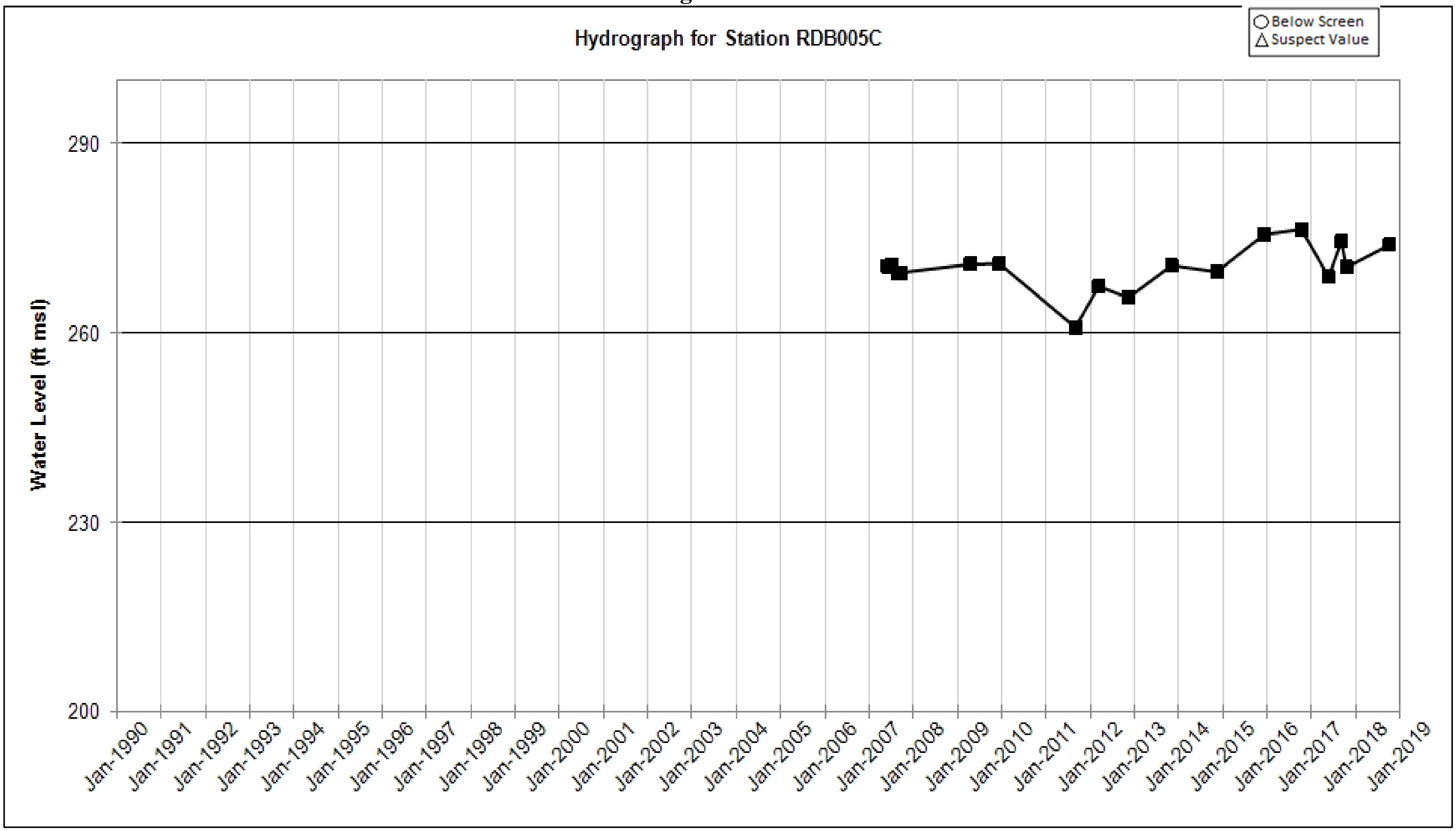
Figure B-18.


Hydrograph for Station RDB005C
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Suspect Value
Water Level (ft msl)
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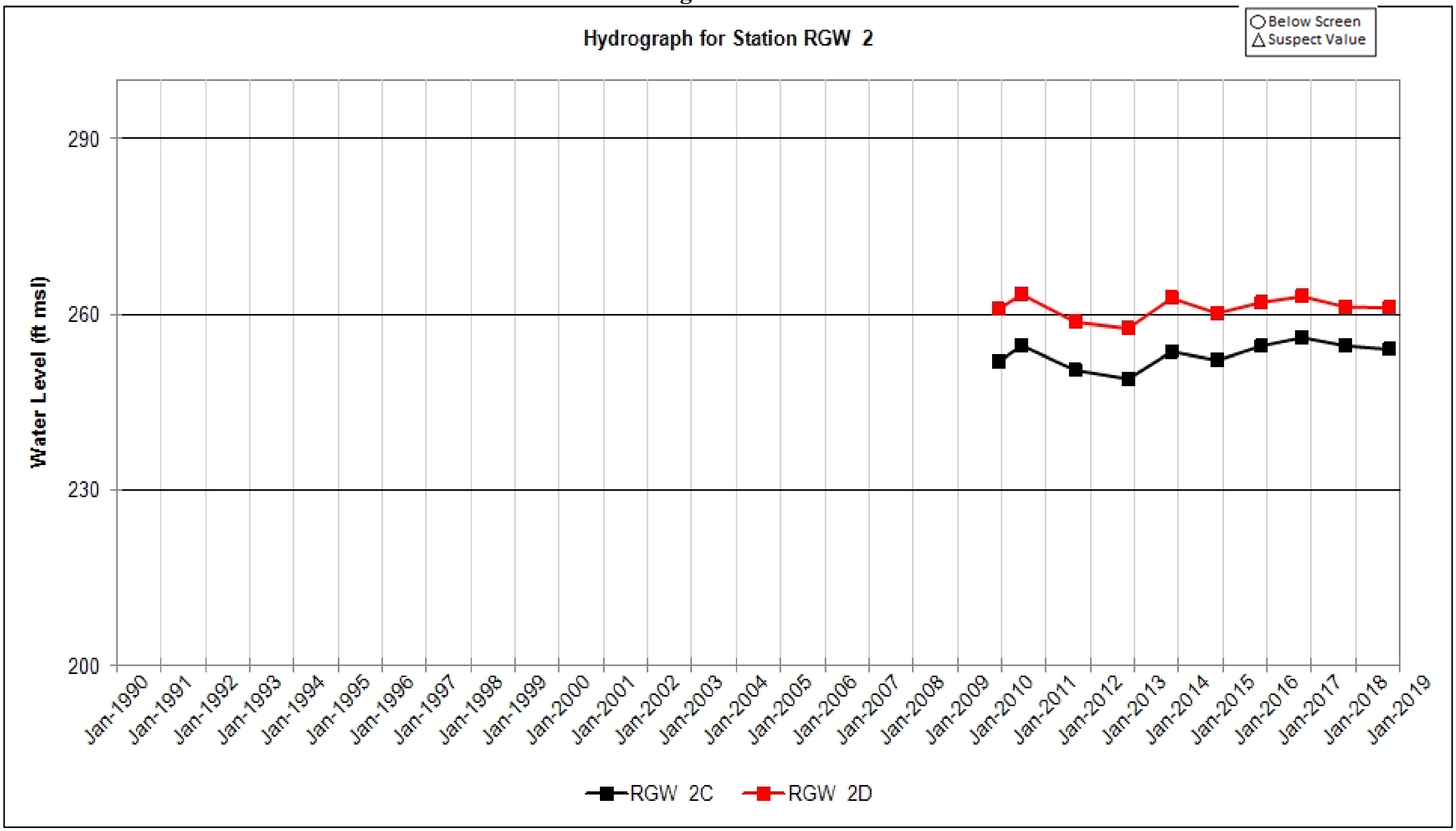
Figure B-19.


Below Screen
Suspect Value
Hydrograph for Station RGW 2
Water Level (ft msl)
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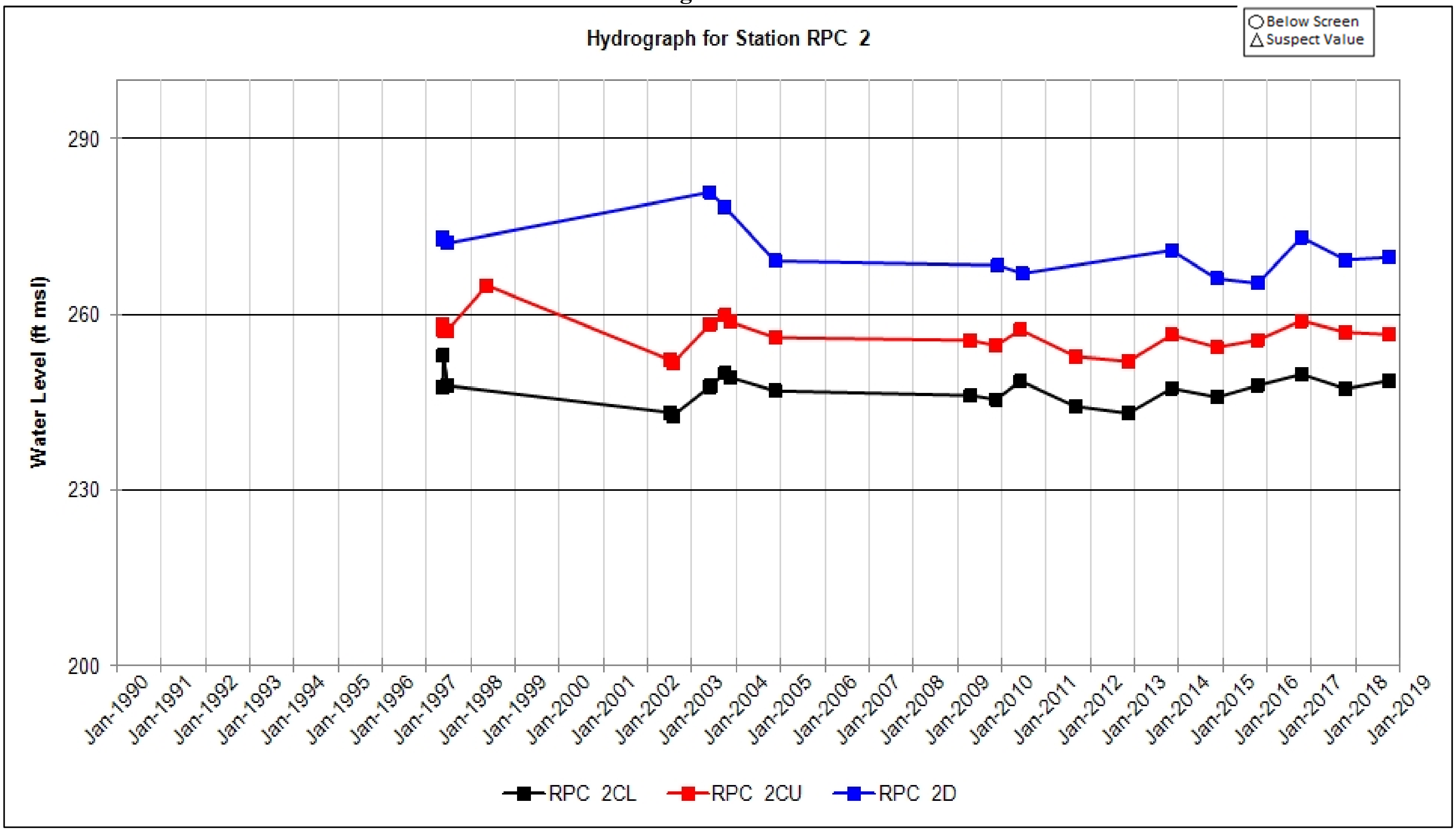
RGW 2C
RGW 2D

Figure B-20.


Hydrograph for Station RPC 2
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Suspect Value
Water Level (ft msl)
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RPC 2CL
RPC 2CU
RPC 2D

Figure B-21.

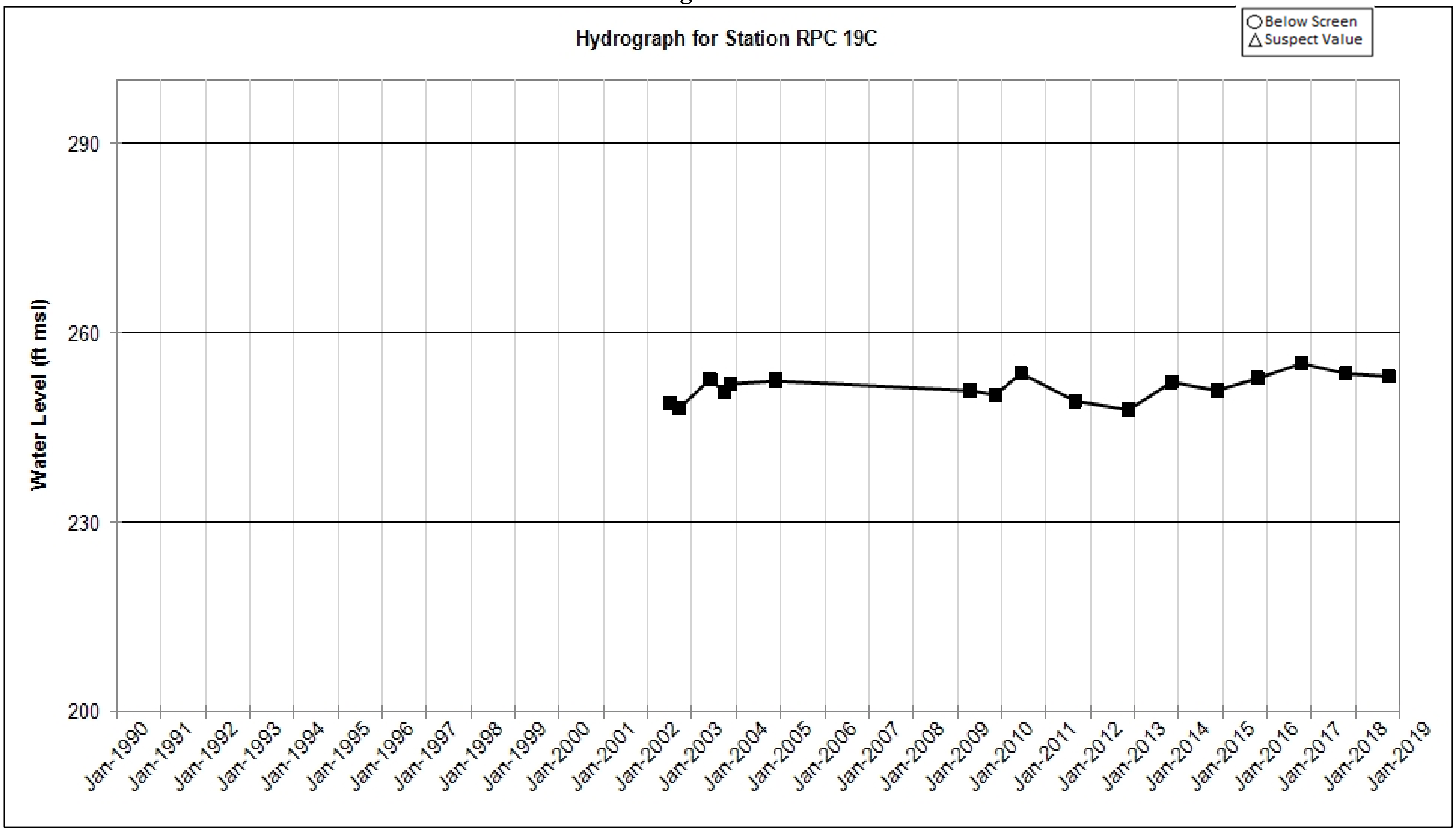
Below Screen
Suspect Value
Hydrograph for Station RPC 19C
Water Level (ft msl)
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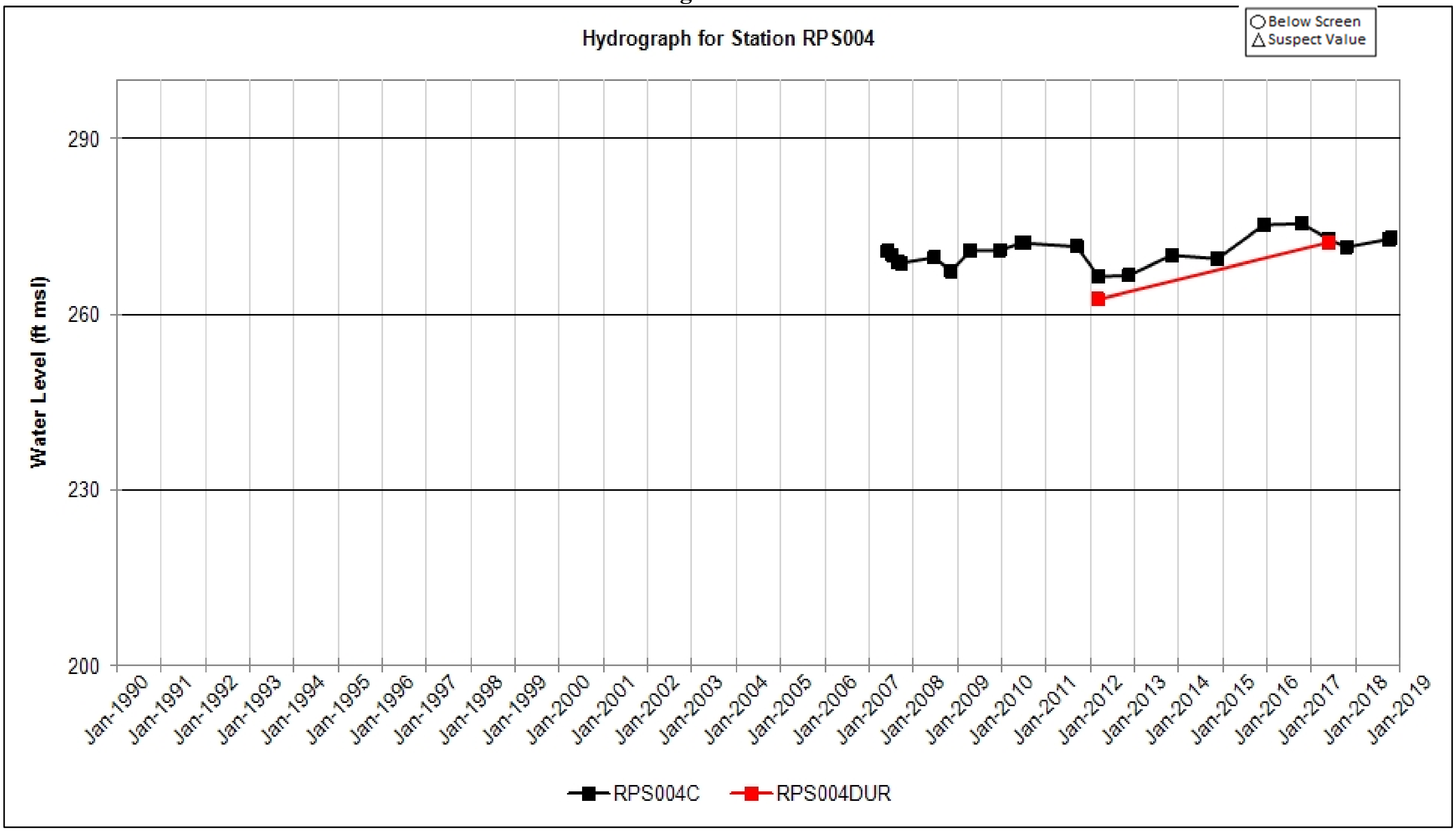
Figure B-22.


Hydrograph for Station RPS004
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Suspect Value
Water Level (ft msl)
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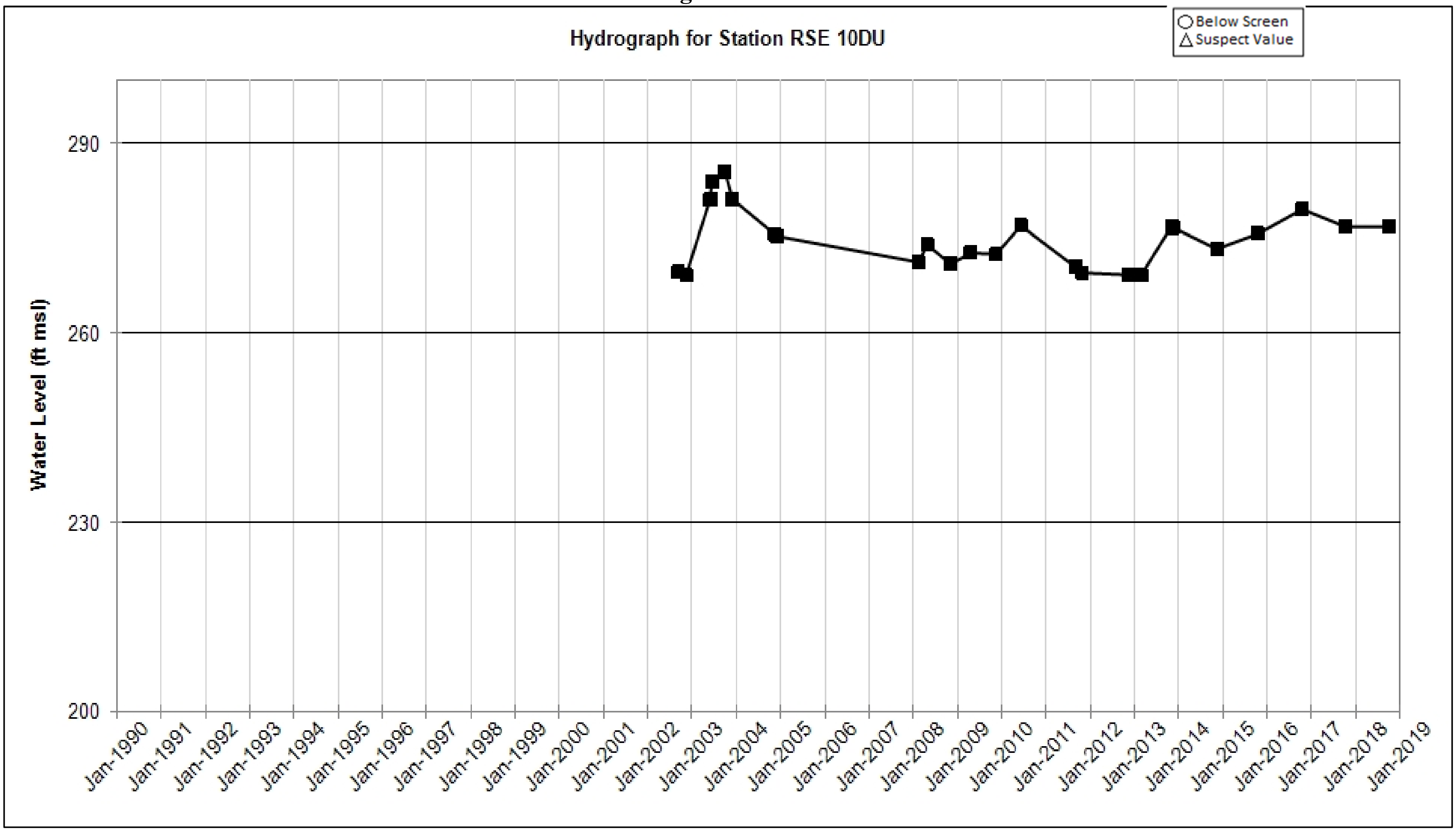
RPS004C
RPS004DUR

Figure B-23.


Hydrograph for Station RSE 10DU
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Suspect Value
Water Level (ft msl)
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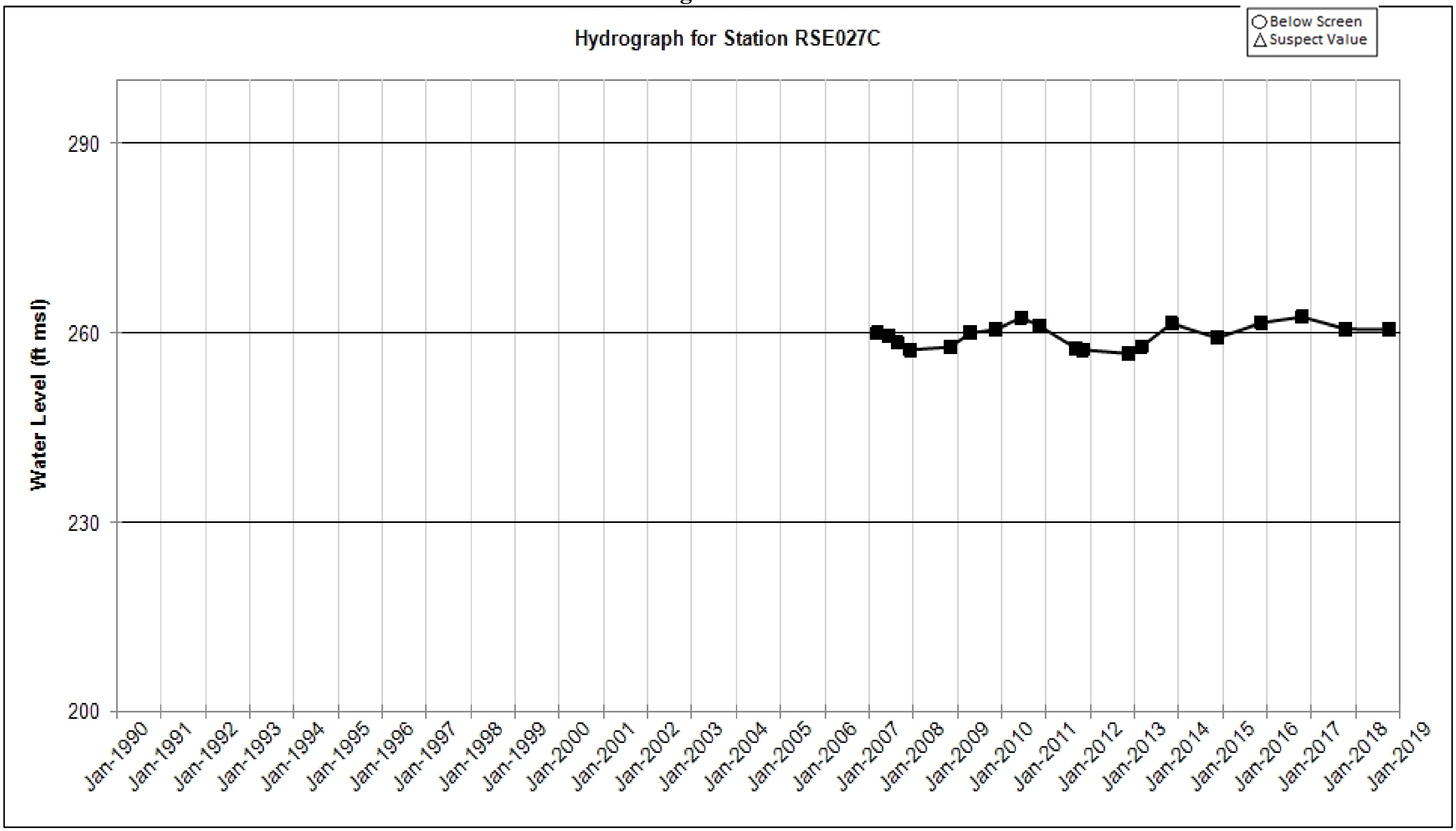
Figure B-24.


Hydrograph for Station RSE027C
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Suspect Value
Water Level (ft msl)
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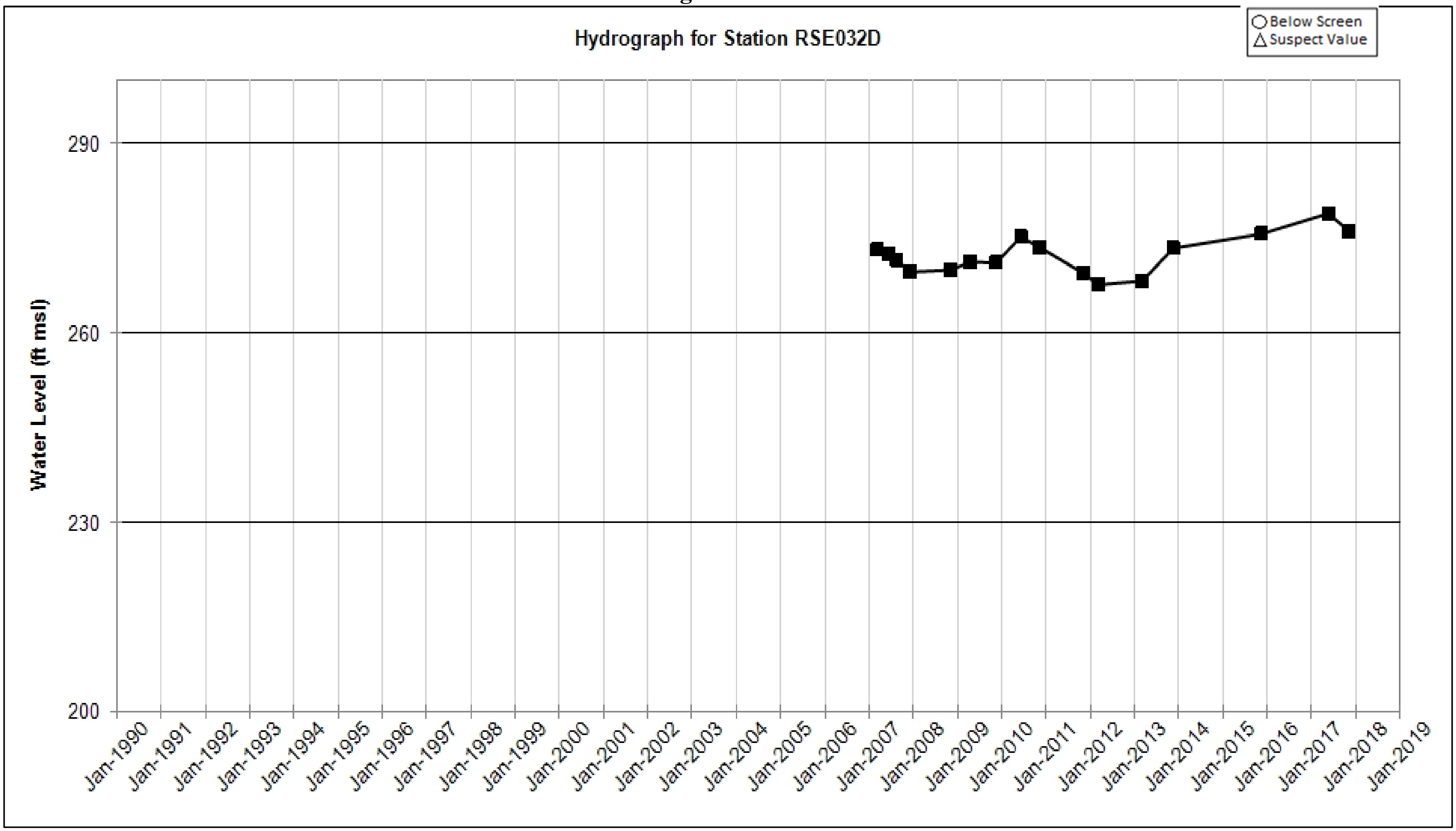
Figure B-25.


Hydrograph for Station RSE032D
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Suspect Value
Water Level (ft msl)
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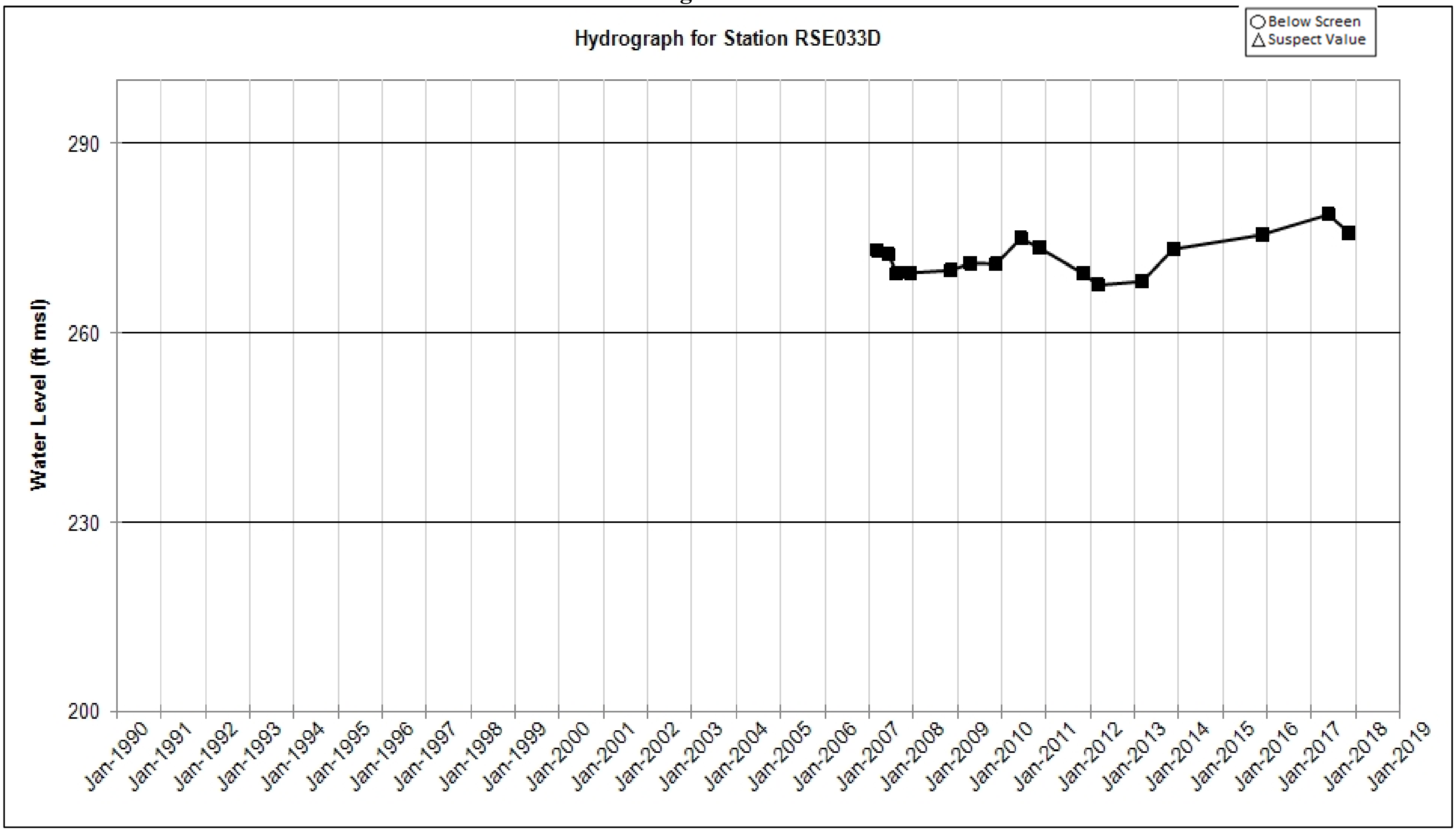
Figure B-26.


Hydrograph for Station RSE033D
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Suspect Value
Water Level (ft msl)
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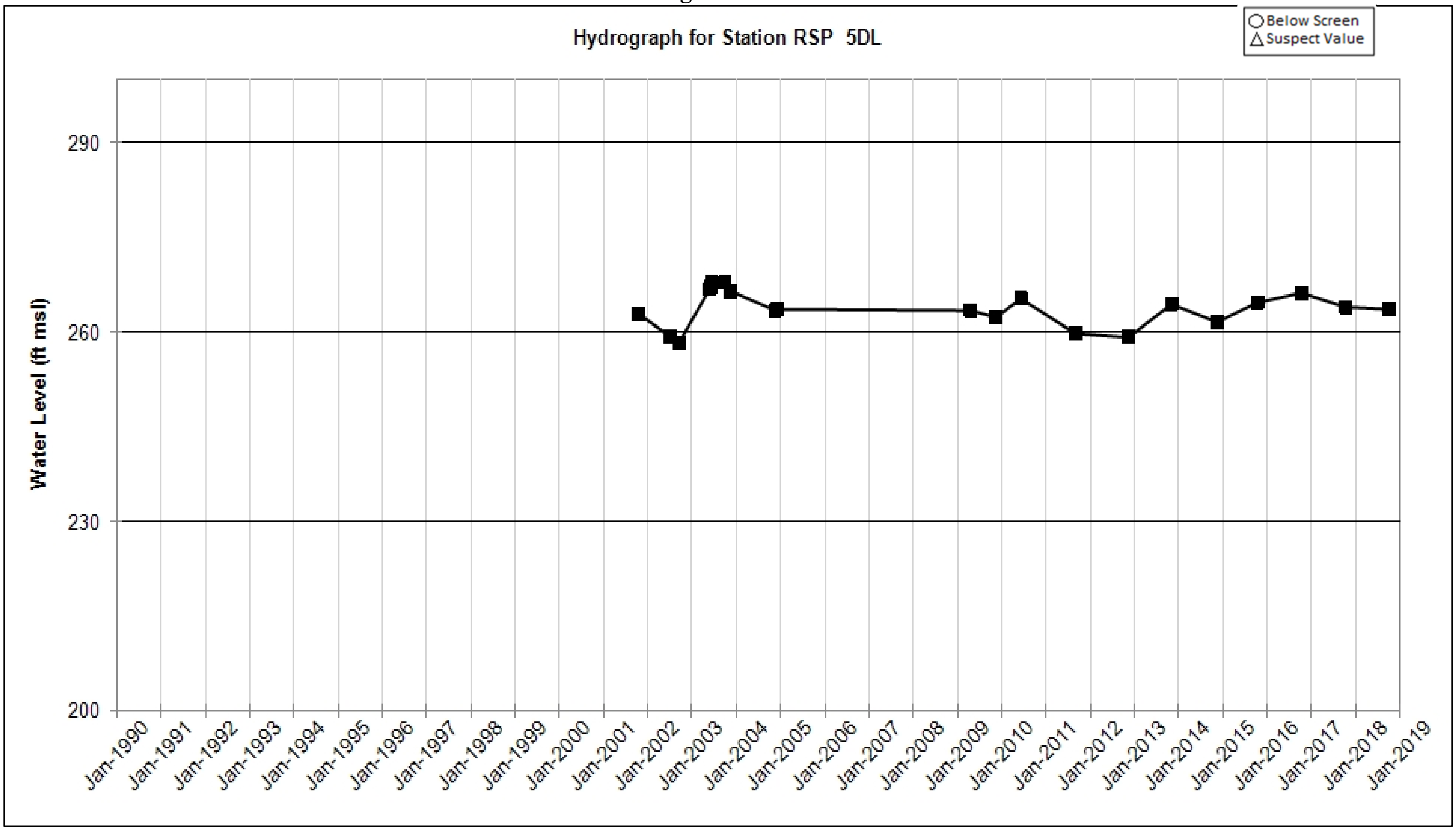
Figure B-27.


Hydrograph for Station RSP 5DL
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Suspect Value
Water Level (ft msl)
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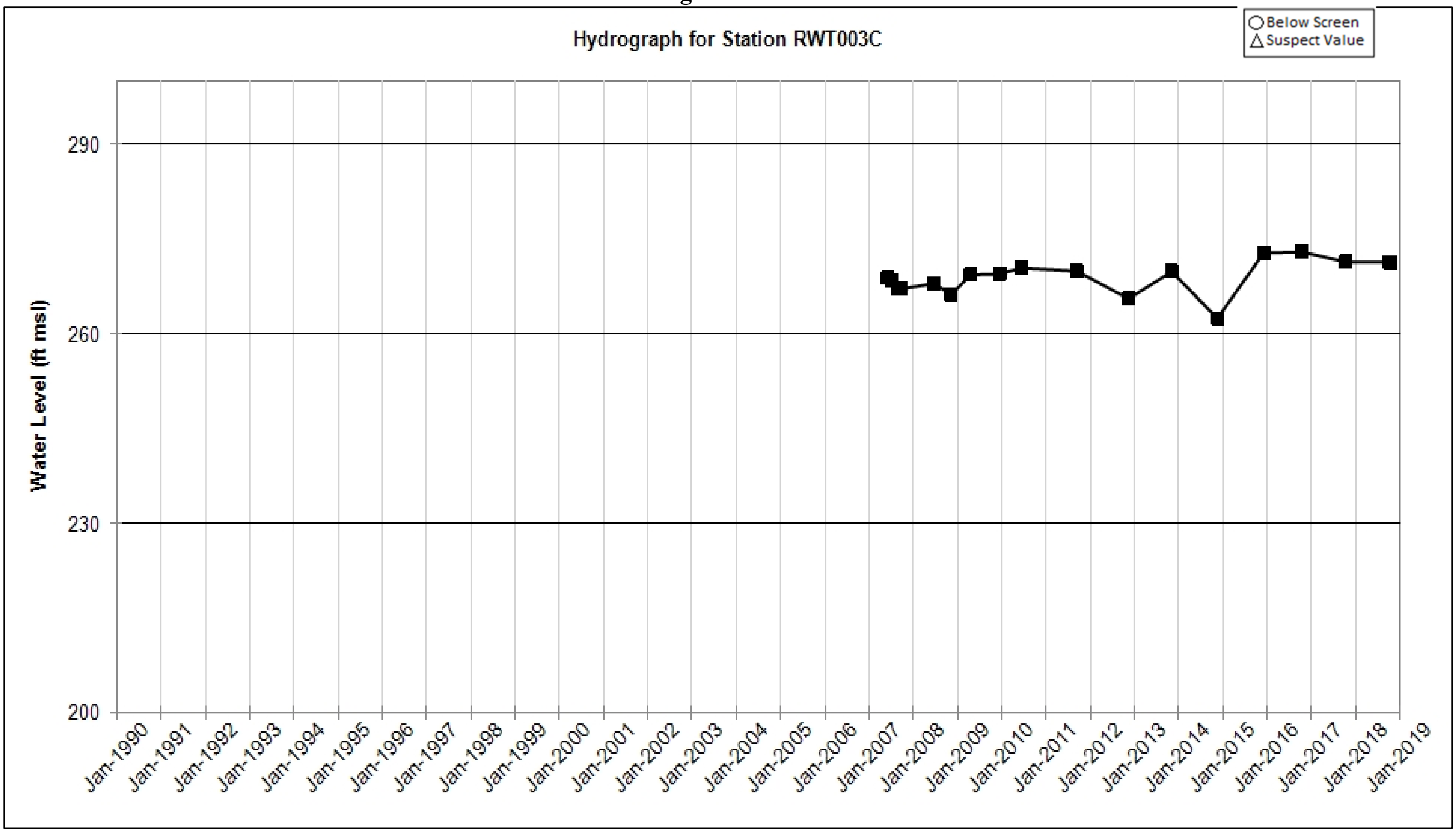
Figure B-28.


Hydrograph for Station RWT003C
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Suspect Value
Water Level (ft msl)
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Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019

APPENDIX C

Time Series Plots

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Figure C-1.

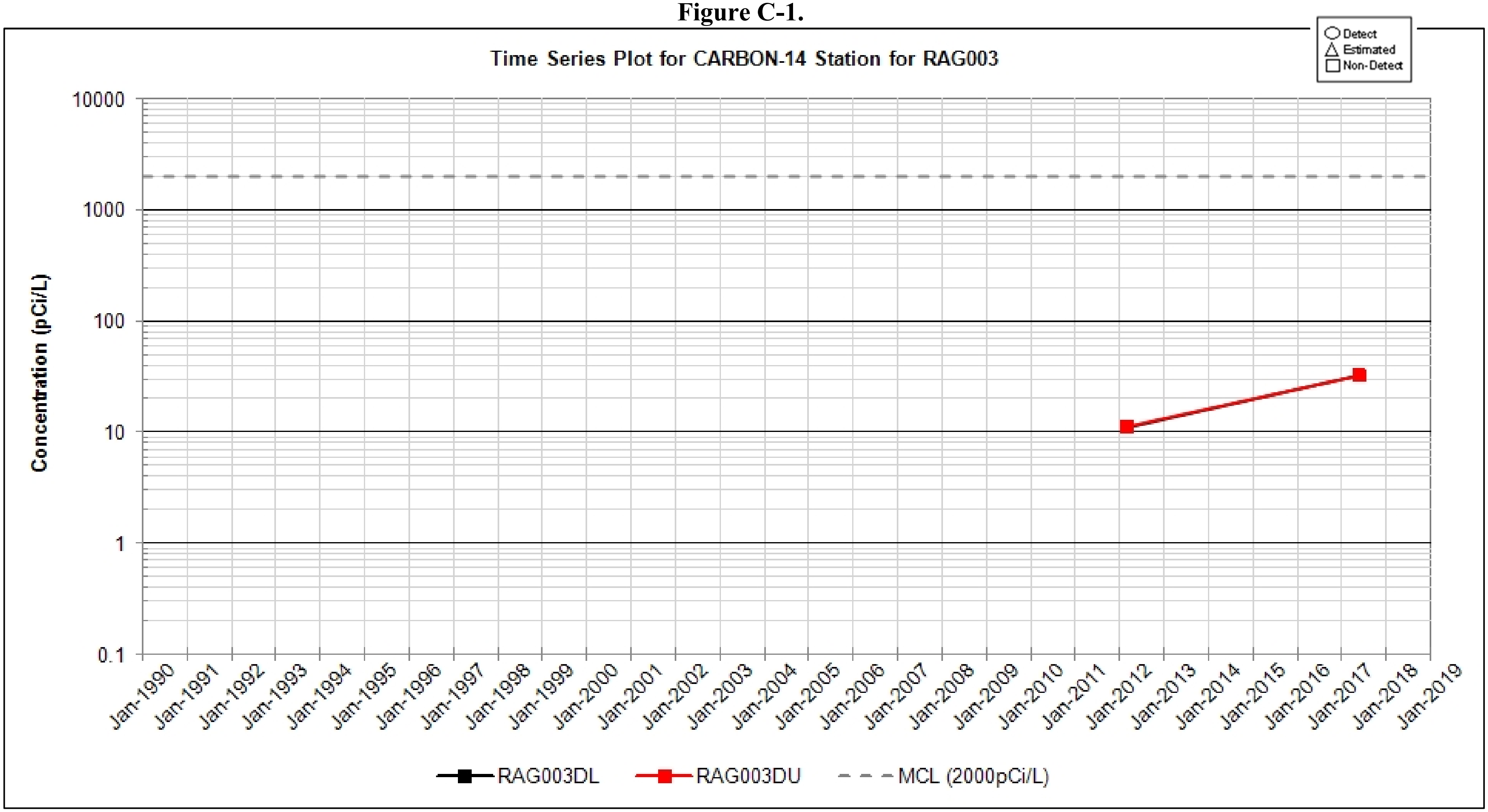

Time Series Plot for CARBON-14 Station for RAG003
Detect
Estimated
Non-Detect
Concentration (pCi/L)
10000
1000
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RAG003DL
RAG003DU
MCL (2000pCi/L)

Figure C-2.

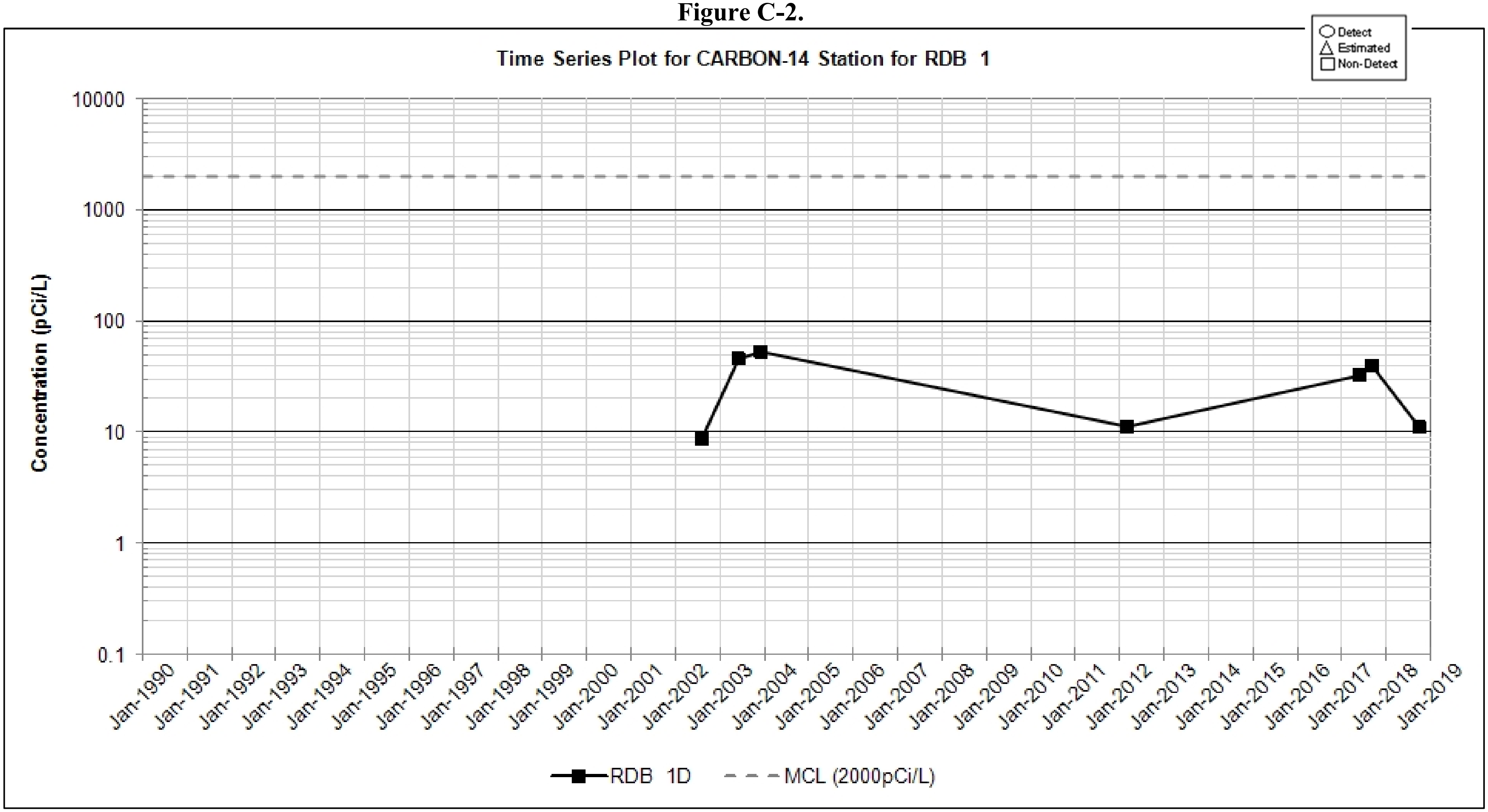

Time Series Plot for CARBON-14 Station for RDB 1
Detect
Estimated
Non-Detect
Concentration (pCi/L)
10000
1000
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RDB 1D
MCL (2000pCi/L)

Figure C-3.

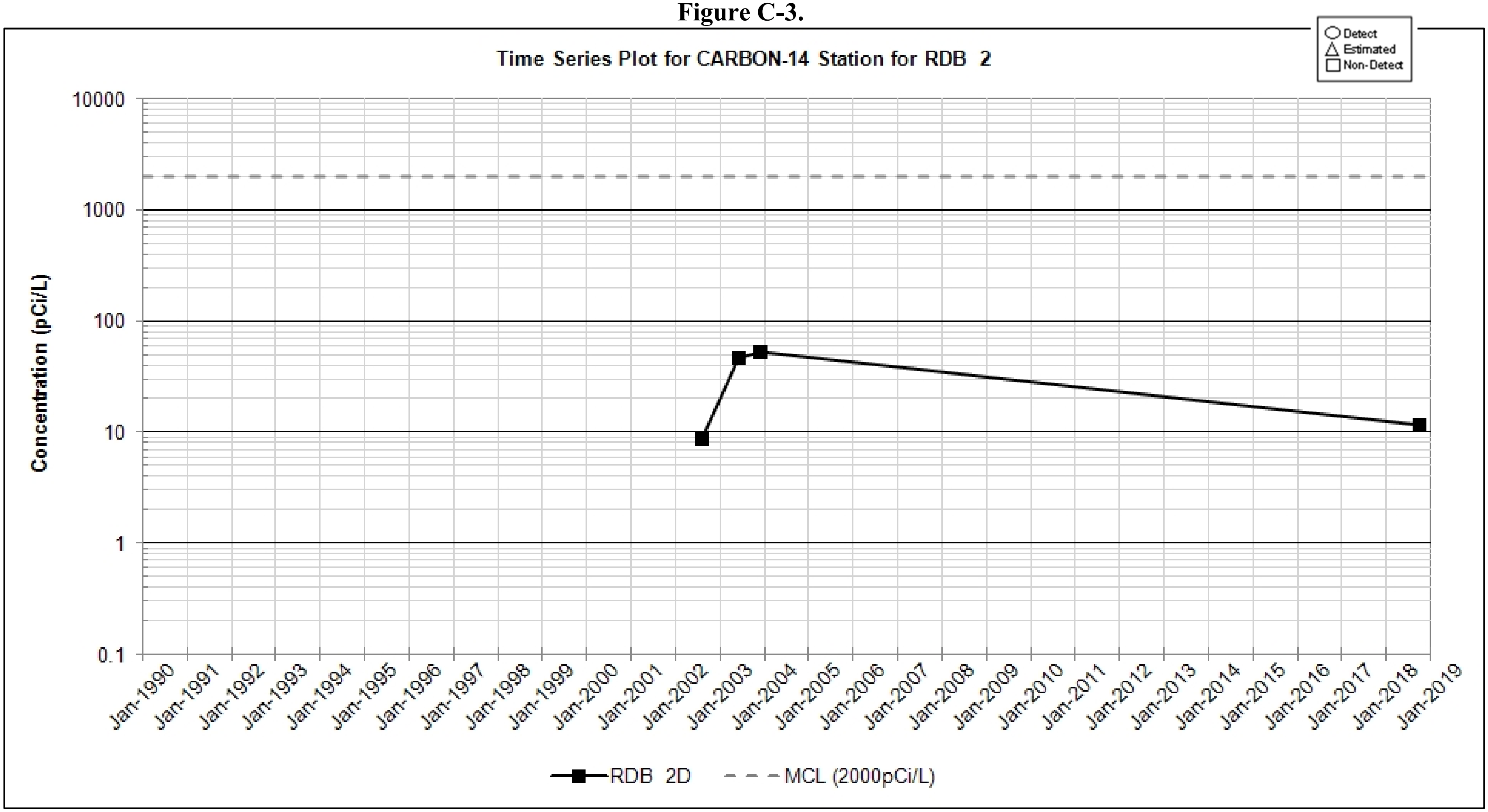

Time Series Plot for CARBON-14 Station for RDB 2
Detect
Estimated
Non-Detect
Concentration (pCi/L)
10000
1000
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RDB 2D
MCL (2000pCi/L)

Figure C-4.

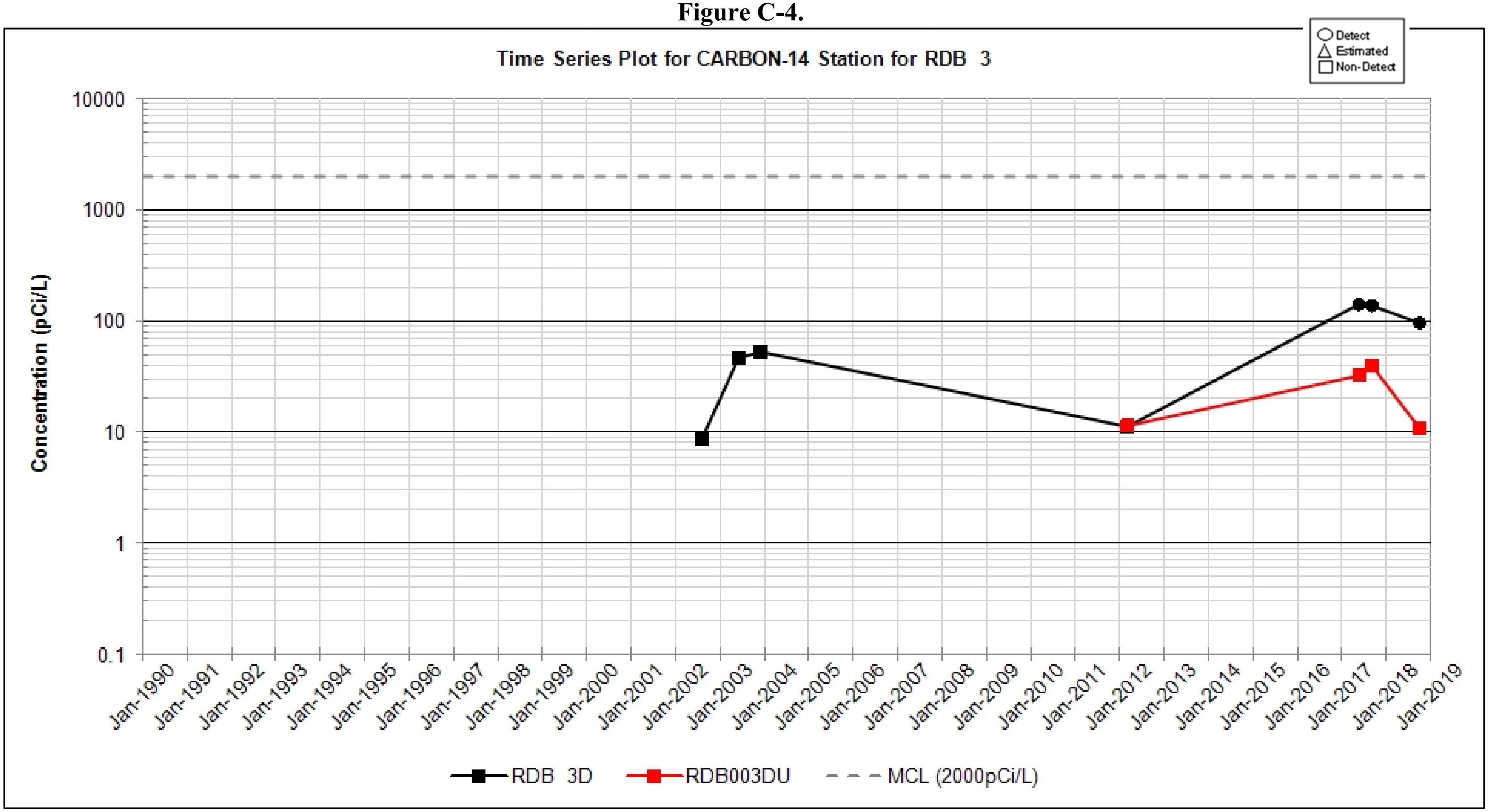

Time Series Plot for CARBON-14 Station for RDB 3
Detect
Estimated
Non-Detect
Concentration (pCi/L)
10000
1000
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RDB 3D
RDB003DU
MCL (2000pCi/L)

Figure C-5.

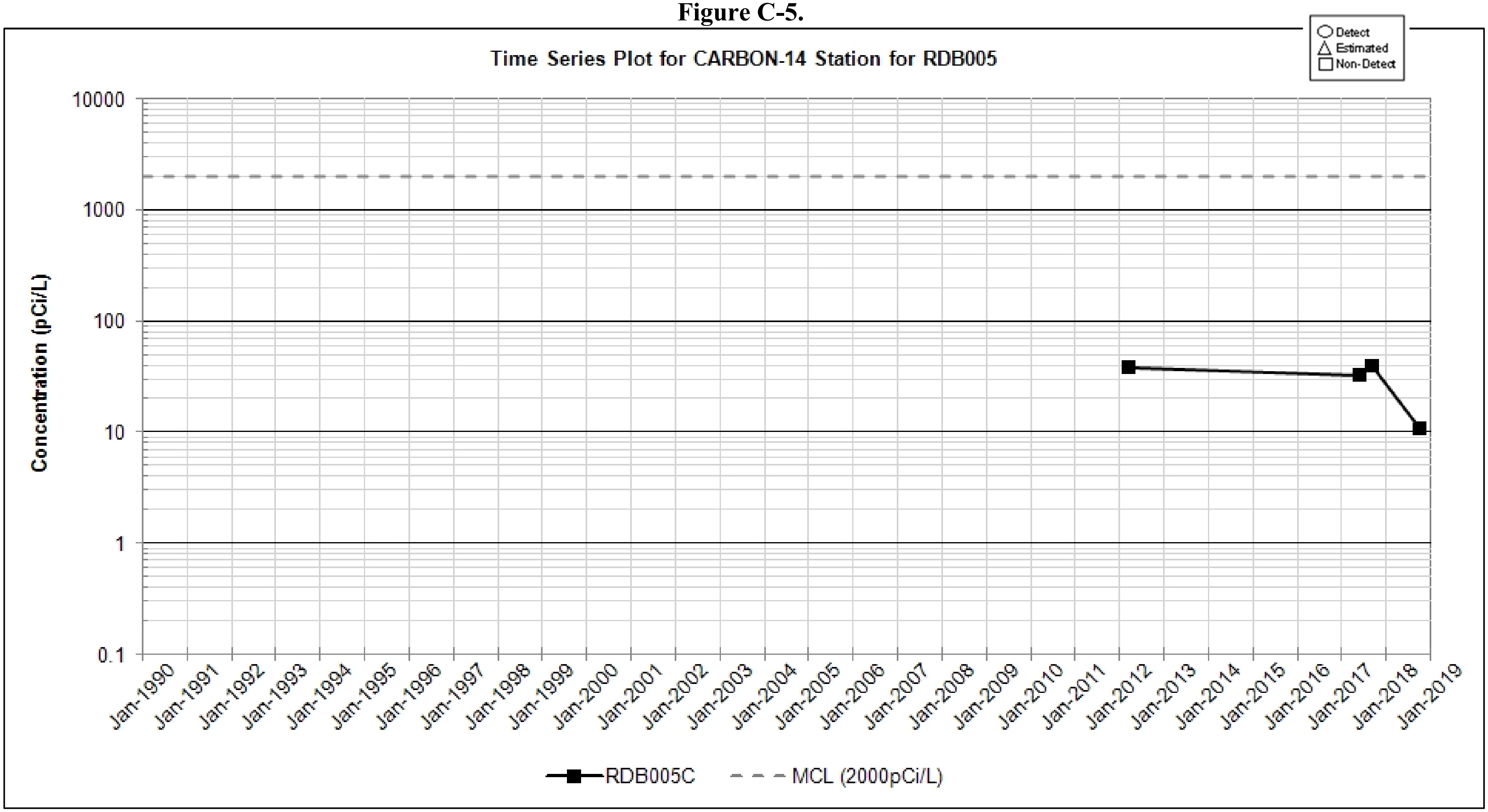

Time Series Plot for CARBON-14 Station for RDB005
Detect
Estimated
Non-Detect
Concentration (pCi/L)
10000
1000
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RDB005C
MCL (2000pCi/L)

Figure C-6.

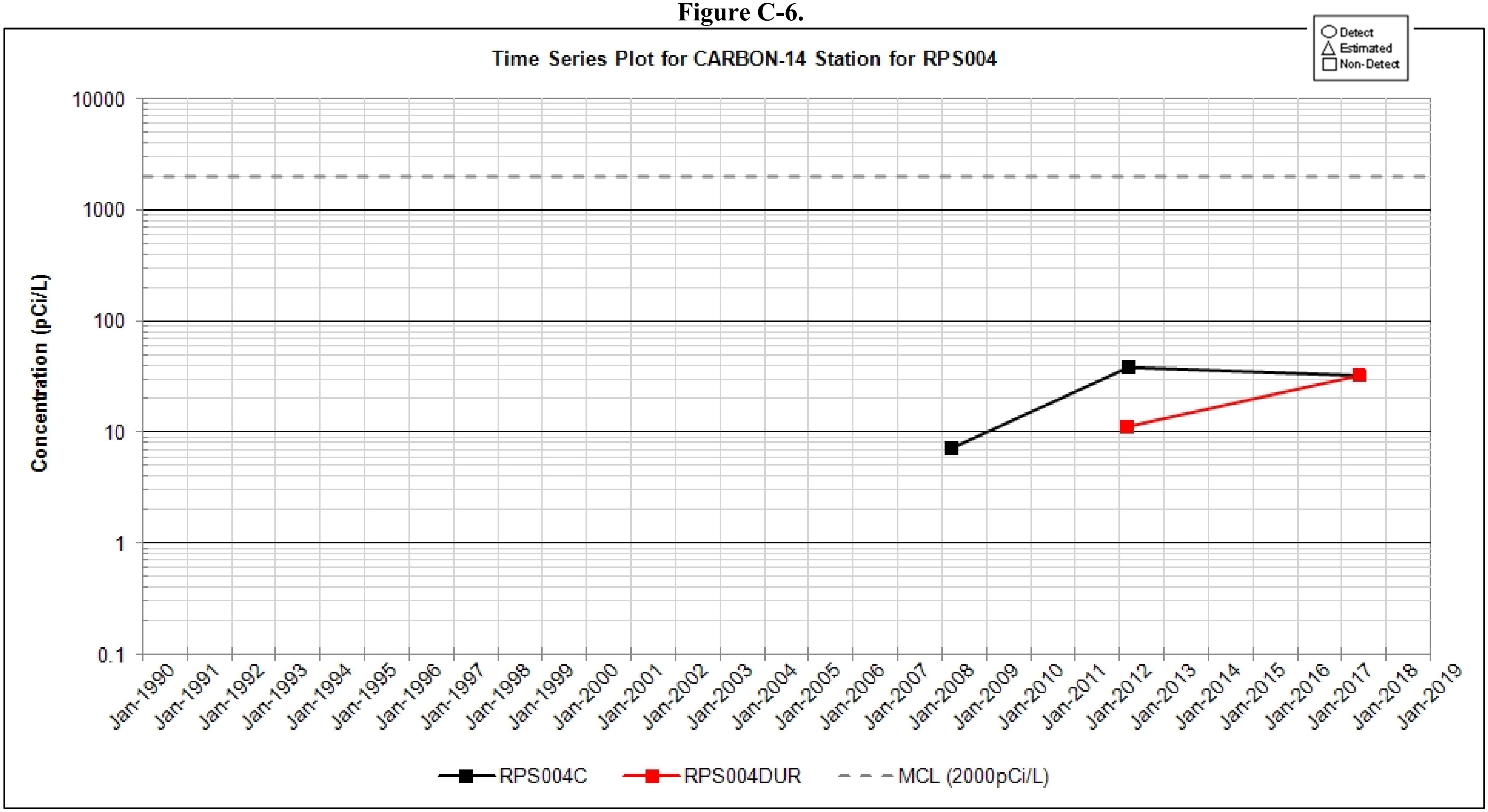

Time Series Plot for CARBON-14 Station for RPS004
Detect
Estimated
Non-Detect
Concentration (pCi/L)
10000
1000
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RPS004C
RPS004DUR
MCL (2000pCi/L)

Figure C-7.

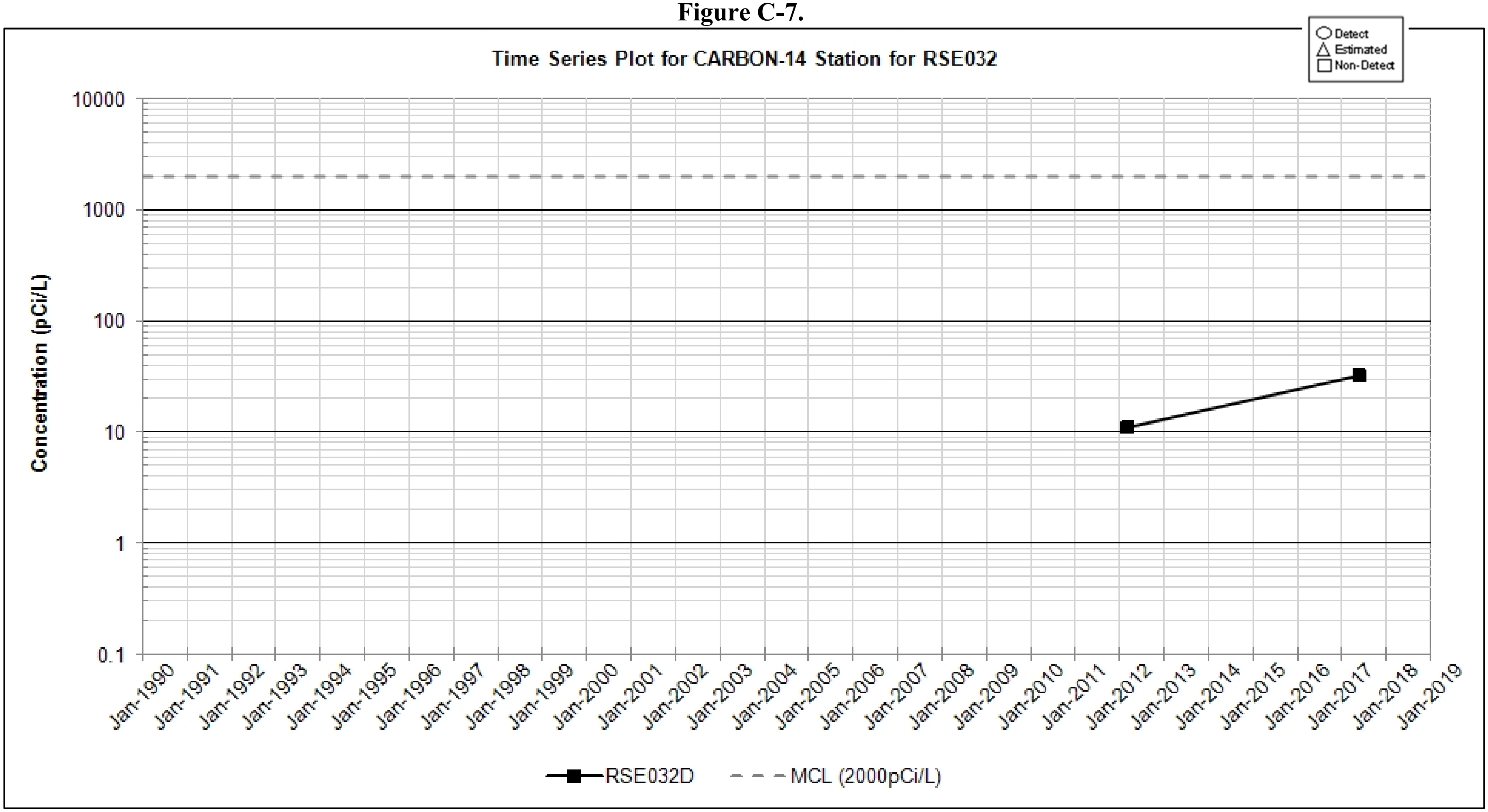

Time Series Plot for CARBON-14 Station for RSE032
Detect
Estimated
Non-Detect
Concentration (pCi/L)
10000
1000
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RSE032D
MCL (2000pCi/L)

Figure C-8.

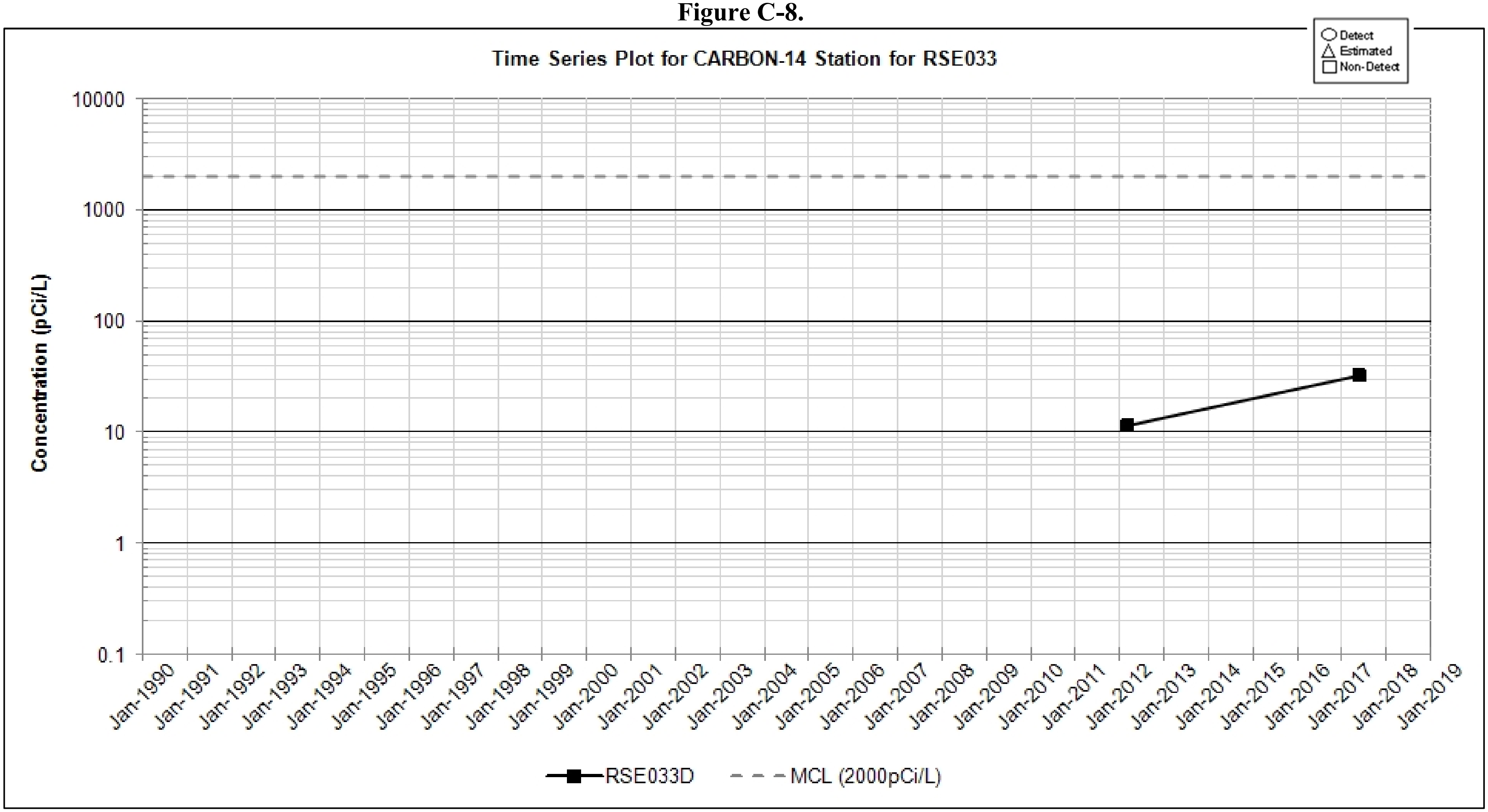
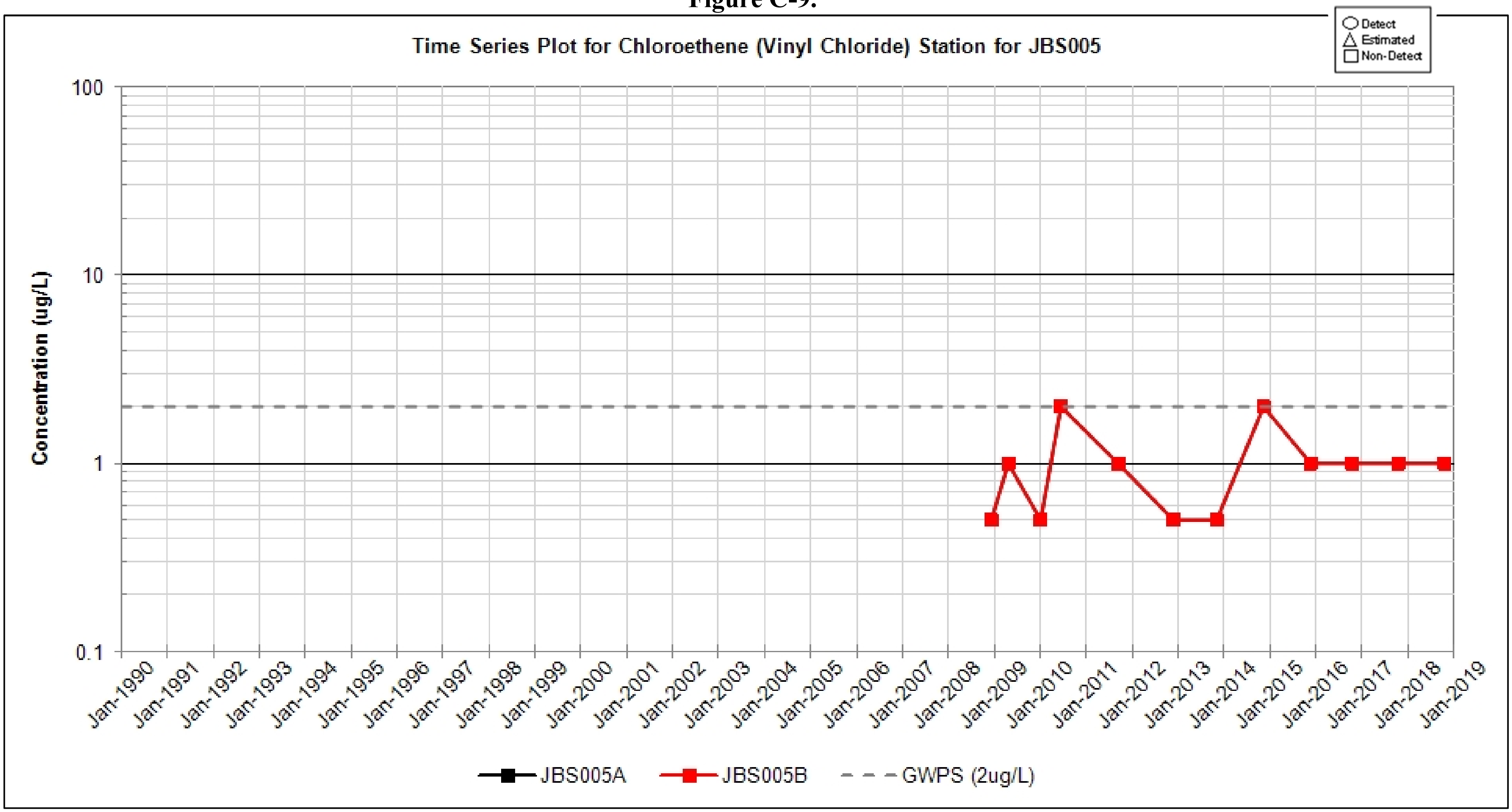

Time Series Plot for CARBON-14 Station for RSE033
Detect
Estimated
Non-Detect
Concentration (pCi/L)
10000
1000
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RSE033D
MCL (2000pCi/L)

Figure C-9.


Time Series Plot for Chloroethene (Vinyl Chloride) Station for JBS005
Detect
Estimated
Non-Detect
Concentration (ug/L)
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
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Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
JBS005A
JBS005B
GWPS (2ug/L)

Figure C-10.

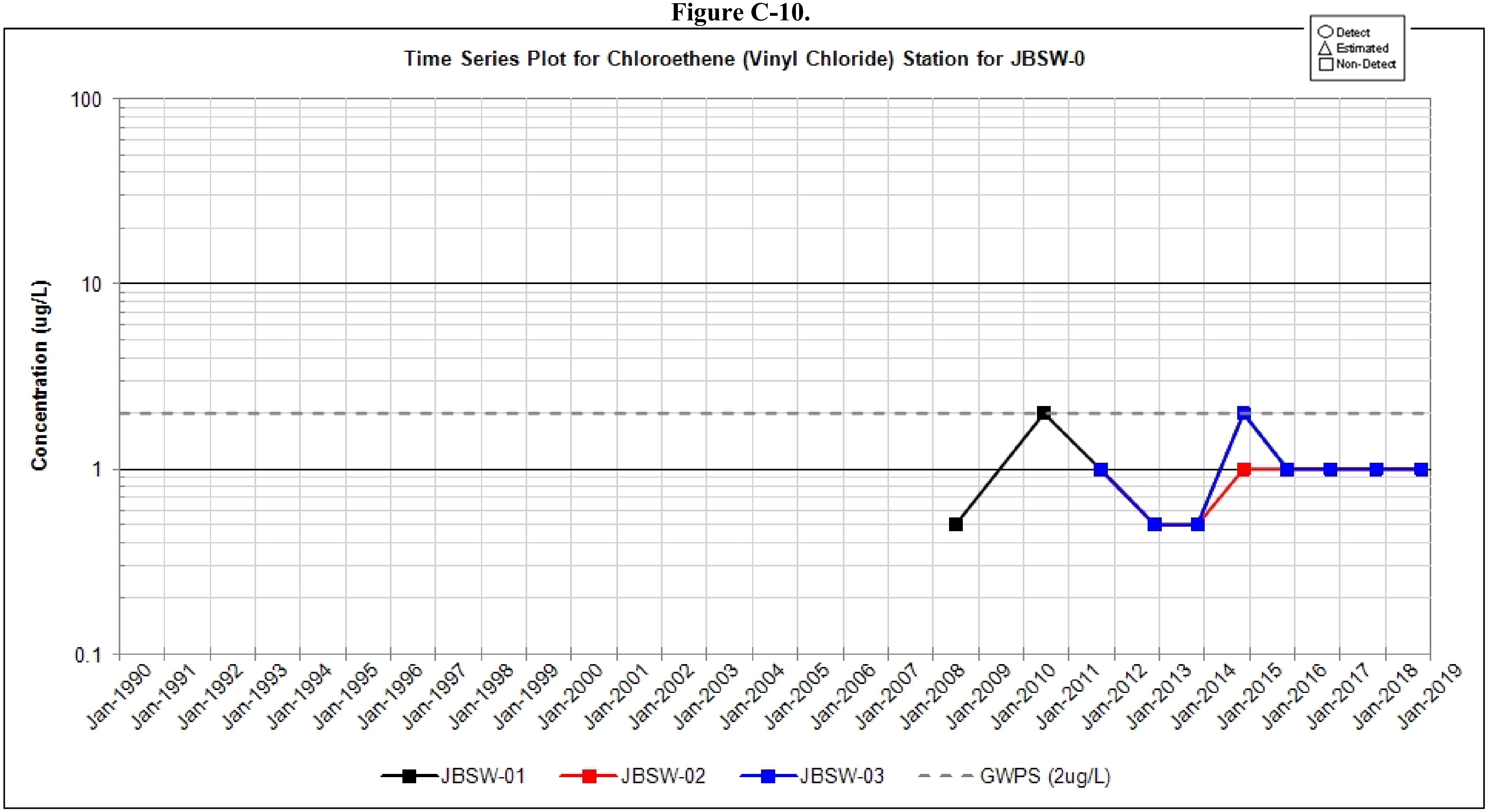
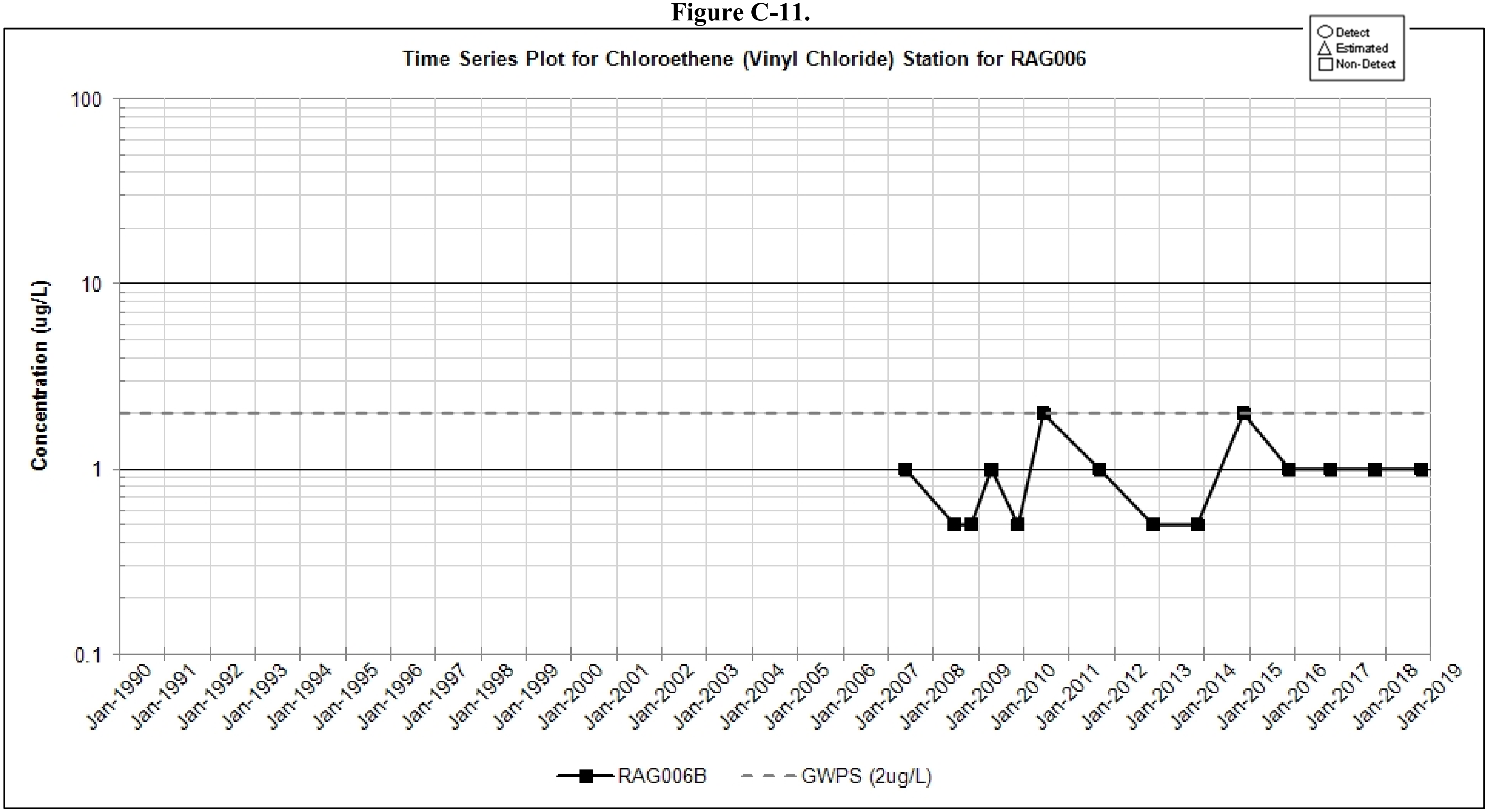

Time Series Plot for Chloroethene (Vinyl Chloride) Station for JBSW-0
Detect
Estimated
Non-Detect
Concentration (ug/L)
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
JBSW-01
JBSW-02
JBSW-03
GWPS (2ug/L)

Figure C-11.


Time Series Plot for Chloroethene (Vinyl Chloride) Station for RAG006
Detect
Estimated
Non-Detect
Concentration (ug/L)
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
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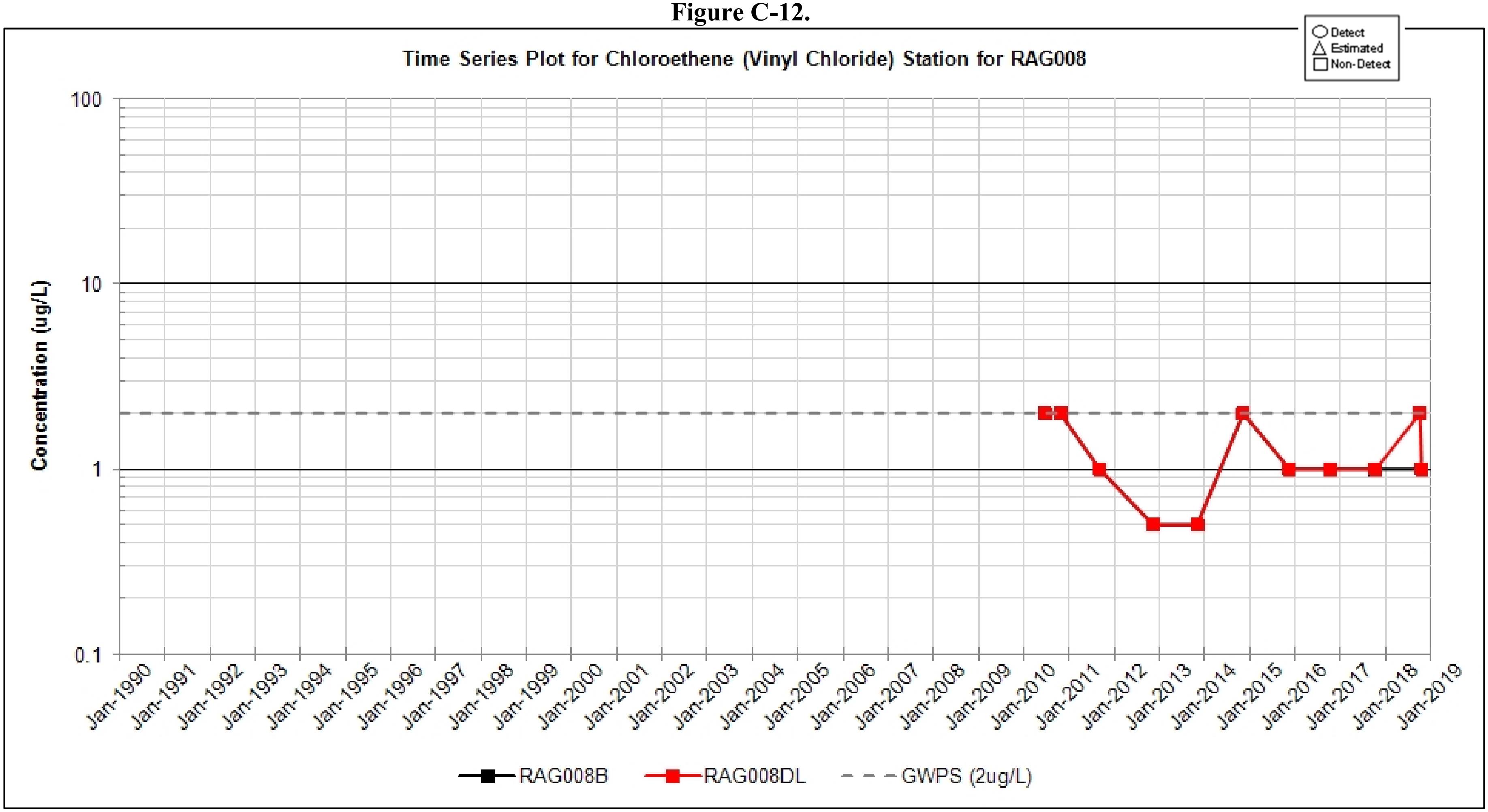
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RAG006B
GWPS (2ug/L)

Figure C-12.


Detect
Estimated
Non-Detect
Time Series Plot for Chloroethene (Vinyl Chloride) Station for RAG008
Concentration (ug/L)
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
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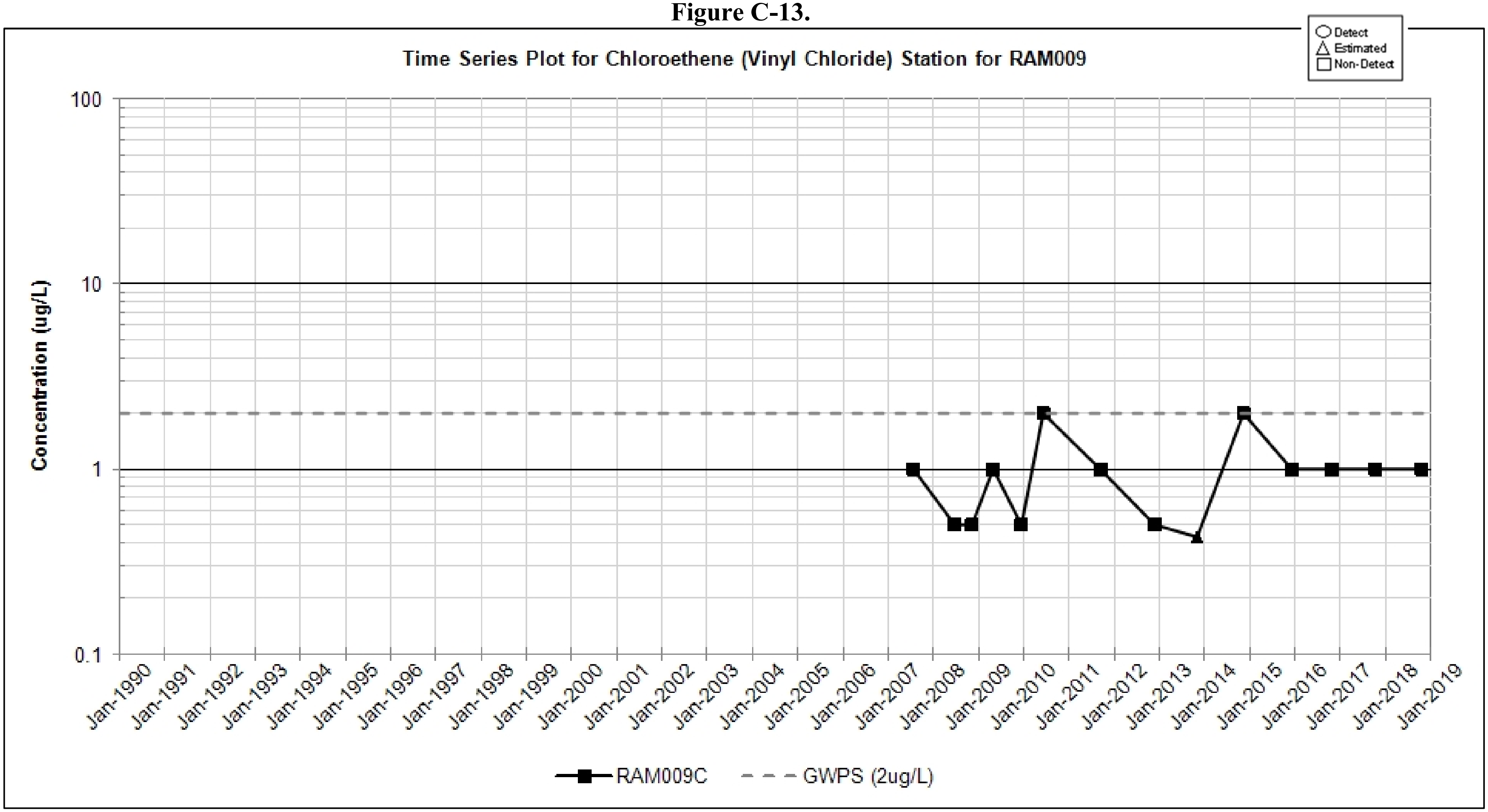
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RAG008B
RAG008DL
GWPS (2ug/L)

Figure C-13.


Time Series Plot for Chloroethene (Vinyl Chloride) Station for RAM009
Detect
Estimated
Non-Detect
Concentration (ug/L)
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
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Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RAM009C
GWPS (2ug/L)

Figure C-14.

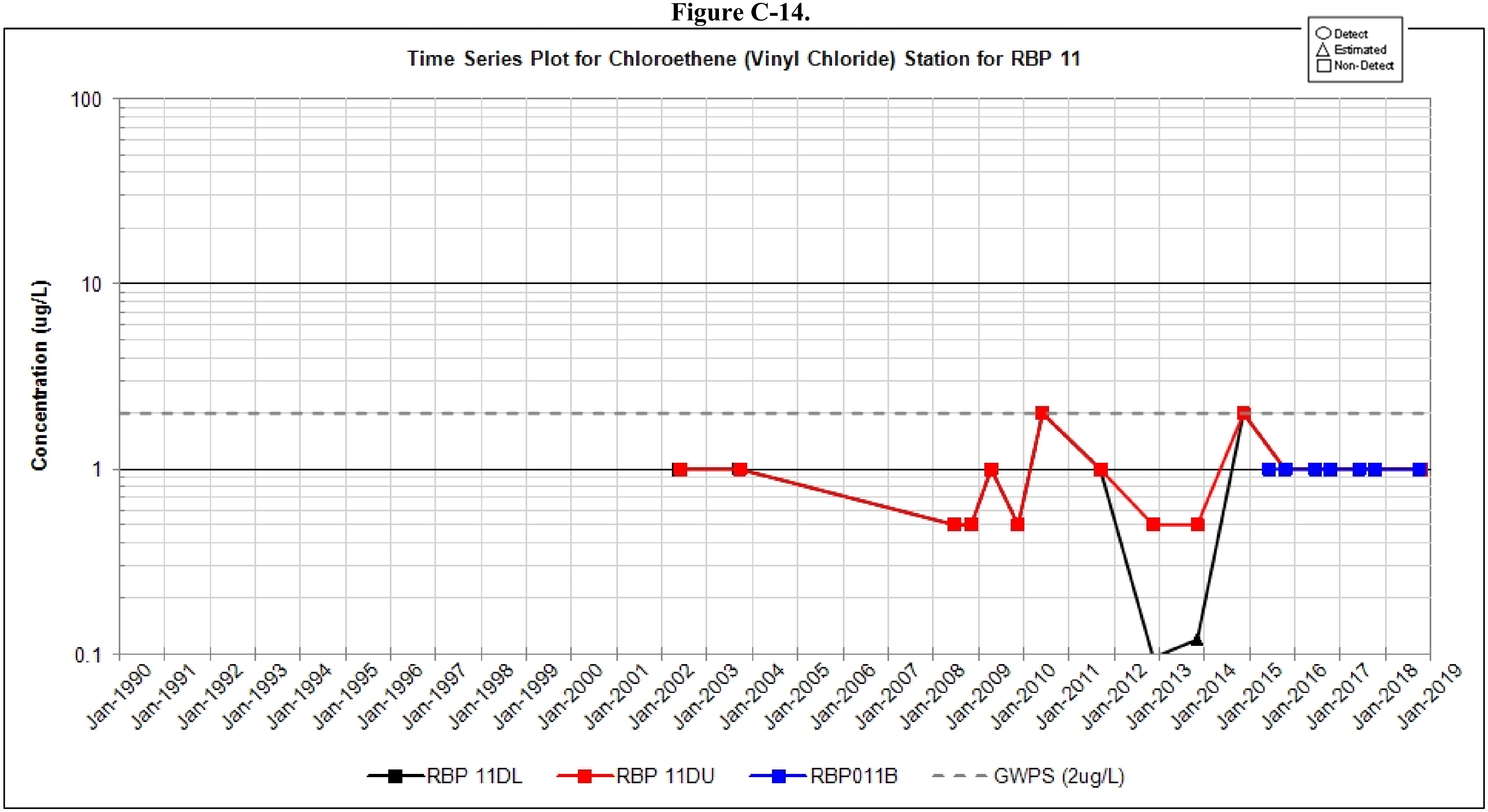

Detect
Estimated
Non-Detect
Time Series Plot for Chloroethene (Vinyl Chloride) Station for RBP 11
Concentration (ug/L)
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RBP 11DL
RBP 11DU
RBP011B
GWPS (2ug/L)

Figure C-15.

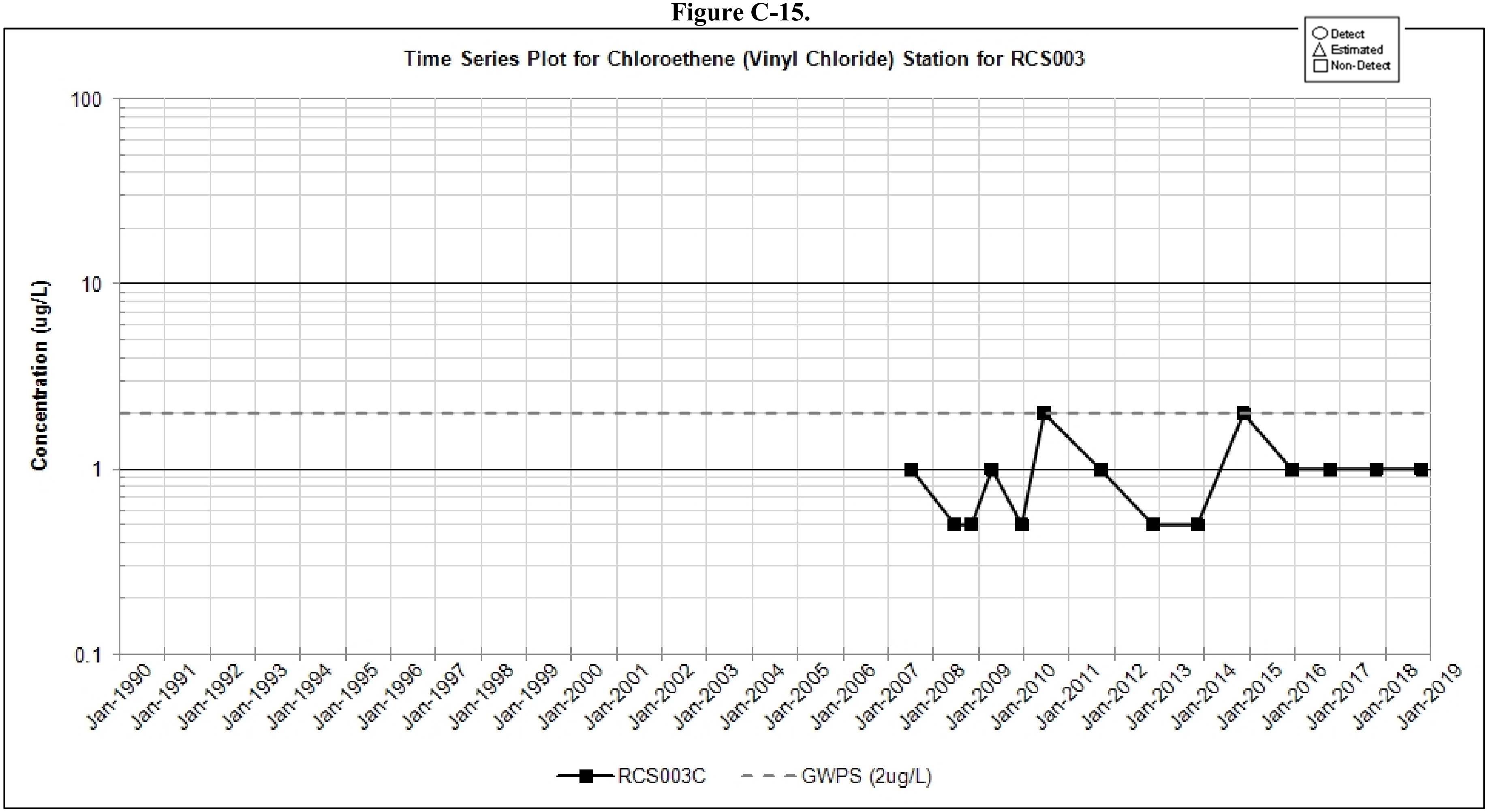
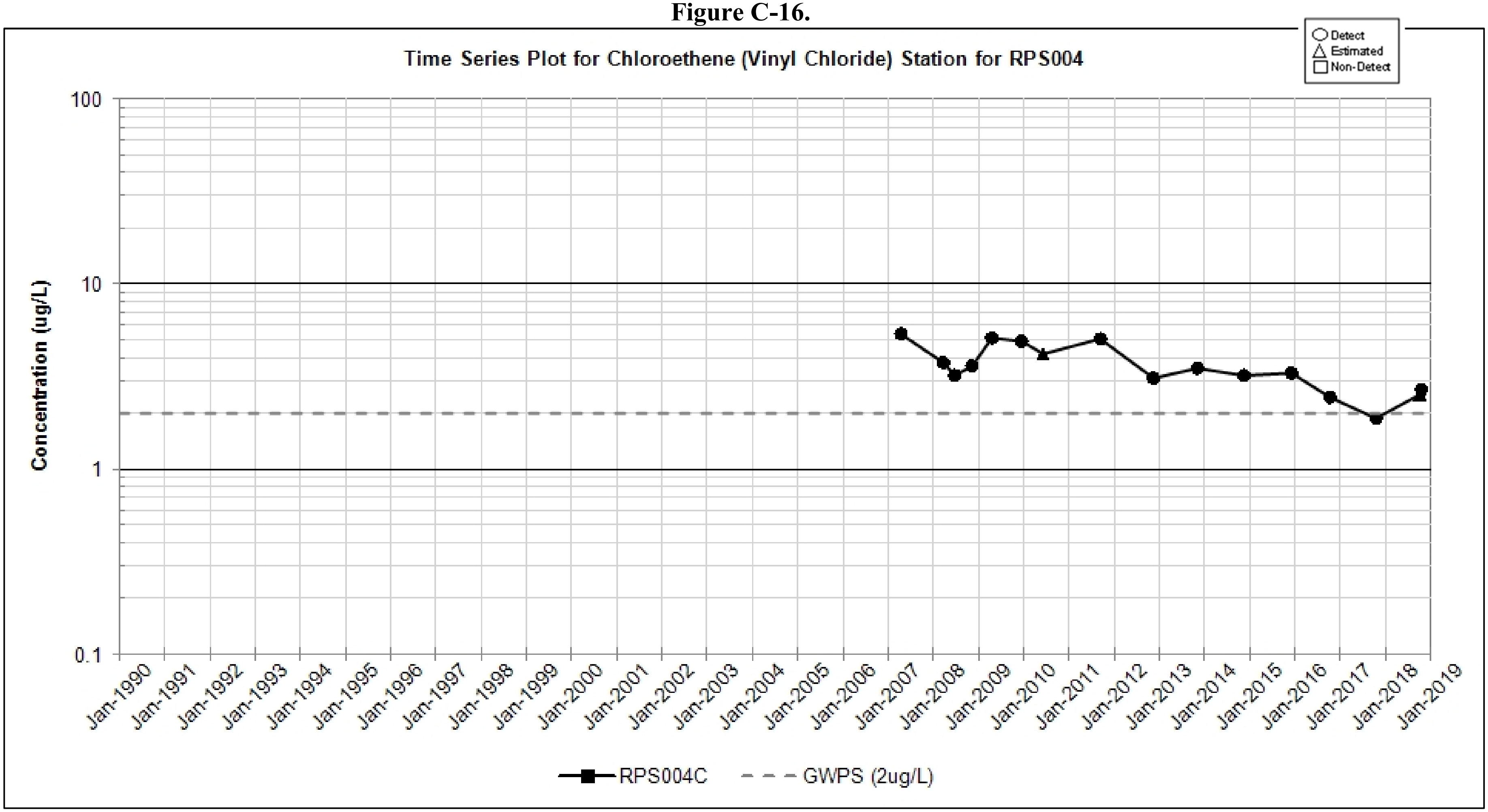

Time Series Plot for Chloroethene (Vinyl Chloride) Station for RCS003
Detect
Estimated
Non-Detect
Concentration (ug/L)
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RCS003C
GWPS (2ug/L)

Figure C-16.


Time Series Plot for Chloroethene (Vinyl Chloride) Station for RPS004
Detect
Estimated
Non-Detect
Concentration (ug/L)
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
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Jan-2016
Jan-2017
Jan-2018
Jan-2019
RPS004C
GWPS (2ug/L)

Figure C-17.

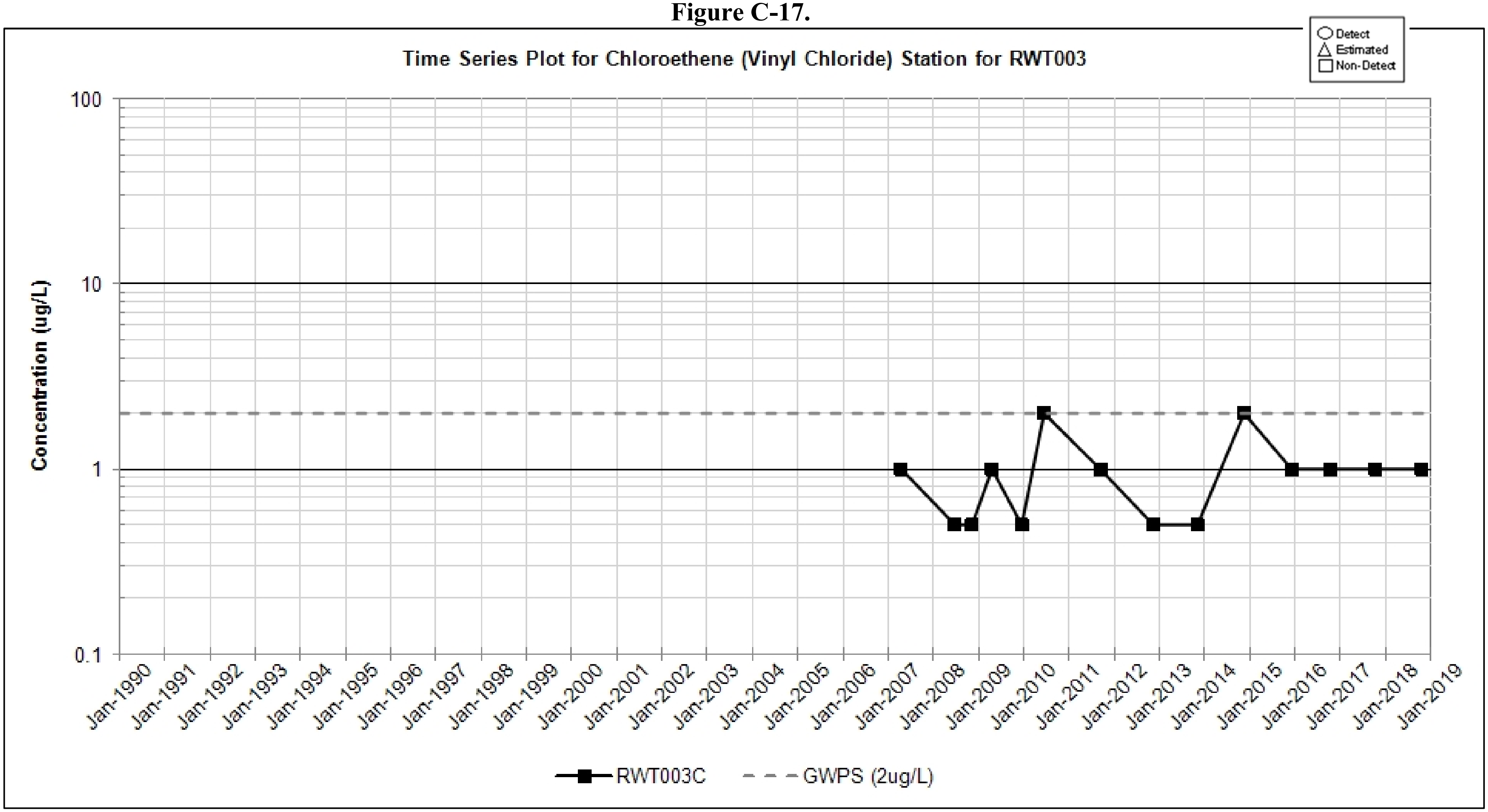

Time Series Plot for Chloroethene (Vinyl Chloride) Station for RWT003
Detect
Estimated
Non-Detect
Concentration (ug/L)
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RWT003C
GWPS (2ug/L)

Figure C-18.

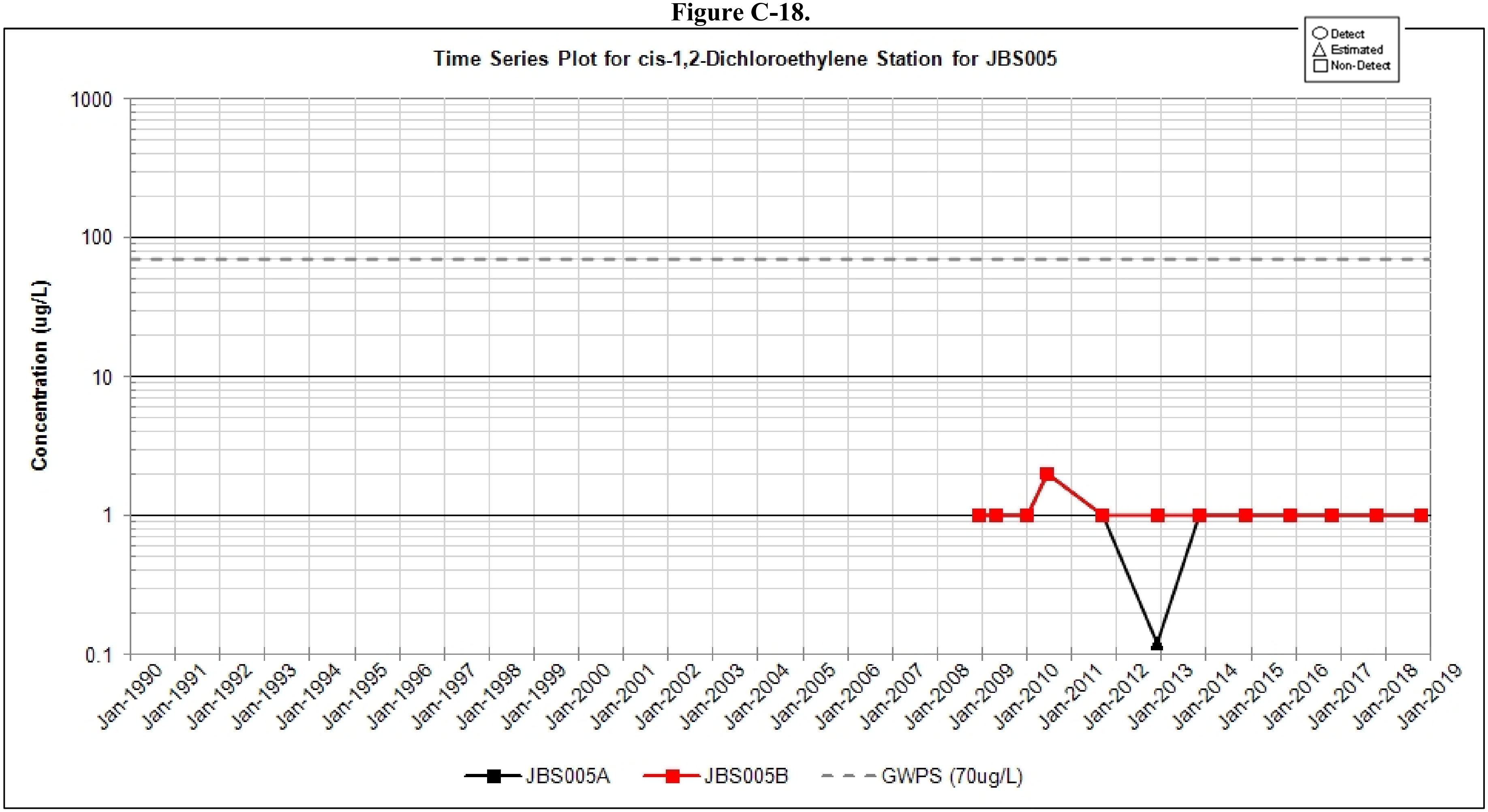

Detect
Estimated
Non-Detect
Time Series Plot for cis-1,2-Dichloroethylene Station for JBS005
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
JBS005A
JBS005B
GWPS (70ug/L)

Figure C-19.

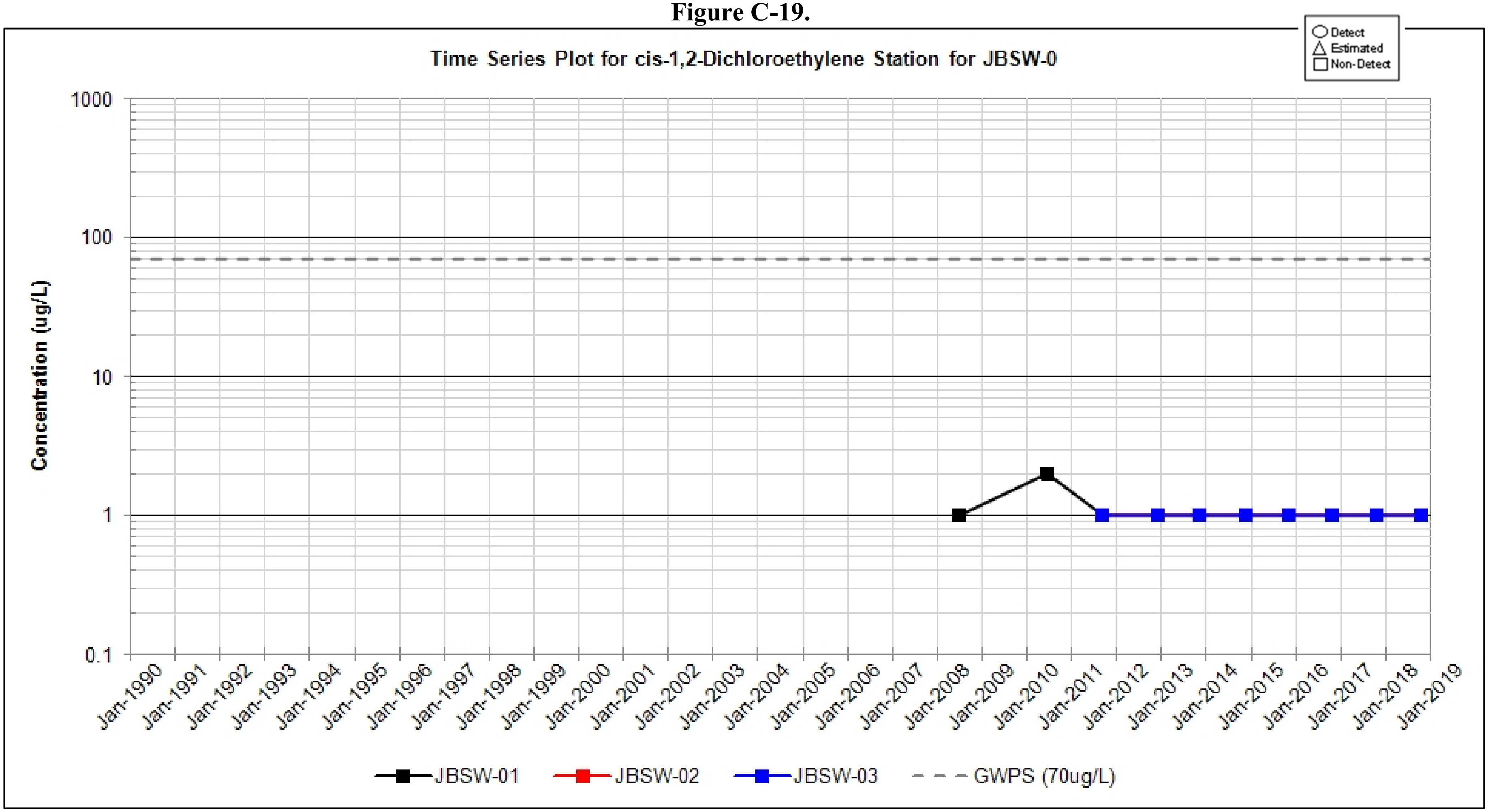

Time Series Plot for cis-1,2-Dichloroethylene Station for JBSW-0
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
JBSW-01
JBSW-02
JBSW-03
GWPS (70ug/L)

Figure C-20.

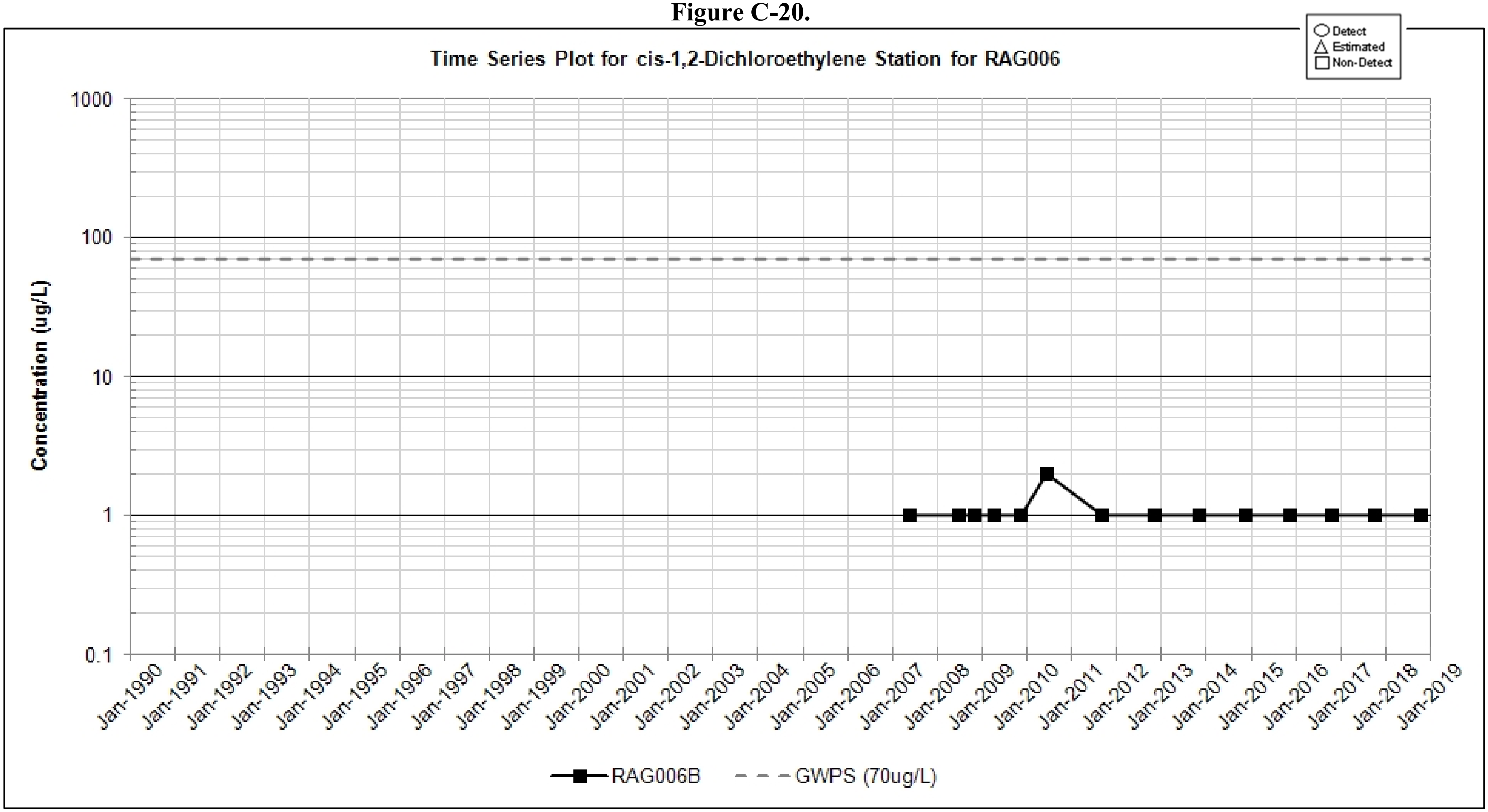

Time Series Plot for cis-1,2-Dichloroethylene Station for RAG006
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RAG006B
GWPS (70ug/L)

Figure C-21.

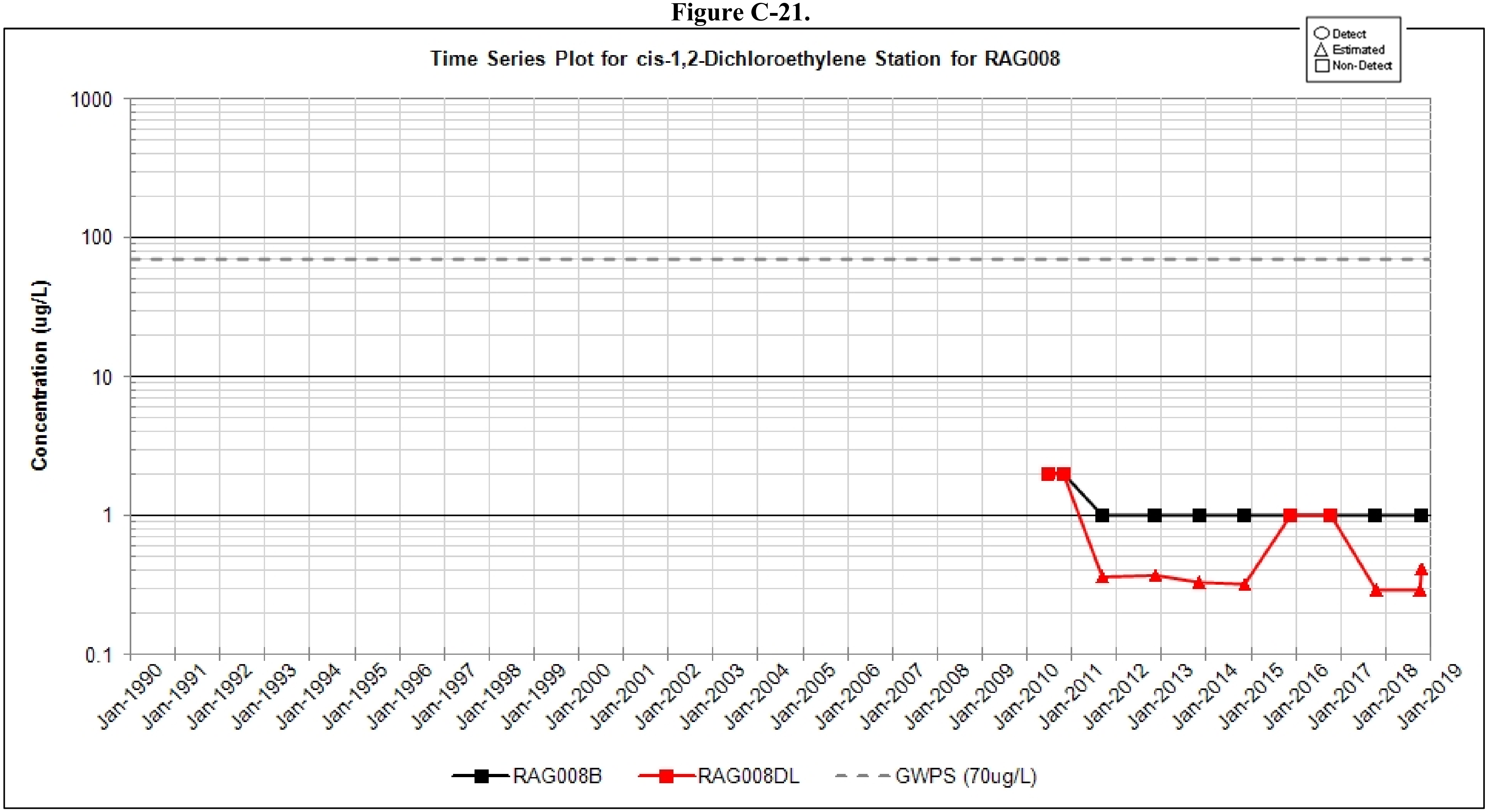

Time Series Plot for cis-1,2-Dichloroethylene Station for RAG008
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RAG008B
RAG008DL
GWPS (70ug/L)

Figure C-22.

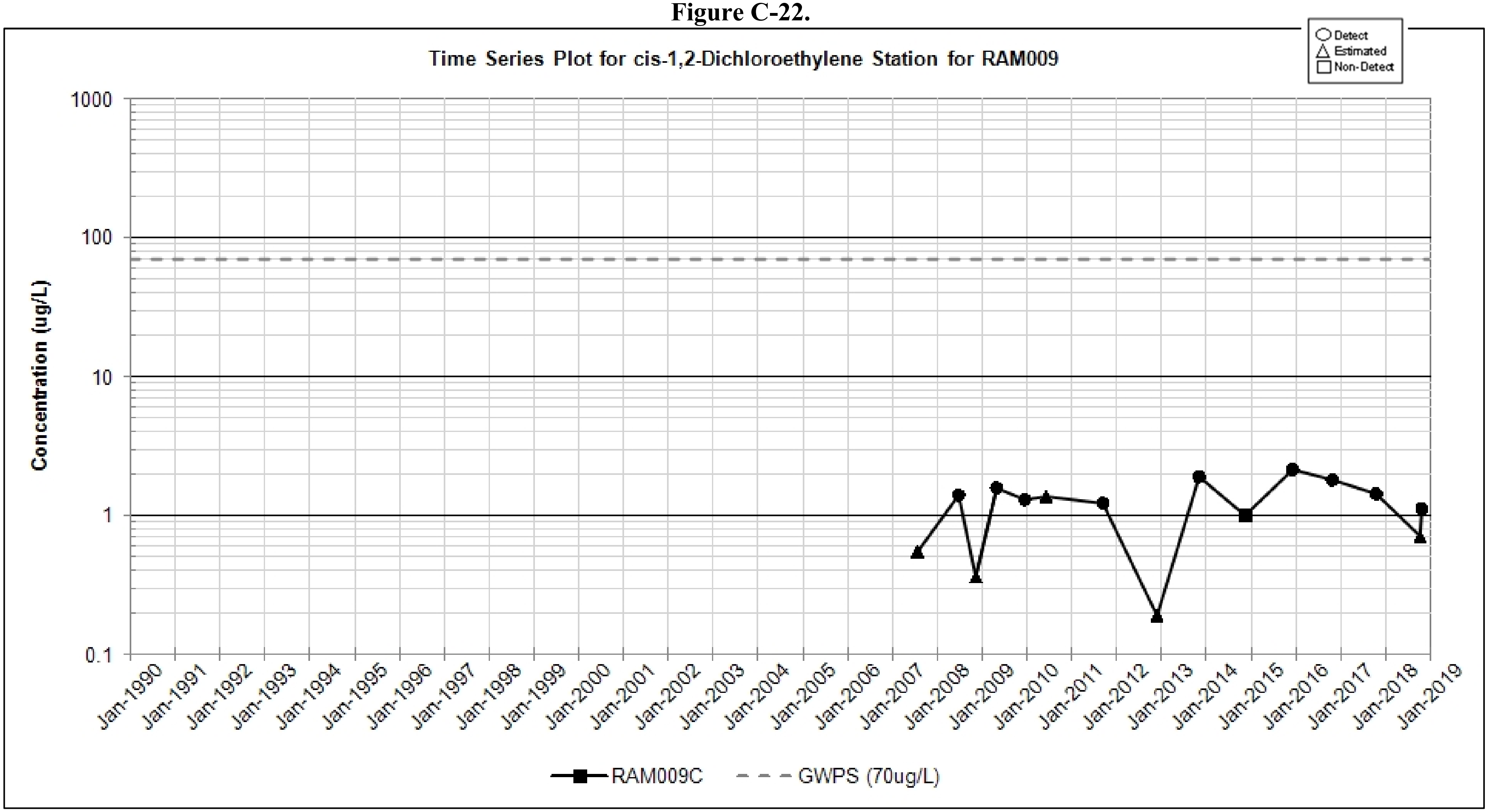

Time Series Plot for cis-1,2-Dichloroethylene Station for RAM009
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RAM009C
GWPS (70ug/L)

Figure C-23.

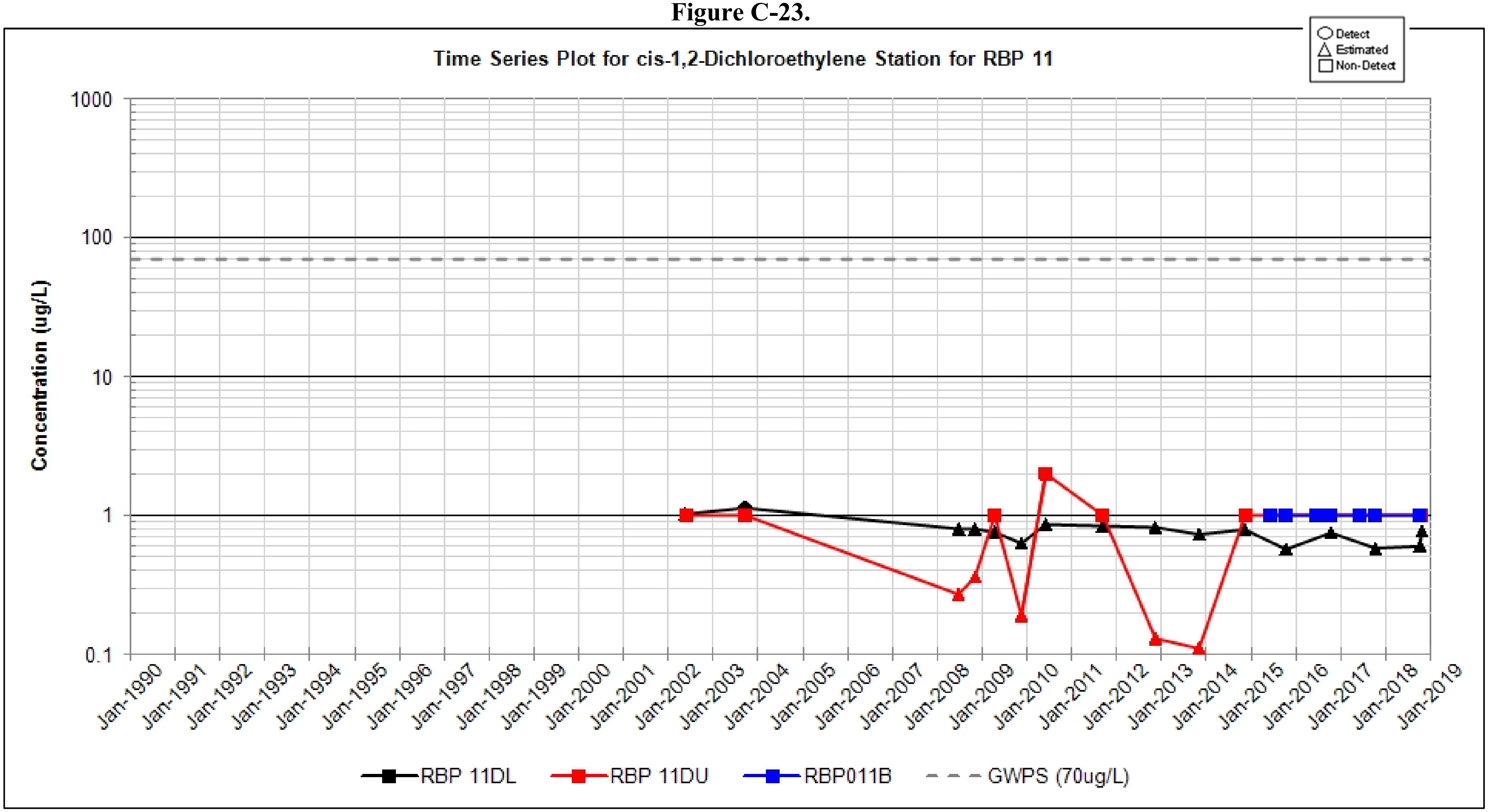
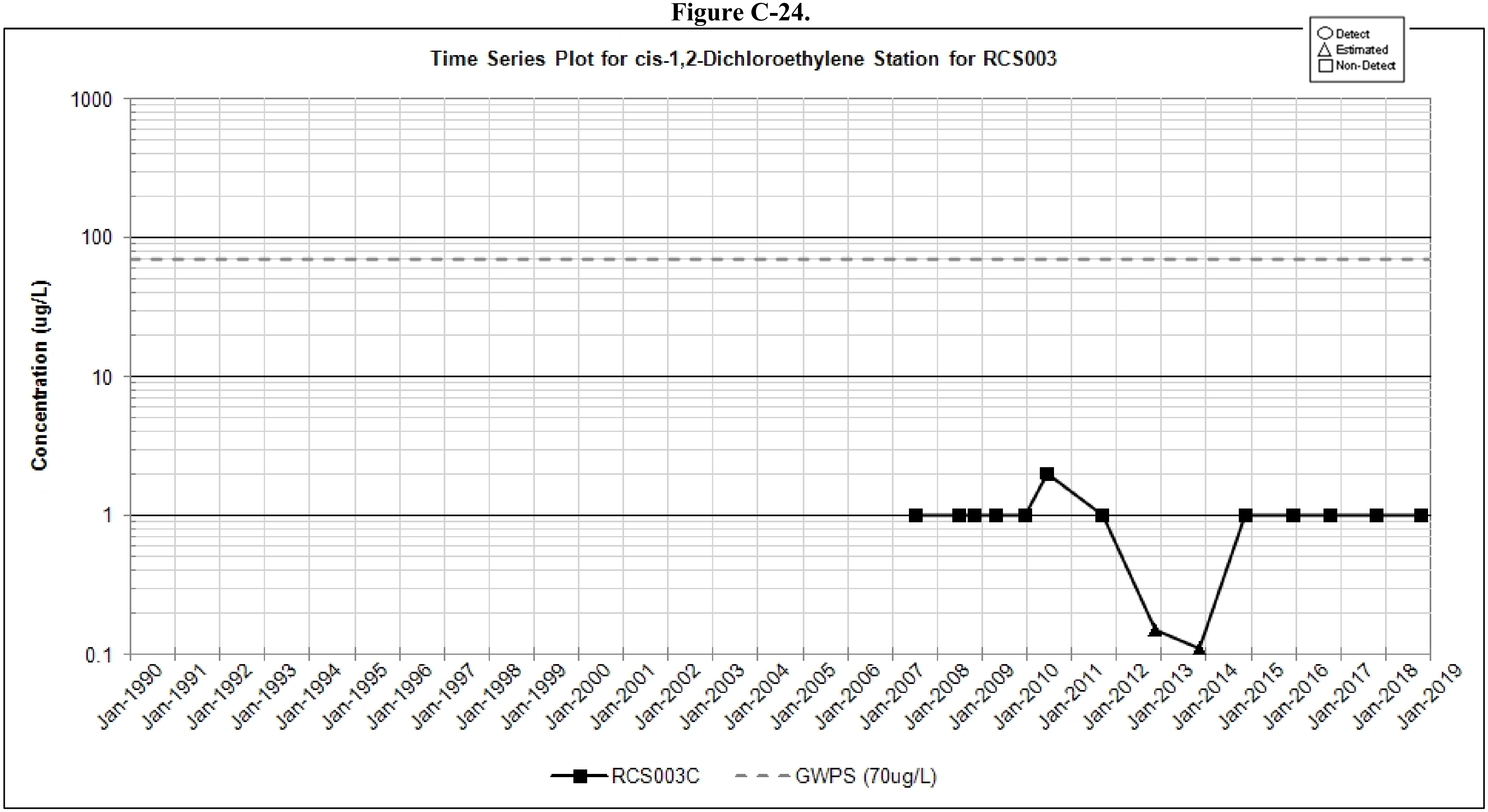

Time Series Plot for cis-1,2-Dichloroethylene Station for RBP 11
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RBP 11DL
RBP 11DU
RBP011B
GWPS (70ug/L)

Figure C-24.


Time Series Plot for cis-1,2-Dichloroethylene Station for RCS003
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
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Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RCS003C
GWPS (70ug/L)

Figure C-25.

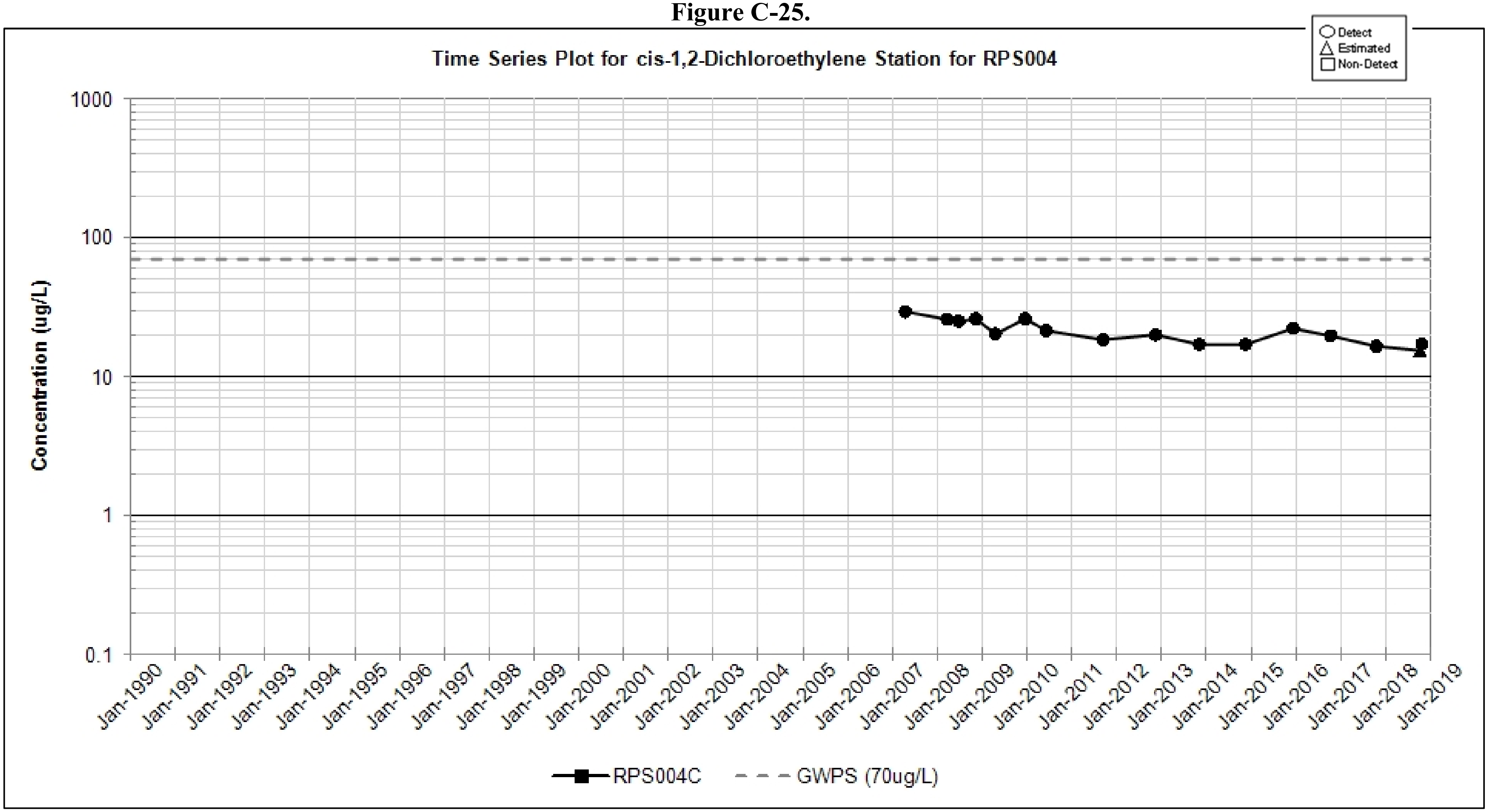

Time Series Plot for cis-1,2-Dichloroethylene Station for RPS004
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RPS004C
GWPS (70ug/L)

Figure C-26.

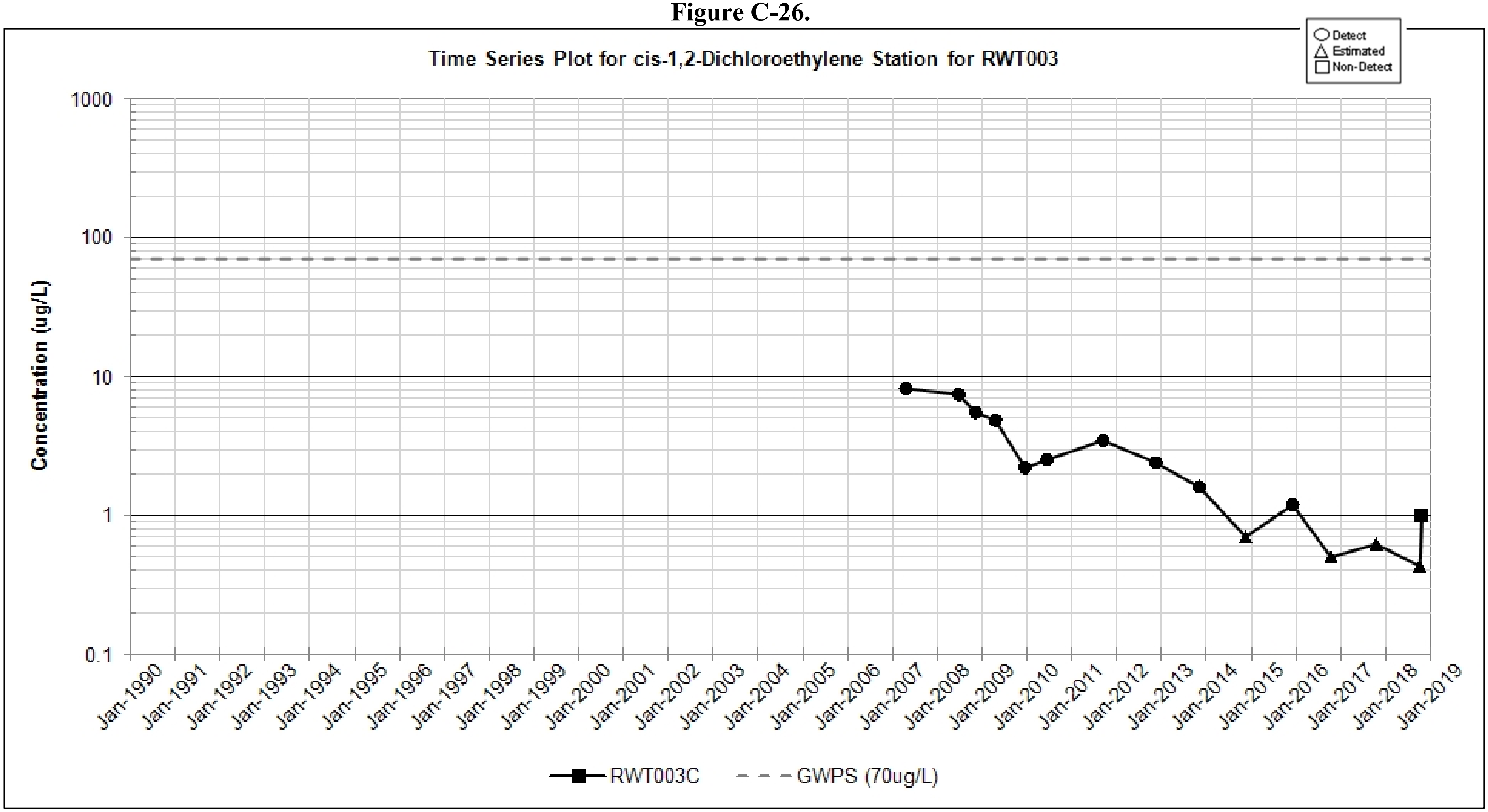

Time Series Plot for cis-1,2-Dichloroethylene Station for RWT003
Detect
Estimated
Non-Detect
Concentration (ug/L)
1000
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RWT003C
GWPS (70ug/L)

Figure C-27.

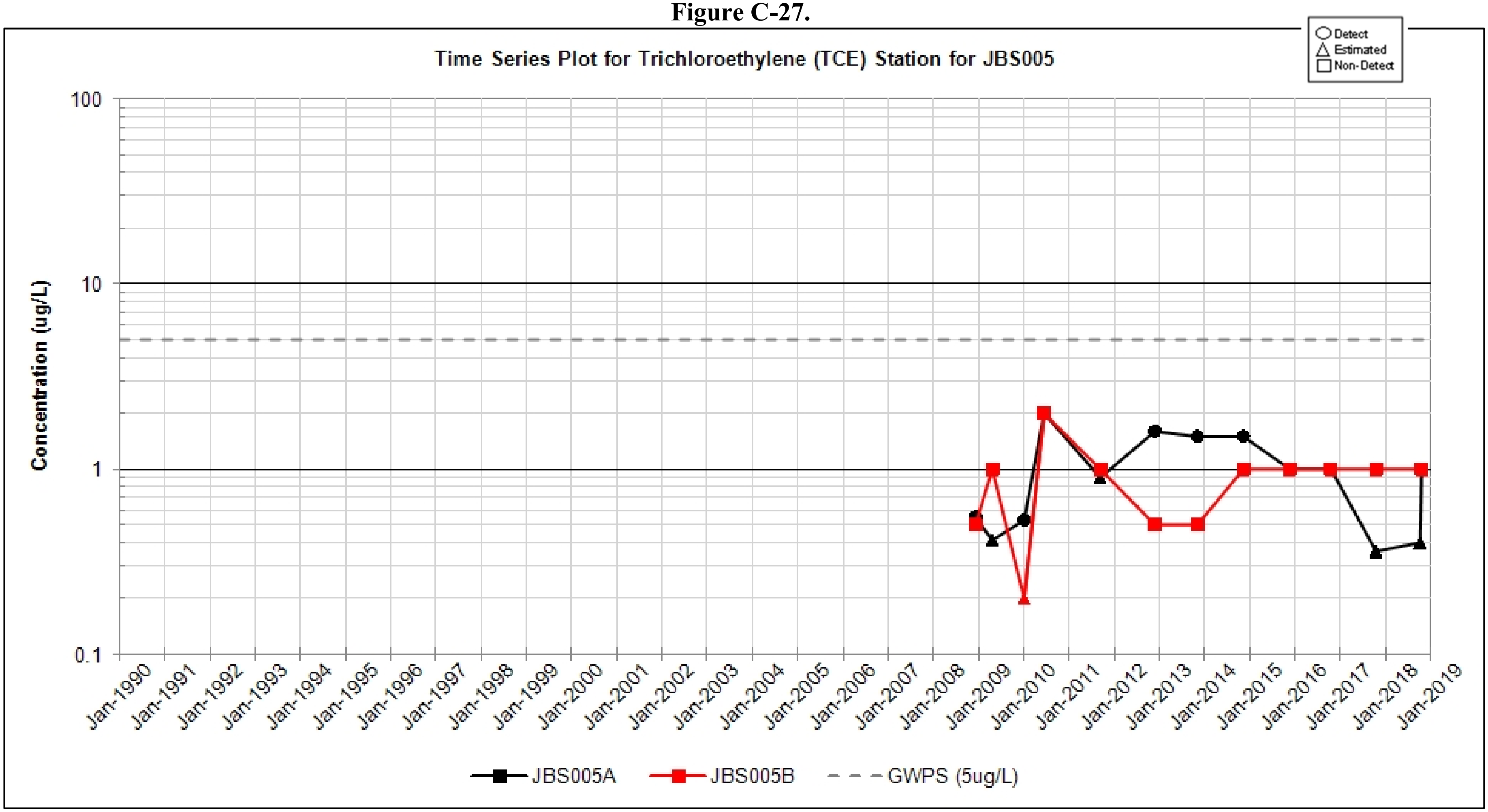

Time Series Plot for Trichloroethylene (TCE) Station for JBS005
Detect
Estimated
Non-Detect
Concentration (ug/L)
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
JBS005A
JBS005B
GWPS (5ug/L)

Figure C-28.

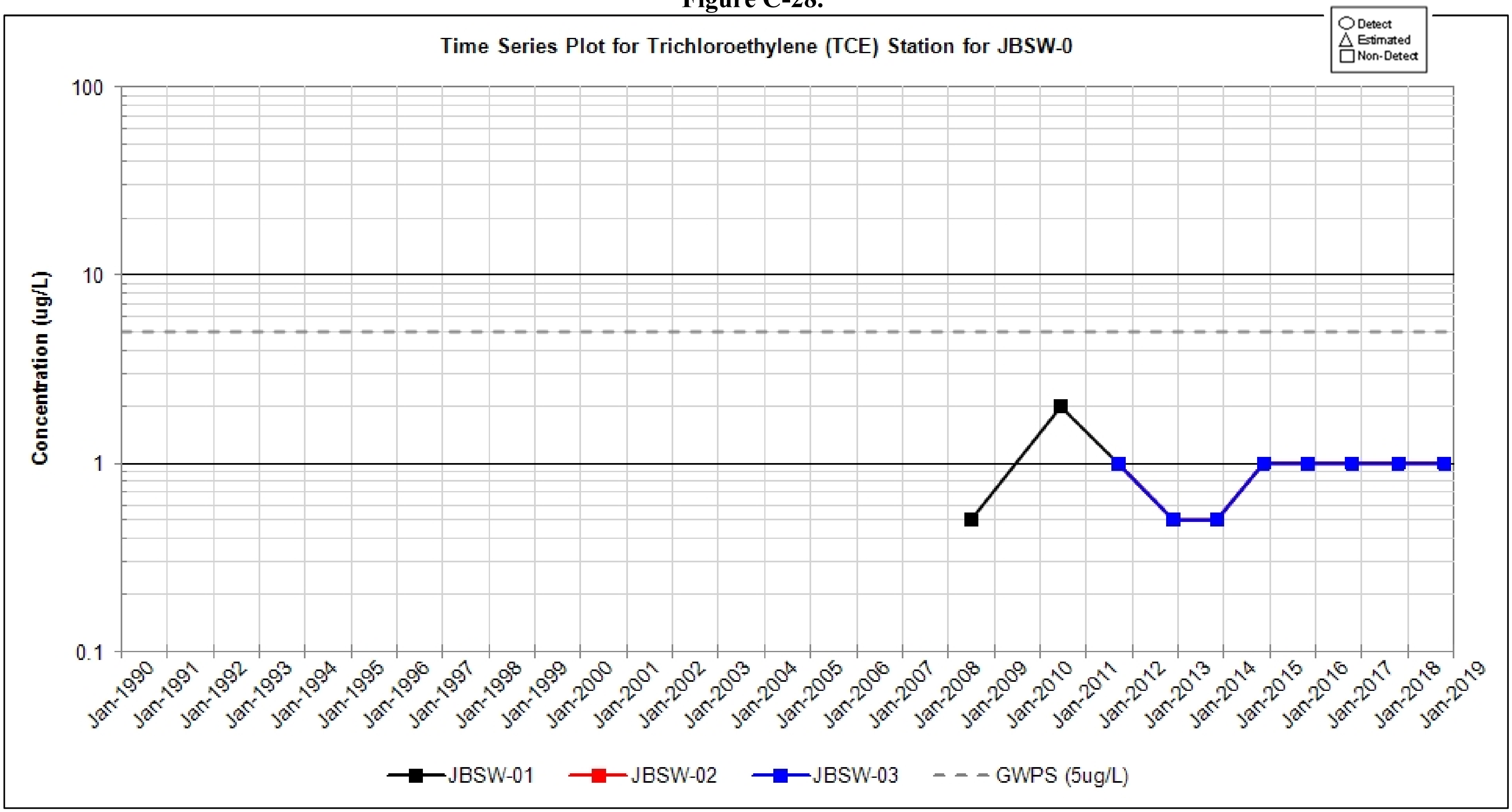

Time Series Plot for Trichloroethylene (TCE) Station for JBSW-0
Detect
Estimated
Non-Detect
Concentration (ug/L)
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
JBSW-01
JBSW-02
JBSW-03
GWPS (5ug/L)

Figure C-29.

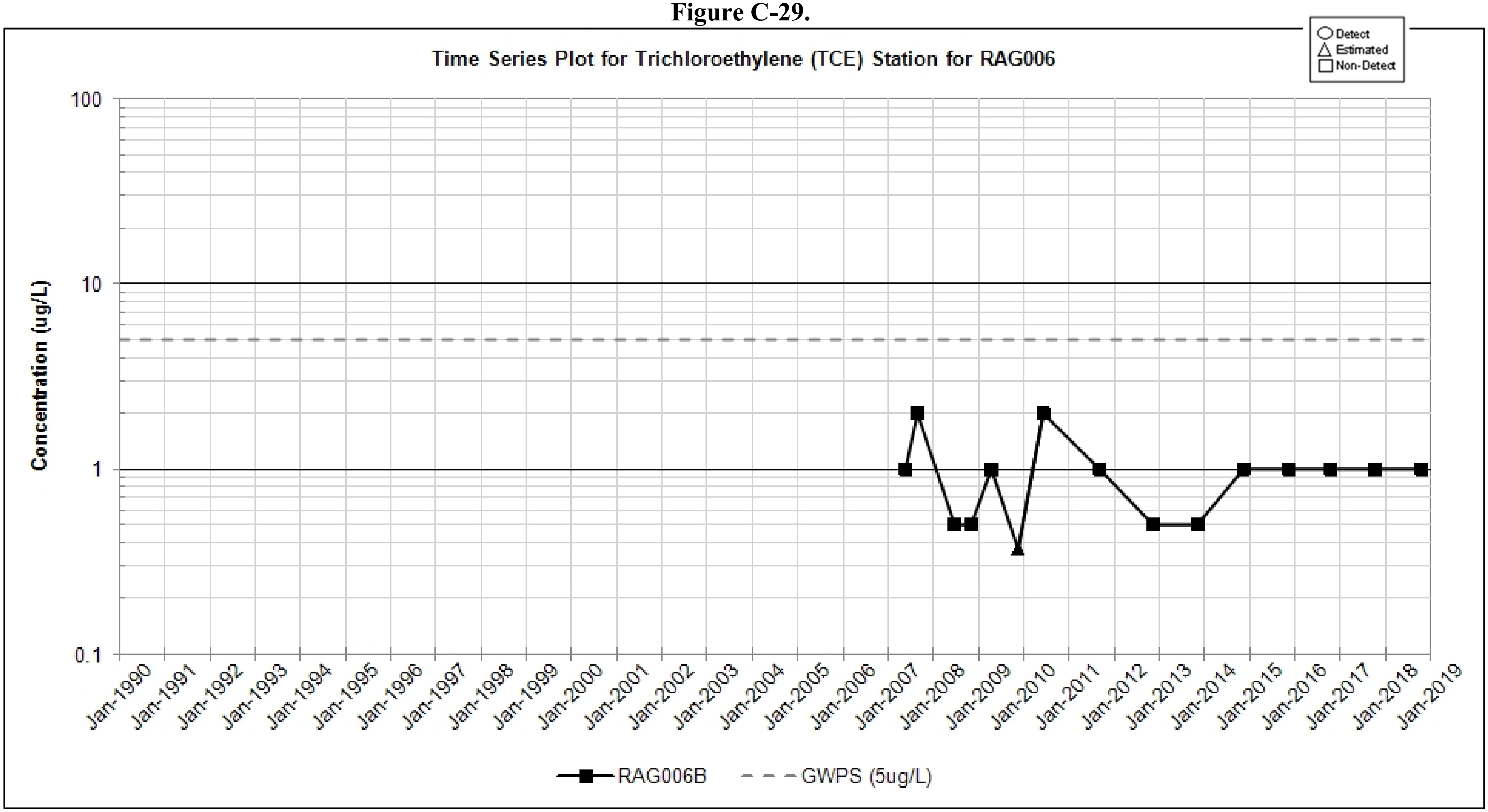

Time Series Plot for Trichloroethylene (TCE) Station for RAG006
Detect
Estimated
Non-Detect
Concentration (ug/L)
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RAG006B
GWPS (5ug/L)

Figure C-30.

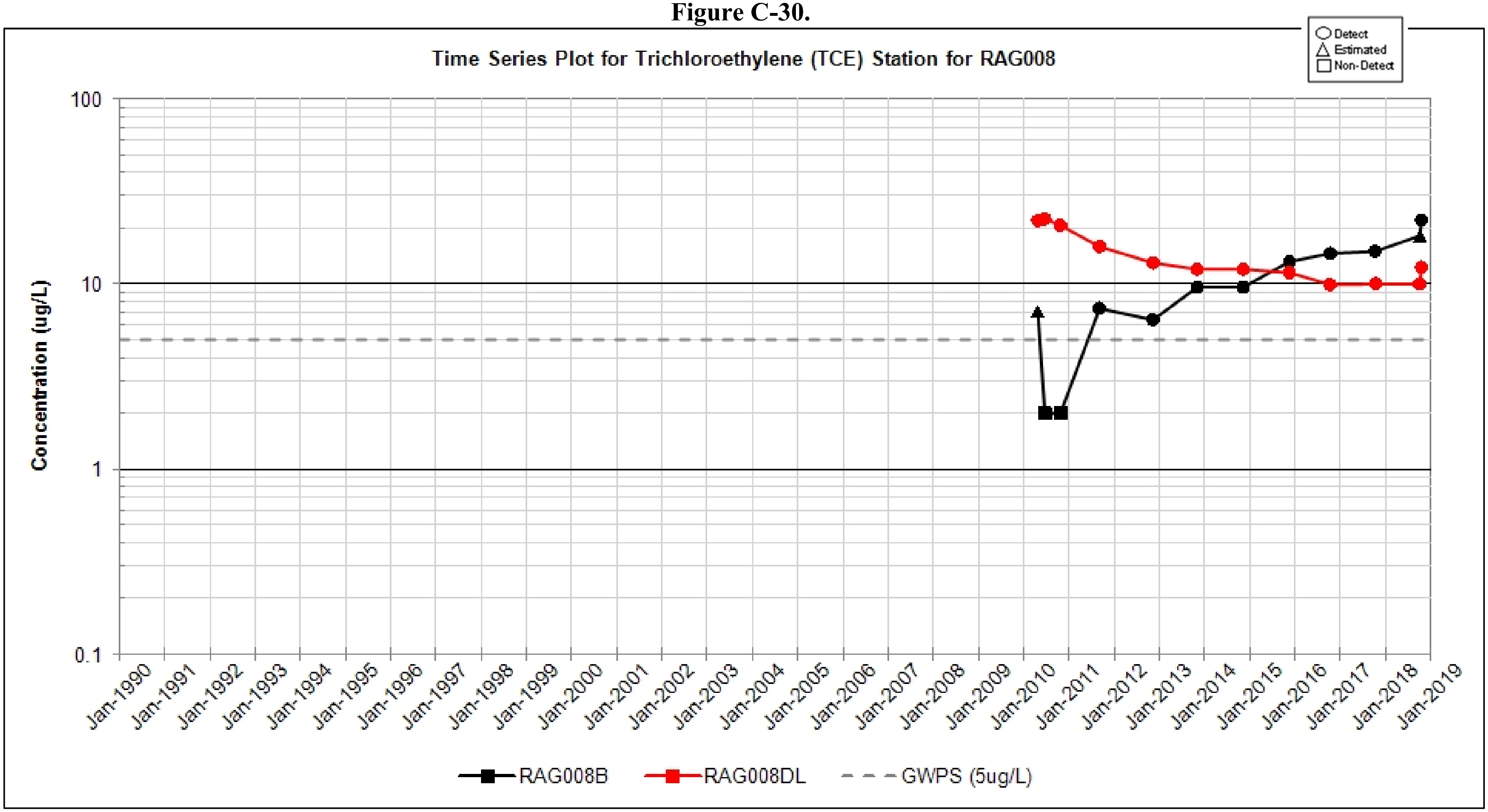

Time Series Plot for Trichloroethylene (TCE) Station for RAG008
Detect
Estimated
Non-Detect
Concentration (ug/L)
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RAG008B
RAG008DL
GWPS (5ug/L)

Figure C-31.

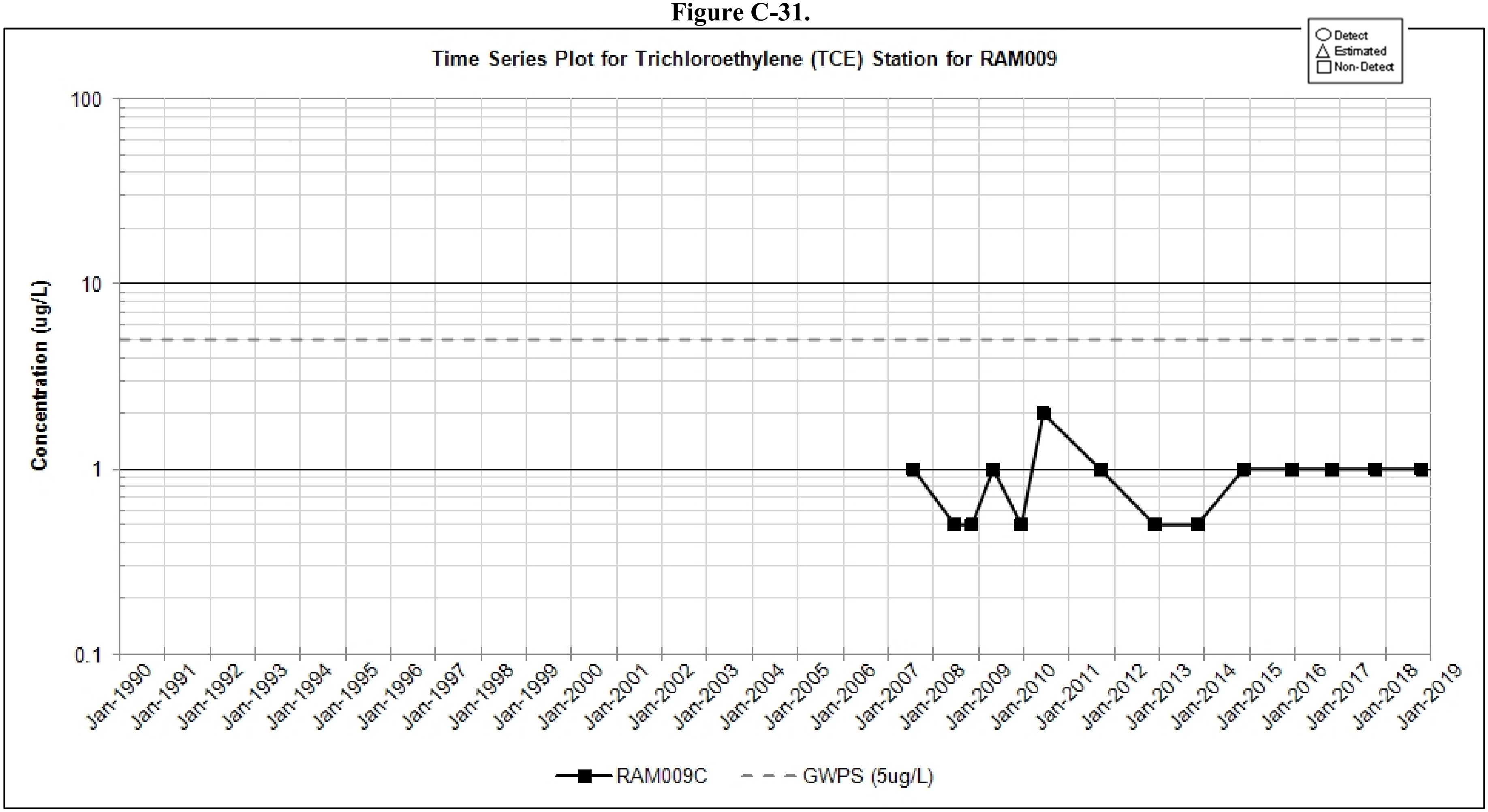
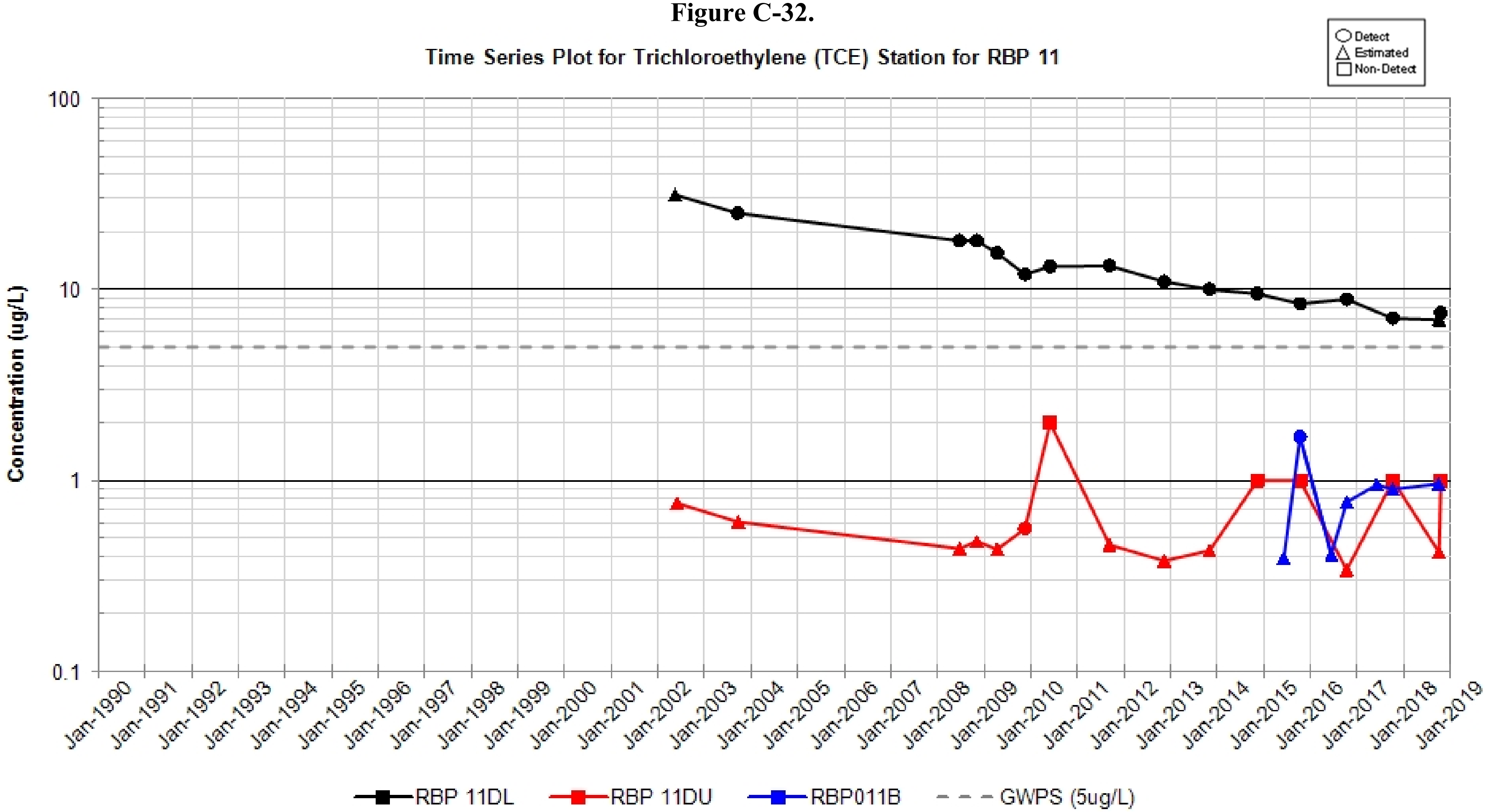

Time Series Plot for Trichloroethylene (TCE) Station for RAM009
Detect
Estimated
Non-Detect
Concentration (ug/L)
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RAM009C
GWPS (5ug/L)

Figure C-32.


Time Series Plot for Trichloroethylene (TCE) Station for RBP 11
Detect
Estimated
Non-Detect
Concentration (ug/L)
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
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Jan-2007
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Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RBP 11DL
RBP 11DU
RBP011B
GWPS (5ug/L)

Figure C-33.

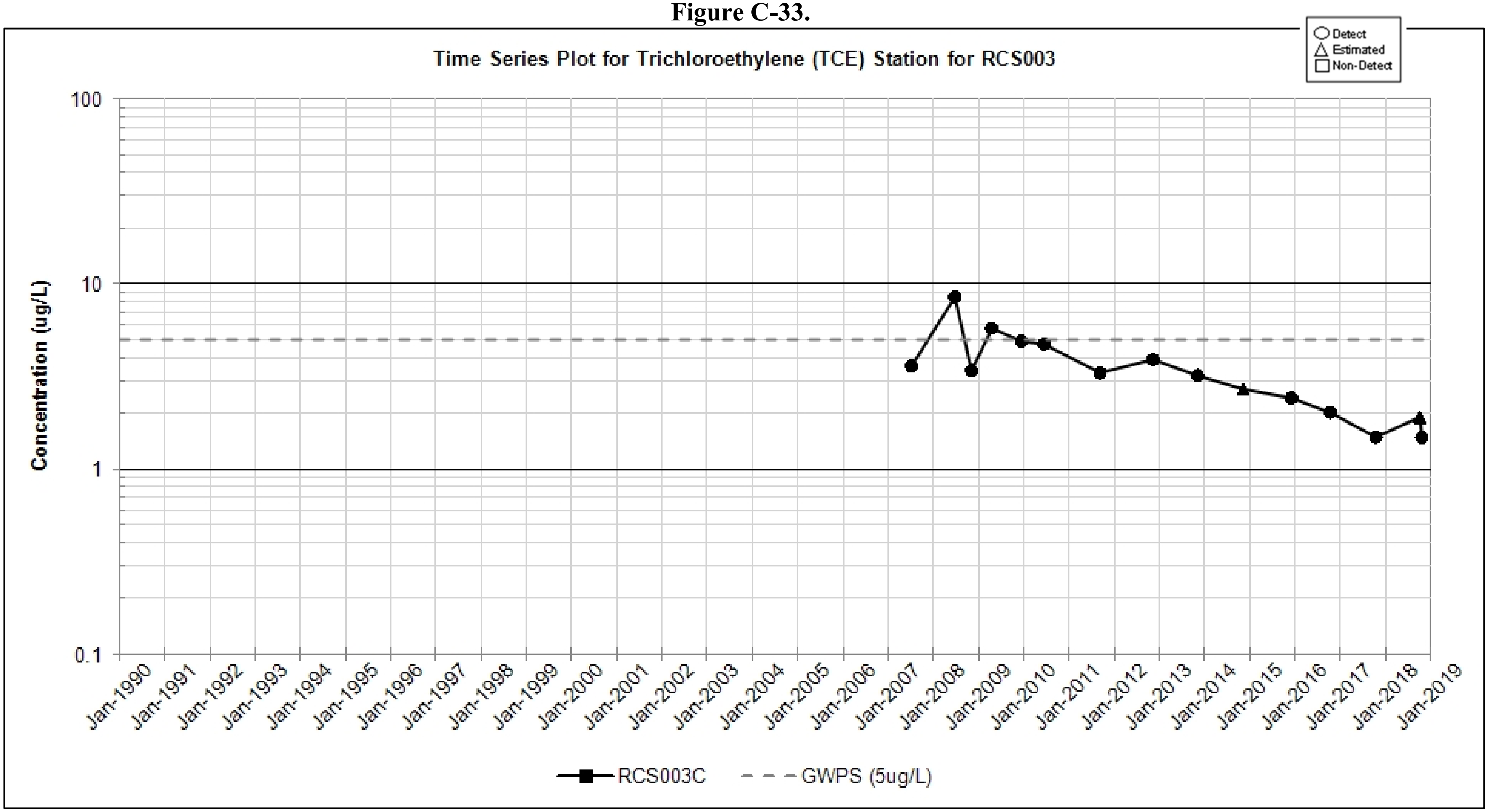

Time Series Plot for Trichloroethylene (TCE) Station for RCS003
Detect
Estimated
Non-Detect
Concentration (ug/L)
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RCS003C
GWPS (5ug/L)

Figure C-34.

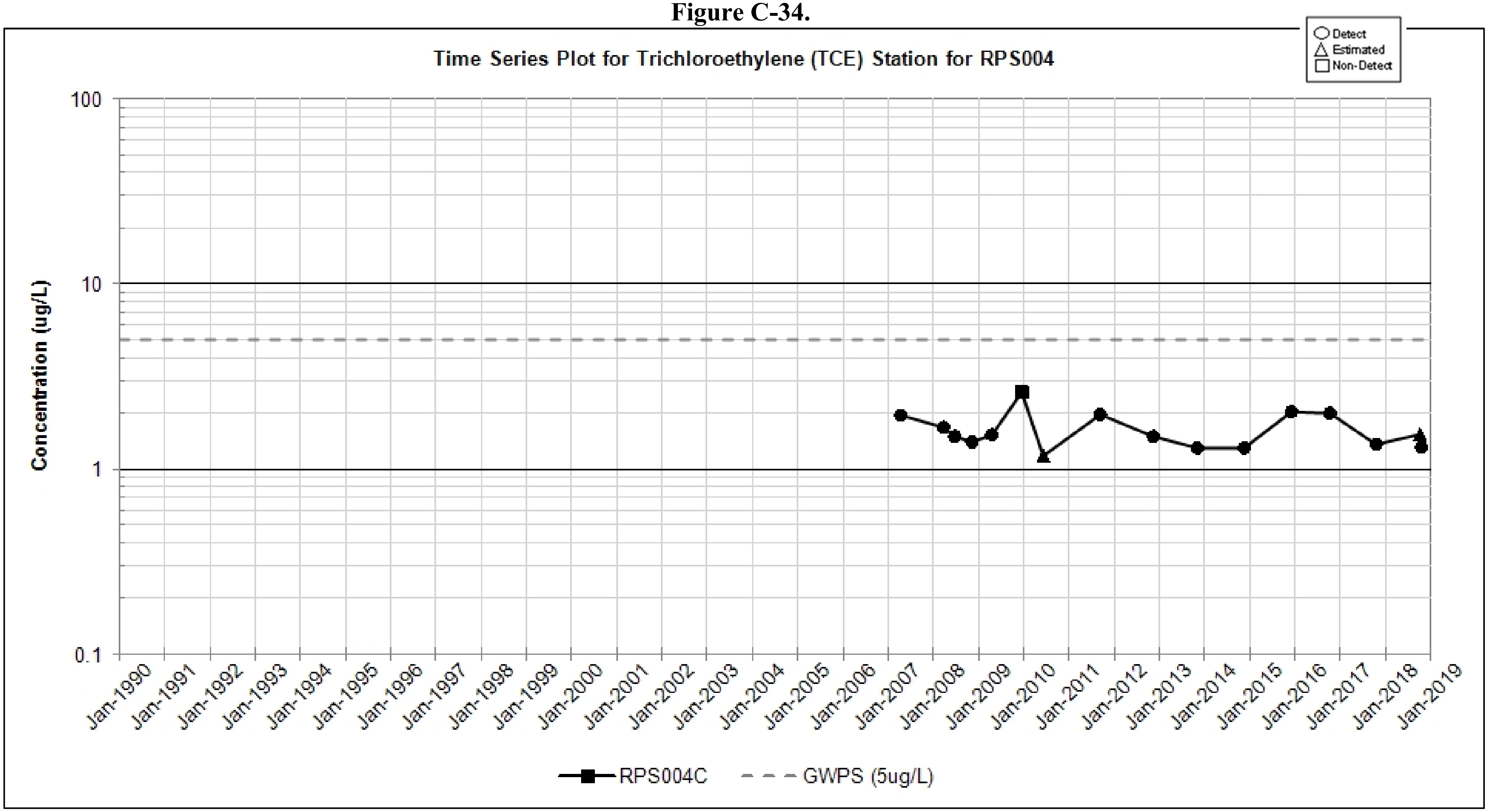

Time Series Plot for Trichloroethylene (TCE) Station for RPS004
Detect
Estimated
Non-Detect
Concentration (ug/L)
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RPS004C
GWPS (5ug/L)

Figure C-35.

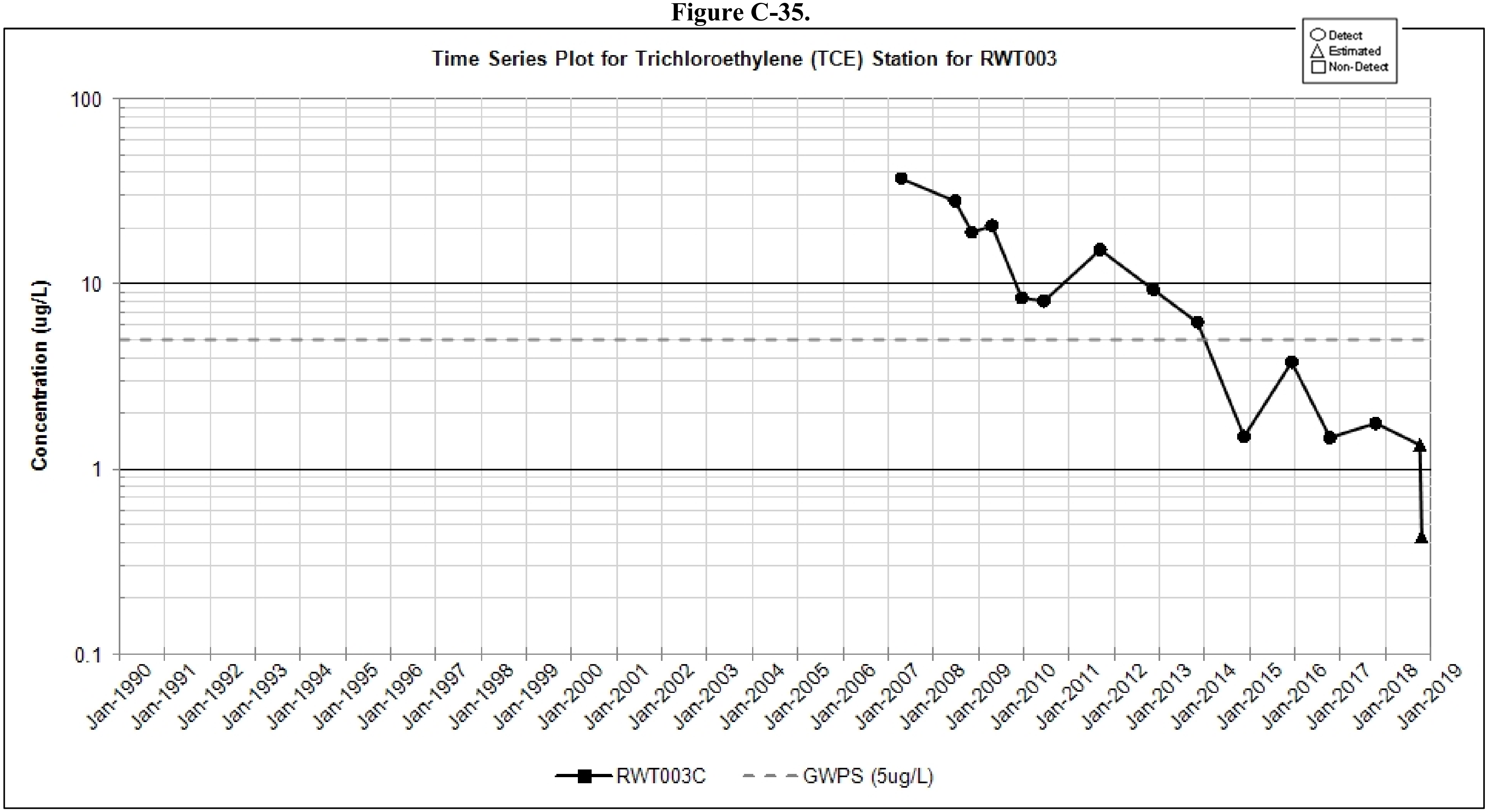

Time Series Plot for Trichloroethylene (TCE) Station for RWT003
Detect
Estimated
Non-Detect
Concentration (ug/L)
100
10
1
0.1
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RWT003C
GWPS (5ug/L)

Figure C-36.

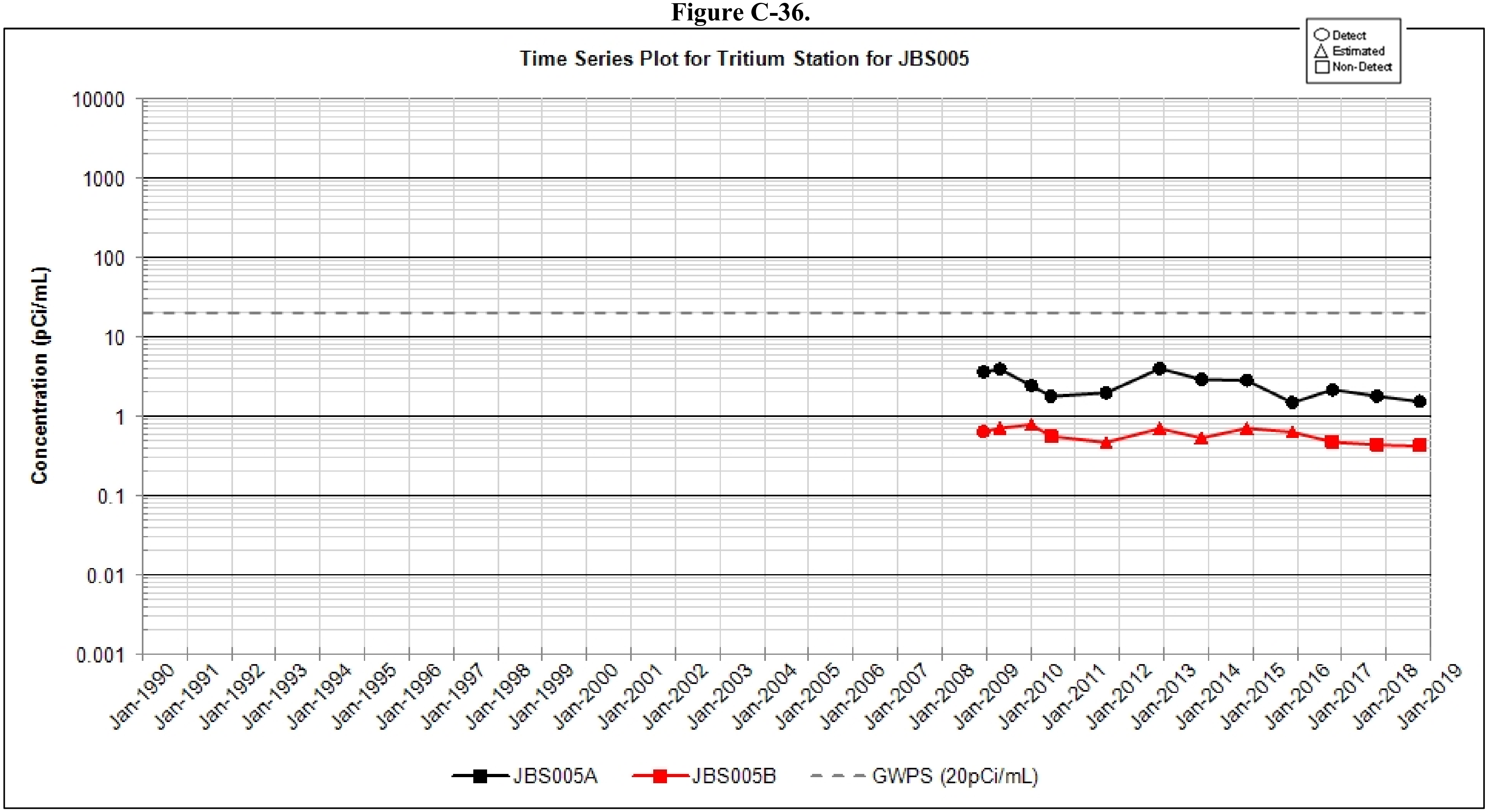

Time Series Plot for Tritium Station for JBS005
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
JBS005A
JBS005B
GWPS (20pCi/mL)

Figure C-37.

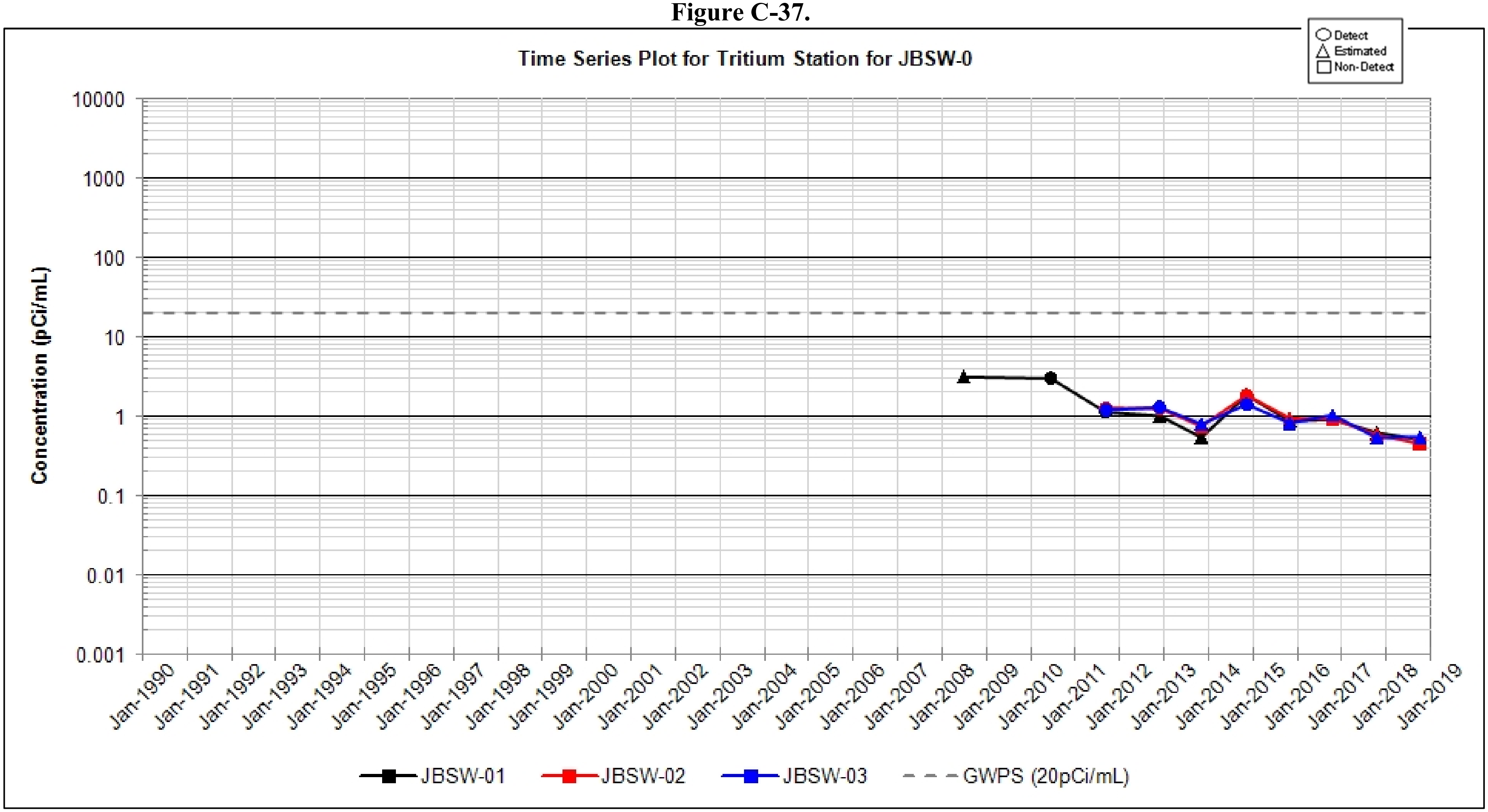

Time Series Plot for Tritium Station for JBSW-0
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
JBSW-01
JBSW-02
JBSW-03
GWPS (20pCi/mL)

Figure C-38.

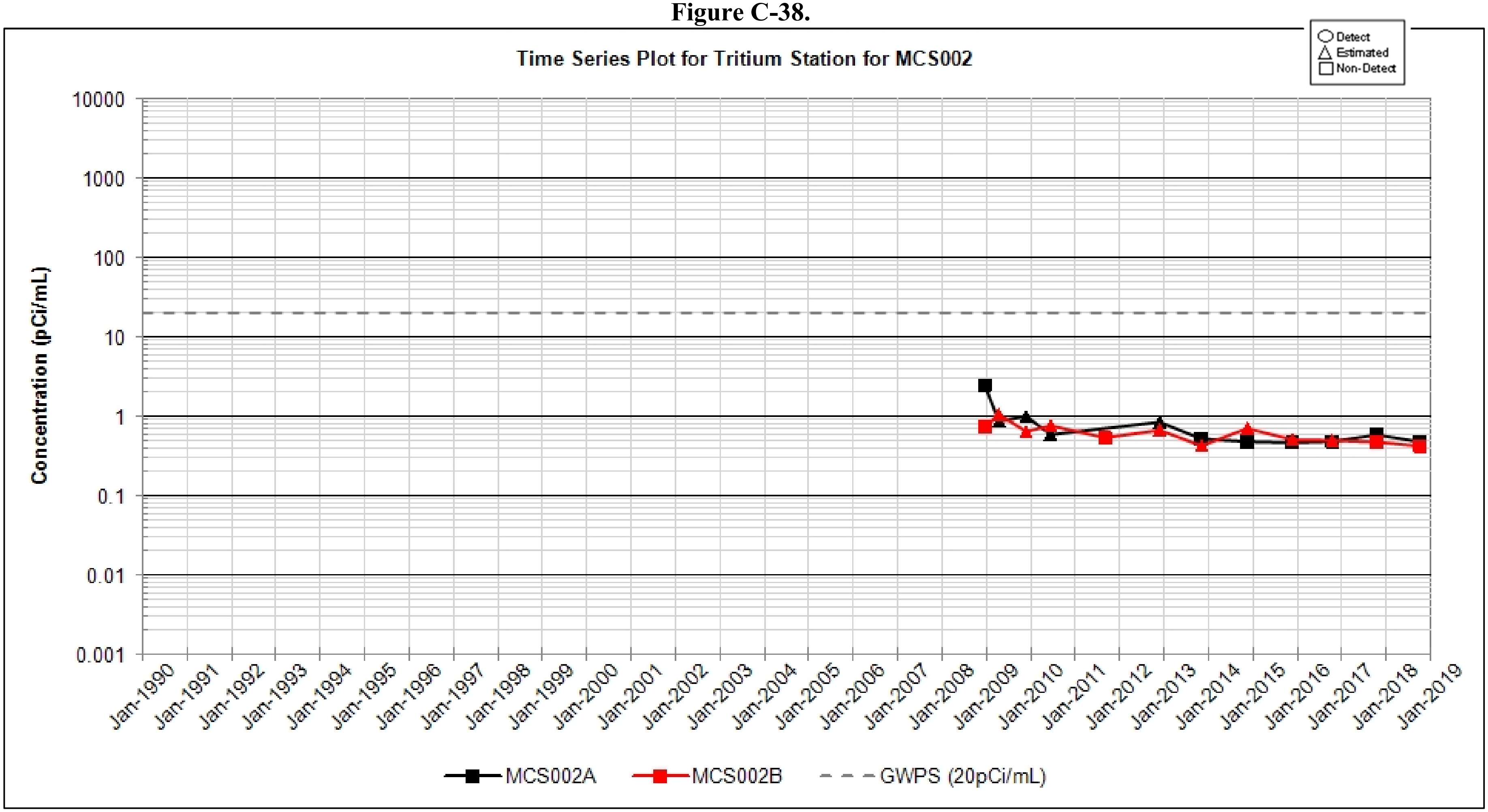

Time Series Plot for Tritium Station for MCS002
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
MCS002A
MCS002B
GWPS (20pCi/mL)

Figure C-39.

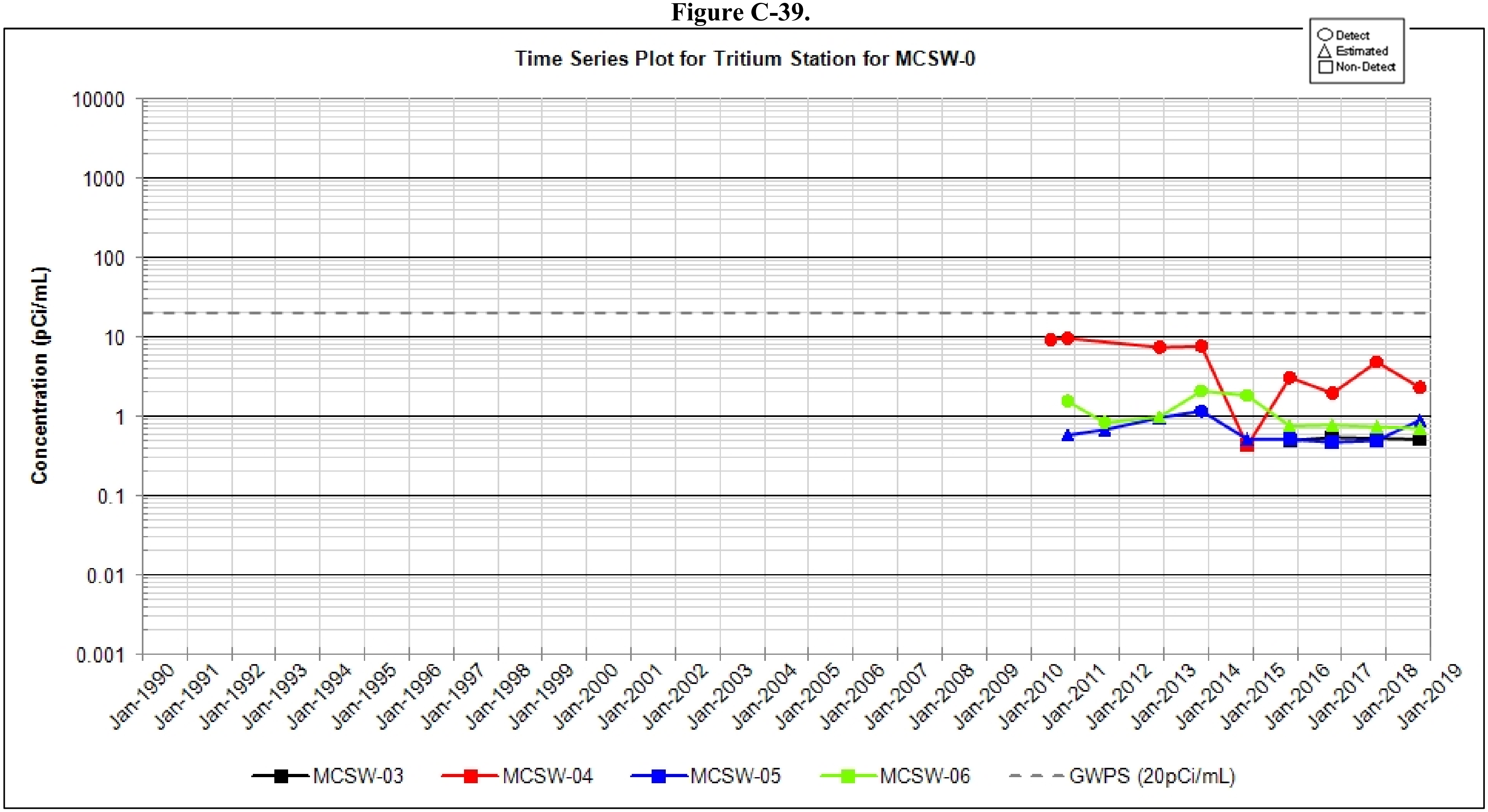

Time Series Plot for Tritium Station for MCSW-0
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
MCSW-03
MCSW-04
MCSW-05
MCSW-06
GWPS (20pCi/mL)

Figure C-40.

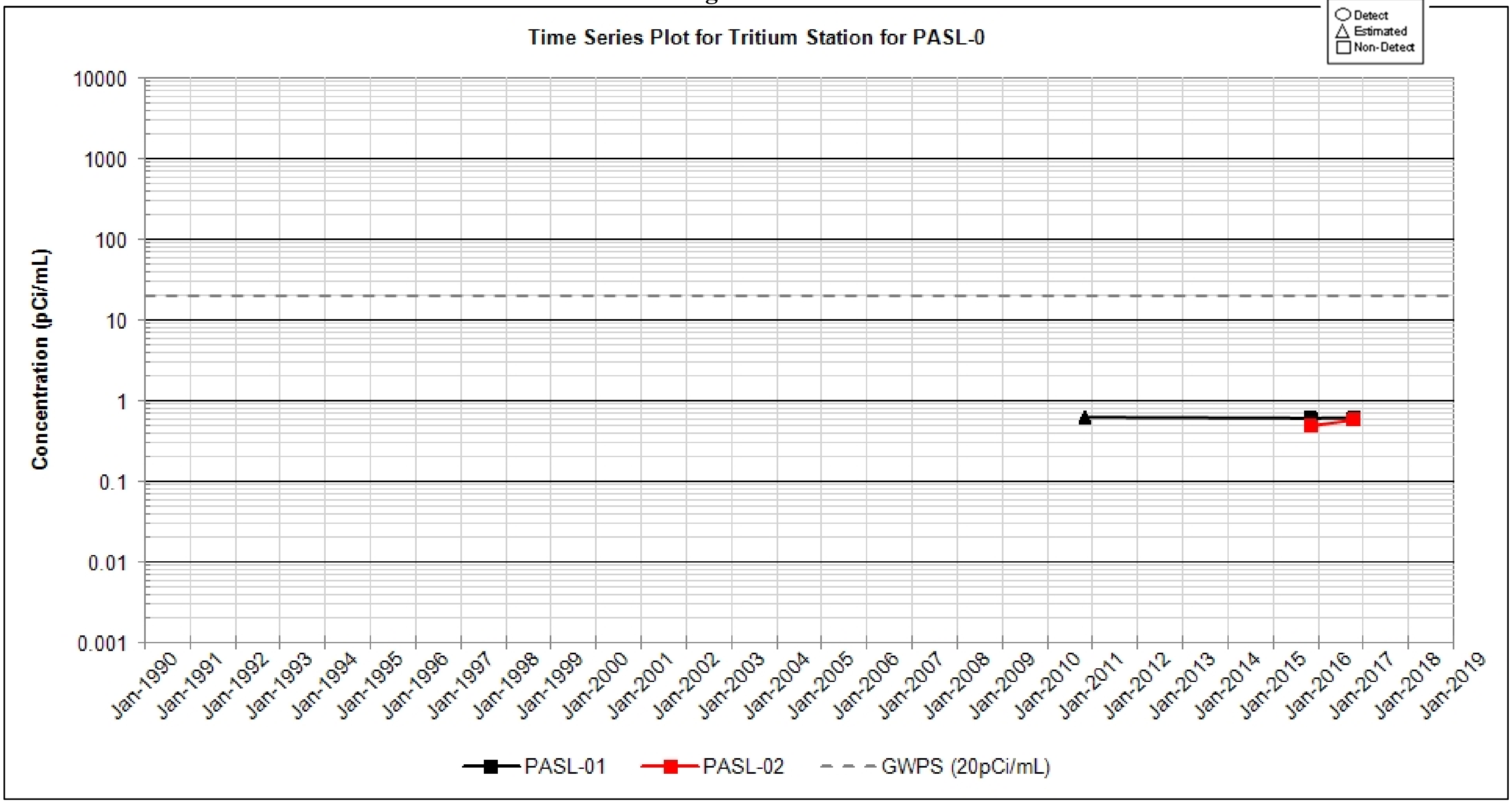

Time Series Plot for Tritium Station for PASL-0
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
PASL-01
PASL-02
GWPS (20pCi/mL)

Figure C-41.

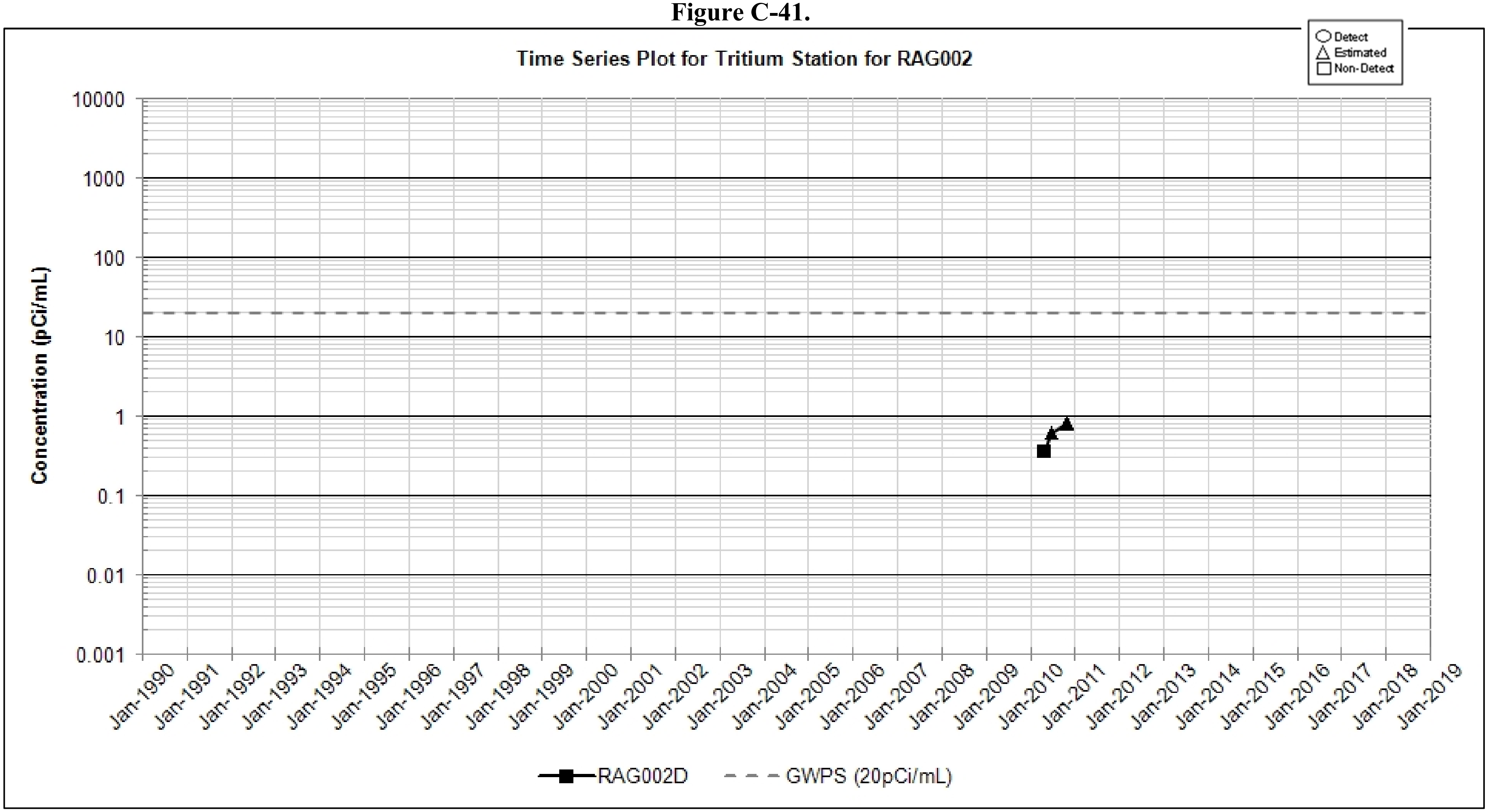

Time Series Plot for Tritium Station for RAG002
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RAG002D
GWPS (20pCi/mL)

Figure C-42.

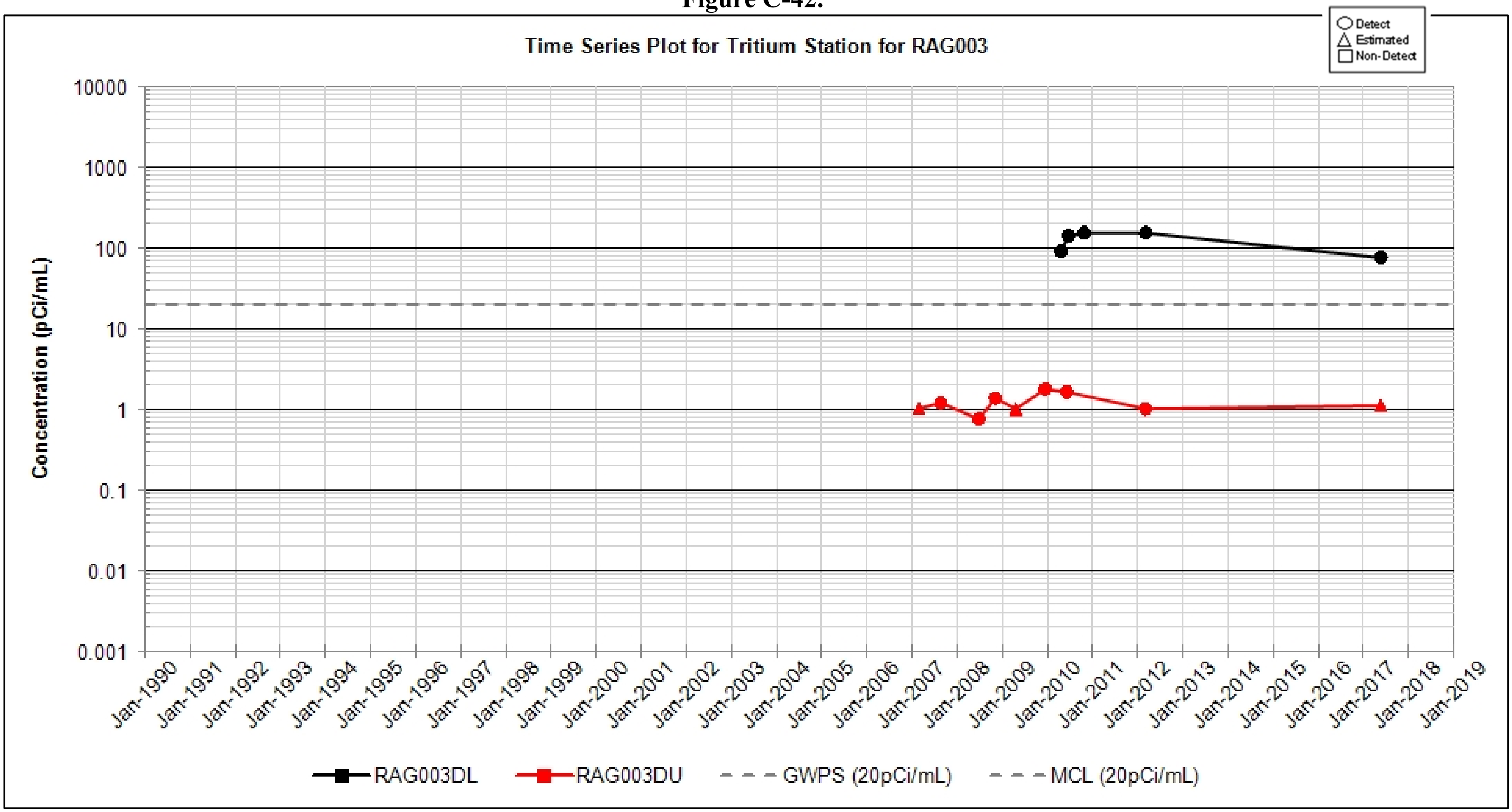

Time Series Plot for Tritium Station for RAG003
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RAG003DL
RAG003DU
GWPS (20pCi/mL)
MCL (20pCi/mL)

Figure C-43.

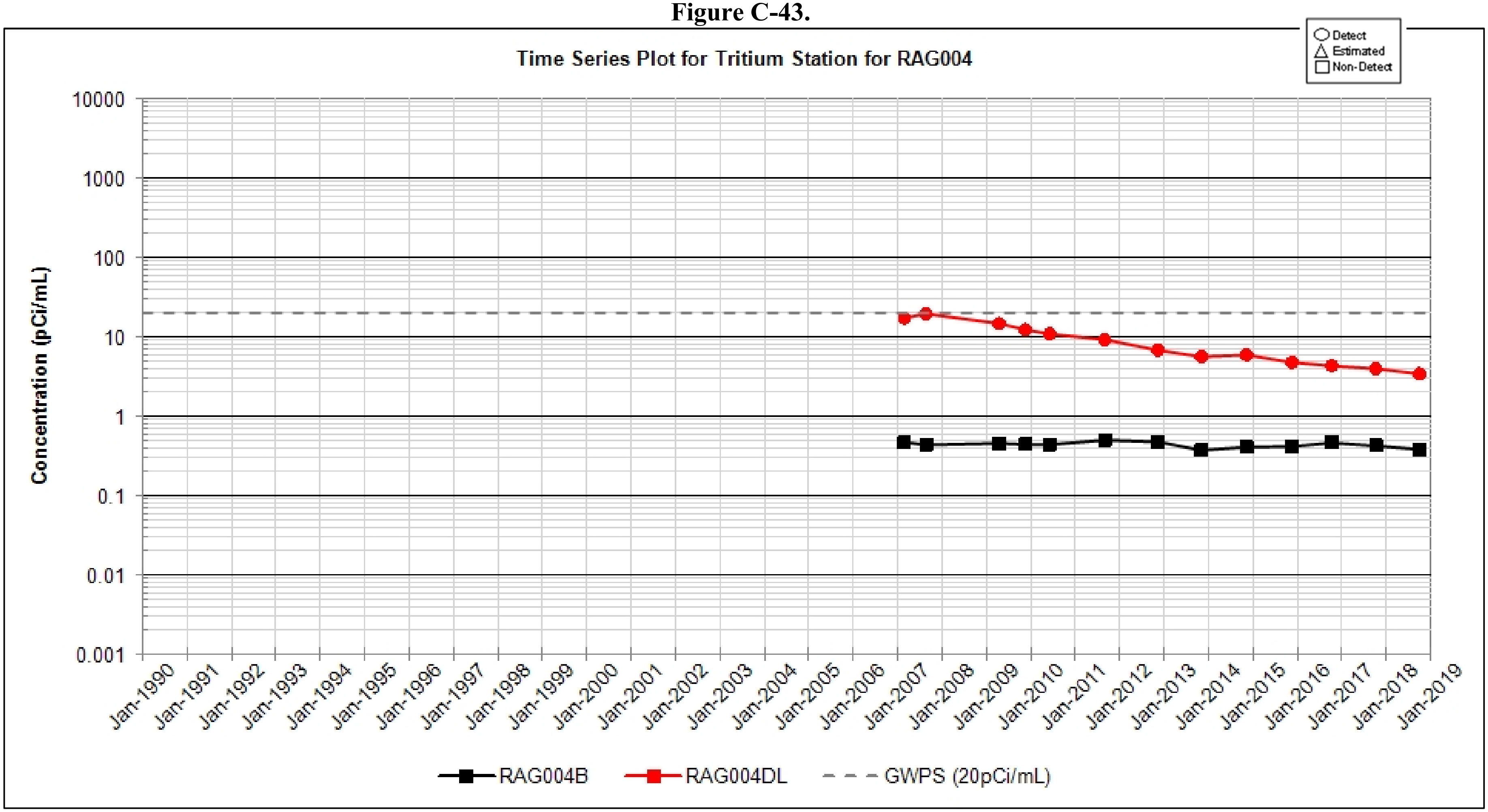

Time Series Plot for Tritium Station for RAG004
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RAG004B
RAG004DL
GWPS (20pCi/mL)

Figure C-44.

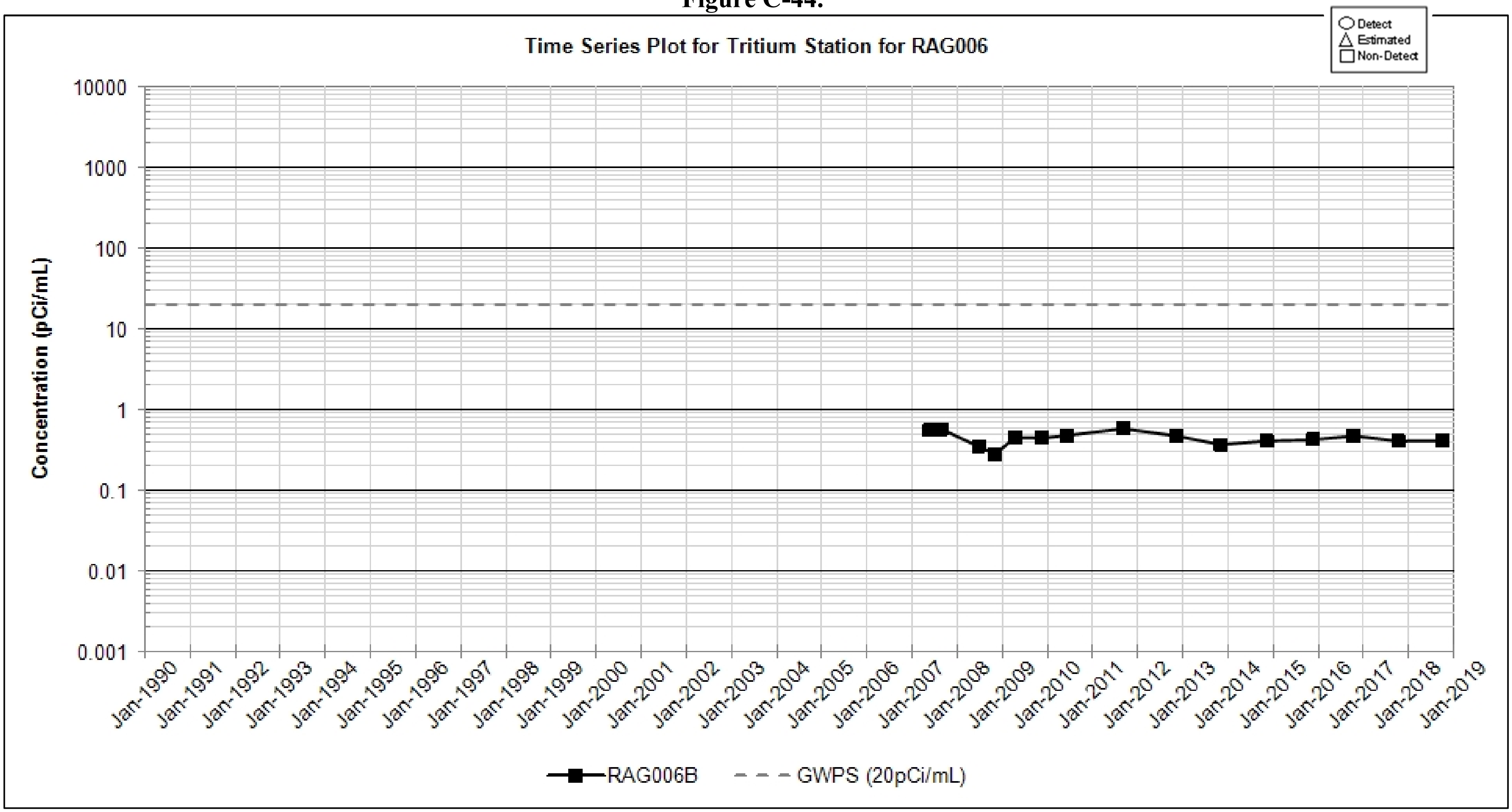

Time Series Plot for Tritium Station for RAG006
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RAG006B
GWPS (20pCi/mL)

Figure C-45.

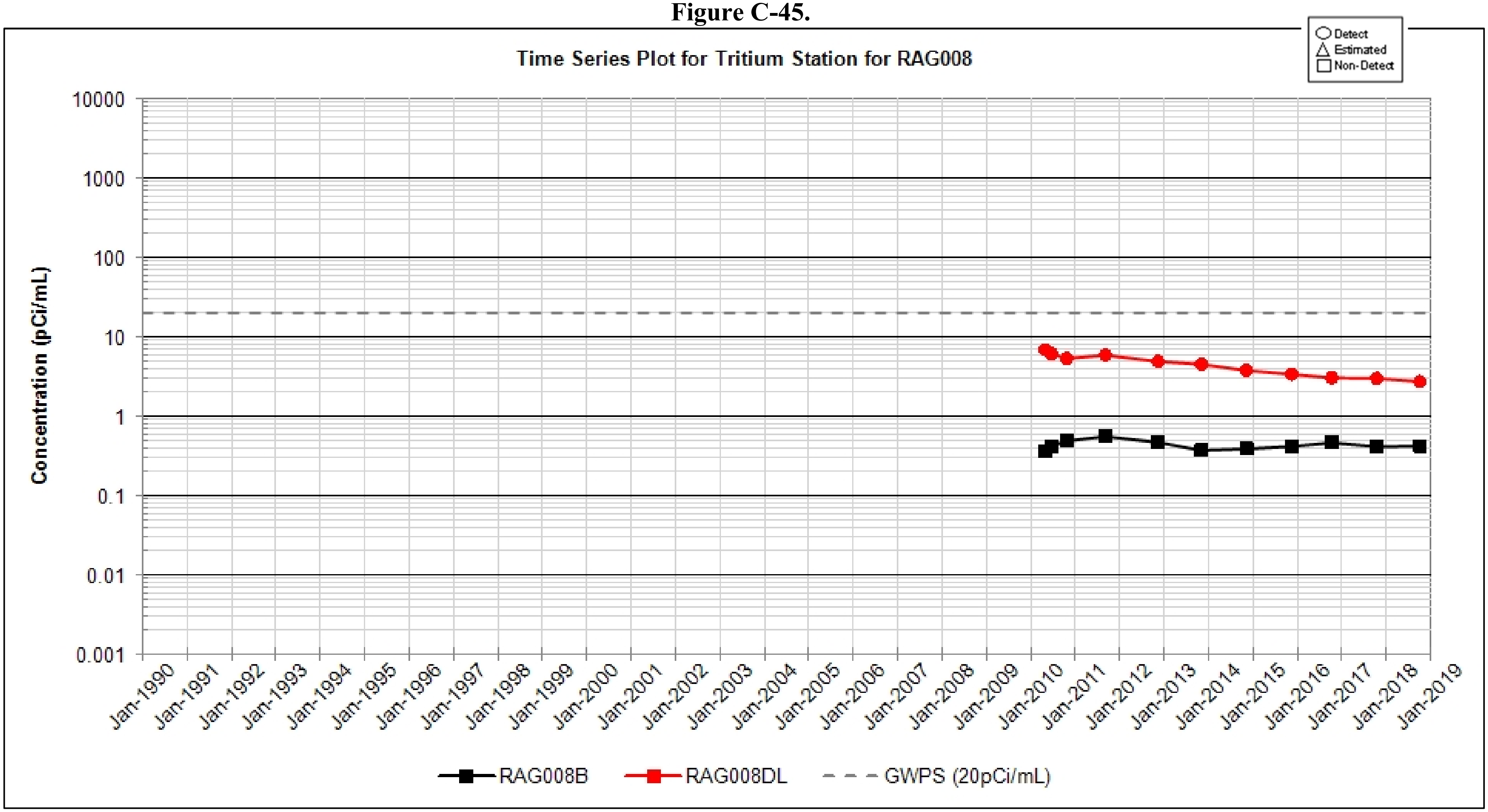

Time Series Plot for Tritium Station for RAG008
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RAG008B
RAG008DL
GWPS (20pCi/mL)

Figure C-46.

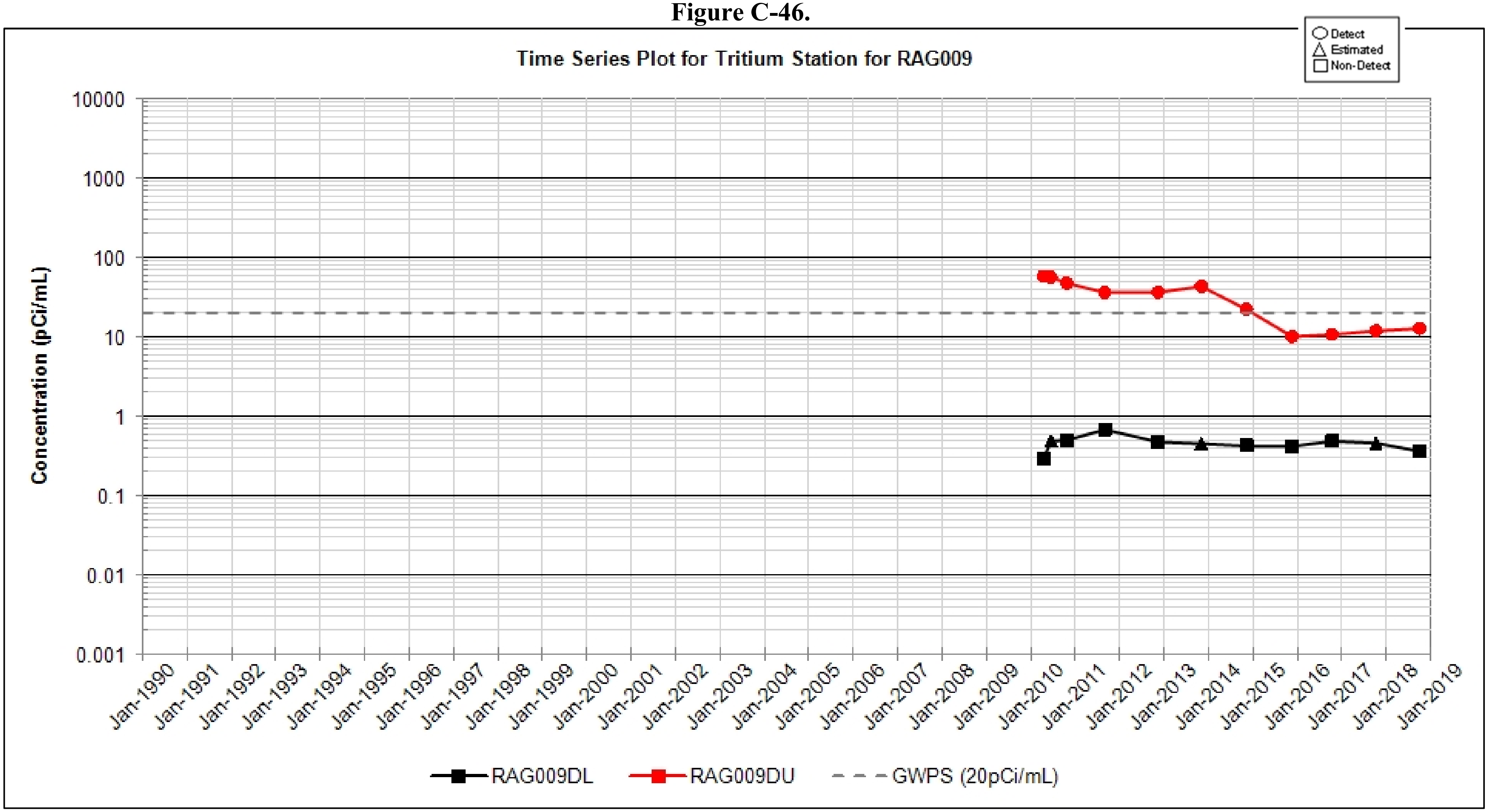

Time Series Plot for Tritium Station for RAG009
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RAG009DL
RAG009DU
GWPS (20pCi/mL)

Figure C-47.

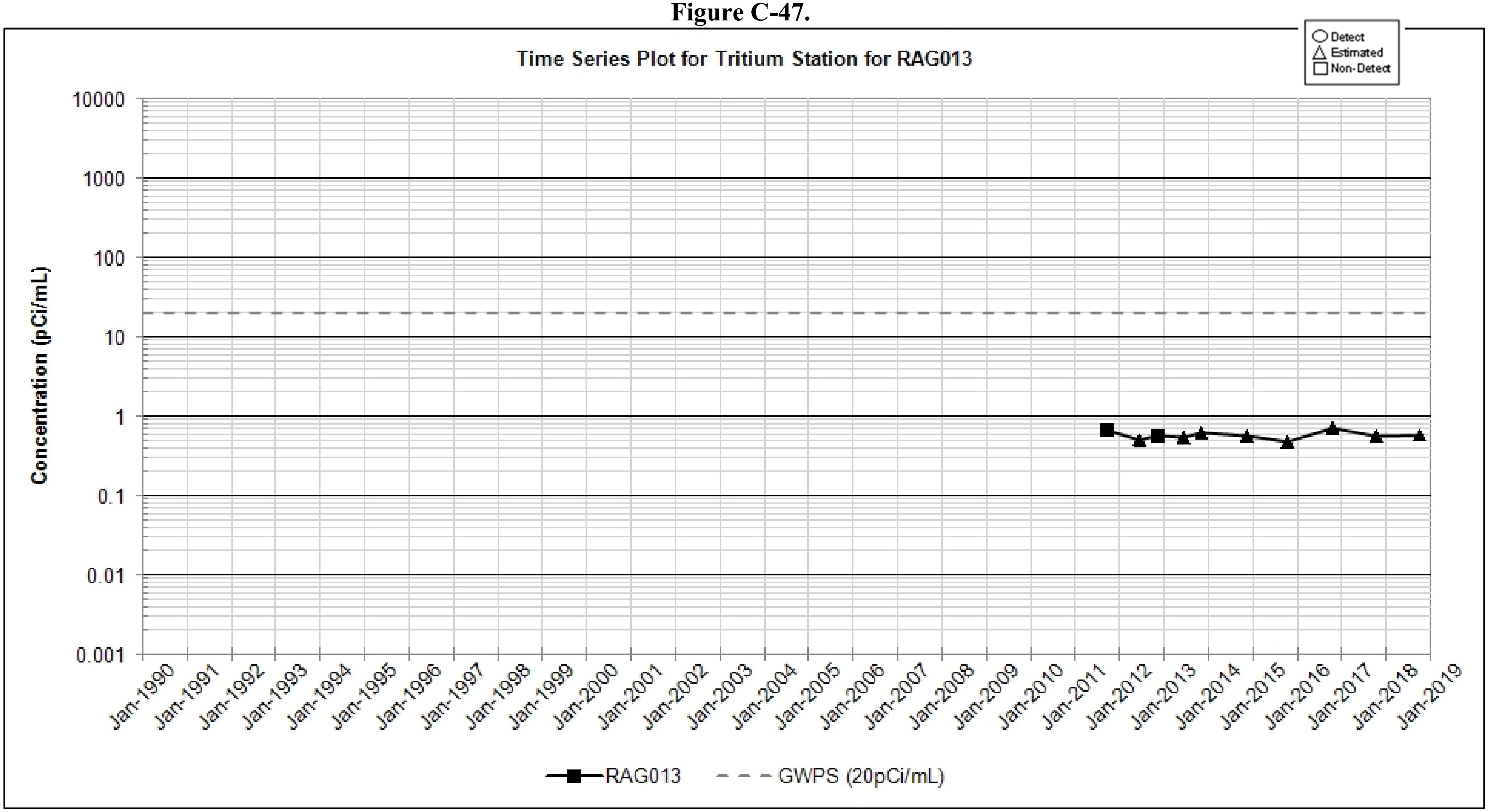

Time Series Plot for Tritium Station for RAG013
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RAG013
GWPS (20pCi/mL)

Figure C-48.

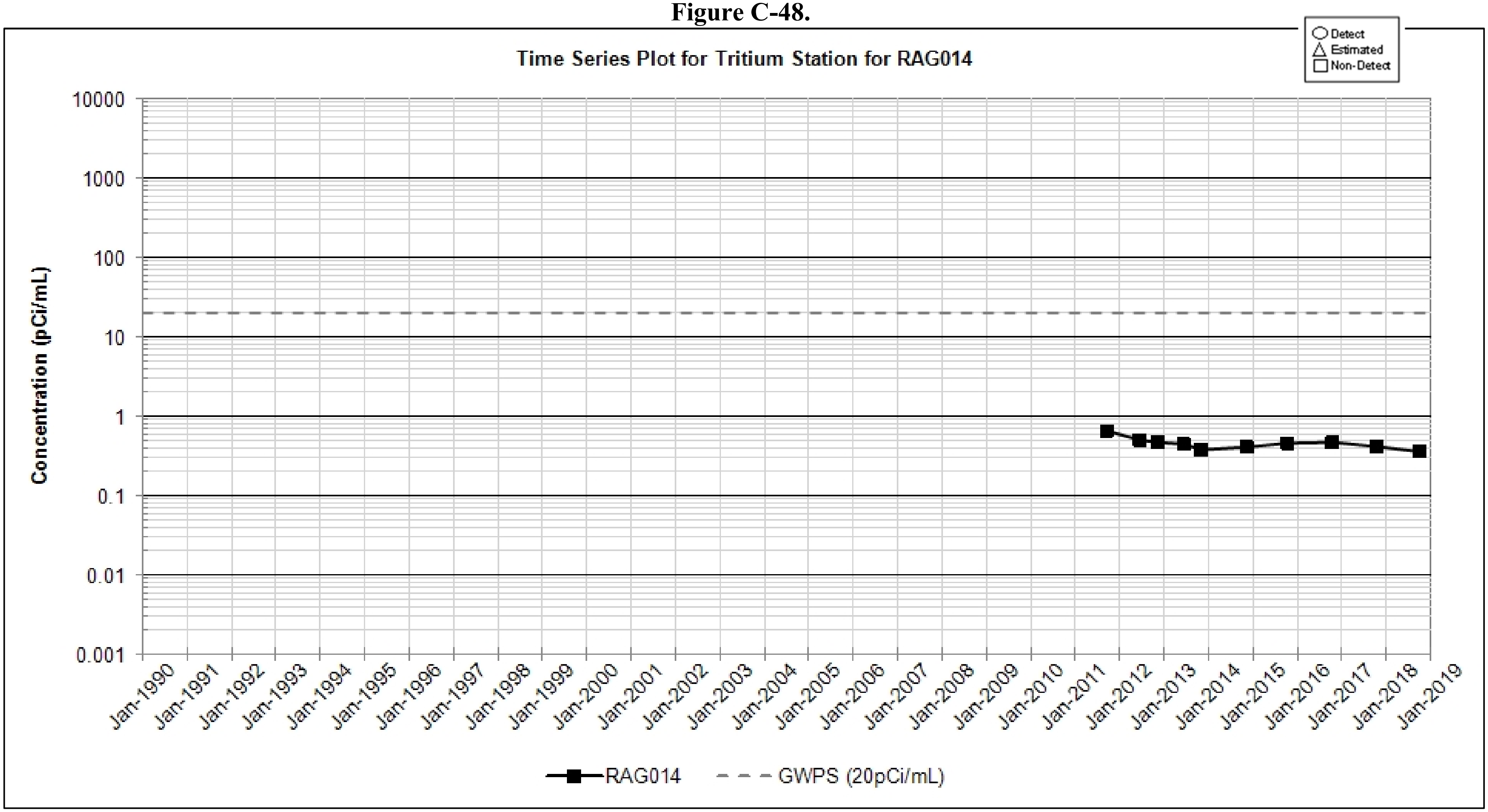

Time Series Plot for Tritium Station for RAG014
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RAG014
GWPS (20pCi/mL)

Figure C-49.

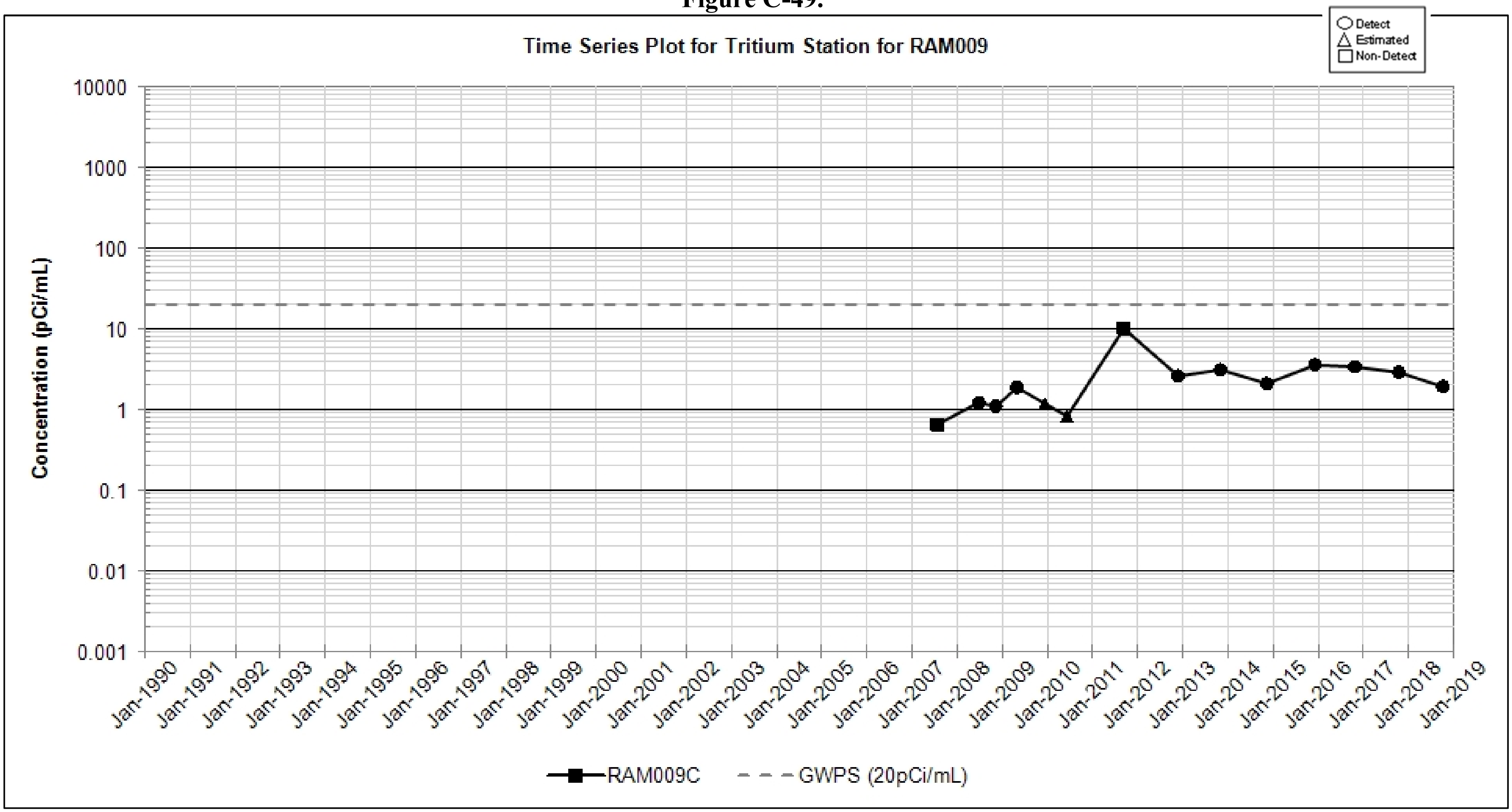

Time Series Plot for Tritium Station for RAM009
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RAM009C
GWPS (20pCi/mL)

Figure C-50.

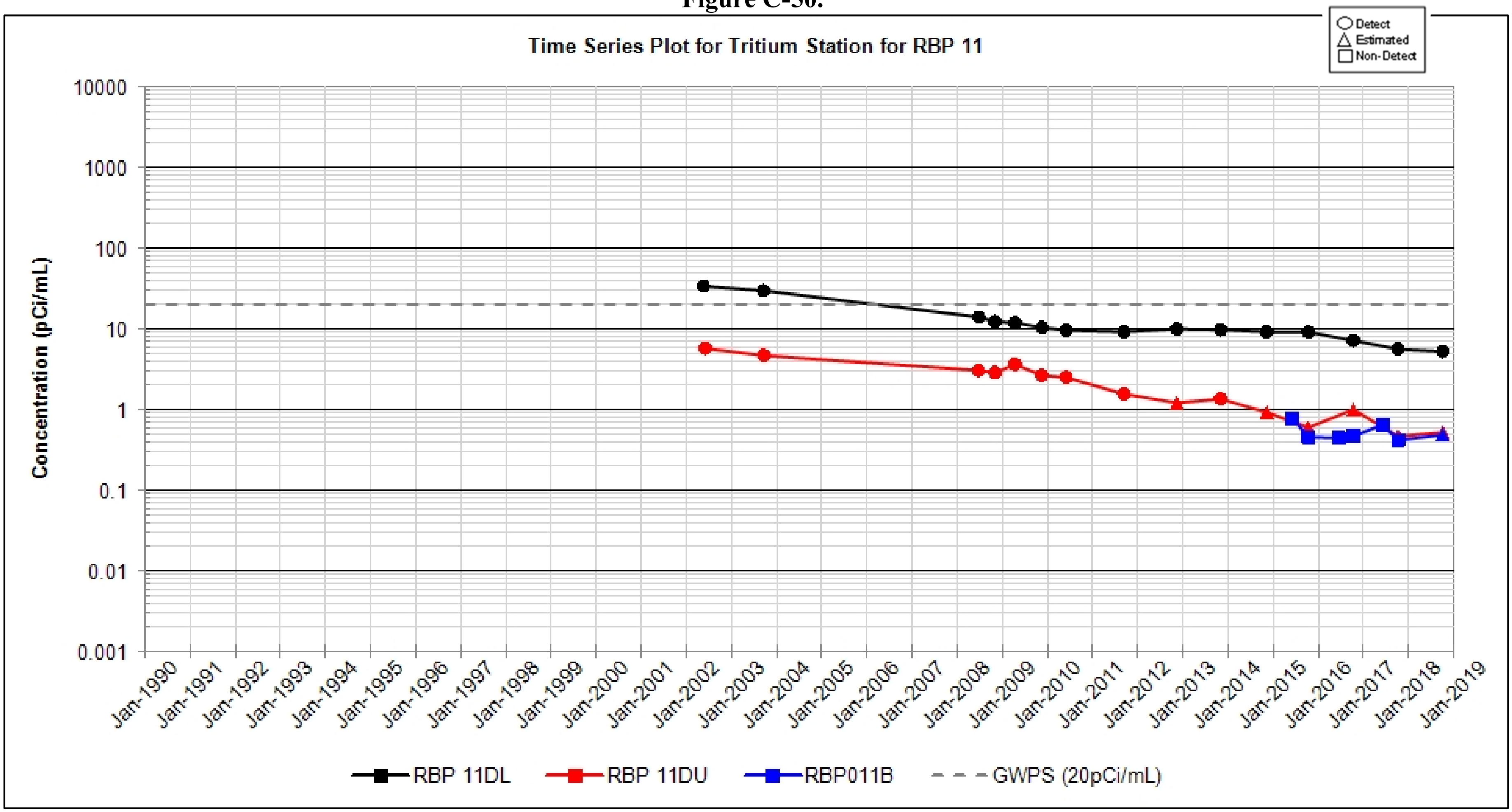

Time Series Plot for Tritium Station for RBP 11
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RBP 11DL
RBP 11DU
RBP011B
GWPS (20pCi/mL)

Figure C-51.

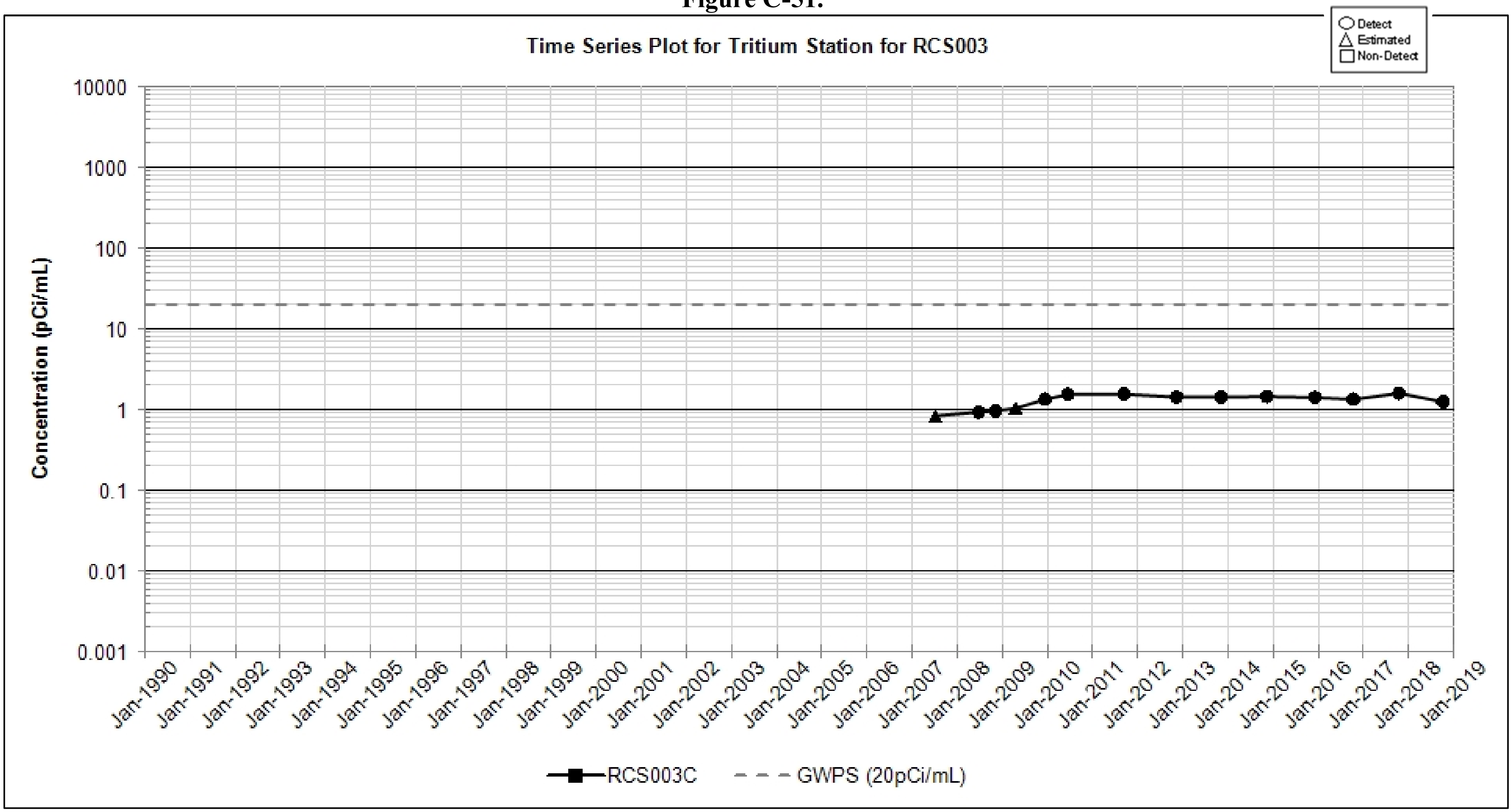

Time Series Plot for Tritium Station for RCS003
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RCS003C
GWPS (20pCi/mL)

Figure C-52.

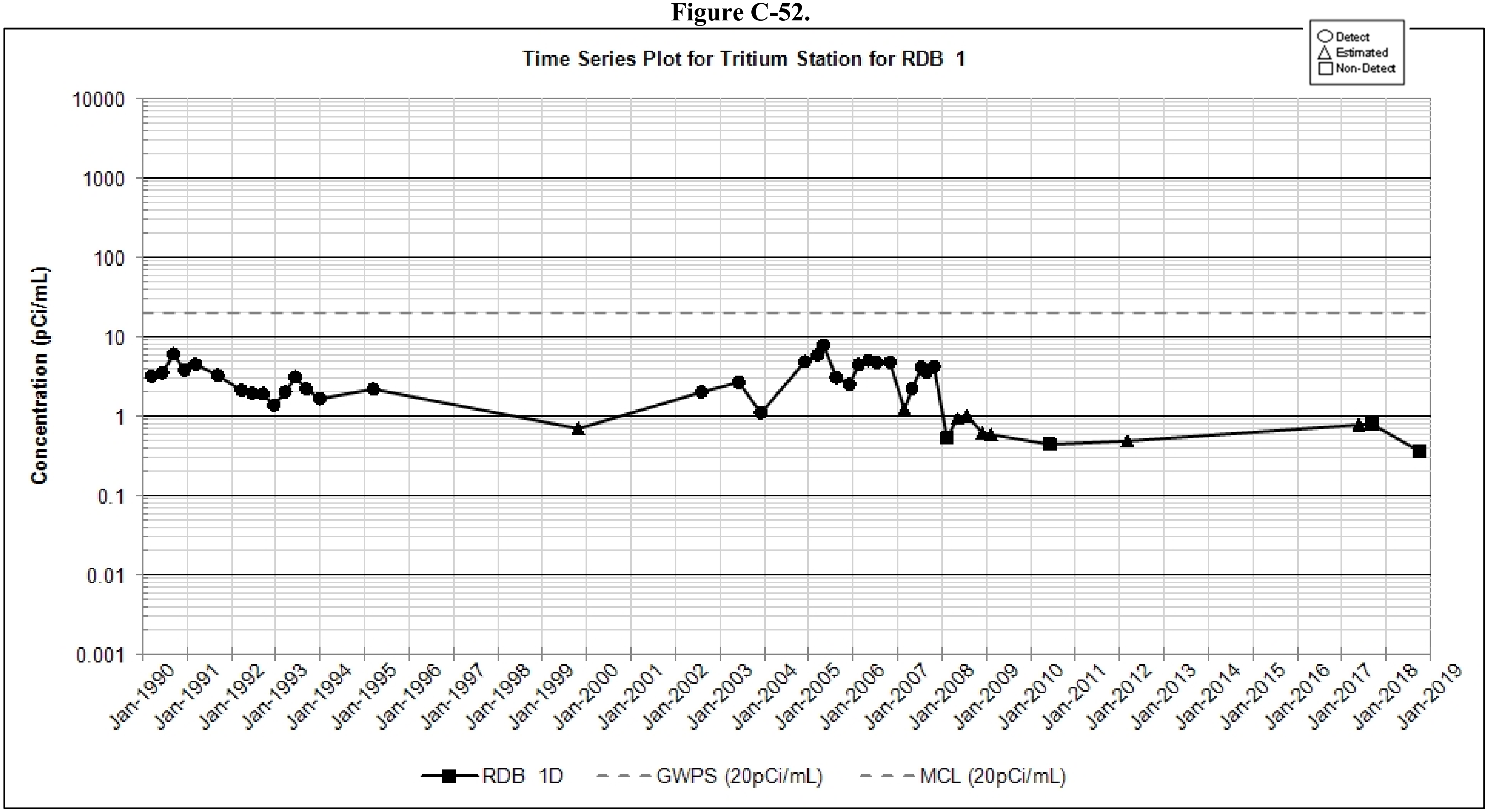

Time Series Plot for Tritium Station for RDB 1
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RDB 1D
GWPS (20pCi/mL)
MCL (20pCi/mL)

Figure C-53.

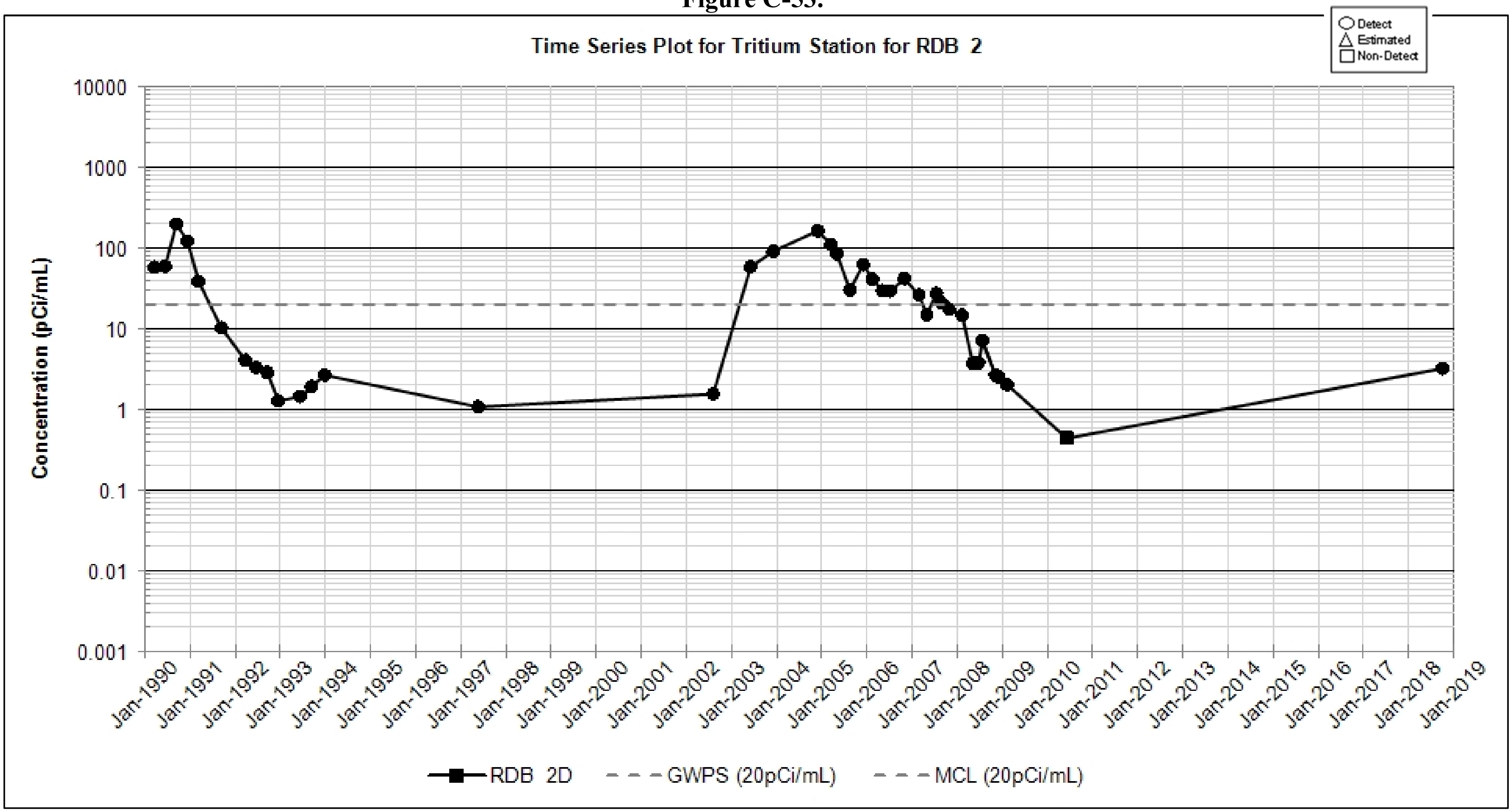

Time Series Plot for Tritium Station for RDB 2
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RDB 2D
GWPS (20pCi/mL)
MCL (20pCi/mL)

Figure C-54.

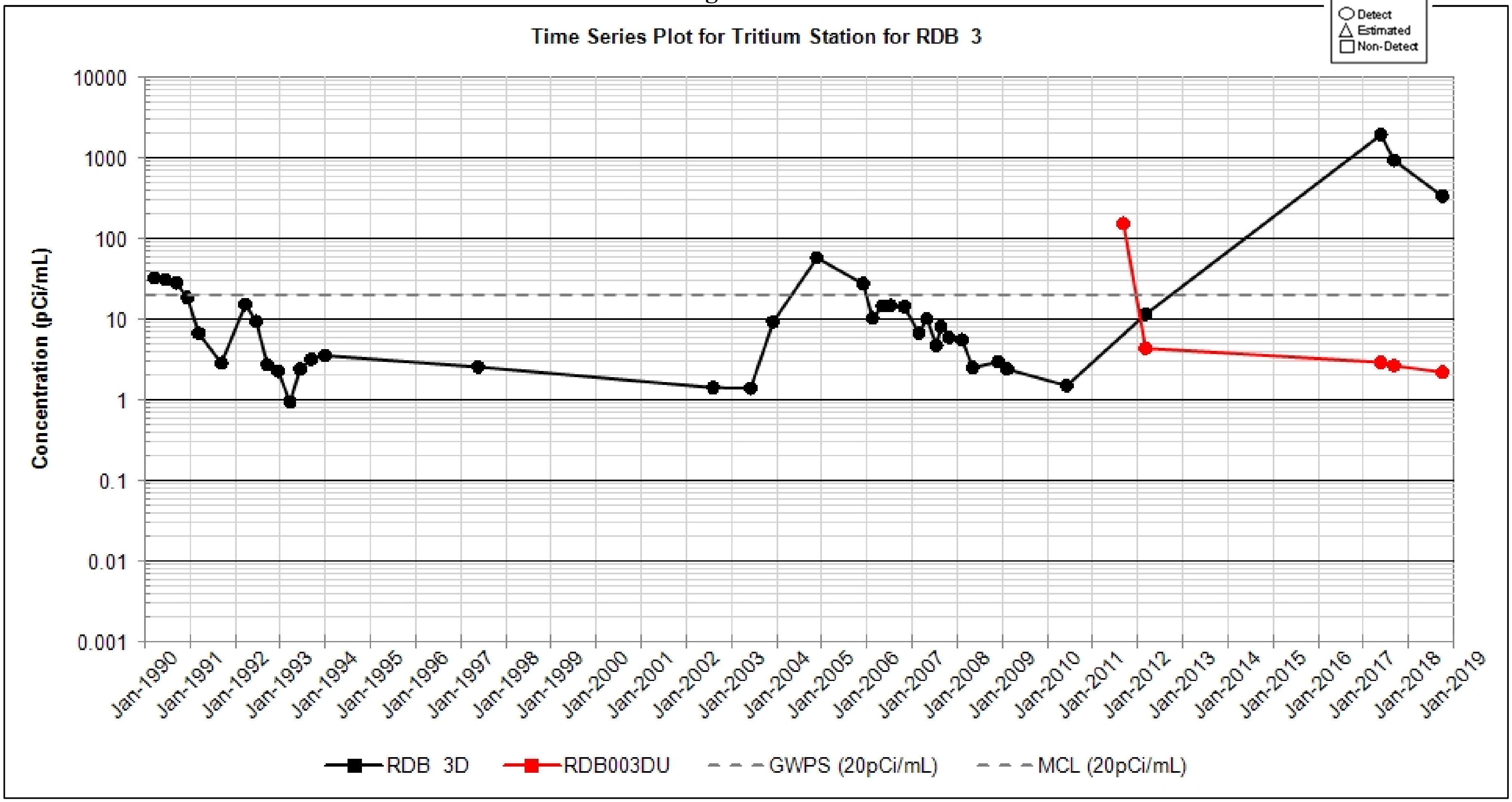

Time Series Plot for Tritium Station for RDB 3
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RDB 3D
RDB003DU
GWPS (20pCi/mL)
MCL (20pCi/mL)

Figure C-55.

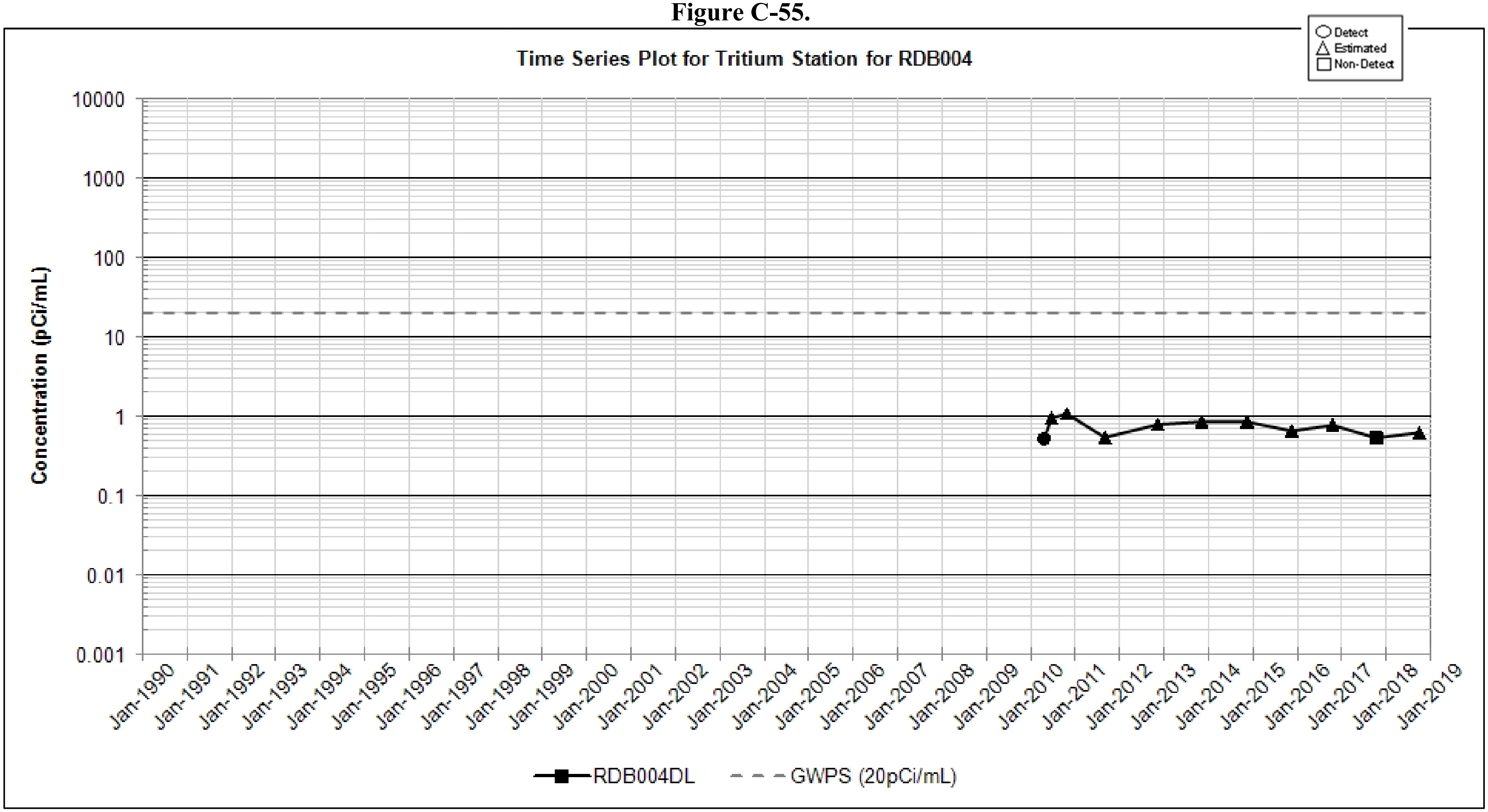

Time Series Plot for Tritium Station for RDB004
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RDB004DL
GWPS (20pCi/mL)

Figure C-56.

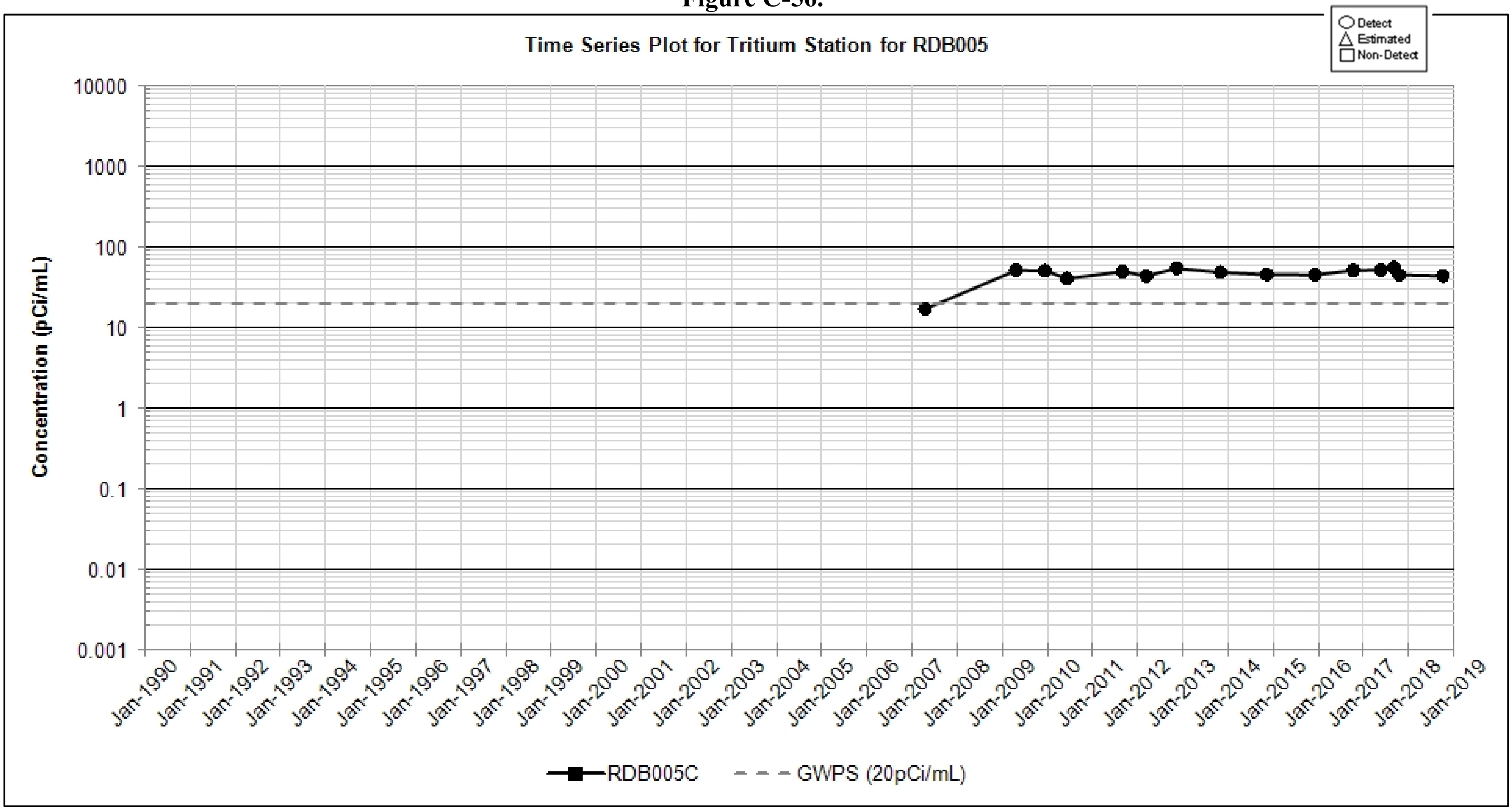

Time Series Plot for Tritium Station for RDB005
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RDB005C
GWPS (20pCi/mL)

Figure C-57.

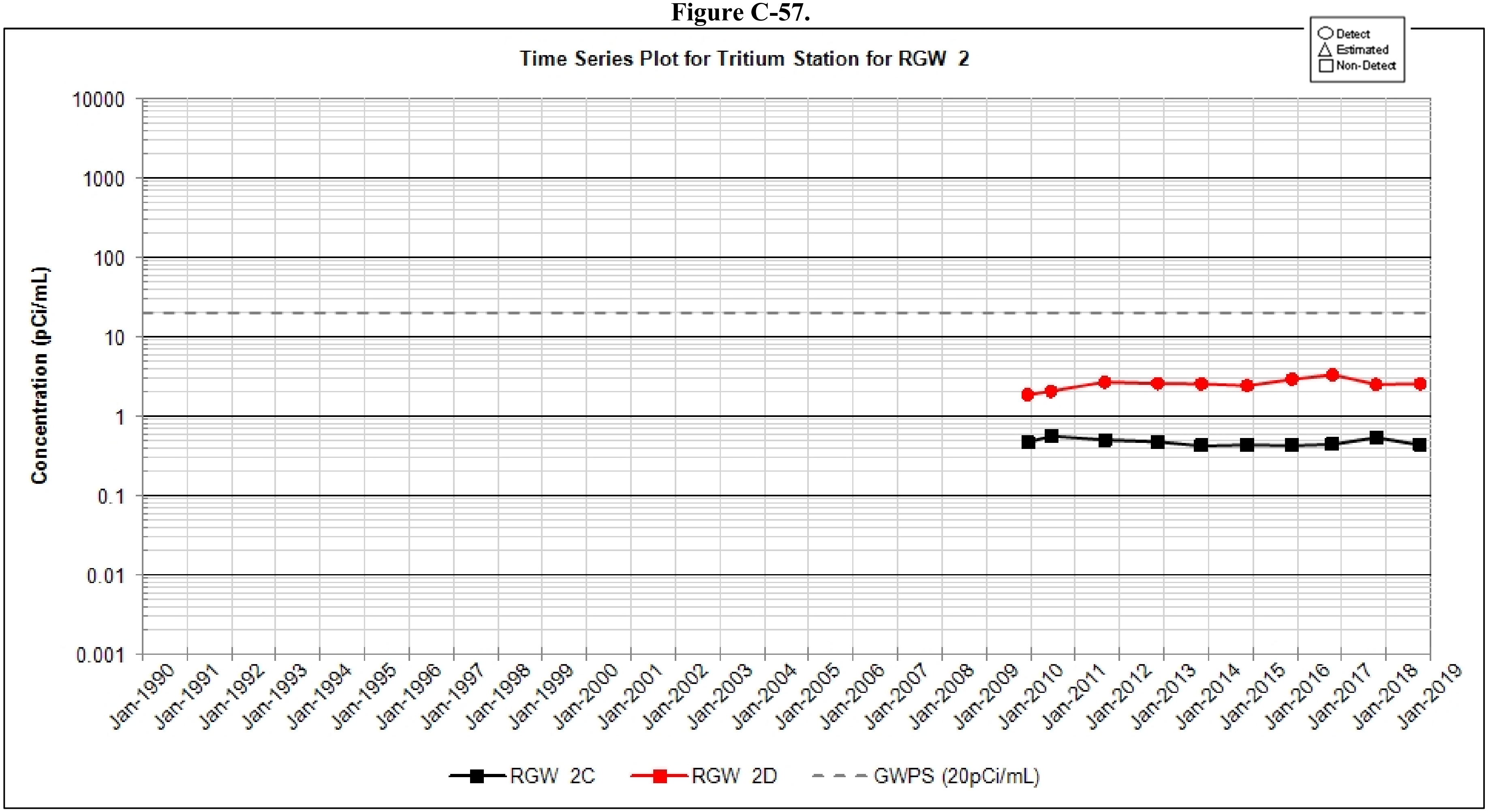

Time Series Plot for Tritium Station for RGW 2
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RGW 2C
RGW 2D
GWPS (20pCi/mL)

Figure C-58.

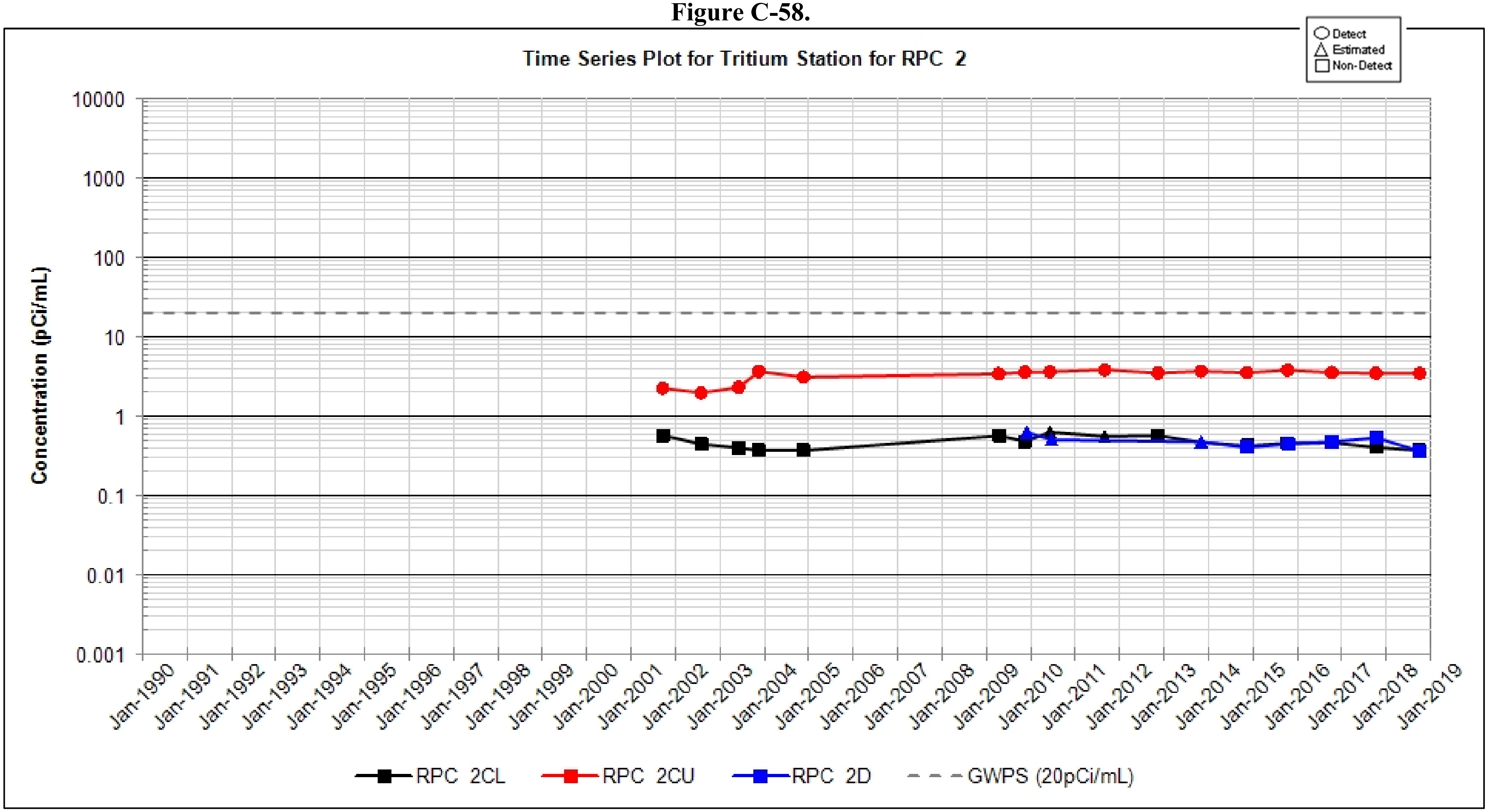

Time Series Plot for Tritium Station for RPC 2
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RPC 2CL
RPC 2CU
RPC 2D
GWPS (20pCi/mL)

Figure C-59.

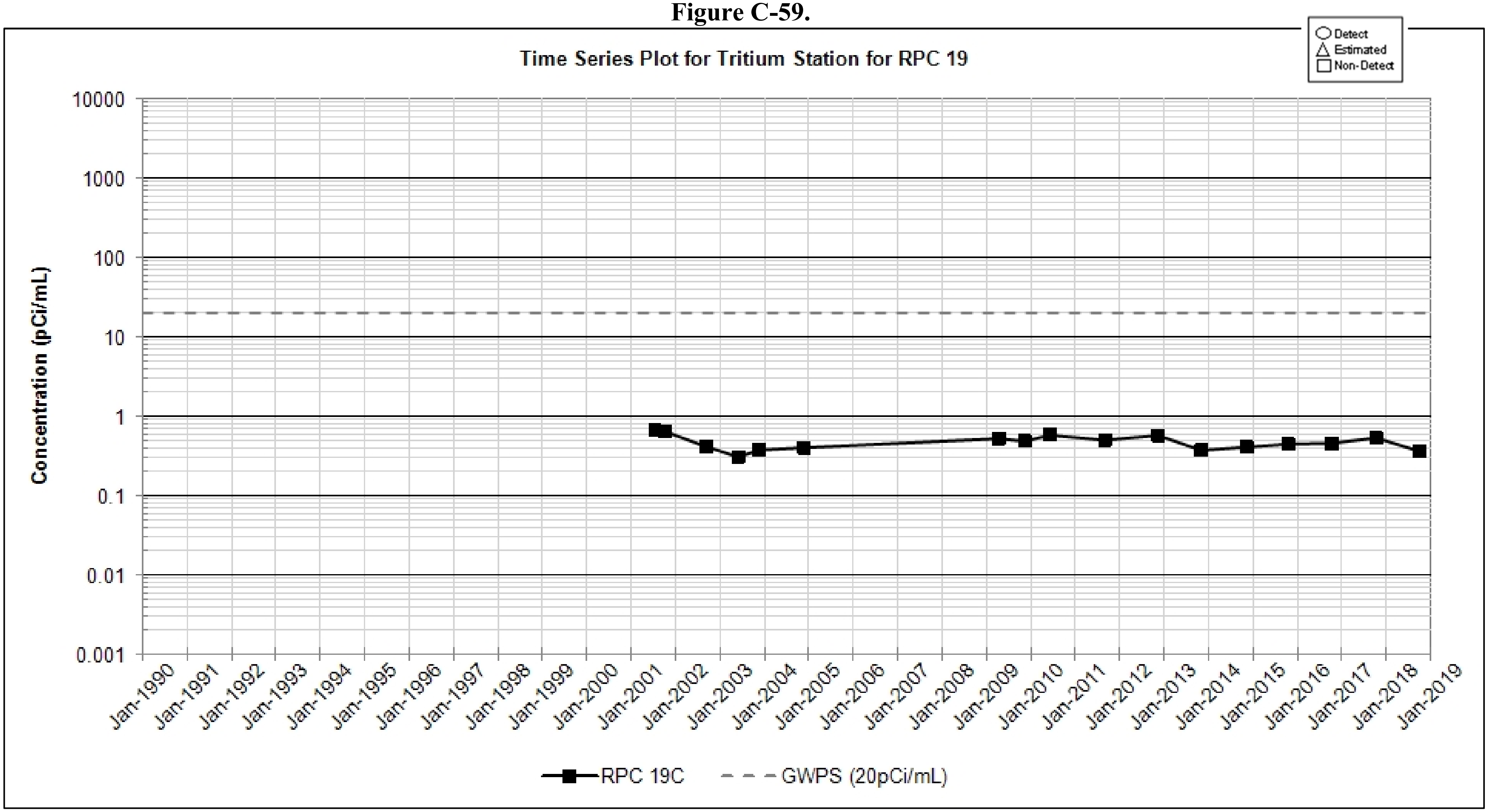

Detect
Estimated
Non-Detect
Time Series Plot for Tritium Station for RPC 19
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RPC 19C
GWPS (20pCi/mL)

Figure C-60.

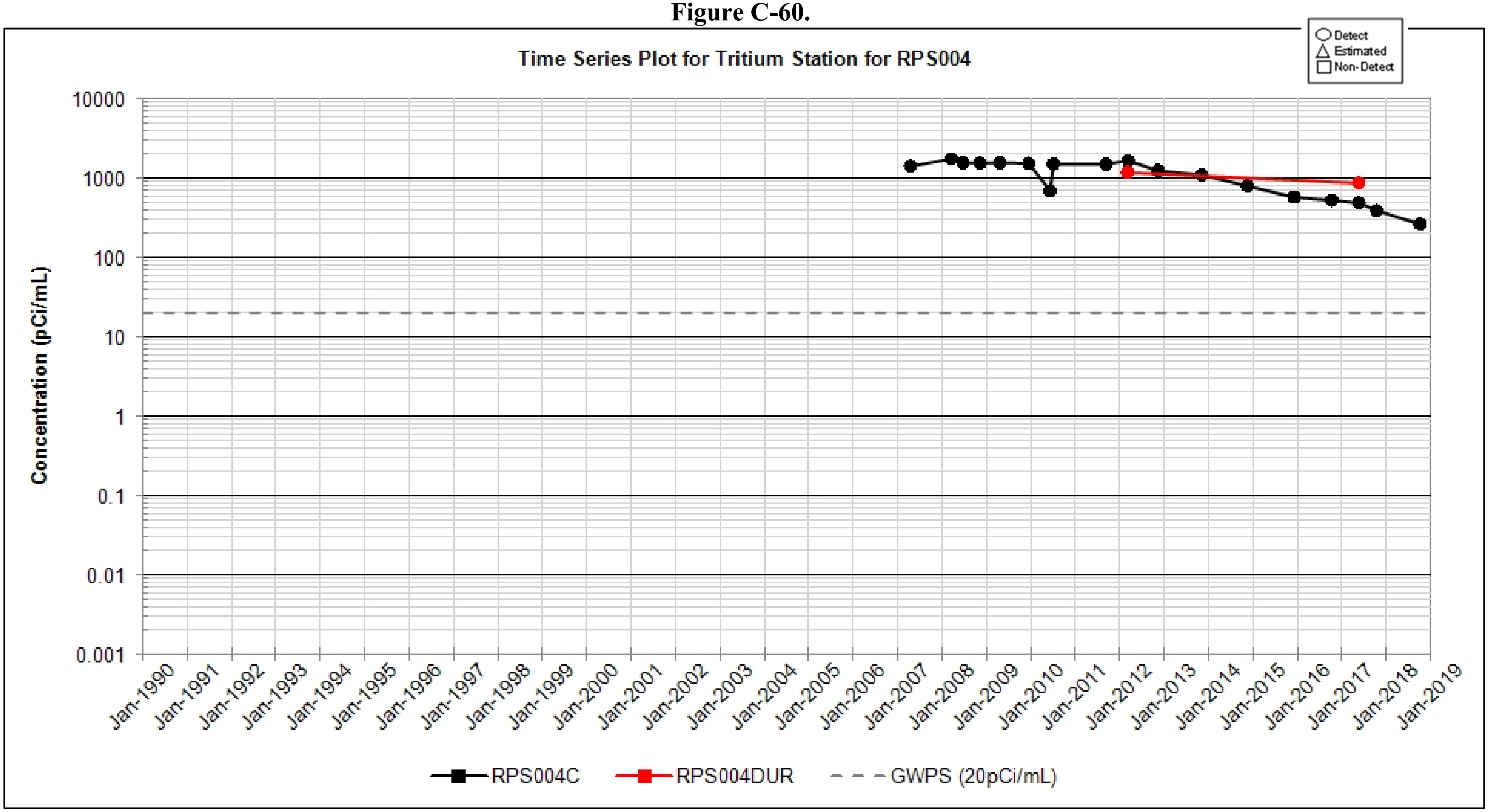

Time Series Plot for Tritium Station for RPS004
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RPS004C
RPS004DUR
GWPS (20pCi/mL)

Figure C-61.

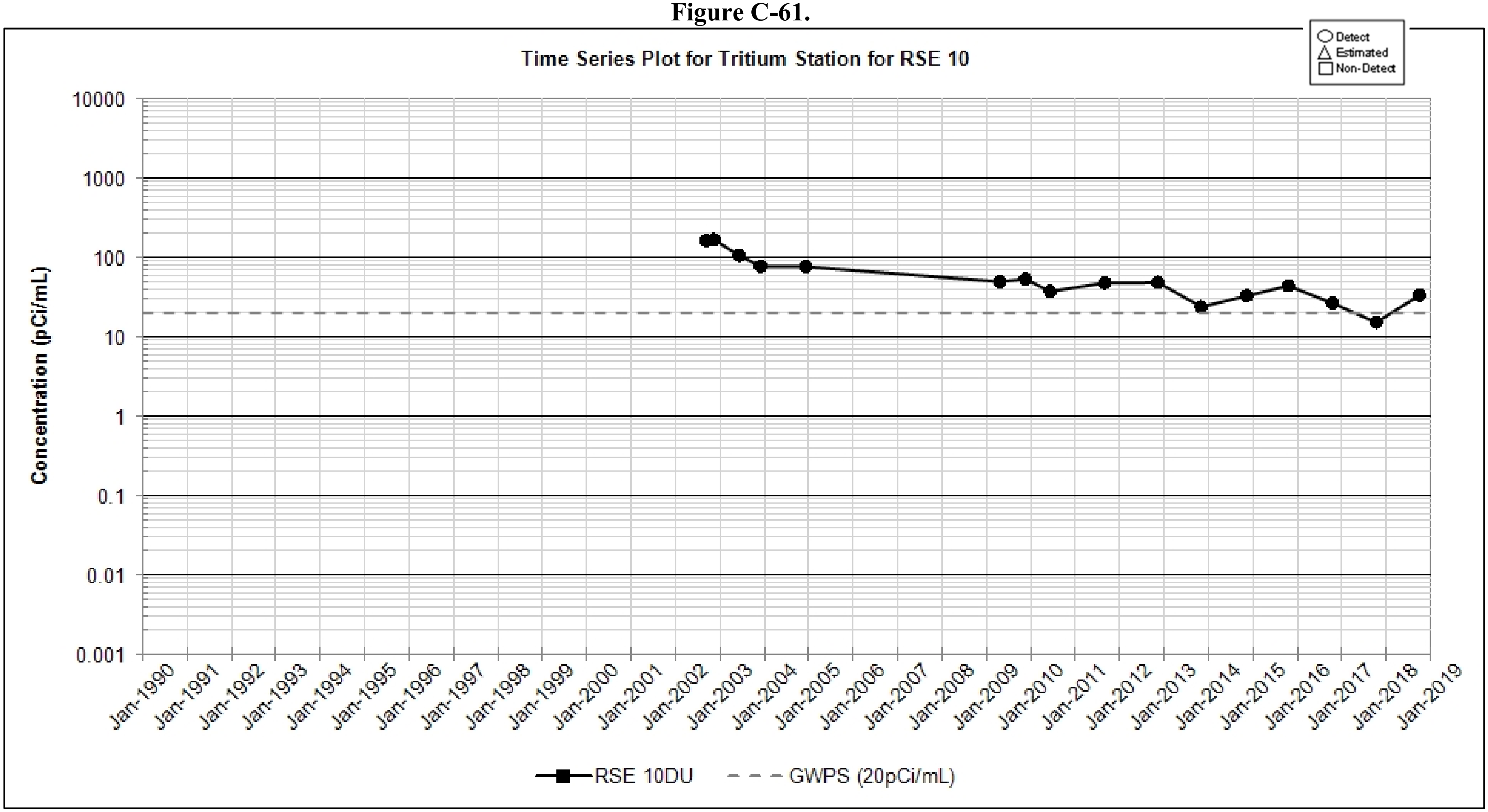

Time Series Plot for Tritium Station for RSE 10
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RSE 10DU
GWPS (20pCi/mL)

Figure C-62.

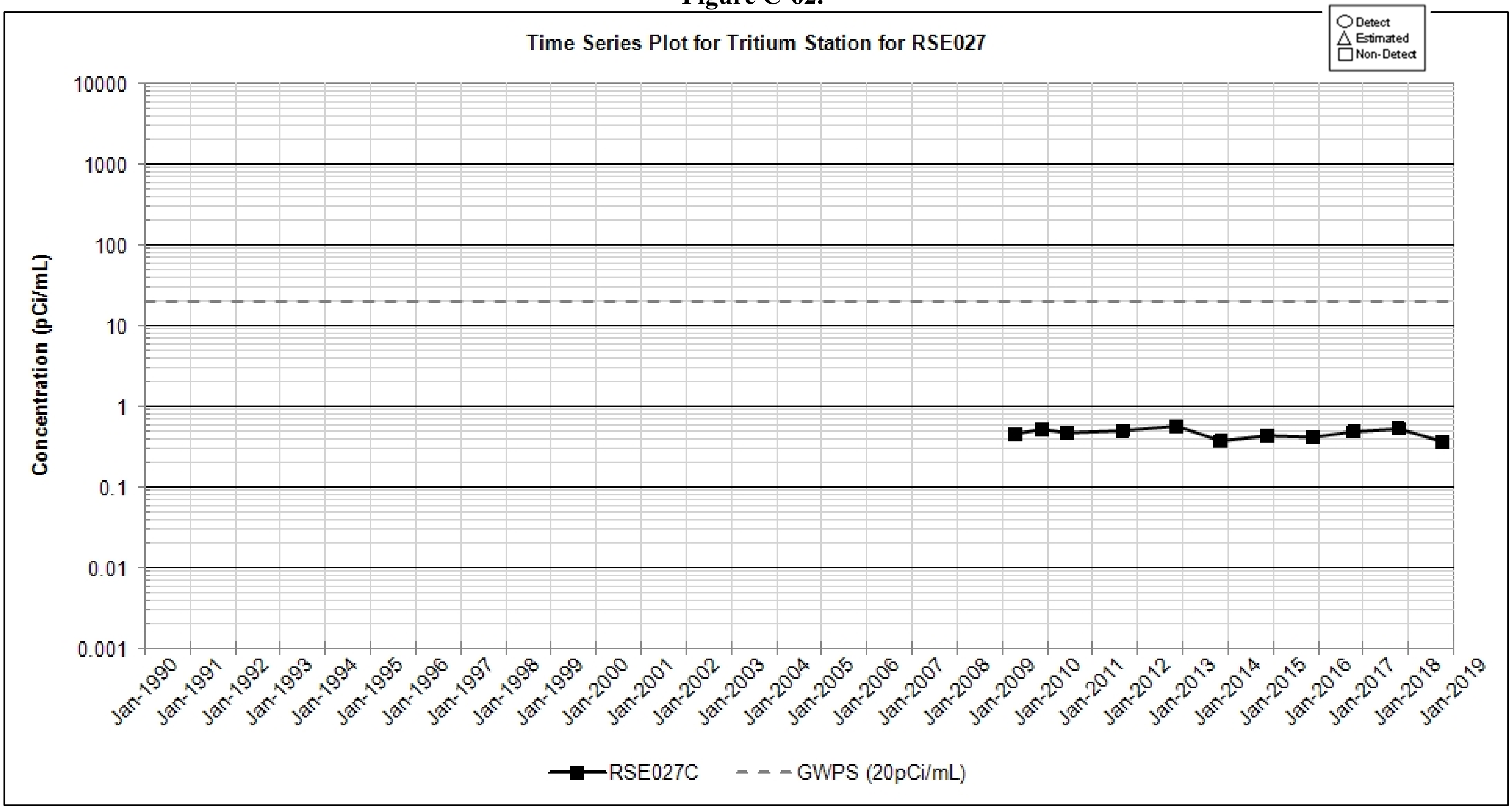

Time Series Plot for Tritium Station for RSE027
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RSE027C
GWPS (20pCi/mL)

Figure C-63.

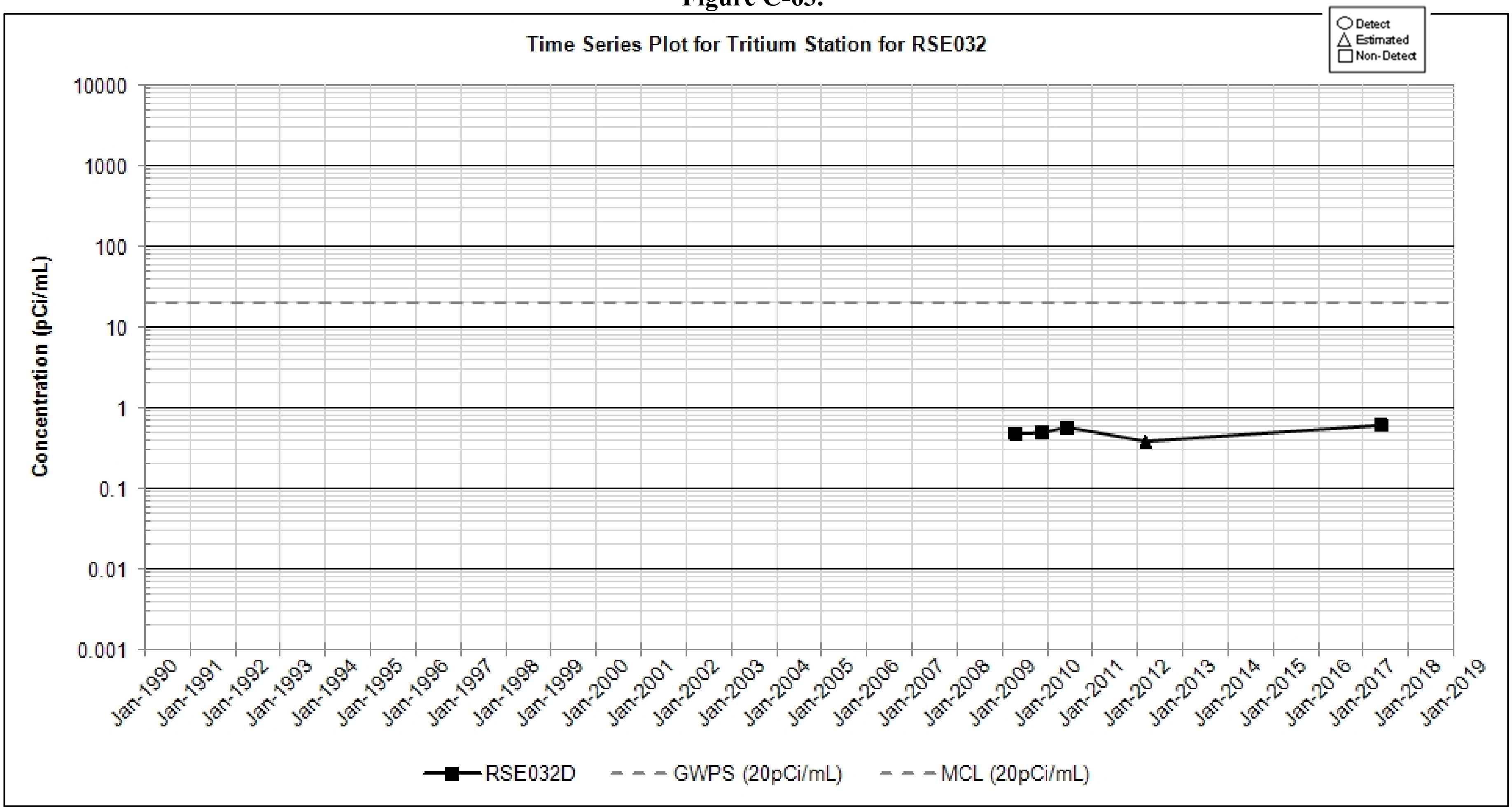

Time Series Plot for Tritium Station for RSE032
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RSE032D
GWPS (20pCi/mL)
MCL (20pCi/mL)

Figure C-64.

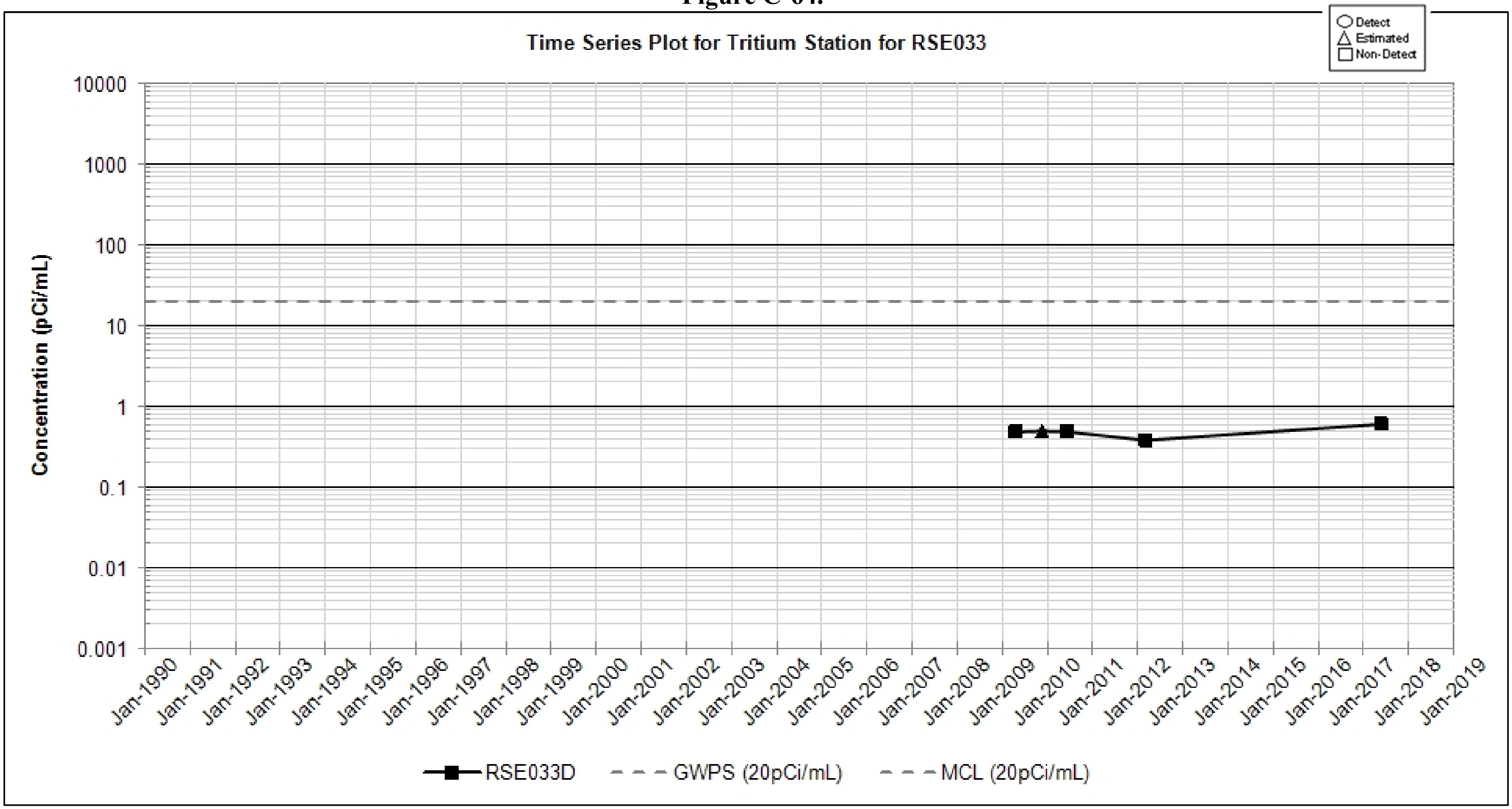
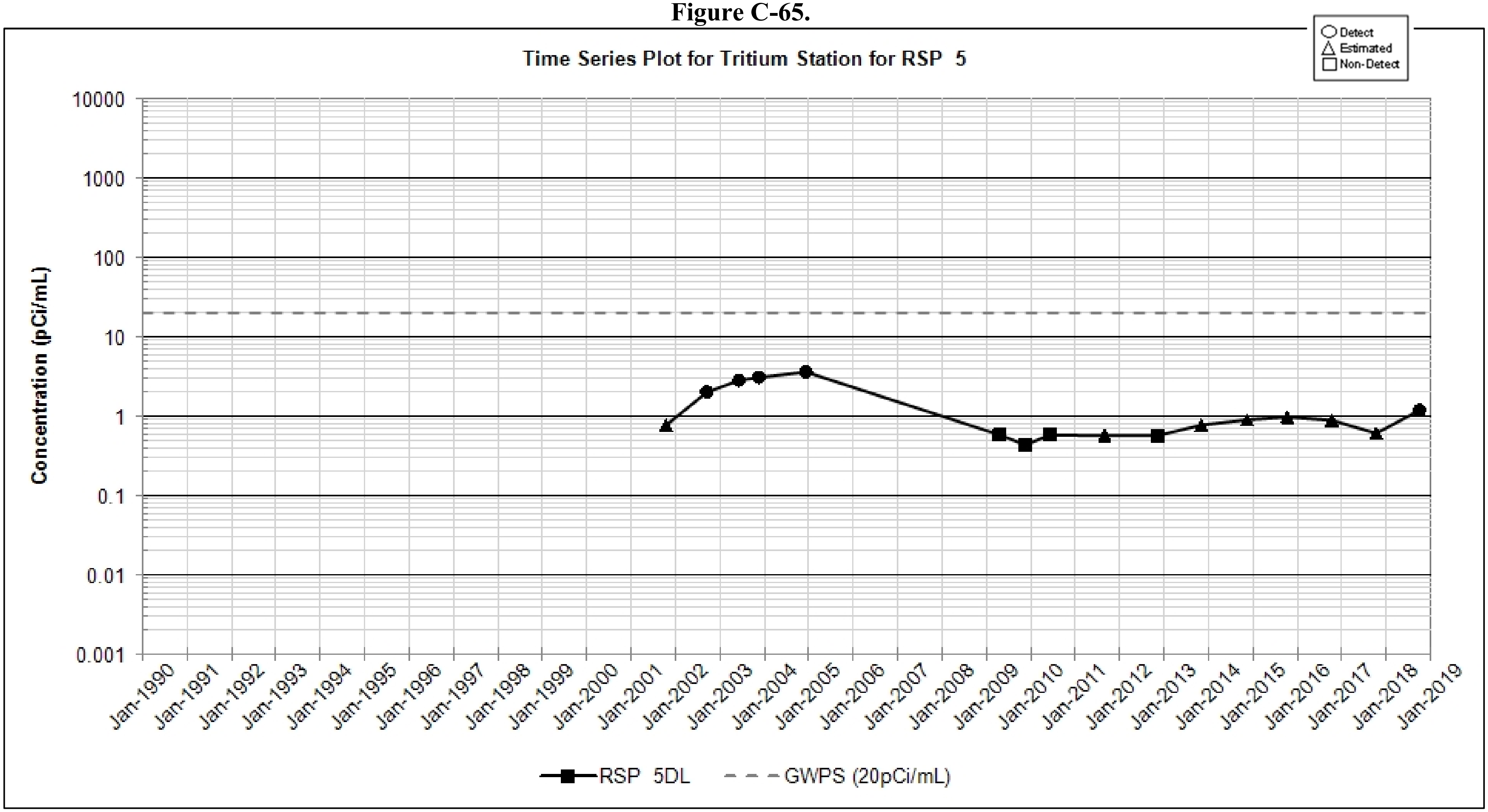

Time Series Plot for Tritium Station for RSE033
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RSE033D
GWPS (20pCi/mL)
MCL (20pCi/mL)

Figure C-65.


Time Series Plot for Tritium Station for RSP 5
Detect
Estimated
Non-Detect
Concentration (pCi/mL)
10000
1000
100
10
1
0.1
0.01
0.001
Jan-1990
Jan-1991
Jan-1992
Jan-1993
Jan-1994
Jan-1995
Jan-1996
Jan-1997
Jan-1998
Jan-1999
Jan-2000
Jan-2001
Jan-2002
Jan-2003
Jan-2004
Jan-2005
Jan-2006
Jan-2007
Jan-2008
Jan-2009
Jan-2010
Jan-2011
Jan-2012
Jan-2013
Jan-2014
Jan-2015
Jan-2016
Jan-2017
Jan-2018
Jan-2019
RSP 5DL
GWPS (20pCi/mL)

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APPENDIX D

Tritium and TCE Plume Maps

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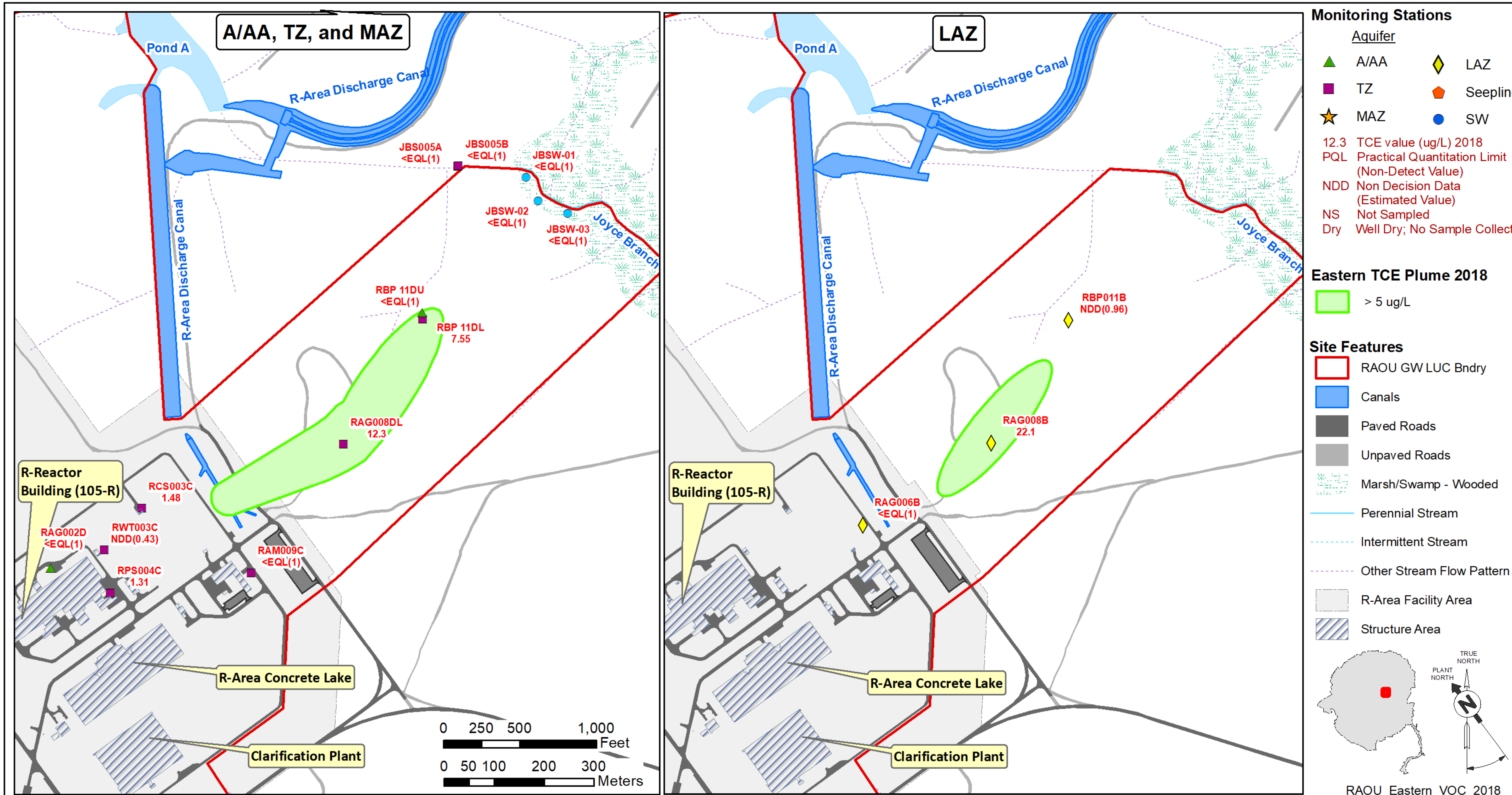

Figure D-1. Eastern VOC Plume 2018

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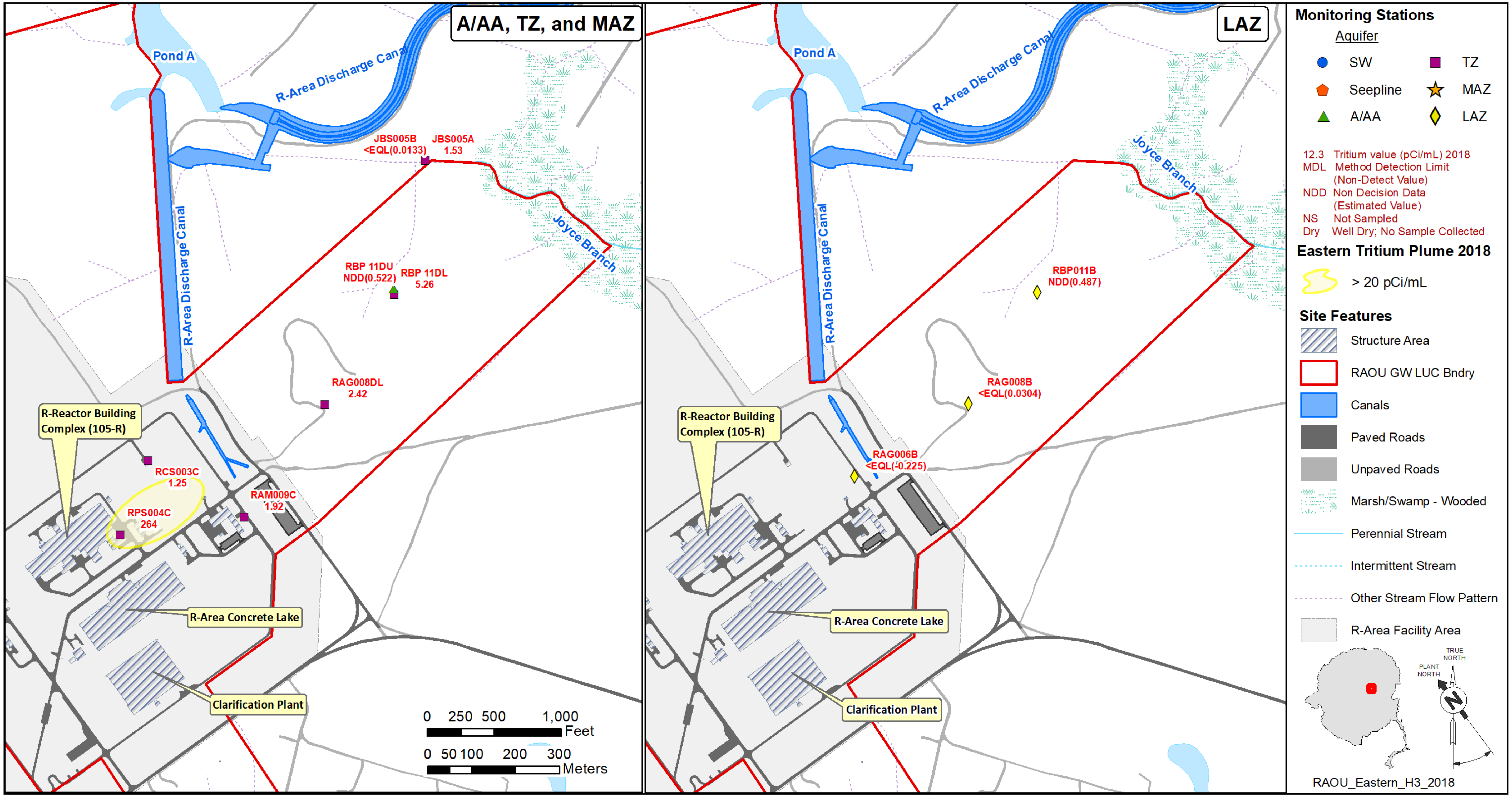

Figure D-2. Eastern Tritium Plume 2018

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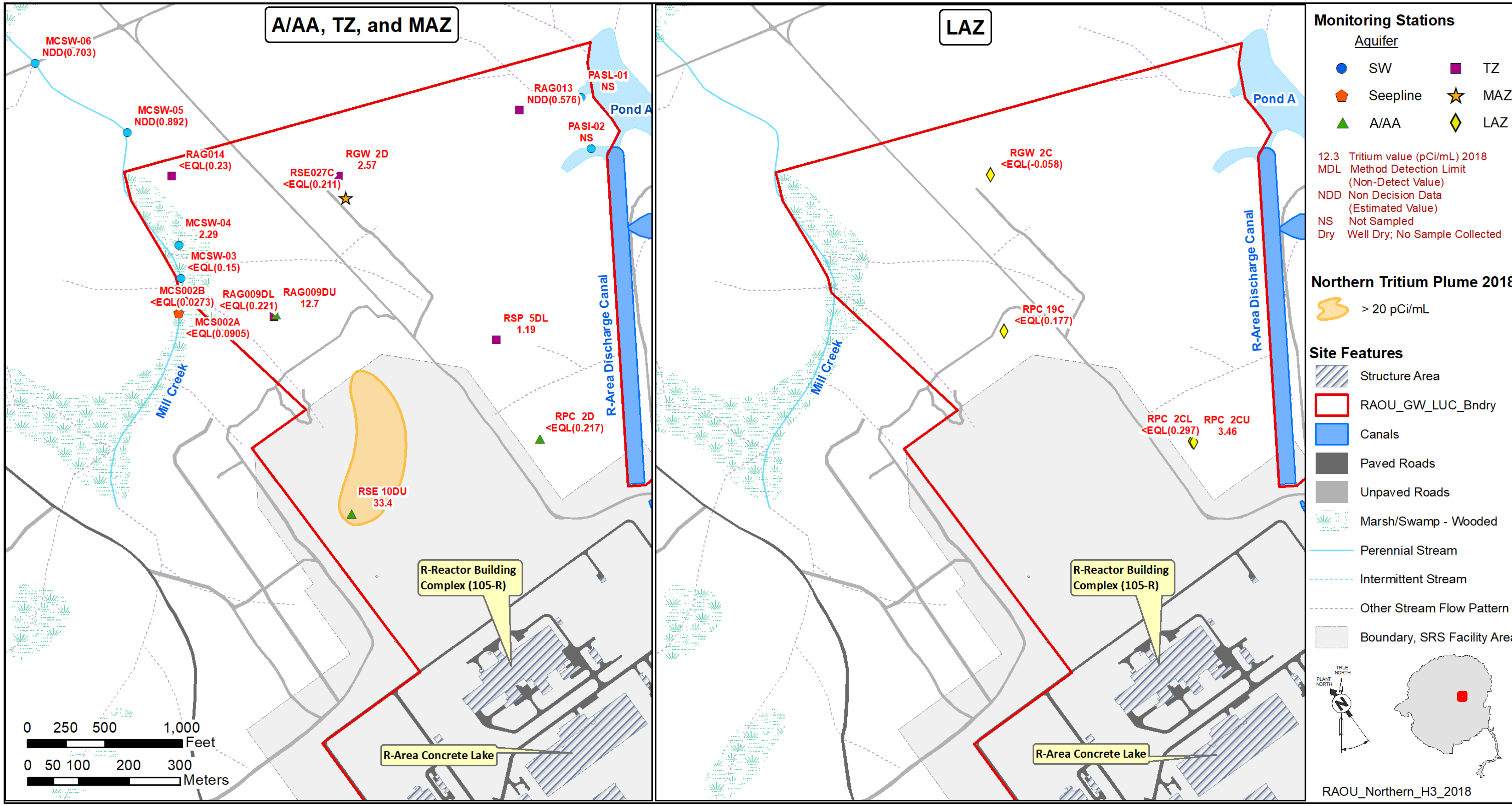

Figure D-3. Northern Tritium Plume 2018

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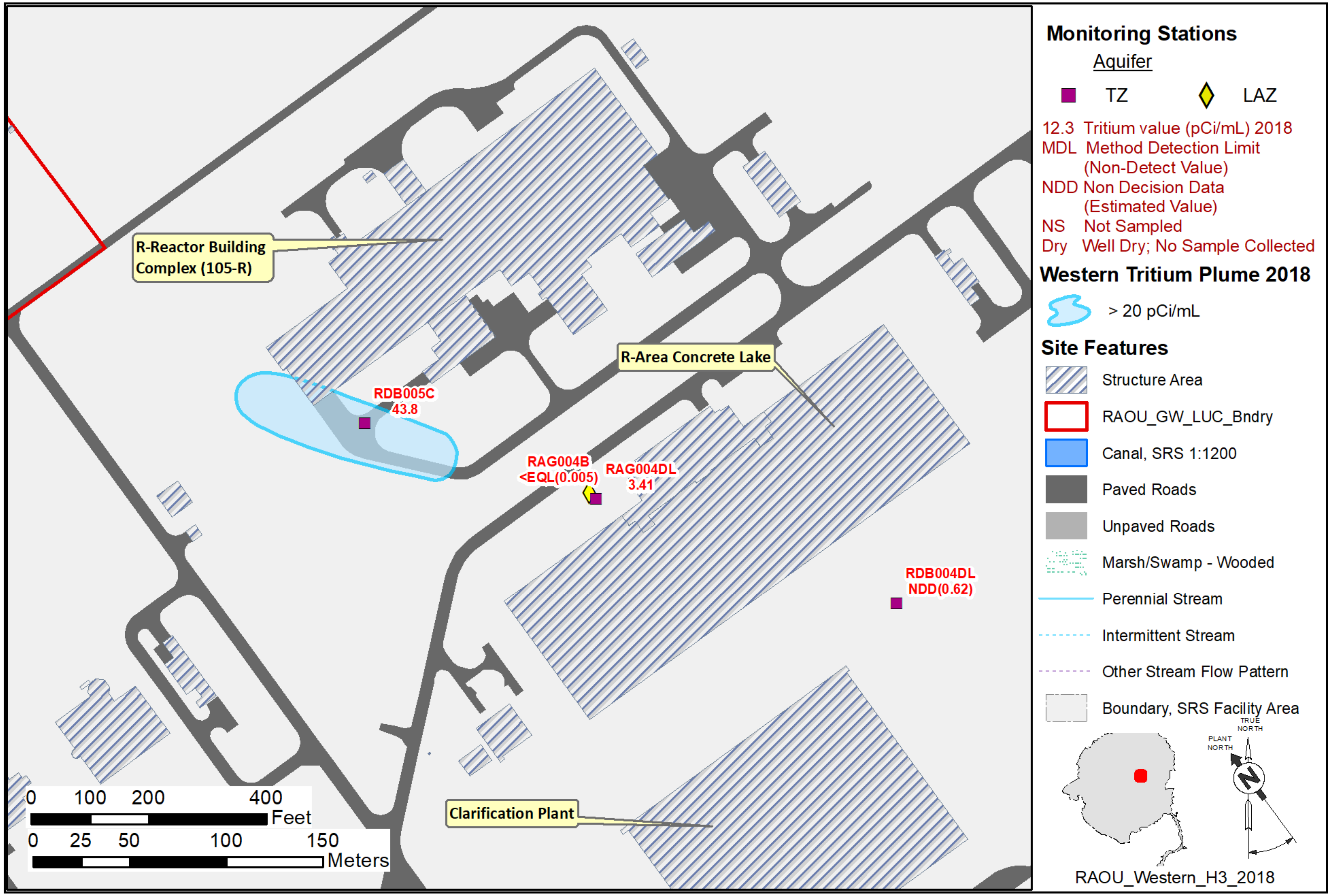

Figure D-4. Western Tritium Plume 2018

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APPENDIX E

Potentiometric Surfaces

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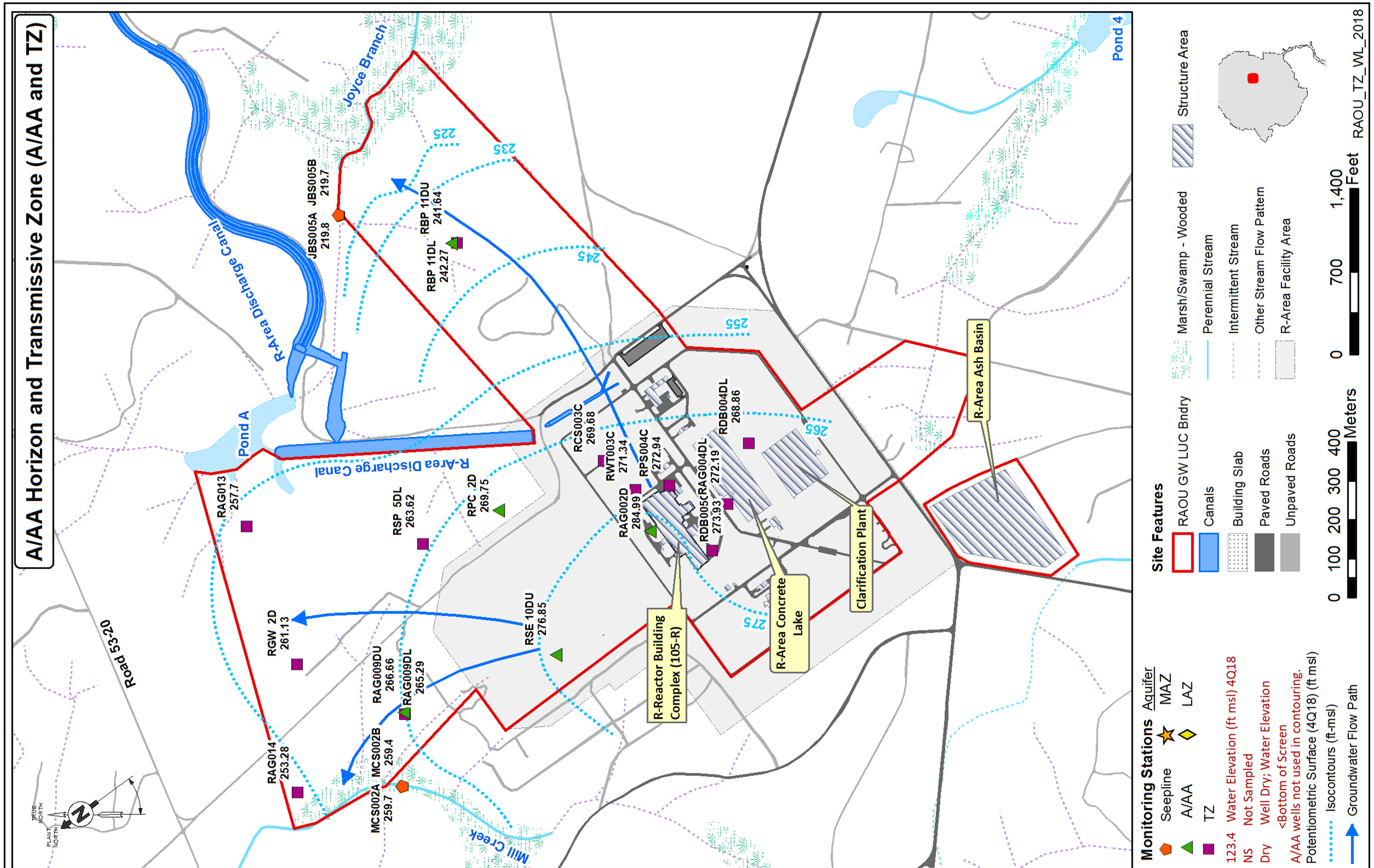

Figure E-1. R-Area TZ Well Water Elevations 2018

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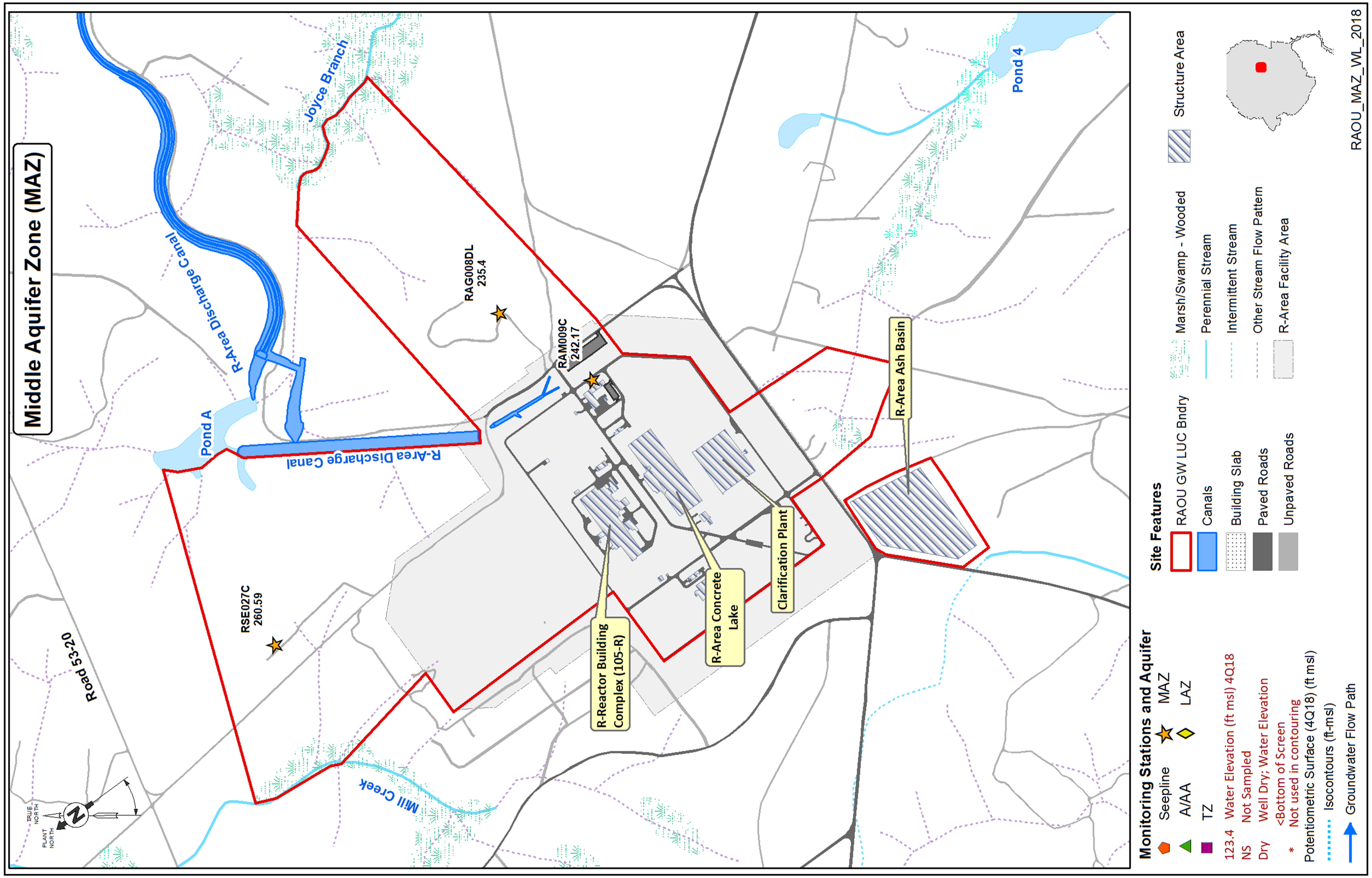

Figure E-2. R-Area MAZ Well Water Elevations 2018

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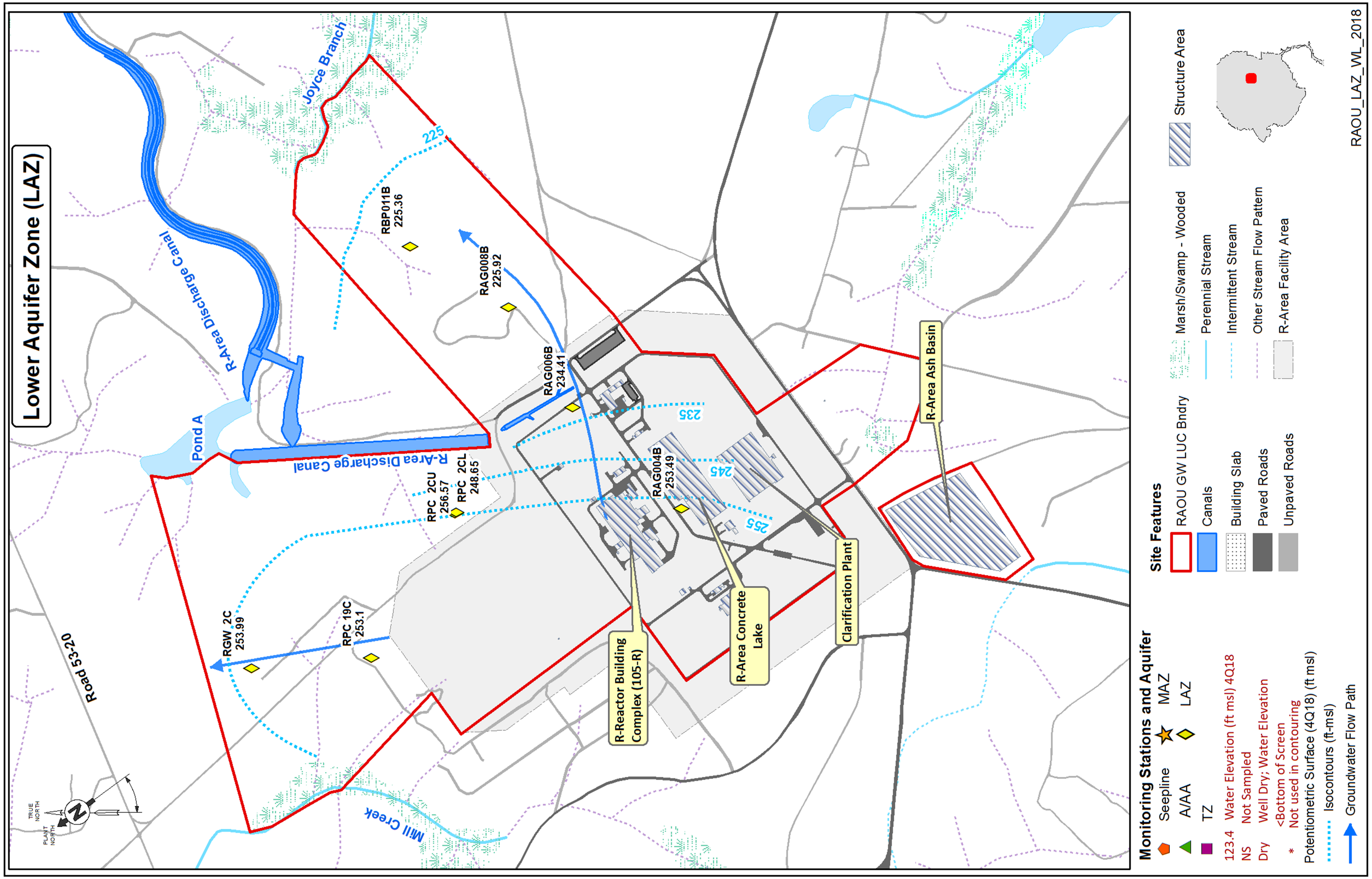

Figure E-3. R-Area LAZ Well Water Elevations 2018

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