*Commonwealth of Virginia*

*VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY*

www.deq.virginia.gov

Stefanie K. Taillon
Secretary of Natural and Historic Resources

Michael S. Rolband, PE, PWD, PWS Emeritus
Director

July 1, 2025

Mr. Matt Alberts
Radford Army Ammunition Plant
Route 114, P.O. Box 1
Radford, Virginia 24143-0100

**VIA ELECTRONIC MAIL**

**Re: Draft Final SWMU 54 Monitored Natural Attenuation Sampling Year Twelve Report**
**Radford Army Ammunitions Plant**
**Route 114, Radford, Virginia 24141**
**EPA ID#: VA1210020730**

Dear Mr. Alberts:

This letter acknowledges the receipt and review of the Draft Final SWMU 54 Monitored Natural Attenuation Sampling Year Twelve Report (Report) submitted to the Virginia Department of Environmental Quality, Office of Remediation Programs (Department) by Radford Army Ammunitions Plant (RFAAP).

The Department has no comments on the submittal and concurs that the current monitoring network is adequate. If you have any questions regarding this correspondence, you may contact me at the email address or phone number listed below.

Sincerely,

Kurt Kochan, Remediation Project Manager
Virginia Department of Environmental Quality
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cc: RFAAP Correspondence File
Melissa Lincoln, BAE
Tara Mason, DEQ-CO
Nikki Herschler, DEQ-BRRO

# FINAL

# SWMU 54 MONITORED NATURAL ATTENUATION MONITORING YEAR TWELVE REPORT

## RADFORD ARMY AMMUNITION PLANT
## RADFORD, VIRGINIA

Contract No. W912DR-19-D-0004
Delivery Order No. W912DR-24-F-0222

*Prepared For:*

**U.S. ARMY CORPS OF ENGINEERS**
**BALTIMORE DISTRICT**
Baltimore, MD

and

**RADFORD ARMY AMMUNITION PLANT**
Radford, VA

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**MAY 2025**

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# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| % | percent |
| < | less than |
| > | greater than |
| ºC | degrees Celsius |
| µg/L | micrograms per liter |
| µS/cm | microsiemens per centimeter |
| 1,3,5-TNT | 1,3,5-trinitrotoluene |
| 2,3,7,8-TCDD | 2,3,7,8-tetrachlorodibenzodioxin |
| 2,4,6-TNT | 2,4,6-trinitrotoluene |
| 2,4-DNT | 2,4-dinitrotoluene |
| 2,6-DNT | 2,6-dinitrotoluene |
| 2-NT | 2-nitrotoluene |
| 2ADNT | 2-amino-4,6-dinitrotoluene |
| 4ADNT | 4-amino-2,6-dinitrotoluene |
| amsl | above mean sea level |
| bgs | below ground surface |
| BTOC | below top of casing |
| C/N | carcinogenic/noncarcinogenic |
| CAPE | Cape Environmental Management Inc. |
| CAS | Chemical Abstracts Service |
| CB&I | CB&I Environmental & Infrastructure, Inc. |
| CCV | continuing calibration verification |
| CMO | corrective measures objective |
| CMS | Corrective Measures Study |
| CoC | chain-of-custody |
| COC | contaminant of concern |
| COD | chemical oxygen demand |
| COPC | chemical of potential concern |
| DL | detection limit |
| DNT | dinitrotoluene |
| DNX | hexahydro-1,3-dinitroso-5-nitro-1,3,5-triazine |
| DO | dissolved oxygen |
| DoD | U.S. Department of Defense |
| $FE^{2+}$ | dissolved ferrous iron |
| ft | feet |
| ft/day | feet per day |
| ft/ft | feet per foot |
| ft/year | feet per year |
| GC | gas chromatography |
| HHRA | human health risk assessment |
| HI | Hazard Index |
| HPLC | high-performance liquid chromatography |
| ICV | initial calibration verification |
| ID | identifier |

# ACRONYMS AND ABBREVIATIONS (CONTINUED)

| | |
|---|---|
| IDW | investigation-derived waste |
| IM | Interim Measure |
| IMWP | Interim Measures Work Plan |
| IT | IT Corporation |
| LCS | laboratory control sample |
| LCSD | laboratory control sample duplicate |
| LOD | limit of detection |
| LOQ | limit of quantitation |
| LQ | laboratory qualifier |
| LTM | long-term monitoring |
| MCL | maximum contaminant level |
| MDL | method detection limit |
| mg/L | milligrams per liter |
| mL | milliliters |
| mL/min | milliliters per minute |
| Mn | manganese |
| MNA | monitored natural attenuation |
| MNX | hexahydro-1-nitroso-3,5-dinitro-1,3,5-triazine |
| mS | millisiemens |
| MS | matrix spike |
| mS/cm | millisiemens per centimeter |
| MSD | matrix spike duplicate |
| mV | millivolts |
| MWP | Master Work Plan |
| ND | not detected |
| NG | nitroglycerin |
| No. | Number |
| NT | not tested |
| NTU | nephelometric turbidity unit |
| ORP | oxidation reduction potential |
| Parsons | Parsons Engineering Science, Inc. |
| PDS | post digestion spike |
| pH | potential of hydrogen |
| PID | photoionization detector |
| ppm | parts per million |
| QA | quality assurance |
| QC | quality control |
| r | reason code |
| RBC | Risk-Based Concentration |
| RCRA | Resource Conservation and Recovery Act |
| RDX | cyclotrimethylenetrinitramine |
| RFAAP | Radford Army Ammunition Plant |
| RFI | RCRA Facility Investigation |
| RG | remedial goal |

# ACRONYMS AND ABBREVIATIONS (CONTINUED)

| | |
|---|---|
| RL | reporting limit |
| RPD | relative percent difference |
| RSL | regional screening level |
| Shaw | Shaw Environmental, Inc. |
| SL | screening level |
| SU | standard unit |
| SWMU | solid waste management unit |
| TIC | total inorganic carbon |
| TNT | trinitrotoluene |
| TNX | hexahydro-1,3,5-trinitroso-1,3,5-triazine |
| TOC | total organic carbon |
| U.S. | United States |
| UFP-QAPP | Uniform Federal Policy – Quality Assurance Project Plan |
| URS | URS Corporation |
| USACE | U.S. Army Corps of Engineers |
| USEPA | U.S. Environmental Protection Agency |
| VDEQ | Virginia Department of Environmental Quality |
| VI | Verification Investigation |
| VQ | validation qualifier |
| WESTON® | Weston Solutions, Inc. |
| YSI® | Yellow Springs Instrument |

# 1. INTRODUCTION

Cape Environmental Management Inc. (CAPE) with subcontractor Weston Solutions, Inc. (WESTON®) has been contracted by the United States (U.S.) Army Corps of Engineers (USACE), Baltimore District, to perform long-term monitoring (LTM) and monitored natural attenuation (MNA) at Solid Waste Management Unit (SWMU) 54 (RAAP-014), Propellant Burning Ash Disposal Area, at Radford Army Ammunition Plant (RFAAP), Radford, VA. This report provides a description of the groundwater monitoring activities completed and an analysis of results from the forty-first and forty-second semiannual monitoring events conducted in 2024 (August and December). Further, this report provides a summary of Year Twelve monitoring consisting of those two monitoring events.

This work was performed under Contract Number (No.) W912DR-19-D-0004, Delivery Order No. W912DR-24-F-0222, in accordance with the *Final Master Work Plan, Quality Assurance Plan, Health and Safety Plan* (RFAAP Final MWP) (URS Corporation [URS], 2003) and with Part II (D)(11-21) Interim Measure (IM) of the RFAAP Resource Conservation and Recovery Act (RCRA) Corrective Action Permit (U.S. Environmental Protection Agency [USEPA], 2000). To maintain consistency with previous LTM and MNA monitoring events (i.e., through Year Eleven), the LTM and MNA activities followed the technical approach, Monitoring and Analysis Plan, and quality assurance/quality control (QA/QC) procedures documented in the Final *SWMU 54 Monitored Natural Attenuation Interim Measures Work Plan* (IMWP) (Shaw Environmental, Inc. [Shaw], 2011a).

Based on the consistency of the data and the fact that quarterly monitoring had been conducted for a full 9 years, groundwater monitoring starting with Year Ten was reduced to a semiannual basis at the well locations. The Virginia Department of Environmental Quality (VDEQ) approved this recommendation, which was presented in the Year Eight report. In October 2021, VDEQ concurred with Radford's Class 1 Modification request for the permit which recommended removal of references to the monitoring frequency specified in the Monitored Natural Attenuation Groundwater Sampling plan for SWMU-49 contained in Attachment C of the permit.

## 1.1 PURPOSE AND SCOPE

Soil IMs have been completed at SWMU 54 to mitigate the threat of contaminant release, migration, and/or exposure to the public and the environment. The IMs included site preparation, soil excavation, waste characterization and off-site disposal, confirmation monitoring, and site restoration. Detailed information concerning the IMs is presented in the *Solid Waste Management Unit 54 RCRA Facility Investigation/Corrective Measures Study Report* (Final SWMU 54 RFI/CMS Report) (URS, 2008).

The corrective measures objectives (CMOs) and remedial goals (RGs) were developed and presented in the Final SWMU 54 RFI/CMS Report (URS, 2008). The site-specific CMOs for SWMU 54 Area A are: to mitigate further leaching of explosives constituents from soil to groundwater at levels that would potentially increase observed concentrations and adversely impact future beneficial use of groundwater; and, to the extent practicable, to restore site groundwater to the most beneficial use. The site-specific CMOs for SWMU 54 Area B are: to mitigate the potential hypothetical future risks that have been identified for exposure to soil under a future construction worker scenario; and to prevent leaching of contaminants of concern from soil to groundwater at levels that would potentially adversely impact future beneficial use of groundwater. The site-specific CMOs for Area A and Area B were met through the excavation and off-site disposal of contaminated soil, which was completed in 2010.

The objectives of the LTM and MNA program are to measure and track the reduction of the following compounds to levels below the RGs, as defined in **Table 1-1**:

- 2,4,6-Trinitrotoluene (2,4,6-TNT)
- Dinitrotoluene (DNT) mixture
- Cyclotrimethylenetrinitramine (RDX)
- Perchlorate

## 1.2 SITE DESCRIPTION AND BACKGROUND

SWMU 54 is situated in the northeastern section of RFAAP within the easternmost portion of the Horseshoe Area. The SWMU consists of two noncontiguous disposal areas, Area A and Area B. Area A is a triangular-shaped parcel located in the southeast section of SWMU 54 that covers approximately 0.58 acres. Area B is a somewhat round tract located in the northwestern section that covers approximately 1.09 acres. Both areas are open fields covered with grass and are

bordered to the east and north by the RFAAP installation security fence. The site is currently undeveloped. SWMU 54 was reportedly used as an ash disposal area in the late 1970s that received propellant ash from the Waste Propellant Burning Grounds. The location of SWMU 54 is provided in **Figure 1-1**. All figures are placed at the end of each report section.

## Table 1-1 SWMU Groundwater Remedial Goals

| Contaminant of Concern | Groundwater RG* (µg/L) |
|---|---|
| 2,4,6-TNT | 7.82 |
| DNT Mixture | 0.932 |
| RDX | 6.1 |
| Perchlorate | 10.9 |

**Notes:**
*RGs were calculated using target risk 1E-5 for the lifetime resident and a target hazard of 1 for the adult and child resident (URS, 2008).
2,4,6-TNT = 2,4,6-trinitrotoluene
DNT = dinitrotoluene
µg/L = micrograms per liter
RDX= cyclotrimethylenetrinitramine
RG = remedial goal
SWMU = Solid Waste Management Unit




Legend

- SWMU 54 Boundary
- Other SWMU Boundary




Aerial Source:
ESRI Imagery Mapping Service, 2019

N

0 150 300 600 Feet

Prepared For:

**Baltimore District**

FIGURE 1-1
SWMU 54 SITE LOCATION MAP
RADFORD, VIRGINIA

File: Y:\Radford\MXD\SWMU\SWMU54_Site_Location_Map.mxd, 4/23/2025 3:31:53 PM, ricksc

# 2. PHYSICAL CHARACTERISTICS

## 2.1 TOPOGRAPHY

SWMU 54 is situated on a gently sloping terrace that leads to the New River to the east. Elevations range from a high of approximately 1,716 feet (ft) above mean sea level (amsl) in the western section of the SWMU to approximately 1,696 ft amsl in the eastern section. East and outside the SWMU boundary, the slope steepens precipitously as it reaches the New River (at approximately 1,676 ft amsl).

## 2.2 SURFACE WATER

The New River is situated approximately 150 ft east of SWMU 54, and a small stream is present on the southern boundary. Surface water runoff from the SWMU flows east and possibly south to the New River and the unnamed stream. SWMU 54 is located within the easternmost portion of the Horseshoe Area at RFAAP. SWMU 54 is positioned within the current New River 100-year floodplain.

## 2.3 GEOLOGY

### 2.3.1 Regional Geology

SWMU 54 is located in the New River Valley, which crosses the Valley and Ridge Province, approximately perpendicular to the regional strike of bedrock, and cross cuts Cambrian and Ordovician limestone or dolostone. Deep clay-rich residuum is prevalent in areas underlain by carbonate rocks. The valley is covered by river floodplain and terrace deposits; karst topography is dominant throughout the area. A more detailed description of the regional geology is presented in the RFAAP Final MWP (URS, 2003).

### 2.3.2 Site-Specific Geology

Characterization of the SWMU 54 subsurface lithology was conducted during the advancement of soil and monitoring well borings at the site. Based on the borehole logs, two geologic cross sections were developed and are presented in **Figure 2-1** (plan view of the cross-sectional lines), **Figure 2-2** (cross section A-A'), and **Figure 2-3** (cross section B-B').

Soil and monitoring well borings ranged from 10 to 60 ft in depth. Depths to bedrock, which were reported to be measured directly at the monitoring well borings, ranged in elevation from approximately 1,716 to 1,670 ft amsl. Based on the borehole logs, it was determined that bedrock slopes to the east.

The site lithology consists of unconsolidated sediments comprised of alluvial deposits overlying a thin zone of saprolitic carbonate (i.e., weathered bedrock), which overlies the Cambrian-aged Elbrook Formation. The alluvial deposits consist primarily of silty sand overlying channel deposits of fine- to coarse-grained sand and gravel (river jack). These paleo-channel deposits rest directly on the saprolite, which reportedly reaches 2.5 ft in thickness. It was also reported that some areas of the SWMU contain fill material to depths of 9 to 10 ft below ground surface (bgs).

Depth to competent bedrock at the SWMU ranges from 17 to 24 ft bgs. This competent bedrock belongs to the Elbrook Formation, which is a thickly-bedded, blue-gray dolostone interspersed with blue-gray to white limestone. Locally, the formation is described as interbedded green and maroon shale, yellowish-brown dolostone, and greenish- to grayish-brown limestone and dolostone.

A more detailed discussion of the geology and soil at RFAAP is presented in Sections 3.4 through 3.7 of the RFAAP Final MWP (URS, 2003) and in the *Facility-Wide Background Study* Report (IT Corporation [IT], 2001).

## 2.4 HYDROGEOLOGY

### 2.4.1 Regional Hydrogeology

Geologically, the Appalachian Plateaus and Valley and Ridge Province encompass two major tectonic domains: the southern Appalachian Basin and the southeastern part of the Eastern Interior Basin. The hydrogeologic framework is based on generalized stratigraphic succession, with indurated sedimentary rocks of the Paleozoic age forming predominant units.

Groundwater flow paths are typically short, commonly extending no more than several miles in their longest range. The largest groundwater supplies are produced from the carbonate rocks, especially where they are associated with thick regolith, an important storage reservoir

throughout the entire area. The regolith stores recharge that otherwise would be rapidly diverted to overland flow. In addition, this unit slowly releases water to underlying carbonate aquifers. Because of the widespread distribution of carbonate rocks and associated regolith, abundant precipitation in a humid climate, and relatively steep hydraulic gradients, this region (and locally) is one of the major karstlands in the eastern United States.

Groundwater supplies in the Valley and Ridge Province are generally of good quality when compared to surface water supplies (Parsons Engineering Science, Inc. [Parsons], 1996); however, because of extended contact with minerals, many groundwater supplies contain higher levels of dissolved solids than the streams into which they discharge. Because of sinkholes and underground caverns in karst aquifers, there is a high potential for groundwater to be impacted by direct infiltration of contaminated surface water.

### 2.4.2 Site-Specific Hydrogeology

Monitoring wells installed at SWMU 54 were screened in both the shallow (surficial aquifer) and shallow bedrock aquifers. Water levels were measured in the wells to calculate the groundwater flow direction at the SWMU. Groundwater contour maps have been prepared using water level data collected prior to each round of groundwater monitoring. The maps for Year Twelve of monitoring are presented in Section 4. Contour lines shown on these figures represent lines of equal elevation of the water table; consequently, groundwater flow direction is always perpendicular to the contour lines and feeds into the New River, which generally runs a south-to-north course. Groundwater at the site tends to flow east and appears to discharge to the New River along the eastern side of the site.




Legend

- Well
- Soil Sample Location
- Fence
- Cross Section
- SWMU 54 Boundary

Aerial Source:
Near Map Imagery, February 2020

N

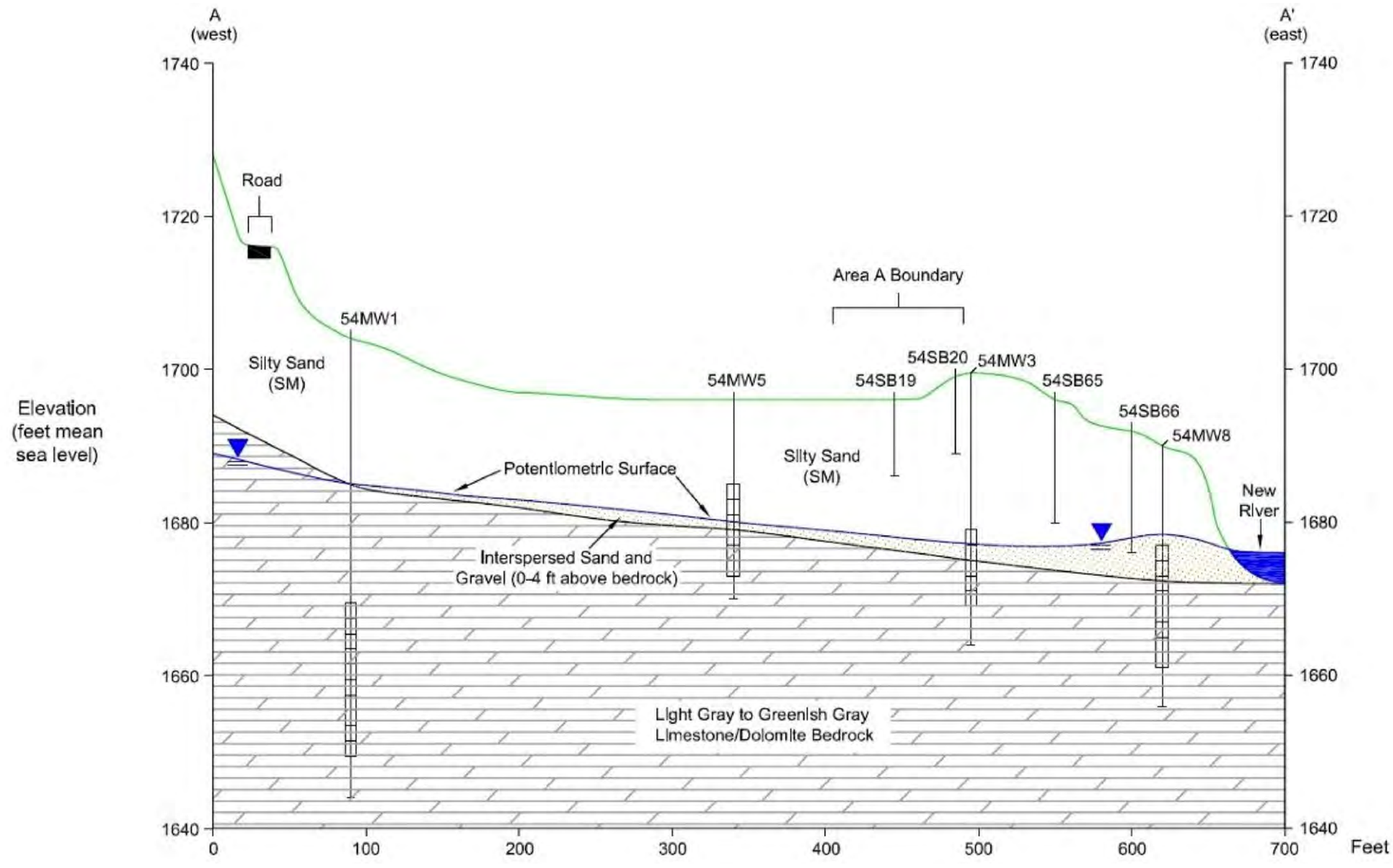
0 30 60 120 Feet

Prepared For:

Baltimore District

FIGURE 2-1
SWMU 54
CROSS SECTION
RADFORD, VIRGINIA

File: Y:\Radford\MXD\SWMU\SWMU54_Topography_Cross_Section.mxd, 4/23/2025 3:35:56 PM, ricksc



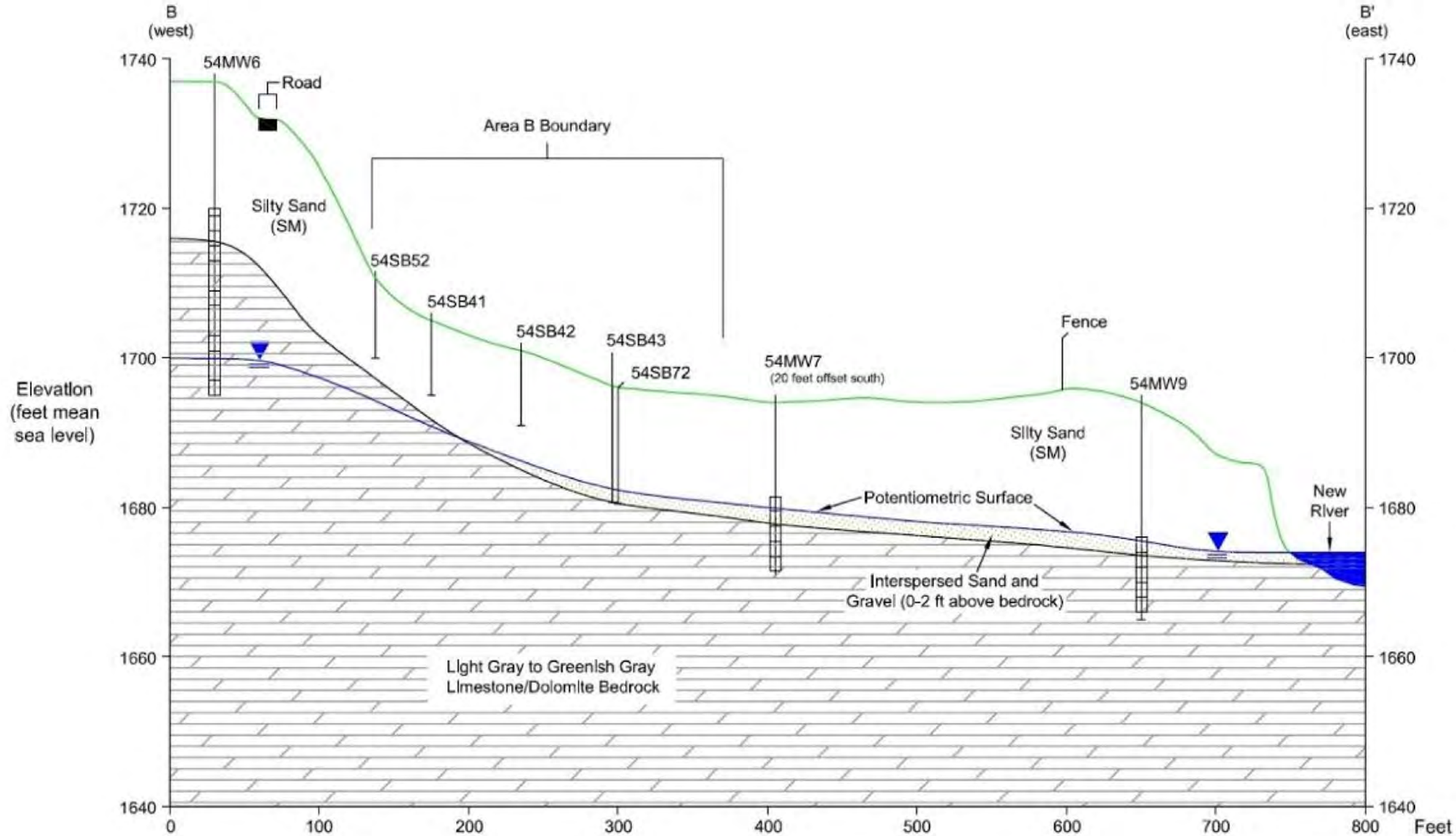

Legend

Data Source:
Bering Sea Environmental, LLC
SWMU 54, Five Year Report, February 2018

Prepared For:
Baltimore District

FIGURE 2-2
SWMU 54
CROSS SECTION A-A'
RADFORD, VIRGINIA

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Legend

Data Source:
Bering Sea Environmental, LLC
SWMU 54, Five Year Report, February 2018

Prepared For:

**Baltimore District**

FIGURE 2-3
SWMU 54
CROSS SECTION B-B'
RADFORD, VIRGINIA

File: Y:\Radford\MXD\SWMU\SWMU54_Cross_Section_B_B_Template.mxd, 4/23/2025 3:36:13 PM, ricksc

# 3. PREVIOUS INVESTIGATIONS

Four previous investigations have been conducted at this site prior to completion of an interim removal measure in 1999 by Parallax, Inc. Data obtained from previous site investigations prior to the IM were used to identify site boundaries and characteristics, and to identify chemicals of potential concern (COPCs). In 1992, the Environmental Photographic Interpretation Center provided aerial photographic analysis of SWMU 54, under the direction of USEPA. In addition, Dames & Moore conducted a RCRA Verification Investigation (VI) at the site in 1992 to identify the ash disposal at Area A under authority of the 1984 Hazardous and Solid Waste Amendments. As a follow-up to the 1992 VI, Parsons completed an RFI in 1996, as part of a multiple site investigation to, "define the extent of ash and the limits of soil contamination." In 1998, a Supplemental RFI/CMS was conducted to investigate a flat grassy area ringed by mature pine trees northwest of Area A. This area was defined as Area B within SWMU 54. The purpose of the supplemental RFI was to, "characterize the nature and extent of contamination within SWMU 54." In 1999, Parallax, Inc. completed IMs at Area A and Area B of SWMU 54 consisting of excavation of selected "hot spot" areas of lead and explosives in soil.

In 2008, URS conducted an RFI/CMS investigating both Area A and Area B to confirm the effectiveness of the IM, evaluate and assess current conditions at the sites, and provide recommendations regarding potential corrective measure requirements at the sites. Direct-push soil borings with chemical monitoring were used to characterize the nature and extent of constituents in soil at SWMU 54, to identify the lateral and vertical extent of any waste material present, and to characterize soil lithology and depth to groundwater and bedrock. Additionally, monitoring wells were installed at the site, and groundwater samples were collected and analyzed. Details of these investigations are described in Section 3.0 (Field Investigation Program) of the Final SWMU 54 RFI/CMS Report (URS, 2008). A potentiometric map portraying the groundwater levels measured in 2007 is provided as **Figure 3-1**. Historical data listing contaminant of concern (COC) concentrations in the on-site groundwater, New River surface water, and New River sediment pore water are provided in **Tables 3-1** through **3-6**.

The nature and extent assessment indicated that the main concern at the site is the fill material and grossly-contaminated soil directly below the material. Area A and Area B were evaluated

separately for the soil and groundwater nature and extent assessments, given the 200-ft separation between the areas, their topographic cross-gradient position, the lack of mobility of the chemicals in soil, and observed distributions of chemicals.

The main contaminants of concern in Area A soil are lead, 2,4,6-TNT, DNT, RDX, amino-DNTs, nitroglycerin (NG), heptachlor epoxide, and dioxins/furans. The main contaminants of concern in groundwater at Area A are explosives and perchlorate. Concentrations of COCs 2,4,6-TNT, DNT, RDX, and perchlorate in groundwater have decreased since RFI monitoring began in 2003 and 2004. The lateral extent of explosives and perchlorate in groundwater extends from Area A eastward to the New River. Monitoring of the groundwater/surface water interface (sediment pore water) and surface water of the New River did not indicate detectable impacts to sediment pore water or surface water from COPCs in groundwater.

Contaminants of concern in Area B soils include lead, DNT, amino-DNT, NG, RDX, dieldrin, Aroclor 1254, heptachlor epoxide, and dioxins/furans. No COCs were identified for Area B groundwater.

The human health risk assessment (HHRA) identified 8 COCs at Area A (2,4,6-TNT, DNT, RDX, perchlorate, amino-DNTs, NG, heptachlor epoxide, and 2,3,7,8-tetrachlorodibenzodioxin [2,3,7,8-TCDD]) and 10 COCs at Area B (2,4,6-TNT, DNT, RDX, amino-DNTs, NG, lead, Aroclor 1254, heptachlor epoxide, dieldrin, and 2,3,7,8-TCDD) under both an industrial and residential future-use scenario for total soil at SWMU 54. The HHRA assessed risk for a number of potential exposed populations including commercial workers, maintenance workers, construction workers, and child/adult residents. The HHRA determined that unacceptable risks to potential future residential and industrial receptors were associated with the COCs. The current land use is industrial for the areas surrounding SWMU 54, and this is not likely to change in the near future. As a result of the findings from the HHRA, it was concluded that, based on the levels detected in the soil hot spot areas, COCs could potentially leach from soil to groundwater at levels of concern, although groundwater impacts at levels of concern have not yet been identified at Area B. Because the RFI demonstrated that COC contamination is present at concentrations associated with unacceptable human health concerns, a CMS was performed to address the propellant ash material and grossly contaminated soil under the ash material at SWMU 54.

The alternatives evaluated were as follows:

- Alternative One: No Further Action.
- Alternative Two: Excavation of Soil at Area A and Area B, Off-Site Disposal, and MNA of Groundwater.
- Alternative Three: Excavation of Soil at Area A and Area B, Off-Site Disposal, and Enhanced In Situ Bioremediation of Groundwater.

These three alternatives were evaluated using the selection criteria of effectiveness, implementability, and cost. The site-specific CMO for SWMU 54 is to mitigate further leaching of explosives constituents from soil to groundwater at levels that would potentially increase observed concentrations and adversely impact future beneficial use of groundwater, and to eliminate the potential threats to human health and the environment that exist within materials found in SWMU 54. Observations from the SWMU 54 soil investigations indicate that the propellant ash consisted of a black, ashy material that was evident when encountered. Therefore, identification and removal of the propellant ash and grossly-contaminated soil were partially based on visual observations during excavation, with analytical samples collected to confirm the observations.

Alternative Two, which entails excavation and off-site disposal as the primary remediation process, was found to achieve the CMO. Therefore, Alternative Two was selected as the final alternative for SWMU 54 because it is implementable and provides a greater level of protection to human health and the environment not provided by other alternatives. In addition, Alternative Two is the sole alternative that facilitates RGs without potential adverse effects to groundwater (i.e., degradation of secondary water quality parameters) from remedial implementation activities, which would occur with implementation of Alternative Three.

The CMOs and RGs were developed in the Final SWMU 54 RFI/CMS Report (URS, 2008). The following is a summary of the findings from that process.

The site-specific CMO for SWMU 54 Area A is to mitigate further leaching of explosives constituents from soil to groundwater at levels that would potentially increase observed concentrations and adversely impact future beneficial use of groundwater, and, to the extent practicable, to restore site groundwater to the most beneficial use. The soil CMOs for Area A

have been met, and the purpose of this report is to implement the groundwater IMs to meet the CMOs for groundwater.

The site-specific CMO for SWMU 54 Area B is to mitigate the potential hypothetical future risks that have been identified for exposure to soil under a future construction worker scenario, and to prevent leaching of contaminants of concern from soil to groundwater at levels that would potentially adversely impact future beneficial use of groundwater. The site-specific CMOs have been met through the soil excavation and off-site disposal completed in 2010.

RGs for soil were used at SWMU 54 to confirm that all COCs were removed from soil to levels safe for human health and the environment. Results from the soil remedial action at SWMU 54 can be found in the approved Final *SWMU 54 Interim Measures Completion Report* (Shaw, 2011b). The groundwater RGs, included in **Table 1-1**, will be used to compare results from groundwater monitoring wells to assess the progress of the MNA process.

Area B, although not monitored during Year Twelve, is expected to have a groundwater flow velocity similar to Area A, as reported in the Year Three MNA Report (CB&I Environmental & Infrastructure, Inc [CB&I], 2014).

# Table 3-1 2002 and 2004 Area A Direct-Push Groundwater Analytical Results with Remedial Goals

| Sample ID<br>Sample Date | CAS | C/N | RG | Units | 54DPW1<br>12/11/2002 | | DL | RL | 54DPW2<br>12/11/2002 | | MDL | RL | 54DPW3<br>12/11/2002 | | MDL | RL | 54GP77<br>10/13/2004 | | MDL | RL | 54GP78<br>10/11/2004 | | MDL | RL | 54GP78-DUP(DUP-1)<br>10/11/2004 | | MDL | RL | 54GP79<br>10/11/2004 | | MDL | RL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | |
| ***Explosives*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **2,4,6-TNT** | 118-96-7 | N | 7.82 | µg/L | <7.2 | U,R,l | 0.73 | 7.2 | 1.5 | JB,B,z | 0.33 | 3.3 | <2.1 | U,R,l | 0.21 | 2.1 | NT | | | | NT | | | | NT | | | | NT | | | |
| **DNT Mixture*** | | | 0.932 | | ND | | | | ND | | | | ND | | | | ND | | | | ND | | | | ND | | | | ND | | | |
| **RDX** | 121-82-4 | C | 6.1 | µg/L | <7.2 | U,R,l | 1 | 7.2 | <3.3 | U,R,l | 0.48 | 3.3 | <2.1 | U,R,l | 0.31 | 2.1 | NT | | | | NT | | | | NT | | | | NT | | | |
| ***Perchlorate*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Perchlorate** | 14797-73-0 | N | 10.9 | µg/L | 5.5 | | 0.54 | 1 | 27.7 | | 0.54 | 1 | 2 | | 0.54 | 1 | 3.5 | | 0.1 | 1 | <1 | U | 0.1 | 1 | <1 | U | 0.1 | 1 | <1 | U | 0.1 | 1 |

| Sample ID<br>Sample Date | CAS | C/N | RG | Units | 54GP80<br>10/13/2004 | | MDL | RL | 54GP81<br>10/11/2004 | | MDL | RL | 54GP82<br>10/11/2004 | | MDL | RL | 54GP83<br>10/11/2004 | | MDL | RL | 54GP84<br>10/13/2004 | | MDL | RL | 54GP85<br>10/14/2004 | | MDL | RL | 54GP86<br>10/13/2004 | | MDL | RL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | |
| ***Explosives*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **2,4,6-TNT** | 118-96-7 | N | 7.82 | µg/L | NT | | | | NT | | | | NT | | | | NT | | | | NT | | | | NT | | | | NT | | | |
| **DNT Mixture*** | | | 0.932 | | ND | | | | ND | | | | ND | | | | ND | | | | ND | | | | ND | | | | ND | | | |
| **RDX** | 121-82-4 | C | 6.1 | µg/L | NT | | | | NT | | | | NT | | | | NT | | | | NT | | | | NT | | | | NT | | | |
| ***Perchlorate*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Perchlorate** | 14797-73-0 | N | 10.9 | µg/L | <1 | U | 0.1 | 1 | 1 | | 0.1 | 1 | <1 | U | 0.1 | 1 | <1 | U | 0.1 | 1 | <1 | U | 0.1 | 1 | <1 | U | 0.1 | 1 | <1 | U | 0.1 | 1 |

| Sample ID<br>Sample Date | CAS | C/N | RG | Units | 54GP87<br>10/14/2004 | | MDL | RL | 54GW56<br>8/18/2004 | | MDL | RL | 54GW57<br>8/17/2004 | | MDL | RL | 54GW58<br>8/24/2004 | | MDL | RL | 54GW59<br>8/18/2004 | | MDL | RL | 54GW59-DUP(DUP-3)<br>8/18/2004 | | MDL | RL | 54GW60<br>8/24/2004 | | MDL | RL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | |
| ***Explosives*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **2,4,6-TNT** | 118-96-7 | N | 7.82 | µg/L | NT | | | | 160 | | 0.15 | 1.3 | 1.7 | J,g | 0.0749 | 0.65 | 15 | | 0.0749 | 0.65 | 4.2 | L | 0.0749 | 0.65 | 11 | J,g | 0.0749 | 0.65 | 9.3 | | 0.0749 | 0.65 |
| **DNT Mixture*** | | | 0.932 | | ND | | | | ND | | | | ND | U | | | ND | | | | ND | | | | ND | | | | ND | | | |
| **RDX** | 121-82-4 | C | 6.1 | µg/L | NT | | | | 35 | J,g | 0.164 | 0.65 | 0.69 | | 0.164 | 0.65 | 3.7 | | 0.164 | 0.65 | 1 | | 0.164 | 0.65 | 1.7 | | 0.164 | 0.65 | 0.8 | | 0.164 | 0.65 |
| ***Perchlorate*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Perchlorate** | 14797-73-0 | N | 10.9 | µg/L | <1 | U | 0.1 | 1 | 13.5 | | 0.1 | 1 | 2 | | 0.1 | 1 | 25.8 | | 0.1 | 1 | 4 | | 0.1 | 1 | 3.6 | | 0.1 | 1 | 1.7 | | 0.1 | 1 |

| Sample ID<br>Sample Date | CAS | C/N | RG | Units | 54GW61<br>8/24/2004 | | MDL | RL | 54GW62<br>8/23/2004 | | MDL | RL | 54GW63<br>8/23/2004 | | MDL | RL | 54GW64<br>8/23/2004 | | MDL | RL | 54GW64-DUP(DUP-9)<br>8/23/2004 | | MDL | RL | 54GW65<br>8/20/2004 | | MDL | RL | 54GW66<br>8/20/2004 | | MDL | RL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | |
| ***Explosives*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **2,4,6-TNT** | 118-96-7 | N | 7.82 | µg/L | 74 | | 0.0749 | 0.65 | 9 | | 0.0749 | 0.65 | <0.65 | U | 0.0749 | 0.65 | 0.82 | J,g | 0.0749 | 0.65 | 0.76 | J,g | 0.0749 | 0.65 | 3 | | 0.0749 | 0.65 | NT | | | |
| **DNT Mixture*** | | | 0.932 | | ND | | | | ND | | | | ND | | | | ND | | | | ND | | | | ND | | | | ND | | | |
| **RDX** | 121-82-4 | C | 6.1 | µg/L | <0.65 | U | 0.164 | 0.65 | 1.6 | | 0.164 | 0.65 | <0.65 | U | 0.164 | 0.65 | 0.75 | J,g | 0.164 | 0.65 | 0.73 | J,g | 0.164 | 0.65 | 0.7 | | 0.164 | 0.65 | NT | | | |
| ***Perchlorate*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Perchlorate** | 14797-73-0 | N | 10.9 | µg/L | 3 | | 0.1 | 1 | 5.3 | | 0.1 | 1 | <1 | U | 0.1 | 1 | 1.1 | | 0.1 | 1 | 0.97 | B | 0.1 | 1 | 1.7 | | 0.1 | 1 | 0.94 | B,J,m | 0.1 | 1 |

# Table 3-1 2002 and 2004 Area A Direct-Push Groundwater Analytical Results with Remedial Goals (Continued)

| Sample ID<br>Sample Date | CAS | C/N | RG | Units | 54GW66<br>8/23/2004 | | MDL | RL | 54GW67<br>8/20/2004 | | MDL | RL | 54GW67<br>8/23/2004 | | MDL | RL | 54GW68<br>8/20/2004 | | MDL | RL | 54GW69<br>8/20/2004 | | MDL | RL | 54GW69<br>8/23/2004 | | MDL | RL | 54GW70<br>8/20/2004 | | MDL | RL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | |
| ***Explosives*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **2,4,6-TNT** | 118-96-7 | N | 7.82 | µg/L | <0.65 | U | 0.0749 | 0.65 | NT | | | | <0.65 | U | 0.0749 | 0.65 | 2.6 | J,g | 0.0749 | 0.65 | NT | | | | 1.4 | | 0.0749 | 0.65 | <0.65 | U | 0.0749 | 0.65 |
| **DNT Mixture*** | | | 0.932 | | ND | | | | ND | | | | ND | | | | ND | | | | ND | | | | ND | | | | ND | | | |
| **RDX** | 121-82-4 | C | 6.1 | µg/L | <0.65 | U | 0.164 | 0.65 | NT | | | | <0.65 | U | 0.164 | 0.65 | <0.65 | U | 0.164 | 0.65 | NT | | | | 0.51 | J | 0.164 | 0.65 | <0.65 | U | 0.164 | 0.65 |
| ***Perchlorate*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Perchlorate** | 14797-73-0 | N | 10.9 | µg/L | NT | | | | 0.59 | B,J,m | 0.1 | 1 | NT | | | | <1 | U | 0.1 | 1 | 0.65 | B,J,m | 0.1 | 1 | NT | | | | 0.76 | B | 0.1 | 1 |

**Notes:**
*DNT mixture is the combined results of 2,4-DNT and 2,6-DNT.
Yellow highlighted values exceed their respective RG.
The CMOs and RGs were developed and presented in the Final SWMU 54 RFI/CMS Report (URS, 2008).
RBC values are from the October 11, 2007, RBC Table and November 2020 Alternate RBC Table.

< = less than
µg/L = micrograms per liter
2,4,6-TNT = 2,4,6-trinitrotoluene
C/N = carcinogenic/noncarcinogenic
CAS = Chemical Abstracts Service
CMO = corrective measures objective
CMS = Corrective Measures Study
DL = detection limit
DNT = dinitrotoluene
ID = identifier
LQ = laboratory qualifier
MDL = method detection limit
ND = not detected
NT = not tested
r = reason code
RBC = Risk-Based Concentration
RDX = cyclotrimethylenetrinitramine
RG = remedial goal
RFI = RCRA Facility Investigation
RL = reporting limit
RPD = relative percent difference
SWMU = Solid Waste Management Unit
TIC = total inorganic carbon
URS = URS Corporation
USEPA = U.S. Environmental Protection Agency
VQ = validation qualifier

C = Carcinogenic per USEPA RBC Table (October 2007)
N = Noncarcinogenic per USEPA RBC Table (October 2007)

Data Qualifiers:
B = Not detected substantially above the level reported in laboratory or field blanks.
E = Concentration exceeded the upper level of the calibration range of the instrument for that specific analysis.
For TICs, compound not present in calibration standard, calculated using total peak areas ion chromatographs and response factor of 1.
J = Analyte present. Reported value may not be accurate or precise.
L = Analyte present. Reported value may be biased low. Actual value is expected to be higher.
N = Sample spike recovery is outside of control limits.
P = Greater than 40% difference for detected concentrations between the two gas chromatography (GC) or high-performance liquid chromatography (HPLC) columns.
R = The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected are not usable.
U = Not detected. The associated number indicates the approximate sample concentration necessary to be detected.
UJ = Not detected, quantitation limit may be inaccurate or imprecise.
UL = Not detected, quantitation limit is probably higher.
c = Calibration failure.
d = Matrix spike/matrix spike duplicate (MS/MSD) or laboratory control sample/laboratory control sample duplicate (LCS/LCSD) RPD imprecision.
g = Dual column confirmation imprecision.
l = LCS recovery failure.
m = MS/MSD recovery failure.
o = Calibration blank contamination.
p = Preparation blank contamination.
s = Serial dilution failure.
w = Field and/or equipment blank contamination.
z = Method blank and/or storage blank contamination.

# Table 3-2 2003-2004 Area A Groundwater Analytical Results with Remedial Goals

| Sample ID<br>Sample Date | CAS | C/N | RG | Units | 54MW2<br>3/4/2003 | | MDL | RL | 54MW3<br>3/4/2003 | | MDL | RL | 54MW5<br>3/4/2003 | | MDL | RL | 54MW-8<br>12/21/2004 | | MDL | RL | 54MW-9<br>12/21/2004 | | MDL | RL | 54MW-10<br>12/21/2004 | | MDL | RL | 54MW10-DUP(DUP-1)<br>12/21/2004 | | MDL | RL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | |
| ***Explosives*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **2,4,6-TNT** | 118-96-7 | N | 7.82 | µg/L | <3.6 | U | 0.365 | 3.6 | 38 | | 0.365 | 3.6 | <4.2 | U | 0.43 | 4.2 | <0.65 | U | 0.0749 | 0.65 | <0.65 | U | 0.0749 | 0.65 | 62 | | 0.15 | 1.3 | 65 | | 0.15 | 1.3 |
| **DNT Mixture*** | | | 0.932 | µg/L | ND | | | | ND | | | | ND | | | | ND | | | | ND | | | | ND | | | | ND | | | |
| **RDX** | 121-82-4 | C | 6.1 | µg/L | <3.6 | U | 0.526 | 3.6 | 32 | | 0.526 | 3.6 | <4.2 | U | 0.61 | 4.2 | 0.2 | J,J,g | 0.164 | 0.65 | 1.1 | J,g | 0.164 | 0.65 | 28 | | 0.164 | 0.65 | 29 | | 0.164 | 0.65 |
| **Perchlorate** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Perchlorate** | 14797-73-0 | N | 10.90 | µg/L | 12 | | 0.54 | 1 | 59.2 | | 0.54 | 1 | 1.6 | | 0.54 | 1 | 0.22 | B | 0.1 | 1 | 0.21 | B | 0.1 | 1 | 9.8 | | 0.1 | 1 | 9.1 | | 0.1 | 1 |
| **Field Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **DO** | -- | -- | -- | mg/L | 6.97 | | | | 5.18 | | | | 2.88 | | | | 0.25 | | | | 2.56 | | | | 1.25 | | | | 1.25 | | | |
| **ORP** | -- | -- | -- | mV | 159.5 | | | | 119.0 | | | | 95.1 | | | | 215 | | | | 234 | | | | 208 | | | | 208 | | | |
| **pH** | -- | -- | -- | SU | 6.37 | | | | 6.65 | | | | 7.00 | | | | 7.20 | | | | 7.53 | | | | 7.06 | | | | 7.06 | | | |
| **Specific Conductivity** | -- | -- | -- | mS | 0.191 | | | | 0.341 | | | | 0.310 | | | | 0.627 | | | | 0.706 | | | | 0.760 | | | | 0.760 | | | |
| **Temperature** | -- | -- | -- | °C | 16.24 | | | | 15.97 | | | | 12.91 | | | | 13.6 | | | | 13.2 | | | | 13.8 | | | | 13.8 | | | |
| **Turbidity** | -- | -- | -- | NTU | 0.80 | | | | 1.93 | | | | 12.0 | | | | 4.17 | | | | 4.13 | | | | 3.52 | | | | 3.52 | | | |

**Notes:**
*DNT mixture is the combined results of 2,4-DNT and 2,6-DNT
Yellow highlighted values exceed their respective RG.
The CMOs and RGs were developed and presented in the Final SWMU 54 RFI/CMS Report (URS, 2008).
RBC values are from the October 11, 2007, RBC Table and November 2020 Alternate RBC Table.
-- = not sampled
< = less than
µg/L = micrograms per liter
°C = degrees Celsius
2,4,6-TNT = 2,4,6-trinitrotoluene
C/N = carcinogenic/noncarcinogenic
CAS = Chemical Abstracts Service
CMO = corrective measures objective
CMS = Corrective Measures Study
DNT = dinitrotoluene
DO = dissolved oxygen
ID = identifier
LQ = laboratory qualifier
MCL = maximum contaminant level
MDL = method detection limit
mg/L = milligrams per liter
mS = millisiemens
mV = millivolts
ND = not detected
NTU = nephelometric turbidity unit
ORP = oxidation-reduction potential
pH = potential of hydrogen
r = reason code
RBC = Risk-Based Concentration
RDX = cyclotrimethylenetrinitramine
RFI = RCRA Facility Investigation
RG = remedial goal
RL = reporting limit
RPD = relative percent difference
SU = standard units
TIC = total inorganic carbon
URS = URS Corporation
USEPA = U.S. Environmental Protection Agency
VQ = Validation Qualifier

C = Carcinogenic per USEPA RBC Table (October 2007)
N = Noncarcinogenic per USEPA RBC Table (October 2007)

Data Qualifiers:
B = Not detected substantially above the level reported in laboratory or field blanks.
E = Concentration exceeded the upper level of the calibration range of the instrument for that specific analysis.
For TICs, compound not present in calibration standard, calculated using total peak areas ion chromatographs and response factor of 1.
J = Analyte present. Reported value may not be accurate or precise.
L = Analyte present. Reported value may be biased low. Actual value is expected to be higher.
N = Sample spike recovery is outside of control limits.
P = Greater than 40% difference for detected concentrations between the two gas chromatography (GC) or high-performance liquid chromatography (HPLC) columns.
R = The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected are not usable.
U = Not detected. The associated number indicates the approximate sample concentration necessary to be detected.
UJ = Not detected, quantitation limit may be inaccurate or imprecise.
UL = Not detected, quantitation limit is probably higher.
c = Calibration failure.
d = Matrix spike/matrix spike duplicate (MS/MSD) or laboratory control sample/laboratory control sample duplicate (LCS/LCSD) RPD imprecision.
g = Dual column confirmation imprecision.
l = LCS recovery failure.
m = MS/MSD recovery failure.
o = Calibration blank contamination.
p = Preparation blank contamination.
s = Serial dilution failure.
w = Field and/or equipment blank contamination.
z = Method blank and/or storage blank contamination.

# Table 3-3 2006-2007 Area A Quarterly Groundwater Monitoring Results with Remedial Goals

| First Quarter – November/December 2006 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID<br>Sample Date** | | | | **54MW1<br>11/29/2006** | | | | **54MW2<br>11/29/2006** | | | | **54MW3<br>12/5/2006** | | | | **54MW5<br>11/29/2006** | | | | **54MW8<br>12/1/2006** | | | | **54MW9<br>12/1/2006** | | | | **54MW10<br>12/1/2006** | | | |
| | **CAS** | **C/N** | **RG** | **Result** | **LQ, VQ, r** | **MDL** | **RL** | **Result** | **LQ, VQ, r** | **MDL** | **RL** | **Result** | **LQ, VQ, r** | **MDL** | **RL** | **Result** | **LQ, VQ, r** | **MDL** | **RL** | **Result** | **LQ, VQ, r** | **MDL** | **RL** | **Result** | **LQ, VQ, r** | **MDL** | **RL** | **Result** | **LQ, VQ, r** | **MDL** | **RL** |
| ***Explosives (µg/L)*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **2,4,6-TNT** | 118-96-7 | N | 7.82 | <5 | U | 0.075 | 5 | 5.6 | | 0.075 | 5 | 0.85 | J | 0.075 | 5 | 0.29 | J | 0.075 | 5 | <5 | U | 0.075 | 5 | <5 | U | 0.075 | 5 | 2.1 | J | 0.075 | 5 |
| **DNT Mixture*** | -- | C | 0.932 | <5 | | | | <5 | | | | <5 | | | | <5 | | | | <5 | | | | <5 | | | | <5 | | | |
| **RDX** | 121-82-4 | C | 6.100 | <5 | U | 0.16 | 5 | <5 | U | 0.16 | 5 | <5 | U | 0.16 | 5 | <5 | U | 0.16 | 5 | <5 | U | 0.16 | 5 | <5 | U | 0.16 | 5 | 3.3 | J | 0.16 | 5 |
| ***Perchlorate (µg/L)*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Perchlorate** | 14797-73-0 | N | 10.90 | <10 | U | 1.84 | 10 | <10 | U | 1.84 | 10 | <10 | U | 1.84 | 10 | <10 | U | 1.84 | 10 | <10 | U | 1.84 | 10 | <10 | U | 1.84 | 10 | <10 | U | 1.84 | 10 |
| ***Field Parameters*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Dissolved Oxygen (mg/L)** | -- | -- | -- | 11.95 | | | | 10.29 | | | | 11.94 | | | | 10.1 | | | | 8.94 | | | | 8.51 | | | | 8.13 | | | |
| **Oxidation Reduction Potential (mV)** | -- | -- | -- | 153 | | | | 159 | | | | 171 | | | | 231 | | | | 32 | | | | 53 | | | | 36 | | | |
| **pH (SU)** | -- | -- | -- | 7.86 | | | | 7.15 | | | | 7.26 | | | | 7.2 | | | | 7.53 | | | | 7.65 | | | | 7.39 | | | |
| **Specific Conductivity (mS)** | -- | -- | -- | 0.44 | | | | 0.533 | | | | 0.580 | | | | 0.557 | | | | 0.605 | | | | 0.790 | | | | 0.733 | | | |
| **Temperature (°C)** | -- | -- | -- | 18.6 | | | | 17.7 | | | | 18.3 | | | | 18.5 | | | | 17.1 | | | | 19.1 | | | | 16.3 | | | |
| **Turbidity (NTU)** | -- | -- | -- | 4.47 | | | | 1.16 | | | | 0.07 | | | | 16.6 | | | | 11.83 | | | | 23.5 | | | | 10.31 | | | |

| Second Quarter – March 2007 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID<br>Sample Date** | | | | **54MW-1<br>3/28/2007** | | | | **54MW-2<br>3/28/2007** | | | | **54MW-3<br>3/28/2007** | | | | **54MW-5<br>3/28/2007** | | | | **54MW-8<br>3/27/2007** | | | | **54MW-9<br>3/27/2007** | | | | **54MW10 DUP AVG<br>3/27/2007** | | | |
| | **CAS** | **C/N** | **RG** | **Result** | **LQ, VQ, r** | **MDL** | **RL** | **Result** | **LQ, VQ, r** | **MDL** | **RL** | **Result** | **LQ, VQ, r** | **MDL** | **RL** | **Result** | **LQ, VQ, r** | **MDL** | **RL** | **Result** | **LQ, VQ, r** | **MDL** | **RL** | **Result** | **LQ, VQ, r** | **MDL** | **RL** | **Result** | **LQ, VQ, r** | **MDL** | **RL** |
| ***Explosives (µg/L)*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **2,4,6-TNT** | 118-96-7 | N | 7.82 | <5 | U | 0.1 | 5 | 0.25 | J,J,d | 0.1 | 5 | <5 | U | 0.1 | 5 | 0.84 | J,J,g | 0.1 | 5 | 14 | | 0.1 | 5 | <5 | U | 0.1 | 5 | 6.018 | | 0.1 | 5 |
| **DNT Mixture*** | -- | C | 0.932 | <5 | | | | 1.146 | | | | <5 | | | | <5 | | | | <5 | | | | <5 | | | | 0.898 | | | |
| **RDX** | 121-82-4 | C | 6.100 | <5 | U | 0.092 | 5 | <5 | U | 0.092 | 5 | <5 | U | 0.092 | 5 | <5 | U | 0.092 | 5 | 8.1 | | 0.092 | 5 | <5 | U | 0.092 | 5 | 3.87 | | 0.092 | 5 |
| ***Perchlorate (µg/L)*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Perchlorate** | 14797-73-0 | N | 10.90 | <0.2 | U | 0.036 | 0.2 | 3.6 | | 0.036 | 0.2 | <0.2 | U | 0.036 | 0.2 | 0.52 | | 0.036 | 0.2 | 0.26 | | 0.036 | 0.2 | 0.24 | | 0.036 | 0.2 | 2.9 | | 0.036 | 0.2 |
| ***Field Parameters*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **DO (mg/L)** | -- | -- | -- | 8.06 | | | | 7.75 | | | | 6.12 | | | | 8.38 | | | | 6.68 | | | | 6.51 | | | | 8 | | | |
| **ORP (mV)** | -- | -- | -- | -5 | | | | 44 | | | | -11 | | | | 53 | | | | -17 | | | | -10 | | | | 11 | | | |
| **pH (SU)** | -- | -- | -- | 7.63 | | | | 6.45 | | | | 6.94 | | | | 6.51 | | | | 7.05 | | | | 7.18 | | | | 6.88 | | | |
| **Specific Conductivity (mS)** | -- | -- | -- | 0.199 | | | | 0.183 | | | | 0.311 | | | | 0.167 | | | | 0.267 | | | | 0.960 | | | | 0.334 | | | |
| **Temperature (°C)** | -- | -- | -- | 13.44 | | | | 15.8 | | | | 15.22 | | | | 12.73 | | | | 13.92 | | | | 14.43 | | | | 15.95 | | | |
| **Turbidity (NTU)** | -- | -- | -- | 1.82 | | | | 0.37 | | | | 2.13 | | | | 1.22 | | | | 13.96 | | | | 7.71 | | | | 3.64 | | | |

# Table 3-3 2006-2007 Area A Quarterly Groundwater Monitoring Results with Remedial Goals (Continued)

| Fourth Quarter – September 2007 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID<br>Sample Date** | | | | **54MW-1<br>6/5/2007** | | | | **54MW-2<br>6/5/2007** | | | | **54MW-3<br>6/5/2007** | | | | **54MW-5<br>6/5/2007** | | | | **54MW-8<br>6/5/2007** | | | | **54MW-9<br>6/5/2007** | | | | **54MW-10<br>6/5/2007** | | | |
| | **CAS** | **C/N** | **RG** | **Result** | **LQ, VQ, r** | **MDL** | **RL** | **Result** | **LQ, VQ, r** | **MDL** | **RL** | **Result** | **LQ, VQ, r** | **MDL** | **RL** | **Result** | **LQ, VQ, r** | **MDL** | **RL** | **Result** | **LQ, VQ, r** | **MDL** | **RL** | **Result** | **LQ, VQ, r** | **MDL** | **RL** | **Result** | **LQ, VQ, r** | **MDL** | **RL** |
| ***Explosives (µg/L)*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **2,4,6-TNT** | 118-96-7 | N | 7.82 | <5 | U | 0.1 | 5 | 3.9 | J | 0.1 | 5 | 1 | J | 0.1 | 5 | 0.49 | J | 0.1 | 5 | <5 | U | 0.1 | 5 | <5 | U | 0.1 | 5 | 2.4 | J | 0.1 | 5 |
| **DNT Mixture*** | -- | C | 0.932 | ND | | | | ND | | | | ND | | | | ND | | | | ND | | | | 0.466 | | | | ND | | | |
| **RDX** | 121-82-4 | C | 6.100 | <5 | U | 0.092 | 5 | <5 | U | 0.092 | 5 | <5 | U | 0.092 | 5 | <5 | U | 0.092 | 5 | 6.3 | | 0.092 | 5 | <5 | U | 0.092 | 5 | 1.6 | J | 0.092 | 5 |
| ***Perchlorate (µg/L)*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Perchlorate** | 14797-73-0 | N | 10.90 | <0.2 | U | 0.08 | 0.2 | 2 | | 0.08 | 0.2 | 0.88 | | 0.08 | 0.2 | 0.58 | | 0.08 | 0.2 | 0.7 | | 0.08 | 0.2 | 0.23 | | 0.08 | 0.2 | 0.37 | | 0.08 | 0.2 |
| ***Field Parameters*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **DO (mg/L)** | -- | -- | -- | 7.57 | | | | 8.46 | | | | 5.06 | | | | 8.44 | | | | 8.82 | | | | 5.21 | | | | 7.35 | | | |
| **ORP (mV)** | -- | -- | -- | 297 | | | | 268 | | | | 109 | | | | 236 | | | | 285 | | | | 94 | | | | 187 | | | |
| **pH (SU)** | -- | -- | -- | 7.33 | | | | 6.78 | | | | 6.2 | | | | 6.24 | | | | 6.9 | | | | 6.25 | | | | 6.87 | | | |
| **Specific Conductivity (mS)** | -- | -- | -- | 0.192 | | | | 0.225 | | | | 0.003 | | | | 0.163 | | | | 0.245 | | | | 0.003 | | | | 0.353 | | | |
| **Temperature (°C)** | -- | -- | -- | 13.58 | | | | 13.48 | | | | 15.66 | | | | 21.68 | | | | 13.4 | | | | 15.44 | | | | 14.51 | | | |
| **Turbidity (NTU)** | -- | -- | -- | 0.48 | | | | 0.29 | | | | 0.36 | | | | 0.67 | | | | 0.06 | | | | 1.67 | | | | **9.37** | | | |

| Fourth Quarter – September 2007 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID<br>Sample Date** | | | | **54MW-1<br>9/19/2007** | | | | **54MW-2<br>9/19/2007** | | | | **54MW-3<br>9/19/2007** | | | | **54MW-5<br>9/19/2007** | | | | **54MW-8<br>9/18/2007** | | | | **54MW-9<br>9/18/2007** | | | | **54MW-10<br>9/18/2007** | | | |
| | **CAS** | **C/N** | **RG** | **Result** | **LQ, VQ, r** | **MDL** | **RL** | **Result** | **LQ, VQ, r** | **MDL** | **RL** | **Result** | **LQ, VQ, r** | **MDL** | **RL** | **Result** | **LQ, VQ, r** | **MDL** | **RL** | **Result** | **LQ, VQ, r** | **MDL** | **RL** | **Result** | **LQ, VQ, r** | **MDL** | **RL** | **Result** | **LQ, VQ, r** | **MDL** | **RL** |
| ***Explosives (µg/L)*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **2,4,6-TNT** | 118-96-7 | N | 7.82 | <5 | U | 0.1 | 5 | 0.78 | J | 0.1 | 5 | 1.2 | J | 0.1 | 5 | 0.38 | J,J,g | 0.1 | 5 | <5 | U | 0.1 | 5 | <5 | U | 0.1 | 5 | 17 | | 0.1 | 5 |
| **DNT Mixture*** | -- | C | 0.932 | ND | | | | ND | | | | ND | | | | ND | | | | ND | | | | ND | | | | 0.696 | | | |
| **RDX** | 121-82-4 | C | 6.100 | <5 | U | 0.092 | 5 | <5 | U | 0.092 | 5 | <5 | U | 0.092 | 5 | <5 | U | 0.092 | 5 | <5 | U | 0.092 | 5 | <5 | U | 0.092 | 5 | 8 | | 0.092 | 5 |
| ***Perchlorate (µg/L)*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Perchlorate** | 14797-73-0 | N | 10.90 | <0.2 | U | 0.08 | 0.2 | 0.57 | | 0.08 | 0.2 | 0.31 | | 0.08 | 0.2 | 0.34 | | 0.08 | 0.2 | 0.37 | | 0.08 | 0.2 | <0.2 | U | 0.08 | 0.2 | 2.9 | | 0.08 | 0.2 |
| ***Field Parameters*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **DO (mg/L)** | -- | -- | -- | 4.03 | | | | 2.37 | | | | 6.34 | | | | 5.53 | | | | 4.06 | | | | 3.78 | | | | 3.89 | | | |
| **ORP (mV)** | -- | -- | -- | 233 | | | | 172 | | | | 205 | | | | 228 | | | | 288 | | | | 237 | | | | 239 | | | |
| **pH (SU)** | -- | -- | -- | 8.2 | | | | 7.01 | | | | 5.67 | | | | 6.89 | | | | 6.82 | | | | 7.11 | | | | 6.76 | | | |
| **Specific Conductivity (mS)** | -- | -- | -- | 0.487 | | | | 0.637 | | | | 0.57 | | | | 0.647 | | | | 0.711 | | | | 0.833 | | | | 0.844 | | | |
| **Temperature (°C)** | -- | -- | -- | 19.79 | | | | 15.91 | | | | 15.6 | | | | 17.36 | | | | 14.41 | | | | 18.05 | | | | 17.27 | | | |
| **Turbidity (NTU)** | -- | -- | -- | 0.79 | | | | 2.19 | | | | 2.02 | | | | 1.62 | | | | 0.43 | | | | 2.19 | | | | 7.19 | | | |

# Table 3-3 2006-2007 Area A Quarterly Groundwater Monitoring Results with Remedial Goals (Continued)

**Notes:**
*DNT mixture is the combined results of 2,4-DNT and 2,6-DNT
44 = Exceeds RG
The CMOs and RGs were developed and presented in the Final SWMU 54 RFI/CMS Report (URS, 2008).
RBC values are from the October 11, 2007, RBC Table and November 2020 Alternate RBC Table.
< = less than
µg/L = micrograms per liter
°C = degrees Celsius
2,4,6-TNT = 2,4,6-trinitrotoluene
C/N = carcinogenic/noncarcinogenic
CAS = Chemical Abstracts Service
CMO = corrective measures objective
CMS = Corrective Measures Study
DNT = dinitrotoluene
DO = dissolved oxygen
ID = identifier
LQ = laboratory qualifier
MCL = maximum contaminant level
MDL = method detection limit
mg/L = milligrams per liter
mS = millisiemens
mV = millivolts
ND = not detected
NTU = nephelometric turbidity unit
ORP = oxidation-reduction potential
pH = potential of hydrogen
r = reason code
RBC = Risk-Based Concentration
RDX = cyclotrimethylenetrinitramine
RFI = RCRA Facility Investigation
RG = remedial goal
RL = reporting limit
RPD = relative percent difference
SU = standard units
TIC = total inorganic carbon
URS = URS Corporation
USEPA = U.S. Environmental Protection Agency
VQ = Validation Qualifier

C = Carcinogenic per USEPA RBC Table (October 2007)
N = Noncarcinogenic per USEPA RBC Table (October 2007)

Data Qualifiers:
B = Not detected substantially above the level reported in laboratory or field blanks.
E = Concentration exceeded the upper level of the calibration range of the instrument for that specific analysis.
For TICs, compound not present in calibration standard, calculated using total peak areas ion chromatographs and response factor of 1.
J = Analyte present. Reported value may not be accurate or precise.
L = Analyte present. Reported value may be biased low. Actual value is expected to be higher.
N = Sample spike recovery is outside of control limits.
P = Greater than 40% difference for detected concentrations between the two gas chromatography (GC) or high-performance liquid chromatography (HPLC) columns.
R = The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected are not usable.
U = Not detected. The associated number indicates the approximate sample concentration necessary to be detected.
UJ = Not detected, quantitation limit may be inaccurate or imprecise.
UL = Not detected, quantitation limit is probably higher.
c = Calibration failure.
d = Matrix spike/matrix spike duplicate (MS/MSD) or laboratory control sample/laboratory control sample duplicate (LCS/LCSD) RPD imprecision.
g = Dual column confirmation imprecision.
l = LCS recovery failure.
m = MS/MSD recovery failure.
o = Calibration blank contamination.
p = Preparation blank contamination.
s = Serial dilution failure.
w = Field and/or equipment blank contamination.
z = Method blank and/or storage blank contamination.

# Table 3-4 2003 Area B Groundwater Analytical Results with Remedial Goals

| Sample ID<br>Sample Date | RG | Units | 54MW4<br>3/4/2003 | | MDL | RL | 54MW6<br>3/3/2003 | | MDL | RL | 54MW7<br>3/4/2003 | | MDL | RL | 54MW7-DUP (GW-DUP-1)<br>3/4/2003 | | MDL | RL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | |
| ***Explosives*** | | | | | | | | | | | | | | | | | | |
| **2,4,6-TNT** | 7.82 | µg/L | <5.4 | U | 0.55 | 5.4 | <4.2 | U | 0.43 | 4.2 | <3.6 | U | 0.365 | 3.6 | <4.8 | U | 0.487 | 4.8 |
| **DNT Mixture*** | 0.932 | µg/L | ND | | | | ND | | | | ND | | | | ND | | | |
| **RDX** | 6.1 | µg/L | <5.4 | U | 0.79 | 5.4 | <4.2 | U | 0.61 | 4.2 | <3.6 | U | 0.526 | 3.6 | <4.8 | U | 0.701 | 4.8 |
| ***Perchlorate*** | | | | | | | | | | | | | | | | | | |
| **Perchlorate** | 10.9 | µg/L | <1 | U | 0.54 | 1 | <1 | U | 0.54 | 1 | <1 | U | 0.54 | 1 | <1 | U | 0.54 | 1 |

**Notes:**
*DNT mixture is the combined results of 2,4-DNT and 2,6-DNT
Yellow highlighted values exceed their respective RG.
The CMOs and RGs were developed and presented in the Final SWMU 54 RFI/CMS Report (URS, 2008).
RBC values are from the October 11, 2007, RBC Table and November 2020 Alternate RBC Table.
µg/L = micrograms per liter
2,4,6-TNT = 2,4,6-trinitrotoluene
CMO = corrective measures objective
CMS = corrective measures study
DNT = dinitrotoluene
ID = identifier
LQ = laboratory qualifier
MDL = method detection limit
mV = millivolts
mS = millisiemens
ND = not detected
r = reason code
RBC = Risk-Based Concentration
RDX = cyclotrimethylenetrinitramine
RFI = RCRA Facility Investigation
RL = reporting limit
RG = remedial goal
SU = standard units
TIC = total inorganic carbon
URS = URS Corporation
USEPA = U.S. Environmental Protection Agency
VQ = validation qualifier

Data Qualifiers:
B = Not detected substantially above the level reported in laboratory or field blanks.
E = Concentration exceeded the upper level of the calibration range of the instrument for that specific analysis.
For TICs, compound not present in calibration standard, calculated using total peak areas ion chromatographs and response factor of 1.
J = Analyte present. Reported value may not be accurate or precise.
L = Analyte present. Reported value may be biased low. Actual value is expected to be higher.
N = Sample spike recovery is outside of control limits.
P = Greater than 40% difference for detected concentrations between the two gas chromatography (GC) or high-performance liquid chromatography (HPLC) columns.
R = The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected are not usable.
U = Not detected. The associated number indicates the approximate sample concentration necessary to be detected.
UJ = Not detected, quantitation limit may be inaccurate or imprecise.
UL = Not detected, quantitation limit is probably higher.
c = Calibration failure.
d = Matrix spike/matrix spike duplicate (MS/MSD) or laboratory control sample/laboratory control sample duplicate (LCS/LCSD) RPD imprecision.
g = Dual column confirmation imprecision.
l = LCS recovery failure.
m = MS/MSD recovery failure.
o = Calibration blank contamination.
p = Preparation blank contamination.
s = Serial dilution failure.
w = Field and/or equipment blank contamination.
z = Method blank and/or storage blank contamination.

# Table 3-5 2006-2007 Area B Quarterly Groundwater Monitoring Results with Remedial Goals

| First Quarter – November/December 2006 | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID<br>Sample Date | CAS | C/N | Adjusted Tap Water RBC | 54MW4<br>11/30/2006 | | MDL | RL | 54MW6<br>11/29/2006 | | MDL | RL | 54MW7<br>12/5/2006 | | MDL | RL |
| | | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | |
| *Explosives (µg/L)* | | | | | | | | | | | | | | | |
| 2,4,6-TNT | 118-96-7 | N | 7.82 | <5 | U | 0.075 | 5 | <5 | U | 0.075 | 5 | <5 | U | 0.075 | 5 |
| DNT Mixture* | -- | C | 0.932 | <5 | | | | <5 | | | | <5 | | | |
| RDX | 121-82-4 | C | 6.100 | <5 | U | 0.16 | 5 | <5 | U | 0.16 | 5 | <5 | U | 0.16 | 5 |
| *Perchlorate (µg/L)* | | | | | | | | | | | | | | | |
| Perchlorate | 14797-73-0 | N | 10.90 | <10 | U | 1.84 | 10 | <10 | U | 1.84 | 10 | <10 | U | 1.84 | 10 |
| *Field Parameters* | | | | | | | | | | | | | | | |
| DO (mg/L) | -- | -- | -- | 9.9 | | | | 11.63 | | | | 10.46 | | | |
| ORP (mV) | -- | -- | -- | -92 | | | | 181 | | | | 170 | | | |
| pH (SU) | -- | -- | -- | 7.77 | | | | 8 | | | | 7.56 | | | |
| Specific Conductivity (mS) | -- | -- | -- | 1.13 | | | | 0.297 | | | | 0.729 | | | |
| Temperature (°C) | -- | -- | -- | 15 | | | | 16.6 | | | | 15.9 | | | |
| Turbidity (NTU) | -- | -- | -- | 2.66 | | | | 4.87 | | | | 5.91 | | | |

| Second Quarter – March 2007 | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID<br>Sample Date | CAS | C/N | RG | 54MW-4<br>3/27/2007 | | MDL | RL | 54MW-6<br>3/27/2007 | | MDL | RL | 54MW-7<br>3/27/2007 | | MDL | RL |
| | | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | |
| *Explosives (µg/L)* | | | | | | | | | | | | | | | |
| 2,4,6-TNT | 118-96-7 | N | 7.82 | <5 | U | 0.1 | 5 | <5 | U | 0.1 | 5 | <5 | U | 0.1 | 5 |
| DNT Mixture* | -- | C | 0.932 | <5 | | | | <5 | | | | <5 | | | |
| RDX | 121-82-4 | C | 6.100 | <5 | U | 0.092 | 5 | <5 | U | 0.092 | 5 | <5 | U | 0.092 | 5 |
| *Perchlorate (µg/L)* | | | | | | | | | | | | | | | |
| Perchlorate | 14797-73-0 | N | 10.90 | <0.2 | U | 0.036 | 0.2 | <0.2 | U | 0.036 | 0.2 | <0.2 | U | 0.036 | 0.2 |
| *Field Parameters* | | | | | | | | | | | | | | | |
| DO (mg/L) | -- | -- | -- | 5.97 | | | | 8.8 | | | | 6 | | | |
| ORP (mV) | -- | -- | -- | -95 | | | | 135 | | | | -44 | | | |
| pH (SU) | -- | -- | -- | 7.16 | | | | 8.21 | | | | 7 | | | |
| Specific Conductivity (mS) | -- | -- | -- | 1.11 | | | | 0.314 | | | | 0.323 | | | |
| Temperature (°C) | -- | -- | -- | 15.68 | | | | 17.77 | | | | 14.25 | | | |
| Turbidity (NTU) | -- | -- | -- | 1.54 | | | | 31.1 | | | | 6.59 | | | |

| Third Quarter – June 2007 | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID<br>Sample Date | CAS | C/N | RG | 54MW4 DUP AVG<br>6/5/2007 | | MDL | RL | 54MW-6<br>6/5/2007 | | MDL | RL | 54MW-7<br>6/5/2007 | | MDL | RL |
| | | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | |
| *Explosives (µg/L)* | | | | | | | | | | | | | | | |
| 2,4,6-TNT | 118-96-7 | N | 7.82 | <5 | U | 0.1 | 5 | <5 | U | 0.1 | 5 | <5 | U | 0.1 | 5 |
| DNT Mixture* | -- | C | 0.932 | <5 | | | | <5 | | | | <5 | | | |
| RDX | 121-82-4 | C | 6.100 | <5 | U | 0.092 | 5 | <5 | U | 0.092 | 5 | <5 | U | 0.092 | 5 |
| *Perchlorate (µg/L)* | | | | | | | | | | | | | | | |
| Perchlorate | 14797-73-0 | N | 10.90 | <0.2 | U | 0.08 | 0.2 | <0.2 | U | 0.08 | 0.2 | <0.2 | U | 0.08 | 0.2 |
| *Field Parameters* | | | | | | | | | | | | | | | |
| DO (mg/L) | -- | -- | -- | 5.15 | | | | 4.5 | | | | 7.72 | | | |
| ORP (mV) | -- | -- | -- | 91 | | | | 76 | | | | 225 | | | |
| pH (SU) | -- | -- | -- | 6.39 | | | | 6.03 | | | | 6.97 | | | |
| Specific Conductivity (mS) | -- | -- | -- | 0.003 | | | | 0.003 | | | | 0.302 | | | |
| Temperature (°C) | -- | -- | -- | 14.54 | | | | 19.28 | | | | 3.03 | | | |
| Turbidity (NTU) | -- | -- | -- | 0.67 | | | | 9.96 | | | | 0.71 | | | |

# Table 3-5 2006-2007 Area B Quarterly Groundwater Monitoring Results with Remedial Goals (Continued)

| Fourth Quarter – September 2007 | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID<br>Sample Date | CAS | C/N | RG | 54MW4<br>9/19/2007 | | MDL | RL | 54MW6<br>9/19/2007 | | MDL | RL | 54MW7 DUP AVG<br>9/19/2007 | | MDL | RL |
| | | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | | Result | LQ, VQ, r | | |
| ***Explosives (µg/L)*** | | | | | | | | | | | | | | | | |
| **2,4,6-TNT** | 118-96-7 | N | 7.82 | <5 | U | 0.1 | 5 | <5 | U | 0.1 | 5 | <5 | U | 0.1 | 5 |
| **DNT Mixture*** | -- | C | 0.932 | ND | | | | ND | | | | ND | | | |
| **RDX** | 121-82-4 | C | 6.100 | <5 | U | 0.092 | 5 | <5 | U | 0.092 | 5 | <5 | U | 0.092 | 5 |
| ***Perchlorate (µg/L)*** | | | | | | | | | | | | | | | | |
| **Perchlorate** | 14797-73-0 | N | 10.90 | <0.2 | U | 0.08 | 0.2 | 0.1 | J | 0.08 | 0.2 | <0.2 | U | 0.08 | 0.2 |
| ***Field Parameters*** | | | | | | | | | | | | | | | | |
| **DO (mg/L)** | -- | -- | -- | 4.03 | | | | 7.47 | | | | 4.56 | | | |
| **ORP (mV)** | -- | -- | -- | -1 | | | | 236 | | | | 266 | | | |
| **pH (SU)** | -- | -- | -- | 7.91 | | | | 8.13 | | | | 6.97 | | | |
| **Specific Conductivity (mS)** | -- | -- | -- | 1.1 | | | | 0.267 | | | | 0.766 | | | |
| **Temperature (°C)** | -- | -- | -- | 16.08 | | | | 16.69 | | | | 16.83 | | | |
| **Turbidity (NTU)** | -- | -- | -- | 0.43 | | | | 4.37 | | | | 0.39 | | | |

**Notes:**
*DNT mixture is the combined results of 2,4-DNT and 2,6-DNT
Yellow highlighted values exceed their respective RG.
The CMOs and RGs were developed and presented in the Final SWMU 54 RFI/CMS Report (URS, 2008).
RBC values are from the October 11, 2007 RBC Table and November 2020 Alternate RBC Table.

< = less than
µg/L = micrograms per liter
°C = degrees Celsius
2,4,6-TNT = 2,4,6-trinitrotoluene
C/N = carcinogenic/noncarcinogenic
CAS = Chemical Abstracts Service
CMO = corrective measures objective
CMS = Corrective Measures Study
DNT = dinitrotoluene
DO = dissolved oxygen
ID = identifier
LQ = laboratory qualifier
MCL = maximum contaminant level
MDL = method detection limit
mg/L = milligrams per liter
mS = millisiemens
mV = millivolts
ND = not detected
NTU = nephelometric turbidity unit
ORP = oxidation-reduction potential
pH = potential of hydrogen
r = reason code
RBC = Risk-Based Concentration
RDX = cyclotrimethylenetrinitramine
RFI = RCRA Facility Investigation
RG = remedial goal
RL = reporting limit
RPD = relative percent difference
SU = standard units
TIC = total inorganic carbon
URS = URS Corporation
USEPA = U.S. Environmental Protection Agency
VQ = Validation Qualifier

C = Carcinogenic per USEPA RBC Table (October 2007)
N = Noncarcinogenic per USEPA RBC Table (October 2007)

Data Qualifiers:
B = Not detected substantially above the level reported in laboratory or field blanks.
E = Concentration exceeded the upper level of the calibration range of the instrument for that specific analysis.
For TICs, compound not present in calibration standard, calculated using total peak areas ion chromatographs and response factor of 1.
J = Analyte present. Reported value may not be accurate or precise.
L = Analyte present. Reported value may be biased low. Actual value is expected to be higher.
N = Sample spike recovery is outside of control limits.
P = Greater than 40% difference for detected concentrations between the two gas chromatography (GC) or high-performance liquid chromatography (HPLC) columns.
R = The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected are not usable.
U = Not detected. The associated number indicates the approximate sample concentration necessary to be detected.
UJ = Not detected, quantitation limit may be inaccurate or imprecise.
UL = Not detected, quantitation limit is probably higher.
c = Calibration failure.
d = Matrix spike/matrix spike duplicate (MS/MSD) or laboratory control sample/laboratory control sample duplicate (LCS/LCSD) RPD imprecision.
g = Dual column confirmation imprecision.
l = LCS recovery failure.
m = MS/MSD recovery failure.
o = Calibration blank contamination.
p = Preparation blank contamination.
s = Serial dilution failure.
w = Field and/or equipment blank contamination.
z = Method blank and/or storage blank contamination.

# Table 3-6 2006 New River Surface and Sediment Pore Water Sample Results with Remedial Goals

| Surface Water | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID<br>Sample Date | | | | NR-SW-1<br>11/30/2006 | | | | NR-SW-2<br>11/30/2006 | | | | NR-SW-3<br>11/30/2006 | | | | NR-SW-4<br>11/30/2006 | | | | NR-SW-5<br>11/30/2006 | | | | NR-SW-6<br>11/30/2006 | | | |
| | CAS | C/N | RG | Result | LQ, VQ, r | MDL | RL | Result | LQ, VQ, r | MDL | RL | Result | LQ, VQ, r | MDL | RL | Result | LQ, VQ, r | MDL | RL | Result | LQ, VQ, r | MDL | RL | Result | LQ, VQ, r | MDL | RL |
| *Explosives (µg/L)* | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2,4,6-TNT | 118-96-7 | C | 7.82 | <5 | U | 0.075 | 5 | <5 | U | 0.075 | 5 | <5 | U | 0.075 | 5 | <5 | U | 0.075 | 5 | <5 | U | 0.075 | 5 | <5 | U | 0.075 | 5 |
| 2,4-DNT | 121-14-2 | N | | <5 | U | 0.12 | 5 | <5 | U | 0.12 | 5 | <5 | U | 0.12 | 5 | <5 | U | 0.12 | 5 | <5 | U | 0.12 | 5 | <5 | U | 0.12 | 5 |
| 2,6-DNT | 606-20-2 | N | | <5 | U | 0.27 | 5 | <5 | U | 0.27 | 5 | <5 | U | 0.27 | 5 | <5 | U | 0.27 | 5 | <5 | U | 0.27 | 5 | <5 | U | 0.27 | 5 |
| DNT Mixture* | | | 0.932 | <5 | | | | <5 | | | | <5 | | | | <5 | | | | <5 | | | | <5 | | | |
| RDX | 121-82-4 | C | 6.100 | <5 | U | 0.16 | 5 | <5 | U | 0.16 | 5 | <5 | U | 0.16 | 5 | <5 | U | 0.16 | 5 | <5 | U | 0.16 | 5 | <5 | U | 0.16 | 5 |
| *Perchlorate (µg/L)* | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Perchlorate | 14797-73-0 | -- | 10.900 | <10 | U | 1.84 | 10 | <10 | U | 1.84 | 10 | <10 | U | 1.84 | 10 | <10 | U | 1.84 | 10 | <10 | U | 1.84 | 10 | <10 | U | 1.84 | 10 |
| *Field Parameters* | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DO (mg/L) | -- | -- | -- | 17.05 | | | | 15.83 | | | | 14.64 | | | | 12.93 | | | | 14.83 | | | | 15.11 | | | |
| ORP (mV) | -- | -- | -- | 219 | | | | 118 | | | | 47 | | | | 53 | | | | 32 | | | | 35 | | | |
| pH (SU) | -- | -- | -- | 8.9 | | | | 8.1 | | | | 7.96 | | | | 7.81 | | | | 7.67 | | | | 8.3 | | | |
| Specific Conductivity (mS) | -- | -- | -- | 0.116 | | | | 0.113 | | | | 0.118 | | | | 0.174 | | | | 0.117 | | | | 0.155 | | | |
| Temperature (°C) | -- | -- | -- | 10.1 | | | | 9.9 | | | | 10.1 | | | | 10.3 | | | | 10.2 | | | | 10.4 | | | |
| Turbidity (NTU) | -- | -- | -- | 71.3 | | | | 13.7 | | | | 17.48 | | | | 9.94 | | | | 7.66 | | | | 6.21 | | | |

| Pore Water | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID<br>Sample Date | | | | NR-PW-1<br>11/30/2006 | | | | NR-PW-2<br>11/30/2006 | | | | NR-PW-3<br>11/30/2006 | | | | NR-PW-4<br>11/30/2006 | | | | NR-PW-5<br>11/30/2006 | | | | NR-PW-6<br>11/30/2006 | | | |
| | CAS | C/N | RG | Result | LQ, VQ, r | MDL | RL | Result | LQ, VQ, r | MDL | RL | Result | LQ, VQ, r | MDL | RL | Result | LQ, VQ, r | MDL | RL | Result | LQ, VQ, r | MDL | RL | Result | LQ, VQ, r | MDL | RL |
| *Explosives (µg/L)* | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2,4,6-TNT | 118-96-7 | C | 7.82 | <5 | U | 0.075 | 5 | <5 | U | 0.075 | 5 | <5 | U | 0.075 | 5 | <5 | U | 0.075 | 5 | <5 | U | 0.075 | 5 | <5 | U | 0.075 | 5 |
| 2,4-DNT | 121-14-2 | N | | <5 | U | 0.12 | 5 | <5 | U | 0.12 | 5 | <5 | U | 0.12 | 5 | <5 | U | 0.12 | 5 | <5 | U | 0.12 | 5 | <5 | U | 0.12 | 5 |
| 2,6-DNT | 606-20-2 | N | | <5 | U | 0.27 | 5 | <5 | U | 0.27 | 5 | <5 | U | 0.27 | 5 | <5 | U | 0.27 | 5 | <5 | U | 0.27 | 5 | <5 | U | 0.27 | 5 |
| DNT Mixture* | | | 0.932 | <5 | | | | <5 | | | | <5 | | | | <5 | | | | <5 | | | | <5 | | | |
| RDX | 121-82-4 | C | 6.100 | <5 | U | 0.16 | 5 | <5 | U | 0.16 | 5 | <5 | U | 0.16 | 5 | <5 | U | 0.16 | 5 | <5 | U | 0.16 | 5 | <5 | U | 0.16 | 5 |
| *Perchlorate (µg/L)* | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Perchlorate | 14797-73-0 | -- | 10.900 | <10 | U | 1.84 | 10 | <10 | U | 1.84 | 10 | <10 | U | 1.84 | 10 | <10 | U | 1.84 | 10 | <10 | U | 1.84 | 10 | <10 | U | 1.84 | 10 |
| *Field Parameters* | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DO (mg/L) | -- | -- | -- | 10.38 | | | | 10.46 | | | | 12.2 | | | | 9.35 | | | | 10.82 | | | | 11.34 | | | |
| ORP (mV) | -- | -- | -- | -109 | | | | -174 | | | | 20 | | | | -182 | | | | -44 | | | | -58 | | | |
| pH (SU) | -- | -- | -- | 7.33 | | | | 7.21 | | | | 7.47 | | | | 7.57 | | | | 7.44 | | | | 7.2 | | | |
| Specific Conductivity (mS) | -- | -- | -- | 0.307 | | | | 0.344 | | | | 0.248 | | | | 0.38 | | | | 0.553 | | | | 0.353 | | | |
| Temperature (°C) | -- | -- | -- | 12.8 | | | | 10.7 | | | | 10.8 | | | | 10.6 | | | | 13.2 | | | | 11.9 | | | |
| Turbidity (NTU) | -- | -- | -- | 16.35 | | | | 37.9 | | | | 22.7 | | | | 4.86 | | | | 3.63 | | | | 11.85 | | | |

# Table 3-6 2006 New River Surface and Sediment Pore Water Sample Results with Remedial Goals (Continued)

| Surface Water | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID<br>Sample Date | | | | NR-SW-7<br>12/1/2006 | | | | NR-SW-8<br>12/1/2006 | | | | NR-SW-8-DUP(DUP-4)<br>12/1/2006 | | | | NR-SW-9<br>12/1/2006 | | | | NR-SW-10<br>12/1/2006 | | | |
| | CAS | C/N | RG | Result | LQ, VQ, r | MDL | RL | Result | LQ, VQ, r | MDL | RL | Result | LQ, VQ, r | MDL | RL | Result | LQ, VQ, r | MDL | RL | Result | LQ, VQ, r | MDL | RL |
| *Explosives (µg/L)* | | | | | | | | | | | | | | | | | | | | | | | |
| 2,4,6-TNT | 118-96-7 | C | 7.82 | <5 | U | 0.075 | 5 | <5 | U | 0.075 | 5 | <5 | U | 0.075 | 5 | <5 | U | 0.075 | 5 | <5 | U | 0.075 | 5 |
| 2,4-DNT | 121-14-2 | N | | <5 | U | 0.12 | 5 | <5 | U | 0.12 | 5 | <5 | U | 0.12 | 5 | <5 | U | 0.12 | 5 | <5 | U | 0.12 | 5 |
| 2,6-DNT | 606-20-2 | N | | <5 | U | 0.27 | 5 | <5 | U | 0.27 | 5 | <5 | U | 0.27 | 5 | <5 | U | 0.27 | 5 | <5 | U | 0.27 | 5 |
| DNT Mixture* | | | 0.932 | <5 | | | | <5 | | | | <5 | | | | <5 | | | | <5 | | | |
| RDX | 121-82-4 | C | 6.100 | <5 | U | 0.16 | 5 | <5 | U | 0.16 | 5 | <5 | U | 0.16 | 5 | <5 | U | 0.16 | 5 | <5 | U | 0.16 | 5 |
| *Perchlorate (µg/L)* | | | | | | | | | | | | | | | | | | | | | | | |
| Perchlorate | 14797-73-0 | -- | 10.900 | <10 | U | 1.84 | 10 | <10 | U | 1.84 | 10 | <10 | U | 1.84 | 10 | <10 | U | 1.84 | 10 | <10 | U | 1.84 | 10 |
| *Field Parameters* | | | | | | | | | | | | | | | | | | | | | | | |
| DO (mg/L) | -- | -- | -- | 13.13 | | | | 13.27 | | | | 13.27 | | | | 13.76 | | | | 14.69 | | | |
| ORP (mV) | -- | -- | -- | 10 | | | | 41 | | | | 41 | | | | 51 | | | | 52 | | | |
| pH (SU) | -- | -- | -- | 8.11 | | | | 7.8 | | | | 7.8 | | | | 7.62 | | | | 7.83 | | | |
| Specific Conductivity (mS) | -- | -- | -- | 0.140 | | | | 0.124 | | | | 0.124 | | | | 0.131 | | | | 0.114 | | | |
| Temperature (°C) | -- | -- | -- | 11.7 | | | | 12.5 | | | | 12.5 | | | | 11.8 | | | | 11 | | | |
| Turbidity (NTU) | -- | -- | -- | 148 | | | | 13.8 | | | | 13.8 | | | | 20.5 | | | | 11.46 | | | |

| Pore Water | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID<br>Sample Date | | | | NR-PW-6-DUP(DUP-3)<br>11/30/2006 | | | | NR-PW-7<br>12/1/2006 | | | | NR-PW-8<br>12/1/2006 | | | | NR-PW-9<br>12/1/2006 | | | | NR-PW-10<br>12/1/2006 | | | |
| | CAS | C/N | RG | Result | LQ, VQ, r | MDL | RL | Result | LQ, VQ, r | MDL | RL | Result | LQ, VQ, r | MDL | RL | Result | LQ, VQ, r | MDL | RL | Result | LQ, VQ, r | MDL | RL |
| *Explosives (µg/L)* | | | | | | | | | | | | | | | | | | | | | | | |
| 2,4,6-TNT | 118-96-7 | C | 7.82 | <5 | U | 0.075 | 5 | <5 | U | 0.075 | 5 | <5 | U | 0.075 | 5 | <5 | U | 0.075 | 5 | <5 | U | 0.075 | 5 |
| 2,4-DNT | 121-14-2 | N | | <5 | U | 0.12 | 5 | <5 | U | 0.12 | 5 | <5 | U | 0.12 | 5 | <5 | U | 0.12 | 5 | <5 | U | 0.12 | 5 |
| 2,6-DNT | 606-20-2 | N | | <5 | U | 0.27 | 5 | <5 | U | 0.27 | 5 | <5 | U | 0.27 | 5 | <5 | U | 0.27 | 5 | <5 | U | 0.27 | 5 |
| DNT Mixture* | | | 0.932 | <5 | | | | <5 | | | | <5 | | | | <5 | | | | <5 | | | |
| RDX | 121-82-4 | C | 6.100 | <5 | U | 0.16 | 5 | <5 | U | 0.16 | 5 | <5 | U | 0.16 | 5 | <5 | U | 0.16 | 5 | <5 | U | 0.16 | 5 |
| *Perchlorate (µg/L)* | | | | | | | | | | | | | | | | | | | | | | | |
| Perchlorate | 14797-73-0 | -- | 10.900 | <10 | U | 1.84 | 10 | <10 | U | 1.84 | 10 | <10 | U | 1.84 | 10 | <10 | U | 1.84 | 10 | <10 | U | 1.84 | 10 |
| *Field Parameters* | | | | | | | | | | | | | | | | | | | | | | | |
| DO (mg/L) | -- | -- | -- | 11.34 | | | | 9.25 | | | | 9.74 | | | | 10.55 | | | | 10.18 | | | |
| ORP (mV) | -- | -- | -- | -58 | | | | -194 | | | | -173 | | | | -173 | | | | -157 | | | |
| pH (SU) | -- | -- | -- | 7.2 | | | | 7.54 | | | | 7.36 | | | | 7.23 | | | | 7.47 | | | |
| Specific Conductivity (mS) | -- | -- | -- | 0.353 | | | | 0.517 | | | | 0.660 | | | | 0.533 | | | | 0.479 | | | |
| Temperature (°C) | -- | -- | -- | 11.9 | | | | 13 | | | | 12.9 | | | | 13.2 | | | | 13.1 | | | |
| Turbidity (NTU) | -- | -- | -- | 11.85 | | | | 3.72 | | | | 5.6 | | | | 15.87 | | | | 1.66 | | | |

# Table 3-6 2006 New River Surface and Sediment Pore Water Sample Results with Remedial Goals (Continued)

**Notes:**
*DNT mixture is the combined results of 2,4-DNT and 2,6-DNT
Yellow highlighted values exceed their respective RG.
The CMOs and RGs were developed and presented in the Final SWMU 54 RFI/CMS Report (URS, 2008).
RBC values are from the October 11, 2007 RBC Table and November 2020 Alternate RBC Table.
Water – BTAG Freshwater Screening Values (USEPA, 2006).
< = less than
µg/L = micrograms per liter
°C = degrees Celsius
2,4,6-TNT = 2,4,6-trinitrotoluene
BTAG = Biological Technical Assistance Group
C/N = carcinogenic/noncarcinogenic
CAS = Chemical Abstracts Service
CMO = corrective measures objective
CMS = Corrective Measures Study
DNT = dinitrotoluene
DO = dissolved oxygen
ID = identifier
LQ = laboratory qualifier
MCL = maximum contaminant level
MDL = method detection limit
mg/L = milligrams per liter
mS = millisiemens
mV = millivolts
ND = not detected
NTU = nephelometric turbidity unit
ORP = oxidation-reduction potential
pH = potential of hydrogen
r = reason code
RBC = Risk-Based Concentration
RDX = cyclotrimethylenetrinitramine
RFI = RCRA Facility Investigation
RG = remedial goal
RL = reporting limit
RPD = relative percent difference
SU = standard units
TIC = total inorganic carbon
URS = URS Corporation
USEPA = U.S. Environmental Protection Agency
VQ = Validation Qualifier

C = Carcinogenic per USEPA RBC Table (October 2007)
N = Noncarcinogenic per USEPA RBC Table (October 2007)

Data Qualifiers:
B = Not detected substantially above the level reported in laboratory or field blanks.
E = Concentration exceeded the upper level of the calibration range of the instrument for that specific analysis.
For TICs, compound not present in calibration standard, calculated using total peak areas ion chromatographs and response factor of 1.
J = Analyte present. Reported value may not be accurate or precise.
L = Analyte present. Reported value may be biased low. Actual value is expected to be higher.
N = Sample spike recovery is outside of control limits.
P = Greater than 40% difference for detected concentrations between the two gas chromatography (GC) or high-performance liquid chromatography (HPLC) columns.
R = The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected are not usable.
U = Not detected. The associated number indicates the approximate sample concentration necessary to be detected.
UJ = Not detected, quantitation limit may be inaccurate or imprecise.
UL = Not detected, quantitation limit is probably higher.
c = Calibration failure.
d = Matrix spike/matrix spike duplicate (MS/MSD) or laboratory control sample/laboratory control sample duplicate (LCS/LCSD) RPD imprecision.
g = Dual column confirmation imprecision.
l = LCS recovery failure.
m = MS/MSD recovery failure.
o = Calibration blank contamination.
p = Preparation blank contamination.
s = Serial dilution failure.
w = Field and/or equipment blank contamination.
z = Method blank and/or storage blank contamination.




Legend

- Well (Current MNA Network)
- Well (Removed from Network After Ninth Quarter)
- Groundwater Contour
- Inferred Groundwater Contour
- Groundwater Flow Direction
- Fence
- SWMU 54 Boundary

Note:
MNA - Monitored Natural Attenuation

Aerial Source:
Near Map Imagery, February 2020

N

0 30 60 120 Feet

Prepared For:

Baltimore District

FIGURE 3-1
SWMU 54
JUNE 5, 2007 GROUNDWATER CONTOUR MAP
RADFORD, VIRGINIA

File: Y:\Radford\MXD\SWMU\SWMU54_2007_Groundwater_ Contour_Map.mxd, 4/23/2025 3:36:21 PM, ricksc

# 4. FIELD ACTIVITIES

The following sections provide a discussion of field activities conducted during Year Twelve of monitoring at SWMU 54.

Year Twelve monitoring consisted of two semiannual monitoring events conducted in August 2024 (forty-first event) and December 2024 (forty-second event). Consistent with the eleventh through fortieth monitoring events, monitoring wells 54MW1, 54MW10, 54MW12, and 54MW13, which monitor Area A at SWMU 54, were included in the Year Twelve monitoring program. Field activities were conducted in accordance with the Final SWMU 54 MNA IMWP (Shaw, 2011a). Copies of the groundwater monitoring forms and field notes are presented in **Appendices A-1** and **A-2**, respectively. The monitoring wells were all in usable condition for the entire year of monitoring.

## 4.1 FORTY-FIRST GROUNDWATER MONITORING (AUGUST 2024)

The forty-first event of groundwater monitoring was conducted on August 20, 2024. Groundwater elevation measurements and samples were collected from four monitoring wells. Groundwater elevation measurements were collected prior to monitoring activities. A groundwater quality meter was calibrated at the beginning of each day before groundwater monitoring was initiated. The locations of monitoring wells sampled during this semiannual event are provided in **Figure 4-1**.

### 4.1.1 Groundwater Elevation Measurements

Water level elevations were collected during each Year Twelve semiannual event from the four monitoring wells at SWMU 54 prior to the collection of groundwater samples. **Table 4-1** provides the measured depth-to-water levels (from the top of the casing) and groundwater elevations amsl collected on August 20, 2024. **Figure 4-2** presents a groundwater elevation contour map developed from the elevation data collected during this semiannual monitoring event. Groundwater contours were derived using Esri ArcGIS Desktop Spatial Analyst 10.7.1 software and creating a spline interpolated continuous surface based on limited groundwater data. The surface model was executed using default values in most cases and forced to cover an area inclusive of all wells using the extent polygon to define the area of interest. Contour lines

were then constructed from the output splined surface at 10-ft and 2-ft intervals, depending on the site, with zero base contour. The results of the automated processing were then reviewed by subject knowledge experts and manually adjusted to accurately represent ground conditions. Groundwater elevations in site wells vary by approximately 1 ft during various events and years but groundwater contours have been consistent in shape since 2019 with general flow toward the New River.

Estimated groundwater flow velocity for Area A was calculated based on parameters used in the Final SWMU 54 RFI/CMS Report (URS, 2008). The Area A flow path of approximately 538.4 ft had a groundwater elevation difference of 13.55 ft, resulting in a calculated hydraulic gradient of 0.025 feet per foot (ft/ft). Using an average K value for Area A of 4.86 feet per day (ft/day) and an estimated effective porosity of 0.20, the groundwater flow velocity for Area A is approximately 0.61 ft/day (223.22 feet per year [ft/year]).

Area B, although not monitored during Year Twelve as mentioned in Section 3, is expected to have a groundwater flow velocity similar to Area A, as reported in the Year Three MNA Report (CB&I, 2014).

### 4.1.2 Groundwater Monitoring

Groundwater samples were collected from the four monitoring wells on August 20, 2024, and were analyzed for explosives, perchlorate, and RDX and its breakdown by-products hexahydro-1,3-dinitroso-5-nitro-1,3,5-triazine (DNX), hexahydro-1-nitroso-3,5-dinitro-1,3,5-triazine (MNX), and hexahydro-1,3,5-trinitroso-1,3,5-triazine (TNX). The breakdown by-products of RDX are considered MNA indicators. In addition, the following indicator parameters were collected: total organic carbon (TOC), total inorganic carbon (TIC), dissolved ferrous iron, dissolved manganese, chlorate, chloride, chlorite, nitrate, and sulfate. Water quality parameters collected during low-flow monitoring included potential of hydrogen (pH), temperature, specific conductivity, dissolved oxygen (DO), oxidation-reduction potential (ORP), and turbidity. **Table 4-2** presents the suite of analytes sampled during the forty-first semiannual monitoring event. Groundwater monitoring was accomplished without any issues.

Groundwater samples were collected via low-flow peristaltic pumps to obtain representative groundwater samples and to minimize investigation-derived waste (IDW) purge water. The following procedures were adhered to during both semiannual groundwater monitoring events:

1. A photoionization detector (PID) reading was taken upon removing the well cap to determine the presence of potentially hazardous levels of volatile gases. The PID readings were collected during the water elevation sweeps and again during sample collection. All PID readings were within acceptable levels.

2. During water level collection, depth-to-water and total depth measurements were recorded to determine the amount of water in the well casing and sand pack. Only approximate total well depths were measured during the semiannual events to confirm that the total depths were consistent with the data from the previous reports.

3. Groundwater samples were collected after all water level elevations had been recorded. The general practice was to lower the peristaltic pump tubing to a depth where the pump inlet was within the screened interval. Ample hydraulic head was maintained above the pump to ensure a sufficient water supply. The pump was connected to a Geocontrol PRO control unit, whereas the discharge tubing was connected to a Yellow Springs Instrument (YSI®) 556 water quality flow cell.

4. Monitoring wells were pumped at a rate of approximately 200 milliliters per minute (mL/min). Flow rate was determined by gauging the time it took to fill a 200-milliliter (mL) vial. Water quality parameters were recorded continuously including temperature, pH, DO, ORP, turbidity, and specific conductivity. Turbidity was measured using a HACH 2100Q turbidity meter, whereas concentrations of dissolved ferrous iron and manganese were measured in the field using a HACH DR900 test kit through Methods 8146 and 8149, respectively.

5. The groundwater flow rate was maintained during sample collection. Samples were collected, labeled, and packed on ice until shipment to the laboratory. Chain-of-custody (CoC) forms were filled out and shipped with the samples. Copies of sampling forms, synoptic water level measurement forms, waste inventory summary forms, and field record book notes are provided in **Appendix A-1** and **A-2**. Copies of the CoC forms are provided in **Appendix B-1**, along with the raw analytical data packages.

**Table 4-3** presents a summary of the final (stabilized) water quality readings for each well from the forty-first event.

Based on the DO data collected during the forty-first monitoring event, groundwater within Area A exhibits slightly aerobic conditions (i.e., DO greater than 1 part per million [ppm]). The DO levels ranged from a low of 0.11 milligrams per liter (mg/L) at monitoring well

54MW10 to a high of 5.96 mg/L at monitoring well 54MW12. ORP measurements ranged from a low of -9.7 millivolts (mV) in monitoring well 54MW10 to a high of 140.9 mV at monitoring well 54MW12. Measurements of pH ranged from a low of 6.86 standard units (SU) at monitoring well 54MW12 to a high of 7.67 SU at monitoring well 54MW1 which is within the range conducive to microbial activity. Measurements of specific conductivity ranged from a low of 404.4 microsiemens per centimeter (µS/cm) at monitoring well 54MW12 to a high of 731.0 µS/cm at monitoring well 54MW10.

Prior to monitoring, the flow cell was disconnected, and the groundwater flow rate was maintained during sample collection. Samples were collected, labeled, and packed in ice until shipment to the laboratory. CoC forms were filled out and shipped with the samples. Equipment calibration and groundwater sampling logs are included in **Appendix A-1**.

### 4.1.3 Quality Control Samples

QC samples, including one duplicate and one matrix spike/matrix spike duplicate (MS/MSD), were collected during the forty-first monitoring event.

The duplicate sample (54MW12/54TW12) and MS/MSD were analyzed for the same suite of compounds as the parent sample.

In previous monitoring years, one equipment rinse blank was collected during each monitoring event. However, because only disposable equipment was utilized during the monitoring, no equipment rinse blanks were warranted. One IDW purge water sample (54-IDW) was collected and analyzed for pH, chemical oxygen demand (COD), and total metals for disposal of IDW purge water in accordance with the Final SWMU 54 MNA IMWP (Shaw, 2011a). Results of the QA/QC samples are presented in the raw analytical data package provided in **Appendix B-1** and summarized in Section 5.7.

## 4.2 FORTY-SECOND GROUNDWATER MONITORING (DECEMBER 2024)

The forty-second groundwater sampling event was conducted on December 10, 2024. Groundwater elevation measurements were collected prior to monitoring activities. The locations of monitoring wells sampled during this semiannual event are provided in **Figure 4-1**.

### 4.2.1 Groundwater Elevation Measurements

**Table 4-4** provides the measured depth-to-water levels (from the top of the casing) and groundwater elevations collected on December 10, 2024, during the fortieth monitoring event. **Figure 4-3** presents a groundwater elevation contour map developed from the elevation data collected during the quarter. Groundwater elevations in site wells vary by approximately 1 ft during various events and years but groundwater contours have been consistent in shape since 2019 with general flow toward the New River.

Estimated groundwater flow velocity for Area A was calculated based on parameters used in the Final SWMU 54 RFI/CMS Report (URS, 2008). The Area A flow path of approximately 538.4 ft had a groundwater elevation difference of approximately 15 ft, resulting in a calculated hydraulic gradient of 0.028 ft/ft. Using an average K value for Area A of 4.86 ft/day and an estimated effective porosity of 0.20, the groundwater flow velocity for Area A is approximately 0.66 ft/day (240.9 ft/year).

### 4.2.2 Groundwater Monitoring

Groundwater samples were collected from monitoring wells 54MW1, 54MW10, 54MW12, and 54MW13 on December 10, 2024, and analyzed for explosives, perchlorate, and RDX and its breakdown by-products DNX, MNX, and TNX. The breakdown by-products of RDX are considered MNA indicators. In addition, the following indicator parameters were collected: TOC, TIC, dissolved ferrous iron, dissolved manganese, chlorate, chloride, chlorite, nitrate, and sulfate. The forty-second event monitoring samples were tested for the same analytes as the forty-first event, which are presented in **Table 4-2**. Groundwater monitoring was accomplished without any issues.

Groundwater samples were collected applying the same method and approach used during the forty-first semiannual monitoring event, specifically, through low-flow peristaltic pumps. Monitoring wells were pumped at a rate of approximately 200 mL/min. **Table 4-5** presents a summary of the final (stabilized) water quality readings for each well from the forty-second event.

Based on the DO data collected during the forty-second monitoring event, groundwater within Area A exhibits aerobic conditions (i.e., DO greater than 1 ppm). The DO levels ranged from a low of 0.47 mg/L at monitoring well 54MW1 to a high of 6.86 mg/L at monitoring well 54MW12. ORP measurements ranged from a low of -31.6 mV at monitoring well 54MW1 to a high of 96.8 mV at monitoring well 54MW12. Measurements of pH ranged from a low of 6.64 SU at monitoring well 54MW12 to a high of 7.36 SU at monitoring well 54MW1. Measurements of specific conductivity ranged from a low of 399.6 µS/cm in monitoring well 54MW12 to a high of 827 µS/cm observed at monitoring well 54MW10. Equipment calibration and groundwater sampling logs are included in **Appendix A-1**.

### 4.2.3 Quality Control Samples

QC samples, including one duplicate and one MS/MSD, were collected during the forty-second monitoring event.

The duplicate sample (54MW10/54TW10) and MS/MSD were analyzed for the same suite of compounds as the parent sample.

In previous monitoring years, one equipment rinse blank was collected during each event. However, because only disposable equipment was utilized during the monitoring, no equipment rinse blanks were warranted. One IDW purge water sample (54-IDW) was collected and analyzed for pH, COD, and total metals. Results of the QA/QC samples are presented in the raw analytical data package provided in **Appendix B-1**.

## Table 4-1 Forty-First Event Groundwater Elevations at SWMU 54

| Well ID | Screen Interval (ft bgs) | Screen Length (ft) | Total Depth (ft) | Water Level (ft BTOC) | Elevation (top of casing) (ft amsl) | Water Level (ft amsl) | PID Reading (ppm) |
|---|---|---|---|---|---|---|---|
| **54MW1** | 34.8 - 54.8 | 20 | 57.42 | 20.69 | 1,707.78 | 1,687.09 | 0.0 |
| **54MW10** | 12 - 27 | 15 | 30.13 | 16.74 | 1,691.10 | 1,674.36 | 0.0 |
| **54MW12** | 20 - 30 | 10 | 33.00 | 25.90 | 1,702.42 | 1,676.52 | 0.0 |
| **54MW13** | 12 – 25 | 10 | 25.32 | 22.41 | 1,698.90 | 1,676.49 | 0.0 |

**Notes:**
Elevation data collected on August 20, 2024.
amsl = above mean sea level
bgs = below ground surface
BTOC = below top of casing
ft = feet
ID = identifier
PID = photoionization detector
ppm = parts per million
SWMU = Solid Waste Management Unit

## Table 4-2 Year Twelve Semiannual Monitoring Analytical Suite

| Well/Sample ID | Frequency | Explosives | Perchlorate | RDX MNA Parameters | MNA Indicator Parameters | Water Quality Parameters |
|---|---|---|---|---|---|---|
| **54MW1** | Semiannual | X | X | X | X | X |
| **54MW10** | Semiannual | X | X | X | X | X |
| **54MW12** | Semiannual | X | X | X | X | X |
| **54MW13** | Semiannual | X | X | X | X | X |

**Notes:**
ID = identifier
MNA = monitored natural attenuation
RDX = cyclotrimethylenetrinitramine

## Table 4-3 Forty-First Semiannual Water Quality Parameters at SWMU 54

| Well ID | pH | Specific Conductivity (µS/cm) | Turbidity (NTU) | DO (mg/L) | ORP (mV) | Temperature (°C) |
|---|---|---|---|---|---|---|
| **54MW1** | 7.67 | 406.1 | 0.00 | 1.20 | 51.3 | 13.6 |
| **54MW10**[1] | 7.28 | 731.0 | 0.00 | 0.11 | -9.7 | 12.6 |
| **54MW12** | 6.86 | 404.4 | 0.00 | 5.96 | 140.9 | 13.7 |
| **54MW13** | 7.08 | 570.7 | 0.00 | 4.27 | 126.4 | 12.9 |

**Notes:**
[1] Well 54MW10 is located adjacent to the New River.
°C = degrees Celsius
µS/cm = microsiemens per centimeter
DO = dissolved oxygen
ID = identifier
mg/L = milligrams per liter
mV = millivolts
NTU = nephelometric turbidity unit
ORP = oxidation reduction potential
pH = potential of hydrogen
SWMU = Solid Waste Management Unit

## Table 4-4 Forty-Second Event Groundwater Elevations at SWMU 54

| Well ID | Screen Interval (ft bgs) | Screen Length (ft) | Total Depth (ft) | Water Level (ft BTOC) | Elevation (top of casing) (ft amsl) | Water Level (ft amsl) | PID Readings (ppm) |
|---|---|---|---|---|---|---|---|
| **54MW1** | 34.8 - 54.8 | 20 | 57.33 | 20.75 | 1707.78 | 1687.03 | PID = 0.0 |
| **54MW10** | 12 - 27 | 15 | 30.28 | 16.82 | 1691.10 | 1674.28 | PID = 0.0 |
| **54MW12** | 20 - 30 | 10 | 32.92 | 25.78 | 1702.42 | 1676.64 | PID = 0.0 |
| **54MW13** | 12 - 25 | 10 | 25.28 | 22.52 | 1698.90 | 1676.38 | PID = 0.1 |

**Notes:**
Elevation data collected on 10 Dec 2024.
amsl = above mean sea level
bgs = below ground surface
BTOC = below top of casing
ft = feet
ID = identifier
PID = photoionization detector
ppm = parts per million
SWMU = Solid Waste Management Unit

## Table 4-5 Forty-Second Semiannual Water Quality Parameters at SWMU 54

| Well ID | pH | Specific Conductivity (µS/cm) | Turbidity (NTU) | DO (mg/L) | ORP (mV) | Temperature (°C) |
|---|---|---|---|---|---|---|
| **54MW1** | 7.36 | 458.0 | 0.00 | 0.47 | -31.6 | 13.9 |
| **54MW10** | 7.18 | 827.0 | 0.00 | 0.52 | -12.6 | 14.1 |
| **54MW12** | 6.64 | 399.6 | 0.00 | 6.86 | 96.8 | 13.7 |
| **54MW13** | 7.00 | 610.1 | 0.00 | 4.84 | 70.3 | 13.3 |

**Notes:**
°C = degrees Celsius
µS/cm = microsiemens per centimeter
DO = dissolved oxygen
ID = identifier
mg/L = milligrams per liter
mV = millivolts
NTU = nephelometric turbidity unit
ORP = oxidation reduction potential
pH = potential of hydrogen
SWMU = Solid Waste Management Unit




Legend

- Well (Current MNA Network)
- Well (Removed from Network After Ninth Quarter)
- Fence
- SWMU 54 Boundary

Note:
MNA - Monitored Natural Attenuation

Aerial Source:
Near Map Imagery, February 2020

N

0 30 60 120 Feet

Prepared For:

Baltimore District

FIGURE 4-1
SWMU 54 MONITORING WELL SAMPLE LOCATIONS
RADFORD, VIRGINIA

File: Y:\Radford\MXD\SWMU\SWMU54_Monitoring_Well_Sample_Locations.mxd, 4/23/2025 3:41:01 PM, ricksc




Legend

- Well (Current MNA Network)
- Well (Removed from Network After Ninth Quarter)
- Groundwater Contour
- Fence
- SWMU 54 Boundary

Note:
Contours are in feet above mean sea level (amsl).
MNA - Monitored Natural Attenuation

Aerial Source:
Near Map Imagery, June 2023

N

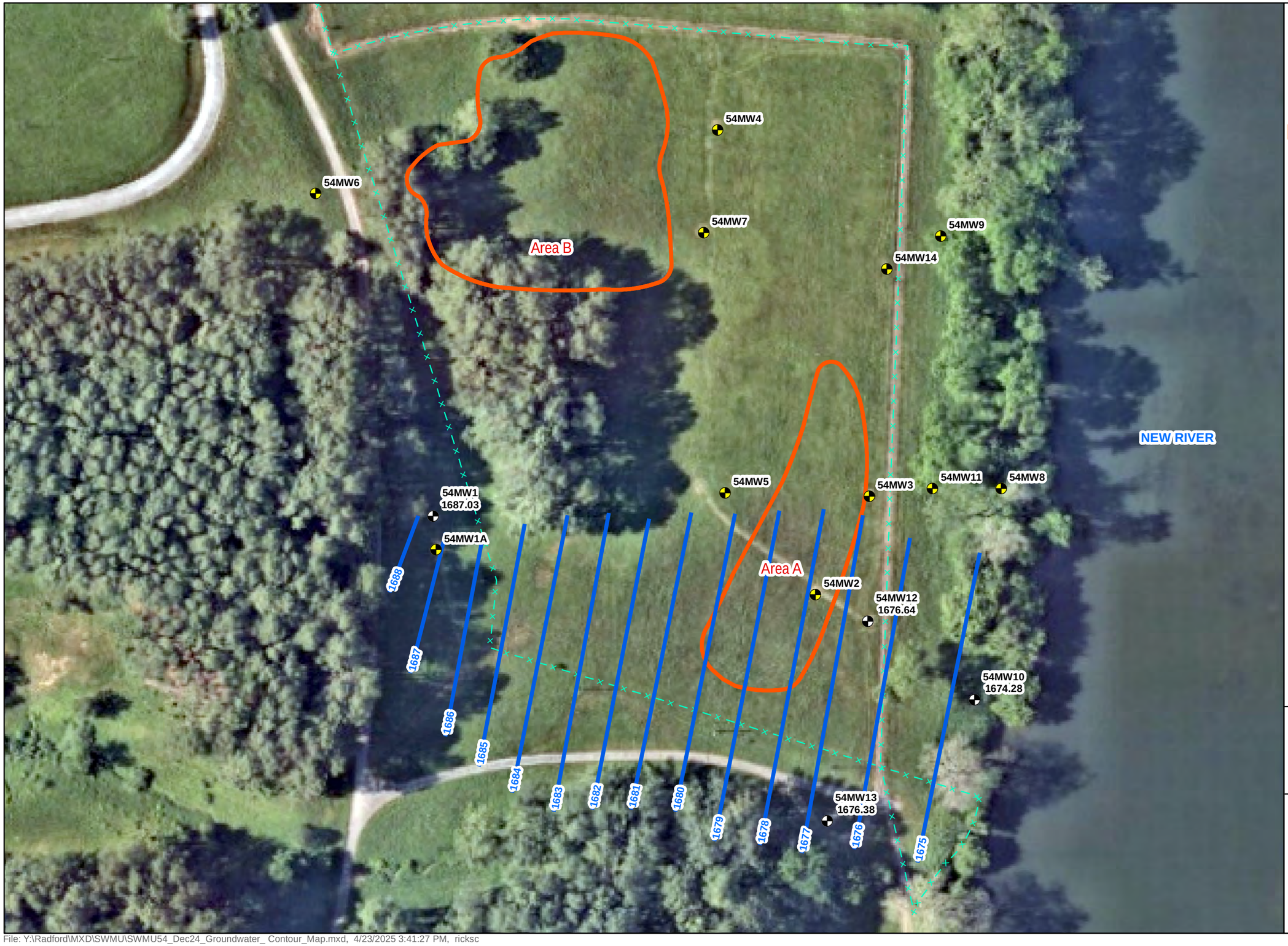
0 30 60 120 Feet

Prepared For:

**Baltimore District**

FIGURE 4-2
SWMU 54 AUGUST 2024
(FORTY-FIRST EVENT)
GROUNDWATER CONTOUR MAP
RADFORD, VIRGINIA

File: Y:\Radford\MXD\SWMU\SWMU54_Aug24_Groundwater_ Contour_Map.mxd, 4/23/2025 3:41:14 PM, ricksc




Legend

- Well (Current MNA Network)
- Well (Removed from Network After Ninth Quarter)
- Groundwater Contour
- Fence
- SWMU 54 Boundary

Note:
Contours are in feet above mean sea level (amsl).
MNA - Monitored Natural Attenuation

Aerial Source:
Near Map Imagery, June 2023

N

0 30 60 120 Feet

Prepared For:

Baltimore District

FIGURE 4-3
SWMU 54 DECEMBER 2024
(FORTY-SECOND EVENT)
GROUNDWATER CONTOUR MAP
RADFORD, VIRGINIA

File: Y:\Radford\MXD\SWMU\SWMU54_Dec24_Groundwater_ Contour_Map.mxd, 4/23/2025 3:41:27 PM, ricksc

# 5. CHEMICAL ANALYTICAL RESULTS

## 5.1 SELECTION OF COMPARISON CRITERIA

The analytical data collected during this investigation were compared to RGs selected in the Final SWMU 54 RFI/CMS Report (URS, 2008). For contaminants that have no RGs, the results are compared in the text to the current USEPA Regional Screening Levels (RSLs) for tap water. Screening levels (SLs) are calculated values that are derived from theoretical risk scenarios. The selected carcinogen SL values presented in **Table 5-1** and discussed in the text are the lower of values calculated to represent an increase of 1E-6 in cancer risk and a Hazard Index (HI) of 0.1. **Tables 5-1** through **5-4** present the analytical results and summaries of the forty-first and forty-second semiannual monitoring data, including number of results that exceeded the RGs, frequency of detection, minimum and maximum detected concentrations, and the location of maximum concentration.

## 5.2 FORTY-FIRST EVENT GROUNDWATER RESULTS (AUGUST 2024)

Four groundwater monitoring wells, 54MW1, 54MW10, 54MW12, and 54MW13, were sampled during this semiannual monitoring event, with a duplicate sample collected from monitoring well 54MW12. Samples were submitted for explosives, perchlorate, RDX breakdown by-products (DNX, MNX, and TNX), and MNA indicator parameter analyses. Detected constituents are summarized in **Table 5-1**, whereas the complete results are presented in **Table 5-2**. Sample locations are provided in **Figure 4-1**. The complete laboratory analytical reports are included in **Appendix B-1**.

**Explosives**

Five explosives were detected in groundwater samples: 2,4,6-TNT, 2-amino-4,6-dinitrotoluene (2ADNT), 4-amino-2,6-dinitrotoluene (4ADNT), RDX, and MNX. All five explosives were detected in monitoring well 54MW13, whereas explosives detected in 54MW10 included only 2ADNT and 4ADNT. In 54MW12, explosives detected included 2,4,6-TNT, 2ADNT, 4ADNT, and RDX. No explosives were detected at background monitoring well 54MW1.

The explosive 2,4,6-TNT was detected at monitoring well 54MW12 at a concentration of 4.8 micrograms per liter (µg/L) (original and duplicate sample) and at monitoring well 54MW13

at a concentration of 7 µg/L. None of the concentrations of 2,4,6-TNT at monitoring wells 54MW12 and 54MW13 exceeded the RG of 7.82 µg/L.

The explosive 2ADNT was detected at monitoring well 54MW10 at an estimated concentration of 0.16 µg/L, at monitoring well 54MW12 at a concentration of 3.1 µg/L (2.3 µg/L in duplicate), and at monitoring well 54MW13 at a concentration of 1.8 µg/L. An RG has not been established for 2ADNT. There is no USEPA maximum contaminant level (MCL) (USEPA, 2024a); however, the Tap Water RSL for 2ADNT is 1.9 µg/L (USEPA, 2024b).

The explosive 4ADNT was detected at monitoring well 54MW10 at an estimated concentration of 0.16 µg/L, at monitoring well 54MW12 at concentrations of 2.3 µg/L (original) and 1.9 µg/L (duplicate), and at monitoring well 54MW13 at a concentration of 1.6 µg/L. An RG has not been established for 4ADNT. There is no USEPA MCL (USEPA, 2024a); however, the Tap Water RSL for 4ADNT is 1.9 µg/L (USEPA, 2024b).

RDX was detected at monitoring well 54MW12 at concentrations of 11 (original) and 5.5 (duplicate) µg/L, and at monitoring well 54MW13 at a concentration of 1.2 µg/L. The detection at 54MW12 exceeded the RG of 6.1 µg/L. TNX, an RDX breakdown by-product, was not detected during this semiannual monitoring event. The monitoring well location (54MW12) where RDX exceeded the RG is provided in **Figure 5-1**.

The monitoring wells with detected concentrations of explosives are consistent with locations with detections recorded during previous monitoring events.

**Perchlorate**

Perchlorate was detected in three groundwater samples collected from monitoring well 54MW12 and 54MW13 during this semiannual monitoring event. Perchlorate was detected at monitoring well 54MW12 at concentrations of 0.77 µg/L (original) and 0.78 µg/L (duplicate) at monitoring well 54MW13 at 0.37 µg/L. All detections were well below the RG of 10.9 µg/L.

**Miscellaneous Analytes**

Groundwater samples were also analyzed for MNA indicators (TOC, TIC, dissolved ferrous iron, dissolved manganese, chlorate, chlorite, chloride, nitrate, and sulfate) for the purposes of evaluating the effectiveness of the MNA process.

TOC was not detected in any of the four monitoring wells during this monitoring event. The concentrations of TIC ranged from a low of 62 mg/L (54MW1) to a high of 97 mg/L (54MW13). Dissolved ferrous iron concentrations ranged from 0.07 mg/L (54MW13) to 0.11 mg/L (54MW10). Dissolved manganese concentrations ranged from 0.30 mg/L (54MW12) to 1.2 mg/L (54MW10). Chloride concentrations ranged from an estimated low of 2.3 mg/L (54MW1) to a high of 5.7 mg/L (54MW13). Nitrate concentrations ranged from 0.47 mg/L (non-detect) (54MW13) to 1 mg/L (54MW12). Sulfate concentrations ranged from 28 mg/L (54MW1) to 180 mg/L (54MW10). The MNA indicator parameter chlorate went undetected during this semiannual monitoring event. MNA indicator parameter chlorite was detected at concentrations of 39 and 42 µg/L (54MW12 original and duplicate) and 10 µg/L (54MW13). **Table 5-2** presents the MNA indicator parameters sample results. A more detailed discussion of the MNA results is provided in Section 6.

## 5.3 FORTY-SECOND GROUNDWATER RESULTS (DECEMBER 2024)

Four groundwater monitoring wells, 54MW1, 54MW10, 54MW12, and 54MW13, were sampled during the forty-second monitoring event. Samples were submitted for explosives, perchlorate, RDX breakdown by-products (DNX, MNX, and TNX), and MNA indicator parameter analyses. A summary of detected and non-detected constituents is summarized in **Table 5-3**, and the analytical results are presented in **Table 5-4**. Sample locations are provided in **Figure 4-1**. The complete laboratory analytical reports are included in **Appendix B-1**.

**Explosives**

Four explosives were detected in groundwater samples: 2,4,6-TNT, 2ADNT, 4ADNT, and RDX. The explosives 2,4,6-TNT, 2ADNT, 4ADNT, and RDX were detected in two monitoring wells, 54MW12 and 54MW13, sampled during this event.

The explosive 2,4,6-TNT was detected at monitoring well 54MW12 at a concentration of 2.7 µg/L and at monitoring well 54MW13 at a concentration of 26.8 µg/L which exceeded the RG of 7.82 µg/L.

The explosive 2ADNT was detected in monitoring well 54MW12 at a concentration of 3.8 µg/L and at a concentration of 3.3 µg/L at monitoring well 54MW13. An RG has not been established for 2ADNT. There is no USEPA MCL (USEPA, 2024a); however, the Tap Water RSL for 2ADNT is 1.9 µg/L (USEPA, 2024b).

The explosive 4ADNT was detected at monitoring well 54MW12 at a concentration of 3.3 µg/L and at monitoring well 54MW13 at a concentration of 2.3 µg/L. An RG has not been established for 4ADNT. There is no USEPA MCL (USEPA, 2024a); however, the Tap Water RSL for 4ADNT is 1.9 µg/L (USEPA, 2024b).

The explosive RDX was detected at monitoring well 54MW12 at a concentration of 0.34 µg/L and at monitoring well 54MW13 at a concentration of 1.2 µg/L. There were no detected concentrations that exceeded RG of 6.1 µg/L. No RDX breakdown by-products (DNX, MNX, and TNX) were detected at any of the monitoring wells during this monitoring event.

The monitoring wells with detected concentrations of explosives are consistent with previous monitoring rounds. The monitoring well location (54MW13) where 2,4,6-TNT exceeded the RG is provided in **Figure 5-1**.

**Perchlorate**

Perchlorate was detected in the groundwater samples collected from monitoring wells 54MW12 and 54MW13. Perchlorate was detected at monitoring well 54MW12 at a concentration of 0.77 µg/L and at monitoring well 54MW13 at a concentration of 0.63 µg/L. All detections are well below the RG of 10.9 µg/L.

**Miscellaneous Analytes**

Groundwater samples were also analyzed for MNA indicators (TOC, TIC, dissolved ferrous iron, dissolved manganese, chlorate, chlorite, chloride, nitrate, and sulfate) for the purposes of evaluating the effectiveness of the MNA process.

TOC was not detected; however, the concentrations of TIC ranged from 64 mg/L (54MW1) to 89 mg/L (54MW13). Dissolved ferrous iron concentrations ranged from 0.09 mg/L (54MW10) to 0.12 mg/L (54MW1). Dissolved manganese concentrations ranged from non-detect (54MW10) to 0.30 mg/L (54MW1). Chloride concentrations ranged from 2.8 mg/L (54MW1) to 8.1 mg/L (54MW13). Detected concentrations of nitrate ranged from 0.62 mg/L (54MW13) to 0.74 mg/L (54MW12). Sulfate concentrations ranged from 18 mg/L (54MW12) to 200 mg/L (54MW10 original and duplicate). The MNA indicators chlorate and chlorite went undetected during this semiannual monitoring event. **Table 5-4** presents the MNA indicator parameters sample results. A more detailed discussion of the MNA results is provided in Section 6.

## 5.4 YEAR ONE THROUGH YEAR TWELVE SAMPLE RESULTS

Samples collected during the first 2 years of monitoring were analyzed for explosives, perchlorate, and MNA indicators. The Year Two MNA Report (CB&I, 2013) recommended elimination of the wells with no COC exceedances for the first 2 years, based on criteria established in the MNA Work Plan. The ninth quarter of monitoring occurred prior to regulatory approval of the Year Two MNA Report, and the original parameters were included in that monitoring event. After approval of the Year Two MNA Report, the sampling plan was modified to include RDX MNA indicators in the analytical suite and to reduce the monitoring program from 14 monitoring wells to 3 wells with COC exceedances (54MW10, 54MW12, and 54MW13), and an upgradient well (54MW1) to monitor background conditions. There have been no further modifications to the sampling plan.

Multiple wells were removed from the monitoring network after the ninth and tenth quarters and, therefore, were not sampled during Years Three through Seven. Monitoring wells that were included in these yearly events included 54MW1, 54MW10, 54MW12, and 54MW13, which monitor Area A at SWMU 54. Year Twelve of monitoring did not change from Years Three through Eleven and included the analyses of explosives, perchlorate, RDX, RDX breakdown by-products (DNX, MNX, and TNX), MNA indicator parameters, and water quality parameters.

### 5.4.1 Groundwater

Samples from the four monitoring wells within SWMU 54 were analyzed for explosives for 36 quarters (Years One through Nine) and 6 semiannual events of monitoring (Years Ten

through Twelve). The trends in number of detections during this period are shown in **Figures 5-3** through **5-6** and are discussed in the paragraphs that follow.

#### *5.4.1.1 Explosives*

During the Year Three monitoring round (tenth through twelfth quarters), 13 explosives were detected in the samples, including DNX, MNX, and TNX. The limit of quantitation (LOQ) for all explosives during the tenth through twelfth quarters was 0.2 µg/L.

During the Year Four monitoring round (thirteenth through sixteenth quarters), the number of explosives detected decreased to five compounds. The explosives included 2,4,6-TNT, 2ADNT, 4ADNT, RDX, and the RDX breakdown by-product DNX. The limit of detection (LOD) during the thirteenth through fifteenth quarters for 2,4,6-TNT, 2ADNT, 4ADNT, and RDX was 0.3 µg/L. The LOQ during the thirteenth through fifteenth quarters was 1.0 µg/L for 2,4,6-TNT and 0.5 µg/L for 2ADNT, 4ADNT, and RDX. The LODs of RDX breakdown by-products of DNX, MNX, and TNX during the thirteenth and fourteenth quarters were 0.2 µg/L, 0.1 µg/L, and 0.2 µg/L, respectively. The LOQs of RDX breakdown by-products of DNX, MNX, and TNX during the thirteenth and fourteenth quarters were 0.4 µg/L, 0.2 µg/L, and 0.4 µg/L, respectively. During the fifteenth quarter, the LOD and LOQ for all RDX breakdown by-products decreased to 0.1 µg/L and 0.2 µg/L, respectively.

During the Year Five monitoring round (seventeenth through twentieth quarters), the number of detected analytes was reduced once more to four compounds: 2,4,6-TNT, 2ADNT, 4ADNT, and RDX. The LOD and LOQ for 2,4,6-TNT, 2ADNT, 4ADNT, RDX, and RDX breakdown by-products during the seventeenth through twentieth quarters were 0.1 µg/L and 0.2 µg/L, respectively. The explosive 2,4,6-TNT was detected at concentrations above the RGs at monitoring wells 54MW12 and 54MW13, whereas RDX was detected above the RGs only at monitoring well 54MW12. The explosive 2,4,6-TNT was detected above the RG at monitoring well 54MW12 during all four quarters (seventeenth through twentieth) and at monitoring well 54MW13 during two monitoring quarters (seventeenth and twentieth), whereas RDX was detected above the RG only during the nineteenth quarter at monitoring well 54MW12.

During the Year Six monitoring round (twenty-first through twenty-fourth quarters), the number of detected analytes remained at four compounds: 2,4,6-TNT, 2ADNT, 4ADNT, and RDX. The LOD and LOQ for 2,4,6-TNT, 2ADNT, 4ADNT, RDX, and RDX breakdown by-products during the twenty-first through twenty-fourth quarters were 0.1 µg/L and 0.2 µg/L, respectively. The explosive 2,4,6-TNT was detected at concentrations above the RGs at monitoring wells 54MW10, 54MW12, and 54MW13, whereas RDX was detected above the RGs only at monitoring well 54MW12. The explosive 2,4,6-TNT was detected above the RG at monitoring well 54MW12 during all four quarters (twenty-first through twenty-fourth), at monitoring well 54MW10 during one monitoring quarter (twenty-first), and at monitoring well 54MW13 during two monitoring quarters (twenty-first and twenty-fourth). RDX was detected above the RG during all four quarters (twenty-first through twenty-fourth) at monitoring well 54MW12.

During the Year Seven monitoring round (twenty-fifth through twenty-eighth quarters), the number of detected analytes expanded to five compounds: 2,4,6-TNT, 2ADNT, 4ADNT, RDX, and 2,6-DNT (and DNT mixture). The LOD and LOQ for 2,4,6-TNT, 2ADNT, 4ADNT, 2,6-DNT, RDX, and RDX breakdown by-products during the twenty-fifth through twenty-seventh quarters were 0.1 µg/L and 0.2 µg/L, respectively. The LOD and LOQ were 0.094 µg/L and 0.19 µg/L, respectively, in the twenty-eighth quarter. The explosive 2,4,6-TNT was detected at concentrations above the RG at monitoring wells 54MW10, 54MW12, and 54MW13, whereas RDX was detected above the RG only at monitoring well 54MW12 and only in the twenty-sixth quarter. The explosive 2,4,6-TNT was detected above the RG at monitoring well 54MW12 during all four quarters (twenty-fifth through twenty-eighth), at monitoring well 54MW10 during one monitoring quarter (twenty-eighth), and at monitoring well 54MW13 during one monitoring quarter (twenty-eighth). RDX was detected above the RG during one quarter (twenty-sixth) at monitoring well 54MW12.

During the Year Eight monitoring round (twenty-ninth through thirty-second quarters), the number of detected analytes decreased to four compounds: 2,4,6-TNT, 2ADNT, 4ADNT, and RDX. The LOD and LOQ for 2,4,6-TNT, 2ADNT, 4ADNT, and RDX during the twenty-ninth through thirty-second quarters were 0.1 µg/L and 0.2 µg/L, respectively. The LOD and LOQ were 0.2 and 0.1 µg/L, respectively, in the twenty-ninth quarter. The explosive 2,4,6-TNT was detected at concentrations above the RG at monitoring wells 54MW10 in the thirtieth and thirty-

first quarters, whereas 2,4,6-TNT was detected at concentrations above the RG at 54MW12 and 54MW13 during the twenty-ninth through thirty-first quarters. RDX and perchlorate were not detected at concentrations above the RG during any quarter.

During the Year Nine monitoring round (thirty-third through thirty-sixth quarters), the number of detected analytes increased to six compounds: 2,4,6-TNT, 2ADNT, 4ADNT, 2-nitrotoluene (2-NT), RDX, and TNX. The LOD and LOQ for 2,4,6-TNT, 2ADNT, 4ADNT, and RDX during the thirty-third through thirty-sixth quarters were 0.1 µg/L and 0.2 µg/L, respectively. The explosive 2,4,6-TNT was detected at concentrations above the RG at monitoring wells 54MW10 and 54MW13 in all four quarters (thirty-third through thirty-sixth), whereas 2,4,6-TNT was detected at concentrations above the RG at 54MW12 during the thirty-fourth through thirty-sixth quarters. RDX and perchlorate were not detected above the RG during any quarter.

During the Year Ten monitoring round (thirty-seventh and thirty-eighth semiannual events), the number of detected analytes decreased to four compounds as compared to Year Nine: 2,4,6-TNT, 2ADNT, 4ADNT, and RDX. The LOD and LOQ for 2,4,6-TNT, 2ADNT, 4ADNT, and RDX during the thirty-seventh and thirty-eighth events were 0.1 µg/L and 0.2 µg/L, respectively. The explosive 2,4,6-TNT was detected at concentrations above the RG at monitoring wells 54MW12 and 54MW13 in the thirty-seventh event. RDX and perchlorate were not detected above the RG during either semiannual event in Year Ten.

During the Year Eleven monitoring round (thirty-ninth and fortieth semiannual events), the number of detected analytes decreased to four compounds as compared to Year Nine: 2,4,6-TNT, 2ADNT, 4ADNT, and RDX. The explosive 2,4,6-TNT was detected at concentrations of 8.8 µg/L (original) and 9.1 µg/L (duplicate) at monitoring well 54MW13 which are above the RG of 7.82 µg/L in the fortieth event. RDX and perchlorate were not detected above the RG during either semiannual event in Year Eleven.

During the Year Twelve monitoring round (forty-first and forty-second semiannual events), the number of detected analytes is essentially the same as compared to Year Eleven with 2,4,6-TNT, 2ADNT, 4ADNT, and RDX being the primary compounds detected. MNX was detected in the forty-first event but only at one monitoring well (54MW13) and it was not detected during the forty-second event. The explosive 2,4,6-TNT was detected at a concentration of 26.8 µg/L in the

forty-second event at monitoring well 54MW13 which is above the RG of 7.82 µg/L and also is the highest concentration of the past 3 years. RDX was detected at monitoring well 54MW12 during the forty-first event at 11 µg/L which is greater than the RG of 6.1 µg/L. Perchlorate was not detected above the RG during either semiannual event in Year Eleven.

Explosives had gone undetected at monitoring well 54MW1 in 35 of the previous 36 quarters, but 2-NT and RDX were detected in this well in the thirty-sixth quarter (**Figure 5-2**); however, explosives were not detected in the past 2 years (Years Eleven and Twelve) at 54MW1.

The explosive 2,4,6-TNT was detected at monitoring well 54MW10 above the RG during the tenth, eleventh, twelfth, sixteenth, twenty-first, twenty-eighth, twenty-ninth, thirtieth, and thirty-third through thirty-sixth quarterly monitoring events (**Figure 5-3**); however, it was not detected above its RG in the two Year Ten events (thirty-seventh and thirty-eight events), two Year Eleven events (thirty-ninth and fortieth events), and two Year Twelve events (forty-first and forty-second events). Monitoring well 54MW12 has had detectable concentrations of 2,4,6-TNT above the RG during most of the monitoring events. The twenty-sixth quarter recorded the highest concentrations of 2,4,6-TNT at 164 µg/L (**Figure 5-4**). The explosive 2,4,6-TNT "spikes" at monitoring well 54MW12 appear fairly regularly to be not occurring in any particular season (**Figure 5-4**). The explosive 2,4,6-TNT was not detected above the RG of 7.92 µg/L at 54MW12 during Year Twelve with concentrations of 4.8 and 2.7 µg/L in the forty-first and forty-second events, respectively. Concentrations of 2,4,6-TNT at 54MW13 had historically been below the RG; however, beginning in the twentieth quarterly event, concentrations have been above the RG for most quarterly and semiannual events. The detected concentration in the most recent event (forty-second event in December 2024) was the highest value recorded in the past 3 years at monitoring well 54MW13 at 26.8 µg/L (**Figure 5-5**).

Concentrations of RDX exceeded the RG in monitoring well 54MW10 during the fifth, tenth, twelfth, and sixteenth quarters (**Figure 5-3**). Monitoring well 54MW12 had detectable concentrations of RDX above the RG during 7 of the first 12 quarters of monitoring, and only one detection above the RG during Year Four (fourteenth quarter) and Year Five (nineteenth quarter) of monitoring. During Year Six, however, there were two detections above the RG, once during the twenty-first quarter and once during the twenty-fourth quarter. During

Year Seven, there was one RDX detection above the RG (54MW12) in the twenty-sixth quarter. The RDX concentration of 11 µg/L in the forty-first event in Year 12 exceeded its RG but the concentration of 0.34 µg/L was less than the RG in the subsequent forty-second event. It appears that elevated concentrations of RDX at 54MW12 are cyclic with periods of lower concentrations in between (**Figure 5-4**). These elevated RDX concentrations are closely aligned with those of 2,4,6-TNT with no particular seasonal pattern being apparent. Historically, monitoring well 54MW13 has not had a detection of RDX above the RG through the first 16 quarters of monitoring. This trend continued during Year Five through Year Six monitoring events. The Year Ten, Eleven, and Twelve RDX concentrations are variable but remain under the RG (**Figure 5-5**).

The only detections of DNX at 54MW12 occurred during the tenth and twelfth quarters, when the breakdown by-product was also detected at monitoring wells 54MW10 and 54MW13. The concentrations of these compounds were low (less than 1 µg/L), but generally mirrored the RDX concentrations in the wells. Detection of the RDX daughter products in these wells with elevated RDX concentrations suggests degradation and natural attenuation of RDX is a viable, ongoing remedial process at the site. During the Year Five through Year Seven monitoring events, DNX was not detected during any of the monitoring quarters. DNX was not detected during the Year Nine or Year Ten monitoring events. TNX was detected in monitoring wells 54MW10 and 54MW13 during the thirty-third quarter but was not detected in the thirty-fourth through thirty-sixth quarters during Year Nine, was not detected during the thirty-seventh and thirty-eighth events of Year Ten, and was not detected in Years Eleven or Twelve.

Many of the intermediate and end-products of RDX degradation are relatively short-lived in the environment, and accumulation of these would not be expected. Studies on the fate and transport of explosives in the environment state that the nitroso intermediates of RDX (DNX, MNX, and TNX) have rarely been observed in the field at the few sites where analyses have been conducted for them (Brannon and Pennington, 2002). Many of these intermediates are observed only transiently due to their susceptibility to rapid mineralization, typically persisting only on the scale of several hours to several days. Significant observations of the final end-products are also not expected. Hydrazines, dimethylhydrazines, and methanol are not likely to accumulate in the environment, particularly at the low levels of concentration at which they would be produced as

end-products, because these compounds biodegrade very rapidly. Therefore, the observation of intermediate and end-products of RDX biodegradation (DNX, MNX, and TNX), even at low concentrations, would be considered strong presumptive evidence of active and ongoing degradation processes.

The 2,4,6-TNT degradation intermediaries 2ADNT and 4ADNT have been detected with regularity at monitoring wells 54MW10, 54MW12, and 54MW13, the exceptions being: the fourteenth quarter when 4ADNT went undetected in monitoring wells 54MW12 and 54MW13; the twentieth quarter when 4ADNT went undetected in monitoring well 54MW10; the twenty-first quarter when 2ADNT went undetected in monitoring well 54MW12; the twenty-second quarter when both 2ADNT and 4ADNT went undetected in monitoring well 54MW10; the twenty-third quarter when 2ADNT went undetected in monitoring well 54MW13 and 4ADNT went undetected in monitoring well 54MW12; and the twenty-fourth quarter when 4ADNT went undetected in monitoring wells 54MW10 and 54MW12. Additionally, 4ADNT went undetected in 54MW13 during the twenty-fifth quarter. The explosive 4ADNT was detected in monitoring wells 54MW10, 54MW12, and 54MW13 during all events of Year Eleven and Twelve.

The explosive 2,6-DNT was detected twice during the Year Seven monitoring event (twenty-sixth quarter). Monitoring well 54MW12 had a concentration of 3.6 µg/L and monitoring well 54MW13 had an estimated concentration of 0.91 µg/L. DNT mixture results are obtained by adding together the results of 2,4-DNT and 2,6-DNT. The RG of 0.932 µg/L for the DNT mixture was exceeded at monitoring well 54MW12. The explosive 2,6-DNT was not detected during the Year Nine monitoring event but was detected in all four wells during the thirty-seventh event of Year Ten and the two analyzed wells during the thirty-eighth event of Year Ten. It was not detected during either monitoring event of Year Eleven and Year Twelve.

Analysis of the historical and recent data for monitoring wells 54MW10, 54MW12, and 54MW13 shows a correlation in 2,4,6-TNT concentration spikes with increasing concentrations of both 2ADNT and 4ADNT, indicating a limited transformation process from 2,4,6-TNT (**Figures 5-6** through **5-9**, respectively). Degradation of 2,4,6-TNT leading to amino-DNTs is likely occurring at localized zones within the soil matrix where the conditions are more favorable.

#### *5.4.1.2 Perchlorate*

Site-wide perchlorate concentrations have typically been steady and below the RG with the exception of the concentrations detected at 54MW12 during the fourth and eighth quarters. These spikes were reported as correlating with peaks in 2,4,6-TNT concentration. During Year Four and Year Five of monitoring, monitoring well 54MW12 continued to exhibit the highest concentrations, with the exception of the sixteenth quarter when the greatest values were detected at monitoring well 54MW10 (**Figures 5-2** through **5-5**). A summary of these results is provided in Section 6.

## 5.5 LABORATORY ANALYSIS, DATA VALIDATION, AND REPORTING

The Year Twelve monitoring effort was collected semiannually in August and December 2024. Groundwater samples were collected in accordance with the Uniform Federal Policy – Quality Assurance Project Plan (UFP-QAPP), revised August 2015. Documentation pertaining to CoC and monitoring conditions was filed in field and laboratory records. **Table 5-9** summarizes the samples and analyses of the Year Twelve monitoring effort.

The samples were placed into coolers with ice at the time of collection. The CoC forms were completed as the samples were packaged into coolers for transport. Trip blanks, temperature blanks, and ice were added as required. The coolers for the metals, pH, COD, anions, chlorate/chlorite, TIC, and TOC were shipped to CT Laboratories in Baraboo, WI; this laboratory then repacked samples for chlorate/chlorite as necessary and shipped to Eurofins Analytical in South Bend, IN (subcontractor laboratory). The coolers containing explosive and perchlorate samples were shipped to SGS Accutest in Orlando, FL.

The analytical data were reviewed for consistency with the test methods as noted in **Table 5-6** to ensure that the data set met project data quality objectives and were usable for the purposes of the project. Validation was performed by Neptune and Company following the *National Functional Guidelines for Inorganic Superfund Data Review* (USEPA, 2014a), *National Functional Guidelines for Superfund Organic Methods Data Review* (USEPA, 2014b), and professional judgment. Any anomalies with regard to the requirements for precision, accuracy, representativeness, completeness, comparability, and sensitivity are discussed below, and the data were flagged where appropriate. Analytical methods are shown in **Table 5-6**. Data validation reports are included as **Appendix B-2**.

**Application of Data Flags**

General data quality flagging conventions in **Table 5-7** were used to indicate QC anomalies. Data were flagged, where appropriate, in accordance with the National Functional Guidelines and the UFP-QAPP. A data quality summary is provided below.

**Preservation, Temperature, and Hold Time**

All sample preservation requirements were met. All sample analyses were within holding time. Refer to **Table 5-8** for holding time exceedances.

### 5.5.1 Precision

Precision was measured from the relative percent difference (RPD) between the parent sample/field duplicate, laboratory duplicates, laboratory control sample (LCS), MS/MSD pairs, and two columns.

**Field Duplicates**

Field duplicates were collected at a frequency of 10 percent (%) of field samples. As summarized in **Table 5-9**, except for RDX in one sample (54MW12 and its duplicate 54TW12) in the forty-first monitoring event, RPDs were within control limits.

**Laboratory Duplicates**

Laboratory duplicate analysis was performed at a frequency of 10% of laboratory samples, for inorganic analyses. RPDs were within control limits. **Table 5-14** lists laboratory duplicate exceedances.

**MS/MSD Duplicate RPD**

MS/MSD samples were analyzed at a frequency of 5% per preparatory batch. Except for TNX in sample 54MW13 during the forty-first monitoring event, results were within control limits. **Table 5-11** lists MS/MSD RPD exceedances.

**RPD Between Two Columns**

RDX was its outside control limit for the December 2024 monitoring event and "J" flagged. **Table 5-12** lists RPD between two columns exceedances.

### 5.5.2 Representativeness

The samples were collected from required monitoring locations. Representativeness of the data is considered acceptable.

### 5.5.3 Comparability

Comparability was acceptable. Standard analytical methods were used. Standard preparatory and analytical methods were applied to the samples across monitoring events. In all cases, the detection limits (DLs) and LODs attained were below the specified LOQs. All target compounds detected below the LOQs, flagged (J) by the laboratory, are considered estimated concentrations.

### 5.5.4 Completeness

Completeness was measured as the number of usable results versus the total number of results. The data set completeness was calculated to be 100%. The information fulfilled the data quality objectives of this investigation.

### 5.5.5 Accuracy

Accuracy was measured from laboratory QC sample percent recoveries, including LCS, MS, MSD, post-digestion spike (PDS), serial dilutions, and surrogates. Accuracy was also evaluated by determining whether any deviations from method or laboratory requirements for internal standard, initial calibration verification (ICV), and continuing calibration verification (CCV) recoveries were noted in the case narrative(s).

**LCS/MS/MSD Recovery**

One LCS was analyzed for each batch of 20 samples or fewer. Most recoveries were within control limits. There were no LCS recovery exceedances.

MS/MSD analysis was performed at a frequency of 5% of field samples. Most recoveries were within control limits. **Table 5-13** presents MS/MSD recoveries outside control limits. The data for the parent sample were flagged as indicated on the table. If no flag was indicated, the data were not flagged. Data were not flagged in cases where the parent sample concentration was greater than four times the spike concentration. Only parent samples were qualified.

**PDS Recovery Exceedances**

Most recoveries were within control limits. There were no PDS recovery exceedances.

**Serial Dilution Percent Difference**

Most percent differences were within control limits as summarized in **Table 5-13**.

**Surrogates**

All surrogate recoveries were within control limits. There were no surrogates that exceeded acceptance criteria.

**Internal Standards**

There were no internal standards outside control limits.

**Calibration Verification**

No calibration results were outside control limits. **Table 5-14** summarizes calibration control limit exceedances.

### 5.5.6 Sensitivity

Sensitivity was measured by evaluating whether the LOQ was less than the RGs. All LOQs were below the RGs.

Additionally, sensitivity was evaluated by determining whether method blank and trip blanks were less than the LOQ. Some analytes were detected in some blanks, leading to qualification of sample results.

**Blanks (Calibration [Instrument], Method, and Trip)**

Calibration blanks were analyzed throughout analytical runs.

One method blank was analyzed with every batch of 20 samples or fewer for each matrix.

**Table 5-15** presents samples flagged for blank results. Sample results greater than two times the blank concentration were not qualified. Data quality and usability were not affected.

## LOQs

LOQs, before adjustments for dilutions, were below the regulatory criteria noted in the UFP-QAPP.

## Data Usability Summary

In summary, all data were considered usable with the qualifications discussed above. The completeness goals for the project were met, and all sample data are usable as qualified for making project decisions and assessments. The data were considered of good quality for the project goals.

High MS/MSD (**Table 5-13**) percent recoveries indicate that the associated results may be biased high for the associated explosives samples but low for sulfate.

The RPDs for field duplicate (**Table 5-9**), laboratory duplicate (**Table 5-10**), MS/MSD (**Table 5-11**), and between two columns (**Table 5-12**) exceedances indicate that the associated results were estimated or non-detect estimated for the associated samples.

The biases do not affect the overall conclusions.

This data quality assessment was prepared by Neptune and Company. Data verification and validation reports (unique report for each monitoring event, August 2024 and December 2024) are presented in **Appendix B-2**.

## Table 5-1 SWMU 54 Summary of Forty-First Event Groundwater Samples

| Analyte | Units | RG | EPA RSL | # of RG Exceedances | # of Detections | # of Samples[1] | Minimum Concentration | Maximum Concentration | Location of Maximum |
|---|---|---|---|---|---|---|---|---|---|
| ***Explosives*** | | | | | | | | | |
| **1,3-Dinitrobenzene** | µg/L | NA | 0.2 | NA | 0 | 5 | ND | ND | NA |
| **2,4,6-TNT** | µg/L | 7.82 | 0.98 | 0 | 3 | 5 | ND | 7.0 | 54MW13 |
| **DNT Mixture*** | µg/L | 0.932 | NA | 0 | 0 | 5 | ND | ND | NA |
| **2,4-DNT** | µg/L | NA | 0.24 | NA | 0 | 5 | ND | ND | NA |
| **2,6-DNT** | µg/L | NA | 0.049 | NA | 0 | 5 | ND | ND | NA |
| **2-Amino-4,6-DNT** | µg/L | NA | 1.9 | NA | 4 | 5 | ND | 3.1 | 54MW12 |
| **2-Nitrotoluene** | µg/L | NA | 0.17 | NA | 0 | 5 | ND | ND | NA |
| **4-Amino-2,6-DNT** | µg/L | NA | 1.9 | NA | 4 | 5 | ND | 2.3 | 54MW12 |
| **RDX** | µg/L | 6.1 | 0.97 | 1 | 3 | 5 | ND | 11 | 54MW12 |
| **DNX** | µg/L | NA | NA | NA | 0 | 5 | ND | ND | NA |
| **MNX** | µg/L | NA | NA | NA | 1 | 5 | ND | 1.5 | 54MW13 |
| **TNX** | µg/L | NA | NA | NA | 0 | 5 | ND | ND | NA |
| ***Miscellaneous*** | | | | | | | | | |
| **Perchlorate** | µg/L | 10.9 | 1.4 | 0 | 3 | 5 | ND | 0.78 | 54TW12 |
| **Chlorate** | µg/L | NA | NA | NA | 0 | 5 | ND | ND | NA |
| **Chlorite** | µg/L | NA | NA | NA | 2 | 5 | ND | 42 | 54MW12 |
| **Chloride** | mg/L | NA | NA | NA | 5 | 5 | 2.3 | 5.7 | 54MW13 |
| **Nitrate (as N)** | mg/L | NA | NA | NA | 3 | 5 | ND | 1 | 54MW12 |
| **Sulfate** | mg/L | NA | NA | NA | 5 | 5 | 28 | 180 | 54MW10 |
| **TIC** | mg/L | NA | NA | NA | 5 | 5 | 62 | 97 | 54MW13 |
| **TOC** | mg/L | NA | NA | NA | 0 | 5 | ND | ND | NA |

**Notes:**
[1]One sample was a duplicate.
*DNT mixture is the combined results of 2,4-DNT and 2,6-DNT.

2,4,6-TNT = 2,4,6-trinitrotoluene
µg/L = micrograms per liter
DNT = dinitrotoluene
DNX = hexahydro-1,3-dinitroso-5-nitro-1,3,5-triazine
EPA = U.S. Environmental Protection Agency
mg/L = milligrams per liter (parts per million)
MNX = hexahydro-1-nitroso-3,5- dinitro-1,3,5-triazine
NA = not applicable
ND = not detected
RDX = cyclotrimethylenetrinitramine
RG = remedial goal
SWMU = Solid Waste Management Unit
TIC = total inorganic carbon
TNX = hexhydro-1,3,5-trinitroso-1,3,5-triazine
TOC = total organic carbon
RSL = EPA Regional Screening Level

## Table 5-2 SWMU 54 Detected Analytes in Forty-First Monitoring Event Groundwater Samples

| Sample ID | | | 54MW1 | | | | 54MW10 | | | | 54MW12 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date Collected | | | 8/20/2024 | | | | 8/20/2024 | | | | 8/20/2024 | | | |
| Analyte | Units | Remedial Goals[1] | Result | Lab Q | LOQ | LOD | Result | Lab Q | LOQ | LOD | Result | Lab Q | LOQ | LOD |
| *Explosives* | | | | | | | | | | | | | | |
| 1,3-Dinitrobenzene | µg/L | NA | 0.1 | U | 0.2 | 0.1 | 0.1 | U | 0.2 | 0.1 | 0.1 | U | 0.2 | 0.1 |
| 2,4,6-TNT | µg/L | 7.82 | 0.1 | U | 0.2 | 0.1 | 0.1 | U | 0.2 | 0.1 | 4.8 | | 0.2 | 0.1 |
| DNT Mixture* | µg/L | 0.932 | 0.1 | U | 0.2 | 0.1 | 0.1 | U | 0.2 | 0.1 | 0.1 | U | 0.2 | 0.1 |
| 2,4-DNT | µg/L | NA | 0.1 | U | 0.2 | 0.1 | 0.1 | U | 0.2 | 0.1 | 0.1 | U | 0.2 | 0.1 |
| 2,6-DNT | µg/L | NA | 0.1 | U | 0.2 | 0.1 | 0.1 | U | 0.2 | 0.1 | 0.1 | U | 0.2 | 0.1 |
| 2-Amino-4,6-DNT | µg/L | NA | 0.1 | U | 0.2 | 0.1 | 0.16 | | 0.2 | 0.1 | 3.1 | | 0.2 | 0.1 |
| 2-Nitrotoluene | µg/L | NA | 0.1 | U | 0.2 | 0.1 | 0.1 | U | 0.2 | 0.1 | 0.1 | U | 0.2 | 0.1 |
| 4-Amino-2,6-DNT | µg/L | NA | 0.1 | U | 0.2 | 0.1 | 0.16 | | 0.2 | 0.1 | 2.3 | | 0.2 | 0.1 |
| RDX | µg/L | 6.1 | 0.1 | U | 0.2 | 0.1 | 0.1 | U | 0.2 | 0.1 | **11** | | 0.2 | 0.1 |
| DNX | µg/L | NA | 0.1 | U | 0.2 | 0.1 | 0.1 | U | 0.2 | 0.1 | 0.1 | U | 0.2 | 0.1 |
| MNX | µg/L | NA | 0.1 | U | 0.2 | 0.1 | 0.1 | U | 0.2 | 0.1 | 0.1 | U | 0.2 | 0.1 |
| TNX | µg/L | NA | 0.1 | U | 0.2 | 0.1 | 0.1 | U | 0.2 | 0.1 | 0.1 | U | 0.2 | 0.1 |
| *Miscellaneous* | | | | | | | | | | | | | | |
| Perchlorate | µg/L | 10.9 | 0.1 | U | 0.2 | 0.1 | 0.1 | U | 0.2 | 0.1 | 0.77 | | 0.2 | 0.1 |
| Chlorate | µg/L | NA | 10 | U | 10 | 0.1 | 10 | U | 10 | 8.2 | 10 | U | 10 | 0.1 |
| Chlorite | µg/L | NA | 10 | U | 10 | 0.1 | 10 | U | 10 | 7.7 | 39 | | 10 | 0.1 |
| Chloride | mg/L | NA | 2.3 | J | 3 | 1.5 | 3.6 | | 3 | 1.5 | 2.9 | J | 3 | 1.5 |
| Nitrate (as N) | mg/L | NA | 0.2 | U | 0.4 | 0.2 | 0.2 | U | 0.4 | 0.2 | 0.99 | | 0.4 | 0.2 |
| Sulfate | mg/L | NA | 28 | | 3 | 1.5 | 180 | | 3 | 1.5 | 30 | | 3 | 1.5 |
| TIC | mg/L | NA | 62 | | 3 | 1.5 | 78 | | 3 | 1.5 | 70 | | 3 | 1.5 |
| TOC | mg/L | NA | 1.5 | U | 3 | 1.5 | 1.5 | U | 3 | 1.5 | 1.5 | U | 3 | 1.5 |
| *MNA* | | | | | | | | | | | | | | |
| Dissolved $Fe^{2+}$ | mg/L | NA | 0.09 | | | | 0.11 | | | | 0.08 | | | |
| Dissolved Mn | mg/L | NA | 0.7 | | | | 1.2 | | | | 0.3 | | | |

## Table 5-2 SWMU 54 Detected Analytes in Forty-First Monitoring Event Groundwater Samples (Continued)

| Sample ID | | | 54TW12 (duplicate) | | | | 54MW13 | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Date Collected | | | 8/20/2024 | | | | 8/20/2024 | | | |
| Analyte | Units | Remedial Goals[1] | Result | Lab Q | LOQ | LOD | Result | Lab Q | LOQ | LOD |
| *Explosives* | | | | | | | | | | |
| 1,3-Dinitrobenzene | µg/L | NA | 0.1 | U | 0.2 | 0.1 | 0.11 | U | 0.22 | 0.11 |
| 2,4,6-TNT | µg/L | 7.82 | 4.8 | | 0.2 | 0.1 | 7.0 | | 0.22 | 0.11 |
| DNT Mixture* | µg/L | 0.932 | 0.1 | U | 0.2 | 0.1 | 0.11 | U | 0.22 | 0.11 |
| 2,4-DNT | µg/L | NA | 0.1 | U | 0.2 | 0.1 | 0.11 | U | 0.22 | 0.11 |
| 2,6-DNT | µg/L | NA | 0.1 | U | 0.2 | 0.1 | 0.11 | U | 0.22 | 0.11 |
| 2-Amino-4,6-DNT | µg/L | NA | 2.3 | | 0.2 | 0.1 | 1.8 | | 0.22 | 0.11 |
| 2-Nitrotoluene | µg/L | NA | 0.1 | U | 0.2 | 0.1 | 0.11 | U | 0.22 | 0.11 |
| 4-Amino-2,6-DNT | µg/L | NA | 1.9 | | 0.2 | 0.1 | 1.6 | | 0.22 | 0.11 |
| RDX | µg/L | 6.1 | 5.5 | | 0.2 | 0.1 | 1.2 | | 0.22 | 0.11 |
| DNX | µg/L | NA | 0.1 | U | 0.2 | 0.1 | 0.11 | U | 0.22 | 0.11 |
| MNX | µg/L | NA | 0.1 | U | 0.2 | 0.1 | 1.5 | | 0.22 | 0.11 |
| TNX | µg/L | NA | 0.1 | U | 0.2 | 0.1 | 0.11 | U | 0.22 | 0.11 |
| *Miscellaneous* | | | | | | | | | | |
| Perchlorate | µg/L | 10.9 | 0.78 | | 0.2 | 0.1 | 0.37 | | 0.2 | 0.1 |
| Chlorate | µg/L | NA | 10 | U | 10 | 0.1 | 10 | U | 10 | 0.1 |
| Chlorite | µg/L | NA | 42 | | 10 | 0.1 | 10 | | 10 | 0.1 |
| Chloride | mg/L | NA | 2.8 | J | 3 | 1.5 | 5.7 | | 3 | 1.5 |
| Nitrate (as N) | mg/L | NA | 1.0 | | 0.4 | 0.2 | 0.47 | | 0.4 | 0.2 |
| Sulfate | mg/L | NA | 30 | | 3 | 1.5 | 34 | | 3 | 1.5 |
| TIC | µg/L | NA | 69 | | 3 | 1.5 | 97 | | 3 | 1.5 |
| TOC | µg/L | NA | 1.5 | U | 3 | 1.5 | 1.5 | U | 3 | 1.5 |
| *MNA* | | | | | | | | | | |
| Dissolved $Fe^{2+}$ | mg/L | NA | 0.08 | | | | 0.07 | | | |
| Dissolved Mn | mg/L | NA | 0.3 | | | | 0.4 | | | |

## Table 5-2 SWMU 54 Detected Analytes in Forty-First Monitoring Event Groundwater Samples (Continued)

**Notes:**
[1]RGs developed in SWMU 54 RFI/CMS Report, Final Document (URS, 2008).
Exceedances denoted by **bold** font.
*DNT mixture is the combined results of 2,4-DNT and 2,6-DNT.
2,4,6-TNT = 2,4,6-trinitrotoluene
µg/L = micrograms per liter (parts per billion)
CMS = Corrective Measures Study
DNT = dinitrotoluene
DNX = hexahydro-1,3-dinitroso-5-nitro-1,3,5-triazine
$FE^{2+}$ = ferrous iron
ID = identifier
Lab Q = Lab Data Qualifiers
LOD = limit of detection
LOQ = limit of quantitation
mg/L = milligrams per liter (parts per million)
Mn = manganese
MNA = monitored natural attenuation
MNX = hexahydro-1-nitroso-3,5-dinitro-1,3,5-triazine
NA = not applicable; remedial goal not established for analyte at SWMU 54
RDX = cyclotrimethylenetrinitramine
RFI = RCRA Facility Investigation
RG = Remedial Goal
SWMU = Solid Waste Management Unit
TIC = total inorganic carbon
TNX = hexhydro-1,3,5-trinitroso-1,3,5-triazine
TOC = total organic carbon
URS = URS Corporation

**Data Qualifiers:**
J = Estimated value.
U = Analyte concentration was not above the detection level.

## Table 5-3 SWMU 54 Summary of Forty-Second Monitoring Event Groundwater Samples

| Analyte | RG | # of RG Exceedances | EPA RSL | # of Detections | # of Samples[1] | Minimum Concentration | Maximum Concentration | Location of Maximum |
|---|---|---|---|---|---|---|---|---|
| *Explosives (µg/L)* | | | | | | | | |
| **1,3-Dinitrobenzene** | NA | NA | 0.2 | 0 | 5 | ND | ND | NA |
| **2,4,6-TNT** | 7.82 | 1 | 0.98 | 2 | 5 | ND | 26.8 | 54MW13 |
| **DNT Mixture*** | 0.932 | 0 | NA | 0 | 5 | ND | ND | NA |
| **2,4-DNT** | NA | NA | 0.24 | 0 | 5 | ND | ND | NA |
| **2,6-DNT** | NA | NA | 0.049 | 0 | 5 | ND | ND | NA |
| **2-Amino-4,6-DNT** | NA | NA | 1.9 | 2 | 5 | ND | 3.8 | 54MW12 |
| **2-Nitrotoluene** | NA | NA | 0.17 | 0 | 5 | ND | ND | NA |
| **4-Amino-2,6-DNT** | NA | NA | 1.9 | 2 | 5 | ND | 3.3 | 54MW12 |
| **RDX** | 6.1 | 0 | 0.97 | 2 | 5 | ND | 1.2 | 54MW13 |
| **DNX** | NA | NA | NA | 0 | 5 | ND | ND | NA |
| **MNX** | NA | NA | NA | 0 | 5 | ND | ND | NA |
| **TNX** | NA | NA | NA | 0 | 5 | ND | ND | NA |
| *Miscellaneous (µg/L)* | | | | | | | | |
| **Perchlorate** | 10.9 | 0 | 1.4 | 2 | 5 | ND | 0.77 | 54MW12 |
| **Chlorate** | NA | NA | NA | 0 | 5 | ND | ND | NA |
| **Chlorite** | NA | NA | NA | 0 | 5 | ND | ND | NA |
| **Chloride** | NA | NA | NA | 5 | 5 | 2.8 | 8.1 | 54MW13 |
| **Nitrate (as N)** | NA | NA | NA | 2 | 5 | ND | 0.74 | 54MW12 |
| **Sulfate** | NA | NA | NA | 5 | 5 | 18 | 200 | 54MW10 |
| **TIC** | NA | NA | NA | 5 | 5 | 64 | 89 | 54MW13 |
| **TOC** | NA | NA | NA | 0 | 5 | ND | ND | NA |

**Notes:**
[1]One sample was a duplicate.
*DNT mixture is the combined results of 2,4-DNT and 2,6-DNT.
2,4,6-TNT = 2,4,6-trinitrotoluene
µg/L = micrograms per liter
DNT = dinitrotoluene
DNX = hexahydro-1,3-dinitroso-5-nitro-1,3,5-triazine
EPA = U.S. Environmental Protection Agency
MNX = hexahydro-1-nitroso-3,5-dinitro-1,3,5-triazine
NA = not applicable
ND = not detected
RDX = cyclotrimethylenetrinitramine
RG = remedial goal
RSL = EPA Regional Screening Level
SWMU = Solid Waste Management Unit
TIC = total inorganic carbon
TNX = hexhydro-1,3,5-trinitroso-1,3,5-triazine
TOC = total organic carbon

## Table 5-4 SWMU 54 Detected Analytes in Forty-Second Monitoring Event Groundwater Samples

| Sample ID | | | 54MW1 | | | | 54MW10 | | | | 54TW10 (duplicate of 54MW10) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date Collected | | | 12/10/2024 | | | | 12/10/2024 | | | | 12/10/24 | | | |
| Analyte | Units | Remedial Goals[1] | Result | Lab Q | LOQ | LOD | Result | Lab Q | LOQ | LOD | Result | Lab Q | LOQ | LOD |
| *Explosives* | | | | | | | | | | | | | | |
| 1,3-Dinitrobenzene | µg/L | NA | 0.11 | U | 0.22 | 0.11 | 0.11 | U | 0.21 | 0.11 | 0.11 | U | 0.21 | 0.11 |
| 2,4,6-TNT | µg/L | 7.82 | 0.11 | U | 0.22 | 0.11 | 0.11 | U | 0.21 | 0.11 | 0.11 | U | 0.21 | 0.11 |
| DNT Mixture* | µg/L | 0.932 | 0.11 | U | 0.22 | 0.11 | 0.11 | U | 0.21 | 0.11 | 0.11 | U | 0.21 | 0.11 |
| 2,4-DNT | µg/L | NA | 0.11 | U | 0.22 | 0.11 | 0.11 | U | 0.21 | 0.11 | 0.11 | U | 0.21 | 0.11 |
| 2,6-DNT | µg/L | NA | 0.11 | U | 0.22 | 0.11 | 0.11 | U | 0.21 | 0.11 | 0.11 | U | 0.21 | 0.11 |
| 2-Amino-4,6-DNT | µg/L | NA | 0.11 | U | 0.22 | 0.11 | 0.11 | U | 0.21 | 0.11 | 0.11 | U | 0.21 | 0.11 |
| 2-Nitrotoluene | µg/L | NA | 0.11 | U | 0.22 | 0.11 | 0.11 | U | 0.21 | 0.11 | 0.11 | U | 0.21 | 0.11 |
| 4-Amino-2,6-DNT | µg/L | NA | 0.11 | U | 0.22 | 0.11 | 0.11 | U | 0.21 | 0.11 | 0.11 | U | 0.21 | 0.11 |
| RDX | µg/L | 6.1 | 0.11 | U | 0.22 | 0.11 | 0.11 | U | 0.21 | 0.11 | 0.11 | U | 0.21 | 0.11 |
| DNX | µg/L | NA | 0.11 | U | 0.22 | 0.11 | 0.11 | U | 0.21 | 0.11 | 0.11 | U | 0.21 | 0.11 |
| MNX | µg/L | NA | 0.11 | U | 0.22 | 0.11 | 0.11 | U | 0.21 | 0.11 | 0.11 | U | 0.21 | 0.11 |
| TNX | µg/L | NA | 0.11 | U | 0.22 | 0.11 | 0.11 | U | 0.21 | 0.11 | 0.11 | U | 0.21 | 0.11 |
| *Miscellaneous* | | | | | | | | | | | | | | |
| Perchlorate | µg/L | 10.9 | 0.1 | U | 0.2 | 0.1 | 0.10 | U | 0.2 | 0.1 | 0.10 | U | 0.2 | 0.1 |
| Chlorate | µg/L | NA | 10 | U | 10 | 0.1 | 10 | U | 10 | 8.2 | 10 | U | 10 | 0.1 |
| Chlorite | µg/L | NA | 10 | U | 10 | 0.1 | 10 | U | 10 | 7.7 | 10 | U | 10 | 0.1 |
| Chloride | mg/L | NA | 2.8 | J | 3 | 1.5 | 4.5 | | 3 | 1.5 | 4.5 | | 3 | 1.5 |
| Nitrate (as N) | mg/L | NA | 0.2 | U | 0.4 | 0.2 | 0.20 | U | 0.4 | 0.2 | 0.20 | U | 0.4 | 0.2 |
| Sulfate | mg/L | NA | 31 | | 3 | 1.5 | 200 | | 30 | 15 | 200 | | 30 | 15 |
| TIC | mg/L | NA | 64 | | 3 | 1.5 | 81 | | 3 | 1.5 | 80 | | 3 | 1.5 |
| TOC | mg/L | NA | 1.5 | U | 3 | 1.5 | 1.5 | U | 3 | 1.5 | 1.5 | U | 3 | 1.5 |
| *MNA* | | | | | | | | | | | | | | |
| Dissolved $Fe^{2+}$ | mg/L | NA | 0.12 | | | | 0.09 | | | | --- | | | |
| Dissolved Mn | mg/L | NA | 0.30 | | | | 0.0 | | | | --- | | | |

## Table 5-4 SWMU 54 Detected Analytes in Forty-Second Monitoring Event Groundwater Samples (Continued)

| Sample ID | | | 54MW12 | | | | 54MW13 | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Date Collected | | | 12/10/2024 | | | | 12/10/2024 | | | |
| Analyte | Units | Remedial Goals[1] | Result | Lab Q | LOQ | LOD | Result | Lab Q | LOQ | LOD |
| *Explosives* | | | | | | | | | | |
| 1,3-Dinitrobenzene | µg/L | NA | 0.11 | U | 0.21 | 0.11 | 0.11 | U | 0.22 | 0.11 |
| 2,4,6-TNT | µg/L | 7.82 | 2.7 | | 0.21 | 0.11 | **26.8** | | 0.22 | 0.11 |
| DNT Mixture* | µg/L | 0.932 | 0.11 | U | 0.21 | 0.11 | 0.11 | U | 0.22 | 0.11 |
| 2,4-DNT | µg/L | NA | 0.11 | U | 0.21 | 0.11 | 0.11 | U | 0.22 | 0.11 |
| 2,6-DNT | µg/L | NA | 0.11 | U | 0.21 | 0.11 | 0.11 | U | 0.22 | 0.11 |
| 2-Amino-4,6-DNT | µg/L | NA | 3.8 | | 0.21 | 0.11 | 3.3 | J | 0.22 | 0.11 |
| 2-Nitrotoluene | µg/L | NA | 0.11 | U | 0.21 | 0.11 | 0.11 | U | 0.22 | 0.11 |
| 4-Amino-2,6-DNT | µg/L | NA | 3.3 | | 0.21 | 0.11 | 2.3 | J | 0.22 | 0.11 |
| RDX | µg/L | 6.1 | 0.34 | | 0.21 | 0.11 | 1.2 | | 0.22 | 0.11 |
| DNX | µg/L | NA | 0.11 | U | 0.21 | 0.11 | 0.11 | U | 0.22 | 0.11 |
| MNX | µg/L | NA | 0.11 | U | 0.21 | 0.11 | 0.11 | U | 0.22 | 0.11 |
| TNX | µg/L | NA | 0.11 | U | 0.21 | 0.11 | 0.11 | U | 0.22 | 0.11 |
| *Miscellaneous* | | | | | | | | | | |
| Perchlorate | µg/L | 10.9 | 0.77 | | 0.2 | 0.1 | 0.63 | | 0.2 | 0.1 |
| Chlorate | µg/L | NA | 10 | U | 10 | 0.1 | 10 | U | 10 | 0.1 |
| Chlorite | µg/L | NA | 10 | U | 10 | 0.1 | 10 | U | 10 | 0.1 |
| Chloride | mg/L | NA | 3.3 | | 3 | 1.5 | 8.1 | | 3 | 1.5 |
| Nitrate (as N) | mg/L | NA | 0.74 | J+ | 0.4 | 0.2 | 0.62 | J+ | 0.4 | 0.2 |
| Sulfate | mg/L | NA | 18 | | 3 | 1.5 | 40 | | 3 | 1.5 |
| TIC | µg/L | NA | 68 | | 3 | 1.5 | 89 | | 3 | 1.5 |
| TOC | µg/L | NA | 1.5 | U | 3 | 1.5 | 1.5 | U | 3 | 1.5 |
| *MNA* | | | | | | | | | | |
| Dissolved $Fe^{2+}$ | mg/L | NA | 0.10 | | | | 0.11 | | | |
| Dissolved Mn | mg/L | NA | 0.20 | | | | 0.10 | | | |

# Table 5-4 SWMU 54 Detected Analytes in Forty-Second Monitoring Event Groundwater Samples (Continued)

**Notes:**
[1]RGs developed in SWMU 54 RFI/CMS Report, Final Document (URS, 2008).
Exceedances denoted by **bold** font.
*DNT mixture is the combined results of 2,4-DNT and 2,6-DNT.
2,4,6-TNT = 2,4,6-trinitrotoluene
µg/L = micrograms per liter (parts per billion)
CMS = Corrective Measures Study
DNT = dinitrotoluene
DNX = hexahydro-1,3-dinitroso-5-nitro-1,3,5-triazine
$Fe^{2+}$ = ferrous iron
ID = identifier
Lab Q = lab data qualifiers
LOD = limit of detection
LOQ = limit of quantitation
mg/L = milligrams per liter (parts per million)
Mn = manganese
MNA = monitored natural attenuation
MNX = hexahydro-1-nitroso-3,5-dinitro-1,3,5-triazine
NA = not applicable; remedial goal not established for analyte at SWMU 54
RDX = cyclotrimethylenetrinitramine
RFI = RCRA Facility Investigation
RG = Remedial Goal
SWMU = Solid Waste Management Unit
TIC = total inorganic carbon
TNX = hexhydro-1,3,5-trinitroso-1,3,5-triazine
TOC = total organic carbon
URS = URS Corporation

Data Qualifiers:
J = Estimated value.
J+ = Estimated value due to MS/MSD recovery outside control limits
U = Analyte concentration was not above the detection level.

## Table 5-5 Summary of Samples and Analyses

| Monitoring Event ID | Data Packages | Matrix | Chloride Nitrate Sulfate | Explosives | Metals | TOC TIC | Chlorate Chlorite Perchlorate | COD pH |
|---|---|---|---|---|---|---|---|---|
| August 2024 | SGS Labs – FC18168 | GW | | X | | | | |
| | CT Labs – 188769 and 188770 | GW | X | | X | X | X | X |
| December 2024 | SGS Labs – FC21117 | GW | | X | | | | |
| | CT Labs – 191589 | GW | X | | X | X | X | X |

**Notes:**
COD = chemical oxygen demand
GW = groundwater
ID = identifier
pH = potential of hydrogen
TIC = total inorganic carbon
TOC = total organic carbon

## Table 5-6 Analytical Methods

| Analysis | Analytes | Method |
|---|---|---|
| Anions | Chloride<br>Nitrate<br>Sulfate | USEPA SW-846 Method 9056A |
| pH | pH | USEPA SW-846 Method 9040 |
| Explosives | Numerous | USEPA SW-846 Method 8330B |
| Metals | Numerous | USEPA SW-846 Method 6010C<br>USEPA SW-846 Method 7470A (Mercury) |
| TOC/TIC | TIC<br>TOC | USEPA SW-846 Method 9060A |
| COD | COD | USEPA Method 410.4 |
| Chlorate/Chlorite | Chlorate<br>Chlorite | USEPA Method 300.1 |
| Perchlorates | Perchlorates | USEPA SW-846 Method 6850 |

**Notes:**
COD = chemical oxygen demand
pH = potential of hydrogen
TIC = total inorganic carbon
TOC = total organic carbon
USEPA = U.S. Environmental Protection Agency

## Table 5-7 Data Qualifiers

| Qualifier | Description |
|---|---|
| R | Rejected: The result is rejected due to deficiencies in the analytical system or the inability to meet QC criteria. |
| M | Matrix effect: The concentration is estimated due to a matrix effect. |
| J | Estimated: The analyte was positively identified, but the quantitation is an estimate due to discrepancies in meeting certain analyte-specific QC criteria. |
| J+ | Estimated: The analyte was positively identified, but the quantitation is an estimate, possibly biased high, due to discrepancies in meeting certain analyte-specific QC criteria. |
| J- | Estimated: The analyte was positively identified, but the quantitation is an estimate, possibly biased low, due to discrepancies in meeting certain analyte-specific QC criteria. |
| B | Blank. The analyte was detected in an associated blank. |
| U | Undetected: The analyte was analyzed for but not detected. |
| UJ | The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific QC criteria. |

## Table 5-8 Holding Time Exceedances

| Monitoring Event | Analysis[1] | Analytes | Result | Samples | Qualifiers |
|---|---|---|---|---|---|
| August 2024 | No holding time exceedances | | | | |
| December 2024 | No holding time exceedances | | | | |

**Notes:**

[1] The holding time for pH analysis is only minutes; therefore, this is expected and exceedances are not presented in the table. The data are still usable for their intended purpose.

## Table 5-9 Field Duplicate Precision Exceedances

| Monitoring Event | Sample ID | Analyte | Flag | RPD |
|---|---|---|---|---|
| August 2024 | 54MW12/54TW12 | RDX | None | 67% |
| December 2024 | No Exceedances | | | |

**Notes:**
% = percent
ID = identifier
RDX = cyclotrimethylenetrinitramine
RPD = relative percent difference

## Table 5-10 Laboratory Duplicate Precision Exceedances

| Monitoring Event | Analyte | Flag | RPD |
|---|---|---|---|
| August 2024 | No Exceedances | | |
| December 2024 | No Exceedances | | |

**Notes:**
RPD = relative percent difference

## Table 5-11 MS/MSD RPD Exceedances

| Monitoring Event | Sample ID | Analyte | Flag | RPD |
|---|---|---|---|---|
| August 2024 | 54MW13 | TNX | None | High |
| December 2024 | No Exceedances | | | |

**Notes:**
ID = identifier
MS = matrix spike
MSD = matrix spike duplicate
RPD = relative percent difference
TNX = hexahydro-1,3,5-trinitroso-1,3,5-triazine

## Table 5-12 RPD Between Two Columns Exceedances

| Monitoring Event | Sample ID | Analyte | Flag | RPD Difference |
|---|---|---|---|---|
| August 2024 | No exceedances | | | |
| December 2024 | 54MW13 | RDX | J | >40% |

**Notes:**
J = Estimated value
% = percent
> = greater than
ID = identifier
RDX = cyclotrimethylenetrinitramine
RPD = Relative Percent Difference

## Table 5-13 MS/MSD Recovery Exceedances

| Monitoring Event | Sample ID | Analyte | Recovery | Parent Flag |
|---|---|---|---|---|
| August 2024 | 54MW13 | TNX<br>Sulfate | High<br>Low | None |
| December 2024 | 54MW12 | DNX<br>MNX<br>TNX<br>Sulfate | High<br>High<br>High<br>Low | None |

**Notes:**
J = Estimated value
UJ = Not detected estimated
DNX = hexahydro-1,3-dinitroso-5-nitro-1,3,5-triazine
ID = identifier
MNX = hexahydro-1-nitroso-3,5-dinitro-1,3,5-triazine
MS = matrix spike
MSD = matrix spike duplicate
TNX = hexahydro-1,3,5-trinitroso-1,3,5-triazine

## Table 5-14 Calibration Exceedances

| Monitoring Event | Analytes | Result | Qualifiers |
|---|---|---|---|
| August 2024 | TNX<br>DNX | High<br>High | None |
| December 2024 | DNX<br>MNX<br>Nitrate | High<br>High<br>High | None<br>None<br>J+ (54MW12 and 54MW13) |

**Notes:**
J+ = Estimated value due to MS/MSD recovery outside control limits
DNX = hexahydro-1,3-dinitroso-5-nitro-1,3,5-triazine
MNX = hexahydro-1-nitroso-3,5-dinitro-1,3,5-triazine
MS = matrix spike
MSD = matrix spike duplicate
TNX = hexahydro-1,3,5-trinitroso-1,3,5-triazine

## Table 5-15 Blank Flags

| Monitoring Event | Type of Blank | Parameter Group | Analyte | Samples Qualified | Flag |
|---|---|---|---|---|---|
| August 2024 | No blank flags | | | | |
| December 2024 | No blank flags | | | | |




**Legend**

- Well (Current MNA Network)
- Well (Removed from Network After Ninth Quarter)
- Monitoring Well Location (Groundwater Sample Results> RGs)
- Fence
- SWMU 54 Boundary

Remedial Goals
2,4,6-TNT RG – 5 µg/L
RDX RG – 5 µg/L

Notes:
MNA - Monitored Natural Attenuation
µg/L - Micrograms per Liter
RGs - Remedial Goals

No exceedances were observed at 54MW1 or 54MW10 during the 2024 monitoring event.

Aerial Source:
Near Map Imagery, June 2023

N

0 30 60 120 Feet

Prepared For:

Baltimore District

**FIGURE 5-1**
SWMU 54 AUGUST AND DECEMBER 2024 GROUNDWATER SAMPLE RESULTS EXCEEDING RGS
RADFORD, VIRGINIA

File: Y:\Radford\MXD\SWMU\SWMU54_2023_ GW_Sample_Results_Exce_RGs_Aug_Dec2024.mxd, 4/23/2025 3:41:37 PM, ricksc

**Figure 5-2 SWMU 54: 54MW1 Explosives Concentrations First Quarter through Forty-Second Event**

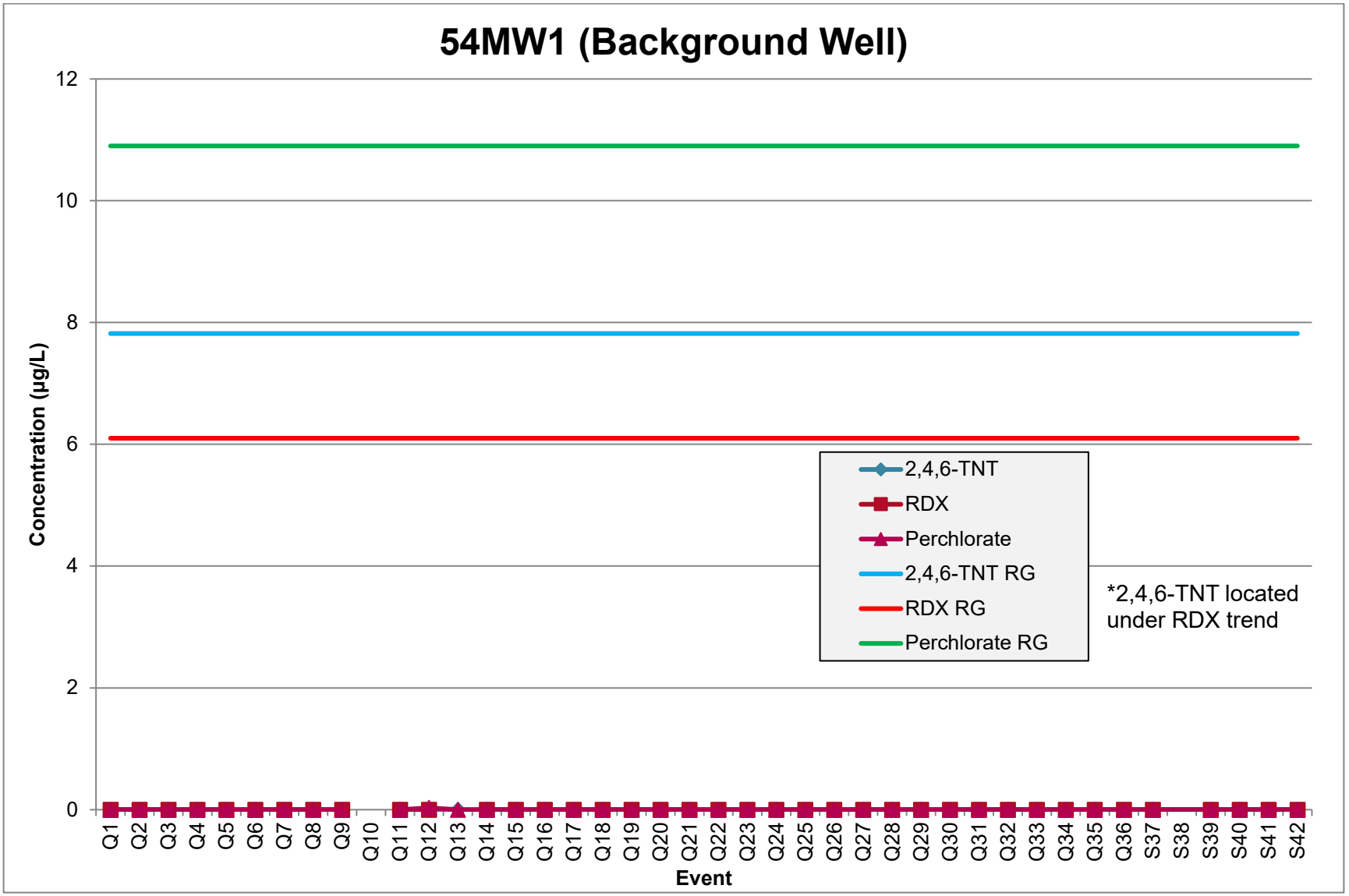


**Figure 5-3 SWMU 54: 54MW10 Explosives Concentrations First Quarter through Forty-Second Event**

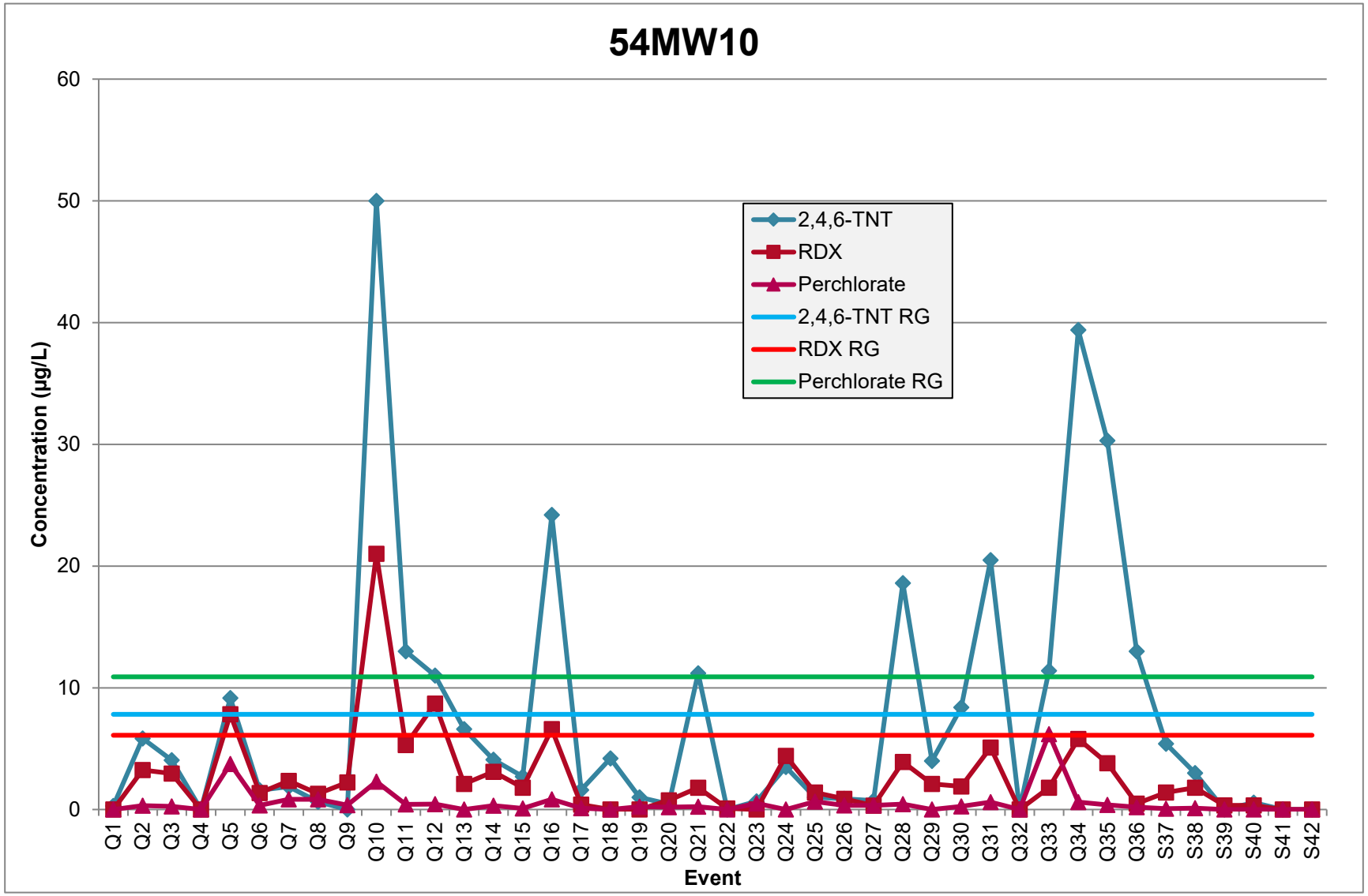


**Figure 5-4 SWMU 54: 54MW12 Explosives Concentrations First Quarter through Forty-Second Event**

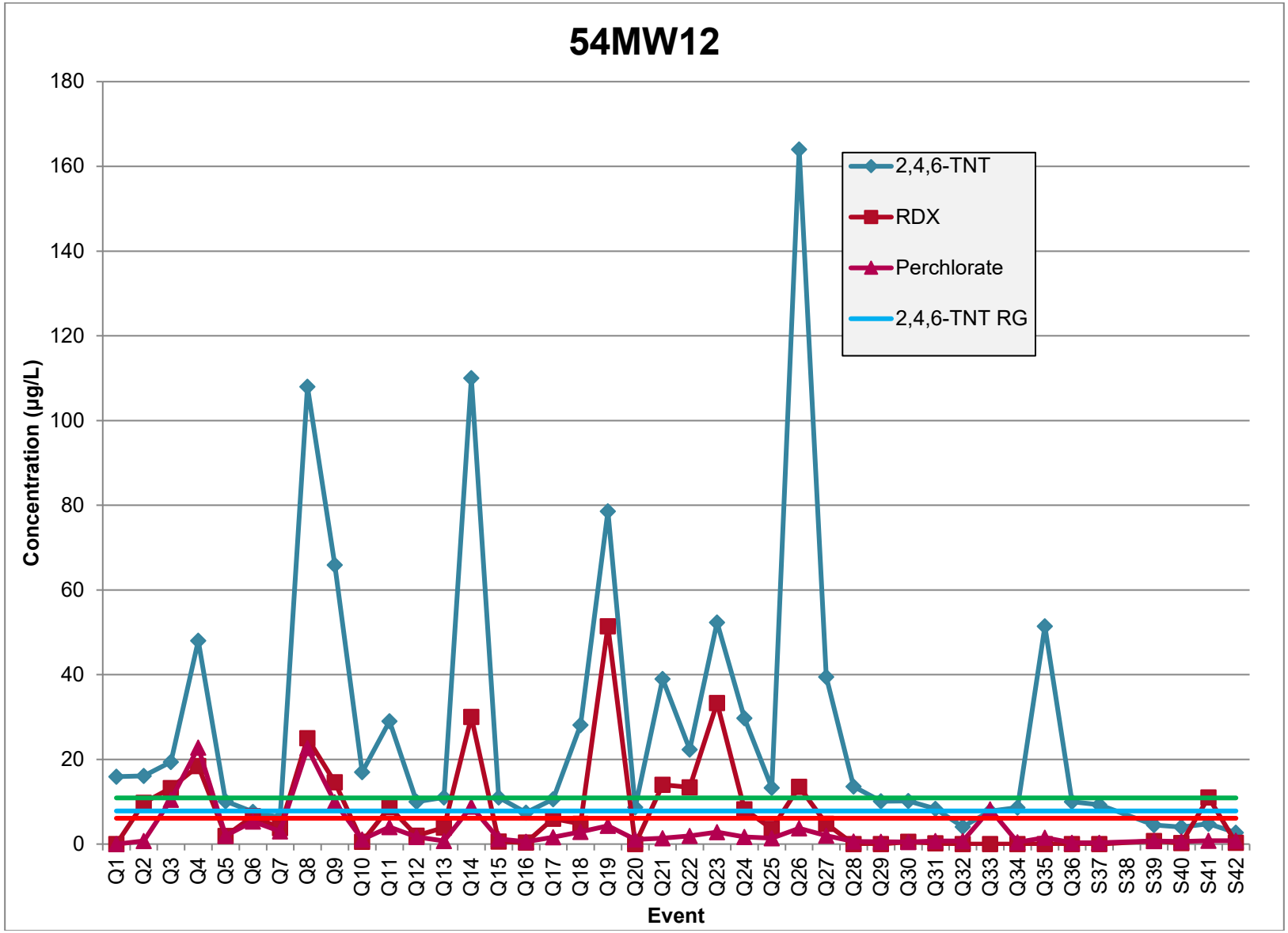


**Figure 5-5 SWMU 54: 54MW13 Explosives Concentrations First Quarter through Forty-Second Event**

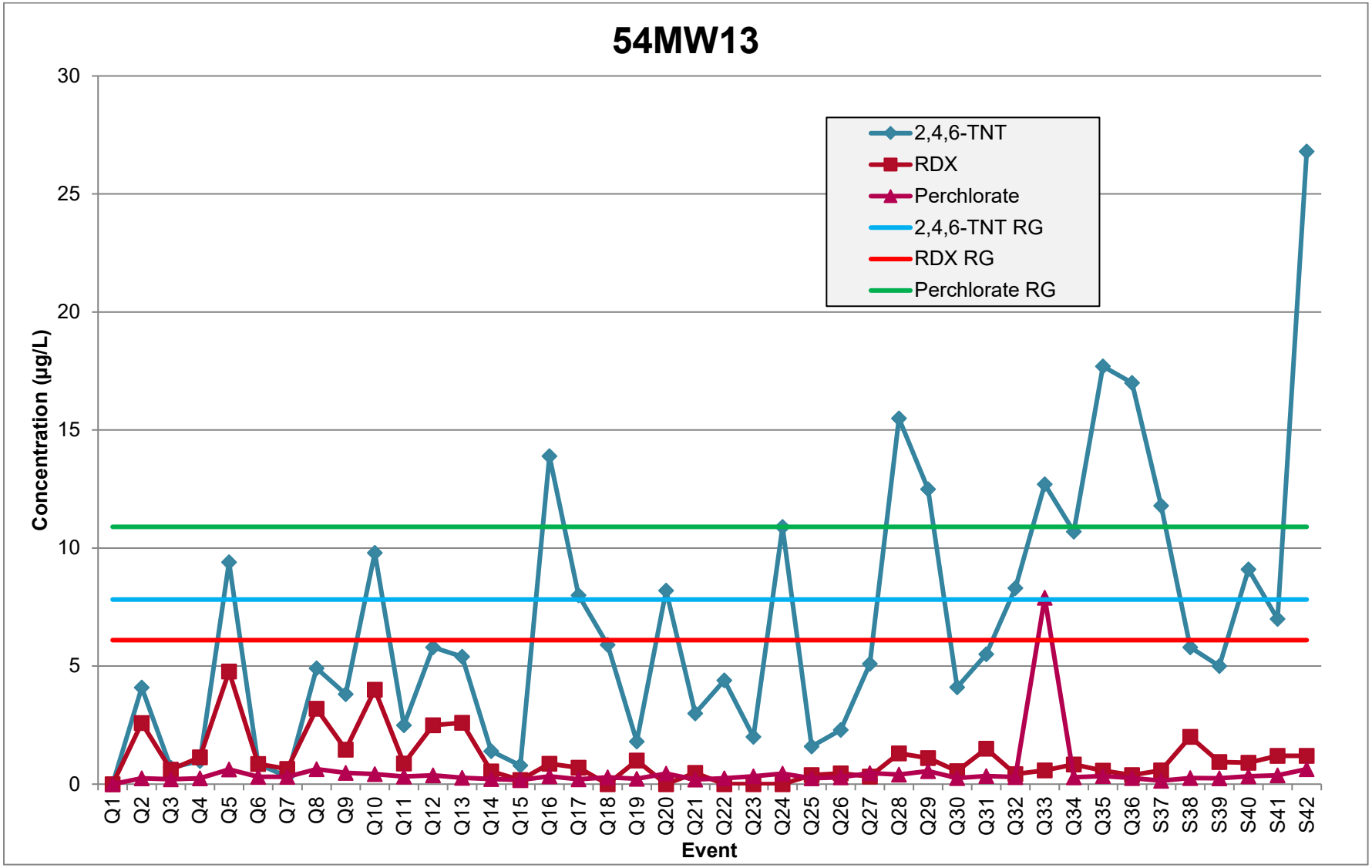
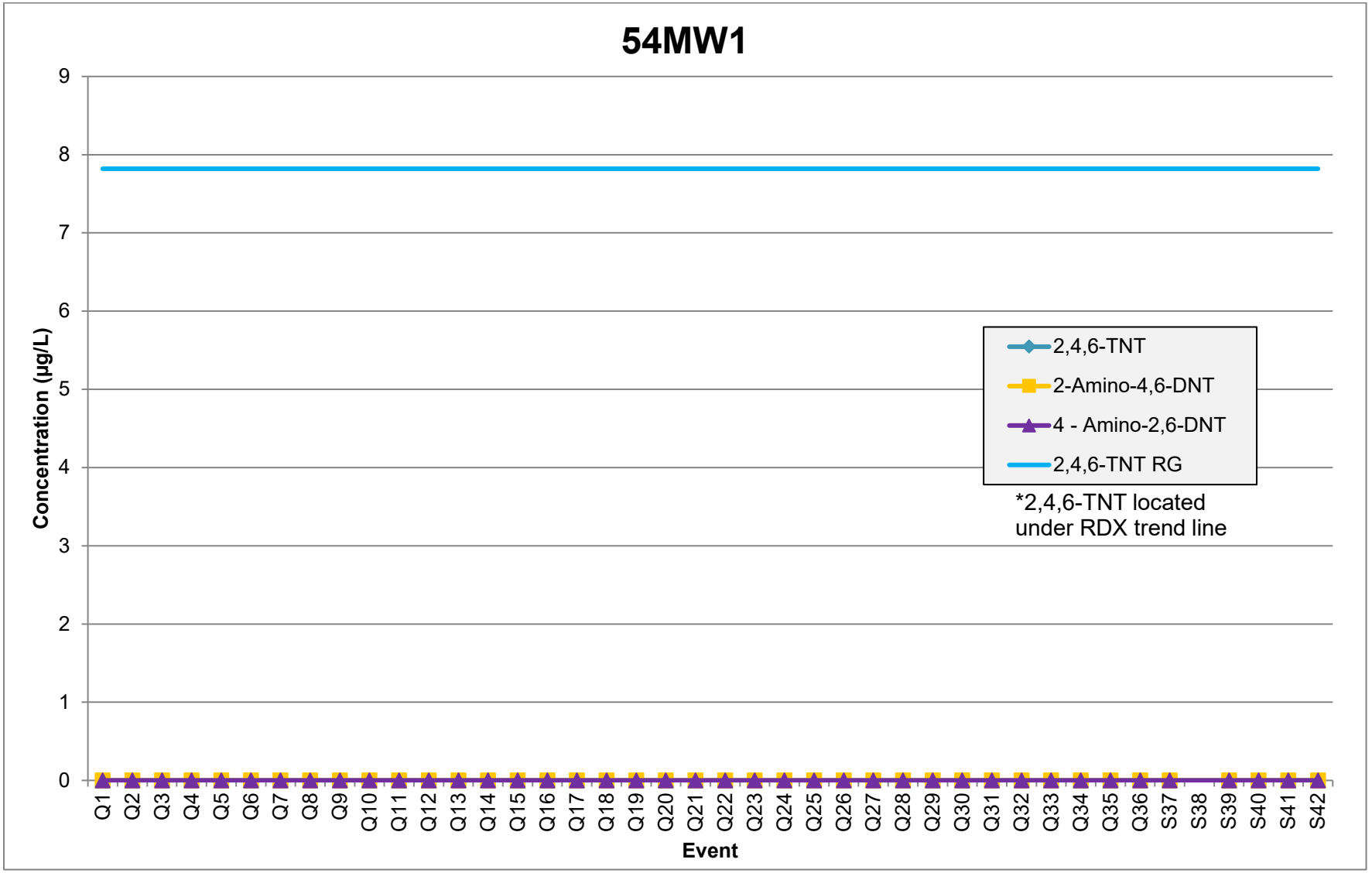


**Figure 5-6 SWMU 54: 54MW1 2,4,6-TNT to Amino-DNT Correlation**



## Figure 5-7 SWMU 54: 54MW10 2,4,6-TNT to Amino-DNT Correlation

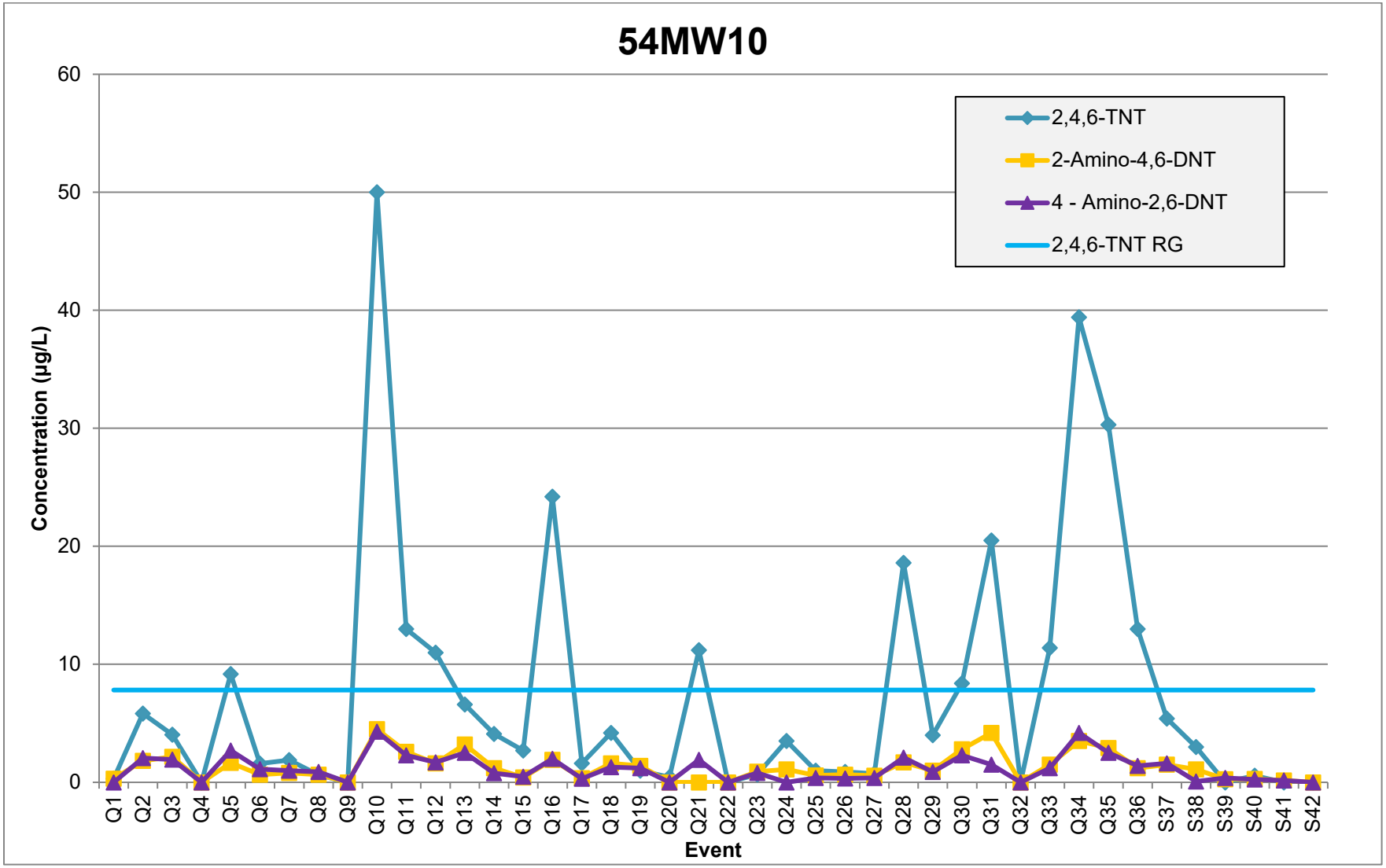


**Figure 5-8 SWMU 54: 54MW12 2,4,6-TNT to Amino-DNT Correlation**

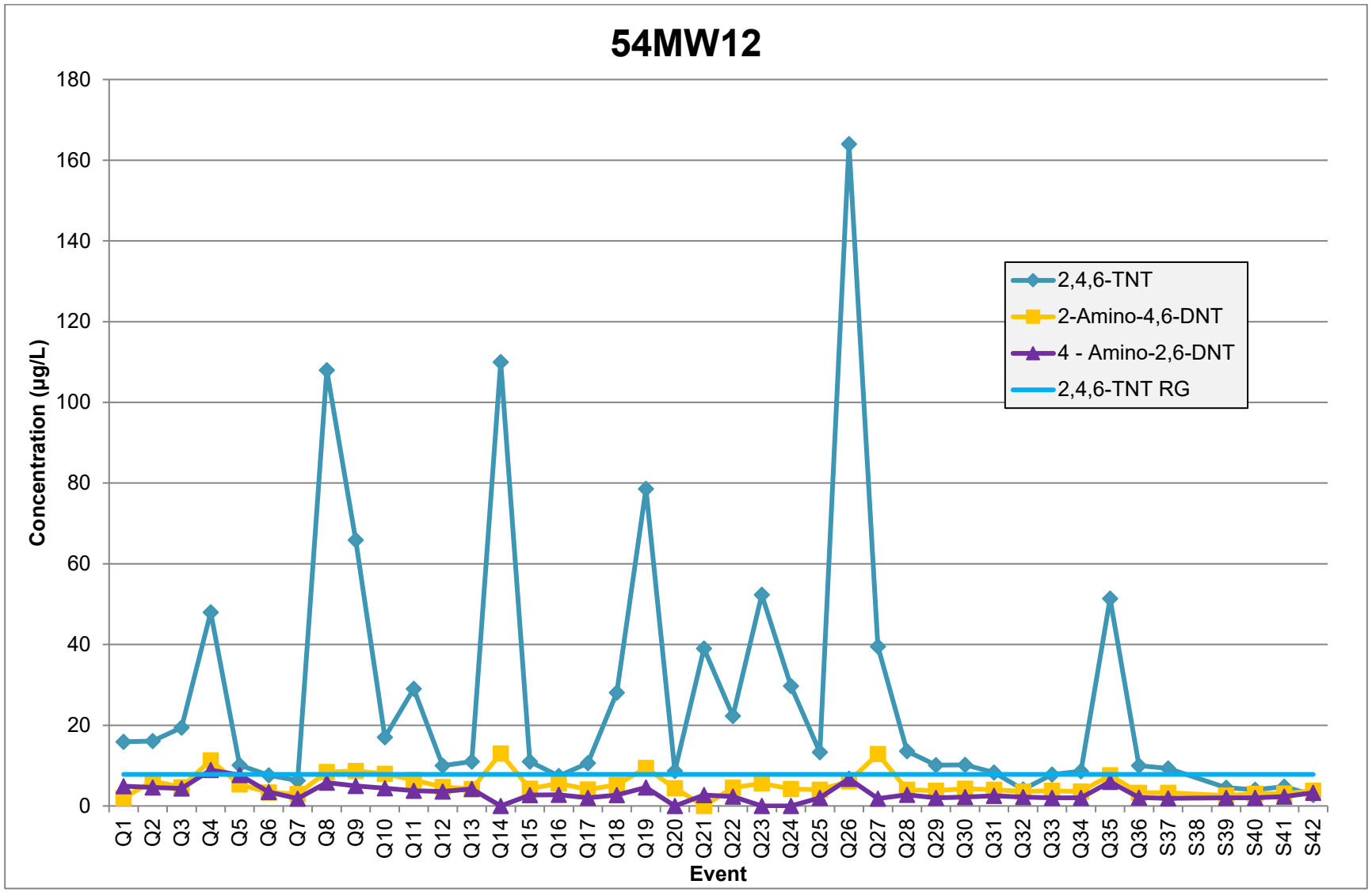
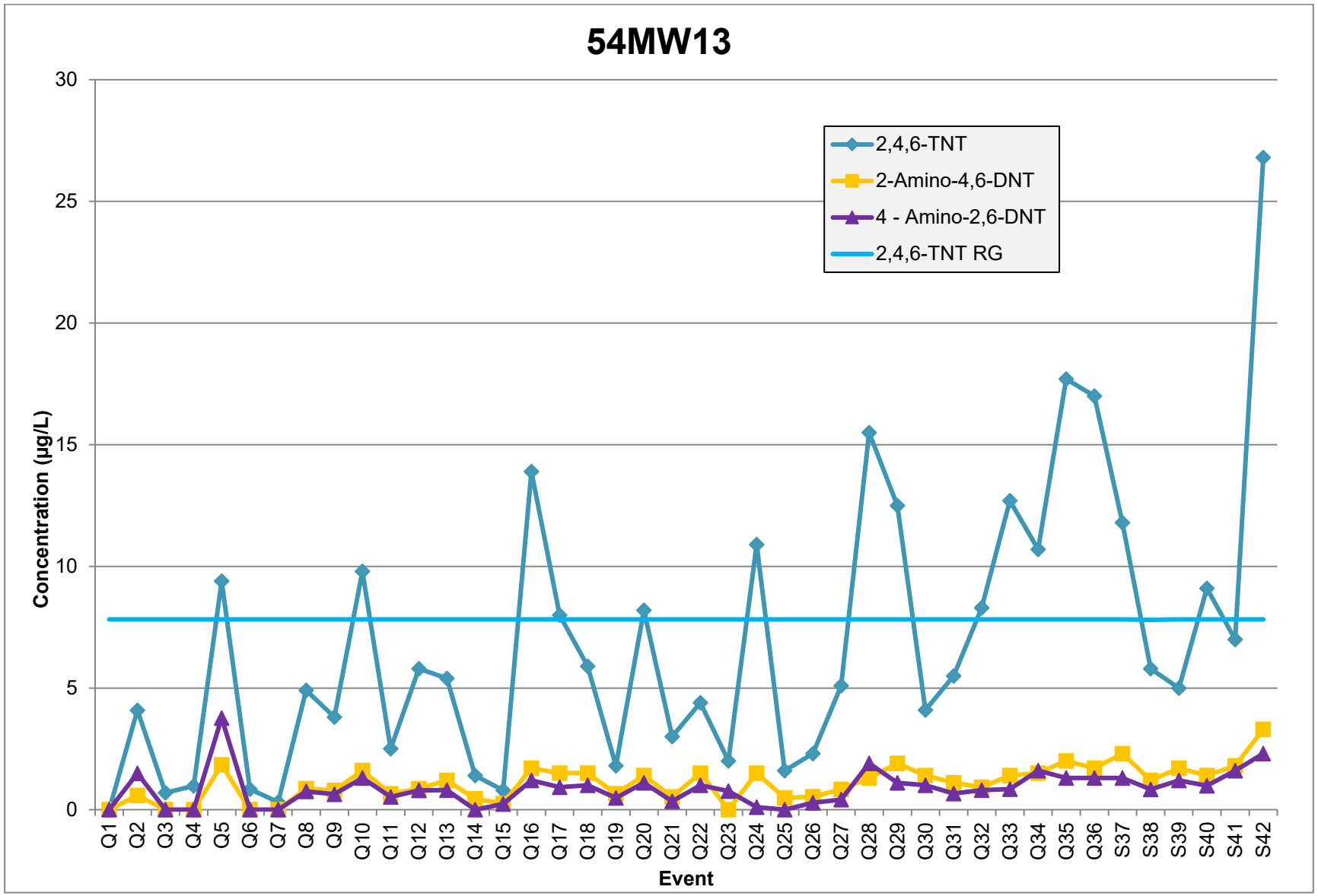


**Figure 5-9 SWMU 54: 54MW13 2,4,6-TNT to Amino-DNT Correlation**



# 6. MNA EVALUATION OF SWMU 54

MNA is a remedial approach in which physical, chemical, and biological processes occur under favorable conditions, without human interferences to reduce the mass, toxicity, volume, concentration, and mobility of contaminants in soil and groundwater. The physical, chemical, and biological processes include biodegradation, dispersion, dilution, sorption, volatilization, and chemical or biological stabilization (USEPA, 1998). Analytical results from multiple groundwater monitoring events at SWMU 54 were evaluated for qualitative indications of natural attenuation processes that may reduce the concentrations of the contaminants of interest (TNT, RDX, and perchlorate). The following sections present the results as they pertain to the lines of evidence used to demonstrate the potential for MNA.

## 6.1 FIRST LINE OF EVIDENCE: OCCURRENCE OF CONTAMINANT TRENDS

The first line of evidence consists of evaluating contaminant and daughter product concentrations for a downward trend in monitoring wells over time. SWMU 54 contains 14 wells (54MW1, 54MW2, 54MW3, 54MW4, 54MW5, 54MW6, 54MW7, 54MW8, 54MW9, 54MW10, 54MW11, 54MW12, 54MW13, and 54MW14), which targeted areas of potential nitroaromatic and perchlorate contamination. The target wells were reduced after the ninth and tenth quarters to 54MW1 (background), 54MW10, 54MW12, and 54MW13. Historical trends and the results of quarterly and semiannual groundwater monitoring are discussed below, and the data are provided in **Table 6-1**, and in **Figures 6-1** through **6-3. Table 6-1** also includes the monitoring month and year for the first through thirty-sixth quarters, the two semiannual events (thirty-seventh and thirty-eighth) in Year Ten, the two semiannual events (thirty-ninth and fortieth) in Year Eleven, and the two semiannual events (forty-first and forty-second) in Year Twelve.

**2,4,6-TNT**

The explosive 2,4,6-TNT was detected above the RG of 7.82 µg/L in well 54MW13 during the Year Twelve monitoring period (forty-second event in December 2024 only).

Concentrations of 2,4,6-TNT have fluctuated in monitoring wells 54MW10, 54MW12, and 54MW13 during the 36 quarterly and 6 semiannual monitoring events. At monitoring well 54MW10, the 2,4,6-TNT concentration went from undetected in the ninth quarter to 50 µg/L in the tenth quarter, which is the highest concentration recorded in this well during the 7 years of

monitoring. The following five quarters of monitoring (eleventh through fifteenth quarters) saw concentrations decline dramatically until a spike was observed during the sixteenth quarter. The concentration spike of 24.2 µg/L at 54MW10 exceeded the RG. Concentrations declined dramatically during the seventeenth through twentieth quarters of monitoring, until the twenty-first quarter when concentrations spiked to 11.2 µg/L. During the twenty-second through twenty-fourth quarters, levels again receded, reaching a low of 0.67 µg/L during the twenty-third quarter and slightly elevating to 3.5 µg/L during the twenty-fourth quarter. The first three quarters of Year Seven showed levels receding again, reaching a low of 0.74 µg/L during the twenty-seventh quarter and elevating to 18.6 µg/L in the twenty-eighth quarter, with two additional spikes in the thirtieth and thirty-first quarters at 8.4 µg/L and 20.5 µg/L, respectively. Concentrations fluctuated in Year Nine but decreased in Year Ten as no 2,4,6-TNT concentrations exceeded its RG in either semiannual event (5.4 µg/L in October 2021 and 3.0 µg/L in April 2022). However, 2,4,6-TNT concentrations increased in the fortieth event of Year Eleven in July 2023 with a concentration of 9.1 µg/L (duplicate sample 54TW13) with an even further increase to 26.8 µg/L at 54MW13 in the December 2024 monitoring event.

Monitoring well 54MW12 experienced the highest detected concentration of 2,4,6-TNT during the Year Seven monitoring period when a concentration of 164 µg/L was detected during the twenty-sixth quarter. The concentrations detected in 54MW12 in the remaining quarters, including the twenty-first through twenty-eighth quarters, were similar to historical concentrations, and a decreasing trend has been noted in the Year Eight twenty-ninth through thirty-second quarters. A spike was observed in the Year Nine thirty-fifth quarter. 2,4,6-TNT was detected at 9.3 µg/L during the thirty-seventh event in October 2021 which is consistent with concentrations noted over the past several years except for the spike noted above in the thirty-fifth event of 51.4 µg/L. 2,4,6-TNT concentrations for 54MW12 for the last 2 years were 4.5 µg/L (January 2023 event), 4 µg/L (July 2023 event), 4.8 µg/L (August 2024 event), and 2.7 µg/L (December 2024 event) which indicate a fairly steady trend.

Monitoring well 54MW13 experienced the three high detections of 2,4,6-TNT during the Year Five monitoring period when two detections (8 µg/L and 8.5 µg/L [field duplicate 54TM13]) were observed during the seventeenth quarter, and one detection (8.2 µg/L) was observed during the twentieth quarter. Year Eight detections spiked in the twenty-ninth and

thirty-second quarters at 12.5 µg/L and 8.3 µg/L, respectively. During the interim quarters, the levels returned to levels similar to historical concentrations. The highest detection happened during the Year Nine monitoring period when levels spiked to 17.7 µg/L during the thirty-fifth and thirty-sixth quarters. The past 3-year trend for monitoring well 54MW13 shows that 2,4,6-TNT concentrations in Year Ten were 11.8 and 5.8 µg/L, concentrations in Year Eleven were 5 µg/L and 9.1 µg/L, and concentrations in Year Twelve were 7 µg/L and 26.8 µg/L, which are consistent with historical levels except for the elevated concentration of 26.8 µg/L noted above for the forty-second event in December 2024.

**DNT Mixture**

Previous reports noted that DNT was detected in the fourth, tenth, eleventh, and twelfth quarters of monitoring at monitoring wells 54MW10, 54MW12, and 54MW13, yet the combined concentrations of 2,4-DNT and 2,6-DNT did not exceed the RG of 0.932 µg/L. During Year Six, neither 2,4-DNT nor 2,6-DNT were detected in any wells. Therefore, the combined concentrations of 2,4-DNT and 2,6-DNT did not exceed the RG in any of the four wells sampled. However, during Year Seven, 2,6-DNT was detected in 54MW12 (3.6 µg/L) and 54MW13 (0.91 µg/L); therefore, the combined concentrations of 2,4-DNT and 2,6-DNT for these two wells did exceed the RG of 0.932 µg/L in the twenty-sixth quarter. This sole RG exceedance for DNT mixture in the 7 years of monitoring coincides with a spike of 2,4,6-TNT in the well with the highest level of 2,4,6-TNT (54MW12). During Year Eight and Year Nine, levels returned to historical levels and no detections of these compounds were noted in Years Ten, Eleven, or Twelve.

**RDX**

RDX concentrations fluctuated in monitoring wells 54MW10 and 54MW12 during the first 16 quarterly monitoring events. At monitoring well 54MW10, a sharp increase in RDX concentrations was observed from 2.23 µg/L in the ninth quarter to 21 µg/L in the tenth quarter. The tenth quarter concentration was the highest concentration reported in this well during the 36 quarters of monitoring. Concentrations decreased during the next 10 quarters of monitoring (eleventh through twentieth quarters) in monitoring well 54MW10; however, during the twelfth and sixteenth quarters, RDX concentrations exceeded the RG. Concentrations again

decreased during the next four quarters of monitoring (twenty-first through twenty-fourth quarters) in monitoring well 54MW10. Monitoring well 54MW12 had 8 reported concentrations of RDX above the RG of 6.1 µg/L in the first 16 quarters of monitoring. During the Year Five monitoring period, concentrations continued to remain below the RG, with the exception of the nineteenth quarter, when concentrations spiked to 51.4 µg/L. This concentration is the highest concentration observed at this well during all 36 quarters of monitoring. The concentration then fell below the DL of 0.1 µg/L in the twentieth quarter. RDX was detected above the RG of 6.1 µg/L every quarter of the Year Seven monitoring period in one monitoring well (54MW12). During the Year Seven monitoring period, the RDX concentration rose above the RG at monitoring well 54MW12 during the twenty-sixth quarter (13.5 µg/L). During Year Eight through Year Eleven, RDX was detected below the RG of 6.1 µg/L every monitoring event; however, during Year Twelve, RDX was detected at a concentration (11 µg/L) above the RG of 6.1 µg/L at 54MW12 during the forty-first monitoring event, and with the concentration (0.34 µg/L) below the RG at this well during the forty-second event.

No breakdown by-products were detected during the Year Eleven monitoring period and only one detection of MNX at 1.5 µg/L (detection at 54MW13 during the forty-first event) was detected during Year Twelve. Historically, RDX breakdown by-products have been observed in monitoring wells 54MW10, 54MW12, and 54MW13. These detections were observed in the tenth through twelfth quarters. The highest total concentrations were observed in monitoring well 54MW10 during the tenth quarter when a spike in RDX occurred. Thereafter, the RDX by-product concentrations steadily decreased. Similar correlations with RDX concentrations were observed in monitoring wells 54MW12 and 54MW13. The highest concentrations of DNX, MNX, and TNX were identified in monitoring wells 54MW12 and 54MW13 during the eleventh and tenth quarters, respectively, which coincide with the highest RDX concentrations recorded in these wells during that time period. There was no DNX, MNX, or TNX detected in monitoring well 54MW12 during the twenty-sixth quarter, when the spike of RDX was observed. TNX was detected at 0.39 µg/L in one well (54MW10) in the thirty-third quarter, and MNX was detected at 5.3 µg/L in one well (54MW12) in the thirty-sixth quarter.

**Amino-DNT**

As 2,4,6-TNT is biologically degraded, the two daughter products, 2ADNT and 4ADNT, are formed. During the Year Twelve monitoring period, the by-products 2ADNT and 4ADNT were detected in monitoring wells 54MW10 (forty-first event only), 54MW12 (both events), and 54MW13 (both events). There is good correlation of 2ADNT and 4ADNT concentrations with 2,4,6-TNT concentrations; i.e., as 2,4,6-TNT concentrations increase or decrease, a corresponding increase or decrease of 2ADNT and 4ADNT is observed. The increased presence of 2ADNT and 4ADNT, along with the increasing concentrations of 2,4,6-TNT, continues to suggest biological degradation of 2,4,6-TNT is occurring at these locations.

**Perchlorate**

Perchlorate concentrations at monitoring wells 54MW10, 54MW12, and 54MW13 continued to remain well below the RG of 10.9 µg/L during Year Twelve of monitoring and are consistent with concentrations observed through the first 11 years of monitoring. Perchlorate was detected in 54MW12 (0.77 and 0.78 µg/L in original and duplicate samples, respectively) and 54MW13 (0.37 µg/L) during the forty-first event while it was detected in 54MW12 (0.77 µg/L) and 54MW13 (0.63 µg/L) in the forty-second event; all results well below its RG and consistent with historical concentrations.

Historically, monitoring well 54MW12 has had two detected concentrations above the RG, which occurred in the fourth and eight quarters. Concentrations decreased during the Year Four monitoring event; this trend first was observed after the ninth quarterly sample event. However, one exception was observed during the fourteenth quarter when the concentration spiked to 8.85 µg/L. The fifteenth and sixteenth quarters saw a return to lower concentrations and a decreasing trend in perchlorate concentrations. During the Year Five monitoring, concentrations steadily rose from 1.6 µg/L to 4.3 µg/L through the seventeenth to nineteenth quarters, though none of the concentrations were above the RG. The twentieth quarter saw a return to a lower concentration of 1.1 µg/L. During the Year Six monitoring, concentrations fluctuated from 1.4 µg/L (twenty-first quarter) to 2.8 µg/L (twenty-third quarter) and back down to 1.7 µg/L (twenty-fourth quarter). Year Seven monitoring results mimicked those of Year Six; observed concentrations ranged from 1.4 µg/L (twenty-fifth quarter) to 3.7 µg/L (twenty-sixth quarter) and

back down once again to 2.0 µg/L (twenty-seventh quarter) and to 0.61 µg/L (twenty-eighth quarter). Monitoring well 54MW12 continued to have the highest observed concentrations of perchlorate at SWMU 54 during Year Seven of monitoring but at concentrations below the RG.

Chloride, chlorate, and chlorite are daughter products of perchlorate degradation. At SWMU 54, chloride is present within the groundwater system, including monitoring well 54MW1 (background). Based on the chloride background concentrations through Year Three of monitoring, a determination could not be established that any measurable change exists due to perchlorate reduction. However, although chloride was detected at monitoring well 54MW1 during all of the Year Four monitoring events, the concentrations detected at wells 54MW10, 54MW12, and 54MW13 during the same period were all slightly higher than the concentrations in 54MW1. During the Year Five monitoring event, chloride was detected at monitoring well 54MW1 during the seventeenth through nineteenth quarters but was not detected during the twentieth quarter. The concentrations detected at monitoring wells 54MW10, 54MW12, and 54MW13 from the seventeenth through nineteenth quarter were all slightly higher than the concentrations in monitoring well 54MW1. During the twentieth quarter of the monitoring event, chloride was not detected in monitoring well 54MW10, but it was detected in monitoring wells 54MW12 and 54MW13 at concentrations similar to previous monitoring quarters. During the Year Six monitoring event, chloride was detected at all wells, including 54MW1 (background). Although chloride was detected at monitoring well 54MW1 during all of the Year Six monitoring events, the concentrations detected at monitoring wells 54MW10, 54MW12, and 54MW13 during the same period were all slightly higher than the concentrations in 54MW1. Chlorate and chlorite were not detected during the Year Six monitoring period with the exception of a detection at monitoring well 54MW10 during the twenty-second quarter (11 µg/L). Chlorate and chlorite went undetected in all of the monitoring wells during the Year Seven through Year Ten and Year Twelve monitoring periods while chlorite was detected in two wells during the Year Eleven January 2023 event. Chloride was detected in all monitoring wells for both monitoring events of Year Eleven and Twelve with the lowest concentrations observed in monitoring well 54MW1 (2.3 µg/L to 2.5 µg/L for Year Eleven and 2.3 to 2.8 µg/L for Year Twelve). Concentrations in the remaining three wells ranged from a low of 3.9 µg/L at monitoring well 54MW10 (fortieth event) to a high of 6.8 µg/L at monitoring well 54MW13

(thirty-ninth event) for Year Eleven and 2.8 µg/L at 54MW12 (forty-first event) to 8.1 µg/L at 54MW13 (forty-second event) for Year Twelve.

This may suggest that chlorate and chlorite have been exhausted in the system and only residual amounts of chloride are being produced as perchlorate concentrations diminish.

**Statistical Trends**

The time series plots (**Figures 5-4** through **5-6**) show a large degree of variability in 2,4,6-TNT concentrations in wells 54MW10, 54MW12, and 54MW13; therefore, Mann-Kendall tests were run for these three monitoring wells using the USEPA software package ProUCL (USEPA, 2020). The results indicated a decreasing trend in 54MW12, no trend at 54MW10, and an increasing trend at 54MW13 (**Appendix C**).

The contaminant concentrations for 2,4,6-TNT, RDX, and perchlorate for the three impacted wells were plotted together to assess a possible correlation between the spike timing among the three wells (**Figures 6-1** through **6-3**). None was apparent; however, there were correlations in all three wells with regard to 2,4,6-TNT, RDX, and perchlorate spikes (i.e., spikes in a given contaminant generally included spikes in the other two contaminants in each well). The highest 2,4,6-TNT concentration was recorded in Year Twelve monitoring but concentrations have been variable over the past 3 years.

Contaminant concentrations for 2,4,6-TNT, RDX, and perchlorate were plotted against groundwater elevation to determine whether the large spike seen in monitoring wells 54MW10, 54MW12, and 54MW13 may be related to water level changes. **Figures 6-1** through **6-3** demonstrate the correlation between the contaminant concentrations at all three wells and groundwater elevation. At monitoring well 54MW10, when groundwater elevation rises, contaminant concentrations appear to decrease. The data suggest a direct relationship between groundwater levels and 2,4,6-TNT, RDX, and perchlorate concentrations, in that elevated concentrations of each are observed with elevated groundwater levels at monitoring well 54MW12. At monitoring well 54MW13, however, contaminant concentrations appear to rise on the backside of a groundwater elevation rise (note fifth, tenth, twelfth, sixteenth, twentieth, twenty-fourth, and twenty-ninth through thirty-second quarters [**Figure 6-3**]).

Additionally, Mann-Kendall tests were run for monitoring wells 54MW10, 54MW12, and 54MW13 to track the trend of perchlorate. The results indicated a decreasing trend for 54MW10 and 54MW12, and a slightly increasing trend at 54MW13 for perchlorate (**Appendix C**).

**First Line of Evidence: Results**

Although the 2,4,6-TNT concentrations have shown variability over time, the first line of evidence indicates that the presence of daughter products, 2ADNT and 4ADNT, suggests that natural attenuation through biological degradation of 2,4,6-TNT is occurring at SWMU 54. Overall decreasing trends in RDX suggest natural attenuation of RDX and perchlorate is occurring.

## 6.2 SECOND LINE OF EVIDENCE: GEOCHEMICAL CONDITIONS

Respiratory substrates are used preferentially during microbial metabolism based on the amount of energy that can be derived from each of them. Respiratory substrates are used in the following order:

$$O_2 > NO_3^- > Fe^{+3} > ClO_4 > SO_4^{-2} > CO_2$$

Geochemical data are available for all 36 quarterly and four semiannual groundwater monitoring events at SWMU 54. Field parameters (DO, ORP, pH, temperature, and specific conductivity) have been collected since 2011 as part of the low-flow monitoring procedures. Laboratory analyses for nitrate, sulfate, and TOC were conducted for all 36 quarterly and all 6 semiannual groundwater monitoring events at SWMU 54. These geochemical data are discussed regarding the potential for biodegradation in the groundwater at SWMU 54.

The microbial degradation of nitroaromatic compounds primarily occurs under nitrate-reducing conditions, whereas perchlorate requires sulfate-reducing groundwater conditions.

**DO**

The preferred terminal electron acceptor during aerobic microbial respiration is oxygen, and DO is measured to determine whether the groundwater is under aerobic or anaerobic conditions. Average DO values less than 1 mg/L are supportive of anaerobic microbial activities. Further, DO values higher than 8 mg/L are considered biased high given their relative magnitude to oxygen solubility at field temperatures and are not included in this analysis.

During the Year Twelve monitoring period, DO values ranged from 0.11 mg/L (54MW10) to 5.96 mg/L (54MW12) for the forty-first event and from 0.47 mg/L (54MW1) to 6.86 mg/L (54MW12) for the forty-second event, which were similar to the most recent 3-year period. In wells where biological degradation products were observed (54MW10 and 54MW12), the DO concentrations indicate that aerobic conditions appear to be favored (**Table 6-2**). 2,4,6-TNT has been known to be reduced under a variety of conditions (aerobic and anaerobic); however, further reduction of 2,4,6-TNT breakdown products, including 2ADNT and 4ADNT, and reduction of RDX and perchlorate are more favorable under anaerobic conditions (Spain, 1995).

The increase in concentrations of explosive constituents at monitoring wells 54MW10, 54MW12, and 54MW13 during the Year Nine monitoring event took place under aerobic conditions. Under aerobic conditions, biodegradation is not as effective in the reduction of explosives and perchlorates. As a result of the subsurface biochemistry, the decreased biological activity may have also led to an increase in the explosive and perchlorate concentrations during the Year Nine monitoring period. Except for the 2,4,6-TNT concentrations at 54MW13 during the forty-first monitoring event, explosive constituent concentrations for Year Twelve are consistent with Year Eleven and were generally less than Years Nine and Ten.

**ORP**

ORP values indicate the groundwater's reductive potential and are used to confirm the DO measurements in groundwater. ORP values less than +50 mV typically correspond to mildly reducing anaerobic conditions, whereas ORP values less than -200 mV correspond to highly reducing anaerobic conditions. As mentioned previously, TNT reduction can occur in aerobic systems, but the reduction of 2,4,6-TNT breakdown products, RDX, and perchlorate are favored under anaerobic conditions (generally observed when ORP values are between -100 mV and 0 mV).

ORP concentrations during the first 12 quarterly monitoring events (early 2011 to May 2014) ranged from -33 to 297 mV, indicating both anaerobic and aerobic conditions were present at the site. However, it was reported that aerobic conditions appeared to be more prevalent (**Table 6-2**). Further, the Year Three ORP values and DO readings did not show a clear corresponding trend for samples taken at the same well and same monitoring event. At monitoring wells with

elevated concentrations of 2,4,6-TNT and RDX (54MW10, 54MW12, and 54MW13), it was suggested that ORP readings were in agreement with DO concentrations, indicating aerobic conditions.

The Year Four and Year Six through Twelve ORP readings ranged from -10.1 mV to 264 mV, indicating that both anaerobic and aerobic conditions were present at SWMU 54 while the Year Five ORP readings indicated that only aerobic conditions were present. Aerobic conditions were the most prevalent at the site.

**pH**

The pH for optimum microbial activity ranges from 6.06 SU to 7.59 SU (USEPA, 1998). Microbial activity may decrease at lower pH values. The first 6 years of pH data are within this optimal pH range (**Table 6-2**) and continued during Year Twelve. In general, the pH environment at SWMU 54 is suitable for microbial activity.

**Nitrate**

Following oxygen, microorganisms preferentially use nitrate as a terminal electron acceptor. Diminished nitrate concentrations may indicate nitrate-reducing conditions, which promote the degradation of nitroaromatics (including 2,4,6-TNT) forming breakdown by-products. It should be noted that elevated nitrate concentrations (greater than 1 mg/L) will inhibit perchlorate reduction, and, additionally, any nitrate would preferentially be reduced to nitrite before 2,4,6-TNT and RDX could be reduced (Interstate Technology and Regulatory Council [Perchlorate Team], 2008).

Nitrate concentrations during the first 36 monitoring events were generally low (overall less than 1 mg/L) with concentrations ranging from non-detect to 4.8 mg/L, suggesting that perchlorate reduction is not inhibited (**Table 6-2**). Year Twelve monitoring nitrate concentrations ranged from non-detect to 1.0 mg/L, which is consistent with previous monitoring events.

Monitoring well 54MW12, where historically the highest and more persistent perchlorate concentrations have been identified, consistently had nitrate concentrations greater than 1 mg/L during the first 16 quarters of monitoring.

During the Year Five monitoring period, however, the nitrate concentrations were only greater than or equal to 1 mg/L during two monitoring events (seventeenth and nineteenth quarters).

During the Year Six monitoring period, nitrate concentrations were consistently higher than 1 mg/L for the twenty-second through twenty-fourth quarters. Only during the twenty-first quarter was the concentration below 1 mg/L.

During the Year Seven monitoring period, nitrate concentrations were consistently higher than 1 mg/L for the twenty-fifth through twenty-seventh quarters. Only during the twenty-eighth quarter was the concentration below 1 mg/L. In contrast, the corresponding reduction of 2,4,6-TNT concentrations and accrual of 2ADNT and 4ADNT present suggest the biodegradation of TNT.

During the Year Nine monitoring period, nitrate concentrations were only higher than 1 mg/L during the thirty-fifth quarter.

During the Year Ten monitoring period, nitrate concentrations were less than 1 mg/L for both semiannual monitoring events.

During the Year Eleven monitoring period, nitrate concentrations were less than 1 mg/L for both semiannual monitoring events.

During the Year Twelve monitoring period, nitrate concentrations ranged up to 1 mg/L which is consistent with results from the past 3 years.

Low nitrate concentrations in the groundwater indicate that conditions exist in groundwater for the promotion of explosives degradation.

**Ferrous Iron**

Ferric iron is reduced to soluble ferrous iron in the groundwater where iron-reducing bacteria have been active. An increase in ferrous iron concentrations is indicative of iron-reducing conditions. Biological reduction of 2,4,6-TNT is favored in iron-reducing conditions; therefore, elevated concentrations of ferrous iron above the typical range of 0.5 to 10 mg/L are an indicator of favorable groundwater conditions for 2,4,6-TNT degradation.

Ferrous iron concentrations for all wells during the 6 previous years of monitoring have ranged from 0.0 mg/L (non-detect) to 0.26 mg/L, indicating that iron-reducing conditions are not present at this time, or that the iron has been reduced previously.

During the Year Five monitoring events, ferrous iron concentrations for all wells were less than 0.2 mg/L (non-detect) with the exception of monitoring well 54MW10 during the seventeenth quarter, when concentrations increased to 0.52 mg/L and then decreased to 0.04 mg/L during the eighteenth quarter.

During the Year Six monitoring events, ferrous iron concentrations for all wells were less than 0.2 mg/L with the exception of monitoring well 54MW13 during the twenty-second quarter, when concentrations increased to 0.26 mg/L, and then decreased to 0.0 mg/L (non-detect) during the twenty-third quarter.

During the Year Seven monitoring events, ferrous iron concentrations for all wells were less than 0.2 mg/L with the exception of monitoring well 54MW12 during the twenty-seventh quarter, when concentrations increased to 0.21 mg/L, and then decreased to 0.14 mg/L during the twenty-eighth quarter.

During the Year Eight monitoring events, ferrous iron concentrations for all wells were less than 0.20 mg/L, whereas Year Nine indicated ferrous iron concentrations were less than 0.10 mg/L.

For the Year Ten monitoring events, an increase in ferrous iron concentrations was noted with concentrations noted up to 2.01 mg/L. Ferrous iron concentration ranges of 0.01 to 0.10 mg/L were noted for the thirty-seventh monitoring event and 0.01 to 2.01 mg/L noted for the thirty-eighth event.

For the Year Eleven monitoring events, ferrous iron concentrations were similar to Year Ten. Ferrous iron concentration ranges of 0.00 to 0.2 mg/L were noted for the thirty-ninth monitoring event and 0.10 to 0.80 mg/L noted for the fortieth event.

For the Year Twelve monitoring events, ferrous iron concentrations were similar to Year Ten. Ferrous iron concentration ranges of 0.07 to 0.11 mg/L were noted for the two semiannual events which are consistent with previous years.

**Manganese**

Manganese-reducing bacteria can use manganese oxides as a terminal electron receptor for respiration. They can also couple manganese reduction to the oxidation of organic and inorganic electron donors. Biological reduction of 2,4,6-TNT is favored in manganese-reducing conditions; therefore, elevated levels of manganese above the typical range of 0.05 to 5.6 mg/L are an indicator of favorable groundwater conditions. Manganese concentrations for all wells during Year Twelve of monitoring ranged between 0.70 mg/L and 1.2 mg/L for August 2024 and between 0.0 mg/L and 0.30 mg/L for December 2024, indicating that manganese-reducing conditions remain low.

**Sulfate**

Biological degradation of TNT breakdown products (2ADNT and 4ADNT), RDX, and perchlorate actively occurs under sulfate-reducing conditions. Sulfate concentrations greater than 20 µg/L may cause competitive exclusion (USEPA, 2008). Sulfate concentrations were measured in the groundwater during each of the first 12 quarterly monitoring events and were found to generally be greater than 20 mg/L (ranging from 15.0 mg/L to 403 mg/L), indicating that biological degradation of 2ADNT and 4ADNT may be inhibited at SWMU 54 (**Table 6-2**).

During Year Four of monitoring, sulfate concentrations were slightly lower (ranging from 19 mg/L to 93 mg/L) but again suggested inhibition of biological degradation of the 2,4,6-TNT by-products 2ADNT and 4ADNT.

During Year Five of monitoring, sulfate concentrations were found to be greater than 20 mg/L (ranging from 28.0 mg/L to 150.0 mg/L), again indicating that biological degradation of 2ADNT and 4ADNT is inhibited at SWMU 54.

During Year Six of monitoring, sulfate concentrations were again greater than 20 mg/L (ranging from 25.0 mg/L to 100.0 mg/L).

During Year Seven of monitoring, sulfate concentrations were again greater than 20 mg/L (ranging from 23 mg/L to 69 mg/L) for all monitoring wells with the exception of 54MW13, where concentrations dropped to 16 mg/L and 15 mg/L (twenty-fifth and twenty-sixth quarters, respectively).

Year Eight sulfate concentrations were generally greater than 20 mg/L (ranging from 17 mg/L to 140 mg/L) for all monitoring wells, where concentrations dropped to 17 mg/L in the thirty-second quarter.

Sulfate concentrations were lower in Year Nine than Year Eight, but similar to Year Seven, with a concentration range of 24 mg/L to 96 mg/L. This indicates that biological degradation of 2ADNT and 4ADNT is inhibited at SWMU 54, but conditions appear to be improving.

Sulfate was detected at a concentration range of 28 mg/L to 120 mg/L in Year Ten which is slightly higher than Year Nine.

Sulfate was detected at a concentration range of 29 mg/L to 190 mg/L in Year Eleven with the maximum concentration slightly higher than Year Ten.

Sulfate was detected at a concentration range of 18 mg/L to 200 mg/L in Year Twelve with the maximum concentration slightly higher than the historical values indicating conditions may be present that inhibit biodegradation.

**TOC**

Organic carbon is a required source of reduced carbon and energy needed to sustain microbial degradation of nitroaromatics and perchlorate. TOC concentrations greater than 20 mg/L are considered adequate to support microbial activity. For the majority of the first 3 years of monitoring, TOC concentrations were found to be considerably lower than what is considered adequate to support microbial activity. TOC concentrations during this timeframe ranged from less than 0.50 mg/L (non-detect) to 7.47 mg/L (**Table 6-2**). However, measured TOC concentrations during the twelfth quarter exceeded 20 mg/L in monitoring wells 54MW1 (51.0 mg/L) and 54MW10 (63.0 mg/L). The Year Four, Year Five, Year Six, and Year Seven TOC results, however, again indicated low concentrations considered inadequate to support microbial activity. The range of TOC during the Year Four, Year Five, Year Six, and Year Seven monitoring periods ranged from 0.3 mg/L to 13 mg/L. This trend continued throughout the Year Eight monitoring events, with concentrations ranging from 0.53 mg/L to 0.99 mg/L, whereas Year Nine indicated TOC concentrations ranging from non-detect to 2.4 mg/L.

Year Ten indicated TOC concentrations ranging from non-detect to 1.5 mg/L which is similar to the past 2 years. No TOC was noted for the Year Eleven and Twelve monitoring events.

## TIC

Inorganic carbon species include carbon dioxide, carbonic acid, and carbonate. The presence of TIC is a useful source of carbon needed to sustain microbial degradation. The oxidation of organic matter should lead to an increase of TIC in groundwater. TIC concentrations during this monitoring period ranged from 62 mg/L to 97 mg/L with only slight variations noted during each semiannual monitoring event (**Table 6-2**). In addition, TIC concentrations have shown little variation over the last 5 years of monitoring, which is consistent with the general low variability of organic contaminant concentrations in groundwater samples over the same period.

## Specific Conductivity

**Figure 6-4** provides a time series plot of specific conductivity at all four wells. Specific conductivity is the indirect measure of the presence of dissolved solids, such as chloride, nitrate, sulfate, iron, and all degradation by-products. **Figures 6-5** through **6-7** provide time series plots of MNA indicators sulfate and nitrate alongside water quality parameters iron and manganese at monitoring wells 54MW10, 54MW12, and 54MW13 for all 11 years. Additionally, **Figures 6-8** through **6-10** provide time series plots of MNA indicator TOC alongside water quality parameters DO and ORP at monitoring wells 54MW10, 54MW12, and 54MW13 for all 11 years. Biodegradation of 2,4,6-TNT, RDX, perchlorate, and more dissolved inorganic ions (such as chlorides, nitrates, sulfates, and iron) would create the electrical current witnessed in the specific conductivity readings.

Monitoring wells 54MW10, 54MW12, and 54MW13 all appear to have similar specific conductivity according to **Figure 6-4**. Additionally, **Figures 6-5** through **6-7** demonstrate that iron and dissolved manganese have been reduced to concentrations at or very near zero at all three wells. Overall, there are sulfate-reducing conditions at all three wells, which is indicative of biodegradation of 2ADNT, 4ADNT, RDX, and perchlorate. Nitrate concentrations at monitoring well 54MW13 have always been at or slightly above zero. Nitrate reducing conditions remain present at monitoring well 54MW12.

## 6.3 MNA DATA TRENDS

**Figures 6-8** through **6-10** demonstrate that ORP conditions at monitoring well 54MW10 support mildly anaerobic conditions; at monitoring wells 54MW12 and 54MW13, ORP is declining overall and beginning to support mildly reducing anaerobic conditions, although both of these wells saw increases in ORP in the thirty-first and thirty-second quarters. DO conditions at all three wells are aerobic. TOC conditions at monitoring well 54MW10 fluctuate between inadequate and adequate conditions for biodegradation. Since the seventeenth quarter and continuing through the forty-second event (Year Twelve), TOC concentrations have remained below 20 mg/L, which is considered inadequate. Meanwhile, conditions at monitoring wells 54MW12 and 54MW13 have consistently been considered inadequate and have remained so since the first quarter. TOC concentrations at monitoring wells 54MW12 and 54MW13 have ranged between less than 0.5 mg/L and 13 mg/L; these concentrations are considered inadequate for sustaining microbial degradation of nitroaromatics and perchlorate. Overall, the data suggest that MNA conditions are variable at all three wells due to low TOC concentrations, and variable DO conditions; however, influence from abiotic degradation and flushing during higher water level events potentially impact and reduce explosives concentrations.

# Table 6-1 Analytical Results for Groundwater Performance Monitoring at SWMU 54

| Parameter | RG | July 2011 (Q1) | Oct 2011 (Q2) | Jan 2012 (Q3) | Apr 2012 (Q4) | Aug 2012 (Q5) | Nov 2012 (Q6) | Feb 2013 (Q7) | May 2013 (Q8) | Aug 2013 (Q9) | Nov 2013 (Q10) | Feb 2014 (Q11) | May 2014 (Q12) | Sept 2015 (Q13) | Jan 2016 (Q14) | Apr 2016 (Q15) | July 2016 (Q16) | Oct 2016 (Q17) | Jan 2017 (Q18) | Apr 2017 (Q19) | July 2017 (Q20) | Oct 2017 (Q21) | Jan 2018 (Q22) | Apr 2018 (Q23) | July 2018 (Q24) | Oct 2018 (Q25) | Jan 2019 (Q26) | Apr 2019 (Q27) | July 2019 (Q28) | Oct 2019 (Q29) | Jan 2020 (Q30) | Apr 2020 (Q31) | July 2020 (Q32) | Oct 2020 (Q33) | Jan 2021 (Q34) | Apr 2021 (Q35) | July 2021 (Q36) | Oct 2021 (S37) | Apr 2022 (S38) | Jan 2023 (S39) | July 2023 (S40) | Aug 2024 (S41) | Dec 2024 (S42) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***54MW1*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **2,4,6-TNT** | 7.82 | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | ND | ND | ND | ND |
| **RDX** | 6.1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | ND | ND | ND | ND |
| **DNT Mixture** | 0.932 | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | ND | ND | ND | ND |
| **Perchlorate** | 10.9 | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | ND | ND | ND | ND |
| ***54MW2*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **2,4,6-TNT** | 7.82 | 2.1 | 0.9 | 2.08 | -- | -- | -- | -- | 0.749 | 0.974 | 0.46 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **RDX** | 6.1 | 0.572 | ND | ND | -- | -- | -- | -- | ND | ND | 0.075 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **DNT Mixture** | 0.932 | ND | ND | ND | -- | -- | -- | -- | ND | ND | ND | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **Perchlorate** | 10.9 | 3.07 | 0.547 | 1.91 | -- | -- | -- | -- | 1.82 | 1 | 0.26 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| ***54MW3*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **2,4,6-TNT** | 7.82 | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **RDX** | 6.1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **DNT Mixture** | 0.932 | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **Perchlorate** | 10.9 | 0.53 | 0.18 | ND | ND | 0.405 | 0.303 | 0.309 | 0.59 | 0.446 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| ***54MW4*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **2,4,6-TNT** | **7.82** | ND | ND | ND | ND | ND | ND | ND | ND | ND | - | - | - | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **RDX** | 6.1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | - | - | - | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **DNT Mixture** | 0.932 | ND | ND | ND | ND | ND | ND | ND | ND | ND | - | - | - | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **Perchlorate** | 10.9 | ND | ND | ND | ND | ND | 0.141 | ND | ND | ND | - | - | - | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| ***54MW5*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **2,4,6-TNT** | 7.82 | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **RDX** | 6.1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **DNT Mixture** | 0.932 | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **Perchlorate** | 10.9 | 0.311 | 0.393 | 0.313 | 0.301 | 0.42 | 0.28 | 0.255 | 0.309 | 0.389 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| ***54MW6*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **2,4,6-TNT** | 7.82 | ND | ND | ND | ND | ND | Dry | ND | ND | Dry | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **RDX** | 6.1 | ND | ND | ND | ND | ND | Dry | ND | ND | Dry | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **DNT Mixture** | 0.932 | ND | ND | ND | ND | ND | Dry | ND | ND | Dry | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **Perchlorate** | 10.9 | ND | 0.127 | 0.159 | ND | 0.175 | Dry | 0.16 | 0.171 | Dry | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| ***54MW7*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **2,4,6-TNT** | 7.82 | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **RDX** | 6.1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **DNT Mixture** | 0.932 | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **Perchlorate** | 10.9 | 0.321 | ND | ND | 0.365 | ND | 0.103 | 0.162 | 0.103 | 0.37 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| ***54MW8*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **2,4,6-TNT** | 7.82 | 0.928 | 0.433 | ND | 0.301 | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **RDX** | 6.1 | 0.761 | 0.567 | 0.493 | ND | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **DNT Mixture** | 0.932 | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **Perchlorate** | 10.9 | ND | 0.408 | 0.355 | 0.388 | 0.392 | 0.286 | 0.484 | 0.118 | 0.334 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| ***54MW9*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **2,4,6-TNT** | 7.82 | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **RDX** | 6.1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **DNT Mixture** | 0.932 | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **Perchlorate** | 10.9 | ND | 0.229 | 0.26 | 0.21 | ND | ND | 1.07 | 0.923 | 0.327 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| ***54MW10*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **2,4,6-TNT** | 7.82 | 0.305 | 5.84 | 4.05 | ND | **9.17** | 1.59 | 1.88 | 0.637 | ND | **50** | **13** | **11** | 6.6 | 4.1 | 2.7 | **24.2** | 1.6 | 4.2 | 1 | 0.44 | **11.2** | ND | 0.67 | 3.5 | 1 | 0.88 | 0.74 | **18.6** | 4 | **8.4** | **20.5** | ND | **11.4** | **39.4** | **30.3** | **13** | 5.4 | 3 | ND | 0.56 | ND | ND |
| **RDX** | 6.1 | ND | 3.24 | 2.95 | ND | **7.84** | 1.35 | 2.36 | 1.29 | 2.23 | **21** | 5.3 | **8.7** | 2.1 | 3.1 | 1.8 | **6.6** | 0.4 | 1.1 | ND | 0.76 | 1.8 | 0.1 | ND | 4.4 | 1.4 | 0.88 | 0.32 | 3.9 | 2.1 | 1.9 | 5.1 | ND | 1.8 | 5.8 | 3.8 | 0.48 | 1.4 | 1.8 | 0.35 | 0.34 | ND | ND |
| **DNT Mixture** | 0.932 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.2 | 0.068 | 0.13 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **Perchlorate** | 10.9 | ND | 0.325 | 0.258 | ND | 3.74 | 0.344 | 0.832 | 0.835 | 0.365 | 2.3 | 0.42 | 0.44 | ND | 0.326 | 0.082 | .84 | 0.12 | 0.1 | 0.24 | 0.2 | 0.23 | ND | 0.5 | 0.22 | 0.65 | 0.34 | 0.35 | 0.45 | ND | 0.25 | 0.61 | ND | 6.2 | 0.62 | 0.38 | 0.19 | 0.072 | 0.12 | ND | ND | ND | ND |

## Table 6-1 Analytical Results for Groundwater Performance Monitoring at SWMU 54 (Continued)

| Parameter | RG | July 2011 (Q1) | Oct 2011 (Q2) | Jan 2012 (Q3) | Apr 2012 (Q4) | Aug 2012 (Q5) | Nov 2012 (Q6) | Feb 2013 (Q7) | May 2013 (Q8) | Aug 2013 (Q9) | Nov 2013 (Q10) | Feb 2014 (Q11) | May 2014 (Q12) | Sept 2015 (Q13) | Jan 2016 (Q14) | Apr 2016 (Q15) | July 2016 (Q16) | Oct 2016 (Q17) | Jan 2017 (Q18) | Apr 2017 (Q19) | July 2017 (Q20) | Oct 2017 (Q21) | Jan 2018 (Q22) | Apr 2018 (Q23) | July 2018 (Q24) | Oct 2018 (Q25) | Jan 2019 (Q26) | Apr 2019 (Q27) | July 2019 (Q28) | Oct 2019 (Q29) | Jan 2020 (Q30) | Apr 2020 (Q31) | July 2020 (Q32) | Oct 2020 (Q33) | Jan 2021 (Q34) | Apr 2021 (Q35) | July 2021 (Q36) | Oct 2021 (S37) | Apr 2022 (S38) | Jan 2023 (S39) | July 2023 (S40) | Aug 2024 (S41) | Dec 2024 (S42) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***54MW11*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **2,4,6-TNT** | 7.82 | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **RDX** | 6.1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **DNT Mixture** | 0.932 | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **Perchlorate** | 10.9 | ND | ND | 0.239 | ND | ND | ND | 0.263 | 0.43 | 0.132 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| ***54MW12*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **2,4,6-TNT** | 7.82 | **15.9** | **16.1** | **19.4** | **48** | **10.1** | 7.62 | 6.29 | **108** | **65.9** | **17** | **29** | **10** | **11** | **110** | **11** | 7.4 | **10.6** | **28.1** | **78.6** | **8.7** | **39** | **22.3** | **52.3** | **29.7** | **13.3** | **164** | **39.5** | **13.6** | **10.1** | **10.2** | **8.3** | 4.1 | 7.8 | **8.6** | **51.4** | **10** | **9.3** | **--** | 4.5 | 4 | 4.8 | 2.7 |
| **RDX** | 6.1 | ND | **9.77** | **13.2** | **18.4** | 1.95 | **6.59** | 3.79 | **25** | **14.6** | 0.54 | **8.7** | 2 | 3.9 | **30** | 0.62 | .37 | 6 | 4.8 | **51.4** | ND | **14** | **13.4** | **33.3** | **8.2** | 3.6 | **13.5** | 4.8 | ND | ND | 0.56 | 0.17 | ND | ND | ND | ND | ND | ND | -- | ND | 0.27 | 11 | 0.34 |
| **DNT Mixture** | 0.932 | ND | ND | ND | 0.381 | ND | ND | ND | ND | ND | 0.2 | 0.31 | 0.93 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | **3.7** | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | 0.75 | ND | ND | ND |
| **Perchlorate** | 10.9 | ND | 0.726 | 10.5 | **22.8** | 2 | 5.31 | 2.98 | **22.7** | 9.88 | 1.1 | 4 | 1.7 | 0.737 | 8.85 | 1.2 | .56 | 1.6 | 2.9 | 4.3 | 1.1 | 1.4 | 1.9 | 2.8 | 1.7 | 1.4 | 3.7 | 2 | 0.61 | 0.53 | 0.49 | 0.73 | 0.75 | 8.2 | 0.46 | 1.5 | 0.30 | 0.30 | -- | 0.72 | 0.61 | 0.78 | 0.77 |
| ***54MW13*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **2,4,6-TNT** | 7.82 | ND | 4.09 | 0.699 | 0.979 | **9.4** | 0.843 | 0.318 | 4.91 | 3.81 | **9.8** | 2.5 | 5.8 | 5.4 | 1.4 | 0.79 | **13.9** | **8** | 5.9 | 1.8 | **8.2** | 3 | 4.4 | 2 | **10.9** | 1.6 | 2.3 | 5.1 | **15.5** | **12.5** | 4.1 | **5.5** | **8.3** | **12.7** | **11.1** | **19.2** | **17.7** | **11.8** | 5.8 | 5 | 9.1 | 7 | 26.8 |
| **RDX** | 6.1 | ND | 2.59 | 0.614 | 1.14 | 4.77 | 0.855 | 0.642 | 3.2 | 1.46 | 4 | 0.88 | 2.5 | 2.6 | 0.54 | 0.17 | .86 | 0.7 | ND | 1 | ND | 0.48 | ND | ND | ND | 0.38 | 0.46 | 0.32 | 1.3 | ND | 0.55 | 1.5 | 0.43 | 0.58 | 0.83 | 0.57 | 0.43 | 0.58 | 2 | 0.94 | 0.91 | 1.2 | 1.2 |
| **DNT Mixture** | 0.932 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.11 | ND | 0.099 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | **1.01** | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| **Perchlorate** | 10.9 | ND | 0.244 | 0.206 | 0.243 | 0.627 | 0.308 | 0.313 | 0.64 | 0.477 | 0.43 | 0.32 | 0.37 | 0.270 | 0.216 | 0.18 | .33 | 0.21 | 0.29 | 0.23 | 0.45 | 0.2 | 0.25 | 0.33 | 0.45 | 0.25 | 0.29 | 0.47 | 0.4 | 0.55 | 0.26 | 0.34 | 0.30 | 7.9 | 0.29 | 0.34 | 0.41 | 0.14 | 0.26 | 0.25 | 0.33 | 0.37 | 0.63 |
| ***54MW14*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **2,4,6-TNT** | 7.82 | 0.928 | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **RDX** | 6.1 | 0.761 | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **DNT Mixture** | 0.932 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **Perchlorate** | 10.9 | ND | ND | 0.215 | 0.181 | 0.214 | 0.24 | ND | ND | 0.195 | 0.456 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

**Notes:**
All units are µg/L.
-- = not sampled
**Bolded** data indicate exceedances of RGs.
2,4,6-TNT = 2,4,6-trinitrotoluene
µg/L = micrograms per liter
DNT = dinitrotoluene
ND = not detected
RDX = cyclotrimethylenetrinitramine
RG = remedial goal
SWMU = Solid Waste Management Unit

# Table 6-2 Water Quality Parameters for Groundwater for Performance Monitoring at SWMU 54

| Well ID | 54MW1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***SWMU 54 First Quarter (July 2011) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.7 | 6.36 | 6.86 | 7.19 | 6.36 | 7.33 | 6.6 | 6.98 | 6.29 | 7.13 | 7.14 | 6.67 | 6.75 | 7.23 |
| **Specific Conductivity (mS/cm)** | 0.357 | 0.526 | 0.491 | 0.949 | 0.371 | 0.449 | 0.419 | 0.544 | 0.535 | 1.68 | 0.651 | 0.568 | 0.676 | 0.582 |
| **Turbidity (NTU)** | 5.6 | 0 | 1.5 | 1.9 | 3 | 0.2 | 0 | 4.6 | 6 | 89.8 | 62.6 | 100 | 94 | 16.9 |
| **DO (mg/L)** | 4.86 | 2.35 | 4.71 | 0 | 4.87 | 0.68 | 3.91 | 3.53 | 1.23 | 0.51 | 0 | 3.52 | 0.9 | 1.06 |
| **ORP (mV)** | 130 | 178 | 121 | -18 | 178 | 110 | 170 | 134 | 198 | 67 | 96 | 152 | 29 | 73 |
| **Temperature (°C)** | 14.12 | 17.07 | 19.82 | 15.52 | 19.88 | 19.32 | 18.87 | 17.86 | 14.3 | 25.19 | 14.94 | 18.38 | 20.09 | 23.76 |
| **Dissolved Manganese** | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.1 | <0.05 | 0.2 | <0.05 | 0.05 | <0.05 | 0.65 | <0.05 |
| **Dissolved Ferrous Iron (mg/L)** | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| **Nitrate (mg/L)** | 25.2 | 1.09 | 0.967 | 0 | 0.613 | 0 | 0.119 | 0.639 | 0.233 | 0 | 0 | 2.79 | 0.439 | 0.242 |
| **Sulfate (mg/L)** | 27.1 | 39.8 | 23.6 | 329 | 15.1 | 27.4 | 61.5 | 40 | 62.2 | 167 | 93.6 | 38.1 | 38.8 | 33.6 |
| **TOC (mg/L)** | 3.9 | 3.51 | 7.26 | 2.51 | 6.14 | 1.95 | 3.17 | 6.05 | 5.1 | 1.61 | 5.97 | 2.64 | 2.55 | 6.73 |
| ***SWMU 54 Second Quarter (October 2011) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.49 | 7.02 | 7.05 | 7.27 | 6.78 | 7.49 | 7.3 | 7.09 | 7.2 | 6.83 | 7.31 | 6.7 | 7.05 | 7.16 |
| **Specific Conductivity (mS/cm)** | 0.432 | 0.56 | 0.674 | 0.912 | 0.502 | 0.305 | 0.734 | 0.541 | 0.562 | 0.677 | 0.654 | 0.523 | 0.831 | 0.568 |
| **Turbidity (NTU)** | 164 | 167 | 160 | 81.1 | 231 | 107 | 155 | 104 | 79.9 | 236 | 685 | 69 | -- | 157 |
| **DO (mg/L)** | 0 | 0 | 0 | 2.44 | 2.68 | 3.8 | 0.1 | 0.05 | 0.06 | 0 | 0 | 1.72 | 0.37 | 0 |
| **ORP (mV)** | 102 | 117 | 107 | -15 | 143 | 122 | 66 | 151 | 146 | 82 | -13 | 144 | 126 | 73 |
| **Temperature (°C)** | 18.04 | 14.77 | 14.16 | 14.32 | 15.48 | 13.18 | 18.01 | 14.94 | 14.75 | 14.75 | 13.73 | 14.81 | 14.63 | 14.93 |
| **Dissolved Manganese (mg/L)** | <0.05 | <0.05 | 0.1 | 0.05 | 0.1 | 0.05 | 0.4 | 0.05 | 0.2 | 0.15 | 0.3 | <0.05 | 0.35 | 0.05 |
| **Dissolved Ferrous Iron (mg/L)** | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| **Nitrate (mg/L)** | 0 | 0.394 | 0.357 | 0 | 0.568 | 0.167 | 0 | 0.514 | 0.184 | 0.388 | 0 | 2 | 0.21 | 0.202 |
| **Sulfate (mg/L)** | 27.1 | 27 | 44.4 | 210 | 17.4 | 7.06 | 216 | 39.9 | 46.9 | 96.7 | 119 | 31.8 | 90.2 | 34.1 |
| **TOC (mg/L)** | 3.9 | 3.2 | 3.22 | 1.38 | 1.88 | 2.68 | 1.31 | 7.47 | 6.78 | 6.98 | 3.22 | 4.71 | 3.31 | 4.64 |
| ***SWMU 54 Third Quarter (January 2011) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.59 | 7.48 | 7.4 | 7.36 | 7.15 | 7.53 | 7.43 | 7.08 | 7.4 | 7.46 | 7.59 | 6.09 | 7.45 | 7.48 |
| **Specific Conductivity (mS/cm)** | 0.498 | 0.662 | 0.762 | 1.11 | 0.628 | 0.305 | 0.905 | 0.492 | 0.674 | 0.707 | 0.763 | 0.595 | 0.687 | 0.651 |
| **Turbidity (NTU)** | 8.9 | 15.3 | 19.2 | 55.6 | 32.1 | 72.4 | 26.8 | 66.7 | 36.8 | 1.1 | 6.8 | --- | 226 | 0 |
| **DO (mg/L)** | 0 | 0 | 0 | 0 | 7.81 | 12.01 | 0 | 16.65 | 8.48 | 6.06 | 5.09 | 4.02 | 7.63 | 1.66 |
| **ORP (mV)** | 100 | 33 | 24 | 5 | 121 | 191 | 3 | 104 | 111 | 118 | 101 | 186 | 25 | 61 |
| **Temperature (°C)** | 13.2 | 13.91 | 13.26 | 13.04 | 13.58 | 11.93 | 12.73 | 9.72 | 9.65 | 11.16 | 11.4 | 12.86 | 11.53 | 12.91 |
| **Dissolved Manganese (mg/L)** | <0.05 | <0.05 | 0.1 | 0.05 | 0.1 | 0.05 | 0.4 | 0.05 | 0.2 | 0.15 | 0.3 | <0.05 | 0.35 | 0.05 |
| **Dissolved Ferrous Iron (mg/L)** | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| **Nitrate (mg/L)** | 0 | 0.609 | 0 | 0 | 0.578 | 0.158 | 0 | 0.401 | 0.174 | 0.572 | 0.158 | 1.94 | 0.237 | 0.241 |
| **Sulfate (mg/L)** | 26.3 | 28.2 | 73.7 | 480 | 20.3 | 4.55 | 249 | 41.5 | 62.5 | 72.7 | 93 | 37.6 | 53.9 | 32.2 |
| **TOC (mg/L)** | 2.1 | 1.8 | 2.39 | 1.16 | 1.42 | 1.94 | 2.38 | 1.66 | 2.78 | 1.66 | 6.71 | 5.09 | 6.63 | 1.68 |

## Table 6-2 Water Quality Parameters for Groundwater Performance Monitoring at SWMU 54 (Continued)

| Well ID | 54MW1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***SWMU 54 Fourth Quarter (April 2012) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 5.42 | 5.19 | 5.38 | 5.33 | 4.99 | 5.76 | 5.57 | 5.38 | 5.46 | 5.48 | 5.59 | 5.05 | 5.32 | 5.5 |
| **Specific Conductivity (mS/cm)** | 0.958 | 1.12 | 1.46 | 0.001 | 0.891 | 0.73 | 1.58 | 1.21 | 1.26 | 1.73 | 1.4 | 1.35 | 0.981 | 1.2 |
| **Turbidity (NTU)** | 2.5 | 4.4 | 2.4 | 125 | 70.1 | 318 | 38 | 3.4 | 65.3 | 30.8 | 94.7 | 37 | 312 | 36 |
| **DO (mg/L)** | 7.36 | 7.18 | 2.24 | 23.45 | 10.47 | 6.49 | 2.01 | 7.43 | 11.29 | 2.83 | 5.8 | 9.44 | 7.1 | 5.55 |
| **ORP (mV)** | -30 | 236 | 225 | 180 | 168 | 132 | 162 | 134 | 145 | 61 | 36 | 267 | 116 | 149 |
| **Temperature (°C)** | 13.37 | 12.44 | 12.02 | 11.56 | 20.98 | 19.09 | 12.57 | 14.69 | 14.21 | 15.5 | 14.11 | 12.67 | 15.52 | 12.69 |
| **Dissolved Manganese (mg/L)** | <0.05 | <0.05 | 0.1 | 0.5 | <0.05 | 0.05 | 0.4 | 0.05 | 0.2 | 0.1 | 0.3 | <0.05 | 0.35 | <0.05 |
| **Dissolved Ferrous Iron (mg/L)** | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| **Nitrate (mg/L)** | 0 | 1.33 | 0 | 0 | 0.677 | 0.129 | 0.231 | 0.483 | 0.139 | 0 | 0 | 2.65 | 0.294 | 0.386 |
| **Sulfate (mg/L)** | 34.9 | 34.9 | 80 | 432 | 14 | 14.9 | 69.4 | 40.1 | 56 | 221 | 104 | 37.9 | 35.4 | 29.3 |
| **TOC (mg/L)** | 1.8 | 1.57 | 1.18 | 1.82 | 2.33 | 5.46 | 0.99 | 2.36 | 3.01 | 2.4 | 2.68 | 2.34 | 3.51 | 1.09 |
| ***SWMU 54 Fifth Quarter (August 2012) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.08 | 6.94 | 6.71 | 7.05 | 6.71 | 7.47 | 7.03 | 6.87 | 6.84 | 6.71 | 7.06 | 6.61 | 6.97 | 7.05 |
| **Specific Conductivity (mS/cm)** | 0.395 | 0.722 | 0.644 | 0.968 | 0.58 | 0.363 | 0.817 | 0.599 | 0.752 | 0.693 | 0.715 | 0.665 | 0.697 | 0.625 |
| **Turbidity (NTU)** | 4.1 | 43 | 19 | 14 | 23 | 0 | 7.4 | 19 | 5.2 | 0.8 | 10.8 | 48 | 95 | 9.2 |
| **DO (mg/L)** | 5.34 | 0 | 0 | 0.23 | 3.96 | 4.84 | 0 | 2.78 | 0.56 | 0.4 | 0 | 0.33 | 1.75 | 0 |
| **ORP (mV)** | 212 | 65 | 209 | -33 | 200 | 134 | 128 | 125 | -10 | 47 | -22 | 226 | 135 | -13 |
| **Temperature (°C)** | 13.89 | 13.49 | 12.93 | 15.06 | 13.44 | 16.52 | 13.66 | 13.7 | 14.09 | 13.93 | 13.64 | 13.71 | 16.12 | 14.08 |
| **Dissolved Manganese (mg/L)** | <0.05 | <0.05 | 0.05 | 0.05 | <0.05 | 0.05 | 0.05 | 0.05 | 0.2 | 0.05 | 0.05 | <0.05 | 0.3 | <0.05 |
| **Dissolved Ferrous Iron (mg/L)** | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| **Nitrate (mg/L)** | 0.600 | 0.190 | 0.613 | 3.00 | 0.728 | 0.120 | 3.00 | 0.581 | 1.80 | 0.594 | 1.80 | 1.06 | 0.681 | 0.214 |
| **Sulfate (mg/L)** | 26.1 | 95.5 | 23.8 | 378 | 18.0 | 15.7 | 186 | 41.8 | 87.2 | 102 | 97.6 | 27.0 | 38.2 | 31.8 |
| **TOC (mg/L)** | 0.721 | 2.00 | 2.00 | 1.10 | 2.00 | 1.00 | 1.02 | 2.00 | 2.00 | 1.37 | 2.00 | 2.00 | 1.05 | 2.04 |
| ***SWMU 54 Sixth Quarter (November 2012) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.63 | 7.21 | 6.97 | 7.03 | 6.99 | Dry | 7.31 | 7.23 | 7.23 | 7.29 | 7.28 | 7.6 | 5.72 | 7.3 |
| **Specific Conductivity (mS/cm)** | 0.443 | 0.62 | 0.561 | 1.01 | 0.612 | Dry | 0.826 | 0.628 | 0.784 | 0.779 | 0.698 | 0.635 | 0.918 | 0.6 |
| **Turbidity (NTU)** | 2.9 | 11.4 | 0.2 | 17 | 5.5 | Dry | 46 | 3.9 | 27.7 | 4.7 | 2.5 | 2.4 | 35 | 43 |
| **DO (mg/L)** | 1.44 | 0.86 | 4.09 | 1 | 1.01 | Dry | 0.56 | 2.71 | 1.14 | 0.38 | 1.1 | 0.26 | 0.95 | 0.45 |
| **ORP (mV)** | 148 | 141 | 145 | 72 | 167 | Dry | 59 | 101 | -28 | 43 | 117 | 135 | 209 | 100 |
| **Temperature (°C)** | 10.03 | 13.43 | 12.22 | 11.27 | 11.21 | Dry | 10.83 | 11.98 | 11.35 | 13.61 | 12.95 | 13.99 | 12.26 | 10.61 |
| **Dissolved Manganese (mg/L)** | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | Dry | 0.05 | 0.05 | 0.2 | 0.05 | 0.05 | 0.1 | 0.3 | 0.05 |
| **Dissolved Ferrous Iron (mg/L)** | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | Dry | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| **Nitrate (mg/L)** | 0.600 | 0.327 | 0.656 | 3.00 | 0.944 | Dry | 1.80 | 0.403 | 1.80 | 0.381 | 0.600 | 2.86 | 0.369 | 0.600 |
| **Sulfate (mg/L)** | 31.3 | 35.4 | 22.9 | 403 | 21.5 | Dry | 179 | 60.3 | 199 | 151 | 99.1 | 49.8 | 76.7 | 39.0 |
| **TOC (mg/L)** | 1.96 | 2.68 | 3.29 | 2.93 | 4.31 | Dry | 3.72 | 4.90 | 6.73 | 5.55 | 5.88 | 3.41 | 2.00 | 2.12 |

## Table 6-2 Water Quality Parameters for Groundwater Performance Monitoring at SWMU 54 (Continued)

| Well ID | 54MW1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***SWMU 54 Seventh Quarter (February 2013) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.85 | 6.89 | 6.76 | 7.52 | 6.56 | 7.08 | 7.4 | 7.03 | 7.04 | 6.69 | 7.09 | 6.36 | 6.96 | 7.45 |
| **Specific Conductivity (mS/cm)** | 0.465 | 0.682 | 0.504 | 1.01 | 0.417 | 0.293 | 0.474 | 0.498 | 0.487 | 0.542 | 0.687 | 0.464 | 0.37 | 0.619 |
| **Turbidity (NTU)** | 0 | 20 | 9 | 16 | 0 | 44.3 | 16 | 9.2 | 10.9 | 13.2 | 2 | 14.2 | 6.8 | 1.2 |
| **DO (mg/L)** | 0.71 | 1.43 | 6.97 | 0.53 | 9.19 | 9.28 | 2.83 | 5.36 | 8.28 | 2.97 | 0.58 | 1.27 | 8.39 | 0.47 |
| **ORP (mV)** | -5 | 156 | 171 | -56 | 168 | 72 | 12 | 168 | 194 | 125 | 169 | 168 | 158 | 56 |
| **Temperature (°C)** | 12.17 | 8.28 | 11.98 | 12.09 | 11.18 | 13.15 | 11.48 | 9.89 | 9.74 | 11.22 | 10.14 | 10.31 | 7.98 | 12.26 |
| **Dissolved Manganese (mg/L)** | 0.05 | <0.05 | 0.1 | 0.05 | <0.05 | 0.05 | 0.1 | 0.05 | 0.2 | 0.1 | 0.25 | <0.05 | 0.2 | <0.05 |
| **Dissolved Ferrous Iron (mg/L)** | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| **Nitrate (mg/L)** | 0.600 | 0.315 | 0.423 | 3.00 | 0.636 | 0.209 | 0.205 | 0.336 | 0.510 | 0.477 | 0.346 | 1.95 | 0.501 | 0.600 |
| **Sulfate (mg/L)** | 27.1 | 36.8 | 25.3 | 340 | 15.5 | 4.29 | 34.2 | 44.6 | 117 | 70.1 | 120 | 35.8 | 23.1 | 41.1 |
| **TOC (mg/L)** | 1.19 | 0.916 | 1.07 | 1.35 | 1.00 | 1.50 | 0.791 | 1.00 | 2.09 | 1.14 | 1.88 | 1.21 | 0.683 | 1.46 |
| ***SWMU 54 Eighth Quarter (May 2013) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.38 | 6.52 | 7.06 | 7.51 | 6.83 | 7.33 | 7.41 | 7.47 | 7.95 | 6.94 | 7.59 | 6.78 | 6.97 | 7.31 |
| **Specific Conductivity (mS/cm)** | 0.398 | 0.315 | 0.499 | 1.021 | 0.4 | 0.494 | 0.674 | 0.596 | 0.521 | 0.537 | 0.592 | 0.665 | 0.44 | 0.608 |
| **Turbidity (NTU)** | 1.2 | 0.2 | 1.4 | 6.2 | 8.9 | 7.1 | 0.5 | 1.6 | 5.2 | 1.4 | 0.3 | 3.8 | 0.2 | 6.4 |
| **DO (mg/L)** | 4.13 | 2.74 | 3.55 | 1.05 | 3.28 | 1.29 | 3.24 | 0.4 | 7.58 | 2.43 | 1.17 | 2.54 | 1.4 | 4.13 |
| **ORP (mV)** | 122 | 254.3 | 273.6 | 257.1 | 283.1 | 128.4 | 282.7 | 255.1 | 244.2 | 287.8 | 255.8 | 292.4 | 284 | 296.5 |
| **Temperature (°C)** | 13.43 | 12.22 | 13.31 | 11.73 | 12.2 | 13.48 | 12.74 | 13.32 | 11.12 | 12.89 | 12.42 | 13.28 | 12.84 | 13.42 |
| **Dissolved Manganese (mg/L)** | <0.05 | 0.05 | 0.05 | 0.05 | <0.05 | <0.05 | 0.05 | 0.05 | 0.1 | 0.05 | 0.05 | <0.05 | 0.15 | 0.05 |
| **Dissolved Ferrous Iron (mg/L)** | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | 0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| **Nitrate (mg/L)** | 0.368 | 0.988 | 0.911 | 3.00 | 1.60 | 0.600 | 1.10 | 0.600 | 0.637 | 0.740 | 0.647 | 4.03 | 1.05 | 0.543 |
| **Sulfate (mg/L)** | 26.1 | 24.1 | 29.0 | 329 | 15.7 | 14.0 | 137 | 41.1 | 96.7 | 48.8 | 89.4 | 47.6 | 29.2 | 37.0 |
| **TOC (mg/L)** | 0.949 | 1.68 | 1.36 | 0.619 | 1.06 | 2.41 | 0.793 | 1.00 | 1.38 | 1.00 | 0.635 | 1.36 | 0.817 | 0.583 |
| ***SWMU 54 Ninth Quarter (August 2013) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.82 | 6.91 | 6.75 | 6.96 | 6.28 | Dry | 6.71 | 6.95 | 7.12 | 6.48 | 7.04 | 6.36 | 6.57 | 6.84 |
| **Specific Conductivity (mS/cm)** | 0.452 | 0.592 | 0.617 | 0.937 | 0.333 | Dry | 0.478 | 0.559 | 0.419 | 0.496 | 0.637 | 0.491 | 0.351 | 0.554 |
| **Turbidity (NTU)** | 3 | 0 | 0 | 0 | 0 | Dry | 7.2 | 0 | 6.1 | 0 | 0 | 7.0 | 0 | 0 |
| **DO (mg/L)** | 0.136 | 0.8 | 1.69 | 0.39 | 6.28 | Dry | 2.4 | 0.67 | 2.36 | 0.86 | 4.65 | 2.85 | 6.57 | 0.52 |
| **ORP (mV)** | 223.2 | 84 | 96 | -18 | 129 | Dry | 86 | 42 | -13 | 35 | 68 | 91 | 146 | 50 |
| **Temperature (°C)** | 14.51 | 15.25 | 15.08 | 13.22 | 15.49 | Dry | 13.05 | 13.4 | 13.25 | 14.51 | 13.46 | 15.7 | 13.89 | 13.21 |
| **Dissolved Manganese (mg/L)** | 0.05 | NM | <0.05 | 0.05 | 0.05 | Dry | <0.05 | <0.05 | 0.05 | <0.05 | 0.05 | 0.05 | 0.15 | 0.05 |
| **Dissolved Ferrous Iron (mg/L)** | <0.2 | NM | <0.2 | <0.2 | <0.2 | Dry | <0.2 | <0.2 | 0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| **Nitrate (mg/L)** | <0.600 | 0.326 | 0.521 | <0.600 | 0.849 | Dry | <0.600 | 0.273 | 0.194 | 0.206 | 0.12 | 4.8 | 0.591 | 0.29 |
| **Sulfate (mg/L)** | 26.7 | 30.8 | 26.1 | 322 | 15.0 | Dry | 27.3 | 38.0 | 39.2 | 44.3 | 91.8 | 39.6 | 23.3 | 28.2 |
| **TOC (mg/L)** | 3.32 | 1.5 | 1.11 | 2.7 | 0.91 | Dry | 0.822 | 2.30 | 4.17 | 4.28 | 3.11 | 3.27 | 2.35 | 3.64 |

## Table 6-2 Water Quality Parameters for Groundwater Performance Monitoring at SWMU 54 (Continued)

| Well ID | 54MW1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***SWMU 54 Tenth Quarter (November 2013) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | -- | 7.45 | -- | -- | -- | -- | -- | -- | -- | 6.89 | -- | NM | 7.29 | -- |
| **Specific Conductivity (mS/cm)** | -- | 0.635 | -- | -- | -- | -- | -- | -- | -- | 0.615 | -- | 0.469 | 0.643 | -- |
| **Turbidity (NTU)** | -- | 0 | -- | -- | -- | -- | -- | -- | -- | 0 | -- | 4.6 | 0.4 | -- |
| **DO (mg/L)** | -- | 2.7 | -- | -- | -- | -- | -- | -- | -- | 2.45 | -- | 1.17 | 1.32 | -- |
| **ORP (mV)** | -- | 51 | -- | -- | -- | -- | -- | -- | -- | 18 | -- | 108 | 25 | -- |
| **Temperature (°C)** | -- | 14.09 | -- | -- | -- | -- | -- | -- | -- | 15.25 | -- | 14.96 | 15.96 | -- |
| **Dissolved Manganese (mg/L)** | -- | <0.05 | -- | -- | -- | -- | -- | -- | -- | <0.05 | -- | 0.05 | 0.05 | -- |
| **Dissolved Ferrous Iron (mg/L)** | -- | <0.2 | -- | -- | -- | -- | -- | -- | -- | <0.2 | -- | <0.2 | <0.2 | -- |
| **Nitrate (mg/L)** | -- | 0.25 | -- | -- | -- | -- | -- | -- | -- | 0.670 | -- | 1.1 | 0.45 | -- |
| **Sulfate (mg/L)** | -- | 29.0 | -- | -- | -- | -- | -- | -- | -- | 57.0 | -- | 26.0 | 39.0 | -- |
| **TOC (mg/L)** | -- | 2.5 | -- | -- | -- | -- | -- | -- | -- | 0.68 | -- | 0.5 | <0.50 | -- |
| ***SWMU 54 Eleventh Quarter (February 2014) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 8.1 | -- | -- | -- | -- | -- | -- | -- | -- | 6.89 | -- | 7.21 | 7.21 | -- |
| **Specific Conductivity (mS/cm)** | 0.41 | -- | -- | -- | -- | -- | -- | -- | -- | 0.587 | -- | 0.643 | 0.481 | -- |
| **Turbidity (NTU)** | 0 | -- | -- | -- | -- | -- | -- | -- | -- | 0 | -- | 3.8 | 14 | -- |
| **DO (mg/L)** | 1.32 | -- | -- | -- | -- | -- | -- | -- | -- | 1.43 | -- | 0.7 | 2.09 | -- |
| **ORP (mV)** | 127 | -- | -- | -- | -- | -- | -- | -- | -- | 153 | -- | 150 | 142 | -- |
| **Temperature (°C)** | 12.34 | -- | -- | -- | -- | -- | -- | -- | -- | 13.2 | -- | 14.11 | 12.04 | -- |
| **Dissolved Manganese (mg/L)** | <0.05 | -- | -- | -- | -- | -- | -- | -- | -- | <0.05 | -- | <0.05 | 0.05 | -- |
| **Dissolved Ferrous Iron (mg/L)** | <0.2 | -- | -- | -- | -- | -- | -- | -- | -- | 0.2 | -- | 0.2 | <0.2 | -- |
| **Nitrate (mg/L)** | <0.025 | -- | -- | -- | -- | -- | -- | -- | -- | 0.470 | -- | 3.1 | 0.44 | -- |
| **Sulfate (mg/L)** | 30.00 | -- | -- | -- | -- | -- | -- | -- | -- | 89.0 | -- | 36.0 | 31.0 | -- |
| **TOC (mg/L)** | 1.00 | -- | -- | -- | -- | -- | -- | -- | -- | 0.53 | -- | 1.00 | <0.50 | -- |
| ***SWMU 54 Twelfth Quarter (May 2014) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.79 | -- | -- | -- | -- | -- | -- | -- | -- | 6.93 | -- | NM | NM | -- |
| **Specific Conductivity (mS/cm)** | 0.469 | -- | -- | -- | -- | -- | -- | -- | -- | 0.582 | -- | 0.453 | 0.47 | -- |
| **Turbidity (NTU)** | 3 | -- | -- | -- | -- | -- | -- | -- | -- | 3.8 | -- | 10 | 9 | -- |
| **DO (mg/L)** | 1.65 | -- | -- | -- | -- | -- | -- | -- | -- | 1.56 | -- | 2.25 | 1.14 | -- |
| **ORP (mV)** | 222.3 | -- | -- | -- | -- | -- | -- | -- | -- | 127.4 | -- | 272.1 | 71.3 | -- |
| **Temperature (°C)** | 16.61 | -- | -- | -- | -- | -- | -- | -- | -- | 12.81 | -- | 14.61 | 16.57 | -- |
| **Dissolved Manganese (mg/L)** | 0.05 | -- | -- | -- | -- | -- | -- | -- | -- | 0.1 | -- | 0.1 | 0.05 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0.2 | -- | -- | -- | -- | -- | -- | -- | -- | <0.2 | -- | 0.2 | 0.2 | -- |
| **Nitrate (mg/L)** | 0.031 | -- | -- | -- | -- | -- | -- | -- | -- | 0.330 | -- | 1.6 | 0.41 | -- |
| **Sulfate (mg/L)** | 29.0 | -- | -- | -- | -- | -- | -- | -- | -- | 58.0 | -- | 31.0 | 27.0 | -- |
| **TOC (mg/L)** | 51.0 | -- | -- | -- | -- | -- | -- | -- | -- | 62.0 | -- | <0.50 | <0.50 | -- |

## Table 6-2 Water Quality Parameters for Groundwater Performance Monitoring at SWMU 54 (Continued)

| Well ID | 54MW1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***SWMU 54 Thirteenth Quarter (September 2015) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 6.7 | -- | -- | -- | -- | -- | -- | -- | -- | 6.8 | -- | 5.4 | 6.69 | -- |
| **Specific Conductivity (mS/cm)** | 0.471 | -- | -- | -- | -- | -- | -- | -- | -- | 329 | -- | 0.557 | 0.529 | -- |
| **Turbidity (NTU)** | 0.65 | -- | -- | -- | -- | -- | -- | -- | -- | 30.7 | -- | 2.66 | 1.00 | -- |
| **DO (mg/L)** | 0.75 | -- | -- | -- | -- | -- | -- | -- | -- | 8.2 | -- | 6.0 | 6.53 | -- |
| **ORP (mV)** | 180 | -- | -- | -- | -- | -- | -- | -- | -- | 71 | -- | 264 | 198.0 | -- |
| **Temperature (°C)** | 14.14 | -- | -- | -- | -- | -- | -- | -- | -- | 15.8 | -- | 14.8 | 14.83 | -- |
| **Dissolved Manganese (mg/L)** | 0.087 | -- | -- | -- | -- | -- | -- | -- | -- | 0.081 | -- | 0.066 | 0.081 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0 | -- | -- | -- | -- | -- | -- | -- | -- | 0.11 | -- | 0.07 | 0.11 | -- |
| **Nitrate (mg/L)** | 0.14 | -- | -- | -- | -- | -- | -- | -- | -- | 0.25 | -- | 0.92 | 0.5 | -- |
| **Sulfate (mg/L)** | 25 | -- | -- | -- | -- | -- | -- | -- | -- | 23 | -- | 24 | 26 | -- |
| **TOC (mg/L)** | 4.1 | -- | -- | -- | -- | -- | -- | -- | -- | 8.1 | -- | 8.3 | 13 | -- |
| ***SWMU 54 Fourteenth Quarter (January 2016) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.60 | -- | -- | -- | -- | -- | -- | -- | -- | 6.16 | -- | 6.79 | 7.01 | -- |
| **Specific Conductivity (mS/cm)** | 2.8 | -- | -- | -- | -- | -- | -- | -- | -- | 0.54 | -- | 589.5 | 324.0 | -- |
| **Turbidity (NTU)** | 0.78 | -- | -- | -- | -- | -- | -- | -- | -- | 0.88 | -- | 5.8 | 7.99 | -- |
| **DO (mg/L)** | 9.89 | -- | -- | -- | -- | -- | -- | -- | -- | 6.70 | -- | 8.6 | 8.74 | -- |
| **ORP (mV)** | 76.2 | -- | -- | -- | -- | -- | -- | -- | -- | 89.3 | -- | 92.4 | 73.2 | -- |
| **Temperature (°C)** | 9.6 | -- | -- | -- | -- | -- | -- | -- | -- | 12.7 | -- | 12.4 | 11.6 | -- |
| **Dissolved Manganese (mg/L)** | 0.063 | -- | -- | -- | -- | -- | -- | -- | -- | 0.054 | -- | 0.030 | 0.063 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0 | -- | -- | -- | -- | -- | -- | -- | -- | 0.0 | -- | 0.10 | 0.05 | -- |
| **Nitrate (mg/L)** | 0.15 | -- | -- | -- | -- | -- | -- | -- | -- | 0.45 | -- | 2.5 | 0.46 | -- |
| **Sulfate (mg/L)** | 26 | -- | -- | -- | -- | -- | -- | -- | -- | 76 | -- | 45 | 20 | -- |
| **TOC (mg/L)** | 1.5 | -- | -- | -- | -- | -- | -- | -- | -- | 0.97 | -- | 1.8 | 1.8 | -- |
| ***SWMU 54 Fifteenth Quarter (April 2016) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.61 | -- | -- | -- | -- | -- | -- | -- | -- | 6.71 | -- | 6.44 | 6.77 | -- |
| **Specific Conductivity (mS/cm)** | 440 | -- | -- | -- | -- | -- | -- | -- | -- | 602 | -- | 353 | 229 | -- |
| **Turbidity (NTU)** | 0.3 | -- | -- | -- | -- | -- | -- | -- | -- | 3.74 | -- | 5.7 | 1.16 | -- |
| **DO (mg/L)** | 4 | -- | -- | -- | -- | -- | -- | -- | -- | 0.61 | -- | 5.8 | 6.86 | -- |
| **ORP (mV)** | 51 | -- | -- | -- | -- | -- | -- | -- | -- | 73.5 | -- | 93.4 | 76.8 | -- |
| **Temperature (°C)** | 12.01 | -- | -- | -- | -- | -- | -- | -- | -- | 13.4 | -- | 14.32 | 13.52 | -- |
| **Dissolved Manganese (mg/L)** | 0.021 | -- | -- | -- | -- | -- | -- | -- | -- | 0.057 | -- | 0.020 | 0.025 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0.02 | -- | -- | -- | -- | -- | -- | -- | -- | 0.03 | -- | 0.04 | 0.02 | -- |
| **Nitrate (mg/L)** | 0.14 | -- | -- | -- | -- | -- | -- | -- | -- | 0.18 | -- | 1.3 | 0.43 | -- |
| **Sulfate (mg/L)** | 29 | -- | -- | -- | -- | -- | -- | -- | -- | 83 | -- | 27 | 19 | -- |
| **TOC (mg/L)** | 4.2 | -- | -- | -- | -- | -- | -- | -- | -- | 8.9 | -- | 6.8 | 0.68 | -- |

## Table 6-2 Water Quality Parameters for Groundwater Performance Monitoring at SWMU 54 (Continued)

| Well ID | 54MW1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***SWMU 54 Sixteenth Quarter (July 2016) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 6.82 | -- | -- | -- | -- | -- | -- | -- | -- | 7.39 | -- | 6.32 | 7.27 | -- |
| **Specific Conductivity (mS/cm)** | 619 | -- | -- | -- | -- | -- | -- | -- | -- | 775 | -- | 499 | 473.0 | -- |
| **Turbidity (NTU)** | 4.62 | -- | -- | -- | -- | -- | -- | -- | -- | 5.36 | -- | 6.50 | 0.72 | -- |
| **DO (mg/L)** | 3.14 | -- | -- | -- | -- | -- | -- | -- | -- | 0.37 | -- | 4.60 | 2.09 | -- |
| **ORP (mV)** | -10.1 | -- | -- | -- | -- | -- | -- | -- | -- | 109 | -- | 8.2 | 12.0 | -- |
| **Temperature (°C)** | 16.56 | -- | -- | -- | -- | -- | -- | -- | -- | 13.79 | -- | 14.33 | 15.2 | -- |
| **Dissolved Manganese (mg/L)** | 0.062 | -- | -- | -- | -- | -- | -- | -- | -- | 0.048 | -- | 0.033 | 0.031 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0.14 | -- | -- | -- | -- | -- | -- | -- | -- | 0.02 | -- | 0.02 | 0.00 | -- |
| **Nitrate (mg/L)** | 0.15 | -- | -- | -- | -- | -- | -- | -- | -- | 0.47 | -- | 0.81 | 0.60 | -- |
| **Sulfate (mg/L)** | 29 | -- | -- | -- | -- | -- | -- | -- | -- | 93 | -- | 25 | 36 | -- |
| **TOC (mg/L)** | 0.92 | -- | -- | -- | -- | -- | -- | -- | -- | 0.58 | -- | 1.2 | 0.78 | -- |
| ***SWMU 54 Seventeenth Quarter (October 2016) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.28 | -- | -- | -- | -- | -- | -- | -- | -- | 5.91 | -- | 6.34 | 6.92 | -- |
| **Specific Conductivity (mS/cm)** | 474 | -- | -- | -- | -- | -- | -- | -- | -- | 839 | -- | 579 | 673 | -- |
| **Turbidity (NTU)** | 0.14 | -- | -- | -- | -- | -- | -- | -- | -- | 3.22 | -- | 3.02 | 9.98 | -- |
| **DO (mg/L)** | 2.60 | -- | -- | -- | -- | -- | -- | -- | -- | 0.54 | -- | 5.05 | 3.40 | -- |
| **ORP (mV)** | 138.2 | -- | -- | -- | -- | -- | -- | -- | -- | 69.1 | -- | 30.4 | 44.8 | -- |
| **Temperature (°C)** | 14.48 | -- | -- | -- | -- | -- | -- | -- | -- | 14.63 | -- | 15.55 | 13.10 | -- |
| **Dissolved Manganese (mg/L)** | 0.049 | -- | -- | -- | -- | -- | -- | -- | -- | 0.003 | -- | 0.038 | 0.061 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0.05 | -- | -- | -- | -- | -- | -- | -- | -- | 0.52 | -- | 0.00 | 0.08 | -- |
| **Nitrate (mg/L)** | 0.15 | -- | -- | -- | -- | -- | -- | -- | -- | 0.26 | -- | 1.2 | 0.49 | -- |
| **Sulfate (mg/L)** | 30 | -- | -- | -- | -- | -- | -- | -- | -- | 150 | -- | 41 | 38 | -- |
| **TOC (mg/L)** | 1.5 | -- | -- | -- | -- | -- | -- | -- | -- | 0.55 | -- | 0.99 | 1.5 | -- |
| ***SWMU 54 Eighteenth Quarter (January 2017) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.43 | -- | -- | -- | -- | -- | -- | -- | -- | 7.19 | -- | 6.70 | 7.04 | -- |
| **Specific Conductivity (mS/cm)** | 486.2 | -- | -- | -- | -- | -- | -- | -- | -- | 854 | -- | 647.5 | 740 | -- |
| **Turbidity (NTU)** | 0.28 | -- | -- | -- | -- | -- | -- | -- | -- | 1.39 | -- | 1.04 | 8.20 | -- |
| **DO (mg/L)** | 2.21 | -- | -- | -- | -- | -- | -- | -- | -- | 1.40 | -- | 5.40 | 3.29 | -- |
| **ORP (mV)** | 74.8 | -- | -- | -- | -- | -- | -- | -- | -- | 49 | -- | 75 | 71 | -- |
| **Temperature (°C)** | 12.8 | -- | -- | -- | -- | -- | -- | -- | -- | 12.5 | -- | 11.8 | 11.7 | -- |
| **Dissolved Manganese (mg/L)** | 0.036 | -- | -- | -- | -- | -- | -- | -- | -- | 0.069 | -- | 0.040 | 0.060 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0.00 | -- | -- | -- | -- | -- | -- | -- | -- | 0.04 | -- | 0.00 | 0.03 | -- |
| **Nitrate (mg/L)** | 0.15 | -- | -- | -- | -- | -- | -- | -- | -- | 0.38 | -- | 0.94 | 0.48 | -- |
| **Sulfate (mg/L)** | 31 | -- | -- | -- | -- | -- | -- | -- | -- | 110 | -- | 38 | 42 | -- |
| **TOC (mg/L)** | 0.56 | -- | -- | -- | -- | -- | -- | -- | -- | 1.5 | -- | 1.4 | 1.5 | -- |

## Table 6-2 Water Quality Parameters for Groundwater Performance Monitoring at SWMU 54 (Continued)

| Well ID | 54MW1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***SWMU 54 Nineteenth Quarter (April 2017) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.65 | -- | -- | -- | -- | -- | -- | -- | -- | 6.88 | -- | 6.70 | 6.97 | -- |
| **Specific Conductivity (mS/cm)** | 0.443 | -- | -- | -- | -- | -- | -- | -- | -- | 0.614 | -- | 0.627 | 0.474 | -- |
| **Turbidity (NTU)** | 0.25 | -- | -- | -- | -- | -- | -- | -- | -- | 0.71 | -- | 1.92 | 14.2 | -- |
| **DO (mg/L)** | 8.38 | -- | -- | -- | -- | -- | -- | -- | -- | 3.2 | -- | 5.39 | 4.74 | -- |
| **ORP (mV)** | 91.0 | -- | -- | -- | -- | -- | -- | -- | -- | 57.3 | -- | 93.4 | 77.5 | -- |
| **Temperature (°C)** | 13.1 | -- | -- | -- | -- | -- | -- | -- | -- | 13.80 | -- | 13.1 | 14 | -- |
| **Dissolved Manganese (mg/L)** | 0.049 | -- | -- | -- | -- | -- | -- | -- | -- | 0.039 | -- | 0.036 | 0.067 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0.00 | -- | -- | -- | -- | -- | -- | -- | -- | 0.04 | -- | 0.02 | 0.14 | -- |
| **Nitrate (mg/L)** | 0.15 | -- | -- | -- | -- | -- | -- | -- | -- | 0.3 | -- | 1 | 0.44 | -- |
| **Sulfate (mg/L)** | 33 | -- | -- | -- | -- | -- | -- | -- | -- | 65 | -- | 47 | 30 | -- |
| **TOC (mg/L)** | 3.3 | -- | -- | -- | -- | -- | -- | -- | -- | 6.9 | -- | 6.7 | 4.4 | -- |
| ***SWMU 54 Twentieth Quarter (July 2017) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.43 | -- | -- | -- | -- | -- | -- | -- | -- | 7.00 | -- | 6.63 | 7.00 | -- |
| **Specific Conductivity (mS/cm)** | 468 | -- | -- | -- | -- | -- | -- | -- | -- | 740 | -- | 505 | 600 | -- |
| **Turbidity (NTU)** | 0.52 | -- | -- | -- | -- | -- | -- | -- | -- | 0.52 | -- | 0.71 | 1.36 | -- |
| **DO (mg/L)** | 0.69 | -- | -- | -- | -- | -- | -- | -- | -- | 0.83 | -- | 0.11 | 0.01 | -- |
| **ORP (mV)** | 116.5 | -- | -- | -- | -- | -- | -- | -- | -- | 24.1 | -- | 85.5 | 15.5 | -- |
| **Temperature (°C)** | 14.8 | -- | -- | -- | -- | -- | -- | -- | -- | 14.9 | -- | 13.7 | 14.8 | -- |
| **Dissolved Manganese (mg/L)** | 0.031 | -- | -- | -- | -- | -- | -- | -- | -- | 0.060 | -- | 0.073 | 0.084 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0.00 | -- | -- | -- | -- | -- | -- | -- | -- | 0.05 | -- | 0.07 | 0.08 | -- |
| **Nitrate (mg/L)** | 0.15 | -- | -- | -- | -- | -- | -- | -- | -- | 0.10 | -- | 0.75 | 0.56 | -- |
| **Sulfate (mg/L)** | 28 | -- | -- | -- | -- | -- | -- | -- | -- | 110 | -- | 32 | 32 | -- |
| **TOC (mg/L)** | 0.71 | -- | -- | -- | -- | -- | -- | -- | -- | 2.6 | -- | 1.5 | 1.9 | -- |
| ***SWMU 54 Twenty-First Quarter (October 2017) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.23 | -- | -- | -- | -- | -- | -- | -- | -- | 6.71 | -- | 6.49 | 6.68 | -- |
| **Specific Conductivity (mS/cm)** | 468.6 | -- | -- | -- | -- | -- | -- | -- | -- | 462.3 | -- | 577.5 | 537.5 | -- |
| **Turbidity (NTU)** | 0.17 | -- | -- | -- | -- | -- | -- | -- | -- | 0.8 | -- | 8.75 | 0.74 | -- |
| **DO (mg/L)** | 7.98 | -- | -- | -- | -- | -- | -- | -- | -- | 8.60 | -- | 6.43 | 5.71 | -- |
| **ORP (mV)** | 63.6 | -- | -- | -- | -- | -- | -- | -- | -- | 45.6 | -- | 97.4 | 88.3 | -- |
| **Temperature (°C)** | 14.2 | -- | -- | -- | -- | -- | -- | -- | -- | 14.9 | -- | 12.7 | 14.6 | -- |
| **Dissolved Manganese (mg/L)** | 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | 0.044 | -- | 0.051 | 0.032 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0.00 | -- | -- | -- | -- | -- | -- | -- | -- | 0.00 | -- | 0.07 | 0.00 | -- |
| **Nitrate (mg/L)** | 0.15 | -- | -- | -- | -- | -- | -- | -- | -- | 0.34 | -- | 0.86 | 0.45 | -- |
| **Sulfate (mg/L)** | 31 | -- | -- | -- | -- | -- | -- | -- | -- | 38 | -- | 37 | 29 | -- |
| **TOC (mg/L)** | 2.6 | -- | -- | -- | -- | -- | -- | -- | -- | 2.6 | -- | 1.2 | 2.2 | -- |

## Table 6-2 Water Quality Parameters for Groundwater Performance Monitoring at SWMU 54 (Continued)

| Well ID | 54MW1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***SWMU 54 Twenty-Second Quarter (January 2018) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.46 | -- | -- | -- | -- | -- | -- | -- | -- | 7.14 | -- | 6.57 | 7.00 | -- |
| **Specific Conductivity (mS/cm)** | 438.4 | -- | -- | -- | -- | -- | -- | -- | -- | 734 | -- | 531.7 | 640.2 | -- |
| **Turbidity (NTU)** | 0.32 | -- | -- | -- | -- | -- | -- | -- | -- | 0.92 | -- | 2.17 | 7.34 | -- |
| **DO (mg/L)** | 0.53 | -- | -- | -- | -- | -- | -- | -- | -- | 0.95 | -- | 8.45 | 4.51 | -- |
| **ORP (mV)** | 69 | -- | -- | -- | -- | -- | -- | -- | -- | 45.9 | -- | 83.2 | 75.3 | -- |
| **Temperature (°C)** | 13 | -- | -- | -- | -- | -- | -- | -- | -- | 12.5 | -- | 10.4 | 12 | -- |
| **Dissolved Manganese (mg/L)** | 0.038 | -- | -- | -- | -- | -- | -- | -- | -- | 0.000 | -- | 0.000 | 0.064 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0.02 | -- | -- | -- | -- | -- | -- | -- | -- | 0.00 | -- | 0.00 | 0.26 | -- |
| **Nitrate (mg/L)** | 0.15 | -- | -- | -- | -- | -- | -- | -- | -- | 0.15 | -- | 1.4 | 0.33 | -- |
| **Sulfate (mg/L)** | 25 | -- | -- | -- | -- | -- | -- | -- | -- | 98 | -- | 46 | 34 | -- |
| **TOC (mg/L)** | 6.5 | -- | -- | -- | -- | -- | -- | -- | -- | 3.7 | -- | 13 | 10 | -- |
| ***SWMU 54 Twenty-Third Quarter (April 2018) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.59 | -- | -- | -- | -- | -- | -- | -- | -- | 6.87 | -- | 6.68 | 6.76 | -- |
| **Specific Conductivity (mS/cm)** | 441.6 | -- | -- | -- | -- | -- | -- | -- | -- | 553.7 | -- | 584 | 520 | -- |
| **Turbidity (NTU)** | 0.59 | -- | -- | -- | -- | -- | -- | -- | -- | 0.78 | -- | 10.4 | 3.15 | -- |
| **DO (mg/L)** | 5.28 | -- | -- | -- | -- | -- | -- | -- | -- | 4.37 | -- | 6.5 | 6.18 | -- |
| **ORP (mV)** | 63.8 | -- | -- | -- | -- | -- | -- | -- | -- | 50 | -- | 204.7 | 73.5 | -- |
| **Temperature (°C)** | 13.6 | -- | -- | -- | -- | -- | -- | -- | -- | 13.1 | -- | 12.4 | 13.4 | -- |
| **Dissolved Manganese (mg/L)** | 0.024 | -- | -- | -- | -- | -- | -- | -- | -- | 0.11 | -- | 0.046 | 0.032 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0.00 | -- | -- | -- | -- | -- | -- | -- | -- | 0.00 | -- | 0.06 | 0.00 | -- |
| **Nitrate (mg/L)** | 0.2 | -- | -- | -- | -- | -- | -- | -- | -- | 0.68 | -- | 1.2 | 0.62 | -- |
| **Sulfate (mg/L)** | 28 | -- | -- | -- | -- | -- | -- | -- | -- | 47 | -- | 41 | 30 | -- |
| **TOC (mg/L)** | 1.5 | -- | -- | -- | -- | -- | -- | -- | -- | 1.5 | -- | 0.72 | 1.5 | -- |
| ***SWMU 54 Twenty-Fourth Quarter (July 2018) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 6.87 | -- | -- | -- | -- | -- | -- | -- | -- | 6.56 | -- | 6.06 | 6.55 | -- |
| **Specific Conductivity (mS/cm)** | 390.9 | -- | -- | -- | -- | -- | -- | -- | -- | 629 | -- | 375.6 | 549 | -- |
| **Turbidity (NTU)** | 0.3 | -- | -- | -- | -- | -- | -- | -- | -- | 0.89 | -- | 39.5 | 2.03 | -- |
| **DO (mg/L)** | 6.96 | -- | -- | -- | -- | -- | -- | -- | -- | 0.78 | -- | 9.17 | 3.42 | -- |
| **ORP (mV)** | 0.5 | -- | -- | -- | -- | -- | -- | -- | -- | -19.9 | -- | 2.9 | 0.7 | -- |
| **Temperature (°C)** | 14 | -- | -- | -- | -- | -- | -- | -- | -- | 14.7 | -- | 15.6 | 16 | -- |
| **Dissolved Manganese (mg/L)** | 0.041 | -- | -- | -- | -- | -- | -- | -- | -- | 0.121 | -- | 0.039 | 0.143 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0.00 | -- | -- | -- | -- | -- | -- | -- | -- | 0.03 | -- | 0.04 | 0.00 | -- |
| **Nitrate (mg/L)** | 0.2 | -- | -- | -- | -- | -- | -- | -- | -- | 0.19 | -- | 1.6 | 0.43 | -- |
| **Sulfate (mg/L)** | 26 | -- | -- | -- | -- | -- | -- | -- | -- | 100 | -- | 40 | 32 | -- |
| **TOC (mg/L)** | 1.5 | -- | -- | -- | -- | -- | -- | -- | -- | 1.5 | -- | 1.5 | 1.5 | -- |

## Table 6-2 Water Quality Parameters for Groundwater Performance Monitoring at SWMU 54 (Continued)

| Well ID | 54MW1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***SWMU 54 Twenty-Fifth Quarter (October 2018) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.39 | -- | -- | -- | -- | -- | -- | -- | -- | 6.89 | -- | 6.41 | 6.63 | -- |
| **Specific Conductivity (mS/cm)** | 374.1 | -- | -- | -- | -- | -- | -- | -- | -- | 707 | -- | 372.6 | 220 | -- |
| **Turbidity (NTU)** | 0.34 | -- | -- | -- | -- | -- | -- | -- | -- | 0.56 | -- | 28.90 | 10.90 | -- |
| **DO (mg/L)** | 8.05 | -- | -- | -- | -- | -- | -- | -- | -- | 2.68 | -- | 5.84 | 5.5 | -- |
| **ORP (mV)** | -34.5 | -- | -- | -- | -- | -- | -- | -- | -- | 71.7 | -- | 118.5 | 110.4 | -- |
| **Temperature (°C)** | 13.3 | -- | -- | -- | -- | -- | -- | -- | -- | 15.4 | -- | 14.7 | 14.8 | -- |
| **Dissolved Manganese (mg/L)** | 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | 0.024 | -- | 0.045 | 0.024 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0.00 | -- | -- | -- | -- | -- | -- | -- | -- | 0.00 | -- | 0.16 | 0.00 | -- |
| **Nitrate (mg/L)** | 0.2 | -- | -- | -- | -- | -- | -- | -- | -- | 0.62 | -- | 2 | 0.41 | -- |
| **Sulfate (mg/L)** | 28 | -- | -- | -- | -- | -- | -- | -- | -- | 61 | -- | 32 | 16 | -- |
| **TOC (mg/L)** | 1.5 | -- | -- | -- | -- | -- | -- | -- | -- | 0.81 | -- | 1 | 1.5 | -- |
| ***SWMU 54 Twenty-Sixth Quarter (February 2019) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.14 | -- | -- | -- | -- | -- | -- | -- | -- | 6.57 | -- | 6.46 | 6.28 | -- |
| **Specific Conductivity (mS/cm)** | 471.5 | -- | -- | -- | -- | -- | -- | -- | -- | 566.6 | -- | 532.6 | 267.6 | -- |
| **Turbidity (NTU)** | 0.32 | -- | -- | -- | -- | -- | -- | -- | -- | 0.26 | -- | 6.2 | 8.99 | -- |
| **DO (mg/L)** | 3.02 | -- | -- | -- | -- | -- | -- | -- | -- | 0.11 | -- | 1.39 | 8.02 | -- |
| **ORP (mV)** | 10.3 | -- | -- | -- | -- | -- | -- | -- | -- | 45.7 | -- | 102.1 | 79.3 | -- |
| **Temperature (°C)** | 13.7 | -- | -- | -- | -- | -- | -- | -- | -- | 13.5 | -- | 13.2 | 13.1 | -- |
| **Dissolved Manganese (mg/L)** | 0.029 | -- | -- | -- | -- | -- | -- | -- | -- | 0.04 | -- | 0.046 | 0.045 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0.02 | -- | -- | -- | -- | -- | -- | -- | -- | 0.05 | -- | 0.06 | 0.14 | -- |
| **Nitrate (mg/L)** | 0.2 | -- | -- | -- | -- | -- | -- | -- | -- | 1.1 | -- | 2 | 0.48 | -- |
| **Sulfate (mg/L)** | 25 | -- | -- | -- | -- | -- | -- | -- | -- | 31 | -- | 43 | 15 | -- |
| **TOC (mg/L)** | 1.5 | -- | -- | -- | -- | -- | -- | -- | -- | 0.72 | -- | 2.3 | 1.5 | -- |
| ***SWMU 54 Twenty-Seventh Quarter (April 2019) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.33 | -- | -- | -- | -- | -- | -- | -- | -- | 6.52 | -- | 5.8 | 6.34 | -- |
| **Specific Conductivity (mS/cm)** | 372.8 | -- | -- | -- | -- | -- | -- | -- | -- | 402.4 | -- | 324.6 | 270.4 | -- |
| **Turbidity (NTU)** | 0.28 | -- | -- | -- | -- | -- | -- | -- | -- | 1.19 | -- | 46.7 | 10.17 | -- |
| **DO (mg/L)** | 8.4 | -- | -- | -- | -- | -- | -- | -- | -- | 4.32 | -- | 6.77 | 5.9 | -- |
| **ORP (mV)** | 62.1 | -- | -- | -- | -- | -- | -- | -- | -- | 89.7 | -- | 118.3 | 116.6 | -- |
| **Temperature (°C)** | 13.2 | -- | -- | -- | -- | -- | -- | -- | -- | 12.2 | -- | 14.2 | 14.3 | -- |
| **Dissolved Manganese (mg/L)** | 0.023 | -- | -- | -- | -- | -- | -- | -- | -- | 0.00 | -- | 0.085 | 0.04 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0.00 | -- | -- | -- | -- | -- | -- | -- | -- | 0.00 | -- | 0.21 | 0.02 | -- |
| **Nitrate (mg/L)** | 0.2 | -- | -- | -- | -- | -- | -- | -- | -- | 2 | -- | 2.5 | 0.58 | -- |
| **Sulfate (mg/L)** | 27 | -- | -- | -- | -- | -- | -- | -- | -- | 30 | -- | 56 | 41 | -- |
| **TOC (mg/L)** | 1.4 | -- | -- | -- | -- | -- | -- | -- | -- | 1.5 | -- | 0.84 | 1.5 | -- |

## Table 6-2 Water Quality Parameters for Groundwater Performance Monitoring at SWMU 54 (Continued)

| Well ID | 54MW1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***SWMU 54 Twenty-Eighth Quarter (July 2019) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.49 | -- | -- | -- | -- | -- | -- | -- | -- | 6.9 | -- | 6.54 | 7.01 | -- |
| **Specific Conductivity (mS/cm)** | 479.5 | -- | -- | -- | -- | -- | -- | -- | -- | 570.1 | -- | 470.5 | 577 | -- |
| **Turbidity (NTU)** | 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | 1.71 | -- | 2.58 | 1.82 | -- |
| **DO (mg/L)** | 3.54 | -- | -- | -- | -- | -- | -- | -- | -- | 5.33 | -- | 4.29 | 6.24 | -- |
| **ORP (mV)** | 212.5 | -- | -- | -- | -- | -- | -- | -- | -- | 79 | -- | 238.7 | 225.1 | -- |
| **Temperature (°C)** | 14.7 | -- | -- | -- | -- | -- | -- | -- | -- | 15.3 | -- | 15.2 | 18.1 | -- |
| **Dissolved Manganese (mg/L)** | 0.035 | -- | -- | -- | -- | -- | -- | -- | -- | 0.026 | -- | 0.04 | 0.038 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0.07 | -- | -- | -- | -- | -- | -- | -- | -- | 1.71 | -- | 2.58 | 1.82 | -- |
| **Nitrate (mg/L)** | 0.2 | -- | -- | -- | -- | -- | -- | -- | -- | 0.46 | -- | 0.84 | 0.5 | -- |
| **Sulfate (mg/L)** | 26 | -- | -- | -- | -- | -- | -- | -- | -- | 65 | -- | 23 | 31 | -- |
| **TOC (mg/L)** | 1.5 | -- | -- | -- | -- | -- | -- | -- | -- | 1.5 | -- | 1.5 | 1.5 | -- |
| ***SWMU 54 Twenty-Ninth Quarter (October 2019) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.33 | -- | -- | -- | -- | -- | -- | -- | -- | 6.99 | -- | 7 | 7.01 | -- |
| **Specific Conductivity (mS/cm)** | 431 | -- | -- | -- | -- | -- | -- | -- | -- | 728 | -- | 601 | 519 | -- |
| **Turbidity (NTU)** | 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | 2.52 | -- | 3.06 | 1.97 | -- |
| **DO (mg/L)** | 14.8 | -- | -- | -- | -- | -- | -- | -- | -- | 18.3 | -- | 48.6 | 77 | -- |
| **ORP (mV)** | 41.3 | -- | -- | -- | -- | -- | -- | -- | -- | 32 | -- | 80.6 | 44.3 | -- |
| **Temperature (°C)** | 14.97 | -- | -- | -- | -- | -- | -- | -- | -- | 15.16 | -- | 14.95 | 16.38 | -- |
| **Dissolved Manganese (mg/L)** | 0.02 | -- | -- | -- | -- | -- | -- | -- | -- | 0.014 | -- | 0.042 | 0.04 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0.24 | -- | -- | -- | -- | -- | -- | -- | -- | 0 | -- | 0.12 | 0.16 | -- |
| **Nitrate (mg/L)** | ND | -- | -- | -- | -- | -- | -- | -- | -- | 0.18 | -- | 0.58 | 0.52 | -- |
| **Sulfate (mg/L)** | 28 | -- | -- | -- | -- | -- | -- | -- | -- | 140 | -- | 32 | 33 | -- |
| **TOC (mg/L)** | ND | -- | -- | -- | -- | -- | -- | -- | -- | 0.62 | -- | 0.69 | 0.53 | -- |
| **TIC (mg/L)** | 61 | -- | -- | -- | -- | -- | -- | -- | -- | 85 | -- | 86 | 97 | -- |

## Table 6-2 Water Quality Parameters for Groundwater Performance Monitoring at SWMU 54 (Continued)

| Well ID | 54MW1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***SWMU 54 Thirtieth Quarter (January 2020) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.5 | -- | -- | -- | -- | -- | -- | -- | -- | 6.87 | -- | 6.51 | 6.93 | -- |
| **Specific Conductivity (mS/cm)** | 462 | -- | -- | -- | -- | -- | -- | -- | -- | 508 | -- | 540 | 600 | -- |
| **Turbidity (NTU)** | 0.34 | -- | -- | -- | -- | -- | -- | -- | -- | 0.43 | -- | 1.13 | 1.86 | -- |
| **DO (mg/L)** | 2.4 | -- | -- | -- | -- | -- | -- | -- | -- | 0.43 | -- | 7.2 | 6.54 | -- |
| **ORP (mV)** | 95.3 | -- | -- | -- | -- | -- | -- | -- | -- | 126.8 | -- | 116.8 | 108.7 | -- |
| **Temperature (°C)** | 13.33 | -- | -- | -- | -- | -- | -- | -- | -- | 12.6 | -- | 12.72 | 12.48 | -- |
| **Dissolved Manganese (mg/L)** | 0.01 | -- | -- | -- | -- | -- | -- | -- | -- | 0.05 | -- | 0.33 | 0.1 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0.04 | -- | -- | -- | -- | -- | -- | -- | -- | 0.06 | -- | 0.07 | 0.1 | -- |
| **Nitrate (mg/L)** | ND | -- | -- | -- | -- | -- | -- | -- | -- | 0.58 | -- | 0.76 | 0.63 | -- |
| **Sulfate (mg/L)** | 29 | -- | -- | -- | -- | -- | -- | -- | -- | 59 | -- | 29 | 27 | -- |
| **TOC (mg/L)** | ND | -- | -- | -- | -- | -- | -- | -- | -- | ND | -- | ND | ND | -- |
| **TIC (mg/L)** | 56 | -- | -- | -- | -- | -- | -- | -- | -- | 59 | -- | 84 | 70 | -- |
| ***SWMU 54 Thirty-First Quarter (April 2020) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.65 | -- | -- | -- | -- | -- | -- | -- | -- | 6.83 | -- | 6.62 | 6.68 | -- |
| **Specific Conductivity (mS/cm)** | 339.6 | -- | -- | -- | -- | -- | -- | -- | -- | 364.9 | -- | 357.2 | 241.6 | -- |
| **Turbidity (NTU)** | 1.86 | -- | -- | -- | -- | -- | -- | -- | -- | 35.68 | -- | 77.81 | 50.12 | -- |
| **DO (mg/L)** | 4.46 | -- | -- | -- | -- | -- | -- | -- | -- | 5.28 | -- | 7.34 | 8.21 | -- |
| **ORP (mV)** | 111 | -- | -- | -- | -- | -- | -- | -- | -- | 112.6 | -- | 127.8 | 96 | -- |
| **Temperature (°C)** | 13.4 | -- | -- | -- | -- | -- | -- | -- | -- | 11.9 | -- | 13.5 | 12 | -- |
| **Dissolved Manganese (mg/L)** | 0.021 | -- | -- | -- | -- | -- | -- | -- | -- | 0.07 | -- | 0.08 | 0.05 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0 | -- | -- | -- | -- | -- | -- | -- | -- | 0.02 | -- | 0.1 | 0.02 | -- |
| **Nitrate (mg/L)** | ND | -- | -- | -- | -- | -- | -- | -- | -- | 1.1 | -- | 1 | 5.6 | -- |
| **Sulfate (mg/L)** | 28 | -- | -- | -- | -- | -- | -- | -- | -- | 52 | -- | 28 | 0.97 | -- |
| **TOC (mg/L)** | ND | -- | -- | -- | -- | -- | -- | -- | -- | 0.99 | -- | ND | 0.46 | -- |
| **TIC (mg/L)** | 56 | -- | -- | -- | -- | -- | -- | -- | -- | 63 | -- | 85 | 21 | -- |

## Table 6-2 Water Quality Parameters for Groundwater Performance Monitoring at SWMU 54 (Continued)

| Well ID | 54MW1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***SWMU 54 Thirty-Second Quarter (July 2020) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.5 | -- | -- | -- | -- | -- | -- | -- | -- | 6.87 | -- | 6.51 | 6.93 | -- |
| **Specific Conductivity (mS/cm)** | 462 | -- | -- | -- | -- | -- | -- | -- | -- | 508 | -- | 540 | 600 | -- |
| **Turbidity (NTU)** | 0.34 | -- | -- | -- | -- | -- | -- | -- | -- | 0.43 | -- | 1.13 | 1.86 | -- |
| **DO (mg/L)** | 2.4 | -- | -- | -- | -- | -- | -- | -- | -- | 0.43 | -- | 7.2 | 6.54 | -- |
| **ORP (mV)** | 95.3 | -- | -- | -- | -- | -- | -- | -- | -- | 126.8 | -- | 116.8 | 108.7 | -- |
| **Temperature (°C)** | 13.33 | -- | -- | -- | -- | -- | -- | -- | -- | 12.6 | -- | 12.72 | 12.48 | -- |
| **Dissolved Manganese (mg/L)** | 0.04 | -- | -- | -- | -- | -- | -- | -- | -- | 0.31 | -- | 0.1 | 0.037 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0.09 | -- | -- | -- | -- | -- | -- | -- | -- | 0.07 | -- | 0.017 | 0.07 | -- |
| **Nitrate (mg/L)** | 0.12 | -- | -- | -- | -- | -- | -- | -- | -- | ND | -- | 1 | 1 | -- |
| **Sulfate (mg/L)** | 28 | -- | -- | -- | -- | -- | -- | -- | -- | 15 | -- | 22 | 20 | -- |
| **TOC (mg/L)** | ND | -- | -- | -- | -- | -- | -- | -- | -- | ND | -- | ND | ND | -- |
| **TIC (mg/L)** | 63 | -- | -- | -- | -- | -- | -- | -- | -- | 63 | -- | 65 | 48 | -- |
| ***SWMU 54 Thirty-Third Quarter (October 2020) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.5 | -- | -- | -- | -- | -- | -- | -- | -- | 7.33 | -- | 6.9 | 7.08 | -- |
| **Specific Conductivity (mS/cm)** | 486 | -- | -- | -- | -- | -- | -- | -- | -- | 831 | -- | 516 | 453 | -- |
| **Turbidity (NTU)** | 10.3 | -- | -- | -- | -- | -- | -- | -- | -- | 28.3 | -- | 15.9 | 35.8 | -- |
| **DO (mg/L)** | 1.81 | -- | -- | -- | -- | -- | -- | -- | -- | 1.37 | -- | 5.27 | 5.19 | -- |
| **ORP (mV)** | 123.9 | -- | -- | -- | -- | -- | -- | -- | -- | 19.8 | -- | 153.1 | 106.1 | -- |
| **Temperature (°C)** | 15.46 | -- | -- | -- | -- | -- | -- | -- | -- | 14.4 | -- | 14.25 | 14.19 | -- |
| **Dissolved Manganese (mg/L)** | 0.00 | -- | -- | -- | -- | -- | -- | -- | -- | 0.00 | -- | 0.0 | 0.0 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0.03 | -- | -- | -- | -- | -- | -- | -- | -- | 0.00 | -- | 0.0 | 0.0 | -- |
| **Nitrate (mg/L)** | 0.17 | -- | -- | -- | -- | -- | -- | -- | -- | 0.25 | -- | 0.46 | 0.48 | -- |
| **Sulfate (mg/L)** | 31 | -- | -- | -- | -- | -- | -- | -- | -- | 95 | -- | 32 | 30 | -- |
| **TOC (mg/L)** | ND | -- | -- | -- | -- | -- | -- | -- | -- | 1.2 | -- | 1.5 | 1.2 | -- |
| **TIC (mg/L)** | 55 | -- | -- | -- | -- | -- | -- | -- | -- | 66 | -- | 69 | 58 | -- |

## Table 6-2 Water Quality Parameters for Groundwater Performance Monitoring at SWMU 54 (Continued)

| Well ID | 54MW1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***SWMU 54 Thirty-Fourth Quarter (January 2021) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.49 | -- | -- | -- | -- | -- | -- | -- | -- | 6.77 | -- | 6.6 | 6.69 | -- |
| **Specific Conductivity (mS/cm)** | 471 | -- | -- | -- | -- | -- | -- | -- | -- | 629 | -- | 542 | 400 | -- |
| **Turbidity (NTU)** | 11 | -- | -- | -- | -- | -- | -- | -- | -- | 8.72 | -- | 2.23 | 6.53 | -- |
| **DO (mg/L)** | 5.06 | -- | -- | -- | -- | -- | -- | -- | -- | 5.37 | -- | 6.92 | 7.63 | -- |
| **ORP (mV)** | 99.9 | -- | -- | -- | -- | -- | -- | -- | -- | 93.3 | -- | 123.7 | 167.7 | -- |
| **Temperature (°C)** | 13.5 | -- | -- | -- | -- | -- | -- | -- | -- | 12.9 | -- | 12.5 | 12.7 | -- |
| **Dissolved Manganese (mg/L)** | 0.0 | -- | -- | -- | -- | -- | -- | -- | -- | 0.0 | -- | 0.02 | 0.02 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0.02 | -- | -- | -- | -- | -- | -- | -- | -- | 0.0 | -- | 0.0 | 0.0 | -- |
| **Nitrate (mg/L)** | 0.2 | -- | -- | -- | -- | -- | -- | -- | -- | 0.66 | -- | 0.73 | 0.8 | -- |
| **Sulfate (mg/L)** | 28 | -- | -- | -- | -- | -- | -- | -- | -- | 75 | -- | 33 | 24 | -- |
| **TOC (mg/L)** | ND | -- | -- | -- | -- | -- | -- | -- | -- | 1.3 | -- | 1.2 | 1.5 | -- |
| **TIC (mg/L)** | 56 | -- | -- | -- | -- | -- | -- | -- | -- | 67 | -- | 66 | 49 | -- |
| ***SWMU 54 Thirty-Fifth Quarter (April 2021) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.58 | -- | -- | -- | -- | -- | -- | -- | -- | 6.72 | -- | 6.48 | 6.68 | -- |
| **Specific Conductivity (mS/cm)** | 424 | -- | -- | -- | -- | -- | -- | -- | -- | 520 | -- | 502 | 459 | -- |
| **Turbidity (NTU)** | 29.8 | -- | -- | -- | -- | -- | -- | -- | -- | 31.72 | -- | 68.62 | 13.2 | -- |
| **DO (mg/L)** | 4.29 | -- | -- | -- | -- | -- | -- | -- | -- | 3.98 | -- | 3.96 | 4.67 | -- |
| **ORP (mV)** | 128 | -- | -- | -- | -- | -- | -- | -- | -- | 145.7 | -- | 171.3 | 158.3 | -- |
| **Temperature (°C)** | 13.9 | -- | -- | -- | -- | -- | -- | -- | -- | 13.1 | -- | 14.5 | 12.8 | -- |
| **Dissolved Manganese (mg/L)** | 0.0 | -- | -- | -- | -- | -- | -- | -- | -- | 0.3 | -- | 0.0 | 0.0 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0.03 | -- | -- | -- | -- | -- | -- | -- | -- | 0.01 | -- | 0.02 | 0.02 | -- |
| **Nitrate (mg/L)** | 0.13 | -- | -- | -- | -- | -- | -- | -- | -- | 0.71 | -- | 1.1 | 0.64 | -- |
| **Sulfate (mg/L)** | 28 | -- | -- | -- | -- | -- | -- | -- | -- | 58 | -- | 34 | 34 | -- |
| **TOC (mg/L)** | ND | -- | -- | -- | -- | -- | -- | -- | -- | ND | -- | 0.84 | 2.4 | -- |
| **TIC (mg/L)** | 57 | -- | -- | -- | -- | -- | -- | -- | -- | 71 | -- | 80 | 63 | -- |

## Table 6-2 Water Quality Parameters for Groundwater Performance Monitoring at SWMU 54 (Continued)

| Well ID | 54MW1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***SWMU 54 Thirty-Sixth Quarter (July 2021) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.25 | -- | -- | -- | -- | -- | -- | -- | -- | 7.12 | -- | 6.87 | 7.44 | -- |
| **Specific Conductivity (mS/cm)** | 482.9 | -- | -- | -- | -- | -- | -- | -- | -- | 661 | -- | 570 | 614 | -- |
| **Turbidity (NTU)** | 1.24 | -- | -- | -- | -- | -- | -- | -- | -- | 0.65 | -- | 3.38 | 0.44 | -- |
| **DO (mg/L)** | 5.41 | -- | -- | -- | -- | -- | -- | -- | -- | 4.59 | -- | 6.04 | 6.77 | -- |
| **ORP (mV)** | 137.7 | -- | -- | -- | -- | -- | -- | -- | -- | 131.7 | -- | 195.9 | 189.6 | -- |
| **Temperature (°C)** | 18.5 | -- | -- | -- | -- | -- | -- | -- | -- | 14.6 | -- | 18.2 | 19.8 | -- |
| **Dissolved Manganese (mg/L)** | 0.09 | -- | -- | -- | -- | -- | -- | -- | -- | 0.2 | -- | 0.5 | 0.6 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0.01 | -- | -- | -- | -- | -- | -- | -- | -- | 0.1 | -- | 0.06 | 0.02 | -- |
| **Nitrate (mg/L)** | ND | -- | -- | -- | -- | -- | -- | -- | -- | 0.42 | -- | 0.61 | 0.54 | -- |
| **Sulfate (mg/L)** | 28 | -- | -- | -- | -- | -- | -- | -- | -- | 96 | -- | 30 | 34 | -- |
| **TOC (mg/L)** | ND | -- | -- | -- | -- | -- | -- | -- | -- | ND | -- | 0.50 | 1.8 | -- |
| **TIC (mg/L)** | 56 | -- | -- | -- | -- | -- | -- | -- | -- | 68 | -- | 73 | 74 | -- |
| ***SWMU 54 Thirty-Seventh Event (October 2021) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.59 | -- | -- | -- | -- | -- | -- | -- | -- | 7.28 | -- | 6.82 | 7.14 | -- |
| **Specific Conductivity (mS/cm)** | 420 | -- | -- | -- | -- | -- | -- | -- | -- | 705 | -- | 470.4 | 598 | -- |
| **Turbidity (NTU)** | 39.72 | -- | -- | -- | -- | -- | -- | -- | -- | 7.3 | -- | 24.22 | 8.56 | -- |
| **DO (mg/L)** | 0.42 | -- | -- | -- | -- | -- | -- | -- | -- | 0.46 | -- | 6.84 | 4.39 | -- |
| **ORP (mV)** | 165.8 | -- | -- | -- | -- | -- | -- | -- | -- | 123.7 | -- | 193.4 | 164.8 | -- |
| **Temperature (°C)** | 13.9 | -- | -- | -- | -- | -- | -- | -- | -- | 13.4 | -- | 13.2 | 13.3 | -- |
| **Dissolved Manganese (mg/L)** | 0.40 | -- | -- | -- | -- | -- | -- | -- | -- | 1.1 | -- | 0.40 | 0 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0.03 | -- | -- | -- | -- | -- | -- | -- | -- | 0.10 | -- | 0.01 | 0.07 | -- |
| **Nitrate (mg/L)** | ND | -- | -- | -- | -- | -- | -- | -- | -- | 0.25 | -- | 0.66 | 0.49 | -- |
| **Sulfate (mg/L)** | 28 | -- | -- | -- | -- | -- | -- | -- | -- | 120 | -- | 28 | 37 | -- |
| **TOC (mg/L)** | ND | -- | -- | -- | -- | -- | -- | -- | -- | ND | -- | ND | ND | -- |
| **TIC (mg/L)** | 60 | -- | -- | -- | -- | -- | -- | -- | -- | 77 | -- | 76 | 91 | -- |
| ***SWMU 54 Thirty-Eighth Event (April 2022) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.44 | -- | -- | -- | -- | -- | -- | -- | -- | 6.75 | -- | 6.68 | 6.95 | -- |
| **Specific Conductivity (mS/cm)** | 428 | -- | -- | -- | -- | -- | -- | -- | -- | 521.7 | -- | 479.9 | 514.4 | -- |
| **Turbidity (NTU)** | 0.74 | -- | -- | -- | -- | -- | -- | -- | -- | 0.28 | -- | 0.67 | 1.25 | -- |
| **DO (mg/L)** | 2.04 | -- | -- | -- | -- | -- | -- | -- | -- | 1.81 | -- | 6.19 | 4.58 | -- |
| **ORP (mV)** | 52.7 | -- | -- | -- | -- | -- | -- | -- | -- | 126.6 | -- | 184.3 | 154.3 | -- |
| **Temperature (°C)** | 13.3 | -- | -- | -- | -- | -- | -- | -- | -- | 13.8 | -- | 13.4 | 14.0 | -- |
| **Dissolved Manganese (mg/L)** | 0.50 | -- | -- | -- | -- | -- | -- | -- | -- | 0 | -- | 2.3 | 3.0 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0.93 | -- | -- | -- | -- | -- | -- | -- | -- | 2.01 | -- | 0.01 | 0.50 | -- |
| **Nitrate (mg/L)** | 0.13 | -- | -- | -- | -- | -- | -- | -- | -- | 0.30 | -- | 0.73 | 0.64 | -- |
| **Sulfate (mg/L)** | 31 | -- | -- | -- | -- | -- | -- | -- | -- | 72 | -- | 33 | 33 | -- |
| **TOC (mg/L)** | ND | -- | -- | -- | -- | -- | -- | -- | -- | ND | -- | ND | ND | -- |
| **TIC (mg/L)** | 60 | -- | -- | -- | -- | -- | -- | -- | -- | 78 | -- | 82 | 83 | -- |

## Table 6-2 Water Quality Parameters for Groundwater Performance Monitoring at SWMU 54 (Continued)

| Well ID | 54MW1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *SWMU 54 Thirty-Ninth Event (January 2023) Water Quality Parameters* | | | | | | | | | | | | | | |
| pH | 7.53 | -- | -- | -- | -- | -- | -- | -- | -- | 7.57 | -- | 6.93 | 7.60 | -- |
| Specific Conductivity (mS/cm) | 446 | -- | -- | -- | -- | -- | -- | -- | -- | 819 | -- | 503.4 | 10.9 | -- |
| Turbidity (NTU) | 0.00 | -- | -- | -- | -- | -- | -- | -- | -- | 3.59 | -- | 0.00 | 0.71 | -- |
| DO (mg/L) | 0.29 | -- | -- | -- | -- | -- | -- | -- | -- | 0.31 | -- | 10.02 | 10.00 | -- |
| ORP (mV) | 32.3 | -- | -- | -- | -- | -- | -- | -- | -- | 52.9 | -- | 159.6 | 52.3 | -- |
| Temperature (°C) | 12.7 | -- | -- | -- | -- | -- | -- | -- | -- | 12.3 | -- | 11.6 | 8.3 | -- |
| Dissolved Manganese (mg/L) | 0.80 | -- | -- | -- | -- | -- | -- | -- | -- | 0.50 | -- | 0.50 | 0.26 | -- |
| Dissolved Ferrous Iron (mg/L) | 0.01 | -- | -- | -- | -- | -- | -- | -- | -- | 0.20 | -- | 0.0 | 0.04 | -- |
| Nitrate (mg/L) | ND | -- | -- | -- | -- | -- | -- | -- | -- | ND | -- | 0.68 | 0.57 | -- |
| Sulfate (mg/L) | 30 | -- | -- | -- | -- | -- | -- | -- | -- | 190 | -- | 30 | 37 | -- |
| TOC (mg/L) | ND | -- | -- | -- | -- | -- | -- | -- | -- | ND | -- | ND | ND | -- |
| TIC (mg/L) | 62 | -- | -- | -- | -- | -- | -- | -- | -- | 78 | -- | 72 | 88 | -- |
| *SWMU 54 Fortieth Event (July 2023) Water Quality Parameters* | | | | | | | | | | | | | | |
| pH | 7.69 | -- | -- | -- | -- | -- | -- | -- | -- | 7.33 | -- | 6.93 | 7.11 | -- |
| Specific Conductivity (mS/cm) | 456.3 | -- | -- | -- | -- | -- | -- | -- | -- | 802 | -- | 606 | 559 | -- |
| Turbidity (NTU) | 1.14 | -- | -- | -- | -- | -- | -- | -- | -- | 5.89 | -- | 1.73 | 5.61 | -- |
| DO (mg/L) | 2.45 | -- | -- | -- | -- | -- | -- | -- | -- | 0.22 | -- | 7.32 | 4.9 | -- |
| ORP (mV) | 144.7 | -- | -- | -- | -- | -- | -- | -- | -- | 86.1 | -- | 147.2 | 85 | -- |
| Temperature (°C) | 14.9 | -- | -- | -- | -- | -- | -- | -- | -- | 15.1 | -- | 15.4 | 15.8 | -- |
| Dissolved Manganese (mg/L) | 0.90 | -- | -- | -- | -- | -- | -- | -- | -- | 0.2 | -- | 1.8 | 0.3 | -- |
| Dissolved Ferrous Iron (mg/L) | 0.2 | -- | -- | -- | -- | -- | -- | -- | -- | 0.8 | -- | 0.1 | 0.1 | -- |
| Nitrate (mg/L) | ND | -- | -- | -- | -- | -- | -- | -- | -- | ND | -- | 0.71 | 0.57 | -- |
| Sulfate (mg/L) | 29 | -- | -- | -- | -- | -- | -- | -- | -- | 170 | -- | 25 | 31 | -- |
| TOC (mg/L) | ND | -- | -- | -- | -- | -- | -- | -- | -- | ND | -- | ND | ND | -- |
| TIC (mg/L) | 66 | -- | -- | -- | -- | -- | -- | -- | -- | 84 | -- | 86 | 85 | -- |

## Table 6-2 Water Quality Parameters for Groundwater Performance Monitoring at SWMU 54 (Continued)

| Well ID | 54MW1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***SWMU 54 Forty-First Event (August 2024) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.67 | -- | -- | -- | -- | -- | -- | -- | -- | 7.28 | -- | 6.85 | 7.08 | -- |
| **Specific Conductivity (mS/cm)** | 406.1 | -- | -- | -- | -- | -- | -- | -- | -- | 731 | -- | 404.4 | 570.7 | -- |
| **Turbidity (NTU)** | 0.00 | -- | -- | -- | -- | -- | -- | -- | -- | 0.00 | -- | 0.00 | 0.00 | -- |
| **DO (mg/L)** | 1.2 | -- | -- | -- | -- | -- | -- | -- | -- | 0.11 | -- | 5.96 | 4.27 | -- |
| **ORP (mV)** | 51.3 | -- | -- | -- | -- | -- | -- | -- | -- | -9.7 | -- | 140.9 | 126.4 | -- |
| **Temperature (°C)** | 13.6 | -- | -- | -- | -- | -- | -- | -- | -- | 12.6 | -- | 13.7 | 12.9 | -- |
| **Dissolved Manganese (mg/L)** | 0.70 | -- | -- | -- | -- | -- | -- | -- | -- | 1.2 | -- | 0.3 | 0.4 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0.09 | -- | -- | -- | -- | -- | -- | -- | -- | 011 | -- | 0.08 | 0.07 | -- |
| **Nitrate (mg/L)** | ND | -- | -- | -- | -- | -- | -- | -- | -- | ND | -- | 1 | 0.47 | -- |
| **Sulfate (mg/L)** | 28 | -- | -- | -- | -- | -- | -- | -- | -- | 180 | -- | 30 | 34 | -- |
| **TOC (mg/L)** | ND | -- | -- | -- | -- | -- | -- | -- | -- | ND | -- | ND | ND | -- |
| **TIC (mg/L)** | 62 | -- | -- | -- | -- | -- | -- | -- | -- | 78 | -- | 70 | 97 | -- |
| ***SWMU 54 Forty-Second Event (December 2024) Water Quality Parameters*** | | | | | | | | | | | | | | |
| **pH** | 7.36 | -- | -- | -- | -- | -- | -- | -- | -- | 7.18 | -- | 6.64 | 7.00 | -- |
| **Specific Conductivity (mS/cm)** | 458.0 | -- | -- | -- | -- | -- | -- | -- | -- | 827 | -- | 399.6 | 610.1 | -- |
| **Turbidity (NTU)** | 0.00 | -- | -- | -- | -- | -- | -- | -- | -- | 0.00 | -- | 0.00 | 0.00 | -- |
| **DO (mg/L)** | 0.47 | -- | -- | -- | -- | -- | -- | -- | -- | 0.52 | -- | 6.86 | 4.84 | -- |
| **ORP (mV)** | -31.6 | -- | -- | -- | -- | -- | -- | -- | -- | -12.6 | -- | 96.8 | 70.3 | -- |
| **Temperature (°C)** | 13.9 | -- | -- | -- | -- | -- | -- | -- | -- | 14.1 | -- | 13.7 | 13.3 | -- |
| **Dissolved Manganese (mg/L)** | 0.3 | -- | -- | -- | -- | -- | -- | -- | -- | 0.0 | -- | 0.2 | 0.1 | -- |
| **Dissolved Ferrous Iron (mg/L)** | 0.12 | -- | -- | -- | -- | -- | -- | -- | -- | 0.9 | -- | 0.1 | 0.11 | -- |
| **Nitrate (mg/L)** | ND | -- | -- | -- | -- | -- | -- | -- | -- | ND | -- | 0.74 | 0.62 | -- |
| **Sulfate (mg/L)** | 31 | -- | -- | -- | -- | -- | -- | -- | -- | 200 | -- | 18 | 40 | -- |
| **TOC (mg/L)** | ND | -- | -- | -- | -- | -- | -- | -- | -- | ND | -- | ND | ND | -- |
| **TIC (mg/L)** | 64 | -- | -- | -- | -- | -- | -- | -- | -- | 81 | -- | 68 | 89 | -- |

**Notes:**
-- = Wells eliminated from monitoring program
°C = degrees Celsius
< = less than
DO = dissolved oxygen
ID = identifier
mg/L = milligrams per liter
mS/cm = millisiemens per centimeter
mV = millivolt
ND = non detect
NM = not measured
NTU = Nephelometric Turbidity Unit
ORP = oxidation reduction potential
pH = potential of hydrogen
SWMU = Solid Waste Management Unit
TIC = total inorganic carbon
TOC = total organic carbon

**Figure 6-1 SWMU 54: 54MW10 Contaminant Concentration to Groundwater Elevation Correlation**

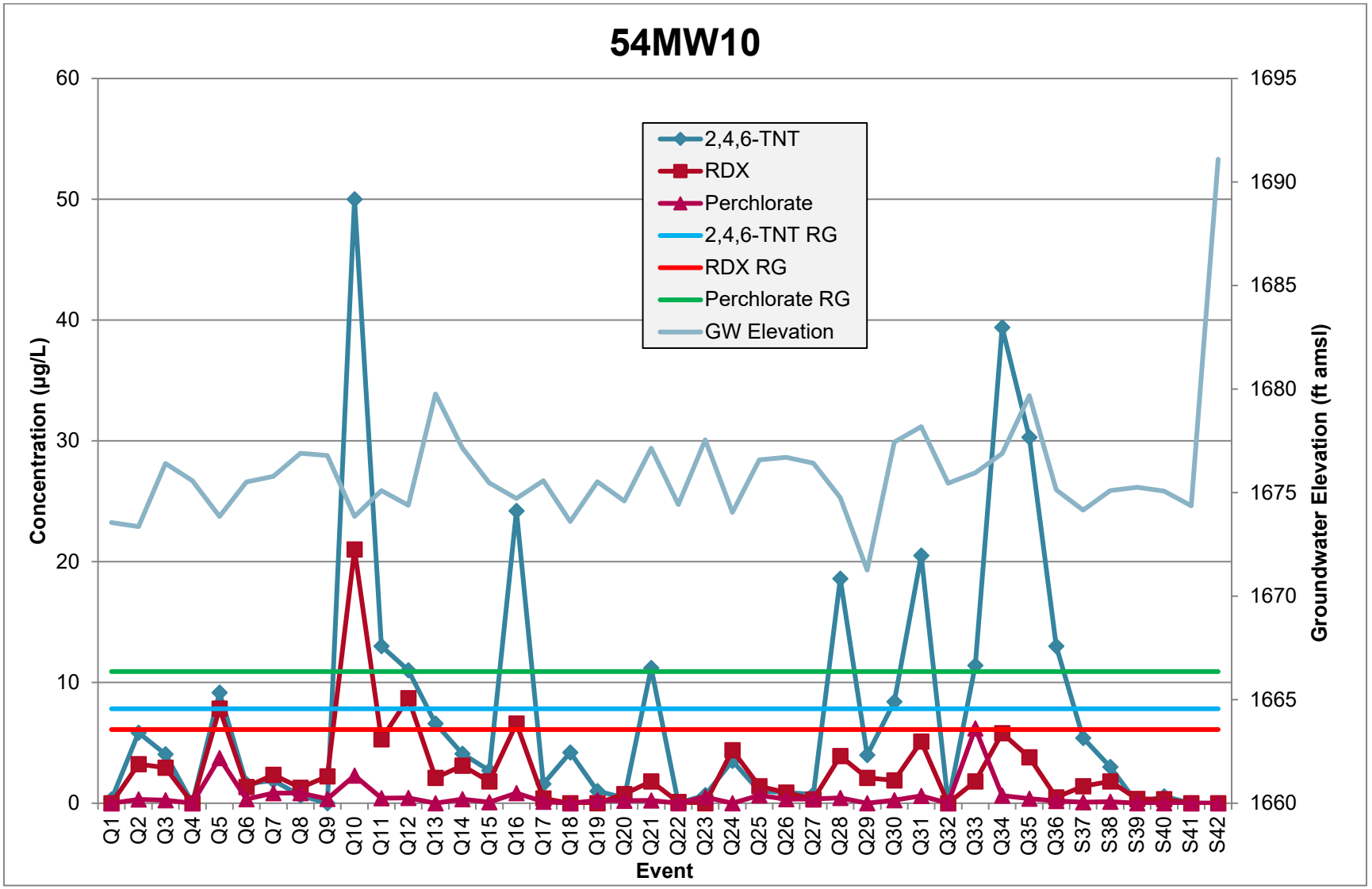


**Figure 6-2 SWMU 54: 54MW12 Contaminant Concentration to Groundwater Elevation Correlation**

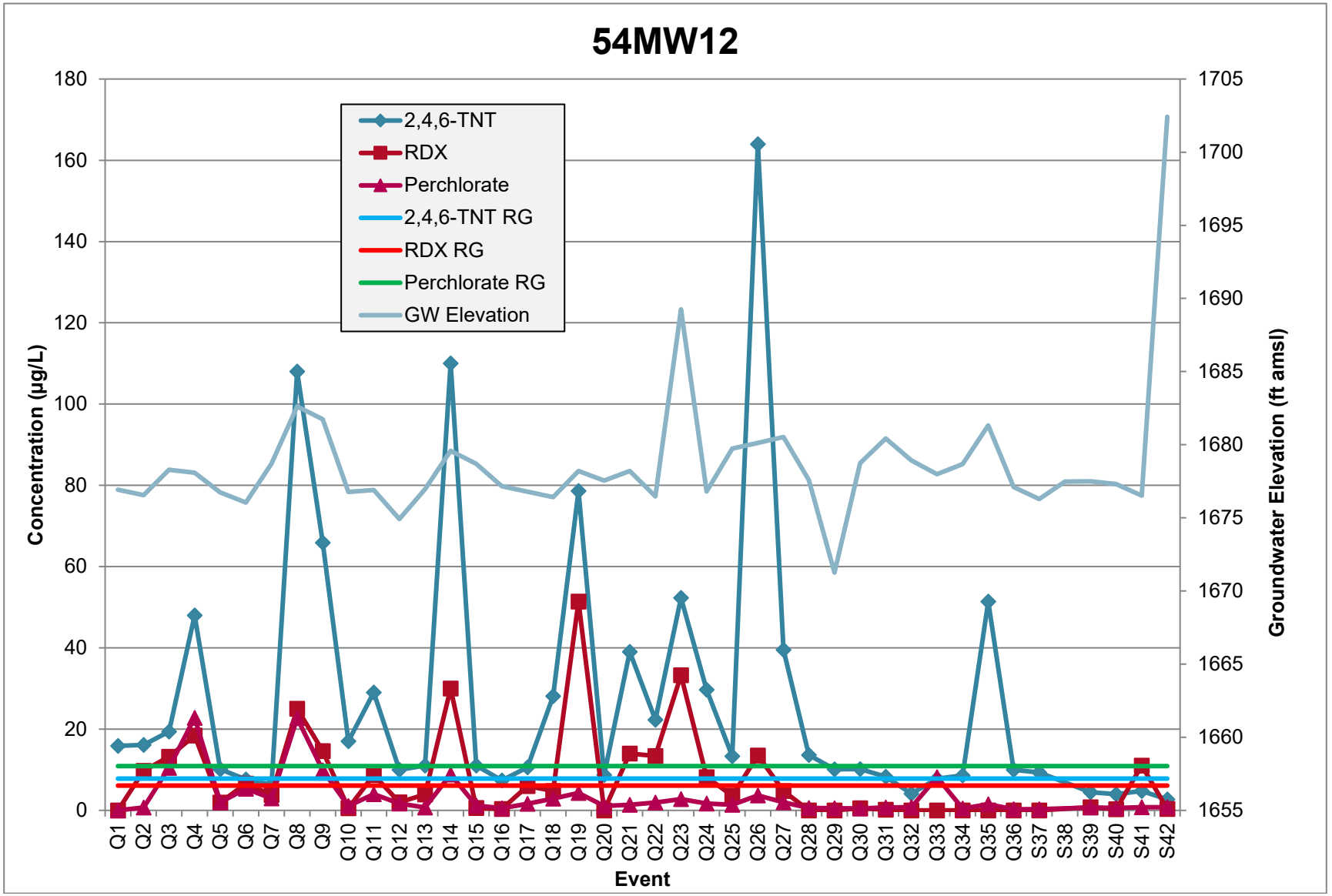
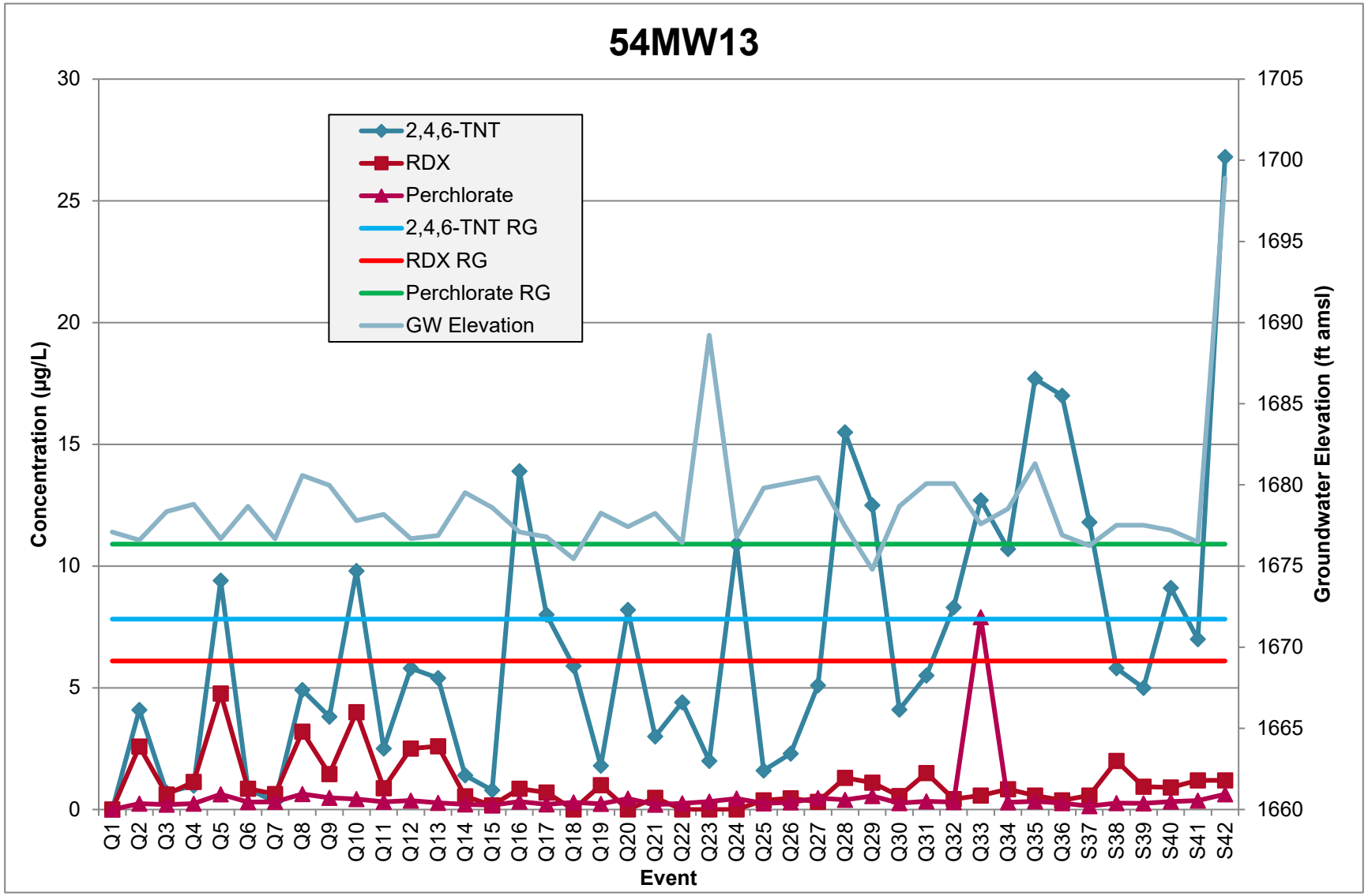
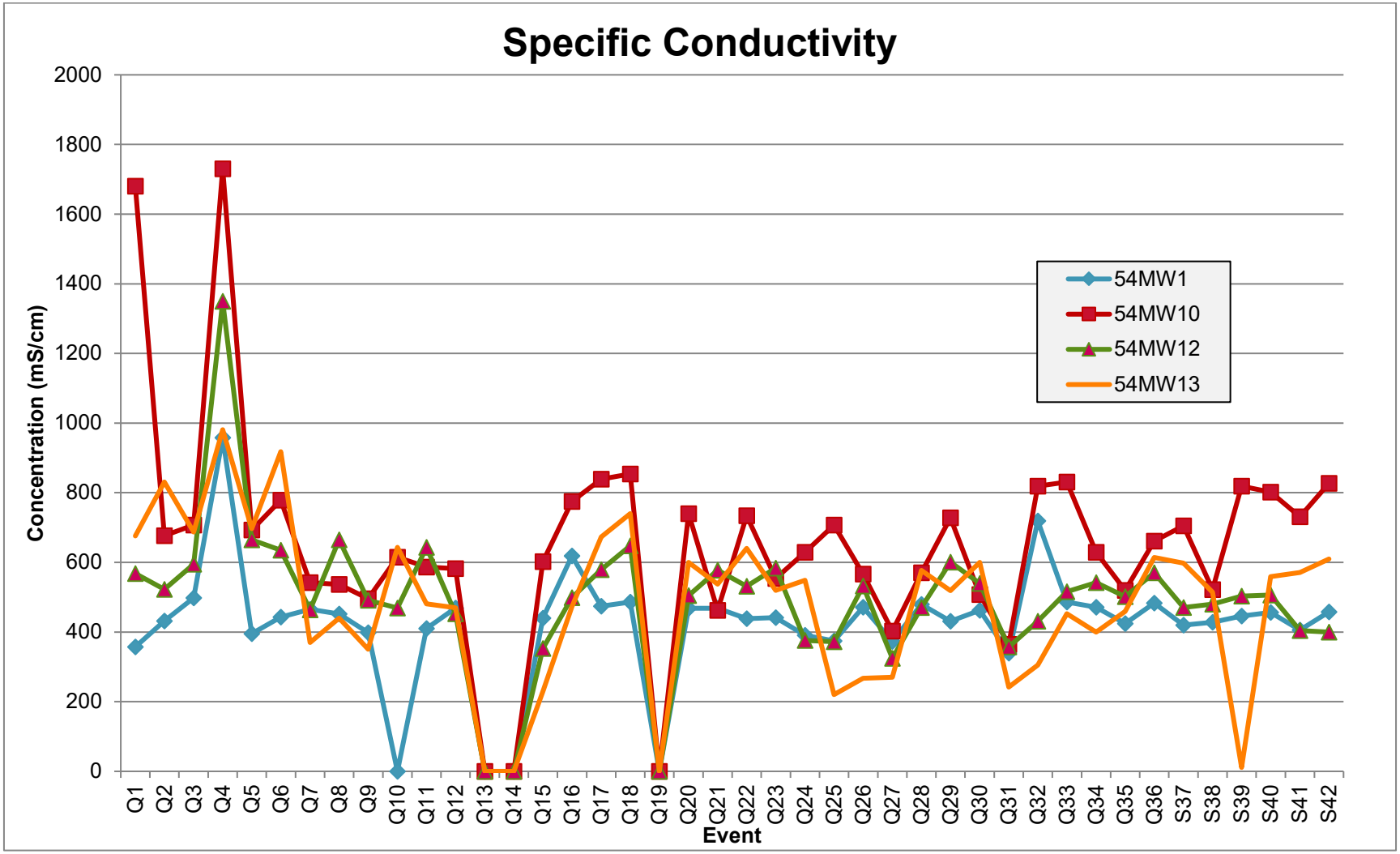


**Figure 6-3 SWMU 54: 54MW13 Contaminant Concentration to Groundwater Elevation Correlation**



## Figure 6-4 SWMU 54: Specific Conductivity




**Notes**:
1. Specific conductivity was not measured at 54MW1 during the tenth quarter.
2. Specific conductivity readings for the thirteenth, fourteenth, and nineteenth quarters for all four wells were not used due to possible unit entry error.

**Figure 6-5 SWMU 54: 54MW10 Ferrous Iron, Dissolved Manganese, Nitrate, and Sulfate Concentrations**

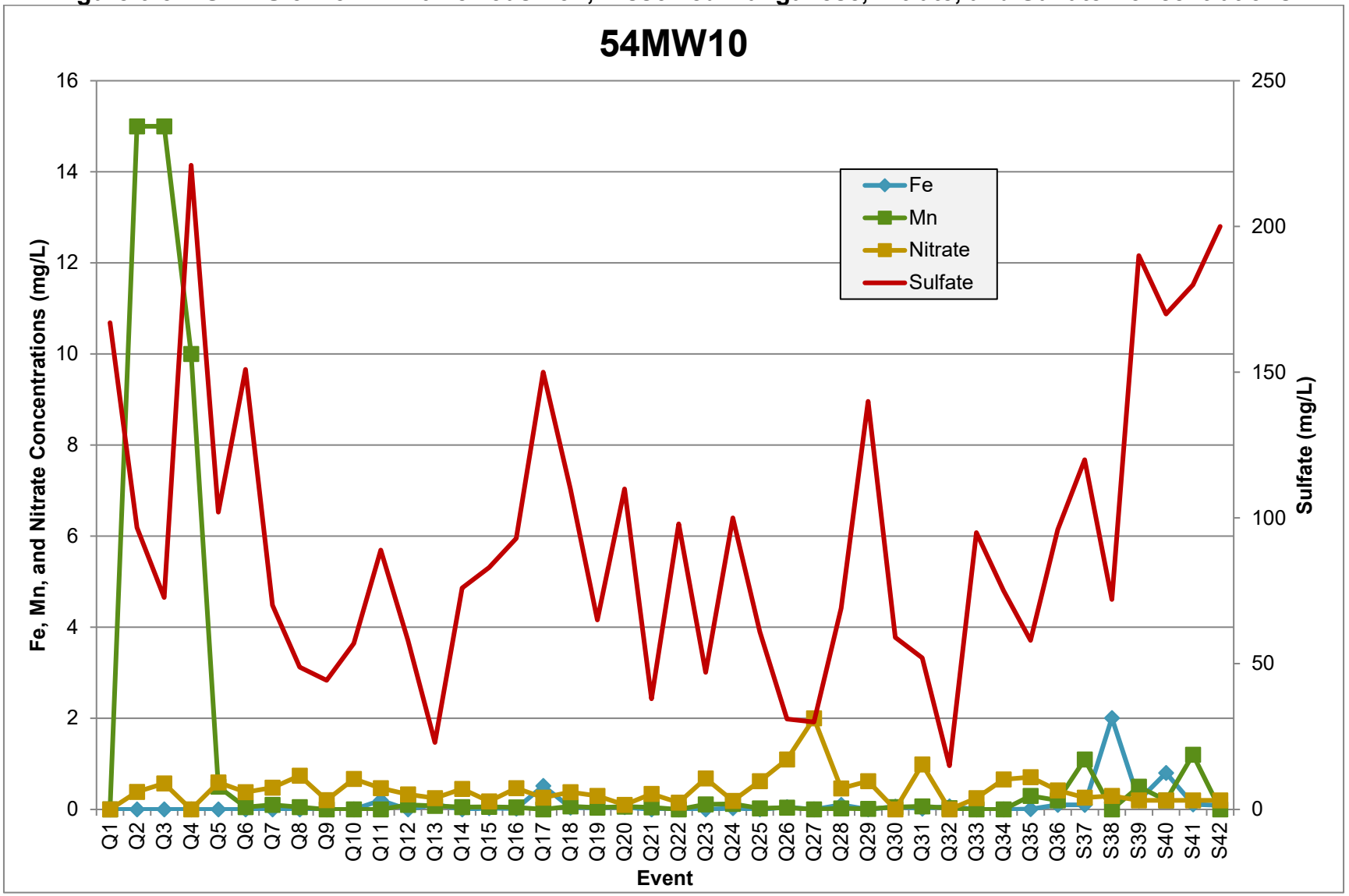


**Figure 6-6 SWMU 54: 54MW12 Ferrous Iron, Dissolved Manganese, Nitrate, and Sulfate Concentrations**

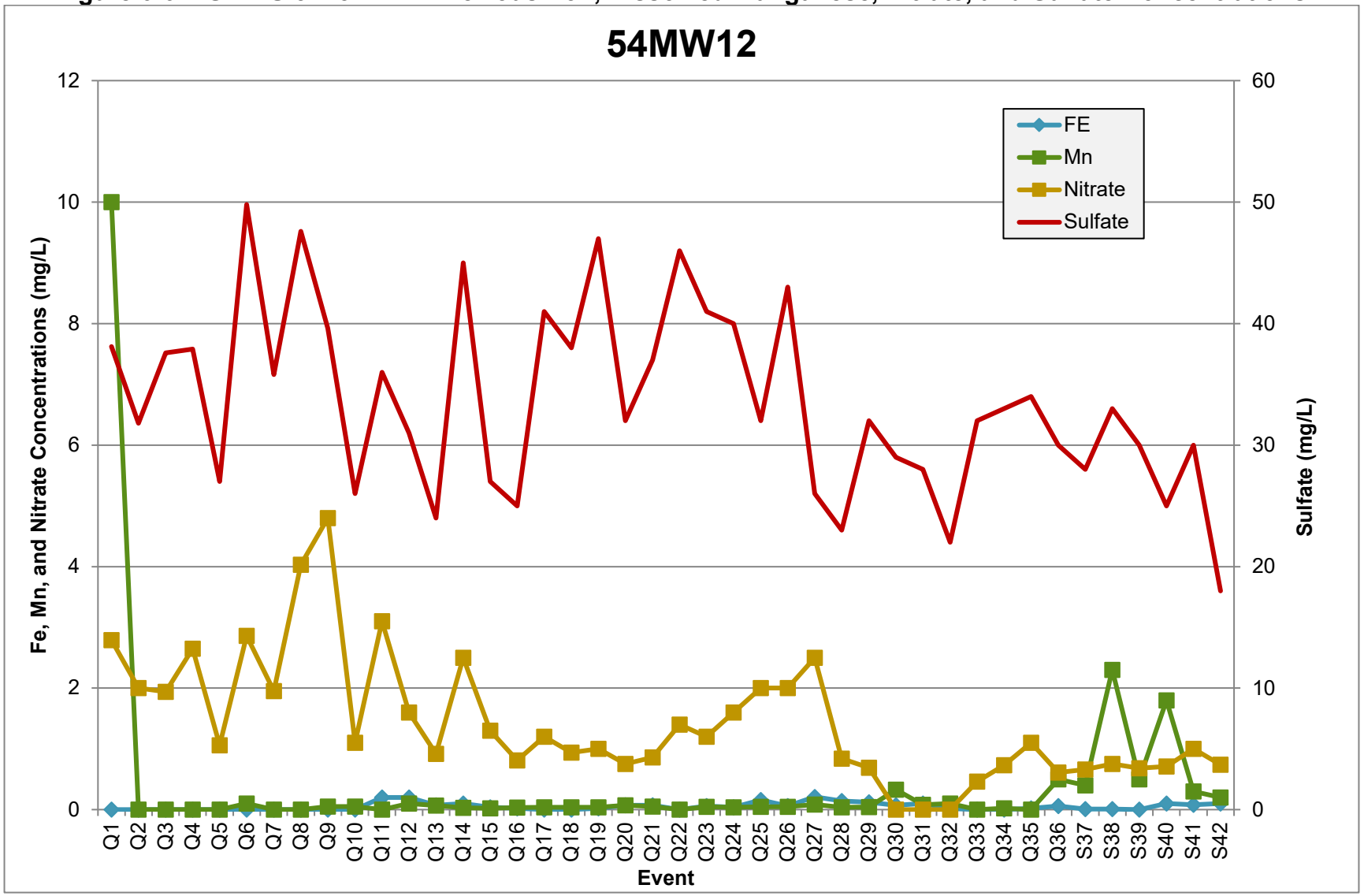


**Figure 6-7 SWMU 54: 54MW13 Ferrous Iron, Dissolved Manganese, Nitrate, and Sulfate Concentrations**

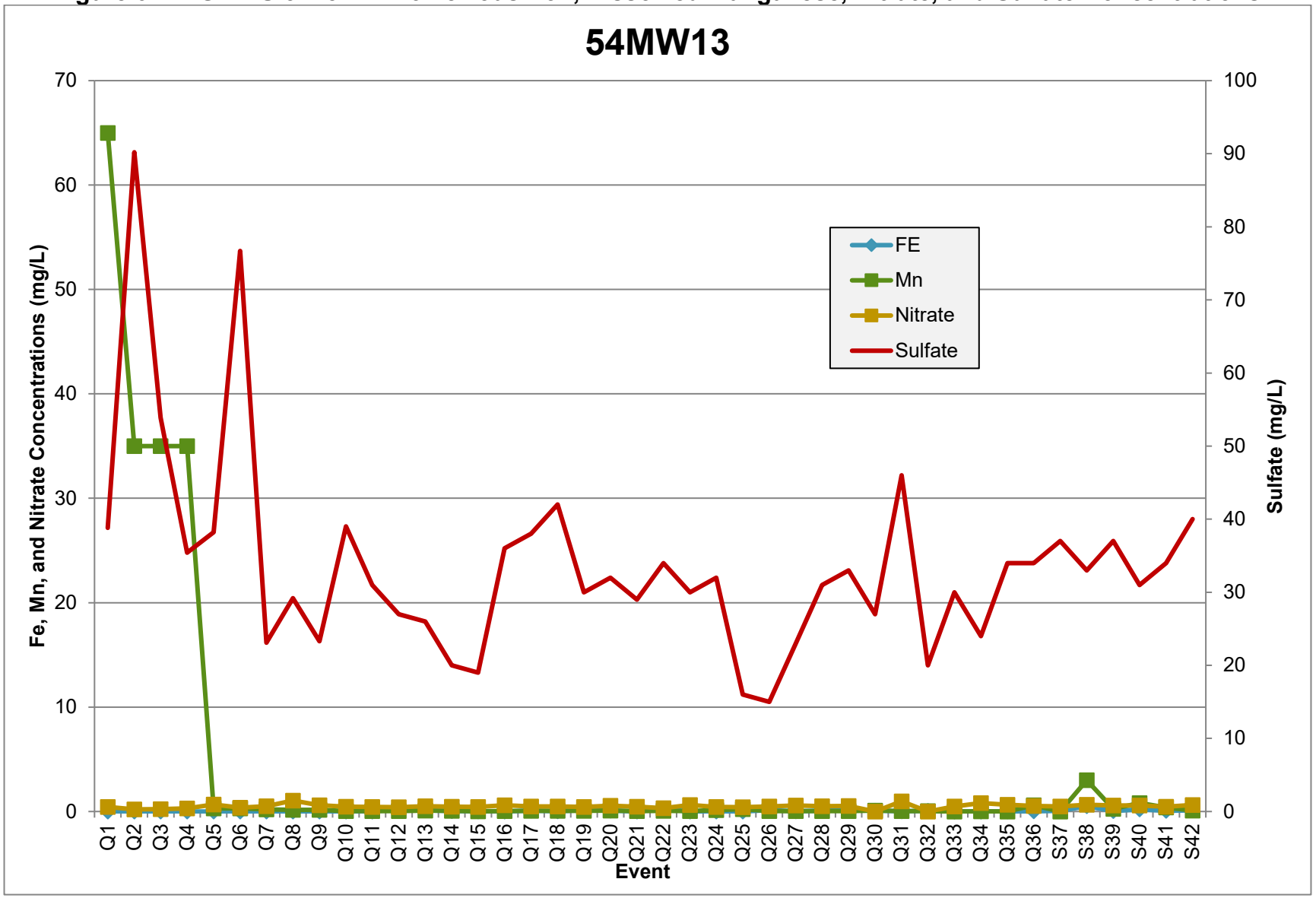


**Figure 6-8 SWMU 54: 54MW10 TOC, DO, and ORP Concentrations**

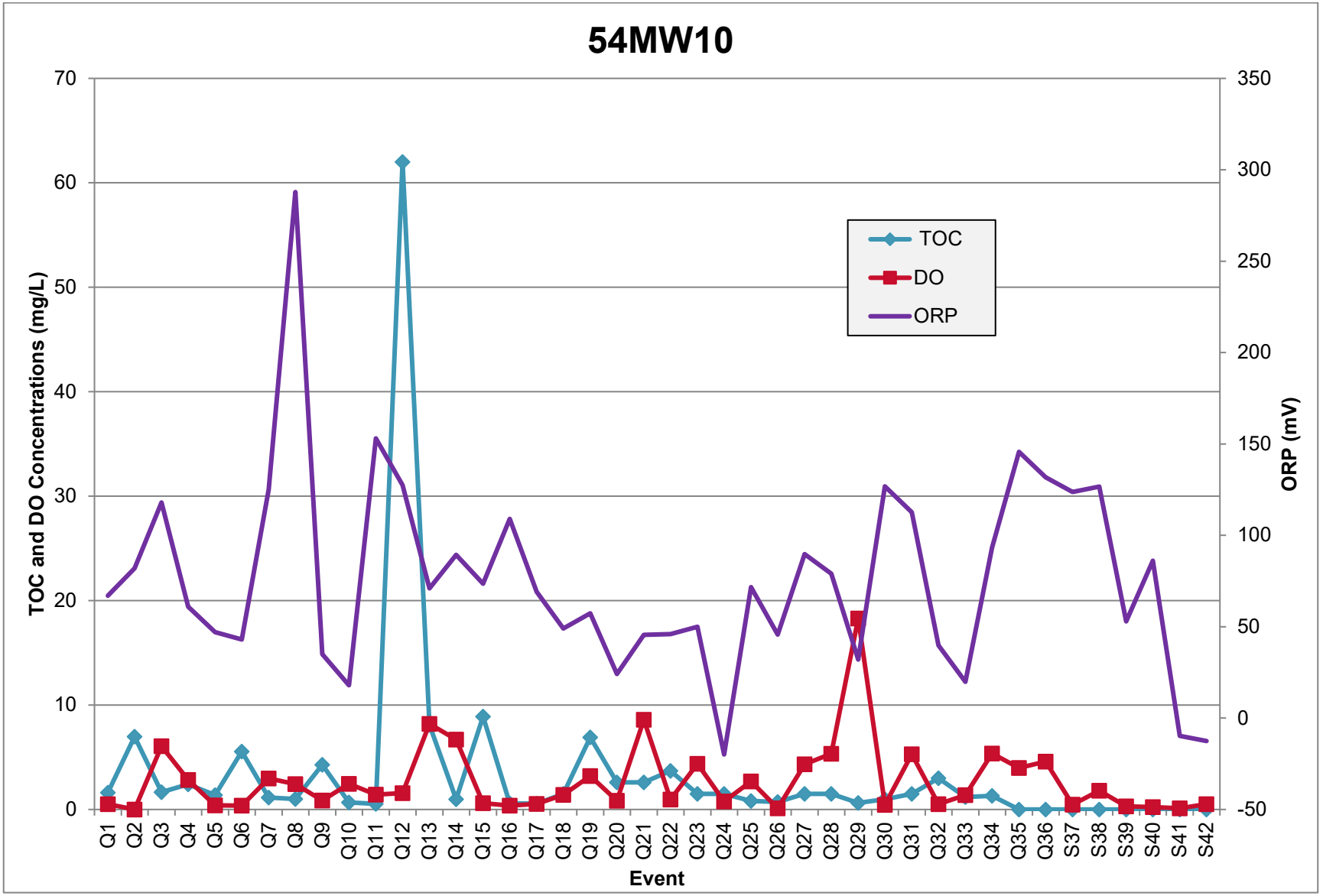


**Figure 6-9 SWMU 54: 54MW12 TOC, DO, and ORP Concentrations**

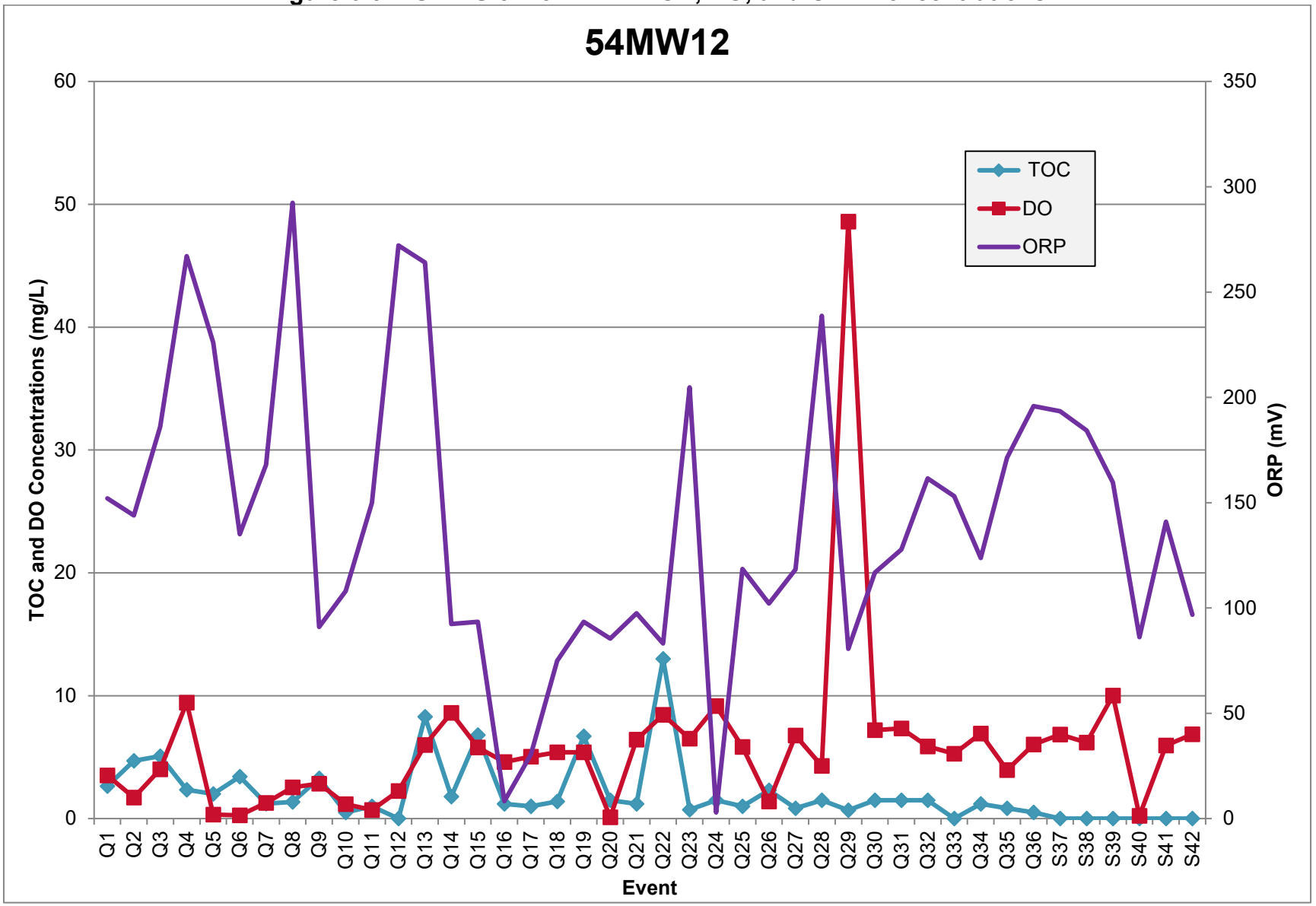
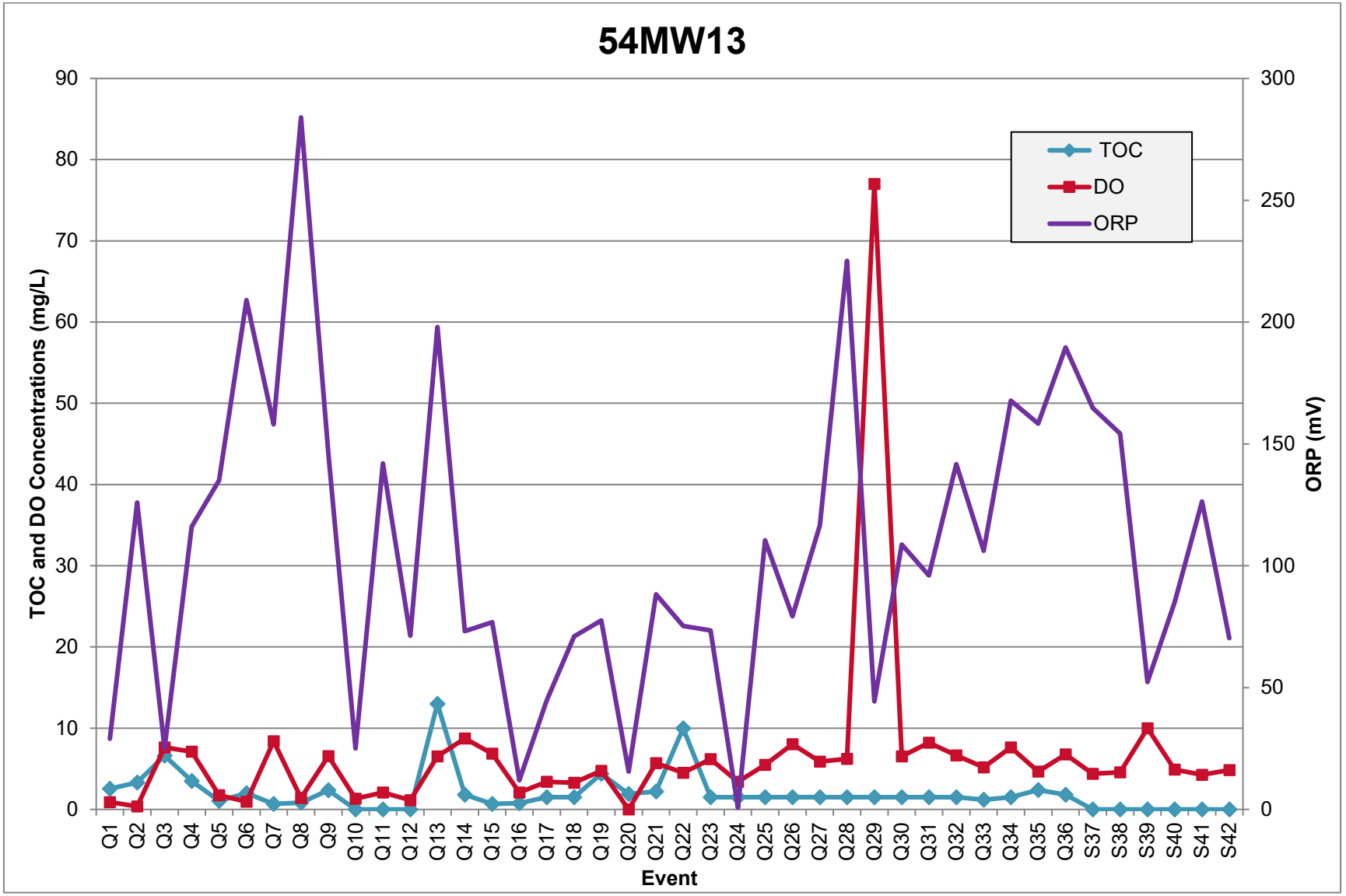


**Figure 6-10 SWMU 54: 54MW13 TOC, DO, and ORP Concentrations**



# 7. SUMMARY AND CONCLUSIONS

This report covers the first 12 years (36 quarters and 6 semiannual events) of groundwater monitoring. Herein, Year Twelve's data are discussed in detail. The first 11 years were described in previous annual reports. Fourteen groundwater monitoring wells were sampled on a quarterly basis for over 2 years (nine quarters) at SWMU 54. After the ninth and tenth quarters, the monitoring program was reduced to the three wells (54MW10, 54MW12, and 54MW13), which have had COC concentrations above RGs, and an upgradient well (54MW1). Monitoring of the monitoring wells associated with Area B were also discontinued after the tenth quarter because no concentrations were detected above their RGs.

Samples collected during the first 12 quarters were analyzed for explosives, perchlorate, and MNA indicators. During the tenth through thirty-sixth quarters, samples were also analyzed for RDX breakdown by-products. Sample results were compared to RGs and evaluated to determine whether MNA is occurring at SWMU 54. This report presents and summarizes the analytical results of the first 12 years (36 quarters and 6 semiannual events) of monitoring.

Based on contaminant concentrations and biological indicator parameters measured in groundwater at SWMU 54 during Year Twelve, concentrations of 2,4,6-TNT fluctuated above and below its RG for Year Twelve at 54MW13 but continue to be below the RG at 54MW12. 2,4,6-TNT concentrations have been consistently below the RG for the past 3 years at 54MW10. RDX exceeded its RG at 54MW12 during one event in Year 12 which was the first RDX exceedance in 3 years at any monitoring well.

In summary, the following conclusions and recommendations are made regarding the potential for MNA in contaminated groundwater at SWMU 54:

- Presence of 2,4,6-TNT daughter products 2ADNT and 4ADNT is further evidence that biological degradation has occurred, which may be aiding in removing mass in the groundwater.
- Identification of RDX breakdown by-products DNX, MNX, and TNX indicates active degradation of RDX. Historically, RDX concentrations at monitoring wells 54MW10, 54MW12, and 54MW13 are consistently below the RG of 6.1 µg/L. During the Year Twelve monitoring period, the only detections noted above the RG in any of the two semiannual events (forty-first and forty-second events) were the 2,4,6-TNT concentration at 54MW13 during the forty-second event in December 2024 and the RDX concentration at 54MW12 during the forty-first event in August 2024.

- All perchlorate concentrations in Year Three through Year Twelve of monitoring are below the RG and showed a steady decline in concentrations during this 9-year period, with the exception of results at monitoring wells 54MW10 and 54MW12 in the thirty-third quarter.

Observed concentrations of DO and ORP during Year Twelve indicate both aerobic and anaerobic conditions exist at SWMU 54. However, aerobic conditions were determined to be more prevalent. Although 2,4,6-TNT has been known to be degraded under a variety of conditions (aerobic and anaerobic), further degradation of 2ADNT and 4ADNT, and reduction of RDX and perchlorate, are more favorable under anaerobic conditions (Spain, 1995).

The source removal efforts at SWMU 54 appear to have been effective in significantly lowering the site-wide COCs in groundwater. This is evident by the fact that 11 of the 14 monitoring well locations (54MW1 through 54MW9, 54MW11, and 54MW14) observed concentrations below the site-selected RGs for eight consecutive quarters for 2,4,6-TNT, DNT mixture, RDX, and perchlorate. As recommended in the Final SWMU 54 MNA IMWP (Shaw, 2011a), and Year Two MNA Report (CB&I, 2013), these wells were removed from the MNA monitoring program after the ninth and tenth quarters.

Explosive concentrations through 36 quarters and 6 semiannual events of groundwater monitoring indicate that limited biodegradation at well locations 54MW10, 54MW12, and 54MW13 (SWMU 54 Area A wells) is occurring. Based on the localized and variable distribution of elevated constituents, the generally declining concentrations near the source area, and the fact that groundwater is bounded within RFAAP by the New River and its use can be controlled by RFAAP, an active groundwater remedy at SWMU 54 does not appear necessary at this time.

The direction and rate of groundwater flow is consistent across all reporting periods and the current network of groundwater monitoring wells is adequate for future groundwater monitoring events.

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# APPENDIX A-1
# FIELD MONITORING LOGS

Rev. 02/2017

# CHAIN OF CUSTODY

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Company: CAPE Environmental
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Telephone: (724) 622-3625
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Project #:
Location: Radford, VA
Sampled By: Y Miyakawa, P. Taylor

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Address: same

**Party listed is responsible for payment of invoice as per CT Laboratories' terms and conditions*

**Client Special Instructions**

**Matrix:**
GW – groundwater SW - surface water WW - wastewater DW - drinking water
S - soil/sediment SL - sludge A - air M - misc/waste

**Turnaround Time**
Normal RUSH*
Date Needed: _____
*Rush analysis requires prior CT Laboratories' approval*
Surcharges:
24 hr 200%
2-3 days 100%
4-9 days 50%

| Collection Date | Collection Time | Matrix | Grab/ Comp | Sample # | Sample ID Description | Filtered? Y/N | TOC 9060A | Anions 9056A | TIC 9060A | Chlorate/Chlorite | COD 410.4 | pH 9040C | TAL Metals | Total # Containers | Designated MS/MSD | CT Lab ID # (Lab use only) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Fill in Spaces with Bottles per Test | | | | | | | | | |
| 8/20 | 0925 | GW | G | | 54MW13 | N | 3 | 3 | 9 | 3 | | | | 18 | X | |
| 8/20 | 1125 | GW | G | | 54MW10 | N | 1 | 1 | 3 | 1 | | | | 6 | | |
| 8/20 | 1328 | GW | G | | 54MW12 | N | 1 | 1 | 3 | 1 | | | | 6 | | |
| 8/20 | 1328 | GW | G | | 54TW12 | N | 1 | 1 | 3 | 1 | | | | 6 | | |
| 8/20 | 1507 | GW | G | | 54MW1 | N | 1 | 1 | 3 | 1 | | | | 6 | | |
| 8/20 | 1558 | GW | G | | 54IDW | N | | | | | 1 | 1 | 1 | 3 | | |

| Relinquished By: | Date/Time | Received By: | Date/Time |
|---|---|---|---|
| Paul T. Taylor | 8/20/2024 1700 | Fedex | 8/20/2024 1700 |
| Received by: | Date/Time | Received for Laboratory by: | Date/Time |

*Lab Use Only*
Ice Present Yes No
Temp _____ IR Gun _____
Cooler # _____

# SGS North America Inc - Orlando

## Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # :

PAGE 1 OF 1

SGS - ORLANDO Quote #

SKIFF #

**Client / Reporting Information**

Company Name: Cape Environmental

Address: 500 Pinnacle Court #100

City: Norcross State: GA Zip: 30071

Project Contact: Matt Feits Email: mfeits@cape-inc.com + chemistry svcs@cape-inc.com

Phone #: (724) 622-3625

Sampler(s) Name(s) (Printed)
Sampler 1: Yoko Miyakawa Sampler 2: Paul Taylor

**Project Information**

Project Name: Radford AAP SWMU 54

Street

City Radford State VA

Project #

Fax #

Client Purchase Order #

**Analytical Information**

LC6850 Perchlorate
LC 8330B XLC3NX

**Matrix Codes**

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid

| SGS Orlando Sample # | Field ID / Point of Collection | COLLECTION DATE (2024) | TIME | SAMPLED BY | MATRIX | TOTAL # OF BOTTLES | OTHER | NONE | HCl | NaOH | HNO3 | H2SO4 | NAOH+ZNAC | DI WATER | MEOH | LC6850 Perchlorate | LC 8330B XLC3NX | | | | | | | | | | | | | | MS/MSD | | | LAB USE ONLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 54MW13 | 8/20 | 0925 | YM/PT | GW | ~~3~~ 9 | | X | | | | | | | | 3 | ~~3~~ 6 | | | | | | | | | | | | | | MS/MSD | | |
| | 54MW10 | 8/20 | 1125 | YM/PT | GW | 3 | | X | | | | | | | | 1 | 2 | | | | | | | | | | | | | | | | |
| | 54MW12 | 8/20 | 1328 | YM/PT | GW | 3 | | X | | | | | | | | 1 | 2 | | | | | | | | | | | | | | | | |
| | 54TW12 | 8/20 | 1328 | YM/PT | GW | 3 | | X | | | | | | | | 1 | 2 | | | | | | | | | | | | | | | | |
| | 54MW1 | 8/20 | 1507 | YM/PT | GW | 3 | | X | | | | | | | | 1 | 2 | | | | | | | | | | | | | | | | |

**Turnaround Time ( Business days)**

- 10 Day (Business) — Approved By: / Date:
- 7 Day
- 5 Day
- 3 Day *RUSH*
- 2 Day *RUSH*
- 1 Day *RUSH*
- Other

Rush T/A Data Available VIA Email or Lablink

**Data Deliverable Information**

- ☐ COMMERCIAL "A" (RESULTS ONLY)
- ☐ COMMERCIAL "B" (RESULTS PLUS QC)
- ☐ REDT1 (EPA LEVEL 3)
- ☐ FULLT1 (EPA LEVEL 4)
- ☐ EDD'S

**Comments / Remarks**

**Sample Custody must be documented below each time samples change possession, including courier delivery.**

| | Relinquished by Sampler/Affiliation | Date Time: | Received By/Affiliation | Relinquished By/Affiliation | Date Time: | Received By/Affiliation |
|---|---|---|---|---|---|---|
| 1 | Paul J. Taylor/Weston | 8/21/2024 1730 | 2 Fedex | 3 | | 4 |
| 5 | Relinquished by/Affiliation | Date Time: | 6 Received By/Affiliation | 7 Relinquished By/Affiliation | Date Time: | 8 Received By/Affiliation |

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

## WELL EVACUATION/SAMPLING FORM

### GENERAL INFORMATION

| | |
|---|---|
| **Radford Army Ammunition Plant SWMUs 49 & 54** | Date: 8/20/24 |
| Well ID: 54MW13 | Weather: 54° Partly Cloudy |
| Sampling Team: P. Taylor, Y. Miyakawa | Sampler's Signature: |

### WELL INSPECTION

| | |
|---|---|
| Protective Casing: (Intact)/Damaged | Well ID Tag Condition: No ID on well |
| Locked: (YES) NO | Measuring Point Marked: YES (NO) |
| Concrete Base: (Intact)/Damaged | Comments: |
| Casing Diameter: ½ in., ¾ in., 1 in., 1 ½, (2 in.), 3 in., 4 in., 6 in., 8 in. | |

### WELL EVACUATION INFORMATION

| | |
|---|---|
| Total Depth (feet Below Top of Casing = ft. BTOC): 25.32 | Well Evacuation Method (peristaltic, bladder pump, other): |
| Depth to Water (ft. BTOC): 22.41 | Screen Interval (ft. BGS): 20-25 |
| Begin Well Evacuation (Time): 0830 | Evacuation Rate (Lpm): 0.2 Lpm |
| Stop Evacuation (Time/Reason): | Restart Time: |
| | Headspace (ppm): 0.0 |

### INDICATOR PARAMETERS

| Time: (5-minute intervals) | Volume Purged (L): | Depth to Water (ft. BTOC): | Temperature (°C): (3%) | Specific Conductivity (µS/cm): (3%) | D.O. (mg/L): | pH: (±0.1) | ORP (mV): (±10 mV) | Turbidity (NTU): (10%) |
|---|---|---|---|---|---|---|---|---|
| 0835 | 1L | 22.80 | 12.6 | 598.7 | 3.05 | 7.17 | -7.2 | 2.34 |
| 0840 | 2L | 22.82 | 12.5 | 593.3 | 3.27 | 7.15 | 20.0 | 1.63 |
| 0845 | 3L | 22.84 | 12.5 | 586.7 | 3.57 | 7.11 | 47.7 | 0.68 |
| 0850 | 4L | 22.84 | 12.4 | 581.2 | 3.76 | 7.11 | 71.8 | 0.01 |
| 0855 | 5L | 22.83 | 12.7 | 576.6 | 3.79 | 7.10 | 89.3 | 0.00 |
| 0900 | 6L | 22.82 | 12.8 | 575.9 | 4.03 | 7.09 | 100.8 | 0.00 |
| 0905 | 7L | 22.83 | 12.9 | 573.1 | 4.04 | 7.08 | 110.6 | 0.00 |
| 0910 | 8L | 22.83 | 12.8 | 572.9 | 4.19 | 7.08 | 116.9 | 0.00 |
| 0915 | 9L | 22.84 | 12.8 | 572.1 | 4.29 | 7.08 | 122.2 | 0.00 |
| 0920 | 10L | 22.84 | 12.9 | 570.7 | 4.27 | 7.08 | 126.4 | 0.00 |
| | | | | | | | | |
| | | | | | | | | |

Red font indicates stabilization criteria to be achieved over three consecutive readings.

| | |
|---|---|
| Final Depth to Water (ft. BTOC): 22.84 | Drawdown Observed (ft): 0.43 |
| Odor: (YES) / NO slight sulfur smell | Well Pumped Dry: YES (NO) |
| End Well Evacuation (Time): 1023 | Total Volume Purged (L): 10 L |

### SAMPLE COLLECTION INFORMATION

| | |
|---|---|
| Sample ID: 54MW13 | PARAMETERS (Circle all applicable): |
| Sample Date & Time: 8/20/24 0925 | SWMU 49: VOCs, MEE, Chloride/Nitrate/Sulfate, TOC, Ferrous Fe, & Mn |
| Duplicate Sample ID: — | SWMU 54: Explosives, Perchlorate, Chlorate/Chlorite, Chloride/Nitrate/Sulfate, TIC, TOC, Ferrous Fe, & Mn |
| Manganese (mg/L): 0.4 | Sample Collection Method: (Low Flow) Other: |
| Ferrous Iron (mg/L): 0.07 | Sample Collection Depth (ft. BTOC): 24.82 |

### COMMENTS

MS/MSDs collected

# WELL EVACUATION/SAMPLING FORM

| | |
|---|---|
| **Radford Army Ammunition Plant SWMUs 49 & 54** | Date: 8/20/24 |
| Well ID: 54MW10 | Weather: 62° Partly cloudy |
| Sampling Team: P. Taylor, Y. Miyakawa | Sampler's Signature: |

## WELL INSPECTION

| | |
|---|---|
| Protective Casing: Intact/Damaged | Well ID Tag Condition: good |
| Locked: YES / NO | Measuring Point Marked: YES / NO |
| Concrete Base: Intact/Damaged | Comments: ID written on casing |
| Casing Diameter: ½ in., ¾ in., 1 in., 1 ½, 2 in., 3 in., 4 in., 6 in., 8 in. | |

## WELL EVACUATION INFORMATION

| | |
|---|---|
| Total Depth (feet Below Top of Casing = ft. BTOC): 30.13 | Well Evacuation Method (peristaltic, bladder pump, other): |
| Depth to Water (ft. BTOC): 16.74 | Screen Interval (ft. BGS): — 25-30 |
| Begin Well Evacuation (Time): 1100 | Evacuation Rate (Lpm): 0.25 |
| Stop Evacuation (Time/Reason): | Restart Time: |
| | Headspace (ppm): 0.0 |

INDICATOR PARAMETERS

| Time: (5-minute intervals) | Volume Purged (L): | Depth to Water (ft. BTOC): | Temperature (°C): (3%) | Specific Conductance (µS/cm): (3%) | D.O. (mg/L): (10%) | pH: (±0.1) | ORP (mV): (±10 mV) | Turbidity (NTU): (10%) |
|---|---|---|---|---|---|---|---|---|
| 1105 | 1.25 | 16.85 | 13.0 | 756 | 0.23 | 7.30 | 18.6 | 0.00 |
| 1110 | 2.50 | 16.89 | 12.6 | 746 | 0.17 | 7.29 | -6.3 | 0.47 |
| 1115 | 3.75 | 16.91 | 12.5 | 738 | 0.17 | 7.29 | -8.4 | 0.00 |
| 1120 | 5.00 | 16.91 | 12.6 | 731 | 0.11 | 7.28 | -9.7 | 0.00 |
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Red font indicates stabilization criteria to be achieved over three consecutive readings.

| | |
|---|---|
| Final Depth to Water ( ft. BTOC): 16.91 | Drawdown Observed (ft): 0.23 |
| Odor: YES / NO Slight Sulfur Smell | Well Pumped Dry: YES / NO |
| End Well Evacuation (Time): 1145 | Total Volume Purged (L): 5.0 |

## SAMPLE COLLECTION INFORMATION

| | |
|---|---|
| Sample ID: 54MW10 | PARAMETERS (Circle all applicable): |
| Sample Date & Time: 8/20/24 1125 | SWMU 49: VOCs, MEE, Chloride/Nitrate/Sulfate, TOC, Ferrous Fe, & Mn |
| Duplicate Sample ID: — | SWMU 54: Explosives, Perchlorate, Chlorate/Chlorite, Chloride/Nitrate/Sulfate, TIC, TOC, Ferrous Fe, & Mn |
| Manganese (mg/L): 1.2 | Sample Collection Method: Low Flow Other: |
| Ferrous Iron (mg/L): 0.11 | Sample Collection Depth (ft. BTOC): 29.63 |

## COMMENTS

## WELL EVACUATION/SAMPLING FORM

### GENERAL INFORMATION

| | |
|---|---|
| **Radford Army Ammunition Plant SWMUs 49 & 54** | Date: 8/20/24 |
| Well ID: 54MW12 | Weather: 68° F, ~~Rain~~ Mostly Sunny |
| Sampling Team: P. Taylor, J. McMahon | Sampler's Signature: |

### WELL INSPECTION

| | |
|---|---|
| Protective Casing: Intact / Damaged | Well ID Tag Condition: NO ID on Well |
| Locked: YES / NO | Measuring Point Marked: YES / NO |
| Concrete Base: Intact / Damaged | Comments: initially cloudy/tan color water |
| Casing Diameter: ½ in., ¾ in., 1 in., 1 ¼ in., 2 in., 3 in., 4 in., 6 in., 8 in. | |

### WELL EVACUATION INFORMATION

| | |
|---|---|
| Total Depth (feet Below Top of Casing = ft. BTOC): 33.00 | Well Evacuation Method: (peristaltic, bladder pump, other) |
| Depth to Water (ft. BTOC): 25.90 | Screen Interval (ft. BTOC): ——— 25-30 |
| Begin Well Evacuation (Time): 1253 | Evacuation Rate (Lpm): 0.3 Lpm |
| Stop Evacuation (Time/Reason): | Restart Time: |
| | Headspace (ppm): 0.0 |

### INDICATOR PARAMETERS

| Time: (5-minute intervals) | Volume Purged (L): | Depth to Water (ft. BTOC): | Temperature (°C): (3%) | Specific Conductivity (µS/cm): (3%) | D.O. (mg/L): (10%) | pH: (±0.1) | ORP (mV): (±10 mV) | Turbidity (NTU): (10%) |
|---|---|---|---|---|---|---|---|---|
| 1258 | 1.5 | 25.93 | 13.1 | 590.3 | 0.44 | 7.32 | 97.3 | 3.03 |
| 1303 | 3.0 | 25.95 | 13.1 | 533.0 | 3.93 | 7.00 | 106.9 | 0.90 |
| 1308 | 4.5 | 25.95 | 13.3 | 428.9 | 6.50 | 6.90 | 125.7 | 0.01 |
| 1313 | 6.0 | 25.96 | 14.1 | 412.8 | 5.79 | 6.86 | 134.6 | 0.04 |
| 1318 | 7.5 | 25.95 | 13.8 | 408.7 | 5.97 | 6.87 | 138.0 | 0.00 |
| 1323 | 9.0 | 25.94 | 13.7 | 404.4 | 5.96 | 6.86 | 140.9 | 0.00 |
| | | | | | | | | |
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Red font indicates stabilization criteria to be achieved over three consecutive readings.

| | |
|---|---|
| Final Depth to Water ( ft. BTOC): 25.94 | Drawdown Observed (ft): 0.04 |
| Odor: YES / NO | Well Pumped Dry: YES / NO |
| End Well Evacuation (Time): 1412 | Total Volume Purged (L): 9L |

### SAMPLE COLLECTION INFORMATION

| | |
|---|---|
| Sample ID: 54MW12 | PARAMETERS (Circle all applicable): |
| Sample Date & Time: 8/20/24 1328 | SWMU 49: VOCs, MEE, Chloride/Nitrate/Sulfate, TOC, Ferrous Fe, & Mn |
| Duplicate Sample ID: 54TW12 | SWMU 54: Explosives, Perchlorate, Chlorate/Chlorite, Chloride/Nitrate/Sulfate, TIC, TOC, Ferrous Fe, & Mn |
| Manganese (mg/L): 0.3 | Sample Collection Method: Low Flow Other: |
| Ferrous Iron (mg/L): 0.08 | Sample Collection Depth (ft. BTOC): 32.5 |

### COMMENTS

Field Duplicate collected

# WELL EVACUATION/SAMPLING FORM

## GENERAL INFORMATION

| | |
|---|---|
| **Radford Army Ammunition Plant SWMUs 49 & 54** | Date: 8/20/24 |
| Well ID: 54MW1 | Weather: 72°, Mostly Sunny |
| Sampling Team: P. Taylor, Y. Miyazaki | Sampler's Signature: |

## WELL INSPECTION

| | |
|---|---|
| Protective Casing: (Intact)/Damaged | Well ID Tag Condition: Good |
| Locked: YES / NO | Measuring Point Marked: (YES) / NO |
| Concrete Base: (Intact)/Damaged | Comments |
| Casing Diameter: ½ in., ¾ in., 1 in., 1 ½, (2 in.), 3 in., 4 in., 6 in., 8 in. | |

## WELL EVACUATION INFORMATION

| | |
|---|---|
| Total Depth (feet Below Top of Casing = ft. BTOC): 57.42 | Well Evacuation Method: (peristaltic pump, other) |
| Depth to Water (ft. BTOC): 20.69 | Screen Interval (ft. BGS): 50-55 |
| Begin Well Evacuation (Time): 1432 | Evacuation Rate (Lpm): 0.25 |
| Stop Evacuation (Time/Reason): | Restart Time: |
| | Headspace (ppm): 0.0 |

## INDICATOR PARAMETERS

| Time: (5-minute intervals) | Volume Purged (L): | Depth to Water (ft. BTOC): | Temperature (°C): (3%) | Specific Conductivity (µS/cm): (3%) | D.O. (mg/L): (10%) | pH: (±0.1) | ORP (mV): (±10 mV) | Turbidity (NTU): (10%) |
|---|---|---|---|---|---|---|---|---|
| 1437 | 1.25 | 21.28 | 13.7 | 408.2 | 0.86 | 7.64 | 83.6 | 0.00 |
| 1442 | 2.5 | 21.93 | 13.6 | 408.5 | 0.85 | 7.68 | 69.1 | 0.00 |
| 1447 | 3.75 | 22.10 | 13.6 | 407.3 | 1.00 | 7.69 | 60.5 | 0.00 |
| 1452 | 5.0 | 22.53 | 13.5 | 407.1 | 1.21 | 7.65 | 56.6 | 0.00 |
| 1457 | 6.25 | 22.86 | 13.6 | 407.1 | 1.23 | 7.68 | 54.3 | 0.00 |
| 1502 | 7.5 | 23.32 | 13.6 | 406.1 | 1.20 | 7.67 | 51.3 | 0.00 |
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Red font indicates stabilization criteria to be achieved over three consecutive readings

| | |
|---|---|
| Final Depth to Water (ft. BTOC): 23.32 | Drawdown Observed (ft): 2.63 |
| Odor: YES / (NO) | Well Pumped Dry: YES / (NO) |
| End Well Evacuation (Time): 1525 | Total Volume Purged (L): 7.5 |

## SAMPLE COLLECTION INFORMATION

| | |
|---|---|
| Sample ID: 54MW1 | PARAMETERS (Circle all applicable): |
| Sample Date & Time: 8/20/24 1507 | SWMU 49: VOCs, MEE, Chloride/Nitrate/Sulfate, TOC, Ferrous Fe, & Mn |
| Duplicate Sample ID: — | SWMU 54: Explosives, Perchlorate, Chlorate/Chlorite, Chloride/Nitrate/Sulfate, TIC, TOC, Ferrous Fe, & Mn |
| Manganese (mg/L): 0.7 | Sample Collection Method: (Low Flow) Other: |
| Ferrous Iron (mg/L): 0.09 | Sample Collection Depth (ft. BTOC): 56.92 |

## COMMENTS

# Synoptic Water Level Measurements

## Radford Army Ammunition Plant SWMUs 49 & 54

## Radford AAP, Virginia

| Well Identification | Date | Time | Headspace Reading (ppm) | Depth to Water (ft BTOC) | Total Well Depth (ft BTOC) | Notes/Field Observations |
|---|---|---|---|---|---|---|
| **SWMU 49** | | | | | | |
| 13MW2 | 8/19/24 | 1320 | 0.0 | 21.96 | 30.45 | Soft bottom |
| 13MW3 | 8/19/24 | 0942 | 0.0 | 15.47 | 22.46 | buildup/root mass over pump inside well, + slight sulfur smell |
| 13MW4 | 8/19/24 | 0918 | 0.0 | 17.36 | 25.35 | Soft bottom |
| 13MW5 | 8/19/24 | 0905 | 0.0 | 17.27 | 25.34 | Soft bottom |
| 49MW04 | 8/19/24 | ~~1205~~ ~~0918~~ | ~~0.0~~ ~~0.0~~ | ~~21.19~~ ~~17.36~~ | ~~72.82~~ ~~25.35~~ | Soft bottom |
| 49MW05 | 8/19/24 | 1420 ~~0905~~ | 0.0 ~~0.0~~ | 20.39 ~~17.27~~ | 39.49 ~~25.34~~ | Soft bottom ~~Soft bottom~~ |
| 48MW1 | | | | | | |
| 48MW2 | | | | | | |
| 48MW3 | | | | | | |
| 48MW6 | | | | | | |
| 48MW7 | | | | | | |
| 49MW01 | | | | | | |
| 49MW02 | | | | | | |
| 49MW03 | | | | | | |
| 50MW2 | | | | | | |
| **SWMU 54** | | | | | | |
| 54MW1 | 8/20/24 | 1421 | 0.0 | 20.69 | 57.42 | v. soft bottom |
| 54MW10 | 8/20/24 | 1053 | 0.0 | 16.74 | 30.13 | hard bottom |
| 54MW12 | 8/20/24 | 1240 | 0.0 | 25.90 | 33.00 | cloudy/tan colored |
| 54MW13 | 8/20/24 | 0815 | 0.0 | 22.41 | 25.32 | Soft bottom |

Key: ppm = parts per million ft = feet TOC = top of casing BTOC = below top of casing

# 320-10 FIELD INSPECTION REPORT

| | | | | |
|---|---|---|---|---|
| **Contract Number:** | W912DR19D0004 | **Task Order No:** | W912DR24F0222 | |
| **CAPE Project No.:** | 10409-0222 | **Date:** | 20-Aug-24 | |
| **Project Location:** | Radford Army Ammunition Plant, Radford, VA | | | |
| **DFW:** | SWMU 49 & SWMU 54 LTM Sampling | **Spec Sect.** | | |
| **Inspection Performed by:** | Yoko Miyakawa | | | |

**1. DESCRIPTION OF WORK INSPECTED:**

**SWMU-54: Gauged and sampled 54MW13 (including MS/MSD), 54MW10, 54MW12 (including FD), and 54MW1. Dumped approximately 31.5 L of IDW water into labeled, designated 55-gal drum at ACD/BAE storage facility. Sample 54IDW was taken for waste characterization.**

**2. TYPE OF INSPECTION:**

☑ Visual ☐ Dimensional

☐ Non-Destructive Examination (NDE) ☐ Other _____

☐ In Progress ☐ Final

**3. REFERENCED DRAWINGS / STANDARDS:**

**See below aerial view**

**4. FINDINGS:**

**54MW13 and 54MW12 were not on the map.**
**Labeled SWMU-54 designated drum.**

**5. SKETCH, IF APPLICABLE:**




**Inspector:** _____

**Quality Control Representative:** _____

CAPE

# 320-16 WASTE INVENTORY SUMMARY

| Contract Number | W912DR19D0004 | DO/TO No: | W912DR24F0222 | CAPE Project # | 10409-0222-002-003 | Project Location | RAAP, Radford, VA |
|---|---|---|---|---|---|---|---|

| Process Generating Waste | *Groundwater produced through purging and sampling the monitoring wells. IDW water from SWMU 48/49 is captured and maintained separately from SWMU 54 IDW water throughout the handling process.* |
|---|---|

| Load Number | Date | Description | Quantity (TNS or GAL) | Waste Classification | Receiving Disposal Facility | Method of Disposal | Date of Disposal or Destruction |
|---|---|---|---|---|---|---|---|
| 1 | 8/19/24 | IDW waste from SWMU 49 | 7 gal | Pending Analysis | —— | | |
| 2 | 8/20/24 | IDW + decon water from SWMU 54 | 8 gal | Pending Analysis | —— | | |
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**TOTAL QUANTITY:** Page 1 of 1 **0.00**

CAPE

# SITE CONTROL LOG

**Date / Day:** Tuesday, 8/20/24

**Project Name/Number:** RADFORD ARMY AMMUNITION PLANT-SWMU 49 & SWMU 54 SAMPLING / CONTRACT W912DR19D0004, TASK ORDER W912DR24F0222

**Project Location:** RADFORD ARMY AMMUNITION PLANT, RADFORD, VA

| Time | | | | DO YOU HAVE AN INJURY TO REPORT? Y/N | |
|---|---|---|---|---|---|
| In | Out | Name (Print) | Signature | | Organization |
| 0730 | 1615 | YOKO MIYAKAWA | | N | CAPE |
| 0730 | 1615 | Paul I. Taylor | | N | Weston |
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# TAILGATE SAFETY MEETING RECORD

| | |
|---|---|
| **DATE/TIME:** | 8/20/24 |
| **PROJECT NAME:** | Radford Army Ammunition Plant-SWMU 49 & SWMU 54 Sampling |
| **PROJECT LOCATION:** | Radford Army Ammunition Plant, Radford, VA |
| **CAPE PROJECT NUMBER:** | CO: W912DR19D0004, TO: W912DR24F0222 |
| **PROJECT MANAGER:** | Matthew Feits |
| **SITE SUPERINTENDENT:** | |
| **SITE HEALTH & SAFETY:** | Yoko Miyakawa |

| **SAFETY TOPICS PRESENTED** | |
|---|---|
| Biological Hazards - Ticks, Spiders, Mosquitos, Wasps, Snakes, + Poison oak/ivy/sumac. | |
| **Protective Clothing/Equipment:** | |
| Modified Level D PPE | Gloves as required |
| High visibility vests/outerwear as required | |
| Safety Toe Boots and Safety Glasses required | |
| **Chemical Hazards:** | |
| Potential for contact with the ground water and preservatives | |
| **Physical Hazards:** | |
| Slip, trip, and falls | Inclement weather |
| Heat stress | Drum handling |
| Biological hazards | |
| **Emergency Procedures:** | |
| Provide first aid to your level of training. Contact 911 for Emergency if required. Notify your supervisor and the SSHO. | |
| **Emergency Hospital:** | Carilion New River Valley Medical Center, 2900 Lamb Cir, Christiansburg, VA 24073 |
| **Hospital Telephone Number:** | (540) 731-2000 |
| **Hospital Direction:** | Map in APP |
| **Special Equipment:** | |
| By signing this form, I confirm that I have not been previously injured on this job without informing my supervisor, and that I will immediately report all incidents/injuries to my supervisors in the future. | |

**SAFETY MEETING ATTENDEES**

| # | Printed Name | Initial | # | Printed Name | Initial |
|---|---|---|---|---|---|
| 1. | Yoko Miyakawa | YM | 16. | | |
| 2. | Paul I. Taylor | PT | 17. | | |
| 3. | | | 18. | | |
| 4. | | | 19. | | |
| 5. | | | 20. | | |
| 6. | | | 21. | | |
| 7. | | | 22. | | |
| 8. | | | 23. | | |
| 9. | | | 24. | | |
| 10. | | | 25. | | |
| 11. | | | 26. | | |
| 12. | | | 27. | | |
| 13. | | | 28. | | |
| 14. | | | 29. | | |
| 15. | | | 30. | | |

**Meeting Conducted By:**

Signature _____

Address: 305 ROANOKE STREET
CHRISTIANSBURG
VA 24073
Location: WALA
Device ID: -BTC01

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# SGS North America Inc - Orlando
## Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # :

PAGE 1 OF 1

SGS - ORLANDO Quote #

SKIFF #

### Client / Reporting Information

Company Name: CAPE Environmental
Address: 500 Pinnacle Court #100
City: Norcross State: GA Zip: 30071
Project Contact: Matt Fetts Email: mfetts@cape-inc.com + chemistry SVCS@cape-inc.com
Phone #: (724) 622-3625
Sampler(s) Name(s) (Printed)
Sampler 1: Yoko Miyakawa Sampler 2: Paul Taylor

### Project Information

Project Name: Radford AAP SWMU 54
Street
City Radford State VA
Project #
Fax #
Client Purchase Order #

### Analytical Information

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid

| SGS Orlando Sample # | Field ID / Point of Collection | COLLECTION DATE (2024) | TIME | SAMPLED BY: | MATRIX | TOTAL # OF BOTTLES | CONTAINER INFORMATION: OTHER | NONE | HCl | NaOH | HNO3 | H2SO4 | NAOH+ZNAC | DI WATER | MEOH | LC6850 Perchlorate | LC8330B XLC3NX | | | | | | | | LAB USE ONLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 54MW13 | 12/10 | 0910 | YM/PT | GW | 3 | | X | | | | | | | | 1 | 2 | | | | | | | | |
| | 54MW10 | 12/10 | 1045 | YM/PT | GW | 3 | | X | | | | | | | | 1 | 2 | | | | | | | | |
| | ~~54MW~~ 54TW10 | 12/10 | 1045 | YM/PT | GW | 3 | | X | | | | | | | | 1 | 2 | | | | | | | | |
| | 54MW12 | 12/10 | 1215 | YM/PT | GW | 9 | | X | | | | | | | | 3 | 6 | | | MS/MSD | | | | | |
| | 54MW1 | 12/10 | 1350 | YM/PT | GW | 3 | | X | | | | | | | | 1 | 2 | | | | | | | | |

### Turnaround Time ( Business days)

10 Day (Business)
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other

Approved By: / Date:

Rush T/A Data Available VIA Email or Lablink

### Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULLT1 (EPA LEVEL 4)
- [ ] EDD'S

### Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

| | | | | | |
|---|---|---|---|---|---|
| Relinquished by Sampler/Affiliation 1 | Date Time: 12/10/24 1700 | Received By/Affiliation 2 Fedex | Relinquished By/Affiliation 3 | Date Time: | Received By/Affiliation 4 |
| Relinquished by/Affiliation 5 | Date Time: | Received By/Affiliation 6 | Relinquished By/Affiliation 7 | Date Time: | Received By/Affiliation 8 |

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

http://www.sgs.com/en/terms-and-conditions

Rev. 02/2017

# CHAIN OF CUSTODY

Page 1 of 1

Company: CAPE Environmental
Project Contact: Matt Feits
Telephone: (724) 622-3625
Project Name: Radford AAP SWMU 54
Project #:
Location: Radford, VA
Sampled By: Y. Miyakawa, P. Taylor

CT LABORATORIES

1230 Lange Court, Baraboo, WI 53913
608-356-2760 Fax 608-356-2766
www.ctlaboratories.com

*Lab Use Only*
*Place Header Sticker Here:*

Program:
QSM RCRA SDWA NPDES
Solid Waste Other _____

PO #

Report To: ChemistrySVCS@cape-inc.com
EMAIL: mfeits@cape-inc.com
Company: CAPE Environmental Mgmt
Address: 500 Pinnacle Ct. #100 Norcross, GA 30071

Invoice To:*
EMAIL:
Company: Same
Address:

*Party listed is responsible for payment of invoice as per CT Laboratories' terms and conditions

**Client Special Instructions**

Matrix:
GW – groundwater SW - surface water WW - wastewater DW - drinking water
S - soil/sediment SL - sludge A - air M - misc/waste

| 2024 Collection Date | Time | Matrix | Grab/ Comp | Sample # | Sample ID Description | Filtered? Y/N | TOC 9060A | Anions 9056A | TIC 9060A | Chlorate/Chlorite | COD 410.4 | pH 9040C | Total Metals | Total # Containers | Designated MS/MSD | CT Lab ID # (Lab use only) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/10 | 0910 | GW | G | | 54MW13 | N | 1 | 1 | 3 | 1 | | | | 6 | | |
| 12/10 | 1045 | GW | G | | 54MW10 | N | 1 | 1 | 3 | 1 | | | | 6 | | |
| 12/10 | 1045 | GW | G | | 54TW10 | N | 1 | 1 | 3 | 1 | | | | 6 | | |
| 12/10 | 1215 | GW | G | | 54MW12 | N | 3 | 3 | 9 | 3 | | | | 18 | X | |
| 12/10 | 1350 | GW | G | | 54MW1 | N | 1 | 1 | 3 | 1 | | | | 6 | | |
| 12/10 | 1450 | GW | G | | 54IDW | N | | | | | 1 | 1 | 1 | 3 | | |

ANALYSES REQUESTED — Fill in Spaces with Bottles per Test

Turnaround Time
Normal RUSH*
Date Needed: _____
*Rush analysis requires prior CT Laboratories' approval*
Surcharges:
24 hr 200%
2-3 days 100%
4-9 days 50%

| Relinquished By: | Date/Time | Received By: | Date/Time |
|---|---|---|---|
| | 12/10/2024 1700 | Fedex | 12/10/2024 1700 |
| Received by: | Date/Time | Received for Laboratory by: | Date/Time |

*Lab Use Only*
Ice Present Yes No
Temp _____ IR Gun _____
Cooler # _____

## WELL EVACUATION/SAMPLING FORM

### GENERAL INFORMATION

| | |
|---|---|
| **Radford Army Ammunition Plant SWMUs 49 & 54** | Date 12/10/24 |
| Well ID 54 MW13 | Weather 44°, Cloudy w/ dense fog |
| Sampling Team P Taylor, Y. Matanawa | Sampler's Signature |

### WELL INSPECTION

| | |
|---|---|
| Protective Casing (Intact) Damaged | Well ID Tag Condition NO Label |
| Locked (YES) NO | Measuring Point Marked YES (NO) |
| Concrete Base (Intact) Damaged | Comments |
| Casing Diameter ¼ in, ¾ in, 1 in, 1 ¼ in, (2 in), 3 in, 4 in, 6 in, 8 in | |

### WELL EVACUATION INFORMATION

| | |
|---|---|
| Total Depth (feet Below Top of Casing = ft BTOC) 25.28 | Well Evacuation Method (peristaltic, bladder pump, other) |
| Depth to Water (ft BTOC) 22.52 | Screen Interval (ft BGS) 20-25 |
| Begin Well Evacuation (Time) 0840 | Evacuation Rate (Lpm) 0.2 |
| Stop Evacuation (Time Reason) | Restart Time |
| | Headspace (ppm) ~~0.0~~ 0.1 |

### INDICATOR PARAMETERS

| Time: (5-minute intervals) | Volume Purged (L): | Depth to Water (ft. BTOC): | Temperature (°C): (3%) | Specific Conductivity (µS/cm): (3%) | D.O. (mg/L): (10%) | pH: (±0.1) | ORP (mV): (±10 mV) | Turbidity (NTU): (10%) |
|---|---|---|---|---|---|---|---|---|
| 0845 | 1.0 | 22.99 | 13.3 | 642.4 | 3.77 | 7.03 | 15.1 | 21.23 |
| 0850 | 2.0 | 23.03 | 13.3 | 620.2 | 4.25 | 7.04 | 49.8 | 10.18 |
| 0855 | 3.0 | 23.03 | 13.3 | 613.4 | 4.44 | 7.02 | 60.3 | 5.12 |
| 0900 | 4.0 | 23.03 | 13.1 | 611.4 | 4.65 | 7.00 | 66.7 | 0.33 |
| 0905 | 5.0 | 23.03 | 13.3 | 610.1 | 4.84 | 7.00 | 70.3 | 0.00 |
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Red font indicates stabilization criteria to be achieved over three consecutive readings

| | |
|---|---|
| Final Depth to Water (ft BTOC) 23.03 | Drawdown Observed (ft) 0.51 |
| Odor (YES) NO Slight Sulfur Smell | Well Pumped Dry YES (NO) |
| End Well Evacuation (Time) 0952 | Total Volume Purged (L) 5.0 |

### SAMPLE COLLECTION INFORMATION

| | |
|---|---|
| Sample ID 54 MW 13 | PARAMETERS (Circle all applicable) |
| Sample Date & Time 12/10/24 0910 | SWMU 49: VOCs, MEK, Chloride/Nitrate/Sulfate, TOC, Ferrous Fe, & Mn |
| Duplicate Sample ID | SWMU 54: Explosives, Perchlorate, Chlorate Chlorite, Chloride/Nitrate Sulfate, TIC, TOC, Ferrous Fe, & Mn |
| Manganese (mg/L) 0.1 | Sample Collection Method (Low Flow) Other |
| Ferrous Iron (mg/L) 0.11 | Sample Collection Depth (ft BTOC) 24.7 |

### COMMENTS

## WELL EVACUATION/SAMPLING FORM

### GENERAL INFORMATION

| | |
|---|---|
| **Radford Army Ammunition Plant SWMU's 49 & 54** | Date 12/10/24 |
| Well ID 54MW10 | Weather 49° Cloudy, Foggy |
| Sampling Team P. Taylor, Y. McClain | Sampler's Signature |

### WELL INSPECTION

| | |
|---|---|
| Protective Casing (Intact) Damaged | Well ID Tag Condition Labeled inside on casing |
| Locked (YES) NO | Measuring Point Marked (YES) NO |
| Concrete Base Intact Damaged buried, unknown | Comments |
| Casing Diameter ½ in, ¾ in, 1 in, 1½ in, 2 in, 3 in, (4 in), 6 in, 8 in | |

### WELL EVACUATION INFORMATION

| | |
|---|---|
| Total Depth (feet Below Top of Casing = ft BTOC) 30.28 | Well Evacuation Method (peristaltic) bladder pump, other) |
| Depth to Water (ft BTOC) 16.82 | Screen Interval (ft BGS) 25-30 |
| Begin Well Evacuation (Time) 1020 | Evacuation Rate (Lpm) 0.25 |
| Stop Evacuation (Time/Reason) | Restart Time |
| | Headspace (ppm) 0.0 |

### INDICATOR PARAMETERS

| Time: (5-minute intervals) | Volume Purged (L): | Depth to Water (ft. BTOC): | Temperature (°C): (3%) | Specific Conductivity (µS/cm): (3%) | D.O. (mg/L): (10%) | pH: (±0.1) | ORP (mV): (±10 mV) | Turbidity (NTU): (10%) |
|---|---|---|---|---|---|---|---|---|
| 1025 | 1.25 | 16.97 | 14.0 | 865 | 0.67 | 7.17 | -12.2 | 0.00 |
| 1030 | 2.5 | 16.98 | 14.1 | 846 | 0.54 | 7.18 | -9.7 | 0.06 |
| 1035 | 3.75 | 16.98 | 14.1 | 838 | 0.53 | 7.17 | -11.5 | 0.00 |
| 1040 | 5.0 | 16.97 | 14.1 | 827 | 0.52 | 7.18 | -12.6 | 0.00 |
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Red font indicates stabilization criteria to be achieved over three consecutive readings

| | |
|---|---|
| Final Depth to Water (ft BTOC) 16.97 | Drawdown Observed (ft) 0.15 |
| Odor (YES) / NO Slight Sulfur smell | Well Pumped Dry YES (NO) |
| End Well Evacuation (Time) 1110 | Total Volume Purged (L) 5.0 |

### SAMPLE COLLECTION INFORMATION

| | |
|---|---|
| Sample ID 54MW10 | PARAMETERS (Circle all applicable) |
| Sample Date & Time 12/10/24 1045 | SWMU 49 VOCs, MEF, Chloride/Nitrate/Sulfate, TOC, Ferrous Fe. & Mn |
| Duplicate Sample ID 54TW10 | SWMU 54 Explosives, Perchlorate, Chlorate Chlorite, Chloride/Nitrate/Sulfate, TIC, TOC Ferrous Fe. & Mn |
| Manganese (mg/L) 0.0 | Sample Collection Method (Low Flow) Other |
| Ferrous Iron (mg/L) 0.09 | Sample Collection Depth (ft BTOC) 29.7 |

### COMMENTS

# WELL EVACUATION/SAMPLING FORM

## GENERAL INFORMATION

| | |
|---|---|
| **Radford Army Ammunition Plant SWMUs 49 & 54** | Date: 12/10/24 |
| Well ID: 54MW12 | Weather: 47°F, Cloudy, 54° |
| Sampling Team: P. Taylor, Y. McMahan | Sampler's Signature: |

## WELL INSPECTION

| | |
|---|---|
| Protective Casing: Intact/Damaged | Well ID Tag Condition: Not labeled |
| Locked: YES / NO | Measuring Point Marked: YES / NO |
| Concrete Base: Intact/Damaged | Comments: |
| Casing Diameter: ½ in, ¾ in, 1 in, 1 ¼, 2 in, 3 in, 4 in, 6 in, 8 in | |

## WELL EVACUATION INFORMATION

| | |
|---|---|
| Total Depth (feet Below Top of Casing = ft. BTOC): 32.92 | Well Evacuation Method (peristaltic, bladder pump, other): |
| Depth to Water (ft. BTOC): 25.98 | Screen Interval (ft. BGS): 25-30 |
| Begin Well Evacuation (Time): 1135 | Evacuation Rate (Lpm): 0.25 |
| Stop Evacuation (Time Reason): | Restart Time: |
| | Headspace (ppm): 0.0 |

## INDICATOR PARAMETERS

| Time: (5-minute intervals) | Volume Purged (L): | Depth to Water (ft. BTOC): | Temperature (°C): (3%) | Specific Conductivity (µS/cm): (3%) | D.O. (mg/L): (10%) | pH: (±0.1) | ORP (mV): (±10 mV) | Turbidity (NTU): (10%) |
|---|---|---|---|---|---|---|---|---|
| 1140 | 1.25 | 25.97 | 13.5 | 643 | 0.62 | 7.19 | 48.6 | 23.33 |
| 1145 | 2.5 | 25.97 | 13.5 | 621.7 | 3.08 | 6.94 | 55.6 | 12.56 |
| 1150 | 3.75 | 25.97 | 13.6 | 465.3 | 6.09 | 6.65 | 75.9 | 6.32 |
| 1155 | 5.0 | 25.98 | 13.7 | 420.7 | 6.67 | 6.68 | 85.3 | 1.11 |
| 1200 | 6.25 | 25.97 | 13.7 | 410.1 | 6.63 | 6.71 | 90.4 | 0.00 |
| 1205 | 7.5 | 25.97 | 13.8 | 404.1 | 6.79 | 6.62 | 94.0 | 0.00 |
| 1210 | 8.75 | 25.97 | 13.7 | 399.6 | 6.86 | 6.49 | 96.8 | 0.00 |
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Red font indicates stabilization criteria to be achieved over three consecutive readings

| | |
|---|---|
| Final Depth to Water (ft. BTOC): 25.97 | Drawdown Observed (ft): No |
| Odor: YES / NO Sulfur smell | Well Pumped Dry: YES / NO |
| End Well Evacuation (Time): 1300 | Total Volume Purged (L): 8.75 |

## SAMPLE COLLECTION INFORMATION

| | |
|---|---|
| Sample ID: 54MW12 | PARAMETERS (Circle all applicable): |
| Sample Date & Time: 12/10/24 1215 | SWMU 49: VOCs, MEE, Chloride/Nitrate/Sulfate, TOC, Ferrous Fe, & Mn |
| Duplicate Sample ID: ——— | SWMU 54: Explosives, Perchlorate, Chlorate/Chlorite, Chloride/Nitrate/Sulfate, TIC, TOC, Ferrous Fe, & Mn |
| Manganese (mg/L): 0.2 | Sample Collection Method: Low Flow Other: |
| Ferrous Iron (mg/L): 0.10 | Sample Collection Depth (ft. BTOC): 32.4 |

## COMMENTS

MS/MSDs taken here.

## WELL EVACUATION/SAMPLING FORM

### GENERAL INFORMATION

| | |
|---|---|
| **Radford Army Ammunition Plant SWMUs 49 & 54** | Date 12/10/24 |
| Well ID 54MW1 | Weather 61°, Mostly Cloudy |
| Sampling Team P. Taylor, Y. Miyakawa | Sampler's Signature |

### WELL INSPECTION

| | |
|---|---|
| Protective Casing (Intact) Damaged | Well ID Tag Condition Good, lasered on cap. |
| Locked (YES) / NO | Measuring Point Marked (YES) / NO |
| Concrete Base (Intact) Damaged | Comments |
| Casing Diameter ½ in, ¾ in, 1 in, 1 ½, 2 in, 3 in, (4 in) 6 in, 8 in | |

### WELL EVACUATION INFORMATION

| | |
|---|---|
| Total Depth (feet Below Top of Casing = ft BTOC) 57.73 | Well Evacuation Method (peristaltic) bladder pump, other) |
| Depth to Water (ft BTOC) 20.75 | Screen Interval (ft BGS) 50-55 |
| Begin Well Evacuation (Time) 1325 | Evacuation Rate (Lpm) 0.2 |
| Stop Evacuation (Time/Reason) | Restart Time |
| | Headspace (ppm) 0.0 |

### INDICATOR PARAMETERS

| Time: (5-minute intervals) | Volume Purged (L): | Depth to Water (ft. BTOC): | Temperature (°C): (3%) | Specific Conductivity (µS/cm): (3%) | D.O. (mg/L): (10%) | pH: (±0.1) | ORP (mV): (±10 mV) | Turbidity (NTU): (10%) |
|---|---|---|---|---|---|---|---|---|
| 1330 | 1.0 | 21.38 | 13.8 | 457.7 | 0.55 | 7.43 | -39.8 | 0.00 |
| 1335 | 2.0 | 21.76 | 13.9 | 457.8 | 0.47 | 7.39 | -35.5 | 0.00 |
| 1340 | 3.0 | 22.07 | 13.8 | 457.9 | 0.47 | 7.38 | -33.6 | 0.00 |
| 1345 | 4.0 | 22.39 | 13.9 | 458.0 | 0.47 | 7.36 | -31.6 | 0.00 |
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Red font indicates stabilization criteria to be achieved over three consecutive readings

| | |
|---|---|
| Final Depth to Water (ft BTOC) 22.39 | Drawdown Observed (ft) 1.84 |
| Odor (YES) / NO Sulfur smell | Well Pumped Dry YES (NO) |
| End Well Evacuation (Time) 1405 | Total Volume Purged (L) 4.0 |

### SAMPLE COLLECTION INFORMATION

| | |
|---|---|
| Sample ID 54MW1 | PARAMETERS (Circle all applicable) |
| Sample Date & Time 12/10/24 1340 | SWMU 49 VOCs, MEE, Chloride/Nitrate/Sulfate, TOC, Ferrous Fe, & Mn |
| Duplicate Sample ID | (SWMU 54) Explosives, Perchlorate, Chlorate/Chlorite, Chloride/Nitrate/Sulfate, TIC, TOC, Ferrous Fe, & Mn |
| Manganese (mg/L) 0.3 | Sample Collection Method (Low Flow) Other |
| Ferrous Iron (mg/L) 0.12 | Sample Collection Depth (ft BTOC) 56.8 |

### COMMENTS

IDW Sample taken — 54IDW @ 1450

# Synoptic Water Level Measurements

## Radford Army Ammunition Plant SWMUs 49 & 54

## Radford AAP, Virginia

| Well Identification | Date | Time | Headspace Reading (ppm) | Depth to Water (ft BTOC) | Total Well Depth (ft BTOC) | Notes/Field Observations |
|---|---|---|---|---|---|---|
| **SWMU 49** | | | | | | |
| 13MW2 | 12/9/24 | 14.48 | 0.0 | 21.84 | 30.43 | |
| 13MW3 | 12/9/24 | 1150 | 0.0 | 15.69 | 22.38 | slight sulfur smell, hard bottom |
| 13MW4 | 12/9/24 | 1022 | 0.0 | 17.56 | 26.30 | hard bottom |
| 13MW5 | 12/9/24 | 0815 | 0.0 | 17.91 | 25.30 | hard bottom |
| 49MW04 | 12/9/24 | ~~1029~~ 1350 YM | 0.0 | ~~17.51~~ 21.48 YM | ~~32.70~~ 32.71 YM | hard bottom |
| 49MW05 | 12/9/24 | 1530 | 0.0 | 20.20 | 39.42 | |
| 48MW1 | | | | | | |
| 48MW2 | | | | | | |
| 48MW3 | | | | | | |
| 48MW6 | | | | | | |
| 48MW7 | | | | | | |
| 49MW01 | | | | | | |
| 49MW02 | | | | | | |
| 49MW03 | | | | | | |
| 50MW2 | | | | | | |
| **SWMU 54** | | | | | | |
| 54MW1 | 12/10/24 | 1312 | 0.0 | 20.75 | 57.33 | hard bottom |
| 54MW10 | 12/10/24 | 1008 | 0.0 | 16.82 | 30.28 | 50 ft bottom |
| 54MW12 | 12/10/24 | 1120 | 0.0 | 25.98 | 32.92 | hard bottom |
| 54MW13 | 12/10/24 | 0840 | 0.1 | 22.52 | 25.28 | hard bottom |

Key: ppm = parts per million ft = feet TOC = top of casing BTOC = below top of casing

# 320-10 FIELD INSPECTION REPORT

| | | | | |
|---|---|---|---|---|
| **Contract Number:** | W912DR19D0004 | **Task Order No:** | W912DR24F0222 | |
| **CAPE Project No.:** | 10409-0222 | **Date:** | 10-Dec-24 | |
| **Project Location:** | Radford Army Ammunition Plant, Radford, VA | | | |
| **DFW:** | SWMU 49 & SWMU 54 LTM Sampling | **Spec Sect.** | | |
| **Inspection Performed by:** | Yoko Miyakawa | | | |

**1. DESCRIPTION OF WORK INSPECTED:**

**SWMU-54: Gauged and sampled wells 54MW13, 54MW10 (including FD "54TW10"), 54MW12 (including MS/MSD), and 54MW1.**
**Sample "54IDW" taken for waste characterization analysis.**

**2. TYPE OF INSPECTION:**

☑ Visual ☐ Dimensional
☐ Non-Destructive Examination (NDE) ☐ Other _____

☐ In Progress ☐ Final

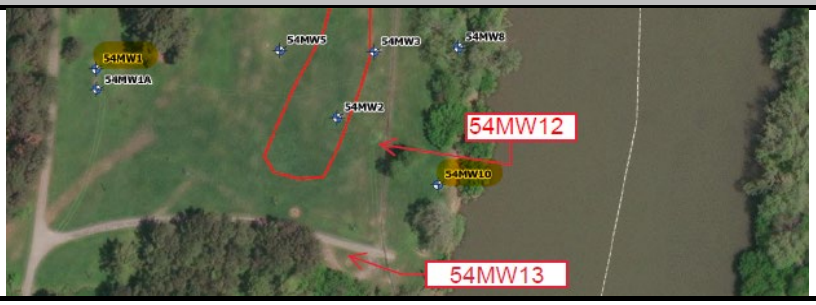
**3. REFERENCED DRAWINGS / STANDARDS:**

**See below aerial view**

**4. FINDINGS:**

**Area is washed out from the hurricane. Fence work was also occurring nearby.**
**55-gallon drum designated for SWMU-54 already has about 10 gallons inside. Approximately 10 gallons of IDW water were added and an IDW sample was taken.**

**5. SKETCH, IF APPLICABLE:**




**Inspector:**

**Quality Control Representative:**

CAPE

# 320-16 WASTE INVENTORY SUMMARY

| Contract Number | W912DR19D0004 | DO/TO No: | W912DR24F0222 | CAPE Project # | 10409-0222-002-003 | Project Location | RAAP, Radford, VA |
|---|---|---|---|---|---|---|---|

| Process Generating Waste | *Groundwater produced through purging and sampling the monitoring wells. IDW water from SWMU 48/49 is captured and maintained separately from SWMU 54 IDW water throughout the handling process.* |
|---|---|

| Load Number | Date | Description | Quantity (TNS or GAL) | Waste Classification | Receiving Disposal Facility | Method of Disposal | Date of Disposal or Destruction |
|---|---|---|---|---|---|---|---|
| 1 | 8/19/24 | IDW waste from SWMU 49 | 7 gal | Pending Analysis | — | | |
| 2 | 8/20/24 | IDW + decon water from SWMU 54 | 8 gal | Pending Analysis | — | | |
| 3 | 8/21/24 | IDW + decon water from SWMU 49 | 4 gal | Pending Analysis | — | | |
| 4 | 8/22/24 | IDW + decon water from SWMU 49 | 6 gal | Pending Analysis | — | | |
| 5 | | | | | | | |
| 6 | 12/9/24 | IDW from SWMU 49 | 15 gal | Pending Analysis | — | | |
| 7 | 12/10/24 | IDW + decon water SWMU 54 | 10 gal | Pending Analysis | — | | |
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| 32 | | | | | | | |
| | | | | | | | |
| CAPE Form 320-16, Revised May 2022 | | **TOTAL QUANTITY:** | Page 1 of 1 **0.00** | | | | |

CAPE

# SITE CONTROL LOG

**Date / Day:** Tuesday, 10 December 2024
**Project Name/Number:** RADFORD ARMY AMMUNITION PLANT-SWMU 49 & SWMU 54 SAMPLING / CONTRACT W912DR19D0004, TASK ORDER W912DR24F0222
**Project Location:** RADFORD ARMY AMMUNITION PLANT, RADFORD, VA

| Time | | | | DO YOU HAVE AN INJURY TO REPORT? Y/N | |
|---|---|---|---|---|---|
| In | Out | Name (Print) | Signature | | Organization |
| 0750 | 1500 | Yoko Miyakawa | | N | CAPE |
| 0750 | 1500 | Paul I Taylor | | N | Weston |
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# TAILGATE SAFETY MEETING RECORD

| | |
|---|---|
| **DATE/TIME:** | Tuesday, 10 December 2024 |
| **PROJECT NAME:** | Radford Army Ammunition Plant-SWMU 49 & SWMU 54 Sampling |
| **PROJECT LOCATION:** | Radford Army Ammunition Plant, Radford, VA |
| **CAPE PROJECT NUMBER:** | CO: W912DR19D0004, TO: W912DR24F0222 |
| **PROJECT MANAGER:** | Matthew Feits |
| **SITE SUPERINTENDENT:** | |
| **SITE HEALTH & SAFETY:** | Yoko Miyakawa |

| **SAFETY TOPICS PRESENTED** | |
|---|---|
| ~~visibility issues~~ slips, trips, & falls. | |
| **Protective Clothing/Equipment:** | |
| Modified Level D PPE | Gloves as required |
| High visibility vests/outerwear as required | |
| Safety Toe Boots and Safety Glasses required | |
| **Chemical Hazards:** | |
| Potential for contact with the ground water and preservatives | |
| **Physical Hazards:** | |
| Slip, trip, and falls | Inclement weather |
| Heat stress | Drum handling |
| Biological hazards | |
| **Emergency Procedures:** | |
| Provide first aid to your level of training. Contact 911 for Emergency if required. Notify your supervisor and the SSHO. | |
| **Emergency Hospital:** | Carilion New River Valley Medical Center, 2900 Lamb Cir, Christiansburg, VA 24073 |
| **Hospital Telephone Number:** | (540) 731-2000 |
| **Hospital Direction:** | Map in APP |
| **Special Equipment:** | |
| By signing this form, I confirm that I have not been previously injured on this job without informing my supervisor, and that I will immediately report all incidents/injuries to my supervisors in the future. | |

**SAFETY MEETING ATTENDEES**

| # | Printed Name | Initial | # | Printed Name | Initial |
|---|---|---|---|---|---|
| 1. | Yoko Miyakawa | YM | 16. | | |
| 2. | Paul I. Taylor | PIT | 17. | | |
| 3. | | | 18. | | |
| 4. | | | 19. | | |
| 5. | | | 20. | | |
| 6. | | | 21. | | |
| 7. | | | 22. | | |
| 8. | | | 23. | | |
| 9. | | | 24. | | |
| 10. | | | 25. | | |
| 11. | | | 26. | | |
| 12. | | | 27. | | |
| 13. | | | 28. | | |
| 14. | | | 29. | | |
| 15. | | | 30. | | |

**Meeting Conducted By:**

Signature _____



Address: 305 ROANOKE STREET
CHRISTIANSBURG
VA 24073
Location: MAIA
Device ID: -BIC01

FedEx Express Package(s) - Dropped Off
Tracking Number:
770448619799

FedEx Express Package(s) - Dropped Off
Tracking Number:
4004[illegible]051067 58 lb (M)

FedEx Express Package(s) - Dropped Off
Tracking Number:
400490051056 57.3 lb (M)

Total Pieces: 3

Subject to terms and conditions, including terms that limit FedEx's liability. The estimated shipping charge may be different than the actual charges for your shipment. Differences may occur based on actual weight, dimensions and other factors. Shipment-related terms and conditions and details on how shipping charges are calculated are available upon request or at fedex.com/serviceguide.

All merchandise sales are final.

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Tell us how we're doing!
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*** Thank you ***

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Dec 10, 2024 4:31:38 PM

# APPENDIX A-2
# CALIBRATION FORMS

Radford Army Ammunition Plant 8/20/24
Radford, VA

Personnel: Paul Taylor (Weston), Yoko Miyakawa (cape)

Weather: 57° Partly Cloudy

Objective: GW sampling @ SWMU 49 + 54, IDW Waste Characterization Sampling

0730 security checks upon arrival
0745 safety tailgate + calibrations @ 54MW13

YSI Pro Plus:

| | | Results: |
|---|---|---|
| Sp C. | 1413 µS/cm → | ~~1419~~ 1415 |
| pH 4. | → | 3.97 |
| pH 7. | → | 6.99 |
| pH 10 | → | 10.09 |
| ORP | 240 mV → | 240.1 |

MicroTPW Turbidity Meter

| | |
|---|---|
| 0.02 ppm → | 0.00 |
| 10.0 ppm → | 10.02 |
| 1000 ppm → | 994.4 |

PID MiniRae 3000
Isobutylene 100ppm → 100.2ppm

Rite in the Rain.

0815 gauged + PID reading of 54MW13
see gauging sheet + sampling sheet
MS/MSD at this location
1048 setup @ 54MW10
see gauging + sampling sheets
1200 meeting Matt Alberts to return
key for locked area/fence where
well 54MW10 was located
M. Alberts showed us location
of waste disposal open on Tu+Th,
waste is contained due to propellant
that was thrown in dumpster.
1232 setup 54MW12 + Field Dupe
see gauging + sampling sheets
1421 setup 54MW1
see gauging + sample sheets
1542 heading to BAE storage area
1552 inspecting 55-gal poly drum for
SWMU 54 designated IDW (unlabeled)
drum is recently emptied, has some
scratches + little dirty on outside
but otherwise good condition.
dumped ~8 gal IDW purge waters +
decon water
using Non-Haz Waste label w/
"pending analysis"



1558-IDW Sample @ 1558
"54IDW" collected for waste
characterization to be sent to
CT Labs.

Label reads: PENDING ANALYSIS
Matthew Feits 724-622-3625
RAAP Redford, VA
Purge Water @ SWMU 54 (8/20/24)

1559 closed + buttoned up
1615 P. Taylor + Y. Miyakawa offsite

samples will be shipped to CT Labs
in WI + SGS in Orlando, FL

8/20/24

Radford, VA
RAAP

12/10/24

Personnel: Paul Taylor (Weston)
Yoko Miyakawa (GAPE)

Weather: 43°, Cloudy, Dense Fog

Objective: GW Sampling @ SWMU 49, 54

0750 P. Taylor + Y. Miyakawa onsite
thru security checks
0808 Move to SWMU 54

YSI Pro Plus Calibration
SpC 1413 µS/cm → 1412
pH 4 → 3.99
pH 7 → 7.00
pH 10 → 10.00
ORP 240mV → 240
Micro TPW Turbidity Meter
1000 NTU → 983.9
10.0 NTU → 10.15
0.02 NTU → [illegible] 0.00
Hach 2100N Turbidimeter
100.0 Stab. → 99.3



0840 Starting @ well ~~MW-10~~ 54MW13
for Sampling & Sump Hydrostatic
1004 Setup @ 54MW10, taking
FD here (54TW10)
1118 Setting up @ 54MW12 taking
MS/MSD samples here.
1310 Setting up @ 54MW1
1425 Heading to trash disposal area
1430 Disposed ~~to~~ of trash + PPE
heading to IDW drums
1446 @ BAE Storage, dumping ~10gal
IDW purge water + decon water into
drum w/ ~10gal already in drum
Touched up labels on both drums.
1450 taking IDW sample - 54IDW
1455 leaving ACD/BAE Storage
1500 Both parties offsite

Samples will be shipped to CT Labs
in WI + SGS in Orlando, FL

12/10/24

Rite in the Rain

# APPENDIX B-1
# LABORATORY ANALYTICAL REPORTS

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# ANALYTICAL SUMMARY REPORT

This report at a minimum contains the following information:

Analytical Report of Test Results
Description of QC Qualifiers
Chain of Custody (copy)
Quality Control Summary (if applicable)
Case Narrative (if applicable)
Correspondence with Client (if applicable)

*This report has been specifically prepared to satisfy project or program requirements. These results are in compliance with NELAC requirements for parameters where accreditation is required or available, unless otherwise noted in the case narrative.*



Unless specifically stated to the contrary, soil/sediment/sludge sample results reported on a Dry Weight Basis

# *ANALYTICAL SAMPLE DATA*

CAPE ENVIRONMENTAL MANAGEMENT
MATT FEITS
500 PINNACLE COURT
SUITE 100
NORCROSS, GA 30071

Project Name: RADFORD AAP
Project Phase: SWMU 54
Project #: 10409-0222
Folder #: 188769
Purchase Order #: SC013781
Contract #: 3648

Arrival Temperature: 5.1
Report Date: 9/5/2024
Date Received: 8/21/2024
Reprint Date: 9/5/2024

Copy: chemistrysvcs@cape-inc.com

CT LAB#: 1493633 Sample Description: 54MW13 Client Sample #: Sampled: 8/20/2024 09:25

| Analyte | Result | Units | DL | DOD LOD | DOD LOQ | RL | DF | Qualifier | Leach Date | Prep Date/Time | Analysis Date/Time | Analyst | Method | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Inorganic Results** | | | | | | | | | | | | | | |
| Total Inorganic Carbon | ***97*** | mg/L | 0.4 | 1.5 | 3.0 | 3.0 | 1.00 | | | | 8/22/24 10:27 | TMG | EPA 9060A | ^ |
| Chloride | ***5.7*** | mg/L | 1.0 | 1.5 | 3.0 | 3.0 | 1.00 | | | | 8/21/24 11:29 | TMG | EPA 9056A | |
| Nitrate Nitrogen | ***0.47*** | mg/L | 0.12 | 0.20 | 0.40 | 0.40 | 1.00 | | | | 8/21/24 11:29 | TMG | EPA 9056A | |
| Sulfate | ***34*** | mg/L | 0.80 | 1.5 | 3.0 | 3.0 | 1.00 | | | | 8/21/24 11:29 | TMG | EPA 9056A | |
| Total Organic Carbon | <1.5 | mg/L | 0.4 | 1.5 | 3.0 | 3.0 | 1.00 | U | | | 8/26/24 10:15 | TMG | EPA 9060A | |
| **Sub Lab Results** | | | | | | | | | | | | | | |
| Chlorate | ***ATTACHED*** | | | | | | 1.00 | | | | 8/26/24 00:00 | SUB | 300.1 | |
| Chlorite | ***ATTACHED*** | | | | | | 1.00 | | | | 8/26/24 00:00 | SUB | 300.1 | |

CT LAB#: 1493634 Sample Description: 54MW10 Client Sample #: Sampled: 8/20/2024 11:25

| Analyte | Result | Units | DL | DOD LOD | DOD LOQ | RL | DF | Qualifier | Leach Date | Prep Date/Time | Analysis Date/Time | Analyst | Method | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Inorganic Results** | | | | | | | | | | | | | | |
| Total Inorganic Carbon | ***78*** | mg/L | 0.4 | 1.5 | 3.0 | 3.0 | 1.00 | | | | 8/22/24 10:40 | TMG | EPA 9060A | ^ |

Unless specifically stated to the contrary, soil/sediment/sludge sample results reported on a Dry Weight Basis

CT LAB#: 1493634 Sample Description: 54MW10 Client Sample #: Sampled: 8/20/2024 11:25

| Analyte | Result | Units | DL | DOD LOD | DOD LOQ | RL | DF | Qualifier | Leach Date | Prep Date/Time | Analysis Date/Time | Analyst | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | ***3.6*** | mg/L | 1.0 | 1.5 | 3.0 | 3.0 | 1.00 | | | | 8/21/24 17:11 | TMG | EPA 9056A |
| Nitrate Nitrogen | <0.20 | mg/L | 0.12 | 0.20 | 0.40 | 0.40 | 1.00 | U | | | 8/21/24 17:11 | TMG | EPA 9056A |
| Sulfate | ***180*** | mg/L | 4.0 | 7.5 | 15 | 15 | 5.00 | | | | 8/22/24 10:35 | TMG | EPA 9056A |
| Total Organic Carbon | <1.5 | mg/L | 0.4 | 1.5 | 3.0 | 3.0 | 1.00 | U | | | 8/26/24 11:08 | TMG | EPA 9060A |
| **Sub Lab Results** | | | | | | | | | | | | | |
| Chlorate | ***ATTACHED*** | | | | | | 1.00 | | | | 8/26/24 00:00 | SUB | 300.1 |
| Chlorite | ***ATTACHED*** | | | | | | 1.00 | | | | 8/26/24 00:00 | SUB | 300.1 |

CT LAB#: 1493635 Sample Description: 54MW12 Client Sample #: Sampled: 8/20/2024 13:28

| Analyte | Result | Units | DL | DOD LOD | DOD LOQ | RL | DF | Qualifier | Leach Date | Prep Date/Time | Analysis Date/Time | Analyst | Method | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Inorganic Results** | | | | | | | | | | | | | | |
| Total Inorganic Carbon | ***70*** | mg/L | 0.4 | 1.5 | 3.0 | 3.0 | 1.00 | | | | 8/22/24 10:54 | TMG | EPA 9060A | ^ |
| Chloride | ***2.9*** | mg/L | 1.0 | 1.5 | 3.0 | 3.0 | 1.00 | J | | | 8/21/24 17:34 | TMG | EPA 9056A | |
| Nitrate Nitrogen | ***0.99*** | mg/L | 0.12 | 0.20 | 0.40 | 0.40 | 1.00 | | | | 8/21/24 17:34 | TMG | EPA 9056A | |
| Sulfate | ***30*** | mg/L | 0.80 | 1.5 | 3.0 | 3.0 | 1.00 | | | | 8/21/24 17:34 | TMG | EPA 9056A | |
| Total Organic Carbon | <1.5 | mg/L | 0.4 | 1.5 | 3.0 | 3.0 | 1.00 | U | | | 8/26/24 11:22 | TMG | EPA 9060A | |
| **Sub Lab Results** | | | | | | | | | | | | | | |
| Chlorate | ***ATTACHED*** | | | | | | 1.00 | | | | 8/26/24 00:00 | SUB | 300.1 | |
| Chlorite | ***ATTACHED*** | | | | | | 1.00 | | | | 8/26/24 00:00 | SUB | 300.1 | |

CT LAB#: 1493636 Sample Description: 54TW12 Client Sample #: Sampled: 8/20/2024 13:28

| Analyte | Result | Units | DL | DOD LOD | DOD LOQ | RL | DF | Qualifier | Leach Date | Prep Date/Time | Analysis Date/Time | Analyst | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Unless specifically stated to the contrary, soil/sediment/sludge sample results reported on a Dry Weight Basis

CT LAB#: 1493636 Sample Description: 54TW12 Client Sample #: Sampled: 8/20/2024 13:28

| Analyte | Result | Units | DL | DOD LOD | DOD LOQ | RL | DF | Qualifier | Leach Date | Prep Date/Time | Analysis Date/Time | Analyst | Method | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Inorganic Results** | | | | | | | | | | | | | | |
| Total Inorganic Carbon | ***69*** | mg/L | 0.4 | 1.5 | 3.0 | 3.0 | 1.00 | | | | 8/22/24 11:07 | TMG | EPA 9060A | ^ |
| Chloride | ***2.8*** | mg/L | 1.0 | 1.5 | 3.0 | 3.0 | 1.00 | J | | | 8/21/24 17:57 | TMG | EPA 9056A | |
| Nitrate Nitrogen | ***1.00*** | mg/L | 0.12 | 0.20 | 0.40 | 0.40 | 1.00 | | | | 8/21/24 17:57 | TMG | EPA 9056A | |
| Sulfate | ***30*** | mg/L | 0.80 | 1.5 | 3.0 | 3.0 | 1.00 | | | | 8/21/24 17:57 | TMG | EPA 9056A | |
| Total Organic Carbon | <1.5 | mg/L | 0.4 | 1.5 | 3.0 | 3.0 | 1.00 | U | | | 8/26/24 11:37 | TMG | EPA 9060A | |
| **Sub Lab Results** | | | | | | | | | | | | | | |
| Chlorate | ***ATTACHED*** | | | | | | 1.00 | | | | 8/26/24 00:00 | SUB | 300.1 | |
| Chlorite | ***ATTACHED*** | | | | | | 1.00 | | | | 8/26/24 00:00 | SUB | 300.1 | |

CT LAB#: 1493637 Sample Description: 54MW1 Client Sample #: Sampled: 8/20/2024 15:07

| Analyte | Result | Units | DL | DOD LOD | DOD LOQ | RL | DF | Qualifier | Leach Date | Prep Date/Time | Analysis Date/Time | Analyst | Method | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Inorganic Results** | | | | | | | | | | | | | | |
| Total Inorganic Carbon | ***62*** | mg/L | 0.4 | 1.5 | 3.0 | 3.0 | 1.00 | | | | 8/22/24 11:20 | TMG | EPA 9060A | ^ |
| Chloride | ***2.3*** | mg/L | 1.0 | 1.5 | 3.0 | 3.0 | 1.00 | J | | | 8/21/24 18:20 | TMG | EPA 9056A | |
| Nitrate Nitrogen | <0.20 | mg/L | 0.12 | 0.20 | 0.40 | 0.40 | 1.00 | U | | | 8/21/24 18:20 | TMG | EPA 9056A | |
| Sulfate | ***28*** | mg/L | 0.80 | 1.5 | 3.0 | 3.0 | 1.00 | | | | 8/21/24 18:20 | TMG | EPA 9056A | |
| Total Organic Carbon | <1.5 | mg/L | 0.4 | 1.5 | 3.0 | 3.0 | 1.00 | U | | | 8/26/24 11:49 | TMG | EPA 9060A | |
| **Sub Lab Results** | | | | | | | | | | | | | | |
| Chlorate | ***ATTACHED*** | | | | | | 1.00 | | | | 8/26/24 00:00 | SUB | 300.1 | |
| Chlorite | ***ATTACHED*** | | | | | | 1.00 | | | | 8/26/24 00:00 | SUB | 300.1 | |

Unless specifically stated to the contrary, soil/sediment/sludge sample results reported on a Dry Weight Basis

Notes:

^ Indicates the laboratory is NELAP accredited for this analyte by the indicated matrix and method . DL (detection limit), LOD (limit of detection), loq (limit of quantitation) as defined by most recent DOD QSM version.

All samples were received intact and properly preserved unless otherwise noted . The results reported relate only to the samples tested. This report shall not be reproduced, except in full, without written approval of this laboratory. The Chain of Custody is attached.

**This report has been specifically prepared to satisfy project or program requirements.** These results are in compliance with NELAC requirements for the parameters where accreditation is required or available, unless noted in the case narrative.

Submitted by: Brett M. Szymanski
Project Manager
608-356-2760

**Current CT Laboratories Certifications**

Wisconsin (WDNR) Chemistry ID# 157066030
Wisconsin (DATCP) Bacteriology ID# 289
Louisiana NELAP (primary) ID# ACC20190002
Illinois NELAP Lab ID# 200073
Kansas NELAP Lab ID# E-10368
Virginia NELAP Lab ID# 460203
ISO/IEC 17025-2005 A2LA Cert # 3806.01
DoD-ELAP A2LA 3806.01
GA EPD Stipulation ID ACC20190002

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# QC Summary Report

**CAPE ENVIRONMENTAL MANAGEMENT** **Project Name: RADFORD AAP**

**SDG #: 0** **Folder #: 188769** **Project #: 10409-0222**

***Duplicate***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284766 | Analysis Date: | 8/21/2024 | Prep Batch #: | | Matrix: | GROUND WATER |
| CTLab #: | 1494564 | Analysis Time: | 22:08 | Prep Date/Time: | | Method: | SW9056A |
| Parent Sample #: | 1493633 | Analyst: | TMG | Prep Analyst: | | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | 5.70 | mg/L | 5.7 | | | | 3.0 | 0 | 10 |
| Nitrate Nitrogen | 0.494 | mg/L | 0.47 | | | | 0.40 | 5 | 10 |
| Sulfate | 34.1 | mg/L | 34 | | | | 3.0 | 0 | 10 |

***Lab Control Spike Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284766 | Analysis Date: | 8/21/2024 | Prep Batch #: | | Matrix: | LIQUID |
| CTLab #: | 1494559 | Analysis Time: | 10:04 | Prep Date/Time: | | Method: | SW9056A |
| Parent Sample #: | | Analyst: | TMG | Prep Analyst: | | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | | | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 13.97 | mg/L | | | 15.00 | 93 | 87 | --- | 111 | | |
| Nitrate Nitrogen | 3.308 | mg/L | | | 3.500 | 95 | 88 | --- | 111 | | |
| Sulfate | 24.65 | mg/L | | | 25.00 | 99 | 87 | --- | 112 | | |

***Method Blank Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284766 | Analysis Date: | 8/21/2024 | Prep Batch #: | | Matrix: | LIQUID |
| CTLab #: | 1494560 | Analysis Time: | 10:27 | Prep Date/Time: | | Method: | SW9056A |
| Parent Sample #: | | Analyst: | TMG | Prep Analyst: | | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | 1.0 | mg/L | | U | 0 | | 1.5 | | |
| Nitrate Nitrogen | 0.12 | mg/L | | U | 0 | | 0.20 | | |
| Sulfate | 0.8 | mg/L | | U | 0 | | 1.5 | | |

***Matrix Spike Duplicate Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284766 | Analysis Date: | 8/21/2024 | Prep Batch #: | | Matrix: | GROUND WATER |
| CTLab #: | 1494566 | Analysis Time: | 22:54 | Prep Date/Time: | | Method: | SW9056A |
| Parent Sample #: | 1494565 | Analyst: | TMG | Prep Analyst: | | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | | | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 13.0 | mg/L | 5.7 | | 8.00 | 91 | 87 | --- | 111 | 2 | 15 |
| Nitrate Nitrogen | 2.31 | mg/L | 0.47 | | 2.00 | 92 | 88 | --- | 111 | 3 | 15 |
| Sulfate | 40.9 | mg/L | 34 | | 8.00 | 86 | 87 | --- | 112 | 0 | 15 |

***Matrix Spike Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284766 | Analysis Date: | 8/21/2024 | Prep Batch #: | | Matrix: | GROUND WATER |
| CTLab #: | 1494565 | Analysis Time: | 22:31 | Prep Date/Time: | | Method: | SW9056A |
| Parent Sample #: | 1493633 | Analyst: | TMG | Prep Analyst: | | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | 12.7 | mg/L | 5.7 | | 8.00 | 88 | 87 --- 111 | | 15 |
| Nitrate Nitrogen | 2.24 | mg/L | 0.47 | | 2.00 | 88 | 88 --- 111 | | 15 |
| Sulfate | 40.8 | mg/L | 34 | | 8.00 | 85 | 87 --- 112 | | 15 |

***Lab Control Spike Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284806 | Analysis Date: | 8/22/2024 | Prep Batch #: | | Matrix: | LIQUID |
| CTLab #: | 1494508 | Analysis Time: | 09:59 | Prep Date/Time: | | Method: | SW9060 |
| Parent Sample #: | | Analyst: | TMG | Prep Analyst: | | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total Inorganic Carbon | 53.41 | mg/L | | | 50.0 | 107 | 85 --- 111 | | |

***Method Blank Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284806 | Analysis Date: | 8/22/2024 | Prep Batch #: | | Matrix: | LIQUID |
| CTLab #: | 1494509 | Analysis Time: | 10:14 | Prep Date/Time: | | Method: | SW9060 |
| Parent Sample #: | | Analyst: | TMG | Prep Analyst: | | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total Inorganic Carbon | 0.5 | mg/L | | U | 0 | | 1.5 | | |

***Duplicate***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284875 | Analysis Date: | 8/26/2024 | Prep Batch #: | | Matrix: | GROUND WATER |
| CTLab #: | 1495385 | Analysis Time: | 10:27 | Prep Date/Time: | | Method: | SW9060 |
| Parent Sample #: | 1493633 | Analyst: | TMG | Prep Analyst: | | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon | 0.4 | mg/L | <DL | U | | | 1.5 | 0 | 20 |

***Lab Control Spike Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284875 | Analysis Date: | 8/26/2024 | Prep Batch #: | | Matrix: | LIQUID |
| CTLab #: | 1495383 | Analysis Time: | 09:45 | Prep Date/Time: | | Method: | SW9060 |
| Parent Sample #: | | Analyst: | TMG | Prep Analyst: | | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon | 51.89 | mg/L | | | 50.0 | 104 | 85 --- 111 | | 20 |

***Method Blank Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284875 | Analysis Date: | 8/26/2024 | Prep Batch #: | | Matrix: | LIQUID |
| CTLab #: | 1495384 | Analysis Time: | 10:00 | Prep Date/Time: | | Method: | SW9060 |
| Parent Sample #: | | Analyst: | TMG | Prep Analyst: | | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon | 0.40 | mg/L | | U | 0 | | 1.5 | | |

***Matrix Spike Duplicate Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284875 | Analysis Date: | 8/26/2024 | Prep Batch #: | | Matrix: | GROUND WATER |
| CTLab #: | 1495387 | Analysis Time: | 10:55 | Prep Date/Time: | | Method: | SW9060 |
| Parent Sample #: | 1495386 | Analyst: | TMG | Prep Analyst: | | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon | 52.0 | mg/L | <DL | | 50.0 | 104 | 85 --- 111 | 2 | 20 |

***Matrix Spike Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284875 | Analysis Date: | 8/26/2024 | Prep Batch #: | | Matrix: | GROUND WATER |
| CTLab #: | 1495386 | Analysis Time: | 10:42 | Prep Date/Time: | | Method: | SW9060 |
| Parent Sample #: | 1493633 | Analyst: | TMG | Prep Analyst: | | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon | 53.2 | mg/L | <DL | | 50.0 | 106 | 85 --- 111 | | 20 |

CT LABORATORIES
delivering more than data from your environmental analyses

# Sample Condition Report

| | | | | | |
|---|---|---|---|---|---|
| Folder #: | 188769 | Print Date / Time: | 08/21/2024 | 11:05 | |
| Client: | CAPE ENVIRONMENTAL MANAGEMENT | Received Date / Time / By: | 08/21/2024 | 10:30 | DJL |
| Project Name: | RADFORD AAP | Log-In Date / Time / By: | 08/21/2024 | 11:05 | erc |
| Project Phase: | SWMU 54 | Project #: | 10409-0222 | PM: | BMS |
| Coolers: | 6542 | Temperature: | 5.1 C | On Ice: | **Y** |
| Custody Seals Present : | **Y** | COC Present:? | **Y** | Complete? | **Y** |
| Seal Intact? | **Y** | Numbers: | DATED AND SIGNED | | |
| Ship Method: | FEDEX EXPRESS | Tracking Number: | 778055533145 | | |
| Adequate Packaging: | **Y** | Temp Blank Enclosed? | **Y** | | |

Notes: THE SAMPLES WERE RECEIVED IN GOOD CONDITION ON ICE.

TWO (2) CUSTODY SEALS WERE PRESENT AND INTACT ON THE COOLER UPON RECEIPT (BOTH WERE DATED 8/20/2024 AND SIGNED).

| Sample ID / | Description | Container Type | Cond. Code | pH OK?/Filtered? | Tests |
|---|---|---|---|---|---|
| **1493633** | 54MW13 | | | | |
| | | MISC | 1 | N / N | |
| | | MISC | 1 | N / N | |
| | | **Total # of Containers of Type ( *MISC* ) = 2** | | | |
| **1493633** | 54MW13 | | | | |
| | | VOA | 1 | / | |
| | | VOA | 1 | / | |
| | | VOA | 1 | / | |
| | | VOA | 1 | N / N | |
| | | VOA | 1 | N / N | |
| | | VOA | 1 | N / N | |
| | | VOA | 1 | N / N | |
| | | VOA | 1 | N / N | |
| | | VOA | 1 | N / N | |
| | | **Total # of Containers of Type ( *VOA* ) = 9** | | | |
| **1493633** | 54MW13 | | | | |
| | | UNPRES PL | 1 | N / N | ANIONS |
| | | UNPRES PL | 1 | N / N | ANIONS |
| | | UNPRES PL | 1 | / | Anions |
| | | **Total # of Containers of Type ( *UNPRES PL* ) = 3** | | | |
| **1493633** | 54MW13 | | | | |
| | | MISC | 1 | / | CHLORATE/CHLORITE |
| | | **Total # of Containers of Type ( *MISC* ) = 1** | | | |
| **1493633** | 54MW13 | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | H2SO4 PL | 1 | Y | / N | TOC |
| | | H2SO4 PL | 1 | N | / N | TOC |
| | | H2SO4 PL | 1 | N | / N | TOC |
| | | **Total # of Containers of Type** | **( *H2SO4 PL* ) = 3** | | | |

| Sample ID / | Description | Container Type | Cond. Code | pH OK?/Filtered? | Tests |
|---|---|---|---|---|---|
| **1493634** | 54MW10 | | | | |
| | | VOA | 1 | / | |
| | | VOA | 1 | / | |
| | | VOA | 1 | / | |
| | | **Total # of Containers of Type** | **( *VOA* ) = 3** | | |
| **1493634** | 54MW10 | | | | |
| | | UNPRES PL | 1 | / | Anions |
| | | **Total # of Containers of Type** | **( *UNPRES PL* ) = 1** | | |
| **1493634** | 54MW10 | | | | |
| | | MISC | 1 | / | CHLORATE/CHLORITE |
| | | **Total # of Containers of Type** | **( *MISC* ) = 1** | | |
| **1493634** | 54MW10 | | | | |
| | | H2SO4 PL | 1 | Y / N | TOC |
| | | **Total # of Containers of Type** | **( *H2SO4 PL* ) = 1** | | |

| Sample ID / | Description | Container Type | Cond. Code | pH OK?/Filtered? | Tests |
|---|---|---|---|---|---|
| **1493635** | 54MW12 | | | | |
| | | VOA | 1 | / | |
| | | VOA | 1 | / | |
| | | VOA | 1 | / | |
| | | **Total # of Containers of Type** | **( *VOA* ) = 3** | | |
| **1493635** | 54MW12 | | | | |
| | | UNPRES PL | 1 | / | Anions |
| | | **Total # of Containers of Type** | **( *UNPRES PL* ) = 1** | | |
| **1493635** | 54MW12 | | | | |
| | | MISC | 1 | / | CHLORATE/CHLORITE |
| | | **Total # of Containers of Type** | **( *MISC* ) = 1** | | |
| **1493635** | 54MW12 | | | | |
| | | H2SO4 PL | 1 | Y / N | TOC |
| | | **Total # of Containers of Type** | **( *H2SO4 PL* ) = 1** | | |

| Sample ID / | Description | Container Type | Cond. Code | pH OK?/Filtered? | Tests |
|---|---|---|---|---|---|
| **1493636** | 54TW12 | | | | |
| | | VOA | 1 | / | |
| | | VOA | 1 | / | |
| | | VOA | 1 | / | |
| | | **Total # of Containers of Type** | **( *VOA* ) = 3** | | |
| **1493636** | 54TW12 | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | UNPRES PL | 1 | | / | Anions |
| | | **Total # of Containers of Type** | **( *UNPRES PL* ) = 1** | | | |
| **1493636** | 54TW12 | | | | | |
| | | MISC | 1 | | / | CHLORATE/CHLORITE |
| | | **Total # of Containers of Type** | **( *MISC* ) = 1** | | | |
| **1493636** | 54TW12 | | | | | |
| | | H2SO4 PL | 1 | Y | / N | TOC |
| | | **Total # of Containers of Type** | **( *H2SO4 PL* ) = 1** | | | |

| **Sample ID /** | **Description** | **Container Type** | **Cond. Code** | **pH OK?/Filtered?** | **Tests** |
|---|---|---|---|---|---|
| **1493637** | 54MW1 | | | | |
| | | VOA | 1 | / | |
| | | VOA | 1 | / | |
| | | VOA | 1 | / | |
| | | **Total # of Containers of Type** | **( *VOA* ) = 3** | | |
| **1493637** | 54MW1 | | | | |
| | | UNPRES PL | 1 | / | Anions |
| | | **Total # of Containers of Type** | **( *UNPRES PL* ) = 1** | | |
| **1493637** | 54MW1 | | | | |
| | | MISC | 1 | / | CHLORATE/CHLORITE |
| | | **Total # of Containers of Type** | **( *MISC* ) = 1** | | |
| **1493637** | 54MW1 | | | | |
| | | H2SO4 PL | 1 | Y / N | TOC |
| | | **Total # of Containers of Type** | **( *H2SO4 PL* ) = 1** | | |

*Condition Code* *Condition Description*

1 Sample Received OK

Rev. 02/2017

# CHAIN OF CUSTODY

Page 1 of 1

Company: CAPE Environmental
Project Contact: Matt Feits
Telephone: (724) 622-3625
Project Name: Radford AAP SWMU 54
Project #:
Location: Radford, VA
Sampled By: Y Miyakawa, P. Taylor

1230 Lange Court, Baraboo, WI 53913
608-356-2760 Fax 608-356-2766
www.ctlaboratories.com

Folder #: 188769 Folder #: 188770
Company: CAPE EN Company: CAPE ENVIRONMENTAL MAN
Project: RADFORD Project: RADFORD AAP
Logged By: erc Logged By: erc PM: BMS

SDWA NPDES
Other _____

Report To:
EMAIL: Chemistry SVCS@cape-inc
Company: mfeits@cape-inc.com com
Address: Cape Environmental Managem
500 Pinnacle Court #100
Norcross, GA 30071

Invoice To:*
EMAIL:
Company:
Address: Same

*Party listed is responsible for payment of invoice as per CT Laboratories' terms and conditions

**Client Special Instructions**

Matrix:
GW – groundwater SW - surface water WW - wastewater DW - drinking water
S - soil/sediment SL - sludge A - air M - misc/waste

| 2024 Collection Date | Time | Matrix | Grab/ Comp | Sample # | Sample ID Description | Filtered? Y/N | TOC 9060A | Anions 9056A | TIC 9060A | Chloride/Chlorite | COD 410.4 | pH 9040C | TAL Metals | Total # Containers | Designated MS/MSD | CT Lab ID # (Lab use only) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8/20 | 0925 | GW | G | | 54MW13 | N | 3 | 3 | 9 | 3 | | | | 18 | X | 149631 |
| 8/20 | 1125 | GW | G | | 54MW10 | N | 1 | 1 | 3 | 1 | | | | 6 | | 34 |
| 8/20 | 1328 | GW | G | | 54MW12 | N | 1 | 1 | 3 | 1 | | | | 6 | | 35 |
| 8/20 | 1328 | GW | G | | 54TW12 | N | 1 | 1 | 3 | 1 | | | | 6 | | 36 |
| 8/20 | 1507 | GW | G | | 54MW1 | N | 1 | 1 | 3 | 1 | | | | 6 | | 37 |
| 8/20 | 1558 | GW | G | | 54IDW | N | | | | | 1 | 1 | 1 | 3 | | 38 |

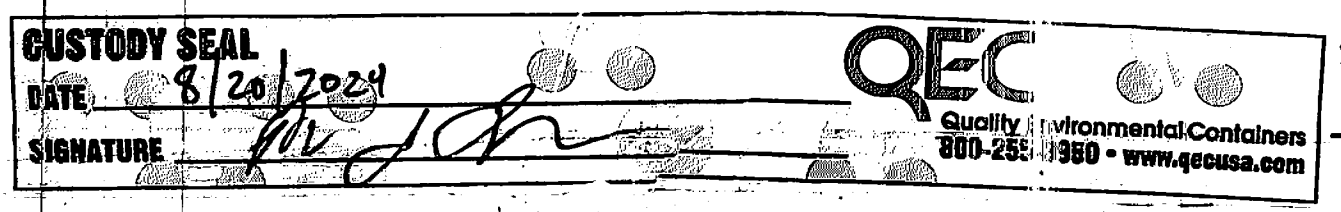
Fill in Spaces with Bottles per Test

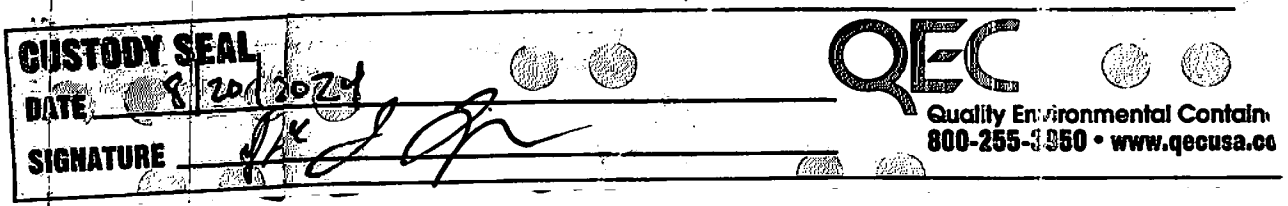
**Turnaround Time**
Normal RUSH*
Date Needed: _____
*Rush analysis requires prior CT Laboratories' approval*
Surcharges:
24 hr 200%
2-3 days 100%
4-9 days 50%

| Relinquished By: | Date/Time | Received By: | Date/Time |
|---|---|---|---|
| Paul I. Taylor | 8/20/2024 1700 | Fedex | 8/20/2024 1700 |
| Received by: | Date/Time | Received for Laboratory by: | Date/Time |
| | | | 8/21/24 1010 |
| | | | 8/22/24 1111 |

Lab Use Only
Ice Present Yes No
Temp 5-1 IR Gun 37
Cooler # 6541




Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

Ice Present (Yes) No
Temperature 5.1
Initials DL
Date 8/21/24 Time 10:30
Cooler # 6542

eurofins | Environment Testing



# ANALYTICAL REPORT

## PREPARED FOR

Attn: Jodi Serstad
CT Laboratories
Environmental & Analytical Services
1230 Lange Court
Baraboo, Wisconsin 53913

Generated 8/28/2024 9:42:03 AM

## JOB DESCRIPTION

1493633-37 / Chlorite/Chlorate

## JOB NUMBER

810-117636-1

Eurofins Eaton Analytical South Bend
110 S Hill Street
South Bend IN 46617

See page two for job notes and contact information.



myEOL

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Eaton Analytical, LLC Project Manager.

## Authorization



Generated
8/28/2024 9:42:03 AM

Authorized for release by
Traci Chlebowski, Senior Project Manager
Traci.Chlebowski@et.eurofinsus.com
(574)233-4777

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# Definitions/Glossary

Client: CT Laboratories
Job ID: 810-117636-1
Project/Site: 1493633-37 / Chlorite/Chlorate

## Qualifiers

### HPLC/IC

| Qualifier | Qualifier Description |
|---|---|
| F1 | MS and/or MSD recovery exceeds control limits. |

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ¤ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CFU | Colony Forming Unit |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MCL | EPA recommended "Maximum Contaminant Level" |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| MPN | Most Probable Number |
| MQL | Method Quantitation Limit |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| NEG | Negative / Absent |
| POS | Positive / Present |
| PQL | Practical Quantitation Limit |
| PRES | Presumptive |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |
| TNTC | Too Numerous To Count |

**Job Narrative**
**810-117636-1**

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

**Receipt**
The samples were received on 8/23/2024 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.2°C.

**HPLC/IC**
Method 300_OF_14D_B: The matrix spike/ matrix spike duplicate (MS/MSD) recoveries for Batch: 112018 Sample: 810-117636-1 were outside the control limits of 90-110%. MS- 79% MSD- 82% recovery for the analyte: Chlorite. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

# Detection Summary

Client: CT Laboratories
Job ID: 810-117636-1
Project/Site: 1493633-37 / Chlorite/Chlorate

## Client Sample ID: 54MW13 — Lab Sample ID: 810-117636-1

No Detections.

## Client Sample ID: 54MW10 — Lab Sample ID: 810-117636-2

No Detections.

## Client Sample ID: 54MW12 — Lab Sample ID: 810-117636-3

| Analyte | Result | Qualifier | RL | | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Chlorite | 39 | | 10 | | ug/L | 1 | | 300.0 | Total/NA |

## Client Sample ID: 54TW12 — Lab Sample ID: 810-117636-4

| Analyte | Result | Qualifier | RL | | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Chlorite | 42 | | 10 | | ug/L | 1 | | 300.0 | Total/NA |

## Client Sample ID: 54MW1 — Lab Sample ID: 810-117636-5

No Detections.

This Detection Summary does not include radiochemical test results.

# Client Sample Results

Client: CT Laboratories
Job ID: 810-117636-1
Project/Site: 1493633-37 / Chlorite/Chlorate

## Client Sample ID: 54MW13
**Lab Sample ID: 810-117636-1**
**Date Collected: 08/20/24 09:25**
**Matrix: Water**
**Date Received: 08/23/24 10:00**

**Method: EPA 300.0 - Anions, Ion Chromatography**

| Analyte | Result | Qualifier | RL | | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Chlorite | <10 | F1 | 10 | | ug/L | | | 08/26/24 18:52 | 1 |
| Chlorate | <10 | | 10 | | ug/L | | | 08/24/24 03:08 | 1 |

## Client Sample ID: 54MW10
**Lab Sample ID: 810-117636-2**
**Date Collected: 08/20/24 11:25**
**Matrix: Water**
**Date Received: 08/23/24 10:00**

**Method: EPA 300.0 - Anions, Ion Chromatography**

| Analyte | Result | Qualifier | RL | | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Chlorite | <10 | | 10 | | ug/L | | | 08/24/24 04:32 | 1 |
| Chlorate | <10 | | 10 | | ug/L | | | 08/24/24 04:32 | 1 |

## Client Sample ID: 54MW12
**Lab Sample ID: 810-117636-3**
**Date Collected: 08/20/24 13:28**
**Matrix: Water**
**Date Received: 08/23/24 10:00**

**Method: EPA 300.0 - Anions, Ion Chromatography**

| Analyte | Result | Qualifier | RL | | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Chlorite** | **39** | | 10 | | ug/L | | | 08/24/24 05:00 | 1 |
| Chlorate | <10 | | 10 | | ug/L | | | 08/24/24 05:00 | 1 |

## Client Sample ID: 54TW12
**Lab Sample ID: 810-117636-4**
**Date Collected: 08/20/24 13:28**
**Matrix: Water**
**Date Received: 08/23/24 10:00**

**Method: EPA 300.0 - Anions, Ion Chromatography**

| Analyte | Result | Qualifier | RL | | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Chlorite** | **42** | | 10 | | ug/L | | | 08/24/24 05:28 | 1 |
| Chlorate | <10 | | 10 | | ug/L | | | 08/24/24 05:28 | 1 |

## Client Sample ID: 54MW1
**Lab Sample ID: 810-117636-5**
**Date Collected: 08/20/24 15:07**
**Matrix: Water**
**Date Received: 08/23/24 10:00**

**Method: EPA 300.0 - Anions, Ion Chromatography**

| Analyte | Result | Qualifier | RL | | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Chlorite | <10 | | 10 | | ug/L | | | 08/26/24 23:32 | 1 |
| Chlorate | <10 | | 10 | | ug/L | | | 08/24/24 05:56 | 1 |

Client: CT Laboratories
Job ID: 810-117636-1
Project/Site: 1493633-37 / Chlorite/Chlorate

## Method: 300.0 - Anions, Ion Chromatography

**Lab Sample ID: MB 810-111977/4**
**Matrix: Water**
**Analysis Batch: 111977**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Chlorite | <10 | | 10 | | ug/L | | | 08/24/24 02:12 | 1 |
| Chlorate | <10 | | 10 | | ug/L | | | 08/24/24 02:12 | 1 |

**Lab Sample ID: LCS 810-111977/5**
**Matrix: Water**
**Analysis Batch: 111977**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chlorite | | | 250 | 241 | | ug/L | | 97 | 90 - 110 | | |
| Chlorate | | | 250 | 243 | | ug/L | | 97 | 90 - 110 | | |

**Lab Sample ID: LLCS 810-111977/1**
**Matrix: Water**
**Analysis Batch: 111977**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | | | Spike Added | LLCS Result | LLCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chlorite | | | 10.0 | 12.8 | | ug/L | | 128 | 50 - 150 | | |
| Chlorate | | | 10.0 | 10.5 | | ug/L | | 105 | 50 - 150 | | |

**Lab Sample ID: 810-117636-1 MS**
**Matrix: Water**
**Analysis Batch: 111977**

**Client Sample ID: 54MW13 MS**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chlorate | <10 | | 250 | 227 | | ug/L | | 91 | 90 - 110 | | |

**Lab Sample ID: 810-117636-1 MSD**
**Matrix: Water**
**Analysis Batch: 111977**

**Client Sample ID: 54MW13 MSD**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chlorate | <10 | | 250 | 229 | | ug/L | | 91 | 90 - 110 | 1 | 20 |

**Lab Sample ID: MB 810-112018/4**
**Matrix: Water**
**Analysis Batch: 112018**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Chlorite | <10 | | 10 | | ug/L | | | 08/26/24 17:56 | 1 |
| Chlorate | <10 | | 10 | | ug/L | | | 08/26/24 17:56 | 1 |

**Lab Sample ID: LCS 810-112018/5**
**Matrix: Water**
**Analysis Batch: 112018**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chlorite | | | 250 | 225 | | ug/L | | 90 | 90 - 110 | | |
| Chlorate | | | 250 | 229 | | ug/L | | 92 | 90 - 110 | | |

Client: CT Laboratories
Job ID: 810-117636-1
Project/Site: 1493633-37 / Chlorite/Chlorate

## Method: 300.0 - Anions, Ion Chromatography (Continued)

**Lab Sample ID: LLCS 810-112018/1**
**Client Sample ID: Lab Control Sample**
**Matrix: Water**
**Prep Type: Total/NA**
**Analysis Batch: 112018**

| Analyte | | | Spike Added | LLCS Result | LLCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chlorite | | | 10.0 | 11.4 | | ug/L | | 114 | 50 - 150 | | |
| Chlorate | | | 10.0 | 12.2 | | ug/L | | 122 | 50 - 150 | | |

**Lab Sample ID: 810-117636-1 MS**
**Client Sample ID: 54MW13 MS**
**Matrix: Water**
**Prep Type: Total/NA**
**Analysis Batch: 112018**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chlorite | <10 | F1 | 250 | 197 | F1 | ug/L | | 79 | 90 - 110 | | |

**Lab Sample ID: 810-117636-1 MSD**
**Client Sample ID: 54MW13 MSD**
**Matrix: Water**
**Prep Type: Total/NA**
**Analysis Batch: 112018**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chlorite | <10 | F1 | 250 | 205 | F1 | ug/L | | 82 | 90 - 110 | 4 | 20 |

# QC Association Summary

Client: CT Laboratories
Job ID: 810-117636-1
Project/Site: 1493633-37 / Chlorite/Chlorate

## HPLC/IC

### Analysis Batch: 111977

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 810-117636-1 | 54MW13 | Total/NA | Water | 300.0 | |
| 810-117636-2 | 54MW10 | Total/NA | Water | 300.0 | |
| 810-117636-3 | 54MW12 | Total/NA | Water | 300.0 | |
| 810-117636-4 | 54TW12 | Total/NA | Water | 300.0 | |
| 810-117636-5 | 54MW1 | Total/NA | Water | 300.0 | |
| MB 810-111977/4 | Method Blank | Total/NA | Water | 300.0 | |
| LCS 810-111977/5 | Lab Control Sample | Total/NA | Water | 300.0 | |
| LLCS 810-111977/1 | Lab Control Sample | Total/NA | Water | 300.0 | |
| 810-117636-1 MS | 54MW13 MS | Total/NA | Water | 300.0 | |
| 810-117636-1 MSD | 54MW13 MSD | Total/NA | Water | 300.0 | |

### Analysis Batch: 112018

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 810-117636-1 | 54MW13 | Total/NA | Water | 300.0 | |
| 810-117636-5 | 54MW1 | Total/NA | Water | 300.0 | |
| MB 810-112018/4 | Method Blank | Total/NA | Water | 300.0 | |
| LCS 810-112018/5 | Lab Control Sample | Total/NA | Water | 300.0 | |
| LLCS 810-112018/1 | Lab Control Sample | Total/NA | Water | 300.0 | |
| 810-117636-1 MS | 54MW13 MS | Total/NA | Water | 300.0 | |
| 810-117636-1 MSD | 54MW13 MSD | Total/NA | Water | 300.0 | |

# Lab Chronicle

Client: CT Laboratories
Job ID: 810-117636-1
Project/Site: 1493633-37 / Chlorite/Chlorate

## Client Sample ID: 54MW13
**Lab Sample ID: 810-117636-1**
**Date Collected: 08/20/24 09:25**
**Matrix: Water**
**Date Received: 08/23/24 10:00**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 300.0 | | 1 | 111977 | NR | EA SB | 08/24/24 03:08 |
| Total/NA | Analysis | 300.0 | | 1 | 112018 | KO | EA SB | 08/26/24 18:52 |

## Client Sample ID: 54MW10
**Lab Sample ID: 810-117636-2**
**Date Collected: 08/20/24 11:25**
**Matrix: Water**
**Date Received: 08/23/24 10:00**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 300.0 | | 1 | 111977 | NR | EA SB | 08/24/24 04:32 |

## Client Sample ID: 54MW12
**Lab Sample ID: 810-117636-3**
**Date Collected: 08/20/24 13:28**
**Matrix: Water**
**Date Received: 08/23/24 10:00**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 300.0 | | 1 | 111977 | NR | EA SB | 08/24/24 05:00 |

## Client Sample ID: 54TW12
**Lab Sample ID: 810-117636-4**
**Date Collected: 08/20/24 13:28**
**Matrix: Water**
**Date Received: 08/23/24 10:00**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 300.0 | | 1 | 111977 | NR | EA SB | 08/24/24 05:28 |

## Client Sample ID: 54MW1
**Lab Sample ID: 810-117636-5**
**Date Collected: 08/20/24 15:07**
**Matrix: Water**
**Date Received: 08/23/24 10:00**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 300.0 | | 1 | 111977 | NR | EA SB | 08/24/24 05:56 |
| Total/NA | Analysis | 300.0 | | 1 | 112018 | KO | EA SB | 08/26/24 23:32 |

**Laboratory References:**

EA SB = Eurofins Eaton Analytical South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

# Accreditation/Certification Summary

Client: CT Laboratories
Job ID: 810-117636-1
Project/Site: 1493633-37 / Chlorite/Chlorate

## Laboratory: Eurofins Eaton Analytical South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| Wisconsin | State | 999766900 | 08-31-24 |

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| 300.0 | | Water | Chlorate |

# Method Summary

Client: CT Laboratories
Job ID: 810-117636-1
Project/Site: 1493633-37 / Chlorite/Chlorate

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| 300.0 | Anions, Ion Chromatography | EPA | EA SB |

**Protocol References:**

EPA = US Environmental Protection Agency

**Laboratory References:**

EA SB = Eurofins Eaton Analytical South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

# Sample Summary

Client: CT Laboratories
Job ID: 810-117636-1
Project/Site: 1493633-37 / Chlorite/Chlorate

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 810-117636-1 | 54MW13 | Water | 08/20/24 09:25 | 08/23/24 10:00 |
| 810-117636-2 | 54MW10 | Water | 08/20/24 11:25 | 08/23/24 10:00 |
| 810-117636-3 | 54MW12 | Water | 08/20/24 13:28 | 08/23/24 10:00 |
| 810-117636-4 | 54TW12 | Water | 08/20/24 13:28 | 08/23/24 10:00 |
| 810-117636-5 | 54MW1 | Water | 08/20/24 15:07 | 08/23/24 10:00 |

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## Sub-Contract Laboratory Chain-of-Custody and Purchase Order

**PURCHASE ORDER #:** 188769 EEA-IN

***The PO# must appear on all invoice and reports!***

***Upon Receipt of Samples, please verify that samples were received in acceptable condition then sign this form and fax to (608)356-2766 or email to the project manager. Sample temperature, upon receipt, must be recorded on this document unless thermal preservation is not a method requirement.***

**Ship to:** **Eurofins Eaton Analytical - IN**
110 South Hill Street
South Bend, IN 46617

Return Invoice and Results to: **bszymanski@ctlaboratories.com**

**CTLaboratories**
Brett M Szymanski
1230 Lange Court
Baraboo WI 53913

**Government UPS Shipping Acct ?** Y (N)

**Ship by:** Speedee ☐ UPS Grnd ☐ UPS 2nd ☐ UPS NDA ☒

**Date Due:** Standard TAT ***RUSH TURNAROUND NEEDED? Y or (N) (Circle One)***

810-117636 Chain of Custody

**Project Name:** RADFORD AAP SWMU 54 **Project State:** VA

**Analytical/QC Criteria:** NONE INDICATED STATE (DOD QSM) NELAP (Circle one) OTHER_____

Report results as EDD? N (Y) (Circle one and indicate type: Basic Excel ) Data Deliverable Package LEVEL: IV

| CTLabs ID# | Sample Date/Time | Matrix | Sample Description | Analyses / Method | | Cost |
|---|---|---|---|---|---|---|
| 1493633 | 8/20/2024 09:25 | GROUND WATER | 54MW13 (Designated MS/MSD) | CHLORATE/CHLORITE | 300.1 | |
| 1493634 | 8/20/2024 11:25 | GROUND WATER | 54MW10 | CHLORATE/CHLORITE | 300.1 | |
| 1493635 | 8/20/2024 13:28 | GROUND WATER | 54MW12 | CHLORATE/CHLORITE | 300.1 | |
| 1493636 | 8/20/2024 13:28 | GROUND WATER | 54TW12 | CHLORATE/CHLORITE | 300.1 | |
| 1493637 | 8/20/2024 15:07 | GROUND WATER | 54MW1 | CHLORATE/CHLORITE | 300.1 | |

Relinquished by: Brett Szymanski Date/ Time: 08/22/2024 12:00

Received by: Kameron Williams Date/ Time: 8/22/24 1200 Receipt Temperature (C)

Initial Temp: 2.4
Corrected Temp: 2.6
IR Gun #: 250 T

**COMMENTS:** **PLEASE LOG USING THE SAMPLE DESCRIPTIONS. 54MW13 IS A DESIGNATED MS/MSD SAMPLE.**

**REPORT ALL SOLIDS ON A DRY WEIGHT BASIS UNLESS OTHERWISE INDICATED**

Form #: FPM1-01
Effective Date: 02/15/14

CT Laboratories Terms and Conditions

1. ORDERS AND RECEIPT OF SAMPLES (Sample Acceptance Policy) - not applicable

2. PAYMENT TERMS

2.1 Services performed by CTL will be in accordance with prices quoted and later confirmed in writing or as stated in the Price Schedule . Invoices may be submitted to Client upon completion of any sample delivery group. Payment in advance is required for all Clients except those whose credit has been established with CTL. For Clients with approved credit, payment terms are net 30 days from the date of invoice by CTL. All overdue payments are subject to an additional interest and service charge of one and one -half percent (1.5%) (or the maximum rate permissible by law, whichever is lesser) per month or portion thereof from the due date until the date of payment. All fees are charged or billed directly to the Client. The billing of a third party will not be accepted without a statement, signed by the third party that acknowledges and accepts payment responsibility. CTL may suspend work and withhold delivery of data under this order at any time in the event Client fails to make timely payment of its invoices . Client shall be responsible for all costs and expenses of collection including reasonable attorneyâ€™s fees. CTL reserves the right to refuse to proceed with work at any time based upon an unfavorable Client credit report.

3. CHANGE ORDERS, TERMINATION

3.1 Changes to the Scope of Work, price, or result delivery date may be initiated by CTL after Sample Acceptance due to any condition which conflicts with analytical , QA or other protocols warranted in these Terms and Conditions. CTL will not proceed with such changes until an agreement with the Client is reached on the amount of any cost, schedule change or technical change to the Scope of Work , and such agreement is documented in writing.

3.2 Changes to the Scope of Work, including but not limited to increasing or decreasing the work, changing test and analysis specification or acceleration in the performance of the work may be initiated by the Client after sample acceptance. Such a change will be documented in writing and may result in a change in cost and turnaround time commitment. CTL's acceptance of such changes is contingent upon technical feasibility and operational capacity.

3.3 Suspension or termination of all or any part of the work may be initiated by the Client. CTL will be compensated consistent with Section 2 of these Terms and Conditions. CTL will complete all work in progress and be paid in full for all work completed.

4. WARRANTIES AND LIABILITY

4.1 Where applicable, CTL will use analytical methodologies which are in substantial conformity with published test methods . CTL has implemented these methods in its Laboratory Quality Manuals and referenced Standard Operating Procedures and where the nature or composition of the sample requires it, CTL reserves the right to deviate from these methodologies as necessary or appropriate , based on the reasonable judgment of CTL, which deviations, if any, will be made on a basis consistent with recognized standards of the industry and/or CTL's Laboratory Quality Manuals. Client may request that CTL perform according to a mutually agreed Quality Assurance Project Plan (QAPP). In the event that samples arrive prior to agreement on a QAPP, CTL will proceed with analyses under its standard Quality Manuals then in effect, and CTL will not be responsible for any resampling or other charges if work must be repeated to comply with a subsequently finalized QAPP .

4.2 CTL shall start preparation and/or analysis within holding times provided that Sample Acceptance occurs within 48 hours of sampling or 1/2 of the holding time for the test, whichever is less. Where resolution of inconsistencies leading to Sample Acceptance does not occur within this period , CTL will use its best efforts to meet holding times and will proceed with the work provided that, in CTL's judgment, the chain-of-custody or definition of the Scope of Work provide sufficient guidance . Reanalysis of samples to comply with CTL's Quality Manuals will be deemed to have met holding times provided the initial analysis was performed within the applicable holding time. Where reanalysis demonstrates that sample matrix interference is the cause of failure to meet any Quality Manual requirements, the warranty will be deemed to have been met.

4.3 CTL warrants that it possesses and maintains all licenses and certifications which are required to perform services under these Terms and Conditions provided that such requirements are specified in writing to CTL prior to Sample Acceptance . CTL will notify the Client in writing of any decertification or revocation of any license, or notice of either, which affects work in progress.

4.4 The warranty obligations set forth in Sections 4.1, 4.2 and 4.3 are the sole and exclusive warranties given by CTL in connection with any services performed by CTL or any Results generated from such services , and CTL gives and makes NO OTHER REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. No representative of CTL is authorized to give or make any other representation or warranty or modify this warranty in any way .

4.5 Client's sole and exclusive remedy for the breach of warranty in connection with any services performed by CTL, will be limited to repeating any services performed, contingent on the Client's providing, at the request of CTL and at the Client's expense, additional sample(s) if necessary. Any reanalysis requested by the Client generating Results consistent with the original Results will be at the Client's expense. If resampling is necessary, CTL's liability for resampling costs will be limited to actual cost or one hundred or one hundred fifty dollars ($150) per sample, whichever is less.

4.6 CTL's liability for any and all causes of action arising hereunder, whether based in contract, tort, warranty, negligence or otherwise, shall be limited to the lesser amount of compensation for the services performed or $100,000. All claims, including those for negligence, shall be deemed waived unless suit thereon is filed within one year after CTL's completion of the services. Under no circumstances, whether arising in contract, tort (including negligence), or otherwise, shall CTL be responsible for loss of use, loss of profits, or for any special, indirect, incidental or consequential damages occasioned by the services performed or by application or use of the reports prepared.

4.7 In no event shall CTL have any responsibility or liability to the Client for any failure or delay in performance by CTL which results , directly or indirectly, in whole or in part, from any cause or circumstance beyond the reasonable control of CTL. Such causes and circumstances shall include, but not be limited to, acts of God, acts of Client, acts or orders of any governmental authority, strikes or other labor disputes, natural disasters, accidents, wars, civil disturbances, equipment breakdown, matrix interference or unknown highly contaminated samples that impact instrument operation, unavailability of supplies from usual suppliers, difficulties or delays in transportation, mail or delivery services, or any other cause beyond CTL's reasonable control.

5. RESULTS, WORK PRODUCT - not applicable

6. INSURANCE

6.1 CTL shall maintain in force during the performance of services under these Terms and Conditions , Workers' Compensation and Employer's Liability Insurance in accordance with the laws of the states having jurisdiction over CTL's employees who are engaged in the performance of the work. CTL shall also maintain during such period, Comprehensive General and Contractual Liability (limit of $2,000,000 per occurrence/ aggregate), Comprehensive Automobile Liability, owned and hired, ($1,000,000 combined single limit), and Professional/Pollution Liability Insurance (limit of $5,000,000 per occurrence/aggregate).Â  Any Client required changes to these limits or conditions may result in a change in cost to the Client.

7. AUDIT

7.1 Upon prior notice to CTL, the Client may audit and inspect CTL's records and accounts covering reimbursable costs related to work done for the Client, for a period of one (1) year after completion of the work. The purpose of any such audit shall be only for verification of such costs, and CTL shall not be required to provide access to cost records where prices are expressed as fixed fees or published unit prices

# Login Sample Receipt Checklist

Client: CT Laboratories

Job Number: 810-117636-1

**Login Number: 117636**

**List Source: Eurofins Eaton Analytical South Bend**

**List Number: 1**

**Creator: Williams, Kameron**

| Question | Answer | Comment |
|---|---|---|
| The cooler's custody seal, if present, is intact. | True | |
| Sample custody seals, if present, are intact. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | True | |
| Samples do not require splitting or compositing. | True | |
| Container provided by EEA | True | |

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# ANALYTICAL SUMMARY REPORT

This report at a minimum contains the following information:

Analytical Report of Test Results
Description of QC Qualifiers
Chain of Custody (copy)
Quality Control Summary (if applicable)
Case Narrative (if applicable)
Correspondence with Client (if applicable)

*This report has been specifically prepared to satisfy project or program requirements. These results are in compliance with NELAC requirements for parameters where accreditation is required or available, unless otherwise noted in the case narrative.*



Unless specifically stated to the contrary, soil/sediment/sludge sample results reported on a Dry Weight Basis

# *ANALYTICAL SAMPLE DATA*

CAPE ENVIRONMENTAL MANAGEMENT
MATT FEITS
500 PINNACLE COURT
SUITE 100
NORCROSS, GA 30071

Project Name: RADFORD AAP
Project Phase: SWMU 54 (IDW)
Project #: 10409-0222
Folder #: 188770
Purchase Order #: SC013781
Contract #: 3648

Arrival Temperature: 5.1
Report Date: 9/5/2024
Date Received: 8/21/2024
Reprint Date: 9/5/2024

Copy: chemistrysvcs@cape-inc.com

CT LAB#: 1493638 Sample Description: 54IDW Client Sample #: Sampled: 8/20/2024 15:58

| Analyte | Result | Units | DL | DOD LOD | DOD LOQ | RL | DF | Qualifier | Leach Date | Prep Date/Time | Analysis Date/Time | Analyst | Method | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Inorganic Results** | | | | | | | | | | | | | | |
| pH | ***7.53*** | S.U. | 0.1 | 0.1 | 0.1 | 0.1 | 1.00 | | | | 8/21/24 15:00 | SJP | EPA 9040C | ^ |
| COD | ***110*** | mg/L | 18 | 50 | 75 | 75 | 1.00 | M | | 8/26/24 16:14 | 8/27/24 13:15 | RLB | EPA 410.4 | ^ |
| **Metals Results** | | | | | | | | | | | | | | |
| Total Potassium | ***1440*** | ug/L | 120 | 250 | 500 | 500 | 1.00 | | | 8/22/24 16:23 | 8/27/24 13:53 | NAH | EPA 6010C | |
| Total Sodium | ***21400*** | ug/L | 200 | 500 | 700 | 700 | 1.00 | | | 8/22/24 16:23 | 8/27/24 13:53 | NAH | EPA 6010C | |
| Total Aluminum | ***949*** | ug/L | 15 | 60 | 120 | 120 | 1.00 | | | 8/22/24 16:23 | 8/27/24 13:53 | NAH | EPA 6010C | |
| Total Antimony | <10 | ug/L | 4.4 | 10 | 20 | 20 | 1.00 | U | | 8/22/24 16:23 | 8/27/24 13:53 | NAH | EPA 6010C | |
| Total Arsenic | <20 | ug/L | 7.7 | 20 | 40 | 40 | 1.00 | U | | 8/22/24 16:23 | 8/27/24 13:53 | NAH | EPA 6010C | |
| Total Barium | ***105*** | ug/L | 0.71 | 2.0 | 4.0 | 4.0 | 1.00 | | | 8/22/24 16:23 | 8/27/24 13:53 | NAH | EPA 6010C | |
| Total Beryllium | <3.0 | ug/L | 0.75 | 3.0 | 8.0 | 8.0 | 1.00 | U | | 8/22/24 16:23 | 8/27/24 13:53 | NAH | EPA 6010C | |
| Total Cadmium | <1.0 | ug/L | 0.41 | 1.0 | 2.0 | 2.0 | 1.00 | U | | 8/22/24 16:23 | 8/27/24 13:53 | NAH | EPA 6010C | |
| Total Calcium | ***77600*** | ug/L | 25 | 50 | 100 | 100 | 1.00 | | | 8/22/24 16:23 | 8/27/24 13:53 | NAH | EPA 6010C | |
| Total Chromium | ***3.0*** | ug/L | 1.1 | 2.5 | 5.0 | 5.0 | 1.00 | J | | 8/22/24 16:23 | 8/27/24 13:53 | NAH | EPA 6010C | |
| Total Cobalt | <2.5 | ug/L | 1.0 | 2.5 | 5.0 | 5.0 | 1.00 | U | | 8/22/24 16:23 | 8/27/24 13:53 | NAH | EPA 6010C | |
| Total Copper | <20 | ug/L | 5.2 | 20 | 40 | 40 | 1.00 | U | | 8/22/24 16:23 | 8/27/24 13:53 | NAH | EPA 6010C | |

Unless specifically stated to the contrary, soil/sediment/sludge sample results reported on a Dry Weight Basis

CT LAB#: 1493638 Sample Description: 54IDW Client Sample #: Sampled: 8/20/2024 15:58

| Analyte | Result | Units | DL | DOD LOD | DOD LOQ | RL | DF | Qualifier | Leach Date | Prep Date/Time | Analysis Date/Time | Analyst | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Iron | ***1190*** | ug/L | 14 | 40 | 80 | 80 | 1.00 | | | 8/22/24 16:23 | 8/27/24 13:53 | NAH | EPA 6010C |
| Total Lead | <5.0 | ug/L | 1.4 | 5.0 | 10 | 10 | 1.00 | U | | 8/22/24 16:23 | 8/27/24 13:53 | NAH | EPA 6010C |
| Total Magnesium | ***29100*** | ug/L | 10 | 25 | 40 | 40 | 1.00 | | | 8/22/24 16:23 | 8/27/24 13:53 | NAH | EPA 6010C |
| Total Manganese | ***83.9*** | ug/L | 1.4 | 3.0 | 5.0 | 5.0 | 1.00 | M | | 8/22/24 16:23 | 8/27/24 13:53 | NAH | EPA 6010C |
| Total Nickel | ***2.0*** | ug/L | 1.5 | 3.0 | 5.0 | 5.0 | 1.00 | J | | 8/22/24 16:23 | 8/27/24 13:53 | NAH | EPA 6010C |
| Total Selenium | <20 | ug/L | 10 | 20 | 40 | 40 | 1.00 | U | | 8/22/24 16:23 | 8/27/24 13:53 | NAH | EPA 6010C |
| Total Silver | ***1.1*** | ug/L | 1.1 | 2.5 | 5.0 | 5.0 | 1.00 | J | | 8/22/24 16:23 | 8/27/24 13:53 | NAH | EPA 6010C |
| Total Thallium | <20 | ug/L | 6.8 | 20 | 40 | 40 | 1.00 | U | | 8/22/24 16:23 | 8/27/24 13:53 | NAH | EPA 6010C |
| Total Vanadium | <3.0 | ug/L | 1.3 | 3.0 | 5.0 | 5.0 | 1.00 | U M | | 8/22/24 16:23 | 8/27/24 13:53 | NAH | EPA 6010C |
| Total Zinc | ***15.8*** | ug/L | 4.5 | 10 | 20 | 20 | 1.00 | J | | 8/22/24 16:23 | 8/27/24 13:53 | NAH | EPA 6010C |
| Total Mercury | <0.080 | ug/L | 0.020 | 0.080 | 0.12 | 0.12 | 1.00 | U M | | 8/22/24 14:00 | 8/23/24 13:06 | MDS | EPA 7470A |

Unless specifically stated to the contrary, soil/sediment/sludge sample results reported on a Dry Weight Basis

Notes:

^ Indicates the laboratory is NELAP accredited for this analyte by the indicated matrix and method . DL (detection limit), LOD (limit of detection), loq (limit of quantitation) as defined by most recent DOD QSM version.

All samples were received intact and properly preserved unless otherwise noted . The results reported relate only to the samples tested. This report shall not be reproduced, except in full, without written approval of this laboratory. The Chain of Custody is attached.

**This report has been specifically prepared to satisfy project or program requirements.** These results are in compliance with NELAC requirements for the parameters where accreditation is required or available, unless noted in the case narrative.

Submitted by: Brett M. Szymanski
Project Manager
608-356-2760

## QC Qualifiers

| Code | Description |
|---|---|
| B | Analyte detected in the associated Method Blank. |
| C | Toxicity present in BOD sample. |
| D | Diluted Out. |
| E | Safe, No Total Coliform detected. |
| F | Unsafe, Total Coliform detected, no E. Coli detected. |
| G | Unsafe, Total Coliform detected and E. Coli detected. |
| H | Holding time exceeded. |
| I | Incubator temperature was outside acceptance limits during test period. |
| J | Estimated value. |
| L | Significant peaks were detected outside the chromatographic window. |
| M | Matrix spike and/or Matrix Spike Duplicate recovery outside acceptance limits. |
| N | Insufficient BOD oxygen depletion. |
| O | Complete BOD oxygen depletion. |
| P | Concentration of analyte differs more than 40% between primary and confirmation analysis. |
| Q | Laboratory Control Sample outside acceptance limits. |
| R | See Narrative at end of report. |
| S | Surrogate standard recovery outside acceptance limits due to apparent matrix effects. |
| T | Sample received with improper preservation or temperature. |
| U | Analyte concentration was below detection limit. |
| V | Raised Quantitation or Reporting Limit due to limited sample amount or dilution for matrix background interference. |
| W | Sample amount received was below program minimum. |
| X | Analyte exceeded calibration range. |
| Y | Replicate/Duplicate precision outside acceptance limits. |
| Z | Specified calibration criteria was not met. |

## Current CT Laboratories Certifications

Wisconsin (WDNR) Chemistry ID# 157066030
Wisconsin (DATCP) Bacteriology ID# 289
Louisiana NELAP (primary) ID# ACC20190002
Illinois NELAP Lab ID# 200073
Kansas NELAP Lab ID# E-10368
Virginia NELAP Lab ID# 460203
ISO/IEC 17025-2005 A2LA Cert # 3806.01
DoD-ELAP A2LA 3806.01
GA EPD Stipulation ID ACC20190002

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# QC Summary Report

**CAPE ENVIRONMENTAL MANAGEMENT** **Project Name: RADFORD AAP**

**SDG #: 0** **Folder #: 188770** **Project #: 10409-0222**

***Duplicate***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284906 | Analysis Date: | 8/27/2024 | Prep Batch #: | 135581 | Matrix: | GROUND WATER |
| CTLab #: | 1495367 | Analysis Time: | 13:15 | Prep Date/Time: | 08/26/2024 16:14 | Method: | E410.4 |
| Parent Sample #: | 1493638 | Analyst: | RLB | Prep Analyst: | RLB | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| COD | 132 | mg/L | 110 | | | | | 18 | 20 |

***Lab Control Spike Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284906 | Analysis Date: | 8/27/2024 | Prep Batch #: | 135581 | Matrix: | LIQUID |
| CTLab #: | 1495366 | Analysis Time: | 13:15 | Prep Date/Time: | 08/26/2024 16:14 | Method: | E410.4 |
| Parent Sample #: | | Analyst: | RLB | Prep Analyst: | RLB | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| COD | 416.1 | mg/L | | | 400.0 | 104 | 90 --- 110 | | |

***Method Blank Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284906 | Analysis Date: | 8/27/2024 | Prep Batch #: | 135581 | Matrix: | LIQUID |
| CTLab #: | 1495365 | Analysis Time: | 13:15 | Prep Date/Time: | 08/26/2024 16:14 | Method: | E410.4 |
| Parent Sample #: | | Analyst: | RLB | Prep Analyst: | RLB | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total COD | 18 | mg/L | | U | 0 | | 37 | | |

***Matrix Spike Duplicate Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284906 | Analysis Date: | 8/27/2024 | Prep Batch #: | 135581 | Matrix: | GROUND WATER |
| CTLab #: | 1495369 | Analysis Time: | 13:15 | Prep Date/Time: | 08/26/2024 16:14 | Method: | E410.4 |
| Parent Sample #: | 1495368 | Analyst: | RLB | Prep Analyst: | RLB | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| COD | 253 | mg/L | 110 | | 148 | 97 | 90 --- 110 | 9 | 20 |

***Matrix Spike Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284906 | Analysis Date: | 8/27/2024 | Prep Batch #: | 135581 | Matrix: | GROUND WATER |
| CTLab #: | 1495368 | Analysis Time: | 13:15 | Prep Date/Time: | 08/26/2024 16:14 | Method: | E410.4 |
| Parent Sample #: | 1493638 | Analyst: | RLB | Prep Analyst: | RLB | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| COD | 278 | mg/L | 110 | | 148 | 114 | 90 --- 110 | | 20 |

***Duplicate***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284841 | Analysis Date: | 8/23/2024 | Prep Batch #: | 135529 | Matrix: | GROUND WATER |
| CTLab #: | 1493667 | Analysis Time: | 13:19 | Prep Date/Time: | 08/22/2024 14:00 | Method: | SW7470A |
| Parent Sample #: | 1493638 | Analyst: | MDS | Prep Analyst: | MDS | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total Mercury | 0.0200 | ug/L | <DL | U | | | 0.12 | 0 | 20 |

***Lab Control Spike Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284841 | Analysis Date: | 8/23/2024 | Prep Batch #: | 135529 | Matrix: | LIQUID |
| CTLab #: | 1493666 | Analysis Time: | 12:56 | Prep Date/Time: | 08/22/2024 14:00 | Method: | SW7470A |
| Parent Sample #: | | Analyst: | MDS | Prep Analyst: | MDS | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total Mercury | 2.09 | ug/L | | | 2.00 | 104 | 82 --- 119 | | |

***Method Blank Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284841 | Analysis Date: | 8/23/2024 | Prep Batch #: | 135529 | Matrix: | LIQUID |
| CTLab #: | 1493665 | Analysis Time: | 13:02 | Prep Date/Time: | 08/22/2024 14:00 | Method: | SW7470A |
| Parent Sample #: | | Analyst: | MDS | Prep Analyst: | MDS | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total Mercury | 0.020 | ug/L | | U | 0 | | 0.06 | | |

***Matrix Spike Duplicate Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284841 | Analysis Date: | 8/23/2024 | Prep Batch #: | 135529 | Matrix: | GROUND WATER |
| CTLab #: | 1493669 | Analysis Time: | 13:32 | Prep Date/Time: | 08/22/2024 14:00 | Method: | SW7470A |
| Parent Sample #: | 1493668 | Analyst: | MDS | Prep Analyst: | MDS | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total Mercury | 1.3 | ug/L | <DL | | 2.0 | 65 | 82 --- 119 | 1 | 20 |

***Matrix Spike Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284841 | Analysis Date: | 8/23/2024 | Prep Batch #: | 135529 | Matrix: | GROUND WATER |
| CTLab #: | 1493668 | Analysis Time: | 13:29 | Prep Date/Time: | 08/22/2024 14:00 | Method: | SW7470A |
| Parent Sample #: | 1493638 | Analyst: | MDS | Prep Analyst: | MDS | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total Mercury | 1.3 | ug/L | <DL | | 2.0 | 65 | 82 --- 119 | | 20 |

***Duplicate***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284910 | Analysis Date: | 8/27/2024 | Prep Batch #: | 135540 | Matrix: | GROUND WATER |
| CTLab #: | 1493949 | Analysis Time: | 14:09 | Prep Date/Time: | 08/22/2024 16:23 | Method: | SW6010 |
| Parent Sample #: | 1493638 | Analyst: | NAH | Prep Analyst: | NAH | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total Potassium | 1440 | ug/L | 1440 | | | | 500 | 0 | 20 |

***Duplicate***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284910 | Analysis Date: | 8/27/2024 | Prep Batch #: | 135540 | Matrix: | GROUND WATER |
| CTLab #: | 1493949 | Analysis Time: | 14:09 | Prep Date/Time: | 08/22/2024 16:23 | Method: | SW6010 |
| Parent Sample #: | 1493638 | Analyst: | NAH | Prep Analyst: | NAH | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total Sodium | 21100 | ug/L | 21400 | | | | 700 | 1 | 20 |

***Lab Control Spike Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284910 | Analysis Date: | 8/27/2024 | Prep Batch #: | 135540 | Matrix: | LIQUID |
| CTLab #: | 1493953 | Analysis Time: | 13:38 | Prep Date/Time: | 08/22/2024 16:23 | Method: | SW6010 |
| Parent Sample #: | | Analyst: | NAH | Prep Analyst: | NAH | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total Potassium | 107000 | ug/L | | | 100000 | 107 | 86 --- 114 | | |

***Lab Control Spike Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284910 | Analysis Date: | 8/27/2024 | Prep Batch #: | 135540 | Matrix: | LIQUID |
| CTLab #: | 1493953 | Analysis Time: | 13:38 | Prep Date/Time: | 08/22/2024 16:23 | Method: | SW6010 |
| Parent Sample #: | | Analyst: | NAH | Prep Analyst: | NAH | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total Sodium | 93100 | ug/L | | | 100000 | 93 | 87 --- 115 | | |

***Method Blank Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284910 | Analysis Date: | 8/27/2024 | Prep Batch #: | 135540 | Matrix: | LIQUID |
| CTLab #: | 1493952 | Analysis Time: | 13:46 | Prep Date/Time: | 08/22/2024 16:23 | Method: | SW6010 |
| Parent Sample #: | | Analyst: | NAH | Prep Analyst: | NAH | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total Potassium | 120 | ug/L | | U | 0 | | 250 | | |

***Method Blank Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284910 | Analysis Date: | 8/27/2024 | Prep Batch #: | 135540 | Matrix: | LIQUID |
| CTLab #: | 1493952 | Analysis Time: | 13:46 | Prep Date/Time: | 08/22/2024 16:23 | Method: | SW6010 |
| Parent Sample #: | | Analyst: | NAH | Prep Analyst: | NAH | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total Sodium | 200 | ug/L | | U | 0 | | 350 | | |

***Matrix Spike Duplicate Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284910 | Analysis Date: | 8/27/2024 | Prep Batch #: | 135540 | Matrix: | GROUND WATER |
| CTLab #: | 1493951 | Analysis Time: | 14:24 | Prep Date/Time: | 08/22/2024 16:23 | Method: | SW6010 |
| Parent Sample #: | 1493950 | Analyst: | NAH | Prep Analyst: | NAH | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total Potassium | 111000 | ug/L | 1440 | | 100000 | 110 | 86 --- 114 | 5 | 20 |

***Matrix Spike Duplicate Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284910 | Analysis Date: | 8/27/2024 | Prep Batch #: | 135540 | Matrix: | GROUND WATER |
| CTLab #: | 1493951 | Analysis Time: | 14:24 | Prep Date/Time: | 08/22/2024 16:23 | Method: | SW6010 |
| Parent Sample #: | 1493950 | Analyst: | NAH | Prep Analyst: | NAH | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total Sodium | 115000 | ug/L | 21400 | | 100000 | 94 | 87 --- 115 | 5 | 20 |

***Matrix Spike Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284910 | Analysis Date: | 8/27/2024 | Prep Batch #: | 135540 | Matrix: | GROUND WATER |
| CTLab #: | 1493950 | Analysis Time: | 14:17 | Prep Date/Time: | 08/22/2024 16:23 | Method: | SW6010 |
| Parent Sample #: | 1493638 | Analyst: | NAH | Prep Analyst: | NAH | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total Potassium | 106000 | ug/L | 1440 | | 100000 | 105 | 86 --- 114 | | 20 |

***Matrix Spike Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284910 | Analysis Date: | 8/27/2024 | Prep Batch #: | 135540 | Matrix: | GROUND WATER |
| CTLab #: | 1493950 | Analysis Time: | 14:17 | Prep Date/Time: | 08/22/2024 16:23 | Method: | SW6010 |
| Parent Sample #: | 1493638 | Analyst: | NAH | Prep Analyst: | NAH | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total Sodium | 109000 | ug/L | 21400 | | 100000 | 88 | 87 --- 115 | | 20 |

***Duplicate***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284911 | Analysis Date: | 8/27/2024 | Prep Batch #: | 135541 | Matrix: | GROUND WATER |
| CTLab #: | 1493958 | Analysis Time: | 14:09 | Prep Date/Time: | 08/22/2024 16:23 | Method: | SW6010 |
| Parent Sample #: | 1493638 | Analyst: | NAH | Prep Analyst: | NAH | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total Aluminum | 1030 | ug/L | 949 | | | | 120 | 8 | 20 |
| Total Antimony | 4.40 | ug/L | <DL | U | | | 20 | 0 | 20 |
| Total Arsenic | 7.70 | ug/L | <DL | U | | | 40 | 0 | 20 |
| Total Barium | 103 | ug/L | 105 | | | | 4.0 | 2 | 20 |
| Total Beryllium | 0.750 | ug/L | <DL | U | | | 8.0 | 0 | 20 |
| Total Cadmium | 1.0 | ug/L | <DL | | | | 2.0 | 200 | 20 |
| Total Calcium | 77800 | ug/L | 77600 | | | | 100 | 0 | 20 |
| Total Chromium | 3.7 | ug/L | 3.0 | | | | 5.0 | 21 | 20 |
| Total Cobalt | 1.00 | ug/L | <DL | U | | | 5.0 | 0 | 20 |
| Total Copper | 5.20 | ug/L | <DL | U | | | 40 | 0 | 20 |
| Total Iron | 1190 | ug/L | 1190 | | | | 80 | 0 | 20 |
| Total Lead | 1.7 | ug/L | <DL | | | | 10 | 200 | 20 |
| Total Magnesium | 29100 | ug/L | 29100 | | | | 40 | 0 | 20 |
| Total Manganese | 82.1 | ug/L | 83.9 | | | | 5.0 | 2 | 20 |
| Total Nickel | 1.8 | ug/L | 2.0 | | | | 5.0 | 11 | 20 |
| Total Selenium | 10.0 | ug/L | <DL | U | | | 40 | 0 | 20 |
| Total Silver | 1.10 | ug/L | 1.1 | U | | | 5.0 | 200 | 20 |
| Total Thallium | 6.80 | ug/L | <DL | U | | | 40 | 0 | 20 |
| Total Vanadium | 1.30 | ug/L | <DL | U | | | 5.0 | 0 | 20 |
| Total Zinc | 16.3 | ug/L | 15.8 | | | | 20 | 3 | 20 |

***Lab Control Spike Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284911 | Analysis Date: | 8/27/2024 | Prep Batch #: | 135541 | Matrix: | LIQUID |
| CTLab #: | 1493957 | Analysis Time: | 13:38 | Prep Date/Time: | 08/22/2024 16:23 | Method: | SW6010 |
| Parent Sample #: | | Analyst: | NAH | Prep Analyst: | NAH | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | | | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Aluminum | 817.0 | ug/L | | | 800.0 | 102 | 86 | --- | 115 | | |
| Total Antimony | 220.0 | ug/L | | | 200.0 | 110 | 88 | --- | 113 | | |
| Total Arsenic | 843.0 | ug/L | | | 800.0 | 105 | 87 | --- | 113 | | |
| Total Barium | 834.0 | ug/L | | | 800.0 | 104 | 88 | --- | 113 | | |
| Total Beryllium | 20.80 | ug/L | | | 20.0 | 104 | 89 | --- | 112 | | |
| Total Cadmium | 21.10 | ug/L | | | 20.0 | 106 | 88 | --- | 113 | | |
| Total Calcium | 211000 | ug/L | | | 200000 | 106 | 87 | --- | 113 | | |
| Total Chromium | 80.10 | ug/L | | | 80.0 | 100 | 90 | --- | 113 | | |
| Total Cobalt | 205.0 | ug/L | | | 200.0 | 102 | 89 | --- | 114 | | |
| Total Copper | 104.0 | ug/L | | | 100.0 | 104 | 86 | --- | 114 | | |
| Total Iron | 417.0 | ug/L | | | 400.0 | 104 | 87 | --- | 115 | | |
| Total Lead | 195.0 | ug/L | | | 200.0 | 98 | 86 | --- | 113 | | |
| Total Magnesium | 98700 | ug/L | | | 100000 | 99 | 85 | --- | 113 | | |
| Total Manganese | 193.0 | ug/L | | | 200.0 | 96 | 90 | --- | 114 | | |
| Total Nickel | 207.0 | ug/L | | | 200.0 | 104 | 88 | --- | 113 | | |
| Total Selenium | 884.0 | ug/L | | | 800.0 | 110 | 83 | --- | 114 | | |
| Total Silver | 20.80 | ug/L | | | 20.0 | 104 | 84 | --- | 115 | | |
| Total Thallium | 804.0 | ug/L | | | 800.0 | 100 | 85 | --- | 114 | | |
| Total Vanadium | 204.0 | ug/L | | | 200.0 | 102 | 90 | --- | 111 | | |
| Total Zinc | 219.0 | ug/L | | | 200.0 | 110 | 87 | --- | 115 | | |

***Method Blank Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284911 | Analysis Date: | 8/27/2024 | Prep Batch #: | 135541 | Matrix: | LIQUID |
| CTLab #: | 1493956 | Analysis Time: | 13:46 | Prep Date/Time: | 08/22/2024 16:23 | Method: | SW6010 |
| Parent Sample #: | | Analyst: | NAH | Prep Analyst: | NAH | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total Aluminum | 15 | ug/L | | U | 0 | | 60 | | |
| Total Antimony | 4.4 | ug/L | | U | 0 | | 10 | | |
| Total Arsenic | 7.7 | ug/L | | U | 0 | | 20 | | |
| Total Barium | 0.71 | ug/L | | U | 0 | | 2.0 | | |
| Total Beryllium | 0.75 | ug/L | | U | 0 | | 4.0 | | |
| Total Cadmium | 0.41 | ug/L | | U | 0 | | 1.0 | | |
| Total Calcium | 25 | ug/L | | U | 0 | | 50 | | |
| Total Chromium | 1.1 | ug/L | | U | 0 | | 2.5 | | |
| Total Cobalt | 1.0 | ug/L | | U | 0 | | 2.5 | | |
| Total Copper | 5.2 | ug/L | | U | 0 | | 20 | | |
| Total Iron | 14 | ug/L | | U | 0 | | 40 | | |
| Total Lead | 1.4 | ug/L | | U | 0 | | 5.0 | | |
| Total Magnesium | 10 | ug/L | | U | 0 | | 20 | | |
| Total Manganese | 1.4 | ug/L | | U | 0 | | 2.5 | | |
| Total Nickel | 1.5 | ug/L | | U | 0 | | 2.5 | | |
| Total Selenium | 10 | ug/L | | U | 0 | | 20 | | |
| Total Silver | 1.1 | ug/L | | U | 0 | | 2.5 | | |
| Total Thallium | 6.8 | ug/L | | U | 0 | | 20 | | |
| Total Vanadium | 1.3 | ug/L | | U | 0 | | 2.5 | | |
| Total Zinc | 4.5 | ug/L | | U | 0 | | 10 | | |

***Matrix Spike Duplicate Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284911 | Analysis Date: | 8/27/2024 | Prep Batch #: | 135541 | Matrix: | GROUND WATER |
| CTLab #: | 1493960 | Analysis Time: | 14:24 | Prep Date/Time: | 08/22/2024 16:23 | Method: | SW6010 |
| Parent Sample #: | 1493959 | Analyst: | NAH | Prep Analyst: | NAH | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | | | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Aluminum | 1940 | ug/L | 949 | | 800 | 124 | 86 | --- | 115 | 7 | 20 |
| Total Antimony | 231 | ug/L | <DL | | 200 | 116 | 88 | --- | 113 | 5 | 20 |
| Total Arsenic | 877 | ug/L | <DL | | 800 | 110 | 87 | --- | 113 | 5 | 20 |
| Total Barium | 954 | ug/L | 105 | | 800 | 106 | 88 | --- | 113 | 5 | 20 |
| Total Beryllium | 20.5 | ug/L | <DL | | 20.0 | 102 | 89 | --- | 112 | 5 | 20 |
| Total Cadmium | 21.7 | ug/L | <DL | | 20.0 | 108 | 88 | --- | 113 | 5 | 20 |
| Total Calcium | 292000 | ug/L | 77600 | | 200000 | 107 | 87 | --- | 113 | 6 | 20 |
| Total Chromium | 86.1 | ug/L | 3.0 | | 80.0 | 104 | 90 | --- | 113 | 5 | 20 |
| Total Cobalt | 210 | ug/L | <DL | | 200 | 105 | 89 | --- | 114 | 5 | 20 |
| Total Copper | 111 | ug/L | <DL | | 100 | 111 | 86 | --- | 114 | 6 | 20 |
| Total Iron | 1570 | ug/L | 1190 | | 400 | 95 | 87 | --- | 115 | 7 | 20 |
| Total Lead | 200 | ug/L | <DL | | 200 | 100 | 86 | --- | 113 | 5 | 20 |
| Total Magnesium | 130000 | ug/L | 29100 | | 100000 | 101 | 85 | --- | 113 | 6 | 20 |
| Total Manganese | 271 | ug/L | 83.9 | | 200 | 94 | 90 | --- | 114 | 5 | 20 |
| Total Nickel | 212 | ug/L | 2.0 | | 200 | 105 | 88 | --- | 113 | 5 | 20 |
| Total Selenium | 901 | ug/L | <DL | | 800 | 113 | 83 | --- | 114 | 4 | 20 |
| Total Silver | 22.4 | ug/L | 1.1 | | 20.0 | 106 | 84 | --- | 115 | 5 | 20 |
| Total Thallium | 808 | ug/L | <DL | | 800 | 101 | 85 | --- | 114 | 5 | 20 |
| Total Vanadium | 166 | ug/L | <DL | | 200 | 83 | 90 | --- | 111 | 5 | 20 |
| Total Zinc | 242 | ug/L | 15.8 | | 200 | 113 | 87 | --- | 115 | 6 | 20 |

***Matrix Spike Water***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Analytical Run #: | 284911 | Analysis Date: | 8/27/2024 | Prep Batch #: | 135541 | Matrix: | GROUND WATER |
| CTLab #: | 1493959 | Analysis Time: | 14:17 | Prep Date/Time: | 08/22/2024 16:23 | Method: | SW6010 |
| Parent Sample #: | 1493638 | Analyst: | NAH | Prep Analyst: | NAH | | |

| Analyte | QC sample result | Units | Parent sample result | Qualifier(s) | Spike Amount Added | % Recovery | Control Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total Aluminum | 1810 | ug/L | 949 | | 800 | 108 | 86 --- 115 | | 20 |
| Total Antimony | 219 | ug/L | <DL | | 200 | 110 | 88 --- 113 | | 20 |
| Total Arsenic | 836 | ug/L | <DL | | 800 | 104 | 87 --- 113 | | 20 |
| Total Barium | 906 | ug/L | 105 | | 800 | 100 | 88 --- 113 | | 20 |
| Total Beryllium | 19.5 | ug/L | <DL | | 20.0 | 98 | 89 --- 112 | | 20 |
| Total Cadmium | 20.6 | ug/L | <DL | | 20.0 | 103 | 88 --- 113 | | 20 |
| Total Calcium | 276000 | ug/L | 77600 | | 200000 | 99 | 87 --- 113 | | 20 |
| Total Chromium | 82.2 | ug/L | 3.0 | | 80.0 | 99 | 90 --- 113 | | 20 |
| Total Cobalt | 200 | ug/L | <DL | | 200 | 100 | 89 --- 114 | | 20 |
| Total Copper | 105 | ug/L | <DL | | 100 | 105 | 86 --- 114 | | 20 |
| Total Iron | 1460 | ug/L | 1190 | | 400 | 68 | 87 --- 115 | | 20 |
| Total Lead | 191 | ug/L | <DL | | 200 | 96 | 86 --- 113 | | 20 |
| Total Magnesium | 123000 | ug/L | 29100 | | 100000 | 94 | 85 --- 113 | | 20 |
| Total Manganese | 257 | ug/L | 83.9 | | 200 | 87 | 90 --- 114 | | 20 |
| Total Nickel | 202 | ug/L | 2.0 | | 200 | 100 | 88 --- 113 | | 20 |
| Total Selenium | 865 | ug/L | <DL | | 800 | 108 | 83 --- 114 | | 20 |
| Total Silver | 21.3 | ug/L | 1.1 | | 20.0 | 101 | 84 --- 115 | | 20 |
| Total Thallium | 771 | ug/L | <DL | | 800 | 96 | 85 --- 114 | | 20 |
| Total Vanadium | 158 | ug/L | <DL | | 200 | 79 | 90 --- 111 | | 20 |
| Total Zinc | 229 | ug/L | 15.8 | | 200 | 107 | 87 --- 115 | | 20 |

CT LABORATORIES
delivering more than data from your environmental analyses

# Sample Condition Report

| | | | |
|---|---|---|---|
| Folder #: | 188770 | Print Date / Time: | 08/21/2024 11:12 |
| Client: | CAPE ENVIRONMENTAL MANAGEMENT | Received Date / Time / By: | 08/21/2024 10:30 DJL |
| Project Name: | RADFORD AAP | Log-In Date / Time / By: | 08/21/2024 11:12 erc |
| Project Phase: | SWMU 54 (IDW) | Project #: | 10409-0222 PM: BMS |
| Coolers: | 6542 | Temperature: | 5.1 C On Ice: **Y** |
| Custody Seals Present : | **Y** | COC Present:? | **Y** Complete? **Y** |
| Seal Intact? | **Y** | Numbers: | DATED AND SIGNED |
| Ship Method: | FEDEX EXPRESS | Tracking Number: | 778055533145 |
| Adequate Packaging: | **Y** | Temp Blank Enclosed? | **Y** |

Notes: THE SAMPLE WAS RECEIVED IN GOOD CONDITION ON ICE.

TWO (2) CUSTODY SEALS WERE PRESENT AND INTACT ON THE COOLER UPON RECEIPT (BOTH WERE DATED 8/20/2024 AND SIGNED).

| Sample ID / | Description | Container Type | Cond. Code | pH OK?/Filtered? | Tests |
|---|---|---|---|---|---|
| **1493638** | 54IDW | | | | |
| | | H2SO4 PL | 1 | Y / N | COD |
| | | **Total # of Containers of Type** | **( *H2SO4 PL* ) = 1** | | |
| **1493638** | 54IDW | | | | |
| | | HNO3 | 1 | Y / N | HG,ICP,K,NA |
| | | **Total # of Containers of Type** | **( *HNO3* ) = 1** | | |
| **1493638** | 54IDW | | | | |
| | | UNPRES PL | 1 | / | pH |
| | | **Total # of Containers of Type** | **( *UNPRES PL* ) = 1** | | |

*Condition Code* *Condition Description*

1 Sample Received OK

Rev. 02/2017

# CHAIN OF CUSTODY

Page 1 of 1

Company: CAPE Environmental
Project Contact: Matt Feits
Telephone: (724) 622-3625
Project Name: Radford AAP SWMU 54
Project #:
Location: Radford, VA
Sampled By: Y Miyakawa, P. Taylor

1230 Lange Court, Baraboo, WI 53913
608-356-2760 Fax 608-356-2766
www.ctlaboratories.com

Folder #: 188769 Folder #: 188770
Company: CAPE EN Company: CAPE ENVIRONMENTAL MAN
Project: RADFORD Project: RADFORD AAP
Logged By: erc Logged By: erc PM: BMS

SDWA NPDES
Other _____

Report To:
EMAIL: Chemistry SVCS@cape-inc
Company: mfeits@cape-inc.com com
Address: Cape Environmental Managem
500 Pinnacle Court #100
Norcross, GA 30071

Invoice To:*
EMAIL:
Company:
Address: Same

*Party listed is responsible for payment of invoice as per CT Laboratories' terms and conditions

**Client Special Instructions**

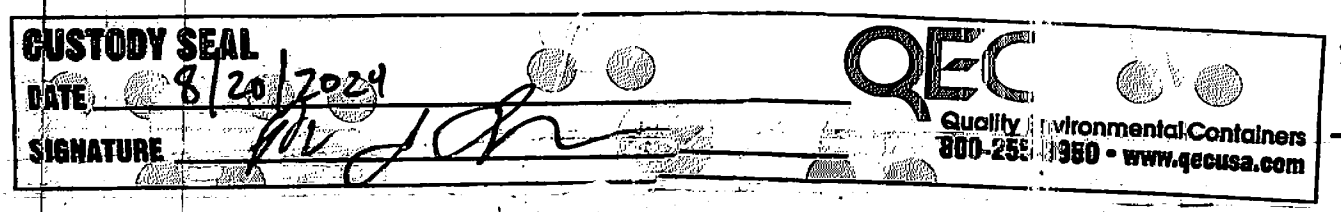
Matrix:
GW – groundwater SW - surface water WW - wastewater DW - drinking water
S - soil/sediment SL - sludge A - air M - misc/waste

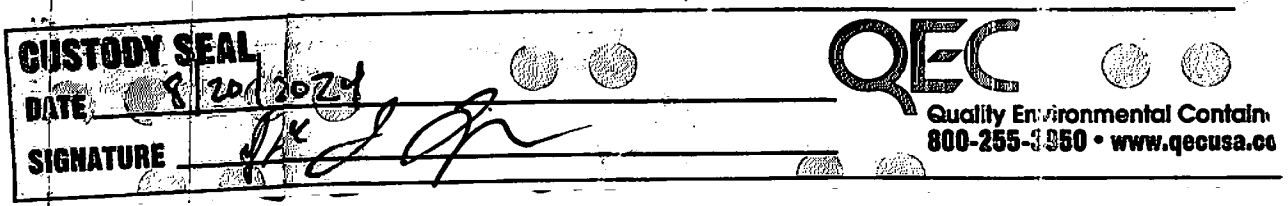
| 2024 Collection Date | Time | Matrix | Grab/ Comp | Sample # | Sample ID Description | Filtered? Y/N | TOC 9060A | Anions 9056A | TIC 9060A | Chlorate/Chlorite | COD 410.4 | pH 9040C | TAL Metals | Total # Containers | Designated MS/MSD | CT Lab ID # (Lab use only) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Fill in Spaces with Bottles per Test | | | | | | | | | |
| 8/20 | 0925 | GW | G | | 54MW13 | N | 3 | 3 | 9 | 3 | | | | 18 | X | 1493631 |
| 8/20 | 1125 | GW | G | | 54MW10 | N | 1 | 1 | 3 | 1 | | | | 6 | | 34 |
| 8/20 | 1328 | GW | G | | 54MW12 | N | 1 | 1 | 3 | 1 | | | | 6 | | 35 |
| 8/20 | 1328 | GW | G | | 54TW12 | N | 1 | 1 | 3 | 1 | | | | 6 | | 36 |
| 8/20 | 1507 | GW | G | | 54MW1 | N | 1 | 1 | 3 | 1 | | | | 6 | | 37 |
| 8/20 | 1558 | GW | G | | 54IDW | N | | | | | 1 | 1 | 1 | 3 | | 38 |

Turnaround Time
Normal RUSH*
Date Needed: _____
*Rush analysis requires prior CT Laboratories' approval*
Surcharges:
24 hr 200%
2-3 days 100%
4-9 days 50%

| Relinquished By: | Date/Time | Received By: | Date/Time | Lab Use Only |
|---|---|---|---|---|
| Paul I. Taylor | 8/20/2024 1700 | Fedex | 8/20/2024 1700 | Ice Present (Yes) No |
| Received by: | Date/Time | Received for Laboratory by: | Date/Time | Temp 5-1 IR Gun 37 |
| | | | 8/21/24 1010 | Cooler # 6541 |
| | | | 8/22/24 1111 | |




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Ice Present (Yes) No
Temperature 5.1
Initials DL
Date 8/21/24 Time 10:30
Cooler # 6542

The results set forth herein are provided by SGS North America Inc.

*e-Hardcopy 2.0*
*Automated Report*

## Technical Report for

### Cape Environmental

Radford Army Ammunition Plant SMWU 54; VA

SGS Job Number: FC18168

Sampling Date: 08/20/24



Report to:

Cape Environmental

ajohnson@cape-inc.com
chemistrysvcs@cape-inc.com; nsaikaly@cape-inc.com
ATTN: Alexis Johnson

Total number of pages in report: 20

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable unless noted in the narrative, comments or footnotes.

Norm Farmer
Technical Director

Client Service contact: Jean Dent-Smith 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

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EHS.US.CustomerCare@sgs.com

Sections:

1 2 3 4 5

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SGS North America Inc.

# Sample Summary

Cape Environmental

**Job No:** FC18168

Radford Army Ammunition Plant SMWU 54; VA

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| FC18168-1 | 08/20/24 | 09:25 | YMPT | 08/21/24 | AQ | Ground Water | 54MW13 |
| FC18168-1D | 08/20/24 | 09:25 | YMPT | 08/21/24 | AQ | Water Dup/MSD | 54MW13 |
| FC18168-1S | 08/20/24 | 09:25 | YMPT | 08/21/24 | AQ | Water Matrix Spike | 54MW13 |
| FC18168-2 | 08/20/24 | 11:25 | YMPT | 08/21/24 | AQ | Ground Water | 54MW10 |
| FC18168-3 | 08/20/24 | 13:28 | YMPT | 08/21/24 | AQ | Ground Water | 54MW12 |
| FC18168-4 | 08/20/24 | 13:28 | YMPT | 08/21/24 | AQ | Ground Water | 54TW12 |
| FC18168-5 | 08/20/24 | 15:07 | YMPT | 08/21/24 | AQ | Ground Water | 54MW1 |

# SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Cape Environmental **Job No:** FC18168

**Site:** Radford Army Ammunition Plant SMWU 54; VA **Report Date** 9/10/2024 5:55:24 PM

On 08/21/2024, 5 Sample(s), 0 Trip Blank(s), 0 Equip. Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 3.4 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC18168 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

## MS Semi-volatiles By Method SW846 6850

**Matrix:** AQ **Batch ID:** OP5218

Sample(s) FC18168-1MS, FC18168-1MSD were used as the QC samples indicated.

## GC/LC Semi-volatiles By Method SW846 8330B

**Matrix:** AQ **Batch ID:** OP4973

Sample(s) FC18168-1MS, FC18168-1MSD were used as the QC samples indicated.

Matrix Spike Recovery(s) for 3,5-Dinitroaniline, TNX are outside control limits. Probable cause is due to matrix interference.

Matrix Spike Duplicate Recovery(s) for 3,5-Dinitroaniline, HMX, TNX are outside control limits. Probable cause is due to matrix interference.

FC18168-1 for 3,5-Dinitroaniline: Primary and confirmation results differ by more than 40%.

FC18168-1: All hits confirmed by reanalysis on a dissimilar column.

FC18168-1: Confirmation run.

FC18168-2: All hits confirmed by reanalysis on a dissimilar column.

FC18168-2: Confirmation run.

FC18168-3 for 3,5-Dinitroaniline: Primary and confirmation results differ by more than 40%.

FC18168-3: All hits confirmed by reanalysis on a dissimilar column.

FC18168-3: Confirmation run.

FC18168-4 for 3,5-Dinitroaniline: Primary and confirmation results differ by more than 40%.

FC18168-4: All hits confirmed by reanalysis on a dissimilar column.

FC18168-4: Confirmation run.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

_____

Kim Benham, Report Generation (signature on file)

# Summary of Hits



**Job Number:** FC18168
**Account:** Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA
**Collected:** 08/20/24



| Lab Sample ID / Analyte | Client Sample ID | Result/ Qual | LOQ | LOD | Units | Method |
|---|---|---|---|---|---|---|
| **FC18168-1** | **54MW13** | | | | | |
| Perchlorate | | 0.37 | 0.20 | 0.10 | ug/l | SW846 6850 |
| HMX [a] | | 2.2 | 0.22 | 0.11 | ug/l | SW846 8330B |
| RDX [a] | | 1.2 | 0.22 | 0.11 | ug/l | SW846 8330B |
| MNX [a] | | 1.5 | 0.22 | 0.11 | ug/l | SW846 8330B |
| 3,5-Dinitroaniline [b] | | 3.3 | 0.22 | 0.11 | ug/l | SW846 8330B |
| 2-amino-4,6-Dinitrotoluene [a] | | 1.8 | 0.22 | 0.11 | ug/l | SW846 8330B |
| 4-amino-2,6-Dinitrotoluene [a] | | 1.6 | 0.22 | 0.11 | ug/l | SW846 8330B |
| 1,3,5-Trinitrobenzene [a] | | 17.7 | 0.22 | 0.11 | ug/l | SW846 8330B |
| 2,4,6-Trinitrotoluene [a] | | 7.0 | 0.22 | 0.11 | ug/l | SW846 8330B |
| **FC18168-2** | **54MW10** | | | | | |
| 2-amino-4,6-Dinitrotoluene [a] | | 0.16 J | 0.20 | 0.10 | ug/l | SW846 8330B |
| 4-amino-2,6-Dinitrotoluene [a] | | 0.16 J | 0.20 | 0.10 | ug/l | SW846 8330B |
| **FC18168-3** | **54MW12** | | | | | |
| Perchlorate | | 0.77 | 0.20 | 0.10 | ug/l | SW846 6850 |
| HMX [a] | | 6.6 | 0.20 | 0.10 | ug/l | SW846 8330B |
| RDX [b] | | 11.0 | 0.20 | 0.10 | ug/l | SW846 8330B |
| 3,5-Dinitroaniline [b] | | 22.4 | 0.20 | 0.10 | ug/l | SW846 8330B |
| 2-amino-4,6-Dinitrotoluene [a] | | 3.1 | 0.20 | 0.10 | ug/l | SW846 8330B |
| 4-amino-2,6-Dinitrotoluene [a] | | 2.3 | 0.20 | 0.10 | ug/l | SW846 8330B |
| 1,3,5-Trinitrobenzene [a] | | 6.5 | 0.20 | 0.10 | ug/l | SW846 8330B |
| 2,4,6-Trinitrotoluene [a] | | 4.8 | 0.20 | 0.10 | ug/l | SW846 8330B |
| **FC18168-4** | **54TW12** | | | | | |
| Perchlorate | | 0.78 | 0.20 | 0.10 | ug/l | SW846 6850 |
| HMX [a] | | 7.3 | 0.21 | 0.10 | ug/l | SW846 8330B |
| RDX [a] | | 5.5 | 0.21 | 0.10 | ug/l | SW846 8330B |
| 3,5-Dinitroaniline [b] | | 10.8 | 0.21 | 0.10 | ug/l | SW846 8330B |
| 2-amino-4,6-Dinitrotoluene [a] | | 2.3 | 0.21 | 0.10 | ug/l | SW846 8330B |
| 4-amino-2,6-Dinitrotoluene [a] | | 1.9 | 0.21 | 0.10 | ug/l | SW846 8330B |
| 1,3,5-Trinitrobenzene [a] | | 6.2 | 0.21 | 0.10 | ug/l | SW846 8330B |
| 2,4,6-Trinitrotoluene [a] | | 4.8 | 0.21 | 0.10 | ug/l | SW846 8330B |
| **FC18168-5** | **54MW1** | | | | | |

No hits reported in this sample.

(a) All hits confirmed by reanalysis on a dissimilar column.
(b) All hits confirmed by reanalysis on a dissimilar column. Primary and confirmation results differ by more than

# Summary of Hits

**Job Number:** FC18168
**Account:** Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA
**Collected:** 08/20/24



| Lab Sample ID<br>Analyte | Client Sample ID | Result/<br>Qual | LOQ | LOD | Units | Method |
|---|---|---|---|---|---|---|

40%.

## Sample Results

Report of Analysis

# Report of Analysis





**Client Sample ID:** 54MW13
**Lab Sample ID:** FC18168-1
**Matrix:** AQ - Ground Water
**Method:** SW846 6850 IN HOUSE
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Date Sampled:** 08/20/24
**Date Received:** 08/21/24
**Percent Solids:** n/a

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | 5Q30934.D | 1 | 09/10/24 15:17 | AL | 09/09/24 15:50 | OP5218 | S5Q510 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 10.0 ml | 10.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | LOQ | LOD | DL | Units | Q |
|---|---|---|---|---|---|---|---|
| 14797-73-0 | Perchlorate | 0.37 | 0.20 | 0.10 | 0.050 | ug/l | |

U = Not detected LOD = Limit of Detection
LOQ = Limit of Quantitation DL = Detection Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





**Client Sample ID:** 54MW13
**Lab Sample ID:** FC18168-1
**Matrix:** AQ - Ground Water
**Method:** SW846 8330B SW846 3535A
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Date Sampled:** 08/20/24
**Date Received:** 08/21/24
**Percent Solids:** n/a

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 [a] | BB083947.D | 1 | 08/29/24 12:52 | FS | 08/26/24 12:30 | OP4973 | GBB2581 |
| Run #2 [b] | GG629810.D | 1 | 08/30/24 09:54 | FS | 08/26/24 12:30 | OP4973 | GGG3464 |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 910 ml | 10.0 ml |
| Run #2 | 910 ml | 10.0 ml |

| CAS No. | Compound | Result | LOQ | LOD | DL | Units | Q |
|---|---|---|---|---|---|---|---|
| 2691-41-0 | HMX | 2.2 | 0.22 | 0.11 | 0.088 | ug/l | |
| 121-82-4 | RDX | 1.2 | 0.22 | 0.11 | 0.088 | ug/l | |
| | DNX | 0.11 U | 0.22 | 0.11 | 0.088 | ug/l | |
| | MNX | 1.5 | 0.22 | 0.11 | 0.088 | ug/l | |
| | TNX | 0.11 U | 0.22 | 0.11 | 0.088 | ug/l | |
| 618-87-1 | 3,5-Dinitroaniline [c] | 3.3 | 0.22 | 0.11 | 0.088 | ug/l | |
| 99-65-0 | 1,3-Dinitrobenzene | 0.11 U | 0.22 | 0.11 | 0.088 | ug/l | |
| 606-20-2 | 2,6-Dinitrotoluene | 0.11 U | 0.22 | 0.11 | 0.088 | ug/l | |
| 121-14-2 | 2,4-Dinitrotoluene | 0.11 U | 0.22 | 0.11 | 0.088 | ug/l | |
| 35572-78-2 | 2-amino-4,6-Dinitrotoluene | 1.8 | 0.22 | 0.11 | 0.088 | ug/l | |
| 19406-51-0 | 4-amino-2,6-Dinitrotoluene | 1.6 | 0.22 | 0.11 | 0.088 | ug/l | |
| 98-95-3 | Nitrobenzene | 0.11 U | 0.22 | 0.11 | 0.11 | ug/l | |
| 88-72-2 | o-Nitrotoluene | 0.11 U | 0.22 | 0.11 | 0.088 | ug/l | |
| 99-08-1 | m-Nitrotoluene | 0.11 U | 0.22 | 0.11 | 0.088 | ug/l | |
| 99-99-0 | p-Nitrotoluene | 0.11 U | 0.22 | 0.11 | 0.088 | ug/l | |
| 479-45-8 | Tetryl | 0.11 U | 0.22 | 0.11 | 0.088 | ug/l | |
| 99-35-4 | 1,3,5-Trinitrobenzene | 17.7 | 0.22 | 0.11 | 0.11 | ug/l | |
| 118-96-7 | 2,4,6-Trinitrotoluene | 7.0 | 0.22 | 0.11 | 0.088 | ug/l | |
| 55-63-0 | Nitroglycerine | 1.1 U | 2.2 | 1.1 | 0.55 | ug/l | |
| 78-11-5 | PETN | 1.1 U | 2.2 | 1.1 | 0.55 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 610-39-9 | 3,4-Dinitrotoluene | 89% | 84% | 70-136% |

(a) All hits confirmed by reanalysis on a dissimilar column.
(b) Confirmation run.
(c) Primary and confirmation results differ by more than 40%.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

# Report of Analysis





**Client Sample ID:** 54MW10
**Lab Sample ID:** FC18168-2
**Matrix:** AQ - Ground Water
**Method:** SW846 6850 IN HOUSE
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Date Sampled:** 08/20/24
**Date Received:** 08/21/24
**Percent Solids:** n/a

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | 5Q30910.D | 1 | 09/09/24 20:56 | AL | 09/09/24 15:50 | OP5218 | S5Q509 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 10.0 ml | 10.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | LOQ | LOD | DL | Units | Q |
|---|---|---|---|---|---|---|---|
| 14797-73-0 | Perchlorate | 0.10 U | 0.20 | 0.10 | 0.050 | ug/l | |

U = Not detected LOD = Limit of Detection
LOQ = Limit of Quantitation DL = Detection Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





**Client Sample ID:** 54MW10
**Lab Sample ID:** FC18168-2 **Date Sampled:** 08/20/24
**Matrix:** AQ - Ground Water **Date Received:** 08/21/24
**Method:** SW846 8330B SW846 3535A **Percent Solids:** n/a
**Project:** Radford Army Ammunition Plant SMWU 54; VA

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 [a] | BB083950.D | 1 | 08/29/24 14:14 | FS | 08/26/24 12:30 | OP4973 | GBB2581 |
| Run #2 [b] | GG629811.D | 1 | 08/30/24 10:22 | FS | 08/26/24 12:30 | OP4973 | GGG3464 |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 990 ml | 10.0 ml |
| Run #2 | 990 ml | 10.0 ml |

| CAS No. | Compound | Result | LOQ | LOD | DL | Units | Q |
|---|---|---|---|---|---|---|---|
| 2691-41-0 | HMX | 0.10 U | 0.20 | 0.10 | 0.081 | ug/l | |
| 121-82-4 | RDX | 0.10 U | 0.20 | 0.10 | 0.081 | ug/l | |
| | DNX | 0.10 U | 0.20 | 0.10 | 0.081 | ug/l | |
| | MNX | 0.10 U | 0.20 | 0.10 | 0.081 | ug/l | |
| | TNX | 0.10 U | 0.20 | 0.10 | 0.081 | ug/l | |
| 618-87-1 | 3,5-Dinitroaniline | 0.10 U | 0.20 | 0.10 | 0.081 | ug/l | |
| 99-65-0 | 1,3-Dinitrobenzene | 0.10 U | 0.20 | 0.10 | 0.081 | ug/l | |
| 606-20-2 | 2,6-Dinitrotoluene | 0.10 U | 0.20 | 0.10 | 0.081 | ug/l | |
| 121-14-2 | 2,4-Dinitrotoluene | 0.10 U | 0.20 | 0.10 | 0.081 | ug/l | |
| 35572-78-2 | 2-amino-4,6-Dinitrotoluene | 0.16 | 0.20 | 0.10 | 0.081 | ug/l | J |
| 19406-51-0 | 4-amino-2,6-Dinitrotoluene | 0.16 | 0.20 | 0.10 | 0.081 | ug/l | J |
| 98-95-3 | Nitrobenzene | 0.10 U | 0.20 | 0.10 | 0.098 | ug/l | |
| 88-72-2 | o-Nitrotoluene | 0.10 U | 0.20 | 0.10 | 0.081 | ug/l | |
| 99-08-1 | m-Nitrotoluene | 0.10 U | 0.20 | 0.10 | 0.081 | ug/l | |
| 99-99-0 | p-Nitrotoluene | 0.10 U | 0.20 | 0.10 | 0.081 | ug/l | |
| 479-45-8 | Tetryl | 0.10 U | 0.20 | 0.10 | 0.081 | ug/l | |
| 99-35-4 | 1,3,5-Trinitrobenzene | 0.10 U | 0.20 | 0.10 | 0.10 | ug/l | |
| 118-96-7 | 2,4,6-Trinitrotoluene | 0.10 U | 0.20 | 0.10 | 0.081 | ug/l | |
| 55-63-0 | Nitroglycerine | 1.0 U | 2.0 | 1.0 | 0.51 | ug/l | |
| 78-11-5 | PETN | 1.0 U | 2.0 | 1.0 | 0.51 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 610-39-9 | 3,4-Dinitrotoluene | 89% | 86% | 70-136% |

(a) All hits confirmed by reanalysis on a dissimilar column.
(b) Confirmation run.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

# Report of Analysis





**Client Sample ID:** 54MW12
**Lab Sample ID:** FC18168-3
**Matrix:** AQ - Ground Water
**Method:** SW846 6850 IN HOUSE
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Date Sampled:** 08/20/24
**Date Received:** 08/21/24
**Percent Solids:** n/a

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | 5Q30911.D | 1 | 09/09/24 21:03 | AL | 09/09/24 15:50 | OP5218 | S5Q509 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 10.0 ml | 10.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | LOQ | LOD | DL | Units | Q |
|---|---|---|---|---|---|---|---|
| 14797-73-0 | Perchlorate | 0.77 | 0.20 | 0.10 | 0.050 | ug/l | |

U = Not detected LOD = Limit of Detection
LOQ = Limit of Quantitation DL = Detection Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





**Client Sample ID:** 54MW12
**Lab Sample ID:** FC18168-3
**Matrix:** AQ - Ground Water
**Method:** SW846 8330B SW846 3535A
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Date Sampled:** 08/20/24
**Date Received:** 08/21/24
**Percent Solids:** n/a

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 [a] | BB083951.D | 1 | 08/29/24 14:51 | FS | 08/26/24 12:30 | OP4973 | GBB2581 |
| Run #2 [b] | GG629812.D | 1 | 08/30/24 10:51 | FS | 08/26/24 12:30 | OP4973 | GGG3464 |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 1000 ml | 10.0 ml |
| Run #2 | 1000 ml | 10.0 ml |

| CAS No. | Compound | Result | LOQ | LOD | DL | Units | Q |
|---|---|---|---|---|---|---|---|
| 2691-41-0 | HMX | 6.6 | 0.20 | 0.10 | 0.080 | ug/l | |
| 121-82-4 | RDX [c] | 11.0 | 0.20 | 0.10 | 0.080 | ug/l | |
| | DNX | 0.10 U | 0.20 | 0.10 | 0.080 | ug/l | |
| | MNX | 0.10 U | 0.20 | 0.10 | 0.080 | ug/l | |
| | TNX | 0.10 U | 0.20 | 0.10 | 0.080 | ug/l | |
| 618-87-1 | 3,5-Dinitroaniline [c] | 22.4 | 0.20 | 0.10 | 0.080 | ug/l | |
| 99-65-0 | 1,3-Dinitrobenzene | 0.10 U | 0.20 | 0.10 | 0.080 | ug/l | |
| 606-20-2 | 2,6-Dinitrotoluene | 0.10 U | 0.20 | 0.10 | 0.080 | ug/l | |
| 121-14-2 | 2,4-Dinitrotoluene | 0.10 U | 0.20 | 0.10 | 0.080 | ug/l | |
| 35572-78-2 | 2-amino-4,6-Dinitrotoluene | 3.1 | 0.20 | 0.10 | 0.080 | ug/l | |
| 19406-51-0 | 4-amino-2,6-Dinitrotoluene | 2.3 | 0.20 | 0.10 | 0.080 | ug/l | |
| 98-95-3 | Nitrobenzene | 0.10 U | 0.20 | 0.10 | 0.097 | ug/l | |
| 88-72-2 | o-Nitrotoluene | 0.10 U | 0.20 | 0.10 | 0.080 | ug/l | |
| 99-08-1 | m-Nitrotoluene | 0.10 U | 0.20 | 0.10 | 0.080 | ug/l | |
| 99-99-0 | p-Nitrotoluene | 0.10 U | 0.20 | 0.10 | 0.080 | ug/l | |
| 479-45-8 | Tetryl | 0.10 U | 0.20 | 0.10 | 0.080 | ug/l | |
| 99-35-4 | 1,3,5-Trinitrobenzene | 6.5 | 0.20 | 0.10 | 0.099 | ug/l | |
| 118-96-7 | 2,4,6-Trinitrotoluene | 4.8 | 0.20 | 0.10 | 0.080 | ug/l | |
| 55-63-0 | Nitroglycerine | 1.0 U | 2.0 | 1.0 | 0.50 | ug/l | |
| 78-11-5 | PETN | 1.0 U | 2.0 | 1.0 | 0.50 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 610-39-9 | 3,4-Dinitrotoluene | 96% | 89% | 70-136% |

(a) All hits confirmed by reanalysis on a dissimilar column.
(b) Confirmation run.
(c) Primary and confirmation results differ by more than 40%.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

# Report of Analysis





**Client Sample ID:** 54TW12
**Lab Sample ID:** FC18168-4
**Matrix:** AQ - Ground Water
**Method:** SW846 6850 IN HOUSE
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Date Sampled:** 08/20/24
**Date Received:** 08/21/24
**Percent Solids:** n/a

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | 5Q30912.D | 1 | 09/09/24 21:10 | AL | 09/09/24 15:50 | OP5218 | S5Q509 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 10.0 ml | 10.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | LOQ | LOD | DL | Units | Q |
|---|---|---|---|---|---|---|---|
| 14797-73-0 | Perchlorate | 0.78 | 0.20 | 0.10 | 0.050 | ug/l | |

U = Not detected LOD = Limit of Detection
LOQ = Limit of Quantitation DL = Detection Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





**Client Sample ID:** 54TW12
**Lab Sample ID:** FC18168-4
**Matrix:** AQ - Ground Water
**Method:** SW846 8330B SW846 3535A
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Date Sampled:** 08/20/24
**Date Received:** 08/21/24
**Percent Solids:** n/a

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 [a] | BB083952.D | 1 | 08/29/24 15:18 | FS | 08/26/24 12:30 | OP4973 | GBB2581 |
| Run #2 [b] | GG629813.D | 1 | 08/30/24 11:39 | FS | 08/26/24 12:30 | OP4973 | GGG3464 |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 960 ml | 10.0 ml |
| Run #2 | 960 ml | 10.0 ml |

| CAS No. | Compound | Result | LOQ | LOD | DL | Units | Q |
|---|---|---|---|---|---|---|---|
| 2691-41-0 | HMX | 7.3 | 0.21 | 0.10 | 0.083 | ug/l | |
| 121-82-4 | RDX | 5.5 | 0.21 | 0.10 | 0.083 | ug/l | |
| | DNX | 0.10 U | 0.21 | 0.10 | 0.083 | ug/l | |
| | MNX | 0.10 U | 0.21 | 0.10 | 0.083 | ug/l | |
| | TNX | 0.10 U | 0.21 | 0.10 | 0.083 | ug/l | |
| 618-87-1 | 3,5-Dinitroaniline [c] | 10.8 | 0.21 | 0.10 | 0.083 | ug/l | |
| 99-65-0 | 1,3-Dinitrobenzene | 0.10 U | 0.21 | 0.10 | 0.083 | ug/l | |
| 606-20-2 | 2,6-Dinitrotoluene | 0.10 U | 0.21 | 0.10 | 0.083 | ug/l | |
| 121-14-2 | 2,4-Dinitrotoluene | 0.10 U | 0.21 | 0.10 | 0.083 | ug/l | |
| 35572-78-2 | 2-amino-4,6-Dinitrotoluene | 2.3 | 0.21 | 0.10 | 0.083 | ug/l | |
| 19406-51-0 | 4-amino-2,6-Dinitrotoluene | 1.9 | 0.21 | 0.10 | 0.083 | ug/l | |
| 98-95-3 | Nitrobenzene | 0.10 U | 0.21 | 0.10 | 0.10 | ug/l | |
| 88-72-2 | o-Nitrotoluene | 0.10 U | 0.21 | 0.10 | 0.083 | ug/l | |
| 99-08-1 | m-Nitrotoluene | 0.10 U | 0.21 | 0.10 | 0.083 | ug/l | |
| 99-99-0 | p-Nitrotoluene | 0.10 U | 0.21 | 0.10 | 0.083 | ug/l | |
| 479-45-8 | Tetryl | 0.10 U | 0.21 | 0.10 | 0.083 | ug/l | |
| 99-35-4 | 1,3,5-Trinitrobenzene | 6.2 | 0.21 | 0.10 | 0.10 | ug/l | |
| 118-96-7 | 2,4,6-Trinitrotoluene | 4.8 | 0.21 | 0.10 | 0.083 | ug/l | |
| 55-63-0 | Nitroglycerine | 1.0 U | 2.1 | 1.0 | 0.52 | ug/l | |
| 78-11-5 | PETN | 1.0 U | 2.1 | 1.0 | 0.52 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 610-39-9 | 3,4-Dinitrotoluene | 82% | 84% | 70-136% |

(a) All hits confirmed by reanalysis on a dissimilar column.
(b) Confirmation run.
(c) Primary and confirmation results differ by more than 40%.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

# Report of Analysis





**Client Sample ID:** 54MW1
**Lab Sample ID:** FC18168-5
**Matrix:** AQ - Ground Water
**Method:** SW846 6850 IN HOUSE
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Date Sampled:** 08/20/24
**Date Received:** 08/21/24
**Percent Solids:** n/a

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | 5Q30913.D | 1 | 09/09/24 21:17 | AL | 09/09/24 15:50 | OP5218 | S5Q509 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 10.0 ml | 10.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | LOQ | LOD | DL | Units | Q |
|---|---|---|---|---|---|---|---|
| 14797-73-0 | Perchlorate | 0.10 U | 0.20 | 0.10 | 0.050 | ug/l | |

U = Not detected LOD = Limit of Detection
LOQ = Limit of Quantitation DL = Detection Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





**Client Sample ID:** 54MW1
**Lab Sample ID:** FC18168-5 **Date Sampled:** 08/20/24
**Matrix:** AQ - Ground Water **Date Received:** 08/21/24
**Method:** SW846 8330B SW846 3535A **Percent Solids:** n/a
**Project:** Radford Army Ammunition Plant SMWU 54; VA

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BB083955.D | 1 | 08/29/24 16:37 | FS | 08/26/24 12:30 | OP4973 | GBB2581 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 980 ml | 10.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | LOQ | LOD | DL | Units | Q |
|---|---|---|---|---|---|---|---|
| 2691-41-0 | HMX | 0.10 U | 0.20 | 0.10 | 0.082 | ug/l | |
| 121-82-4 | RDX | 0.10 U | 0.20 | 0.10 | 0.082 | ug/l | |
| | DNX | 0.10 U | 0.20 | 0.10 | 0.082 | ug/l | |
| | MNX | 0.10 U | 0.20 | 0.10 | 0.082 | ug/l | |
| | TNX | 0.10 U | 0.20 | 0.10 | 0.082 | ug/l | |
| 618-87-1 | 3,5-Dinitroaniline | 0.10 U | 0.20 | 0.10 | 0.082 | ug/l | |
| 99-65-0 | 1,3-Dinitrobenzene | 0.10 U | 0.20 | 0.10 | 0.082 | ug/l | |
| 606-20-2 | 2,6-Dinitrotoluene | 0.10 U | 0.20 | 0.10 | 0.082 | ug/l | |
| 121-14-2 | 2,4-Dinitrotoluene | 0.10 U | 0.20 | 0.10 | 0.082 | ug/l | |
| 35572-78-2 | 2-amino-4,6-Dinitrotoluene | 0.10 U | 0.20 | 0.10 | 0.082 | ug/l | |
| 19406-51-0 | 4-amino-2,6-Dinitrotoluene | 0.10 U | 0.20 | 0.10 | 0.082 | ug/l | |
| 98-95-3 | Nitrobenzene | 0.10 U | 0.20 | 0.10 | 0.099 | ug/l | |
| 88-72-2 | o-Nitrotoluene | 0.10 U | 0.20 | 0.10 | 0.082 | ug/l | |
| 99-08-1 | m-Nitrotoluene | 0.10 U | 0.20 | 0.10 | 0.082 | ug/l | |
| 99-99-0 | p-Nitrotoluene | 0.10 U | 0.20 | 0.10 | 0.082 | ug/l | |
| 479-45-8 | Tetryl | 0.10 U | 0.20 | 0.10 | 0.082 | ug/l | |
| 99-35-4 | 1,3,5-Trinitrobenzene | 0.10 U | 0.20 | 0.10 | 0.10 | ug/l | |
| 118-96-7 | 2,4,6-Trinitrotoluene | 0.10 U | 0.20 | 0.10 | 0.082 | ug/l | |
| 55-63-0 | Nitroglycerine | 1.0 U | 2.0 | 1.0 | 0.51 | ug/l | |
| 78-11-5 | PETN | 1.0 U | 2.0 | 1.0 | 0.51 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 610-39-9 | 3,4-Dinitrotoluene | 86% | | 70-136% |

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

## Misc. Forms

### Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

# SGS North America Inc - Orlando

## Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB #: FC18168 PAGE 1 OF 1

SGS - ORLANDO Quote #: SKIF

**Client / Reporting Information**

Company Name: Cape Environmental
Address: 500 Pinnacle Court #100
City: Norcross State: GA Zip: 30071
Project Contact: Matt Feits Email: mfeits@cape-inc.com
Phone #: (724) 622-3625
Sampler(s) Name(s) (Printed) Sampler 1: Yoko Miyakawa Sampler 2: Paul Taylor

**Project Information**

Project Name: Radford AAP SWMU 54
Street
City: Radford State: VA
Project #: chemistry svcs@cape-inc.com
Fax #
Client Purchase Order #

**Analytical Information**

| SGS Orlando Sample # | Field ID / Point of Collection | COLLECTION DATE 2024 | TIME | SAMPLED BY: | MATRIX | CONTAINER INFORMATION TOTAL # OF BOTTLES | OTHER | NONE | HCl | H2SO4 | HNO3 | NaOH | NaOH+ZnAc | DI WATER | MEOH | LC6850 Perchlorate | LC 8330B XLC3NX | | |

# SGS - Orlando Sample Receipt Summary

**Job Number:** fc18168 **Client:** CAPE ENVIRONMENTAL **Project:** RADFORD AAP SWMU 54

**Date / Time Received:** 8/21/2024 9:30:00 AM **Delivery Method:** FED EX **Airbill #'s:** 6840 3320 6288

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.0); Cooler 2: (3.6);

**Cooler Temps (Corrected) °C:** Cooler 1: (2.8); Cooler 2: (3.4);

| Cooler Information | Y | or | N |
|---|---|---|---|
| 1. Custody Seals Present: | ☑ | | ☐ |
| 2. Custody Seals Intact: | ☑ | | ☐ |
| 3. Temp criteria achieved: | ☑ | | ☐ |
| 4. Cooler temp verification: | IR Gun | | |
| 5. Cooler media: | Ice (Bag) | | |

| Trip Blank Information | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Trip Blank present / cooler: | ☐ | | ☐ | ☑ |
| 2. Trip Blank listed on COC: | ☐ | | ☐ | ☑ |

| | W | or | S | N/A |
|---|---|---|---|---|
| 3. Type of TB Received | ☐ | | ☐ | ☑ |

| Sample Information | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Sample labels present on bottles: | ☑ | | ☐ | |
| 2. Samples presented properly | ☑ | | ☐ | |
| 3. Sufficient volume/containers recv'd for analysis | ☑ | | ☐ | |
| 4. Condition of sample: | Intact | | | |
| 5. Sample recv'd within HT | ☑ | | ☐ | |
| 6. Dates/Times/IDs on COC match sample label | ☑ | | ☐ | |
| 7. VOCs have headspace | ☐ | | ☐ | ☑ |
| 8. Bottles received for unspecified tests | ☐ | | ☑ | |
| 9. Compositing instructions clear | ☐ | | ☐ | ☑ |
| 10. Voa Soil Kits/Jars received past 48hrs? | ☐ | | ☐ | ☑ |
| 11. % Solids Jar Received? | ☐ | | ☐ | ☑ |
| 12. Residual Chlorine Present? | ☐ | | ☐ | ☑ |

**Misc Information**

Number of Encores: 25 Gram 5 Gram

Number of Lab Filtered Metals:

Test Strip Lot #s: pH 0-3: 226422 pH 10-12: Other: (Specify) pH 1.0 - 12.0 222221

Residual Chlorine Test Strip Lot #

Comments

Sample Receipt Summary 112723 EK Technician: SHAYLAP Date: 8/21/2024 4:52:37 PM Reviewer: Date:

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***ANALYTICAL RESULTS FOR:***

**MATT FEITS**
**CAPE ENVIRONMENTAL MANAGEMENT**
**500 PINNACLE COURT**
**SUITE 100**
**NORCROSS, GA 30071**

| | |
|---|---|
| PROJECT SITE: | RFAAP SWMU-54; RADFORD, VA |
| DOD CONTRACT #: | |
| PROJECT #: | 10409-0222 |
| SDG: | ***191589*** |
| PREPARED: | January 10, 2025 |
| TOTAL # OF PAGES: | 363 |

*The data contained in the following report have been reviewed by the appropriate CT Laboratories' LLC staff members. In addition, CT Laboratories LLC certifies that to the best of our knowledge that the analyses reported herein are true, complete and correct within the limits of the methods employed and that they follow the applicable requirements as specified by the project plan, state-specific, NELAC or DOD QSM requirements. The estimated uncertainty of measurement is only available upon request. The reported results relate only to the tested samples. This report shall not be reproduced, except in full, without written approval of CT Laboratories LLC.*

**APPROVED BY:** Brett Szymanski
PROJECT MANAGER

Certifications: IL (NELAP 200073), KS (NELAP E-10368), WI (157066030), DOD ELAP (A2LA 3806.01), VA (NELAP 460203), LA (primary NELAP 115843), ISO17025 (A2LA 3806.01)

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## *Case Narrative*

**Client:** CAPE Environmental Management
**Project:** RFAAP SWMU-54, Radford, VA
**Sample Receipt Date:** 12/11/2024
**SDG #:** 191589

Five (5) water samples were received for a variety of analytical parameters, including: Anions, Chlorate/Chlorite, TIC, and TOC. The Chlorate/Chlorite analysis was subcontracted to Eurofins Eaton Analytical in South Bend, IN. The assigned sample ID number, date sampled, and date received are indicated in the attached Project Summary. The samples were received intact and at a temperature within method specified acceptance limits. A breakdown of sample receipt information can be found on the Sample Condition Report located in the last section of the data package and any exceptions are noted below. The analyses were performed following DOD QSM 5.4 requirements.

Manual integrations may have been performed on the data provided with this package. If manual integrations were performed, a Reason #(s) was included on the raw data that corresponds to the "Index Key for Manual Integration Rationale." The raw data includes a "Before" and "After" manual integration illustration. The manual integrations were initialed and dated by the analyst, as well as, by the person reviewing the data.

**Sample Analysis and Quality Control**

***Inorganic Analysis:***

The samples were analyzed using US EPA Methods 9056A (Anions) and 9060A (TIC/TOC). All samples were analyzed within the holding time unless noted below. The following summaries of quality control procedures are included:

Duplicate Analysis Data
Laboratory Control Spike Data
Method Blank Data
Initial Calibration Summary
Calibration Check Summary
Analysis Run Log
Prep Log

All analysis results met the method specified quality control criteria with the following exceptions:

Some samples may have been analyzed and/or reanalyzed diluted to obtain results for all target analytes within the calibration range of the instrument.

**Anions (9056A) Water Analysis**

<u>Analytical Run #288029</u>

The Matrix Spike (MS) and the Matrix Spike Duplicate (MSD) for sample #1537129 had a low recovery for chloride. The parent sample result for this analyte was qualified with an "M" flag.

Nitrate was detected in the Continuing Calibration Blank (CCB). Detects of the analyte in the associated samples were qualified with a “B” flag.

**TIC (9060A) Water Analysis**

Analytical Run # 288154

Total Carbon (TC) was detected in the Method Blank (MB) at a concentration above the Limit of Detection (LOD). The MB result was less than 1/10$^{th}$ the associated sample results, so the data was not qualified.

**TOC (9060A) Water Analysis**

Analytical Run # 288395

All analytical results for this run met the method/project specified quality control criteria.

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**Data Qualifiers**

| Code | Description |
|---|---|
| A | Analyte averaged calibration criteria within acceptable limits. |
| B | Analyte detected in associated Method Blank. |
| C | Toxicity present in BOD sample. |
| D | Diluted Out. |
| E | Safe, No Total Coliform detected. |
| F | Unsafe, Total Coliform detected, no E. Coli detected. |
| G | Unsafe, Total Coliform detected and E. Coli detected. |
| H | Holding time exceeded. |
| J | Estimated value. |
| L | Significant peaks were detected outside the chromatographic window. |
| M | Matrix spike and/or Matrix Spike Duplicate recovery outside acceptance limits. |
| N | Insufficient BOD oxygen depletion. |
| O | Complete BOD oxygen depletion. |
| P | Concentration of analyte differs more than 40% between primary and confirmation analysis. |
| Q | Laboratory Control Sample outside acceptance limits. |
| R | See Narrative at end of report. |
| S | Surrogate standard recovery outside acceptance limits due to apparent matrix effects. |
| T | Sample received with improper preservation or temperature. |
| U | Analyte concentration was not above the detection level. |
| V | Raised Quantitation or Reporting Limit due to limited sample amount or dilution for matrix background interference. |
| W | Sample amount received was below program minimum. |
| X | Analyte exceeded calibration range. |
| Y | Replicate/Duplicate precision outside acceptance limits. |
| Z | Calibration criteria exceeded. |

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## MANUAL INTEGRATION REASON CODES

CTLaboratories has identified four general cases with valid reasons supporting the use of manual integration techniques. These codes are used on chromatograms in this data package to document the reasons for manual integrations per CTLaboratories' SOP SS-10 current revision.

**#1**: **Data system failed to select the correct peak or missed the peak entirely.**
In some cases the chromatography system selects and integrates the "wrong peak". In this case the analyst must correct the selection and force the system to integrate the proper peak. In other instances the system may miss the peak completely. In this case the analyst manually integrated the peak

**#2**: **Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak.**
This phenomenon is common at low concentrations where the signal to noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low or high area counts for the target compound.

**#3: Improperly Integrated Isomers and/or coeluting compounds.**
For when the system fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations may be inaccurate, and they must be corrected by manual integration. Prime examples are compounds that are unresolved and integrated improperly when present at low concentrations in standards or samples.

**#4: System Established Incorrect Baseline.**
There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and may be corrected via manual procedures.

**#5: Miscellaneous.**
Some situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the group supervisor. If the form of manual integration is not clearly covered by these four cases, then review and approval by the group supervisor or the *QA/QC* Supervisor will be required.

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www.ctlaboratories.com

# Sample Delivery Group

## 191589

CAPE ENVIRONMENTAL MANAGEMENT
MATT FEITS
500 PINNACLE COURT
SUITE 100
NORCROSS, GA 30071

Project Name: RADFORD AAP SWMU 54
Project #: 10409-0222

| | CT Sample # | Folder # | Client Sample # | Sample Description | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|---|---|---|
| 1 | 1537124 | 191589 | | 54MW13 | GROUND WATER | 12/10/2024 | 12/11/2024 |
| 2 | 1537127 | 191589 | | 54MW10 | GROUND WATER | 12/10/2024 | 12/11/2024 |
| 3 | 1537128 | 191589 | | 54TW10 | GROUND WATER | 12/10/2024 | 12/11/2024 |
| 4 | 1537129 | 191589 | | 54MW12 | GROUND WATER | 12/10/2024 | 12/11/2024 |
| 5 | 1537130 | 191589 | | 54MW1 | GROUND WATER | 12/10/2024 | 12/11/2024 |

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# QC Batch Cross Reference Summary



CAPE ENVIRONMENTAL MANAGEMENT
MATT FEITS
500 PINNACLE COURT
SUITE 100
NORCROSS, GA 30071

Copy: chemistrysvcs@cape-inc.com

| | |
|---|---|
| Project Name: | RADFORD AAP SWMU 54 |
| Project #: | 10409-0222 |
| Report Date: | 01/10/2025 |
| Date Received: | 12/11/2024 |
| SDG #: | 191589 |

## *Inorganic Parameters*

| CTI LAB#: | Parameter | Method | Matrix | Prep Batch # | Analytical Run # |
|---|---|---|---|---|---|
| 1537124 | Carbon , Total Inorganic and Organic | EPA 9060A | GROUND WATER | | 288154 |
| 1537127 | Carbon , Total Inorganic and Organic | EPA 9060A | GROUND WATER | | 288154 |
| 1537128 | Carbon , Total Inorganic and Organic | EPA 9060A | GROUND WATER | | 288154 |
| 1537129 | Carbon , Total Inorganic and Organic | EPA 9060A | GROUND WATER | | 288154 |
| 1537130 | Carbon , Total Inorganic and Organic | EPA 9060A | GROUND WATER | | 288154 |

| CTI LAB#: | Parameter | Method | Matrix | Prep Batch # | Analytical Run # |
|---|---|---|---|---|---|
| 1537124 | Anions QSM 5.0 | EPA 9056A | GROUND WATER | | 288029 |
| 1537127 | Anions QSM 5.0 | EPA 9056A | GROUND WATER | | 288029 |
| 1537128 | Anions QSM 5.0 | EPA 9056A | GROUND WATER | | 288029 |
| 1537129 | Anions QSM 5.0 | EPA 9056A | GROUND WATER | | 288029 |
| 1537130 | Anions QSM 5.0 | EPA 9056A | GROUND WATER | | 288029 |
| 1537124 | Anions QSM 5.0 | EPA 9056A | GROUND WATER | | 288029 |
| 1537127 | Anions QSM 5.0 | EPA 9056A | GROUND WATER | | 288029 |
| 1537128 | Anions QSM 5.0 | EPA 9056A | GROUND WATER | | 288029 |
| 1537129 | Anions QSM 5.0 | EPA 9056A | GROUND WATER | | 288029 |
| 1537130 | Anions QSM 5.0 | EPA 9056A | GROUND WATER | | 288029 |
| 1537127 | Anions QSM 5.0 | EPA 9056A | GROUND WATER | | 288029 |
| 1537128 | Anions QSM 5.0 | EPA 9056A | GROUND WATER | | 288029 |

| CTI LAB#: | Parameter | Method | Matrix | Prep Batch # | Analytical Run # |
|---|---|---|---|---|---|
| 1537124 | Organic Carbon, Total QSM 5.0 | EPA 9060A | GROUND WATER | | 288395 |
| 1537127 | Organic Carbon, Total QSM 5.0 | EPA 9060A | GROUND WATER | | 288395 |
| 1537128 | Organic Carbon, Total QSM 5.0 | EPA 9060A | GROUND WATER | | 288395 |
| 1537129 | Organic Carbon, Total QSM 5.0 | EPA 9060A | GROUND WATER | | 288395 |
| 1537130 | Organic Carbon, Total QSM 5.0 | EPA 9060A | GROUND WATER | | 288395 |

Project Name: RADFORD AAP SWMU 54
Project #: 10409-0222
SDG #: 191589

## Summary of Methods associated with SDG

**SDG:** **191589**
**Company:** **CAPE ENVIRONMENTAL MANAGE**
**Project:** **RADFORD AAP SWMU 54**

| Matrix | Analytical Method | Prep Method | Cleanup Method(s) - if applicable |
|---|---|---|---|
| GROUND WATER | EPA 9060A | NONE | |
| GROUND WATER | EPA 9056A | NONE | |
| GROUND WATER | EPA 9060A | NONE | |

# INORGANIC
# CLP FORMS
# DOCUMENTS

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***INORGANIC ANALYSIS DATA SHEET***

Sample Description

**54MW1**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWM |
| Matrix (soil/water): | GROUND WATER | SDG No.: | 191589 |
| % Solids: | | Lab Sample ID: | 1537130 |
| Analytical Method: | EPA 9056A | Date Received: | 12/11/2024 |
| Dilution Factor: | 1.0000 | TCLP (1311) /SPLP(1312) Extraction Date/time: | |
| Analytical Run #: | 288029 | Analysis Date/Time: | 12/17/2024 10:20 |
| Analytical Prep Batch #: | | Prep. Date/Time: | |

Concentration Units: mg/L

| CAS # | Analyte | Concentration | Qualifiers | DL | LOD | LOQ | RL |
|---|---|---|---|---|---|---|---|
| 16887-00-6 | Chloride | 2.8 | J | 1.0 | 1.5 | 3.0 | 3.2 |
| 14808-79-8 | Sulfate | 31 | | 0.80 | 1.5 | 3.0 | 3.0 |

Unless noted to the contrary, i.e., no % solids reported, then analytical results for solid matrices are reported on a dry weight basis

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***INORGANIC ANALYSIS DATA SHEET***

Sample Description

**54MW1**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWM |
| Matrix (soil/water): | GROUND WATER | SDG No.: | 191589 |
| % Solids: | | Lab Sample ID: | 1537130 |
| Analytical Method: | EPA 9060A | Date Received: | 12/11/2024 |
| Dilution Factor: | 1 | TCLP (1311) /SPLP(1312) Extraction Date/time: | |
| Analytical Run #: | 288154 | Analysis Date/Time: | 12/16/2024 16:43 |
| Analytical Prep Batch #: | | Prep. Date/Time: | |

Concentration Units: mg/L

| CAS # | Analyte | Concentration | Qualifiers | DL | LOD | LOQ | RL |
|---|---|---|---|---|---|---|---|
| TIC | Total Inorganic Carbon | 64 | | 0.4 | 1.5 | 3.0 | 3.0 |

Unless noted to the contrary, i.e., no % solids reported, then analytical results for solid matrices are reported on a dry weight basis

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***INORGANIC ANALYSIS DATA SHEET***

Sample Description

**54MW1**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWM |
| Matrix (soil/water): | GROUND WATER | SDG No.: | 191589 |
| % Solids: | | Lab Sample ID: | 1537130 |
| Analytical Method: | EPA 9060A | Date Received: | 12/11/2024 |
| Dilution Factor: | 1 | TCLP (1311) /SPLP(1312) Extraction Date/time: | |
| Analytical Run #: | 288395 | Analysis Date/Time: | 12/27/2024 19:56 |
| Analytical Prep Batch #: | | Prep. Date/Time: | |

Concentration Units: mg/L

| CAS # | Analyte | Concentration | Qualifiers | DL | LOD | LOQ | RL |
|---|---|---|---|---|---|---|---|
| TOC | Total Organic Carbon | 1.5 | U | 0.4 | 1.5 | 3.0 | 3.0 |

Unless noted to the contrary, i.e., no % solids reported, then analytical results for solid matrices are reported on a dry weight basis

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***INORGANIC ANALYSIS DATA SHEET***

Sample Description

**54MW1**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWM |
| Matrix (soil/water): | GROUND WATER | SDG No.: | 191589 |
| % Solids: | | Lab Sample ID: | 1537130 |
| Analytical Method: | EPA 9056A | Date Received: | 12/11/2024 |
| Dilution Factor: | 1.0000 | TCLP (1311) /SPLP(1312) Extraction Date/time: | |
| Analytical Run #: | 288029 | Analysis Date/Time: | 12/11/2024 20:47 |
| Analytical Prep Batch #: | | Prep. Date/Time: | |

Concentration Units: mg/L

| CAS # | Analyte | Concentration | Qualifiers | DL | LOD | LOQ | RL |
|---|---|---|---|---|---|---|---|
| 14797-55-8 | Nitrate Nitrogen | 0.20 | U | 0.12 | 0.20 | 0.40 | 0.40 |

Unless noted to the contrary, i.e., no % solids reported, then analytical results for solid matrices are reported on a dry weight basis

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***INORGANIC ANALYSIS DATA SHEET***

Sample Description

**54MW10**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWM |
| Matrix (soil/water): | GROUND WATER | SDG No.: | 191589 |
| % Solids: | | Lab Sample ID: | 1537127 |
| Analytical Method: | EPA 9056A | Date Received: | 12/11/2024 |
| Dilution Factor: | 1.0000 | TCLP (1311) /SPLP(1312) Extraction Date/time: | |
| Analytical Run #: | 288029 | Analysis Date/Time: | 12/17/2024 05:33 |
| Analytical Prep Batch #: | | Prep. Date/Time: | |

Concentration Units: mg/L

| CAS # | Analyte | Concentration | Qualifiers | DL | LOD | LOQ | RL |
|---|---|---|---|---|---|---|---|
| 16887-00-6 | Chloride | 4.5 | | 1.0 | 1.5 | 3.0 | 3.2 |

Unless noted to the contrary, i.e., no % solids reported, then analytical results for solid matrices are reported on a dry weight basis

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***INORGANIC ANALYSIS DATA SHEET***

Sample Description

**54MW10**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWM |
| Matrix (soil/water): | GROUND WATER | SDG No.: | 191589 |
| % Solids: | | Lab Sample ID: | 1537127 |
| Analytical Method: | EPA 9056A | Date Received: | 12/11/2024 |
| Dilution Factor: | 10 | TCLP (1311) /SPLP(1312) Extraction Date/time: | |
| Analytical Run #: | 288029 | Analysis Date/Time: | 12/17/2024 06:02 |
| Analytical Prep Batch #: | | Prep. Date/Time: | |

Concentration Units: mg/L

| CAS # | Analyte | Concentration | Qualifiers | DL | LOD | LOQ | RL |
|---|---|---|---|---|---|---|---|
| 14808-79-8 | Sulfate | 200 | | 8.0 | 15 | 30 | 30 |

Unless noted to the contrary, i.e., no % solids reported, then analytical results for solid matrices are reported on a dry weight basis

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***INORGANIC ANALYSIS DATA SHEET***

Sample Description

**54MW10**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWM |
| Matrix (soil/water): | GROUND WATER | SDG No.: | 191589 |
| % Solids: | | Lab Sample ID: | 1537127 |
| Analytical Method: | EPA 9060A | Date Received: | 12/11/2024 |
| Dilution Factor: | 1 | TCLP (1311) /SPLP(1312) Extraction Date/time: | |
| Analytical Run #: | 288154 | Analysis Date/Time: | 12/16/2024 16:02 |
| Analytical Prep Batch #: | | Prep. Date/Time: | |

Concentration Units: mg/L

| CAS # | Analyte | Concentration | Qualifiers | DL | LOD | LOQ | RL |
|---|---|---|---|---|---|---|---|
| TIC | Total Inorganic Carbon | 81 | | 0.4 | 1.5 | 3.0 | 3.0 |

Unless noted to the contrary, i.e., no % solids reported, then analytical results for solid matrices are reported on a dry weight basis

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***INORGANIC ANALYSIS DATA SHEET***

Sample Description

**54MW10**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWM |
| Matrix (soil/water): | GROUND WATER | SDG No.: | 191589 |
| % Solids: | | Lab Sample ID: | 1537127 |
| Analytical Method: | EPA 9060A | Date Received: | 12/11/2024 |
| Dilution Factor: | 1 | TCLP (1311) /SPLP(1312) Extraction Date/time: | |
| Analytical Run #: | 288395 | Analysis Date/Time: | 12/27/2024 18:37 |
| Analytical Prep Batch #: | | Prep. Date/Time: | |

Concentration Units: mg/L

| CAS # | Analyte | Concentration | Qualifiers | DL | LOD | LOQ | RL |
|---|---|---|---|---|---|---|---|
| TOC | Total Organic Carbon | 1.5 | U | 0.4 | 1.5 | 3.0 | 3.0 |

Unless noted to the contrary, i.e., no % solids reported, then analytical results for solid matrices are reported on a dry weight basis

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***INORGANIC ANALYSIS DATA SHEET***

Sample Description

**54MW10**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWM |
| Matrix (soil/water): | GROUND WATER | SDG No.: | 191589 |
| % Solids: | | Lab Sample ID: | 1537127 |
| Analytical Method: | EPA 9056A | Date Received: | 12/11/2024 |
| Dilution Factor: | 1.0000 | TCLP (1311) /SPLP(1312) Extraction Date/time: | |
| Analytical Run #: | 288029 | Analysis Date/Time: | 12/11/2024 19:25 |
| Analytical Prep Batch #: | | Prep. Date/Time: | |

Concentration Units: mg/L

| CAS # | Analyte | Concentration | Qualifiers | DL | LOD | LOQ | RL |
|---|---|---|---|---|---|---|---|
| 14797-55-8 | Nitrate Nitrogen | 0.20 | U | 0.12 | 0.20 | 0.40 | 0.40 |

Unless noted to the contrary, i.e., no % solids reported, then analytical results for solid matrices are reported on a dry weight basis

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***INORGANIC ANALYSIS DATA SHEET***

Sample Description

**54MW12**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWM |
| Matrix (soil/water): | GROUND WATER | SDG No.: | 191589 |
| % Solids: | | Lab Sample ID: | 1537129 |
| Analytical Method: | EPA 9056A | Date Received: | 12/11/2024 |
| Dilution Factor: | 1.0000 | TCLP (1311) /SPLP(1312) Extraction Date/time: | |
| Analytical Run #: | 288029 | Analysis Date/Time: | 12/17/2024 07:28 |
| Analytical Prep Batch #: | | Prep. Date/Time: | |

Concentration Units: mg/L

| CAS # | Analyte | Concentration | Qualifiers | DL | LOD | LOQ | RL |
|---|---|---|---|---|---|---|---|
| 16887-00-6 | Chloride | 3.3 | M | 1.0 | 1.5 | 3.0 | 3.2 |
| 14808-79-8 | Sulfate | 18 | | 0.80 | 1.5 | 3.0 | 3.0 |

Unless noted to the contrary, i.e., no % solids reported, then analytical results for solid matrices are reported on a dry weight basis

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***INORGANIC ANALYSIS DATA SHEET***

Sample Description

**54MW12**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWM |
| Matrix (soil/water): | GROUND WATER | SDG No.: | 191589 |
| % Solids: | | Lab Sample ID: | 1537129 |
| Analytical Method: | EPA 9060A | Date Received: | 12/11/2024 |
| Dilution Factor: | 1 | TCLP (1311) /SPLP(1312) Extraction Date/time: | |
| Analytical Run #: | 288154 | Analysis Date/Time: | 12/16/2024 16:29 |
| Analytical Prep Batch #: | | Prep. Date/Time: | |

Concentration Units: mg/L

| CAS # | Analyte | Concentration | Qualifiers | DL | LOD | LOQ | RL |
|---|---|---|---|---|---|---|---|
| TIC | Total Inorganic Carbon | 68 | | 0.4 | 1.5 | 3.0 | 3.0 |

Unless noted to the contrary, i.e., no % solids reported, then analytical results for solid matrices are reported on a dry weight basis

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***INORGANIC ANALYSIS DATA SHEET***

Sample Description

**54MW12**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWM |
| Matrix (soil/water): | GROUND WATER | SDG No.: | 191589 |
| % Solids: | | Lab Sample ID: | 1537129 |
| Analytical Method: | EPA 9060A | Date Received: | 12/11/2024 |
| Dilution Factor: | 1 | TCLP (1311) /SPLP(1312) Extraction Date/time: | |
| Analytical Run #: | 288395 | Analysis Date/Time: | 12/27/2024 19:05 |
| Analytical Prep Batch #: | | Prep. Date/Time: | |

Concentration Units: mg/L

| CAS # | Analyte | Concentration | Qualifiers | DL | LOD | LOQ | RL |
|---|---|---|---|---|---|---|---|
| TOC | Total Organic Carbon | 1.5 | U | 0.4 | 1.5 | 3.0 | 3.0 |

Unless noted to the contrary, i.e., no % solids reported, then analytical results for solid matrices are reported on a dry weight basis

CT LABORATORIES
delivering more than data from your environmental analyses

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***INORGANIC ANALYSIS DATA SHEET***

Sample Description

**54MW12**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWM |
| Matrix (soil/water): | GROUND WATER | SDG No.: | 191589 |
| % Solids: | | Lab Sample ID: | 1537129 |
| Analytical Method: | EPA 9056A | Date Received: | 12/11/2024 |
| Dilution Factor: | 1.0000 | TCLP (1311) /SPLP(1312) Extraction Date/time: | |
| Analytical Run #: | 288029 | Analysis Date/Time: | 12/11/2024 20:20 |
| Analytical Prep Batch #: | | Prep. Date/Time: | |

Concentration Units: mg/L

| CAS # | Analyte | Concentration | Qualifiers | DL | LOD | LOQ | RL |
|---|---|---|---|---|---|---|---|
| 14797-55-8 | Nitrate Nitrogen | 0.74 | B | 0.12 | 0.20 | 0.40 | 0.40 |

Unless noted to the contrary, i.e., no % solids reported, then analytical results for solid matrices are reported on a dry weight basis

CT LABORATORIES
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***INORGANIC ANALYSIS DATA SHEET***

Sample Description

**54MW13**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWM |
| Matrix (soil/water): | GROUND WATER | SDG No.: | 191589 |
| % Solids: | | Lab Sample ID: | 1537124 |
| Analytical Method: | EPA 9056A | Date Received: | 12/11/2024 |
| Dilution Factor: | 1.0000 | TCLP (1311) /SPLP(1312) Extraction Date/time: | |
| Analytical Run #: | 288029 | Analysis Date/Time: | 12/17/2024 05:05 |
| Analytical Prep Batch #: | | Prep. Date/Time: | |

Concentration Units: mg/L

| CAS # | Analyte | Concentration | Qualifiers | DL | LOD | LOQ | RL |
|---|---|---|---|---|---|---|---|
| 16887-00-6 | Chloride | 8.1 | | 1.0 | 1.5 | 3.0 | 3.2 |
| 14808-79-8 | Sulfate | 40 | | 0.80 | 1.5 | 3.0 | 3.0 |

Unless noted to the contrary, i.e., no % solids reported, then analytical results for solid matrices are reported on a dry weight basis

CT LABORATORIES
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***INORGANIC ANALYSIS DATA SHEET***

Sample Description

**54MW13**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWM |
| Matrix (soil/water): | GROUND WATER | SDG No.: | 191589 |
| % Solids: | | Lab Sample ID: | 1537124 |
| Analytical Method: | EPA 9060A | Date Received: | 12/11/2024 |
| Dilution Factor: | 1 | TCLP (1311) /SPLP(1312) Extraction Date/time: | |
| Analytical Run #: | 288154 | Analysis Date/Time: | 12/16/2024 15:49 |
| Analytical Prep Batch #: | | Prep. Date/Time: | |

Concentration Units: mg/L

| CAS # | Analyte | Concentration | Qualifiers | DL | LOD | LOQ | RL |
|---|---|---|---|---|---|---|---|
| TIC | Total Inorganic Carbon | 89 | | 0.4 | 1.5 | 3.0 | 3.0 |

Unless noted to the contrary, i.e., no % solids reported, then analytical results for solid matrices are reported on a dry weight basis

CT LABORATORIES
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***INORGANIC ANALYSIS DATA SHEET***

Sample Description

**54MW13**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWM |
| Matrix (soil/water): | GROUND WATER | SDG No.: | 191589 |
| % Solids: | | Lab Sample ID: | 1537124 |
| Analytical Method: | EPA 9060A | Date Received: | 12/11/2024 |
| Dilution Factor: | 1 | TCLP (1311) /SPLP(1312) Extraction Date/time: | |
| Analytical Run #: | 288395 | Analysis Date/Time: | 12/27/2024 17:54 |
| Analytical Prep Batch #: | | Prep. Date/Time: | |

Concentration Units: mg/L

| CAS # | Analyte | Concentration | Qualifiers | DL | LOD | LOQ | RL |
|---|---|---|---|---|---|---|---|
| TOC | Total Organic Carbon | 1.5 | U | 0.4 | 1.5 | 3.0 | 3.0 |

Unless noted to the contrary, i.e., no % solids reported, then analytical results for solid matrices are reported on a dry weight basis

CT LABORATORIES
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***INORGANIC ANALYSIS DATA SHEET***

Sample Description

**54MW13**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWM |
| Matrix (soil/water): | GROUND WATER | SDG No.: | 191589 |
| % Solids: | | Lab Sample ID: | 1537124 |
| Analytical Method: | EPA 9056A | Date Received: | 12/11/2024 |
| Dilution Factor: | 1.0000 | TCLP (1311) /SPLP(1312) Extraction Date/time: | |
| Analytical Run #: | 288029 | Analysis Date/Time: | 12/11/2024 18:58 |
| Analytical Prep Batch #: | | Prep. Date/Time: | |

Concentration Units: mg/L

| CAS # | Analyte | Concentration | Qualifiers | DL | LOD | LOQ | RL |
|---|---|---|---|---|---|---|---|
| 14797-55-8 | Nitrate Nitrogen | 0.62 | B | 0.12 | 0.20 | 0.40 | 0.40 |

Unless noted to the contrary, i.e., no % solids reported, then analytical results for solid matrices are reported on a dry weight basis

CT LABORATORIES
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***INORGANIC ANALYSIS DATA SHEET***

Sample Description

**54TW10**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWM |
| Matrix (soil/water): | GROUND WATER | SDG No.: | 191589 |
| % Solids: | | Lab Sample ID: | 1537128 |
| Analytical Method: | EPA 9056A | Date Received: | 12/11/2024 |
| Dilution Factor: | 1.0000 | TCLP (1311) /SPLP(1312) Extraction Date/time: | |
| Analytical Run #: | 288029 | Analysis Date/Time: | 12/17/2024 06:31 |
| Analytical Prep Batch #: | | Prep. Date/Time: | |

Concentration Units: mg/L

| CAS # | Analyte | Concentration | Qualifiers | DL | LOD | LOQ | RL |
|---|---|---|---|---|---|---|---|
| 16887-00-6 | Chloride | 4.5 | | 1.0 | 1.5 | 3.0 | 3.2 |

Unless noted to the contrary, i.e., no % solids reported, then analytical results for solid matrices are reported on a dry weight basis

CT LABORATORIES
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***INORGANIC ANALYSIS DATA SHEET***

Sample Description

**54TW10**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWM |
| Matrix (soil/water): | GROUND WATER | SDG No.: | 191589 |
| % Solids: | | Lab Sample ID: | 1537128 |
| Analytical Method: | EPA 9056A | Date Received: | 12/11/2024 |
| Dilution Factor: | 10 | TCLP (1311) /SPLP(1312) Extraction Date/time: | |
| Analytical Run #: | 288029 | Analysis Date/Time: | 12/17/2024 06:59 |
| Analytical Prep Batch #: | | Prep. Date/Time: | |

Concentration Units: mg/L

| CAS # | Analyte | Concentration | Qualifiers | DL | LOD | LOQ | RL |
|---|---|---|---|---|---|---|---|
| 14808-79-8 | Sulfate | 200 | | 8.0 | 15 | 30 | 30 |

Unless noted to the contrary, i.e., no % solids reported, then analytical results for solid matrices are reported on a dry weight basis

CT LABORATORIES
delivering more than data from your environmental analyses

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***INORGANIC ANALYSIS DATA SHEET***

Sample Description

**54TW10**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWM |
| Matrix (soil/water): | GROUND WATER | SDG No.: | 191589 |
| % Solids: | | Lab Sample ID: | 1537128 |
| Analytical Method: | EPA 9060A | Date Received: | 12/11/2024 |
| Dilution Factor: | 1 | TCLP (1311) /SPLP(1312) Extraction Date/time: | |
| Analytical Run #: | 288154 | Analysis Date/Time: | 12/16/2024 16:16 |
| Analytical Prep Batch #: | | Prep. Date/Time: | |

Concentration Units: mg/L

| CAS # | Analyte | Concentration | Qualifiers | DL | LOD | LOQ | RL |
|---|---|---|---|---|---|---|---|
| TIC | Total Inorganic Carbon | 80 | | 0.4 | 1.5 | 3.0 | 3.0 |

Unless noted to the contrary, i.e., no % solids reported, then analytical results for solid matrices are reported on a dry weight basis

CT LABORATORIES
delivering more than data from your environmental analyses

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***INORGANIC ANALYSIS DATA SHEET***

Sample Description

**54TW10**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWM |
| Matrix (soil/water): | GROUND WATER | SDG No.: | 191589 |
| % Solids: | | Lab Sample ID: | 1537128 |
| Analytical Method: | EPA 9060A | Date Received: | 12/11/2024 |
| Dilution Factor: | 1 | TCLP (1311) /SPLP(1312) Extraction Date/time: | |
| Analytical Run #: | 288395 | Analysis Date/Time: | 12/27/2024 18:52 |
| Analytical Prep Batch #: | | Prep. Date/Time: | |

Concentration Units: mg/L

| CAS # | Analyte | Concentration | Qualifiers | DL | LOD | LOQ | RL |
|---|---|---|---|---|---|---|---|
| TOC | Total Organic Carbon | 1.5 | U | 0.4 | 1.5 | 3.0 | 3.0 |

Unless noted to the contrary, i.e., no % solids reported, then analytical results for solid matrices are reported on a dry weight basis

CT LABORATORIES
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1

***INORGANIC ANALYSIS DATA SHEET***

Sample Description

**54TW10**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWM |
| Matrix (soil/water): | GROUND WATER | SDG No.: | 191589 |
| % Solids: | | Lab Sample ID: | 1537128 |
| Analytical Method: | EPA 9056A | Date Received: | 12/11/2024 |
| Dilution Factor: | 1.0000 | TCLP (1311) /SPLP(1312) Extraction Date/time: | |
| Analytical Run #: | 288029 | Analysis Date/Time: | 12/11/2024 19:52 |
| Analytical Prep Batch #: | | Prep. Date/Time: | |

Concentration Units: mg/L

| CAS # | Analyte | Concentration | Qualifiers | DL | LOD | LOQ | RL |
|---|---|---|---|---|---|---|---|
| 14797-55-8 | Nitrate Nitrogen | 0.20 | U | 0.12 | 0.20 | 0.40 | 0.40 |

Unless noted to the contrary, i.e., no % solids reported, then analytical results for solid matrices are reported on a dry weight basis

CT LABORATORIES
delivering more than data from your environmental analyses

Sample No.

**ICV**

**2A-1**

***INITIAL CALIBRATION VERIFICATION***

Lab Name: CT Laboratories Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU

SDG No.: 191589

Analytical Run #: 288029 Lab Sample ID: 1539297

ICAL Calibration #: Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | | Spiked Conc. | Measured Conc. | %R** | Lower Limit (1) | Upper Limit (1) |
|---|---|---|---|---|---|---|---|
| Chloride | 10/28/24 | 14:10 | 15.00 | 14.47 | 96 | 90 | 110 |
| Nitrate Nitrogen | 10/28/24 | 14:10 | 3.50 | 3.503 | 100 | 90 | 110 |
| Sulfate | 10/28/24 | 14:10 | 25.00 | 24.20 | 97 | 90 | 110 |

Default Limits (not applicable to MDL Check) **No percent recovery is calculated for MDL checks. The check is simply whether the analyte is detected.

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

CT LABORATORIES
delivering more than data from your environmental analyses

Sample No.

**ICV**

**2A-1**

***INITIAL CALIBRATION VERIFICATION***

Lab Name: CT Laboratories  Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU

SDG No.: 191589

Analytical Run #: 288029  Lab Sample ID: 1540037

ICAL Calibration #:  Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | Spiked Conc. | Measured Conc. | %R** | Lower Limit (1) | Upper Limit (1) |
|---|---|---|---|---|---|---|
| Chloride | 7/30/24 19:57 | 15.00 | 13.73 | 92 | 90 | 110 |

Analysis Type: ReRun  Re-Analysis #1

| Analyte | Analysis Date/Time | Spiked Conc. | Measured Conc. | %R** | Lower Limit (1) | Upper Limit (1) |
|---|---|---|---|---|---|---|
| Sulfate | 7/31/24 08:54 | 25.00 | 23.39 | 94 | 90 | 110 |

Default Limits (not applicable to MDL Check)  **No percent recovery is calculated for MDL checks. The check is simply whether the analyte is detected.

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

CT LABORATORIES
delivering more than data from your environmental analyses

Sample No.

**ICV**

**2A-1**

***INITIAL CALIBRATION VERIFICATION***

Lab Name: CT Laboratories

Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU

SDG No.: 191589

Analytical Run #: 288395

Lab Sample ID: 1542584

ICAL Calibration #:

Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | | Spiked Conc. | Measured Conc. | %R** | Lower Limit (1) | Upper Limit (1) |
|---|---|---|---|---|---|---|---|
| Total Organic Carbon | 2/13/24 | 14:22 | 50.0 | 49.09 | 98 | 90 | 110 |

Default Limits (not applicable to MDL Check) **No percent recovery is calculated for MDL checks. The check is simply whether the analyte is detected.

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

CT LABORATORIES
delivering more than data from your environmental analyses

Sample No.

CCV

**2A-2**

***CONTINUING CALIBRATION VERIFICATION***

Lab Name: CT Laboratories  Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU

SDG No.: 191589

Analytical Run #: 288029  Lab Sample ID: 1539232

ICAL Calibration #:  Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | | Spiked Conc. | Measured Conc. | %R** | Lower Limit (1) | Upper Limit (1) |
|---|---|---|---|---|---|---|---|
| Chloride | 12/11/24 | 10:20 | 15.00 | 14.30 | 95 | 90 | 110 |
| Nitrate Nitrogen | 12/11/24 | 10:20 | 3.500 | 3.610 | 103 | 90 | 110 |
| Sulfate | 12/11/24 | 10:20 | 25.00 | 27.27 | 109 | 90 | 110 |

Default Limits (not applicable to MDL Check) **No percent recovery is calculated for MDL checks. The check is simply whether the analyte is detected.

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

CT LABORATORIES
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Sample No.

CCV

**2A-2**

***CONTINUING CALIBRATION VERIFICATION***

Lab Name: CT Laboratories Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU

SDG No.: 191589

Analytical Run #: 288029 Lab Sample ID: 1539234

ICAL Calibration #: Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | | Spiked Conc. | Measured Conc. | %R** | Lower Limit (1) | Upper Limit (1) |
|---|---|---|---|---|---|---|---|
| Chloride | 12/11/24 | 17:08 | 15.00 | 13.79 | 92 | 90 | 110 |
| Nitrate Nitrogen | 12/11/24 | 17:08 | 3.500 | 3.547 | 101 | 90 | 110 |
| Sulfate | 12/11/24 | 17:08 | 25.00 | 27.40 | 110 | 90 | 110 |

Default Limits (not applicable to MDL Check) **No percent recovery is calculated for MDL checks. The check is simply whether the analyte is detected.

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

CT LABORATORIES
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Sample No.

CCV

**2A-2**

***CONTINUING CALIBRATION VERIFICATION***

Lab Name: CT Laboratories Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU

SDG No.: 191589

Analytical Run #: 288029 Lab Sample ID: 1539241

ICAL Calibration #: Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | Spiked Conc. | Measured Conc. | %R** | Lower Limit (1) | Upper Limit (1) |
|---|---|---|---|---|---|---|
| Nitrate Nitrogen | 12/11/24 23:05 | 3.500 | 3.384 | 97 | 90 | 110 |

Default Limits (not applicable to MDL Check) **No percent recovery is calculated for MDL checks. The check is simply whether the analyte is detected.

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

CT LABORATORIES
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Sample No.

CCV

**2A-2**

***CONTINUING CALIBRATION VERIFICATION***

Lab Name: CT Laboratories  Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU

SDG No.: 191589

Analytical Run #: 288029  Lab Sample ID: 1539245

ICAL Calibration #:  Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | | Spiked Conc. | Measured Conc. | %R** | Lower Limit (1) | Upper Limit (1) |
|---|---|---|---|---|---|---|---|
| Nitrate Nitrogen | 12/12/24 | 04:34 | 3.500 | 3.300 | 94 | 90 | 110 |
| Sulfate | 12/12/24 | 04:34 | 25.00 | 24.70 | 99 | 90 | 110 |

Default Limits (not applicable to MDL Check)  **No percent recovery is calculated for MDL checks. The check is simply whether the analyte is detected.

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

CT LABORATORIES
delivering more than data from your environmental analyses

Sample No.

CCV

**2A-2**

***CONTINUING CALIBRATION VERIFICATION***

Lab Name: CT Laboratories Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU

SDG No.: 191589

Analytical Run #: 288029 Lab Sample ID: 1539247

ICAL Calibration #: Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | | Spiked Conc. | Measured Conc. | %R** | Lower Limit (1) | Upper Limit (1) |
|---|---|---|---|---|---|---|---|
| Nitrate Nitrogen | 12/12/24 | 06:51 | 3.500 | 3.239 | 93 | 90 | 110 |
| Sulfate | 12/12/24 | 06:51 | 25.00 | 24.54 | 98 | 90 | 110 |

Default Limits (not applicable to MDL Check) **No percent recovery is calculated for MDL checks. The check is simply whether the analyte is detected.

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

CT LABORATORIES
delivering more than data from your environmental analyses

Sample No.

**CCV**

**2A-2**

***CONTINUING CALIBRATION VERIFICATION***

Lab Name: CT Laboratories

Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU

SDG No.: 191589

Analytical Run #: 288029

Lab Sample ID: 1540046

ICAL Calibration #:

Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | | Spiked Conc. | Measured Conc. | %R** | Lower Limit (1) | Upper Limit (1) |
|---|---|---|---|---|---|---|---|
| Chloride | 12/16/24 | 19:59 | 15.00 | 14.78 | 99 | 90 | 110 |
| Sulfate | 12/16/24 | 19:59 | 25.00 | 23.16 | 93 | 90 | 110 |

Default Limits (not applicable to MDL Check) **No percent recovery is calculated for MDL checks. The check is simply whether the analyte is detected.

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

CT LABORATORIES
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Sample No.

CCV

**2A-2**

***CONTINUING CALIBRATION VERIFICATION***

Lab Name: CT Laboratories Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU

SDG No.: 191589

Analytical Run #: 288029 Lab Sample ID: 1540049

ICAL Calibration #: Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | | Spiked Conc. | Measured Conc. | %R** | Lower Limit (1) | Upper Limit (1) |
|---|---|---|---|---|---|---|---|
| Chloride | 12/17/24 | 02:12 | 15.00 | 14.97 | 100 | 90 | 110 |
| Sulfate | 12/17/24 | 02:12 | 25.00 | 26.68 | 107 | 90 | 110 |

Default Limits (not applicable to MDL Check) **No percent recovery is calculated for MDL checks. The check is simply whether the analyte is detected.

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

CT LABORATORIES
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Sample No.

CCV

**2A-2**

***CONTINUING CALIBRATION VERIFICATION***

Lab Name: CT Laboratories Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU

SDG No.: 191589

Analytical Run #: 288029 Lab Sample ID: 1540051

ICAL Calibration #: Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | | Spiked Conc. | Measured Conc. | %R** | Lower Limit (1) | Upper Limit (1) |
|---|---|---|---|---|---|---|---|
| Chloride | 12/17/24 | 07:57 | 15.00 | 14.10 | 94 | 90 | 110 |
| Sulfate | 12/17/24 | 07:57 | 25.00 | 26.17 | 105 | 90 | 110 |

Default Limits (not applicable to MDL Check) **No percent recovery is calculated for MDL checks. The check is simply whether the analyte is detected.

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

CT LABORATORIES
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Sample No.

CCV

**2A-2**

***CONTINUING CALIBRATION VERIFICATION***

Lab Name: CT Laboratories Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU

SDG No.: 191589

Analytical Run #: 288029 Lab Sample ID: 1540053

ICAL Calibration #: Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | | Spiked Conc. | Measured Conc. | %R** | Lower Limit (1) | Upper Limit (1) |
|---|---|---|---|---|---|---|---|
| Chloride | 12/17/24 | 12:44 | 15.00 | 13.97 | 93 | 90 | 110 |
| Sulfate | 12/17/24 | 12:44 | 25.00 | 26.38 | 106 | 90 | 110 |

Default Limits (not applicable to MDL Check) **No percent recovery is calculated for MDL checks. The check is simply whether the analyte is detected.

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

CT LABORATORIES
delivering more than data from your environmental analyses

Sample No.

CCV

**2A-2**

***CONTINUING CALIBRATION VERIFICATION***

Lab Name: CT Laboratories Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU

SDG No.: 191589

Analytical Run #: 288154 Lab Sample ID: 1539120

ICAL Calibration #: Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | | Spiked Conc. | Measured Conc. | %R** | Lower Limit (1) | Upper Limit (1) |
|---|---|---|---|---|---|---|---|
| Total Carbon | 12/17/24 | 08:51 | 50.0 | 52.37 | 105 | 90 | 110 |
| Total Inorganic Carbon | 12/17/24 | 08:51 | 50.0 | 52.37 | 105 | 90 | 110 |
| Total Organic Carbon | 12/17/24 | 08:51 | 50.0 | 52.37 | 105 | 90 | 110 |

Default Limits (not applicable to MDL Check) **No percent recovery is calculated for MDL checks. The check is simply whether the analyte is detected.

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

CT LABORATORIES
delivering more than data from your environmental analyses

Sample No.

CCV

**2A-2**

***CONTINUING CALIBRATION VERIFICATION***

Lab Name: CT Laboratories  Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU

SDG No.: 191589

Analytical Run #: 288154  Lab Sample ID: 1541805

ICAL Calibration #: ICAL0710  Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | | Spiked Conc. | Measured Conc. | %R** | Lower Limit (1) | Upper Limit (1) |
|---|---|---|---|---|---|---|---|
| Total Carbon | 12/16/24 | 15:01 | 50.0 | 53.30 | 107 | 90 | 110 |
| Total Inorganic Carbon | 12/16/24 | 15:01 | 50.0 | 53.30 | 107 | 90 | 110 |
| Total Organic Carbon | 12/16/24 | 15:01 | 50.0 | 53.30 | 107 | 90 | 110 |

Default Limits (not applicable to MDL Check)  **No percent recovery is calculated for MDL checks. The check is simply whether the analyte is detected.

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

CT LABORATORIES
delivering more than data from your environmental analyses

Sample No.

CCV

**2A-2**

***CONTINUING CALIBRATION VERIFICATION***

Lab Name: CT Laboratories Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU

SDG No.: 191589

Analytical Run #: 288395 Lab Sample ID: 1542515

ICAL Calibration #: ICAL0710 Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | Spiked Conc. | Measured Conc. | %R** | Lower Limit (1) | Upper Limit (1) |
|---|---|---|---|---|---|---|
| Total Organic Carbon | 12/27/24 12:45 | 50.0 | 48.50 | 97 | 90 | 110 |

Default Limits (not applicable to MDL Check) **No percent recovery is calculated for MDL checks. The check is simply whether the analyte is detected.

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

CT LABORATORIES
delivering more than data from your environmental analyses

Sample No.

CCV

**2A-2**

***CONTINUING CALIBRATION VERIFICATION***

Lab Name: CT Laboratories Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU

SDG No.: 191589

Analytical Run #: 288395 Lab Sample ID: 1542518

ICAL Calibration #: ICAL0710 Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | Spiked Conc. | Measured Conc. | %R** | Lower Limit (1) | Upper Limit (1) |
|---|---|---|---|---|---|---|
| Total Organic Carbon | 12/27/24 15:34 | 50.0 | 46.97 | 94 | 90 | 110 |

Default Limits (not applicable to MDL Check) **No percent recovery is calculated for MDL checks. The check is simply whether the analyte is detected.

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

CT LABORATORIES
delivering more than data from your environmental analyses

Sample No.

CCV

**2A-2**

***CONTINUING CALIBRATION VERIFICATION***

Lab Name: CT Laboratories Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU

SDG No.: 191589

Analytical Run #: 288395 Lab Sample ID: 1542523

ICAL Calibration #: ICAL0710 Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | Spiked Conc. | Measured Conc. | %R** | Lower Limit (1) | Upper Limit (1) |
|---|---|---|---|---|---|---|
| Total Organic Carbon | 12/27/24 18:08 | 50.0 | 48.30 | 97 | 90 | 110 |

Default Limits (not applicable to MDL Check) **No percent recovery is calculated for MDL checks. The check is simply whether the analyte is detected.

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

CT LABORATORIES
delivering more than data from your environmental analyses

Sample No.

CCV

**2A-2**

***CONTINUING CALIBRATION VERIFICATION***

Lab Name: CT Laboratories Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU

SDG No.: 191589

Analytical Run #: 288395 Lab Sample ID: 1542528

ICAL Calibration #: ICAL0710 Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | Spiked Conc. | Measured Conc. | %R** | Lower Limit (1) | Upper Limit (1) |
|---|---|---|---|---|---|---|
| Total Organic Carbon | 12/27/24 20:10 | 50.0 | 48.48 | 97 | 90 | 110 |

Default Limits (not applicable to MDL Check) **No percent recovery is calculated for MDL checks. The check is simply whether the analyte is detected.

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

CT LABORATORIES
delivering more than data from your environmental analyses

Sample No.

**ICB**

3-1

***INITIAL CALIBRATION BLANKS***

Lab Name: CT Laboratories  Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54

SDG No.: 191589

Analytical Run #: 288395  Lab Sample ID: 1542583

Analytical Prep Batch #:  Preparation Date/Time:

ICAL Calibration #:  Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | Measured Concentration | C*** | Detection Limit** | Reporting Limit | Control Limit |
|---|---|---|---|---|---|---|
| Total Organic Carbon | 02/13/2024 14:36 | 0 | U | 0.40 | 3.0 | 1.5 |

** Detection Limit only reported if value was less than the control limit.
***A "U" indicates the analyte was not detected in the method blank at the detection limit or the Control Limit whichever was less.

A "FAIL" qualifier only indicates the analyte concentration was above the Detection Limit.

CT LABORATORIES
delivering more than data from your environmental analyses

Sample No.

ICB

3-1

***INITIAL CALIBRATION BLANKS***

Lab Name: CT Laboratories  Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54

SDG No.: 191589

Analytical Run #: 288029  Lab Sample ID: 1539298

Analytical Prep Batch #:  Preparation Date/Time:

ICAL Calibration #:  Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | Measured Concentration | C*** | Detection Limit** | Reporting Limit | Control Limit |
|---|---|---|---|---|---|---|
| Chloride | 10/28/2024 14:36 | 0 | U | 1.0 | 3.0 | 1.5 |
| Nitrate Nitrogen | 10/28/2024 14:36 | 0 | U | 0.12 | 0.40 | 0.20 |
| Sulfate | 10/28/2024 14:36 | 0 | U | 0.8 | 3.0 | 1.5 |

** Detection Limit only reported if value was less than the control limit.
***A "U" indicates the analyte was not detected in the method blank at the detection limit or the Control Limit whichever was less.

A "FAIL" qualifier only indicates the analyte concentration was above the Detection Limit.

CT LABORATORIES
delivering more than data from your environmental analyses

Sample No.

**ICB**

3-1

***INITIAL CALIBRATION BLANKS***

Lab Name: CT Laboratories  Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54

SDG No.: 191589

Analytical Run #: 288029  Lab Sample ID: 1540038

Analytical Prep Batch #:  Preparation Date/Time:

ICAL Calibration #:  Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | Measured Concentration | C*** | Detection Limit** | Reporting Limit | Control Limit |
|---|---|---|---|---|---|---|
| Chloride | 07/30/2024 21:02 | 0 | U | 1.0 | 3.0 | 1.5 |
| Sulfate | 07/30/2024 21:02 | 0.5692 | U | 0.8 | 3.0 | 1.5 |

** Detection Limit only reported if value was less than the control limit.
***A "U" indicates the analyte was not detected in the method blank at the detection limit or the Control Limit whichever was less.

A "FAIL" qualifier only indicates the analyte concentration was above the Detection Limit.

CT LABORATORIES
delivering more than data from your environmental analyses

Sample No.

3-2

CCB

## *CONTINUING CALIBRATION BLANKS*

Lab Name: CT Laboratories Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54

SDG No.: 191589

Analytical Run #: 288029 Lab Sample ID: 1539242

Analytical Prep Batch #: 0 Preparation Date/Time:

ICAL Calibration #: Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | Measured Concentration | C*** | Detection Limit** | Reporting Limit | Control Limit | |
|---|---|---|---|---|---|---|---|
| Nitrate Nitrogen | 12/11/2024 23:32 | 0.4760 | | 0.12 | 0.40 | 0.20 | FAIL |

** Detection Limit only reported if value was less than the control limit.
***A "U" indicates the analyte was not detected in the method blank at the detection limit or the Control Limit whichever was less.

A "FAIL" qualifier only indicates the analyte concentration was above the Detection Limit.

CT LABORATORIES
delivering more than data from your environmental analyses

Sample No.

3-2

CCB

## *CONTINUING CALIBRATION BLANKS*

Lab Name: CT Laboratories  Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54

SDG No.: 191589

Analytical Run #: 288029  Lab Sample ID: 1539246

Analytical Prep Batch #: 0  Preparation Date/Time:

ICAL Calibration #:  Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | Measured Concentration | C*** | Detection Limit** | Reporting Limit | Control Limit |
|---|---|---|---|---|---|---|
| Nitrate Nitrogen | 12/12/2024 05:01 | 0 | U | 0.12 | 0.40 | 0.20 |
| Sulfate | 12/12/2024 05:01 | 0 | U | 0.8 | 3.0 | 1.5 |

** Detection Limit only reported if value was less than the control limit.
***A "U" indicates the analyte was not detected in the method blank at the detection limit or the Control Limit whichever was less.

A "FAIL" qualifier only indicates the analyte concentration was above the Detection Limit.

CT LABORATORIES
delivering more than data from your environmental analyses

Sample No.

3-2

**CCB**

***CONTINUING CALIBRATION BLANKS***

Lab Name: CT Laboratories  Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54

SDG No.: 191589

Analytical Run #: 288029  Lab Sample ID: 1539248

Analytical Prep Batch #: 0  Preparation Date/Time:

ICAL Calibration #:  Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | Measured Concentration | C*** | Detection Limit** | Reporting Limit | Control Limit |
|---|---|---|---|---|---|---|
| Nitrate Nitrogen | 12/12/2024 07:18 | 0 | U | 0.12 | 0.40 | 0.20 |
| Sulfate | 12/12/2024 07:18 | 0 | U | 0.8 | 3.0 | 1.5 |

** Detection Limit only reported if value was less than the control limit.
***A "U" indicates the analyte was not detected in the method blank at the detection limit or the Control Limit whichever was less.

A "FAIL" qualifier only indicates the analyte concentration was above the Detection Limit.

CT LABORATORIES
delivering more than data from your environmental analyses

Sample No.

3-2

CCB

## *CONTINUING CALIBRATION BLANKS*

Lab Name: CT Laboratories  Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54

SDG No.: 191589

Analytical Run #: 288395  Lab Sample ID: 1542519

Analytical Prep Batch #: 0  Preparation Date/Time:

ICAL Calibration #: ICAL0710  Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | Measured Concentration | C*** | Detection Limit** | Reporting Limit | Control Limit |
|---|---|---|---|---|---|---|
| Total Organic Carbon | 12/27/2024 15:47 | 0 | U | 0.40 | 3.0 | 1.5 |

** Detection Limit only reported if value was less than the control limit.
***A "U" indicates the analyte was not detected in the method blank at the detection limit or the Control Limit whichever was less.

A "FAIL" qualifier only indicates the analyte concentration was above the Detection Limit.

CT LABORATORIES
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Sample No.

3-2

CCB

## *CONTINUING CALIBRATION BLANKS*

Lab Name: CT Laboratories  Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54

SDG No.: 191589

Analytical Run #: 288395  Lab Sample ID: 1542524

Analytical Prep Batch #: 0  Preparation Date/Time:

ICAL Calibration #: ICAL0710  Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | Measured Concentration | C*** | Detection Limit** | Reporting Limit | Control Limit |
|---|---|---|---|---|---|---|
| Total Organic Carbon | 12/27/2024 18:22 | 0 | U | 0.40 | 3.0 | 1.5 |

** Detection Limit only reported if value was less than the control limit.
***A "U" indicates the analyte was not detected in the method blank at the detection limit or the Control Limit whichever was less.

A "FAIL" qualifier only indicates the analyte concentration was above the Detection Limit.

CT LABORATORIES
delivering more than data from your environmental analyses

Sample No.

3-2

CCB

## *CONTINUING CALIBRATION BLANKS*

Lab Name: CT Laboratories  Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54

SDG No.: 191589

Analytical Run #: 288395  Lab Sample ID: 1542529

Analytical Prep Batch #: 0  Preparation Date/Time:

ICAL Calibration #: ICAL0710  Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | Measured Concentration | C*** | Detection Limit** | Reporting Limit | Control Limit |
|---|---|---|---|---|---|---|
| Total Organic Carbon | 12/27/2024 20:24 | 0 | U | 0.40 | 3.0 | 1.5 |

** Detection Limit only reported if value was less than the control limit.
***A "U" indicates the analyte was not detected in the method blank at the detection limit or the Control Limit whichever was less.

A "FAIL" qualifier only indicates the analyte concentration was above the Detection Limit.

CT LABORATORIES
delivering more than data from your environmental analyses

Sample No.

CCB

3-2

***CONTINUING CALIBRATION BLANKS***

Lab Name: CT Laboratories  Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54

SDG No.: 191589

Analytical Run #: 288154  Lab Sample ID: 1542588

Analytical Prep Batch #:  Preparation Date/Time:

ICAL Calibration #:  Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | Measured Concentration | C*** | Detection Limit** | Reporting Limit | Control Limit |
|---|---|---|---|---|---|---|
| Total Carbon | 12/17/2024 09:05 | 0 | U | 0.5 | 3.0 | 1.5 |
| Total Inorganic Carbon | 12/17/2024 09:05 | 0 | U | 0.5 | 3.0 | 1.5 |
| Total Organic Carbon | 12/17/2024 09:05 | 0 | U | 0.5 | 3.0 | 1.5 |

** Detection Limit only reported if value was less than the control limit.
***A "U" indicates the analyte was not detected in the method blank at the detection limit or the Control Limit whichever was less.

A "FAIL" qualifier only indicates the analyte concentration was above the Detection Limit.

CT LABORATORIES
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Sample No.

3-2

CCB

## *CONTINUING CALIBRATION BLANKS*

Lab Name: CT Laboratories Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54

SDG No.: 191589

Analytical Run #: 288029 Lab Sample ID: 1539302

Analytical Prep Batch #: Preparation Date/Time:

ICAL Calibration #: Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | Measured Concentration | C*** | Detection Limit** | Reporting Limit | Control Limit |
|---|---|---|---|---|---|---|
| Chloride | 12/11/2024 11:15 | 0 | U | 1.0 | 3.0 | 1.5 |
| Nitrate Nitrogen | 12/11/2024 11:15 | 0 | U | 0.12 | 0.40 | 0.20 |
| Sulfate | 12/11/2024 11:15 | 0 | U | 0.8 | 3.0 | 1.5 |

** Detection Limit only reported if value was less than the control limit.
***A "U" indicates the analyte was not detected in the method blank at the detection limit or the Control Limit whichever was less.

A "FAIL" qualifier only indicates the analyte concentration was above the Detection Limit.

CT LABORATORIES
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Sample No.

3-2

**CCB**

***CONTINUING CALIBRATION BLANKS***

Lab Name: CT Laboratories  Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54

SDG No.: 191589

Analytical Run #: 288029  Lab Sample ID: 1540050

Analytical Prep Batch #:  Preparation Date/Time:

ICAL Calibration #:  Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | Measured Concentration | C*** | Detection Limit** | Reporting Limit | Control Limit |
|---|---|---|---|---|---|---|
| Chloride | 12/17/2024 02:41 | 0 | U | 1.0 | 3.0 | 1.5 |
| Sulfate | 12/17/2024 02:41 | 0 | U | 0.8 | 3.0 | 1.5 |

** Detection Limit only reported if value was less than the control limit.
***A "U" indicates the analyte was not detected in the method blank at the detection limit or the Control Limit whichever was less.

A "FAIL" qualifier only indicates the analyte concentration was above the Detection Limit.

CT LABORATORIES
delivering more than data from your environmental analyses

Sample No.

CCB

3-2

## *CONTINUING CALIBRATION BLANKS*

Lab Name: CT Laboratories

Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54

SDG No.: 191589

Analytical Run #: 288029

Lab Sample ID: 1540052

Analytical Prep Batch #:

Preparation Date/Time:

ICAL Calibration #:

Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | Measured Concentration | C*** | Detection Limit** | Reporting Limit | Control Limit |
|---|---|---|---|---|---|---|
| Chloride | 12/17/2024 08:25 | 0 | U | 1.0 | 3.0 | 1.5 |
| Sulfate | 12/17/2024 08:25 | 0 | U | 0.8 | 3.0 | 1.5 |

** Detection Limit only reported if value was less than the control limit.
***A "U" indicates the analyte was not detected in the method blank at the detection limit or the Control Limit whichever was less.

A "FAIL" qualifier only indicates the analyte concentration was above the Detection Limit.

CT LABORATORIES
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Sample No.

CCB

3-2

***CONTINUING CALIBRATION BLANKS***

Lab Name: CT Laboratories Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54

SDG No.: 191589

Analytical Run #: 288029 Lab Sample ID: 1540054

Analytical Prep Batch #: Preparation Date/Time:

ICAL Calibration #: Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | Measured Concentration | C*** | Detection Limit** | Reporting Limit | Control Limit |
|---|---|---|---|---|---|---|
| Chloride | 12/17/2024 13:13 | 0 | U | 1.0 | 3.0 | 1.5 |
| Sulfate | 12/17/2024 13:13 | 0 | U | 0.8 | 3.0 | 1.5 |

** Detection Limit only reported if value was less than the control limit.
***A "U" indicates the analyte was not detected in the method blank at the detection limit or the Control Limit whichever was less.

A "FAIL" qualifier only indicates the analyte concentration was above the Detection Limit.

CT LABORATORIES
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Sample No.

**MB**

**3-3**

***METHOD BLANKS***

Lab Name: CT Laboratories  Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54

SDG No.: 191589

Analytical Run #: 288029  Lab Sample ID: 1539236

Analytical Prep Batch #: 0  Preparation Date/Time:

ICAL Calibration #:  Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | Measured Concentration | C*** | Detection Limit** | Reporting Limit | Control Limit |
|---|---|---|---|---|---|---|
| Chloride | 12/11/2024 18:03 | 0 | U | 1.0 | 3.0 | 1.5 |
| Nitrate Nitrogen | 12/11/2024 18:03 | 0 | U | 0.12 | 0.40 | 0.20 |
| Sulfate | 12/11/2024 18:03 | 0 | U | 0.8 | 3.0 | 1.5 |

** Detection Limit only reported if value was less than the control limit.
***A "U" indicates the analyte was not detected in the method blank at the detection limit or the Control Limit whichever was less.

A "FAIL" qualifier only indicates the analyte concentration was above the Detection Limit.

CT LABORATORIES
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Sample No.

**MB**

**3-3**

***METHOD BLANKS***

Lab Name: CT Laboratories  Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54

SDG No.: 191589

Analytical Run #: 288154  Lab Sample ID: 1541807

Analytical Prep Batch #: 0  Preparation Date/Time:

ICAL Calibration #: ICAL0710  Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | | Measured Concentration | C*** | Detection Limit** | Reporting Limit | Control Limit | |
|---|---|---|---|---|---|---|---|---|
| Total Carbon | 12/16/2024 | 15:35 | 1.190 | | 0.5 | 3.0 | 1.5 | FAIL |
| Total Inorganic Carbon | 12/16/2024 | 15:35 | 1.190 | | 0.5 | 3.0 | 1.5 | FAIL |
| Total Organic Carbon | 12/16/2024 | 15:35 | 1.190 | | 0.5 | 3.0 | 1.5 | FAIL |

** Detection Limit only reported if value was less than the control limit.
***A "U" indicates the analyte was not detected in the method blank at the detection limit or the Control Limit whichever was less.

A "FAIL" qualifier only indicates the analyte concentration was above the Detection Limit.

Sample No.

**MB**

**3-3**

***METHOD BLANKS***

Lab Name: CT Laboratories

Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54

SDG No.: 191589

Analytical Run #: 288395

Lab Sample ID: 1542517

Analytical Prep Batch #: 0

Preparation Date/Time:

ICAL Calibration #: ICAL0710

Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | Measured Concentration | C*** | Detection Limit** | Reporting Limit | Control Limit |
|---|---|---|---|---|---|---|
| Total Organic Carbon | 12/27/2024 13:13 | 0 | U | 0.40 | 3.0 | 1.5 |

** Detection Limit only reported if value was less than the control limit.
***A "U" indicates the analyte was not detected in the method blank at the detection limit or the Control Limit whichever was less.

A "FAIL" qualifier only indicates the analyte concentration was above the Detection Limit.

CT LABORATORIES
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Sample No.

**MB**

**3-3**

***METHOD BLANKS***

Lab Name: CT Laboratories  Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54

SDG No.: 191589

Analytical Run #: 288029  Lab Sample ID: 1540048

Analytical Prep Batch #:  Preparation Date/Time:

ICAL Calibration #:  Concentration Units: mg/L

Analysis Type: Initial Analysis

| Analyte | Analysis Date/Time | Measured Concentration | C*** | Detection Limit** | Reporting Limit | Control Limit |
|---|---|---|---|---|---|---|
| Chloride | 12/16/2024 20:57 | 0.7015 | U | 1.0 | 3.0 | 1.5 |
| Sulfate | 12/16/2024 20:57 | 0 | U | 0.8 | 3.0 | 1.5 |

** Detection Limit only reported if value was less than the control limit.
***A "U" indicates the analyte was not detected in the method blank at the detection limit or the Control Limit whichever was less.

A "FAIL" qualifier only indicates the analyte concentration was above the Detection Limit.

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**5A**

***SPIKE SAMPLE RECOVERY***

Sample Description

**54MW12**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54 |
| Matrix: | LIQUID | SDG No.: | 191589 |
| % Solids for Sample: | | Concentration Units: | mg/L |
| Sample No.: | 1539243 | Parent Sample No.: | 1537129 |
| Analytical Prep Batch #: | 0 | Analytical Preparation Date/Time: | |
| Analytical Run #: | 288029 | ICAL Calibration #: | |

| Analysis Type | *Initial Analysis* | Analysis Date: -------- | 12/11/2024 | Analysis Time: -------- | 23:59 |
|---|---|---|---|---|---|

| Analyte | Control Limit (%R) | Spike Result | C (Spike) | Parent Result | C (Parent) | Spike Amount | %R | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Nitrate Nitrogen | 88-111 | 2.58 | | 0.74 | | 2.00 | 92 | | |

BDL = analyte concentration was below detection limit

CT LABORATORIES
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**5A**

***SPIKE SAMPLE RECOVERY***

Sample Description

**54MW12**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54 |
| Matrix: | LIQUID | SDG No.: | 191589 |
| % Solids for Sample: | | Concentration Units: | mg/L |
| Sample No.: | 1539243 | Parent Sample No.: | 1537129 |
| Analytical Prep Batch #: | 0 | Analytical Preparation Date/Time: | |
| Analytical Run #: | 288029 | ICAL Calibration #: | |

ReRun *Re-Analysis #1* Analysis Date: -------- 12/17/2024 Analysis Time: -------- 09:23

| Analyte | Control Limit (%R) | Spike Result | C (Spike) | Parent Result | C (Parent) | Spike Amount | %R | Q | M | |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 87-111 | 10.1 | | 3.3 | | 8.00 | 85 | | | *FAIL* |
| Sulfate | 87-112 | 26.1 | | 18 | | 8.00 | 101 | | | |

BDL = analyte concentration was below detection limit

CT LABORATORIES
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**5A**

***SPIKE SAMPLE RECOVERY***

Sample Description

**54MW12**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54 |
| Matrix: | LIQUID | SDG No.: | 191589 |
| % Solids for Sample: | | Concentration Units: | mg/L |
| Sample No.: | 1542526 | Parent Sample No.: | 1537129 |
| Analytical Prep Batch #: | 0 | Analytical Preparation Date/Time: | |
| Analytical Run #: | 288395 | ICAL Calibration #: | ICAL0710 |

Analysis Type *Initial Analysis* Analysis Date: -------- 12/27/2024 Analysis Time: -------- 19:31

| Analyte | Control Limit (%R) | Spike Result | C (Spike) | Parent Result | C (Parent) | Spike Amount | %R | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon | 85-111 | 50.0 | | BDL | U | 50.0 | 100 | | TOC |

BDL = analyte concentration was below detection limit

CT LABORATORIES
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**5C**

***SPIKE DUPLICATE SAMPLE RECOVERY***

Sample Description: **54MW12**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54 |
| Matrix: | LIQUID | SDG No.: | 191589 |
| % Solids for Sample: | | Concentration Units: | mg/L |
| Sample No.: | 1539244 | Parent Sample No.: | 1539243 |
| Analytical Prep Batch #: | 0 | Analytical Preparation Date/Time: | |
| Analytical Run #: | 288029 | ICAL Calibration #: | |

| Analysis Type | *Initial Analysis* | Analysis Date: -------- | 12/12/2024 | Analysis Time: -------- | 00:27 |
|---|---|---|---|---|---|

| Analyte | Control Limit (%R) | Spike Result | C (Spike) | Parent Result | C (Parent) | Spike Amount | %R | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Nitrate Nitrogen | 88-111 | 2.60 | | 0.74 | | 2.00 | 93 | | |

BDL = analyte concentration was below detection limit

CT LABORATORIES
delivering more than data from your environmental analyses

**5C**

***SPIKE DUPLICATE SAMPLE RECOVERY***

Sample Description

**54MW12**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54 |
| Matrix: | LIQUID | SDG No.: | 191589 |
| % Solids for Sample: | | Concentration Units: | mg/L |
| Sample No.: | 1539244 | Parent Sample No.: | 1539243 |
| Analytical Prep Batch #: | 0 | Analytical Preparation Date/Time: | |
| Analytical Run #: | 288029 | ICAL Calibration #: | |

ReRun *Re-Analysis #1* Analysis Date: -------- 12/17/2024 Analysis Time: -------- 09:52

| Analyte | Control Limit (%R) | Spike Result | C (Spike) | Parent Result | C (Parent) | Spike Amount | %R | Q | M | |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 87-111 | 10.1 | | 3.3 | | 8.00 | 85 | | | *FAIL* |
| Sulfate | 87-112 | 25.9 | | 18 | | 8.00 | 99 | | | |

BDL = analyte concentration was below detection limit

CT LABORATORIES
delivering more than data from your environmental analyses

**5C**

***SPIKE DUPLICATE SAMPLE RECOVERY***

Sample Description: **54MW12**

| | | | |
|---|---|---|---|
| Lab Name: | CT Laboratories | Contract: | CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54 |
| Matrix: | LIQUID | SDG No.: | 191589 |
| % Solids for Sample: | | Concentration Units: | mg/L |
| Sample No.: | 1542527 | Parent Sample No.: | 1542526 |
| Analytical Prep Batch #: | 0 | Analytical Preparation Date/Time: | |
| Analytical Run #: | 288395 | ICAL Calibration #: | ICAL0710 |

Analysis Type: *Initial Analysis* Analysis Date: -------- 12/27/2024 Analysis Time: -------- 19:44

| Analyte | Control Limit (%R) | Spike Result | C (Spike) | Parent Result | C (Parent) | Spike Amount | %R | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon | 85-111 | 51.4 | | BDL | U | 50.0 | 103 | | TOC |

BDL = analyte concentration was below detection limit

CT LABORATORIES
delivering more than data from your environmental analyses

6

***DUPLICATES***

Sample Description

**54MW12**

Lab Name: CT Laboratories
Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54

Matrix: LIQUID
SDG No.: 191589

% Solid for Sample:
Concentration Units: mg/L

Analytical Prep Batch #: 0
Analytical Preparation Date/Time:

Analytical Run #: 288029
ICAL Calibration #:

Sample #: 1539240
Parent Sample #: 1537129

Analysis Type *Initial Analysis*

| Analyte | Analysis Date/Time | RPD Limit | Original Parent Conc. (S) | C | Duplicate Conc. (D) | C | RPD | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Nitrate Nitrogen | 12/11/2024 22:37 | 10 | 0.74 | | 0.713 | | 4 | | |

CT LABORATORIES
delivering more than data from your environmental analyses

6

***DUPLICATES***

Sample Description

**54MW12**

Lab Name: CT Laboratories
Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54
Matrix: LIQUID
SDG No.: 191589
% Solid for Sample:
Concentration Units: mg/L
Analytical Prep Batch #: 0
Analytical Preparation Date/Time:
Analytical Run #: 288029
ICAL Calibration #:
Sample #: 1539240
Parent Sample #: 1537129

ReRun *Re-Analysis #1*

| Analyte | Analysis Date/Time | | RPD Limit | Original Parent Conc. (S) | C | Duplicate Conc. (D) | C | RPD | Q | M |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 12/17/2024 | 08:54 | 10 | 3.3 | | 3.25 | | 2 | | |
| Sulfate | 12/17/2024 | 08:54 | 10 | 18 | | 18.1 | | 1 | | |

CT LABORATORIES
delivering more than data from your environmental analyses

6

***DUPLICATES***

Sample Description

**54MW12**

Lab Name: CT Laboratories
Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54
Matrix: LIQUID
SDG No.: 191589
% Solid for Sample:
Concentration Units: mg/L
Analytical Prep Batch #: 0
Analytical Preparation Date/Time:
Analytical Run #: 288395
ICAL Calibration #: ICAL0710
Sample #: 1542525
Parent Sample #: 1537129

Analysis Type *Initial Analysis*

| Analyte | Analysis Date/Time | RPD Limit | Original Parent Conc. (S) | C | Duplicate Conc. (D) | C | RPD | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon | 12/27/2024 19:17 | 20 | 0.4 | U | 0.4 | U | 0 | | TOC |

CT LABORATORIES
delivering more than data from your environmental analyses

**6A**

***MATRIX SPIKE DUPLICATES***

Sample Description: **54MW12**

Lab Name: CT Laboratories
Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54
Matrix: LIQUID
SDG No.: 191589
% Solid for Sample:
Concentration Units: mg/L
Analytical Prep Batch #: 0
Analytical Preparation Date/Time:
Analytical Run #: 288029
ICAL Calibration #:
Sample #: 1539244
Parent Sample #: 1539243

Analysis Type *Initial Analysis*

| Analyte | Analysis Date/Time | RPD Limit | Matrix Spike Parent Conc. (S) | C | Matrix Spike Duplicate Conc. (D) | C | RPD | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Nitrate Nitrogen | 12/12/2024 00:27 | 15 | 2.58 | | 2.60 | | 1 | | |

CT LABORATORIES
delivering more than data from your environmental analyses

**6A**

***MATRIX SPIKE DUPLICATES***

Sample Description: **54MW12**

Lab Name: CT Laboratories
Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54
Matrix: LIQUID
SDG No.: 191589
% Solid for Sample:
Concentration Units: mg/L
Analytical Prep Batch #: 0
Analytical Preparation Date/Time:
Analytical Run #: 288029
ICAL Calibration #:
Sample #: 1539244
Parent Sample #: 1539243

ReRun *Re-Analysis #1*

| Analyte | Analysis Date/Time | | RPD Limit | Matrix Spike Parent Conc. (S) | C | Matrix Spike Duplicate Conc. (D) | C | RPD | Q | M |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 12/17/2024 | 09:52 | 15 | 10.1 | | 10.1 | | 0 | | |
| Sulfate | 12/17/2024 | 09:52 | 15 | 26.1 | | 25.9 | | 1 | | |

CT LABORATORIES
delivering more than data from your environmental analyses

**6A**

***MATRIX SPIKE DUPLICATES***

Sample Description: **54MW12**

Lab Name: CT Laboratories
Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54
Matrix: LIQUID
SDG No.: 191589
% Solid for Sample:
Concentration Units: mg/L
Analytical Prep Batch #: 0
Analytical Preparation Date/Time:
Analytical Run #: 288395
ICAL Calibration #: ICAL0710
Sample #: 1542527
Parent Sample #: 1542526

Analysis Type *Initial Analysis*

| Analyte | Analysis Date/Time | RPD Limit | Matrix Spike Parent Conc. (S) | C | Matrix Spike Duplicate Conc. (D) | C | RPD | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon | 12/27/2024 19:44 | 20 | 50.0 | | 51.4 | | 3 | | TOC |

CT LABORATORIES
delivering more than data from your environmental analyses

7-1

Sample No:

***LABORATORY CONTROL SAMPLE - AQUEOUS***

**LCS**

Lab Name: CT Laboratories

Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54

LCS Source: SPEX and Ultra

SDG No.: 191589

Concentration Units: mg/L

Analytical Run #: 288029

Sample No.:#: 1539235

Analytical Prep Batch #: 0

Preparation Date/Time:

ICAL Calibration #:

Analysis Type ---------- Initial Analysis

| Analyte | Analysis Date/Time | Control Limit (%R) | Spike Result | C | Spike Amount | %R | Q | M |
|---|---|---|---|---|---|---|---|---|
| Chloride | 12/11/2024 17:35 | 87-111 | 13.62 | | 15.00 | 91 | | |
| Nitrate Nitrogen | 12/11/2024 17:35 | 88-111 | 3.495 | | 3.500 | 100 | | |
| Sulfate | 12/11/2024 17:35 | 87-112 | 27.21 | | 25.00 | 109 | | |

CT LABORATORIES
delivering more than data from your environmental analyses

7-1

Sample No:

***LABORATORY CONTROL SAMPLE - AQUEOUS***

**LCS**

Lab Name: CT Laboratories

Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54

LCS Source: SPEX and Ultra

SDG No.: 191589

Concentration Units: mg/L

Analytical Run #: 288154

Sample No.:#: 1541808

Analytical Prep Batch #: 0

Preparation Date/Time:

ICAL Calibration #: ICAL0710

Analysis Type ---------- Initial Analysis

| Analyte | Analysis Date/Time | Control Limit (%R) | Spike Result | C | Spike Amount | %R | Q | M |
|---|---|---|---|---|---|---|---|---|
| Total Carbon | 12/16/2024 16:57 | 85-111 | 53.58 | | 50.0 | 107 | | TOC |
| Total Inorganic Carbon | 12/16/2024 16:57 | 85-111 | 53.58 | | 50.0 | 107 | | TOC |
| Total Organic Carbon | 12/16/2024 16:57 | 85-111 | 53.58 | | 50.0 | 107 | | TOC |

CT LABORATORIES
delivering more than data from your environmental analyses

7-1

Sample No:

***LABORATORY CONTROL SAMPLE - AQUEOUS***

**LCS**

Lab Name: CT Laboratories

Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54

LCS Source: SPEX and Ultra

SDG No.: 191589

Concentration Units: mg/L

Analytical Run #: 288395

Sample No.:#: 1542516

Analytical Prep Batch #: 0

Preparation Date/Time:

ICAL Calibration #: ICAL0710

Analysis Type ---------- Initial Analysis

| Analyte | Analysis Date/Time | Control Limit (%R) | Spike Result | C | Spike Amount | %R | Q | M |
|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon | 12/27/2024 12:59 | 85-111 | 48.42 | | 50.0 | 97 | | TOC |

CT LABORATORIES
delivering more than data from your environmental analyses

7-1

Sample No:

***LABORATORY CONTROL SAMPLE - AQUEOUS***

**LCS**

Lab Name: CT Laboratories

Contract: CAPE ENVIRONMENTAL MANAGEMENT-RADFORD AAP SWMU 54

LCS Source: SPEX and Ultra

SDG No.: 191589

Concentration Units: mg/L

Analytical Run #: 288029

Sample No.:#: 1540047

Analytical Prep Batch #:

Preparation Date/Time:

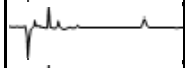
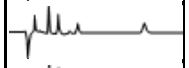
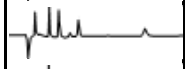
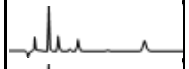
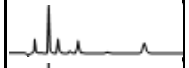
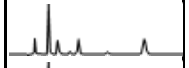
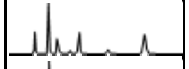
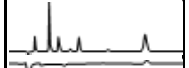
ICAL Calibration #:

Analysis Type ---------- Initial Analysis

| Analyte | Analysis Date/Time | Control Limit (%R) | Spike Result | C | Spike Amount | %R | Q | M |
|---|---|---|---|---|---|---|---|---|
| Chloride | 12/16/2024 20:28 | 87-111 | 15.56 | | 15.00 | 104 | | IC |
| Sulfate | 12/16/2024 20:28 | 87-112 | 26.86 | | 25.00 | 107 | | IC |

# INORGANICS
# RAW DATA
# DOCUMENTS

Curve not used for O-phos

| ECD_1 | Name | Type | Level | Position | Volume | Instrument Method | Processing Method | Status |
|---|---|---|---|---|---|---|---|---|
|  | STD1 | Calibration Standard | 1 | 3 | 5000 | Anions | IC5364 | Finished |
|  | STD 2 | Calibration Standard | 2 | 4 | 5000 | Anions | IC5364 | Finished |
|  | STD 3 | Calibration Standard | 3 | 5 | 5000 | Anions | IC5364 | Finished |
|  | STD 4 | Calibration Standard | 4 | 6 | 5000 | Anions | IC5364 | Finished |
|  | STD 5 | Calibration Standard | 5 | 7 | 5000 | Anions | IC5364 | Finished |
|  | STD 6 | Calibration Standard | 6 | 8 | 5000 | Anions | IC5364 | Finished |
|  | STD 7 | Calibration Standard | 7 | 9 | 5000 | Anions | IC5364 | Finished |
|  | STD 8 | Calibration Standard | 8 | 10 | 5000 | Anions | IC5364 | Finished |
|  | STD 9 | Calibration Standard | 9 | 11 | 5000 | Anions | IC5364 | Finished |
|  | ICV | Unknown | | 12 | 5000 | Anions | IC5364 | Finished |
|  | ICB | Unknown | | 14 | 5000 | Anions | IC5364 | Finished |
|  | ICV | Unknown | | 17 | 5000 | Anions | IC5364 | Finished |

## Calibration Concentrations

| Instrument:AQUION 5 | Cal. File: IC5364 | | | | ICV | IC5355 IC5367 | | Analyst/Date: TMG 07/30/2024 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Cal Level 1 (mg/L) | Cal Level 2 (mg/L) | Cal Level 3 (mg/L) | Cal Level 4 (mg/L) | Cal Level 5 (mg/L) | Cal Level 6 (mg/L) | Cal Level 7 (mg/L) | Cal Level 8 (mg/L) | Cal Level 9 (mg/L) | ICV (mg/L) |
| Fluoride | 0.0 | 0.1 | 0.30 | 0.5 | 1.0 | 2.0 | 5.0 | | | 3.5 |
| Chloride | 0.0 | 0.5 | 0.75 | 1.0 | 5.0 | 10.0 | 20.0 | 30.0 | 40.0 | 15.0 |
| Bromide | 0.0 | 0.1 | 0.30 | 0.5 | 1.0 | 2.0 | 5.0 | | | 3.5 |
| Nitrite | 0.0 | 0.1 | 0.30 | 0.5 | 1.0 | 2.0 | 5.0 | | | 3.5 |
| Nitrate | 0.0 | 0.1 | 0.30 | 0.5 | 1.0 | 2.0 | 5.0 | 7.0 | | 3.5 |
| O-Phoshorous | 0.0 | 0.1 | 0.30 | 0.5 | 1.0 | 2.0 | 5.0 | | | 3.5 |
| Sulfate | 0.0 | 0.5 | 0.75 | 1.0 | 5.0 | 10.0 | 30.0 | 50.0 | 70.0 | 25.0 |

After Manual Integration

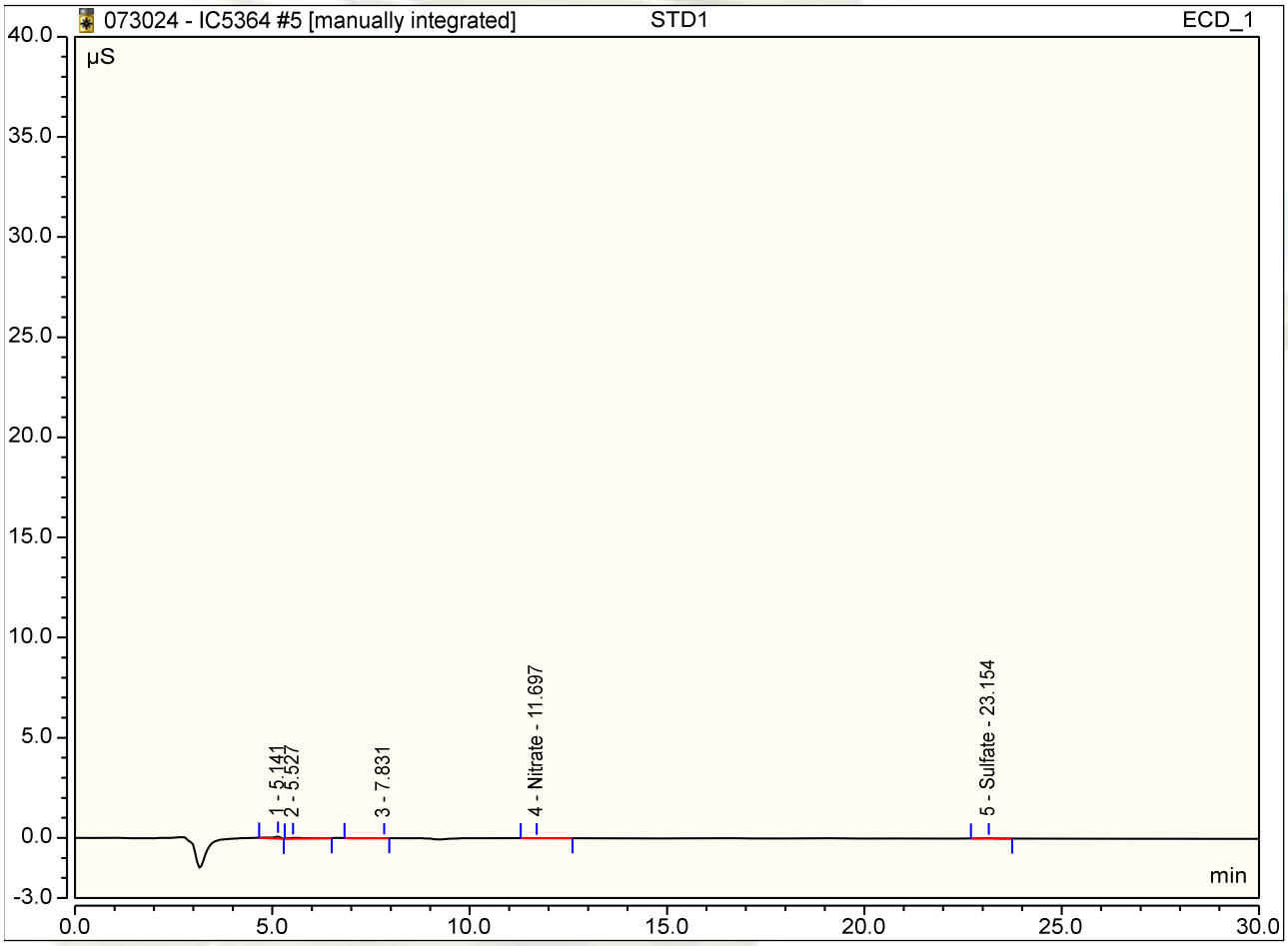


TMG 08/13/2024

## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD1** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Calibration Standard** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **30-Jul-2024 / 15:03** | *Run Time:* | **30.00** |

| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 4 | 11.70 | Nitrate | 0.000 | 0.004 | 0.1133 |
| 5 | 23.15 | Sulfate | 0.006 | 0.011 | 0.3285 |




RD 08/13/2024



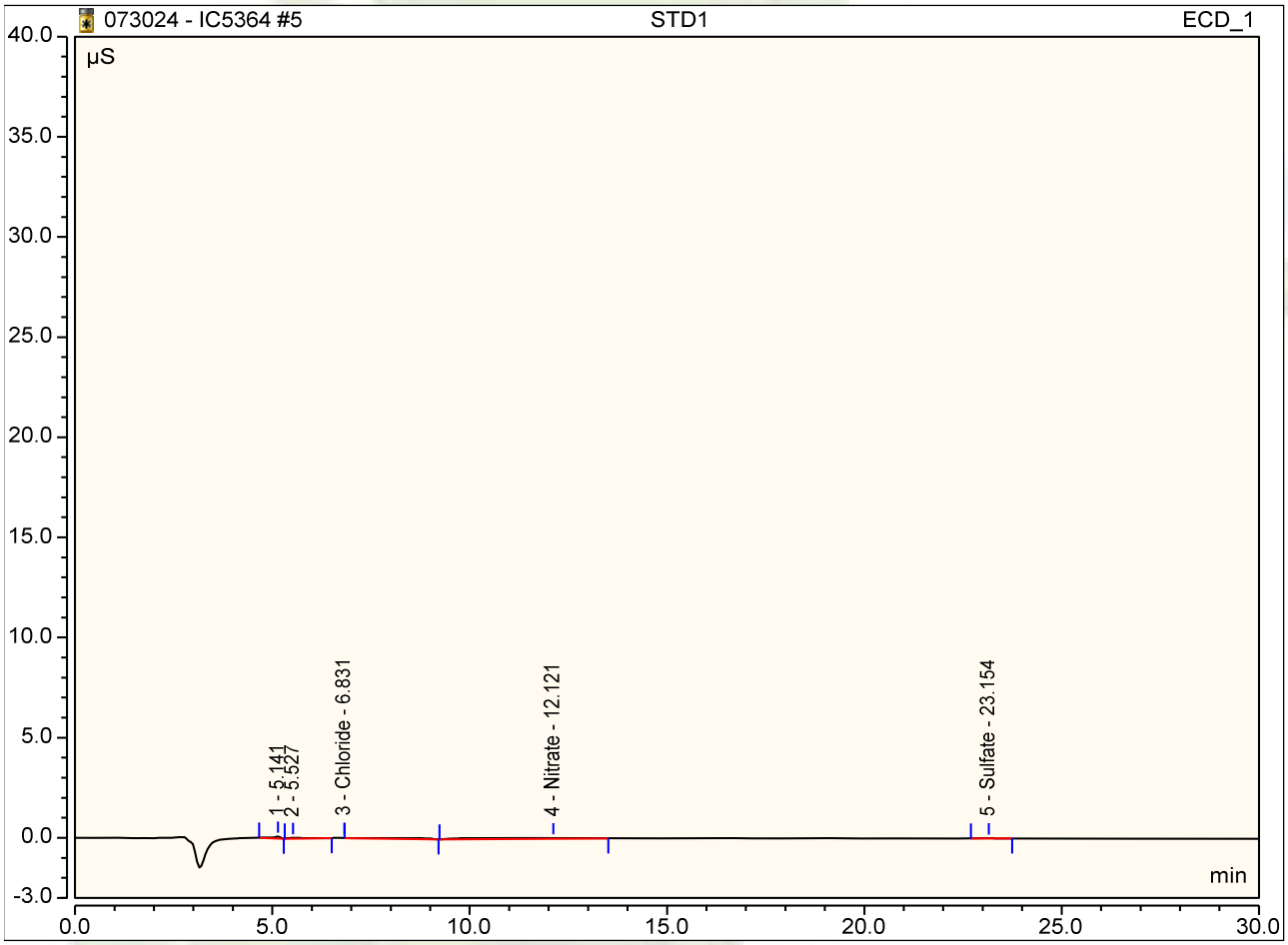
Chromeleon (c) Dionex 1996-2009
Version 7.2.9.11323

TMG 08/13/2024

## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD1** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Calibration Standard** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **30-Jul-2024 / 15:03** | *Run Time:* | **30.00** |

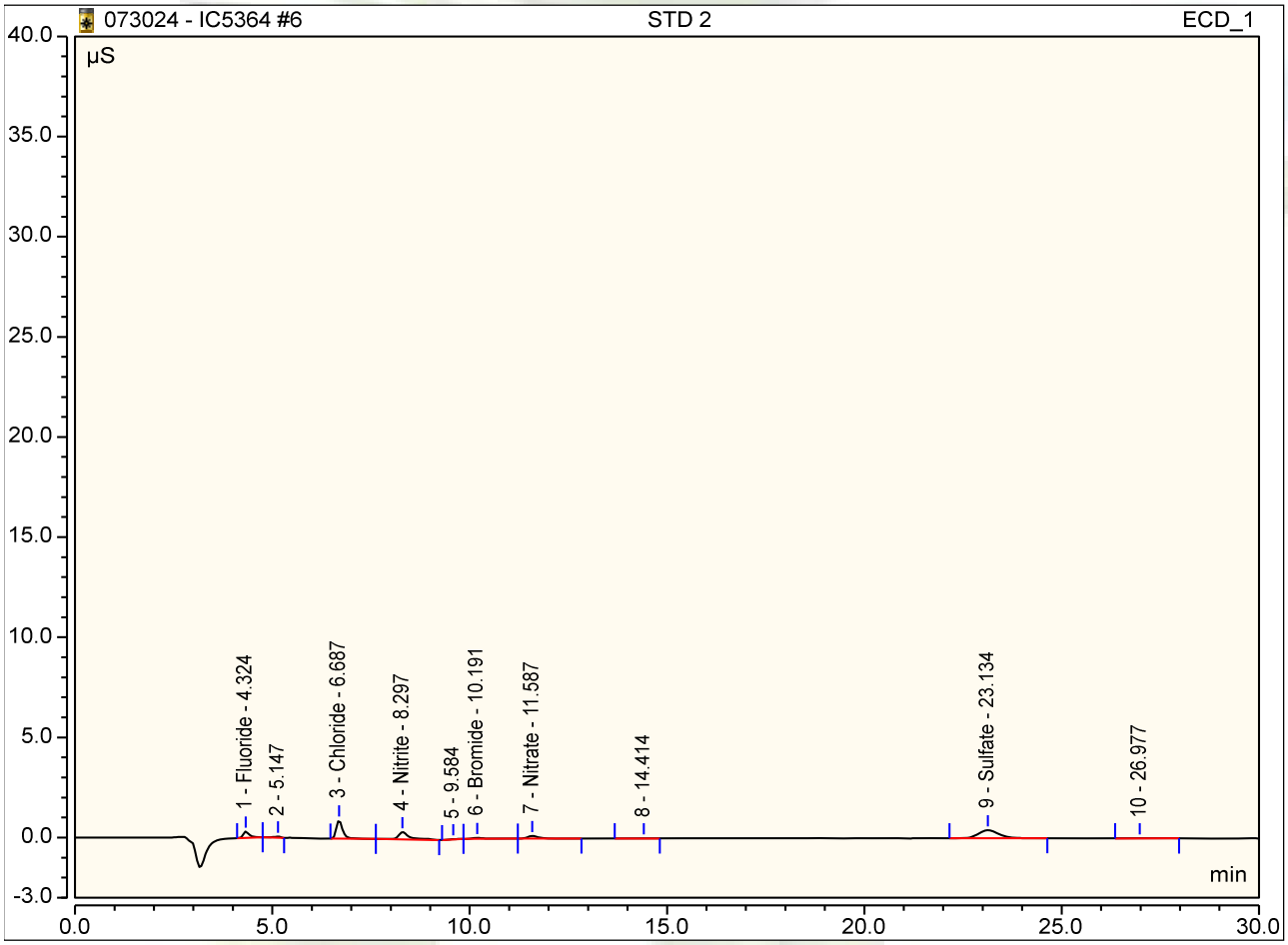
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 3 | 6.83 | Chloride | 0.061 | 0.000 | 0.6036 |
| 4 | 12.12 | Nitrate | 0.126 | 0.026 | 0.2171 |
| 5 | 23.15 | Sulfate | 0.006 | 0.011 | 0.3285 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD 2** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Calibration Standard** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **30-Jul-2024 / 15:35** | *Run Time:* | **30.00** |

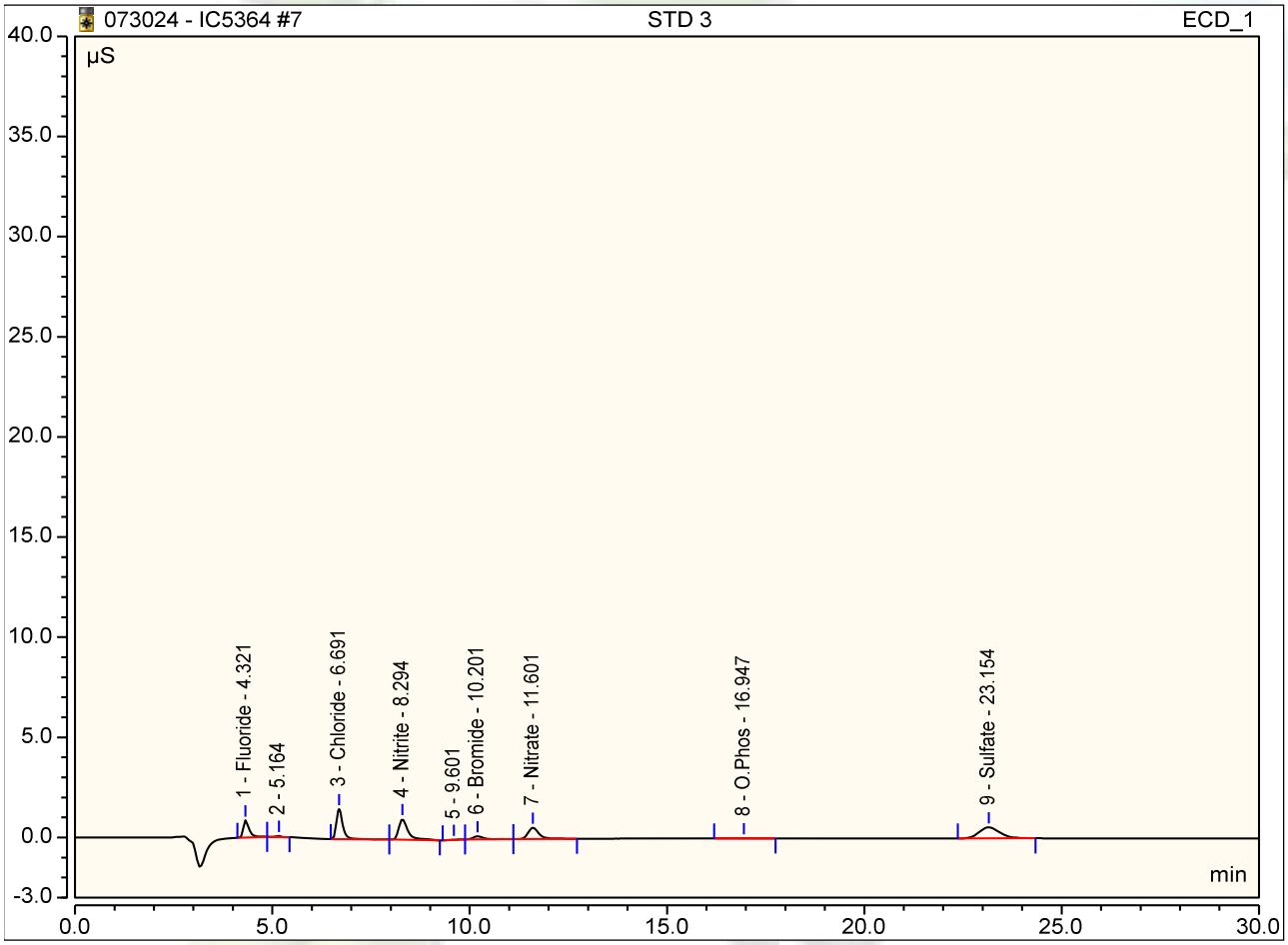
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.32 | Fluoride | 0.055 | 0.312 | 0.1250 |
| 3 | 6.69 | Chloride | 0.173 | 0.916 | 0.9849 |
| 4 | 8.30 | Nitrite | 0.125 | 0.366 | 0.0996 |
| 6 | 10.19 | Bromide | 0.018 | 0.054 | 0.1038 |
| 7 | 11.59 | Nitrate | 0.042 | 0.133 | 0.1564 |
| 9 | 23.13 | Sulfate | 0.249 | 0.405 | 1.1147 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD 3** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Calibration Standard** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **30-Jul-2024 / 16:08** | *Run Time:* | **30.00** |

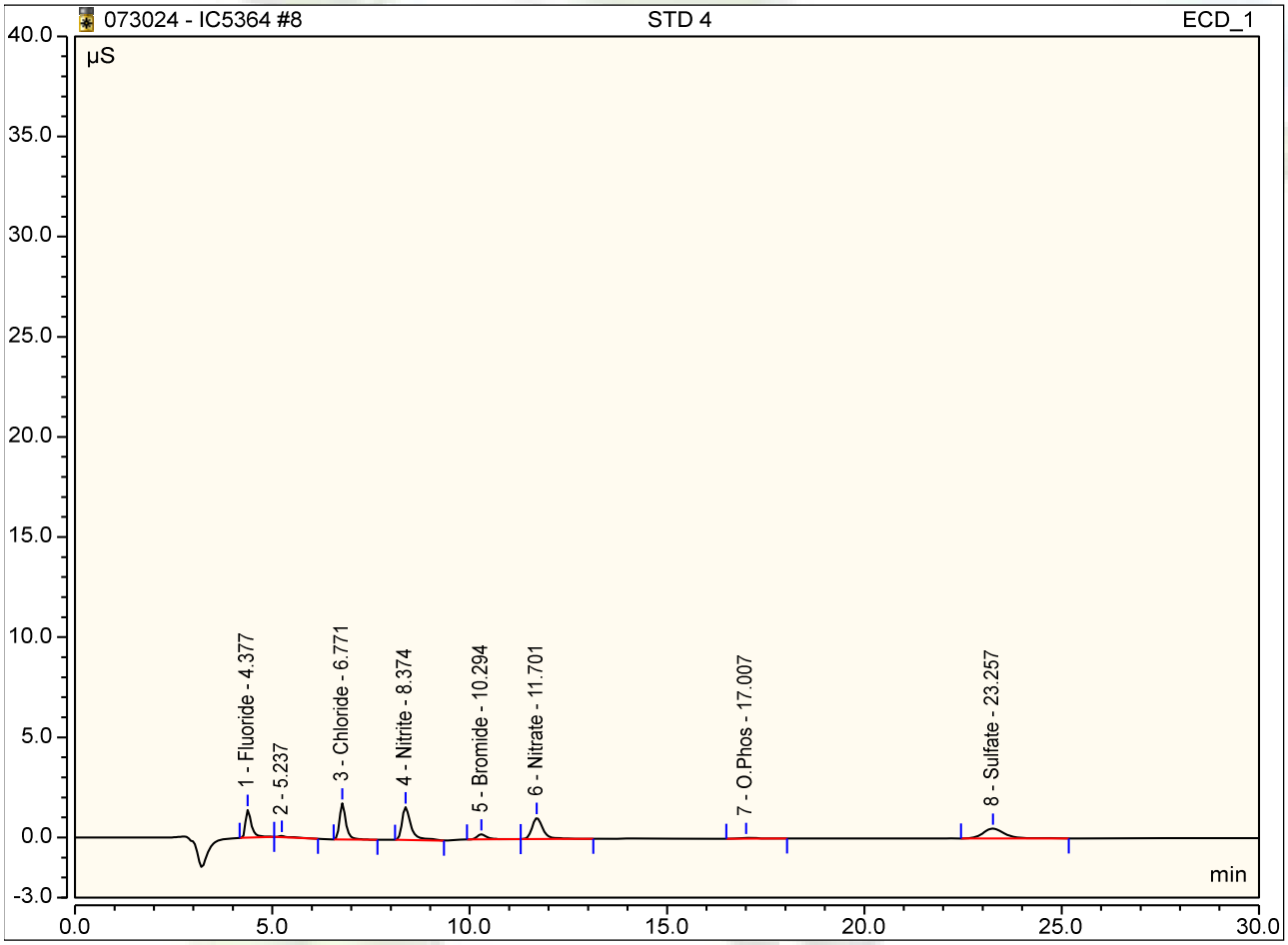
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.32 | Fluoride | 0.148 | 0.856 | 0.2981 |
| 3 | 6.69 | Chloride | 0.280 | 1.500 | 1.2155 |
| 4 | 8.29 | Nitrite | 0.288 | 1.034 | 0.2899 |
| 6 | 10.20 | Bromide | 0.044 | 0.153 | 0.2693 |
| 7 | 11.60 | Nitrate | 0.181 | 0.566 | 0.2997 |
| 8 | 16.95 | O.Phos | 0.011 | 0.019 | 0.5353 |
| 9 | 23.15 | Sulfate | 0.341 | 0.559 | 1.4097 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD 4** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Calibration Standard** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **30-Jul-2024 / 16:41** | *Run Time:* | **30.00** |

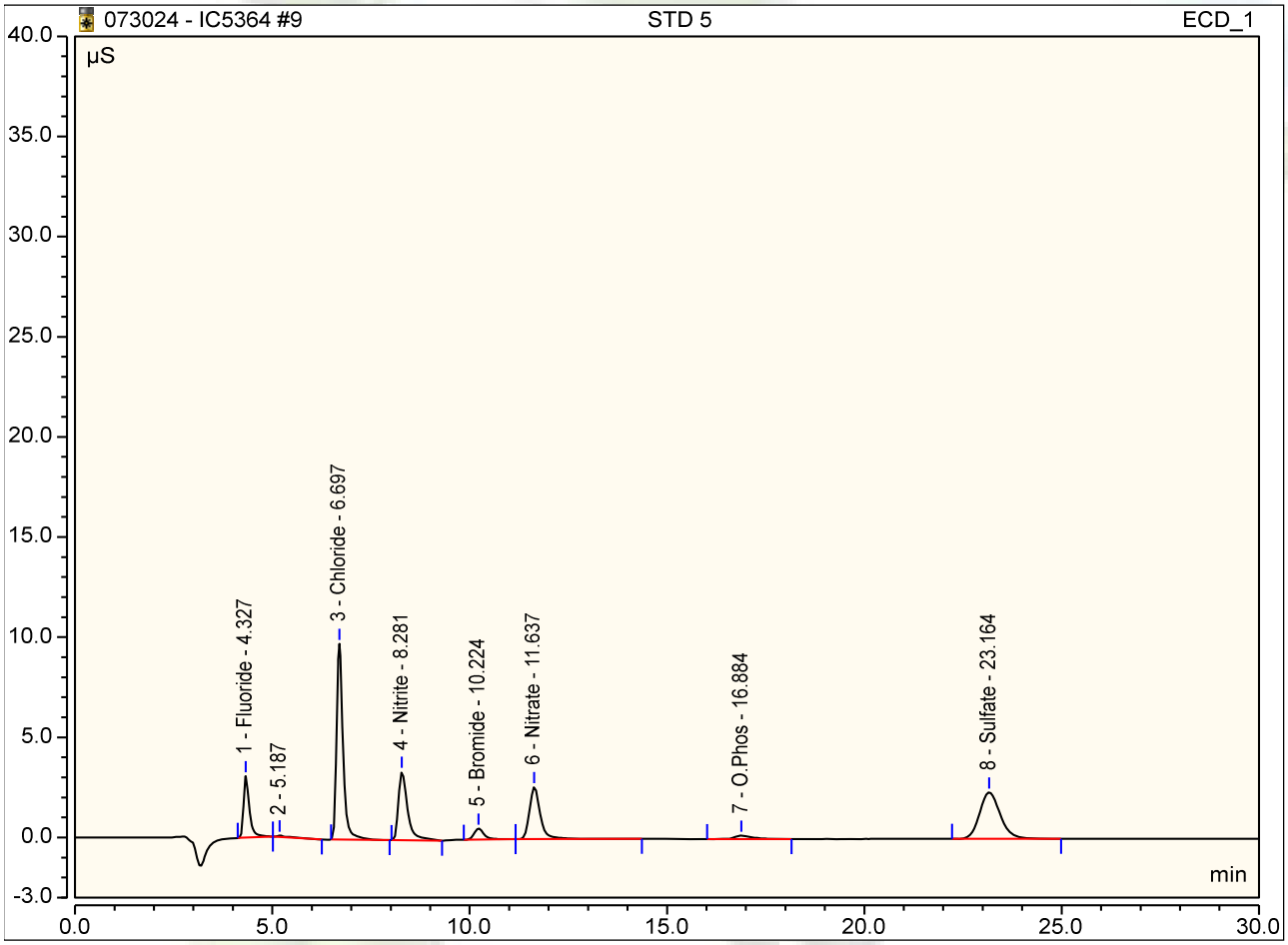
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.38 | Fluoride | 0.245 | 1.392 | 0.4801 |
| 3 | 6.77 | Chloride | 0.340 | 1.808 | 1.3451 |
| 4 | 8.37 | Nitrite | 0.445 | 1.633 | 0.4735 |
| 5 | 10.29 | Bromide | 0.078 | 0.258 | 0.4866 |
| 6 | 11.70 | Nitrate | 0.337 | 1.057 | 0.4611 |
| 7 | 17.01 | O.Phos | 0.021 | 0.041 | 0.5809 |
| 8 | 23.26 | Sulfate | 0.305 | 0.489 | 1.2930 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD 5** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Calibration Standard** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **30-Jul-2024 / 17:13** | *Run Time:* | **30.00** |

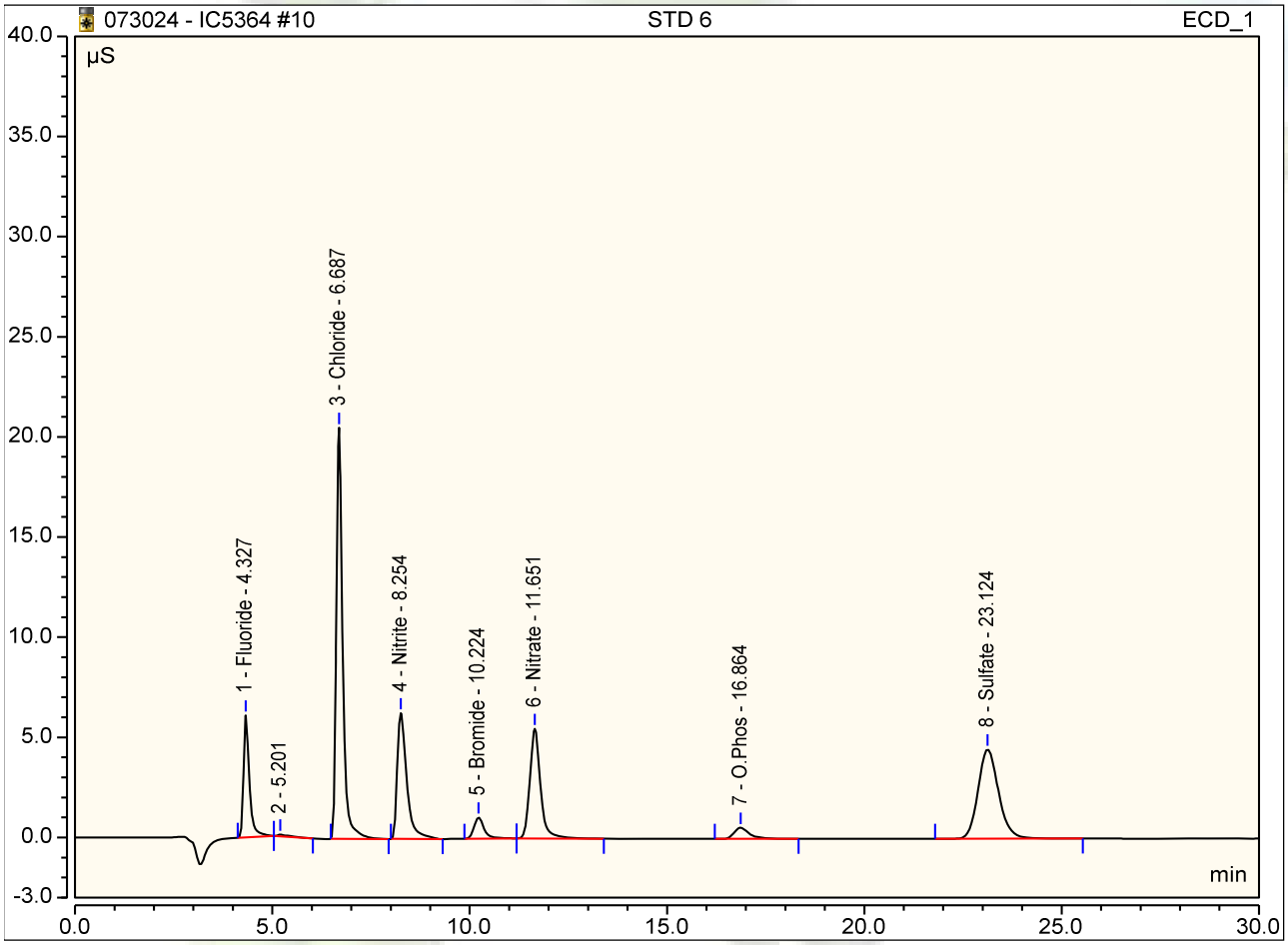
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.33 | Fluoride | 0.532 | 3.075 | 1.0143 |
| 3 | 6.70 | Chloride | 1.831 | 9.782 | 4.5550 |
| 4 | 8.28 | Nitrite | 0.927 | 3.422 | 1.0358 |
| 5 | 10.22 | Bromide | 0.163 | 0.551 | 1.0386 |
| 6 | 11.64 | Nitrate | 0.840 | 2.603 | 0.9811 |
| 7 | 16.88 | O.Phos | 0.086 | 0.176 | 0.8843 |
| 8 | 23.16 | Sulfate | 1.401 | 2.316 | 4.8309 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD 6** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Calibration Standard** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **30-Jul-2024 / 17:46** | *Run Time:* | **30.00** |

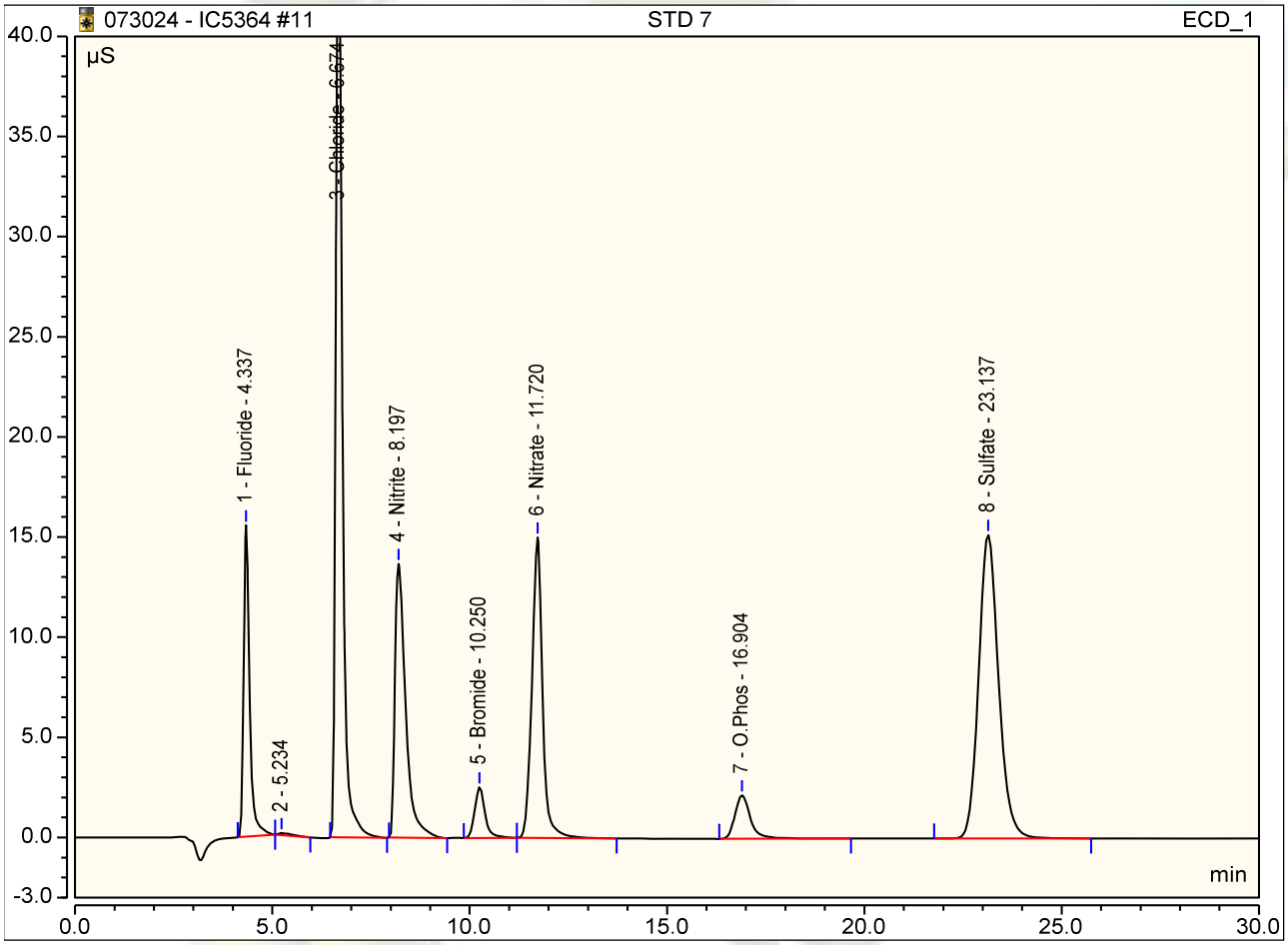
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.33 | Fluoride | 1.046 | 6.094 | 1.9731 |
| 3 | 6.69 | Chloride | 3.798 | 20.515 | 8.7909 |
| 4 | 8.25 | Nitrite | 1.761 | 6.286 | 2.0086 |
| 5 | 10.22 | Bromide | 0.314 | 1.059 | 2.0106 |
| 6 | 11.65 | Nitrate | 1.711 | 5.473 | 1.8805 |
| 7 | 16.86 | O.Phos | 0.254 | 0.558 | 1.6643 |
| 8 | 23.12 | Sulfate | 2.684 | 4.456 | 8.9696 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD 7** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Calibration Standard** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **30-Jul-2024 / 18:19** | *Run Time:* | **30.00** |

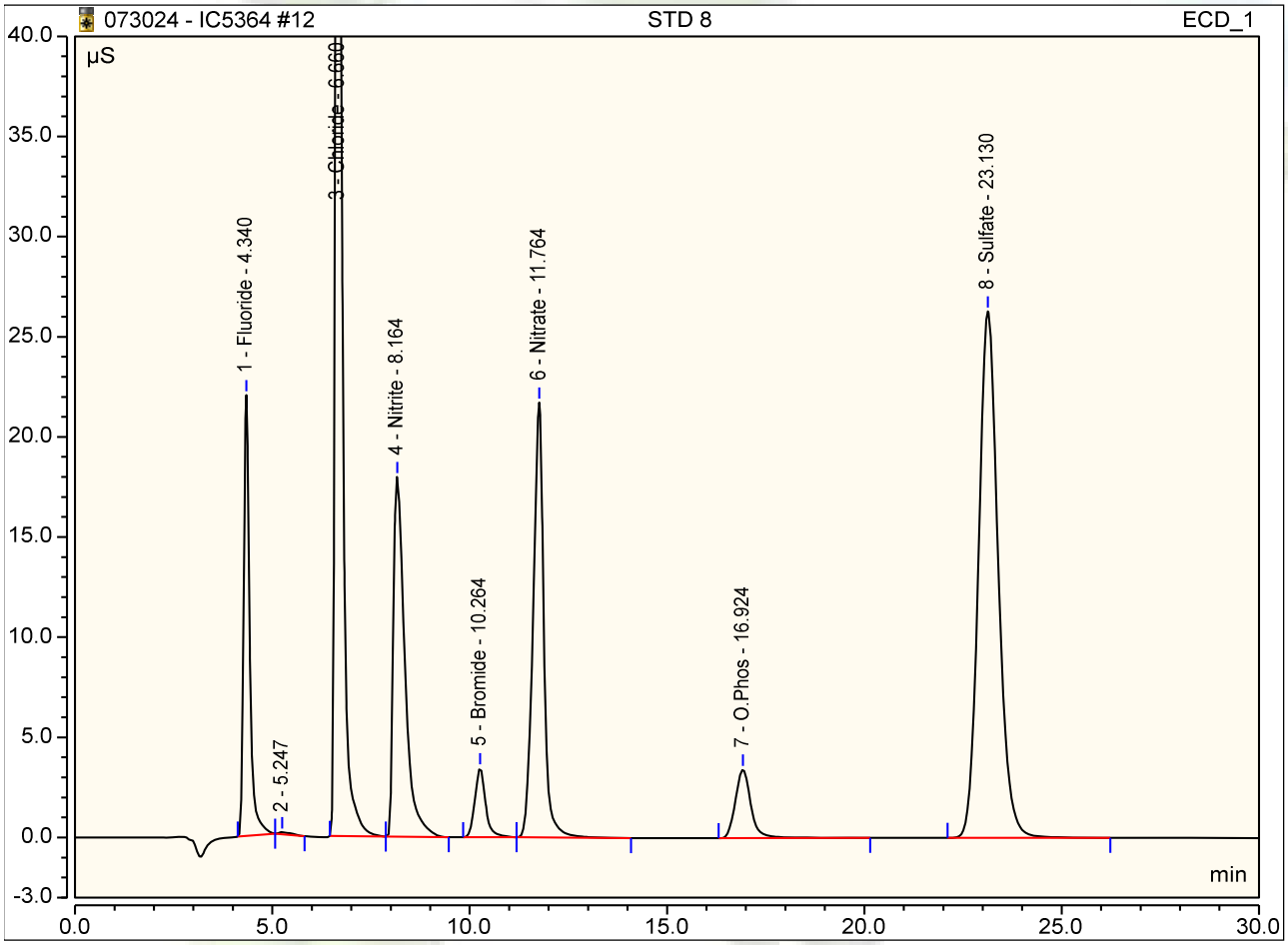
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.34 | Fluoride | 2.673 | 15.543 | 5.0095 |
| 3 | 6.67 | Chloride | 9.054 | 49.052 | 20.1111 |
| 4 | 8.20 | Nitrite | 4.320 | 13.664 | 4.9927 |
| 5 | 10.25 | Bromide | 0.777 | 2.534 | 4.9911 |
| 6 | 11.72 | Nitrate | 4.624 | 15.006 | 4.8915 |
| 7 | 16.90 | O.Phos | 1.001 | 2.169 | 5.1352 |
| 8 | 23.14 | Sulfate | 8.878 | 15.165 | 28.9536 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD 8** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Calibration Standard** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **30-Jul-2024 / 18:51** | *Run Time:* | **30.00** |

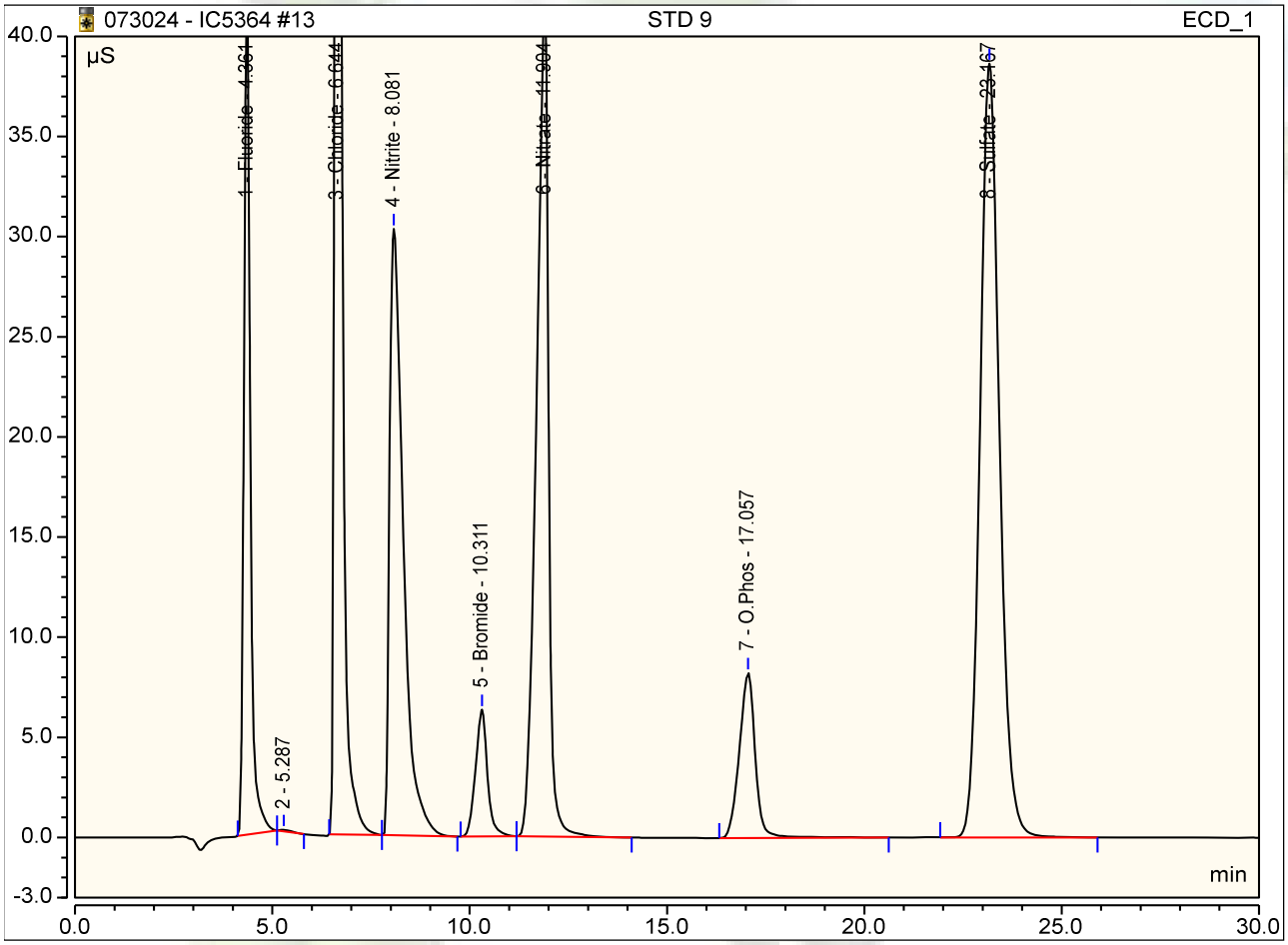
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.34 | Fluoride | 3.838 | 22.014 | 7.1814 |
| 3 | 6.66 | Chloride | 13.588 | 72.931 | 29.8741 |
| 4 | 8.16 | Nitrite | 6.101 | 17.966 | 7.0711 |
| 5 | 10.26 | Bromide | 1.093 | 3.454 | 7.0305 |
| 6 | 11.76 | Nitrate | 6.777 | 21.717 | 7.1163 |
| 7 | 16.92 | O.Phos | 1.575 | 3.429 | 7.8044 |
| 8 | 23.13 | Sulfate | 15.139 | 26.284 | 49.1527 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD 9** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Calibration Standard** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **30-Jul-2024 / 19:24** | *Run Time:* | **30.00** |

| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.36 | Fluoride | 7.907 | 43.353 | 14.7728 |
| 3 | 6.64 | Chloride | 18.463 | 97.980 | 40.3733 |
| 4 | 8.08 | Nitrite | 12.222 | 30.271 | 14.2105 |
| 5 | 10.31 | Bromide | 2.221 | 6.321 | 14.2961 |
| 6 | 11.90 | Nitrate | 14.783 | 42.617 | 15.3892 |
| 7 | 17.06 | O.Phos | 3.851 | 8.233 | 18.3789 |
| 8 | 23.17 | Sulfate | 21.971 | 38.637 | 71.1973 |

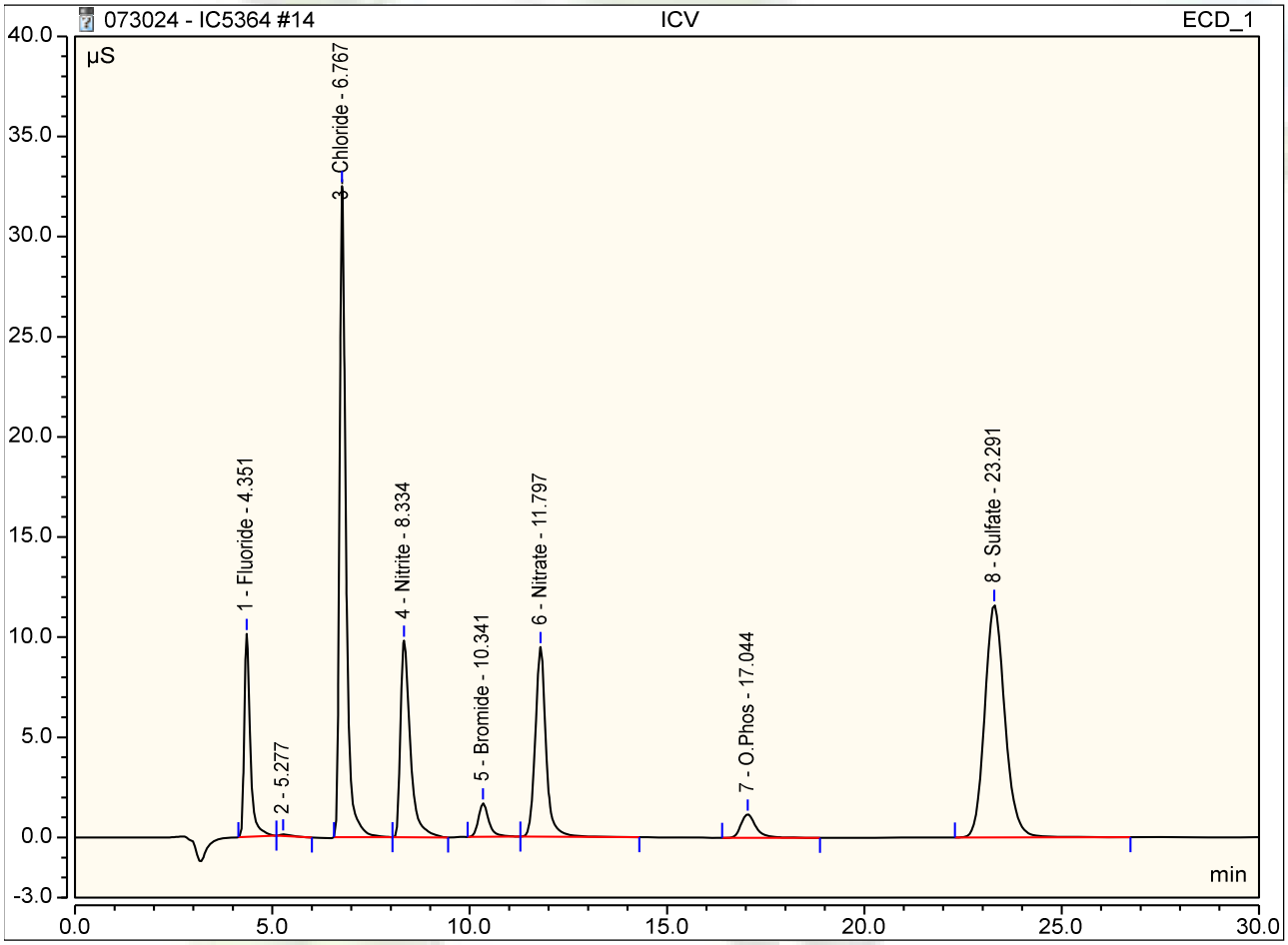


## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **ICV** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **30-Jul-2024 / 19:57** | *Run Time:* | **30.00** |

| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.35 | Fluoride | 1.770 | 10.130 | 3.3245 |
| 3 | 6.77 | Chloride | 6.092 | 32.513 | 13.7319 |
| 4 | 8.33 | Nitrite | 2.846 | 9.812 | 3.2742 |
| 5 | 10.34 | Bromide | 0.516 | 1.670 | 3.3076 |
| 6 | 11.80 | Nitrate | 2.980 | 9.472 | 3.1929 |
| 7 | 17.04 | O.Phos | 0.517 | 1.167 | 2.8881 |
| 8 | 23.29 | Sulfate | 6.864 | 11.608 | 22.4544 |

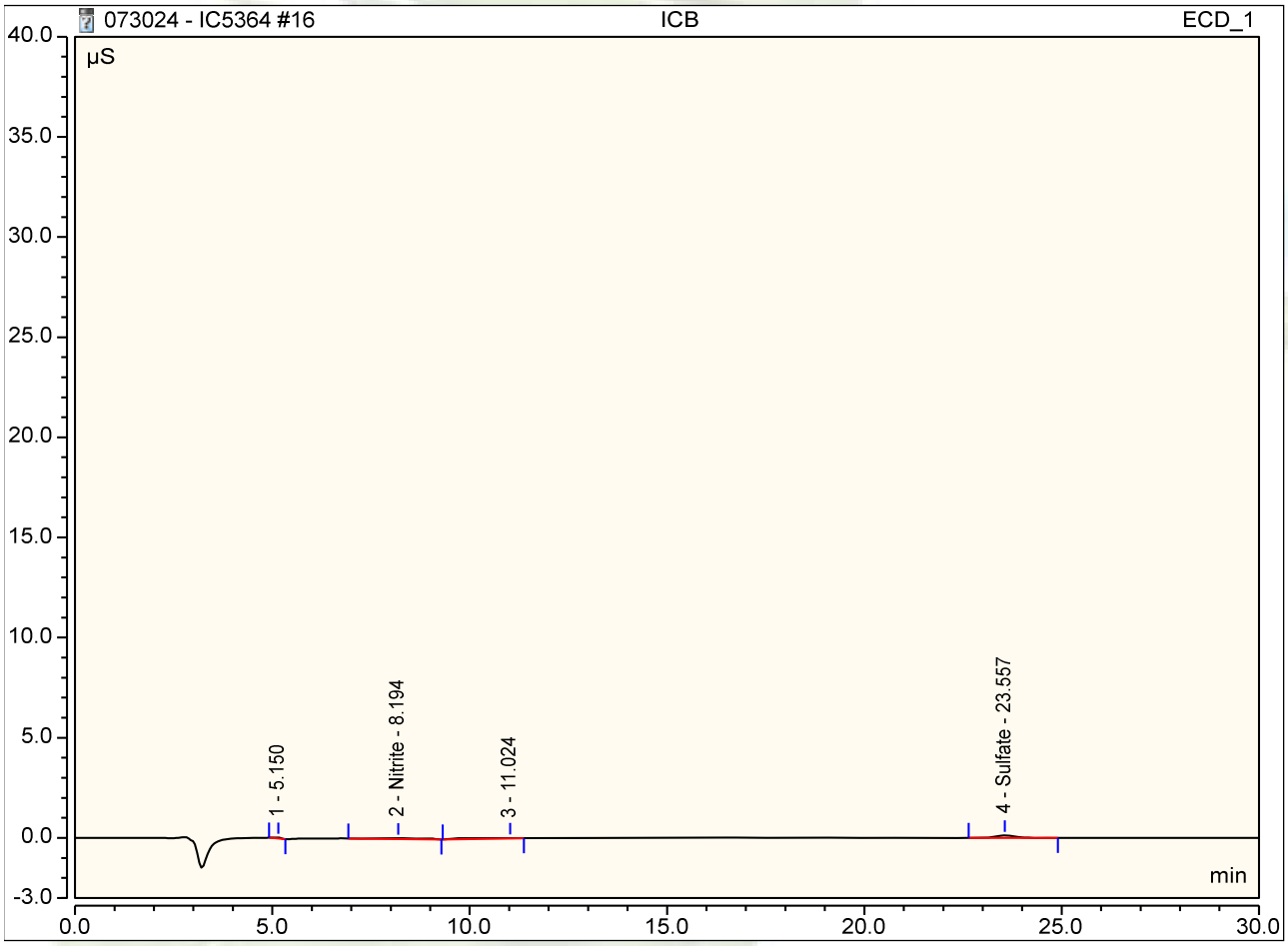
6.4671



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **ICB** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **30-Jul-2024 / 21:02** | *Run Time:* | **30.00** |

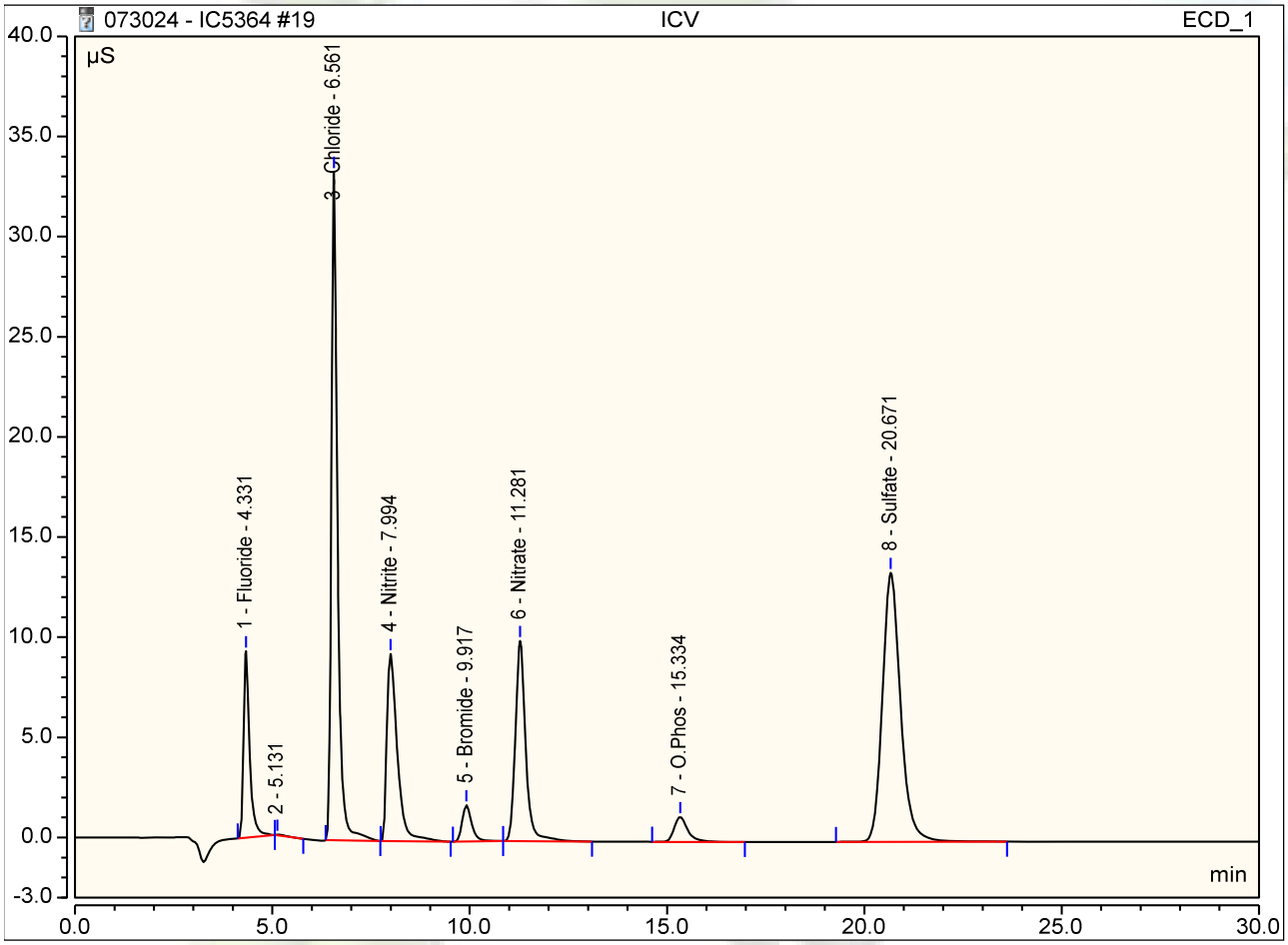
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 2 | 8.19 | Nitrite | 0.058 | 0.035 | 0.0220 |
| 4 | 23.56 | Sulfate | 0.080 | 0.127 | 0.5692 |



## Peak Integration Report

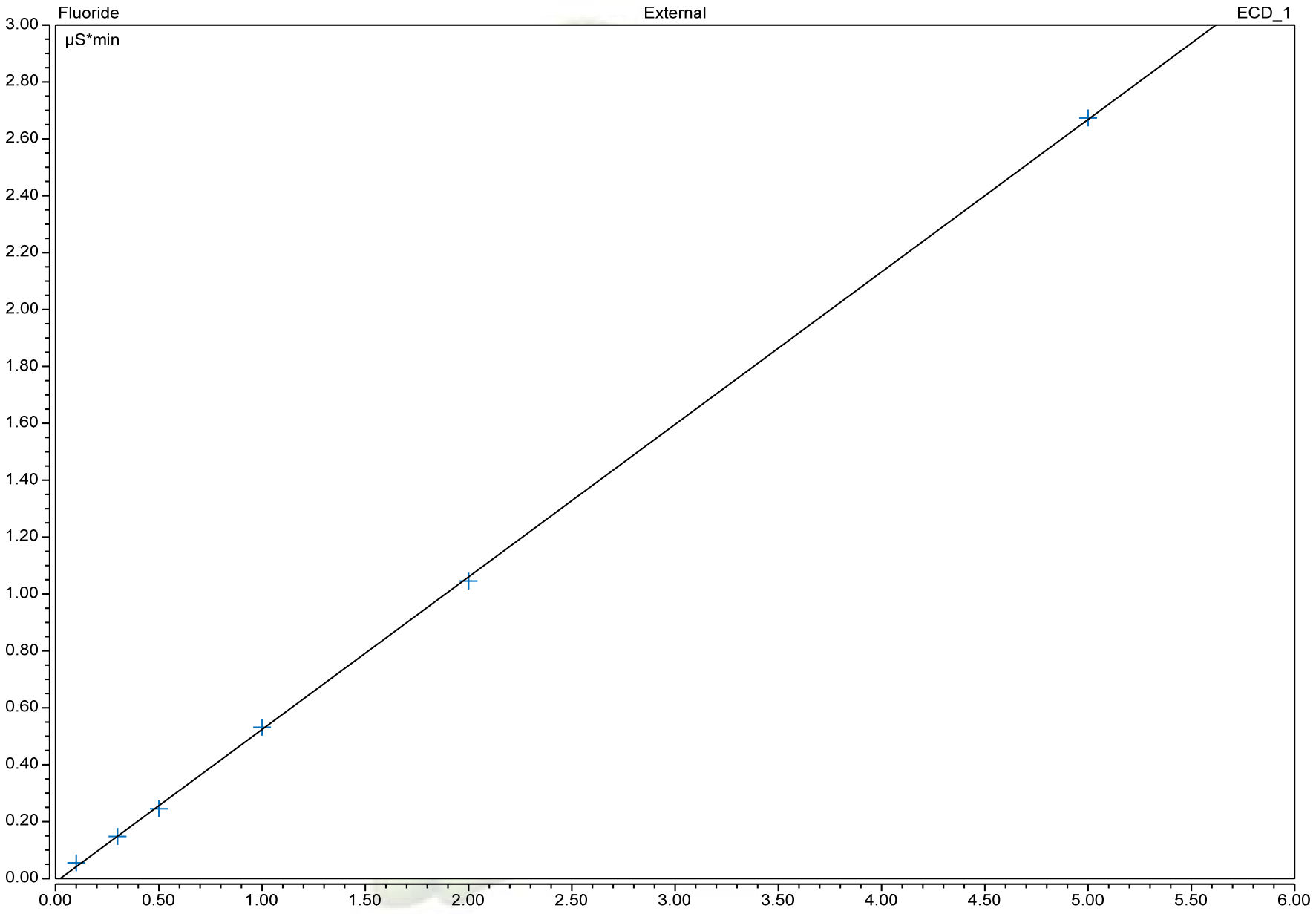
| | | | |
|---|---|---|---|
| *Sample Name:* | **ICV** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **31-Jul-2024 / 08:54** | *Run Time:* | **30.00** |

| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.33 | Fluoride | 1.663 | 9.302 | 3.1249 |
| 3 | 6.56 | Chloride | 6.167 | 33.373 | 13.8923 |
| 4 | 7.99 | Nitrite | 2.866 | 9.342 | 3.2974 |
| 5 | 9.92 | Bromide | 0.513 | 1.811 | 3.2923 |
| 6 | 11.28 | Nitrate | 3.032 | 10.000 | 3.2465 |
| 7 | 15.33 | O.Phos | 0.507 | 1.240 | 2.8392 |
| 8 | 20.67 | Sulfate | 7.153 | 13.423 | 23.3895 |

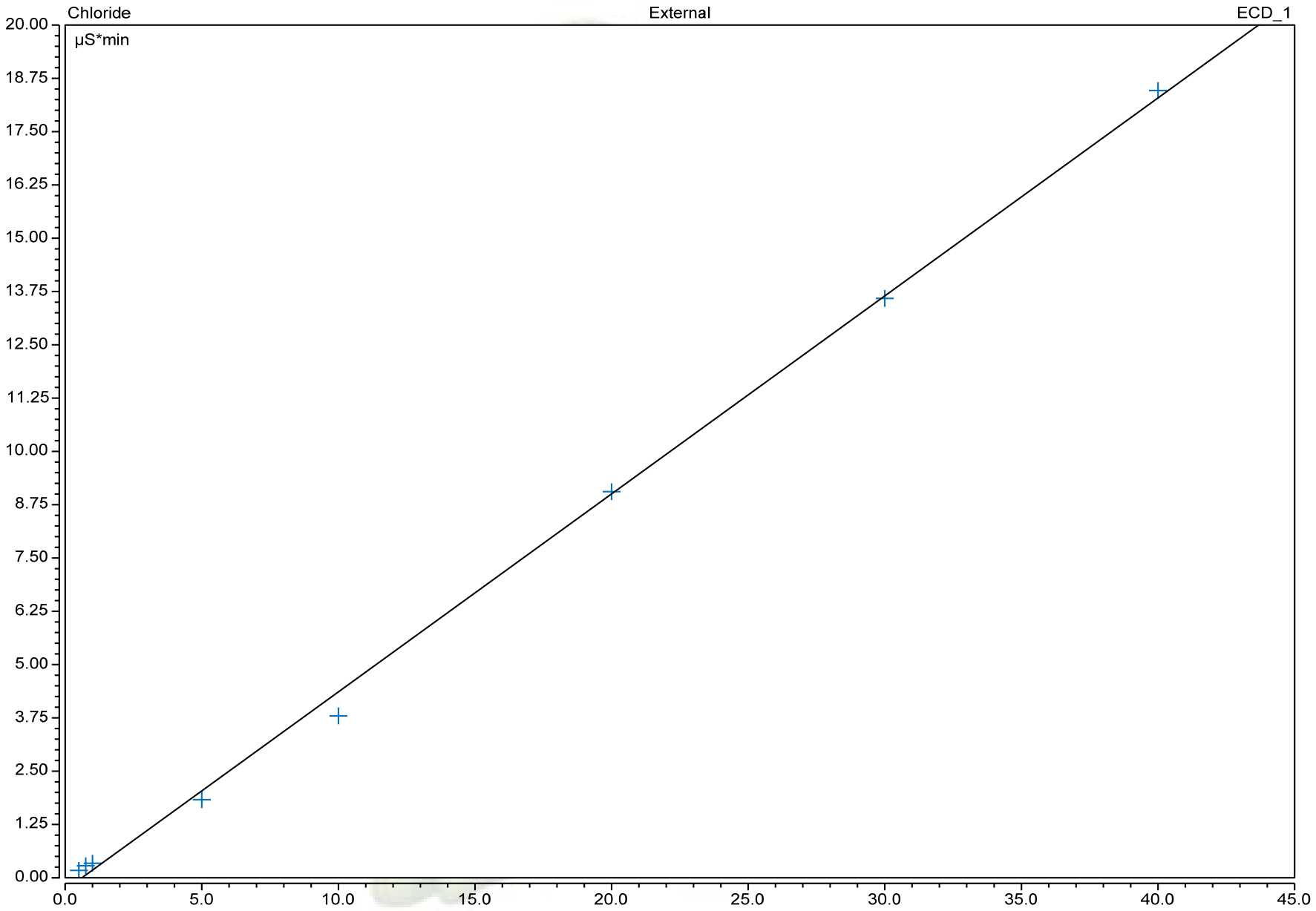


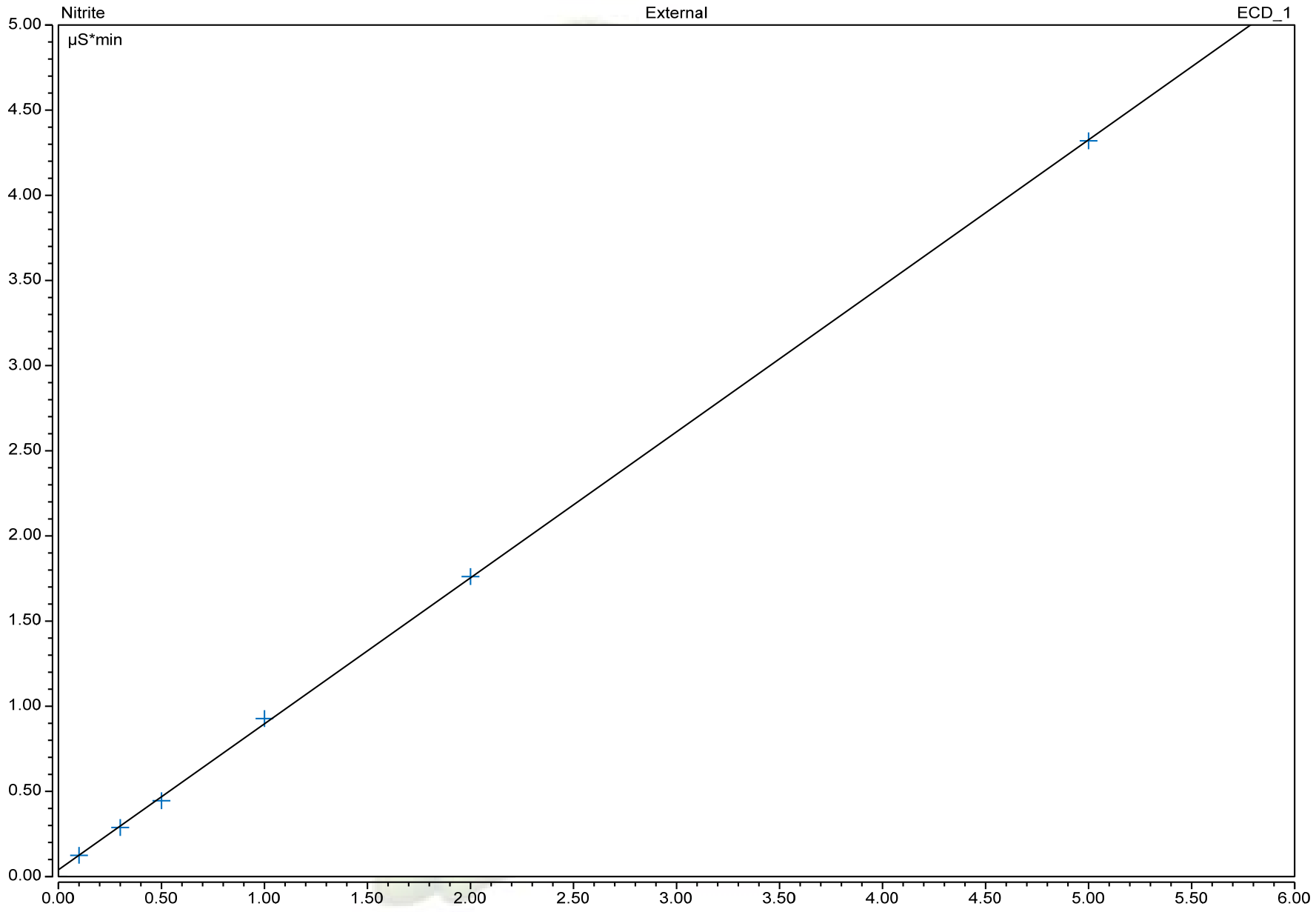
| Peak No. | Peak Name | Cal.Type | Eval.Type | Number of Points | Rel.Std.Dev. % | Coeff.of Determination | C0 (Offset) | C1 (Slope) | C2 (Curve) |
|---|---|---|---|---|---|---|---|---|---|
| *1* | *Fluoride* | *Lin, WithOffset* | *Area* | *6* | *1.5460* | *0.99988* | *-0.0121* | *0.5361* | *0.0000* |
| 3 | Chloride | Lin, WithOffset | Area | 8 | 4.9415 | 0.99849 | -0.2842 | 0.4644 | 0.0000 |
| 4 | Nitrite | Lin, WithOffset | Area | 6 | 1.5373 | 0.99987 | 0.0394 | 0.8573 | 0.0000 |
| 5 | Bromide | Lin, WithOffset | Area | 6 | 1.7714 | 0.99984 | 0.0022 | 0.1552 | 0.0000 |
| 6 | Nitrate | Lin, WithOffset | Area | 8 | 5.2203 | 0.99880 | -0.1092 | 0.9677 | 0.0000 |
| 7 | O.Phos | Lin, WithOffset | Area | 5 | 20.5486 | 0.98630 | -0.1041 | 0.2152 | 0.0000 |
| 8 | Sulfate | Lin, WithOffset | Area | 9 | 4.7813 | 0.99900 | -0.0961 | 0.3099 | 0.0000 |
| **Maximum** | | | | | **20.5486** | 0.99988 | | | |
| **Minimum** | | | | | 1.5373 | **0.98630** | | | |

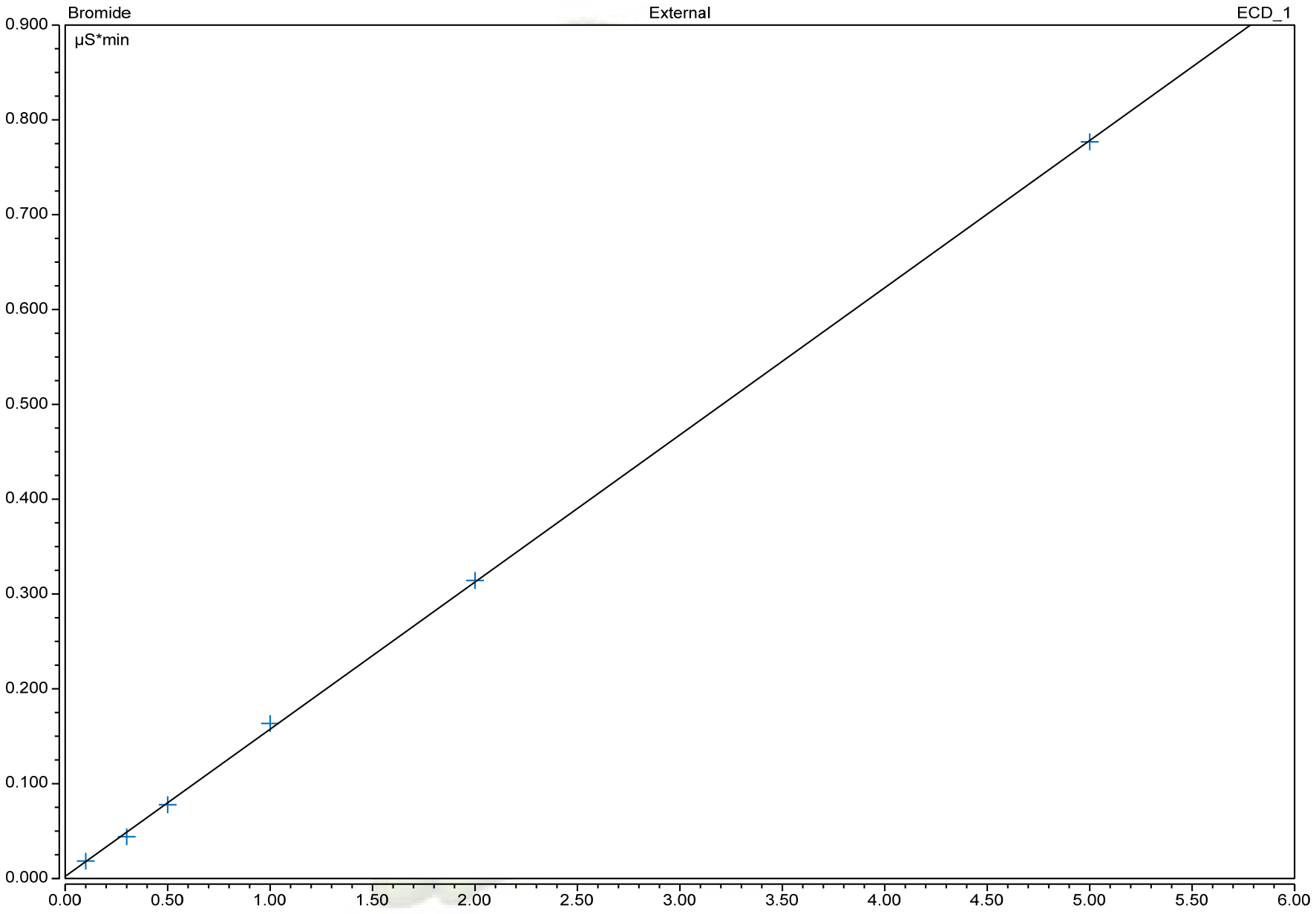


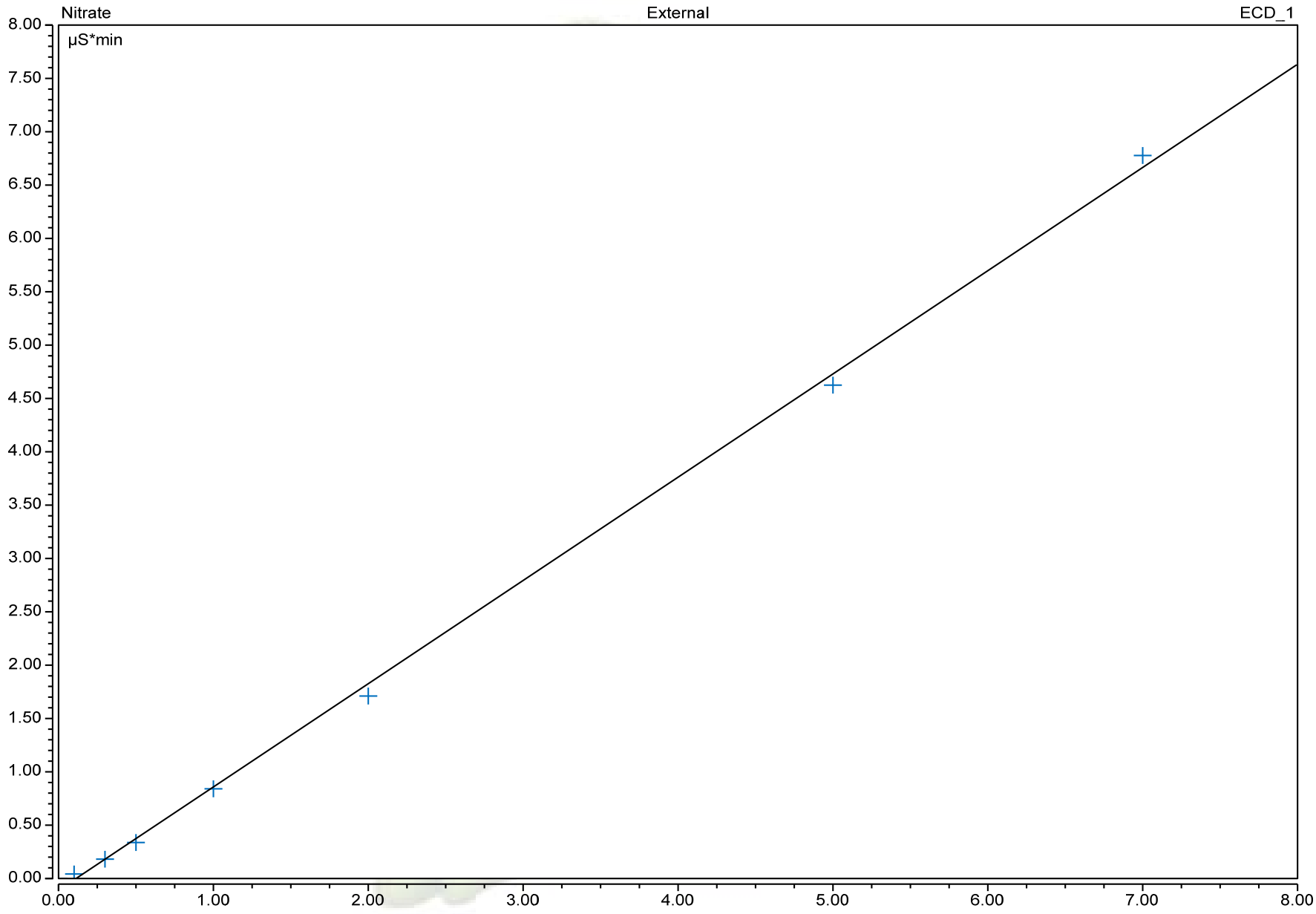

Fluoride
External
ECD_1
µS*min
3.00
2.80
2.60
2.40
2.20
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
5.50
6.00

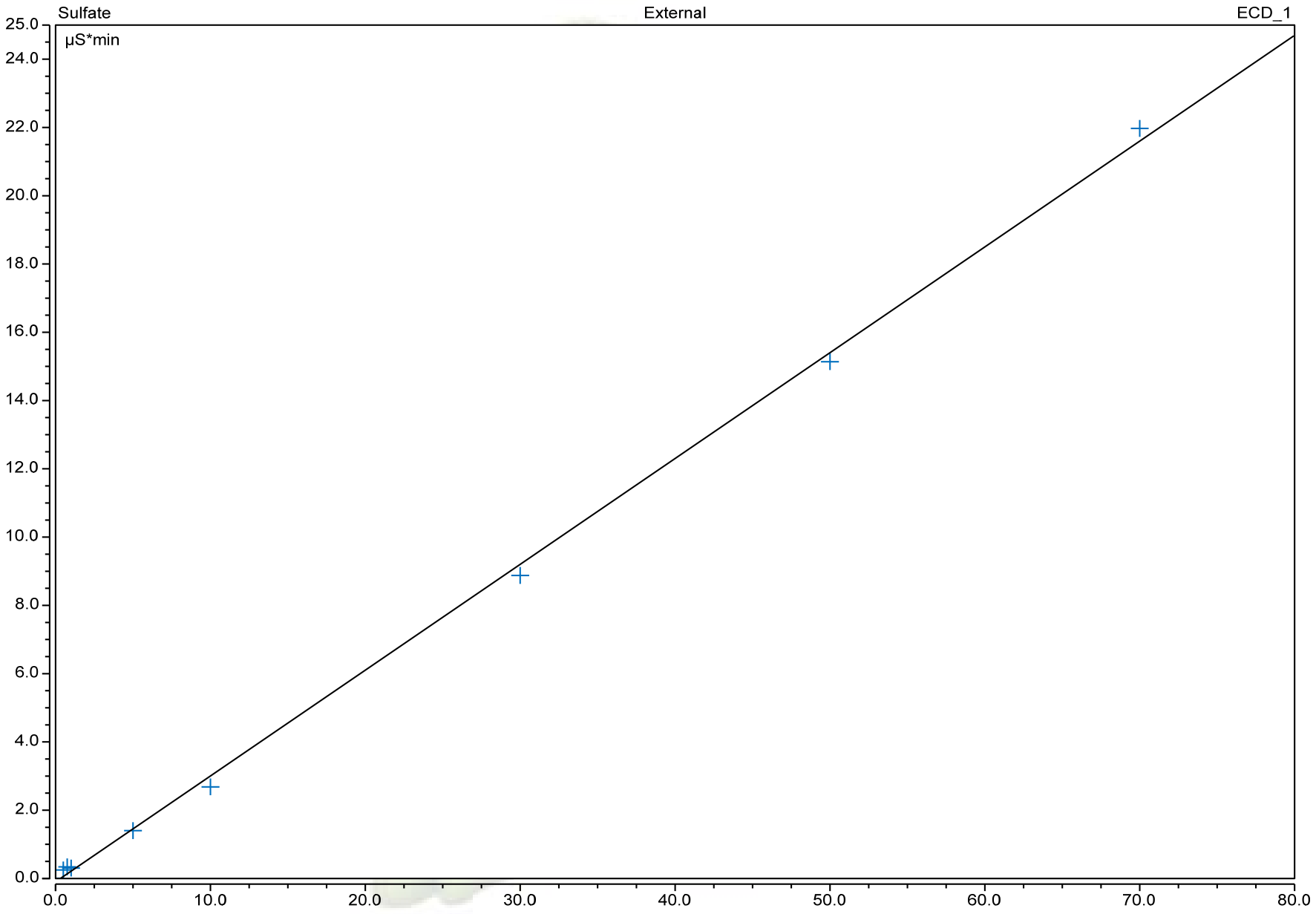
Calibration Plot

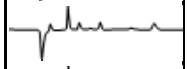
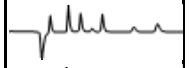
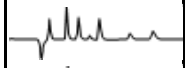
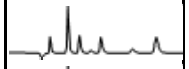
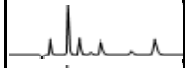
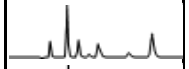
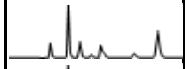
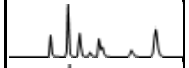
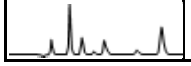



Nitrite
External
ECD_1
µS*min
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
5.50
6.00


Bromide
External
ECD_1
µS*min
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
5.50
6.00


Nitrate
External
ECD_1
µS*min
8.00
7.50
7.00
6.50
6.00
5.50
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00


Sulfate
External
ECD_1
µS*min
25.0
24.0
22.0
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
80.0

| ECD_1 | Name | Dilution | Type | Level | Position | Volume | Instrument Method | Processing Method | Status |
|---|---|---|---|---|---|---|---|---|---|
|  | STD1 | 1.0000 | Calibration Standard | 1 | 2 | 5000 | Anions 1.0 | IC5492A | Finished |
|  | STD2 | 1.0000 | Calibration Standard | 2 | 3 | 5000 | Anions 1.0 | IC5492A | Finished |
|  | STD3 | 1.0000 | Calibration Standard | 3 | 4 | 5000 | Anions 1.0 | IC5492A | Finished |
|  | STD4 | 1.0000 | Calibration Standard | 4 | 5 | 5000 | Anions 1.0 | IC5492A | Finished |
|  | STD5 | 1.0000 | Calibration Standard | 5 | 6 | 5000 | Anions 1.0 | IC5492A | Finished |
|  | STD6 | 1.0000 | Calibration Standard | 6 | 7 | 5000 | Anions 1.0 | IC5492A | Finished |
|  | STD7 | 1.0000 | Calibration Standard | 7 | 8 | 5000 | Anions 1.0 | IC5492A | Finished |
|  | STD8 | 1.0000 | Calibration Standard | 8 | 9 | 5000 | Anions 1.0 | IC5492A | Finished |
|  | STD9 | 1.0000 | Calibration Standard | 9 | 10 | 5000 | Anions 1.0 | IC5492A | Finished |
|  | ICV | 1.0000 | Unknown | | 13 | 5000 | Anions 1.0 | IC5492A | Finished |

| ECD_1 | Name | Dilution | Type | Level | Position | Volume | Instrument Method | Processing Method | Status |
|---|---|---|---|---|---|---|---|---|---|
|  | ICB | 1.0000 | Unknown | | 1 | 5000 | Anions 1.0 | IC5492A | Finished |

## Calibration Concentrations

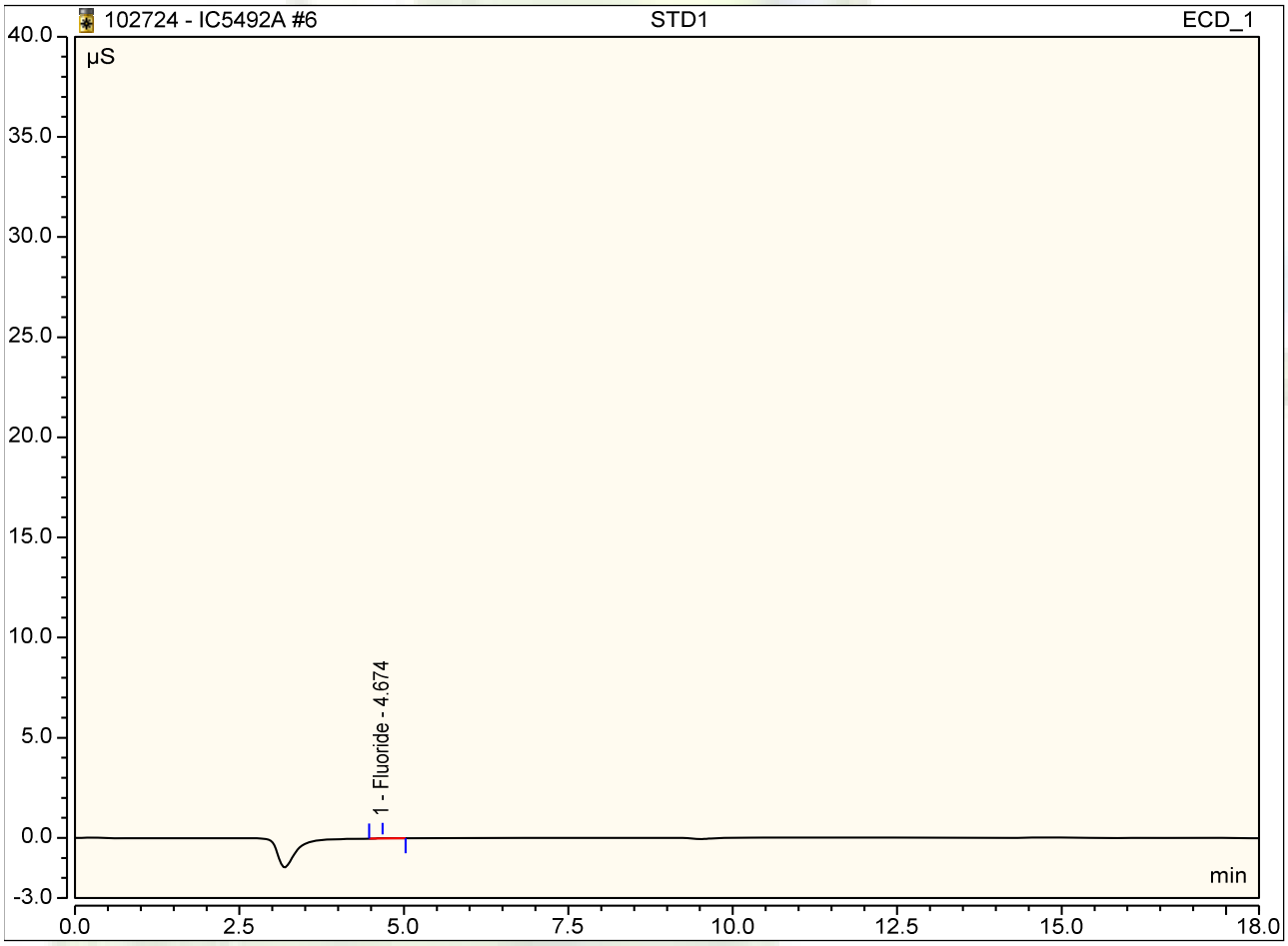
| Instrument:AQUION 4 | Cal. File: | IC5492A | | | ICV | IC5486 IC5494 | | Analyst/Date: TMG 10/28/2024 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Cal Level 1 (mg/L) | Cal Level 2 (mg/L) | Cal Level 3 (mg/L) | Cal Level 4 (mg/L) | Cal Level 5 (mg/L) | Cal Level 6 (mg/L) | Cal Level 7 (mg/L) | Cal Level 8 (mg/L) | Cal Level 9 (mg/L) | ICV (mg/L) |
| Fluoride | 0.0 | 0.1 | 0.30 | 0.5 | 1.0 | 2.0 | 5.0 | | | 3.5 |
| Chloride | 0.0 | 0.5 | 0.75 | 1.0 | 5.0 | 10.0 | 20.0 | 30.0 | 40.0 | 15.0 |
| Bromide | 0.0 | 0.1 | 0.30 | 0.5 | 1.0 | 2.0 | 5.0 | | | 3.5 |
| Nitrite | 0.0 | 0.1 | 0.30 | 0.5 | 1.0 | 2.0 | 5.0 | | | 3.5 |
| Nitrate | 0.0 | 0.1 | 0.30 | 0.5 | 1.0 | 2.0 | 5.0 | 7.0 | | 3.5 |
| O-Phoshorous | 0.0 | 0.1 | 0.30 | 0.5 | 1.0 | 2.0 | 5.0 | | | 3.5 |
| Sulfate | 0.0 | 0.5 | 0.75 | 1.0 | 5.0 | 10.0 | 30.0 | 50.0 | 70.0 | 25.0 |

RD 11/06/2024

## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD1** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Calibration Standard** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **28-Oct-2024 / 10:18** | *Run Time:* | **18.00** |

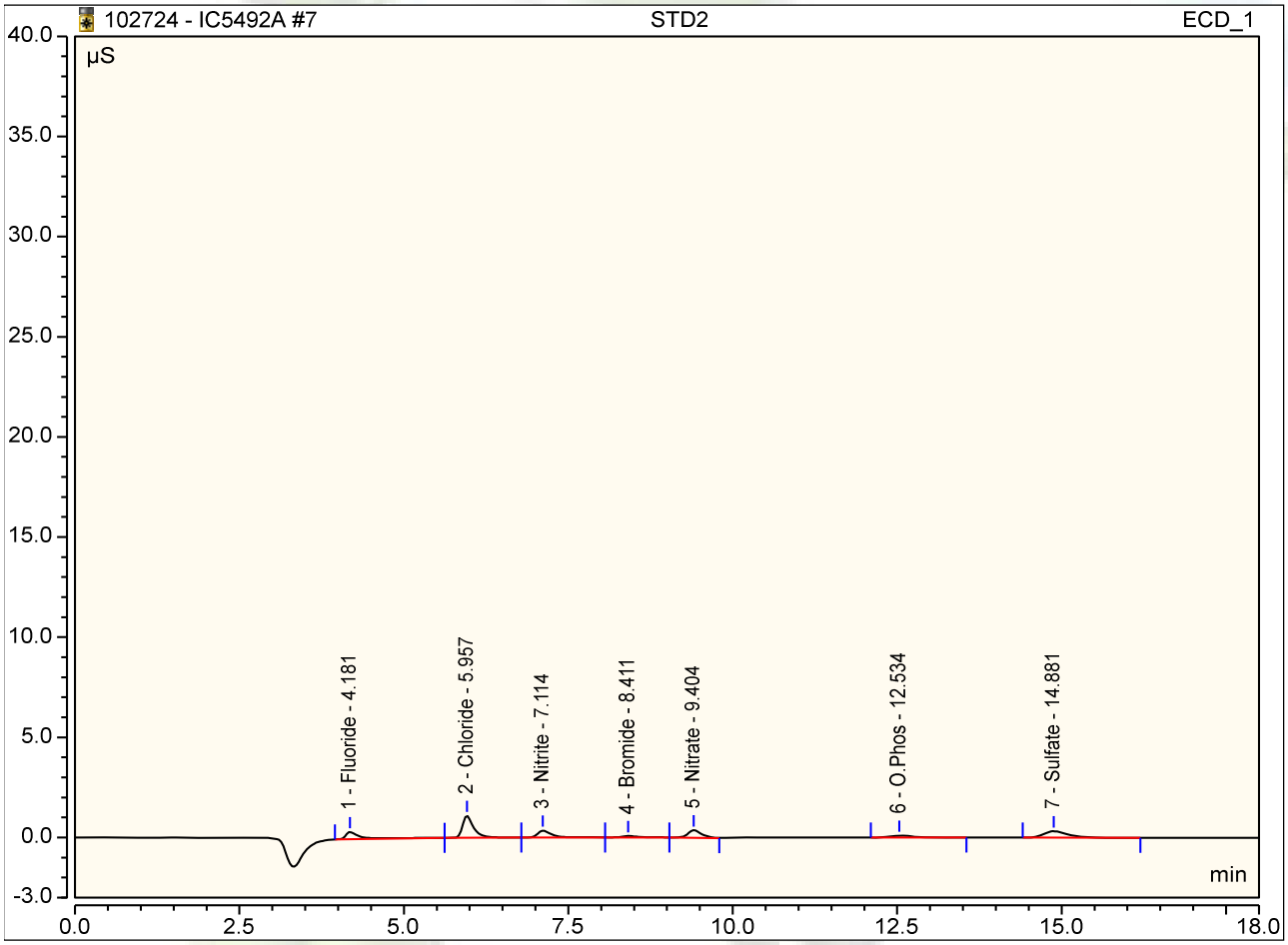
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.67 | Fluoride | 0.005 | 0.027 | n.a. |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD2** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Calibration Standard** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **28-Oct-2024 / 10:39** | *Run Time:* | **18.00** |

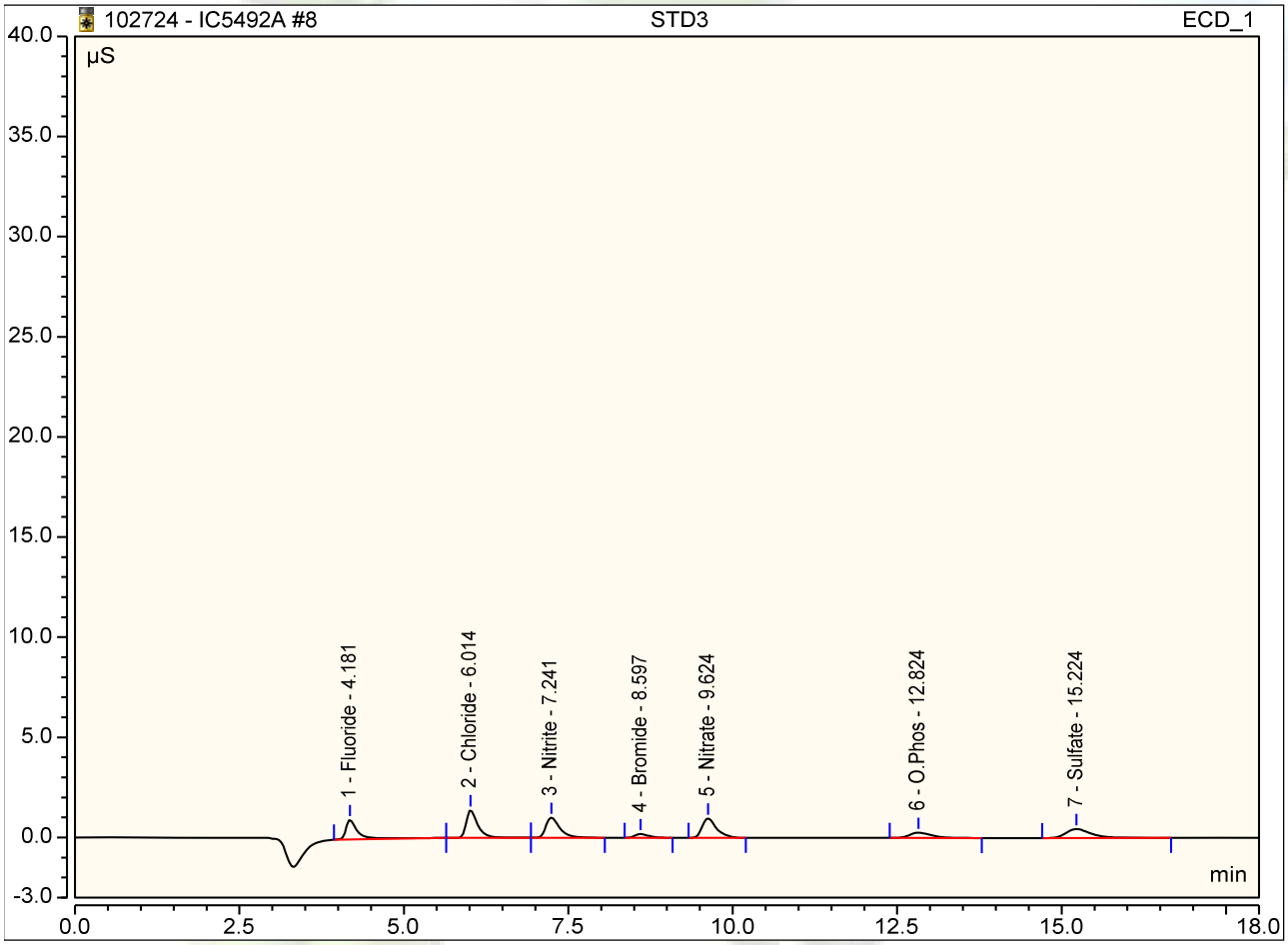
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.18 | Fluoride | 0.097 | 0.359 | 0.1120 |
| 2 | 5.96 | Chloride | 0.212 | 1.094 | 1.0559 |
| 3 | 7.11 | Nitrite | 0.082 | 0.344 | 0.1017 |
| 4 | 8.41 | Bromide | 0.019 | 0.069 | 0.0942 |
| 5 | 9.40 | Nitrate | 0.088 | 0.371 | 0.1943 |
| 6 | 12.53 | O.Phos | 0.038 | 0.096 | 0.0868 |
| 7 | 14.88 | Sulfate | 0.139 | 0.322 | 1.3000 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD3** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Calibration Standard** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **28-Oct-2024 / 10:59** | *Run Time:* | **18.00** |

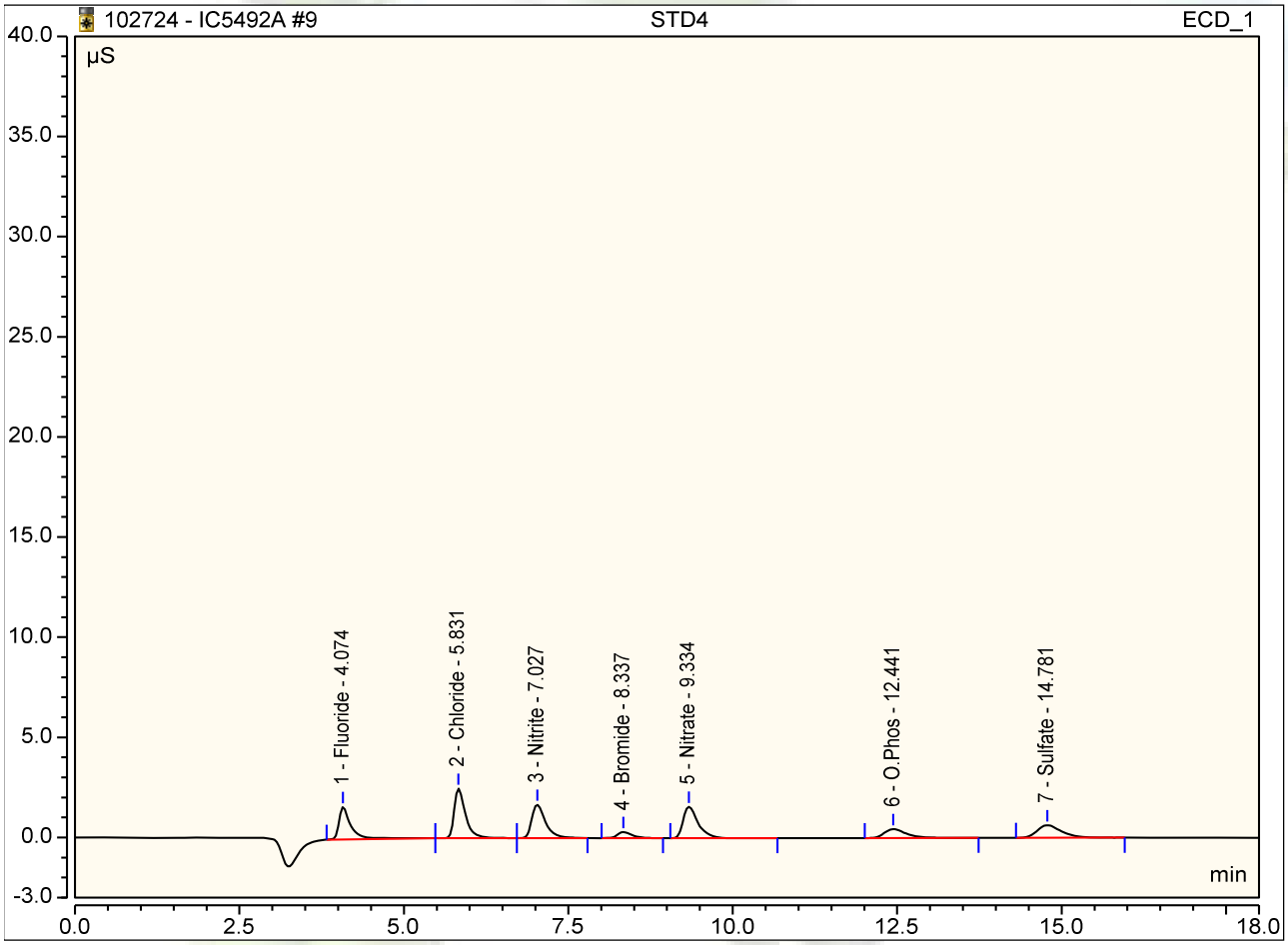
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.18 | Fluoride | 0.210 | 0.971 | 0.2975 |
| 2 | 6.01 | Chloride | 0.282 | 1.382 | 1.1927 |
| 3 | 7.24 | Nitrite | 0.247 | 1.004 | 0.2977 |
| 4 | 8.60 | Bromide | 0.046 | 0.186 | 0.2683 |
| 5 | 9.62 | Nitrate | 0.243 | 0.963 | 0.3441 |
| 6 | 12.82 | O.Phos | 0.106 | 0.271 | 0.2872 |
| 7 | 15.22 | Sulfate | 0.199 | 0.448 | 1.4794 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD4** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Calibration Standard** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **28-Oct-2024 / 11:20** | *Run Time:* | **18.00** |

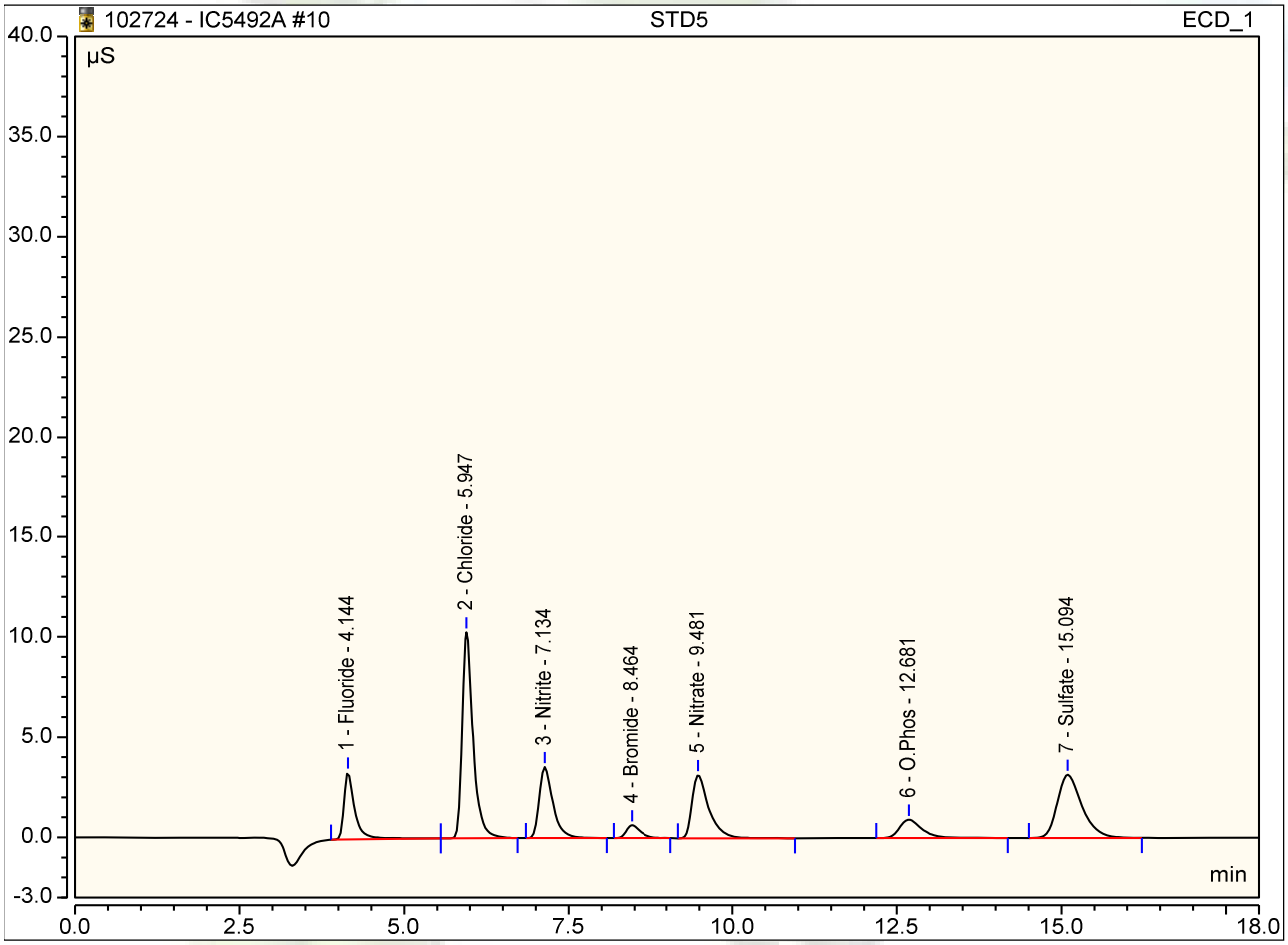
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.07 | Fluoride | 0.349 | 1.617 | 0.5265 |
| 2 | 5.83 | Chloride | 0.486 | 2.466 | 1.5986 |
| 3 | 7.03 | Nitrite | 0.404 | 1.667 | 0.4830 |
| 4 | 8.34 | Bromide | 0.078 | 0.308 | 0.4765 |
| 5 | 9.33 | Nitrate | 0.422 | 1.579 | 0.5164 |
| 6 | 12.44 | O.Phos | 0.176 | 0.449 | 0.4955 |
| 7 | 14.78 | Sulfate | 0.270 | 0.627 | 1.6958 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD5** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Calibration Standard** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **28-Oct-2024 / 11:40** | *Run Time:* | **18.00** |

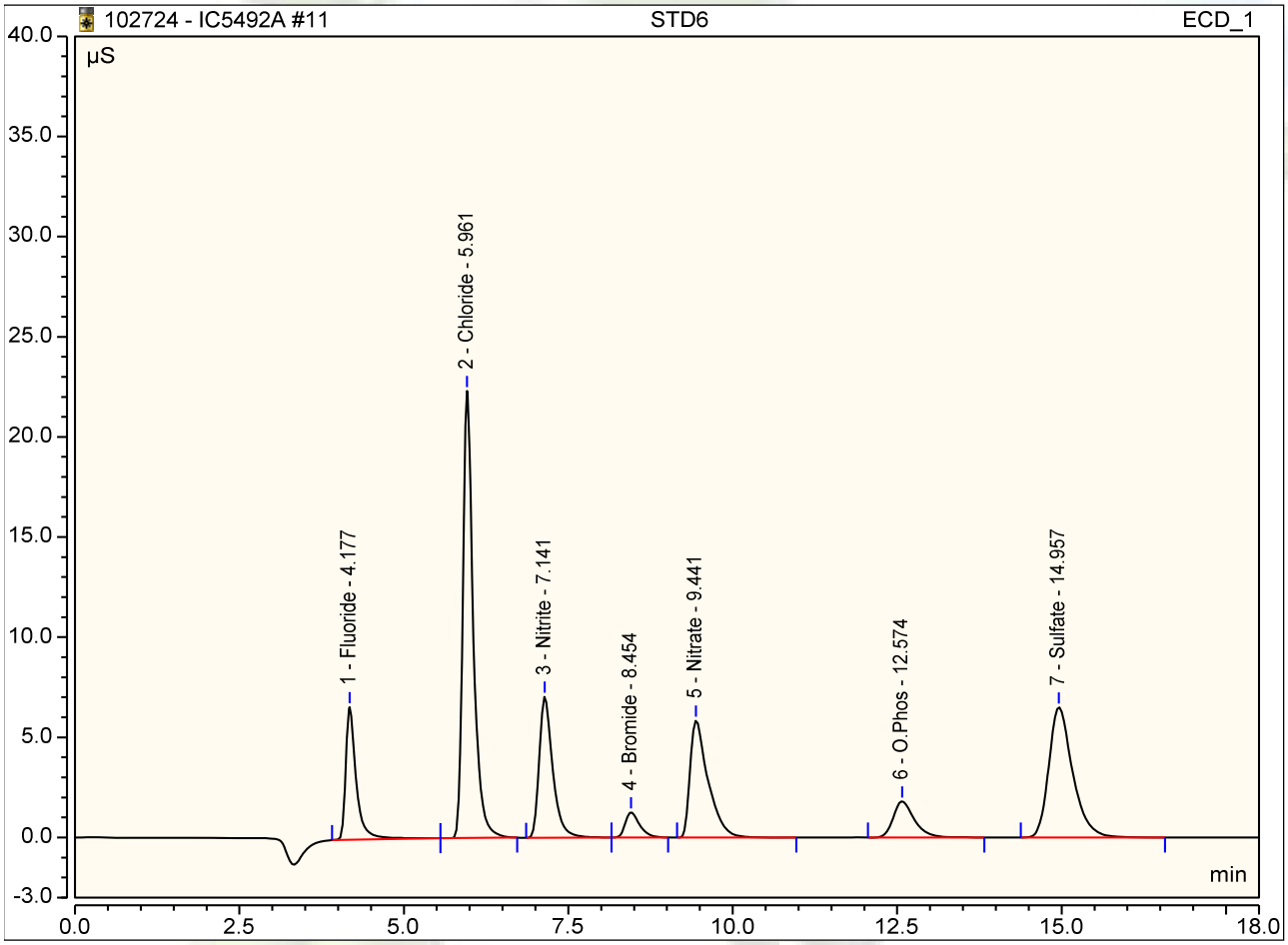
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.14 | Fluoride | 0.650 | 3.346 | 1.0234 |
| 2 | 5.95 | Chloride | 1.972 | 10.275 | 4.5413 |
| 3 | 7.13 | Nitrite | 0.859 | 3.548 | 1.0229 |
| 4 | 8.46 | Bromide | 0.164 | 0.642 | 1.0384 |
| 5 | 9.48 | Nitrate | 0.936 | 3.150 | 1.0138 |
| 6 | 12.68 | O.Phos | 0.362 | 0.919 | 1.0463 |
| 7 | 15.09 | Sulfate | 1.366 | 3.154 | 5.0049 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD6** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Calibration Standard** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **28-Oct-2024 / 12:01** | *Run Time:* | **18.00** |

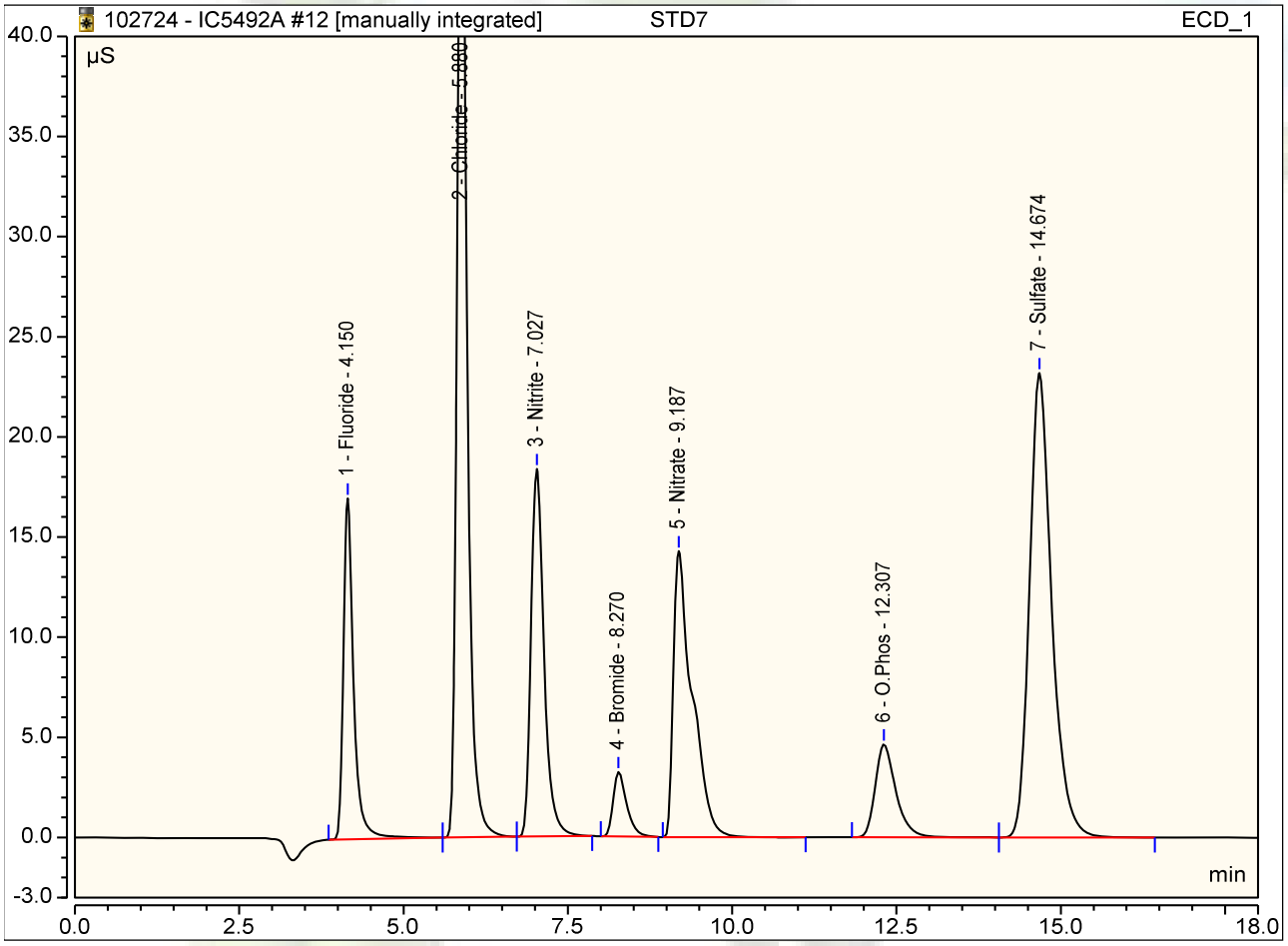
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.18 | Fluoride | 1.231 | 6.631 | 1.9811 |
| 2 | 5.96 | Chloride | 4.112 | 22.319 | 8.7790 |
| 3 | 7.14 | Nitrite | 1.680 | 7.050 | 1.9958 |
| 4 | 8.45 | Bromide | 0.319 | 1.260 | 2.0432 |
| 5 | 9.44 | Nitrate | 1.861 | 5.853 | 1.9071 |
| 6 | 12.57 | O.Phos | 0.679 | 1.807 | 1.9866 |
| 7 | 14.96 | Sulfate | 2.730 | 6.494 | 9.1276 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD7** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Calibration Standard** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **28-Oct-2024 / 12:21** | *Run Time:* | **18.00** |

| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.15 | Fluoride | 3.064 | 17.018 | 5.0002 |
| 2 | 5.88 | Chloride | 9.409 | 54.143 | 19.2700 |
| 3 | 7.03 | Nitrite | 4.214 | 18.353 | 4.9989 |
| 4 | 8.27 | Bromide | 0.772 | 3.222 | 4.9794 |
| 5 | 9.19 | Nitrate | 4.715 | 14.273 | 4.6645 |
| 6 | 12.31 | O.Phos | 1.694 | 4.643 | 4.9976 |
| 7 | 14.67 | Sulfate | 9.094 | 23.182 | 28.3521 |

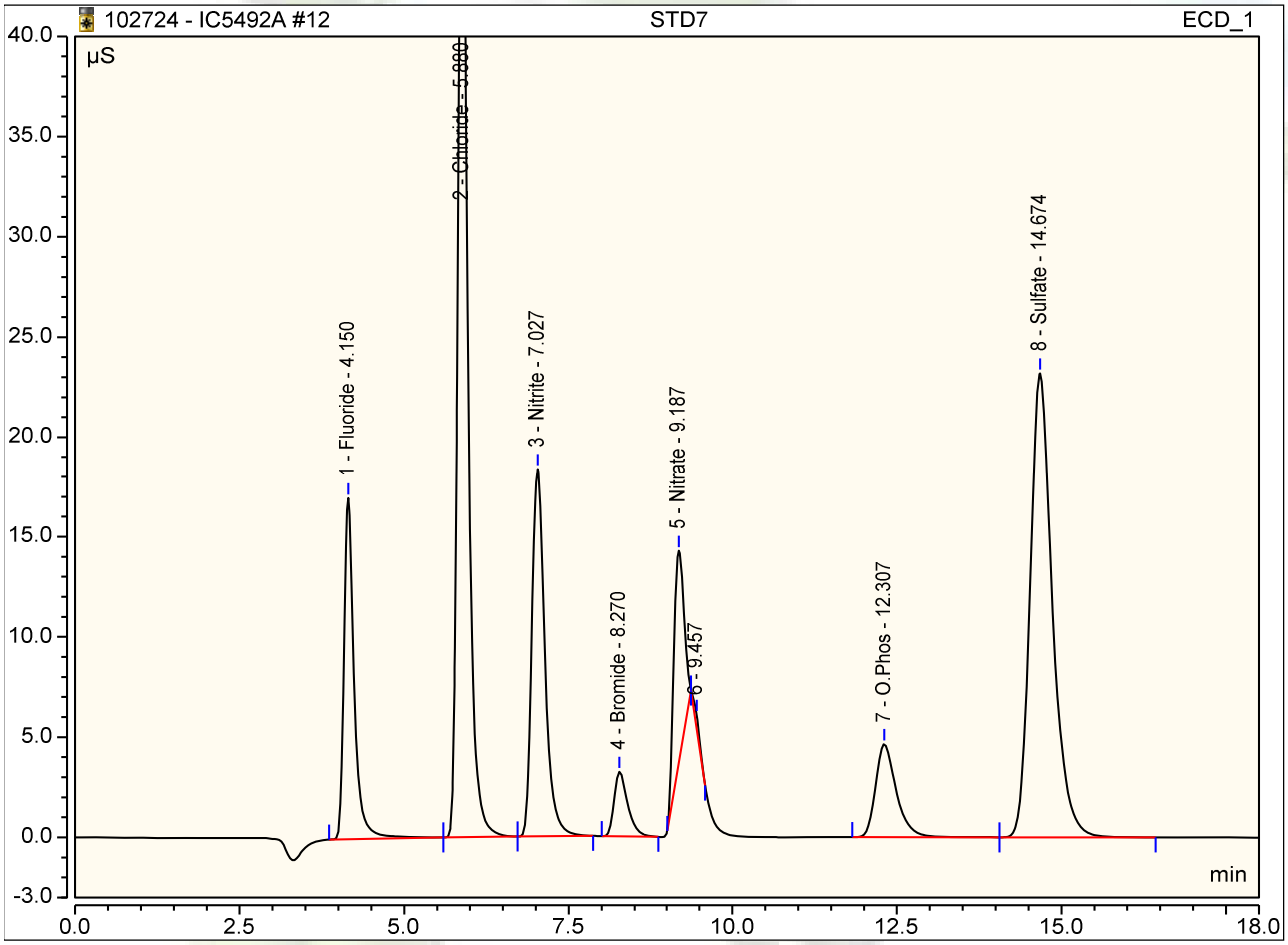



After Manual Integration

## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD7** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Calibration Standard** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **28-Oct-2024 / 12:21** | *Run Time:* | **18.00** |

| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.15 | Fluoride | 3.064 | 17.018 | 5.0002 |
| 2 | 5.88 | Chloride | 9.409 | 54.143 | 19.2700 |
| 3 | 7.03 | Nitrite | 4.214 | 18.353 | 4.9989 |
| 4 | 8.27 | Bromide | 0.772 | 3.222 | 4.9794 |
| 5 | 9.19 | Nitrate | 1.914 | 10.566 | 2.3599 |
| 7 | 12.31 | O.Phos | 1.694 | 4.643 | 4.9976 |
| 8 | 14.67 | Sulfate | 9.094 | 23.182 | 28.3521 |

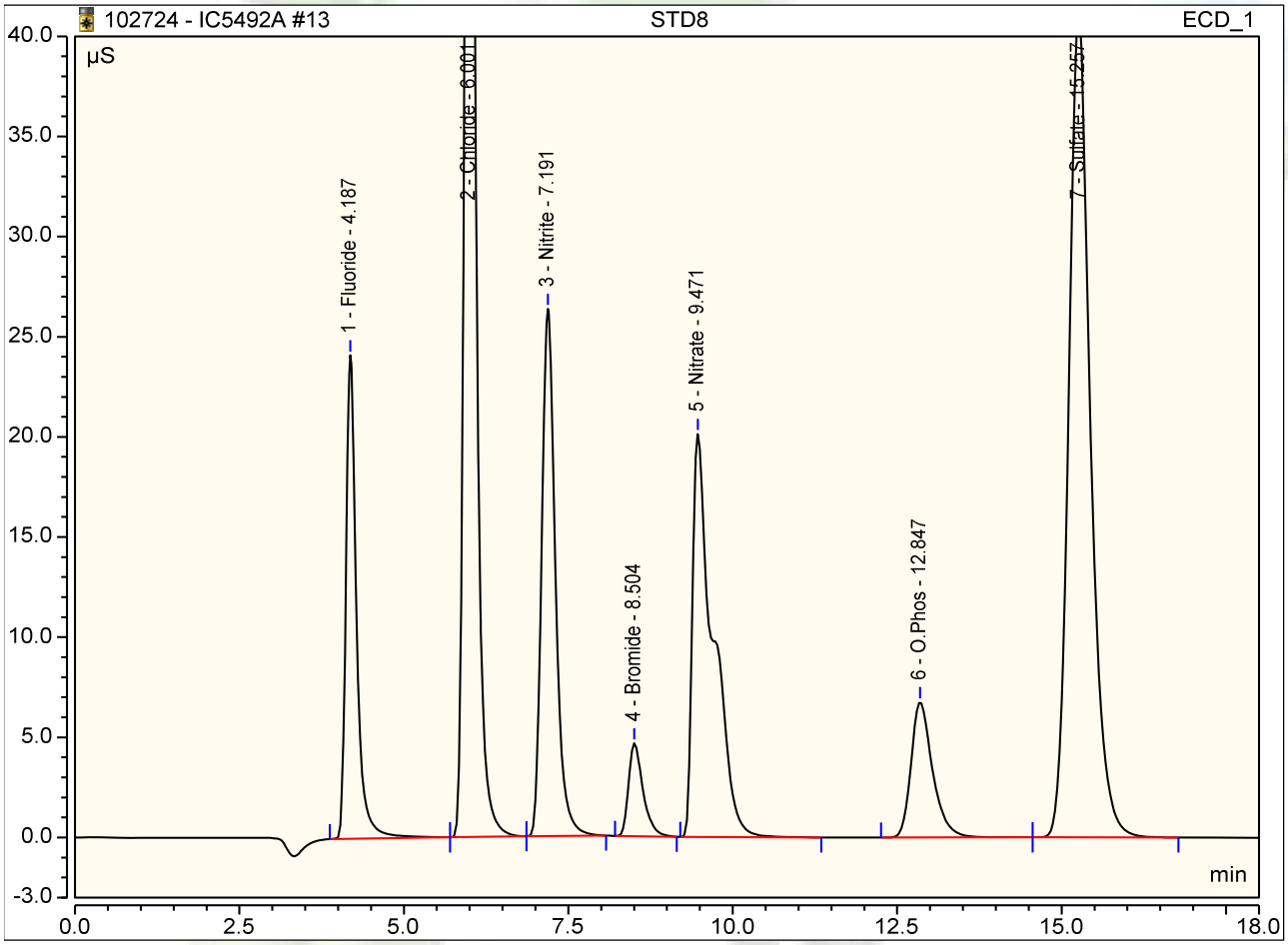



RD 11/06/2024

## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD8** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Calibration Standard** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **28-Oct-2024 / 12:42** | *Run Time:* | **18.00** |

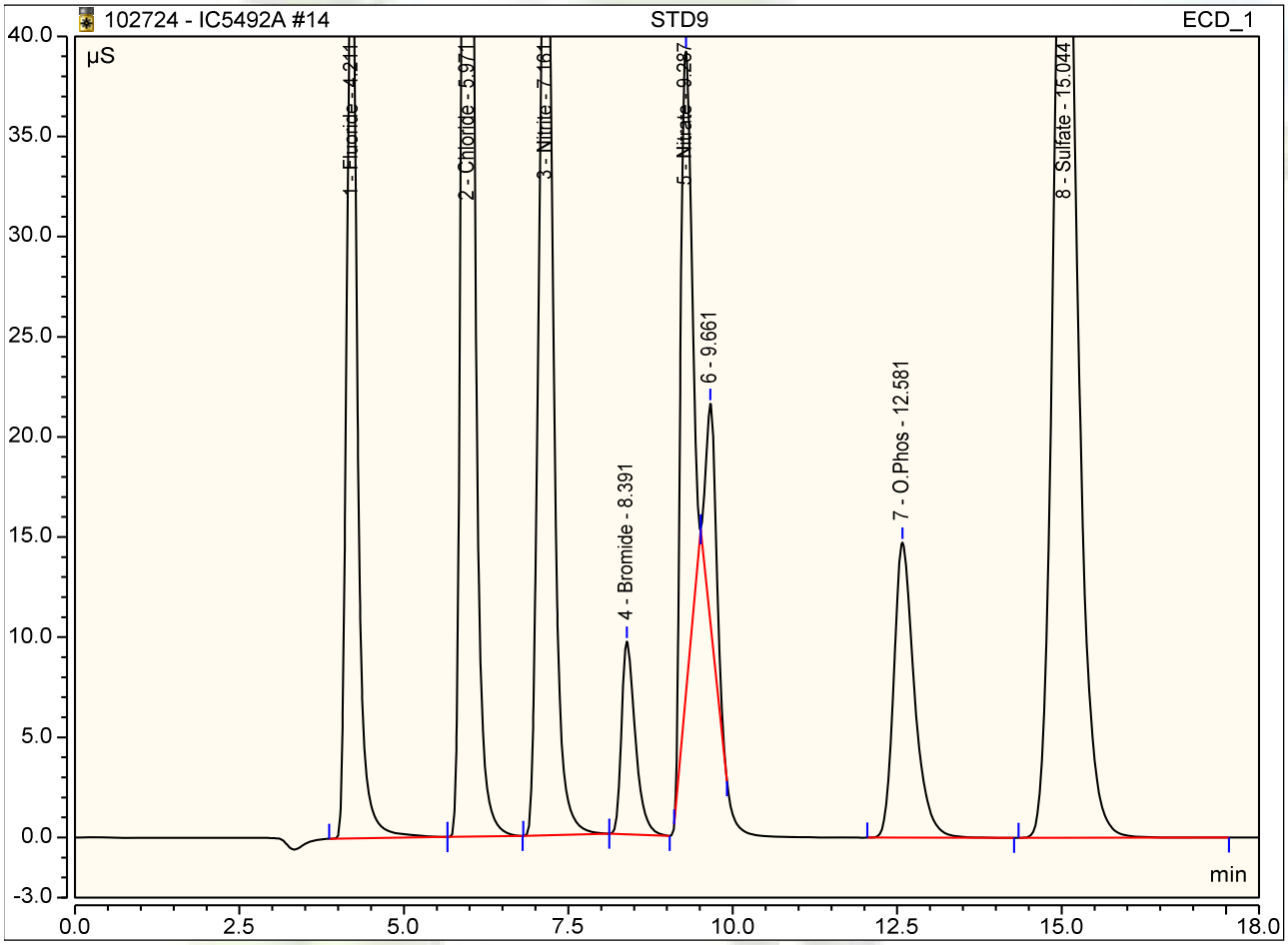
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.19 | Fluoride | 4.505 | 24.142 | 7.3756 |
| 2 | 6.00 | Chloride | 15.059 | 83.960 | 30.4604 |
| 3 | 7.19 | Nitrite | 6.382 | 26.321 | 7.5694 |
| 4 | 8.50 | Bromide | 1.181 | 4.640 | 7.6335 |
| 5 | 9.47 | Nitrate | 7.401 | 20.133 | 7.2598 |
| 6 | 12.85 | O.Phos | 2.564 | 6.756 | 7.5775 |
| 7 | 15.26 | Sulfate | 15.661 | 41.224 | 48.1910 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD9** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Calibration Standard** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **28-Oct-2024 / 13:02** | *Run Time:* | **18.00** |

| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.21 | Fluoride | 9.019 | 47.154 | 14.8145 |
| 2 | 5.97 | Chloride | 20.054 | 111.337 | 40.3520 |
| 3 | 7.16 | Nitrite | 12.802 | 51.323 | 15.1793 |
| 4 | 8.39 | Bromide | 2.352 | 9.619 | 15.2274 |
| 5 | 9.29 | Nitrate | 6.296 | 32.144 | 6.1921 |
| 7 | 12.58 | O.Phos | 5.354 | 14.732 | 15.8527 |
| 8 | 15.04 | Sulfate | 23.575 | 59.734 | 72.0992 |

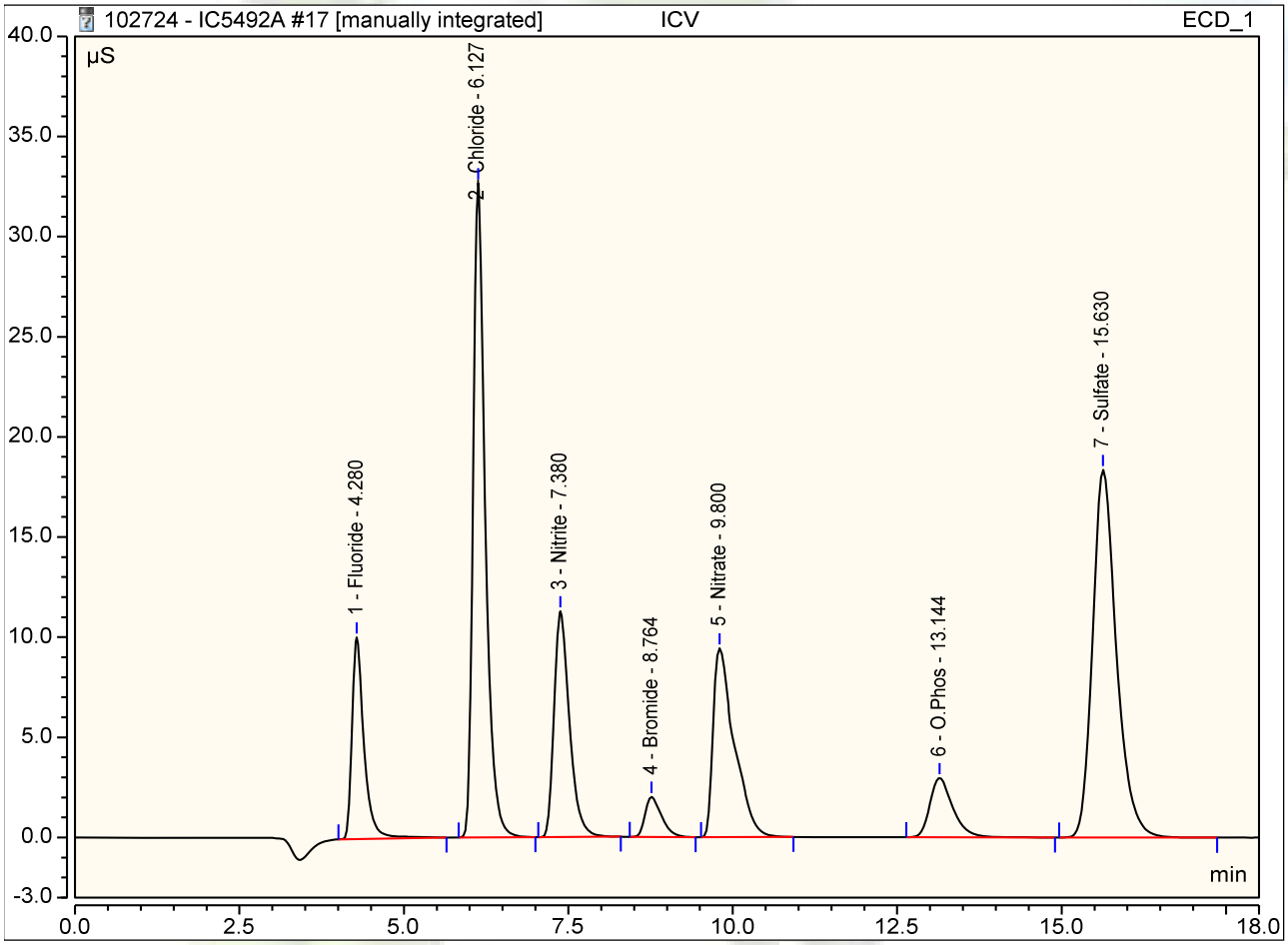


TMG 11/06/2024

## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **ICV** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **28-Oct-2024 / 14:10** | *Run Time:* | **18.00** |

| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.28 | Fluoride | 2.126 | 10.064 | 3.4560 |
| 2 | 6.13 | Chloride | 6.986 | 32.665 | 14.4708 |
| 3 | 7.38 | Nitrite | 3.058 | 11.270 | 3.6297 |
| 4 | 8.76 | Bromide | 0.580 | 2.006 | 3.7370 |
| 5 | 9.80 | Nitrate | 3.512 | 9.440 | 3.5025 |
| 6 | 13.14 | O.Phos | 1.192 | 2.960 | 3.5089 |
| 7 | 15.63 | Sulfate | 7.719 | 18.354 | 24.1982 |

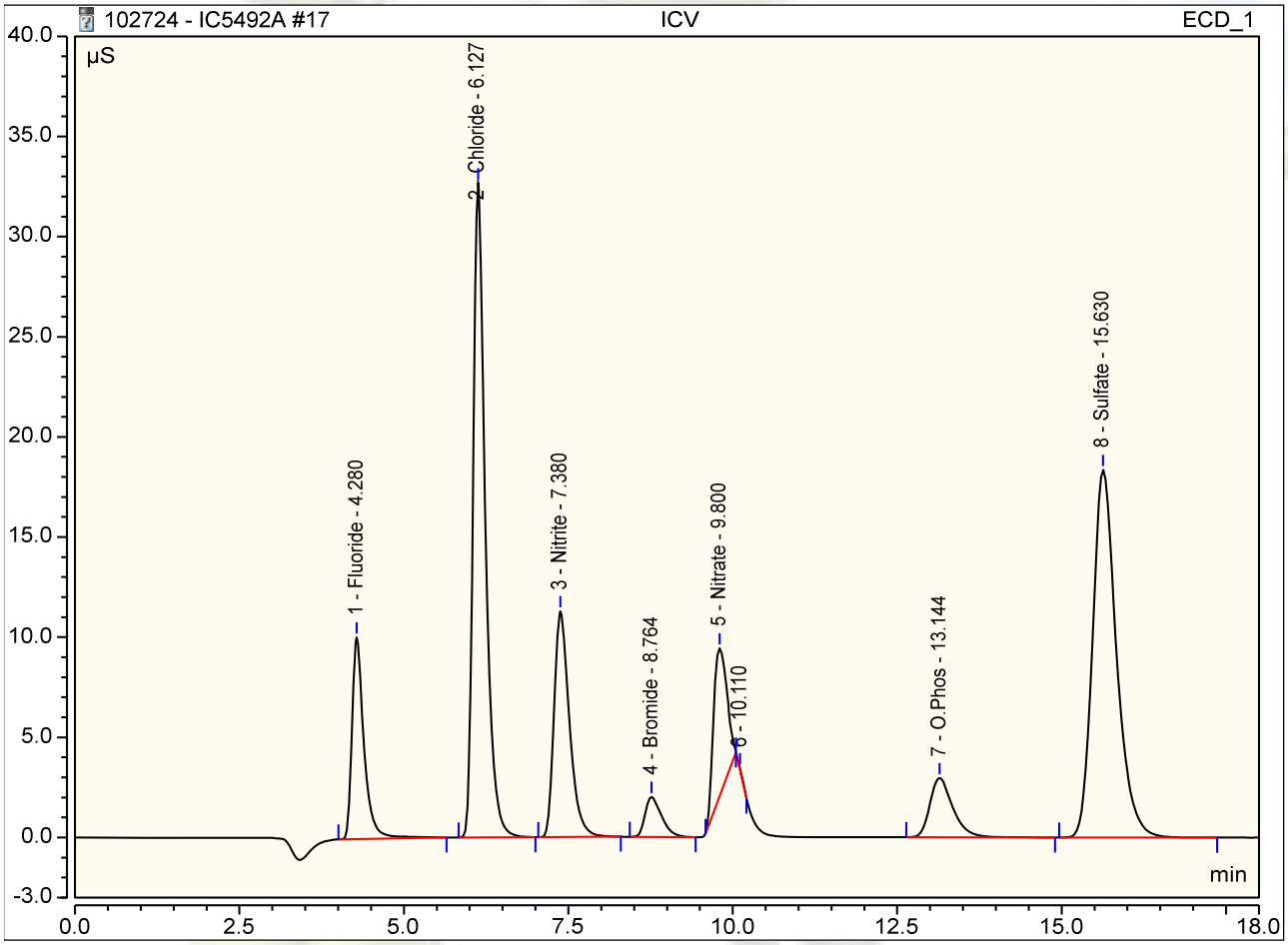



RD 11/06/2024

## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **ICV** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **28-Oct-2024 / 14:10** | *Run Time:* | **18.00** |

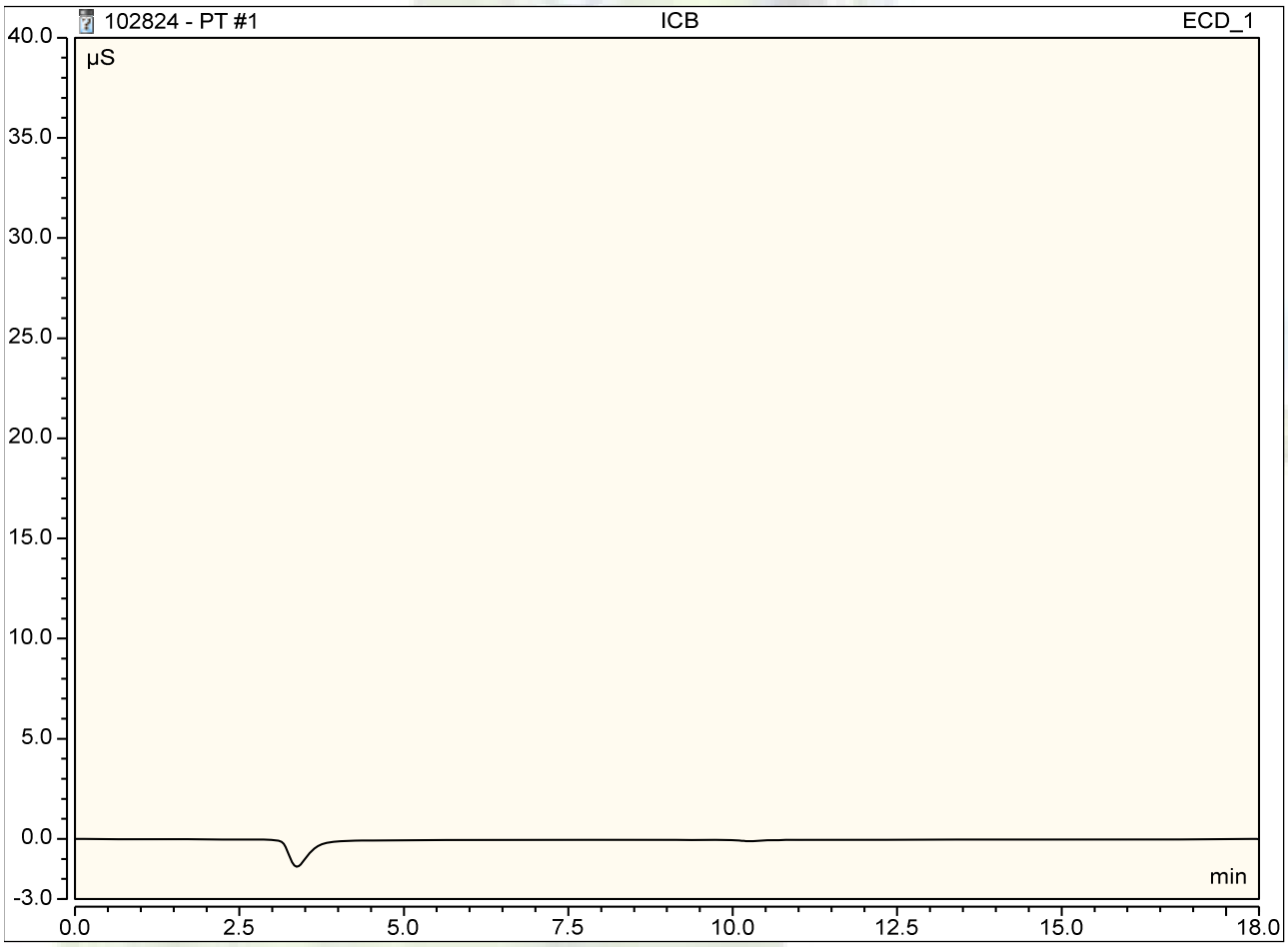
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.28 | Fluoride | 2.126 | 10.064 | 3.4560 |
| 2 | 6.13 | Chloride | 6.986 | 32.665 | 14.4708 |
| 3 | 7.38 | Nitrite | 3.058 | 11.270 | 3.6297 |
| 4 | 8.76 | Bromide | 0.580 | 2.006 | 3.7370 |
| 5 | 9.80 | Nitrate | 1.749 | 7.376 | 1.7988 |
| 7 | 13.14 | O.Phos | 1.192 | 2.960 | 3.5089 |
| 8 | 15.63 | Sulfate | 7.719 | 18.354 | 24.1982 |



## Peak Integration Report

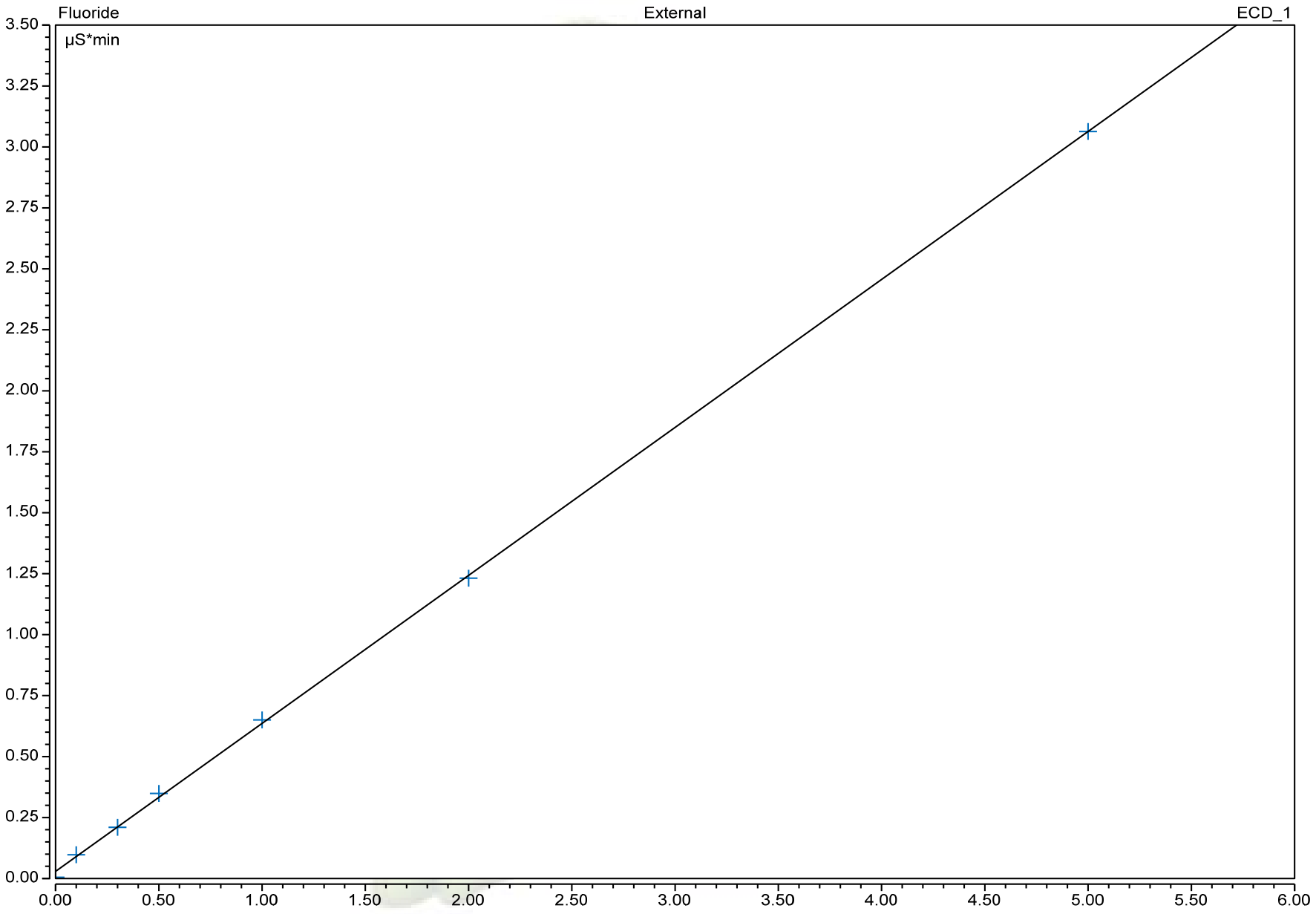
| | | | |
|---|---|---|---|
| *Sample Name:* | **ICB** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **28-Oct-2024 / 14:36** | *Run Time:* | **18.00** |

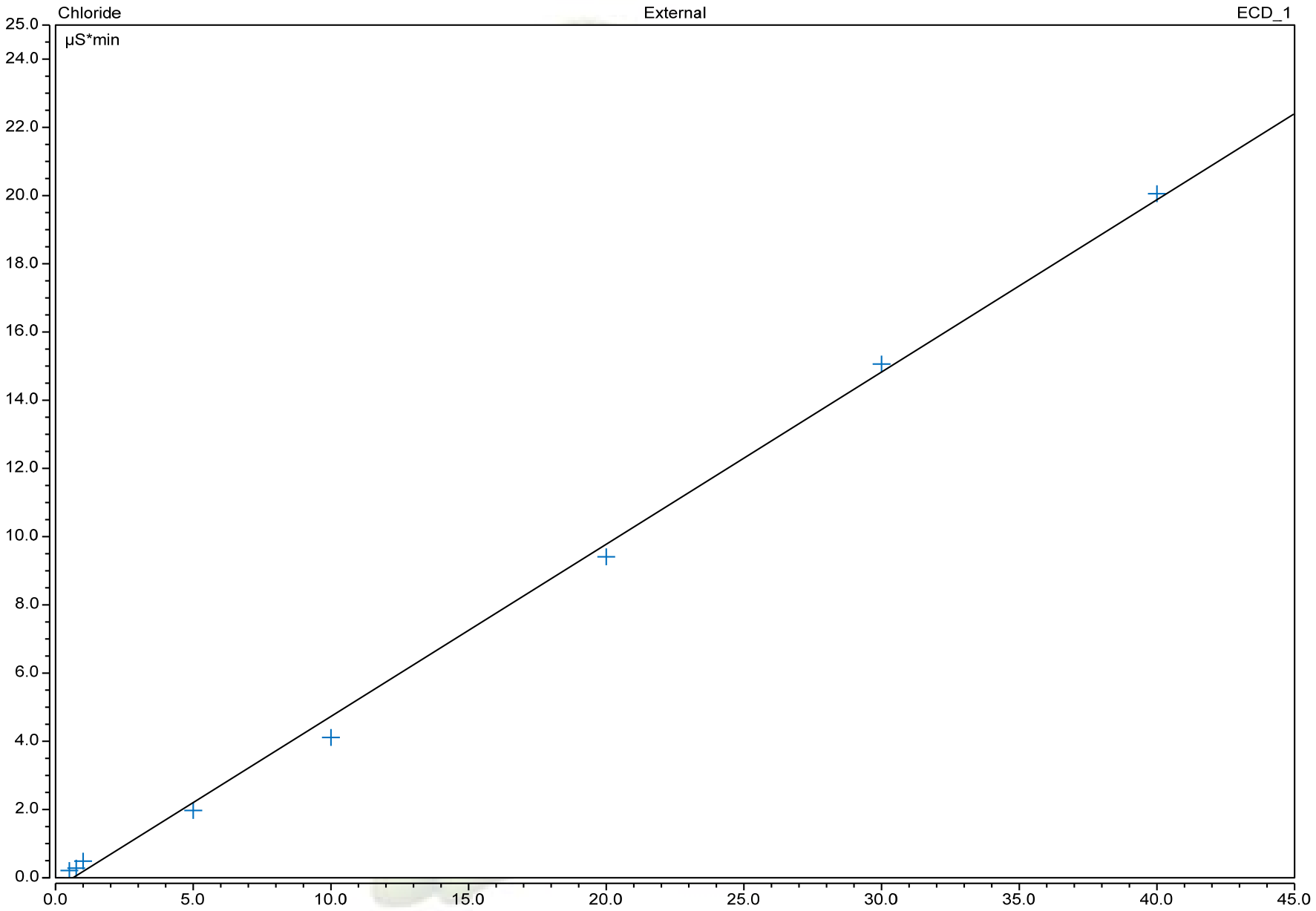
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount n.a. |
|---|---|---|---|---|---|

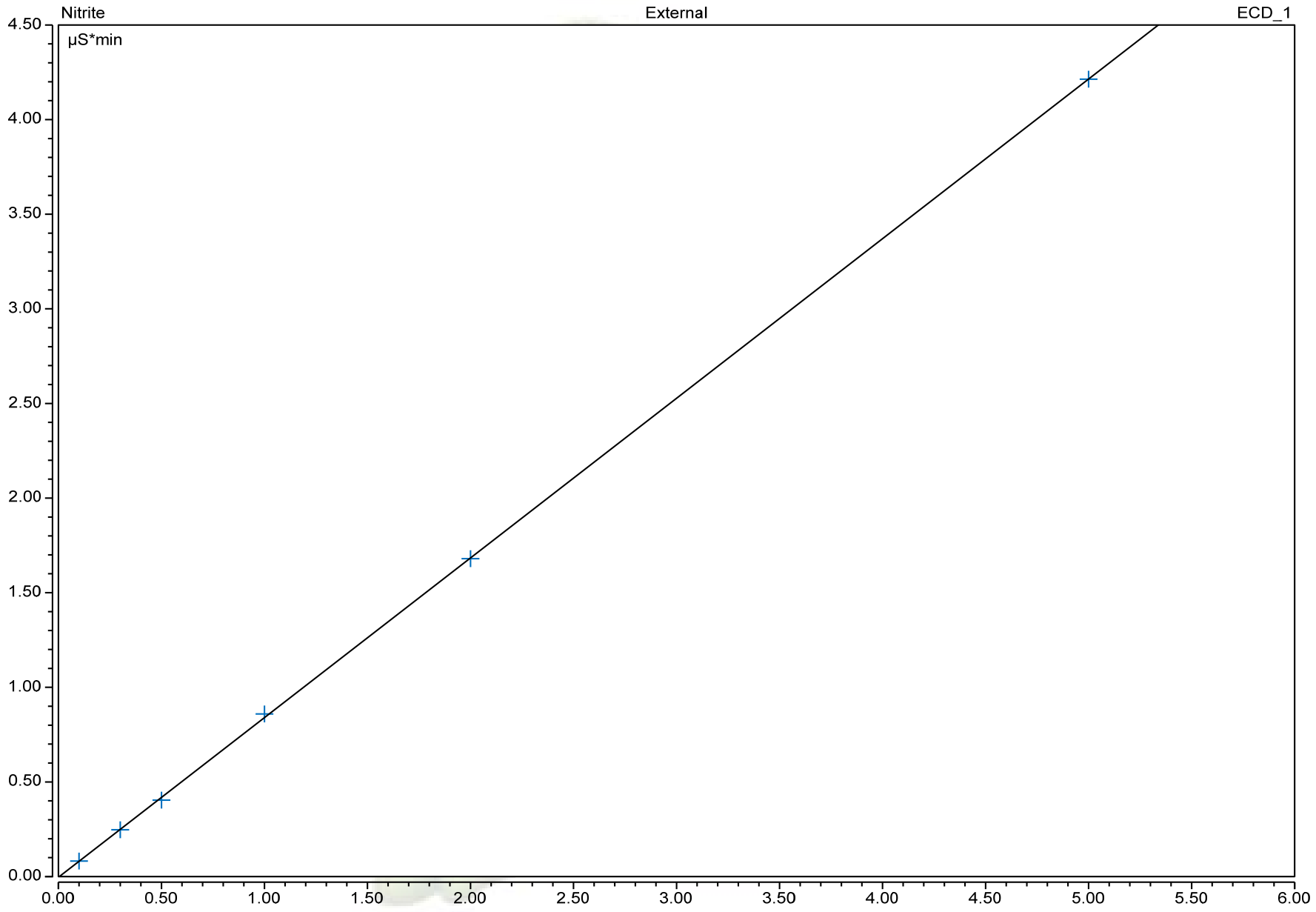


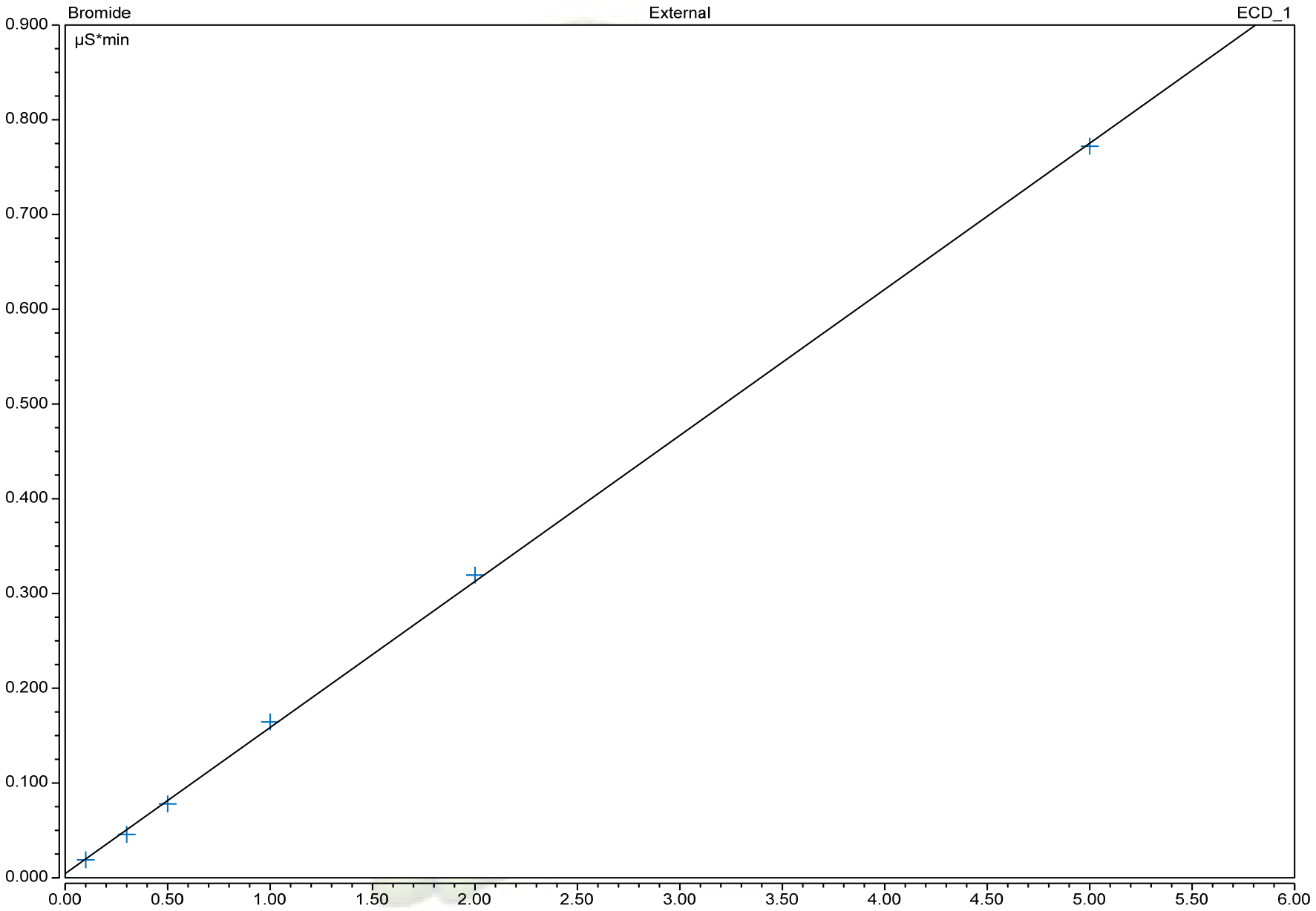
| Peak No. | Peak Name | Cal.Type | Eval.Type | Number of Points | Rel.Std.Dev. % | Coeff.of Determination | C0 (Offset) | C1 (Slope) | C2 (Curve) |
|---|---|---|---|---|---|---|---|---|---|
| *1* | *Fluoride* | *Lin, WithOffset* | *Area* | *7* | *1.9777* | *0.99982* | *0.0292* | *0.6069* | *0.0000* |
| 2 | Chloride | Lin, WithOffset | Area | 8 | 5.9231 | 0.99784 | -0.3207 | 0.5049 | 0.0000 |
| 3 | Nitrite | Lin, WithOffset | Area | 6 | 0.9806 | 0.99995 | -0.0037 | 0.8436 | 0.0000 |
| 4 | Bromide | Lin, WithOffset | Area | 6 | 2.4220 | 0.99969 | 0.0044 | 0.1542 | 0.0000 |
| 5 | Nitrate | Lin, WithOffset | Area | 7 | 9.2468 | 0.99540 | -0.1127 | 1.0350 | 0.0000 |
| 6 | O.Phos | Lin, WithOffset | Area | 6 | 1.7176 | 0.99984 | 0.0091 | 0.3372 | 0.0000 |
| 7 | Sulfate | Lin, WithOffset | Area | 8 | 7.2965 | 0.99741 | -0.2911 | 0.3310 | 0.0000 |
| **Maximum** | | | | | **9.2468** | 0.99995 | | | |
| **Minimum** | | | | | 0.9806 | **0.99540** | | | |

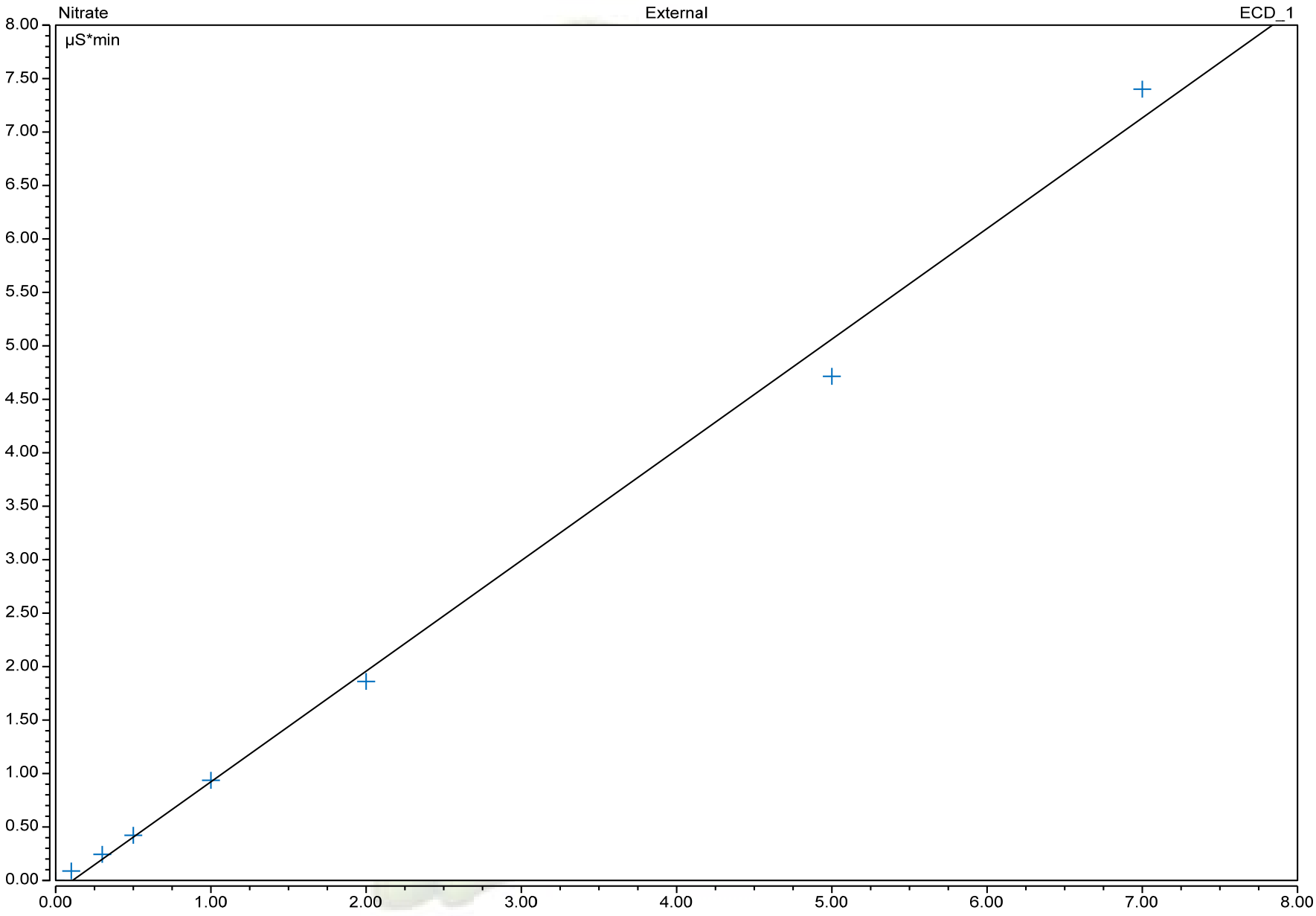


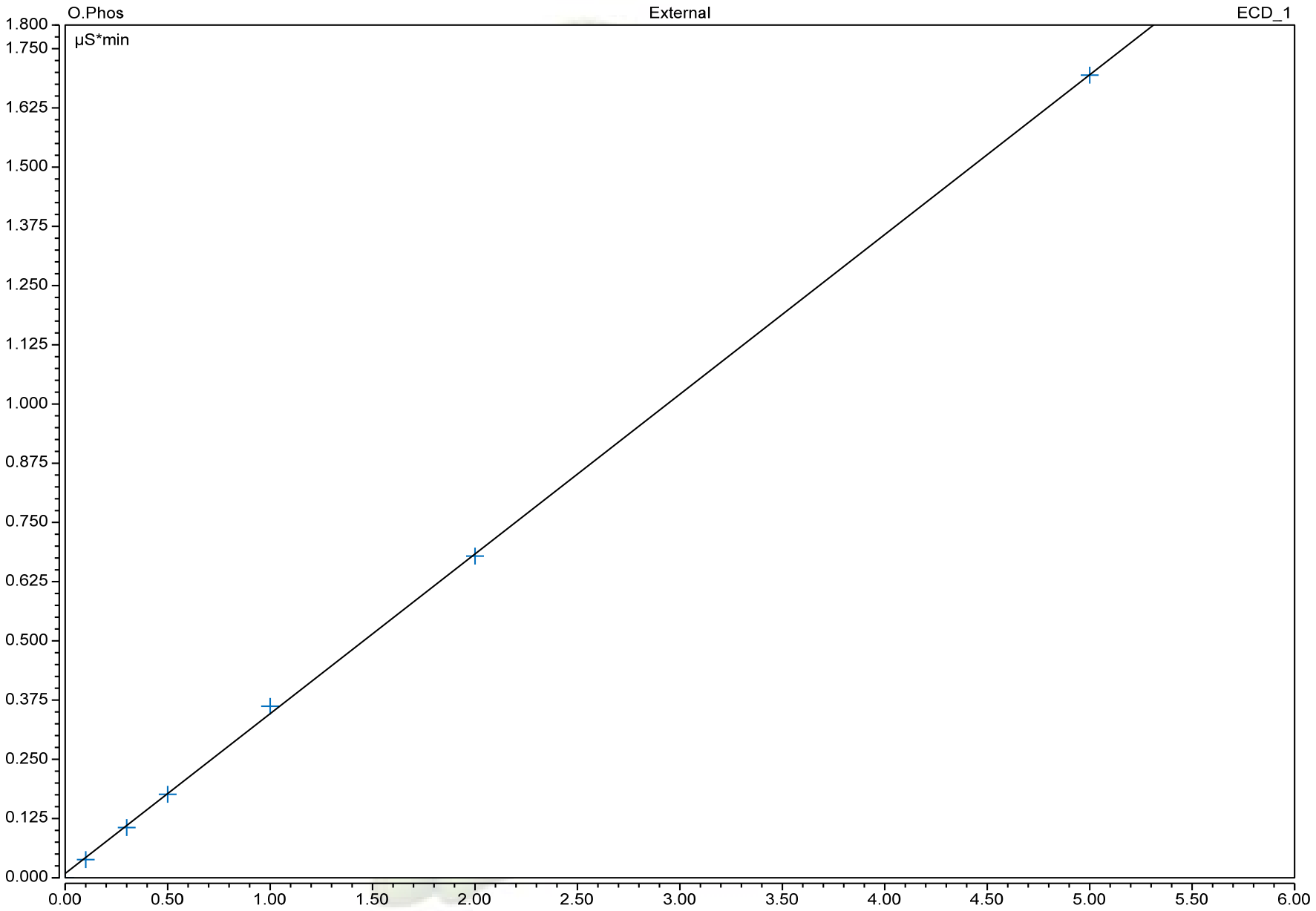

Fluoride
External
ECD_1
µS*min
3.50
3.25
3.00
2.75
2.50
2.25
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
5.50
6.00

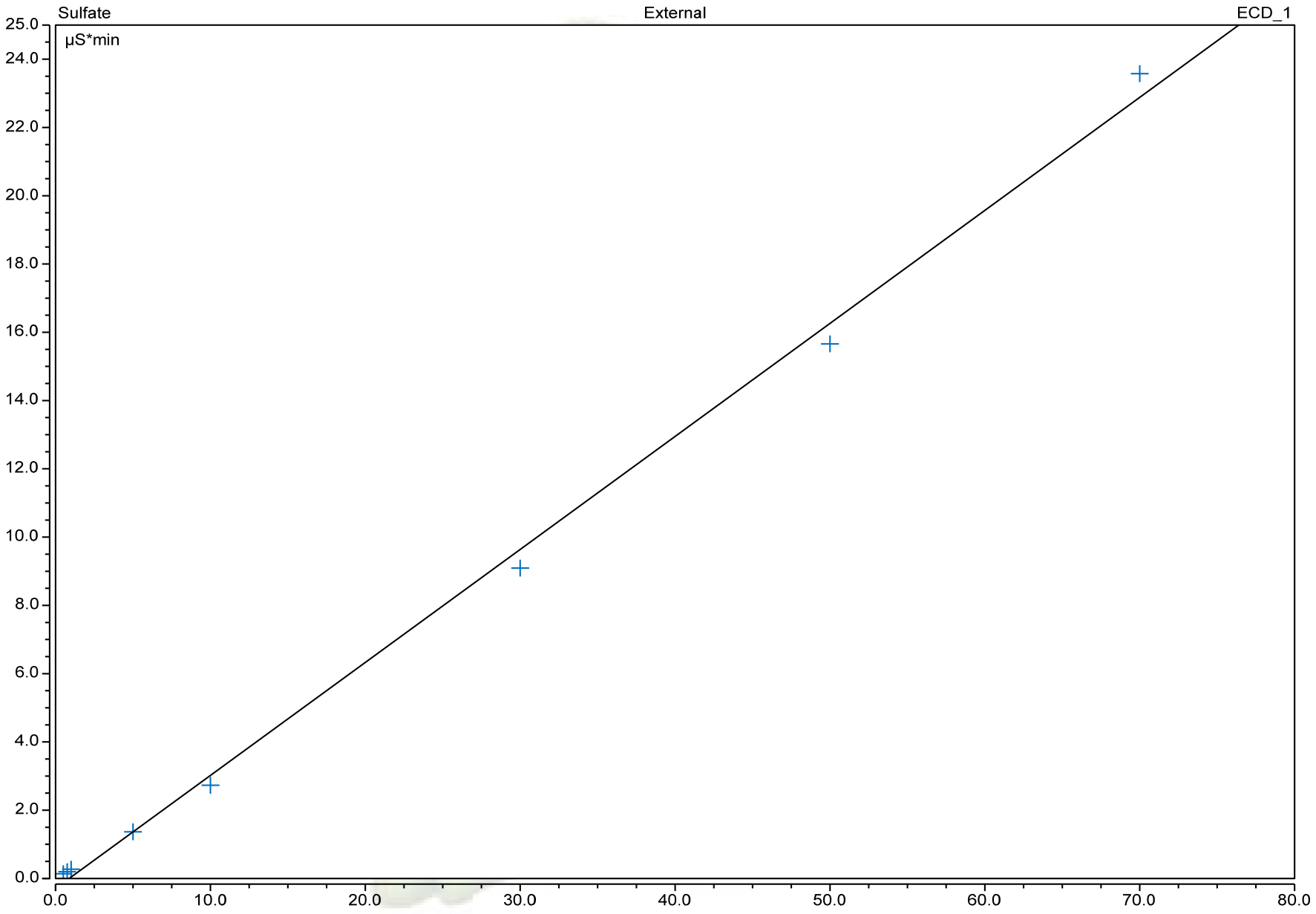

Chloride
External
ECD_1
µS*min
25.0
24.0
22.0
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
40.0
45.0


Nitrite
External
ECD_1
µS*min
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
5.50
6.00

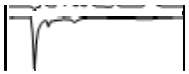
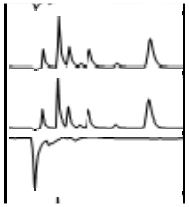
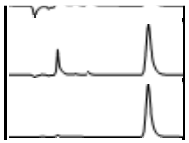

Bromide
External
ECD_1
µS*min
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
5.50
6.00

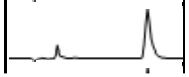
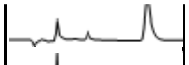
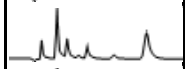
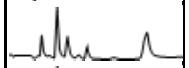
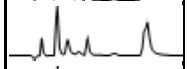
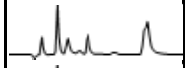

Nitrate
External
ECD_1
µS*min
8.00
7.50
7.00
6.50
6.00
5.50
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00

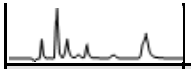

O.Phos
External
ECD_1
µS*min
1.800
1.750
1.625
1.500
1.375
1.250
1.125
1.000
0.875
0.750
0.625
0.500
0.375
0.250
0.125
0.000
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
5.50
6.00


Sulfate
External
ECD_1
µS*min
25.0
24.0
22.0
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
80.0

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| ECD_1 | Name | Dilution | Type | Level | Position | Volume | Instrument Method | Processing Method | Status |
|---|---|---|---|---|---|---|---|---|---|
|  | CCV | 1.0000 | Unknown | | 1 | 5000 | Anions 1.0 | IC5492A | Finished |
|  | MBW-CCB | 1.0000 | Unknown | | 3 | 5000 | Anions 1.0 | IC5492A | Finished |
|  | CCV | 1.0000 | Unknown | | 14 | 5000 | Anions 1.0 | IC5492A | Finished |
| | LCSW | 1.0000 | Unknown | | 15 | 5000 | Anions 1.0 | IC5492A | Finished |
| | MBW-CCB | 1.0000 | Unknown | | 16 | 5000 | Anions 1.0 | IC5492A | Finished |
|  | 1537124 | 1.0000 | Unknown | | 18 | 5000 | Anions 1.0 | IC5492A | Finished |
| | 1537127 | 1.0000 | Unknown | | 19 | 5000 | Anions 1.0 | IC5492A | Finished |

| ECD_1 | Name | Dilution | Type | Level | Position | Volume | Instrument Method | Processing Method | Status |
|---|---|---|---|---|---|---|---|---|---|
|  | 1537128 | 1.0000 | Unknown | | 20 | 5000 | Anions 1.0 | IC5492A | Finished |
|  | 1537129 | 1.0000 | Unknown | | 21 | 5000 | Anions 1.0 | IC5492A | Finished |
|  | 1537130 | 1.0000 | Unknown | | 22 | 5000 | Anions 1.0 | IC5492A | Finished |
|  | DUP1537129 | 1.0000 | Unknown | | 26 | 5000 | Anions 1.0 | IC5492A | Finished |
|  | CCV | 1.0000 | Unknown | | 27 | 5000 | Anions 1.0 | IC5492A | Finished |
|  | CCB | 1.0000 | Unknown | | 28 | 5000 | Anions 1.0 | IC5492A | Finished |
|  | MSW1537129 | 1.0000 | Unknown | | 29 | 5000 | Anions 1.0 | IC5492A | Finished |
|  | MSDW1537129 | 1.0000 | Unknown | | 30 | 5000 | Anions 1.0 | IC5492A | Finished |

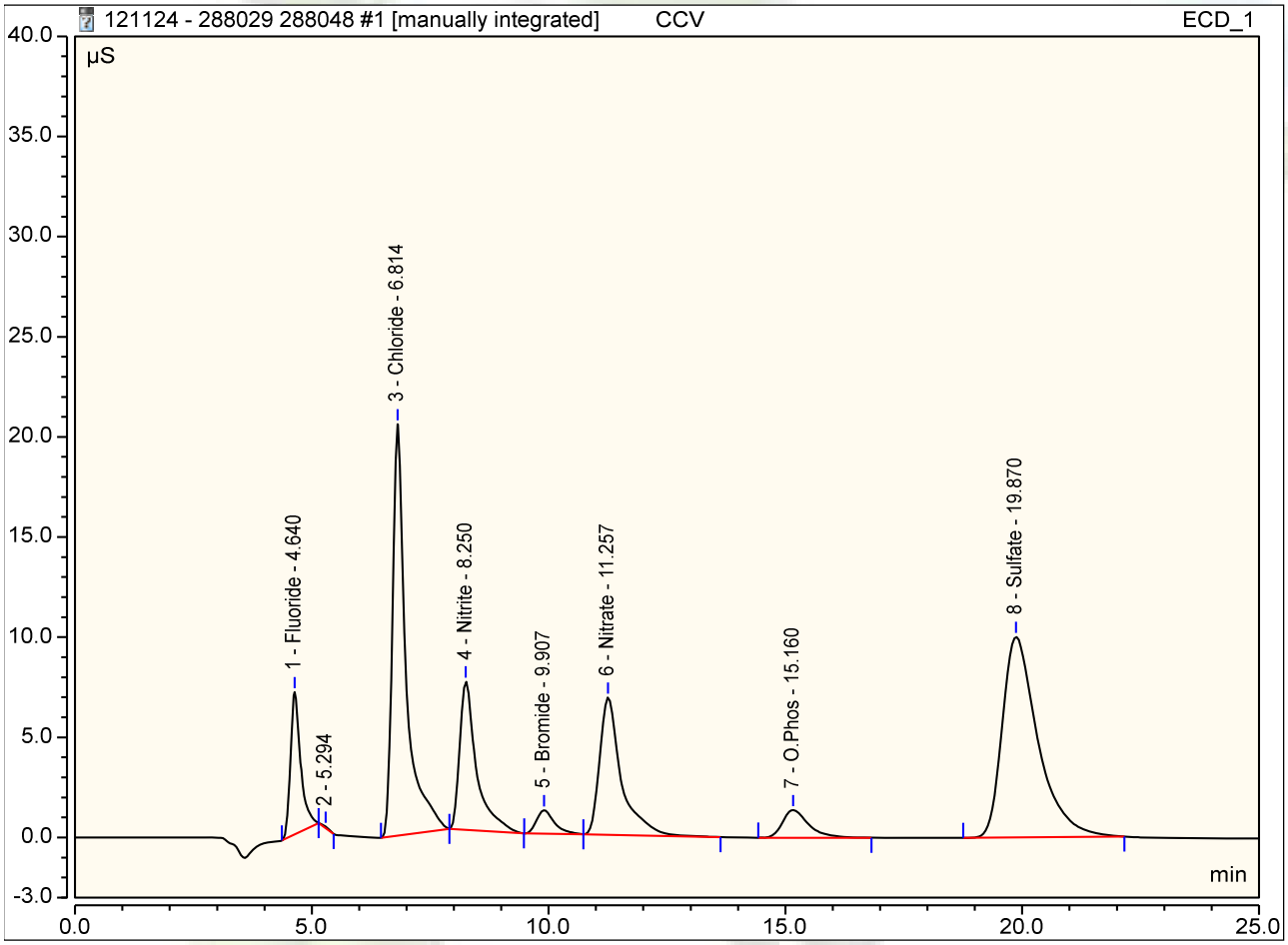
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
|  | CCV | 1.0000 | Unknown | | 39 | 5000 | Anions 1.0 | IC5492A | Finished |
| **ECD_1** | **Name** | **Dilution** | **Type** | **Level** | **Position** | **Volume** | **Instrument Method** | **Processing Method** | **Status** |
|  | CCB | 1.0000 | Unknown | | 40 | 5000 | Anions 1.0 | IC5492A | Finished |

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## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCV** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **11-Dec-2024 / 10:20** | *Run Time:* | **25.00** |

| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.64 | Fluoride | 1.784 | 7.114 | 2.8917 |
| 3 | 6.81 | Chloride | 6.901 | 20.546 | 14.3027 |
| 4 | 8.25 | Nitrite | 3.063 | 7.416 | 3.6346 |
| 5 | 9.91 | Bromide | 0.512 | 1.174 | 3.2937 |
| 6 | 11.26 | Nitrate | 3.623 | 6.857 | 3.6098 |
| 7 | 15.16 | O.Phos | 0.878 | 1.382 | 2.5783 |
| 8 | 19.87 | Sulfate | 8.734 | 10.014 | 27.2660 |



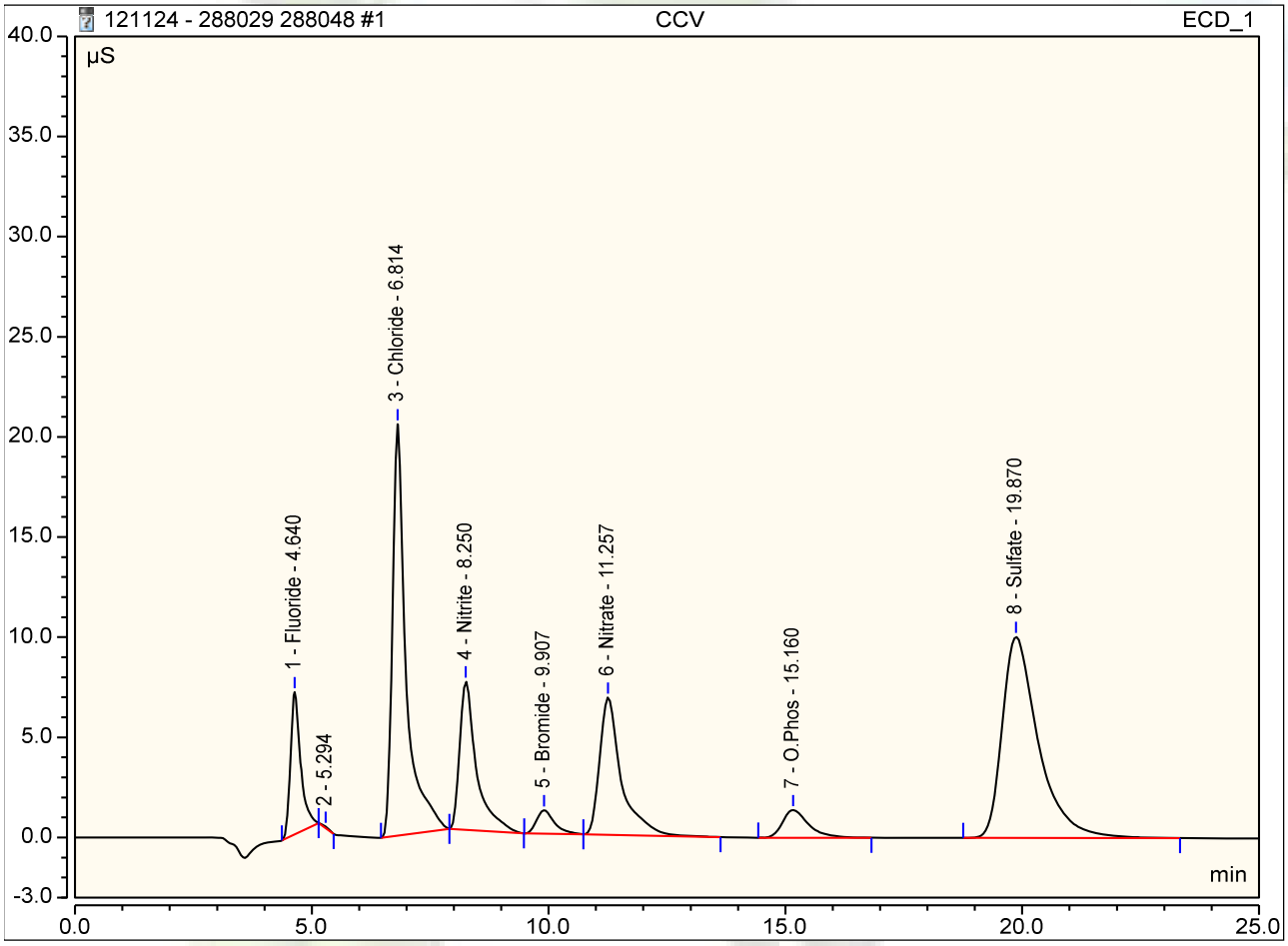

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## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCV** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **11-Dec-2024 / 10:20** | *Run Time:* | **25.00** |

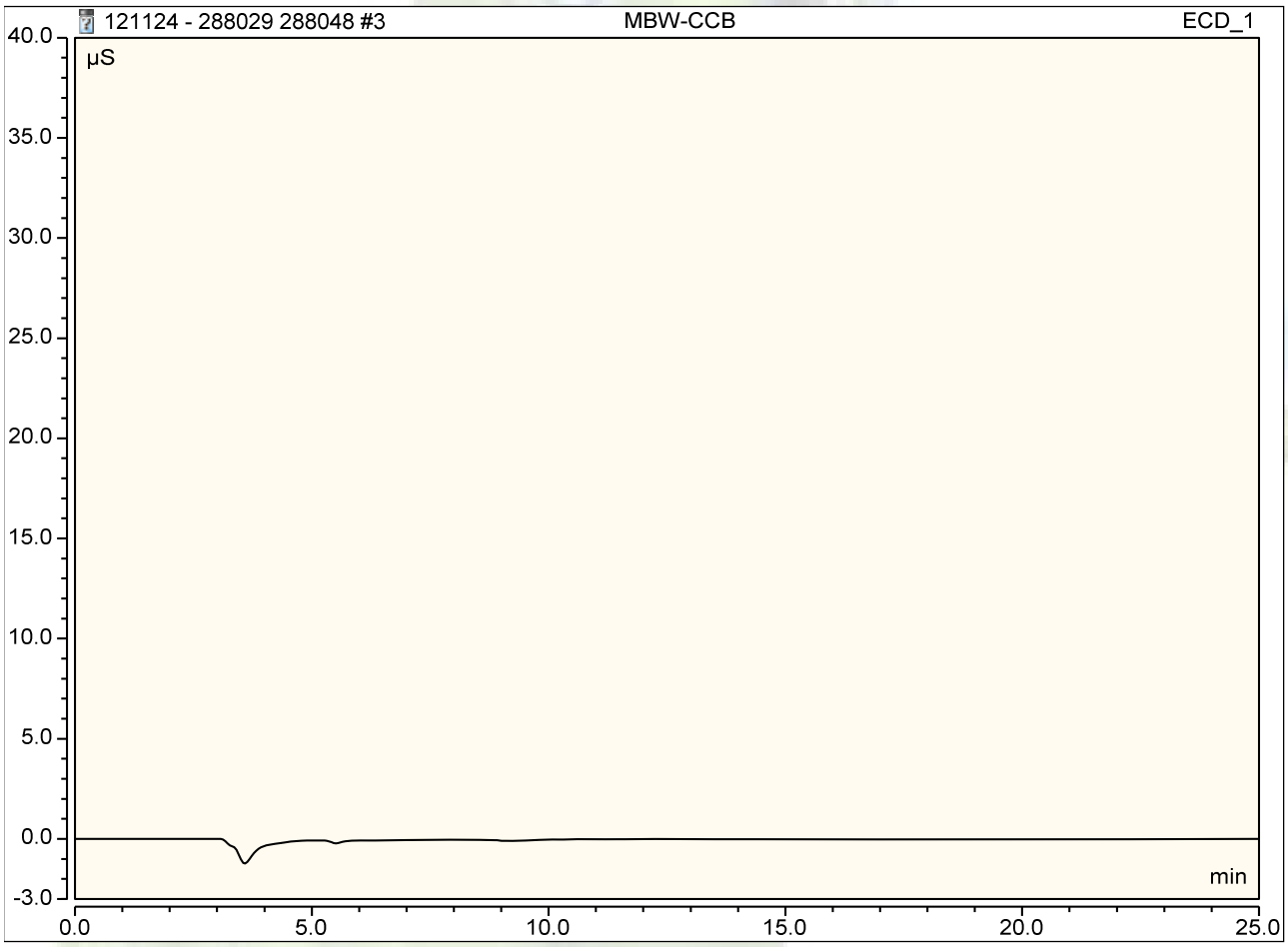
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.64 | Fluoride | 1.784 | 7.114 | 2.8917 |
| 3 | 6.81 | Chloride | 6.901 | 20.546 | 14.3027 |
| 4 | 8.25 | Nitrite | 3.063 | 7.416 | 3.6346 |
| 5 | 9.91 | Bromide | 0.512 | 1.174 | 3.2937 |
| 6 | 11.26 | Nitrate | 3.623 | 6.857 | 3.6098 |
| 7 | 15.16 | O.Phos | 0.878 | 1.382 | 2.5783 |
| 8 | 19.87 | Sulfate | 8.885 | 10.037 | 27.7215 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **MBW-CCB** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **11-Dec-2024 / 11:15** | *Run Time:* | **25.00** |

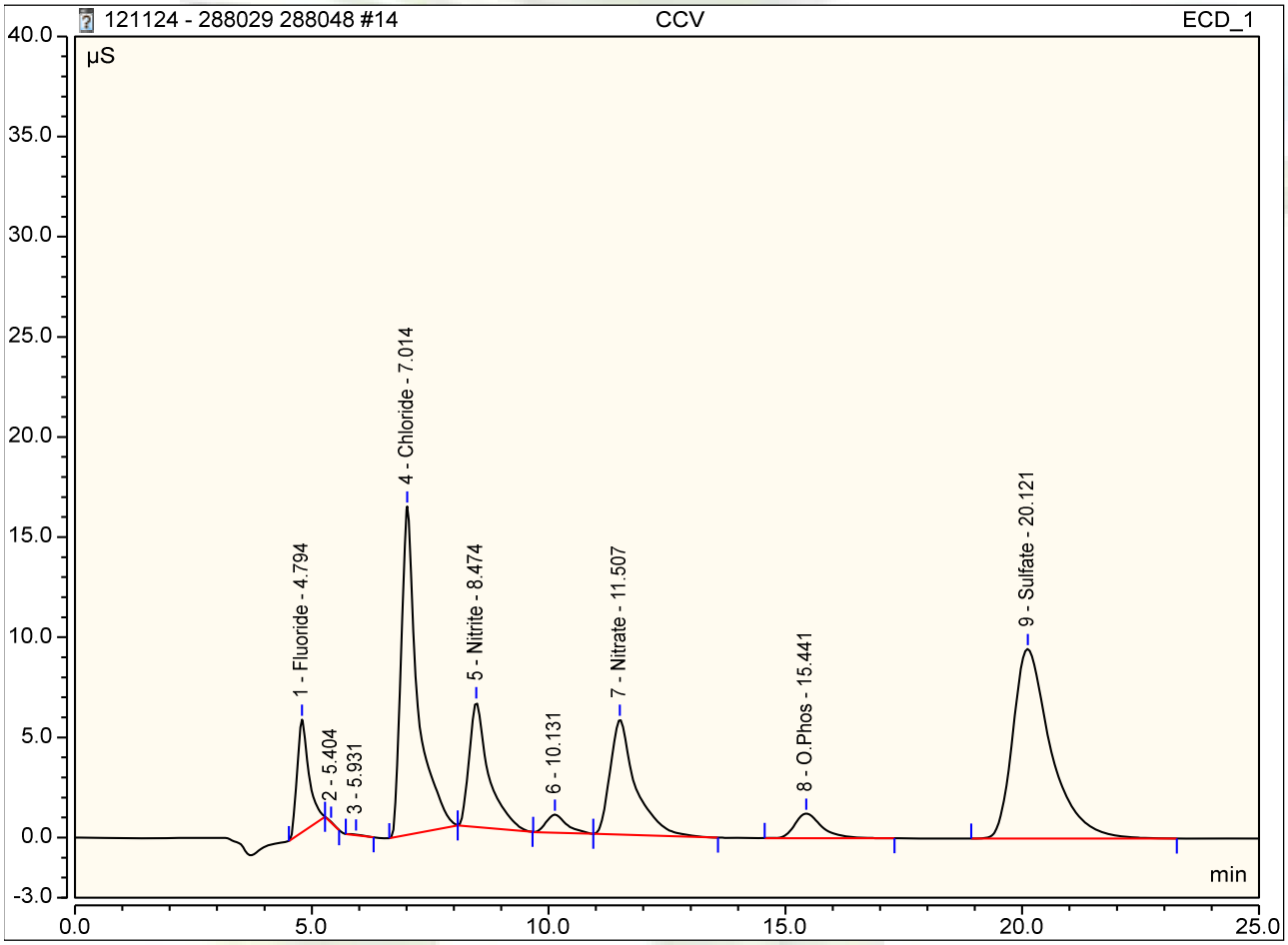
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount n.a. |
|---|---|---|---|---|---|



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCV** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **11-Dec-2024 / 17:08** | *Run Time:* | **25.00** |

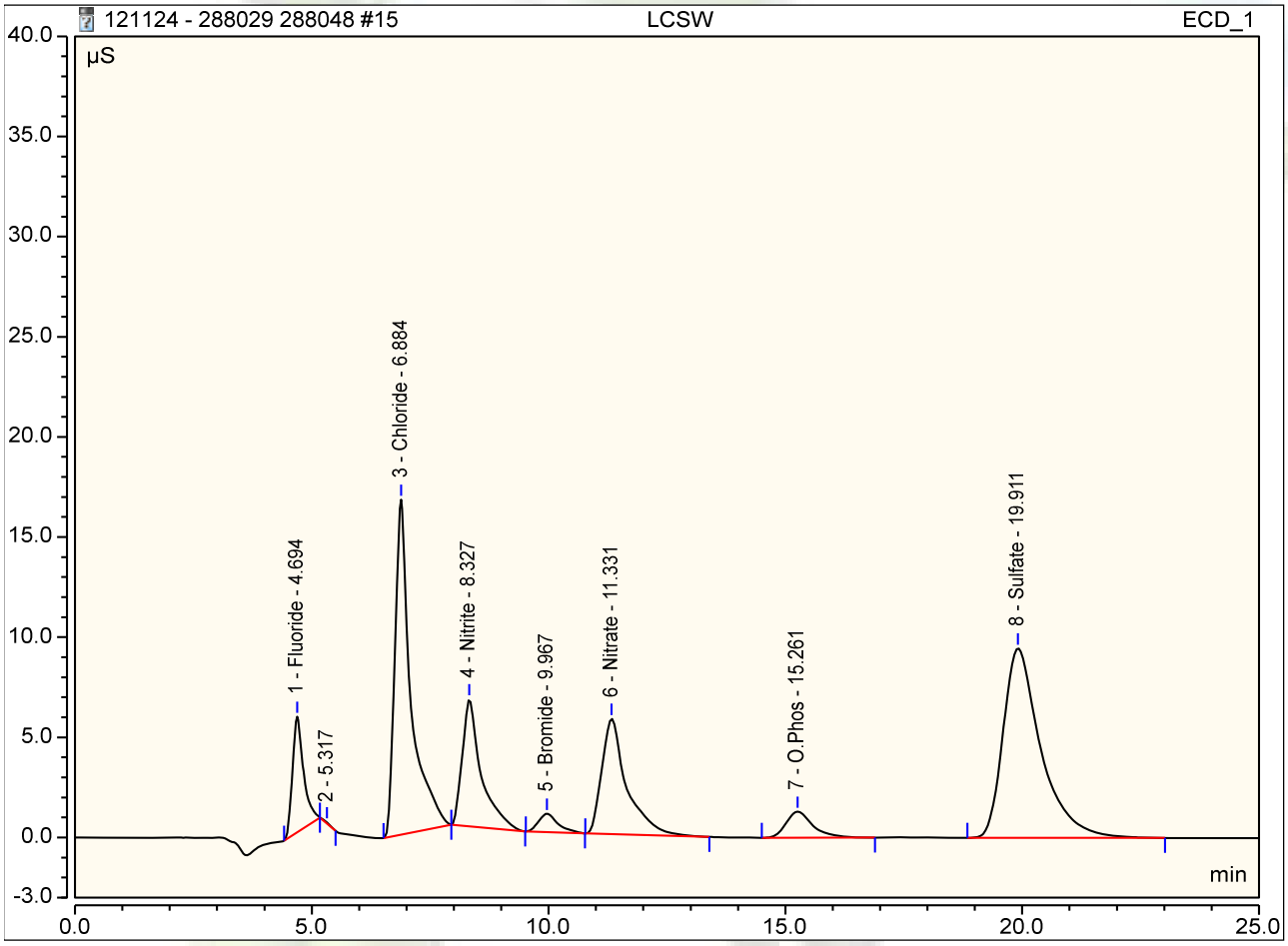
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.79 | Fluoride | 1.592 | 5.615 | 2.5758 |
| 4 | 7.01 | Chloride | 6.643 | 16.404 | 13.7924 |
| 5 | 8.47 | Nitrite | 2.959 | 6.228 | 3.5121 |
| 7 | 11.51 | Nitrate | 3.558 | 5.742 | 3.5467 |
| 8 | 15.44 | O.Phos | 0.812 | 1.224 | 2.3800 |
| 9 | 20.12 | Sulfate | 8.780 | 9.463 | 27.4044 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **LCSW** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **11-Dec-2024 / 17:35** | *Run Time:* | **25.00** |

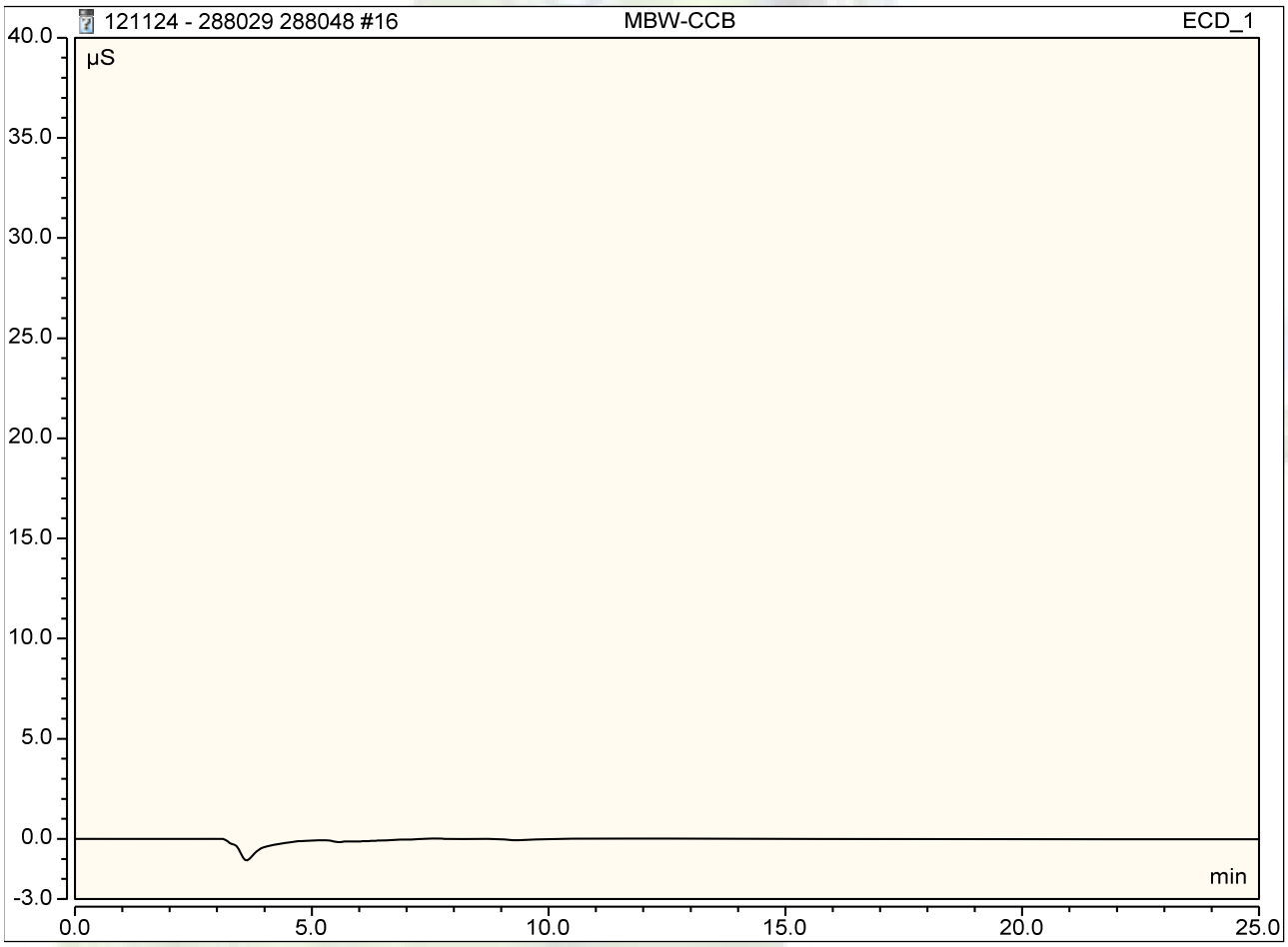
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.69 | Fluoride | 1.582 | 5.780 | 2.5584 |
| 3 | 6.88 | Chloride | 6.555 | 16.722 | 13.6177 |
| 4 | 8.33 | Nitrite | 2.951 | 6.357 | 3.5020 |
| 5 | 9.97 | Bromide | 0.442 | 0.923 | 2.8379 |
| 6 | 11.33 | Nitrate | 3.504 | 5.762 | 3.4951 |
| 7 | 15.26 | O.Phos | 0.843 | 1.298 | 2.4744 |
| 8 | 19.91 | Sulfate | 8.717 | 9.461 | 27.2148 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **MBW-CCB** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **11-Dec-2024 / 18:03** | *Run Time:* | **25.00** |

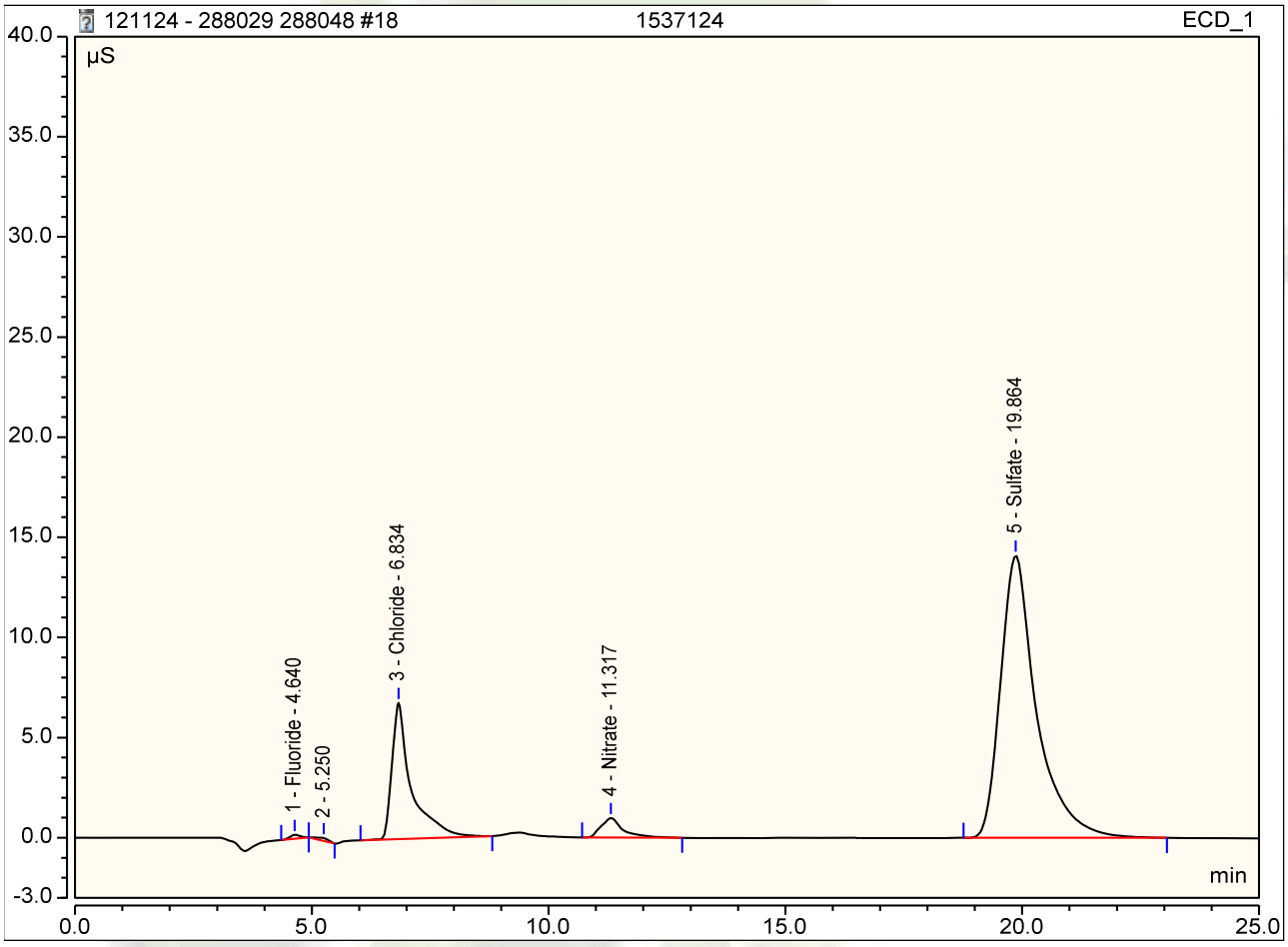
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount n.a. |
|---|---|---|---|---|---|



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **1537124** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **11-Dec-2024 / 18:58** | *Run Time:* | **25.00** |

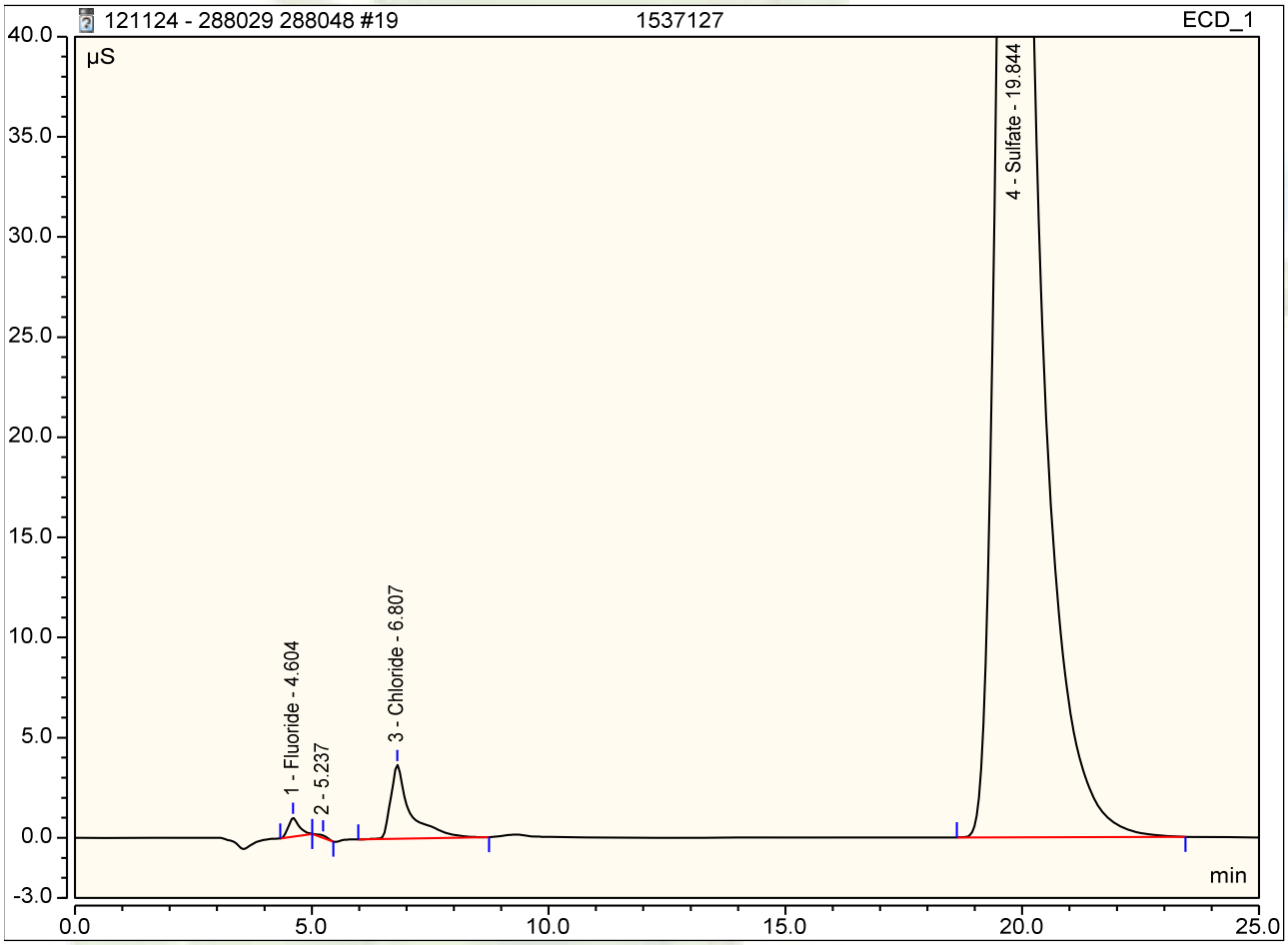
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.64 | Fluoride | 0.049 | 0.197 | 0.0326 |
| 3 | 6.83 | Chloride | 3.239 | 6.803 | 7.0498 |
| 4 | 11.32 | Nitrate | 0.524 | 0.980 | 0.6157 |
| 5 | 19.86 | Sulfate | 12.412 | 14.101 | 38.3753 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **1537127** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **11-Dec-2024 / 19:25** | *Run Time:* | **25.00** |

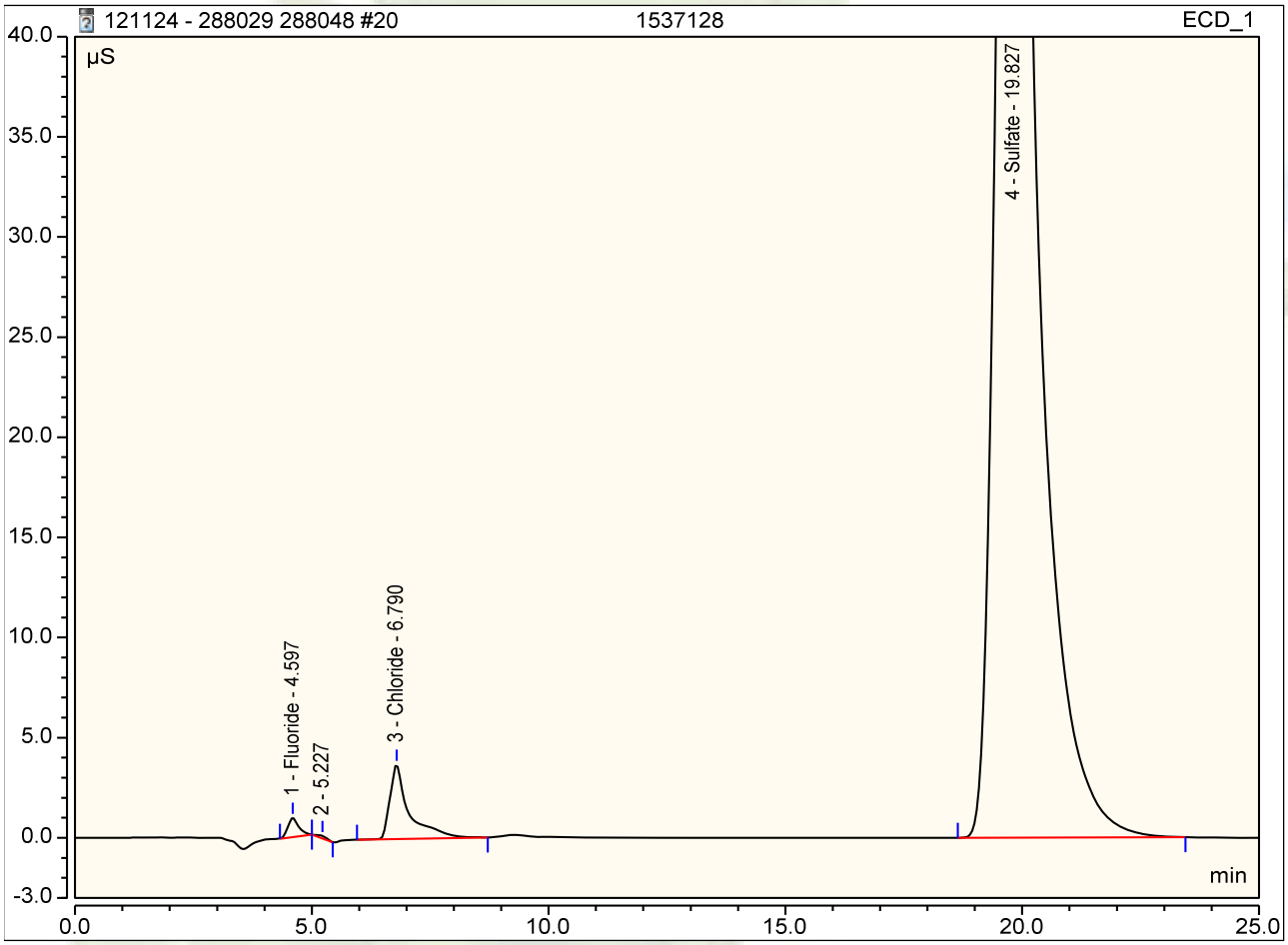
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.60 | Fluoride | 0.253 | 0.946 | 0.3687 |
| 3 | 6.81 | Chloride | 1.787 | 3.692 | 4.1748 |
| 4 | 19.84 | Sulfate | 77.425 | 91.504 | 234.7838 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **1537128** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **11-Dec-2024 / 19:52** | *Run Time:* | **25.00** |

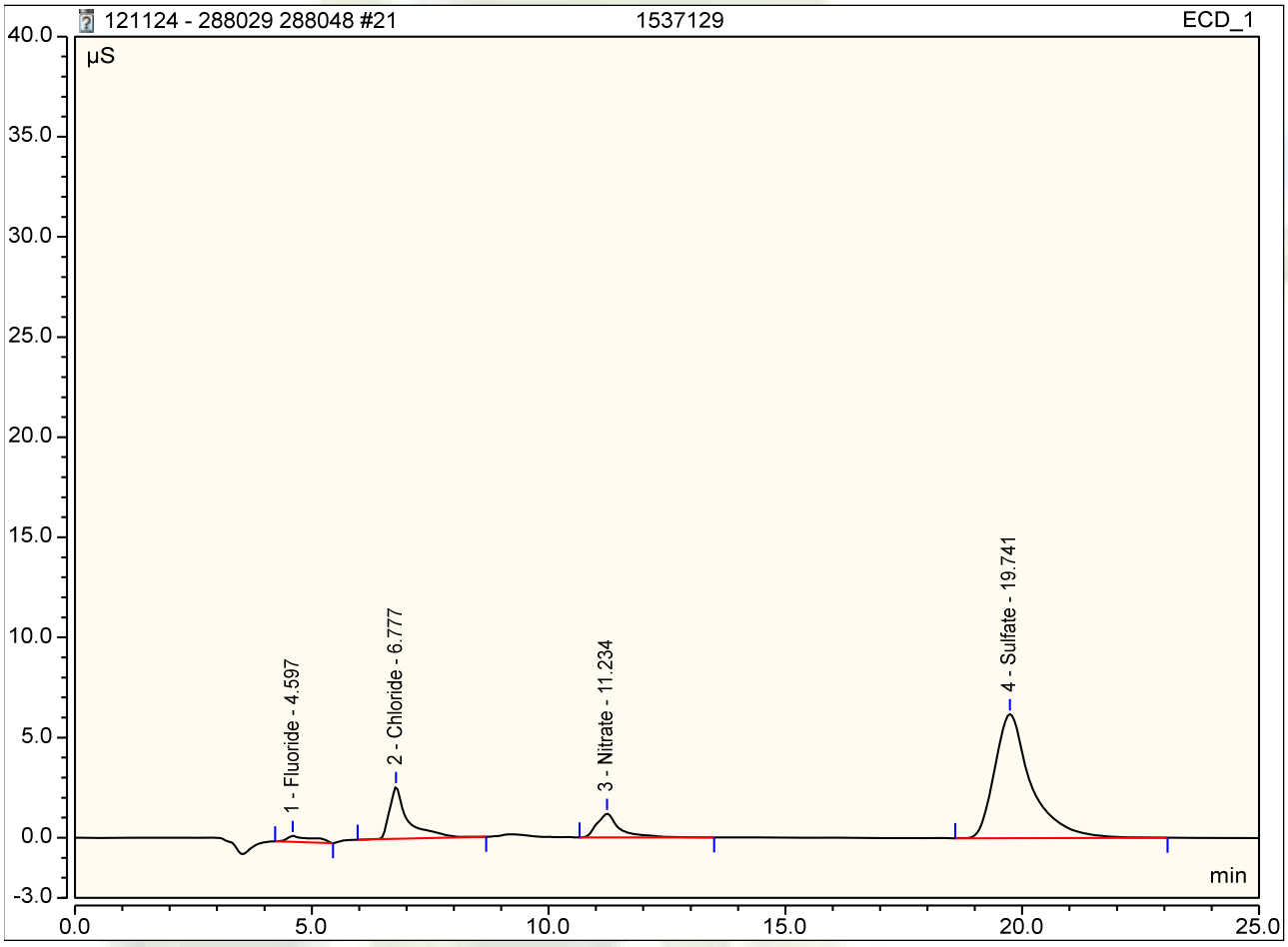
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.60 | Fluoride | 0.257 | 0.967 | 0.3751 |
| 3 | 6.79 | Chloride | 1.757 | 3.718 | 4.1157 |
| 4 | 19.83 | Sulfate | 77.927 | 91.821 | 236.2989 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **1537129** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **11-Dec-2024 / 20:20** | *Run Time:* | **25.00** |

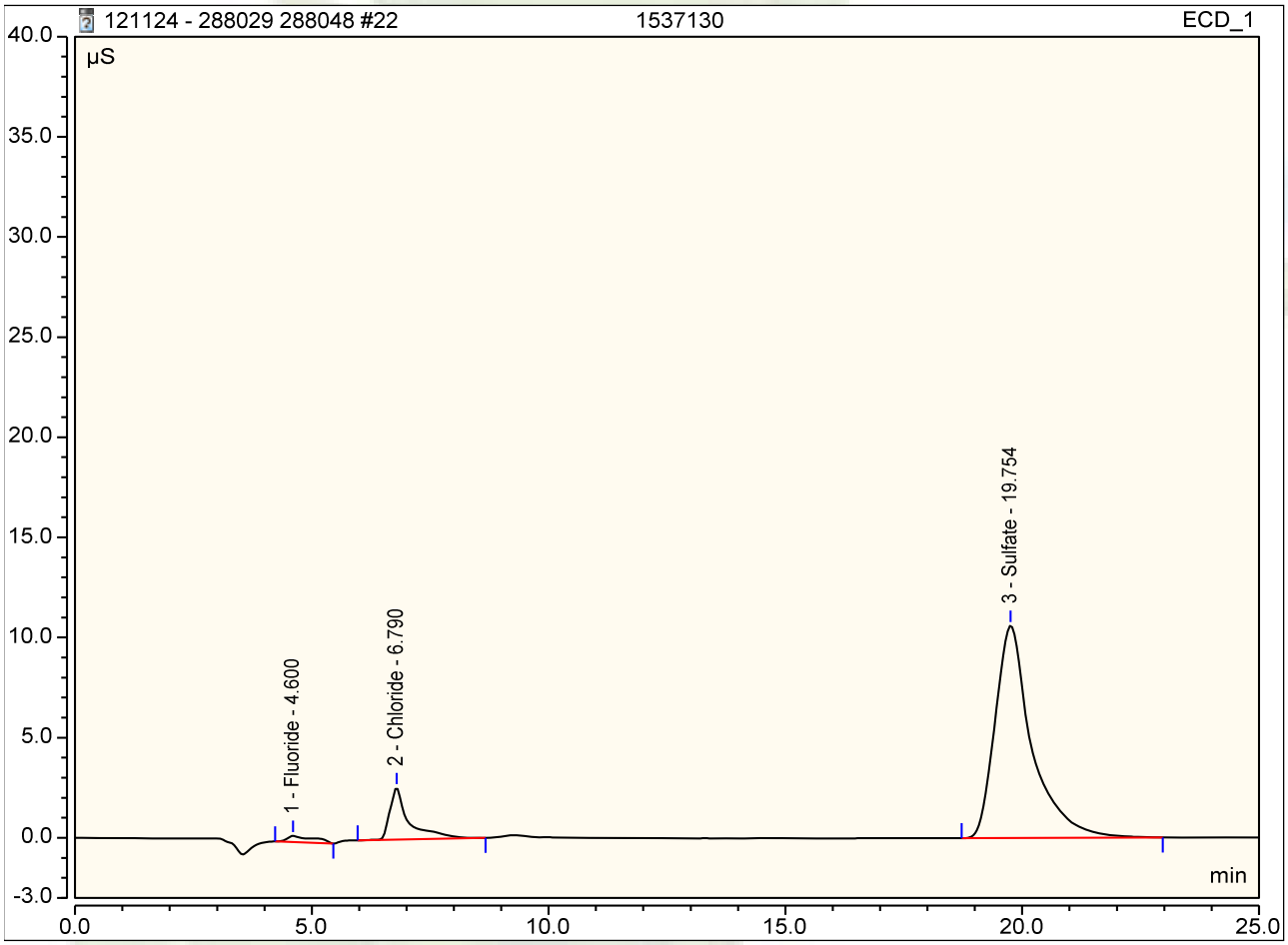
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.60 | Fluoride | 0.200 | 0.301 | 0.2817 |
| 2 | 6.78 | Chloride | 1.190 | 2.597 | 2.9920 |
| 3 | 11.23 | Nitrate | 0.655 | 1.185 | 0.7421 |
| 4 | 19.74 | Sulfate | 5.533 | 6.190 | 17.5953 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **1537130** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **11-Dec-2024 / 20:47** | *Run Time:* | **25.00** |

| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.60 | Fluoride | 0.211 | 0.320 | 0.2998 |
| 2 | 6.79 | Chloride | 1.214 | 2.584 | 3.0398 |
| 3 | 19.75 | Sulfate | 9.518 | 10.596 | 29.6337 |

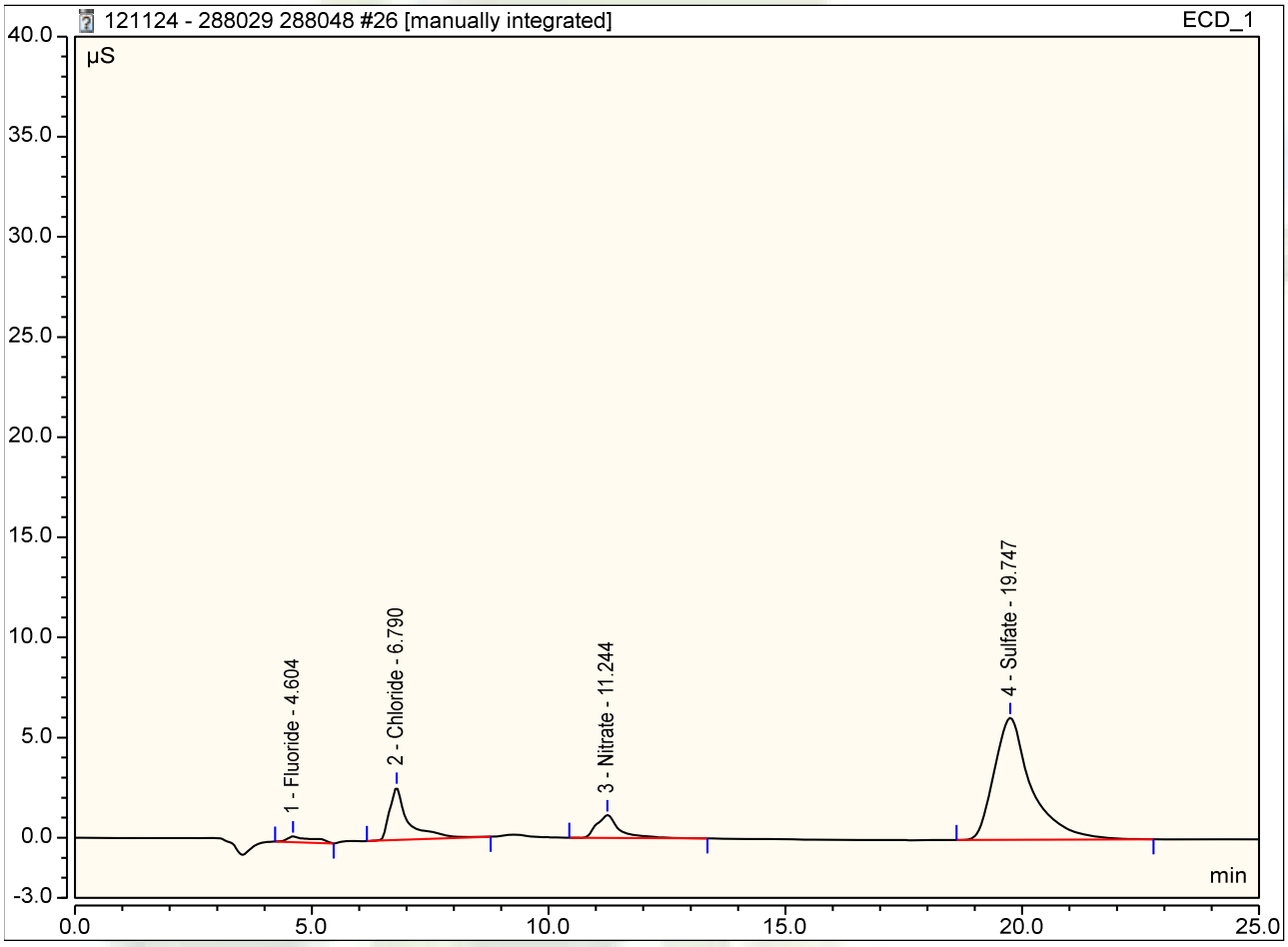


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## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **DUP1537129** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **11-Dec-2024 / 22:37** | *Run Time:* | **25.00** |

| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.60 | Fluoride | 0.190 | 0.293 | 0.2652 |
| 2 | 6.79 | Chloride | 1.219 | 2.619 | 3.0492 |
| 3 | 11.24 | Nitrate | 0.625 | 1.135 | 0.7129 |
| 4 | 19.75 | Sulfate | 5.551 | 6.083 | 17.6495 |



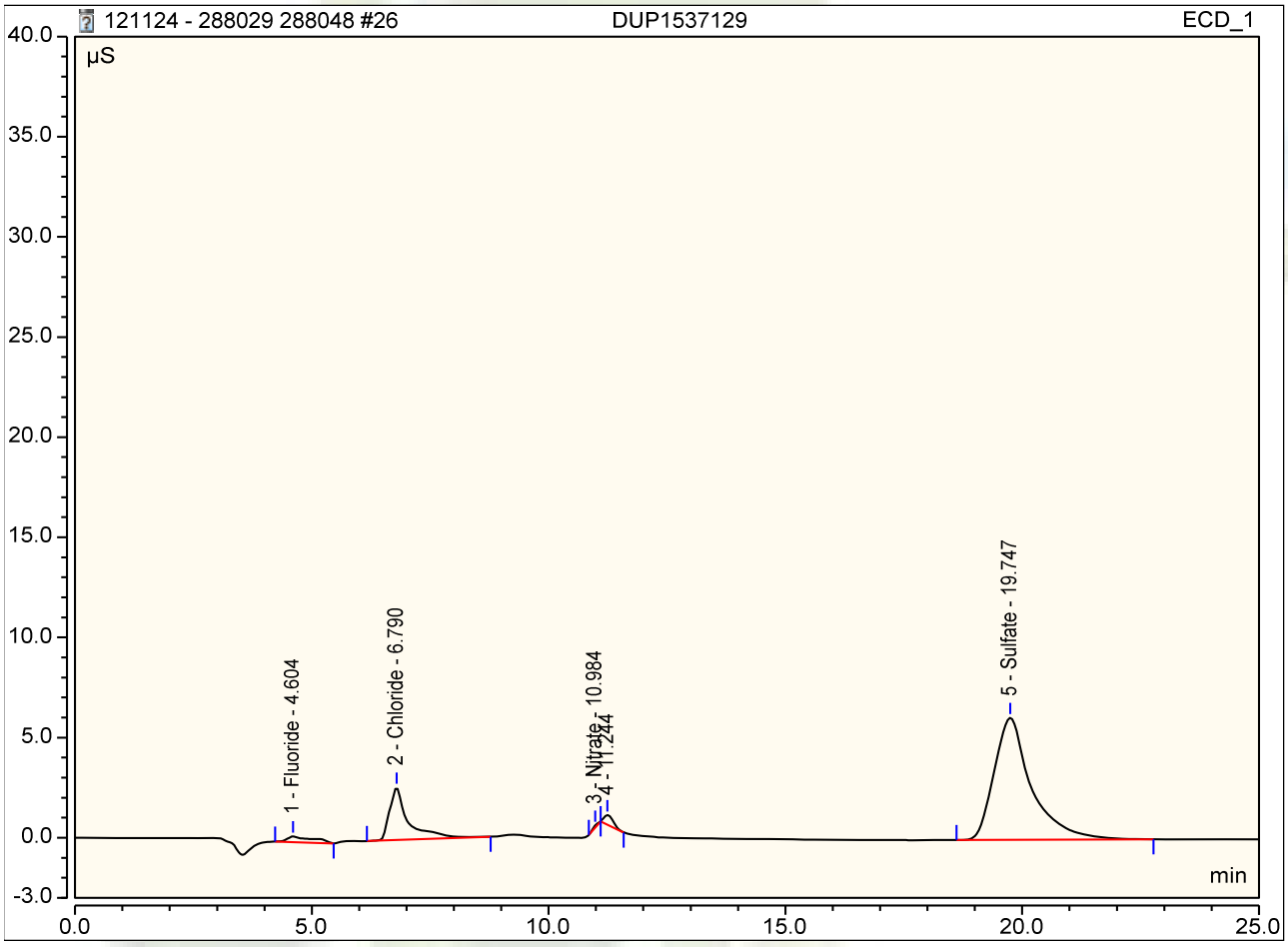

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## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **DUP1537129** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **11-Dec-2024 / 22:37** | *Run Time:* | **25.00** |

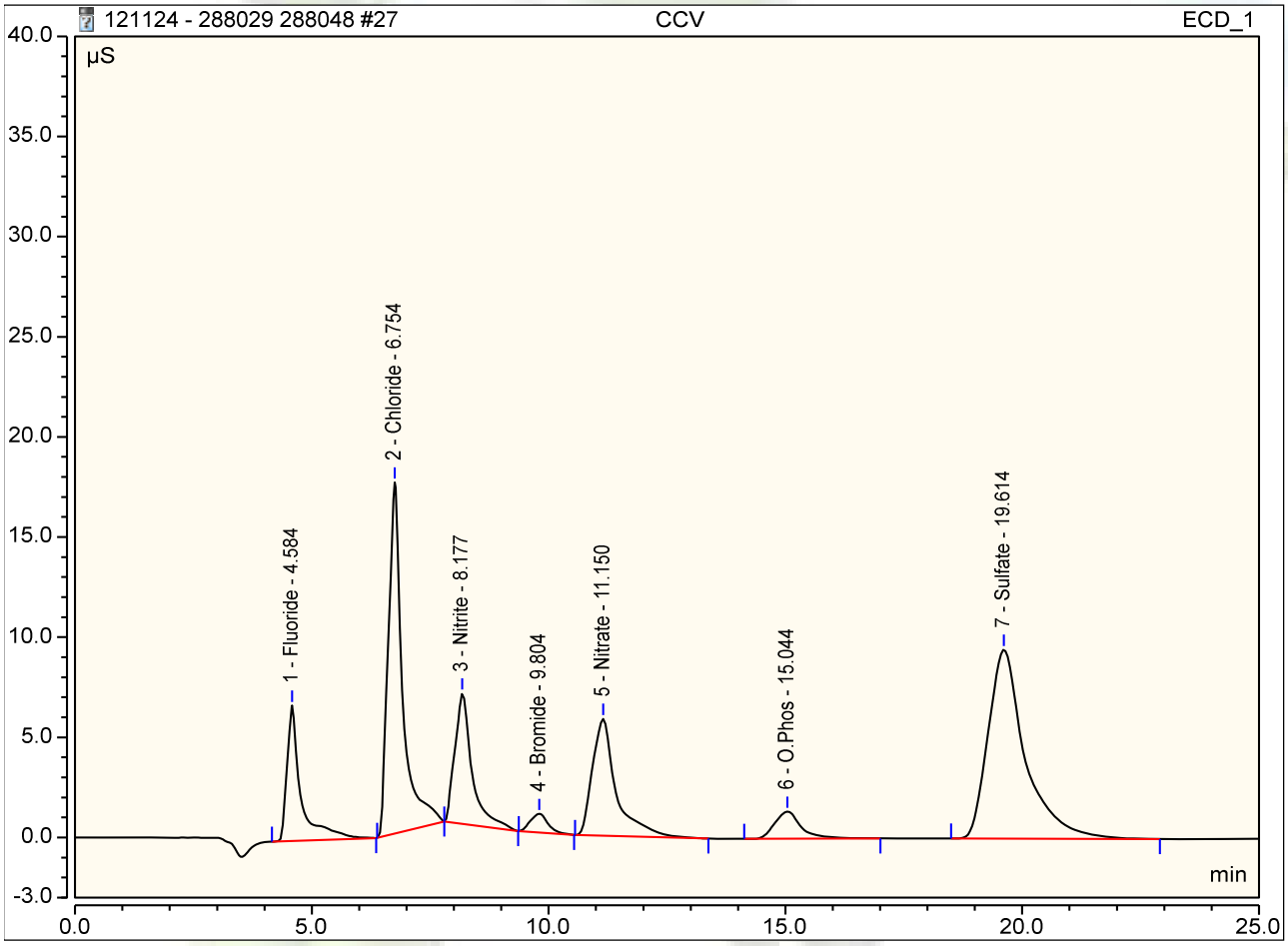
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.60 | Fluoride | 0.190 | 0.293 | 0.2652 |
| 2 | 6.79 | Chloride | 1.219 | 2.619 | 3.0492 |
| 3 | 10.98 | Nitrate | 0.012 | 0.092 | 0.1208 |
| 5 | 19.75 | Sulfate | 5.551 | 6.083 | 17.6495 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCV** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **11-Dec-2024 / 23:05** | *Run Time:* | **25.00** |

| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.58 | Fluoride | 2.332 | 6.754 | 3.7946 |
| 2 | 6.75 | Chloride | 6.192 | 17.540 | 12.8986 |
| 3 | 8.18 | Nitrite | 2.721 | 6.517 | 3.2296 |
| 4 | 9.80 | Bromide | 0.402 | 0.934 | 2.5759 |
| 5 | 11.15 | Nitrate | 3.390 | 5.840 | 3.3842 |
| 6 | 15.04 | O.Phos | 0.874 | 1.354 | 2.5662 |
| 7 | 19.61 | Sulfate | 8.572 | 9.437 | 26.7760 |

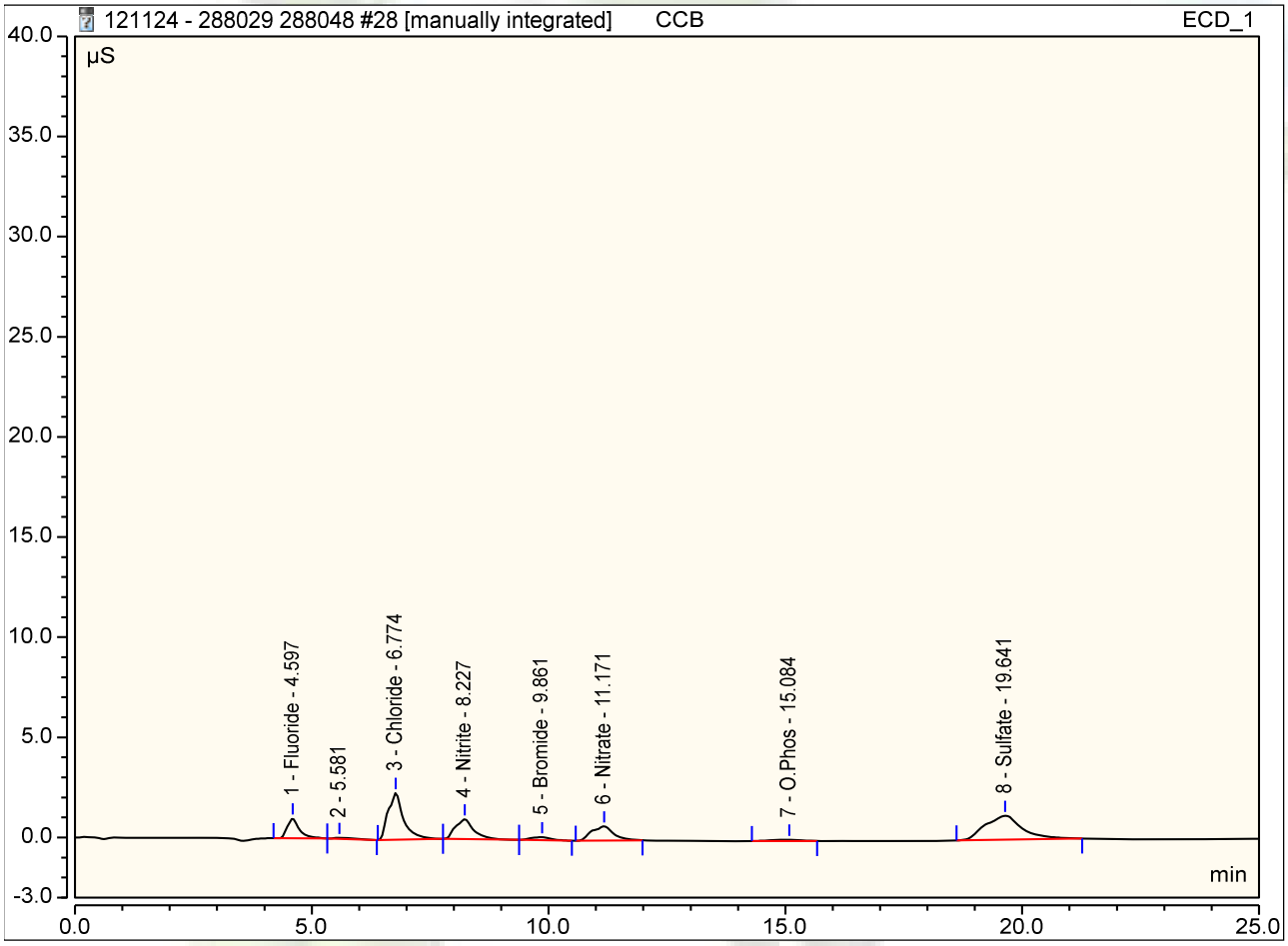


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## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCB** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **11-Dec-2024 / 23:32** | *Run Time:* | **25.00** |

| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.60 | Fluoride | 0.299 | 0.996 | 0.4449 |
| 3 | 6.77 | Chloride | 0.885 | 2.337 | 2.3873 |
| 4 | 8.23 | Nitrite | 0.449 | 0.993 | 0.5362 |
| 5 | 9.86 | Bromide | 0.074 | 0.159 | 0.4502 |
| 6 | 11.17 | Nitrate | 0.380 | 0.712 | 0.4760 |
| 7 | 15.08 | O.Phos | 0.043 | 0.067 | 0.1004 |
| 8 | 19.64 | Sulfate | 1.086 | 1.201 | 4.1594 |

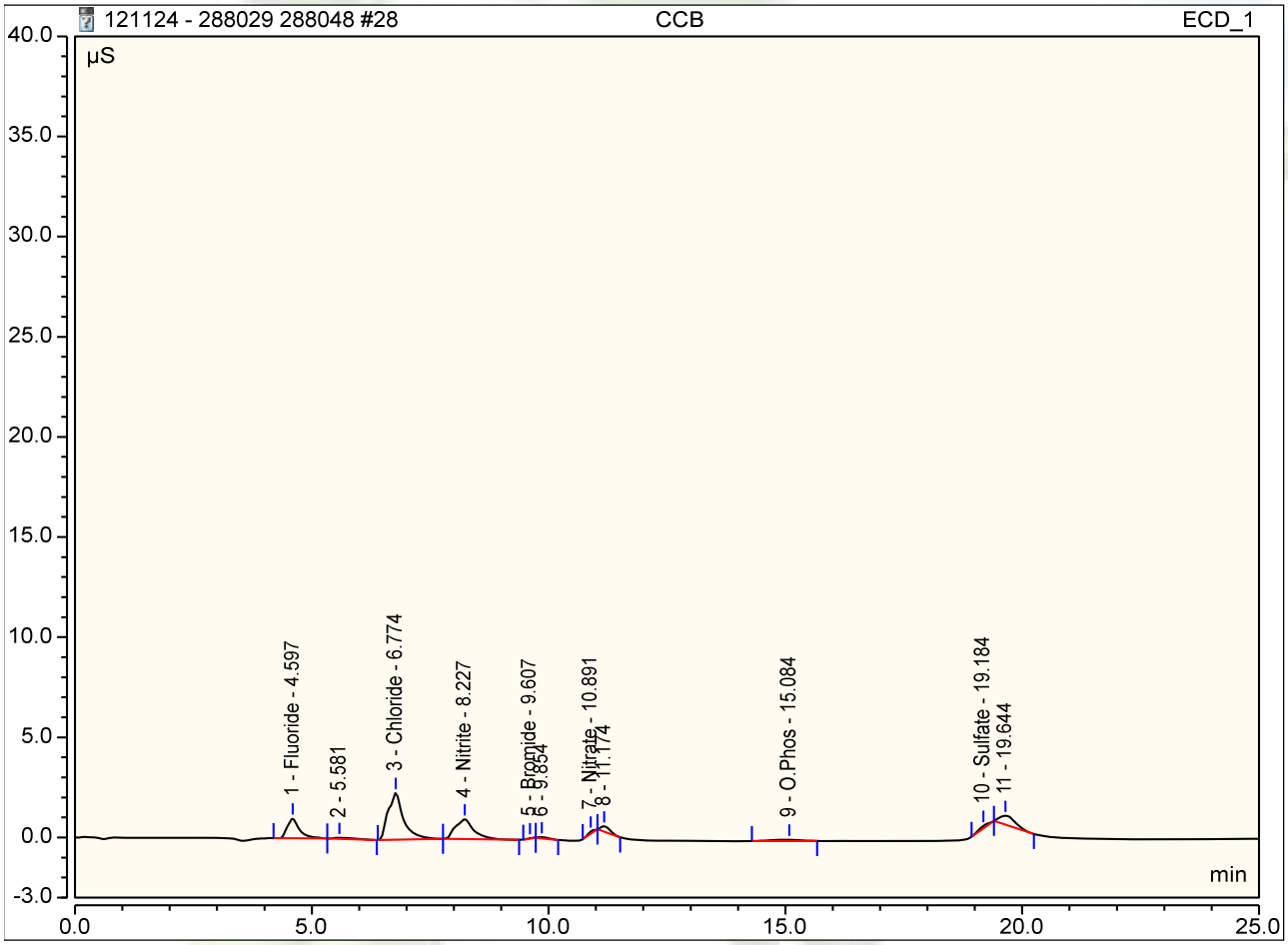



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## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCB** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **11-Dec-2024 / 23:32** | *Run Time:* | **25.00** |

| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.60 | Fluoride | 0.299 | 0.996 | 0.4449 |
| 3 | 6.77 | Chloride | 0.885 | 2.337 | 2.3873 |
| 4 | 8.23 | Nitrite | 0.449 | 0.993 | 0.5362 |
| 5 | 9.61 | Bromide | 0.004 | 0.027 | n.a. |
| 7 | 10.89 | Nitrate | 0.021 | 0.128 | 0.1289 |
| 9 | 15.08 | O.Phos | 0.043 | 0.067 | 0.1004 |
| 10 | 19.18 | Sulfate | 0.031 | 0.124 | 0.9745 |

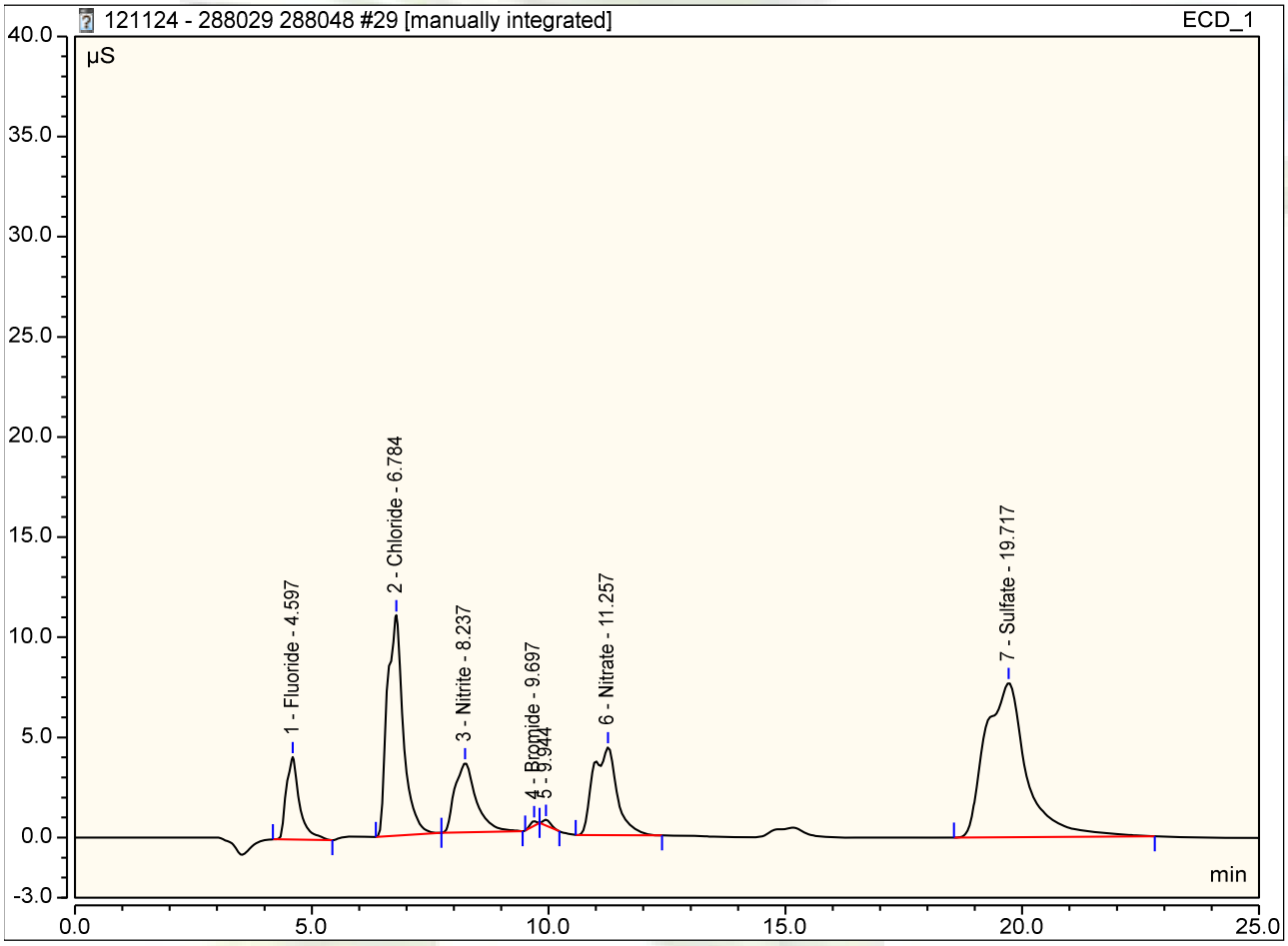


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## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **MSW1537129** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **11-Dec-2024 / 23:59** | *Run Time:* | **25.00** |

| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.60 | Fluoride | 1.344 | 4.121 | 2.1664 |
| 2 | 6.78 | Chloride | 4.324 | 11.004 | 9.1998 |
| 3 | 8.24 | Nitrite | 1.808 | 3.460 | 2.1478 |
| 4 | 9.70 | Bromide | 0.038 | 0.230 | 0.2188 |
| 6 | 11.26 | Nitrate | 2.558 | 4.393 | 2.5803 |
| 7 | 19.72 | Sulfate | 7.769 | 7.712 | 24.3507 |

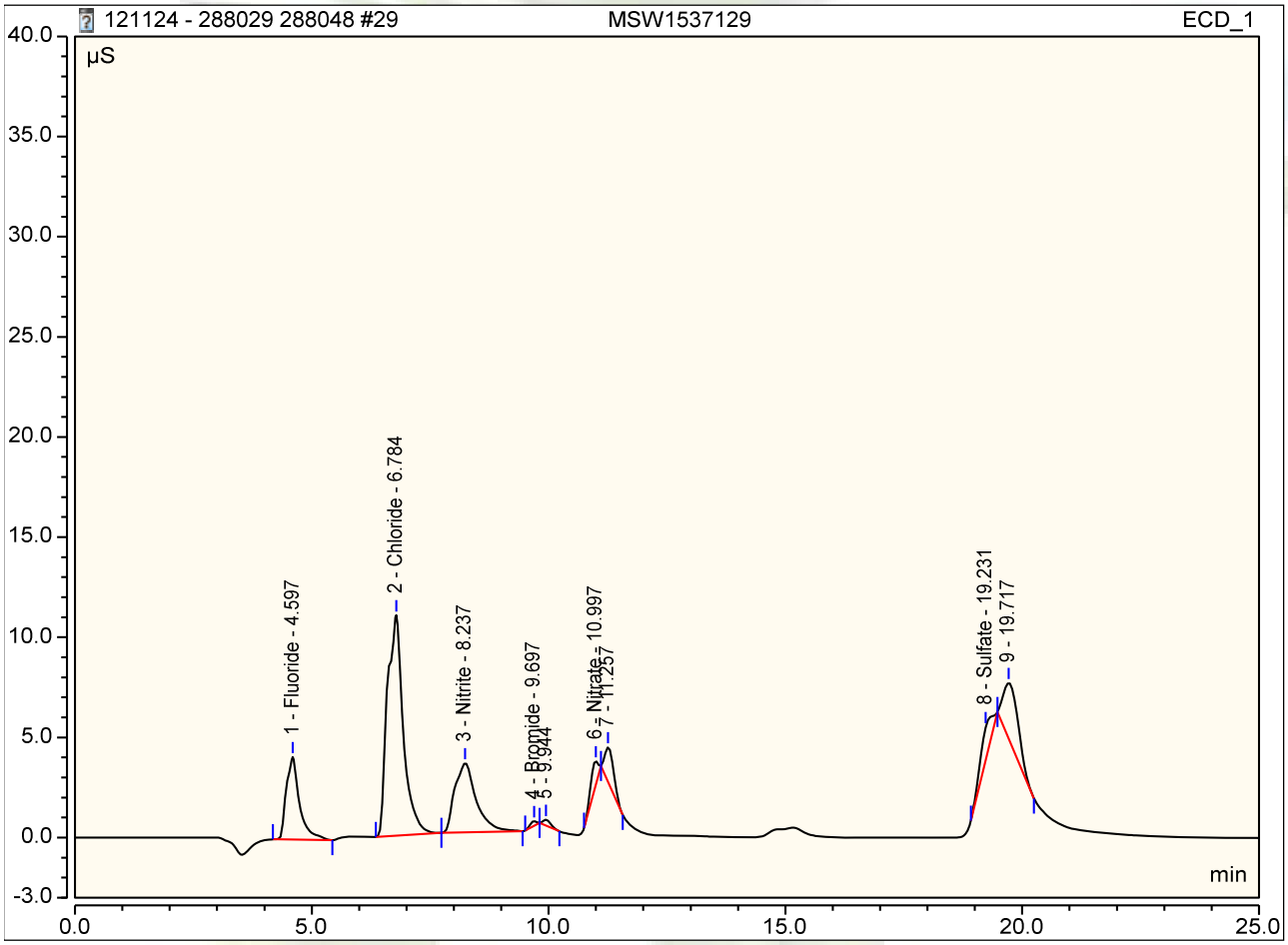



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## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **MSW1537129** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **11-Dec-2024 / 23:59** | *Run Time:* | **25.00** |

| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.60 | Fluoride | 1.344 | 4.121 | 2.1664 |
| 2 | 6.78 | Chloride | 4.324 | 11.004 | 9.1998 |
| 3 | 8.24 | Nitrite | 1.808 | 3.460 | 2.1478 |
| 4 | 9.70 | Bromide | 0.038 | 0.230 | 0.2188 |
| 6 | 11.00 | Nitrate | 0.253 | 1.185 | 0.3531 |
| 8 | 19.23 | Sulfate | 0.485 | 1.664 | 2.3436 |

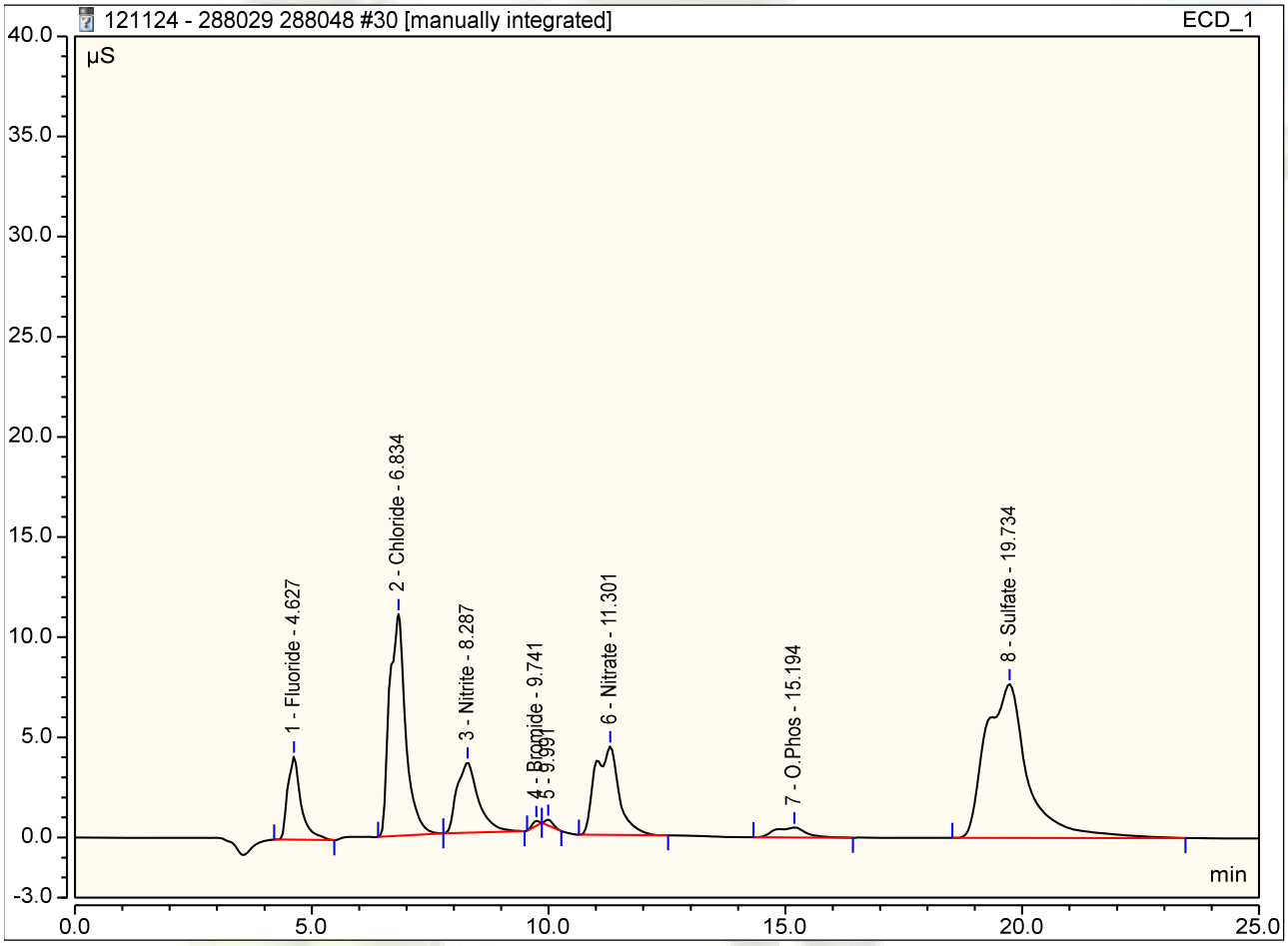


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## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **MSDW1537129** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **12-Dec-2024 / 00:27** | *Run Time:* | **25.00** |

| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.63 | Fluoride | 1.369 | 4.162 | 2.2084 |
| 2 | 6.83 | Chloride | 4.371 | 11.077 | 9.2919 |
| 3 | 8.29 | Nitrite | 1.829 | 3.503 | 2.1718 |
| 4 | 9.74 | Bromide | 0.041 | 0.246 | 0.2366 |
| 6 | 11.30 | Nitrate | 2.574 | 4.431 | 2.5960 |
| 7 | 15.19 | O.Phos | 0.383 | 0.500 | 1.1099 |
| 8 | 19.73 | Sulfate | 7.862 | 7.677 | 24.6306 |

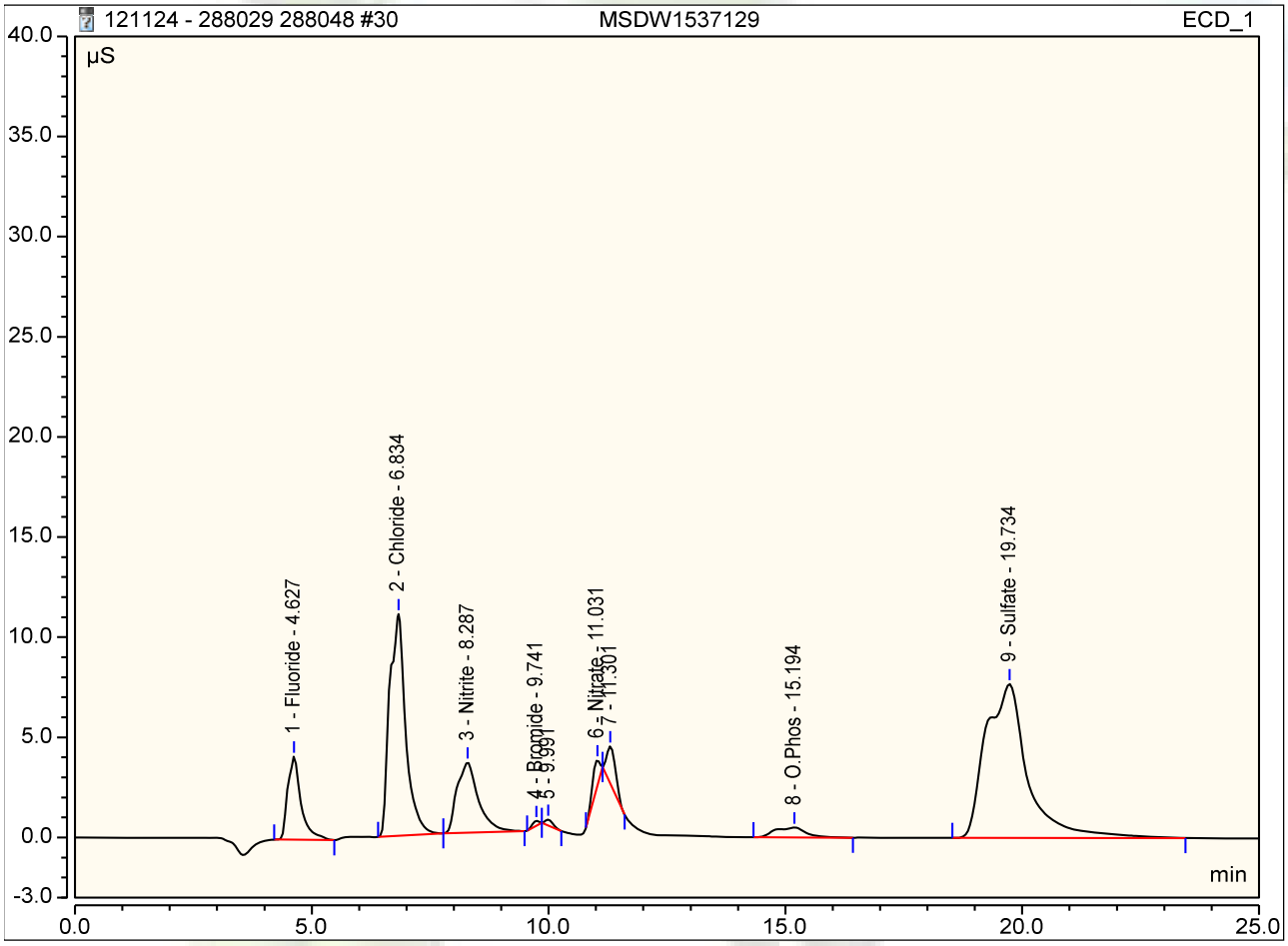



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## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **MSDW1537129** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **12-Dec-2024 / 00:27** | *Run Time:* | **25.00** |

| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.63 | Fluoride | 1.369 | 4.162 | 2.2084 |
| 2 | 6.83 | Chloride | 4.371 | 11.077 | 9.2919 |
| 3 | 8.29 | Nitrite | 1.829 | 3.503 | 2.1718 |
| 4 | 9.74 | Bromide | 0.041 | 0.246 | 0.2366 |
| 6 | 11.03 | Nitrate | 0.263 | 1.292 | 0.3633 |
| 8 | 15.19 | O.Phos | 0.383 | 0.500 | 1.1099 |
| 9 | 19.73 | Sulfate | 7.862 | 7.677 | 24.6306 |

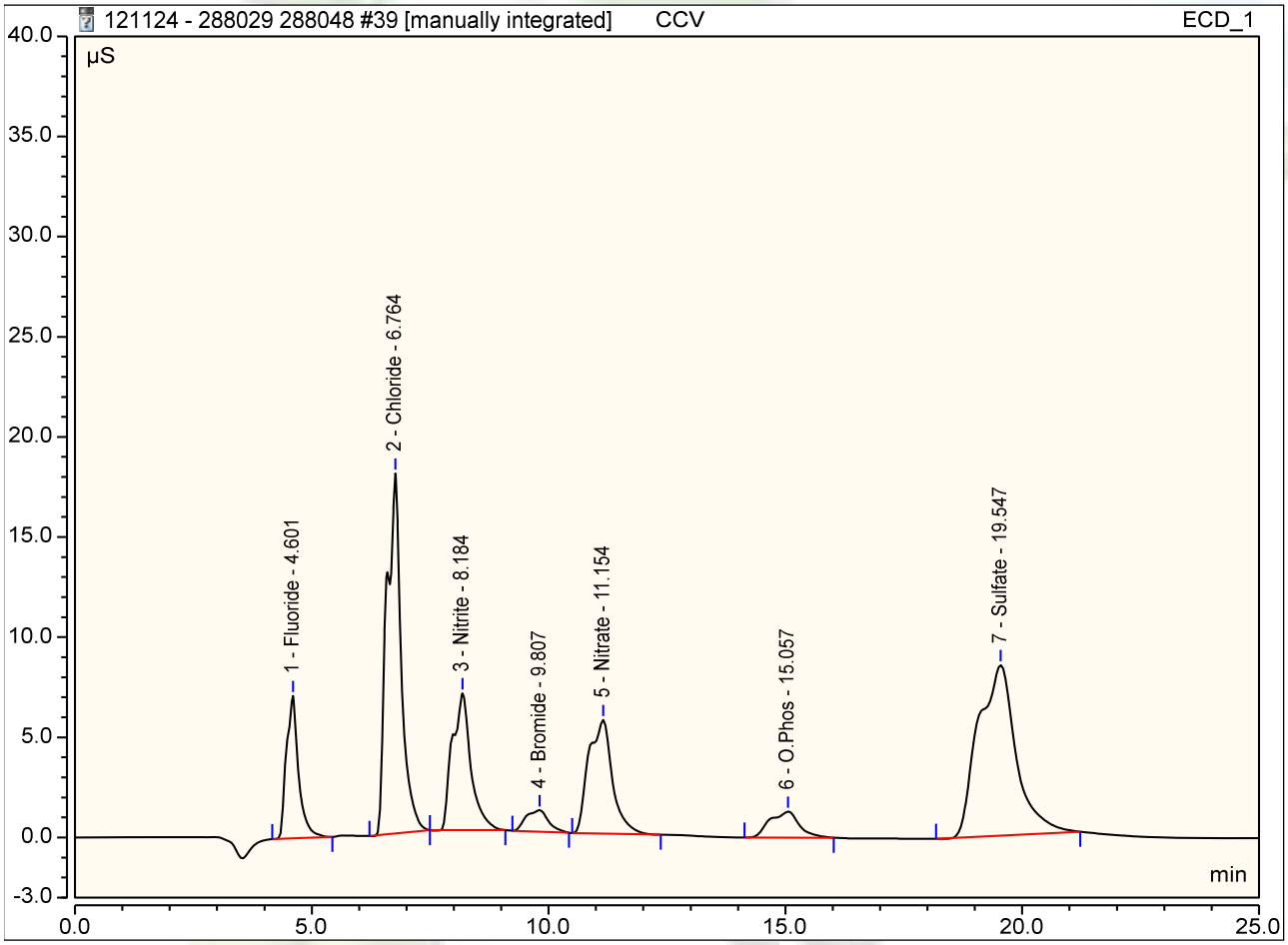


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## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCV** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **12-Dec-2024 / 04:34** | *Run Time:* | **25.00** |

| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.60 | Fluoride | 2.134 | 7.119 | 3.4690 |
| 2 | 6.76 | Chloride | 6.447 | 17.985 | 13.4035 |
| 3 | 8.18 | Nitrite | 3.101 | 6.841 | 3.6797 |
| 4 | 9.81 | Bromide | 0.580 | 1.074 | 3.7364 |
| 5 | 11.15 | Nitrate | 3.302 | 5.686 | 3.2998 |
| 6 | 15.06 | O.Phos | 0.937 | 1.298 | 2.7518 |
| 7 | 19.55 | Sulfate | 7.886 | 8.519 | 24.7042 |

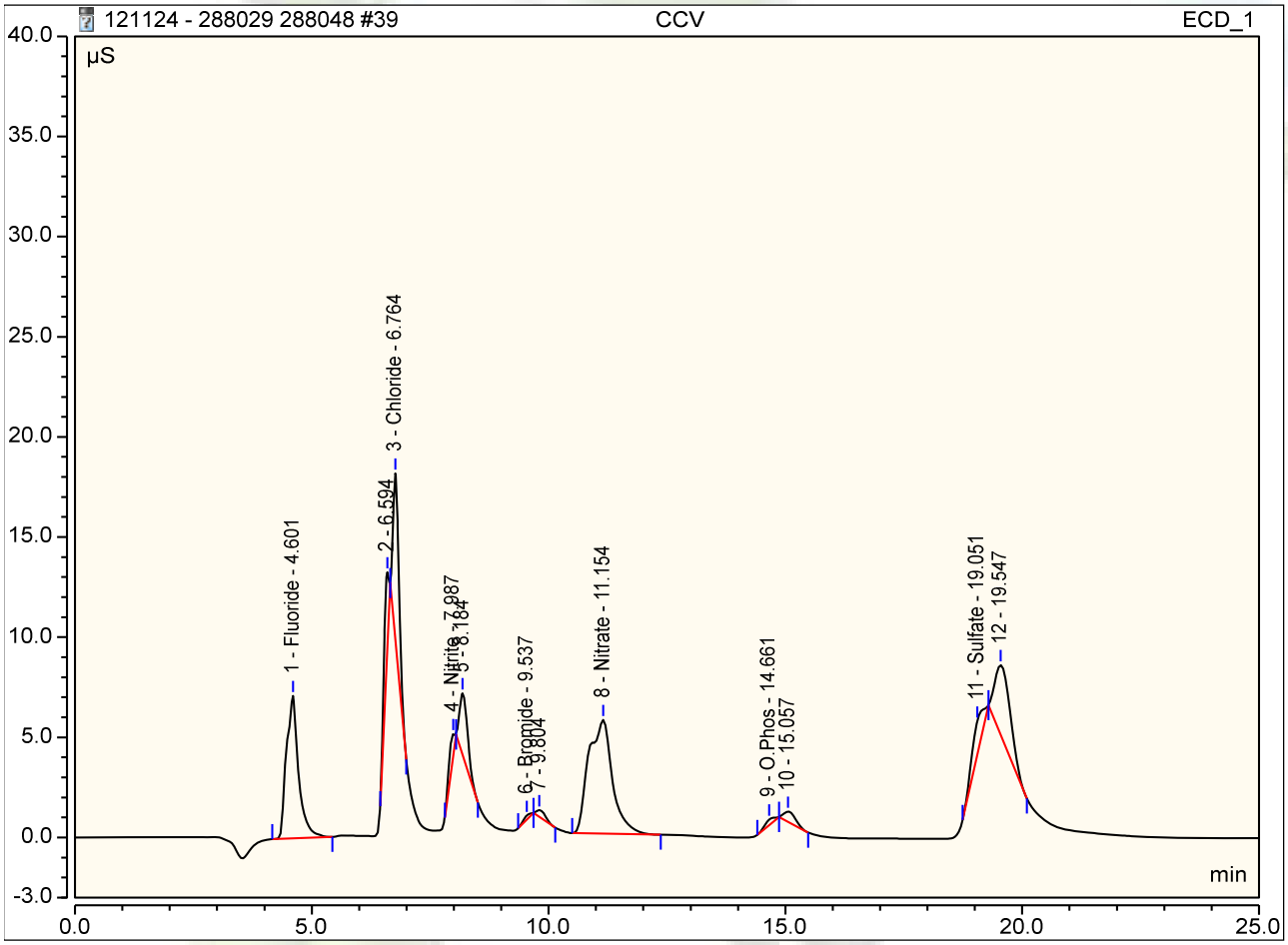



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## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCV** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **12-Dec-2024 / 04:34** | *Run Time:* | **25.00** |

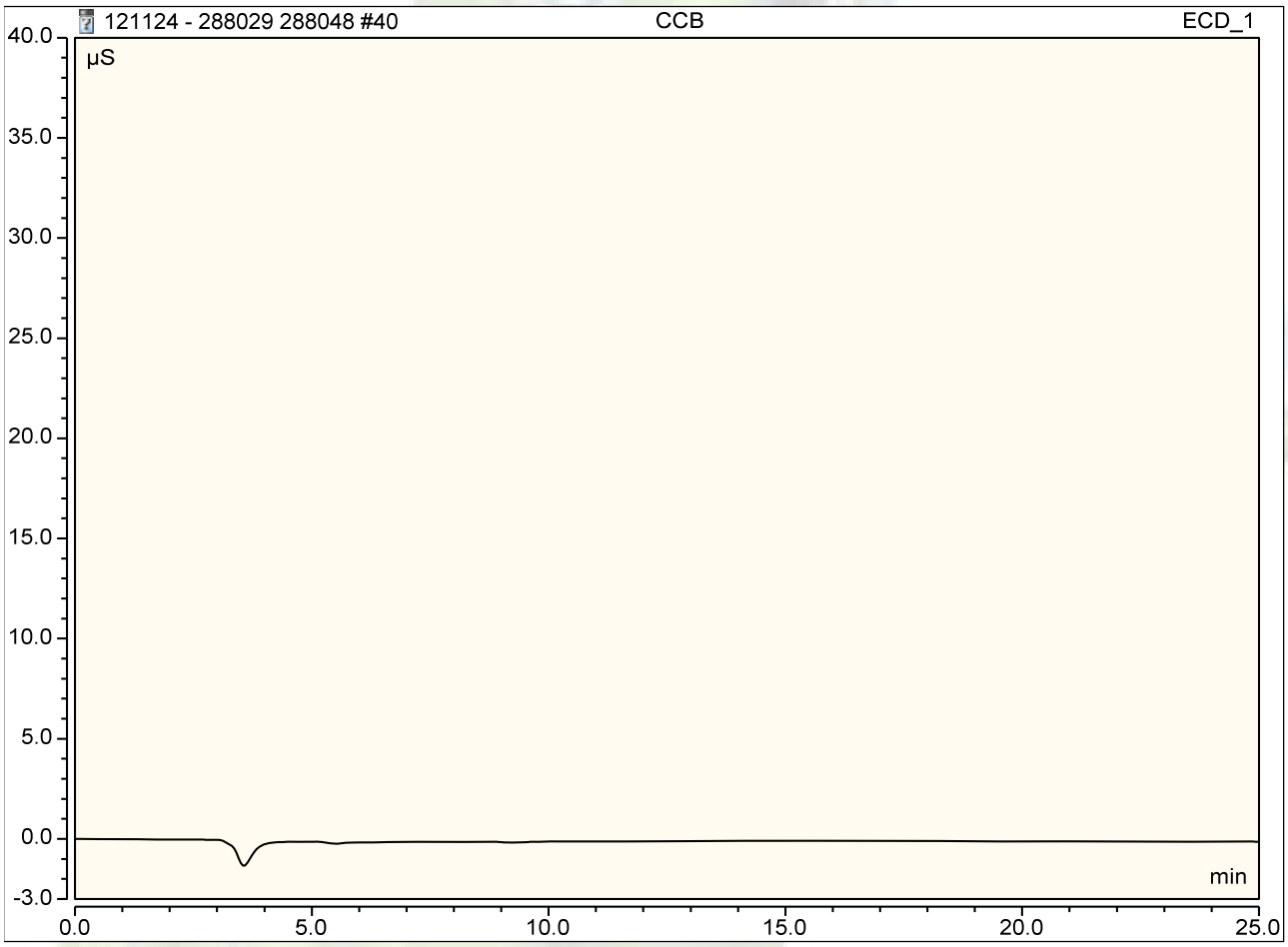
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 4.60 | Fluoride | 2.134 | 7.119 | 3.4690 |
| 3 | 6.76 | Chloride | 1.214 | 8.266 | 3.0396 |
| 4 | 7.99 | Nitrite | 0.198 | 1.076 | 0.2389 |
| 6 | 9.54 | Bromide | 0.035 | 0.206 | 0.1988 |
| 8 | 11.15 | Nitrate | 3.302 | 5.686 | 3.2998 |
| 9 | 14.66 | O.Phos | 0.065 | 0.276 | 0.1647 |
| 11 | 19.05 | Sulfate | 0.471 | 1.662 | 2.3034 |



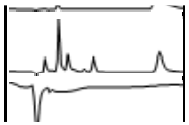
## Peak Integration Report

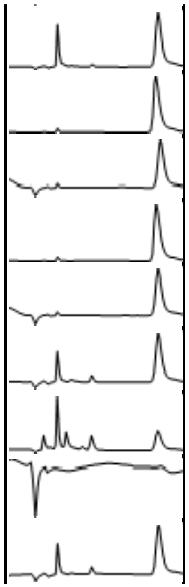
| | | | |
|---|---|---|---|
| *Sample Name:* | **CCB** | *Sequence Date:* | **05/04/2018** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5492A** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **12-Dec-2024 / 05:01** | *Run Time:* | **25.00** |

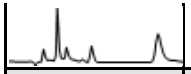
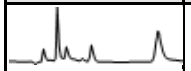
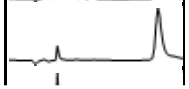
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount n.a. |
|---|---|---|---|---|---|

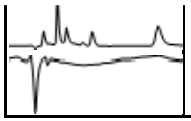


| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
|  | CCV | Unknown | | 13 | 5000 | Anions | IC5364 | Finished |
| | LCSW | Unknown | | 14 | 5000 | Anions | IC5364 | Finished |
| | MBW-CCB | Unknown | | 15 | 5000 | Anions | IC5364 | Finished |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
|  | CCV | Unknown | | 26 | 5000 | Anions | IC5364 | Finished |
| | CCB | Unknown | | 27 | 5000 | Anions | IC5364 | Finished |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
|  | 1537124 | Unknown | | 32 | 5000 | Anions | IC5364 | Finished |
| | 1537127 | Unknown | | 33 | 5000 | Anions | IC5364 | Finished |
| | 1537127X10 | Unknown | | 34 | 5000 | Anions | IC5364 | Finished |
| | 1537128 | Unknown | | 35 | 5000 | Anions | IC5364 | Finished |
| | 1537128X10 | Unknown | | 36 | 5000 | Anions | IC5364 | Finished |
| | 1537129 | Unknown | | 37 | 5000 | Anions | IC5364 | Finished |
| | CCV | Unknown | | 38 | 5000 | Anions | IC5364 | Finished |
| | CCB | Unknown | | 39 | 5000 | Anions | IC5364 | Finished |
| | DUP1537129 | Unknown | | 40 | 5000 | Anions | IC5364 | Finished |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
|  | MSW1537129 | Unknown | | 41 | 5000 | Anions | IC5364 | Finished |
| **ECD_1** | **Name** | **Type** | **Level** | **Position** | **Volume** | **Instrument Method** | **Processing Method** | **Status** |
|  | MSDW1537129 | Unknown | | 42 | 5000 | Anions | IC5364 | Finished |
|  | 1537130 | Unknown | | 43 | 5000 | Anions | IC5364 | Finished |

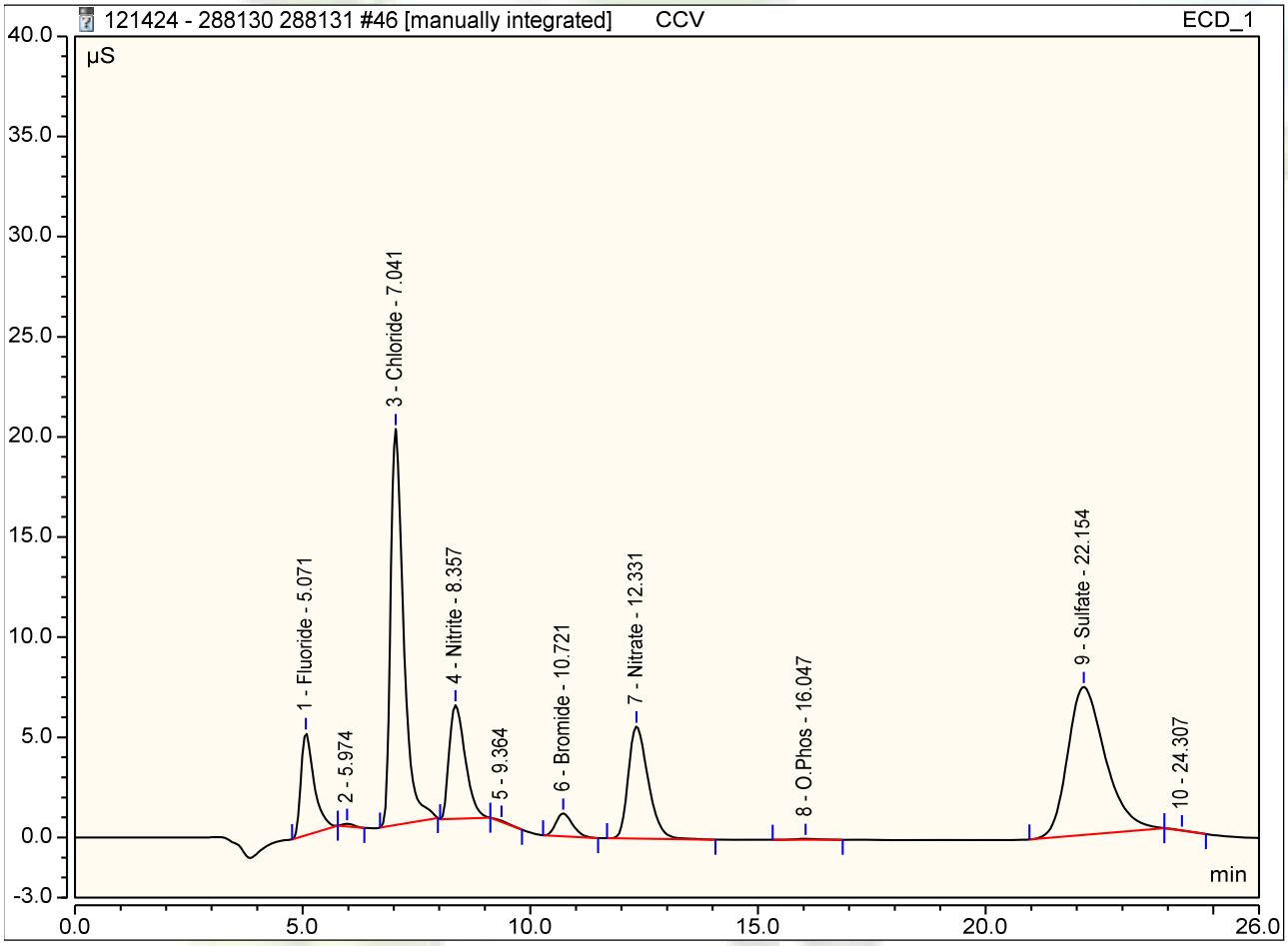
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
|  | CCV | Unknown | | 48 | 5000 | Anions | IC5364 | Finished |
| | CCB | Unknown | | 49 | 5000 | Anions | IC5364 | Finished |

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## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCV** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **16-Dec-2024 / 19:59** | *Run Time:* | **26.00** |

| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 5.07 | Fluoride | 1.711 | 5.092 | 3.2135 |
| 3 | 7.04 | Chloride | 6.580 | 19.775 | 14.7828 |
| 4 | 8.36 | Nitrite | 2.333 | 5.676 | 2.6749 |
| 6 | 10.72 | Bromide | 0.487 | 1.139 | 3.1216 |
| 7 | 12.33 | Nitrate | 2.843 | 5.605 | 3.0513 |
| 8 | 16.05 | O.Phos | 0.031 | 0.054 | 0.6273 |
| 9 | 22.15 | Sulfate | 7.081 | 7.386 | 23.1561 |



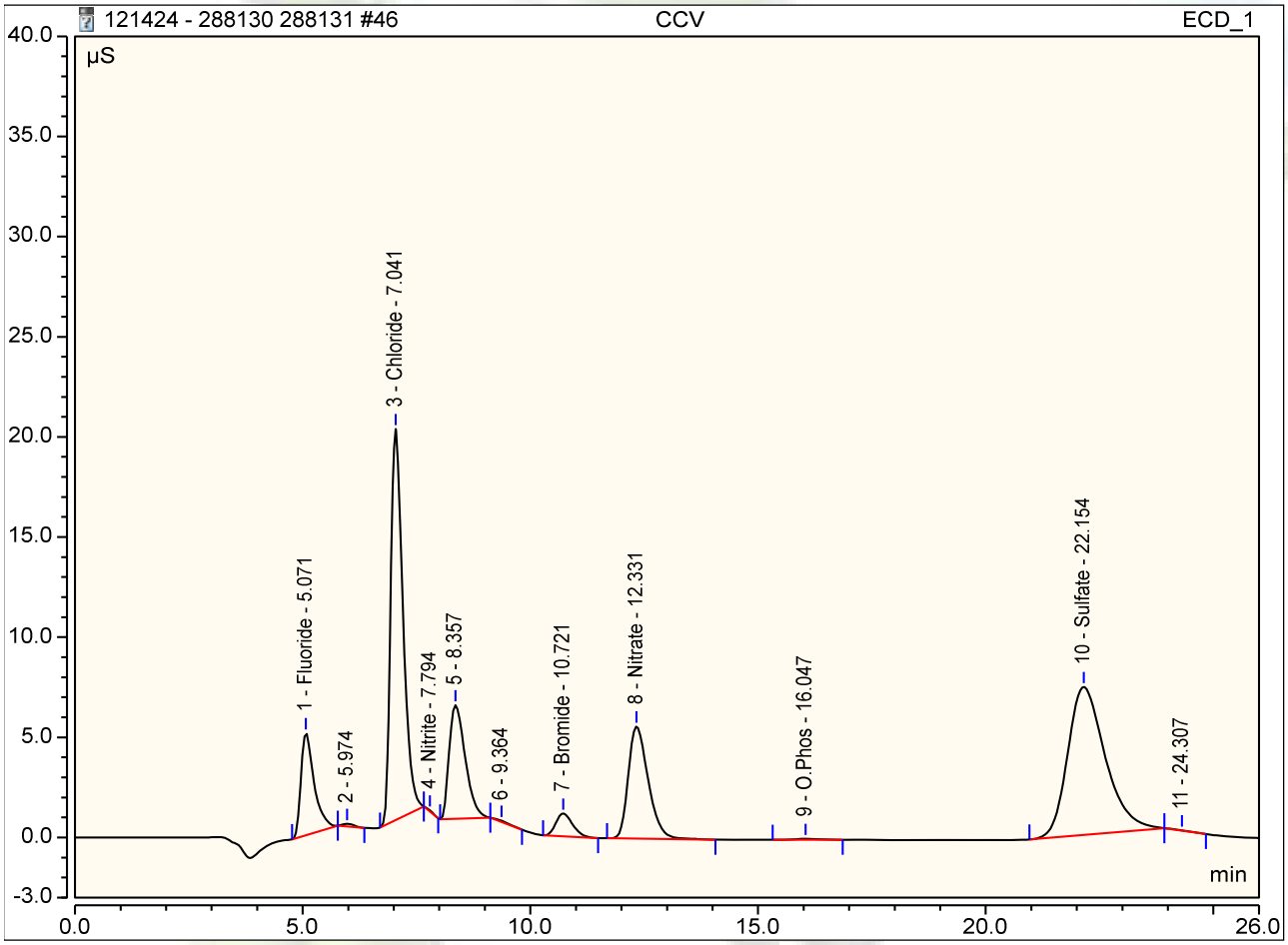

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## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCV** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **16-Dec-2024 / 19:59** | *Run Time:* | **26.00** |

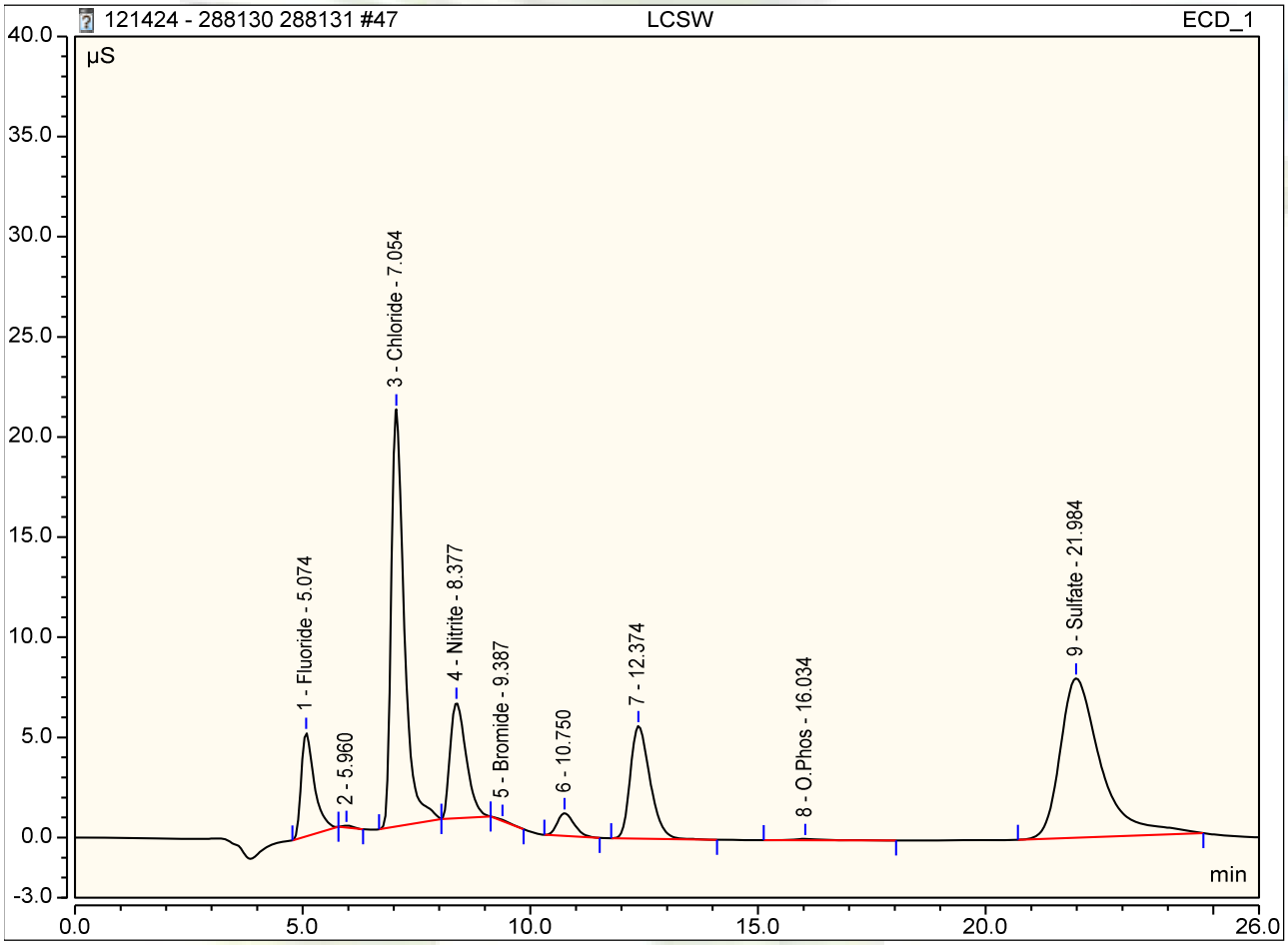
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 5.07 | Fluoride | 1.711 | 5.092 | 3.2135 |
| 3 | 7.04 | Chloride | 6.124 | 19.524 | 13.8004 |
| 4 | 7.79 | Nitrite | 0.010 | 0.058 | n.a. |
| 7 | 10.72 | Bromide | 0.487 | 1.139 | 3.1216 |
| 8 | 12.33 | Nitrate | 2.843 | 5.605 | 3.0513 |
| 9 | 16.05 | O.Phos | 0.031 | 0.054 | 0.6273 |
| 10 | 22.15 | Sulfate | 7.081 | 7.386 | 23.1561 |



# Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **LCSW** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **16-Dec-2024 / 20:28** | *Run Time:* | **26.00** |

| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 5.07 | Fluoride | 1.733 | 5.171 | 3.2562 |
| 3 | 7.05 | Chloride | 6.943 | 20.825 | 15.5648 |
| 4 | 8.38 | Nitrite | 2.366 | 5.767 | 2.7135 |
| 5 | 9.39 | Bromide | 0.026 | 0.068 | 0.1516 |
| 8 | 16.03 | O.Phos | 0.048 | 0.066 | 0.7087 |
| 9 | 21.98 | Sulfate | 8.229 | 7.959 | 26.8605 |

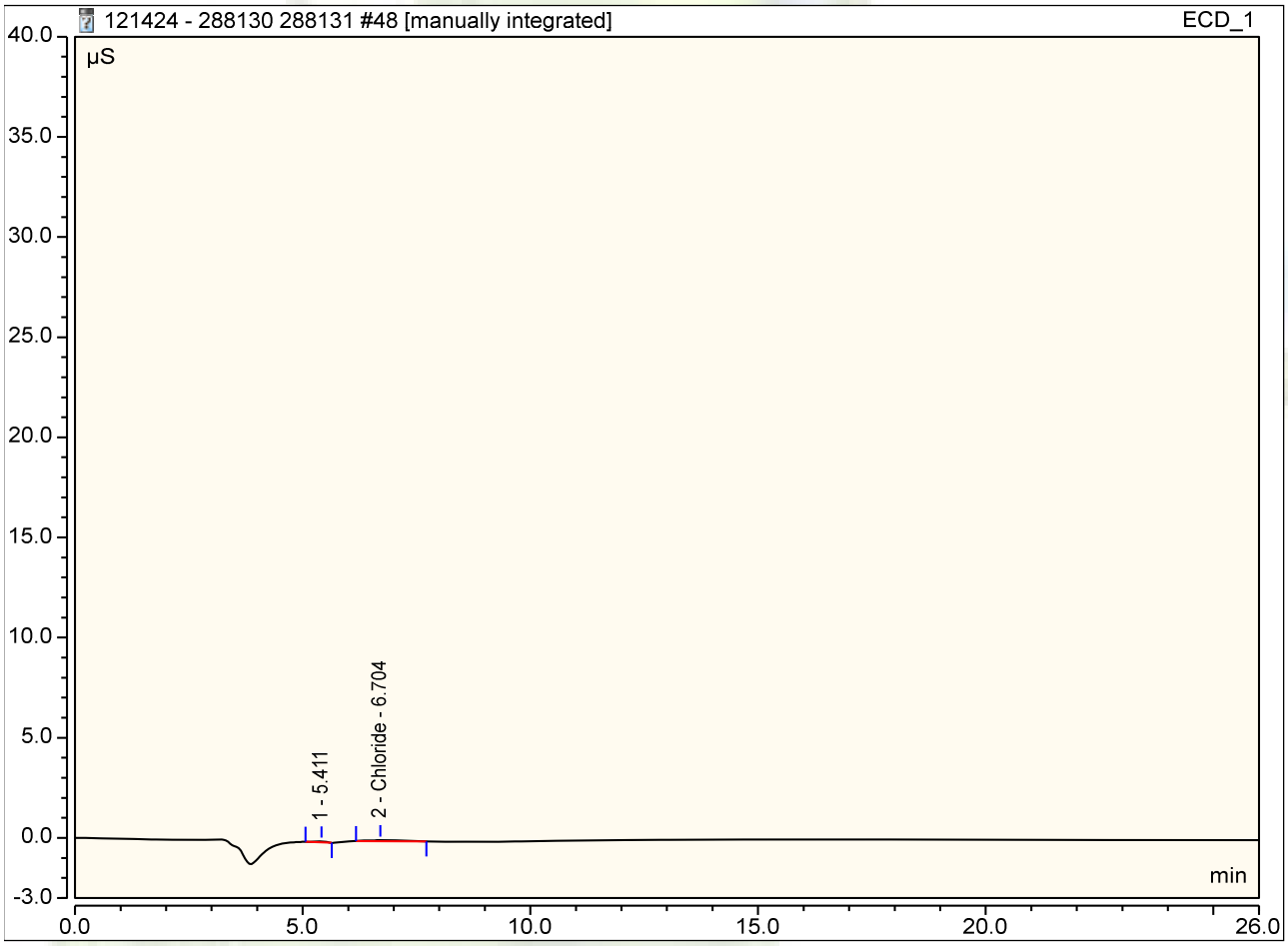


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## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **MBW-CCB** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **16-Dec-2024 / 20:57** | *Run Time:* | **26.00** |

| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 2 | 6.70 | Chloride | 0.041 | 0.043 | 0.7015 |



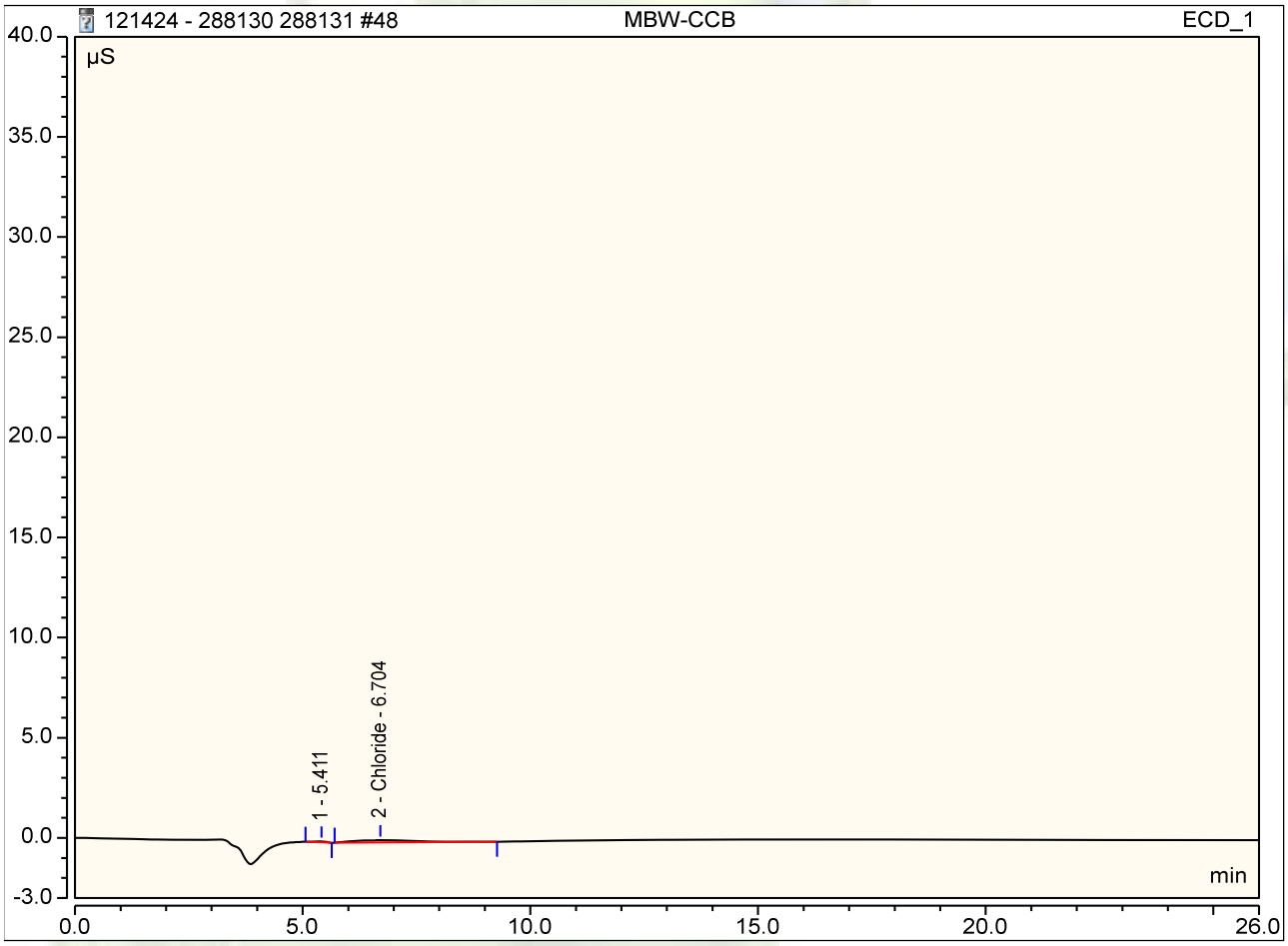

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## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **MBW-CCB** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **16-Dec-2024 / 20:57** | *Run Time:* | **26.00** |

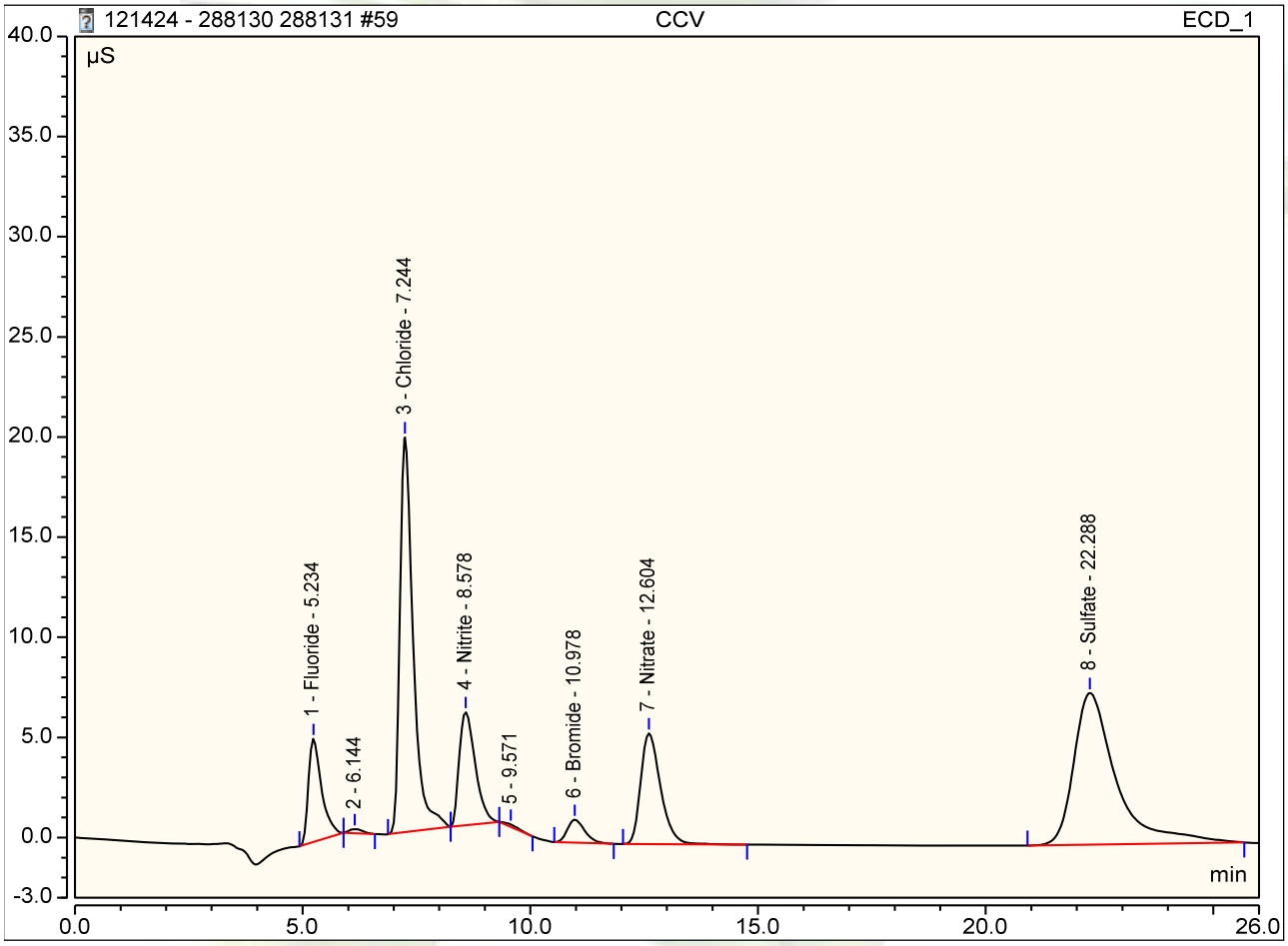
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 2 | 6.70 | Chloride | 0.189 | 0.113 | 1.0182 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCV** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **17-Dec-2024 / 02:12** | *Run Time:* | **26.00** |

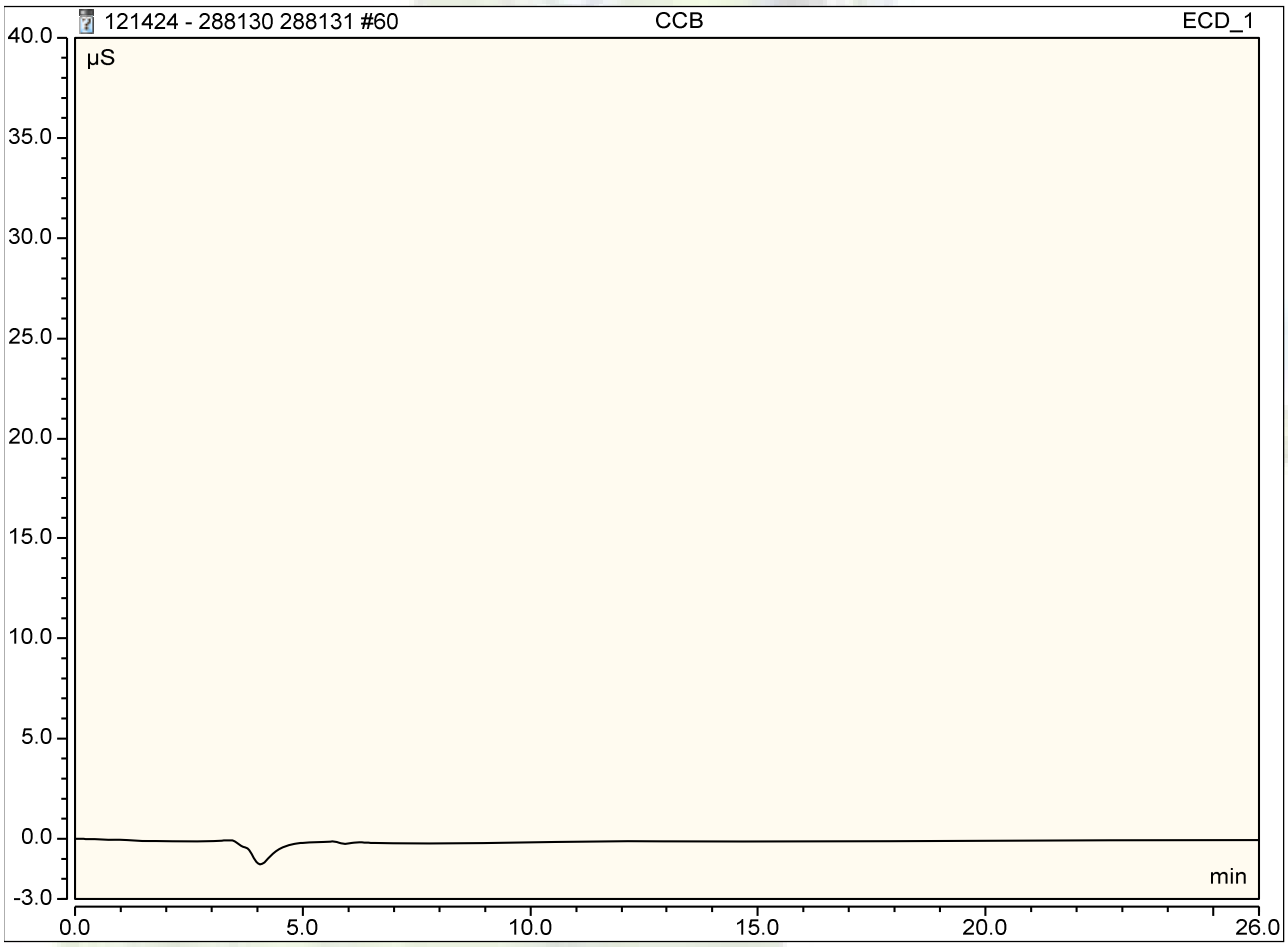
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 5.23 | Fluoride | 1.736 | 5.155 | 3.2603 |
| 3 | 7.24 | Chloride | 6.666 | 19.719 | 14.9674 |
| 4 | 8.58 | Nitrite | 2.308 | 5.655 | 2.6468 |
| 6 | 10.98 | Bromide | 0.505 | 1.147 | 3.2403 |
| 7 | 12.60 | Nitrate | 2.804 | 5.535 | 3.0106 |
| 8 | 22.29 | Sulfate | 8.174 | 7.577 | 26.6828 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCB** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **17-Dec-2024 / 02:41** | *Run Time:* | **26.00** |

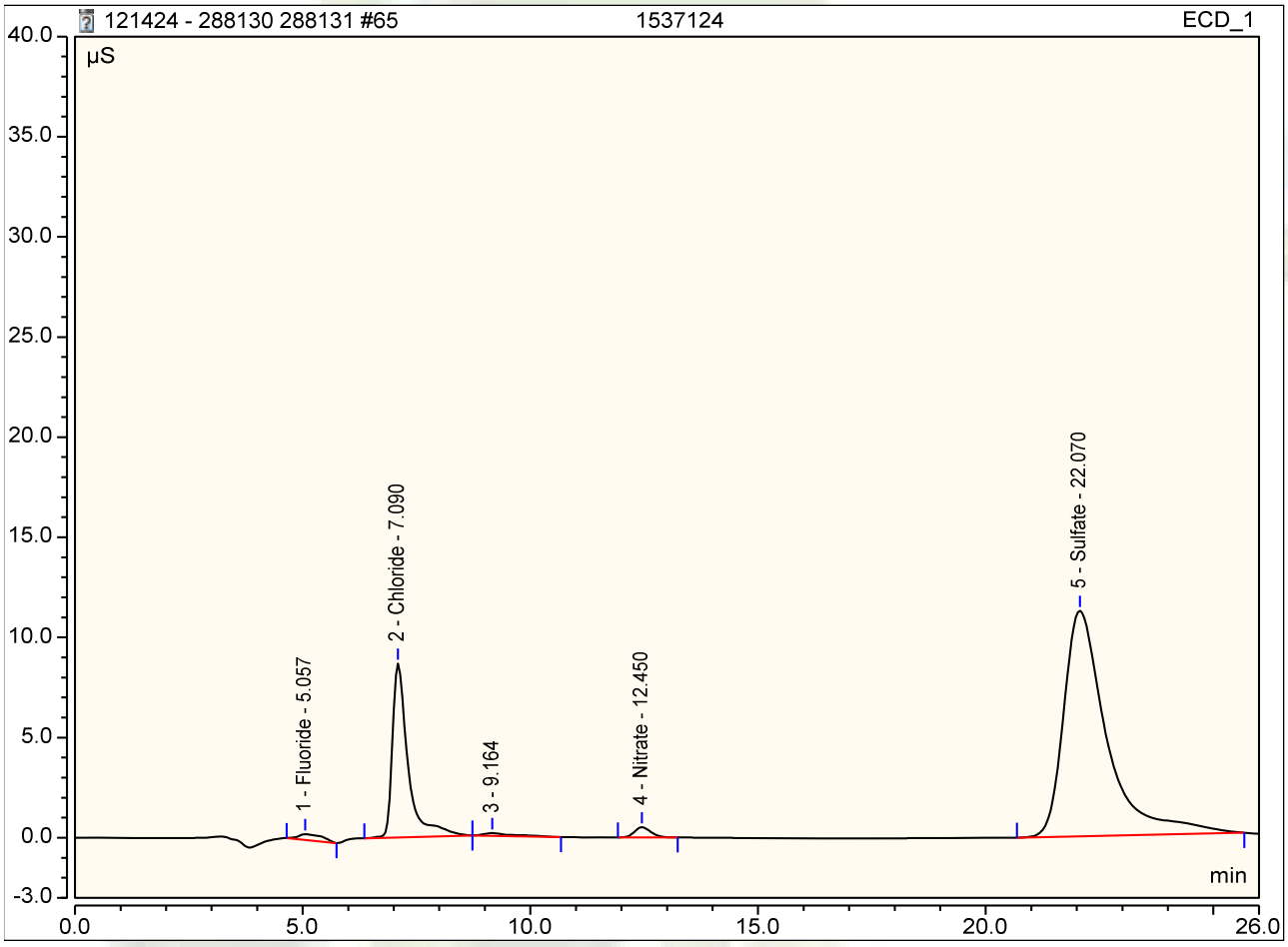
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount n.a. |
|---|---|---|---|---|---|



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **1537124** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **17-Dec-2024 / 05:05** | *Run Time:* | **26.00** |

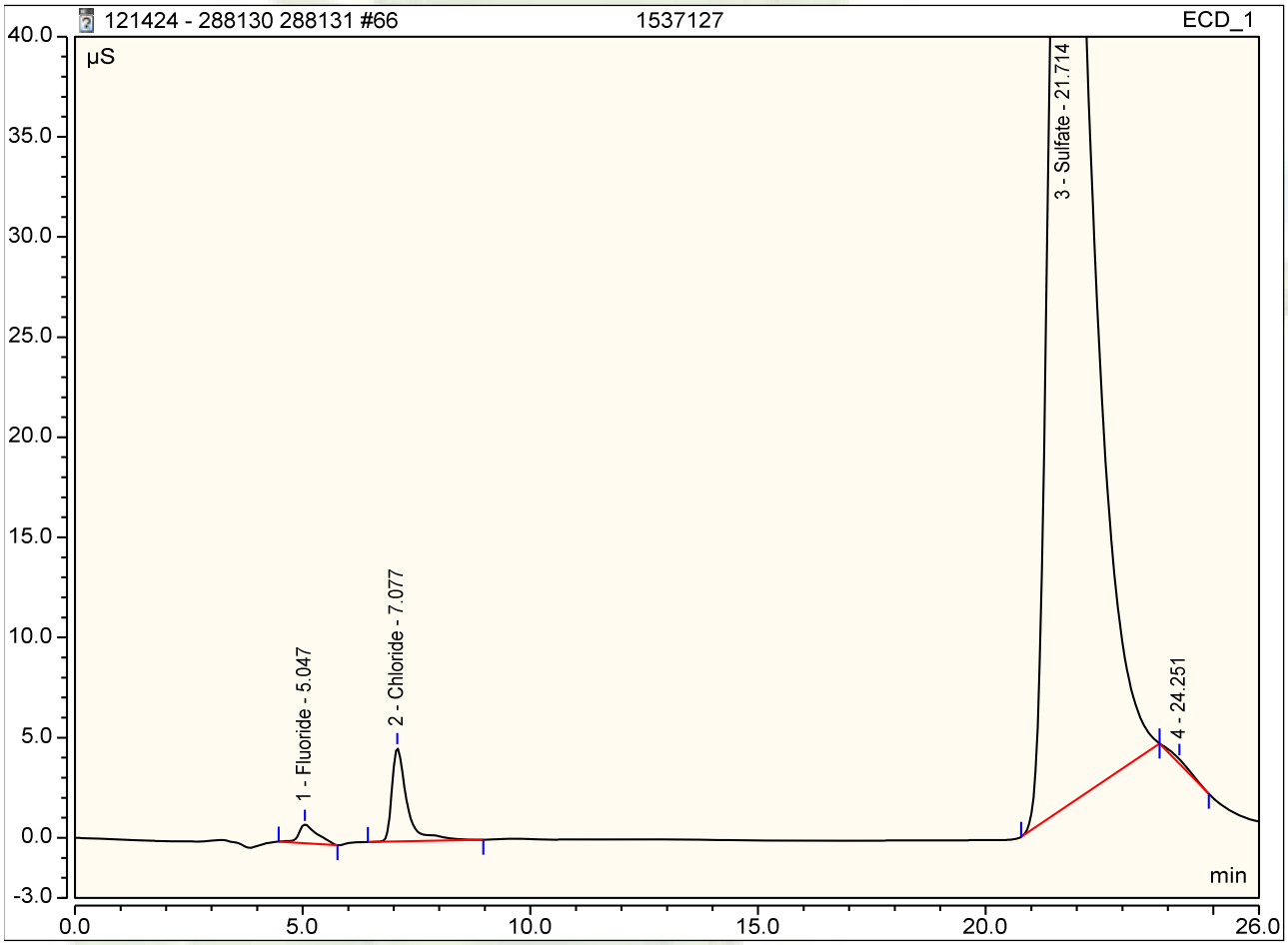
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 5.06 | Fluoride | 0.185 | 0.288 | 0.3680 |
| 2 | 7.09 | Chloride | 3.480 | 8.684 | 8.1063 |
| 4 | 12.45 | Nitrate | 0.214 | 0.508 | 0.3338 |
| 5 | 22.07 | Sulfate | 12.399 | 11.263 | 40.3154 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **1537127** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **17-Dec-2024 / 05:33** | *Run Time:* | **26.00** |

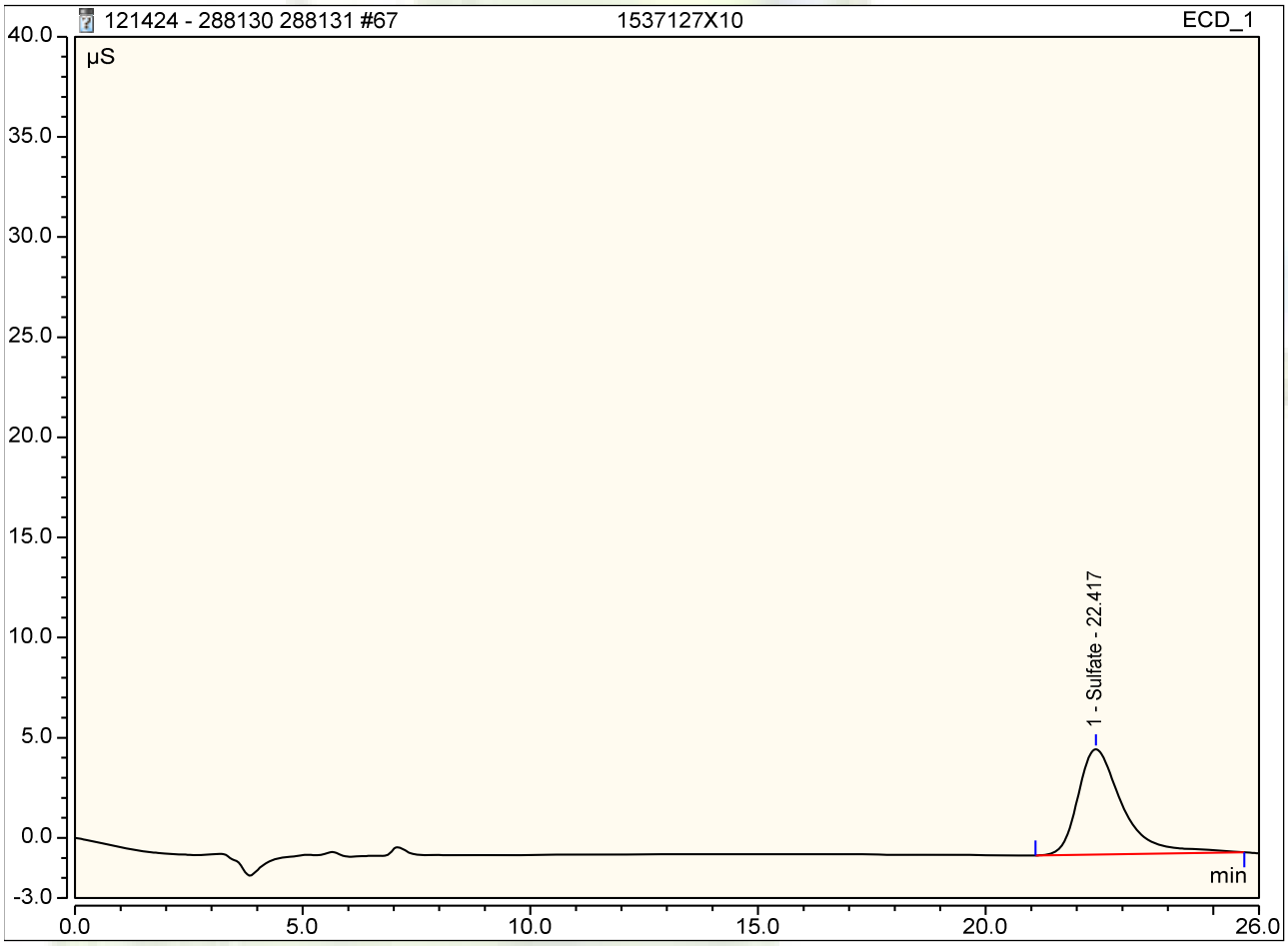
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 5.05 | Fluoride | 0.441 | 0.931 | 0.8462 |
| 2 | 7.08 | Chloride | 1.793 | 4.667 | 4.4741 |
| 3 | 21.71 | Sulfate | 65.901 | 64.908 | 212.9331 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **1537127X10** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **17-Dec-2024 / 06:02** | *Run Time:* | **26.00** |

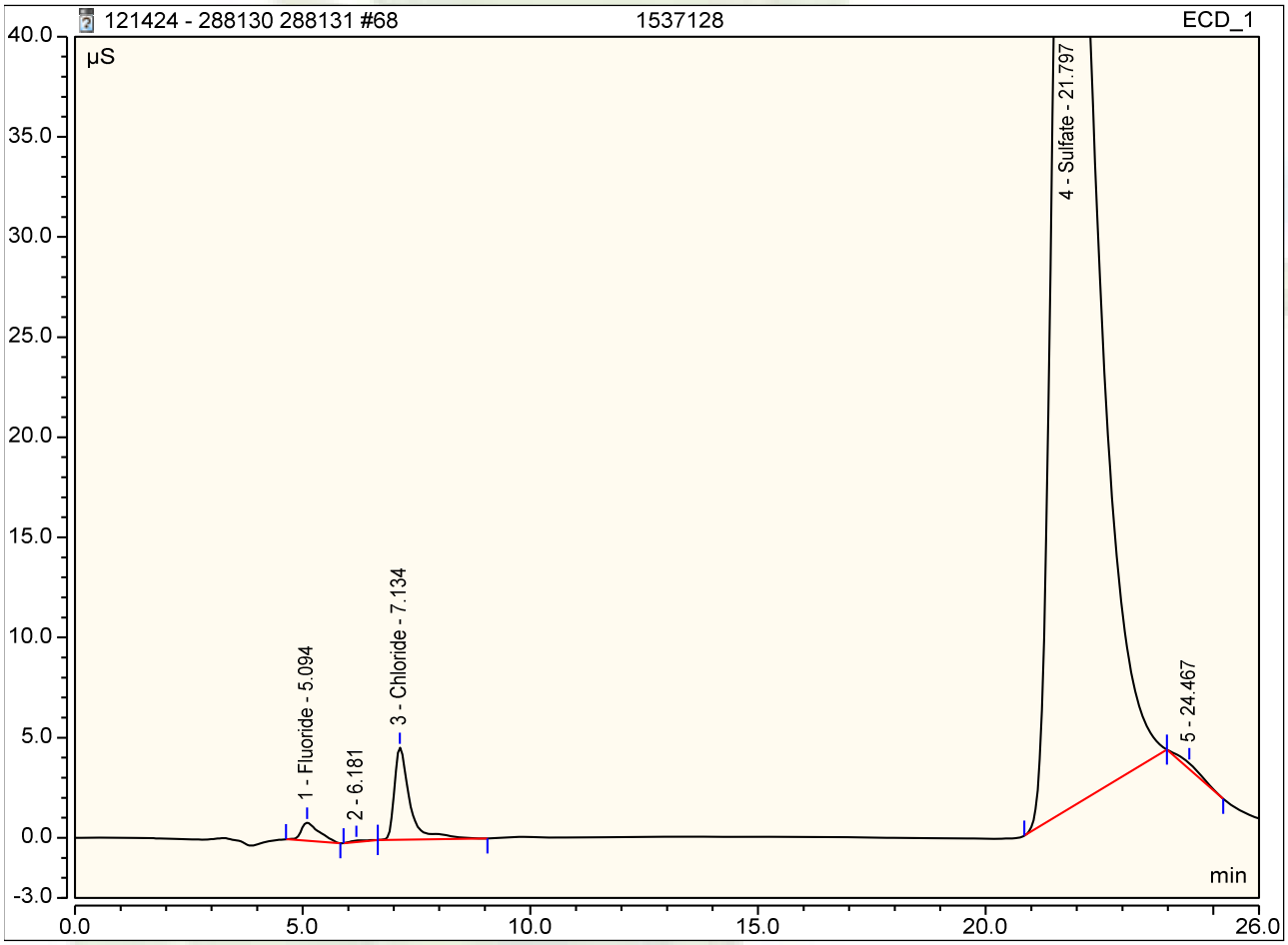
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 22.42 | Sulfate | 5.957 | 5.252 | 19.5296 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **1537128** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **17-Dec-2024 / 06:31** | *Run Time:* | **26.00** |

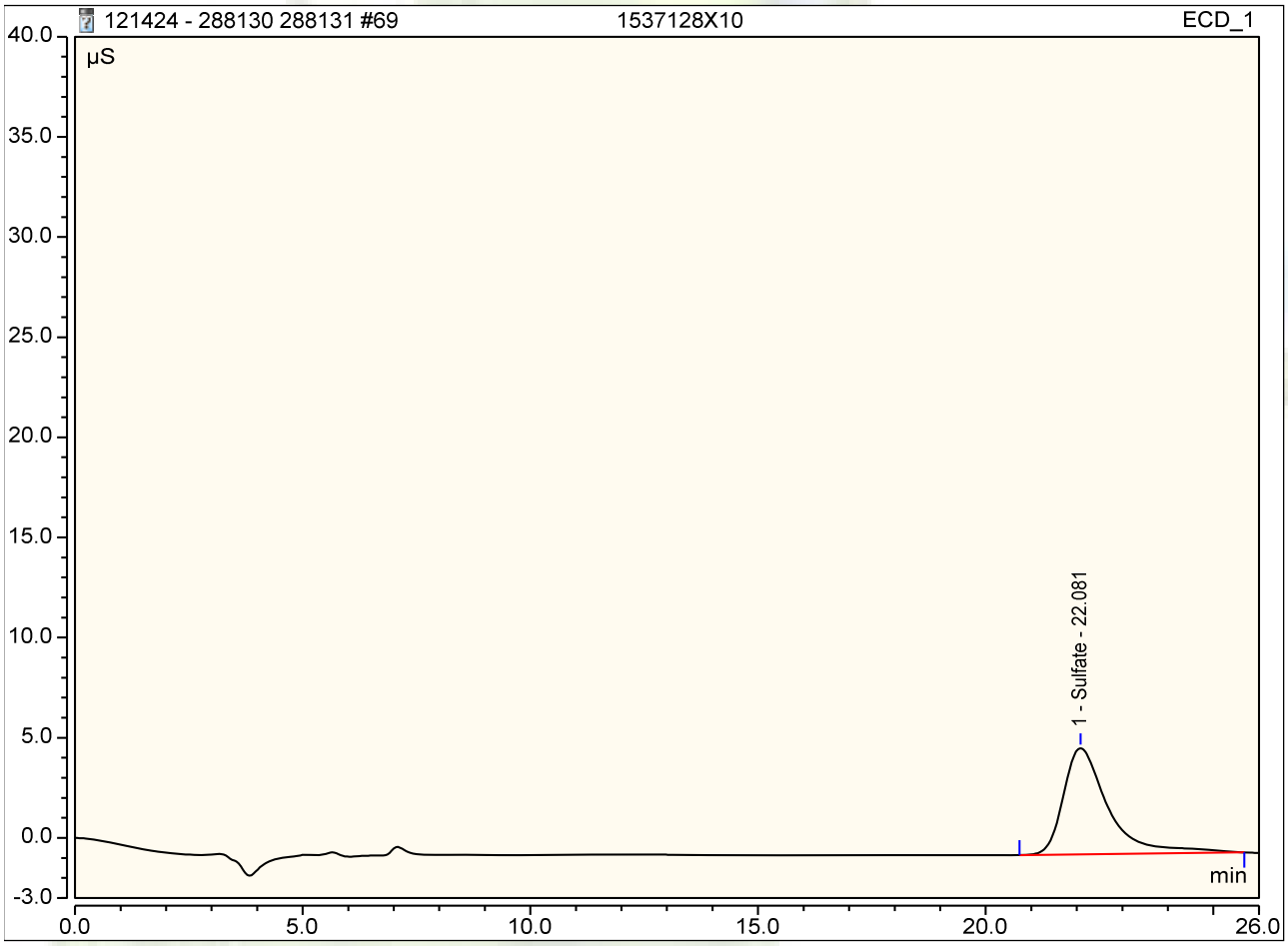
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 5.09 | Fluoride | 0.424 | 0.910 | 0.8132 |
| 3 | 7.13 | Chloride | 1.798 | 4.587 | 4.4839 |
| 4 | 21.80 | Sulfate | 66.870 | 65.216 | 216.0568 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **1537128X10** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **17-Dec-2024 / 06:59** | *Run Time:* | **26.00** |

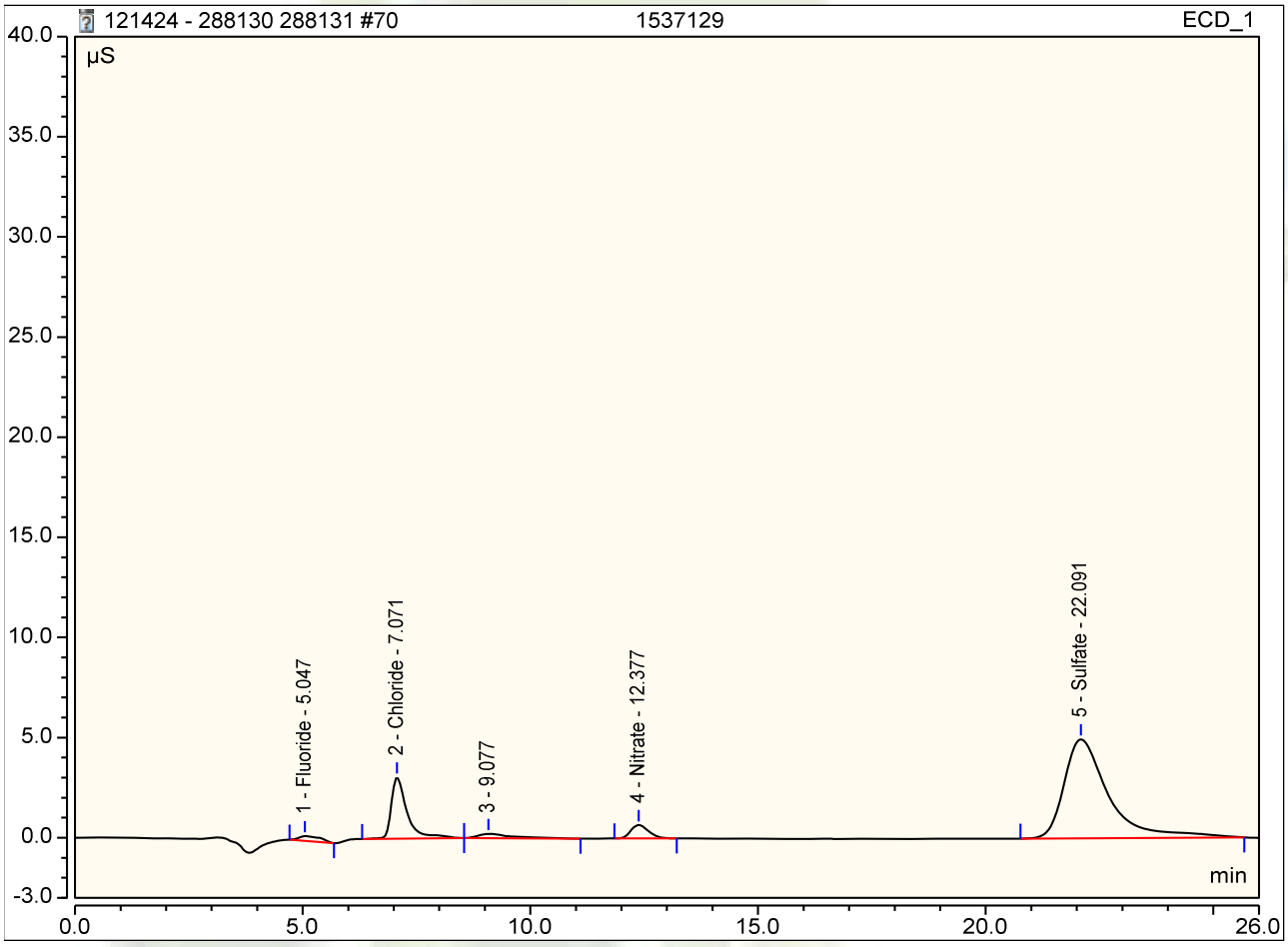
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 22.08 | Sulfate | 6.033 | 5.295 | 19.7763 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **1537129** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **17-Dec-2024 / 07:28** | *Run Time:* | **26.00** |

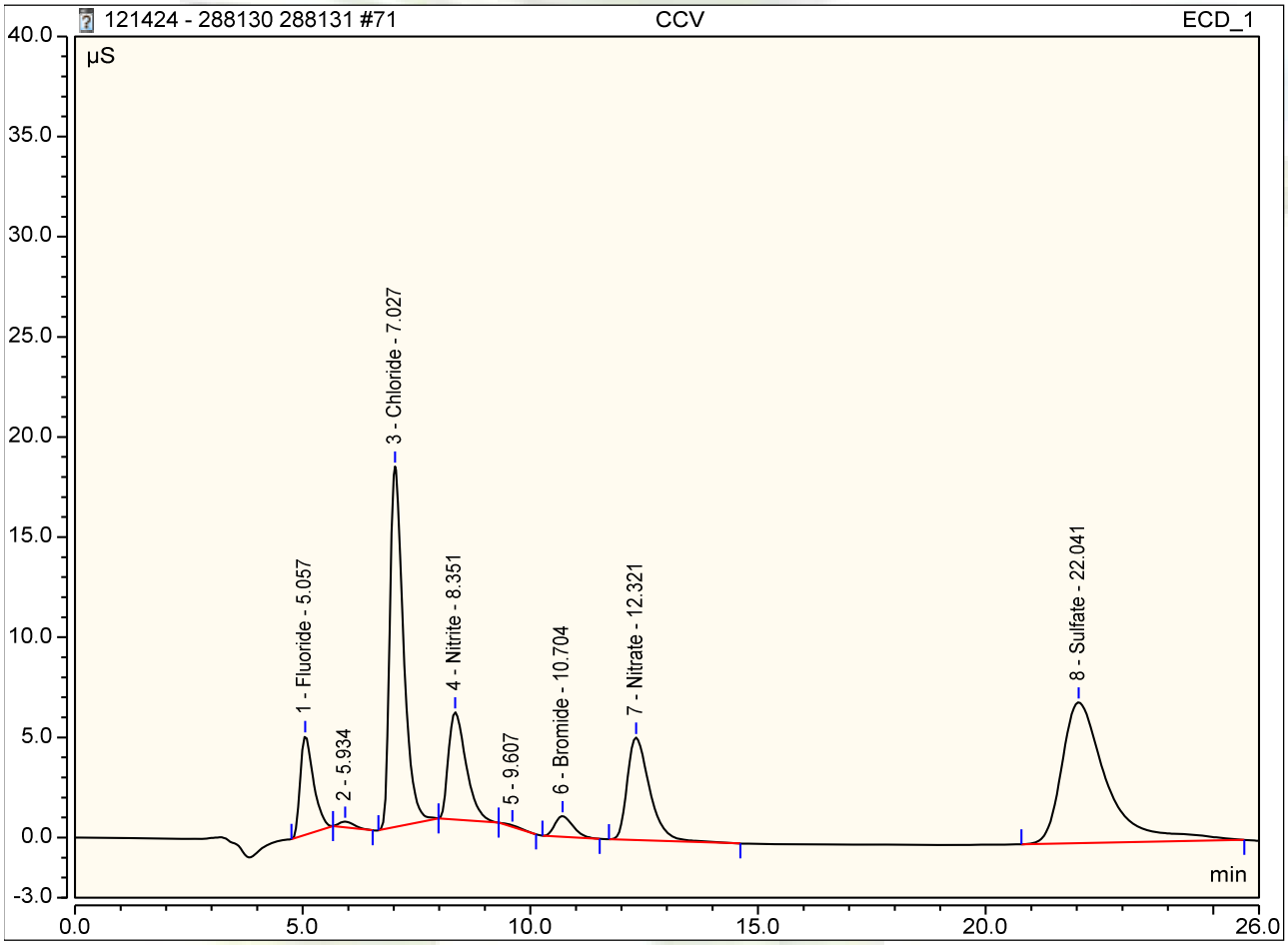
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 5.05 | Fluoride | 0.134 | 0.230 | 0.2716 |
| 2 | 7.07 | Chloride | 1.243 | 3.066 | 3.2883 |
| 4 | 12.38 | Nitrate | 0.302 | 0.665 | 0.4253 |
| 5 | 22.09 | Sulfate | 5.584 | 4.939 | 18.3259 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCV** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **17-Dec-2024 / 07:57** | *Run Time:* | **26.00** |

| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 5.06 | Fluoride | 1.671 | 4.923 | 3.1402 |
| 3 | 7.03 | Chloride | 6.263 | 18.004 | 14.1003 |
| 4 | 8.35 | Nitrite | 2.430 | 5.359 | 2.7886 |
| 6 | 10.70 | Bromide | 0.480 | 1.030 | 3.0804 |
| 7 | 12.32 | Nitrate | 2.934 | 5.114 | 3.1449 |
| 8 | 22.04 | Sulfate | 8.015 | 7.028 | 26.1700 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCB** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **17-Dec-2024 / 08:25** | *Run Time:* | **26.00** |

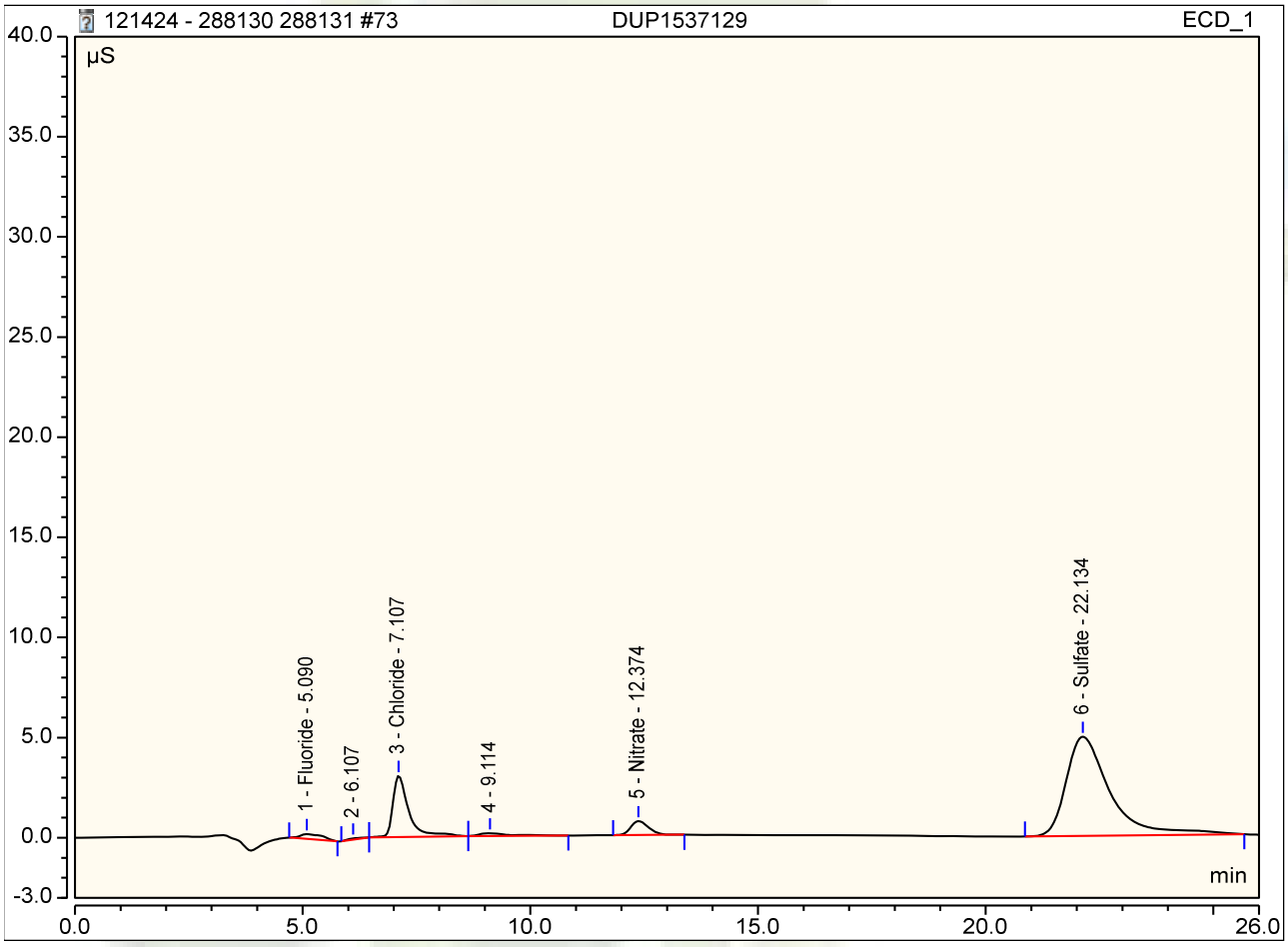
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount n.a. |
|---|---|---|---|---|---|



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **DUP1537129** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **17-Dec-2024 / 08:54** | *Run Time:* | **26.00** |

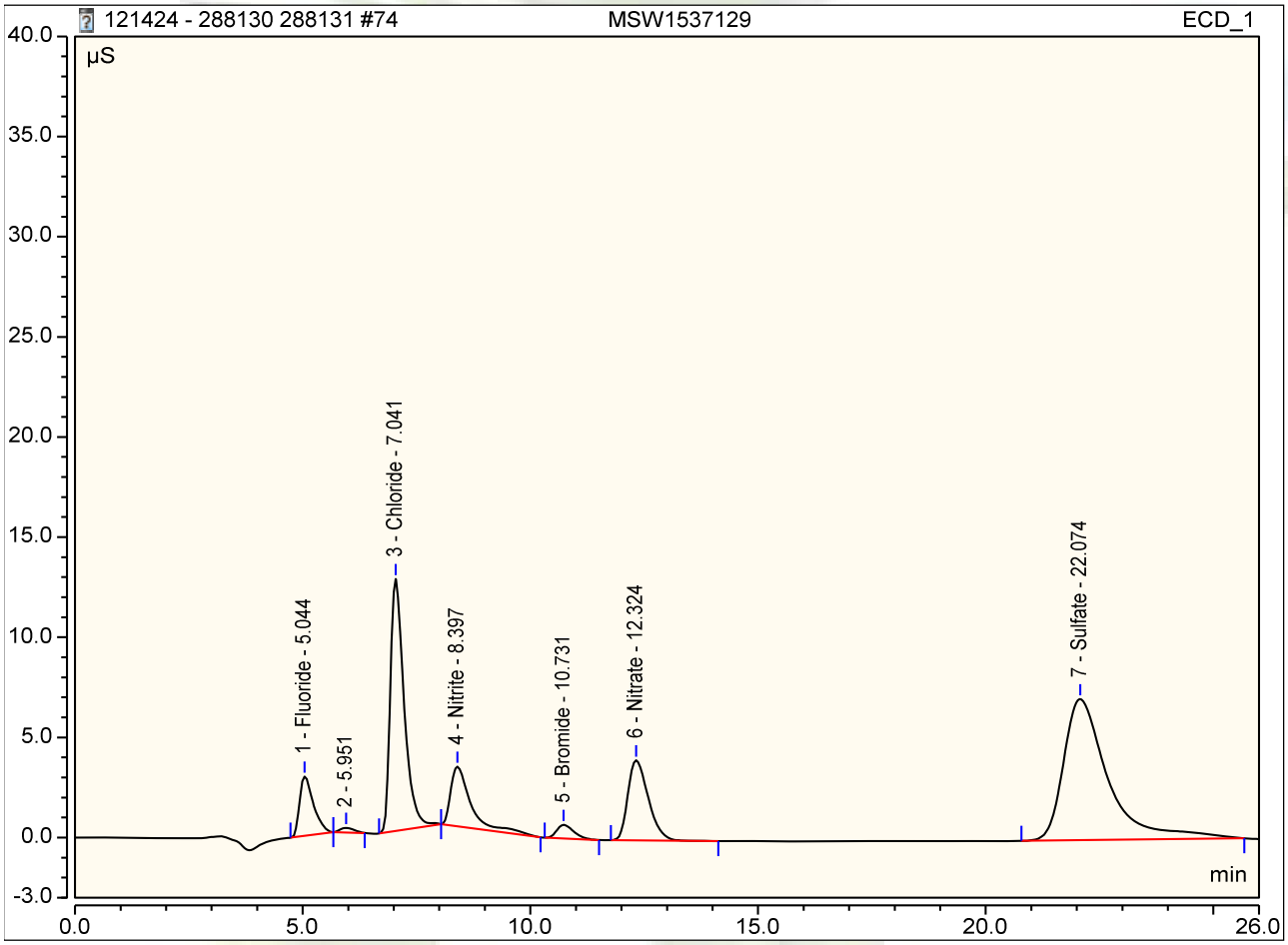
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 5.09 | Fluoride | 0.148 | 0.244 | 0.2989 |
| 3 | 7.11 | Chloride | 1.227 | 3.046 | 3.2536 |
| 5 | 12.37 | Nitrate | 0.315 | 0.695 | 0.4383 |
| 6 | 22.13 | Sulfate | 5.510 | 4.952 | 18.0876 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **MSW1537129** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **17-Dec-2024 / 09:23** | *Run Time:* | **26.00** |

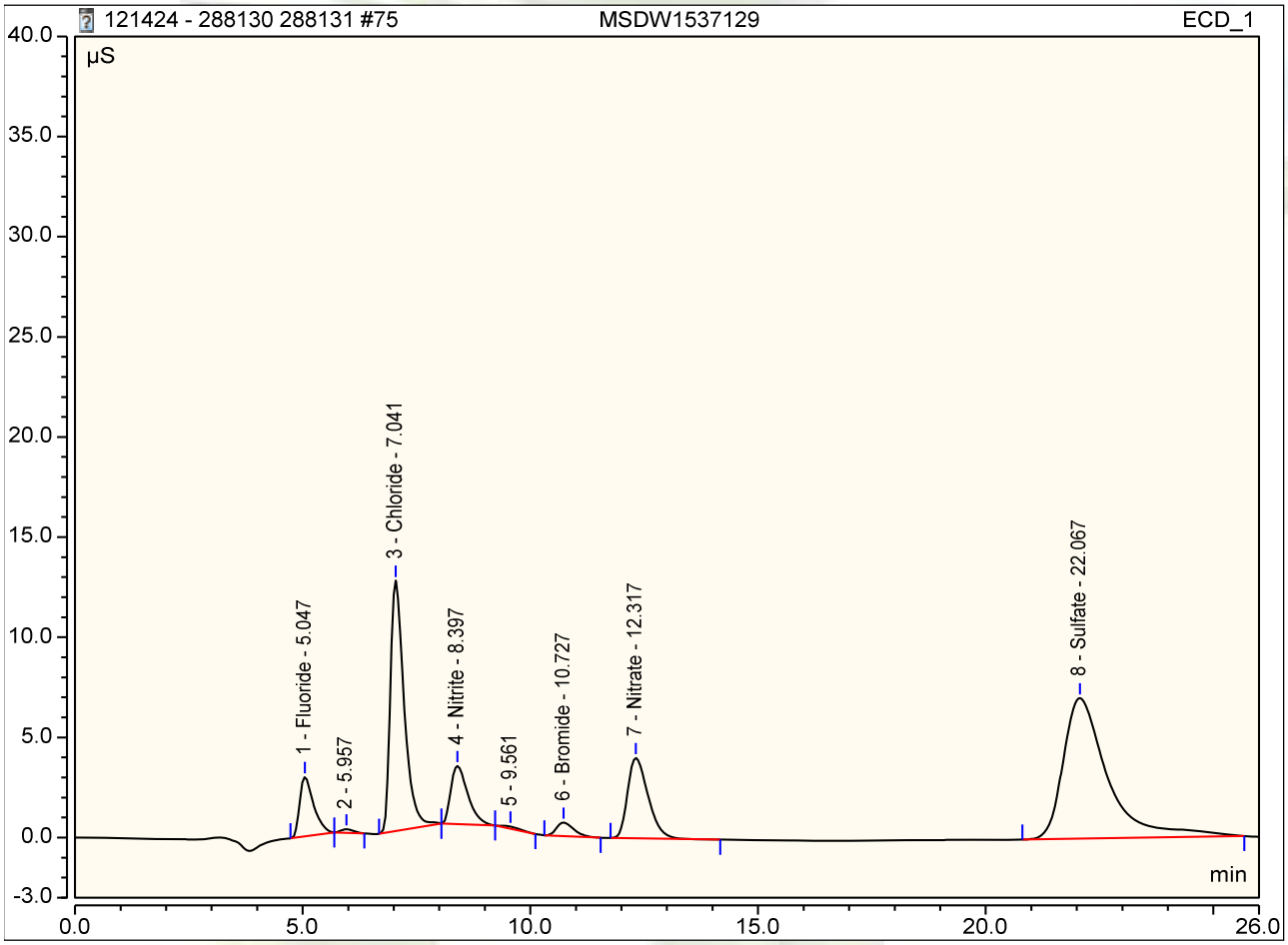
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 5.04 | Fluoride | 1.050 | 2.966 | 1.9807 |
| 3 | 7.04 | Chloride | 4.421 | 12.585 | 10.1330 |
| 4 | 8.40 | Nitrite | 1.525 | 2.978 | 1.7327 |
| 5 | 10.73 | Bromide | 0.298 | 0.684 | 1.9080 |
| 6 | 12.32 | Nitrate | 2.084 | 3.999 | 2.2664 |
| 7 | 22.07 | Sulfate | 7.985 | 7.042 | 26.0739 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **MSDW1537129** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **17-Dec-2024 / 09:52** | *Run Time:* | **26.00** |

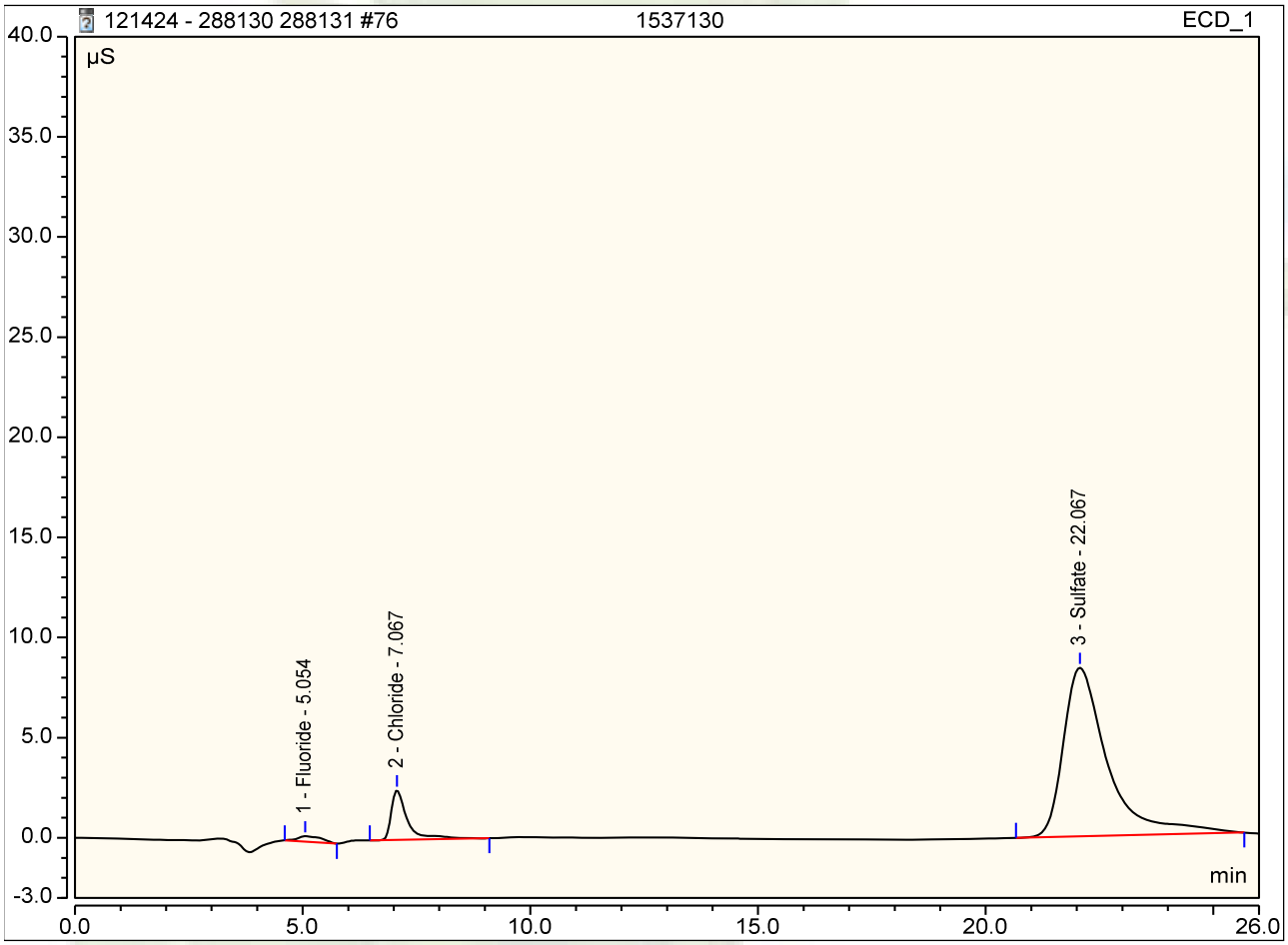
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 5.05 | Fluoride | 1.058 | 2.968 | 1.9964 |
| 3 | 7.04 | Chloride | 4.404 | 12.501 | 10.0963 |
| 4 | 8.40 | Nitrite | 1.262 | 2.908 | 1.4259 |
| 6 | 10.73 | Bromide | 0.299 | 0.681 | 1.9149 |
| 7 | 12.32 | Nitrate | 2.102 | 4.011 | 2.2855 |
| 8 | 22.07 | Sulfate | 7.945 | 7.011 | 25.9426 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **1537130** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **17-Dec-2024 / 10:20** | *Run Time:* | **26.00** |

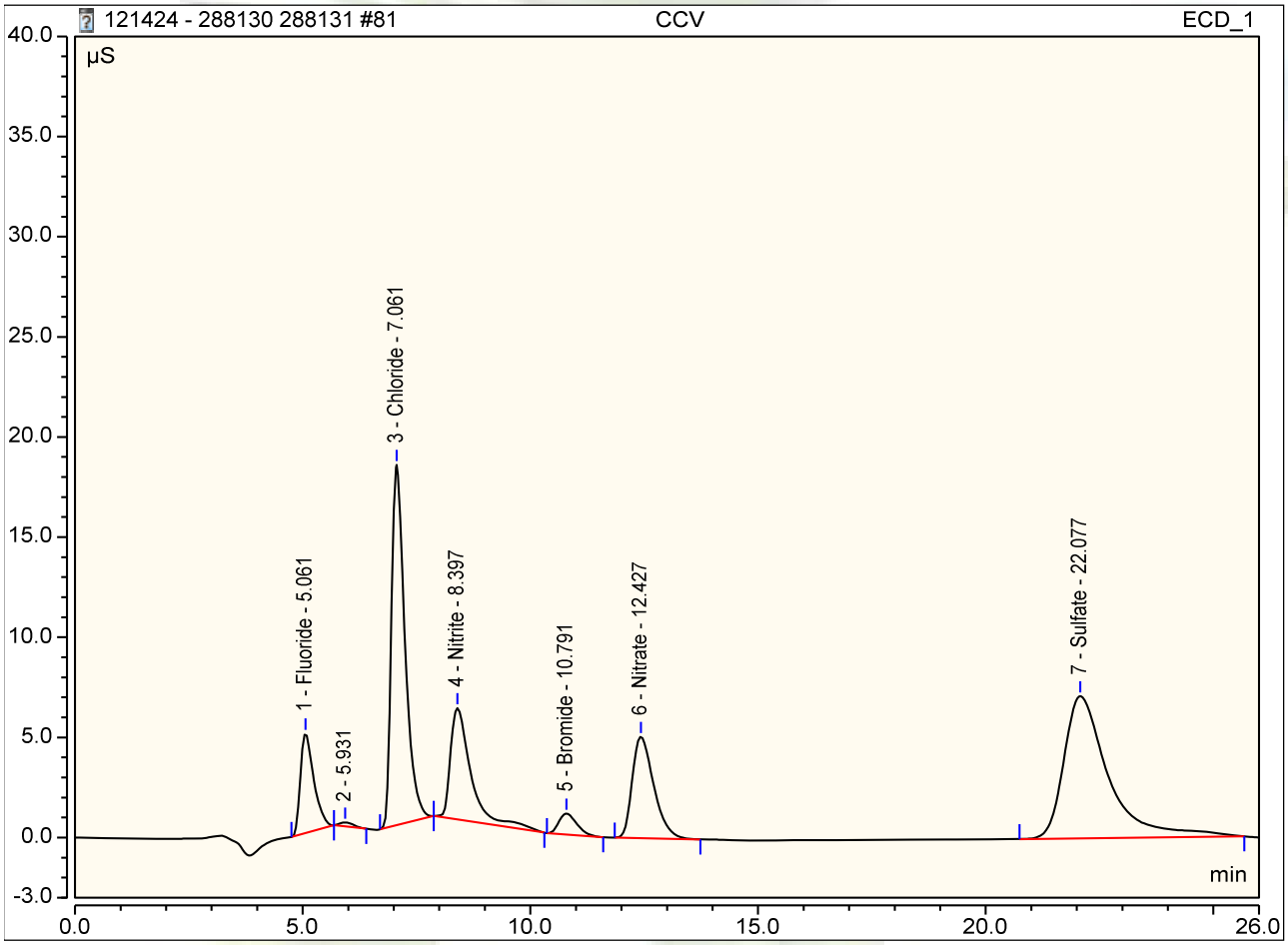
| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 5.05 | Fluoride | 0.174 | 0.275 | 0.3463 |
| 2 | 7.07 | Chloride | 1.026 | 2.480 | 2.8221 |
| 3 | 22.07 | Sulfate | 9.501 | 8.420 | 30.9628 |



## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCV** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **17-Dec-2024 / 12:44** | *Run Time:* | **26.00** |

| No. | Time min | Peak Name | Area µS*min | Height µS | Amount |
|---|---|---|---|---|---|
| 1 | 5.06 | Fluoride | 1.701 | 4.972 | 3.1954 |
| 3 | 7.06 | Chloride | 6.205 | 17.991 | 13.9749 |
| 4 | 8.40 | Nitrite | 2.906 | 5.569 | 3.3432 |
| 5 | 10.79 | Bromide | 0.478 | 1.045 | 3.0688 |
| 6 | 12.43 | Nitrate | 2.772 | 5.058 | 2.9778 |
| 7 | 22.08 | Sulfate | 8.081 | 7.095 | 26.3815 |

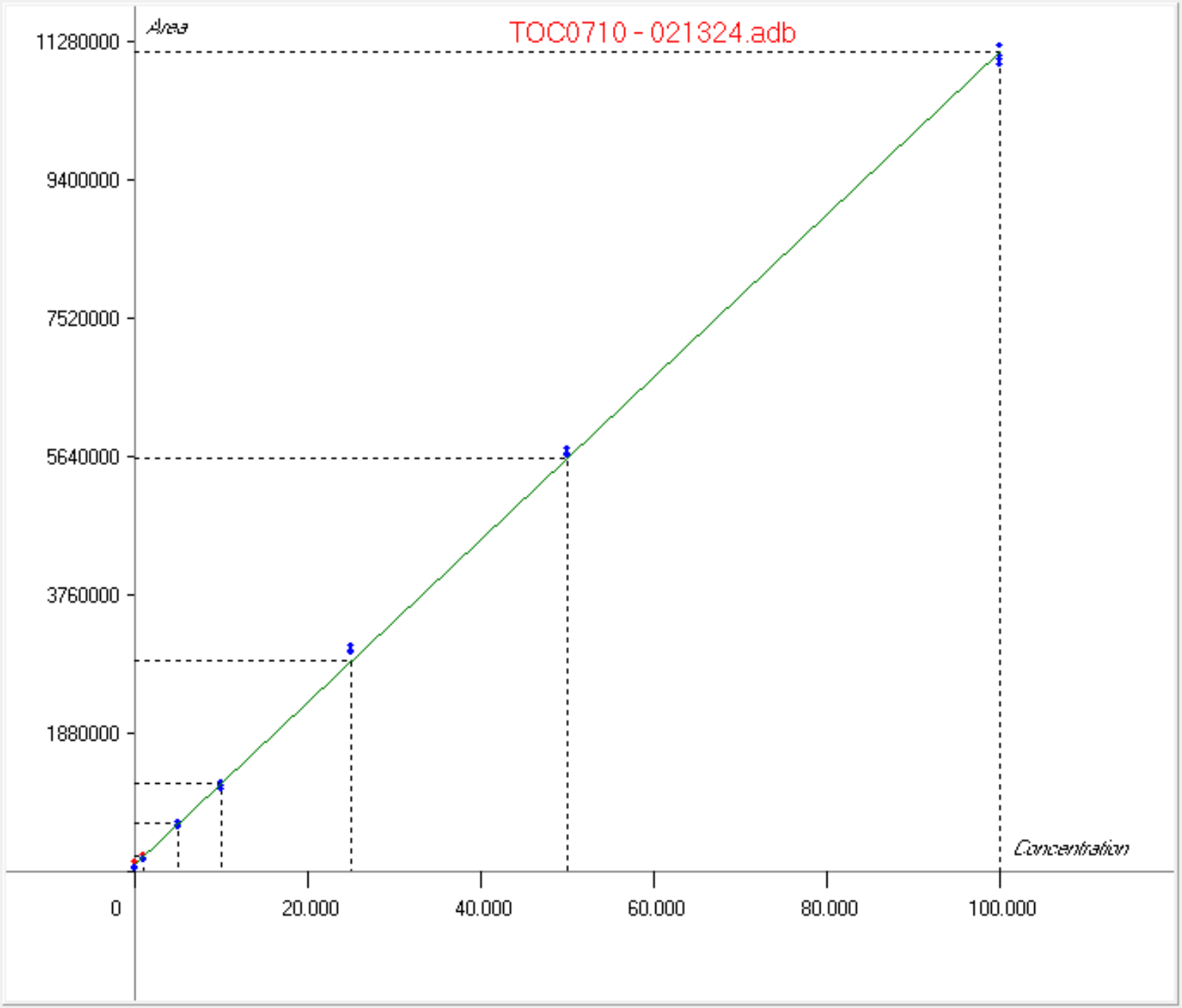


## Peak Integration Report

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCB** | *Sequence Date:* | **11/01/2021** |
| *Injection Type:* | **Unknown** | *Dilution Factor:* | **1.0000** |
| *Processing Method:* | **IC5364** | *Operator:* | **Administrator** |
| *Inj. Date / Time:* | **17-Dec-2024 / 13:13** | *Run Time:* | **26.00** |

| No. | Time min | Peak Name | Area µS*min | Height µS | Amount n.a. |
|---|---|---|---|---|---|






## Cursor Position

| Concentration | Area |
|---|---|
| 40.400 mg/l | -1692000 |

| | |
|---|---|
| A2 | 0 |
| A1 | 110459 |
| A0 | 116069 |
| Correlation | 0.99973 |
| Order | 1 |
| Volume | 100 µl |
| Conc. | 100.00 |
| Area | 11250887 |

☐ Confidence Intervals 95%

☐ Detection/Determination 95%

| Conc. | Area | Sel. |
|---|---|---|
| 0 | 164481 | ☐ |
| 0 | 92436 | ☑ |
| 0 | 71353 | ☑ |
| 0 | 82635 | ☑ |
| 0 | 47243 | ☑ |
| 1 | 248446 | ☐ |
| 1 | 196772 | ☑ |
| 1 | 184321 | ☑ |

• Used Value
• Ignored Value

CurveNo:1 CurveType:TC

<-- --> Print... Exit

RD 03/13/2024

# Analysis Name TOC0710 - 021324.adb

Template Name CURVE TEMP.tdb
Method Name N / A
Operator TMG

Date Tuesday, February 13, 2024
Time 12:23

Start Oven Temp. 755 °C
Start Cooler Temp. 2 °C

Version 2.55 Release
Info ICAL0710 INSTRUMENT:TOCW ICV0707

| Element | Integration Time | Samples | Extra Samples | Max. CV |
|---|---|---|---|---|
| Carbon | 60 s | 4 | 1 | 10 % |
| SampleTime | 240 s | | | |

| No | Type | FileName | Date/Time | Max. Area | Max Conc. | Order | Correlation | Volume | Sel. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | TC | This Analysis | Feb 13 2024, 12:23 | 11250887 | 100 | 1 | 0.99973 | 100 µl | Yes |
| | *A2: 0* | | *A1: 110459.442959699* | | *A0: 116069.092099652* | | | | |

| Inj. Order | Position | Type | Identification | Dilution Factor |
|---|---|---|---|---|
| 1 | 1 | Unknown | BLANK | 1 x |

| Injection Type | Conc. | Area | CV | Inj. Volume |
|---|---|---|---|---|
| **TC** | **ZERO !** | **102401** | **77.35** | **100 µl** |

| Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 13 2024 12:34:19 | 22.09 | 2556162 | 1 | 758 | 2 | - | - |
| 2 | 2 13 2024 12:38:48 | 0.70 | 193118 | 1 | 758 | 2 | - | Yes |
| 3 | 2 13 2024 12:41:06 | ZERO ! | 104022 | 1 | 758 | 2 | - | Yes |
| 4 | 2 13 2024 12:43:20 | ZERO ! | 112464 | 1 | 757 | 2 | - | Yes |
| 5 | 2 13 2024 12:45:34 | 0.00 | 0 | 0 | 758 | 2 | - | Yes |

| Inj. Order | Position | Type | Identification | Dilution Factor |
|---|---|---|---|---|
| 2 | S1 | Standard | TC Std 0.00 mg/l | 1 x |

| Injection Type | Conc. | Area | CV | Inj. Volume |
|---|---|---|---|---|
| **TC** | **ZERO !** | **73416** | **26.51** | **100 µl** |

| Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 13 2024 12:50:25 | 0.44 | 164481 | 1 | 759 | 2 | - | - |
| 2 | 2 13 2024 12:53:21 | ZERO ! | 92436 | 1 | 759 | 2 | - | Yes |
| 3 | 2 13 2024 12:55:33 | ZERO ! | 71353 | 1 | 758 | 2 | - | Yes |
| 4 | 2 13 2024 12:57:45 | ZERO ! | 82635 | 1 | 758 | 2 | - | Yes |
| 5 | 2 13 2024 12:59:54 | ZERO ! | 47243 | 1 | 758 | 2 | - | Yes |

| Inj. Order | Position | Type | Identification | Dilution Factor |
|---|---|---|---|---|
| 3 | S2 | Standard | TC Std 1.00 mg/l | 1 x |

| Injection Type | Conc. | Area | CV | Inj. Volume |
|---|---|---|---|---|
| **TC** | **0.61** | **183922** | **5.16** | **100 µl** |

| Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 13 2024 13:02:55 | 1.20 | 248446 | 1 | 758 | 2 | - | - |
| 2 | 2 13 2024 13:05:57 | 0.73 | 196772 | 1 | 758 | 2 | - | Yes |
| 3 | 2 13 2024 13:08:14 | 0.62 | 184321 | 1 | 758 | 2 | - | Yes |
| 4 | 2 13 2024 13:10:30 | 0.53 | 174346 | 1 | 757 | 2 | - | Yes |
| 5 | 2 13 2024 13:12:47 | 0.58 | 180252 | 1 | 757 | 2 | - | Yes |

| Inj. Order | Position | Type | Identification | Dilution Factor |
|---|---|---|---|---|
| 4 | S3 | Standard | TC Std. 5.00 mg/l | 1 x |

| Injection Type | Conc. | Area | CV | Inj. Volume |
|---|---|---|---|---|
| **TC** | **4.82** | **647938** | **4.34** | **100 µl** |

| Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 13 2024 13:15:52 | 5.15 | 684567 | 1 | 758 | 2 | - | Yes |
| 2 | 2 13 2024 13:19:13 | 4.77 | 643092 | 1 | 759 | 2 | - | Yes |
| 3 | 2 13 2024 13:21:43 | 4.81 | 647828 | 1 | 758 | 2 | - | Yes |
| 4 | 2 13 2024 13:24:18 | 4.53 | 616265 | 1 | 758 | 2 | - | Yes |

| 5 | S4 | Standard | TC Std. 10.00 mg/l | | | | 1 x | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **TC** | **9.57** | **1173576** | | **3.39** | | **100 µl** | |
| | Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
| | 1 | 2 13 2024 13:27:41 | 10.05 | 1226071 | 1 | 759 | 2 | - | Yes |
| | 2 | 2 13 2024 13:31:02 | 9.66 | 1182734 | 1 | 758 | 2 | - | Yes |
| | 3 | 2 13 2024 13:33:37 | 9.27 | 1140556 | 1 | 758 | 2 | - | Yes |
| | 4 | 2 13 2024 13:36:15 | 9.31 | 1144944 | 1 | 757 | 2 | - | Yes |

| 6 | S5 | Standard | TC Std. 25.00 mg/l | | | | 1 x | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **TC** | **26.35** | **3026875** | | **1.45** | | **100 µl** | |
| | Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
| | 1 | 2 13 2024 13:39:39 | 26.90 | 3087508 | 1 | 757 | 2 | - | Yes |
| | 2 | 2 13 2024 13:43:16 | 26.01 | 2989571 | 1 | 756 | 2 | - | Yes |
| | 3 | 2 13 2024 13:46:12 | 26.12 | 3000783 | 1 | 756 | 2 | - | Yes |
| | 4 | 2 13 2024 13:49:00 | 26.38 | 3029640 | 1 | 756 | 2 | - | Yes |

| 7 | S6 | Standard | TC Std. 50.00 mg/l | | | | 1 x | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **TC** | **50.63** | **5708295** | | **0.71** | | **100 µl** | |
| | Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
| | 1 | 2 13 2024 13:52:53 | 51.12 | 5762859 | 1 | 756 | 2 | - | Yes |
| | 2 | 2 13 2024 13:56:38 | 50.64 | 5709511 | 1 | 756 | 2 | - | Yes |
| | 3 | 2 13 2024 13:59:44 | 50.49 | 5693224 | 1 | 755 | 2 | - | Yes |
| | 4 | 2 13 2024 14:02:44 | 50.26 | 5667589 | 1 | 755 | 2 | - | Yes |

| 8 | S7 | Standard | TC Std. 100.00 mg/l | | | | 1 x | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **TC** | **99.41** | **11096212** | | **1.02** | | **100 µl** | |
| | Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
| | 1 | 2 13 2024 14:06:40 | 100.80 | 11250887 | 1 | 755 | 2 | - | Yes |
| | 2 | 2 13 2024 14:11:06 | 98.35 | 10979593 | 1 | 754 | 2 | - | Yes |
| | 3 | 2 13 2024 14:14:52 | 99.38 | 11093393 | 1 | 755 | 2 | - | Yes |
| | 4 | 2 13 2024 14:18:28 | 99.09 | 11060976 | 1 | 754 | 2 | - | Yes |

| 9 | S8 | Unknown | ICV - 50.00 mg/L | | | | 1 x | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **TC** | **49.09** | **5538406** | | **1.19** | | **100 µl** | |
| | Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
| | 1 | 2 13 2024 14:22:54 | 49.93 | 5631270 | 1 | 755 | 2 | - | Yes |
| | 2 | 2 13 2024 14:26:43 | 48.84 | 5510939 | 1 | 754 | 2 | - | Yes |
| | 3 | 2 13 2024 14:29:46 | 48.55 | 5478358 | 1 | 753 | 2 | - | Yes |
| | 4 | 2 13 2024 14:32:52 | 49.04 | 5533060 | 1 | 753 | 2 | - | Yes |

| 10 | 2 | Unknown | ICB | | | | 1 x | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **TC** | **ZERO !** | **132791** | | **57.26** | | **100 µl** | |
| | Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
| | 1 | 2 13 2024 14:36:50 | 1.14 | 241599 | 1 | 753 | 2 | - | Yes |
| | 2 | 2 13 2024 14:40:02 | ZERO ! | 74230 | 1 | 753 | 2 | - | Yes |
| | 3 | 2 13 2024 14:42:11 | ZERO ! | 87496 | 1 | 752 | 2 | - | Yes |
| | 4 | 2 13 2024 14:44:27 | 0.11 | 127840 | 1 | 752 | 2 | - | Yes |
| | 5 | 2 13 2024 14:46:44 | 0 | 0 | 0 | 752 | 2 | - | - |

# Analysis Name 121624 - 288154.adb

Template Name 121624 - 288154.tdb
Method Name N / A
Operator TMG

Run stopped before ending CCV. CCV and CCB were run the next morning. Data included.

Date Monday, December 16, 2024
Time 14:45

Start Oven Temp. 778 °C
Start Cooler Temp. 2 °C

Version 2.55 Release
Info ICAL0710 INSTRUMENT:TOCW CCV0755 LCS0756 SPIKE0735

| Element | Integration Time | Samples | Extra Samples | Max. CV |
|---|---|---|---|---|
| Carbon | 60 s | 4 | 1 | 10 % |
| SampleTime | 240 s | | | |

| No | Type | FileName | Date/Time | Max. Area | Max Conc. | Order | Correlation | Volume | Sel. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | TC | TOC0710 - 021324 | Feb 13 2024, 12:23 | 11250887 | 100 | 1 | 0.99973 | 100 µl | Yes |
| | *A2: 0* | | *A1: 110459.442959699* | | *A0: 116069.092099652* | | | | |

Inj. Order 1 | Position 1 | Type Unknown | Identification IB | Dilution Factor 1 x

| | Injection Type | Conc. | Area | CV | Inj. Volume |
|---|---|---|---|---|---|
| | **TC** | **2.41** | **381606** | **45.24** | **100 µl** |

| Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
|---|---|---|---|---|---|---|---|---|
| 1 | 12/16/2024 14:45:33 | 4.71 | 636284 | 1 | 777 | 2 | - | Yes |
| 2 | 12/16/2024 14:49:12 | 1.98 | 334481 | 1 | 778 | 2 | - | Yes |
| 3 | 12/16/2024 14:51:50 | 1.29 | 258041 | 1 | 778 | 2 | - | Yes |
| 4 | 12/16/2024 14:54:12 | 1.64 | 297619 | 1 | 778 | 2 | - | Yes |
| 5 | 12/16/2024 14:56:36 | 0 | 0 | 0 | 778 | 2 | - | - |

2 | S1 | Unknown | CCV | 1 x

| | | | | | |
|---|---|---|---|---|---|
| **TC** | **53.30** | **6003933** | **0.97** | **100 µl** | |

| Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
|---|---|---|---|---|---|---|---|---|
| 1 | 12/16/2024 15:01:29 | 53.98 | 6078764 | 1 | 780 | 2 | - | Yes |
| 2 | 12/16/2024 15:05:16 | 53.09 | 5980402 | 1 | 779 | 2 | - | Yes |
| 3 | 12/16/2024 15:08:29 | 53.41 | 6015210 | 1 | 779 | 2 | - | Yes |
| 4 | 12/16/2024 15:11:34 | 52.74 | 5941357 | 1 | 778 | 2 | - | Yes |

3 | S5 | Unknown | LCSW | NOT USED | 1 x

| | | | | | |
|---|---|---|---|---|---|
| **TC** | **0.00** | **0** | **0.00** | **100 µl** | |

| Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
|---|---|---|---|---|---|---|---|---|
| 1 | 12/16/2024 15:15:32 | ZERO ! | 98152 | 1 | 777 | 2 | - | - |
| 2 | 12/16/2024 15:18:24 | 0 | 0 | 0 | 779 | 2 | - | Yes |
| 3 | 12/16/2024 15:22:25 | 0 | 0 | 0 | 777 | 2 | - | Yes |
| 4 | 12/16/2024 15:26:26 | 0 | 0 | 0 | 777 | 2 | - | Yes |
| 5 | 12/16/2024 15:30:28 | 0 | 0 | 0 | 775 | 2 | - | Yes |

4 | 2 | Unknown | MBW | 1 x

| | | | | | |
|---|---|---|---|---|---|
| **TC** | **1.19** | **248242** | **31.77** | **100 µl** | |

| Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
|---|---|---|---|---|---|---|---|---|
| 1 | 12/16/2024 15:35:22 | 3.53 | 505965 | 1 | 774 | 2 | - | - |
| 2 | 12/16/2024 15:38:34 | 1.52 | 284094 | 1 | 772 | 2 | - | Yes |
| 3 | 12/16/2024 15:41:03 | 1.42 | 273068 | 1 | 771 | 2 | - | Yes |
| 4 | 12/16/2024 15:43:26 | 1.70 | 304281 | 1 | 769 | 2 | - | Yes |
| 5 | 12/16/2024 15:45:59 | 0.14 | 131525 | 1 | 768 | 2 | - | Yes |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 5 | 3 | Unknown | 1537124 | | | | | 1 x | |
| | | **TC** | **89.21** | **9969885** | | **0.86** | | **100 µl** | |
| | Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
| | 1 | 12/16/2024 15:49:05 | 89.12 | 9960671 | 1 | 769 | 2 | - | Yes |
| | 2 | 12/16/2024 15:52:44 | 90.27 | 10086805 | 1 | 769 | 2 | - | Yes |
| | 3 | 12/16/2024 15:55:47 | 89.03 | 9950155 | 1 | 768 | 2 | - | Yes |
| | 4 | 12/16/2024 15:59:05 | 88.41 | 9881910 | 1 | 766 | 2 | - | Yes |
| 6 | 4 | Unknown | 1537127 | | | | | 1 x | |
| | | **TC** | **80.64** | **9023410** | | **0.39** | | **100 µl** | |
| | Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
| | 1 | 12/16/2024 16:02:54 | 80.28 | 8983203 | 1 | 766 | 2 | - | Yes |
| | 2 | 12/16/2024 16:06:26 | 80.49 | 9007126 | 1 | 764 | 2 | - | Yes |
| | 3 | 12/16/2024 16:09:23 | 80.99 | 9061870 | 1 | 764 | 2 | - | Yes |
| | 4 | 12/16/2024 16:12:51 | 80.80 | 9041444 | 1 | 764 | 2 | - | Yes |
| 7 | 5 | Unknown | 1537128 | | | | | 1 x | |
| | | **TC** | **79.83** | **8934274** | | **0.91** | | **100 µl** | |
| | Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
| | 1 | 12/16/2024 16:16:34 | 80.15 | 8969010 | 1 | 762 | 2 | - | Yes |
| | 2 | 12/16/2024 16:20:04 | 78.73 | 8812812 | 1 | 761 | 2 | - | Yes |
| | 3 | 12/16/2024 16:23:03 | 80.25 | 8980750 | 1 | 761 | 2 | - | Yes |
| | 4 | 12/16/2024 16:26:00 | 80.20 | 8974526 | 1 | 760 | 2 | - | Yes |
| 8 | 6 | Unknown | 1537129 | | | | | 1 x | |
| | | **TC** | **68.39** | **7669974** | | **0.68** | | **100 µl** | |
| | Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
| | 1 | 12/16/2024 16:29:48 | 69.04 | 7742121 | 1 | 760 | 2 | - | Yes |
| | 2 | 12/16/2024 16:33:28 | 68.10 | 7637806 | 1 | 760 | 2 | - | Yes |
| | 3 | 12/16/2024 16:36:26 | 67.98 | 7625451 | 1 | 759 | 2 | - | Yes |
| | 4 | 12/16/2024 16:39:26 | 68.43 | 7674518 | 1 | 758 | 2 | - | Yes |
| 9 | 7 | Unknown | 1537130 | | | | | 1 x | |
| | | **TC** | **64.04** | **7189928** | | **0.56** | | **100 µl** | |
| | Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
| | 1 | 12/16/2024 16:43:17 | 64.42 | 7231844 | 1 | 758 | 2 | - | Yes |
| | 2 | 12/16/2024 16:47:06 | 64.01 | 7187087 | 1 | 757 | 2 | - | Yes |
| | 3 | 12/16/2024 16:50:19 | 64.17 | 7204726 | 1 | 757 | 2 | - | Yes |
| | 4 | 12/16/2024 16:53:20 | 63.55 | 7136056 | 1 | 756 | 2 | - | Yes |
| 10 | S5 | Unknown | LCSW | | | | | 1 x | |
| | | **TC** | **53.58** | **6035097** | | **3.44** | | **100 µl** | |
| | Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
| | 1 | 12/16/2024 16:57:16 | 53.01 | 5971835 | 1 | 756 | 2 | - | Yes |
| | 2 | 12/16/2024 17:01:03 | 52.61 | 5927821 | 1 | 756 | 2 | - | Yes |
| | 3 | 12/16/2024 17:04:32 | 56.37 | 6343206 | 1 | 755 | 2 | - | Yes |
| | 4 | 12/16/2024 17:07:58 | 52.34 | 5897529 | 1 | 755 | 2 | - | Yes |
| 11 | S1 | Unknown | CCV | | | | | 1 x | |

# Analysis Name 121724 - 288154R.adb

Template Name 121724 - 288154R.tdb
Method Name N / A
Operator TMG

Date Tuesday, December 17, 2024
Time 8:35

Start Oven Temp. 776 °C
Start Cooler Temp. 2 °C

Version 2.55 Release
Info ICAL0710 INSTRUMENT:TOCW
CCV0755 LCS0756 SPIKE0735

| Element | Integration Time | Samples | Extra Samples | Max. CV |
|---|---|---|---|---|
| Carbon | 60 s | 4 | 1 | 10 % |
| SampleTime | 240 s | | | |

| No | Type | FileName | Date/Time | Max. Area | Max Conc. | Order | Correlation | Volume | Sel. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | TC | TOC0710 - 021324 | Feb 13 2024, 12:23 | 11250887 | 100 | 1 | 0.99973 | 100 µl | Yes |
| | *A2: 0* | | *A1: 110459.442959699* | | *A0: 116069.092099652* | | | | |

| Inj. Order | Position | Type | Identification | Dilution Factor |
|---|---|---|---|---|
| 1 | 1 | Unknown | IB | 1 x |

| Injection Type | Conc. | Area | CV | Inj. Volume |
|---|---|---|---|---|
| **TC** | **2.45** | **386481** | **78.96** | **100 µl** |

| Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
|---|---|---|---|---|---|---|---|---|
| 1 | 12 17 2024 8:35:53 | 6.32 | 813681 | 1 | 777 | 2 | - | Yes |
| 2 | 12 17 2024 8:39:09 | 2.55 | 398122 | 1 | 777 | 2 | - | Yes |
| 3 | 12 17 2024 8:41:44 | 0.60 | 182327 | 1 | 777 | 2 | - | Yes |
| 4 | 12 17 2024 8:44:03 | 0.32 | 151795 | 1 | 777 | 2 | - | Yes |
| 5 | 12 17 2024 8:46:23 | 0 | 0 | 0 | 777 | 2 | - | - |

| Inj. Order | Position | Type | Identification | Dilution Factor |
|---|---|---|---|---|
| 2 | S1 | Unknown | CCV | 1 x |

| Injection Type | Conc. | Area | CV | Inj. Volume |
|---|---|---|---|---|
| **TC** | **52.37** | **5900558** | **1.71** | **100 µl** |

| Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
|---|---|---|---|---|---|---|---|---|
| 1 | 12 17 2024 8:51:15 | 53.10 | 5981014 | 1 | 777 | 2 | - | Yes |
| 2 | 12 17 2024 8:54:58 | 51.99 | 5858606 | 1 | 776 | 2 | - | Yes |
| 3 | 12 17 2024 8:58:07 | 51.25 | 5777464 | 1 | 776 | 2 | - | Yes |
| 4 | 12 17 2024 9:01:18 | 53.13 | 5985148 | 1 | 774 | 2 | - | Yes |

| Inj. Order | Position | Type | Identification | Dilution Factor |
|---|---|---|---|---|
| 3 | 2 | Unknown | CCB | 1 x |

| Injection Type | Conc. | Area | CV | Inj. Volume |
|---|---|---|---|---|
| **TC** | **ZERO !** | **150104** | **20.05** | **100 µl** |

| Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
|---|---|---|---|---|---|---|---|---|
| 1 | 12 17 2024 9:05:41 | 0.44 | 165203 | 1 | 772 | 2 | - | Yes |
| 2 | 12 17 2024 9:08:32 | ZERO ! | 82650 | 1 | 771 | 2 | - | - |
| 3 | 12 17 2024 9:10:47 | ZERO ! | 106342 | 1 | 770 | 2 | - | Yes |
| 4 | 12 17 2024 9:12:55 | 0.36 | 155406 | 1 | 769 | 2 | - | Yes |
| 5 | 12 17 2024 9:15:11 | 0.52 | 173466 | 1 | 769 | 2 | - | Yes |

# Analysis Name 122724 - 288395 288397.adb

| | |
|---|---|
| Template Name | 122724 - 288395 288397.tdb |
| Method Name | N / A |
| Operator | TMG |
| Date | Friday, December 27, 2024 |
| Time | 9:25 |
| Start Oven Temp. | 759 °C |
| Start Cooler Temp. | 2 °C |
| Version | 2.55 Release |
| Info | ICAL0710 INSTRUMENT:TOCW CCV0755 LCS0756 SPIKE0735 |

| Element | Integration Time | Samples | Extra Samples | Max. CV |
|---|---|---|---|---|
| Carbon | 60 s | 4 | 1 | 10 % |
| SampleTime | 240 s | | | |

| No | Type | FileName | Date/Time | Max. Area | Max Conc. | Order | Correlation | Volume | Sel. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | TC | TOC0710 - 021324 | Feb 13 2024, 12:23 | 11250887 | 100 | 1 | 0.99973 | 100 µl | Yes |
| | *A2: 0* | | *A1: 110459.442959699* | | *A0: 116069.092099652* | | | | |

| 16 | S1 | Unknown | CCV | | | | 1 x | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **TC** | **48.50** | **5473675** | **0.65** | | **100 µl** | | |
| | Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
| | 1 | 12 27 2024 12:45:48 | 48.56 | 5479522 | 1 | 752 | 2 | - | Yes |
| | 2 | 12 27 2024 12:49:25 | 48.89 | 5516549 | 1 | 752 | 2 | - | Yes |
| | 3 | 12 27 2024 12:52:27 | 48.45 | 5468237 | 1 | 751 | 2 | - | Yes |
| | 4 | 12 27 2024 12:55:29 | 48.11 | 5430393 | 1 | 752 | 2 | - | Yes |

| 17 | S5 | Unknown | LCSW | | | | 1 x | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **TC** | **48.42** | **5464166** | **0.68** | | **100 µl** | | |
| | Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
| | 1 | 12 27 2024 12:59:15 | 48.59 | 5483473 | 1 | 751 | 2 | - | Yes |
| | 2 | 12 27 2024 13:03:02 | 48.78 | 5503963 | 1 | 752 | 2 | - | Yes |
| | 3 | 12 27 2024 13:06:19 | 48.02 | 5420470 | 1 | 752 | 2 | - | Yes |
| | 4 | 12 27 2024 13:09:25 | 48.28 | 5448761 | 1 | 752 | 2 | - | Yes |

| 18 | 13 | Unknown | MBW-CCB | | | | 1 x | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **TC** | **ZERO !** | **98896** | **18.05** | | **100 µl** | | |
| | Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
| | 1 | 12 27 2024 13:13:18 | 0.05 | 121633 | 1 | 752 | 2 | - | Yes |
| | 2 | 12 27 2024 13:16:06 | ZERO ! | 96537 | 1 | 751 | 2 | - | Yes |
| | 3 | 12 27 2024 13:18:13 | ZERO ! | 99343 | 1 | 751 | 2 | - | Yes |
| | 4 | 12 27 2024 13:20:21 | ZERO ! | 78074 | 1 | 751 | 2 | - | Yes |
| | 5 | 12 27 2024 13:22:29 | 0.28 | 147000 | 1 | 751 | 2 | - | - |

| 29 | S1 | Unknown | CCV | | | | 1 x | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **TC** | **46.97** | **5304609** | **0.51** | | **100 µl** | | |
| | Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
| | 1 | 12 27 2024 15:34:17 | 46.98 | 5304909 | 1 | 752 | 2 | - | Yes |
| | 2 | 12 27 2024 15:37:56 | 47.22 | 5331591 | 1 | 752 | 2 | - | Yes |
| | 3 | 12 27 2024 15:40:58 | 47.06 | 5314064 | 1 | 752 | 2 | - | Yes |
| | 4 | 12 27 2024 15:43:59 | 46.64 | 5267872 | 1 | 752 | 2 | - | Yes |

| 30 | 24 | Unknown | CCB | | | | 1 x | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **TC** | **ZERO !** | **94916** | **25.57** | | **100 µl** | | |
| | Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
| | 1 | 12 27 2024 15:47:44 | ZERO ! | 104333 | 1 | 752 | 2 | - | Yes |
| | 2 | 12 27 2024 15:50:33 | 0.06 | 122808 | 1 | 752 | 2 | - | Yes |
| | 3 | 12 27 2024 15:52:41 | ZERO ! | 66136 | 1 | 751 | 2 | - | Yes |
| | 4 | 12 27 2024 15:54:42 | ZERO ! | 86390 | 1 | 751 | 2 | - | Yes |
| | 5 | 12 27 2024 15:56:47 | 0 | 0 | 0 | 751 | 2 | - | - |

| | | | | | | |
|---|---|---|---|---|---|---|
| 40 | 34 | Unknown | 1537124 | | | 1 x |

| | TC | ZERO ! | 116918 | 12.89 | | 100 µl | | |
|---|---|---|---|---|---|---|---|---|
| Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
| 1 | 12 27 2024 17:54:51 | 0.01 | 116854 | 1 | 752 | 2 | - | Yes |
| 2 | 12 27 2024 17:57:34 | 0.02 | 118292 | 1 | 751 | 2 | - | Yes |
| 3 | 12 27 2024 17:59:39 | ZERO ! | 97845 | 1 | 751 | 2 | - | Yes |
| 4 | 12 27 2024 18:01:41 | 0.17 | 134684 | 1 | 751 | 2 | - | Yes |
| 5 | 12 27 2024 18:03:45 | 0 | 0 | 0 | 751 | 2 | - | - |

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| | | | | | | |
|---|---|---|---|---|---|---|
| 41 | S2 | Unknown | CCV | | | 1 x |

| | TC | 48.30 | 5451907 | 0.15 | | 100 µl | | |
|---|---|---|---|---|---|---|---|---|
| Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
| 1 | 12 27 2024 18:08:38 | 48.32 | 5453474 | 1 | 752 | 2 | - | Yes |
| 2 | 12 27 2024 18:12:19 | 48.27 | 5448022 | 1 | 751 | 2 | - | Yes |
| 3 | 12 27 2024 18:15:12 | 48.23 | 5443342 | 1 | 751 | 2 | - | Yes |
| 4 | 12 27 2024 18:18:08 | 48.40 | 5462791 | 1 | 751 | 2 | - | Yes |

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| | | | | | | |
|---|---|---|---|---|---|---|
| 42 | 35 | Unknown | CCB | | | 1 x |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **TC** | **ZERO !** | **59843** | | **72.62** | | **100 µl** | |
| | Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
| | 1 | 12 27 2024 18:22:00 | ZERO ! | 103657 | 1 | 751 | 2 | - | Yes |
| | 2 | 12 27 2024 18:24:56 | ZERO ! | 63593 | 1 | 751 | 2 | - | Yes |
| | 3 | 12 27 2024 18:27:01 | ZERO ! | 72123 | 1 | 751 | 2 | - | Yes |
| | 4 | 12 27 2024 18:29:01 | 0 | 0 | 0 | 751 | 2 | - | Yes |
| | 5 | 12 27 2024 18:33:02 | 0 | 0 | 0 | 752 | 2 | - | - |

| | | | | |
|---|---|---|---|---|
| 43 | 36 | Unknown | 1537127 | 1 x |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **TC** | **ZERO !** | **122208** | | **35.13** | | **100 µl** | |
| | Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
| | 1 | 12 27 2024 18:37:57 | 0.56 | 178302 | 1 | 753 | 2 | - | Yes |
| | 2 | 12 27 2024 18:41:03 | ZERO ! | 106666 | 1 | 752 | 2 | - | Yes |
| | 3 | 12 27 2024 18:43:09 | 0.10 | 127616 | 1 | 752 | 2 | - | Yes |
| | 4 | 12 27 2024 18:45:19 | ZERO ! | 76248 | 1 | 752 | 2 | - | Yes |
| | 5 | 12 27 2024 18:47:21 | 0 | 0 | 0 | 751 | 2 | - | - |

| | | | | |
|---|---|---|---|---|
| 44 | 37 | Unknown | 1537128 | 1 x |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **TC** | **ZERO !** | **65055** | | **12.48** | | **100 µl** | |
| | Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
| | 1 | 12 27 2024 18:52:15 | ZERO ! | 65259 | 1 | 752 | 2 | - | Yes |
| | 2 | 12 27 2024 18:54:53 | ZERO ! | 75241 | 1 | 752 | 2 | - | Yes |
| | 3 | 12 27 2024 18:56:51 | ZERO ! | 55394 | 1 | 752 | 2 | - | Yes |
| | 4 | 12 27 2024 18:58:51 | ZERO ! | 64329 | 1 | 751 | 2 | - | Yes |
| | 5 | 12 27 2024 19:00:59 | 0 | 0 | 0 | 751 | 2 | - | - |

| | | | | |
|---|---|---|---|---|
| 45 | 38 | Unknown | 1537129 | 1 x |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **TC** | **ZERO !** | **105387** | | **12.17** | | **100 µl** | |
| | Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
| | 1 | 12 27 2024 19:05:54 | ZERO ! | 115181 | 1 | 753 | 2 | - | Yes |
| | 2 | 12 27 2024 19:08:40 | ZERO ! | 86886 | 1 | 753 | 2 | - | Yes |
| | 3 | 12 27 2024 19:10:40 | ZERO ! | 106768 | 1 | 752 | 2 | - | Yes |
| | 4 | 12 27 2024 19:12:48 | ZERO ! | 112713 | 1 | 752 | 2 | - | Yes |
| | 5 | 12 27 2024 19:14:52 | ZERO ! | 69142 | 1 | 752 | 2 | - | - |

| | | | | |
|---|---|---|---|---|
| 46 | 39 | Unknown | DUP1537129 | 1 x |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **TC** | **ZERO !** | **144444** | | **52.77** | | **100 µl** | |
| | Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
| | 1 | 12 27 2024 19:17:47 | 1.29 | 258474 | 1 | 752 | 2 | - | Yes |
| | 2 | 12 27 2024 19:20:35 | ZERO ! | 111095 | 1 | 752 | 2 | - | Yes |
| | 3 | 12 27 2024 19:22:41 | ZERO ! | 109510 | 1 | 752 | 2 | - | Yes |
| | 4 | 12 27 2024 19:24:53 | ZERO ! | 98699 | 1 | 751 | 2 | - | Yes |
| | 5 | 12 27 2024 19:26:56 | 0 | 0 | 0 | 750 | 2 | - | - |

| | | | | |
|---|---|---|---|---|
| 47 | 40 | Unknown | MSW1537129 | 1 x |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **TC** | **49.97** | **5635951** | | **0.19** | | **100 µl** | |
| | Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
| | 1 | 12 27 2024 19:31:51 | 49.85 | 5622182 | 1 | 751 | 2 | - | Yes |
| | 2 | 12 27 2024 19:35:12 | 49.98 | 5636698 | 1 | 751 | 2 | - | Yes |
| | 3 | 12 27 2024 19:37:51 | 49.98 | 5637046 | 1 | 751 | 2 | - | Yes |
| | 4 | 12 27 2024 19:40:40 | 50.08 | 5647881 | 1 | 751 | 2 | - | Yes |

| | | | | |
|---|---|---|---|---|
| 48 | 41 | Unknown | MSDW1537129 | 1 x |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **TC** | **51.41** | **5794760** | | **0.54** | | **100 µl** | |
| | Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
| | 1 | 12 27 2024 19:44:16 | 51.03 | 5752884 | 1 | 751 | 2 | - | Yes |
| | 2 | 12 27 2024 19:47:36 | 51.51 | 5806101 | 1 | 751 | 2 | - | Yes |
| | 3 | 12 27 2024 19:50:20 | 51.70 | 5827128 | 1 | 751 | 2 | - | Yes |
| | 4 | 12 27 2024 19:53:04 | 51.39 | 5792927 | 1 | 751 | 2 | - | Yes |

| | | | | |
|---|---|---|---|---|
| 49 | 42 | Unknown | 1537130 | 1 x |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **TC** | **ZERO !** | **86211** | | **10.56** | | **100 µl** | |

| Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
|---|---|---|---|---|---|---|---|---|
| 1 | 12 27 2024 19:56:43 | ZERO ! | 90713 | 1 | 751 | 2 | - | Yes |
| 2 | 12 27 2024 19:59:28 | ZERO ! | 80548 | 1 | 751 | 2 | - | Yes |
| 3 | 12 27 2024 20:01:30 | ZERO ! | 96678 | 1 | 751 | 2 | - | Yes |
| 4 | 12 27 2024 20:03:30 | ZERO ! | 76905 | 1 | 750 | 2 | - | Yes |
| 5 | 12 27 2024 20:05:29 | 0 | 0 | 0 | 751 | 2 | - | - |

---

50 S2 Unknown CCV 1 x

**TC** **48.48** **5470528** **1.20** **100 µl**

| Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
|---|---|---|---|---|---|---|---|---|
| 1 | 12 27 2024 20:10:24 | 47.63 | 5376754 | 1 | 751 | 2 | - | Yes |
| 2 | 12 27 2024 20:14:03 | 48.73 | 5499096 | 1 | 751 | 2 | - | Yes |
| 3 | 12 27 2024 20:17:16 | 48.99 | 5527663 | 1 | 751 | 2 | - | Yes |
| 4 | 12 27 2024 20:20:08 | 48.55 | 5478602 | 1 | 751 | 2 | - | Yes |

---

51 43 Unknown CCB 1 x

**TC** **ZERO !** **72494** **18.58** **100 µl**

| Sample | Inj. Time | Conc. | Area | Curve | Oven | Cooler | Edited | Sel. |
|---|---|---|---|---|---|---|---|---|
| 1 | 12 27 2024 20:24:00 | ZERO ! | 70487 | 1 | 751 | 2 | - | Yes |
| 2 | 12 27 2024 20:26:48 | ZERO ! | 91416 | 1 | 751 | 2 | - | Yes |
| 3 | 12 27 2024 20:29:01 | ZERO ! | 59597 | 1 | 751 | 2 | - | Yes |
| 4 | 12 27 2024 20:30:59 | ZERO ! | 68479 | 1 | 750 | 2 | - | Yes |
| 5 | 12 27 2024 20:33:01 | 0 | 0 | 0 | 751 | 2 | - | - |

**INORGANICS**
**LOGBOOK**
**DOCUMENTS**

WANIONS IC QSM 5.0 Anion Run
# 288029 on 12/19/2024

Date Analyzed: _____ Date Reviewed: _____

Date Entered: _____ Date Validated: _____

| COC | ORDER | ANALYTE | SAMPLE DATE: | QC TYPE (Parent Sample) | CLIENT | PROJECT | TEST | PREP BATCH | MATRIX | DEL | RUSH |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1540037 | | | | | | WANIONS IC QSM 5.0 | | | | |
| | | Chloride | | ICV | | | | | | | |
| | | Sulfate | | ICV | | | | | | | |
| | 1540038 | | | | | | WANIONS IC QSM 5.0 | | | | |
| | | Chloride | | ICB | | | | | | | |
| | | Sulfate | | ICB | | | | | | | |
| | 1540037 | | | | | | WANIONS IC QSM 5.0 | | | | |
| | | Chloride | ***RERUN*** | ICV | | | | | | | |
| | | Sulfate | ***RERUN*** | ICV | | | | | | | |
| | 1539297 | | | | | | WANIONS IC QSM 5.0 | | | | |
| | | Nitrate Nitrogen | | ICV | | | | | | | |
| | | Chloride | | ICV | | | | | | | |
| | | Sulfate | | ICV | | | | | | | |
| | 1539298 | | | | | | WANIONS IC QSM 5.0 | | | | |
| | | Nitrate Nitrogen | | ICB | | | | | | | |
| | | Chloride | | ICB | | | | | | | |
| | | Sulfate | | ICB | | | | | | | |
| | 1539232 | | | | | | WANIONS IC QSM 5.0 | | | | |
| | | Nitrate Nitrogen | | CCV | | | | 0 | | | |
| | | Chloride | | CCV | | | | 0 | | | |
| | | Sulfate | | CCV | | | | 0 | | | |

**Matrix: S-Soil Slg-Sludge GW-GroundWater M-Misc Waste SW-Surface Water A-Air WW-WasteWater DW-Drinking Water SD=Sediment Leachate=LE**

WANIONS IC QSM 5.0 Anion Run
# 288029 on 12/19/2024

Date Analyzed: _____ Date Reviewed: _____

Date Entered: _____ Date Validated: _____

| COC | ORDER | ANALYTE | SAMPLE DATE: | QC TYPE (Parent Sample) | CLIENT | PROJECT | TEST | PREP BATCH | MATRIX | DEL | RUSH |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1539302 | | | | | | WANIONS IC QSM 5.0 | | | | |
| | | Nitrate Nitrogen | | CCB | | | | | | | |
| | | Chloride | | CCB | | | | | | | |
| | | Sulfate | | CCB | | | | | | | |

**Matrix: S-Soil Slg-Sludge GW-GroundWater M-Misc Waste SW-Surface Water A-Air WW-WasteWater DW-Drinking Water SD=Sediment Leachate=LE**

WANIONS IC QSM 5.0 Anion Run
# 288029 on 12/19/2024

Date Analyzed: _____ Date Reviewed: _____

Date Entered: _____ Date Validated: _____

| COC | ORDER | ANALYTE | SAMPLE DATE: | QC TYPE (Parent Sample) | CLIENT | PROJECT | TEST | PREP BATCH | MATRIX | DEL | RUSH |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1539234 | | | | | | WANIONS IC QSM 5.0 | | | | |
| | | Nitrate Nitrogen | | CCV | | | | 0 | | | |
| | | Chloride | | CCV | | | | 0 | | | |
| | | Sulfate | | CCV | | | | 0 | | | |
| | 1539235 | | | | | | WANIONS IC QSM 5.0 | | | | |
| | | Chloride | | LCSW | | | | 0 | | | |
| | | Nitrate Nitrogen | | LCSW | | | | 0 | | | |
| | | Sulfate | | LCSW | | | | 0 | | | |

**Matrix: S-Soil Slg-Sludge GW-GroundWater M-Misc Waste SW-Surface Water A-Air WW-WasteWater DW-Drinking Water SD=Sediment Leachate=LE**

Distribution:

C:\Windows\ServiceProfiles\LocalService\AppData\Local\Temp\tmp1500.tmp

WANIONS IC QSM 5.0 Anion Run
# 288029 on 12/19/2024

Date Analyzed: _____ Date Reviewed: _____

Date Entered: _____ Date Validated: _____

| COC | ORDER | ANALYTE | SAMPLE DATE: | | QC TYPE (Parent Sample) | CLIENT | PROJECT | TEST | PREP BATCH | MATRIX | DEL | RUSH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1539236 | | | | | | | WANIONS IC QSM 5.0 | | | | |
| | | Nitrate Nitrogen | | | MBW | | | | 0 | | | |
| | | Chloride | | | MBW | | | | 0 | | | |
| | | Sulfate | | | MBW | | | | 0 | | | |
| **191589** | 1537124 | | 12/10/2024 | 09:10 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 54 | ANIONS IC QSM 5.0 | | GW | **4** | |
| | | Chloride | | | | | | | | | | |
| | | Sulfate | | | | | | | | | | |
| | | Nitrate Nitrogen | | | | | | | | | | |
| **191589** | 1537127 | | 12/10/2024 | 10:45 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 54 | ANIONS IC QSM 5.0 | | GW | **4** | |
| | | Nitrate Nitrogen | | | | | | | | | | |
| | | Sulfate | | | | | | | | | | |
| | | Chloride | | | | | | | | | | |
| **191589** | 1537128 | | 12/10/2024 | 10:45 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 54 | ANIONS IC QSM 5.0 | | GW | **4** | |
| | | Chloride | | | | | | | | | | |
| | | Sulfate | | | | | | | | | | |
| | | Nitrate Nitrogen | | | | | | | | | | |
| **191589** | 1537129 | | 12/10/2024 | 12:15 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 54 | ANIONS IC QSM 5.0 | | GW | **4** | |
| | | Chloride | | | * | | | | | | | |
| | | Nitrate Nitrogen | | | * | | | | | | | |
| | | Sulfate | | | * | | | | | | | |

**Matrix: S-Soil Slg-Sludge GW-GroundWater M-Misc Waste SW-Surface Water A-Air WW-WasteWater DW-Drinking Water SD=Sediment Leachate=LE**

WANIONS IC QSM 5.0 Anion Run
# 288029 on 12/19/2024

Date Analyzed: _____ Date Reviewed: _____

Date Entered: _____ Date Validated: _____

| COC | ORDER | ANALYTE | SAMPLE DATE: | QC TYPE (Parent Sample) | CLIENT | PROJECT | TEST | PREP BATCH | MATRIX | DEL | RUSH |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **191589** | 1537130 | | 12/10/2024 13:50 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 54 | ANIONS IC QSM 5.0 | | GW | **4** | |
| | | Chloride | | | | | | | | | |
| | | Nitrate Nitrogen | | | | | | | | | |
| | | Sulfate | | | | | | | | | |
| | 1539237 | | 12/9/2024 11:15 | | | | ANIONS IC QSM 5.0 | | | | |
| | | Nitrate Nitrogen | | DUP | 1537079 | | | 0 | | | |
| | | Chloride | | DUP | 1537079 | | | 0 | | | |
| | | Sulfate | | DUP | 1537079 | | | 0 | | | |
| | 1539238 | | 12/9/2024 11:15 | | | | ANIONS IC QSM 5.0 | | | | |
| | | Nitrate Nitrogen | | MSW | 1537079 | | | 0 | | | |
| | | Chloride | | MSW | 1537079 | | | 0 | | | |
| | | Sulfate | | MSW | 1537079 | | | 0 | | | |
| | 1539239 | | 12/9/2024 11:15 | | | | ANIONS IC QSM 5.0 | | | | |
| | | Nitrate Nitrogen | | MSDW | 1539238 | | | 0 | | | |
| | | Chloride | | MSDW | 1539238 | | | 0 | | | |
| | | Sulfate | | MSDW | 1539238 | | | 0 | | | |
| | 1539240 | | 12/10/2024 12:15 | | | | ANIONS IC QSM 5.0 | | | | |
| | | Sulfate | | DUP | 1537129 | | | 0 | | | |
| | | Nitrate Nitrogen | | DUP | 1537129 | | | 0 | | | |
| | | Chloride | | DUP | 1537129 | | | 0 | | | |
| | 1539241 | | | | | | WANIONS IC QSM 5.0 | | | | |
| | | Nitrate Nitrogen | | CCV | | | | 0 | | | |

**Matrix: S-Soil Slg-Sludge GW-GroundWater M-Misc Waste SW-Surface Water A-Air WW-WasteWater DW-Drinking Water SD=Sediment Leachate=LE**

WANIONS IC QSM 5.0 Anion Run
# 288029 on 12/19/2024

Date Analyzed: _____ Date Reviewed: _____

Date Entered: _____ Date Validated: _____

| COC | ORDER | ANALYTE | SAMPLE DATE: | | QC TYPE (Parent Sample) | | CLIENT | PROJECT | TEST | PREP BATCH | MATRIX | DEL | RUSH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1539242 | | | | | | | | WANIONS IC QSM 5.0 | | | | |
| | | Nitrate Nitrogen | | | CCB | | | | | 0 | | | |
| | 1539243 | | 12/10/2024 | 12:15 | | | | | ANIONS IC QSM 5.0 | | | | |
| | | Nitrate Nitrogen | | | MSW | 1537129 | | | | 0 | | | |
| | | Chloride | | | MSW | 1537129 | | | | 0 | | | |
| | | Sulfate | | | MSW | 1537129 | | | | 0 | | | |
| | 1539244 | | 12/10/2024 | 12:15 | | | | | ANIONS IC QSM 5.0 | | | | |
| | | Nitrate Nitrogen | | | MSDW | 1539243 | | | | 0 | | | |
| | | Chloride | | | MSDW | 1539243 | | | | 0 | | | |
| | | Sulfate | | | MSDW | 1539243 | | | | 0 | | | |
| | 1539245 | | | | | | | | WANIONS IC QSM 5.0 | | | | |
| | | Nitrate Nitrogen | | | CCV | | | | | 0 | | | |
| | | Sulfate | | | CCV | | | | | 0 | | | |
| | 1539246 | | | | | | | | WANIONS IC QSM 5.0 | | | | |
| | | Nitrate Nitrogen | | | CCB | | | | | 0 | | | |
| | | Sulfate | | | CCB | | | | | 0 | | | |

**Matrix: S-Soil Slg-Sludge GW-GroundWater M-Misc Waste SW-Surface Water A-Air WW-WasteWater DW-Drinking Water SD=Sediment Leachate=LE**

WANIONS IC QSM 5.0 Anion Run
# 288029 on 12/19/2024

Date Analyzed: _____ Date Reviewed: _____

Date Entered: _____ Date Validated: _____

| COC | ORDER | ANALYTE | SAMPLE DATE: | QC TYPE (Parent Sample) | CLIENT | PROJECT | TEST | PREP BATCH | MATRIX | DEL | RUSH |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Nitrate Nitrogen | | CCV | | | | 0 | | | |
| | | Sulfate | | CCV | | | | 0 | | | |
| | 1539248 | | | | | | WANIONS IC QSM 5.0 | | | | |
| | | Nitrate Nitrogen | | CCB | | | | 0 | | | |
| | | Sulfate | | CCB | | | | 0 | | | |
| | 1540046 | | | | | | WANIONS IC QSM 5.0 | | | | |
| | | Chloride | | CCV | | | | | | | |
| | | Sulfate | | CCV | | | | | | | |
| | 1540047 | | | | | | WANIONS IC QSM 5.0 | | | | |
| | | Chloride | | LCSW | | | | | | | |
| | | Sulfate | | LCSW | | | | | | | |
| | 1540048 | | | | | | WANIONS IC QSM 5.0 | | | | |
| | | Chloride | | MBW | | | | | | | |
| | | Sulfate | | MBW | | | | | | | |

**Matrix: S-Soil Slg-Sludge GW-GroundWater M-Misc Waste SW-Surface Water A-Air WW-WasteWater DW-Drinking Water SD=Sediment Leachate=LE**

WANIONS IC QSM 5.0 Anion Run
# 288029 on 12/19/2024

Date Analyzed: _____ Date Reviewed: _____

Date Entered: _____ Date Validated: _____

| COC | ORDER | ANALYTE | SAMPLE DATE: | QC TYPE (Parent Sample) | CLIENT | PROJECT | TEST | PREP BATCH | MATRIX | DEL | RUSH |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **191589** | 1537124 | | 12/10/2024 09:10 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 54 | ANIONS IC QSM 5.0 | | GW | **4** | |
| | | Nitrate Nitrogen | ***RERUN*** | | | | | | | | |
| | | Sulfate | ***RERUN*** | | | | | | | | |
| | | Chloride | ***RERUN*** | | | | | | | | |
| **191589** | 1537127 | | 12/10/2024 10:45 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 54 | ANIONS IC QSM 5.0 | | GW | **4** | |
| | | Sulfate | ***RERUN*** | | | | | | | | |
| | | Chloride | ***RERUN*** | | | | | | | | |
| | | Nitrate Nitrogen | ***RERUN*** | | | | | | | | |
| **191589** | 1537127 | | 12/10/2024 10:45 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 54 | ANIONS IC QSM 5.0 | | GW | **4** | |
| | | Chloride | ***RERUN*** | | | | | | | | |
| | | Nitrate Nitrogen | ***RERUN*** | | | | | | | | |
| | | Sulfate | ***RERUN*** | | | | | | | | |
| **191589** | 1537128 | | 12/10/2024 10:45 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 54 | ANIONS IC QSM 5.0 | | GW | **4** | |
| | | Nitrate Nitrogen | ***RERUN*** | | | | | | | | |
| | | Sulfate | ***RERUN*** | | | | | | | | |
| | | Chloride | ***RERUN*** | | | | | | | | |
| **191589** | 1537128 | | 12/10/2024 10:45 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 54 | ANIONS IC QSM 5.0 | | GW | **4** | |
| | | Chloride | ***RERUN*** | | | | | | | | |
| | | Sulfate | ***RERUN*** | | | | | | | | |
| | | Nitrate Nitrogen | ***RERUN*** | | | | | | | | |

**Matrix: S-Soil Slg-Sludge GW-GroundWater M-Misc Waste SW-Surface Water A-Air WW-WasteWater DW-Drinking Water SD=Sediment Leachate=LE**

WANIONS IC QSM 5.0 Anion Run
# 288029 on 12/19/2024

Date Analyzed: _____ Date Reviewed: _____

Date Entered: _____ Date Validated: _____

| COC | ORDER | ANALYTE | SAMPLE DATE: | QC TYPE (Parent Sample) | CLIENT | PROJECT | TEST | PREP BATCH | MATRIX | DEL | RUSH |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **191589** | 1537129 | | 12/10/2024 12:15 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 54 | ANIONS IC QSM 5.0 | | GW | **4** | |
| | | Sulfate | ***RERUN*** | * | | | | | | | |
| | | Nitrate Nitrogen | ***RERUN*** | * | | | | | | | |
| | | Chloride | ***RERUN*** | * | | | | | | | |
| | 1540051 | | | | | | WANIONS IC QSM 5.0 | | | | |
| | | Chloride | | CCV | | | | | | | |
| | | Sulfate | | CCV | | | | | | | |
| | 1540052 | | | | | | WANIONS IC QSM 5.0 | | | | |
| | | Chloride | | CCB | | | | | | | |
| | | Sulfate | | CCB | | | | | | | |
| | 1539240 | | 12/10/2024 12:15 | | | | ANIONS IC QSM 5.0 | | | | |
| | | Chloride | ***RERUN*** | DUP | 1537129 | | | 0 | | | |
| | | Nitrate Nitrogen | ***RERUN*** | DUP | 1537129 | | | 0 | | | |
| | | Sulfate | ***RERUN*** | DUP | 1537129 | | | 0 | | | |
| | 1539243 | | 12/10/2024 12:15 | | | | ANIONS IC QSM 5.0 | | | | |
| | | Nitrate Nitrogen | ***RERUN*** | MSW | 1537129 | | | 0 | | | |
| | | Chloride | ***RERUN*** | MSW | 1537129 | | | 0 | | | |
| | | Sulfate | ***RERUN*** | MSW | 1537129 | | | 0 | | | |
| | 1539244 | | 12/10/2024 12:15 | | | | ANIONS IC QSM 5.0 | | | | |
| | | Sulfate | ***RERUN*** | MSDW | 1539243 | | | 0 | | | |
| | | Chloride | ***RERUN*** | MSDW | 1539243 | | | 0 | | | |
| | | Nitrate Nitrogen | ***RERUN*** | MSDW | 1539243 | | | 0 | | | |

**Matrix: S-Soil Slg-Sludge GW-GroundWater M-Misc Waste SW-Surface Water A-Air WW-WasteWater DW-Drinking Water SD=Sediment Leachate=LE**

WANIONS IC QSM 5.0 Anion Run
# 288029 on 12/19/2024

Date Analyzed: _____ Date Reviewed: _____

Date Entered: _____ Date Validated: _____

| COC | ORDER | ANALYTE | SAMPLE DATE: | QC TYPE (Parent Sample) | CLIENT | PROJECT | TEST | PREP BATCH | MATRIX | DEL | RUSH |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **191589** | 1537130 | | 12/10/2024 13:50 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 54 | ANIONS IC QSM 5.0 | | GW | **4** | |
| | | Chloride | ***RERUN*** | | | | | | | | |
| | | Sulfate | ***RERUN*** | | | | | | | | |
| | | Nitrate Nitrogen | ***RERUN*** | | | | | | | | |
| | 1540053 | | | | | | WANIONS IC QSM 5.0 | | | | |
| | | Chloride | | CCV | | | | | | | |
| | | Sulfate | | CCV | | | | | | | |
| | 1540054 | | | | | | WANIONS IC QSM 5.0 | | | | |
| | | Chloride | | CCB | | | | | | | |
| | | Sulfate | | CCB | | | | | | | |

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**Matrix: S-Soil Slg-Sludge GW-GroundWater M-Misc Waste SW-Surface Water A-Air WW-WasteWater DW-Drinking Water SD=Sediment Leachate=LE**

## Data Review Checklist

| | Method: Anions by Ion Chromatography 300.0/9056 | Independent Data Review Checklist | Instrument: Aquion - System 4 |
|---|---|---|---|

| LIMS Run #(s) | Analysis Date | Analyst/Data Interpreter | Independent Reviewer | Date of Review | Approved? (Yes/No) |
|---|---|---|---|---|---|
| 288029 288048 | 12/11/2024 | TMG | RLD | 12/19/2024 | Yes |

**Instructions:** Complete one checklist per *analytical sequence* . Enter the appropriate response for each question. Each "No" response requires an explanation in the Comments section, and may require the initiation of a Nonconformance Report.

| Requirement | Acceptance Criteria | Analyst Review | | Independent Review | | Comments |
|---|---|---|---|---|---|---|
| | | Yes | No | Yes | No | (Indicate reference to an attachment if necessary) |
| 1. Were the samples analyzed within hold time? | 28 days for Cl, F, $SO_4$;14 days for preserved $NO_2$+$NO_3$; 48 hours for O.Phos, and unpreserved $NO_2$ and $NO_3$ | | No | | No | Affected sample results were "H" flagged |
| 2. Was the calibration performed using the required number of standards? | Minimum three plus a blank | Yes | | Yes | | |
| 3. Was relative error (%RE) or relative standard error (%RSE) acceptable? | %RE at low point ≤ 40%, %RE at midpoint ≤ 10%, %RSE ≤15% | | No | | No | |
| 4. Is the standard prep log number noted on the analytical report bench sheet? | --- | Yes | | Yes | | |
| 5. Was the correlation coefficient acceptable? | ≥ .995 | Yes | | Yes | | |
| 6. Were the ICV and ICB run immediately after the calibration check standard? | --- | Yes | | Yes | | |
| 7. Was the ICV recovery acceptable? | 90 – 110 % or contract/program specific | Yes | | Yes | | |
| 8. Was the ICB result acceptable? | < LOD or contract/program specific | Yes | | Yes | | |
| 9. Were the CCV's and the CCB's analyzed at the required frequency? | 1 / 10 samples or contract/program specific | Yes | | Yes | | |
| 10. Were the CCV recoveries acceptable? | 90 – 110 % or contract/program specific | Yes | | Yes | | |
| 11. Were the CCB results acceptable? | < LOD or program/project specific | | No | | No | Affected sample results were "B" flagged |
| 12. Was the MB analyzed at the required frequency? | 1 / 20 samples or contract/program specific | Yes | | Yes | | |
| 13. Were the MB results acceptable? | < LOD or contract/program specific | Yes | | Yes | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 14. Was a LCS run at the required frequency? | 1 / 20 samples or contract/program specific | Yes | | Yes | | |
| 15. Was the LCS recovery acceptable? | Within in-house or contract/program specific limits | Yes | | Yes | | |
| 16. Was the LCS used before the indicated expiration date? | --- | Yes | | Yes | | |
| 17. Were the MS and MSD (when required) prepared at the required frequency? | 1 per 20 samples per matrix or contract/program specific | Yes | | Yes | | |
| 18. Were the MS and MSD (when required) recoveries acceptable? | Within In-house or contract/program specific limits | | No | | No | Affected sample results were "M" flagged |
| 19. Was the RPD between the MS and MSD (when required) acceptable? | Within in house or contract/program specific limits | Yes | | Yes | | |
| 20. Was a sample duplicate prepared at the required frequency? | Contract/program specific or 1 per 20 samples (1 / 10 for SDWA samples) | Yes | | Yes | | |
| 21. Was the duplicate within precision limits? | Within in-house or contract/program specific limits | Yes | | Yes | | |
| 22. Were all chromatograms checked to ensure accurate peak identification? | --- | Yes | | Yes | | |
| 23. Are all samples on the job lists accounted for? | --- | Yes | | Yes | | |
| 24. Were all samples having analytes detected in amounts exceeding the calibration range diluted, reanalyzed and DF applied to the final results? | --- | Yes | | Yes | | |
| 25. Were non-matrix related nonconformities (if applicable) documented in the NCR spreadsheet? | --- | Yes | | Yes | | |

*Non-Applicable Yes/No Cells Are Left Blank*

Comments:

**Aquion Run Log - System 4**

| Start Date | Start Time | End Date | End Time | Analyst | Lims Run #(s) | Calibration ID# | Data File | CCV ID's | LCS ID's | Spike ID's | Total Cond. | Pressure (Mpa) | Flow (mL/min) | iC Eluent (initiated 01/11/2024) | Reviewed/Date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/22/24 | 10:21 | 11/23/24 | 05:27 | TMG | 287559 287560 287589 | IC5492A | 112224 - | IC5530 IC5533 | IC5531 IC5534 | IC5532 IC5535 | 22.42 | 1452.54 | 0.87 | IC5506 | |
| 11/25/24 | 11:19 | 11/26/24 | 10:31 | TMG | 287663 287664 | IC5492A | 112524 - | IC5530 IC5533 | IC5531 IC5534 | IC5532 IC5535 | 24.54 | 1461.61 | 0.87 | IC5506 | |
| 11/26/24 | 10:57 | 11/27/24 | 10:39 | TMG | 287672 287683 287684 | IC5492A | 112624 - | IC5530 IC5533 | IC5531 IC5534 | IC5532 IC5535 | 24.77 | 1495.36 | 0.87 | IC5506 | |
| 11/27/24 | 10:39 | 12/02/24 | 13:54 | TMG | 287708 287672R 287683R 287684R | IC5492A | 112724 - | IC5536 IC5539 | IC5537 IC5540 | IC5538 IC5541 | 23.88 | 1083.14 | 0.79 | IC5506 | |
| 12/02/24 | 14:33 | 12/03/24 | 03:12 | TMG | 287772 | IC5492A | 120224 - | IC5536 IC5539 | IC5537 IC5540 | IC5538 IC5541 | 23.99 | 1126.88 | 0.79 | IC5506 | |
| 12/03/24 | 11:52 | 12/04/24 | 07:10 | TMG | 287788 287793 | IC5492A | 120324 - | IC5536 IC5543 | IC5537 IC5544 | IC5538 IC5545 | 22.7 | 1190.02 | 0.79 | IC5506 | |
| 12/04/24 | 10:01 | 12/05/24 | 09:28 | TMG | 287815 287816 287817 | IC5492A | 120424 - | IC5536 IC5543 | IC5537 IC5544 | IC5538 IC5545 | 22.9 | 1201.75 | 0.82 | IC5506 | |
| 12/05/24 | 11:13 | 12/06/24 | 10:56 | TMG | 287862 287868 | IC5492A | 120524 - | IC5546 IC5549 | IC5547 IC5550 | IC5548 IC5551 | 22.72 | 1291.13 | 0.82 | IC5506 | |
| 12/06/24 | 11:25 | 12/06/24 | 22:02 | TMG | 287915 | IC5492A | 120624 - | IC5546 IC5549 | IC5547 IC5550 | IC5548 IC5551 | 25.9 | 1119.51 | 0.83 | IC5506 | |
| 12/07/24 | 17:13 | 12/09/24 | 12:36 | TMG | 287942 | IC5492A | 120724 - | IC5546 IC5549 | IC5547 IC5550 | IC5548 IC5551 | 28 | 1195.15 | 0.83 | IC5506 | |
| 12/09/24 | 14:43 | 12/10/24 | 00:19 | TMG | 287974 | IC5492A | 120924 - | IC5546 IC5554 | IC5547 IC5555 | IC5548 IC5556 | 28.62 | 1268.05 | 0.83 | IC5506 | |
| 12/10/24 | 11:33 | 12/11/24 | 09:39 | TMG | 287998 288002 | IC5492A | 121024 - | IC5546 IC5554 | IC5547 IC5555 | IC5548 IC5556 | 28.51 | 1291.46 | 0.83 | IC5506 | |
| 12/11/24 | 10:20 | 12/12/24 | 07:18 | TMG | 288029 288048 | IC5492A | 121124 - | IC5546 IC5554 | IC5547 IC5555 | IC5548 IC5556 | 28.05 | 1319.43 | 0.83 | IC5506 | |
| 12/12/24 | 13:41 | 12/12/24 | 07:22 | TMG | 288083 | IC5492A | 121224 - | IC5560 IC5563 | IC5561 IC5564 | IC5562 IC5565 | 26.06 | 1197.89 | 0.81 | IC5506 | |
| 12/14/24 | 12:47 | 12/14/24 | 22:19 | TMG | 288114 288130 | IC5492A | 121424 - | IC5560 IC5563 | IC5561 IC5564 | IC5562 IC5565 | 30.61 | 1032.92 | 0.76 | IC5506 | : |
| 12/17/24 | 14:32 | 12/18/24 | 07:29 | TMG | IC5572A | IC5572A | 121724 - | IC5560 IC5573 | IC5561 IC5574 | IC5562 IC5575 | 25.7 | 902.74 | 1 | IC5506 | |
| 12/18/24 | 9:00 | 12/19/24 | 10:11 | TMG | 288224 288234 | IC5572A | 121824 - | IC5560 IC5573 | IC5561 IC5574 | IC5562 IC5575 | 25.18 | 912.03 | 0.97 | IC5506 | |
| | | | | | | | | | | | | | | IC5582 | |

**Aquion Run Log - System 5**

| Start Date | Start Time | End Date | End Time | Analyst | Lims Run #(s) | Calibration ID# | Data File | CCV ID's | LCS ID's | Spike ID's | Total Cond. | Pressure (Mpa) | Flow (mL/min) | iC Eluent (initiated 01/11/2024) | Reviewed/Date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 09/18/24 | 11:32 | 09/19/24 | 09:21 | TMG | 285543 285546 | IC5364 | 091824 - | IC5438 IC5441 | IC5439 IC5442 | IC5440 IC5443 | 23.71 | 2318.71 | 0.75 | | RLD 11/19/2024 |
| 09/19/24 | 22:00 | 09/20/24 | 16:30 | TMG | 285468 285469 Nitrocellulose | IC5364 | 091924 - | IC5438 IC5441 | IC5439 IC5442 | IC5440 IC5443 | 25.14 | 2255.64 | 0.75 | | RLD 11/19/2024 |
| 09/19/24 | 11:18 | 09/20/24 | 03:34 | TMG | 285574 | IC5364 | 091924 - | IC5438 IC5441 | IC5439 IC5442 | IC5440 IC5443 | 25.74 | 2213.4 | 0.75 | | RLD 11/19/2024 |
| 09/27/24 | 20:17 | 09/28/24 | 14:42 | DGS | 285794 285822 285823 | IC5364 | 092724 - | IC5446 IC5449 | IC5447 IC5450 | IC5448 IC5451 | 25.24 | 2357.14 | 0.75 | | RLD 11/19/2024 |
| 09/30/24 | 11:36 | 10/01/24 | 03:27 | TMG | 285640 285641 Nitrocellulose | IC5364 | 093024 - | IC5446 IC5449 | IC5447 IC5450 | IC5448 IC5451 | 24.34 | 2350.18 | 0.75 | | RLD 11/19/2024 |
| 10/02/24 | 9:38 | 10/03/24 | 10:30 | TMG | 285928 285929 | IC5364 | 100224 - | IC5446 IC5449 | IC5447 IC5450 | IC5448 IC5451 | 24.21 | 1892.55 | 0.75 | | RLD 11/19/2024 |
| 10/03/24 | 11:06 | 10/04/24 | 08:52 | TMG | 285987 286003 | IC5364 | 100324 - | IC5452 IC5455 | IC5453 IC5456 | IC5454 IC5457 | 23.92 | 1975.26 | 0.75 | | RLD 11/19/2024 |
| 10/04/24 | 12:49 | 10/07/24 | 23:15 | TMG | 286026 | IC5364 | 100424 - | IC5452 IC5455 | IC5453 IC5456 | IC5454 IC5457 | 24.2 | 1911.17 | 0.75 | | RLD 11/19/2024 |
| 10/07/24 | 8:03 | 10/07/24 | 23:15 | TMG | 286026R 286060 | IC5364 | 100724 - | IC5452 IC5455 | IC5453 IC5456 | IC5454 IC5457 | 25.14 | 1763.09 | 0.75 | | RLD 11/19/2024 |
| 10/08/24 | 11:53 | 10/08/24 | 23:25 | TMG | 286026R 286060R | IC5364 | 100824 - | IC5452 IC5455 | IC5453 IC5456 | IC5454 IC5457 | 26.81 | 1700.96 | 0.7 | | RLD 11/19/2024 |
| 10/09/24 | 10:18 | 10/10/24 | 10:19 | TMG | 286139 286140 286159 | IC5364 | 100924 - | IC5452 IC5455 | IC5453 IC5456 | IC5454 IC5457 | 27.36 | 1614.34 | 0.7 | | RLD 11/19/2024 |
| 10/10/24 | 11:06 | 10/11/24 | 09:24 | TMG | 286183 286184 | IC5364 | 101024 - | IC5460 IC5463 | IC5461 IC5464 | IC5462 IC5465 | 26.64 | 1639.05 | 0.7 | | |
| 10/14/24 | 10:12 | 10/15/24 | 09:59 | TMG | 286240 | IC5364 | 101424 - | IC5460 IC5463 | IC5461 IC5464 | IC5462 IC5465 | 27.4 | 1675.62 | 0.7 | | |
| 10/15/24 | 12:44 | 10/15/24 | 18:32 | TMG | 286303 Nitrocellulose | IC5364 | 101524 - | IC5460 IC5467 | IC5461 IC5468 | IC5462 IC5469 | 26.54 | 1814.78 | 0.7 | | |
| 10/16/24 | 13:50 | 10/16/24 | 23:44 | TMG | 286059 Nitrocellulose | IC5364 | 101624 - | IC5460 IC5467 | IC5461 IC5468 | IC5462 IC5469 | 26.81 | 1847.12 | 0.7 | | |
| 10/17/24 | 14:50 | 10/18/24 | 13:40 | TMG | 286381 286385 | IC5364 | 101724 - | IC5473 IC5476 | IC5474 IC5477 | IC5475 IC5478 | 25.2 | 1866.62 | 0.68 | | |
| 10/18/24 | 14:13 | 10/19/24 | 01:39 | TMG | 286059 Nitrocellulose | IC5364 | 101824 - | IC5473 IC5476 | IC5474 IC5477 | IC5475 IC5478 | 26.29 | 1953.84 | 0.68 | | |
| 10/21/24 | 10:48 | 10/22/24 | 13:56 | TMG | 286423 | IC5364 | 102124 - | IC5473 IC5476 | IC5474 IC5477 | IC5475 IC5478 | 27.12 | 2004.07 | 0.68 | | |
| 10/22/24 | 14:46 | 10/23/24 | 03:51 | TMG | 286505 | IC5364 | 102224 - | IC5473 IC5482 | IC5474 IC5483 | IC5475 IC5484 | 26.59 | 1838.58 | 0.68 | | |
| 10/24/24 | 8:57 | 10/25/24 | 14:21 | TMG | 286605 286606 | IC5364 | 102424 - | IC5485 IC5488 | IC5486 IC5489 | IC5487 IC5490 | 27.08 | 1935.71 | 0.68 | | |
| 10/28/24 | 13:25 | 10/29/24 | 12:38 | TMG | IC5492 | IC5492 | 102824 - | IC5485 IC5493 | IC5486 IC5494 | IC5487 IC5495 | 28.62 | 2128.56 | 0.92 | | |
| 10/29/24 | 13:49 | 10/30/24 | 07:31 | TMG | IC5492 | IC5492 | 102924 - | IC5485 IC5493 | IC5486 IC5494 | IC5487 IC5495 | 27.21 | 2245.63 | 0.92 | | |
| 10/30/24 | 9:03 | 10/31/24 | 17:46 | TMG | 286835 286836 | IC5364 | 103024 - | IC5485 IC5493 | IC5486 IC5494 | IC5487 IC5495 | 27.59 | 1617.87 | 0.66 | | |
| 11/04/24 | 7:53 | 11/05/24 | 02:59 | TMG | 286963 286978 | IC5364 | 110424 - | IC5499 IC5509 | IC5500 IC5510 | IC5501 IC5511 | 28.64 | 1568.63 | 0.66 | | |
| 11/11/24 | 9:10 | 11/12/24 | 10:52 | TMG | 287167 287168 | IC5364 | 111124 - | IC5512 IC5515 | IC5513 IC5516 | IC5514 IC5517 | 28.5 | 1582.35 | 0.66 | | |
| 11/14/24 | 10:20 | 11/15/24 | 11:45 | TMG | 287271 | IC5364 | 111424 - | IC5521 IC5524 | IC5522 IC5525 | IC5523 IC5526 | 27.88 | 1611.68 | 0.66 | | |
| 11/18/24 | 7:42 | 11/19/24 | 11:09 | TMG | 287381 | IC5364 | 111824 - | IC5521 IC5524 | IC5522 IC5525 | IC5523 IC5526 | 25.97 | 1634.74 | 0.66 | | |
| 11/20/24 | 8:05 | 11/21/24 | 13:30 | TMG | 287444 | IC5364 | 112024 - | IC5521 IC5527 | IC5522 IC5528 | IC5523 IC5529 | 25.43 | 1668.97 | 0.66 | | |
| 11/25/24 | 7:39 | 11/26/24 | 11:10 | TMG | 287620 | IC5364 | 112224 - | IC5530 IC5533 | IC5531 IC5534 | IC5532 IC5535 | 32.89 | 1628.86 | 0.66 | | |
| 11/27/24 | 7:45 | 11/28/24 | 04:59 | TMG | 287679 287682 | IC5364 | 112724 - | IC5536 IC5539 | IC5537 IC5540 | IC5538 IC5541 | 27.67 | 1577.03 | 0.62 | | |
| 12/02/24 | 13:46 | 12/03/24 | 11:26 | TMG | 286761 286762 MDL W S | IC5364 | 120224 - | IC5536 IC5539 | IC5537 IC5540 | IC5538 IC5541 | 28.31 | 2145.22 | 0.75 | | |
| 12/03/24 | 12:31 | 12/04/24 | 12:55 | TMG | 287787 | IC5364 | 120324 - | IC5536 IC5543 | IC5537 IC5544 | IC5538 IC5545 | 29.69 | 2143.01 | 0.73 | | |
| 12/04/24 | 14:21 | 12/05/24 | 08:13 | TMG | 287841 | IC5364 | 120424 - | IC5536 IC5543 | IC5537 IC5544 | IC5538 IC5545 | 29.95 | 2453.08 | 0.73 | | |
| 12/05/24 | 8:56 | 12/05/24 | 18:11 | TMG | 287861 | IC5364 | 120524 - | IC5546 IC5549 | IC5547 IC5550 | IC5548 IC5551 | 29.98 | 2565.46 | 0.75 | | |
| 12/06/24 | 8:41 | 12/07/24 | 01:45 | TMG | 287914 | IC5364 | 120624 - | IC5546 IC5549 | IC5547 IC5550 | IC5548 IC5551 | 31.57 | 2313.74 | 0.75 | | |
| 12/11/24 | 10:35 | 12/11/24 | 21:28 | TMG | 287900 Nitrocellulose | IC5364 | 121124 - | IC5546 IC5554 | IC5547 IC5555 | IC5548 IC5556 | 3308 | 1771.45 | 0.81 | | |
| 12/12/24 | 7:41 | 12/14/24 | 05:47 | TMG | 288049 288078 288079 288085 | IC5364 | 121224 - | IC5560 IC5563 | IC5561 IC5564 | IC5562 IC5565 | 33.43 | 1773.66 | 0.81 | | |
| 12/13/24 | 7:47 | 12/14/24 | 05:18 | TMG | RR 288112 288113 | IC5364 | 121324 - | IC5560 IC5563 | IC5561 IC5564 | IC5562 IC5565 | 32.8 | 1723.43 | 0.8 | | |
| 12/14/24 | 12:49 | 12/17/24 | 13:13 | TMG | 288130 288131 | IC5364 | 121424 - | IC5560 IC5563 | IC5561 IC5564 | IC5562 IC5565 | 32.51 | 1916.95 | 0.79 | | |
| 12/17/24 | 14:23 | 12/18/24 | 05:21 | TMG | 288211 | IC5364 | 121724 - | IC5560 IC5573 | IC5561 IC5574 | IC5562 IC5575 | 29.78 | 1802.81 | 0.65 | | |
| 12/18/24 | 11:56 | 12/21/24 | 10:57 | TMG | 288039 288040 288236 288237 288238 Nitrocellulose | IC5364 | 121824 - | IC5560 IC5573 | IC5561 IC5574 | IC5562 IC5575 | 27.67 | 1646.33 | 0.65 | | |
| 12/20/24 | 3:29 | 12/21/24 | 10:57 | TMG | 288273 288274 288308 | IC5364 | 122024 - | IC5576 IC5579 | IC5577 IC5580 | IC5578 IC5581 | 28.16 | 1684.48 | 0.65 | | |
| 12/23/24 | 9:49 | 12/24/24 | 15:02 | TMG | 288327 288343 288345 | IC5364 | 122324 - | IC5576 IC5579 | IC5577 IC5580 | IC5578 IC5581 | 29.59 | 1710.03 | 0.67 | | |
| 12/27/24 | 9:23 | 12/27/24 | 21:03 | TMG | 288279 288401 | IC5364 | 122724 - | IC5583 IC5586 | IC5584 IC5587 | IC5585 IC5588 | 27.56 | 1692.67 | 0.67 | | |

# W CARBON, INORG & ORG Analytical Run
# 288154 on 12/30/2024

Date Analyzed: _____ Date Reviewed: _____

Date Entered: _____ Date Validated: _____

| COC | ORDER | SAMPLE DECRIPTION | SAMPLE DATE/ TIME | | QC TYPE (Parent Sample) | CLIENT | PROJECT | TEST | PREP BATCH | MATRIX | DEL | RUSH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1541805 | | | | | | | W CARBON, INORG & ORG | | | | |
| | | | | | CCV | | | | 0 | | | |
| | 1541807 | | | | | | | W CARBON, INORG & ORG | | | | |
| | | | | | MBW | | | | 0 | | | |
| 191589 | 1537124 | | 12/10/2024 | 09:10 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 54 | CARBON, INORG & ORG | | GW | 4 | |
| | | 54MW13 | | | | | | | | | | |
| 191589 | 1537127 | | 12/10/2024 | 10:45 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 54 | CARBON, INORG & ORG | | GW | 4 | |
| | | 54MW10 | | | | | | | | | | |
| 191589 | 1537128 | | 12/10/2024 | 10:45 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 54 | CARBON, INORG & ORG | | GW | 4 | |
| | | 54TW10 | | | | | | | | | | |
| 191589 | 1537129 | | 12/10/2024 | 12:15 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 54 | CARBON, INORG & ORG | | GW | 4 | |
| | | 54MW12 | | | Designated MS/MSD | | | | | | | |
| 191589 | 1537130 | | 12/10/2024 | 13:50 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 54 | CARBON, INORG & ORG | | GW | 4 | |
| | | 54MW1 | | | | | | | | | | |
| | 1541808 | | | | | | | W CARBON, INORG & ORG | | | | |
| | | | | | LCSW | | | | 0 | | | |
| | 1539120 | | | | | | | W CARBON, INORG & ORG | | | | |
| | | | | | CCV | | | | | | | |
| | 1542588 | | | | | | | W CARBON, INORG & ORG | | | | |
| | | | | | CCB | | | | | | | |

**10** SAMPLE COUNT ON RUN, INCLUDING METHOD AND INSTRUMENT QC

**Matrix: S-Soil Slg-Sludge GW-GroundWater M-Misc Waste SW-Surface Water A-Air WW-WasteWater DW-Drinking Water SD=Sediment Leachate=LE**

Distribution:

C:\Windows\ServiceProfiles\LocalService\AppData\Local\Temp\tmpF1A9.tmp

## FWC39-01 Data Review Checklist

| | | | | | |
|---|---|---|---|---|---|
| | Method: Total Organic Carbon Method 415.1/9060/SM5310B | | Independent Data Review Checklist | | Instrument: TOCW |
| **LIMS Run #(s)** | **Analysis Date** | **Analyst / Data Interpreter** | **Independent Reviewer** | **Date of Review** | **Approved? (Yes or No)** |
| 288154 | 12/16/2024 | TMG | RLD | 12/30/2024 | Yes |

**Instructions:** Complete one checklist per *analytical sequence* . Enter the appropriate response for each question. Each "No" response requires an explanation in the Comments section, and may require the initiation of a Nonconformance Report.

| **Requirement** | **Acceptance Criteria** | **Analyst Review** | | **Independent Review** | | **Comments** |
|---|---|---|---|---|---|---|
| | | Yes | No | Yes | No | (Indicate reference to an attachment if necessary) |
| 1. Were the samples preserved prior to analysis and analyzed within hold time? | pH <2, 28 days or program/project specific | Yes | | Yes | | |
| 2. Was the calibration curve performed using the required number of standards? | 3 standards and a blank | Yes | | Yes | | |
| 3. Was relative error (%RE) or Relative Standard Error (%RSE) acceptable? | %RE at low point 50-150, %RE at midpoint 80-120, RSE <15% | Yes | | Yes | | |
| 4. Was the correlation coefficient acceptable? | r ≥ .995 | Yes | | Yes | | |
| 5. Were the ICV and ICB analyzed? | --- | Yes | | Yes | | |
| 6. Was the ICV result acceptable? | 90 – 110 % Rec. or contract/program specific | Yes | | Yes | | |
| 7. Was the ICB result acceptable? | < LOD or contract/program specific | Yes | | Yes | | |
| 8. Was an LCS & MB run with each batch of samples? | One each per analytical batch or contract/program specific frequency. | Yes | | Yes | | |
| 9. Was the LCS recovery acceptable? | In-house derived or contract/program specific limits. | Yes | | Yes | | |
| 10. Were the MB results acceptable? | < LOD or project/ program specific (<1/2 RL for DOD-QSM). | | No | | No | Samples were 20 times above LOQ, no flags |
| 11. Were the CCV's analyzed at the required frequency? | Beginning, after every 10 sample, & at the end of a sequence. | Yes | | Yes | | |
| 12. Were the CCB's analyzed at the required frequency? | After each CCV (unless MB analyzed after CCV) | Yes | | Yes | | |
| 13. Were the CCV recoveries acceptable? | 90 – 110 % Rec. or project/ program specific | Yes | | Yes | | |
| 14. Were the CCB results acceptable? | < LOD or project/ program specific | Yes | | Yes | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 15. Were all positive results that were reported within the calibration curve? | --- | Yes | | Yes | | |
| 16. Was an MS and MSD analyzed at the required frequency? | 1 / 20 of the same matrix or project/ program specific | Yes | | Yes | | |
| 17. Were the MS and MSD recoveries acceptable? | In-house derived or project/ program specific limits | Yes | | Yes | | |
| 18. Was the RPD between the MS and MSD acceptable? | In-house derived or project/ program specific limits | Yes | | Yes | | |
| 19. Was a Duplicate analyzed at the required frequency? | 1 per 20 of the same matrix or contract/program specific | Yes | | Yes | | |
| 20. Was the RPD between the Duplicate (if valid) and the sample acceptable? | In-house derived or project/ program specific limits (QSM samples, duplicate only valid when sample result ≥5x the LOQ) | Yes | | Yes | | |
| 21. Are all samples on the job lists accounted for? | --- | Yes | | Yes | | |
| 22. Is the standards prep log numbers noted on the analytical report? | --- | Yes | | Yes | | |
| 23. Were post analysis corrections addressed and/or the Audit Trail function turned on (if available)? | Correction should be initialed, dated, and reason given. Audit trail must be on (if available) | Yes | | Yes | | |
| 24. Were non-matrix related nonconformities (if applicable) documented in the NCR spreadsheet? | --- | Yes | | Yes | | |

*Non-Applicable Yes/No Cells Are Left Blank*

Comments:

# WORGANIC CARBON QSM 5.0 Analytical Run
# 288395 on 12/30/2024

Date Analyzed: _____ Date Reviewed: _____

Date Entered: _____ Date Validated: _____

| COC | ORDER | SAMPLE DECRIPTION | SAMPLE DATE/ TIME | QC TYPE (Parent Sample) | CLIENT | PROJECT | TEST | PREP BATCH | MATRIX | DEL | RUSH |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1542584 | | | | | | WORGANIC CARBON QSM 5.0 | | | | |
| | | | | ICV | | | | | | | |
| | 1542583 | | | | | | WORGANIC CARBON QSM 5.0 | | | | |
| | | | | ICB | | | | | | | |
| | 1542515 | | | | | | WORGANIC CARBON QSM 5.0 | | | | |
| | | | | CCV | | | | 0 | | | |
| | 1542516 | | | | | | WORGANIC CARBON QSM 5.0 | | | | |
| | | | | LCSW | | | | 0 | | | |
| | 1542517 | | | | | | WORGANIC CARBON QSM 5.0 | | | | |
| | | | | MBW | | | | 0 | | | |
| 191577 | 1537078 | | 12/9/2024 09:40 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 49 | ORGAN CARBON T QSM 5.0 | | GW | 4 | |
| | | 13MW5 | | | | | | | | | |
| | 1542518 | | | | | | WORGANIC CARBON QSM 5.0 | | | | |
| | | | | CCV | | | | 0 | | | |
| | 1542519 | | | | | | WORGANIC CARBON QSM 5.0 | | | | |
| | | | | CCB | | | | 0 | | | |
| 191577 | 1537079 | | 12/9/2024 11:15 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 49 | ORGAN CARBON T QSM 5.0 | | GW | 4 | |
| | | 13MW4 | | Designated MS/MSD | | | | | | | |
| | 1542520 | | 12/9/2024 11:15 | | | | ORGAN CARBON T QSM 5.0 | | | | |
| | | 13MW4 | | DUP 1537079 | | | | 0 | | | |
| | 1542521 | | 12/9/2024 11:15 | | | | ORGAN CARBON T QSM 5.0 | | | | |
| | | 13MW4 | | MSW 1537079 | | | | 0 | | | |
| | 1542522 | | 12/9/2024 11:15 | | | | ORGAN CARBON T QSM 5.0 | | | | |
| | | 13MW4 | | MSDW 1542521 | | | | 0 | | | |
| 191577 | 1537080 | | 12/9/2024 13:15 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 49 | ORGAN CARBON T QSM 5.0 | | GW | 4 | |
| | | 13MW3 | | | | | | | | | |
| 191577 | 1537081 | | 12/9/2024 13:15 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 49 | ORGAN CARBON T QSM 5.0 | | GW | 4 | |
| | | 13TW3 | | | | | | | | | |
| 191577 | 1537082 | | 12/9/2024 14:25 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 49 | ORGAN CARBON T QSM 5.0 | | GW | 4 | |
| | | 49MW04 | | | | | | | | | |
| 191577 | 1537083 | | 12/9/2024 15:15 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 49 | ORGAN CARBON T QSM 5.0 | | GW | 4 | |
| | | 13MW2 | | | | | | | | | |
| 191577 | 1537084 | | 12/9/2024 16:10 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 49 | ORGAN CARBON T QSM 5.0 | | GW | 4 | |
| | | 49MW05 | | | | | | | | | |

**Matrix: S-Soil Slg-Sludge GW-GroundWater M-Misc Waste SW-Surface Water A-Air WW-WasteWater DW-Drinking Water SD=Sediment Leachate=LE**

Distribution: WetChem C:\Windows\ServiceProfiles\LocalService\AppData\Local\Temp\tmp636D.tmp Page 1 of 1

# WORGANIC CARBON QSM 5.0 Analytical Run
# 288395 on 12/30/2024

Date Analyzed: _____ Date Reviewed: _____

Date Entered: _____ Date Validated: _____

| COC | ORDER | SAMPLE DECRIPTION | SAMPLE DATE/ TIME | QC TYPE (Parent Sample) | CLIENT | PROJECT | TEST | PREP BATCH | MATRIX | DEL | RUSH |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 191589 | 1537124 | | 12/10/2024 09:10 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 54 | ORGAN CARBON T QSM 5.0 | | GW | 4 | |
| | | 54MW13 | | | | | | | | | |
| | 1542523 | | | | | | WORGANIC CARBON QSM 5.0 | | | | |
| | | | | CCV | | | | 0 | | | |
| | 1542524 | | | | | | WORGANIC CARBON QSM 5.0 | | | | |
| | | | | CCB | | | | 0 | | | |
| 191589 | 1537127 | | 12/10/2024 10:45 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 54 | ORGAN CARBON T QSM 5.0 | | GW | 4 | |
| | | 54MW10 | | | | | | | | | |
| 191589 | 1537128 | | 12/10/2024 10:45 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 54 | ORGAN CARBON T QSM 5.0 | | GW | 4 | |
| | | 54TW10 | | | | | | | | | |
| 191589 | 1537129 | | 12/10/2024 12:15 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 54 | ORGAN CARBON T QSM 5.0 | | GW | 4 | |
| | | 54MW12 | | Designated MS/MSD | | | | | | | |
| | 1542525 | | 12/10/2024 12:15 | | | | ORGAN CARBON T QSM 5.0 | | | | |
| | | 54MW12 | | DUP 1537129 | | | | 0 | | | |
| | 1542526 | | 12/10/2024 12:15 | | | | ORGAN CARBON T QSM 5.0 | | | | |
| | | 54MW12 | | MSW 1537129 | | | | 0 | | | |
| | 1542527 | | 12/10/2024 12:15 | | | | ORGAN CARBON T QSM 5.0 | | | | |
| | | 54MW12 | | MSDW 1542526 | | | | 0 | | | |
| 191589 | 1537130 | | 12/10/2024 13:50 | | CAPE ENVIRONMENTAL MANAGEMENT | RADFORD AAP SWMU 54 | ORGAN CARBON T QSM 5.0 | | GW | 4 | |
| | | 54MW1 | | | | | | | | | |
| | 1542528 | | | | | | WORGANIC CARBON QSM 5.0 | | | | |
| | | | | CCV | | | | 0 | | | |
| | 1542529 | | | | | | WORGANIC CARBON QSM 5.0 | | | | |
| | | | | CCB | | | | 0 | | | |

**29** SAMPLE COUNT ON RUN, INCLUDING METHOD AND INSTRUMENT QC

**Matrix: S-Soil Slg-Sludge GW-GroundWater M-Misc Waste SW-Surface Water A-Air WW-WasteWater DW-Drinking Water SD=Sediment Leachate=LE**

Distribution:

C:\Windows\ServiceProfiles\LocalService\AppData\Local\Temp\tmp636D.tmp

## FWC39-01 Data Review Checklist

| | Method: Total Organic Carbon Method 415.1/9060/SM5310B | Independent Data Review Checklist | Instrument: TOCW |
|---|---|---|---|

| LIMS Run #(s) | Analysis Date | Analyst / Data Interpreter | Independent Reviewer | Date of Review | Approved? (Yes or No) |
|---|---|---|---|---|---|
| 288395 288397 | 12/27/2024 | TMG | RLD | 12/30/2024 | Yes |

**Instructions:** Complete one checklist per *analytical sequence* . Enter the appropriate response for each question. Each "No" response requires an explanation in the Comments section, and may require the initiation of a Nonconformance Report.

| Requirement | Acceptance Criteria | Analyst Review | | Independent Review | | Comments |
|---|---|---|---|---|---|---|
| | | Yes | No | Yes | No | (Indicate reference to an attachment if necessary) |
| 1. Were the samples preserved prior to analysis and analyzed within hold time? | pH <2, 28 days or program/project specific | Yes | | Yes | | |
| 2. Was the calibration curve performed using the required number of standards? | 3 standards and a blank | Yes | | Yes | | |
| 3. Was relative error (%RE) or Relative Standard Error (%RSE) acceptable? | %RE at low point 50-150, %RE at midpoint 80-120, RSE <15% | Yes | | Yes | | |
| 4. Was the correlation coefficient acceptable? | r ≥ .995 | Yes | | Yes | | |
| 5. Were the ICV and ICB analyzed? | --- | Yes | | Yes | | |
| 6. Was the ICV result acceptable? | 90 – 110 % Rec. or contract/program specific | Yes | | Yes | | |
| 7. Was the ICB result acceptable? | < LOD or contract/program specific | Yes | | Yes | | |
| 8. Was an LCS & MB run with each batch of samples? | One each per analytical batch or contract/program specific frequency. | Yes | | Yes | | |
| 9. Was the LCS recovery acceptable? | In-house derived or contract/program specific limits. | Yes | | Yes | | |
| 10. Were the MB results acceptable? | < LOD or project/ program specific (<1/2 RL for DOD-QSM). | Yes | | Yes | | |
| 11. Were the CCV's analyzed at the required frequency? | Beginning, after every 10 sample, & at the end of a sequence. | Yes | | Yes | | |
| 12. Were the CCB's analyzed at the required frequency? | After each CCV (unless MB analyzed after CCV) | Yes | | Yes | | |
| 13. Were the CCV recoveries acceptable? | 90 – 110 % Rec. or project/ program specific | Yes | | Yes | | |
| 14. Were the CCB results acceptable? | < LOD or project/ program specific | Yes | | Yes | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 15. Were all positive results that were reported within the calibration curve? | --- | Yes | | Yes | | |
| 16. Was an MS and MSD analyzed at the required frequency? | 1 / 20 of the same matrix or project/ program specific | Yes | | Yes | | |
| 17. Were the MS and MSD recoveries acceptable? | In-house derived or project/ program specific limits | Yes | | Yes | | |
| 18. Was the RPD between the MS and MSD acceptable? | In-house derived or project/ program specific limits | Yes | | Yes | | |
| 19. Was a Duplicate analyzed at the required frequency? | 1 per 20 of the same matrix or contract/program specific | Yes | | Yes | | |
| 20. Was the RPD between the Duplicate (if valid) and the sample acceptable? | In-house derived or project/ program specific limits (QSM samples, duplicate only valid when sample result ≥5x the LOQ) | Yes | | Yes | | |
| 21. Are all samples on the job lists accounted for? | --- | Yes | | Yes | | |
| 22. Is the standards prep log numbers noted on the analytical report? | --- | Yes | | Yes | | |
| 23. Were post analysis corrections addressed and/or the Audit Trail function turned on (if available)? | Correction should be initialed, dated, and reason given. Audit trail must be on (if available) | Yes | | Yes | | |
| 24. Were non-matrix related nonconformities (if applicable) documented in the NCR spreadsheet? | --- | Yes | | Yes | | |

*Non-Applicable Yes/No Cells Are Left Blank*

Comments:

# TOC Instrument Run Logbook

| Start Date | Start Time | End Date | End Time | Analyst | LIMs Run # | Matrix (S or W) | Calibration ID # | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| 11/18/2024 | 9:05 | 11/18/2024 | 16:24 | TMG | 287316, 287317 | W | 0710 | |
| 11/20/2024 | 9:45 | 11/20/2024 | 12:08 | TMG | 287443 | S | 0713 | |
| 11/22/2024 | 10:49 | 11/22/2024 | 16:33 | TMG | 287520 | W | 0710 | |
| 11/25/2024 | 12:28 | 11/25/2024 | 13:45 | TMG | 287520R | W | 0710 | |
| 11/26/2024 | 13:09 | 11/26/2024 | 19:17 | TMG | 287521, 287665 | W | 0710 | |
| 11/27/2024 | 9:34 | 11/27/2024 | 11:20 | TMG | 287665R | W | 0710 | |
| 12/02/2024 | 10:14 | 12/2/2024 | 11:49 | TMG | 287744 | ~~W~~ S* | 0713 | * TMG 12/3/24 |
| 12/2/2024 | 12:06 | 12/2/2024 | 12:11 | TMG | 287744R | S | 0713 | |
| 12/6/2024 | 9:29 | 12/6/2024 | 20:51 | TMG | 287863, 287864 | W | 0710 | |
| 12/10/2024 | 15:00 | 12/11/2024 | 13:43 | TMG | 287994, 287995 | W | 0710 | Not used. Instrument not communicating |
| 12/12/2024 | 13:54 | 12/12/2024 | 16:56 | TMG | 287994, 287995 | W | 0710 | Not used. Instrument not communicating. |
| 12/16/2024 | 8:37 | 12/16/2024 | 11:02 | TMG | 288105 | S | 0713 | |
| 12/16/2024 | 14:45 | 12/16/2024 | 17:07 | TMG | 288154 | W | 0710 | TIC |
| 12/17/2024 | 8:35 | 12/17/2024 | 9:15 | TMG | 288154R | W | 0710 | TIC |
| 12/17/2024 | 11:50 | 12/17/2024 | 17:32 | TMG | 287994 | W | 0710 | |
| 12/23/2024 | 12:16 | 12/23/2024 | 19:12 | TMG | 287995 | W | 0710 | |
| 12/24/2024 | 9:13 | 12/24/2024 | 10:47 | TMG | 288326 | S | 0713 | |
| 12/27/2024 | 9:35 | 12/27/2024 | 20:33 | TMG | 288395, 288397 | W | 0710 | |

Reviewed By:_____

# SUBCONTRACTED ANALYSIS DOCUMENTS

eurofins | Environment Testing

# ANALYTICAL REPORT

## PREPARED FOR

Attn: Brett Szymanski
CT Laboratories
Environmental & Analytical Services
1230 Lange Court
Baraboo WI 53913

Generated 12/16/2024 9:24 AM

## JOB DESCRIPTION

1537124

## JOB NUMBER

810-131403-1

Eurofins Eaton Analytical South Bend
110 S Hill Street
South Bend IN 46617

See page two for job notes and contact information.



my EOL

# Eurofins Eaton Analytical South Bend

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Eaton Analytical, LLC Project Manager.

## Authorization



Generated
12/16/2024 9:24 AM

Authorized for release by
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## Qualifiers

### HPLC/IC

| Qualifier | Qualifier Description |
|---|---|
| F1 | MS and/or MSD recovery exceeds control limits. |

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ☼ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CFU | Colony Forming Unit |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MCL | EPA recommended "Maximum Contaminant Level" |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| MPN | Most Probable Number |
| MQL | Method Quantitation Limit |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| NEG | Negative / Absent |
| POS | Positive / Present |
| PQL | Practical Quantitation Limit |
| PRES | Presumptive |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |
| TNTC | Too Numerous To Count |

**Job Narrative**
**810-131403-1**

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

**Receipt**
The samples were received on 12/12/2024 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.2°C.

**HPLC/IC**
Method 300_OF_14D_B: The matrix spike (MS) recovery for Batch: 126563, Sample 810-131403-4 was outside control limit of 90-110% at 88% recovery for the analyte: Chlorite. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

# Detection Summary

Client: CT Laboratories
Project/Site: 1537124

Job ID: 810-131403-1

## Client Sample ID: 54MW13 — Lab Sample ID: 810-131403-1

No Detections.

## Client Sample ID: 54MW10 — Lab Sample ID: 810-131403-2

No Detections.

## Client Sample ID: 54TW10 — Lab Sample ID: 810-131403-3

No Detections.

## Client Sample ID: 54MW12 — Lab Sample ID: 810-131403-4

No Detections.

## Client Sample ID: 54MW1 — Lab Sample ID: 810-131403-5

No Detections.

This Detection Summary does not include radiochemical test results.

## Client Sample ID: 54MW13
**Lab Sample ID: 810-131403-1**
**Date Collected: 12/10/24 09:10**
**Matrix: Drinking Water**
**Date Received: 12/12/24 09:30**

### Method: EPA 300.0 - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Chlorite | <10 | | 10 | | ug/L | | | 12/14/24 16:47 | 1 |
| Chlorate | <10 | | 10 | | ug/L | | | 12/14/24 16:47 | 1 |

## Client Sample ID: 54MW10
**Lab Sample ID: 810-131403-2**
**Date Collected: 12/10/24 10:45**
**Matrix: Drinking Water**
**Date Received: 12/12/24 09:30**

### Method: EPA 300.0 - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Chlorite | <10 | | 10 | | ug/L | | | 12/14/24 17:15 | 1 |
| Chlorate | <10 | | 10 | | ug/L | | | 12/14/24 17:15 | 1 |

## Client Sample ID: 54TW10
**Lab Sample ID: 810-131403-3**
**Date Collected: 12/10/24 10:45**
**Matrix: Drinking Water**
**Date Received: 12/12/24 09:30**

### Method: EPA 300.0 - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Chlorite | <10 | | 10 | | ug/L | | | 12/14/24 17:42 | 1 |
| Chlorate | <10 | | 10 | | ug/L | | | 12/14/24 17:42 | 1 |

## Client Sample ID: 54MW12
**Lab Sample ID: 810-131403-4**
**Date Collected: 12/10/24 12:15**
**Matrix: Drinking Water**
**Date Received: 12/12/24 09:30**

### Method: EPA 300.0 - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Chlorite | <10 | F1 | 10 | | ug/L | | | 12/14/24 15:23 | 1 |
| Chlorate | <10 | | 10 | | ug/L | | | 12/14/24 15:23 | 1 |

## Client Sample ID: 54MW1
**Lab Sample ID: 810-131403-5**
**Date Collected: 12/10/24 13:50**
**Matrix: Drinking Water**
**Date Received: 12/12/24 09:30**

### Method: EPA 300.0 - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Chlorite | <10 | | 10 | | ug/L | | | 12/14/24 18:10 | 1 |
| Chlorate | <10 | | 10 | | ug/L | | | 12/14/24 18:10 | 1 |

# Action Limit Summary

Client: CT Laboratories
Project/Site: 1537124

Job ID: 810-131403-1

## Client Sample ID: 54MW13 — Lab Sample ID: 810-131403-1

### Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits have been highlighted for your convenience.

| Analyte | Result | Qualifier | Unit | EPAMCL Limit | RL | Method | Prep Type |
|---|---|---|---|---|---|---|---|
| Chlorite | <10 | | ug/L | 1000 | 10 | 300.0 | Total/NA |

## Client Sample ID: 54MW10 — Lab Sample ID: 810-131403-2

### Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits have been highlighted for your convenience.

| Analyte | Result | Qualifier | Unit | EPAMCL Limit | RL | Method | Prep Type |
|---|---|---|---|---|---|---|---|
| Chlorite | <10 | | ug/L | 1000 | 10 | 300.0 | Total/NA |

## Client Sample ID: 54TW10 — Lab Sample ID: 810-131403-3

### Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits have been highlighted for your convenience.

| Analyte | Result | Qualifier | Unit | EPAMCL Limit | RL | Method | Prep Type |
|---|---|---|---|---|---|---|---|
| Chlorite | <10 | | ug/L | 1000 | 10 | 300.0 | Total/NA |

## Client Sample ID: 54MW12 — Lab Sample ID: 810-131403-4

### Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits have been highlighted for your convenience.

| Analyte | Result | Qualifier | Unit | EPAMCL Limit | RL | Method | Prep Type |
|---|---|---|---|---|---|---|---|
| Chlorite | <10 | F1 | ug/L | 1000 | 10 | 300.0 | Total/NA |

## Client Sample ID: 54MW1 — Lab Sample ID: 810-131403-5

### Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits have been highlighted for your convenience.

| Analyte | Result | Qualifier | Unit | EPAMCL Limit | RL | Method | Prep Type |
|---|---|---|---|---|---|---|---|
| Chlorite | <10 | | ug/L | 1000 | 10 | 300.0 | Total/NA |

# Default Detection Limits

Client: CT Laboratories
Project/Site: 1537124

Job ID: 810-131403-1

## Method: 300.0 - Anions, Ion Chromatography

| Analyte | RL | | Units |
|---|---|---|---|
| Chlorate | 10 | 5.3 | ug/L |
| Chlorite | 10 | 3.0 | ug/L |

## Method: 300.0 - Anions, Ion Chromatography

**Lab Sample ID: MB 810-126563/4**
**Matrix: Drinking Water**
**Analysis Batch: 126563**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Chlorite | <10 | | 10 | | ug/L | | | 12/14/24 07:28 | 1 |
| Chlorate | <10 | | 10 | | ug/L | | | 12/14/24 07:28 | 1 |

**Lab Sample ID: LCS 810-126563/5**
**Matrix: Drinking Water**
**Analysis Batch: 126563**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chlorite | | | 250 | 249 | | ug/L | | 99 | 90 - 110 | | |
| Chlorate | | | 250 | 254 | | ug/L | | 102 | 90 - 110 | | |

**Lab Sample ID: LLCS 810-126563/1**
**Matrix: Drinking Water**
**Analysis Batch: 126563**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | | | Spike Added | LLCS Result | LLCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chlorite | | | 10.0 | 14.9 | | ug/L | | 149 | 50 - 150 | | |
| Chlorate | | | 10.0 | 10.5 | | ug/L | | 105 | 50 - 150 | | |

**Lab Sample ID: 810-131403-4 MS**
**Matrix: Drinking Water**
**Analysis Batch: 126563**

**Client Sample ID: 54MW12 MS**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chlorite | <10 | F1 | 250 | 228 | F1 | ug/L | | 88 | 90 - 110 | | |
| Chlorate | <10 | | 250 | 245 | | ug/L | | 98 | 90 - 110 | | |

**Lab Sample ID: 810-131403-4 MSD**
**Matrix: Drinking Water**
**Analysis Batch: 126563**

**Client Sample ID: 54MW12 MSD**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chlorite | <10 | F1 | 250 | 231 | | ug/L | | 90 | 90 - 110 | 1 | 20 |
| Chlorate | <10 | | 250 | 248 | | ug/L | | 99 | 90 - 110 | 1 | 20 |

# QC Association Summary

Client: CT Laboratories
Project/Site: 1537124

Job ID: 810-131403-1

## HPLC/IC

### Analysis Batch: 126563

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 810-131403-1 | 54MW13 | Total/NA | Drinking Water | 300.0 | |
| 810-131403-2 | 54MW10 | Total/NA | Drinking Water | 300.0 | |
| 810-131403-3 | 54TW10 | Total/NA | Drinking Water | 300.0 | |
| 810-131403-4 | 54MW12 | Total/NA | Drinking Water | 300.0 | |
| 810-131403-5 | 54MW1 | Total/NA | Drinking Water | 300.0 | |
| MB 810-126563/4 | Method Blank | Total/NA | Drinking Water | 300.0 | |
| LCS 810-126563/5 | Lab Control Sample | Total/NA | Drinking Water | 300.0 | |
| LLCS 810-126563/1 | Lab Control Sample | Total/NA | Drinking Water | 300.0 | |
| 810-131403-4 MS | 54MW12 MS | Total/NA | Drinking Water | 300.0 | |
| 810-131403-4 MSD | 54MW12 MSD | Total/NA | Drinking Water | 300.0 | |

# Lab Chronicle

Client: CT Laboratories
Project/Site: 1537124

Job ID: 810-131403-1

## Client Sample ID: 54MW13
**Date Collected: 12/10/24 09:10**
**Date Received: 12/12/24 09:30**

## Lab Sample ID: 810-131403-1
**Matrix: Drinking Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 300.0 | | 1 | 126563 | NR | EA SB | 12/14/24 16:47 |

## Client Sample ID: 54MW10
**Date Collected: 12/10/24 10:45**
**Date Received: 12/12/24 09:30**

## Lab Sample ID: 810-131403-2
**Matrix: Drinking Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 300.0 | | 1 | 126563 | NR | EA SB | 12/14/24 17:15 |

## Client Sample ID: 54TW10
**Date Collected: 12/10/24 10:45**
**Date Received: 12/12/24 09:30**

## Lab Sample ID: 810-131403-3
**Matrix: Drinking Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 300.0 | | 1 | 126563 | NR | EA SB | 12/14/24 17:42 |

## Client Sample ID: 54MW12
**Date Collected: 12/10/24 12:15**
**Date Received: 12/12/24 09:30**

## Lab Sample ID: 810-131403-4
**Matrix: Drinking Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 300.0 | | 1 | 126563 | NR | EA SB | 12/14/24 15:23 |

## Client Sample ID: 54MW1
**Date Collected: 12/10/24 13:50**
**Date Received: 12/12/24 09:30**

## Lab Sample ID: 810-131403-5
**Matrix: Drinking Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 300.0 | | 1 | 126563 | NR | EA SB | 12/14/24 18:10 |

**Laboratory References:**

EA SB = Eurofins Eaton Analytical South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

# Accreditation/Certification Summary

Client: CT Laboratories
Project/Site: 1537124

Job ID: 810-131403-1

## Laboratory: Eurofins Eaton Analytical South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| Virginia | NELAP | 460275 | 03-14-25 |

The following analytes are included in this report, but the laboratory is not certified by Virginia NELAP 460275. This list may include analytes for which the agency does not offer certification:

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| 300.0 | | Drinking Water | Chlorate |

# Method Summary

Client: CT Laboratories
Project/Site: 1537124

Job ID: 810-131403-1

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| 300.0 | Anions, Ion Chromatography | EPA | EA SB |

**Protocol References:**

EPA = US Environmental Protection Agency

**Laboratory References:**

EA SB = Eurofins Eaton Analytical South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

# Sample Summary

Client: CT Laboratories
Project/Site: 1537124

Job ID: 810-131403-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 810-131403-1 | 54MW13 | Drinking Water | 12/10/24 09:10 | 12/12/24 09:30 |
| 810-131403-2 | 54MW10 | Drinking Water | 12/10/24 10:45 | 12/12/24 09:30 |
| 810-131403-3 | 54TW10 | Drinking Water | 12/10/24 10:45 | 12/12/24 09:30 |
| 810-131403-4 | 54MW12 | Drinking Water | 12/10/24 12:15 | 12/12/24 09:30 |
| 810-131403-5 | 54MW1 | Drinking Water | 12/10/24 13:50 | 12/12/24 09:30 |

HPLC/IC MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins Eaton Analytical South Bend Job No.: 810-131403-1

SDG No.:

Instrument ID: IC-HR Analysis Batch Number: 121748

Lab Sample ID: IC 810-121748/2 Client Sample ID:

Date Analyzed: 11/07/24 17:45 Lab File ID: 110724A_3.d GC Column: IonPac AS-19 ID:

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---|---|---|---|---|
| | | REASON | ANALYST | DATE |
| Chlorite | 5.68 | Peak not integrated | U4QX | 11/08/24 15:03 |
| Chlorate | 12.62 | Incomplete Integration | U4QX | 11/08/24 15:04 |

Lab Sample ID: IC 810-121748/3 Client Sample ID:

Date Analyzed: 11/07/24 18:15 Lab File ID: 110724A_4.d GC Column: IonPac AS-19 ID:

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---|---|---|---|---|
| | | REASON | ANALYST | DATE |
| Chlorite | 5.68 | Incomplete Integration | U4QX | 11/08/24 15:06 |

HPLC/IC MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins Eaton Analytical South Bend Job No.: 810-131403-1

SDG No.:

Instrument ID: IC-HR Analysis Batch Number: 126563

Lab Sample ID: CCB 810-126563/3 Client Sample ID:

Date Analyzed: 12/14/24 07:00 Lab File ID: 121424A_12.d GC Column: IonPac AS-19 ID:

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---|---|---|---|---|
| | | REASON | ANALYST | DATE |
| Chlorite | | Invalid Compound ID | U4QX | 12/15/24 10:24 |

Lab Sample ID: MB 810-126563/4 Client Sample ID:

Date Analyzed: 12/14/24 07:28 Lab File ID: 121424A_13.d GC Column: IonPac AS-19 ID:

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---|---|---|---|---|
| | | REASON | ANALYST | DATE |
| Chlorate | | Invalid Compound ID | U4QX | 12/15/24 10:24 |

Lab Sample ID: 810-131403-4 Client Sample ID: 54MW12

Date Analyzed: 12/14/24 15:23 Lab File ID: 121424A_30.d GC Column: IonPac AS-19 ID:

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---|---|---|---|---|
| | | REASON | ANALYST | DATE |
| Chlorate | | Invalid Compound ID | U4QX | 12/15/24 10:26 |

Lab Sample ID: 810-131403-1 Client Sample ID: 54MW13

Date Analyzed: 12/14/24 16:47 Lab File ID: 121424A_33.d GC Column: IonPac AS-19 ID:

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---|---|---|---|---|
| | | REASON | ANALYST | DATE |
| Chlorate | | Invalid Compound ID | U4QX | 12/15/24 10:27 |

Lab Sample ID: 810-131403-2 Client Sample ID: 54MW10

Date Analyzed: 12/14/24 17:15 Lab File ID: 121424A_34.d GC Column: IonPac AS-19 ID:

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---|---|---|---|---|
| | | REASON | ANALYST | DATE |
| Chlorate | | Invalid Compound ID | U4QX | 12/15/24 10:27 |

HPLC/IC MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins Eaton Analytical South Bend Job No.: 810-131403-1

SDG No.:

Instrument ID: IC-HR Analysis Batch Number: 126563

Lab Sample ID: 810-131403-5 Client Sample ID: 54MW1

Date Analyzed: 12/14/24 18:10 Lab File ID: 121424A_36.d GC Column: IonPac AS-19 ID:

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---|---|---|---|---|
| | | REASON | ANALYST | DATE |
| Chlorate | | Invalid Compound ID | U4QX | 12/15/24 10:27 |
| Chlorite | | Invalid Compound ID | U4QX | 12/15/24 10:27 |

Lab Sample ID: CCB 810-126563/35 Client Sample ID:

Date Analyzed: 12/14/24 21:54 Lab File ID: 121424A_44.d GC Column: IonPac AS-19 ID:

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---|---|---|---|---|
| | | REASON | ANALYST | DATE |
| Chlorite | | Invalid Compound ID | U4QX | 12/15/24 10:28 |

# REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|---|---|---|---|---|---|---|---|---|
| | | | | | Reagent ID | Volume Added | | |
| **IC-300B CalSS_00031** | 11/28/24 | 10/31/24 | MilliQ Water, Lot 111021 | 100 mL | IC-BR-CalSt_00005 | 2500 uL | Bromide | 25 mg/L |
| | | | | | IC-CLO2-CalSt_00005 | 2500 uL | Chlorite | 25 mg/L |
| | | | | | IC-CLO3-CalSt_00005 | 2500 uL | Chlorate | 25 mg/L |
| .IC-BR-CalSt_00005 | 07/11/25 | Inorganic Venture, Lot V2-BR740950 | | | (Purchased Reagent) | | Bromide | 1000 ug/mL |
| .IC-CLO2-CalSt_00005 | 07/11/25 | Inorganic Venture, Lot V2-CLOX740545 | | | (Purchased Reagent) | | Chlorite | 1000 ug/mL |
| .IC-CLO3-CalSt_00005 | 07/11/25 | Inorganic Venture, Lot U2-CLOX730522 | | | (Purchased Reagent) | | Chlorate | 1000 ug/mL |
| **IC-300B CalSS_00032** | 01/02/25 | 12/02/24 | MilliQ Water, Lot 111021 | 100 mL | IC-CLO2-CalSt_00005 | 2500 uL | Chlorite | 25 mg/L |
| | | | | | IC-CLO3-CalSt_00005 | 2500 uL | Chlorate | 25 mg/L |
| .IC-CLO2-CalSt_00005 | 07/11/25 | Inorganic Venture, Lot V2-CLOX740545 | | | (Purchased Reagent) | | Chlorite | 1000 ug/mL |
| .IC-CLO3-CalSt_00005 | 07/11/25 | Inorganic Venture, Lot U2-CLOX730522 | | | (Purchased Reagent) | | Chlorate | 1000 ug/mL |
| **IC-300B QCSS_00031** | 12/05/24 | 11/07/24 | MilliQ Water, Lot 111021 | 100 mL | IC-CL03-QCST_00002 | 2.5 mL | Chlorate | 25 mg/L |
| | | | | | IC-CLO2_QCST_00001 | 2.5 mL | Chlorite | 25 mg/L |
| .IC-CL03-QCST_00002 | 03/31/27 | Agilent, Lot 0006730994 | | | (Purchased Reagent) | | Chlorate | 1000 ug/mL |
| .IC-CLO2_QCST_00001 | 08/09/26 | AccuStandard, Lot 224075031 | | | (Purchased Reagent) | | Chlorite | 1000 ug/mL |

# Reagent

# IC-BR-CalSt_00005

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# Certificate of Analysis

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

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F: 540-585-3012
info@inorganicventures.com

## 1.0 ACCREDITATION / REGISTRATION

**INORGANIC VENTURES** is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED
Testing Laboratory
Certificate 883.01

ACCREDITED
Reference Material Producer
Certificate 883.02

## 2.0 PRODUCT DESCRIPTION

| | |
|---|---|
| Product Code: | Single Analyte Ion Chromatography Solution |
| Catalog Number: | ICBR1 |
| Lot Number: | V2-BR740950 |
| Matrix: | H2O |
| Value / Analyte(s): | 1 000 µg/mL ea:<br>Bromide |
| Starting Material: | Potassium Bromide |
| Starting Material Lot#: | 2694 |
| Starting Material Purity: | 99.6000% |

## 3.0 CERTIFIED VALUES AND UNCERTAINTIES

**Certified Value:** 1005 ± 4 µg/mL

**Density:** 0.999 g/mL (measured at 20 ± 4 ºC)

### Assay Information:

**Assay Method #1** **1004 ± 2 µg/mL**
IC Assay NIST SRM 3184 Lot Number: 151130

**Assay Method #2** **1006 ± 5 µg/mL**
Fajans NIST SRM 999c Lot Number: 999c

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

### Characterization of CRM/RM by Two or More Methods

**Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:**

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

$X_i$ = mean of Assay Method i with standard uncertainty $u_{char\ i}$

$w_i$ = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

**CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$**

$k$ = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\,(u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

$u_{bb}$ = bottle to bottle homogeneity standard uncertainty

$u_{lts}$ = long term stability standard uncertainty (storage)

$u_{ts}$ = transport stability standard uncertainty

### Characterization of CRM/RM by One Method

**Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:**

$X_{CRM/RM} = (X_a)\,(u_{char\ a})$

$X_a$ = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

**CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$**

$k$ = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

$u_{bb}$ = bottle to bottle homogeneity standard uncertainty

$u_{lts}$ = long term stability standard uncertainty (storage)

$u_{ts}$ = transport stability standard uncertainty

## 4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

### 4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

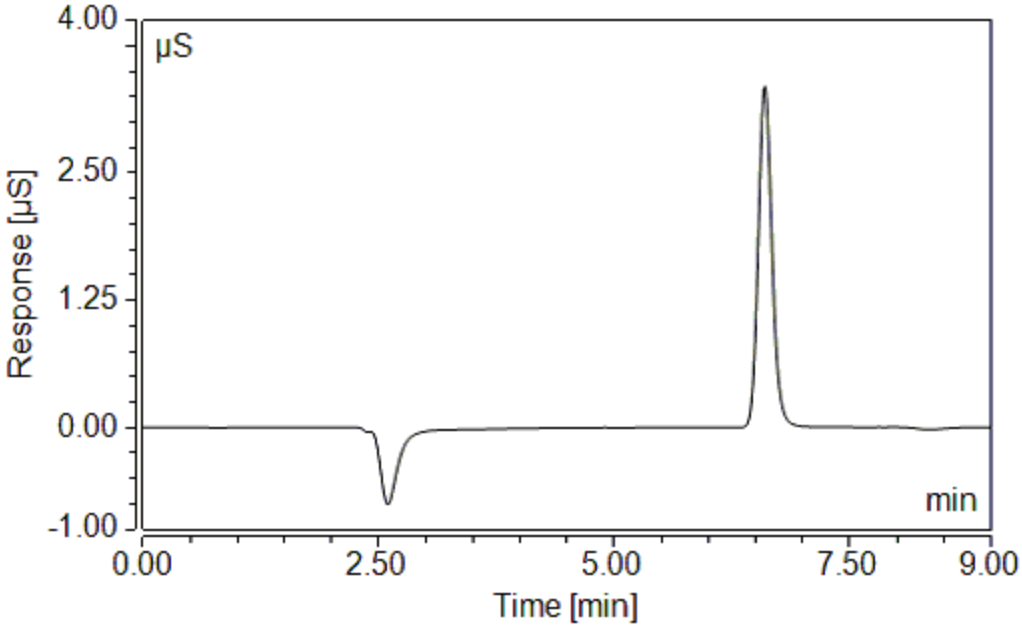
### 4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

### 4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

## 5.0 CHROMATOGRAM




**Thermo Dionex Aquion IC**

| | | | |
|---|---|---|---|
| **Analytical Column:** | IonPac AS22 4 x 250 mm | **Eluent:** | 4.5 mM Na2CO3 / 1.4mM NaHCO3 |
| **Guard Column:** | IonPac AG22 4 x 50 mm | **Eluent Flow Rate:** | 1.2mL/min |
| **Anion Self Regen Suppressor/ Chemical Suppression:** | AERS 500 4 mm | **Column Temp:** | 20°C |
| | | **Cell Temp:** | 35°C |
| **Cation Self Regen Suppressor/ Chemical Suppression:** | N/A | **Scale X-Axis:** | minutes |
| | | **Scale Y-Axis:** | 4µS/cm |
| | | **Concentration:** | 10µg/g |
| **Suppressor Current/ Chemical Suppressant:** | 41mA | | |

## 6.0 INTENDED USE

**6.1** This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

**6.2** For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures Terms and Conditions of Sale, https://www.inorganicventures.com/terms-and-conditions-sale. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

## 7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

**7.1 Storage and Handling Recommendations**

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

## 8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

## 9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

## 10.0 QUALITY STANDARD DOCUMENTATION

### 10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

### 10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

### 10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

## 11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

### 11.1 Certification Issue Date

February 14, 2024

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

### 11.2 Lot Expiration Date

- **February 14, 2029**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

**11.3 Period of Validity**

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

## 12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

**Certificate Prepared By:**

Uyen Truong
Custom Processing Supervisor



**Certificate Approved By:**

Muzzammil Khan
Stock Laboratory Supervisor



**Certifying Officer:**

Paul Gaines
Chairman / Senior Technical Director



# Reagent

# IC-ClO2-CalSt_00005

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Christiansburg, VA 24073 USA
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## 1.0 ACCREDITATION / REGISTRATION

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Reference Material Producer
Certificate 883.02

## 2.0 PRODUCT DESCRIPTION

| | |
|---|---|
| Product Code: | Single Analyte Ion Chromatography Solution |
| Catalog Number: | ICCLO21 |
| Lot Number: | V2-CLOX740545 |
| Matrix: | H2O |
| Value / Analyte(s): | 1 000 µg/mL ea:<br>Chlorite |
| Starting Material: | Sodium chlorite |
| Starting Material Lot#: | U2-BI7U016 |
| Starting Material Purity: | 98.2000% |

## 3.0 CERTIFIED VALUES AND UNCERTAINTIES

**Certified Value:** 1000 ± 4 µg/mL

**Density:** 1.000 g/mL (measured at 20 ± 4 ºC)

### Assay Information:

**Assay Method #1** **1000 ± 4 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

**Assay Method #2** **1000 ± 3 µg/mL**
Iodometric NIST SRM 136f Lot Number: 136f

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

### Characterization of CRM/RM by Two or More Methods

**Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:**

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

$X_i$ = mean of Assay Method i with standard uncertainty $u_{char\ i}$

$w_i$ = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

**CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$**

$k$ = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\,(u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

$u_{bb}$ = bottle to bottle homogeneity standard uncertainty

$u_{lts}$ = long term stability standard uncertainty (storage)

$u_{ts}$ = transport stability standard uncertainty

### Characterization of CRM/RM by One Method

**Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:**

$X_{CRM/RM} = (X_a)\,(u_{char\ a})$

$X_a$ = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

**CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$**

$k$ = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

$u_{bb}$ = bottle to bottle homogeneity standard uncertainty

$u_{lts}$ = long term stability standard uncertainty (storage)

$u_{ts}$ = transport stability standard uncertainty

## 4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

### 4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

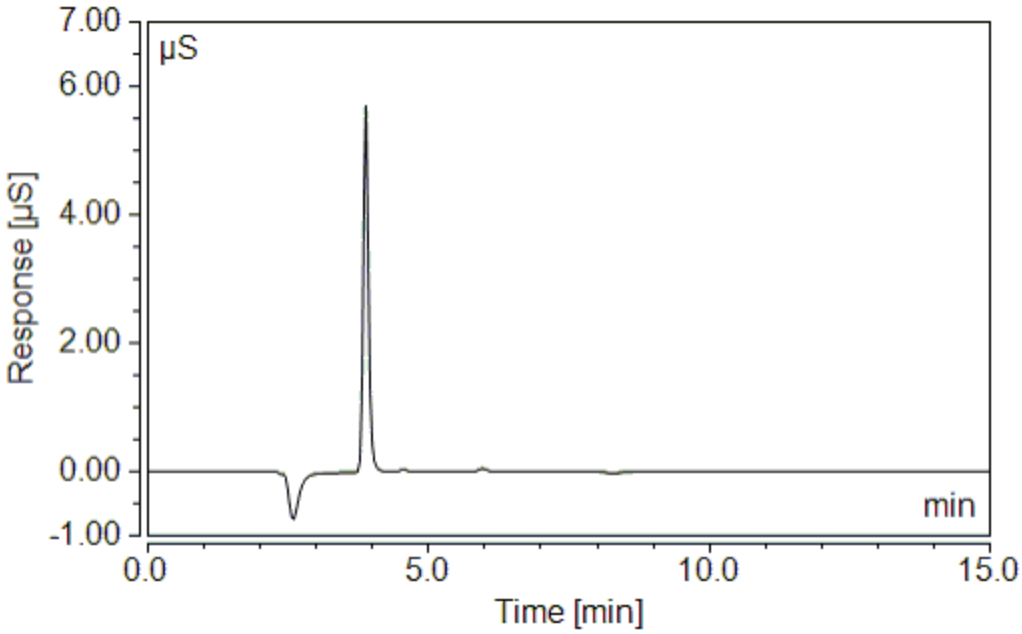
### 4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

### 4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

## 5.0 CHROMATOGRAM




**Thermo Dionex Aquion IC**

| | | | |
|---|---|---|---|
| **Analytical Column:** | IonPac AS22 4 x 250 mm | **Eluent:** | 4.5 mM Na2CO3 / 1.4mM NaHCO3 |
| **Guard Column:** | IonPac AG22 4 x 50 mm | **Eluent Flow Rate:** | 1.2mL/min |
| **Anion Self Regen Suppressor/ Chemical Suppression:** | AERS 500 4 mm | **Column Temp:** | 20°C |
| | | **Cell Temp:** | 35°C |
| | | **Scale X-Axis:** | minutes |
| **Cation Self Regen Suppressor/ Chemical Suppression:** | N/A | **Scale Y-Axis:** | 7µS/cm |
| | | **Concentration:** | 10µg/g |
| **Suppressor Current/ Chemical Suppressant:** | 41mA | | |

## 6.0 INTENDED USE

**6.1** This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

**6.2** For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures Terms and Conditions of Sale, https://www.inorganicventures.com/terms-and-conditions-sale. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

## 7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

**7.1 Storage and Handling Recommendations**

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

## 8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

## 9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

## 10.0 QUALITY STANDARD DOCUMENTATION

### 10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

### 10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

### 10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

## 11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

### 11.1 Certification Issue Date

February 02, 2024

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

### 11.2 Lot Expiration Date

- **February 02, 2028**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

**11.3 Period of Validity**

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

## 12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

**Certificate Prepared By:**

Uyen Truong
Custom Processing Supervisor



**Certificate Approved By:**

Muzzammil Khan
Stock Laboratory Supervisor



**Certifying Officer:**

Paul Gaines
Chairman / Senior Technical Director



# Reagent

# IC-ClO3-CalSt_00005

INORGANIC VENTURES™
Refine your results. Redefine your industry.

# Certificate of Analysis

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

P: 800-669-6799/540-585-3030
F: 540-585-3012
info@inorganicventures.com

## 1.0 ACCREDITATION / REGISTRATION

**INORGANIC VENTURES** is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED
Testing Laboratory
Certificate 883.01

ACCREDITED
Reference Material Producer
Certificate 883.02

## 2.0 PRODUCT DESCRIPTION

| | |
|---|---|
| Product Code: | Single Analyte Ion Chromatography Solution |
| Catalog Number: | ICCLO31 |
| Lot Number: | U2-CLOX730522 |
| Matrix: | H2O |
| Value / Analyte(s): | 1 000 µg/mL ea:<br>Chlorate |
| Starting Material: | Potassium Chlorate |
| Starting Material Lot#: | 2456 |
| Starting Material Purity: | 100.0000% |

## 3.0 CERTIFIED VALUES AND UNCERTAINTIES

**Certified Value:** 1001 ± 6 µg/mL

**Density:** 0.999 g/mL (measured at 20 ± 4 ºC)

### Assay Information:

**Assay Method #1** **1001 ± 4 µg/mL**
ICP Assay NIST SRM 3182 Lot Number: 190830

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

### Characterization of CRM/RM by Two or More Methods

**Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:**

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

$X_i$ = mean of Assay Method i with standard uncertainty $u_{char\ i}$

$w_i$ = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/u_{char\ i})^2)$

**CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\ (u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$**

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

$u_{bb}$ = bottle to bottle homogeneity standard uncertainty

$u_{lts}$ = long term stability standard uncertainty (storage)

$u_{ts}$ = transport stability standard uncertainty

### Characterization of CRM/RM by One Method

**Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:**

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

$X_a$ = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

**CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\ (u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$**

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

$u_{bb}$ = bottle to bottle homogeneity standard uncertainty

$u_{lts}$ = long term stability standard uncertainty (storage)

$u_{ts}$ = transport stability standard uncertainty

## 4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

### 4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

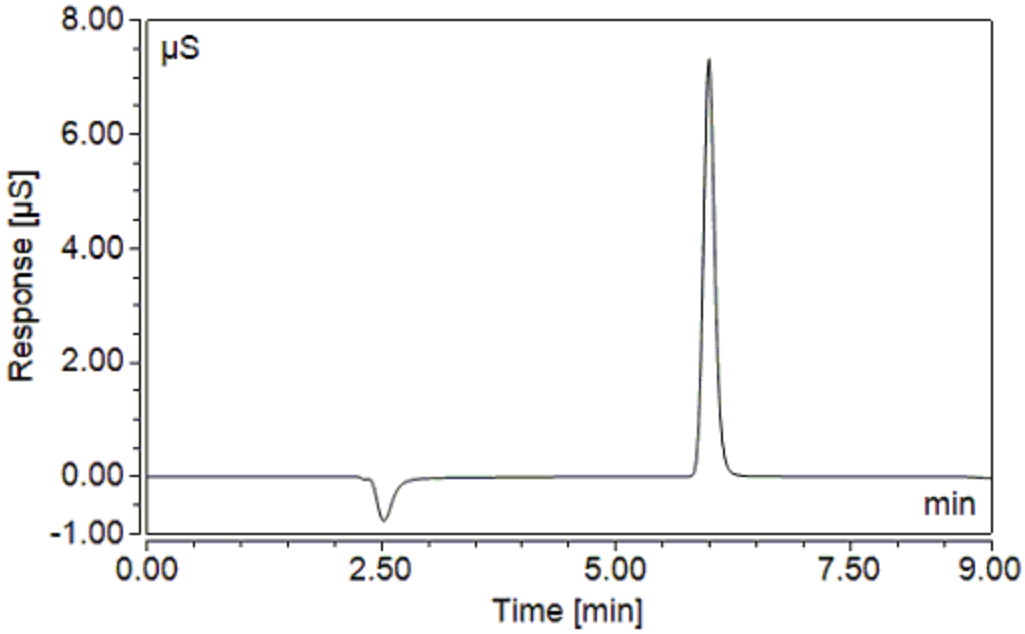
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## 5.0 CHROMATOGRAM




**Thermo Dionex Aquion IC**

| | | | |
|---|---|---|---|
| **Analytical Column:** | IonPac AS22 4x250 mm | **Eluent:** | 4.5mM Na2CO3 / 1.4 mM NaHCO3 |
| **Guard Column:** | IonPac AG22 4x50 mm | **Eluent Flow Rate:** | 1.2 mL/min |
| **Anion Self Regen Suppressor/ Chemical Suppression:** | AERS 500 4mm | **Column Temp:** | 20 °C |
| | | **Cell Temp:** | 35 °C |
| **Cation Self Regen Suppressor/ Chemical Suppression:** | N/A | **Scale X-Axis:** | minutes |
| | | **Scale Y-Axis:** | 8 µS/cm |
| | | **Concentration:** | 20 µg/g |
| **Suppressor Current/ Chemical Suppressant:** | 41 mA | | |

## 6.0 INTENDED USE

**6.1** This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

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## 8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

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## 11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

### 11.1 Certification Issue Date

April 11, 2023

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

### 11.2 Lot Expiration Date

- **April 11, 2028**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

**11.3 Period of Validity**

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

## 12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

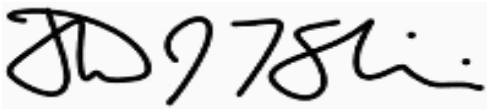
**Certificate Prepared By:**

Joseph Burns
Manager, Production



**Certificate Approved By:**

Thomas Kozikowski
Manager, Quality Control



**Certifying Officer:**

Paul Gaines
Chairman / Senior Technical Director



# Method 300.0

## Anions (IC) by Method 300.0

FORM III
HPLC/IC LAB CONTROL SAMPLE RECOVERY

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1

SDG No.:

Matrix: Drinking Water  Level: Low  Lab File ID: 121424A_14.d

Lab ID: LCS 810-126563/5  Client ID:

| COMPOUND | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC | QC LIMITS REC | # |
|---|---|---|---|---|---|
| Chlorite | 250 | 249 | 99 | 90-110 | |
| Chlorate | 250 | 254 | 102 | 90-110 | |

# Column to be used to flag recovery and RPD values

FORM III 300.0

FORM III
HPLC/IC LOW LEVEL CONTROL SAMPLE RECOVERY

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1

SDG No.:

Matrix: Drinking Water  Level: Low  Lab File ID: 121424A_10.d

Lab ID: LLCS 810-126563/1  Client ID:

| COMPOUND | SPIKE ADDED (ug/L) | LLCS CONCENTRATION (ug/L) | LLCS % REC | QC LIMITS REC | # |
|---|---|---|---|---|---|
| Chlorite | 10.0 | 14.9 | 149 | 50-150 | |
| Chlorate | 10.0 | 10.5 | 105 | 50-150 | |

# Column to be used to flag recovery and RPD values

FORM III 300.0

FORM III
HPLC/IC MATRIX SPIKE RECOVERY

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1

SDG No.:

Matrix: Drinking Water  Level: Low  Lab File ID: 121424A_31.d

Lab ID: 810-131403-4 MS  Client ID: 54MW12 MS MS

| COMPOUND | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC | QC LIMITS REC | # |
|---|---|---|---|---|---|---|
| Chlorite | 250 | <10 | 228 | 88 | 90-110 | F1 |
| Chlorate | 250 | <10 | 245 | 98 | 90-110 | |

# Column to be used to flag recovery and RPD values

FORM III 300.0

FORM III
HPLC/IC MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1

SDG No.:

Matrix: Drinking Water  Level: Low  Lab File ID: 121424A_32.d

Lab ID: 810-131403-4 MSD  Client ID: 54MW12 MSD MSD

| COMPOUND | SPIKE ADDED (ug/L) | MSD CONCENTRATION (ug/L) | MSD % REC | % RPD | QC LIMITS RPD | QC LIMITS REC | # |
|---|---|---|---|---|---|---|---|
| Chlorite | 250 | 231 | 90 | 1 | 20 | 90-110 | |
| Chlorate | 250 | 248 | 99 | 1 | 20 | 90-110 | |

# Column to be used to flag recovery and RPD values

FORM III 300.0

FORM IV
HPLC/IC METHOD BLANK SUMMARY

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1

SDG No.:

Lab File ID: 121424A_13.d  Lab Sample ID: MB 810-126563/4

Matrix: Drinking Water  Date Extracted:

Instrument ID: IC-HR  Date Analyzed: 12/14/2024 07:28

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

| CLIENT SAMPLE ID | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|---|---|---|---|
| | LLCS 810-126563/1 | 121424A_10.d | 12/14/2024 06:04 |
| | LCS 810-126563/5 | 121424A_14.d | 12/14/2024 07:56 |
| 54MW12 | 810-131403-4 | 121424A_30.d | 12/14/2024 15:23 |
| 54MW12 MS MS | 810-131403-4 MS | 121424A_31.d | 12/14/2024 15:51 |
| 54MW12 MSD MSD | 810-131403-4 MSD | 121424A_32.d | 12/14/2024 16:19 |
| 54MW13 | 810-131403-1 | 121424A_33.d | 12/14/2024 16:47 |
| 54MW10 | 810-131403-2 | 121424A_34.d | 12/14/2024 17:15 |
| 54TW10 | 810-131403-3 | 121424A_35.d | 12/14/2024 17:42 |
| 54MW1 | 810-131403-5 | 121424A_36.d | 12/14/2024 18:10 |

FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1

SDG No.:

Client Sample ID: 54MW13  Lab Sample ID: 810-131403-1

Matrix: Drinking Water  Lab File ID: 121424A_33.d

Analysis Method: 300.0  Date Collected: 12/10/2024 09:10

Extraction Method:  Date Extracted:

Sample wt/vol: 0(mL)  Date Analyzed: 12/14/2024 16:47

Con. Extract Vol.:  Dilution Factor: 1

Injection Volume: 1(uL)  GC Column: IonPac AS-19 ID:

% Moisture:  % Solids:  GPC Cleanup:(Y/N) N

Cleanup Factor:

Analysis Batch No.: 126563  Units: ug/L

Preparation Batch No.:  Instrument ID: IC-HR

| CAS NO. | COMPOUND NAME | RESULT | Q | RL |
|---|---|---|---|---|
| 14998-27-7 | Chlorite | <10 | | 10 |
| 14866-68-3 | Chlorate | <10 | | 10 |

Eurofins Eaton Analytical South Bend
Target Compound Quantitation Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_33.d | | | | |
| Lims ID: | 810-131403-A-1 | | | | |
| Client ID: | 54MW13 | | | | |
| Sample Type: | Client | | | | |
| Inject. Date: | 14-Dec-2024 16:47:00 | ALS Bottle#: | 0 | Worklist Smp#: | 24 |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | 810-131403-A-1 | | | | |
| Misc. Info.: | 810-0032367-024 | | | | |
| Operator ID: | | Instrument ID: | IC-HR | | |
| Method: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\300B_IC_HR.m | | | | |
| Limit Group: | IC - 300 - B | | | | |
| Last Update: | 15-Dec-2024 10:28:53 | Calib Date: | 07-Nov-2024 20:17:00 | | |
| Integrator: | Falcon | | | | |
| Quant Method: | External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_8.d | | | | |
| Column 1 : | IC IonPac AS-19 ( 0.00 mm) | | Det: 010621A_11 | | |
| Process Host: | CTX1635 | | | | |
| First Level Reviewer: U4QX | | Date: | 15-Dec-2024 10:27:24 | | |

| RT (min.) | Exp RT (min.) | Dlt RT (min.) | Response | OnCol Amt ug/ml | Flags |
|---|---|---|---|---|---|

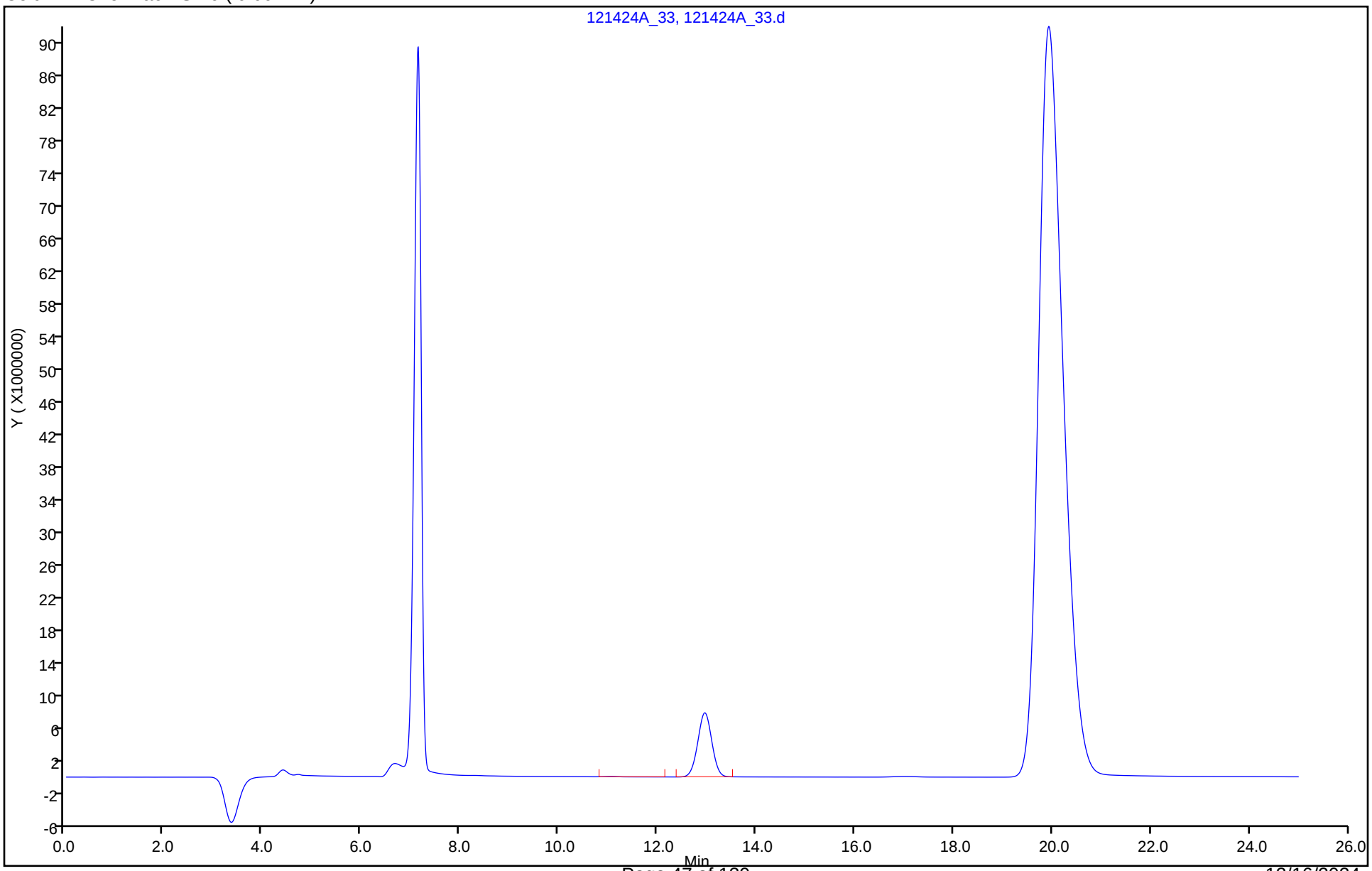
Report Date: 15-Dec-2024 10:28:55 Chrom Revision: 2.3 12-Nov-2024 16:55:22

Eurofins Eaton Analytical South Bend

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_33.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 14-Dec-2024 16:47:00 | Instrument ID: | IC-HR | Operator ID: | |
| Lims ID: | 810-131403-A-1 | Lab Sample ID: | 810-131403-1 | Worklist Smp#: | 24 |
| Client ID: | 54MW13 | | | | |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | ALS Bottle#: | 0 |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |

Column: IC IonPac AS-19 ( 0.00 mm)



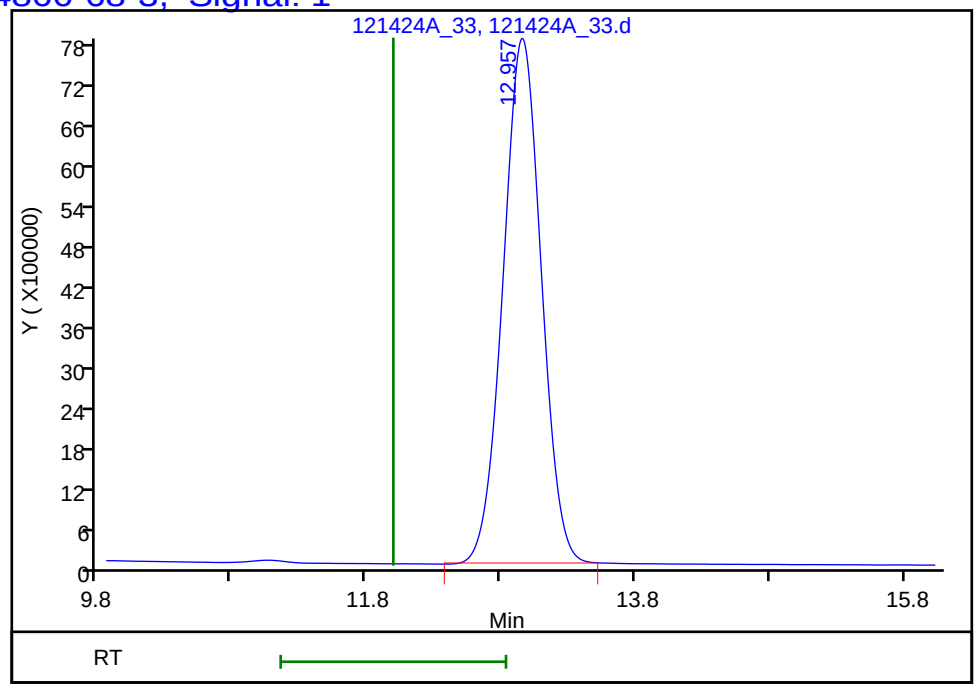
User Disabled Compound Report

Eurofins Eaton Analytical South Bend

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_33.d | | | | |
| Injection Date: | 14-Dec-2024 16:47:00 | Instrument ID: | IC-HR | | |
| Lims ID: | 810-131403-A-1 | Lab Sample ID: | 810-131403-1 | | |
| Client ID: | 54MW13 | | | | |
| Operator ID: | | ALS Bottle#: | 0 | Worklist Smp#: | 24 |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | | |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |
| Column: | IC IonPac AS-19 ( 0.00 mm) | Detector | 010621A_11 | | |

## 2 Chlorate, CAS: 14866-68-3, Signal: 1

RT: 12.96
Response: 155149257
Amount: 4.419799




Reviewer: U4QX, 15-Dec-2024 10:27:24
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1

SDG No.:

Client Sample ID: 54MW10  Lab Sample ID: 810-131403-2

Matrix: Drinking Water  Lab File ID: 121424A_34.d

Analysis Method: 300.0  Date Collected: 12/10/2024 10:45

Extraction Method:  Date Extracted:

Sample wt/vol: 0(mL)  Date Analyzed: 12/14/2024 17:15

Con. Extract Vol.:  Dilution Factor: 1

Injection Volume: 1(uL)  GC Column: IonPac AS-19 ID:

% Moisture:  % Solids:  GPC Cleanup:(Y/N) N

Cleanup Factor:

Analysis Batch No.: 126563  Units: ug/L

Preparation Batch No.:  Instrument ID: IC-HR

| CAS NO. | COMPOUND NAME | RESULT | Q | RL |
|---|---|---|---|---|
| 14998-27-7 | Chlorite | <10 | | 10 |
| 14866-68-3 | Chlorate | <10 | | 10 |

Eurofins Eaton Analytical South Bend
Target Compound Quantitation Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_34.d | | | | |
| Lims ID: | 810-131403-A-2 | | | | |
| Client ID: | 54MW10 | | | | |
| Sample Type: | Client | | | | |
| Inject. Date: | 14-Dec-2024 17:15:00 | ALS Bottle#: | 0 | Worklist Smp#: | 25 |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | 810-131403-A-2 | | | | |
| Misc. Info.: | 810-0032367-025 | | | | |
| Operator ID: | | Instrument ID: | IC-HR | | |
| Method: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\300B_IC_HR.m | | | | |
| Limit Group: | IC - 300 - B | | | | |
| Last Update: | 15-Dec-2024 10:28:53 | Calib Date: | 07-Nov-2024 20:17:00 | | |
| Integrator: | Falcon | | | | |
| Quant Method: | External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_8.d | | | | |
| Column 1 : | IC IonPac AS-19 ( 0.00 mm) | | Det: 010621A_11 | | |
| Process Host: | CTX1635 | | | | |
| First Level Reviewer: U4QX | | Date: | 15-Dec-2024 10:27:33 | | |

| RT (min.) | Exp RT (min.) | Dlt RT (min.) | Response | OnCol Amt ug/ml | Flags |
|---|---|---|---|---|---|

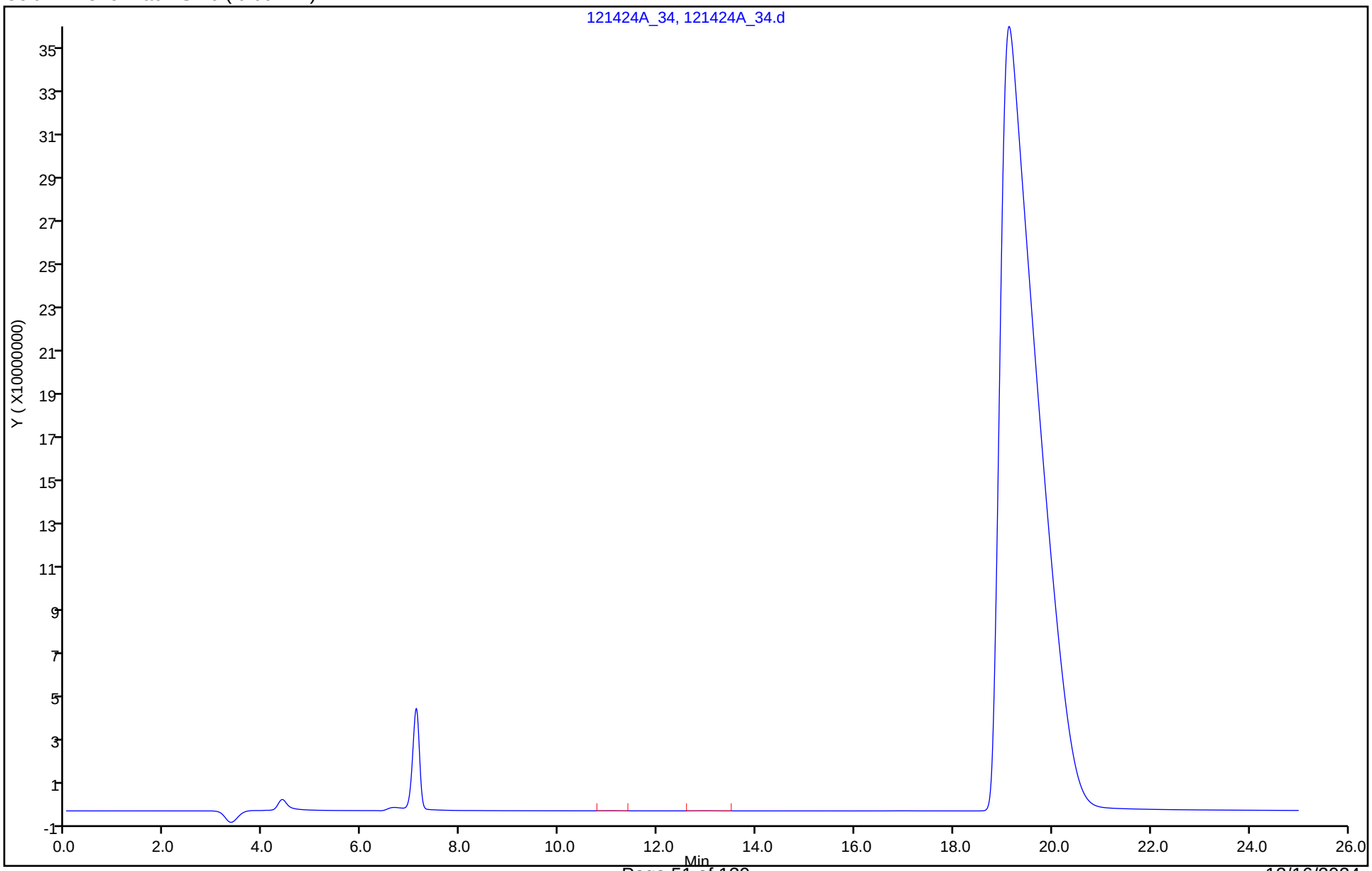
Report Date: 15-Dec-2024 10:28:55 Chrom Revision: 2.3 12-Nov-2024 16:55:22

Eurofins Eaton Analytical South Bend

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_34.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 14-Dec-2024 17:15:00 | Instrument ID: | IC-HR | Operator ID: | |
| Lims ID: | 810-131403-A-2 | Lab Sample ID: | 810-131403-2 | Worklist Smp#: | 25 |
| Client ID: | 54MW10 | | | | |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | ALS Bottle#: | 0 |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |

Column: IC IonPac AS-19 ( 0.00 mm)



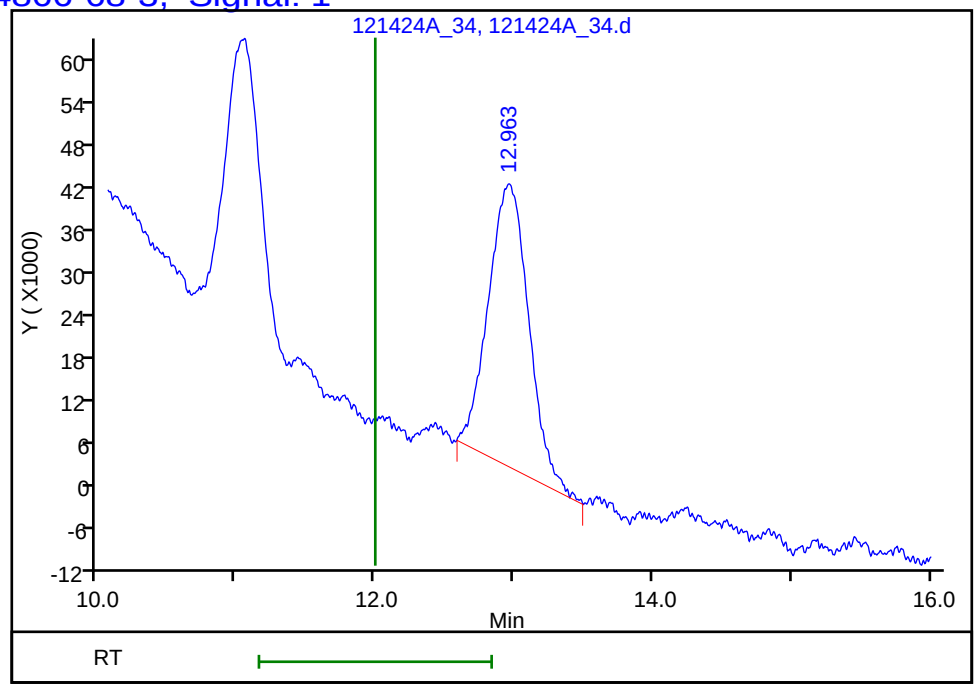
User Disabled Compound Report

Eurofins Eaton Analytical South Bend

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_34.d | | | | |
| Injection Date: | 14-Dec-2024 17:15:00 | Instrument ID: | IC-HR | | |
| Lims ID: | 810-131403-A-2 | Lab Sample ID: | 810-131403-2 | | |
| Client ID: | 54MW10 | | | | |
| Operator ID: | | ALS Bottle#: | 0 | Worklist Smp#: | 25 |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | | |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |
| Column: | IC IonPac AS-19 ( 0.00 mm) | Detector | 010621A_11 | | |

## 2 Chlorate, CAS: 14866-68-3, Signal: 1

RT: 12.96
Response: 799608
Amount: 0.024807




Reviewer: U4QX, 15-Dec-2024 10:27:33
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1

SDG No.:

Client Sample ID: 54TW10  Lab Sample ID: 810-131403-3

Matrix: Drinking Water  Lab File ID: 121424A_35.d

Analysis Method: 300.0  Date Collected: 12/10/2024 10:45

Extraction Method:  Date Extracted:

Sample wt/vol: 0(mL)  Date Analyzed: 12/14/2024 17:42

Con. Extract Vol.:  Dilution Factor: 1

Injection Volume: 1(uL)  GC Column: IonPac AS-19 ID:

% Moisture:  % Solids:  GPC Cleanup:(Y/N) N

Cleanup Factor:

Analysis Batch No.: 126563  Units: ug/L

Preparation Batch No.:  Instrument ID: IC-HR

| CAS NO. | COMPOUND NAME | RESULT | Q | RL |
|---|---|---|---|---|
| 14998-27-7 | Chlorite | <10 | | 10 |
| 14866-68-3 | Chlorate | <10 | | 10 |

Eurofins Eaton Analytical South Bend
Target Compound Quantitation Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_35.d | | | | |
| Lims ID: | 810-131403-A-3 | | | | |
| Client ID: | 54TW10 | | | | |
| Sample Type: | Client | | | | |
| Inject. Date: | 14-Dec-2024 17:42:00 | ALS Bottle#: | 0 | Worklist Smp#: | 26 |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | 810-131403-A-3 | | | | |
| Misc. Info.: | 810-0032367-026 | | | | |
| Operator ID: | | Instrument ID: | IC-HR | | |
| Method: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\300B_IC_HR.m | | | | |
| Limit Group: | IC - 300 - B | | | | |
| Last Update: | 15-Dec-2024 10:28:53 | Calib Date: | 07-Nov-2024 20:17:00 | | |
| Integrator: | Falcon | | | | |
| Quant Method: | External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_8.d | | | | |
| Column 1 : | IC IonPac AS-19 ( 0.00 mm) | | Det: 010621A_11 | | |
| Process Host: | CTX1635 | | | | |
| First Level Reviewer: U4QX | | Date: | 15-Dec-2024 10:27:42 | | |

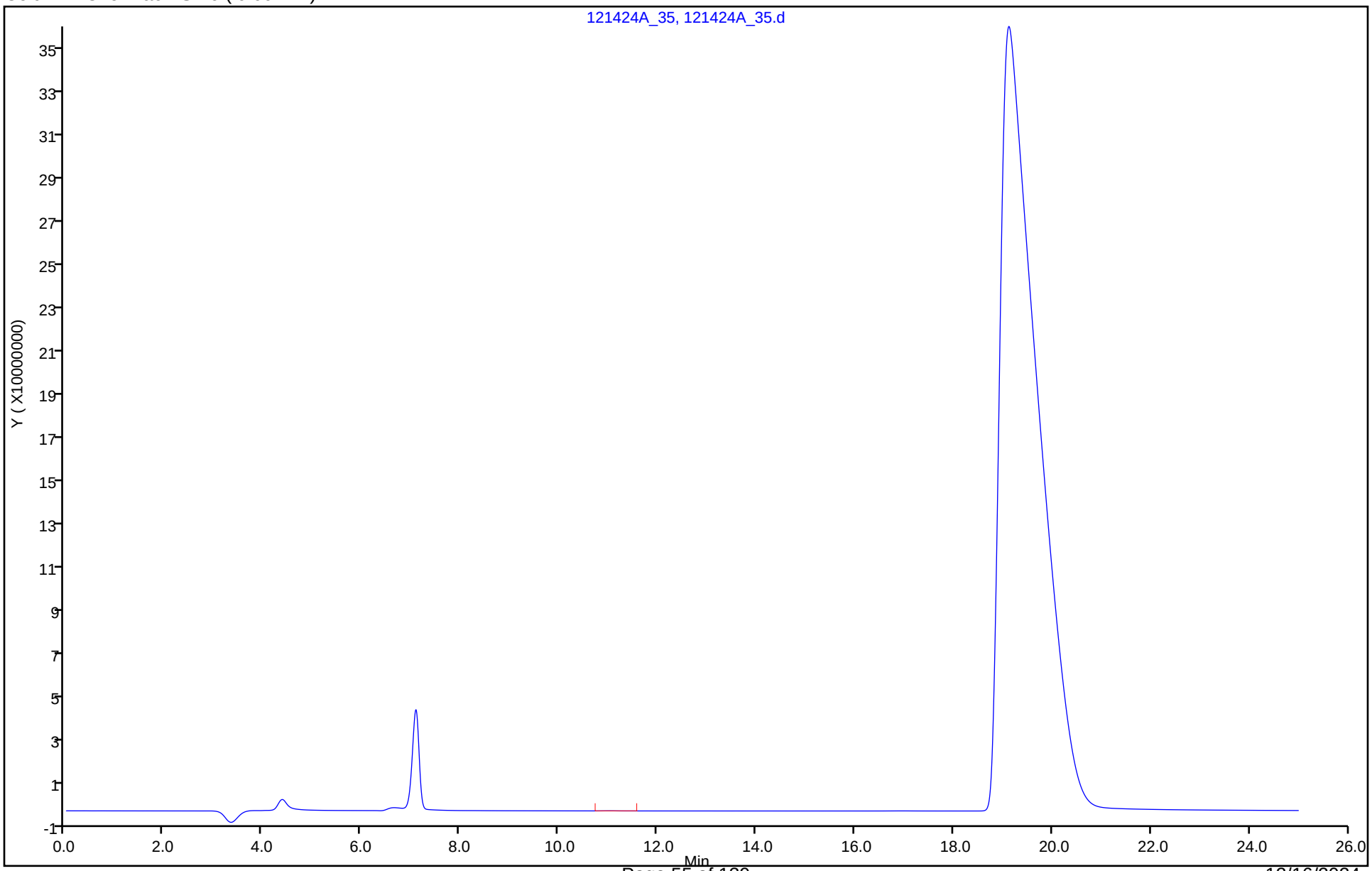
| RT (min.) | Exp RT (min.) | Dlt RT (min.) | Response | OnCol Amt ug/ml | Flags |
|---|---|---|---|---|---|

Report Date: 15-Dec-2024 10:28:56 Chrom Revision: 2.3 12-Nov-2024 16:55:22

Eurofins Eaton Analytical South Bend

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_35.d | | | | |
| Injection Date: | 14-Dec-2024 17:42:00 | Instrument ID: | IC-HR | Operator ID: | |
| Lims ID: | 810-131403-A-3 | Lab Sample ID: | 810-131403-3 | Worklist Smp#: | 26 |
| Client ID: | 54TW10 | | | | |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | ALS Bottle#: | 0 |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |

Column: IC IonPac AS-19 ( 0.00 mm)



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1

SDG No.:

Client Sample ID: 54MW12  Lab Sample ID: 810-131403-4

Matrix: Drinking Water  Lab File ID: 121424A_30.d

Analysis Method: 300.0  Date Collected: 12/10/2024 12:15

Extraction Method:  Date Extracted:

Sample wt/vol: 0(mL)  Date Analyzed: 12/14/2024 15:23

Con. Extract Vol.:  Dilution Factor: 1

Injection Volume: 1(uL)  GC Column: IonPac AS-19 ID:

% Moisture:  % Solids:  GPC Cleanup:(Y/N) N

Cleanup Factor:

Analysis Batch No.: 126563  Units: ug/L

Preparation Batch No.:  Instrument ID: IC-HR

| CAS NO. | COMPOUND NAME | RESULT | Q | RL |
|---|---|---|---|---|
| 14998-27-7 | Chlorite | <10 | F1 | 10 |
| 14866-68-3 | Chlorate | <10 | | 10 |

Eurofins Eaton Analytical South Bend
Target Compound Quantitation Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_30.d | | | | |
| Lims ID: | 810-131403-A-4 | | | | |
| Client ID: | 54MW12 | | | | |
| Sample Type: | Client | | | | |
| Inject. Date: | 14-Dec-2024 15:23:00 | ALS Bottle#: | 0 | Worklist Smp#: | 21 |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | 810-131403-A-4 | | | | |
| Misc. Info.: | 810-0032367-021 | | | | |
| Operator ID: | | Instrument ID: | IC-HR | | |
| Method: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\300B_IC_HR.m | | | | |
| Limit Group: | IC - 300 - B | | | | |
| Last Update: | 15-Dec-2024 10:28:53 | Calib Date: | 07-Nov-2024 20:17:00 | | |
| Integrator: | Falcon | | | | |
| Quant Method: | External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_8.d | | | | |
| Column 1 : | IC IonPac AS-19 ( 0.00 mm) | | Det: 010621A_11 | | |
| Process Host: | CTX1635 | | | | |
| First Level Reviewer: U4QX | | Date: | 15-Dec-2024 10:27:00 | | |

| RT (min.) | Exp RT (min.) | Dlt RT (min.) | Response | OnCol Amt ug/ml | Flags |
|---|---|---|---|---|---|
| 10 Chlorite | | | | | |
| 5.887 | 5.607 | 0.280 | 59379 | 0.007074 | |
| 3 Bromide | | | | | M |
| 11.067 | 11.050 | 0.017 | 410662 | 0.0121 | M |

## QC Flag Legend

Processing Flags

Review Flags

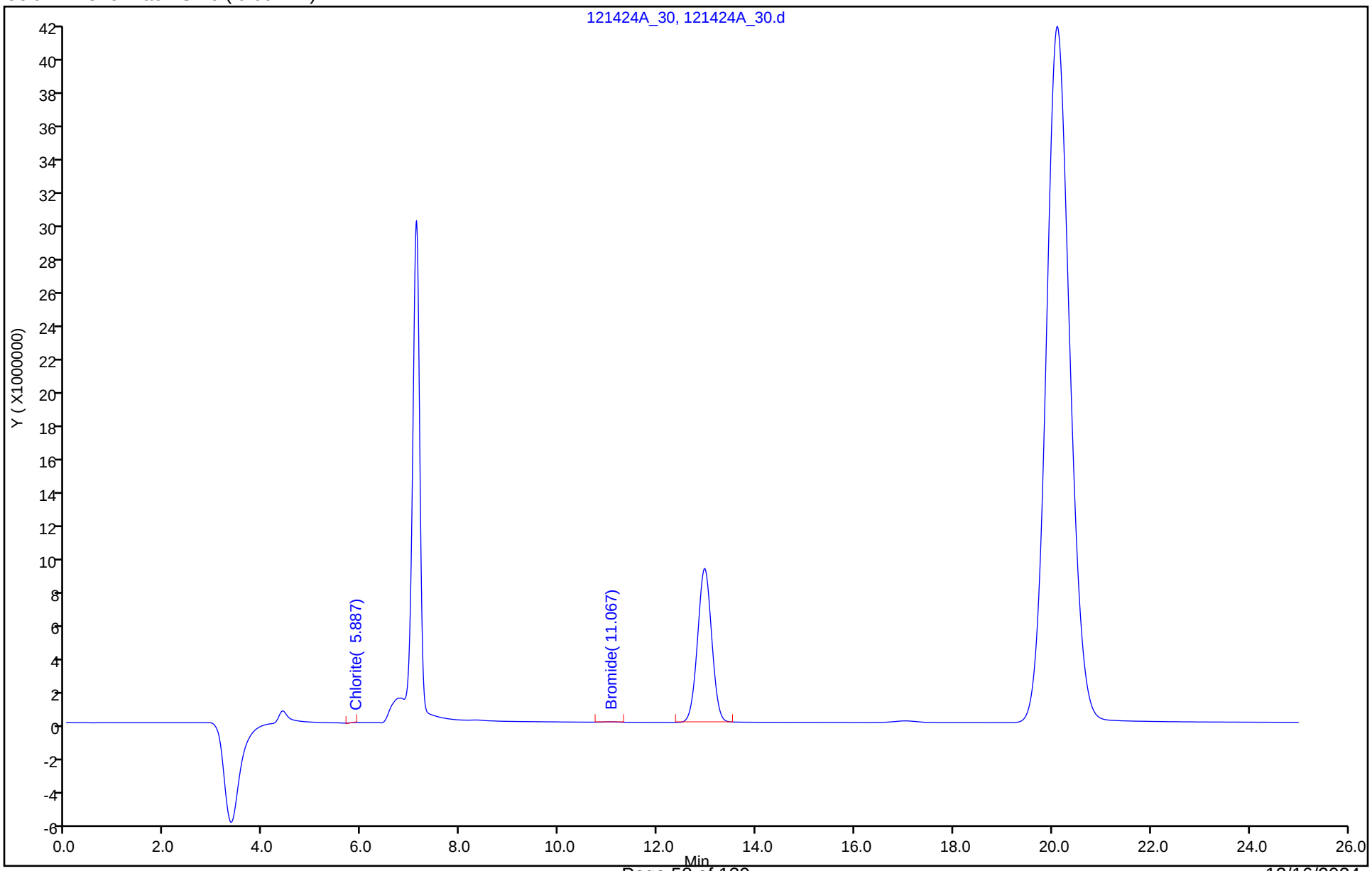
M - Manually Integrated

Report Date: 15-Dec-2024 10:28:54 Chrom Revision: 2.3 12-Nov-2024 16:55:22

Eurofins Eaton Analytical South Bend

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_30.d | | | | |
| Injection Date: | 14-Dec-2024 15:23:00 | Instrument ID: | IC-HR | Operator ID: | |
| Lims ID: | 810-131403-A-4 | Lab Sample ID: | 810-131403-4 | Worklist Smp#: | 21 |
| Client ID: | 54MW12 | | | | |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | ALS Bottle#: | 0 |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |

Column: IC IonPac AS-19 ( 0.00 mm)



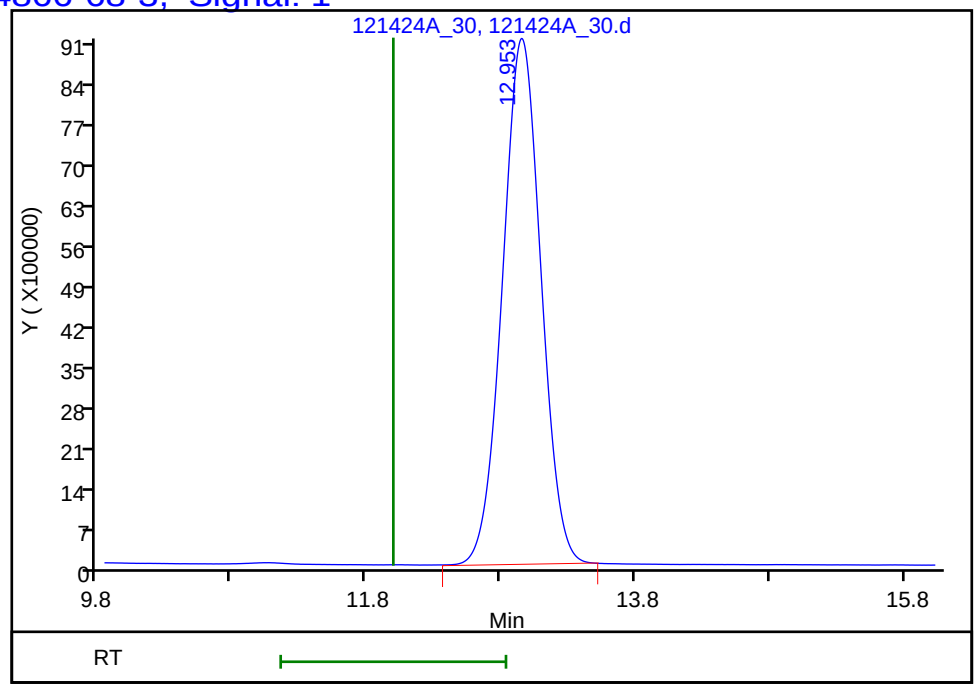
User Disabled Compound Report

Eurofins Eaton Analytical South Bend

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_30.d | | | | |
| Injection Date: | 14-Dec-2024 15:23:00 | Instrument ID: | IC-HR | | |
| Lims ID: | 810-131403-A-4 | Lab Sample ID: | 810-131403-4 | | |
| Client ID: | 54MW12 | | | | |
| Operator ID: | | ALS Bottle#: | 0 | Worklist Smp#: | 21 |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | | |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |
| Column: | IC IonPac AS-19 ( 0.00 mm) | Detector | 010621A_11 | | |

## 2 Chlorate, CAS: 14866-68-3, Signal: 1

RT: 12.95
Response: 181484520
Amount: 5.169676




Reviewer: U4QX, 15-Dec-2024 10:27:00
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1

SDG No.:

Client Sample ID: 54MW1  Lab Sample ID: 810-131403-5

Matrix: Drinking Water  Lab File ID: 121424A_36.d

Analysis Method: 300.0  Date Collected: 12/10/2024 13:50

Extraction Method:  Date Extracted:

Sample wt/vol: 0(mL)  Date Analyzed: 12/14/2024 18:10

Con. Extract Vol.:  Dilution Factor: 1

Injection Volume: 1(uL)  GC Column: IonPac AS-19 ID:

% Moisture:  % Solids:  GPC Cleanup:(Y/N) N

Cleanup Factor:

Analysis Batch No.: 126563  Units: ug/L

Preparation Batch No.:  Instrument ID: IC-HR

| CAS NO. | COMPOUND NAME | RESULT | Q | RL |
|---|---|---|---|---|
| 14998-27-7 | Chlorite | <10 | | 10 |
| 14866-68-3 | Chlorate | <10 | | 10 |

Eurofins Eaton Analytical South Bend
Target Compound Quantitation Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_36.d | | | | |
| Lims ID: | 810-131403-A-5 | | | | |
| Client ID: | 54MW1 | | | | |
| Sample Type: | Client | | | | |
| Inject. Date: | 14-Dec-2024 18:10:00 | ALS Bottle#: | 0 | Worklist Smp#: | 27 |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | 810-131403-A-5 | | | | |
| Misc. Info.: | 810-0032367-027 | | | | |
| Operator ID: | | Instrument ID: | IC-HR | | |
| Method: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\300B_IC_HR.m | | | | |
| Limit Group: | IC - 300 - B | | | | |
| Last Update: | 15-Dec-2024 10:28:53 | Calib Date: | 07-Nov-2024 20:17:00 | | |
| Integrator: | Falcon | | | | |
| Quant Method: | External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_8.d | | | | |
| Column 1 : | IC IonPac AS-19 ( 0.00 mm) | | Det: 010621A_11 | | |
| Process Host: | CTX1635 | | | | |
| First Level Reviewer: U4QX | | Date: | 15-Dec-2024 10:27:55 | | |

| RT (min.) | Exp RT (min.) | Dlt RT (min.) | Response | OnCol Amt ug/ml | Flags |
|---|---|---|---|---|---|

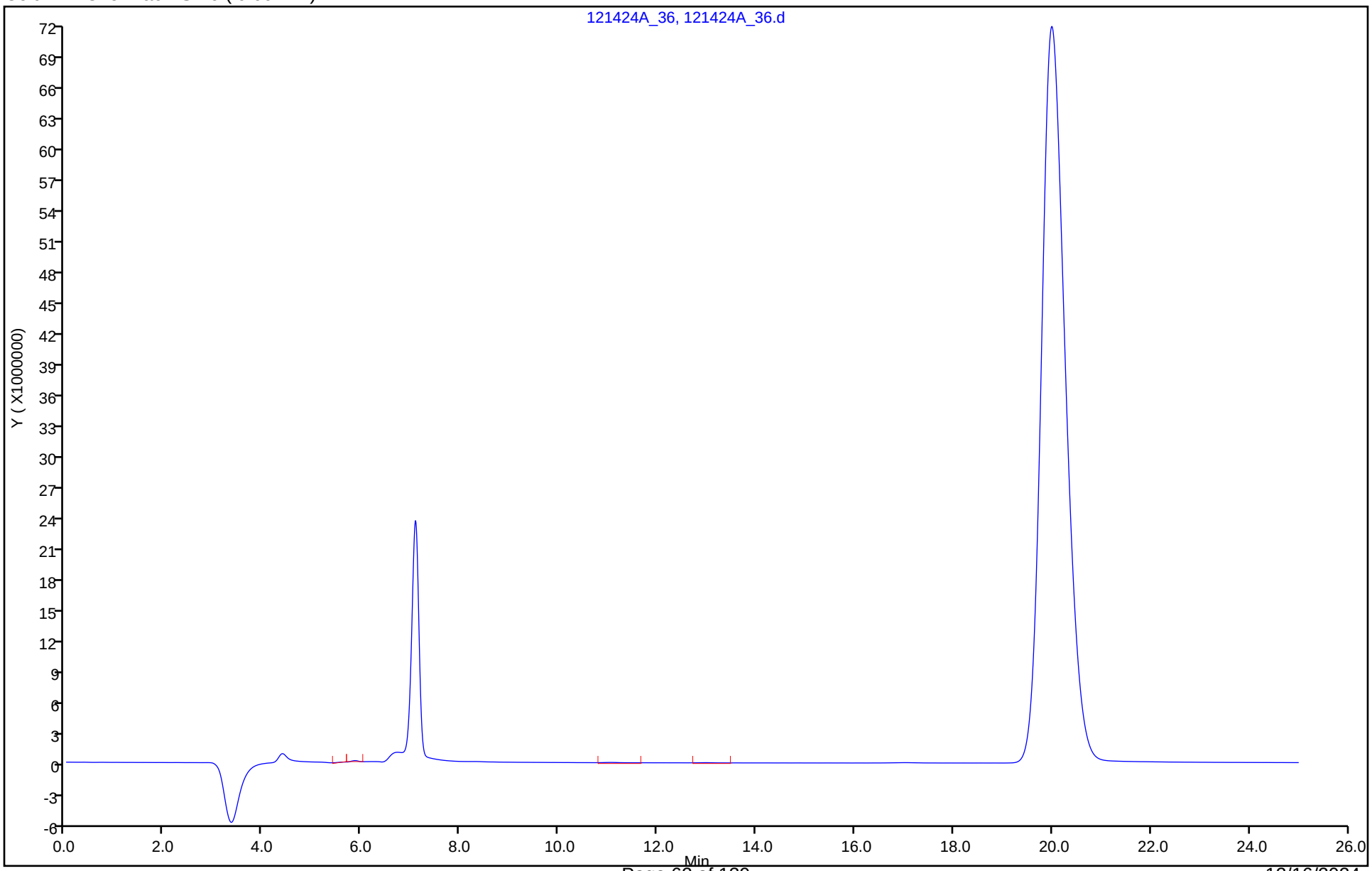
Report Date: 15-Dec-2024 10:28:56 Chrom Revision: 2.3 12-Nov-2024 16:55:22

Eurofins Eaton Analytical South Bend

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_36.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 14-Dec-2024 18:10:00 | Instrument ID: | IC-HR | Operator ID: | |
| Lims ID: | 810-131403-A-5 | Lab Sample ID: | 810-131403-5 | Worklist Smp#: | 27 |
| Client ID: | 54MW1 | | | | |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | ALS Bottle#: | 0 |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |

Column: IC IonPac AS-19 ( 0.00 mm)



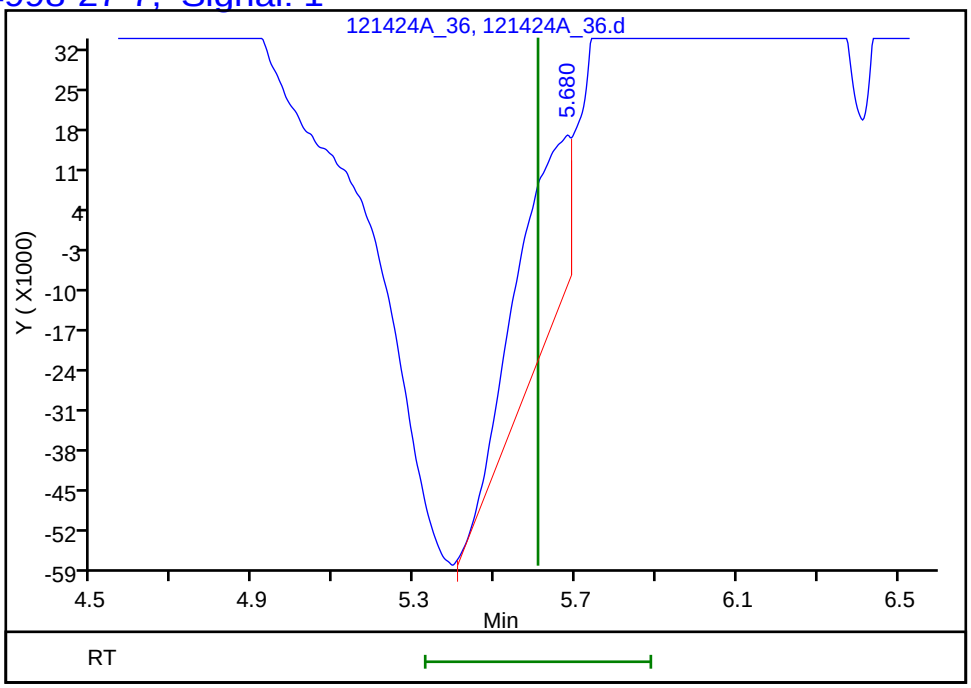
User Disabled Compound Report

Eurofins Eaton Analytical South Bend

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_36.d | | | | |
| Injection Date: | 14-Dec-2024 18:10:00 | Instrument ID: | IC-HR | | |
| Lims ID: | 810-131403-A-5 | Lab Sample ID: | 810-131403-5 | | |
| Client ID: | 54MW1 | | | | |
| Operator ID: | | ALS Bottle#: | 0 | Worklist Smp#: | 27 |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | | |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |
| Column: | IC IonPac AS-19 ( 0.00 mm) | Detector | 010621A_11 | | |

10 Chlorite, CAS: 14998-27-7, Signal: 1

RT: 5.68
Response: 303389
Amount: 0.012978




Reviewer: U4QX, 15-Dec-2024 10:27:55
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

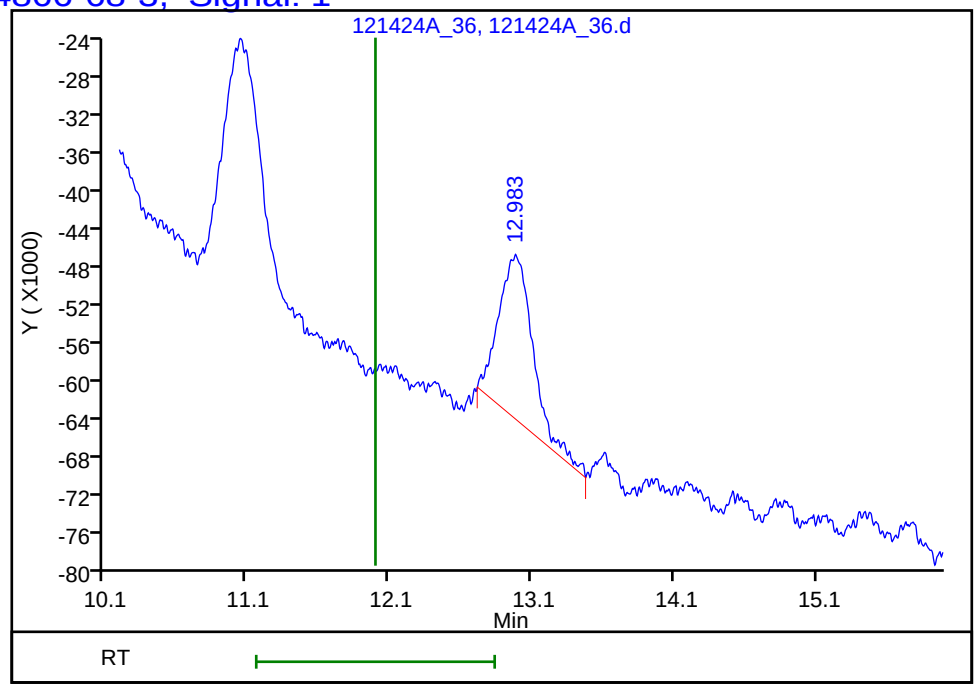
User Disabled Compound Report

Eurofins Eaton Analytical South Bend

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_36.d | | | | |
| Injection Date: | 14-Dec-2024 18:10:00 | Instrument ID: | IC-HR | | |
| Lims ID: | 810-131403-A-5 | Lab Sample ID: | 810-131403-5 | | |
| Client ID: | 54MW1 | | | | |
| Operator ID: | | ALS Bottle#: | 0 | Worklist Smp#: | 27 |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | | |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |
| Column: | IC IonPac AS-19 ( 0.00 mm) | Detector | 010621A_11 | | |

## 2 Chlorate, CAS: 14866-68-3, Signal: 1

RT: 12.98
Response: 289055
Amount: 0.010269




Reviewer: U4QX, 15-Dec-2024 10:27:55
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

FORM VI
HPLC/IC BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1  Analy Batch No.: 121748

SDG No.:

Instrument ID: IC-HR  GC Column: IonPac AS-1  ID:  Heated Purge: (Y/N) N

Calibration Start Date: 11/07/2024 17:14  Calibration End Date: 11/07/2024 20:17  Calibration ID: 13826

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---|---|---|
| Level 1 | IC 810-121748/1 | 110724A_2.d |
| Level 2 | IC 810-121748/2 | 110724A_3.d |
| Level 3 | IC 810-121748/3 | 110724A_4.d |
| Level 4 | IC 810-121748/4 | 110724A_5.d |
| Level 5 | ICRT 810-121748/5 | 110724A_6.d |
| Level 6 | IC 810-121748/6 | 110724A_7.d |
| Level 7 | IC 810-121748/7 | 110724A_8.d |

| ANALYTE | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | LVL 6 | LVL 7 | | | | RT WINDOW | AVG RT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chlorite | | 5.683 | 5.683 | 5.683 | 5.687 | 5.683 | 5.687 | | | | 5.402 - 5.971 | 5.684 |
| Bromide | | 11.500 | 11.513 | 11.523 | 11.523 | 11.520 | 11.520 | | | | 10.947 - 12.100 | 11.517 |
| Chlorate | | 12.620 | 12.617 | 12.607 | 12.610 | 12.603 | 12.603 | | | | 11.727 - 13.493 | 12.610 |

FORM VI
HPLC/IC BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1  Analy Batch No.: 121748

SDG No.:

Instrument ID: IC-HR  GC Column: IonPac AS-1  ID:  Heated Purge: (Y/N) N

Calibration Start Date: 11/07/2024 17:14  Calibration End Date: 11/07/2024 20:17  Calibration ID: 13826

Calibration Files

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---|---|---|
| Level 1 | IC 810-121748/1 | 110724A_2.d |
| Level 2 | IC 810-121748/2 | 110724A_3.d |
| Level 3 | IC 810-121748/3 | 110724A_4.d |
| Level 4 | IC 810-121748/4 | 110724A_5.d |
| Level 5 | ICRT 810-121748/5 | 110724A_6.d |
| Level 6 | IC 810-121748/6 | 110724A_7.d |
| Level 7 | IC 810-121748/7 | 110724A_8.d |

| ANALYTE | CF | | | | CURVE TYPE | COEFFICIENT | | | # | MIN CF | %RSD /RSE | # | MAX %RSD /RSE | R^2 OR COD | # | MIN R^2 OR COD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LVL 1 LVL 5 | LVL 2 LVL 6 | LVL 3 LVL 7 | LVL 4 | | B | M1 | M2 | | | | | | | | |
| Chlorite | 38865716 | 28761200 40305044 | 33621950 41329843 | 39123500 | Lin | -232986.20 | 41330903.4 | | | | | | | 1.0000 | | 0.9950 |
| Bromide | 38454340 | 35741900 38916962 | 35618100 39086374 | 38487460 | Lin | -64258.269 | 39109986.6 | | | | | | | 1.0000 | | 0.9950 |
| Chlorate | 34121408 | 33124900 34752942 | 33287750 35143361 | 34762710 | Lin | -71583.386 | 35119437.6 | | | | | | | 1.0000 | | 0.9950 |

Note: The M1 coefficient is the same as Ave CF for an Ave curve type. RSD is calculated for Ave curve types. RSE is used for all other types.

FORM VI
HPLC/IC BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1  Analy Batch No.: 121748

SDG No.:

Instrument ID: IC-HR  GC Column: IonPac AS-  ID:  Heated Purge: (Y/N) N

Calibration Start Date: 11/07/2024 17:14  Calibration End Date: 11/07/2024 20:17  Calibration ID: 13826

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---|---|---|
| Level 1 | IC 810-121748/1 | 110724A_2.d |
| Level 2 | IC 810-121748/2 | 110724A_3.d |
| Level 3 | IC 810-121748/3 | 110724A_4.d |
| Level 4 | IC 810-121748/4 | 110724A_5.d |
| Level 5 | ICRT 810-121748/5 | 110724A_6.d |
| Level 6 | IC 810-121748/6 | 110724A_7.d |
| Level 7 | IC 810-121748/7 | 110724A_8.d |

| ANALYTE | CURVE TYPE | RESPONSE | | | | | CONCENTRATION (UG/ML) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LVL 1<br>LVL 6 | LVL 2<br>LVL 7 | LVL 3 | LVL 4 | LVL 5 | LVL 1<br>LVL 6 | LVL 2<br>LVL 7 | LVL 3 | LVL 4 | LVL 5 |
| Chlorite | Lin | 20152522 | 287612<br>41329843 | 672439 | 3912350 | 9716429 | 0.000000<br>0.500 | 0.0100<br>1.00 | 0.0200 | 0.100 | 0.250 |
| Bromide | Lin | 19458481 | 357419<br>39086374 | 712362 | 3848746 | 9613585 | 0.000000<br>0.500 | 0.0100<br>1.00 | 0.0200 | 0.100 | 0.250 |
| Chlorate | Lin | 17376471 | 331249<br>35143361 | 665755 | 3476271 | 8530352 | 0.000000<br>0.500 | 0.0100<br>1.00 | 0.0200 | 0.100 | 0.250 |

Curve Type Legend:
Lin = Linear

FORM VI
HPLC/IC BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: Eurofins Eaton Analytical South Bend Job No.: 810-131403-1 Analy Batch No.: 121748

SDG No.:

Instrument ID: IC-HR GC Column: IonPac AS-1 ID: Heated Purge: (Y/N) N

Calibration Start Date: 11/07/2024 17:14 Calibration End Date: 11/07/2024 20:17 Calibration ID: 13826

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---|---|---|
| Level 1 | IC 810-121748/1 | 110724A_2.d |
| Level 2 | IC 810-121748/2 | 110724A_3.d |
| Level 3 | IC 810-121748/3 | 110724A_4.d |
| Level 4 | IC 810-121748/4 | 110724A_5.d |
| Level 5 | ICRT 810-121748/5 | 110724A_6.d |
| Level 6 | IC 810-121748/6 | 110724A_7.d |
| Level 7 | IC 810-121748/7 | 110724A_8.d |

| ANALYTE | PERCENT ERROR | | | | | | PERCENT ERROR LIMIT | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LVL 1 # LVL 7 # | LVL 2 # | LVL 3 # | LVL 4 # | LVL 5 # | LVL 6 # | LVL 1 LVL 7 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | LVL 6 |
| Chlorite | 0.6 | 26.0 * | 9.5 | 0.3 | -3.7 | -1.4 | 50 10 | 10 | 10 | 10 | 10 | 10 |
| Bromide | 0.1 | 7.8 | -0.7 | 0.1 | -1.0 | -0.2 | 50 10 | 10 | 10 | 10 | 10 | 10 |
| Chlorate | 0.3 | 14.7 * | 5.0 | 1.0 | -2.0 | -0.6 | 50 10 | 10 | 10 | 10 | 10 | 10 |

Eurofins Eaton Analytical South Bend
Target Compound Quantitation Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_2.d | | | | |
| Lims ID: | IC L0 | | | | |
| Client ID: | | | | | |
| Sample Type: | IC | Calib Level: | 0 | | |
| Inject. Date: | 07-Nov-2024 17:14:00 | ALS Bottle#: | 0 | Worklist Smp#: | 1 |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | IC L0 | | | | |
| Misc. Info.: | 810-0031142-001 | | | | |
| Operator ID: | | Instrument ID: | IC-HR | | |
| Sublist: | chrom-300B_IC_HR*sub1 | | | | |
| Method: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\300B_IC_HR.m | | | | |
| Limit Group: | IC - 300 - B | | | | |
| Last Update: | 08-Nov-2024 15:07:56 | Calib Date: | 07-Nov-2024 20:17:00 | | |
| Integrator: | Falcon | | | | |
| Quant Method: | External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_8.d | | | | |
| Column 1 : | IC IonPac AS-19 ( 0.00 mm) | | Det: 010621A_11 | | |
| Process Host: | CTX1634 | | | | |

| RT (min.) | Exp RT (min.) | Dlt RT (min.) | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---|---|---|---|---|---|---|

## Reagents:

IC-300B CalSS_00031 Amount Added: 0.00 Units: uL

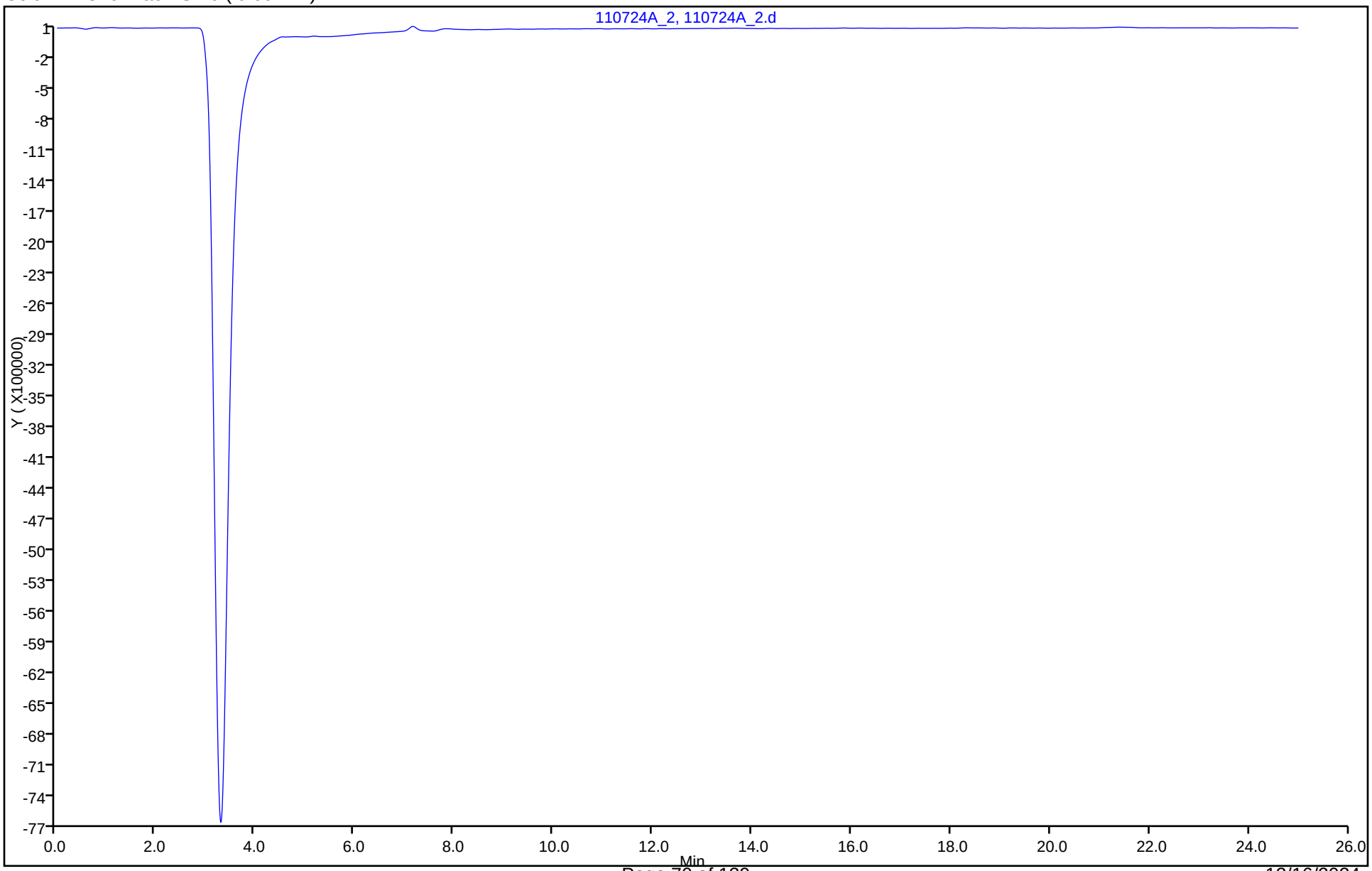
Report Date: 08-Nov-2024 15:07:56 Chrom Revision: 2.3 24-Sep-2024 15:19:46

Eurofins Eaton Analytical South Bend

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_2.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 07-Nov-2024 17:14:00 | Instrument ID: | IC-HR | Operator ID: | |
| Lims ID: | IC L0 | | | Worklist Smp#: | 1 |
| Client ID: | | | | | |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | ALS Bottle#: | 0 |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |

Column: IC IonPac AS-19 ( 0.00 mm)



Eurofins Eaton Analytical South Bend
Target Compound Quantitation Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_3.d | | | | |
| Lims ID: | IC L1 | | | | |
| Client ID: | | | | | |
| Sample Type: | IC | Calib Level: | 1 | | |
| Inject. Date: | 07-Nov-2024 17:45:00 | ALS Bottle#: | 0 | Worklist Smp#: | 2 |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | IC L1 | | | | |
| Misc. Info.: | 810-0031142-002 | | | | |
| Operator ID: | | Instrument ID: | IC-HR | | |
| Sublist: | chrom-300B_IC_HR*sub1 | | | | |
| Method: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\300B_IC_HR.m | | | | |
| Limit Group: | IC - 300 - B | | | | |
| Last Update: | 08-Nov-2024 15:07:57 | Calib Date: | 07-Nov-2024 20:17:00 | | |
| Integrator: | Falcon | | | | |
| Quant Method: | External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_8.d | | | | |
| Column 1 : | IC IonPac AS-19 ( 0.00 mm) | | Det: 010621A_11 | | |
| Process Host: | CTX1634 | | | | |
| First Level Reviewer: U4QX | | Date: | 08-Nov-2024 13:12:50 | | |

| RT (min.) | Exp RT (min.) | Dlt RT (min.) | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---|---|---|---|---|---|---|
| 10 Chlorite | | | | | | Ma |
| 5.683 | 5.687 | -0.004 | 287612 | 0.0100 | 0.0126 | Ma |
| 3 Bromide | | | | | | |
| 11.500 | 11.523 | -0.023 | 357419 | 0.0100 | 0.0108 | |
| 2 Chlorate | | | | | | M |
| 12.620 | 12.610 | 0.010 | 331249 | 0.0100 | 0.0115 | M |

## QC Flag Legend

Processing Flags

Review Flags

M - Manually Integrated

a - User Assigned ID

## Reagents:

IC-300B CalSS_00031 Amount Added: 40.00 Units: uL

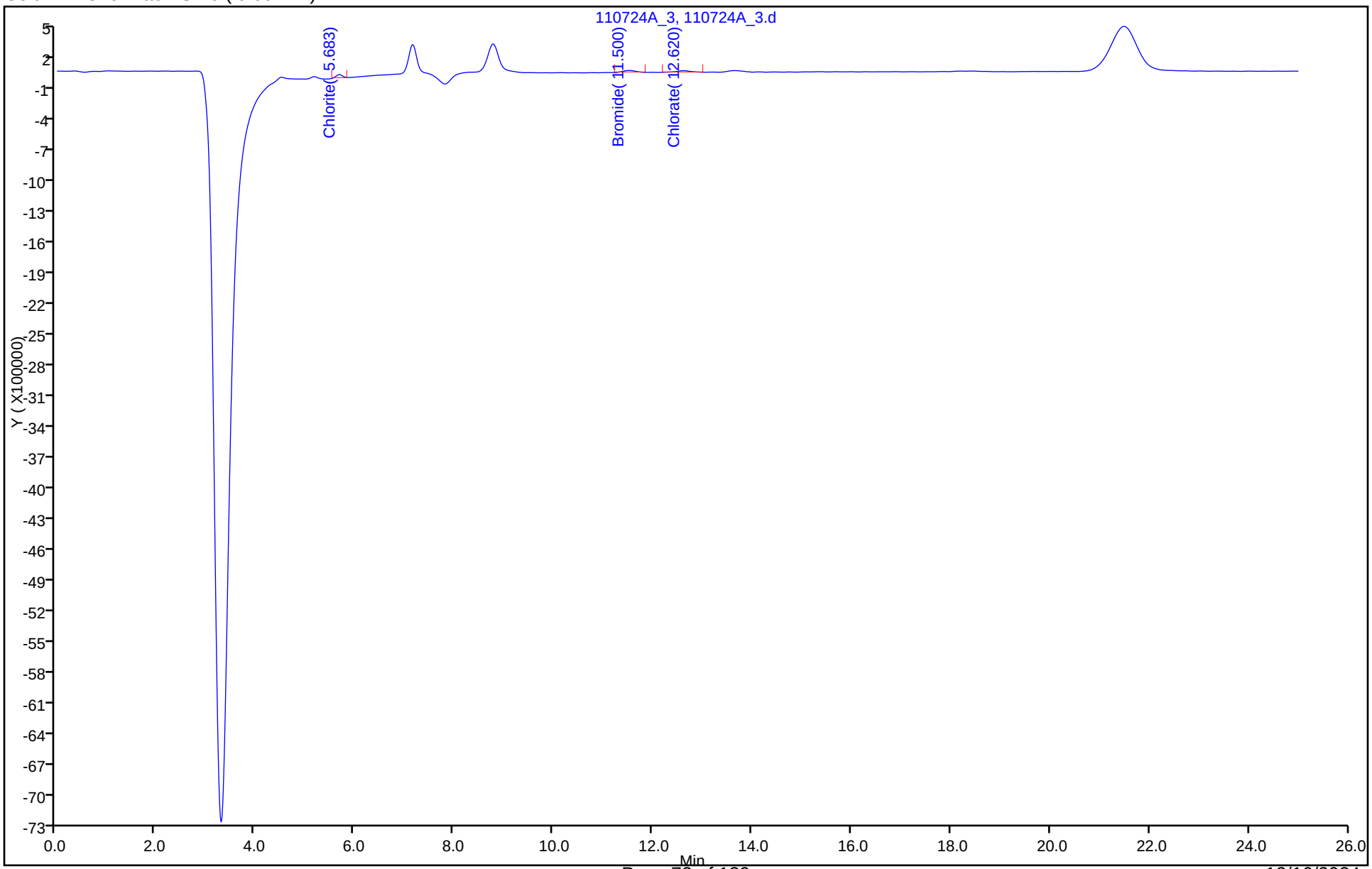
Report Date: 08-Nov-2024 15:07:57 Chrom Revision: 2.3 24-Sep-2024 15:19:46

Eurofins Eaton Analytical South Bend

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_3.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 07-Nov-2024 17:45:00 | Instrument ID: | IC-HR | Operator ID: | |
| Lims ID: | IC L1 | | | Worklist Smp#: | 2 |
| Client ID: | | | | | |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | ALS Bottle#: | 0 |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |

Column: IC IonPac AS-19 ( 0.00 mm)



Manual Integration/User Assign Peak Report

Eurofins Eaton Analytical South Bend

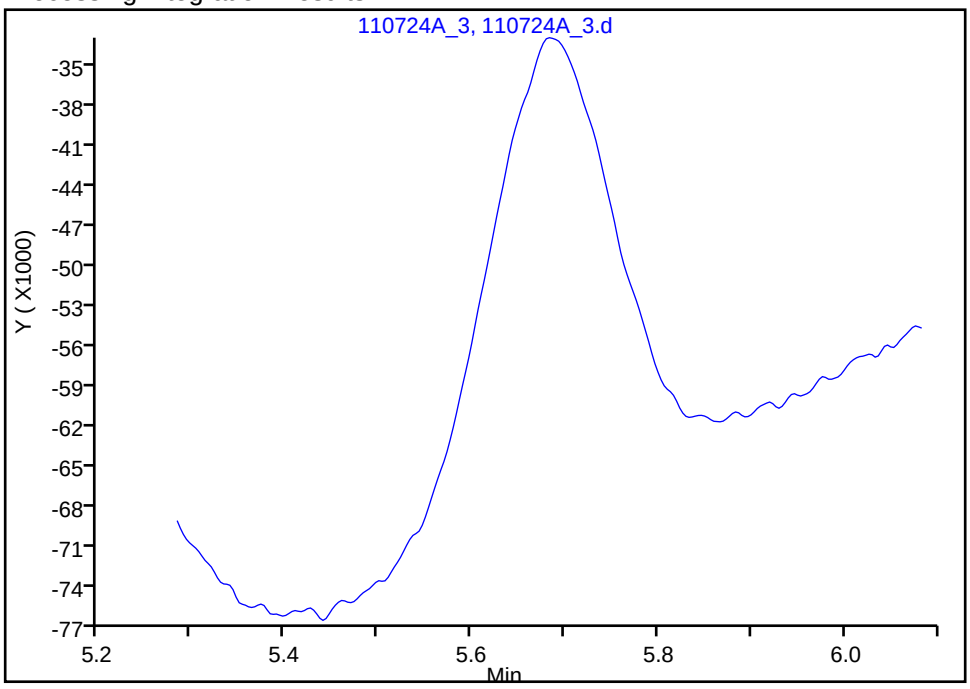
| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_3.d | | | | |
| Injection Date: | 07-Nov-2024 17:45:00 | Instrument ID: | IC-HR | | |
| Lims ID: | IC L1 | | | | |
| Client ID: | | | | | |
| Operator ID: | | ALS Bottle#: | 0 | Worklist Smp#: | 2 |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | | |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |
| Column: | IC IonPac AS-19 ( 0.00 mm) | Detector | 010621A_11 | | |

## 10 Chlorite, CAS: 14998-27-7

Signal: 1

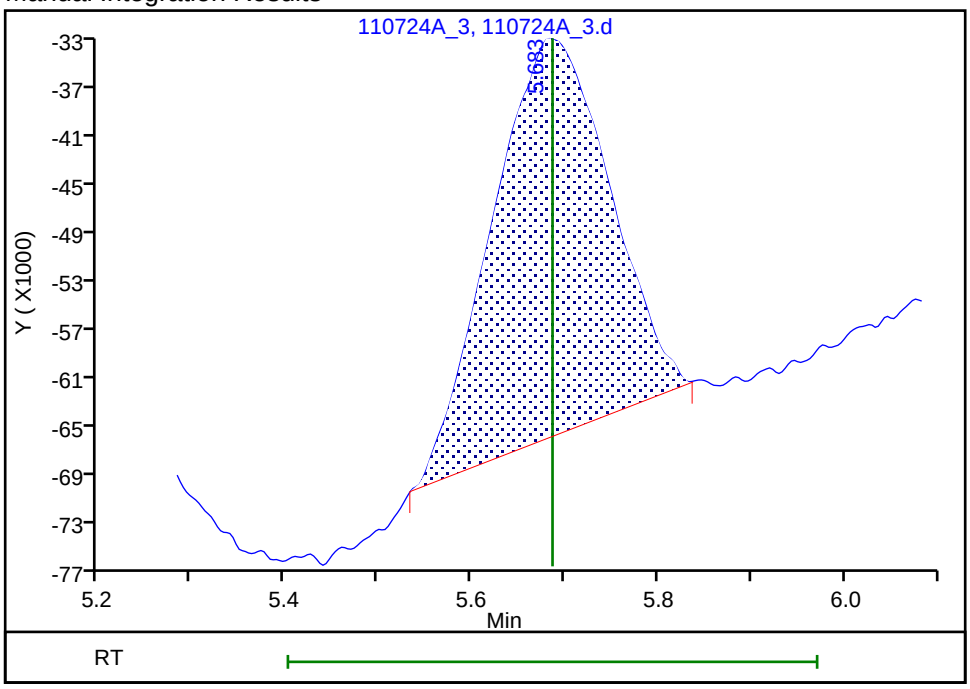
Not Detected
Expected RT: 5.69

Processing Integration Results




Manual Integration Results

RT: 5.68
Area: 287612
Amount: 0.012596
Amount Units: ug/ml




Reviewer: U4QX, 08-Nov-2024 15:03:56 -05:00:00 (UTC)
Audit Action: Manually Integrated/Assigned Compound ID Audit Reason: Peak not integrated

Manual Integration/User Assign Peak Report

Eurofins Eaton Analytical South Bend

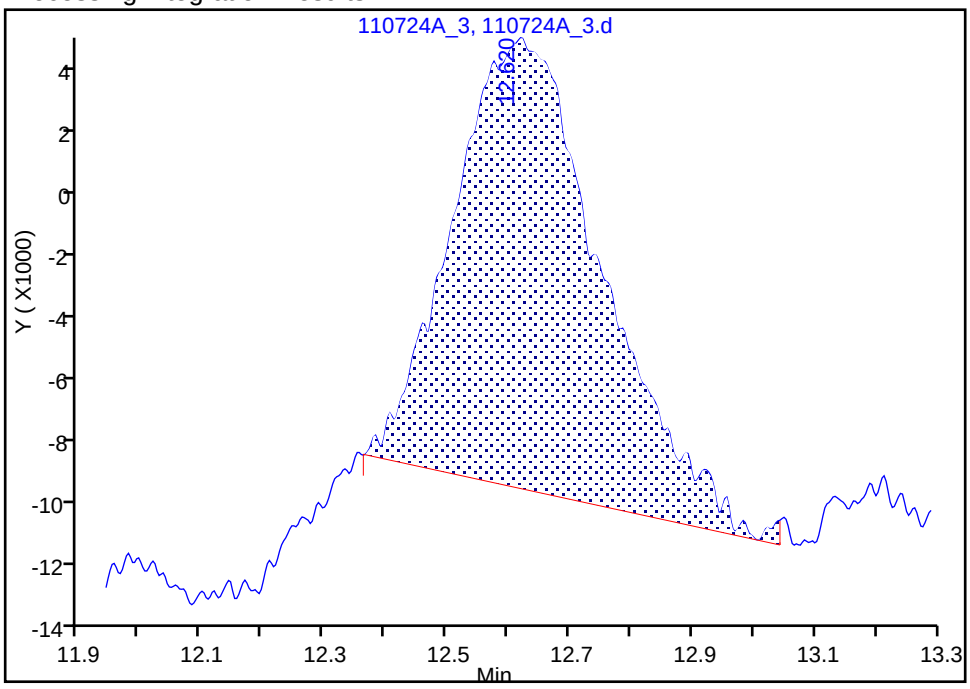
| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_3.d | | | | |
| Injection Date: | 07-Nov-2024 17:45:00 | Instrument ID: | IC-HR | | |
| Lims ID: | IC L1 | | | | |
| Client ID: | | | | | |
| Operator ID: | | ALS Bottle#: | 0 | Worklist Smp#: | 2 |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | | |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |
| Column: | IC IonPac AS-19 ( 0.00 mm) | Detector | 010621A_11 | | |

## 2 Chlorate, CAS: 14866-68-3

Signal: 1

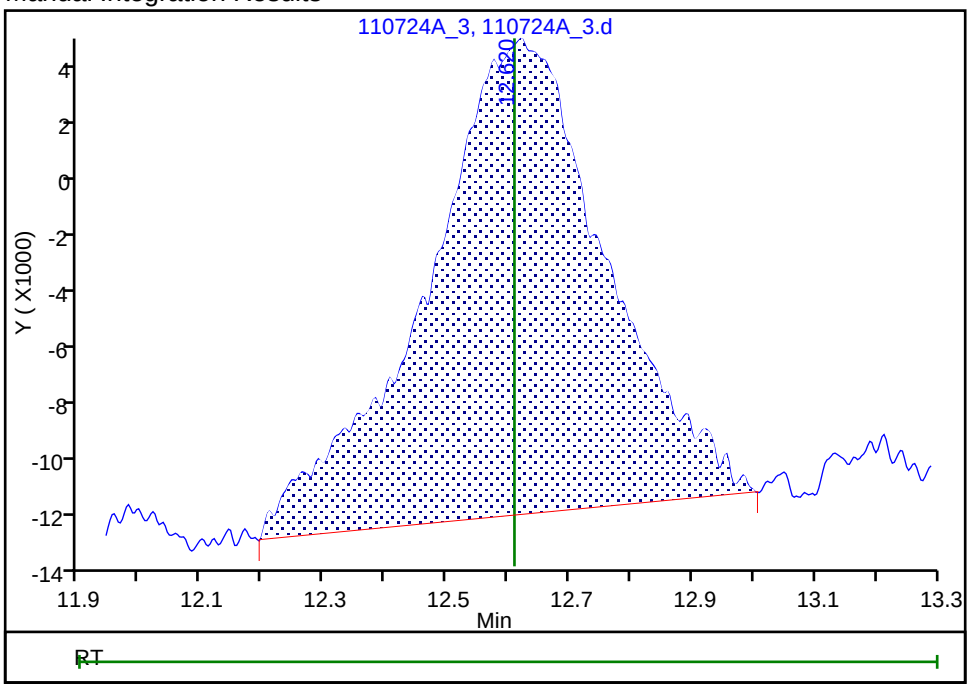
Processing Integration Results

RT: 12.62
Area: 234088
Amount: 0.009326
Amount Units: ug/ml




Manual Integration Results

RT: 12.62
Area: 331249
Amount: 0.011470
Amount Units: ug/ml




Reviewer: U4QX, 08-Nov-2024 15:04:40 -05:00:00 (UTC)

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Eurofins Eaton Analytical South Bend
Target Compound Quantitation Report

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_4.d
Lims ID: IC L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 07-Nov-2024 18:15:00 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: IC L2
Misc. Info.: 810-0031142-003
Operator ID: Instrument ID: IC-HR
Sublist: chrom-300B_IC_HR*sub1

Method: \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\300B_IC_HR.m
Limit Group: IC - 300 - B
Last Update: 08-Nov-2024 15:07:57 Calib Date: 07-Nov-2024 20:17:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_8.d

Column 1 : IC IonPac AS-19 ( 0.00 mm) Det: 010621A_11
Process Host: CTX1634

First Level Reviewer: U4QX Date: 08-Nov-2024 13:12:33

| RT (min.) | Exp RT (min.) | Dlt RT (min.) | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---|---|---|---|---|---|---|
| 10 Chlorite | | | | | | M |
| 5.683 | 5.687 | -0.004 | 672439 | 0.0200 | 0.0219 | M |
| 3 Bromide | | | | | | |
| 11.513 | 11.523 | -0.010 | 712362 | 0.0200 | 0.0199 | |
| 2 Chlorate | | | | | | |
| 12.617 | 12.610 | 0.007 | 665755 | 0.0200 | 0.0210 | |

## QC Flag Legend

Processing Flags
Review Flags
M - Manually Integrated

## Reagents:

IC-300B CalSS_00031 Amount Added: 80.00 Units: uL

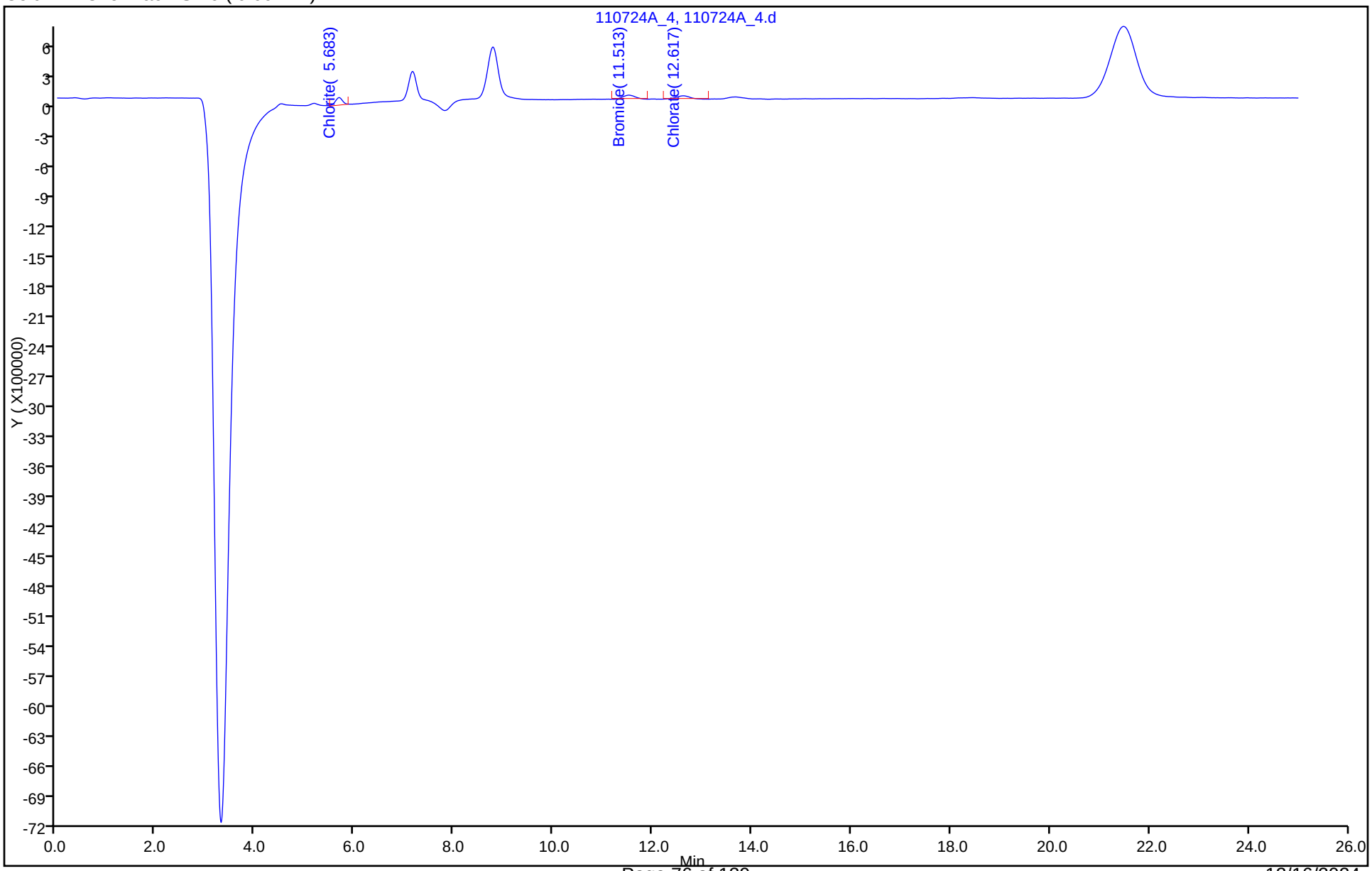
Report Date: 08-Nov-2024 15:07:57 Chrom Revision: 2.3 24-Sep-2024 15:19:46

Eurofins Eaton Analytical South Bend

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_4.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 07-Nov-2024 18:15:00 | Instrument ID: | IC-HR | Operator ID: | |
| Lims ID: | IC L2 | | | Worklist Smp#: | 3 |
| Client ID: | | | | | |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | ALS Bottle#: | 0 |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |

Column: IC IonPac AS-19 ( 0.00 mm)



Manual Integration/User Assign Peak Report

Eurofins Eaton Analytical South Bend

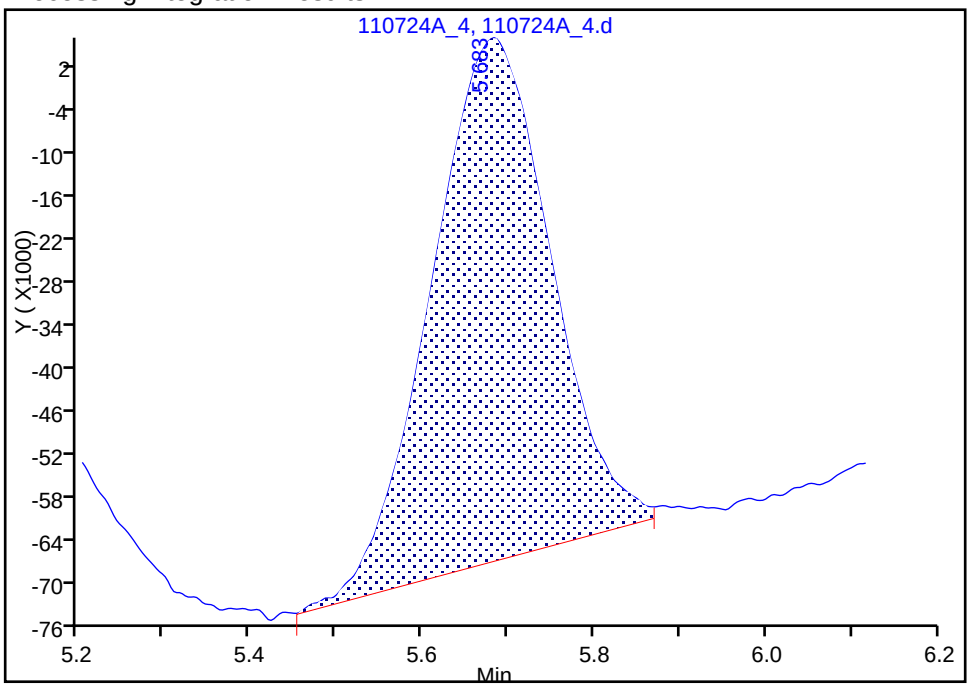
| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_4.d | | | | |
| Injection Date: | 07-Nov-2024 18:15:00 | Instrument ID: | IC-HR | | |
| Lims ID: | IC L2 | | | | |
| Client ID: | | | | | |
| Operator ID: | | ALS Bottle#: | 0 | Worklist Smp#: | 3 |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | | |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |
| Column: | IC IonPac AS-19 ( 0.00 mm) | Detector | 010621A_11 | | |

## 10 Chlorite, CAS: 14998-27-7

Signal: 1

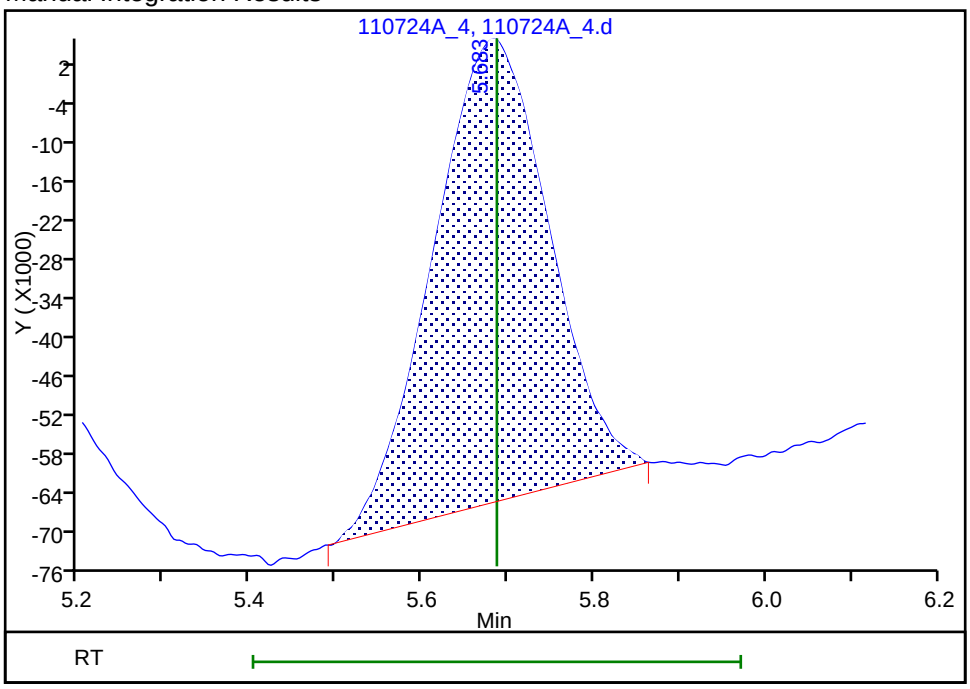
Processing Integration Results

RT: 5.68
Area: 706676
Amount: 0.022555
Amount Units: ug/ml




Manual Integration Results

RT: 5.68
Area: 672439
Amount: 0.021907
Amount Units: ug/ml




Reviewer: U4QX, 08-Nov-2024 15:06:50 -05:00:00 (UTC)

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Eurofins Eaton Analytical South Bend
Target Compound Quantitation Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_5.d | | | | |
| Lims ID: | IC L3 | | | | |
| Client ID: | | | | | |
| Sample Type: | IC | Calib Level: | 3 | | |
| Inject. Date: | 07-Nov-2024 18:46:00 | ALS Bottle#: | 0 | Worklist Smp#: | 4 |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | IC L3 | | | | |
| Misc. Info.: | 810-0031142-004 | | | | |
| Operator ID: | | Instrument ID: | IC-HR | | |
| Sublist: | chrom-300B_IC_HR*sub1 | | | | |
| Method: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\300B_IC_HR.m | | | | |
| Limit Group: | IC - 300 - B | | | | |
| Last Update: | 08-Nov-2024 15:07:58 | Calib Date: | 07-Nov-2024 20:17:00 | | |
| Integrator: | Falcon | | | | |
| Quant Method: | External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_8.d | | | | |
| Column 1 : | IC IonPac AS-19 ( 0.00 mm) | | Det: 010621A_11 | | |
| Process Host: | CTX1634 | | | | |
| First Level Reviewer: U4QX | | Date: | 08-Nov-2024 15:05:32 | | |

| RT (min.) | Exp RT (min.) | Dlt RT (min.) | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---|---|---|---|---|---|---|
| 10 Chlorite | | | | | | |
| 5.683 | 5.683 | 0.000 | 3912350 | 0.1000 | 0.1003 | |
| 3 Bromide | | | | | | |
| 11.523 | 11.523 | 0.000 | 3848746 | 0.1000 | 0.1001 | |
| 2 Chlorate | | | | | | |
| 12.607 | 12.607 | 0.000 | 3476271 | 0.1000 | 0.1010 | |

## QC Flag Legend

Processing Flags

## Reagents:

IC-300B CalSS_00031 Amount Added: 400.00 Units: uL

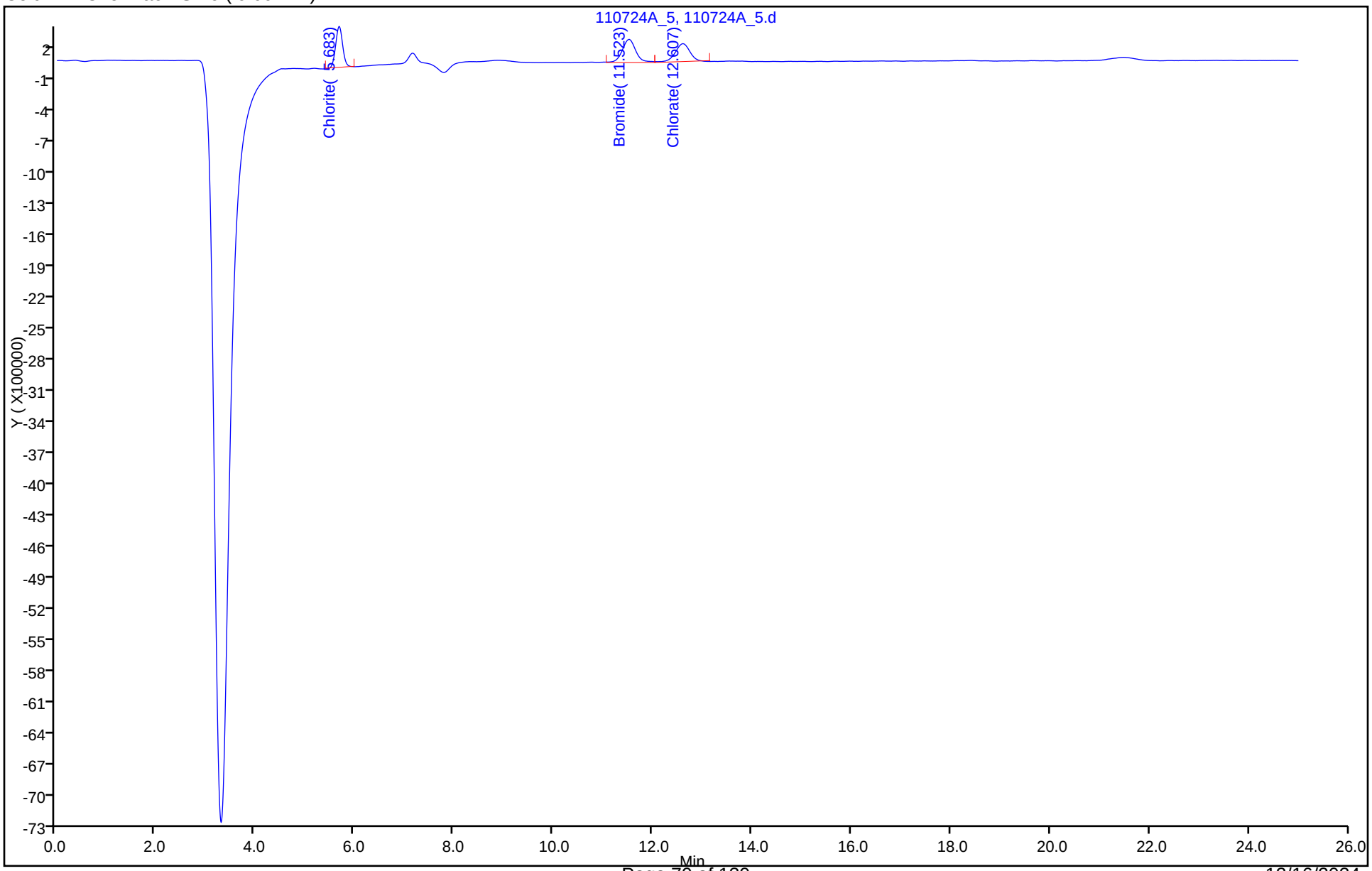
Report Date: 08-Nov-2024 15:07:58 Chrom Revision: 2.3 24-Sep-2024 15:19:46

Eurofins Eaton Analytical South Bend

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_5.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 07-Nov-2024 18:46:00 | Instrument ID: | IC-HR | Operator ID: | |
| Lims ID: | IC L3 | | | Worklist Smp#: | 4 |
| Client ID: | | | | | |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | ALS Bottle#: | 0 |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |

Column: IC IonPac AS-19 ( 0.00 mm)



Eurofins Eaton Analytical South Bend
Target Compound Quantitation Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_6.d | | | | |
| Lims ID: | ICRT L4 | | | | |
| Client ID: | | | | | |
| Sample Type: | ICRT | Calib Level: | 4 | | |
| Inject. Date: | 07-Nov-2024 19:16:00 | ALS Bottle#: | 0 | Worklist Smp#: | 5 |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | ICRT L4 | | | | |
| Misc. Info.: | 810-0031142-005 | | | | |
| Operator ID: | | Instrument ID: | IC-HR | | |
| Sublist: | chrom-300B_IC_HR*sub1 | | | | |
| Method: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\300B_IC_HR.m | | | | |
| Limit Group: | IC - 300 - B | | | | |
| Last Update: | 08-Nov-2024 15:07:58 | Calib Date: | 07-Nov-2024 20:17:00 | | |
| Integrator: | Falcon | | | | |
| Quant Method: | External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_8.d | | | | |
| Column 1 : | IC IonPac AS-19 ( 0.00 mm) | | Det: 010621A_11 | | |
| Process Host: | CTX1634 | | | | |
| First Level Reviewer: U4QX | | Date: | 08-Nov-2024 13:05:27 | | |

| RT (min.) | Exp RT (min.) | Dlt RT (min.) | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---|---|---|---|---|---|---|
| 10 Chlorite | | | | | | |
| 5.687 | 5.687 | 0.000 | 9716429 | 0.2500 | 0.2407 | |
| 3 Bromide | | | | | | |
| 11.523 | 11.523 | 0.000 | 9613585 | 0.2500 | 0.2475 | |
| 2 Chlorate | | | | | | |
| 12.610 | 12.610 | 0.000 | 8530352 | 0.2500 | 0.2449 | |

## QC Flag Legend

Processing Flags

## Reagents:

IC-300B CalSS_00031 Amount Added: 1000.00 Units: uL

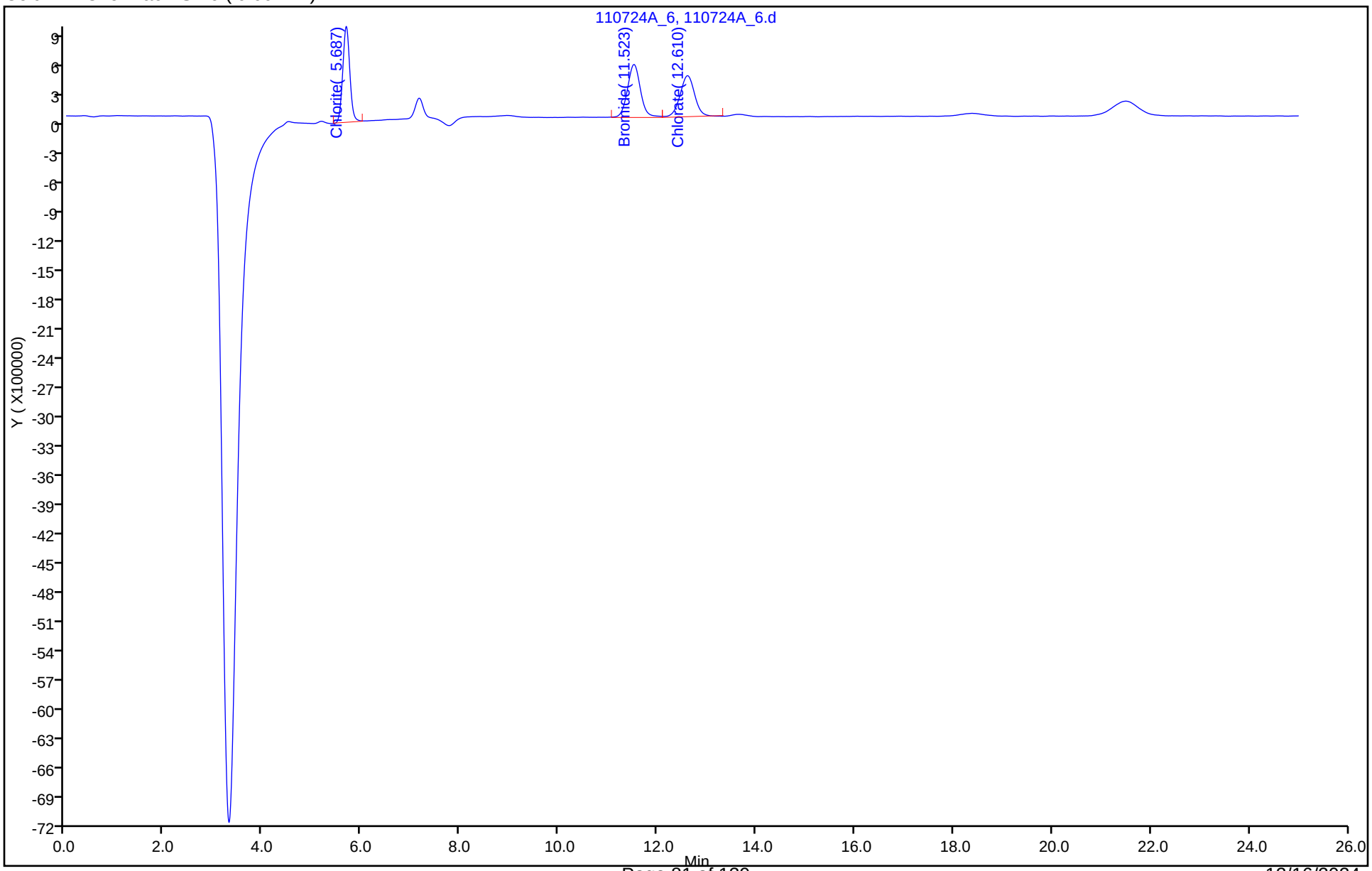
Report Date: 08-Nov-2024 15:07:59 Chrom Revision: 2.3 24-Sep-2024 15:19:46

Eurofins Eaton Analytical South Bend

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_6.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 07-Nov-2024 19:16:00 | Instrument ID: | IC-HR | Operator ID: | |
| Lims ID: | ICRT L4 | | | Worklist Smp#: | 5 |
| Client ID: | | | | | |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | ALS Bottle#: | 0 |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |

Column: IC IonPac AS-19 ( 0.00 mm)



Eurofins Eaton Analytical South Bend
Target Compound Quantitation Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_7.d | | | | |
| Lims ID: | IC L5 | | | | |
| Client ID: | | | | | |
| Sample Type: | IC | Calib Level: | 5 | | |
| Inject. Date: | 07-Nov-2024 19:46:00 | ALS Bottle#: | 0 | Worklist Smp#: | 6 |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | IC L5 | | | | |
| Misc. Info.: | 810-0031142-006 | | | | |
| Operator ID: | | Instrument ID: | IC-HR | | |
| Sublist: | chrom-300B_IC_HR*sub1 | | | | |
| Method: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\300B_IC_HR.m | | | | |
| Limit Group: | IC - 300 - B | | | | |
| Last Update: | 08-Nov-2024 15:07:59 | Calib Date: | 07-Nov-2024 20:17:00 | | |
| Integrator: | Falcon | | | | |
| Quant Method: | External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_8.d | | | | |
| Column 1 : | IC IonPac AS-19 ( 0.00 mm) | | Det: 010621A_11 | | |
| Process Host: | CTX1634 | | | | |
| First Level Reviewer: U4QX | | Date: | 08-Nov-2024 15:05:48 | | |

| RT (min.) | Exp RT (min.) | Dlt RT (min.) | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---|---|---|---|---|---|---|
| 10 Chlorite | | | | | | |
| 5.683 | 5.687 | -0.004 | 20152522 | 0.5000 | 0.4932 | |
| 3 Bromide | | | | | | |
| 11.520 | 11.523 | -0.003 | 19458481 | 0.5000 | 0.4992 | |
| 2 Chlorate | | | | | | |
| 12.603 | 12.610 | -0.007 | 17376471 | 0.5000 | 0.4968 | |

## QC Flag Legend

Processing Flags

## Reagents:

IC-300B CalSS_00031 Amount Added: 1000.00 Units: uL

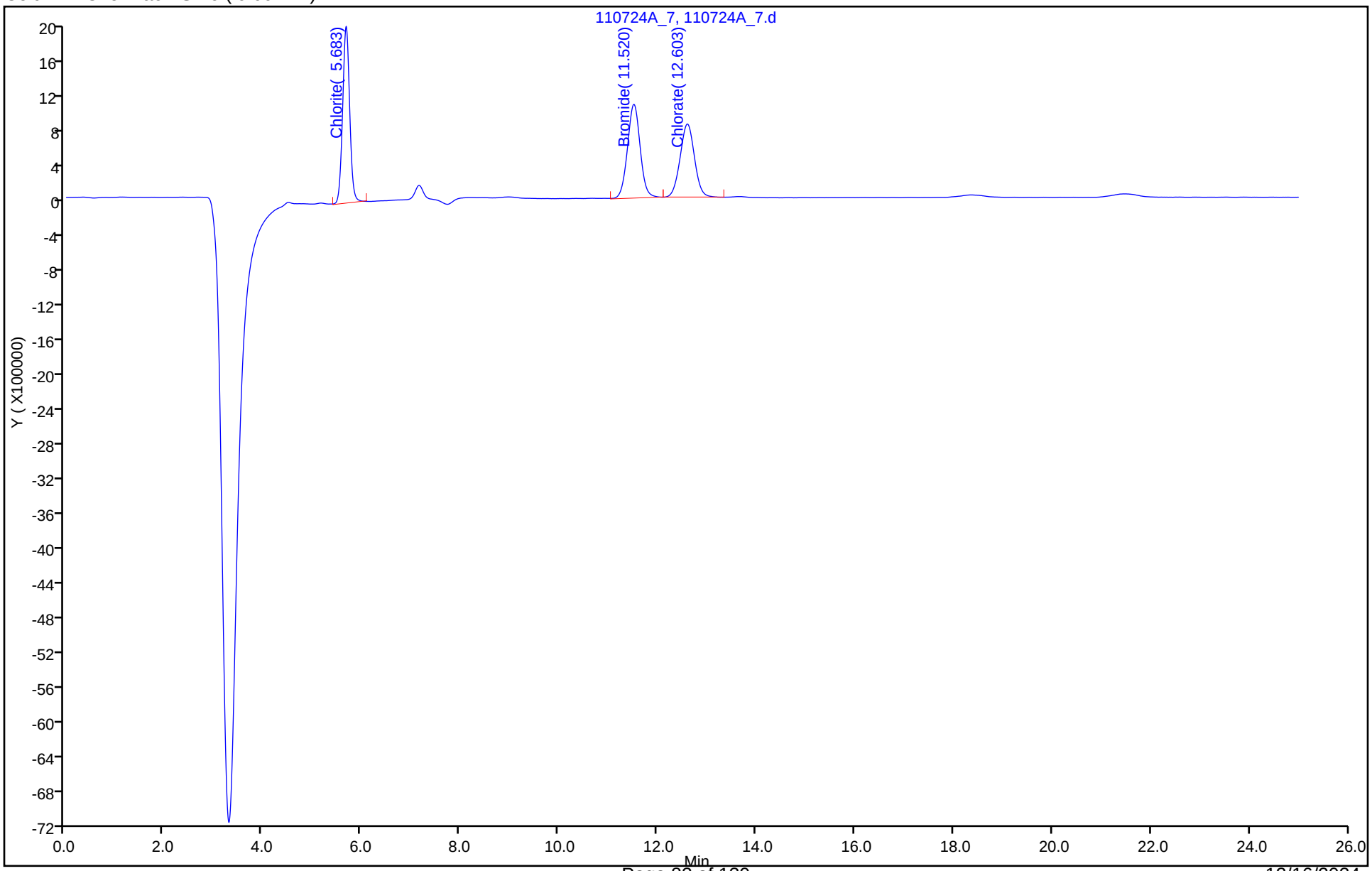
Report Date: 08-Nov-2024 15:07:59 Chrom Revision: 2.3 24-Sep-2024 15:19:46

Eurofins Eaton Analytical South Bend

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_7.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 07-Nov-2024 19:46:00 | Instrument ID: | IC-HR | Operator ID: | |
| Lims ID: | IC L5 | | | Worklist Smp#: | 6 |
| Client ID: | | | | | |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | ALS Bottle#: | 0 |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |

Column: IC IonPac AS-19 ( 0.00 mm)



Eurofins Eaton Analytical South Bend
Target Compound Quantitation Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_8.d | | | | |
| Lims ID: | IC L6 | | | | |
| Client ID: | | | | | |
| Sample Type: | IC | Calib Level: | 6 | | |
| Inject. Date: | 07-Nov-2024 20:17:00 | ALS Bottle#: | 0 | Worklist Smp#: | 7 |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | IC L6 | | | | |
| Misc. Info.: | 810-0031142-007 | | | | |
| Operator ID: | | Instrument ID: | IC-HR | | |
| Sublist: | chrom-300B_IC_HR*sub1 | | | | |
| Method: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\300B_IC_HR.m | | | | |
| Limit Group: | IC - 300 - B | | | | |
| Last Update: | 08-Nov-2024 15:08:00 | Calib Date: | 07-Nov-2024 20:17:00 | | |
| Integrator: | Falcon | | | | |
| Quant Method: | External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_8.d | | | | |
| Column 1 : | IC IonPac AS-19 ( 0.00 mm) | | Det: 010621A_11 | | |
| Process Host: | CTX1634 | | | | |
| First Level Reviewer: U4QX | | Date: | 08-Nov-2024 15:05:51 | | |

| RT (min.) | Exp RT (min.) | Dlt RT (min.) | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---|---|---|---|---|---|---|
| 10 Chlorite | | | | | | |
| 5.687 | 5.687 | 0.000 | 41329843 | 1.00 | 1.01 | |
| 3 Bromide | | | | | | |
| 11.520 | 11.523 | -0.003 | 39086374 | 1.00 | 1.00 | |
| 2 Chlorate | | | | | | |
| 12.603 | 12.610 | -0.007 | 35143361 | 1.00 | 1.00 | |

## QC Flag Legend

Processing Flags

## Reagents:

IC-300B CalSS_00031 Amount Added: 1000.00 Units: uL

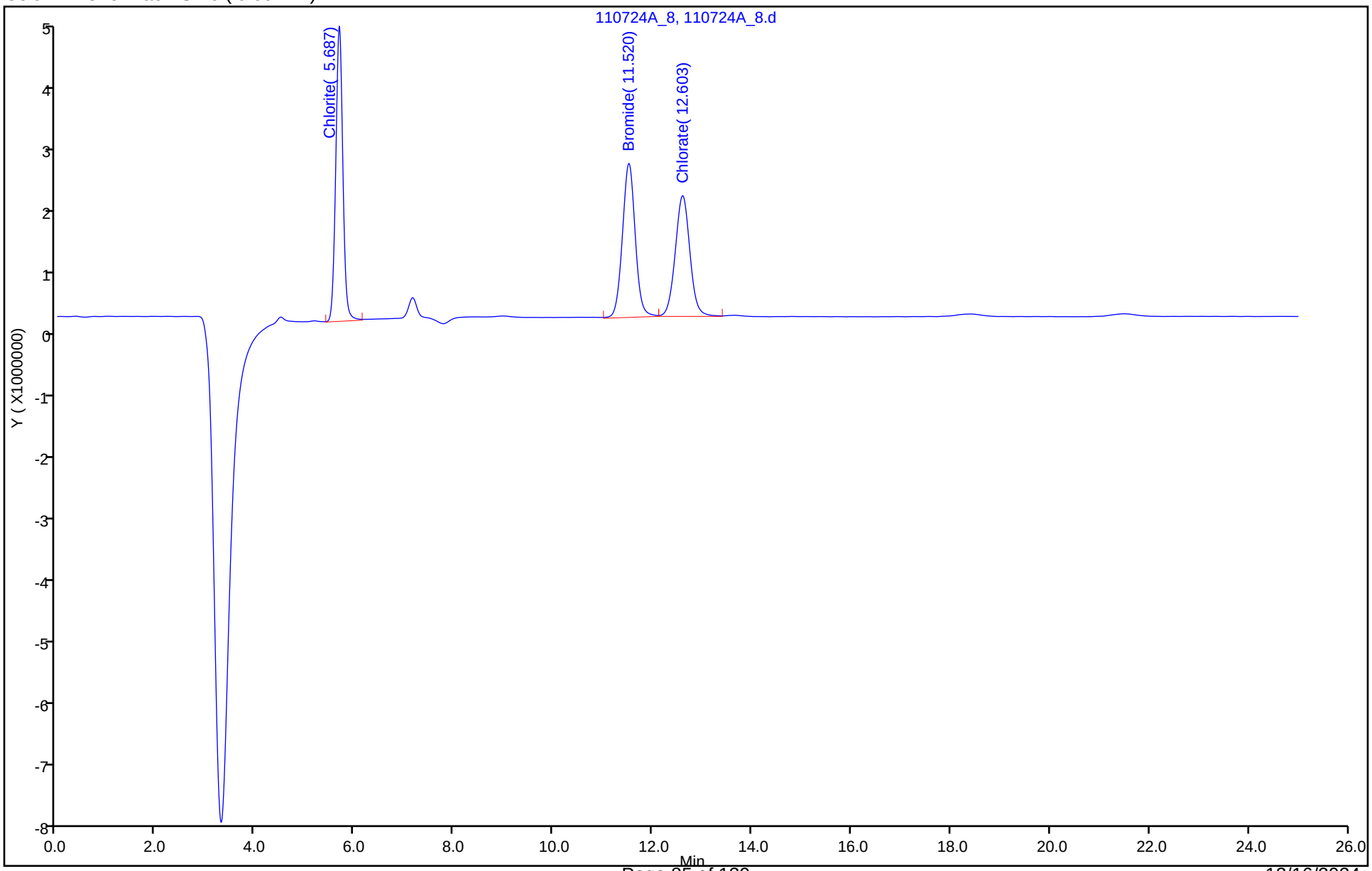
Report Date: 08-Nov-2024 15:08:00 Chrom Revision: 2.3 24-Sep-2024 15:19:46

Eurofins Eaton Analytical South Bend

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_8.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 07-Nov-2024 20:17:00 | Instrument ID: | IC-HR | Operator ID: | |
| Lims ID: | IC L6 | | | Worklist Smp#: | 7 |
| Client ID: | | | | | |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | ALS Bottle#: | 0 |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |

Column: IC IonPac AS-19 ( 0.00 mm)



## Calibration / Chlorite

| | |
|---|---|
| **Curve Type:** | Linear |
| **Weighting:** | None |
| **Origin:** | None |
| **Dependency:** | Response |
| **Calib Mode:** | ESTD |
| **Response Base:** | AREA |
| **RF Rounding:** | 0 |

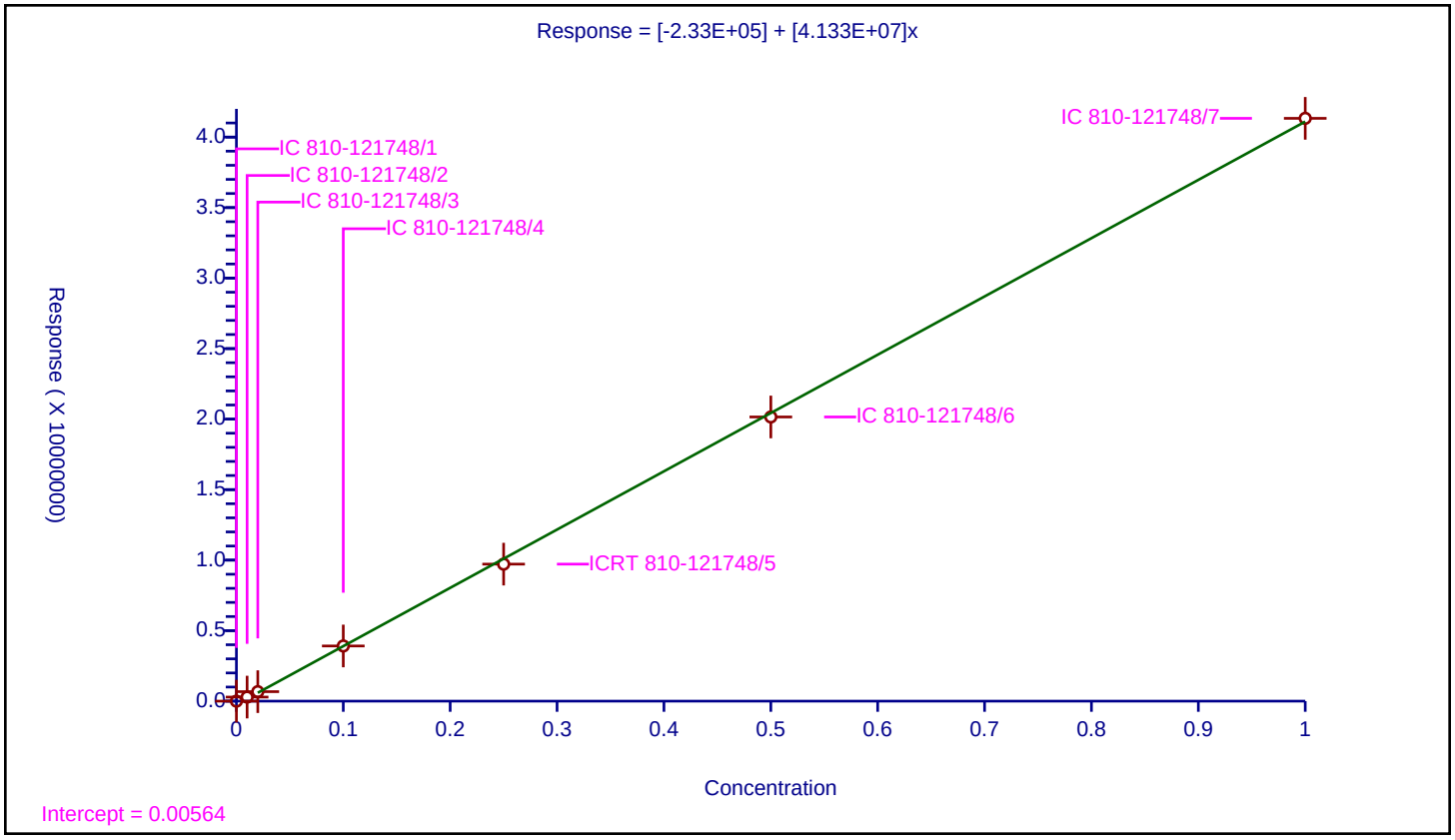
**Curve Coefficients**

| | |
|---|---|
| **Intercept:** | -2.33E+05 |
| **Slope:** | 4.133E+07 |

**Error Coefficients**

| | |
|---|---|
| **Relative Standard Deviation:** | 14.0 |

| ID | Level | Concentration | Response | IS Amount | IS Response | RF | Used |
|---|---|---|---|---|---|---|---|
| 1 | IC 810-121748/1 | 0.0 | 0.0 | | | NaN | Y |
| 2 | IC 810-121748/2 | 0.01 | 287612.0 | | | 28761200.0 | Y |
| 3 | IC 810-121748/3 | 0.02 | 672439.0 | | | 33621950.0 | Y |
| 4 | IC 810-121748/4 | 0.1 | 3912350.0 | | | 39123500.0 | Y |
| 5 | ICRT 810-121748/5 | 0.25 | 9716429.0 | | | 38865716.0 | Y |
| 6 | IC 810-121748/6 | 0.5 | 20152522.0 | | | 40305044.0 | Y |
| 7 | IC 810-121748/7 | 1.0 | 41329843.0 | | | 41329843.0 | Y |



## Calibration / Bromide

| | |
|---|---|
| **Curve Type:** | Linear |
| **Weighting:** | None |
| **Origin:** | None |
| **Dependency:** | Response |
| **Calib Mode:** | ESTD |
| **Response Base:** | AREA |
| **RF Rounding:** | 0 |

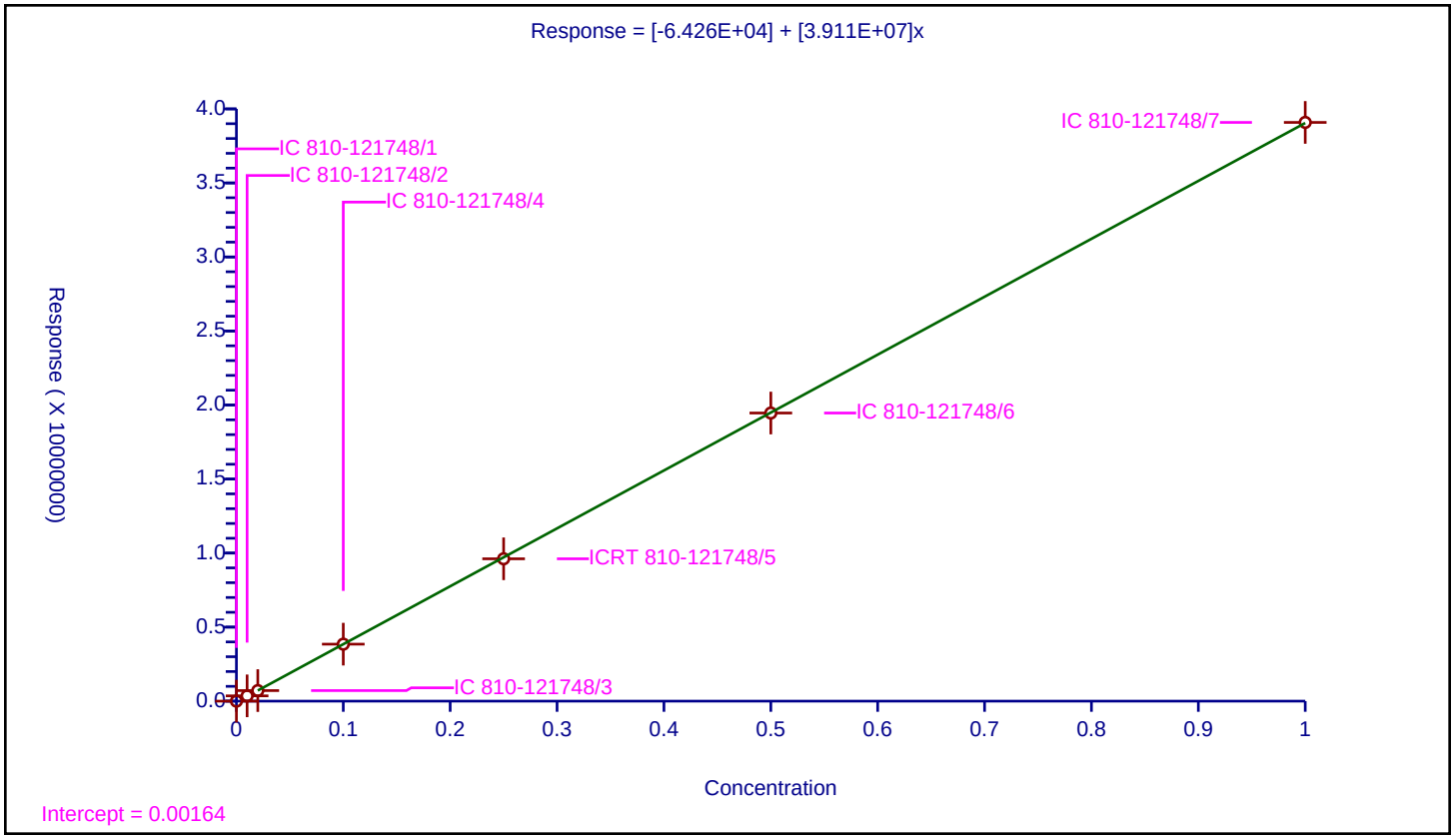
**Curve Coefficients**

| | |
|---|---|
| **Intercept:** | -6.426E+04 |
| **Slope:** | 3.911E+07 |

**Error Coefficients**

| | |
|---|---|
| **Relative Standard Deviation:** | 4.0 |

| ID | Level | Concentration | Response | IS Amount | IS Response | RF | Used |
|---|---|---|---|---|---|---|---|
| 1 | IC 810-121748/1 | 0.0 | 0.0 | | | NaN | Y |
| 2 | IC 810-121748/2 | 0.01 | 357419.0 | | | 35741900.0 | Y |
| 3 | IC 810-121748/3 | 0.02 | 712362.0 | | | 35618100.0 | Y |
| 4 | IC 810-121748/4 | 0.1 | 3848746.0 | | | 38487460.0 | Y |
| 5 | ICRT 810-121748/5 | 0.25 | 9613585.0 | | | 38454340.0 | Y |
| 6 | IC 810-121748/6 | 0.5 | 19458481.0 | | | 38916962.0 | Y |
| 7 | IC 810-121748/7 | 1.0 | 39086374.0 | | | 39086374.0 | Y |



## Calibration / Chlorate

| | |
|---|---|
| **Curve Type:** | Linear |
| **Weighting:** | None |
| **Origin:** | None |
| **Dependency:** | Response |
| **Calib Mode:** | ESTD |
| **Response Base:** | AREA |
| **RF Rounding:** | 0 |

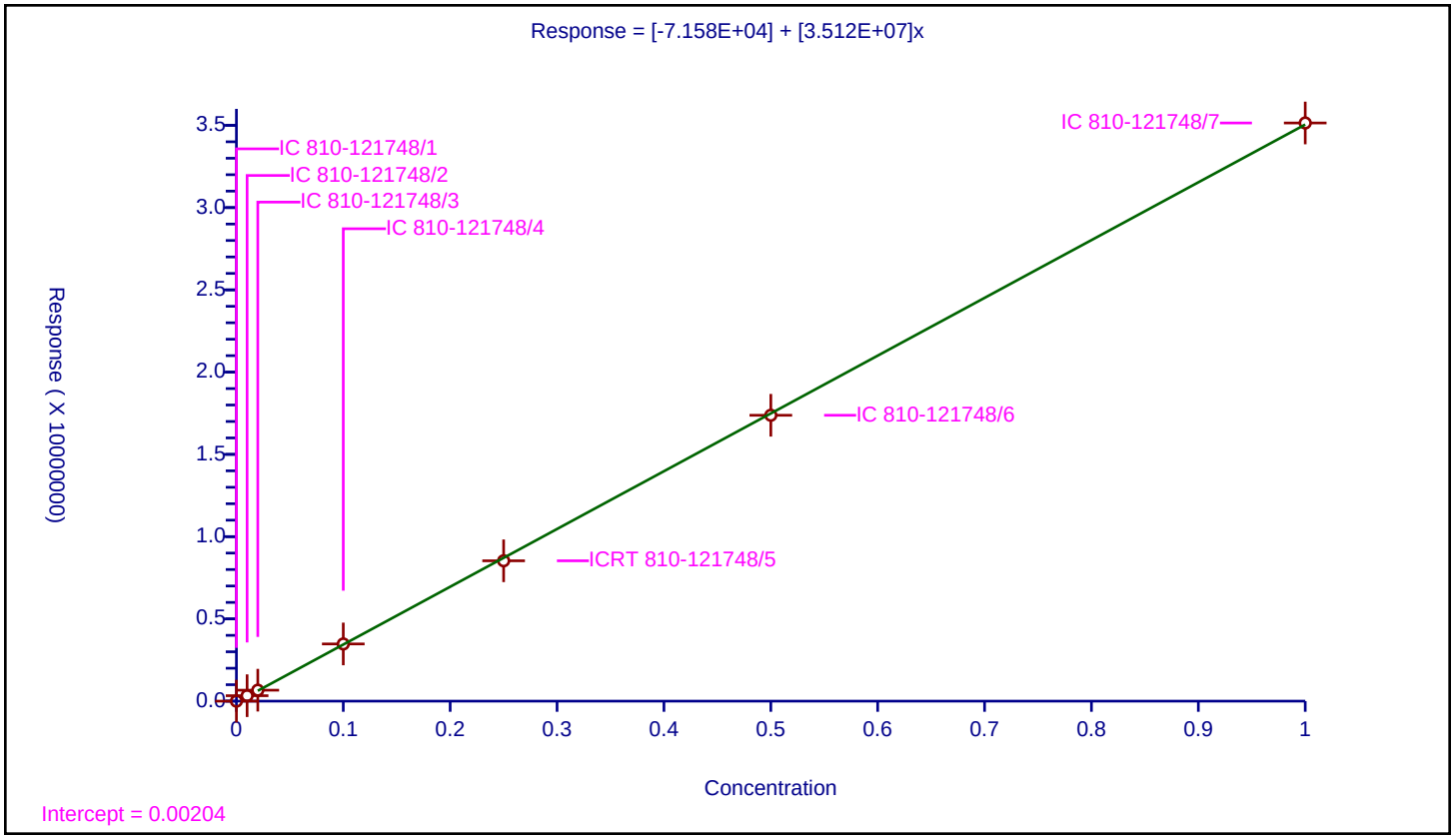
**Curve Coefficients**

| | |
|---|---|
| **Intercept:** | -7.158E+04 |
| **Slope:** | 3.512E+07 |

**Error Coefficients**

| | |
|---|---|
| **Relative Standard Deviation:** | 7.9 |

| ID | Level | Concentration | Response | IS Amount | IS Response | RF | Used |
|---|---|---|---|---|---|---|---|
| 1 | IC 810-121748/1 | 0.0 | 0.0 | | | NaN | Y |
| 2 | IC 810-121748/2 | 0.01 | 331249.0 | | | 33124900.0 | Y |
| 3 | IC 810-121748/3 | 0.02 | 665755.0 | | | 33287750.0 | Y |
| 4 | IC 810-121748/4 | 0.1 | 3476271.0 | | | 34762710.0 | Y |
| 5 | ICRT 810-121748/5 | 0.25 | 8530352.0 | | | 34121408.0 | Y |
| 6 | IC 810-121748/6 | 0.5 | 17376471.0 | | | 34752942.0 | Y |
| 7 | IC 810-121748/7 | 1.0 | 35143361.0 | | | 35143361.0 | Y |



FORM VII
HPLC/IC CONTINUING CALIBRATION DATA

Lab Name: Eurofins Eaton Analytical South Bend Job No.: 810-131403-1

SDG No.:

Lab Sample ID: ICV 810-121748/8 Calibration Date: 11/07/2024 20:48

Instrument ID: IC-HR Calib Start Date: 11/07/2024 17:14

GC Column: IonPac AS-19 ID: Calib End Date: 11/07/2024 20:17

Lab File ID: 110724A_9.d Conc. Units: ug/L

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %REC | %REC LIMITS |
|---|---|---|---|---|---|---|---|---|
| Chlorite | Lin | | 39733704 | | 246 | 250 | 98 | 90-110 |
| Bromide | Lin | | 37921964 | | 244 | 250 | 98 | 90-110 |
| Chlorate | Lin | | 33796420 | | 243 | 250 | 97 | 90-110 |

FORM VII
HPLC/IC CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1

SDG No.:

Lab Sample ID: ICV 810-121748/8  Calibration Date: 11/07/2024 20:48

Instrument ID: IC-HR  Calib Start Date: 11/07/2024 17:14

GC Column: IonPac AS-19  ID:  Calib End Date: 11/07/2024 20:17

Lab File ID: 110724A_9.d

| Analyte | RT | RT WINDOW | |
|---|---|---|---|
| | | FROM | TO |
| Chlorite | 5.69 | 5.40 | 5.97 |
| Bromide | 11.52 | 10.95 | 12.10 |
| Chlorate | 12.61 | 11.73 | 13.49 |

Eurofins Eaton Analytical South Bend
Target Compound Quantitation Report

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_9.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 07-Nov-2024 20:48:00 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: ICV
Misc. Info.: 810-0031142-008
Operator ID: Instrument ID: IC-HR
Sublist:

Method: \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\300B_IC_HR.m
Limit Group: IC - 300 - B
Last Update: 08-Nov-2024 15:19:12 Calib Date: 07-Nov-2024 20:17:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_8.d

Column 1 : IC IonPac AS-19 ( 0.00 mm) Det: 010621A_11
Process Host: CTX1634

First Level Reviewer: U4QX Date: 08-Nov-2024 12:12:05

| RT (min.) | Exp RT (min.) | Dlt RT (min.) | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---|---|---|---|---|---|---|
| 10 Chlorite | | | | | | |
| 5.687 | 5.687 | 0.000 | 9933426 | 0.2500 | 0.2460 | |
| 3 Bromide | | | | | | |
| 11.520 | 11.523 | -0.003 | 9480491 | 0.2500 | 0.2440 | |
| 2 Chlorate | | | | | | |
| 12.607 | 12.610 | -0.003 | 8449105 | 0.2500 | 0.2426 | |

## Reagents:

IC-300B QCSS_00031 Amount Added: 1000.00 Units: uL

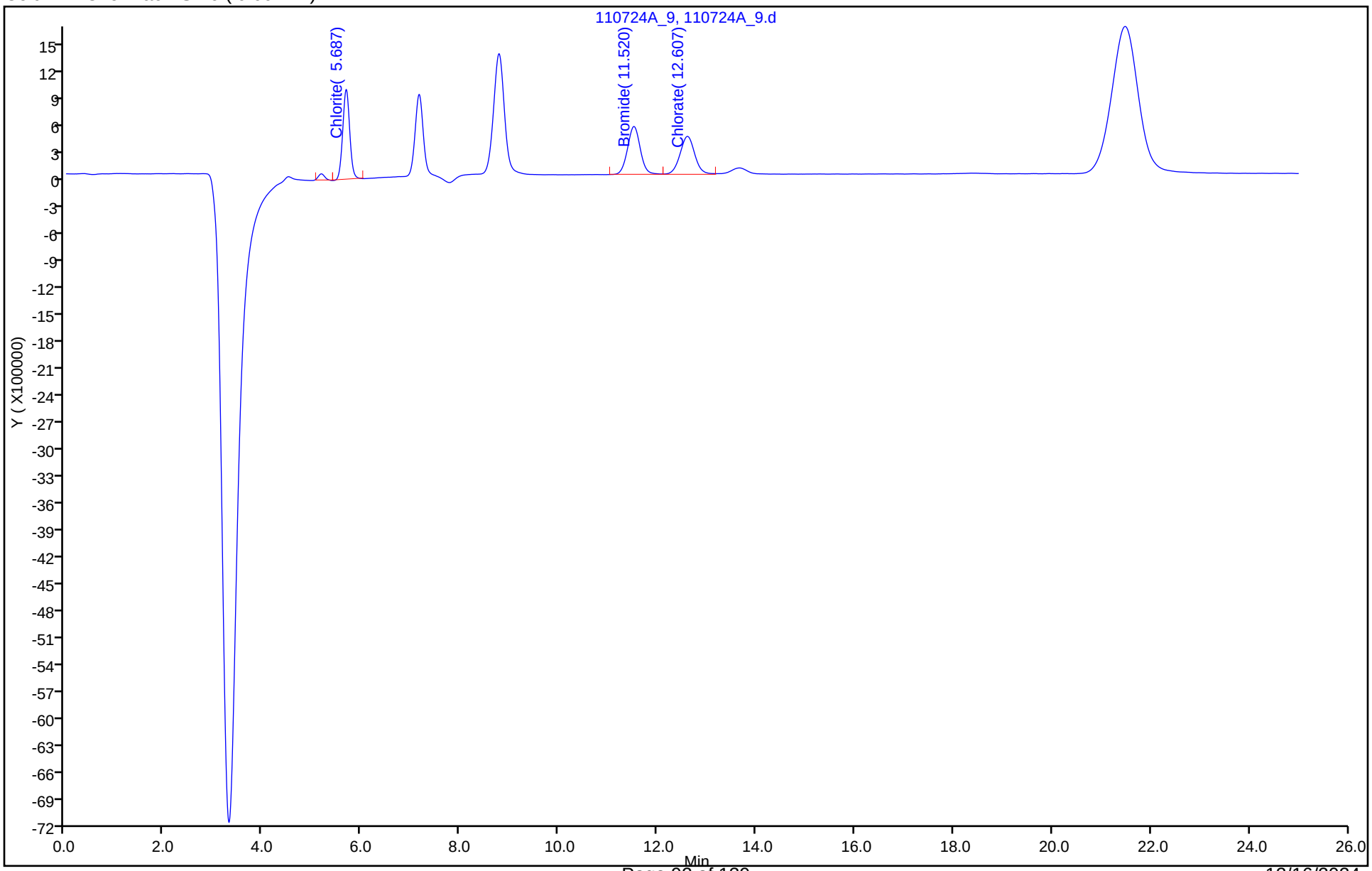
Report Date: 08-Nov-2024 15:20:35 Chrom Revision: 2.3 24-Sep-2024 15:19:46

Eurofins Eaton Analytical South Bend

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_9.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 07-Nov-2024 20:48:00 | Instrument ID: | IC-HR | Operator ID: | |
| Lims ID: | ICV | | | Worklist Smp#: | 8 |
| Client ID: | | | | | |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | ALS Bottle#: | 0 |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |

Column: IC IonPac AS-19 ( 0.00 mm)



FORM VII
HPLC/IC CONTINUING CALIBRATION DATA

Lab Name: Eurofins Eaton Analytical South Bend Job No.: 810-131403-1

SDG No.:

Lab Sample ID: CCV 810-126563/2 Calibration Date: 12/14/2024 06:32

Instrument ID: IC-HR Calib Start Date: 11/07/2024 17:14

GC Column: IonPac AS-19 ID: Calib End Date: 11/07/2024 20:17

Lab File ID: 121424A_11.d Conc. Units: ug/L

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %REC | %REC LIMITS |
|---|---|---|---|---|---|---|---|---|
| Chlorite | Lin | | 40475876 | | 250 | 250 | 100 | 90-110 |
| Bromide | Lin | | 39734996 | | 256 | 250 | 102 | 90-110 |
| Chlorate | Lin | | 35926700 | | 258 | 250 | 103 | 90-110 |

FORM VII
HPLC/IC CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1

SDG No.:

Lab Sample ID: CCV 810-126563/2  Calibration Date: 12/14/2024 06:32

Instrument ID: IC-HR  Calib Start Date: 11/07/2024 17:14

GC Column: IonPac AS-19  ID:  Calib End Date: 11/07/2024 20:17

Lab File ID: 121424A_11.d

| Analyte | RT | RT WINDOW | |
|---|---|---|---|
| | | FROM | TO |
| Chlorite | 5.61 | 5.33 | 5.89 |
| Bromide | 11.05 | 10.50 | 11.60 |
| Chlorate | 12.00 | 11.16 | 12.84 |

Eurofins Eaton Analytical South Bend
Target Compound Quantitation Report

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_11.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 14-Dec-2024 06:32:00 ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: CCV
Misc. Info.: 810-0032367-002
Operator ID: Instrument ID: IC-HR
Sublist: chrom-300B_IC_HR*sub1

Method: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\300B_IC_HR.m
Limit Group: IC - 300 - B
Last Update: 15-Dec-2024 10:28:47 Calib Date: 07-Nov-2024 20:17:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_8.d

Column 1 : IC IonPac AS-19 ( 0.00 mm) Det: 010621A_11
Process Host: CTX1635

First Level Reviewer: U4QX Date: 15-Dec-2024 10:23:40

| RT (min.) | Exp RT (min.) | Dlt RT (min.) | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---|---|---|---|---|---|---|
| 10 Chlorite | | | | | | |
| 5.607 | 5.607 | 0.000 | 10118969 | 0.2500 | 0.2505 | |
| 3 Bromide | | | | | | |
| 11.050 | 11.050 | 0.000 | 9933749 | 0.2500 | 0.2556 | |
| 2 Chlorate | | | | | | |
| 11.997 | 11.997 | 0.000 | 8981675 | 0.2500 | 0.2578 | |

## QC Flag Legend
Processing Flags

## Reagents:
IC-300B CalSS_00032 Amount Added: 1000.00 Units: uL

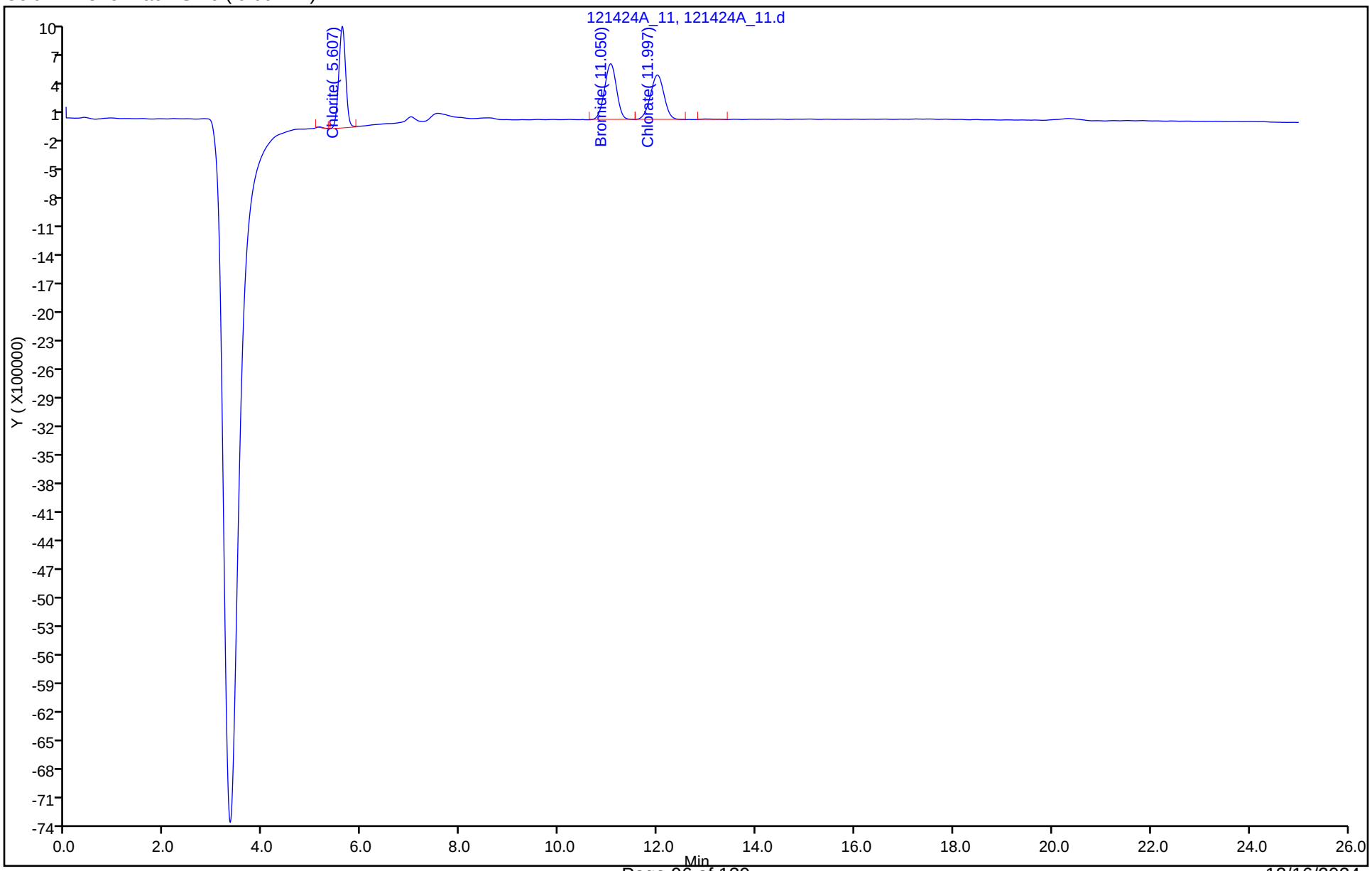
Report Date: 15-Dec-2024 10:28:47 Chrom Revision: 2.3 12-Nov-2024 16:55:22

Eurofins Eaton Analytical South Bend

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_11.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 14-Dec-2024 06:32:00 | Instrument ID: | IC-HR | Operator ID: | |
| Lims ID: | CCV | | | Worklist Smp#: | 2 |
| Client ID: | | | | | |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | ALS Bottle#: | 0 |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |

Column: IC IonPac AS-19 ( 0.00 mm)



FORM VII
HPLC/IC CONTINUING CALIBRATION DATA

Lab Name: Eurofins Eaton Analytical South Bend Job No.: 810-131403-1

SDG No.:

Lab Sample ID: CCV 810-126563/19 Calibration Date: 12/14/2024 14:27

Instrument ID: IC-HR Calib Start Date: 11/07/2024 17:14

GC Column: IonPac AS-19 ID: Calib End Date: 11/07/2024 20:17

Lab File ID: 121424A_28.d Conc. Units: ug/L

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %REC | %REC LIMITS |
|---|---|---|---|---|---|---|---|---|
| Chlorite | Lin | | 39980168 | | 247 | 250 | 99 | 90-110 |
| Bromide | Lin | | 38901336 | | 250 | 250 | 100 | 90-110 |
| Chlorate | Lin | | 35325940 | | 254 | 250 | 101 | 90-110 |

FORM VII
HPLC/IC CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1

SDG No.:

Lab Sample ID: CCV 810-126563/19  Calibration Date: 12/14/2024 14:27

Instrument ID: IC-HR  Calib Start Date: 11/07/2024 17:14

GC Column: IonPac AS-19  ID:  Calib End Date: 11/07/2024 20:17

Lab File ID: 121424A_28.d

| Analyte | RT | RT WINDOW | |
|---|---|---|---|
| | | FROM | TO |
| Chlorite | 5.59 | 5.33 | 5.89 |
| Bromide | 11.02 | 10.50 | 11.60 |
| Chlorate | 11.96 | 11.16 | 12.84 |

Eurofins Eaton Analytical South Bend
Target Compound Quantitation Report

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_28.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 14-Dec-2024 14:27:00 ALS Bottle#: 0 Worklist Smp#: 19
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: CCV
Misc. Info.: 810-0032367-019
Operator ID: Instrument ID: IC-HR
Sublist: chrom-300B_IC_HR*sub1

Method: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\300B_IC_HR.m
Limit Group: IC - 300 - B
Last Update: 15-Dec-2024 10:28:53 Calib Date: 07-Nov-2024 20:17:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_8.d

Column 1 : IC IonPac AS-19 ( 0.00 mm) Det: 010621A_11
Process Host: CTX1635

| RT (min.) | Exp RT (min.) | Dlt RT (min.) | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---|---|---|---|---|---|---|
| 10 Chlorite | | | | | | |
| 5.593 | 5.607 | -0.014 | 9995042 | 0.2500 | 0.2475 | |
| 3 Bromide | | | | | | |
| 11.020 | 11.050 | -0.030 | 9725334 | 0.2500 | 0.2503 | |
| 2 Chlorate | | | | | | |
| 11.963 | 11.997 | -0.034 | 8831485 | 0.2500 | 0.2535 | |

## Reagents:

IC-300B CalSS_00032 Amount Added: 1000.00 Units: uL

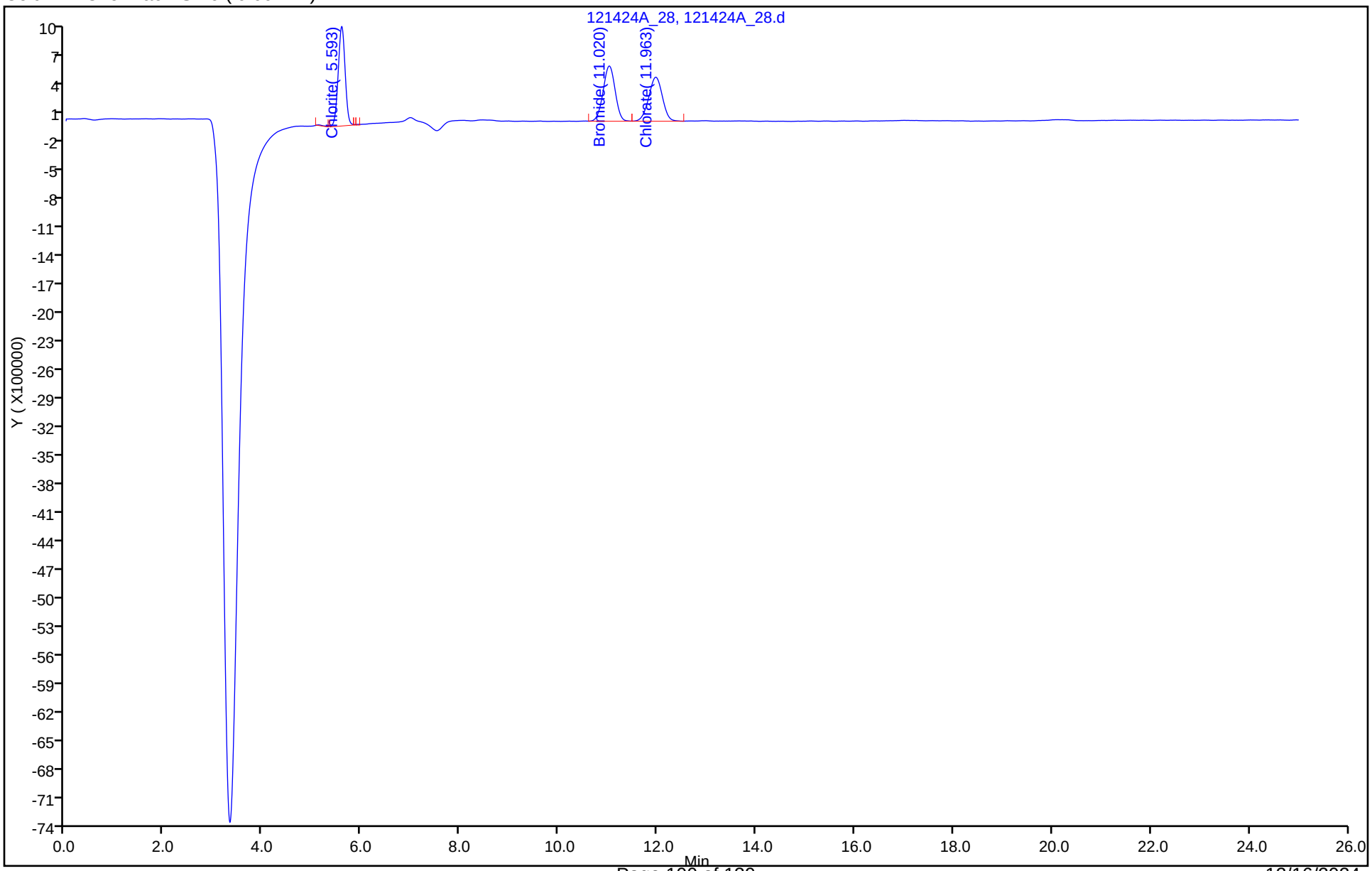
Report Date: 15-Dec-2024 10:28:53 Chrom Revision: 2.3 12-Nov-2024 16:55:22

Eurofins Eaton Analytical South Bend

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_28.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 14-Dec-2024 14:27:00 | Instrument ID: | IC-HR | Operator ID: | |
| Lims ID: | CCV | | | Worklist Smp#: | 19 |
| Client ID: | | | | | |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | ALS Bottle#: | 0 |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |

Column: IC IonPac AS-19 ( 0.00 mm)



FORM VII
HPLC/IC CONTINUING CALIBRATION DATA

Lab Name: Eurofins Eaton Analytical South Bend Job No.: 810-131403-1

SDG No.:

Lab Sample ID: CCV 810-126563/34 Calibration Date: 12/14/2024 21:26

Instrument ID: IC-HR Calib Start Date: 11/07/2024 17:14

GC Column: IonPac AS-19 ID: Calib End Date: 11/07/2024 20:17

Lab File ID: 121424A_43.d Conc. Units: ug/L

| ANALYTE | CURVE TYPE | AVE CF | CF | MIN CF | CALC AMOUNT | SPIKE AMOUNT | %REC | %REC LIMITS |
|---|---|---|---|---|---|---|---|---|
| Chlorite | Lin | | 40058528 | | 248 | 250 | 99 | 90-110 |
| Bromide | Lin | | 39108092 | | 252 | 250 | 101 | 90-110 |
| Chlorate | Lin | | 35886236 | | 257 | 250 | 103 | 90-110 |

FORM VII
HPLC/IC CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1

SDG No.:

Lab Sample ID: CCV 810-126563/34  Calibration Date: 12/14/2024 21:26

Instrument ID: IC-HR  Calib Start Date: 11/07/2024 17:14

GC Column: IonPac AS-19  ID:  Calib End Date: 11/07/2024 20:17

Lab File ID: 121424A_43.d

| Analyte | RT | RT WINDOW | |
|---|---|---|---|
| | | FROM | TO |
| Chlorite | 5.59 | 5.33 | 5.89 |
| Bromide | 11.01 | 10.50 | 11.60 |
| Chlorate | 11.95 | 11.16 | 12.84 |

Eurofins Eaton Analytical South Bend
Target Compound Quantitation Report

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_43.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 14-Dec-2024 21:26:00 ALS Bottle#: 0 Worklist Smp#: 34
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: CCV
Misc. Info.: 810-0032367-034
Operator ID: Instrument ID: IC-HR
Sublist: chrom-300B_IC_HR*sub1

Method: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\300B_IC_HR.m
Limit Group: IC - 300 - B
Last Update: 15-Dec-2024 10:28:58 Calib Date: 07-Nov-2024 20:17:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_8.d

Column 1 : IC IonPac AS-19 ( 0.00 mm) Det: 010621A_11
Process Host: CTX1635

| RT (min.) | Exp RT (min.) | Dlt RT (min.) | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---|---|---|---|---|---|---|
| 10 Chlorite | | | | | | |
| 5.593 | 5.607 | -0.014 | 10014632 | 0.2500 | 0.2479 | |
| 3 Bromide | | | | | | |
| 11.010 | 11.050 | -0.040 | 9777023 | 0.2500 | 0.2516 | |
| 2 Chlorate | | | | | | |
| 11.947 | 11.997 | -0.050 | 8971559 | 0.2500 | 0.2575 | |

## Reagents:

IC-300B CalSS_00032 Amount Added: 1000.00 Units: uL

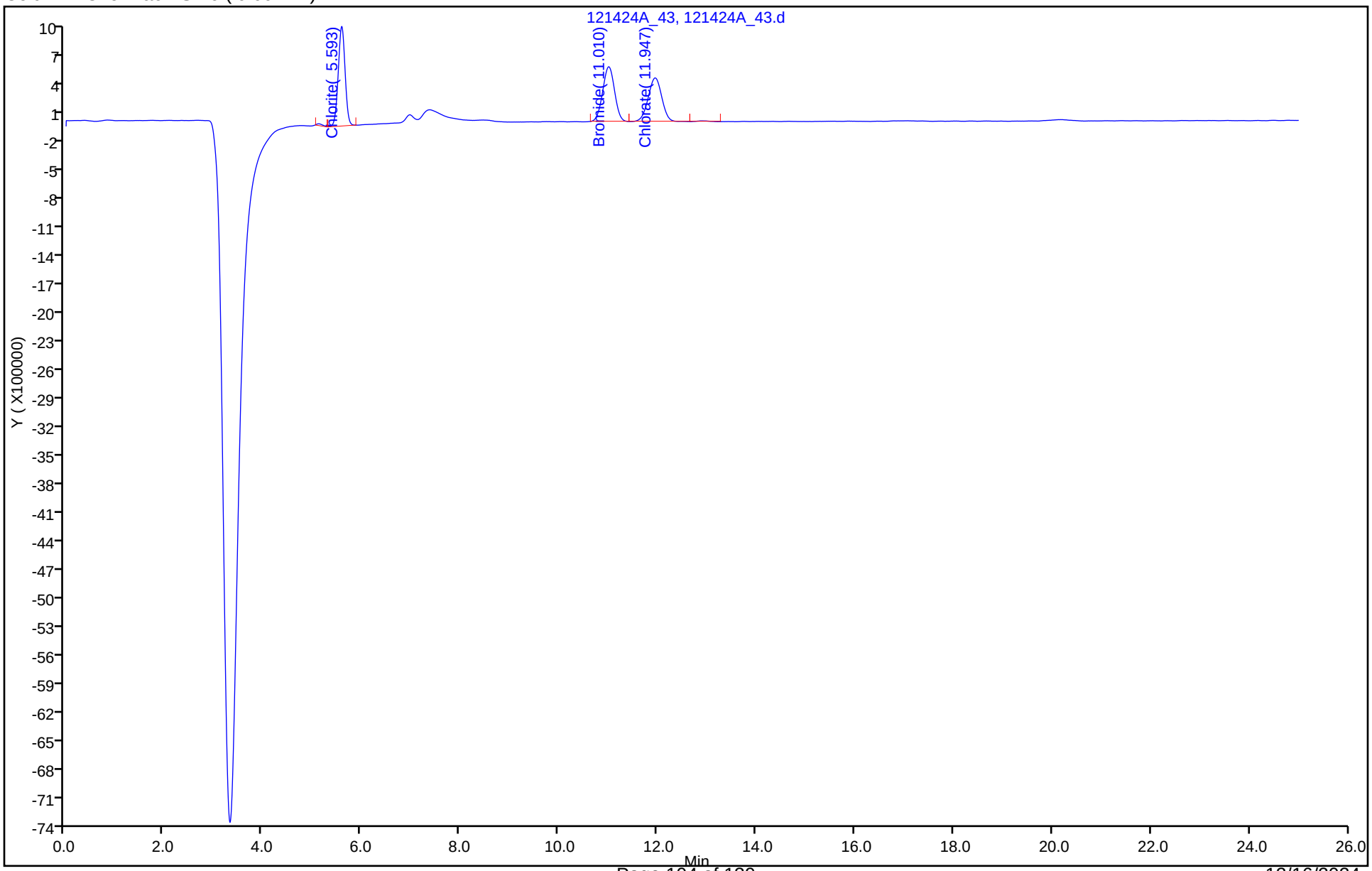
Report Date: 15-Dec-2024 10:28:58 Chrom Revision: 2.3 12-Nov-2024 16:55:22

Eurofins Eaton Analytical South Bend

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_43.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 14-Dec-2024 21:26:00 | Instrument ID: | IC-HR | Operator ID: | |
| Lims ID: | CCV | | | Worklist Smp#: | 34 |
| Client ID: | | | | | |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | ALS Bottle#: | 0 |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |

Column: IC IonPac AS-19 ( 0.00 mm)



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1

SDG No.:

Client Sample ID:  Lab Sample ID: MB 810-126563/4

Matrix: Drinking Water  Lab File ID: 121424A_13.d

Analysis Method: 300.0  Date Collected:

Extraction Method:  Date Extracted:

Sample wt/vol: 0(mL)  Date Analyzed: 12/14/2024 07:28

Con. Extract Vol.:  Dilution Factor: 1

Injection Volume: 1(uL)  GC Column: IonPac AS-19 ID:

% Moisture:  % Solids:  GPC Cleanup:(Y/N) N

Cleanup Factor:

Analysis Batch No.: 126563  Units: ug/L

Preparation Batch No.:  Instrument ID: IC-HR

| CAS NO. | COMPOUND NAME | RESULT | Q | RL |
|---|---|---|---|---|
| 14998-27-7 | Chlorite | <10 | | 10 |
| 14866-68-3 | Chlorate | <10 | | 10 |

Eurofins Eaton Analytical South Bend
Target Compound Quantitation Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_13.d | | | | |
| Lims ID: | MB | | | | |
| Client ID: | | | | | |
| Sample Type: | MB | | | | |
| Inject. Date: | 14-Dec-2024 07:28:00 | ALS Bottle#: | 0 | Worklist Smp#: | 4 |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | MB | | | | |
| Misc. Info.: | 810-0032367-004 | | | | |
| Operator ID: | | Instrument ID: | IC-HR | | |
| Method: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\300B_IC_HR.m | | | | |
| Limit Group: | IC - 300 - B | | | | |
| Last Update: | 15-Dec-2024 10:28:47 | Calib Date: | 07-Nov-2024 20:17:00 | | |
| Integrator: | Falcon | | | | |
| Quant Method: | External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_8.d | | | | |
| Column 1 : | IC IonPac AS-19 ( 0.00 mm) | | Det: 010621A_11 | | |
| Process Host: | CTX1635 | | | | |
| First Level Reviewer: U4QX | | Date: | 15-Dec-2024 10:24:12 | | |

| RT (min.) | Exp RT (min.) | Dlt RT (min.) | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---|---|---|---|---|---|---|

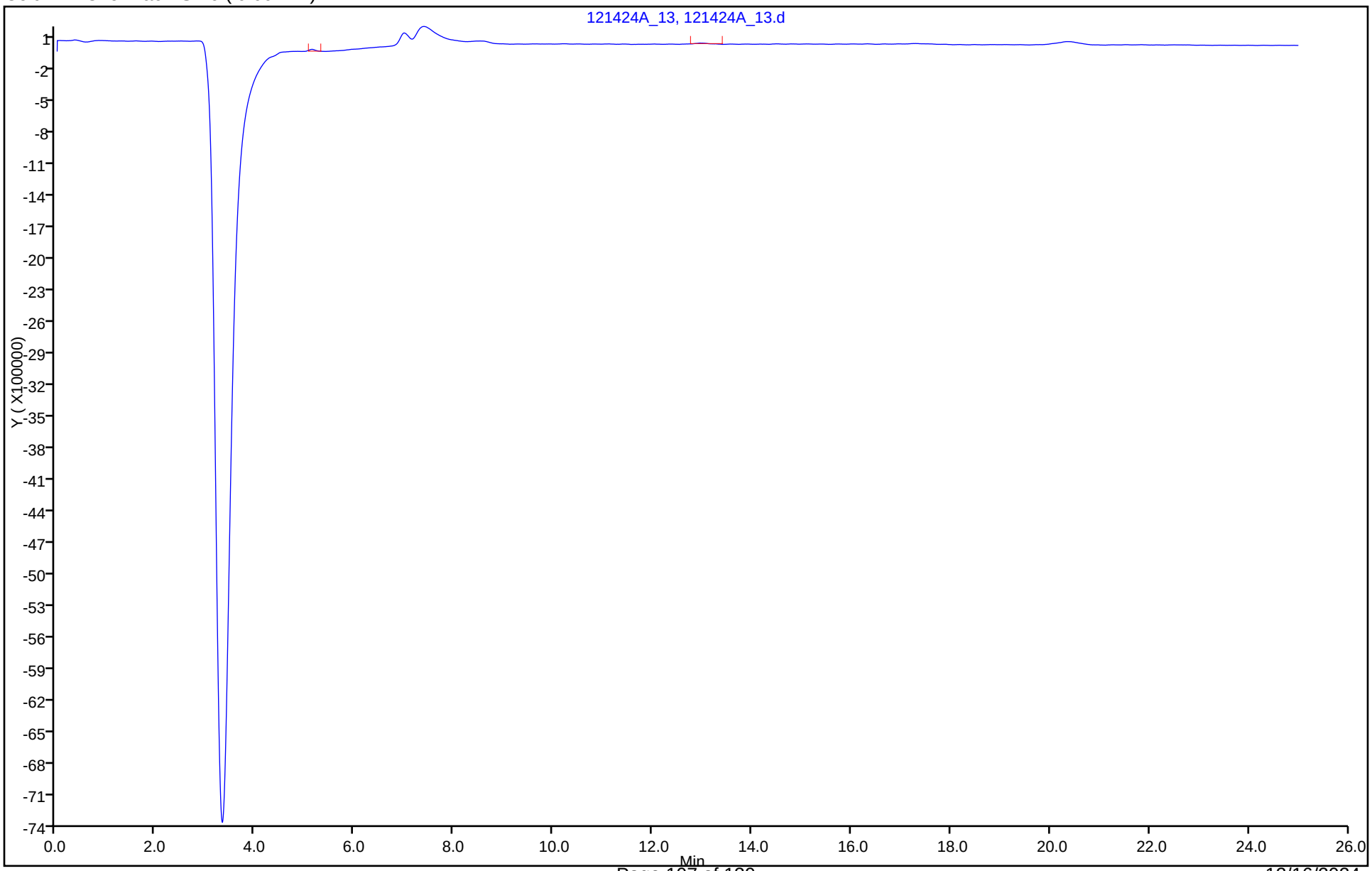
Report Date: 15-Dec-2024 10:28:48 Chrom Revision: 2.3 12-Nov-2024 16:55:22

Eurofins Eaton Analytical South Bend

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_13.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 14-Dec-2024 07:28:00 | Instrument ID: | IC-HR | Operator ID: | |
| Lims ID: | MB | | | Worklist Smp#: | 4 |
| Client ID: | | | | | |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | ALS Bottle#: | 0 |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |

Column: IC IonPac AS-19 ( 0.00 mm)



User Disabled Compound Report

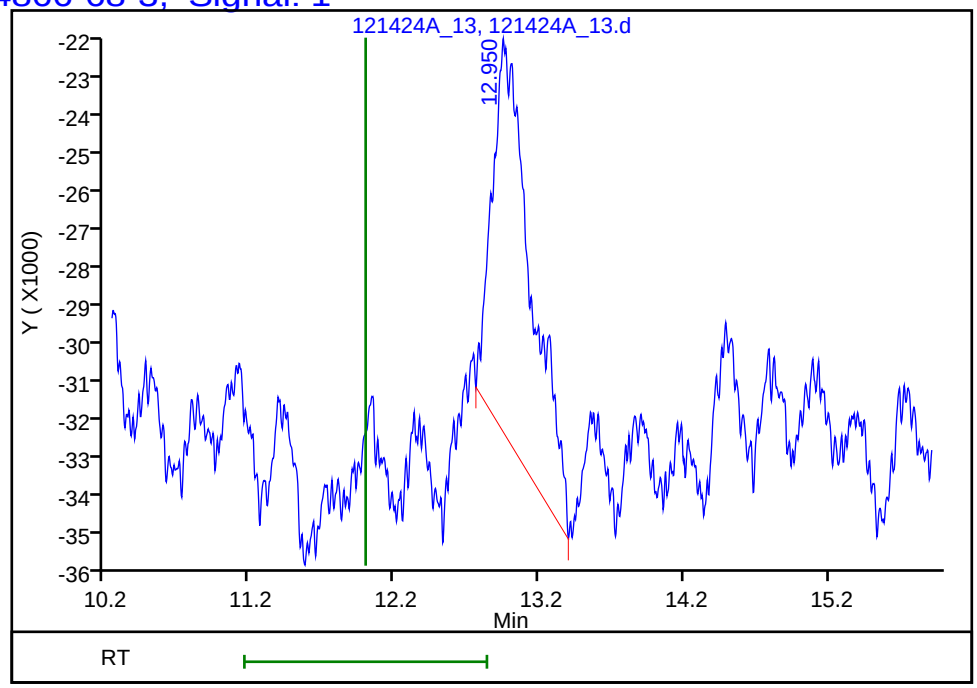
Eurofins Eaton Analytical South Bend

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_13.d
Injection Date: 14-Dec-2024 07:28:00 Instrument ID: IC-HR
Lims ID: MB
Client ID:
Operator ID: ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: 300B_IC_HR Limit Group: IC - 300 - B

Column: IC IonPac AS-19 ( 0.00 mm) Detector 010621A_11

## 2 Chlorate, CAS: 14866-68-3, Signal: 1

RT: 12.95
Response: 189090
Amount: 0.007422




Reviewer: U4QX, 15-Dec-2024 10:24:12
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1

SDG No.:

Client Sample ID:  Lab Sample ID: CCB 810-126563/3

Matrix: Drinking Water  Lab File ID: 121424A_12.d

Analysis Method: 300.0  Date Collected:

Extraction Method:  Date Extracted:

Sample wt/vol: 0(mL)  Date Analyzed: 12/14/2024 07:00

Con. Extract Vol.:  Dilution Factor: 1

Injection Volume: 1(uL)  GC Column: IonPac AS-19 ID:

% Moisture:  % Solids:  GPC Cleanup:(Y/N) N

Cleanup Factor:

Analysis Batch No.: 126563  Units: ug/L

Preparation Batch No.:  Instrument ID: IC-HR

| CAS NO. | COMPOUND NAME | RESULT | Q | RL |
|---|---|---|---|---|
| 14998-27-7 | Chlorite | <3.0 | | 10 |
| 14866-68-3 | Chlorate | <5.3 | | 10 |

Eurofins Eaton Analytical South Bend
Target Compound Quantitation Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_12.d | | | | |
| Lims ID: | CCB | | | | |
| Client ID: | | | | | |
| Sample Type: | CCB | | | | |
| Inject. Date: | 14-Dec-2024 07:00:00 | ALS Bottle#: | 0 | Worklist Smp#: | 3 |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | CCB | | | | |
| Misc. Info.: | 810-0032367-003 | | | | |
| Operator ID: | | Instrument ID: | IC-HR | | |
| Method: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\300B_IC_HR.m | | | | |
| Limit Group: | IC - 300 - B | | | | |
| Last Update: | 15-Dec-2024 10:28:47 | Calib Date: | 07-Nov-2024 20:17:00 | | |
| Integrator: | Falcon | | | | |
| Quant Method: | External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_8.d | | | | |
| Column 1 : | IC IonPac AS-19 ( 0.00 mm) | | Det: 010621A_11 | | |
| Process Host: | CTX1635 | | | | |
| First Level Reviewer: U4QX | | Date: | 15-Dec-2024 10:24:08 | | |

| RT (min.) | Exp RT (min.) | Dlt RT (min.) | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---|---|---|---|---|---|---|

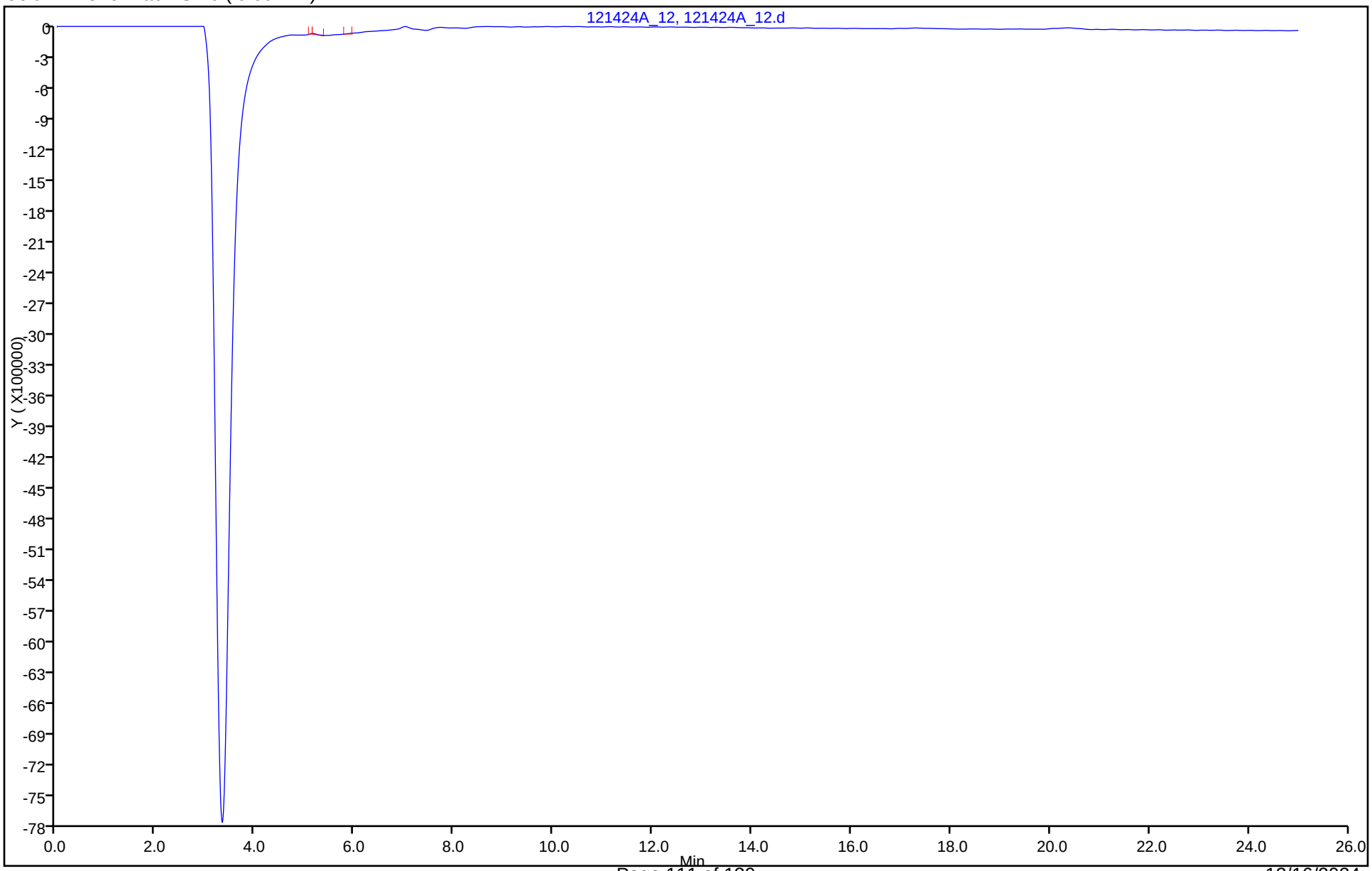
Report Date: 15-Dec-2024 10:28:48 Chrom Revision: 2.3 12-Nov-2024 16:55:22

Eurofins Eaton Analytical South Bend

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_12.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 14-Dec-2024 07:00:00 | Instrument ID: | IC-HR | Operator ID: | |
| Lims ID: | CCB | | | Worklist Smp#: | 3 |
| Client ID: | | | | | |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | ALS Bottle#: | 0 |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |

Column: IC IonPac AS-19 ( 0.00 mm)



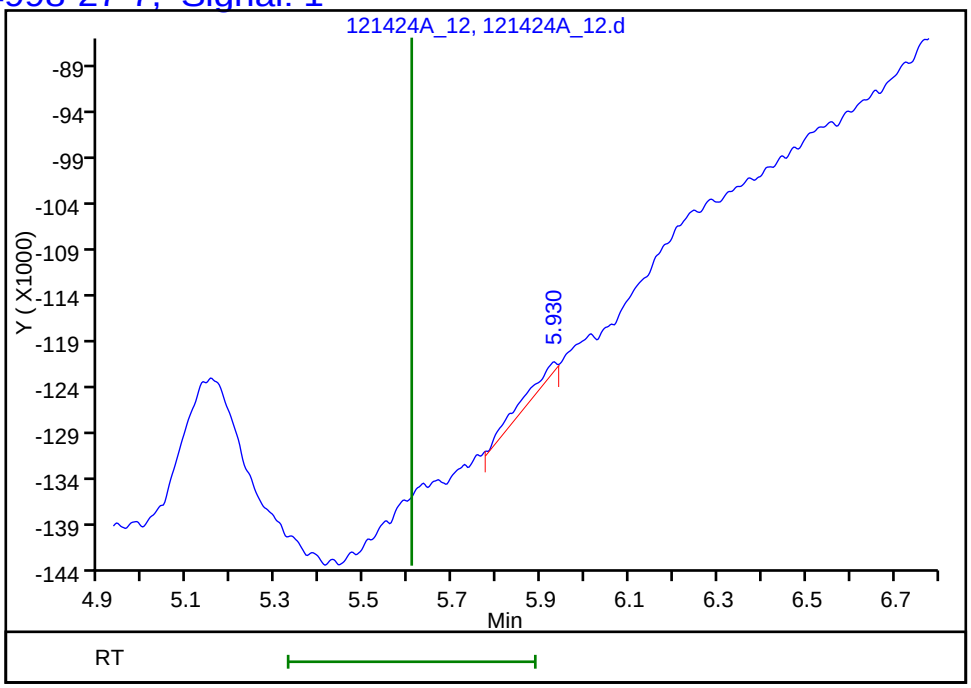
User Disabled Compound Report

Eurofins Eaton Analytical South Bend

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_12.d
Injection Date: 14-Dec-2024 07:00:00 Instrument ID: IC-HR
Lims ID: CCB
Client ID:
Operator ID: ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: 300B_IC_HR Limit Group: IC - 300 - B
Column: IC IonPac AS-19 ( 0.00 mm) Detector 010621A_11

## 10 Chlorite, CAS: 14998-27-7, Signal: 1

RT: 5.93
Response: 9098
Amount: 0.005857




Reviewer: U4QX, 15-Dec-2024 10:24:08
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1

SDG No.:

Client Sample ID:  Lab Sample ID: CCB 810-126563/20

Matrix: Drinking Water  Lab File ID: 121424A_29.d

Analysis Method: 300.0  Date Collected:

Extraction Method:  Date Extracted:

Sample wt/vol: 0(mL)  Date Analyzed: 12/14/2024 14:55

Con. Extract Vol.:  Dilution Factor: 1

Injection Volume: 1(uL)  GC Column: IonPac AS-19 ID:

% Moisture:  % Solids:  GPC Cleanup:(Y/N) N

Cleanup Factor:

Analysis Batch No.: 126563  Units: ug/L

Preparation Batch No.:  Instrument ID: IC-HR

| CAS NO. | COMPOUND NAME | RESULT | Q | RL |
|---|---|---|---|---|
| 14998-27-7 | Chlorite | <3.0 | | 10 |
| 14866-68-3 | Chlorate | <5.3 | | 10 |

Eurofins Eaton Analytical South Bend
Target Compound Quantitation Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_29.d | | | | |
| Lims ID: | CCB | | | | |
| Client ID: | | | | | |
| Sample Type: | CCB | | | | |
| Inject. Date: | 14-Dec-2024 14:55:00 | ALS Bottle#: | 0 | Worklist Smp#: | 20 |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | CCB | | | | |
| Misc. Info.: | 810-0032367-020 | | | | |
| Operator ID: | | Instrument ID: | IC-HR | | |
| Method: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\300B_IC_HR.m | | | | |
| Limit Group: | IC - 300 - B | | | | |
| Last Update: | 15-Dec-2024 10:28:53 | Calib Date: | 07-Nov-2024 20:17:00 | | |
| Integrator: | Falcon | | | | |
| Quant Method: | External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_8.d | | | | |
| Column 1 : | IC IonPac AS-19 ( 0.00 mm) | | Det: 010621A_11 | | |
| Process Host: | CTX1635 | | | | |

| RT (min.) | Exp RT (min.) | Dlt RT (min.) | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---|---|---|---|---|---|---|

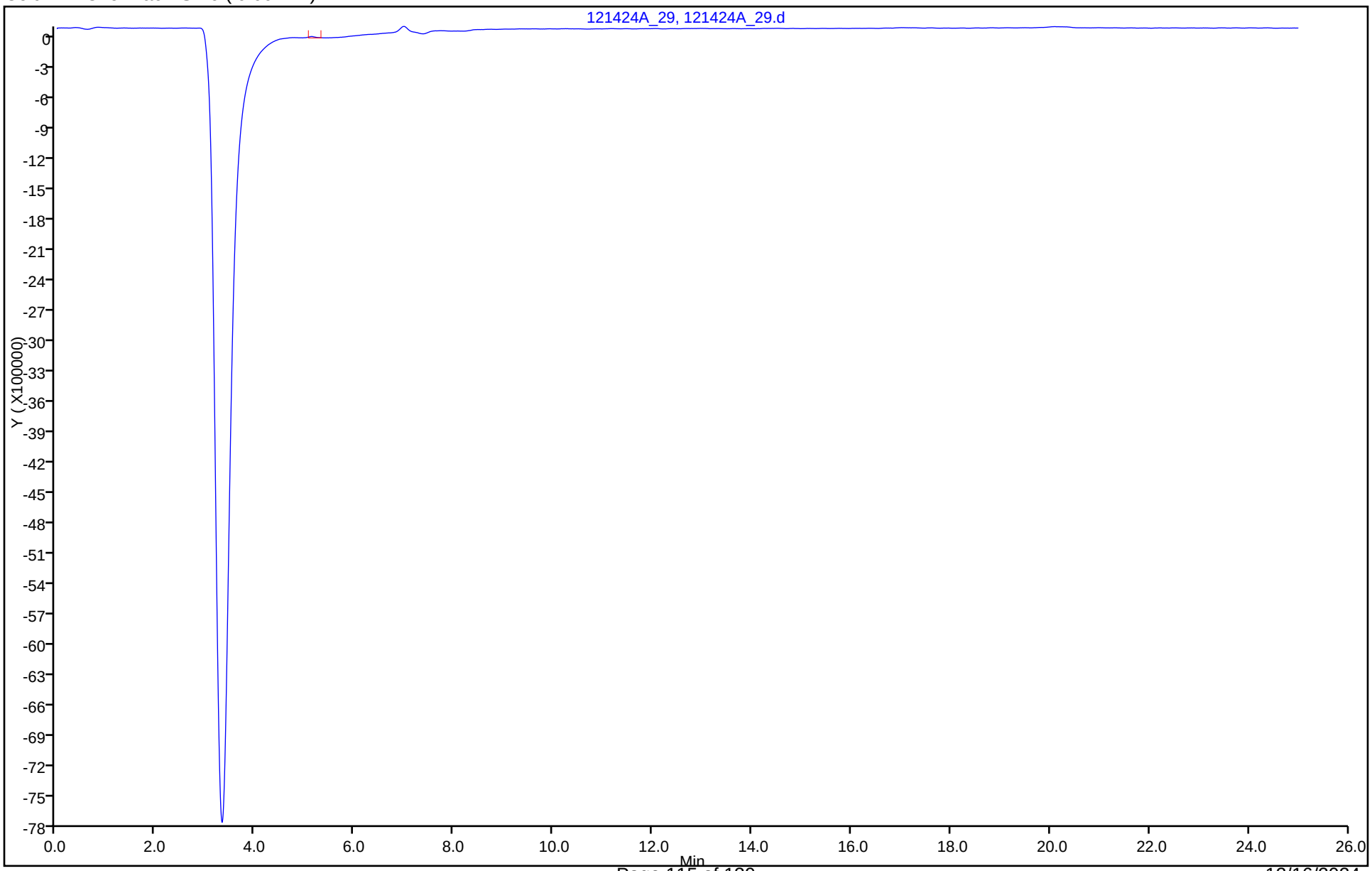
Report Date: 15-Dec-2024 10:28:53 Chrom Revision: 2.3 12-Nov-2024 16:55:22

Eurofins Eaton Analytical South Bend

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_29.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 14-Dec-2024 14:55:00 | Instrument ID: | IC-HR | Operator ID: | |
| Lims ID: | CCB | | | Worklist Smp#: | 20 |
| Client ID: | | | | | |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | ALS Bottle#: | 0 |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |

Column: IC IonPac AS-19 ( 0.00 mm)



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1

SDG No.:

Client Sample ID:  Lab Sample ID: CCB 810-126563/35

Matrix: Drinking Water  Lab File ID: 121424A_44.d

Analysis Method: 300.0  Date Collected:

Extraction Method:  Date Extracted:

Sample wt/vol: 0(mL)  Date Analyzed: 12/14/2024 21:54

Con. Extract Vol.:  Dilution Factor: 1

Injection Volume: 1(uL)  GC Column: IonPac AS-19 ID:

% Moisture:  % Solids:  GPC Cleanup:(Y/N) N

Cleanup Factor:

Analysis Batch No.: 126563  Units: ug/L

Preparation Batch No.:  Instrument ID: IC-HR

| CAS NO. | COMPOUND NAME | RESULT | Q | RL |
|---|---|---|---|---|
| 14998-27-7 | Chlorite | <3.0 | | 10 |
| 14866-68-3 | Chlorate | <5.3 | | 10 |

Eurofins Eaton Analytical South Bend
Target Compound Quantitation Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_44.d | | | | |
| Lims ID: | CCB | | | | |
| Client ID: | | | | | |
| Sample Type: | CCB | | | | |
| Inject. Date: | 14-Dec-2024 21:54:00 | ALS Bottle#: | 0 | Worklist Smp#: | 35 |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | CCB | | | | |
| Misc. Info.: | 810-0032367-035 | | | | |
| Operator ID: | | Instrument ID: | IC-HR | | |
| Method: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\300B_IC_HR.m | | | | |
| Limit Group: | IC - 300 - B | | | | |
| Last Update: | 15-Dec-2024 10:28:19 | Calib Date: | 07-Nov-2024 20:17:00 | | |
| Integrator: | Falcon | | | | |
| Quant Method: | External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_8.d | | | | |
| Column 1 : | IC IonPac AS-19 ( 0.00 mm) | | Det: 010621A_11 | | |
| Process Host: | CTX1635 | | | | |
| First Level Reviewer: U4QX | | Date: | 15-Dec-2024 10:35:20 | | |

| RT (min.) | Exp RT (min.) | Dlt RT (min.) | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---|---|---|---|---|---|---|

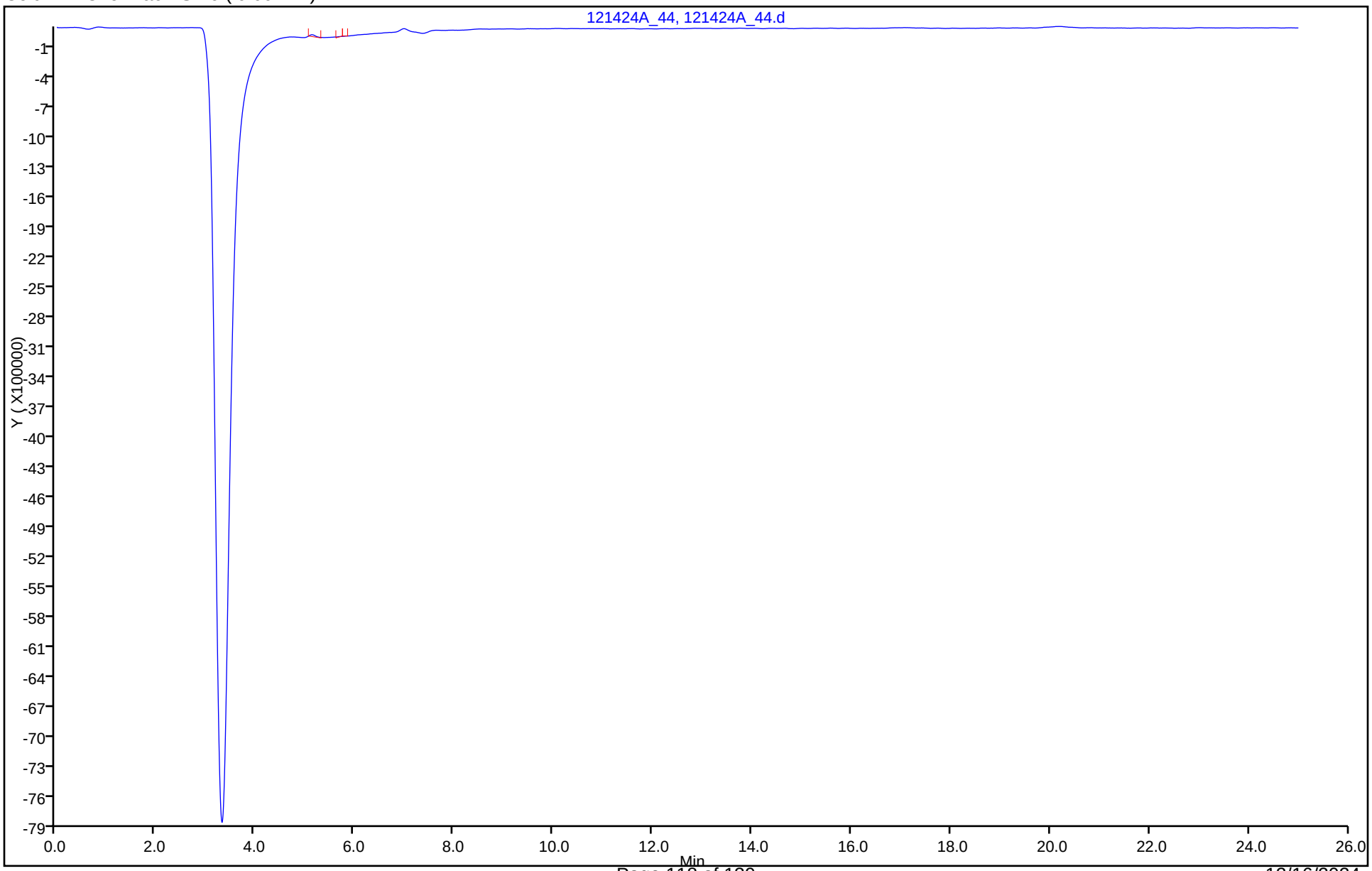
Report Date: 15-Dec-2024 10:35:20 Chrom Revision: 2.3 12-Nov-2024 16:55:22

Eurofins Eaton Analytical South Bend

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_44.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 14-Dec-2024 21:54:00 | Instrument ID: | IC-HR | Operator ID: | |
| Lims ID: | CCB | | | Worklist Smp#: | 35 |
| Client ID: | | | | | |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | ALS Bottle#: | 0 |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |

Column: IC IonPac AS-19 ( 0.00 mm)



User Disabled Compound Report

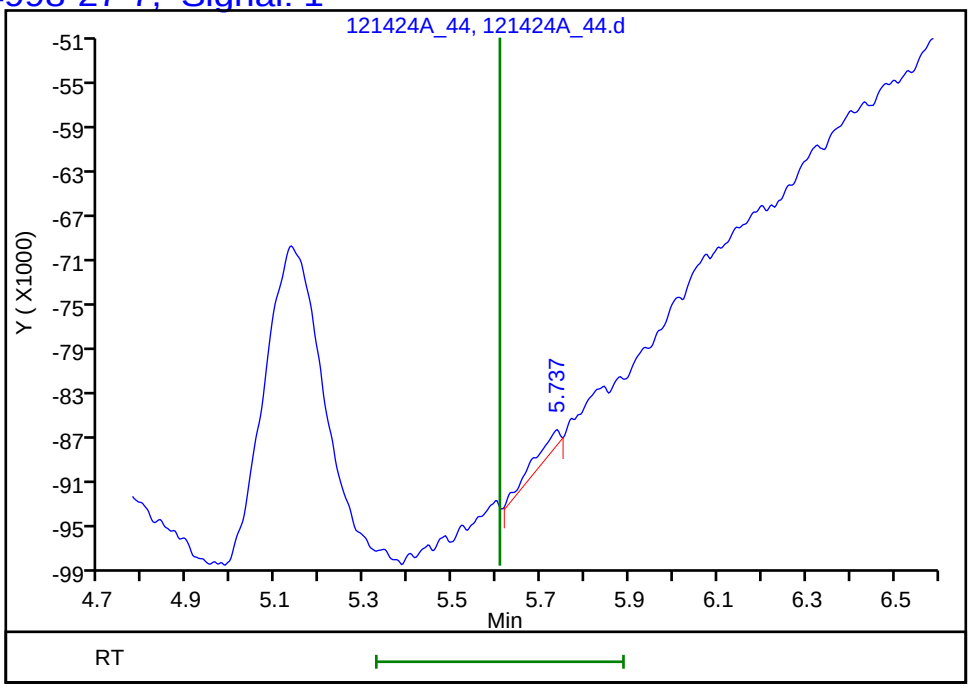
Eurofins Eaton Analytical South Bend

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_44.d
Injection Date: 14-Dec-2024 21:54:00 Instrument ID: IC-HR
Lims ID: CCB
Client ID:
Operator ID: ALS Bottle#: 0 Worklist Smp#: 35
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: 300B_IC_HR Limit Group: IC - 300 - B

Column: IC IonPac AS-19 ( 0.00 mm) Detector 010621A_11

## 10 Chlorite, CAS: 14998-27-7, Signal: 1

RT: 5.74
Response: 7437
Amount: 0.005817




Reviewer: U4QX, 15-Dec-2024 10:28:39
Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1

SDG No.:

Client Sample ID:  Lab Sample ID: LCS 810-126563/5

Matrix: Drinking Water  Lab File ID: 121424A_14.d

Analysis Method: 300.0  Date Collected:

Extraction Method:  Date Extracted:

Sample wt/vol: 0(mL)  Date Analyzed: 12/14/2024 07:56

Con. Extract Vol.:  Dilution Factor: 1

Injection Volume: 1(uL)  GC Column: IonPac AS-19 ID:

% Moisture:  % Solids:  GPC Cleanup:(Y/N) N

Cleanup Factor:

Analysis Batch No.: 126563  Units: ug/L

Preparation Batch No.:  Instrument ID: IC-HR

| CAS NO. | COMPOUND NAME | RESULT | Q | RL |
|---|---|---|---|---|
| 14998-27-7 | Chlorite | 249 | | 10 |
| 14866-68-3 | Chlorate | 254 | | 10 |

Eurofins Eaton Analytical South Bend
Target Compound Quantitation Report

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_14.d
Lims ID: LCS
Client ID:
Sample Type: LCS
Inject. Date: 14-Dec-2024 07:56:00 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: LCS
Misc. Info.: 810-0032367-005
Operator ID: Instrument ID: IC-HR

Method: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\300B_IC_HR.m
Limit Group: IC - 300 - B
Last Update: 15-Dec-2024 10:28:47 Calib Date: 07-Nov-2024 20:17:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_8.d

Column 1 : IC IonPac AS-19 ( 0.00 mm) Det: 010621A_11
Process Host: CTX1635

| | RT (min.) | Exp RT (min.) | Dlt RT (min.) | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---|---|---|---|---|---|---|---|
| 10 | Chlorite | | | | | | |
| | 5.603 | 5.607 | -0.004 | 10046543 | 0.2500 | 0.2487 | |
| 3 | Bromide | | | | | | |
| | 11.053 | 11.050 | 0.003 | 9766632 | 0.2500 | 0.2514 | |
| 2 | Chlorate | | | | | | |
| | 12.003 | 11.997 | 0.006 | 8864745 | 0.2500 | 0.2545 | |

## Reagents:

IC-300B CalSS_00032 Amount Added: 1000.00 Units: uL

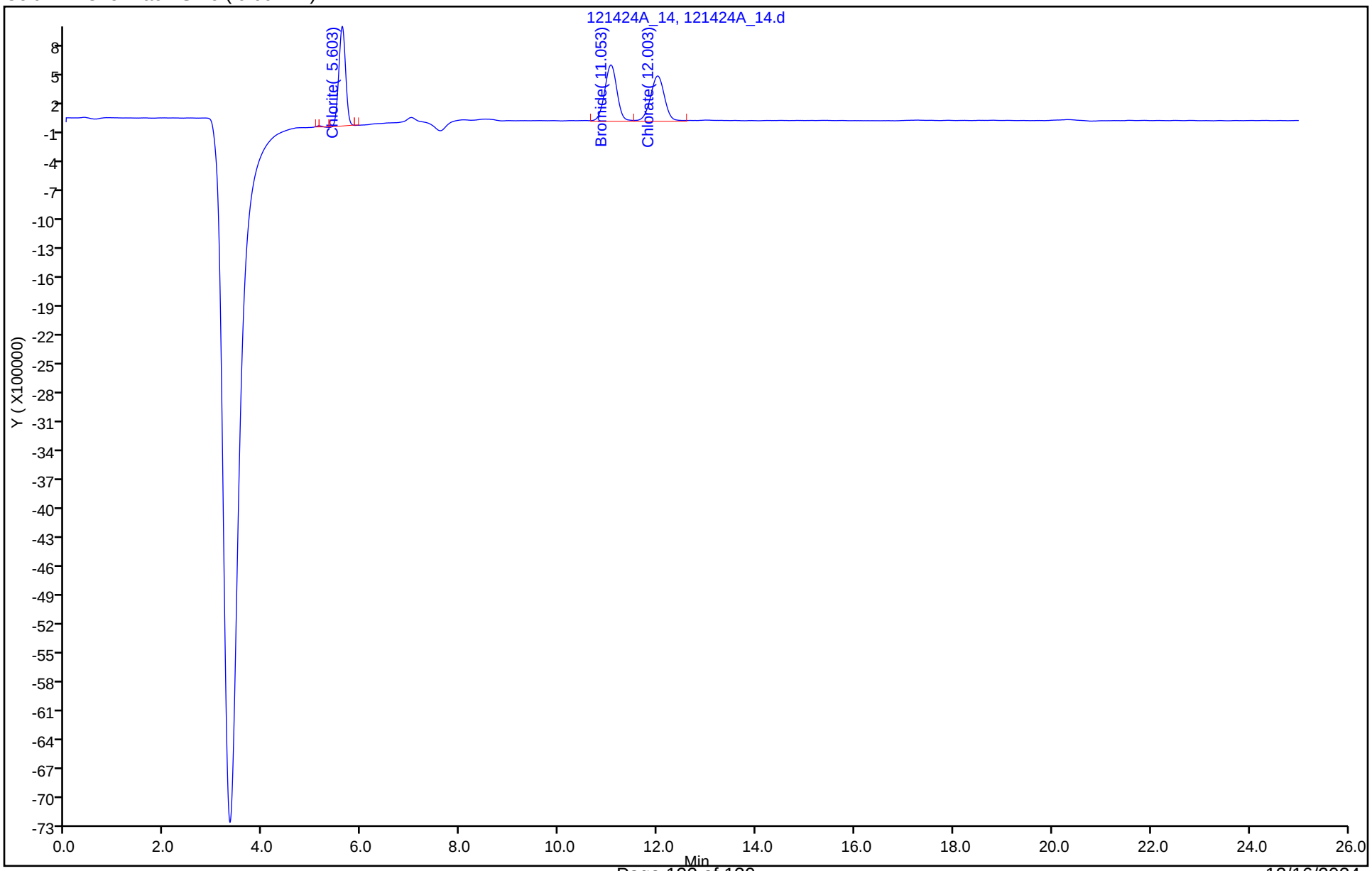
Report Date: 15-Dec-2024 10:28:48 Chrom Revision: 2.3 12-Nov-2024 16:55:22

Eurofins Eaton Analytical South Bend

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_14.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 14-Dec-2024 07:56:00 | Instrument ID: | IC-HR | Operator ID: | |
| Lims ID: | LCS | | | Worklist Smp#: | 5 |
| Client ID: | | | | | |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | ALS Bottle#: | 0 |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |

Column: IC IonPac AS-19 ( 0.00 mm)



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1

SDG No.:

Client Sample ID:  Lab Sample ID: LLCS 810-126563/1

Matrix: Drinking Water  Lab File ID: 121424A_10.d

Analysis Method: 300.0  Date Collected:

Extraction Method:  Date Extracted:

Sample wt/vol: 0(mL)  Date Analyzed: 12/14/2024 06:04

Con. Extract Vol.:  Dilution Factor: 1

Injection Volume: 1(uL)  GC Column: IonPac AS-19 ID:

% Moisture:  % Solids:  GPC Cleanup:(Y/N) N

Cleanup Factor:

Analysis Batch No.: 126563  Units: ug/L

Preparation Batch No.:  Instrument ID: IC-HR

| CAS NO. | COMPOUND NAME | RESULT | Q | RL |
|---|---|---|---|---|
| 14998-27-7 | Chlorite | 14.9 | | 10 |
| 14866-68-3 | Chlorate | 10.5 | | 10 |

Eurofins Eaton Analytical South Bend
Target Compound Quantitation Report

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_10.d
Lims ID: LLCS
Client ID:
Sample Type: LLCS
Inject. Date: 14-Dec-2024 06:04:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: LLCS
Misc. Info.: 810-0032367-001
Operator ID: Instrument ID: IC-HR

Method: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\300B_IC_HR.m
Limit Group: IC - 300 - B
Last Update: 15-Dec-2024 10:28:19 Calib Date: 07-Nov-2024 20:17:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_8.d

Column 1 : IC IonPac AS-19 ( 0.00 mm) Det: 010621A_11
Process Host: CTX1635

| RT (min.) | Exp RT (min.) | Dlt RT (min.) | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---|---|---|---|---|---|---|
| 10 Chlorite | | | | | | |
| 5.603 | 5.607 | -0.004 | 382596 | 0.0100 | 0.0149 | |
| 3 Bromide | | | | | | |
| 11.067 | 11.050 | 0.017 | 358008 | 0.0100 | 0.0108 | |
| 2 Chlorate | | | | | | |
| 11.980 | 11.997 | -0.017 | 296632 | 0.0100 | 0.0105 | |

## Reagents:

IC-300B CalSS_00032 Amount Added: 40.00 Units: uL

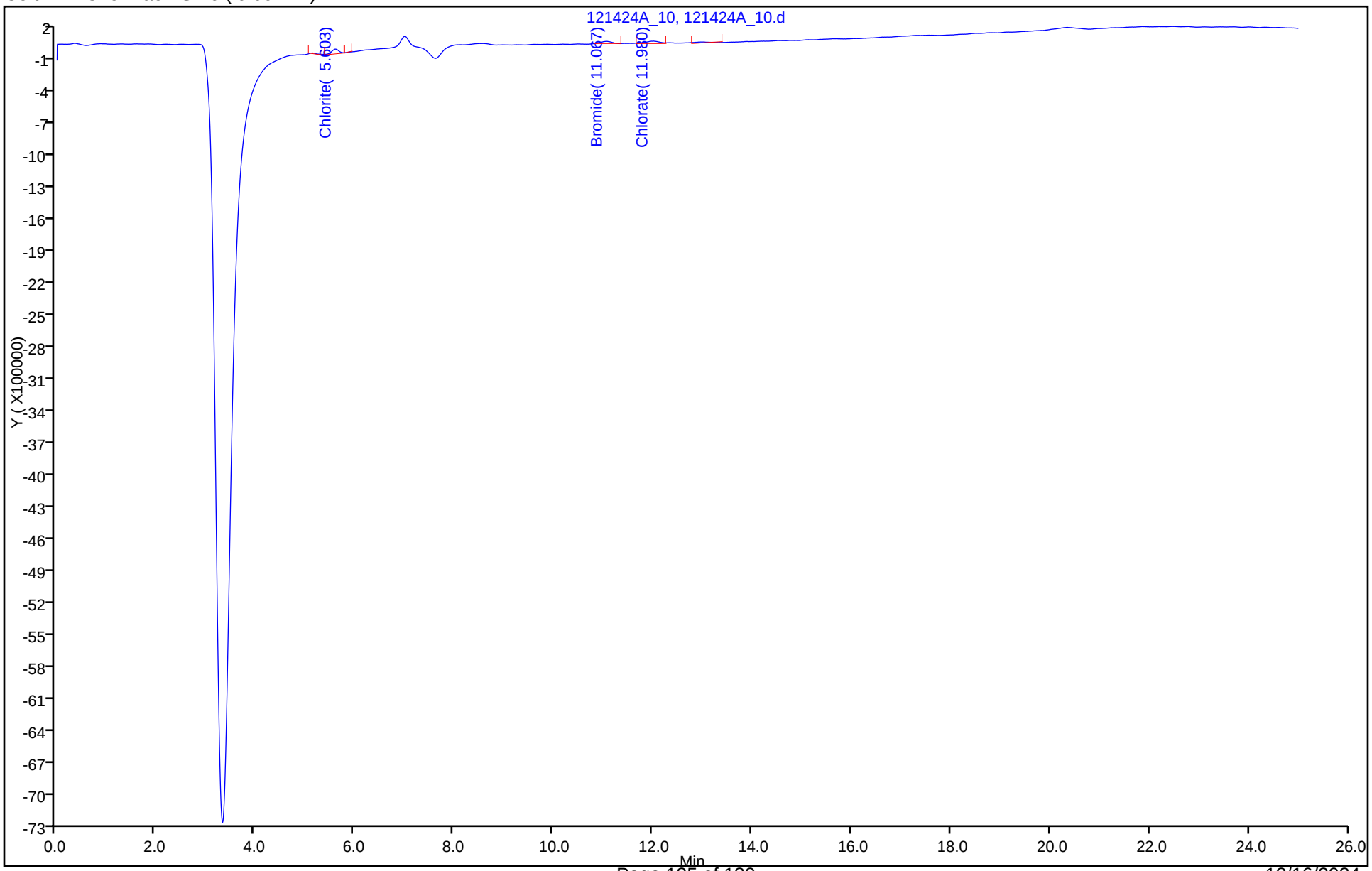
Report Date: 15-Dec-2024 10:28:47 Chrom Revision: 2.3 12-Nov-2024 16:55:22

Eurofins Eaton Analytical South Bend

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_10.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 14-Dec-2024 06:04:00 | Instrument ID: | IC-HR | Operator ID: | |
| Lims ID: | LLCS | | | Worklist Smp#: | 1 |
| Client ID: | | | | | |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | ALS Bottle#: | 0 |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |

Column: IC IonPac AS-19 ( 0.00 mm)



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Eaton Analytical South Bend
Job No.: 810-131403-1

SDG No.:

Client Sample ID: 54MW12 MS MS
Lab Sample ID: 810-131403-4 MS

Matrix: Drinking Water
Lab File ID: 121424A_31.d

Analysis Method: 300.0
Date Collected: 12/10/2024 12:15

Extraction Method:
Date Extracted:

Sample wt/vol: 0(mL)
Date Analyzed: 12/14/2024 15:51

Con. Extract Vol.:
Dilution Factor: 1

Injection Volume: 1(uL)
GC Column: IonPac AS-19 ID:

% Moisture: % Solids:
GPC Cleanup:(Y/N) N

Cleanup Factor:

Analysis Batch No.: 126563
Units: ug/L

Preparation Batch No.:
Instrument ID: IC-HR

| CAS NO. | COMPOUND NAME | RESULT | Q | RL |
|---|---|---|---|---|
| 14998-27-7 | Chlorite | 228 | | 10 |
| 14866-68-3 | Chlorate | 245 | | 10 |

Eurofins Eaton Analytical South Bend
Target Compound Quantitation Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_31.d | | | | |
| Lims ID: | 810-131403-A-4 MS | | | | |
| Client ID: | 54MW12 MS | | | | |
| Sample Type: | MS | | | | |
| Inject. Date: | 14-Dec-2024 15:51:00 | ALS Bottle#: | 0 | Worklist Smp#: | 22 |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | 810-131403-A-4 MS | | | | |
| Misc. Info.: | 810-0032367-022 | | | | |
| Operator ID: | | Instrument ID: | IC-HR | | |
| Method: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\300B_IC_HR.m | | | | |
| Limit Group: | IC - 300 - B | | | | |
| Last Update: | 15-Dec-2024 10:28:53 | Calib Date: | 07-Nov-2024 20:17:00 | | |
| Integrator: | Falcon | | | | |
| Quant Method: | External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_8.d | | | | |
| Column 1 : | IC IonPac AS-19 ( 0.00 mm) | | Det: 010621A_11 | | |
| Process Host: | CTX1635 | | | | |

| RT (min.) | Exp RT (min.) | Dlt RT (min.) | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---|---|---|---|---|---|---|
| 10 Chlorite | | | | | | |
| 5.607 | 5.607 | 0.000 | 9196089 | 0.2500 | 0.2281 | |
| 3 Bromide | | | | | | |
| 11.060 | 11.050 | 0.010 | 10087442 | 0.2500 | 0.2596 | |
| 2 Chlorate | | | | | | |
| 12.000 | 11.997 | 0.003 | 8532436 | 0.2500 | 0.2450 | |

## Reagents:

IC-300B CalSS_00032 Amount Added: 100.00 Units: uL

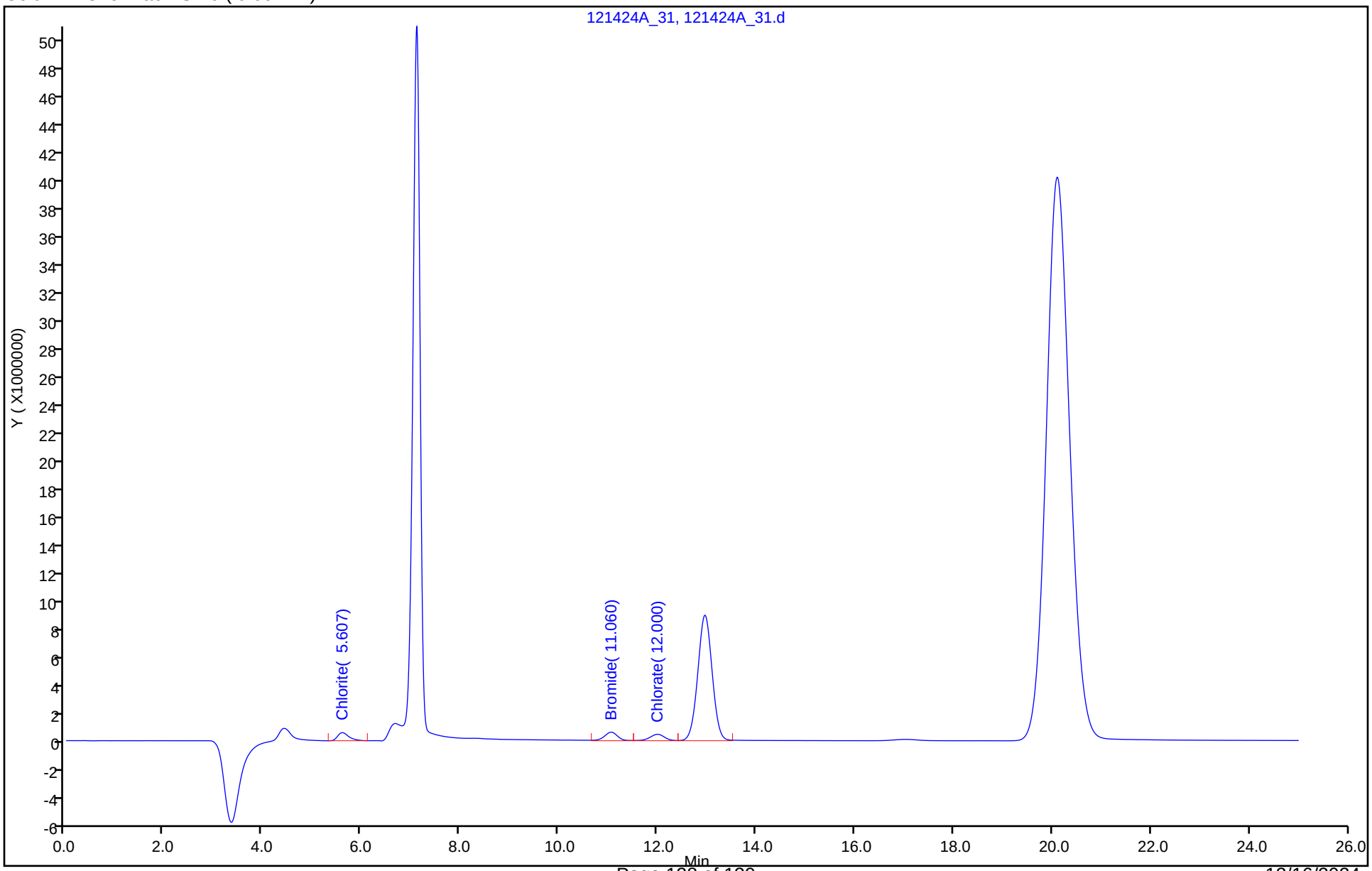
Report Date: 15-Dec-2024 10:28:54 Chrom Revision: 2.3 12-Nov-2024 16:55:22

Eurofins Eaton Analytical South Bend

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_31.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 14-Dec-2024 15:51:00 | Instrument ID: | IC-HR | Operator ID: | |
| Lims ID: | 810-131403-A-4 MS | | | Worklist Smp#: | 22 |
| Client ID: | 54MW12 MS | | | | |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | ALS Bottle#: | 0 |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |

Column: IC IonPac AS-19 ( 0.00 mm)



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1

SDG No.:

Client Sample ID: 54MW12 MSD MSD  Lab Sample ID: 810-131403-4 MSD

Matrix: Drinking Water  Lab File ID: 121424A_32.d

Analysis Method: 300.0  Date Collected: 12/10/2024 12:15

Extraction Method:  Date Extracted:

Sample wt/vol: 0(mL)  Date Analyzed: 12/14/2024 16:19

Con. Extract Vol.:  Dilution Factor: 1

Injection Volume: 1(uL)  GC Column: IonPac AS-19 ID:

% Moisture:  % Solids:  GPC Cleanup:(Y/N) N

Cleanup Factor:

Analysis Batch No.: 126563  Units: ug/L

Preparation Batch No.:  Instrument ID: IC-HR

| CAS NO. | COMPOUND NAME | RESULT | Q | RL |
|---|---|---|---|---|
| 14998-27-7 | Chlorite | 231 | | 10 |
| 14866-68-3 | Chlorate | 248 | | 10 |

Eurofins Eaton Analytical South Bend
Target Compound Quantitation Report

| | | | | | |
|---|---|---|---|---|---|
| Data File: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_32.d | | | | |
| Lims ID: | 810-131403-A-4 MSD | | | | |
| Client ID: | 54MW12 MSD | | | | |
| Sample Type: | MSD | | | | |
| Inject. Date: | 14-Dec-2024 16:19:00 | ALS Bottle#: | 0 | Worklist Smp#: | 23 |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | | |
| Sample Info: | 810-131403-A-4 MSD | | | | |
| Misc. Info.: | 810-0032367-023 | | | | |
| Operator ID: | | Instrument ID: | IC-HR | | |
| Method: | \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\300B_IC_HR.m | | | | |
| Limit Group: | IC - 300 - B | | | | |
| Last Update: | 15-Dec-2024 10:28:53 | Calib Date: | 07-Nov-2024 20:17:00 | | |
| Integrator: | Falcon | | | | |
| Quant Method: | External Standard | Quant By: | Initial Calibration | | |
| Last ICal File: | \\ChromFS\Southbend\ChromData\IC-HR\20241107-31142.b\110724A_8.d | | | | |
| Column 1 : | IC IonPac AS-19 ( 0.00 mm) | | Det: 010621A_11 | | |
| Process Host: | CTX1635 | | | | |

First Level Reviewer: U4QX Date: 15-Dec-2024 10:27:11

| RT (min.) | Exp RT (min.) | Dlt RT (min.) | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---|---|---|---|---|---|---|
| 10 Chlorite | | | | | | |
| 5.610 | 5.607 | 0.003 | 9312888 | 0.2500 | 0.2310 | |
| 3 Bromide | | | | | | |
| 11.063 | 11.050 | 0.013 | 10096162 | 0.2500 | 0.2598 | |
| 2 Chlorate | | | | | | |
| 12.007 | 11.997 | 0.010 | 8623242 | 0.2500 | 0.2476 | |

## QC Flag Legend

Processing Flags

## Reagents:

IC-300B CalSS_00032 Amount Added: 100.00 Units: uL

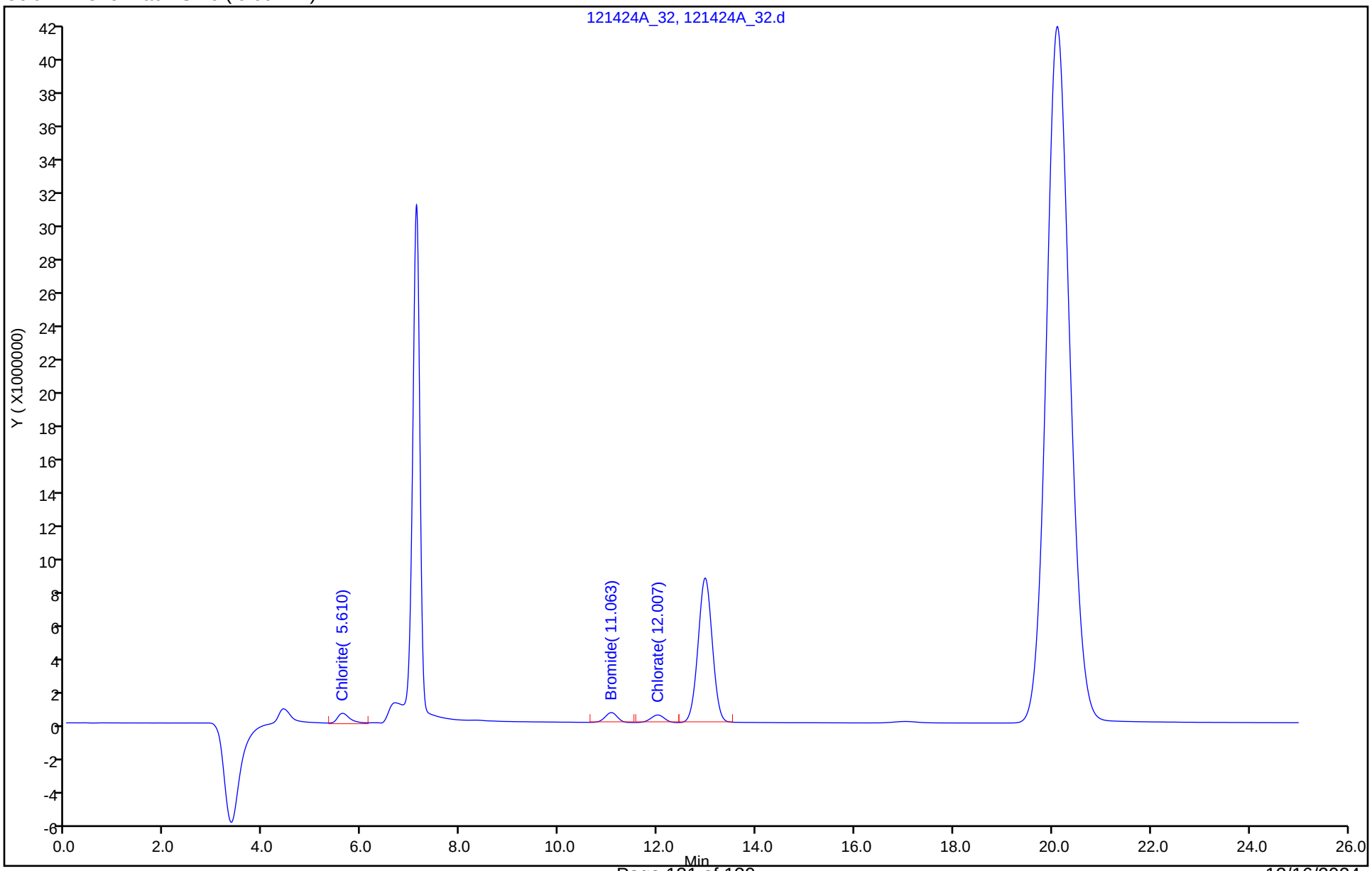
Report Date: 15-Dec-2024 10:28:55 Chrom Revision: 2.3 12-Nov-2024 16:55:22

Eurofins Eaton Analytical South Bend

Data File: \\ChromFS\Southbend\ChromData\IC-HR\20241214-32367.b\121424A_32.d

| | | | | | |
|---|---|---|---|---|---|
| Injection Date: | 14-Dec-2024 16:19:00 | Instrument ID: | IC-HR | Operator ID: | |
| Lims ID: | 810-131403-A-4 MSD | | | Worklist Smp#: | 23 |
| Client ID: | 54MW12 MSD | | | | |
| Injection Vol: | 1.0 ul | Dil. Factor: | 1.0000 | ALS Bottle#: | 0 |
| Method: | 300B_IC_HR | Limit Group: | IC - 300 - B | | |

Column: IC IonPac AS-19 ( 0.00 mm)



HPLC/IC ANALYSIS RUN LOG

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1

SDG No.:

Instrument ID: IC-HR  Start Date: 11/07/2024 17:14

Analysis Batch Number: 121748  End Date: 11/08/2024 11:13

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|---|---|---|---|---|---|
| IC 810-121748/1 | | 11/07/2024 17:14 | 1 | 110724A_2.d | IonPac AS-19 |
| IC 810-121748/2 | | 11/07/2024 17:45 | 1 | 110724A_3.d | IonPac AS-19 |
| IC 810-121748/3 | | 11/07/2024 18:15 | 1 | 110724A_4.d | IonPac AS-19 |
| IC 810-121748/4 | | 11/07/2024 18:46 | 1 | 110724A_5.d | IonPac AS-19 |
| ICRT 810-121748/5 | | 11/07/2024 19:16 | 1 | 110724A_6.d | IonPac AS-19 |
| IC 810-121748/6 | | 11/07/2024 19:46 | 1 | 110724A_7.d | IonPac AS-19 |
| IC 810-121748/7 | | 11/07/2024 20:17 | 1 | 110724A_8.d | IonPac AS-19 |
| ICV 810-121748/8 | | 11/07/2024 20:48 | 1 | 110724A_9.d | IonPac AS-19 |
| ZZZZZ (QC) | | 11/07/2024 21:20 | 1 | | IonPac AS-19 |
| CCV 810-121748/10 | | 11/07/2024 21:50 | 1 | | IonPac AS-19 |
| CCB 810-121748/11 | | 11/07/2024 22:21 | 1 | | IonPac AS-19 |
| ZZZZZ (QC) | | 11/07/2024 22:51 | 1 | | IonPac AS-19 |
| ZZZZZ (QC) | | 11/07/2024 23:21 | 1 | | IonPac AS-19 |
| ZZZZZ (Client) | | 11/07/2024 23:50 | 1 | | IonPac AS-19 |
| ZZZZZ (QC) | | 11/08/2024 00:22 | 1 | | IonPac AS-19 |
| ZZZZZ (QC) | | 11/08/2024 00:52 | 1 | | IonPac AS-19 |
| ZZZZZ (Client) | | 11/08/2024 01:23 | 1 | | IonPac AS-19 |
| ZZZZZ (Client) | | 11/08/2024 01:54 | 1 | | IonPac AS-19 |
| ZZZZZ (Client) | | 11/08/2024 02:24 | 1 | | IonPac AS-19 |
| ZZZZZ (Client) | | 11/08/2024 02:55 | 1 | | IonPac AS-19 |
| ZZZZZ (Client) | | 11/08/2024 03:26 | 1 | | IonPac AS-19 |
| ZZZZZ (Client) | | 11/08/2024 03:56 | 1 | | IonPac AS-19 |
| ZZZZZ (Client) | | 11/08/2024 04:27 | 1 | | IonPac AS-19 |
| ZZZZZ (Client) | | 11/08/2024 04:57 | 1 | | IonPac AS-19 |
| ZZZZZ (Client) | | 11/08/2024 05:27 | 1 | | IonPac AS-19 |
| CCV 810-121748/26 | | 11/08/2024 05:58 | 1 | | IonPac AS-19 |
| CCB 810-121748/27 | | 11/08/2024 06:29 | 1 | | IonPac AS-19 |
| ZZZZZ (Client) | | 11/08/2024 06:59 | 1 | | IonPac AS-19 |
| ZZZZZ (QC) | | 11/08/2024 07:29 | 1 | | IonPac AS-19 |
| ZZZZZ (QC) | | 11/08/2024 08:00 | 1 | | IonPac AS-19 |
| CCV 810-121748/31 | | 11/08/2024 08:32 | 1 | | IonPac AS-19 |
| CCB 810-121748/32 | | 11/08/2024 09:02 | 1 | | IonPac AS-19 |
| ZZZZZ (QC) | | 11/08/2024 11:13 | 1 | | IonPac AS-19 |

HPLC/IC ANALYSIS RUN LOG

Lab Name: Eurofins Eaton Analytical South Bend  Job No.: 810-131403-1

SDG No.:

Instrument ID: IC-HR  Start Date: 12/14/2024 06:04

Analysis Batch Number: 126563  End Date: 12/14/2024 21:54

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|---|---|---|---|---|---|
| LLCS 810-126563/1 | | 12/14/2024 06:04 | 1 | 121424A_10.d | IonPac AS-19 |
| CCV 810-126563/2 | | 12/14/2024 06:32 | 1 | 121424A_11.d | IonPac AS-19 |
| CCB 810-126563/3 | | 12/14/2024 07:00 | 1 | 121424A_12.d | IonPac AS-19 |
| MB 810-126563/4 | | 12/14/2024 07:28 | 1 | 121424A_13.d | IonPac AS-19 |
| LCS 810-126563/5 | | 12/14/2024 07:56 | 1 | 121424A_14.d | IonPac AS-19 |
| ZZZZZ (Client) | | 12/14/2024 08:24 | 1 | | IonPac AS-19 |
| ZZZZZ (QC) | | 12/14/2024 08:52 | 1 | | IonPac AS-19 |
| ZZZZZ (QC) | | 12/14/2024 09:20 | 1 | | IonPac AS-19 |
| ZZZZZ (Client) | | 12/14/2024 09:48 | 1 | | IonPac AS-19 |
| ZZZZZ (Client) | | 12/14/2024 10:15 | 1 | | IonPac AS-19 |
| ZZZZZ (Client) | | 12/14/2024 10:43 | 1 | | IonPac AS-19 |
| ZZZZZ (Client) | | 12/14/2024 11:11 | 1 | | IonPac AS-19 |
| ZZZZZ (Client) | | 12/14/2024 11:39 | 1 | | IonPac AS-19 |
| ZZZZZ (Client) | | 12/14/2024 12:07 | 1 | | IonPac AS-19 |
| ZZZZZ (Client) | | 12/14/2024 12:35 | 1 | | IonPac AS-19 |
| ZZZZZ (Client) | | 12/14/2024 13:03 | 10 | | IonPac AS-19 |
| ZZZZZ (Client) | | 12/14/2024 13:31 | 10 | | IonPac AS-19 |
| ZZZZZ (QC) | | 12/14/2024 13:59 | 1 | | IonPac AS-19 |
| CCV 810-126563/19 | | 12/14/2024 14:27 | 1 | 121424A_28.d | IonPac AS-19 |
| CCB 810-126563/20 | | 12/14/2024 14:55 | 1 | 121424A_29.d | IonPac AS-19 |
| 810-131403-4 | 54MW12 | 12/14/2024 15:23 | 1 | 121424A_30.d | IonPac AS-19 |
| 810-131403-4 MS | 54MW12 MS MS | 12/14/2024 15:51 | 1 | 121424A_31.d | IonPac AS-19 |
| 810-131403-4 MSD | 54MW12 MSD MSD | 12/14/2024 16:19 | 1 | 121424A_32.d | IonPac AS-19 |
| 810-131403-1 | 54MW13 | 12/14/2024 16:47 | 1 | 121424A_33.d | IonPac AS-19 |
| 810-131403-2 | 54MW10 | 12/14/2024 17:15 | 1 | 121424A_34.d | IonPac AS-19 |
| 810-131403-3 | 54TW10 | 12/14/2024 17:42 | 1 | 121424A_35.d | IonPac AS-19 |
| 810-131403-5 | 54MW1 | 12/14/2024 18:10 | 1 | 121424A_36.d | IonPac AS-19 |
| ZZZZZ (Client) | | 12/14/2024 18:38 | 1 | | IonPac AS-19 |
| ZZZZZ (Client) | | 12/14/2024 19:06 | 1 | | IonPac AS-19 |
| ZZZZZ (Client) | | 12/14/2024 19:34 | 1 | | IonPac AS-19 |
| ZZZZZ (Client) | | 12/14/2024 20:02 | 1 | | IonPac AS-19 |
| ZZZZZ (Client) | | 12/14/2024 20:30 | 1 | | IonPac AS-19 |
| ZZZZZ (QC) | | 12/14/2024 20:58 | 1 | | IonPac AS-19 |
| CCV 810-126563/34 | | 12/14/2024 21:26 | 1 | 121424A_43.d | IonPac AS-19 |
| CCB 810-126563/35 | | 12/14/2024 21:54 | 1 | 121424A_44.d | IonPac AS-19 |

# HPLC/IC BATCH WORKSHEET

Lab Name: Eurofins Eaton Analytical Sout  Job No.: 810-131403-1

SDG No.:

Batch Number: 121748  Batch Start Date: 11/07/24 17:14  Batch Analyst: Rowley, Nicholas

Batch Method: 300.0  Batch End Date:

| Lab Sample ID | Client Sample ID | Method Chain | Matrix | Basis | IC-300B CalSS 00031 | IC-300B QCSS 00031 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IC 810-121748/2 | | 300.0 | | | 40 uL | | | | | |
| IC 810-121748/3 | | 300.0 | | | 80 uL | | | | | |
| IC 810-121748/4 | | 300.0 | | | 400 uL | | | | | |
| ICRT 810-121748/5 | | 300.0 | | | 1000 uL | | | | | |
| IC 810-121748/6 | | 300.0 | | | 1000 uL | | | | | |
| IC 810-121748/7 | | 300.0 | | | 1000 uL | | | | | |
| ICV 810-121748/8 | | 300.0 | | | | 1000 uL | | | | |

| Batch Notes | |
|---|---|
| Filter ID | Whatman 0.45um PP lot 181389452 |
| Pipette/Syringe/Dispenser ID | PP0010,044,04515 |
| Eluent 1 ID | 1653326 |

| Basis | Basis Description |
|---|---|
| | |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

# HPLC/IC BATCH WORKSHEET

Lab Name: Eurofins Eaton Analytical Sout  Job No.: 810-131403-1

SDG No.:

Batch Number: 126563  Batch Start Date: 12/14/24 06:04  Batch Analyst: Rowley, Nicholas

Batch Method: 300.0  Batch End Date:

| Lab Sample ID | Client Sample ID | Method Chain | Matrix | Basis | IC-300B CalSS 00032 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| LLCS 810-126563/1 | | 300.0 | | | 40 uL | | | | | |
| CCV 810-126563/2 | | 300.0 | | | 1000 uL | | | | | |
| LCS 810-126563/5 | | 300.0 | | | 1000 uL | | | | | |
| CCV 810-126563/19 | | 300.0 | | | 1000 uL | | | | | |
| 810-131403-A-4 MS | 54MW12 MS | 300.0 | ıking Wa | T | 100 uL | | | | | |
| 810-131403-A-4 MSD | 54MW12 MSD | 300.0 | ıking Wa | T | 100 uL | | | | | |
| CCV 810-126563/34 | | 300.0 | | | 1000 uL | | | | | |

| Batch Notes | |
|---|---|
| Filter ID | Whatman 0.45um PP lot 181389452 |
| Eluent 1 ID | 1703300 |

| Basis | Basis Description |
|---|---|
| T | Total/NA |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

# Shipping and Receiving Documents

810-131403 Chain of Custody

TORIES
environmental analyses

1230 Lange Court • Baraboo, WI 53913 • 608-356-2760
www.ctlaboratories.com

## Sub-Contract Laboratory Chain-of-Custody and Purchase Order

**PURCHASE ORDER #:** 191589 EEA-IN

***The PO# must appear on all invoice and reports!***

***Upon Receipt of Samples, please verify that samples were received in acceptable condition then sign this form and fax to (608)356-2766 or email to the project manager. Sample temperature, upon receipt, must be recorded on this document unless thermal preservation is not a method requirement.***

**Ship to:** **Eurofins Eaton Analytical - IN**
110 South Hill Street
South Bend, IN 46617

Return Invoice and Results to: **bszymanski@ctlaboratories.com**

**CTLaboratories**
Brett M Szymanski
1230 Lange Court
Baraboo WI 53913

**Government UPS Shipping Acct ?** Y (N)

**Ship by:** Speedee ☐ UPS Grnd ☐ UPS 2nd ☐ UPS NDA [X]

**Date Due:** Standard TAT ***RUSH TURNAROUND NEEDED?*** ***Y or (N) (Circle One)***

**Project Name:** RADFORD AAP SWMU 54 **Project State:** VA

**Analytical/QC Criteria:** NONE INDICATED STATE (DOD QSM) NELAP (Circle one) OTHER_____

Report results as EDD? N (Y) (Circle one and indicate type: Basic Excel) Data Deliverable Package LEVEL: IV

| CTLabs ID# | Sample Date/Time | Matrix | Sample Description | Analyses / Method | | Cost |
|---|---|---|---|---|---|---|
| 1537124 | 12/10/2024 09:10 | GROUND WATER | 54MW13 | CHLORATE/CHLORITE | 300.1 | |
| 1537127 | 12/10/2024 10:45 | GROUND WATER | 54MW10 | CHLORATE/CHLORITE | 300.1 | |
| 1537128 | 12/10/2024 10:45 | GROUND WATER | 54TW10 | CHLORATE/CHLORITE | 300.1 | |
| 1537129 | 12/10/2024 12:15 | GROUND WATER | 54MW12 (Designated MS/MSD) | CHLORATE/CHLORITE | 300.1 | |
| 1537130 | 12/10/2024 13:50 | GROUND WATER | 54MW1 | CHLORATE/CHLORITE | 300.1 | |

Relinquished by: Brett Szymanski Date/Time: 12/11/2024 12:15

Received by: KDW Date/Time: 12-12-2024 0930 Receipt Temperature (C) _____

WE

**COMMENTS:** **PLEASE LOG USING THE SAMPLE DESCRIPTIONS. 54MW12 IS A DESIGNATED MS/MSD SAMPLE.**

Initial Temp: 1.8
Corrected Temp: 1.2
IR Gun # 18

**REPORT ALL SOLIDS ON A DRY WEIGHT BASIS UNLESS OTHERWISE INDICATED**

Form #: FPM1-01
Effective Date: 02/15/14

CT Laboratories Terms and Conditions

1. ORDERS AND RECEIPT OF SAMPLES (Sample Acceptance Policy) - not applicable

2. PAYMENT TERMS

2.1 Services performed by CTL will be in accordance with prices quoted and later confirmed in writing or as stated in the Price Schedule. Invoices may be submitted to Client upon completion of any sample delivery group. Payment in advance is required for all Clients except those whose credit has been established with CTL. For Clients with approved credit, payment terms are net 30 days from the date of invoice by CTL. All overdue payments are subject to an additional interest and service charge of one and one-half percent (1.5%) (or the maximum rate permissible by law, whichever is lesser) per month or portion thereof from the due date until the date of payment. All fees are charged or billed directly to the Client. The billing of a third party will not be accepted without a statement, signed by the third party that acknowledges and accepts payment responsibility. CTL may suspend work and withhold delivery of data under this order at any time in the event Client fails to make timely payment of its invoices. Client shall be responsible for all costs and expenses of collection including reasonable attorneyâ€™s fees. CTL reserves the right to refuse to proceed with work at any time based upon an unfavorable Client credit report.

3. CHANGE ORDERS, TERMINATION

3.1 Changes to the Scope of Work, price, or result delivery date may be initiated by CTL after Sample Acceptance due to any condition which conflicts with analytical, QA or other protocols warranted in these Terms and Conditions. CTL will not proceed with such changes until an agreement with the Client is reached on the amount of any cost, schedule change or technical change to the Scope of Work, and such agreement is documented in writing.

3.2 Changes to the Scope of Work, including but not limited to increasing or decreasing the work, changing test and analysis specification or acceleration in the performance of the work may be initiated by the Client after sample acceptance. Such a change will be documented in writing and may result in a change in cost and turnaround time commitment. CTL's acceptance of such changes is contingent upon technical feasibility and operational capacity.

3.3 Suspension or termination of all or any part of the work may be initiated by the Client. CTL will be compensated consistent with Section 2 of these Terms and Conditions. CTL will complete all work in progress and be paid in full for all work completed.

4. WARRANTIES AND LIABILITY

4.1 Where applicable, CTL will use analytical methodologies which are in substantial conformity with published test methods. CTL has implemented these methods in its Laboratory Quality Manuals and referenced Standard Operating Procedures and where the nature or composition of the sample requires it, CTL reserves the right to deviate from these methodologies as necessary or appropriate, based on the reasonable judgment of CTL, which deviations, if any, will be made on a basis consistent with recognized standards of the industry and/or CTL's Laboratory Quality Manuals. Client may request that CTL perform according to a mutually agreed Quality Assurance Project Plan (QAPP). In the event that samples arrive prior to agreement on a QAPP, CTL will proceed with analyses under its standard Quality Manuals then in effect, and CTL will not be responsible for any resampling or other charges if work must be repeated to comply with a subsequently finalized QAPP.

4.2 CTL shall start preparation and/or analysis within holding times provided that Sample Acceptance occurs within 48 hours of sampling or 1/2 of the holding time for the test, whichever is less. Where resolution of inconsistencies leading to Sample Acceptance does not occur within this period, CTL will use its best efforts to meet holding times and will proceed with the work provided that, in CTL's judgment, the chain-of-custody or definition of the Scope of Work provide sufficient guidance. Reanalysis of samples to comply with CTL's Quality Manuals will be deemed to have met holding times provided the initial analysis was performed within the applicable holding time. Where reanalysis demonstrates that sample matrix interference is the cause of failure to meet any Quality Manual requirements, the warranty will be deemed to have been met.

4.3 CTL warrants that it possesses and maintains all licenses and certifications which are required to perform services under these Terms and Conditions provided that such requirements are specified in writing to CTL prior to Sample Acceptance. CTL will notify the Client in writing of any decertification or revocation of any license, or notice of either, which affects work in progress.

4.4 The warranty obligations set forth in Sections 4.1, 4.2 and 4.3 are the sole and exclusive warranties given by CTL in connection with any services performed by CTL or any Results generated from such services, and CTL gives and makes NO OTHER REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. No representative of CTL is authorized to give or make any other representation or warranty or modify this warranty in any way.

4.5 Client's sole and exclusive remedy for the breach of warranty in connection with any services performed by CTL, will be limited to repeating any services performed, contingent on the Client's providing, at the request of CTL and at the Client's expense, additional sample(s) if necessary. Any reanalysis requested by the Client generating Results consistent with the original Results will be at the Client's expense. If resampling is necessary, CTL's liability for resampling costs will be limited to actual cost or one hundred or one hundred fifty dollars ($150) per sample, whichever is less.

4.6 CTL's liability for any and all causes of action arising hereunder, whether based in contract, tort, warranty, negligence or otherwise, shall be limited to the lesser amount of compensation for the services performed or $100,000. All claims, including those for negligence, shall be deemed waived unless suit thereon is filed within one year after CTL's completion of the services. Under no circumstances, whether arising in contract, tort (including negligence), or otherwise, shall CTL be responsible for loss of use, loss of profits, or for any special, indirect, incidental or consequential damages occasioned by the services performed or by application or use of the reports prepared.

4.7 In no event shall CTL have any responsibility or liability to the Client for any failure or delay in performance by CTL which results, directly or indirectly, in whole or in part, from any cause or circumstance beyond the reasonable control of CTL. Such causes and circumstances shall include, but not be limited to, acts of God, acts of Client, acts or orders of any governmental authority, strikes or other labor disputes, natural disasters, accidents, wars, civil disturbances, equipment breakdown, matrix interference or unknown highly contaminated samples that impact instrument operation, unavailability of supplies from usual suppliers, difficulties or delays in transportation, mail or delivery services, or any other cause beyond CTL's reasonable control.

5. RESULTS, WORK PRODUCT - not applicable

6. INSURANCE

6.1 CTL shall maintain in force during the performance of services under these Terms and Conditions, Workers' Compensation and Employer's Liability Insurance in accordance with the laws of the states having jurisdiction over CTL's employees who are engaged in the performance of the work. CTL shall also maintain during such period, Comprehensive General and Contractual Liability (limit of $2,000,000 per occurrence/ aggregate), Comprehensive Automobile Liability, owned and hired, ($1,000,000 combined single limit), and Professional/Pollution Liability Insurance (limit of $5,000,000 per occurrence/aggregate) Â. Any Client required changes to these limits or conditions may result in a change in cost to the Client.

7. AUDIT

7.1 Upon prior notice to CTL, the Client may audit and inspect CTL's records and accounts covering reimbursable costs related to work done for the Client, for a period of one (1) year after completion of the work. The purpose of any such audit shall be only for verification of such costs, and CTL shall not be required to provide access to cost records where prices are expressed as fixed fees or published unit prices.

# Login Sample Receipt Checklist

Client: CT Laboratories

Job Number: 810-131403-1

**Login Number: 131403**
**List Number: 1**
**Creator: DePriest, Kellie**

**List Source: Eurofins Eaton Analytical South Bend**

| Question | Answer | Comment |
|---|---|---|
| The cooler's custody seal, if present, is intact. | True | |
| Sample custody seals, if present, are intact. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | True | |
| Samples do not require splitting or compositing. | True | |
| Container provided by EEA | True | |

**CHAIN OF CUSTODY,**
**PM CONFIRMATION**
**AND**
**SAMPLE CONDITION FORMS**
**DOCUMENTS**

Rev. 02/2017

# CHAIN OF CUSTODY

Page 1 of 1

Company: CAPE Environmental
Project Contact: Matt Feits
Telephone: (724) 622-3625
Project Name: Radford AAP SWMU 54
Project #:
Location: Radford, VA
Sampled By: Y. Miyakawa, P. Taylor

[illegible] raboo, WI 53913
[illegible] Fax 608-356-2766
[illegible] laboratories.com

Folder #: 191589 Company: CAPE ENVI Project: RADFORD A/ Logged By: erc P

Folder #: 191590 Company: CAPE ENVIRONMENTAL MAN Project: RADFORD AAP SWMU 54 Logged By: erc PM: BMS

NPDES _____

Report To: Chemistry SVCS@cape-inc.com
EMAIL: mfeits@cape-inc.com
Company: CAPE Environmental Mgmt
Address: 500 Pinnacle Ct. #100 Norcross, GA 30071

Invoice To:*
EMAIL:
Company: Same
Address:

*Party listed is responsible for payment of invoice as per CT Laboratories' terms and conditions

**Client Special Instructions**

Matrix:
GW – groundwater SW - surface water WW - wastewater DW - drinking water
S - soil/sediment SL - sludge A - air M - misc/waste

| 2024 Collection Date | Time | Matrix | Grab/ Comp | Sample # | Sample ID Description | Filtered? Y/N | TOC 9060A | Anions 9056A | TIC 9060A | Chloride/Chlorine | COD 410.4 | pH 9040C | Total Metals | Total # Containers | Designated MS/MSD | CT Lab ID # (Lab use only) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Fill in Spaces with Bottles per Test | | | | | | | | | |
| 12/10 | 0910 | GW | G | | 54MW13 | N | 1 | 1 | 3 | 1 | | | | 6 | | 1537124 |
| 12/10 | 1045 | GW | G | | 54MW10 | N | 1 | 1 | 3 | 1 | | | | 6 | | 27 |
| 12/10 | 1045 | GW | G | | 54TW10 | N | 1 | 1 | 3 | 1 | | | | 6 | | 28 |
| 12/10 | 1215 | GW | G | | 54MW12 | N | 3 | 3 | 9 | 3 | | | | 18 | X | 29 |
| 12/10 | 1350 | GW | G | | 54MW1 | N | 1 | 1 | 3 | 1 | | | | 6 | | 30 |
| 12/10 | 1450 | GW | G | | 54IDW | N | | | | | 1 | 1 | 1 | 3 | | 33 |

Turnaround Time
Normal RUSH*
Date Needed: _____
*Rush analysis requires prior CT Laboratories' approval*
Surcharges:
24 hr 200%
2-3 days 100%
4-9 days 50%

| Relinquished By: | Date/Time | Received By: | Date/Time |
|---|---|---|---|
| [signature] | 12/10/2024 1700 | Fedex | 12/10/2024 1700 |
| Received by: | Date/Time | Received for Laboratory by: | Date/Time |
| | | [signature] | 12/11/24 1710 |

Lab Use Only
Ice Present Yes No
Temp 3.7 IR Gun 33
Cooler # 6102

ORIGIN ID:LIYA (724) 622-3625
MATTHEW FEITS
CAPE ENVIRONMENTAL MANAGEMENT INC.
500 PINNACLE COURT
SUITE 100
NORCROSS, GA 30071
UNITED STATES US

SHIP DATE: 10DEC24
ACTWGT: 45.00 LB
CAD: 100980732/INET4535

BILL SENDER

TO **SAMPLE RECEIVING**
**CT LABS**
**1230 LANGE COURT**

**BARABOO WI 53913**
(608) 356-2760
INV:
PO:
REF: 10409-0222-002-003
DEPT:

58CJ4/EB78/C6C4

J244024091001uv

FedEx Express

1 of 3

TRK# 0201 **7704 4881 9799**
## MASTER ##

**WED - 11 DEC 12:00P**
**PRIORITY OVERNIGHT**

**XH LNRA**

**53913**
**WI-US MSN**

**CUSTODY SEAL**
**DATE** 12/10/2024
**SIGNATURE**

QEC
Quality Environmental Containers
800-255-3950 • www.qecusa.com

After printing this label:
**CONSIGNEE COPY - PLEASE PLACE IN FRONT OF POUCH**
1. Fold the printed page along the horizontal line.
2. Place label in shipping pouch and affix it to your shipment.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

Ice Present Yes / No
Temperature 3.7 °C
Initials
Date 12/11/24 Time 12:10
Cooler # 6302

## PM Login Confirmation

***Folder #: 191589***

**Contract #:** 3648

**Company:** CAPE ENVIRONMENTAL MANAGEMENT **Project:** RADFORD AAP SWMU 54 **Proj #:** 10409-0222

**Project Phase:** RADFORD, VA **PO Number:** SC013781 **Invoice #:** 192311

**Project Manager:** *BMS* **Date Received:** 12/11/24 **Log Date:** 12/11/2024

Report To: MATT FEITS
500 PINNACLE COURT
SUITE 100
NORCROSS, GA 30071
Phone: 724-622-3625: Fax:
Rep. E-Mail mfeits@cape-inc.com

CC: chemistrysvcs@cape-inc.com

Invoice To :ACCOUNTS PAYABLE
500 PINNACLE COURT
SUITE 100
NORCROSS, GA 30071
Phone: Fax:
EMail: cleighton@cape-inc.com

CC:

Collected By:
Collector's Phone: 724-622-3625

Arrival Temperature: 3.7 oC

**SAMPLE #:** 1537124 **DESCR:** 54MW13 **PRIMARY / DETAILED MATRIX:** AQUEOUS / GROUND WATER **SAMPLED:** 12/10/2024 **Time:** 09:10

**CLIENT SAMPLE #:** **DETAILED SITE/POINT ID INFORMATION:**

| TEST# | TEST | TEST METHOD | ANALYTE | TEST GROUP | SPECIAL REQUIREMENTS | HOLD DATE | ANALYSIS DUE | RUSH | STATUS |
|---|---|---|---|---|---|---|---|---|---|
| 759 | CARBON, INORG & ORG | (EPA 9060A) | | | *Y* | 12/24/2024 | 12/23/2024 | | Logged |
| 1227 | ANIONS IC QSM 5.0 | (EPA 9056A) | | | | 12/12/2024 | 12/23/2024 | | Logged |
| | | | Chloride | | | | | | |
| | | | Nitrate Nitrogen | | | | | | |
| | | | Sulfate | | | | | | |
| 1230 | ORGAN CARBON T QSM 5.0 | (EPA 9060A) | | | | 1/7/2025 | 12/23/2024 | | Logged |
| 1279 | SUB CHLORATE/CHLORITE | (300.1) | | | | | 12/23/2024 | | Logged |

**SAMPLE #:** 1537127 **DESCR:** 54MW10 **PRIMARY / DETAILED MATRIX:** AQUEOUS / GROUND WATER **SAMPLED:** 12/10/2024 **Time:** 10:45

**CLIENT SAMPLE #:** **DETAILED SITE/POINT ID INFORMATION:**

| TEST# | TEST | TEST METHOD | ANALYTE | TEST GROUP | SPECIAL REQUIREMENTS | HOLD DATE | ANALYSIS DUE | RUSH | STATUS |
|---|---|---|---|---|---|---|---|---|---|
| 759 | CARBON, INORG & ORG | (EPA 9060A) | | | *Y* | 12/24/2024 | 12/23/2024 | | Logged |
| 1227 | ANIONS IC QSM 5.0 | (EPA 9056A) | | | | 12/12/2024 | 12/23/2024 | | Logged |

C:\Windows\ServiceProfiles\LocalService\AppData\Local\Temp\tmp9CB8.tmp

**Folder #:** 191589 **Company:** *CAPE ENVIRONMENTAL MANAGEMENT* **Project:** RADFORD AAP SWMU 54

**SAMPLE #:** 1537127 **DESCR:** 54MW10 **PRIMARY / DETAILED MATRIX:** AQUEOUS / GROUND WATER **SAMPLED:** 12/10/2024 **Time:** 10:45

**CLIENT SAMPLE #:** **DETAILED SITE/POINT ID INFORMATION:**

| TEST# | TEST | TEST METHOD | ANALYTE | TEST GROUP | SPECIAL REQUIREMENTS | HOLD DATE | ANALYSIS DUE | RUSH | STATUS |
|---|---|---|---|---|---|---|---|---|---|
| | | | Chloride | | | | | | |
| | | | Nitrate Nitrogen | | | | | | |
| | | | Sulfate | | | | | | |
| 1230 | ORGAN CARBON T QSM 5.0 | (EPA 9060A) | | | | 1/7/2025 | 12/23/2024 | | Logged |
| 1279 | SUB CHLORATE/CHLORITE | (300.1) | | | | | 12/23/2024 | | Logged |

**SAMPLE #:** 1537128 **DESCR:** 54TW10 **PRIMARY / DETAILED MATRIX:** AQUEOUS / GROUND WATER **SAMPLED:** 12/10/2024 **Time:** 10:45

**CLIENT SAMPLE #:** **DETAILED SITE/POINT ID INFORMATION:**

| TEST# | TEST | TEST METHOD | ANALYTE | TEST GROUP | SPECIAL REQUIREMENTS | HOLD DATE | ANALYSIS DUE | RUSH | STATUS |
|---|---|---|---|---|---|---|---|---|---|
| 759 | CARBON, INORG & ORG | (EPA 9060A) | | | ***Y*** | 12/24/2024 | 12/23/2024 | | Logged |
| 1227 | ANIONS IC QSM 5.0 | (EPA 9056A) | | | | 12/12/2024 | 12/23/2024 | | Logged |
| | | | Chloride | | | | | | |
| | | | Nitrate Nitrogen | | | | | | |
| | | | Sulfate | | | | | | |
| 1230 | ORGAN CARBON T QSM 5.0 | (EPA 9060A) | | | | 1/7/2025 | 12/23/2024 | | Logged |
| 1279 | SUB CHLORATE/CHLORITE | (300.1) | | | | | 12/23/2024 | | Logged |

**SAMPLE #:** 1537129 **DESCR:** 54MW12 **PRIMARY / DETAILED MATRIX:** AQUEOUS / GROUND WATER **SAMPLED:** 12/10/2024 **Time:** 12:15

**CLIENT SAMPLE #:** **DETAILED SITE/POINT ID INFORMATION:**

| TEST# | TEST | TEST METHOD | ANALYTE | TEST GROUP | SPECIAL REQUIREMENTS | HOLD DATE | ANALYSIS DUE | RUSH | STATUS |
|---|---|---|---|---|---|---|---|---|---|
| 759 | CARBON, INORG & ORG | (EPA 9060A) | | | ***Y*** ***DESIGNATED MATRIX SPIKE*** | 12/24/2024 | 12/23/2024 | | Logged |
| 1227 | ANIONS IC QSM 5.0 | (EPA 9056A) | | | ***DESIGNATED MATRIX SPIKE*** | 12/12/2024 | 12/23/2024 | | Logged |
| | | | Chloride | | | | | | |
| | | | Nitrate Nitrogen | | | | | | |
| | | | Sulfate | | | | | | |
| 1230 | ORGAN CARBON T QSM 5.0 | (EPA 9060A) | | | ***DESIGNATED MATRIX SPIKE*** | 1/7/2025 | 12/23/2024 | | Logged |
| 1279 | SUB CHLORATE/CHLORITE | (300.1) | | | ***DESIGNATED MATRIX SPIKE*** | | 12/23/2024 | | Logged |

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**Folder #:** 191589 **Company:** *CAPE ENVIRONMENTAL MANAGEMENT* **Project:** RADFORD AAP SWMU 54

**SAMPLE #:** 1537130 **DESCR:** 54MW1 **PRIMARY / DETAILED MATRIX:** AQUEOUS / GROUND WATER **SAMPLED:** 12/10/2024 **Time:** 13:50

**CLIENT SAMPLE #:** **DETAILED SITE/POINT ID INFORMATION:**

| TEST# | TEST | TEST METHOD | ANALYTE | TEST GROUP | SPECIAL REQUIREMENTS | HOLD DATE | ANALYSIS DUE | RUSH | STATUS |
|---|---|---|---|---|---|---|---|---|---|
| 759 | CARBON, INORG & ORG | (EPA 9060A) | | | *Y* | 12/24/2024 | 12/23/2024 | | Logged |
| 1227 | ANIONS IC QSM 5.0 | (EPA 9056A) | | | | 12/12/2024 | 12/23/2024 | | Logged |
| | | | Chloride | | | | | | |
| | | | Nitrate Nitrogen | | | | | | |
| | | | Sulfate | | | | | | |
| 1230 | ORGAN CARBON T QSM 5.0 | (EPA 9060A) | | | | 1/7/2025 | 12/23/2024 | | Logged |
| 1279 | SUB CHLORATE/CHLORITE | (300.1) | | | | | 12/23/2024 | | Logged |

**Invoice Number:** 192311 **Preliminary Invoice Estimate:** $1,680.00

| Item | Matrix | Quantity | Price | Expedited TAT Surcharge | Total |
|---|---|---|---|---|---|
| ANIONS IC QSM 5.0 Chloride | GROUND WATER | 7 | $15.00 | 0.00 | $105.00 |
| ANIONS IC QSM 5.0 Nitrate Nitrogen | GROUND WATER | 7 | $15.00 | 0.00 | $105.00 |
| ANIONS IC QSM 5.0 Sulfate | GROUND WATER | 7 | $15.00 | 0.00 | $105.00 |
| CARBON, INORG & ORG | GROUND WATER | 7 | $35.00 | 0.00 | $245.00 |
| ORGAN CARBON T QSM 5.0 | GROUND WATER | 7 | $35.00 | 0.00 | $245.00 |
| SUB CHLORATE/CHLORITE | GROUND WATER | 7 | $125.00 | 0.00 | $875.00 |
| Temporary Fuel Surcharge on lab supplies and services (if applicable): | | | | | $0.00 |

Bottle Information

| Container | # Containers | Tests |
|---|---|---|
| **H2SO4 PL** | **7** | TOC |
| **MISC** | **7** | CHLORATE/CHLORITE |
| **UNPRES PL** | **7** | ANIONS |
| **VOA** | **21** | |

C:\Windows\ServiceProfiles\LocalService\AppData\Local\Temp\tmp9CB8.tmp

CT LABORATORIES
delivering more than data from your environmental analyses

# Sample Condition Report

| | | | | | |
|---|---|---|---|---|---|
| Folder #: | 191589 | Print Date / Time: | 12/11/2024 | 10:21 | |
| Client: | CAPE ENVIRONMENTAL MANAGEMENT | Received Date / Time / By: | 12/11/2024 | 12:10 | DJL |
| Project Name: | RADFORD AAP SWMU 54 | Log-In Date / Time / By: | 12/11/2024 | 12:21 | erc |
| Project Phase: | RADFORD, VA | Project #: | 10409-0222 | PM: | BMS |
| Coolers: | 6302 | Temperature: | 3.7 C | On Ice: | **Y** |
| Custody Seals Present : | **Y** | COC Present:? | **Y** | Complete? | **Y** |
| Seal Intact? | **Y** | Numbers: | DATED AND SIGNED | | |
| Ship Method: | FEDEX EXPRESS | Tracking Number: | 770448819799 | | |
| Adequate Packaging: | **Y** | Temp Blank Enclosed? | **Y** | | |

Notes: THE SAMPLES WERE RECEIVED IN GOOD CONDITION ON ICE.

ONE (1) CUSTODY SEAL WAS PRESENT AND INTACT ON THE COOLER UPON RECEIPT (DATED 12/10/24 AND SIGNED).

| Sample ID / | Description | Container Type | Cond. Code | pH OK?/Filtered? | Tests |
|---|---|---|---|---|---|
| **1537124** | 54MW13 | | | | |
| | | VOA | 1 | / | |
| | | VOA | 1 | / | |
| | | VOA | 1 | / | |
| | | **Total # of Containers of Type ( *VOA* ) = 3** | | | |
| **1537124** | 54MW13 | | | | |
| | | UNPRES PL | 1 | / | Anions |
| | | **Total # of Containers of Type ( *UNPRES PL* ) = 1** | | | |
| **1537124** | 54MW13 | | | | |
| | | MISC | 1 | / | CHLORATE/CHLORITE |
| | | **Total # of Containers of Type ( *MISC* ) = 1** | | | |
| **1537124** | 54MW13 | | | | |
| | | H2SO4 PL | 1 | Y / N | TOC |
| | | **Total # of Containers of Type ( *H2SO4 PL* ) = 1** | | | |

| Sample ID / | Description | Container Type | Cond. Code | pH OK?/Filtered? | Tests |
|---|---|---|---|---|---|
| **1537127** | 54MW10 | | | | |
| | | VOA | 1 | / | |
| | | VOA | 1 | / | |
| | | VOA | 1 | / | |
| | | **Total # of Containers of Type ( *VOA* ) = 3** | | | |
| **1537127** | 54MW10 | | | | |
| | | UNPRES PL | 1 | / | Anions |

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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | **Total # of Containers of Type** | **( *UNPRES PL* ) = 1** | | | | |
| **1537127** | 54MW10 | | | | | | |
| | | MISC | 1 | | / | | CHLORATE/CHLORITE |
| | | **Total # of Containers of Type** | **( *MISC* ) = 1** | | | | |
| **1537127** | 54MW10 | | | | | | |
| | | H2SO4 PL | 1 | Y | / | N | TOC |
| | | **Total # of Containers of Type** | **( *H2SO4 PL* ) = 1** | | | | |

| Sample ID / | Description | Container Type | Cond. Code | pH OK?/Filtered? | | | Tests |
|---|---|---|---|---|---|---|---|
| **1537128** | 54TW10 | | | | | | |
| | | VOA | 1 | | / | | |
| | | VOA | 1 | | / | | |
| | | VOA | 1 | | / | | |
| | | **Total # of Containers of Type** | **( *VOA* ) = 3** | | | | |
| **1537128** | 54TW10 | | | | | | |
| | | UNPRES PL | 1 | | / | | Anions |
| | | **Total # of Containers of Type** | **( *UNPRES PL* ) = 1** | | | | |
| **1537128** | 54TW10 | | | | | | |
| | | MISC | 1 | | / | | CHLORATE/CHLORITE |
| | | **Total # of Containers of Type** | **( *MISC* ) = 1** | | | | |
| **1537128** | 54TW10 | | | | | | |
| | | H2SO4 PL | 1 | Y | / | N | TOC |
| | | **Total # of Containers of Type** | **( *H2SO4 PL* ) = 1** | | | | |

| Sample ID / | Description | Container Type | Cond. Code | pH OK?/Filtered? | | | Tests |
|---|---|---|---|---|---|---|---|
| **1537129** | 54MW12 | | | | | | |
| | | VOA | 1 | | / | | |
| | | VOA | 1 | | / | | |
| | | VOA | 1 | | / | | |
| | | VOA | 1 | N | / | N | |
| | | VOA | 1 | N | / | N | |
| | | VOA | 1 | N | / | N | |
| | | VOA | 1 | N | / | N | |
| | | VOA | 1 | N | / | N | |
| | | VOA | 1 | N | / | N | |
| | | **Total # of Containers of Type** | **( *VOA* ) = 9** | | | | |
| **1537129** | 54MW12 | | | | | | |
| | | UNPRES PL | 1 | N | / | N | ANIONS |
| | | UNPRES PL | 1 | N | / | N | ANIONS |
| | | UNPRES PL | 1 | | / | | Anions |
| | | **Total # of Containers of Type** | **( *UNPRES PL* ) = 3** | | | | |
| **1537129** | 54MW12 | | | | | | |
| | | MISC | 1 | | / | | CHLORATE/CHLORITE |
| | | **Total # of Containers of Type** | **( *MISC* ) = 1** | | | | |

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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **1537129** | 54MW12 | | | | | | |
| | | MISC | 1 | N | / | N | SUB |
| | | MISC | 1 | N | / | N | SUB |
| | | **Total # of Containers of Type** | ( ***MISC*** ) = **2** | | | | |
| **1537129** | 54MW12 | | | | | | |
| | | H2SO4 PL | 1 | Y | / | N | TOC |
| | | H2SO4 PL | 1 | Y | / | N | TOC |
| | | H2SO4 PL | 1 | Y | / | N | TOC |
| | | **Total # of Containers of Type** | ( ***H2SO4 PL*** ) = **3** | | | | |

| Sample ID / | Description | Container Type | Cond. Code | pH OK?/Filtered? | | Tests |
|---|---|---|---|---|---|---|
| **1537130** | 54MW1 | | | | | |
| | | VOA | 1 | / | | |
| | | VOA | 1 | / | | |
| | | VOA | 1 | / | | |
| | | **Total # of Containers of Type** | ( ***VOA*** ) = **3** | | | |
| **1537130** | 54MW1 | | | | | |
| | | UNPRES PL | 1 | / | | Anions |
| | | **Total # of Containers of Type** | ( ***UNPRES PL*** ) = **1** | | | |
| **1537130** | 54MW1 | | | | | |
| | | MISC | 1 | / | | CHLORATE/CHLORITE |
| | | **Total # of Containers of Type** | ( ***MISC*** ) = **1** | | | |
| **1537130** | 54MW1 | | | | | |
| | | H2SO4 PL | 1 | Y | / N | TOC |
| | | **Total # of Containers of Type** | ( ***H2SO4 PL*** ) = **1** | | | |

| *Condition Code* | *Condition Description* |
|---|---|
| 1 | Sample Received OK |

191589

The results set forth herein are provided by SGS North America Inc.

*e-Hardcopy 2.0*
*Automated Report*

Technical Report for

Cape Environmental

Radford Army Ammunition Plant SMWU 54; VA

SGS Job Number: FC21117

Sampling Date: 12/10/24



Report to:

Cape Environmental
Jacksonville, FL
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nsaikaly@cape-inc.com

ATTN: Alexis Johnson

Total number of pages in report: **479**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable unless noted in the narrative, comments or footnotes.

Norm Farmer
Technical Director

Client Service contact: Jean Dent-Smith 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AL, AK, AR, CT, IA, KY, MA, MI. MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

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SGS North America Inc.

# Sample Summary

Cape Environmental

**Job No:** FC21117

Radford Army Ammunition Plant SMWU 54; VA

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| FC21117-1 | 12/10/24 | 09:10 | YMPT | 12/11/24 | AQ | Ground Water | 54MW13 |
| FC21117-2 | 12/10/24 | 10:45 | YMPT | 12/11/24 | AQ | Ground Water | 54MW10 |
| FC21117-3 | 12/10/24 | 10:45 | YMPT | 12/11/24 | AQ | Ground Water | 54TW10 |
| FC21117-4 | 12/10/24 | 12:15 | YMPT | 12/11/24 | AQ | Ground Water | 54MW12 |
| FC21117-4D | 12/10/24 | 12:15 | YMPT | 12/11/24 | AQ | Water Dup/MSD | 54MW12 |
| FC21117-4S | 12/10/24 | 12:15 | YMPT | 12/11/24 | AQ | Water Matrix Spike | 54MW12 |
| FC21117-5 | 12/10/24 | 13:50 | YMPT | 12/11/24 | AQ | Ground Water | 54MW1 |

# SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Cape Environmental **Job No:** FC21117

**Site:** Radford Army Ammunition Plant SMWU 54; VA **Report Date:** 1/2/2025 1:01:23 PM

On 12/11/2024, 5 Sample(s), 0 Trip Blank(s), 0 Equip. Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 2.4 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC21117 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

## MS Semi-volatiles By Method SW846 6850

**Matrix:** AQ **Batch ID:** OP6969

Sample(s) FC21117-4MS were used as the QC samples indicated.

## GC/LC Semi-volatiles By Method SW846 8330B

**Matrix:** AQ **Batch ID:** OP6902

Sample(s) FC21117-4MS, FC21117-4MSD were used as the QC samples indicated.

Blank Spike Recovery(s) for DNX are outside control limits.

Matrix Spike Recovery(s) for 1,3,5-Trinitrobenzene, 3,5-Dinitroaniline, DNX, TNX are outside control limits. Probable cause is due to matrix interference.

Matrix Spike Duplicate Recovery(s) for DNX, MNX, Nitrobenzene, TNX are outside control limits. Probable cause is due to matrix interference.

RPD(s) for MSD for 1,3-Dinitrobenzene, 3,5-Dinitroaniline, HMX, MNX, Nitrobenzene, RDX, TNX are outside control limits for sample OP6902-MSD. Probable cause is due to sample non-homogeneity.

FC21117-1 for 3,5-Dinitroaniline: Primary and confirmation results differ by more than 40%.

FC21117-1 for DNX: Associated BS and CCV outside of control limits high, sample was ND.

FC21117-1 for MNX: Associated CCV outside of control limits high, sample was ND.

FC21117-1: All hits confirmed by reanalysis on a dissimilar column.

FC21117-1: Confirmation run.

FC21117-2 for DNX: Associated BS and CCV outside of control limits high, sample was ND.

FC21117-2 for MNX: Associated CCV outside of control limits high, sample was ND.

FC21117-3 for DNX: Associated BS and CCV outside of control limits high, sample was ND.

FC21117-3 for HMX: Primary and confirmation results differ by more than 40%.

FC21117-3 for MNX: Associated CCV outside of control limits high, sample was ND.

FC21117-3: All hits confirmed by reanalysis on a dissimilar column.

FC21117-3: Confirmation run.

FC21117-4 for 3,5-Dinitroaniline: Primary and confirmation results differ by more than 40%.

FC21117-4 for DNX: Associated BS and CCV outside of control limits high, sample was ND.

FC21117-4 for MNX: Associated CCV outside of control limits high, sample was ND.

FC21117-4: All hits confirmed by reanalysis on a dissimilar column.

FC21117-4: Confirmation run.

FC21117-5 for DNX: Associated BS and CCV outside of control limits high, sample was ND.

FC21117-5 for MNX: Associated CCV outside of control limits high, sample was ND.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.



Narrative prepared by:

_____

Kim Benham, Report Generation (signature on file)

# Summary of Hits



**Job Number:** FC21117
**Account:** Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA
**Collected:** 12/10/24



| Lab Sample ID / Analyte | Client Sample ID | Result/ Qual | LOQ | LOD | Units | Method |
|---|---|---|---|---|---|---|
| **FC21117-1** | **54MW13** | | | | | |
| Perchlorate | | 0.63 | 0.20 | 0.10 | ug/l | SW846 6850 |
| HMX [a] | | 4.0 | 0.22 | 0.11 | ug/l | SW846 8330B |
| RDX [b] | | 1.2 | 0.22 | 0.11 | ug/l | SW846 8330B |
| 3,5-Dinitroaniline [b] | | 33.7 | 0.22 | 0.11 | ug/l | SW846 8330B |
| 2-amino-4,6-Dinitrotoluene [a] | | 3.3 | 0.22 | 0.11 | ug/l | SW846 8330B |
| 4-amino-2,6-Dinitrotoluene [a] | | 2.3 | 0.22 | 0.11 | ug/l | SW846 8330B |
| 1,3,5-Trinitrobenzene [a] | | 29.4 | 0.22 | 0.11 | ug/l | SW846 8330B |
| 2,4,6-Trinitrotoluene [a] | | 26.8 | 0.22 | 0.11 | ug/l | SW846 8330B |
| **FC21117-2** | **54MW10** | | | | | |
| No hits reported in this sample. | | | | | | |
| **FC21117-3** | **54TW10** | | | | | |
| HMX [b] | | 0.26 | 0.21 | 0.11 | ug/l | SW846 8330B |
| **FC21117-4** | **54MW12** | | | | | |
| Perchlorate | | 0.77 | 0.20 | 0.10 | ug/l | SW846 6850 |
| HMX [a] | | 12.8 | 0.21 | 0.11 | ug/l | SW846 8330B |
| RDX [a] | | 0.34 | 0.21 | 0.11 | ug/l | SW846 8330B |
| 3,5-Dinitroaniline [b] | | 9.2 | 0.21 | 0.11 | ug/l | SW846 8330B |
| 2-amino-4,6-Dinitrotoluene [a] | | 3.8 | 0.21 | 0.11 | ug/l | SW846 8330B |
| 4-amino-2,6-Dinitrotoluene [a] | | 3.3 | 0.21 | 0.11 | ug/l | SW846 8330B |
| 1,3,5-Trinitrobenzene [a] | | 4.6 | 0.21 | 0.11 | ug/l | SW846 8330B |
| 2,4,6-Trinitrotoluene [a] | | 2.7 | 0.21 | 0.11 | ug/l | SW846 8330B |
| **FC21117-5** | **54MW1** | | | | | |
| No hits reported in this sample. | | | | | | |

(a) All hits confirmed by reanalysis on a dissimilar column.
(b) All hits confirmed by reanalysis on a dissimilar column. Primary and confirmation results differ by more than 40%.

## Sample Results

Report of Analysis

SGS North America Inc.

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | 54MW13 | | |
| **Lab Sample ID:** | FC21117-1 | **Date Sampled:** | 12/10/24 |
| **Matrix:** | AQ - Ground Water | **Date Received:** | 12/11/24 |
| **Method:** | SW846 6850 IN HOUSE | **Percent Solids:** | n/a |
| **Project:** | Radford Army Ammunition Plant SMWU 54; VA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | Q116923.D | 1 | 12/30/24 18:11 | NG | 12/16/24 18:00 | OP6969 | SQ2411 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 10.0 ml | 10.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | LOQ | LOD | DL | Units | Q |
|---|---|---|---|---|---|---|---|
| 14797-73-0 | Perchlorate | 0.63 | 0.20 | 0.10 | 0.050 | ug/l | |

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

# Report of Analysis





**Client Sample ID:** 54MW13
**Lab Sample ID:** FC21117-1 **Date Sampled:** 12/10/24
**Matrix:** AQ - Ground Water **Date Received:** 12/11/24
**Method:** SW846 8330B SW846 3535A **Percent Solids:** n/a
**Project:** Radford Army Ammunition Plant SMWU 54; VA

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 [a] | BB085956.D | 1 | 12/17/24 16:55 | FS | 12/12/24 08:20 | OP6902 | GBB2633 |
| Run #2 [b] | GG630902.D | 1 | 12/18/24 17:26 | FS | 12/12/24 08:20 | OP6902 | GGG3516 |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 910 ml | 10.0 ml |
| Run #2 | 910 ml | 10.0 ml |

| CAS No. | Compound | Result | LOQ | LOD | DL | Units | Q |
|---|---|---|---|---|---|---|---|
| 2691-41-0 | HMX | 4.0 | 0.22 | 0.11 | 0.088 | ug/l | |
| 121-82-4 | RDX [c] | 1.2 | 0.22 | 0.11 | 0.088 | ug/l | |
| | DNX [d] | 0.11 U | 0.22 | 0.11 | 0.088 | ug/l | |
| | MNX [e] | 0.11 U | 0.22 | 0.11 | 0.088 | ug/l | |
| | TNX | 0.11 U | 0.22 | 0.11 | 0.088 | ug/l | |
| 618-87-1 | 3,5-Dinitroaniline [c] | 33.7 | 0.22 | 0.11 | 0.088 | ug/l | |
| 99-65-0 | 1,3-Dinitrobenzene | 0.11 U | 0.22 | 0.11 | 0.088 | ug/l | |
| 606-20-2 | 2,6-Dinitrotoluene | 0.11 U | 0.22 | 0.11 | 0.088 | ug/l | |
| 121-14-2 | 2,4-Dinitrotoluene | 0.11 U | 0.22 | 0.11 | 0.088 | ug/l | |
| 35572-78-2 | 2-amino-4,6-Dinitrotoluene | 3.3 | 0.22 | 0.11 | 0.088 | ug/l | |
| 19406-51-0 | 4-amino-2,6-Dinitrotoluene | 2.3 | 0.22 | 0.11 | 0.088 | ug/l | |
| 98-95-3 | Nitrobenzene | 0.11 U | 0.22 | 0.11 | 0.11 | ug/l | |
| 88-72-2 | o-Nitrotoluene | 0.11 U | 0.22 | 0.11 | 0.088 | ug/l | |
| 99-08-1 | m-Nitrotoluene | 0.11 U | 0.22 | 0.11 | 0.088 | ug/l | |
| 99-99-0 | p-Nitrotoluene | 0.11 U | 0.22 | 0.11 | 0.088 | ug/l | |
| 479-45-8 | Tetryl | 0.11 U | 0.22 | 0.11 | 0.088 | ug/l | |
| 99-35-4 | 1,3,5-Trinitrobenzene | 29.4 | 0.22 | 0.11 | 0.11 | ug/l | |
| 118-96-7 | 2,4,6-Trinitrotoluene | 26.8 | 0.22 | 0.11 | 0.088 | ug/l | |
| 55-63-0 | Nitroglycerine | 1.1 U | 2.2 | 1.1 | 0.55 | ug/l | |
| 78-11-5 | PETN | 1.1 U | 2.2 | 1.1 | 0.55 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 610-39-9 | 3,4-Dinitrotoluene | 80% | 118% | 70-136% |

(a) All hits confirmed by reanalysis on a dissimilar column.
(b) Confirmation run.
(c) Primary and confirmation results differ by more than 40%.
(d) Associated BS and CCV outside of control limits high, sample was ND.
(e) Associated CCV outside of control limits high, sample was ND.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | 54MW10 | | |
| **Lab Sample ID:** | FC21117-2 | **Date Sampled:** | 12/10/24 |
| **Matrix:** | AQ - Ground Water | **Date Received:** | 12/11/24 |
| **Method:** | SW846 6850 IN HOUSE | **Percent Solids:** | n/a |
| **Project:** | Radford Army Ammunition Plant SMWU 54; VA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | Q116924.D | 1 | 12/30/24 18:18 | NG | 12/16/24 18:00 | OP6969 | SQ2411 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 10.0 ml | 10.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | LOQ | LOD | DL | Units | Q |
|---|---|---|---|---|---|---|---|
| 14797-73-0 | Perchlorate | 0.10 U | 0.20 | 0.10 | 0.050 | ug/l | |

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | 54MW10 | | |
| **Lab Sample ID:** | FC21117-2 | **Date Sampled:** | 12/10/24 |
| **Matrix:** | AQ - Ground Water | **Date Received:** | 12/11/24 |
| **Method:** | SW846 8330B SW846 3535A | **Percent Solids:** | n/a |
| **Project:** | Radford Army Ammunition Plant SMWU 54; VA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BB085957.D | 1 | 12/17/24 17:22 | FS | 12/12/24 08:20 | OP6902 | GBB2633 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 950 ml | 10.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | LOQ | LOD | DL | Units | Q |
|---|---|---|---|---|---|---|---|
| 2691-41-0 | HMX | 0.11 U | 0.21 | 0.11 | 0.084 | ug/l | |
| 121-82-4 | RDX | 0.11 U | 0.21 | 0.11 | 0.084 | ug/l | |
| | DNX [a] | 0.11 U | 0.21 | 0.11 | 0.084 | ug/l | |
| | MNX [b] | 0.11 U | 0.21 | 0.11 | 0.084 | ug/l | |
| | TNX | 0.11 U | 0.21 | 0.11 | 0.084 | ug/l | |
| 618-87-1 | 3,5-Dinitroaniline | 0.11 U | 0.21 | 0.11 | 0.084 | ug/l | |
| 99-65-0 | 1,3-Dinitrobenzene | 0.11 U | 0.21 | 0.11 | 0.084 | ug/l | |
| 606-20-2 | 2,6-Dinitrotoluene | 0.11 U | 0.21 | 0.11 | 0.084 | ug/l | |
| 121-14-2 | 2,4-Dinitrotoluene | 0.11 U | 0.21 | 0.11 | 0.084 | ug/l | |
| 35572-78-2 | 2-amino-4,6-Dinitrotoluene | 0.11 U | 0.21 | 0.11 | 0.084 | ug/l | |
| 19406-51-0 | 4-amino-2,6-Dinitrotoluene | 0.11 U | 0.21 | 0.11 | 0.084 | ug/l | |
| 98-95-3 | Nitrobenzene | 0.11 U | 0.21 | 0.11 | 0.10 | ug/l | |
| 88-72-2 | o-Nitrotoluene | 0.11 U | 0.21 | 0.11 | 0.084 | ug/l | |
| 99-08-1 | m-Nitrotoluene | 0.11 U | 0.21 | 0.11 | 0.084 | ug/l | |
| 99-99-0 | p-Nitrotoluene | 0.11 U | 0.21 | 0.11 | 0.084 | ug/l | |
| 479-45-8 | Tetryl | 0.11 U | 0.21 | 0.11 | 0.084 | ug/l | |
| 99-35-4 | 1,3,5-Trinitrobenzene | 0.11 U | 0.21 | 0.11 | 0.10 | ug/l | |
| 118-96-7 | 2,4,6-Trinitrotoluene | 0.11 U | 0.21 | 0.11 | 0.084 | ug/l | |
| 55-63-0 | Nitroglycerine | 1.1 U | 2.1 | 1.1 | 0.53 | ug/l | |
| 78-11-5 | PETN | 1.1 U | 2.1 | 1.1 | 0.53 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 610-39-9 | 3,4-Dinitrotoluene | 79% | | 70-136% |

(a) Associated BS and CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits high, sample was ND.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | 54TW10 | | |
| **Lab Sample ID:** | FC21117-3 | **Date Sampled:** | 12/10/24 |
| **Matrix:** | AQ - Ground Water | **Date Received:** | 12/11/24 |
| **Method:** | SW846 6850 IN HOUSE | **Percent Solids:** | n/a |
| **Project:** | Radford Army Ammunition Plant SMWU 54; VA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | Q116925.D | 1 | 12/30/24 18:25 | NG | 12/16/24 18:00 | OP6969 | SQ2411 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 10.0 ml | 10.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | LOQ | LOD | DL | Units | Q |
|---|---|---|---|---|---|---|---|
| 14797-73-0 | Perchlorate | 0.10 U | 0.20 | 0.10 | 0.050 | ug/l | |

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | 54TW10 | | |
| **Lab Sample ID:** | FC21117-3 | **Date Sampled:** | 12/10/24 |
| **Matrix:** | AQ - Ground Water | **Date Received:** | 12/11/24 |
| **Method:** | SW846 8330B SW846 3535A | **Percent Solids:** | n/a |
| **Project:** | Radford Army Ammunition Plant SMWU 54; VA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 [a] | BB085958.D | 1 | 12/17/24 17:48 | FS | 12/12/24 08:20 | OP6902 | GBB2633 |
| Run #2 [b] | GG630903.D | 1 | 12/18/24 17:55 | FS | 12/12/24 08:20 | OP6902 | GGG3516 |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 940 ml | 10.0 ml |
| Run #2 | 940 ml | 10.0 ml |

| CAS No. | Compound | Result | LOQ | LOD | DL | Units | Q |
|---|---|---|---|---|---|---|---|
| 2691-41-0 | HMX [c] | 0.26 | 0.21 | 0.11 | 0.085 | ug/l | |
| 121-82-4 | RDX | 0.11 U | 0.21 | 0.11 | 0.085 | ug/l | |
| | DNX [d] | 0.11 U | 0.21 | 0.11 | 0.085 | ug/l | |
| | MNX [e] | 0.11 U | 0.21 | 0.11 | 0.085 | ug/l | |
| | TNX | 0.11 U | 0.21 | 0.11 | 0.085 | ug/l | |
| 618-87-1 | 3,5-Dinitroaniline | 0.11 U | 0.21 | 0.11 | 0.085 | ug/l | |
| 99-65-0 | 1,3-Dinitrobenzene | 0.11 U | 0.21 | 0.11 | 0.085 | ug/l | |
| 606-20-2 | 2,6-Dinitrotoluene | 0.11 U | 0.21 | 0.11 | 0.085 | ug/l | |
| 121-14-2 | 2,4-Dinitrotoluene | 0.11 U | 0.21 | 0.11 | 0.085 | ug/l | |
| 35572-78-2 | 2-amino-4,6-Dinitrotoluene | 0.11 U | 0.21 | 0.11 | 0.085 | ug/l | |
| 19406-51-0 | 4-amino-2,6-Dinitrotoluene | 0.11 U | 0.21 | 0.11 | 0.085 | ug/l | |
| 98-95-3 | Nitrobenzene | 0.11 U | 0.21 | 0.11 | 0.10 | ug/l | |
| 88-72-2 | o-Nitrotoluene | 0.11 U | 0.21 | 0.11 | 0.085 | ug/l | |
| 99-08-1 | m-Nitrotoluene | 0.11 U | 0.21 | 0.11 | 0.085 | ug/l | |
| 99-99-0 | p-Nitrotoluene | 0.11 U | 0.21 | 0.11 | 0.085 | ug/l | |
| 479-45-8 | Tetryl | 0.11 U | 0.21 | 0.11 | 0.085 | ug/l | |
| 99-35-4 | 1,3,5-Trinitrobenzene | 0.11 U | 0.21 | 0.11 | 0.11 | ug/l | |
| 118-96-7 | 2,4,6-Trinitrotoluene | 0.11 U | 0.21 | 0.11 | 0.085 | ug/l | |
| 55-63-0 | Nitroglycerine | 1.1 U | 2.1 | 1.1 | 0.53 | ug/l | |
| 78-11-5 | PETN | 1.1 U | 2.1 | 1.1 | 0.53 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 610-39-9 | 3,4-Dinitrotoluene | 81% | 100% | 70-136% |

(a) All hits confirmed by reanalysis on a dissimilar column.
(b) Confirmation run.
(c) Primary and confirmation results differ by more than 40%.
(d) Associated BS and CCV outside of control limits high, sample was ND.
(e) Associated CCV outside of control limits high, sample was ND.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | 54MW12 | | |
| **Lab Sample ID:** | FC21117-4 | **Date Sampled:** | 12/10/24 |
| **Matrix:** | AQ - Ground Water | **Date Received:** | 12/11/24 |
| **Method:** | SW846 6850 IN HOUSE | **Percent Solids:** | n/a |
| **Project:** | Radford Army Ammunition Plant SMWU 54; VA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | Q116926.D | 1 | 12/30/24 18:38 | NG | 12/16/24 18:00 | OP6969 | SQ2411 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 10.0 ml | 10.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | LOQ | LOD | DL | Units | Q |
|---|---|---|---|---|---|---|---|
| 14797-73-0 | Perchlorate | 0.77 | 0.20 | 0.10 | 0.050 | ug/l | |

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | 54MW12 | | |
| **Lab Sample ID:** | FC21117-4 | **Date Sampled:** | 12/10/24 |
| **Matrix:** | AQ - Ground Water | **Date Received:** | 12/11/24 |
| **Method:** | SW846 8330B SW846 3535A | **Percent Solids:** | n/a |
| **Project:** | Radford Army Ammunition Plant SMWU 54; VA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 [a] | BB085959.D | 1 | 12/17/24 18:15 | FS | 12/12/24 08:20 | OP6902 | GBB2633 |
| Run #2 [b] | GG630904.D | 1 | 12/18/24 18:25 | FS | 12/12/24 08:20 | OP6902 | GGG3516 |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 950 ml | 10.0 ml |
| Run #2 | 950 ml | 10.0 ml |

| CAS No. | Compound | Result | LOQ | LOD | DL | Units | Q |
|---|---|---|---|---|---|---|---|
| 2691-41-0 | HMX | 12.8 | 0.21 | 0.11 | 0.084 | ug/l | |
| 121-82-4 | RDX | 0.34 | 0.21 | 0.11 | 0.084 | ug/l | |
| | DNX [c] | 0.11 U | 0.21 | 0.11 | 0.084 | ug/l | |
| | MNX [d] | 0.11 U | 0.21 | 0.11 | 0.084 | ug/l | |
| | TNX | 0.11 U | 0.21 | 0.11 | 0.084 | ug/l | |
| 618-87-1 | 3,5-Dinitroaniline [e] | 9.2 | 0.21 | 0.11 | 0.084 | ug/l | |
| 99-65-0 | 1,3-Dinitrobenzene | 0.11 U | 0.21 | 0.11 | 0.084 | ug/l | |
| 606-20-2 | 2,6-Dinitrotoluene | 0.11 U | 0.21 | 0.11 | 0.084 | ug/l | |
| 121-14-2 | 2,4-Dinitrotoluene | 0.11 U | 0.21 | 0.11 | 0.084 | ug/l | |
| 35572-78-2 | 2-amino-4,6-Dinitrotoluene | 3.8 | 0.21 | 0.11 | 0.084 | ug/l | |
| 19406-51-0 | 4-amino-2,6-Dinitrotoluene | 3.3 | 0.21 | 0.11 | 0.084 | ug/l | |
| 98-95-3 | Nitrobenzene | 0.11 U | 0.21 | 0.11 | 0.10 | ug/l | |
| 88-72-2 | o-Nitrotoluene | 0.11 U | 0.21 | 0.11 | 0.084 | ug/l | |
| 99-08-1 | m-Nitrotoluene | 0.11 U | 0.21 | 0.11 | 0.084 | ug/l | |
| 99-99-0 | p-Nitrotoluene | 0.11 U | 0.21 | 0.11 | 0.084 | ug/l | |
| 479-45-8 | Tetryl | 0.11 U | 0.21 | 0.11 | 0.084 | ug/l | |
| 99-35-4 | 1,3,5-Trinitrobenzene | 4.6 | 0.21 | 0.11 | 0.10 | ug/l | |
| 118-96-7 | 2,4,6-Trinitrotoluene | 2.7 | 0.21 | 0.11 | 0.084 | ug/l | |
| 55-63-0 | Nitroglycerine | 1.1 U | 2.1 | 1.1 | 0.53 | ug/l | |
| 78-11-5 | PETN | 1.1 U | 2.1 | 1.1 | 0.53 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 610-39-9 | 3,4-Dinitrotoluene | 82% | 105% | 70-136% |

(a) All hits confirmed by reanalysis on a dissimilar column.
(b) Confirmation run.
(c) Associated BS and CCV outside of control limits high, sample was ND.
(d) Associated CCV outside of control limits high, sample was ND.
(e) Primary and confirmation results differ by more than 40%.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | 54MW1 | | |
| **Lab Sample ID:** | FC21117-5 | **Date Sampled:** | 12/10/24 |
| **Matrix:** | AQ - Ground Water | **Date Received:** | 12/11/24 |
| **Method:** | SW846 6850 IN HOUSE | **Percent Solids:** | n/a |
| **Project:** | Radford Army Ammunition Plant SMWU 54; VA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | Q116929.D | 1 | 12/30/24 18:59 | NG | 12/16/24 18:00 | OP6969 | SQ2411 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 10.0 ml | 10.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | LOQ | LOD | DL | Units | Q |
|---|---|---|---|---|---|---|---|
| 14797-73-0 | Perchlorate | 0.10 U | 0.20 | 0.10 | 0.050 | ug/l | |

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | 54MW1 | | |
| **Lab Sample ID:** | FC21117-5 | **Date Sampled:** | 12/10/24 |
| **Matrix:** | AQ - Ground Water | **Date Received:** | 12/11/24 |
| **Method:** | SW846 8330B SW846 3535A | **Percent Solids:** | n/a |
| **Project:** | Radford Army Ammunition Plant SMWU 54; VA | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BB085962.D | 1 | 12/17/24 19:34 | FS | 12/12/24 08:20 | OP6902 | GBB2633 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 930 ml | 10.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | LOQ | LOD | DL | Units | Q |
|---|---|---|---|---|---|---|---|
| 2691-41-0 | HMX | 0.11 U | 0.22 | 0.11 | 0.086 | ug/l | |
| 121-82-4 | RDX | 0.11 U | 0.22 | 0.11 | 0.086 | ug/l | |
| | DNX [a] | 0.11 U | 0.22 | 0.11 | 0.086 | ug/l | |
| | MNX [b] | 0.11 U | 0.22 | 0.11 | 0.086 | ug/l | |
| | TNX | 0.11 U | 0.22 | 0.11 | 0.086 | ug/l | |
| 618-87-1 | 3,5-Dinitroaniline | 0.11 U | 0.22 | 0.11 | 0.086 | ug/l | |
| 99-65-0 | 1,3-Dinitrobenzene | 0.11 U | 0.22 | 0.11 | 0.086 | ug/l | |
| 606-20-2 | 2,6-Dinitrotoluene | 0.11 U | 0.22 | 0.11 | 0.086 | ug/l | |
| 121-14-2 | 2,4-Dinitrotoluene | 0.11 U | 0.22 | 0.11 | 0.086 | ug/l | |
| 35572-78-2 | 2-amino-4,6-Dinitrotoluene | 0.11 U | 0.22 | 0.11 | 0.086 | ug/l | |
| 19406-51-0 | 4-amino-2,6-Dinitrotoluene | 0.11 U | 0.22 | 0.11 | 0.086 | ug/l | |
| 98-95-3 | Nitrobenzene | 0.11 U | 0.22 | 0.11 | 0.10 | ug/l | |
| 88-72-2 | o-Nitrotoluene | 0.11 U | 0.22 | 0.11 | 0.086 | ug/l | |
| 99-08-1 | m-Nitrotoluene | 0.11 U | 0.22 | 0.11 | 0.086 | ug/l | |
| 99-99-0 | p-Nitrotoluene | 0.11 U | 0.22 | 0.11 | 0.086 | ug/l | |
| 479-45-8 | Tetryl | 0.11 U | 0.22 | 0.11 | 0.086 | ug/l | |
| 99-35-4 | 1,3,5-Trinitrobenzene | 0.11 U | 0.22 | 0.11 | 0.11 | ug/l | |
| 118-96-7 | 2,4,6-Trinitrotoluene | 0.11 U | 0.22 | 0.11 | 0.086 | ug/l | |
| 55-63-0 | Nitroglycerine | 1.1 U | 2.2 | 1.1 | 0.54 | ug/l | |
| 78-11-5 | PETN | 1.1 U | 2.2 | 1.1 | 0.54 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 610-39-9 | 3,4-Dinitrotoluene | 84% | | 70-136% |

(a) Associated BS and CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits high, sample was ND.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits

# SGS North America Inc - Orlando
## Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com

SGS - ORLANDO JOB # : PAGE 1 OF 1

SGS - ORLANDO Quote # SKIFF # FC21117

**Client / Reporting Information**

Company Name: CAPE Environmental
Address: 500 Pinnacle Court #100
City: Norcross State: GA Zip: 30071
Project Contact: Matt Fetts Email: mfetts@cape-inc.com + chemistry SVCS @ cape-inc.com
Phone #: (724) 622-3625
Sampler(s) Name(s) (Printed) Sampler 1: Yoko Miyakawa Sampler 2: Paul Taylor

**Project Information**

Project Name: Radford AAP SWMU 54
Street
City Radford State VA
Project #
Fax #
Client Purchase Order #

**Analytical Information**

| SGS Orlando Sample # | Field ID / Point of Collection | COLLECTION DATE 2024 | TIME | SAMPLED BY: | MATRIX | TOTAL # OF BOTTLES | CONTAINER INFORMATION: OTHER | NONE | HCl | NaOH | HNO3 | H2SO4 | NAOH+ZNAA | DI WATER | MEOH | LC6858 Perchlorate | LC8330B XLC3NX | Matrix Codes / LAB USE ONLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 54MW13 | 12/10 | 0910 | YM/PT | GW | 3 | | X | | | | | | | | 1 | 2 | |
| 2 | 54MW10 | 12/10 | 1045 | YM/PT | GW | 3 | | X | | | | | | | | 1 | 2 | |
| 3 | ~~54MW~~ 54TW10 | 12/10 | 1045 | YM/PT | GW | 3 | | X | | | | | | | | 1 | 2 | |
| 4 | 54MW12 | 12/10 | 1215 | YM/PT | GW | 9 | | X | | | | | | | | 3 | 6 | MS/MSD |
| 5 | 54MW1 | 12/10 | 1350 | YM/PT | GW | 3 | | X | | | | | | | | 1 | 2 | |

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid

**Turnaround Time ( Business days)**

10 Day (Business)
7 Day
5 Day
3 Day *RUSH*
2 Day *RUSH*
1 Day *RUSH*
Other
Approved By: / Date:
Rush T/A Data Available VIA Email or Lablink

**Data Deliverable Information**

- COMMERCIAL "A" (RESULTS ONLY)
- COMMERCIAL "B" (RESULTS PLUS QC)
- REDT1 (EPA LEVEL 3)
- FULLT1 (EPA LEVEL 4)
- EDD'S

**Comments / Remarks**

INITIAL ASSESSMENT ZB
FINAL VERIFICATION ZB

Sample Custody must be documented below each time samples change possession, including courier delivery.

| | Relinquished by Sampler/Affiliation | Date Time: | Received By/Affiliation | Relinquished By/Affiliation | Date Time: | Received By/Affiliation |
|---|---|---|---|---|---|---|
| 1 | | 12/10/24 1700 | 2 Fedex | 3 | | 4 12/11/24 1000 |
| 5 | Relinquished by/Affiliation | Date Time: | 6 Received By/Affiliation | 7 Relinquished By/Affiliation | Date Time: | 8 Received By/Affiliation |

Lab Use Only : Cooler Temperature (s) Celsius (corrected): 2.4, 2.6 JK #1

http://www.sgs.com/en/terms-and-conditions

ORLD-SMT-0001-03-FORM-COC (4).xls Rev 031318

**FC21117: Chain of Custody**
**Page 1 of 2**

# SGS - Orlando Sample Receipt Summary

**Job Number:** fc21117 **Client:** CAPE ENVIRONMENTAL **Project:** RADFORD AAP SWMU 54

**Date / Time Received:** 12/11/2024 10:00:00 AM **Delivery Method:** FEDEX **Airbill #'s:** 400490051056

**Cooler Temps (Raw Measured) °C:** Cooler 1: (2.4); Cooler 2: (2.6);

**Cooler Temps (Corrected) °C:** Cooler 1: (2.2); Cooler 2: (2.4);

| Cooler Information | Y | or | N |
|---|---|---|---|
| 1. Custody Seals Present: | ☑ | | ☐ |
| 2. Custody Seals Intact: | ☑ | | ☐ |
| 3. Temp criteria achieved: | ☑ | | ☐ |
| 4. Cooler temp verification: | IR Gun | | |
| 5. Cooler media: | Ice (Bag) | | |

| Trip Blank Information | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Trip Blank present / cooler: | ☐ | | ☐ | ☑ |
| 2. Trip Blank listed on COC: | ☐ | | ☐ | ☑ |

| | W | or | S | N/A |
|---|---|---|---|---|
| 3. Type of TB Received | ☐ | | ☐ | ☑ |

| Sample Information | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Sample labels present on bottles: | ☑ | | ☐ | |
| 2. Samples presented properly | ☑ | | ☐ | |
| 3. Sufficient volume/containers recv'd for analysis | ☑ | | ☐ | |
| 4. Condition of sample: | Intact | | | |
| 5. Sample recv'd within HT | ☑ | | ☐ | |
| 6. Dates/Times/IDs on COC match sample label | ☑ | | ☐ | |
| 7. VOCs have headspace | ☐ | | ☐ | ☑ |
| 8. Bottles received for unspecified tests | ☐ | | ☑ | |
| 9. Compositing instructions clear | ☐ | | ☐ | ☑ |
| 10. Voa Soil Kits/Jars received past 48hrs? | ☐ | | ☐ | ☑ |
| 11. % Solids Jar Received? | ☐ | | ☐ | ☑ |
| 12. Residual Chlorine Present? | ☐ | | ☐ | ☑ |

**Misc Information**

Number of Encores: 25 Gram 5 Gram

Number of Lab Filtered Metals:

Test Strip Lot #s: pH 0-3: 226422 pH 10-12: Other: (Specify)

Residual Chlorine Test Strip Lot #

Comments

Sample Receipt Summary 112723 EK Technician: ZANEB Date: 12/11/2024 12:24:12 PM Reviewer: Date:

# QC Evaluation: DOD QSM5.x Limits



**Job Number:** FC21117
**Account:** Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA
**Collected:** 12/10/24

| QC Sample ID | CAS# | Analyte | Sample Type | Result Type | Result | Units | Limits |
|---|---|---|---|---|---|---|---|
| OP6969 | SW846 6850 | | | | | | |
| OP6969-BS | 14797-73-0 | Perchlorate | BSP | REC | 100 | % | 84-119 |
| OP6969-MS | 14797-73-0 | Perchlorate | MS | REC | 105 | % | 84-119 |
| OP6969-MS | 14797-73-0 | Perchlorate | MS | REC | 110 | % | 84-119 |
| OP6902 | SW846 8330B | | | | | | |
| OP6902-BS | 2691-41-0 | HMX | BSP | REC | 100 | % | 65-135 |
| OP6902-BS | 121-82-4 | RDX | BSP | REC | 92 | % | 68-130 |
| OP6902-BS | | DNX | BSP | REC | 132 | % | 66-119 |
| OP6902-BS | | MNX | BSP | REC | 133 | % | 57-132 |
| OP6902-BS | 618-87-1 | 3,5-Dinitroaniline | BSP | REC | 88 | % | 71-117 |
| OP6902-BS | 99-65-0 | 1,3-Dinitrobenzene | BSP | REC | 86 | % | 78-120 |
| OP6902-BS | 606-20-2 | 2,6-Dinitrotoluene | BSP | REC | 86 | % | 77-127 |
| OP6902-BS | 121-14-2 | 2,4-Dinitrotoluene | BSP | REC | 92 | % | 78-120 |
| OP6902-BS | 35572-78-2 | 2-amino-4,6-Dinitrotoluene | BSP | REC | 92 | % | 79-120 |
| OP6902-BS | 19406-51-0 | 4-amino-2,6-Dinitrotoluene | BSP | REC | 90 | % | 76-125 |
| OP6902-BS | 98-95-3 | Nitrobenzene | BSP | REC | 82 | % | 65-134 |
| OP6902-BS | 88-72-2 | o-Nitrotoluene | BSP | REC | 78 | % | 70-127 |
| OP6902-BS | 99-08-1 | m-Nitrotoluene | BSP | REC | 82 | % | 73-125 |
| OP6902-BS | 99-99-0 | p-Nitrotoluene | BSP | REC | 82 | % | 71-127 |
| OP6902-BS | 479-45-8 | Tetryl | BSP | REC | 78 | % | 64-128 |
| OP6902-BS | 99-35-4 | 1,3,5-Trinitrobenzene | BSP | REC | 84 | % | 73-125 |
| OP6902-BS | 118-96-7 | 2,4,6-Trinitrotoluene | BSP | REC | 86 | % | 71-123 |
| OP6902-BS | 55-63-0 | Nitroglycerine | BSP | REC | 94 | % | 74-127 |
| OP6902-BS | 78-11-5 | PETN | BSP | REC | 104 | % | 73-127 |
| OP6902-MS | 2691-41-0 | HMX | MS | REC | 93 | % | 65-135 |
| OP6902-MS | 121-82-4 | RDX | MS | REC | 86 | % | 68-130 |
| OP6902-MS | | DNX | MS | REC | 140 | % | 66-119 |
| OP6902-MS | | MNX | MS | REC | 118 | % | 57-132 |
| OP6902-MS | 618-87-1 | 3,5-Dinitroaniline | MS | REC | 12 | % | 71-117 |
| OP6902-MS | 99-65-0 | 1,3-Dinitrobenzene | MS | REC | 85 | % | 78-120 |
| OP6902-MS | 606-20-2 | 2,6-Dinitrotoluene | MS | REC | 86 | % | 77-127 |
| OP6902-MS | 121-14-2 | 2,4-Dinitrotoluene | MS | REC | 89 | % | 78-120 |
| OP6902-MS | 35572-78-2 | 2-amino-4,6-Dinitrotoluene | MS | REC | 86 | % | 79-120 |
| OP6902-MS | 19406-51-0 | 4-amino-2,6-Dinitrotoluene | MS | REC | 85 | % | 76-125 |
| OP6902-MS | 98-95-3 | Nitrobenzene | MS | REC | 102 | % | 65-134 |
| OP6902-MS | 88-72-2 | o-Nitrotoluene | MS | REC | 86 | % | 70-127 |
| OP6902-MS | 99-08-1 | m-Nitrotoluene | MS | REC | 88 | % | 73-125 |
| OP6902-MS | 99-99-0 | p-Nitrotoluene | MS | REC | 86 | % | 71-127 |
| OP6902-MS | 479-45-8 | Tetryl | MS | REC | 70 | % | 64-128 |
| OP6902-MS | 99-35-4 | 1,3,5-Trinitrobenzene | MS | REC | 75 | % | 73-125 |
| OP6902-MS | 118-96-7 | 2,4,6-Trinitrotoluene | MS | REC | 83 | % | 71-123 |

* Sample used for QC is not from job FC21117

# QC Evaluation: DOD QSM5.x Limits



**Job Number:** FC21117
**Account:** Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA
**Collected:** 12/10/24



| QC Sample ID | CAS# | Analyte | Sample Type | Result Type | Result | Units | Limits |
|---|---|---|---|---|---|---|---|
| OP6902-MS | 55-63-0 | Nitroglycerine | MS | REC | 96 | % | 74-127 |
| OP6902-MS | 78-11-5 | PETN | MS | REC | 104 | % | 73-127 |
| OP6902-MSD | 2691-41-0 | HMX | MSD | REC | 144 | % | 65-135 |
| OP6902-MSD | 2691-41-0 | HMX | MSD | RPD | 22 | % | 20 |
| OP6902-MSD | 121-82-4 | RDX | MSD | REC | 112 | % | 68-130 |
| OP6902-MSD | 121-82-4 | RDX | MSD | RPD | 25 | % | 20 |
| OP6902-MSD | | DNX | MSD | REC | 148 | % | 66-119 |
| OP6902-MSD | | DNX | MSD | RPD | 6 | % | 20 |
| OP6902-MSD | | MNX | MSD | REC | 172 | % | 57-132 |
| OP6902-MSD | | MNX | MSD | RPD | 37 | % | 20 |
| OP6902-MSD | 618-87-1 | 3,5-Dinitroaniline | MSD | REC | 114 | % | 71-117 |
| OP6902-MSD | 618-87-1 | 3,5-Dinitroaniline | MSD | RPD | 69 | % | 20 |
| OP6902-MSD | 99-65-0 | 1,3-Dinitrobenzene | MSD | REC | 103 | % | 78-120 |
| OP6902-MSD | 99-65-0 | 1,3-Dinitrobenzene | MSD | RPD | 20 | % | 20 |
| OP6902-MSD | 606-20-2 | 2,6-Dinitrotoluene | MSD | REC | 87 | % | 77-127 |
| OP6902-MSD | 606-20-2 | 2,6-Dinitrotoluene | MSD | RPD | 2 | % | 20 |
| OP6902-MSD | 121-14-2 | 2,4-Dinitrotoluene | MSD | REC | 93 | % | 78-120 |
| OP6902-MSD | 121-14-2 | 2,4-Dinitrotoluene | MSD | RPD | 4 | % | 20 |
| OP6902-MSD | 35572-78-2 | 2-amino-4,6-Dinitrotoluene | MSD | REC | 94 | % | 79-120 |
| OP6902-MSD | 35572-78-2 | 2-amino-4,6-Dinitrotoluene | MSD | RPD | 7 | % | 20 |
| OP6902-MSD | 19406-51-0 | 4-amino-2,6-Dinitrotoluene | MSD | REC | 91 | % | 76-125 |
| OP6902-MSD | 19406-51-0 | 4-amino-2,6-Dinitrotoluene | MSD | RPD | 5 | % | 20 |
| OP6902-MSD | 98-95-3 | Nitrobenzene | MSD | REC | 150 | % | 65-134 |
| OP6902-MSD | 98-95-3 | Nitrobenzene | MSD | RPD | 38 | % | 20 |
| OP6902-MSD | 88-72-2 | o-Nitrotoluene | MSD | REC | 89 | % | 70-127 |
| OP6902-MSD | 88-72-2 | o-Nitrotoluene | MSD | RPD | 3 | % | 20 |
| OP6902-MSD | 99-08-1 | m-Nitrotoluene | MSD | REC | 93 | % | 73-125 |
| OP6902-MSD | 99-08-1 | m-Nitrotoluene | MSD | RPD | 5 | % | 20 |
| OP6902-MSD | 99-99-0 | p-Nitrotoluene | MSD | REC | 90 | % | 71-127 |
| OP6902-MSD | 99-99-0 | p-Nitrotoluene | MSD | RPD | 4 | % | 20 |
| OP6902-MSD | 479-45-8 | Tetryl | MSD | REC | 75 | % | 64-128 |
| OP6902-MSD | 479-45-8 | Tetryl | MSD | RPD | 7 | % | 20 |
| OP6902-MSD | 99-35-4 | 1,3,5-Trinitrobenzene | MSD | REC | 86 | % | 73-125 |
| OP6902-MSD | 99-35-4 | 1,3,5-Trinitrobenzene | MSD | RPD | 8 | % | 20 |
| OP6902-MSD | 118-96-7 | 2,4,6-Trinitrotoluene | MSD | REC | 86 | % | 71-123 |
| OP6902-MSD | 118-96-7 | 2,4,6-Trinitrotoluene | MSD | RPD | 3 | % | 20 |
| OP6902-MSD | 55-63-0 | Nitroglycerine | MSD | REC | 93 | % | 74-127 |
| OP6902-MSD | 55-63-0 | Nitroglycerine | MSD | RPD | 3 | % | 20 |
| OP6902-MSD | 78-11-5 | PETN | MSD | REC | 109 | % | 73-127 |
| OP6902-MSD | 78-11-5 | PETN | MSD | RPD | 5 | % | 20 |

* Sample used for QC is not from job FC21117

## MS Semi-volatiles

6

### QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Initial and Continuing Calibration Summaries
- Run Sequence Reports

# Instrument Blank



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| SQ2411-IBLK | Q116945.D | 1 | 12/30/24 | NG | n/a | n/a | SQ2411 |

**The QC reported here applies to the following samples:** **Method:** SW846 6850

FC21117-1, FC21117-2, FC21117-3, FC21117-4, FC21117-5

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 14797-73-0 | Perchlorate | ND | 0.20 | 0.050 | ug/l | |

# Method Blank Summary



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP6969-MB | Q116922.D | 1 | 12/30/24 | NG | 12/16/24 | OP6969 | SQ2411 |

**The QC reported here applies to the following samples:** **Method:** SW846 6850

FC21117-1, FC21117-2, FC21117-3, FC21117-4, FC21117-5

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 14797-73-0 | Perchlorate | ND | 0.20 | 0.050 | ug/l | |

# Instrument Blank



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| SQ2412-IBLK | Q117061.D | 1 | 12/31/24 | NG | n/a | n/a | SQ2412 |

**The QC reported here applies to the following samples:** **Method:** SW846 6850

OP6969-MS

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 14797-73-0 | Perchlorate | ND | 0.20 | 0.050 | ug/l | |

# Blank Spike Summary



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP6969-BS | Q116921.D | 1 | 12/30/24 | NG | 12/16/24 | OP6969 | SQ2411 |

**The QC reported here applies to the following samples:** **Method:** SW846 6850

FC21117-1, FC21117-2, FC21117-3, FC21117-4, FC21117-5

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 14797-73-0 | Perchlorate | 0.2 | 0.20 | 100 | 80-120 |

* = Outside of Control Limits.

# Matrix Spike Summary



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP6969-MS | Q116927.D | 1 | 12/30/24 | NG | 12/16/24 | OP6969 | SQ2411 |
| FC21117-4 | Q116926.D | 1 | 12/30/24 | NG | 12/16/24 | OP6969 | SQ2411 |
| FC21117-4 [a] | Q117052.D | 1 | 12/31/24 | NG | 12/16/24 | OP6969 | SQ2412 |

**The QC reported here applies to the following samples:** **Method:** SW846 6850

FC21117-1, FC21117-2, FC21117-3, FC21117-4, FC21117-5

| CAS No. | Compound | FC21117-4 ug/l | Q | Spike ug/l | MS ug/l | MS % | Limits |
|---|---|---|---|---|---|---|---|
| 14797-73-0 | Perchlorate | 0.77 | | 0.2 | 0.99 | 110 | 80-120 |

(a) Confirmation run.

* = Outside of Control Limits.

# Matrix Spike Summary



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP6969-MS | Q117053.D | 1 | 12/31/24 | NG | 12/16/24 | OP6969 | SQ2412 |
| FC21117-4 | Q116926.D | 1 | 12/30/24 | NG | 12/16/24 | OP6969 | SQ2411 |
| FC21117-4 [a] | Q117052.D | 1 | 12/31/24 | NG | 12/16/24 | OP6969 | SQ2412 |

**The QC reported here applies to the following samples:** **Method:** SW846 6850

FC21117-1, FC21117-2, FC21117-3, FC21117-4, FC21117-5

| CAS No. | Compound | FC21117-4 ug/l | Q | Spike ug/l | MS ug/l | MS % | Limits |
|---|---|---|---|---|---|---|---|
| 14797-73-0 | Perchlorate | 0.77 | | 0.2 | 0.98 | 105 | 80-120 |

(a) Confirmation run.

* = Outside of Control Limits.

# Internal Standard Area Summary



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

| | | | |
|---|---|---|---|
| **Check Std:** | SQ2411-CC2411 | **Injection Date:** | 12/30/24 |
| **Lab File ID:** | Q116919.D | **Injection Time:** | 17:43 |
| **Instrument ID:** | GCMSQ | **Method:** | SW846 6850 |

| | IS 1 AREA | RT |
|---|---|---|
| Initial Cal [a] | 40750 | 4.82 |
| Check Std [b] | 41404 | 4.81 |
| Upper Limit [c] | 61125 | 6.81 |
| Lower Limit [d] | 20375 | 2.81 |

| Lab Sample ID | IS 1 AREA | RT |
|---|---|---|
| OP6969-BS | 44008 | 4.80 |
| OP6969-MB | 43487 | 4.80 |
| FC21117-1 | 43438 | 4.64 |
| FC21117-2 | 45708 | 4.59 |
| FC21117-3 | 47448 | 4.59 |
| FC21117-4 | 45260 | 4.65 |
| OP6969-MS | 46118 | 4.64 |
| FC21117-5 | 47041 | 4.64 |

**IS 1** = Cl18O4 (ISTD)

(a) Initial Cal is: SQ2411-ICC2411 Q116912.D 12/30/24 16:55. Area is AVERAGE of initial cal points.
(b) Check Std Limit = -50 to + 50% of initial cal area.
(c) Upper Limit = + 50% of initial standard area; Retention time + 2 minutes of check standard.
(d) Lower Limit = -50% of initial standard area; Retention time -2 minutes of check standard.

# Internal Standard Area Summary



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

| | | | |
|---|---|---|---|
| **Check Std:** | SQ2412-CC2411 | **Injection Date:** | 12/31/24 |
| **Lab File ID:** | Q117048.D | **Injection Time:** | 18:09 |
| **Instrument ID:** | GCMSQ | **Method:** | SW846 6850 |

| | IS 1 AREA | RT |
|---|---|---|
| Initial Cal [a] | 40750 | 4.82 |
| Check Std [b] | 43000 | 4.66 |
| Upper Limit [c] | 61125 | 6.66 |
| Lower Limit [d] | 20375 | 2.66 |

| Lab Sample ID | IS 1 AREA | RT |
|---|---|---|
| ZZZZZZ | 40558 | 4.50 |
| FC21117-4 [e] | 42168 | 4.51 |
| OP6969-MS | 41552 | 4.51 |
| ZZZZZZ | 42754 | 4.66 |
| FC21135-16 | 38283 | 4.64 |
| OP7077-MS [f] | 33103 | 4.56 |
| OP7077-MSD [f] | 33862 | 4.55 |

**IS 1** = Cl18O4 (ISTD)

(a) Initial Cal is: SQ2411-ICC2411 Q116912.D 12/30/24 16:55. Area is AVERAGE of initial cal points.
(b) Check Std Limit = -50 to + 50% of initial cal area.
(c) Upper Limit = + 50% of initial standard area; Retention time + 2 minutes of check standard.
(d) Lower Limit = -50% of initial standard area; Retention time -2 minutes of check standard.
(e) Confirmation run.
(f) rr2500x

# Initial Calibration Summary

**Job Number:** FC21117 **Sample:** SQ2411-ICC2411
**Account:** CAPEFLJ Cape Environmental **Lab FileID:** Q116912.D
**Project:** Radford Army Ammunition Plant SMWU 54; VA



## Initial Calibration Report

| | |
|---|---|
| Method Path | D:\MassHunter\Methods |
| Method File | 6850_123024_SQ2411.quantmethod.xml |
| Batch Name | D:\MassHunter\Data\123024_6850_SQ2411\QuantResults\SQ2411.batch.bin |
| Last Calib Update | 12/30/2024 8:11:03 PM |

| Level Name | Calibration Files | Acq. Date-Time | Level Last Update Time |
|---|---|---|---|
| 1 | D:\MassHunter\Data\123024_6850_SQ2411\Q116909.d | 12/30/2024 4:34:58 PM | 12/30/2024 8:11:03 PM |
| 2 | D:\MassHunter\Data\123024_6850_SQ2411\Q116910.d | 12/30/2024 4:41:51 PM | 12/30/2024 8:11:03 PM |
| 3 | D:\MassHunter\Data\123024_6850_SQ2411\Q116911.d | 12/30/2024 4:48:44 PM | 12/30/2024 8:11:03 PM |
| 4 | D:\MassHunter\Data\123024_6850_SQ2411\Q116912.d | 12/30/2024 4:55:37 PM | 12/30/2024 8:11:03 PM |
| 5 | D:\MassHunter\Data\123024_6850_SQ2411\Q116913.d | 12/30/2024 5:02:29 PM | 12/30/2024 8:11:03 PM |
| 6 | D:\MassHunter\Data\123024_6850_SQ2411\Q116914.d | 12/30/2024 5:09:22 PM | 12/30/2024 8:11:03 PM |
| 7 | D:\MassHunter\Data\123024_6850_SQ2411\Q116915.d | 12/30/2024 5:16:15 PM | 12/30/2024 8:11:03 PM |
| 8 | D:\MassHunter\Data\123024_6850_SQ2411\Q116916.d | 12/30/2024 5:23:07 PM | 12/30/2024 8:11:03 PM |

| Compound | Curve Fit | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Avg RF | %RSD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| I Cl18O4 | | ---------- ISTD ---------- | | | | | | | | | |
| T Perchlorate | Quadratic | 1.1974 | 1.0834 | 1.0908 | 1.2562 | 1.2268 | 1.2770 | 1.2965 | 1.3908 | 1.2274 | 8.436 |

**(RedFont and #) = Outlier Flag; (I) = Internal Standard; (T) = Target; (S) = Surrogate; (M) = Matrix Spike**



Generated at 8:12 PM on 12/30/2024

# Initial Calibration Summary

**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** SQ2411-ICC2411
**Lab FileID:** Q116912.D

## Initial Calibration Report

**Compounds with Curve fitting not using Avg Response Factor:**

| Compound | Curve Fit | Curve Fit Formula | Curve Fit R2 |
|---|---|---|---|
| T Perchlorate | Quadratic | y = 0.017477 * x ^ 2 + 1.215409 * x | 0.999970 |

**(RedFont and #) = Outlier Flag; (I) = Internal Standard; (T) = Target; (S) = Surrogate; (M) = Matrix Spike**

# Initial Calibration Verification



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** SQ2411-ICV2411
**Lab FileID:** Q116917.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\123024_6850_SQ2411\SQ2411.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\123024_6850_SQ2411\Q116909.d
2:D:\MassHunter\Data\123024_6850_SQ2411\Q116910.d
3:D:\MassHunter\Data\123024_6850_SQ2411\Q116911.d
4:D:\MassHunter\Data\123024_6850_SQ2411\Q116912.d
5:D:\MassHunter\Data\123024_6850_SQ2411\Q116913.d
6:D:\MassHunter\Data\123024_6850_SQ2411\Q116914.d
7:D:\MassHunter\Data\123024_6850_SQ2411\Q116915.d
8:D:\MassHunter\Data\123024_6850_SQ2411\Q116916.d

Data File: Q116917
Type : QC
Level : 4

| Cpnd Name | Exp. Conc | Final Conc | Dev % | Area % |
|---|---|---|---|---|
| Cl18O4 | --- | --ISTD-- | | |
| Perchlorate | 2.000 | 2.223 | 11.1 | 111.1 |

CC Criteria: +/- 15%

# Continuing Calibration Summary



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** SQ2411-CC2411
**Lab FileID:** Q116919.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\123024_6850_SQ2411\SQ2411.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\123024_6850_SQ2411\Q116909.d
2:D:\MassHunter\Data\123024_6850_SQ2411\Q116910.d
3:D:\MassHunter\Data\123024_6850_SQ2411\Q116911.d
4:D:\MassHunter\Data\123024_6850_SQ2411\Q116912.d
5:D:\MassHunter\Data\123024_6850_SQ2411\Q116913.d
6:D:\MassHunter\Data\123024_6850_SQ2411\Q116914.d
7:D:\MassHunter\Data\123024_6850_SQ2411\Q116915.d
8:D:\MassHunter\Data\123024_6850_SQ2411\Q116916.d

Data File: Q116919
Type : QC
Level : 4

| Cpnd Name | Exp. Conc | Final Conc | Dev % | Area % |
|---|---|---|---|---|
| Cl18O4 | --- | --ISTD-- | | |
| Perchlorate | 2.000 | 2.119 | 6.0 | 106.0 |

CC Criteria: +/- 15%

# Continuing Calibration Summary



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** SQ2411-CC2411
**Lab FileID:** Q116920.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\123024_6850_SQ2411\SQ2411.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\123024_6850_SQ2411\Q116909.d
2:D:\MassHunter\Data\123024_6850_SQ2411\Q116910.d
3:D:\MassHunter\Data\123024_6850_SQ2411\Q116911.d
4:D:\MassHunter\Data\123024_6850_SQ2411\Q116912.d
5:D:\MassHunter\Data\123024_6850_SQ2411\Q116913.d
6:D:\MassHunter\Data\123024_6850_SQ2411\Q116914.d
7:D:\MassHunter\Data\123024_6850_SQ2411\Q116915.d
8:D:\MassHunter\Data\123024_6850_SQ2411\Q116916.d

Data File: Q116920
Type : QC
Level : 1

| Cpnd Name | Exp. Conc | Final Conc | Dev % | Area % |
|---|---|---|---|---|
| Cl18O4 | --- | --ISTD-- | | |
| Perchlorate | 0.200 | 0.193 | -3.5 | 96.5 |

CC Criteria: +/- 15%

# Continuing Calibration Summary



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** SQ2411-CC2411
**Lab FileID:** Q116930.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\123024_6850_SQ2411\SQ2411.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\123024_6850_SQ2411\Q116909.d
2:D:\MassHunter\Data\123024_6850_SQ2411\Q116910.d
3:D:\MassHunter\Data\123024_6850_SQ2411\Q116911.d
4:D:\MassHunter\Data\123024_6850_SQ2411\Q116912.d
5:D:\MassHunter\Data\123024_6850_SQ2411\Q116913.d
6:D:\MassHunter\Data\123024_6850_SQ2411\Q116914.d
7:D:\MassHunter\Data\123024_6850_SQ2411\Q116915.d
8:D:\MassHunter\Data\123024_6850_SQ2411\Q116916.d

Data File: Q116930
Type : QC
Level : 4

| Cpnd Name | Exp. Conc | Final Conc | Dev % | Area % |
|---|---|---|---|---|
| Cl18O4 | --- | --ISTD-- | | |
| Perchlorate | 2.000 | 2.013 | 0.6 | 100.6 |

CC Criteria: +/- 15%

# Continuing Calibration Summary



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** SQ2411-CC2411
**Lab FileID:** Q116931.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\123024_6850_SQ2411\SQ2411.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\123024_6850_SQ2411\Q116909.d
2:D:\MassHunter\Data\123024_6850_SQ2411\Q116910.d
3:D:\MassHunter\Data\123024_6850_SQ2411\Q116911.d
4:D:\MassHunter\Data\123024_6850_SQ2411\Q116912.d
5:D:\MassHunter\Data\123024_6850_SQ2411\Q116913.d
6:D:\MassHunter\Data\123024_6850_SQ2411\Q116914.d
7:D:\MassHunter\Data\123024_6850_SQ2411\Q116915.d
8:D:\MassHunter\Data\123024_6850_SQ2411\Q116916.d

Data File: Q116931
Type : QC
Level : 1

| Cpnd Name | Exp. Conc | Final Conc | Dev % | Area % |
|---|---|---|---|---|
| Cl18O4 | --- | --ISTD-- | | |
| Perchlorate | 0.200 | 0.177 | -11.3 | 88.7 |

CC Criteria: +/- 15%

# Continuing Calibration Summary



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** SQ2412-CC2411
**Lab FileID:** Q117048.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\123124_6850_SQ2412\sq2412.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\123024_6850_SQ2411\Q116909.d
2:D:\MassHunter\Data\123024_6850_SQ2411\Q116910.d
3:D:\MassHunter\Data\123024_6850_SQ2411\Q116911.d
4:D:\MassHunter\Data\123024_6850_SQ2411\Q116912.d
5:D:\MassHunter\Data\123024_6850_SQ2411\Q116913.d
6:D:\MassHunter\Data\123024_6850_SQ2411\Q116914.d
7:D:\MassHunter\Data\123024_6850_SQ2411\Q116915.d
8:D:\MassHunter\Data\123024_6850_SQ2411\Q116916.d

Data File: Q117048
Type : QC
Level : 4

| Cpnd Name | Exp. Conc | Final Conc | Dev % | Area % |
|---|---|---|---|---|
| Cl18O4 | --- | --ISTD-- | | |
| Perchlorate | 2.000 | 2.139 | 7.0 | 107.0 |

CC Criteria: +/- 15%

# Continuing Calibration Summary



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** SQ2412-CC2411
**Lab FileID:** Q117049.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\123124_6850_SQ2412\sq2412.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\123024_6850_SQ2411\Q116909.d
2:D:\MassHunter\Data\123024_6850_SQ2411\Q116910.d
3:D:\MassHunter\Data\123024_6850_SQ2411\Q116911.d
4:D:\MassHunter\Data\123024_6850_SQ2411\Q116912.d
5:D:\MassHunter\Data\123024_6850_SQ2411\Q116913.d
6:D:\MassHunter\Data\123024_6850_SQ2411\Q116914.d
7:D:\MassHunter\Data\123024_6850_SQ2411\Q116915.d
8:D:\MassHunter\Data\123024_6850_SQ2411\Q116916.d

Data File: Q117049
Type : QC
Level : 1

| Cpnd Name | Exp. Conc | Final Conc | Dev % | Area % |
|---|---|---|---|---|
| Cl18O4 | --- | --ISTD-- | | |
| Perchlorate | 0.200 | 0.212 | 6.1 | 106.1 |

CC Criteria: +/- 30%

# Continuing Calibration Summary



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** SQ2412-CC2411
**Lab FileID:** Q117059.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\123124_6850_SQ2412\sq2412.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\123024_6850_SQ2411\Q116909.d
2:D:\MassHunter\Data\123024_6850_SQ2411\Q116910.d
3:D:\MassHunter\Data\123024_6850_SQ2411\Q116911.d
4:D:\MassHunter\Data\123024_6850_SQ2411\Q116912.d
5:D:\MassHunter\Data\123024_6850_SQ2411\Q116913.d
6:D:\MassHunter\Data\123024_6850_SQ2411\Q116914.d
7:D:\MassHunter\Data\123024_6850_SQ2411\Q116915.d
8:D:\MassHunter\Data\123024_6850_SQ2411\Q116916.d

Data File: Q117059
Type : QC
Level : 4

| Cpnd Name | Exp. Conc | Final Conc | Dev % | Area % |
|---|---|---|---|---|
| Cl18O4 | --- | --ISTD-- | | |
| Perchlorate | 2.000 | 2.085 | 4.2 | 104.2 |

CC Criteria: +/- 15%

# Run Sequence Report



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

| **Run ID:** SQ2411 | **Method:** SW846 6850 | **Instrument ID:** GCMSQ |
|---|---|---|

| Lab Sample ID | Lab File ID | Date/Time Analyzed | Prep QC Batch | Client Sample ID |
|---|---|---|---|---|
| SQ2411-IC2411 | Q116908.D | 12/30/24 16:27 | n/a | Mass Calibration Verification |
| SQ2411-IC2411 | Q116909.D | 12/30/24 16:34 | n/a | Initial cal 0.2 |
| SQ2411-IC2411 | Q116910.D | 12/30/24 16:41 | n/a | Initial cal 0.5 |
| SQ2411-IC2411 | Q116911.D | 12/30/24 16:48 | n/a | Initial cal 1.0 |
| SQ2411-ICC2411 | Q116912.D | 12/30/24 16:55 | n/a | Initial cal 2 |
| SQ2411-IC2411 | Q116913.D | 12/30/24 17:02 | n/a | Initial cal 5 |
| SQ2411-IC2411 | Q116914.D | 12/30/24 17:09 | n/a | Initial cal 10 |
| SQ2411-IC2411 | Q116915.D | 12/30/24 17:16 | n/a | Initial cal 25 |
| SQ2411-IC2411 | Q116916.D | 12/30/24 17:23 | n/a | Initial cal 50 |
| SQ2411-ICV2411 | Q116917.D | 12/30/24 17:30 | n/a | Initial cal verification 2 |
| SQ2411-CC2411 | Q116919.D | 12/30/24 17:43 | n/a | Continuing cal 2 |
| SQ2411-CC2411 | Q116920.D | 12/30/24 17:50 | n/a | Continuing cal 0.2 |
| OP6969-BS | Q116921.D | 12/30/24 17:57 | OP6969 | Blank Spike |
| OP6969-MB | Q116922.D | 12/30/24 18:04 | OP6969 | Method Blank |
| FC21117-1 | Q116923.D | 12/30/24 18:11 | OP6969 | 54MW13 |
| FC21117-2 | Q116924.D | 12/30/24 18:18 | OP6969 | 54MW10 |
| FC21117-3 | Q116925.D | 12/30/24 18:25 | OP6969 | 54TW10 |
| FC21117-4 | Q116926.D | 12/30/24 18:38 | OP6969 | 54MW12 |
| OP6969-MS | Q116927.D | 12/30/24 18:45 | OP6969 | Matrix Spike |
| FC21117-5 | Q116929.D | 12/30/24 18:59 | OP6969 | 54MW1 |
| SQ2411-CC2411 | Q116930.D | 12/30/24 19:06 | n/a | Continuing cal 2 |
| SQ2411-CC2411 | Q116931.D | 12/30/24 19:12 | n/a | Continuing cal 0.2 |
| ZZZZZZ | Q116933.D | 12/30/24 19:26 | OP6969 | (unrelated sample) |
| ZZZZZZ | Q116934.D | 12/30/24 19:33 | OP6969 | (unrelated sample) |
| ZZZZZZ | Q116935.D | 12/30/24 19:40 | OP6969 | (unrelated sample) |
| ZZZZZZ | Q116936.D | 12/30/24 19:47 | OP6969 | (unrelated sample) |
| ZZZZZZ | Q116937.D | 12/30/24 19:54 | OP6969 | (unrelated sample) |
| ZZZZZZ | Q116938.D | 12/30/24 20:01 | OP6969 | (unrelated sample) |
| ZZZZZZ | Q116939.D | 12/30/24 20:08 | OP6969 | (unrelated sample) |
| ZZZZZZ | Q116940.D | 12/30/24 20:15 | OP6969 | (unrelated sample) |
| ZZZZZZ | Q116941.D | 12/30/24 20:21 | OP6969 | (unrelated sample) |
| ZZZZZZ | Q116942.D | 12/30/24 20:28 | OP6969 | (unrelated sample) |
| SQ2411-CC2411 | Q116943.D | 12/30/24 20:35 | n/a | Continuing cal 2 |
| SQ2411-ECC2411 | Q116944.D | 12/30/24 20:42 | n/a | Ending cal 0.2 |
| SQ2411-IBLK | Q116945.D | 12/30/24 20:49 | n/a | Instrument Blank |

# Run Sequence Report



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Run ID:** SQ2412 **Method:** SW846 6850 **Instrument ID:** GCMSQ

| Lab Sample ID | Lab File ID | Date/Time Analyzed | Prep QC Batch | Client Sample ID |
|---|---|---|---|---|
| SQ2412-CC2411 | Q117000.D | 12/31/24 12:06 | n/a | Continuing cal 2 |
| SQ2412-CC2411 | Q117001.D | 12/31/24 12:13 | n/a | Continuing cal 0.2 |
| ZZZZZZ | Q117002.D | 12/31/24 12:20 | OP6969 | (unrelated sample) |
| ZZZZZZ | Q117003.D | 12/31/24 12:27 | OP6969 | (unrelated sample) |
| ZZZZZZ | Q117006.D | 12/31/24 13:03 | OP6969 | (unrelated sample) |
| ZZZZZZ | Q117007.D | 12/31/24 13:17 | OP6969 | (unrelated sample) |
| OP7077-BS | Q117008.D | 12/31/24 13:23 | OP7077 | Blank Spike |
| OP7077-MB | Q117009.D | 12/31/24 13:30 | OP7077 | Method Blank |
| ZZZZZZ | Q117010.D | 12/31/24 13:37 | OP7077 | (unrelated sample) |
| ZZZZZZ | Q117011.D | 12/31/24 13:44 | OP7077 | (unrelated sample) |
| SQ2412-CC2411 | Q117012.D | 12/31/24 13:51 | n/a | Continuing cal 2 |
| SQ2412-CC2411 | Q117013.D | 12/31/24 13:58 | n/a | Continuing cal 0.2 |
| ZZZZZZ | Q117016.D | 12/31/24 14:18 | OP7077 | (unrelated sample) |
| ZZZZZZ | Q117017.D | 12/31/24 14:36 | OP7077 | (unrelated sample) |
| ZZZZZZ | Q117020.D | 12/31/24 14:57 | OP7077 | (unrelated sample) |
| ZZZZZZ | Q117021.D | 12/31/24 15:04 | OP7077 | (unrelated sample) |
| SQ2412-CC2411 | Q117022.D | 12/31/24 15:10 | n/a | Continuing cal 2 |
| SQ2412-CC2411 | Q117023.D | 12/31/24 15:17 | n/a | Continuing cal 0.2 |
| ZZZZZZ | Q117025.D | 12/31/24 15:31 | OP7077 | (unrelated sample) |
| ZZZZZZ | Q117026.D | 12/31/24 15:38 | OP7077 | (unrelated sample) |
| ZZZZZZ | Q117027.D | 12/31/24 15:45 | OP7077 | (unrelated sample) |
| ZZZZZZ | Q117028.D | 12/31/24 15:52 | OP7077 | (unrelated sample) |
| ZZZZZZ | Q117029.D | 12/31/24 15:59 | OP7077 | (unrelated sample) |
| ZZZZZZ | Q117030.D | 12/31/24 16:05 | OP7077 | (unrelated sample) |
| ZZZZZZ | Q117031.D | 12/31/24 16:12 | OP7077 | (unrelated sample) |
| ZZZZZZ | Q117032.D | 12/31/24 16:19 | OP7077 | (unrelated sample) |
| ZZZZZZ | Q117033.D | 12/31/24 16:26 | OP7077 | (unrelated sample) |
| ZZZZZZ | Q117034.D | 12/31/24 16:33 | OP7077 | (unrelated sample) |
| SQ2412-CC2411 | Q117035.D | 12/31/24 16:40 | n/a | Continuing cal 2 |
| SQ2412-CC2411 | Q117036.D | 12/31/24 16:47 | n/a | Continuing cal 0.2 |
| OP7078-BS | Q117038.D | 12/31/24 17:00 | OP7078 | Blank Spike |
| OP7078-MB | Q117039.D | 12/31/24 17:07 | OP7078 | Method Blank |
| ZZZZZZ | Q117040.D | 12/31/24 17:14 | OP7078 | (unrelated sample) |
| FC21225-11 | Q117041.D | 12/31/24 17:21 | OP7078 | (used for QC only; not part of job FC21117) |
| OP7078-MS | Q117042.D | 12/31/24 17:28 | OP7078 | Matrix Spike |
| OP7078-MSD | Q117043.D | 12/31/24 17:35 | OP7078 | Matrix Spike Duplicate |
| ZZZZZZ | Q117044.D | 12/31/24 17:42 | OP6967 | (unrelated sample) |
| ZZZZZZ | Q117046.D | 12/31/24 17:55 | OP6968 | (unrelated sample) |
| ZZZZZZ | Q117047.D | 12/31/24 18:02 | OP6968 | (unrelated sample) |
| SQ2412-CC2411 | Q117048.D | 12/31/24 18:09 | n/a | Continuing cal 2 |
| SQ2412-CC2411 | Q117049.D | 12/31/24 18:16 | n/a | Continuing cal 0.2 |
| ZZZZZZ | Q117051.D | 12/31/24 18:30 | OP7077 | (unrelated sample) |
| FC21117-4 | Q117052.D | 12/31/24 18:36 | OP6969 | 54MW12 |
| OP6969-MS | Q117053.D | 12/31/24 18:43 | OP6969 | Matrix Spike |
| ZZZZZZ | Q117055.D | 12/31/24 18:57 | OP6969 | (unrelated sample) |
| FC21135-16 | Q117056.D | 12/31/24 19:04 | OP7077 | (used for QC only; not part of job FC21117) |

# Run Sequence Report



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

| **Run ID:** SQ2412 | **Method:** SW846 6850 | **Instrument ID:** GCMSQ |
|---|---|---|

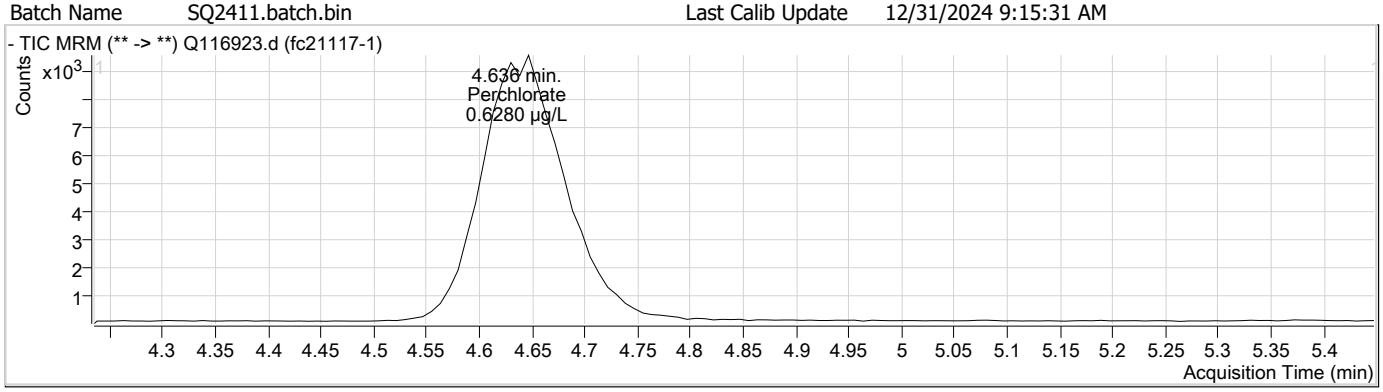
| Lab Sample ID | Lab File ID | Date/Time Analyzed | Prep QC Batch | Client Sample ID |
|---|---|---|---|---|
| OP7077-MS | Q117057.D | 12/31/24 19:11 | OP7077 | Matrix Spike |
| OP7077-MSD | Q117058.D | 12/31/24 19:18 | OP7077 | Matrix Spike Duplicate |
| SQ2412-CC2411 | Q117059.D | 12/31/24 19:24 | n/a | Continuing cal 2 |
| SQ2412-ECC2411 | Q117060.D | 12/31/24 19:31 | n/a | Ending cal 0.2 |
| SQ2412-IBLK | Q117061.D | 12/31/24 19:38 | n/a | Instrument Blank |

## MS Semi-volatiles

Raw Data

# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q116923.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/30/2024 6:11:20 PM |
| Sample Name | fc21117-1 | Instrument | Instrument 1 |
| Vial | P1-E9 | Sample Information | OP6969,SQ2411,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | SQ2411.batch.bin | Last Calib Update | 12/31/2024 9:15:31 AM |

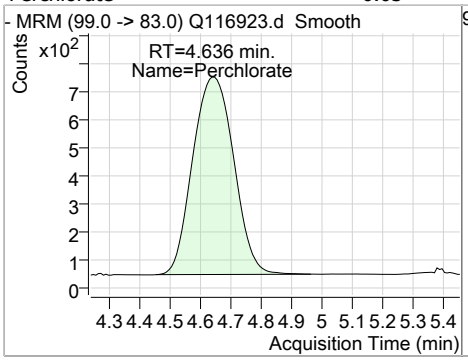


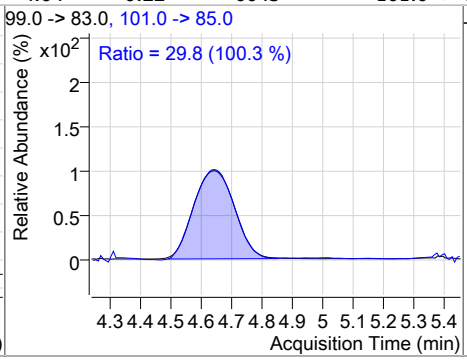

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.638 | 107.0 -> 89.0 | 43438 | NoQ | 5.00 | µg/L | -0.217 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | QValue |
| Perchlorate | 4.636 | 99.0 -> 83.0 | 6643 | 3.4 | 0.63 | µg/L | 100 |

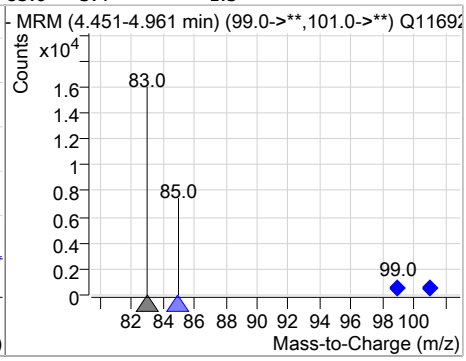
**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| Perchlorate | 0.63 | 4.64 | -0.22 | 6643 | 101.0 -> 85.0 | 3.4 | 1.5 | |

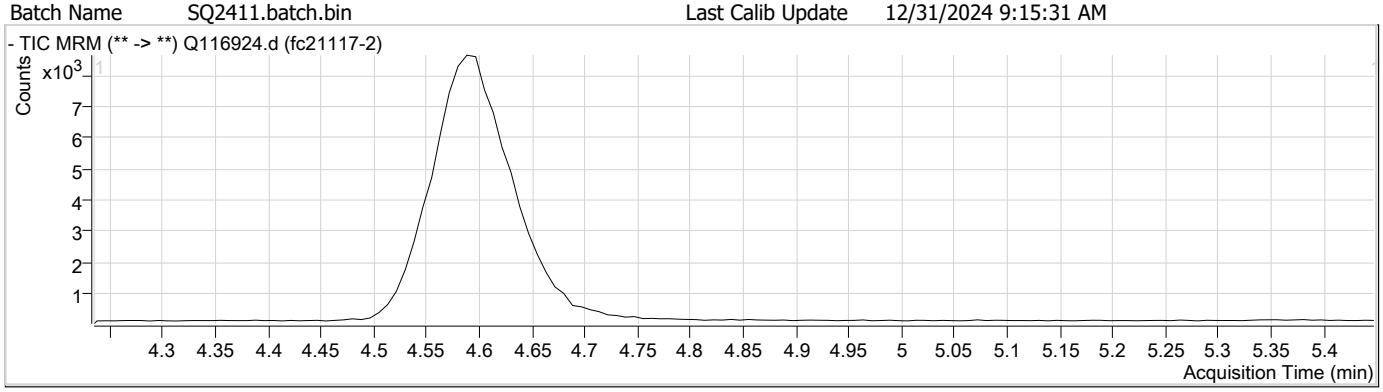


# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q116924.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/30/2024 6:18:13 PM |
| Sample Name | fc21117-2 | Instrument | Instrument 1 |
| Vial | P1-F1 | Sample Information | OP6969,SQ2411,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | SQ2411.batch.bin | Last Calib Update | 12/31/2024 9:15:31 AM |

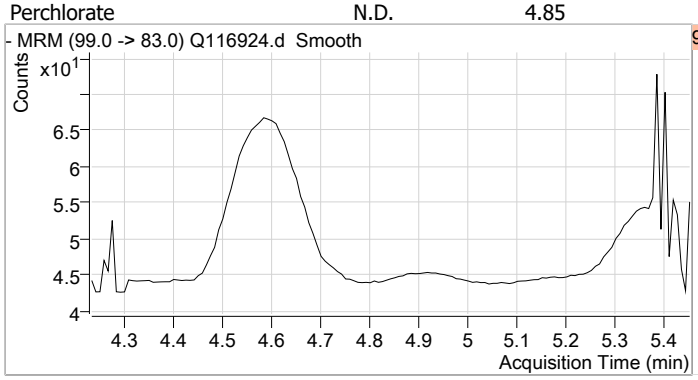


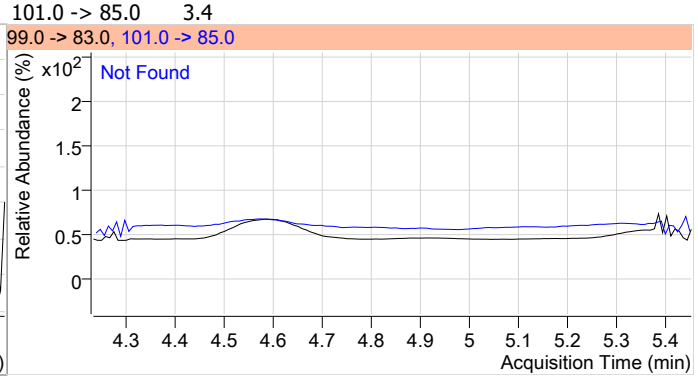

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.588 | 107.0 -> 89.0 | 45708 | NoQ | 5.00 | µg/L | -0.267 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | **QValue** |
| Perchlorate | - | 99.0 -> 83.0 | | - | N.D. | | |

**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

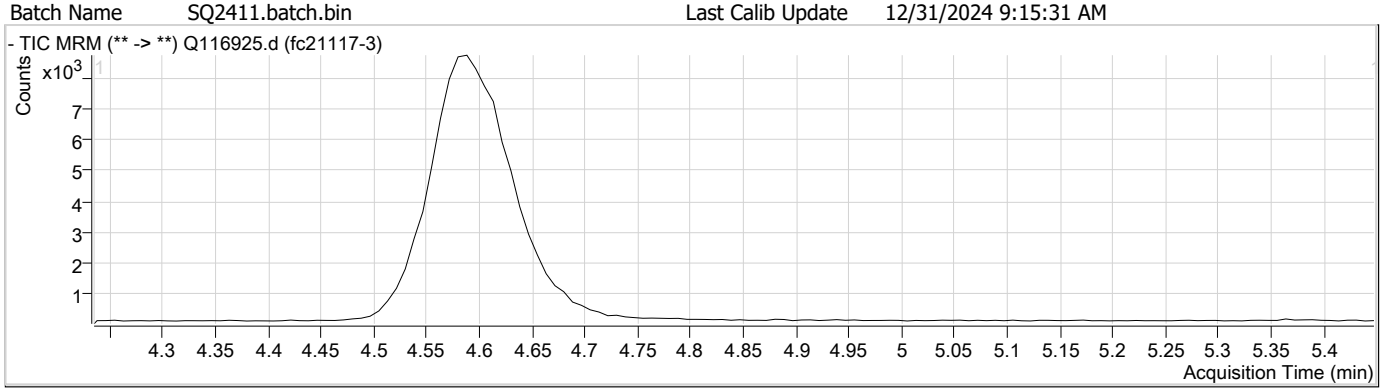
| Compound | Conc. | Exp RT | QIon | Exp Ratio |
|---|---|---|---|---|
| Perchlorate | N.D. | 4.85 | 101.0 -> 85.0 | 3.4 |



# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q116925.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/30/2024 6:25:06 PM |
| Sample Name | fc21117-3 | Instrument | Instrument 1 |
| Vial | P1-F2 | Sample Information | OP6969,SQ2411,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | SQ2411.batch.bin | Last Calib Update | 12/31/2024 9:15:31 AM |

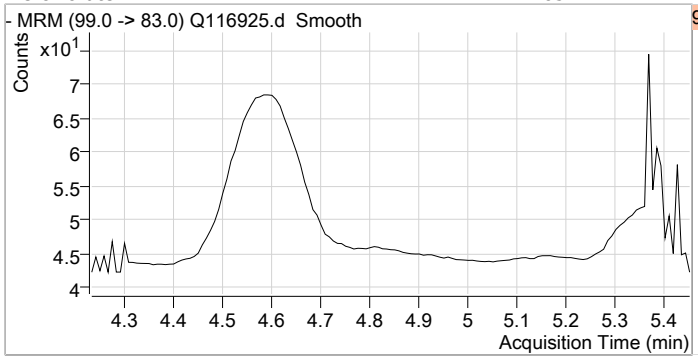


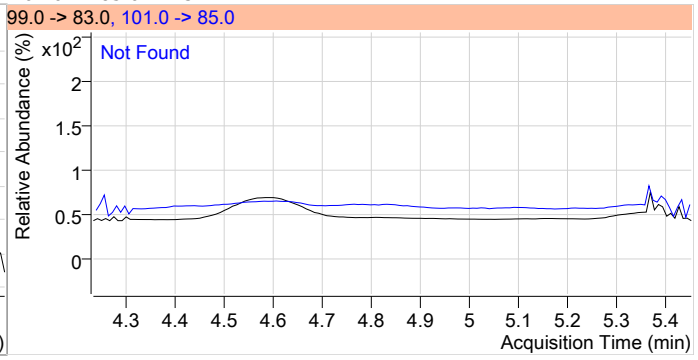

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.588 | 107.0 -> 89.0 | 47448 | NoQ | 5.00 | µg/L | -0.267 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | QValue |
| Perchlorate | - | 99.0 -> 83.0 | | - | N.D. | | |

**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

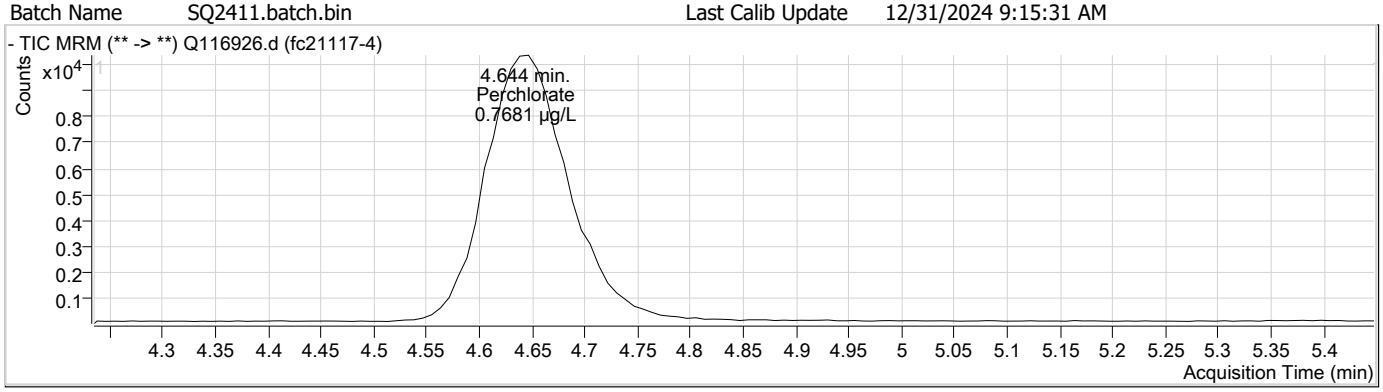
| Compound | Conc. | Exp RT | QIon | Exp Ratio |
|---|---|---|---|---|
| Perchlorate | N.D. | 4.85 | 101.0 -> 85.0 | 3.4 |



# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q116926.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/30/2024 6:38:31 PM |
| Sample Name | fc21117-4 | Instrument | Instrument 1 |
| Vial | P1-F3 | Sample Information | OP6969,SQ2411,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | SQ2411.batch.bin | Last Calib Update | 12/31/2024 9:15:31 AM |

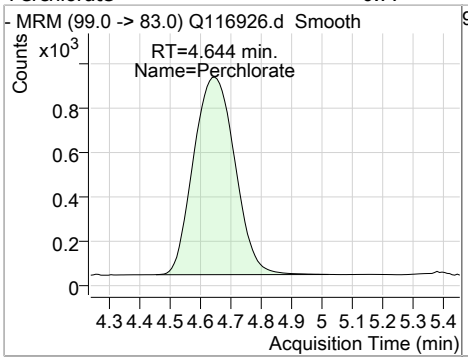


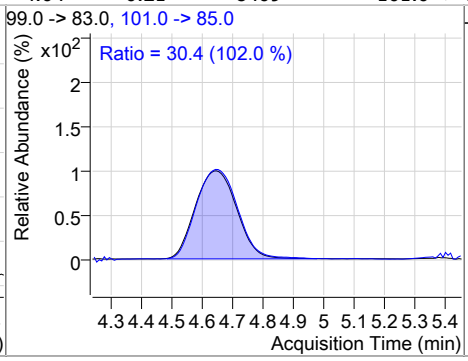

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.647 | 107.0 -> 89.0 | 45260 | NoQ | 5.00 | µg/L | -0.208 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | QValue |
| Perchlorate | 4.644 | 99.0 -> 83.0 | 8469 | 3.3 | 0.77 | µg/L | 99 |

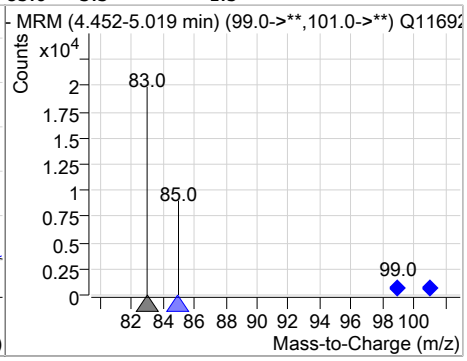
**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| Perchlorate | 0.77 | 4.64 | -0.21 | 8469 | 101.0 -> 85.0 | 3.3 | 1.5 | |

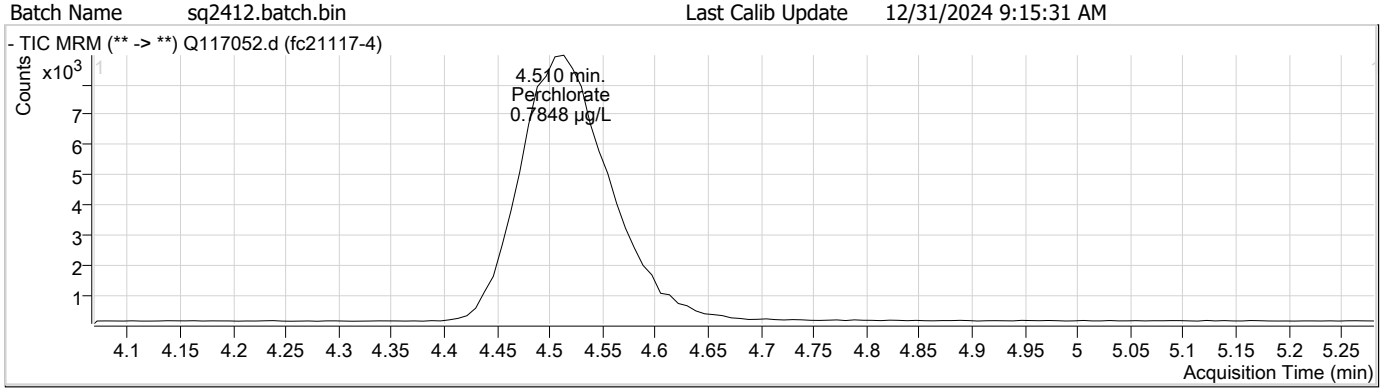


# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q117052.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/31/2024 6:36:56 PM |
| Sample Name | fc21117-4 | Instrument | Instrument 1 |
| Vial | P1-F3 | Sample Information | OP6969,SQ2412,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | sq2412.batch.bin | Last Calib Update | 12/31/2024 9:15:31 AM |

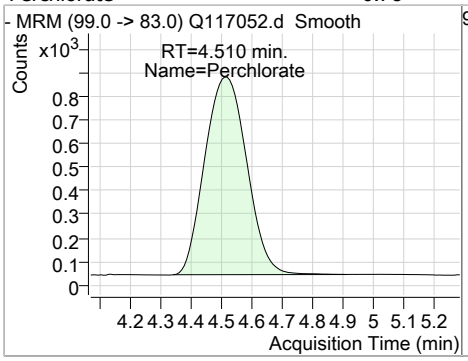


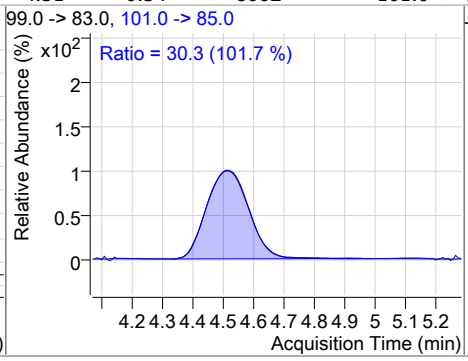

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.513 | 107.0 -> 89.0 | 42168 | NoQ | 5.00 | µg/L | -0.342 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | QValue |
| Perchlorate | 4.510 | 99.0 -> 83.0 | 8062 | 3.3 | 0.78 | µg/L | 99 |

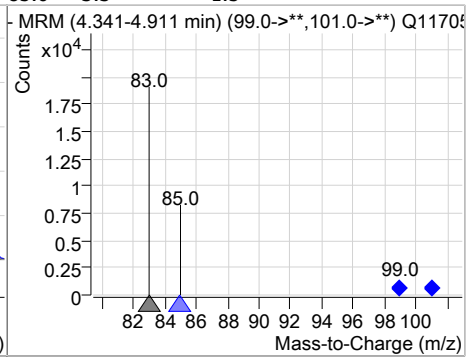
**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| Perchlorate | 0.78 | 4.51 | -0.34 | 8062 | 101.0 -> 85.0 | 3.3 | 1.5 | |

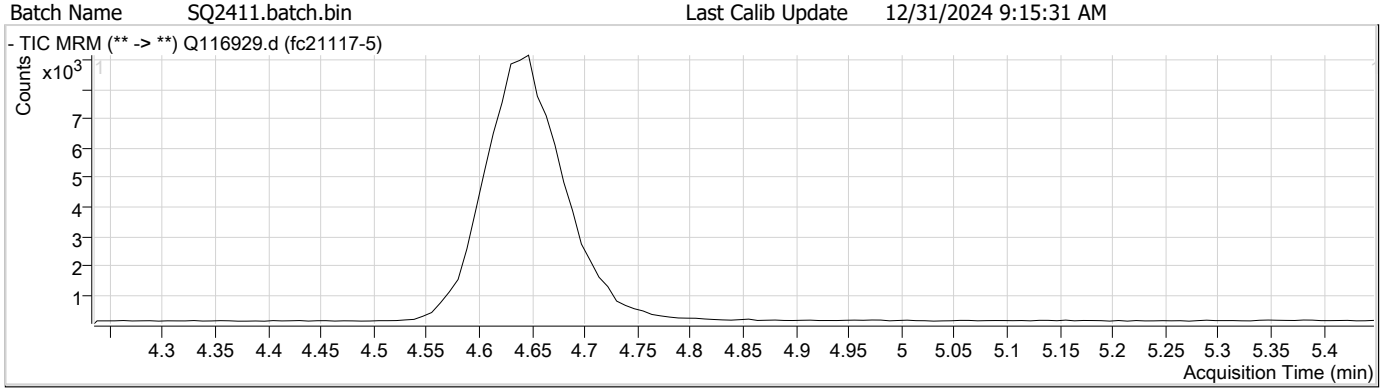


# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q116929.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/30/2024 6:59:13 PM |
| Sample Name | fc21117-5 | Instrument | Instrument 1 |
| Vial | P1-F6 | Sample Information | OP6969,SQ2411,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | SQ2411.batch.bin | Last Calib Update | 12/31/2024 9:15:31 AM |

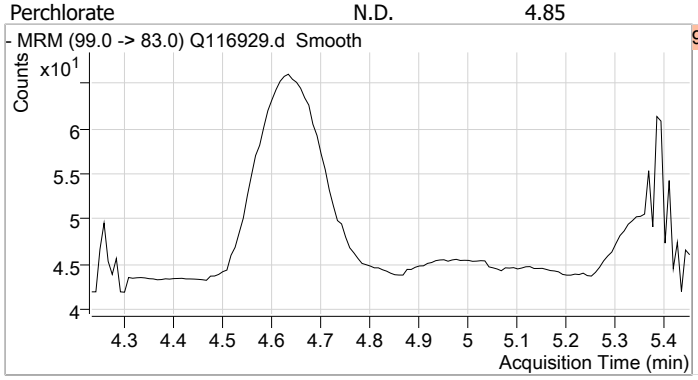


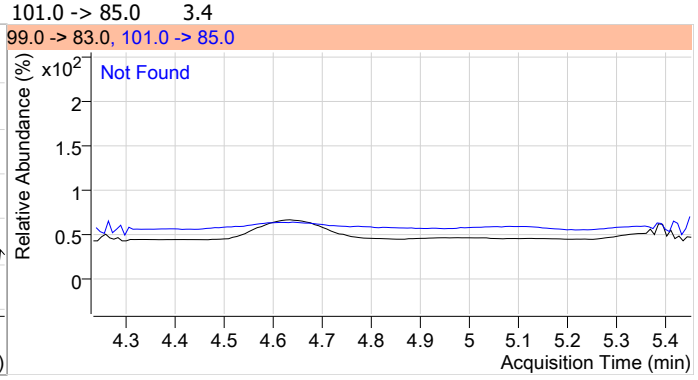

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.638 | 107.0 -> 89.0 | 47041 | NoQ | 5.00 | µg/L | -0.217 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | QValue |
| Perchlorate | - | 99.0 -> 83.0 | | - | N.D. | | |

**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

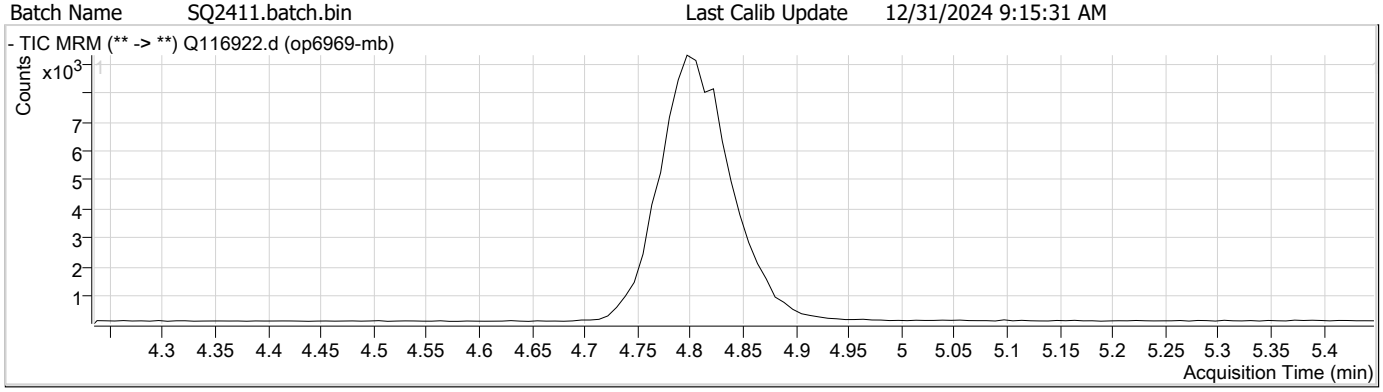
| Compound | Conc. | Exp RT | QIon | Exp Ratio |
|---|---|---|---|---|
| Perchlorate | N.D. | 4.85 | 101.0 -> 85.0 | 3.4 |



# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q116922.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/30/2024 6:04:27 PM |
| Sample Name | op6969-mb | Instrument | Instrument 1 |
| Vial | P1-E8 | Sample Information | OP6969,SQ2411,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | SQ2411.batch.bin | Last Calib Update | 12/31/2024 9:15:31 AM |

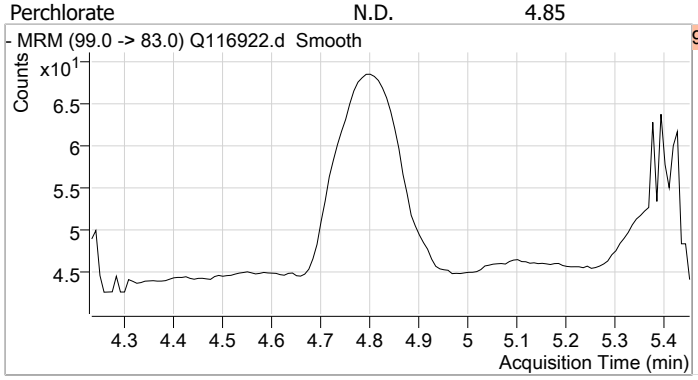


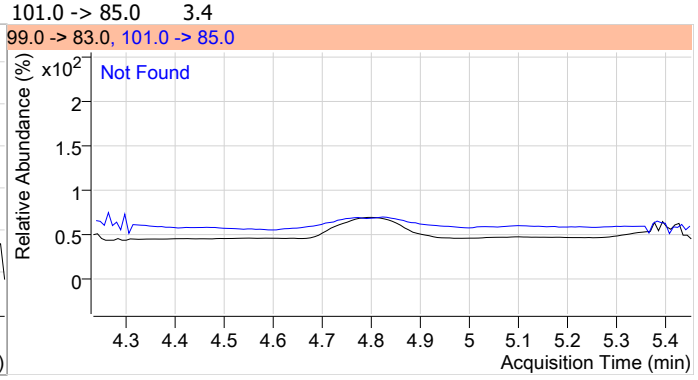

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.805 | 107.0 -> 89.0 | 43487 | NoQ | 5.00 | µg/L | -0.050 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | QValue |
| Perchlorate | - | 99.0 -> 83.0 | | - | N.D. | | |

**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

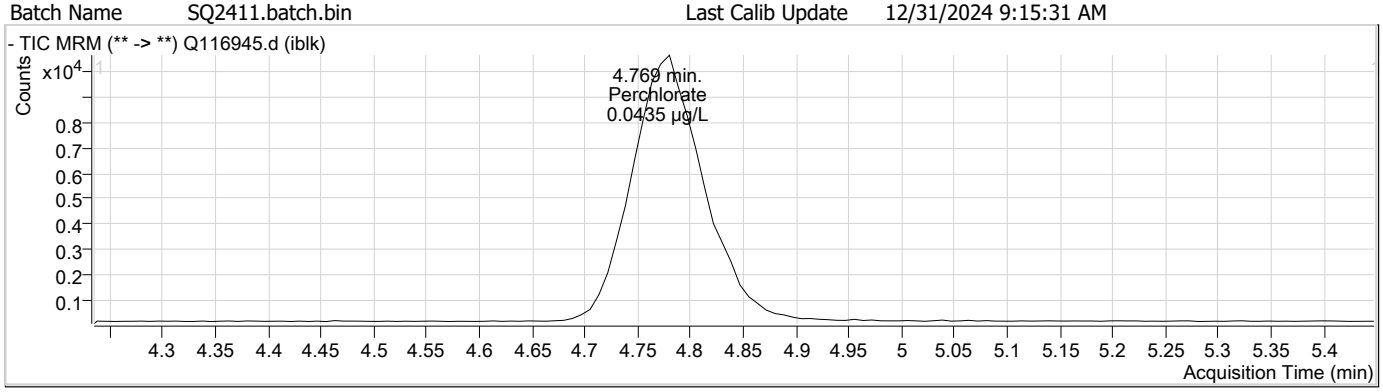
| Compound | Conc. | Exp RT | QIon | Exp Ratio |
|---|---|---|---|---|
| Perchlorate | N.D. | 4.85 | 101.0 -> 85.0 | 3.4 |



# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q116945.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/30/2024 8:49:28 PM |
| Sample Name | iblk | Instrument | Instrument 1 |
| Vial | Vial 1 | Sample Information | OP6853,SQ2411,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | SQ2411.batch.bin | Last Calib Update | 12/31/2024 9:15:31 AM |

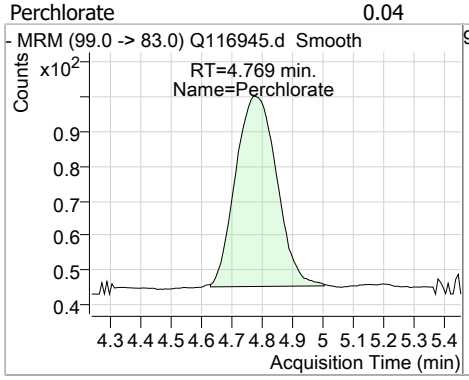


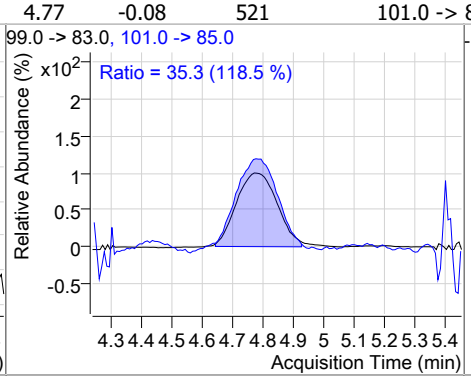

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.780 | 107.0 -> 89.0 | 49281 | NoQ | 5.00 | µg/L | -0.075 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | QValue |
| Perchlorate | 4.769 | 99.0 -> 83.0 | 521 | 2.8 | 0.04 | µg/L | 90 |

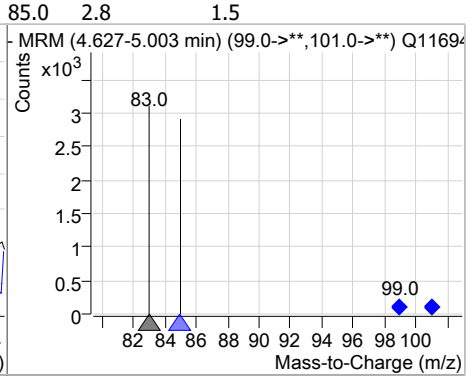
**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| Perchlorate | 0.04 | 4.77 | -0.08 | 521 | 101.0 -> 85.0 | 2.8 | 1.5 | |

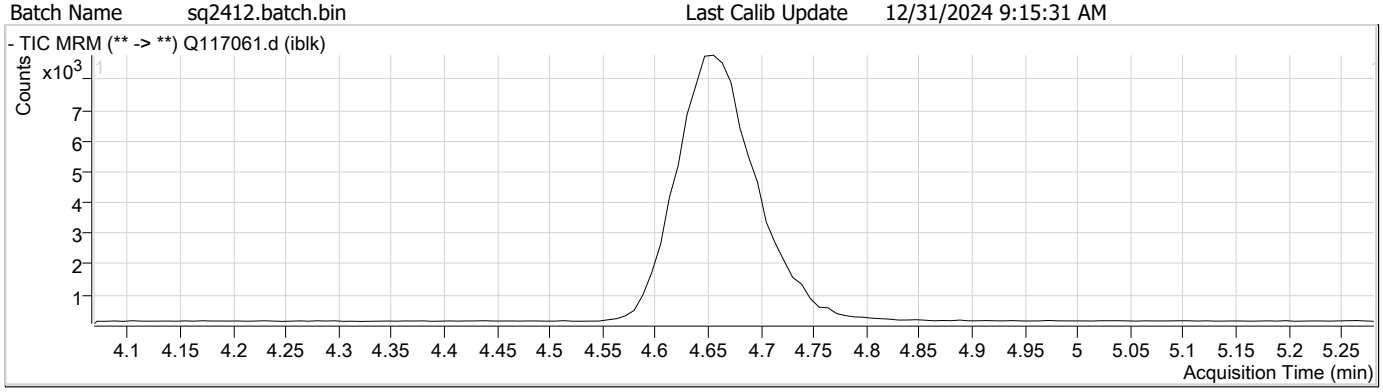


# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q117061.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/31/2024 7:38:38 PM |
| Sample Name | iblk | Instrument | Instrument 1 |
| Vial | Vial 1 | Sample Information | OP6853,SQ2412,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | sq2412.batch.bin | Last Calib Update | 12/31/2024 9:15:31 AM |

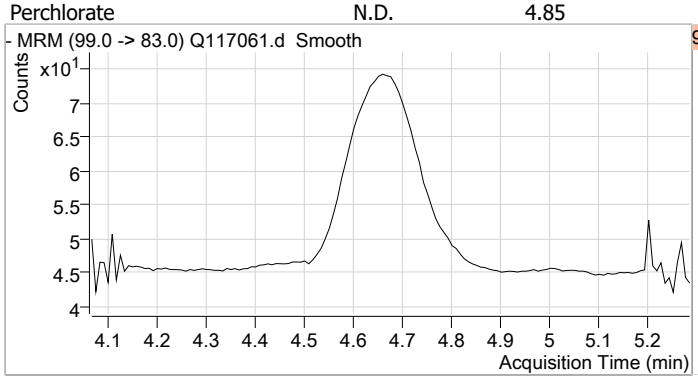


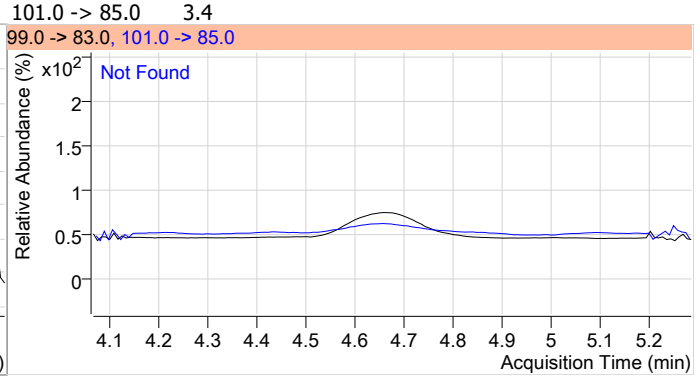

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.655 | 107.0 -> 89.0 | 45541 | NoQ | 5.00 | µg/L | -0.200 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | QValue |
| Perchlorate | - | 99.0 -> 83.0 | | - | N.D. | | |

**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

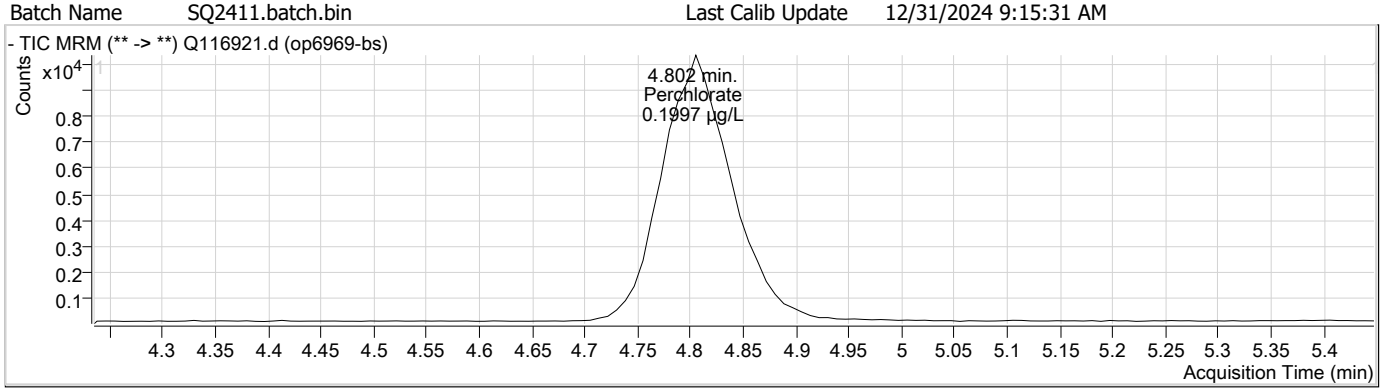
| Compound | Conc. | Exp RT | QIon | Exp Ratio |
|---|---|---|---|---|
| Perchlorate | N.D. | 4.85 | 101.0 -> 85.0 | 3.4 |



# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q116921.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/30/2024 5:57:33 PM |
| Sample Name | op6969-bs | Instrument | Instrument 1 |
| Vial | P1-E7 | Sample Information | OP6969,SQ2411,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | SQ2411.batch.bin | Last Calib Update | 12/31/2024 9:15:31 AM |

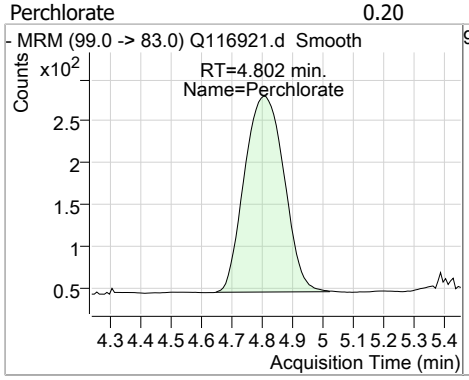


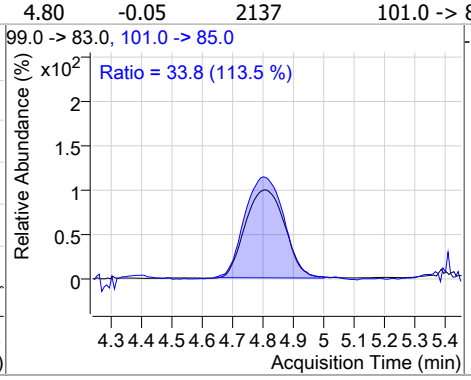

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.805 | 107.0 -> 89.0 | 44008 | NoQ | 5.00 | µg/L | -0.050 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | QValue |
| Perchlorate | 4.802 | 99.0 -> 83.0 | 2137 | 3.0 | 0.20 | µg/L | 93 |

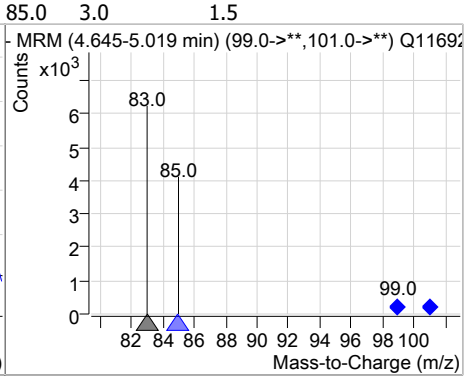
**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| Perchlorate | 0.20 | 4.80 | -0.05 | 2137 | 101.0 -> 85.0 | 3.0 | 1.5 | |

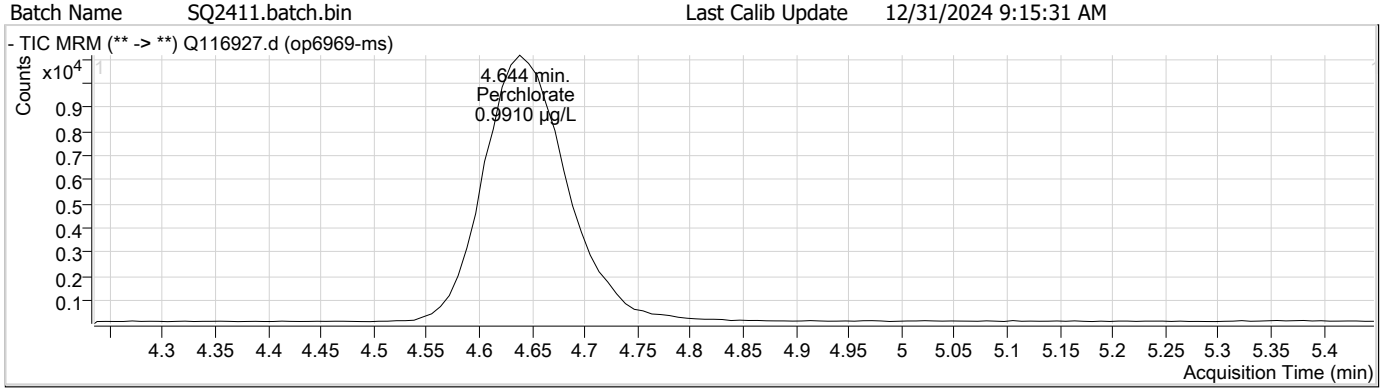


# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q116927.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/30/2024 6:45:25 PM |
| Sample Name | op6969-ms | Instrument | Instrument 1 |
| Vial | P1-F4 | Sample Information | OP6969,SQ2411,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | SQ2411.batch.bin | Last Calib Update | 12/31/2024 9:15:31 AM |

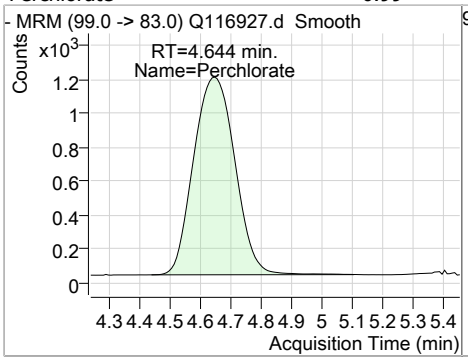


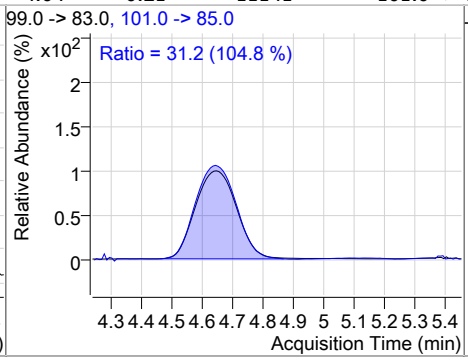

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.638 | 107.0 -> 89.0 | 46118 | NoQ | 5.00 | µg/L | -0.217 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | QValue |
| Perchlorate | 4.644 | 99.0 -> 83.0 | 11141 | 3.2 | 0.99 | µg/L | 97 |

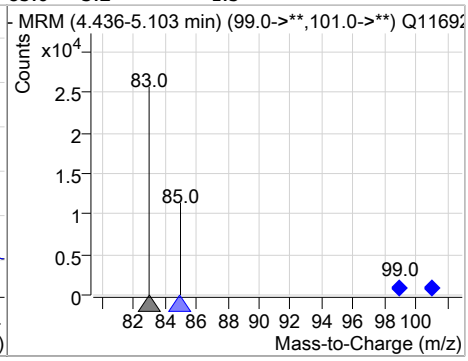
**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| Perchlorate | 0.99 | 4.64 | -0.21 | 11141 | 101.0 -> 85.0 | 3.2 | 1.5 | |

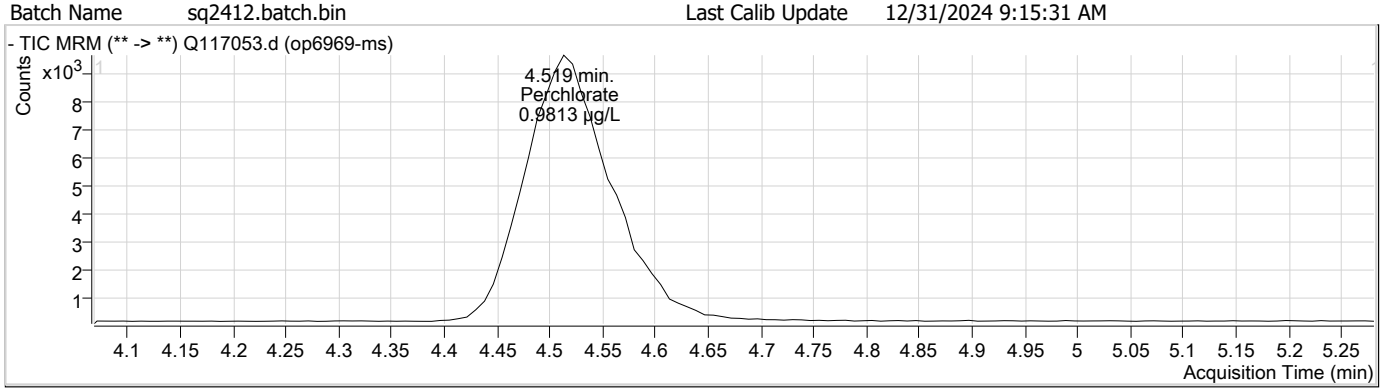


# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q117053.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/31/2024 6:43:47 PM |
| Sample Name | op6969-ms | Instrument | Instrument 1 |
| Vial | P1-F4 | Sample Information | OP6969,SQ2412,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | sq2412.batch.bin | Last Calib Update | 12/31/2024 9:15:31 AM |

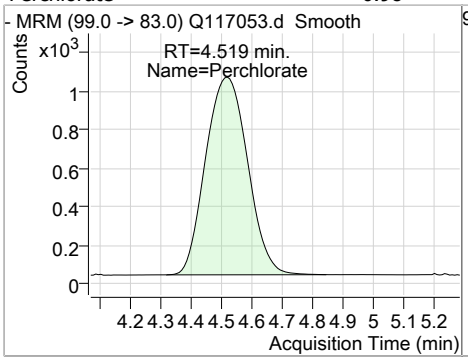


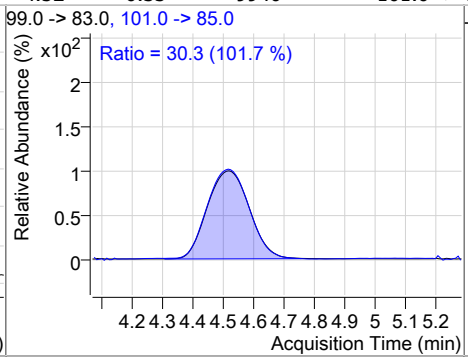

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.513 | 107.0 -> 89.0 | 41552 | NoQ | 5.00 | µg/L | -0.342 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | QValue |
| Perchlorate | 4.519 | 99.0 -> 83.0 | 9940 | 3.3 | 0.98 | µg/L | 99 |

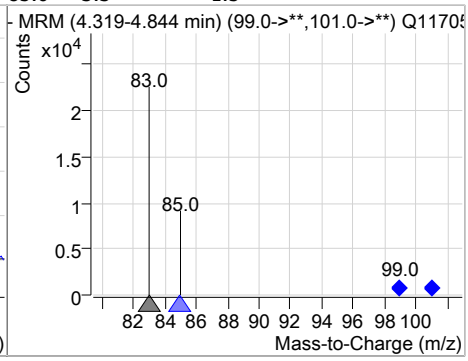
**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| Perchlorate | 0.98 | 4.52 | -0.33 | 9940 | 101.0 -> 85.0 | 3.3 | 1.5 | |



# QQQ Check Tune Report

Agilent Technologies

| | |
|---|---|
| **Instrument Name** | Instrument 1 |
| **MS Model** | G6460A |
| **MS Instrument Serial** | SG10447001 |
| **Software_Firmware Version** | B.08.02.B8260.0, FW: A.00.08.62 |
| **Tune Date & Time** | 20 December 2024 11:52:36 |
| **Data Path** | D:\MassHunter\Tune\QQQ\G6460A\atunes.TUNE.XML |
| **Ion Source** | AJS ESI |
| **Ionization Mode** | AJS ESI |
| **Tuned Resolution** | All |
| **Vacuum Pressure** | 1.59E+0[R]; 1.88E-5[H] |

**Source Parameters**

| Parameter | Value |
|---|---|
| Gas Temp | 300 |
| Gas Flow | 10 |
| Nebulizer | 15 |
| Capillary | 4000 |
| Nozzle Voltage | 1500 |
| Sheath Gas Temp | 250 |
| Sheath Gas Flow | 7 |

# QQQ Check Tune Report

Agilent Technologies

## Negative Results

**Analyzer: MS1 Polarity: Negative Width: Unit**

| m/z Expected | m/z Measured | Delta | Result | FWHM Expected | FWHM Measured | Delta | Result | Abundance |
|---|---|---|---|---|---|---|---|---|
| 112.99 | 112.92 | -0.07 | Pass | 0.70 | 0.69 | -0.01 | Pass | 30518 |
| 302.00 | 301.95 | -0.05 | Pass | 0.70 | 0.79 | 0.09 | Pass | 10181 |
| 601.98 | 601.92 | -0.06 | Pass | 0.70 | 0.72 | 0.02 | Pass | 27277 |
| 1033.99 | 1033.96 | -0.03 | Pass | 0.70 | 0.74 | 0.04 | Pass | 142062 |
| 1633.95 | 1633.91 | -0.04 | Pass | 0.70 | 0.73 | 0.03 | Pass | 150424 |
| 2233.91 | 2233.78 | -0.13 | Pass | 0.70 | 0.76 | 0.06 | Pass | 22656 |

**Analyzer: MS2 Polarity: Negative Width: Unit**

| m/z Expected | m/z Measured | Delta | Result | FWHM Expected | FWHM Measured | Delta | Result | Abundance |
|---|---|---|---|---|---|---|---|---|
| 69.00 | 69.02 | 0.02 | Pass | 0.70 | 0.70 | 0.00 | Pass | 12053 |
| 112.99 | 112.96 | -0.03 | Pass | 0.70 | 0.74 | 0.04 | Pass | 59481 |
| 302.00 | 301.97 | -0.03 | Pass | 0.70 | 0.74 | 0.04 | Pass | 21545 |
| 601.98 | 601.99 | 0.01 | Pass | 0.70 | 0.71 | 0.01 | Pass | 45614 |
| 1033.99 | 1033.98 | -0.01 | Pass | 0.70 | 0.70 | 0.00 | Pass | 294514 |
| 1633.95 | 1633.93 | -0.02 | Pass | 0.70 | 0.70 | 0.00 | Pass | 381689 |
| 2233.91 | 2233.87 | -0.04 | Pass | 0.70 | 0.77 | 0.07 | Pass | 214885 |

**Analyzer: MS1 Polarity: Negative Width: Wide**

| m/z Expected | m/z Measured | Delta | Result | FWHM Expected | FWHM Measured | Delta | Result | Abundance |
|---|---|---|---|---|---|---|---|---|
| 112.99 | 112.85 | -0.14 | Pass | 1.20 | 1.17 | -0.03 | Pass | 38507 |
| 302.00 | 301.93 | -0.07 | Pass | 1.20 | 1.31 | 0.11 | Pass | 15734 |
| 601.98 | 601.93 | -0.05 | Pass | 1.20 | 1.37 | 0.17 | Pass | 37556 |
| 1033.99 | 1033.87 | -0.12 | Pass | 1.20 | 1.44 | 0.24 | Pass | 241223 |
| 1633.95 | 1633.86 | -0.09 | Pass | 1.20 | 1.42 | 0.22 | Pass | 390785 |
| 2233.91 | 2233.81 | -0.10 | Pass | 1.20 | 1.33 | 0.13 | Pass | 163941 |

**Analyzer: MS2 Polarity: Negative Width: Wide**

| m/z Expected | m/z Measured | Delta | Result | FWHM Expected | FWHM Measured | Delta | Result | Abundance |
|---|---|---|---|---|---|---|---|---|
| 69.00 | 69.01 | 0.01 | Pass | 1.20 | 1.23 | 0.03 | Pass | 14975 |
| 112.99 | 112.91 | -0.08 | Pass | 1.20 | 1.33 | 0.13 | Pass | 62037 |
| 302.00 | 301.93 | -0.07 | Pass | 1.20 | 1.37 | 0.17 | Pass | 32285 |
| 601.98 | 601.91 | -0.07 | Pass | 1.20 | 1.32 | 0.12 | Pass | 74317 |
| 1033.99 | 1033.92 | -0.07 | Pass | 1.20 | 1.09 | -0.11 | Pass | 506328 |
| 1633.95 | 1633.92 | -0.03 | Pass | 1.20 | 1.08 | -0.12 | Pass | 1101891 |
| 2233.91 | 2233.94 | 0.03 | Pass | 1.20 | 1.21 | 0.01 | Pass | 610044 |

**Analyzer: MS1 Polarity: Negative Width: Widest**

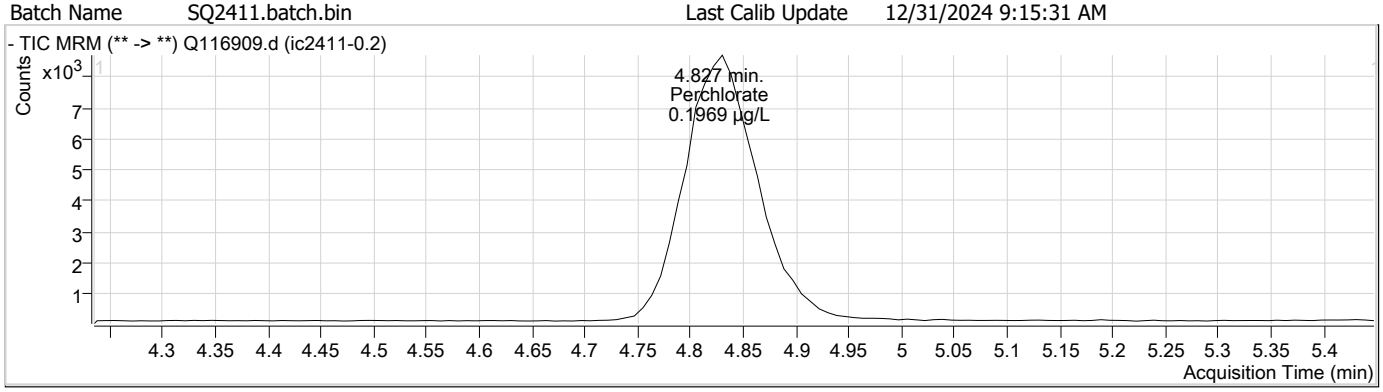
| m/z Expected | m/z Measured | Delta | Result | FWHM Expected | FWHM Measured | Delta | Result | Abundance |
|---|---|---|---|---|---|---|---|---|
| 112.99 | 112.63 | -0.36 | Pass | 2.50 | 2.71 | 0.21 | Pass | 50065 |
| 302.00 | 301.89 | -0.11 | Pass | 2.50 | 2.79 | 0.29 | Pass | 20351 |
| 601.98 | 601.64 | -0.34 | Pass | 2.50 | 2.82 | 0.32 | Pass | 49268 |
| 1033.99 | 1033.84 | -0.15 | Pass | 2.50 | 2.72 | 0.22 | Pass | 371415 |
| 1633.95 | 1633.83 | -0.12 | Pass | 2.50 | 2.50 | 0.00 | Pass | 664436 |
| 2233.91 | 2233.83 | -0.08 | Pass | 2.50 | 2.31 | -0.19 | Pass | 342524 |

**Analyzer: MS2 Polarity: Negative Width: Widest**

| m/z Expected | m/z Measured | Delta | Result | FWHM Expected | FWHM Measured | Delta | Result | Abundance |
|---|---|---|---|---|---|---|---|---|
| 69.00 | 68.95 | -0.05 | Pass | 2.50 | 2.39 | -0.11 | Pass | 17862 |
| 112.99 | 112.89 | -0.10 | Pass | 2.50 | 2.47 | -0.03 | Pass | 78160 |
| 302.00 | 301.93 | -0.07 | Pass | 2.50 | 2.57 | 0.07 | Pass | 33786 |
| 601.98 | 601.93 | -0.05 | Pass | 2.50 | 2.55 | 0.05 | Pass | 95869 |
| 1033.99 | 1033.90 | -0.09 | Pass | 2.50 | 2.22 | -0.28 | Pass | 912553 |
| 1633.95 | 1633.91 | -0.04 | Pass | 2.50 | 2.27 | -0.23 | Pass | 2442459 |
| 2233.91 | 2233.79 | -0.12 | Pass | 2.50 | 2.43 | -0.07 | Pass | 1557878 |

# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q116909.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/30/2024 4:34:58 PM |
| Sample Name | ic2411-0.2 | Instrument | Instrument 1 |
| Vial | Vial 2 | Sample Information | OP6853,SQ2411,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | SQ2411.batch.bin | Last Calib Update | 12/31/2024 9:15:31 AM |

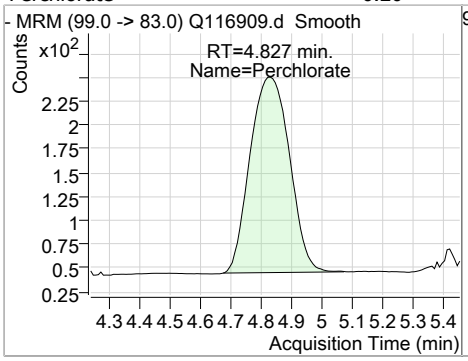


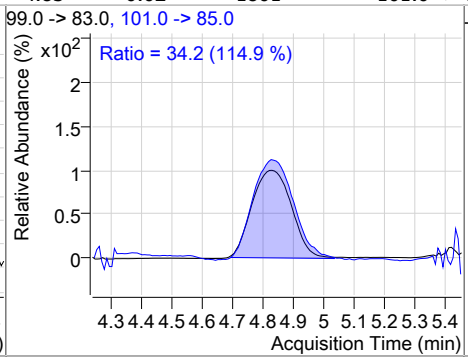

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.830 | 107.0 -> 89.0 | 38848 | NoQ | 5.00 | µg/L | -0.025 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | QValue |
| Perchlorate | 4.827 | 99.0 -> 83.0 | 1861 | 2.9 | 0.20 | µg/L | 92 |

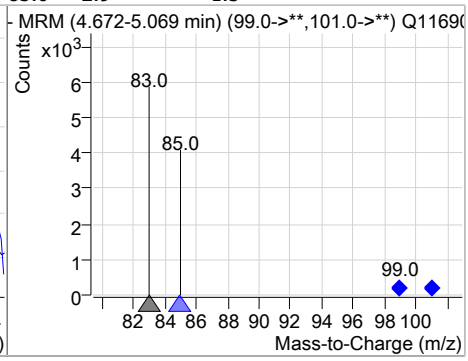
**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| Perchlorate | 0.20 | 4.83 | -0.02 | 1861 | 101.0 -> 85.0 | 2.9 | 1.5 | |

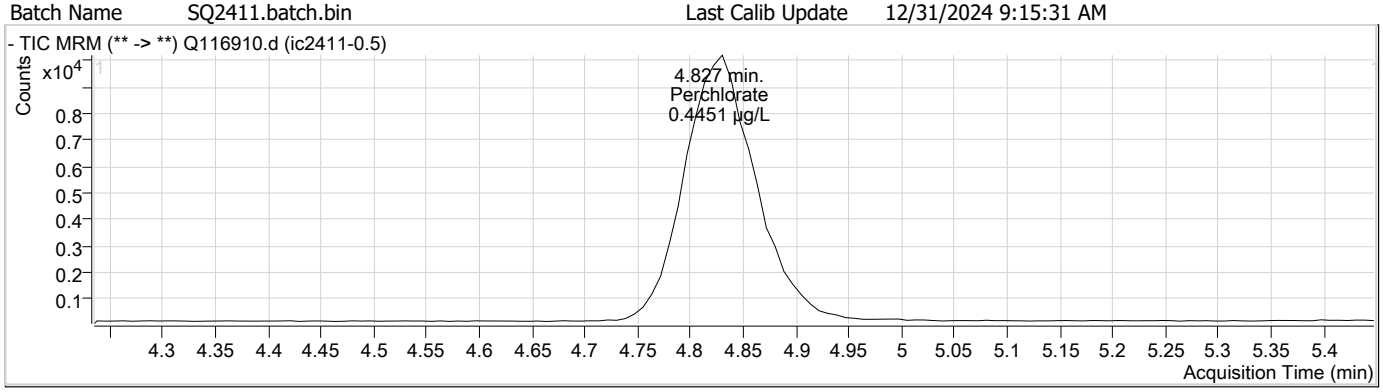


# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q116910.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/30/2024 4:41:51 PM |
| Sample Name | ic2411-0.5 | Instrument | Instrument 1 |
| Vial | Vial 3 | Sample Information | OP6853,SQ2411,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | SQ2411.batch.bin | Last Calib Update | 12/31/2024 9:15:31 AM |

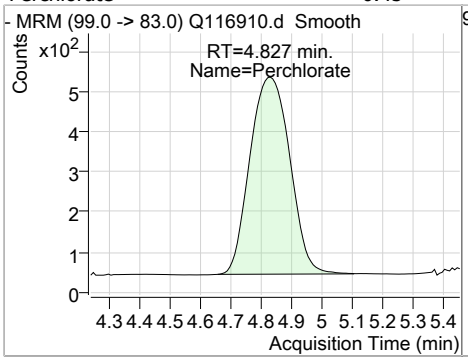


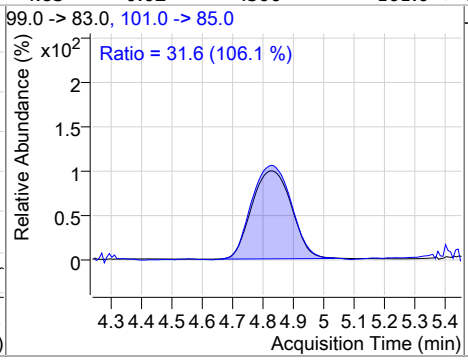

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.830 | 107.0 -> 89.0 | 41592 | NoQ | 5.00 | µg/L | -0.025 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | QValue |
| Perchlorate | 4.827 | 99.0 -> 83.0 | 4506 | 3.2 | 0.45 | µg/L | 97 |

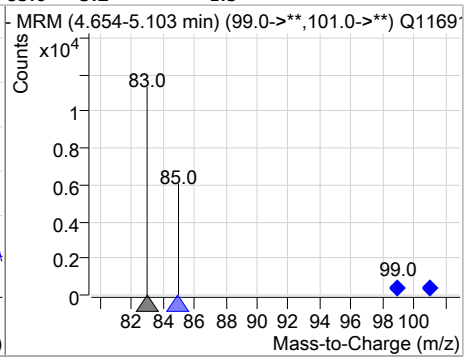
**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| Perchlorate | 0.45 | 4.83 | -0.02 | 4506 | 101.0 -> 85.0 | 3.2 | 1.5 | |

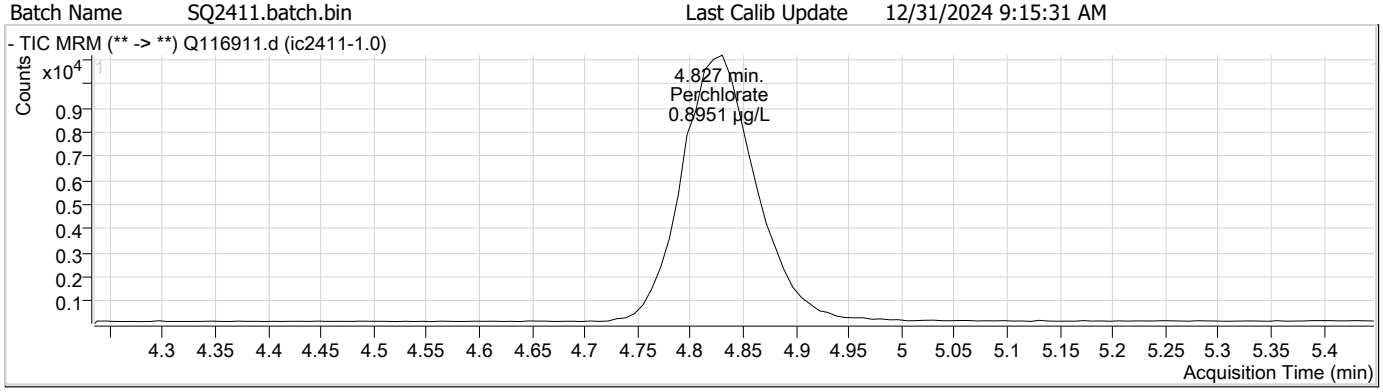


# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q116911.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/30/2024 4:48:44 PM |
| Sample Name | ic2411-1.0 | Instrument | Instrument 1 |
| Vial | Vial 4 | Sample Information | OP6853,SQ2411,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | SQ2411.batch.bin | Last Calib Update | 12/31/2024 9:15:31 AM |

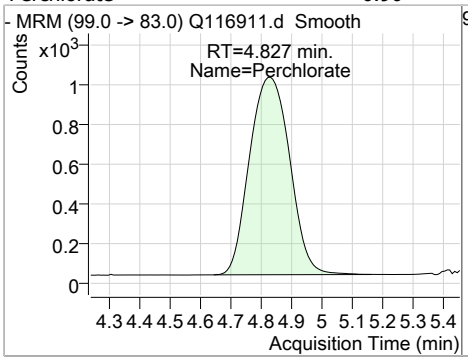


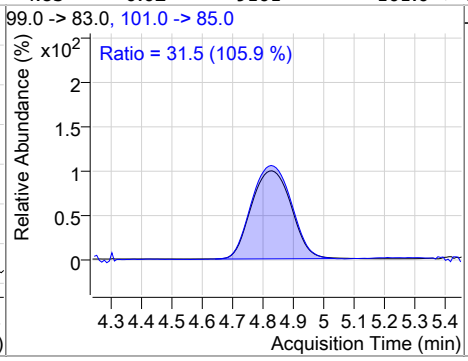

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.830 | 107.0 -> 89.0 | 41992 | NoQ | 5.00 | µg/L | -0.025 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | QValue |
| Perchlorate | 4.827 | 99.0 -> 83.0 | 9161 | 3.2 | 0.90 | µg/L | 97 |

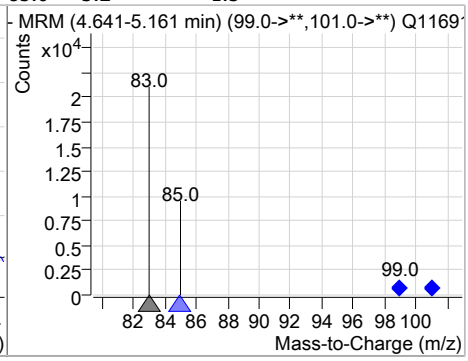
**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| Perchlorate | 0.90 | 4.83 | -0.02 | 9161 | 101.0 -> 85.0 | 3.2 | 1.5 | |

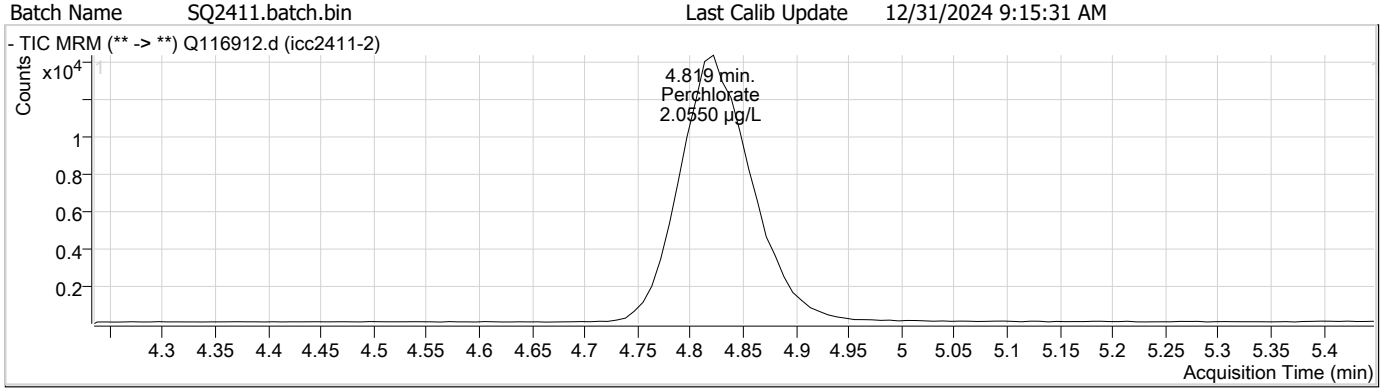


# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q116912.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/30/2024 4:55:37 PM |
| Sample Name | icc2411-2 | Instrument | Instrument 1 |
| Vial | Vial 5 | Sample Information | OP6853,SQ2411,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | SQ2411.batch.bin | Last Calib Update | 12/31/2024 9:15:31 AM |

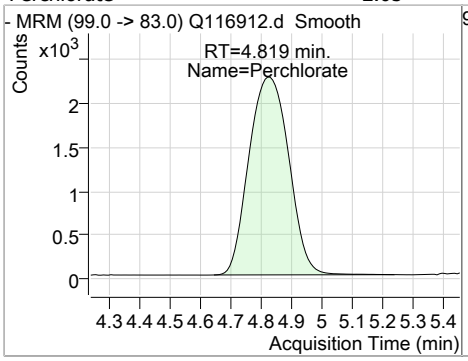


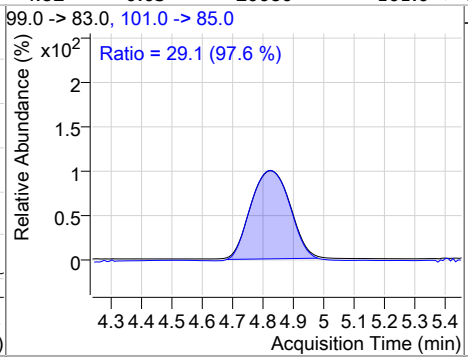

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.822 | 107.0 -> 89.0 | 41156 | NoQ | 5.00 | µg/L | -0.033 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | QValue |
| Perchlorate | 4.819 | 99.0 -> 83.0 | 20680 | 3.4 | 2.05 | µg/L | 99 |

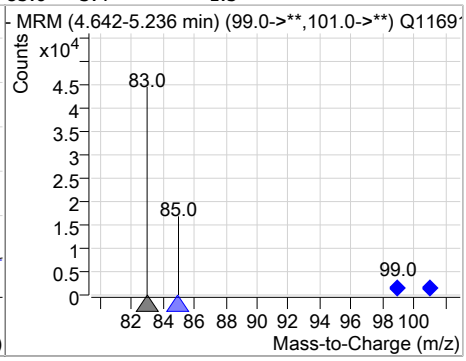
**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| Perchlorate | 2.05 | 4.82 | -0.03 | 20680 | 101.0 -> 85.0 | 3.4 | 1.5 | |

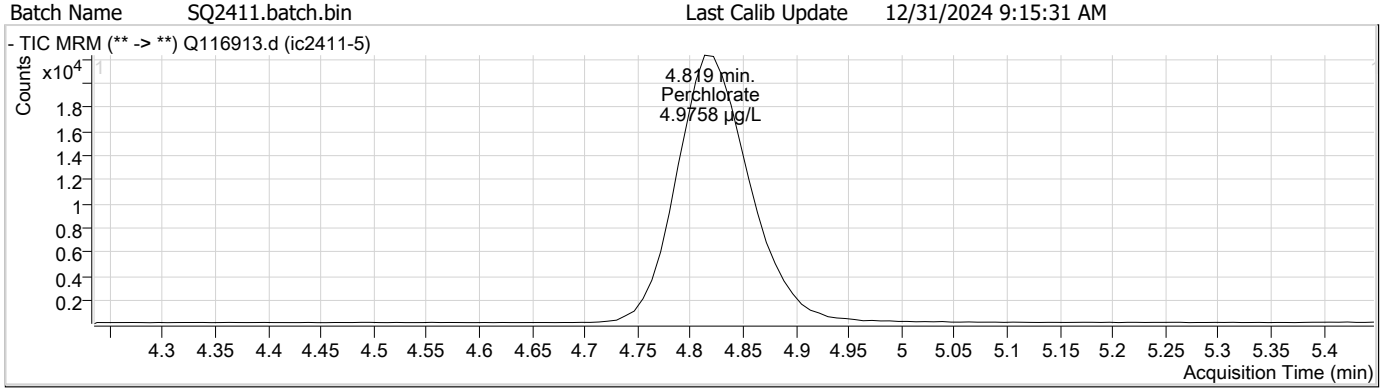


# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q116913.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/30/2024 5:02:29 PM |
| Sample Name | ic2411-5 | Instrument | Instrument 1 |
| Vial | Vial 6 | Sample Information | OP6853,SQ2411,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | SQ2411.batch.bin | Last Calib Update | 12/31/2024 9:15:31 AM |

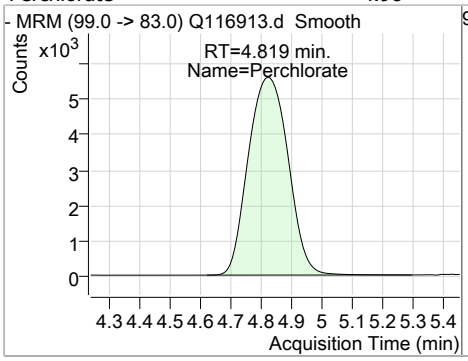


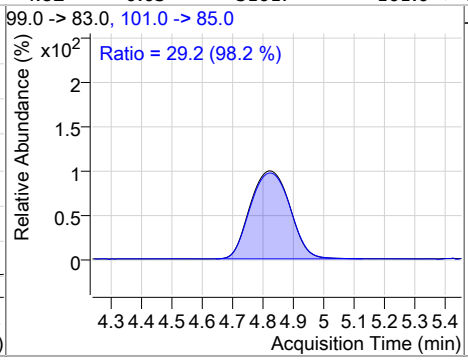

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.822 | 107.0 -> 89.0 | 41584 | NoQ | 5.00 | µg/L | -0.033 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | QValue |
| Perchlorate | 4.819 | 99.0 -> 83.0 | 51017 | 3.4 | 4.98 | µg/L | 99 |

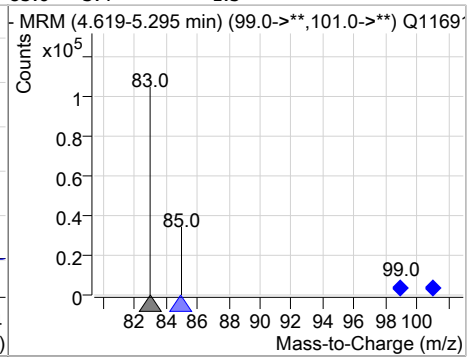
**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| Perchlorate | 4.98 | 4.82 | -0.03 | 51017 | 101.0 -> 85.0 | 3.4 | 1.5 | |

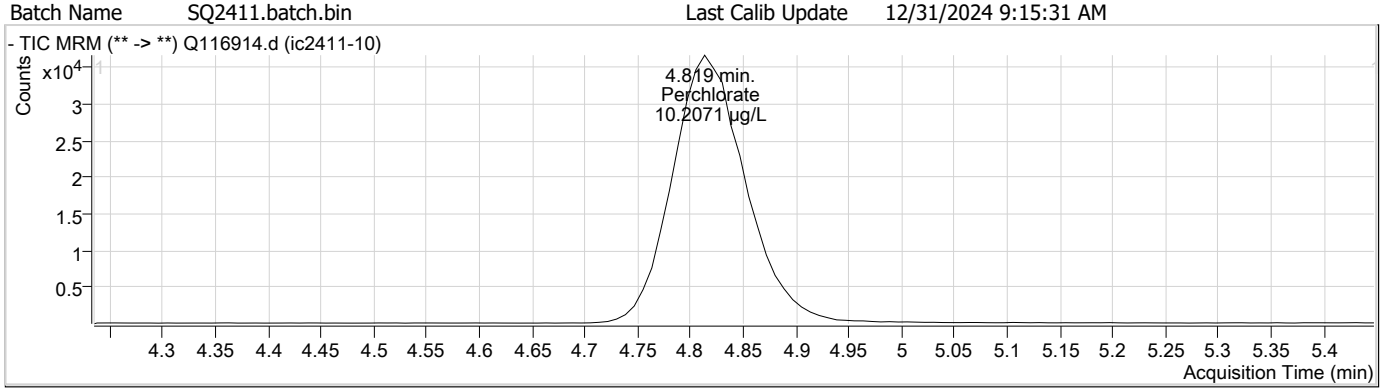


# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q116914.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/30/2024 5:09:22 PM |
| Sample Name | ic2411-10 | Instrument | Instrument 1 |
| Vial | Vial 7 | Sample Information | OP6853,SQ2411,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | SQ2411.batch.bin | Last Calib Update | 12/31/2024 9:15:31 AM |

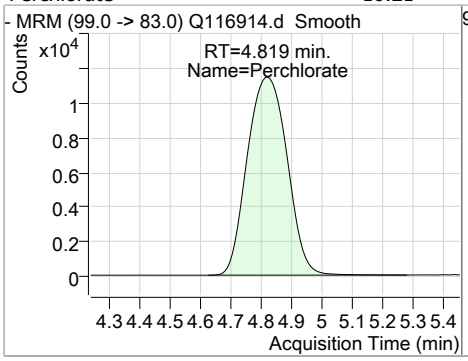


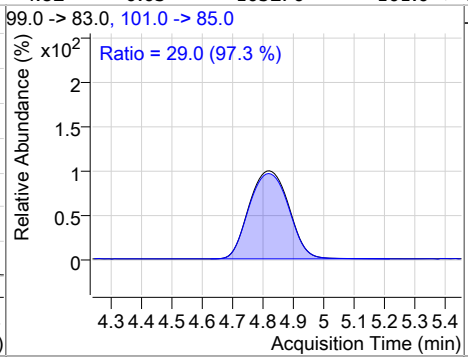

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.822 | 107.0 -> 89.0 | 41220 | NoQ | 5.00 | µg/L | -0.033 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | **QValue** |
| Perchlorate | 4.819 | 99.0 -> 83.0 | 105276 | 3.5 | 10.21 | µg/L | 98 |

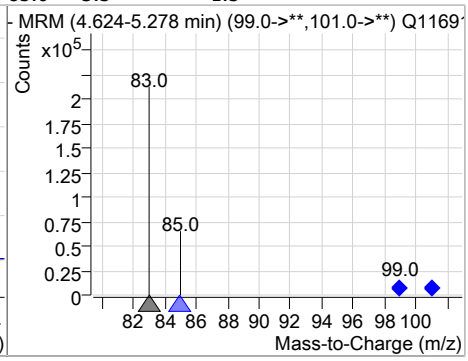
**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| Perchlorate | 10.21 | 4.82 | -0.03 | 105276 | 101.0 -> 85.0 | 3.5 | 1.5 | |

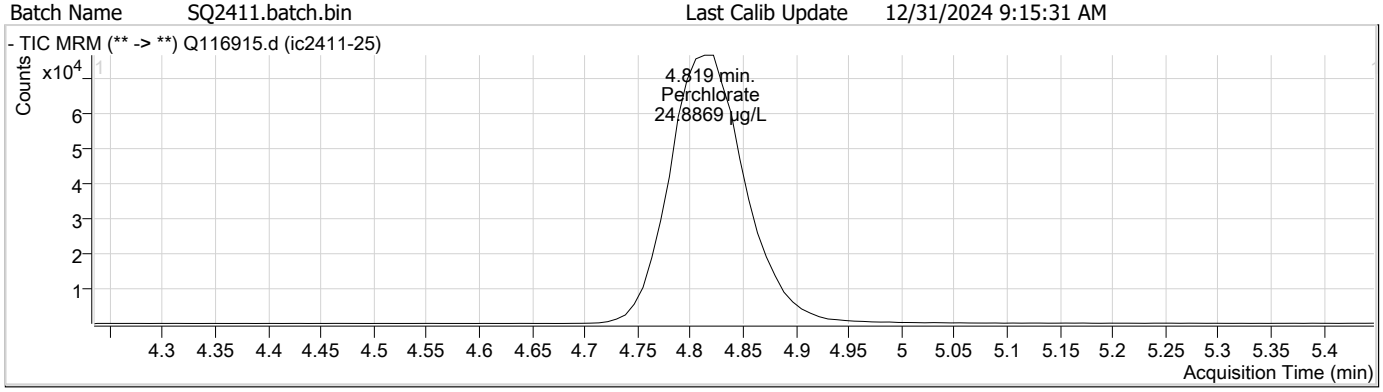


# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q116915.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/30/2024 5:16:15 PM |
| Sample Name | ic2411-25 | Instrument | Instrument 1 |
| Vial | Vial 8 | Sample Information | OP6853,SQ2411,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | SQ2411.batch.bin | Last Calib Update | 12/31/2024 9:15:31 AM |

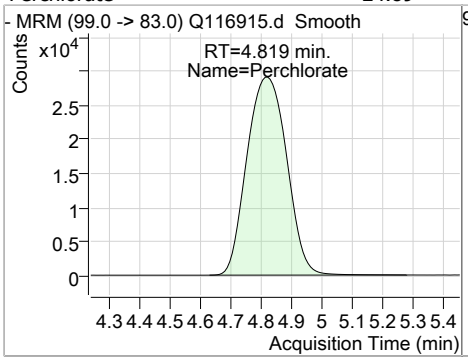


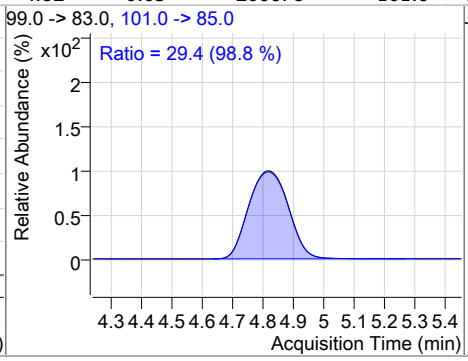

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.814 | 107.0 -> 89.0 | 41045 | NoQ | 5.00 | µg/L | -0.042 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | QValue |
| Perchlorate | 4.819 | 99.0 -> 83.0 | 266078 | 3.4 | 24.89 | µg/L | 99 |

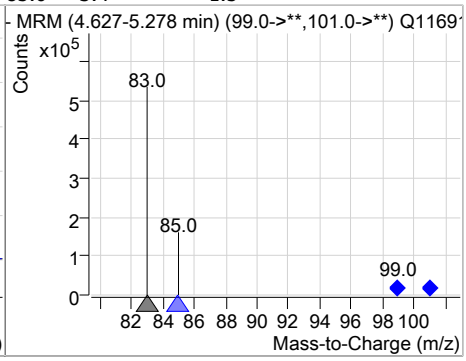
**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| Perchlorate | 24.89 | 4.82 | -0.03 | 266078 | 101.0 -> 85.0 | 3.4 | 1.5 | |

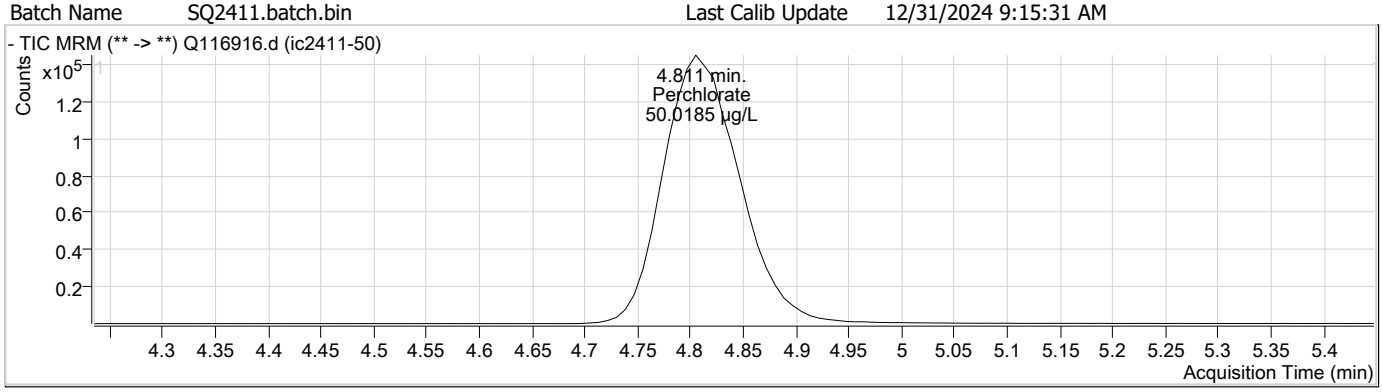


# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q116916.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/30/2024 5:23:07 PM |
| Sample Name | ic2411-50 | Instrument | Instrument 1 |
| Vial | Vial 9 | Sample Information | OP6853,SQ2411,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | SQ2411.batch.bin | Last Calib Update | 12/31/2024 9:15:31 AM |

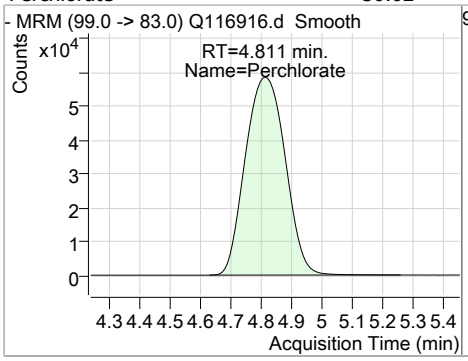


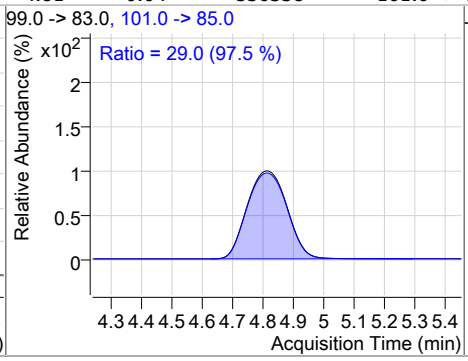

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.814 | 107.0 -> 89.0 | 38564 | NoQ | 5.00 | µg/L | -0.042 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | QValue |
| Perchlorate | 4.811 | 99.0 -> 83.0 | 536338 | 3.4 | 50.02 | µg/L | 99 |

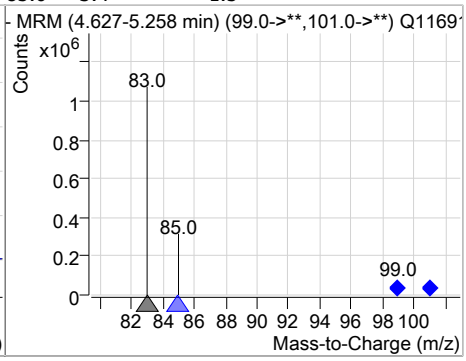
**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| Perchlorate | 50.02 | 4.81 | -0.04 | 536338 | 101.0 -> 85.0 | 3.4 | 1.5 | |

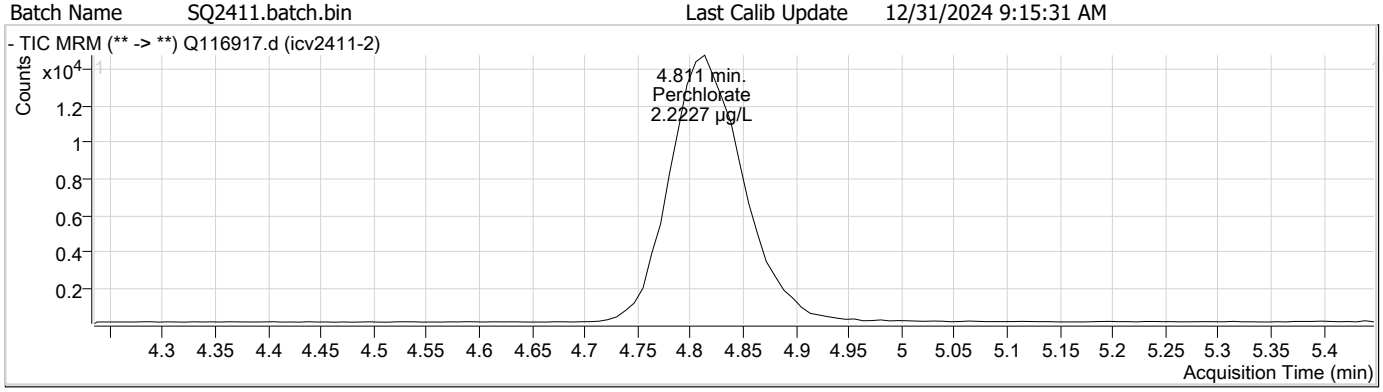


# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q116917.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/30/2024 5:30:00 PM |
| Sample Name | icv2411-2 | Instrument | Instrument 1 |
| Vial | Vial 10 | Sample Information | OP6853,SQ2411,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | SQ2411.batch.bin | Last Calib Update | 12/31/2024 9:15:31 AM |

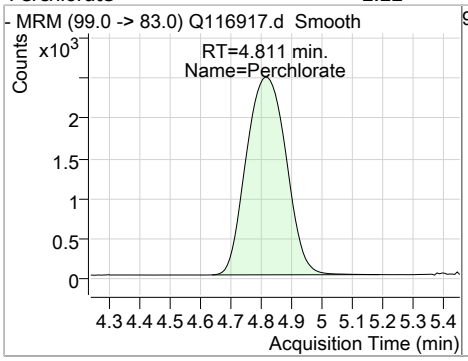


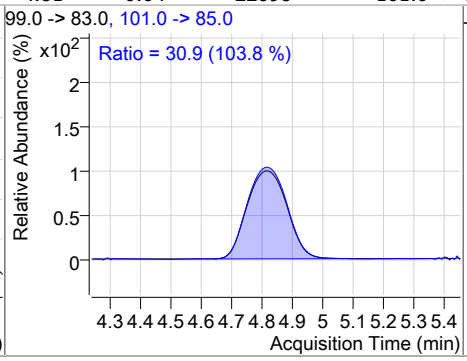

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.814 | 107.0 -> 89.0 | 41745 | NoQ | 5.00 | µg/L | -0.042 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | QValue |
| Perchlorate | 4.811 | 99.0 -> 83.0 | 22698 | 3.2 | 2.22 | µg/L | 98 |

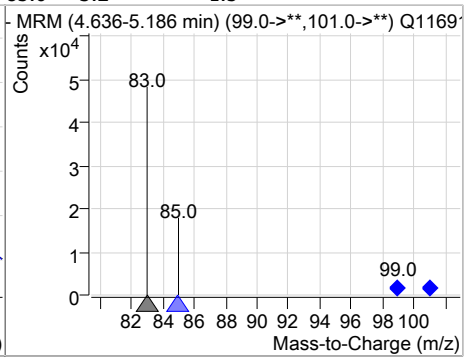
**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| Perchlorate | 2.22 | 4.81 | -0.04 | 22698 | 101.0 -> 85.0 | 3.2 | 1.5 | |

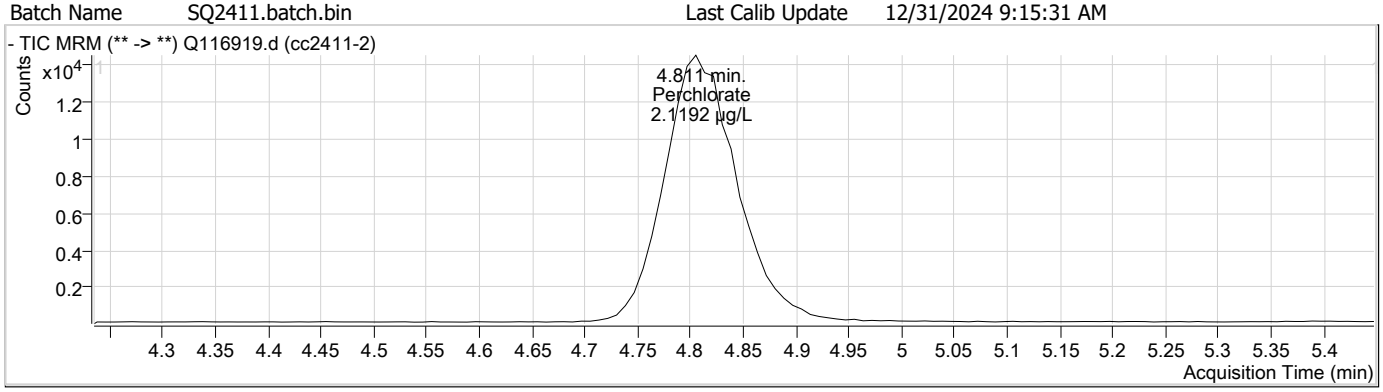


# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q116919.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/30/2024 5:43:47 PM |
| Sample Name | cc2411-2 | Instrument | Instrument 1 |
| Vial | Vial 5 | Sample Information | OP6853,SQ2411,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | SQ2411.batch.bin | Last Calib Update | 12/31/2024 9:15:31 AM |

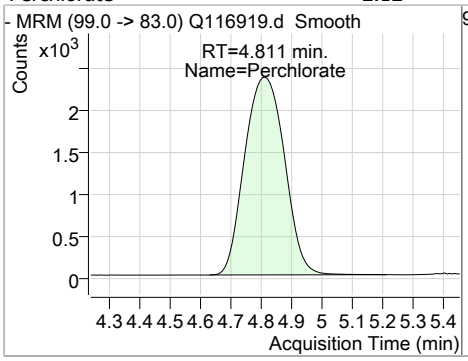


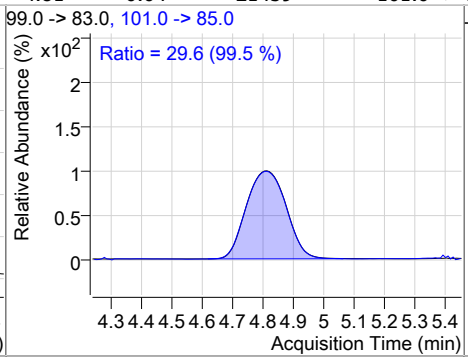

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.814 | 107.0 -> 89.0 | 41404 | NoQ | 5.00 | µg/L | -0.042 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | QValue |
| Perchlorate | 4.811 | 99.0 -> 83.0 | 21459 | 3.4 | 2.12 | µg/L | 100 |

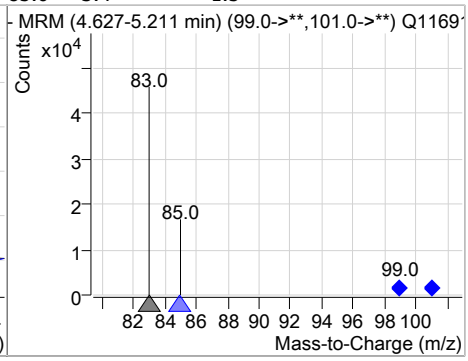
**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| Perchlorate | 2.12 | 4.81 | -0.04 | 21459 | 101.0 -> 85.0 | 3.4 | 1.5 | |

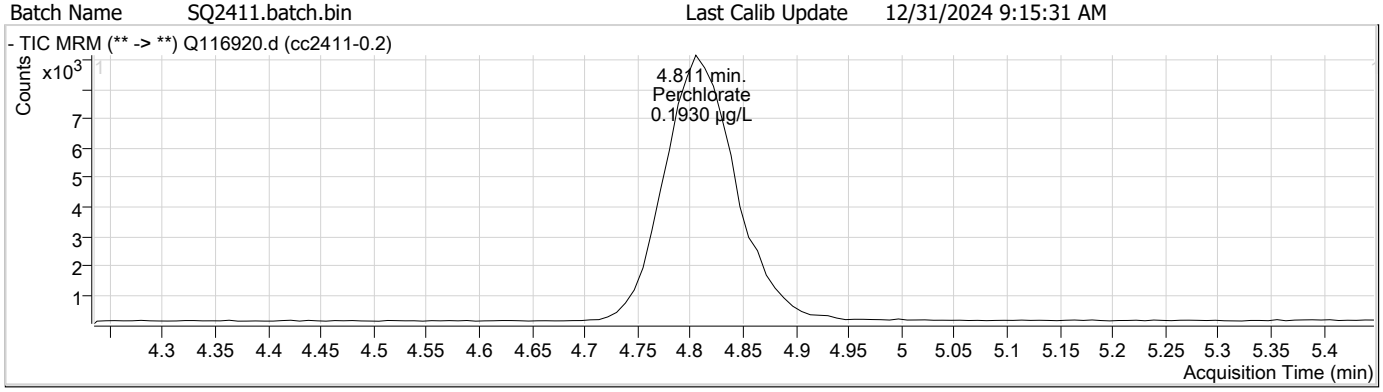


# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q116920.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/30/2024 5:50:39 PM |
| Sample Name | cc2411-0.2 | Instrument | Instrument 1 |
| Vial | Vial 2 | Sample Information | OP6853,SQ2411,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | SQ2411.batch.bin | Last Calib Update | 12/31/2024 9:15:31 AM |

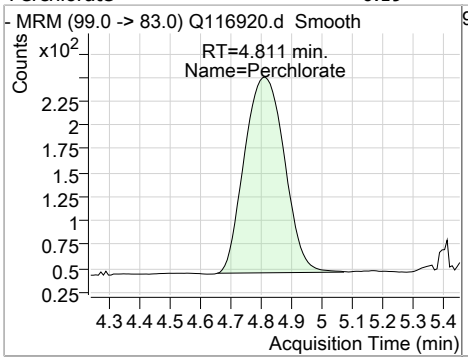


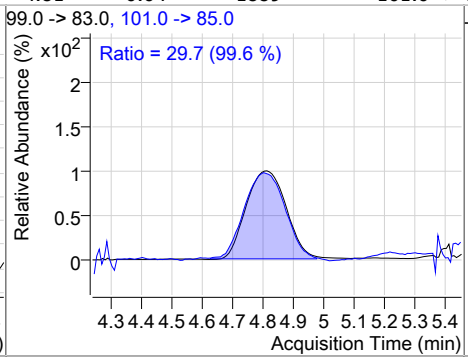

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.805 | 107.0 -> 89.0 | 40251 | NoQ | 5.00 | µg/L | -0.050 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | QValue |
| Perchlorate | 4.811 | 99.0 -> 83.0 | 1889 | 3.4 | 0.19 | µg/L | 100 |

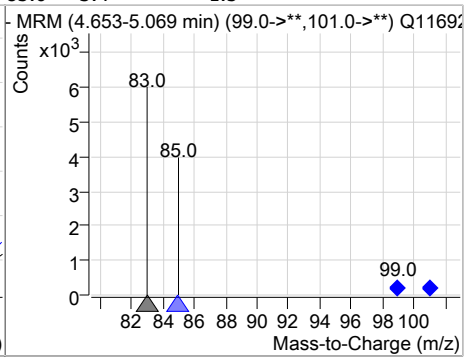
**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| Perchlorate | 0.19 | 4.81 | -0.04 | 1889 | 101.0 -> 85.0 | 3.4 | 1.5 | |

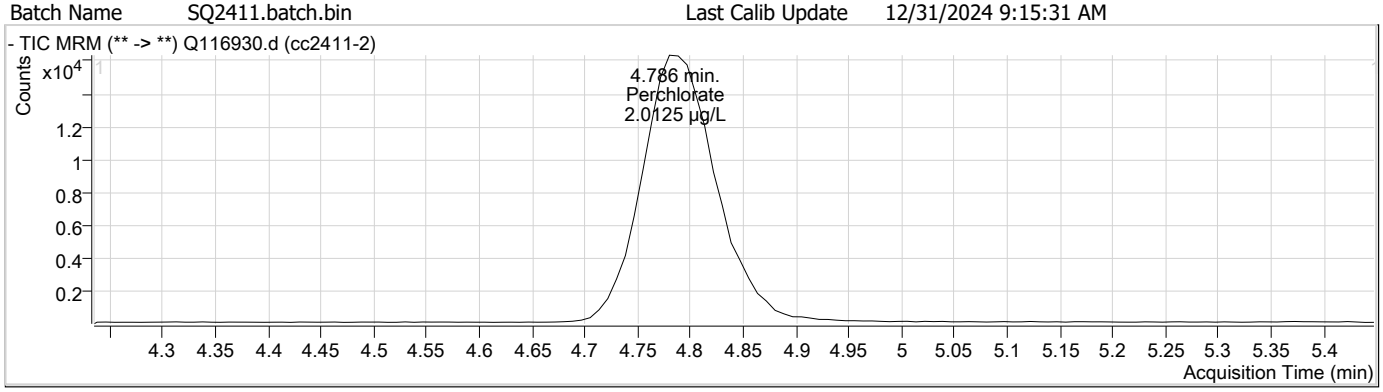


# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q116930.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/30/2024 7:06:05 PM |
| Sample Name | cc2411-2 | Instrument | Instrument 1 |
| Vial | Vial 5 | Sample Information | OP6853,SQ2411,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | SQ2411.batch.bin | Last Calib Update | 12/31/2024 9:15:31 AM |

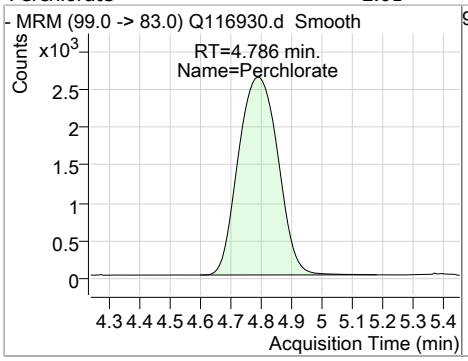


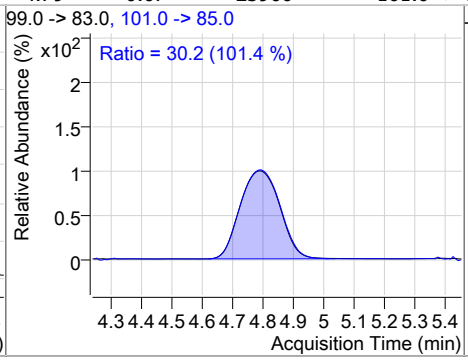

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.789 | 107.0 -> 89.0 | 48708 | NoQ | 5.00 | µg/L | -0.067 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | QValue |
| Perchlorate | 4.786 | 99.0 -> 83.0 | 23966 | 3.3 | 2.01 | µg/L | 99 |

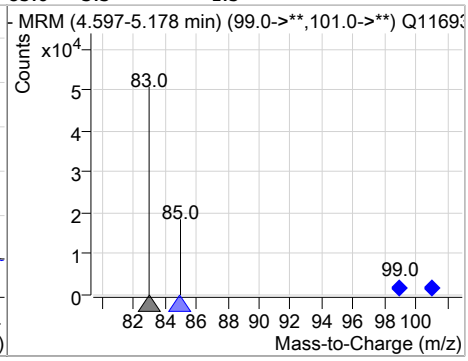
**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| Perchlorate | 2.01 | 4.79 | -0.07 | 23966 | 101.0 -> 85.0 | 3.3 | 1.5 | |

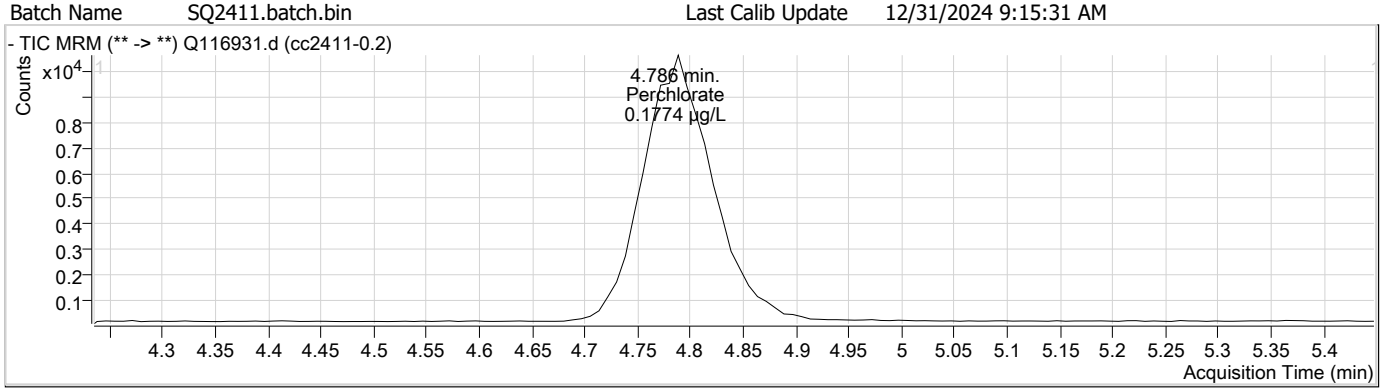


# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q116931.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/30/2024 7:12:58 PM |
| Sample Name | cc2411-0.2 | Instrument | Instrument 1 |
| Vial | Vial 2 | Sample Information | OP6853,SQ2411,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | SQ2411.batch.bin | Last Calib Update | 12/31/2024 9:15:31 AM |

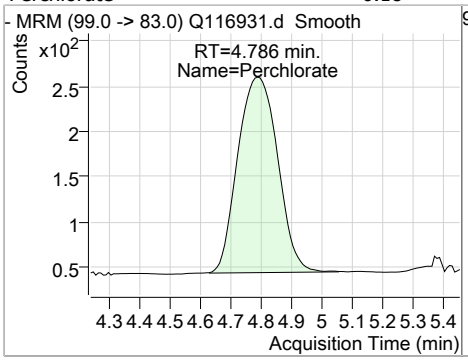


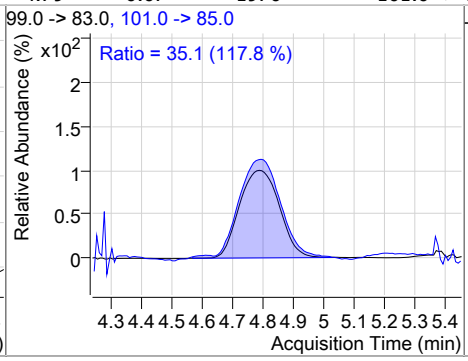

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.788 | 107.0 -> 89.0 | 45675 | NoQ | 5.00 | µg/L | -0.067 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | QValue |
| Perchlorate | 4.786 | 99.0 -> 83.0 | 1970 | 2.9 | 0.18 | µg/L | 90 |

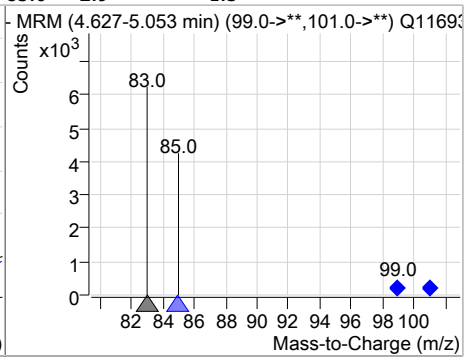
**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| Perchlorate | 0.18 | 4.79 | -0.07 | 1970 | 101.0 -> 85.0 | 2.9 | 1.5 | |

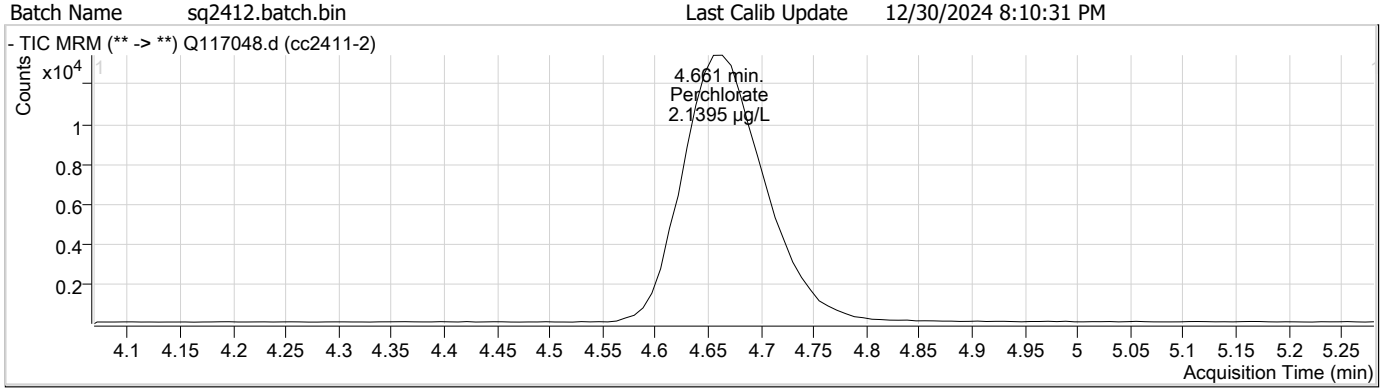


# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q117048.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/31/2024 6:09:32 PM |
| Sample Name | cc2411-2 | Instrument | Instrument 1 |
| Vial | Vial 5 | Sample Information | OP6853,SQ2412,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | sq2412.batch.bin | Last Calib Update | 12/30/2024 8:10:31 PM |

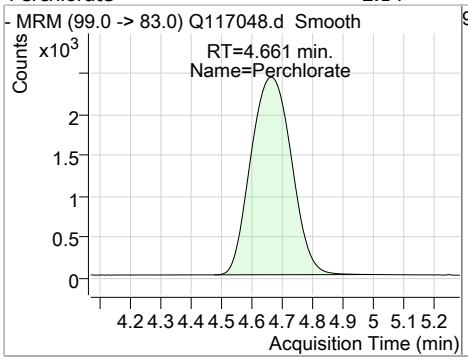


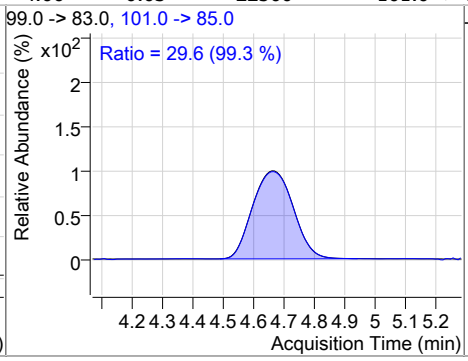

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.663 | 107.0 -> 89.0 | 43000 | NoQ | 5.00 | µg/L | -0.017 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | QValue |
| Perchlorate | 4.661 | 99.0 -> 83.0 | 22500 | 3.4 | 2.14 | µg/L | 100 |

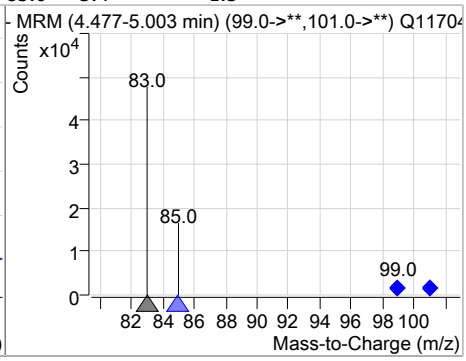
**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| Perchlorate | 2.14 | 4.66 | -0.03 | 22500 | 101.0 -> 85.0 | 3.4 | 1.5 | |

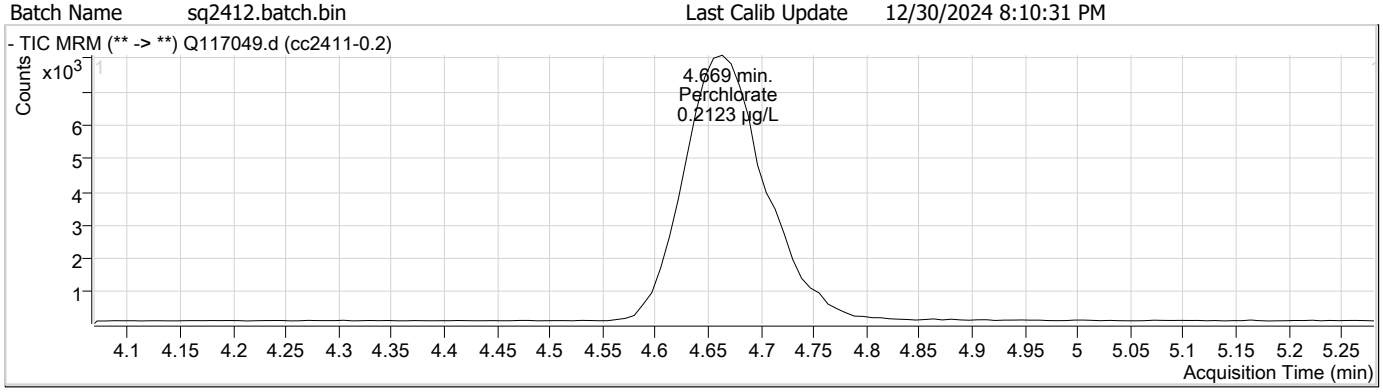


# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q117049.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/31/2024 6:16:22 PM |
| Sample Name | cc2411-0.2 | Instrument | Instrument 1 |
| Vial | Vial 2 | Sample Information | OP6853,SQ2412,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | sq2412.batch.bin | Last Calib Update | 12/30/2024 8:10:31 PM |

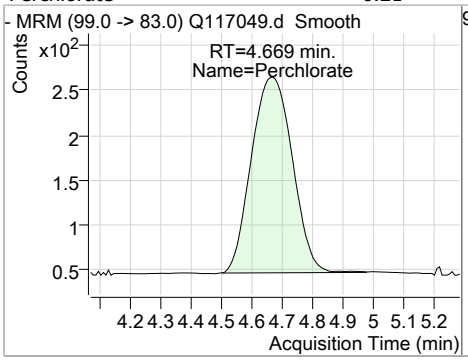


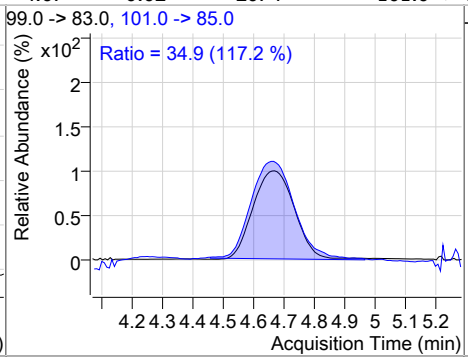

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.663 | 107.0 -> 89.0 | 40163 | NoQ | 5.00 | µg/L | -0.017 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | QValue |
| Perchlorate | 4.669 | 99.0 -> 83.0 | 2074 | 2.9 | 0.21 | µg/L | 91 |

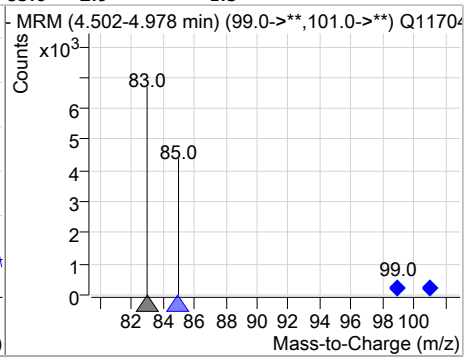
**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| Perchlorate | 0.21 | 4.67 | -0.02 | 2074 | 101.0 -> 85.0 | 2.9 | 1.5 | |

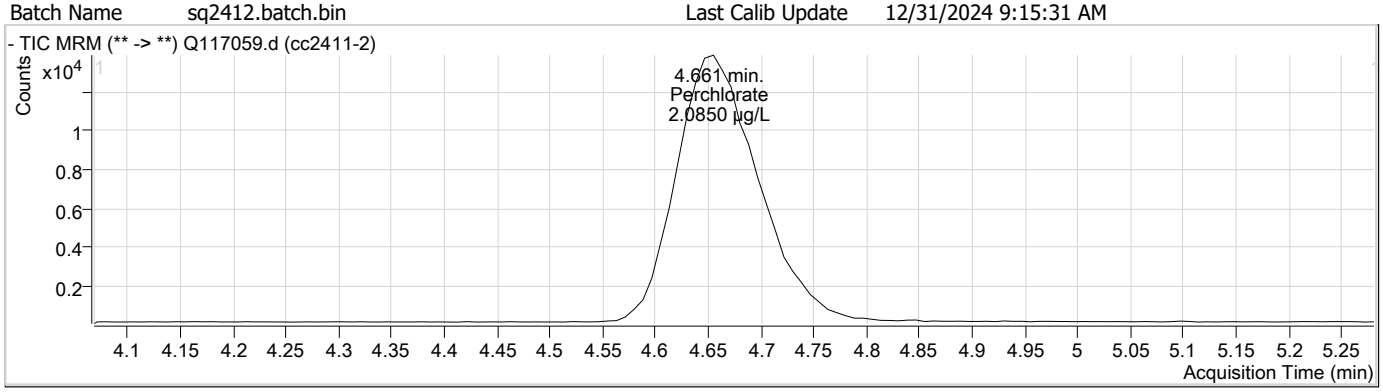


# Quantitative Analysis Report for Perchlorate by 6850

| | | | |
|---|---|---|---|
| Data File | : Q117059.d | Operator | natashag |
| Acq. Method | Perchlorate_5.m | Acq. Date-Time | 12/31/2024 7:24:56 PM |
| Sample Name | cc2411-2 | Instrument | Instrument 1 |
| Vial | Vial 5 | Sample Information | OP6853,SQ2412,10,,,10,1,water |
| DA Method File | 6850_123024_SQ2411.quantmethod.xml | Comment | |
| Batch Name | sq2412.batch.bin | Last Calib Update | 12/31/2024 9:15:31 AM |

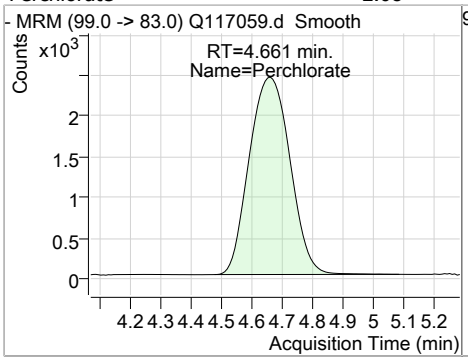


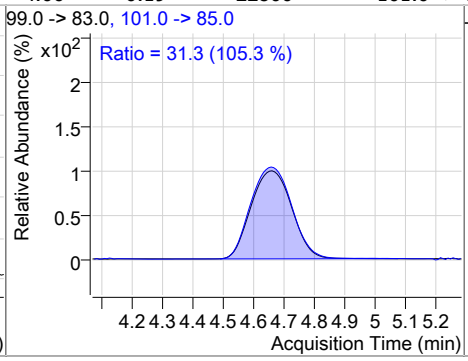

| Compound | RT | QIon | Resp. | Q-ratio | Conc. | Units | Dev(Min) |
|---|---|---|---|---|---|---|---|
| **Internal Standards** | | | | | | | |
| Cl18O4 | 4.655 | 107.0 -> 89.0 | 44730 | NoQ | 5.00 | µg/L | -0.200 |
| **System Monitoring Compounds** | | | | | | | |
| **Target Compounds** | | | | | | | QValue |
| Perchlorate | 4.661 | 99.0 -> 83.0 | 22806 | 3.2 | 2.08 | µg/L | 97 |

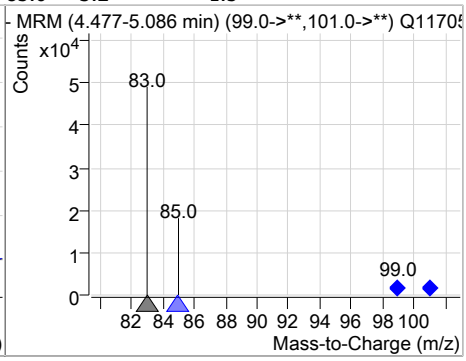
**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed; (*) = Surrogate Percent Recovery Out of Range; (d): Zeroed Peak**

# Quantitative Analysis Report for Perchlorate by 6850

| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| Perchlorate | 2.08 | 4.66 | -0.19 | 22806 | 101.0 -> 85.0 | 3.2 | 1.5 | |



## SGS ORLANDO

## LCMS1-Q ANALYSIS LOG

| | |
|---|---|
| DATE: | 12/30/24 |
| COLUMN TYPE: | K-Prime |
| AMOUNT INJ: | 5 ul |
| INSTRUMENT: | LCMS1-Q |

| | |
|---|---|
| METHODS: | 6850 |
| PROC. METH: | 6850_123024_SQ2411 |
| CAL DATE: | 12/30/24 |
| ANALYST: | MRE |
| RUN BATCH: | SQ2411 |

| | |
|---|---|
| ELUENT A LOT #: | 240884 W/0.1% AA 224297 |
| ELUENT B LOT #: | 24516 W/0.1% AA 224297 |
| IC/CC STD LOT #: | LCMS 2439 |
| ICV STD LOT #: | LCMS 2438 |
| ISTD/ID STD LOT #: | 12777B |

| | Data File | Sample | Sample Name | Method | Sample Type | Level | Misc. Info | Comments |
|---|---|---|---|---|---|---|---|---|
| 1 | Q116907.d | Vial 1 | ccb | Perchlorate_5.m | Sample | | OP6853,SQ2411,10,,,10,1,water | ✓ |
| 2 | Q116908.d | Vial 1 | ic2411-0 | Perchlorate_5.m | Sample | | OP6853,SQ2411,10,,,10,1,water | ✓ |
| 3 | Q116909.d | Vial 2 | ic2411-0.2 | Perchlorate_5.m | Calibration | 1 | OP6853,SQ2411,10,,,10,1,water | ✓ |
| 4 | Q116910.d | Vial 3 | ic2411-0.5 | Perchlorate_5.m | Calibration | 2 | OP6853,SQ2411,10,,,10,1,water | ✓ |
| 5 | Q116911.d | Vial 4 | ic2411-1.0 | Perchlorate_5.m | Calibration | 3 | OP6853,SQ2411,10,,,10,1,water | ✓ |
| 6 | Q116912.d | Vial 5 | icc2411-2 | Perchlorate_5.m | Calibration | 4 | OP6853,SQ2411,10,,,10,1,water | ✓ |
| 7 | Q116913.d | Vial 6 | ic2411-5 | Perchlorate_5.m | Calibration | 5 | OP6853,SQ2411,10,,,10,1,water | ✓ |
| 8 | Q116914.d | Vial 7 | ic2411-10 | Perchlorate_5.m | Calibration | 6 | OP6853,SQ2411,10,,,10,1,water | ✓ |
| 9 | Q116915.d | Vial 8 | ic2411-25 | Perchlorate_5.m | Calibration | 7 | OP6853,SQ2411,10,,,10,1,water | ✓ |
| 10 | Q116916.d | Vial 9 | ic2411-50 | Perchlorate_5.m | Calibration | 8 | OP6853,SQ2411,10,,,10,1,water | ✓ |
| 11 | Q116917.d | Vial 10 | icv2411-2 | Perchlorate_5.m | QC | 4 | OP6853,SQ2411,10,,,10,1,water | PASS |
| 12 | Q116918.d | P1-A1 | ics | Perchlorate_5.m | Sample | | OP6853,SQ2411,10,,,10,1,water | PASS |
| 13 | Q116919.d | Vial 5 | cc2411-2 | Perchlorate_5.m | QC | 4 | OP6853,SQ2411,10,,,10,1,water | PASS |
| 14 | Q116920.d | Vial 2 | cc2411-0.2 | Perchlorate_5.m | QC | 1 | OP6853,SQ2411,10,,,10,1,water | PASS |
| 15 | Q116921.d | P1-E7 | op6969-bs | Perchlorate_5.m | Sample | | OP6969,SQ2411,10,,,10,1,water | ✓ |
| 16 | Q116922.d | P1-E8 | op6969-mb | Perchlorate_5.m | Sample | | OP6969,SQ2411,10,,,10,1,water | ✓ |
| 17 | Q116923.d | P1-E9 | fc21117-1 | Perchlorate_5.m | Sample | | OP6969,SQ2411,10,,,10,1,water | ✓ |
| 18 | Q116924.d | P1-F1 | fc21117-2 | Perchlorate_5.m | Sample | | OP6969,SQ2411,10,,,10,1,water | ✓ |
| 19 | Q116925.d | P1-F2 | fc21117-3 | Perchlorate_5.m | Sample | | OP6969,SQ2411,10,,,10,1,water | ✓ |
| 20 | Q116926.d | P1-F3 | fc21117-4 | Perchlorate_5.m | Sample | | OP6969,SQ2411,10,,,10,1,water | ✓ |
| 21 | Q116927.d | P1-F4 | op6969-ms | Perchlorate_5.m | Sample | | OP6969,SQ2411,10,,,10,1,water | ✓ |
| 22 | Q116928.d | P1-F5 | op6969-msd | Perchlorate_5.m | Sample | | OP6969,SQ2411,10,,,10,1,water | ✓ |
| 23 | Q116929.d | P1-F6 | fc21117-5 | Perchlorate_5.m | Sample | | OP6969,SQ2411,10,,,10,1,water | ✓ |
| 24 | Q116930.d | Vial 5 | cc2411-2 | Perchlorate_5.m | QC | 4 | OP6853,SQ2411,10,,,10,1,water | PASS |
| 25 | Q116931.d | Vial 2 | cc2411-0.2 | Perchlorate_5.m | QC | 1 | OP6853,SQ2411,10,,,10,1,water | PASS |
| 26 | Q116932.d | Vial 1 | ccb | Perchlorate_5.m | Sample | | OP6853,SQ2411,10,,,10,1,water | ✓ |
| 27 | Q116933.d | P1-F7 | fc21119-1 | Perchlorate_5.m | Sample | | OP6969,SQ2411,10,,,10,2,water | ✓ |
| 28 | Q116934.d | P1-F8 | fc21119-2 | Perchlorate_5.m | Sample | | OP6969,SQ2411,10,,,10,1,water | ✓ |
| 29 | Q116935.d | P1-F9 | fc21135-1 | Perchlorate_5.m | Sample | | OP6969,SQ2411,10,,,10,500,water | ✓ |
| 30 | Q116936.d | P2-A1 | fc21135-2 | Perchlorate_5.m | Sample | | OP6969,SQ2411,10,,,10,250,water | ✓ |
| 31 | Q116937.d | P2-A2 | fc21135-3 | Perchlorate_5.m | Sample | | OP6969,SQ2411,10,,,10,500,water | ✓ |
| 32 | Q116938.d | P2-A3 | fc21135-4 | Perchlorate_5.m | Sample | | OP6969,SQ2411,10,,,10,25,water | ✓ |
| 33 | Q116939.d | P2-A4 | fc21135-5 | Perchlorate_5.m | Sample | | OP6969,SQ2411,10,,,10,1,water | ✓ |
| 34 | Q116940.d | P2-A5 | fc21135-6 | Perchlorate_5.m | Sample | | OP6969,SQ2411,10,,,10,5,water | ✓ |
| 35 | Q116941.d | P2-A6 | fc21135-7 | Perchlorate_5.m | Sample | | OP6969,SQ2411,10,,,10,1,water | ✓ |

## SGS ORLANDO LCMS1-Q ANALYSIS LOG

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 36 | Q116942.d | P2-A7 | fc21135-8 | Perchlorate_5.m | Sample | | OP6969,SQ2411,10,,,10,1,water | ✓ |
| 37 | Q116943.d | Vial 5 | cc2411-2 | Perchlorate_5.m | QC | 4 | OP6853,SQ2411,10,,,10,1,water | PASS |
| 38 | Q116944.d | Vial 2 | ecc2411-0.2 | Perchlorate_5.m | QC | 1 | OP6853,SQ2411,10,,,10,1,water | PASS |
| 39 | Q116945.d | Vial 1 | IBLK | Perchlorate_5.m | Sample | | OP6853,SQ2411,10,,,10,1,water | ✓ |

## SGS ORLANDO

## LCMS1-Q ANALYSIS LOG

| | |
|---|---|
| DATE: | 12/31/24 |
| COLUMN TYPE: | K-Prime |
| AMOUNT INJ: | 5 ul |
| INSTRUMENT: | LCMS1-Q |

| | |
|---|---|
| METHODS: | 6850 |
| PROC. METH: | 6850_123024_SQ2411 |
| CAL DATE: | 12/30/24 |
| ANALYST: | MRE |
| RUN BATCH: | SQ2412 |

| | |
|---|---|
| ELUENT A LOT #: | 240884 W/0.1% AA 224297 |
| ELUENT B LOT #: | 24516 W/0.1% AA 224297 |
| IC/CC STD LOT #: | LCMS 2439 |
| ICV STD LOT #: | LCMS 2438 |
| ISTD/ID STD LOT #: | 12777B |

| | Data File | Sample | Sample Name | Method | Sample Type | Level | Misc. Info | Comments |
|---|---|---|---|---|---|---|---|---|
| 1 | Q116997.d | Vial 1 | ccb | Perchlorate_5.m | Sample | | OP6853,SQ2412,10,,,10,1,water | ✓ |
| 2 | Q116998.d | Vial 1 | ccb | Perchlorate_5.m | Sample | | OP6853,SQ2412,10,,,10,1,water | ✓ |
| 3 | Q116999.d | P1-A1 | ics | Perchlorate_5.m | Sample | | OP6853,SQ2412,10,,,10,1,water | ✓ |
| 4 | Q117000.d | Vial 5 | cc2411-2 | Perchlorate_5.m | QC | 50x | OP6853,SQ2412,10,,,10,1,water | ✓ |
| 5 | Q117001.d | Vial 2 | cc2411-0.2 | Perchlorate_5.m | QC | 500x | OP6853,SQ2412,10,,,10,1,water | ✓ |
| 6 | Q117002.d | P2-A8 | fc21135-9 | Perchlorate_5.m | Sample | | OP6969,SQ2412,10,,,10,1,water | ✓ |
| 7 | Q117003.d | P2-A9 | fc21135-10 | Perchlorate_5.m | Sample | 50ul/10 | OP6969,SQ2412,10,,,10,200,water | ✓ |
| 8 | Q117004.d | P2-B2 | fc21135-12 | Perchlorate_5.m | Sample | 2ml/10 | OP6969,SQ2412,10,,,10,5,water | ✓ |
| 9 | Q117005.d | P2-B3 | fc21135-13 | Perchlorate_5.m | Sample | 1ml/10 | OP6969,SQ2412,10,,,10,10,water | ✓ |
| 10 | Q117006.d | P2-B2 | fc21135-12 | Perchlorate_5.m | Sample | | OP6969,SQ2412,10,,,10,,water | ✓ |
| 11 | Q117007.d | P2-B3 | fc21135-13 | Perchlorate_5.m | Sample | | OP6969,SQ2412,10,,,10,1,water | ✓ |
| 12 | Q117008.d | P2-B4 | op7077-bs | Perchlorate_5.m | Sample | | OP7077,SQ2412,10,,,10,1,water | ✓ |
| 13 | Q117009.d | P2-B5 | op7077-mb | Perchlorate_5.m | Sample | | OP7077,SQ2412,10,,,10,1,water | ✓ |
| 14 | Q117010.d | P2-B6 | fc21135-14 | Perchlorate_5.m | Sample | | OP7077,SQ2412,10,,,10,1,water | ✓ |
| 15 | Q117011.d | P2-B7 | fc21135-15 | Perchlorate_5.m | Sample | | OP7077,SQ2412,10,,,10,1,water | ✓ |
| 16 | Q117012.d | Vial 5 | cc2411-2 | Perchlorate_5.m | QC | 50x | OP7077,SQ2412,10,,,10,1,water | ✓ |
| 17 | Q117013.d | Vial 2 | cc2411-0.2 | Perchlorate_5.m | QC | 500x | OP7077,SQ2412,10,,,10,1,water | ✓ |
| 18 | Q117014.d | Vial 1 | ccb | Perchlorate_5.m | Sample | | OP6969,SQ2412,10,,,10,1,water | ✓ |
| 19 | Q117015.d | P2-C2 | fc21223-1 | Perchlorate_5.m | Sample | 200ul/10 | OP7077,SQ2412,10,,,10,50,water | ✓ |
| 20 | Q117016.d | P2-C3 | fc21223-2 | Perchlorate_5.m | Sample | 10ul/10 | OP7077,SQ2412,10,,,10,1000,water | ✓ |
| 21 | Q117017.d | P2-C4 | fc21223-3 | Perchlorate_5.m | Sample | 10ul/10 | OP7077,SQ2412,10,,,10,1000,water | ✓ |
| 22 | Q117018.d | P2-C5 | fc21223-4 | Perchlorate_5.m | Sample | 1ml/10 | OP7077,SQ2412,10,,,10,10,water | ✓ |
| 23 | Q117019.d | P2-C6 | fc21223-5 | Perchlorate_5.m | Sample | 1ml/10 | OP7077,SQ2412,10,,,10,10,water | ✓ |
| 24 | Q117020.d | P2-C7 | fc21223-6 | Perchlorate_5.m | Sample | 1ml/10 | OP7077,SQ2412,10,,,10,10,water | ✓ |
| 25 | Q117021.d | P2-C8 | fc21223-7 | Perchlorate_5.m | Sample | | OP7077,SQ2412,10,,,10,1,water | ✓ |
| 26 | Q117022.d | Vial 5 | cc2411-2 | Perchlorate_5.m | QC | 50x | OP6853,SQ2412,10,,,10,1,water | ✓ |
| 27 | Q117023.d | Vial 2 | cc2411-0.2 | Perchlorate_5.m | QC | 500x | OP6853,SQ2412,10,,,10,1,water | ✓ |
| 28 | Q117024.d | Vial 1 | ccb | Perchlorate_5.m | Sample | | OP6853,SQ2412,10,,,10,1,water | ✓ |
| 29 | Q117025.d | P2-C9 | fc21223-8 | Perchlorate_5.m | Sample | | OP7077,SQ2412,10,,,10,1,water | ✓ |
| 30 | Q117026.d | P2-D1 | fc21225-1 | Perchlorate_5.m | Sample | | OP7077,SQ2412,10,,,10,1,water | ✓ |
| 31 | Q117027.d | P2-D2 | fc21225-2 | Perchlorate_5.m | Sample | 10ul/10 | OP7077,SQ2412,10,,,10,1000,water | ✓ |
| 32 | Q117028.d | P2-D3 | fc21225-3 | Perchlorate_5.m | Sample | | OP7077,SQ2412,10,,,10,1,water | ✓ |
| 33 | Q117029.d | P2-D4 | fc21225-4 | Perchlorate_5.m | Sample | 10ul/10 | OP7077,SQ2412,10,,,10,1000,water | ✓ |
| 34 | Q117030.d | P2-D5 | fc21225-5 | Perchlorate_5.m | Sample | | OP7077,SQ2412,10,,,10,1,water | ✓ |
| 35 | Q117031.d | P2-D6 | fc21225-6 | Perchlorate_5.m | Sample | 200ul/10 | OP7077,SQ2412,10,,,10,50,water | ✓ |

## SGS ORLANDO LCMS1-Q ANALYSIS LOG

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 36 | Q117032.d | P2-D7 | fc21225-7 | Perchlorate_5.m | Sample | | OP7077,SQ2412,10,,,10,1,water | ✓ |
| 37 | Q117033.d | P2-D8 | fc21225-8 | Perchlorate_5.m | Sample | | OP7077,SQ2412,10,,,10,1,water | ✓ |
| 38 | Q117034.d | P2-D9 | fc21225-9 | Perchlorate_5.m | Sample | | OP7077,SQ2412,10,,,10,1,water | ✓ |
| 39 | Q117035.d | Vial 5 | cc2411-2 | Perchlorate_5.m | QC | 50x | OP7077,SQ2412,10,,,10,1,water | ✓ |
| 40 | Q117036.d | Vial 2 | cc2411-0.2 | Perchlorate_5.m | QC | 500x | OP7077,SQ2412,10,,,10,1,water | ✓ |
| 41 | Q117037.d | Vial 1 | ccb | Perchlorate_5.m | Sample | | OP7077,SQ2412,10,,,10,1,water | ✓ |
| 42 | Q117038.d | P2-E1 | op7078-bs | Perchlorate_5.m | Sample | | OP7078,SQ2412,10,,,10,1,water | ✓ |
| 43 | Q117039.d | P2-E2 | op7078-mb | Perchlorate_5.m | Sample | | OP7078,SQ2412,10,,,10,1,water | ✓ |
| 44 | Q117040.d | P2-E3 | fc21225-10 | Perchlorate_5.m | Sample | 10ul/10 | OP7078,SQ2412,10,,,10,1000,water | ✓ |
| 45 | Q117041.d | P2-E4 | fc21225-11 | Perchlorate_5.m | Sample | 10ul/10 | OP7078,SQ2412,10,,,10,1000,water | ✓ |
| 46 | Q117042.d | P2-E5 | op7078-ms | Perchlorate_5.m | Sample | 10ul/10 | OP7078,SQ2412,10,,,10,1000,water | ✓ |
| 47 | Q117043.d | P2-E6 | op7078-msd | Perchlorate_5.m | Sample | 10ul/10 | OP7078,SQ2412,10,,,10,1000,water | ✓ |
| 48 | Q117044.d | P2-F1 | fc20936-1 | Perchlorate_5.m | Sample | 50ul/10 | OP6967,SQ2412,10,,,10,200,water | ✓ |
| 49 | Q117045.d | P2-F2 | fc21021-3 | Perchlorate_5.m | Sample | 100ul/10 | OP6967,SQ2412,10,,,10,100,water | ✓ |
| 50 | Q117046.d | P2-F3 | fc21024-6 | Perchlorate_5.m | Sample | 40ul/10 | OP6968,SQ2412,10,,,10,250,water | ✓ |
| 51 | Q117047.d | P2-F4 | fc21024-13 | Perchlorate_5.m | Sample | 20ul/10 | OP6968,SQ2412,10,,,10,5000,water | ✓ |
| 52 | Q117048.d | Vial 5 | cc2411-2 | Perchlorate_5.m | QC | 50x | OP6853,SQ2412,10,,,10,1,water | ✓ |
| 53 | Q117049.d | Vial 2 | cc2411-0.2 | Perchlorate_5.m | QC | 500x | OP6853,SQ2412,10,,,10,1,water | ✓ |
| 54 | Q117050.d | Vial 1 | ccb | Perchlorate_5.m | Sample | | OP6853,SQ2412,10,,,10,1,water | ✓ |
| 55 | Q117051.d | P2-C2 | fc21223-1 | Perchlorate_5.m | Sample | | OP7077,SQ2412,10,,,10,,water | ✓ |
| 56 | Q117052.d | P1-F3 | fc21117-4 | Perchlorate_5.m | Sample | | OP6969,SQ2412,10,,,10,1,water | ✓ |
| 57 | Q117053.d | P1-F4 | op6969-ms | Perchlorate_5.m | Sample | | OP6969,SQ2412,10,,,10,1,water | ✓ |
| 58 | Q117054.d | P1-F5 | op6969-msd | Perchlorate_5.m | Sample | | OP6969,SQ2412,10,,,10,1,water | ✓ |
| 59 | Q117055.d | P2-B1 | fc21135-11 | Perchlorate_5.m | Sample | | OP6969,SQ2412,10,,,10,5000,water | rr 10,0000x |
| 60 | Q117056.d | P2-B8 | fc21135-16 | Perchlorate_5.m | Sample | | OP7077,SQ2412,10,,,10,250,water | rr 2500x |
| 61 | Q117057.d | P2-B9 | op7077-ms | Perchlorate_5.m | Sample | | OP7077,SQ2412,10,,,10,250,water | rr 2500x |
| 62 | Q117058.d | P2-C1 | op7077-msd | Perchlorate_5.m | Sample | | OP7077,SQ2412,10,,,10,250,water | rr 2500x |
| 63 | Q117059.d | Vial 5 | cc2411-2 | Perchlorate_5.m | QC | 50x | OP6853,SQ2412,10,,,10,1,water | ✓ |
| 64 | Q117060.d | Vial 2 | ecc2411-0.2 | Perchlorate_5.m | QC | 500x | OP6853,SQ2412,10,,,10,1,water | ✓ |
| 65 | Q117061.d | Vial 1 | iblk | Perchlorate_5.m | Sample | | OP6853,SQ2412,10,,,10,1,water | ✓ |

**SGS - ORLANDO**

# PERCHLORATE PREP REPORT

Date/Time: 12/16/24 18:00 Started {mm/dd/yy 24:00}

Date/Time: 12/19/24 1630 Finished {mm/dd/yy 24:00}

Prep Method: **6850**

Analytical Method: **6850**

Batch# OP69169 Ext. By: — Conc. By: — Vialed By: AS

| Sample ID | Bottle Number | Amount extracted ml / g (circle one) | Initial pH | Adjusted pH | Surrogate Amount | Spike Amount | Final Volume (ml) | Comments |
|---|---|---|---|---|---|---|---|---|
| OP 69169 MB | ~~AS 12/16/24~~ | 10.0 | | | | | 10.0 | |
| OP 69169 BS | ~~AS 12/16/24~~ | ↓ | | | | 20ul | ↓ | |
| FC21117-1 | 1 | | | | | | | |
| -2 | 1 | | | | | | | |
| -3 | 1 | | | | | | | |
| -4 | 2 | | | | | | | MS/MSD |
| -5 | 1 | | | | | | | |
| FC21119-1 | 1 | | | | | | | |
| -2 | 1 | | | | | | | |
| FC21135-1 | 1 | | | | | | | |
| -2 | 1 | | | | | | | |
| -3 | 1 | | | | | | | |
| -4 | 1 | | | | | | | |
| -5 | 1 | | | | | | | |
| -6 | 1 | | | | | | | high cond. |
| -7 | 1 | | | | | | | |
| -8 | 1 | | | | | | | |
| -9 | 1 | | | | | | | |
| -10 | 1 | | | | | | | |
| -11 | 1 | | | | | | | |
| -12 | 1 | | | | | | | |
| -13 | 1 | | | | | | | |
| OP69169 MS | 2 | ↓ | | | | 20ul | ↓ | FC21117-4 |
| OP69169 MSD | 2 | | | | | ↓ | | FC21117-4 |
| DUP | | | | | | | | |

**Comments:**

Surr. ID: 12818A (ISTD) Conc: 1.0mg/L Exp. Date: 06/01/25 Inj. By: AS Ver. By MB

Spk. ID: LCMS 2438 Conc: 100ppb Exp. Date: 06/03/25 Inj. By: AS Ver. By MB

Pipette ID LC30 Pipette ID — Pipette ID —

Acetonitrile Lot # — Sonicator ID — Time In: — Time Out: —

{mm/dd/yy 24:00} {mm/dd/yy 24:00}

Syringe Filter Lot# — pH Paper # — HPLC Water # 243464

Relinquished By: Anna Sellers Date: 12/19/24

Accepted By: Anna Sellers Date: 12/19/24

Perchlorate Prep Report 091823 SI.xls

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7.7.1

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## GC/LC Semi-volatiles

### QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- GC Identification Summaries (Explosives)
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries
- Initial and Continuing Calibration Summaries
- Run Sequence Reports

# Method Blank Summary



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP6902-MB | BB085955.D | 1 | 12/17/24 | FS | 12/12/24 | OP6902 | GBB2633 |

**The QC reported here applies to the following samples:** **Method:** SW846 8330B

FC21117-1, FC21117-2, FC21117-3, FC21117-4, FC21117-5

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 2691-41-0 | HMX | ND | 0.20 | 0.080 | ug/l | |
| 121-82-4 | RDX | ND | 0.20 | 0.080 | ug/l | |
| | DNX | ND | 0.20 | 0.080 | ug/l | |
| | MNX | ND | 0.20 | 0.080 | ug/l | |
| | TNX | ND | 0.20 | 0.080 | ug/l | |
| 618-87-1 | 3,5-Dinitroaniline | ND | 0.20 | 0.080 | ug/l | |
| 99-65-0 | 1,3-Dinitrobenzene | ND | 0.20 | 0.080 | ug/l | |
| 606-20-2 | 2,6-Dinitrotoluene | ND | 0.20 | 0.080 | ug/l | |
| 121-14-2 | 2,4-Dinitrotoluene | ND | 0.20 | 0.080 | ug/l | |
| 35572-78-2 | 2-amino-4,6-Dinitrotoluene | ND | 0.20 | 0.080 | ug/l | |
| 19406-51-0 | 4-amino-2,6-Dinitrotoluene | ND | 0.20 | 0.080 | ug/l | |
| 98-95-3 | Nitrobenzene | ND | 0.20 | 0.097 | ug/l | |
| 88-72-2 | o-Nitrotoluene | ND | 0.20 | 0.080 | ug/l | |
| 99-08-1 | m-Nitrotoluene | ND | 0.20 | 0.080 | ug/l | |
| 99-99-0 | p-Nitrotoluene | ND | 0.20 | 0.080 | ug/l | |
| 479-45-8 | Tetryl | ND | 0.20 | 0.080 | ug/l | |
| 99-35-4 | 1,3,5-Trinitrobenzene | ND | 0.20 | 0.099 | ug/l | |
| 118-96-7 | 2,4,6-Trinitrotoluene | ND | 0.20 | 0.080 | ug/l | |
| 55-63-0 | Nitroglycerine | ND | 2.0 | 0.50 | ug/l | |
| 78-11-5 | PETN | ND | 2.0 | 0.50 | ug/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 610-39-9 | 3,4-Dinitrotoluene | 72% | 70-136% |

# Method Blank Summary



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP6902-MB | GG630901.D | 1 | 12/18/24 | FS | 12/12/24 | OP6902 | GGG3516 |

**The QC reported here applies to the following samples:** **Method:** SW846 8330B

FC21117-1, FC21117-2, FC21117-3, FC21117-4, FC21117-5

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 2691-41-0 | HMX | ND | 0.20 | 0.080 | ug/l | |
| 121-82-4 | RDX | ND | 0.20 | 0.080 | ug/l | |
| | DNX | ND | 0.20 | 0.080 | ug/l | |
| | MNX | ND | 0.20 | 0.080 | ug/l | |
| | TNX | ND | 0.20 | 0.080 | ug/l | |
| 618-87-1 | 3,5-Dinitroaniline | ND | 0.20 | 0.080 | ug/l | |
| 99-65-0 | 1,3-Dinitrobenzene | ND | 0.20 | 0.080 | ug/l | |
| 606-20-2 | 2,6-Dinitrotoluene | ND | 0.20 | 0.080 | ug/l | |
| 121-14-2 | 2,4-Dinitrotoluene | ND | 0.20 | 0.080 | ug/l | |
| 35572-78-2 | 2-amino-4,6-Dinitrotoluene | ND | 0.20 | 0.080 | ug/l | |
| 19406-51-0 | 4-amino-2,6-Dinitrotoluene | ND | 0.20 | 0.080 | ug/l | |
| 98-95-3 | Nitrobenzene | ND | 0.20 | 0.097 | ug/l | |
| 88-72-2 | o-Nitrotoluene | ND | 0.20 | 0.080 | ug/l | |
| 99-08-1 | m-Nitrotoluene | ND | 0.20 | 0.080 | ug/l | |
| 99-99-0 | p-Nitrotoluene | ND | 0.20 | 0.080 | ug/l | |
| 479-45-8 | Tetryl | ND | 0.20 | 0.080 | ug/l | |
| 99-35-4 | 1,3,5-Trinitrobenzene | ND | 0.20 | 0.099 | ug/l | |
| 118-96-7 | 2,4,6-Trinitrotoluene | ND | 0.20 | 0.080 | ug/l | |
| 55-63-0 | Nitroglycerine | ND | 2.0 | 0.50 | ug/l | |
| 78-11-5 | PETN | ND | 2.0 | 0.50 | ug/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 610-39-9 | 3,4-Dinitrotoluene | 84% | 70-136% |

# Blank Spike Summary



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP6902-BS | BB085954.D | 1 | 12/17/24 | FS | 12/12/24 | OP6902 | GBB2633 |

**The QC reported here applies to the following samples:** **Method:** SW846 8330B

FC21117-1, FC21117-2, FC21117-3, FC21117-4, FC21117-5

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 2691-41-0 | HMX | 5 | 5.0 | 100 | 77-144 |
| 121-82-4 | RDX | 5 | 4.6 | 92 | 77-125 |
| | DNX | 5 | 6.6 | 132* | 66-127 |
| | MNX | 5.8 | 7.7 | 133 | 71-137 |
| | TNX | 2.35 | 2.8 | 119 | 60-126 |
| 618-87-1 | 3,5-Dinitroaniline | 5 | 4.4 | 88 | 77-115 |
| 99-65-0 | 1,3-Dinitrobenzene | 5 | 4.3 | 86 | 79-122 |
| 606-20-2 | 2,6-Dinitrotoluene | 5 | 4.3 | 86 | 81-131 |
| 121-14-2 | 2,4-Dinitrotoluene | 5 | 4.6 | 92 | 80-123 |
| 35572-78-2 | 2-amino-4,6-Dinitrotoluene | 5 | 4.6 | 92 | 81-120 |
| 19406-51-0 | 4-amino-2,6-Dinitrotoluene | 5 | 4.5 | 90 | 79-119 |
| 98-95-3 | Nitrobenzene | 5 | 4.1 | 82 | 78-130 |
| 88-72-2 | o-Nitrotoluene | 5 | 3.9 | 78 | 76-131 |
| 99-08-1 | m-Nitrotoluene | 5 | 4.1 | 82 | 78-122 |
| 99-99-0 | p-Nitrotoluene | 5 | 4.1 | 82 | 79-124 |
| 479-45-8 | Tetryl | 5 | 3.9 | 78 | 65-124 |
| 99-35-4 | 1,3,5-Trinitrobenzene | 5 | 4.2 | 84 | 79-128 |
| 118-96-7 | 2,4,6-Trinitrotoluene | 5 | 4.3 | 86 | 72-112 |
| 55-63-0 | Nitroglycerine | 5 | 4.7 | 94 | 69-123 |
| 78-11-5 | PETN | 5 | 5.2 | 104 | 73-145 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 610-39-9 | 3,4-Dinitrotoluene | 87% | 70-136% |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP6902-MS | BB085960.D | 1 | 12/17/24 | FS | 12/12/24 | OP6902 | GBB2633 |
| OP6902-MSD | BB085961.D | 1 | 12/17/24 | FS | 12/12/24 | OP6902 | GBB2633 |
| FC21117-4 [a] | BB085959.D | 1 | 12/17/24 | FS | 12/12/24 | OP6902 | GBB2633 |
| FC21117-4 [b] | GG630904.D | 1 | 12/18/24 | FS | 12/12/24 | OP6902 | GGG3516 |

**The QC reported here applies to the following samples:** **Method:** SW846 8330B

FC21117-1, FC21117-2, FC21117-3, FC21117-4, FC21117-5

| CAS No. | Compound | FC21117-4 ug/l | Q | Spike ug/l | MS ug/l | MS % | Spike ug/l | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2691-41-0 | HMX | 12.8 | | 10.9 | 22.9 | 93 | 10.9 | 28.5 | 144 | 22* | 77-144/21 |
| 121-82-4 | RDX | 0.34 | | 10.9 | 9.7 | 86 | 10.9 | 12.5 | 112 | 25* | 77-125/19 |
| | DNX | 0.21 | U | 10.9 | 15.2 | 140* | 10.9 | 16.1 | 148* | 6 | 66-127/25 |
| | MNX | 0.21 | U | 12.6 | 14.9 | 118 | 12.6 | 21.7 | 172* | 37* | 71-137/20 |
| | TNX | 0.21 | U | 5.11 | 7.0 | 137* | 5.11 | 8.7 | 170* | 22* | 60-126/18 |
| 618-87-1 | 3,5-Dinitroaniline | 9.2 | | 10.9 | 10.5 | 12* | 10.9 | 21.6 | 114 | 69* | 77-115/19 |
| 99-65-0 | 1,3-Dinitrobenzene | 0.21 | U | 10.9 | 9.2 | 85 | 10.9 | 11.2 | 103 | 20* | 79-122/17 |
| 606-20-2 | 2,6-Dinitrotoluene | 0.21 | U | 10.9 | 9.3 | 86 | 10.9 | 9.5 | 87 | 2 | 81-131/17 |
| 121-14-2 | 2,4-Dinitrotoluene | 0.21 | U | 10.9 | 9.7 | 89 | 10.9 | 10.1 | 93 | 4 | 80-123/19 |
| 35572-78-2 | 2-amino-4,6-Dinitrotoluene | 3.8 | | 10.9 | 13.1 | 86 | 10.9 | 14.0 | 94 | 7 | 81-120/19 |
| 19406-51-0 | 4-amino-2,6-Dinitrotoluene | 3.3 | | 10.9 | 12.5 | 85 | 10.9 | 13.2 | 91 | 5 | 79-119/20 |
| 98-95-3 | Nitrobenzene | 0.21 | U | 10.9 | 11.1 | 102 | 10.9 | 16.3 | 150* | 38* | 78-130/19 |
| 88-72-2 | o-Nitrotoluene | 0.21 | U | 10.9 | 9.4 | 86 | 10.9 | 9.7 | 89 | 3 | 76-131/20 |
| 99-08-1 | m-Nitrotoluene | 0.21 | U | 10.9 | 9.6 | 88 | 10.9 | 10.1 | 93 | 5 | 78-122/18 |
| 99-99-0 | p-Nitrotoluene | 0.21 | U | 10.9 | 9.4 | 86 | 10.9 | 9.8 | 90 | 4 | 79-124/18 |
| 479-45-8 | Tetryl | 0.21 | U | 10.9 | 8.3 | 70 | 10.9 | 8.9 | 75 | 7 | 65-124/20 |
| 99-35-4 | 1,3,5-Trinitrobenzene | 4.6 | | 10.9 | 12.8 | 75* | 10.9 | 13.9 | 86 | 8 | 79-128/16 |
| 118-96-7 | 2,4,6-Trinitrotoluene | 2.7 | | 10.9 | 11.7 | 83 | 10.9 | 12.0 | 86 | 3 | 72-112/16 |
| 55-63-0 | Nitroglycerine | 2.1 | U | 10.9 | 10.4 | 96 | 10.9 | 10.1 | 93 | 3 | 69-123/18 |
| 78-11-5 | PETN | 2.1 | U | 10.9 | 11.3 | 104 | 10.9 | 11.9 | 109 | 5 | 73-145/18 |

| CAS No. | Surrogate Recoveries | MS | MSD | FC21117-4 | FC21117-4 | Limits |
|---|---|---|---|---|---|---|
| 610-39-9 | 3,4-Dinitrotoluene | 78% | 81% | 82% | 105% | 70-136% |

(a) All hits confirmed by reanalysis on a dissimilar column.
(b) Confirmation run.

* = Outside of Control Limits.

# GC Identification Summary (Explosives)



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

| | | | |
|---|---|---|---|
| **Sample ID:** | FC21117-1 | **Method:** | SW846 8330B |
| **Client ID:** | 54MW13 | | |

| Injection Type | Lab File ID | Dilution | Prep Batch | Inst Batch | Injection Time | Inst ID |
|---|---|---|---|---|---|---|
| Reportable | BB085956.D | 1 | OP6902 | GBB2633 | 12/17/24 16:55 | GCBB |
| Confirmation | GG630902.D | 1 | OP6902 | GGG3516 | 12/18/24 17:26 | GCGG |

| Compound | Lab File ID | Dilution | Sig# | Conc | Q | Units | RPD Conc |
|---|---|---|---|---|---|---|---|
| HMX | BB085956.D | 1 | 1 | 4 | | ug/l | 11.8 |
| HMX | GG630902.D | 1 | 1 | 4.5 | | ug/l | |
| RDX [a] | BB085956.D | 1 | 1 | 1.2 | | ug/l | 54.0 |
| RDX | GG630902.D | 1 | 1 | .69 | | ug/l | |
| 3,5-Dinitroaniline [a] | BB085956.D | 1 | 1 | 33.7 | | ug/l | 159.5 |
| 3,5-Dinitroaniline | GG630902.D | 1 | 1 | 3.8 | | ug/l | |
| 2-amino-4,6-Dinitrotoluene | BB085956.D | 1 | 1 | 3.3 | | ug/l | 9.5 |
| 2-amino-4,6-Dinitrotoluene | GG630902.D | 1 | 1 | 3 | | ug/l | |
| 4-amino-2,6-Dinitrotoluene | BB085956.D | 1 | 1 | 2.3 | | ug/l | 23.1 |
| 4-amino-2,6-Dinitrotoluene | GG630902.D | 1 | 1 | 2.9 | | ug/l | |
| 1,3,5-Trinitrobenzene | BB085956.D | 1 | 1 | 29.4 | | ug/l | 5.0 |
| 1,3,5-Trinitrobenzene | GG630902.D | 1 | 1 | 30.9 | | ug/l | |
| 2,4,6-Trinitrotoluene | BB085956.D | 1 | 1 | 26.8 | | ug/l | 4.4 |
| 2,4,6-Trinitrotoluene | GG630902.D | 1 | 1 | 28 | | ug/l | |

(a) Primary and confirmation results differ by more than 40%.

# GC Identification Summary (Explosives)



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

| | | | |
|---|---|---|---|
| **Sample ID:** | FC21117-3 | **Method:** | SW846 8330B |
| **Client ID:** | 54TW10 | | |

| Injection Type | Lab File ID | Dilution | Prep Batch | Inst Batch | Injection Time | Inst ID |
|---|---|---|---|---|---|---|
| Reportable | BB085958.D | 1 | OP6902 | GBB2633 | 12/17/24 17:48 | GCBB |
| Confirmation | GG630903.D | 1 | OP6902 | GGG3516 | 12/18/24 17:55 | GCGG |

| Compound | Lab File ID | Dilution | Sig# | Conc | Q | Units | RPD Conc |
|---|---|---|---|---|---|---|---|
| HMX [a] | BB085958.D | 1 | 1 | .26 | | ug/l | 53.7 |
| HMX | GG630903.D | 1 | 1 | .15 | J | ug/l | |

(a) Primary and confirmation results differ by more than 40%.

# GC Identification Summary (Explosives)



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

| | | | |
|---|---|---|---|
| **Sample ID:** | FC21117-4 | **Method:** | SW846 8330B |
| **Client ID:** | 54MW12 | | |

| Injection Type | Lab File ID | Dilution | Prep Batch | Inst Batch | Injection Time | Inst ID |
|---|---|---|---|---|---|---|
| Reportable | BB085959.D | 1 | OP6902 | GBB2633 | 12/17/24 18:15 | GCBB |
| Confirmation | GG630904.D | 1 | OP6902 | GGG3516 | 12/18/24 18:25 | GCGG |

| Compound | Lab File ID | Dilution | Sig# | Conc | Q | Units | RPD Conc |
|---|---|---|---|---|---|---|---|
| HMX | BB085959.D | 1 | 1 | 12.8 | | ug/l | 5.3 |
| HMX | GG630904.D | 1 | 1 | 13.5 | | ug/l | |
| RDX | BB085959.D | 1 | 1 | .34 | | ug/l | 30.5 |
| RDX | GG630904.D | 1 | 1 | .25 | | ug/l | |
| 3,5-Dinitroaniline [a] | BB085959.D | 1 | 1 | 9.2 | | ug/l | 134.5 |
| 3,5-Dinitroaniline | GG630904.D | 1 | 1 | 1.8 | | ug/l | |
| 2-amino-4,6-Dinitrotoluene | BB085959.D | 1 | 1 | 3.8 | | ug/l | 5.4 |
| 2-amino-4,6-Dinitrotoluene | GG630904.D | 1 | 1 | 3.6 | | ug/l | |
| 4-amino-2,6-Dinitrotoluene | BB085959.D | 1 | 1 | 3.3 | | ug/l | 14.1 |
| 4-amino-2,6-Dinitrotoluene | GG630904.D | 1 | 1 | 3.8 | | ug/l | |
| 1,3,5-Trinitrobenzene | BB085959.D | 1 | 1 | 4.6 | | ug/l | 2.2 |
| 1,3,5-Trinitrobenzene | GG630904.D | 1 | 1 | 4.5 | | ug/l | |
| 2,4,6-Trinitrotoluene | BB085959.D | 1 | 1 | 2.7 | | ug/l | 7.7 |
| 2,4,6-Trinitrotoluene | GG630904.D | 1 | 1 | 2.5 | | ug/l | |

(a) Primary and confirmation results differ by more than 40%.

# Surrogate Recovery Summary



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Method:** SW846 8330B **Matrix:** AQ

**Samples and QC shown here apply to the above method**

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| FC21117-1 | BB085956.D | 80 |
| FC21117-1 | GG630902.D | 118 |
| FC21117-2 | BB085957.D | 79 |
| FC21117-3 | BB085958.D | 81 |
| FC21117-3 | GG630903.D | 100 |
| FC21117-4 | GG630904.D | 105 |
| FC21117-4 | BB085959.D | 82 |
| FC21117-5 | BB085962.D | 84 |
| OP6902-BS | BB085954.D | 87 |
| OP6902-MB | BB085955.D | 72 |
| OP6902-MB | GG630901.D | 84 |
| OP6902-MS | BB085960.D | 78 |
| OP6902-MSD | BB085961.D | 81 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| **S1** = 3,4-Dinitrotoluene | 70-136% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

| | | | |
|---|---|---|---|
| **Check Std:** | GGG3516-CC3484 | **Injection Date:** | 12/18/24 |
| **Lab File ID:** | GG630896.D | **Injection Time:** | 13:49 |
| **Instrument ID:** | GCGG | **Method:** | SW846 8330B |

| | **S1** [a] **RT** |
|---|---|
| Check Std | 13.66 |

| **Lab Sample ID** | **Lab File ID** | **Date Analyzed** | **Time Analyzed** | **S1** [a] **RT** |
|---|---|---|---|---|
| OP6848-MB | GG630897.D | 12/18/24 | 14:49 | 13.41 |
| FC21058-1 | GG630898.D | 12/18/24 | 15:19 | 13.17 |
| ZZZZZZ | GG630899.D | 12/18/24 | 15:48 | 12.73 |
| ZZZZZZ | GG630900.D | 12/18/24 | 16:27 | 13.50 |
| OP6902-MB | GG630901.D | 12/18/24 | 16:56 | 13.57 |
| FC21117-1 | GG630902.D | 12/18/24 | 17:26 | 13.24 |
| FC21117-3 | GG630903.D | 12/18/24 | 17:55 | 12.63 |
| FC21117-4 | GG630904.D | 12/18/24 | 18:25 | 13.38 |
| OP6970-MB | GG630905.D | 12/18/24 | 18:54 | 12.84 |
| FC21084-1 | GG630906.D | 12/18/24 | 19:24 | 13.64 |

**Surrogate Compounds**

**S1** = 3,4-Dinitrotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

| | | | |
|---|---|---|---|
| **Check Std:** | GBB2633-CC2589 | **Injection Date:** | 12/17/24 |
| **Lab File ID:** | BB085952.D | **Injection Time:** | 13:49 |
| **Instrument ID:** | GCBB | **Method:** | SW846 8330B |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 10.92 | 10.92 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| ZZZZZZ | BB085953.D | 12/17/24 | 15:36 | | 10.95 |
| OP6902-BS | BB085954.D | 12/17/24 | 16:03 | | 10.93 |
| OP6902-MB | BB085955.D | 12/17/24 | 16:29 | | 10.91 |
| FC21117-1 | BB085956.D | 12/17/24 | 16:55 | | 10.94 |
| FC21117-2 | BB085957.D | 12/17/24 | 17:22 | | 10.95 |
| FC21117-3 | BB085958.D | 12/17/24 | 17:48 | | 10.95 |
| FC21117-4 | BB085959.D | 12/17/24 | 18:15 | | 10.96 |
| OP6902-MS | BB085960.D | 12/17/24 | 18:41 | | 10.93 |
| OP6902-MSD | BB085961.D | 12/17/24 | 19:08 | | 10.97 |
| FC21117-5 | BB085962.D | 12/17/24 | 19:34 | | 10.97 |
| GBB2633-ECC2589 | BB085964.D | 12/18/24 | 06:50 | 10.63 | 10.63 |

**Surrogate Compounds**

**S1** = 3,4-Dinitrotoluene

(a) Retention time from GC signal #2
(b) Retention time from GC signal #1

# Initial Calibration Summary



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** GBB2589-ICC2589
**Lab FileID:** BB084351.D

Response Factor Report G1315B

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 12:12:32 2024
Response via : Initial Calibration

Calibration Files
20 =BB084346.D 50 =BB084347.D 100 =BB084348.D 200 =BB084349.D
500 =BB084350.D 1000=BB084351.D 2500=BB084352.D 5000=BB084353.D

| Compound | 20 | 50 | 100 | 200 | 500 | 1000 | 2500 | 5000 | Avg | %RSD |
|---|---|---|---|---|---|---|---|---|---|---|
| 1) TNX | 3.999 | 2.677 | 3.278 | 3.125 | 2.880 | 2.920 | 2.898 | 2.905 | 3.085 E3 | 13.29 |
| 2) HMX | 3.817 | 1.877 | 1.747 | 1.621 | 1.563 | 1.540 | 1.520 | 1.511 | 1.899 E3 | 41.34 |
| ---- Linear regr., Force(0,0) ---- Coefficient = 1.0000 | | | | | | | | | | |
| Response Ratio = 0.00000 + 1514.08521 *A | | | | | | | | | | |
| 3) DNX | 3.655 | 2.512 | 2.946 | 2.664 | 2.409 | 2.440 | 2.410 | 2.412 | 2.681 E3 | 16.23 |
| ---- Linear regr., Force(0,0) ---- Coefficient = 1.0000 | | | | | | | | | | |
| Response Ratio = 0.00000 + 2413.16679 *A | | | | | | | | | | |
| 4) MNX | 3.760 | 2.411 | 2.635 | 2.458 | 2.231 | 2.268 | 2.233 | 2.235 | 2.529 E3 | 20.48 |
| ---- Linear regr., Force(0,0) ---- Coefficient = 1.0000 | | | | | | | | | | |
| Response Ratio = 0.00000 + 2235.98931 *A | | | | | | | | | | |
| 5) RDX | 2.426 | 1.985 | 1.812 | 1.898 | 1.793 | 1.814 | 1.802 | 1.807 | 1.917 E3 | 11.27 |
| 6) 1,3,5-Trinit | 5.723 | 4.182 | 4.064 | 4.338 | 4.077 | 4.117 | 4.098 | 4.135 | 4.342 E3 | 13.01 |
| 7) 1,3-Dinitrob | 7.406 | 5.573 | 5.340 | 5.597 | 5.251 | 5.327 | 5.260 | 5.289 | 5.630 E3 | 12.97 |
| 8) 3,5-Dinitroa | 5.665 | 4.231 | 3.834 | 4.074 | 3.849 | 3.946 | 3.906 | 3.925 | 4.179 E3 | 14.70 |
| 9) Nitrobenzene | 3.977 | 3.222 | 2.980 | 3.220 | 3.019 | 3.063 | 3.049 | 3.063 | 3.199 E3 | 10.20 |
| 10) Nitroglyceri | | | | | | | | | 0.000 | -1.00 |
| 11) Tetryl | 4.352 | 3.234 | 3.016 | 3.106 | 2.934 | 2.974 | 2.984 | 2.996 | 3.199 E3 | 14.85 |
| 12) 2,4,6-Trinit | 5.430 | 4.095 | 3.821 | 3.914 | 3.702 | 3.764 | 3.750 | 3.766 | 4.030 E3 | 14.37 |
| 13) 2-Amino-4,6- | 5.370 | 3.532 | 3.227 | 3.364 | 3.215 | 3.271 | 3.251 | 3.264 | 3.562 E3 | 20.72 |
| ---- Linear regr., Force(0,0) ---- Coefficient = 1.0000 | | | | | | | | | | |
| Response Ratio = 0.00000 + 3261.23993 *A | | | | | | | | | | |
| 14) 4-Amino-2,6- | 3.558 | 2.599 | 2.368 | 2.466 | 2.351 | 2.400 | 2.386 | 2.392 | 2.565 E3 | 15.94 |
| ---- Linear regr., Force(0,0) ---- Coefficient = 1.0000 | | | | | | | | | | |
| Response Ratio = 0.00000 + 2390.71727 *A | | | | | | | | | | |
| 15) 3,4-Dinitrot | 3.466 | 2.280 | 2.320 | 2.256 | 2.184 | 2.244 | 2.231 | 2.248 | 2.404 E3 | 17.94 |
| ---- Linear regr., Force(0,0) ---- Coefficient = 1.0000 | | | | | | | | | | |
| Response Ratio = 0.00000 + 2243.99690 *A | | | | | | | | | | |
| 16) 2,4-Dinitrot | 7.212 | 4.973 | 4.659 | 4.860 | 4.620 | 4.739 | 4.689 | 4.713 | 5.058 E3 | 17.36 |
| ---- Linear regr., Force(0,0) ---- Coefficient = 1.0000 | | | | | | | | | | |
| Response Ratio = 0.00000 + 4708.63589 *A | | | | | | | | | | |
| 17) 2,6-Dinitrot | 3.850 | 2.815 | 2.727 | 2.720 | 2.599 | 2.682 | 2.641 | 2.659 | 2.837 E3 | 14.61 |
| 18) o-Nitrotolue | 2.875 | 2.263 | 2.114 | 2.289 | 2.123 | 2.185 | 2.171 | 2.178 | 2.275 E3 | 10.99 |
| 19) p-Nitrotolue | 4.522 | 3.346 | 3.236 | 3.498 | 3.228 | 3.364 | 3.318 | 3.339 | 3.481 E3 | 12.32 |
| 20) m-Nitrotolue | 4.547 | 3.442 | 3.066 | 3.290 | 3.074 | 3.181 | 3.135 | 3.166 | 3.363 E3 | 14.70 |
| 21) PETN | | | | | | | | | 0.000 | -1.00 |
| Signal #2 | | | | | | | | | | |
| 1) TNX | 6.469 | 4.729 | 5.151 | 4.887 | 4.454 | 4.482 | 4.435 | 4.463 | 4.884 E3 | 14.13 |
| 2) HMX | 1.510 | 0.630 | 0.592 | 0.480 | 0.450 | 0.428 | 0.423 | 0.418 | 0.617 E4 | 59.97 |

# Initial Calibration Summary

**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** GBB2589-ICC2589
**Lab FileID:** BB084351.D

```
            ---- Linear regr., Force(0,0) ----  Coefficient =  1.0000
              Response Ratio = 0.00000 + 4200.14906 *A

  3) DNX          6.617 4.182 4.918 4.247 3.874 3.822 3.780 3.774 4.402 E3  22.13
            ---- Linear regr., Force(0,0) ----  Coefficient =  1.0000
              Response Ratio = 0.00000 + 3778.52039 *A

  4) MNX          5.404 3.700 4.054 3.760 3.443 3.455 3.428 3.439 3.835 E3  17.50
            ---- Linear regr., Force(0,0) ----  Coefficient =  1.0000
              Response Ratio = 0.00000 + 3437.81993 *A

  5) RDX          4.319 3.030 2.842 3.004 2.841 2.884 2.864 2.874 3.082 E3  16.37
            ---- Linear regr., Force(0,0) ----  Coefficient =  1.0000
              Response Ratio = 0.00000 + 2872.30030 *A

  6) 1,3,5-Trinit 8.331 6.490 6.160 6.688 6.233 6.399 6.480 6.492 6.659 E3  10.44
  7) 1,3-Dinitrob 5.316 3.986 3.615 3.966 3.674 3.901 3.686 3.612 3.969 E3  14.25
  8) 3,5-Dinitroa 9.025 6.690 6.982 7.137 6.606 6.621 6.552 6.563 7.022 E3  11.92
  9) Nitrobenzene 4.390 3.773 3.060 3.208 2.984 3.011 2.990 3.005 3.303 E3  15.54
            ---- Linear regr., Force(0,0) ----  Coefficient =  1.0000
              Response Ratio = 0.00000 + 3002.33740 *A

 10) Nitroglyceri 2.102 1.659 1.256 1.379 1.277 1.295 1.273 1.294 1.442 E3  20.64
            ---- Linear regr., Force(0,0) ----  Coefficient =  0.9999
              Response Ratio = 0.00000 + 1290.36412 *A

 11) Tetryl       6.194 4.871 4.445 4.711 4.470 4.599 4.660 4.755 4.838 E3  11.69
 12) 2,4,6-Trinit 6.096 4.709 4.326 4.559 4.312 4.488 4.528 4.594 4.701 E3  12.31
 13) 2-Amino-4,6- 5.567 4.280 4.013 4.550 4.505 4.747 4.835 4.913 4.676 E3   9.97
 14) 4-Amino-2,6- 5.721 4.234 3.911 4.564 4.529 4.770 4.805 4.860 4.674 E3  11.34
 15) 3,4-Dinitrot 5.921 3.695 3.502 3.868 3.842 3.996 4.018 4.085 4.116 E3  18.31
            ---- Linear regr., Force(0,0) ----  Coefficient =  0.9999
              Response Ratio = 0.00000 + 4067.14356 *A

 16) 2,4-Dinitrot 4.047 2.458 2.738 3.173 3.086 3.170 3.143 3.183 3.125 E3  14.59
 17) 2,6-Dinitrot 3.449 3.177 3.371 3.619 3.484 3.522 3.522 3.539 3.460 E3   3.91
 18) o-Nitrotolue 3.050 2.724 2.686 3.097 3.026 3.042 3.050 3.095 2.971 E3   5.60
 19) p-Nitrotolue 3.534 3.014 2.661 2.515 2.572 2.778 2.781 2.828 2.835 E3  11.38
 20) m-Nitrotolue 4.487 3.894 3.747 3.378 3.504 3.753 3.811 3.860 3.804 E3   8.64
 21) PETN         1.380 1.342 1.201 1.349 1.355 1.380 1.387 1.395 1.349 E3   4.65
-------------------------------------------------------------------------------
(#) = Out of Range  ###  Number of calibration levels exceeded format  ###

          BBB2589_091224.M        Mon Sep 16 14:50:20 2024
```

# Initial Calibration Verification



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** GBB2589-ICV2589
**Lab FileID:** BB084354.D

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084354.D\dad1B.ch Vial: 11
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084354.D\dad1A.ch
Acq On : 12-Sep-2024, 12:14:48 Operator: fouads
Sample : icv2589-1000 Inst : G1315B
Misc : op5264,GBB2589,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 12:12:32 2024
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 200%

| | Compound | Amount | Calc. | %Drift | Area% | Dev(min) | RT Window |
|---|---|---|---|---|---|---|---|
| 1 | TNX | 472.000 | 407.871 | 13.6 | 91 | 0.00 | 1.07- 1.67 |
| | Amount | Calc. | %Drift | | | | |
| 2 | HMX | 1000.000 | 989.875 | 1.0 | 97 | 0.00 | 1.22- 1.81 |
| 3 | DNX | 1000.000 | 914.310 | 8.6 | 90 | 0.00 | 1.48- 2.08 |
| 4 | MNX | 1166.000 | 1062.276 | 8.9 | 90 | 0.01 | 2.11- 2.71 |
| | Amount | Calc. | %Drift | | | | |
| 5 | RDX | 1000.000 | 920.974 | 7.9 | 97 | 0.01 | 2.66- 3.46 |
| 6 | 1,3,5-Trinitrobenzene | 1000.000 | 910.775 | 8.9 | 96 | 0.01 | 4.46- 5.26 |
| 7 | 1,3-Dinitrobenzene | 1000.000 | 921.563 | 7.8 | 97 | 0.01 | 5.71- 6.51 |
| 8 | 3,5-Dinitroaniline | 1000.000 | 915.920 | 8.4 | 97 | 0.02 | 6.17- 6.97 |
| 9 | Nitrobenzene | 1000.000 | 940.425 | 6.0 | 98 | 0.01 | 7.35- 8.15 |
| 10 | Nitroglycerin | | ----------NA---------- | | | | |
| 11 | Tetryl | 1000.000 | 864.702 | 13.5 | 93 | 0.03 | 9.48-10.28 |
| 12 | 2,4,6-Trinitrotoluene | 1000.000 | 916.521 | 8.3 | 98 | 0.02 | 9.87-10.67 |
| | Amount | Calc. | %Drift | | | | |
| 13 | 2-Amino-4,6-Dinitrotol | 1000.000 | 981.298 | 1.9 | 98 | 0.03 | 10.45-11.24 |
| 14 | 4-Amino-2,6-Dinitrotol | 1000.000 | 1012.539 | -1.3 | 101 | 0.03 | 10.94-11.74 |
| 15 S | 3,4-Dinitrotoluene | | ----------NA---------- | | | | |
| 16 | 2,4-Dinitrotoluene | 1000.000 | 982.081 | 1.8 | 98 | 0.02 | 11.95-12.75 |
| | Amount | Calc. | %Drift | | | | |
| 17 | 2,6-Dinitrotoluene | 1000.000 | 919.998 | 8.0 | 97 | 0.02 | 12.40-13.20 |
| 18 | o-Nitrotoluene | 1000.000 | 963.246 | 3.7 | 100 | 0.00 | 15.47-16.35 |
| 19 | p-Nitrotoluene | 1000.000 | 967.187 | 3.3 | 100 | 0.00 | 15.90-16.90 |
| 20 | m-Nitrotoluene | 1000.000 | 954.094 | 4.6 | 101 | 0.00 | 16.66-17.66 |
| 21 | PETN | | ----------NA---------- | | | | |
| ***** | Signal #2 ***** | | | | | | |
| 1 | TNX | 472.000 | 396.528 | 16.0# | 92 | 0.00 | 1.07- 1.67 |
| | Amount | Calc. | %Drift | | | | |
| 2 | HMX | 1000.000 | 1011.809 | -1.2 | 99 | 0.00 | 1.22- 1.81 |
| 3 | DNX | 1000.000 | 925.569 | 7.4 | 92 | 0.00 | 1.48- 2.08 |
| 4 | MNX | 1166.000 | 1063.476 | 8.8 | 91 | 0.01 | 2.11- 2.71 |
| 5 | RDX | 1000.000 | 973.393 | 2.7 | 97 | 0.01 | 2.66- 3.46 |
| | Amount | Calc. | %Drift | | | | |

# Initial Calibration Verification

**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** GBB2589-ICV2589
**Lab FileID:** BB084354.D

| | | | Amount | Calc. | %Drift | | | |
|---|---|---|---|---|---|---|---|---|
| 6 | 1,3,5-Trinitrobenzene | | 1000.000 | 950.348 | 5.0 | 99 | 0.01 | 4.46- 5.26 |
| 7 | 1,3-Dinitrobenzene | | 1000.000 | 995.314 | 0.5 | 101 | 0.01 | 5.71- 6.51 |
| 8 | 3,5-Dinitroaniline | | 1000.000 | 922.619 | 7.7 | 98 | 0.02 | 6.17- 6.97 |
| | | Amount | Calc. | %Drift | | | | |
| 9 | Nitrobenzene | | 1000.000 | 989.614 | 1.0 | 99 | 0.01 | 7.35- 8.15 |
| 10 | Nitroglycerin | | 1000.000 | 984.063 | 1.6 | 98 | 0.03 | 8.78- 9.78 |
| | | Amount | Calc. | %Drift | | | | |
| 11 | Tetryl | | 1000.000 | 884.431 | 11.6 | 93 | 0.03 | 9.48-10.28 |
| 12 | 2,4,6-Trinitrotoluene | | 1000.000 | 945.363 | 5.5 | 99 | 0.02 | 9.87-10.67 |
| 13 | 2-Amino-4,6-Dinitrotol | | 1000.000 | 1005.472 | -0.5 | 99 | 0.03 | 10.45-11.25 |
| 14 | 4-Amino-2,6-Dinitrotol | | 1000.000 | 1029.609 | -3.0 | 101 | 0.03 | 10.94-11.74 |
| | | Amount | Calc. | %Drift | | | | |
| 15 | S 3,4-Dinitrotoluene | | | NA | | | | |
| | | Amount | Calc. | %Drift | | | | |
| 16 | 2,4-Dinitrotoluene | | 1000.000 | 1002.377 | -0.2 | 99 | 0.02 | 11.95-12.75 |
| 17 | 2,6-Dinitrotoluene | | 1000.000 | 1007.734 | -0.8 | 99 | 0.02 | 12.40-13.20 |
| 18 | o-Nitrotoluene | | 1000.000 | 857.050 | 14.3 | 84 | 0.01 | 15.35-16.35 |
| 19 | p-Nitrotoluene | | 1000.000 | 983.125 | 1.7 | 100 | 0.00 | 15.90-16.90 |
| 20 | m-Nitrotoluene | | 1000.000 | 995.598 | 0.4 | 101 | 0.00 | 16.66-17.66 |
| 21 | PETN | | 1000.000 | 1008.670 | -0.9 | 99 | 0.00 | 18.05-19.25 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0
BB084351.D BBB2589_091224.M Mon Sep 16 14:50:55 2024

8.7.2
8

# Continuing Calibration Summary



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** GBB2633-CC2589
**Lab FileID:** BB085952.D

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085952.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085952.D\dad1A.ch
Acq On : 17-Dec-2024, 13:49:09 Operator: fouads
Sample : cc2589-1000 Inst : G1315B
Misc : op3387,GBB2633,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 10:40:49 2024
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | Amount | Calc. | %Drift | Area% | Dev(min) | RT Window |
|---|---|---|---|---|---|---|---|
| 1 | TNX | 472.000 | 549.543 | -16.4 | 123 | 0.00 | 0.99- 1.59 |
| | Amount | Calc. | %Drift | | | | |
| 2 | HMX | 1000.000 | 978.652 | 2.1 | 96 | 0.00 | 1.13- 1.73 |
| 3 | DNX | 1000.000 | 1253.295 | -25.3# | 124 | 0.00 | 1.36- 1.96 |
| 4 | MNX | 1166.000 | 1459.411 | -25.2# | 123 | 0.00 | 1.94- 2.54 |
| | Amount | Calc. | %Drift | | | | |
| 5 | RDX | 1000.000 | 920.561 | 7.9 | 97 | 0.00 | 2.44- 3.24 |
| 6 | 1,3,5-Trinitrobenzene | 1000.000 | 845.184 | 15.5 | 89 | 0.00 | 4.16- 4.96 |
| 7 | 1,3-Dinitrobenzene | 1000.000 | 854.603 | 14.5 | 90 | 0.00 | 5.37- 6.17 |
| 8 | 3,5-Dinitroaniline | 1000.000 | 881.657 | 11.8 | 93 | 0.00 | 5.77- 6.57 |
| 9 | Nitrobenzene | 1000.000 | 873.721 | 12.6 | 91 | 0.00 | 6.93- 7.73 |
| 10 | Nitroglycerin | ----------NA---------- | | | | | |
| 11 | Tetryl | 1000.000 | 840.104 | 16.0 | 90 | 0.00 | 8.84- 9.64 |
| 12 | 2,4,6-Trinitrotoluene | 1000.000 | 854.296 | 14.6 | 91 | 0.00 | 9.18- 9.98 |
| | Amount | Calc. | %Drift | | | | |
| 13 | 2-Amino-4,6-Dinitrotol | 1000.000 | 929.214 | 7.1 | 93 | -0.02 | 9.71-10.51 |
| 14 | 4-Amino-2,6-Dinitrotol | 1000.000 | 906.320 | 9.4 | 90 | -0.02 | 10.16-10.96 |
| 15 S | 3,4-Dinitrotoluene | 1000.000 | 923.154 | 7.7 | 92 | 0.00 | 10.53-11.33 |
| 16 | 2,4-Dinitrotoluene | 1000.000 | 924.146 | 7.6 | 92 | 0.00 | 11.19-11.99 |
| | Amount | Calc. | %Drift | | | | |
| 17 | 2,6-Dinitrotoluene | 1000.000 | 851.977 | 14.8 | 90 | 0.00 | 11.63-12.43 |
| 18 | o-Nitrotoluene | 1000.000 | 876.289 | 12.4 | 91 | 0.00 | 14.77-15.65 |
| 19 | p-Nitrotoluene | 1000.000 | 880.355 | 12.0 | 91 | 0.00 | 15.21-16.21 |
| 20 | m-Nitrotoluene | 1000.000 | 895.135 | 10.5 | 95 | 0.00 | 16.11-17.11 |
| 21 | PETN | ----------NA---------- | | | | | |
| ***** | Signal #2 ***** | | | | | | |
| 1 | TNX | 472.000 | 531.328 | -12.6 | 123 | 0.00 | 0.99- 1.59 |
| | Amount | Calc. | %Drift | | | | |
| 2 | HMX | 1000.000 | 997.130 | 0.3 | 98 | 0.00 | 1.13- 1.73 |
| 3 | DNX | 1000.000 | 1273.207 | -27.3# | 126 | 0.00 | 1.36- 1.96 |
| 4 | MNX | 1166.000 | 1453.807 | -24.7# | 124 | 0.00 | 1.94- 2.54 |
| 5 | RDX | 1000.000 | 971.472 | 2.9 | 97 | 0.00 | 2.44- 3.24 |
| | Amount | Calc. | %Drift | | | | |

# Continuing Calibration Summary

**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** GBB2633-CC2589
**Lab FileID:** BB085952.D

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 6 | | 1,3,5-Trinitrobenzene | 1000.000 | 889.934 | 11.0 | 93 | 0.00 | 4.16- 4.96 |
| 7 | | 1,3-Dinitrobenzene | 1000.000 | 904.393 | 9.6 | 92 | 0.00 | 5.37- 6.17 |
| 8 | | 3,5-Dinitroaniline | 1000.000 | 911.428 | 8.9 | 97 | 0.00 | 5.77- 6.57 |
| | | | Amount | Calc. | %Drift | | | |
| 9 | | Nitrobenzene | 1000.000 | 919.835 | 8.0 | 92 | 0.00 | 6.93- 7.73 |
| 10 | | Nitroglycerin | 1000.000 | 937.916 | 6.2 | 93 | 0.01 | 8.09- 9.09 |
| | | | Amount | Calc. | %Drift | | | |
| 11 | | Tetryl | 1000.000 | 902.322 | 9.8 | 95 | 0.00 | 8.84- 9.64 |
| 12 | | 2,4,6-Trinitrotoluene | 1000.000 | 893.873 | 10.6 | 94 | 0.00 | 9.18- 9.98 |
| 13 | | 2-Amino-4,6-Dinitrotol | 1000.000 | 968.775 | 3.1 | 95 | -0.02 | 9.71-10.51 |
| 14 | | 4-Amino-2,6-Dinitrotol | 1000.000 | 937.545 | 6.2 | 92 | -0.02 | 10.16-10.96 |
| | | | Amount | Calc. | %Drift | | | |
| 15 | S | 3,4-Dinitrotoluene | 1000.000 | 908.749 | 9.1 | 92 | 0.00 | 10.53-11.33 |
| | | | Amount | Calc. | %Drift | | | |
| 16 | | 2,4-Dinitrotoluene | 1000.000 | 920.955 | 7.9 | 91 | 0.00 | 11.19-11.99 |
| 17 | | 2,6-Dinitrotoluene | 1000.000 | 922.398 | 7.8 | 91 | 0.00 | 11.63-12.43 |
| 18 | | o-Nitrotoluene | 1000.000 | 929.230 | 7.1 | 91 | 0.00 | 14.65-15.65 |
| 19 | | p-Nitrotoluene | 1000.000 | 908.013 | 9.2 | 93 | 0.00 | 15.21-16.21 |
| 20 | | m-Nitrotoluene | 1000.000 | 915.213 | 8.5 | 93 | 0.00 | 16.11-17.11 |
| 21 | | PETN | 1000.000 | 1035.023 | -3.5 | 101 | 0.03 | 17.73-18.93 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0
BB084351.D BBB2589_091224.M Wed Dec 18 10:41:09 2024

8.7.3

8

# Continuing Calibration Summary



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** GBB2633-ECC2589
**Lab FileID:** BB085964.D

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085964.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085964.D\dad1A.ch
Acq On : 18-Dec-2024, 06:50:29 Operator: fouads
Sample : ecc2589-1000 Inst : G1315B
Misc : op3387,GBB2633,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 07:19:55 2024
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | Amount | Calc. | %Drift | Area% | Dev(min) | RT Window |
|---|---|---|---|---|---|---|---|
| 1 | TNX | 472.000 | 559.092 | -18.5 | 125 | -0.01 | 0.99- 1.59 |
| | Amount | Calc. | %Drift | | | | |
| 2 | HMX | 1000.000 | 979.943 | 2.0 | 96 | -0.02 | 1.13- 1.73 |
| 3 | DNX | 1000.000 | 1276.716 | -27.7# | 126 | -0.02 | 1.36- 1.96 |
| 4 | MNX | 1166.000 | 1493.851 | -28.1# | 126 | -0.04 | 1.94- 2.54 |
| | Amount | Calc. | %Drift | | | | |
| 5 | RDX | 1000.000 | 934.849 | 6.5 | 99 | 0.00 | 2.39- 3.19 |
| 6 | 1,3,5-Trinitrobenzene | 1000.000 | 894.975 | 10.5 | 94 | 0.00 | 4.09- 4.89 |
| 7 | 1,3-Dinitrobenzene | 1000.000 | 878.678 | 12.1 | 93 | 0.00 | 5.27- 6.07 |
| 8 | 3,5-Dinitroaniline | 1000.000 | 918.711 | 8.1 | 97 | 0.00 | 5.63- 6.43 |
| 9 | Nitrobenzene | 1000.000 | 895.186 | 10.5 | 93 | 0.00 | 6.79- 7.59 |
| 10 | Nitroglycerin | | | NA | | | |
| 11 | Tetryl | 1000.000 | 879.123 | 12.1 | 95 | 0.00 | 8.59- 9.39 |
| 12 | 2,4,6-Trinitrotoluene | 1000.000 | 882.950 | 11.7 | 95 | 0.00 | 8.96- 9.76 |
| | Amount | Calc. | %Drift | | | | |
| 13 | 2-Amino-4,6-Dinitrotol | 1000.000 | 967.413 | 3.3 | 96 | 0.00 | 9.39-10.19 |
| 14 | 4-Amino-2,6-Dinitrotol | 1000.000 | 944.524 | 5.5 | 94 | 0.00 | 9.82-10.62 |
| 15 S | 3,4-Dinitrotoluene | 1000.000 | 959.208 | 4.1 | 96 | 0.00 | 10.22-11.02 |
| 16 | 2,4-Dinitrotoluene | 1000.000 | 954.420 | 4.6 | 95 | 0.00 | 10.90-11.70 |
| | Amount | Calc. | %Drift | | | | |
| 17 | 2,6-Dinitrotoluene | 1000.000 | 883.274 | 11.7 | 93 | 0.00 | 11.33-12.13 |
| 18 | o-Nitrotoluene | 1000.000 | 880.021 | 12.0 | 92 | 0.00 | 14.48-15.36 |
| 19 | p-Nitrotoluene | 1000.000 | 880.450 | 12.0 | 91 | 0.00 | 14.92-15.92 |
| 20 | m-Nitrotoluene | 1000.000 | 898.829 | 10.1 | 95 | 0.00 | 15.84-16.84 |
| 21 | PETN | | | NA | | | |
| ***** | Signal #2 ***** | | | | | | |
| 1 | TNX | 472.000 | 541.090 | -14.6 | 125 | -0.01 | 0.99- 1.59 |
| | Amount | Calc. | %Drift | | | | |
| 2 | HMX | 1000.000 | 984.115 | 1.6 | 97 | -0.02 | 1.13- 1.73 |
| 3 | DNX | 1000.000 | 1290.173 | -29.0# | 128 | -0.02 | 1.36- 1.96 |
| 4 | MNX | 1166.000 | 1491.120 | -27.9# | 127 | -0.04 | 1.94- 2.54 |
| 5 | RDX | 1000.000 | 987.383 | 1.3 | 98 | 0.00 | 2.39- 3.19 |
| | Amount | Calc. | %Drift | | | | |

# Continuing Calibration Summary

**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** GBB2633-ECC2589
**Lab FileID:** BB085964.D

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 6 | 1,3,5-Trinitrobenzene | 1000.000 | 918.888 | 8.1 | 96 | 0.00 | 4.09- 4.89 |
| 7 | 1,3-Dinitrobenzene | 1000.000 | 882.954 | 11.7 | 90 | 0.00 | 5.27- 6.07 |
| 8 | 3,5-Dinitroaniline | 1000.000 | 952.873 | 4.7 | 101 | 0.00 | 5.63- 6.43 |
| | | Amount | Calc. | %Drift | | | |
| 9 | Nitrobenzene | 1000.000 | 921.771 | 7.8 | 92 | 0.00 | 6.79- 7.59 |
| 10 | Nitroglycerin | 1000.000 | 980.316 | 2.0 | 98 | 0.00 | 7.94- 8.94 |
| | | Amount | Calc. | %Drift | | | |
| 11 | Tetryl | 1000.000 | 935.981 | 6.4 | 98 | 0.00 | 8.59- 9.39 |
| 12 | 2,4,6-Trinitrotoluene | 1000.000 | 920.445 | 8.0 | 96 | 0.00 | 8.96- 9.76 |
| 13 | 2-Amino-4,6-Dinitrotol | 1000.000 | 1021.095 | -2.1 | 101 | 0.00 | 9.39-10.19 |
| 14 | 4-Amino-2,6-Dinitrotol | 1000.000 | 981.945 | 1.8 | 96 | 0.00 | 9.82-10.62 |
| | | Amount | Calc. | %Drift | | | |
| 15 S | 3,4-Dinitrotoluene | 1000.000 | 944.953 | 5.5 | 96 | 0.00 | 10.22-11.02 |
| | | Amount | Calc. | %Drift | | | |
| 16 | 2,4-Dinitrotoluene | 1000.000 | 936.614 | 6.3 | 92 | 0.00 | 10.90-11.70 |
| 17 | 2,6-Dinitrotoluene | 1000.000 | 943.806 | 5.6 | 93 | 0.00 | 11.33-12.13 |
| 18 | o-Nitrotoluene | 1000.000 | 953.371 | 4.7 | 93 | 0.00 | 14.36-15.36 |
| 19 | p-Nitrotoluene | 1000.000 | 946.649 | 5.3 | 97 | 0.00 | 14.92-15.92 |
| 20 | m-Nitrotoluene | 1000.000 | 923.252 | 7.7 | 94 | 0.00 | 15.85-16.85 |
| 21 | PETN | 1000.000 | 1046.173 | -4.6 | 102 | 0.00 | 17.61-18.81 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0
BB084351.D BBB2589_091224.M Wed Dec 18 08:24:01 2024

8.7.4

8

# Initial Calibration Summary



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** GGG3484-ICC3484
**Lab FileID:** GG630272.D

Response Factor Report G1315B

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Fri Oct 04 15:40:51 2024
Response via : Initial Calibration

Calibration Files
20 =GG630269.D 50 =GG630267.D 100 =GG630268.D 200 =GG630270.D
500 =GG630271.D 1000=GG630272.D 2500=GG630273.D 5000=GG630274.D

| Compound | 20 | 50 | 100 | 200 | 500 | 1000 | 2500 | 5000 | Avg | %RSD |
|---|---|---|---|---|---|---|---|---|---|---|
| 1) TNX | 1.027 | 0.956 | 0.856 | 0.767 | 0.759 | 0.764 | 0.777 | 0.788 | 0.837 E4 | 12.17 |
| 2) HMX | 3.443 | 3.103 | 3.229 | 3.051 | 3.119 | 3.161 | 3.293 | 3.350 | 3.219 E3 | 4.20 |
| 3) DNX | 7.473 | 7.640 | 6.584 | 6.217 | 6.253 | 6.361 | 6.505 | 6.600 | 6.704 E3 | 8.15 |
| 4) MNX | 7.323 | 7.255 | 6.164 | 5.511 | 5.588 | 5.657 | 5.787 | 5.849 | 6.142 E3 | 11.97 |
| 5) 1,3,5-Trinit | 1.218 | 1.081 | 0.952 | 0.883 | 0.908 | 0.932 | 0.922 | 0.935 | 0.979 E4 | 11.58 |
| 6) RDX | 5.028 | 4.998 | 4.195 | 4.145 | 4.159 | 4.324 | 4.483 | 4.531 | 4.483 E3 | 7.96 |
| 7) 1,3-Dinitrob | 1.520 | 1.388 | 1.266 | 1.215 | 1.217 | 1.254 | 1.264 | 1.275 | 1.300 E4 | 8.00 |
| 8) Nitrobenzene | 1.108 | 0.921 | 0.832 | 0.789 | 0.789 | 0.801 | 0.827 | 0.820 | 0.861 E4 | 12.60 |
| 9) 2,4,6-Trinit | 1.099 | 1.075 | 0.810 | 0.853 | 0.864 | 0.880 | 0.920 | 0.932 | 0.929 E4 | 11.28 |
| 10) Nitroglyceri | | | | | | | 6.912 | | 6.912 E3 | 0.00 |
| 11) Tetryl | 7.561 | 7.681 | 6.834 | 6.121 | 6.375 | 6.638 | 6.912 | 7.126 | 6.906 E3 | 7.84 |
| 12) 3,4-Dinitrot | 6.091 | 4.673 | 4.165 | 4.030 | 4.025 | 4.063 | 4.565 | 4.556 | 4.521 E3 | 15.22 |
| ---- Linear regr., Force(0,0) ---- Coefficient = 0.9995 | | | | | | | | | | |
| Response Ratio = 0.00000 + 4537.45896 *A | | | | | | | | | | |
| 13) 2,6-Dinitrot | 7.305 | 5.379 | 6.163 | 6.443 | 6.053 | 6.615 | 6.274 | 6.444 | 6.334 E3 | 8.58 |
| 14) 2,4-Dinitrot | 1.462 | 1.269 | 1.262 | 1.142 | 1.150 | 1.169 | 1.182 | 1.197 | 1.229 E4 | 8.57 |
| 15) 3,5-Dinitroa | 1.203 | 1.185 | 1.002 | 0.856 | 0.937 | 0.955 | 0.961 | 0.983 | 1.010 E4 | 12.03 |
| 16) o-Nitrotolue | 4.716 | 6.165 | 4.671 | 4.605 | 5.133 | 5.108 | 5.504 | 5.350 | 5.156 E3 | 10.13 |
| 17) p-Nitrotolue | 6.641 | 5.888 | 5.247 | 4.979 | 5.044 | 5.169 | 5.276 | 5.360 | 5.451 E3 | 10.18 |
| 18) 4-Amino-2,6- | 6.560 | 5.846 | 5.388 | 4.979 | 5.044 | 5.169 | 5.276 | 5.360 | 5.453 E3 | 9.55 |
| 19) m-Nitrotolue | 6.378 | 6.560 | 5.461 | 4.962 | 5.358 | 5.572 | 5.532 | 5.536 | 5.670 E3 | 9.38 |
| 20) 2-Amino-4,6- | 1.026 | 0.946 | 0.851 | 0.780 | 0.844 | 0.881 | 0.872 | 0.899 | 0.887 E4 | 8.27 |
| 21) PETN | | | | | | | | | 0.000 | -1.00 |

Signal #2

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1) TNX | 9.555 | 9.296 | 8.498 | 7.674 | 7.594 | 7.640 | 7.775 | 7.884 | 8.239 E3 | 9.57 |
| 2) HMX | 3.669 | 3.227 | 3.314 | 3.051 | 3.119 | 3.161 | 3.293 | 3.350 | 3.273 E3 | 5.80 |
| 3) DNX | 6.930 | 6.919 | 6.584 | 6.217 | 6.253 | 6.361 | 6.505 | 6.600 | 6.546 E3 | 4.17 |
| 4) MNX | 7.370 | 6.911 | 5.962 | 5.511 | 5.588 | 5.657 | 5.787 | 5.849 | 6.079 E3 | 11.21 |
| 5) 1,3,5-Trinit | 1.229 | 1.108 | 0.970 | 0.883 | 0.908 | 0.932 | 0.922 | 0.935 | 0.986 E4 | 12.13 |
| 6) RDX | 4.856 | 4.917 | 4.168 | 3.946 | 4.159 | 4.324 | 4.483 | 4.531 | 4.423 E3 | 7.73 |
| 7) 1,3-Dinitrob | 1.754 | 0.670 | 0.907 | 0.934 | 0.901 | 0.951 | 0.986 | 0.979 | 1.010 E4 | 31.35 |
| ---- Linear regr., Force(0,0) ---- Coefficient = 0.9999 | | | | | | | | | | |
| Response Ratio = 0.00000 + 9787.32021 *A | | | | | | | | | | |
| 8) Nitrobenzene | 1.218 | 0.890 | 0.709 | 0.739 | 0.774 | 0.752 | 0.786 | 0.775 | 0.830 E4 | 19.90 |
| ---- Linear regr., Force(0,0) ---- Coefficient = 0.9999 | | | | | | | | | | |
| Response Ratio = 0.00000 + 7759.93192 *A | | | | | | | | | | |
| 9) 2,4,6-Trinit | 2.461 | 1.282 | 1.204 | 1.108 | 1.250 | 1.172 | 1.234 | 1.236 | 1.368 E4 | 32.49 |
| ---- Linear regr., Force(0,0) ---- Coefficient = 0.9999 | | | | | | | | | | |
| Response Ratio = 0.00000 + 12333.26626 *A | | | | | | | | | | |
| 10) Nitroglyceri | 1.070 | 0.596 | 0.652 | 0.366 | 0.304 | 0.311 | 0.303 | 0.306 | 0.488 E4 | 56.07 |
| ---- Linear regr., Force(0,0) ---- Coefficient = 0.9996 | | | | | | | | | | |

# Initial Calibration Summary

**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** GGG3484-ICC3484
**Lab FileID:** GG630272.D

```
              Response Ratio = 0.00000 + 3057.77931 *A

11) Tetryl       2.006 1.619 1.067 1.034 1.139 1.207 1.235 1.256 1.320 E4  25.01
            ---- Linear regr., Force(0,0) ----  Coefficient =  0.9998
              Response Ratio = 0.00000 + 12494.42474 *A

12) 3,4-Dinitrot 1.156 1.152 0.889 0.707 0.828 0.861 0.902 0.903 0.925 E4  16.79
            ---- Linear regr., Force(0,0) ----  Coefficient =  0.9998
              Response Ratio = 0.00000 + 9009.62018 *A

13) 2,6-Dinitrot 1.245 0.621 0.841 0.909 0.922 0.968 0.948 0.968 0.928 E4  18.49
            ---- Linear regr., Force(0,0) ----  Coefficient =  0.9999
              Response Ratio = 0.00000 + 9632.34925 *A

14) 2,4-Dinitrot 1.004 1.507 1.164 0.750 0.809 0.834 0.854 0.865 0.973 E4  25.89
            ---- Linear regr., Force(0,0) ----  Coefficient =  0.9997
              Response Ratio = 0.00000 + 8617.71385 *A

15) 3,5-Dinitroa 1.983 3.124 1.449 1.374 1.557 1.575 1.590 1.628 1.785 E4  31.91
            ---- Linear regr., Force(0,0) ----  Coefficient =  0.9997
              Response Ratio = 0.00000 + 16183.35581 *A

16) o-Nitrotolue 0.698 1.482 1.040 0.708 0.758 0.783 0.830 0.796 0.887 E4  29.67
            ---- Linear regr., Force(0,0) ----  Coefficient =  0.9994
              Response Ratio = 0.00000 + 8017.36727 *A

17) p-Nitrotolue 0.676 1.097 0.821 0.893 0.923 0.938 0.958 0.970 0.910 E4  13.44
18) 4-Amino-2,6- 0.721 1.071 0.821 0.893 0.923 0.938 0.958 0.970 0.912 E4  11.45
19) m-Nitrotolue 8.154 8.744 8.919 8.068 8.976 9.647 9.315 9.410 8.904 E3   6.39
20) 2-Amino-4,6- 0.873 1.084 1.151 1.238 1.230 1.295 1.226 1.276 1.171 E4  11.81
21) PETN         0.345 1.509 0.258 0.298 0.307 0.314 0.323 0.329 0.460 E4  92.21
            ---- Linear regr., Force(0,0) ----  Coefficient =  0.9983
              Response Ratio = 0.00000 + 3272.79720 *A

--------------------------------------------------------------------------------
(#) = Out of Range  ###  Number of calibration levels exceeded format  ###

          GGG3484_100324.M        Fri Oct 04 15:51:47 2024
```

# Initial Calibration Verification



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** GGG3484-ICV3484
**Lab FileID:** GG630275.D

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630275.D\dad1B.ch Vial: 10
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630275.D\dad1A.ch
Acq On : 03-Oct-2024, 15:39:10 Operator: fouads
Sample : ICV3484-1000 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Fri Oct 04 15:40:51 2024
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | Amount | Calc. | %Drift | Area% | Dev(min) | RT Window |
|---|---|---|---|---|---|---|---|
| 1 | TNX | 472.000 | 454.774 | 3.6 | 106 | 0.00 | 3.88- 5.32 |
| 2 | HMX | 1000.000 | 1130.256 | -13.0 | 115 | -0.01 | 4.70- 5.70 |
| 3 | DNX | 1000.000 | 1002.057 | -0.2 | 106 | 0.00 | 4.93- 5.93 |
| 4 | MNX | 1166.000 | 1133.056 | 2.8 | 105 | 0.00 | 6.05- 7.05 |
| 5 | 1,3,5-Trinitrobenzene | 1000.000 | 913.770 | 8.6 | 96 | 0.00 | 6.85- 7.85 |
| 6 | RDX | 1000.000 | 1029.776 | -3.0 | 107 | 0.00 | 7.35- 8.35 |
| 7 | 1,3-Dinitrobenzene | 1000.000 | 983.619 | 1.6 | 102 | 0.00 | 9.30-10.30 |
| 8 | Nitrobenzene | 1000.000 | 951.697 | 4.8 | 102 | 0.00 | 10.34-11.34 |
| 9 | 2,4,6-Trinitrotoluene | 1000.000 | 1001.620 | -0.2 | 106 | 0.00 | 10.91-11.91 |
| 10 | Nitroglycerin | ---------- | NA | ---------- | | | |
| 11 | Tetryl | 1000.000 | 971.150 | 2.9 | 101 | 0.00 | 12.25-13.25 |
| | ---------- | Amount | Calc. | %Drift | ---------- | | |
| 12 S | 3,4-Dinitrotoluene | ---------- | NA | ---------- | | | |
| | ---------- | Amount | Calc. | %Drift | ---------- | | |
| 13 | 2,6-Dinitrotoluene | 1000.000 | 934.657 | 6.5 | 90 | 0.00 | 13.97-14.97 |
| 14 | 2,4-Dinitrotoluene | 1000.000 | 987.892 | 1.2 | 104 | 0.00 | 14.56-15.56 |
| 15 | 3,5-Dinitroaniline | 1000.000 | 961.136 | 3.9 | 102 | 0.00 | 15.46-16.46 |
| 16 | o-Nitrotoluene | 1000.000 | 1024.561 | -2.5 | 103 | 0.00 | 16.27-17.27 |
| 17 | p-Nitrotoluene | 2000.000 | 1949.706 | 2.5 | 103 | 0.00 | 17.33-18.33 |
| 18 | 4-Amino-2,6-Dinitrotol | 2000.000 | 1948.890 | 2.6 | 103 | 0.00 | 17.33-18.33 |
| 19 | m-Nitrotoluene | 1000.000 | 993.879 | 0.6 | 101 | 0.00 | 18.52-19.52 |
| 20 | 2-Amino-4,6-Dinitrotol | 1000.000 | 981.788 | 1.8 | 99 | 0.00 | 19.25-20.25 |
| 21 | PETN | ---------- | NA | ---------- | | | |
| ***** | Signal #2 ***** | | | | | | |
| 1 | TNX | 472.000 | 461.939 | 2.1 | 106 | 0.00 | 4.30- 5.32 |
| 2 | HMX | 1000.000 | 1111.517 | -11.2 | 115 | -0.01 | 4.70- 5.70 |
| 3 | DNX | 1000.000 | 1026.230 | -2.6 | 106 | 0.00 | 4.93- 5.93 |
| 4 | MNX | 1166.000 | 1144.670 | 1.8 | 105 | 0.00 | 6.05- 7.05 |
| 5 | 1,3,5-Trinitrobenzene | 1000.000 | 907.342 | 9.3 | 96 | 0.00 | 6.85- 7.85 |
| 6 | RDX | 1000.000 | 1043.715 | -4.4 | 107 | 0.00 | 7.35- 8.35 |
| | ---------- | Amount | Calc. | %Drift | ---------- | | |
| 7 | 1,3-Dinitrobenzene | 1000.000 | 995.674 | 0.4 | 103 | 0.00 | 9.30-10.30 |
| 8 | Nitrobenzene | 1000.000 | 979.519 | 2.0 | 101 | 0.00 | 10.34-11.34 |
| 9 | 2,4,6-Trinitrotoluene | 1000.000 | 995.503 | 0.4 | 105 | 0.00 | 10.91-11.91 |
| 10 | Nitroglycerin | ---------- | NA | ---------- | | | |
| 11 | Tetryl | 1000.000 | 975.290 | 2.5 | 101 | 0.00 | 12.25-13.25 |

# Initial Calibration Verification

**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** GGG3484-ICV3484
**Lab FileID:** GG630275.D

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 12 | S | 3,4-Dinitrotoluene | | | ----------NA---------- | | | |
| 13 | | 2,6-Dinitrotoluene | 1000.000 | 926.295 | 7.4 | 92 | 0.00 | 13.97-14.97 |
| 14 | | 2,4-Dinitrotoluene | 1000.000 | 1002.137 | -0.2 | 104 | 0.00 | 14.56-15.56 |
| 15 | | 3,5-Dinitroaniline | 1000.000 | 976.666 | 2.3 | 100 | 0.00 | 15.46-16.46 |
| 16 | | o-Nitrotoluene | 1000.000 | 987.557 | 1.2 | 101 | 0.00 | 16.27-17.27 |
| | | ---------- | Amount | Calc. | %Drift | | | ---------- |
| 17 | | p-Nitrotoluene | 2000.000 | 2143.535 | -7.2 | 104 | 0.00 | 17.33-18.33 |
| 18 | | 4-Amino-2,6-Dinitrotol | 2000.000 | 2137.962 | -6.9 | 104 | 0.00 | 17.33-18.33 |
| 19 | | m-Nitrotoluene | 1000.000 | 1082.387 | -8.2 | 100 | 0.00 | 18.52-19.52 |
| 20 | | 2-Amino-4,6-Dinitrotol | 1000.000 | 1033.922 | -3.4 | 94 | 0.00 | 19.26-20.26 |
| | | ---------- | Amount | Calc. | %Drift | | | ---------- |
| 21 | | PETN | | | ----------NA---------- | | | |

(#) = Out of Range SPCC's out = 0 CCC's out = 0
GG630272.D GGG3484_100324.M Fri Oct 04 15:50:54 2024

8.7.6

8

# Initial Calibration Verification



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** GGG3484-ICV3484
**Lab FileID:** GG630276.D

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630276.D\dad1B.ch Vial: 11
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630276.D\dad1A.ch
Acq On : 03-Oct-2024, 17:16:05 Operator: fouads
Sample : ICV3484-1000 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Fri Oct 04 15:40:51 2024
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | Amount | Calc. | %Drift | Area% Dev(min) | RT Window |
|---|---|---|---|---|---|---|
| 1 | TNX | | | NA | | |
| 2 | HMX | | | NA | | |
| 3 | DNX | | | NA | | |
| 4 | MNX | | | NA | | |
| 5 | 1,3,5-Trinitrobenzene | | | NA | | |
| 6 | RDX | | | NA | | |
| 7 | 1,3-Dinitrobenzene | | | NA | | |
| 8 | Nitrobenzene | | | NA | | |
| 9 | 2,4,6-Trinitrotoluene | | | NA | | |
| 10 | Nitroglycerin | | | NA | | |
| 11 | Tetryl | | | NA | | |
| | Amount | Calc. | %Drift | | | |
| 12 S | 3,4-Dinitrotoluene | | | NA | | |
| | Amount | Calc. | %Drift | | | |
| 13 | 2,6-Dinitrotoluene | | | NA | | |
| 14 | 2,4-Dinitrotoluene | | | NA | | |
| 15 | 3,5-Dinitroaniline | | | NA | | |
| 16 | o-Nitrotoluene | | | NA | | |
| 17 | p-Nitrotoluene | | | NA | | |
| 18 | 4-Amino-2,6-Dinitrotoluen | | | NA | | |
| 19 | m-Nitrotoluene | | | NA | | |
| 20 | 2-Amino-4,6-Dinitrotoluen | | | NA | | |
| 21 | PETN | | | NA | | |

***** Signal #2 *****

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | TNX | | | NA | | |
| 2 | HMX | | | NA | | |
| 3 | DNX | | | NA | | |
| 4 | MNX | | | NA | | |
| 5 | 1,3,5-Trinitrobenzene | | | NA | | |
| 6 | RDX | | | NA | | |
| | Amount | Calc. | %Drift | | | |
| 7 | 1,3-Dinitrobenzene | | | NA | | |
| 8 | Nitrobenzene | | | NA | | |
| 9 | 2,4,6-Trinitrotoluene | | | NA | | |
| 10 | Nitroglycerin | 1000.000 | 1093.857 | -9.4 | 108 -0.10 | 11.72-12.72 |
| 11 | Tetryl | | | NA | | |

# Initial Calibration Verification

**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** GGG3484-ICV3484
**Lab FileID:** GG630276.D

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 12 | S | 3,4-Dinitrotoluene | | | ----------NA---------- | | | | |
| 13 | | 2,6-Dinitrotoluene | | | ----------NA---------- | | | | |
| 14 | | 2,4-Dinitrotoluene | | | ----------NA---------- | | | | |
| 15 | | 3,5-Dinitroaniline | | | ----------NA---------- | | | | |
| 16 | | o-Nitrotoluene | | | ----------NA---------- | | | | |
| | | | Amount | Calc. | %Drift | | | | |
| 17 | | p-Nitrotoluene | | | ----------NA---------- | | | | |
| 18 | | 4-Amino-2,6-Dinitrotoluen | | | ----------NA---------- | | | | |
| 19 | | m-Nitrotoluene | | | ----------NA---------- | | | | |
| 20 | | 2-Amino-4,6-Dinitrotoluen | | | ----------NA---------- | | | | |
| | | | Amount | Calc. | %Drift | | | | |
| 21 | | PETN | 1000.000 | 1059.577 | -6.0 | 110 | 0.00 | 20.34-21.34 | |

(#) = Out of Range SPCC's out = 0 CCC's out = 0
GG630272.D GGG3484_100324.M Fri Oct 04 15:50:55 2024

8.7.7

8

# Continuing Calibration Summary



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** GGG3516-CC3484
**Lab FileID:** GG630896.D

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630896.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630896.D\dad1A.ch
Acq On : 18-Dec-2024, 13:49:00 Operator: fouads
Sample : cc3484-1000 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 09:46:29 2024
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | Amount | Calc. | %Drift | Area% | Dev(min) | RT Window |
|---|---|---|---|---|---|---|---|
| 1 | TNX | 472.000 | 519.559 | -10.1 | 121 | 0.00 | 3.83- 5.27 |
| 2 | HMX | 1000.000 | 958.239 | 4.2 | 98 | 0.00 | 4.62- 5.62 |
| 3 | DNX | 1000.000 | 1160.247 | -16.0 | 122 | 0.00 | 4.83- 5.83 |
| 4 | MNX | 1166.000 | 1300.256 | -11.5 | 121 | 0.00 | 5.89- 6.89 |
| 5 | 1,3,5-Trinitrobenzene | 1000.000 | 907.928 | 9.2 | 95 | 0.00 | 6.63- 7.63 |
| 6 | RDX | 1000.000 | 940.098 | 6.0 | 97 | 0.00 | 7.14- 8.14 |
| 7 | 1,3-Dinitrobenzene | 1000.000 | 909.633 | 9.0 | 94 | 0.00 | 9.04-10.04 |
| 8 | Nitrobenzene | 1000.000 | 858.591 | 14.1 | 92 | 0.00 | 9.96-10.97 |
| 9 | 2,4,6-Trinitrotoluene | 1000.000 | 924.744 | 7.5 | 98 | 0.00 | 10.50-11.50 |
| 10 | Nitroglycerin | ---------- | NA | ---------- | | | |
| 11 | Tetryl | 1000.000 | 946.166 | 5.4 | 98 | 0.00 | 11.72-12.72 |
| | ---------- | Amount | Calc. | %Drift | ---------- | | |
| 12 S | 3,4-Dinitrotoluene | 1000.000 | 1052.168 | -5.2 | 118 | 0.00 | 13.15-14.15 |
| | ---------- | Amount | Calc. | %Drift | ---------- | | |
| 13 | 2,6-Dinitrotoluene | 1000.000 | 979.651 | 2.0 | 94 | 0.00 | 13.44-14.44 |
| 14 | 2,4-Dinitrotoluene | 1000.000 | 924.666 | 7.5 | 97 | 0.00 | 14.08-15.08 |
| 15 | 3,5-Dinitroaniline | 1000.000 | 917.540 | 8.2 | 97 | 0.00 | 15.06-16.06 |
| 16 | o-Nitrotoluene | 1000.000 | 952.514 | 4.7 | 96 | 0.00 | 15.52-16.52 |
| 17 | p-Nitrotoluene | 2000.000 | 1778.539 | 11.1 | 94 | 0.00 | 16.64-17.64 |
| 18 | 4-Amino-2,6-Dinitrotol | 2000.000 | 1777.794 | 11.1 | 94 | 0.00 | 16.65-17.65 |
| 19 | m-Nitrotoluene | 1000.000 | 877.682 | 12.2 | 89 | 0.00 | 17.67-18.67 |
| 20 | 2-Amino-4,6-Dinitrotol | 1000.000 | 940.750 | 5.9 | 95 | 0.00 | 18.61-19.61 |
| 21 | PETN | ---------- | NA | ---------- | | | |
| ***** | Signal #2 ***** | | | | | | |
| 1 | TNX | 472.000 | 527.744 | -11.8 | 121 | 0.00 | 4.26- 5.27 |
| 2 | HMX | 1000.000 | 942.351 | 5.8 | 98 | 0.00 | 4.62- 5.62 |
| 3 | DNX | 1000.000 | 1188.237 | -18.8 | 122 | 0.00 | 4.83- 5.83 |
| 4 | MNX | 1166.000 | 1313.584 | -12.7 | 121 | 0.00 | 5.89- 6.89 |
| 5 | 1,3,5-Trinitrobenzene | 1000.000 | 901.541 | 9.8 | 95 | 0.00 | 6.63- 7.63 |
| 6 | RDX | 1000.000 | 952.824 | 4.7 | 97 | 0.00 | 7.14- 8.14 |
| | ---------- | Amount | Calc. | %Drift | ---------- | | |
| 7 | 1,3-Dinitrobenzene | 1000.000 | 884.313 | 11.6 | 91 | 0.00 | 9.04-10.04 |
| 8 | Nitrobenzene | 1000.000 | 893.409 | 10.7 | 92 | 0.00 | 9.96-10.96 |
| 9 | 2,4,6-Trinitrotoluene | 1000.000 | 944.698 | 5.5 | 99 | 0.00 | 10.50-11.50 |
| 10 | Nitroglycerin | 1000.000 | 1010.724 | -1.1 | 100 | 0.00 | 11.24-12.24 |
| 11 | Tetryl | 1000.000 | 955.923 | 4.4 | 99 | 0.00 | 11.72-12.72 |

# Continuing Calibration Summary

**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** GGG3516-CC3484
**Lab FileID:** GG630896.D

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 12 | S | 3,4-Dinitrotoluene | 1000.000 | 1089.685 | -9.0 | 114 | 0.00 | 13.15-14.15 |
| 13 | | 2,6-Dinitrotoluene | 1000.000 | 876.547 | 12.3 | 87 | 0.00 | 13.43-14.43 |
| 14 | | 2,4-Dinitrotoluene | 1000.000 | 908.822 | 9.1 | 94 | 0.00 | 14.08-15.08 |
| 15 | | 3,5-Dinitroaniline | 1000.000 | 976.674 | 2.3 | 100 | 0.00 | 15.06-16.06 |
| 16 | | o-Nitrotoluene | 1000.000 | 952.046 | 4.8 | 98 | 0.00 | 15.52-16.52 |
| | | | Amount | Calc. | %Drift | | | |
| 17 | | p-Nitrotoluene | 2000.000 | 1921.677 | 3.9 | 93 | 0.00 | 16.66-17.66 |
| 18 | | 4-Amino-2,6-Dinitrotol | 2000.000 | 1916.681 | 4.2 | 93 | 0.00 | 16.66-17.66 |
| 19 | | m-Nitrotoluene | 1000.000 | 932.486 | 6.8 | 86 | 0.00 | 17.67-18.67 |
| 20 | | 2-Amino-4,6-Dinitrotol | 1000.000 | 1023.067 | -2.3 | 93 | 0.00 | 18.61-19.61 |
| | | | Amount | Calc. | %Drift | | | |
| 21 | | PETN | 1000.000 | 786.414 | 21.4# | 82 | 0.00 | 19.49-20.49 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0
GG630272.D GGG3484_100324.M Thu Dec 19 09:48:09 2024

8.7.8

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# Continuing Calibration Summary



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** GGG3516-CC3484
**Lab FileID:** GG630908.D

Evaluate Continuing Calibration Report

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630908.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630908.D\dad1A.ch
Acq On : 18-Dec-2024, 20:23:13 Operator: fouads
Sample : cc3484-1000 Inst : G1315B
Misc : op6848,GGG3516,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 12:54:19 2024
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | Amount | Calc. | %Drift | Area% | Dev(min) | RT Window |
|---|---|---|---|---|---|---|---|
| 1 | TNX | 472.000 | 517.884 | -9.7 | 120 | 0.00 | 4.01- 5.45 |
| 2 | HMX | 1000.000 | 946.421 | 5.4 | 96 | 0.00 | 4.82- 5.82 |
| 3 | DNX | 1000.000 | 1165.425 | -16.5 | 123 | 0.00 | 5.03- 6.03 |
| 4 | MNX | 1166.000 | 1297.273 | -11.3 | 121 | 0.00 | 6.12- 7.12 |
| 5 | 1,3,5-Trinitrobenzene | 1000.000 | 813.757 | 18.6 | 85 | 0.00 | 6.12- 7.12 |
| 6 | RDX | 1000.000 | 927.712 | 7.2 | 96 | 0.00 | 7.28- 8.28 |
| 7 | 1,3-Dinitrobenzene | 1000.000 | 926.840 | 7.3 | 96 | 0.00 | 8.94- 9.94 |
| 8 | Nitrobenzene | 1000.000 | 836.088 | 16.4 | 90 | 0.00 | 9.81-10.81 |
| 9 | 2,4,6-Trinitrotoluene | 1000.000 | 932.810 | 6.7 | 98 | 0.00 | 10.32-11.32 |
| 10 | Nitroglycerin | ----------NA---------- | | | | | |
| 11 | Tetryl | 1000.000 | 941.721 | 5.8 | 98 | 0.00 | 11.41-12.41 |
| | ---------- | Amount | Calc. | %Drift | ---------- | | |
| 12 S | 3,4-Dinitrotoluene | 1000.000 | 1095.063 | -9.5 | 122 | 0.00 | 12.77-13.77 |
| | ---------- | Amount | Calc. | %Drift | ---------- | | |
| 13 | 2,6-Dinitrotoluene | 1000.000 | 939.007 | 6.1 | 90 | 0.00 | 13.10-14.10 |
| 14 | 2,4-Dinitrotoluene | 1000.000 | 905.250 | 9.5 | 95 | 0.00 | 13.71-14.71 |
| 15 | 3,5-Dinitroaniline | 1000.000 | 918.524 | 8.1 | 97 | 0.00 | 14.65-15.65 |
| 16 | o-Nitrotoluene | 1000.000 | 903.405 | 9.7 | 91 | 0.00 | 15.03-16.03 |
| 17 | p-Nitrotoluene | 2000.000 | 1744.508 | 12.8 | 92 | 0.00 | 16.06-17.06 |
| 18 | 4-Amino-2,6-Dinitrotol | 2000.000 | 1743.778 | 12.8 | 92 | 0.00 | 16.06-17.06 |
| 19 | m-Nitrotoluene | 1000.000 | 821.962 | 17.8 | 84 | 0.00 | 17.11-18.11 |
| 20 | 2-Amino-4,6-Dinitrotol | 1000.000 | 885.376 | 11.5 | 89 | 0.00 | 18.01-19.01 |
| 21 | PETN | ----------NA---------- | | | | | |

***** Signal #2 *****

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | TNX | 472.000 | 526.043 | -11.4 | 120 | 0.00 | 4.43- 5.45 |
| 2 | HMX | 1000.000 | 930.730 | 6.9 | 96 | 0.00 | 4.82- 5.82 |
| 3 | DNX | 1000.000 | 1193.540 | -19.4 | 123 | 0.00 | 5.03- 6.03 |
| 4 | MNX | 1166.000 | 1310.571 | -12.4 | 121 | 0.00 | 6.12- 7.12 |
| 5 | 1,3,5-Trinitrobenzene | 1000.000 | 808.033 | 19.2 | 85 | 0.00 | 6.12- 7.12 |
| 6 | RDX | 1000.000 | 940.270 | 6.0 | 96 | 0.00 | 7.28- 8.28 |
| | ---------- | Amount | Calc. | %Drift | ---------- | | |
| 7 | 1,3-Dinitrobenzene | 1000.000 | 891.293 | 10.9 | 92 | 0.00 | 8.94- 9.94 |
| 8 | Nitrobenzene | 1000.000 | 919.532 | 8.0 | 95 | 0.00 | 9.81-10.81 |
| 9 | 2,4,6-Trinitrotoluene | 1000.000 | 1007.638 | -0.8 | 106 | 0.00 | 10.32-11.32 |
| 10 | Nitroglycerin | 1000.000 | 795.501 | 20.4# | 78 | 0.00 | 10.97-11.97 |
| 11 | Tetryl | 1000.000 | 842.995 | 15.7 | 87 | 0.00 | 11.41-12.41 |

# Continuing Calibration Summary

**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Sample:** GGG3516-CC3484
**Lab FileID:** GG630908.D

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 12 | S | 3,4-Dinitrotoluene | 1000.000 | 1211.631 | -21.2# | 127 | 0.00 | 12.77-13.77 |
| 13 | | 2,6-Dinitrotoluene | 1000.000 | 959.092 | 4.1 | 95 | 0.00 | 13.10-14.10 |
| 14 | | 2,4-Dinitrotoluene | 1000.000 | 992.744 | 0.7 | 103 | 0.00 | 13.71-14.71 |
| 15 | | 3,5-Dinitroaniline | 1000.000 | 997.660 | 0.2 | 103 | 0.00 | 14.65-15.65 |
| 16 | | o-Nitrotoluene | 1000.000 | 905.454 | 9.5 | 93 | 0.00 | 15.03-16.03 |
| | | | Amount | Calc. | %Drift | | | |
| 17 | | p-Nitrotoluene | 2000.000 | 1915.197 | 4.2 | 93 | 0.00 | 16.08-17.08 |
| 18 | | 4-Amino-2,6-Dinitrotol | 2000.000 | 1910.218 | 4.5 | 93 | 0.00 | 16.08-17.08 |
| 19 | | m-Nitrotoluene | 1000.000 | 866.639 | 13.3 | 80 | 0.00 | 17.10-18.10 |
| 20 | | 2-Amino-4,6-Dinitrotol | 1000.000 | 948.814 | 5.1 | 86 | 0.00 | 18.01-19.01 |
| | | | Amount | Calc. | %Drift | | | |
| 21 | | PETN | 1000.000 | 1053.859 | -5.4 | 110 | 0.00 | 18.83-19.83 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0
GG630272.D GGG3484_100324.M Thu Dec 19 12:56:14 2024

8.7.9

8

# Run Sequence Report



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Run ID:** GBB2589 **Method:** SW846 8330B **Instrument ID:** GCBB

| Lab Sample ID | Lab File ID | Date/Time Analyzed | Prep QC Batch | Client Sample ID |
|---|---|---|---|---|
| GBB2589-IC2589 | BB084346.D | 09/12/24 08:17 | n/a | Initial cal 20 |
| GBB2589-IC2589 | BB084347.D | 09/12/24 08:43 | n/a | Initial cal 50 |
| GBB2589-IC2589 | BB084348.D | 09/12/24 09:10 | n/a | Initial cal 100 |
| GBB2589-IC2589 | BB084349.D | 09/12/24 09:36 | n/a | Initial cal 200 |
| GBB2589-IC2589 | BB084350.D | 09/12/24 10:02 | n/a | Initial cal 500 |
| GBB2589-ICC2589 | BB084351.D | 09/12/24 10:29 | n/a | Initial cal 1000 |
| GBB2589-IC2589 | BB084352.D | 09/12/24 10:55 | n/a | Initial cal 2500 |
| GBB2589-IC2589 | BB084353.D | 09/12/24 11:22 | n/a | Initial cal 5000 |
| GBB2589-ICV2589 | BB084354.D | 09/12/24 12:14 | n/a | Initial cal verification 1000 |
| OP5264-BS | BB084355.D | 09/12/24 14:58 | OP5264 | Blank Spike |
| OP5264-MB | BB084356.D | 09/12/24 15:25 | OP5264 | Method Blank |
| ZZZZZZ | BB084357.D | 09/12/24 15:51 | OP5264 | (unrelated sample) |
| ZZZZZZ | BB084358.D | 09/12/24 16:18 | OP5264 | (unrelated sample) |
| ZZZZZZ | BB084360.D | 09/12/24 16:43 | OP5264 | (unrelated sample) |
| ZZZZZZ | BB084361.D | 09/12/24 17:09 | OP5264 | (unrelated sample) |
| ZZZZZZ | BB084362.D | 09/12/24 17:35 | OP5264 | (unrelated sample) |
| ZZZZZZ | BB084363.D | 09/12/24 18:02 | OP5264 | (unrelated sample) |
| ZZZZZZ | BB084364.D | 09/12/24 18:29 | OP5264 | (unrelated sample) |
| GBB2589-CC2589 | BB084366.D | 09/12/24 19:21 | n/a | Continuing cal 1000 |
| ZZZZZZ | BB084367.D | 09/12/24 19:48 | OP5264 | (unrelated sample) |
| ZZZZZZ | BB084368.D | 09/12/24 20:14 | OP5068 | (unrelated sample) |
| ZZZZZZ | BB084369.D | 09/12/24 20:41 | OP5068 | (unrelated sample) |
| ZZZZZZ | BB084370.D | 09/12/24 21:07 | OP5068 | (unrelated sample) |
| ZZZZZZ | BB084371.D | 09/12/24 21:34 | OP5068 | (unrelated sample) |
| OP5265-MB | BB084372.D | 09/12/24 22:00 | OP5265 | Method Blank |
| OP5265-BS | BB084373.D | 09/12/24 22:27 | OP5265 | Blank Spike |
| FC18623-1 | BB084374.D | 09/12/24 22:53 | OP5265 | (used for QC only; not part of job FC21117) |
| OP5265-MS | BB084375.D | 09/12/24 23:20 | OP5265 | Matrix Spike |
| OP5265-MSD | BB084376.D | 09/12/24 23:46 | OP5265 | Matrix Spike Duplicate |
| GBB2589-CC2589 | BB084378.D | 09/13/24 00:39 | n/a | Continuing cal 1000 |
| ZZZZZZ | BB084379.D | 09/13/24 01:06 | OP5265 | (unrelated sample) |
| ZZZZZZ | BB084380.D | 09/13/24 01:32 | OP5265 | (unrelated sample) |
| ZZZZZZ | BB084381.D | 09/13/24 01:59 | OP5265 | (unrelated sample) |
| ZZZZZZ | BB084382.D | 09/13/24 02:25 | OP5265 | (unrelated sample) |
| ZZZZZZ | BB084383.D | 09/13/24 02:52 | OP5068 | (unrelated sample) |
| GBB2589-ECC2589 | BB084385.D | 09/13/24 03:45 | n/a | Ending cal 1000 |

# Run Sequence Report



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Run ID:** GBB2633 **Method:** SW846 8330B **Instrument ID:** GCBB

| Lab Sample ID | Lab File ID | Date/Time Analyzed | Prep QC Batch | Client Sample ID |
|---|---|---|---|---|
| GBB2633-CC2589 | BB085940.D | 12/17/24 08:18 | n/a | Continuing cal 1000 |
| OP6848-MB | BB085941.D | 12/17/24 08:51 | OP6848 | Method Blank |
| OP6848-BS | BB085942.D | 12/17/24 09:18 | OP6848 | Blank Spike |
| ZZZZZZ | BB085943.D | 12/17/24 09:45 | OP6848 | (unrelated sample) |
| FC21058-1 | BB085944.D | 12/17/24 10:17 | OP6848 | (used for QC only; not part of job FC21117) |
| OP6848-MS | BB085945.D | 12/17/24 10:43 | OP6848 | Matrix Spike |
| OP6848-MSD | BB085946.D | 12/17/24 11:10 | OP6848 | Matrix Spike Duplicate |
| ZZZZZZ | BB085947.D | 12/17/24 11:36 | OP6848 | (unrelated sample) |
| ZZZZZZ | BB085948.D | 12/17/24 12:03 | OP6848 | (unrelated sample) |
| ZZZZZZ | BB085949.D | 12/17/24 12:29 | OP6848 | (unrelated sample) |
| ZZZZZZ | BB085950.D | 12/17/24 12:56 | OP6848 | (unrelated sample) |
| GBB2633-CC2589 | BB085952.D | 12/17/24 13:49 | n/a | Continuing cal 1000 |
| ZZZZZZ | BB085953.D | 12/17/24 15:36 | OP6848 | (unrelated sample) |
| OP6902-BS | BB085954.D | 12/17/24 16:03 | OP6902 | Blank Spike |
| OP6902-MB | BB085955.D | 12/17/24 16:29 | OP6902 | Method Blank |
| FC21117-1 | BB085956.D | 12/17/24 16:55 | OP6902 | 54MW13 |
| FC21117-2 | BB085957.D | 12/17/24 17:22 | OP6902 | 54MW10 |
| FC21117-3 | BB085958.D | 12/17/24 17:48 | OP6902 | 54TW10 |
| FC21117-4 | BB085959.D | 12/17/24 18:15 | OP6902 | 54MW12 |
| OP6902-MS | BB085960.D | 12/17/24 18:41 | OP6902 | Matrix Spike |
| OP6902-MSD | BB085961.D | 12/17/24 19:08 | OP6902 | Matrix Spike Duplicate |
| FC21117-5 | BB085962.D | 12/17/24 19:34 | OP6902 | 54MW1 |
| GBB2633-ECC2589 | BB085964.D | 12/18/24 06:50 | n/a | Ending cal 1000 |

# Run Sequence Report



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Run ID:** GGG3484 **Method:** SW846 8330B **Instrument ID:** GCGG

| Lab Sample ID | Lab File ID | Date/Time Analyzed | Prep QC Batch | Client Sample ID |
|---|---|---|---|---|
| GGG3484-IC3484 | GG630267.D | 10/03/24 08:31 | n/a | Initial cal 50 |
| GGG3484-IC3484 | GG630268.D | 10/03/24 09:04 | n/a | Initial cal 100 |
| GGG3484-IC3484 | GG630269.D | 10/03/24 09:38 | n/a | Initial cal 20 |
| GGG3484-IC3484 | GG630270.D | 10/03/24 10:18 | n/a | Initial cal 200 |
| GGG3484-IC3484 | GG630271.D | 10/03/24 10:57 | n/a | Initial cal 500 |
| GGG3484-ICC3484 | GG630272.D | 10/03/24 11:27 | n/a | Initial cal 1000 |
| GGG3484-IC3484 | GG630273.D | 10/03/24 11:56 | n/a | Initial cal 2500 |
| GGG3484-IC3484 | GG630274.D | 10/03/24 12:26 | n/a | Initial cal 5000 |
| GGG3484-ICV3484 | GG630275.D | 10/03/24 15:39 | n/a | Initial cal verification 1000 |
| GGG3484-ICV3484 | GG630276.D | 10/03/24 17:16 | n/a | Initial cal verification 1000 |
| OP5553-MB | GG630277.D | 10/03/24 17:45 | OP5553 | Method Blank |
| ZZZZZZ | GG630278.D | 10/03/24 18:15 | OP5553 | (unrelated sample) |
| ZZZZZZ | GG630279.D | 10/03/24 18:44 | OP5553 | (unrelated sample) |
| ZZZZZZ | GG630280.D | 10/03/24 19:14 | OP5553 | (unrelated sample) |
| ZZZZZZ | GG630281.D | 10/03/24 19:43 | OP5553 | (unrelated sample) |
| OP5595-MB | GG630282.D | 10/03/24 20:12 | OP5595 | Method Blank |
| ZZZZZZ | GG630283.D | 10/03/24 20:42 | OP5595 | (unrelated sample) |
| ZZZZZZ | GG630284.D | 10/03/24 21:12 | OP5595 | (unrelated sample) |
| FC19136-3 | GG630285.D | 10/03/24 21:41 | OP5595 | (used for QC only; not part of job FC21117) |
| GGG3484-ECC3484 | GG630287.D | 10/03/24 22:40 | n/a | Ending cal 1000 |

# Run Sequence Report



**Job Number:** FC21117
**Account:** CAPEFLJ Cape Environmental
**Project:** Radford Army Ammunition Plant SMWU 54; VA

**Run ID:** GGG3516 **Method:** SW846 8330A **Instrument ID:** GCGG

| Lab Sample ID | Lab File ID | Date/Time Analyzed | Prep QC Batch | Client Sample ID |
|---|---|---|---|---|
| GGG3516-CC3484 | GG630896.D | 12/18/24 13:49 | n/a | Continuing cal 1000 |
| OP6848-MB | GG630897.D | 12/18/24 14:49 | OP6848 | Method Blank |
| FC21058-1 | GG630898.D | 12/18/24 15:19 | OP6848 | (used for QC only; not part of job FC21117) |
| ZZZZZZ | GG630899.D | 12/18/24 15:48 | OP6848 | (unrelated sample) |
| ZZZZZZ | GG630900.D | 12/18/24 16:27 | OP6848 | (unrelated sample) |
| OP6902-MB | GG630901.D | 12/18/24 16:56 | OP6902 | Method Blank |
| FC21117-1 | GG630902.D | 12/18/24 17:26 | OP6902 | 54MW13 |
| FC21117-3 | GG630903.D | 12/18/24 17:55 | OP6902 | 54TW10 |
| FC21117-4 | GG630904.D | 12/18/24 18:25 | OP6902 | 54MW12 |
| OP6970-MB | GG630905.D | 12/18/24 18:54 | OP6970 | Method Blank |
| FC21084-1 | GG630906.D | 12/18/24 19:24 | OP6970 | (used for QC only; not part of job FC21117) |
| GGG3516-CC3484 | GG630908.D | 12/18/24 20:23 | n/a | Continuing cal 1000 |
| ZZZZZZ | GG630909.D | 12/18/24 20:52 | OP6970 | (unrelated sample) |
| ZZZZZZ | GG630910.D | 12/18/24 21:22 | OP6970 | (unrelated sample) |
| ZZZZZZ | GG630911.D | 12/18/24 21:51 | OP6970 | (unrelated sample) |
| ZZZZZZ | GG630912.D | 12/18/24 22:20 | OP6970 | (unrelated sample) |
| ZZZZZZ | GG630913.D | 12/18/24 22:50 | OP6970 | (unrelated sample) |
| GGG3516-ECC3484 | GG630915.D | 12/18/24 23:49 | n/a | Ending cal 1000 |

GC/LC Semi-volatiles

Raw Data

Manual Integrations APPROVED (compounds with "m" flag)
Naresh Jiawan
12/19/24 14:18

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085956.D\dad1B.ch Vial: 16
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085956.D\dad1A.ch
Acq On : 17-Dec-2024, 16:55:59 Operator: fouads
Sample : fc21117-1 Inst : G1315B
Misc : OP6902,GBB2633,910,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 06:21:03 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 06:19:51 2024
Response via : Initial Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 15) S | 3,4-Dinitrotolue | 10.94 | 10.94 | 897248 | 1637349 | 399.844 | 402.580 |
| | Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 79.97% | 80.52% |
| | Target Compounds | | | | | | |
| 1) | TNX | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 2) | HMX | 1.42 | 1.43 | 545321 | 1510524 | 360.165m | 359.636m |
| 3) | DNX | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 4) | MNX | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 5) | RDX | 2.84 | 2.83 | 209380 | 274688 | 109.218 | 95.634m |
| 6) | 1,3,5-Trinitrobe | 4.56 | 4.56 | 11615808 | 17825098 | 2675.421 | 2676.769 |
| 7) | 1,3-Dinitrobenze | 5.73 | 5.73 | 3680752 | 2617343 | 653.738m | 659.366m |
| 8) | 3,5-Dinitroanili | 5.99 | 6.14 | 12803288 | 14864515 | 3063.697m | 2116.827m |
| 9) | Nitrobenzene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 10) | Nitroglycerin | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 11) | Tetryl | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 12) | 2,4,6-Trinitroto | 9.59 | 9.59 | 9828682 | 11907122 | 2438.580 | 2532.661 |
| 13) | 2-Amino-4,6-Dini | 10.11 | 10.11 | 969057 | 1425647 | 297.144 | 304.865 |
| 14) | 4-Amino-2,6-Dini | 10.55 | 10.55 | 493207 | 1014955 | 206.301 | 217.136 |
| 16) | 2,4-Dinitrotolue | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 17) | 2,6-Dinitrotolue | 12.01 | 12.06 | 111487 | 117158 | 39.302 | 33.857 |
| 18) | o-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 19) | p-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 20) | m-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. |
| 21) | PETN | 0.00 | 18.29 | 0 | 413699 | N.D. | 306.767m# |

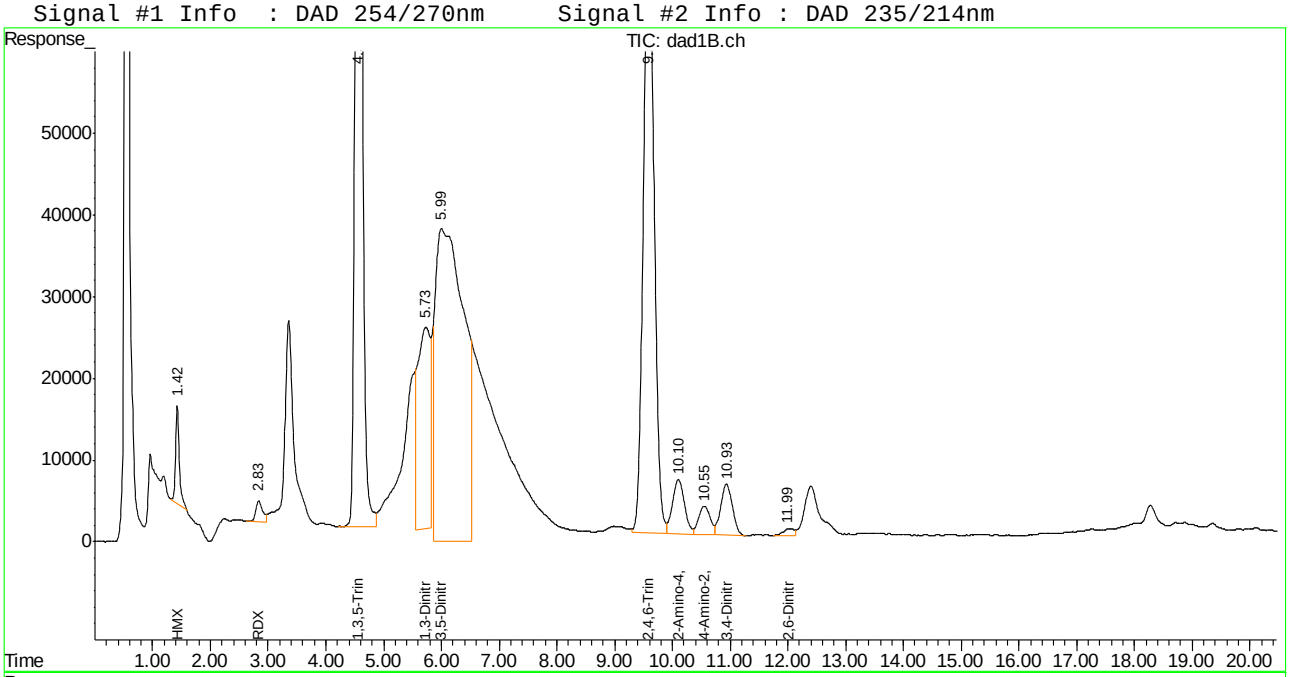
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
BB085956.D BBB2589_091224.M Wed Dec 18 10:41:58 2024 Page 1

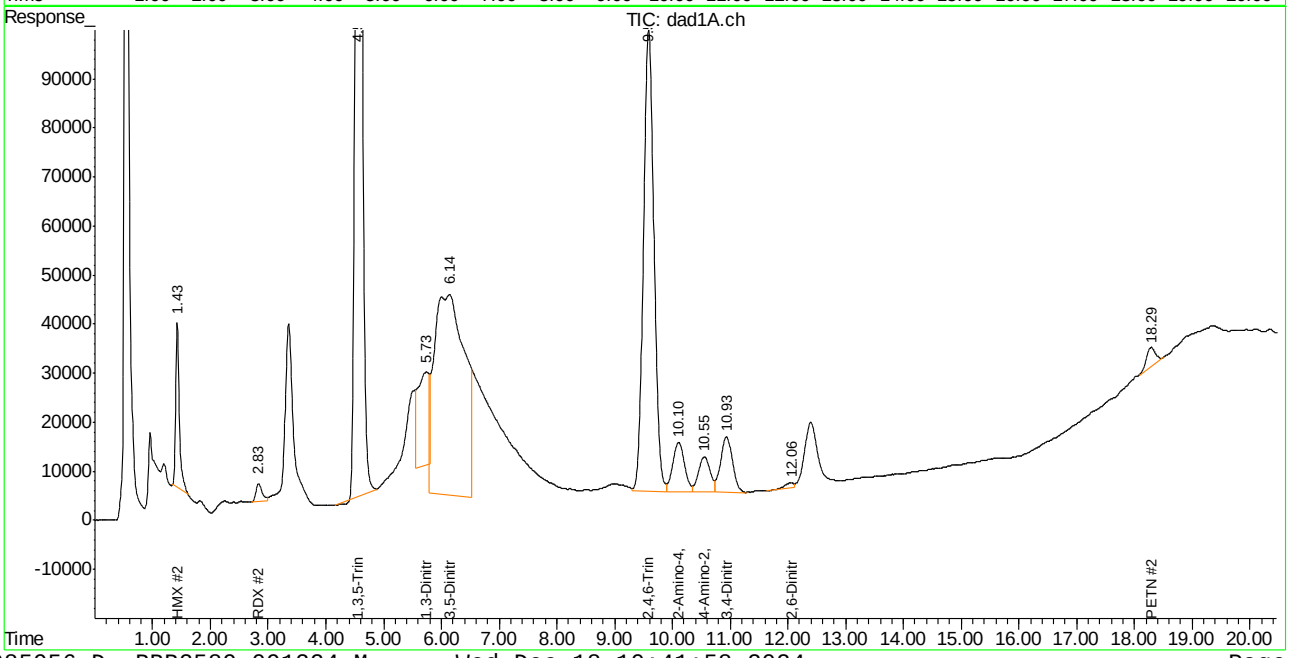
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085956.D\dad1B.ch Vial: 16
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085956.D\dad1A.ch
Acq On : 17-Dec-2024, 16:55:59 Operator: fouads
Sample : fc21117-1 Inst : G1315B
Misc : OP6902,GBB2633,910,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 6:34 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 06:19:51 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm




BB085956.D BBB2589_091224.M Wed Dec 18 10:41:58 2024 Page 2

# Manual Integration Approval Summary



**Sample Number:** FC21117-1
**Lab FileID:** BB085956.D
**Injection Time:** 12/17/24 16:55

**Method:** SW846 8330B
**Analyst approved:** 12/19/24 13:06 Fouad Sekkar
**Supervisor approved:** 12/19/24 14:18 Naresh Jiawan

| Parameter | CAS | Sig# | R.T. (min.) | Reason |
|---|---|---|---|---|
| HMX | 2691-41-0 | 1 | 1.42 | Poor instrument integration |
| HMX | 2691-41-0 | 2 | 1.43 | Poor instrument integration |
| RDX | 121-82-4 | 2 | 2.83 | Poor instrument integration |
| 3,5-Dinitroaniline | 618-87-1 | 1 | 5.99 | Poor instrument integration |
| 3,5-Dinitroaniline | 618-87-1 | 2 | 6.14 | Poor instrument integration |

Manual Integrations APPROVED (compounds with "m" flag)
Naresh Jiawan 12/19/24 14:18

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630902.D\dad1B.ch Vial: 8
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630902.D\dad1A.ch
Acq On : 18-Dec-2024, 17:26:20 Operator: fouads
Sample : FC21117-1CF Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 10:10:24 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 10:10:14 2024
Response via : Initial Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 12) S | 3,4-Dinitrotolue | 13.24 | 13.24 | 2671572 | 4709553 | 588.782 | 522.725 |
| | Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 117.76% | 104.55% |
| | Target Compounds | | | | | | |
| 1) | TNX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 2) | HMX | 5.28 | 5.28 | 1332181 | 1332181 | 413.882 | 407.019 |
| 3) | DNX | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 4) | MNX | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 5) | 1,3,5-Trinitrobe | 7.22 | 7.22 | 27510145 | 27382472 | 2809.807m | 2777.093m |
| 6) | RDX | 7.66 | 7.66 | 281478 | 370801 | 62.788m | 83.833m |
| 7) | 1,3-Dinitrobenze | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 8) | Nitrobenzene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 9) | 2,4,6-Trinitroto | 10.87 | 10.87 | 23676063 | 31544185 | 2548.500 | 2557.651 |
| 10) | Nitroglycerin | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 11) | Tetryl | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 13) | 2,6-Dinitrotolue | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 14) | 2,4-Dinitrotolue | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 15) | 3,5-Dinitroanili | 14.93 | 14.93 | 3499811 | 6056229 | 346.464 | 374.226 |
| 16) | o-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 17) | p-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 18) | 4-Amino-2,6-Dini | 16.68 | 16.69 | 1432209 | 2802903 | 262.654 | 307.371 |
| 19) | m-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 20) | 2-Amino-4,6-Dini | 18.59 | 18.59 | 2426087 | 3141655 | 273.441 | 268.187 |
| 21) | PETN | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |

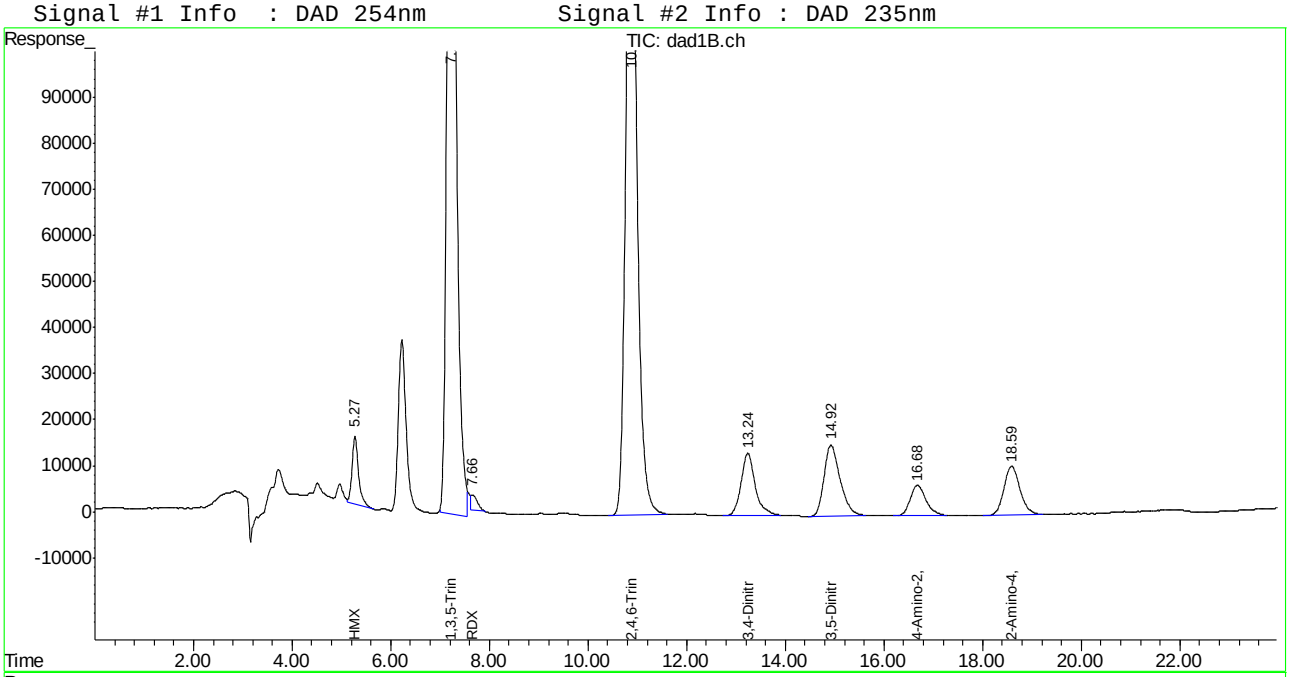
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
GG630902.D GGG3484_100324.M Thu Dec 19 10:18:36 2024 Page 1

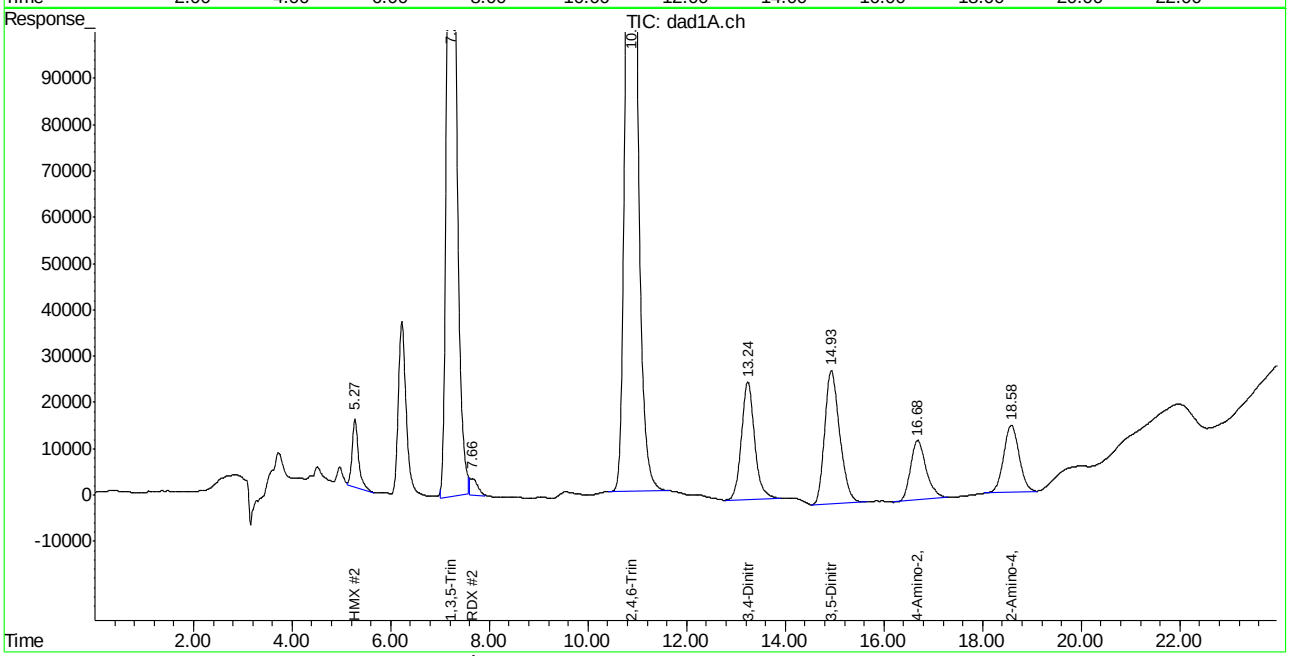
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630902.D\dad1B.ch Vial: 8
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630902.D\dad1A.ch
Acq On : 18-Dec-2024, 17:26:20 Operator: fouads
Sample : FC21117-1CF Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 10:11 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 10:10:14 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm



# Manual Integration Approval Summary



**Sample Number:** FC21117-1
**Lab FileID:** GG630902.D
**Injection Time:** 12/18/24 17:26

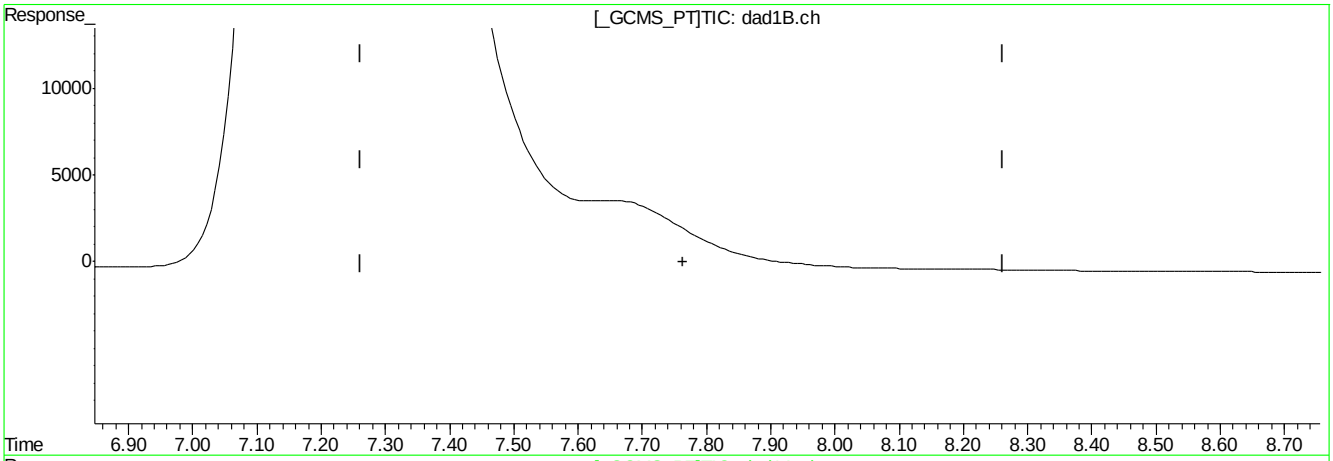
**Method:** SW846 8330B
**Analyst approved:** 12/19/24 12:59 Fouad Sekkar
**Supervisor approved:** 12/19/24 14:18 Naresh Jiawan

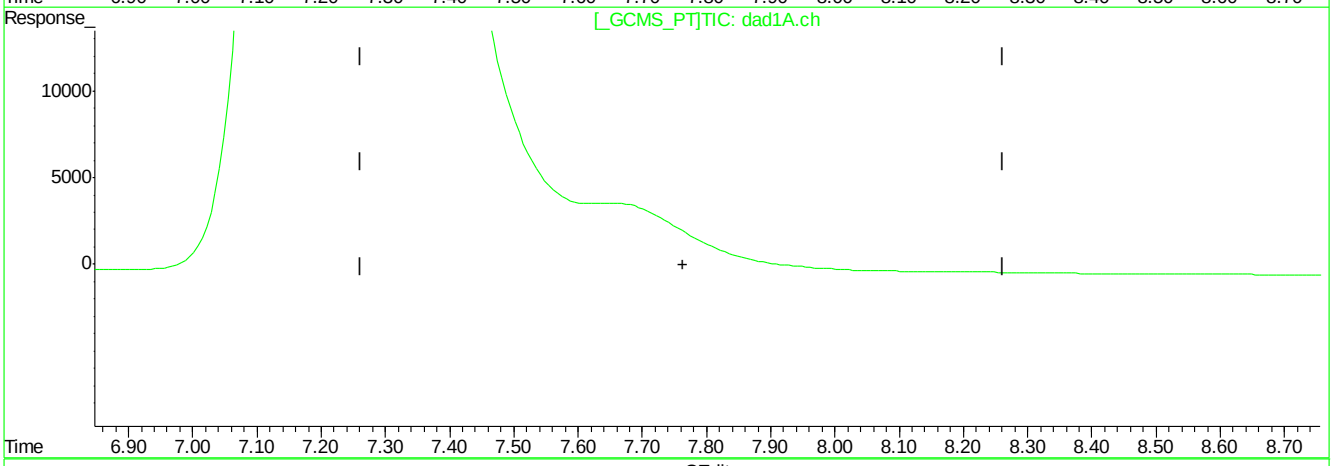
| Parameter | CAS | Sig# | R.T. (min.) | Reason |
|---|---|---|---|---|
| 1,3,5-Trinitrobenzene | 99-35-4 | 1 | 7.22 | Poor instrument integration |
| 1,3,5-Trinitrobenzene | 99-35-4 | 2 | 7.22 | Poor instrument integration |
| RDX | 121-82-4 | 1 | 7.66 | Poor instrument integration |
| RDX | 121-82-4 | 2 | 7.66 | Poor instrument integration |

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630902.D\dad1B.ch Vial: 8
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630902.D\dad1A.ch
Acq On : 18-Dec-2024, 17:26:20 Operator: fouads
Sample : FC21117-1CF Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 10:07 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 10:02:57 2024
Response via : Multiple Level Calibration




QEdit

(6) RDX

0.00min 0.000ppb

response 0

(6) RDX #2

0.00min 0.000ppb

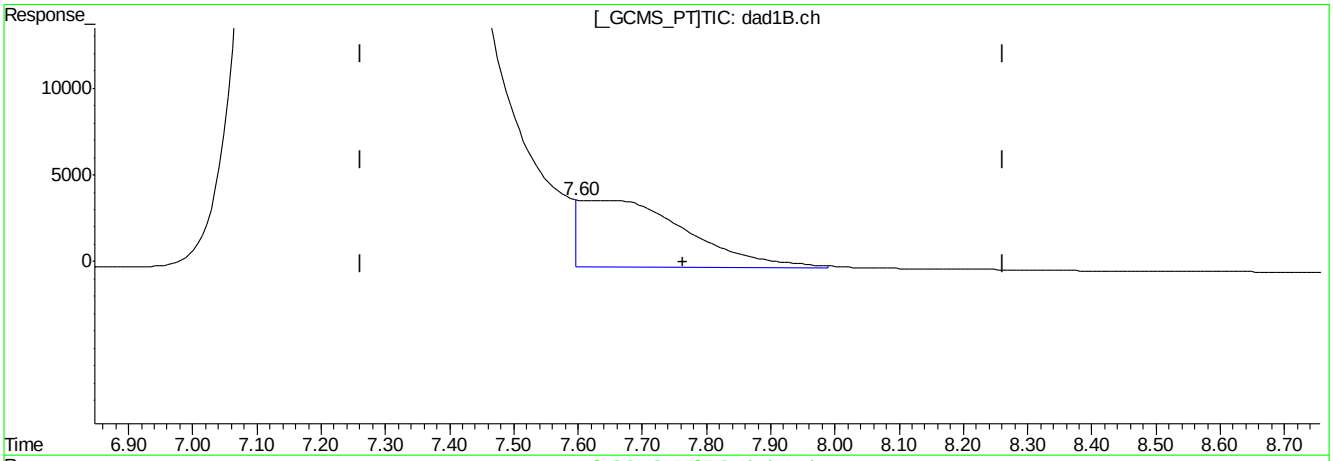
response 0

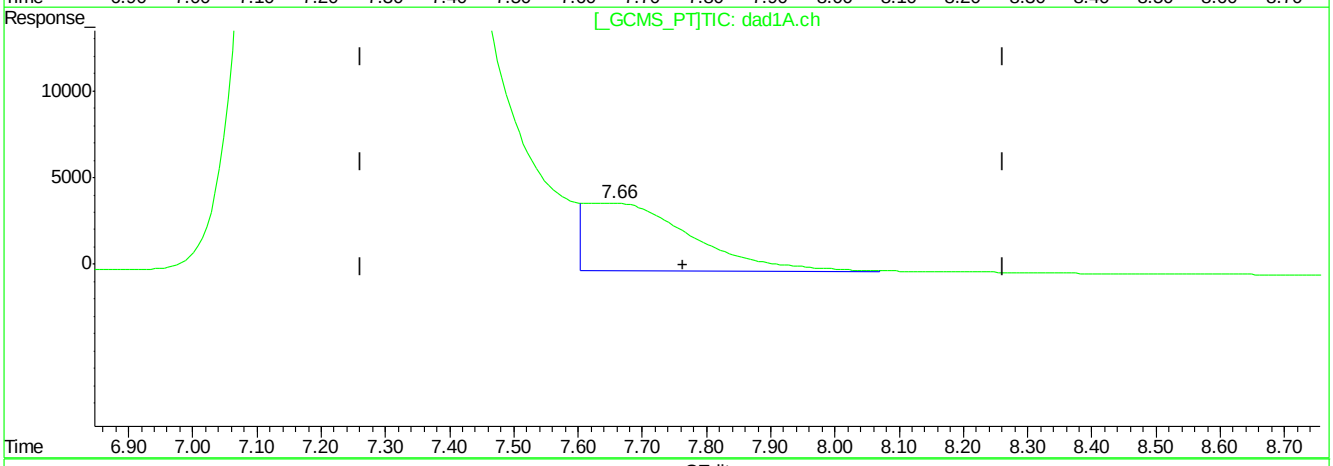
(+) = Expected Retention Time
GG630902.D GGG3484_100324.M Thu Dec 19 10:07:45 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630902.D\dad1B.ch Vial: 8
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630902.D\dad1A.ch
Acq On : 18-Dec-2024, 17:26:20 Operator: fouads
Sample : FC21117-1CF Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 10:07 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 10:02:57 2024
Response via : Multiple Level Calibration




QEdit

(6) RDX

7.60min 99.246ppb m

response 444914

(6) RDX #2

7.66min 101.870ppb m

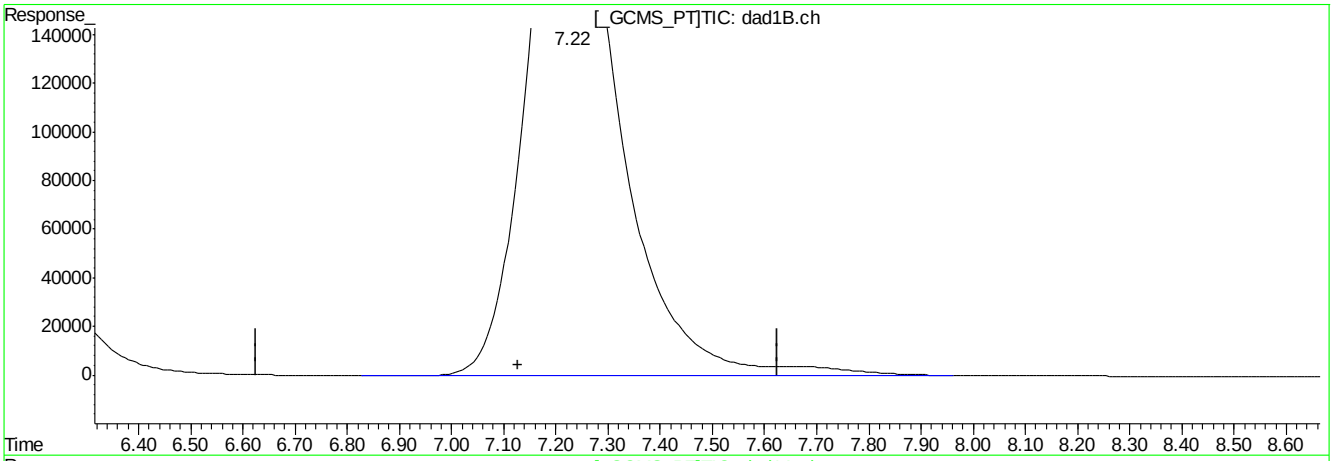
response 450580

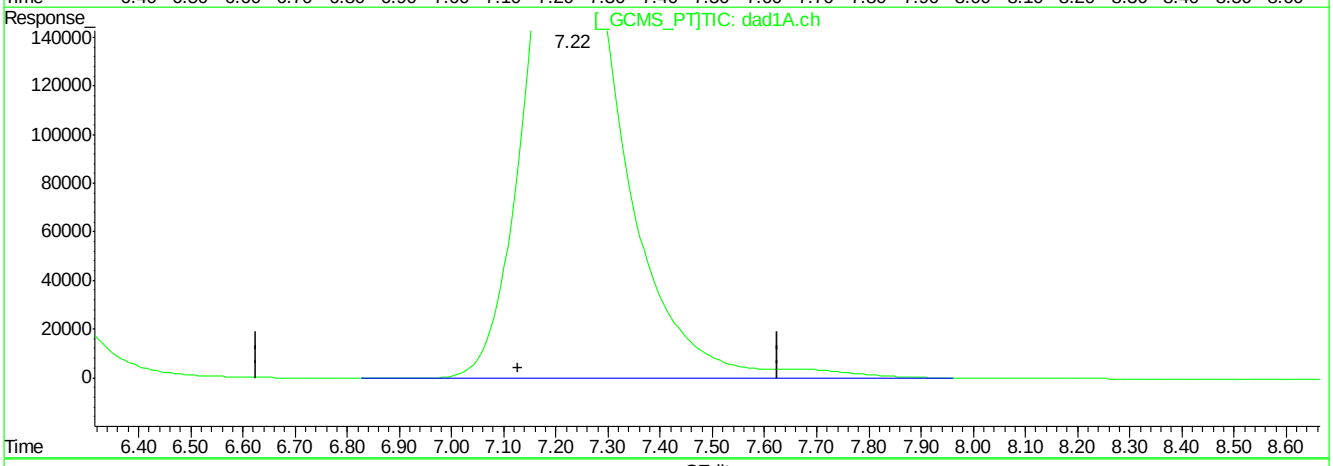
(+) = Expected Retention Time
GG630902.D GGG3484_100324.M Thu Dec 19 10:07:57 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630902.D\dad1B.ch Vial: 8
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630902.D\dad1A.ch
Acq On : 18-Dec-2024, 17:26:20 Operator: fouads
Sample : FC21117-1CF Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 10:08 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 10:08:17 2024
Response via : Multiple Level Calibration




QEdit

(5) 1,3,5-Trinitrobenzene

7.22min 2849.912ppb

response 27902796

(5) 1,3,5-Trinitrobenzene #2

7.22min 2829.864ppb

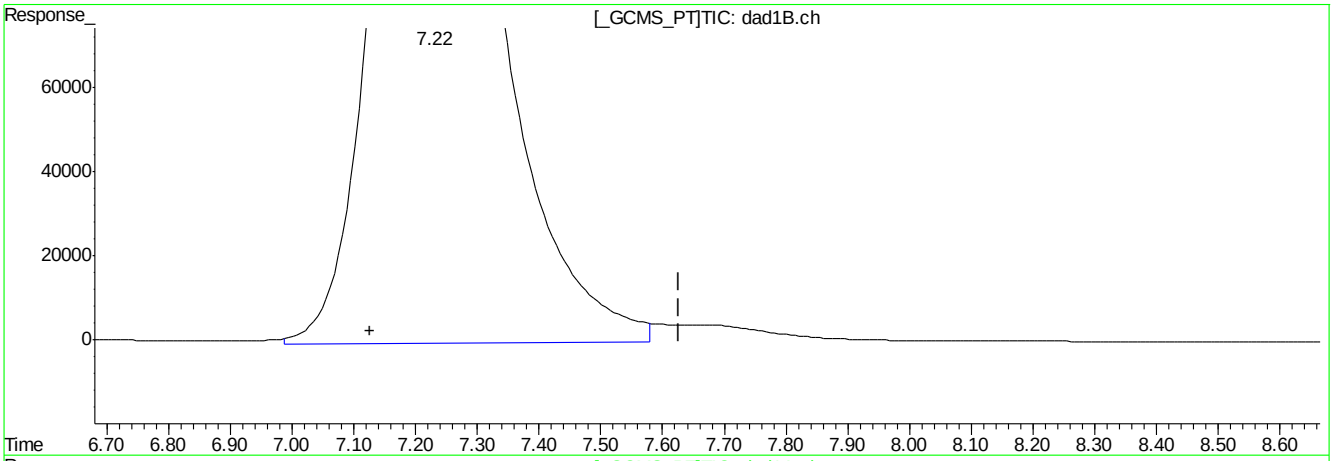
response 27902796

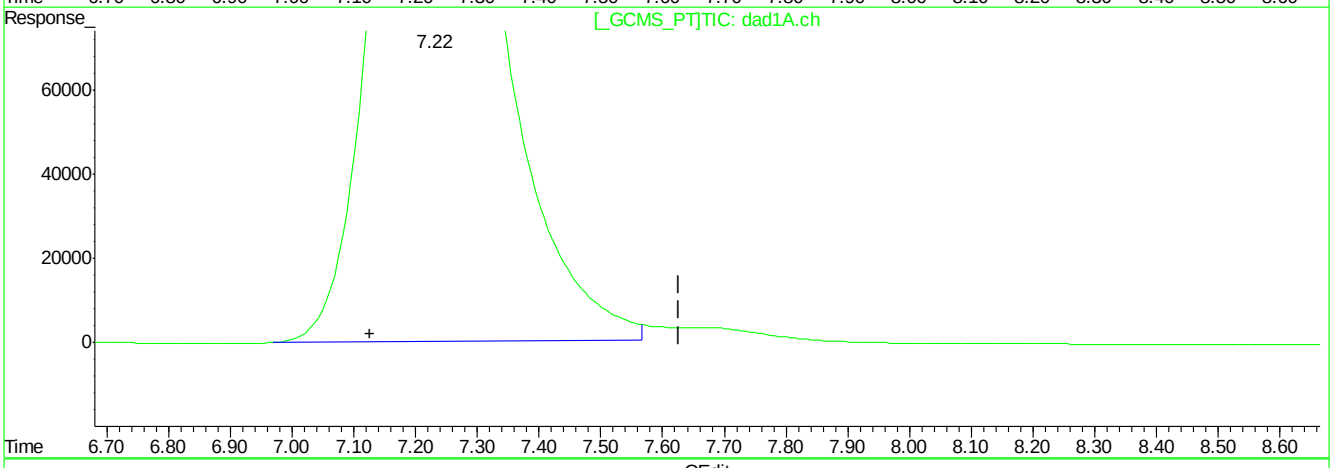
(+) = Expected Retention Time
GG630902.D GGG3484_100324.M Thu Dec 19 10:08:37 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630902.D\dad1B.ch Vial: 8
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630902.D\dad1A.ch
Acq On : 18-Dec-2024, 17:26:20 Operator: fouads
Sample : FC21117-1CF Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 10:08 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 10:08:17 2024
Response via : Multiple Level Calibration




QEdit

(5) 1,3,5-Trinitrobenzene

7.22min 2821.921ppb m

response 27628749

(5) 1,3,5-Trinitrobenzene #2

7.22min 2766.211ppb m

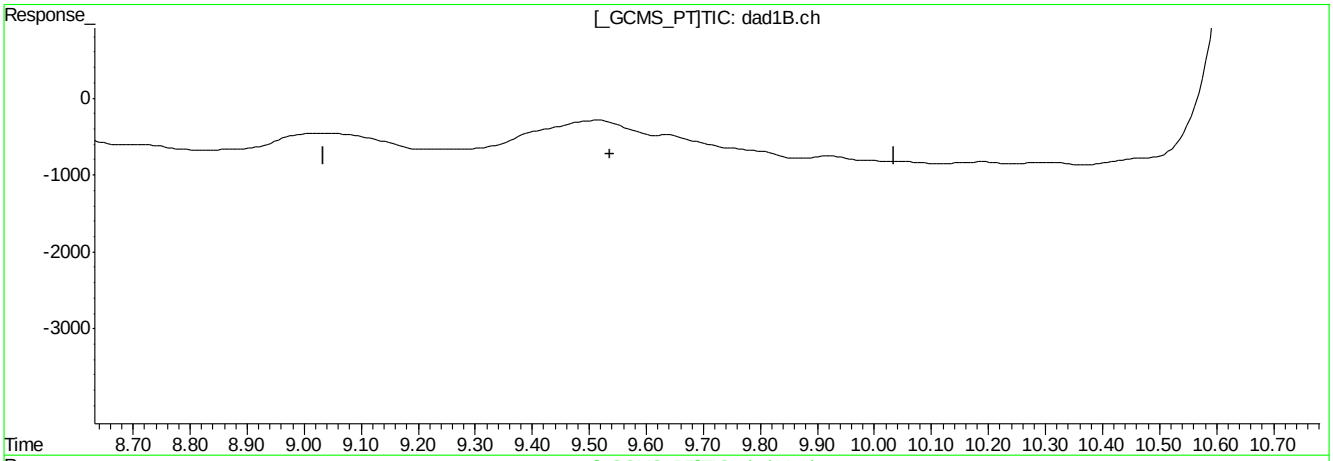
response 27275174

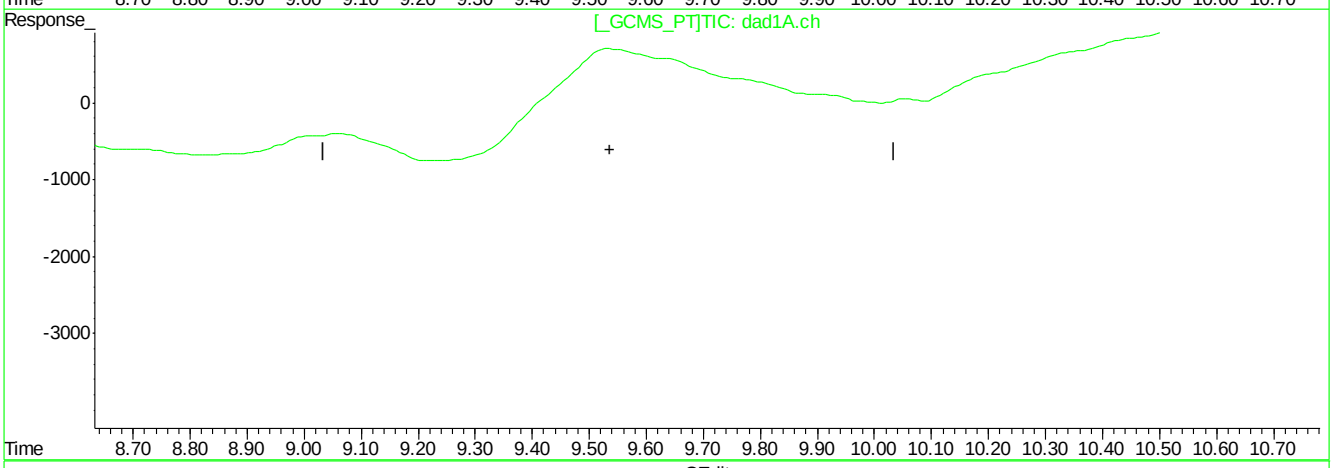
(+) = Expected Retention Time
GG630902.D GGG3484_100324.M Thu Dec 19 10:08:46 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630902.D\dad1B.ch Vial: 8
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630902.D\dad1A.ch
Acq On : 18-Dec-2024, 17:26:20 Operator: fouads
Sample : FC21117-1CF Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 10:11 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 10:10:14 2024
Response via : Multiple Level Calibration




QEdit

(7) 1,3-Dinitrobenzene

0.00min 0.000ppb

response 0

(7) 1,3-Dinitrobenzene #2

0.00min 0.000ppb

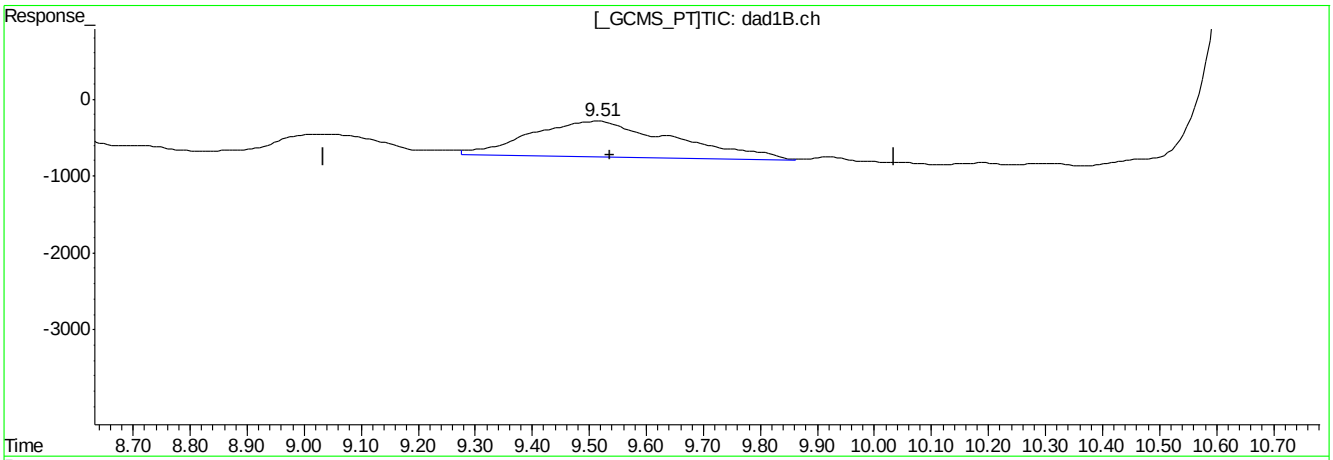
response 0

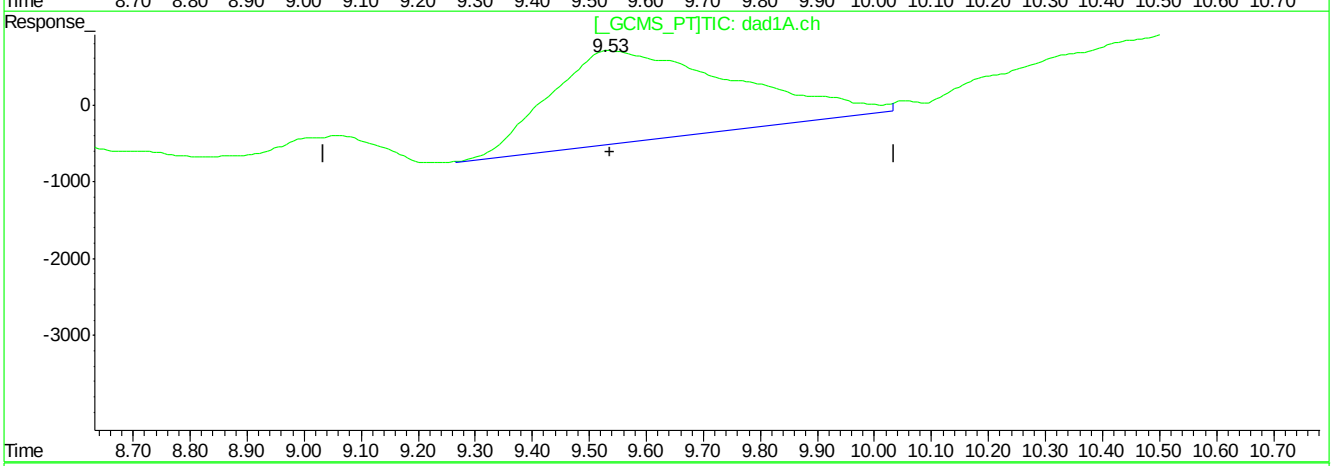
(+) = Expected Retention Time
GG630902.D GGG3484_100324.M Thu Dec 19 10:11:34 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630902.D\dad1B.ch Vial: 8
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630902.D\dad1A.ch
Acq On : 18-Dec-2024, 17:26:20 Operator: fouads
Sample : FC21117-1CF Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 10:11 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 10:10:14 2024
Response via : Multiple Level Calibration




QEdit

(7) 1,3-Dinitrobenzene

9.51min 6.329ppb m

response 82267

(7) 1,3-Dinitrobenzene #2

9.53min 27.763ppb m

response 271727

(+) = Expected Retention Time
GG630902.D GGG3484_100324.M Thu Dec 19 10:11:45 2024

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085957.D\dad1B.ch Vial: 17
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085957.D\dad1A.ch
Acq On : 17-Dec-2024, 17:22:27 Operator: fouads
Sample : fc21117-2 Inst : G1315B
Misc : OP6902,GBB2633,950,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 06:21:04 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 06:19:51 2024
Response via : Initial Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 15) S | 3,4-Dinitrotolue | 10.95 | 10.95 | 885014 | 1564638 | 394.392 | 384.702 |
| | Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 78.88% | 76.94% |
| | Target Compounds | | | | | | |
| 1) | TNX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 2) | HMX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 3) | DNX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 4) | MNX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 5) | RDX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 6) | 1,3,5-Trinitrobe | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 7) | 1,3-Dinitrobenze | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 8) | 3,5-Dinitroanili | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 9) | Nitrobenzene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 10) | Nitroglycerin | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 11) | Tetryl | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 12) | 2,4,6-Trinitroto | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 13) | 2-Amino-4,6-Dini | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 14) | 4-Amino-2,6-Dini | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 16) | 2,4-Dinitrotolue | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 17) | 2,6-Dinitrotolue | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 18) | o-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 19) | p-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 20) | m-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 21) | PETN | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. |

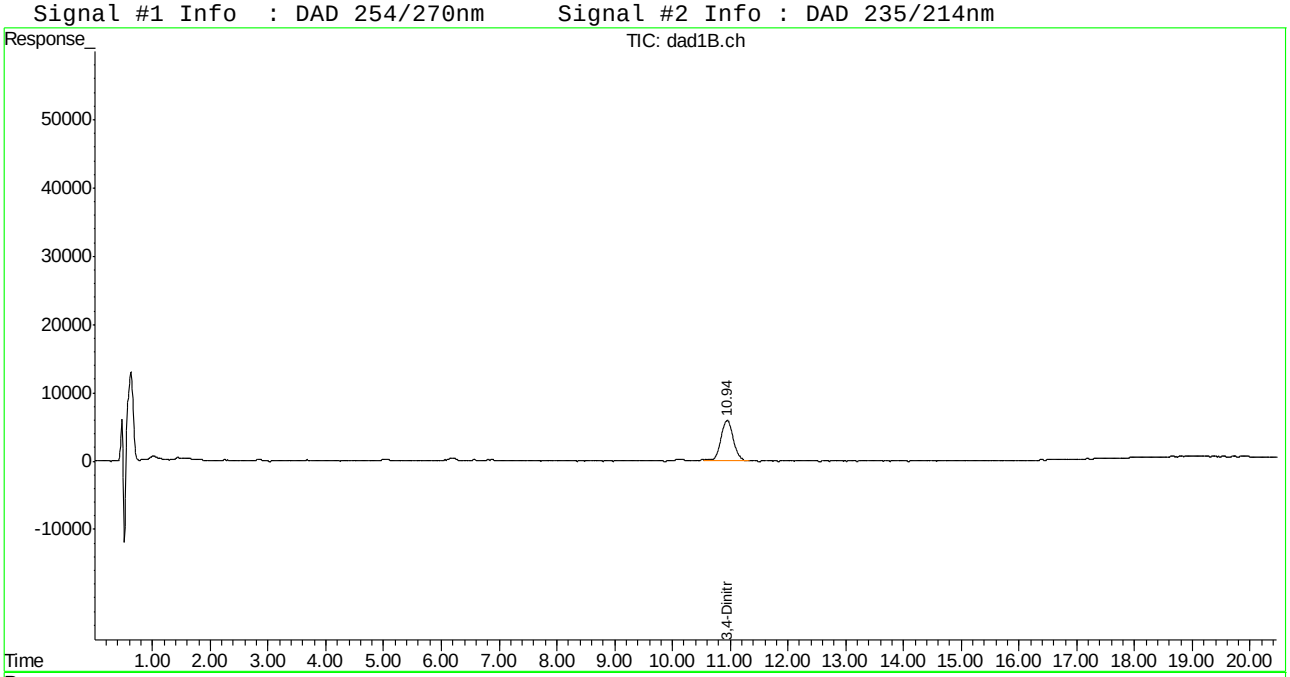
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
BB085957.D BBB2589_091224.M Wed Dec 18 10:41:59 2024 Page 1

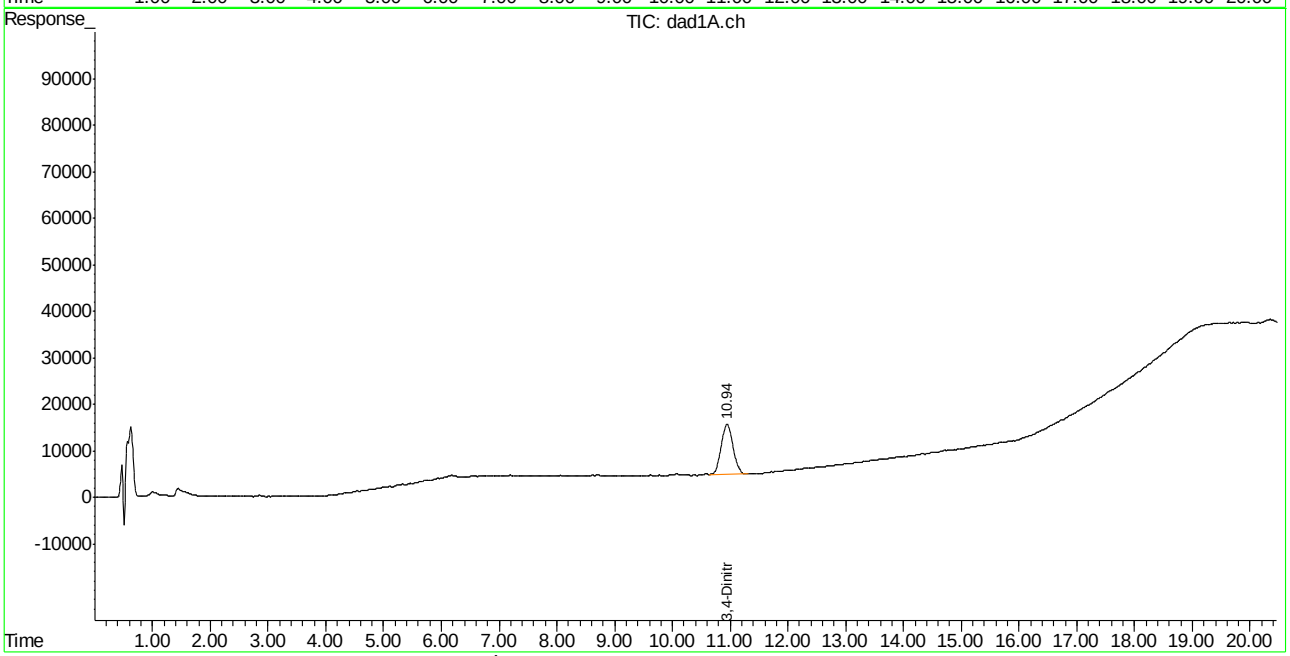
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085957.D\dad1B.ch Vial: 17
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085957.D\dad1A.ch
Acq On : 17-Dec-2024, 17:22:27 Operator: fouads
Sample : fc21117-2 Inst : G1315B
Misc : OP6902,GBB2633,950,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 8:19 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 06:19:51 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm



Manual Integrations APPROVED (compounds with "m" flag)
Naresh Jiawan 12/19/24 14:18

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085958.D\dad1B.ch Vial: 18
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085958.D\dad1A.ch
Acq On : 17-Dec-2024, 17:48:56 Operator: fouads
Sample : fc21117-3 Inst : G1315B
Misc : OP6902,GBB2633,940,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 06:21:05 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 06:19:51 2024
Response via : Initial Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 15) S | 3,4-Dinitrotolue | 10.95 | 10.95 | 907324 | 1643196 | 404.334 | 404.017 |
| | Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 80.87% | 80.80% |
| | Target Compounds | | | | | | |
| 1) | TNX | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 2) | HMX | 1.43 | 1.44 | 36941 | 224918 | 24.398m | 53.550m# |
| 3) | DNX | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 4) | MNX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 5) | RDX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 6) | 1,3,5-Trinitrobe | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 7) | 1,3-Dinitrobenze | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 8) | 3,5-Dinitroanili | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 9) | Nitrobenzene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 10) | Nitroglycerin | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 11) | Tetryl | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 12) | 2,4,6-Trinitroto | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 13) | 2-Amino-4,6-Dini | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 14) | 4-Amino-2,6-Dini | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 16) | 2,4-Dinitrotolue | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 17) | 2,6-Dinitrotolue | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 18) | o-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 19) | p-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 20) | m-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 21) | PETN | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. |

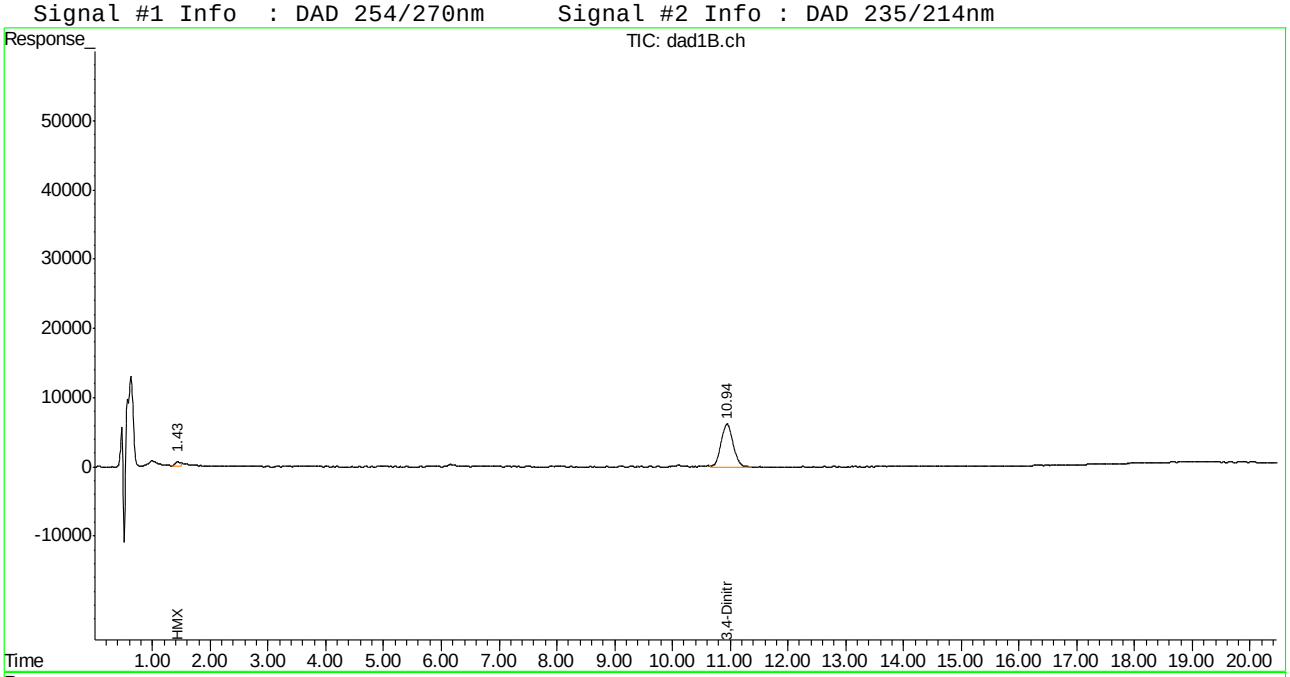
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
BB085958.D BBB2589_091224.M Wed Dec 18 10:42:00 2024 Page 1

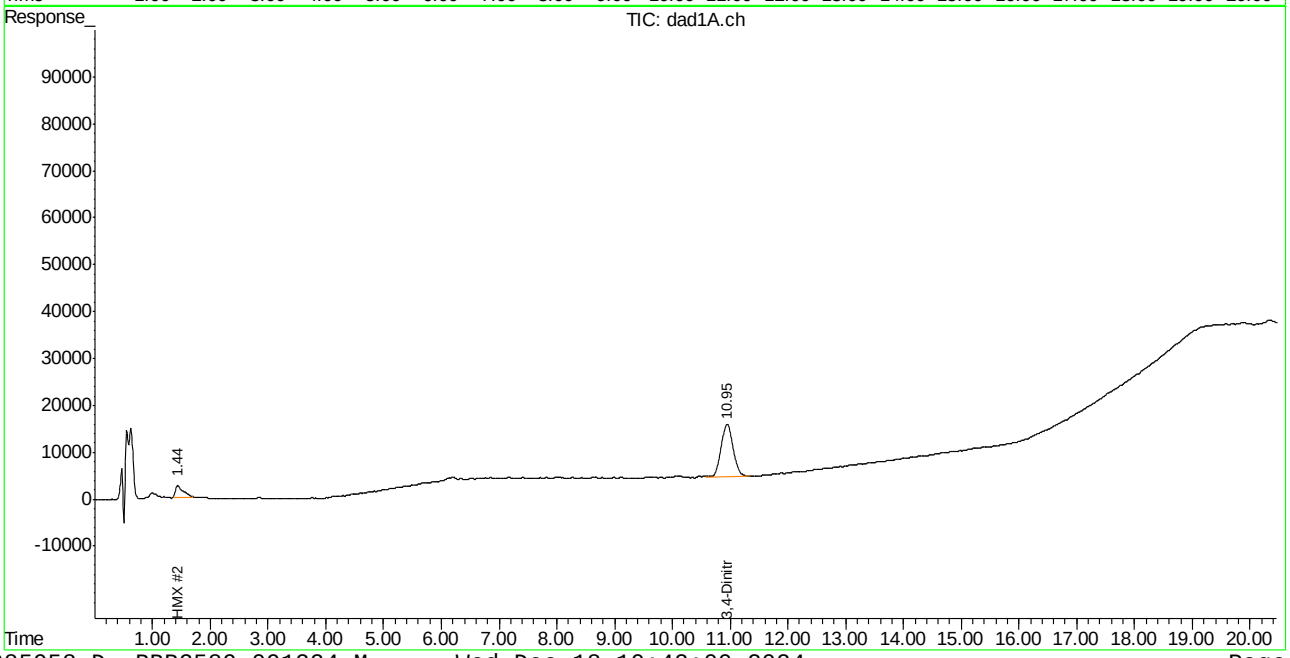
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085958.D\dad1B.ch Vial: 18
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085958.D\dad1A.ch
Acq On : 17-Dec-2024, 17:48:56 Operator: fouads
Sample : fc21117-3 Inst : G1315B
Misc : OP6902,GBB2633,940,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 8:20 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 06:19:51 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm




BB085958.D BBB2589_091224.M Wed Dec 18 10:42:00 2024 Page 2

# Manual Integration Approval Summary



**Sample Number:** FC21117-3
**Lab FileID:** BB085958.D
**Injection Time:** 12/17/24 17:48
**Method:** SW846 8330B
**Analyst approved:** 12/19/24 13:06 Fouad Sekkar
**Supervisor approved:** 12/19/24 14:18 Naresh Jiawan

| Parameter | CAS | Sig# | R.T. (min.) | Reason |
|---|---|---|---|---|
| HMX | 2691-41-0 | 1 | 1.43 | Poor instrument integration |
| HMX | 2691-41-0 | 2 | 1.44 | Poor instrument integration |

Manual Integrations APPROVED (compounds with "m" flag)
Naresh Jiawan 12/19/24 14:18

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630903.D\dad1B.ch Vial: 9
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630903.D\dad1A.ch
Acq On : 18-Dec-2024, 17:55:51 Operator: fouads
Sample : FC21117-3CF Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 10:16:43 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 10:16:32 2024
Response via : Initial Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 12) S | 3,4-Dinitrotolue | 12.63 | 12.63 | 2262069 | 5239441 | 498.532 | 581.539 |
| | Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 99.71% | 116.31% |
| | Target Compounds | | | | | | |
| 1) | TNX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 2) | HMX | 4.71 | 4.71 | 45976 | 54292 | 14.284m | 16.588m |
| 3) | DNX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 4) | MNX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 5) | 1,3,5-Trinitrobe | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 6) | RDX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 7) | 1,3-Dinitrobenze | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 8) | Nitrobenzene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 9) | 2,4,6-Trinitroto | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 10) | Nitroglycerin | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 11) | Tetryl | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 13) | 2,6-Dinitrotolue | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 14) | 2,4-Dinitrotolue | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 15) | 3,5-Dinitroanili | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 16) | o-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 17) | p-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 18) | 4-Amino-2,6-Dini | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 19) | m-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 20) | 2-Amino-4,6-Dini | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 21) | PETN | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |

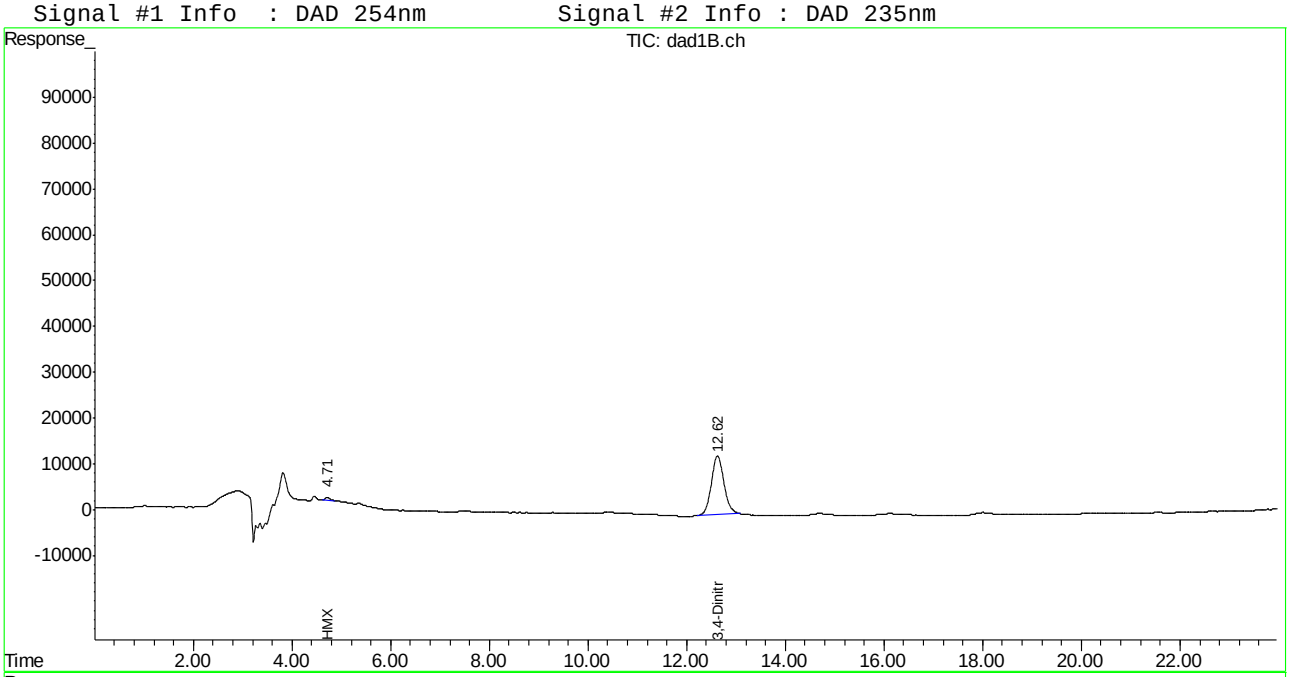
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
GG630903.D GGG3484_100324.M Thu Dec 19 10:18:37 2024 Page 1

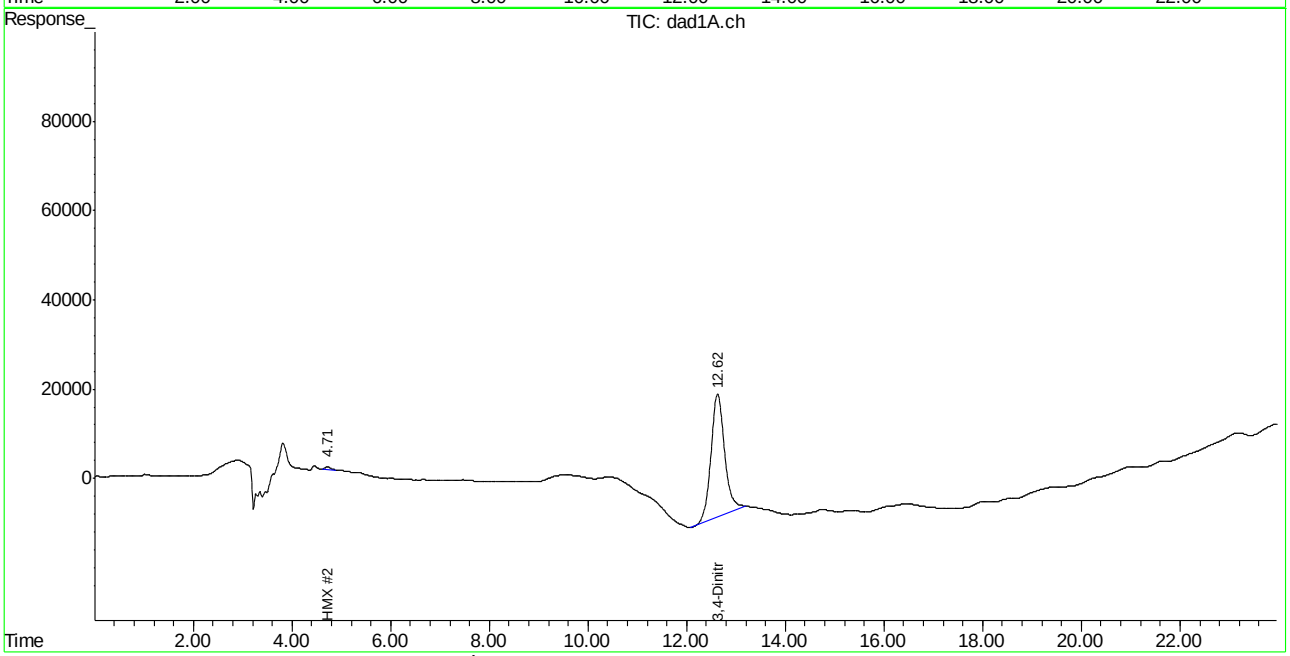
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630903.D\dad1B.ch Vial: 9
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630903.D\dad1A.ch
Acq On : 18-Dec-2024, 17:55:51 Operator: fouads
Sample : FC21117-3CF Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 10:16 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 10:16:32 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm



# Manual Integration Approval Summary



**Sample Number:** FC21117-3
**Lab FileID:** GG630903.D
**Injection Time:** 12/18/24 17:55

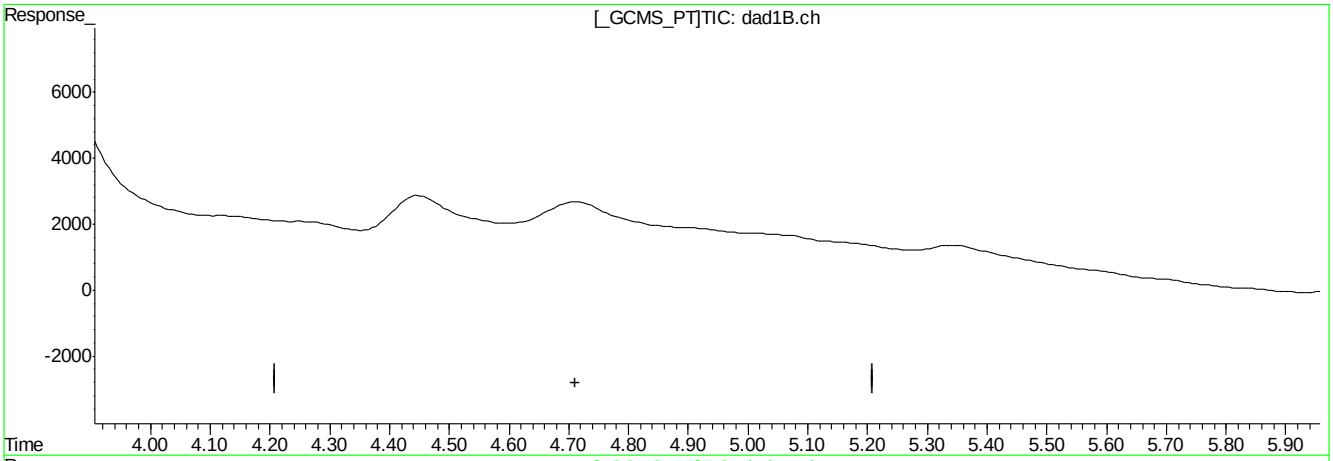
**Method:** SW846 8330B
**Analyst approved:** 12/19/24 12:59 Fouad Sekkar
**Supervisor approved:** 12/19/24 14:18 Naresh Jiawan

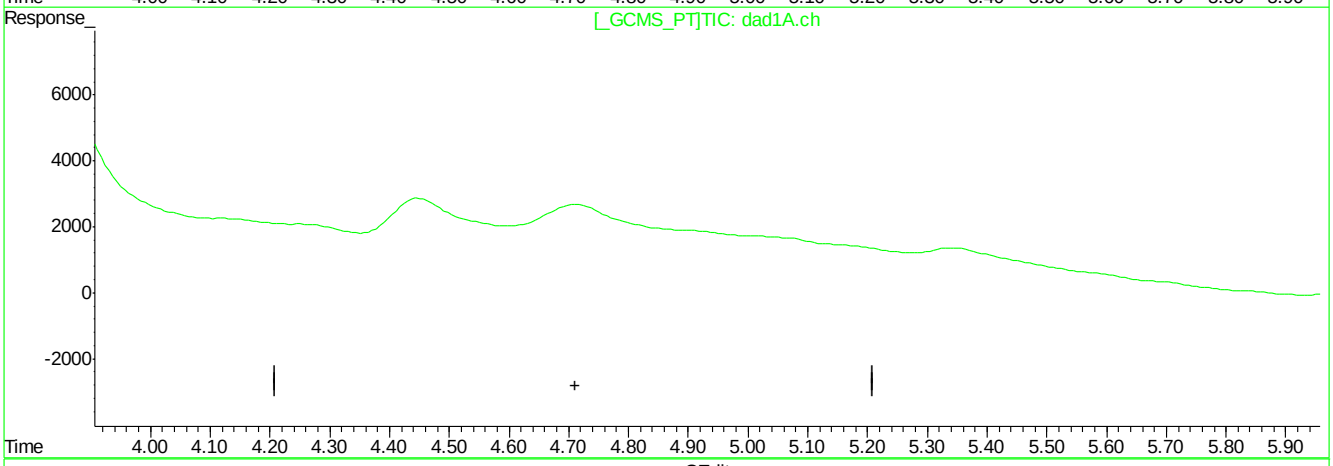
| Parameter | CAS | Sig# | R.T. (min.) | Reason |
|---|---|---|---|---|
| HMX | 2691-41-0 | 1 | 4.71 | Poor instrument integration |
| HMX | 2691-41-0 | 2 | 4.71 | Poor instrument integration |

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630903.D\dad1B.ch Vial: 9
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630903.D\dad1A.ch
Acq On : 18-Dec-2024, 17:55:51 Operator: fouads
Sample : FC21117-3CF Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 10:16 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 10:16:32 2024
Response via : Multiple Level Calibration




QEdit

(2) HMX

0.00min 0.000ppb

response 0

(2) HMX #2

0.00min 0.000ppb

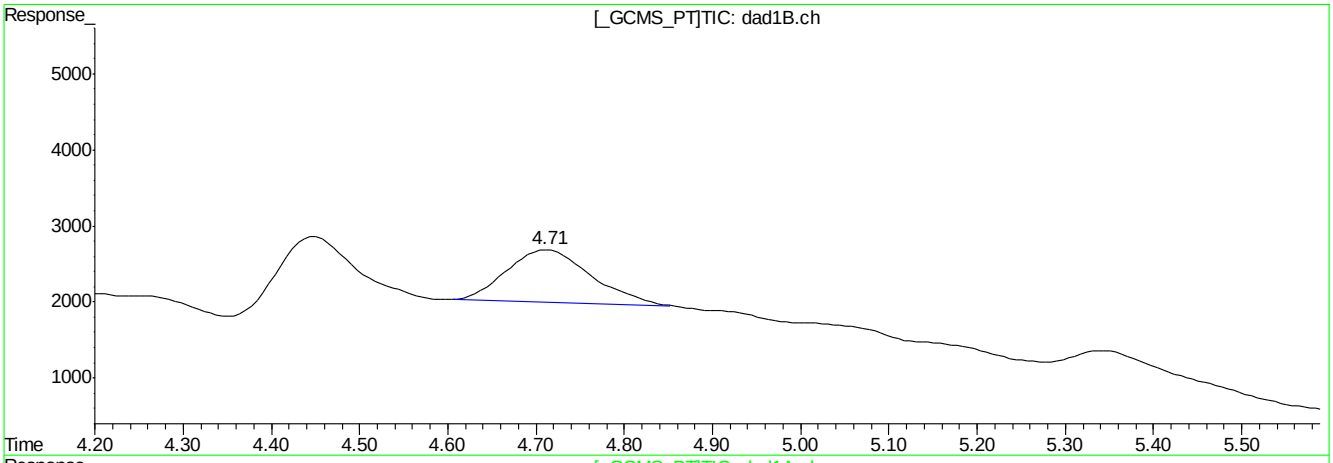
response 0

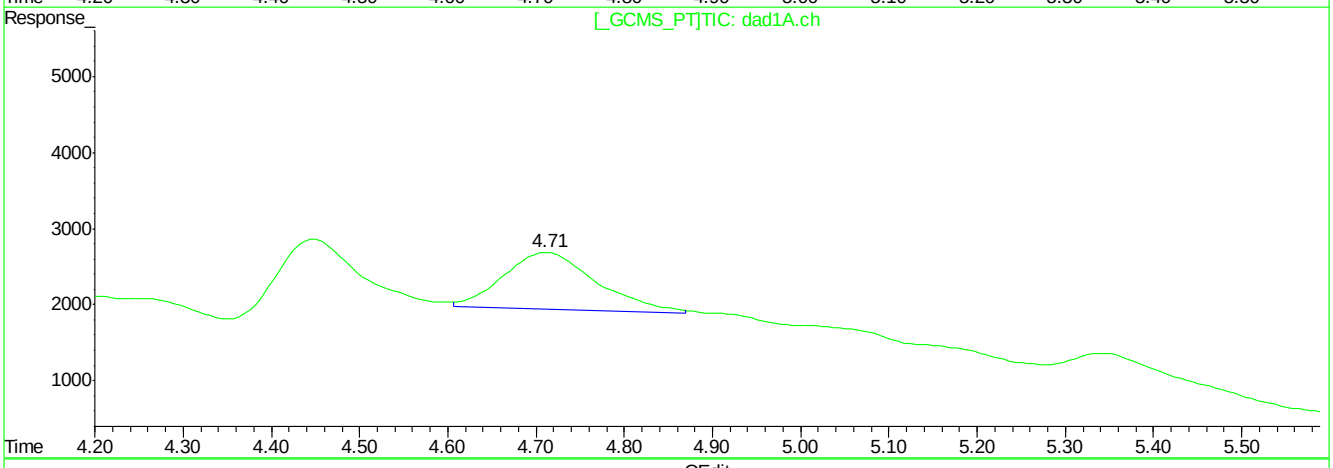
(+) = Expected Retention Time
GG630903.D GGG3484_100324.M Thu Dec 19 10:16:54 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630903.D\dad1B.ch Vial: 9
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630903.D\dad1A.ch
Acq On : 18-Dec-2024, 17:55:51 Operator: fouads
Sample : FC21117-3CF Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 10:16 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 10:16:32 2024
Response via : Multiple Level Calibration




QEdit

(2) HMX

4.71min 14.284ppb m

response 45976

(2) HMX #2

4.71min 16.588ppb m

response 54292

(+) = Expected Retention Time
GG630903.D GGG3484_100324.M Thu Dec 19 10:17:03 2024

Manual Integrations APPROVED (compounds with "m" flag)
Naresh Jiawan
12/19/24 14:18

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085959.D\dad1B.ch Vial: 19
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085959.D\dad1A.ch
Acq On : 17-Dec-2024, 18:15:23 Operator: fouads
Sample : fc21117-4 Inst : G1315B
Misc : OP6902,GBB2633,950,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 06:21:06 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 06:19:51 2024
Response via : Initial Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 15) S | 3,4-Dinitrotolue | 10.96 | 10.96 | 918191 | 1642745 | 409.176 | 403.906 |
| | Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 81.84% | 80.78% |
| | Target Compounds | | | | | | |
| 1) | TNX | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 2) | HMX | 1.43 | 1.43 | 1834458 | 5098158 | 1211.595m | 1213.804m |
| 3) | DNX | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 4) | MNX | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 5) | RDX | 2.84 | 2.84 | 61597 | 70549 | 32.130 | 24.562m |
| 6) | 1,3,5-Trinitrobe | 4.56 | 4.57 | 1910559 | 2826518 | 440.051 | 424.454 |
| 7) | 1,3-Dinitrobenze | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 8) | 3,5-Dinitroanili | 6.26 | 6.17 | 3659734 | 3323992 | 875.737m | 473.363m# |
| 9) | Nitrobenzene | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 10) | Nitroglycerin | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 11) | Tetryl | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 12) | 2,4,6-Trinitroto | 9.60 | 9.60 | 1019728 | 1171619 | 253.003 | 249.205 |
| 13) | 2-Amino-4,6-Dini | 10.13 | 10.13 | 1183243 | 1718262 | 362.820 | 367.438 |
| 14) | 4-Amino-2,6-Dini | 10.58 | 10.58 | 756385 | 1492014 | 316.384 | 319.196 |
| 16) | 2,4-Dinitrotolue | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 17) | 2,6-Dinitrotolue | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 18) | o-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 19) | p-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 20) | m-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 21) | PETN | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |

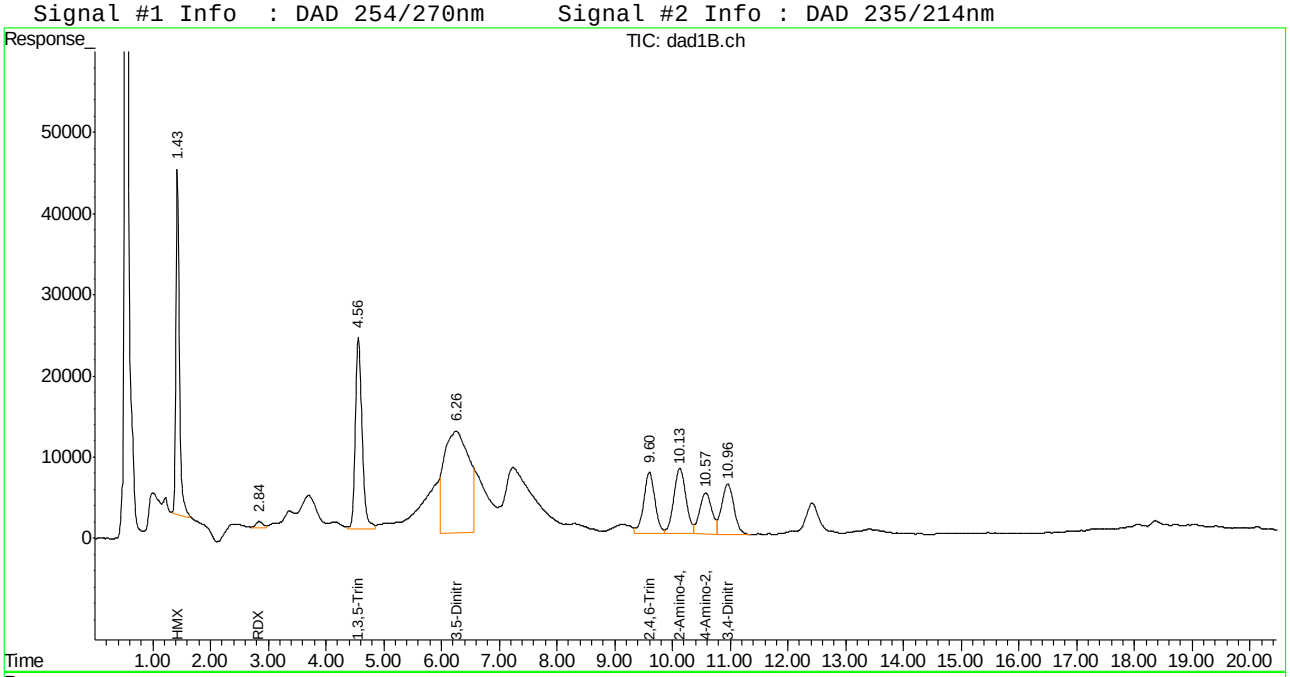
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
BB085959.D BBB2589_091224.M Thu Dec 19 13:10:41 2024 Page 1

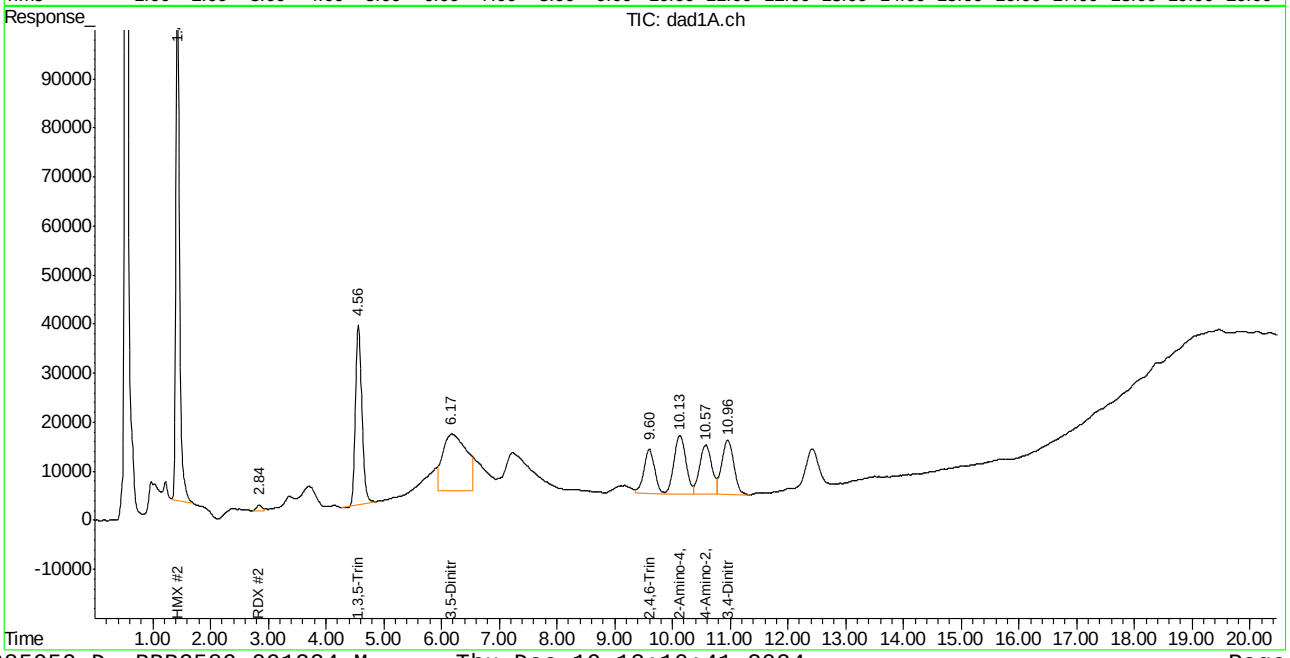
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085959.D\dad1B.ch Vial: 19
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085959.D\dad1A.ch
Acq On : 17-Dec-2024, 18:15:23 Operator: fouads
Sample : fc21117-4 Inst : G1315B
Misc : OP6902,GBB2633,950,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 19 13:10 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 06:19:51 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm




BB085959.D BBB2589_091224.M Thu Dec 19 13:10:41 2024 Page 2

# Manual Integration Approval Summary



**Sample Number:** FC21117-4
**Lab FileID:** BB085959.D
**Injection Time:** 12/17/24 18:15

**Method:** SW846 8330B
**Analyst approved:** 12/19/24 13:06 Fouad Sekkar
**Supervisor approved:** 12/19/24 14:18 Naresh Jiawan

| Parameter | CAS | Sig# | R.T. (min.) | Reason |
|---|---|---|---|---|
| HMX | 2691-41-0 | 1 | 1.43 | Poor instrument integration |
| HMX | 2691-41-0 | 2 | 1.43 | Poor instrument integration |
| RDX | 121-82-4 | 2 | 2.84 | Poor instrument integration |
| 3,5-Dinitroaniline | 618-87-1 | 2 | 6.17 | Poor instrument integration |
| 3,5-Dinitroaniline | 618-87-1 | 1 | 6.26 | Poor instrument integration |

Manual Integrations APPROVED (compounds with "m" flag)
Naresh Jiawan 12/19/24 14:18

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630904.D\dad1B.ch Vial: 10
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630904.D\dad1A.ch
Acq On : 18-Dec-2024, 18:25:19 Operator: fouads
Sample : fc21117-4cf Inst : G1315B
Misc : op6902,GGG3516,950,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 12:46:28 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 12:46:16 2024
Response via : Initial Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 12) S | 3,4-Dinitrotolue | 13.38 | 13.37 | 2381928 | 5743734 | 524.948 | 637.511 |
| | Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 104.99% | 127.50% |
| | Target Compounds | | | | | | |
| 1) | TNX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 2) | HMX | 5.25 | 5.25 | 4131082 | 4131082 | 1283.443 | 1262.164 |
| 3) | DNX | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 4) | MNX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 5) | 1,3,5-Trinitrobe | 7.22 | 7.22 | 4173129 | 4173129 | 426.231 | 423.233 |
| 6) | RDX | 7.68 | 7.68 | 105038 | 120095 | 23.430m | 27.152m |
| 7) | 1,3-Dinitrobenze | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 8) | Nitrobenzene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 9) | 2,4,6-Trinitroto | 10.94 | 10.94 | 2214547 | 2962687 | 238.375 | 240.219 |
| 10) | Nitroglycerin | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. |
| 11) | Tetryl | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 13) | 2,6-Dinitrotolue | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 14) | 2,4-Dinitrotolue | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 15) | 3,5-Dinitroanili | 15.10 | 15.10 | 1749567 | 3777305 | 173.199 | 233.407m |
| 16) | o-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 17) | p-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 18) | 4-Amino-2,6-Dini | 16.87 | 16.88 | 1945221 | 4255407 | 356.735 | 466.655 |
| 19) | m-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 20) | 2-Amino-4,6-Dini | 18.78 | 18.77 | 3048722 | 4277585 | 343.618 | 365.155m |
| 21) | PETN | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |

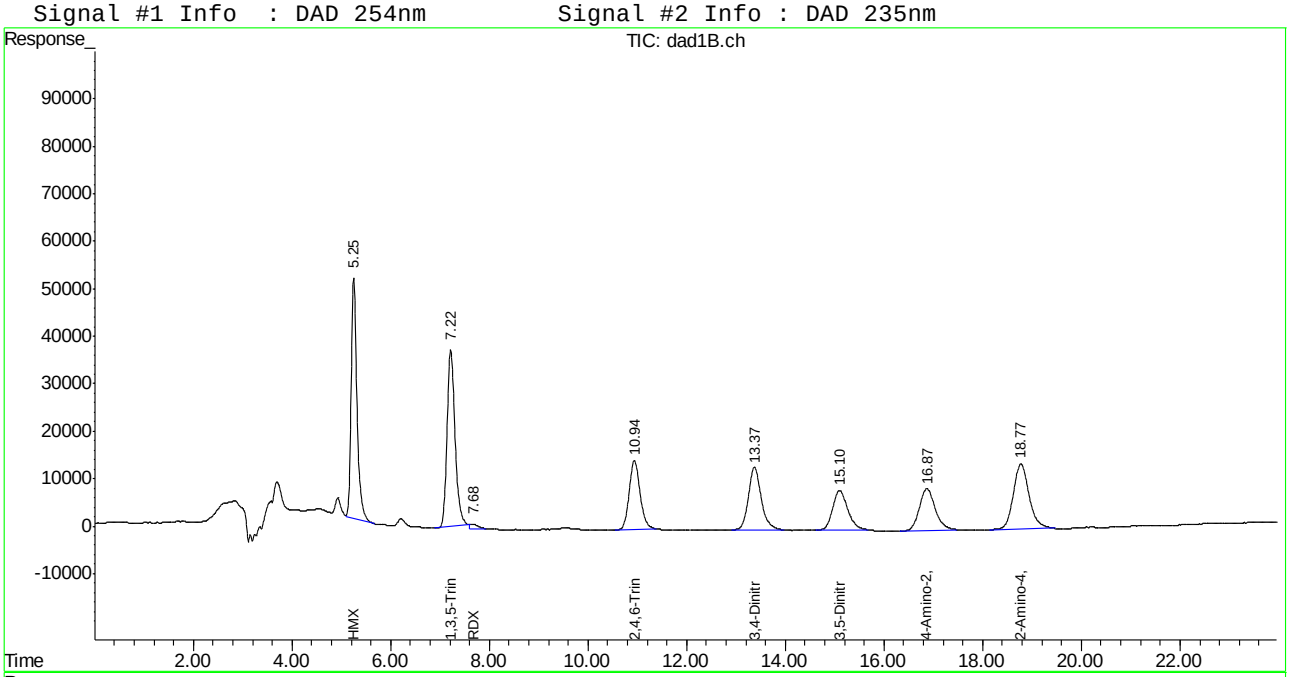
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
GG630904.D GGG3484_100324.M Thu Dec 19 12:49:31 2024 Page 1

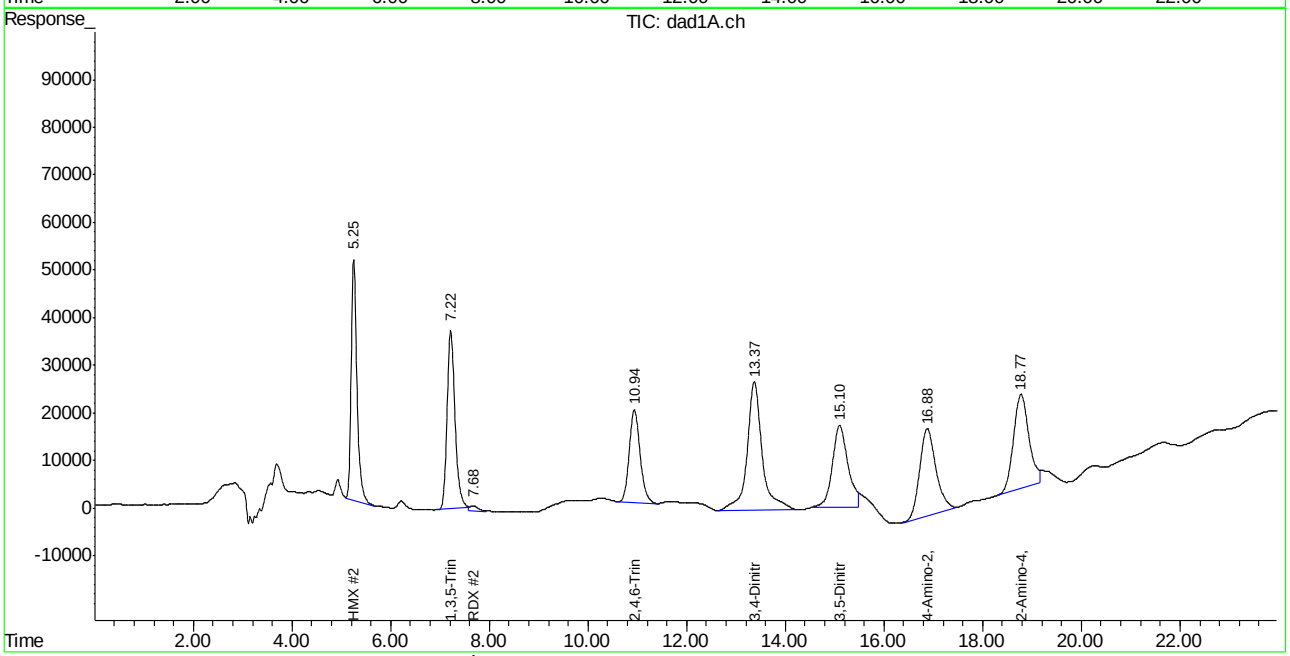
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630904.D\dad1B.ch Vial: 10
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630904.D\dad1A.ch
Acq On : 18-Dec-2024, 18:25:19 Operator: fouads
Sample : fc21117-4cf Inst : G1315B
Misc : op6902,GGG3516,950,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 12:48 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 12:46:16 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm



# Manual Integration Approval Summary



**Sample Number:** FC21117-4
**Lab FileID:** GG630904.D
**Injection Time:** 12/18/24 18:25

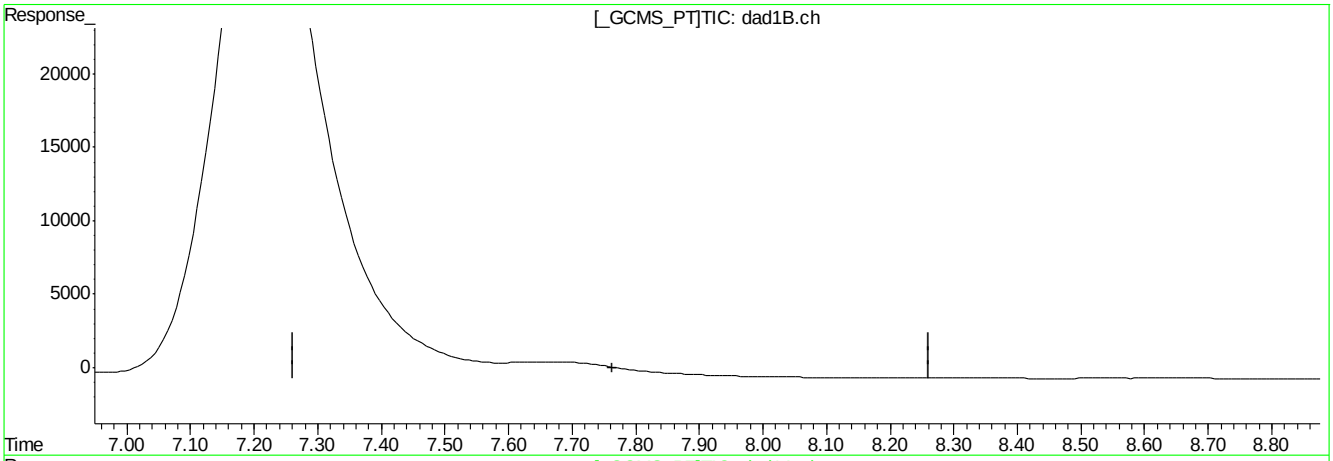
**Method:** SW846 8330B
**Analyst approved:** 12/19/24 12:59 Fouad Sekkar
**Supervisor approved:** 12/19/24 14:18 Naresh Jiawan

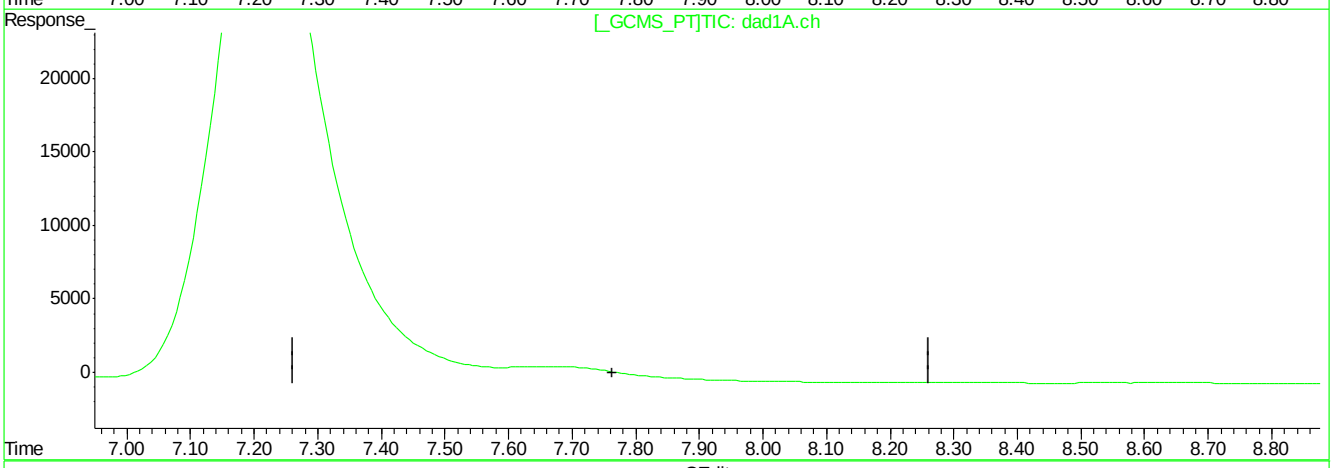
| Parameter | CAS | Sig# | R.T. (min.) | Reason |
|---|---|---|---|---|
| RDX | 121-82-4 | 1 | 7.68 | Poor instrument integration |
| RDX | 121-82-4 | 2 | 7.68 | Poor instrument integration |
| 3,5-Dinitroaniline | 618-87-1 | 2 | 15.10 | Missed peak |
| 2-amino-4,6-Dinitrotoluene | 35572-78-2 | 2 | 18.77 | Missed peak |

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630904.D\dad1B.ch Vial: 10
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630904.D\dad1A.ch
Acq On : 18-Dec-2024, 18:25:19 Operator: fouads
Sample : fc2117-4cf Inst : G1315B
Misc : op6902,GGG3516,950,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 12:46 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 12:46:16 2024
Response via : Multiple Level Calibration




QEdit

(6) RDX

0.00min 0.000ppb

response 0

(6) RDX #2

0.00min 0.000ppb

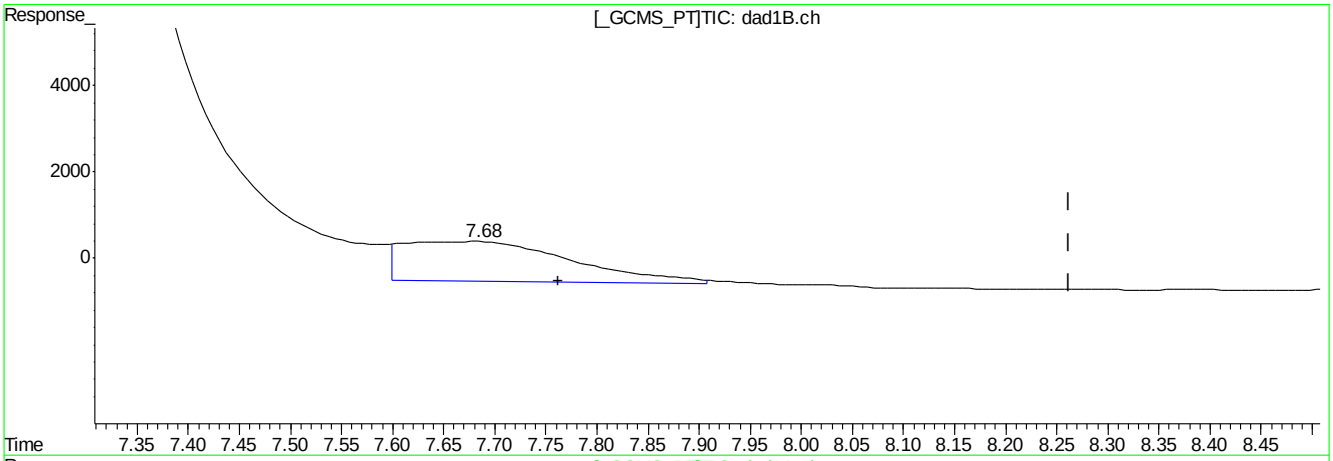
response 0

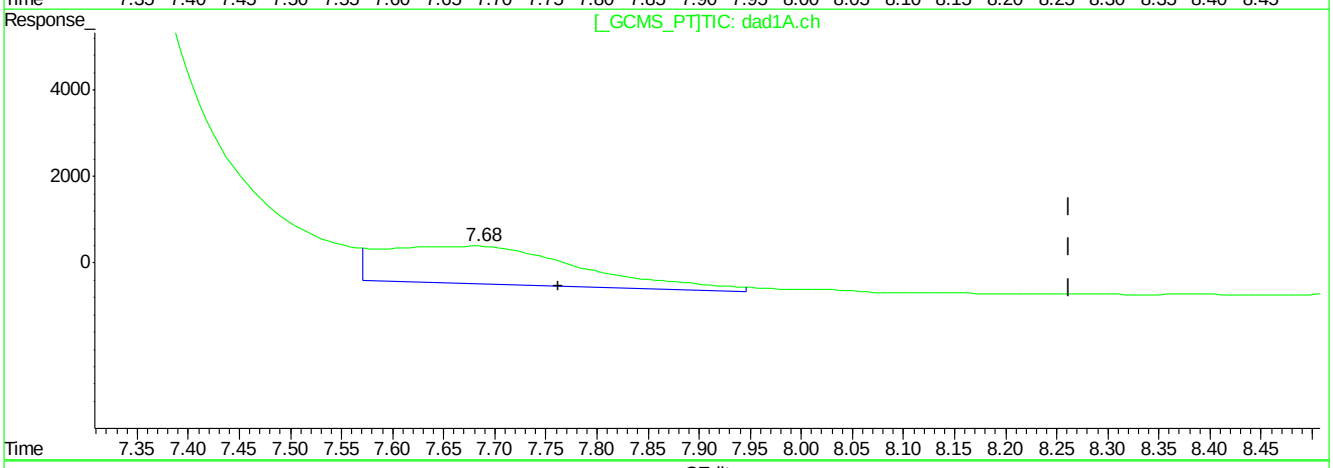
(+) = Expected Retention Time
GG630904.D GGG3484_100324.M Thu Dec 19 12:46:45 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630904.D\dad1B.ch Vial: 10
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630904.D\dad1A.ch
Acq On : 18-Dec-2024, 18:25:19 Operator: fouads
Sample : fc2117-4cf Inst : G1315B
Misc : op6902,GGG3516,950,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 12:46 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 12:46:16 2024
Response via : Multiple Level Calibration




QEdit

(6) RDX

7.68min 23.430ppb m

response 105038

(6) RDX #2

7.68min 27.152ppb m

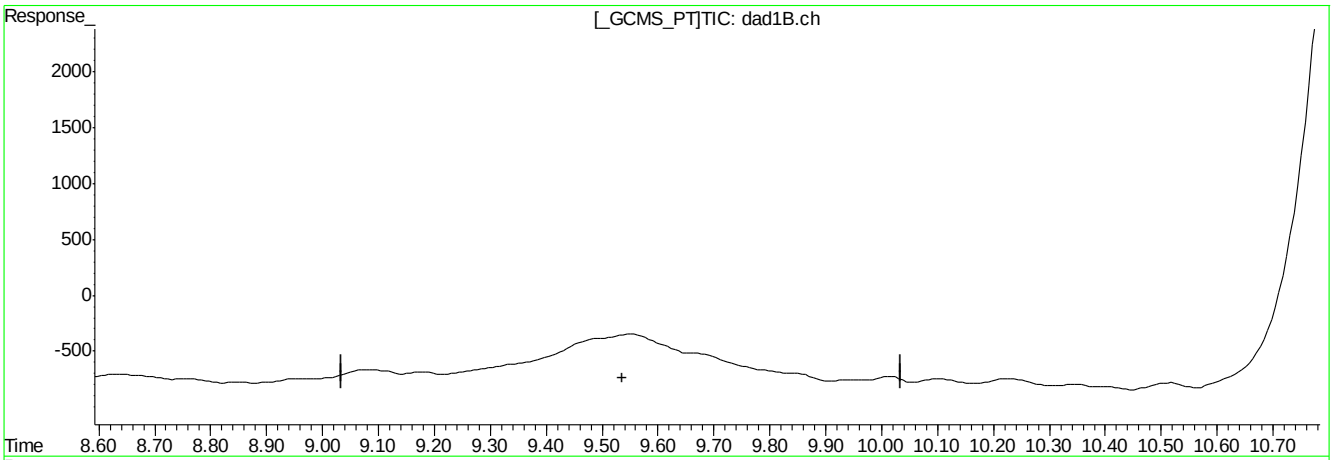
response 120095

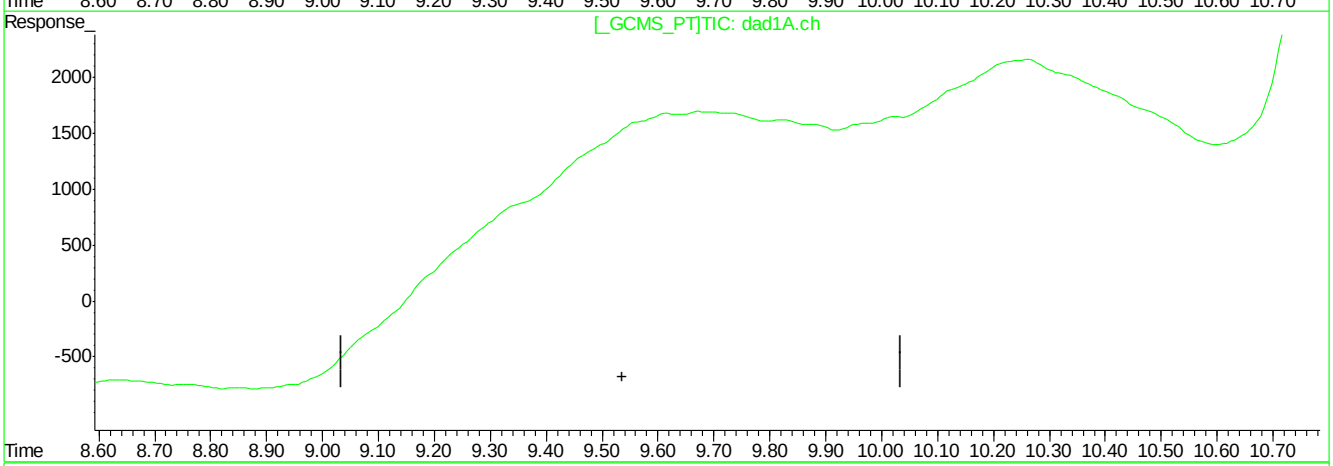
(+) = Expected Retention Time
GG630904.D GGG3484_100324.M Thu Dec 19 12:46:54 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630904.D\dad1B.ch Vial: 10
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630904.D\dad1A.ch
Acq On : 18-Dec-2024, 18:25:19 Operator: fouads
Sample : fc2117-4cf Inst : G1315B
Misc : op6902,GGG3516,950,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 12:46 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 12:46:16 2024
Response via : Multiple Level Calibration




QEdit

(7) 1,3-Dinitrobenzene

0.00min 0.000ppb

response 0

(7) 1,3-Dinitrobenzene #2

0.00min 0.000ppb

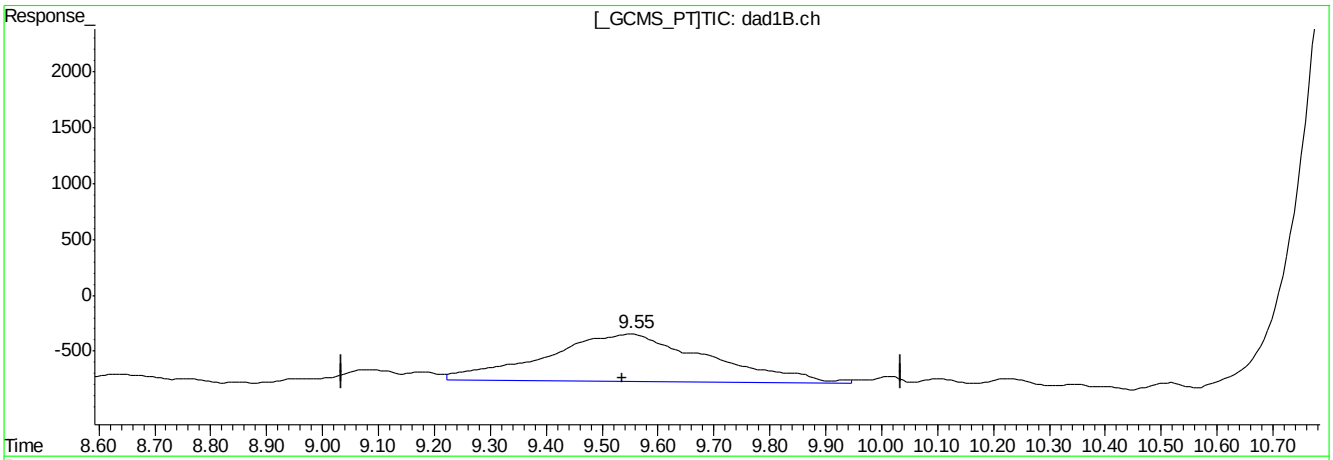
response 0

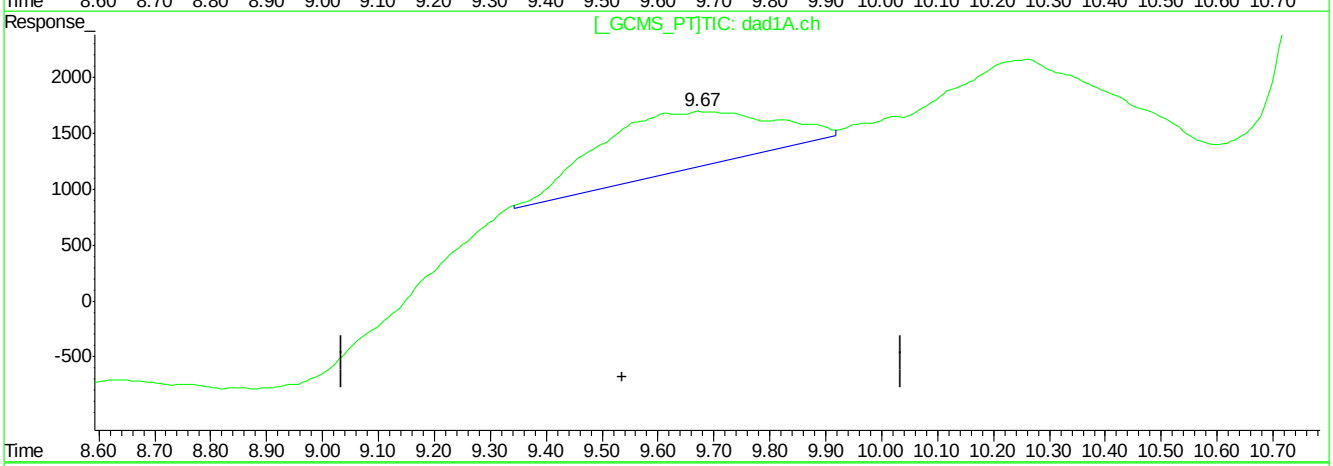
(+) = Expected Retention Time
GG630904.D GGG3484_100324.M Thu Dec 19 12:47:03 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630904.D\dad1B.ch Vial: 10
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630904.D\dad1A.ch
Acq On : 18-Dec-2024, 18:25:19 Operator: fouads
Sample : fc2117-4cf Inst : G1315B
Misc : op6902,GGG3516,950,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 12:46 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 12:46:16 2024
Response via : Multiple Level Calibration




QEdit

(7) 1,3-Dinitrobenzene

9.55min 6.592ppb m

response 85695

(7) 1,3-Dinitrobenzene #2

9.67min 11.525ppb m

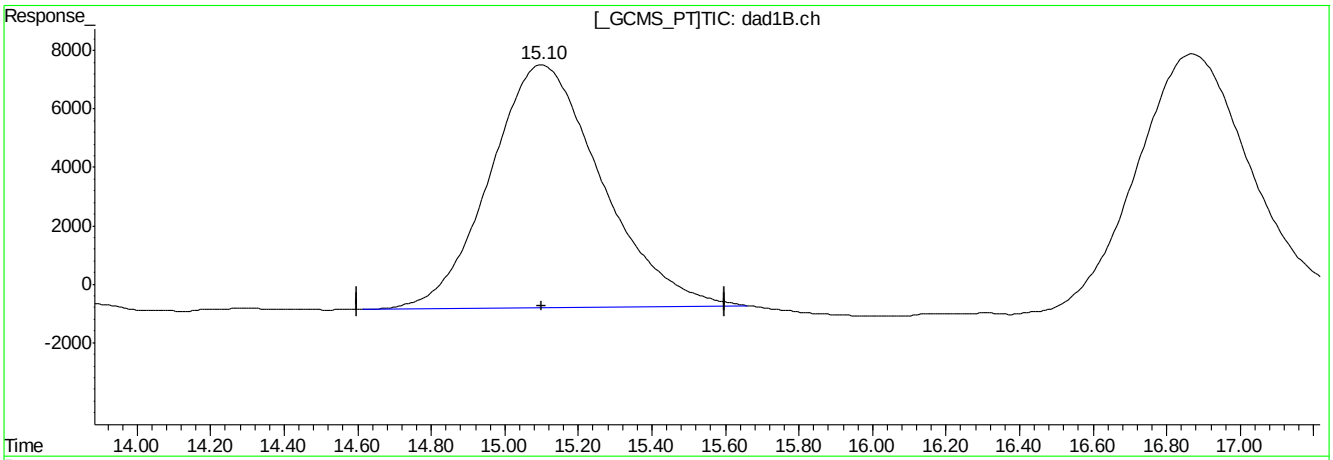
response 112797

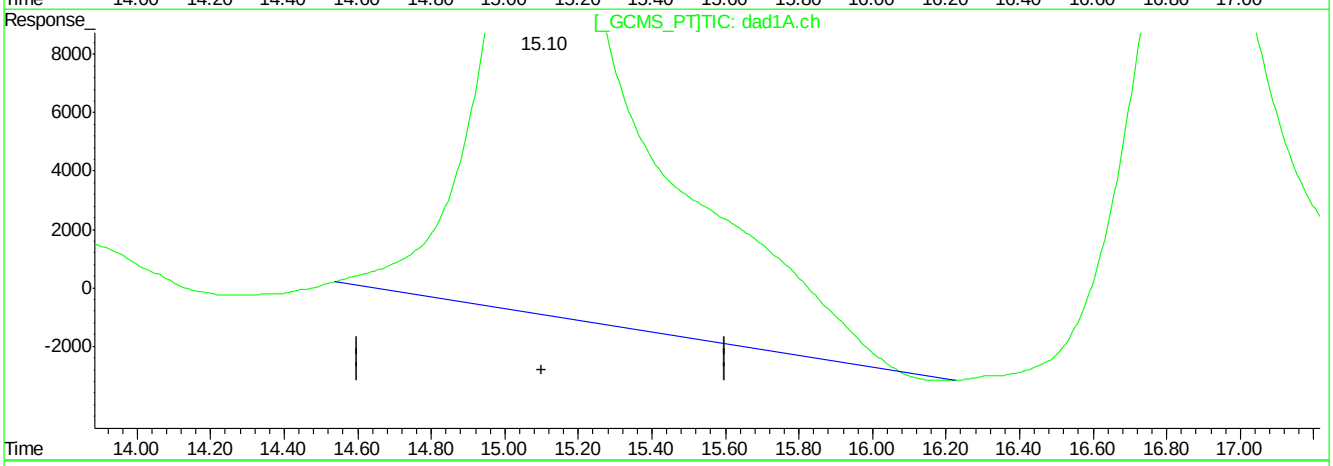
(+) = Expected Retention Time
GG630904.D GGG3484_100324.M Thu Dec 19 12:47:10 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630904.D\dad1B.ch Vial: 10
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630904.D\dad1A.ch
Acq On : 18-Dec-2024, 18:25:19 Operator: fouads
Sample : fc2117-4cf Inst : G1315B
Misc : op6902,GGG3516,950,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 12:46 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 12:46:16 2024
Response via : Multiple Level Calibration




QEdit

(15) 3,5-Dinitroaniline

15.10min 173.199ppb

response 1749567

(15) 3,5-Dinitroaniline #2

15.10min 326.022ppb

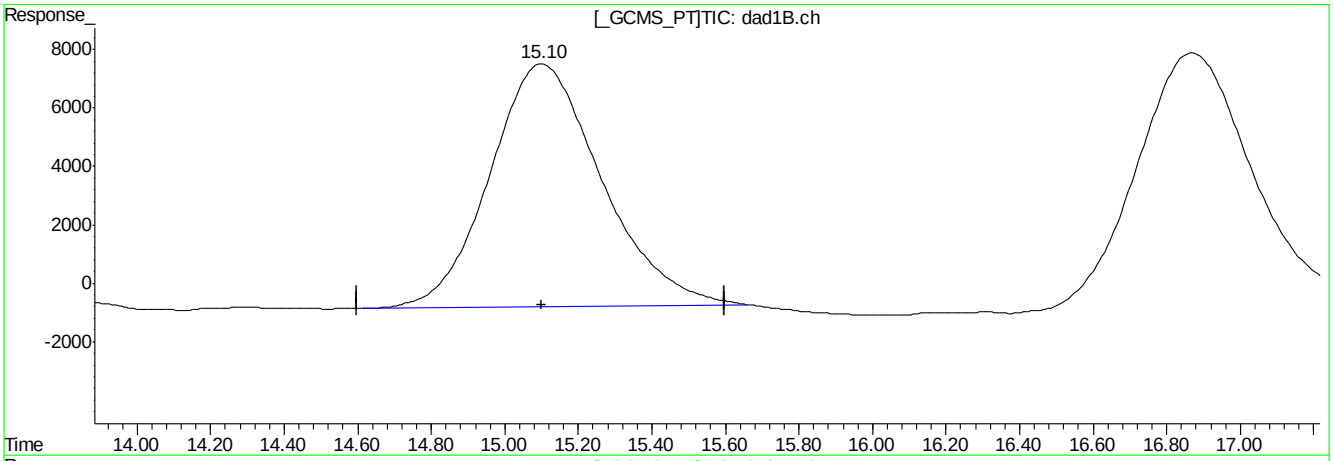
response 5276126

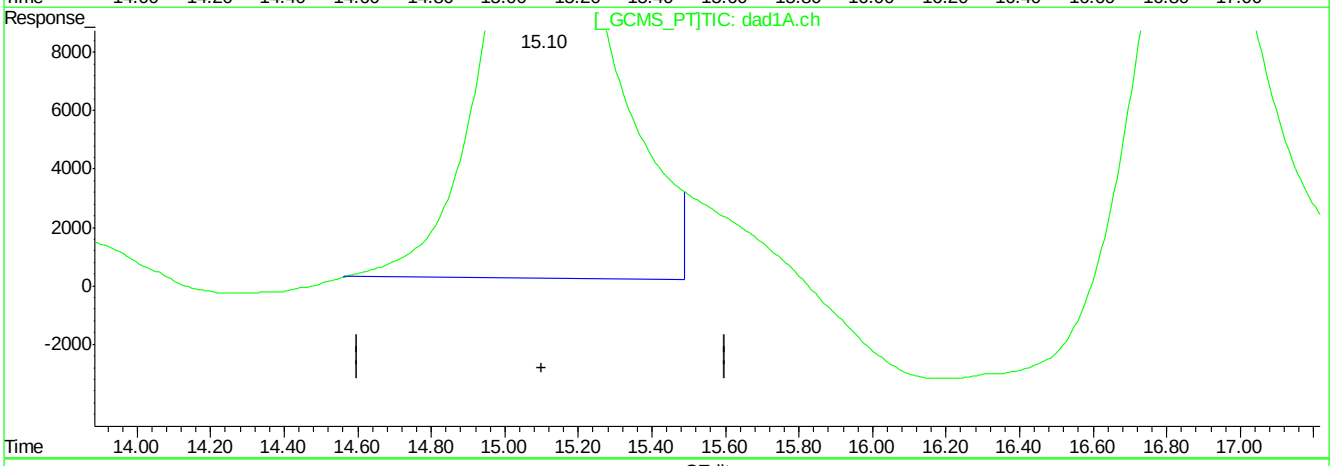
(+) = Expected Retention Time
GG630904.D GGG3484_100324.M Thu Dec 19 12:47:38 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630904.D\dad1B.ch Vial: 10
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630904.D\dad1A.ch
Acq On : 18-Dec-2024, 18:25:19 Operator: fouads
Sample : fc2117-4cf Inst : G1315B
Misc : op6902,GGG3516,950,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 12:46 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 12:46:16 2024
Response via : Multiple Level Calibration




QEdit

(15) 3,5-Dinitroaniline

15.10min 173.199ppb

response 1749567

(15) 3,5-Dinitroaniline #2

15.10min 233.407ppb m

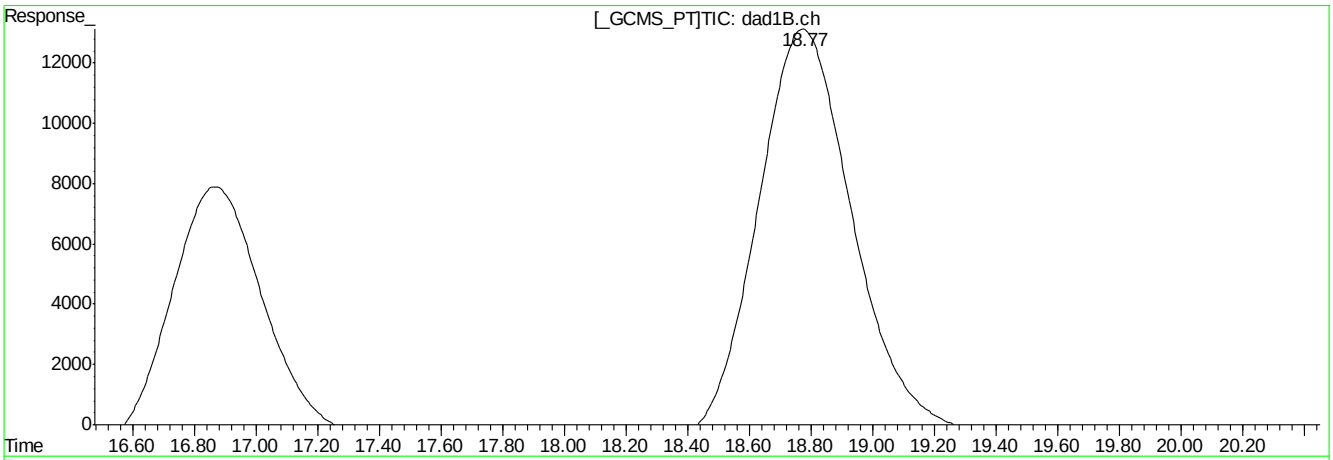
response 3777305

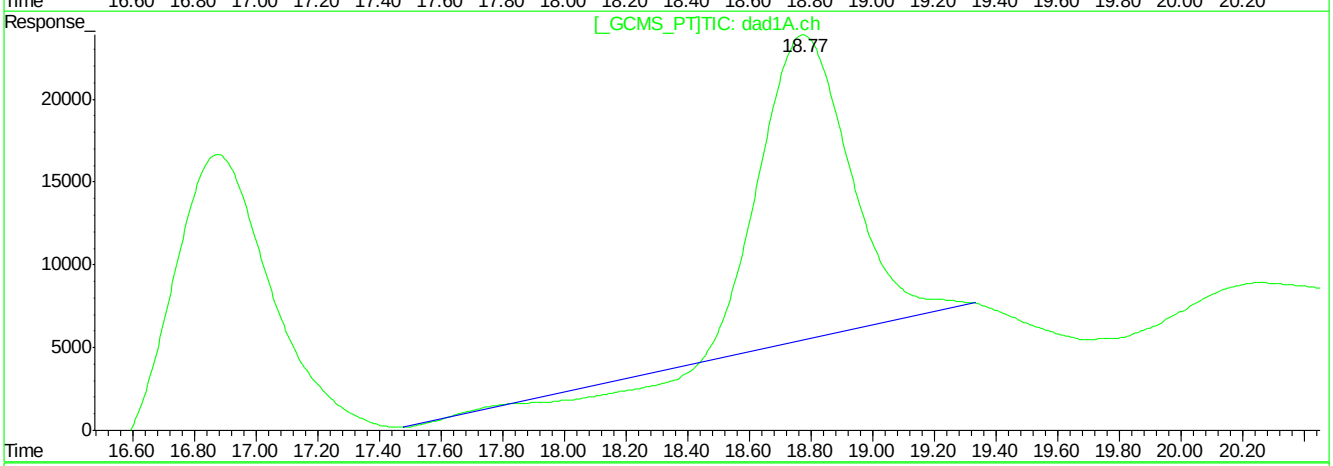
(+) = Expected Retention Time
GG630904.D GGG3484_100324.M Thu Dec 19 12:47:43 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630904.D\dad1B.ch Vial: 10
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630904.D\dad1A.ch
Acq On : 18-Dec-2024, 18:25:19 Operator: fouads
Sample : fc2117-4cf Inst : G1315B
Misc : op6902,GGG3516,950,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 12:46 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 12:46:16 2024
Response via : Multiple Level Calibration




QEdit

(20) 2-Amino-4,6-Dinitrotoluene

18.78min 343.618ppb

response 3048722

(20) 2-Amino-4,6-Dinitrotoluene #2

18.78min 305.208ppb

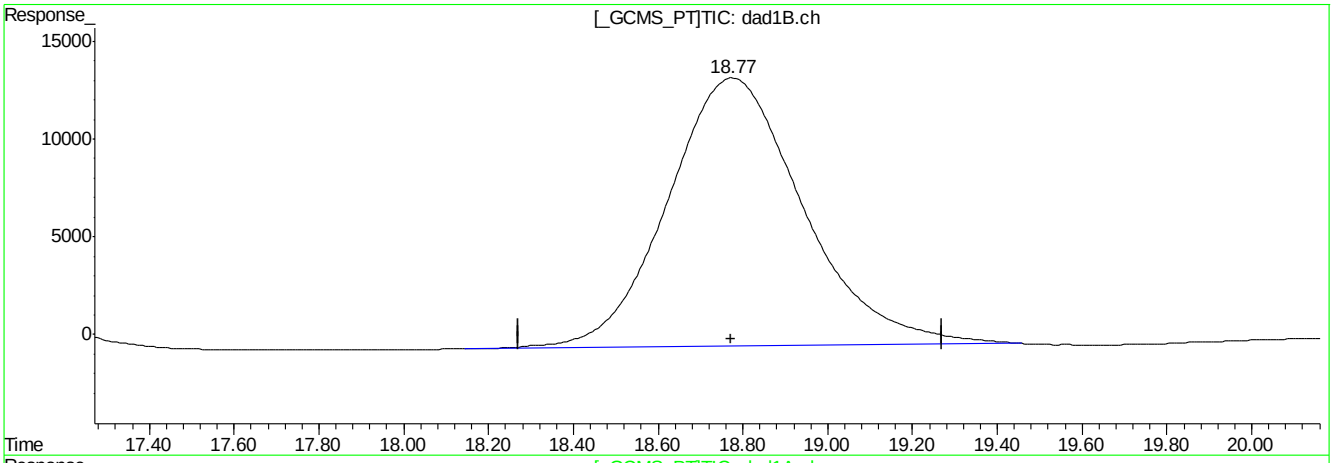
response 3575331

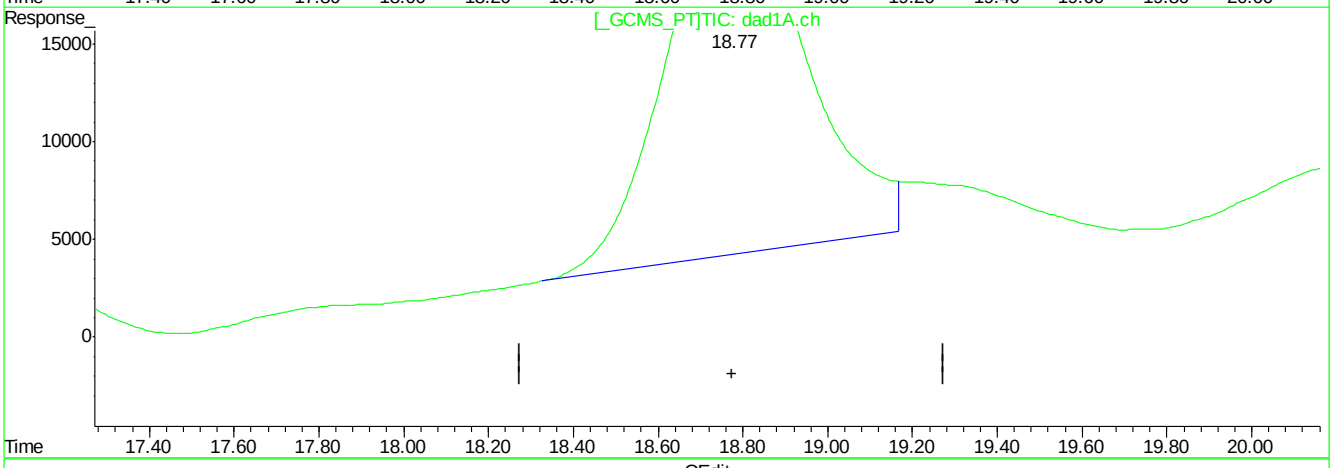
(+) = Expected Retention Time
GG630904.D GGG3484_100324.M Thu Dec 19 12:47:57 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630904.D\dad1B.ch Vial: 10
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630904.D\dad1A.ch
Acq On : 18-Dec-2024, 18:25:19 Operator: fouads
Sample : fc2117-4cf Inst : G1315B
Misc : op6902,GGG3516,950,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 12:46 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 12:46:16 2024
Response via : Multiple Level Calibration




QEdit

(20) 2-Amino-4,6-Dinitrotoluene

18.78min 343.618ppb

response 3048722

(20) 2-Amino-4,6-Dinitrotoluene #2

18.77min 365.155ppb m

response 4277585

(+) = Expected Retention Time
GG630904.D GGG3484_100324.M Thu Dec 19 12:48:06 2024

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085962.D\dad1B.ch Vial: 22
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085962.D\dad1A.ch
Acq On : 17-Dec-2024, 19:34:45 Operator: fouads
Sample : fc21117-5 Inst : G1315B
Misc : OP6902,GBB2633,930,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 06:21:09 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 06:19:51 2024
Response via : Initial Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 15) S | 3,4-Dinitrotolue | 10.97 | 10.97 | 939966 | 1649864 | 418.880 | 405.657 |
| | Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 83.78% | 81.13% |
| | Target Compounds | | | | | | |
| 1) | TNX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 2) | HMX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 3) | DNX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 4) | MNX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 5) | RDX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 6) | 1,3,5-Trinitrobe | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 7) | 1,3-Dinitrobenze | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 8) | 3,5-Dinitroanili | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 9) | Nitrobenzene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 10) | Nitroglycerin | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 11) | Tetryl | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 12) | 2,4,6-Trinitroto | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 13) | 2-Amino-4,6-Dini | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 14) | 4-Amino-2,6-Dini | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 16) | 2,4-Dinitrotolue | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 17) | 2,6-Dinitrotolue | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 18) | o-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 19) | p-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 20) | m-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 21) | PETN | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. |

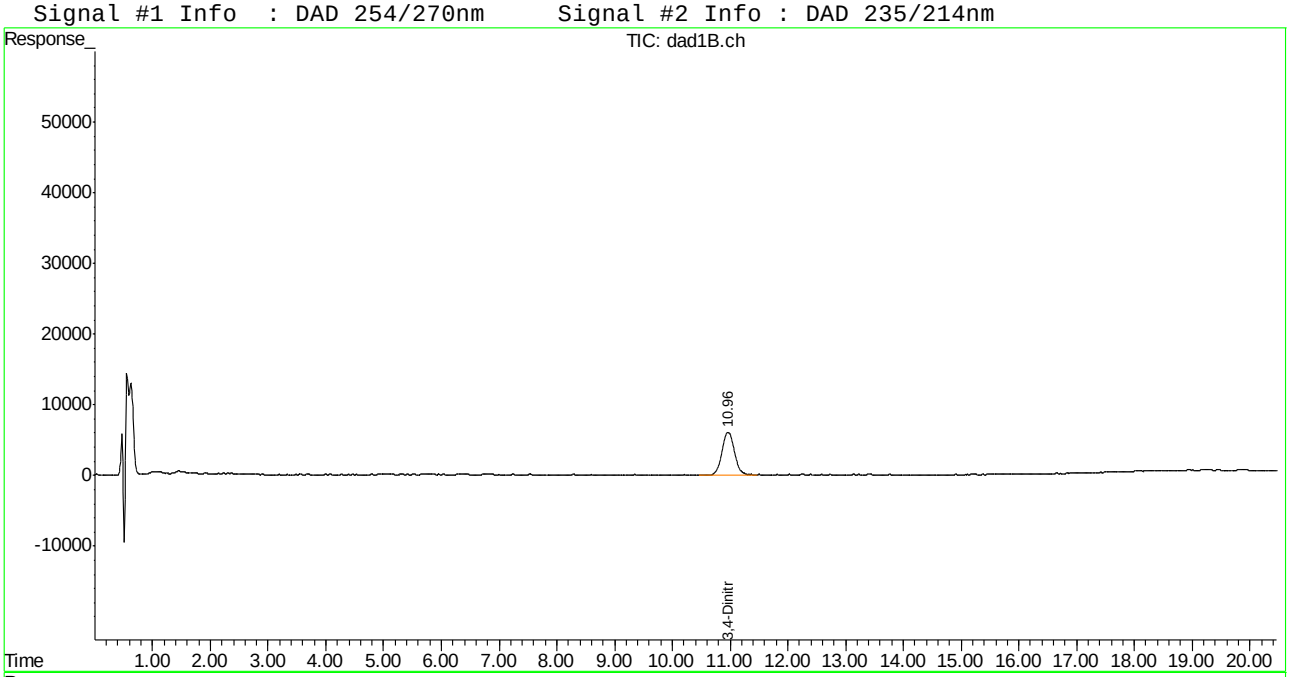
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
BB085962.D BBB2589_091224.M Wed Dec 18 10:42:04 2024 Page 1

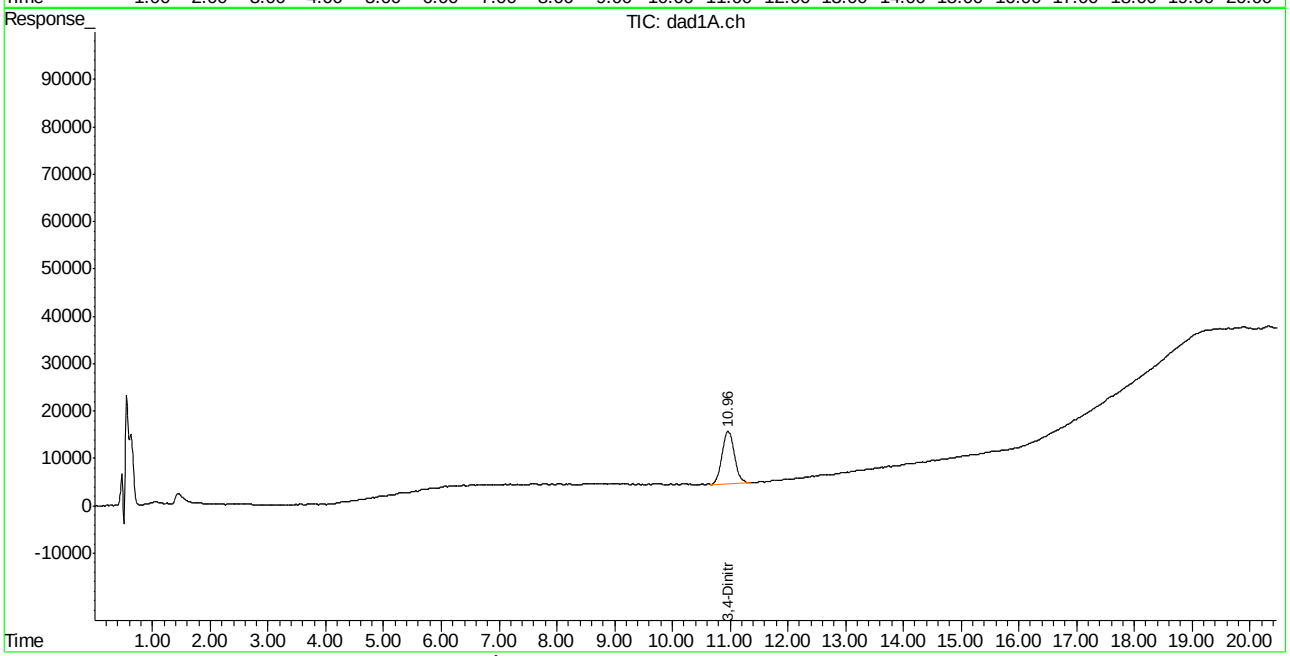
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085962.D\dad1B.ch Vial: 22
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085962.D\dad1A.ch
Acq On : 17-Dec-2024, 19:34:45 Operator: fouads
Sample : fc21117-5 Inst : G1315B
Misc : OP6902,GBB2633,930,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 8:21 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 06:19:51 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm



Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085955.D\dad1B.ch Vial: 15
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085955.D\dad1A.ch
Acq On : 17-Dec-2024, 16:29:32 Operator: fouads
Sample : op6902-mb Inst : G1315B
Misc : OP6902,GBB2633,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 06:21:02 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 06:19:51 2024
Response via : Initial Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm

| Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb | |
|---|---|---|---|---|---|---|---|
| System Monitoring Compounds | | | | | | | |
| 15) S 3,4-Dinitrotolue | 10.91 | 10.91 | 809018 | 1485713 | 360.525 | 365.296 | |
| Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 72.10% | 73.06% | |
| Target Compounds | | | | | | | |
| 1) TNX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. | d |
| 2) HMX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. | d |
| 3) DNX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. | d |
| 4) MNX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. | |
| 5) RDX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. | |
| 6) 1,3,5-Trinitrobe | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. | |
| 7) 1,3-Dinitrobenze | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. | |
| 8) 3,5-Dinitroanili | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. | d |
| 9) Nitrobenzene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. | d |
| 10) Nitroglycerin | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. | d |
| 11) Tetryl | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. | |
| 12) 2,4,6-Trinitroto | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. | d |
| 13) 2-Amino-4,6-Dini | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. | |
| 14) 4-Amino-2,6-Dini | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. | |
| 16) 2,4-Dinitrotolue | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. | d |
| 17) 2,6-Dinitrotolue | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. | d |
| 18) o-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. | d |
| 19) p-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. | d |
| 20) m-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. | |
| 21) PETN | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. | |

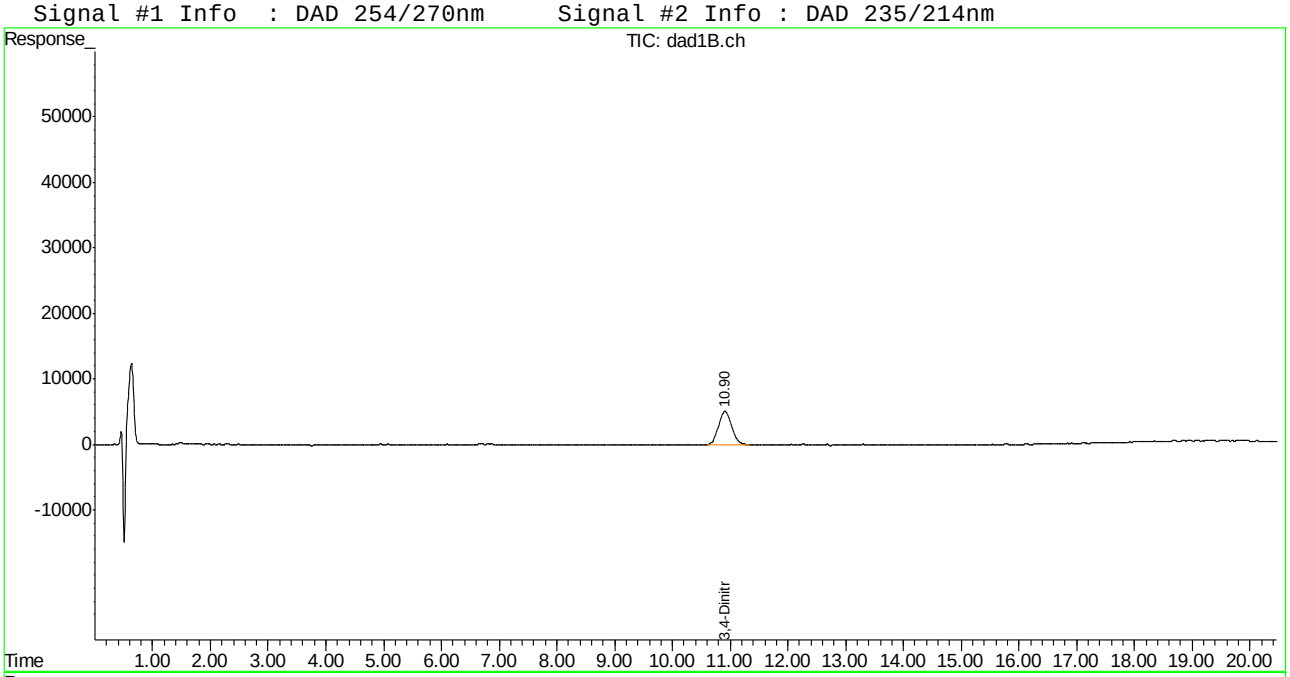
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
BB085955.D BBB2589_091224.M Wed Dec 18 10:41:57 2024 Page 1

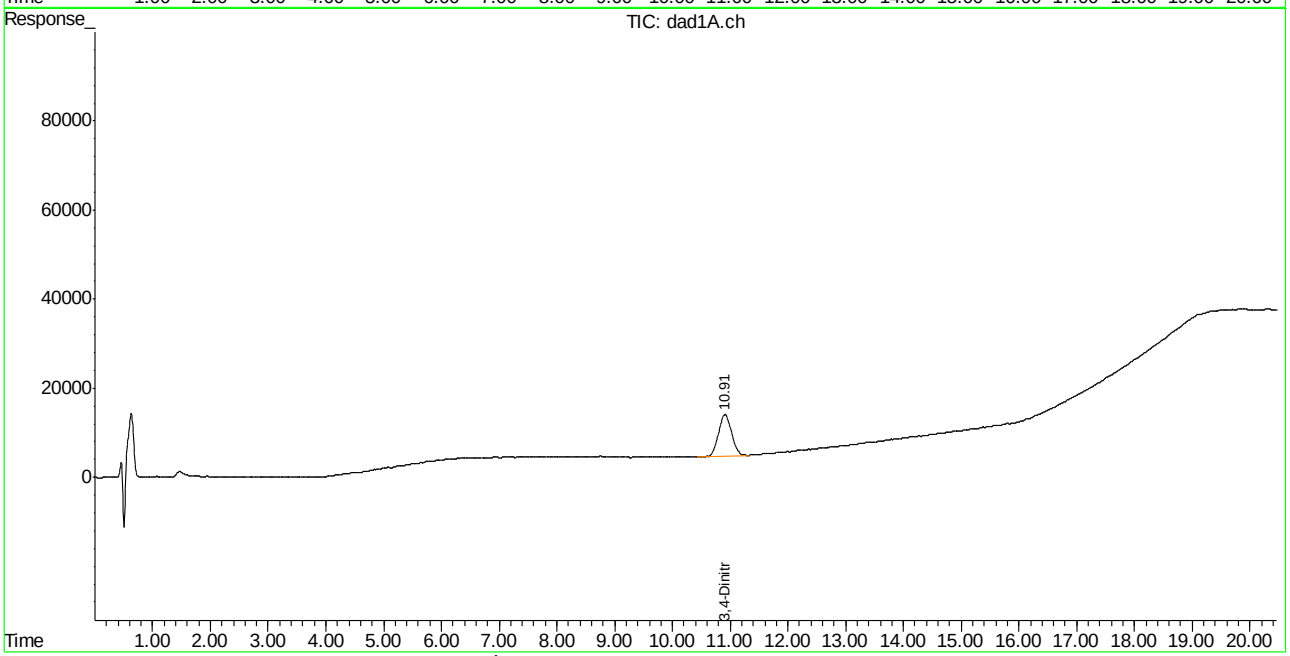
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085955.D\dad1B.ch Vial: 15
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085955.D\dad1A.ch
Acq On : 17-Dec-2024, 16:29:32 Operator: fouads
Sample : op6902-mb Inst : G1315B
Misc : OP6902,GBB2633,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 6:31 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 06:19:51 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm



Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630901.D\dad1B.ch Vial: 7
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630901.D\dad1A.ch
Acq On : 18-Dec-2024, 16:56:55 Operator: fouads
Sample : OP6902-MB Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 09:48:34 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 09:46:29 2024
Response via : Initial Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 12) S | 3,4-Dinitrotolue | 13.57 | 13.57 | 1912643 | 3556632 | 421.523 | 394.759 |
| | Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 84.30% | 78.95% |
| | Target Compounds | | | | | | |
| 1) | TNX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 2) | HMX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 3) | DNX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 4) | MNX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 5) | 1,3,5-Trinitrobe | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 6) | RDX | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 7) | 1,3-Dinitrobenze | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 8) | Nitrobenzene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 9) | 2,4,6-Trinitroto | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 10) | Nitroglycerin | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 11) | Tetryl | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 13) | 2,6-Dinitrotolue | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 14) | 2,4-Dinitrotolue | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 15) | 3,5-Dinitroanili | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 16) | o-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 17) | p-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 18) | 4-Amino-2,6-Dini | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 19) | m-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 20) | 2-Amino-4,6-Dini | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| 21) | PETN | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |

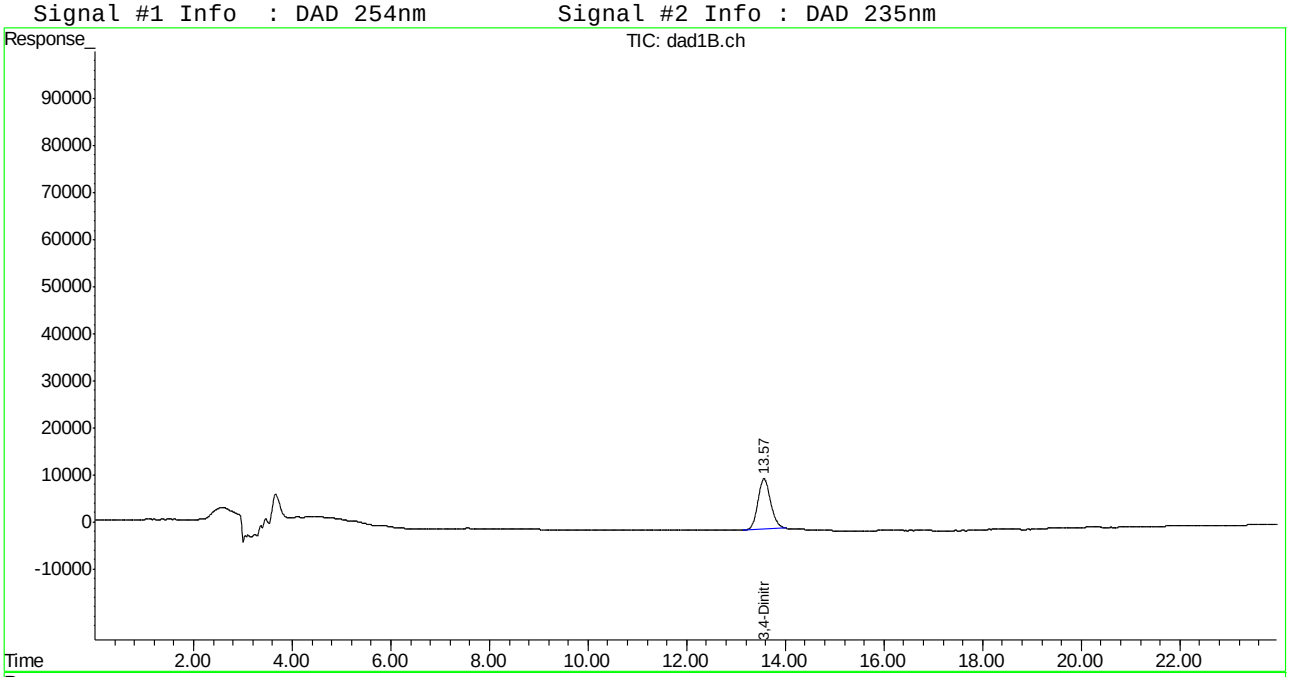
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
GG630901.D GGG3484_100324.M Thu Dec 19 10:18:35 2024 Page 1

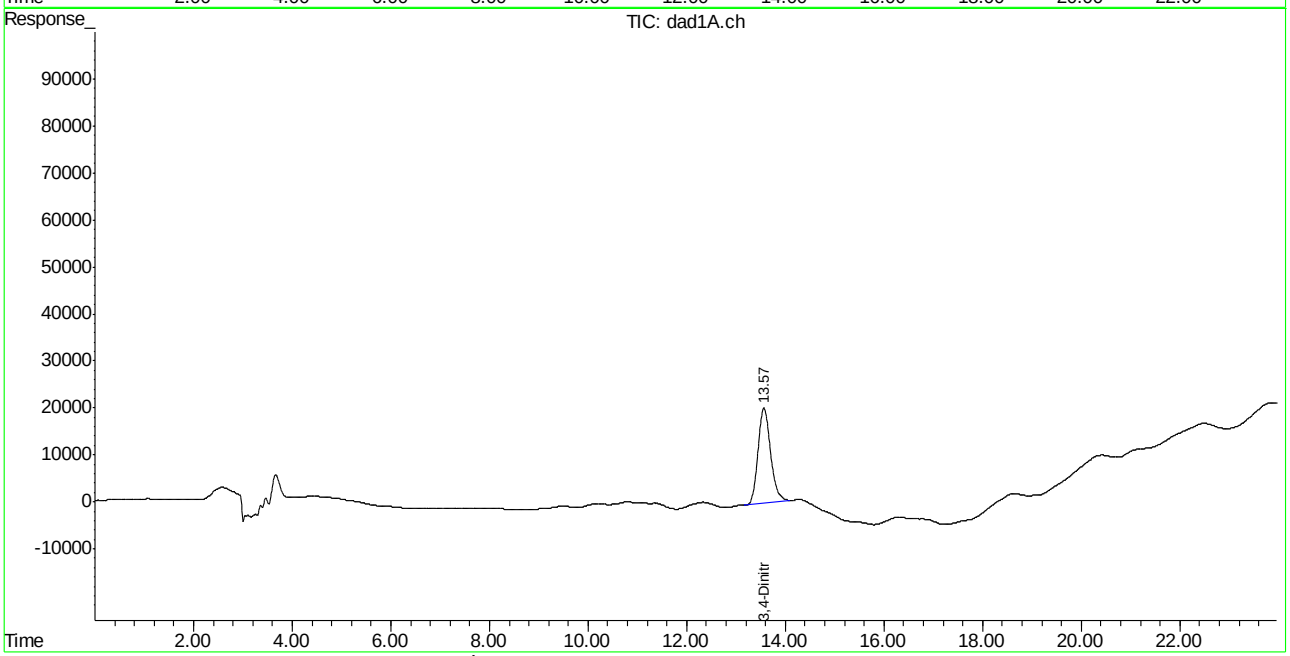
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630901.D\dad1B.ch Vial: 7
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630901.D\dad1A.ch
Acq On : 18-Dec-2024, 16:56:55 Operator: fouads
Sample : OP6902-MB Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 9:48 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 09:46:29 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm



Manual Integrations APPROVED (compounds with "m" flag)
Naresh Jiawan 12/18/24 12:05

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085954.D\dad1B.ch Vial: 14
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085954.D\dad1A.ch
Acq On : 17-Dec-2024, 16:03:07 Operator: fouads
Sample : op6902-bs Inst : G1315B
Misc : OP6902,GBB2633,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 06:21:01 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 06:19:51 2024
Response via : Initial Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 15) S | 3,4-Dinitrotolue | 10.93 | 10.93 | 970786 | 1702461 | 432.615 | 418.589 |
| | Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 86.52% | 83.72% |
| | Target Compounds | | | | | | |
| 1) | TNX | 1.28 | 1.28 | 861227 | 1313740 | 279.147 | 268.996 |
| 2) | HMX | 1.43 | 1.43 | 751454 | 2137922 | 496.309 | 509.011 |
| 3) | DNX | 1.65 | 1.65 | 1587367 | 2521484 | 657.794 | 667.321 |
| 4) | MNX | 2.23 | 2.23 | 1723481 | 2628720 | 770.791 | 764.647 |
| 5) | RDX | 2.83 | 2.83 | 883879 | 1377214 | 461.051 | 479.481 |
| 6) | 1,3,5-Trinitrobe | 4.56 | 4.56 | 1822983 | 2955754 | 419.880 | 443.861 |
| 7) | 1,3-Dinitrobenze | 5.76 | 5.76 | 2398870 | 1988660 | 426.063 | 500.987 |
| 8) | 3,5-Dinitroanili | 6.16 | 6.16 | 1853922 | 3328166 | 443.625 | 473.958 |
| 9) | Nitrobenzene | 7.32 | 7.32 | 1319414 | 1292841 | 412.432 | 430.612 |
| 10) | Nitroglycerin | 0.00 | 8.60 | 0 | 608148 | N.D. | 471.300 # |
| 11) | Tetryl | 9.25 | 9.24 | 1245752 | 2000298 | 389.364 | 413.440 |
| 12) | 2,4,6-Trinitroto | 9.58 | 9.58 | 1739481 | 2077056 | 431.580 | 441.793 |
| 13) | 2-Amino-4,6-Dini | 10.10 | 10.10 | 1514452 | 2237601 | 464.379 | 478.495 |
| 14) | 4-Amino-2,6-Dini | 10.55 | 10.55 | 1086027 | 2153924 | 454.268 | 460.803 |
| 16) | 2,4-Dinitrotolue | 11.59 | 11.59 | 2161082 | 1425844 | 458.961 | 456.297 |
| 17) | 2,6-Dinitrotolue | 12.03 | 12.03 | 1208283 | 1564273 | 425.952 | 452.051 |
| 18) | o-Nitrotoluene | 15.15 | 15.15 | 894176 | 1243629 | 393.090 | 418.560 |
| 19) | p-Nitrotoluene | 15.72 | 15.72 | 1423776 | 1184685 | 408.986 | 417.837 |
| 20) | m-Nitrotoluene | 16.62 | 16.63 | 1392617 | 1505318 | 414.143 | 395.700 |
| 21) | PETN | 0.00 | 18.38 | 0 | 697593 | N.D. d | 517.281m |

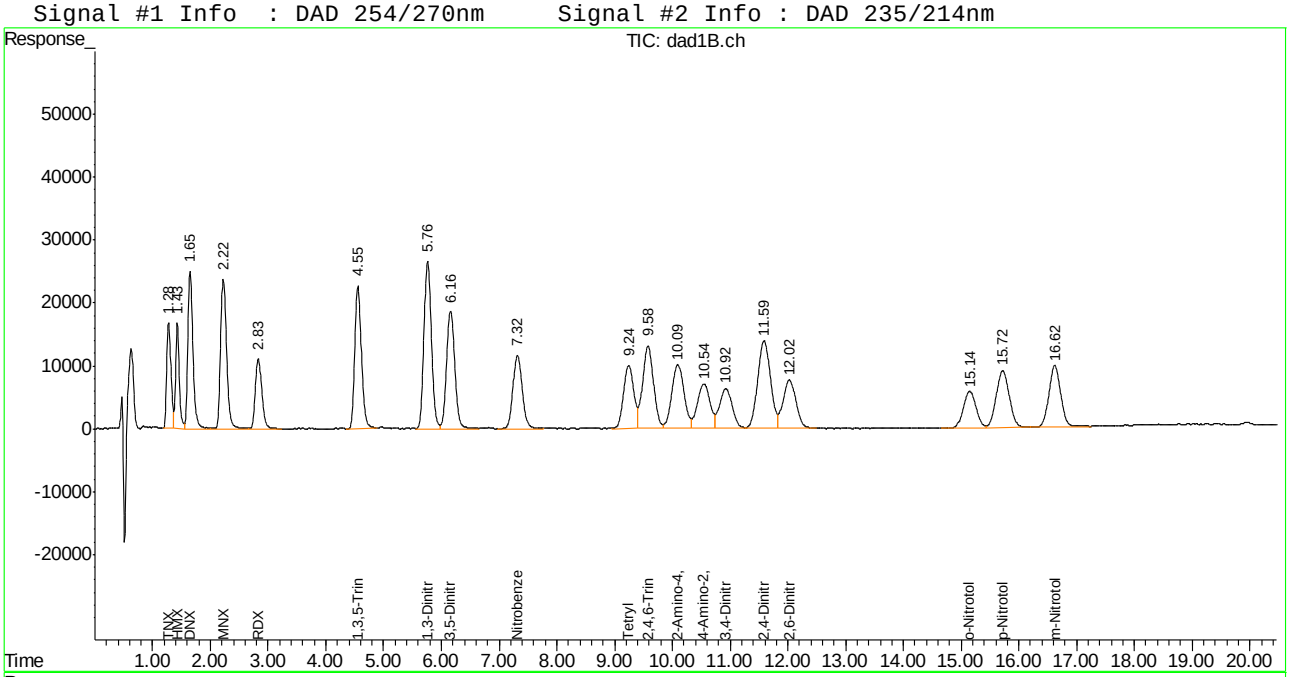
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
BB085954.D BBB2589_091224.M Wed Dec 18 10:41:56 2024 Page 1

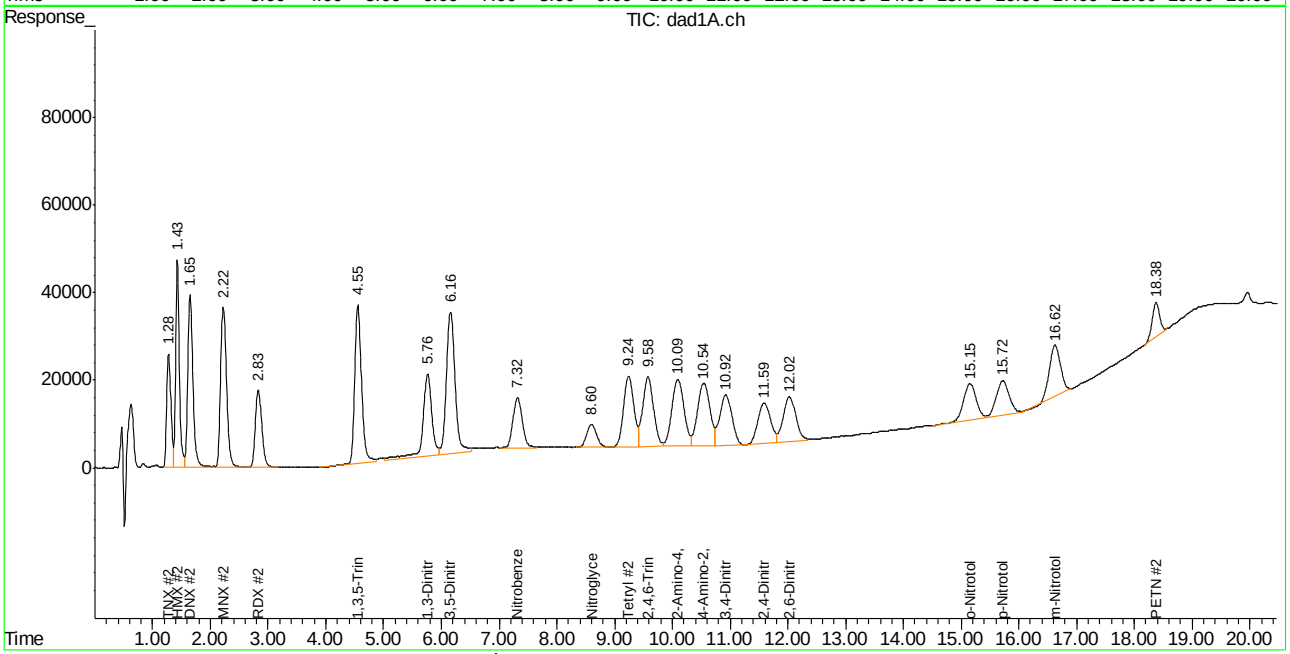
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085954.D\dad1B.ch Vial: 14
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085954.D\dad1A.ch
Acq On : 17-Dec-2024, 16:03:07 Operator: fouads
Sample : op6902-bs Inst : G1315B
Misc : OP6902,GBB2633,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 6:21 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 06:19:51 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm



# Manual Integration Approval Summary



| | | | |
|---|---|---|---|
| **Sample Number:** | OP6902-BS | **Method:** | SW846 8330B |
| **Lab FileID:** | BB085954.D | **Analyst approved:** | 12/18/24 11:05 Fouad Sekkar |
| **Injection Time:** | 12/17/24 16:03 | **Supervisor approved:** | 12/18/24 12:05 Naresh Jiawan |

| Parameter | CAS | Sig# | R.T. (min.) | Reason |
|---|---|---|---|---|
| PETN | 78-11-5 | 2 | 18.38 | Poor instrument integration |

Manual Integrations APPROVED (compounds with "m" flag)
Naresh Jiawan
12/19/24 14:18

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085960.D\dad1B.ch Vial: 20
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085960.D\dad1A.ch
Acq On : 17-Dec-2024, 18:41:51 Operator: fouads
Sample : op6902-ms Inst : G1315B
Misc : OP6902,GBB2633,460,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 06:21:07 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 06:19:51 2024
Response via : Initial Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 15) S | 3,4-Dinitrotolue | 10.93 | 10.94 | 873713 | 1566518 | 389.356 | 385.164 |
| Spiked Amount | 500.000 | Range | 70 - 136 | Recovery | = | 77.87% | 77.03% |
| | Target Compounds | | | | | | |
| 1) | TNX | 1.27 | 1.27 | 996747 | 1499893 | 323.073 | 307.111 |
| 2) | HMX | 1.43 | 1.43 | 1598375 | 4408409 | 1055.670 | 1049.584 |
| 3) | DNX | 1.64 | 1.64 | 1686284 | 2717972 | 698.785 | 719.322 |
| 4) | MNX | 2.22 | 2.22 | 1531544 | 2499203 | 684.951 | 726.973 |
| 5) | RDX | 2.83 | 2.83 | 852418 | 1373106 | 444.640 | 478.051 |
| 6) | 1,3,5-Trinitrobe | 4.55 | 4.55 | 2560480 | 4017177 | 589.745 | 603.254 |
| 7) | 1,3-Dinitrobenze | 5.76 | 5.76 | 2370103 | 1511056 | 420.954 | 380.668 |
| 8) | 3,5-Dinitroanili | 6.16 | 6.16 | 2023926 | 3095001 | 484.305 | 440.753 |
| 9) | Nitrobenzene | 7.32 | 7.32 | 1629158 | 1211028 | 509.254 | 403.362 |
| 10) | Nitroglycerin | 0.00 | 8.60 | 0 | 615815 | N.D. | 477.241 # |
| 11) | Tetryl | 9.25 | 9.25 | 1224735 | 1981698 | 382.795 | 409.595 |
| 12) | 2,4,6-Trinitroto | 9.58 | 9.58 | 2166144 | 2662761 | 537.439 | 566.373 |
| 13) | 2-Amino-4,6-Dini | 10.10 | 10.10 | 1959630 | 2942140 | 600.885 | 629.156 |
| 14) | 4-Amino-2,6-Dini | 10.55 | 10.55 | 1369569 | 2753009 | 572.870 | 588.969 |
| 16) | 2,4-Dinitrotolue | 11.60 | 11.60 | 2103613 | 1342578 | 446.756 | 429.650 |
| 17) | 2,6-Dinitrotolue | 12.04 | 12.04 | 1213852 | 1545633 | 427.915 | 446.664 |
| 18) | o-Nitrotoluene | 15.16 | 15.17 | 984648 | 1349742 | 432.863 | 454.274 |
| 19) | p-Nitrotoluene | 15.73 | 15.74 | 1511551 | 1255826 | 434.200 | 442.929 |
| 20) | m-Nitrotoluene | 16.64 | 16.64 | 1490435 | 1678566 | 443.232 | 441.241 |
| 21) | PETN | 0.00 | 18.38 | 0 | 703143 | N.D. d | 521.396m |

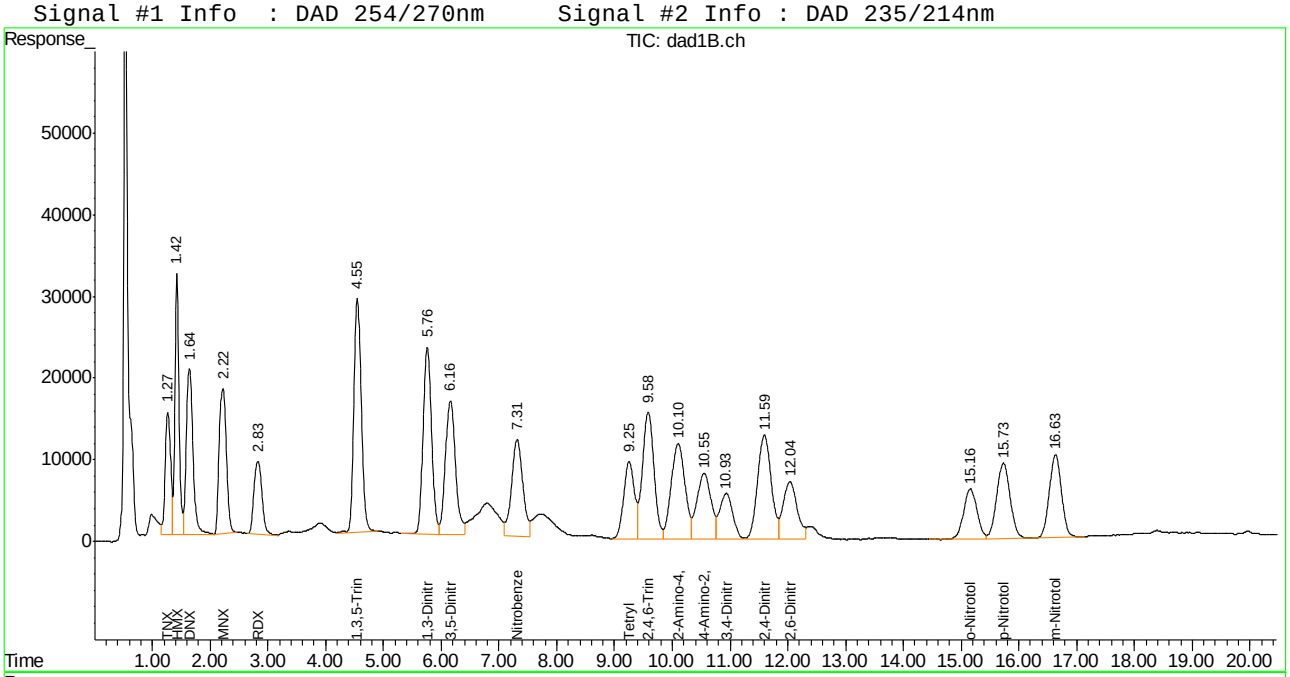
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
BB085960.D BBB2589_091224.M Wed Dec 18 10:42:02 2024 Page 1

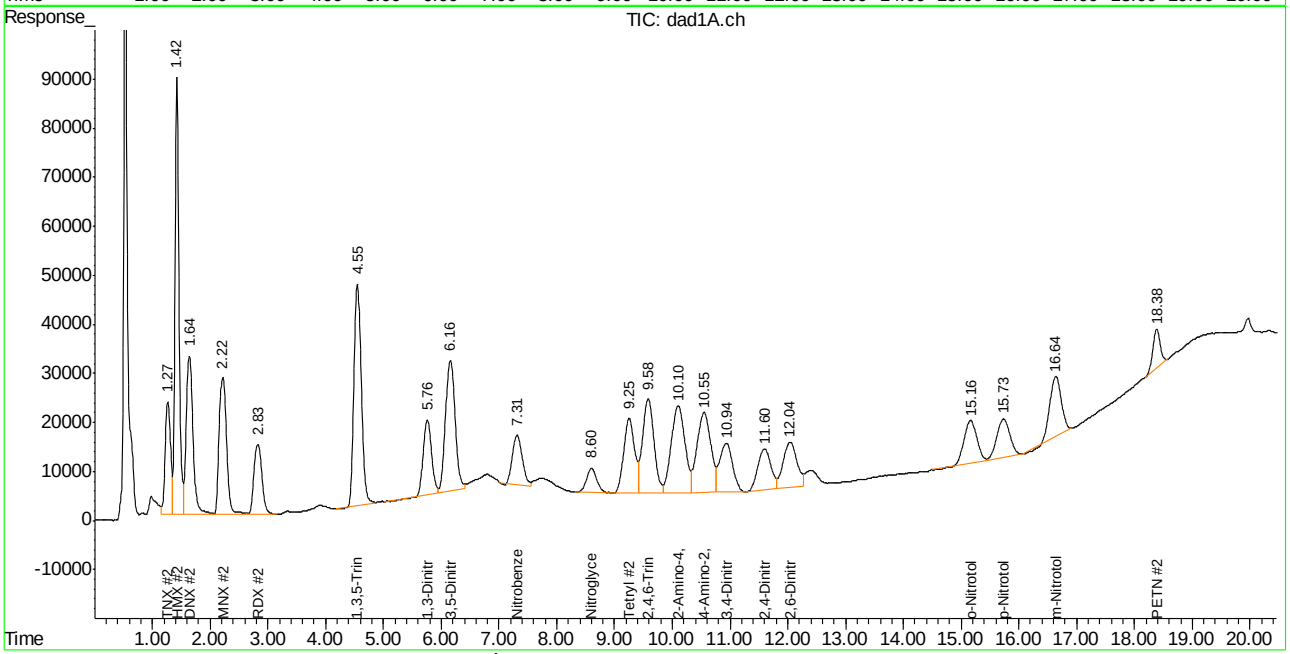
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085960.D\dad1B.ch Vial: 20
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085960.D\dad1A.ch
Acq On : 17-Dec-2024, 18:41:51 Operator: fouads
Sample : op6902-ms Inst : G1315B
Misc : OP6902,GBB2633,460,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 7:53 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 06:19:51 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm



# Manual Integration Approval Summary



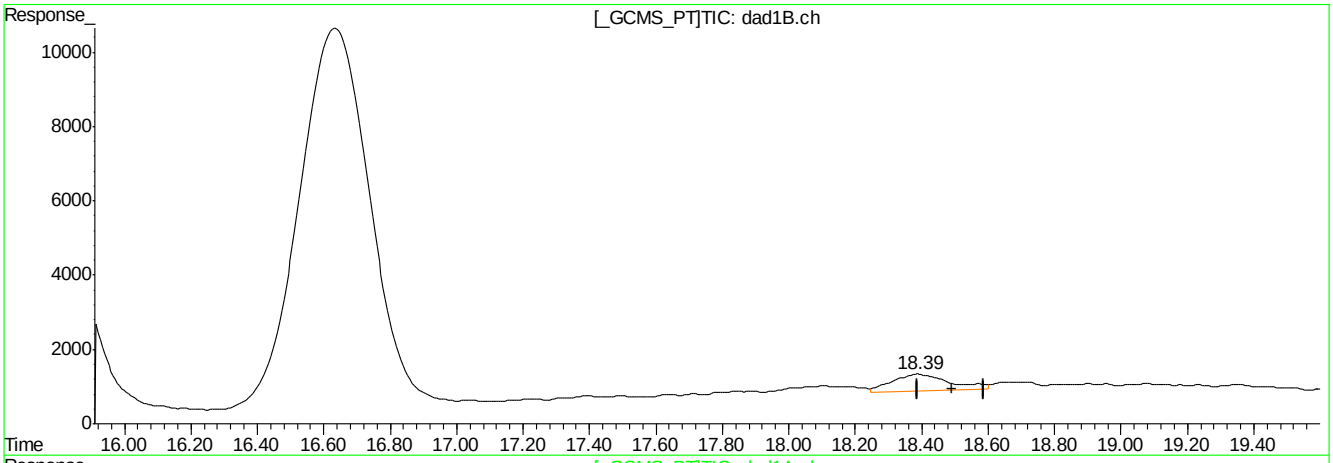
| | | | |
|---|---|---|---|
| **Sample Number:** | OP6902-MS | **Method:** | SW846 8330B |
| **Lab FileID:** | BB085960.D | **Analyst approved:** | 12/19/24 13:06 Fouad Sekkar |
| **Injection Time:** | 12/17/24 18:41 | **Supervisor approved:** | 12/19/24 14:18 Naresh Jiawan |

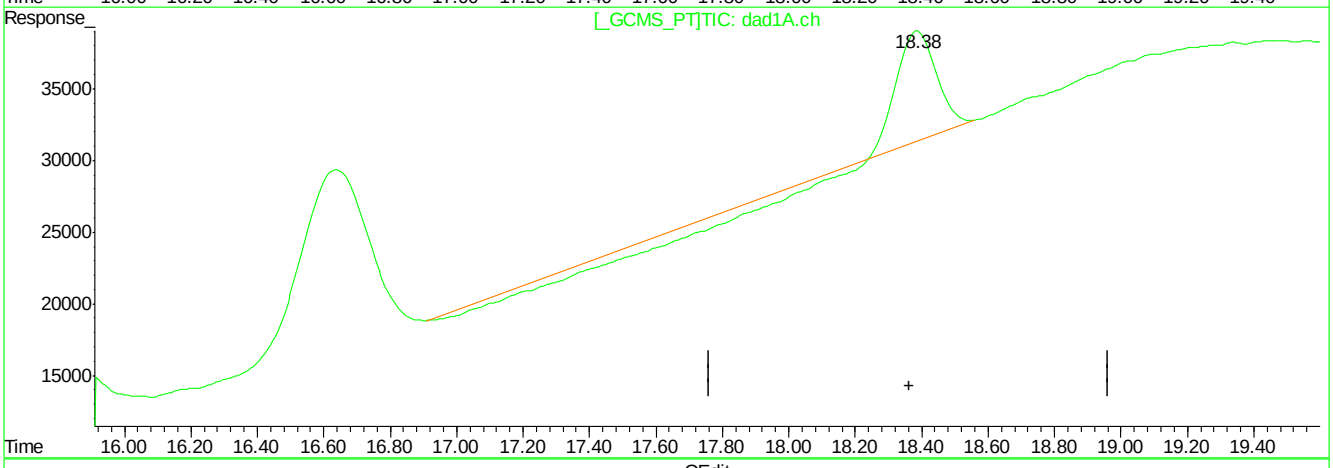
| Parameter | CAS | Sig# | R.T. (min.) | Reason |
|---|---|---|---|---|
| PETN | 78-11-5 | 2 | 18.38 | Poor instrument integration |

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085960.D\dad1B.ch Vial: 20
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085960.D\dad1A.ch
Acq On : 17-Dec-2024, 18:41:51 Operator: fouads
Sample : op6902-ms Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 6:21 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 07:19:55 2024
Response via : Multiple Level Calibration




QEdit

(21) PETN

18.39min 0.000ppb

response 53867

(21) PETN #2

18.39min 129.855ppb

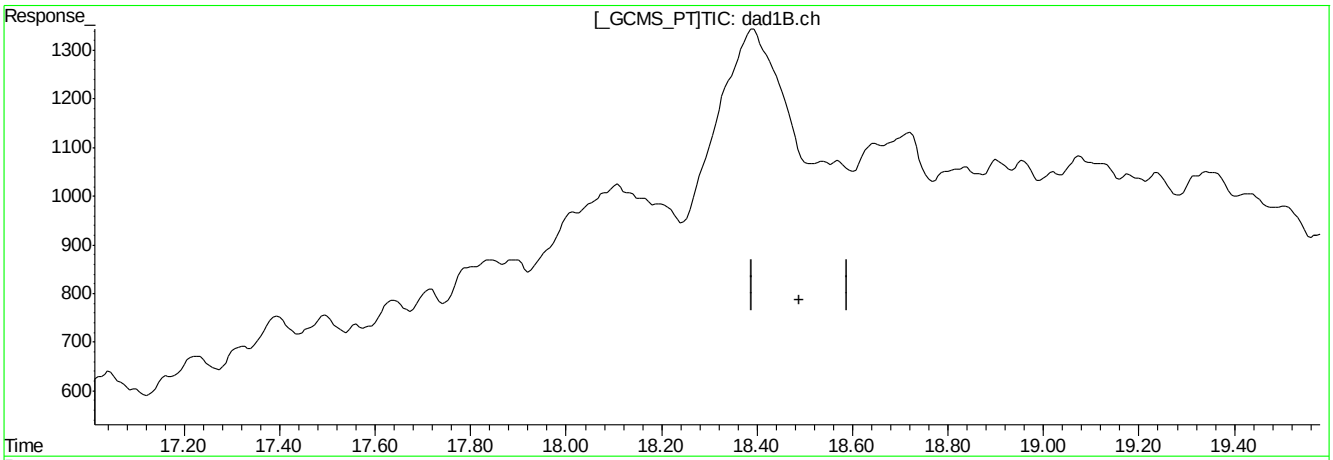
response 175120

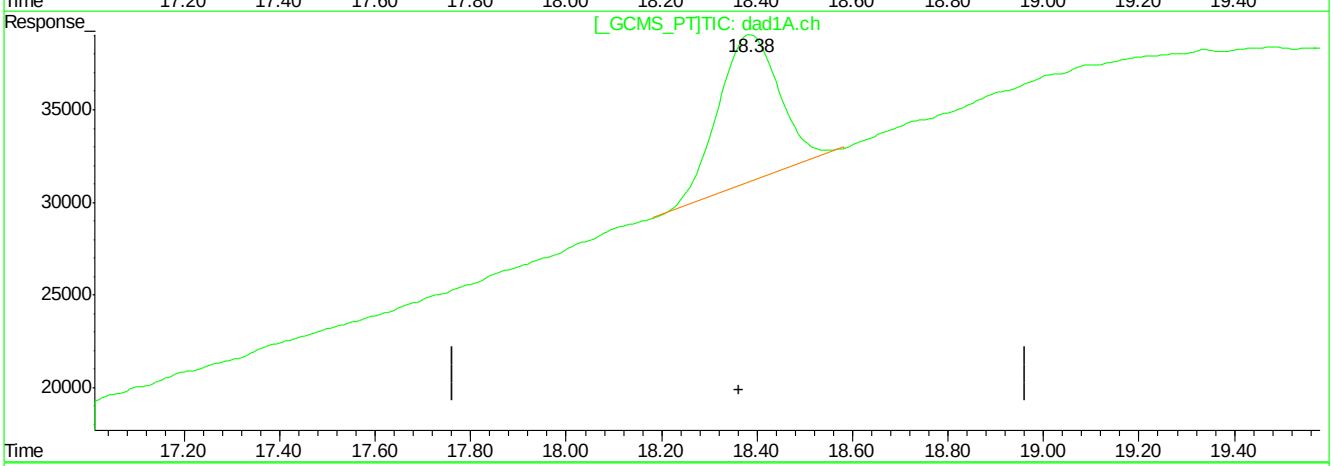
(+) = Expected Retention Time
BB085960.D BBB2589_091224.M Wed Dec 18 07:53:17 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085960.D\dad1B.ch Vial: 20
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085960.D\dad1A.ch
Acq On : 17-Dec-2024, 18:41:51 Operator: fouads
Sample : op6902-ms Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 6:21 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 07:19:55 2024
Response via : Multiple Level Calibration




QEdit

(21) PETN

0.00min 0.000ppb d

response 0

(21) PETN #2

18.38min 521.396ppb m

response 703143

(+) = Expected Retention Time
BB085960.D BBB2589_091224.M Wed Dec 18 07:53:24 2024

Manual Integrations APPROVED (compounds with "m" flag)
Naresh Jiawan
12/19/24 14:18

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085961.D\dad1B.ch Vial: 21
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085961.D\dad1A.ch
Acq On : 17-Dec-2024, 19:08:20 Operator: fouads
Sample : op6902-msd Inst : G1315B
Misc : OP6902,GBB2633,460,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 06:21:08 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 06:19:51 2024
Response via : Initial Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 15) S | 3,4-Dinitrotolue | 10.97 | 10.98 | 905334 | 1638604 | 403.447 | 402.888 |
| Spiked Amount | 500.000 | Range | 70 - 136 | Recovery | = | 80.69% | 80.58% |
| | Target Compounds | | | | | | |
| 1) | TNX | 1.29 | 1.29 | 1231077 | 1808346 | 399.026 | 370.269 |
| 2) | HMX | 1.44 | 1.44 | 1982835 | 5064160 | 1309.593 | 1205.710 |
| 3) | DNX | 1.66 | 1.66 | 1791397 | 2723547 | 742.343 | 720.797 |
| 4) | MNX | 2.24 | 2.24 | 2231936 | 3022521 | 998.187 | 879.197 |
| 5) | RDX | 2.85 | 2.85 | 1100286 | 1562456 | 573.934 | 543.974 |
| 6) | 1,3,5-Trinitrobe | 4.58 | 4.58 | 2775838 | 4410053 | 639.347 | 662.251 |
| 7) | 1,3-Dinitrobenze | 5.79 | 5.79 | 2896622 | 2261554 | 514.469 | 569.735 |
| 8) | 3,5-Dinitroanili | 6.19 | 6.19 | 4145312 | 5285226 | 991.931 | 752.659 |
| 9) | Nitrobenzene | 7.35 | 7.35 | 2394277 | 2141698 | 748.420 | 713.344 |
| 10) | Nitroglycerin | 0.00 | 8.63 | 0 | 597990 | N.D. | 463.427 # |
| 11) | Tetryl | 9.28 | 9.28 | 1313132 | 2121861 | 410.424 | 438.565 |
| 12) | 2,4,6-Trinitroto | 9.61 | 9.61 | 2226601 | 2699176 | 552.439 | 574.118 |
| 13) | 2-Amino-4,6-Dini | 10.15 | 10.15 | 2098331 | 3155268 | 643.415 | 674.732 |
| 14) | 4-Amino-2,6-Dini | 10.60 | 10.60 | 1455439 | 2974023 | 608.788 | 636.252 |
| 16) | 2,4-Dinitrotolue | 11.64 | 11.64 | 2194635 | 1460891 | 466.087 | 467.512 |
| 17) | 2,6-Dinitrotolue | 12.08 | 12.08 | 1239527 | 1626402 | 436.966 | 470.005 |
| 18) | o-Nitrotoluene | 15.20 | 15.20 | 1012808 | 1395567 | 445.243 | 469.697 |
| 19) | p-Nitrotoluene | 15.77 | 15.77 | 1569907 | 1266420 | 450.963 | 446.665 |
| 20) | m-Nitrotoluene | 16.67 | 16.67 | 1559488 | 1725573 | 463.767 | 453.598 |
| 21) | PETN | 0.00 | 18.39 | 0 | 737084 | N.D. | 546.564m# |

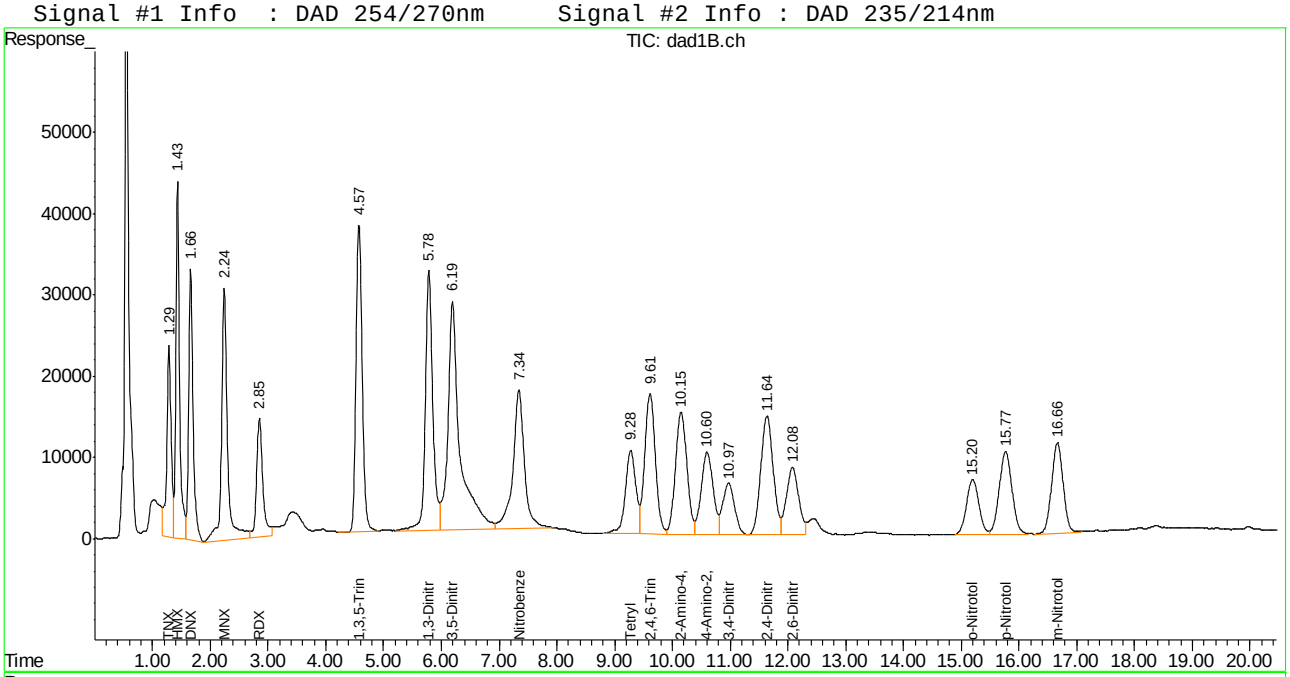
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
BB085961.D BBB2589_091224.M Wed Dec 18 10:42:03 2024 Page 1

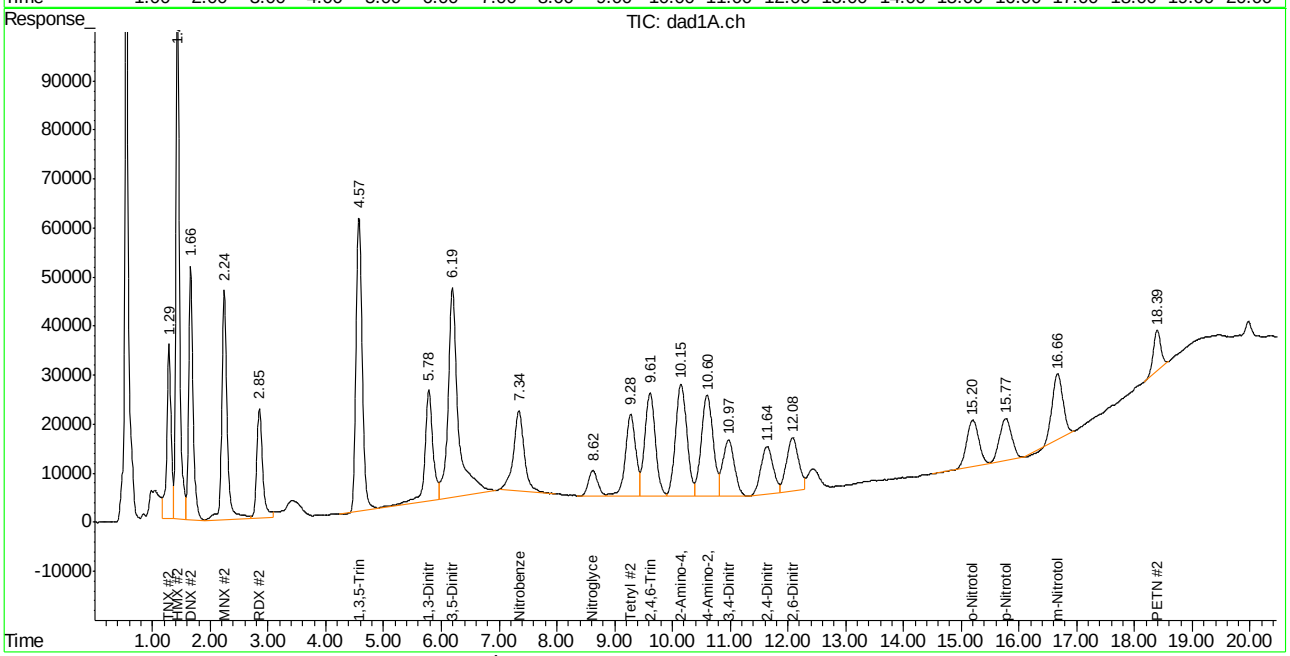
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085961.D\dad1B.ch Vial: 21
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085961.D\dad1A.ch
Acq On : 17-Dec-2024, 19:08:20 Operator: fouads
Sample : op6902-msd Inst : G1315B
Misc : OP6902,GBB2633,460,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 7:59 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 06:19:51 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm



# Manual Integration Approval Summary



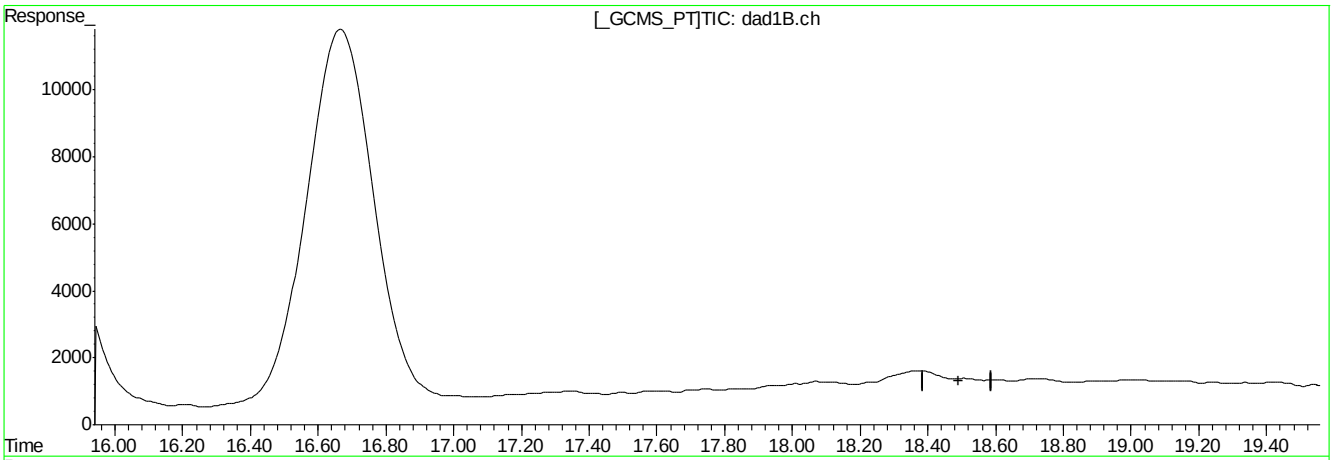
| | | | |
|---|---|---|---|
| **Sample Number:** | OP6902-MSD | **Method:** | SW846 8330B |
| **Lab FileID:** | BB085961.D | **Analyst approved:** | 12/19/24 13:06 Fouad Sekkar |
| **Injection Time:** | 12/17/24 19:08 | **Supervisor approved:** | 12/19/24 14:18 Naresh Jiawan |

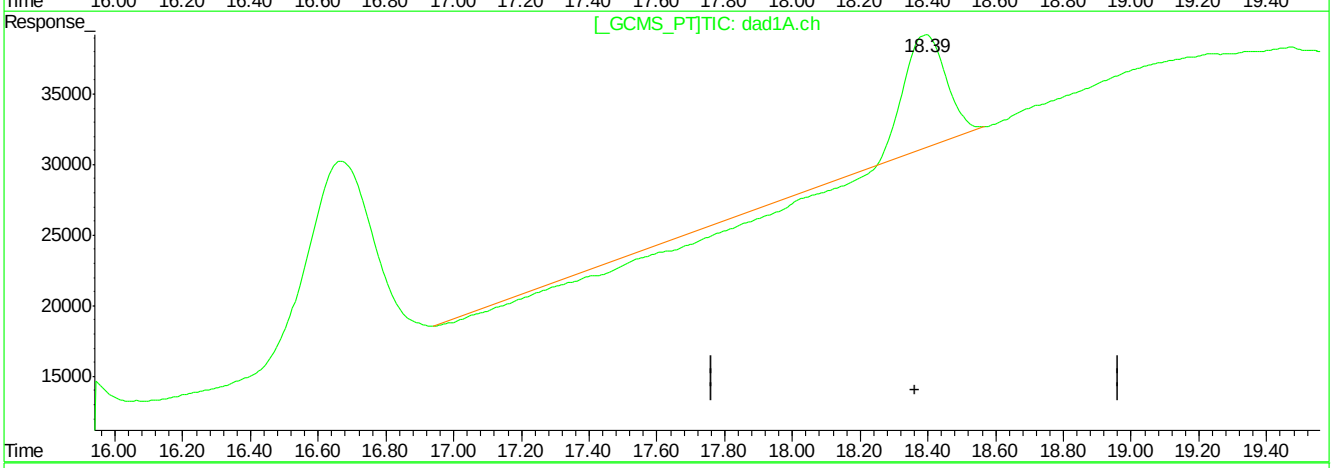
| Parameter | CAS | Sig# | R.T. (min.) | Reason |
|---|---|---|---|---|
| PETN | 78-11-5 | 2 | 18.39 | Poor instrument integration |

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085961.D\dad1B.ch Vial: 21
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085961.D\dad1A.ch
Acq On : 17-Dec-2024, 19:08:20 Operator: fouads
Sample : op6902-msd Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 6:21 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 07:19:55 2024
Response via : Multiple Level Calibration




QEdit

(21) PETN

0.00min 0.000ppb

response 0

(21) PETN #2

18.39min 213.072ppb

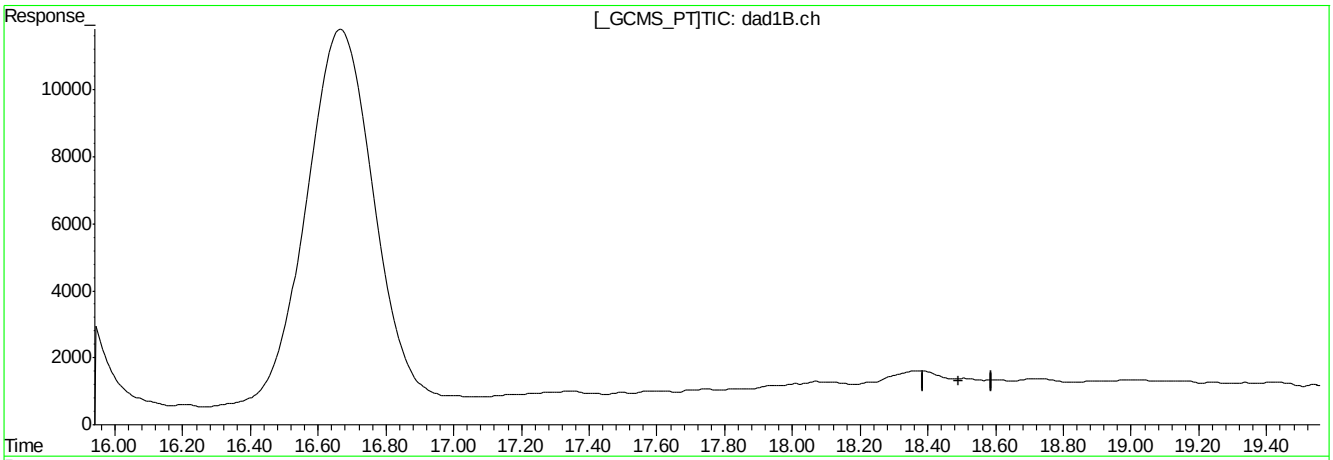
response 287344

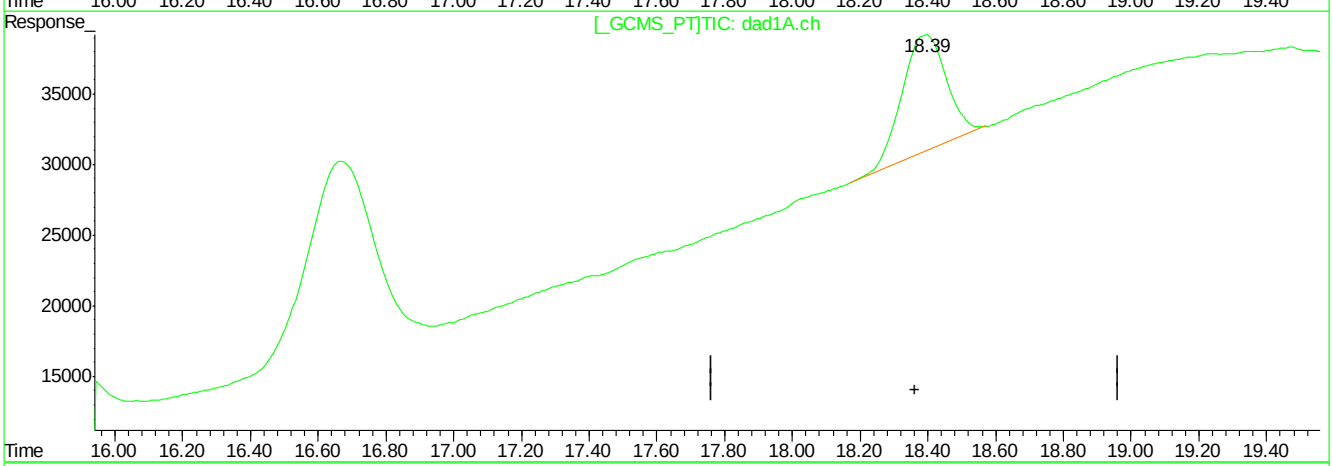
(+) = Expected Retention Time
BB085961.D BBB2589_091224.M Wed Dec 18 07:59:17 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085961.D\dad1B.ch Vial: 21
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085961.D\dad1A.ch
Acq On : 17-Dec-2024, 19:08:20 Operator: fouads
Sample : op6902-msd Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 6:21 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 07:19:55 2024
Response via : Multiple Level Calibration




QEdit

(21) PETN

0.00min 0.000ppb

response 0

(21) PETN #2

18.39min 546.564ppb m

response 737084

(+) = Expected Retention Time
BB085961.D BBB2589_091224.M Wed Dec 18 07:59:23 2024

Manual Integrations APPROVED (compounds with "m" flag)
William Hustedde 09/19/24 15:28

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1A.ch
Acq On : 12-Sep-2024, 08:17:03 Operator: fouads
Sample : ic2589-20 Inst : G1315B
Misc : op5264,GBB2589,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54:37 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Initial Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 15) S | 3,4-Dinitrotolue | 11.72 | 11.73 | 69330 | 118419 | 29.272 | 30.580 |
| | Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 5.85%# | 6.12%# |
| | Target Compounds | | | | | | |
| 1) | TNX | 1.38 | 1.37 | 37987 | 61457 | 9.896 | 10.481 |
| 2) | HMX | 1.52 | 1.52 | 76340 | 301944 | 53.247 | 75.515 # |
| 3) | DNX | 1.78 | 1.78 | 73102 | 132342 | 22.895 | 26.368 |
| 4) | MNX | 2.42 | 2.42 | 86490 | 124291 | 29.299 | 27.299 |
| 5) | RDX | 3.07 | 3.07 | 48525 | 86372 | 27.244 | 30.112 |
| 6) | 1,3,5-Trinitrobe | 4.87 | 4.87 | 114459 | 166624 | 28.481 | 27.312m |
| 7) | 1,3-Dinitrobenze | 6.13 | 6.12 | 148113 | 106326 | 28.848 | 29.497m |
| 8) | 3,5-Dinitroanili | 6.60 | 6.59 | 113302 | 180493 | 29.440 | 27.242m |
| 9) | Nitrobenzene | 7.77 | 7.78 | 79534 | 87804 | 27.073 | 30.533 |
| 10) | Nitroglycerin | 0.00 | 9.30 | 0 | 42040 | N.D. d | 35.123 |
| 11) | Tetryl | 9.92 | 9.91 | 87036 | 123877 | 30.761 | 26.118 |
| 12) | 2,4,6-Trinitroto | 10.30 | 10.30 | 108602 | 121913 | 28.989 | 28.166 |
| 13) | 2-Amino-4,6-Dini | 10.89 | 10.90 | 107405 | 111340 | 34.815 | 23.997 |
| 14) | 4-Amino-2,6-Dini | 11.40 | 11.40 | 71159 | 114415 | 31.249 | 24.756 |
| 16) | 2,4-Dinitrotolue | 12.40 | 12.43 | 144247 | 80942 | 30.703 | 26.925 |
| 17) | 2,6-Dinitrotolue | 12.84 | 12.86 | 76995 | 68982 | 29.150 | 20.856 |
| 18) | o-Nitrotoluene | 15.90 | 15.99 | 57492 | 61001 | 26.909 | 22.224m |
| 19) | p-Nitrotoluene | 16.45 | 16.44 | 90447 | 70674 | 28.012 | 26.919m |
| 20) | m-Nitrotoluene | 17.19 | 17.27 | 90948 | 89744 | 30.209 | 25.628m |
| 21) | PETN | 0.00 | 18.66 | 0 | 27608 | N.D. | 21.156m# |

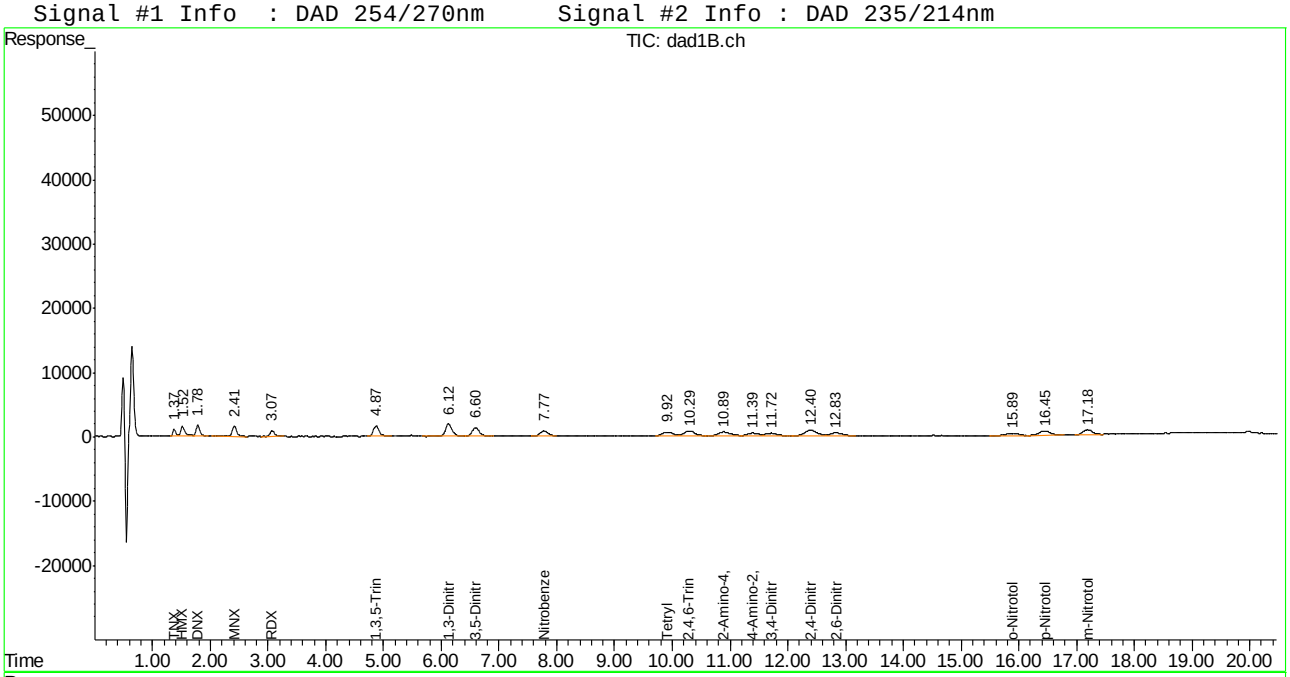
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.

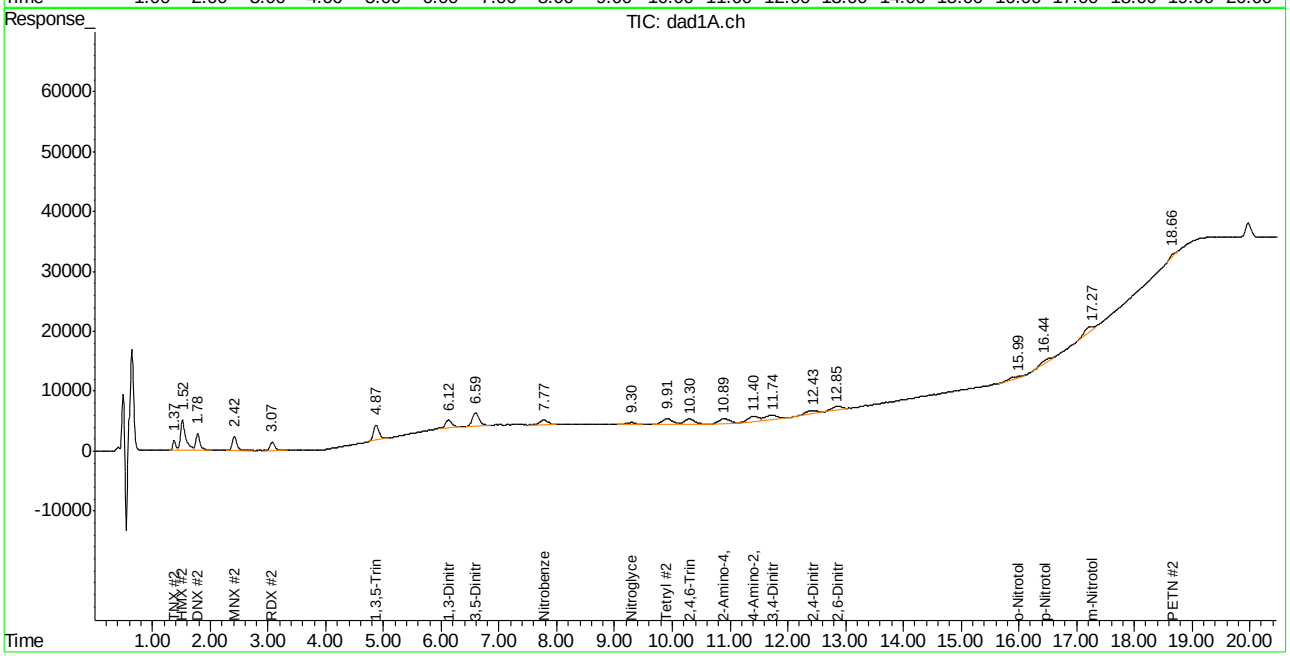
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1A.ch
Acq On : 12-Sep-2024, 08:17:03 Operator: fouads
Sample : ic2589-20 Inst : G1315B
Misc : op5264,GBB2589,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:56 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm



# Manual Integration Approval Summary



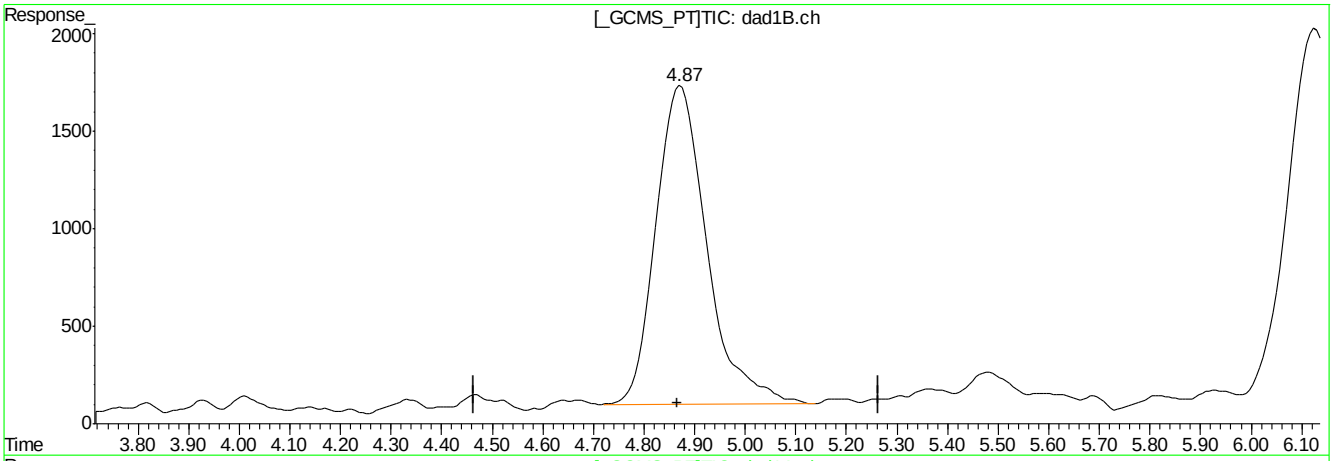
**Sample Number:** GBB2589-IC2589
**Lab FileID:** BB084346.D
**Injection Time:** 09/12/24 08:17
**Method:** SW846 8330B
**Analyst approved:** 09/16/24 15:05 Fouad Sekkar
**Supervisor approved:** 09/19/24 15:28 William Hustedde

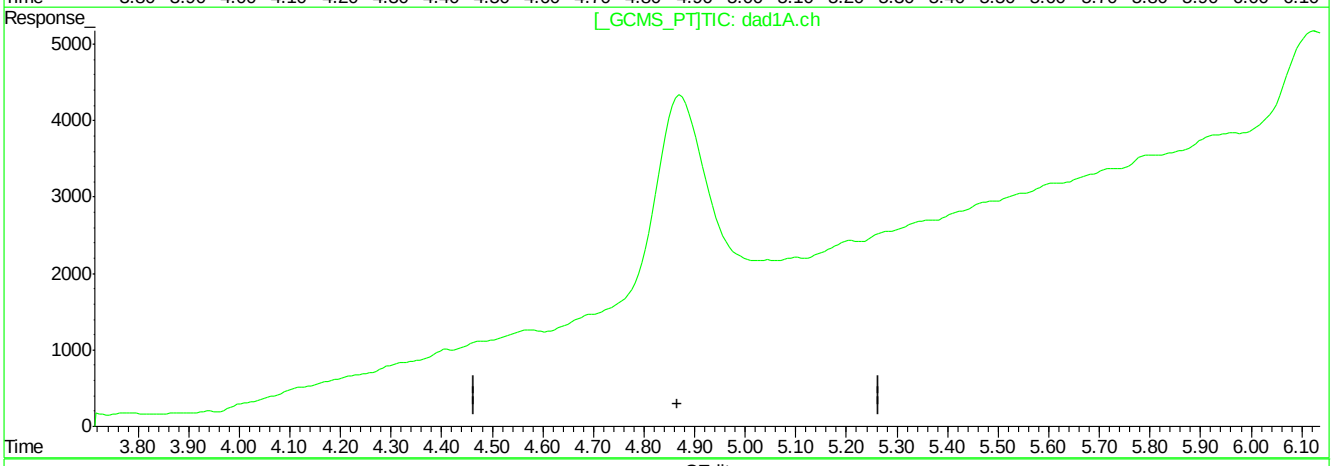
| Parameter | CAS | Sig# | R.T. (min.) | Reason |
|---|---|---|---|---|
| 1,3,5-Trinitrobenzene | 99-35-4 | 2 | 4.87 | Poor instrument integration |
| 1,3-Dinitrobenzene | 99-65-0 | 2 | 6.12 | Poor instrument integration |
| 3,5-Dinitroaniline | 618-87-1 | 2 | 6.59 | Poor instrument integration |
| o-Nitrotoluene | 88-72-2 | 2 | 15.99 | Poor instrument integration |
| p-Nitrotoluene | 99-99-0 | 2 | 16.44 | Poor instrument integration |
| m-Nitrotoluene | 99-08-1 | 2 | 17.27 | Poor instrument integration |
| PETN | 78-11-5 | 2 | 18.66 | Poor instrument integration |

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1A.ch
Acq On : 12-Sep-2024, 08:17:03 Operator: fouads
Sample : ic2589-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(6) 1,3,5-Trinitrobenzene

4.87min 28.481ppb

response 114459

(6) 1,3,5-Trinitrobenzene #2

0.00min 0.000ppb

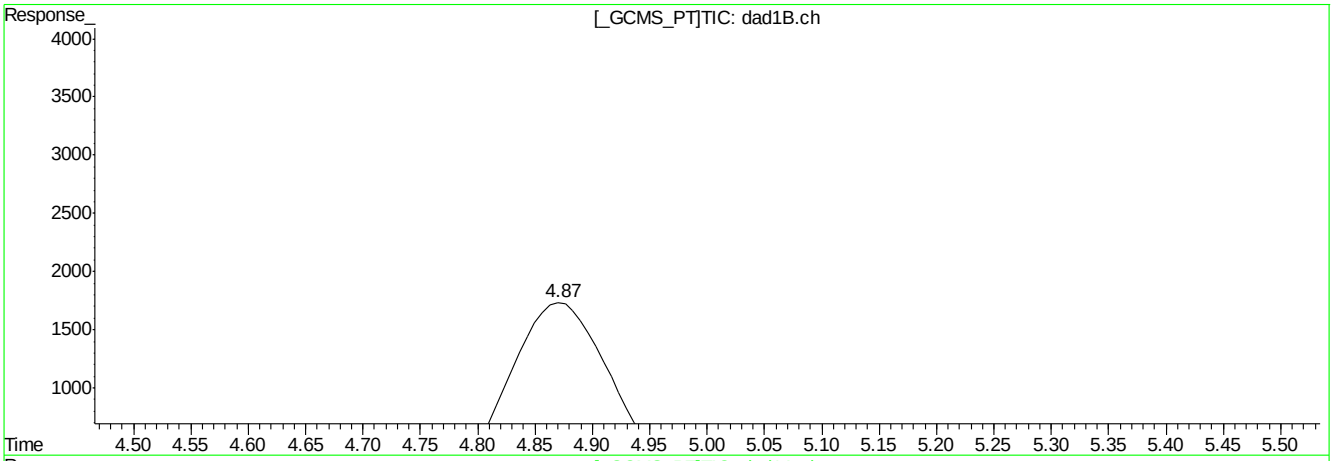
response 0

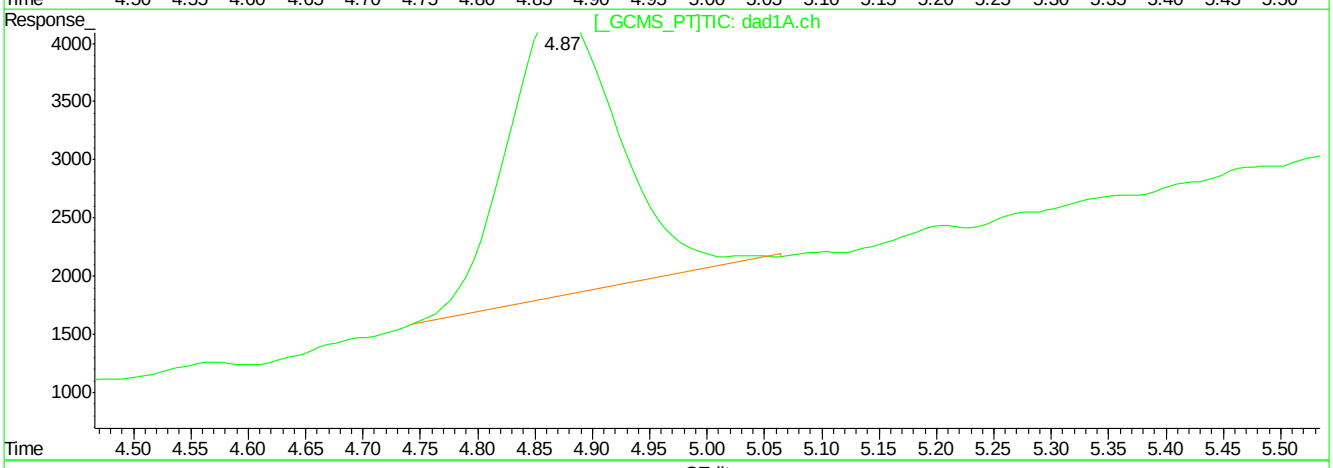
(+) = Expected Retention Time
BB084346.D BBB2589_091224.M Thu Sep 12 11:55:15 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1A.ch
Acq On : 12-Sep-2024, 08:17:03 Operator: fouads
Sample : ic2589-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(6) 1,3,5-Trinitrobenzene

4.87min 28.481ppb

response 114459

(6) 1,3,5-Trinitrobenzene #2

4.87min 27.312ppb m

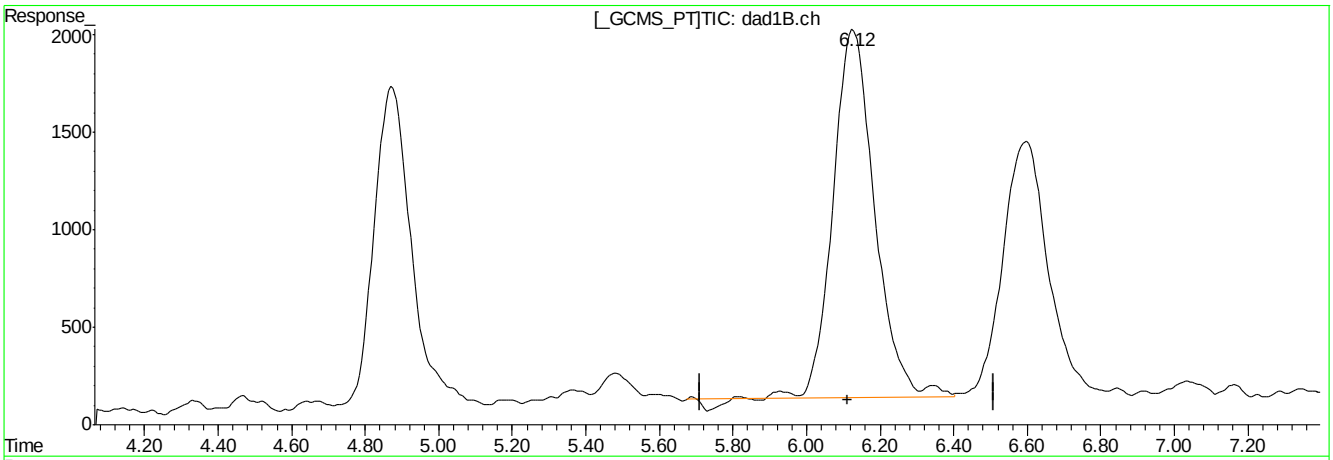
response 166624

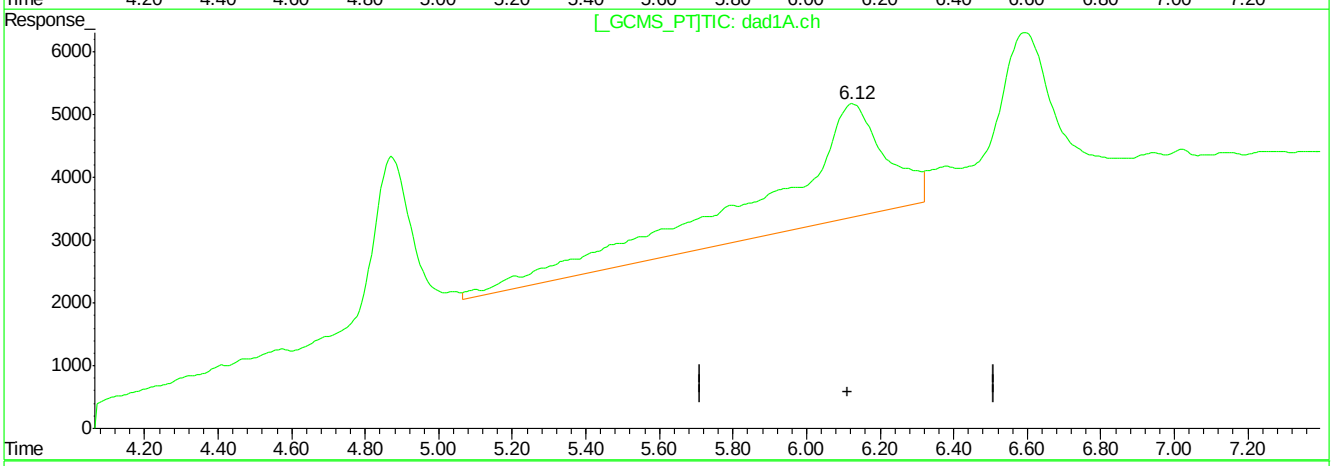
(+) = Expected Retention Time
BB084346.D BBB2589_091224.M Thu Sep 12 11:55:24 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1A.ch
Acq On : 12-Sep-2024, 08:17:03 Operator: fouads
Sample : ic2589-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(7) 1,3-Dinitrobenzene

6.13min 28.848ppb

response 148113

(7) 1,3-Dinitrobenzene #2

6.13min 115.305ppb

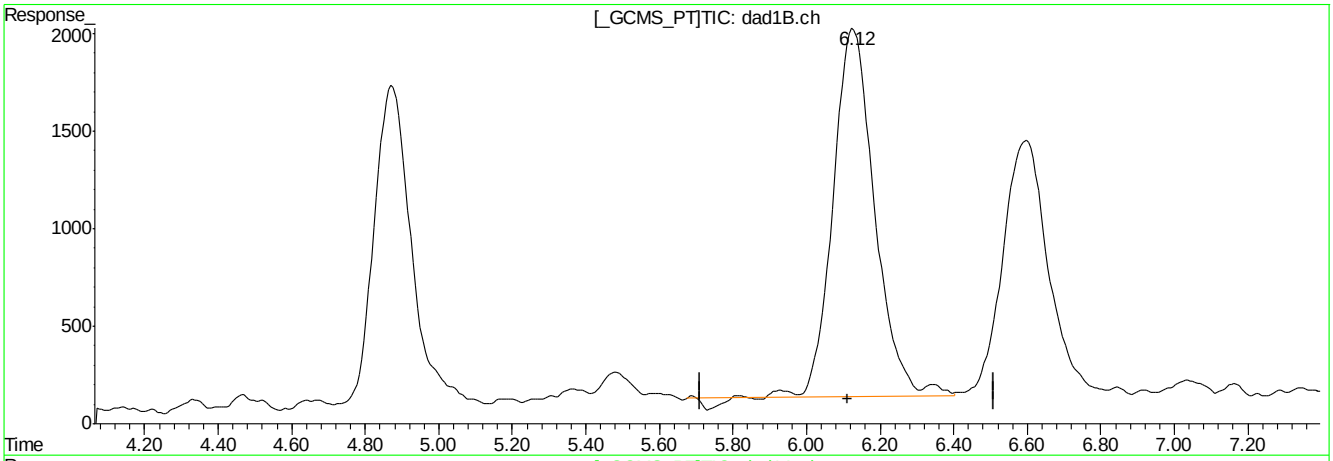
response 415629

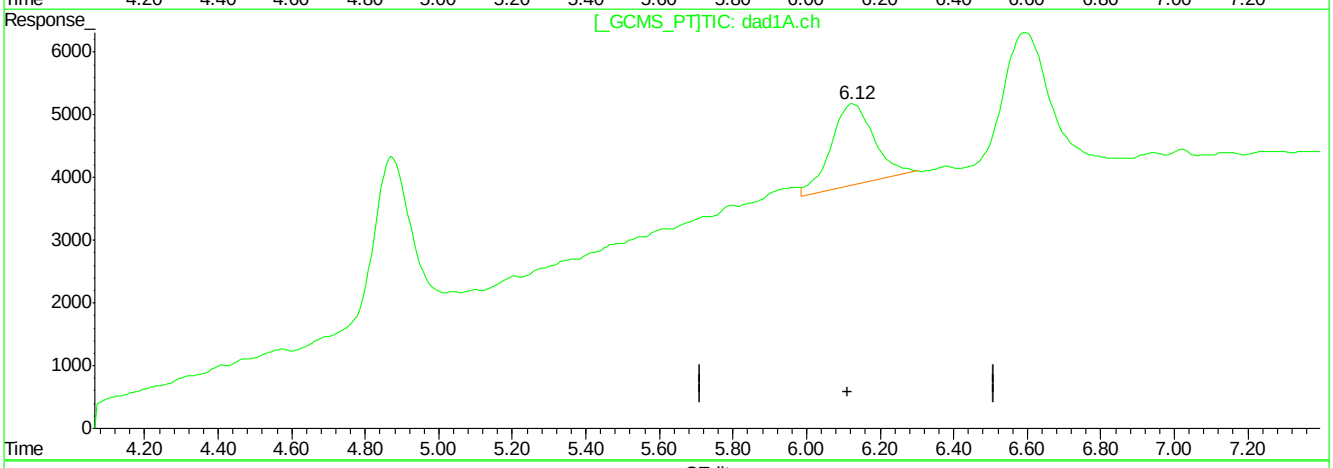
(+) = Expected Retention Time
BB084346.D BBB2589_091224.M Thu Sep 12 11:55:28 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1A.ch
Acq On : 12-Sep-2024, 08:17:03 Operator: fouads
Sample : ic2589-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(7) 1,3-Dinitrobenzene

6.13min 28.848ppb

response 148113

(7) 1,3-Dinitrobenzene #2

6.12min 29.497ppb m

response 106326

(+) = Expected Retention Time
BB084346.D BBB2589_091224.M Thu Sep 12 11:55:34 2024

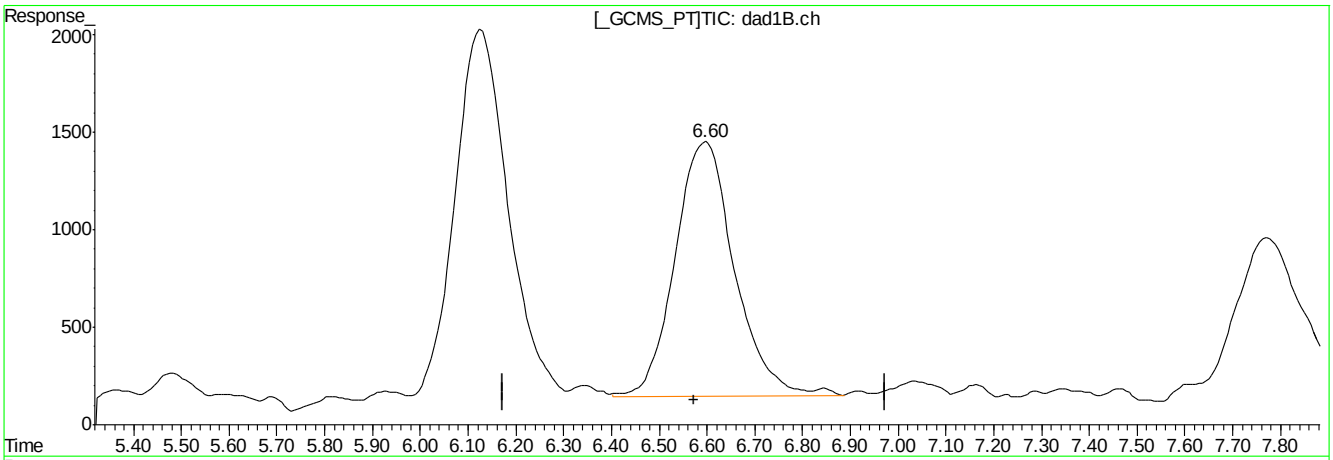


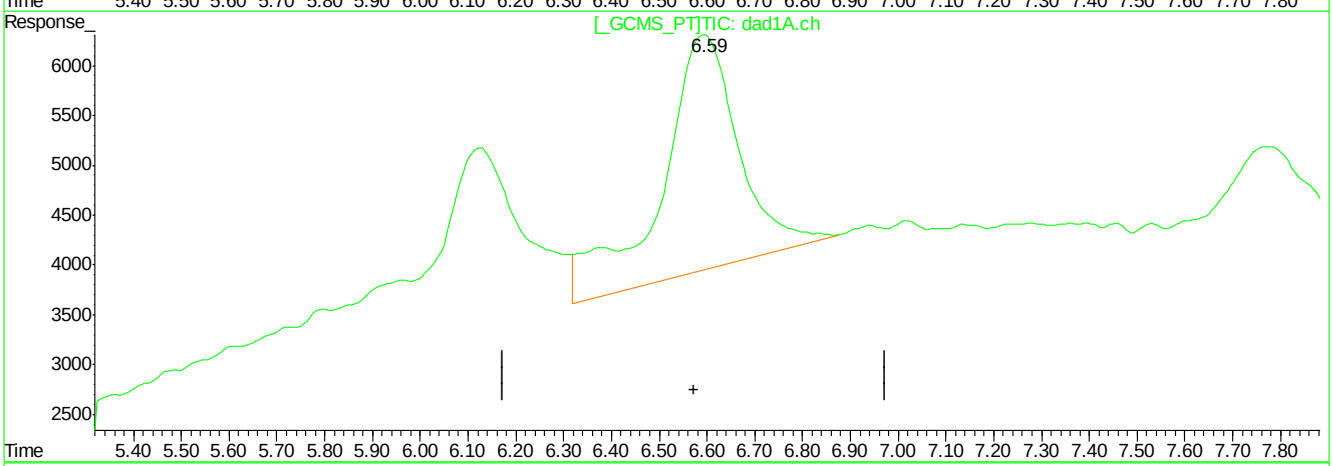
BB084346.D edits: 1,3-Dinitrobenzene

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1A.ch
Acq On : 12-Sep-2024, 08:17:03 Operator: fouads
Sample : ic2589-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(8) 3,5-Dinitroaniline

6.60min 29.440ppb

response 113302

(8) 3,5-Dinitroaniline #2

6.60min 40.017ppb

response 265140

(+) = Expected Retention Time
BB084346.D BBB2589_091224.M Thu Sep 12 11:55:39 2024

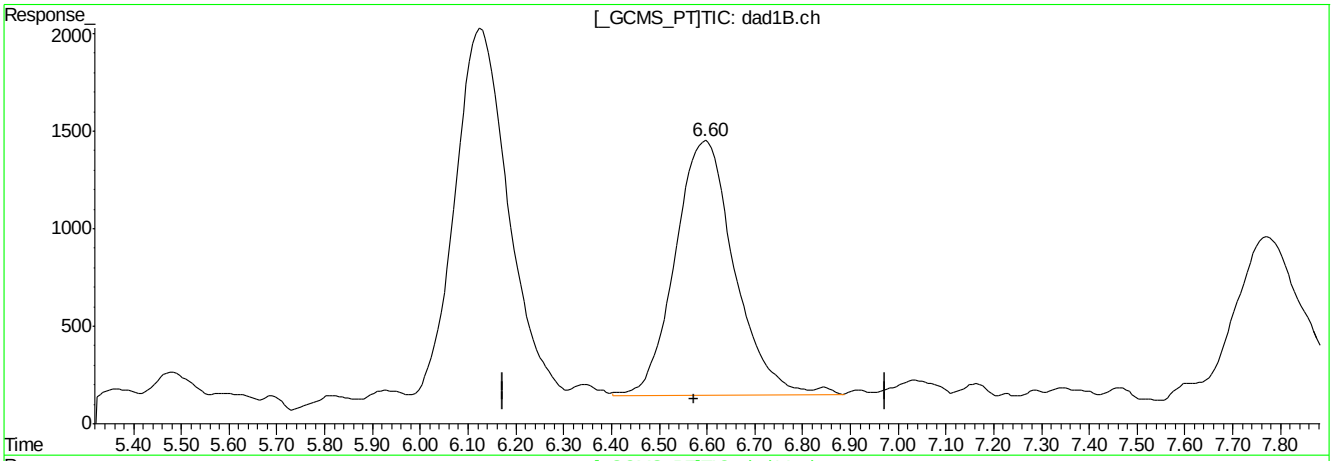


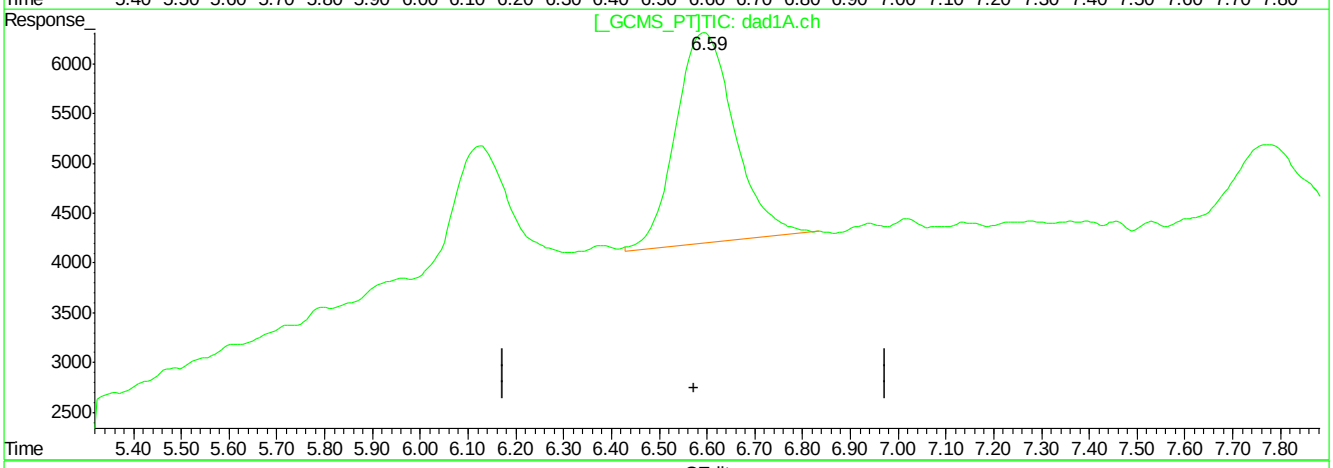
BB084346.D edits: 3,5-Dinitroaniline

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1A.ch
Acq On : 12-Sep-2024, 08:17:03 Operator: fouads
Sample : ic2589-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(8) 3,5-Dinitroaniline

6.60min 29.440ppb

response 113302

(8) 3,5-Dinitroaniline #2

6.59min 27.242ppb m

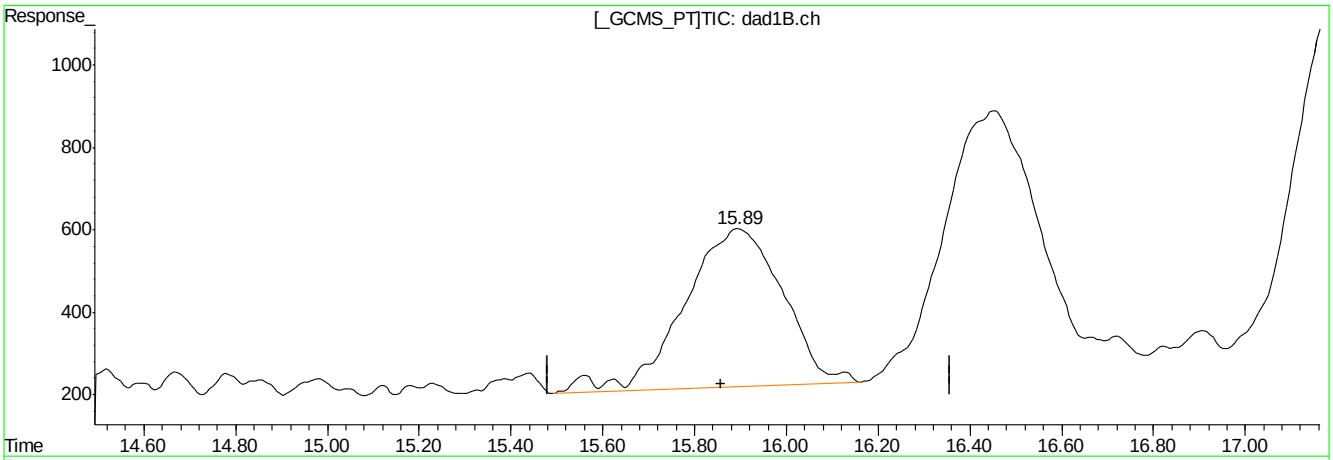
response 180493

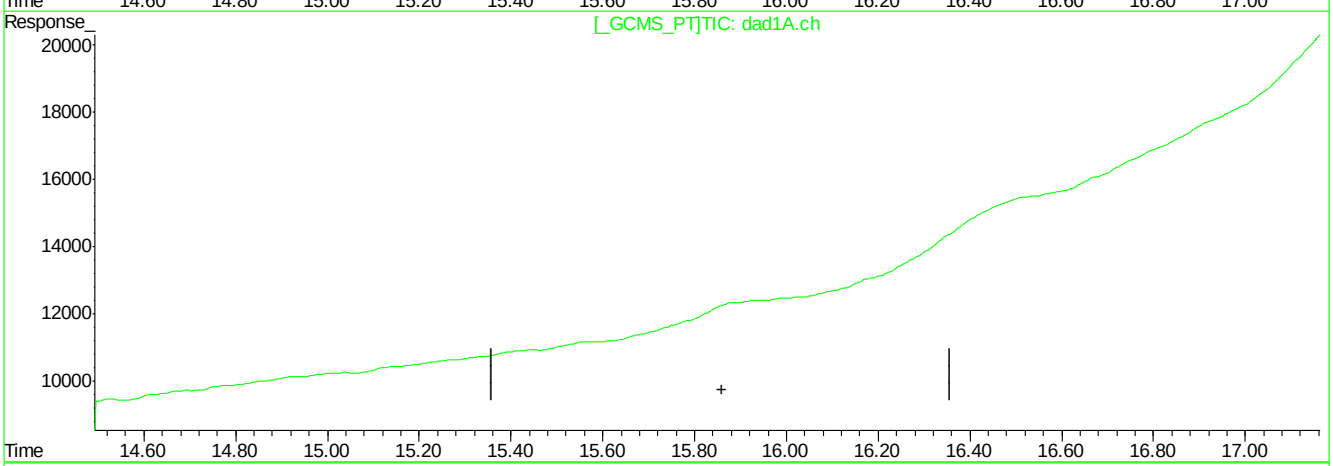
(+) = Expected Retention Time
BB084346.D BBB2589_091224.M Thu Sep 12 11:55:44 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1A.ch
Acq On : 12-Sep-2024, 08:17:03 Operator: fouads
Sample : ic2589-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(18) o-Nitrotoluene

15.90min 26.909ppb

response 57492

(18) o-Nitrotoluene #2

0.00min 0.000ppb

response 0

(+) = Expected Retention Time
BB084346.D BBB2589_091224.M Thu Sep 12 11:56:08 2024

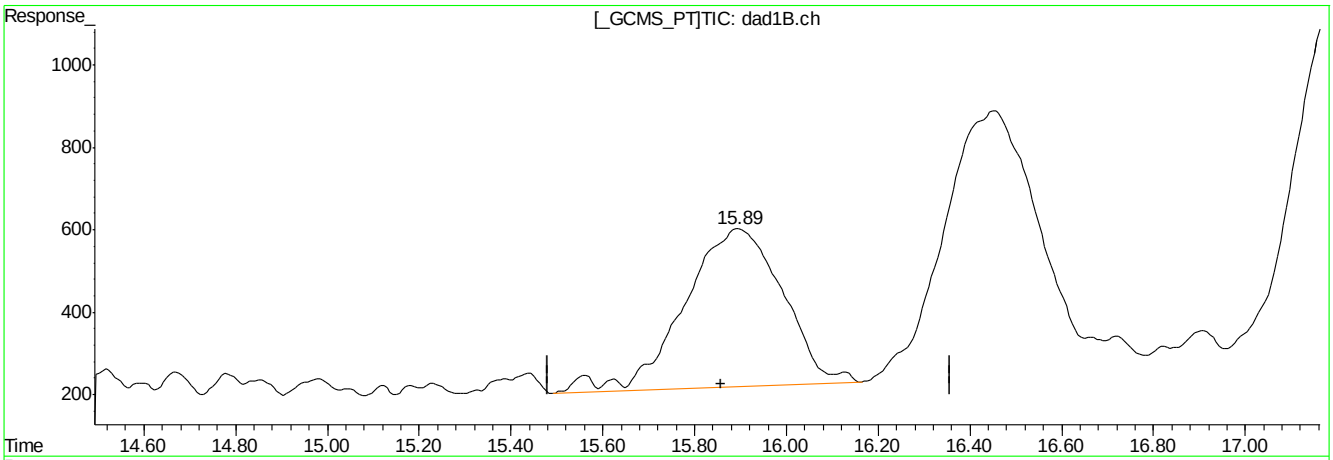


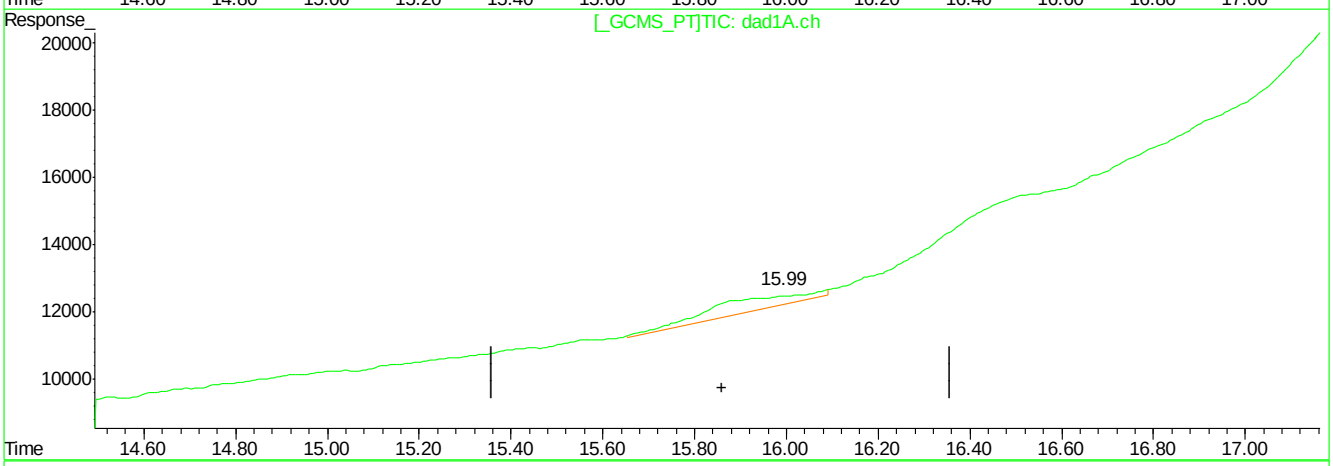
BB084346.D edits: o-Nitrotoluene

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1A.ch
Acq On : 12-Sep-2024, 08:17:03 Operator: fouads
Sample : ic2589-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(18) o-Nitrotoluene

15.90min 26.909ppb

response 57492

(18) o-Nitrotoluene #2

15.99min 22.224ppb m

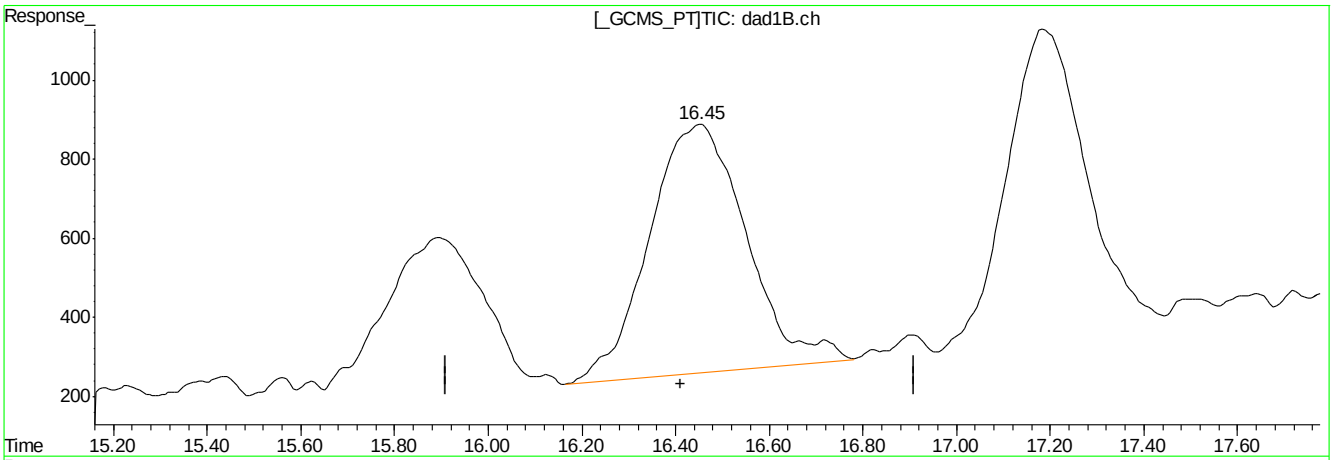
response 61001

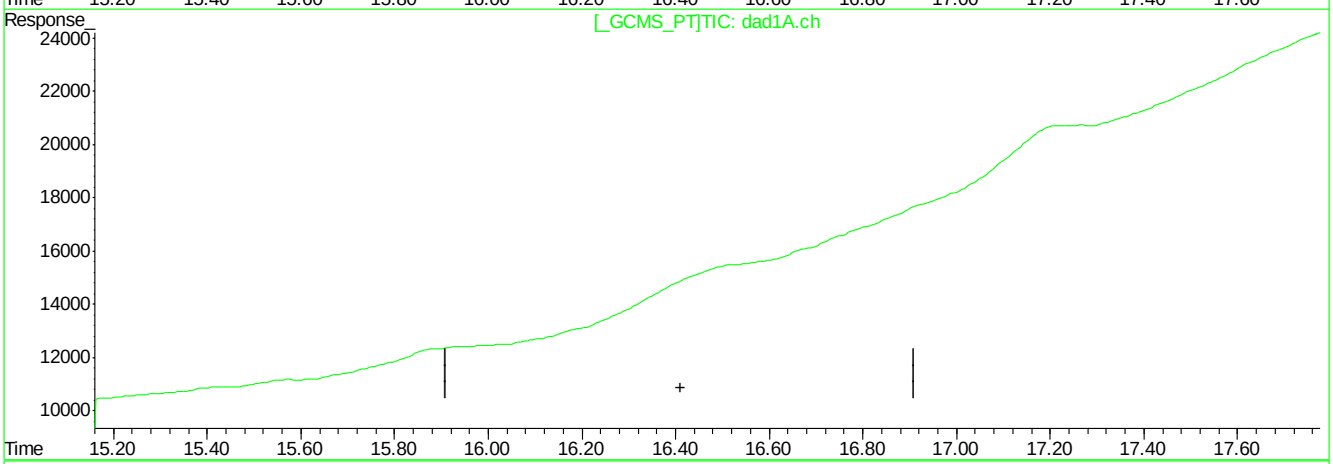
(+) = Expected Retention Time
BB084346.D BBB2589_091224.M Thu Sep 12 11:56:16 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1A.ch
Acq On : 12-Sep-2024, 08:17:03 Operator: fouads
Sample : ic2589-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(19) p-Nitrotoluene

16.45min 28.012ppb

response 90447

(19) p-Nitrotoluene #2

0.00min 0.000ppb

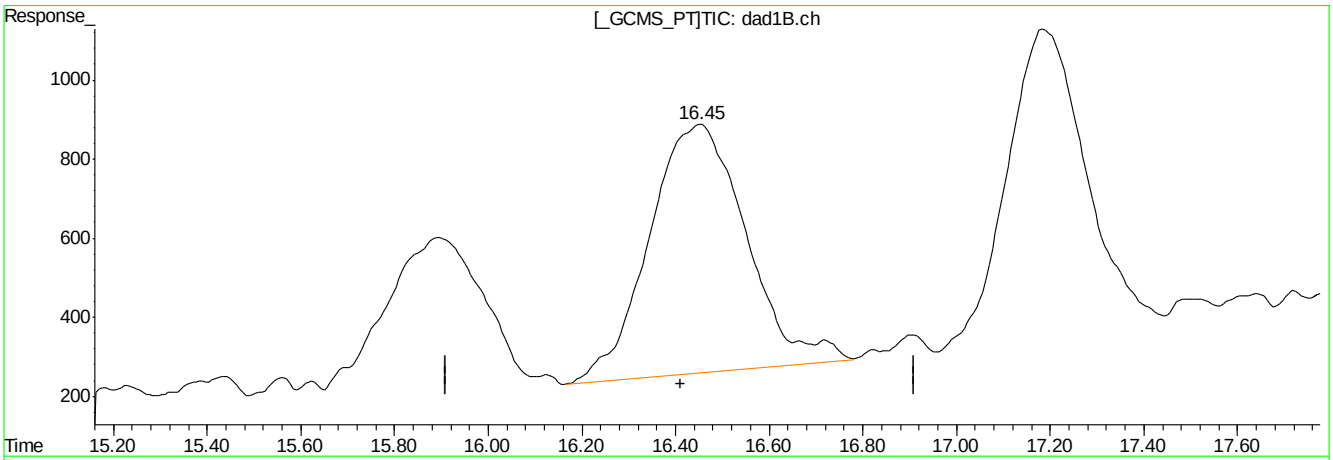
response 0

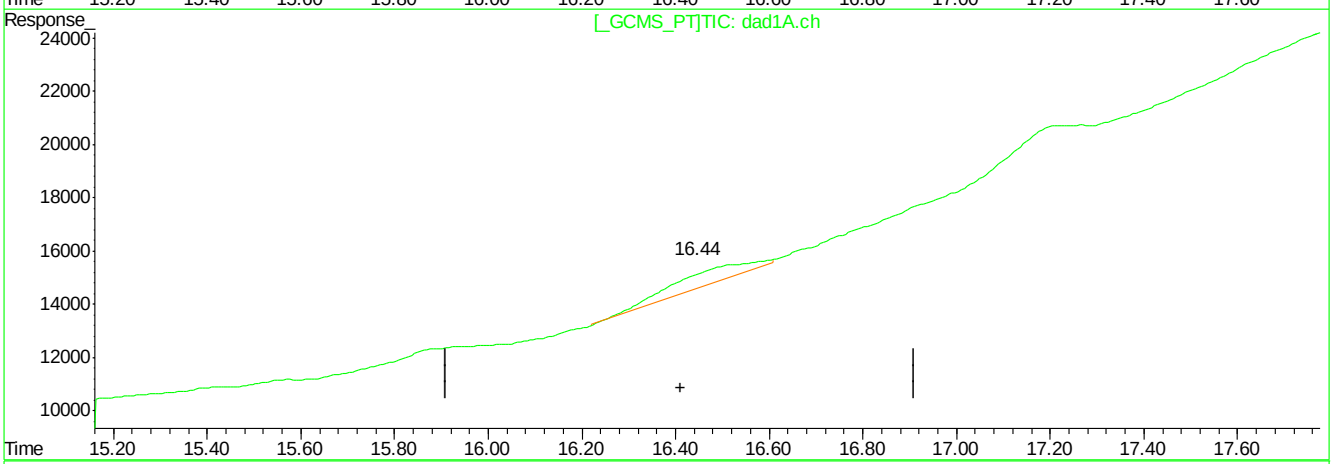
(+) = Expected Retention Time
BB084346.D BBB2589_091224.M Thu Sep 12 11:56:20 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1A.ch
Acq On : 12-Sep-2024, 08:17:03 Operator: fouads
Sample : ic2589-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(19) p-Nitrotoluene

16.45min 28.012ppb

response 90447

(19) p-Nitrotoluene #2

16.44min 26.919ppb m

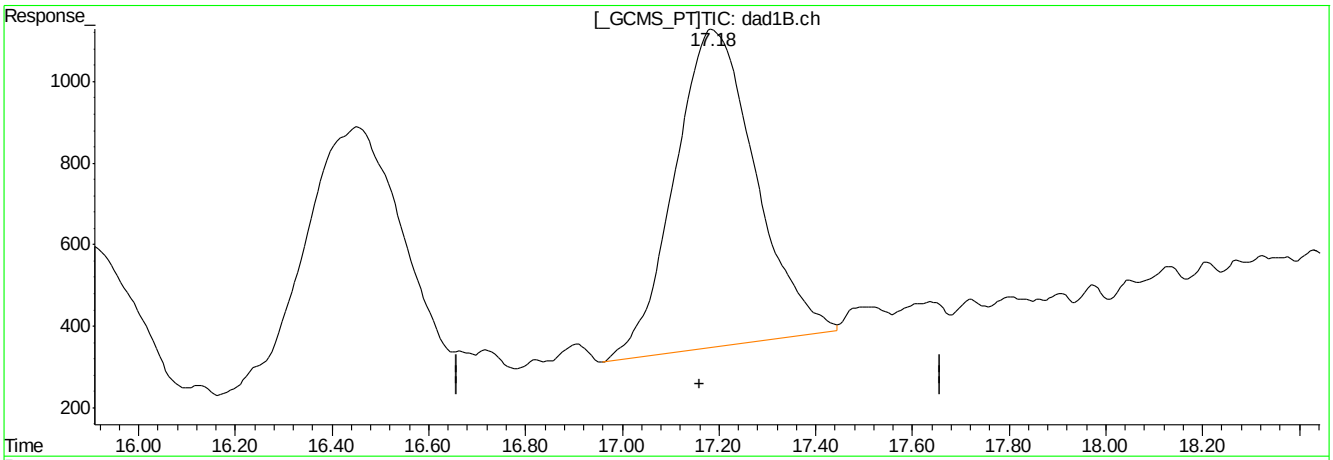
response 70674

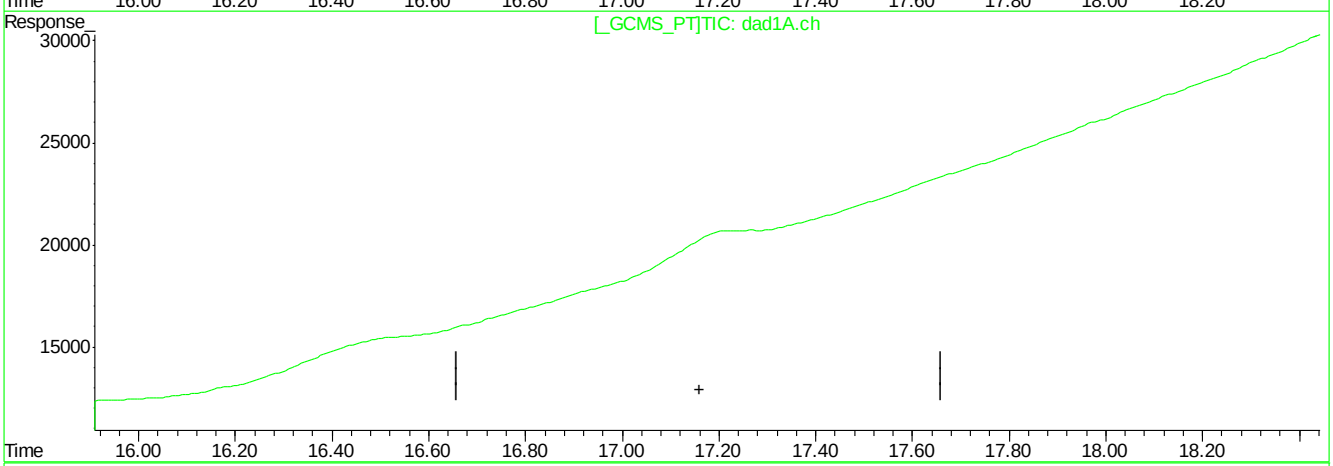
(+) = Expected Retention Time
BB084346.D BBB2589_091224.M Thu Sep 12 11:56:27 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1A.ch
Acq On : 12-Sep-2024, 08:17:03 Operator: fouads
Sample : ic2589-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(20) m-Nitrotoluene

17.19min 30.209ppb

response 90948

(20) m-Nitrotoluene #2

0.00min 0.000ppb

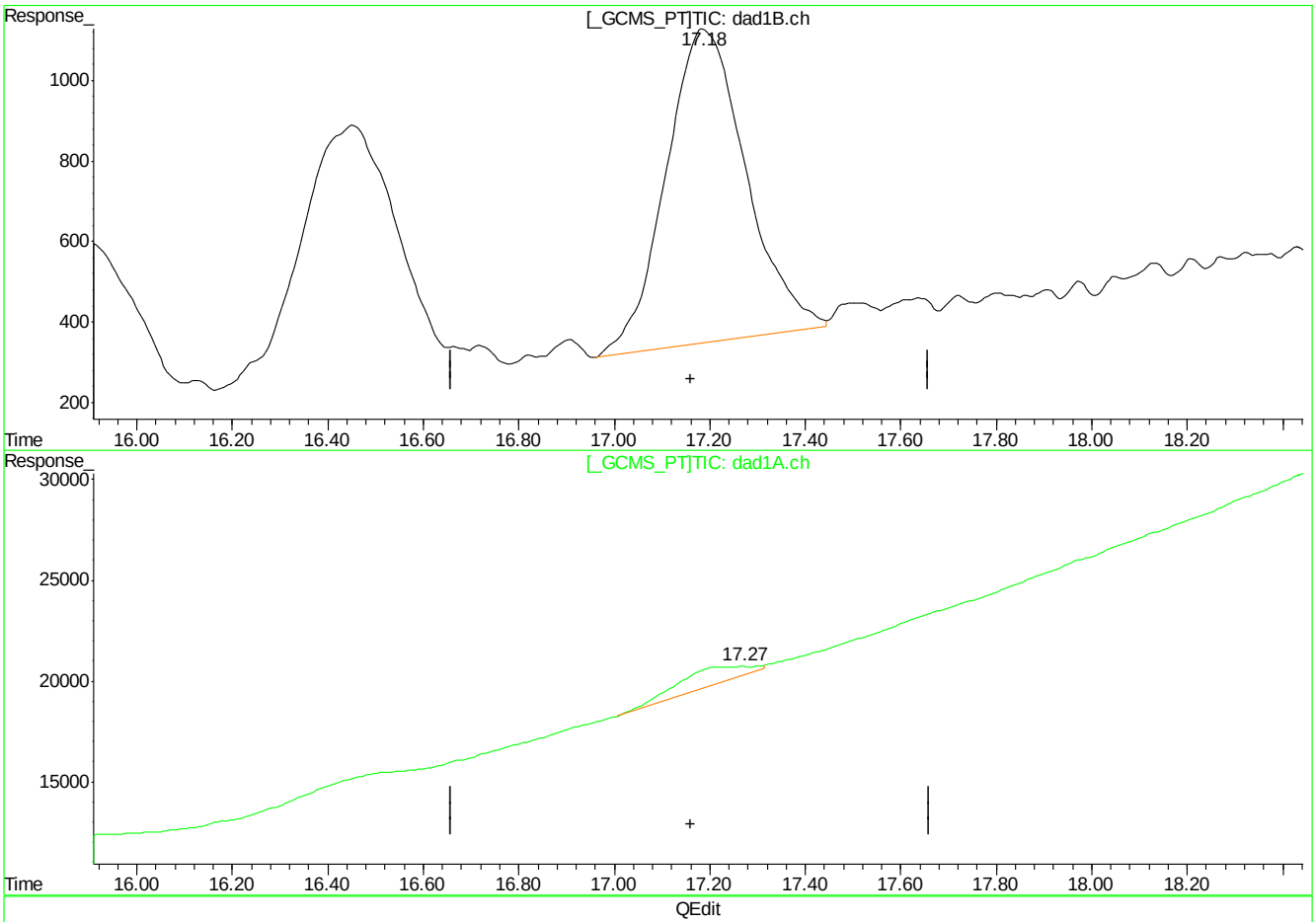
response 0

(+) = Expected Retention Time
BB084346.D BBB2589_091224.M Thu Sep 12 11:56:31 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1A.ch
Acq On : 12-Sep-2024, 08:17:03 Operator: fouads
Sample : ic2589-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




(20) m-Nitrotoluene

17.19min 30.209ppb

response 90948

(20) m-Nitrotoluene #2

17.27min 25.628ppb m

response 89744

(+) = Expected Retention Time
BB084346.D BBB2589_091224.M Thu Sep 12 11:56:36 2024

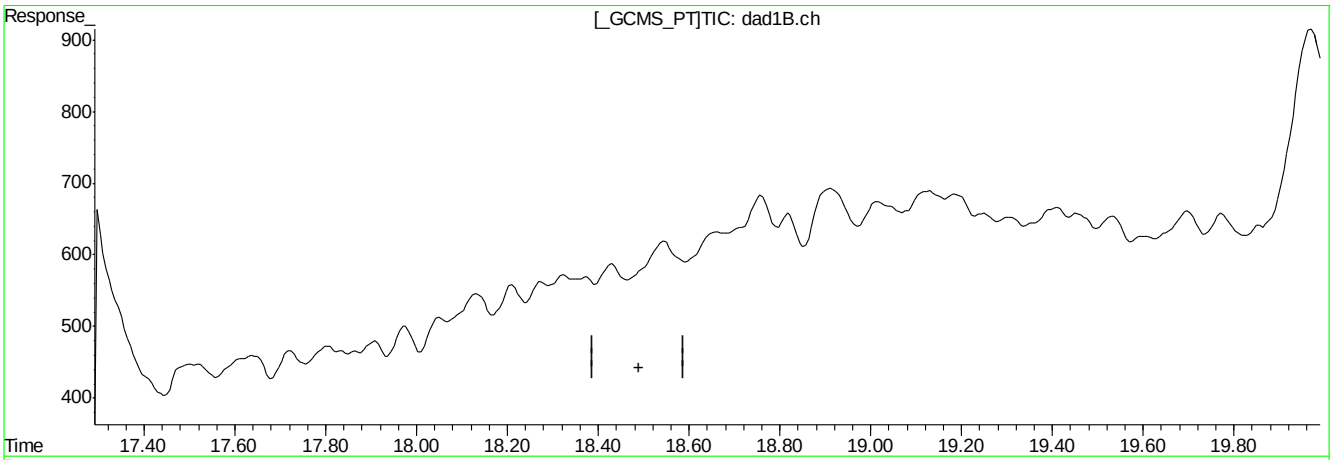


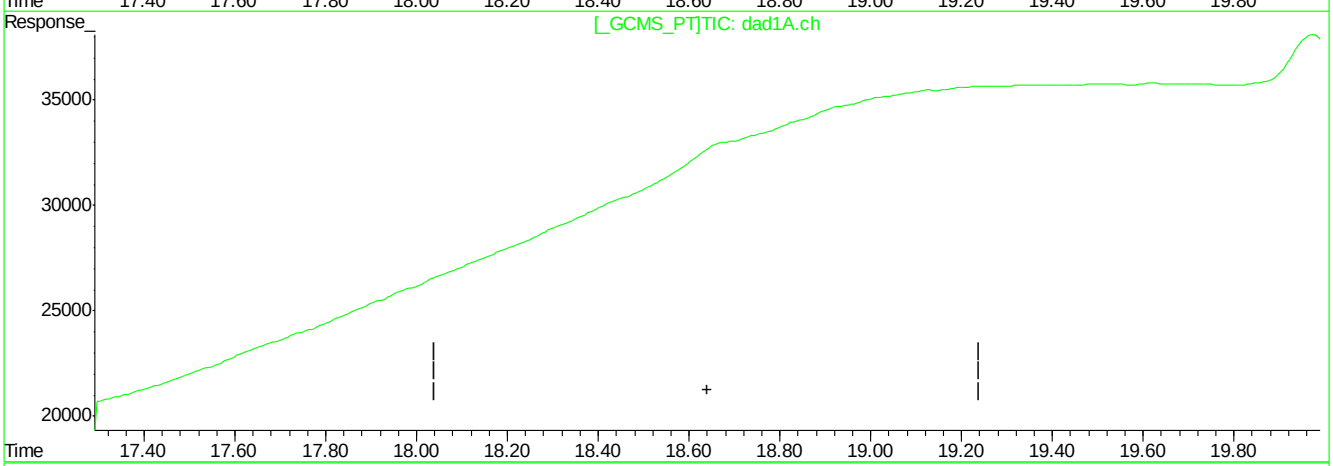
BB084346.D edits: m-Nitrotoluene

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1A.ch
Acq On : 12-Sep-2024, 08:17:03 Operator: fouads
Sample : ic2589-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(21) PETN

0.00min 0.000ppb

response 0

(21) PETN #2

0.00min 0.000ppb

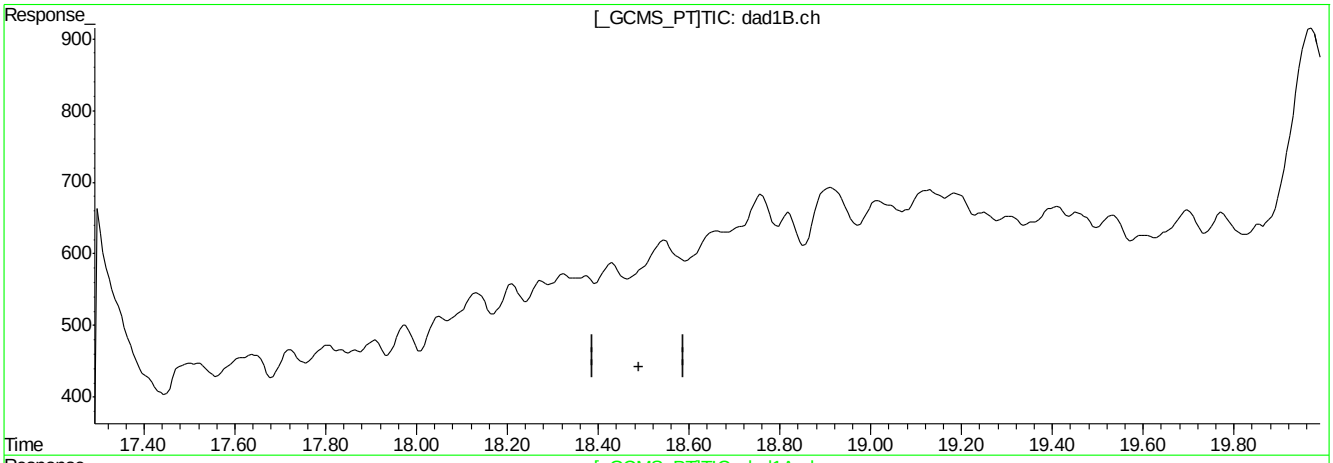
response 0

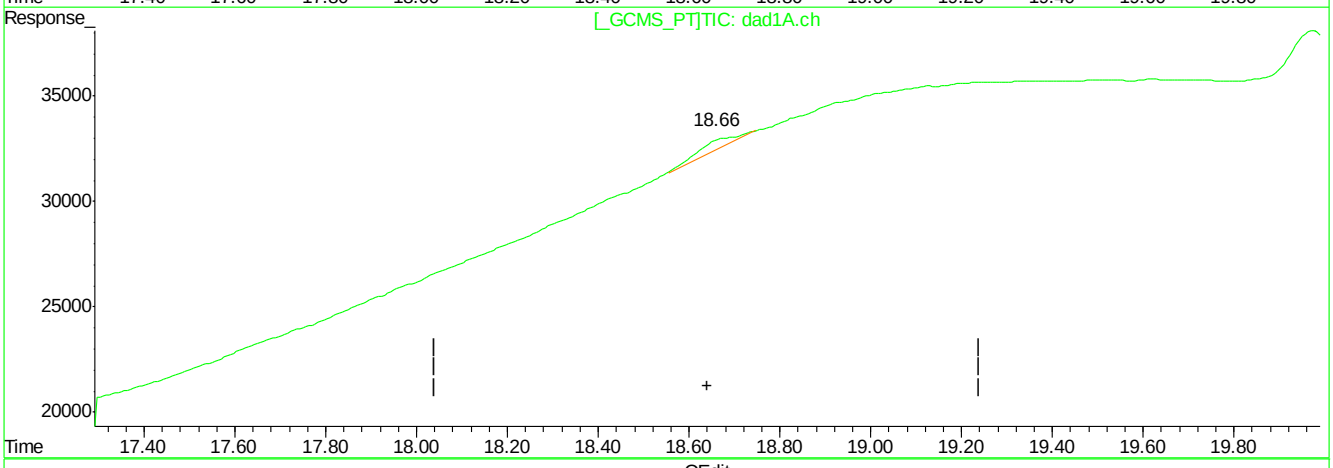
(+) = Expected Retention Time
BB084346.D BBB2589_091224.M Thu Sep 12 11:56:41 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084346.D\dad1A.ch
Acq On : 12-Sep-2024, 08:17:03 Operator: fouads
Sample : ic2589-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(21) PETN

0.00min 0.000ppb

response 0

(21) PETN #2

18.66min 21.156ppb m

response 27608

(+) = Expected Retention Time
BB084346.D BBB2589_091224.M Thu Sep 12 11:56:54 2024

Manual Integrations APPROVED (compounds with "m" flag)
William Hustedde 09/19/24 15:28

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1A.ch
Acq On : 12-Sep-2024, 08:43:29 Operator: fouads
Sample : ic2589-50 Inst : G1315B
Misc : op5264,GBB2589,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54:38 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Initial Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 15) S | 3,4-Dinitrotolue | 11.70 | 11.72 | 114020 | 184754 | 48.141 | 47.710 |
| | Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 9.63%# | 9.54%# |
| | Target Compounds | | | | | | |
| 1) | TNX | 1.38 | 1.38 | 64238 | 113500 | 16.734 | 19.357 |
| 2) | HMX | 1.53 | 1.53 | 93838 | 315024 | 65.452 | 78.786 |
| 3) | DNX | 1.79 | 1.79 | 125582 | 209094 | 39.331 | 41.660 |
| 4) | MNX | 2.42 | 2.42 | 139811 | 214612 | 47.361 | 47.136 |
| 5) | RDX | 3.08 | 3.08 | 99251 | 151512 | 55.723 | 52.821 |
| 6) | 1,3,5-Trinitrobe | 4.88 | 4.88 | 209100 | 324488 | 52.031 | 53.188m |
| 7) | 1,3-Dinitrobenze | 6.13 | 6.13 | 278675 | 199303 | 54.277 | 55.291m |
| 8) | 3,5-Dinitroanili | 6.59 | 6.59 | 211543 | 334513 | 54.966 | 50.487m |
| 9) | Nitrobenzene | 7.77 | 7.78 | 161091 | 188628 | 54.835 | 65.594 |
| 10) | Nitroglycerin | 0.00 | 9.30 | 0 | 82946 | N.D. d | 69.299 |
| 11) | Tetryl | 9.91 | 9.91 | 161690 | 243528 | 57.146 | 51.345 |
| 12) | 2,4,6-Trinitroto | 10.29 | 10.29 | 204766 | 235464 | 54.659 | 54.400 |
| 13) | 2-Amino-4,6-Dini | 10.90 | 10.90 | 176577 | 214017 | 57.237 | 46.126 |
| 14) | 4-Amino-2,6-Dini | 11.37 | 11.40 | 129970 | 211705 | 57.075 | 45.806 |
| 16) | 2,4-Dinitrotolue | 12.39 | 12.41 | 248627 | 122920 | 52.921 | 40.888 |
| 17) | 2,6-Dinitrotolue | 12.84 | 12.85 | 140771 | 158835 | 53.296 | 48.021 |
| 18) | o-Nitrotoluene | 15.88 | 15.89 | 113167 | 136202 | 52.966 | 49.622m |
| 19) | p-Nitrotoluene | 16.44 | 16.49 | 167313 | 150696 | 51.818 | 57.399m |
| 20) | m-Nitrotoluene | 17.18 | 17.20 | 172077 | 194705 | 57.156 | 55.601m |
| 21) | PETN | 0.00 | 18.68 | 0 | 67087 | N.D. | 51.409m# |

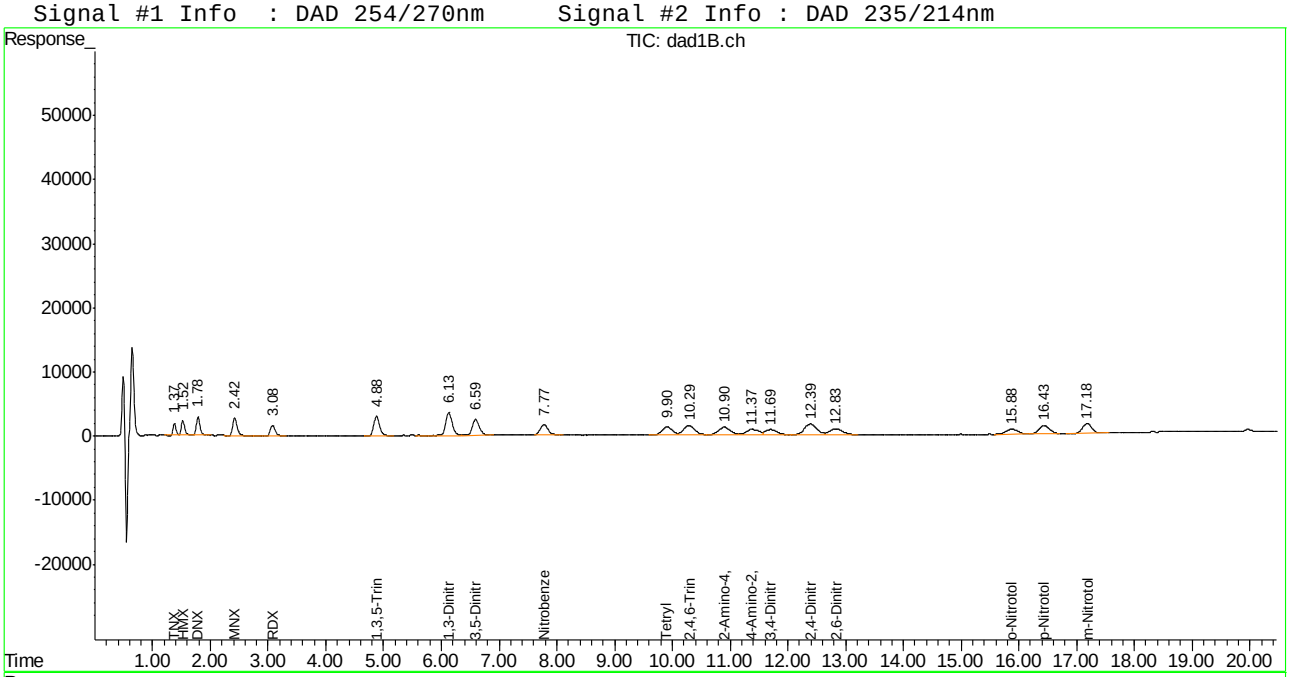
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
BB084347.D BBB2589_091224.M Mon Sep 16 14:49:34 2024 Page 1

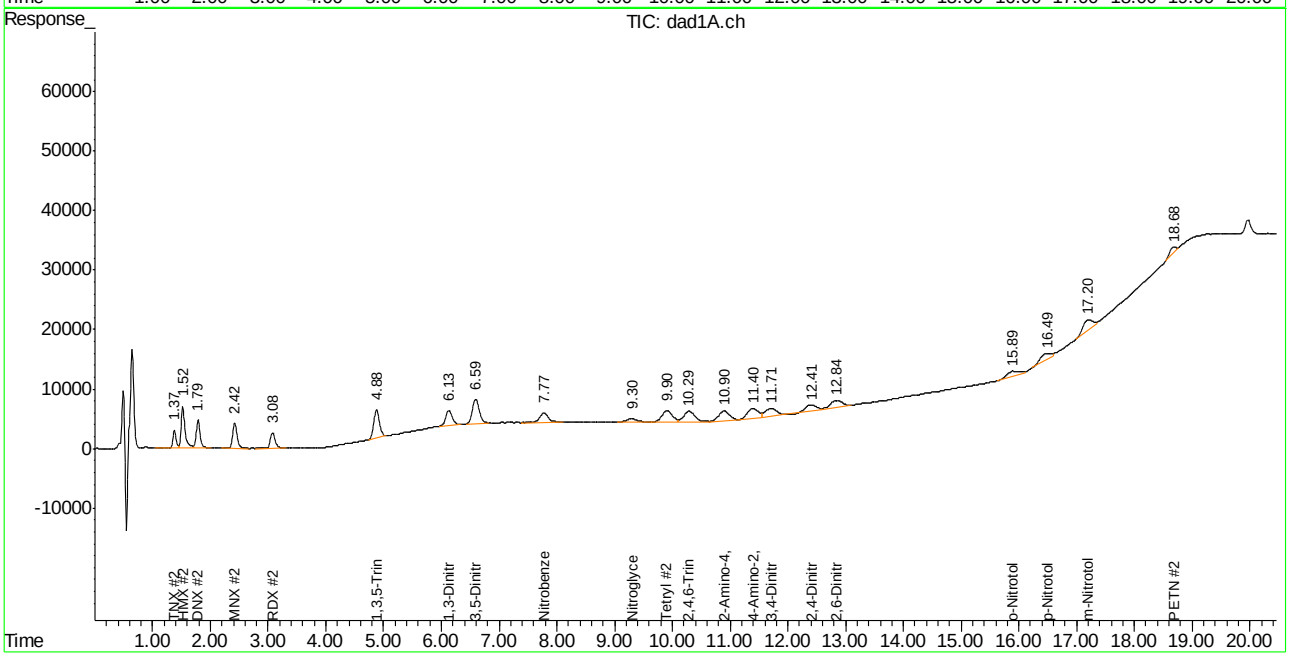
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1A.ch
Acq On : 12-Sep-2024, 08:43:29 Operator: fouads
Sample : ic2589-50 Inst : G1315B
Misc : op5264,GBB2589,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:59 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm



# Manual Integration Approval Summary



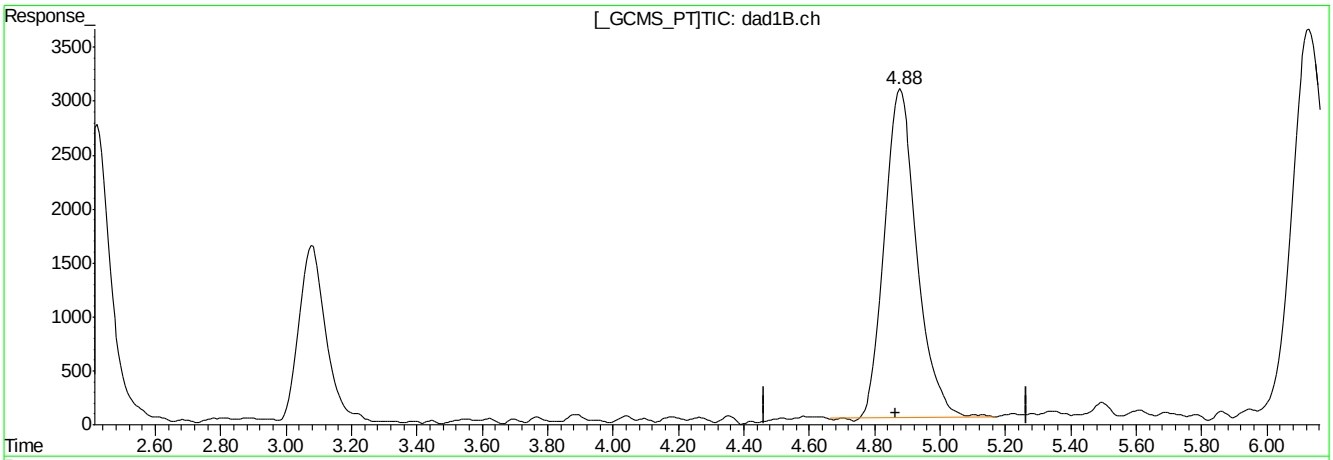
**Sample Number:** GBB2589-IC2589 **Method:** SW846 8330B
**Lab FileID:** BB084347.D **Analyst approved:** 09/16/24 15:05 Fouad Sekkar
**Injection Time:** 09/12/24 08:43 **Supervisor approved:** 09/19/24 15:28 William Hustedde

| Parameter | CAS | Sig# | R.T. (min.) | Reason |
|---|---|---|---|---|
| 1,3,5-Trinitrobenzene | 99-35-4 | 2 | 4.88 | Poor instrument integration |
| 1,3-Dinitrobenzene | 99-65-0 | 2 | 6.13 | Poor instrument integration |
| 3,5-Dinitroaniline | 618-87-1 | 2 | 6.59 | Poor instrument integration |
| o-Nitrotoluene | 88-72-2 | 2 | 15.89 | Poor instrument integration |
| p-Nitrotoluene | 99-99-0 | 2 | 16.49 | Poor instrument integration |
| m-Nitrotoluene | 99-08-1 | 2 | 17.20 | Poor instrument integration |
| PETN | 78-11-5 | 2 | 18.68 | Poor instrument integration |

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1A.ch
Acq On : 12-Sep-2024, 08:43:29 Operator: fouads
Sample : ic2589-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




(6) 1,3,5-Trinitrobenzene

4.88min 52.031ppb

response 209100

(6) 1,3,5-Trinitrobenzene #2

4.88min 3.586ppb

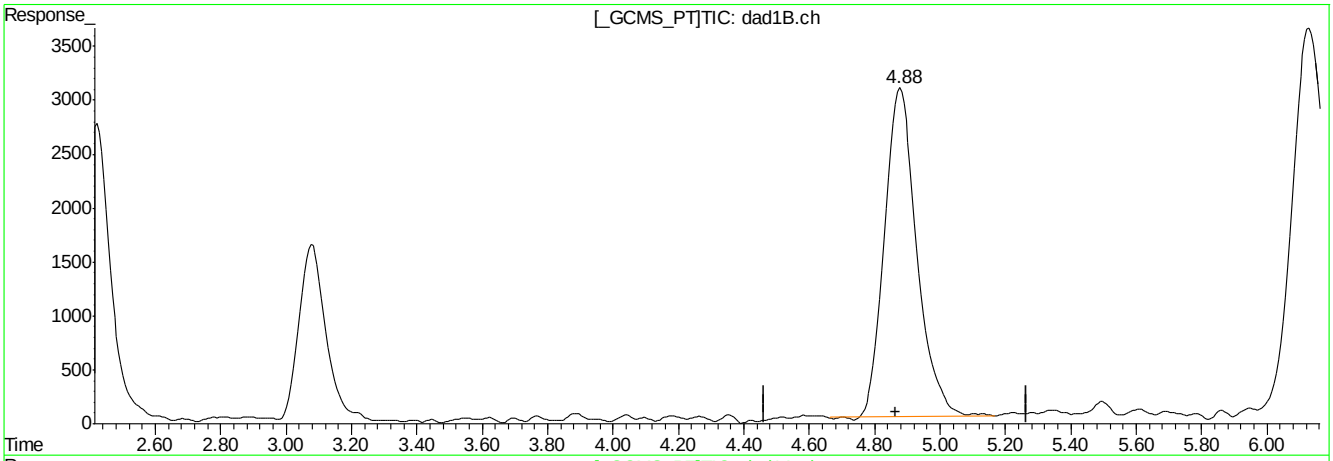
response 21876

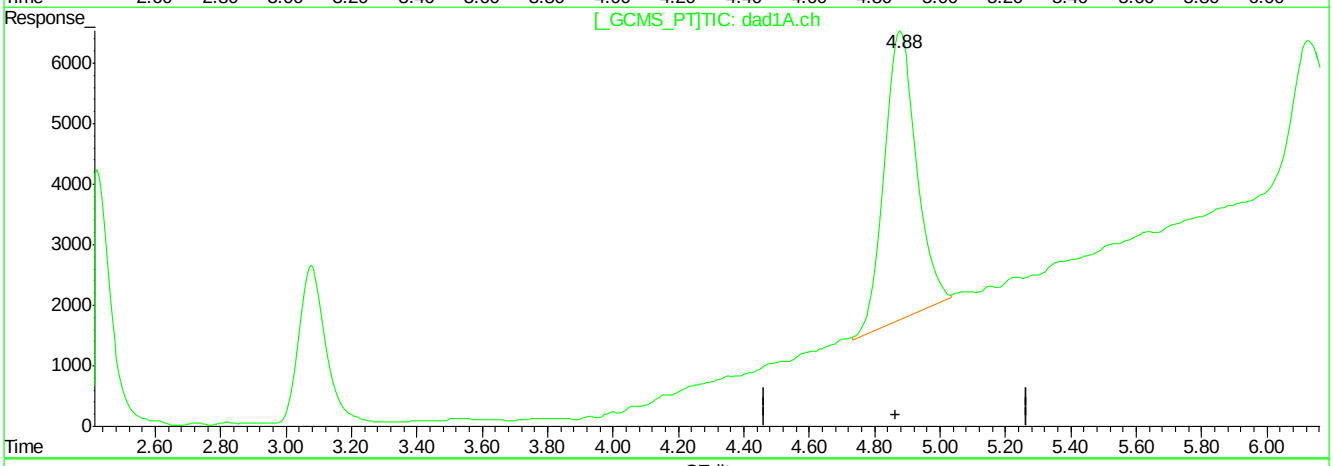
(+) = Expected Retention Time
BB084347.D BBB2589_091224.M Thu Sep 12 11:57:25 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1A.ch
Acq On : 12-Sep-2024, 08:43:29 Operator: fouads
Sample : ic2589-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(6) 1,3,5-Trinitrobenzene

4.88min 52.031ppb

response 209100

(6) 1,3,5-Trinitrobenzene #2

4.88min 53.188ppb m

response 324488

(+) = Expected Retention Time
BB084347.D BBB2589_091224.M Thu Sep 12 11:57:35 2024

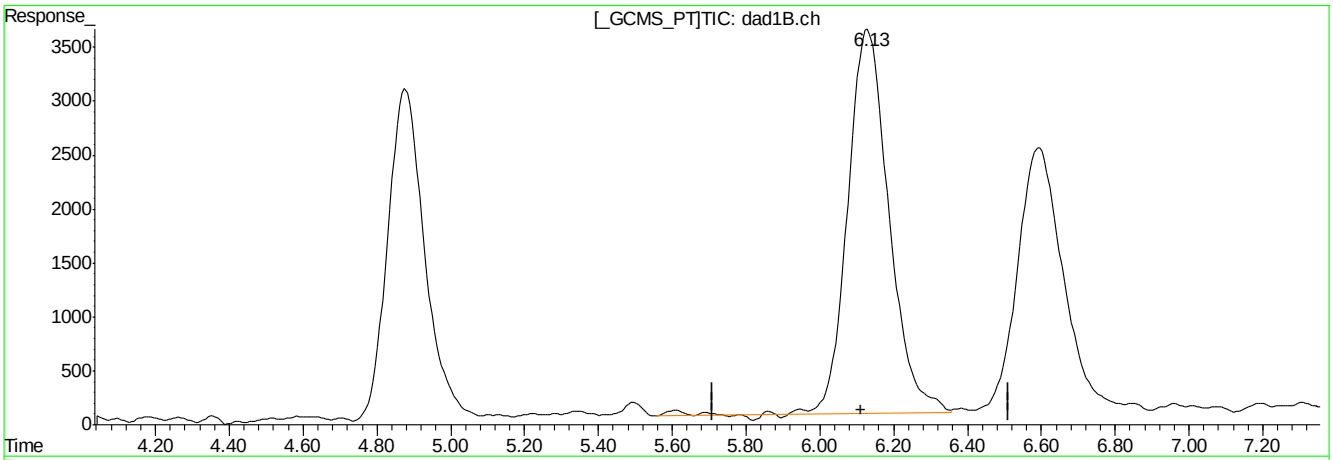


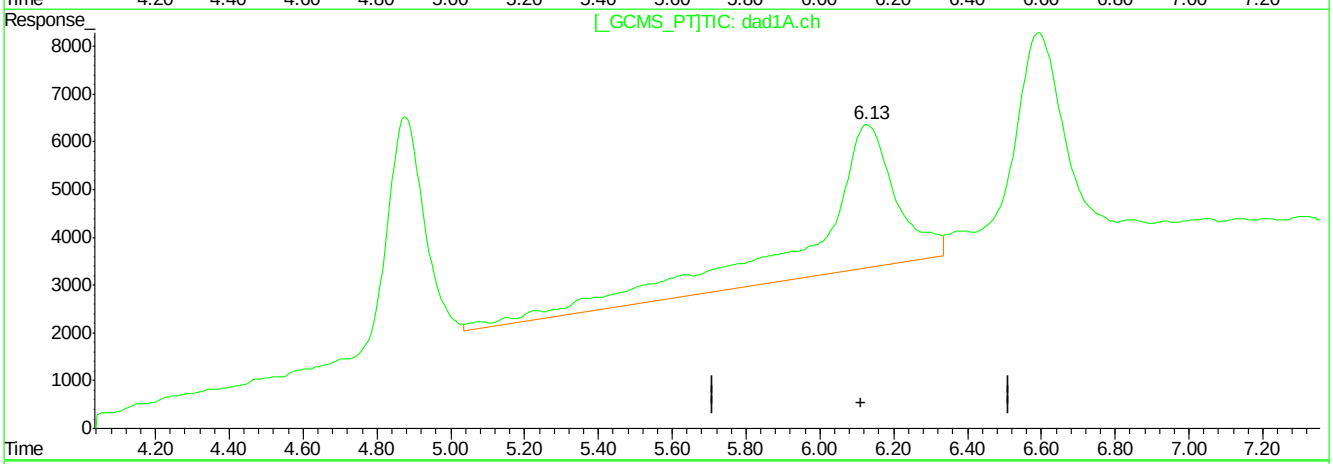
BB084347.D edits: 1,3,5-Trinitrobenzene

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1A.ch
Acq On : 12-Sep-2024, 08:43:29 Operator: fouads
Sample : ic2589-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(7) 1,3-Dinitrobenzene

6.13min 54.277ppb

response 278675

(7) 1,3-Dinitrobenzene #2

6.13min 136.507ppb

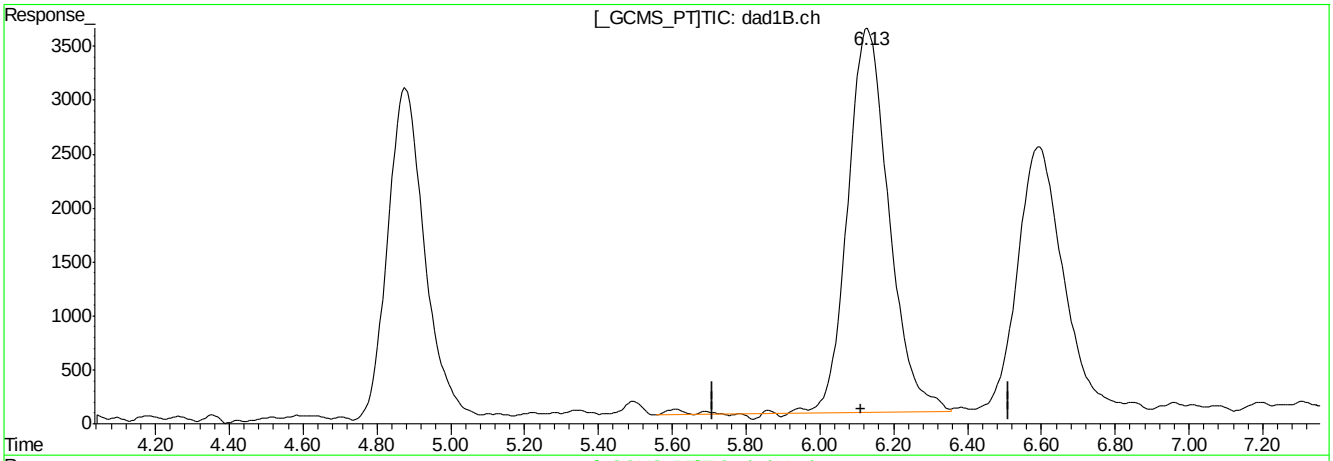
response 492053

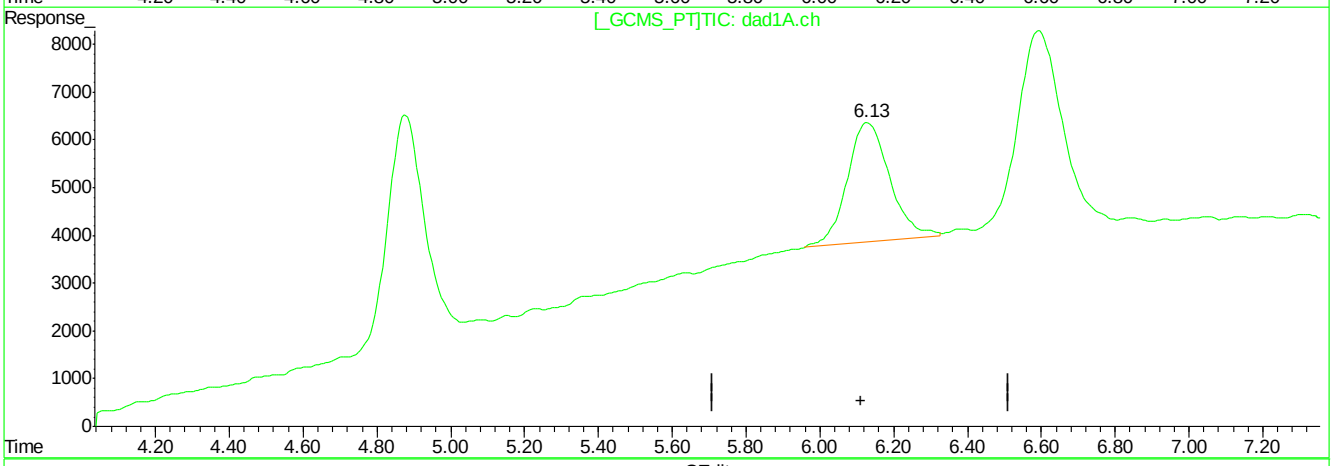
(+) = Expected Retention Time
BB084347.D BBB2589_091224.M Thu Sep 12 11:57:39 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1A.ch
Acq On : 12-Sep-2024, 08:43:29 Operator: fouads
Sample : ic2589-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(7) 1,3-Dinitrobenzene

6.13min 54.277ppb

response 278675

(7) 1,3-Dinitrobenzene #2

6.13min 55.291ppb m

response 199303

(+) = Expected Retention Time
BB084347.D BBB2589_091224.M Thu Sep 12 11:57:52 2024

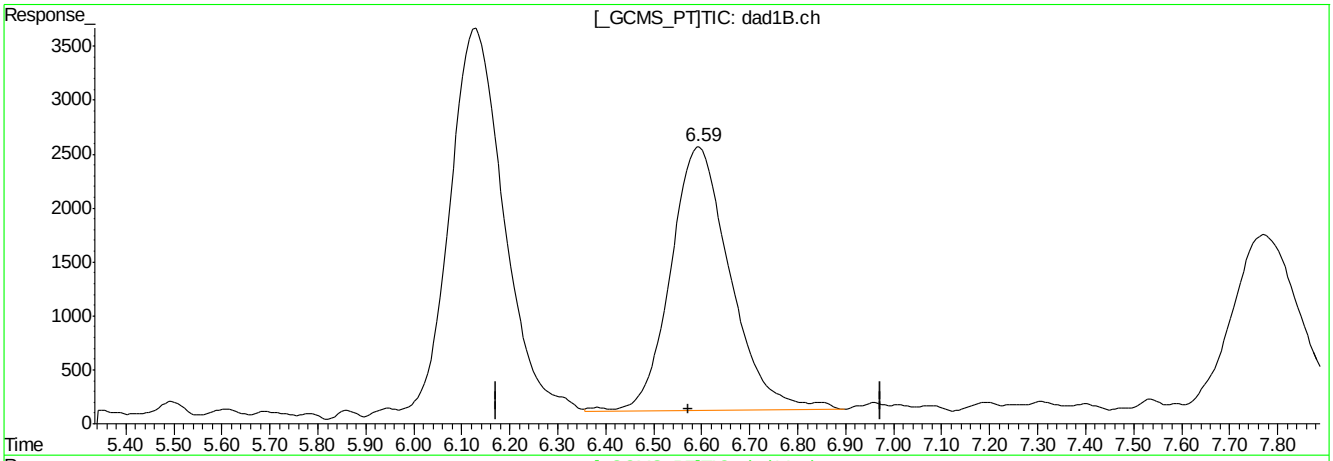


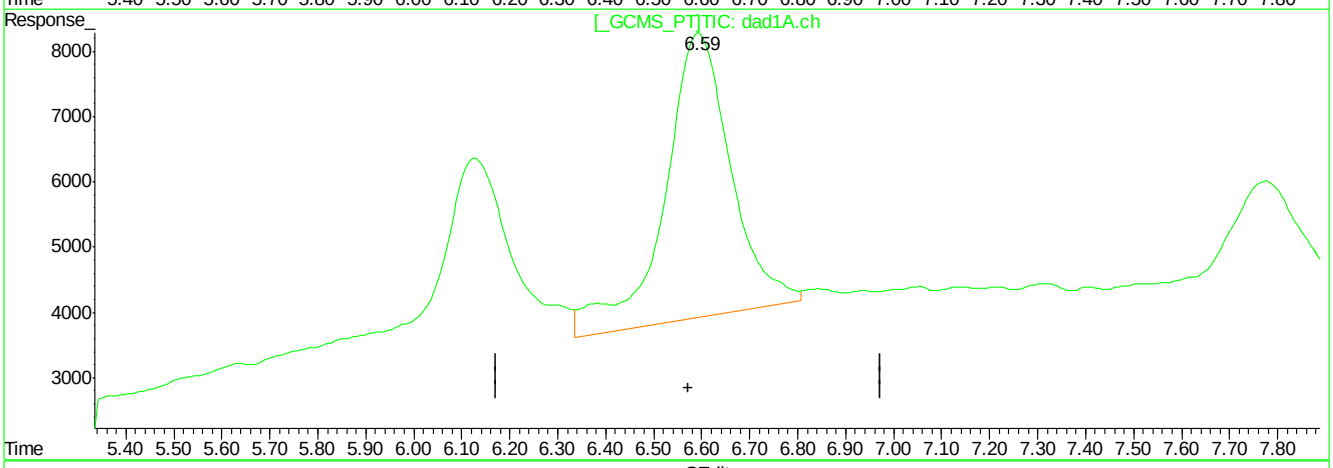
BB084347.D edits: 1,3-Dinitrobenzene

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1A.ch
Acq On : 12-Sep-2024, 08:43:29 Operator: fouads
Sample : ic2589-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(8) 3,5-Dinitroaniline

6.59min 54.966ppb

response 211543

(8) 3,5-Dinitroaniline #2

6.59min 63.425ppb

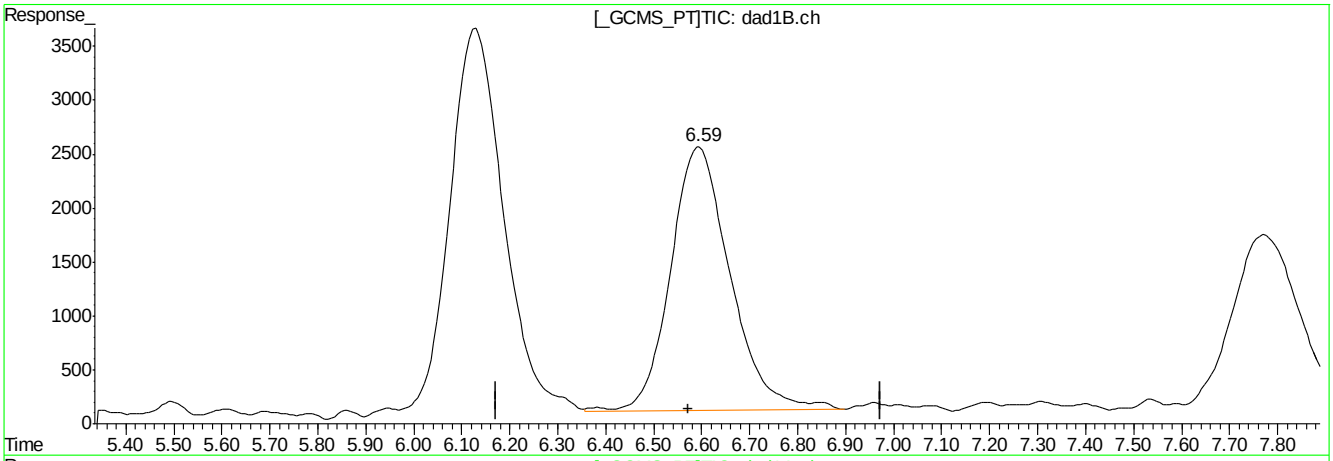
response 420236

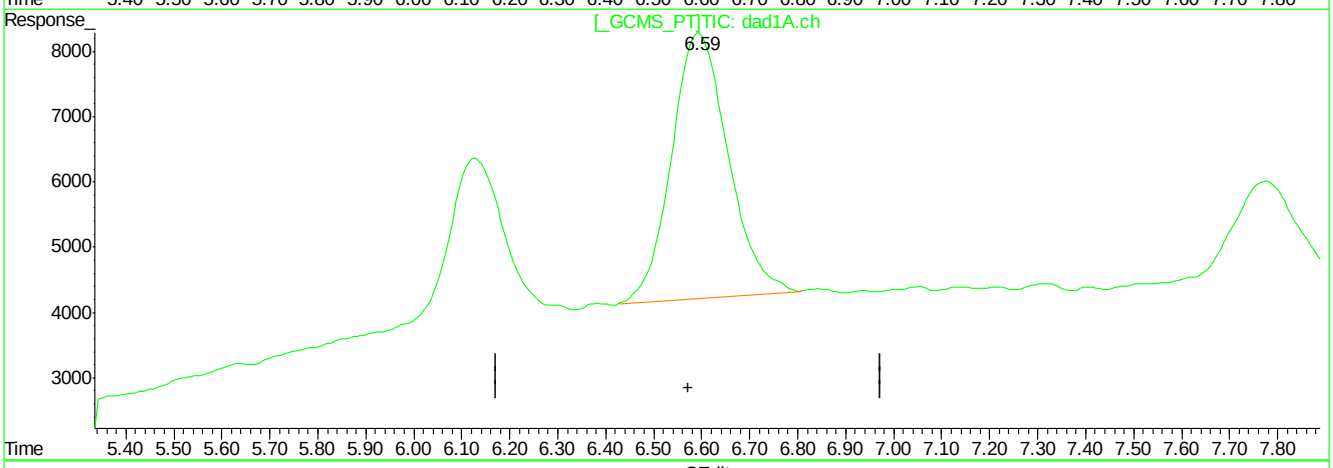
(+) = Expected Retention Time
BB084347.D BBB2589_091224.M Thu Sep 12 11:57:56 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1A.ch
Acq On : 12-Sep-2024, 08:43:29 Operator: fouads
Sample : ic2589-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(8) 3,5-Dinitroaniline

6.59min 54.966ppb

response 211543

(8) 3,5-Dinitroaniline #2

6.59min 50.487ppb m

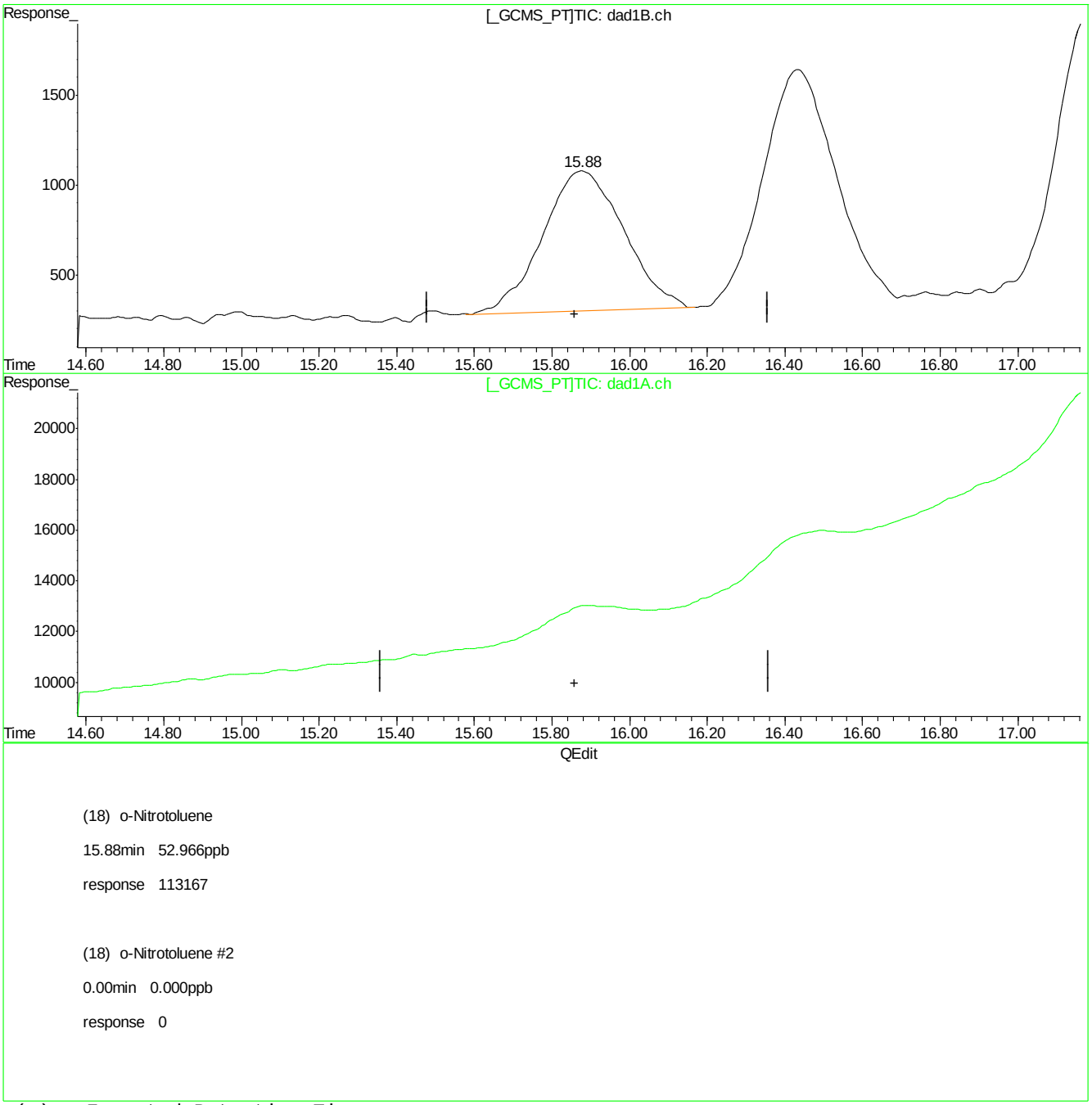
response 334513

(+) = Expected Retention Time
BB084347.D BBB2589_091224.M Thu Sep 12 11:58:01 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1A.ch
Acq On : 12-Sep-2024, 08:43:29 Operator: fouads
Sample : ic2589-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration

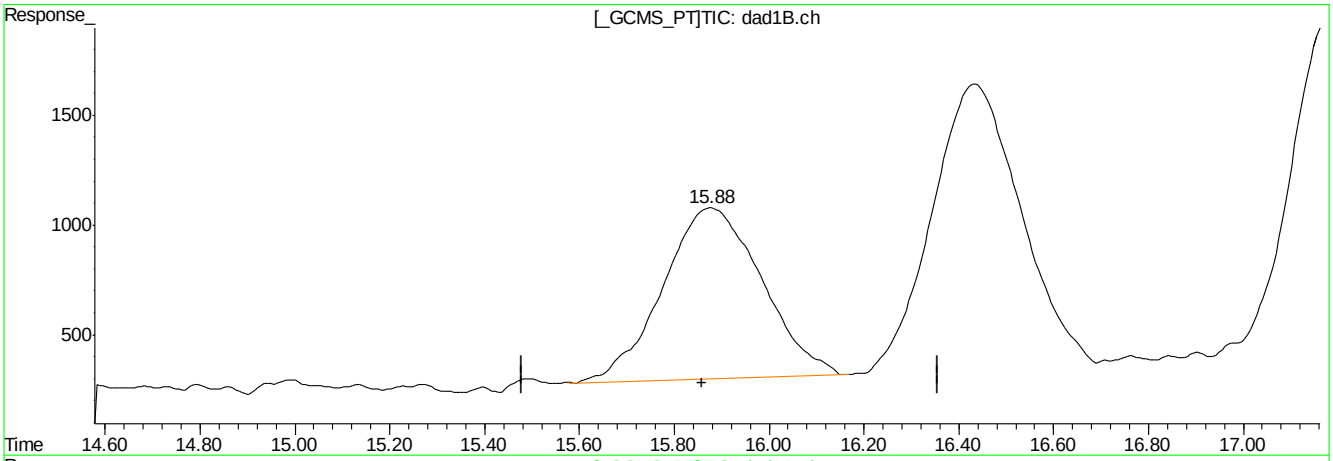


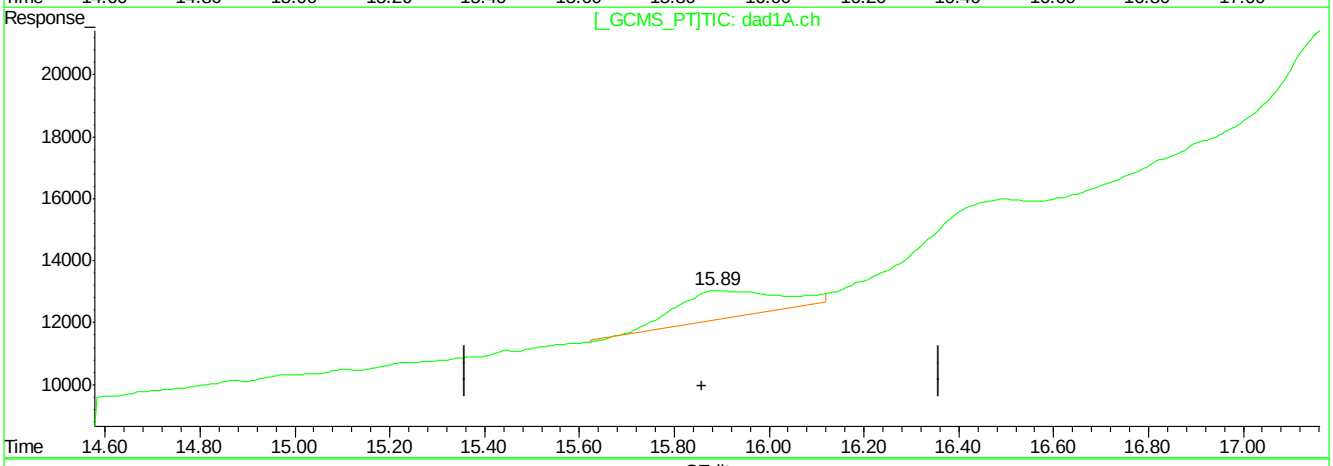

(+) = Expected Retention Time
BB084347.D BBB2589_091224.M Thu Sep 12 11:58:21 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1A.ch
Acq On : 12-Sep-2024, 08:43:29 Operator: fouads
Sample : ic2589-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(18) o-Nitrotoluene

15.88min 52.966ppb

response 113167

(18) o-Nitrotoluene #2

15.89min 49.622ppb m

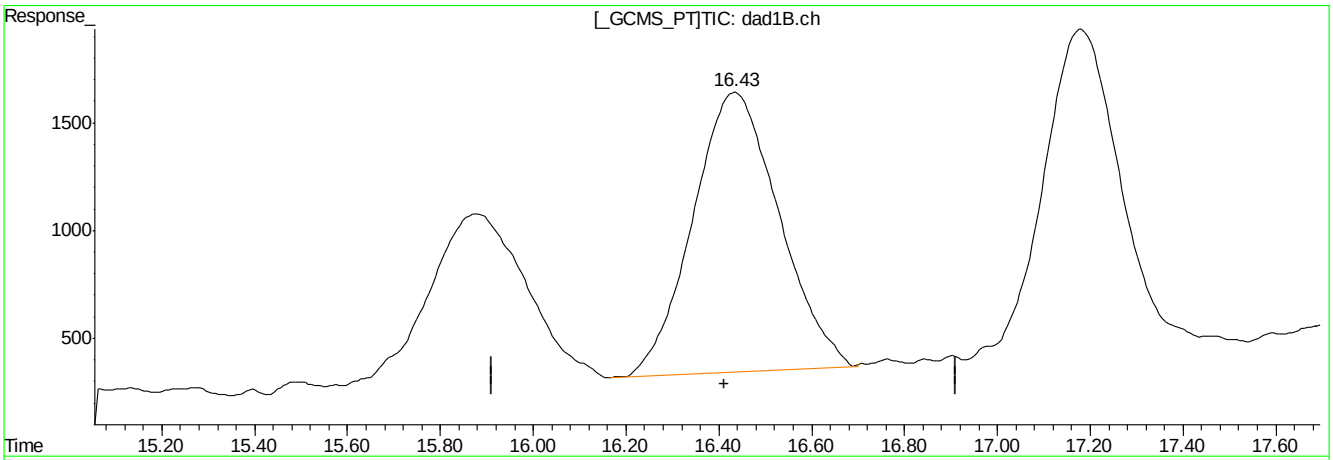
response 136202

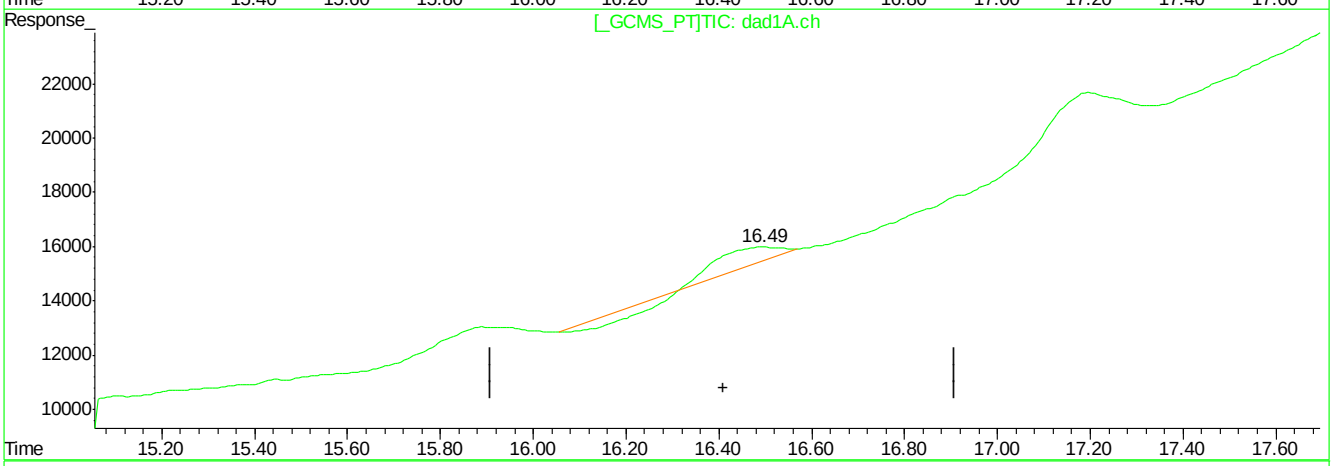
(+) = Expected Retention Time
BB084347.D BBB2589_091224.M Thu Sep 12 11:58:28 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1A.ch
Acq On : 12-Sep-2024, 08:43:29 Operator: fouads
Sample : ic2589-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(19) p-Nitrotoluene

16.44min 51.818ppb

response 167313

(19) p-Nitrotoluene #2

16.50min 7.425ppb

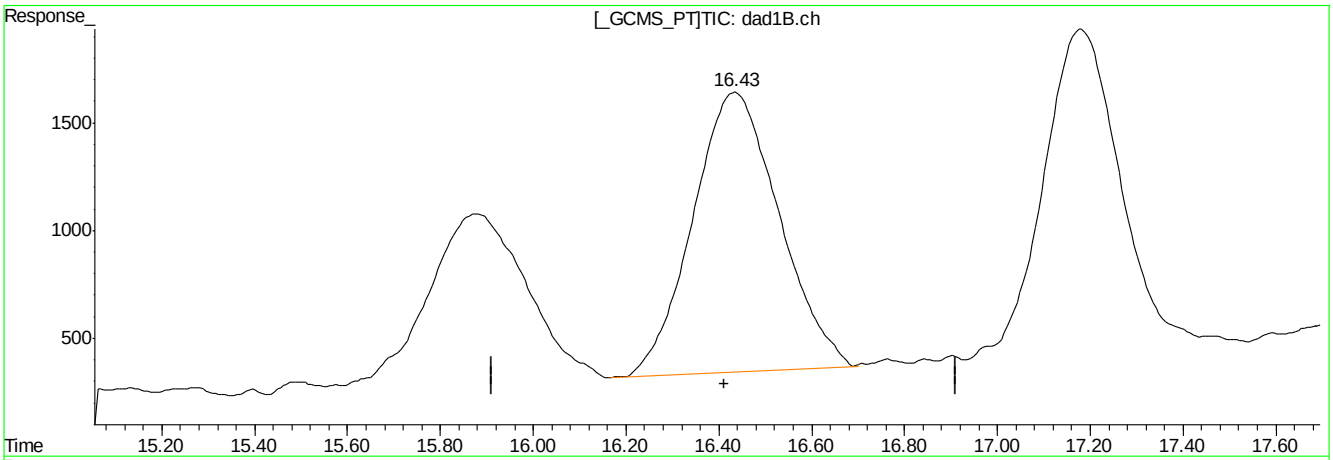
response 19493

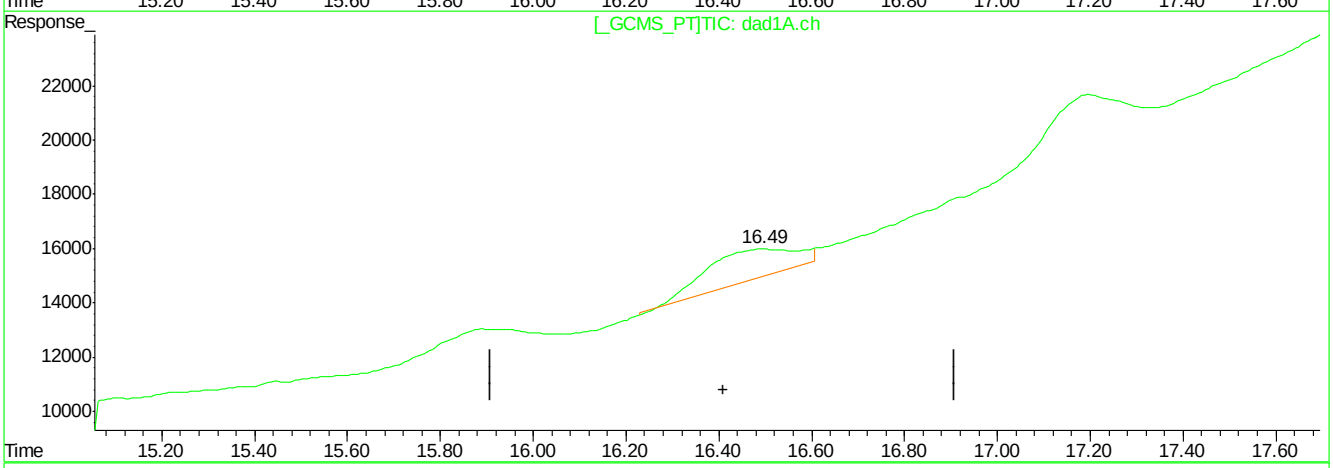
(+) = Expected Retention Time
BB084347.D BBB2589_091224.M Thu Sep 12 11:58:32 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1A.ch
Acq On : 12-Sep-2024, 08:43:29 Operator: fouads
Sample : ic2589-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(19) p-Nitrotoluene

16.44min 51.818ppb

response 167313

(19) p-Nitrotoluene #2

16.49min 57.399ppb m

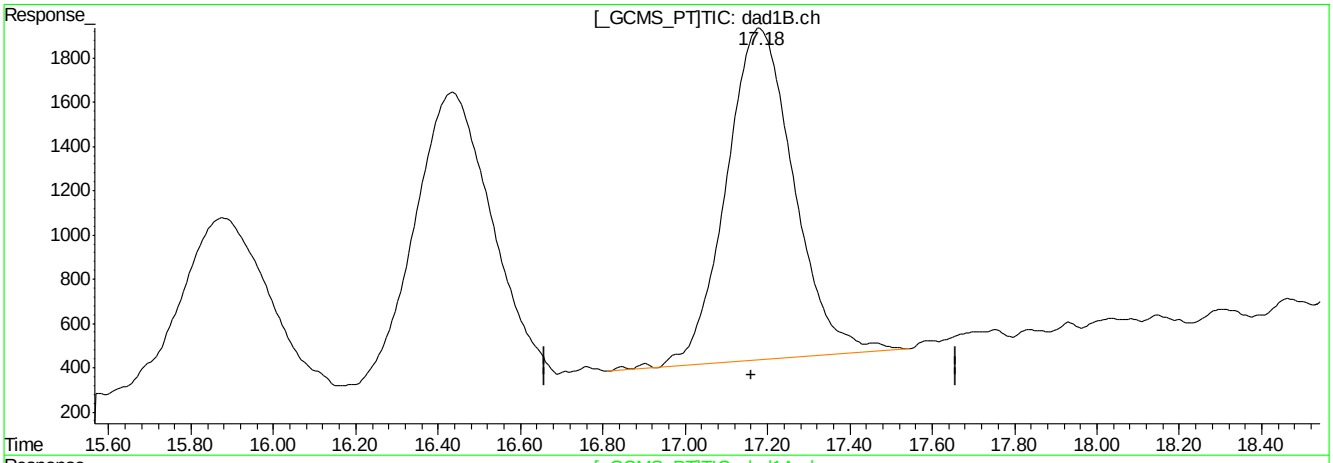
response 150696

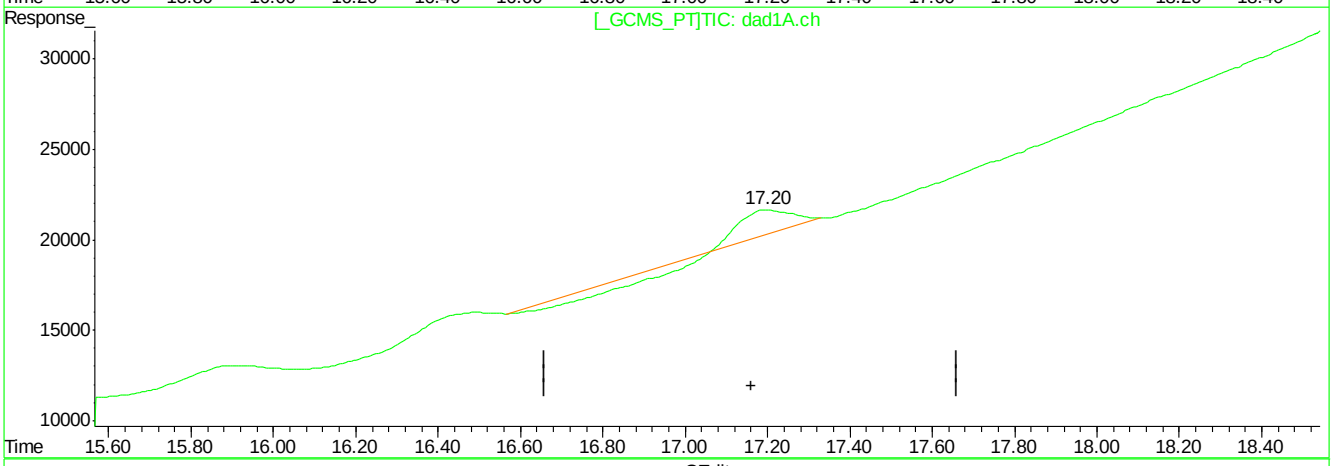
(+) = Expected Retention Time
BB084347.D BBB2589_091224.M Thu Sep 12 11:58:40 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1A.ch
Acq On : 12-Sep-2024, 08:43:29 Operator: fouads
Sample : ic2589-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(20) m-Nitrotoluene

17.18min 57.156ppb

response 172077

(20) m-Nitrotoluene #2

17.20min 1.517ppb

response 5312

(+) = Expected Retention Time
BB084347.D BBB2589_091224.M Thu Sep 12 11:58:45 2024

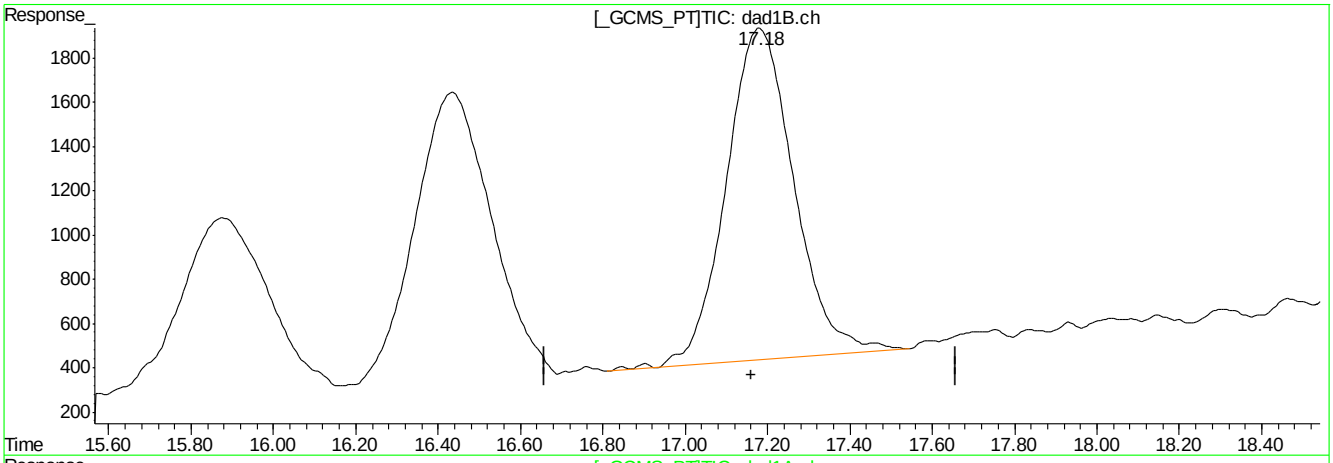


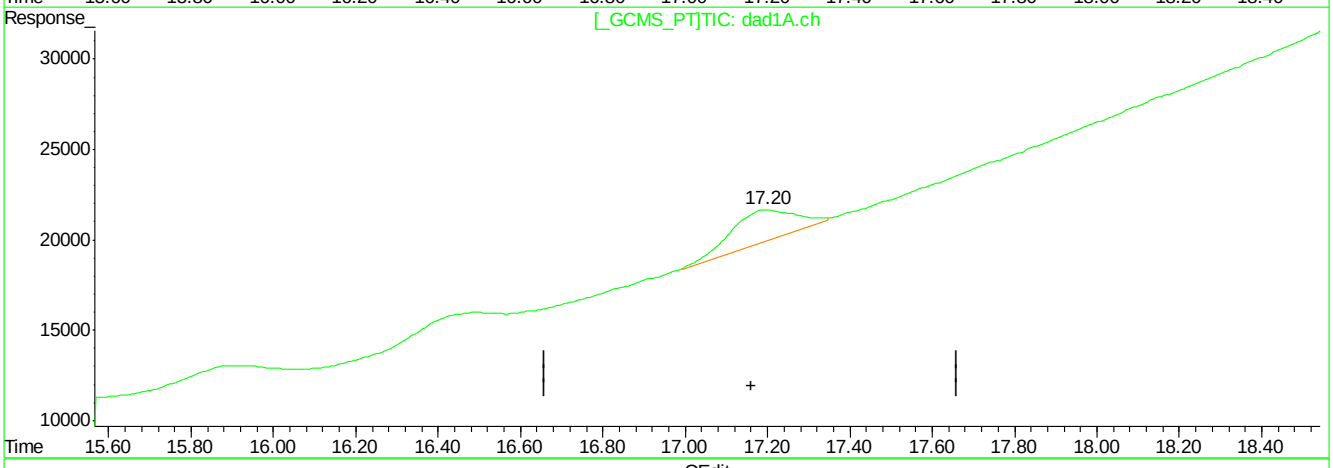
BB084347.D edits: m-Nitrotoluene

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1A.ch
Acq On : 12-Sep-2024, 08:43:29 Operator: fouads
Sample : ic2589-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(20) m-Nitrotoluene

17.18min 57.156ppb

response 172077

(20) m-Nitrotoluene #2

17.20min 55.601ppb m

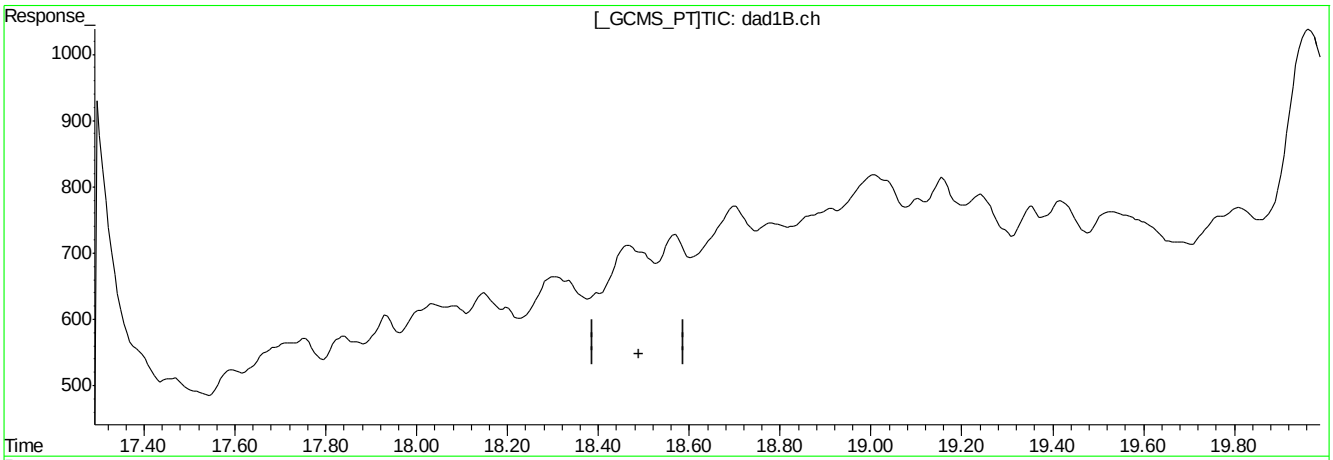
response 194705

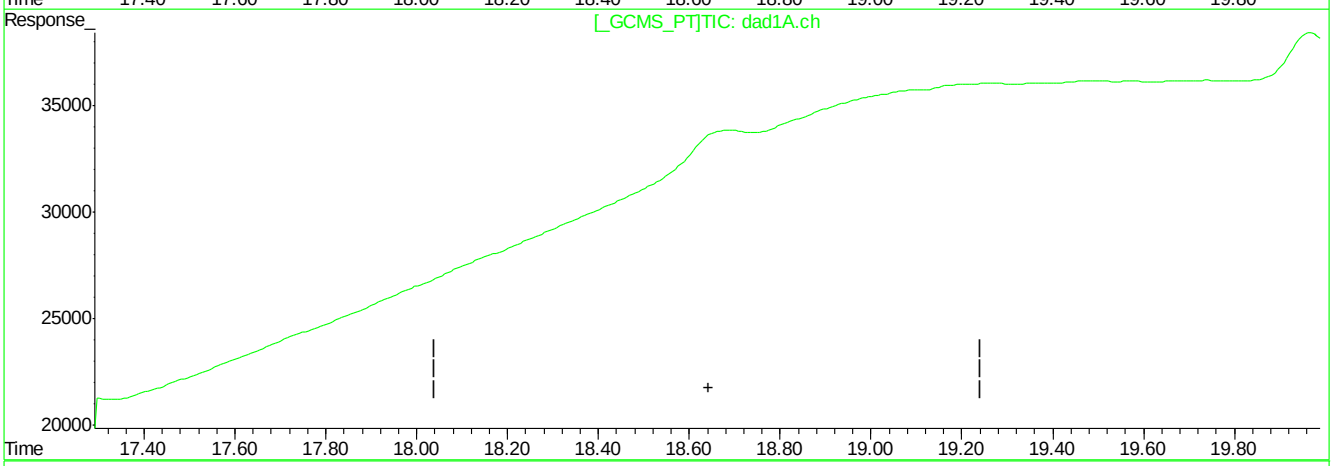
(+) = Expected Retention Time
BB084347.D BBB2589_091224.M Thu Sep 12 11:58:57 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1A.ch
Acq On : 12-Sep-2024, 08:43:29 Operator: fouads
Sample : ic2589-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(21) PETN

0.00min 0.000ppb

response 0

(21) PETN #2

0.00min 0.000ppb

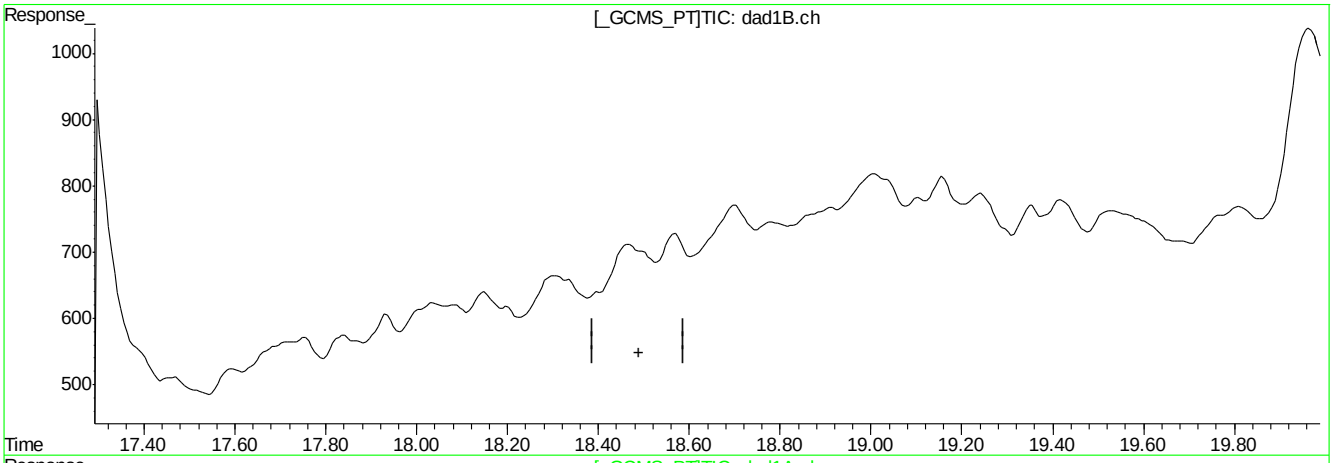
response 0

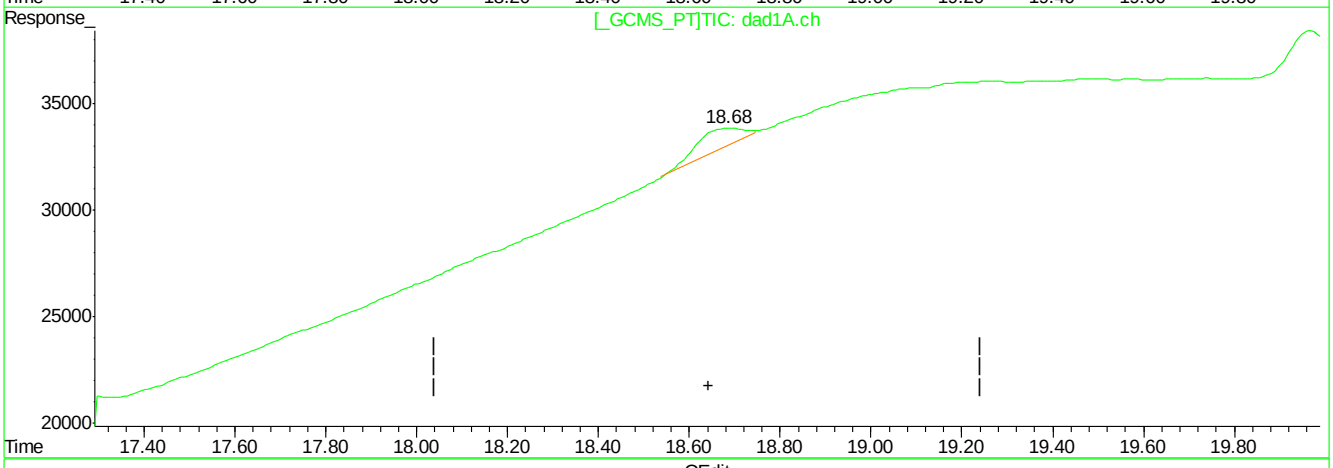
(+) = Expected Retention Time
BB084347.D BBB2589_091224.M Thu Sep 12 11:59:01 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084347.D\dad1A.ch
Acq On : 12-Sep-2024, 08:43:29 Operator: fouads
Sample : ic2589-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(21) PETN

0.00min 0.000ppb

response 0

(21) PETN #2

18.68min 51.409ppb m

response 67087

(+) = Expected Retention Time
BB084347.D BBB2589_091224.M Thu Sep 12 11:59:09 2024

Manual Integrations APPROVED (compounds with "m" flag)
William Hustedde 09/19/24 15:28

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1A.ch
Acq On : 12-Sep-2024, 09:10:00 Operator: fouads
Sample : ic2589-100 Inst : G1315B
Misc : op5264,GBB2589,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54:39 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Initial Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 15) S | 3,4-Dinitrotolue | 11.61 | 11.62 | 231999 | 350167 | 97.954 | 90.426 |
| Spiked Amount | 500.000 | Range | 70 - 136 | Recovery | = | 19.59%# | 18.09%# |
| | Target Compounds | | | | | | |
| 1) | TNX | 1.37 | 1.37 | 154079 | 242109 | 40.137 | 41.290 |
| 2) | HMX | 1.52 | 1.52 | 174678 | 592181 | 121.838 | 148.102 |
| 3) | DNX | 1.78 | 1.78 | 294602 | 491826 | 92.267 | 97.991 |
| 4) | MNX | 2.41 | 2.41 | 308262 | 474344 | 104.424 | 104.183 |
| 5) | RDX | 3.06 | 3.06 | 181234 | 284237 | 101.752 | 99.093 |
| 6) | 1,3,5-Trinitrobe | 4.86 | 4.86 | 406392 | 616002 | 101.124 | 100.972m |
| 7) | 1,3-Dinitrobenze | 6.11 | 6.11 | 533966 | 361466 | 104.001 | 100.279m |
| 8) | 3,5-Dinitroanili | 6.57 | 6.57 | 383440 | 698233 | 99.630 | 105.383 |
| 9) | Nitrobenzene | 7.75 | 7.75 | 298023 | 305967 | 101.447 | 106.397 |
| 10) | Nitroglycerin | 0.00 | 9.27 | 0 | 125629 | N.D. d | 104.960 |
| 11) | Tetryl | 9.85 | 9.85 | 301603 | 444524 | 106.596 | 93.722 |
| 12) | 2,4,6-Trinitroto | 10.24 | 10.23 | 382086 | 432576 | 101.991 | 99.939 |
| 13) | 2-Amino-4,6-Dini | 10.80 | 10.80 | 322688 | 401295 | 104.599 | 86.489 |
| 14) | 4-Amino-2,6-Dini | 11.28 | 11.28 | 236845 | 391119 | 104.008 | 84.625 |
| 16) | 2,4-Dinitrotolue | 12.29 | 12.29 | 465861 | 273799 | 99.160 | 91.076 |
| 17) | 2,6-Dinitrotolue | 12.72 | 12.73 | 272712 | 337089 | 103.248 | 101.913 |
| 18) | o-Nitrotoluene | 15.74 | 15.75 | 211371 | 268614 | 98.930 | 97.862m |
| 19) | p-Nitrotoluene | 16.30 | 16.32 | 323577 | 266094 | 100.215 | 101.353m |
| 20) | m-Nitrotoluene | 17.07 | 17.07 | 306645 | 374689 | 101.853 | 106.999m |
| 21) | PETN | 0.00 | 18.60 | 0 | 120061 | N.D. | 92.003m# |

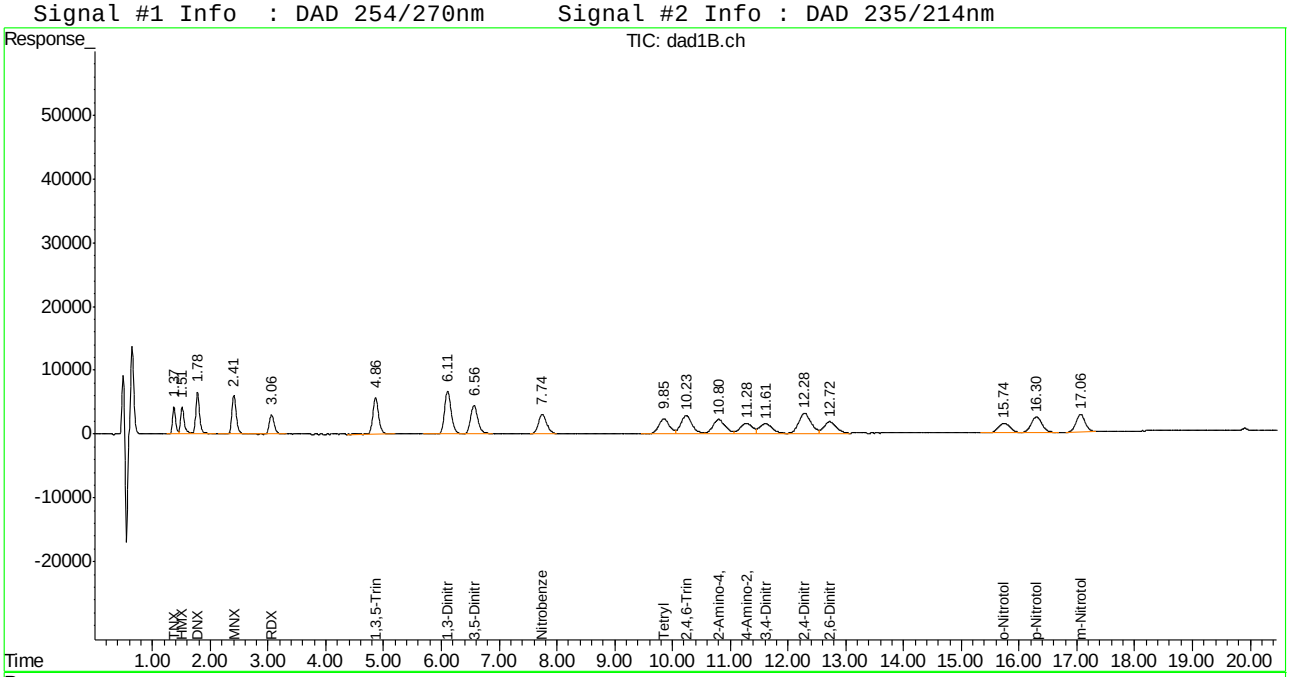
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
BB084348.D BBB2589_091224.M Mon Sep 16 14:49:35 2024 Page 1

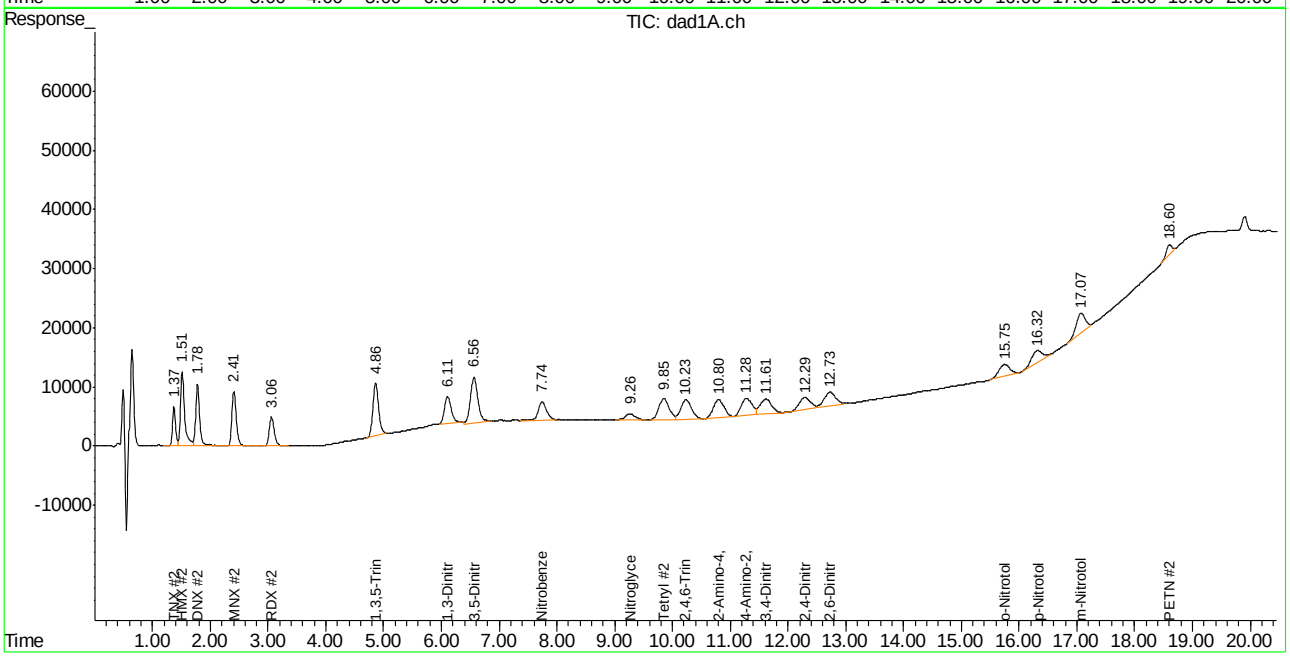
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1A.ch
Acq On : 12-Sep-2024, 09:10:00 Operator: fouads
Sample : ic2589-100 Inst : G1315B
Misc : op5264,GBB2589,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 12:01 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm



# Manual Integration Approval Summary



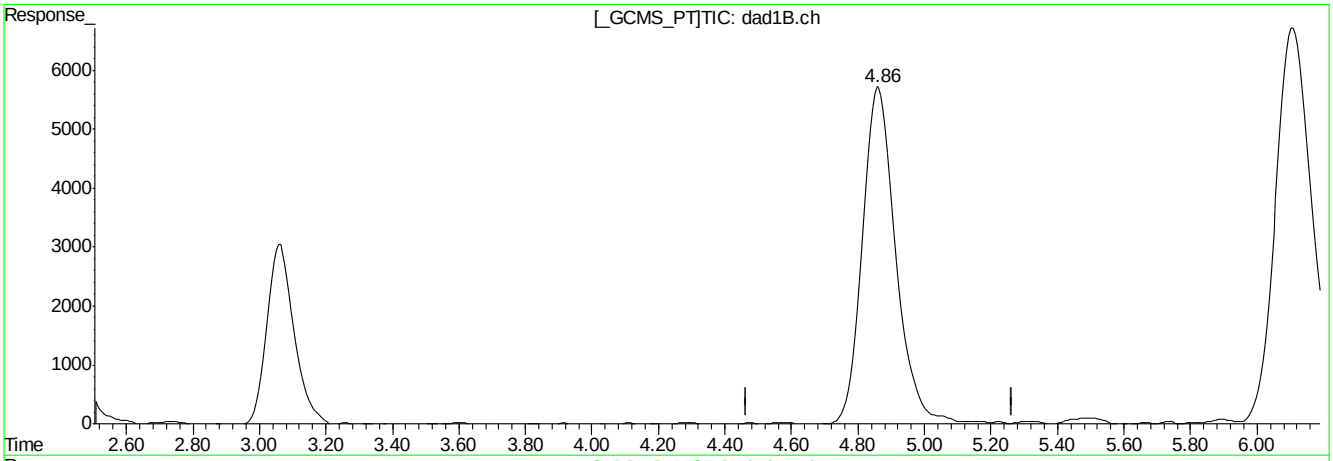
**Sample Number:** GBB2589-IC2589 **Method:** SW846 8330B
**Lab FileID:** BB084348.D **Analyst approved:** 09/16/24 15:05 Fouad Sekkar
**Injection Time:** 09/12/24 09:10 **Supervisor approved:** 09/19/24 15:28 William Hustedde

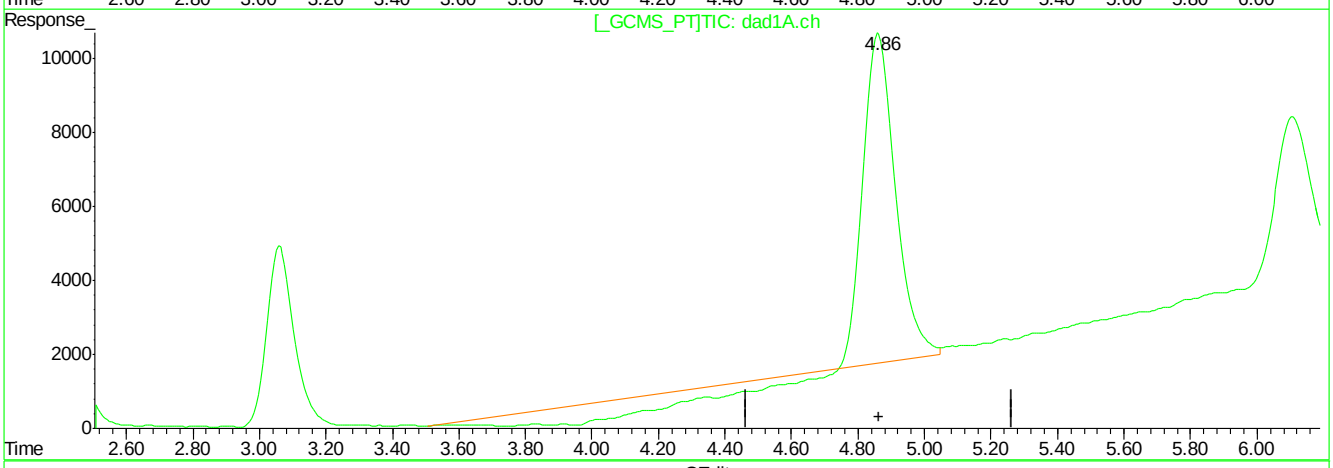
| Parameter | CAS | Sig# | R.T. (min.) | Reason |
|---|---|---|---|---|
| 1,3,5-Trinitrobenzene | 99-35-4 | 2 | 4.86 | Poor instrument integration |
| 1,3-Dinitrobenzene | 99-65-0 | 2 | 6.11 | Poor instrument integration |
| o-Nitrotoluene | 88-72-2 | 2 | 15.75 | Poor instrument integration |
| p-Nitrotoluene | 99-99-0 | 2 | 16.32 | Poor instrument integration |
| m-Nitrotoluene | 99-08-1 | 2 | 17.07 | Poor instrument integration |
| PETN | 78-11-5 | 2 | 18.60 | Poor instrument integration |

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1A.ch
Acq On : 12-Sep-2024, 09:10:00 Operator: fouads
Sample : ic2589-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(6) 1,3,5-Trinitrobenzene

4.86min 101.124ppb

response 406392

(6) 1,3,5-Trinitrobenzene #2

4.86min 65.329ppb

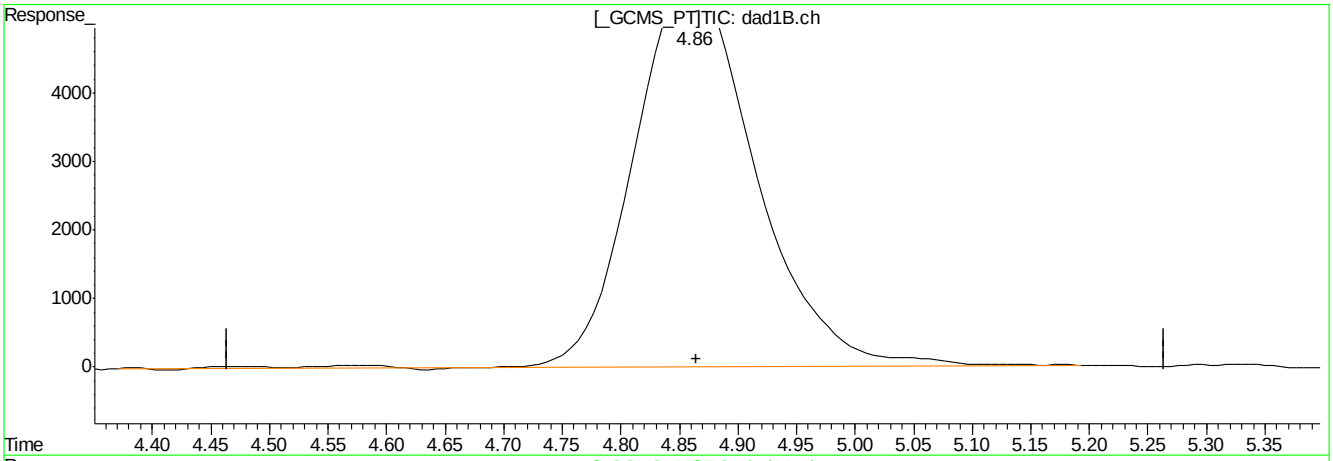
response 398553

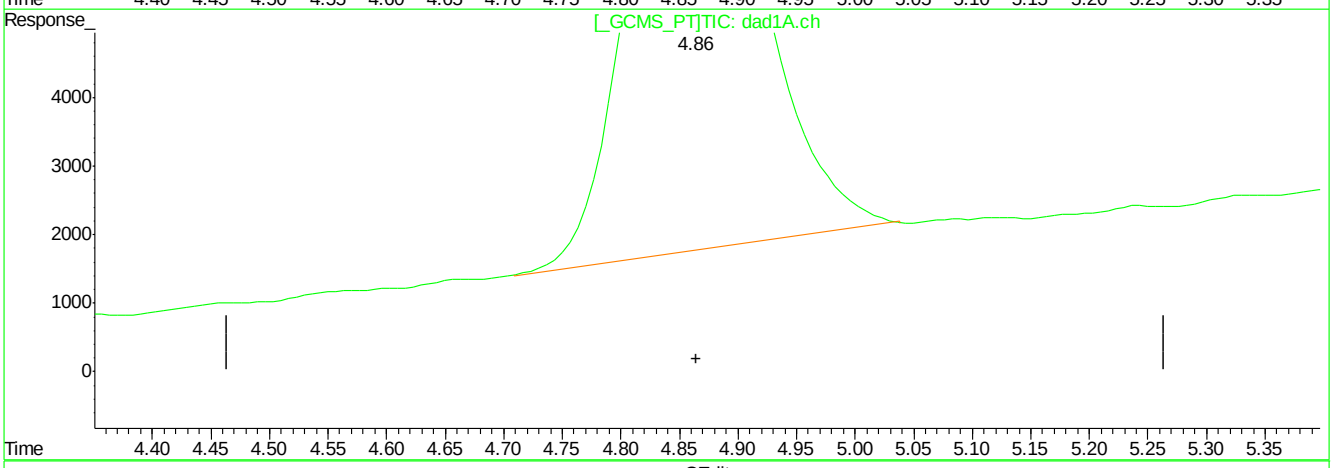
(+) = Expected Retention Time
BB084348.D BBB2589_091224.M Thu Sep 12 11:59:36 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1A.ch
Acq On : 12-Sep-2024, 09:10:00 Operator: fouads
Sample : ic2589-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(6) 1,3,5-Trinitrobenzene

4.86min 101.124ppb

response 406392

(6) 1,3,5-Trinitrobenzene #2

4.86min 100.972ppb m

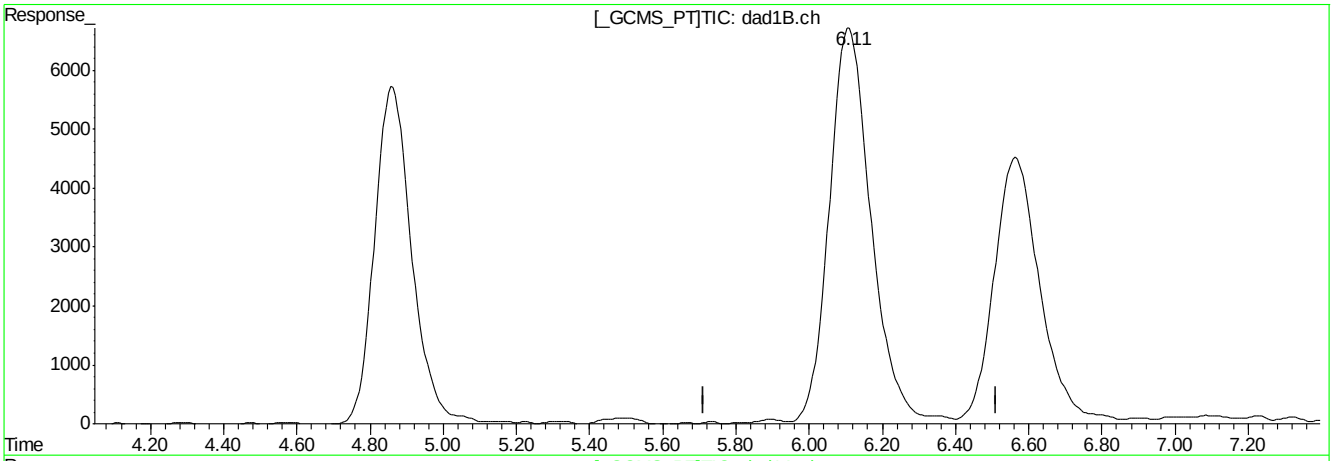
response 616002

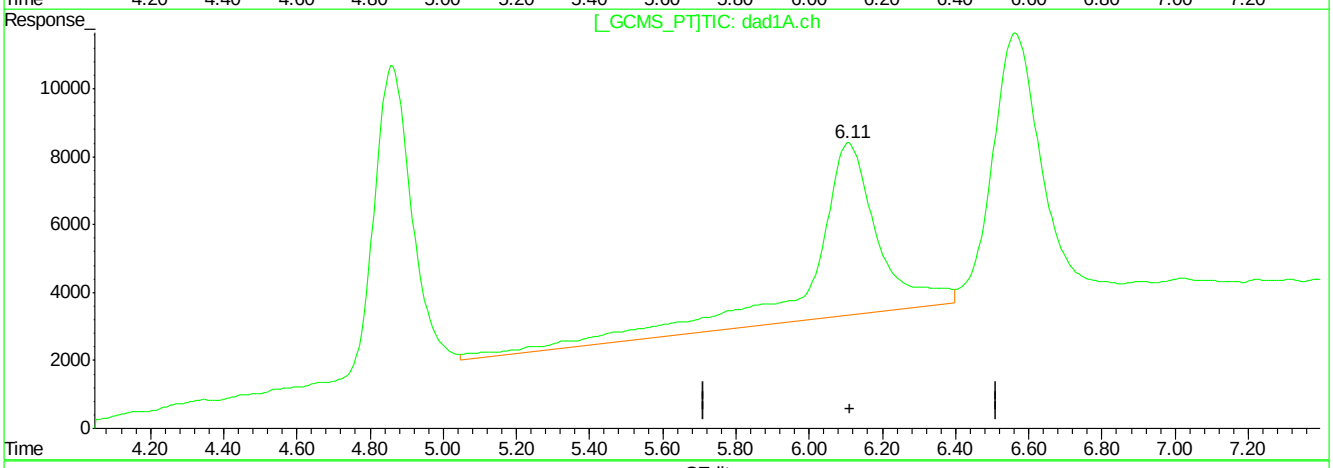
(+) = Expected Retention Time
BB084348.D BBB2589_091224.M Thu Sep 12 11:59:46 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1A.ch
Acq On : 12-Sep-2024, 09:10:00 Operator: fouads
Sample : ic2589-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(7) 1,3-Dinitrobenzene

6.11min 104.001ppb

response 533966

(7) 1,3-Dinitrobenzene #2

6.11min 187.101ppb

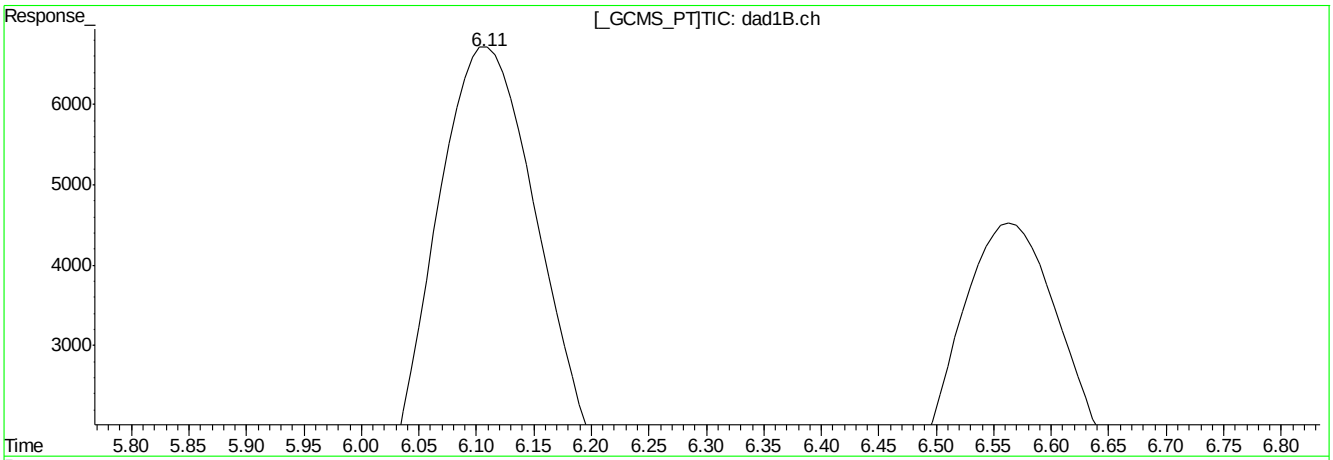
response 674424

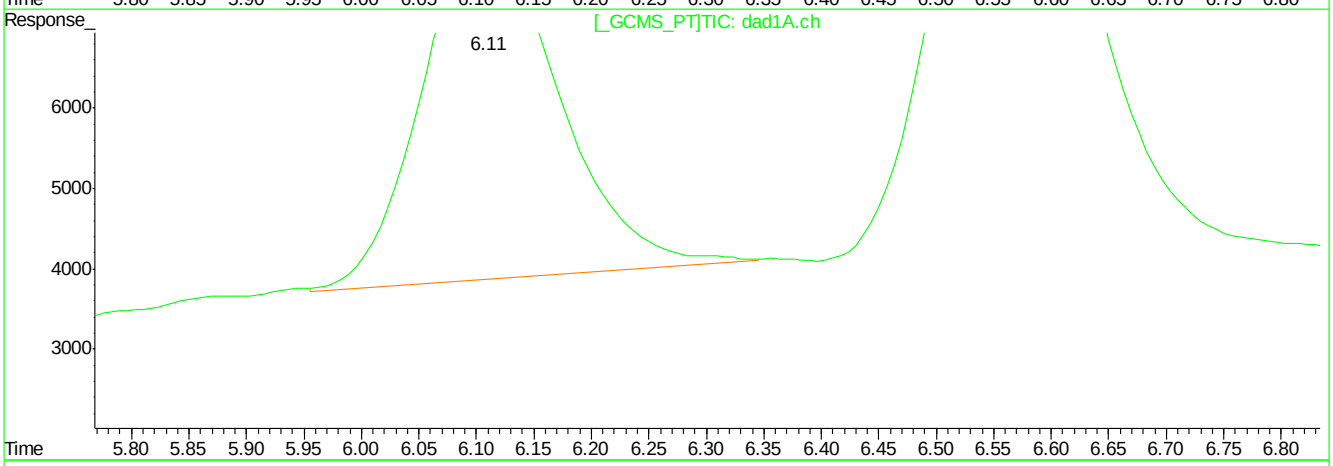
(+) = Expected Retention Time
BB084348.D BBB2589_091224.M Thu Sep 12 11:59:51 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1A.ch
Acq On : 12-Sep-2024, 09:10:00 Operator: fouads
Sample : ic2589-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(7) 1,3-Dinitrobenzene

6.11min 104.001ppb

response 533966

(7) 1,3-Dinitrobenzene #2

6.11min 100.279ppb m

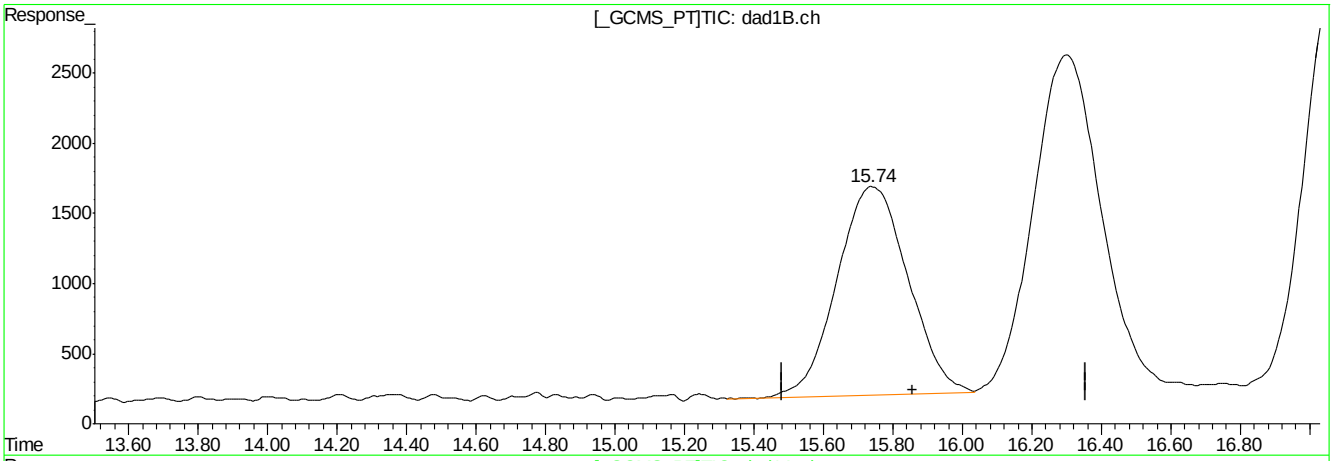
response 361466

(+) = Expected Retention Time
BB084348.D BBB2589_091224.M Thu Sep 12 11:59:59 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1A.ch
Acq On : 12-Sep-2024, 09:10:00 Operator: fouads
Sample : ic2589-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




(18) o-Nitrotoluene

15.74min 98.930ppb

response 211371

(18) o-Nitrotoluene #2

15.75min 45.279ppb

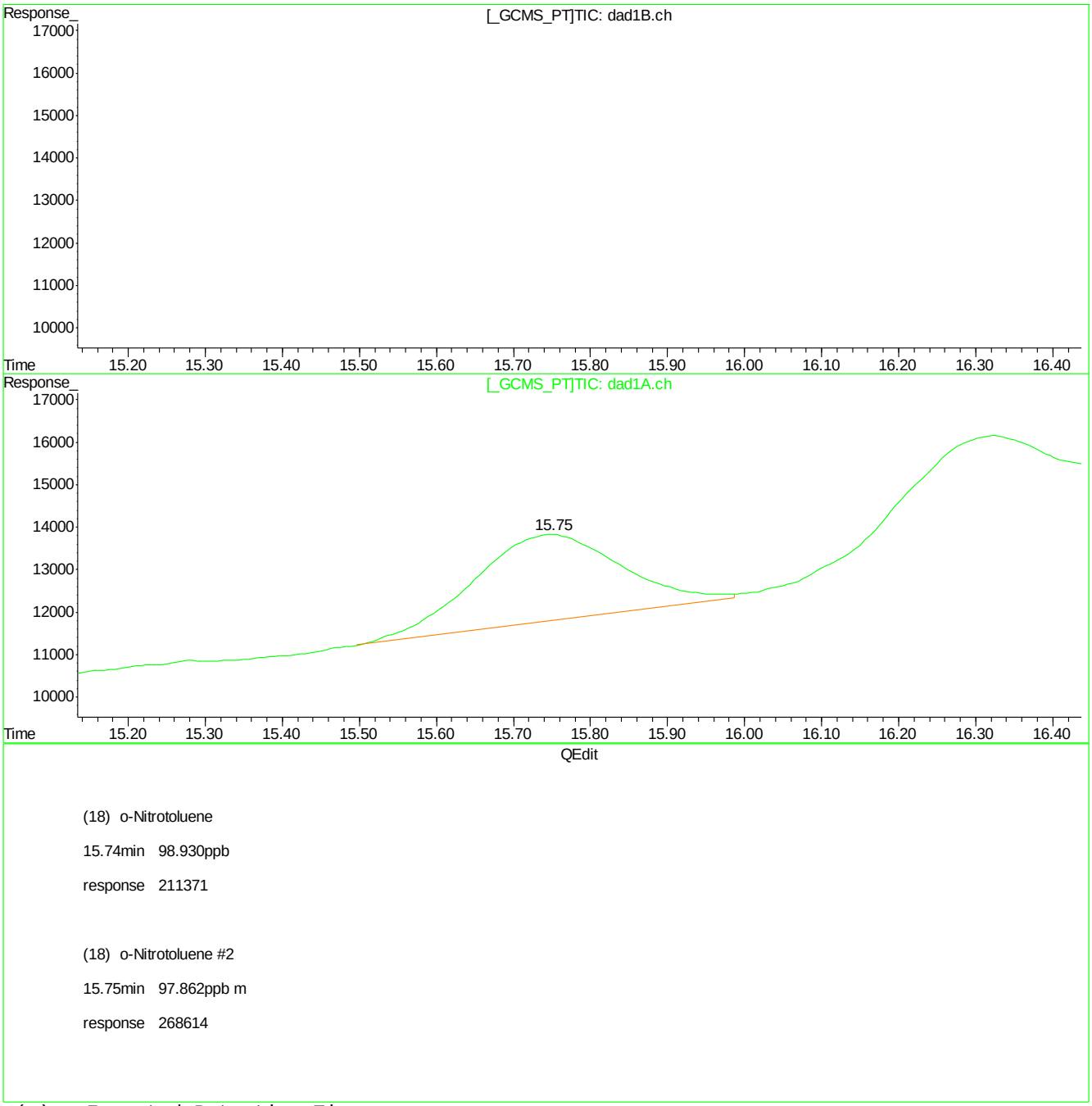
response 124284

(+) = Expected Retention Time
BB084348.D BBB2589_091224.M Thu Sep 12 12:00:23 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1A.ch
Acq On : 12-Sep-2024, 09:10:00 Operator: fouads
Sample : ic2589-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




(18) o-Nitrotoluene

15.74min 98.930ppb

response 211371

(18) o-Nitrotoluene #2

15.75min 97.862ppb m

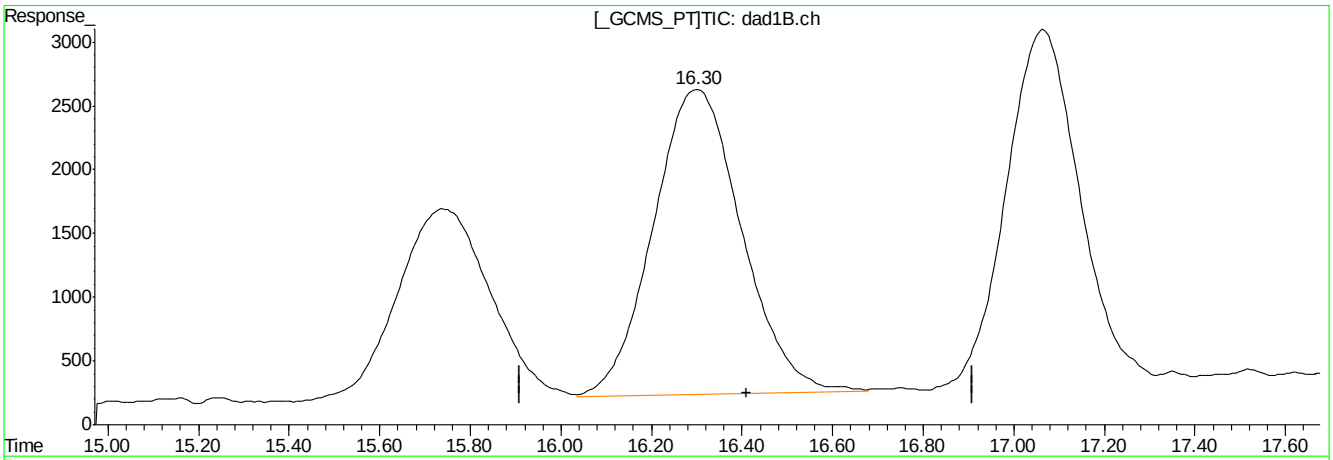
response 268614

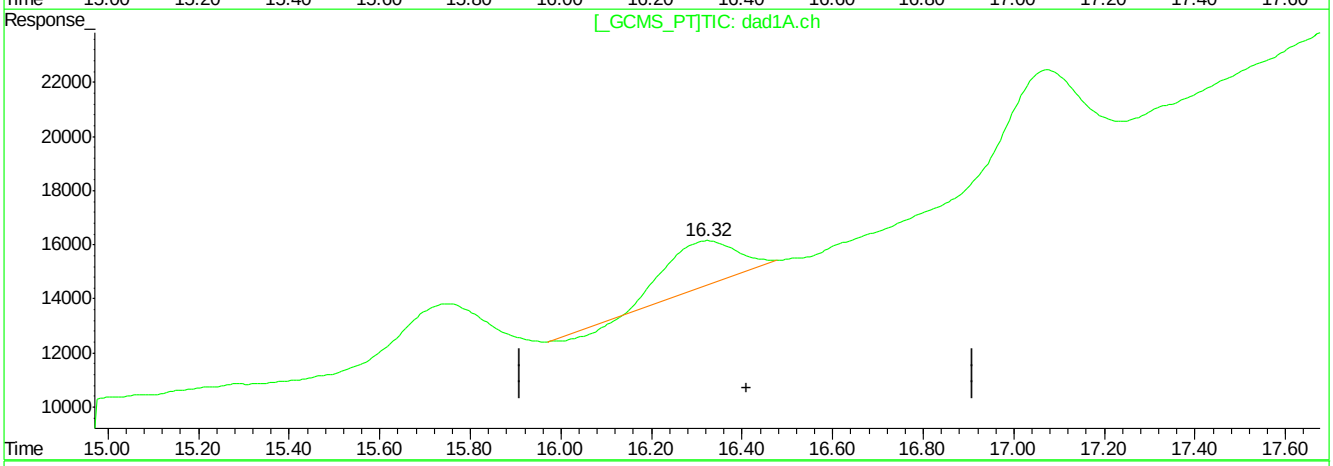
(+) = Expected Retention Time
BB084348.D BBB2589_091224.M Thu Sep 12 12:00:35 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1A.ch
Acq On : 12-Sep-2024, 09:10:00 Operator: fouads
Sample : ic2589-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(19) p-Nitrotoluene

16.30min 100.215ppb

response 323577

(19) p-Nitrotoluene #2

16.32min 63.574ppb

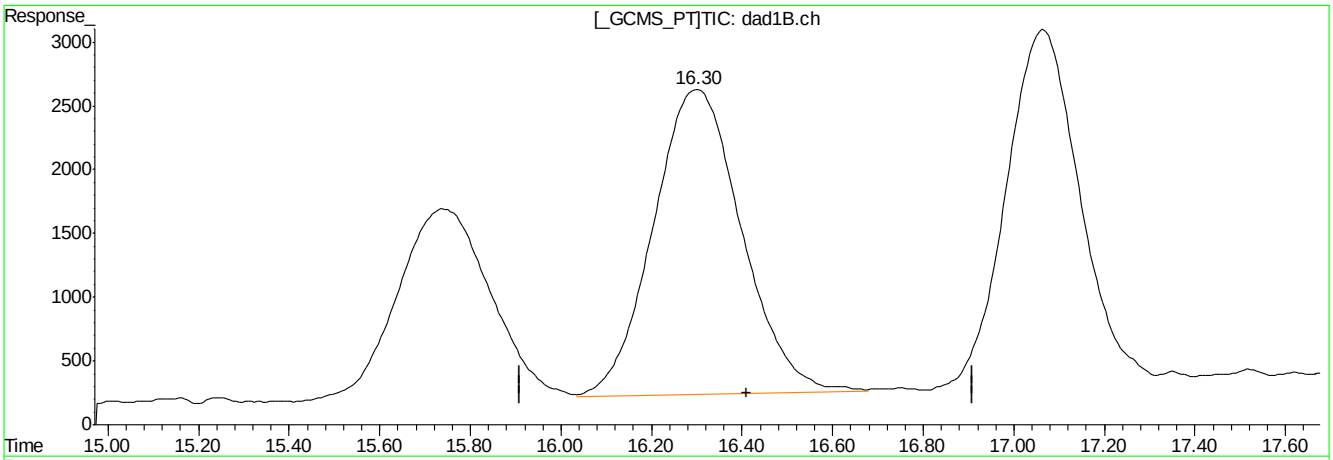
response 166908

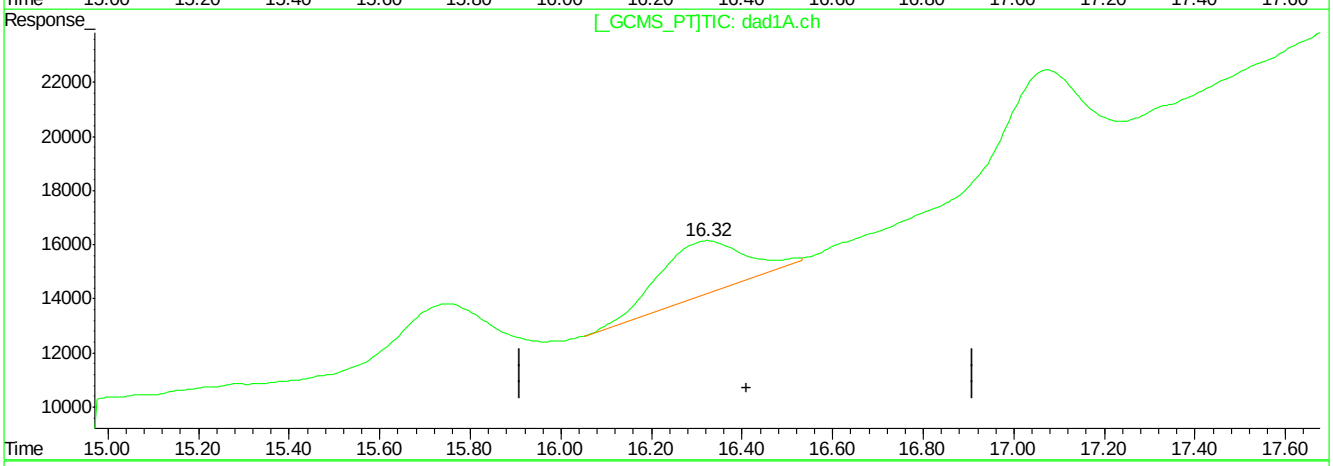
(+) = Expected Retention Time
BB084348.D BBB2589_091224.M Thu Sep 12 12:00:39 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1A.ch
Acq On : 12-Sep-2024, 09:10:00 Operator: fouads
Sample : ic2589-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(19) p-Nitrotoluene

16.30min 100.215ppb

response 323577

(19) p-Nitrotoluene #2

16.32min 101.353ppb m

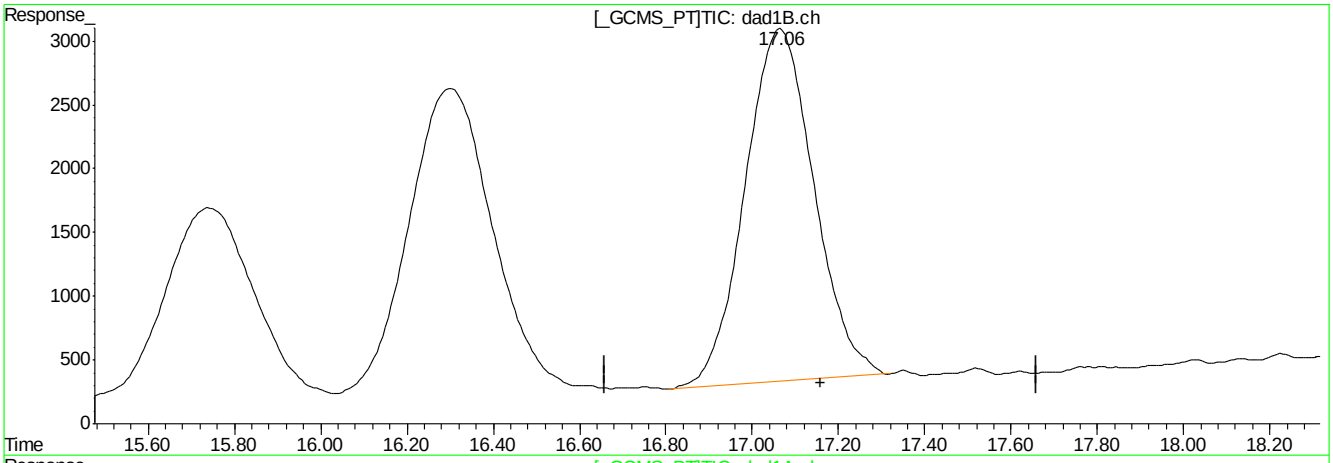
response 266094

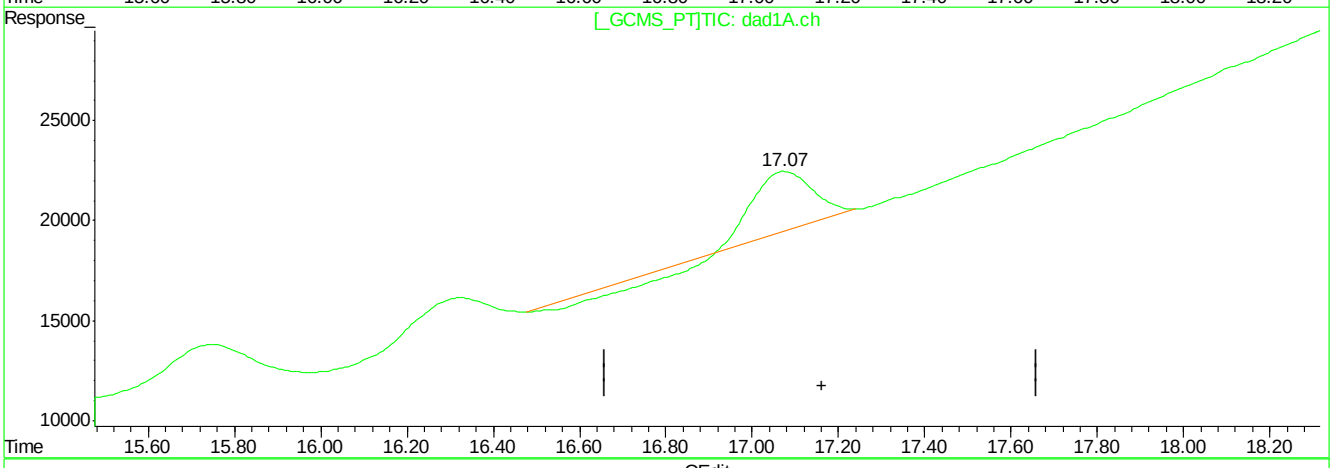
(+) = Expected Retention Time
BB084348.D BBB2589_091224.M Thu Sep 12 12:00:47 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1A.ch
Acq On : 12-Sep-2024, 09:10:00 Operator: fouads
Sample : ic2589-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(20) m-Nitrotoluene

17.07min 101.853ppb

response 306645

(20) m-Nitrotoluene #2

17.08min 57.839ppb

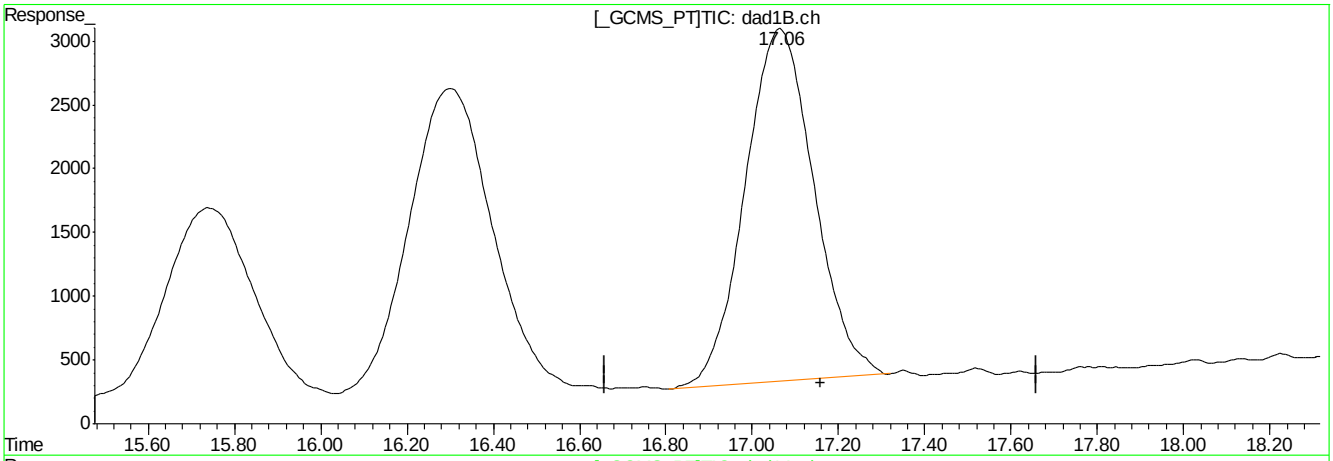
response 202542

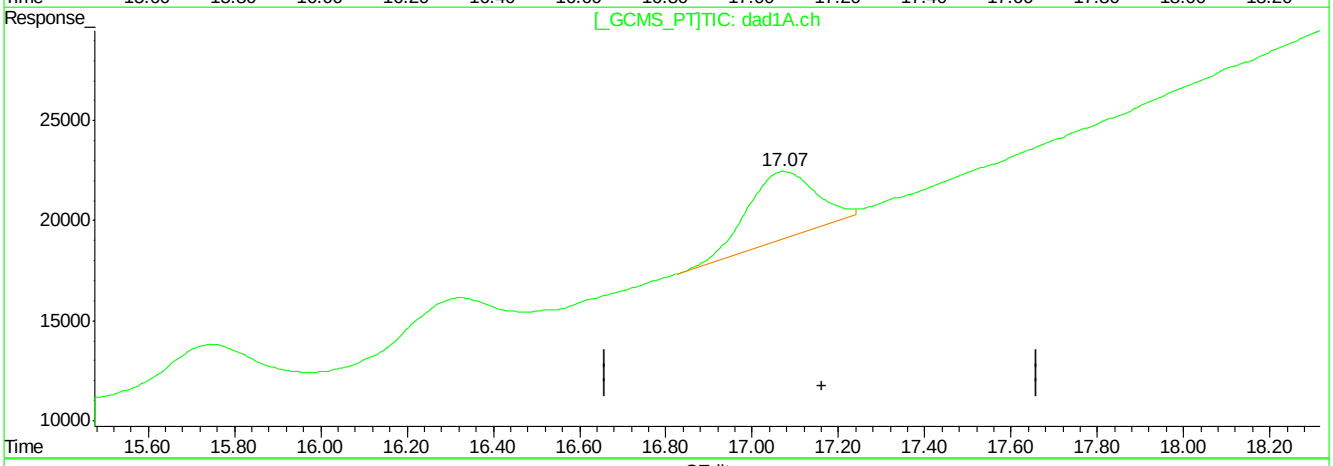
(+) = Expected Retention Time
BB084348.D BBB2589_091224.M Thu Sep 12 12:00:51 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1A.ch
Acq On : 12-Sep-2024, 09:10:00 Operator: fouads
Sample : ic2589-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(20) m-Nitrotoluene

17.07min 101.853ppb

response 306645

(20) m-Nitrotoluene #2

17.07min 106.999ppb m

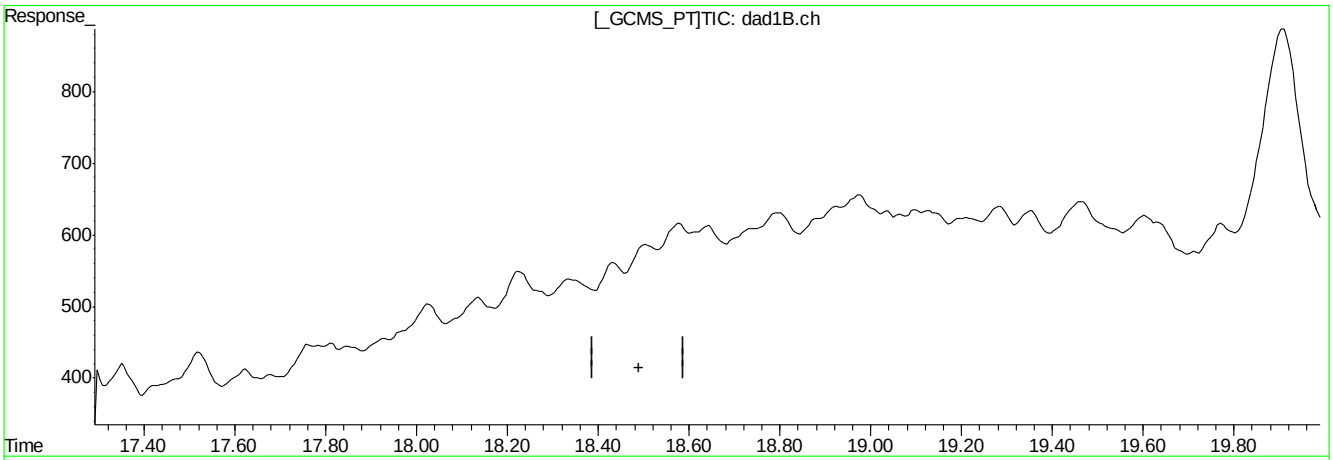
response 374689

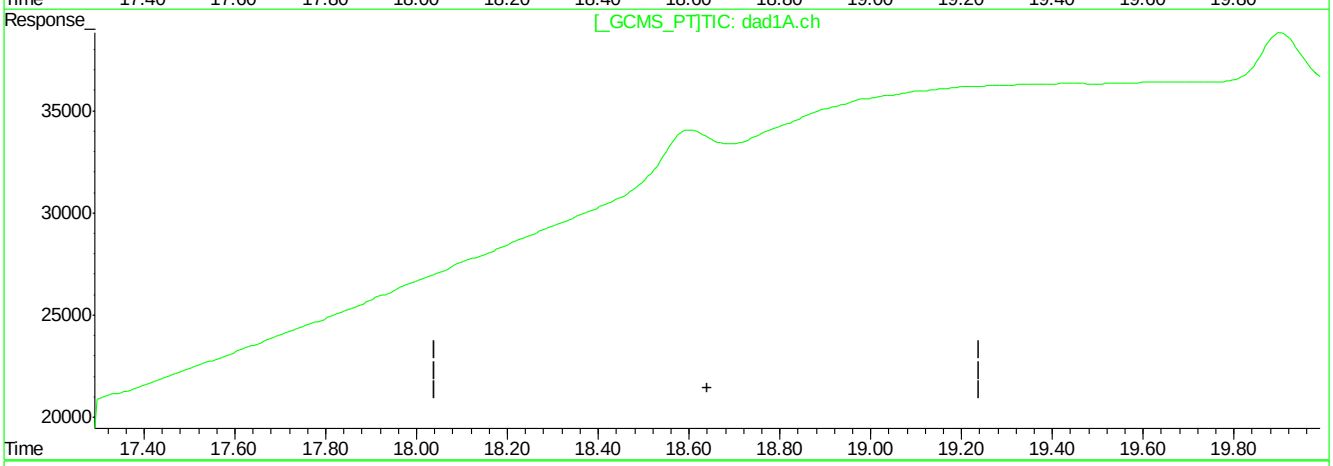
(+) = Expected Retention Time
BB084348.D BBB2589_091224.M Thu Sep 12 12:00:58 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1A.ch
Acq On : 12-Sep-2024, 09:10:00 Operator: fouads
Sample : ic2589-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(21) PETN

0.00min 0.000ppb

response 0

(21) PETN #2

0.00min 0.000ppb

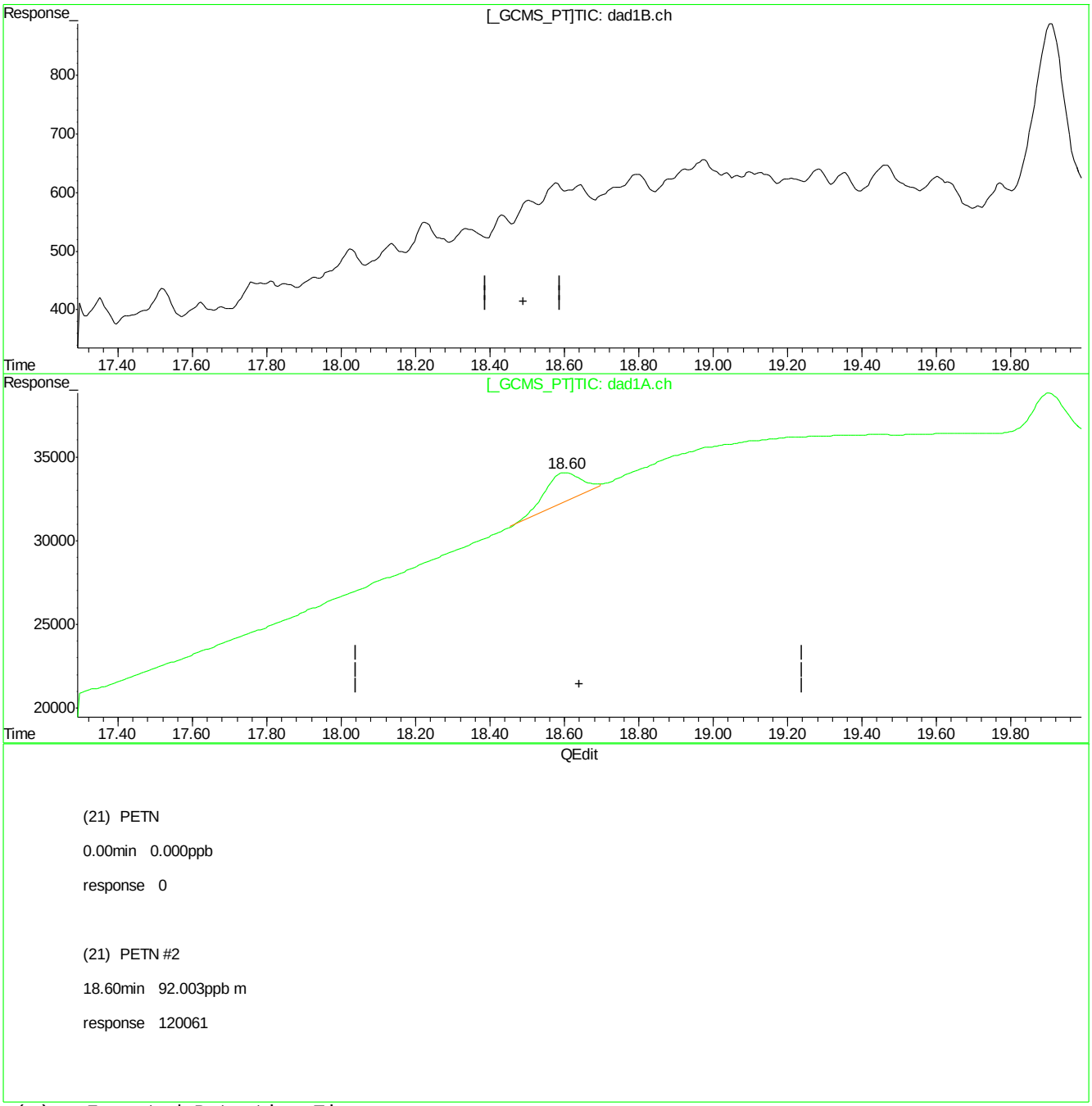
response 0

(+) = Expected Retention Time
BB084348.D BBB2589_091224.M Thu Sep 12 12:01:01 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084348.D\dad1A.ch
Acq On : 12-Sep-2024, 09:10:00 Operator: fouads
Sample : ic2589-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




(+) = Expected Retention Time
BB084348.D BBB2589_091224.M Thu Sep 12 12:01:09 2024

Manual Integrations APPROVED (compounds with "m" flag)
William Hustedde 09/19/24 15:28

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084349.D\dad1B.ch Vial: 6
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084349.D\dad1A.ch
Acq On : 12-Sep-2024, 09:36:26 Operator: fouads
Sample : ic2589-200 Inst : G1315B
Misc : op5264,GBB2589,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54:40 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Initial Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 15) S | 3,4-Dinitrotolue | 11.60 | 11.60 | 451190 | 773549 | 190.501 | 199.758 |
| | Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 38.10%# | 39.95%# |
| | Target Compounds | | | | | | |
| 1) | TNX | 1.37 | 1.37 | 293704 | 459396 | 76.509 | 78.347 |
| 2) | HMX | 1.51 | 1.51 | 324293 | 960058 | 226.195 | 240.107 |
| 3) | DNX | 1.77 | 1.77 | 532787 | 849345 | 166.865 | 169.223 |
| 4) | MNX | 2.40 | 2.40 | 572632 | 876031 | 193.979 | 192.407 |
| 5) | RDX | 3.04 | 3.04 | 379558 | 600850 | 213.100 | 209.473 |
| 6) | 1,3,5-Trinitrobe | 4.84 | 4.84 | 867583 | 1337657 | 215.884 | 219.262m |
| 7) | 1,3-Dinitrobenze | 6.09 | 6.08 | 1119305 | 793217 | 218.007 | 220.057m |
| 8) | 3,5-Dinitroanili | 6.53 | 6.53 | 814846 | 1427475 | 211.723 | 215.446 |
| 9) | Nitrobenzene | 7.72 | 7.72 | 644035 | 641529 | 219.229 | 223.087 |
| 10) | Nitroglycerin | 0.00 | 9.24 | 0 | 275895 | N.D. | 230.503 # |
| 11) | Tetryl | 9.81 | 9.81 | 621164 | 942294 | 219.538 | 198.671 |
| 12) | 2,4,6-Trinitroto | 10.21 | 10.21 | 782824 | 911815 | 208.960 | 210.659 |
| 13) | 2-Amino-4,6-Dini | 10.76 | 10.76 | 672797 | 910039 | 218.087 | 196.137 |
| 14) | 4-Amino-2,6-Dini | 11.25 | 11.25 | 493129 | 912838 | 216.553 | 197.508 |
| 16) | 2,4-Dinitrotolue | 12.28 | 12.28 | 972039 | 634583 | 206.901 | 211.087 |
| 17) | 2,6-Dinitrotolue | 12.72 | 12.72 | 543947 | 723870 | 205.938 | 218.850 |
| 18) | o-Nitrotoluene | 15.78 | 15.77 | 457852 | 619318 | 214.292 | 225.631m |
| 19) | p-Nitrotoluene | 16.34 | 16.35 | 699536 | 503013 | 216.654 | 191.594 |
| 20) | m-Nitrotoluene | 17.10 | 17.11 | 658083 | 675577 | 218.585 | 192.923 |
| 21) | PETN | 0.00 | 18.62 | 0 | 269851 | N.D. | 206.788m# |

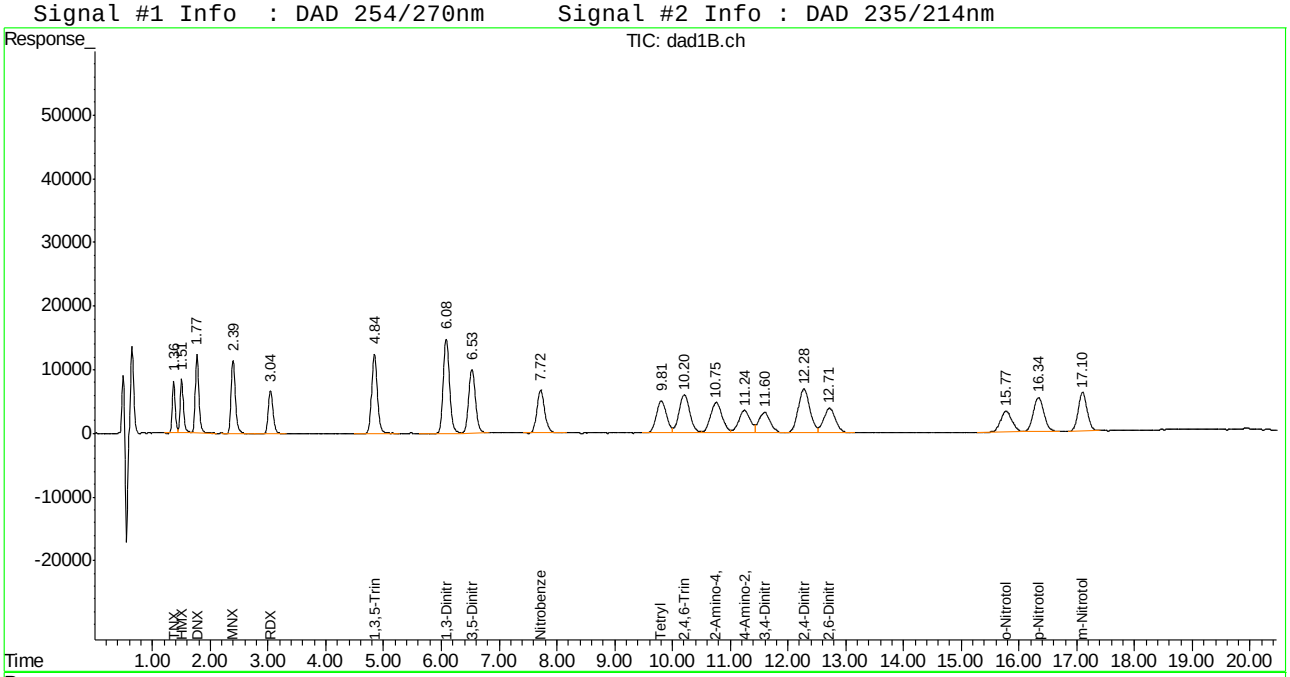
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
BB084349.D BBB2589_091224.M Mon Sep 16 14:49:36 2024 Page 1

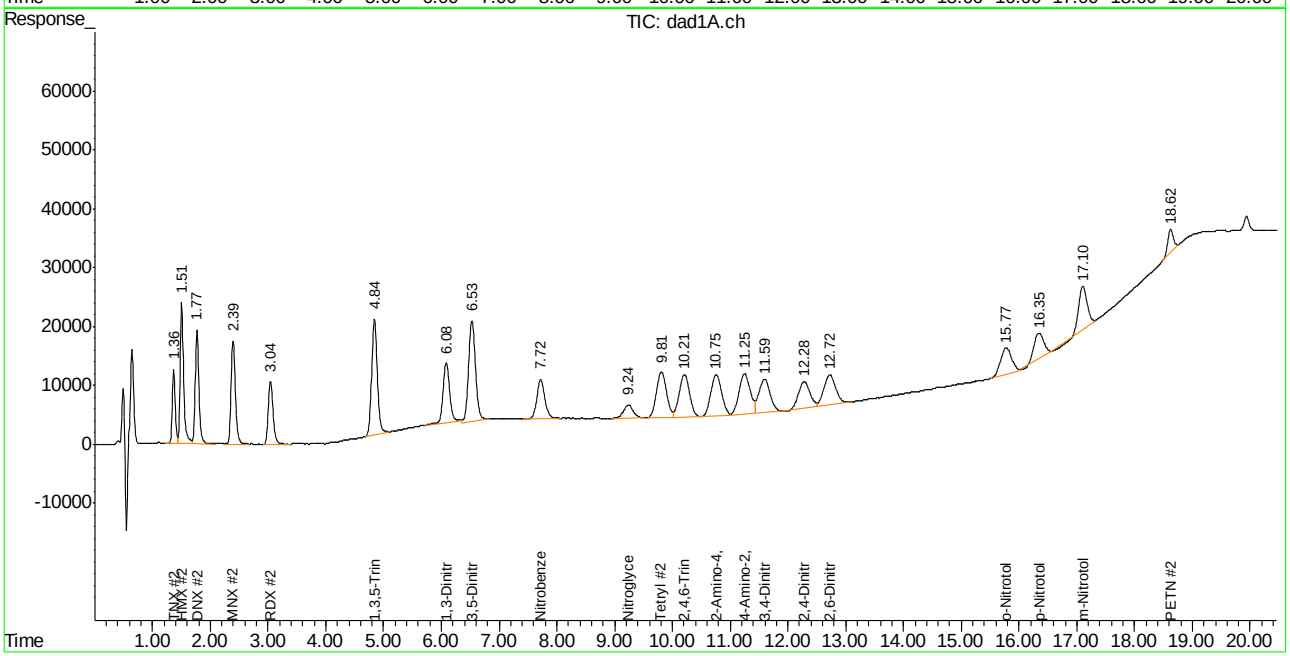
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084349.D\dad1B.ch Vial: 6
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084349.D\dad1A.ch
Acq On : 12-Sep-2024, 09:36:26 Operator: fouads
Sample : ic2589-200 Inst : G1315B
Misc : op5264,GBB2589,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 12:02 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm



# Manual Integration Approval Summary



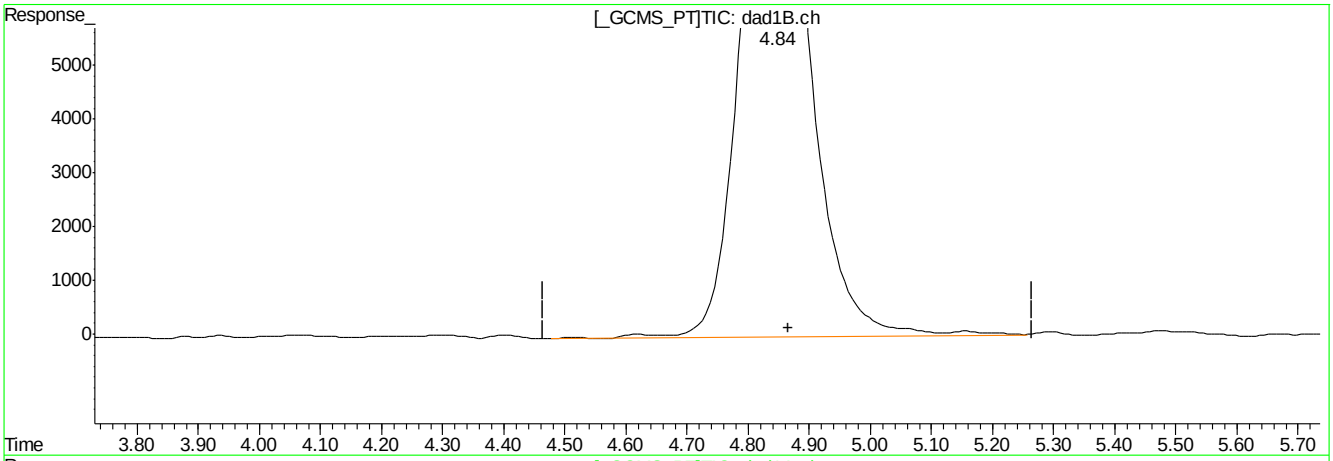
**Sample Number:** GBB2589-IC2589
**Lab FileID:** BB084349.D
**Injection Time:** 09/12/24 09:36
**Method:** SW846 8330B
**Analyst approved:** 09/16/24 15:05 Fouad Sekkar
**Supervisor approved:** 09/19/24 15:28 William Hustedde

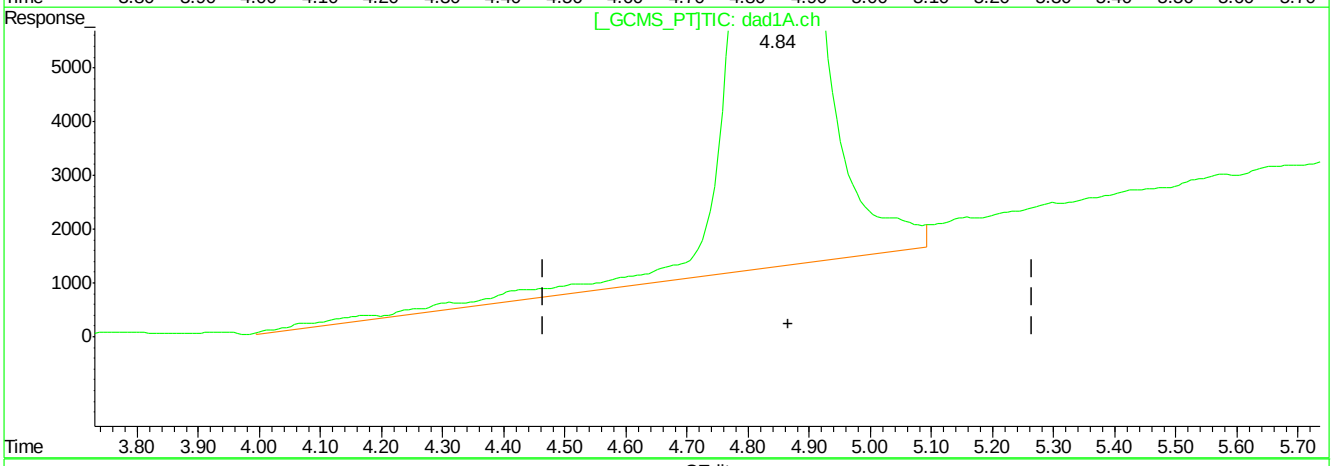
| Parameter | CAS | Sig# | R.T. (min.) | Reason |
|---|---|---|---|---|
| 1,3,5-Trinitrobenzene | 99-35-4 | 2 | 4.84 | Poor instrument integration |
| 1,3-Dinitrobenzene | 99-65-0 | 2 | 6.08 | Poor instrument integration |
| o-Nitrotoluene | 88-72-2 | 2 | 15.77 | Poor instrument integration |
| PETN | 78-11-5 | 2 | 18.62 | Poor instrument integration |

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084349.D\dad1B.ch Vial: 6
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084349.D\dad1A.ch
Acq On : 12-Sep-2024, 09:36:26 Operator: fouads
Sample : ic2589-200 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(6) 1,3,5-Trinitrobenzene

4.84min 215.884ppb

response 867583

(6) 1,3,5-Trinitrobenzene #2

4.84min 238.986ppb

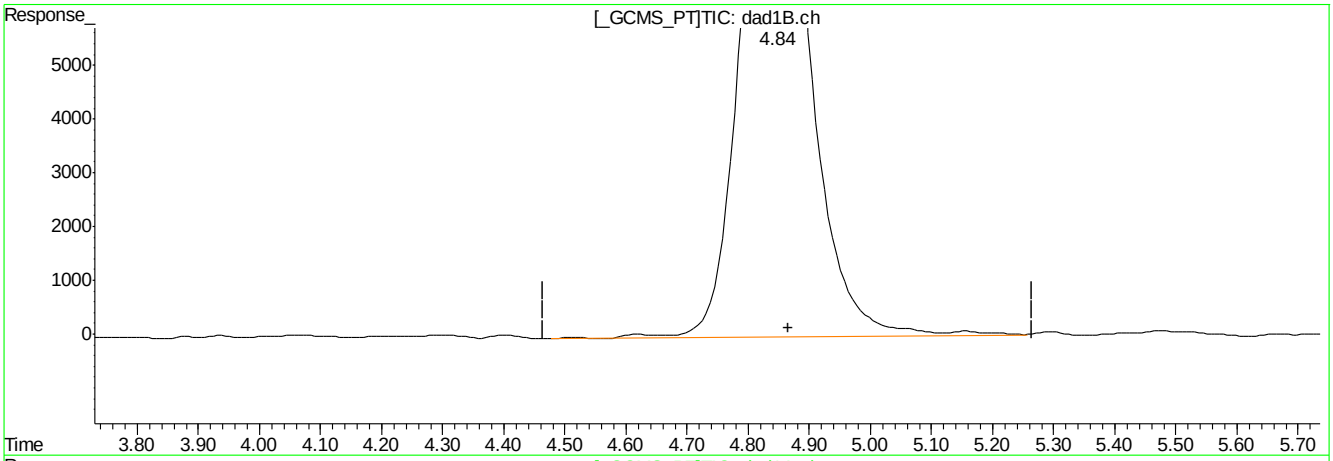
response 1457989

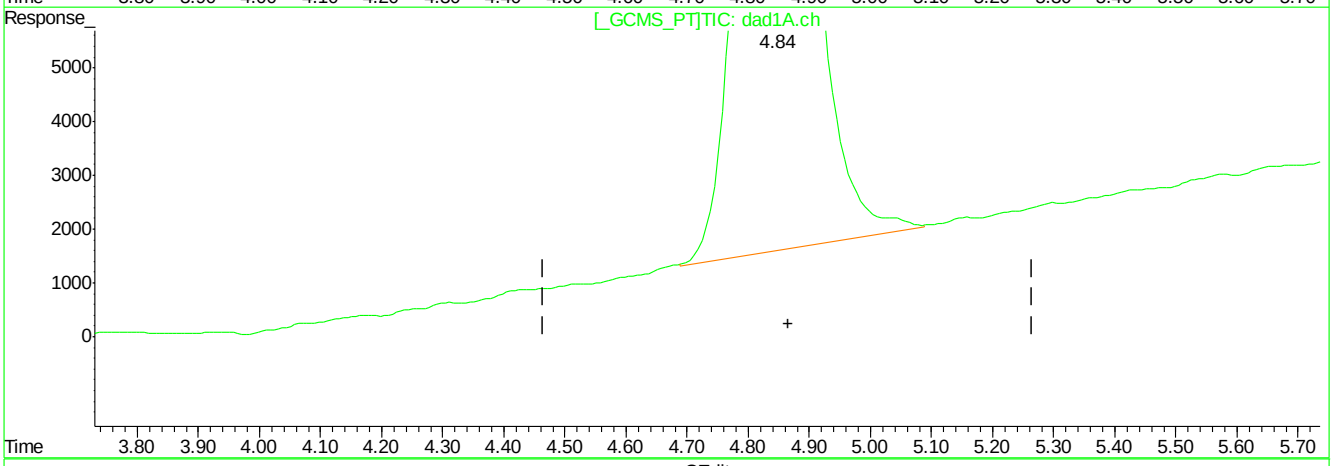
(+) = Expected Retention Time
BB084349.D BBB2589_091224.M Thu Sep 12 12:01:40 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084349.D\dad1B.ch Vial: 6
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084349.D\dad1A.ch
Acq On : 12-Sep-2024, 09:36:26 Operator: fouads
Sample : ic2589-200 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(6) 1,3,5-Trinitrobenzene

4.84min 215.884ppb

response 867583

(6) 1,3,5-Trinitrobenzene #2

4.84min 219.262ppb m

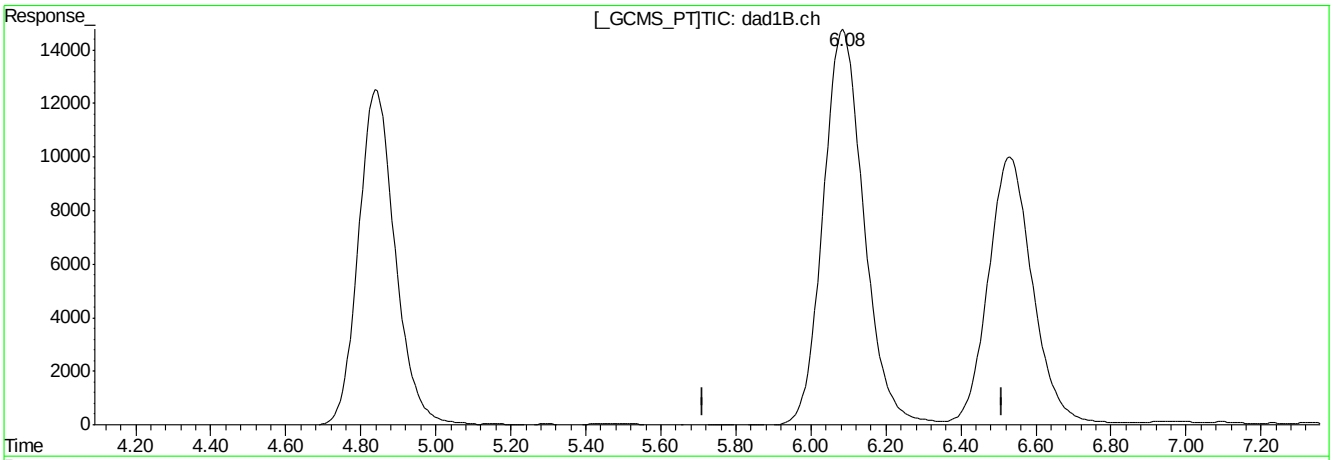
response 1337657

(+) = Expected Retention Time
BB084349.D BBB2589_091224.M Thu Sep 12 12:01:46 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084349.D\dad1B.ch Vial: 6
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084349.D\dad1A.ch
Acq On : 12-Sep-2024, 09:36:26 Operator: fouads
Sample : ic2589-200 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




(7) 1,3-Dinitrobenzene

6.09min 218.007ppb

response 1119305

(7) 1,3-Dinitrobenzene #2

6.09min 328.483ppb

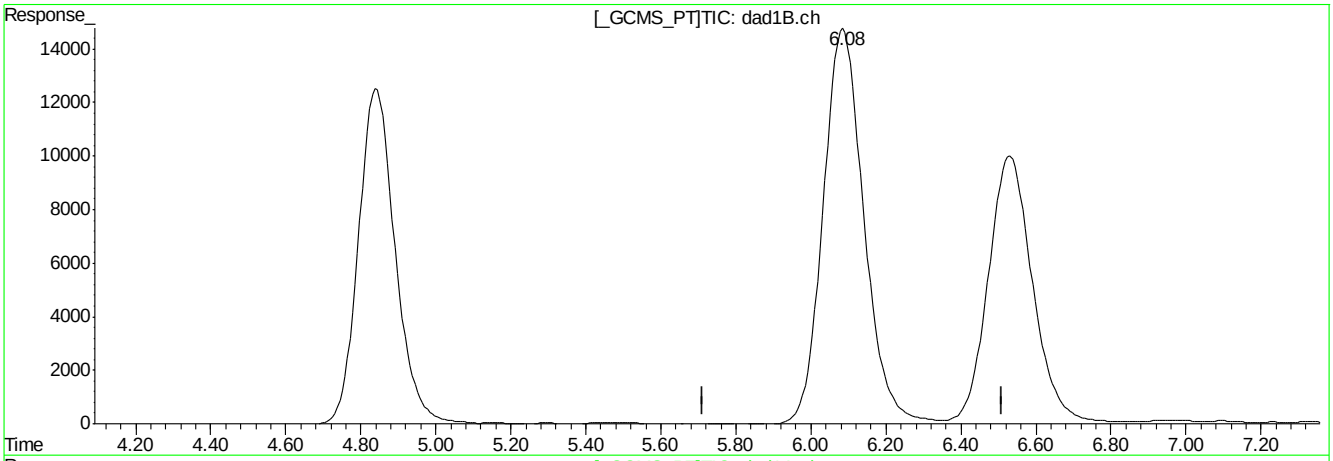
response 1184050

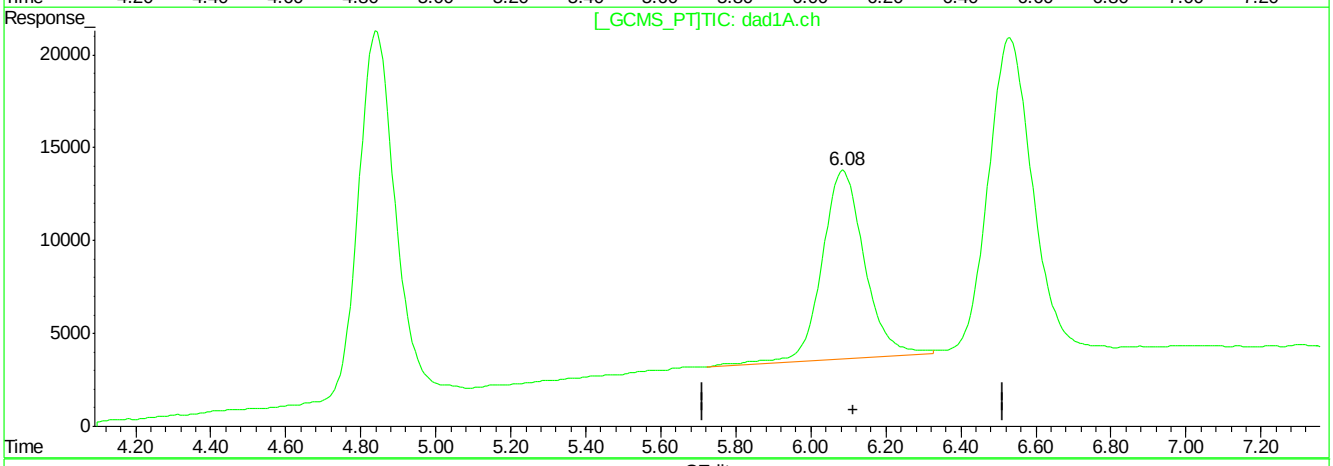
(+) = Expected Retention Time
BB084349.D BBB2589_091224.M Thu Sep 12 12:01:50 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084349.D\dad1B.ch Vial: 6
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084349.D\dad1A.ch
Acq On : 12-Sep-2024, 09:36:26 Operator: fouads
Sample : ic2589-200 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(7) 1,3-Dinitrobenzene

6.09min 218.007ppb

response 1119305

(7) 1,3-Dinitrobenzene #2

6.08min 220.057ppb m

response 793217

(+) = Expected Retention Time
BB084349.D BBB2589_091224.M Thu Sep 12 12:01:59 2024



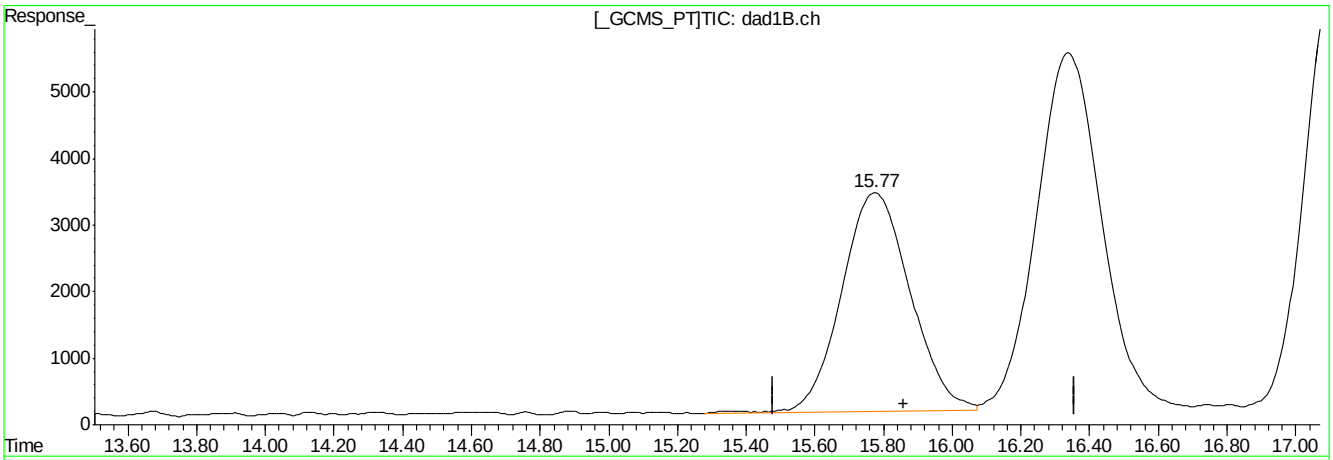
BB084349.D edits: 1,3-Dinitrobenzene

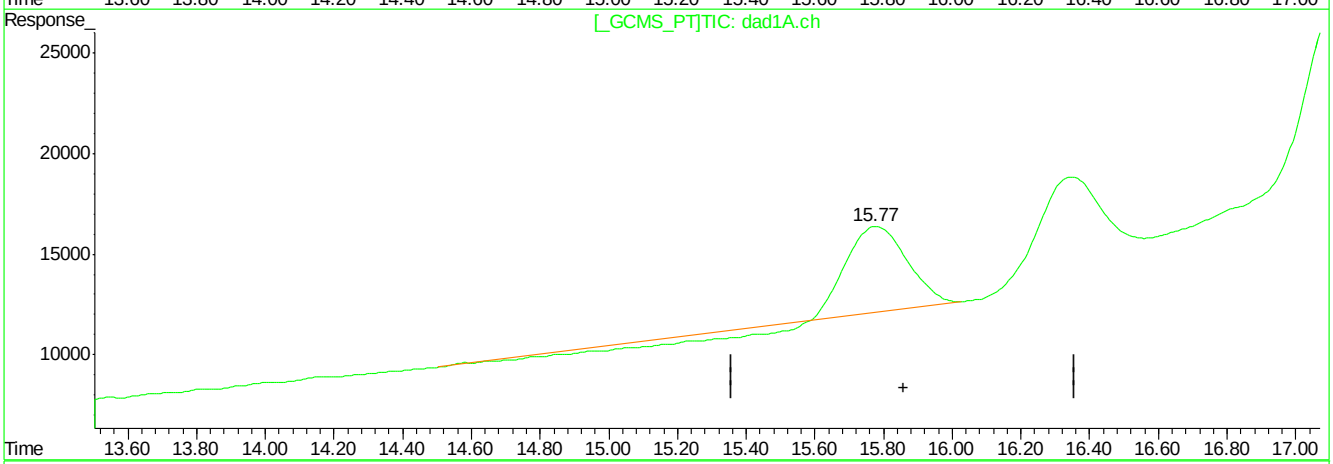
FC21117

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084349.D\dad1B.ch Vial: 6
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084349.D\dad1A.ch
Acq On : 12-Sep-2024, 09:36:26 Operator: fouads
Sample : ic2589-200 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(18) o-Nitrotoluene

15.78min 214.292ppb

response 457852

(18) o-Nitrotoluene #2

15.78min 147.665ppb

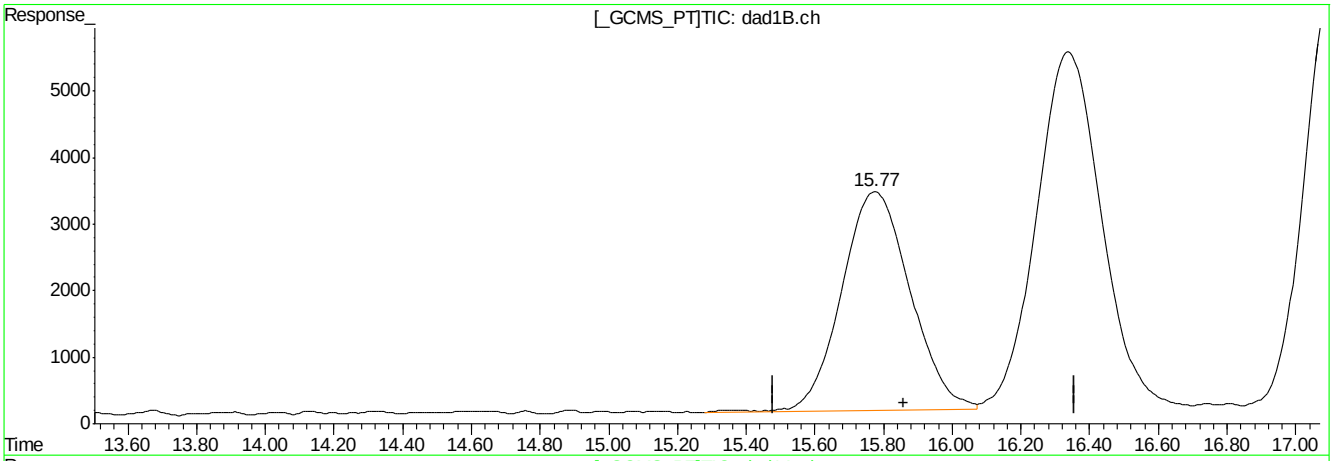
response 405313

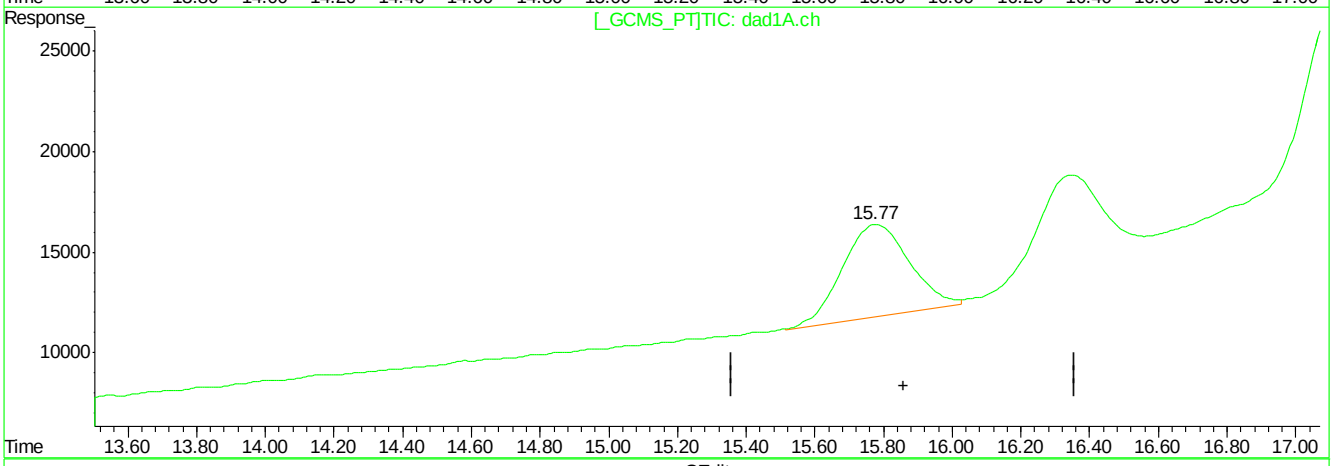
(+) = Expected Retention Time
BB084349.D BBB2589_091224.M Thu Sep 12 12:02:20 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084349.D\dad1B.ch Vial: 6
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084349.D\dad1A.ch
Acq On : 12-Sep-2024, 09:36:26 Operator: fouads
Sample : ic2589-200 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(18) o-Nitrotoluene

15.78min 214.292ppb

response 457852

(18) o-Nitrotoluene #2

15.77min 225.631ppb m

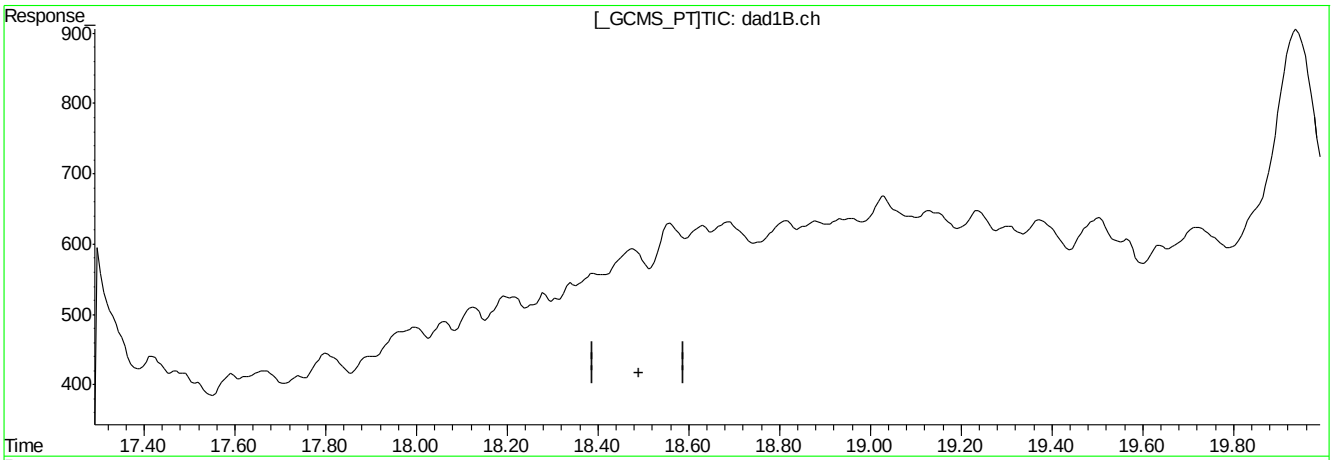
response 619318

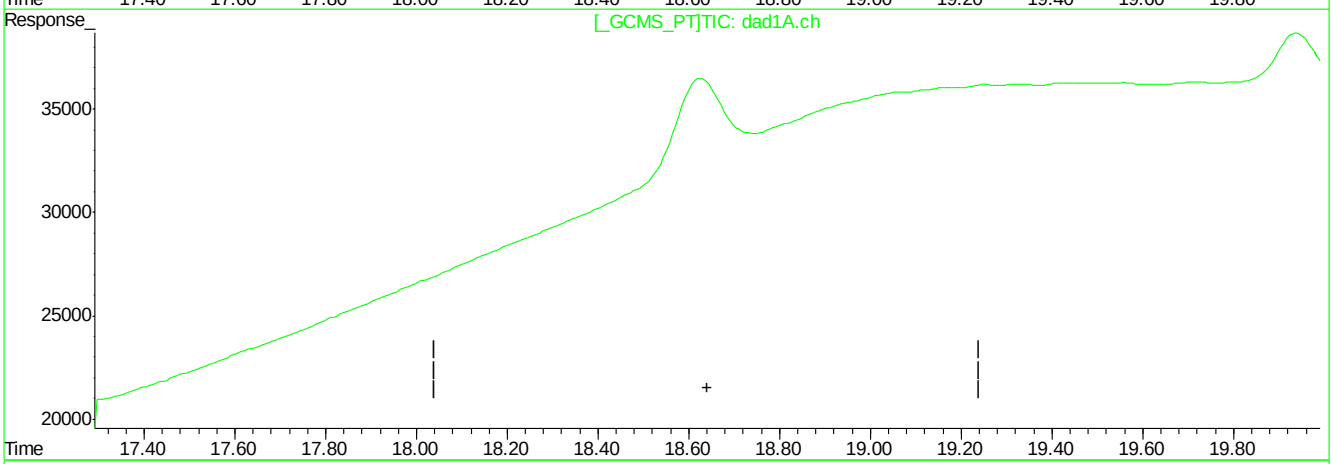
(+) = Expected Retention Time
BB084349.D BBB2589_091224.M Thu Sep 12 12:02:34 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084349.D\dad1B.ch Vial: 6
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084349.D\dad1A.ch
Acq On : 12-Sep-2024, 09:36:26 Operator: fouads
Sample : ic2589-200 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(21) PETN

0.00min 0.000ppb

response 0

(21) PETN #2

0.00min 0.000ppb

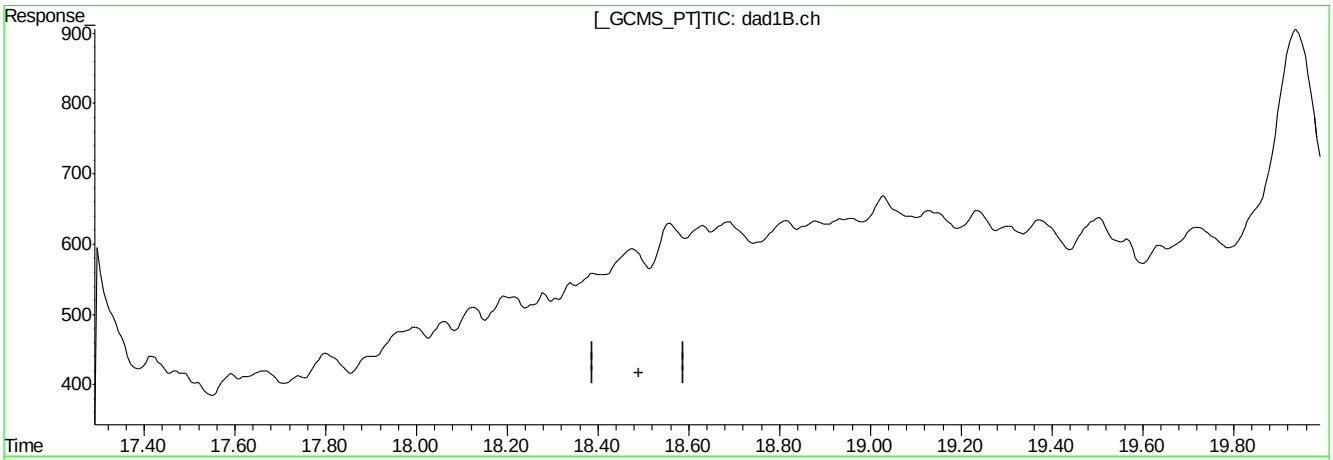
response 0

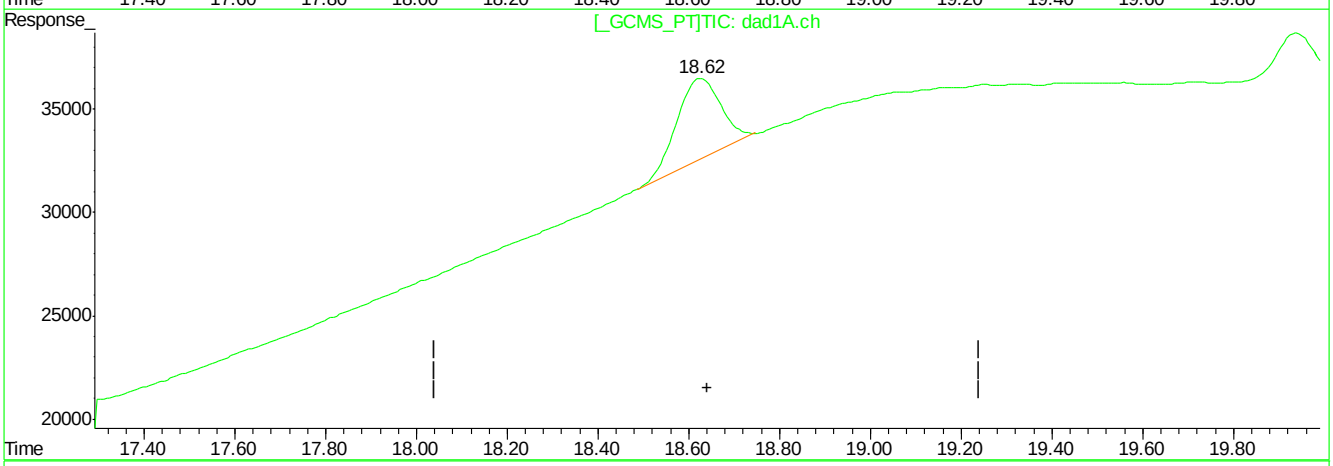
(+) = Expected Retention Time
BB084349.D BBB2589_091224.M Thu Sep 12 12:02:43 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084349.D\dad1B.ch Vial: 6
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084349.D\dad1A.ch
Acq On : 12-Sep-2024, 09:36:26 Operator: fouads
Sample : ic2589-200 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(21) PETN

0.00min 0.000ppb

response 0

(21) PETN #2

18.62min 206.788ppb m

response 269851

(+) = Expected Retention Time
BB084349.D BBB2589_091224.M Thu Sep 12 12:02:49 2024

Manual Integrations APPROVED (compounds with "m" flag)
William Hustedde 09/19/24 15:28

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084350.D\dad1B.ch Vial: 7
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084350.D\dad1A.ch
Acq On : 12-Sep-2024, 10:02:55 Operator: fouads
Sample : ic2589-500 Inst : G1315B
Misc : op5264,GBB2589,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54:41 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Initial Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 15) S | 3,4-Dinitrotolue | 11.60 | 11.60 | 1092068 | 1920858 | 461.092 | 496.034 |
| | Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 92.22% | 99.21% |
| | Target Compounds | | | | | | |
| 1) | TNX | 1.37 | 1.37 | 679603 | 1051158 | 177.034 | 179.269 |
| 2) | HMX | 1.51 | 1.51 | 781726 | 2252384 | 545.254 | 563.312 |
| 3) | DNX | 1.77 | 1.77 | 1204469 | 1937205 | 377.230 | 385.969 |
| 4) | MNX | 2.40 | 2.40 | 1300751 | 2007346 | 440.630 | 440.884 |
| 5) | RDX | 3.05 | 3.05 | 896260 | 1420732 | 503.197 | 495.306 |
| 6) | 1,3,5-Trinitrobe | 4.85 | 4.85 | 2038279 | 3116558 | 507.194 | 510.851 |
| 7) | 1,3-Dinitrobenze | 6.09 | 6.09 | 2625430 | 1837018 | 511.355 | 509.631m |
| 8) | 3,5-Dinitroanili | 6.53 | 6.53 | 1924709 | 3302922 | 500.102 | 498.505 |
| 9) | Nitrobenzene | 7.72 | 7.72 | 1509382 | 1492247 | 513.793 | 518.917 |
| 10) | Nitroglycerin | 0.00 | 9.24 | 0 | 638339 | N.D. | 533.316 # |
| 11) | Tetryl | 9.82 | 9.82 | 1467130 | 2235199 | 518.527 | 471.264 |
| 12) | 2,4,6-Trinitroto | 10.21 | 10.21 | 1851237 | 2155883 | 494.153 | 498.080 |
| 13) | 2-Amino-4,6-Dini | 10.77 | 10.77 | 1607730 | 2252398 | 521.145 | 485.450 |
| 14) | 4-Amino-2,6-Dini | 11.25 | 11.26 | 1175272 | 2264599 | 516.111 | 489.984 |
| 16) | 2,4-Dinitrotolue | 12.29 | 12.29 | 2309942 | 1542867 | 491.678 | 513.218 |
| 17) | 2,6-Dinitrotolue | 12.73 | 12.73 | 1299594 | 1741884 | 492.025 | 526.631 |
| 18) | o-Nitrotoluene | 15.78 | 15.78 | 1061489 | 1513008 | 496.818 | 551.222m |
| 19) | p-Nitrotoluene | 16.34 | 16.35 | 1613789 | 1285947 | 499.807 | 489.807 |
| 20) | m-Nitrotoluene | 17.11 | 17.11 | 1536896 | 1751831 | 510.486 | 500.265 |
| 21) | PETN | 0.00 | 18.62 | 0 | 677737 | N.D. | 519.353m# |

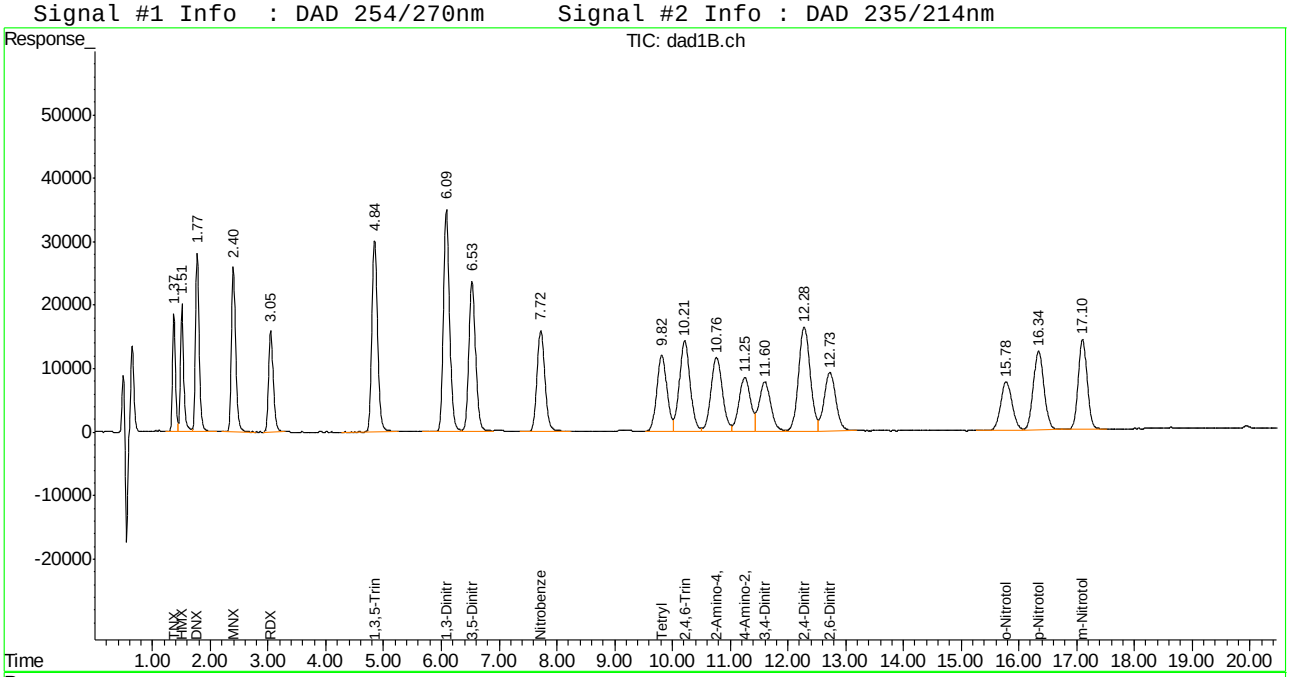
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
BB084350.D BBB2589_091224.M Mon Sep 16 14:49:37 2024 Page 1

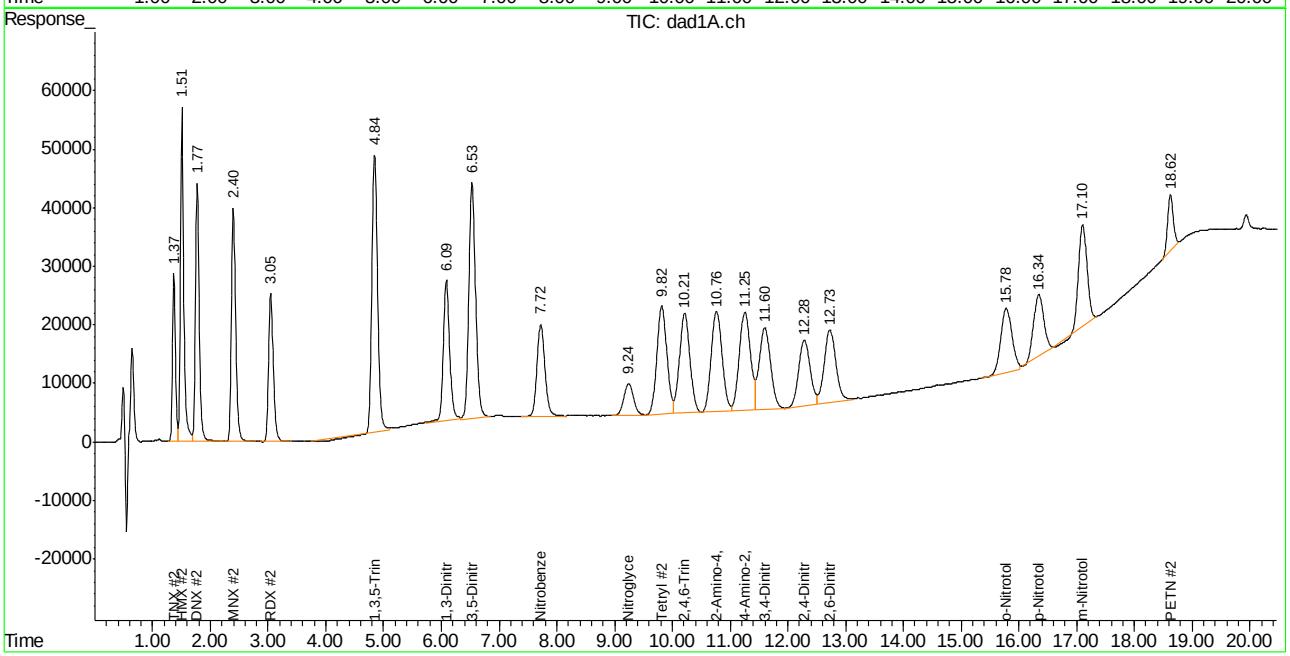
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084350.D\dad1B.ch Vial: 7
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084350.D\dad1A.ch
Acq On : 12-Sep-2024, 10:02:55 Operator: fouads
Sample : ic2589-500 Inst : G1315B
Misc : op5264,GBB2589,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 12:04 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm



# Manual Integration Approval Summary



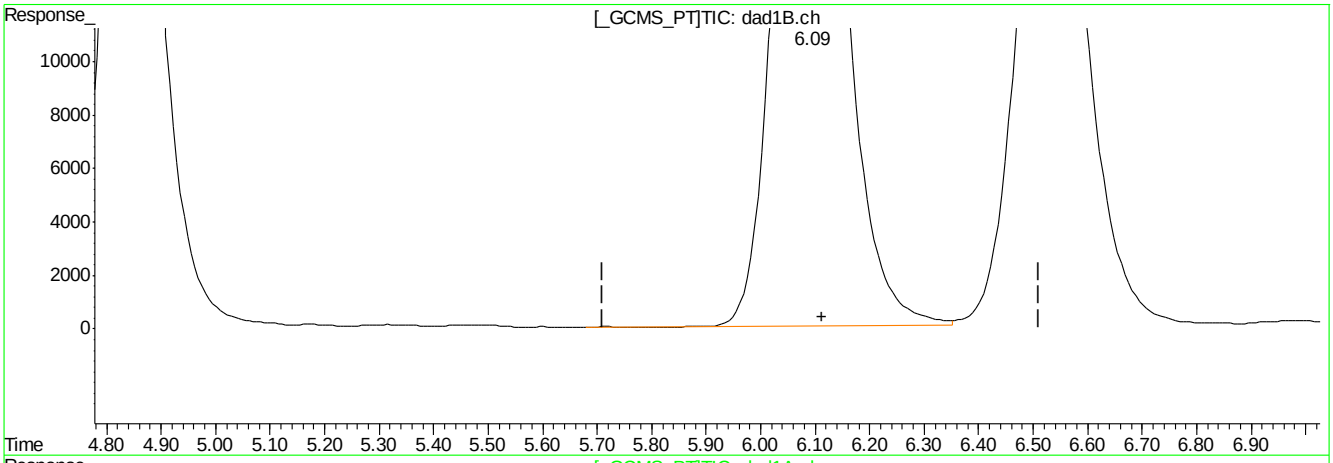
**Sample Number:** GBB2589-IC2589
**Lab FileID:** BB084350.D
**Injection Time:** 09/12/24 10:02
**Method:** SW846 8330B
**Analyst approved:** 09/16/24 15:05 Fouad Sekkar
**Supervisor approved:** 09/19/24 15:28 William Hustedde

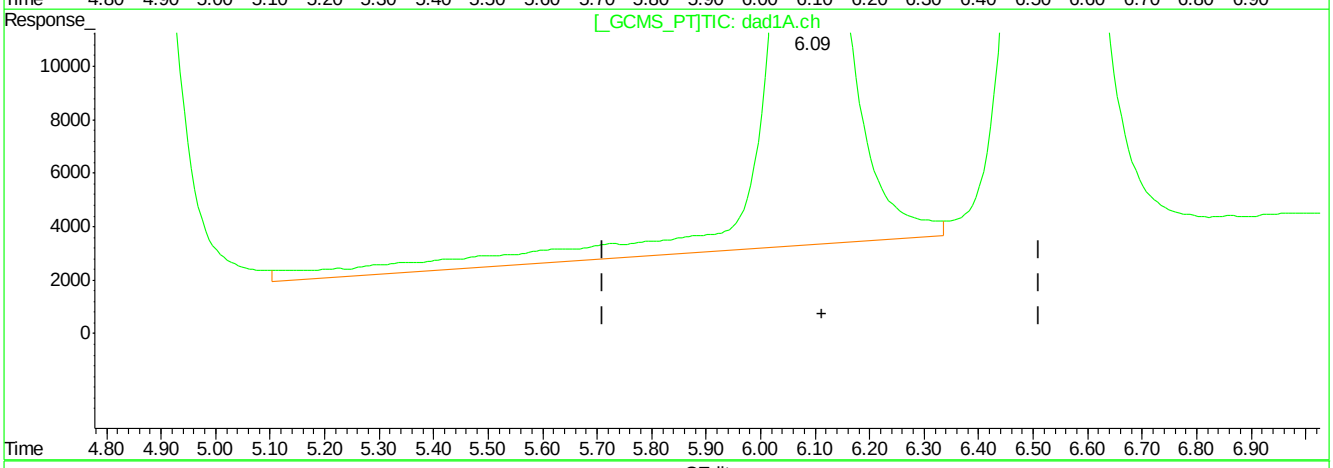
| Parameter | CAS | Sig# | R.T. (min.) | Reason |
|---|---|---|---|---|
| 1,3-Dinitrobenzene | 99-65-0 | 2 | 6.09 | Poor instrument integration |
| o-Nitrotoluene | 88-72-2 | 2 | 15.78 | Poor instrument integration |
| PETN | 78-11-5 | 2 | 18.62 | Poor instrument integration |

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084350.D\dad1B.ch Vial: 7
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084350.D\dad1A.ch
Acq On : 12-Sep-2024, 10:02:55 Operator: fouads
Sample : ic2589-500 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(7) 1,3-Dinitrobenzene

6.09min 511.355ppb

response 2625430

(7) 1,3-Dinitrobenzene #2

6.09min 585.313ppb

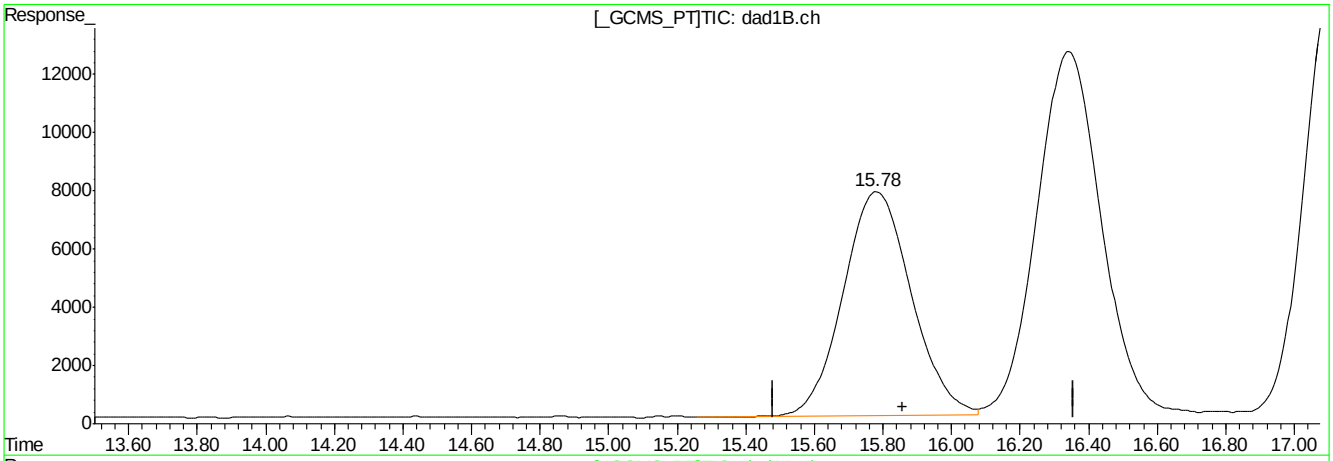
response 2109819

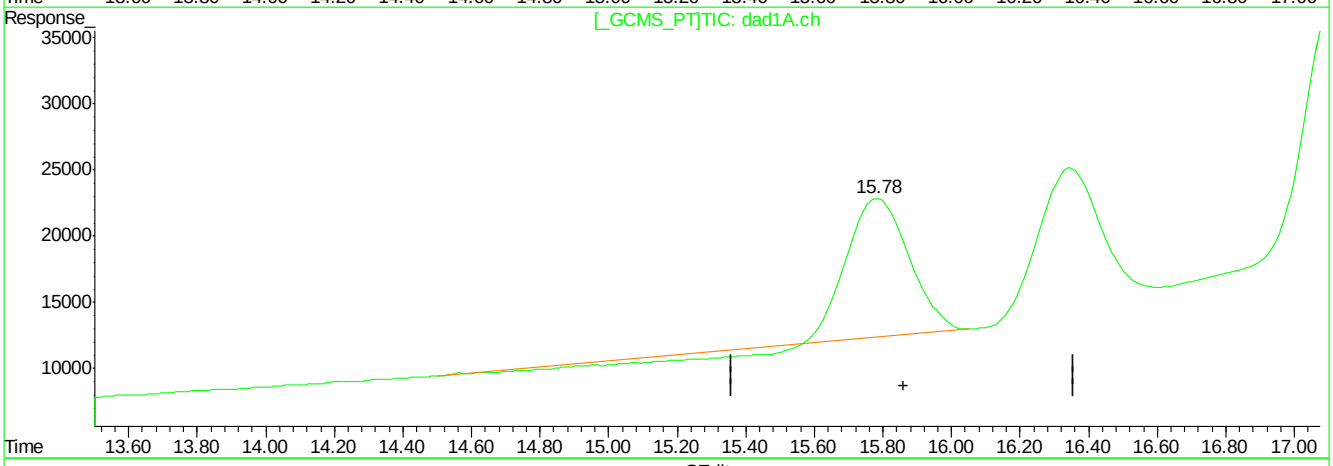
(+) = Expected Retention Time
BB084350.D BBB2589_091224.M Thu Sep 12 12:03:29 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084350.D\dad1B.ch Vial: 7
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084350.D\dad1A.ch
Acq On : 12-Sep-2024, 10:02:55 Operator: fouads
Sample : ic2589-500 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(18) o-Nitrotoluene

15.78min 496.818ppb

response 1061489

(18) o-Nitrotoluene #2

15.78min 426.199ppb

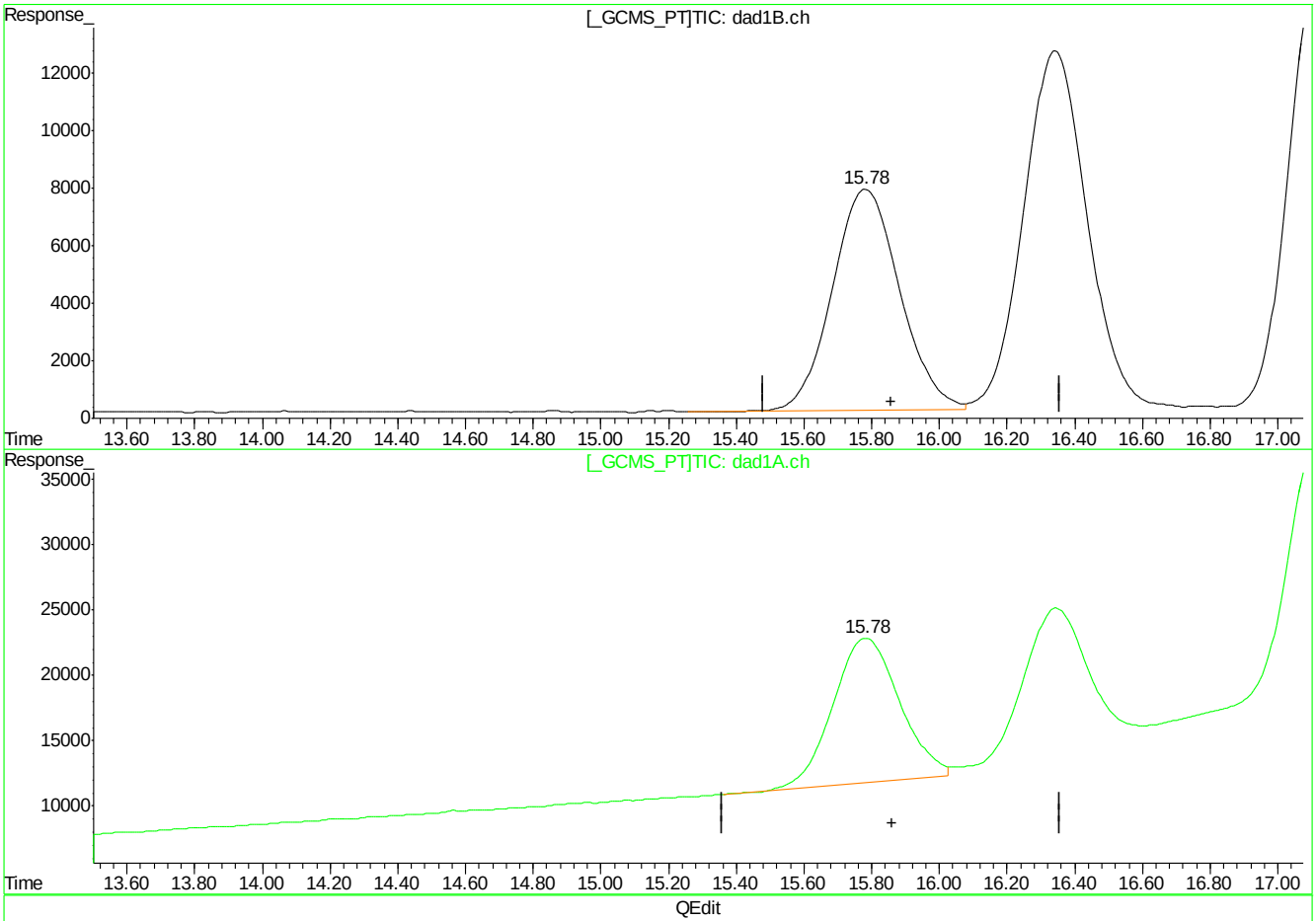
response 1169841

(+) = Expected Retention Time
BB084350.D BBB2589_091224.M Thu Sep 12 12:03:55 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084350.D\dad1B.ch Vial: 7
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084350.D\dad1A.ch
Acq On : 12-Sep-2024, 10:02:55 Operator: fouads
Sample : ic2589-500 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




(18) o-Nitrotoluene

15.78min 496.818ppb

response 1061489

(18) o-Nitrotoluene #2

15.78min 551.222ppb m

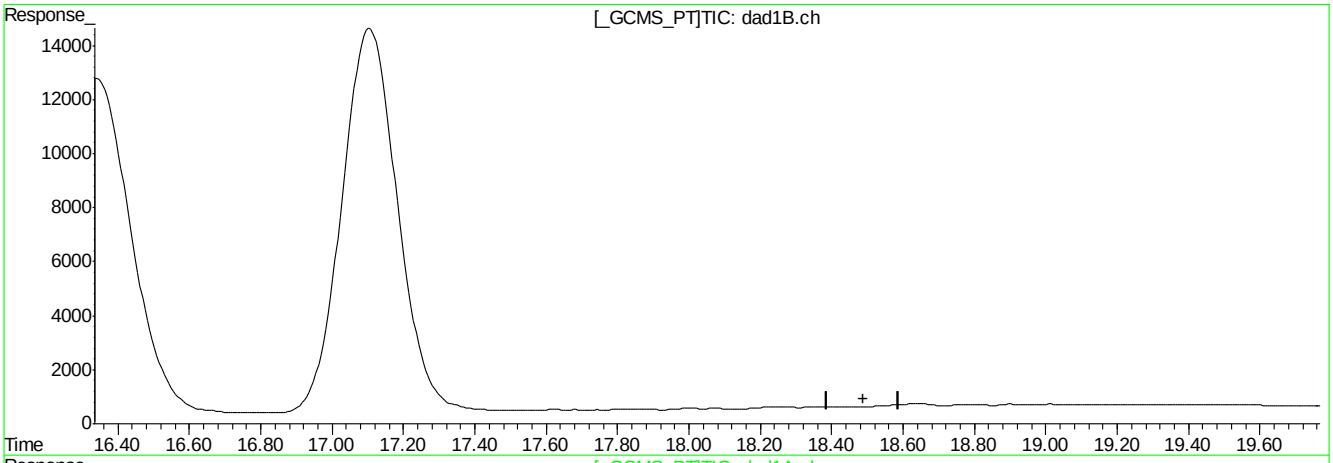
response 1513008

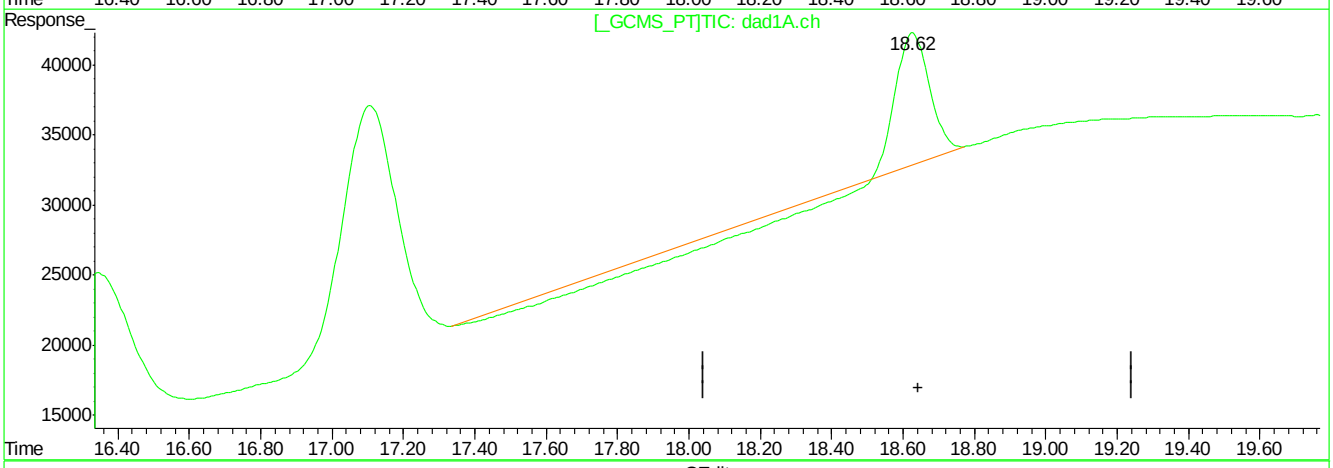
(+) = Expected Retention Time
BB084350.D BBB2589_091224.M Thu Sep 12 12:04:00 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084350.D\dad1B.ch Vial: 7
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084350.D\dad1A.ch
Acq On : 12-Sep-2024, 10:02:55 Operator: fouads
Sample : ic2589-500 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(21) PETN

0.00min 0.000ppb

response 0

(21) PETN #2

18.63min 153.969ppb

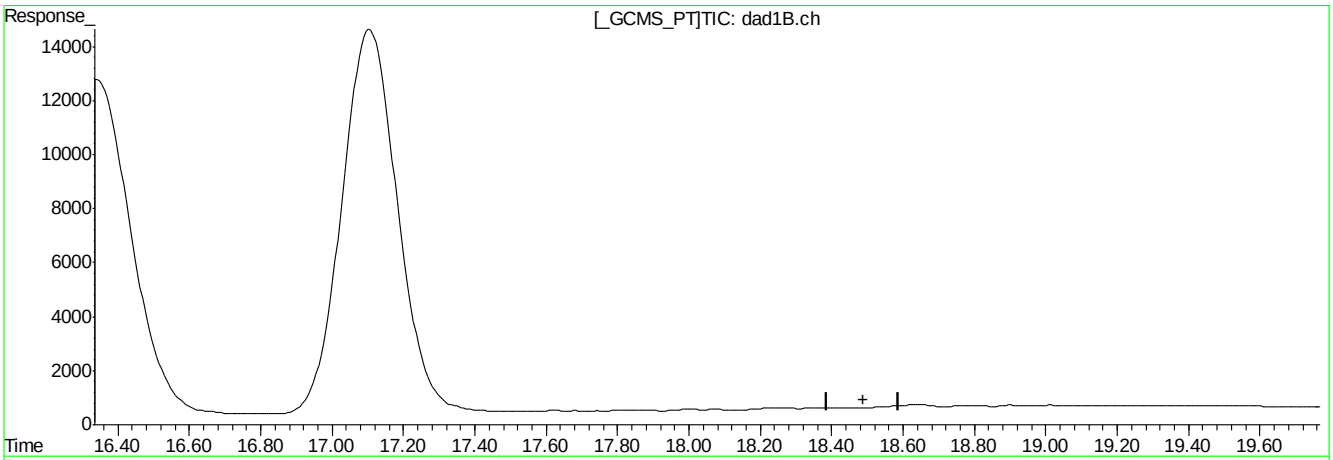
response 200924

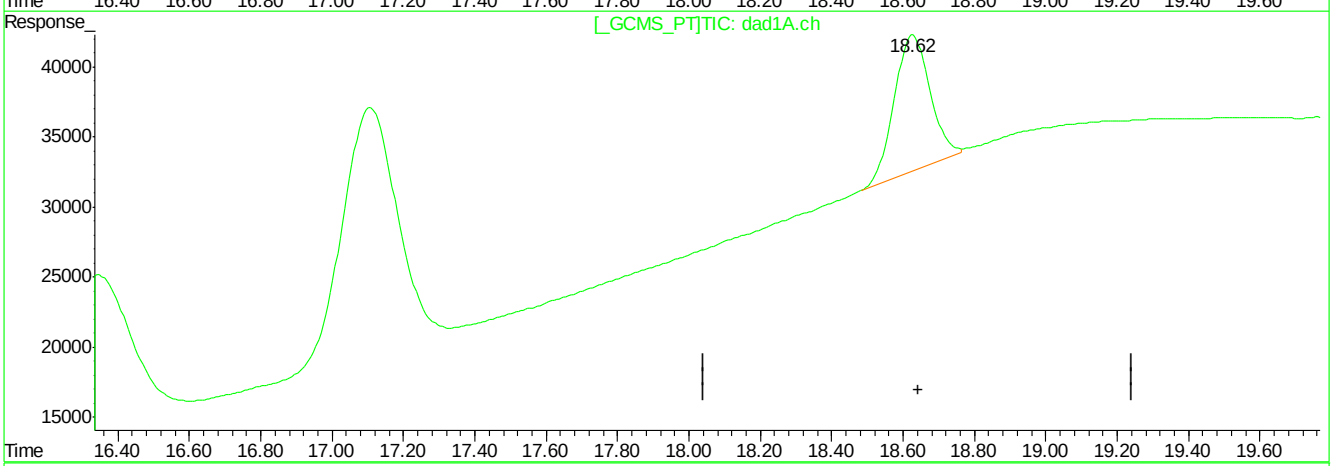
(+) = Expected Retention Time
BB084350.D BBB2589_091224.M Thu Sep 12 12:04:08 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084350.D\dad1B.ch Vial: 7
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084350.D\dad1A.ch
Acq On : 12-Sep-2024, 10:02:55 Operator: fouads
Sample : ic2589-500 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(21) PETN

0.00min 0.000ppb

response 0

(21) PETN #2

18.62min 519.353ppb m

response 677737

(+) = Expected Retention Time
BB084350.D BBB2589_091224.M Thu Sep 12 12:04:14 2024

Manual Integrations APPROVED (compounds with "m" flag)
William Hustedde 09/19/24 15:28

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084351.D\dad1B.ch Vial: 8
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084351.D\dad1A.ch
Acq On : 12-Sep-2024, 10:29:21 Operator: fouads
Sample : icc2589-1000 Inst : G1315B
Misc : op5264,GBB2589,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54:42 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Initial Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 15) S | 3,4-Dinitrotolue | 11.67 | 11.67 | 2243711 | 3996479 | 947.338 | 1032.033 |
| | Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 189.47%# | 206.41%# |
| | Target Compounds | | | | | | |
| 1) | TNX | 1.37 | 1.37 | 1378298 | 2115362 | 359.042 | 360.763 |
| 2) | HMX | 1.51 | 1.51 | 1539636 | 4281058 | 1073.896 | 1070.676 |
| 3) | DNX | 1.77 | 1.77 | 2439707 | 3821658 | 764.097 | 761.427 |
| 4) | MNX | 2.40 | 2.40 | 2644887 | 4028686 | 895.957 | 884.842 |
| 5) | RDX | 3.05 | 3.05 | 1813728 | 2884415 | 1018.301 | 1005.585 |
| 6) | 1,3,5-Trinitrobe | 4.86 | 4.86 | 4116656 | 6398948 | 1024.366 | 1048.885 |
| 7) | 1,3-Dinitrobenze | 6.11 | 6.11 | 5326681 | 3900844 | 1037.477 | 1082.184 |
| 8) | 3,5-Dinitroanili | 6.56 | 6.56 | 3946440 | 6620804 | 1025.413 | 999.267 |
| 9) | Nitrobenzene | 7.75 | 7.75 | 3062907 | 3011363 | 1042.612 | 1047.178 |
| 10) | Nitroglycerin | 0.00 | 9.28 | 0 | 1295310 | N.D. d | 1082.198 |
| 11) | Tetryl | 9.88 | 9.88 | 2973894 | 4599089 | 1051.062 | 969.662 |
| 12) | 2,4,6-Trinitroto | 10.26 | 10.26 | 3764446 | 4487892 | 1004.848 | 1036.851 |
| 13) | 2-Amino-4,6-Dini | 10.84 | 10.84 | 3271338 | 4747411 | 1060.403 | 1023.189 |
| 14) | 4-Amino-2,6-Dini | 11.33 | 11.33 | 2400400 | 4769543 | 1054.115 | 1031.970 |
| 16) | 2,4-Dinitrotolue | 12.35 | 12.35 | 4738521 | 3170024 | 1008.608 | 1054.475 |
| 17) | 2,6-Dinitrotolue | 12.79 | 12.80 | 2682112 | 3522478 | 1015.444 | 1064.964 |
| 18) | o-Nitrotoluene | 15.85 | 15.85 | 2185371 | 3041769 | 1022.838 | 1108.184m |
| 19) | p-Nitrotoluene | 16.40 | 16.40 | 3363887 | 2778271 | 1041.830 | 1058.221 |
| 20) | m-Nitrotoluene | 17.16 | 17.16 | 3180530 | 3752992 | 1056.425 | 1071.731 |
| 21) | PETN | 0.00 | 18.65 | 0 | 1379911 | N.D. d | 1057.432m |

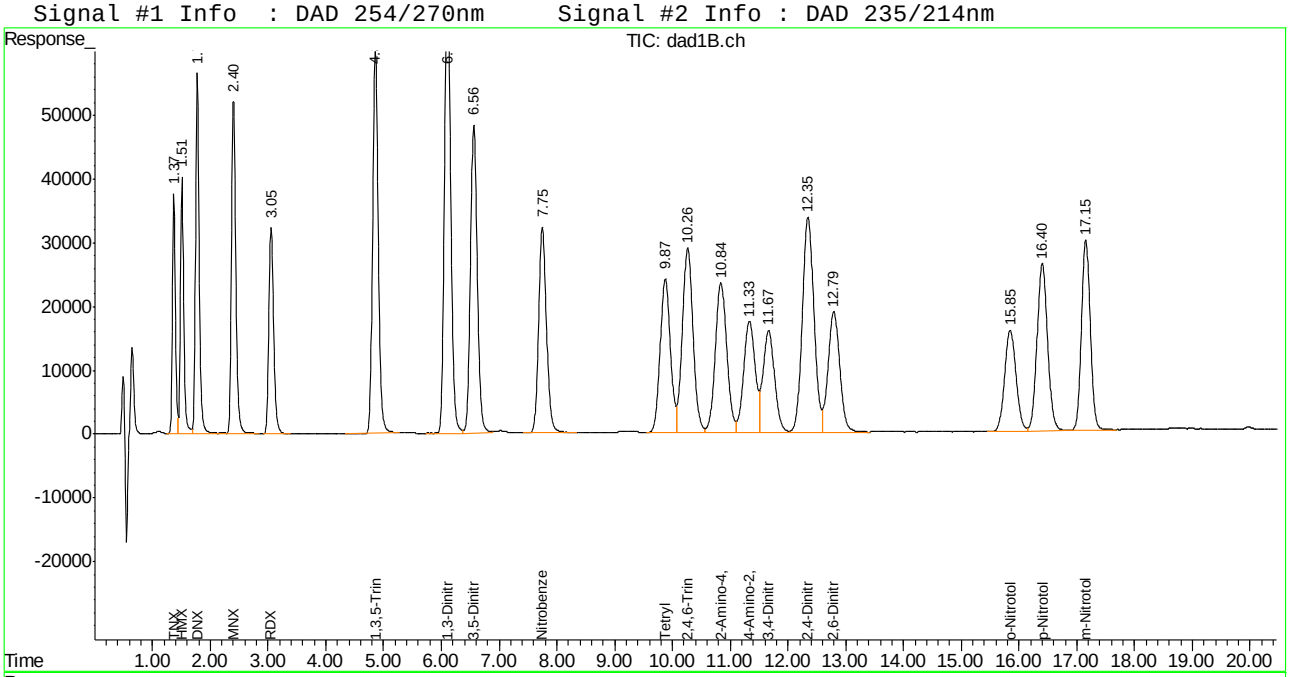
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
BB084351.D BBB2589_091224.M Mon Sep 16 14:49:38 2024 Page 1

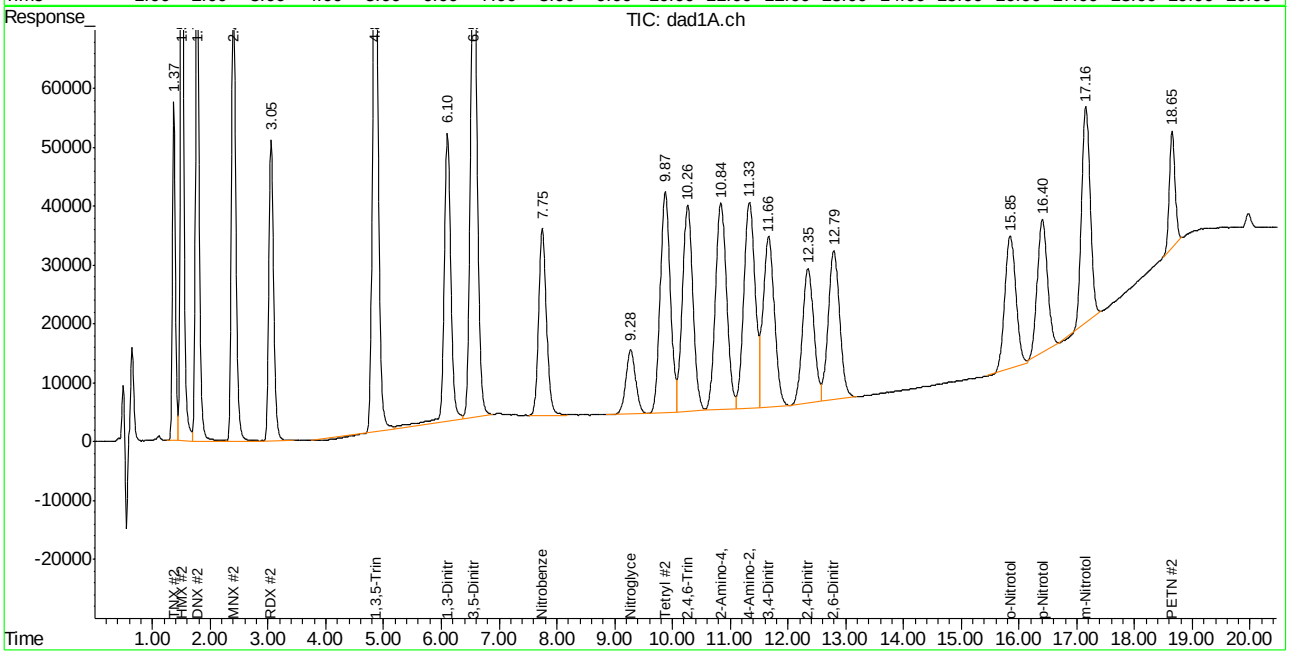
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084351.D\dad1B.ch Vial: 8
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084351.D\dad1A.ch
Acq On : 12-Sep-2024, 10:29:21 Operator: fouads
Sample : icc2589-1000 Inst : G1315B
Misc : op5264,GBB2589,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 12:05 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm



# Manual Integration Approval Summary



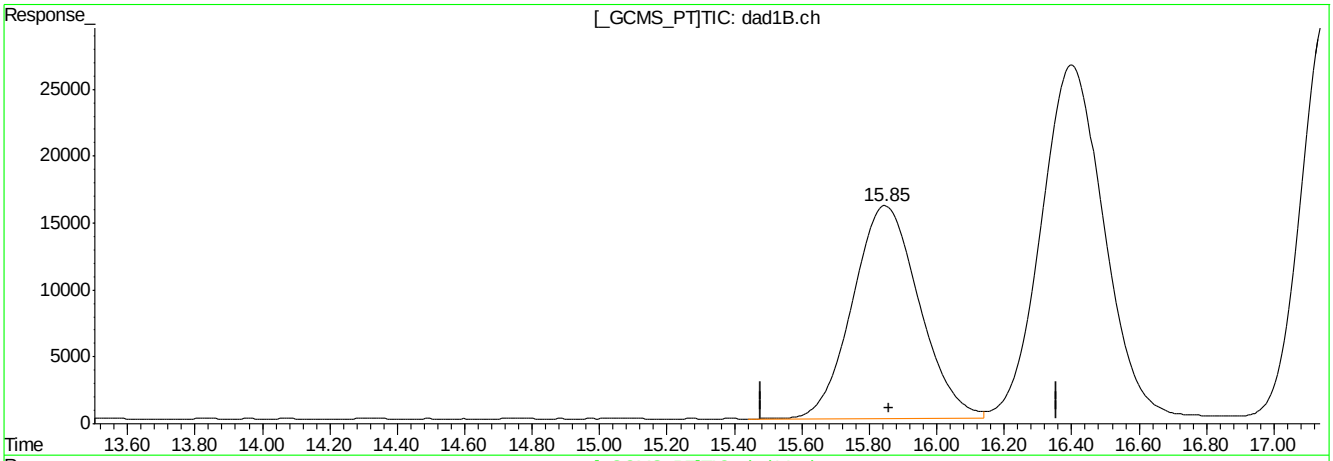
**Sample Number:** GBB2589-ICC2589 **Method:** SW846 8330B
**Lab FileID:** BB084351.D **Analyst approved:** 09/16/24 15:05 Fouad Sekkar
**Injection Time:** 09/12/24 10:29 **Supervisor approved:** 09/19/24 15:28 William Hustedde

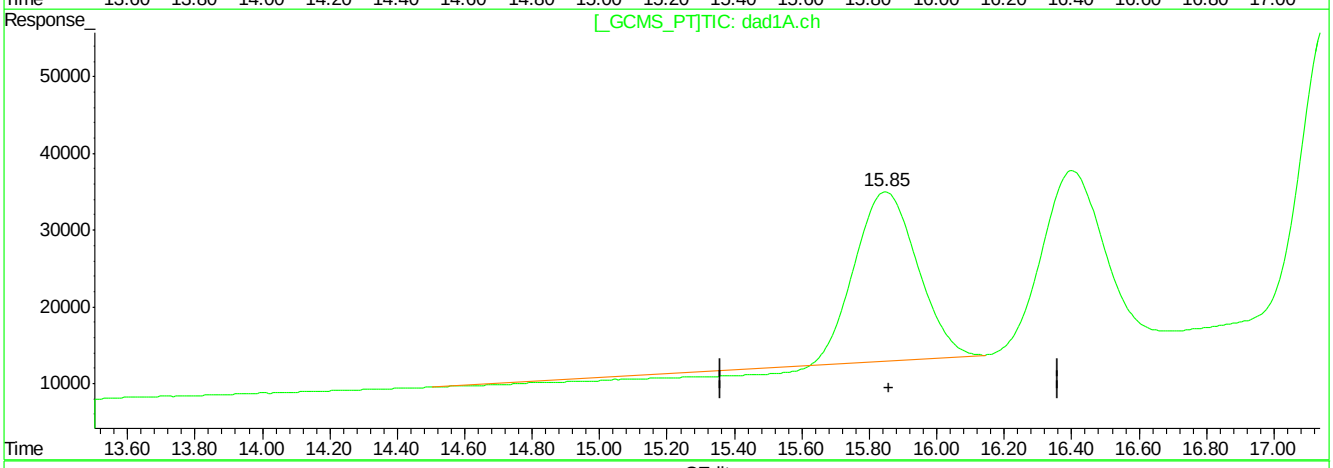
| Parameter | CAS | Sig# | R.T. (min.) | Reason |
|---|---|---|---|---|
| o-Nitrotoluene | 88-72-2 | 2 | 15.85 | Poor instrument integration |
| PETN | 78-11-5 | 2 | 18.65 | Poor instrument integration |

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084351.D\dad1B.ch Vial: 8
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084351.D\dad1A.ch
Acq On : 12-Sep-2024, 10:29:21 Operator: fouads
Sample : icc2589-1000 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(18) o-Nitrotoluene

15.85min 1022.838ppb

response 2185371

(18) o-Nitrotoluene #2

15.85min 937.232ppb

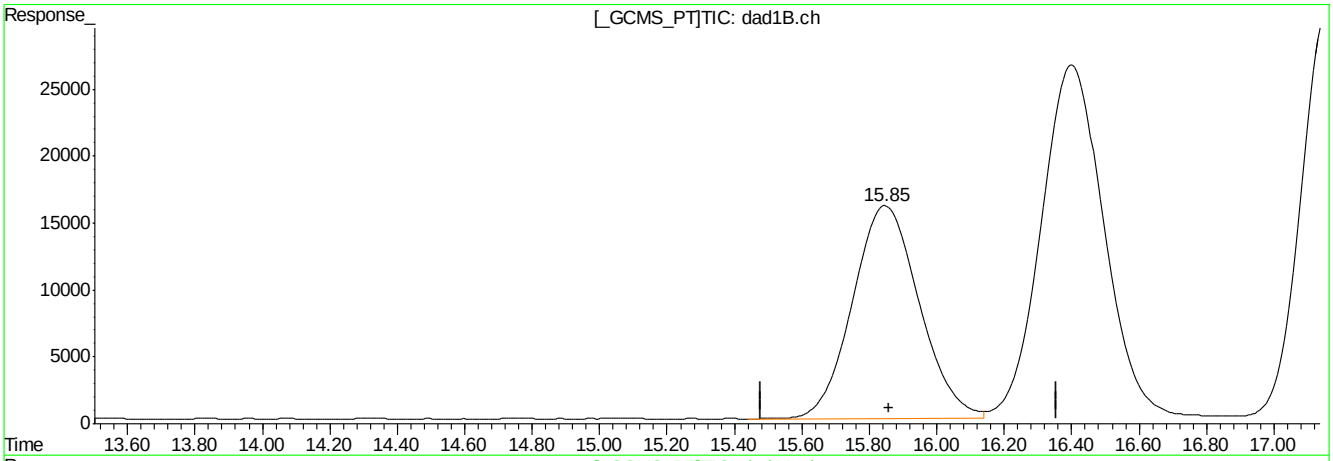
response 2572536

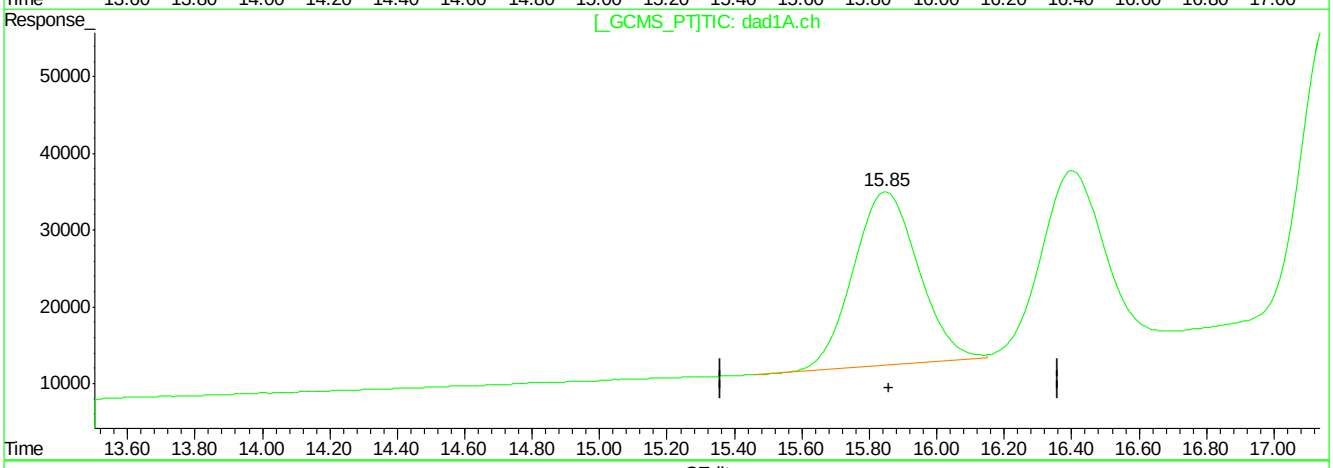
(+) = Expected Retention Time
BB084351.D BBB2589_091224.M Thu Sep 12 12:04:59 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084351.D\dad1B.ch Vial: 8
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084351.D\dad1A.ch
Acq On : 12-Sep-2024, 10:29:21 Operator: fouads
Sample : icc2589-1000 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(18) o-Nitrotoluene

15.85min 1022.838ppb

response 2185371

(18) o-Nitrotoluene #2

15.85min 1108.184ppb m

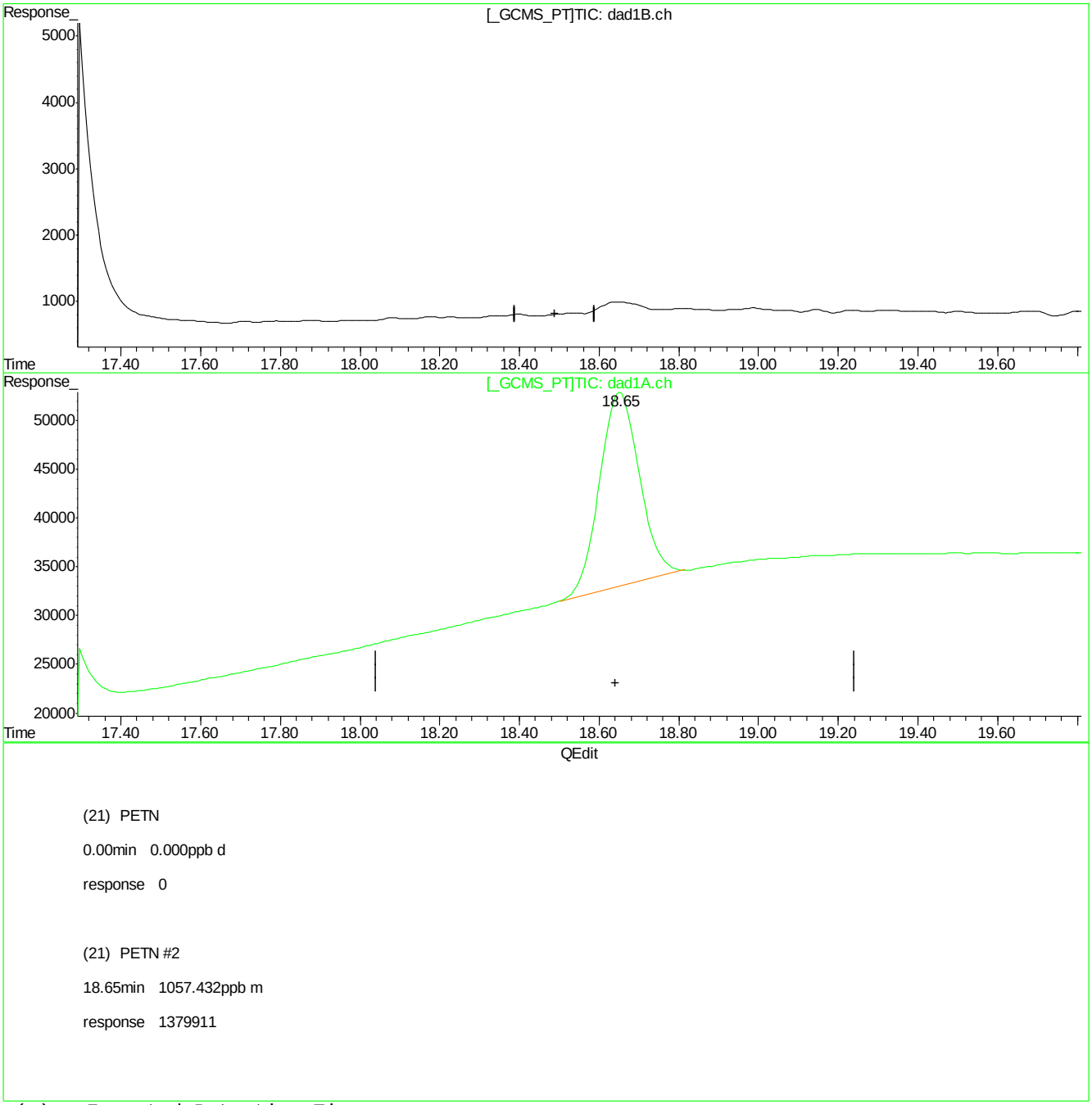
response 3041769

(+) = Expected Retention Time
BB084351.D BBB2589_091224.M Thu Sep 12 12:05:10 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084351.D\dad1B.ch Vial: 8
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084351.D\dad1A.ch
Acq On : 12-Sep-2024, 10:29:21 Operator: fouads
Sample : icc2589-1000 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




(+) = Expected Retention Time
BB084351.D BBB2589_091224.M Thu Sep 12 12:05:34 2024

BB084352.D

Manual Integrations APPROVED (compounds with "m" flag)

William Hustedde 09/19/24 15:28

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084352.D\dad1B.ch Vial: 9
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084352.D\dad1A.ch
Acq On : 12-Sep-2024, 10:55:50 Operator: fouads
Sample : ic2589-2500 Inst : G1315B
Misc : op5264,GBB2589,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54:43 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Initial Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 15) S | 3,4-Dinitrotolue | 11.67 | 11.67 | 5576672 | 10044474 | 2354.579 | 2593.840 |
| Spiked Amount | 500.000 | Range | 70 - 136 | Recovery | = | 470.92%# | 518.77%# |
| | Target Compounds | | | | | | |
| 1) | TNX | 1.37 | 1.37 | 3420064 | 5233792 | 890.915 | 892.593 |
| 2) | HMX | 1.52 | 1.52 | 3798978 | 10586976 | 2649.787 | 2647.762 |
| 3) | DNX | 1.78 | 1.78 | 6025868 | 9449532 | 1887.255 | 1882.725 |
| 4) | MNX | 2.41 | 2.41 | 6509301 | 9993544 | 2205.029 | 2194.935 |
| 5) | RDX | 3.06 | 3.06 | 4506243 | 7160665 | 2529.988 | 2496.402 |
| 6) | 1,3,5-Trinitrobe | 4.87 | 4.87 | 10245371 | 16199900 | 2549.402 | 2655.409 |
| 7) | 1,3-Dinitrobenze | 6.11 | 6.11 | 13150550 | 9214253 | 2561.332 | 2556.246 |
| 8) | 3,5-Dinitroanili | 6.57 | 6.57 | 9766127 | 16380801 | 2537.557 | 2472.328 |
| 9) | Nitrobenzene | 7.75 | 7.75 | 7622802 | 7475971 | 2594.798 | 2599.710 |
| 10) | Nitroglycerin | 0.00 | 9.28 | 0 | 3182156 | N.D. d | 2658.609 |
| 11) | Tetryl | 9.89 | 9.89 | 7459152 | 11648978 | 2636.286 | 2456.044 |
| 12) | 2,4,6-Trinitroto | 10.27 | 10.27 | 9376201 | 11319516 | 2502.801 | 2615.182 |
| 13) | 2-Amino-4,6-Dini | 10.85 | 10.85 | 8128104 | 12087149 | 2634.722 | 2605.091 |
| 14) | 4-Amino-2,6-Dini | 11.34 | 11.34 | 5963759 | 12013385 | 2618.932 | 2599.296 |
| 16) | 2,4-Dinitrotolue | 12.35 | 12.35 | 11721884 | 7858444 | 2495.037 | 2614.028 |
| 17) | 2,6-Dinitrotolue | 12.80 | 12.80 | 6602470 | 8805297 | 2499.687 | 2662.139 |
| 18) | o-Nitrotoluene | 15.85 | 15.84 | 5427126 | 7625027 | 2540.105 | 2777.968m |
| 19) | p-Nitrotoluene | 16.40 | 16.40 | 8294195 | 6951253 | 2568.796 | 2647.677 |
| 20) | m-Nitrotoluene | 17.15 | 17.15 | 7837539 | 9527171 | 2603.267 | 2720.647 |
| 21) | PETN | 0.00 | 18.65 | 0 | 3466428 | N.D. | 2656.340m# |

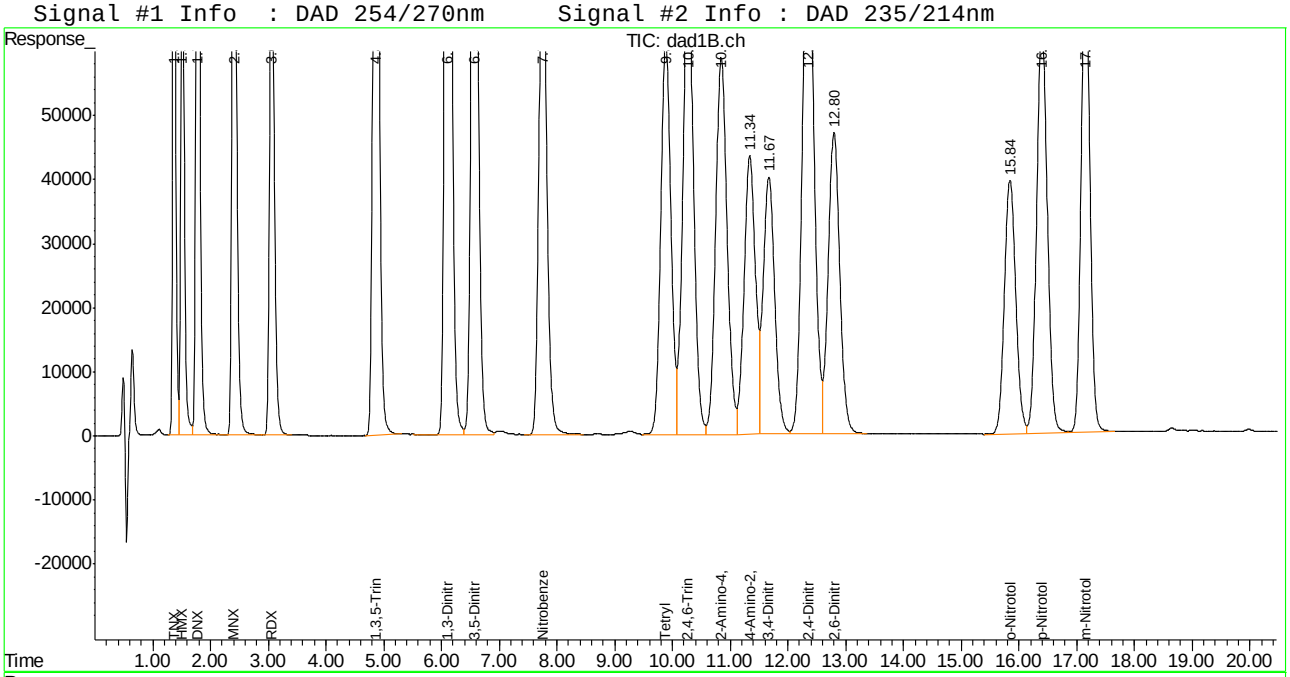
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
BB084352.D BBB2589_091224.M Mon Sep 16 14:49:39 2024 Page 1

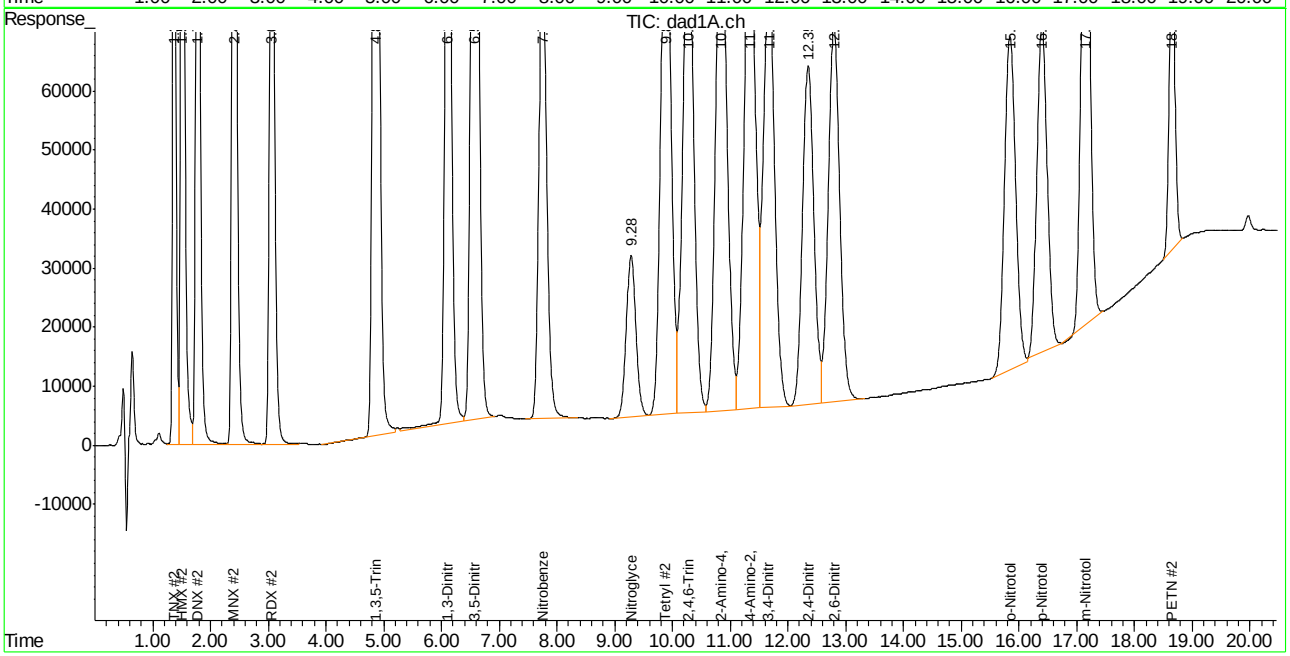
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084352.D\dad1B.ch Vial: 9
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084352.D\dad1A.ch
Acq On : 12-Sep-2024, 10:55:50 Operator: fouads
Sample : ic2589-2500 Inst : G1315B
Misc : op5264,GBB2589,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 12:06 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm



# Manual Integration Approval Summary



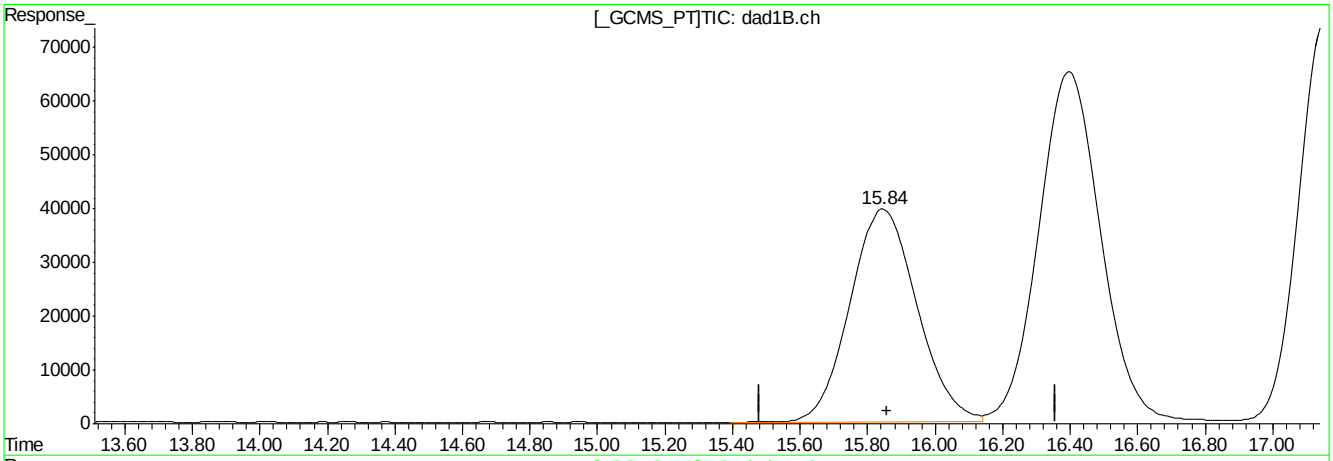
**Sample Number:** GBB2589-IC2589
**Lab FileID:** BB084352.D
**Injection Time:** 09/12/24 10:55
**Method:** SW846 8330B
**Analyst approved:** 09/16/24 15:05 Fouad Sekkar
**Supervisor approved:** 09/19/24 15:28 William Hustedde

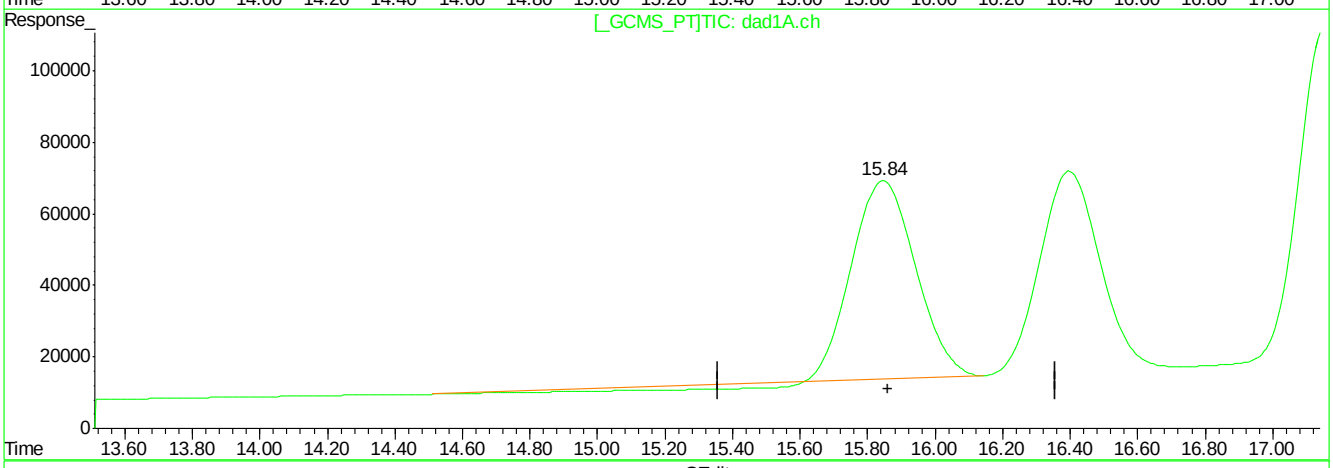
| Parameter | CAS | Sig# | R.T. (min.) | Reason |
|---|---|---|---|---|
| o-Nitrotoluene | 88-72-2 | 2 | 15.84 | Poor instrument integration |
| PETN | 78-11-5 | 2 | 18.65 | Poor instrument integration |

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084352.D\dad1B.ch Vial: 9
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084352.D\dad1A.ch
Acq On : 12-Sep-2024, 10:55:50 Operator: fouads
Sample : ic2589-2500 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(18) o-Nitrotoluene

15.85min 2540.105ppb

response 5427126

(18) o-Nitrotoluene #2

15.85min 2480.512ppb

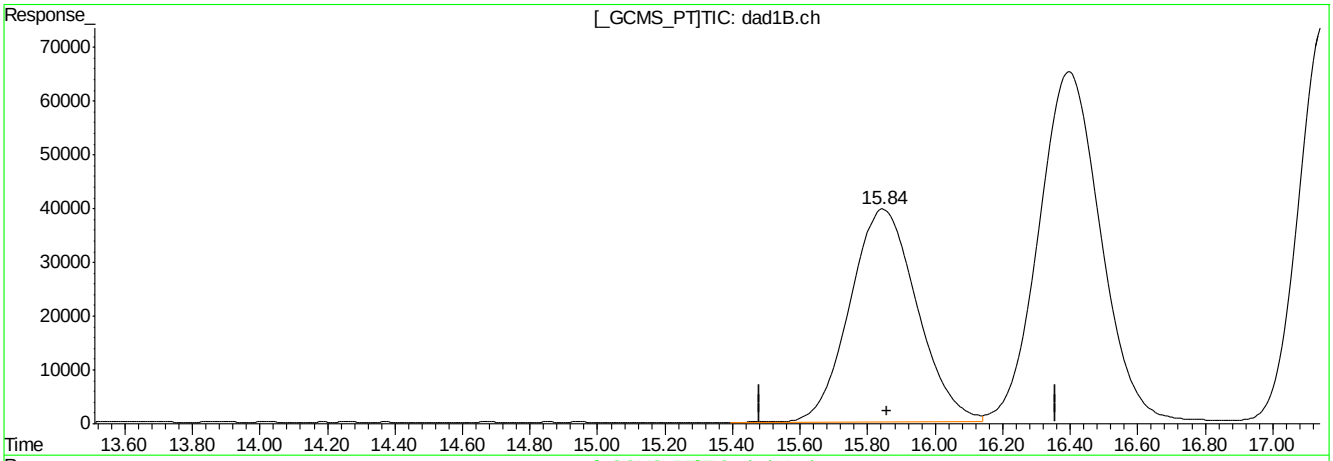
response 6808564

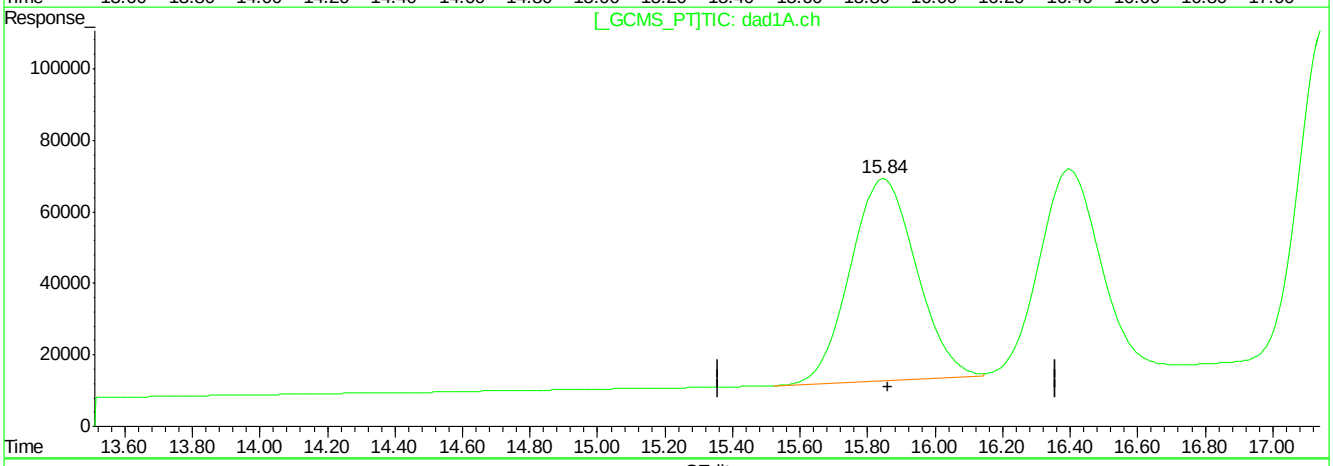
(+) = Expected Retention Time
BB084352.D BBB2589_091224.M Thu Sep 12 12:06:16 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084352.D\dad1B.ch Vial: 9
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084352.D\dad1A.ch
Acq On : 12-Sep-2024, 10:55:50 Operator: fouads
Sample : ic2589-2500 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(18) o-Nitrotoluene

15.85min 2540.105ppb

response 5427126

(18) o-Nitrotoluene #2

15.84min 2777.968ppb m

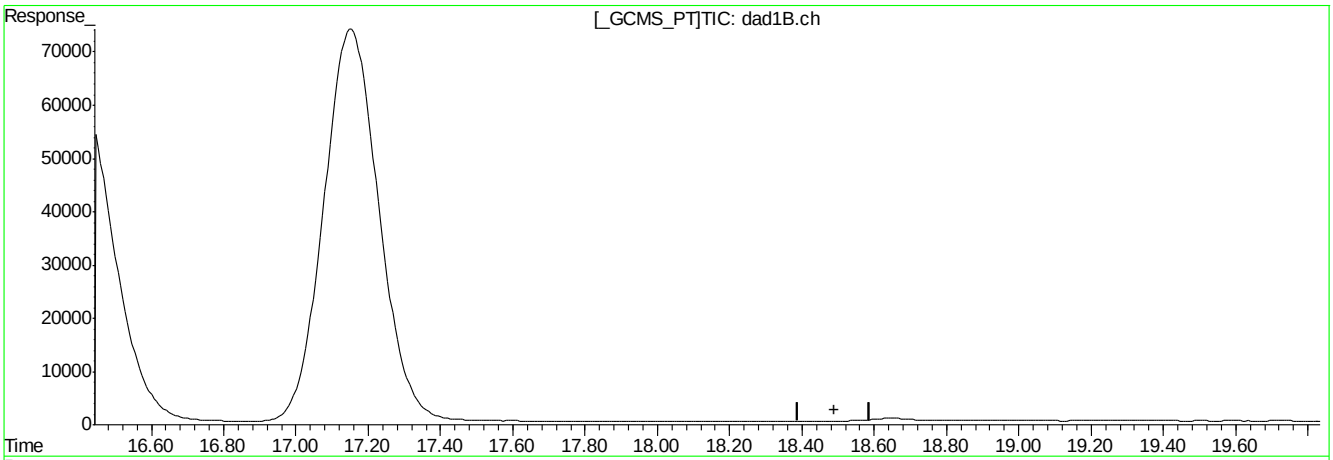
response 7625027

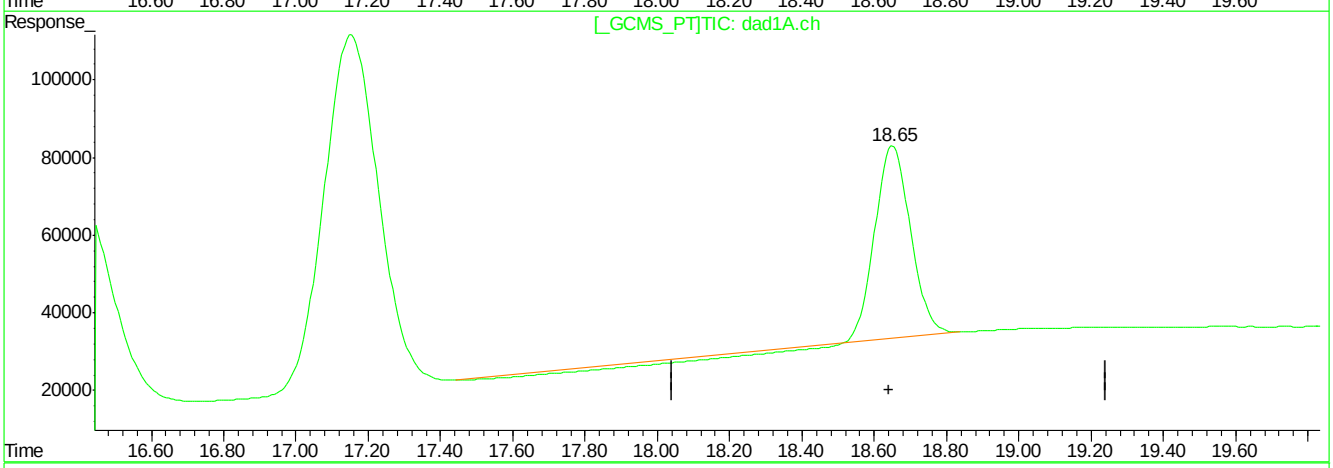
(+) = Expected Retention Time
BB084352.D BBB2589_091224.M Thu Sep 12 12:06:29 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084352.D\dad1B.ch Vial: 9
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084352.D\dad1A.ch
Acq On : 12-Sep-2024, 10:55:50 Operator: fouads
Sample : ic2589-2500 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(21) PETN

0.00min 0.000ppb

response 0

(21) PETN #2

18.65min 2284.221ppb

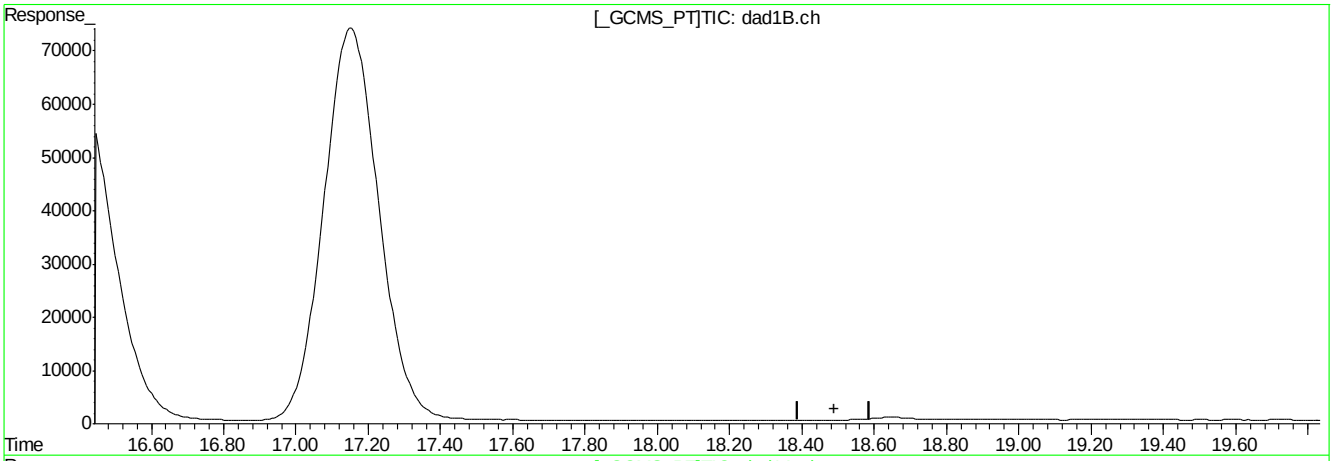
response 2980827

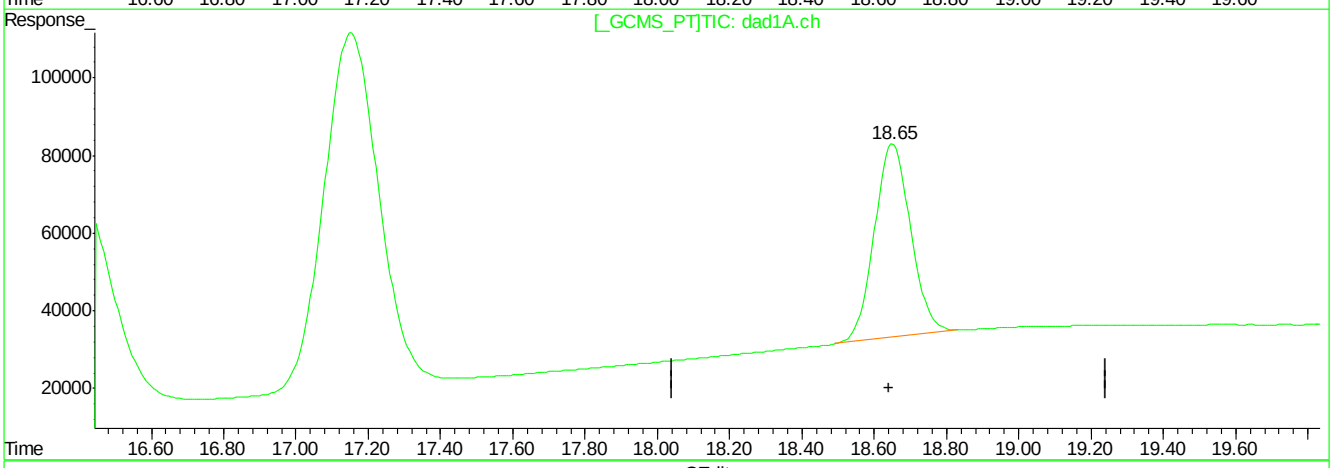
(+) = Expected Retention Time
BB084352.D BBB2589_091224.M Thu Sep 12 12:06:38 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084352.D\dad1B.ch Vial: 9
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084352.D\dad1A.ch
Acq On : 12-Sep-2024, 10:55:50 Operator: fouads
Sample : ic2589-2500 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(21) PETN

0.00min 0.000ppb

response 0

(21) PETN #2

18.65min 2656.340ppb m

response 3466428

(+) = Expected Retention Time
BB084352.D BBB2589_091224.M Thu Sep 12 12:06:53 2024

Manual Integrations APPROVED (compounds with "m" flag)
William Hustedde 09/19/24 15:28

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084353.D\dad1B.ch Vial: 10
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084353.D\dad1A.ch
Acq On : 12-Sep-2024, 11:22:22 Operator: fouads
Sample : ic2589-5000 Inst : G1315B
Misc : op5264,GBB2589,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54:44 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Initial Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 15) S | 3,4-Dinitrotolue | 11.69 | 11.69 | 11239331 | 20425578 | 4745.464 | 5274.610 |
| | Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 949.09%# | 1054.92%# |
| | Target Compounds | | | | | | |
| 1) | TNX | 1.37 | 1.37 | 6856851 | 10532806 | 1786.186 | 1796.309 |
| 2) | HMX | 1.52 | 1.52 | 7554275 | 20915865 | 5269.106 | 5230.977 |
| 3) | DNX | 1.78 | 1.78 | 12061042 | 18871111 | 3777.424 | 3759.881 |
| 4) | MNX | 2.41 | 2.41 | 13029621 | 20047218 | 4413.791 | 4403.077 |
| 5) | RDX | 3.07 | 3.07 | 9033207 | 14369473 | 5071.610 | 5009.587 |
| 6) | 1,3,5-Trinitrobe | 4.87 | 4.87 | 20676273 | 32461018 | 5144.970 | 5320.852 |
| 7) | 1,3-Dinitrobenze | 6.12 | 6.12 | 26447191 | 18060952 | 5151.118 | 5010.525 |
| 8) | 3,5-Dinitroanili | 6.58 | 6.58 | 19626766 | 32814983 | 5099.671 | 4952.712 |
| 9) | Nitrobenzene | 7.76 | 7.76 | 15315845 | 15023457 | 5213.506 | 5224.288 |
| 10) | Nitroglycerin | 0.00 | 9.29 | 0 | 6472499 | N.D. d | 5407.606 |
| 11) | Tetryl | 9.90 | 9.90 | 14981660 | 23776609 | 5294.963 | 5013.006 |
| 12) | 2,4,6-Trinitroto | 10.29 | 10.29 | 18830761 | 22970953 | 5026.519 | 5307.049 |
| 13) | 2-Amino-4,6-Dini | 10.86 | 10.86 | 16317910 | 24565282 | 5289.445 | 5294.450 |
| 14) | 4-Amino-2,6-Dini | 11.36 | 11.36 | 11959423 | 24299700 | 5251.875 | 5257.645 |
| 16) | 2,4-Dinitrotolue | 12.37 | 12.37 | 23565048 | 15914980 | 5015.889 | 5293.950 |
| 17) | 2,6-Dinitrotolue | 12.82 | 12.82 | 13295232 | 17693524 | 5033.558 | 5349.350 |
| 18) | o-Nitrotoluene | 15.86 | 15.86 | 10888713 | 15475026 | 5096.339 | 5637.898m |
| 19) | p-Nitrotoluene | 16.41 | 16.41 | 16693244 | 14139744 | 5170.067 | 5385.716 |
| 20) | m-Nitrotoluene | 17.16 | 17.16 | 15830253 | 19299738 | 5258.077 | 5511.371 |
| 21) | PETN | 0.00 | 18.65 | 0 | 6973219 | N.D. | 5343.609m# |

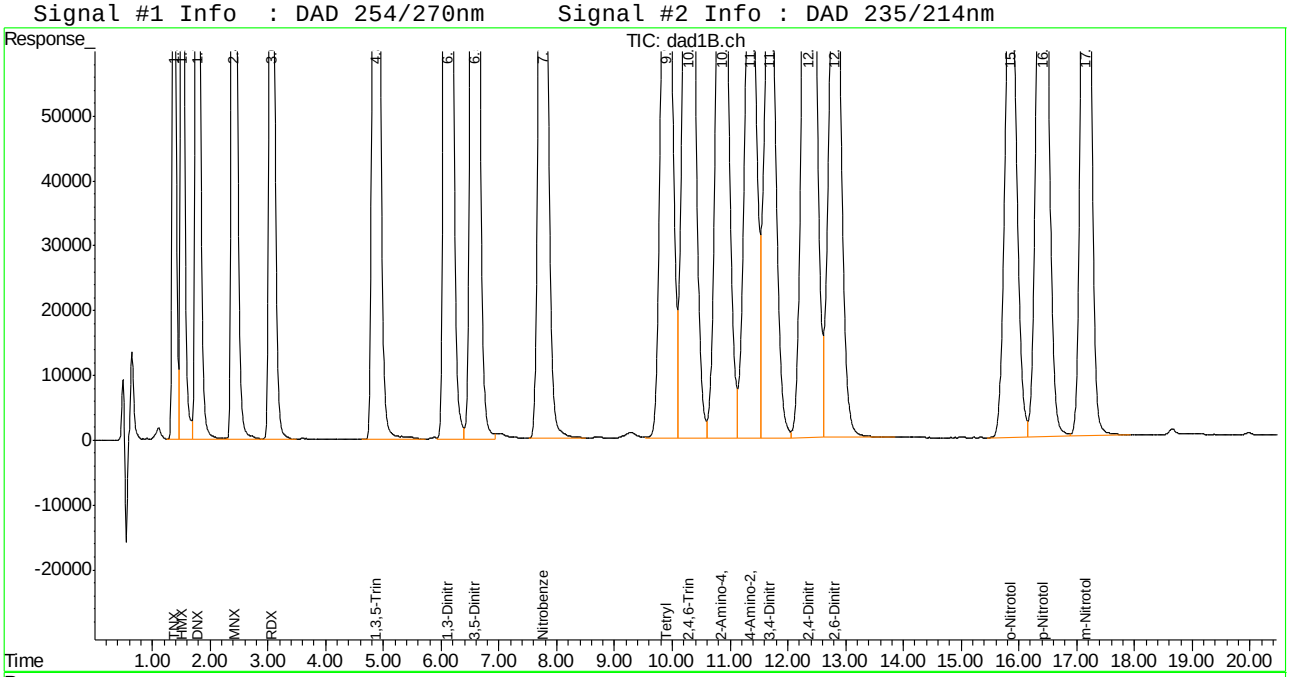
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
BB084353.D BBB2589_091224.M Mon Sep 16 14:49:40 2024 Page 1

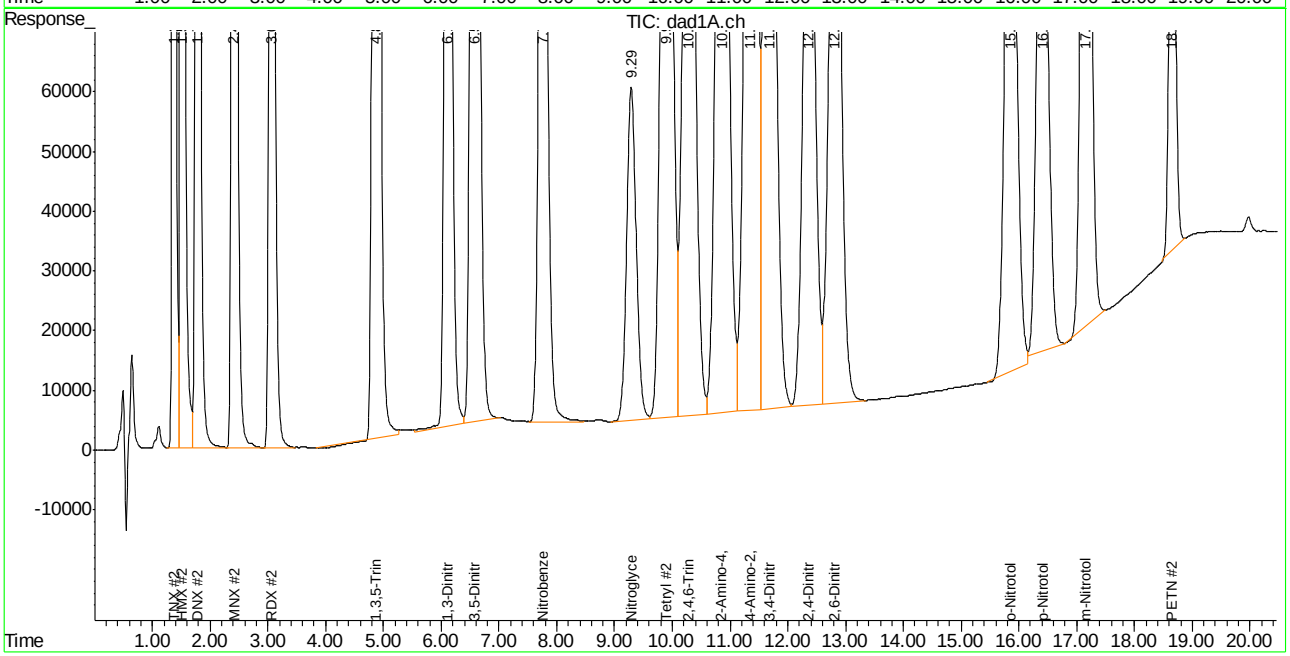
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084353.D\dad1B.ch Vial: 10
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084353.D\dad1A.ch
Acq On : 12-Sep-2024, 11:22:22 Operator: fouads
Sample : ic2589-5000 Inst : G1315B
Misc : op5264,GBB2589,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 12:07 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm



# Manual Integration Approval Summary



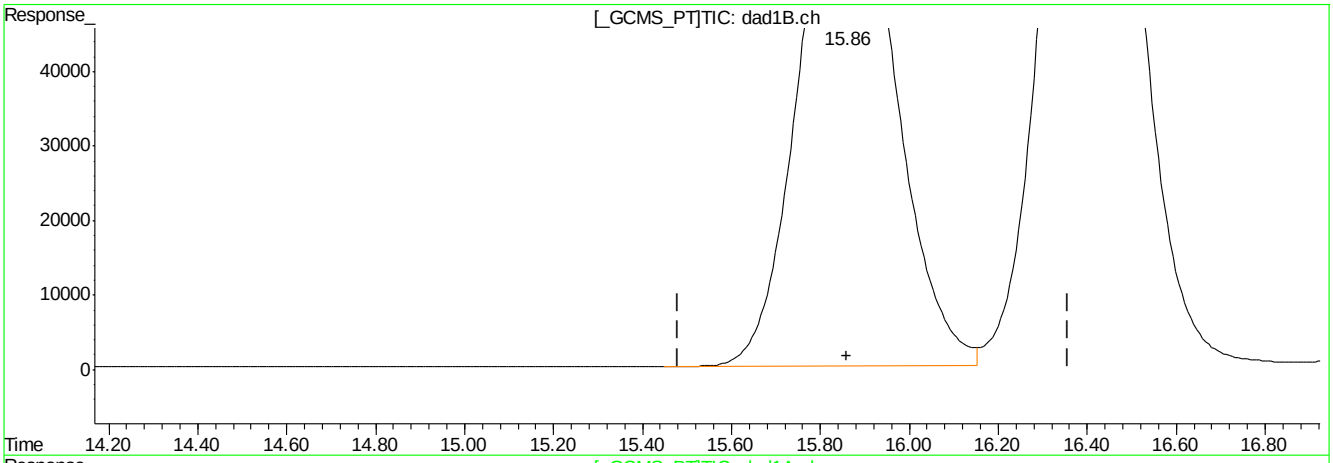
**Sample Number:** GBB2589-IC2589
**Lab FileID:** BB084353.D
**Injection Time:** 09/12/24 11:22
**Method:** SW846 8330B
**Analyst approved:** 09/16/24 15:05 Fouad Sekkar
**Supervisor approved:** 09/19/24 15:28 William Hustedde

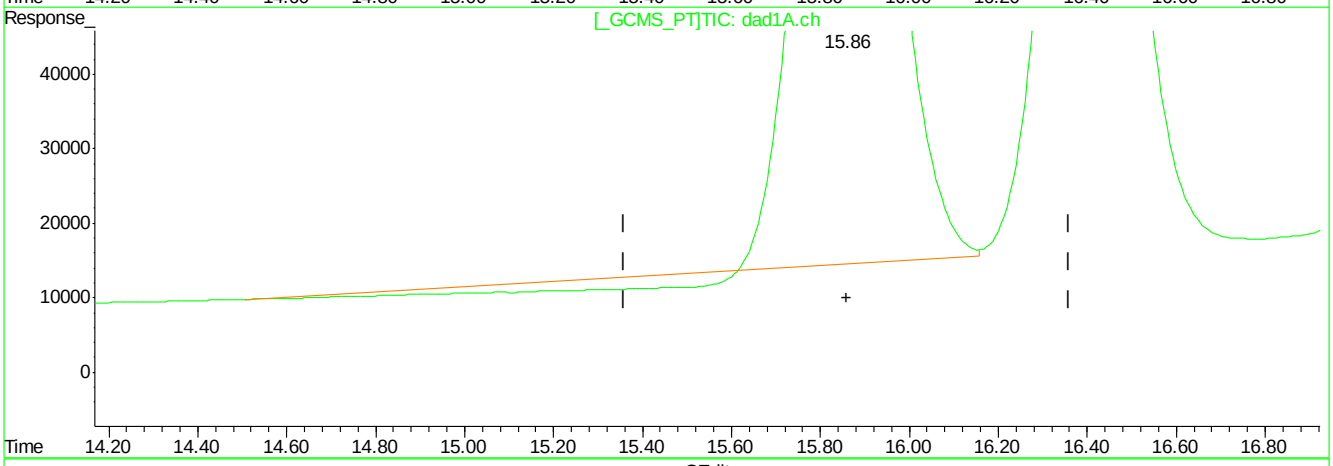
| Parameter | CAS | Sig# | R.T. (min.) | Reason |
|---|---|---|---|---|
| o-Nitrotoluene | 88-72-2 | 2 | 15.86 | Poor instrument integration |
| PETN | 78-11-5 | 2 | 18.65 | Poor instrument integration |

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084353.D\dad1B.ch Vial: 10
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084353.D\dad1A.ch
Acq On : 12-Sep-2024, 11:22:22 Operator: fouads
Sample : ic2589-5000 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(18) o-Nitrotoluene

15.86min 5096.339ppb

response 10888713

(18) o-Nitrotoluene #2

15.86min 5216.553ppb

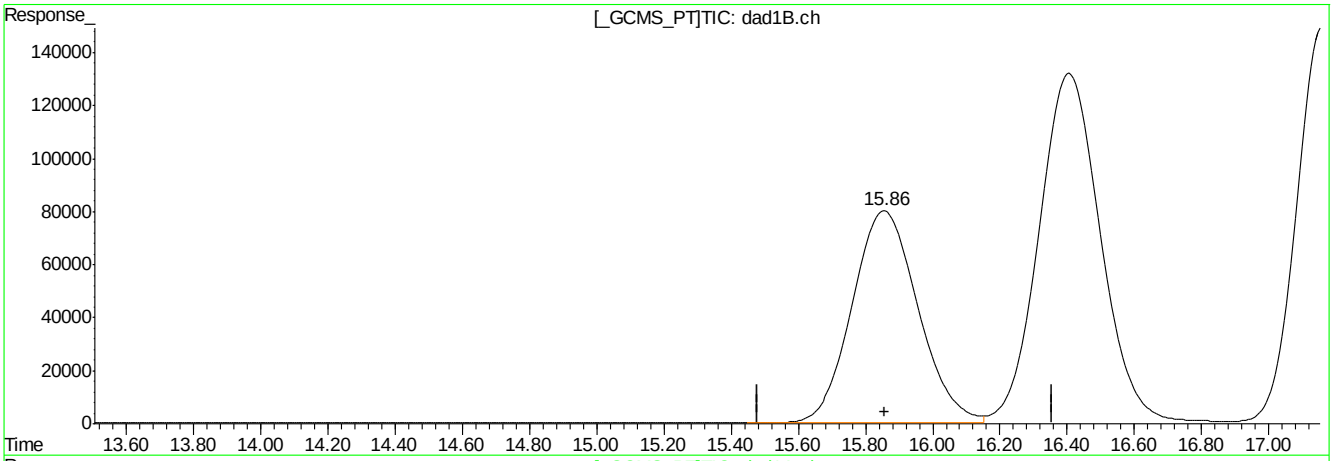
response 14318511

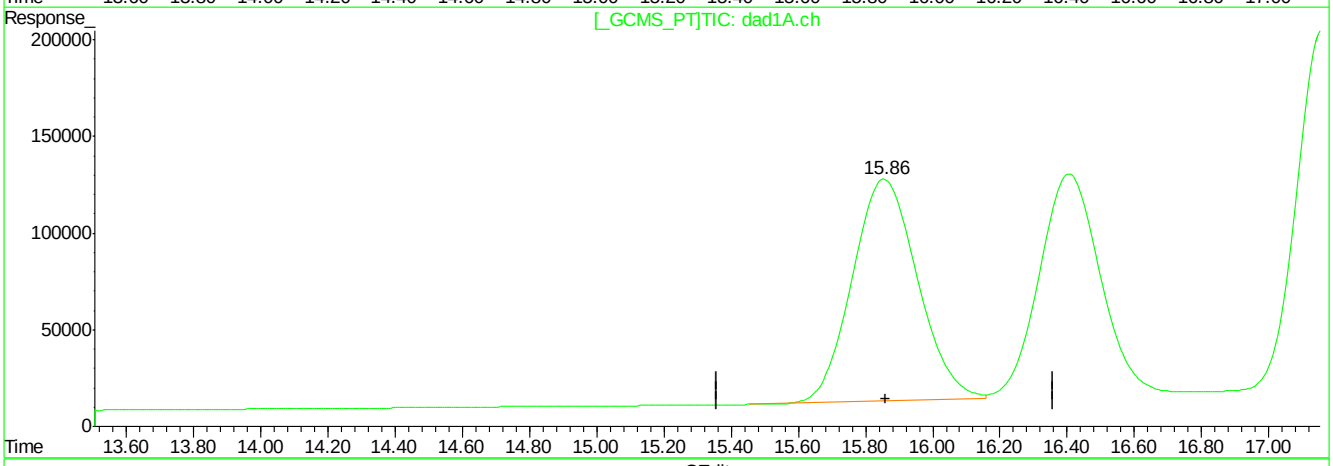
(+) = Expected Retention Time
BB084353.D BBB2589_091224.M Thu Sep 12 12:07:27 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084353.D\dad1B.ch Vial: 10
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084353.D\dad1A.ch
Acq On : 12-Sep-2024, 11:22:22 Operator: fouads
Sample : ic2589-5000 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(18) o-Nitrotoluene

15.86min 5096.339ppb

response 10888713

(18) o-Nitrotoluene #2

15.86min 5637.898ppb m

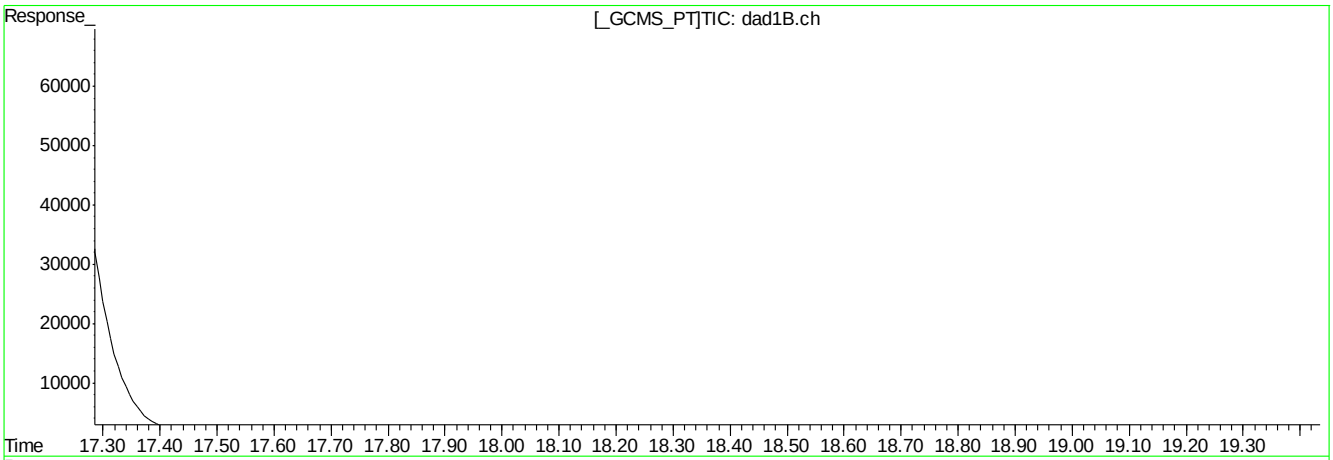
response 15475026

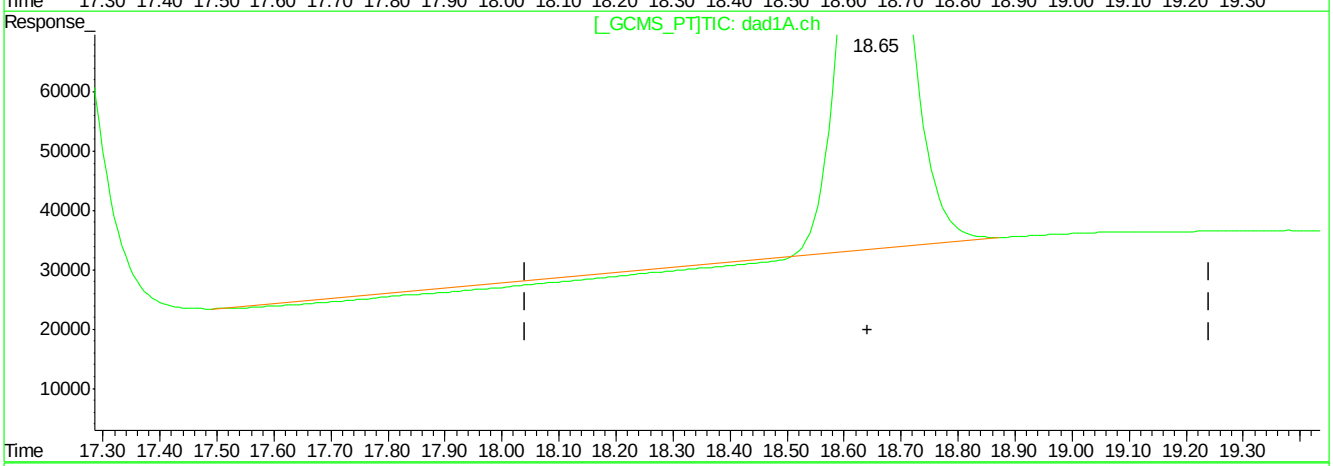
(+) = Expected Retention Time
BB084353.D BBB2589_091224.M Thu Sep 12 12:07:34 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084353.D\dad1B.ch Vial: 10
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084353.D\dad1A.ch
Acq On : 12-Sep-2024, 11:22:22 Operator: fouads
Sample : ic2589-5000 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(21) PETN

0.00min 0.000ppb

response 0

(21) PETN #2

18.65min 5009.062ppb

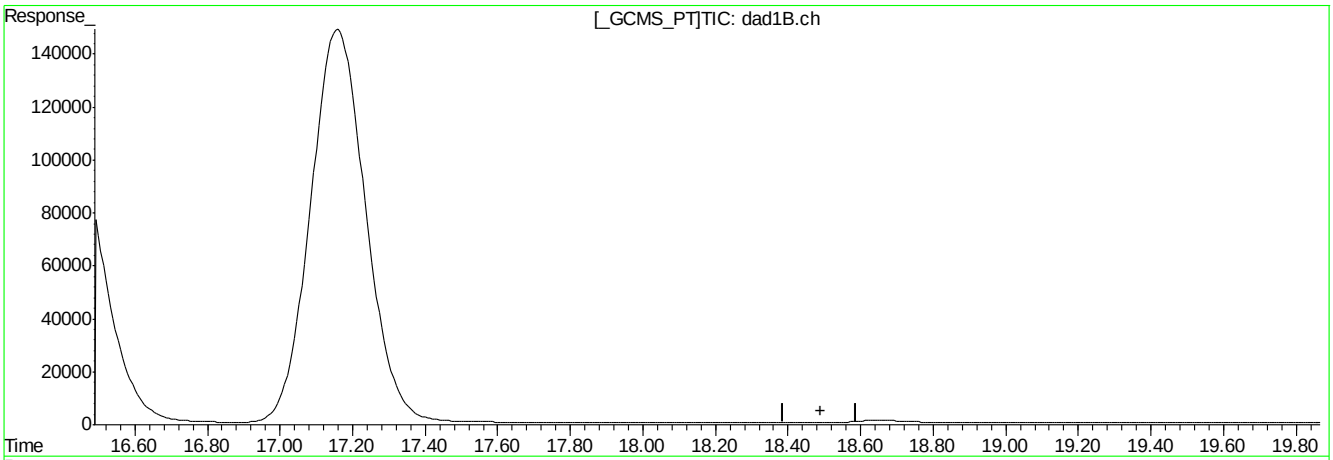
response 6536647

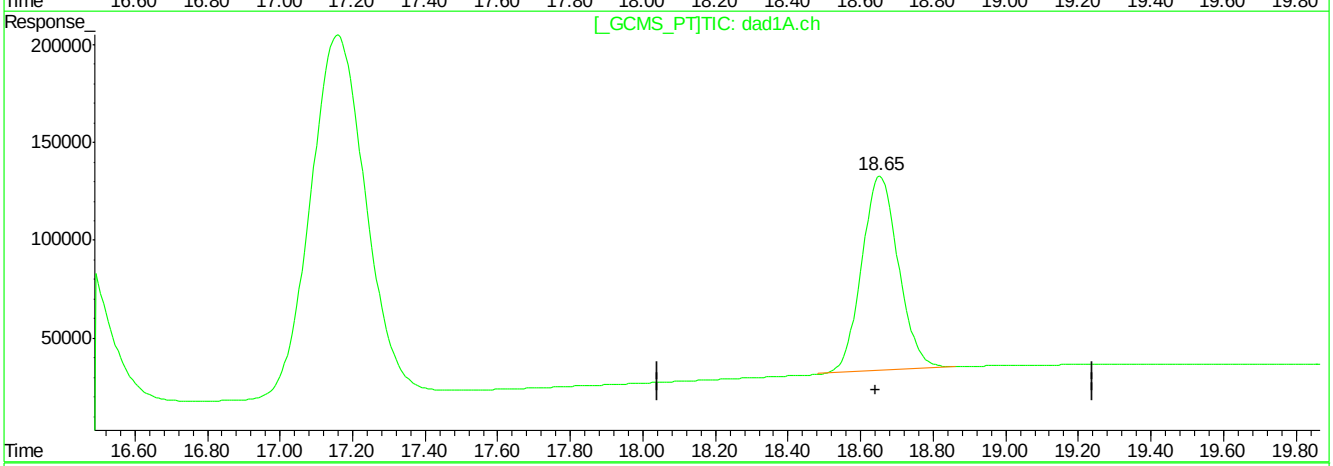
(+) = Expected Retention Time
BB084353.D BBB2589_091224.M Thu Sep 12 12:07:46 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084353.D\dad1B.ch Vial: 10
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084353.D\dad1A.ch
Acq On : 12-Sep-2024, 11:22:22 Operator: fouads
Sample : ic2589-5000 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 11:54 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 08:45:00 2024
Response via : Multiple Level Calibration




QEdit

(21) PETN

0.00min 0.000ppb

response 0

(21) PETN #2

18.65min 5343.609ppb m

response 6973219

(+) = Expected Retention Time
BB084353.D BBB2589_091224.M Thu Sep 12 12:07:54 2024

Manual Integrations APPROVED
(compounds with "m" flag)
William Hustedde
09/19/24 15:28

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084354.D\dad1B.ch Vial: 11
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084354.D\dad1A.ch
Acq On : 12-Sep-2024, 12:14:48 Operator: fouads
Sample : icv2589-1000 Inst : G1315B
Misc : op5264,GBB2589,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 12:35:47 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 12:12:32 2024
Response via : Initial Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm

| Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|
| System Monitoring Compounds | | | | | | |
| 15) S 3,4-Dinitrotolue | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 0.00%# | 0.00%# |
| Target Compounds | | | | | | |
| 1) TNX | 1.38 | 1.38 | 1258368 | 1936590 | 407.871 | 396.528 |
| 2) HMX | 1.52 | 1.52 | 1498756 | 4249749 | 989.875 | 1011.809 |
| 3) DNX | 1.79 | 1.79 | 2206383 | 3497280 | 914.310 | 925.569 |
| 4) MNX | 2.42 | 2.42 | 2375239 | 3656039 | 1062.276 | 1063.476 |
| 5) RDX | 3.07 | 3.07 | 1765596 | 2795878 | 920.974 | 973.393 |
| 6) 1,3,5-Trinitrobe | 4.88 | 4.88 | 3954288 | 6328540 | 910.775 | 950.348 |
| 7) 1,3-Dinitrobenze | 6.12 | 6.12 | 5188688 | 3950881 | 921.563 | 995.314 |
| 8) 3,5-Dinitroanili | 6.58 | 6.58 | 3827659 | 6478700 | 915.920 | 922.619 |
| 9) Nitrobenzene | 7.77 | 7.77 | 3008523 | 2971155 | 940.425 | 989.614 |
| 10) Nitroglycerin | 0.00 | 9.31 | 0 | 1269800 | N.D. d | 984.063 |
| 11) Tetryl | 9.91 | 9.91 | 2766573 | 4279042 | 864.702 | 884.431 |
| 12) 2,4,6-Trinitroto | 10.30 | 10.30 | 3694032 | 4444555 | 916.521 | 945.363 |
| 13) 2-Amino-4,6-Dini | 10.87 | 10.87 | 3200248 | 4701915 | 981.298 | 1005.472 |
| 14) 4-Amino-2,6-Dini | 11.37 | 11.37 | 2420695 | 4812683 | 1012.539 | 1029.609 |
| 16) 2,4-Dinitrotolue | 12.37 | 12.37 | 4624262 | 3132246 | 982.081 | 1002.377 |
| 17) 2,6-Dinitrotolue | 12.82 | 12.82 | 2609730 | 3487154 | 919.998 | 1007.734 |
| 18) o-Nitrotoluene | 15.86 | 15.86 | 2191128 | 2546473 | 963.246 | 857.050 |
| 19) p-Nitrotoluene | 16.41 | 16.41 | 3367004 | 2787432 | 967.187 | 983.125 |
| 20) m-Nitrotoluene | 17.16 | 17.16 | 3208286 | 3787444 | 954.094 | 995.598 |
| 21) PETN | 0.00 | 18.65 | 0 | 1360270 | N.D. | 1008.670m# |

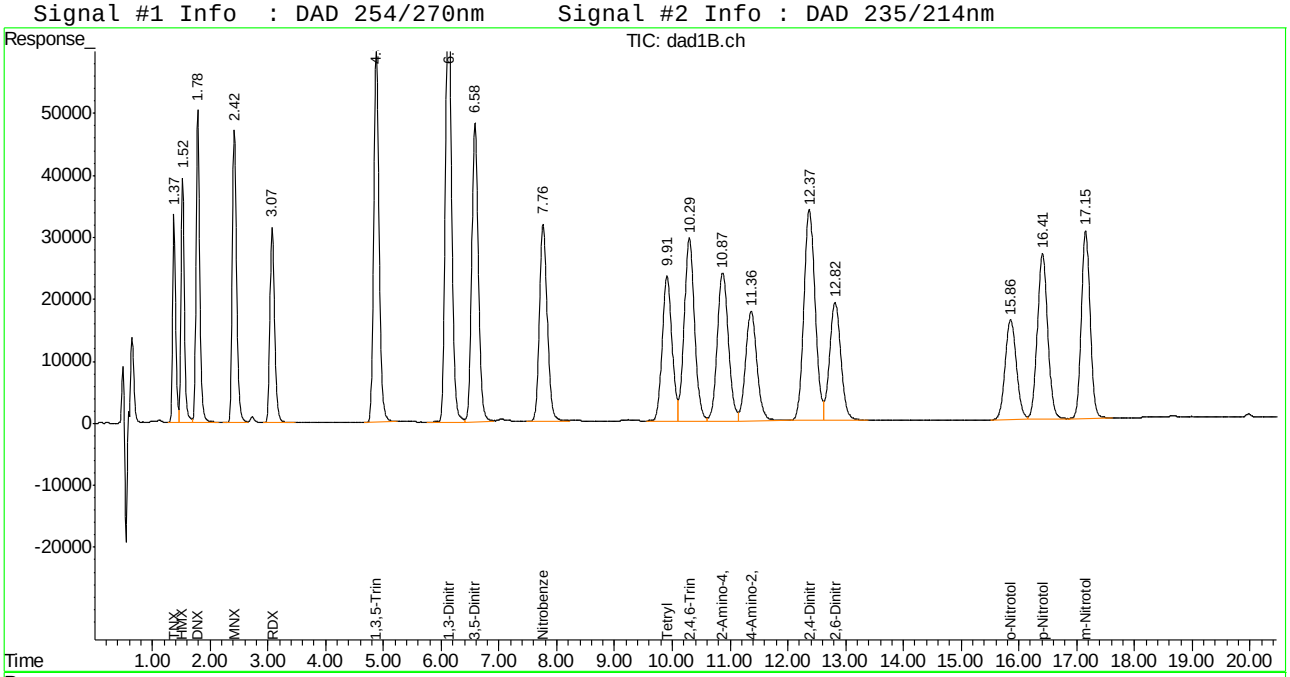
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
BB084354.D BBB2589_091224.M Mon Sep 16 14:49:41 2024 Page 1

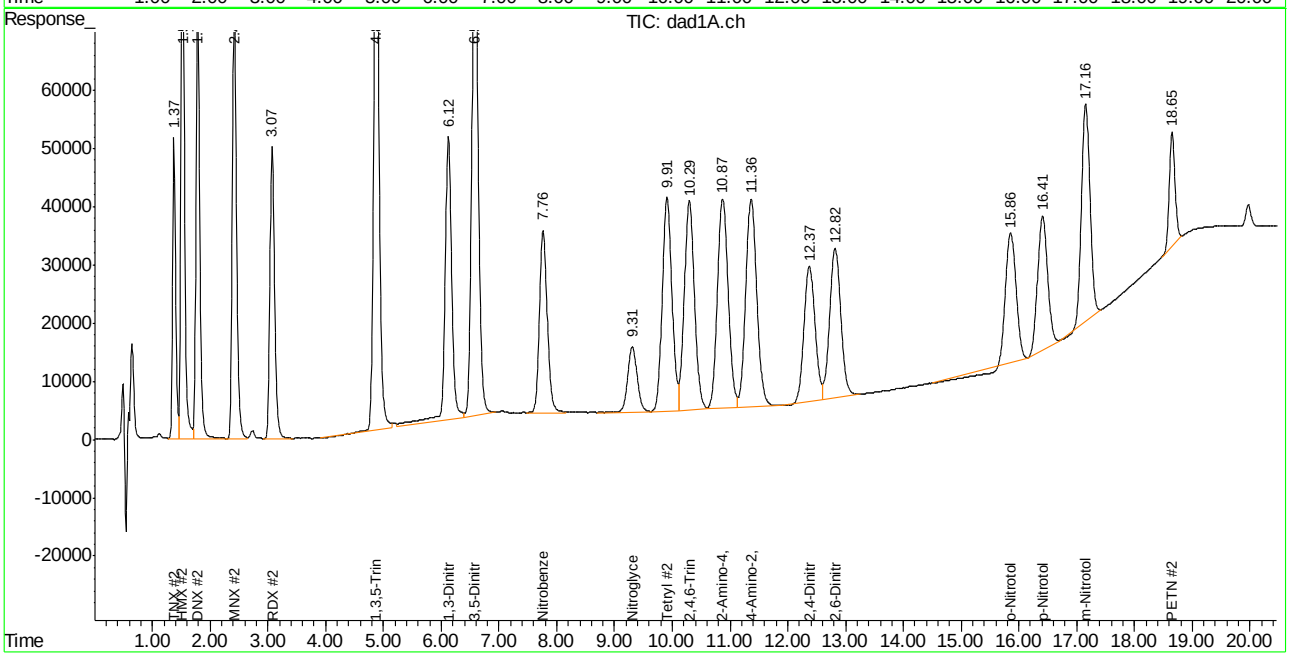
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084354.D\dad1B.ch Vial: 11
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084354.D\dad1A.ch
Acq On : 12-Sep-2024, 12:14:48 Operator: fouads
Sample : icv2589-1000 Inst : G1315B
Misc : op5264,GBB2589,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 12:36 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 12:12:32 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm



# Manual Integration Approval Summary



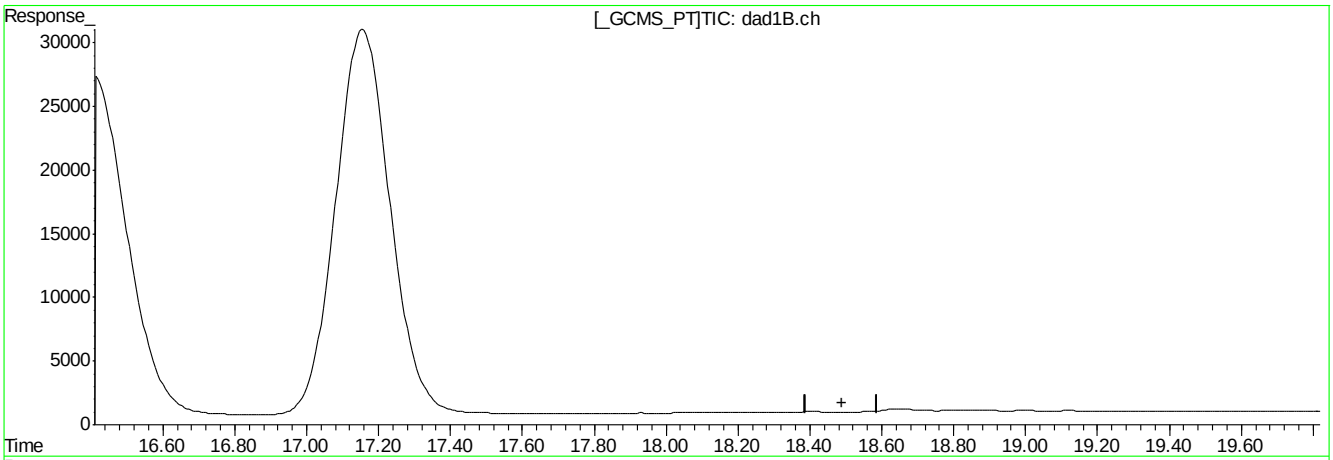
**Sample Number:** GBB2589-ICV2589 **Method:** SW846 8330B
**Lab FileID:** BB084354.D **Analyst approved:** 09/16/24 15:05 Fouad Sekkar
**Injection Time:** 09/12/24 12:14 **Supervisor approved:** 09/19/24 15:28 William Hustedde

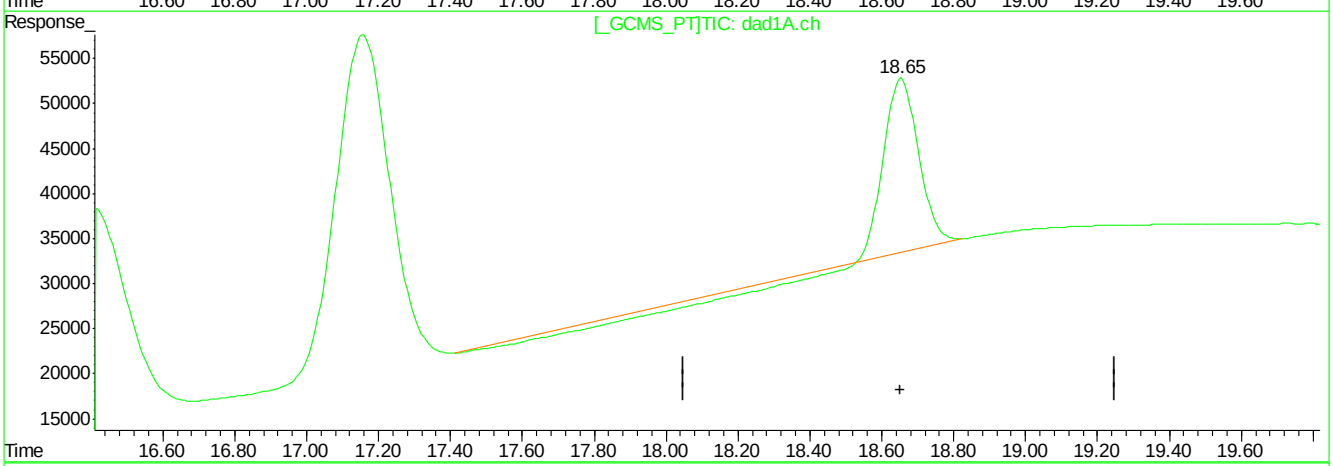
| Parameter | CAS | Sig# | R.T. (min.) | Reason |
|---|---|---|---|---|
| PETN | 78-11-5 | 2 | 18.65 | Poor instrument integration |

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084354.D\dad1B.ch Vial: 11
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084354.D\dad1A.ch
Acq On : 12-Sep-2024, 12:14:48 Operator: fouads
Sample : icv2589-1000 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 12:35 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 12:12:32 2024
Response via : Multiple Level Calibration




QEdit

(21) PETN

0.00min 0.000ppb

response 0

(21) PETN #2

18.65min 713.092ppb

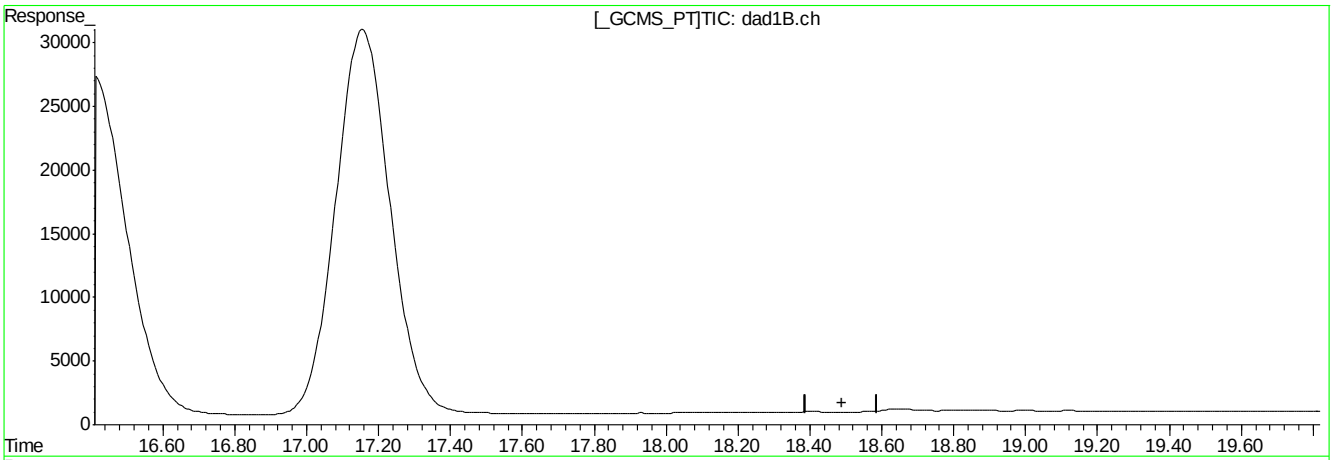
response 961659

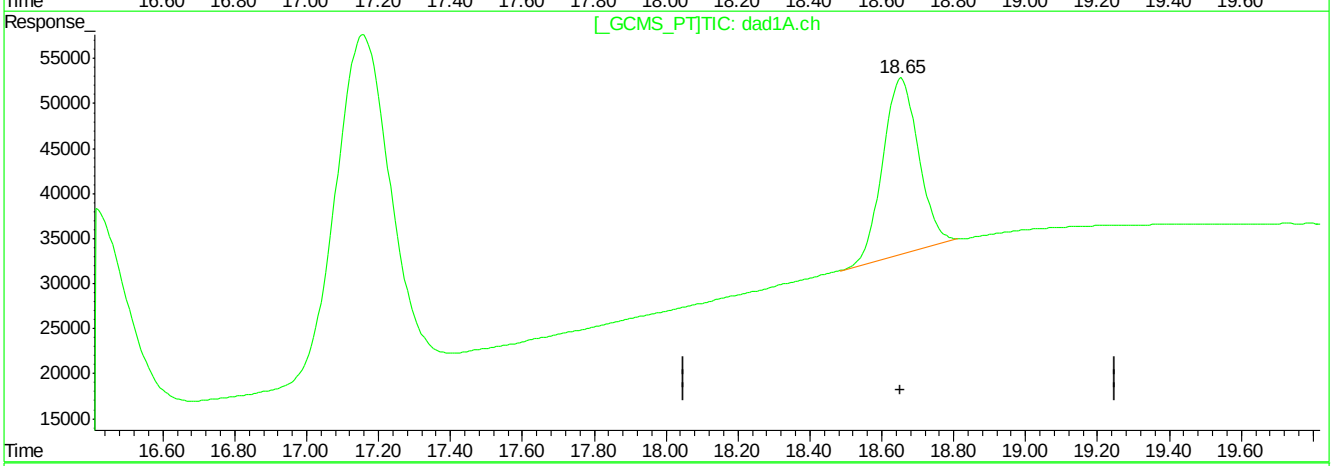
(+) = Expected Retention Time
BB084354.D BBB2589_091224.M Thu Sep 12 12:36:21 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2589\BB084354.D\dad1B.ch Vial: 11
Signal #2 : C:\HPCHEM\2\DATA\GBB2589\BB084354.D\dad1A.ch
Acq On : 12-Sep-2024, 12:14:48 Operator: fouads
Sample : icv2589-1000 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Sep 12 12:35 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Sep 12 12:12:32 2024
Response via : Multiple Level Calibration




QEdit

(21) PETN

0.00min 0.000ppb

response 0

(21) PETN #2

18.65min 1008.670ppb m

response 1360270

(+) = Expected Retention Time
BB084354.D BBB2589_091224.M Thu Sep 12 12:36:29 2024

Manual Integrations APPROVED (compounds with "m" flag)
Naresh Jiawan 12/18/24 12:05

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085952.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085952.D\dad1A.ch
Acq On : 17-Dec-2024, 13:49:09 Operator: fouads
Sample : cc2589-1000 Inst : G1315B
Misc : op3387,GBB2633,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 06:20:05 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 06:19:51 2024
Response via : Initial Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 15) S | 3,4-Dinitrotolue | 10.92 | 10.92 | 2071556 | 3696011 | 923.154 | 908.749 |
| Spiked Amount | 500.000 | Range | 70 - 136 | Recovery | = | 184.63%# | 181.75%# |
| | Target Compounds | | | | | | |
| 1) | TNX | 1.29 | 1.29 | 1695455 | 2594941 | 549.543 | 531.328 |
| 2) | HMX | 1.43 | 1.43 | 1481763 | 4188094 | 978.652 | 997.130 |
| 3) | DNX | 1.67 | 1.66 | 3024409 | 4810838 | 1253.295 | 1273.207 |
| 4) | MNX | 2.24 | 2.24 | 3263228 | 4997926 | 1459.411 | 1453.807 |
| 5) | RDX | 2.85 | 2.85 | 1764803 | 2790358 | 920.561 | 971.472 |
| 6) | 1,3,5-Trinitrobe | 4.57 | 4.57 | 3669512 | 5926233 | 845.184 | 889.934 |
| 7) | 1,3-Dinitrobenze | 5.77 | 5.77 | 4811687 | 3589971 | 854.603 | 904.393 |
| 8) | 3,5-Dinitroanili | 6.17 | 6.17 | 3684471 | 6400113 | 881.657 | 911.428 |
| 9) | Nitrobenzene | 7.33 | 7.33 | 2795129 | 2761654 | 873.721 | 919.835 |
| 10) | Nitroglycerin | 0.00 | 8.60 | 0 | 1210253 | N.D. | 937.916 # |
| 11) | Tetryl | 9.23 | 9.23 | 2687872 | 4365601 | 840.104 | 902.322 |
| 12) | 2,4,6-Trinitroto | 9.58 | 9.58 | 3443235 | 4202480 | 854.296 | 893.873 |
| 13) | 2-Amino-4,6-Dini | 10.09 | 10.09 | 3030389 | 4530306 | 929.214 | 968.775 |
| 14) | 4-Amino-2,6-Dini | 10.54 | 10.54 | 2166755 | 4382348 | 906.320 | 937.545 |
| 16) | 2,4-Dinitrotolue | 11.59 | 11.58 | 4351466 | 2877816 | 924.146 | 920.955 |
| 17) | 2,6-Dinitrotolue | 12.03 | 12.03 | 2416776 | 3191858 | 851.977 | 922.398 |
| 18) | o-Nitrotoluene | 15.14 | 15.14 | 1993325 | 2760933 | 876.289 | 929.230 |
| 19) | p-Nitrotoluene | 15.71 | 15.71 | 3064721 | 2574469 | 880.355 | 908.013 |
| 20) | m-Nitrotoluene | 16.61 | 16.61 | 3010027 | 3481647 | 895.135 | 915.213 |
| 21) | PETN | 0.00 | 18.36 | 0 | 1395808 | N.D. | 1035.023m# |

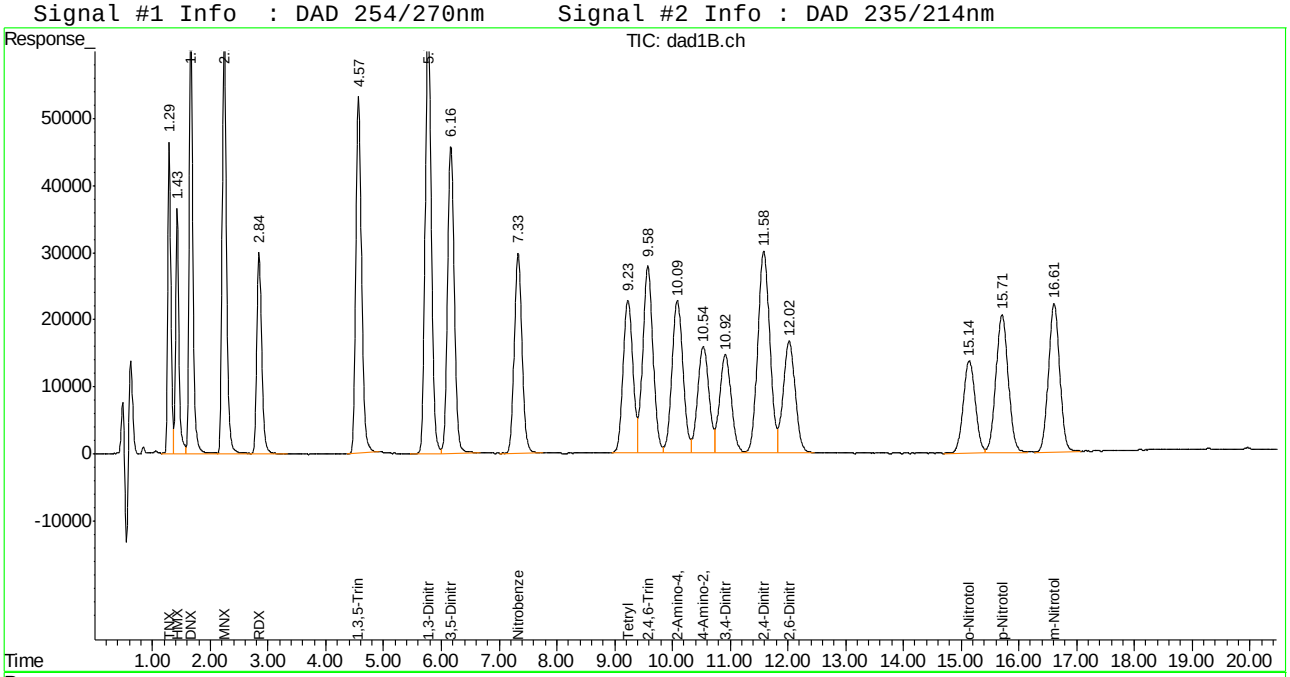
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
BB085952.D BBB2589_091224.M Wed Dec 18 10:41:54 2024 Page 1

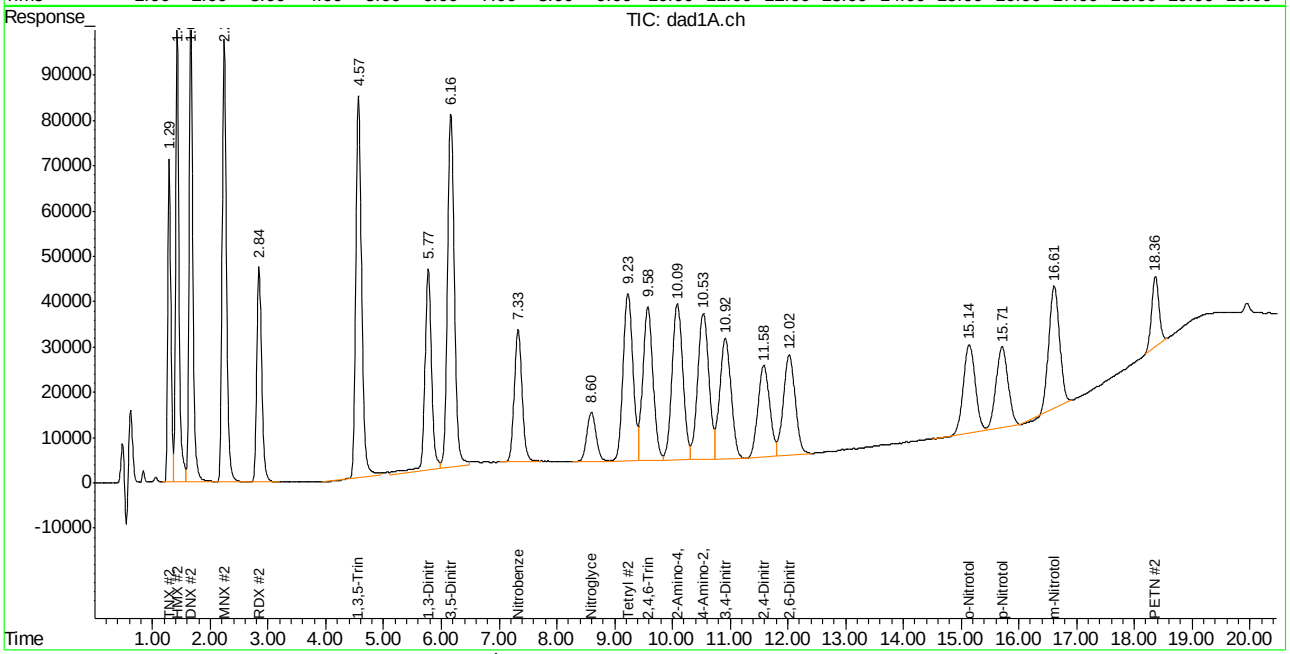
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085952.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085952.D\dad1A.ch
Acq On : 17-Dec-2024, 13:49:09 Operator: fouads
Sample : cc2589-1000 Inst : G1315B
Misc : op3387,GBB2633,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 6:29 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 06:19:51 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm



# Manual Integration Approval Summary



| | | | |
|---|---|---|---|
| **Sample Number:** | GBB2633-CC2589 | **Method:** | SW846 8330B |
| **Lab FileID:** | BB085952.D | **Analyst approved:** | 12/18/24 11:05 Fouad Sekkar |
| **Injection Time:** | 12/17/24 13:49 | **Supervisor approved:** | 12/18/24 12:05 Naresh Jiawan |

| Parameter | CAS | Sig# | R.T. (min.) | Reason |
|---|---|---|---|---|
| PETN | 78-11-5 | 2 | 18.36 | Poor instrument integration |

Manual Integrations APPROVED (compounds with "m" flag)
Naresh Jiawan 12/18/24 12:05

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085964.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085964.D\dad1A.ch
Acq On : 18-Dec-2024, 06:50:29 Operator: fouads
Sample : ecc2589-1000 Inst : G1315B
Misc : op3387,GBB2633,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 07:20:04 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 07:19:55 2024
Response via : Initial Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 15) S | 3,4-Dinitrotolue | 10.63 | 10.63 | 2152461 | 3843259 | 959.208 | 944.953 |
| | Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 191.84%# | 188.99%# |
| | Target Compounds | | | | | | |
| 1) | TNX | 1.28 | 1.28 | 1724916 | 2642615 | 559.092 | 541.090 |
| 2) | HMX | 1.41 | 1.41 | 1483717 | 4133431 | 979.943 | 984.115 |
| 3) | DNX | 1.64 | 1.64 | 3080929 | 4874946 | 1276.716 | 1290.173 |
| 4) | MNX | 2.20 | 2.20 | 3340234 | 5126202 | 1493.851 | 1491.120 |
| 5) | RDX | 2.79 | 2.79 | 1792194 | 2836061 | 934.849 | 987.383 |
| 6) | 1,3,5-Trinitrobe | 4.49 | 4.49 | 3885689 | 6119046 | 894.975 | 918.888 |
| 7) | 1,3-Dinitrobenze | 5.67 | 5.67 | 4947232 | 3504869 | 878.678 | 882.954 |
| 8) | 3,5-Dinitroanili | 6.04 | 6.04 | 3839323 | 6691145 | 918.711 | 952.873 |
| 9) | Nitrobenzene | 7.20 | 7.20 | 2863798 | 2767468 | 895.186 | 921.771 |
| 10) | Nitroglycerin | 0.00 | 8.44 | 0 | 1264965 | N.D. | 980.316 # |
| 11) | Tetryl | 8.99 | 8.99 | 2812711 | 4528450 | 879.123 | 935.981 |
| 12) | 2,4,6-Trinitroto | 9.36 | 9.36 | 3558725 | 4327404 | 882.950 | 920.445 |
| 13) | 2-Amino-4,6-Dini | 9.79 | 9.79 | 3154965 | 4774972 | 967.413 | 1021.095 |
| 14) | 4-Amino-2,6-Dini | 10.22 | 10.22 | 2258089 | 4589890 | 944.524 | 981.945 |
| 16) | 2,4-Dinitrotolue | 11.30 | 11.30 | 4494018 | 2926749 | 954.420 | 936.614 |
| 17) | 2,6-Dinitrotolue | 11.73 | 11.73 | 2505555 | 3265937 | 883.274 | 943.806 |
| 18) | o-Nitrotoluene | 14.86 | 14.86 | 2001814 | 2832662 | 880.021 | 953.371 |
| 19) | p-Nitrotoluene | 15.42 | 15.42 | 3065053 | 2684014 | 880.450 | 946.649 |
| 20) | m-Nitrotoluene | 16.35 | 16.35 | 3022448 | 3512227 | 898.829 | 923.252 |
| 21) | PETN | 0.00 | 18.21 | 0 | 1410845 | N.D. | 1046.173m# |

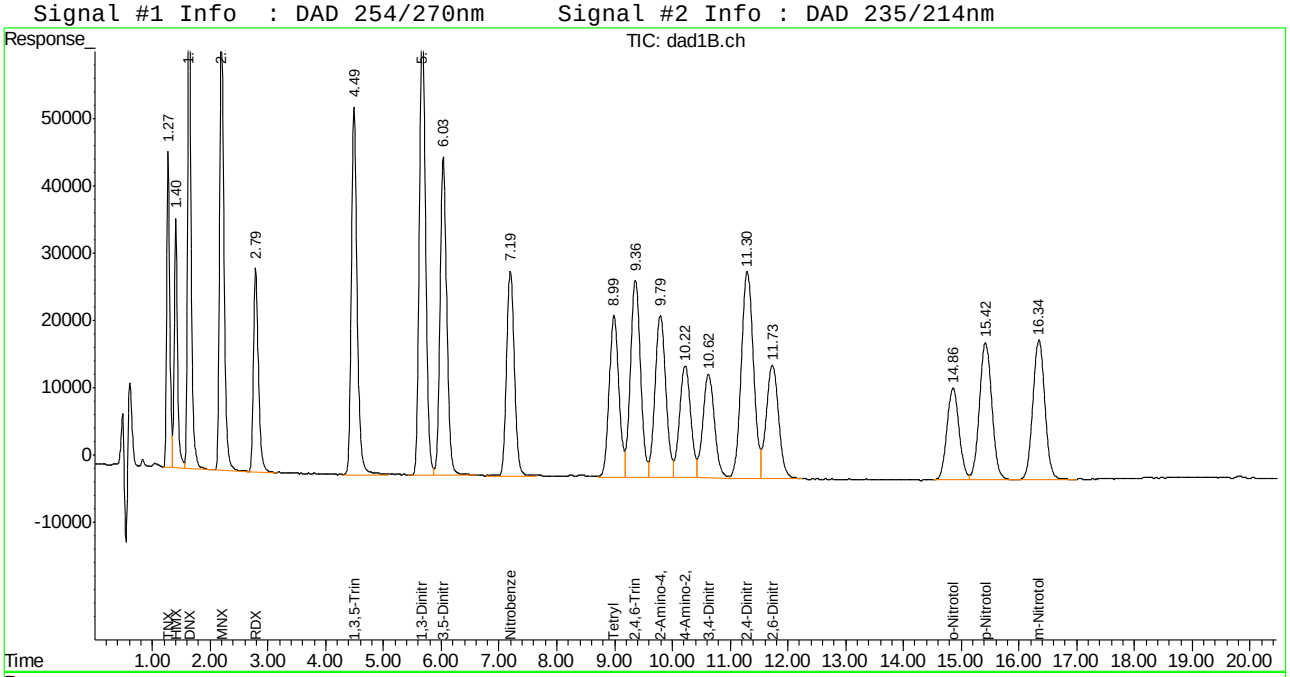
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
BB085964.D BBB2589_091224.M Wed Dec 18 10:42:05 2024 Page 1

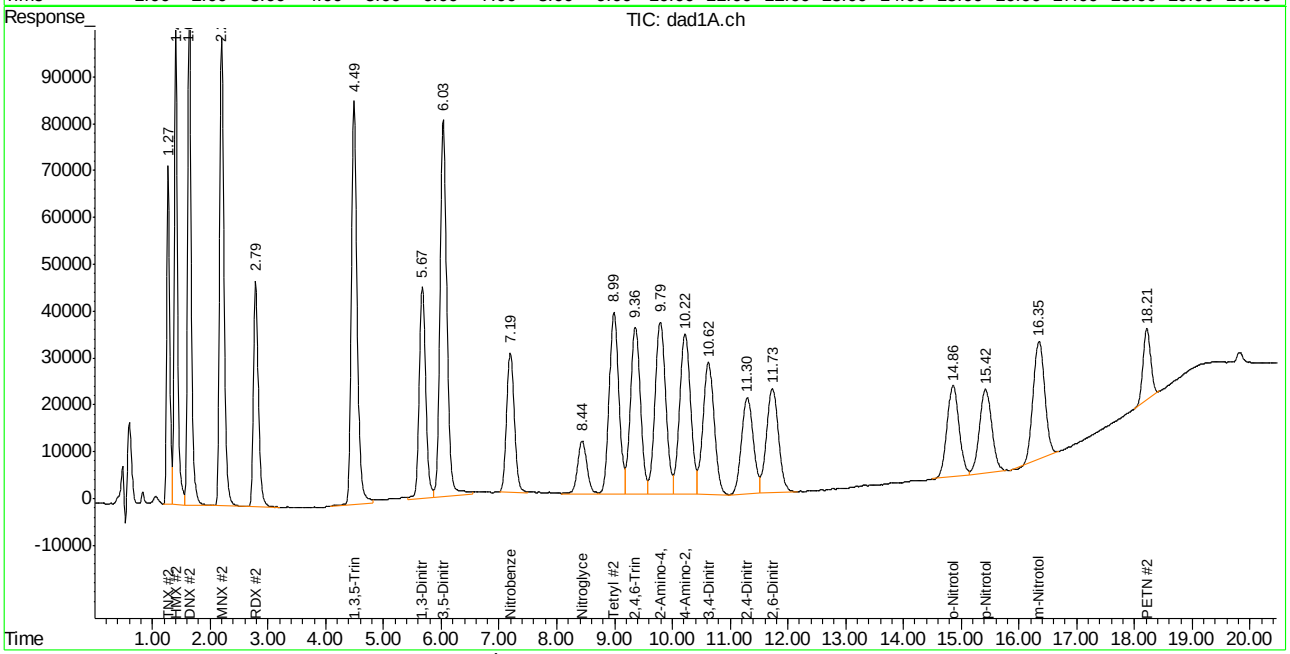
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085964.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085964.D\dad1A.ch
Acq On : 18-Dec-2024, 06:50:29 Operator: fouads
Sample : ecc2589-1000 Inst : G1315B
Misc : op3387,GBB2633,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 8:23 2024 Quant Results File: BBB2589_091224.RES

Quant Method : C:\MSDCHEM\2...\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 07:19:55 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330B.M

Volume Inj. : 100ul
Signal #1 Phase : Extend C-18 Signal #2 Phase: Extend C-18
Signal #1 Info : DAD 254/270nm Signal #2 Info : DAD 235/214nm



# Manual Integration Approval Summary



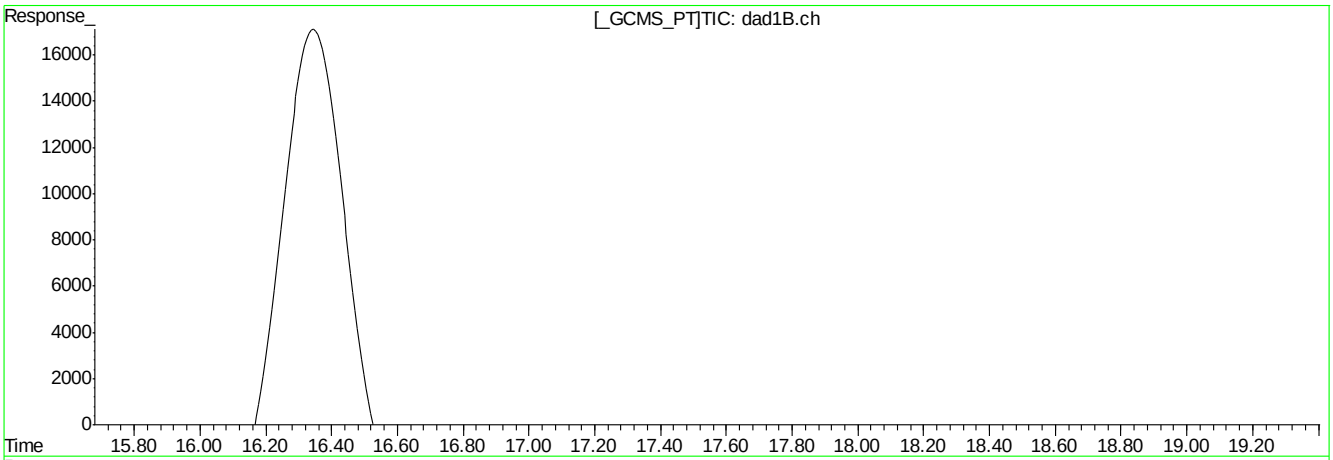
| | | | |
|---|---|---|---|
| **Sample Number:** | GBB2633-ECC2589 | **Method:** | SW846 8330B |
| **Lab FileID:** | BB085964.D | **Analyst approved:** | 12/18/24 11:05 Fouad Sekkar |
| **Injection Time:** | 12/18/24 06:50 | **Supervisor approved:** | 12/18/24 12:05 Naresh Jiawan |

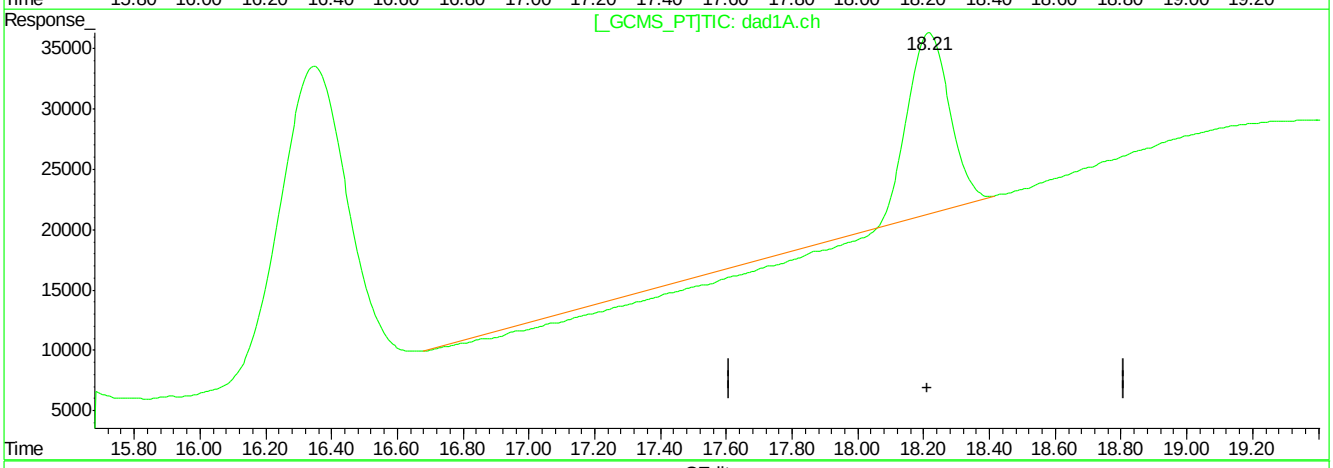
| Parameter | CAS | Sig# | R.T. (min.) | Reason |
|---|---|---|---|---|
| PETN | 78-11-5 | 2 | 18.21 | Poor instrument integration |

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085964.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085964.D\dad1A.ch
Acq On : 18-Dec-2024, 06:50:29 Operator: fouads
Sample : ecc2589-1000 Inst : G1315B
Misc : op3387,GBB2633,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 7:20 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 07:19:55 2024
Response via : Multiple Level Calibration




QEdit

(21) PETN

0.00min 0.000ppb

response 0

(21) PETN #2

18.22min 599.839ppb

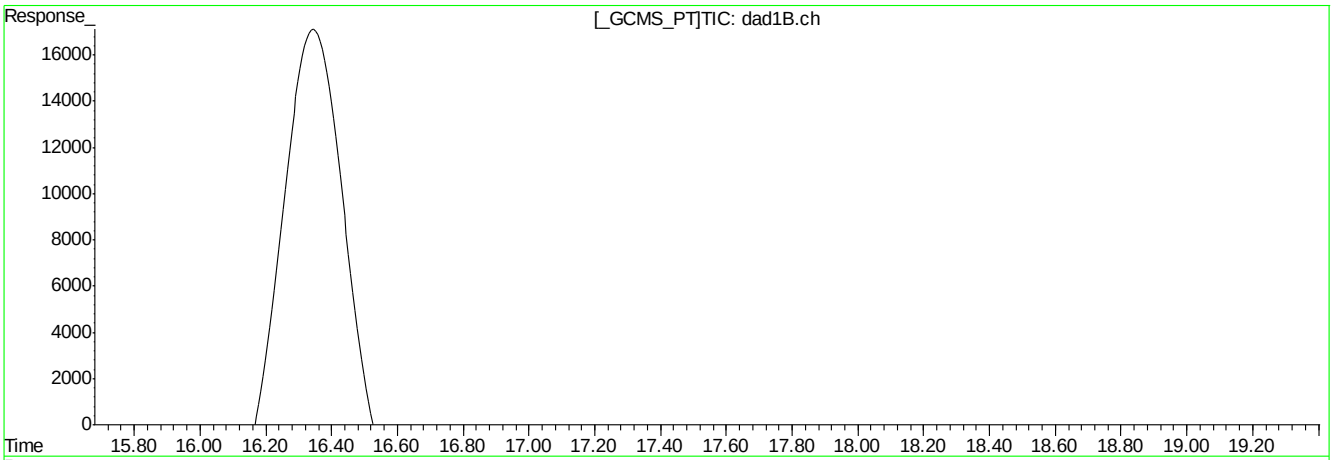
response 808929

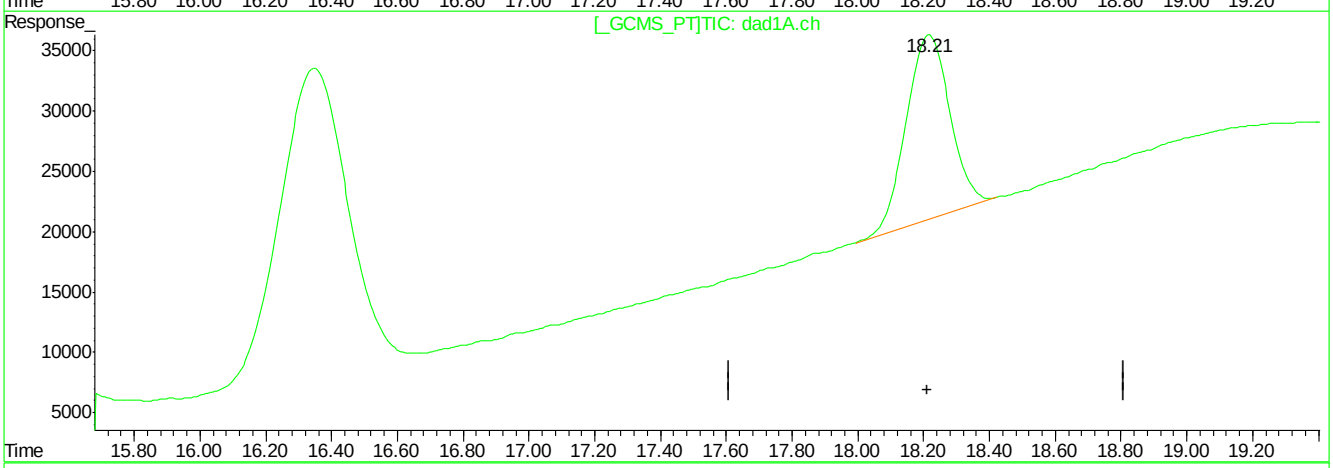
(+) = Expected Retention Time
BB085964.D BBB2589_091224.M Wed Dec 18 08:23:37 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\2\DATA\GBB2633\BB085964.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\2\DATA\GBB2633\BB085964.D\dad1A.ch
Acq On : 18-Dec-2024, 06:50:29 Operator: fouads
Sample : ecc2589-1000 Inst : G1315B
Misc : op3387,GBB2633,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: events.e IntFile Signal #2: EVENTS2.E
Quant Time: Dec 18 7:20 2024 Quant Results File: BBB2589_091224.RES

Method : C:\MSDCHEM\2\METHODS\BBB2589_091224.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Wed Dec 18 07:19:55 2024
Response via : Multiple Level Calibration




QEdit

(21) PETN

0.00min 0.000ppb

response 0

(21) PETN #2

18.21min 1046.173ppb m

response 1410845

(+) = Expected Retention Time
BB085964.D BBB2589_091224.M Wed Dec 18 08:23:45 2024

Manual Integrations APPROVED (compounds with "m" flag)
William Hustedde 10/07/24 15:21

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 03 14:23:19 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Initial Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 12) S | 3,4-Dinitrotolue | 13.15 | 13.08 | 233633 | 576121 | 44.562m | 55.115m |
| | Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 8.91%# | 11.02%# |
| | Target Compounds | | | | | | |
| 1) | TNX | 4.93 | 4.93 | 229353 | 223107 | 29.182m | NoCal m# |
| 2) | HMX | 5.23 | 5.23 | 155171 | 161364 | 41.578m | NoCal m# |
| 3) | DNX | 5.46 | 5.46 | 381995 | 345943 | 58.639m | NoCal m# |
| 4) | MNX | 6.43 | 6.43 | 420770 | 400832 | 71.296m | NoCal m# |
| 5) | 1,3,5-Trinitrobe | 7.21 | 7.21 | 540418 | 554038 | 53.896m | NoCal m# |
| 6) | RDX | 7.58 | 7.58 | 249902 | 245855 | 49.833m | NoCal m# |
| 7) | 1,3-Dinitrobenze | 9.43 | 9.42 | 694228 | 334755 | 50.663m | NoCal m# |
| 8) | Nitrobenzene | 10.38 | 10.38 | 460607 | 445240 | 50.663m | NoCal m# |
| 9) | 2,4,6-Trinitroto | 10.89 | 10.89 | 537603 | 641212 | 54.613m | NoCal m# |
| 10) | Nitroglycerin | 0.00 | 11.53 | 0 | 297758 | N.D. | NoCal m |
| 11) | Tetryl | 11.89 | 11.88 | 384070 | 809635 | 51.471m | NoCal m# |
| 13) | 2,6-Dinitrotolue | 13.60 | 13.61 | 268957 | 310523 | 39.536m | NoCal m# |
| 14) | 2,4-Dinitrotolue | 14.24 | 14.22 | 634500 | 753549 | 49.128m | NoCal m# |
| 15) | 3,5-Dinitroanili | 15.25 | 15.26 | 592340 | 1561790 | 55.359m | NoCal m# |
| 16) | o-Nitrotoluene | 15.72 | 15.70 | 308226 | 741185 | 52.717m | NoCal m# |
| 17) | p-Nitrotoluene | 16.71 | 16.72 | 588839 | 1096888 | 101.491m | NoCal m# |
| 18) | 4-Amino-2,6-Dini | 16.71 | 16.72 | 584599 | 1070712 | 100.763m | NoCal m# |
| 19) | m-Nitrotoluene | 17.84 | 17.88 | 328003 | 437189 | 52.905m | NoCal m# |
| 20) | 2-Amino-4,6-Dini | 18.61 | 18.64 | 472848 | 541860 | 48.515m | NoCal m# |
| 21) | PETN | 0.00 | 21.06 | 0 | 754591 | N.D. | NoCal m |

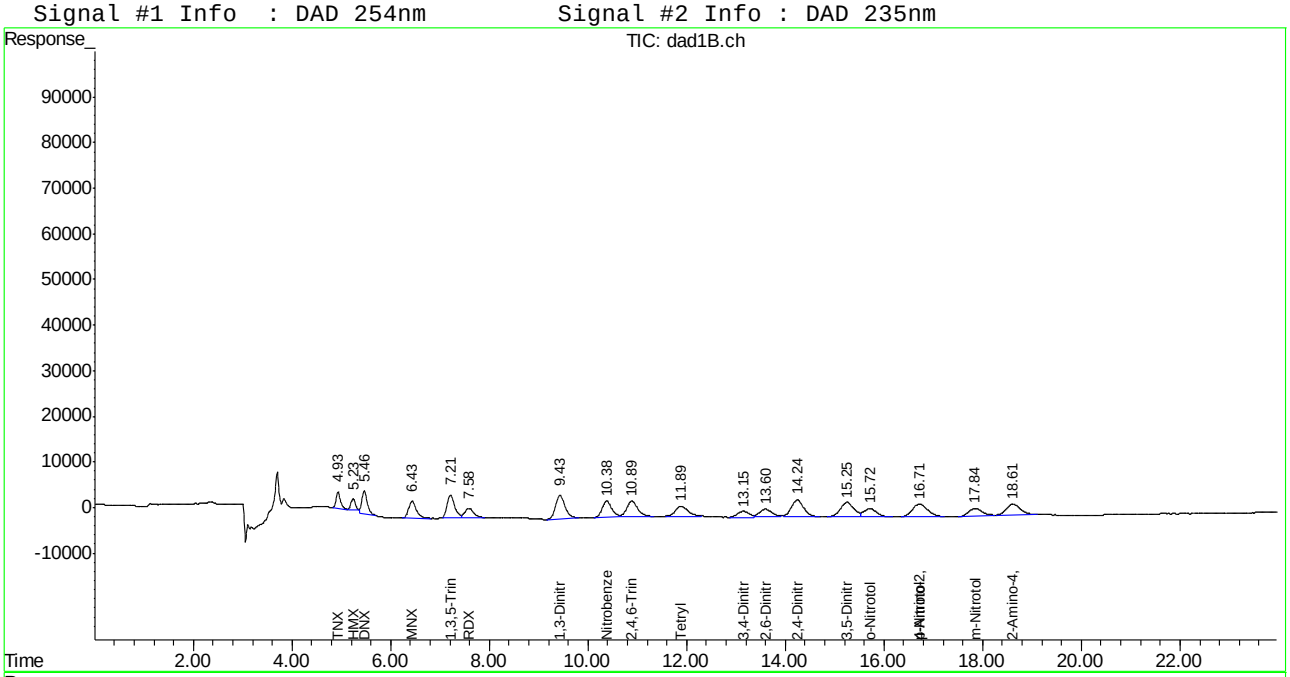
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.

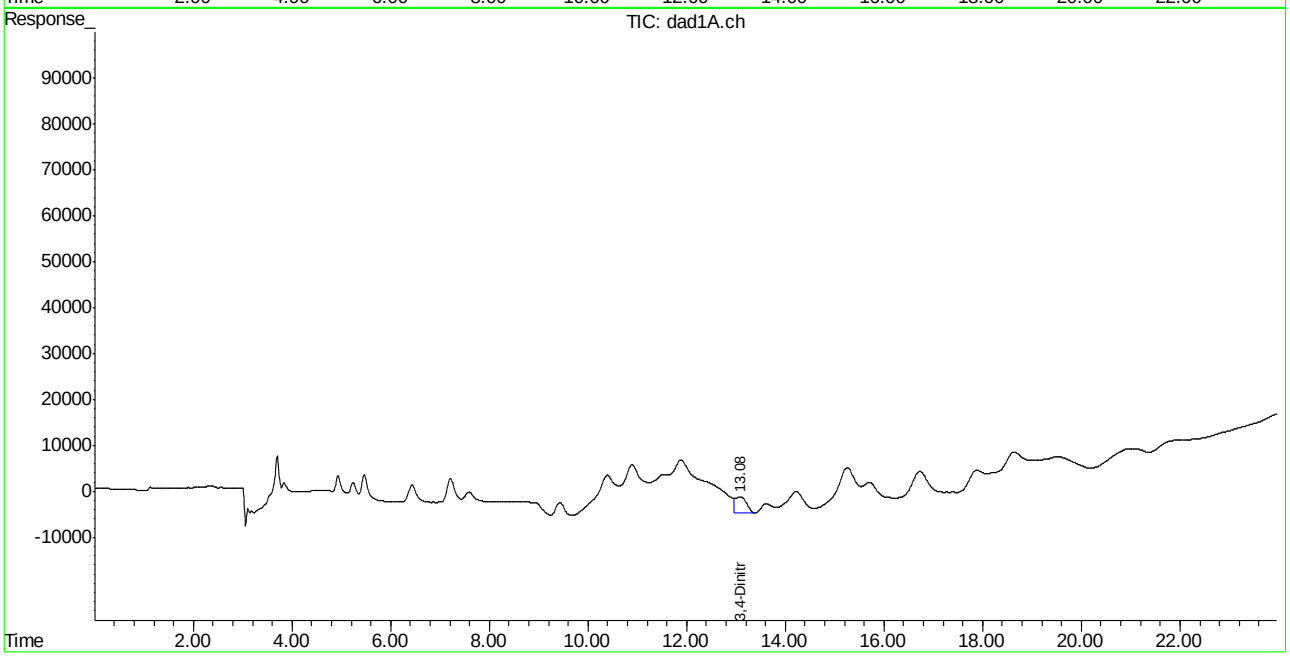
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 15:17 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm



# Manual Integration Approval Summary



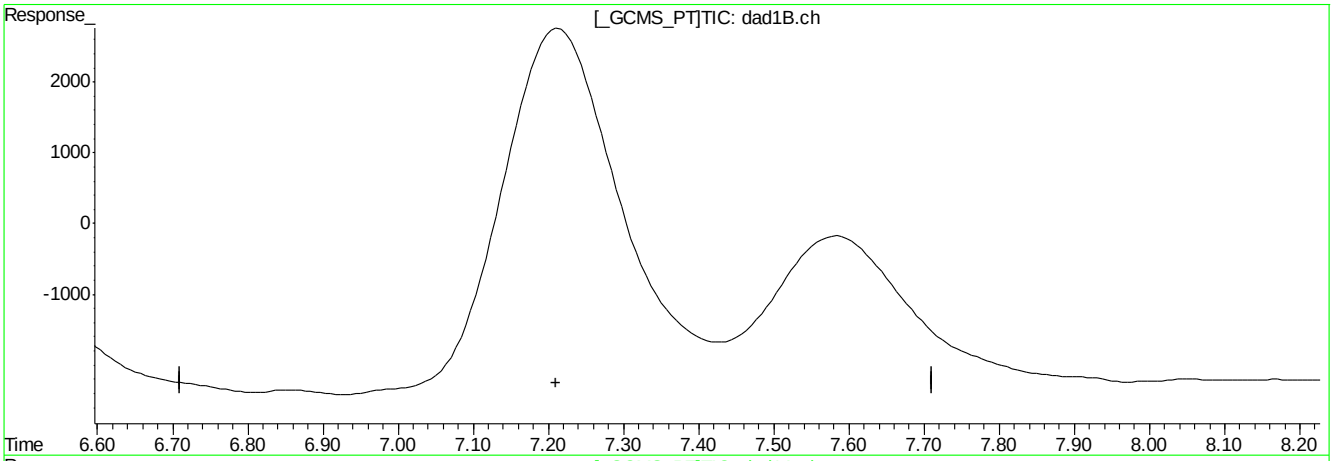
**Sample Number:** GGG3484-IC3484 **Method:** SW846 8330B
**Lab FileID:** GG630267.D **Analyst approved:** 10/07/24 09:34 Fouad Sekkar
**Injection Time:** 10/03/24 08:31 **Supervisor approved:** 10/07/24 15:21 William Hustedde

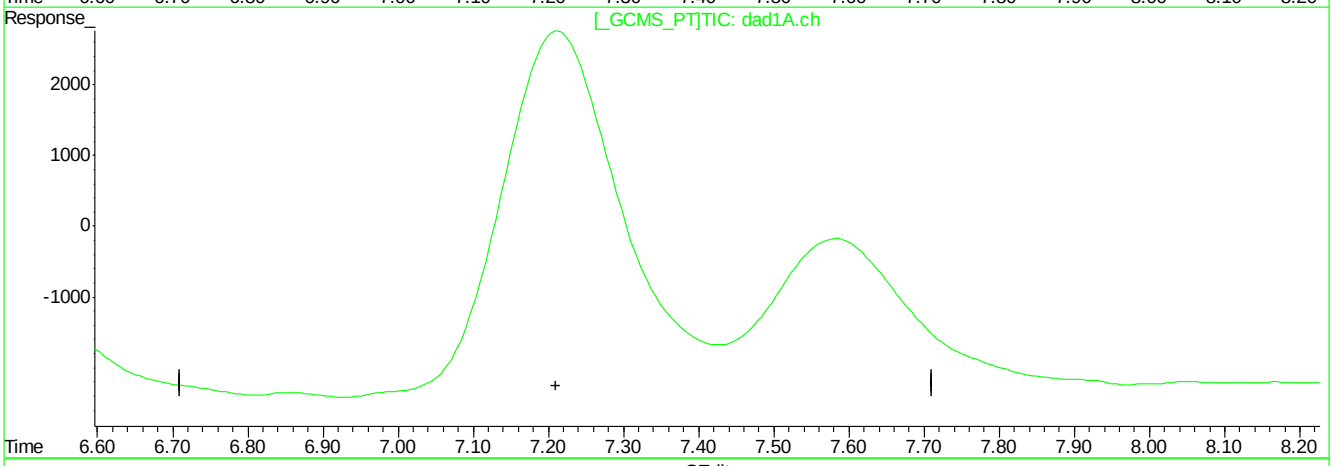
| Parameter | CAS | Sig# | R.T. (min.) | Reason |
|---|---|---|---|---|
| TNX | | 1 | 4.93 | Missed peak |
| HMX | 2691-41-0 | 1 | 5.23 | Missed peak |
| DNX | | 1 | 5.46 | Missed peak |
| MNX | | 1 | 6.43 | Missed peak |
| 1,3,5-Trinitrobenzene | 99-35-4 | 1 | 7.21 | Poor instrument integration |
| RDX | 121-82-4 | 1 | 7.58 | Missed peak |
| 1,3-Dinitrobenzene | 99-65-0 | 1 | 9.43 | Missed peak |
| Nitrobenzene | 98-95-3 | 1 | 10.38 | Poor instrument integration |
| 2,4,6-Trinitrotoluene | 118-96-7 | 1 | 10.89 | Poor instrument integration |
| Tetryl | 479-45-8 | 1 | 11.89 | Poor instrument integration |
| 3,4-Dinitrotoluene | 610-39-9 | 2 | 13.08 | Poor instrument integration |
| 3,4-Dinitrotoluene | 610-39-9 | 1 | 13.15 | Poor instrument integration |
| 2,6-Dinitrotoluene | 606-20-2 | 1 | 13.60 | Missed peak |
| 2,4-Dinitrotoluene | 121-14-2 | 1 | 14.24 | Missed peak |
| 3,5-Dinitroaniline | 618-87-1 | 1 | 15.25 | Missed peak |
| o-Nitrotoluene | 88-72-2 | 1 | 15.72 | Poor instrument integration |
| 4-amino-2,6-Dinitrotoluene | 19406-51-0 | 1 | 16.71 | Missed peak |
| p-Nitrotoluene | 99-99-0 | 1 | 16.71 | Poor instrument integration |
| m-Nitrotoluene | 99-08-1 | 1 | 17.84 | Poor instrument integration |
| 2-amino-4,6-Dinitrotoluene | 35572-78-2 | 1 | 18.61 | Missed peak |

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(5) 1,3,5-Trinitrobenzene

0.00min 0.000ppb

response 0

(5) 1,3,5-Trinitrobenzene #2

0.00min 0.000ppb

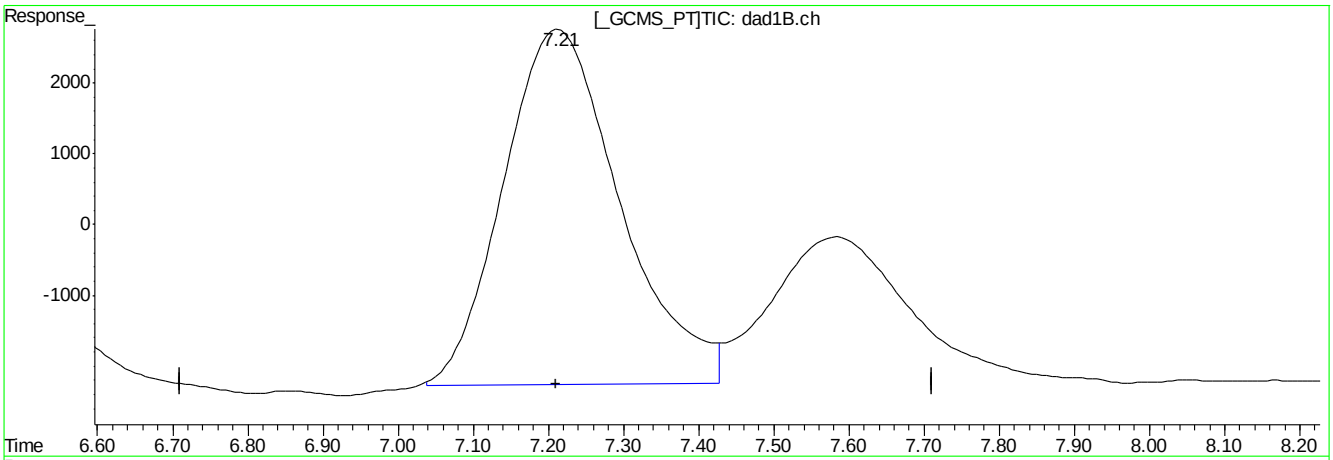
response 0

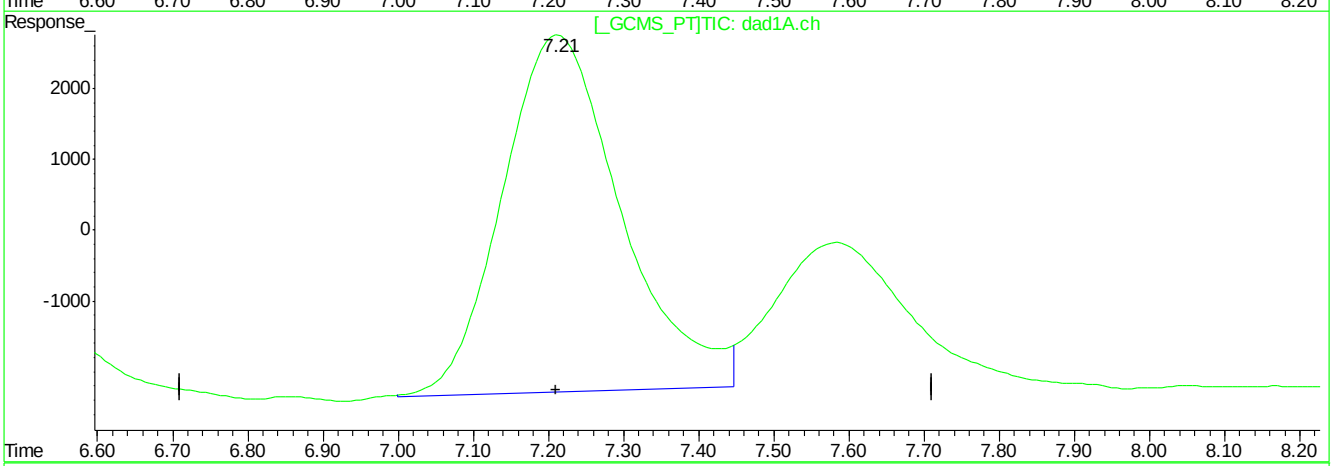
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:24:31 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(5) 1,3,5-Trinitrobenzene

7.21min 53.896ppb m

response 540418

(5) 1,3,5-Trinitrobenzene #2

7.21min 0.000ppb m

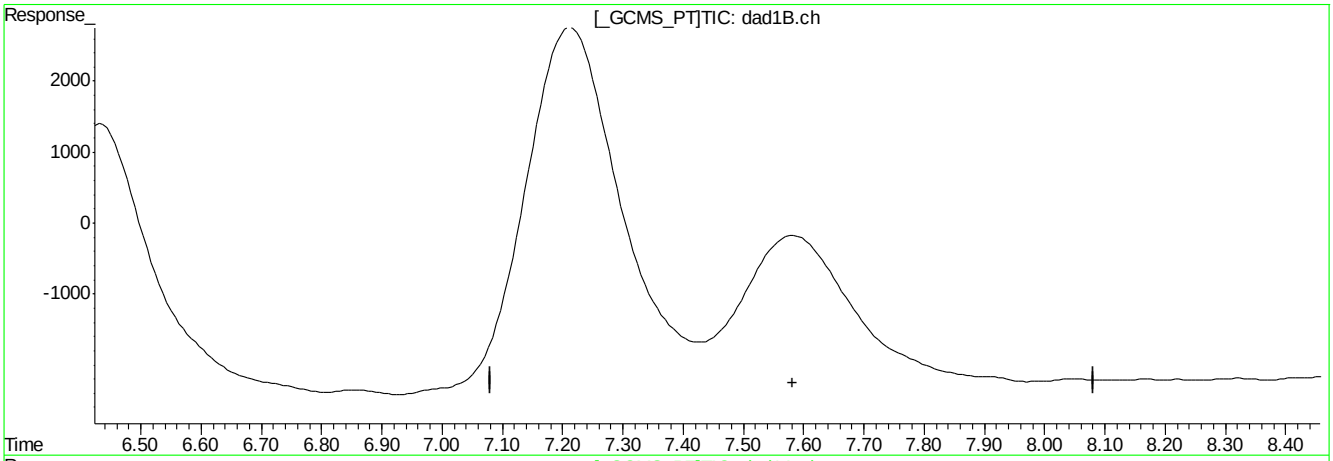
response 554038

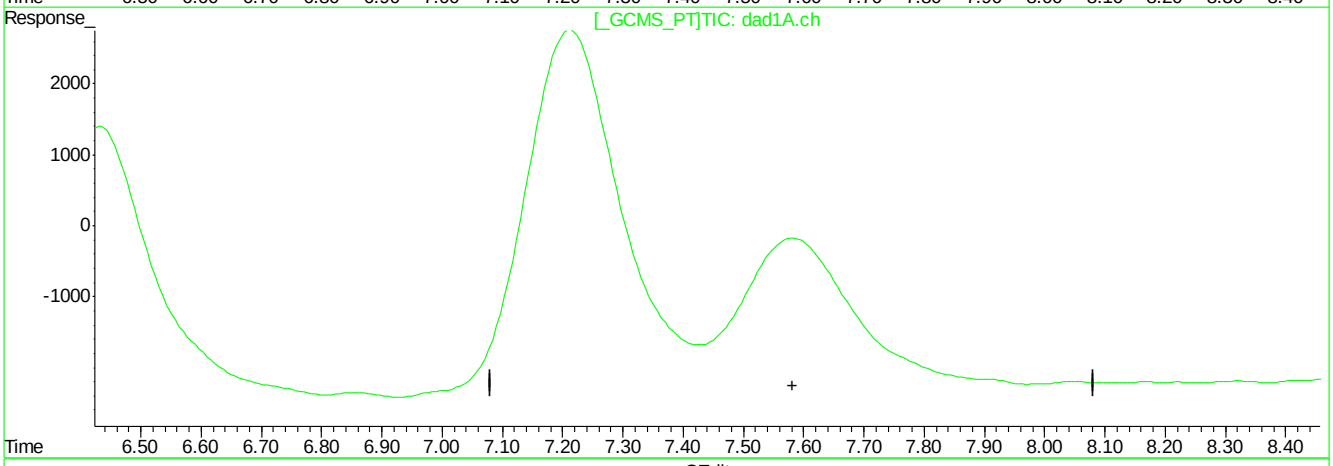
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:24:38 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(6) RDX

0.00min 0.000ppb

response 0

(6) RDX #2

0.00min 0.000ppb

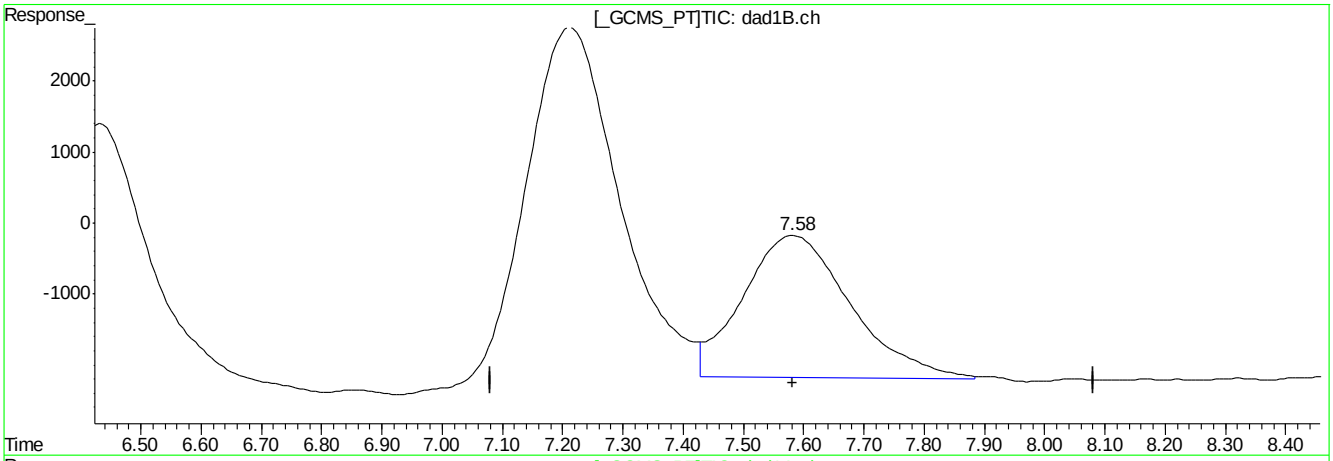
response 0

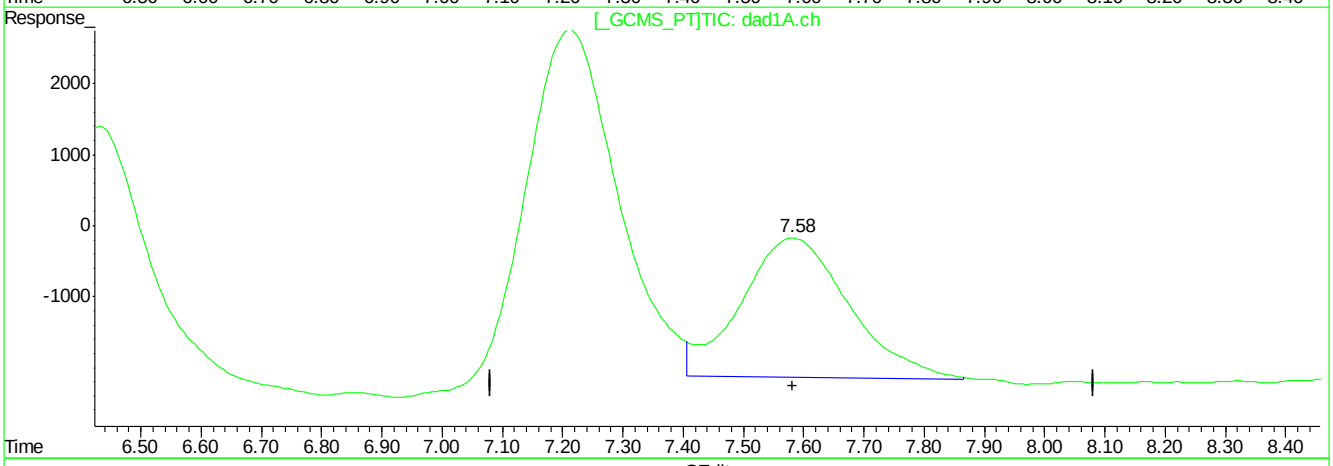
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:24:43 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(6) RDX

7.58min 49.833ppb m

response 249902

(6) RDX #2

7.58min 0.000ppb m

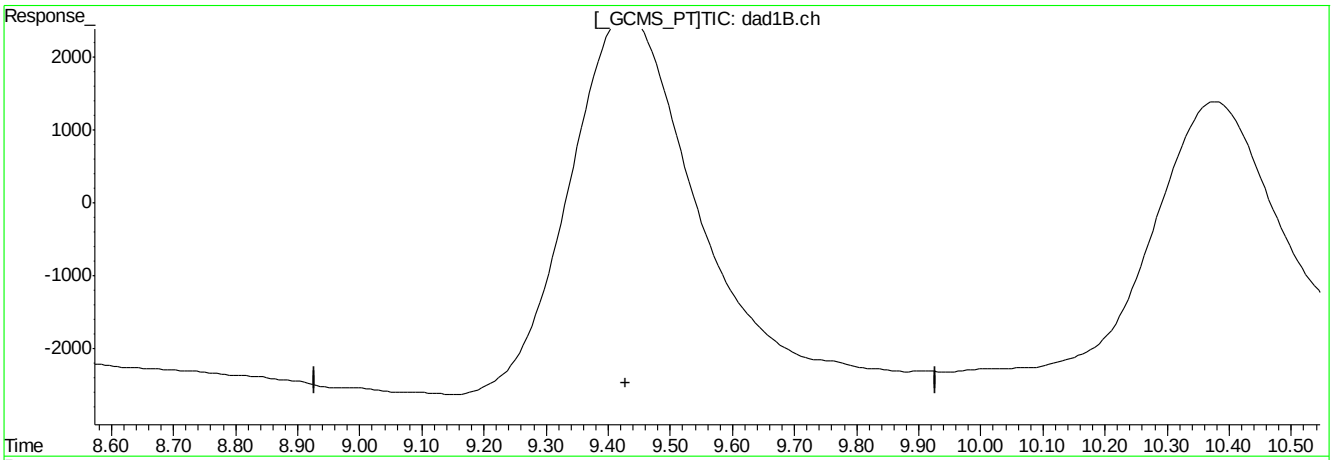
response 245855

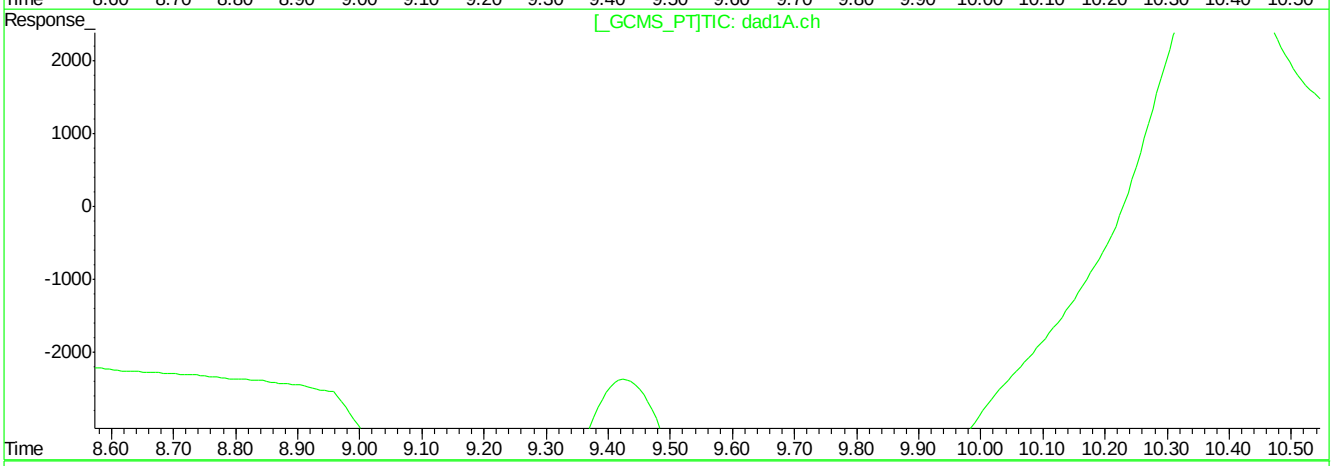
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:24:51 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(7) 1,3-Dinitrobenzene

0.00min 0.000ppb

response 0

(7) 1,3-Dinitrobenzene #2

0.00min 0.000ppb

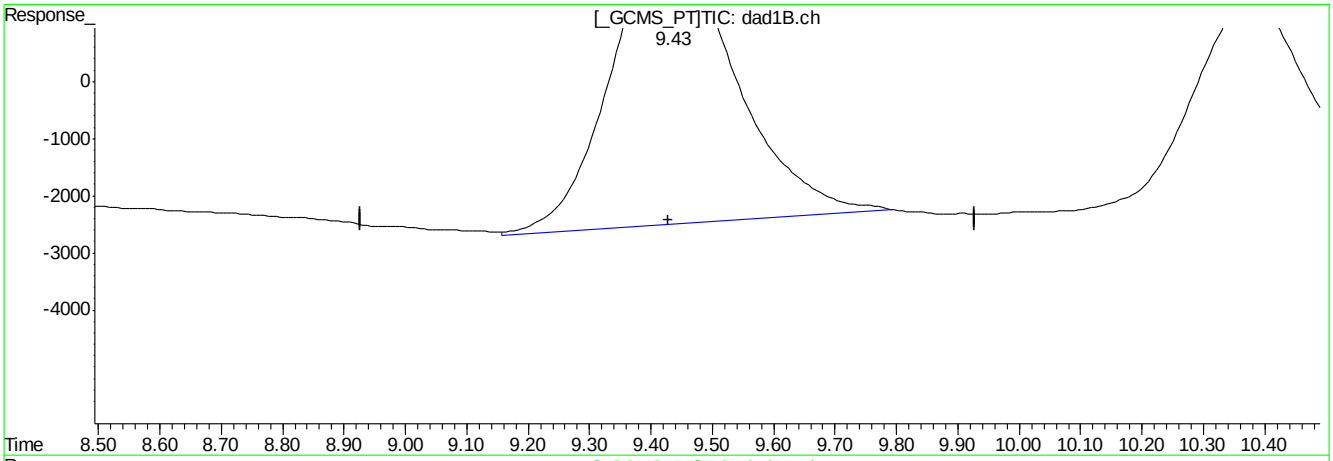
response 0

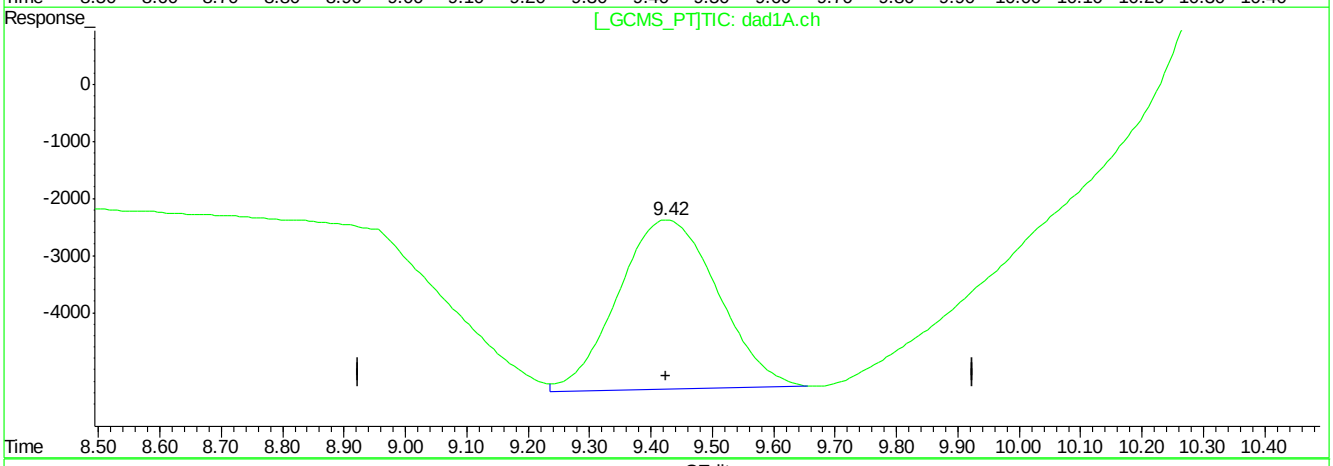
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:24:55 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(7) 1,3-Dinitrobenzene

9.43min 50.663ppb m

response 694228

(7) 1,3-Dinitrobenzene #2

9.42min 0.000ppb m

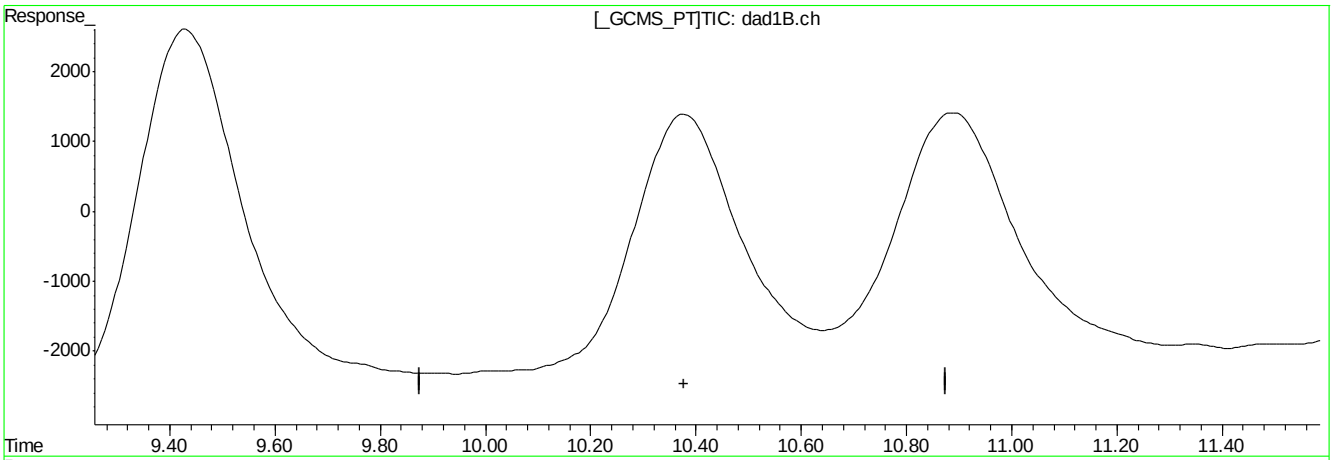
response 334755

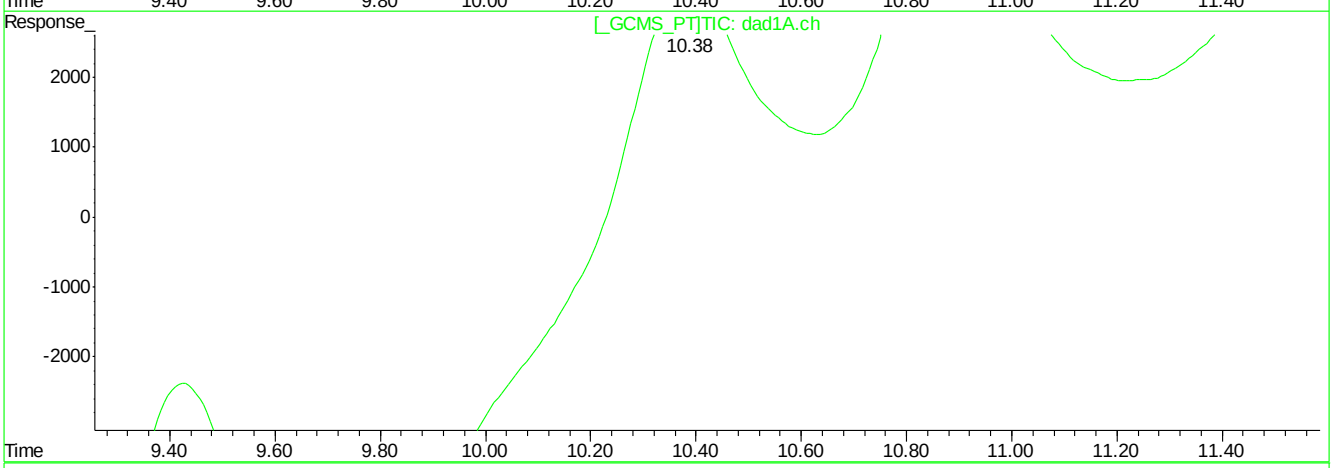
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:25:04 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(8) Nitrobenzene

0.00min 0.000ppb

response 0

(8) Nitrobenzene #2

10.39min 0.000ppb

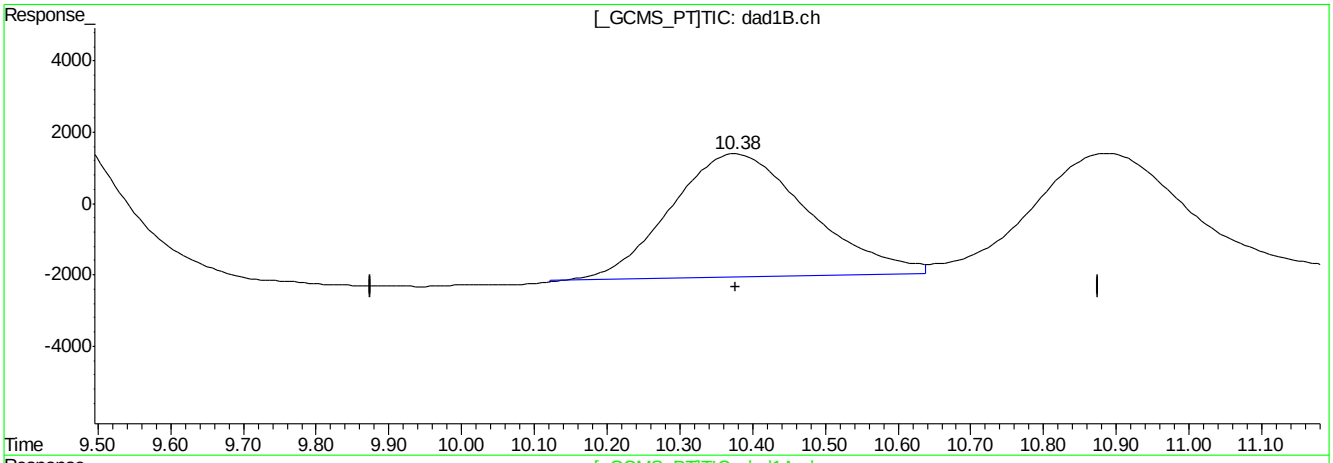
response 669610

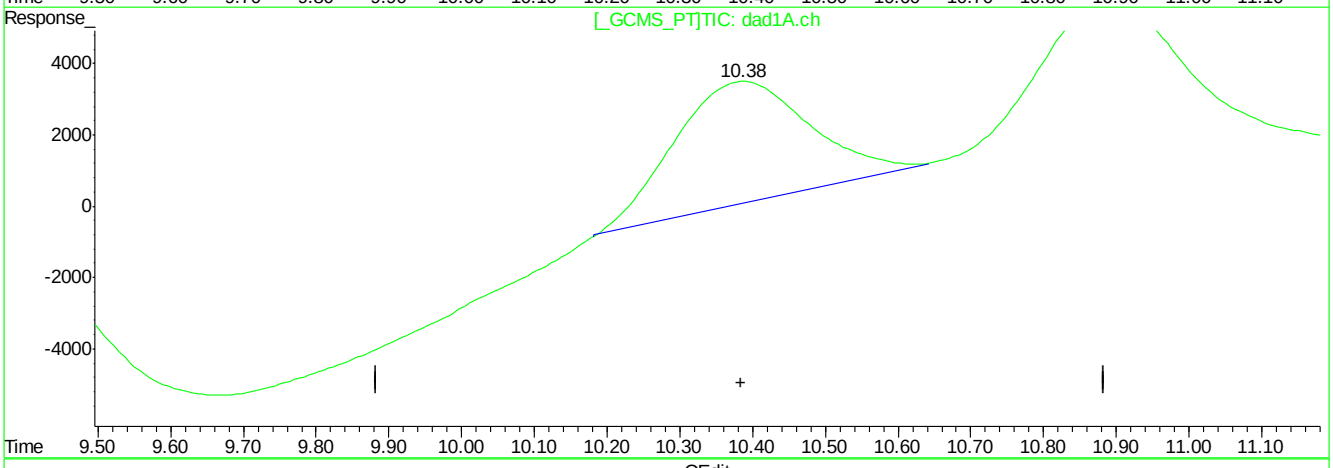
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:25:09 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(8) Nitrobenzene

10.38min 50.663ppb m

response 460607

(8) Nitrobenzene #2

10.38min 0.000ppb m

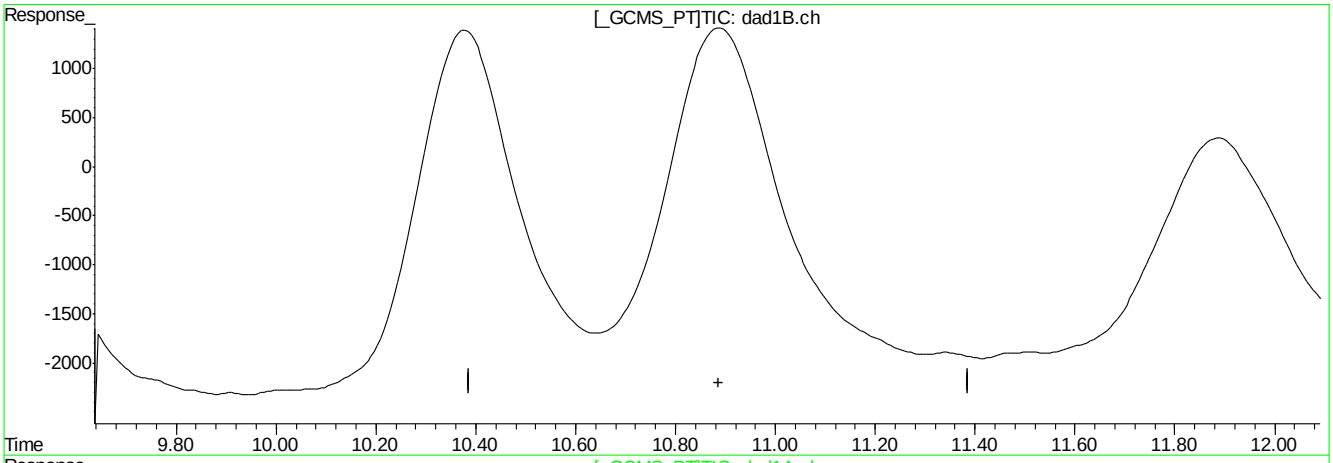
response 445240

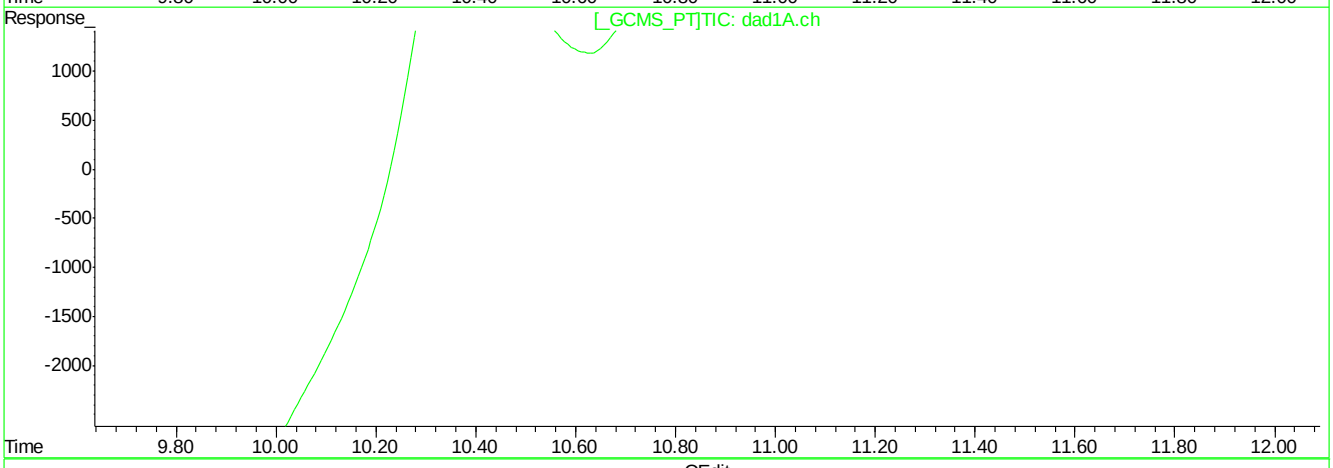
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:25:19 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(9) 2,4,6-Trinitrotoluene

0.00min 0.000ppb

response 0

(9) 2,4,6-Trinitrotoluene #2

0.00min 0.000ppb

response 0

(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:25:25 2024

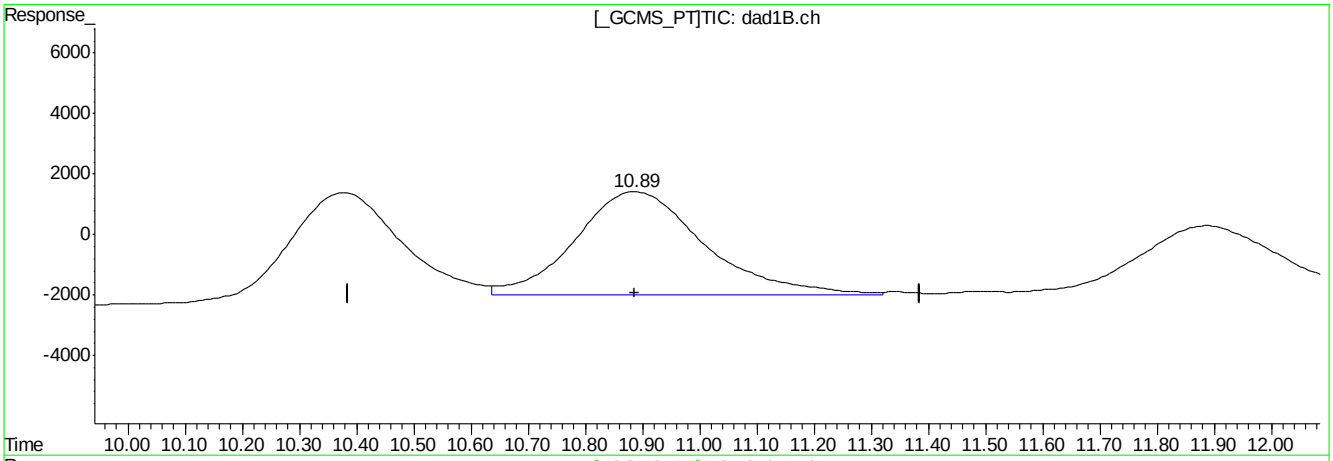


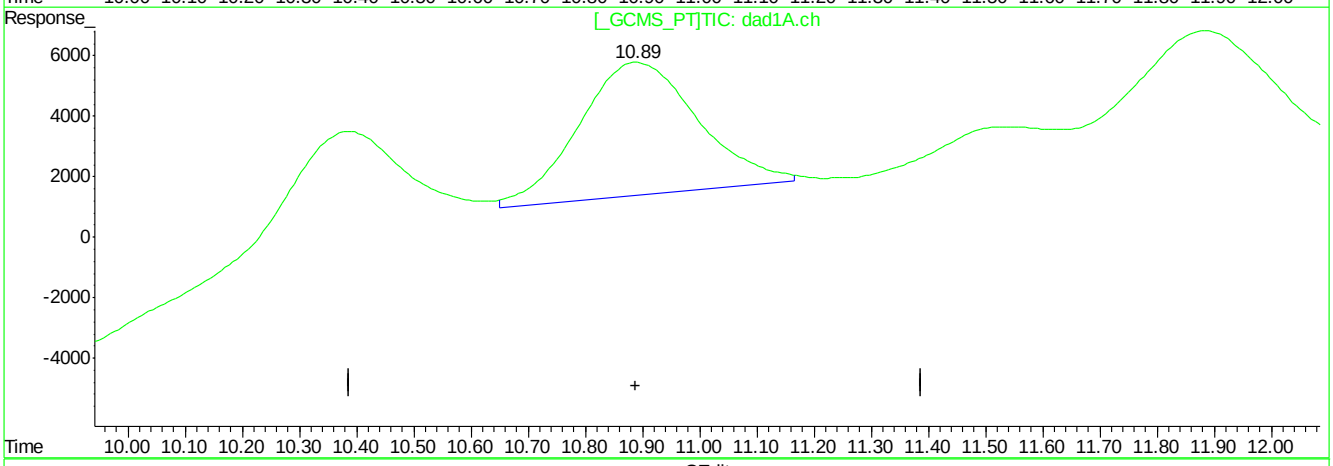
GG630267.D edits: 2,4,6-Trinitrotoluene

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(9) 2,4,6-Trinitrotoluene

10.89min 54.613ppb m

response 537603

(9) 2,4,6-Trinitrotoluene #2

10.89min 0.000ppb m

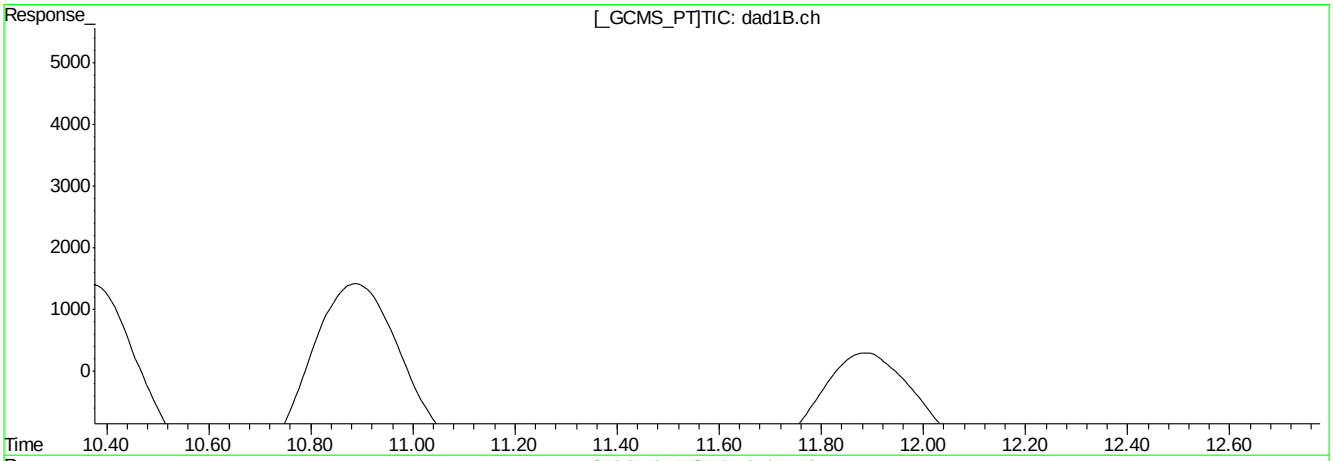
response 641212

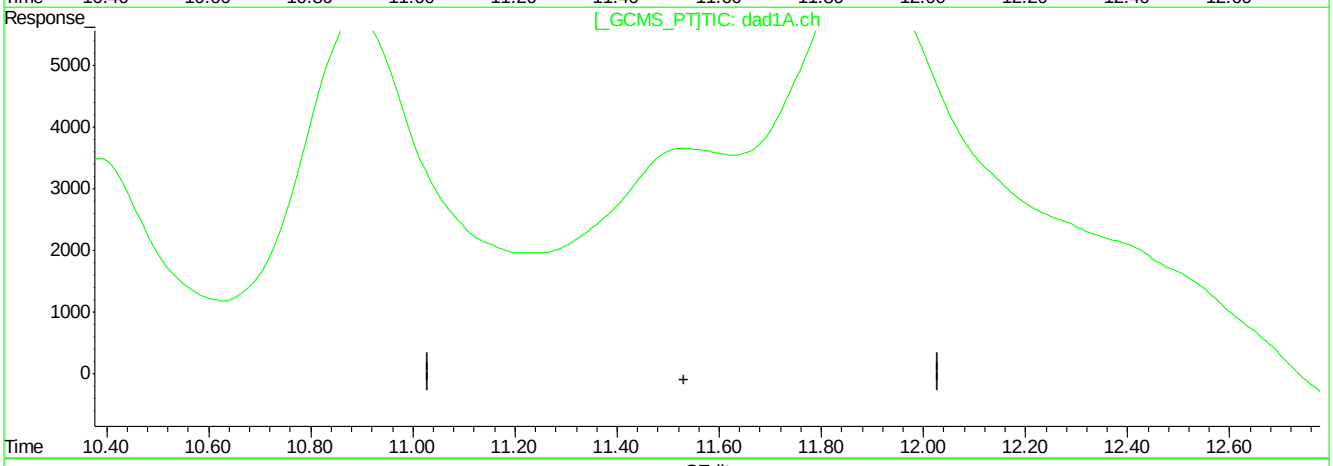
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:25:41 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(10) Nitroglycerin

0.00min 0.000ppb

response 0

(10) Nitroglycerin #2

0.00min 0.000ppb

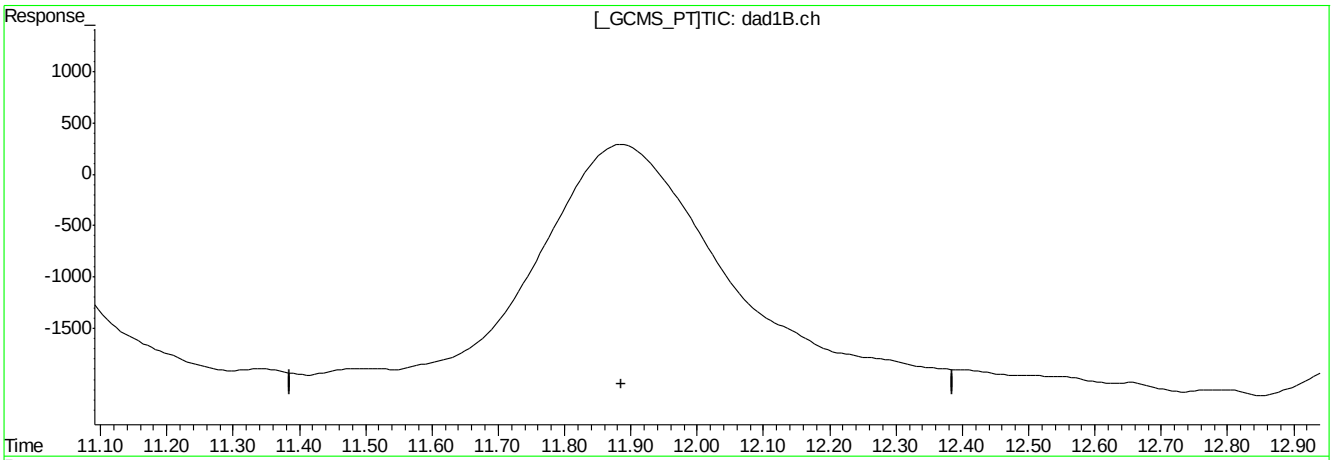
response 0

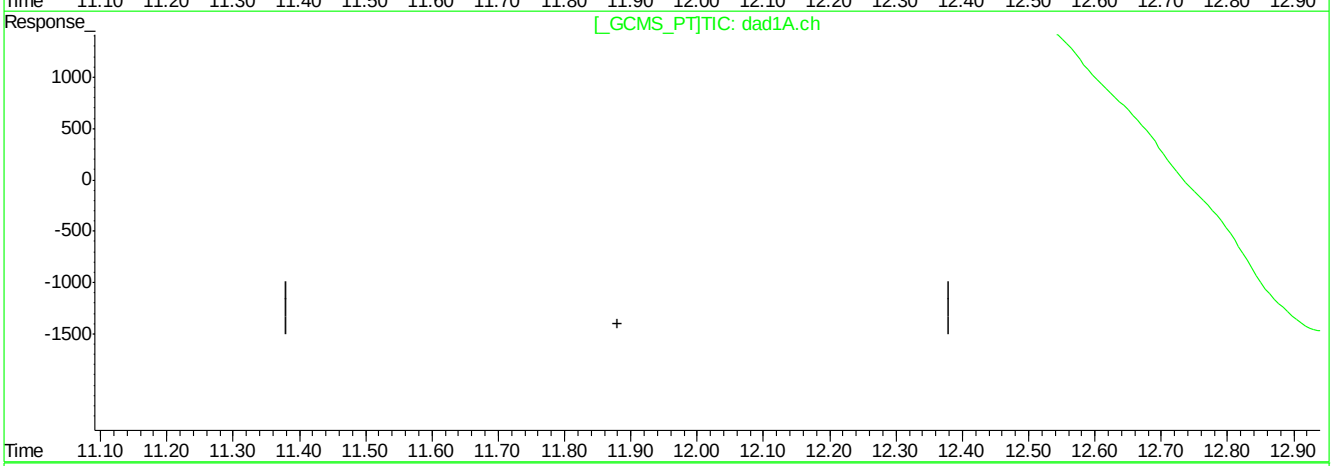
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:25:47 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(11) Tetryl

0.00min 0.000ppb

response 0

(11) Tetryl #2

0.00min 0.000ppb

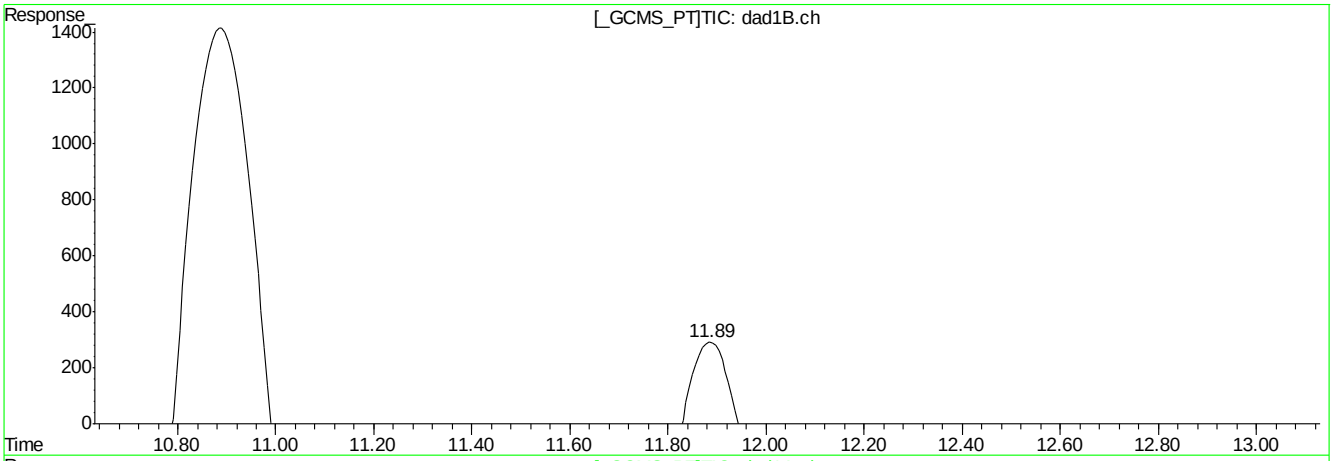
response 0

(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:26:15 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




(11) Tetryl

11.89min 51.471ppb m

response 384070

(11) Tetryl #2

11.88min 0.000ppb m

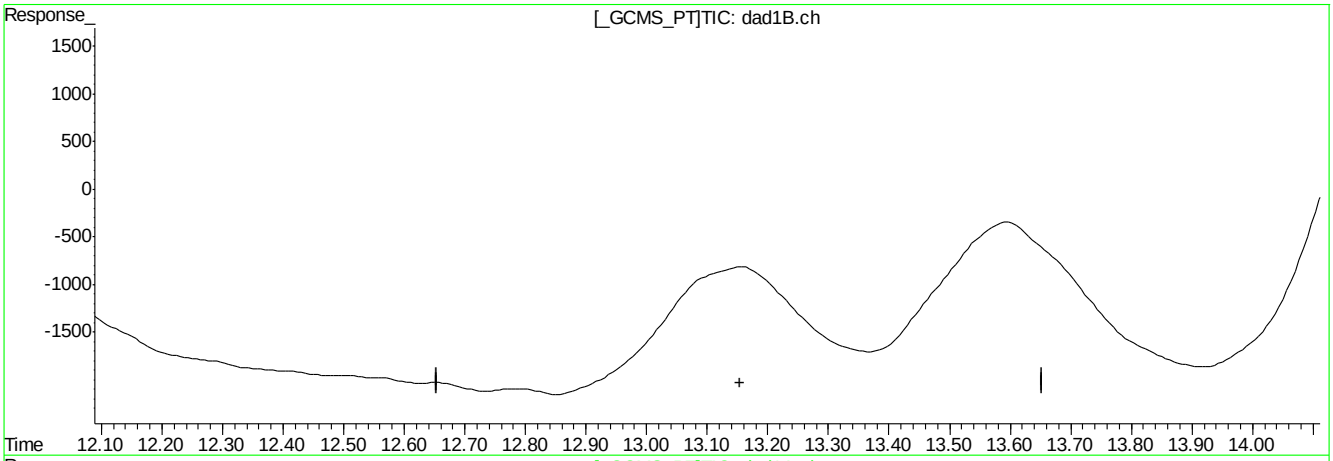
response 809635

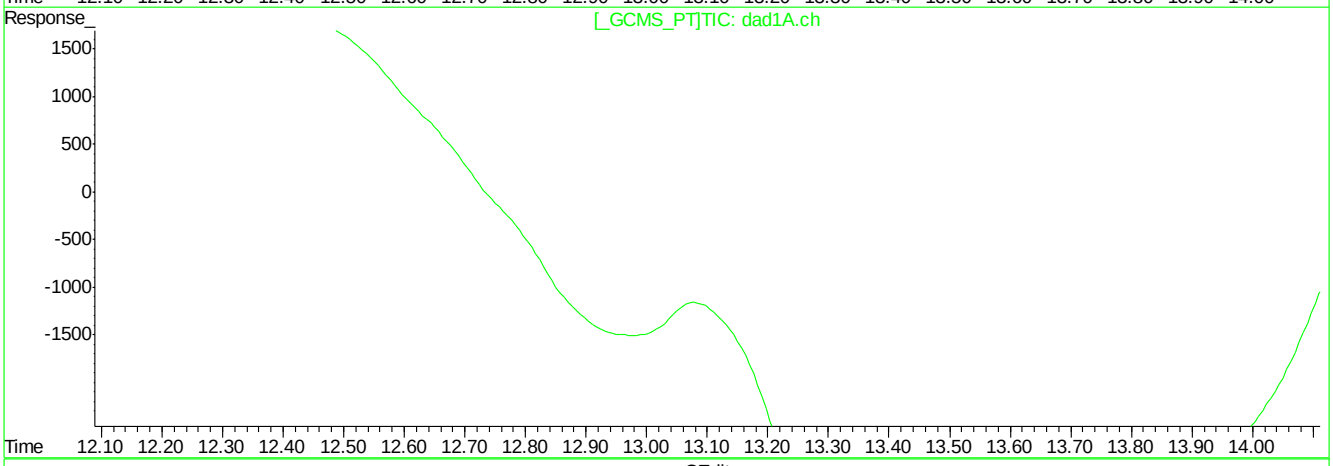
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:26:31 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(12) 3,4-Dinitrotoluene (S)

0.00min 0.000ppb

response 0

(12) 3,4-Dinitrotoluene #2 (S)

0.00min 0.000ppb

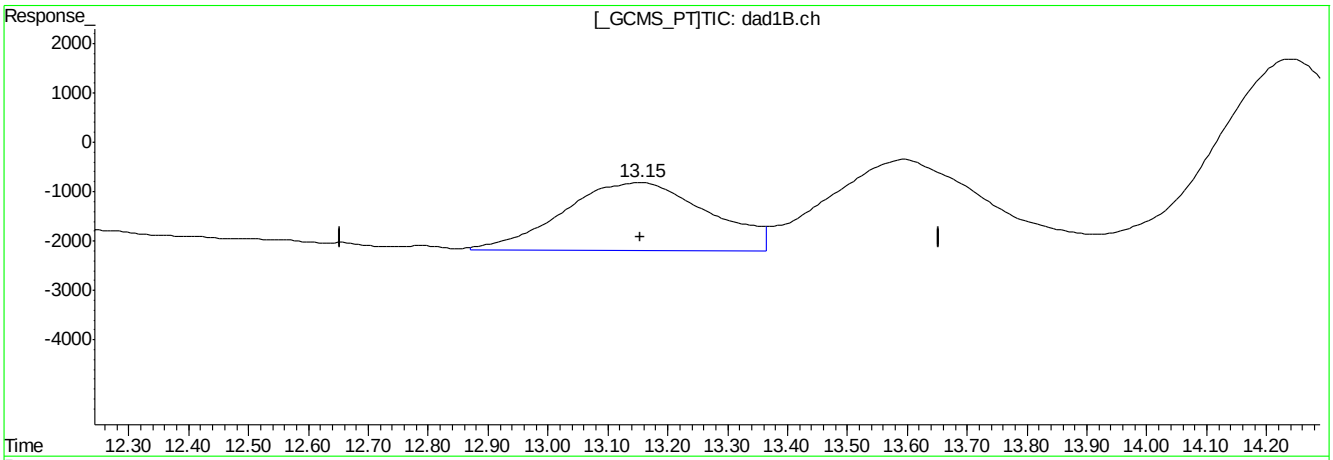
response 0

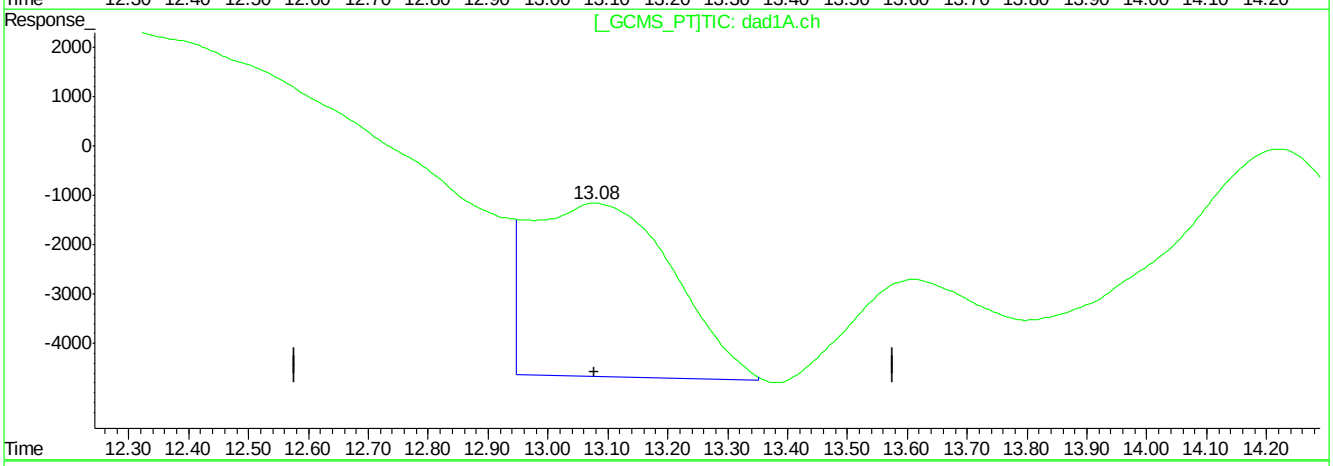
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:26:36 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(12) 3,4-Dinitrotoluene (S)

13.15min 44.562ppb m

response 233633

(12) 3,4-Dinitrotoluene #2 (S)

13.08min 55.115ppb m

response 576121

(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:26:47 2024

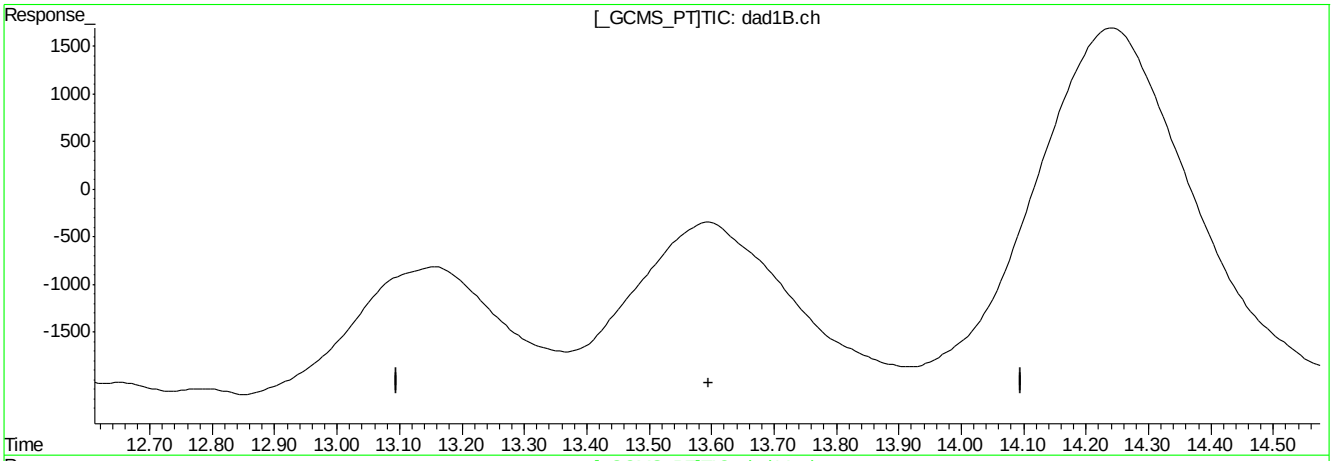


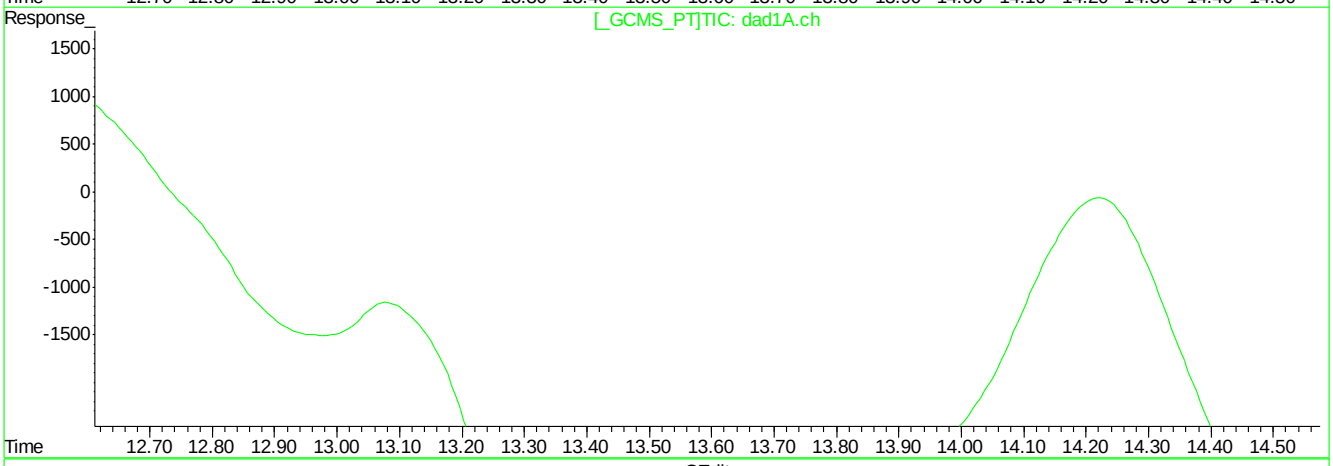
GG630267.D edits: 3,4-Dinitrotoluene

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(13) 2,6-Dinitrotoluene

0.00min 0.000ppb

response 0

(13) 2,6-Dinitrotoluene #2

0.00min 0.000ppb

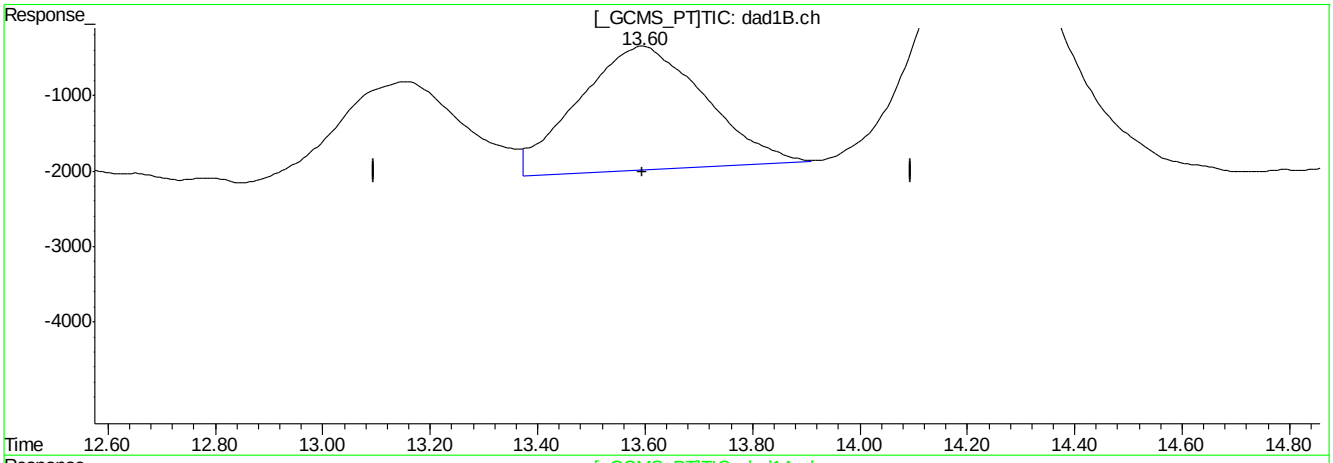
response 0

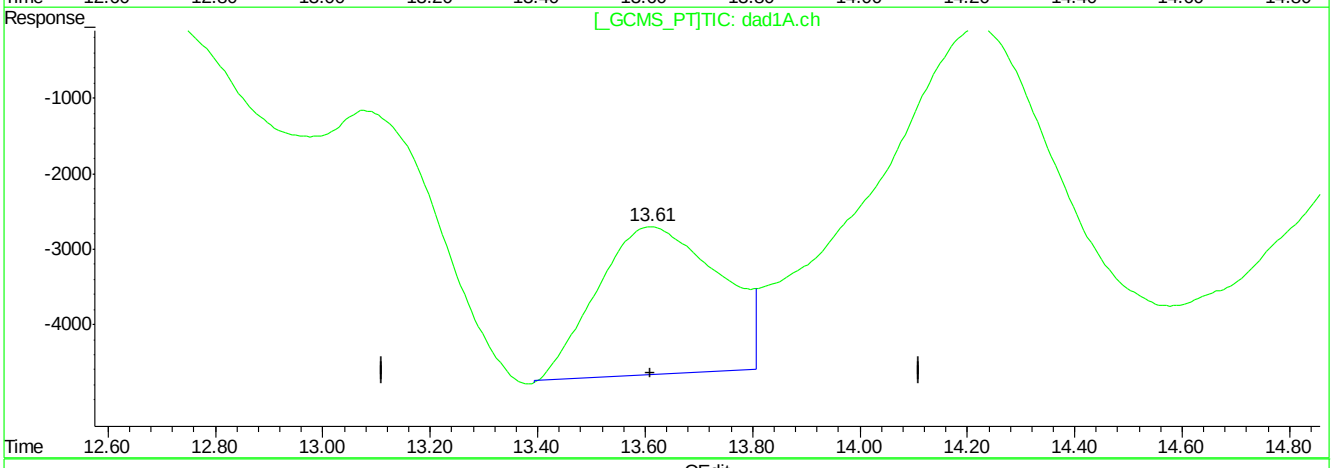
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:27:07 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(13) 2,6-Dinitrotoluene

13.60min 39.536ppb m

response 268957

(13) 2,6-Dinitrotoluene #2

13.61min 0.000ppb m

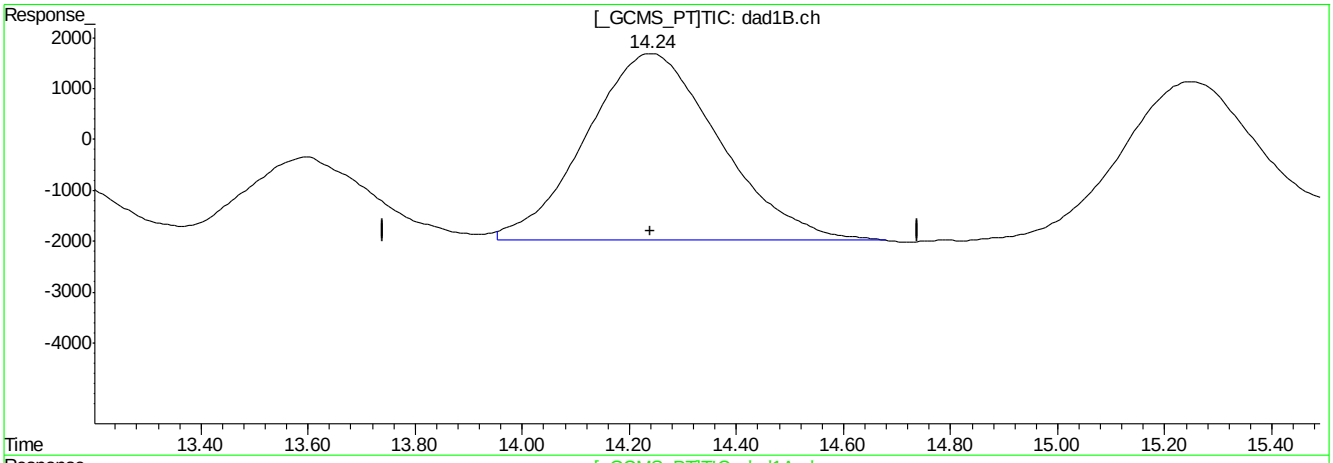
response 310523

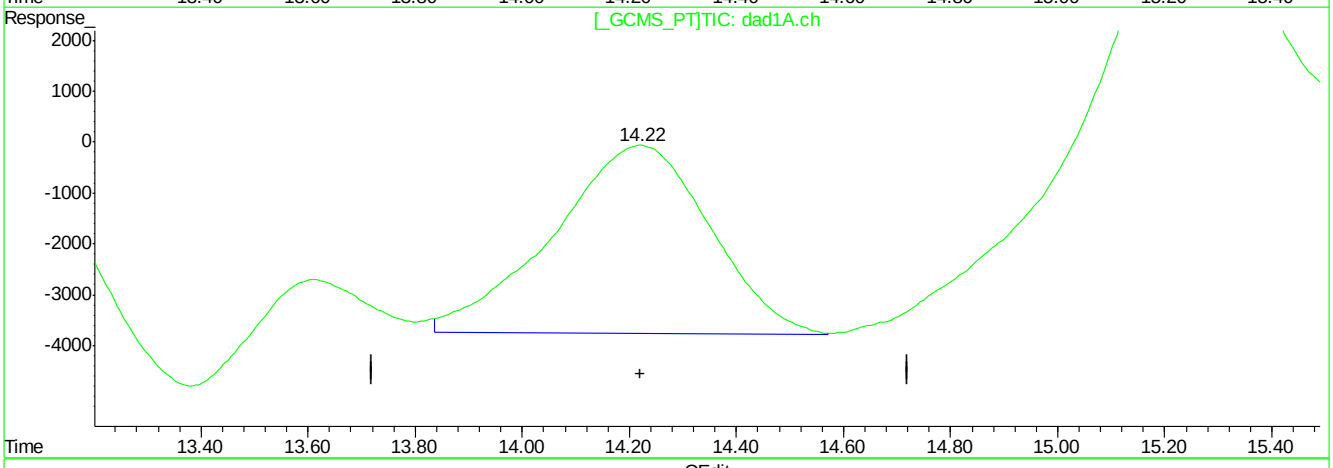
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:27:21 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(14) 2,4-Dinitrotoluene

14.24min 49.128ppb m

response 634500

(14) 2,4-Dinitrotoluene #2

14.22min 0.000ppb m

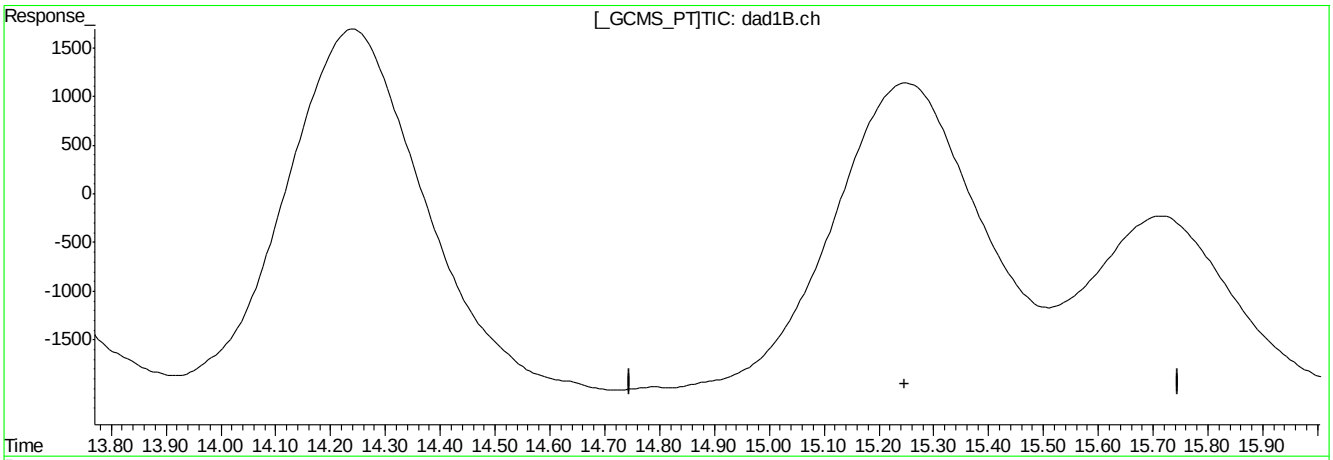
response 753549

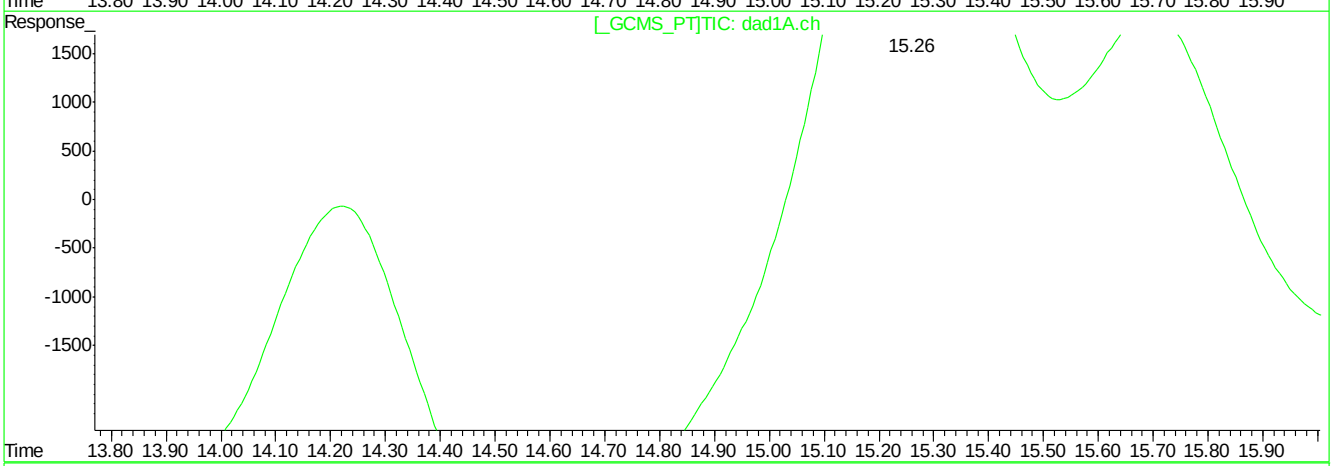
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:27:33 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(15) 3,5-Dinitroaniline

0.00min 0.000ppb

response 0

(15) 3,5-Dinitroaniline #2

15.26min 0.000ppb

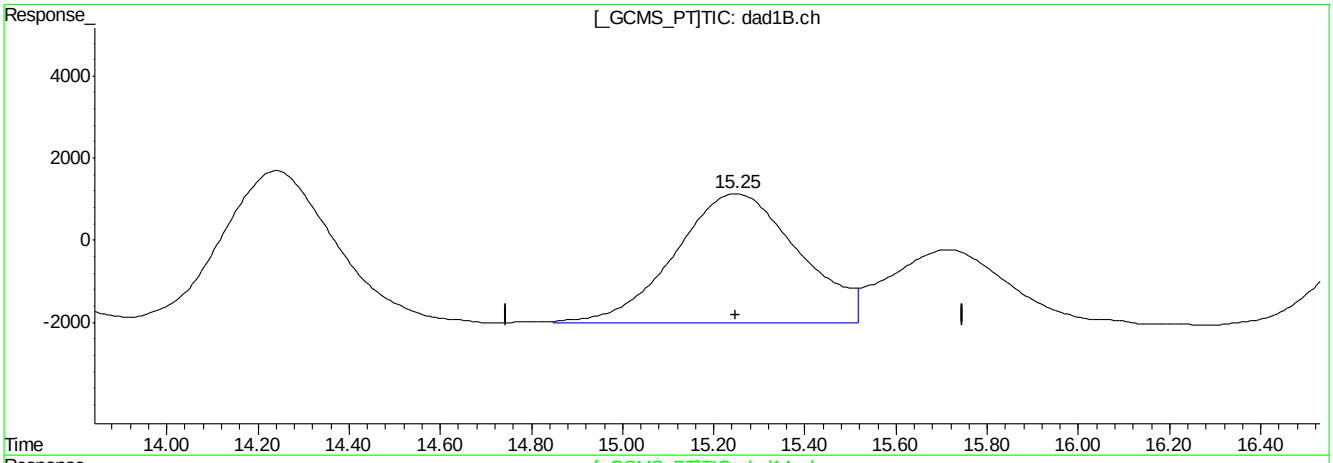
response 1034609

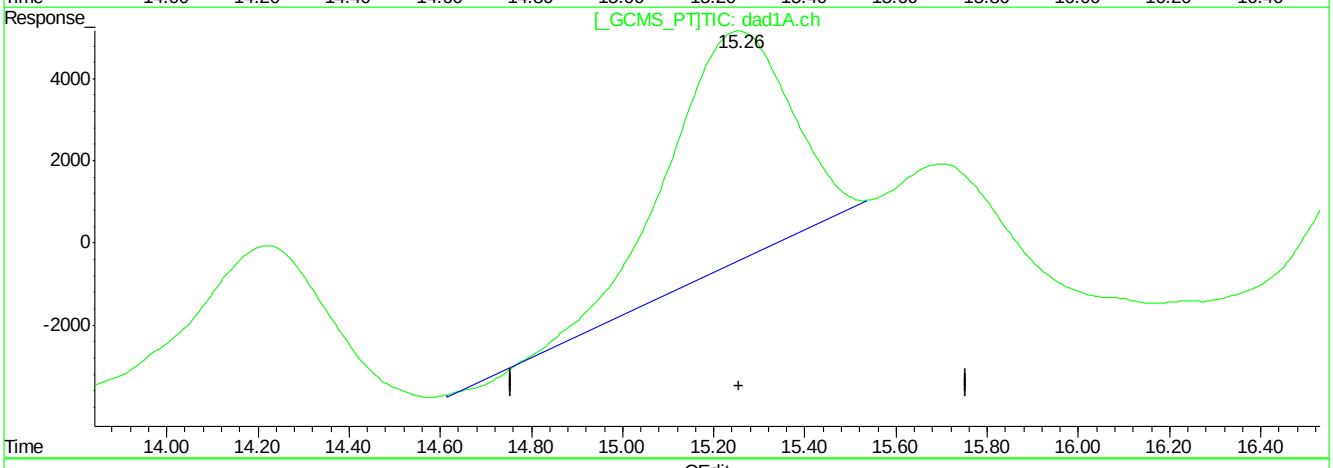
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:27:39 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(15) 3,5-Dinitroaniline

15.25min 55.359ppb m

response 592340

(15) 3,5-Dinitroaniline #2

15.26min 0.000ppb

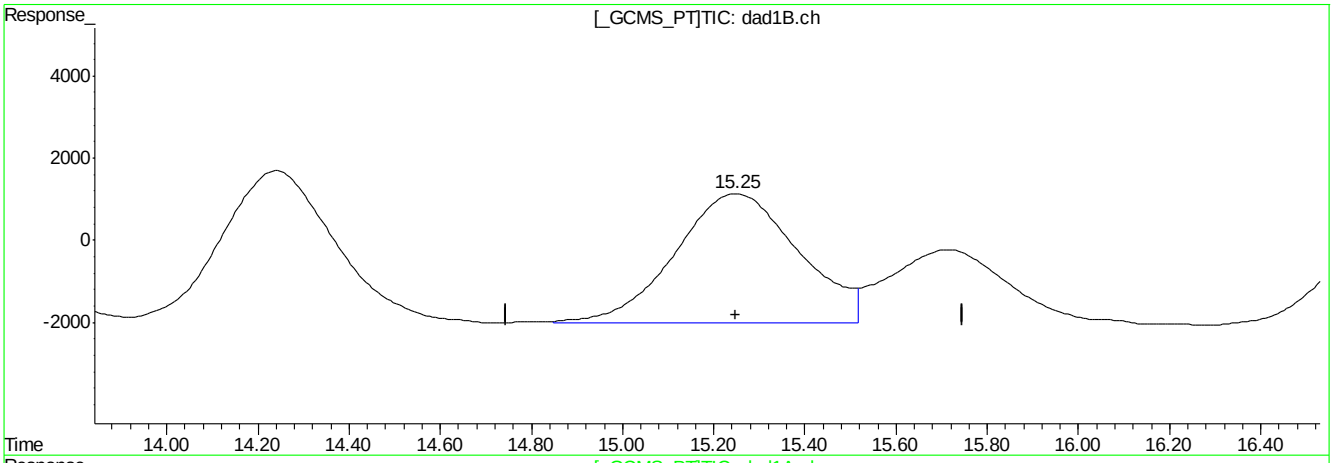
response 1034609

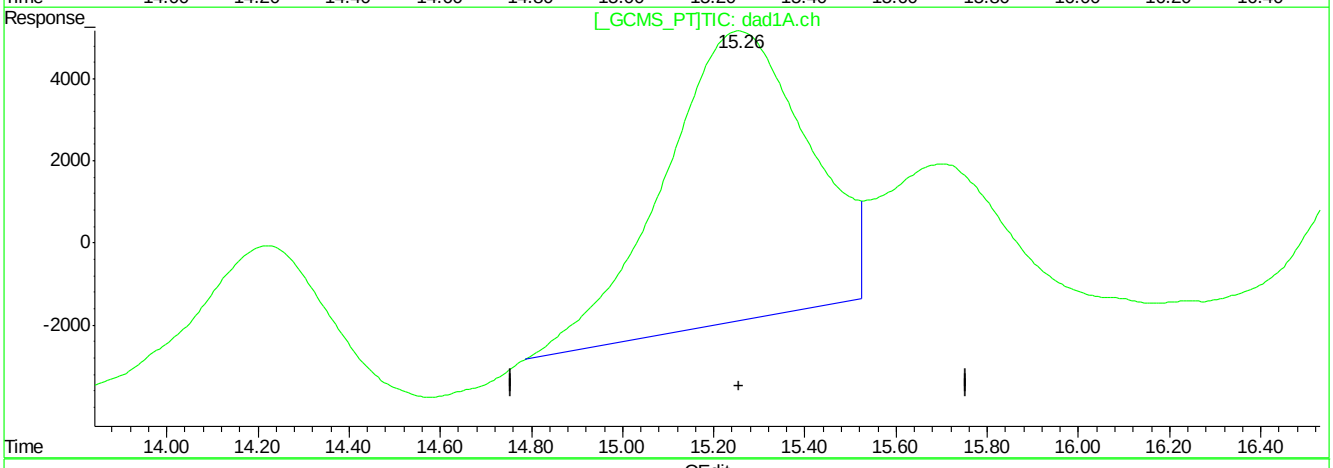
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:27:53 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(15) 3,5-Dinitroaniline

15.25min 55.359ppb m

response 592340

(15) 3,5-Dinitroaniline #2

15.26min 0.000ppb m

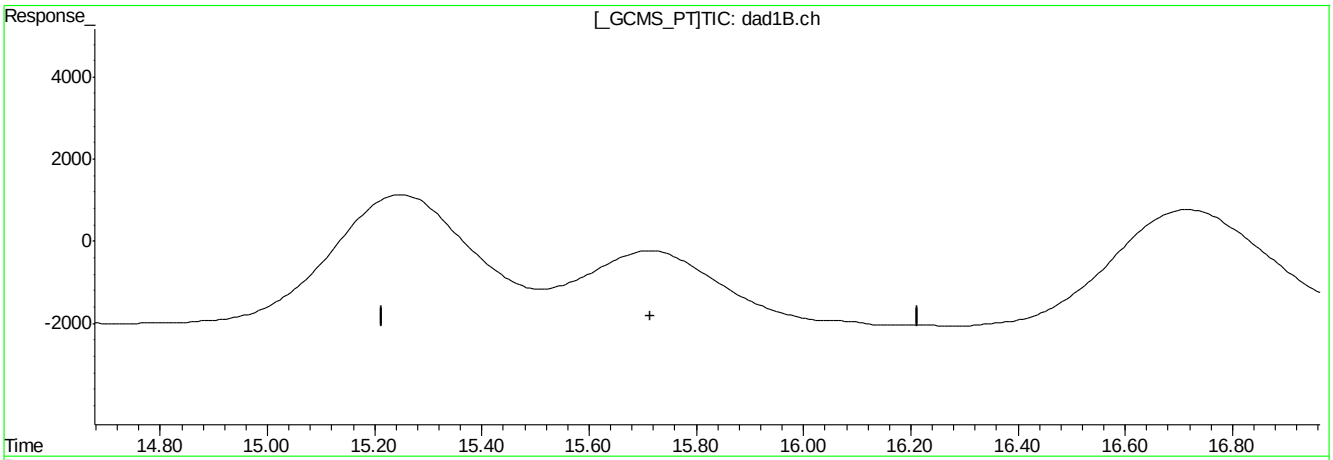
response 1561790

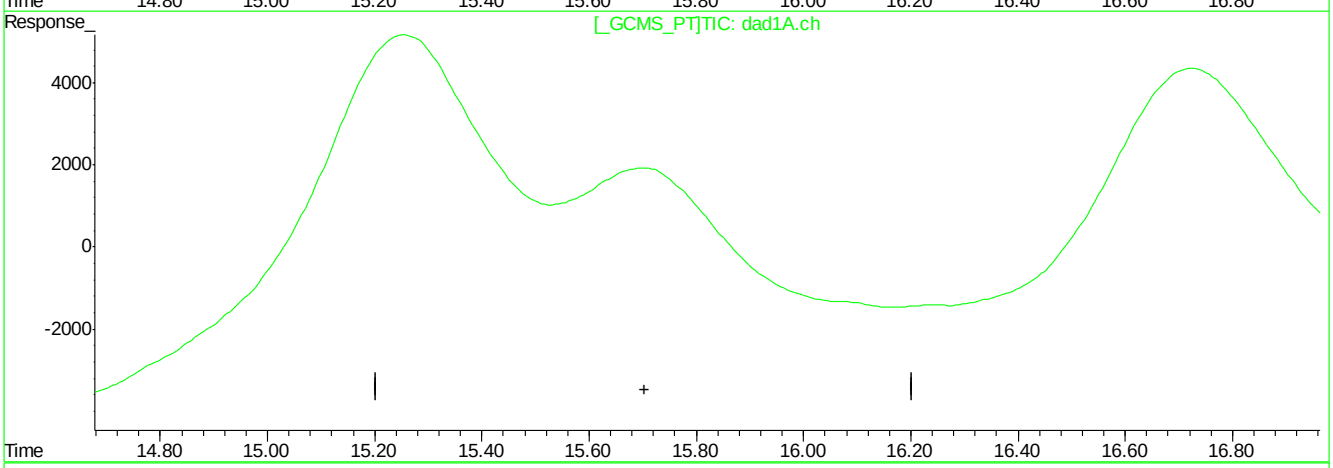
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:28:01 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(16) o-Nitrotoluene

0.00min 0.000ppb

response 0

(16) o-Nitrotoluene #2

0.00min 0.000ppb

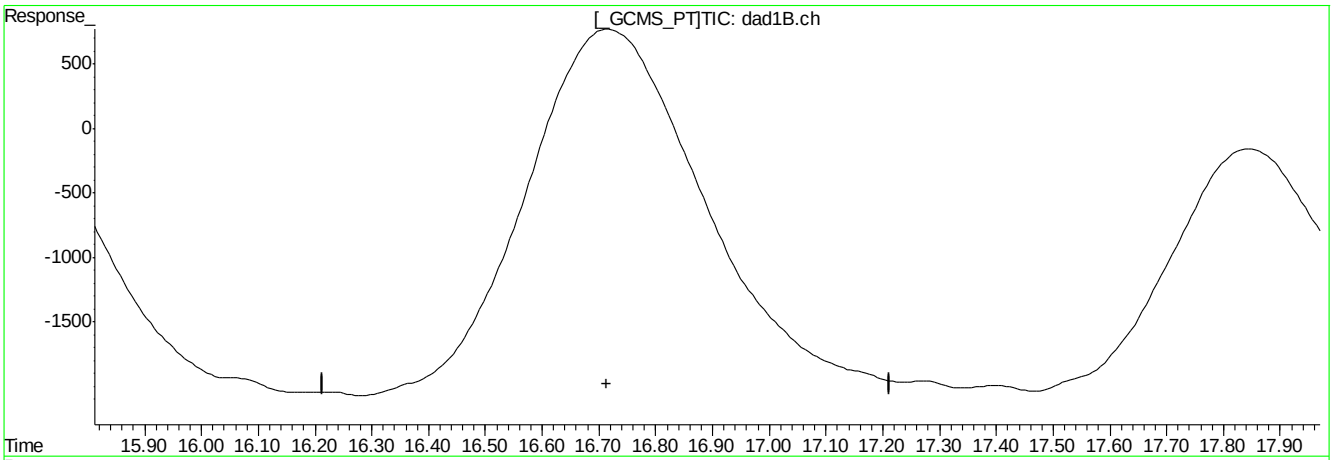
response 0

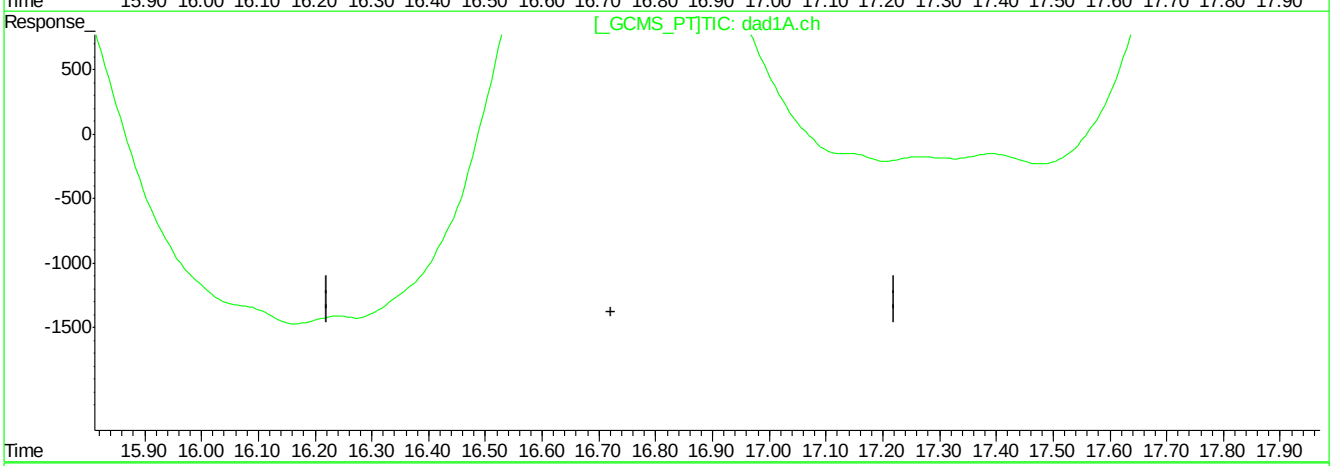
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:28:08 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(17) p-Nitrotoluene

0.00min 0.000ppb

response 0

(17) p-Nitrotoluene #2

0.00min 0.000ppb

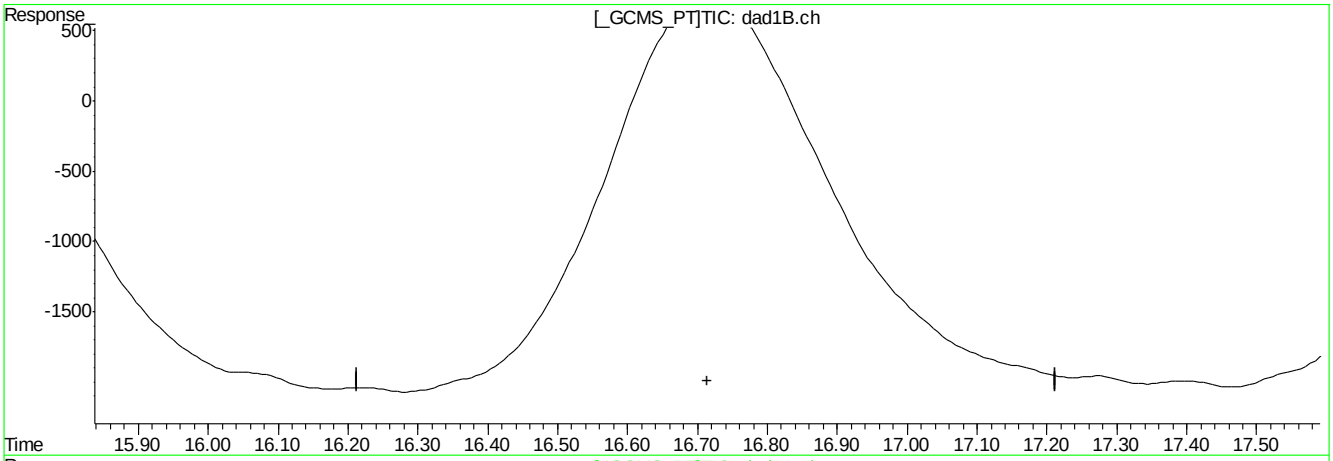
response 0

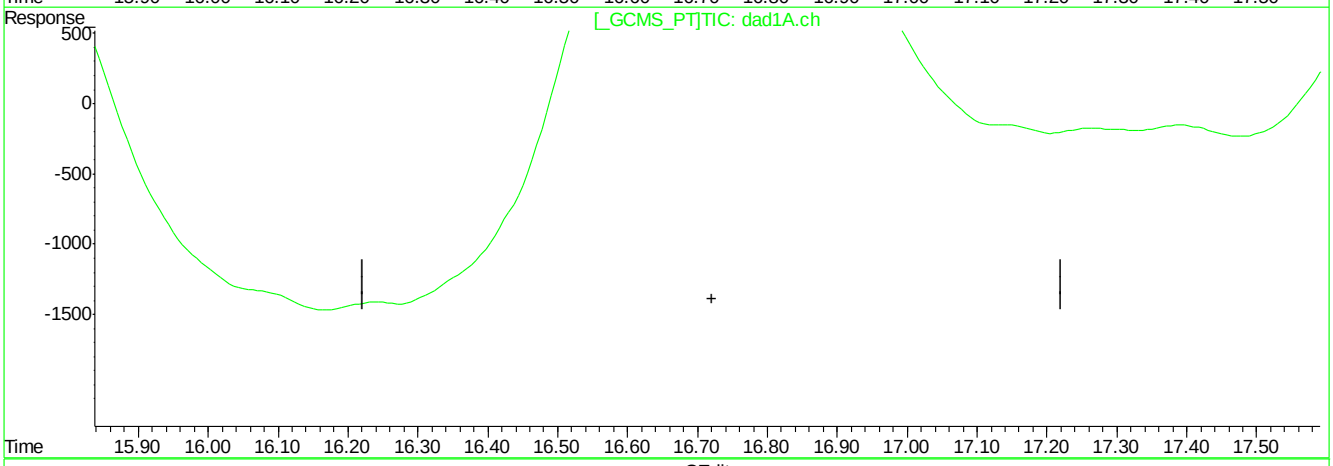
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:28:42 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(18) 4-Amino-2,6-Dinitrotoluene

0.00min 0.000ppb

response 0

(18) 4-Amino-2,6-Dinitrotoluene #2

0.00min 0.000ppb

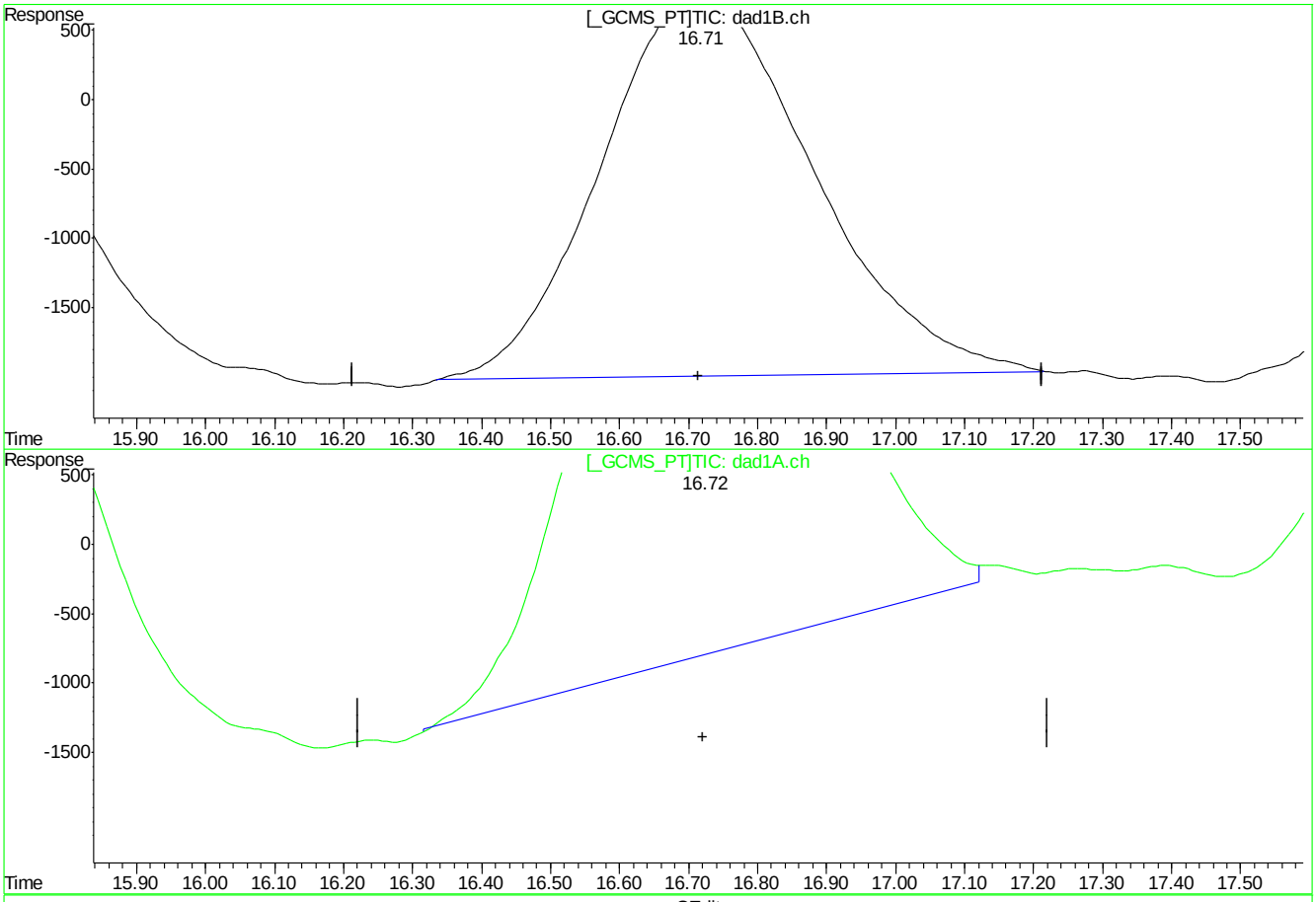
response 0

(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:30:23 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




(18) 4-Amino-2,6-Dinitrotoluene

16.71min 100.763ppb m

response 584599

(18) 4-Amino-2,6-Dinitrotoluene #2

16.72min 0.000ppb m

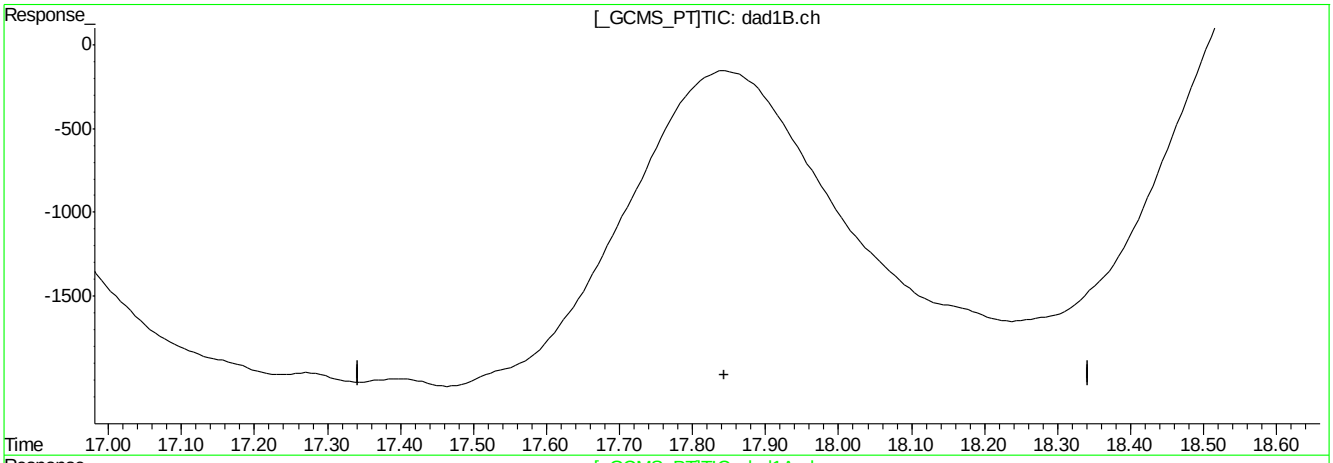
response 1070712

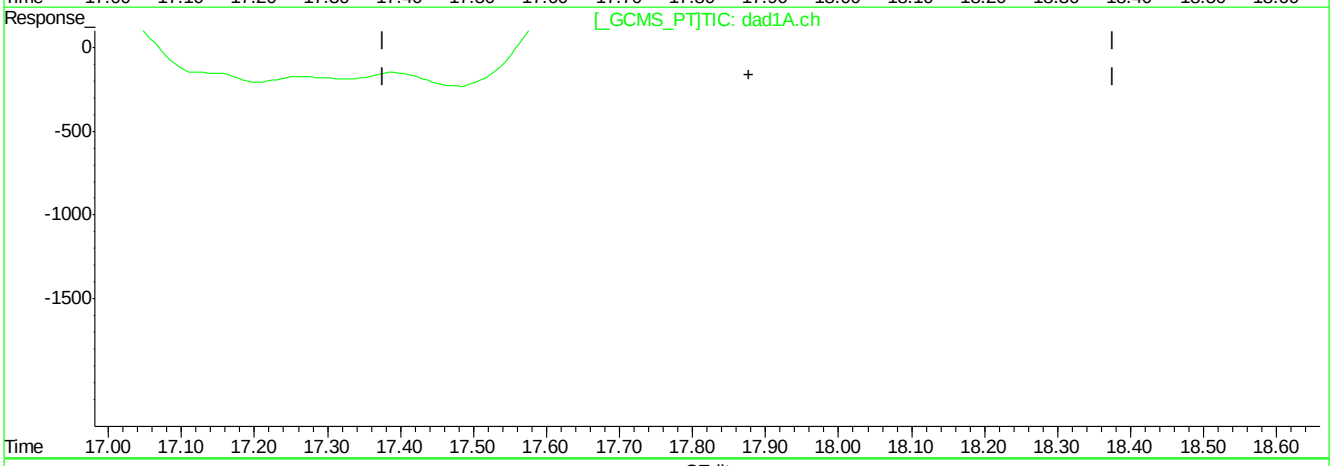
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:30:37 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(19) m-Nitrotoluene

0.00min 0.000ppb

response 0

(19) m-Nitrotoluene #2

0.00min 0.000ppb

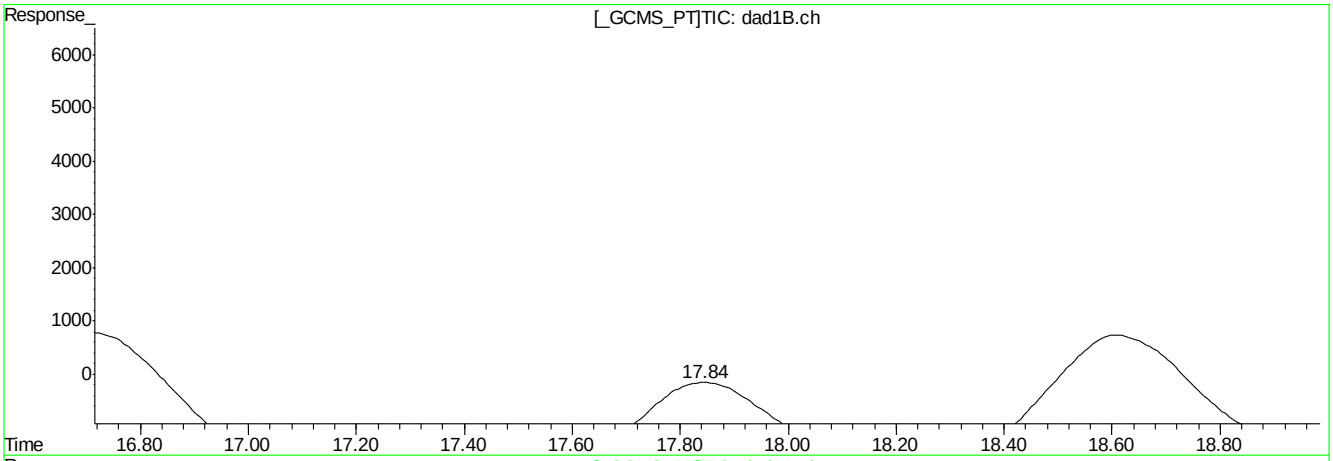
response 0

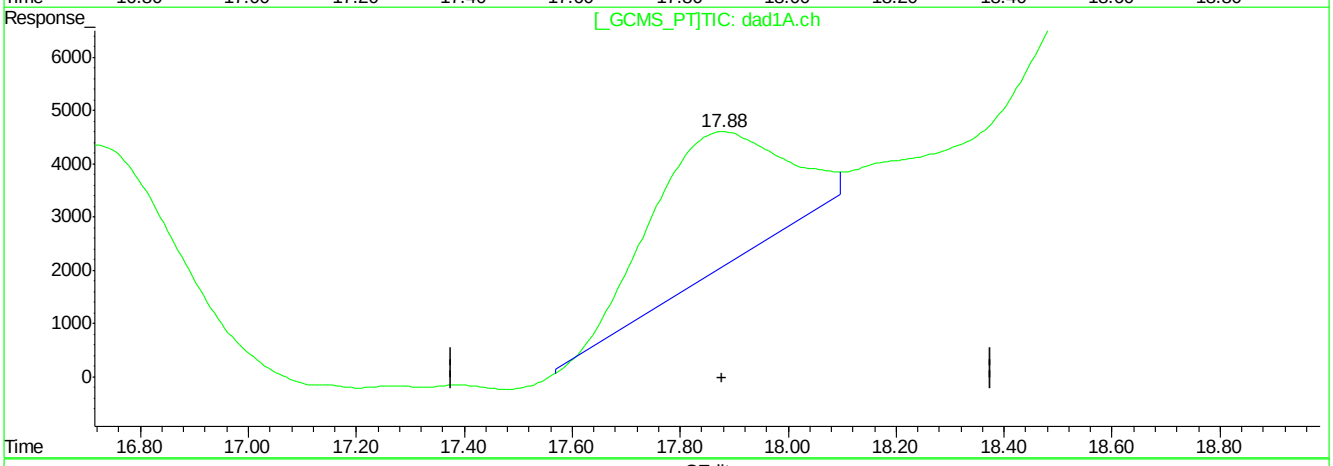
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:30:43 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(19) m-Nitrotoluene

17.84min 52.905ppb m

response 328003

(19) m-Nitrotoluene #2

17.88min 0.000ppb m

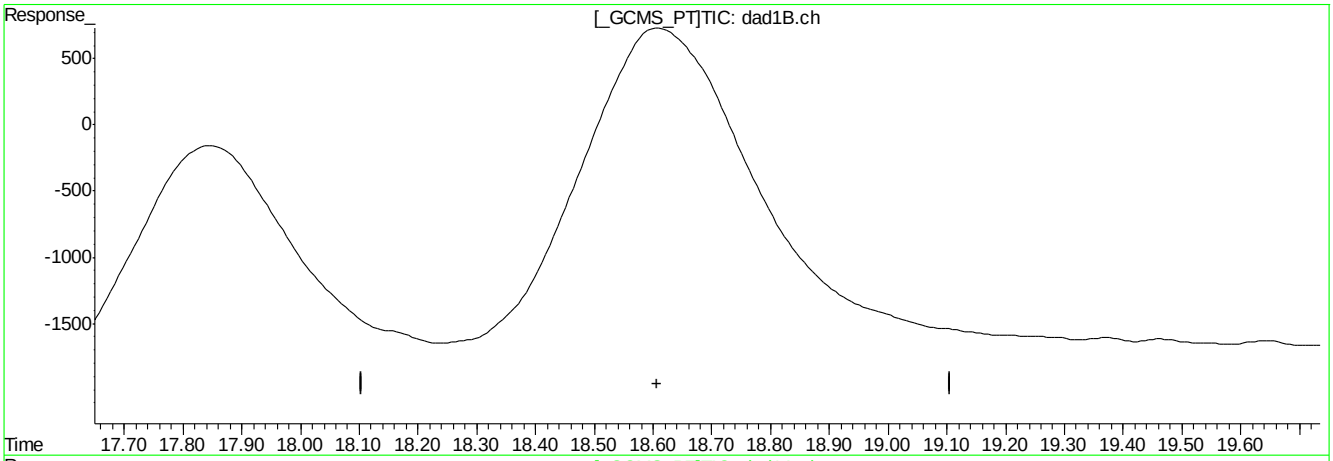
response 437189

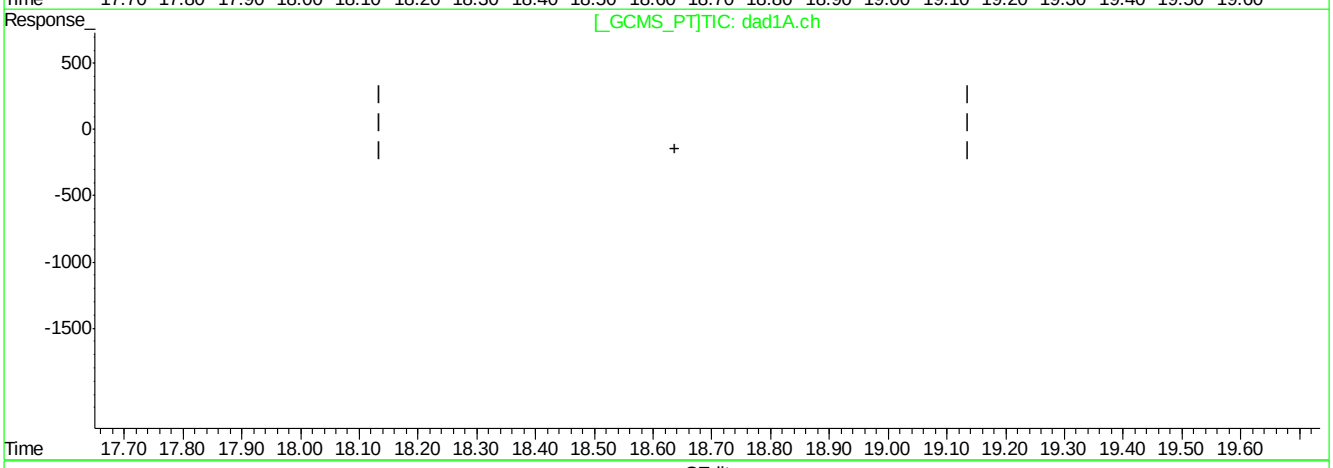
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:30:56 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(20) 2-Amino-4,6-Dinitrotoluene

0.00min 0.000ppb

response 0

(20) 2-Amino-4,6-Dinitrotoluene #2

0.00min 0.000ppb

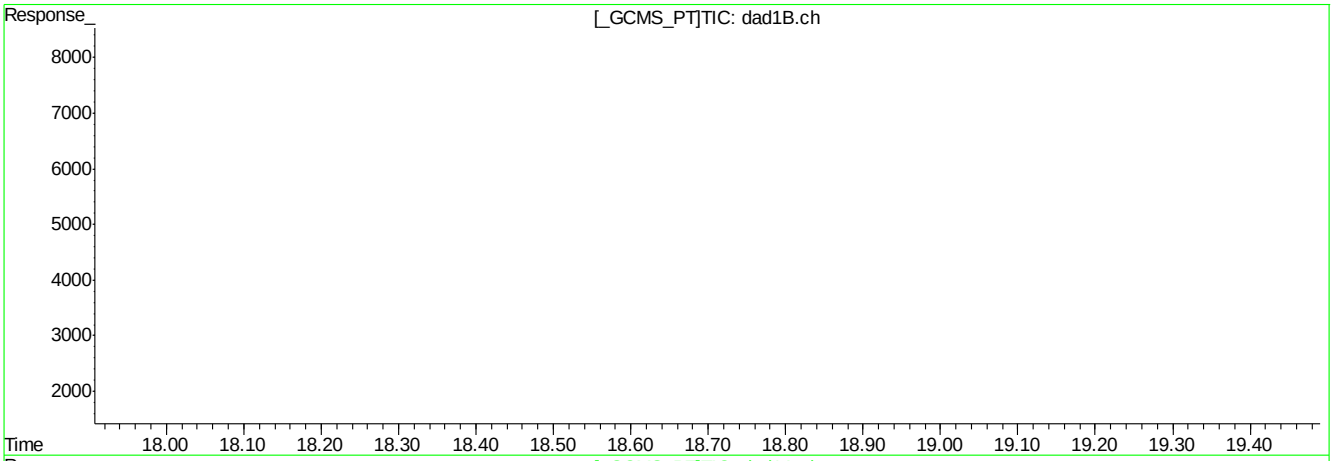
response 0

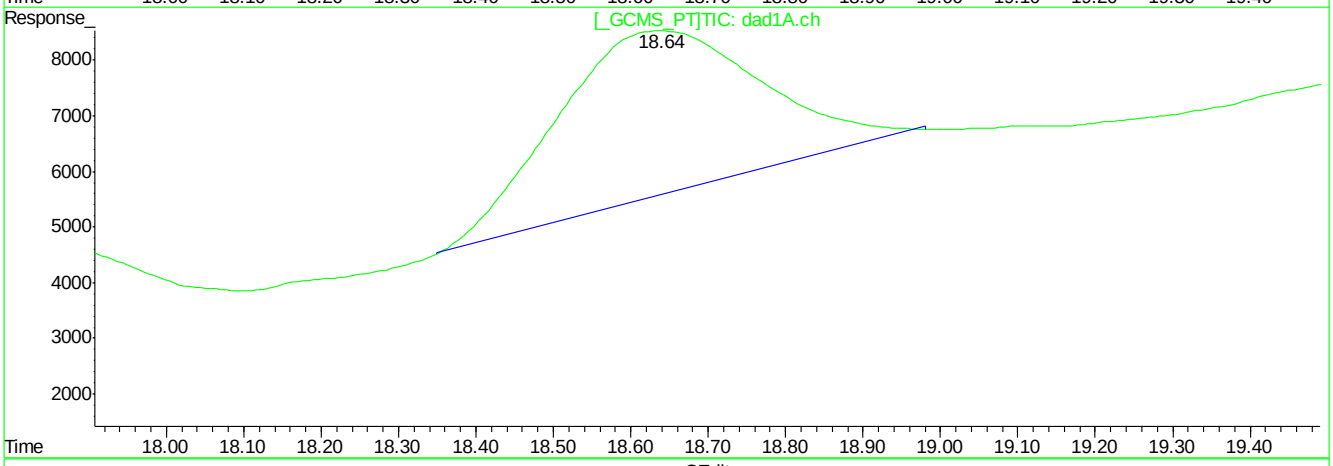
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:31:02 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(20) 2-Amino-4,6-Dinitrotoluene

18.61min 48.515ppb m

response 472848

(20) 2-Amino-4,6-Dinitrotoluene #2

18.64min 0.000ppb m

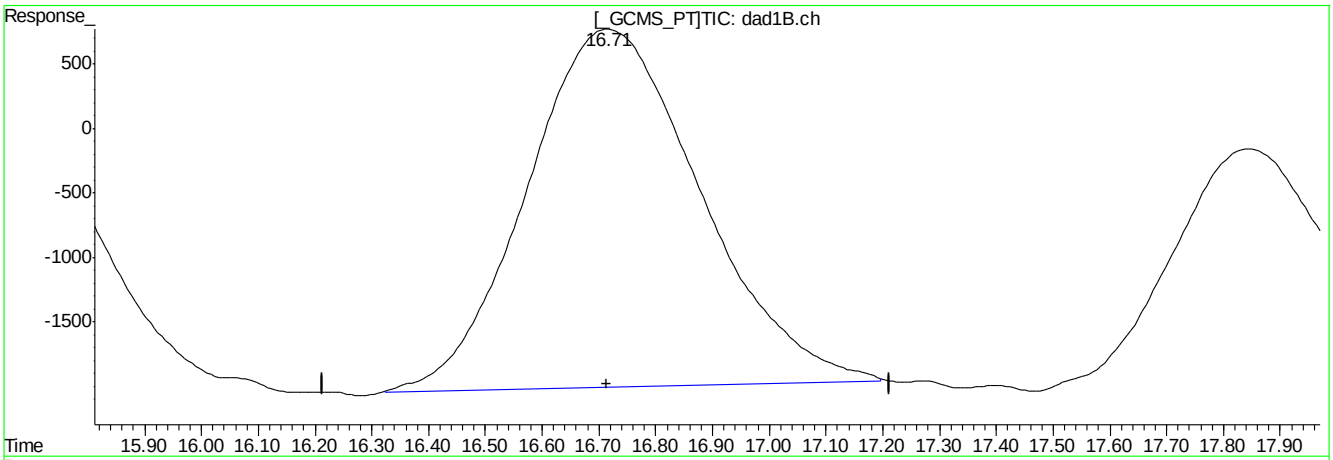
response 541860

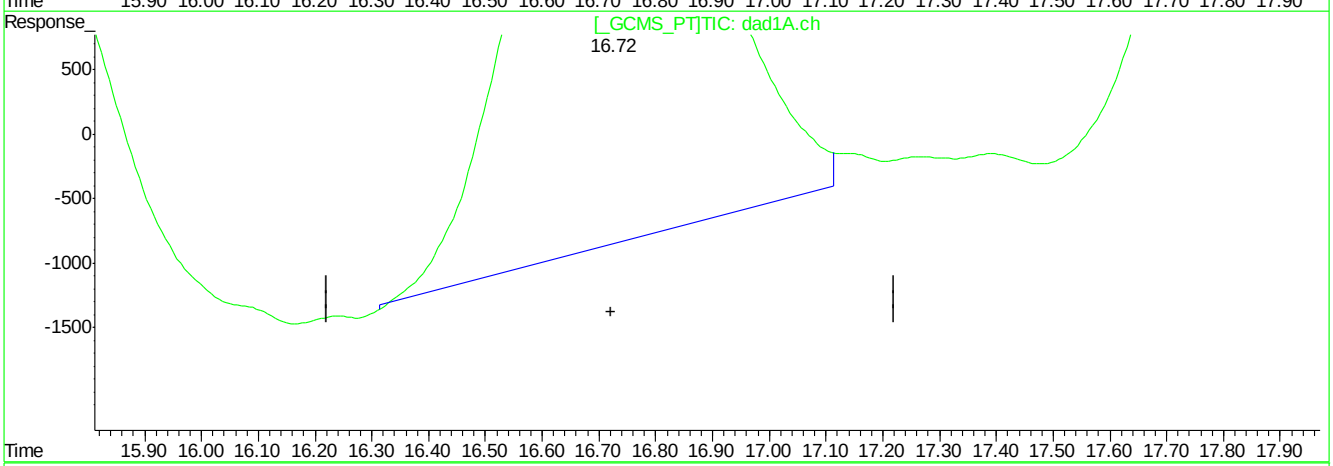
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:31:15 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:23 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:23:03 2024
Response via : Multiple Level Calibration




QEdit

(17) p-Nitrotoluene

16.71min 101.491ppb m

response 588839

(17) p-Nitrotoluene #2

16.72min 0.000ppb m

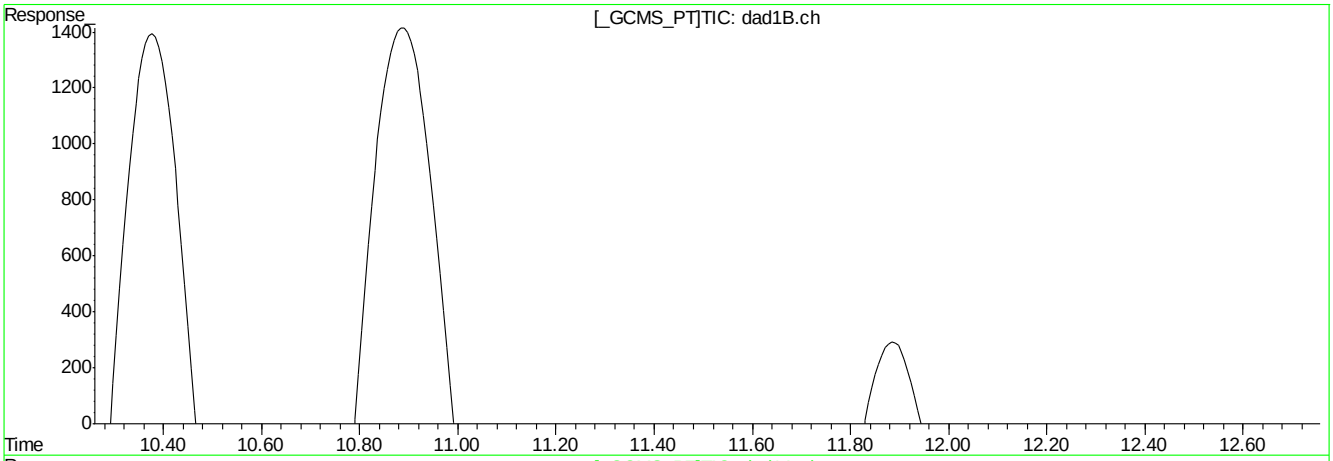
response 1096888

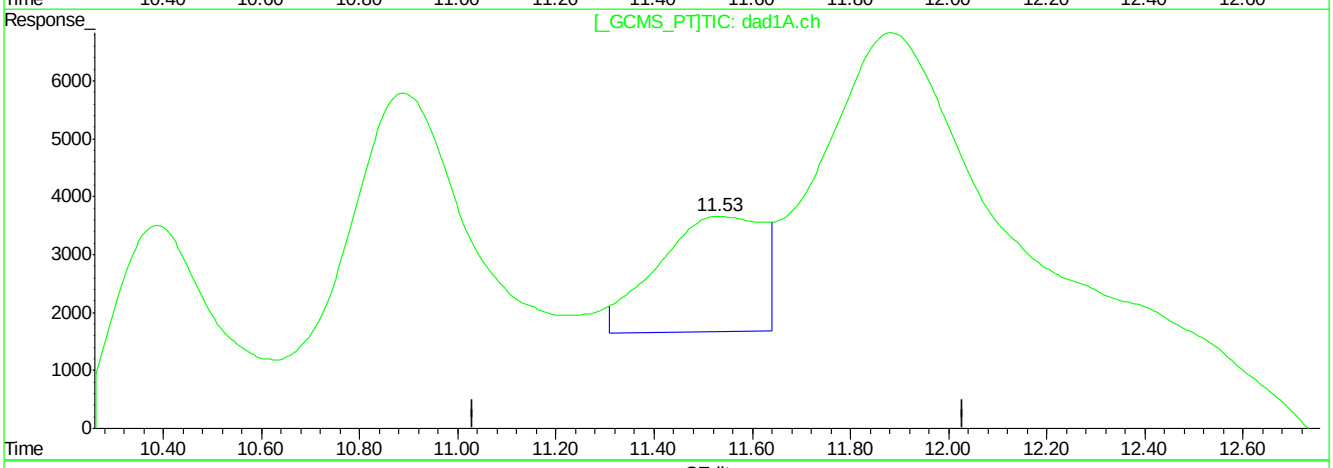
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Thu Oct 03 14:30:15 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 15:17 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Fri Oct 04 15:40:51 2024
Response via : Multiple Level Calibration




QEdit

(10) Nitroglycerin

0.00min 0.000ppb

response 0

(10) Nitroglycerin #2

11.53min 0.000ppb m

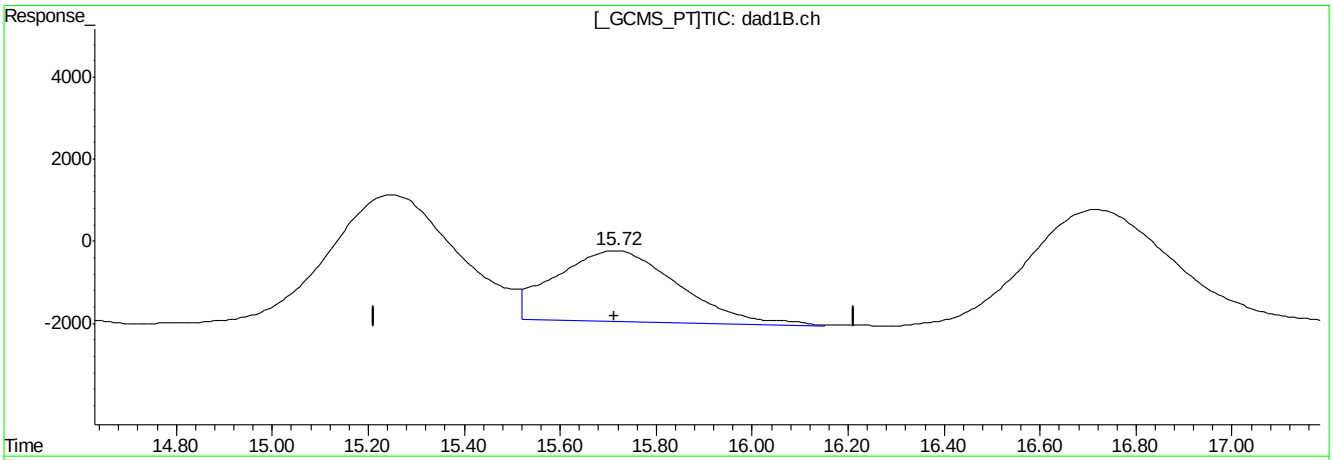
response 297758

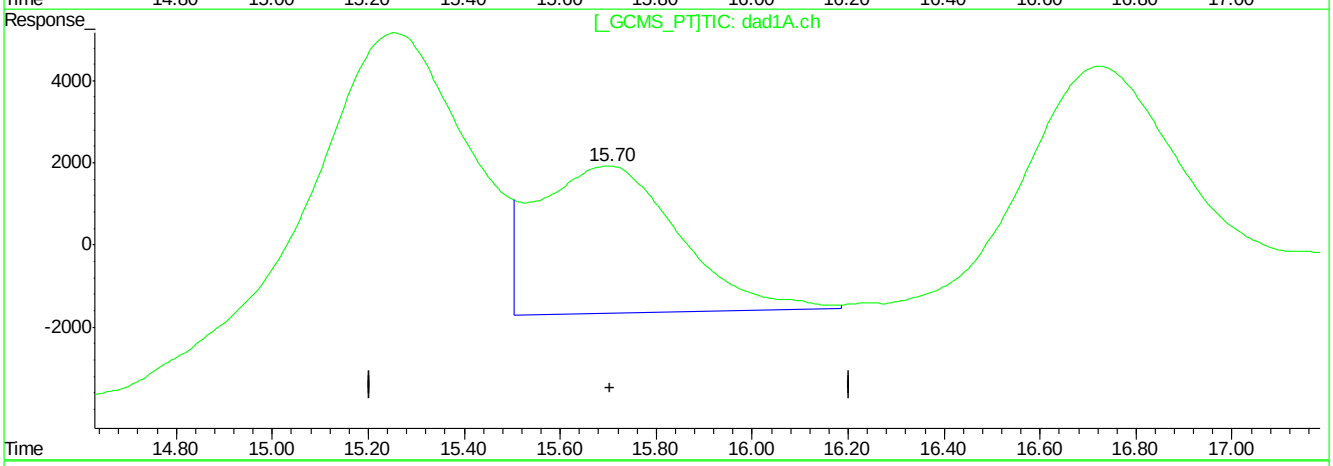
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Mon Oct 07 11:07:32 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 15:17 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Fri Oct 04 15:40:51 2024
Response via : Multiple Level Calibration




QEdit

(16) o-Nitrotoluene

15.72min 52.717ppb m

response 308226

(16) o-Nitrotoluene #2

15.70min 0.000ppb m

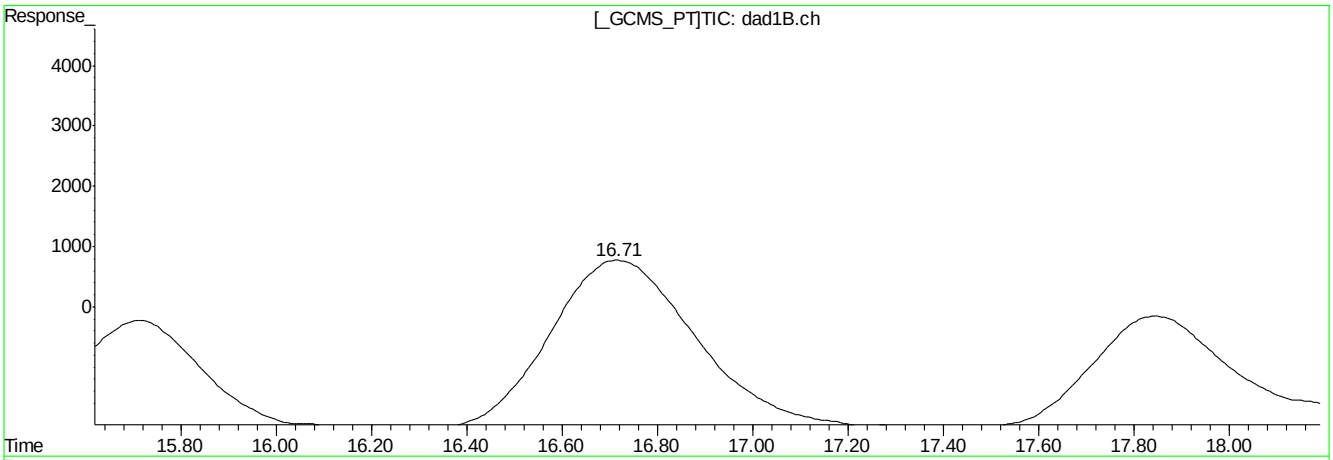
response 741185

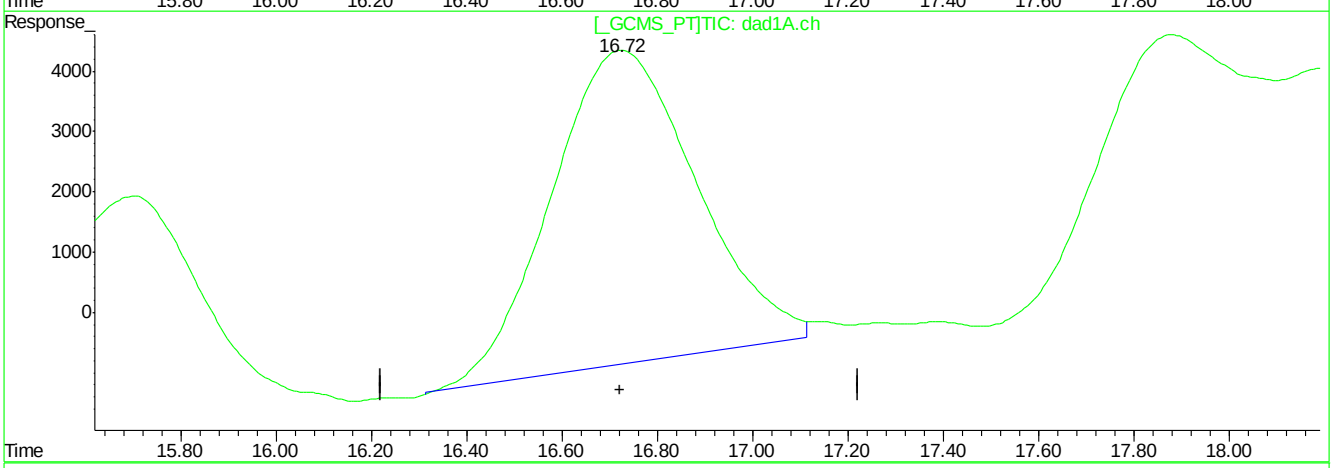
(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Mon Oct 07 11:07:59 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1B.ch Vial: 3
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630267.D\dad1A.ch
Acq On : 03-Oct-2024, 08:31:47 Operator: fouads
Sample : IC3484-50 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 15:17 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Fri Oct 04 15:40:51 2024
Response via : Multiple Level Calibration




QEdit

(17) p-Nitrotoluene

16.71min 101.491ppb m

response 588839

(17) p-Nitrotoluene #2

16.72min 0.000ppb m

response 1096888

(+) = Expected Retention Time
GG630267.D GGG3484_100324.M Mon Oct 07 11:08:29 2024

Manual Integrations APPROVED (compounds with "m" flag)
William Hustedde 10/07/24 15:21

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 03 14:13:15 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Initial Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb | |
|---|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | | |
| 12) S | 3,4-Dinitrotolue | 14.25 | 14.24 | 416459 | 888842 | 79.434m | 85.032m | |
| Spiked Amount | 500.000 | Range | 70 - 136 | Recovery | = | 15.89%# | 17.01%# | |
| | Target Compounds | | | | | | | |
| 1) | TNX | 4.83 | 4.83 | 402343 | 399388 | 51.192m | NoCal | m# |
| 2) | HMX | 5.21 | 5.21 | 322912 | 331374 | 86.525m | NoCal | m# |
| 3) | DNX | 5.45 | 5.45 | 658414 | 658414 | 101.071 | NoCal | # |
| 4) | MNX | 6.58 | 6.58 | 721172 | 697568 | 122.196m | NoCal | m# |
| 5) | 1,3,5-Trinitrobe | 7.36 | 7.35 | 952151 | 970274 | 94.958 | NoCal | m# |
| 6) | RDX | 7.88 | 7.88 | 419473 | 416765 | 83.647m | NoCal | m# |
| 7) | 1,3-Dinitrobenze | 9.83 | 9.83 | 1266097 | 907498 | 92.397 | NoCal | # |
| 8) | Nitrobenzene | 10.86 | 10.85 | 831782 | 708724 | 91.488m | NoCal | m# |
| 9) | 2,4,6-Trinitroto | 11.41 | 11.40 | 809628 | 1204466 | 82.247m | NoCal | # |
| 10) | Nitroglycerin | 0.00 | 12.22 | 0 | 651512 | N.D. | NoCal | m |
| 11) | Tetryl | 12.77 | 12.78 | 683449 | 1066802 | 91.592m | NoCal | m# |
| 13) | 2,6-Dinitrotolue | 14.48 | 14.47 | 616294 | 841212 | 90.593m | NoCal | m# |
| 14) | 2,4-Dinitrotolue | 15.10 | 15.10 | 1262161 | 1163703 | 97.727m | NoCal | m# |
| 15) | 3,5-Dinitroanili | 16.12 | 16.13 | 1001739 | 1448704 | 93.620m | NoCal | # |
| 16) | o-Nitrotoluene | 16.79 | 16.80 | 467122 | 1039693 | 79.894m | NoCal | m# |
| 17) | p-Nitrotoluene | 17.95 | 17.97 | 1049328 | 1642764 | 180.860m | NoCal | # |
| 18) | 4-Amino-2,6-Dini | 17.95 | 17.97 | 1077655 | 1642764 | 185.747m | NoCal | # |
| 19) | m-Nitrotoluene | 19.08 | 19.09 | 546145 | 891948 | 88.090m | NoCal | # |
| 20) | 2-Amino-4,6-Dini | 19.93 | 19.95 | 850748 | 1150983 | 87.288m | NoCal | # |
| 21) | PETN | 0.00 | 21.07 | 0 | 257997 | N.D. | NoCal | m |

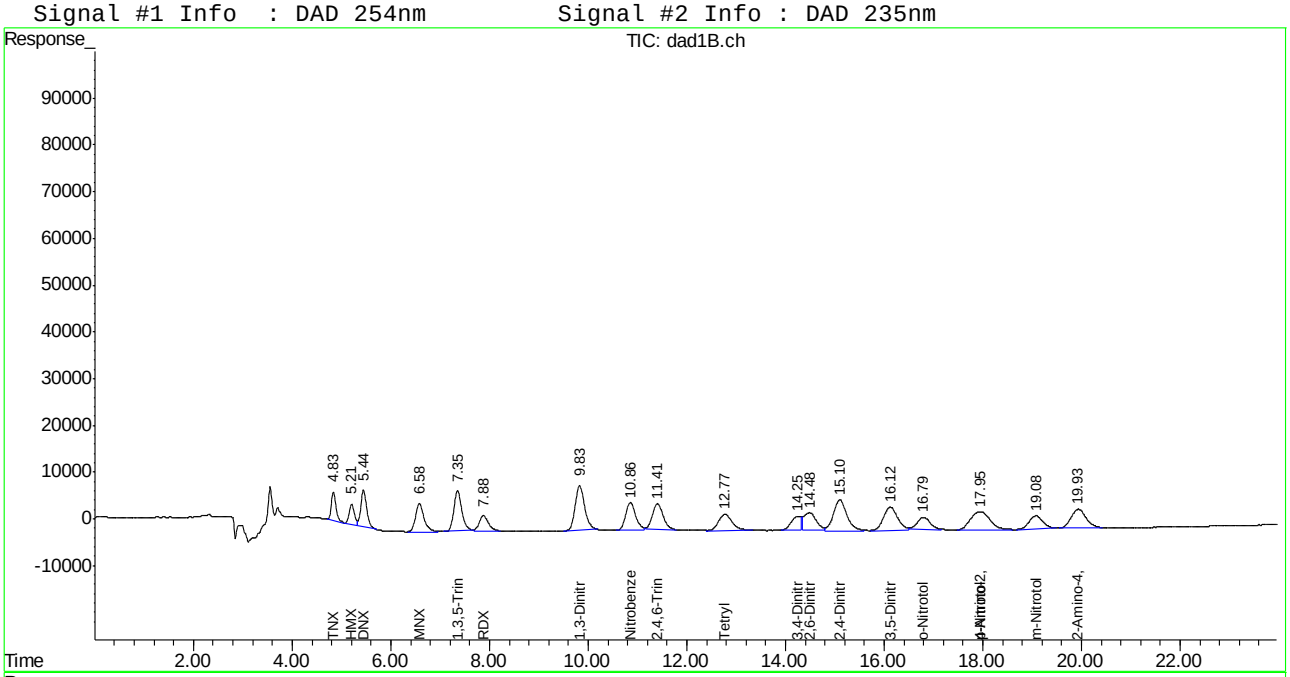
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
GG630268.D GGG3484_100324.M Mon Oct 07 09:23:33 2024 Page 1

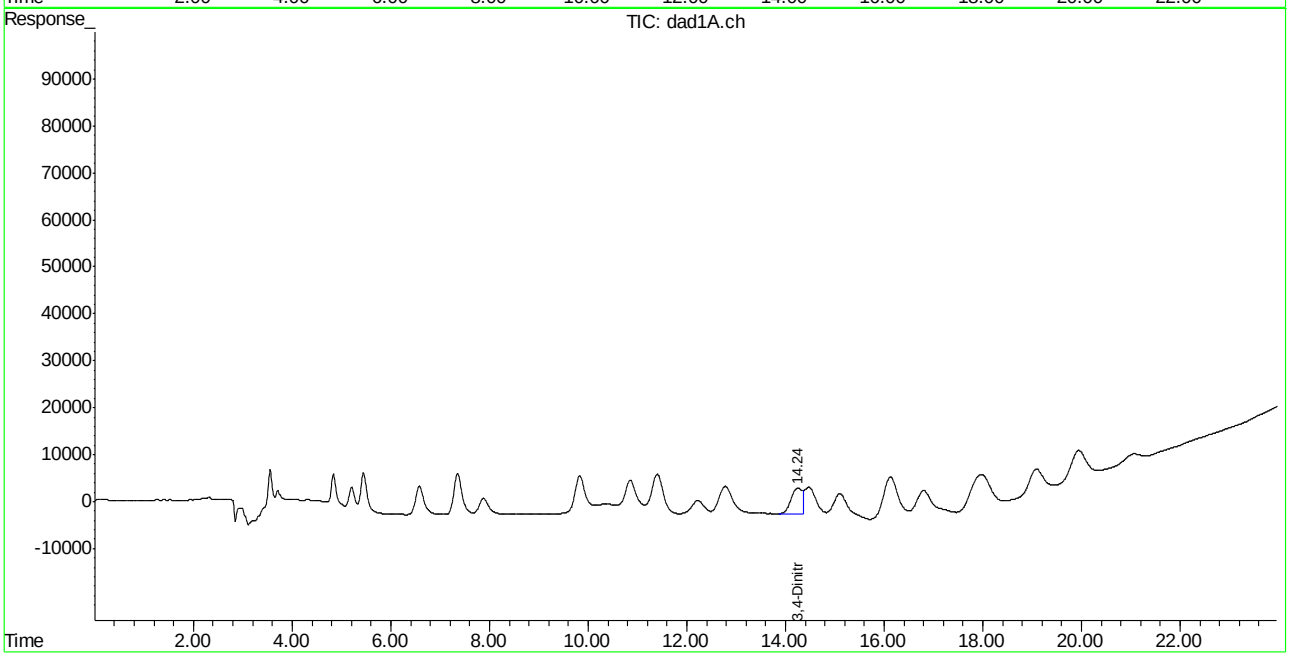
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 15:17 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm



# Manual Integration Approval Summary



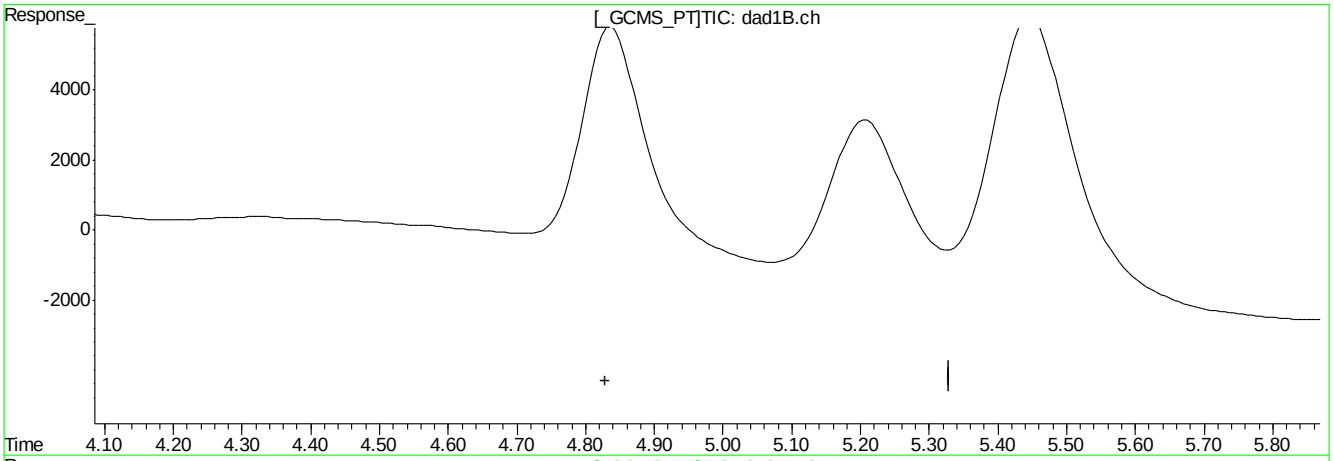
**Sample Number:** GGG3484-IC3484
**Lab FileID:** GG630268.D
**Injection Time:** 10/03/24 09:04
**Method:** SW846 8330B
**Analyst approved:** 10/07/24 09:34 Fouad Sekkar
**Supervisor approved:** 10/07/24 15:21 William Hustedde

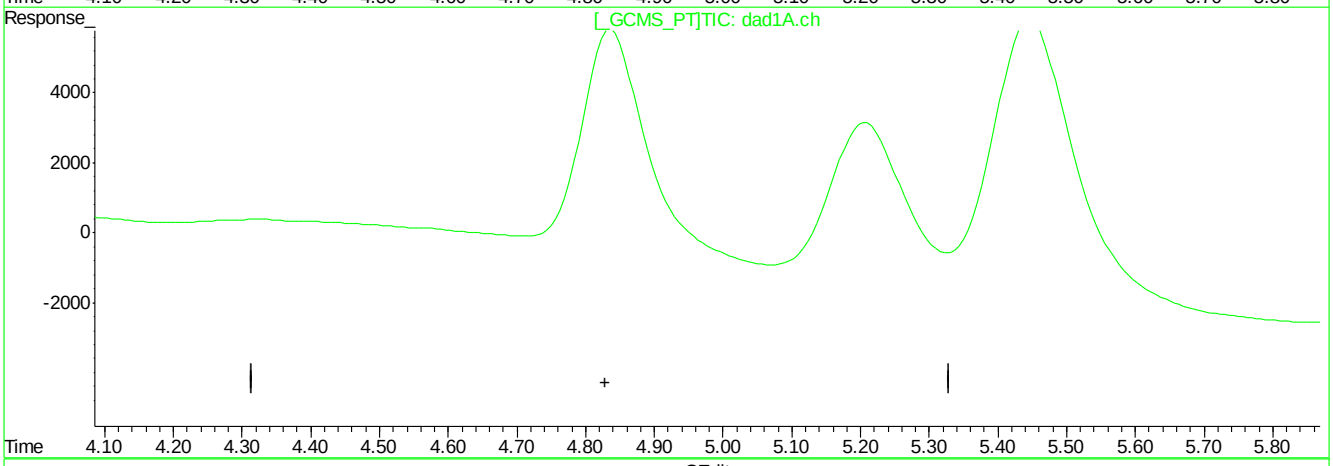
| Parameter | CAS | Sig# | R.T. (min.) | Reason |
|---|---|---|---|---|
| TNX | | 1 | 4.83 | Poor instrument integration |
| HMX | 2691-41-0 | 1 | 5.21 | Poor instrument integration |
| MNX | | 1 | 6.58 | Poor instrument integration |
| RDX | 121-82-4 | 1 | 7.88 | Poor instrument integration |
| Nitrobenzene | 98-95-3 | 1 | 10.86 | Poor instrument integration |
| 2,4,6-Trinitrotoluene | 118-96-7 | 1 | 11.41 | Poor instrument integration |
| Tetryl | 479-45-8 | 1 | 12.77 | Poor instrument integration |
| 3,4-Dinitrotoluene | 610-39-9 | 2 | 14.24 | Poor instrument integration |
| 3,4-Dinitrotoluene | 610-39-9 | 1 | 14.25 | Poor instrument integration |
| 2,6-Dinitrotoluene | 606-20-2 | 1 | 14.48 | Poor instrument integration |
| 2,4-Dinitrotoluene | 121-14-2 | 1 | 15.10 | Poor instrument integration |
| 3,5-Dinitroaniline | 618-87-1 | 1 | 16.12 | Poor instrument integration |
| o-Nitrotoluene | 88-72-2 | 1 | 16.79 | Poor instrument integration |
| 4-amino-2,6-Dinitrotoluene | 19406-51-0 | 1 | 17.95 | Poor instrument integration |
| p-Nitrotoluene | 99-99-0 | 1 | 17.95 | Poor instrument integration |
| m-Nitrotoluene | 99-08-1 | 1 | 19.08 | Poor instrument integration |
| 2-amino-4,6-Dinitrotoluene | 35572-78-2 | 1 | 19.93 | Poor instrument integration |

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Multiple Level Calibration




QEdit

(1) TNX

0.00min 0.000ppb

response 0

(1) TNX #2

0.00min 0.000ppb

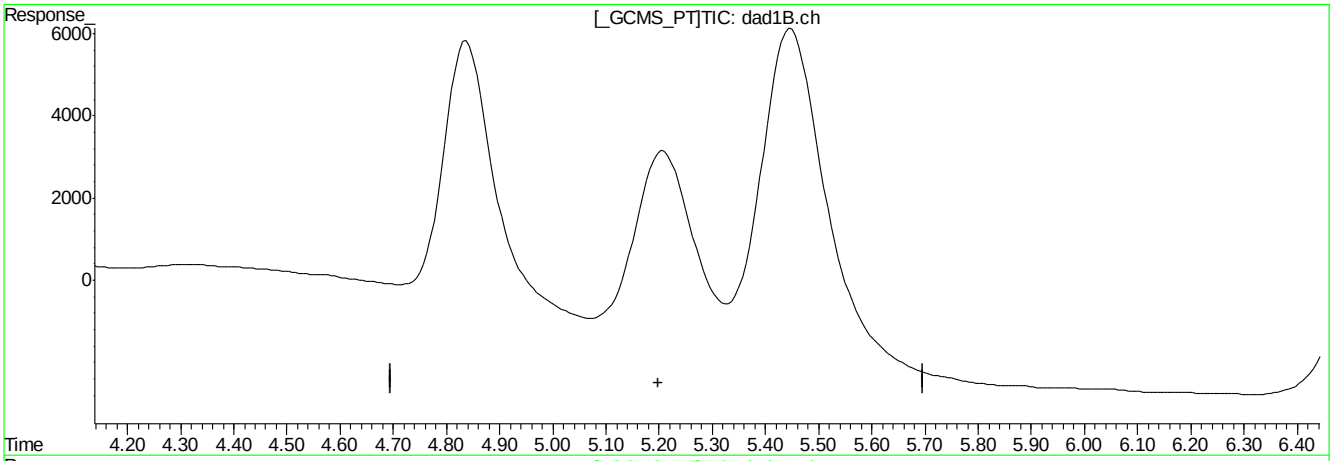
response 0

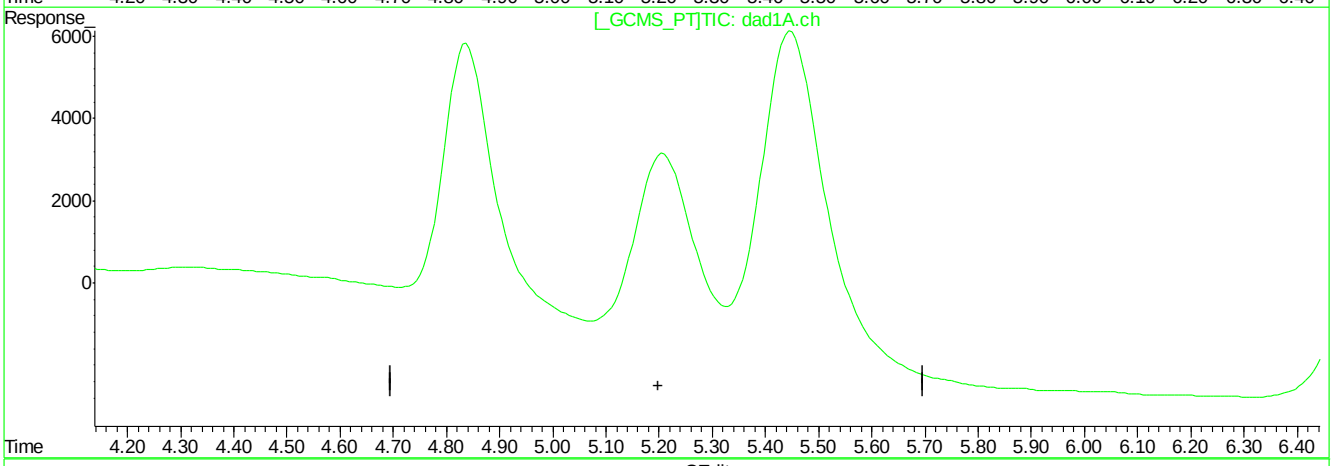
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 12:00:11 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Multiple Level Calibration




QEdit

(2) HMX

0.00min 0.000ppb

response 0

(2) HMX #2

0.00min 0.000ppb

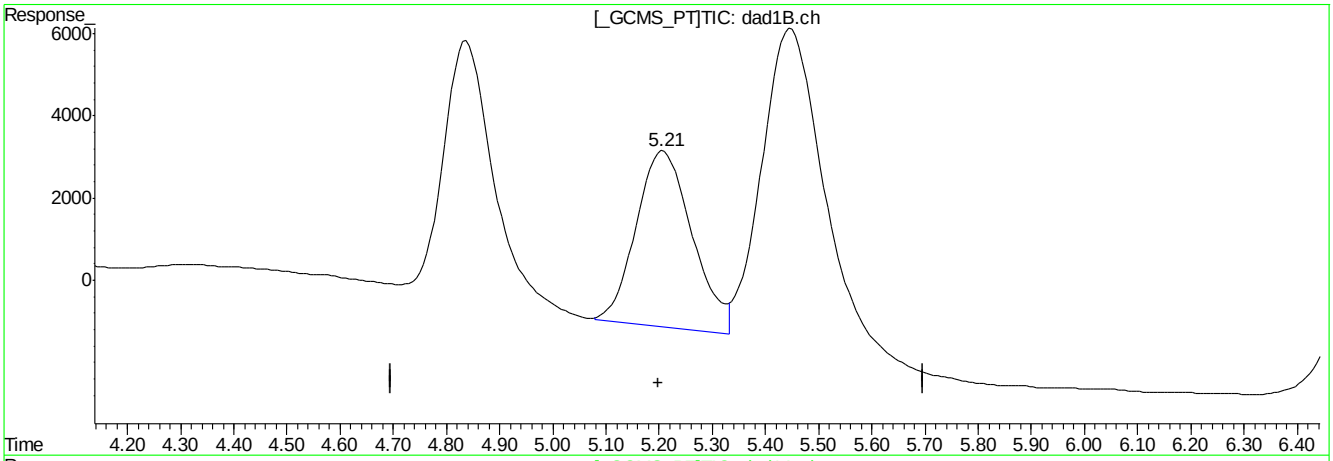
response 0

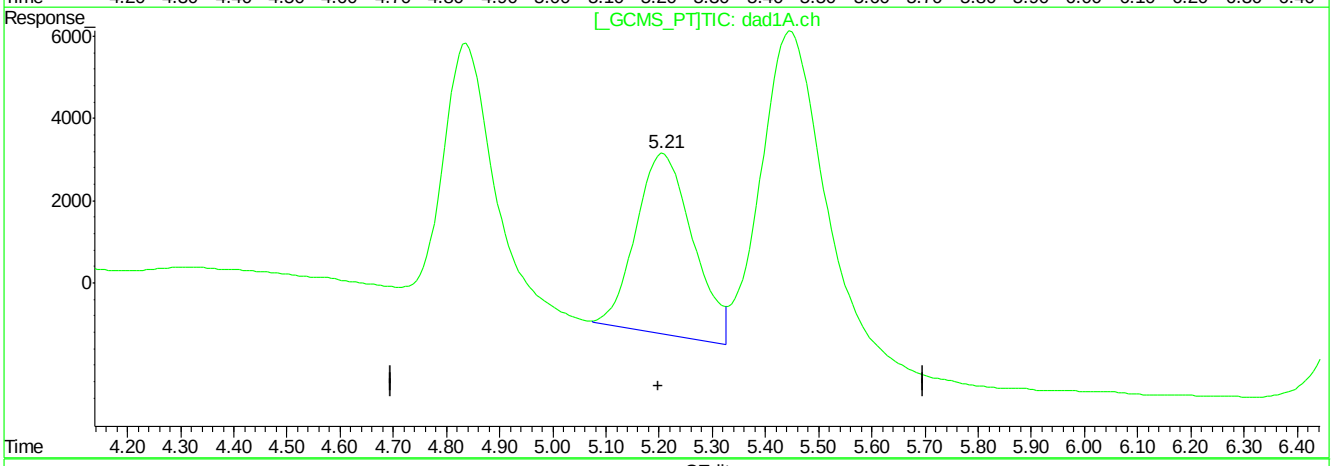
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 12:00:22 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Multiple Level Calibration




QEdit

(2) HMX

5.21min 84.965ppb m

response 317091

(2) HMX #2

5.21min 0.000ppb m

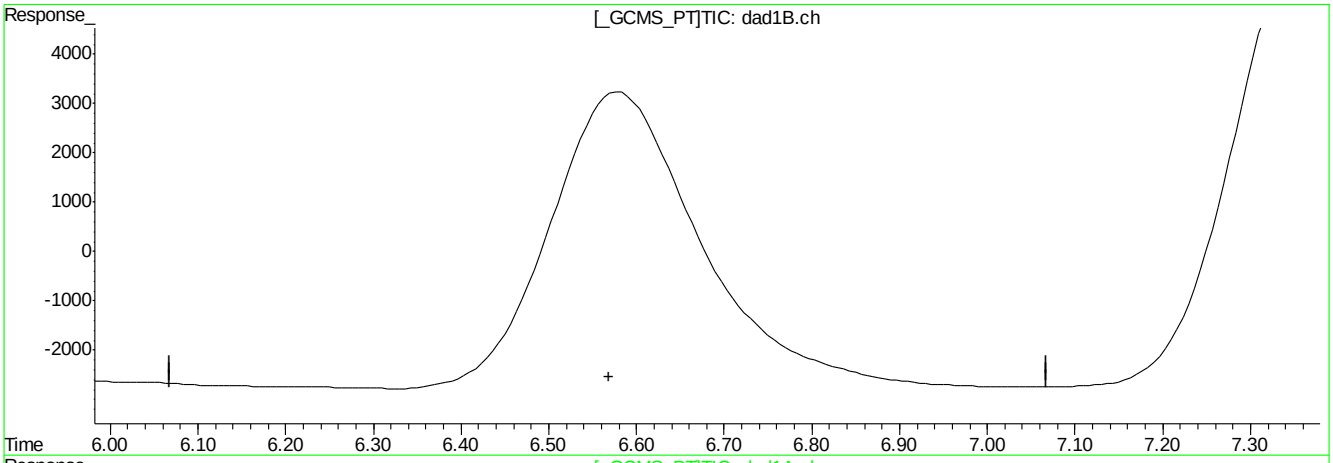
response 328375

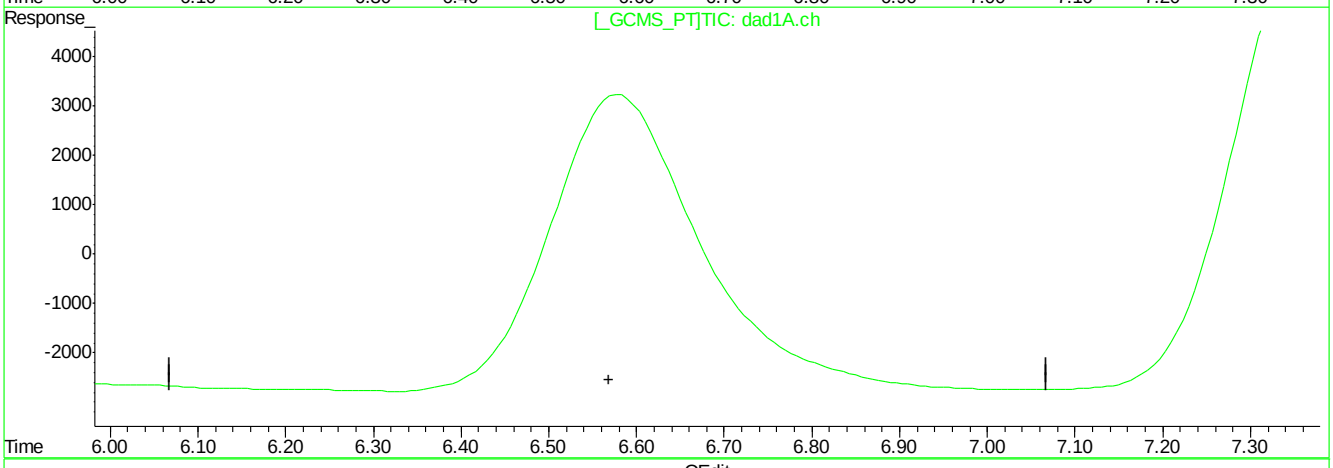
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 12:00:30 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Multiple Level Calibration




QEdit

(4) MNX

0.00min 0.000ppb

response 0

(4) MNX #2

0.00min 0.000ppb

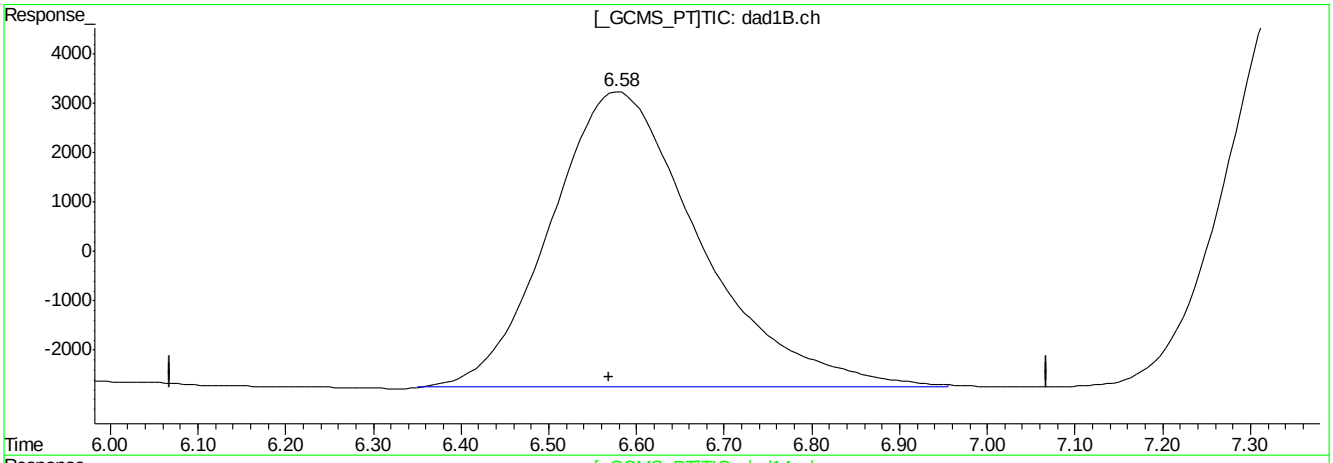
response 0

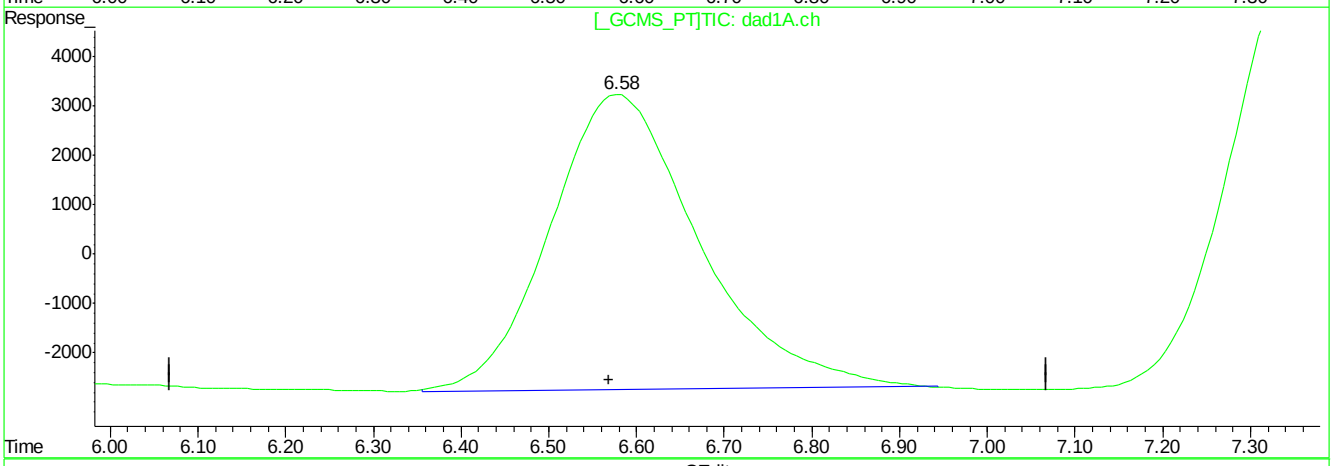
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 12:00:39 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Multiple Level Calibration




QEdit

(4) MNX

6.58min 120.029ppb m

response 708381

(4) MNX #2

6.58min 0.000ppb m

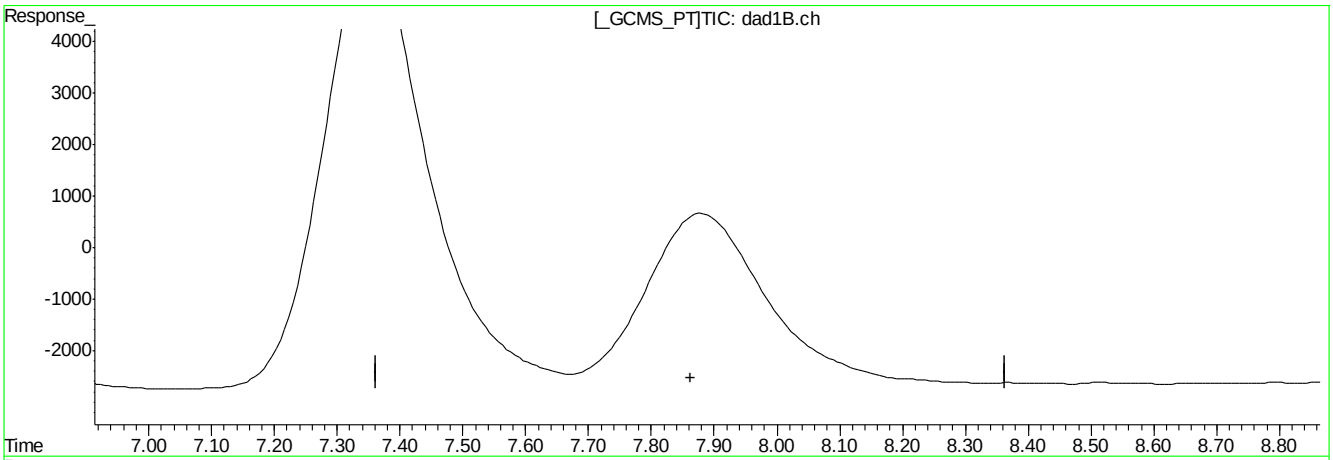
response 704883

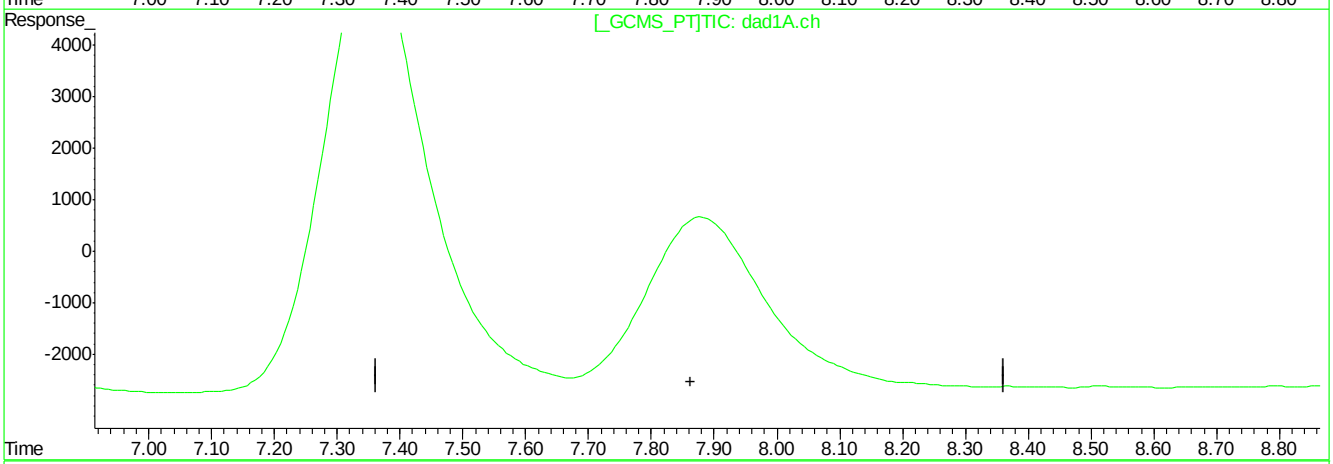
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 12:00:48 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Multiple Level Calibration




QEdit

(6) RDX

0.00min 0.000ppb

response 0

(6) RDX #2

0.00min 0.000ppb

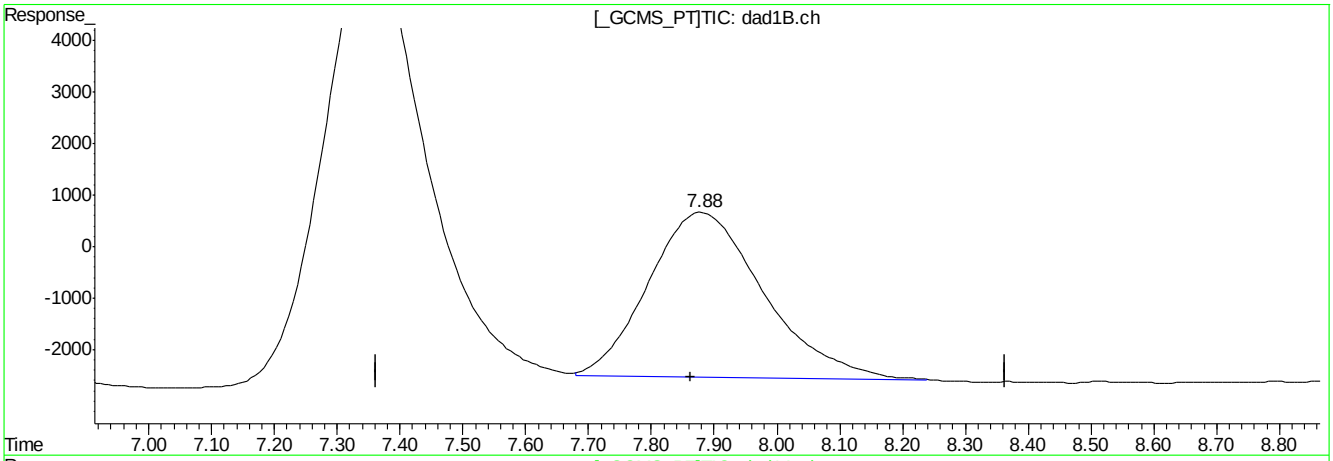
response 0

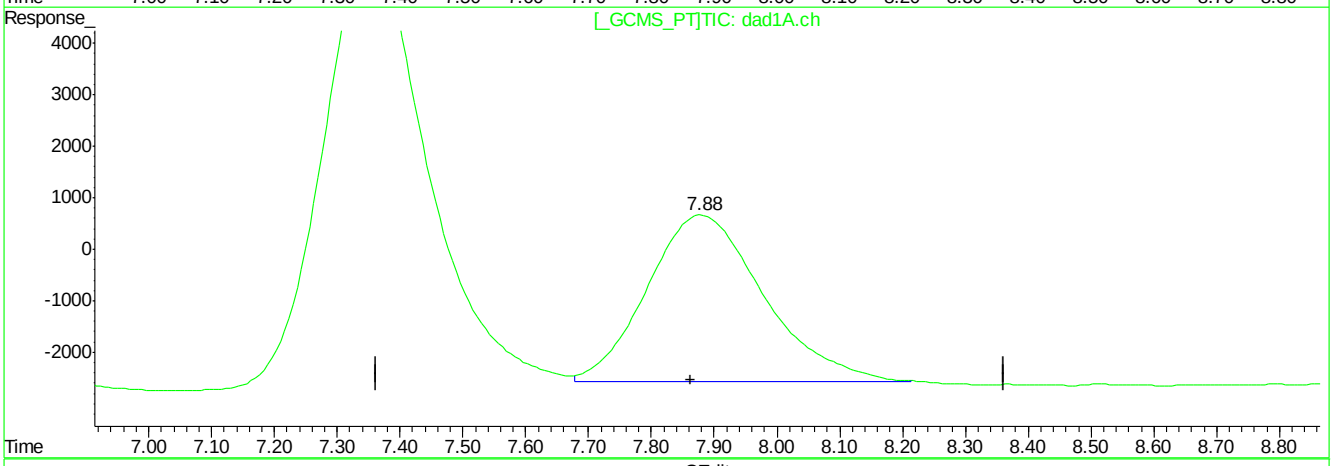
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 12:01:06 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Multiple Level Calibration




QEdit

(6) RDX

7.88min 81.252ppb m

response 407464

(6) RDX #2

7.88min 0.000ppb m

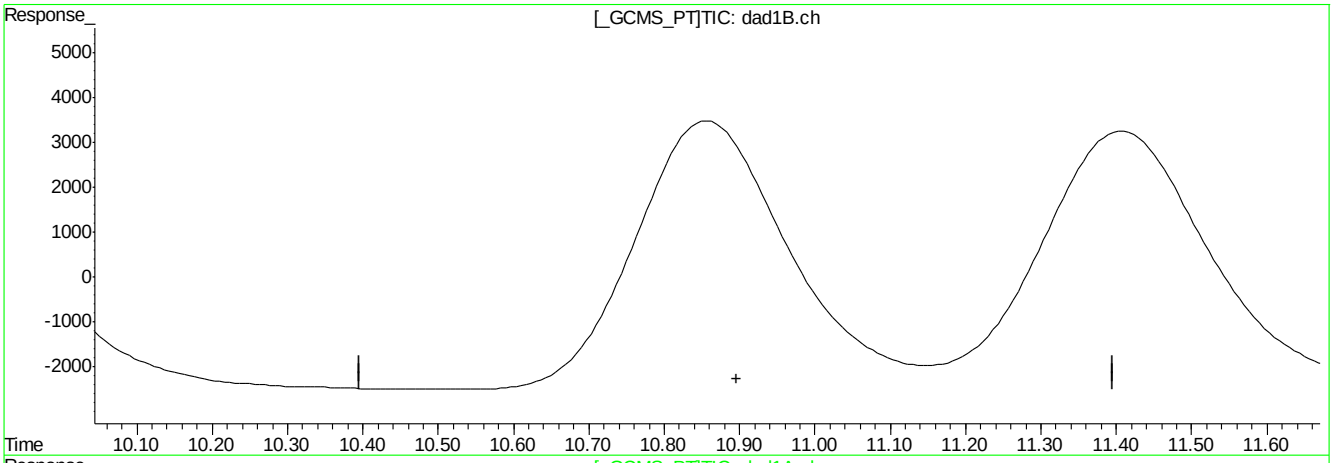
response 416727

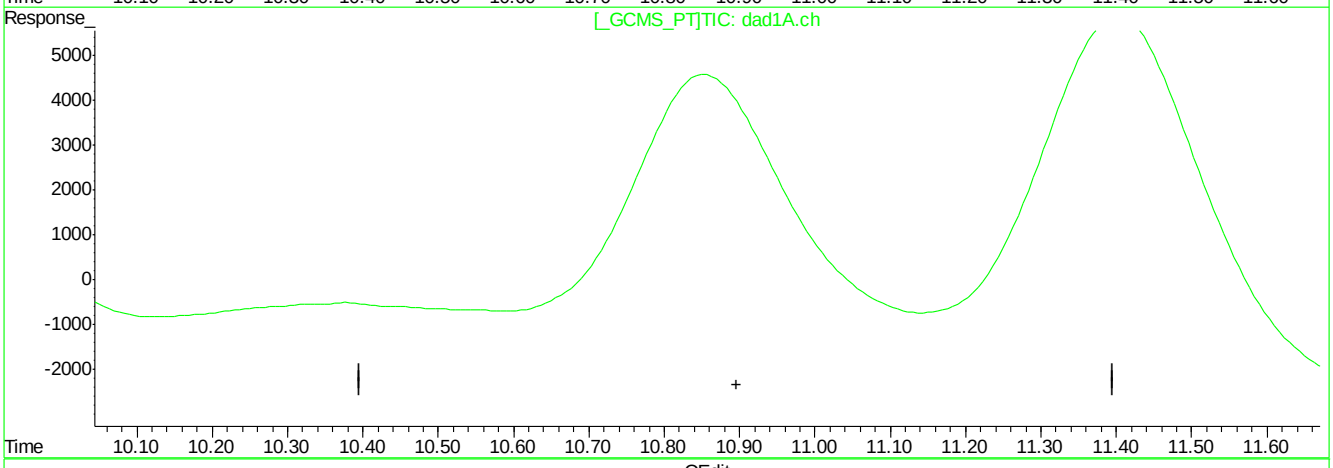
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 12:01:13 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Multiple Level Calibration




QEdit

(8) Nitrobenzene

0.00min 0.000ppb

response 0

(8) Nitrobenzene #2

0.00min 0.000ppb

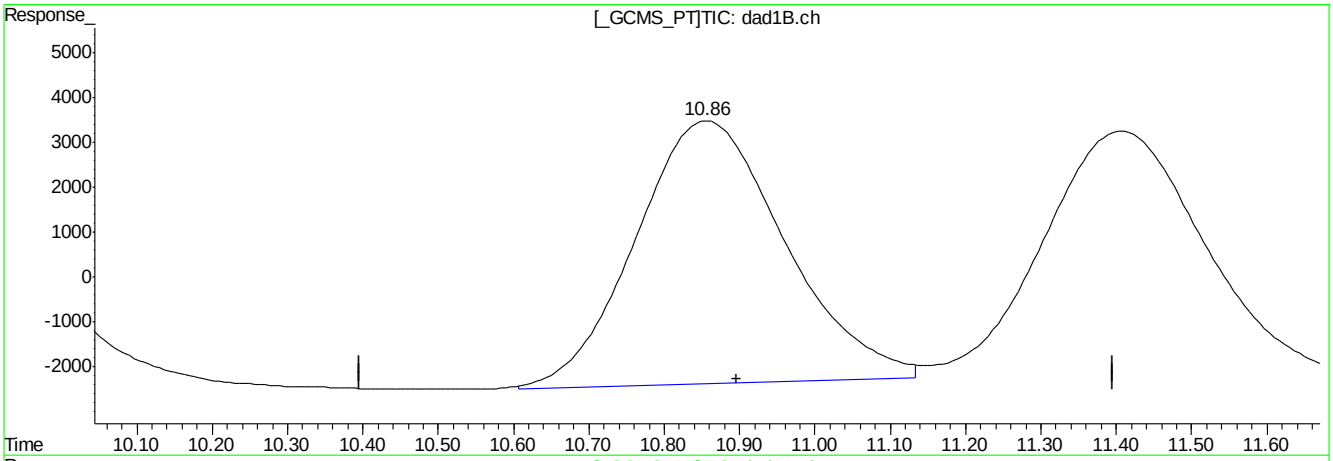
response 0

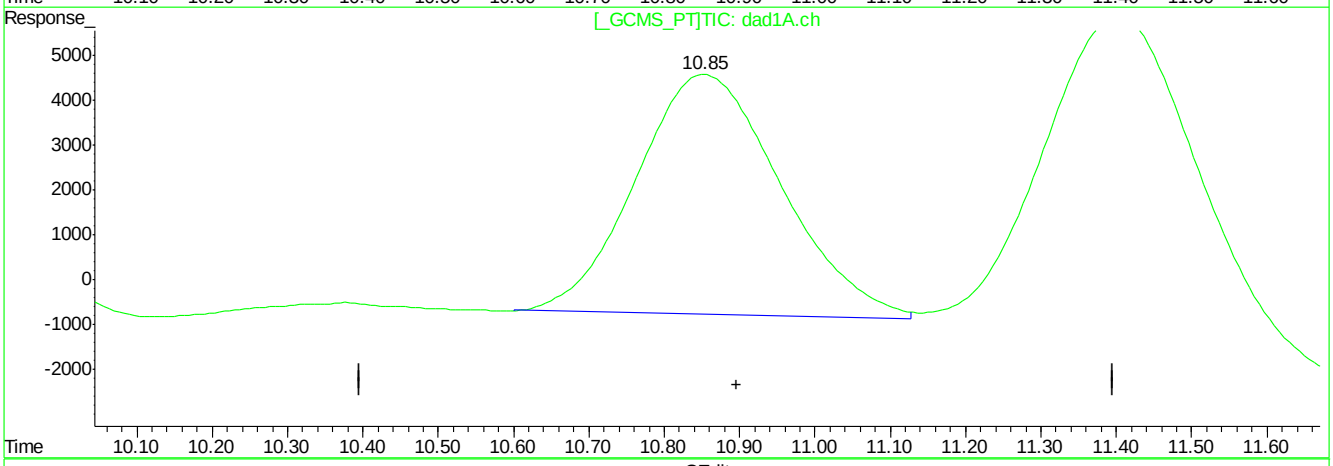
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 12:01:21 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Multiple Level Calibration




QEdit

(8) Nitrobenzene

10.86min 88.677ppb m

response 806225

(8) Nitrobenzene #2

10.85min 0.000ppb m

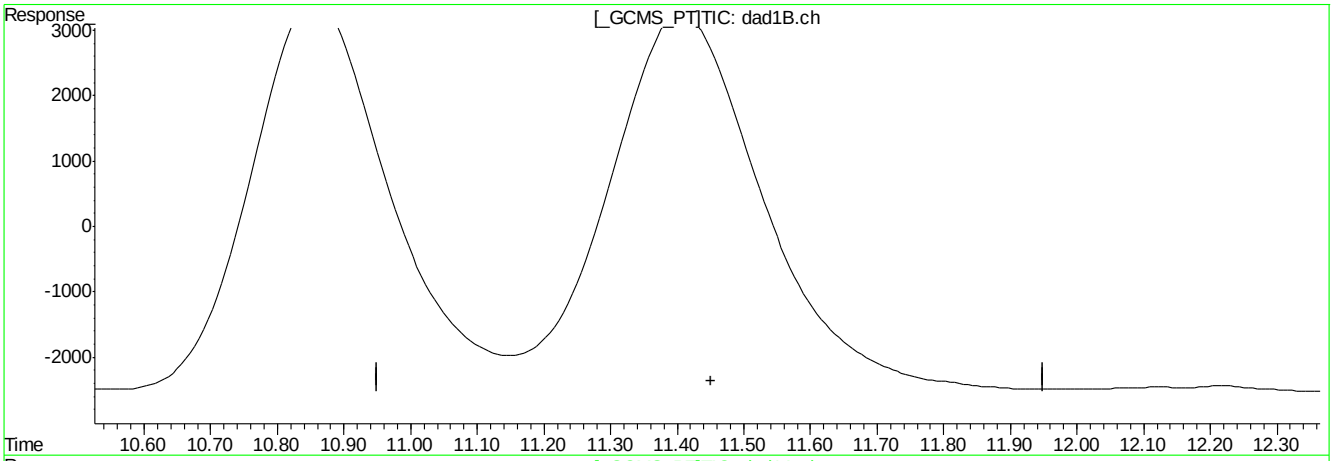
response 714037

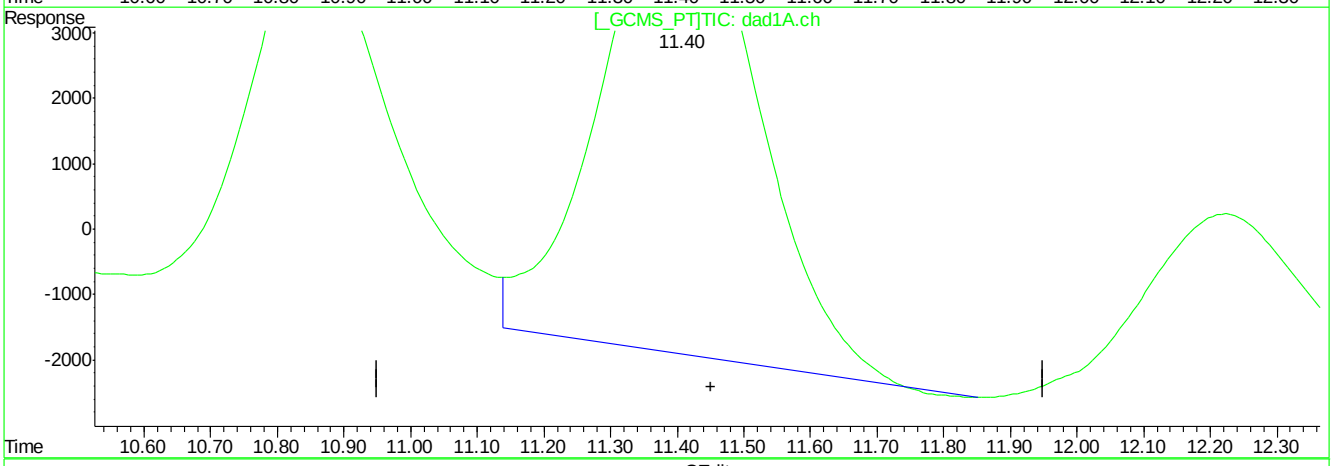
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 12:01:29 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Multiple Level Calibration




QEdit

(9) 2,4,6-Trinitrotoluene

0.00min 0.000ppb

response 0

(9) 2,4,6-Trinitrotoluene #2

11.40min 0.000ppb

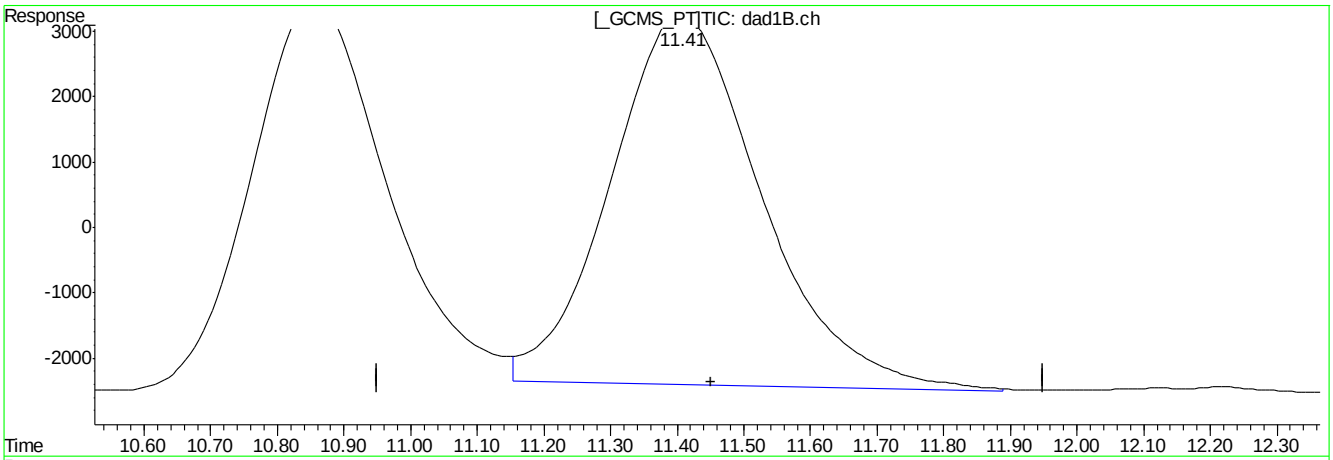
response 1204466

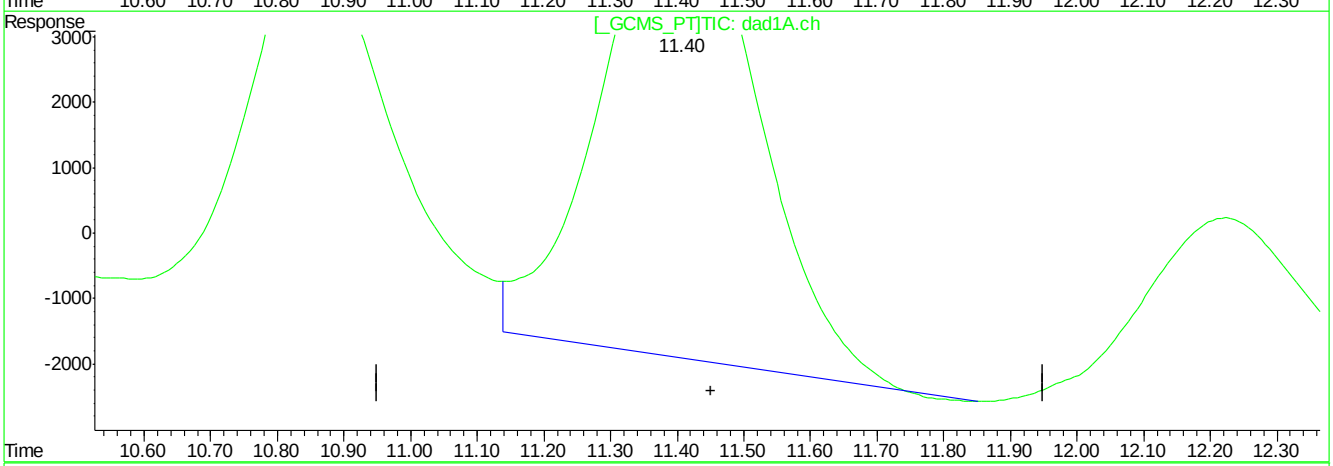
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 12:01:42 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Multiple Level Calibration




QEdit

(9) 2,4,6-Trinitrotoluene

11.41min 90.288ppb m

response 888780

(9) 2,4,6-Trinitrotoluene #2

11.40min 0.000ppb

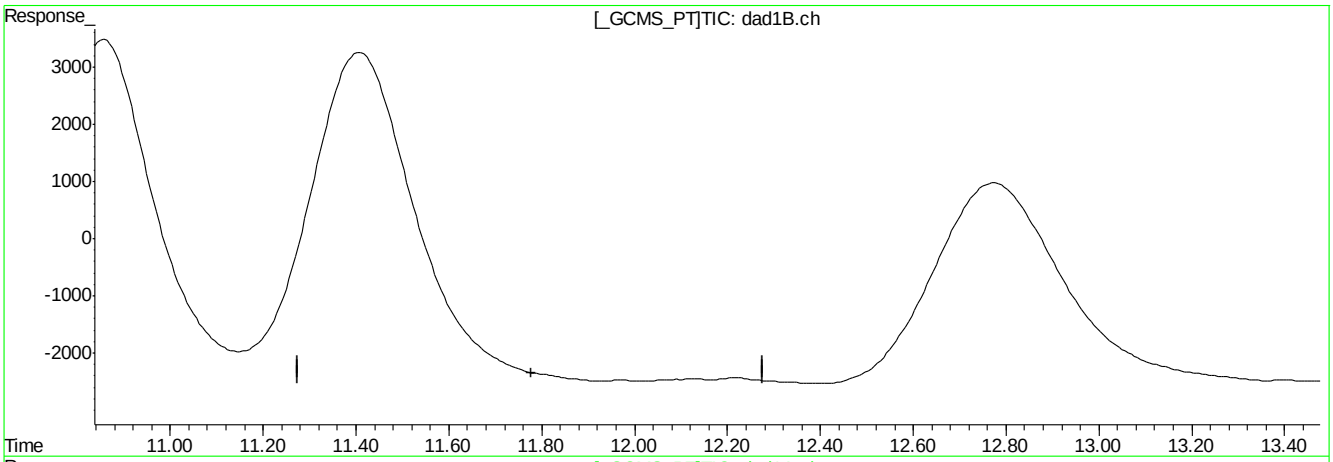
response 1204466

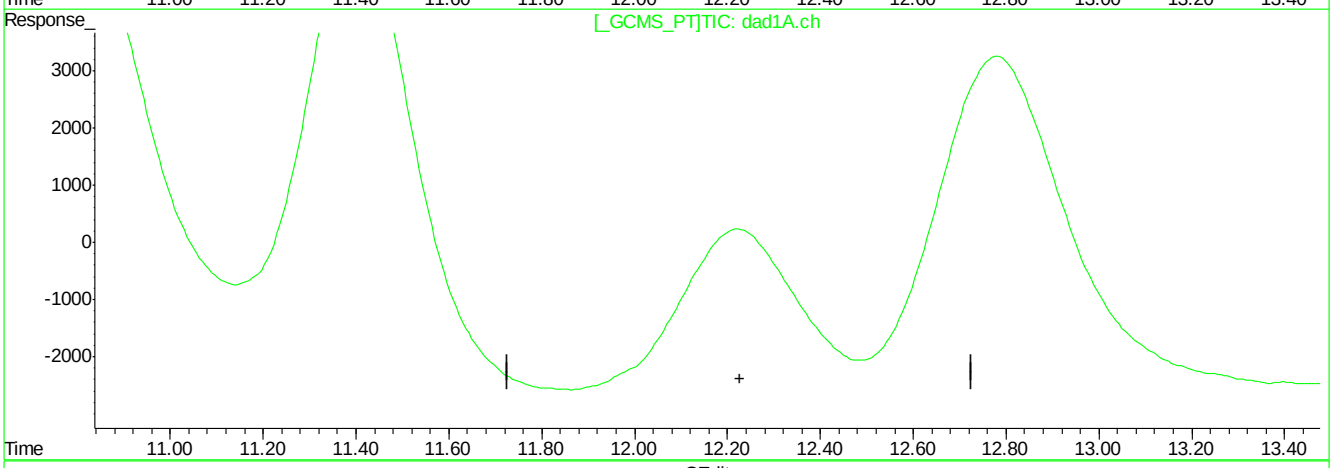
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 12:01:47 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Multiple Level Calibration




QEdit

(10) Nitroglycerin

0.00min 0.000ppb

response 0

(10) Nitroglycerin #2

0.00min 0.000ppb

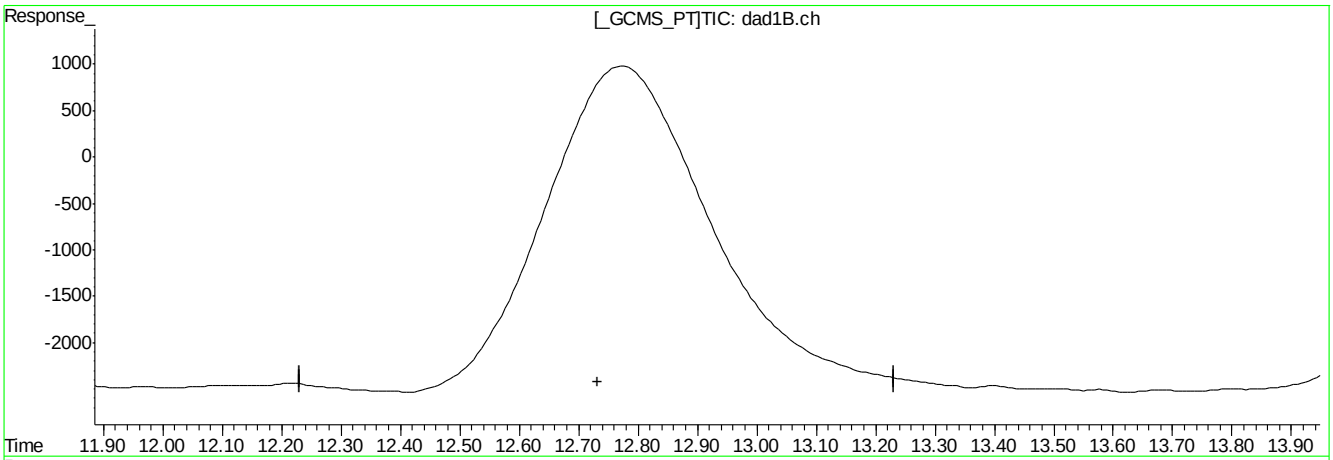
response 0

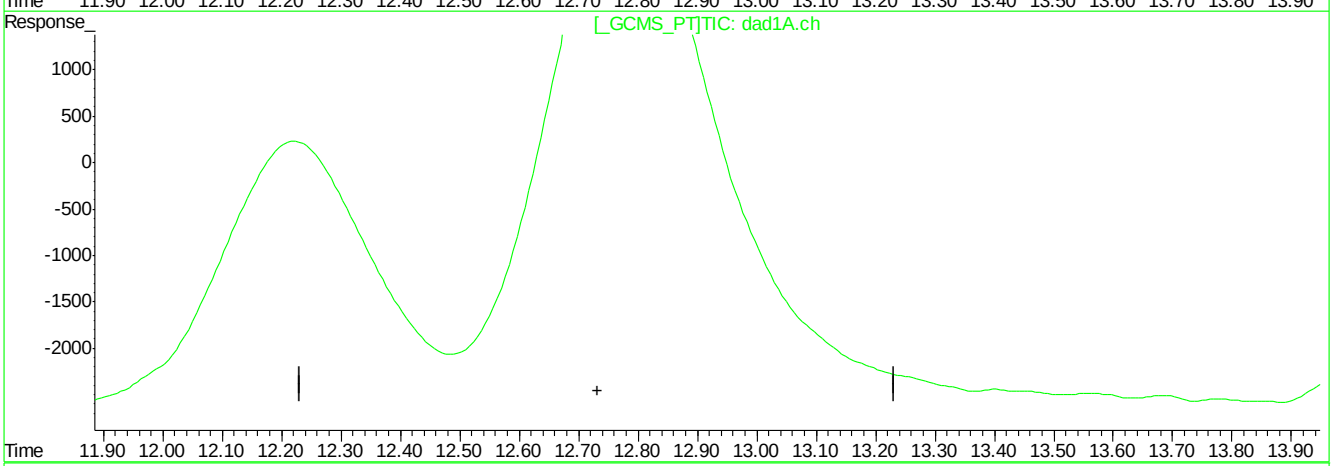
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 12:01:52 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Multiple Level Calibration




QEdit

(11) Tetryl

0.00min 0.000ppb

response 0

(11) Tetryl #2

0.00min 0.000ppb

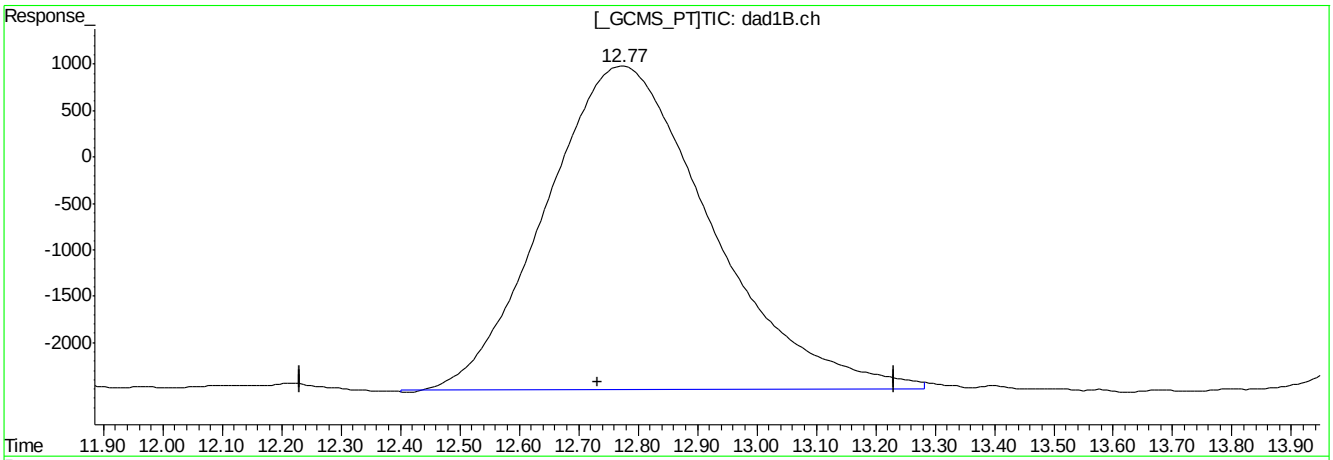
response 0

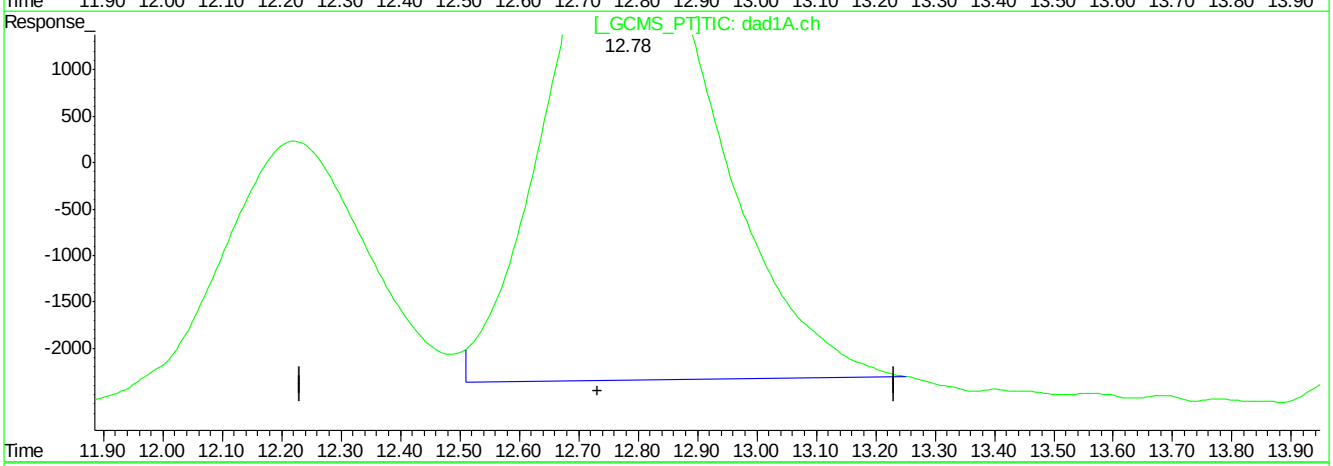
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 12:02:04 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Multiple Level Calibration




QEdit

(11) Tetryl

12.77min 90.453ppb m

response 674954

(11) Tetryl #2

12.78min 0.000ppb m

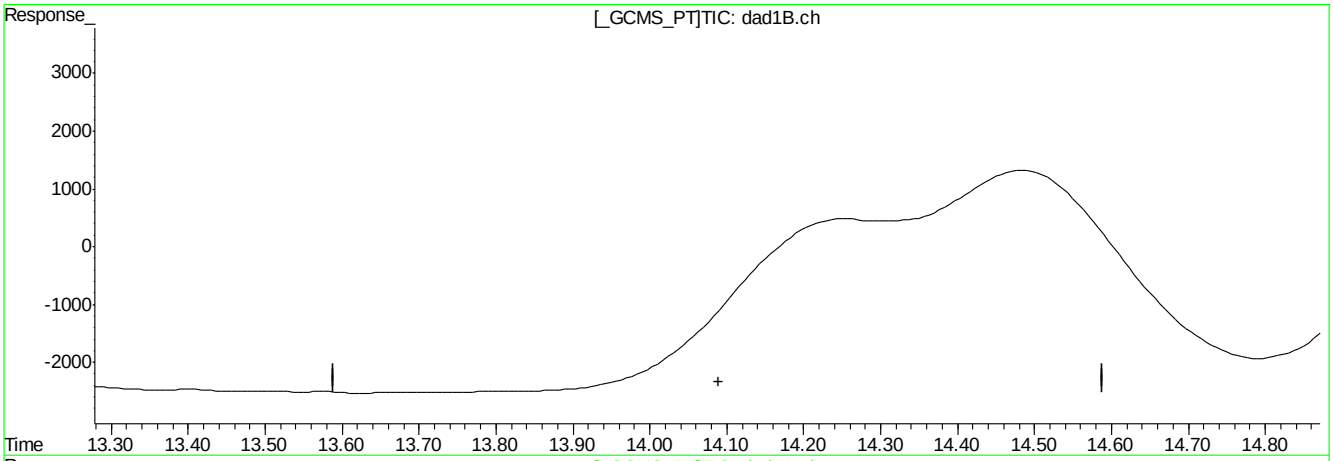
response 1034480

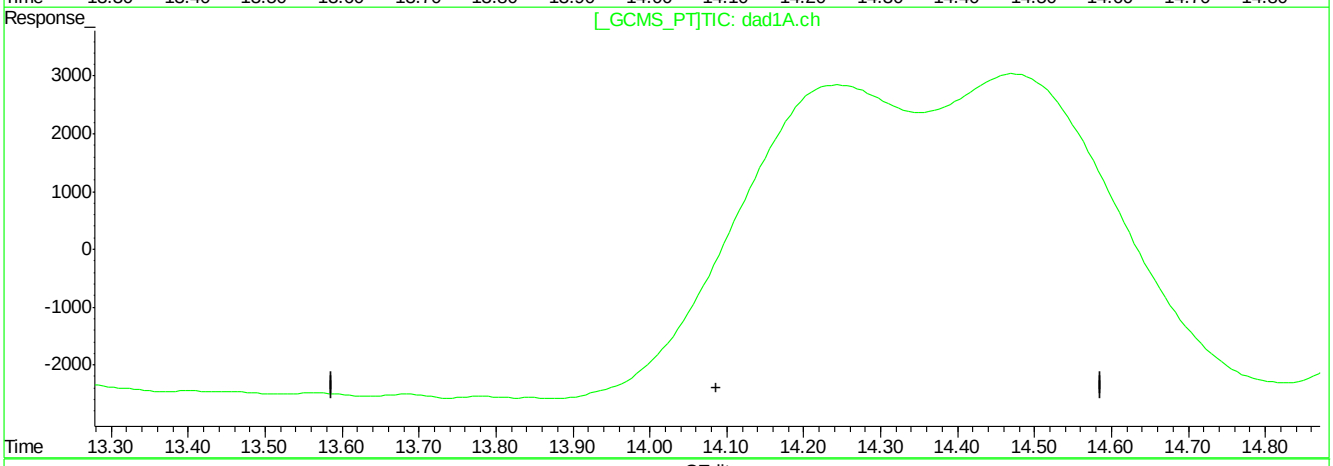
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 12:02:11 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Multiple Level Calibration




QEdit

(12) 3,4-Dinitrotoluene (S)

0.00min 0.000ppb

response 0

(12) 3,4-Dinitrotoluene #2 (S)

0.00min 0.000ppb

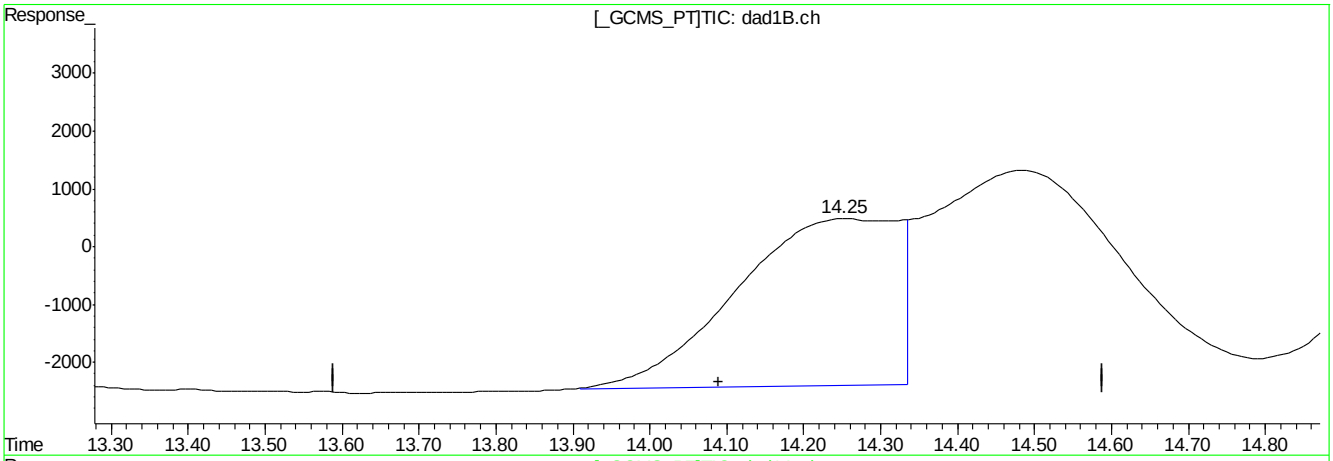
response 0

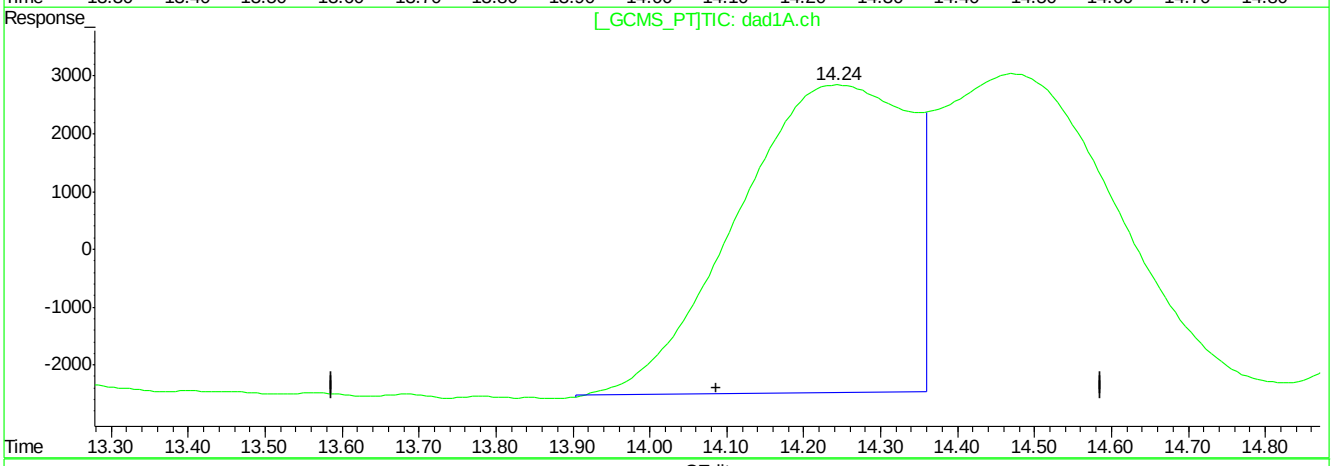
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 12:02:16 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Multiple Level Calibration




QEdit

(12) 3,4-Dinitrotoluene (S)

14.25min 78.307ppb m

response 410552

(12) 3,4-Dinitrotoluene #2 (S)

14.24min 79.259ppb m

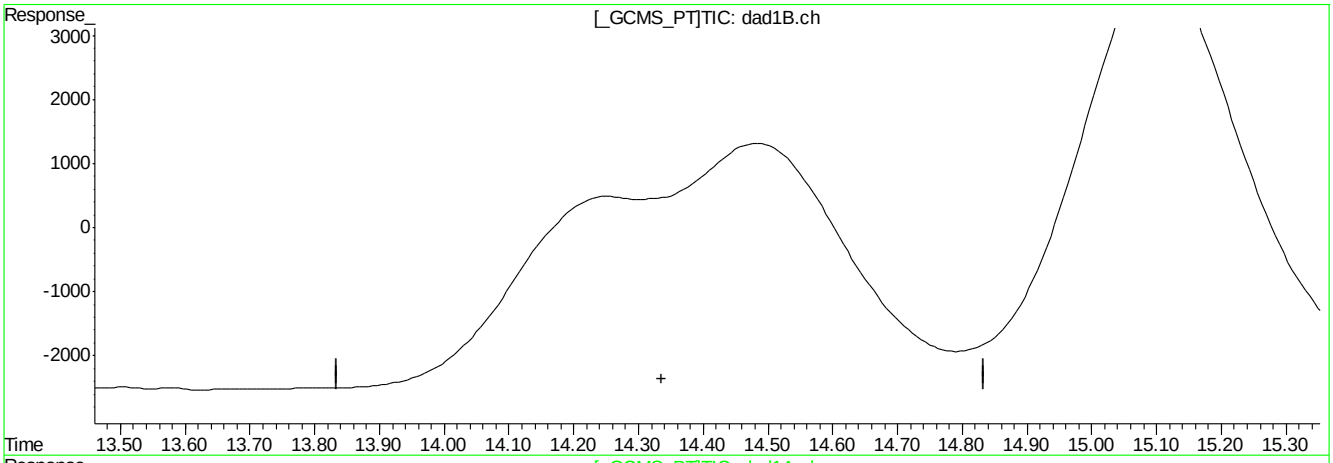
response 828498

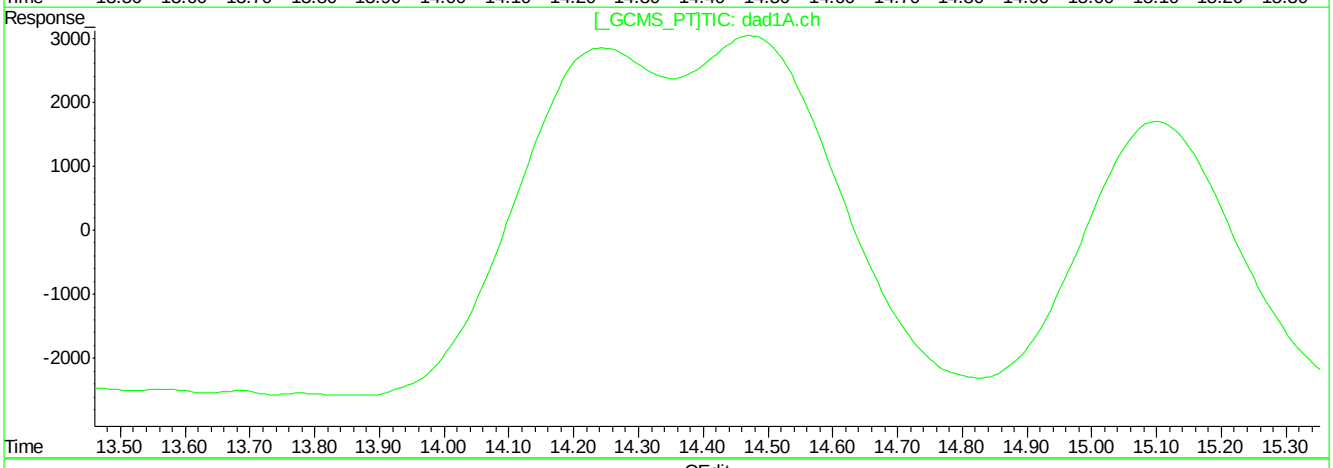
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 12:02:26 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Multiple Level Calibration




QEdit

(13) 2,6-Dinitrotoluene

0.00min 0.000ppb

response 0

(13) 2,6-Dinitrotoluene #2

0.00min 0.000ppb

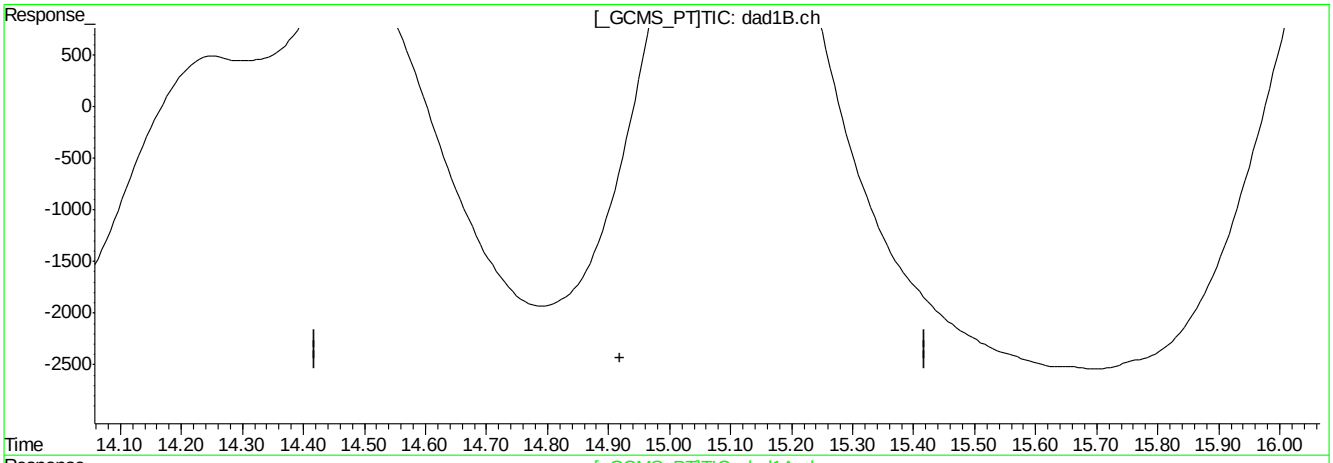
response 0

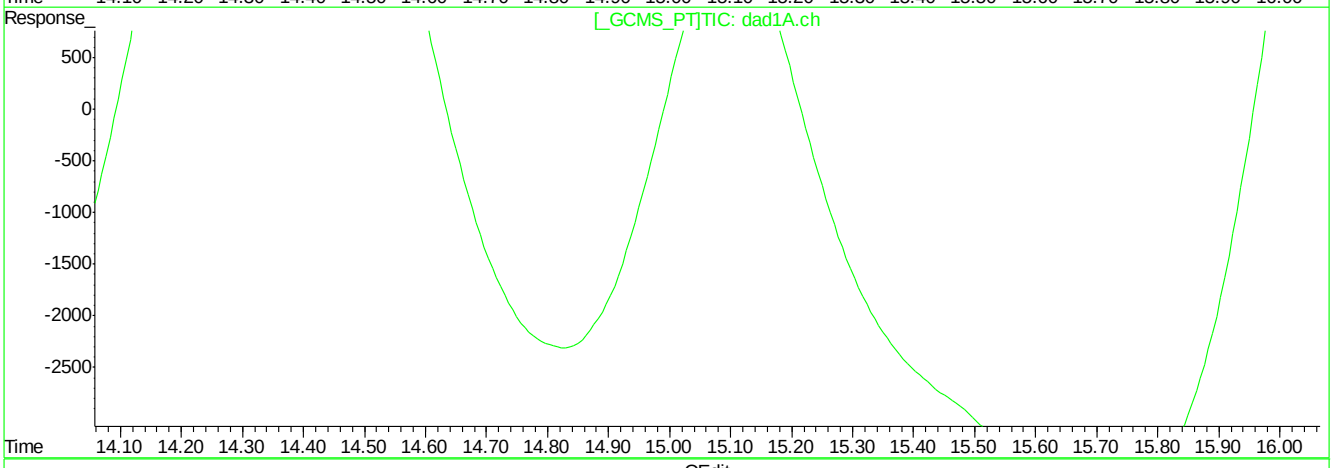
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 12:02:30 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Multiple Level Calibration




QEdit

(14) 2,4-Dinitrotoluene

0.00min 0.000ppb

response 0

(14) 2,4-Dinitrotoluene #2

0.00min 0.000ppb

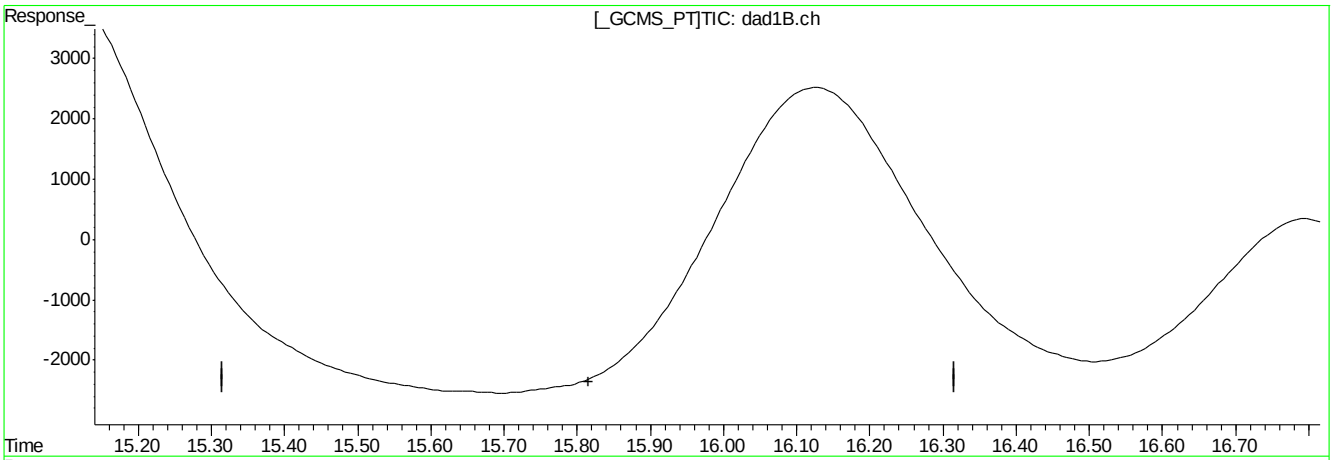
response 0

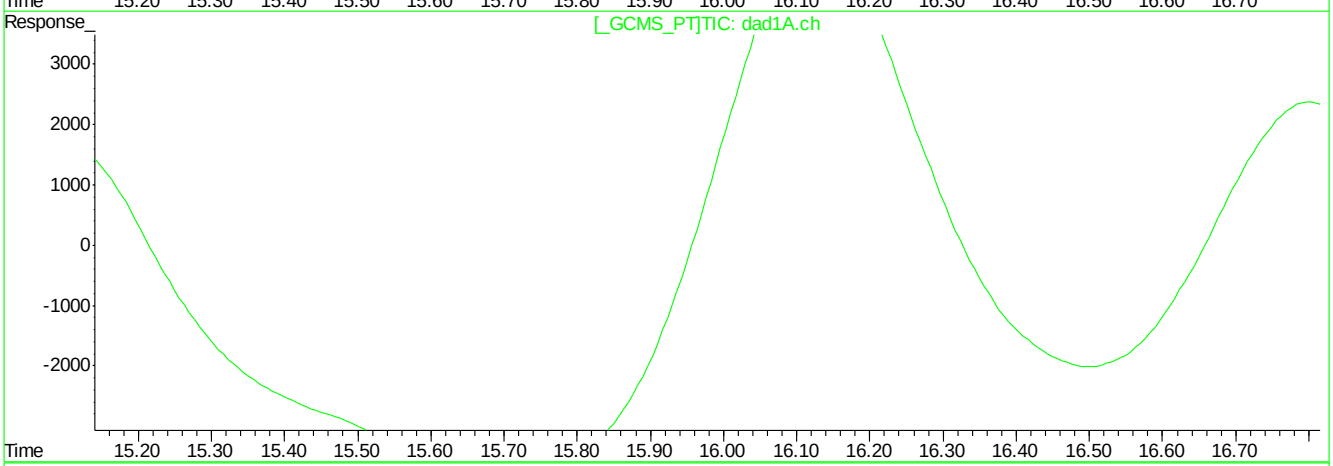
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 12:02:54 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Multiple Level Calibration




QEdit

(15) 3,5-Dinitroaniline

0.00min 0.000ppb

response 0

(15) 3,5-Dinitroaniline #2

0.00min 0.000ppb

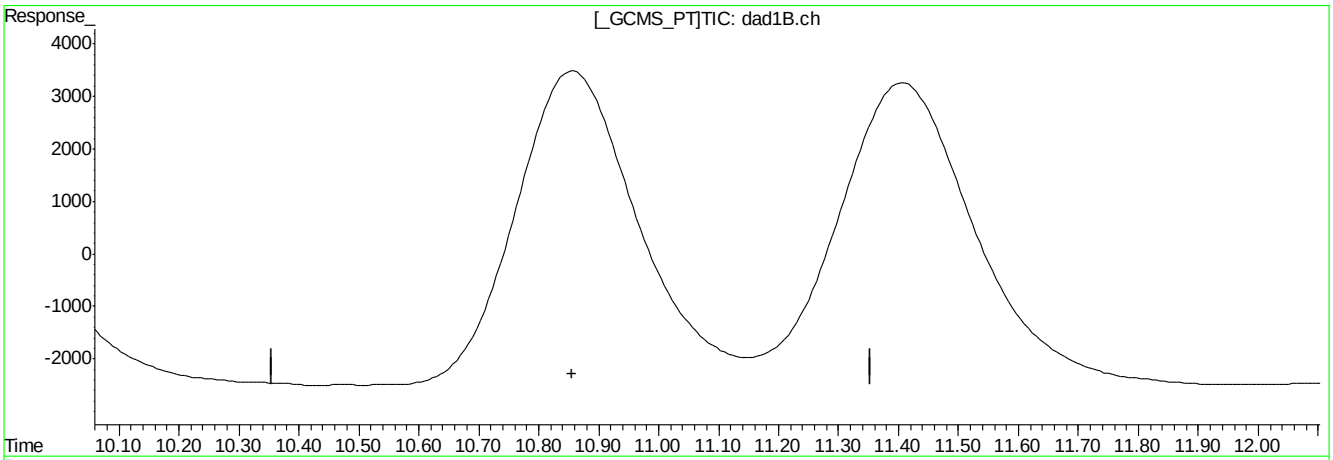
response 0

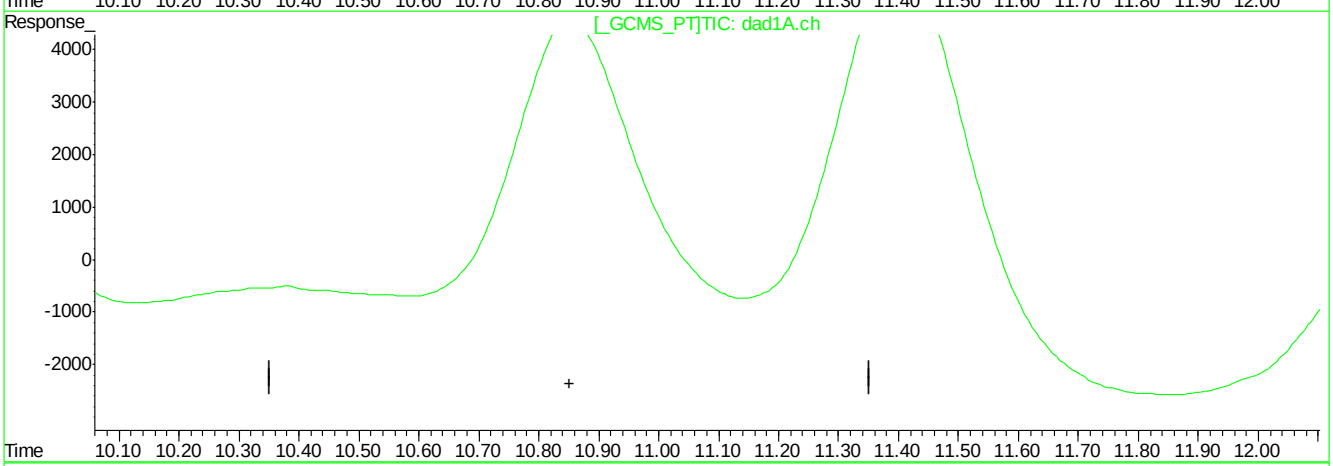
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 12:03:14 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




QEdit

(8) Nitrobenzene

0.00min 0.000ppb

response 0

(8) Nitrobenzene #2

0.00min 0.000ppb

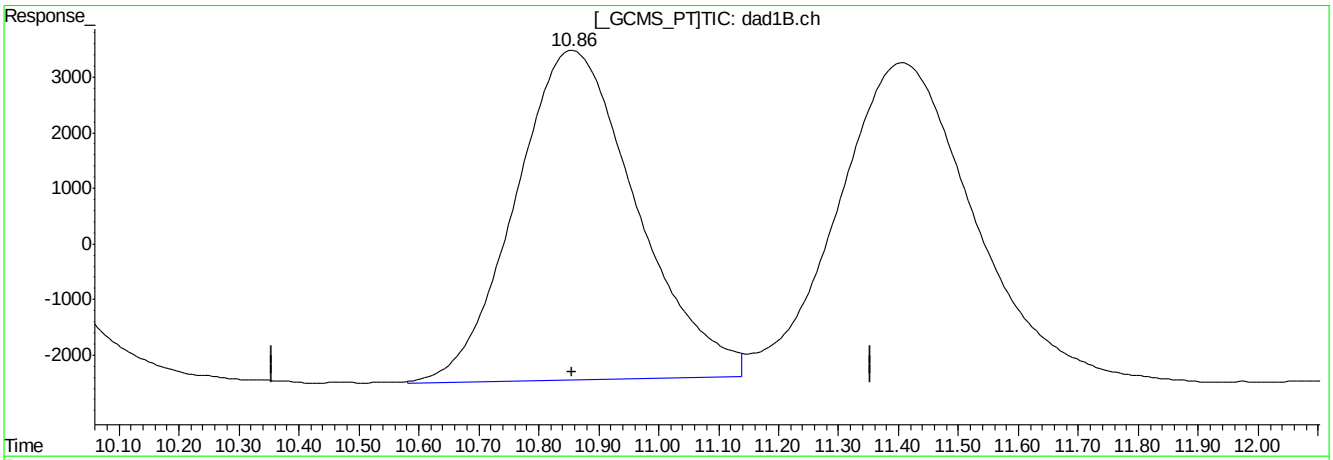
response 0

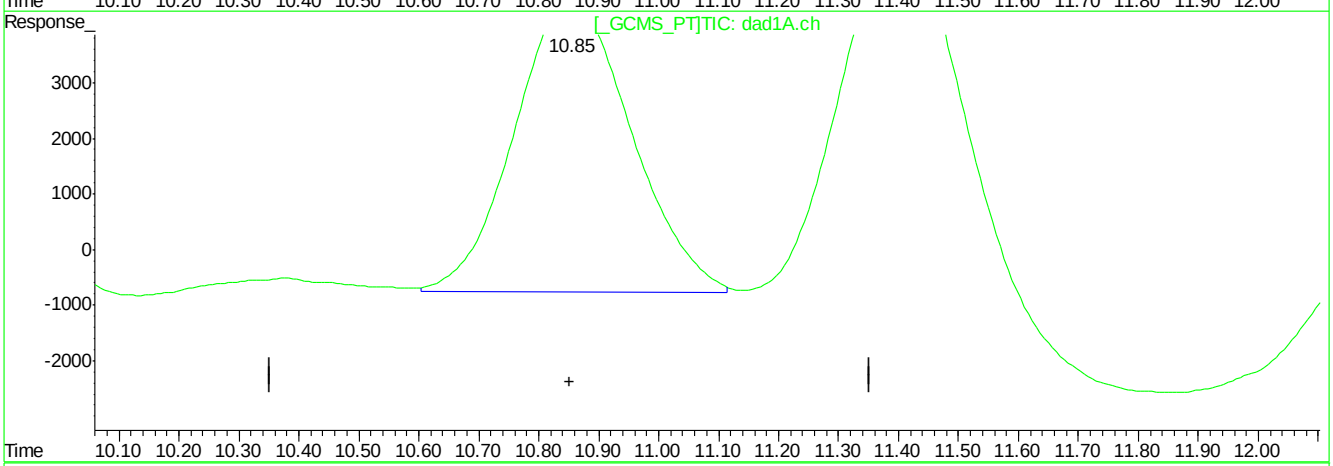
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:14:17 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




QEdit

(8) Nitrobenzene

10.86min 91.488ppb m

response 831782

(8) Nitrobenzene #2

10.85min 0.000ppb m

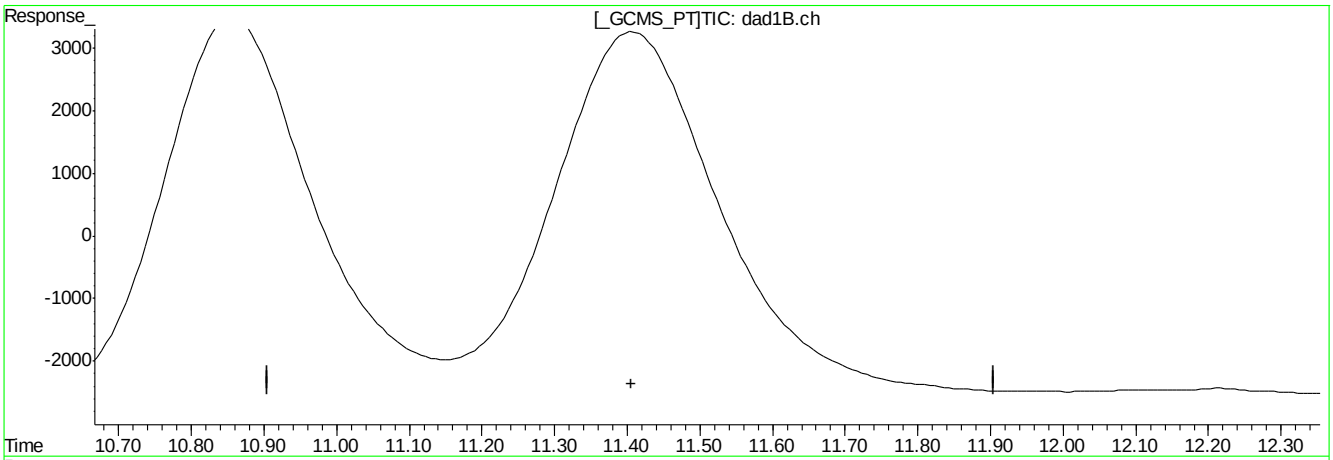
response 708724

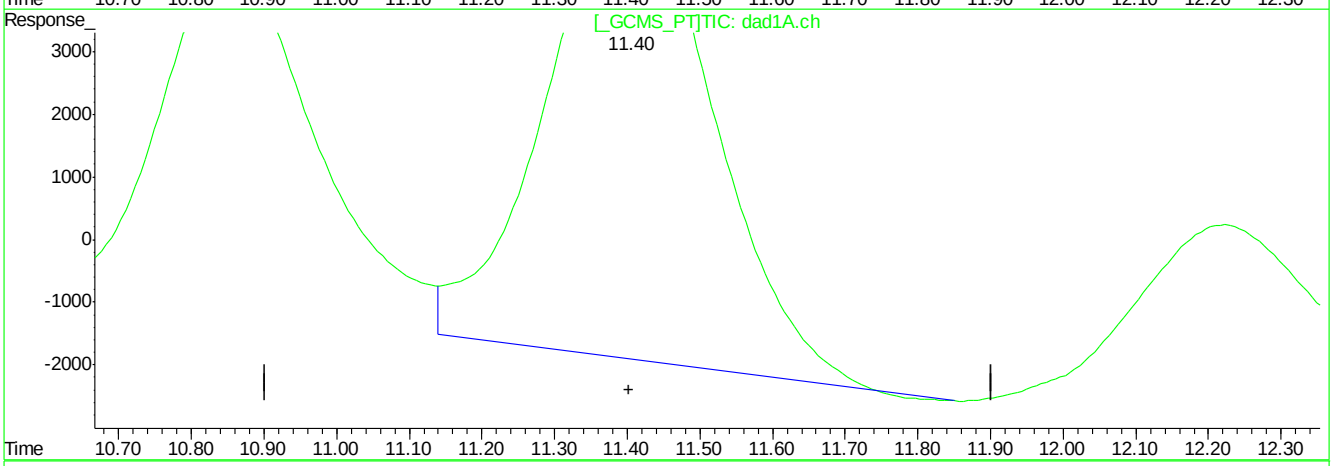
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:14:26 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




QEdit

(9) 2,4,6-Trinitrotoluene

0.00min 0.000ppb

response 0

(9) 2,4,6-Trinitrotoluene #2

11.40min 0.000ppb

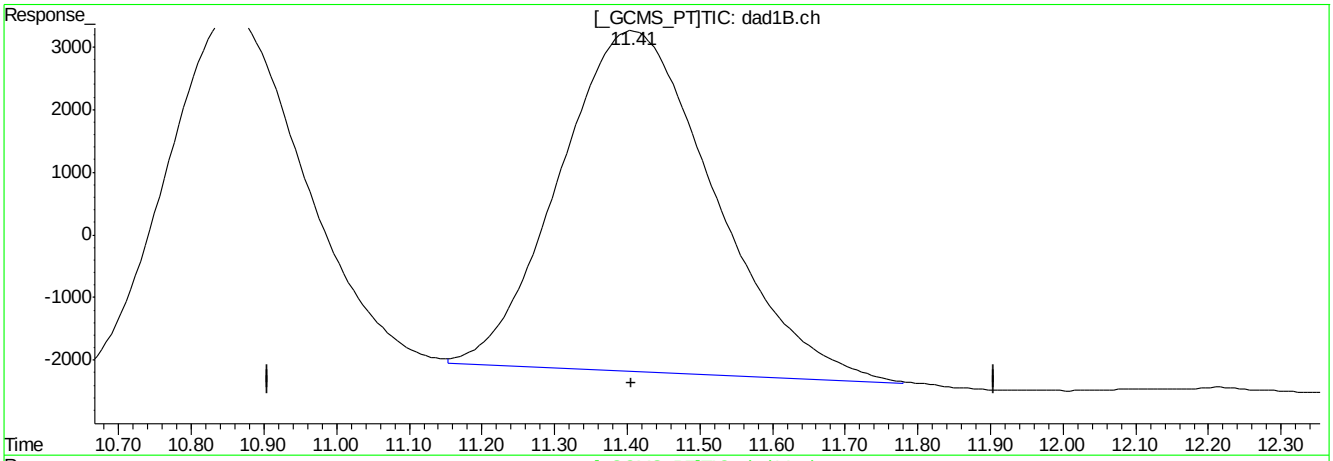
response 1204466

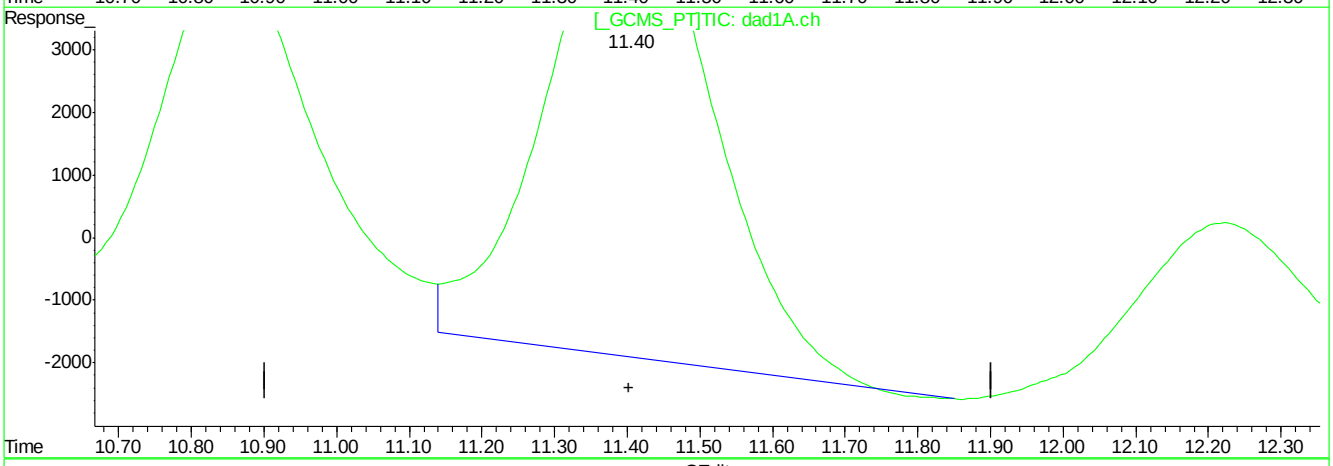
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:14:32 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




QEdit

(9) 2,4,6-Trinitrotoluene

11.41min 82.247ppb m

response 809628

(9) 2,4,6-Trinitrotoluene #2

11.40min 0.000ppb

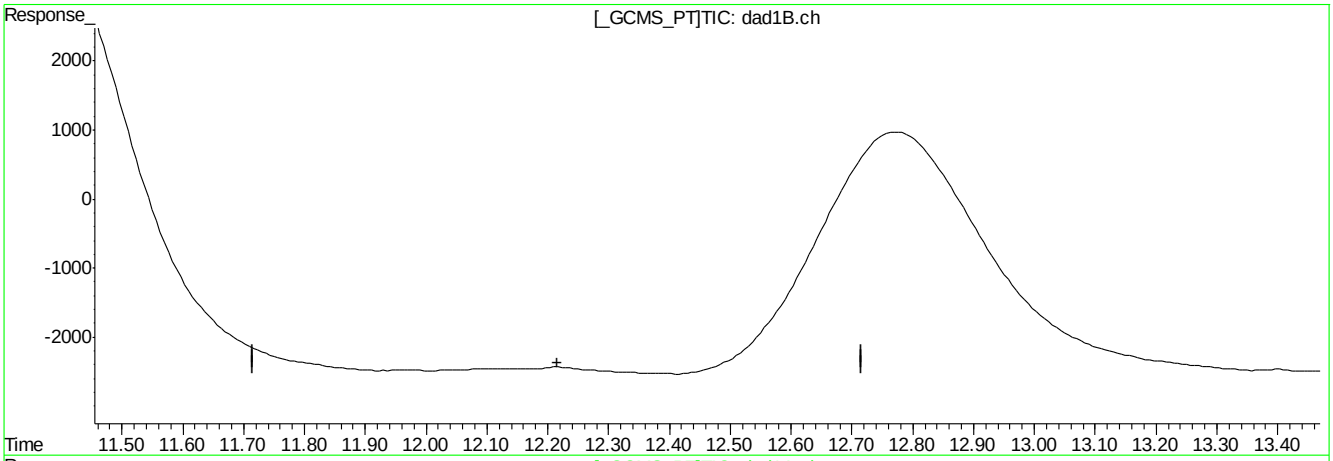
response 1204466

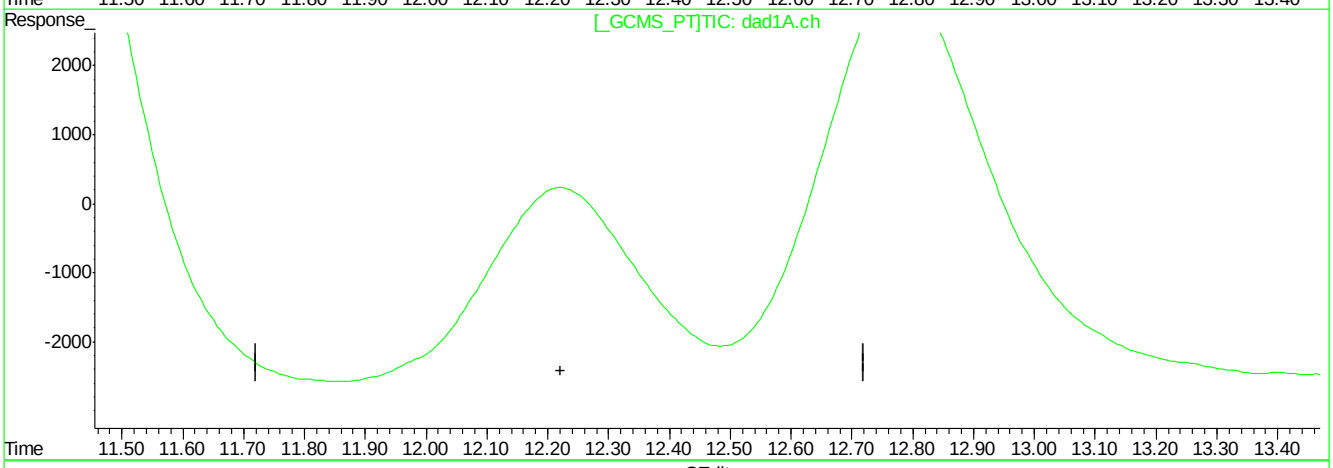
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:14:37 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




QEdit

(10) Nitroglycerin

0.00min 0.000ppb

response 0

(10) Nitroglycerin #2

0.00min 0.000ppb

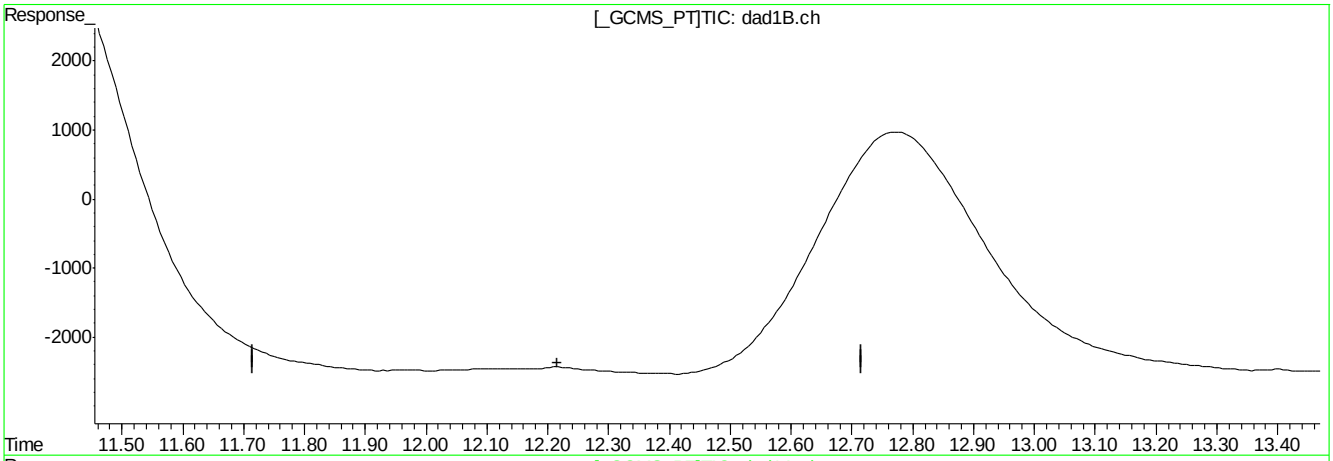
response 0

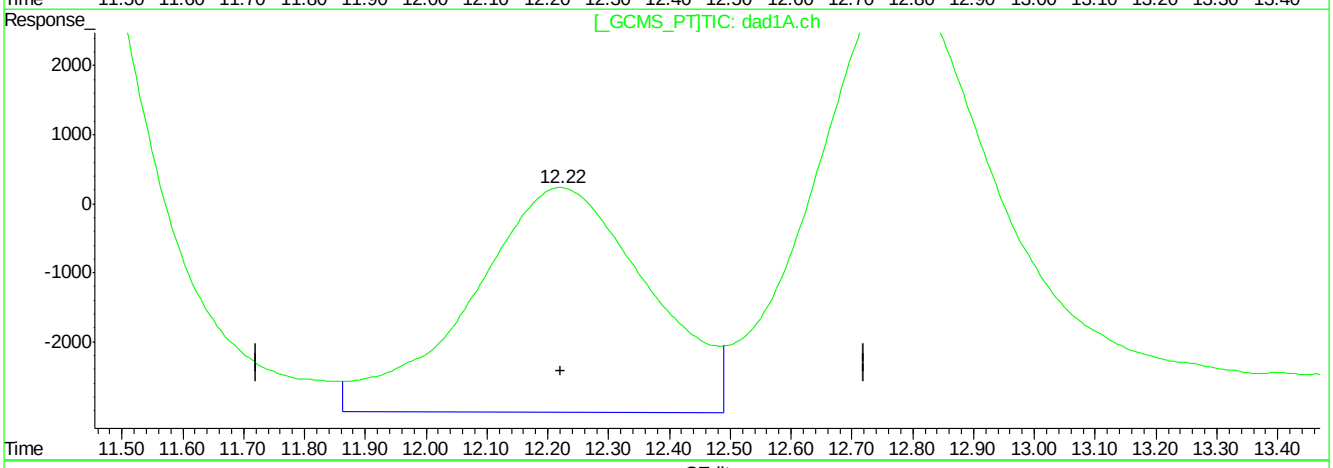
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:14:43 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




QEdit

(10) Nitroglycerin

0.00min 0.000ppb

response 0

(10) Nitroglycerin #2

12.22min 0.000ppb m

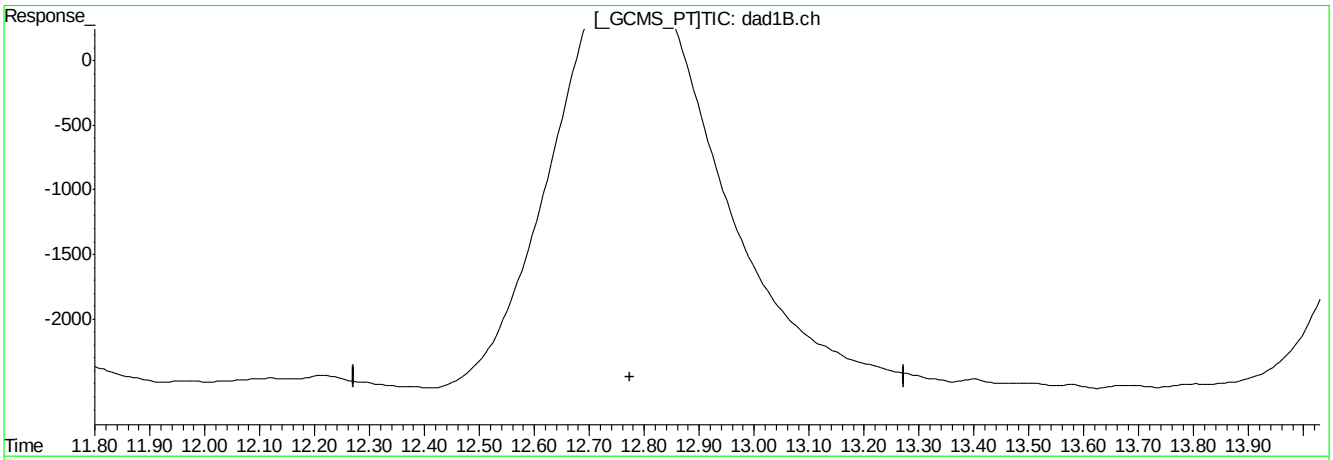
response 651512

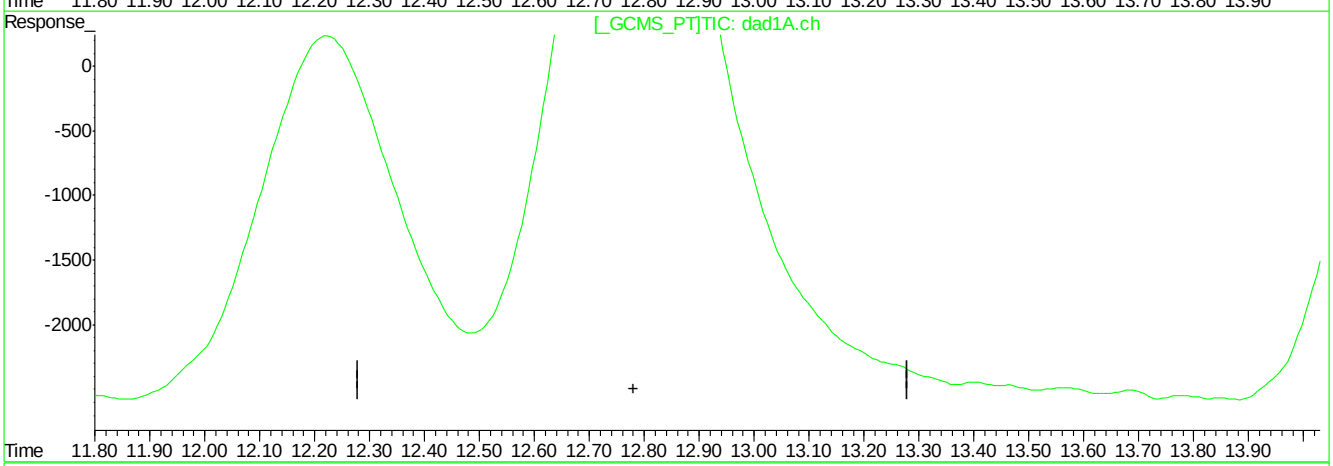
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:14:49 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




QEdit

(11) Tetryl

0.00min 0.000ppb

response 0

(11) Tetryl #2

0.00min 0.000ppb

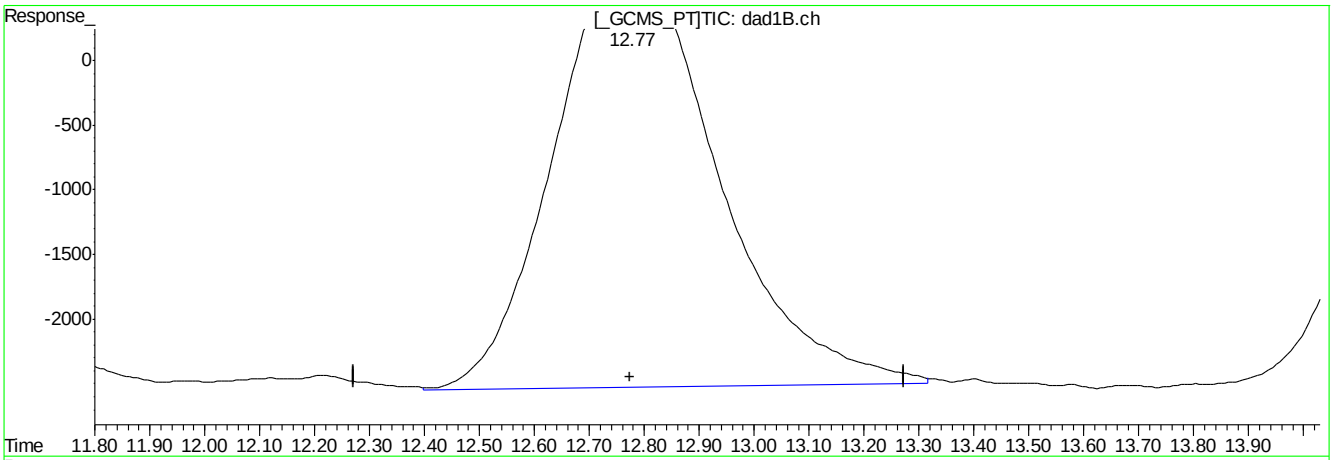
response 0

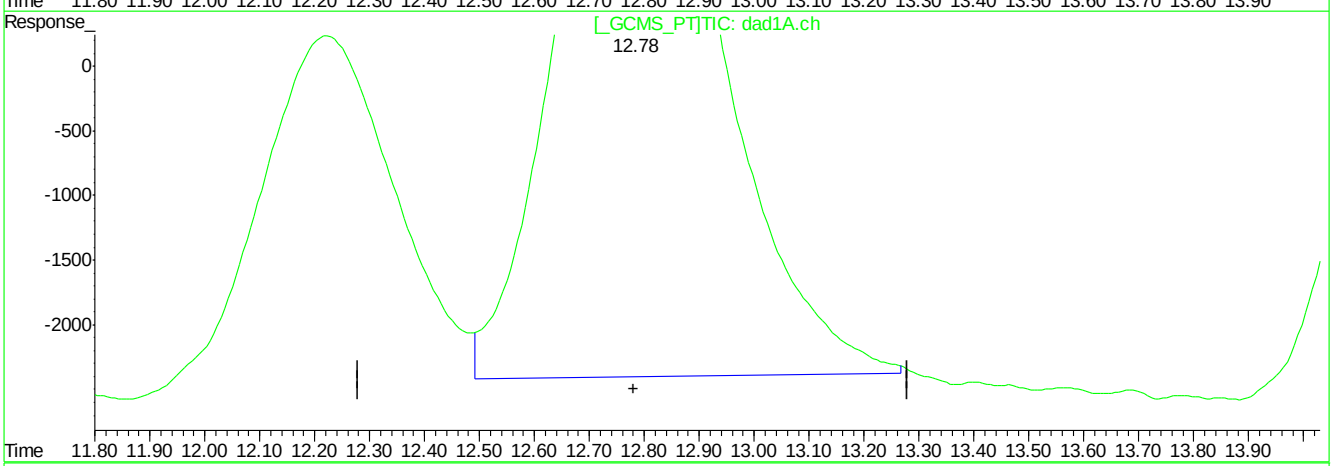
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:14:54 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




QEdit

(11) Tetryl

12.77min 91.592ppb m

response 683449

(11) Tetryl #2

12.78min 0.000ppb m

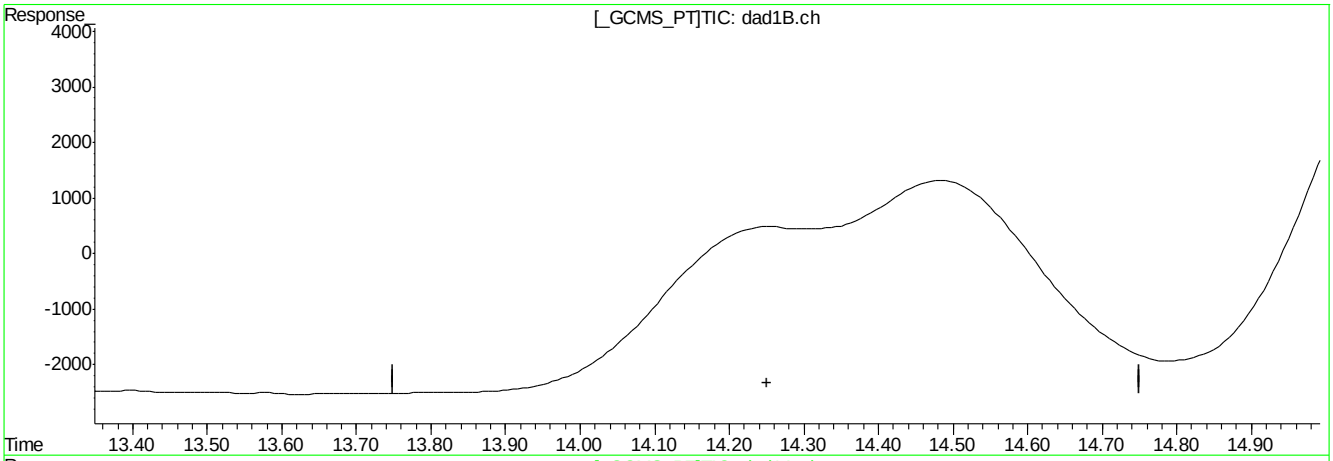
response 1066802

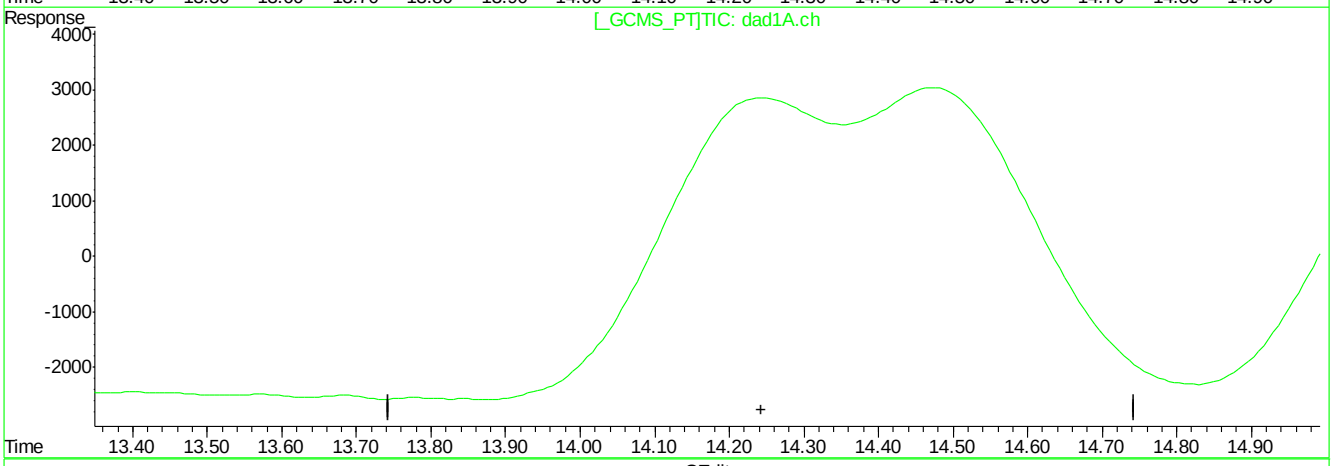
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:15:01 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




QEdit

(12) 3,4-Dinitrotoluene (S)

0.00min 0.000ppb

response 0

(12) 3,4-Dinitrotoluene #2 (S)

0.00min 0.000ppb

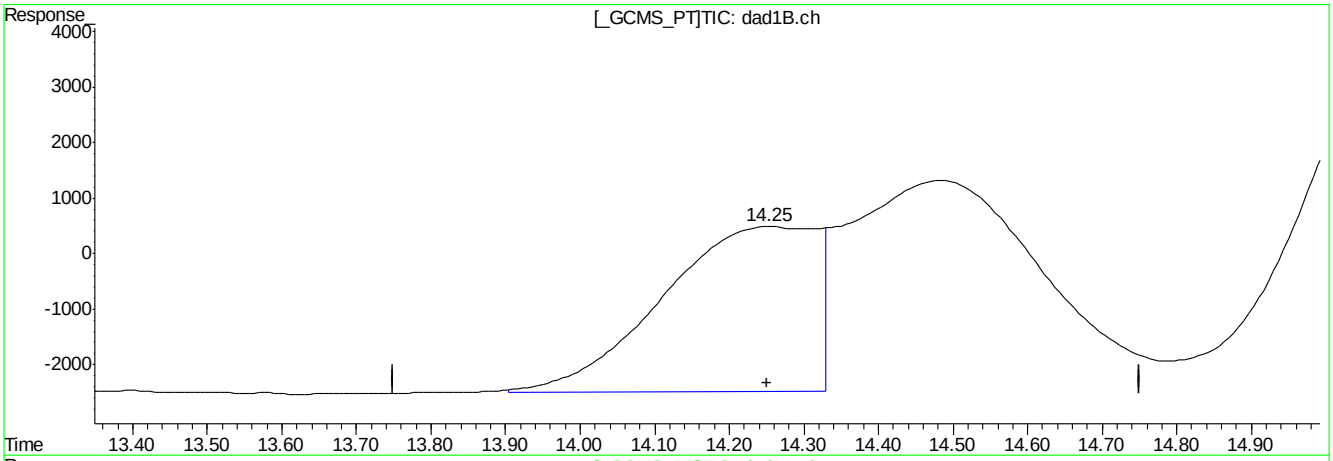
response 0

(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:15:07 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




(12) 3,4-Dinitrotoluene (S)

14.25min 79.434ppb m

response 416459

(12) 3,4-Dinitrotoluene #2 (S)

14.24min 85.032ppb m

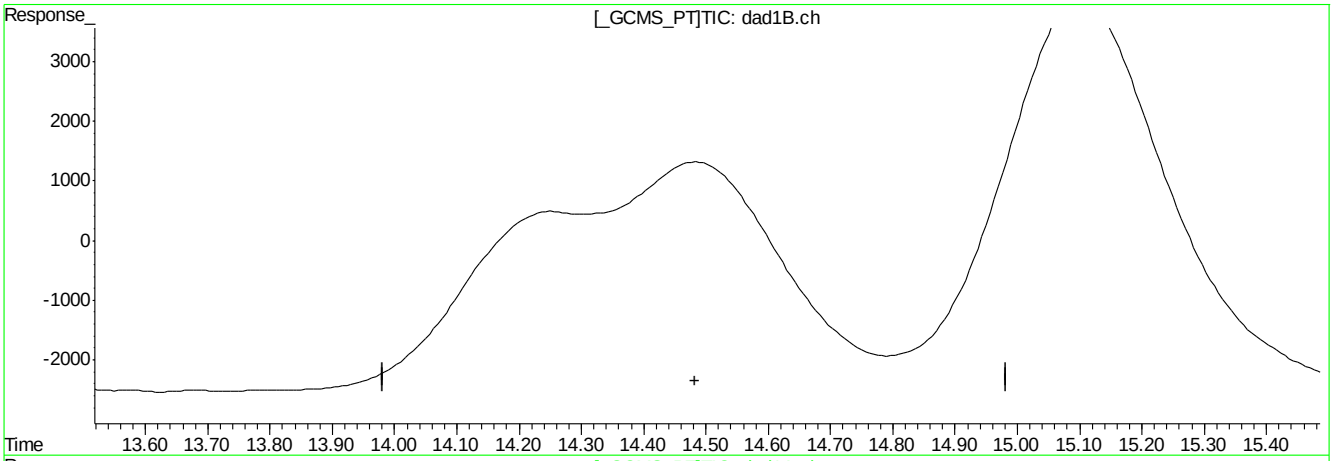
response 888842

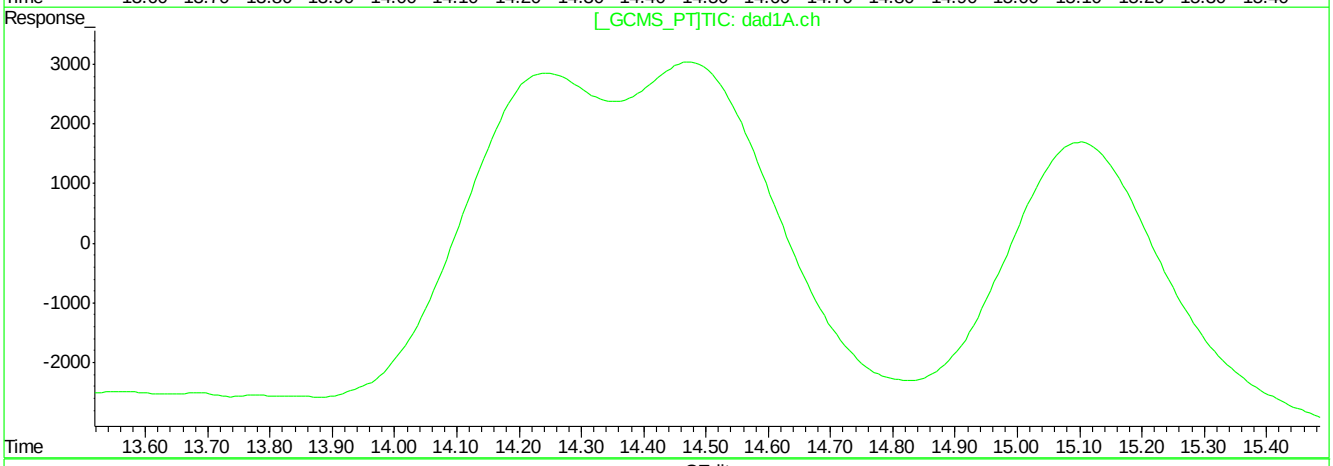
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:15:17 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




QEdit

(13) 2,6-Dinitrotoluene

0.00min 0.000ppb

response 0

(13) 2,6-Dinitrotoluene #2

0.00min 0.000ppb

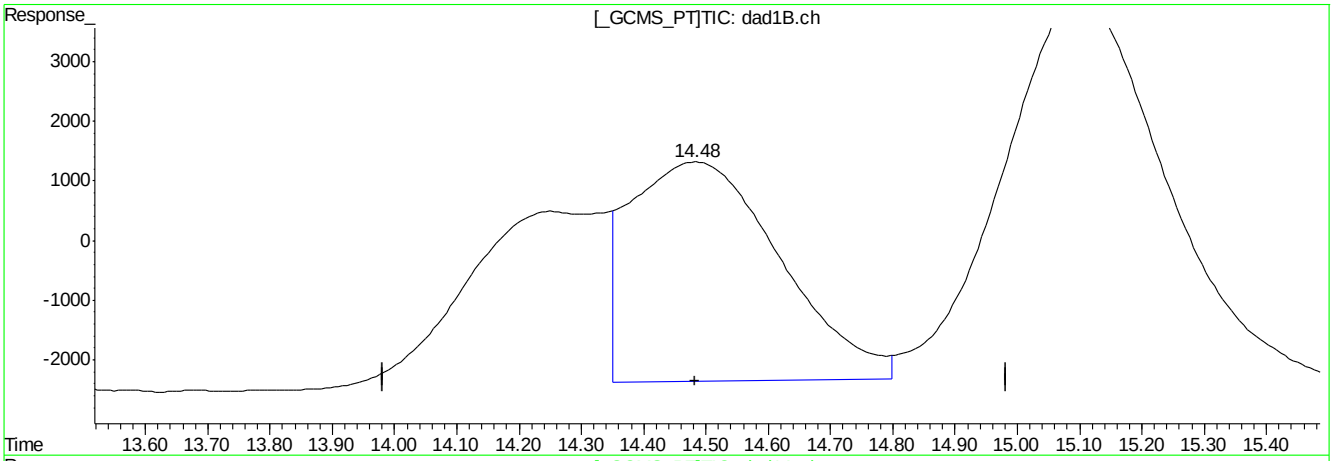
response 0

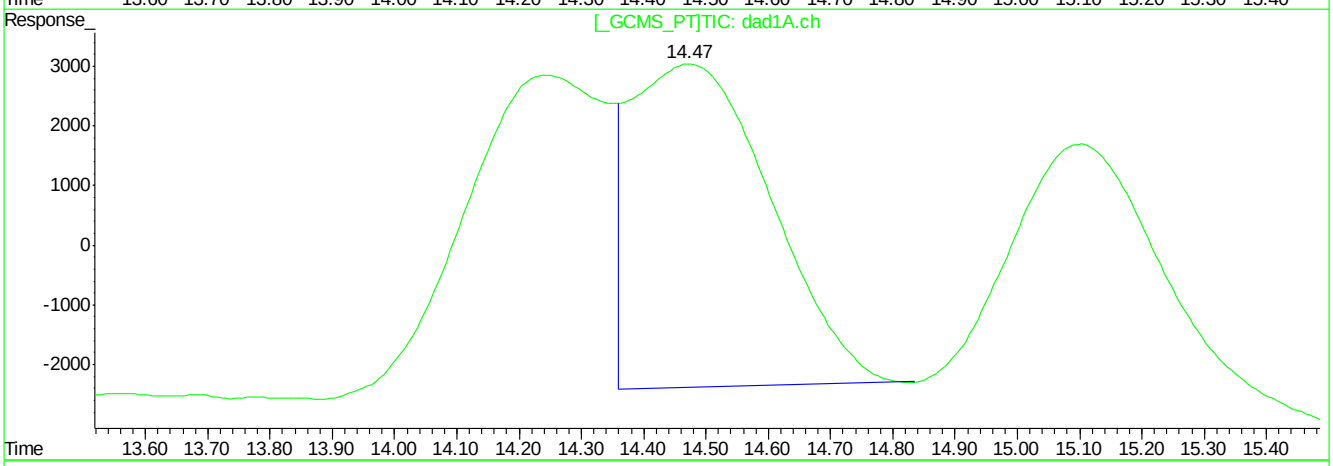
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:15:21 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




QEdit

(13) 2,6-Dinitrotoluene

14.48min 90.593ppb m

response 616294

(13) 2,6-Dinitrotoluene #2

14.47min 0.000ppb m

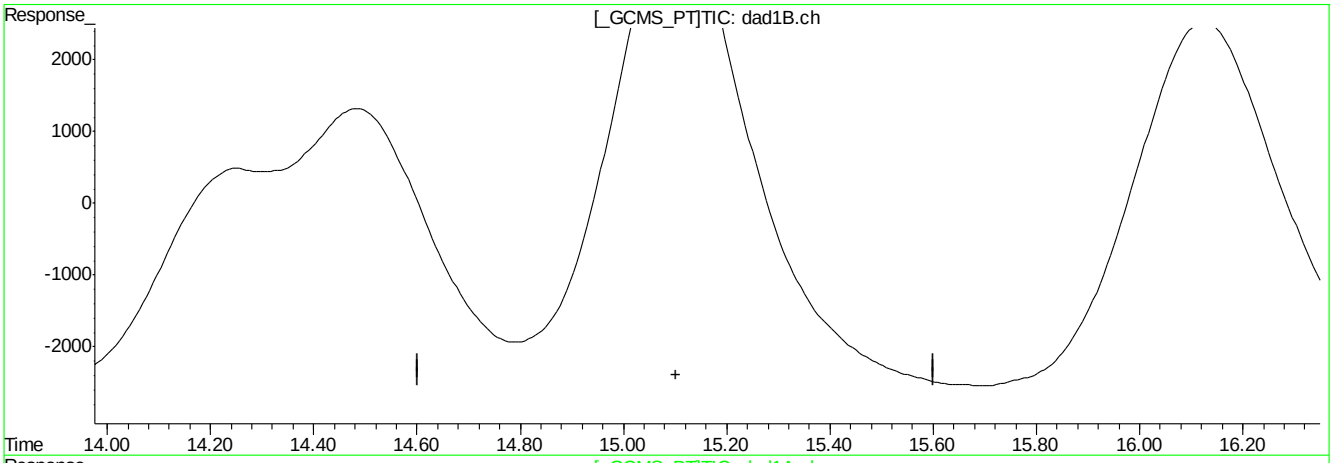
response 841212

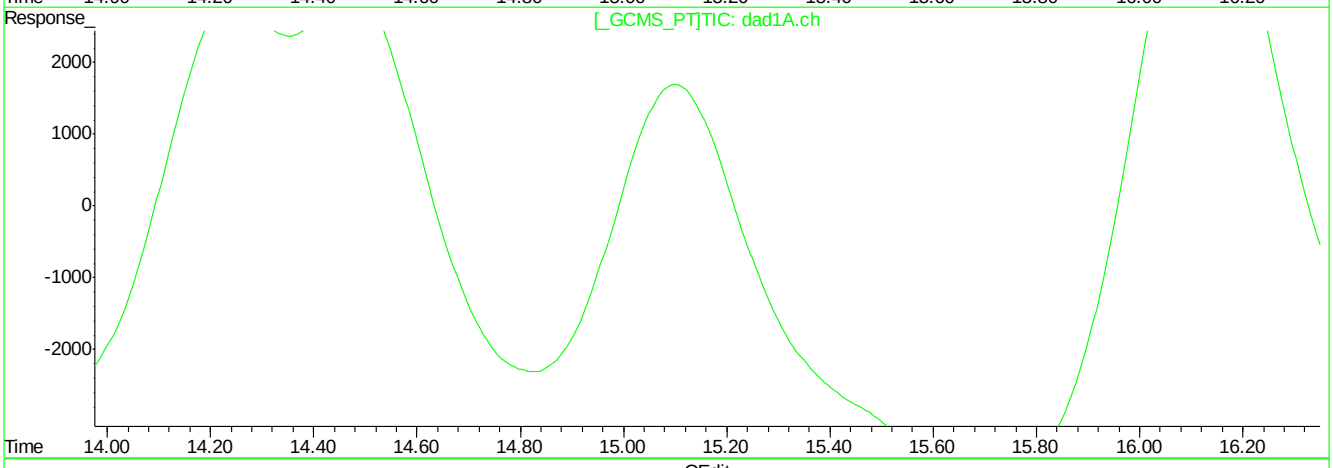
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:15:30 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




QEdit

(14) 2,4-Dinitrotoluene

0.00min 0.000ppb

response 0

(14) 2,4-Dinitrotoluene #2

0.00min 0.000ppb

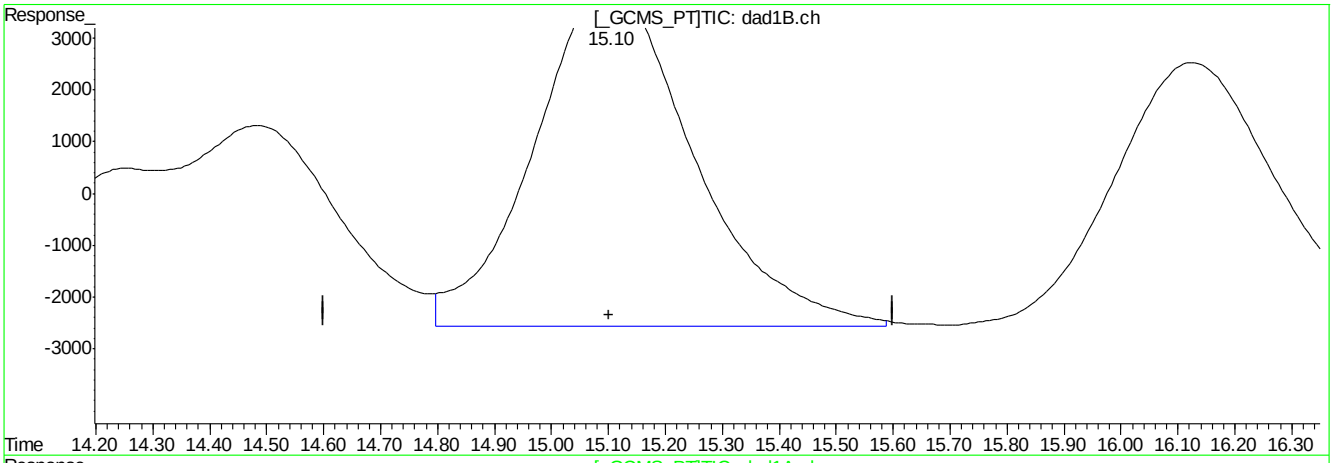
response 0

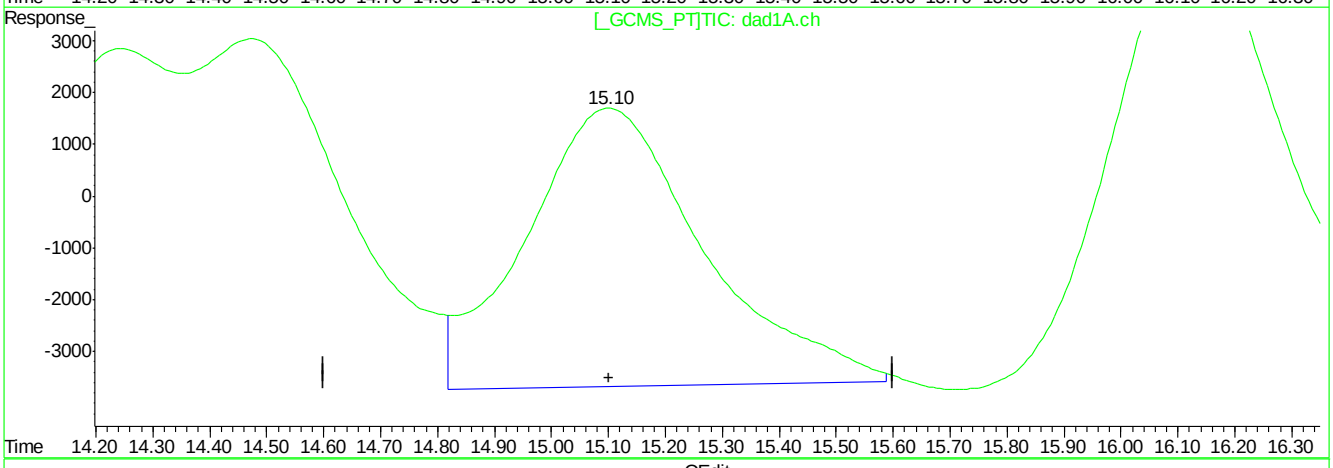
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:15:35 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




QEdit

(14) 2,4-Dinitrotoluene

15.10min 97.727ppb m

response 1262161

(14) 2,4-Dinitrotoluene #2

15.10min 0.000ppb m

response 1163703

(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:15:49 2024

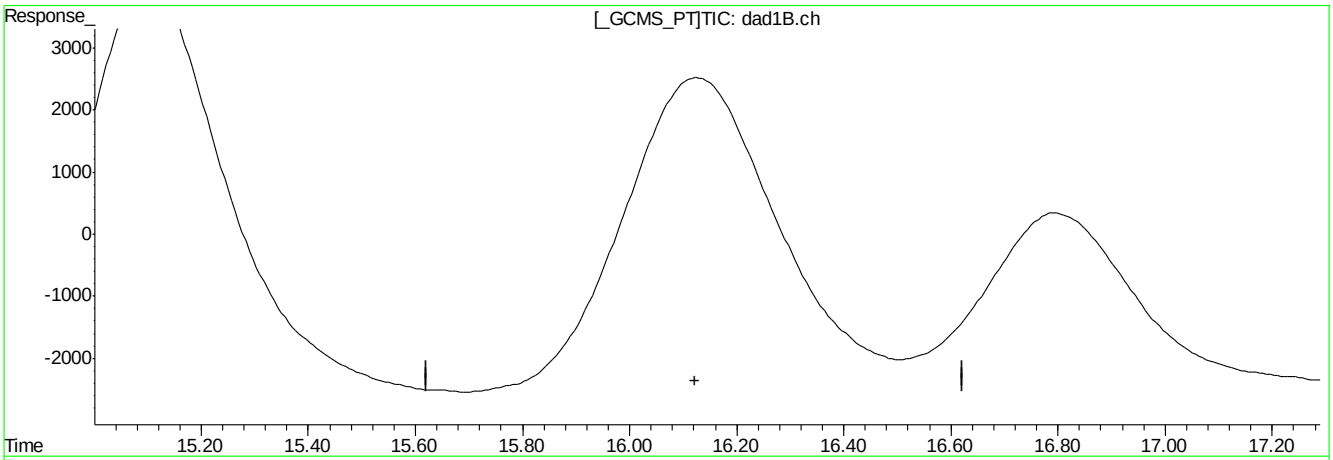


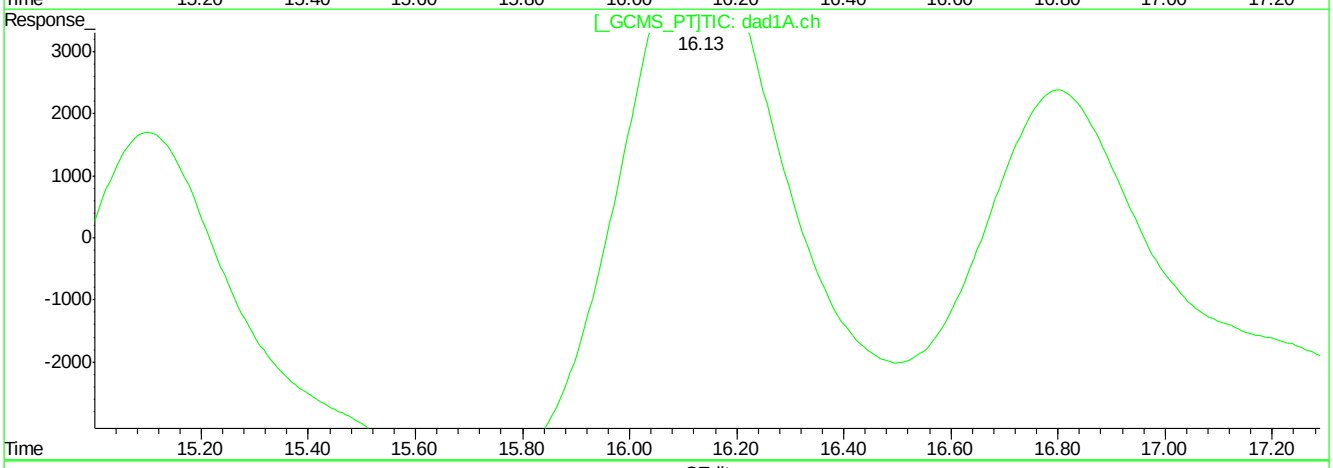
GG630268.D edits: 2,4-Dinitrotoluene

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




QEdit

(15) 3,5-Dinitroaniline

0.00min 0.000ppb

response 0

(15) 3,5-Dinitroaniline #2

16.13min 0.000ppb

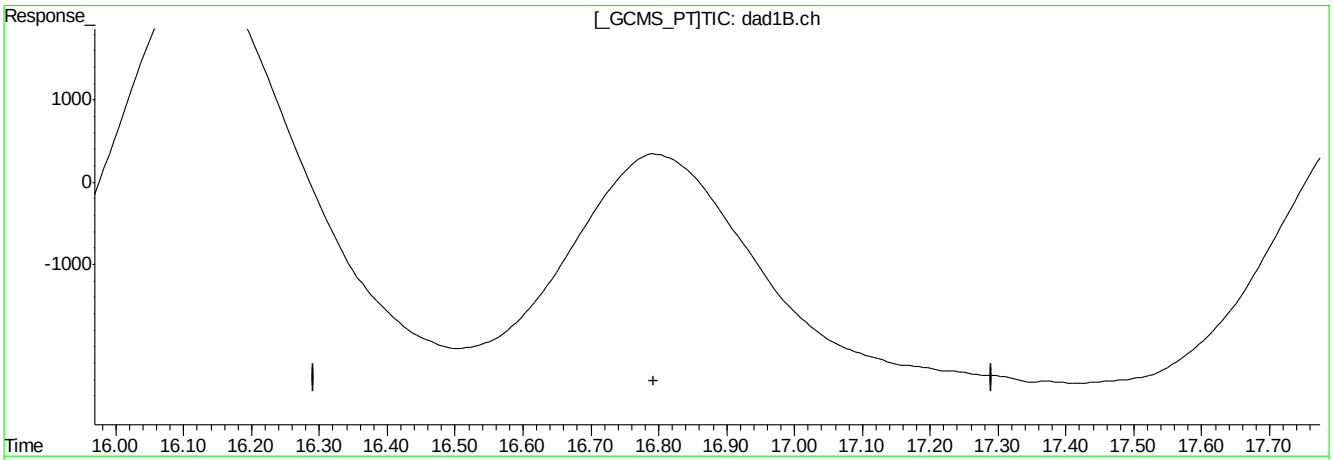
response 1448704

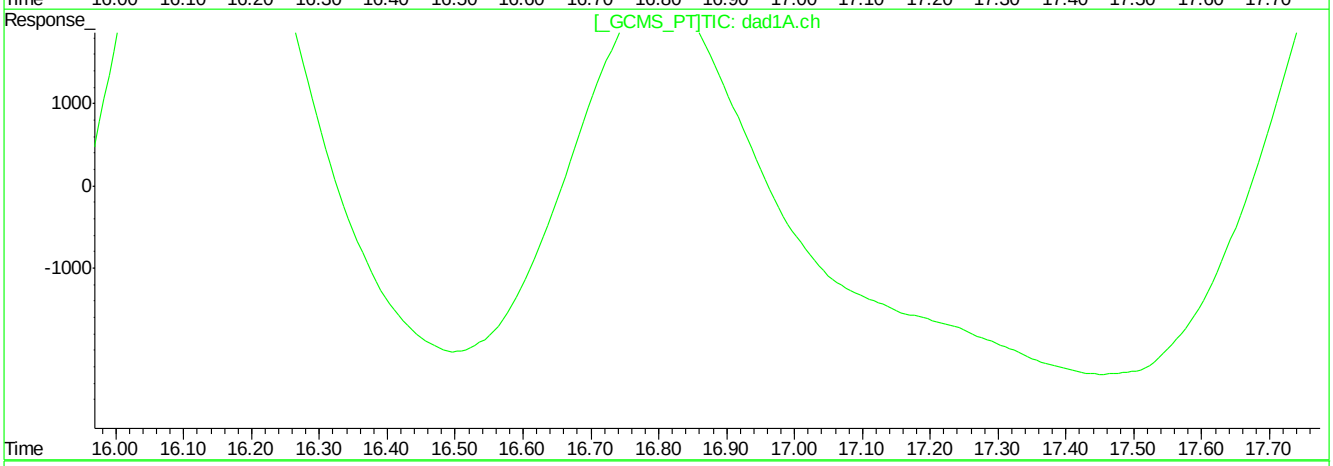
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:15:56 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




QEdit

(16) o-Nitrotoluene

0.00min 0.000ppb

response 0

(16) o-Nitrotoluene #2

0.00min 0.000ppb

response 0

(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:16:07 2024



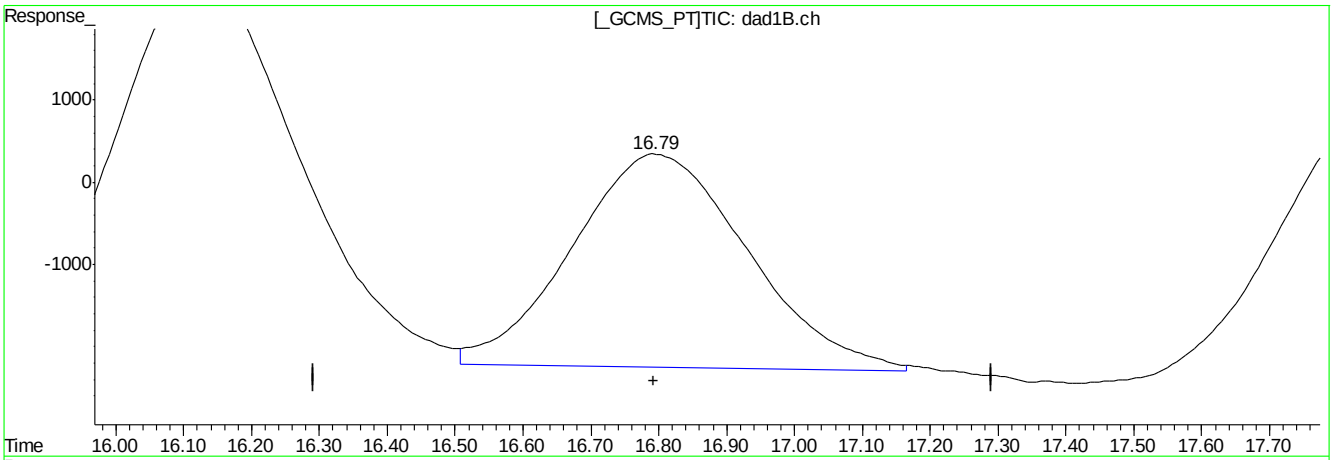
GG630268.D edits: o-Nitrotoluene

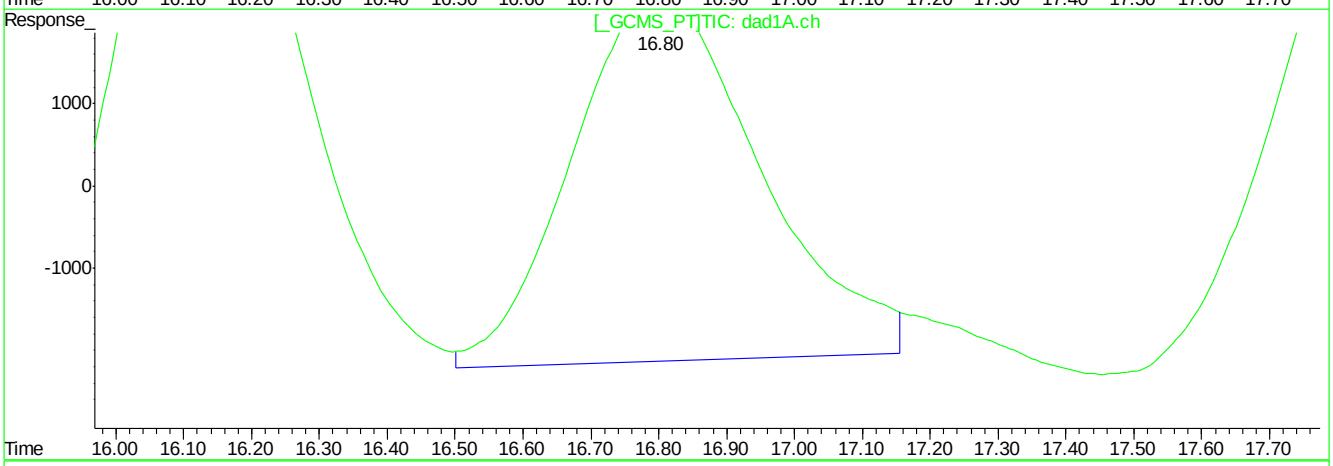
FC21117

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




QEdit

(16) o-Nitrotoluene

16.79min 79.894ppb m

response 467122

(16) o-Nitrotoluene #2

16.80min 0.000ppb m

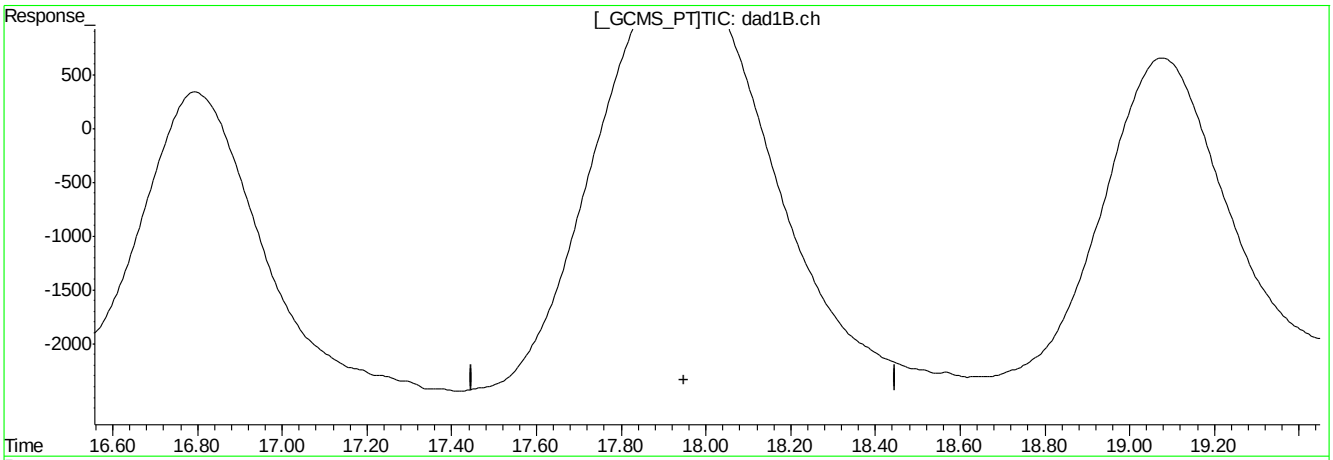
response 851721

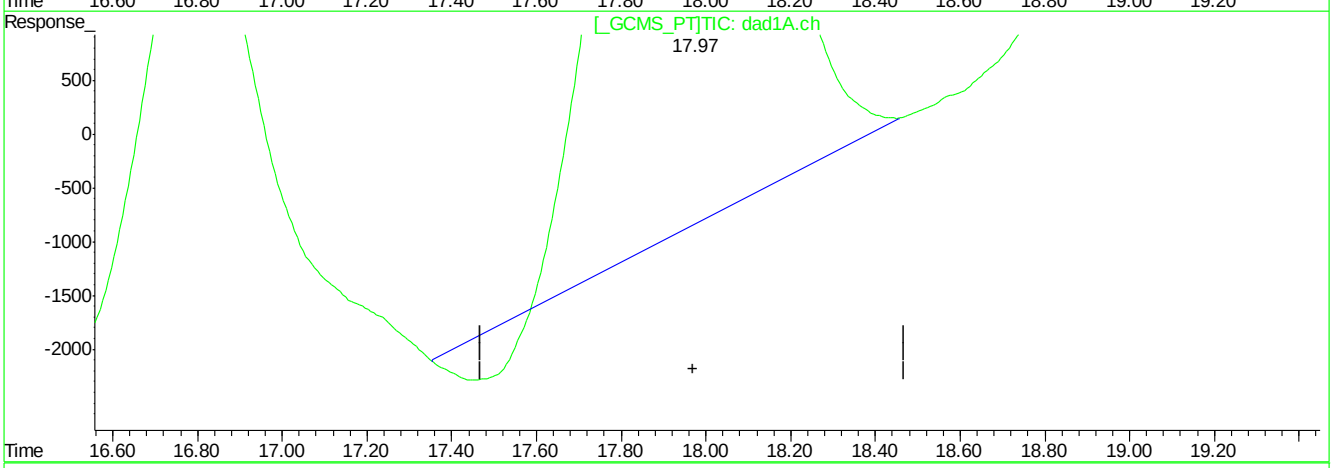
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:16:15 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




QEdit

(17) p-Nitrotoluene

0.00min 0.000ppb

response 0

(17) p-Nitrotoluene #2

17.97min 0.000ppb

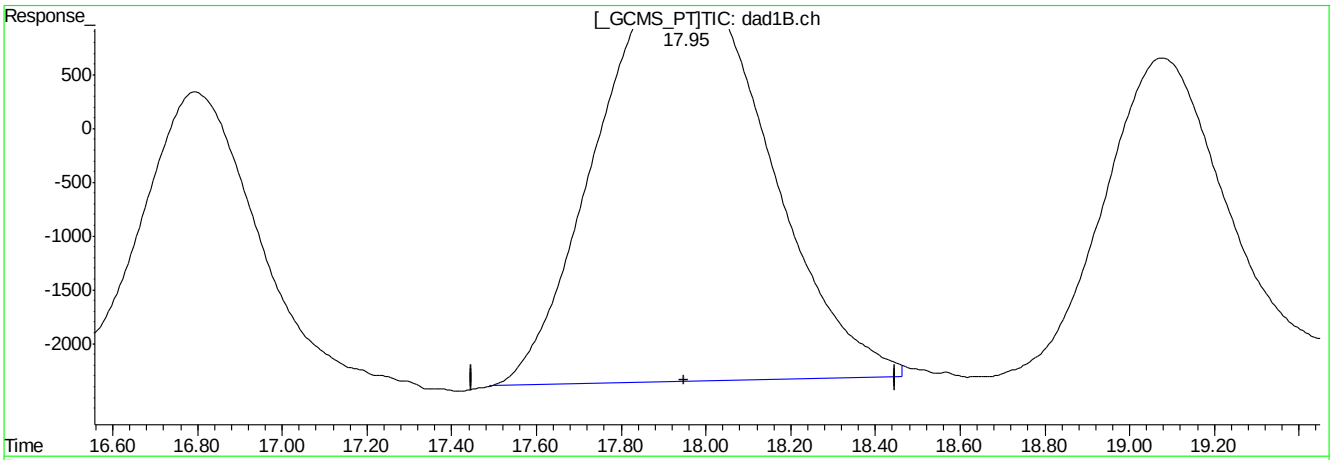
response 1642764

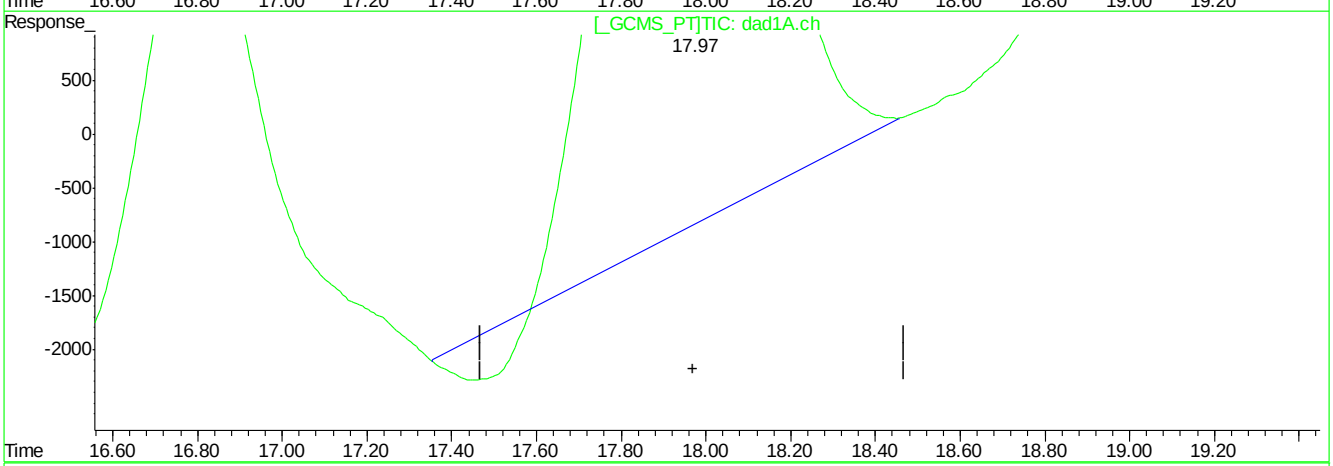
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:16:21 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




QEdit

(17) p-Nitrotoluene

17.95min 180.860ppb m

response 1049328

(17) p-Nitrotoluene #2

17.97min 0.000ppb

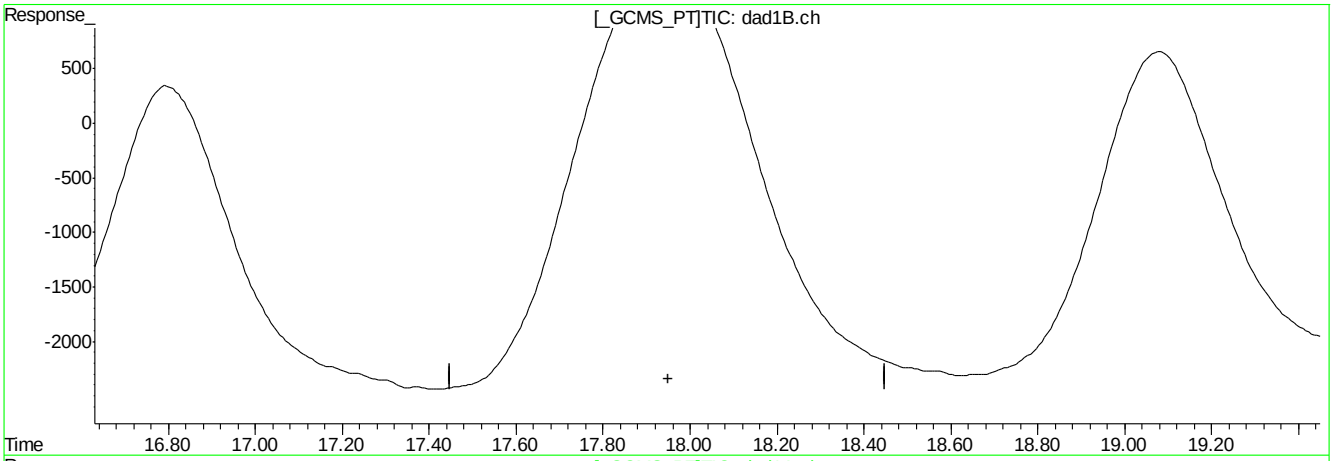
response 1642764

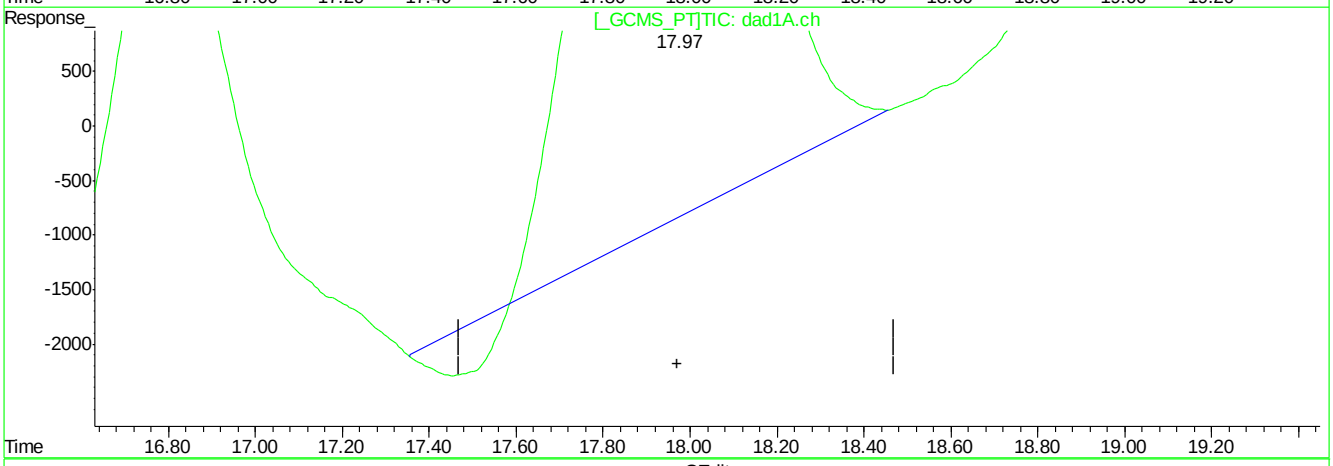
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:16:26 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




QEdit

(18) 4-Amino-2,6-Dinitrotoluene

0.00min 0.000ppb

response 0

(18) 4-Amino-2,6-Dinitrotoluene #2

17.97min 0.000ppb

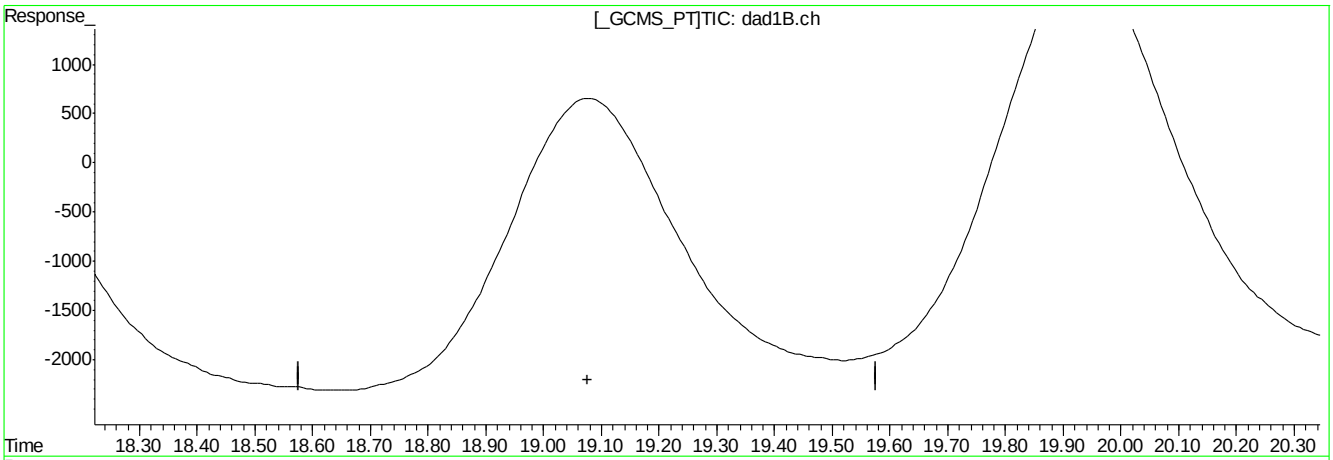
response 1642764

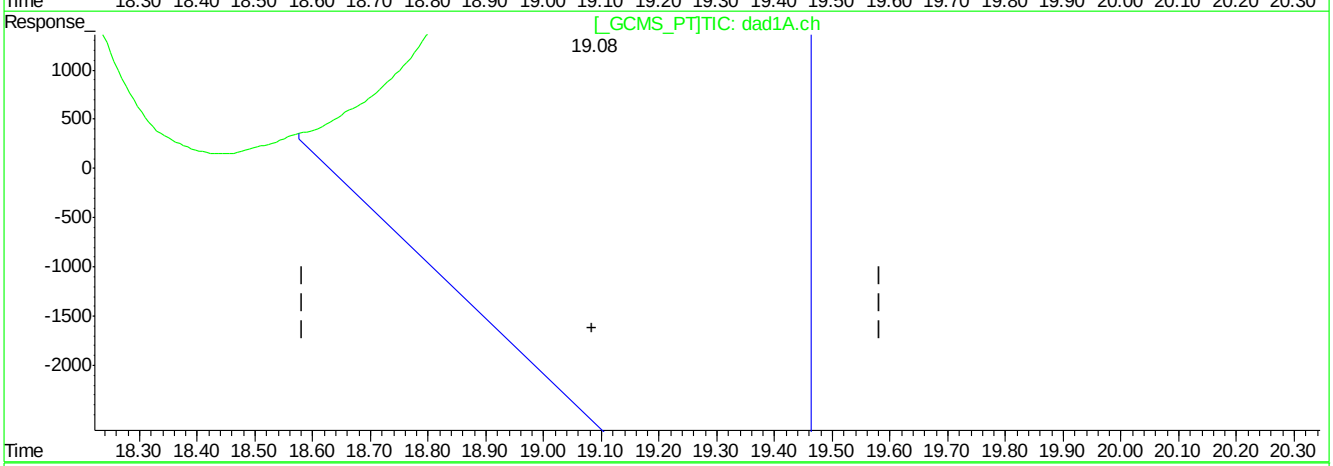
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:16:31 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




QEdit

(19) m-Nitrotoluene

0.00min 0.000ppb

response 0

(19) m-Nitrotoluene #2

19.09min 0.000ppb

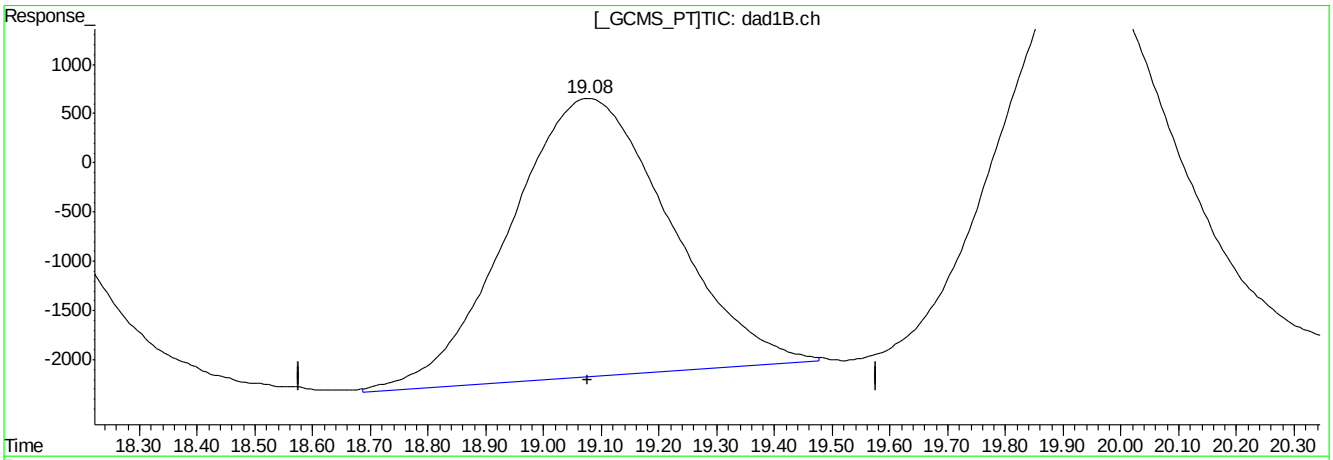
response 891948

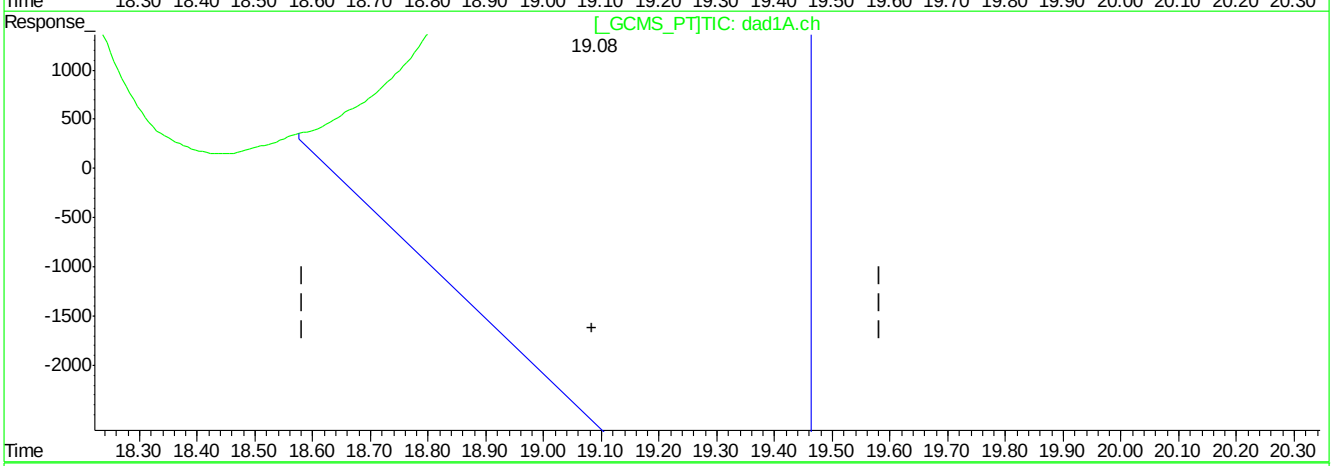
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:16:49 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




QEdit

(19) m-Nitrotoluene

19.08min 88.090ppb m

response 546145

(19) m-Nitrotoluene #2

19.09min 0.000ppb

response 891948

(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:16:53 2024

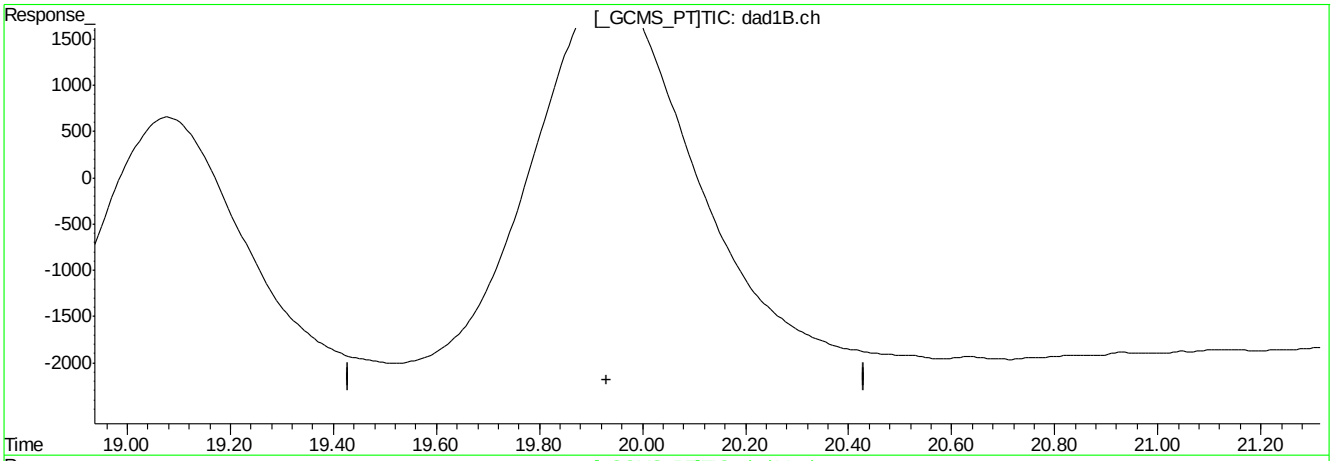


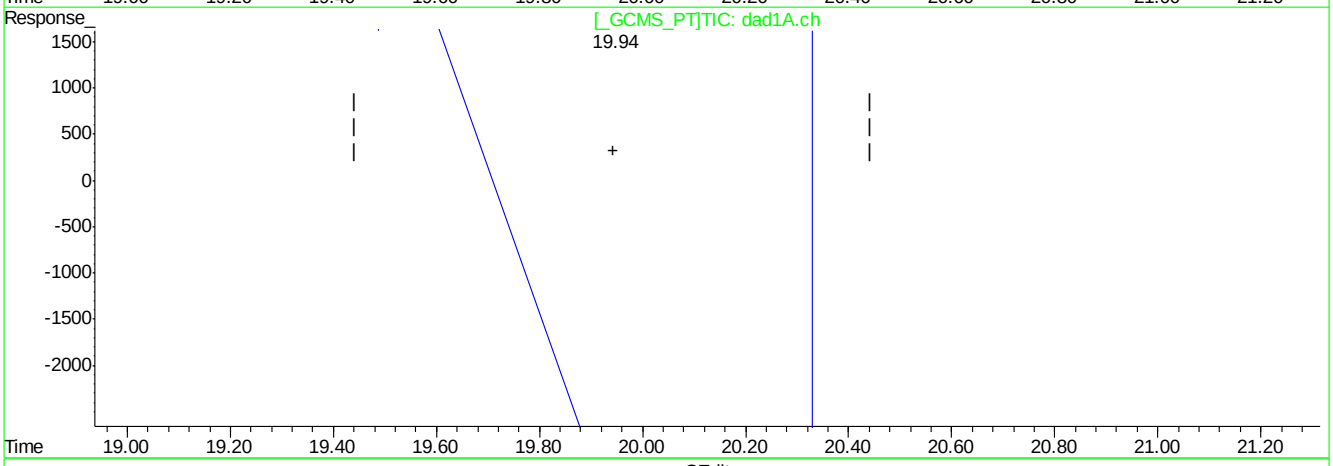
GG630268.D edits: m-Nitrotoluene

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




QEdit

(20) 2-Amino-4,6-Dinitrotoluene

0.00min 0.000ppb

response 0

(20) 2-Amino-4,6-Dinitrotoluene #2

19.95min 0.000ppb

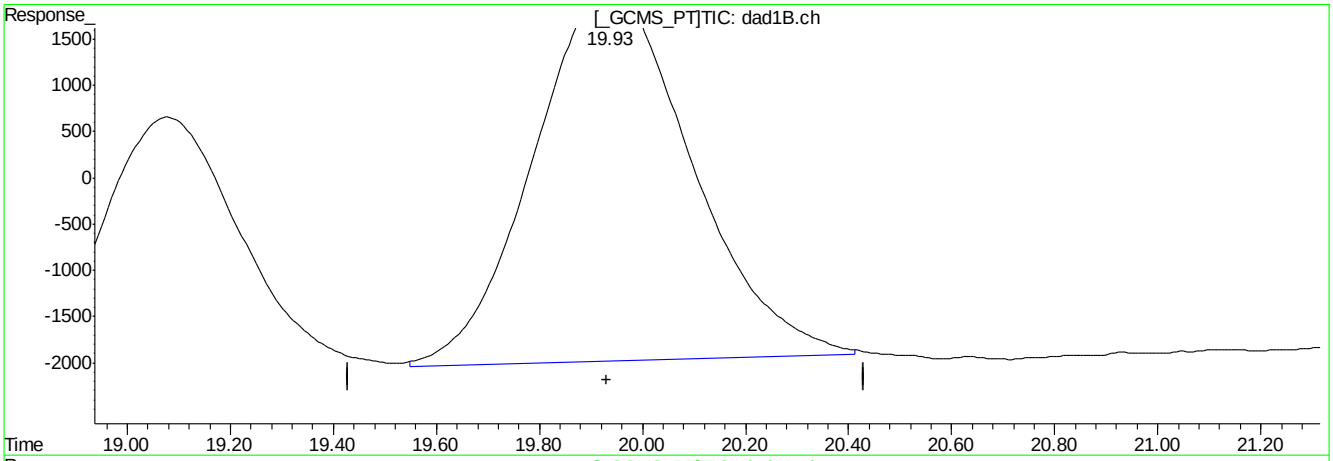
response 1150983

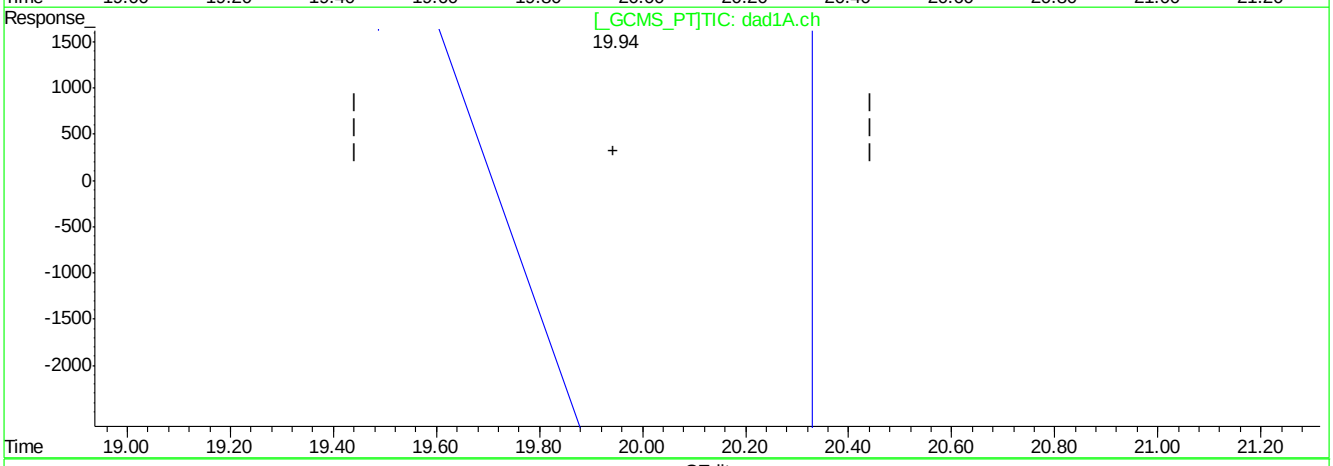
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:16:58 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




QEdit

(20) 2-Amino-4,6-Dinitrotoluene

19.93min 87.288ppb m

response 850748

(20) 2-Amino-4,6-Dinitrotoluene #2

19.95min 0.000ppb

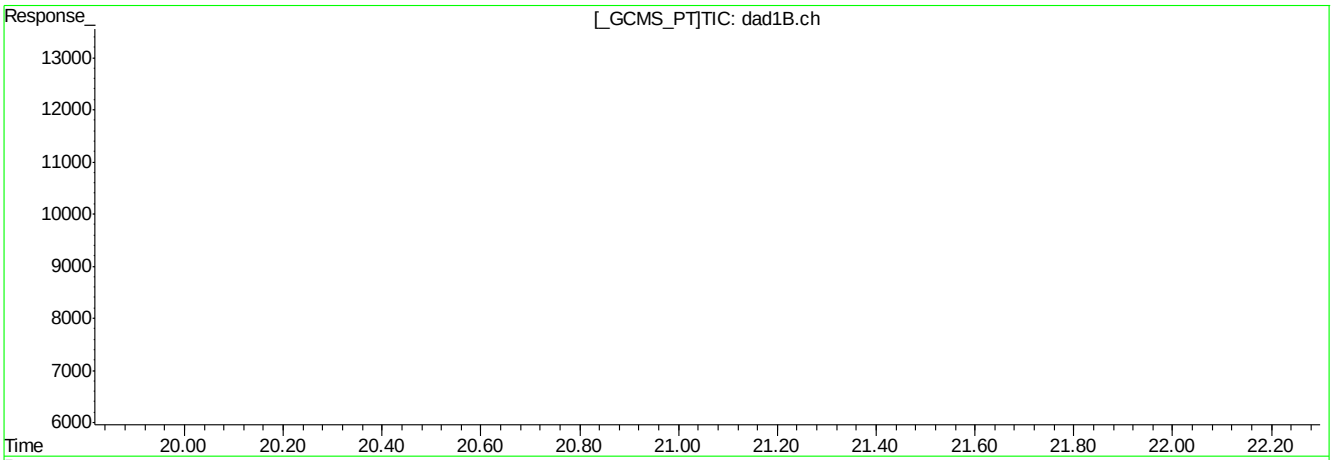
response 1150983

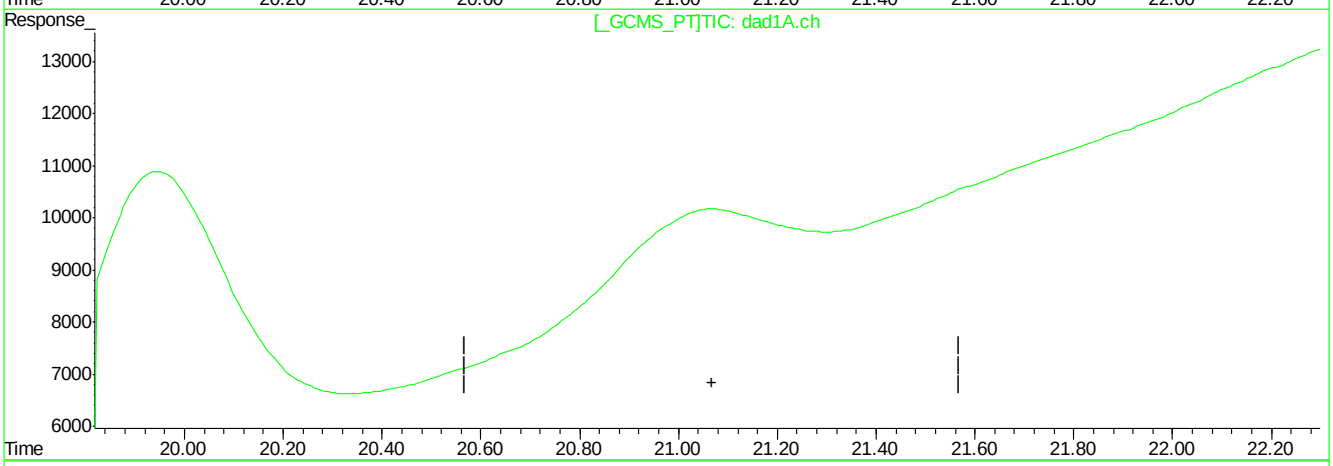
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:17:02 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




QEdit

(21) PETN

0.00min 0.000ppb

response 0

(21) PETN #2

0.00min 0.000ppb

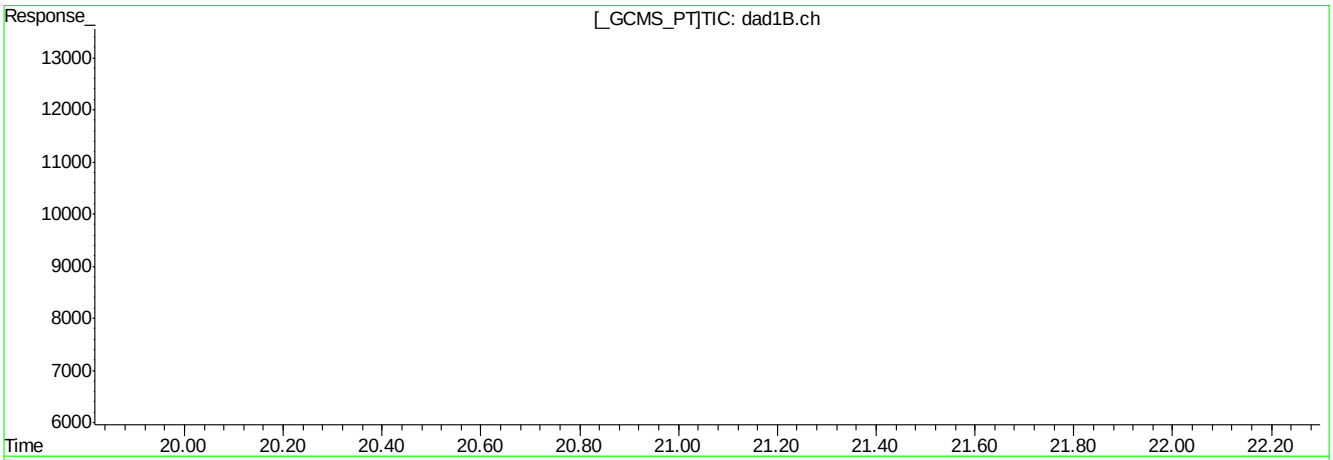
response 0

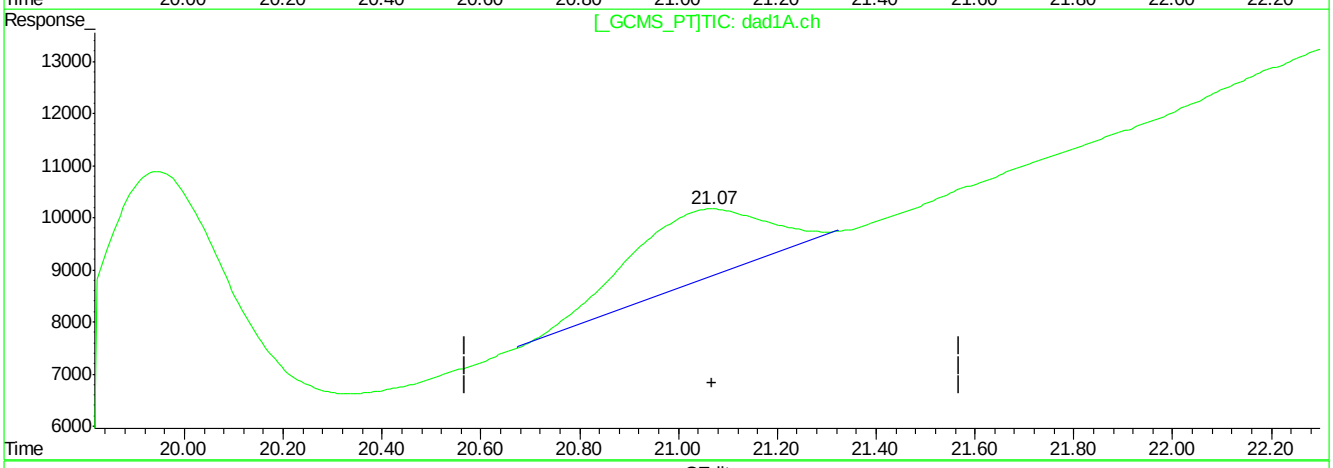
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:17:09 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




QEdit

(21) PETN

0.00min 0.000ppb

response 0

(21) PETN #2

21.07min 0.000ppb m

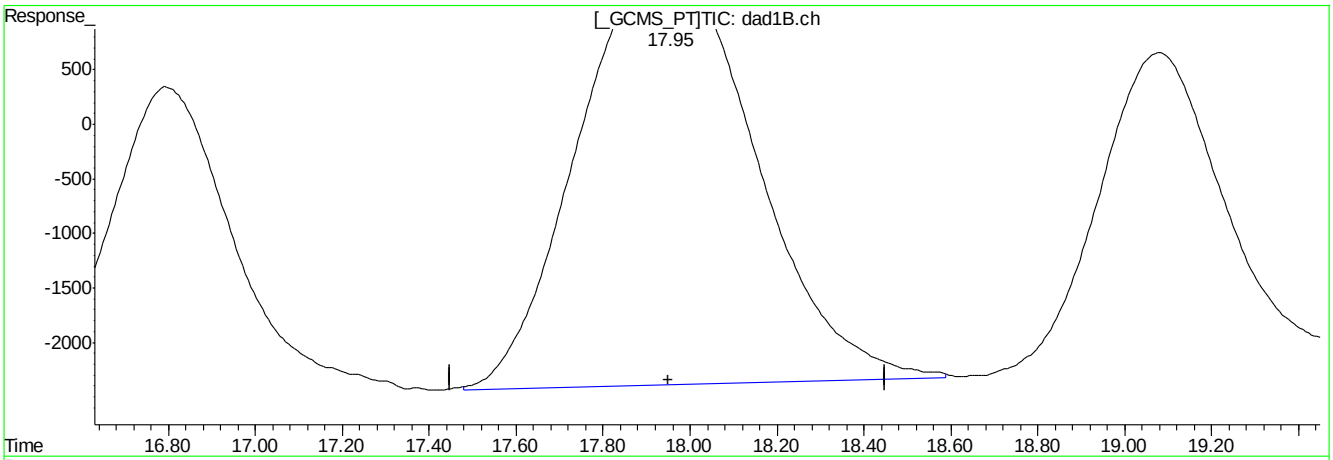
response 257997

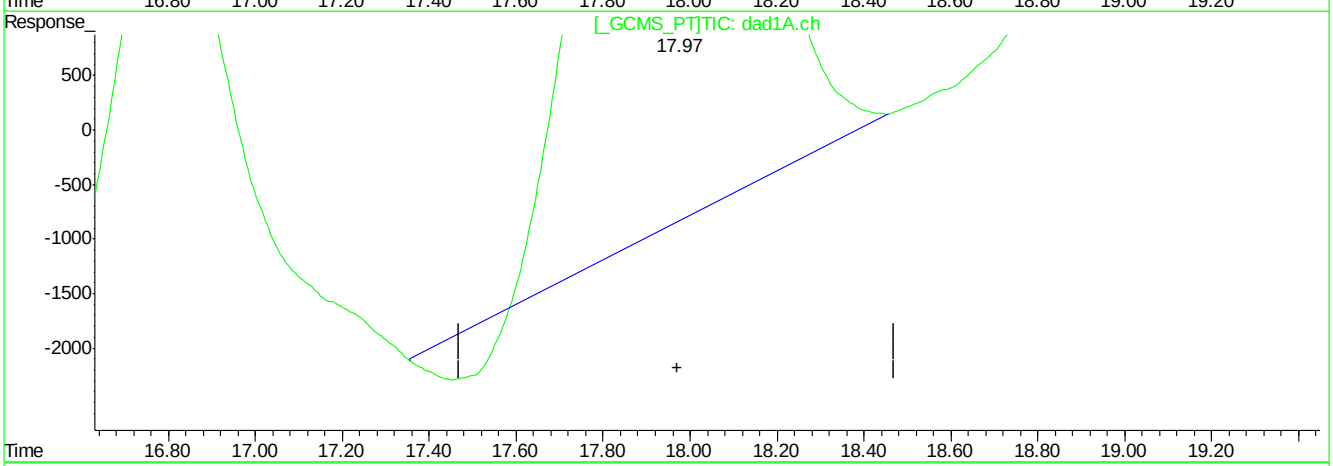
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:17:15 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:13 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:11:35 2024
Response via : Multiple Level Calibration




QEdit

(18) 4-Amino-2,6-Dinitrotoluene

17.95min 185.747ppb m

response 1077655

(18) 4-Amino-2,6-Dinitrotoluene #2

17.97min 0.000ppb

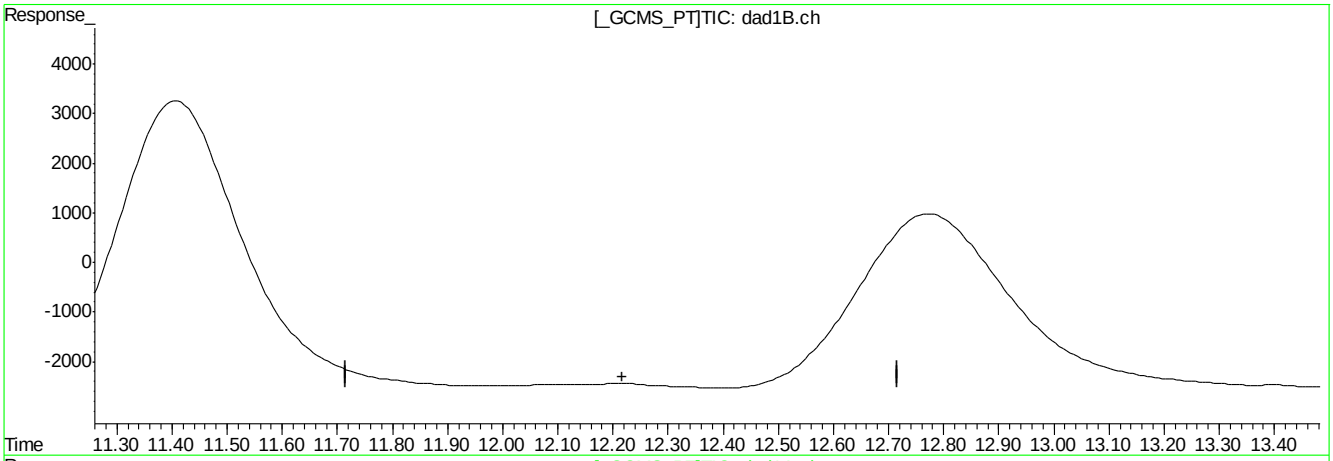
response 1642764

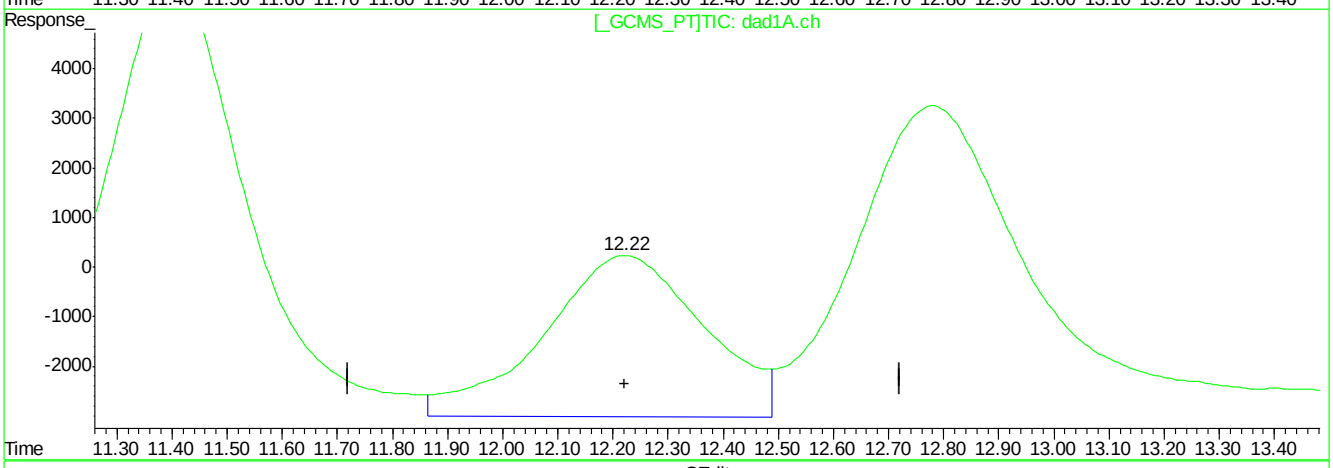
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Thu Oct 03 14:16:36 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 15:17 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Fri Oct 04 15:40:51 2024
Response via : Multiple Level Calibration




QEdit

(10) Nitroglycerin

0.00min 0.000ppb

response 0

(10) Nitroglycerin #2

12.22min 0.000ppb m

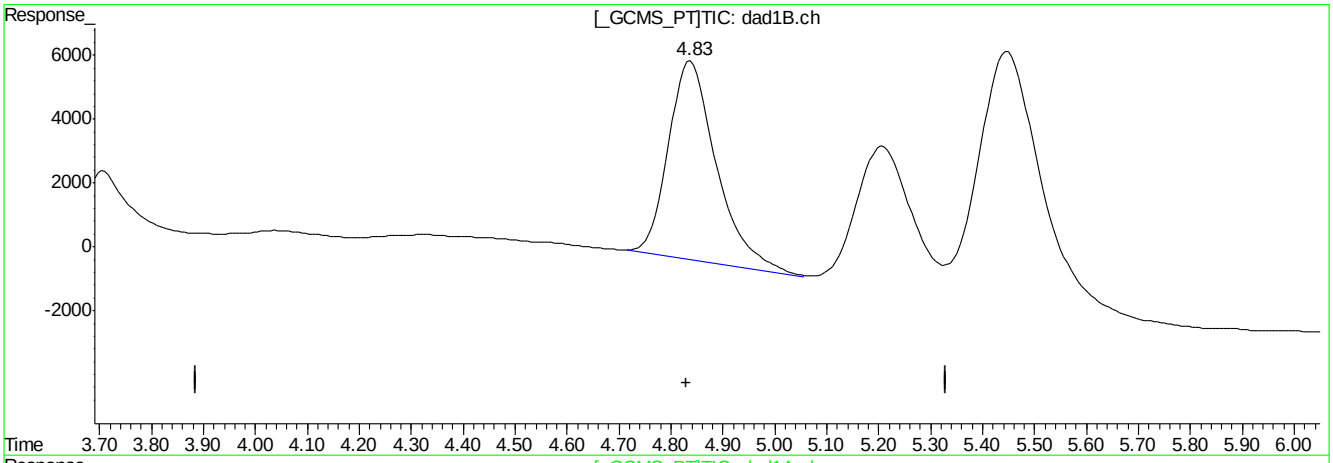
response 651512

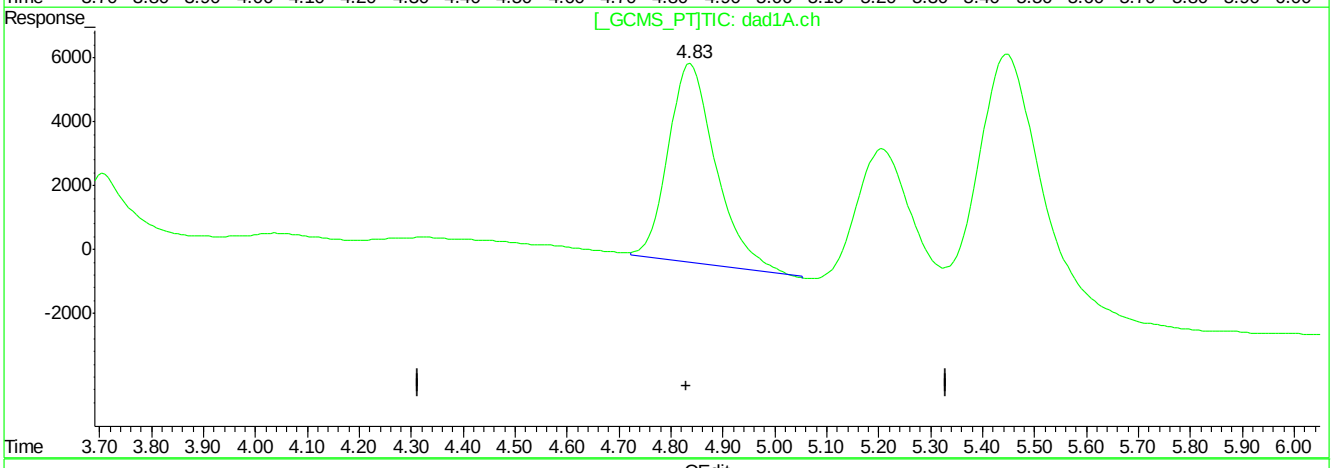
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Mon Oct 07 11:12:10 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 15:17 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Fri Oct 04 15:40:51 2024
Response via : Multiple Level Calibration




QEdit

(1) TNX

4.83min 51.192ppb m

response 402343

(1) TNX #2

4.83min 0.000ppb m

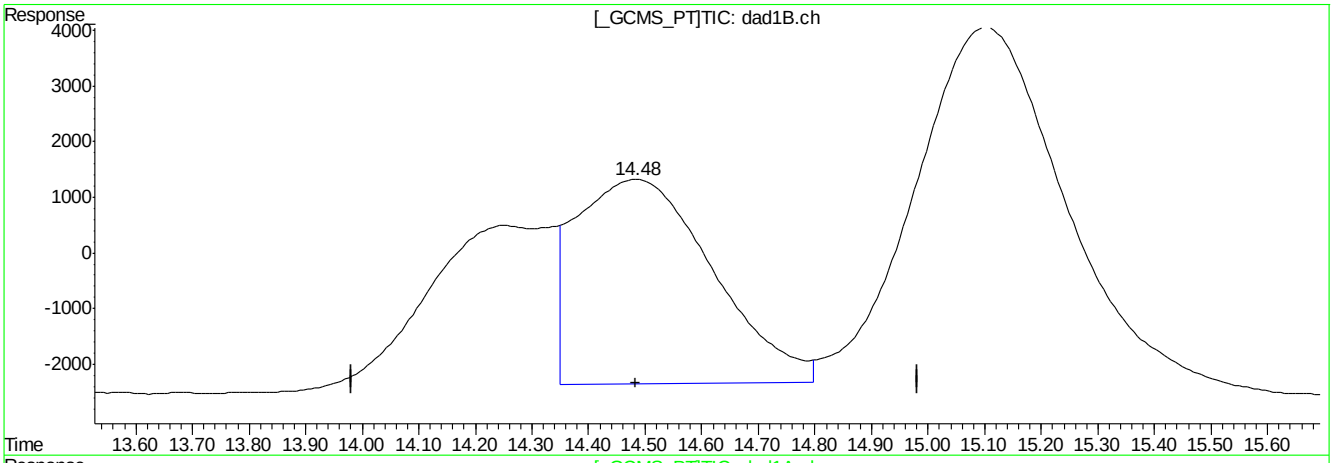
response 399388

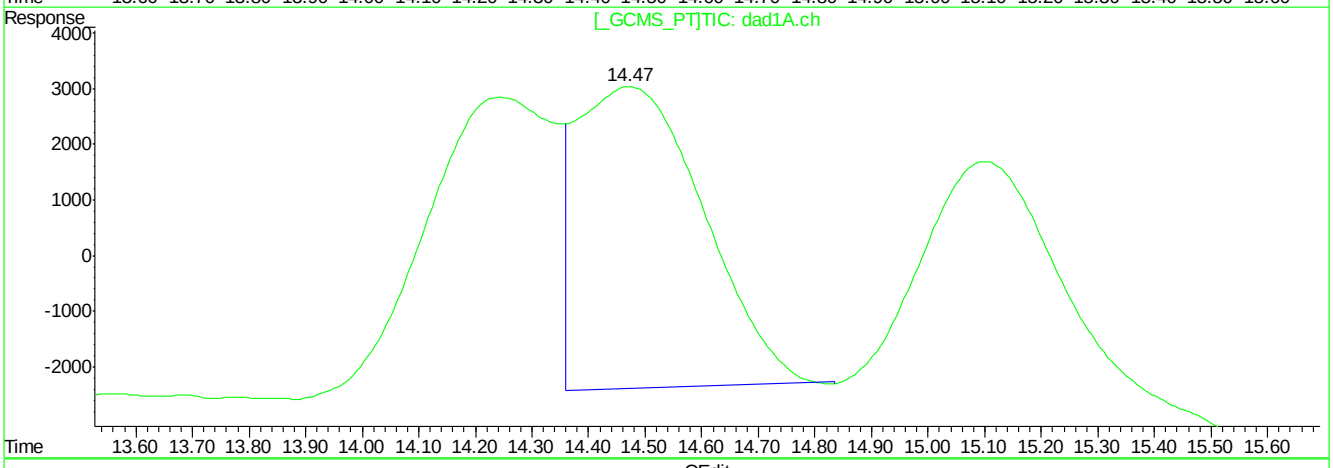
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Mon Oct 07 11:12:17 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 15:17 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Fri Oct 04 15:40:51 2024
Response via : Multiple Level Calibration




QEdit

(13) 2,6-Dinitrotoluene

14.48min 90.593ppb m

response 616294

(13) 2,6-Dinitrotoluene #2

14.47min 0.000ppb m

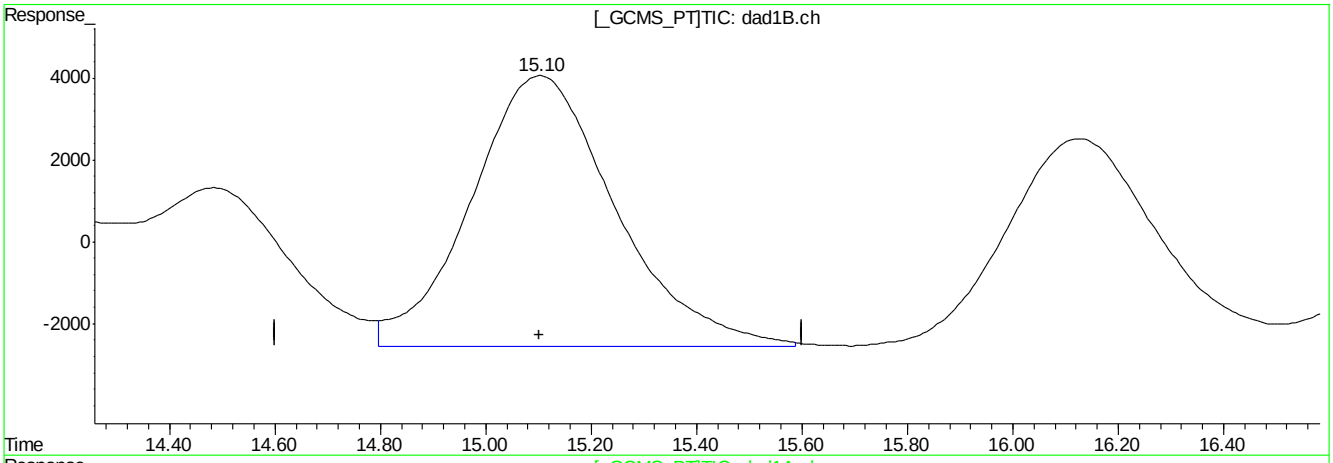
response 841212

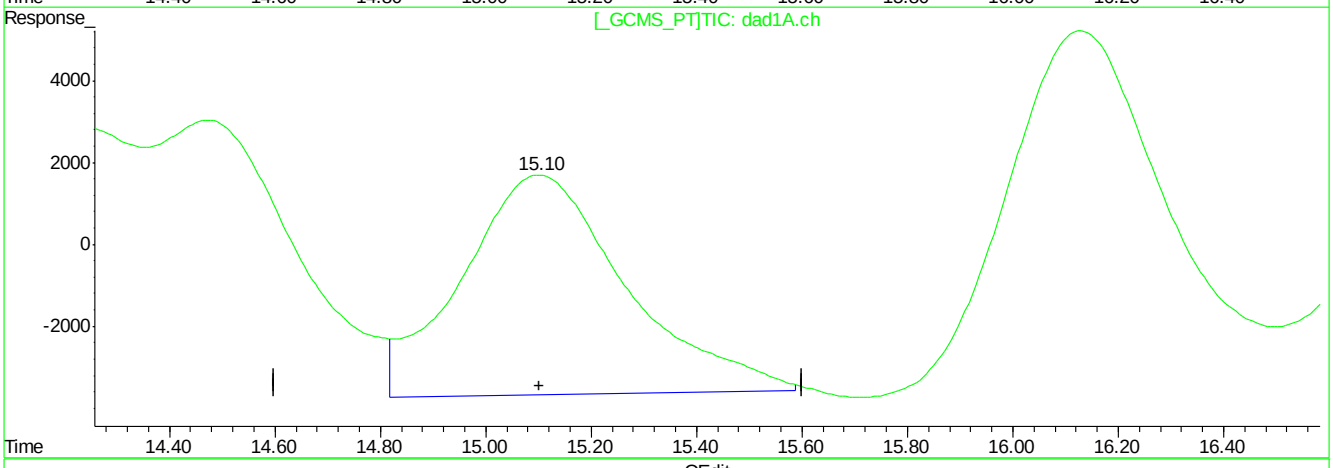
(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Mon Oct 07 11:12:34 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 15:17 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Fri Oct 04 15:40:51 2024
Response via : Multiple Level Calibration




QEdit

(14) 2,4-Dinitrotoluene

15.10min 97.727ppb m

response 1262161

(14) 2,4-Dinitrotoluene #2

15.10min 0.000ppb m

response 1163703

(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Mon Oct 07 11:12:48 2024

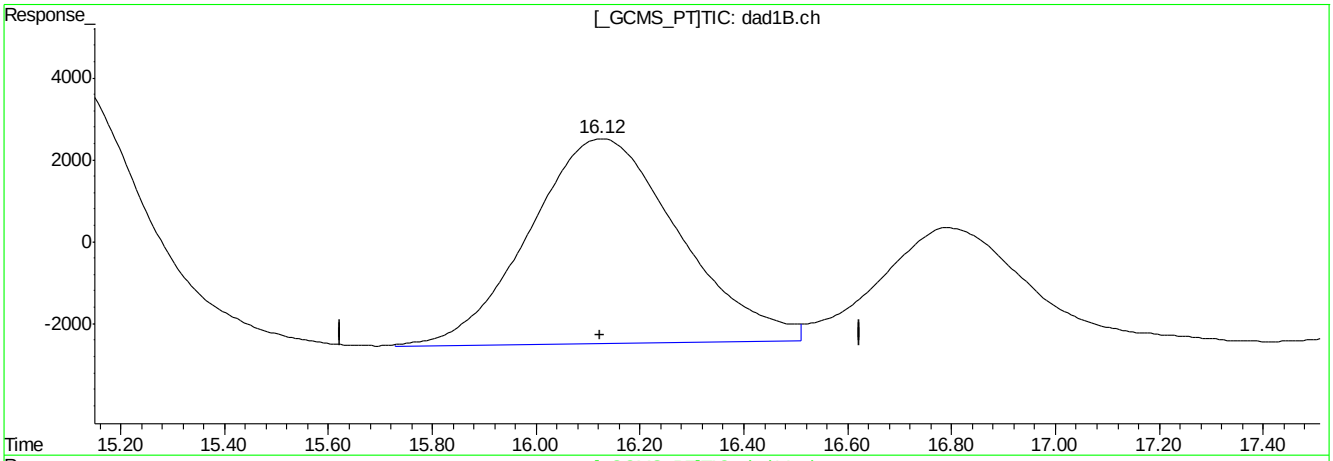


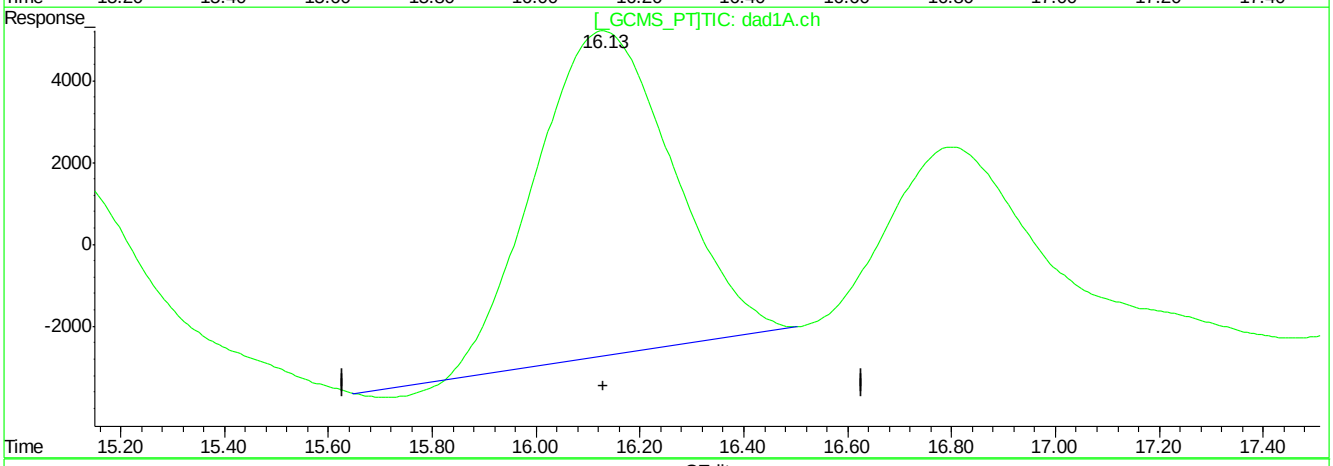
GG630268.D edits: 2,4-Dinitrotoluene

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1B.ch Vial: 4
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630268.D\dad1A.ch
Acq On : 03-Oct-2024, 09:04:47 Operator: fouads
Sample : IC3484-100 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 15:17 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Fri Oct 04 15:40:51 2024
Response via : Multiple Level Calibration




QEdit

(15) 3,5-Dinitroaniline

16.12min 93.620ppb m

response 1001739

(15) 3,5-Dinitroaniline #2

16.13min 0.000ppb

response 1448704

(+) = Expected Retention Time
GG630268.D GGG3484_100324.M Mon Oct 07 11:13:02 2024



GG630268.D edits: 3,5-Dinitroaniline

Manual Integrations APPROVED (compounds with "m" flag)
William Hustedde 10/07/24 15:21

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 03 14:47:24 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Initial Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 12) S | 3,4-Dinitrotolue | 14.43 | 14.37 | 121818 | 231282 | 23.235m | 22.126m |
| | Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 4.65%# | 4.43%# |
| | Target Compounds | | | | | | |
| 1) | TNX | 4.82 | 4.82 | 97569 | 90772 | 12.414m | NoCal m# |
| 2) | HMX | 5.20 | 5.20 | 68864 | 73377 | 18.452m | NoCal m# |
| 3) | DNX | 5.44 | 5.44 | 149451 | 138606 | 22.942m | NoCal m# |
| 4) | MNX | 6.59 | 6.59 | 168423 | 169504 | 28.538m | NoCal m# |
| 5) | 1,3,5-Trinitrobe | 7.36 | 7.36 | 243687 | 245712 | 24.303m | NoCal m# |
| 6) | RDX | 7.90 | 7.90 | 100560 | 97121 | 20.053m | NoCal m# |
| 7) | 1,3-Dinitrobenze | 9.85 | 9.85 | 304058 | 350706 | 22.190m | NoCal m# |
| 8) | Nitrobenzene | 10.90 | 10.89 | 221670 | 243513 | 24.382m | NoCal m# |
| 9) | 2,4,6-Trinitroto | 11.46 | 11.46 | 219736 | 492102 | 22.322m | NoCal m# |
| 10) | Nitroglycerin | 0.00 | 12.20 | 0 | 214064 | N.D. | NoCal m |
| 11) | Tetryl | 12.84 | 12.82 | 151220 | 401264 | 20.266m | NoCal m# |
| 13) | 2,6-Dinitrotolue | 14.56 | 14.51 | 146098 | 248914 | 21.476m | NoCal m# |
| 14) | 2,4-Dinitrotolue | 15.18 | 15.18 | 292477 | 200770 | 22.646m | NoCal m# |
| 15) | 3,5-Dinitroanili | 16.17 | 16.19 | 240696 | 396614 | 22.495m | NoCal m# |
| 16) | o-Nitrotoluene | 16.92 | 16.92 | 94311 | 139639 | 16.130m | NoCal m# |
| 17) | p-Nitrotoluene | 18.08 | 18.23 | 265650 | 270413 | 45.787m | NoCal m# |
| 18) | 4-Amino-2,6-Dini | 18.08 | 18.23 | 262411 | 288470 | 45.230m | NoCal m# |
| 19) | m-Nitrotoluene | 19.19 | 19.23 | 127570 | 163086 | 20.576m | NoCal m# |
| 20) | 2-Amino-4,6-Dini | 20.02 | 19.23 | 205160 | 174614 | 21.050m | NoCal m# |
| 21) | PETN | 0.00 | 21.31 | 0 | 68979 | N.D. | NoCal m |

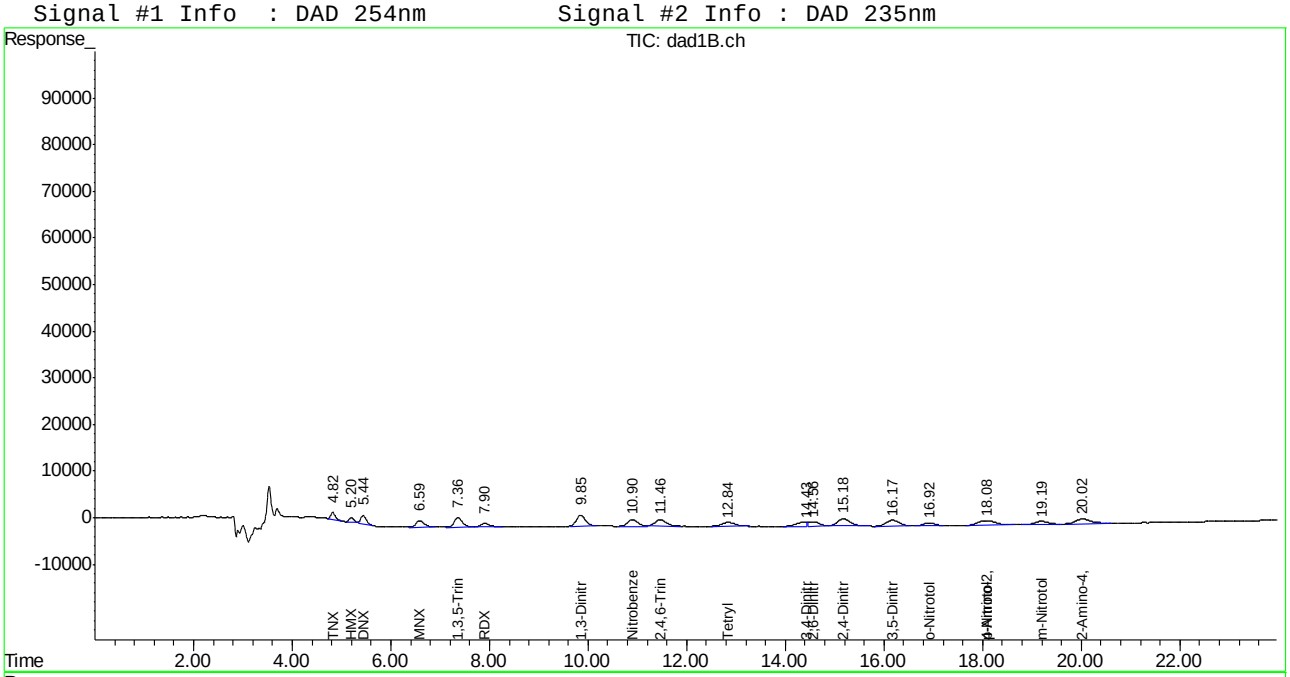
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
GG630269.D GGG3484_100324.M Mon Oct 07 09:23:34 2024 Page 1

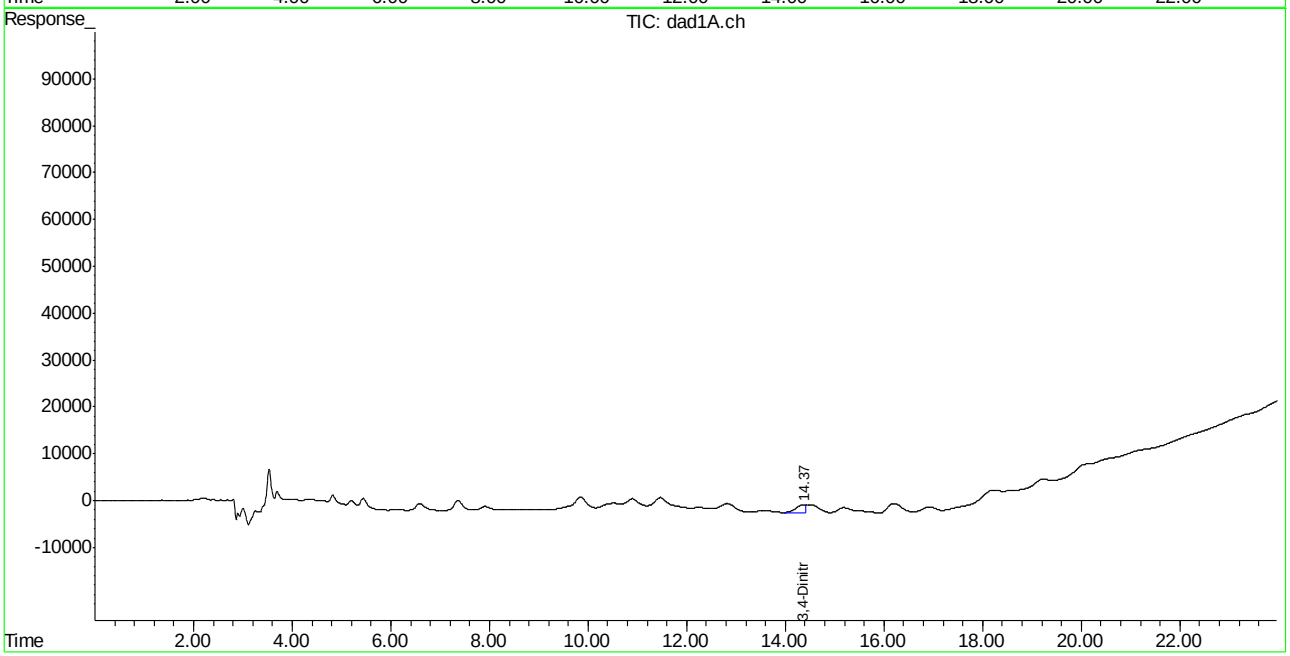
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:51 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm



# Manual Integration Approval Summary



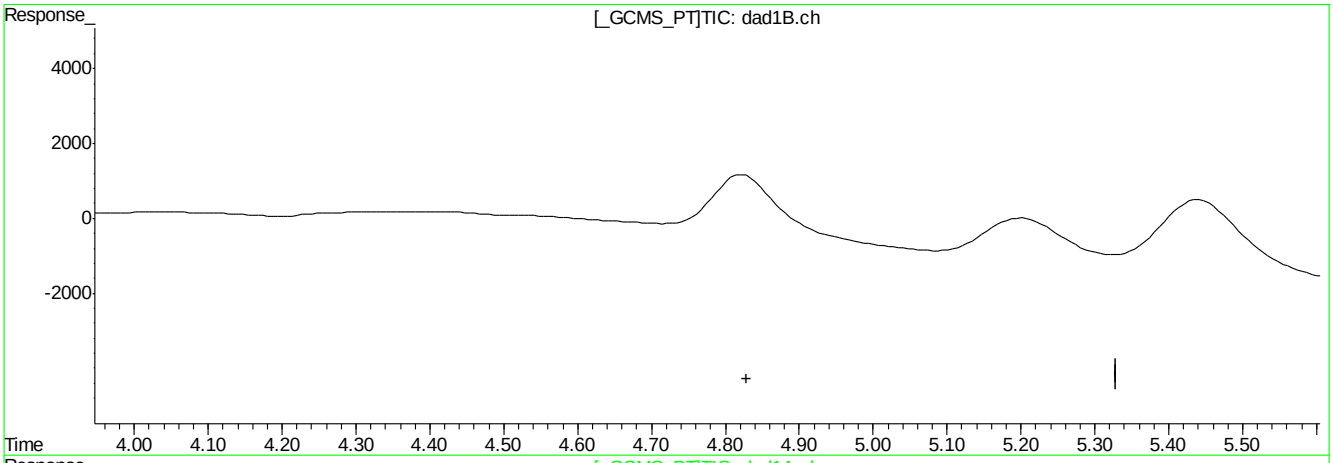
**Sample Number:** GGG3484-IC3484 **Method:** SW846 8330B
**Lab FileID:** GG630269.D **Analyst approved:** 10/07/24 09:34 Fouad Sekkar
**Injection Time:** 10/03/24 09:38 **Supervisor approved:** 10/07/24 15:21 William Hustedde

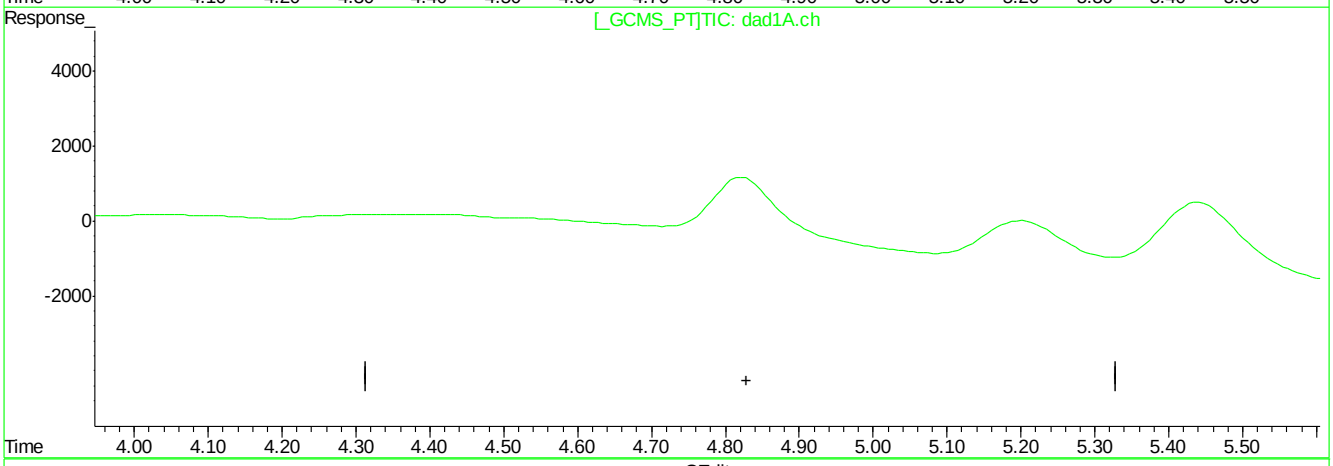
| Parameter | CAS | Sig# | R.T. (min.) | Reason |
|---|---|---|---|---|
| TNX | | 1 | 4.82 | Poor instrument integration |
| HMX | 2691-41-0 | 1 | 5.20 | Poor instrument integration |
| DNX | | 1 | 5.44 | Poor instrument integration |
| MNX | | 1 | 6.59 | Poor instrument integration |
| 1,3,5-Trinitrobenzene | 99-35-4 | 1 | 7.36 | Poor instrument integration |
| RDX | 121-82-4 | 1 | 7.90 | Poor instrument integration |
| 1,3-Dinitrobenzene | 99-65-0 | 1 | 9.85 | Poor instrument integration |
| Nitrobenzene | 98-95-3 | 1 | 10.90 | Poor instrument integration |
| 2,4,6-Trinitrotoluene | 118-96-7 | 1 | 11.46 | Poor instrument integration |
| Tetryl | 479-45-8 | 1 | 12.84 | Poor instrument integration |
| 3,4-Dinitrotoluene | 610-39-9 | 2 | 14.37 | Poor instrument integration |
| 3,4-Dinitrotoluene | 610-39-9 | 1 | 14.43 | Poor instrument integration |
| 2,6-Dinitrotoluene | 606-20-2 | 1 | 14.56 | Poor instrument integration |
| 2,4-Dinitrotoluene | 121-14-2 | 1 | 15.18 | Poor instrument integration |
| 3,5-Dinitroaniline | 618-87-1 | 1 | 16.17 | Poor instrument integration |
| o-Nitrotoluene | 88-72-2 | 1 | 16.92 | Poor instrument integration |
| 4-amino-2,6-Dinitrotoluene | 19406-51-0 | 1 | 18.08 | Poor instrument integration |
| p-Nitrotoluene | 99-99-0 | 1 | 18.08 | Poor instrument integration |
| m-Nitrotoluene | 99-08-1 | 1 | 19.19 | Poor instrument integration |
| 2-amino-4,6-Dinitrotoluene | 35572-78-2 | 1 | 20.02 | Poor instrument integration |

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(1) TNX

0.00min 0.000ppb

response 0

(1) TNX #2

0.00min 0.000ppb

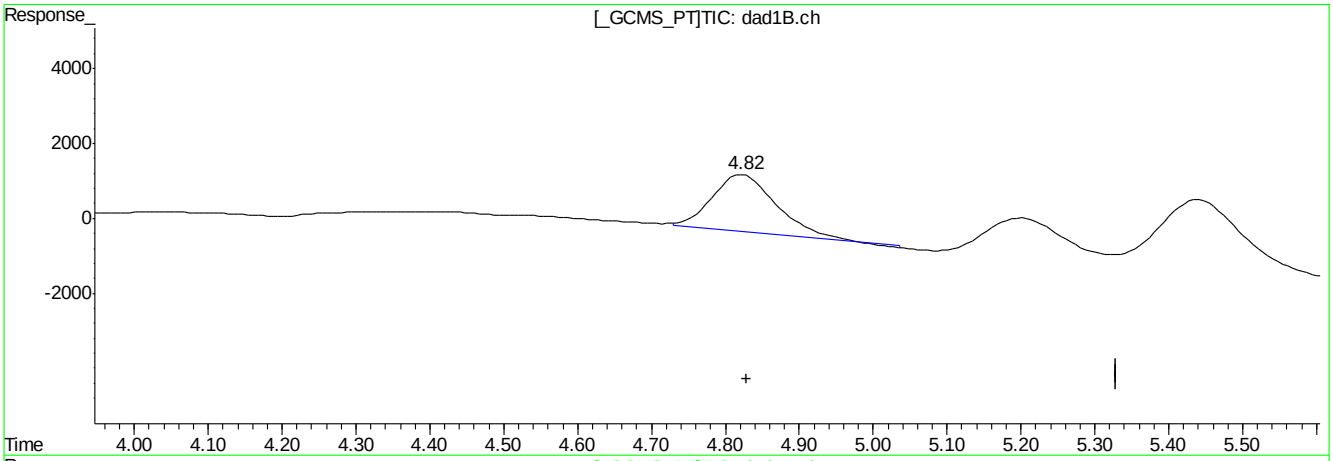
response 0

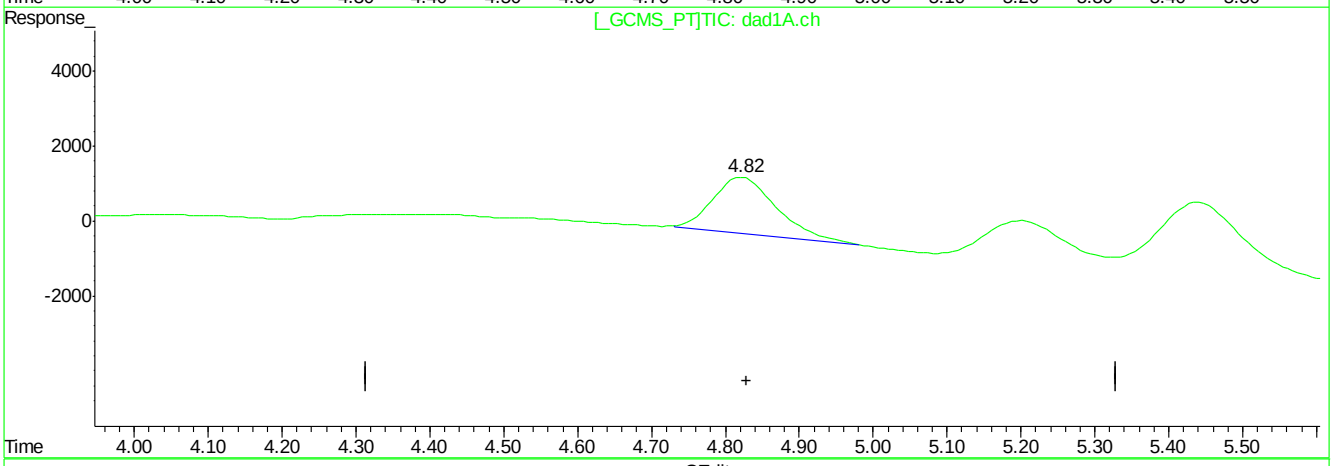
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:43:11 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(1) TNX

4.82min 11.718ppb m

response 92099

(1) TNX #2

4.82min 0.000ppb m

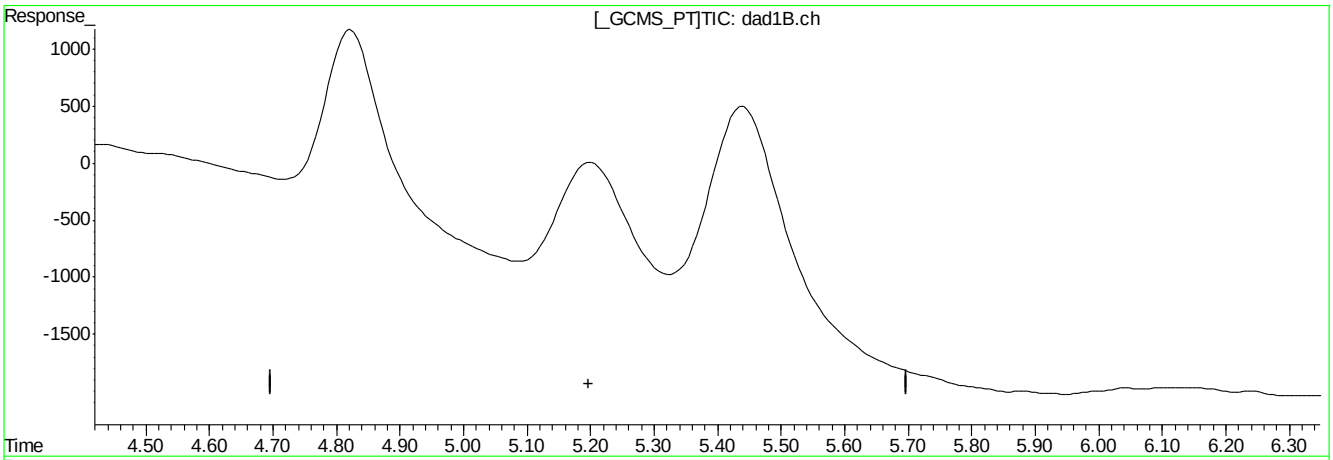
response 91564

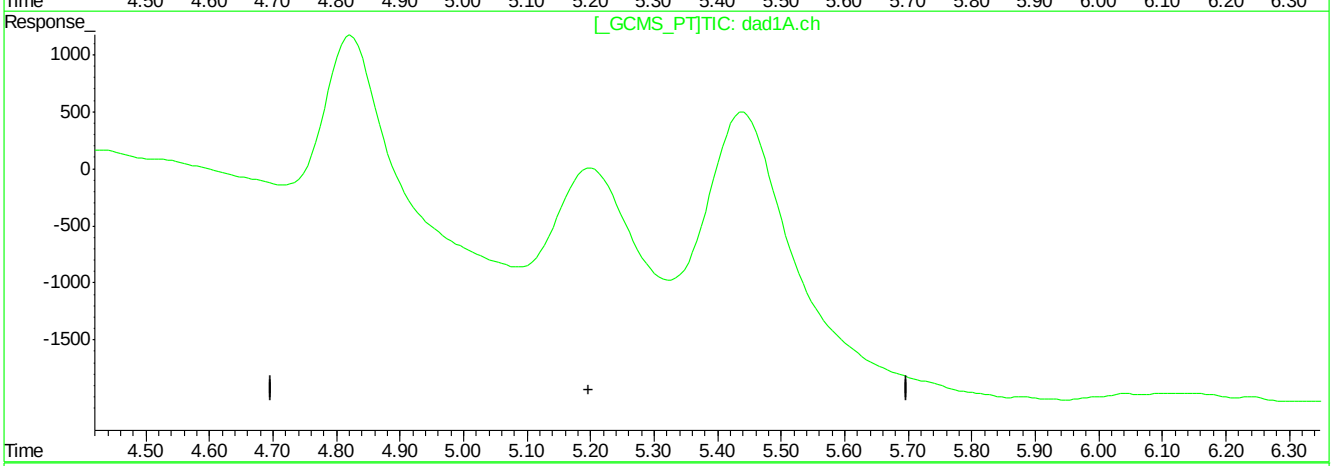
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:43:17 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(2) HMX

0.00min 0.000ppb

response 0

(2) HMX #2

0.00min 0.000ppb

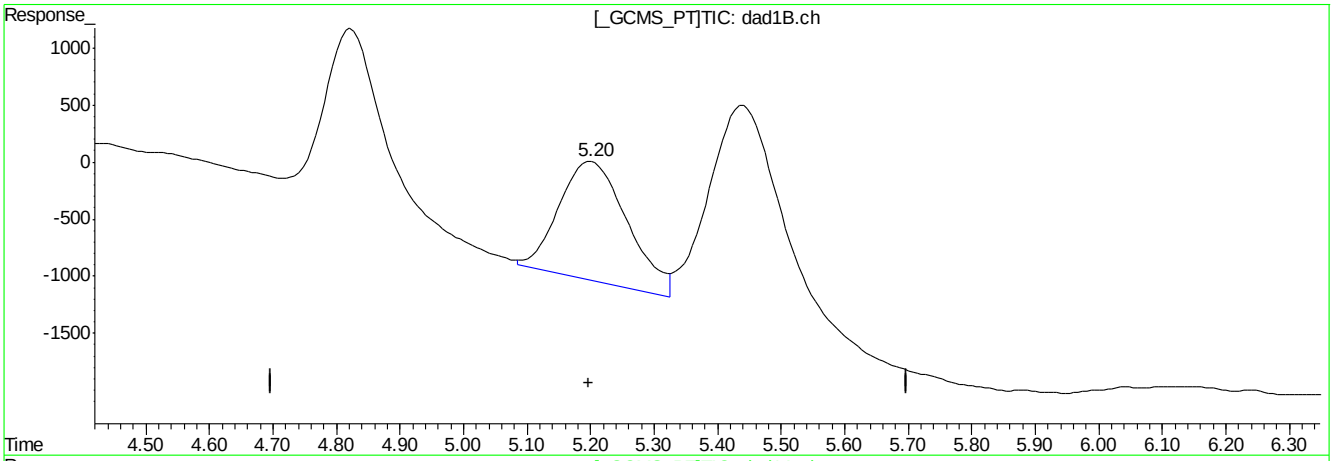
response 0

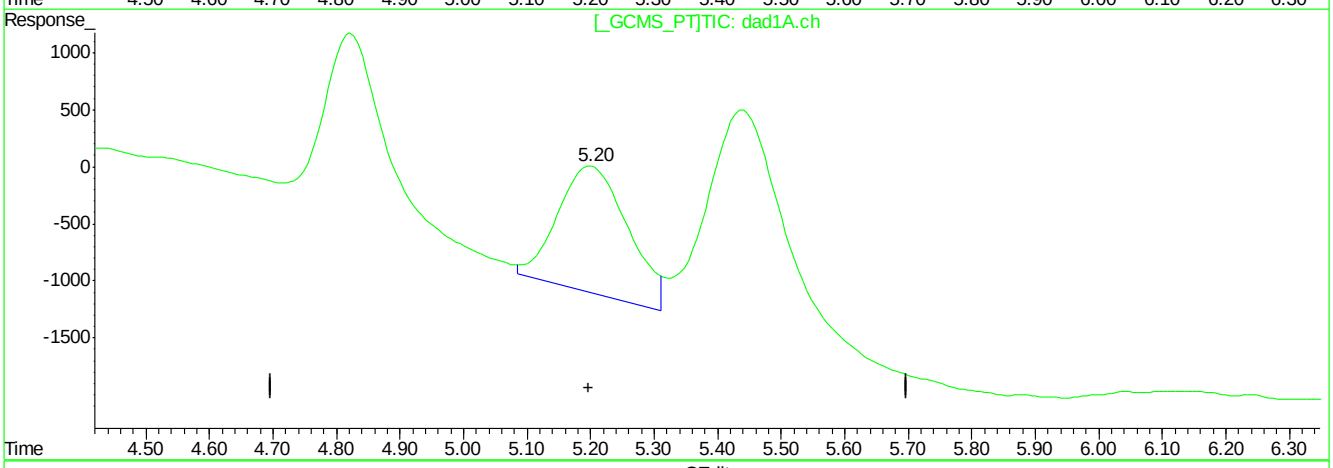
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:43:22 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(2) HMX

5.20min 20.842ppb m

response 77782

(2) HMX #2

5.20min 0.000ppb m

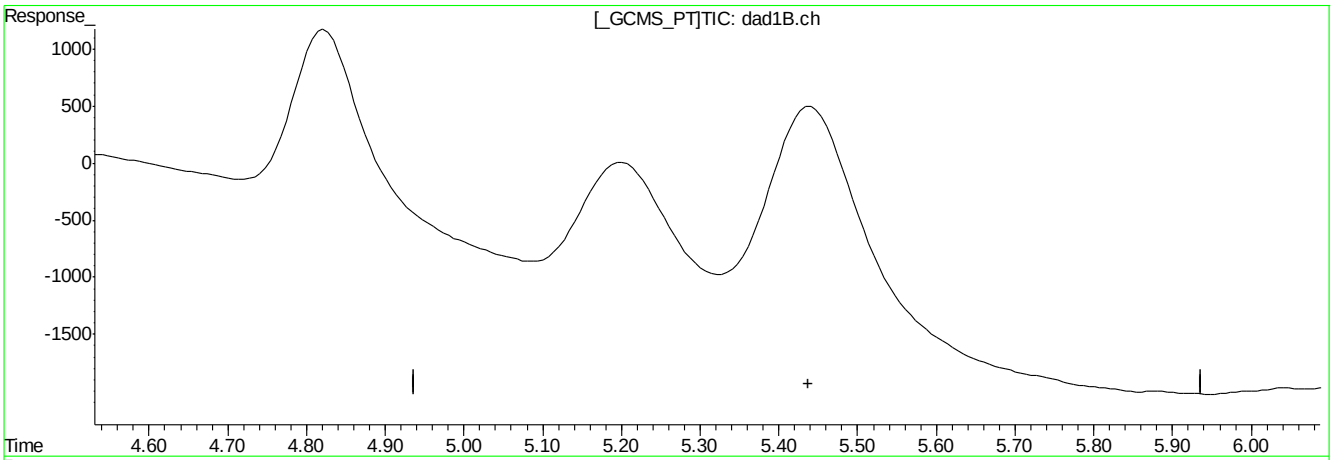
response 85274

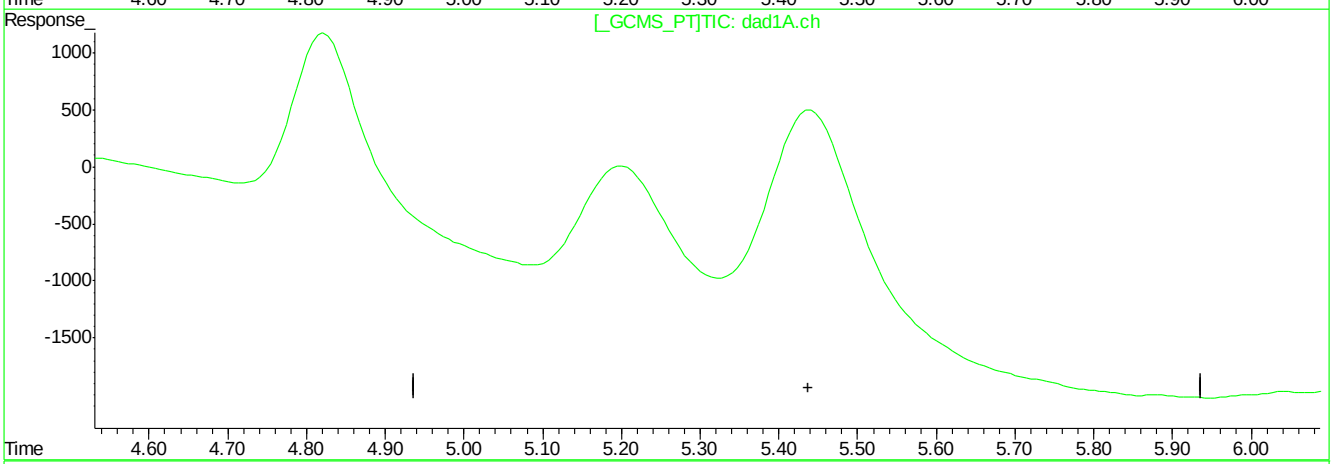
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:43:30 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(3) DNX

0.00min 0.000ppb

response 0

(3) DNX #2

0.00min 0.000ppb

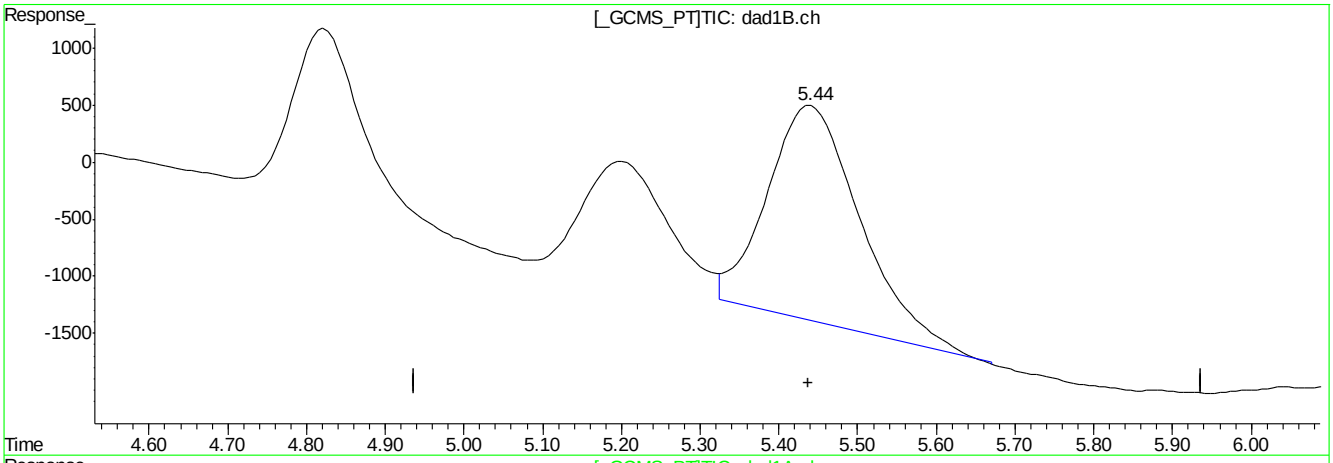
response 0

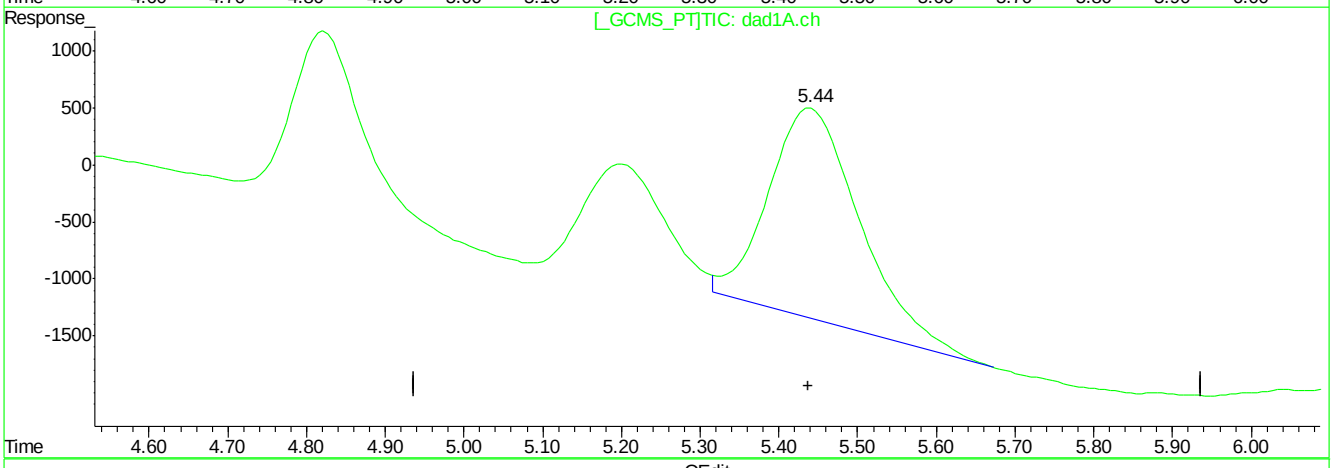
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:43:34 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(3) DNX

5.44min 23.665ppb m

response 154166

(3) DNX #2

5.44min 0.000ppb m

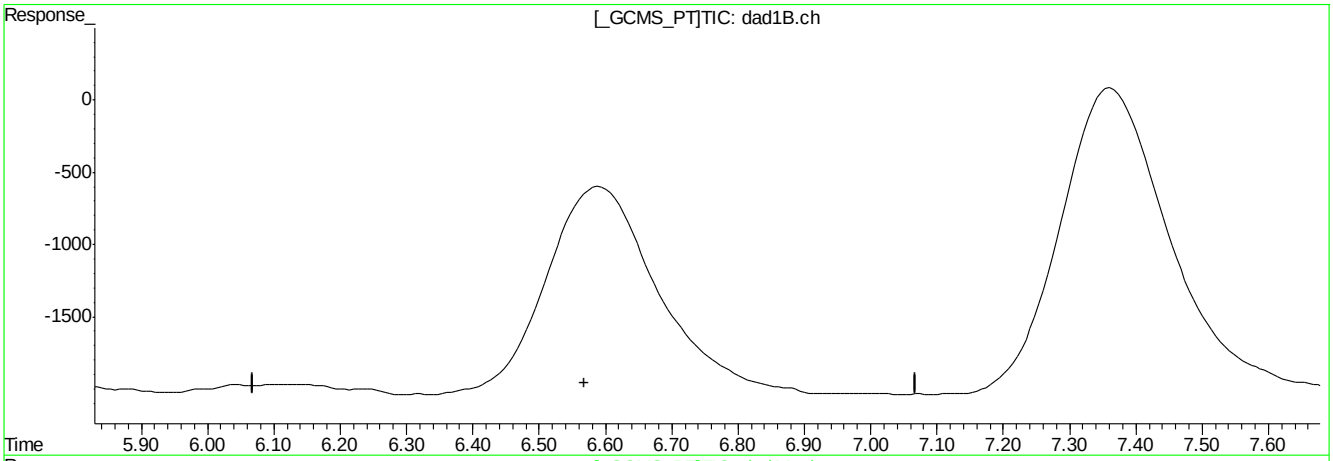
response 148777

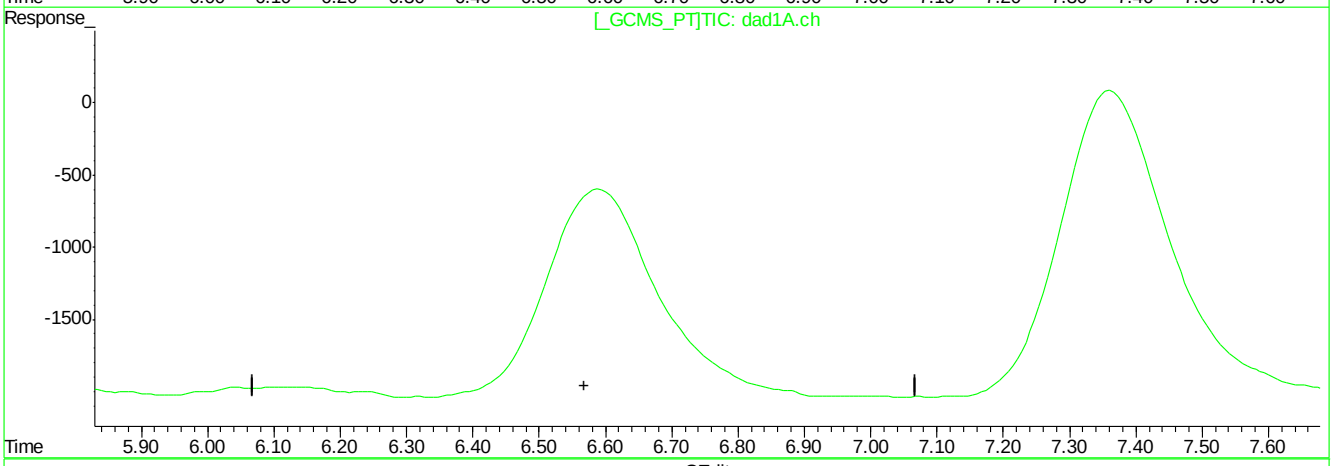
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:43:42 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(4) MNX

0.00min 0.000ppb

response 0

(4) MNX #2

0.00min 0.000ppb

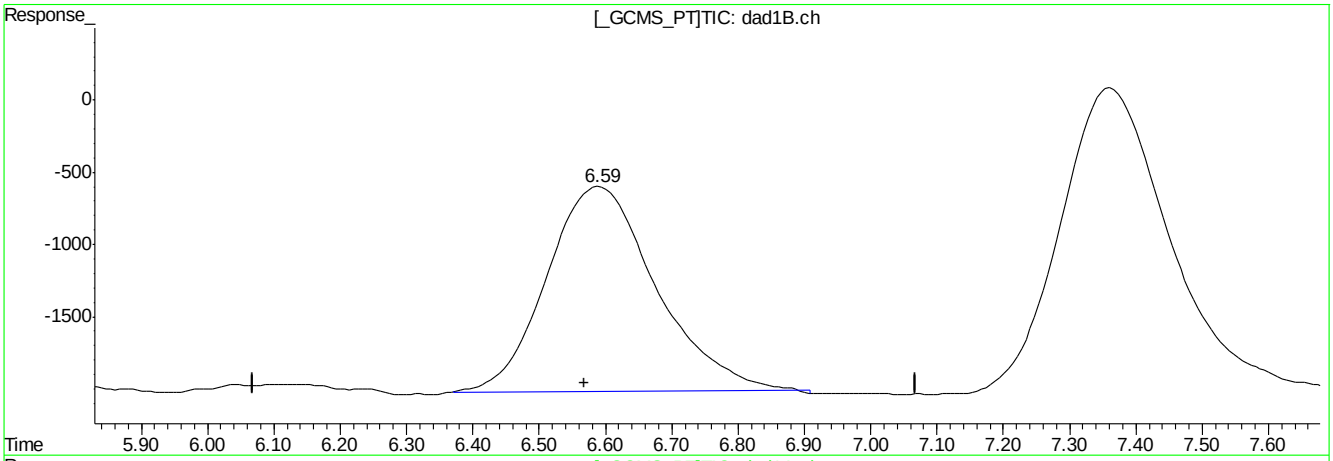
response 0

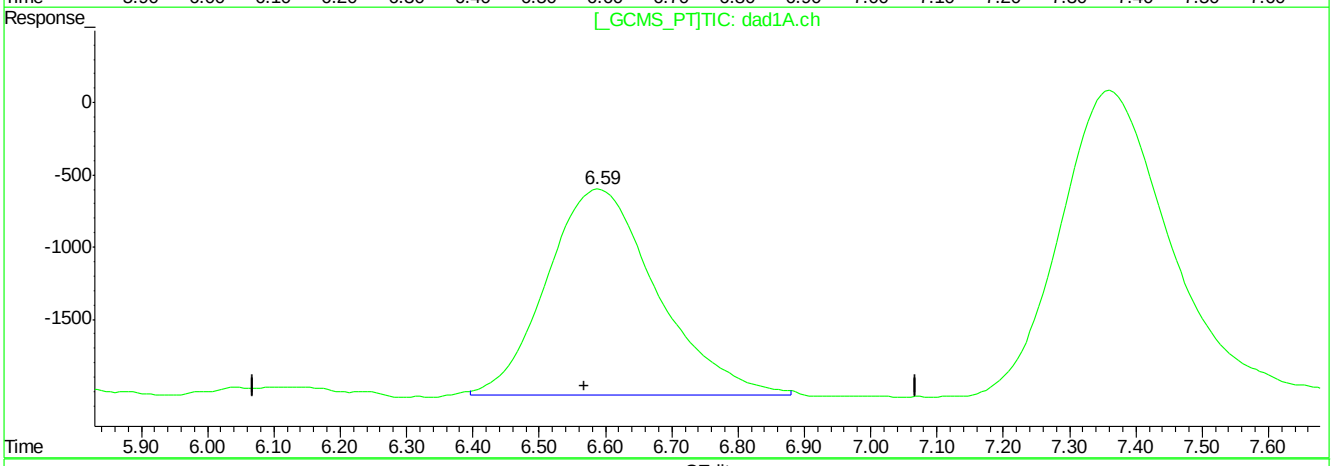
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:43:47 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(4) MNX

6.59min 27.686ppb m

response 163395

(4) MNX #2

6.59min 0.000ppb m

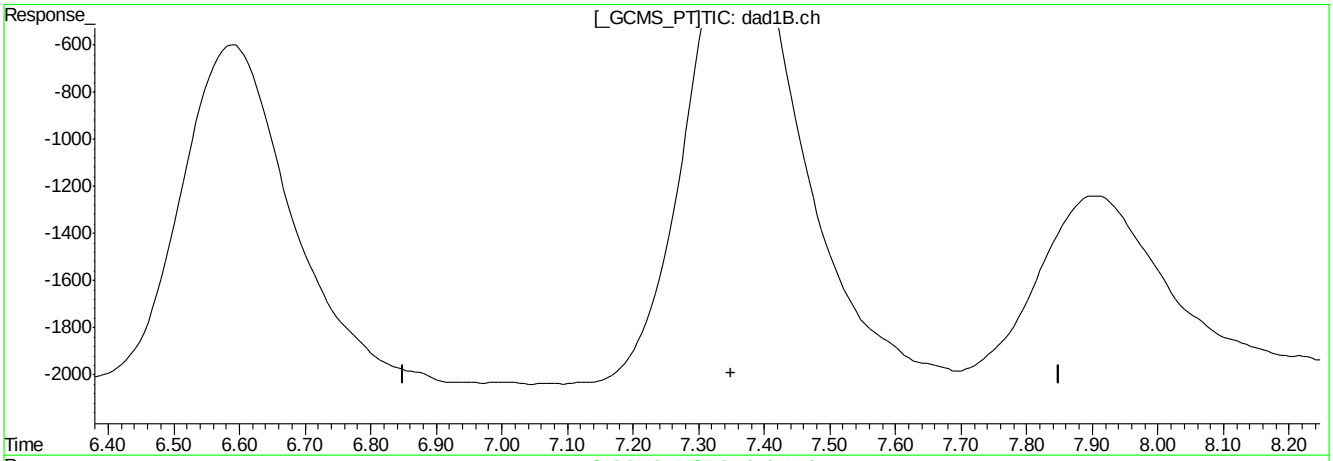
response 164971

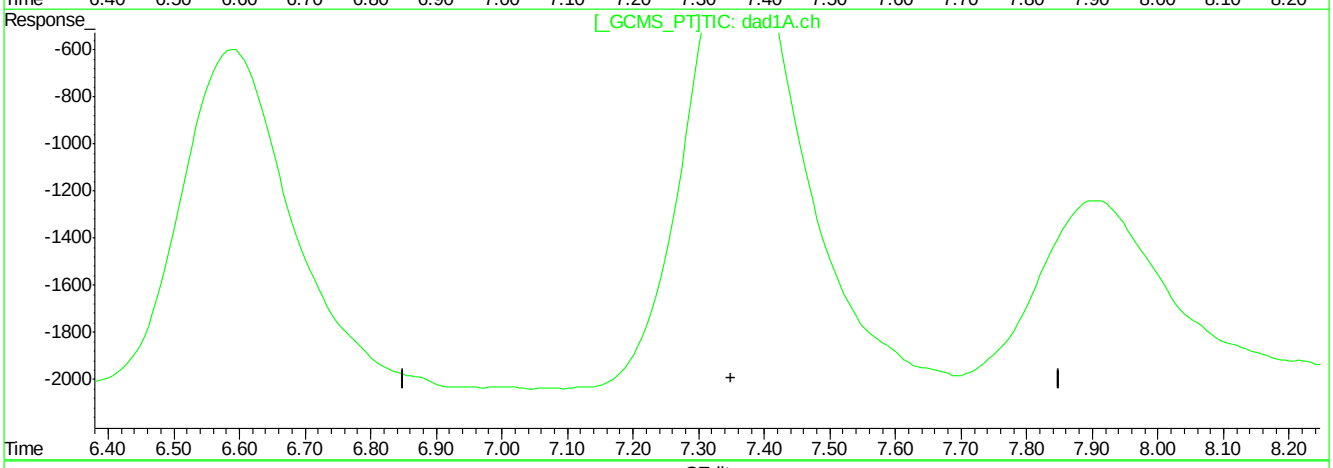
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:43:54 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(5) 1,3,5-Trinitrobenzene

0.00min 0.000ppb

response 0

(5) 1,3,5-Trinitrobenzene #2

0.00min 0.000ppb

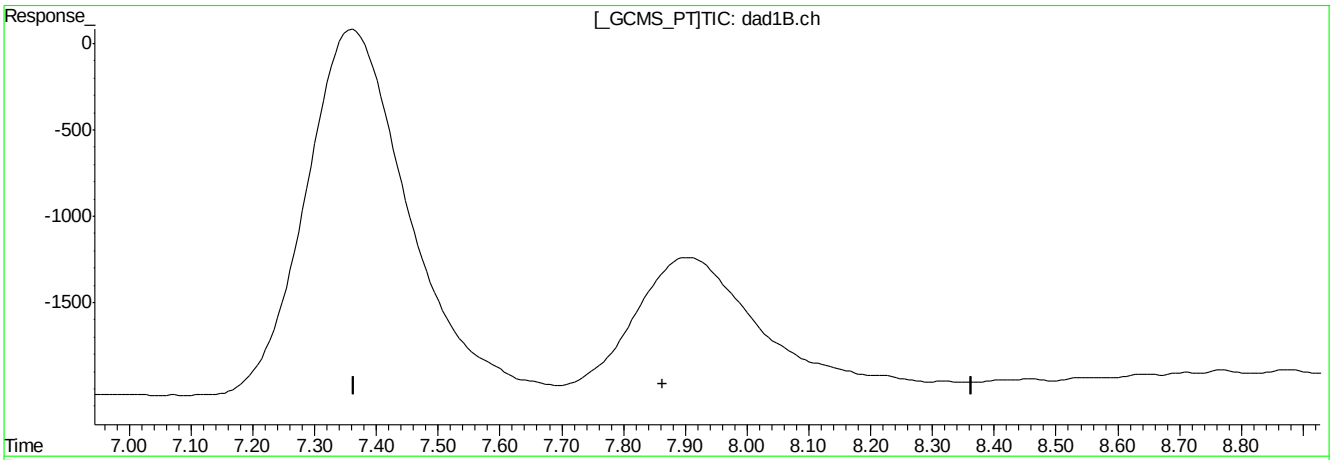
response 0

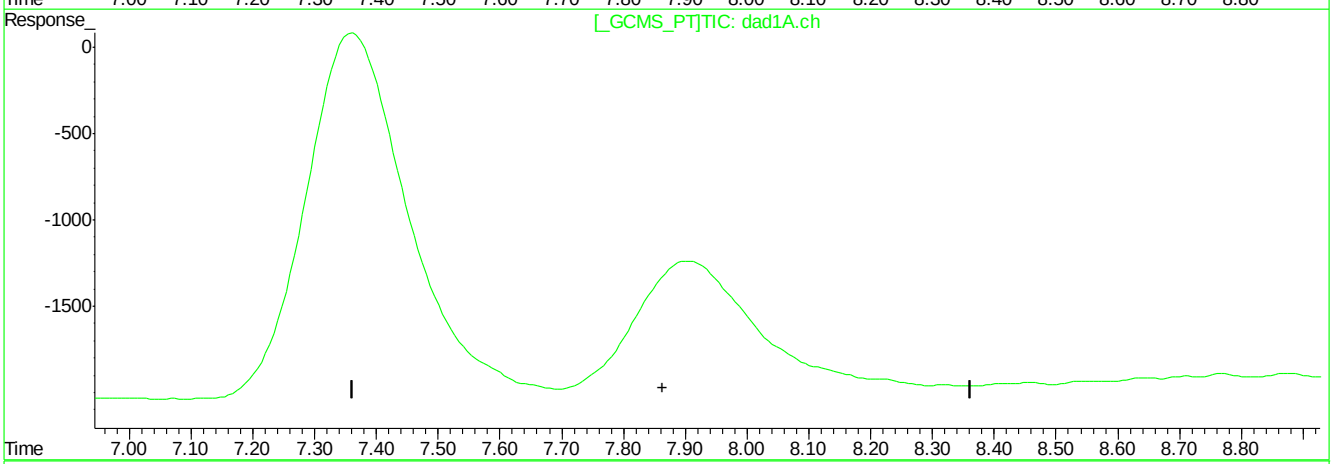
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:43:58 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(6) RDX

0.00min 0.000ppb

response 0

(6) RDX #2

0.00min 0.000ppb

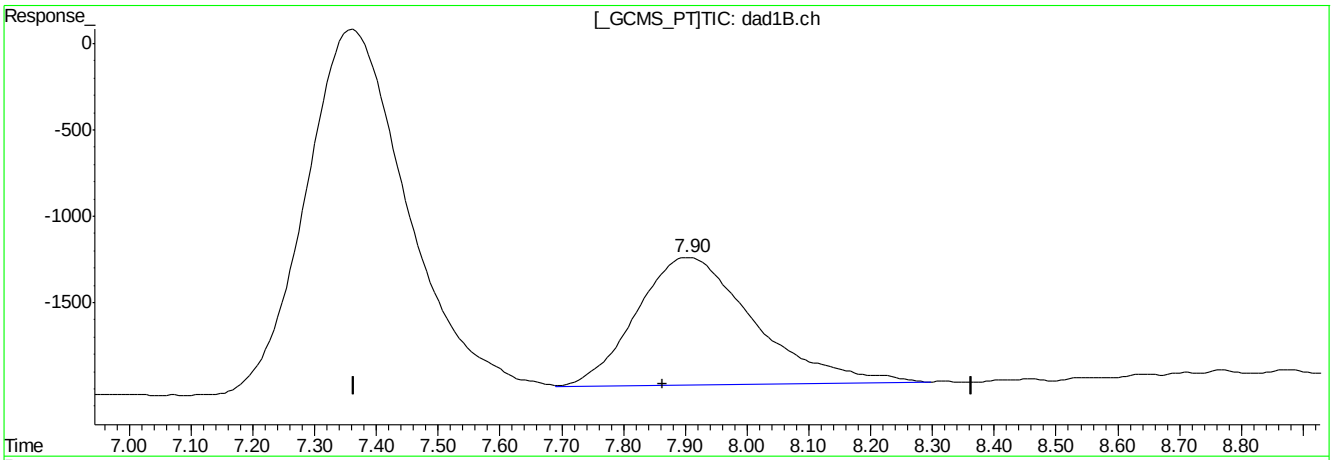
response 0

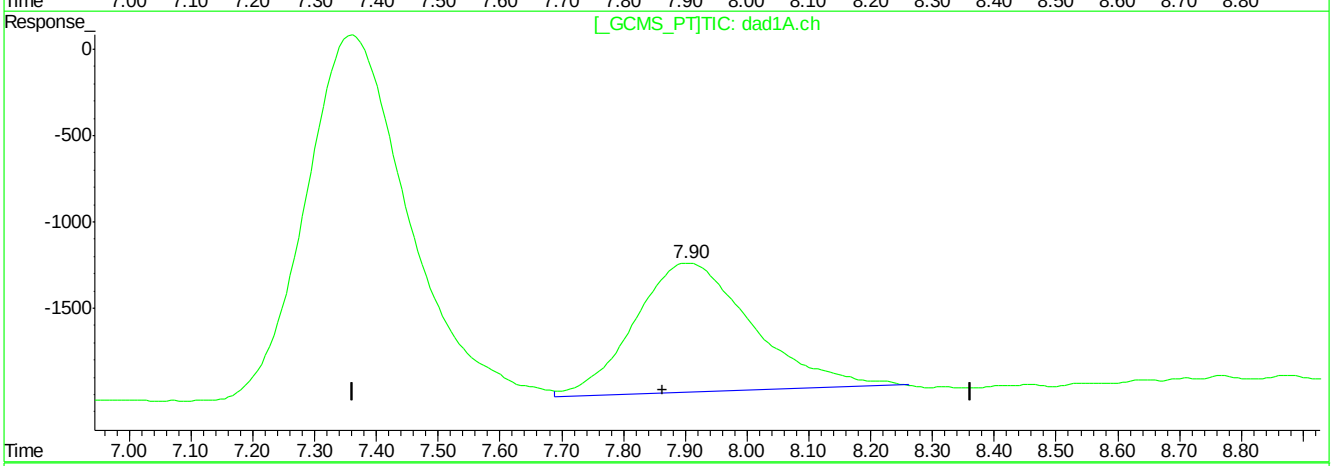
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:44:06 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(6) RDX

7.90min 19.605ppb m

response 98317

(6) RDX #2

7.90min 0.000ppb m

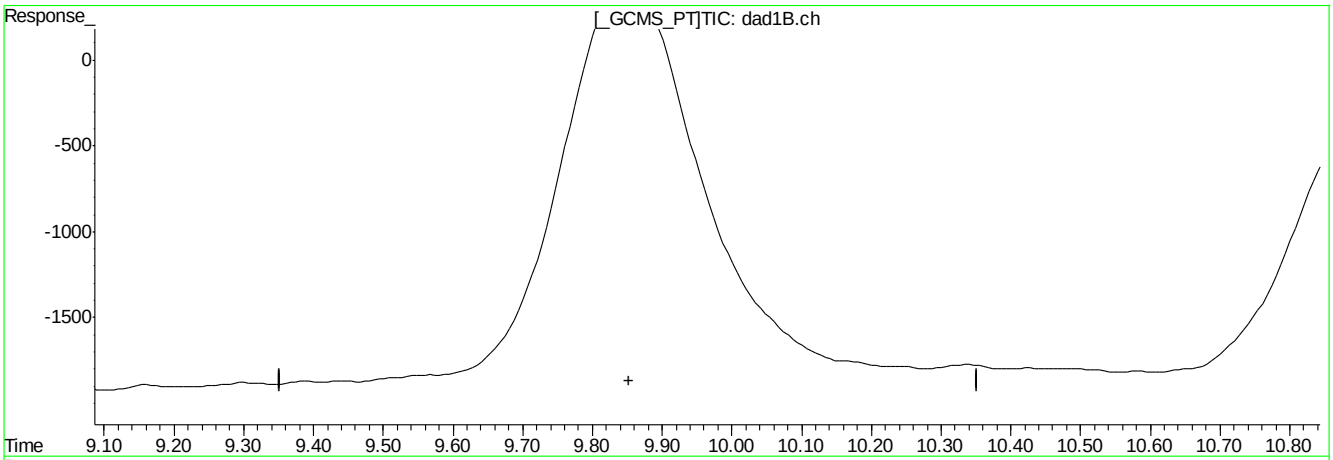
response 98792

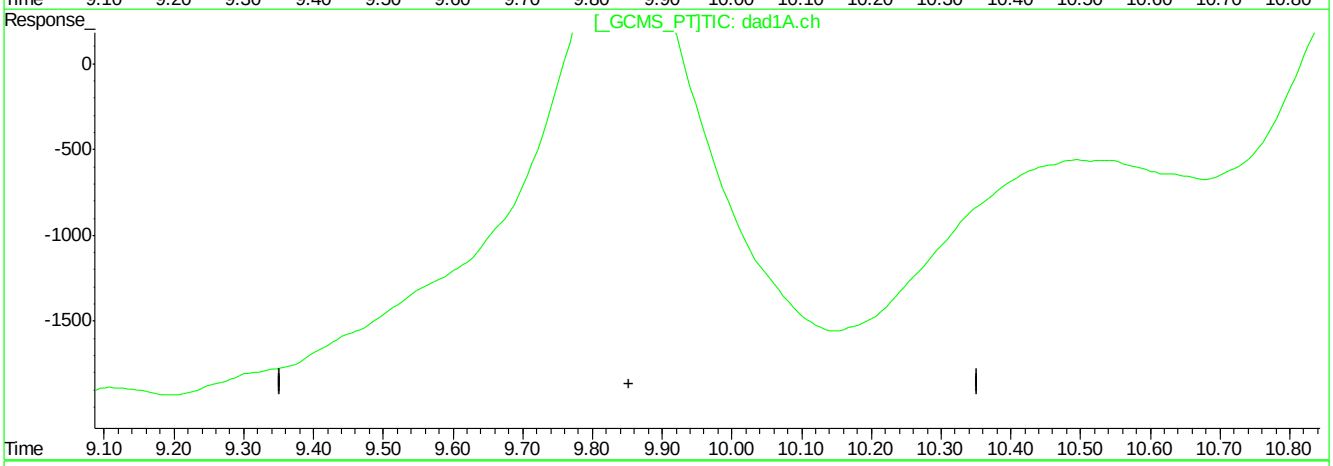
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:44:12 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(7) 1,3-Dinitrobenzene

0.00min 0.000ppb

response 0

(7) 1,3-Dinitrobenzene #2

0.00min 0.000ppb

response 0

(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:44:17 2024

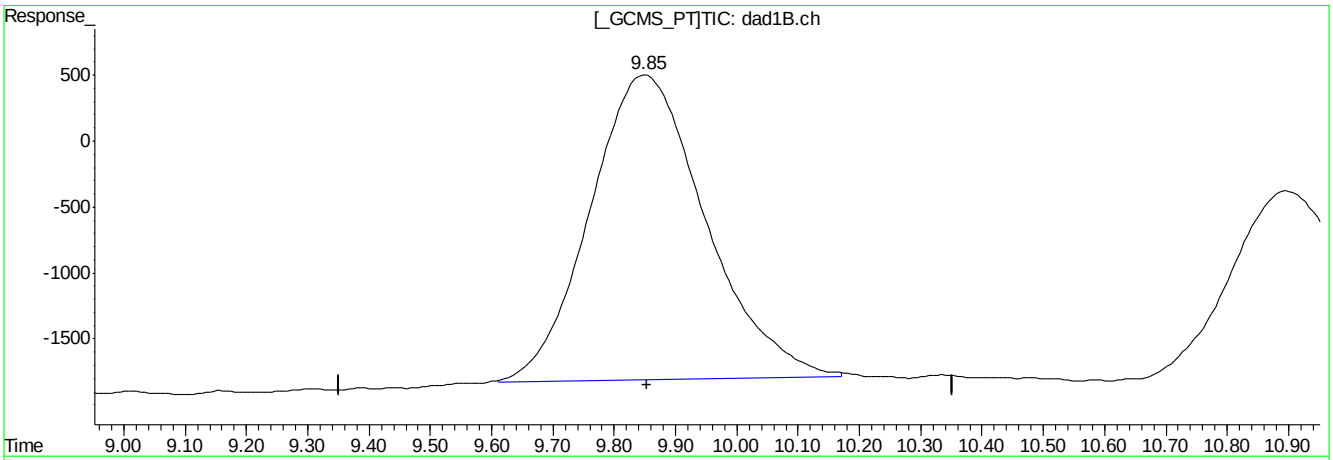


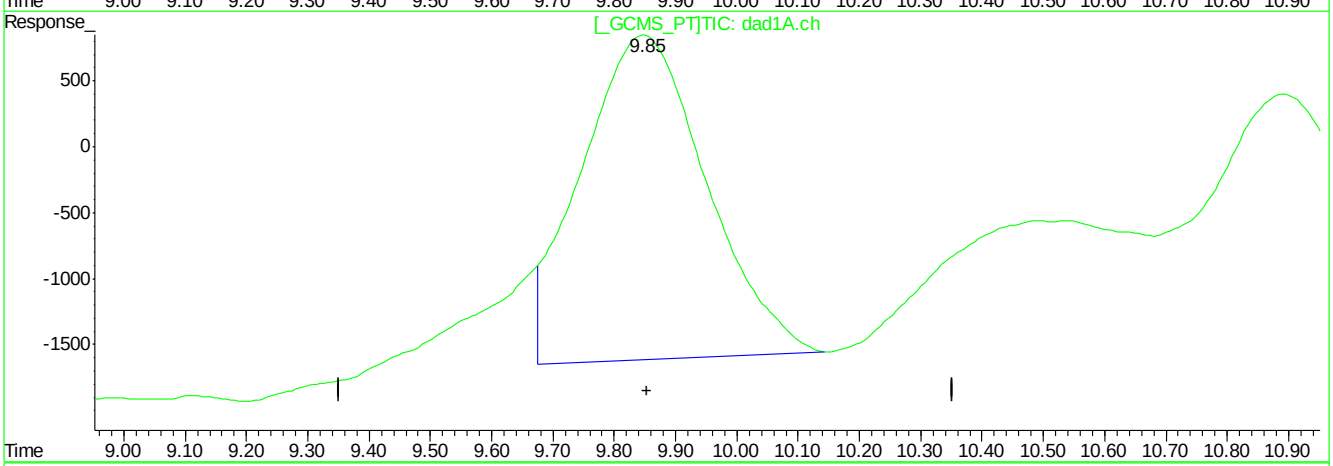
GG630269.D edits: 1,3-Dinitrobenzene

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(7) 1,3-Dinitrobenzene

9.85min 22.160ppb m

response 303651

(7) 1,3-Dinitrobenzene #2

9.85min 0.000ppb m

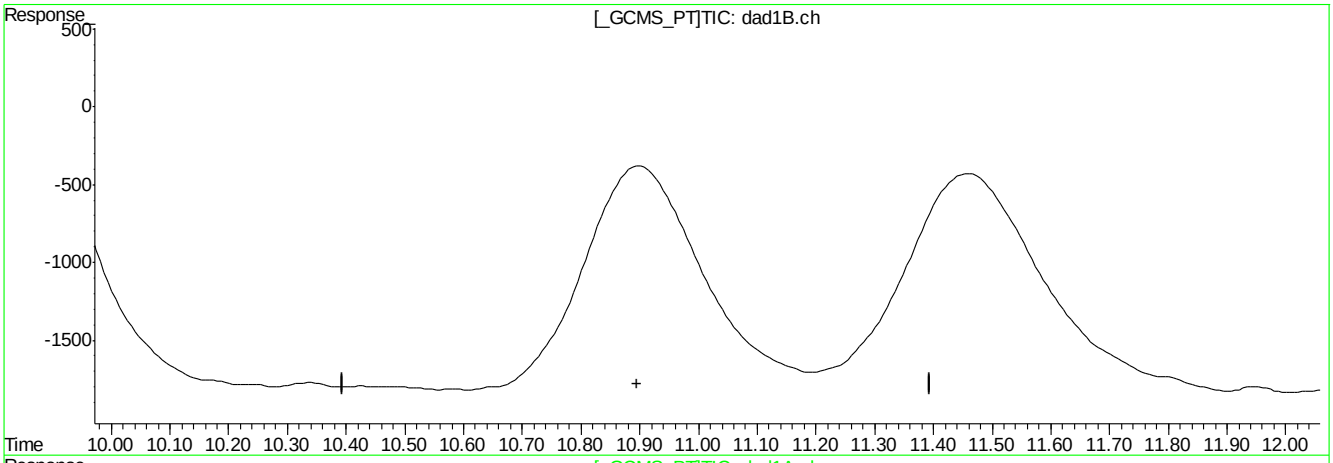
response 349468

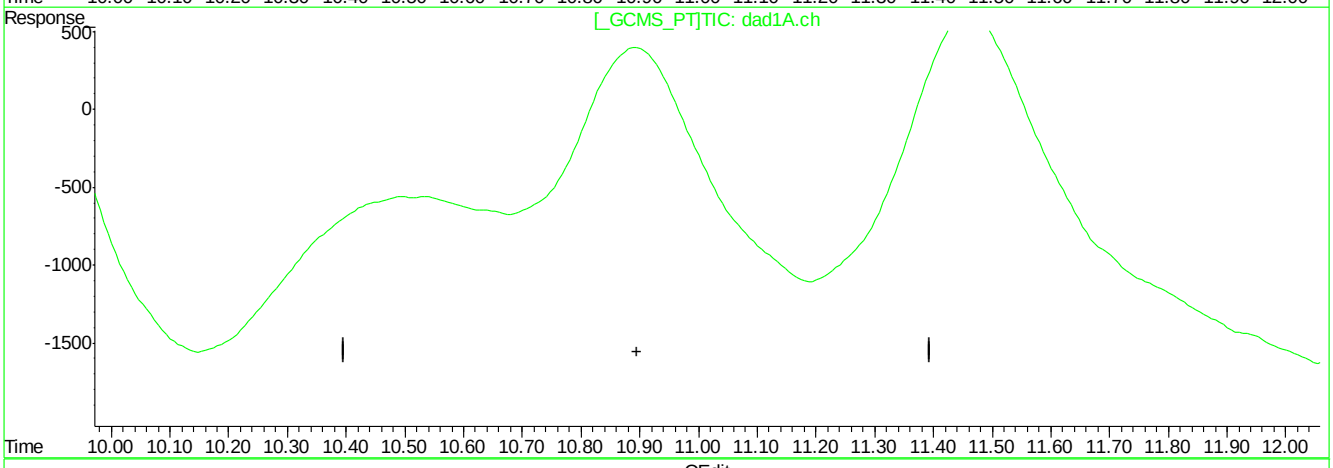
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:44:29 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(8) Nitrobenzene

0.00min 0.000ppb

response 0

(8) Nitrobenzene #2

0.00min 0.000ppb

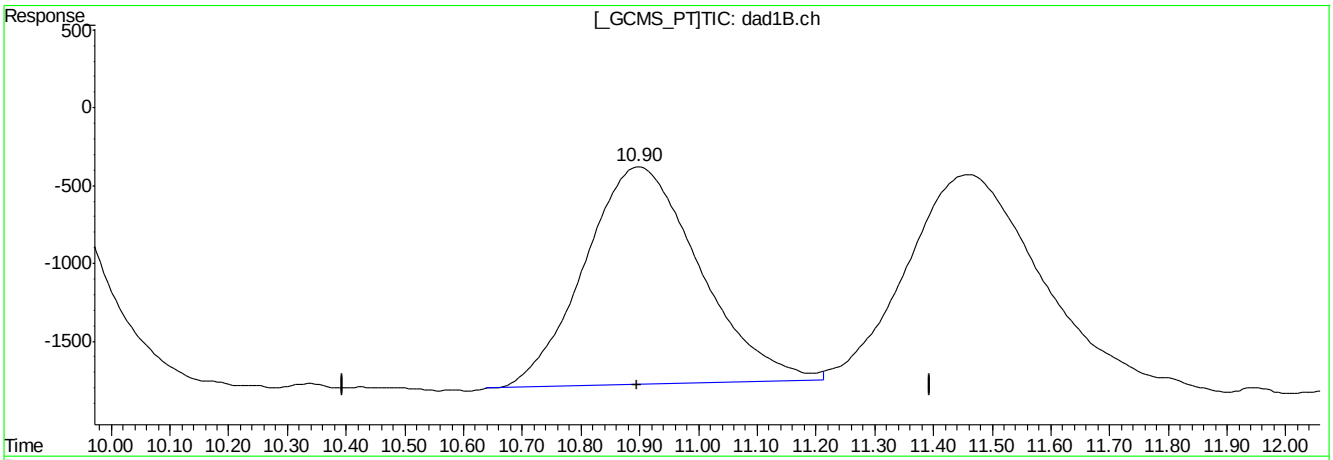
response 0

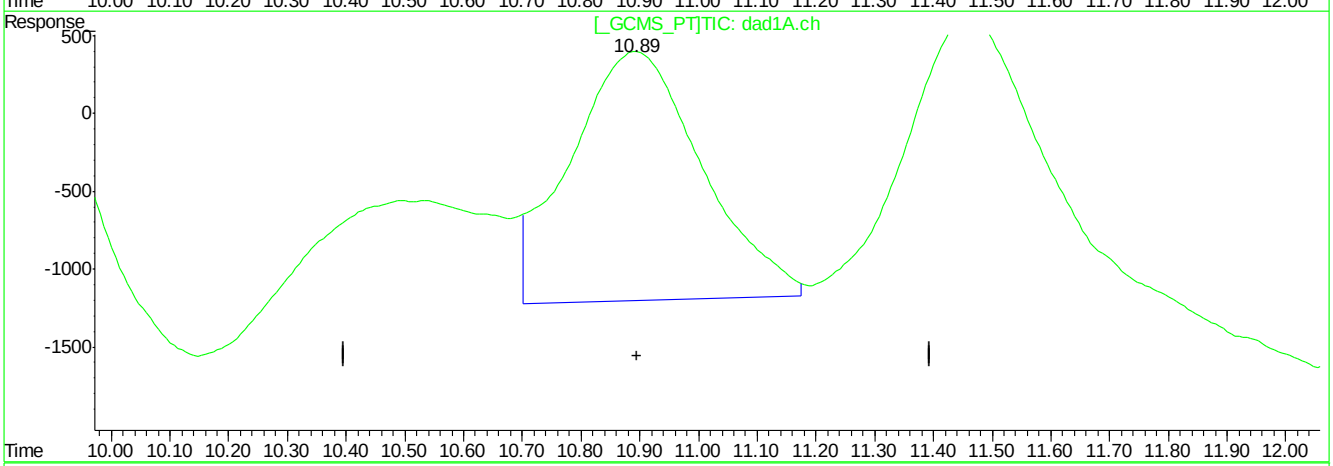
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:44:35 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(8) Nitrobenzene

10.90min 20.980ppb m

response 190745

(8) Nitrobenzene #2

10.89min 0.000ppb m

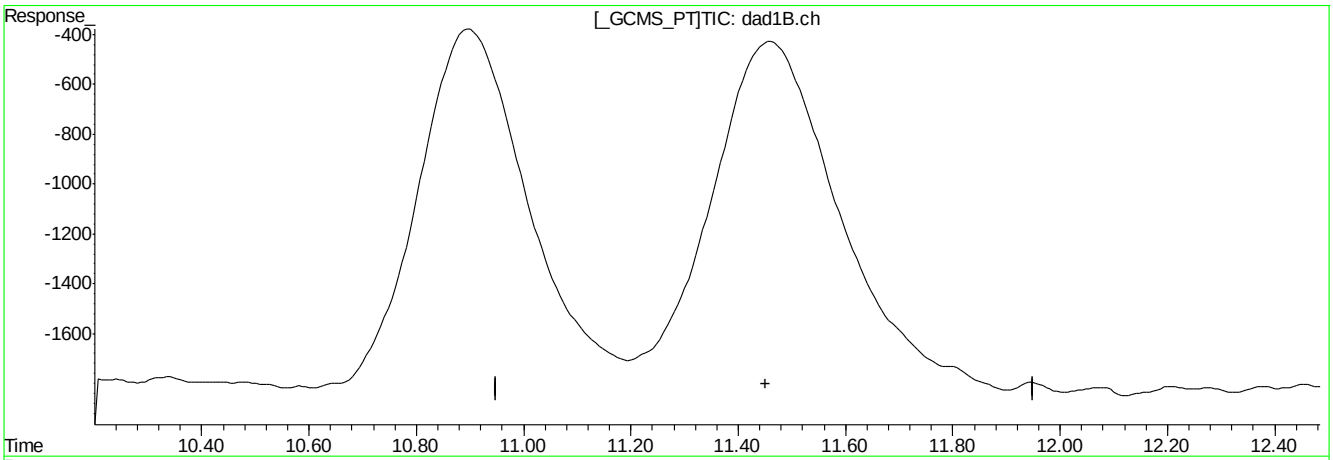
response 250221

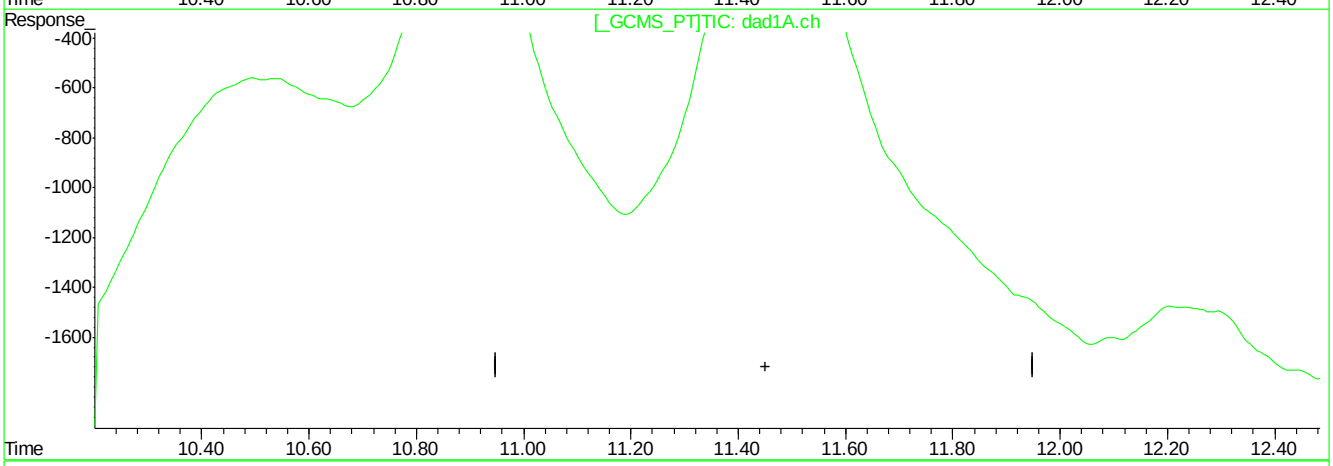
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:44:42 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(9) 2,4,6-Trinitrotoluene

0.00min 0.000ppb

response 0

(9) 2,4,6-Trinitrotoluene #2

0.00min 0.000ppb

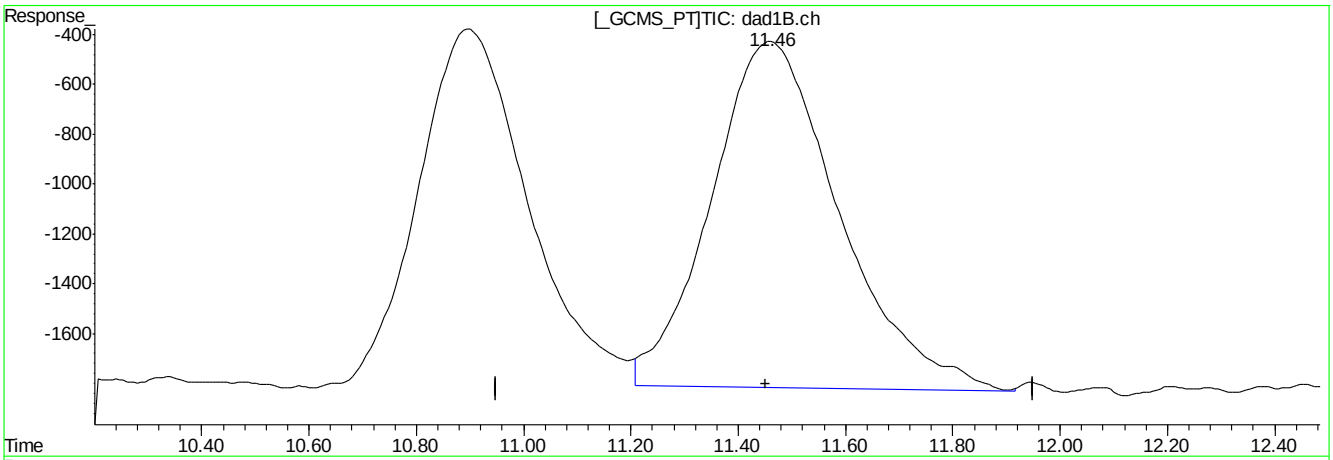
response 0

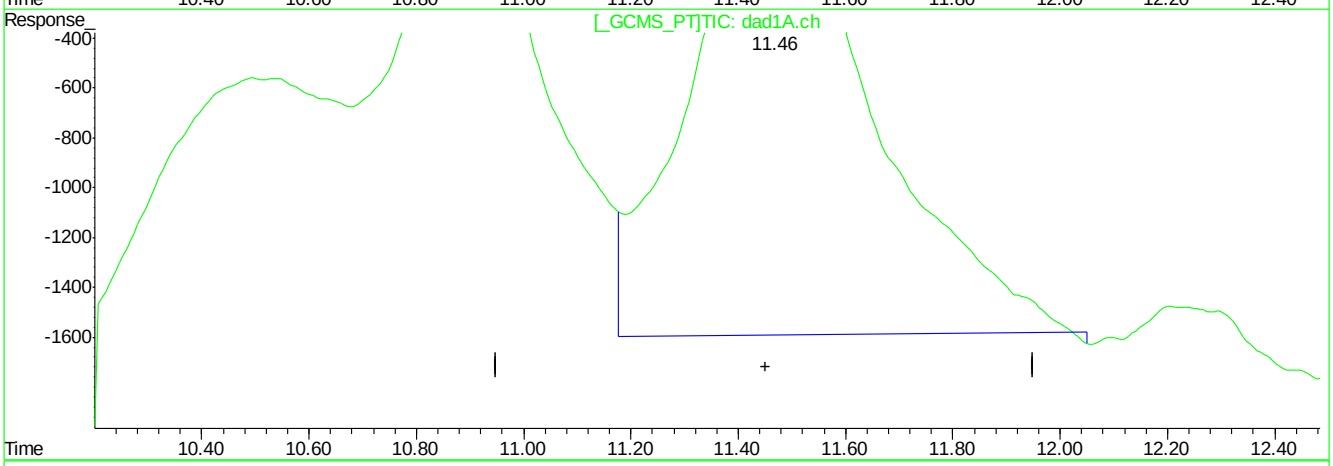
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:44:47 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(9) 2,4,6-Trinitrotoluene

11.46min 23.484ppb m

response 231173

(9) 2,4,6-Trinitrotoluene #2

11.46min 0.000ppb m

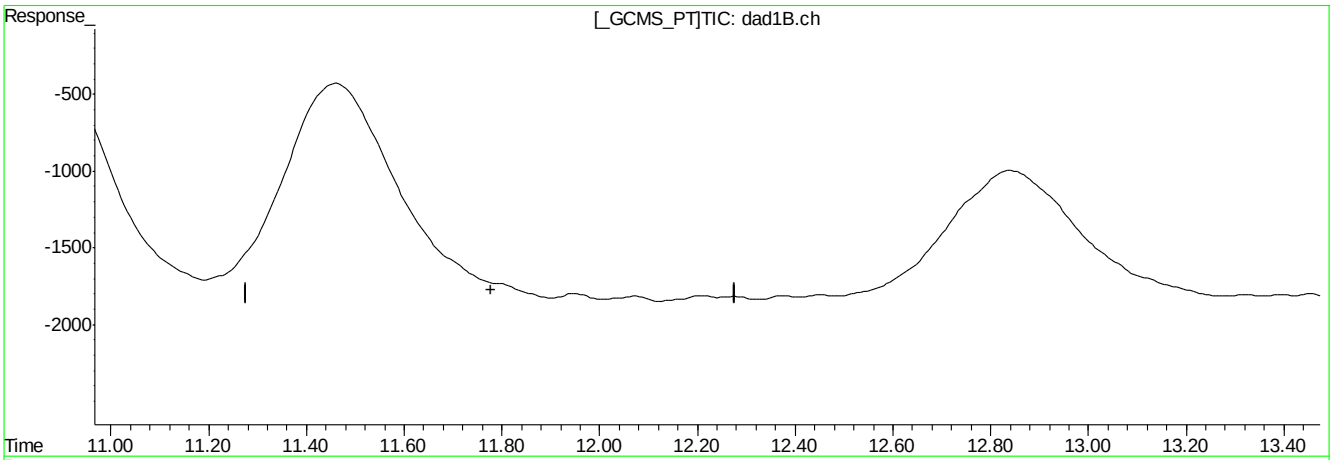
response 463605

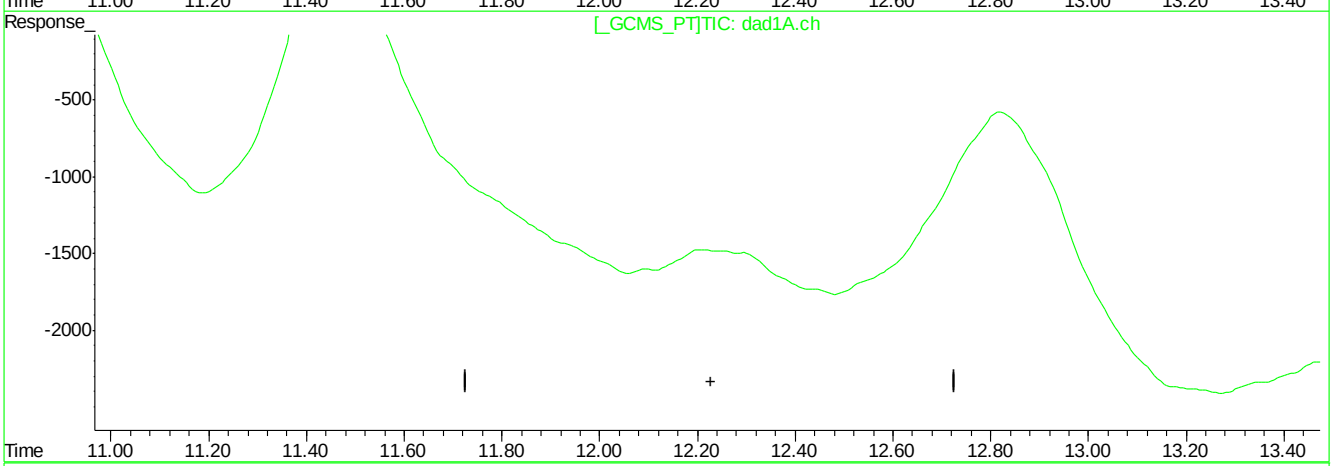
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:44:57 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(10) Nitroglycerin

0.00min 0.000ppb

response 0

(10) Nitroglycerin #2

0.00min 0.000ppb

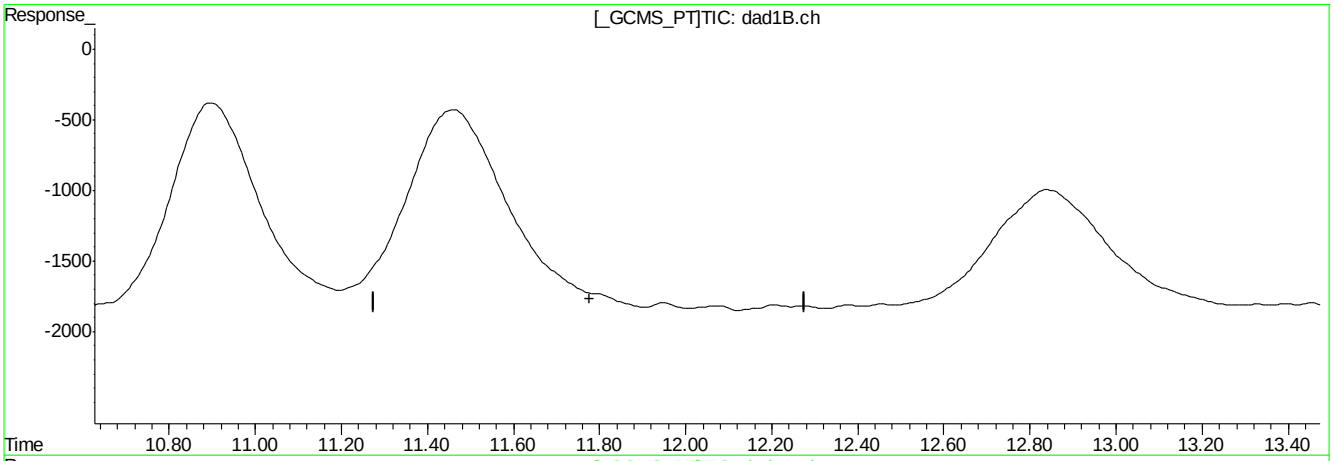
response 0

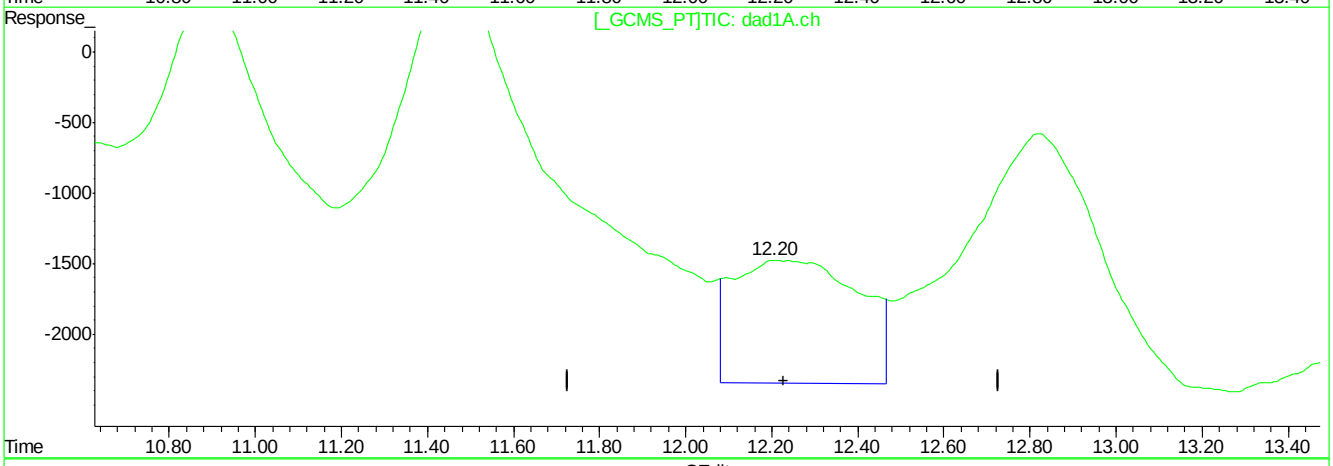
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:45:04 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(10) Nitroglycerin

0.00min 0.000ppb

response 0

(10) Nitroglycerin #2

12.20min 0.000ppb m

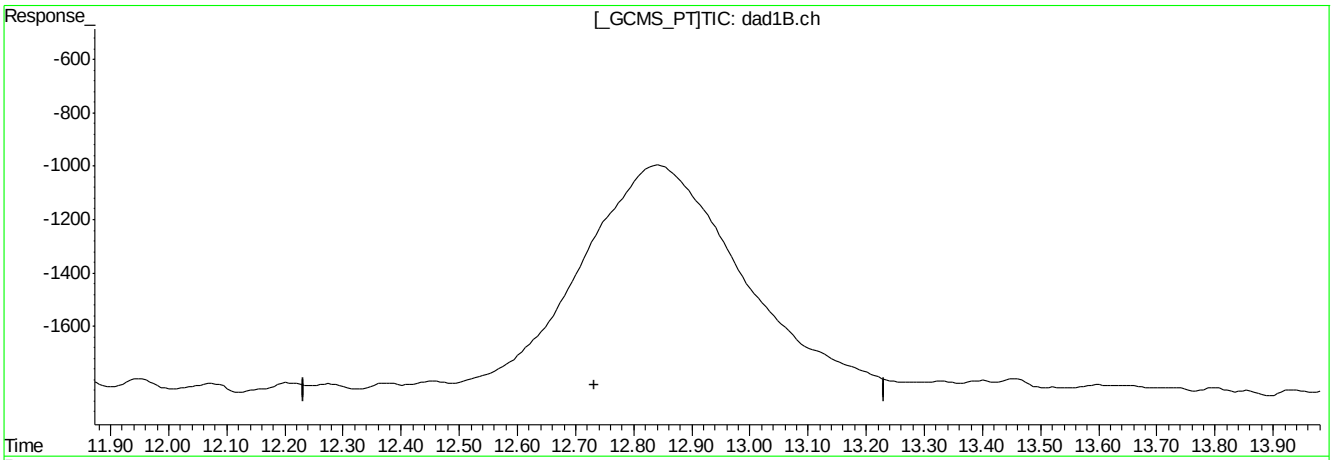
response 174957

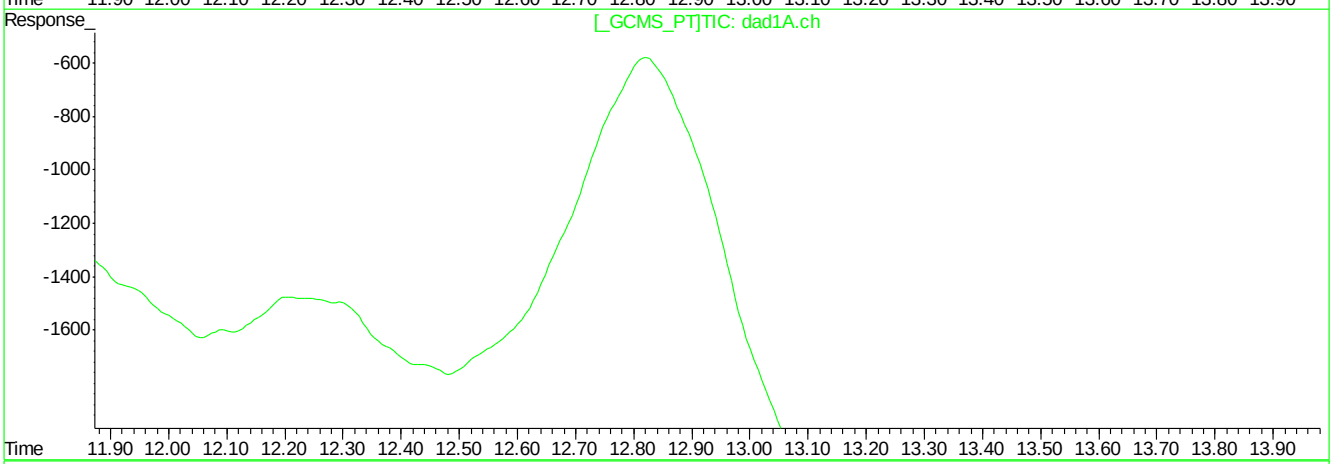
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:45:19 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(11) Tetryl

0.00min 0.000ppb

response 0

(11) Tetryl #2

0.00min 0.000ppb

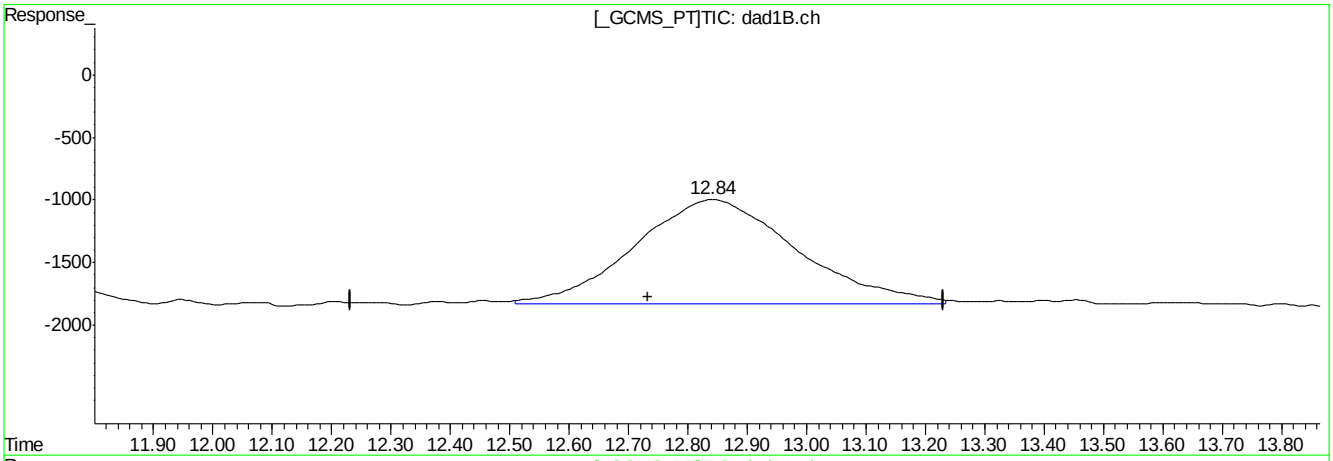
response 0

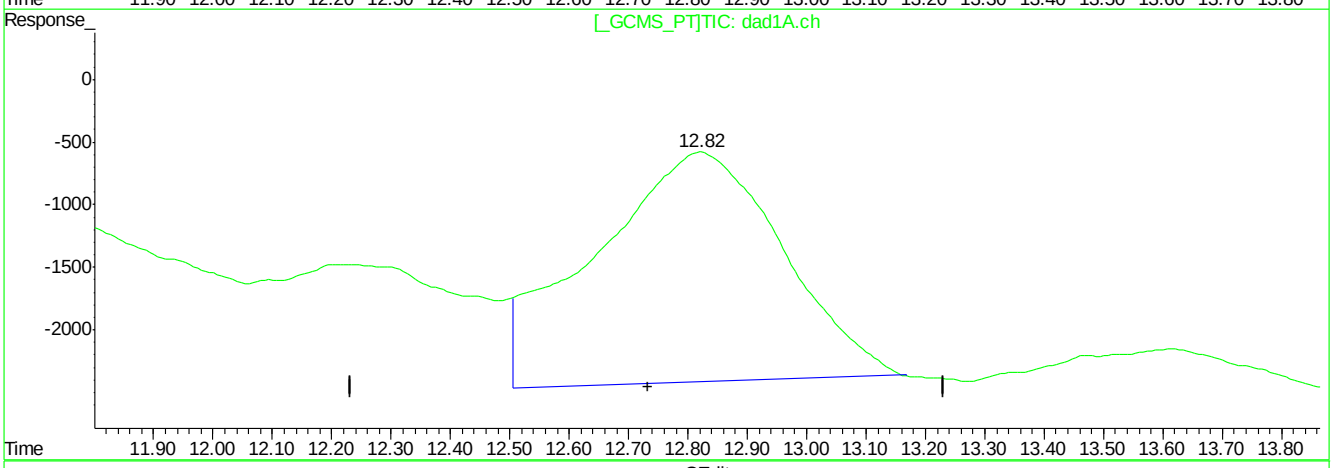
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:45:24 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(11) Tetryl

12.84min 21.283ppb m

response 158814

(11) Tetryl #2

12.82min 0.000ppb m

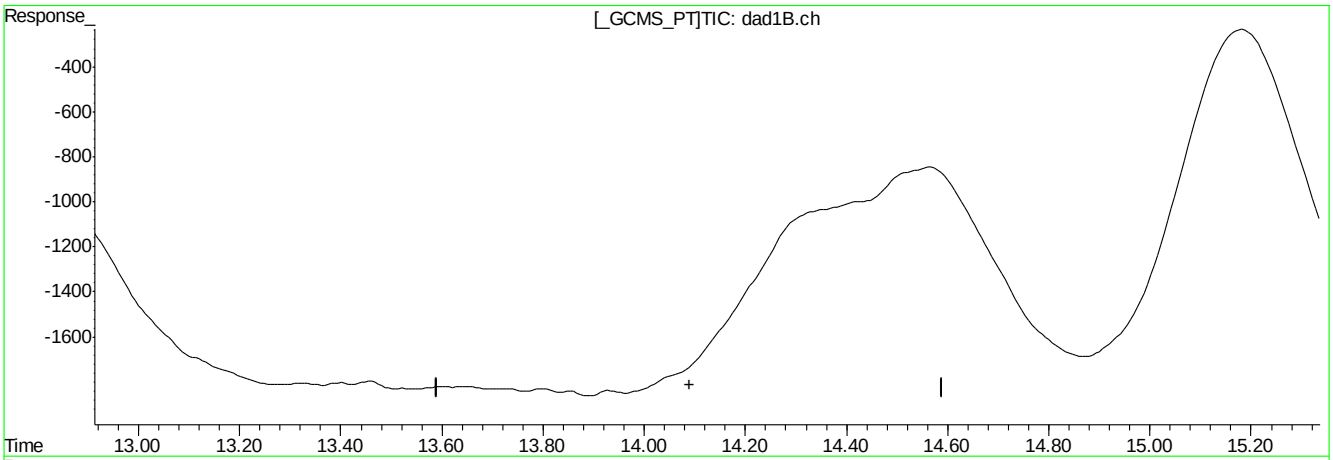
response 404126

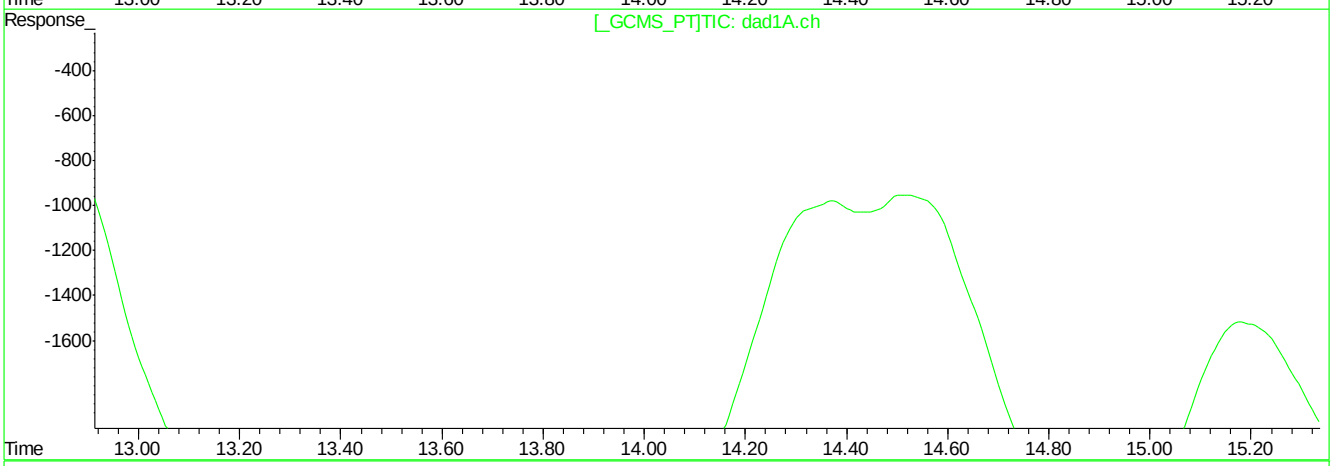
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:45:38 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(12) 3,4-Dinitrotoluene (S)

0.00min 0.000ppb

response 0

(12) 3,4-Dinitrotoluene #2 (S)

0.00min 0.000ppb

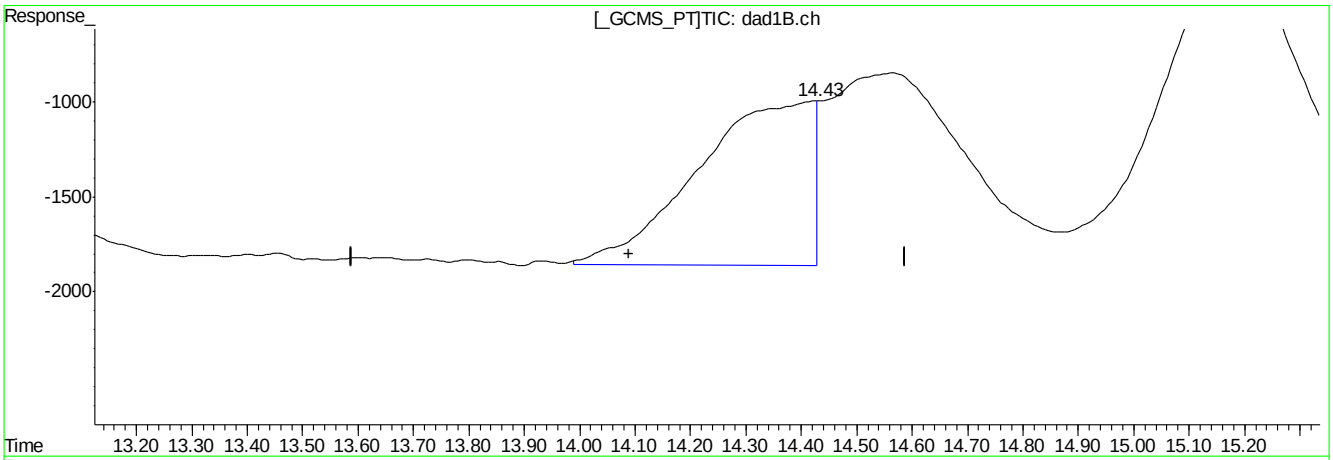
response 0

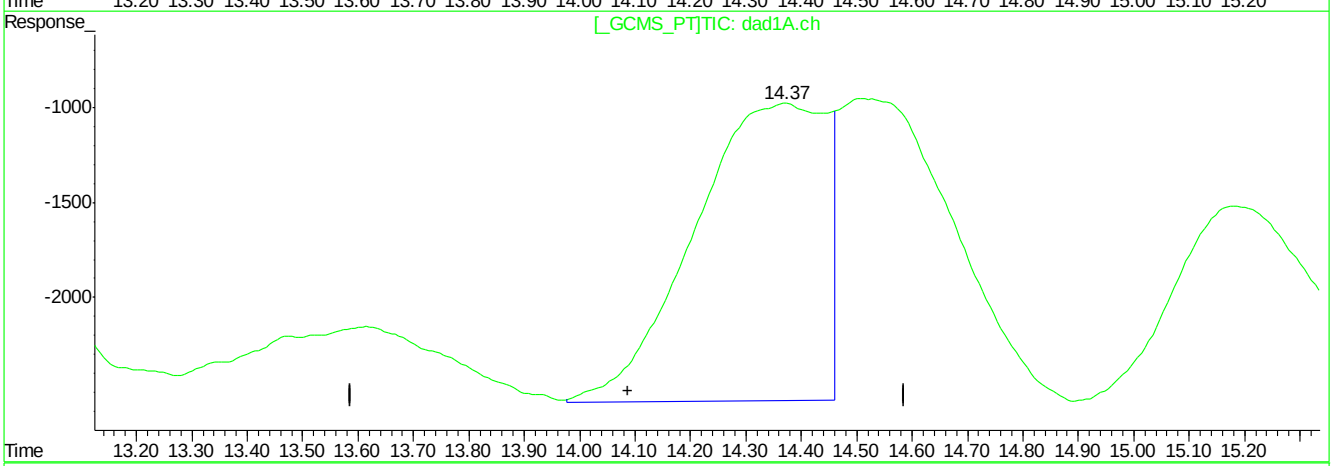
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:45:43 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(12) 3,4-Dinitrotoluene (S)

14.43min 24.266ppb m

response 127224

(12) 3,4-Dinitrotoluene #2 (S)

14.37min 24.230ppb m

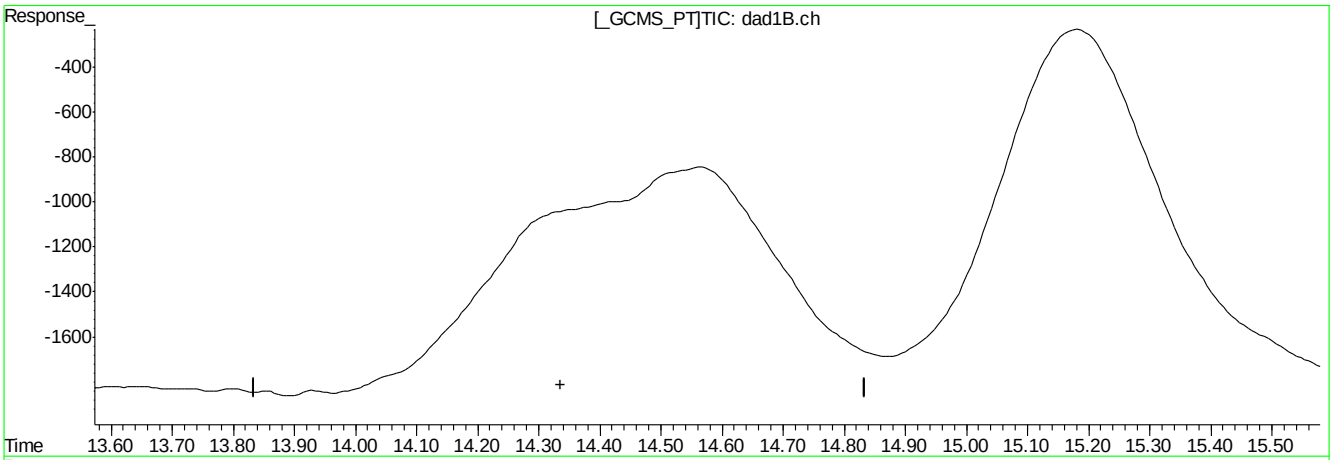
response 253276

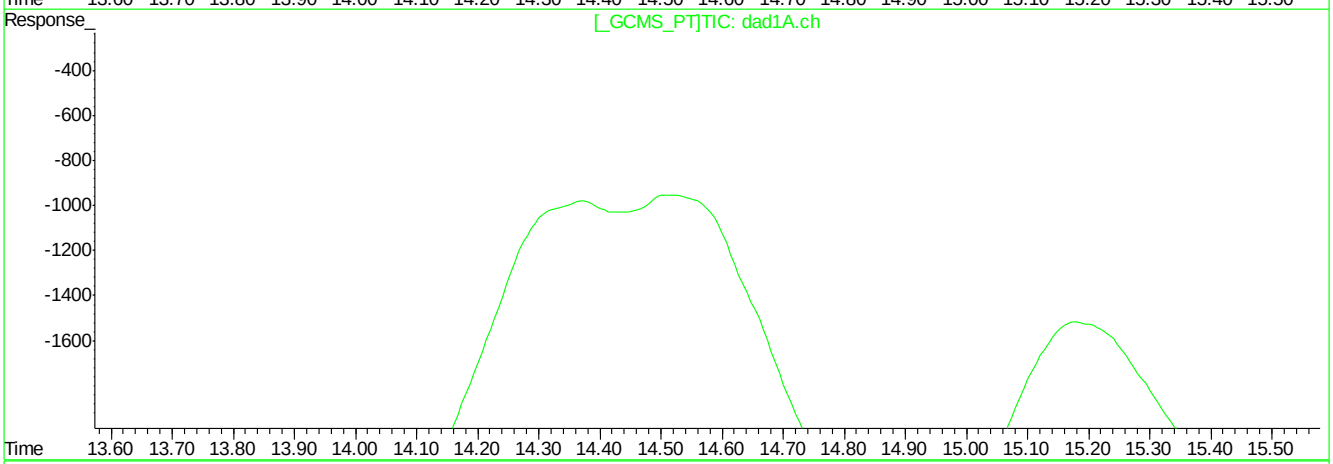
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:45:55 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(13) 2,6-Dinitrotoluene

0.00min 0.000ppb

response 0

(13) 2,6-Dinitrotoluene #2

0.00min 0.000ppb

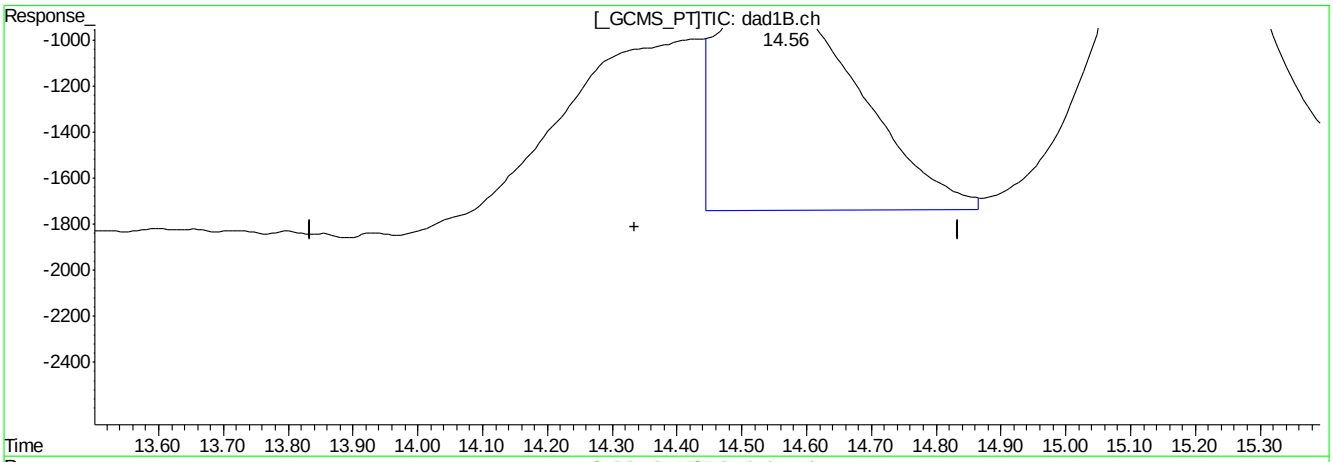
response 0

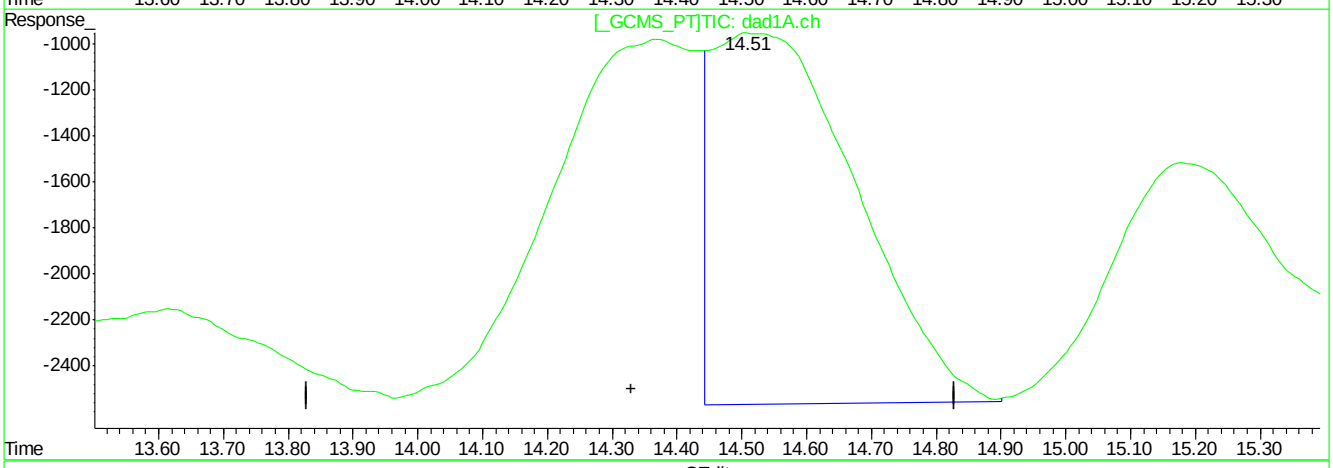
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:46:05 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(13) 2,6-Dinitrotoluene

14.56min 20.031ppb m

response 136272

(13) 2,6-Dinitrotoluene #2

14.51min 0.000ppb m

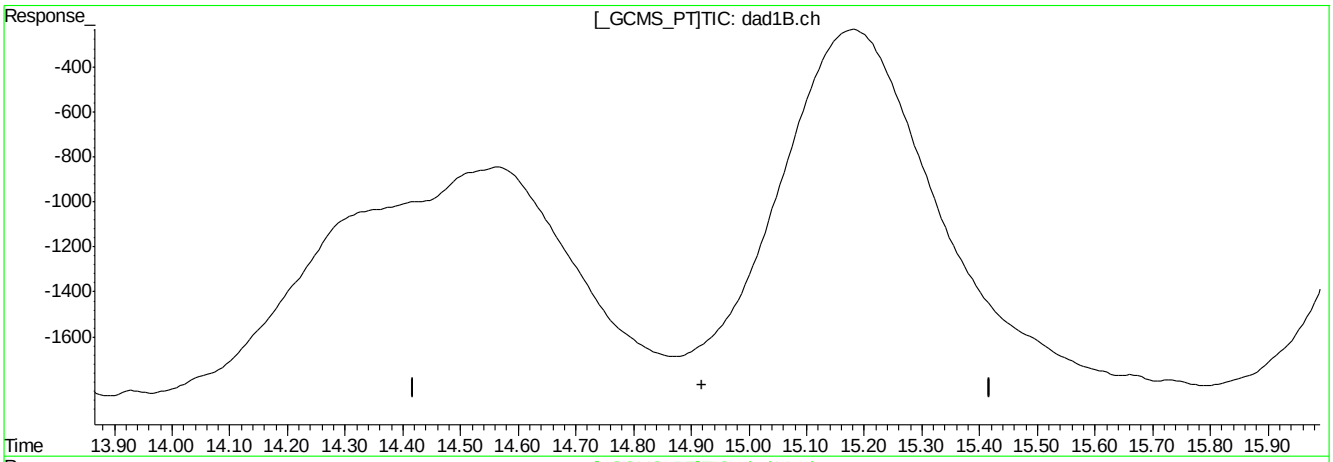
response 249131

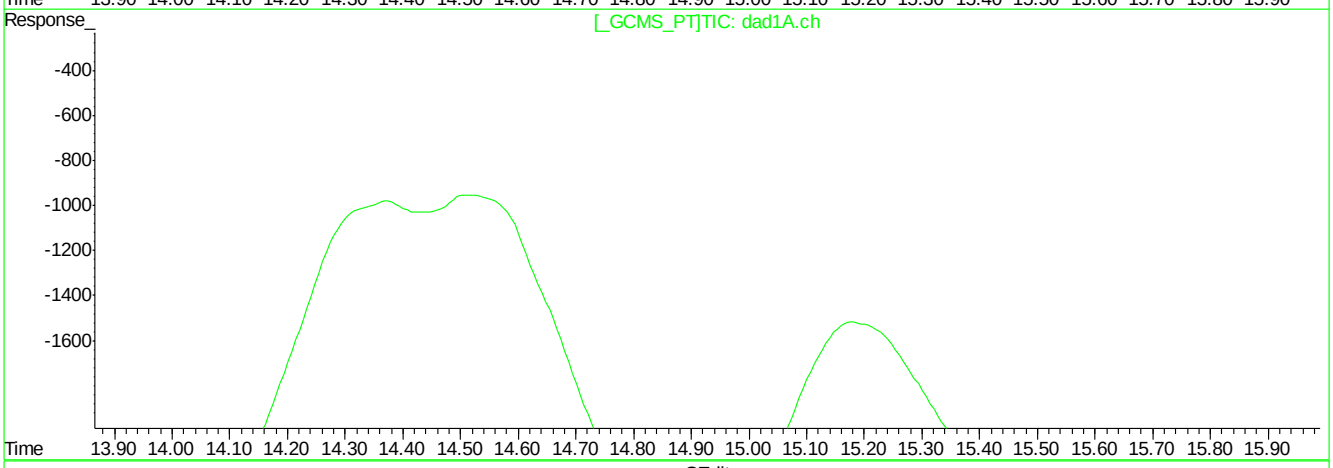
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:46:32 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(14) 2,4-Dinitrotoluene

0.00min 0.000ppb

response 0

(14) 2,4-Dinitrotoluene #2

0.00min 0.000ppb

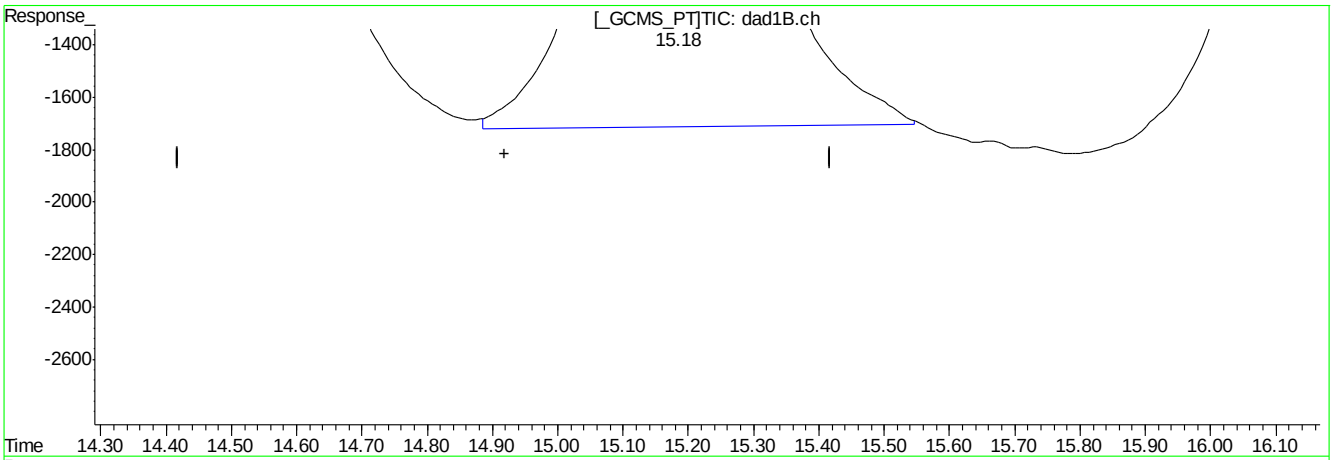
response 0

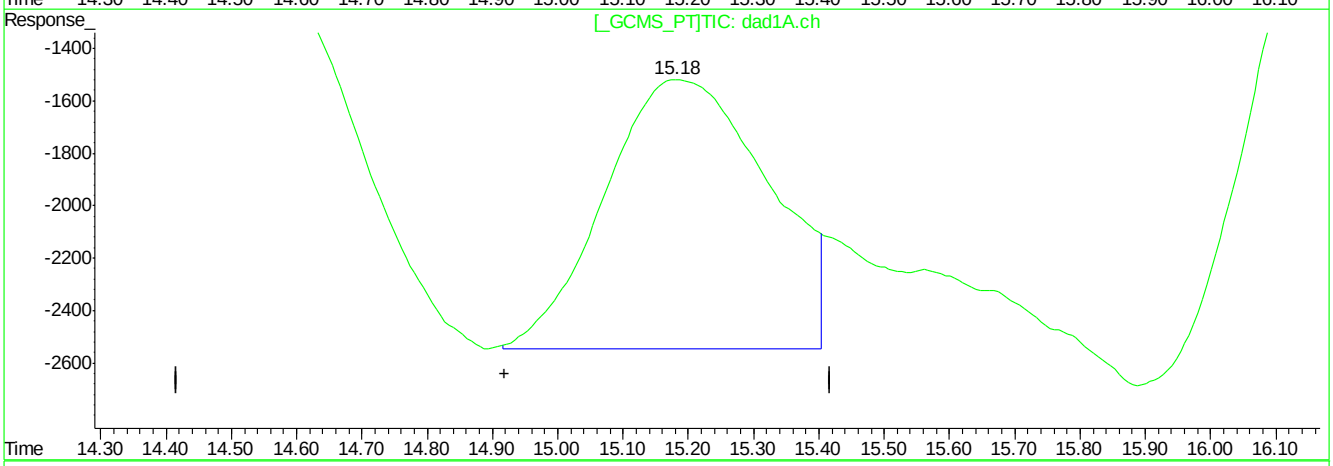
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:46:38 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(14) 2,4-Dinitrotoluene

15.18min 19.958ppb m

response 257763

(14) 2,4-Dinitrotoluene #2

15.18min 0.000ppb m

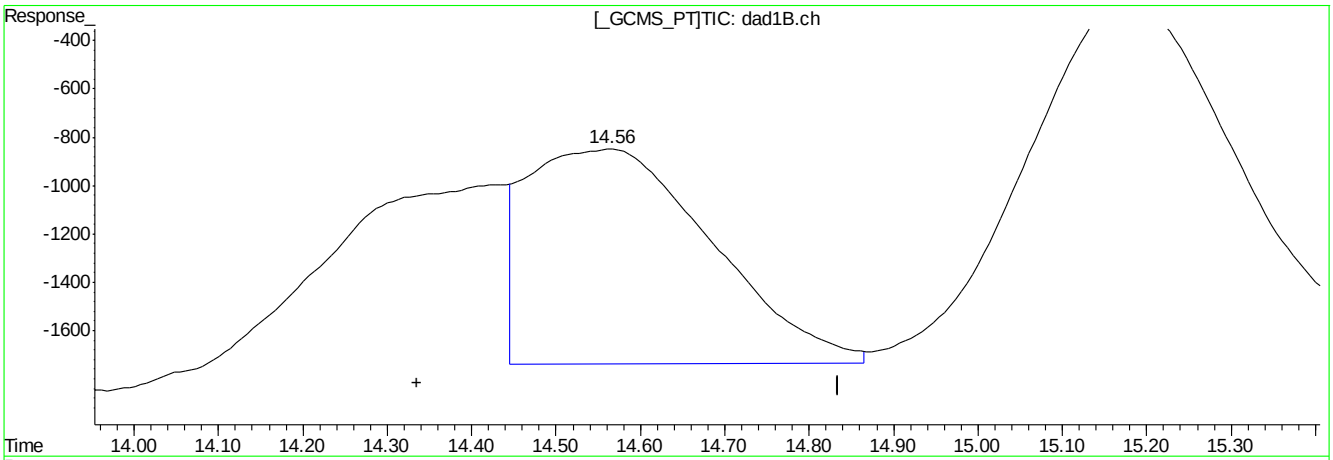
response 178255

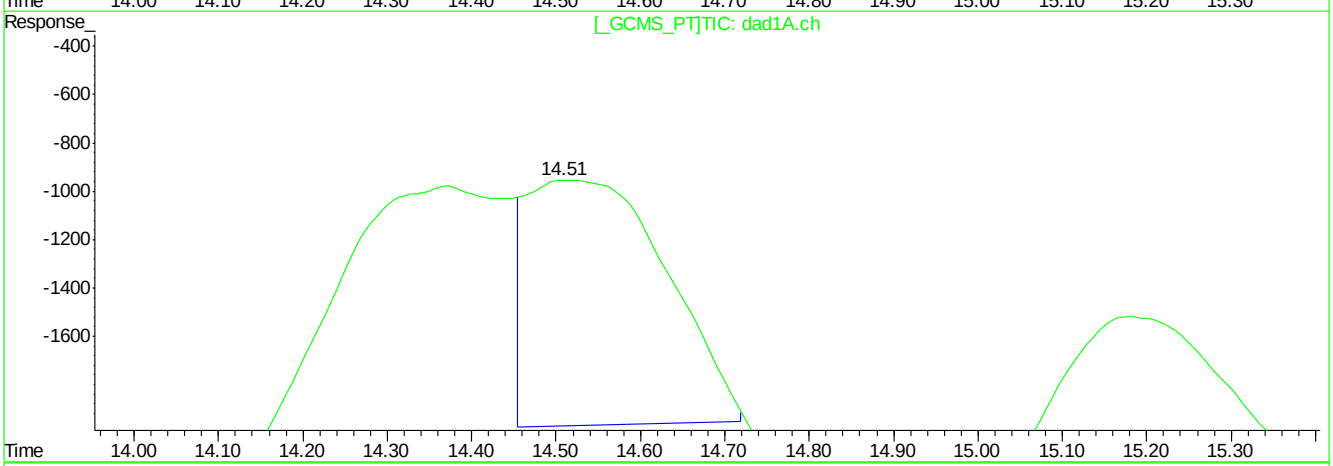
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:46:49 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(13) 2,6-Dinitrotoluene

14.56min 20.031ppb m

response 136272

(13) 2,6-Dinitrotoluene #2

14.51min 0.000ppb m

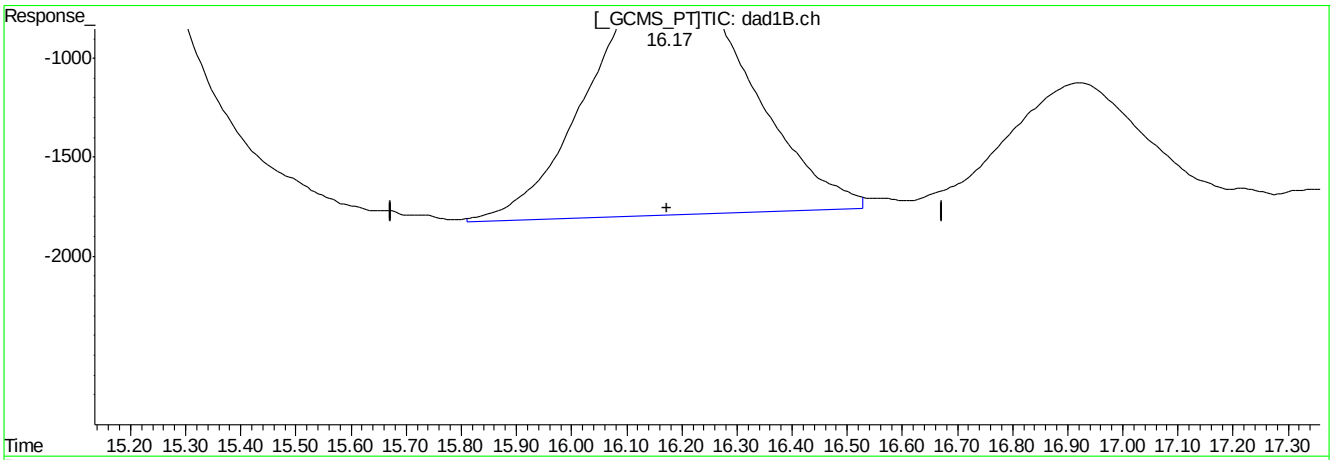
response 117021

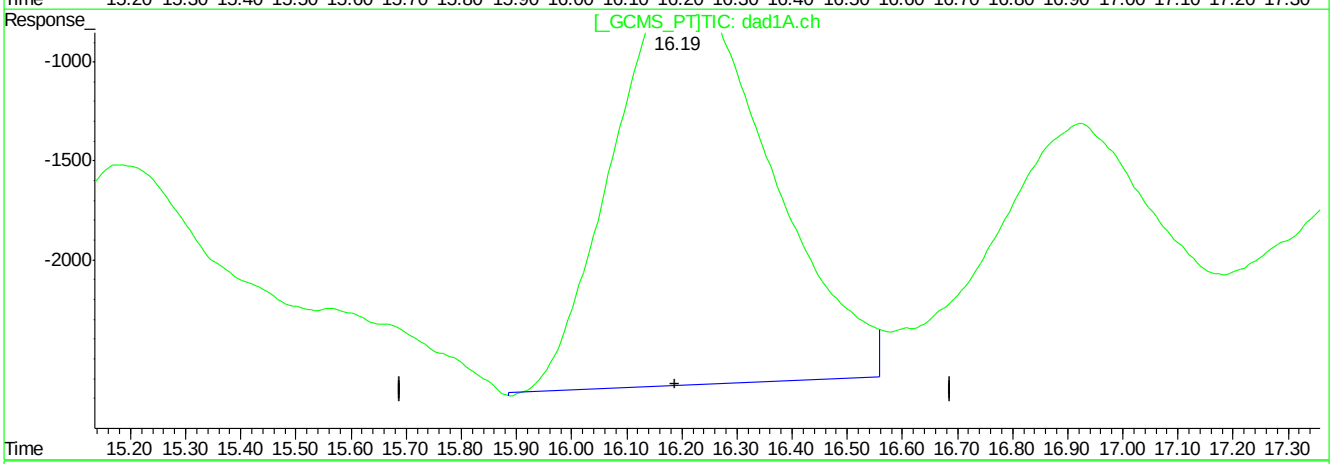
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:46:16 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:47 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(15) 3,5-Dinitroaniline

16.17min 22.495ppb m

response 240696

(15) 3,5-Dinitroaniline #2

16.19min 0.000ppb m

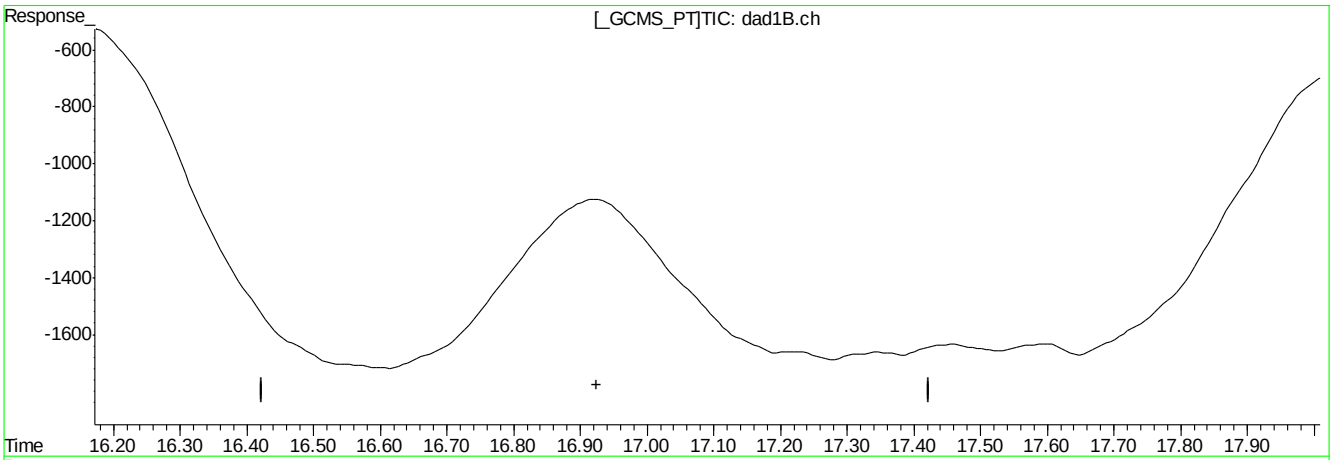
response 396614

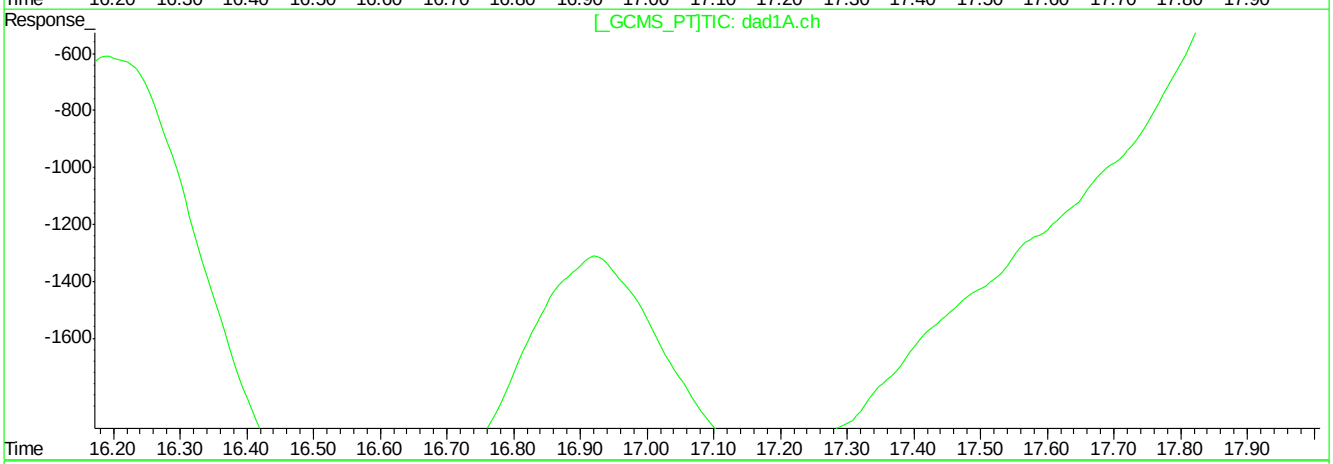
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:50:23 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:47 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(16) o-Nitrotoluene

0.00min 0.000ppb

response 0

(16) o-Nitrotoluene #2

0.00min 0.000ppb

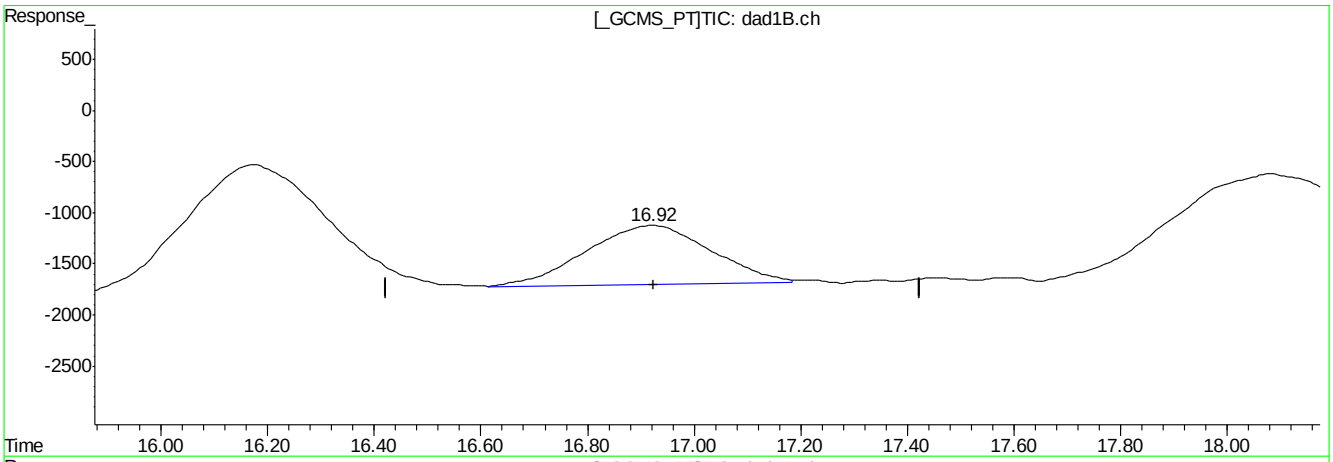
response 0

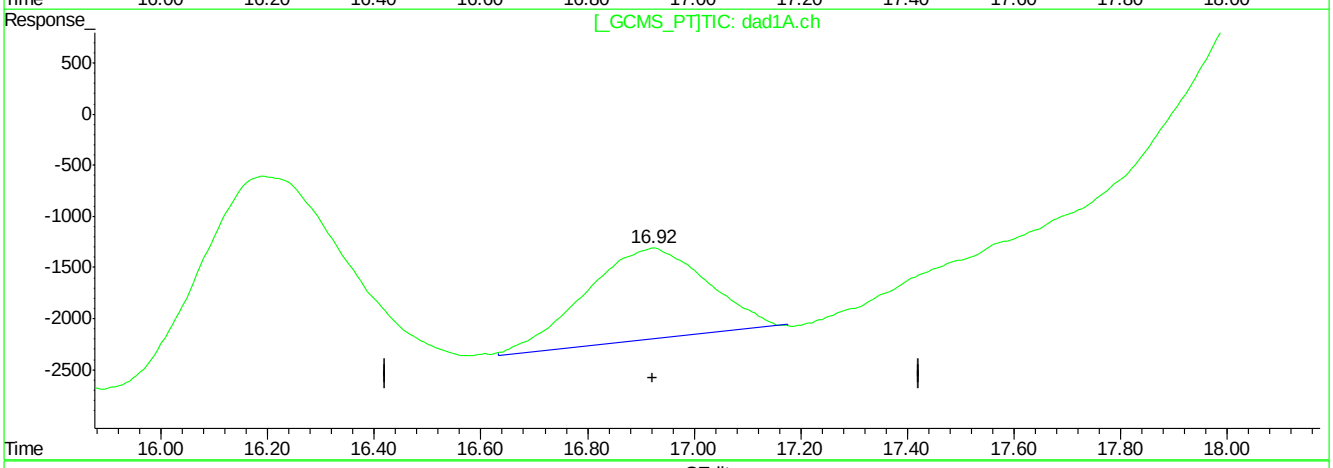
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:50:27 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:47 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(16) o-Nitrotoluene

16.92min 16.130ppb m

response 94311

(16) o-Nitrotoluene #2

16.92min 0.000ppb m

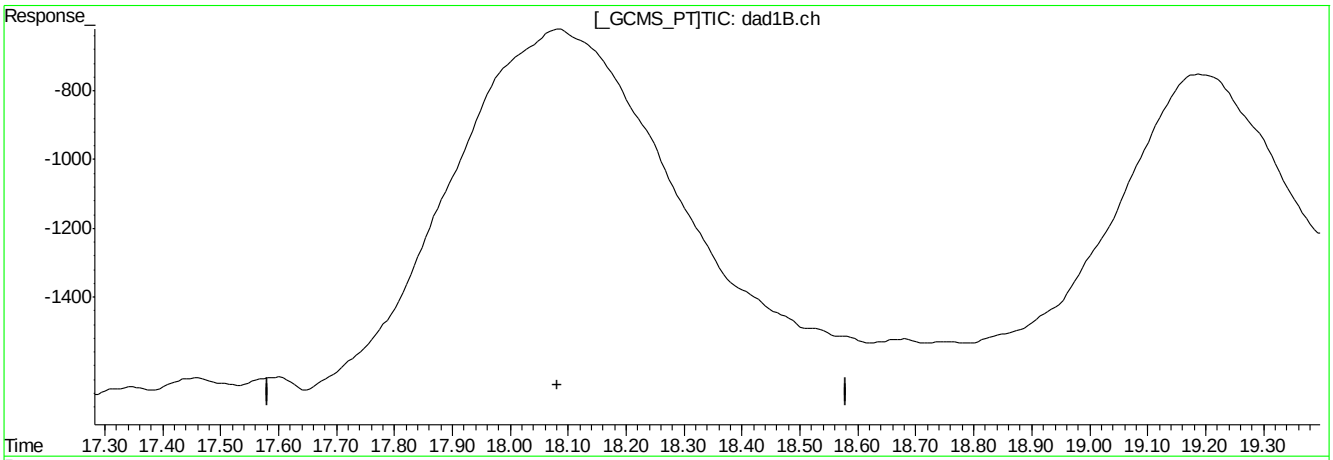
response 139639

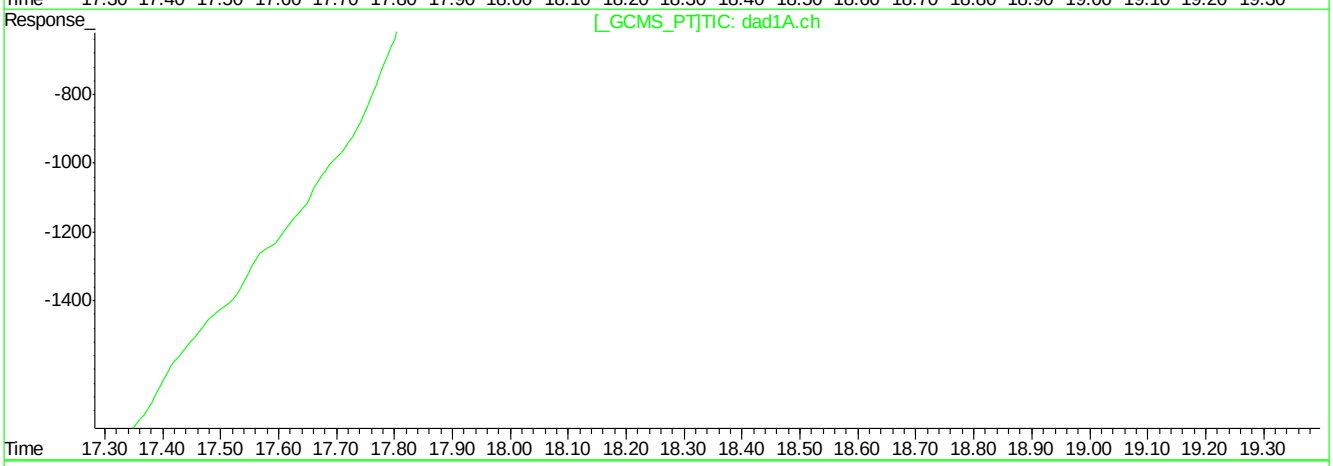
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:50:35 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:47 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(17) p-Nitrotoluene

0.00min 0.000ppb

response 0

(17) p-Nitrotoluene #2

0.00min 0.000ppb

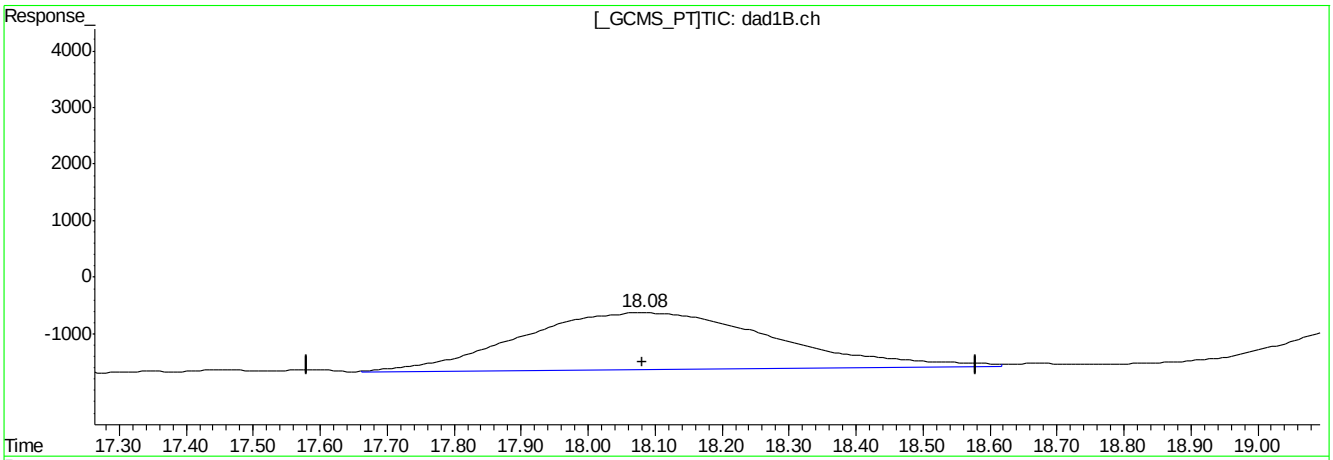
response 0

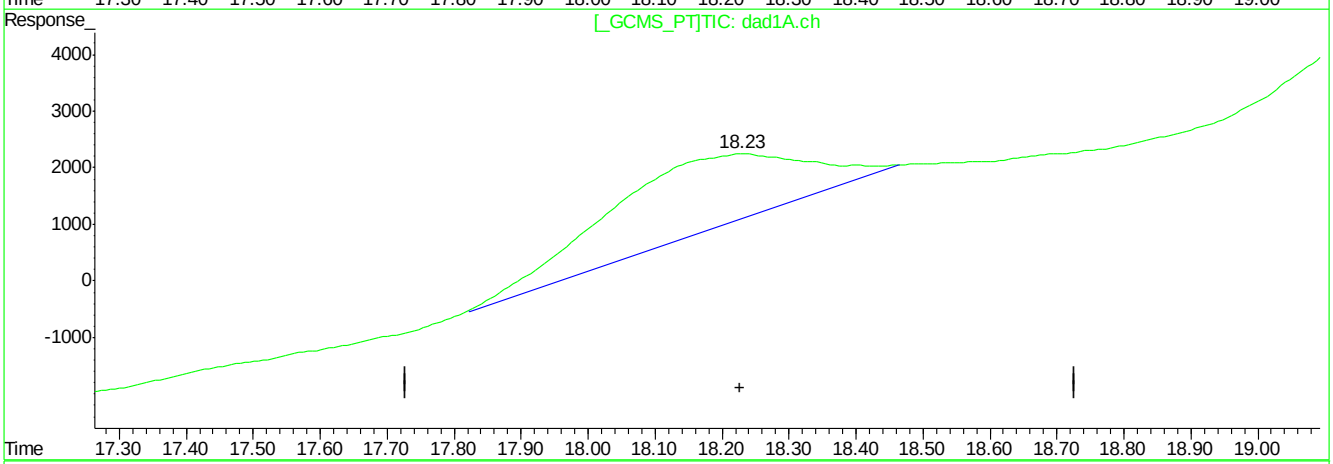
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:50:40 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:47 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(17) p-Nitrotoluene

18.08min 45.787ppb m

response 265650

(17) p-Nitrotoluene #2

18.23min 0.000ppb m

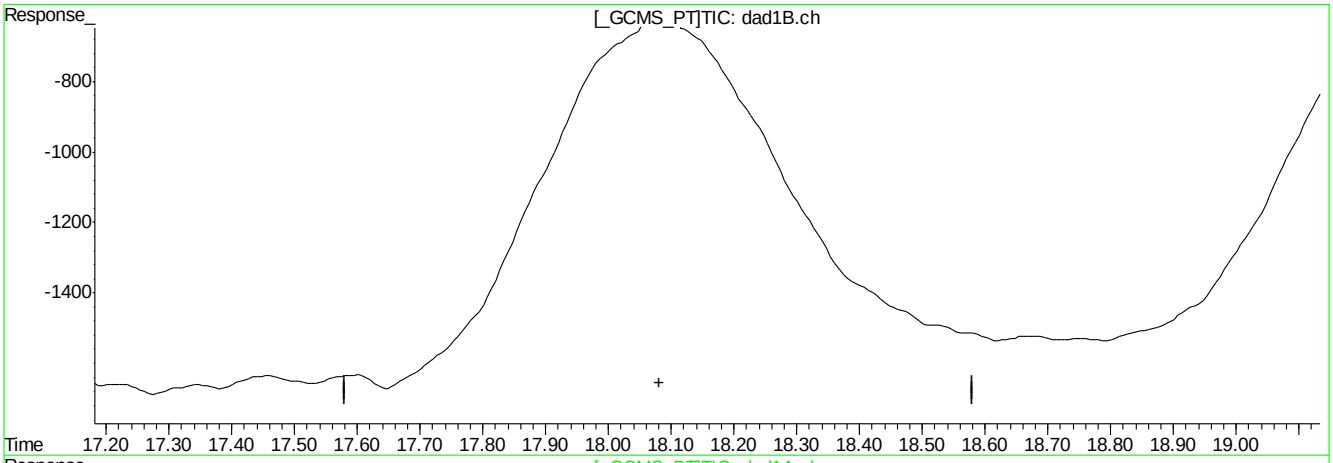
response 270413

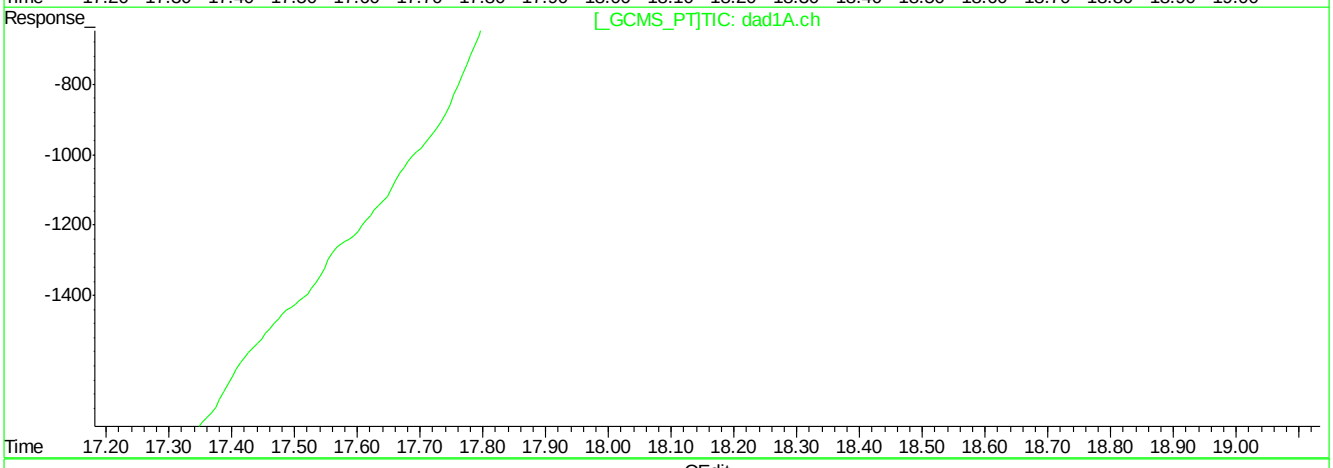
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:50:49 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:47 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(18) 4-Amino-2,6-Dinitrotoluene

0.00min 0.000ppb

response 0

(18) 4-Amino-2,6-Dinitrotoluene #2

0.00min 0.000ppb

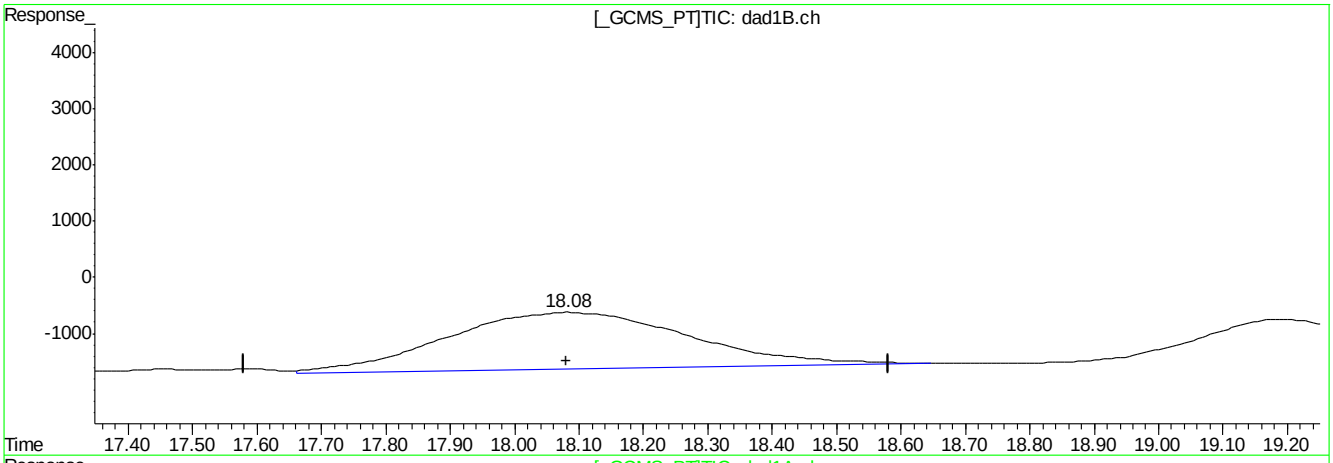
response 0

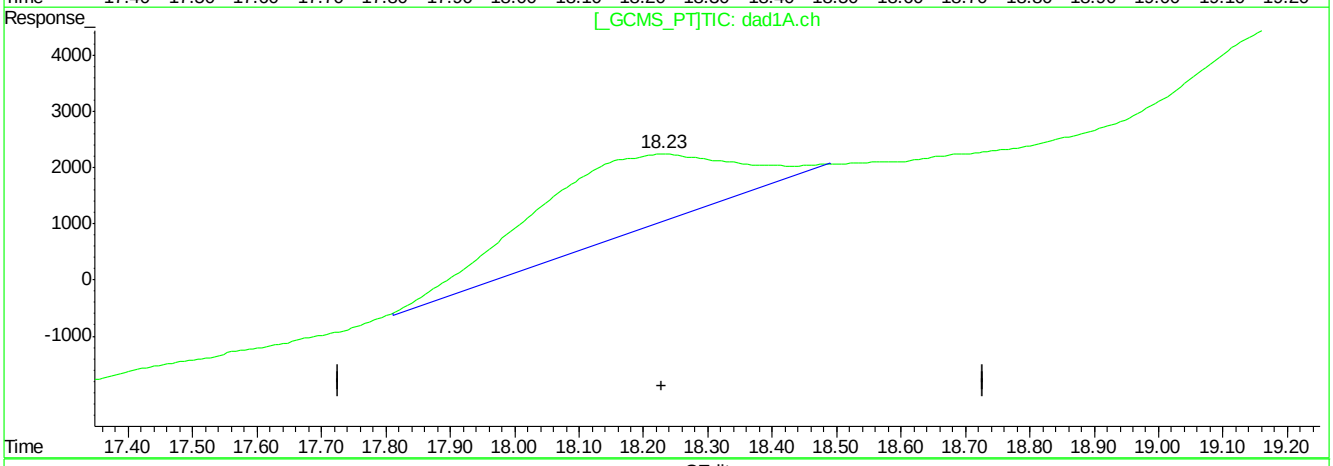
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:50:54 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:47 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(18) 4-Amino-2,6-Dinitrotoluene

18.08min 45.230ppb m

response 262411

(18) 4-Amino-2,6-Dinitrotoluene #2

18.23min 0.000ppb m

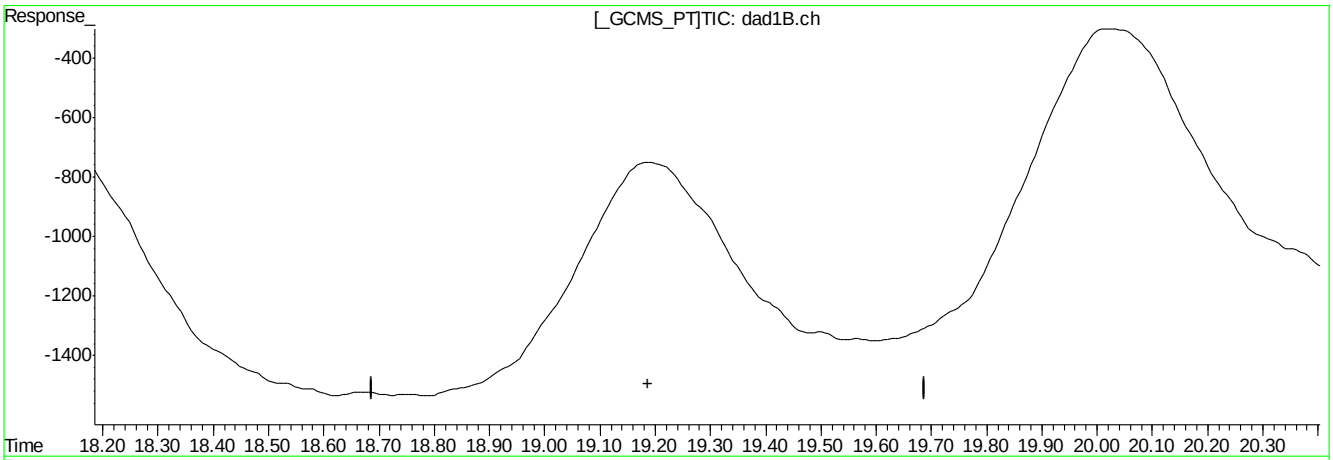
response 288470

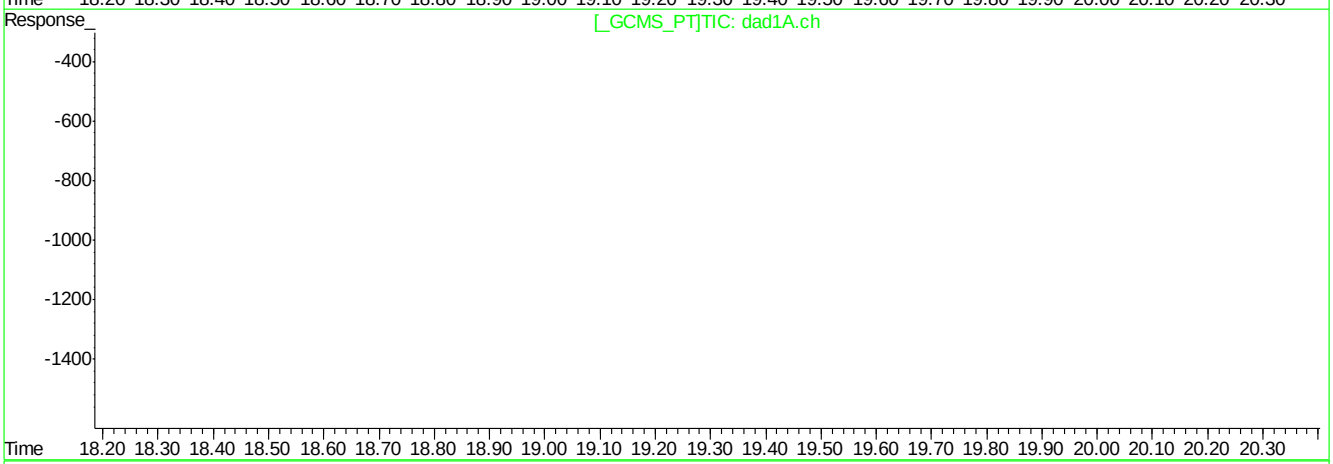
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:51:06 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:47 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(19) m-Nitrotoluene

0.00min 0.000ppb

response 0

(19) m-Nitrotoluene #2

0.00min 0.000ppb

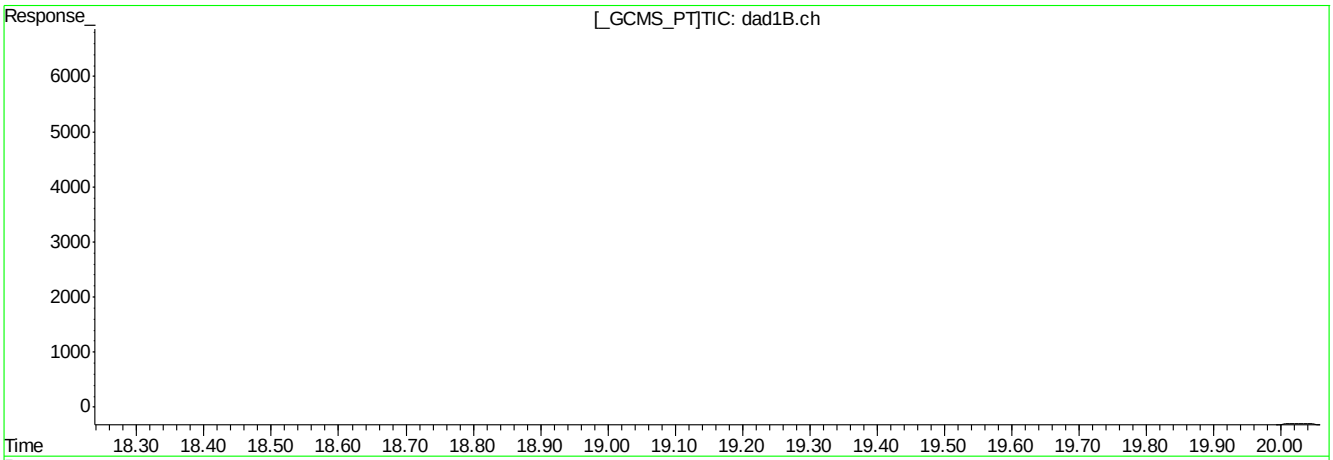
response 0

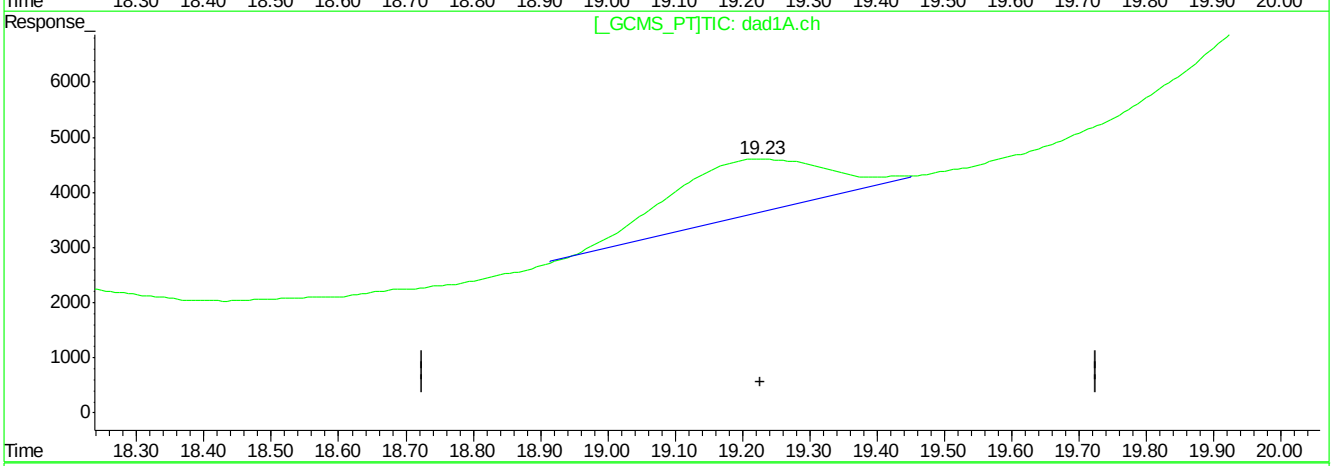
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:51:12 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:47 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(19) m-Nitrotoluene

19.19min 20.576ppb m

response 127570

(19) m-Nitrotoluene #2

19.23min 0.000ppb m

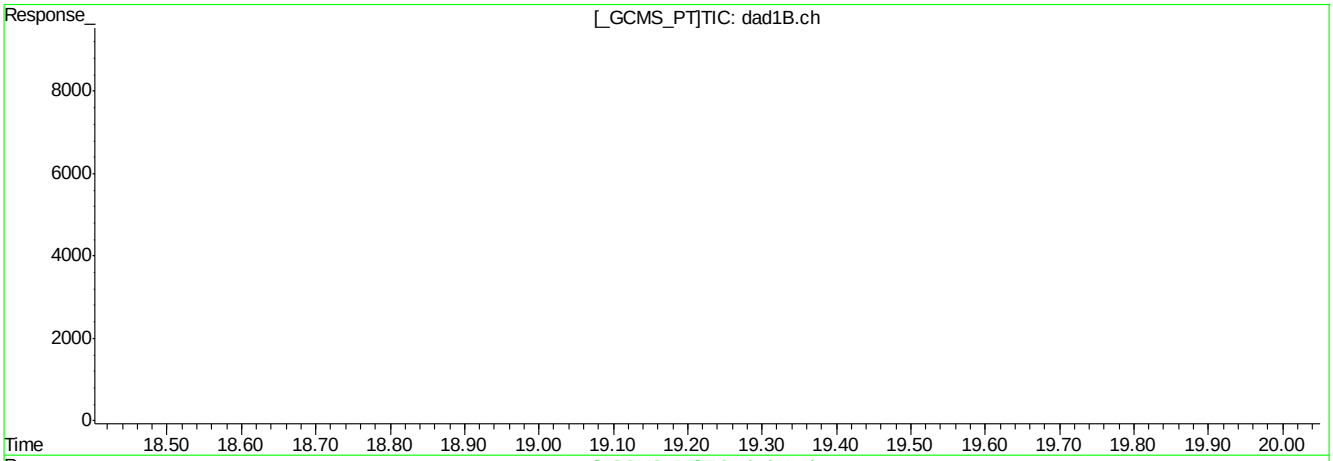
response 163086

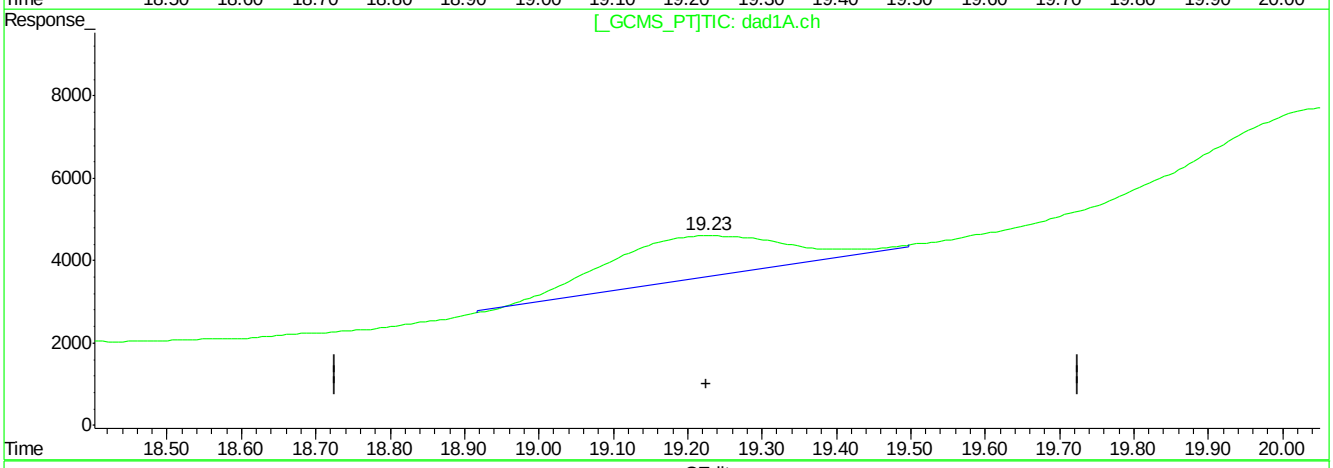
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:51:24 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:47 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




QEdit

(20) 2-Amino-4,6-Dinitrotoluene

20.02min 21.050ppb m

response 205160

(20) 2-Amino-4,6-Dinitrotoluene #2

19.23min 0.000ppb m

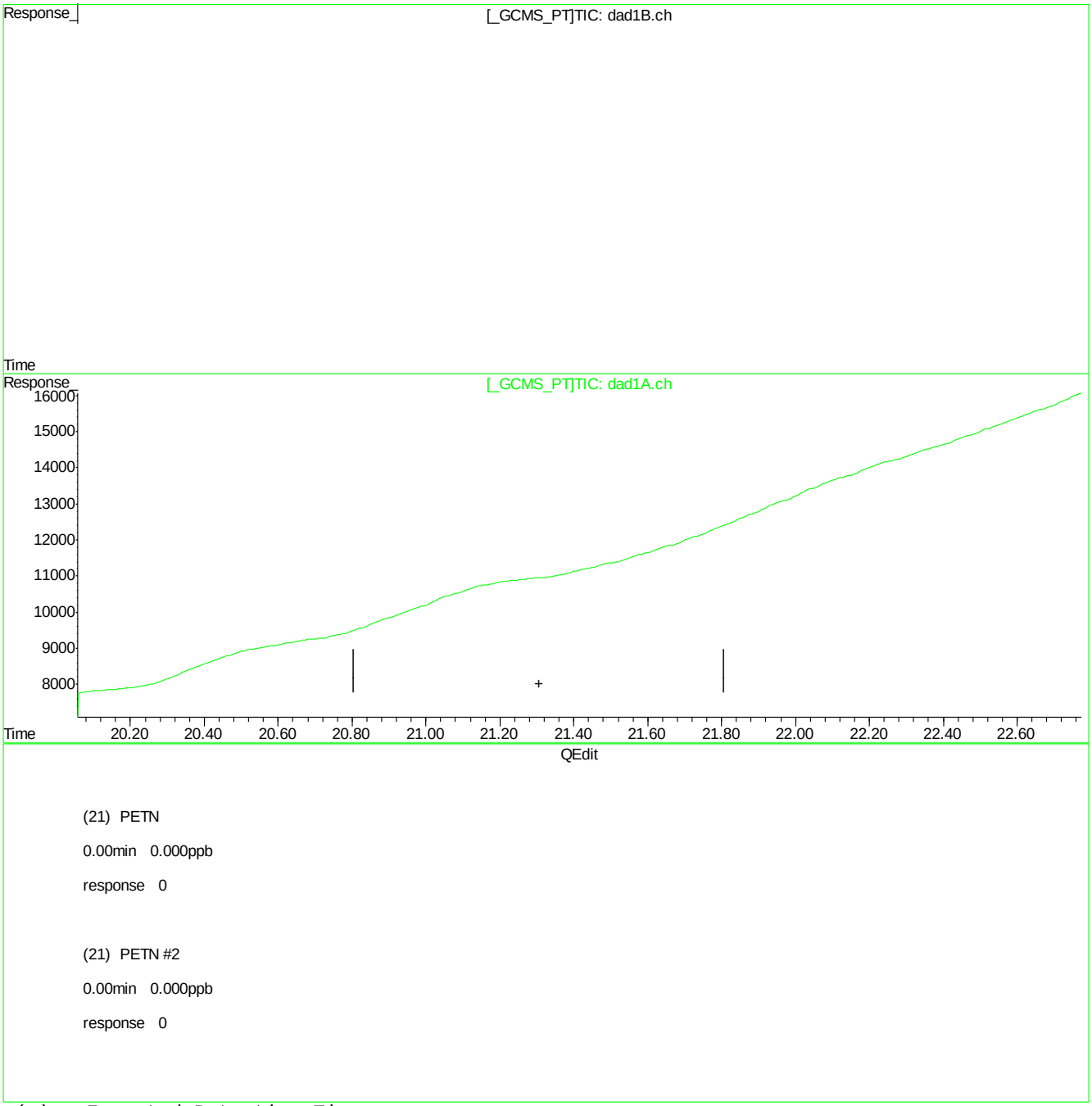
response 174614

(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:51:35 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:47 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration

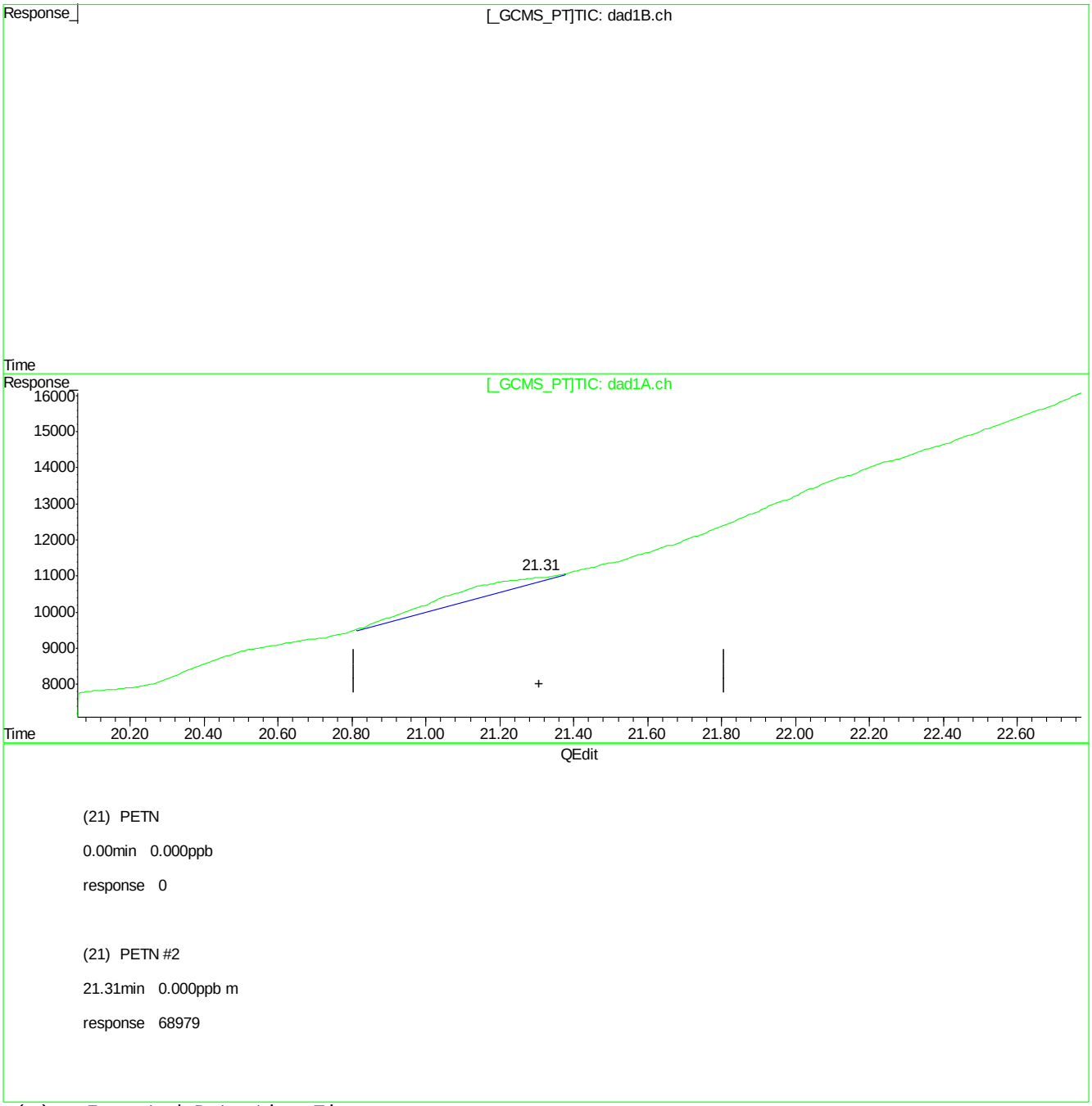



(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:51:39 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:47 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:42:49 2024
Response via : Multiple Level Calibration




(21) PETN

0.00min 0.000ppb

response 0

(21) PETN #2

21.31min 0.000ppb m

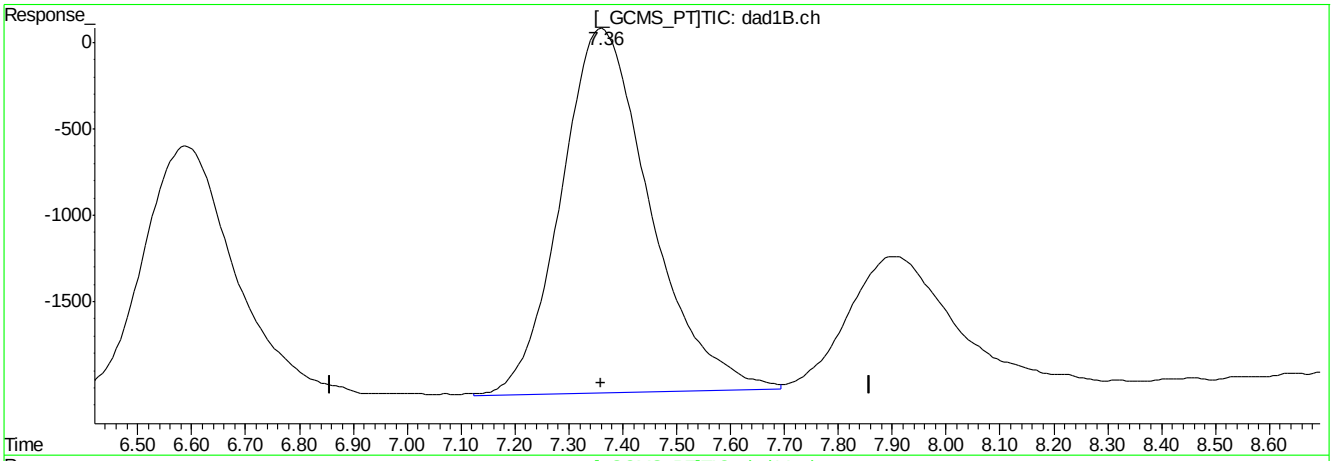
response 68979

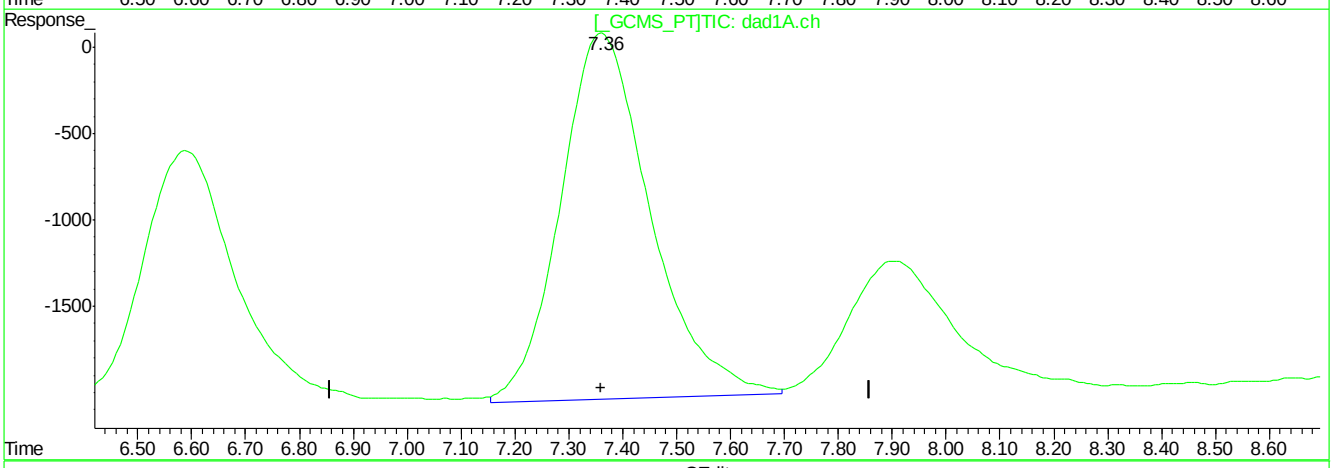
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Thu Oct 03 14:51:45 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:51 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Fri Oct 04 15:40:51 2024
Response via : Multiple Level Calibration




QEdit

(5) 1,3,5-Trinitrobenzene

7.36min 24.303ppb m

response 243687

(5) 1,3,5-Trinitrobenzene #2

7.36min 0.000ppb m

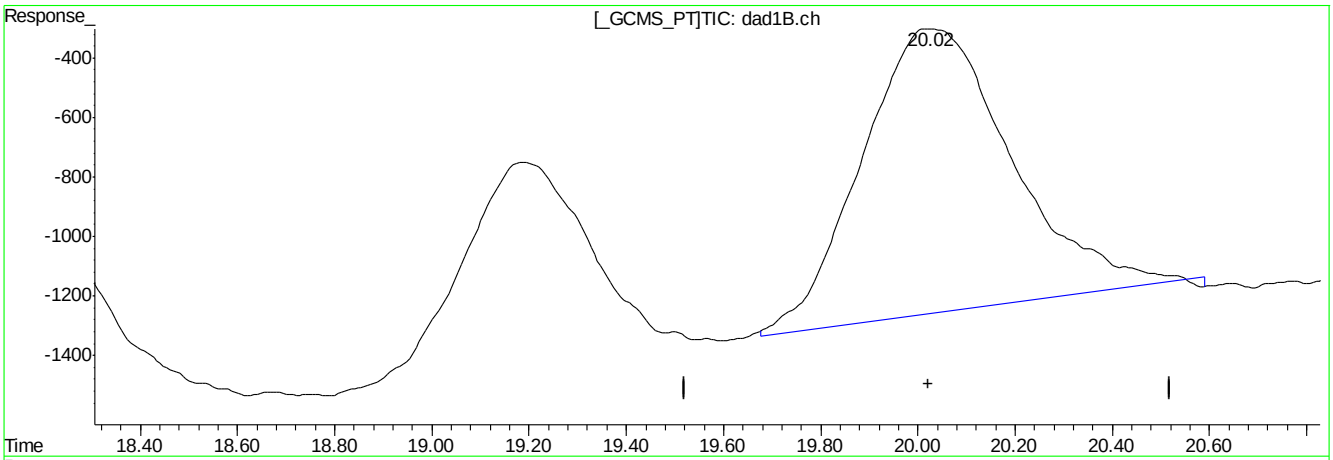
response 245712

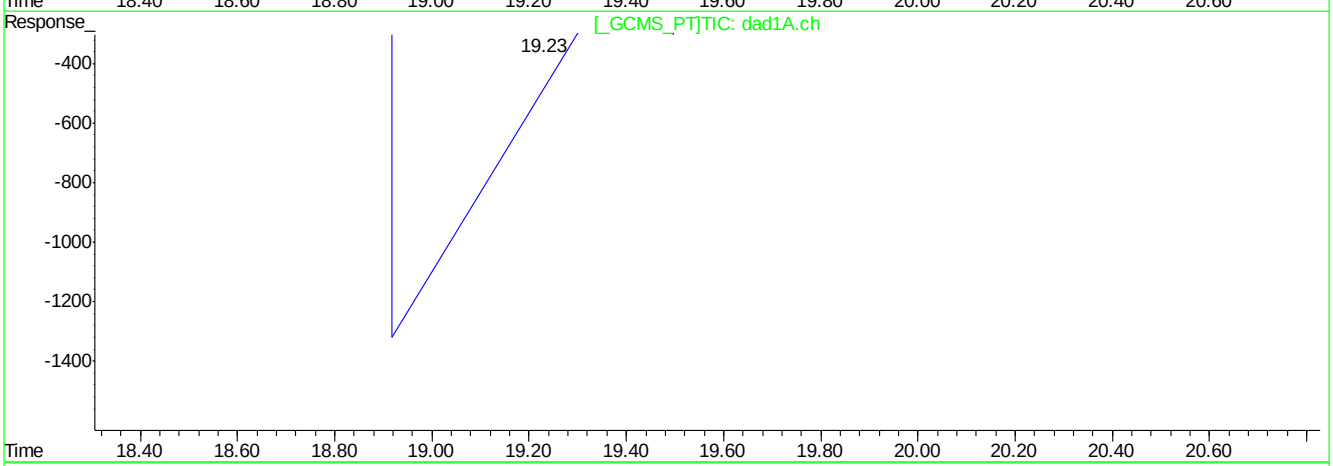
(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Mon Oct 07 11:14:35 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630269.D\dad1A.ch
Acq On : 03-Oct-2024, 09:38:18 Operator: fouads
Sample : IC3484-20 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:51 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Fri Oct 04 15:40:51 2024
Response via : Multiple Level Calibration




QEdit

(20) 2-Amino-4,6-Dinitrotoluene

20.02min 21.050ppb m

response 205160

(20) 2-Amino-4,6-Dinitrotoluene #2

19.23min 0.000ppb m

response 174614

(+) = Expected Retention Time
GG630269.D GGG3484_100324.M Mon Oct 07 11:15:40 2024

Manual Integrations APPROVED (compounds with "m" flag)
William Hustedde 10/07/24 15:21

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1A.ch
Acq On : 03-Oct-2024, 10:18:41 Operator: fouads
Sample : IC3484-200 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 03 14:56:55 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:56:41 2024
Response via : Initial Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb | |
|---|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | | |
| 12) S | 3,4-Dinitrotolue | 14.44 | 14.38 | 805959 | 1413464 | 153.725m | 135.220m | |
| Spiked Amount | 500.000 | Range | 70 - 136 | Recovery | = | 30.75%# | 27.04%# | |
| | Target Compounds | | | | | | | |
| 1) | TNX | 4.83 | 4.83 | 721353 | 721353 | 91.782 | NoCal | # |
| 2) | HMX | 5.21 | 5.21 | 610106 | 610106 | 163.479 | NoCal | # |
| 3) | DNX | 5.45 | 5.45 | 1243350 | 1243350 | 190.862 | NoCal | # |
| 4) | MNX | 6.61 | 6.61 | 1283958 | 1283958 | 217.555 | NoCal | # |
| 5) | 1,3,5-Trinitrobe | 7.38 | 7.38 | 1766608 | 1766608 | 176.183 | NoCal | # |
| 6) | RDX | 7.93 | 7.93 | 828984 | 789180 | 165.307m | NoCal | m# |
| 7) | 1,3-Dinitrobenze | 9.88 | 9.88 | 2430337 | 1867797 | 177.361 | NoCal | # |
| 8) | Nitrobenzene | 10.93 | 10.93 | 1577417 | 1478771 | 173.501 | NoCal | # |
| 9) | 2,4,6-Trinitroto | 11.49 | 11.49 | 1705529 | 2215639 | 173.259 | NoCal | # |
| 10) | Nitroglycerin | 0.00 | 12.29 | 0 | 731754 | N.D. | NoCal | m |
| 11) | Tetryl | 12.87 | 12.87 | 1224165 | 2067216 | 164.055 | NoCal | # |
| 13) | 2,6-Dinitrotolue | 14.58 | 14.57 | 1288535 | 1818344 | 189.410m | NoCal | m# |
| 14) | 2,4-Dinitrotolue | 15.20 | 15.20 | 2284291 | 1499121 | 176.869 | NoCal | # |
| 15) | 3,5-Dinitroanili | 16.18 | 16.18 | 1711718 | 2748719 | 159.974 | NoCal | # |
| 16) | o-Nitrotoluene | 16.91 | 16.92 | 921019 | 1415511 | 157.526m | NoCal | # |
| 17) | p-Nitrotoluene | 18.05 | 18.07 | 1991410 | 3573260 | 343.236 | NoCal | # |
| 18) | 4-Amino-2,6-Dini | 18.05 | 18.07 | 1991410 | 3573260 | 343.245 | NoCal | # |
| 19) | m-Nitrotoluene | 19.19 | 19.20 | 992478 | 1613698 | 160.081m | NoCal | # |
| 20) | 2-Amino-4,6-Dini | 20.02 | 20.02 | 1560328 | 2476451 | 160.092 | NoCal | # |
| 21) | PETN | 0.00 | 21.16 | 0 | 596078 | N.D. | NoCal | m |

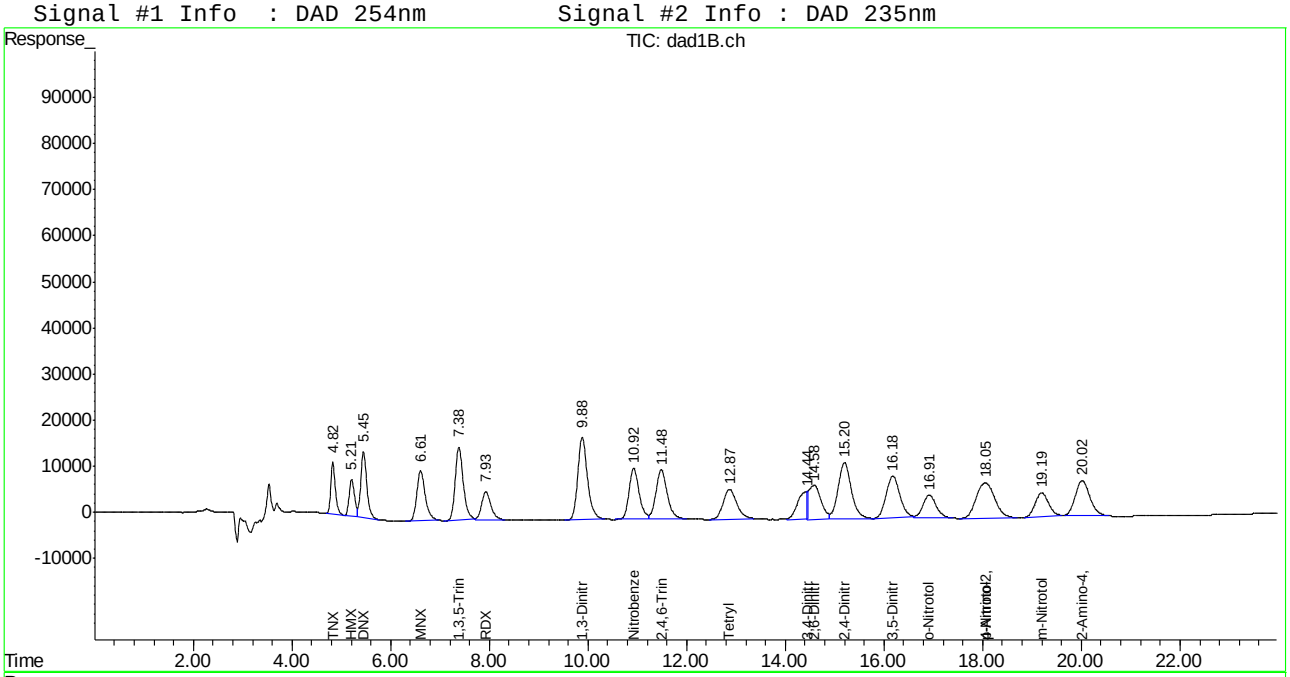
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.

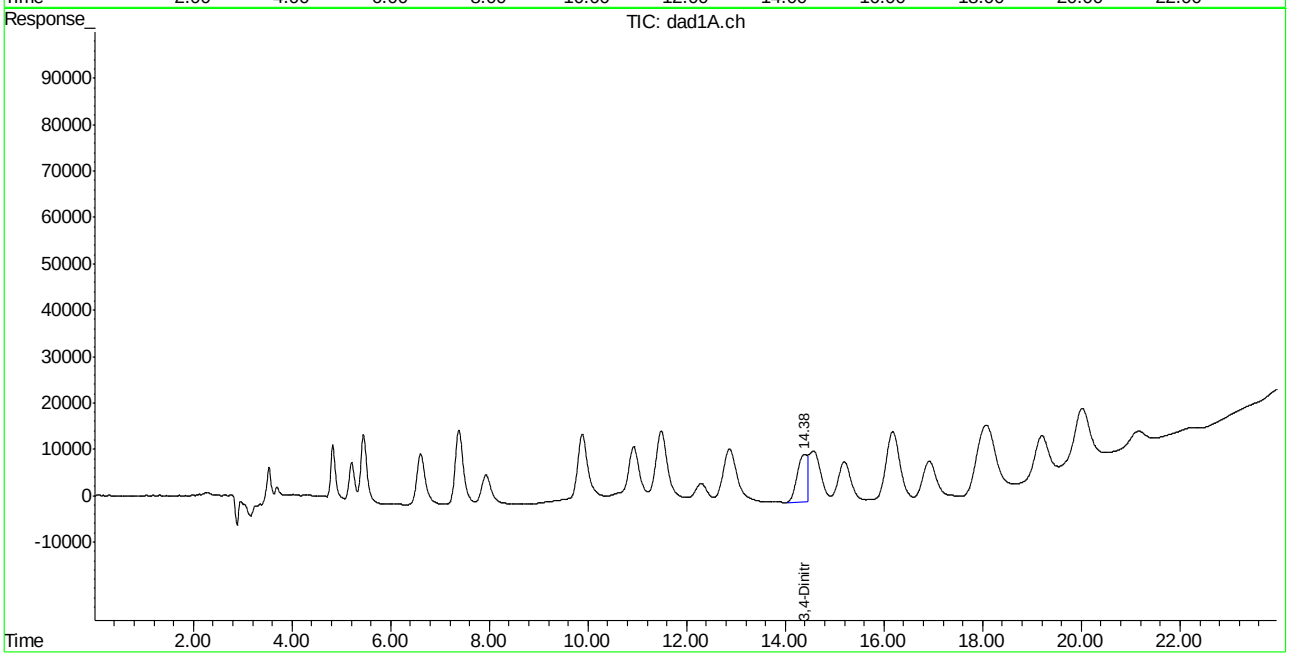
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1A.ch
Acq On : 03-Oct-2024, 10:18:41 Operator: fouads
Sample : IC3484-200 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:59 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:56:41 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm



# Manual Integration Approval Summary



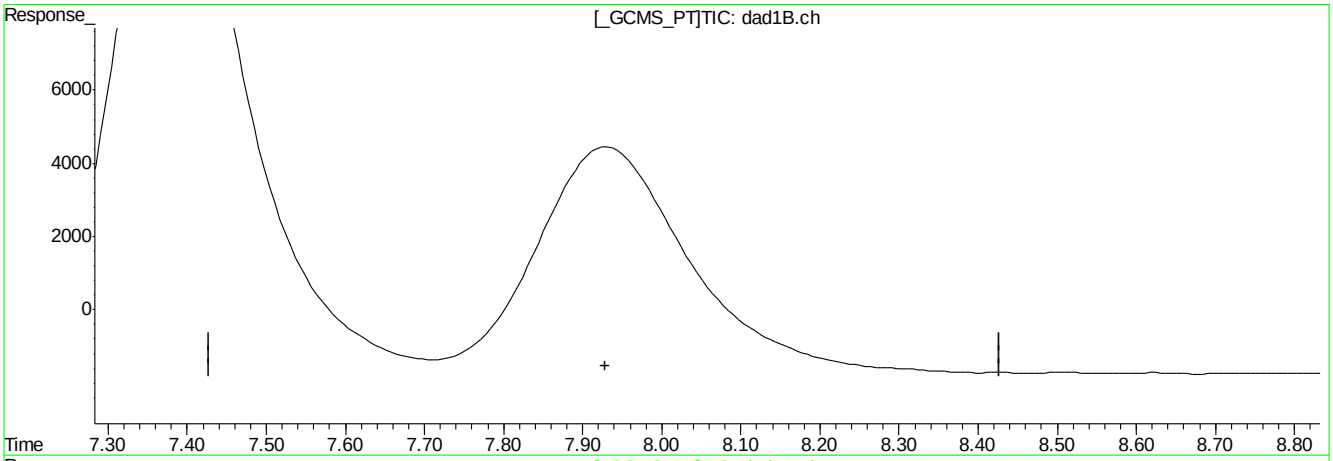
**Sample Number:** GGG3484-IC3484
**Lab FileID:** GG630270.D
**Injection Time:** 10/03/24 10:18
**Method:** SW846 8330B
**Analyst approved:** 10/07/24 09:34 Fouad Sekkar
**Supervisor approved:** 10/07/24 15:21 William Hustedde

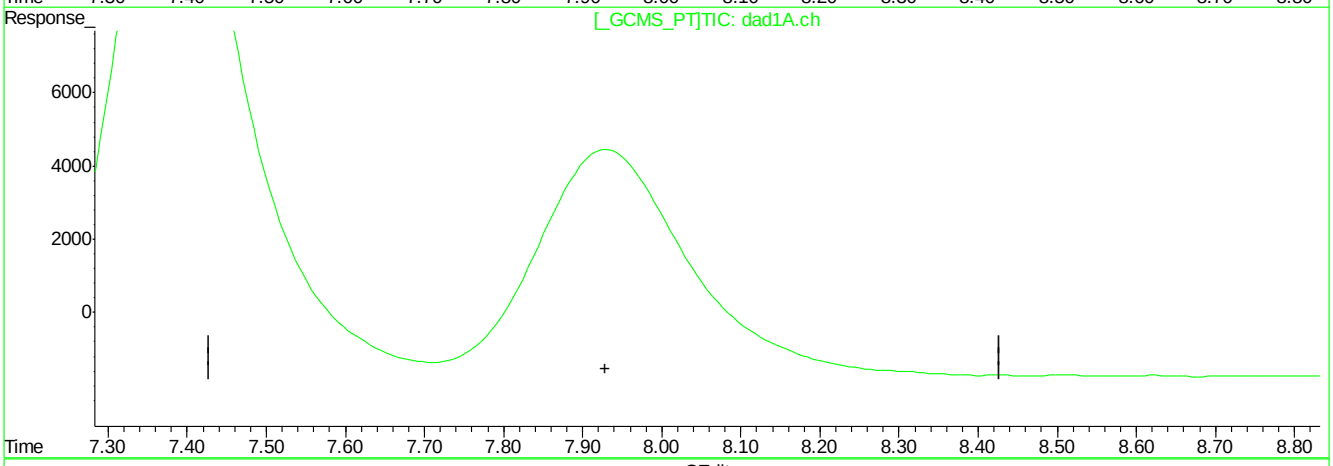
| Parameter | CAS | Sig# | R.T. (min.) | Reason |
|---|---|---|---|---|
| RDX | 121-82-4 | 1 | 7.93 | Poor instrument integration |
| 3,4-Dinitrotoluene | 610-39-9 | 2 | 14.38 | Poor instrument integration |
| 3,4-Dinitrotoluene | 610-39-9 | 1 | 14.44 | Poor instrument integration |
| 2,6-Dinitrotoluene | 606-20-2 | 1 | 14.58 | Poor instrument integration |
| o-Nitrotoluene | 88-72-2 | 1 | 16.91 | Poor instrument integration |
| m-Nitrotoluene | 99-08-1 | 1 | 19.19 | Poor instrument integration |

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1A.ch
Acq On : 03-Oct-2024, 10:18:41 Operator: fouads
Sample : IC3484-200 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:56 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:56:41 2024
Response via : Multiple Level Calibration




QEdit

(6) RDX

0.00min 0.000ppb

response 0

(6) RDX #2

0.00min 0.000ppb

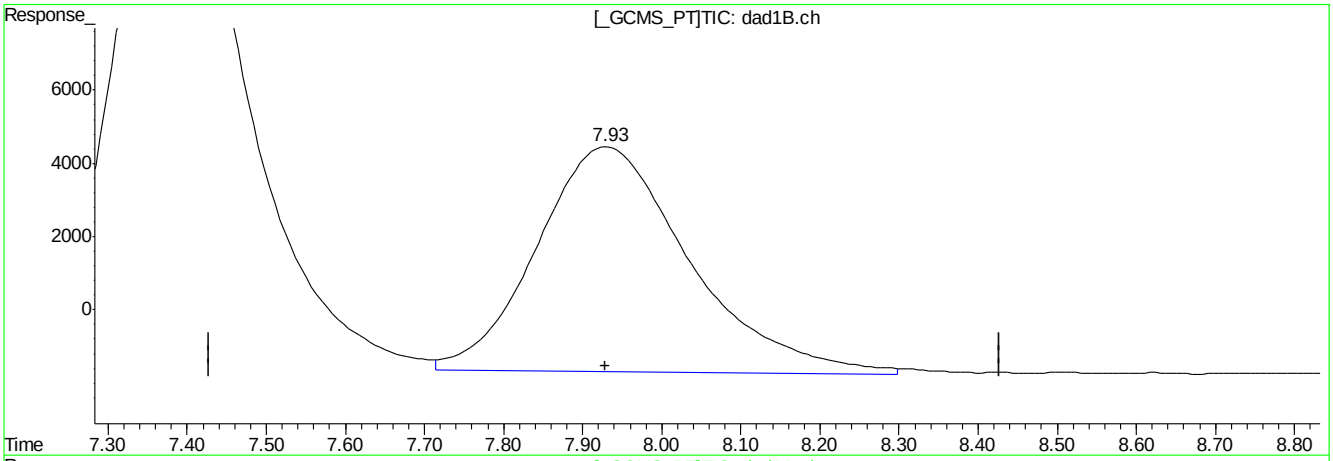
response 0

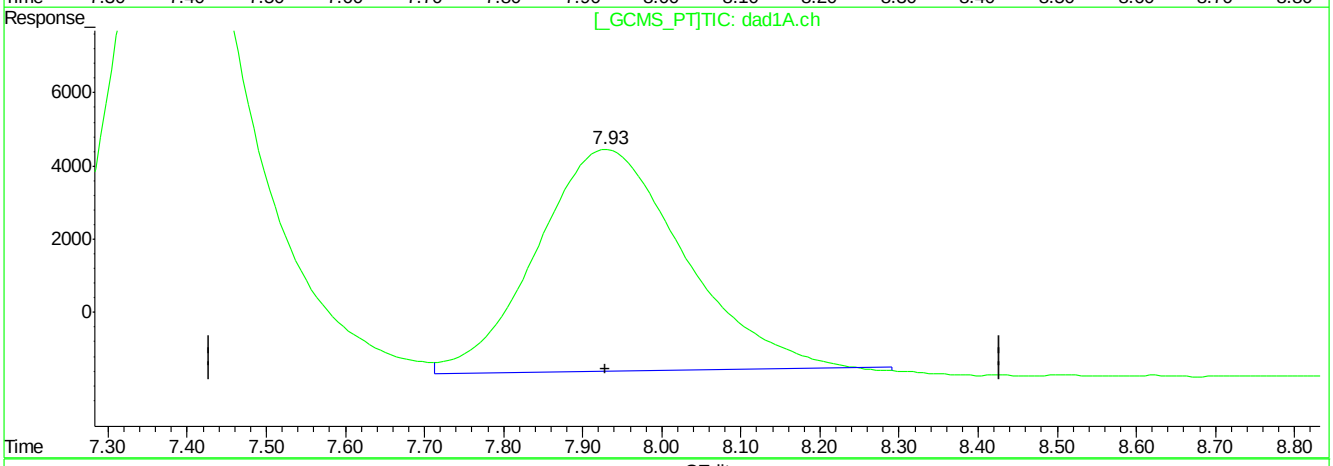
(+) = Expected Retention Time
GG630270.D GGG3484_100324.M Thu Oct 03 14:57:19 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1A.ch
Acq On : 03-Oct-2024, 10:18:41 Operator: fouads
Sample : IC3484-200 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:56 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:56:41 2024
Response via : Multiple Level Calibration




QEdit

(6) RDX

7.93min 165.307ppb m

response 828984

(6) RDX #2

7.93min 0.000ppb m

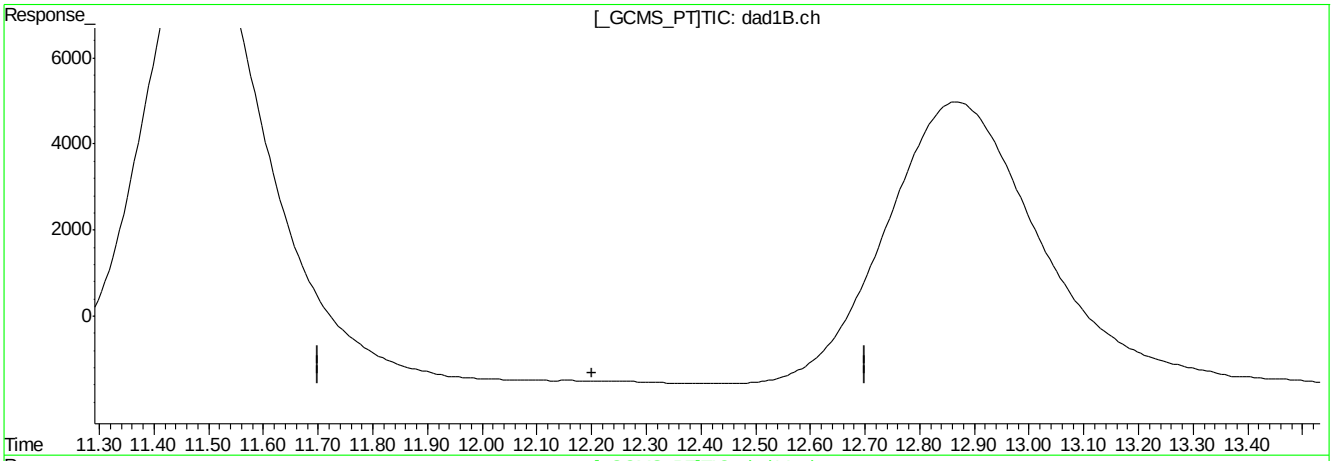
response 789180

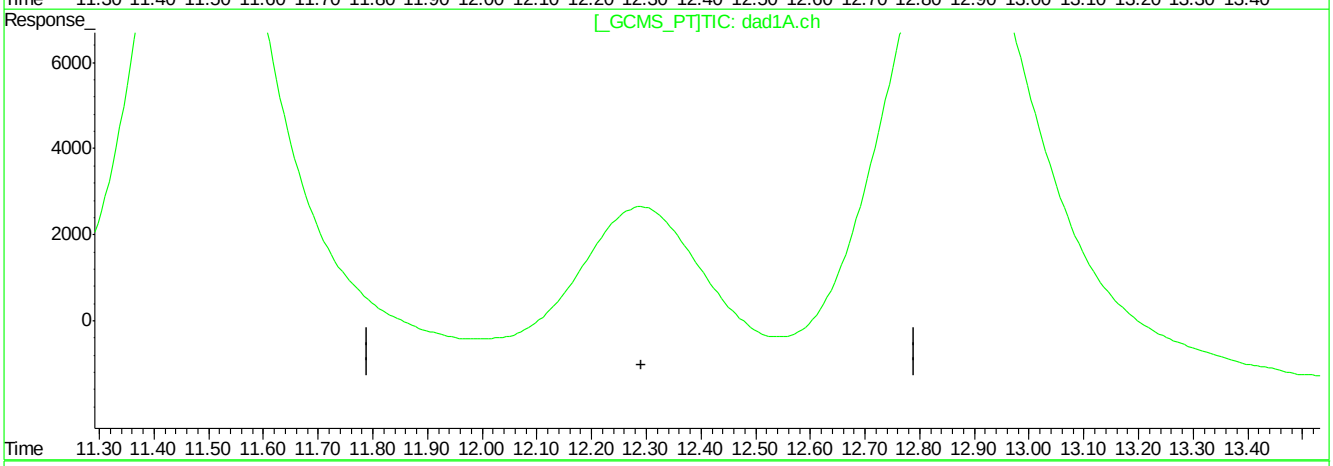
(+) = Expected Retention Time
GG630270.D GGG3484_100324.M Thu Oct 03 14:57:26 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1A.ch
Acq On : 03-Oct-2024, 10:18:41 Operator: fouads
Sample : IC3484-200 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:56 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:56:41 2024
Response via : Multiple Level Calibration




QEdit

(10) Nitroglycerin

0.00min 0.000ppb

response 0

(10) Nitroglycerin #2

0.00min 0.000ppb

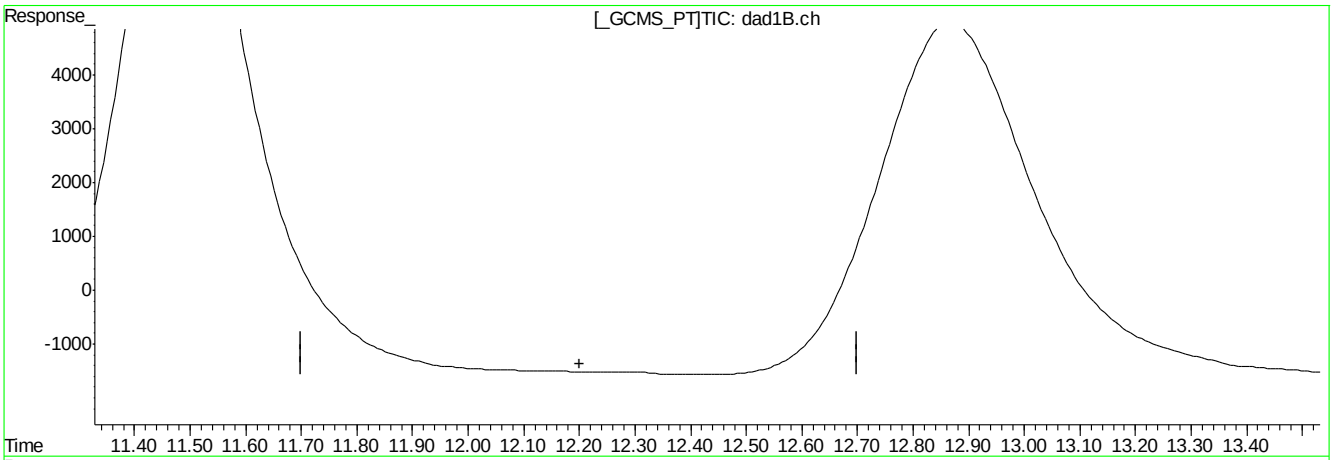
response 0

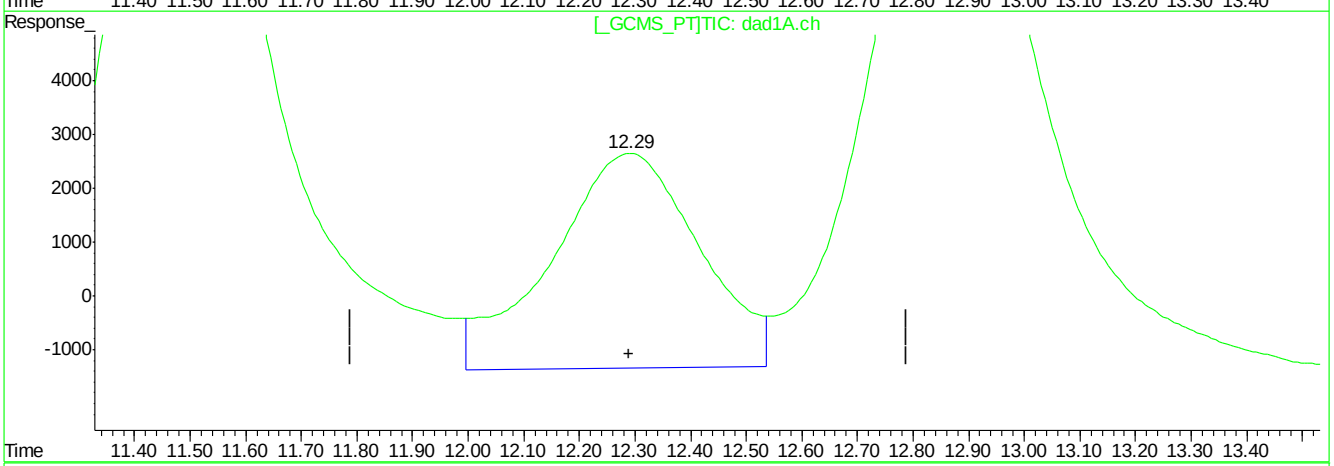
(+) = Expected Retention Time
GG630270.D GGG3484_100324.M Thu Oct 03 14:57:39 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1A.ch
Acq On : 03-Oct-2024, 10:18:41 Operator: fouads
Sample : IC3484-200 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:56 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:56:41 2024
Response via : Multiple Level Calibration




QEdit

(10) Nitroglycerin

0.00min 0.000ppb

response 0

(10) Nitroglycerin #2

12.29min 0.000ppb m

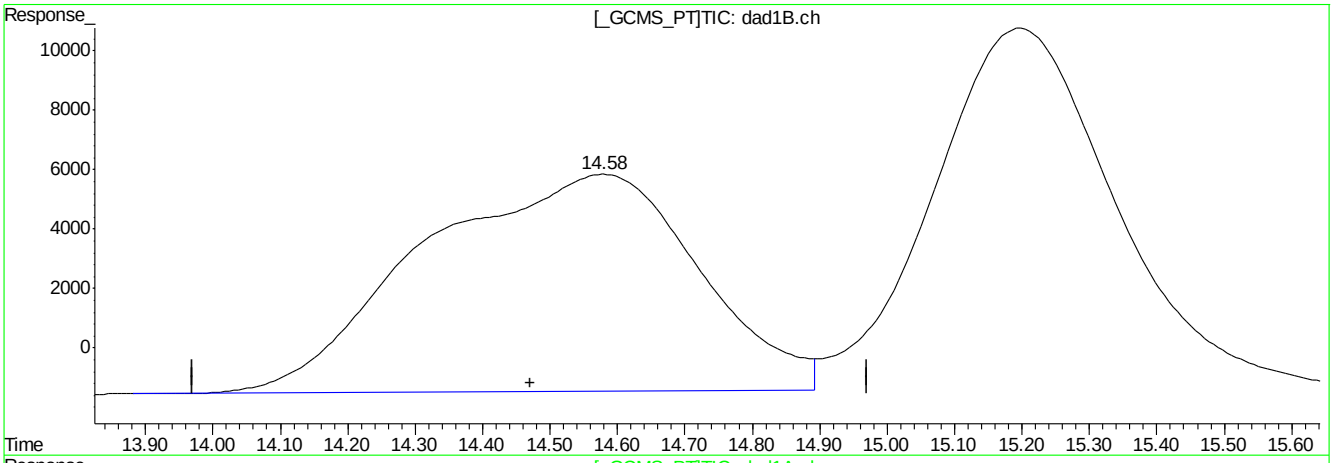
response 731754

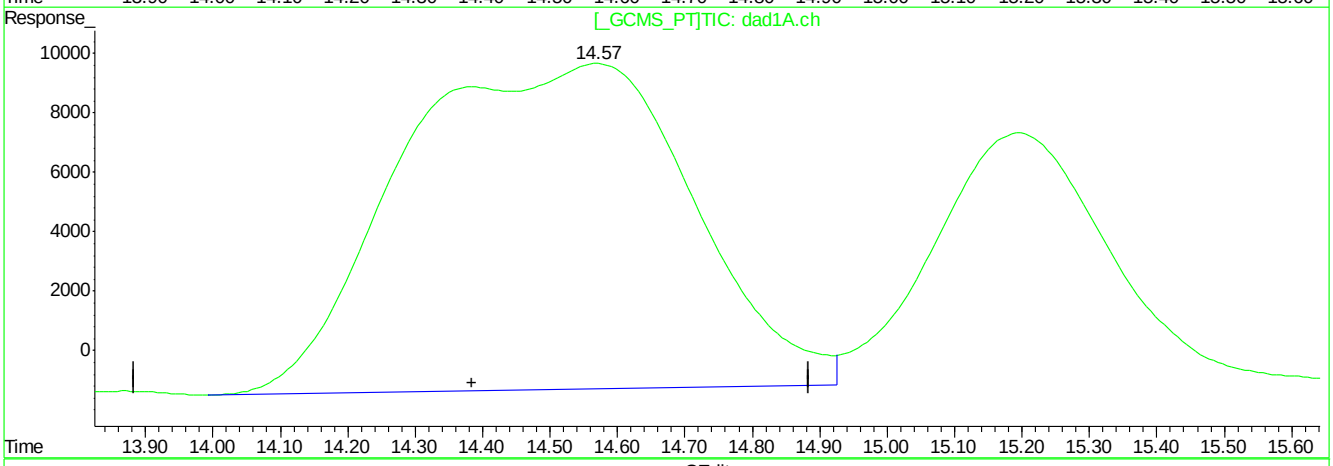
(+) = Expected Retention Time
GG630270.D GGG3484_100324.M Thu Oct 03 14:57:48 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1A.ch
Acq On : 03-Oct-2024, 10:18:41 Operator: fouads
Sample : IC3484-200 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:56 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:56:41 2024
Response via : Multiple Level Calibration




QEdit

(12) 3,4-Dinitrotoluene (S)

14.58min 395.203ppb

response 2071985

(12) 3,4-Dinitrotoluene #2 (S)

14.57min 315.849ppb

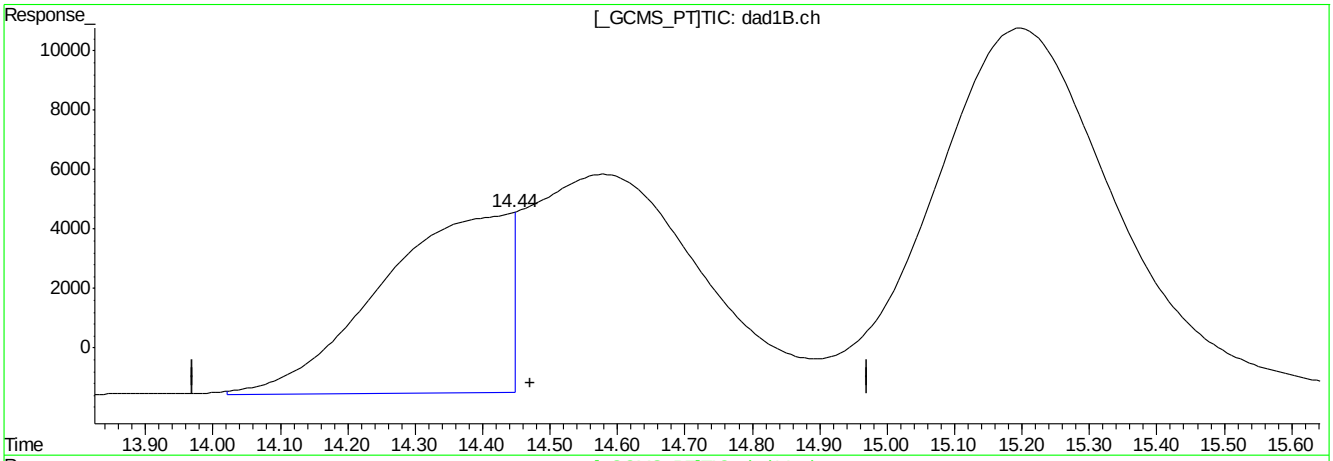
response 3301597

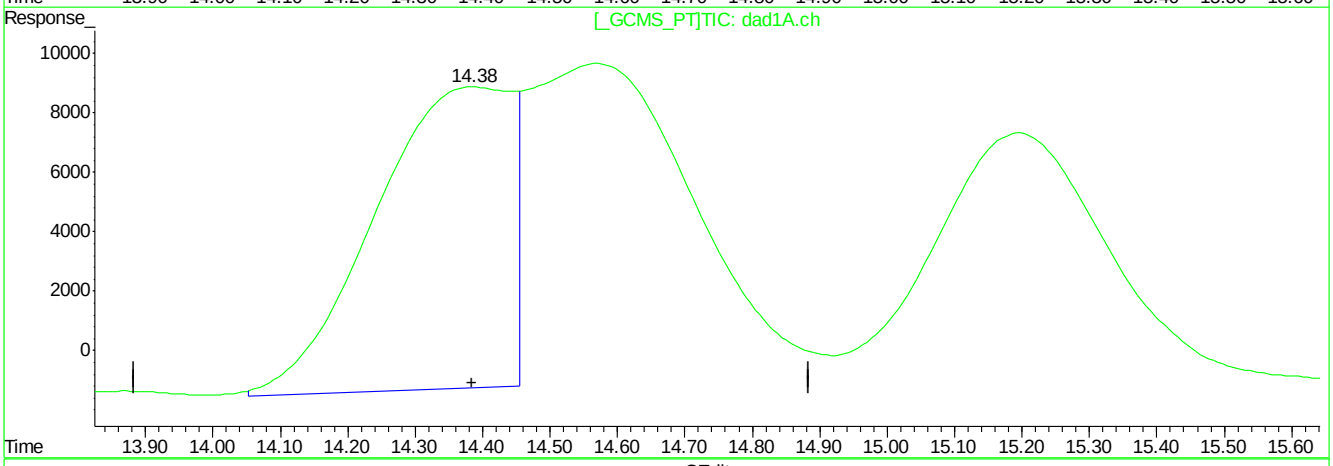
(+) = Expected Retention Time
GG630270.D GGG3484_100324.M Thu Oct 03 14:57:59 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1A.ch
Acq On : 03-Oct-2024, 10:18:41 Operator: fouads
Sample : IC3484-200 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:56 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:56:41 2024
Response via : Multiple Level Calibration




QEdit

(12) 3,4-Dinitrotoluene (S)

14.44min 153.725ppb m

response 805959

(12) 3,4-Dinitrotoluene #2 (S)

14.38min 135.220ppb m

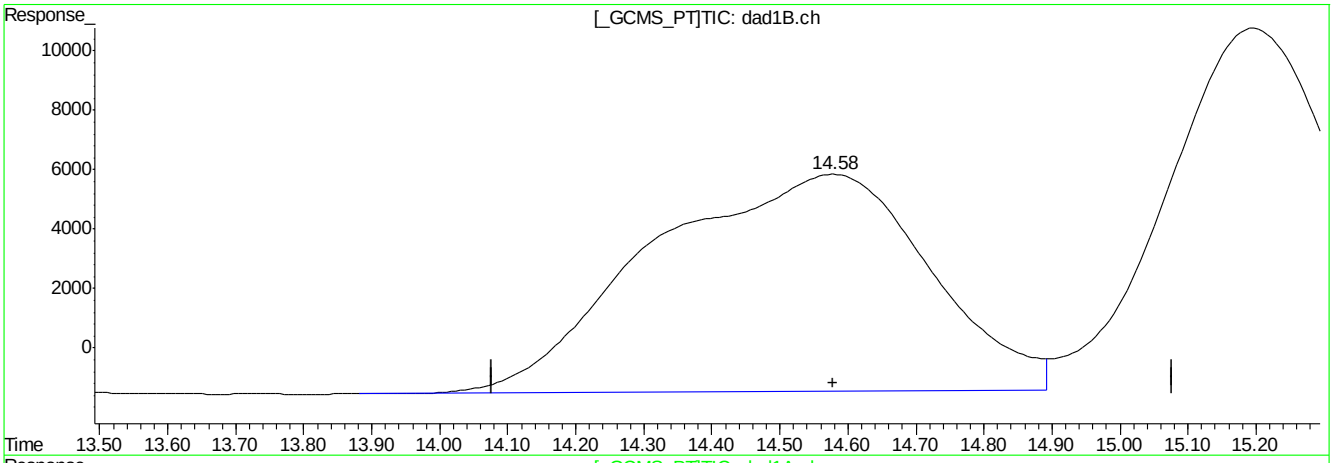
response 1413464

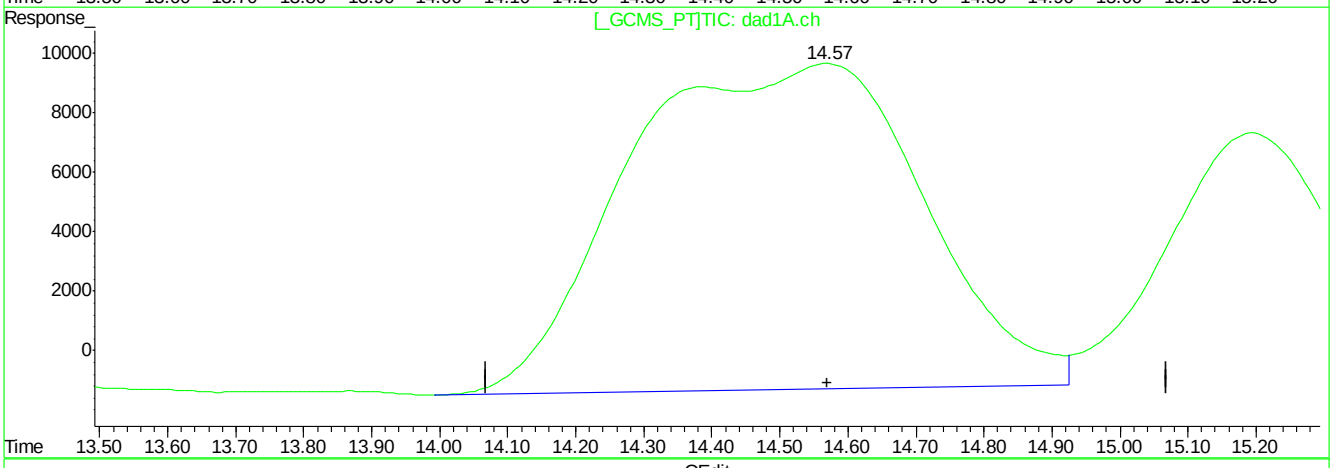
(+) = Expected Retention Time
GG630270.D GGG3484_100324.M Thu Oct 03 14:58:08 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1A.ch
Acq On : 03-Oct-2024, 10:18:41 Operator: fouads
Sample : IC3484-200 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:56 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:56:41 2024
Response via : Multiple Level Calibration




QEdit

(13) 2,6-Dinitrotoluene

14.58min 304.574ppb

response 2071985

(13) 2,6-Dinitrotoluene #2

14.57min 0.000ppb

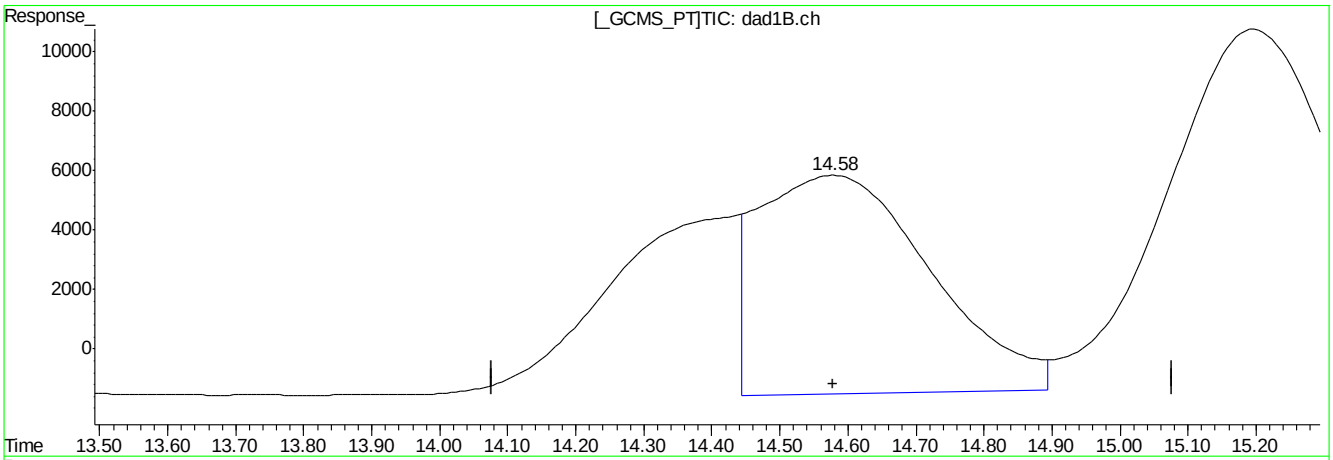
response 3301597

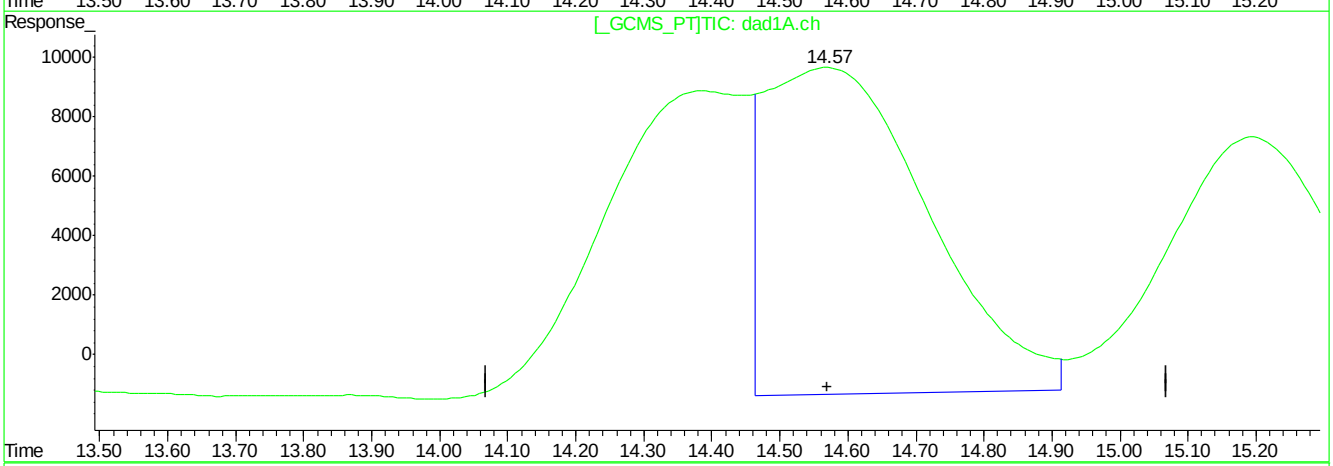
(+) = Expected Retention Time
GG630270.D GGG3484_100324.M Thu Oct 03 14:58:13 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1A.ch
Acq On : 03-Oct-2024, 10:18:41 Operator: fouads
Sample : IC3484-200 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:56 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:56:41 2024
Response via : Multiple Level Calibration




QEdit

(13) 2,6-Dinitrotoluene

14.58min 189.410ppb m

response 1288535

(13) 2,6-Dinitrotoluene #2

14.57min 0.000ppb m

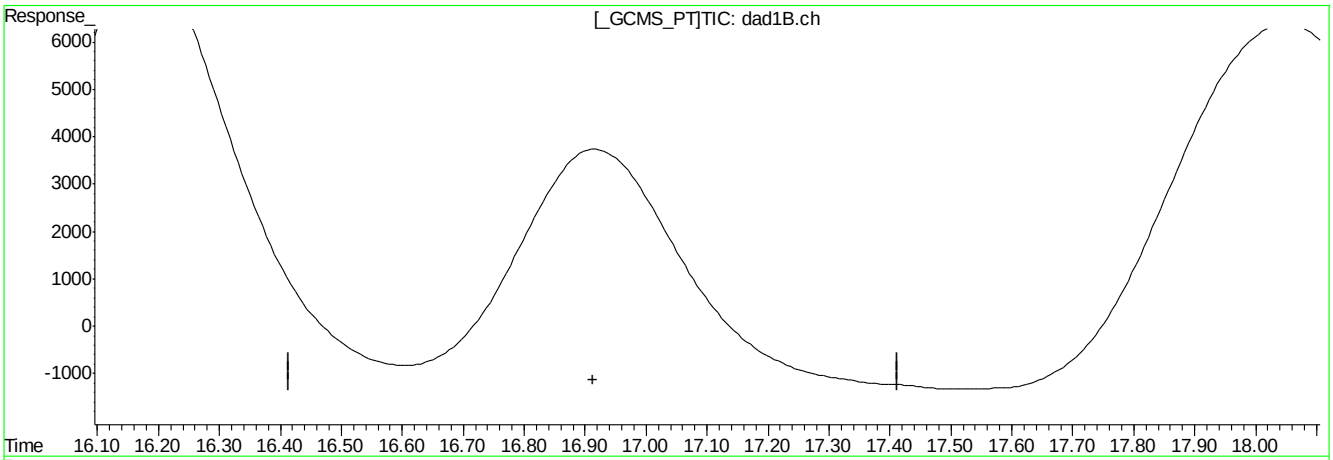
response 1818344

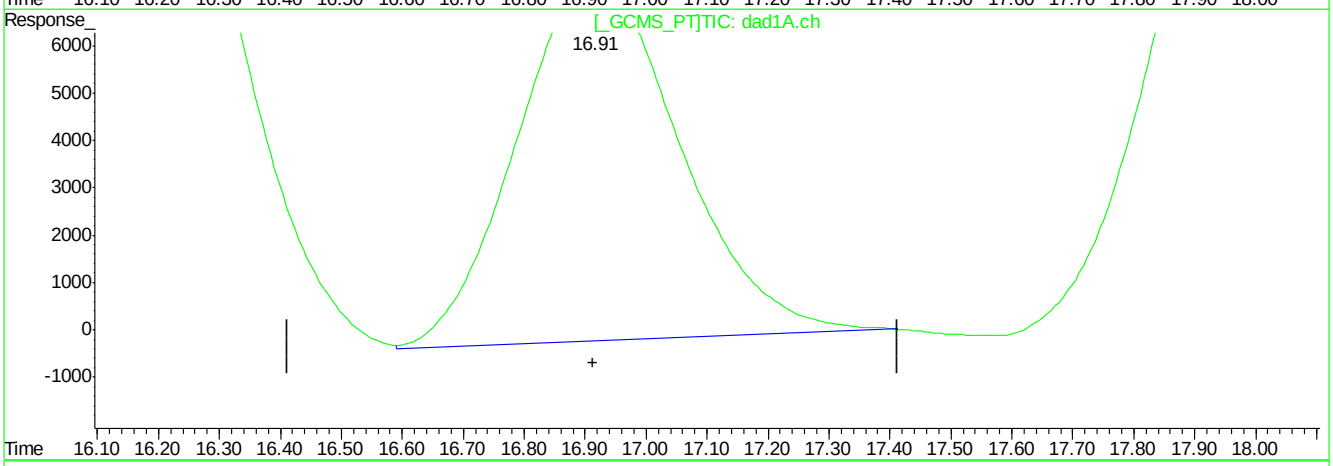
(+) = Expected Retention Time
GG630270.D GGG3484_100324.M Thu Oct 03 14:58:22 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1A.ch
Acq On : 03-Oct-2024, 10:18:41 Operator: fouads
Sample : IC3484-200 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:56 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:56:41 2024
Response via : Multiple Level Calibration




QEdit

(16) o-Nitrotoluene

0.00min 0.000ppb

response 0

(16) o-Nitrotoluene #2

16.92min 0.000ppb

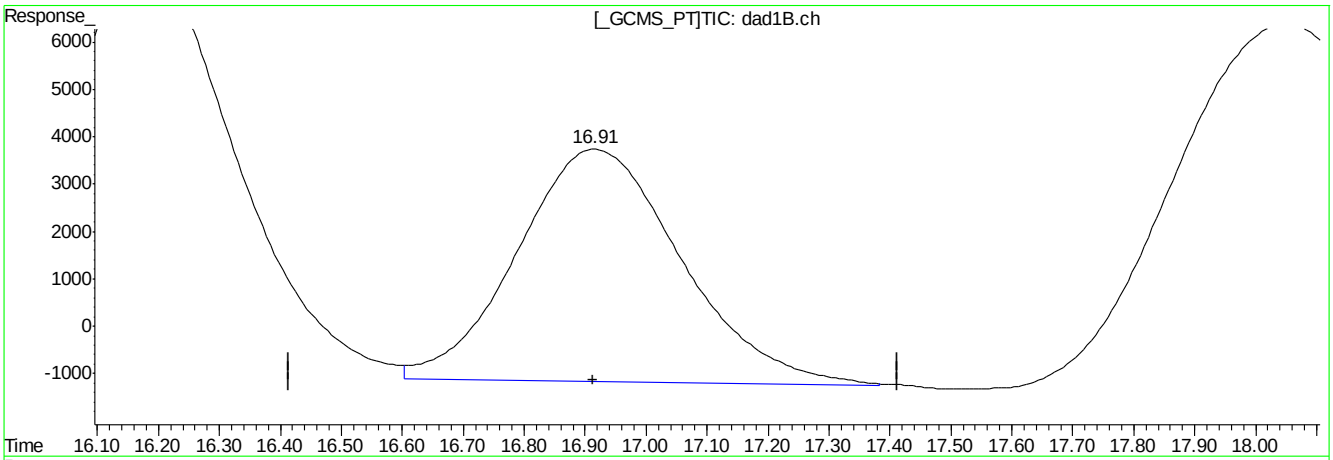
response 1415511

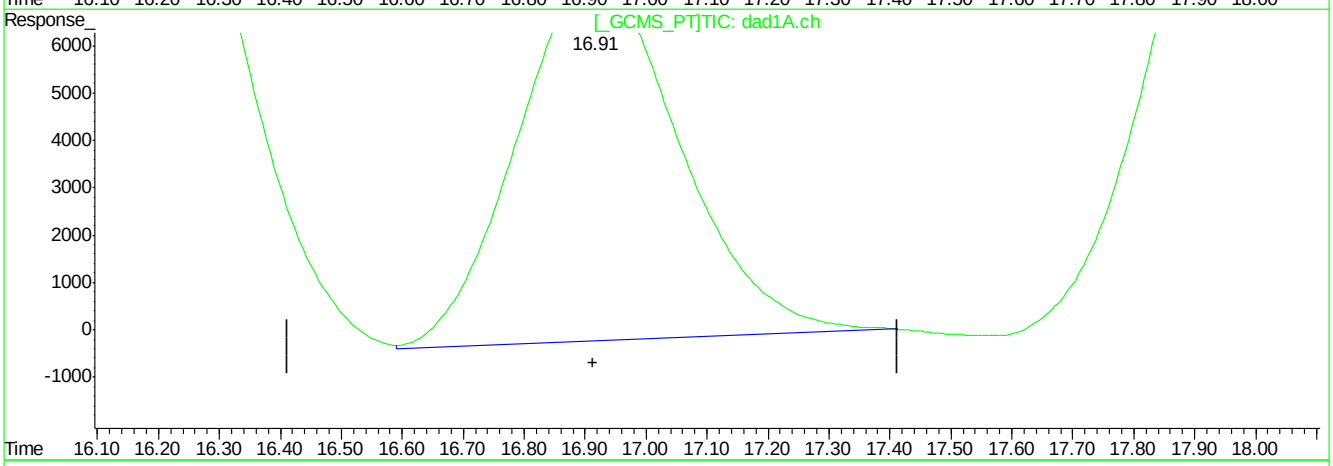
(+) = Expected Retention Time
GG630270.D GGG3484_100324.M Thu Oct 03 14:58:33 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1A.ch
Acq On : 03-Oct-2024, 10:18:41 Operator: fouads
Sample : IC3484-200 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:56 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:56:41 2024
Response via : Multiple Level Calibration




QEdit

(16) o-Nitrotoluene

16.91min 157.526ppb m

response 921019

(16) o-Nitrotoluene #2

16.92min 0.000ppb

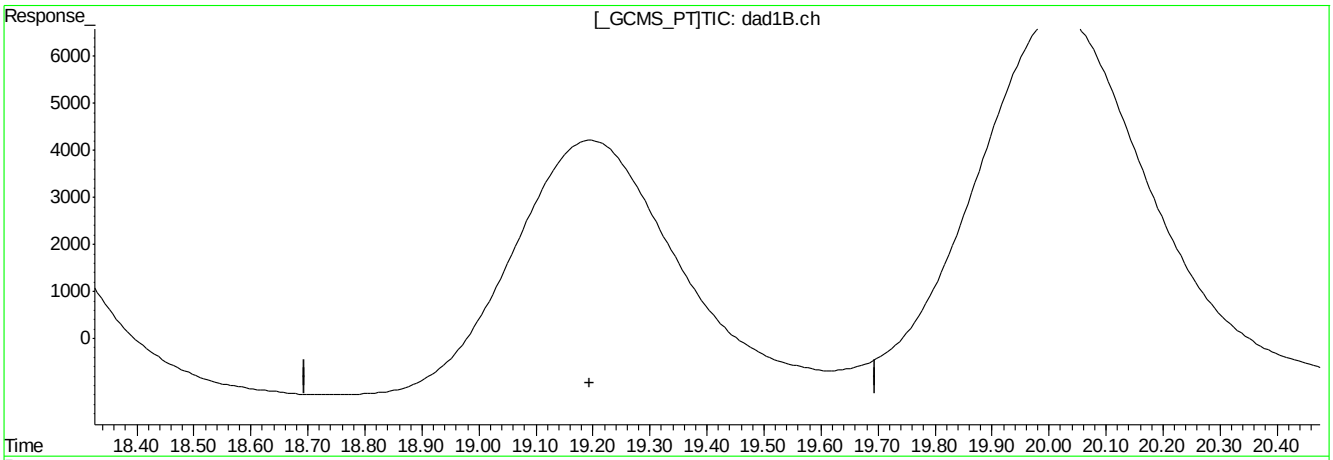
response 1415511

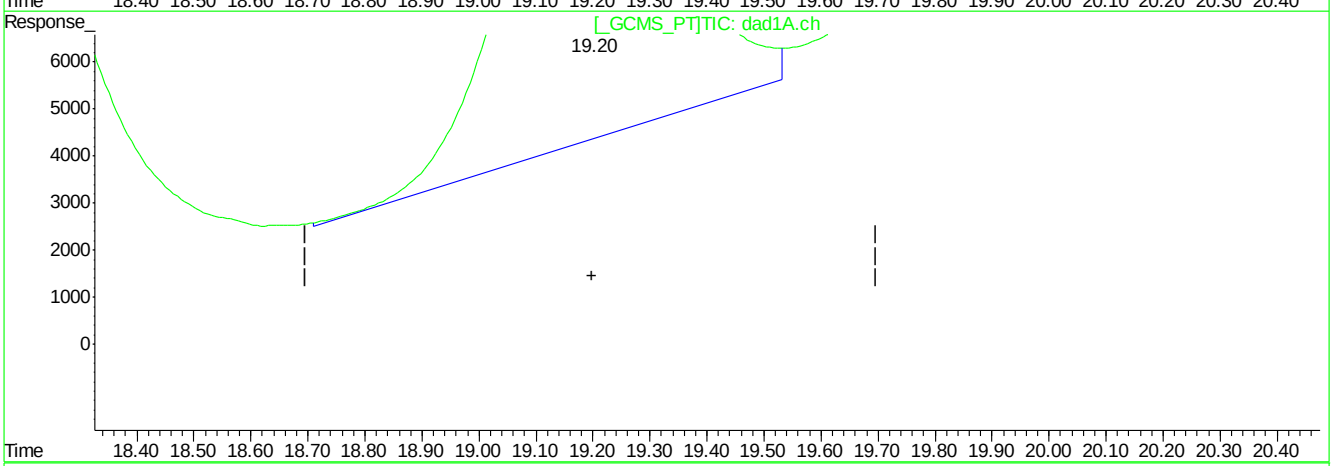
(+) = Expected Retention Time
GG630270.D GGG3484_100324.M Thu Oct 03 14:58:37 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1A.ch
Acq On : 03-Oct-2024, 10:18:41 Operator: fouads
Sample : IC3484-200 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:56 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:56:41 2024
Response via : Multiple Level Calibration




QEdit

(19) m-Nitrotoluene

0.00min 0.000ppb

response 0

(19) m-Nitrotoluene #2

19.20min 0.000ppb

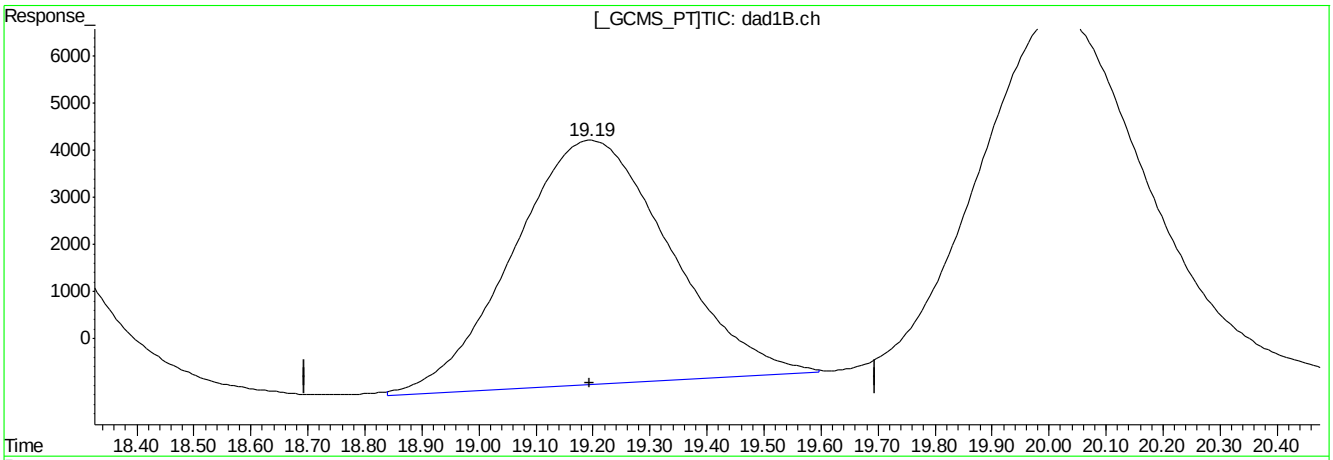
response 1613698

(+) = Expected Retention Time
GG630270.D GGG3484_100324.M Thu Oct 03 14:58:46 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1A.ch
Acq On : 03-Oct-2024, 10:18:41 Operator: fouads
Sample : IC3484-200 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:56 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:56:41 2024
Response via : Multiple Level Calibration




(19) m-Nitrotoluene

19.19min 160.081ppb m

response 992478

(19) m-Nitrotoluene #2

19.20min 0.000ppb

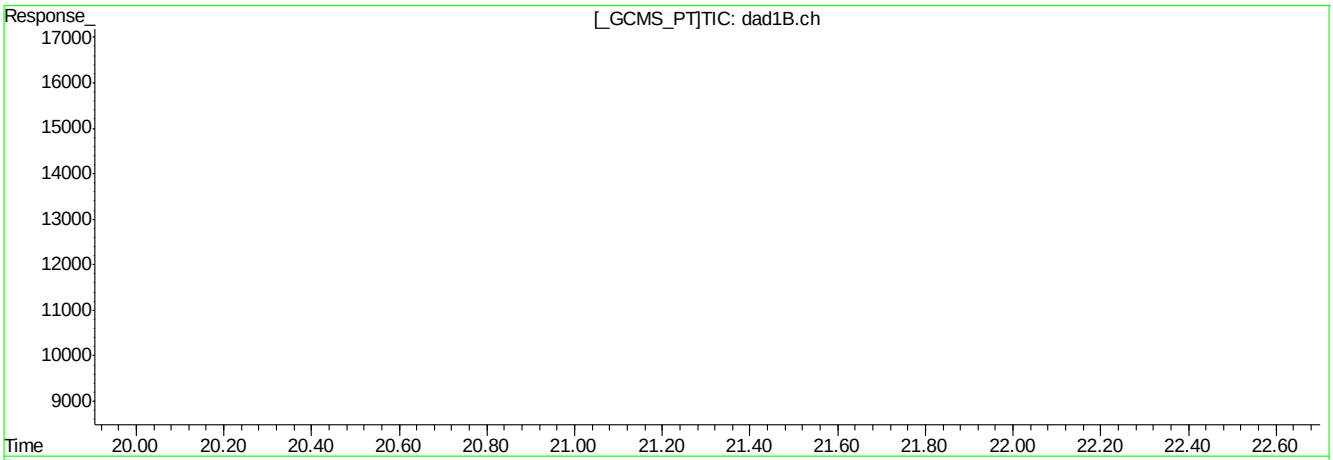
response 1613698

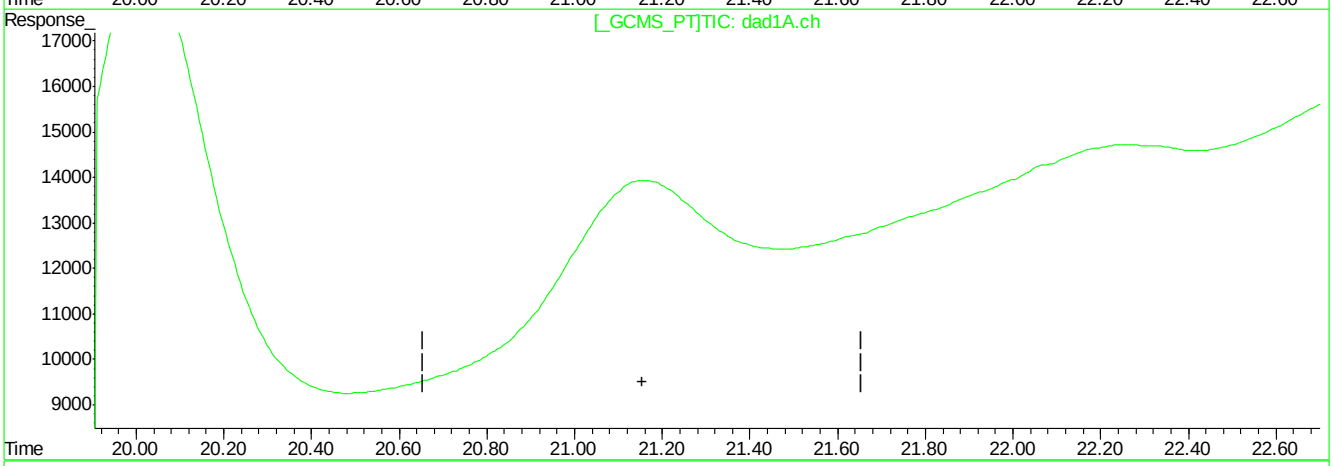
(+) = Expected Retention Time
GG630270.D GGG3484_100324.M Thu Oct 03 14:58:50 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1A.ch
Acq On : 03-Oct-2024, 10:18:41 Operator: fouads
Sample : IC3484-200 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:56 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:56:41 2024
Response via : Multiple Level Calibration




QEdit

(21) PETN

0.00min 0.000ppb

response 0

(21) PETN #2

0.00min 0.000ppb

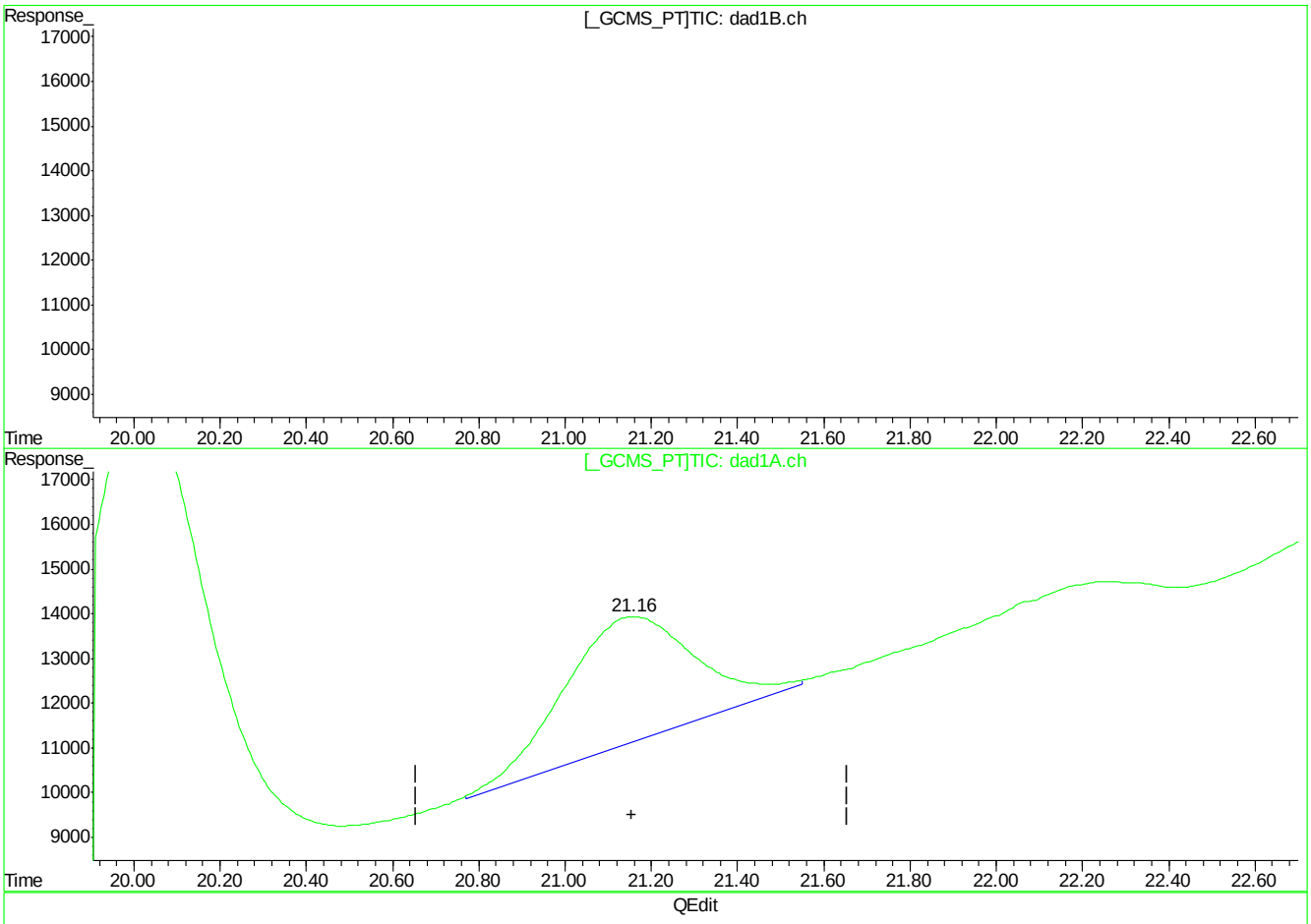
response 0

(+) = Expected Retention Time
GG630270.D GGG3484_100324.M Thu Oct 03 14:58:57 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1B.ch Vial: 5
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630270.D\dad1A.ch
Acq On : 03-Oct-2024, 10:18:41 Operator: fouads
Sample : IC3484-200 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 14:56 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 14:56:41 2024
Response via : Multiple Level Calibration




(+) = Expected Retention Time
GG630270.D GGG3484_100324.M Thu Oct 03 14:59:05 2024

Manual Integrations APPROVED (compounds with "m" flag)
William Hustedde 10/07/24 15:21

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630271.D\dad1B.ch Vial: 6
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630271.D\dad1A.ch
Acq On : 03-Oct-2024, 10:57:44 Operator: fouads
Sample : IC3484-500 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 03 11:59:39 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Initial Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb | |
|---|---|---|---|---|---|---|---|---|
| | **System Monitoring Compounds** | | | | | | | |
| 12) S | 3,4-Dinitrotolue | 14.10 | 14.10 | 2012421 | 4139067 | 383.841m | 395.966 | |
| Spiked Amount | 500.000 | Range | 70 - 136 | Recovery | = | 76.77% | 79.19% | |
| | **Target Compounds** | | | | | | | |
| 1) | TNX | 4.84 | 4.84 | 1792081 | 1792081 | 228.016 | NoCal | # |
| 2) | HMX | 5.21 | 5.21 | 1559590 | 1559590 | 417.894 | NoCal | # |
| 3) | DNX | 5.45 | 5.45 | 3126660 | 3126660 | 479.961 | NoCal | # |
| 4) | MNX | 6.57 | 6.57 | 3257608 | 3257608 | 551.972 | NoCal | # |
| 5) | 1,3,5-Trinitrobe | 7.35 | 7.35 | 4540737 | 4540737 | 452.846 | NoCal | # |
| 6) | RDX | 7.85 | 7.85 | 2079525 | 2079525 | 414.676 | NoCal | # |
| 7) | 1,3-Dinitrobenze | 9.79 | 9.79 | 6083284 | 4503482 | 443.947 | NoCal | # |
| 8) | Nitrobenzene | 10.81 | 10.81 | 3945980 | 3867869 | 434.022 | NoCal | # |
| 9) | 2,4,6-Trinitroto | 11.36 | 11.36 | 4320483 | 6248198 | 438.902 | NoCal | # |
| 10) | Nitroglycerin | 0.00 | 12.12 | 0 | 1520320 | N.D. | NoCal | |
| 11) | Tetryl | 12.66 | 12.66 | 3187545 | 5694042 | 427.176 | NoCal | # |
| 13) | 2,6-Dinitrotolue | 14.36 | 14.36 | 3026705 | 4610974 | 444.914m | NoCal | # |
| 14) | 2,4-Dinitrotolue | 14.97 | 14.97 | 5751749 | 4047059 | 445.349 | NoCal | # |
| 15) | 3,5-Dinitroanili | 15.95 | 15.95 | 4685890 | 7783260 | 437.933 | NoCal | # |
| 16) | o-Nitrotoluene | 16.63 | 16.63 | 2566372 | 3788961 | 438.937 | NoCal | # |
| 17) | p-Nitrotoluene | 17.73 | 17.74 | 5044109 | 9231878 | 869.395 | NoCal | # |
| 18) | 4-Amino-2,6-Dini | 17.73 | 17.74 | 5044109 | 9231878 | 869.416 | NoCal | # |
| 19) | m-Nitrotoluene | 18.89 | 18.89 | 2679201 | 4487894 | 432.140 | NoCal | # |
| 20) | 2-Amino-4,6-Dini | 19.69 | 19.69 | 4218558 | 6147606 | 432.831 | NoCal | # |
| 21) | PETN | 0.00 | 20.80 | 0 | 1534306 | N.D. | NoCal | |

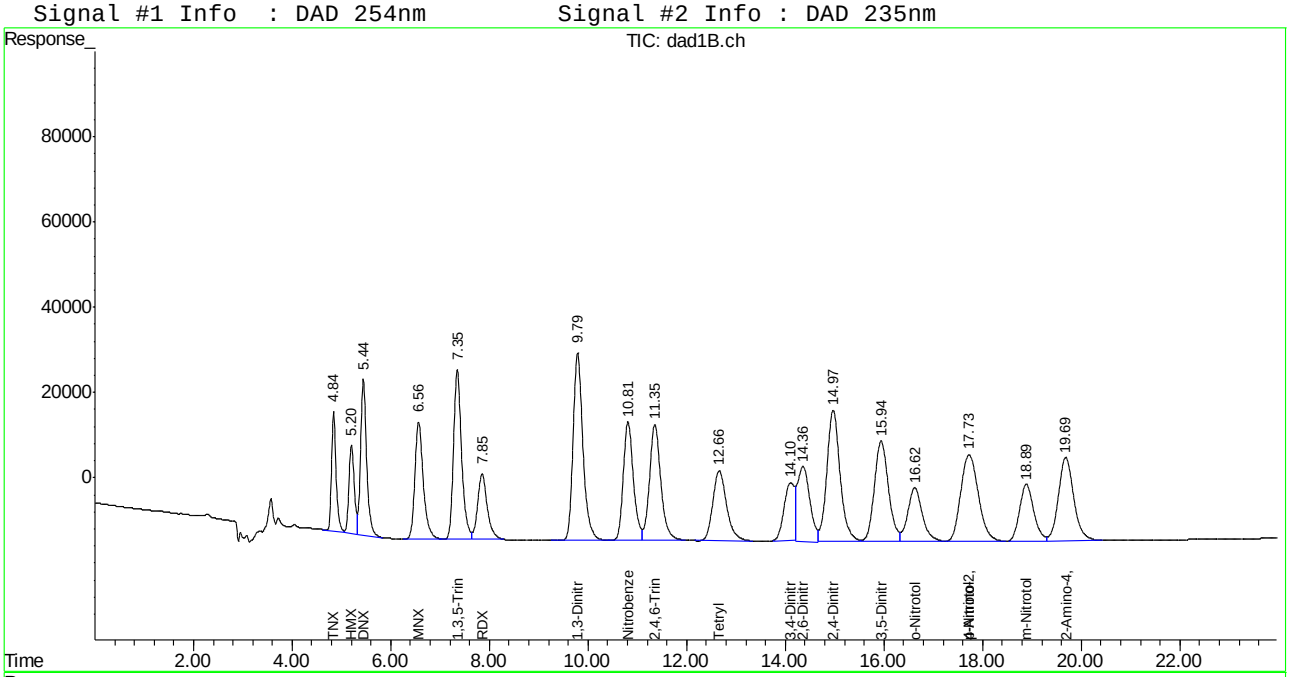
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.

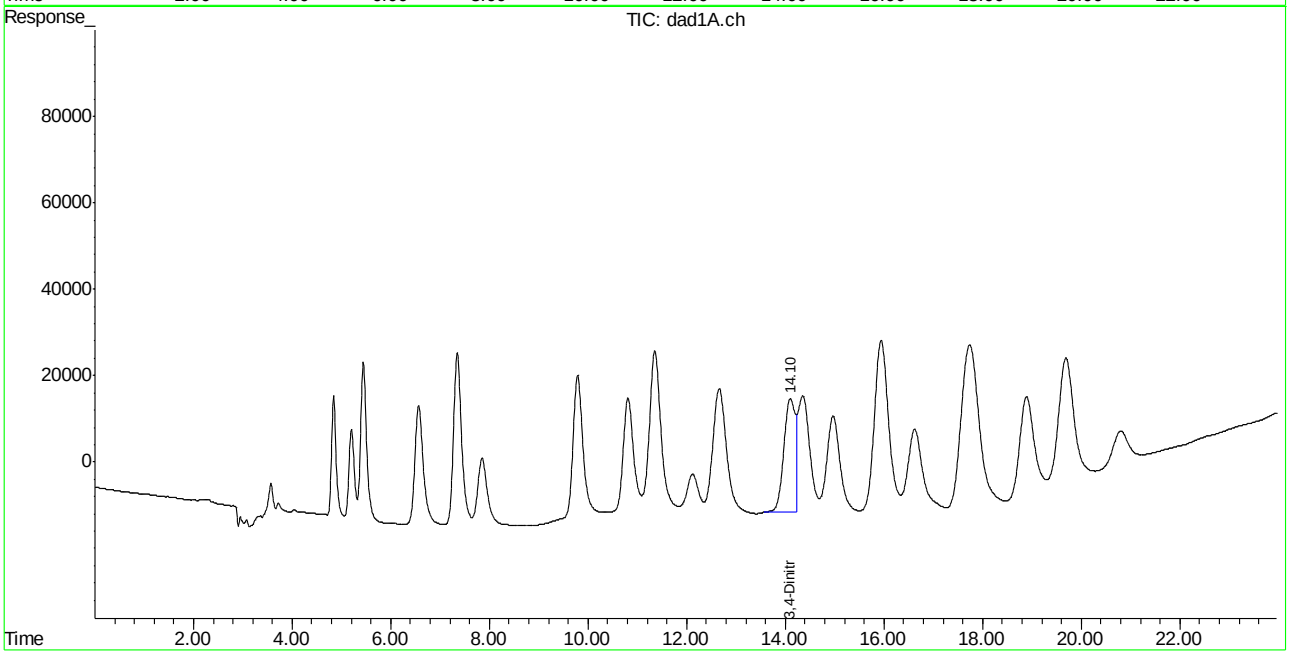
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630271.D\dad1B.ch Vial: 6
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630271.D\dad1A.ch
Acq On : 03-Oct-2024, 10:57:44 Operator: fouads
Sample : IC3484-500 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 13:13 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm



# Manual Integration Approval Summary



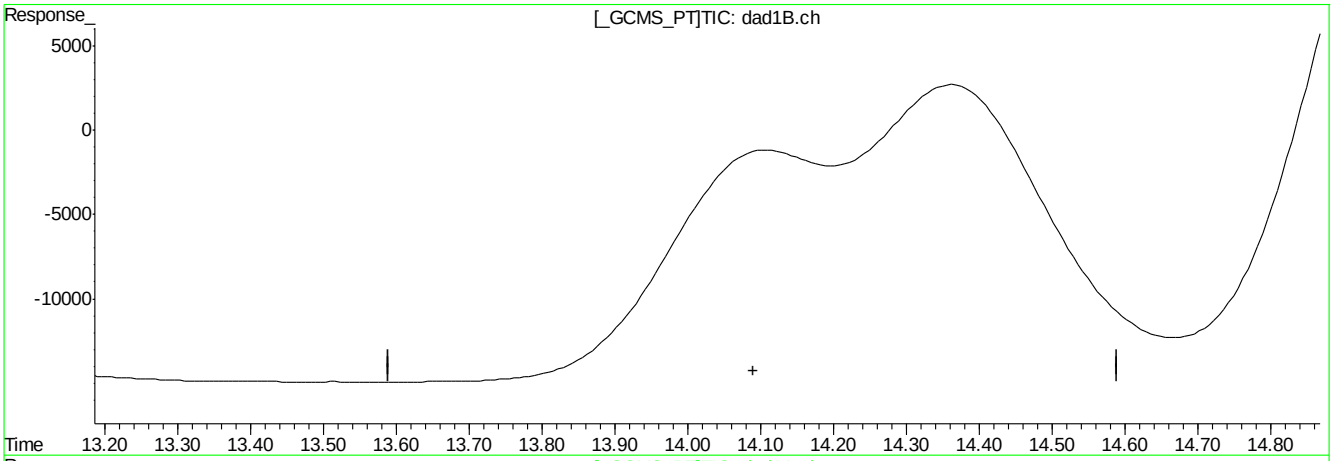
**Sample Number:** GGG3484-IC3484
**Lab FileID:** GG630271.D
**Injection Time:** 10/03/24 10:57
**Method:** SW846 8330B
**Analyst approved:** 10/07/24 09:34 Fouad Sekkar
**Supervisor approved:** 10/07/24 15:21 William Hustedde

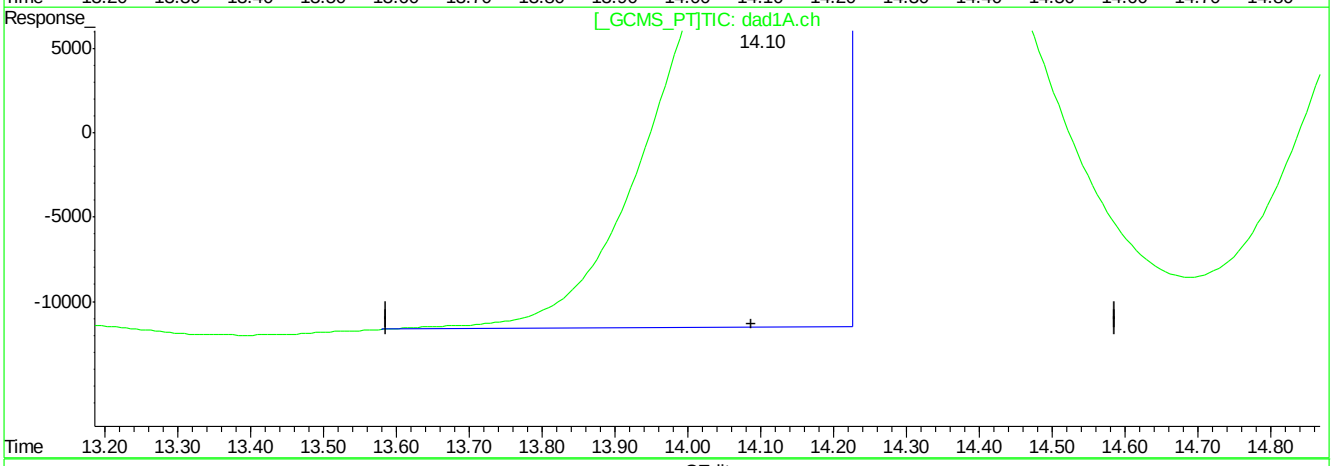
| Parameter | CAS | Sig# | R.T. (min.) | Reason |
|---|---|---|---|---|
| 3,4-Dinitrotoluene | 610-39-9 | 1 | 14.10 | Poor instrument integration |
| 2,6-Dinitrotoluene | 606-20-2 | 1 | 14.36 | Poor instrument integration |

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630271.D\dad1B.ch Vial: 6
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630271.D\dad1A.ch
Acq On : 03-Oct-2024, 10:57:44 Operator: fouads
Sample : IC3484-500 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Multiple Level Calibration




QEdit

(12) 3,4-Dinitrotoluene (S)

0.00min 0.000ppb

response 0

(12) 3,4-Dinitrotoluene #2 (S)

14.10min 395.966ppb

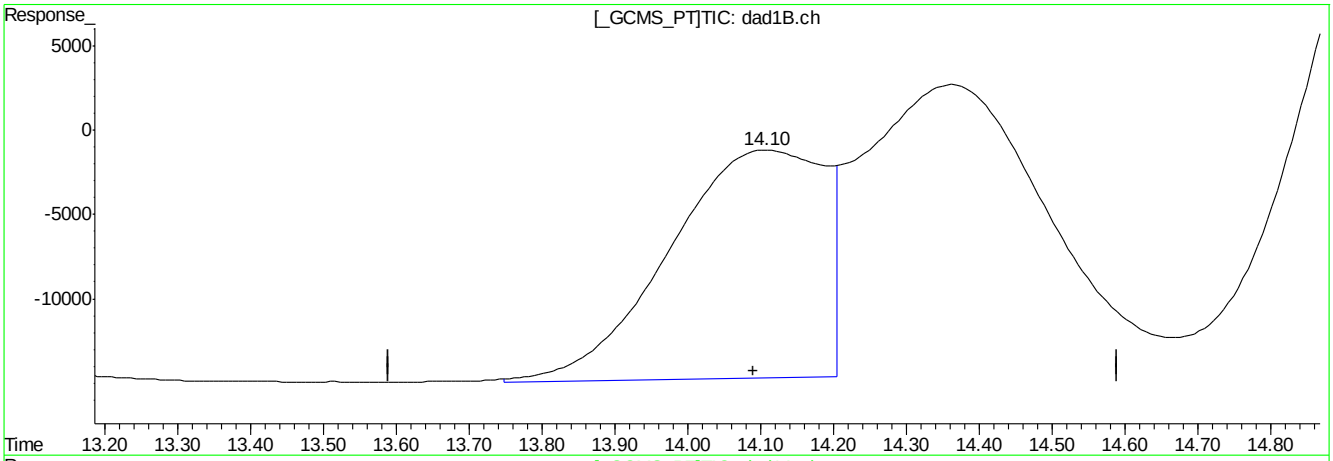
response 4139067

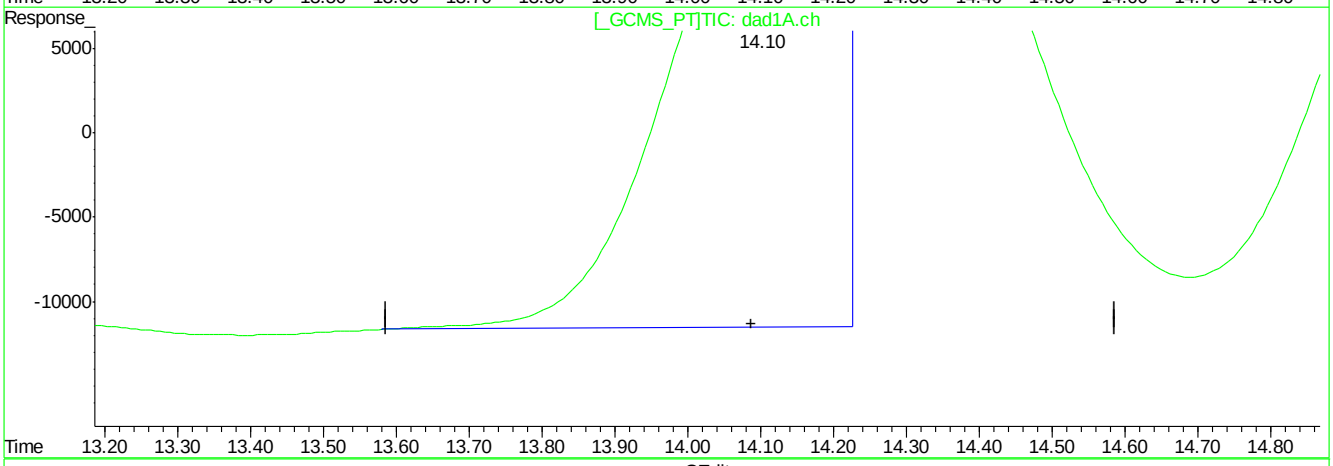
(+) = Expected Retention Time
GG630271.D GGG3484_100324.M Thu Oct 03 13:13:30 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630271.D\dad1B.ch Vial: 6
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630271.D\dad1A.ch
Acq On : 03-Oct-2024, 10:57:44 Operator: fouads
Sample : IC3484-500 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Multiple Level Calibration




QEdit

(12) 3,4-Dinitrotoluene (S)

14.10min 383.841ppb m

response 2012421

(12) 3,4-Dinitrotoluene #2 (S)

14.10min 395.966ppb

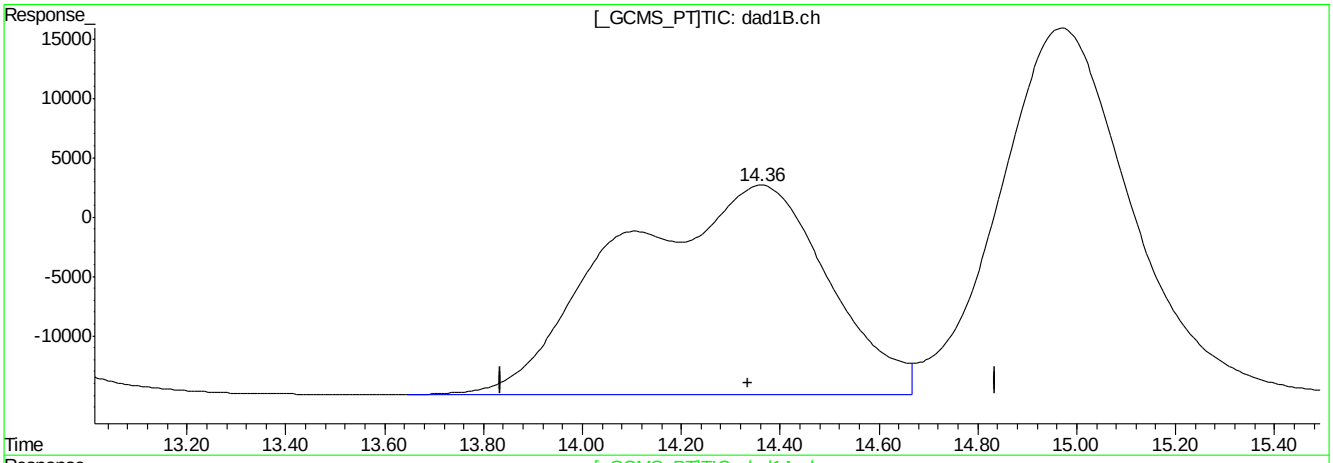
response 4139067

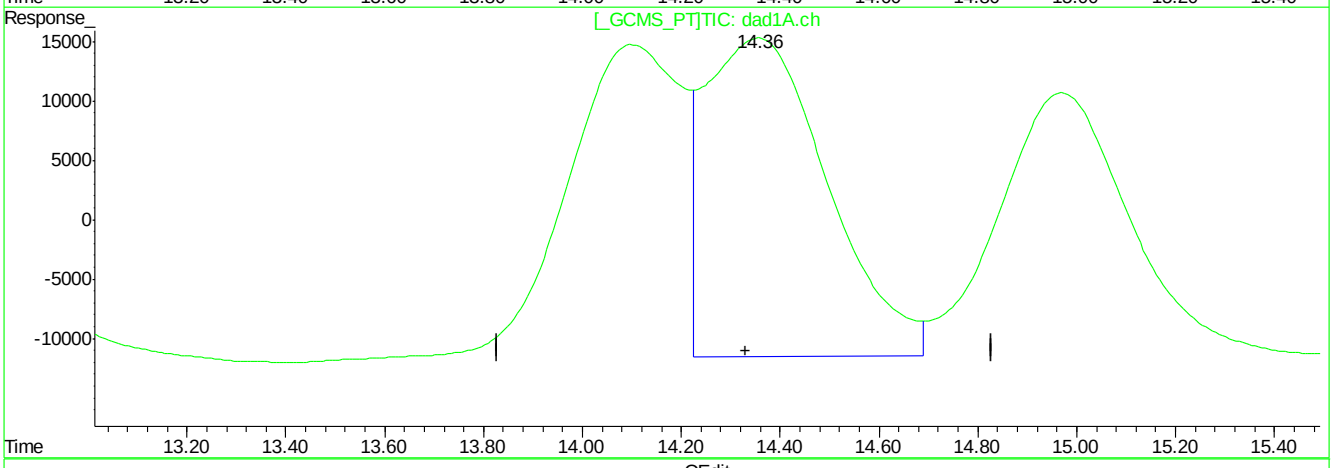
(+) = Expected Retention Time
GG630271.D GGG3484_100324.M Thu Oct 03 13:13:40 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630271.D\dad1B.ch Vial: 6
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630271.D\dad1A.ch
Acq On : 03-Oct-2024, 10:57:44 Operator: fouads
Sample : IC3484-500 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Multiple Level Calibration




QEdit

(13) 2,6-Dinitrotoluene

14.36min 759.335ppb

response 5165680

(13) 2,6-Dinitrotoluene #2

14.36min 0.000ppb

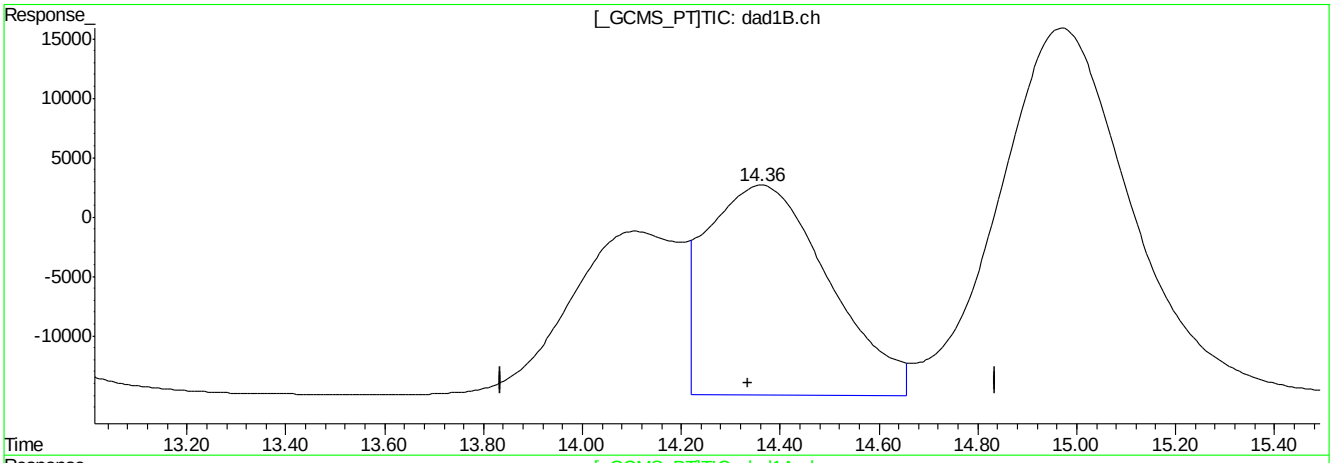
response 4610974

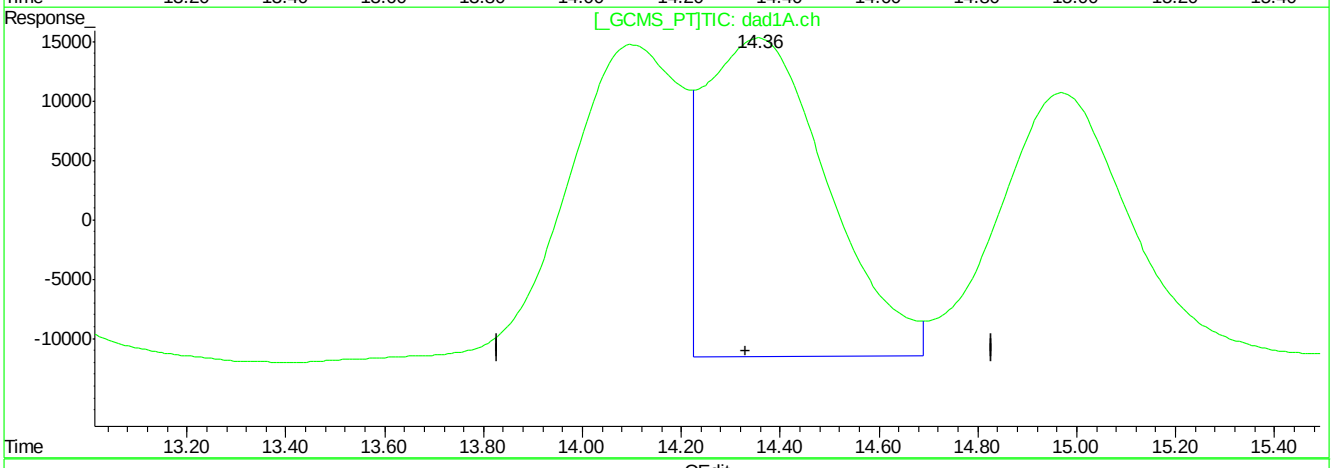
(+) = Expected Retention Time
GG630271.D GGG3484_100324.M Thu Oct 03 13:13:47 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630271.D\dad1B.ch Vial: 6
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630271.D\dad1A.ch
Acq On : 03-Oct-2024, 10:57:44 Operator: fouads
Sample : IC3484-500 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Multiple Level Calibration




QEdit

(13) 2,6-Dinitrotoluene

14.36min 444.914ppb m

response 3026705

(13) 2,6-Dinitrotoluene #2

14.36min 0.000ppb

response 4610974

(+) = Expected Retention Time
GG630271.D GGG3484_100324.M Thu Oct 03 13:13:58 2024

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630272.D\dad1B.ch Vial: 7
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630272.D\dad1A.ch
Acq On : 03-Oct-2024, 11:27:13 Operator: fouads
Sample : ICC3484-1000 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 03 11:59:40 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Initial Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb | |
|---|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | | |
| 12) S | 3,4-Dinitrotolue | 14.10 | 14.09 | 4062997 | 8611270 | 774.960 | 823.802 | |
| | Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 154.99%# | 164.76%# | |
| | Target Compounds | | | | | | | |
| 1) | TNX | 4.83 | 4.83 | 3606170 | 3606170 | 458.832 | NoCal | # |
| 2) | HMX | 5.20 | 5.20 | 3161139 | 3161139 | 847.031 | NoCal | # |
| 3) | DNX | 5.44 | 5.44 | 6360930 | 6360930 | 976.441 | NoCal | # |
| 4) | MNX | 6.57 | 6.57 | 6596592 | 6596592 | 1117.733 | NoCal | # |
| 5) | 1,3,5-Trinitrobe | 7.35 | 7.35 | 9318854 | 9318854 | 929.366 | NoCal | # |
| 6) | RDX | 7.87 | 7.87 | 4324466 | 4324466 | 862.338 | NoCal | # |
| 7) | 1,3-Dinitrobenze | 9.86 | 9.86 | 12535230 | 9505510 | 914.797 | NoCal | # |
| 8) | Nitrobenzene | 10.90 | 10.90 | 8014264 | 7520462 | 881.496 | NoCal | # |
| 9) | 2,4,6-Trinitroto | 11.45 | 11.45 | 8799608 | 11719085 | 893.920 | NoCal | # |
| 10) | Nitroglycerin | 0.00 | 12.23 | 0 | 3105151 | N.D. | NoCal | |
| 11) | Tetryl | 12.73 | 12.73 | 6638395 | 12072061 | 889.638 | NoCal | # |
| 13) | 2,6-Dinitrotolue | 14.34 | 14.33 | 6614805 | 9678345 | 972.351 | NoCal | # |
| 14) | 2,4-Dinitrotolue | 14.92 | 14.92 | 11686482 | 8338669 | 904.866 | NoCal | # |
| 15) | 3,5-Dinitroanili | 15.82 | 15.82 | 9548729 | 15750134 | 892.404 | NoCal | # |
| 16) | o-Nitrotoluene | 16.50 | 16.50 | 5107682 | 7825318 | 873.587 | NoCal | # |
| 17) | p-Nitrotoluene | 17.52 | 17.52 | 10338014 | 18763253 | 1781.844 | NoCal | # |
| 18) | 4-Amino-2,6-Dini | 17.52 | 17.52 | 10338014 | 18763253 | 1781.887 | NoCal | # |
| 19) | m-Nitrotoluene | 18.69 | 18.69 | 5572373 | 9646976 | 898.793 | NoCal | # |
| 20) | 2-Amino-4,6-Dini | 19.45 | 19.45 | 8805201 | 12948217 | 903.427 | NoCal | # |
| 21) | PETN | 0.00 | 20.65 | 0 | 3140416 | N.D. | NoCal | |

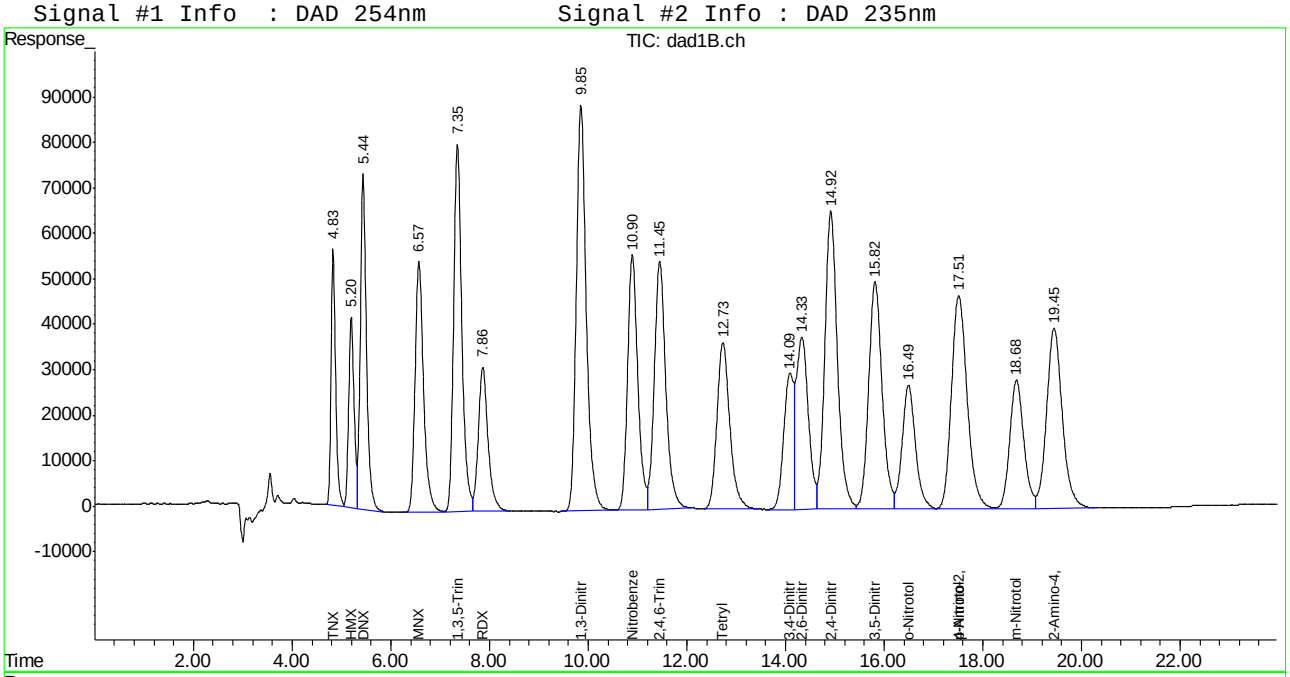
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.

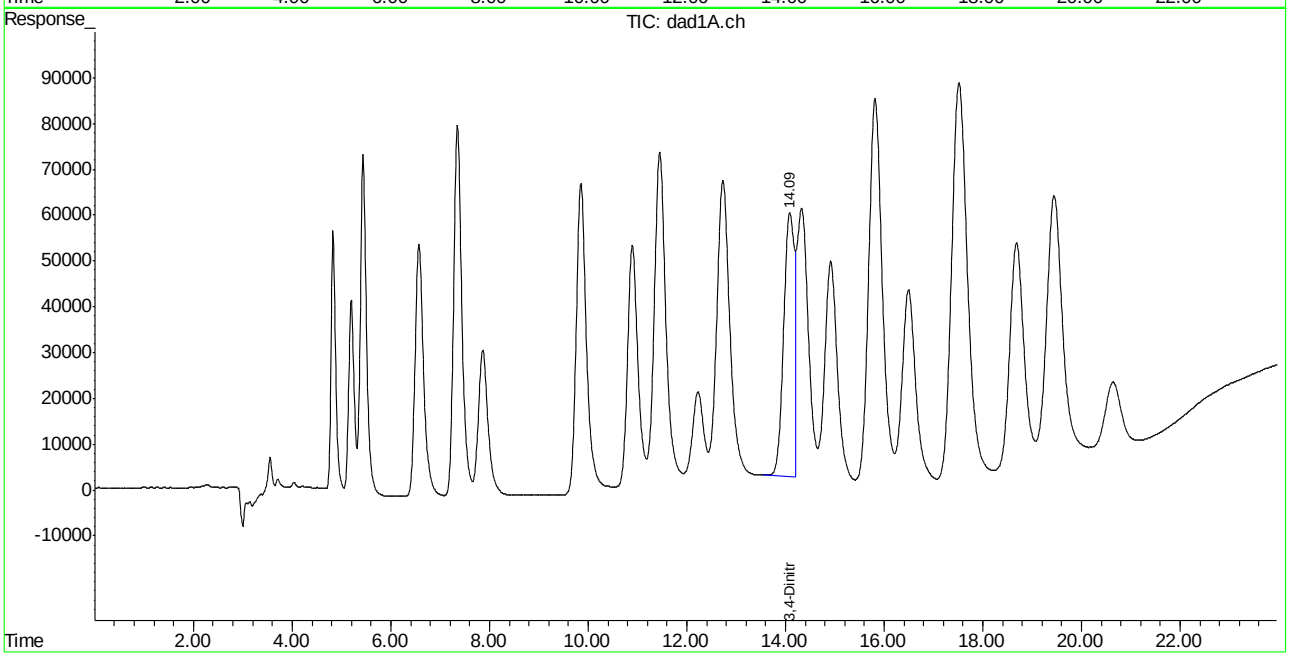
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630272.D\dad1B.ch Vial: 7
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630272.D\dad1A.ch
Acq On : 03-Oct-2024, 11:27:13 Operator: fouads
Sample : ICC3484-1000 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 3 11:59 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Oct 03 11:59:15 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm



Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630273.D\dad1B.ch Vial: 8
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630273.D\dad1A.ch
Acq On : 03-Oct-2024, 11:56:38 Operator: fouads
Sample : IC3484-2500 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 04 15:29:55 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Fri Oct 04 15:29:45 2024
Response via : Initial Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 12) S | 3,4-Dinitrotolue | 13.52 | 13.52 | 11412004 | 22541447 | 2515.065 | 2501.931 |
| | Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 503.01%# | 500.39%# |
| | Target Compounds | | | | | | |
| 1) | TNX | 4.82 | 4.82 | 9174203 | 9174203 | 1096.187 | 1113.457 |
| 2) | HMX | 5.12 | 5.12 | 8233501 | 8233501 | 2557.982 | 2515.570 |
| 3) | DNX | 5.36 | 5.36 | 16261313 | 16261313 | 2425.605 | 2484.119 |
| 4) | MNX | 6.36 | 6.36 | 16869247 | 16869247 | 2746.729 | 2774.886 |
| 5) | 1,3,5-Trinitrobe | 7.17 | 7.17 | 23061263 | 23061263 | 2355.411 | 2338.842 |
| 6) | RDX | 7.58 | 7.58 | 11207761 | 11207761 | 2500.077 | 2533.919 |
| 7) | 1,3-Dinitrobenze | 9.56 | 9.56 | 31593700 | 24649259 | 2430.442 | 2518.489 |
| 8) | Nitrobenzene | 10.52 | 10.52 | 20668129 | 19647314 | 2368.418 | 2279.003 |
| 9) | 2,4,6-Trinitroto | 11.05 | 11.05 | 23004316 | 30859610 | 2476.193 | 2502.144 |
| 10) | Nitroglycerin | 0.00 | 11.73 | 0 | 7581333 | N.D. | 1564.225 # |
| 11) | Tetryl | 12.17 | 12.17 | 17279369 | 30875179 | 2502.036 | 2471.116 |
| 13) | 2,6-Dinitrotolue | 13.87 | 13.87 | 15683903 | 23688759 | 2475.988 | 2459.292 |
| 14) | 2,4-Dinitrotolue | 14.47 | 14.47 | 29560852 | 21339758 | 2404.729 | 2476.267 |
| 15) | 3,5-Dinitroanili | 15.40 | 15.40 | 24015915 | 39756981 | 2377.460 | 2456.659 |
| 16) | o-Nitrotoluene | 15.96 | 15.96 | 13760600 | 20758065 | 1449.421 | 2015.883 |
| 17) | p-Nitrotoluene | 16.93 | 16.93 | 26381378 | 47883178 | 4840.127 | 5264.632 |
| 18) | 4-Amino-2,6-Dini | 16.93 | 16.93 | 26381378 | 47883178 | 4838.101 | 5250.946 |
| 19) | m-Nitrotoluene | 18.06 | 18.06 | 13830324 | 23288568 | 2439.116 | 2615.444 |
| 20) | 2-Amino-4,6-Dini | 18.81 | 18.81 | 21811700 | 30639641 | 2458.371 | 2615.548 |
| 21) | PETN | 0.00 | 19.89 | 0 | 8086810 | N.D. | 2470.917 # |

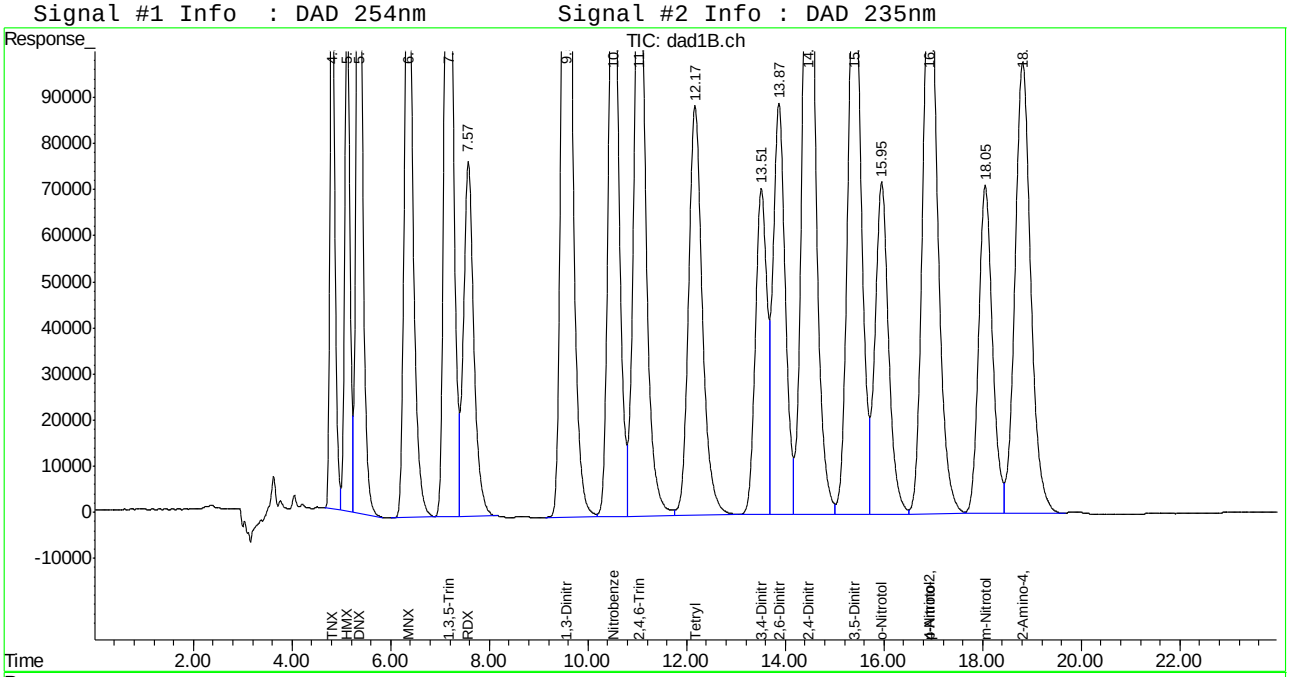
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.

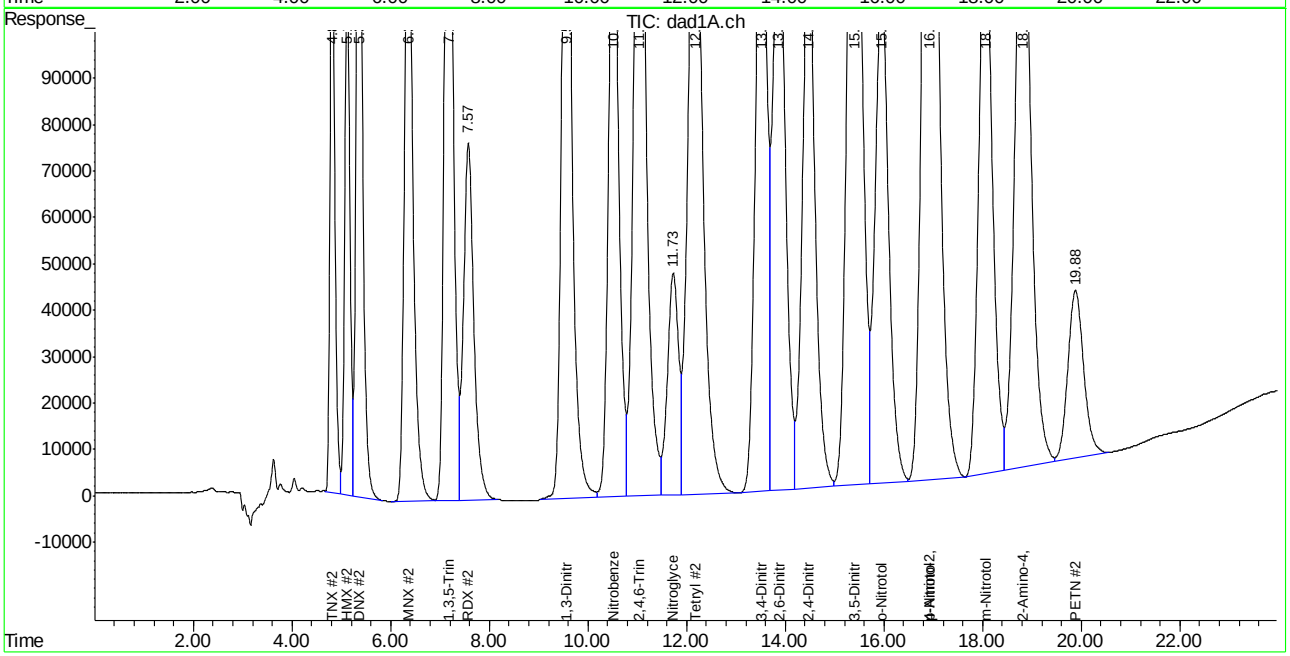
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630273.D\dad1B.ch Vial: 8
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630273.D\dad1A.ch
Acq On : 03-Oct-2024, 11:56:38 Operator: fouads
Sample : IC3484-2500 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 4 15:29 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Fri Oct 04 15:29:45 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm



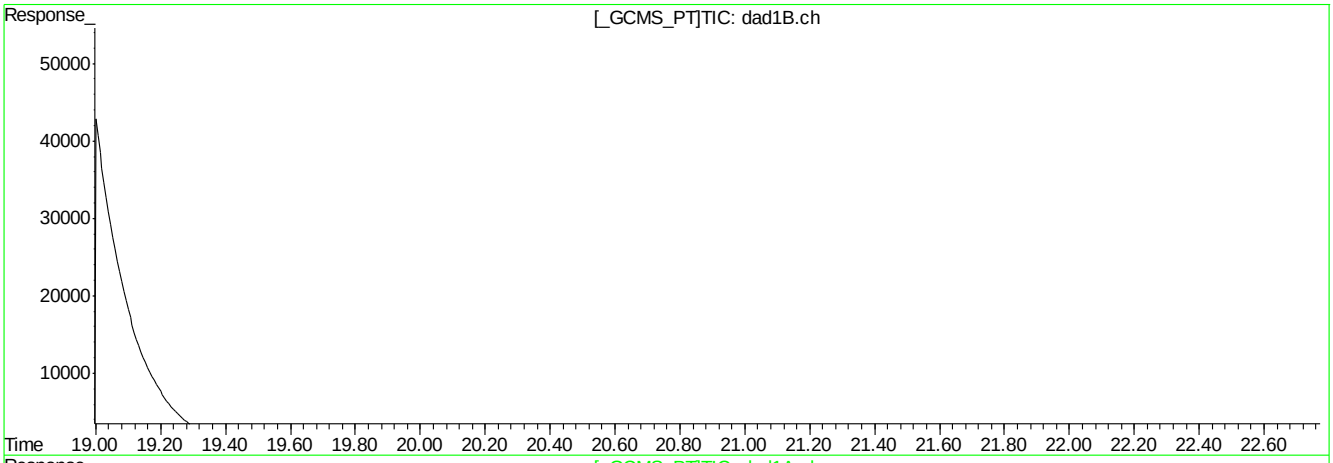



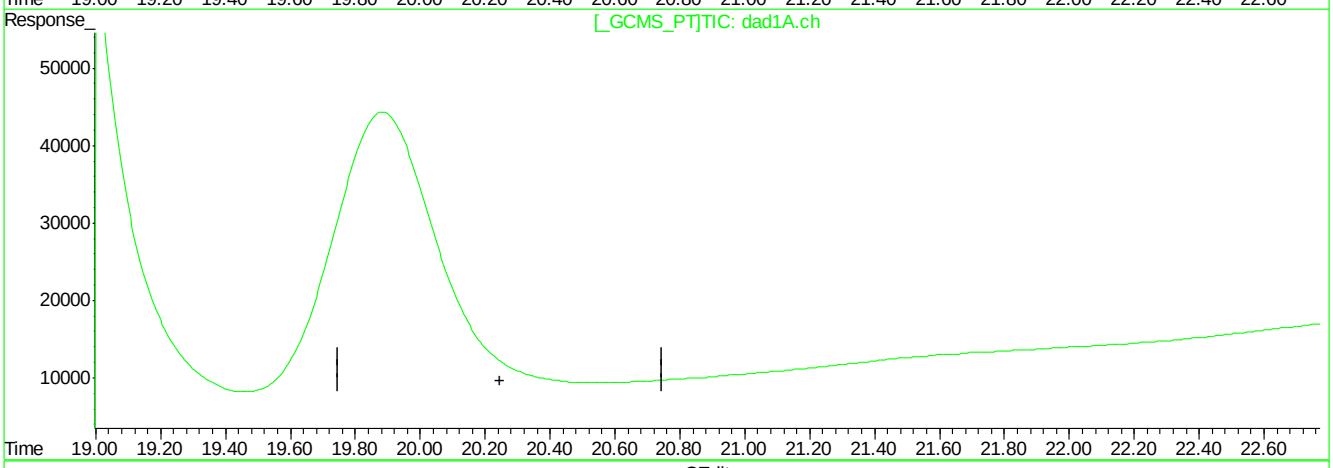

GG630273.D GGG3484_100324.M Mon Oct 07 09:23:38 2024 Page 2

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630273.D\dad1B.ch Vial: 8
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630273.D\dad1A.ch
Acq On : 03-Oct-2024, 11:56:38 Operator: fouads
Sample : IC3484-2500 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 4 15:28 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Fri Oct 04 15:28:32 2024
Response via : Multiple Level Calibration




QEdit

(21) PETN

0.00min 0.000ppb

response 0

(21) PETN #2

0.00min 0.000ppb

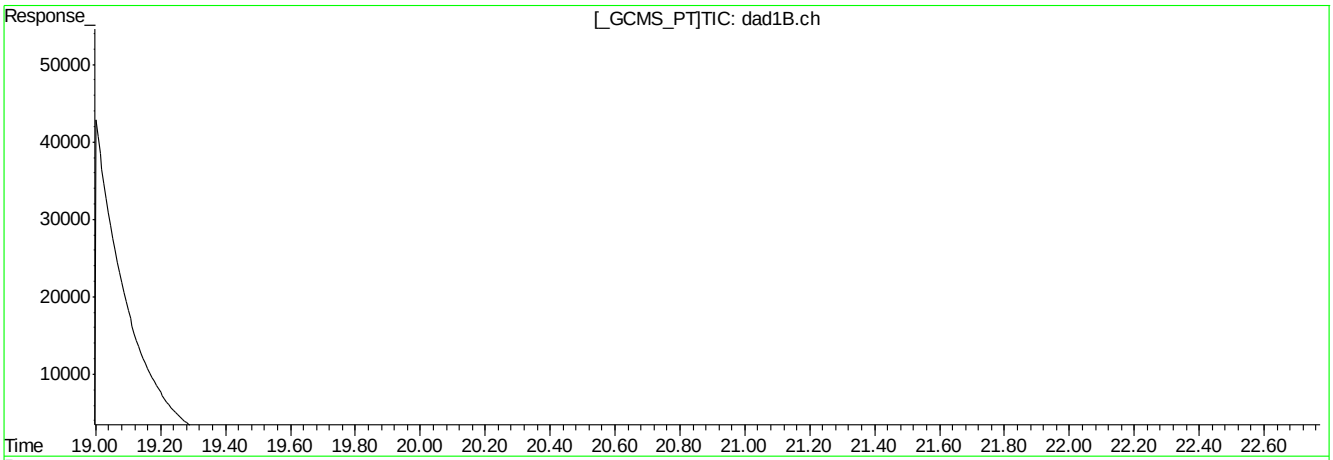
response 0

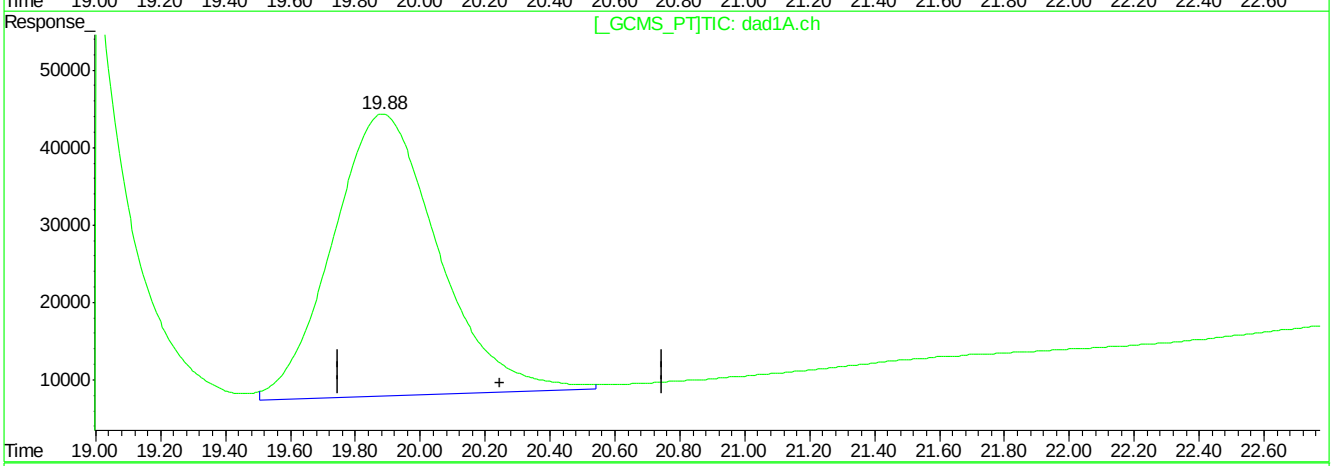
(+) = Expected Retention Time
GG630273.D GGG3484_100324.M Fri Oct 04 15:29:17 2024

Quantitation Report (Qedit)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630273.D\dad1B.ch Vial: 8
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630273.D\dad1A.ch
Acq On : 03-Oct-2024, 11:56:38 Operator: fouads
Sample : IC3484-2500 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 4 15:28 2024 Quant Results File: GGG3484_100324.RES

Method : C:\MSDCHEM\1\METHODS\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Fri Oct 04 15:28:32 2024
Response via : Multiple Level Calibration




QEdit

(21) PETN

0.00min 0.000ppb

response 0

(21) PETN #2

19.88min 2519.600ppb m

response 8246138

(+) = Expected Retention Time
GG630273.D GGG3484_100324.M Fri Oct 04 15:29:22 2024

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630274.D\dad1B.ch Vial: 9
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630274.D\dad1A.ch
Acq On : 03-Oct-2024, 12:26:04 Operator: fouads
Sample : IC3484-5000 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 04 15:26:52 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Fri Oct 04 15:26:39 2024
Response via : Initial Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 12) S | 3,4-Dinitrotolue | 13.65 | 13.65 | 22778255 | 45169967 | 5020.046 | 5013.526 |
| | Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 1004.01%# | 1002.71%# |
| | Target Compounds | | | | | | |
| 1) | TNX | 4.80 | 4.80 | 18605955 | 18605955 | 2223.147 | 2258.173 |
| 2) | HMX | 5.11 | 5.11 | 16749951 | 16749951 | 5203.869 | 5117.588 |
| 3) | DNX | 5.35 | 5.35 | 33000257 | 33000257 | 4922.455 | 5041.203 |
| 4) | MNX | 6.34 | 6.34 | 34097391 | 34097391 | 5551.896 | 5608.808 |
| 5) | 1,3,5-Trinitrobe | 7.16 | 7.16 | 46769946 | 46769946 | 4776.948 | 4743.345 |
| 6) | RDX | 7.56 | 7.56 | 22657171 | 22657171 | 5054.057 | 5122.472 |
| 7) | 1,3-Dinitrobenze | 9.54 | 9.54 | 63769188 | 48947439 | 4905.641 | 5001.107 |
| 8) | Nitrobenzene | 10.52 | 10.52 | 41019513 | 38728369 | 4764.313 | 4990.813 |
| 9) | 2,4,6-Trinitroto | 11.06 | 11.07 | 46582419 | 61777179 | 5014.149 | 5008.988 |
| 10) | Nitroglycerin | 0.00 | 11.77 | 0 | 15298054 | N.D. | 5002.995 # |
| 11) | Tetryl | 12.24 | 12.24 | 35630222 | 62810820 | 5159.222 | 5027.108 |
| 13) | 2,6-Dinitrotolue | 13.98 | 13.98 | 32218927 | 48377375 | 5086.341 | 5022.386 |
| 14) | 2,4-Dinitrotolue | 14.59 | 14.59 | 59855818 | 43272419 | 4869.176 | 5021.334 |
| 15) | 3,5-Dinitroanili | 15.48 | 15.48 | 49137743 | 81400062 | 4864.400 | 5029.863 |
| 16) | o-Nitrotoluene | 16.13 | 16.13 | 26748286 | 39789334 | 2556.436 | 3414.364 |
| 17) | p-Nitrotoluene | 17.16 | 17.16 | 53602434 | 96957269 | 9834.308 | 10660.202 |
| 18) | 4-Amino-2,6-Dini | 17.16 | 17.16 | 53602434 | 96957269 | 9830.190 | 10632.490 |
| 19) | m-Nitrotoluene | 18.37 | 18.37 | 27682363 | 47048860 | 4882.062 | 5283.865 |
| 20) | 2-Amino-4,6-Dini | 19.14 | 19.14 | 44941561 | 63780825 | 5065.310 | 5444.639 |
| 21) | PETN | 0.00 | 20.37 | 0 | 16446064 | N.D. | 5025.079 # |

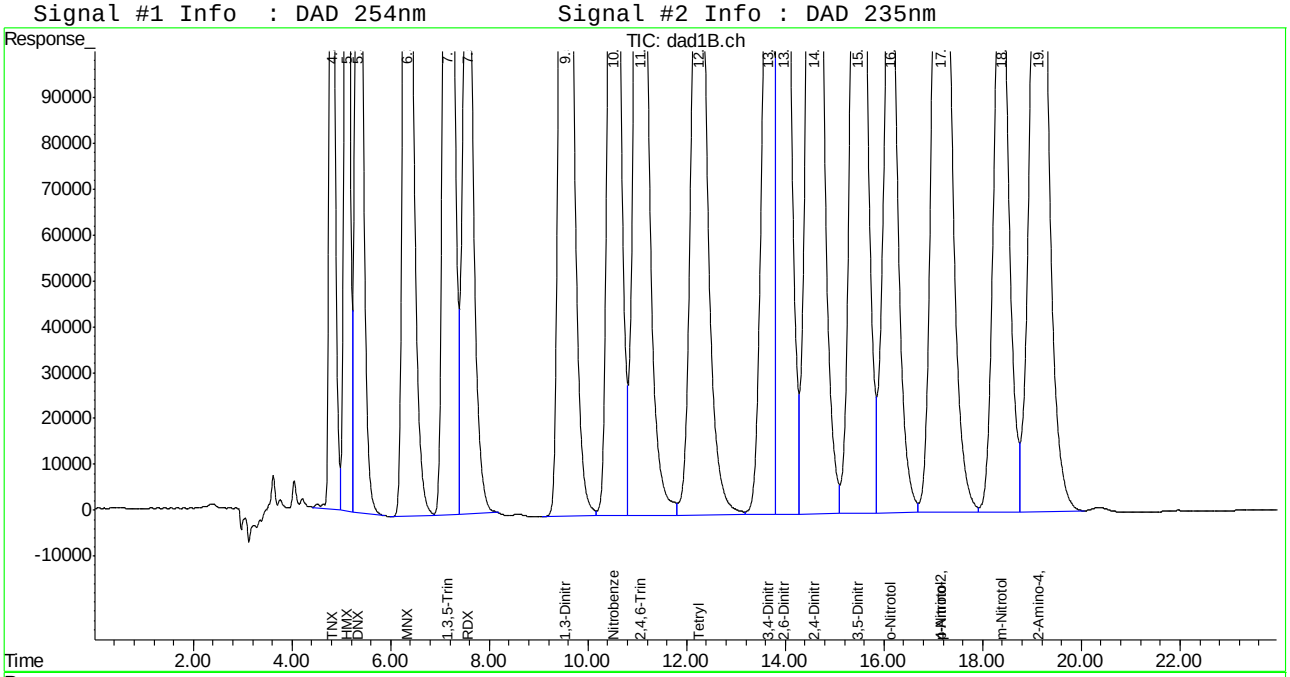
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
GG630274.D GGG3484_100324.M Mon Oct 07 09:23:39 2024 Page 1

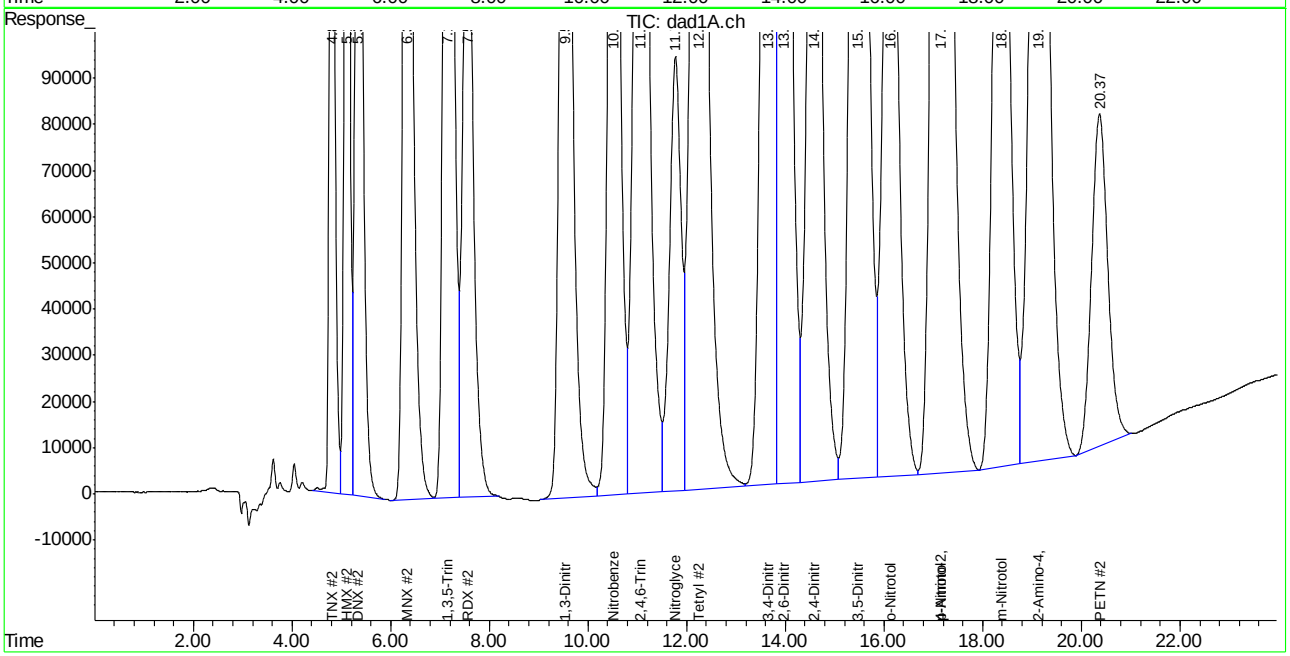
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630274.D\dad1B.ch Vial: 9
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630274.D\dad1A.ch
Acq On : 03-Oct-2024, 12:26:04 Operator: fouads
Sample : IC3484-5000 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 4 15:26 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Fri Oct 04 15:26:39 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm




GG630274.D GGG3484_100324.M Mon Oct 07 09:23:39 2024 Page 2

Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630275.D\dad1B.ch Vial: 10
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630275.D\dad1A.ch
Acq On : 03-Oct-2024, 15:39:10 Operator: fouads
Sample : ICV3484-1000 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 04 15:34:49 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Fri Oct 04 15:34:40 2024
Response via : Initial Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 12) S | 3,4-Dinitrotolue | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| | Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 0.00%# | 0.00%# |
| | Target Compounds | | | | | | |
| 1) | TNX | 4.82 | 4.82 | 3806095 | 3806095 | 454.774 | 461.939 |
| 2) | HMX | 5.19 | 5.19 | 3638012 | 3638012 | 1130.256 | 1111.517 |
| 3) | DNX | 5.43 | 5.43 | 6717813 | 6717813 | 1002.057 | 1026.230 |
| 4) | MNX | 6.56 | 6.56 | 6958747 | 6958747 | 1133.056 | 1144.670 |
| 5) | 1,3,5-Trinitrobe | 7.35 | 7.35 | 8946505 | 8946505 | 913.770 | 907.342 |
| 6) | RDX | 7.85 | 7.85 | 4616451 | 4616451 | 1029.776 | 1043.715 |
| 7) | 1,3-Dinitrobenze | 9.81 | 9.81 | 12786217 | 9744978 | 983.619 | 995.674 |
| 8) | Nitrobenzene | 10.84 | 10.84 | 8193865 | 7601004 | 951.697 | 979.519 |
| 9) | 2,4,6-Trinitroto | 11.41 | 11.41 | 9305244 | 12277803 | 1001.620 | 995.503 |
| 10) | Nitroglycerin | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. d |
| 11) | Tetryl | 12.76 | 12.76 | 6706885 | 12185692 | 971.150 | 975.290 |
| 13) | 2,6-Dinitrotolue | 14.48 | 14.48 | 5920492 | 8922399 | 934.657 | 926.295 |
| 14) | 2,4-Dinitrotolue | 15.07 | 15.07 | 12143959 | 8636126 | 987.892 | 1002.137 |
| 15) | 3,5-Dinitroanili | 15.96 | 15.96 | 9708919 | 15805727 | 961.136 | 976.666 |
| 16) | o-Nitrotoluene | 16.77 | 16.77 | 5282986 | 7917607 | 1024.561 | 987.557 |
| 17) | p-Nitrotoluene | 17.83 | 17.83 | 10626981 | 19495996 | 1949.706 | 2143.535 |
| 18) | 4-Amino-2,6-Dini | 17.83 | 17.83 | 10626981 | 19495996 | 1948.890 | 2137.962 |
| 19) | m-Nitrotoluene | 19.02 | 19.02 | 5635512 | 9637841 | 993.879 | 1082.387 |
| 20) | 2-Amino-4,6-Dini | 19.76 | 19.76 | 8710840 | 12111800 | 981.788 | 1033.922 |
| 21) | PETN | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |

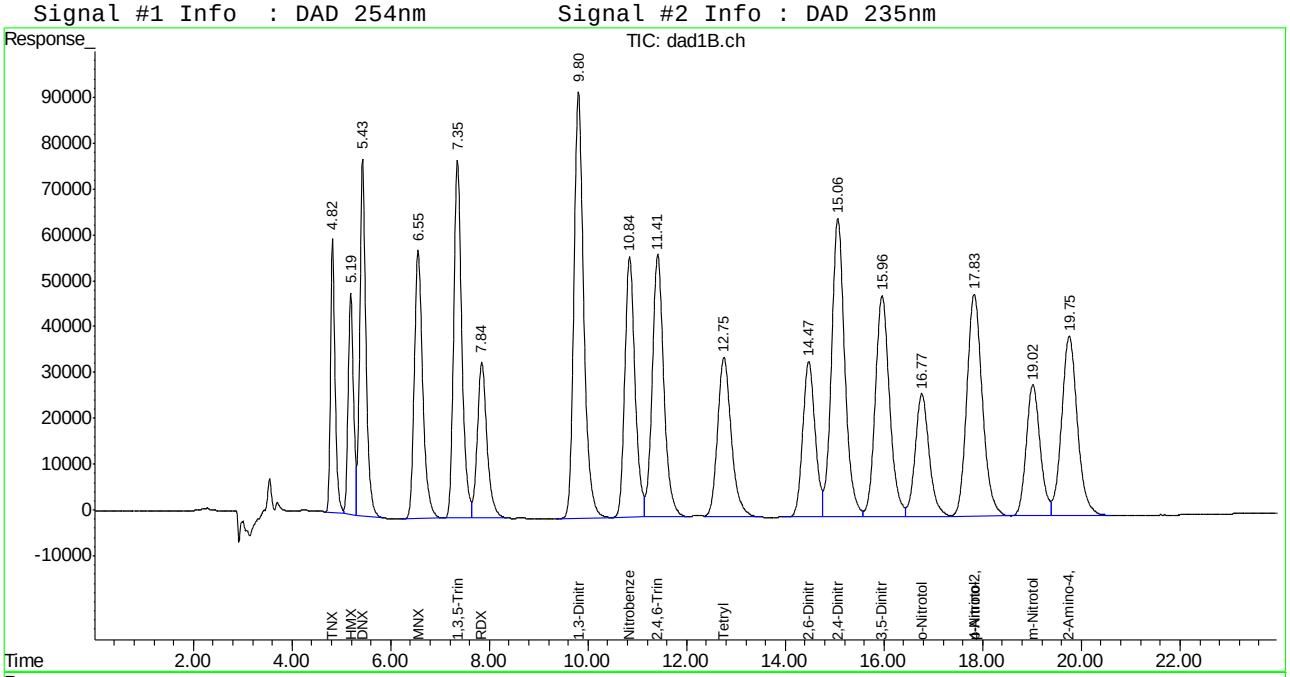
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.

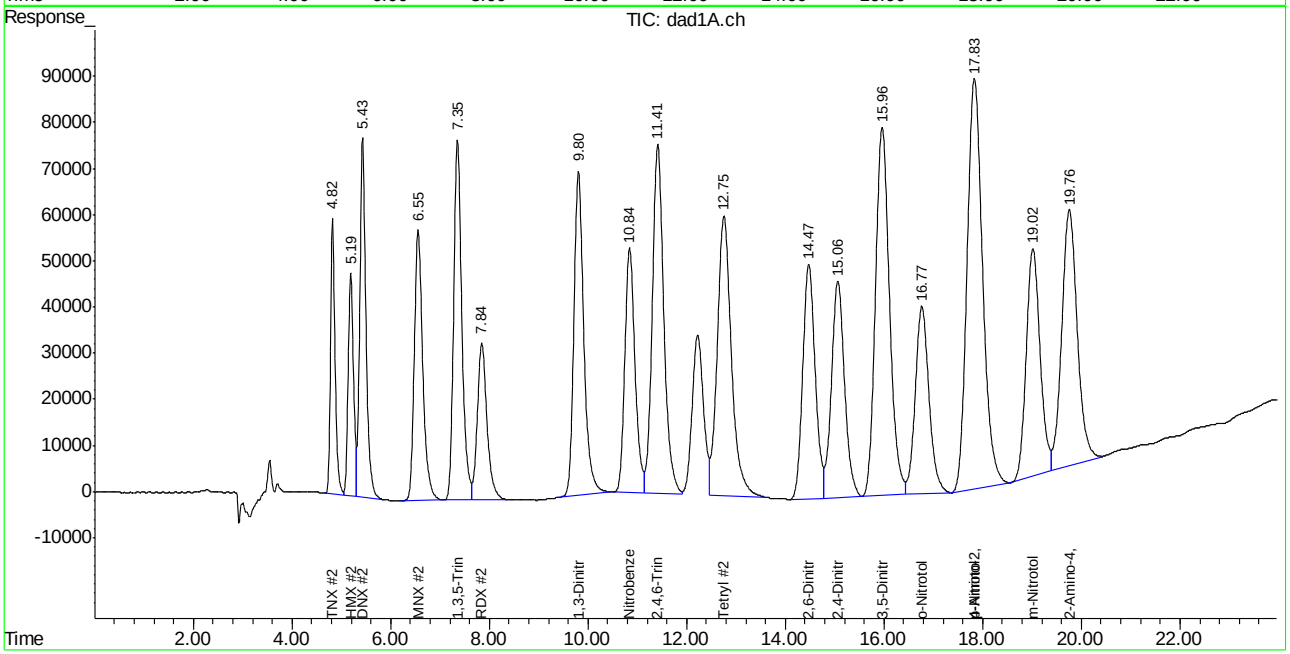
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630275.D\dad1B.ch Vial: 10
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630275.D\dad1A.ch
Acq On : 03-Oct-2024, 15:39:10 Operator: fouads
Sample : ICV3484-1000 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 4 15:35 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Fri Oct 04 15:34:40 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm



Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630276.D\dad1B.ch Vial: 11
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630276.D\dad1A.ch
Acq On : 03-Oct-2024, 17:16:05 Operator: fouads
Sample : ICV3484-1000 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 04 15:36:00 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Fri Oct 04 15:35:50 2024
Response via : Initial Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 12) S | 3,4-Dinitrotolue | 0.00 | 0.00 | 0 | 0 | N.D. | N.D. |
| | Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 0.00%# | 0.00%# |
| | Target Compounds | | | | | | |
| 1) | TNX | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 2) | HMX | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 3) | DNX | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 4) | MNX | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 5) | 1,3,5-Trinitrobe | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 6) | RDX | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 7) | 1,3-Dinitrobenze | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 8) | Nitrobenzene | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 9) | 2,4,6-Trinitroto | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 10) | Nitroglycerin | 0.00 | 12.12 | 0 | 3344774 | N.D. | 1093.857 # |
| 11) | Tetryl | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 13) | 2,6-Dinitrotolue | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 14) | 2,4-Dinitrotolue | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 15) | 3,5-Dinitroanili | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 16) | o-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 17) | p-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 18) | 4-Amino-2,6-Dini | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 19) | m-Nitrotoluene | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 20) | 2-Amino-4,6-Dini | 0.00 | 0.00 | 0 | 0 | N.D. d | N.D. d |
| 21) | PETN | 0.00 | 20.85 | 0 | 3467780 | N.D. | 1059.577 # |

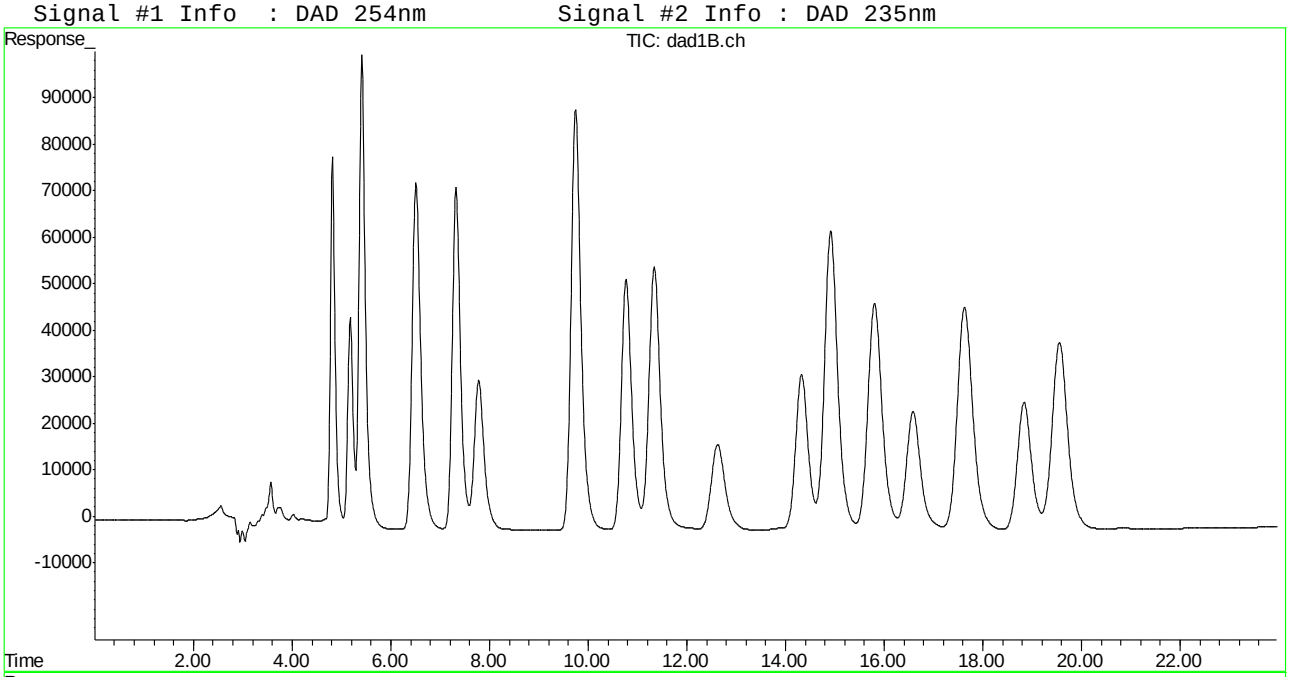
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.
GG630276.D GGG3484_100324.M Mon Oct 07 09:23:41 2024 Page 1

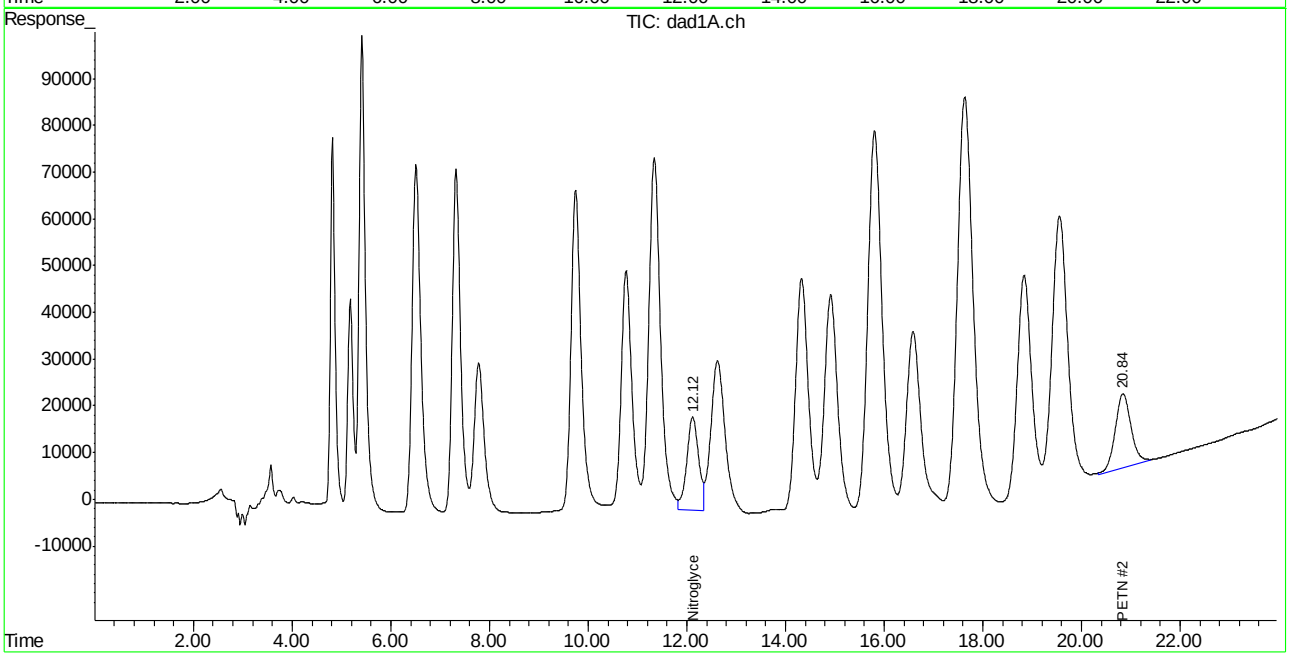
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3484\GG630276.D\dad1B.ch Vial: 11
Signal #2 : C:\HPCHEM\1\DATA\GGG3484\GG630276.D\dad1A.ch
Acq On : 03-Oct-2024, 17:16:05 Operator: fouads
Sample : ICV3484-1000 Inst : G1315B
Misc : op5552,GGG3484,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Oct 4 15:36 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Fri Oct 04 15:35:50 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm



Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630896.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630896.D\dad1A.ch
Acq On : 18-Dec-2024, 13:49:00 Operator: fouads
Sample : cc3484-1000 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 09:46:39 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 09:46:29 2024
Response via : Initial Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb |
|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | |
| 12) S | 3,4-Dinitrotolue | 13.66 | 13.65 | 4774171 | 9817646 | 1052.168 | 1089.685 |
| | Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 210.43%# | 217.94%# |
| | Target Compounds | | | | | | |
| 1) | TNX | 4.78 | 4.78 | 4348290 | 4348290 | 519.559 | 527.744 |
| 2) | HMX | 5.12 | 5.12 | 3084330 | 3084330 | 958.239 | 942.351 |
| 3) | DNX | 5.34 | 5.34 | 7778325 | 7778325 | 1160.247 | 1188.237 |
| 4) | MNX | 6.39 | 6.39 | 7985618 | 7985618 | 1300.256 | 1313.584 |
| 5) | 1,3,5-Trinitrobe | 7.13 | 7.13 | 8889303 | 8889303 | 907.928 | 901.541 |
| 6) | RDX | 7.64 | 7.64 | 4214430 | 4214430 | 940.098 | 952.824 |
| 7) | 1,3-Dinitrobenze | 9.54 | 9.54 | 11824467 | 8655056 | 909.633 | 884.313 |
| 8) | Nitrobenzene | 10.47 | 10.47 | 7392250 | 6932790 | 858.591 | 893.409 |
| 9) | 2,4,6-Trinitroto | 11.01 | 11.00 | 8591048 | 11651211 | 924.744 | 944.698 |
| 10) | Nitroglycerin | 0.00 | 11.74 | 0 | 3090570 | N.D. d | 1010.724 # |
| 11) | Tetryl | 12.23 | 12.22 | 6534336 | 11943712 | 946.166 | 955.923 |
| 13) | 2,6-Dinitrotolue | 13.94 | 13.93 | 6205501 | 8443207 | 979.651 | 876.547 |
| 14) | 2,4-Dinitrotolue | 14.58 | 14.58 | 11366740 | 7831967 | 924.666 | 908.822 |
| 15) | 3,5-Dinitroanili | 15.56 | 15.56 | 9268535 | 15805857 | 917.540 | 976.674 |
| 16) | o-Nitrotoluene | 16.02 | 16.02 | 4911488 | 7632899 | 952.514 | 952.046 |
| 17) | p-Nitrotoluene | 17.15 | 17.16 | 9694022 | 17478144 | 1778.539 | 1921.677 |
| 18) | 4-Amino-2,6-Dini | 17.15 | 17.16 | 9694022 | 17478144 | 1777.794 | 1916.681 |
| 19) | m-Nitrotoluene | 18.17 | 18.17 | 4976649 | 8303092 | 877.682 | 932.486 |
| 20) | 2-Amino-4,6-Dini | 19.11 | 19.11 | 8346733 | 11984641 | 940.750 | 1023.067 |
| 21) | PETN | 0.00 | 20.00 | 0 | 2573775 | N.D. | 786.414 # |

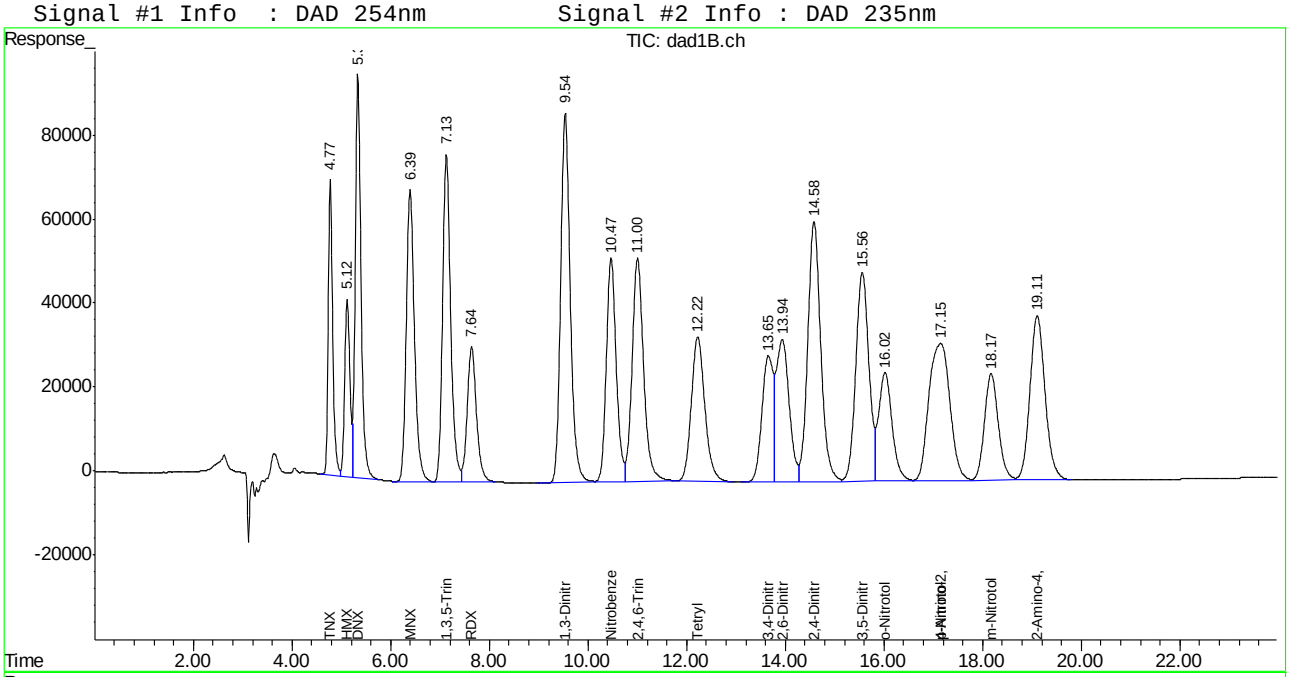
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.

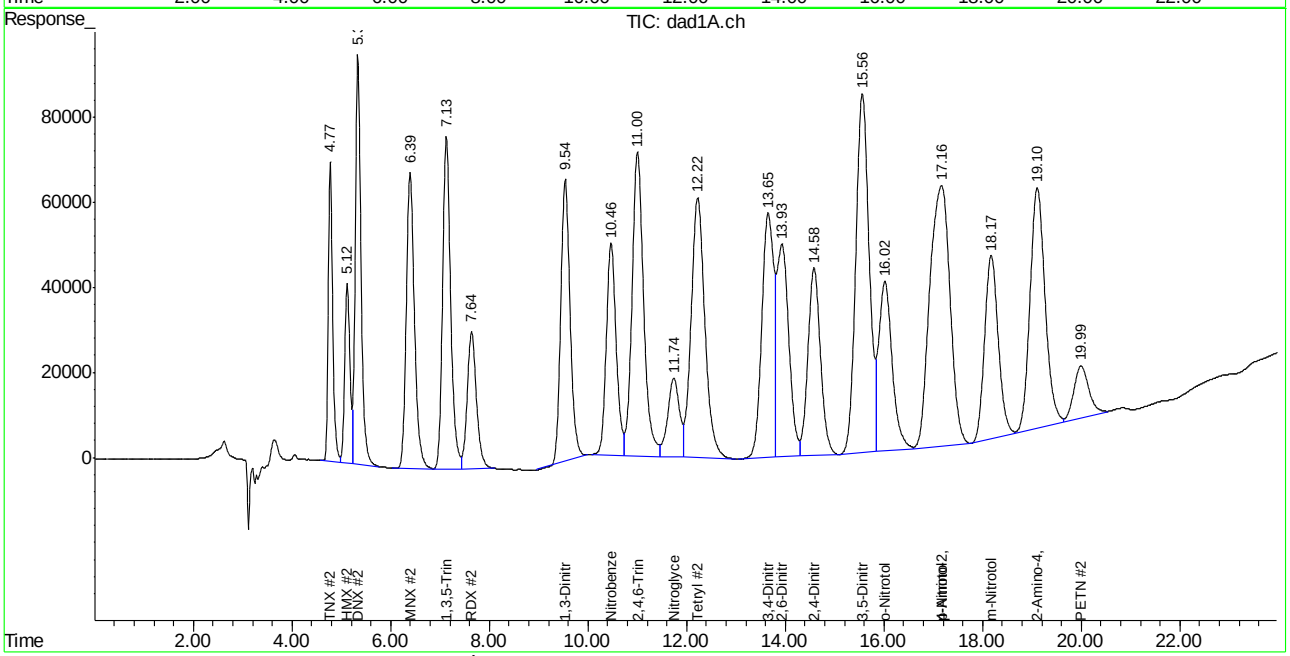
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630896.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630896.D\dad1A.ch
Acq On : 18-Dec-2024, 13:49:00 Operator: fouads
Sample : cc3484-1000 Inst : G1315B
Misc : Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 9:47 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 09:46:29 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm



Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630908.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630908.D\dad1A.ch
Acq On : 18-Dec-2024, 20:23:13 Operator: fouads
Sample : cc3484-1000 Inst : G1315B
Misc : op6848,GGG3516,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 12:54:29 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 12:54:19 2024
Response via : Initial Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm

| | Compound | RT#1 | RT#2 | Resp#1 | Resp#2 | ppb | ppb | |
|---|---|---|---|---|---|---|---|---|
| | System Monitoring Compounds | | | | | | | |
| 12) S | 3,4-Dinitrotolue | 13.27 | 13.27 | 4968805 | 10916340 | 1095.063 | 1211.631 | |
| | Spiked Amount 500.000 | Range 70 - 136 | | Recovery = | | 219.01%# | 242.33%# | |
| | Target Compounds | | | | | | | |
| 1) | TNX | 4.95 | 4.95 | 4334271 | 4334271 | 517.884 | 526.043 | |
| 2) | HMX | 5.32 | 5.32 | 3046293 | 3046293 | 946.421 | 930.730 | |
| 3) | DNX | 5.53 | 5.53 | 7813038 | 7813038 | 1165.425 | 1193.540 | |
| 4) | MNX | 6.62 | 6.62 | 7967298 | 7967298 | 1297.273 | 1310.571 | |
| 5) | 1,3,5-Trinitrobe | 6.62 | 6.62 | 7967298 | 7967298 | 813.757 | 808.033 | |
| 6) | RDX | 7.78 | 7.78 | 4158901 | 4158901 | 927.712 | 940.270 | |
| 7) | 1,3-Dinitrobenze | 9.44 | 9.44 | 12048142 | 8723374 | 926.840 | 891.293 | |
| 8) | Nitrobenzene | 10.31 | 10.31 | 7198502 | 7135509 | 836.088 | 919.532 | |
| 9) | 2,4,6-Trinitroto | 10.82 | 10.82 | 8665984 | 12427462 | 932.810 | 1007.638 | |
| 10) | Nitroglycerin | 0.00 | 11.48 | 0 | 2432468 | N.D. | 795.501 | # |
| 11) | Tetryl | 11.92 | 11.91 | 6503642 | 10532742 | 941.721 | 842.995 | |
| 13) | 2,6-Dinitrotolue | 13.60 | 13.60 | 5948049 | 9238312 | 939.007 | 959.092 | |
| 14) | 2,4-Dinitrotolue | 14.21 | 14.21 | 11128059 | 8555186 | 905.250 | 992.744 | |
| 15) | 3,5-Dinitroanili | 15.15 | 15.15 | 9278467 | 16145495 | 918.524 | 997.660 | |
| 16) | o-Nitrotoluene | 15.53 | 15.53 | 4658261 | 7259361 | 903.405 | 905.454 | |
| 17) | p-Nitrotoluene | 16.57 | 16.58 | 9508537 | 17419209 | 1744.508 | 1915.197 | |
| 18) | 4-Amino-2,6-Dini | 16.57 | 16.58 | 9508537 | 17419209 | 1743.778 | 1910.218 | |
| 19) | m-Nitrotoluene | 17.61 | 17.61 | 4660705 | 7716771 | 821.962 | 866.639 | |
| 20) | 2-Amino-4,6-Dini | 18.51 | 18.51 | 7855430 | 11114815 | 885.376 | 948.814 | |
| 21) | PETN | 0.00 | 19.34 | 0 | 3449068 | N.D. | 1053.859 | # |

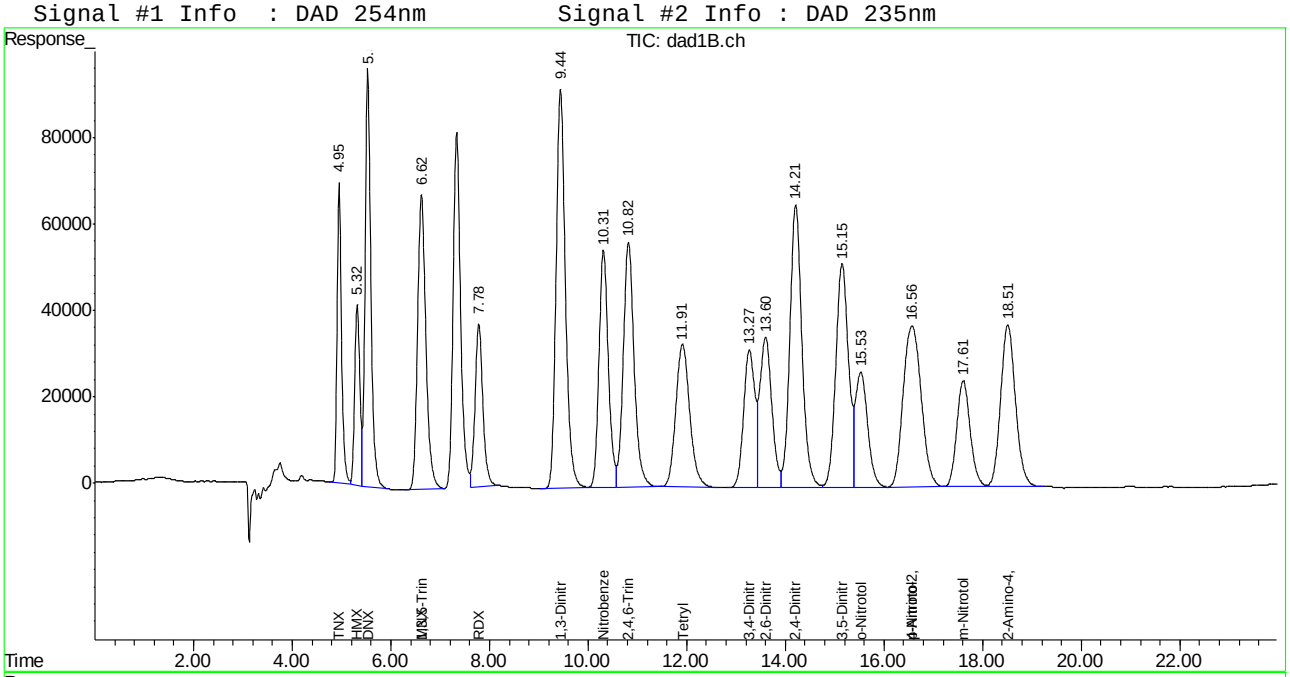
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 40% (m)=manual int.

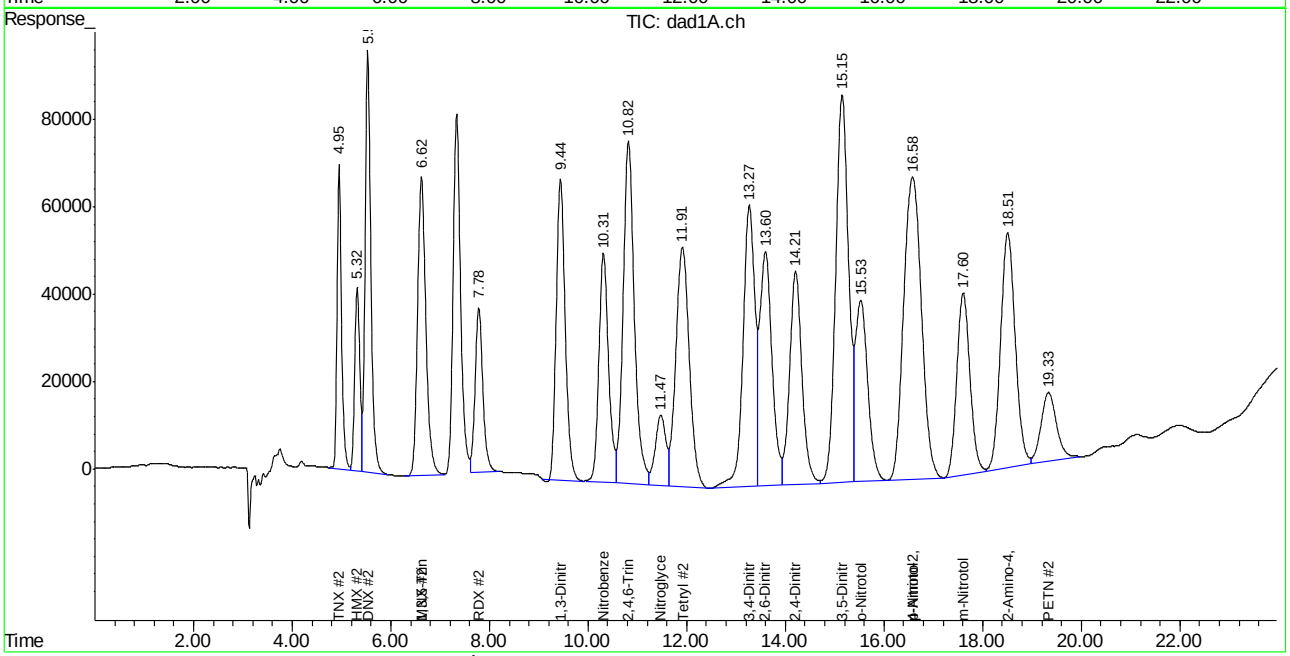
Quantitation Report (QT Reviewed)

Signal #1 : C:\HPCHEM\1\DATA\GGG3516\GG630908.D\dad1B.ch Vial: 2
Signal #2 : C:\HPCHEM\1\DATA\GGG3516\GG630908.D\dad1A.ch
Acq On : 18-Dec-2024, 20:23:13 Operator: fouads
Sample : cc3484-1000 Inst : G1315B
Misc : op6848,GGG3516,1000,,,10,1,water Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e
Quant Time: Dec 19 12:54 2024 Quant Results File: GGG3484_100324.RES

Quant Method : C:\MSDCHEM\1...\GGG3484_100324.M (Chemstation Integrator)
Title : Explosives by 8330A,8330B,8332
Last Update : Thu Dec 19 12:54:19 2024
Response via : Multiple Level Calibration
DataAcq Meth : 8330RPB3.M

Volume Inj. : 100ul
Signal #1 Phase : Bonus RP Signal #2 Phase: Bonus RP
Signal #1 Info : DAD 254nm Signal #2 Info : DAD 235nm



SGS-ORLANDO HPLC-04 BB ANALYSIS LOG

| | | | | | |
|---|---|---|---|---|---|
| DATE | 9/12/2024 | METHODS | 8330 | IC/ICC STD LOT | LC1750/LC1834 |
| COLUMN TYPE | Extend C18 | ACQ. METHOD | 8330B | ICV STD LOT | LC1734 |
| AMOUNT INJ | 100ul | PROC. METHOD | BBB2589_091224.m | SOLVENT | 222737 |
| INSTRUMENT | HPLC05-BB | CALIB. DATE | 9/12/2024 | SOLVENT | 258274 |
| ANALYST | fs | RUN BATCH | GBB2589 | HEAD PRESSURE | 240 |

| DATA FILE | ALS | SAMPLE NAME | METHOD | DF | MISC. INFO | COMMENTS |
|---|---|---|---|---|---|---|
| BB084244 | 1 | ccb | 8330 | 1 | op98911,GBB2589,1000,,,10,1,water | |
| BB084245 | 2 | cond std | 8330 | 100+400 | op3387,GBB2589,1000,,,10,1,water | |
| BB084246 | 3 | ic5289-20 | 8330 | 1 | op5155,GBB2589,1000,,,10,1,water | |
| BB084247 | 4 | ic5289-50 | 8330 | 1 | op5155,GBB2589,1000,,,10,1,water | |
| BB084248 | 5 | ic5289-100 | 8330 | 1 | op5155,GBB2589,880,,,10,1,water | |
| BB084249 | 6 | ic5289-200 | 8330 | 4 | op5155,GBB2589,800,,,10,4,water | |
| BB084250 | 7 | ic5289-500 | 8330 | 4 | op5155,GBB2589,840,,,10,4,water | |
| BB084251 | 8 | icc5289-1000 | 8330 | 4 | op5155,GBB2589,900,,,10,4,water | curve passe |
| BB084252 | 9 | ic5289-2500 | 8330 | 1 | op5155,GBB2589,850,,,10,1,water | |
| BB084253 | 10 | ic5289-5000 | 8330 | 1 | op5155,GBB2589,500,,,10,1,water | |
| BB084254 | 11 | icv5289-1000 | 8330 | 1 | op5155,GBB2589,500,,,10,1,water | icv passed |
| BB084255 | 12 | op5264-bs | 8330 | 1 | op5264,GBB2589,1000,,,10,1,water | / tetryl 135 low |
| BB084256 | 13 | op5264-mb | 8330 | 1 | op5264,GBB2589,1000,,,10,1,water | nd |
| BB084257 | 14 | fc18659-1 | 8330 | 1 | op5264,GBB2589,130,,,10,1,water | nd |
| BB084258 | 15 | fc18659-2 | 8330 | 1 | op5264,GBB2589,130,,,10,1,water | nd |
| BB084259 | 16 | fc18659-3 | 8330 | 1 | op5264,GBB2589,140,,,10,1,water | rerun not aquired |
| BB084260 | 17 | fc18286-2cf,4 | 8330 | 4 | op5264,GBB2589,940,,,10,4,water | confirmed |
| BB084261 | 18 | fc18286-3cf,4 | 8330 | 4 | op5264,GBB2589,820,,,10,4,water | confirmed |
| BB084262 | 19 | fc18308-4cf | 8330 | 1 | op5264,GBB2589,840,,,10,1,water | confirmed |
| BB084263 | 20 | fc18308-5cf | 8330 | 1 | op5264,GBB2589,740,,,10,1,water | confirmed |
| BB084264 | 21 | fc18308-6cf | 8330 | 1 | op5264,GBB2589,790,,,10,1,water | confirmed |
| BB084265 | 1 | ccb | 8330 | 1 | op98911,GBB2589,1000,,,10,1,water | / |
| BB084266 | 8 | cc2589-1000 | 8330 | 100+400 | op5155,GBB2589,1000,,,10,1,water | passed |
| BB084267 | 22 | fc18233-3cf | 8330 | 1 | op5264,GBB2589,860,,,10,1,water | confirmed |
| BB084268 | 23 | fc18338-1,10 | 8330 | 10 | op5068,GBB2589,710,,,10,10,water | dl req matrix |
| BB084269 | 24 | fc18338-2,5 | 8330 | 5 | op5068,GBB2589,880,,,10,5,water | dl req matrix |
| BB084270 | 25 | fc18338-3,5 | 8330 | 5 | op5068,GBB2589,700,,,10,5,water | dl req matrix |
| BB084271 | 26 | fc18338-5,5 | 8330 | 5 | op5068,GBB2589,880,,,10,5,water | dl req matrix |
| BB084272 | 27 | op5265-mb | 8330 | 1 | op5265,GBB2589,1000,,,10,1,water | nd |
| BB084273 | 28 | op5265-bs | 8330 | 1 | op5265,GBB2589,1000,,,10,1,water | / |
| BB084274 | 29 | fc18623-1 | 8330 | 1 | op5265,GBB2589,1010,,,10,1,water | ? |
| BB084275 | 30 | op5265-ms | 8330 | 1 | op5265,GBB2589,490,,,10,1,water | / |
| BB084276 | 31 | op5265-msd | 8330 | 1 | op5265,GBB2589,490,,,10,1,water | / |
| BB084277 | 1 | ccb | 8330 | 1 | op98911,GBB2589,1000,,,10,1,water | / |
| BB084278 | 8 | cc2589-1000 | 8330 | 100+400 | op5155,GBB2589,1000,,,10,1,water | passed |
| BB084279 | 32 | fc18623-2 | 8330 | 1 | op5265,GBB2589,1000,,,10,1,water | / |
| BB084280 | 33 | fc18662-1 | 8330 | 1 | op5265,GBB2589,940,,,10,1,water | hmx? |
| BB084281 | 33 | fc18662-2 | 8330 | 1 | op5265,GBB2589,940,,,10,1,water | hmx? |
| BB084282 | 34 | fc18662-3 | 8330 | 1 | op5265,GBB2589,920,,,10,1,water | hmx? |
| BB084283 | 35 | fc18338-7,100 | 8330 | 100 | op5068,GBB2589,550,,,10,100,water | report nitrobenzene |
| BB084284 | 1 | ccb | 8330 | 1 | op5265,GBB2589,1000,,,10,1,water | / |
| BB084285 | 8 | ecc2889-1000 | 8330 | 100+400 | op5155,GBB2589,1000,,,10,1,water | passed |

SGS-ORLANDO HPLC-04 BB ANALYSIS LOG

| | | | | | |
|---|---|---|---|---|---|
| DATE | 12/17/2024 | METHODS | 8330 | IC/ICC STD LOT | LC1750/LC1834 |
| COLUMN TYPE | Extend C18 | ACQ. METHOD | 8330B | ICV STD LOT | LC1734 |
| AMOUNT INJ | 100ul | PROC. METHOD | BBB2589_091224.m | SOLVENT | 222737 |
| INSTRUMENT | HPLC05-BB | CALIB. DATE | 9/12/2024 | SOLVENT | 258274 |
| ANALYST | fs | RUN BATCH | GBB2633 | HEAD PRESSURE | 240 |

| DATA FILE | ALS | SAMPLE NAME | METHOD | DF | MISC. INFO | COMMENTS |
|---|---|---|---|---|---|---|
| BB085939 | 1 | ccb | 8330 | 1 | op98911,GBB2633,1000,,,10,1,water | / |
| BB085940 | 2 | cc2589-1000 | 8330 | 100+400 | op3387,GBB2633,1000,,,10,1,water | passed (plus cpds high) |
| BB085941 | 3 | op6848-mb | 8330 | 1 | OP6848,GBB2633,1000,,,10,1,water | nd |
| BB085942 | 4 | op6848-bs | 8330 | 1 | OP6848,GBB2633,1000,,,10,1,water | / plus high |
| BB085943 | 5 | je1979-11a | 8330 | 1 | OP6848,GBB2633,1000,,,10,1,water | nd |
| BB085944 | 6 | fc21058-1 | 8330 | 1 | OP6848,GBB2633,900,,,10,1,water | hmx,rdx? |
| BB085945 | 7 | op6848-ms | 8330 | 1 | OP6848,GBB2633,450,,,10,1,water | / |
| BB085946 | 8 | op6848-msd | 8330 | 1 | OP6848,GBB2633,450,,,10,1,water | / |
| BB085947 | 9 | fc21058-2 | 8330 | 1 | OP6848,GBB2633,940,,,10,1,water | nd |
| BB085948 | 10 | fc21058-3 | 8330 | 1 | OP6848,GBB2633,910,,,10,1,water | /? |
| BB085949 | 11 | fc21058-4 | 8330 | 1 | OP6848,GBB2633,910,,,10,1,water | nd |
| BB085950 | 12 | fc21058-5 | 8330 | 1 | OP6848,GBB2633,900,,,10,1,water | /? |
| BB085951 | 1 | ccb | 8330 | 1 | op98911,GBB2633,1000,,,10,1,water | / |
| BB085952 | 2 | cc2589-1000 | 8330 | 100+400 | op3387,GBB2633,1000,,,10,1,water | passed (plus cpds high) |
| BB085953 | 13 | fc21058-6 | 8330 | 1 | OP6848,GBB2633,930,,,10,1,water | nd |
| BB085909 | 14 | op6902-bs | 8330 | 1 | OP6902,GBB2633,1000,,,10,1,water | / dnx high |
| BB085910 | 15 | op6902-mb | 8330 | 1 | OP6902,GBB2633,950,,,10,1,water | nd |
| BB085911 | 16 | fc21117-1 | 8330 | 1 | OP6902,GBB2633,950,,,10,1,water | /? |
| BB085912 | 17 | fc21117-2 | 8330 | 1 | OP6902,GBB2633,940,,,10,1,water | nd |
| BB085913 | 18 | fc21117-3 | 8330 | 1 | OP6902,GBB2633,950,,,10,1,water | /? |
| BB085914 | 19 | fc21117-4 | 8330 | 1 | OP6902,GBB2633,930,,,10,1,water | /? |
| BB085915 | 20 | op6902-ms | 8330 | 1 | OP6902,GBB2633,980,,,10,1,water | / |
| BB085916 | 21 | op6902-msd | 8330 | 1 | OP6902,GBB2633,490,,,10,1,water | / |
| BB085917 | 22 | fc21117-5 | 8330 | 1 | OP6902,GBB2633,490,,,10,1,water | nd |
| BB085918 | 1 | ccb | 8330 | 1 | op98911,GBB2633,1000,,,10,1,water | / |
| BB085919 | 2 | ecc2589-1000 | 8330 | 100+400 | op3387,GBB2633,1000,,,10,1,water | passed (plus cpds high) |

| | | | | | |
|---|---|---|---|---|---|
| DATE | 10/3/2024 | METHODS | 8330 | IC/ICC STD LOT | LC1750,lc1756 |
| COLUMN TYPE | Bonus-RP | ACQ. METHOD | 8330 | ICV STD LOT | LC1734 |
| AMOUNT INJ | 100uL | PROC. METHOD | GGG3484_100324.M | SOLVENT | 222742 |
| INSTRUMENT | HPLC3-GG | CALIB. DATE | 10/3/2024 | SOLVENT | 223231 |
| ANALYST | fs | RUN BATCH | GGG3484 | HEAD PRESSURE | 180 |

| DATA FILE | ALS | SAMPLE NAME | METHOD | DF | MISC. INFO | COMMENTS |
|---|---|---|---|---|---|---|
| GG630265 | 1 | ccb | 8330 | 1 | op4207,GGG3484,1000,,,10,1,water | nd |
| GG630266 | 2 | ic3484-20,na | 8330 | 100+400 | op5407,GGG3484,940,,,10,1,water | na |
| GG630267 | 3 | ic3484-50 | 8330 | 5/500 | op5552,GGG3484,1000,,,10,1,water | |
| GG630268 | 4 | ic3484-100 | 8330 | 10/500 | *op5552,GGG3484,1000,,,10,1,water* | |
| GG630269 | 2 | ic3484-20 | 8330 | 2/500 | op5552,GGG3484,1000,,,10,1,water | |
| GG630270 | 5 | ic3484-200 | 8330 | 20/500 | op5552,GGG3484,1000,,,10,1,water | |
| GG630271 | 6 | ic3484-500 | 8330 | 50/500 | op5552,GGG3484,1000,,,10,1,water | |
| GG630272 | 7 | icc3484-1000 | 8330 | 100/500 | op5552,GGG3484,1000,,,10,1,water | curve passed |
| GG630273 | 8 | ic3484-2500 | 8330 | 250+250 | op5552,GGG3484,1000,,,10,1,water | |
| GG630274 | 9 | ic3484-5000 | 8330 | 1x | op5552,GGG3484,1000,,,10,1,water | |
| GG630275 | 10 | icv3484-1000 | 8330 | 1x | op4207,GGG3484,1000,,,10,1,water | icv passed |
| GG630276 | 11 | icv3484-1000 | 8330 | 1 | op5407,GGG3484,1000,,,10,1,water | report nitroglycerine,,petn |
| GG630277 | 2 | op5553-mb | 8330 | 1 | op5553,GGG3484,10,,,50,1,soil | nd |
| GG630278 | 12 | FC19025-3CF | 8330 | 1 | op5553,GGG3484,10.1,,,50,1,soil | confirmed nd |
| GG630279 | 13 | FC19025-13CF | 8330 | 1 | op5553,GGG3484,10.3,,,50,1,soil | confirmed nd |
| GG630280 | 14 | FC19025-16CF | 8330 | 1 | op5553,GGG3484,10.2,,,50,1,soil | confirmed |
| GG630281 | 15 | FC19025-19CF | 8330 | 1 | op5553,GGG3484,10.4,,,50,1,soil | confirmed nd |
| GG630282 | 16 | op5595-mb | 8330 | 1 | op5595,GGG3484,1000,,,10,1,water | nd |
| GG630283 | 17 | fc19136-1cf | 8330 | 1 | op5595,GGG3484,950,,,10,1,water | confirmed |
| GG630284 | 18 | fc19136-2cf | 8330 | 1 | op5595,GGG3484,950,,,10,1,water | confirmed |
| GG630285 | 19 | fc19136-3cf | 8330 | 1 | op5595,GGG3484,950,,,10,1,water | confirmed |
| GG630286 | 1 | ccb | 8330 | 1 | op4207,GGG3484,1000,,,10,1,water | / |
| GG630287 | 7 | icc3484-1000 | 8330 | 100/500 | op5552,GGG3484,10.3,,,50,1,soil | passed |

| | | | | | |
|---|---|---|---|---|---|
| DATE | 12/18/2024 | METHODS | 8330 | IC/ICC STD LOT | LC1750,lc1756 |
| COLUMN TYPE | Bonus-RP | ACQ. METHOD | 8330 | ICV STD LOT | LC1734 |
| AMOUNT INJ | 100uL | PROC. METHOD | GGG3484_100324.M | SOLVENT | 222742 |
| INSTRUMENT | HPLC3-GG | CALIB. DATE | 10/3/2024 | SOLVENT | 223231 |
| ANALYST | fs | RUN BATCH | GGG3516 | HEAD PRESSURE | 180 |

| DATA FILE | ALS | SAMPLE NAME | METHOD | DF | MISC. INFO | COMMENTS |
|---|---|---|---|---|---|---|
| GG630853 | 1 | ccb | 8330 | 1 | op5407,GGG3516,1000,,,10,1,water | / |
| GG630854 | 2 | cc3484-1000 | 8330 | 100+400 | op5407,GGG3516,1000,,,10,1,water | passed target cpds |
| GG630855 | 3 | op6848-mb | 8330 | 1 | op6848,GGG3516,1000,,,10,1,water | nd |
| GG630856 | 4 | fc21058-1cf | 8330 | 1 | *op6848,GGG3516,900,,,10,1,water* | confirmed |
| GG630857 | 5 | fc21058-3cf | 8330 | 1 | op6848,GGG3516,910,,,10,1,water | confirmed |
| GG630858 | 6 | fc21058-5cf | 8330 | 1 | op6848,GGG3516,900,,,10,1,water | confirmed |
| GG630859 | 7 | op6902-mb | 8330 | 1 | op6902,GGG3516,1000,,,10,1,water | nd |
| GG630860 | 8 | fc21117-1cf | 8330 | 1 | op6902,GGG3516,910,,,10,1,water | confirmed |
| GG630861 | 9 | fc21117-3cf | 8330 | 1 | op6902,GGG3516,940,,,10,1,water | confirmed |
| GG630862 | 10 | fc21117-4cf | 8330 | 1 | op6902,GGG3516,950,,,10,1,water | confirmed |
| GG630863 | 11 | op6970-mb | 8330 | 1 | op6970,GGG3516,2,,,20,1,soil | nd |
| GG630864 | 12 | fc21084-1cf | 8330 | 1 | op6970,GGG3516,2.02,,,20,1,soil | confirmed low surrg |
| GG630865 | 1 | ccb | 8330 | 1 | op5407,GGG3516,1000,,,10,1,water | / |
| GG630866 | 2 | cc3484-1000 | 8330 | 100+400 | op5407,GGG3516,1000,,,10,1,water | passed target cpds |
| GG630867 | 13 | fc21084-3cf | 8330 | 1 | op6970,GGG3516,2.05,,,20,1,soil | confirmed low surrg |
| GG630868 | 14 | fc21084-4cf | 8330 | 1 | op6970,GGG3516,2.02,,,20,1,soil | confirmed low surrg |
| GG630869 | 15 | fc21084-6cf | 8330 | 1 | op6970,GGG3516,2.01,,,20,1,soil | confirmed low surrg |
| GG630870 | 16 | fc21084-7cf | 8330 | 1 | op6970,GGG3516,2,,,20,1,soil | confirmed low surrg |
| GG630871 | 17 | fc21084-8cf | 8330 | 1 | op6970,GGG3516,2.03,,,20,1,soil | confirmed low surrg |
| GG630872 | 1 | ccb | 8330 | 1 | op5407,GGG3516,1000,,,10,1,water | / |
| GG630873 | 2 | ecc3484-1000 | 8330 | 100+400 | op5407,GGG3516,1000,,,10,1,water | passed target cpds |

SGS - ORLANDO

# SPE LIQUID SAMPLE PREP REPORT

Date/Time Started: 12/12/24 8:20 (mm/dd/yy 24:00)

Date/Time Finished: 12/12/24 1:45 (mm/dd/yy 24:00)

Prep Method: 3535A or 537 or 537MOD (circle)

Analytical Method: 8330 B

Batch# OP#6902 Ext By: JM/CP Conc. By: — Vialed By: CP

| Sample ID | Bottle Number | Amount Extracted (ml) | Initial pH | Adjusted pH | Surrogate Amount | Spike Amount | Final Volume (ml) | Manifold ID | Comments |
|---|---|---|---|---|---|---|---|---|---|
| OP#6902 MB | — | 1000 | 7 | NA | 250µl | | 10ml | AT3 | |
| OP#6902 BS | — | 1000 | ↓ | ↓ | ↓ | 250+200 µl | ↓ | ↓ | |
| FC21117-1 | 3 | 910 | 7 | NA | 250µl | | 10ml | AT2 | |
| -2 | 2 | 950 | ↓ | ↓ | ↓ | | ↓ | ↓ | |
| -3 | 3 | 940 | | | | | | | |
| -4 | 9 | 950 | | | | | | | |
| -5 | 2 | 930 | ↓ | ↓ | ↓ | | ↓ | ↓ | |
| FC21117-4MS | 8 | 460 | 7 | NA | 250µl | 250+200 µl | 10ml | AT3 | |
| FC21117-4MSD | 8 | 460 | ↓ | ↓ | ↓ | ↓ | ↓ | AT1 | |
| DUP | | | | | | | | | |

Comments:

Surr.1 ID: LC18871 Conc: 25ppm Exp. Date: 5/11/25 Inj. By: JM Ver. By: CP

Spk.1 ID: LC18876 Conc: 20ppm Exp. Date: 6/12/25 Inj. By: JM Ver. By: CP

Spk.2 ID: LC1843 Conc: 25ppm Exp. Date: 4/30/24 Inj. By: JM Ver. By: —

Spk.3 ID: — Conc: — Exp. Date: — Inj. By: — Ver. By: —

TurboVap Temp (Therm ID): — N-Evap Temp (Therm ID): —

Observed Temp °C: — Corr. Temp °C: — Observed Temp °C: — Corr. Temp °C: —

Methanol Lot #: — SPE Lot #: 5214-0160 pH Paper #: 210224

Acetonitrile Lot #: 242583 Syringe filter Lot #: — Reagent #: —

Water Lot#: 242068 Pre-filter Lot#: — Reagent #: —

Solvent#: — Carbon Lot#: — Other: —

Relinquished By: Date: 12/12/24

Accepted By: Date: 12/12/24

ORLD-EXT-0001-3-08-FORM-extwater_spe xls 032718

# APPENDIX B-2
# DATA VALIDATION REPORTS



# DATA VERIFICATION/VALIDATION REPORT
# Solid Waste Management Unit (SWMU) 54
# Radford Army Ammunition Plant (RFAAP), Radford, VA
# SDGs FC18168 (SGS), 188769 (CTL)

U.S. ARMY CORPS OF ENGINEERS, Baltimore District

Radford Army Ammunition Depot

Radford, Virginia

SWMU 54: Interim Measures

October 09, 2024

**Prepared for:**

Cape Environmental Management Inc.

500 Pinnacle Ct, Ste 100

Norcross, GA 30071

**Prepared by:**

Neptune and Company, Inc

1435 Garrison Street, Suite 201

Lakewood CO, 80215

# Signature Page

| | |
|---|---|
| Data validator: Phil Conley | Philip D Conley<br>Digitally signed by Philip D Conley<br>Date: 2024.10.09 17:51:23 -04'00' |
| Reviewer: Polona Carson | POLONA KALAN CARSON<br>Digitally signed by POLONA KALAN CARSON<br>Date: 2024.10.09 14:16:40 -06'00' |

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*Acronyms and Abbreviations*

| | |
|---|---|
| °C | degrees Celsius |
| %D | percent difference |
| %R | percent recovery |
| %RSD | percent relative standard deviation |
| CCV | continuing calibration verification |
| COC | chains-of-custody |
| CTL | CT Laboratories, Inc |
| DL | detection limit |
| ICV | initial calibration verification |
| IS | internal standard |
| LCS | laboratory control sample |
| LOD | limit of detection |
| LOQ | limit of quantitation |
| MS | matrix spike |
| MSD | matrix spike duplicate |
| QAPP | quality assurance project plan |
| QC | quality control |
| QSM | Quality Systems Manual |
| RPD | relative percent difference |
| SEDD | Staged Electronic Data Deliverable |
| SGS | SGS North America, Inc. |
| SWMU | Solid Waste Management Unit |
| USEPA | U.S. Environmental Protection Agency |
| USACE | U.S. Army Corps of Engineers |

# Introduction

This data verification/validation report is for groundwater samples collected from the Propellant Burning Ash Disposal Area site at the Radford Army Ammunition Plant, located in Radford, VA. The data analyses are for 5 groundwater samples collected on August 20, 2024. The samples were shipped to two laboratories, SGS North America, Inc. (SGS) and CT Laboratories, LLC (CTL) and were received by the laboratories on August 21, 2024. The attributes of the samples collected, including calendar dates and identification numbers, are summarized in Table 1.

*Table 1: Samples Collected from Clearfield Naval Supply Depot Historical Landfill Site*

| SGS ID | CTL ID | Client Sample ID | Matrix | Date Sampled | Date | Validation |
|---|---|---|---|---|---|---|
| FC18168-1 | 1493633 | 54MW13 | Groundwater | 08/20/2024 | 08/21/2024 | S4VEM |
| FC18168-2 | 1493634 | 54MW10 | Groundwater | 08/20/2024 | 08/21/2024 | S4VEM |
| FC18168-3 | 1493635 | 54MW12 | Groundwater | 08/20/2024 | 08/21/2024 | S4VEM |
| FC18168-4 | 1493636 | 54TW12 | Groundwater | 08/20/2024 | 08/21/2024 | S4VEM |
| FC18168-5 | 1493637 | 54MW1 | Groundwater | 08/20/2024 | 08/21/2024 | S4VEM |

Site samples were collected in accordance with the SWMU 54 Interim Measures Work Plan, Section 4 Quality Assurance Project Plan (QAPP). The samples were shipped to SGS located in Orlando, FL for analysis of perchlorate (SW6850) and explosives (SW8330). Samples were also shipped to CTL located in Baraboo, WI for analysis of TOC/TIC (9060A) and Anions (9056A). CTL subcontracted the analysis of Chlorate/Chlorite (300.0) to Eurofins located in South Bend, IN.

Analytical results were reviewed in accordance with the project QAPP, the Department of Defense (DoD) Quality Systems Manual (QSM), DoD General Data Validation Guidelines, DoD Data Validation Guidelines Module 1.

Both SGS and CTL provided Level IV data package, which included the required elements to perform the USEPA Region III level M3, Stage 4 electronic and manual validation (S4VEM) defined in the QAPP. The data were validated to S4VEM by the Neptune and Company, Incorporated (Neptune) data validator.

Data qualifier definitions are listed in Table 2 below.

*Table 2: Final Validation Flags Definitions*

| Qualifier | Definition |
|---|---|
| U | Not detected. The associated number indicates the compound reporting limit for the sample. |
| J | Indicates an estimated value for 1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, 2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or 3) estimating a concentration >=MDL and <MRL or <3*MRL, whichever is greater |

| Qualifier | Definition |
|---|---|
| B | The analyte has been detected in the sample and the associated laboratory or field blank. |
| K | Analyte present. Reported value may be biased high (estimated) due to QC non-conformance. |
| L | Analyte present. Reported value may be biased low (estimated) due to QC non-conformance. |
| UL | Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. QL is probably higher |
| UJ | The analyte was analyzed for, but was not detected above the reported sample QL. The reported QL is approximate and may be inaccurate or imprecise. |
| N | The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification." |
| NJ | The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration. |
| R | The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meeting the QC criteria. The analyte may or may not be present in the sample. |

## Sample Receipt

All samples were received at SGS, Orlando, FL and CTL Baraboo, WI facilities on August 21, 2024. There were two coolers received by SGS at the maximum corrected temperatures of 2.8°C and 3.4°C. There was one cooler received at CTL at a temperature of 5.1°C. CTL repackaged samples and shipped to Eurofins for the analysis of chlorate/chlorite. The cooler was received at Eurofins South Bend facility on August 23, 2024. The cooler temperature was 2.2°C. The samples were received intact and in good condition.

## Preservation and Holding Times

The sample receipt form indicates that the samples were received intact and in good condition. Cooler temperatures met criteria. The case narrative indicates all samples were extracted and analyzed within the preparation and analytical hold times. This was verified by reviewing the sample summaries containing sample collection, receipt, preparation and analytical dates, with the exception for analysis of chlorite. Preservation and hold time are not provided in the QAPP. Method 300.0 is consulted for preservation and hold time criteria for Chlorate/Chlorite analysis. Method 300.0 indicates the analytical hold time for chlorite is "immediately" for unpreserved samples. The hold time may be increased to 14 days if the sample is collected in an opaque bottle and preserved with EDA. The CoC did not provide preservation information. Eurofins indicated in the sample login form that the sample containers were provided by Eurofins. The lab provided email confirmation that the correct sample containers and preservative were shipped to the field for collecting samples for chlorite analysis. Therefore, the hold

time is extended to 14 days with properly preserved samples. The samples were collected on August 20, 2024, and analyzed on August 24 or 26, 2024. Samples for chlorite analysis were analyzed within hold time. No qualifiers were applied.

# Validation

## Explosives by Method SW8330

### Calibration

The initial calibration consisted of eight (8) calibration standards. The lab employed the average relative response factor with the %RSD within acceptance limit (<20%), or linear regression forced through zero. The second source calibration verification was performed following the initial calibration and was within control limits (+/-20%), The continuing calibrations checks performed prior to analysis of samples were within control limits, except TNX (high) and DNX (high). All results for TNX and DNX were non-detected in all samples. No qualifications were applied for non-detected results.

### Blanks

A method blank was prepared and analyzed with the batch of samples. All results were non-detected. No qualifiers were necessary.

### Laboratory Control Sample

A laboratory control sample (LCS) was prepared and analyzed with the batch of samples. All analyte recoveries were within control limits. No qualifiers were necessary.

### Matrix Spike / Matrix Spike Duplicate

MS/MSD analyses were performed on sample 54MW13. The MS/MSD recoveries and RPD were within control limits except for HMX (high), TNX (high) and 3,5-dinitroaniline (low). TNX was not detected in the parent sample. No qualifiers were applied. HMX was detected in the parent sample and was qualified as estimated with a high bias. Analyte 3,5-dinitroaniline was detected in the parent sample and was qualified as estimated with a low bias.

### Target Compound Quantitation

Target compound quantitation's were manually recalculated for analytes HMX and 3,5-dinitroaniline. Manual integration was performed on several analytes. This is due to unidentified co-eluding material, which makes peak baseline determination difficult. This is observed in the manual integration of 3,5-dinitroaniline. The confirmation column does not resolve this unidentified co-eluding interference. Manual integration of both peaks from the primary and confirmation column is subjective based upon

analyst's interpretation and is the reason for the high difference (>40%) between the columns. The results for 3,5-dinitroaniline are qualified as estimated, J, for samples 54MW13, 54MW12, and 54TW12.

## Perchlorate by Method SW6850

### Calibration

Prior to analyzing the calibration standards, the instrument was properly tuned. The initial calibration consisted of eight (8) calibration standards. The lab employed the average relative response factor with the %RSD within acceptance limit (<15%). The second source calibration verification was performed following the initial calibration and was within control limits (+/-15%, +/-50% for low concentration CCV). The continuing calibrations checks performed prior to analysis of samples were within control limits. No qualifications were necessary.

### Blanks

A method blank was prepared and analyzed with the batch of samples. The result was non-detected. No qualifiers were necessary.

### Laboratory Control Sample

A laboratory control sample (LCS) was prepared and analyzed with the batch of samples. The analyte recovery was within control limits. No qualifiers were necessary.

### Matrix Spike / Matrix Spike Duplicate

MS/MSD analyses were performed on sample 54MW13. The MS/MSD recoveries and RPD were within control limits. No qualifiers were necessary.

### Target Compound Quantitation

Target compound quantitation's were manually recalculated.

## TOC/TIC by Method SW9060A

### Calibration

The analysis of TOC and TIC are determined from the same initial calibration. The initial calibration consisted of seven (7) points for TOC/TIC and the correlation coefficient, r, was >0.995. A second source calibration verification was performed following the initial calibration and was within control limits. The initial calibration and second source verifications were verified by manual calculation for TOC/TIC.

Analysis of samples proceeded immediately following the initial calibration. The calibration was verified throughout the analysis with CCV standards. All CCVs were within acceptance limits. The continuing calibration verifications results were manually calculated from the raw data for TOC/TIC.

### Blanks

A method blank was prepared and analyzed with each analytical batch from each lab. There were no detects for TOC and TIC in the method blanks. Raw data was reviewed for the QC blanks.

### Laboratory Control Sample

A laboratory control sample (LCS) was prepared and analyzed with each analytical batch. The TOC and TIC recoveries were within the control limits. The results and recoveries for TOC and TIC were verified from the raw data.

### Matrix Spike / Matrix Spike Duplicate

MS/MSD analyses were performed on sample 54MW13 for the TIC analytical batch. The MS/MSD recoveries and percent RPD were within control limits. The MS/MSD results and recoveries for TIC were verified from the raw data.

### Target Compound Identification and Quantitation

Target compound identification was reviewed for all samples. No anomalies were identified. TOC and TIC sample results were calculated manually from the raw data.

## Anions by Method SW9056A

### Calibration

The initial calibration consisted of nine (9) points for all anions (chloride, nitrate, and sulfate) using linear regression. The correlation of determination, ($r^2$), was above 0.995. A second source calibration verification was performed following the initial calibration and was within control limits. The initial calibration and second source verifications were verified by manual calculation for sulfate.

The calibration was verified throughout the analysis with CCV standards. All CCVs were within acceptance limits. The continuing calibration verifications results were manually calculated from the raw data for sulfate.

### Blanks

A method blank was prepared and analyzed with the analytical batch. There were no detects in the method blank. The raw data were reviewed for all QC blank.

### Laboratory Control Sample

A laboratory control sample (LCS) was prepared and analyzed with the analytical batch. The recoveries for all anions were within the control limits. The result and recovery for sulfate were verified from the raw data.

### Matrix Spike / Matrix Spike Duplicate

MS/MSD analyses were performed on sample 54MW13. The MS/MSD recoveries for sulfate were slightly below control limits. The percent RPD was within control limits demonstrating acceptable precision. The parent sample sulfate level is more than 4 times the spike level. No qualifiers were applied due to the insignificant spike level. The MS/MSD results, recoveries, and RPD for sulfate were verified from the raw data.

### Target Compound Identification and Quantitation

Target compound identification was reviewed for all samples. No anomalies were identified. Sulfate sample results were calculated manually from the raw data.

## Chlorate/Chlorite by Method 300.0

### Calibration

The initial calibration consisted of seven (7) points and the coefficient of determination, $r^2$, was >0.995. A second source calibration verification was performed following the initial calibration and was within control limits. The initial calibration and second source verifications were verified by manual calculation for chlorite.

Analysis of samples proceeded immediately following the initial calibration. The calibration was verified throughout the analysis with CCV standards. All CCVs were within acceptance limits. The continuing calibration verifications results were manually calculated from the raw data for chlorite.

### Blanks

A method blank was prepared and analyzed with each analytical batch from each lab. There were no detects in the method blank. Raw data was reviewed for the QC blank.

### Laboratory Control Sample

A laboratory control sample (LCS) was prepared and analyzed with each analytical batch. The recoveries were within the control limits. The results and recoveries were verified for chlorite from the raw data.

### Matrix Spike / Matrix Spike Duplicate

MS/MSD analyses were performed on sample 54MW13. The MS/MSD recoveries and percent RPD were within control limits. The MS/MSD results and recoveries for chlorite were verified from the raw data.

### Target Compound Identification and Quantitation

Target compound identification was reviewed for all samples. No anomalies were identified. Chlorite sample results were calculated manually from the raw data.

## Field Duplicate Comparison

Table 3 below lists the field duplicate comparison. Only detected analytes are listed. The RPD or "<2xLOQ" factor for each analyte was determined. Where the result is less than 2 times the sample-specific LOQ, the difference between the results should be less than 2 times the LOQ value. The QAPP does not provide a criterion for evaluating the field duplicate precision. Note that RPD between results for RDX and 3,5-dinitroaniline are greater than 50%.

*Table 3: Field Duplicate Comparison*

| Analyte | Sample ID | Field Duplicate ID | RPD or <2xLOQ |
|---|---|---|---|
| | 54MW12 | 54TW12 | |
| perchlorate | 0.77 ug/L | 0.78 ug/L | 1.3% |
| HMX | 6.6 ug/L | 7.3 ug/L | 10.1% |
| RDX | 11.0 ug/L | 5.5 ug/L | 66.7% |
| 3,5-dinitroaniline | 22.4 ug/L | 10.8 ug/L | 69.9% |
| 2-amnio-4,6-dinitroaniline | 3.1 ug/L | 2.3 ug/L | 29.6% |
| 4-amino-2,6-dinitroaniline | 2.3 ug/L | 1.9 ug/L | 19.0% |
| 1,3,5-trinitrobenzene | 6.5 ug/L | 6.2 ug/L | 4.7% |
| 2,4,6-trinitrotoluene | 4.8 ug/L | 4.8 ug/L | 0.0% |
| TIC | 70 mg/L | 69 mg/L | 1.4% |
| Chloride | 2.9 J mg/L | 2.8 J mg/L | <2xLOQ |
| Sulfate | 30 mg/L | 30 mg/L | 0.0% |
| Chlorite | 39 ug/L | 42 ug/L | 7.4% |

## Overall Assessment

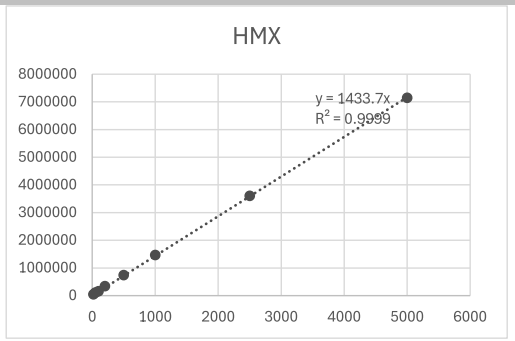
All data are deemed usable as no results were considered for exclusion. The MS/MS recovery was high for HMX and low for 3,5-dinitroaniline. Results for the parent sample were qualified. For the S4VEM review, the results for HMX, 3,5-dinitroaniline, perchlorate, TOC, TIC, sulfate and chlorite were re-calculated to verify reported results. All results may be utilized for project decision-making processes noting the qualifications described within this review.

*Table 4: Qualified Sample Results*

| Client Sample ID | Analyte | Result | Qualifier | Reason |
|---|---|---|---|---|
| 54MW13 | HMX | 2.2 ug/L | J+ | M |
| 54MW13 | 3,5-dinitroaniline | 3.3 ug/L | J | P1, M |
| 54MW12 | 3,5-dinitroaniline | 22.4 ug/L | J | P1 |
| 54TW12 | 3,5-dinitroaniline | 10.8 ug/L | J | P1 |

*M – MS and/or MSD recovery outside project limits*
*P1 – Confirmation column RPD outside control limit*
*H1 – Analytical hold time*

| Initial Calibration and Calculation Worksheet - HMX | | |
|---|---|---|
| **Calibration Levels** | **Y-Values, Comp Response #1, Ax** | **X-Values, Comp Conc, Cx** |
| 1 | 44345 | 20 |
| 2 | 114383 | 50 |
| 3 | 156707 | 100 |
| 4 | 341189 | 200 |
| 5 | 741677 | 500 |
| 6 | 1464686 | 1000 |
| 7 | 3601721 | 2500 |
| 8 | 7148097 | 5000 |
| **Sums =** | **13612805** | **9370** |




**CALIBRATION MODELS**

**Linear Regression:**

y = mx

Cx = Ax/m

| | Calculated | Lab Reported |
|---|---|---|
| **Slope (m)** | **1433.7** | **1433.69182** |
| **Correlation Coefficient** | | **1.0000** |
| | | |
| | | |

| Sample Concentration Calculations | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | **Spike Amount** | **Compound Response #1 Ax** | **Linear On-column Concentration** | **Lab Reported** | **Sample volume** | **Extract Volume** | **Calculated Result** | **Lab Reported** | **Calculated %Rec, %D, RPD** | **Lab Reported %Rec, %D, RPD** |
| 20 | | 44345 | 30.930 | | | | | | | |
| 50 | | 114383 | 79.782 | | | | | | | |
| 100 | | 156707 | 109.303 | | | | | | | |
| 200 | | 341189 | 237.978 | | | | | | | |
| 500 | | 741677 | 517.317 | | | | | | | |
| 1000 | | 1464686 | 1021.613 | | | | | | | |
| 2500 | | 3601721 | 2512.186 | | | | | | | |
| 5000 | | 7148097 | 4985.769 | | | | | | | |
| ICV | 1000.000 | 1618481 | 1128.884 | 1128.890 | - | - | - | - | -12.9% | -12.90% |
| CCV | 1000.000 | 1550938 | 1081.773 | 1081.779 | - | - | - | - | -8.2% | -8.20% |
| CCV | 1000.000 | 1570418 | 1095.360 | 1095.366 | - | - | - | - | -9.5% | -9.50% |
| ECCV | 1000.000 | 1563518 | 1090.548 | 1090.554 | - | - | - | - | -9.1% | -9.10% |
| MB | | ND | ND | ND | 1000 | 10 | ND | ND | | |
| BS | 5.000 | 725025 | 505.702 | 505.705 | 1000 | 10 | 5.1 | 5.1 | 101% | 102% |
| 54MW13-MS | 10.400 | 1144210 | 798.082 | 798.086 | 480 | 10 | 16.6 | 16.6 | 139% | 138% |
| 54MW13-MSD | 10.4 | 1191702 | 831.2073656 | 831.212 | 480 | 10 | 17.3 | 17.3 | 146%, 4% | 145%, 4% |
| 54MW13 | | 284924 | 198.7333473 | 198.731 | 910 | 10 | 2.2 | 2.2 | | |
| 54MW10 | | 0 | 0.000 | 0 | 990 | 10 | 0.0 | 0.10 U | | |
| 54MW12 | | 945010 | 659.141 | 659.144 | 1000 | 10 | 6.6 | 6.6 | | |
| 54TW12 | | 1011575 | 705.570 | 705.574 | 960 | 10 | 7.3 | 7.3 | | |
| 54MW1 | | 0 | 0.000 | 0 | 980 | 10 | 0.0 | 0 | | |

| Initial Calibration and Calculation Worksheet - 3,5-dinitroaniline | | | | |
|---|---|---|---|---|
| Calibration Levels | Y-Values, Comp Response #1, Ax | X-Values, Comp Conc, Cx | Response Factor | Lab Reported Response Factor |
| 1 | 88931 | 20 | 4447 | 4.447E+03 |
| 2 | 222573 | 50 | 4451 | 4.451E+03 |
| 3 | 383397 | 100 | 3834 | 3.834E+03 |
| 4 | 642997 | 200 | 3215 | 3.215E+03 |
| 5 | 1878538 | 500 | 3757 | 3.757E+03 |
| 6 | 3674116 | 1000 | 3674 | 3.674E+03 |
| 7 | 9258781 | 2500 | 3704 | 3.704E+03 |
| 8 | 18537020 | 5000 | 3707 | 3.707E+03 |
| | | Average Response Factor | 3849 | |

**CALIBRATION MODELS**

**Avareage Response Factor**

y = mx Cx = Ax/m

| | Calculated | Lab Reported |
|---|---|---|
| Avg RF | 3849 | 3849 |

| Sample Concentration Calculations | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Spike Amount | Compound Response #1 Ax | Average RF On-column Concentration | Lab Reported | Sample volume | Extract Volume | Calculated Result | Lab Reported | Calculated %Rec, %D, RPD | Lab Reported %Rec, %D, RPD |
| 20 | | 88931 | 23.107 | | | | | | | |
| 50 | | 222573 | 57.832 | | | | | | | |
| 100 | | 383397 | 99.619 | | | | | | | |
| 200 | | 642997 | 167.071 | | | | | | | |
| 500 | | 1878538 | 488.105 | | | | | | | |
| 1000 | | 3674116 | 954.655 | | | | | | | |
| 2500 | | 9258781 | 2405.732 | | | | | | | |
| 5000 | | 18537020 | 4816.519 | | | | | | | |
| ICV | 1000.000 | 4129802 | 1073.057 | 1073.057 | - | - | - | - | -7.3% | -7.30% |
| CCV | 1000.000 | 3803158 | 988.184 | 988.184 | - | - | - | - | 1.2% | 1.20% |
| CCV | 1000.000 | 3798492 | 986.971 | 986.971 | - | - | - | - | 1.3% | 1.30% |
| ECCV | 1000.000 | 3803702 | 988.325 | 988.325 | - | - | - | - | 1.2% | 1.20% |
| MB | | ND | ND | ND | 1000 | 10 | ND | ND | | |
| BS | 5.000 | 1772002 | 460.424 | 460.424 | 1000 | 10 | 4.6 | 4.6 | 92% | 92% |
| 54MW13-MS | 10.400 | 1936792 | 503.241 | 503.241 | 480 | 10 | 10.5 | 10.5 | 69% | 69% |
| 54MW13-MSD | 10.4 | 2056679 | 534.392 | 534.392 | 480 | 10 | 11.1 | 11.1 | 75%, 6% | 75%, 6% |
| 54MW13 | | 1160146 | 301.444 | 301.444 | 910 | 10 | 3.3 | 3.3 | | |
| 54MW10 | | 0 | 0.000 | 0 | 990 | 10 | 0.0 | 0.10 U | | |
| 54MW12 | | 8607655 | 2236.548 | 2236.548 | 1000 | 10 | 22.4 | 22.4 | | |
| 54TW12 | | 3992363 | 1037.345 | 1037.346 | 960 | 10 | 10.8 | 10.8 | | |
| 54MW1 | | 0 | 0.000 | 0 | 980 | 10 | 0.0 | 0.10 U | | |

| Internal Standard Initial Calibration and Calculation Worksheet - 1,2-dichloroethane-d4 (surrogate) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Compound Area, Ax | ISTD Area, Ais | Compound Conc, Cx | ISTD Conc, Cis | Y-Values Ax/Ais | X-Values Cx/Cis | | RF (Ax*Cis)/(Ais*Cx) |
| 392 | 7488 | 0.2 | 5 | 0.052350427 | 0.04 | | 1.309 |
| 848 | 7759 | 0.5 | 5 | 0.109292435 | 0.1 | | 1.09292 |
| 1707 | 7632 | 1 | 5 | 0.223663522 | 0.2 | | 1.11832 |
| 3366 | 7697 | 2 | 5 | 0.437313239 | 0.4 | | 1.09328 |
| 9208 | 7645 | 5 | 5 | 1.204447351 | 1 | | 1.20445 |
| 18984 | 8037 | 10 | 5 | 2.362075401 | 2 | | 1.18104 |
| 50461 | 8170 | 25 | 5 | 6.176376989 | 5 | | 1.23528 |
| 99925 | 7935 | 50 | 5 | 12.59294266 | 10 | | 1.25929 |
| | | | | | | | |

**CALIBRATION MODEL:**

**Average Response Factor:**

Cx = Ax*Cis/Ais/RF

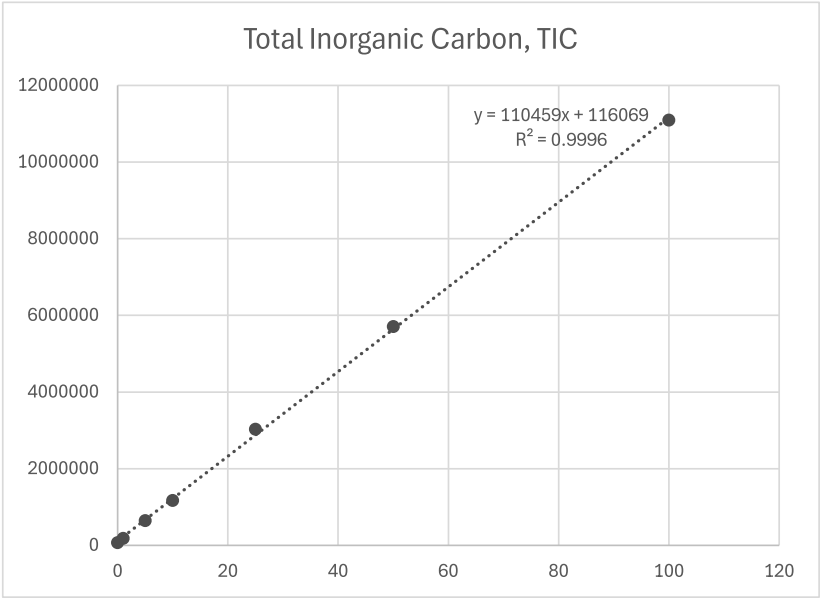
| | | Lab Reported |
|---|---|---|
| Average RF | 1.1867 | 1.1868 |
| RSD | 0.06762 | 0.06796 |

| Sample Concentration Calculations | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Spike Concentration | Compound Area Ax | ISTD Area Ais | ISTD Conc Cis | Ave RF On-column Conc | Dilution | Calculated Result | Lab Result Reported Result | Rec., RPD, Drift, %Deviation | Lab Result Reported RPD, Drift, %Deviation |
| Level 1 | 0.2 | 392 | 7488 | 5 | 0.221 | 1.000 | 0.22 | NA | -10.3% | |
| Level 2 | 0.5 | 848 | 7759 | 5 | 0.461 | 1.000 | 0.46 | NA | 7.9% | |
| Level 3 | 1 | 1707 | 7632 | 5 | 0.942 | 1.000 | 0.94 | NA | 5.8% | |
| Level 4 | 2 | 3366 | 7697 | 5 | 1.843 | 1.000 | 1.84 | NA | 7.9% | |
| Level 5 | 5 | 9208 | 7645 | 5 | 5.075 | 1.000 | 5.07 | NA | -1.5% | |
| Level 6 | 10 | 18984 | 8037 | 5 | 9.953 | 1.000 | 9.95 | NA | 0.5% | |
| Level 7 | 25 | 50461 | 8170 | 5 | 26.024 | 1.000 | 26.02 | NA | -4.1% | |
| Level 8 | 50 | 99925 | 7935 | 5 | 53.060 | 1.000 | 53.06 | NA | -6.1% | |
| ICV | 2 | 3690 | 8327 | 5 | 1.867 | 1.000 | 1.87 | 1.85 | -7.50% | -7.40% |
| CCV | 2 | 3475 | 7565 | 5 | 1.935 | 1.000 | 1.94 | 1.92 | -4.00% | -4.00% |
| CCVL | 0.2 | 379 | 7907 | 5 | 0.202 | 1.000 | 0.202 | 0.201 | 0.98% | 0.40% |
| CCV | 2.0 | 3903 | 8539 | 5 | 1.926 | 1.000 | 1.926 | 1.910 | -3.71% | -4.50% |
| CCVL | 0.2 | 339 | 8299 | 5 | 0.172 | 1.000 | 0.172 | 0.171 | -13.94% | -14.60% |
| CCV | 2.0 | 4053 | 8991 | 5 | 1.899 | 1.000 | 1.899 | 1.884 | -5.03% | -5.80% |
| CCVL | 0.2 | 397 | 8934 | 5 | 0.187 | 1.000 | 0.187 | 0.186 | -6.38% | -6.90% |
| BLK | | ND | 8103 | 5 | ND | 1.000 | ND | ND | | |
| IBLK | | ND | 8947 | 5 | ND | 1.000 | ND | ND | | |
| BS | 0.2 | 366 | 8309 | 5 | 0.186 | 1.000 | 0.186 | 0.18 | 92.80% | 90.00% |
| 54MW13 | | 675 | 8329 | 5 | 0.341 | 1.000 | 0.34 | 0.34 | | |
| 54MW13-MS | 0.20 | 1092 | 8357 | 5 | 0.551 | 1.000 | 0.55 | 0.55 | 104.55% | 105.00% |
| 54MW13-MSD | 0.20 | 1175 | 8566 | 5 | 0.578 | 1.000 | 0.58 | 0.57 | 118%, 4.9% | 115%, 4% |
| 54MW10 | | 0 | 8932 | 5 | 0.000 | 1.000 | 0.00 | ND | | |
| 54MW12 | | 1639 | 8958 | 5 | 0.771 | 1.000 | 0.77 | 0.77 | | |
| 54TW12 | | 1689 | 9058 | 5 | 0.786 | 1.000 | 0.79 | 0.78 | | |
| 54MW1 | | 0 | 8975 | 5 | 0.000 | 1.000 | 0.00 | ND | | |

Slight difference in calculated recoveries due to rounding by lab prior to determine percent recoveries.

| Area1 | Area 2 | Area 1 | Area 2 | X-Values, Compound Conc, Cx | Average Area |
|---|---|---|---|---|---|
| 92436 | 71353 | 82635 | 47243 | 0 | 73416.75 |
| 196772 | 184321 | 174346 | 180252 | 1 | 183922.75 |
| 684567 | 643092 | 647828 | 616265 | 5 | 647938 |
| 1226071 | 1182734 | 1140556 | 1144944 | 10 | 1173576.25 |
| 3087508 | 2989571 | 3000783 | 3029640 | 25 | 3026875.5 |
| 5762859 | 5709511 | 5693224 | 5667589 | 50 | 5708295.75 |
| 11250887 | 10979593 | 11093393 | 11060976 | 100 | 11096212.3 |

| | Calculated | Lab Reported |
|---|---|---|
| Slope | 110459.443 | 110459 |
| intercept | 116069.092 | 116069 |
| COD | 0.99962 | 0.99973 |

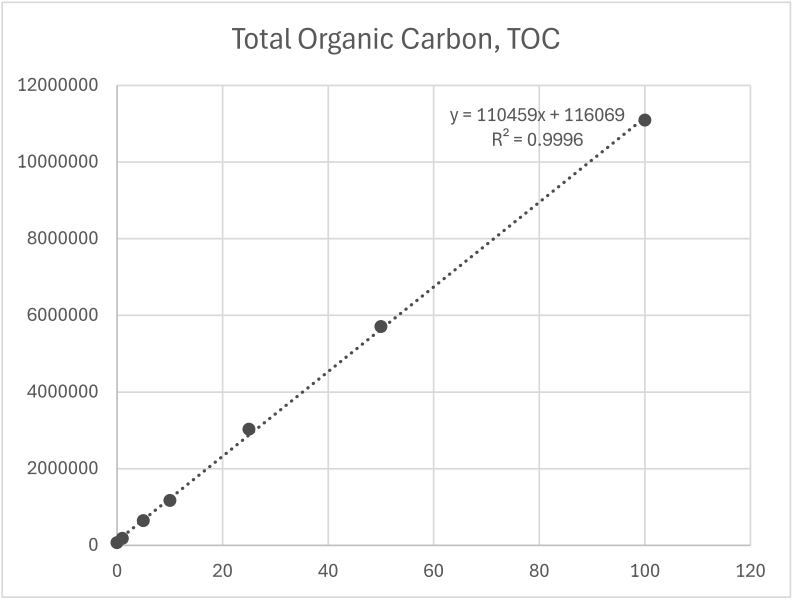



| Sample Concentration Calculations | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Spike Conc. | Area 1 | Area 2 | Area 3 | Area 4 | Average Area | Instrument Result | Dilution | Calculated Result | Lab Instrument Reported Result | Rec., RPD, Drift, %Deviation | Lab Result Reported RPD, Drift, %Deviation |
| Level 1 | 0 | 92436 | 71353 | 82635 | 47243 | 73416.750 | -0.386 | 1.000 | -0.39 | | | |
| Level 2 | 1 | 196772 | 184321 | 174346 | 180252 | 183922.750 | 0.614 | 1.000 | 0.61 | | | |
| Level 3 | 5 | 684567 | 643092 | 647828 | 616265 | 647938.000 | 4.815 | 1.000 | 15.50 | | | |
| Level 4 | 10 | 1226071 | 1182734 | 1140556 | 1144944 | 1173576.250 | 9.57371 | 1.000 | 9.57371 | | | |
| Level 5 | 25 | 3087508 | 2989571 | 3000783 | 3029640 | 3026875.500 | 26.352 | 1.000 | 26.35 | | | |
| Level 6 | 50 | 5762859 | 5709511 | 5693224 | 5667589 | 5708295.750 | 50.627 | 1.000 | 50.627 | | | |
| Level 7 | 100 | 11250887 | 10979593 | 11093393 | 11060976 | 11096212.250 | 99.404 | 1.000 | 99.40 | | | |
| ICV | 50 | 5631270 | 5510939 | 5478458 | 5533060 | 5538431.750 | 49.089 | 1.000 | 49.09 | 49.09 | 98.2% | 98.0% |
| LCS | 50 | 6204677 | 6121724 | 5911545 | 5824694 | 6015660.000 | 53.410 | 1.000 | 53.41 | 53.41 | 106.8% | 107.0% |
| MB | | 167086 | 140871 | 97548 | 169797 | 131160.600 | 0.137 | 1.000 | 0.14 | 1.5 U | < 0.4 DL | |
| 54MW13 | | 11024092 | 10816131 | 10654556 | 10609087 | 10775966.500 | 96.505 | 1.000 | 96.51 | 96.51 | | |
| 54MW10 | | 8864406 | 8648071 | 8619501 | 8679855 | 8702958.250 | 77.7379365 | 1.000 | 77.74 | 77.74 | | |
| 54MW12 | | 8050756 | 7926590 | 7759150 | 7834910 | 7892851.500 | 70.4039618 | 1.000 | 70.40 | 70.4 | | |
| 54TW12 | | 8026442 | 7820466 | 7638516 | 7740587 | 7806502.750 | 69.6222383 | 1.000 | 69.62 | 69.62 | | |
| 54MW1 | | 6979205 | 6907587 | 6872900 | 6896647 | 6914084.750 | 61.543092 | 1.000 | 61.54 | 61.54 | | |

DL detection limit

| Area1 | Area 2 | Area 1 | Area 2 | X-Values, Compound Conc, Cx | Average Area |
|---|---|---|---|---|---|
| 92436 | 71353 | 82635 | 47243 | 0 | 73416.75 |
| 196772 | 184321 | 174346 | 180252 | 1 | 183922.75 |
| 684567 | 643092 | 647828 | 616265 | 5 | 647938 |
| 1226071 | 1182734 | 1140556 | 1144944 | 10 | 1173576.25 |
| 3087508 | 2989571 | 3000783 | 3029640 | 25 | 3026875.5 |
| 5762859 | 5709511 | 5693224 | 5667589 | 50 | 5708295.75 |
| 11250887 | 10979593 | 11093393 | 11060976 | 100 | 11096212.3 |

| | Calculated | Lab Reported |
|---|---|---|
| Slope | 110459.443 | 110459 |
| intercept | 116069.092 | 116069 |
| COD | 0.99962 | 0.99973 |




| Sample Concentration Calculations | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Spike Conc. | Area 1 | Area 2 | Area 3 | Area 4 | Average Area | Instrument Result | Dilution | Calculated Result | Lab Instrument Reported Result | Rec., RPD, Drift, %Deviation | Lab Result Reported RPD, Drift, %Deviation |
| Level 1 | 0 | 92436 | 71353 | 82635 | 47243 | 73416.750 | -0.386 | 1.000 | -0.39 | | | |
| Level 2 | 1 | 196772 | 184321 | 174346 | 180252 | 183922.750 | 0.614 | 1.000 | 0.61 | | | |
| Level 3 | 5 | 684567 | 643092 | 647828 | 616265 | 647938.000 | 4.815 | 1.000 | 15.50 | | | |
| Level 4 | 10 | 1226071 | 1182734 | 1140556 | 1144944 | 1173576.250 | 9.57371 | 1.000 | 9.57371 | | | |
| Level 5 | 25 | 3087508 | 2989571 | 3000783 | 3029640 | 3026875.500 | 26.352 | 1.000 | 26.35 | | | |
| Level 6 | 50 | 5762859 | 5709511 | 5693224 | 5667589 | 5708295.750 | 50.627 | 1.000 | 50.627 | | | |
| Level 7 | 100 | 11250887 | 10979593 | 11093393 | 11060976 | 11096212.250 | 99.404 | 1.000 | 99.40 | | | |
| ICV | 50 | 5631270 | 5510939 | 5478458 | 5533060 | 5538431.750 | 49.089 | 1.000 | 49.09 | 49.09 | 98.2% | 98.0% |
| LCS | 50 | 6204677 | 6121724 | 5911545 | 5824694 | 6015660.000 | 53.410 | 1.000 | 53.41 | 54.91 | 106.8% | 107.0% |
| MB | | 167299 | 134144 | 149560 | 220434 | 150387.600 | 0.311 | 1.000 | 0.31 | 1.5 U | < 0.4 DL | |
| 54MW13 | | 128634 | 148068 | 148968 | 95432 | 130275.500 | 0.129 | 1.000 | 0.13 | 1.5 U | < 0.4 DL | |
| 54MW10 | | 116269 | 116569 | 101412 | 70993 | 101310.750 | -0.1336087 | 1.000 | -0.13 | 1.5 U | | |
| 54MW12 | | 175412 | 186676 | 134901 | 115796 | 153196.250 | 0.33611574 | 1.000 | 0.34 | 1.5 U | < 0.4 DL | |
| 54TW12 | | 113581 | 125166 | 126453 | 163865 | 132266.250 | 0.14663443 | 1.000 | 0.15 | 1.5 U | < 0.4 DL | |
| 54MW1 | | 0 | 69008 | 63311 | 0 | 33079.750 | -0.75131053 | 1.000 | -0.75 | 1.5 U | | |

L detection limit

| Initial Calibration Model Worksheet - Sulfate | | | | | |
|---|---|---|---|---|---|
| Y-Values, Compound Area, Ax | X-Values, Compound Conc, Cx/Vs | $X^2$ | RF | $Y^2$ | XY |
| | | $(Cx)^2$ | Ax/Cx | $(Ax)^2$ | (Cx*Ax) |
| 0.1270 | 0.5 | 0.250 | 0 | 1.61E-02 | 0.1 |
| 0.1870 | 0.75 | 0.563 | 0 | 3.50E-02 | 0.1 |
| 0.2400 | 1 | 1.000 | 0 | 5.76E-02 | 0.2 |
| 1.2620 | 5 | 25.000 | 0 | 1.59E+00 | 6.3 |
| 2.6170 | 10 | 100.000 | 0 | 6.85E+00 | 26.2 |
| 9.1530 | 30 | 900.000 | 0 | 8.38E+01 | 274.6 |
| 16.2040 | 50 | 2500.000 | 0 | 2.63E+02 | 810.2 |
| 23.7340 | 70 | 4900.000 | 0 | 5.63E+02 | 1661.4 |
| **53.524** | **167.25** | **8426.8125** | **8** | **918.199812** | **2779.1** |

**CALIBRATION MODELS:**

**Linear Regression:**

y = mx + b

Cx = (Ax-b)/m

| Weighting | | Equal | Reported |
|---|---|---|---|
| Slope (m) | | 0.3367 | 0.3367 |
| Intercept (b) | | -0.3490 | -0.3490 |
| CC (R) (≥0.99) | | 0.9990 | NR |
| COD ($R^2$) (≥0.98) | | 0.99802 | 0.99802 |
| Note | | | |

| Sample Concentration Calculations | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample ID | Spike Concentration | Compound Area Ax | Linear Cal On-column Conc | Dilution | Calculated Result | Laboratory Reported | % Recovery | Lab Reported |
| ICV | 25.000 | 7.588 | 23.572 | 1 | 23.572 | 23.573 | 94.3% | 94% |
| LCS | 25.000 | 7.950 | 24.647 | 1 | 24.647 | 24.6458 | 98.6% | 98% |
| MB | | | 1.037 | 1 | 1.037 | 1.5 U | | |
| LCS | 25 | 7.722 | 23.970 | 1 | 23.970 | 23.969 | 95.9% | 96% |
| MB | | | 1.037 | 1 | 1.037 | 1.5 U | | |
| 54MW13 | | 11.164 | 34.192 | 1 | 34.192 | 34.192 | | |
| 54MW10 | | 11.997 | 36.666 | 5 | 183.328 | 183.325 | | |
| 54MW12 | | 9.733 | 29.942 | 1 | 29.942 | 29.943 | | |
| 54TW12 | | 9.835 | 30.245 | 1 | 30.245 | 30.244 | | |
| 54MW1 | | 8.957 | 27.637 | 1 | 27.637 | 27.637 | | |
| 54MW13-MS | 8 | 13.374 | 40.755 | 1 | 40.755 | 40.753 | 82.0% | 85% |
| 54MW13-MSD | 8 | 13.429 | 40.918 | 1 | 40.918 | 40.918 | 84%, 0.2% | 86%, 0% |

Slight differences in percent recovery calculations are due to lab rounding prior to determing percent recoveries.

| Initial Calibration Model Worksheet - Chlorite | | | | | |
|---|---|---|---|---|---|
| Y-Values, Compound Area, Ax | X-Values, Compound Conc, Cx/Vs | | RF | | |
| | | | Ax/Cx | | |
| 0 | 0 | | #DIV/0! | | |
| 330777 | 0.01 | | 33077700 | | |
| 726367 | 0.02 | | 36318350 | | |
| 3970253 | 0.1 | | 39702530 | | |
| 10052693 | 0.25 | | 40210772 | | |
| 20576076 | 0.5 | | 41152152 | | |
| 41951038 | 1 | | 41951038 | | |
| | | | | | |

**CALIBRATION MODELS:**

**Linear Regression:**

y = mx + b

Cx = (Ax-b)/m

| Weighting | | Equal | Reported |
|---|---|---|---|
| Slope (m) | | 4.196E+07 | 4.196E+07 |
| Intercept (b) | | -1.816E+05 | -1.816E+05 |
| CC (R) (≥0.99) | | 0.9999 | NR |
| COD ($R^2$) (≥0.98) | | 0.99987 | NR |
| Note | | | |

| Sample Concentration Calculations | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample ID | Spike Concentration | Compound Area Ax | Linear Cal On-column Conc, ug/ml | Dilution | Calculated Result, ug/L | Laboratory Reported | % Recovery | Lab Reported |
| ICV | 250.000 | 9812054 | 0.238 | 1 | 238.1902 | 238.2 | 0.1% | 95% |
| LCS | 250.000 | 9942836.000 | 0.241 | 1 | 241.3073 | 241.3 | 0.1% | 97% |
| LCSD | 250.000 | 9270307.000 | 0.225 | 1 | 225.2781 | 225.3 | 0.1% | 90% |
| LLCS | 10 | 357295 | 0.013 | 1 | 12.8436 | 12.8 | 0.1% | 128% |
| LLCS | 10 | 295252 | 0.011 | 1 | 11.3649 | 11.4 | 0.1% | 114% |
| MS | 250 | 8073604 | 0.197 | 1 | 196.7557 | 196.8 | 77.0% | 79% |
| MSD | 250 | 8433796 | 0.205 | 1 | 205.3406 | 205.3 | 80%, 4% | 82%, 4% |
| 54MW13 | | | 0.004 | 1 | 4.3278 | 10 U | | |
| 54MW10 | | | 0.004 | 1 | 4.3278 | 10 U | | |
| 54MW12 | | 1468978 | 0.039 | 1 | 39.3397 | 39 | | |
| 54TW12 | | 1592278 | 0.042 | 1 | 42.2785 | 42 | | |
| 54MW1 | | | 0.004 | 1 | 4.3278 | 10 U | | |

Slight differences in percent recovery calculations are due to lab rounding prior to determing percent recoveries.



# DATA VERIFICATION/VALIDATION REPORT
# Solid Waste Management Unit (SWMU) 54
# Radford Army Ammunition Plant (RFAAP), Radford, VA
# SDGs FC21117 (SGS), 191589 (CTL)

U.S. ARMY CORPS OF ENGINEERS, Baltimore District

Radford Army Ammunition Depot

Radford, Virginia

SWMU 54: Interim Measures

January 30, 2025

**Prepared for:**

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# Signature Page

| | |
|---|---|
| Data validator:Phil Conley | Philip D Conley<br>Digitally signed by Philip D Conley<br>Date: 2025.01.31 13:06:52 -05'00' |
| Reviewer:Polona Carson | POLONA KALAN CARSON<br>Digitally signed by POLONA KALAN CARSON<br>Date: 2025.01.30 15:03:06 -07'00' |

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*Acronyms and Abbreviations*

| | |
|---|---|
| °C | degrees Celsius |
| %D | percent difference |
| %R | percent recovery |
| %RSD | percent relative standard deviation |
| CCV | continuing calibration verification |
| COC | chains-of-custody |
| CTL | CT Laboratories, Inc |
| DL | detection limit |
| ICV | initial calibration verification |
| IS | internal standard |
| LCS | laboratory control sample |
| LOD | limit of detection |
| LOQ | limit of quantitation |
| MS | matrix spike |
| MSD | matrix spike duplicate |
| QAPP | quality assurance project plan |
| QC | quality control |
| QSM | Quality Systems Manual |
| RPD | relative percent difference |
| SEDD | Staged Electronic Data Deliverable |
| SGS | SGS North America, Inc. |
| SWMU | Solid Waste Management Unit |
| USEPA | U.S. Environmental Protection Agency |
| USACE | U.S. Army Corps of Engineers |

# Introduction

This data verification/validation report is for groundwater samples collected from the Propellant Burning Ash Disposal Area site at the Radford Army Ammunition Plant, located in Radford, VA. The data analyses are for 5 groundwater samples collected on December 10, 2024. The samples were shipped to two laboratories, SGS North America, Inc. (SGS) and CT Laboratories, LLC (CTL) and were received by the laboratories on December 11, 2024. The attributes of the samples collected, including calendar dates and identification numbers, are summarized in Table 1.

*Table 1: Samples Collected from Clearfield Naval Supply Depot Historical Landfill Site*

| SGS ID | CTL ID | Client Sample ID | Matrix | Date Sampled | Date Received | Validation Stage |
|---|---|---|---|---|---|---|
| FC21117-1 | 1537124 | 54MW13 | Groundwater | 12/10/2024 | 08/21/2024 | S4VEM |
| FC21117-2 | 1537127 | 54MW10 | Groundwater | 12/10/2024 | 08/21/2024 | S4VEM |
| FC21117-3 | 1537128 | 54TW10 | Groundwater | 12/10/2024 | 08/21/2024 | S4VEM |
| FC21117-4 | 1537129 | 54MW12 | Groundwater | 12/10/2024 | 08/21/2024 | S4VEM |
| FC21117-5 | 1537130 | 54MW1 | Groundwater | 12/10/2024 | 08/21/2024 | S4VEM |

Site samples were collected in accordance with the SWMU 54 Interim Measures Work Plan, Section 4 Quality Assurance Project Plan (QAPP). The samples were shipped to SGS located in Orlando, FL for analysis of perchlorate (SW6850) and explosives (SW8330). Samples were also shipped to CTL located in Baraboo, WI for analysis of TOC/TIC (9060A) and Anions (9056A). CTL subcontracted the analysis of Chlorate/Chlorite (300.0) to Eurofins located in South Bend, IN.

Analytical results were reviewed in accordance with the project QAPP, the Department of Defense (DoD) Quality Systems Manual (QSM), DoD General Data Validation Guidelines, DoD Data Validation Guidelines Module 1.

Both SGS and CTL provided Level IV data package, which included the required elements to perform the USEPA Region III level M3, Stage 4 electronic and manual validation (S4VEM) defined in the QAPP. The data were validated to S4VEM by the Neptune and Company, Incorporated (Neptune) data validator.

Data qualifier definitions are listed in Table 2 below.

*Table 2: Final Validation Flags Definitions*

| Qualifier | Definition |
|---|---|
| U | Not detected. The associated number indicates the compound reporting limit for the sample. |
| J | Indicates an estimated value for 1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, 2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or 3) estimating a concentration >=MDL and <MRL or <3*MRL, whichever is greater |

| Qualifier | Definition |
|---|---|
| B | The analyte has been detected in the sample and the associated laboratory or field blank. |
| K | Analyte present. Reported value may be biased high (estimated) due to QC non-conformance. |
| L | Analyte present. Reported value may be biased low (estimated) due to QC non-conformance. |
| UL | Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. QL is probably higher |
| UJ | The analyte was analyzed for, but was not detected above the reported sample QL. The reported QL is approximate and may be inaccurate or imprecise. |
| N | The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification." |
| NJ | The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration. |
| R | The data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meeting the QC criteria. The analyte may or may not be present in the sample. |

## Sample Receipt

All samples were received at SGS, Orlando, FL and CTL Baraboo, WI facilities on December 11, 2024. There were two coolers received by SGS at the maximum corrected temperatures of 2.2°C and 2.4°C. There was one cooler received at CTL at a temperature of 3.7°C. CTL repackaged samples and shipped to Eurofins for the analysis of chlorate/chlorite. The cooler was received at Eurofins South Bend facility on December 12, 2024. The cooler corrected temperature was 1.2°C. The samples were received intact and in good condition.

## Preservation and Holding Times

The sample receipt form indicates that the samples were received intact and in good condition. Cooler temperatures met the criteria. The case narrative indicates all samples were extracted and analyzed within the preparation and analytical hold times. This was verified by reviewing the sample summaries containing sample collection, receipt, preparation and analytical dates, with the exception for analysis of chlorite. Preservation and hold time are not provided in the QAPP. Method 300.0 is consulted for preservation and hold time criteria for Chlorate/Chlorite analysis. Method 300.0 indicates the analytical hold time for chlorite is "immediately" for unpreserved samples. The hold time may be increased to 14 days if the sample is collected in an opaque bottle and preserved with EDA. The CoC did not provide preservation information. Eurofins indicated in the sample login form that the sample containers were provided by Eurofins. The lab provided email confirmation that the correct sample containers and preservative were shipped to the field for collecting samples for chlorite analysis. Therefore, the hold

time is extended to 14 days with properly preserved samples. The samples were collected on December 10, 2024, and analyzed on December 14, 2024. Samples for chlorite analysis were analyzed within hold time. No qualifiers were applied.

# Validation

## Explosives by Method SW8330

### Calibration

The initial calibration consisted of eight (8) calibration standards. The lab employed the average relative response factor with the %RSD within acceptance limit (<20%), or linear regression forced through zero. The second source calibration verification was performed following the initial calibration and was within control limits (+/-20%), The continuing calibrations checks performed prior to analysis of samples were within control limits, except DNX (high) and MNX (high). All results for DNX and MNX were non-detected in all samples. No qualifications were applied for non-detected results. A second instrument was used to confirm detections with a dissimilar column for three samples. No results were reported from the second instrument.

### Blanks

A method blank was prepared and analyzed with the batch of samples. All results were non-detected. No qualifiers were necessary.

### Laboratory Control Sample

A laboratory control sample (LCS) was prepared and analyzed with the batch of samples. All analyte recoveries were within control limits, except for DNX (high). All samples were non-detect for DNX. No qualifiers were applied.

### Matrix Spike / Matrix Spike Duplicate

MS/MSD analyses were performed on sample 54MW12. The MS/MSD recoveries were within control limits except for DNX (MS/MSD high), MNX (MSD high), TNX (MS/MSD high), 3,5-dinitroaniline (MS low), nitrobenzene (MSD high), and 1,3,5-trinitrobenzene (MS low). The RPD levels were within control limits, except for HMX, RDX, MNX, TNX, 3,5-dinitroaniline, 1,3-dinitrobenzene, and nitrobenzene. DNX, MNX, TNX, 1,3-dinitrobenzene, and nitrobenzene were not detected in the parent sample. No qualifiers were applied. Analytes HMX, RDX and 3,5-dinitroaniline were detected in the parent sample and qualified as estimated with no bias. Analyte 1,3,5-trinitrobenzene was detected in the parent sample and was qualified as estimated with a low bias.

### Surrogate

All surrogate recoveries were within control limits. No qualifiers were applied.

### Target Compound Quantitation

Target compound quantitation's were manually recalculated for all detected analytes in sample 54MW12. Manual integration was performed for several analytes due to poor instrument integration. Sample 54MW13 was observed to have co-eluting material around the retention time for RDX and 3,5-Dinitroanline, which makes peak baseline determination difficult. The confirmation column does not resolve this unidentified co-eluting interference. Manual integration of both peaks from the primary and confirmation column is subjective based upon analyst's interpretation and is the reason for the high difference (>40%) between the columns. The results for 3,5-dinitroaniline are qualified as estimated, J, for samples 54MW12 and 54MW13. The result for HMX is qualified as estimated for sample 54TW10. The result for RDX is qualified as estimated for sample 54MW13.

## Perchlorate by Method SW6850

### Calibration

Prior to analyzing the calibration standards, the instrument was properly tuned. The initial calibration consisted of eight (8) calibration standards. The lab employed the average relative response factor with the %RSD within acceptance limit (<15%). The second source calibration verification was performed following the initial calibration and was within control limits (+/-15%, +/-50% for low concentration CCV). The continuing calibrations checks performed prior to analysis of samples were within control limits. No qualifications were necessary.

### Blanks

A method blank was prepared and analyzed with the batch of samples. The result was non-detected. No qualifiers were necessary.

### Laboratory Control Sample

A laboratory control sample (LCS) was prepared and analyzed with the batch of samples. The analyte recovery was within control limits. No qualifiers were necessary.

### Matrix Spike / Matrix Spike Duplicate

MS/MSD analyses were performed on sample 54MW12. The MS/MSD recoveries and RPD were within control limits. No qualifiers were necessary.

### Target Compound Quantitation

Target compound quantitation was manually recalculated for sample 54MW12.

## TOC/TIC by Method SW9060A

### Calibration

The analysis of TOC and TIC are determined from the same initial calibration. The initial calibration consisted of seven (7) points for TOC/TIC and the correlation coefficient, r, was >0.995. A second source calibration verification was performed following the initial calibration and was within control limits.

Analysis of samples proceeded immediately following the initial calibration. The calibration was verified throughout the analysis with CCV standards. All CCVs were within acceptance limits.

### Blanks

A method blank was prepared and analyzed with each analytical batch from each lab. There were no detects for TOC in the method blank. TIC was detected in the method blank. Raw data was reviewed for the QC blanks. All results for TIC were greater than 10x the blank contamination. No qualifiers were applied.

### Laboratory Control Sample

A laboratory control sample (LCS) was prepared and analyzed with each analytical batch. The TOC and TIC recoveries were within the control limits.

### Matrix Spike / Matrix Spike Duplicate

MS/MSD analyses were performed on sample 54MW12 for the TIC analytical batch. The MS/MSD recoveries and percent RPD were within control limits.

### Target Compound Identification and Quantitation

Target compound identification was reviewed for sample 54MW12. No anomalies were identified. TOC and TIC sample results were calculated manually from the raw data.

## Anions by Method SW9056A

### Calibration

The initial calibration consisted of nine (9) points for all anions (chloride, nitrate, and sulfate) using linear regression. The correlation of determination, ($r^2$), was above 0.995. A second source calibration verification was performed following the initial calibration and was within control limits.

The calibration was verified throughout the analysis with CCV standards. All CCVs were within acceptance limits. The continuing calibration blanks (CCB) were analyzed following the CCV. A CCB contained nitrate above the LOQ. Sample results for 54MW12 and 54MW13 are qualified as estimated with a high bias.

### Blanks

A method blank was prepared and analyzed with the analytical batch. There were no detects in the method blank. The raw data were reviewed for all QC blanks.

### Laboratory Control Sample

A laboratory control sample (LCS) was prepared and analyzed with the analytical batch. The recoveries for all anions were within the control limits.

### Matrix Spike / Matrix Spike Duplicate

MS/MSD analyses were performed on sample 54MW13. The MS/MSD recoveries for sulfate were slightly below control limits. The percent RPD was within control limits demonstrating acceptable precision. The parent sample sulfate level is more than 4 times the spike level. No qualifiers were applied due to the insignificant spike level.

### Target Compound Identification and Quantitation

Target compound identification was reviewed for all samples. No anomalies were identified. All detected anions in sample 54MW12 were calculated manually from the raw data.

## Chlorate/Chlorite by Method 300.0

### Calibration

The initial calibration consisted of seven (7) points and the coefficient of determination, $r^2$, was >0.995. A second source calibration verification was performed following the initial calibration and was within control limits.

Analysis of samples proceeded immediately following the initial calibration. The calibration was verified throughout the analysis with CCV standards. All CCVs were within acceptance limits.

### Blanks

A method blank was prepared and analyzed with each analytical batch from each lab. There were no detects in the method blank. Raw data was reviewed for the QC blank.

### Laboratory Control Sample

A laboratory control sample (LCS) was prepared and analyzed with each analytical batch. The recoveries were within the control limits.

### Matrix Spike / Matrix Spike Duplicate

MS/MSD analyses were performed on sample 54MW12. The MS/MSD recoveries and percent RPD were within control limits.

### Target Compound Identification and Quantitation

Target compound identification was reviewed for Laboratory QC as no detections were observed above the reporting limit in any sample . No anomalies were identified. Chlorite/Chlorate results were calculated manually from the raw data.

## Field Duplicate Comparison

Table 3 below lists the field duplicate comparison. Only detected analytes are listed. The RPD or "<2xLOQ" factor for each analyte was determined. Where the result is less than 2 times the sample-specific LOQ, the difference between the results should be less than 2 times the LOQ value. The QAPP does not provide a criterion for evaluating the field duplicate precision, however, precision has been demonstrated for the detected analytes.

*Table 3: Field Duplicate Comparison*

| Analyte | Sample ID | Field Duplicate ID | RPD or <2xLOQ |
|---|---|---|---|
| | 54MW10 | 54TW10 | |
| HMX | 0.11 U ug/L | 0.26 ug/L (LOQ=0.21 ug/L) | <2XLOQ |
| TIC | 81 mg/L | 80 mg/L | 1.2% |
| Chloride | 4.5 mg/L | 4.5 mg/L | 0.0% |
| Sulfate | 200 mg/L | 200 mg/L | 0.0% |

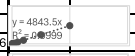
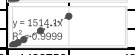
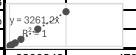
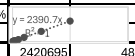
## Overall Assessment

All data are deemed usable as no results were considered for exclusion. The MS/MSD recoveries were high for DNX, MNX, TNX and nitrobenzene and low for 3,5-dinitroaniline and 1,3,5-tribitrobenzene. Primary and confirmation results differ by more than 40%. Nitrate was detected in a continuing calibration blank. See Table 4 for qualifications due to the QC outliers. For the S4VEM review, all detects for sample 54MW12 and laboratory QC were manually calculated from instrument raw data to verify reported results. All results may be utilized for project decision-making processes noting the qualifications described within this review.

*Table 4: Qualified Sample Results*

| Client Sample ID | Analyte | Result | Qualifier | Reason |
|---|---|---|---|---|
| 54MW12 | RDX | 0.34 | J | D |
| 54MW12 | HMX | 12.8 | J | D |
| 54MW12 | 3,5-Dinitroaniline | 9.2 | J | D, P1 |
| 54MW12 | 1,3,5-Trinitrobenzene | 4.6 | J- | M |
| 54TW10 | HMX | 0.26 | J | P1 |
| 54MW13 | RDX | 1.2 | J | P1 |
| 54MW13 | 3,5-Dinitroaniline | 33.7 | J | P1 |
| 54MW12 | Nitrate | 0.74 | J+ | Nitrate |
| 54MW13 | Nitrate | 0.62 | J+ | Nitrate |

*M – MS and/or MSD recovery outside project limits*
*D – RPD outside project limit*
*P1 – Confirmation column RPD outside control limit*
*H1 – Analytical hold time*

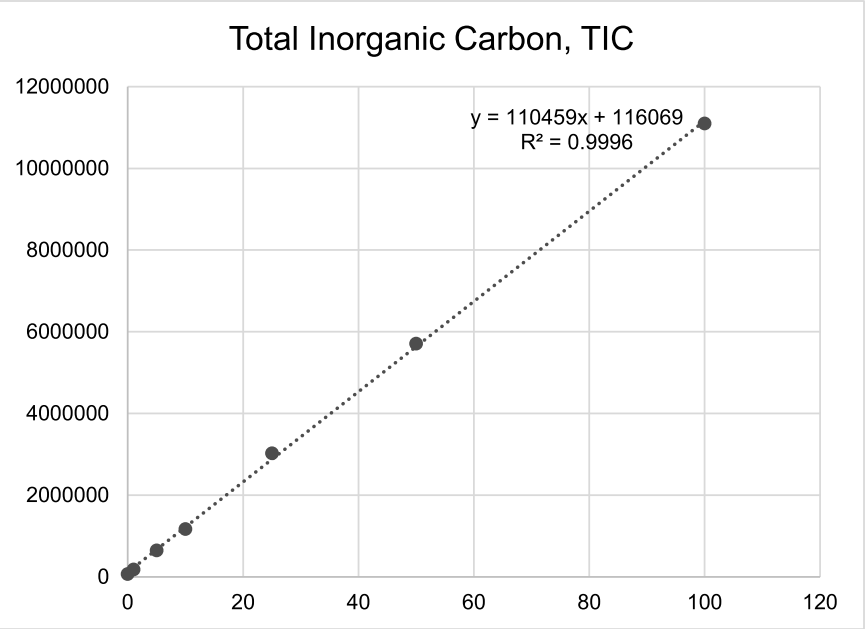
| | | HMX | | RDX | | | 3,5-Dinitroaniline | | | | 2-amino-4,6-Dinitrotoluene | | | 4-amino-2,6-Dinitrotoluene | | | 1,3,5-Trinitrobenzene | | | | 2,4,6-Trinitrotoluene | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | **Spike Level** | **Column1** | **Column 2** | **Column 1** | **Column 2** | **RF Col 1** | **Column 1** | **Column 2** | **RF Col 1** | **RF Col 2** | **Column 1** | **Column 2** | **RF Col 1** | **Column 1** | **Column 2** | **RF Col 2** | **Column 1** | **Column 2** | **RF Col 1** | **RF Col 2** | **Column 1** | **Column 2** | **RF Col 1** | **RF Col 2** |
| Std 1 | 20 | 76340 | 301944 | 48525 | 86372 | 2426.25 | 113302 | 180493 | 5665.1 | 9024.65 | 107405 | 111340 | 5567 | 71159 | 114415 | 5720.75 | 114459 | 166624 | 5722.95 | 8331.2 | 108602 | 121913 | 5430.1 | 6095.65 |
| Std 2 | 50 | 93838 | 315024 | 99251 | 151512 | 1985.02 | 211543 | 334513 | 4230.86 | 6690.26 | 176577 | 214017 | 4280.34 | 129970 | 211705 | 4234.1 | 209100 | 324488 | 4182 | 6489.76 | 204766 | 235464 | 4095.32 | 4709.28 |
| Std 3 | 100 | 174678 | 592181 | 181234 | 284237 | 1812.34 | 383440 | 698233 | 3834.4 | 6982.33 | 322688 | 401295 | 4012.95 | 236845 | 391119 | 3911.19 | 406392 | 616002 | 4063.92 | 6160.02 | 382086 | 432576 | 3820.86 | 4325.76 |
| Std 4 | 200 | 324293 | 960058 | 379558 | 600850 | 1897.79 | 814846 | 1427475 | 4074.23 | 7137.375 | 672797 | 910039 | 4550.195 | 493129 | 912838 | 4564.19 | 867583 | 1337657 | 4337.915 | 6688.285 | 782824 | 911815 | 3914.12 | 4559.075 |
| Std 5 | 500 | 781726 | 2252384 | 896260 | 1420732 | 1792.52 | 1924709 | 3302922 | 3849.418 | 6605.844 | 1607730 | 2252398 | 4504.796 | 1175272 | 2264599 | 4529.198 | 2038279 | 3116558 | 4076.558 | 6233.116 | 1851237 | 2155883 | 3702.474 | 4311.766 |
| Std 6 | 1000 | 1539636 | 4281058 | 1813728 | 2884415 | 1813.728 | 3946440 | 6620804 | 3946.44 | 6620.804 | 3271338 | 4747411 | 4747.411 | 2400400 | 4769543 | 4769.543 | 4116656 | 6398948 | 4116.656 | 6398.948 | 3764446 | 4487892 | 3764.446 | 4487.892 |
| Std 7 | 2500 | 3798978 | 10586976 | 4506243 | 7160665 | 1802.497 | 9766127 | 16380801 | 3906.451 | 6552.32 | 8128104 | 12087149 | 4834.86 | 5963759 | 12013385 | 4805.354 | 10245371 | 16199900 | 4098.148 | 6479.96 | 9376201 | 11319516 | 3750.48 | 4527.806 |
| Std 8 | 5000 | 7554275 | 20915865 | 9033207 | 14369473 | 1806.641 | 19626766 | 32814983 | 3925.353 | 6562.997 | 16317910 | 24565282 | 4913.056 | 11959423 | 24299700 | 4859.94 | 20676273 | 32461018 | 4135.255 | 6492.204 | 18830761 | 22970953 | 3766.152 | 4594.191 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | |  | |  | | | | | | | | | |  | | | | | | | | | | |
| Average RF | | | | | | 1917.098 | | | 4179.032 | 7022.073 | | | 4676.326 | | | 4674.283 | | | 4341.675 | 6659.187 | | | 4030.494 | 4701.428 |
| %RSD | |  | | | | 11.27% | | | 14.70% | 11.92% |  | | 9.97% |  | | 11.34% | | | 13.01% | 10.44% | | | 14.37% | 12.31% |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| ICV | 1000 | 1498756 | 4249749 | 1765596 | 2795878 | | 3827659 | 6478700 | | | 3200248 | 4701915 | | 2420695 | 4812683 | | 3954288 | 6328540 | | | 3694032 | 4444555 | | |
| | | 989.8659 | 1011.820909 | 920.9731 | 973.3934478 | | 915.9201 | 922.6193549 | | | 981.3099 | 1005.472031 | | 1012.547 | 1029.608792 | | 910.7747 | 950.3473027 | | | 916.5209 | 945.3628712 | | |
| | Calc %Drift | 1.0% | -1.2% | 7.9% | 2.7% | | 8.4% | 7.7% | | | 1.9% | -0.5% | | -1.3% | -3.0% | | 8.9% | 5.0% | | | 8.3% | 5.5% | | |
| | Lab Report %Rec | 1.0% | -1.2% | 7.9% | 2.7% | | 8.4% | 7.7% | | | 1.9% | -0.5% | | -1.3% | -3.0% | | 8.9% | 5.0% | | | 8.3% | 5.5% | | |
| CCV | 1000 | 1481763 | 4188094 | 1764803 | 2790358 | | 3684471 | 6400113 | | | 3030389 | 4530306 | | 2166755 | 4382348 | | 3669512 | 5926233 | | | 3443235 | 4202480 | | |
| | | 978.6428 | 997.1414966 | 920.5595 | 971.4716429 | | 881.6567 | 911.4279296 | | | 929.2251 | 968.7746321 | | 906.3266 | 937.5444069 | | 845.1834 | 889.9334676 | | | 854.296 | 893.8731906 | | |
| | Calc %Drift | 2.1% | 0.3% | 7.9% | 2.9% | | 11.8% | 8.9% | | | 7.1% | 3.1% | | 9.4% | 6.2% | | 15.5% | 11.0% | | | 14.6% | 10.6% | | |
| | Lab Report %Rec | 2.1% | 0.3% | 7.9% | 2.9% | | 11.8% | 8.9% | | | 7.1% | 3.1% | | 9.4% | 6.2% | | 15.5% | 11.0% | | | 14.6% | 10.6% | | |
| CCV | 1000 | 1483717 | 4133431 | 1792194 | 2836061 | | 3839323 | 6691145 | | | 3154965 | 4774972 | | 2258089 | 4589890 | | 3885689 | 6119046 | | | 3558725 | 4327404 | | |
| | | 979.9333 | 984.1268065 | 934.8472 | 987.3832817 | | 918.7112 | 952.8732436 | | | 967.4246 | 1021.094765 | | 944.5305 | 981.9452261 | | 894.9746 | 918.8879049 | | | 882.9501 | 920.4446947 | | |
| | Calc %Drift | 2.0% | 1.6% | 6.5% | 1.3% | | 8.1% | 4.7% | | | 3.3% | -2.1% | | 5.5% | 1.8% | | 10.5% | 8.1% | | | 11.7% | 8.0% | | |
| | Lab Report %Rec | 2.0% | 1.6% | 6.5% | 1.3% | | 8.1% | 4.7% | | | 3.3% | -2.1% | | 5.5% | 1.8% | | 10.5% | 8.1% | | | 11.7% | 8.0% | | |
| LCS | Sample Vol, mL | 751454 | 2137922 | 883879 | 1377214 | | 1853922 | 3328166 | | | 1514452 | 2237601 | | 1086027 | 2153924 | | 1822983 | 2955754 | | | 1739481 | 2077056 | | |
| | 1000 | 5.0 | 5.1 | 4.6 | 4.8 | | 4.4 | 4.7 | | | 4.6 | 4.8 | | 4.5 | 4.6 | | 4.2 | 4.4 | | | 4.3 | 4.4 | | |
| Spike Level, 5 | Calc %Rec | 99% | 102% | 92% | 96% | | 89% | 95% | | | 93% | 96% | | 91% | 92% | | 84% | 89% | | | 86% | 88% | | |
| | Lab Report %Rec | 100% | | 92% | | | 88% | | | | 92% | | | 90% | | | 84% | | | | 86% | | | |
| MB | | 0 | 0 | 0 | 0 | | 0 | 0 | | | 0 | 0 | | 0 | 0 | | 0 | 0 | | | 0 | 0 | | |
| | | 0 | 0 | 0 | 0 | | 0 | 0 | | | 0 | 0 | | 0 | 0 | | 0 | 0 | | | 0 | 0 | | |
| | Lab Reported | ND | ND | ND | ND | | ND | ND | | | ND | ND | | ND | ND | | ND | ND | | | ND | ND | | |
| 54MW12 | Sample Vol, mL | 1834458 | 5098158 | 61597 | 70549 | | 3659734 | 3323992 | | | 1183243 | 1718262 | | 756385 | 1492014 | | 1910559 | 2826518 | | | 1019728 | 1171619 | | |
| | 950 | 12.8 | 12.8 | 0.34 | 0.26 | | 9.2 | 5.0 | | | 3.8 | 3.9 | | 3.3 | 3.4 | | 4.6 | 4.5 | | | 2.7 | 2.6 | | |
| | Lab Reported | 12.8 | 2nd Col Diff: 0% | 0.34 | 2nd Col Diff: 24% | | 9.2 | 2nd Col Diff: 46% | | | 3.8 | 2nd Col Diff: 1% | | 3.3 | 2nd Col Diff: 1% | | 4.6 | 2nd Col Diff: 4% | | | 2.7 | 2nd Col Diff: 2% | | |
| MS - 54MW12 | Sample Vol, mL | 1598375 | 4408409 | 852418 | 1373106 | | 2023926 | 3095001 | | | 1959630 | 2942140 | | 1369569 | 2753009 | | 2560480 | 4017177 | | | 2166144 | 2662761 | | |
| | 460 | 22.9 | 22.8 | 9.7 | 10.4 | | 10.5 | 9.6 | | | 13.1 | 13.7 | | 12.5 | 12.8 | | 12.8 | 13.1 | | | 11.7 | 12.3 | | |
| Spike Level, 10.9 | Calc %Rec | 94% | 92% | 86% | 93% | | 12% | 42% | | | 85% | 90% | | 84% | 87% | | 75% | 79% | | | 83% | 89% | | |
| | Lab Report %Rec | 93% | NR | 86% | NR | | 12% | NR | | | 86% | NR | | 85% | NR | | 75% | NR | | | 83% | NR | | |
| MSD - 54MW12 | Sample Vol, mL | 1982835 | 5064160 | 1100286 | 1562456 | | 4145312 | 5285226 | | | 2098331 | 3155268 | | 1455439 | 2974023 | | 2775838 | 4410053 | | | 2226601 | 2699176 | | |
| | 460 | 28.5 | 26.2 | 12.5 | 11.8 | | 21.6 | 16.4 | | | 14.0 | 14.7 | | 13.2 | 13.8 | | 13.9 | 14.4 | | | 12.0 | 12.5 | | |
| Spike Level, 10.9 | Calc %Rec | 144% | 123% | 111% | 106% | | 113% | 104% | | | 93% | 99% | | 91% | 96% | | 85% | 91% | | | 86% | 90% | | |
| | Lab Report %Rec | 144% | NR | 112% | NR | | 114% | NR | | | 94% | NR | | 91% | NR | | 86% | NR | | | 86% | NR | | |
| | Calc RPD | 21% | NC | 25% | NC | | 69% | NC | | | 7% | NC | | 6% | NC | | 8% | NC | | | 3% | NC | | |
| | Lab Report RPD | 22% | NR | 25% | NR | | 69% | NR | | | 7% | NR | | 5% | NR | | 8% | NR | | | 3% | NR | | |

| Sample Concentration Calculations | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Lab ID** | **Spike Concentration** | **Compound Area, Ax** | **ISTD Area, Ais** | **ISTD Conc, Cis** | **Ave RF On-column Conc** | **Dilution** | **Calculated Result** | **Lab Result Reported Result** | **Rec., RPD, Drift, %Deviation** | **Lab Result Reported RPD, Drift, %Deviation** |
| Level 1 | 0.2 | 392 | 7488 | 5 | 0.215 | 1.000 | 0.22 | NA | -7.6% | |
| Level 2 | 0.5 | 848 | 7759 | 5 | 0.449 | 1.000 | 0.45 | NA | 10.2% | |
| Level 3 | 1 | 1707 | 7632 | 5 | 0.918 | 1.000 | 0.92 | NA | 8.2% | |
| Level 4 | 2 | 3366 | 7697 | 5 | 1.790 | 1.000 | 1.79 | NA | 10.5% | |
| Level 5 | 5 | 9208 | 7645 | 5 | 4.886 | 1.000 | 4.89 | NA | 2.3% | |
| Level 6 | 10 | 18984 | 8037 | 5 | 9.460 | 1.000 | 9.46 | NA | 5.4% | |
| Level 7 | 25 | 50461 | 8170 | 5 | 23.782 | 1.000 | 23.78 | NA | 4.9% | |
| Level 8 | 50 | 99925 | 7935 | 5 | 45.778 | 1.000 | 45.78 | NA | 8.4% | |
| ICV | 2 | 22698 | 41745 | 5 | 2.223 | 1.000 | 2.22 | 2.22 | 11.1% | 11.1% |
| CCV | 2 | 21459 | 41404 | 5 | 2.119 | 1.000 | 2.12 | 2.12 | 6.0% | 6.0% |
| CCVL | 0.2 | 1889 | 40251 | 5 | 0.193 | 1.000 | 0.193 | 0.190 | -3.5% | -3.5% |
| CCV | 2.0 | 23966 | 48708 | 5 | 2.012 | 1.000 | 2.012 | 2.020 | 0.6% | 0.6% |
| CCVL | 0.2 | 1970 | 45675 | 5 | 0.177 | 1.000 | 0.177 | 0.180 | -11.3% | -11.3% |
| CCV | 2.0 | 22500 | 43000 | 5 | 2.139 | 1.000 | 2.139 | 2.140 | 7.0% | 7.0% |
| CCVL | 0.2 | 2074 | 40163 | 5 | 0.212 | 1.000 | 0.212 | 0.210 | 6.2% | 6.1% |
| CCV | 2.0 | 22806 | 44730 | 5 | 2.085 | 1.000 | 2.085 | 2.080 | 4.2% | 4.2% |
| BLK | | ND | 43487 | 5 | ND | 1.000 | ND | ND | | |
| IBLK | | 521 | 49281 | 5 | 0.043 | 1.000 | 0.043 | 0.040 | 0.2 U | 0.2 U |
| IBLK | | ND | 45541 | 5 | ND | 1.000 | ND | ND | | |
| BS | 0.2 | 2137 | 44008 | 5 | 0.200 | 1.000 | 0.20 | 0.20 | 99.82% | 100% |
| 54MW12 | | 8469 | 45260 | 5 | 0.768 | 1.000 | 0.77 | 0.77 | | |
| 54MW12-MS run 1 | 0.20 | 11141 | 46118 | 5 | 0.991 | 1.000 | 0.99 | 0.99 | 111% | 110% |
| 54MW12-MS run 2 | 0.20 | 9940 | 41552 | 5 | 0.981 | 1.000 | 0.98 | 0.98 | 107% | 105% |

Slight difference in calculated recoveries due to rounding by lab prior to determine percent recoveries.

| Area1 | Area 2 | Area 1 | Area 2 | X-Values, Compound Conc, Cx | Average Area |
|---|---|---|---|---|---|
| 92436 | 71353 | 82635 | 47243 | 0 | 73416.75 |
| 196772 | 184321 | 174346 | 180252 | 1 | 183922.75 |
| 684567 | 643092 | 647828 | 616265 | 5 | 647938 |
| 1226071 | 1182734 | 1140556 | 1144944 | 10 | 1173576.25 |
| 3087508 | 2989571 | 3000783 | 3029640 | 25 | 3026875.5 |
| 5762859 | 5709511 | 5693224 | 5667589 | 50 | 5708295.75 |
| 11250887 | 10979593 | 11093393 | 11060976 | 100 | 11096212.25 |

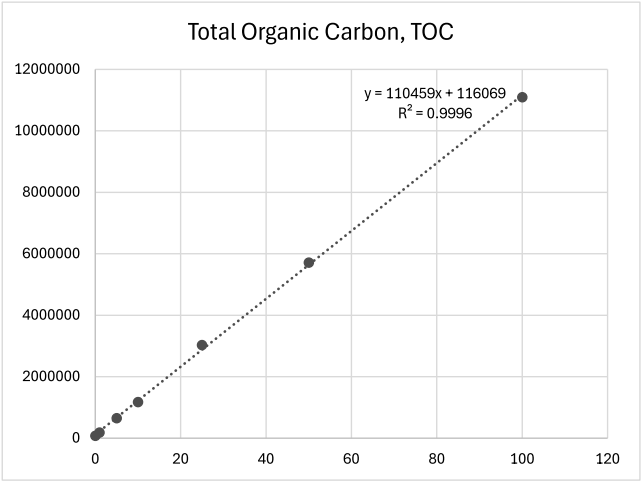
| | Calculated | Lab Reported |
|---|---|---|
| Slope | 110459.443 | 110459 |
| intercept | 116069.092 | 116069 |
| COD | 0.99962 | 0.99973 |




| Sample Concentration Calculations | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Spike Conc. | Area 1 | Area 2 | Area 3 | Area 4 | Average Area | Instrument Result | Dilution | Calculated Result | Lab Instrument Reported Result | Rec., RPD, Drift, %Deviation | Lab Result Reported RPD, Drift, %Deviation |
| Level 1 | 0 | 92436 | 71353 | 82635 | 47243 | 73416.750 | -0.386 | 1.000 | -0.39 | | | |
| Level 2 | 1 | 196772 | 184321 | 174346 | 180252 | 183922.750 | 0.614 | 1.000 | 0.61 | | | |
| Level 3 | 5 | 684567 | 643092 | 647828 | 616265 | 647938.000 | 4.815 | 1.000 | 15.50 | | | |
| Level 4 | 10 | 1226071 | 1182734 | 1140556 | 1144944 | 1173576.250 | 9.57371 | 1.000 | 9.57371 | | | |
| Level 5 | 25 | 3087508 | 2989571 | 3000783 | 3029640 | 3026875.500 | 26.352 | 1.000 | 26.35 | | | |
| Level 6 | 50 | 5762859 | 5709511 | 5693224 | 5667589 | 5708295.750 | 50.627 | 1.000 | 50.627 | | | |
| Level 7 | 100 | 11250887 | 10979593 | 11093393 | 11060976 | 11096212.250 | 99.404 | 1.000 | 99.40 | | | |
| ICV | 50 | 5631270 | 5510939 | 5478458 | 5533060 | 5538431.750 | 49.089 | 1.000 | 49.09 | 49.09 | 98% | 98% |
| ICB | | 241599 | 74230 | 87496 | 127840 | 132791.250 | 0.151 | 1.000 | 0.15 | | | |
| CCV | 50 | 6078764 | 5980402 | 6015210 | 5941357 | 6003933.250 | 53.303 | 1.000 | 53.30 | 53.30 | 107% | 107% |
| MB | | 284094 | 273068 | 304281 | 131525 | 248242.000 | 1.197 | 1.000 | 1.20 | 1.19 | | |
| 54MW12 | | 7742121 | 7637806 | 7625451 | 7674518 | 7669974.000 | 68.3862303 | 1.000 | 68 | 68 | | |
| LCS | 50 | 5971835 | 5927821 | 6343206 | 5897529 | 6035097.750 | 53.586 | 1.000 | 53.59 | 53.58 | 107% | 107% |

| Area1 | Area 2 | Area 1 | Area 2 | X-Values, Compound Conc, Cx | Average Area |
|---|---|---|---|---|---|
| 92436 | 71353 | 82635 | 47243 | 0 | 73416.75 |
| 196772 | 184321 | 174346 | 180252 | 1 | 183922.75 |
| 684567 | 643092 | 647828 | 616265 | 5 | 647938 |
| 1226071 | 1182734 | 1140556 | 1144944 | 10 | 1173576.25 |
| 3087508 | 2989571 | 3000783 | 3029640 | 25 | 3026875.5 |
| 5762859 | 5709511 | 5693224 | 5667589 | 50 | 5708295.75 |
| 11250887 | 10979593 | 11093393 | 11060976 | 100 | 11096212.25 |

| | Calculated | Lab Reported |
|---|---|---|
| Slope | 110459.443 | 110459 |
| intercept | 116069.092 | 116069 |
| COD | 0.99962 | 0.99973 |




| Sample Concentration Calculations | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab ID | Spike Conc. | Area 1 | Area 2 | Area 3 | Area 4 | Average Area | Instrument Result | Dilution | Calculated Result | Lab Instrument Reported Result | Rec., RPD, Drift, %Deviation | Lab Result Reported RPD, Drift, %Deviation |
| Level 1 | 0 | 92436 | 71353 | 82635 | 47243 | 73416.750 | -0.386 | 1.000 | -0.39 | | | |
| Level 2 | 1 | 196772 | 184321 | 174346 | 180252 | 183922.750 | 0.614 | 1.000 | 0.61 | | | |
| Level 3 | 5 | 684567 | 643092 | 647828 | 616265 | 647938.000 | 4.815 | 1.000 | 15.50 | | | |
| Level 4 | 10 | 1226071 | 1182734 | 1140556 | 1144944 | 1173576.250 | 9.57371 | 1.000 | 9.57371 | | | |
| Level 5 | 25 | 3087508 | 2989571 | 3000783 | 3029640 | 3026875.500 | 26.352 | 1.000 | 26.35 | | | |
| Level 6 | 50 | 5762859 | 5709511 | 5693224 | 5667589 | 5708295.750 | 50.627 | 1.000 | 50.627 | | | |
| Level 7 | 100 | 11250887 | 10979593 | 11093393 | 11060976 | 11096212.250 | 99.404 | 1.000 | 99.40 | | | |
| ICV | 50 | 5631270 | 5510939 | 5478458 | 5533060 | 5538431.750 | 49.089 | 1.000 | 49.09 | 49.09 | 98% | 98% |
| ICB | | 241599 | 74230 | 87496 | 127840 | 132791.250 | 0.151 | 1.000 | 0.15 | 1.5 U | | |
| CCV | 50 | 5479522 | 5516549 | 5468237 | 5430393 | 5473675.250 | 48.503 | 1.000 | 48.50 | 48.50 | 97% | 97% |
| LCS | 50 | 5483473 | 5503963 | 5420470 | 5448761 | 5464166.750 | 48.417 | 1.000 | 48.42 | 48.42 | 97% | 97% |
| MB | | 121633 | 96537 | 99343 | 78074 | 98896.750 | -0.155 | 1.000 | -0.16 | 1.5 U | | |
| CCV | 50 | 5304909 | 5331591 | 5314064 | 5267872 | 5304609.000 | 46.972 | 1.000 | 46.97 | 46.97 | 94% | 94% |
| CCB | | 104333 | 122808 | 66136 | 86390 | 94916.750 | -0.191 | 1.000 | -0.19 | 1.5 U | | |
| CCV | 50 | 5453474 | 5448022 | 5443342 | 5462791 | 5451907.250 | 48.306 | 1.000 | 48.31 | 48.30 | 97% | 97% |
| CCB | | 103657 | 63593 | 72123 | 0 | 59843.250 | -0.509 | 1.000 | -0.51 | 1.5 U | | |
| 54MW12 | | 115181 | 86886 | 106768 | 112713 | 105387.000 | -0.09670601 | 1.000 | -0.10 | 1.5 U | | |
| DUP | | 258474 | 111095 | 109510 | 98699 | 144444.500 | 0.25688531 | 1.000 | 0.26 | 1.5 U | | |
| MS | 50 | 5622182 | 5636698 | 5637046 | 5647881 | 5635951.750 | 49.9720305 | 1.000 | 50.0 | 50.0 | 100% | 100% |
| MSD | 50 | 5752884 | 5806101 | 5827128 | 5792927 | 5794760.000 | 51.409737 | 1.000 | 51.4 | 51.4 | 103%, 3% | 103%, 3% |
| CCV | 50 | 5376754 | 5499096 | 5527663 | 5478602 | 5470528.750 | 48.474 | 1.000 | 48.47 | 48.47 | 97% | 97% |
| CCB | | 70487 | 91416 | 59597 | 68479 | 72494.750 | -0.394 | 1.000 | -0.39 | 1.5 U | | |

DL detection limit

| Initial Calibration Model Worksheet | | | | | | |
|---|---|---|---|---|---|---|
| | Sulfate - AQUION 5 | | Chloride - AQUION 5 | | Nitrate - AQUION 4 | |
| | Area, µs*min | Conc., mg/L | Area, µs*min | Conc., mg/L | Area, µs*min | Conc., mg/L |
| | 0.006 | 0 | NA | NA | NA | NA |
| | 0.2490 | 0.5 | 0.17300 | 0.5 | 0.088 | 0.1 |
| | 0.3410 | 0.75 | 0.28000 | 0.75 | 0.243 | 0.3 |
| | 0.3050 | 1 | 0.34000 | 1 | 0.422 | 0.5 |
| | 1.4010 | 5 | 1.83100 | 5 | 0.936 | 1 |
| | 2.6840 | 10 | 3.79800 | 10 | 1.861 | 2 |
| | 8.8780 | 30 | 9.05400 | 20 | 4.715 | 5 |
| | 15.1390 | 50 | 13.58800 | 30 | 7.401 | 7 |
| | 21.9710 | 70 | 18.46300 | 40 | NA | NA |
| **Weighting** | **Calculated** | **Reported** | **Calculated** | **Reported** | **Calculated** | **Reported** |
| **Slope (m)** | **0.3099** | **0.3099** | **0.4644** | **0.4644** | **1.0350** | **1.0350** |
| **Intercept (b)** | **-0.0960** | **0.0961** | **-0.2844** | **-0.2842** | **-0.1130** | **-0.1127** |
| **CC (R) (≥0.99)** | **0.9995** | **NR** | **0.9992** | **NR** | **0.9977** | **NR** |
| **COD ($R^2$) (≥0.98)** | **0.99900** | **0.99900** | **0.99849** | **0.99900** | **0.99540** | **0.99540** |
| **Note** | | | | | | |

| Sample Concentration Calculations | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | **Analyte** | **Instrument** | **Spike Concentration** | **Area, µs*min** | **Calc. Conc., mg/L** | **Dilution** | **Calc. Result** | **Laboratory Reported** | **% Recovery** | **Lab Reported** |
| ICV | Chloride | AQUION - 5 | 15 | 6.092 | 13.732 | 1 | 13.732 | 13.732 | 91.5% | 92% |
| | Nitrate | AQUION - 5 | 3.5 | 3.512 | 3.502 | 1 | 3.502 | 3.5025 | 100.1% | 100% |
| ICB | Chloride | AQUION - 5 | | 0.000 | 0.612 | 1 | 0.612 | ND | 1.5 U | |
| | Nitrate | AQUION - 4 | | 0.000 | 0.109 | 1 | 0.109 | ND | 1.5 U | |
| | Sulfate | AQUION - 5 | | 0.080 | 0.568 | 1 | 0.568 | 0.569 | 1.5 U | |
| ICV | Nitrate | AQUION - 4 | 3.5 | 3.623 | 3.610 | 1 | 3.610 | 3.6098 | 103.1% | 103% |
| | Sulfate | AQUION - 5 | 25 | 7.153 | 23.388 | 1 | 23.388 | 23.390 | 93.6% | 94% |
| CCV | Chloride | AQUION - 5 | 15 | 6.58 | 14.783 | 1 | 14.783 | 14.783 | 98.6% | 99% |
| | Sulfate | AQUION - 5 | 25 | 7.081 | 23.156 | 1 | 23.156 | 23.156 | 92.6% | 93% |
| LCSW - 288130, 288131 | Chloride | AQUION - 5 | 15 | 6.943 | 15.564 | 1 | 15.564 | 15.565 | 103.8% | 104% |
| | Sulfate | AQUION - 5 | 25 | 8.229 | 26.860 | 1 | 26.860 | 26.861 | 107.4% | 107% |
| MBW-CCB | Chloride | AQUION - 5 | | 0.041 | 0.701 | 1 | 0.701 | 1.5 U | | |
| | Sulfate | AQUION - 5 | | 0.000 | 0.310 | 1 | 0.310 | 1.5 U | | |
| CCV | Chloride | AQUION - 5 | 15 | 6.666 | 14.968 | 1 | 14.968 | 14.967 | 99.8% | 100% |
| | Sulfate | AQUION - 5 | 25 | 8.174 | 26.682 | 1 | 26.682 | 26.683 | 106.7% | 107% |
| CCB | Chloride | AQUION - 5 | | 0.000 | 0.612 | 1 | 0.612 | ND | 1.5 U | |
| | Sulfate | AQUION - 5 | | 0.000 | 0.310 | 1 | 0.310 | ND | 1.5 U | |
| 54MW12 | Chloride | AQUION - 5 | | 1.243 | 3.289 | 1 | 3.289 | 3.3 | | |
| | Sulfate | AQUION - 5 | | 5.584 | 18.326 | 1 | 18.326 | 18 | | |
| CCV | Chloride | AQUION - 5 | 15 | 6.263 | 14.100 | 1 | 14.100 | 14.100 | 94.0% | 94% |
| | Sulfate | AQUION - 5 | 25 | 8.015 | 26.169 | 1 | 26.169 | 26.170 | 104.7% | 105% |
| CCB | Chloride | AQUION - 5 | | 0.000 | | 1 | 0.000 | ND | 1.5 U | |
| | Sulfate | AQUION - 5 | | 0.000 | | 1 | 0.000 | ND | 1.5 U | |
| Duplicate - 54MW12 | Chloride | AQUION - 5 | | 1.227 | 3.254 | 1 | 3.254 | 3.254 | 1% | 2% |
| | Sulfate | AQUION - 5 | | 5.510 | 18.087 | 1 | 18.087 | 18 | 1% | 1% |
| MSW - 54MW12 | Chloride | AQUION - 5 | 8 | 4.421 | 10.133 | 1 | 10.133 | 10.133 | 85.5% | 85% |
| | Sulfate | AQUION - 5 | 8 | 7.985 | 26.072 | 1 | 26.072 | 26.074 | 96.8% | 101% |
| MSDW - 54MW12 | Chloride | AQUION - 5 | 8 | 4.404 | 10.097 | 1 | 10.097 | 10.096 | 85%, 0% | 85%, 2% |
| | Sulfate | AQUION - 5 | 8 | 7.945 | 25.943 | 1 | 25.943 | 26 | 95%, 0% | 99%, 1% |
| CCV | Chloride | AQUION - 5 | 15 | 6.205 | 13.975 | 1 | 13.975 | 13.975 | 93.2% | 94% |
| | Sulfate | AQUION - 5 | 25 | 8.081 | 26.382 | 1 | 26.382 | 26.382 | 105.5% | 105% |
| CCB | Chloride | AQUION - 5 | | 0.000 | | 1 | 0.000 | ND | 1.5 U | |
| | Sulfate | AQUION - 5 | | 0.000 | | 1 | 0.000 | ND | 1.5 U | |
| CCV | Nitrate | AQUION - 4 | 3.5 | 3.623 | 3.610 | 1 | 3.610 | 3.6098 | 103% | 103% |
| MBW-CCB | Nitrate | AQUION - 4 | | 0.000 | 0.000 | 1 | 0.000 | 0.2 U | | |
| CCV | Nitrate | AQUION - 4 | 3.5 | 3.558 | 3.547 | 1 | 3.547 | 3.5278 | 101% | 101% |
| LCSW - 288029, 288048 | Nitrate | AQUION - 4 | 3.5 | 3.504 | 3.495 | 1 | 3.495 | 3.4951 | 100% | 100% |
| MBW-CCB | Nitrate | AQUION - 4 | | 0.000 | 0.000 | 1 | 0.000 | 0.2 U | | |
| 54MW12 | Nitrate | AQUION - 4 | | 0.655 | 0.742 | 1 | 0.742 | 0.74 | | |
| Duplicate - 54MW12 | Nitrate | AQUION - 4 | | 0.625 | 0.713 | 1 | 0.713 | 0.7129 | 4% | 4% |
| CCV | Nitrate | AQUION - 4 | 3.5 | 3.390 | 3.384 | 1 | 3.384 | 3.3842 | 97% | 97% |
| CCB | Nitrate | AQUION - 4 | | 0.380 | 0.476 | 1 | 0.476 | 0.4760 | | |
| MSW - 54MW12 | Nitrate | AQUION - 4 | 2 | 2.558 | 2.581 | 1 | 2.581 | 2.5803 | 92% | 92% |
| MSDW - 54MW12 | Nitrate | AQUION - 4 | 2 | 2.574 | 2.596 | 1 | 2.596 | 2.5960 | 93%, 1% | 93%, 1% |
| CCV | Nitrate | AQUION - 4 | 3.5 | 3.302 | 3.299 | 1 | 3.299 | 3.2998 | 94% | 94% |
| CCB | Nitrate | AQUION - 4 | | 0.021 | 0.129 | 1 | 0.129 | 0.1289 | 0.2 U | |

Slight differences in percent recovery calculations are due to lab rounding prior to determing percent recoveries.

| Initial Calibration Model Worksheet - Chlorite | | | | | |
|---|---|---|---|---|---|
| Y-Values, Compound Area, Ax | X-Values, Compound Conc, Cx/Vs | | RF | | |
| | | | Ax/Cx | | |
| 0 | 0 | | #DIV/0! | | |
| 287612 | 0.01 | | 28761200 | | |
| 672439 | 0.02 | | 33621950 | | |
| 3912350 | 0.1 | | 39123500 | | |
| 9716429 | 0.25 | | 38865716 | | |
| 20152522 | 0.5 | | 40305044 | | |
| 41329843 | 1 | | 41329843 | | |
| | | | | | |

**CALIBRATION MODELS:**

**Linear Regression:**

y = mx + b

Cx = (Ax-b)/m

| Weighting | | Calculated | Lab Reported |
|---|---|---|---|
| Slope (m) | | 4.133E+07 | 4.133E+07 |
| Intercept (b) | | -2.330E+05 | -2.330E+05 |
| CC (R) (≥0.99) | | 0.9999 | NR |
| COD ($R^2$) (≥0.98) | | 0.99975 | 1.0000 |
| Note | | | |

| Sample Concentration Calculations | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample ID | Spike Concentration | Compound Area Ax | Linear Cal On-column Conc, ug/ml | Dilution | Calculated Result, ug/L | Laboratory Reported | % Recovery | Lab Reported |
| ICV | 250 | 9933426 | 0.246 | 1 | 246.0 | 246.0 | 98% | 95% |
| CCV | 250 | 10118969 | 0.250 | 1 | 250.5 | 250.5 | 100% | |
| CCV | 250 | 9995042 | 0.247 | 1 | 247.5 | 247.5 | 99% | |
| CCV | 250 | 10014632 | 0.248 | 1 | 247.9 | 247.9 | 99% | |
| MB 810-126563/4 | | 0 | 0.000 | 1 | 0.0 | ND | | |
| LCS | 250 | 10046543.000 | 0.249 | 1 | 248.7 | 248.7 | 99% | 99% |
| LLCS | 10 | 382596 | 0.015 | 1 | 14.9 | 14.9 | 149% | 149% |
| MS | 250 | 9196089 | 0.228 | 1 | 228.1 | 228.1 | 88% | 88% |
| MSD | 250 | 9312888 | 0.231 | 1 | 231.0 | 231.0 | 90%, 1% | 90%, 1% |
| 54TW12 | | 59379 | 0.007 | 1 | 7.1 | 10 U | | |

Slight differences in percent recovery calculations are due to lab rounding prior to determing percent recoveries.

| Initial Calibration Model Worksheet - Chlorate | | | | | |
|---|---|---|---|---|---|
| Y-Values, Compound Area, Ax | X-Values, Compound Conc, Cx/Vs | | RF | | |
| | | | Ax/Cx | | |
| 0 | 0 | | #DIV/0! | | |
| 331249 | 0.01 | | 33124900 | | |
| 665755 | 0.02 | | 33287750 | | |
| 3476271 | 0.1 | | 34762710 | | |
| 8530352 | 0.25 | | 34121408 | | |
| 17376471 | 0.5 | | 34752942 | | |
| 35143361 | 1 | | 35143361 | | |
| | | | | | |

**CALIBRATION MODELS:**

**Linear Regression:**

y = mx + b

Cx = (Ax-b)/m

| Weighting | | Calculated | Lab Reported |
|---|---|---|---|
| Slope (m) | | 3.512E+07 | 3.512E+07 |
| Intercept (b) | | -7.158E+04 | -7.158E+04 |
| CC (R) (≥0.99) | | 1.0000 | NR |
| COD ($R^2$) (≥0.98) | | 0.99994 | 1.0000 |
| Note | | | |

| Sample Concentration Calculations | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample ID | Spike Concentration | Compound Area Ax | Linear Cal On-column Conc, ug/ml | Dilution | Calculated Result, ug/L | Laboratory Reported | % Recovery | Lab Reported |
| ICV | 250 | 8449105 | 0.243 | 1 | 243 | 246 | 97% | 97% |
| CCV | 250 | 8981675 | 0.258 | 1 | 258 | 258 | 103% | 103% |
| CCV | 250 | 8831485 | 0.254 | 1 | 254 | 254 | 101% | 101% |
| CCV | 250 | 8971559 | 0.257 | 1 | 257 | 257 | 103% | 103% |
| MB 810-126563/4 | | 0 | 0.000 | 1 | 0.0 | ND | | |
| LCS | 250 | 8864745 | 0.254 | 1 | 254.5 | 254.0 | 102% | 102% |
| LLCS | 10 | 296632 | 0.010 | 1 | 10.5 | 10.5 | 105% | 105% |
| MS | 250 | 8532436 | 0.245 | 1 | 245.0 | 245.0 | 97% | 98% |
| MSD | 250 | 8623242 | 0.248 | 1 | 247.6 | 248.0 | 98%, 1% | 99%, 1% |
| 54MW1 | | 0 | 0.000 | 1 | 0.0 | 10 U | | |
| 54MW10 | | 0 | 0.000 | 1 | 0.0 | 10 U | | |
| 54TW10 | | 0 | 0.000 | 1 | 0.0 | 10 U | | |
| 54TW12 | | 0 | 0.002 | 1 | 2.0 | 10 U | | |
| 54MW13 | | 0 | 0.000 | 1 | 0.0 | 10 U | | |

Slight differences in percent recovery calculations are due to lab rounding prior to determing percent recoveries.

# APPENDIX C
# MANN-KENDALL TEST RESULTS

# 54MW10

| Quarter | Month Year | UNITS | Year | Month | Well | 54MW10: 2,4,6-TNT | 54MW10: 2,4,6-TNT Qual | 54MW10: Perchlorate | 54MW10: Perchlorate Qual | 54MW10: RDX | 54MW10: RDX Qual | 2,4,6-TNT RG | RDX RG | Perchlorate RG | GW Elevation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q1 | | µg/L | | | 54MW10 | 0.305 | | ND | | ND | | 7.82 | 6.1 | 10.9 | 1673.55 |
| Q02 | | µg/L | | | 54MW10 | 5.84 | | 0.325 | | 3.24 | | 7.82 | 6.1 | 10.9 | 1673.36 |
| Q03 | | µg/L | | | 54MW10 | 4.05 | | 0.258 | | 2.95 | | 7.82 | 6.1 | 10.9 | 1676.41 |
| Q04 | | µg/L | | | 54MW10 | ND | | ND | | ND | | 7.82 | 6.1 | 10.9 | 1675.58 |
| Q05 | | µg/L | | | 54MW10 | 9.17 | | 3.74 | | 7.84 | | 7.82 | 6.1 | 10.9 | 1673.85 |
| Q06 | | µg/L | | | 54MW10 | 1.59 | | 0.344 | | 1.35 | | 7.82 | 6.1 | 10.9 | 1675.52 |
| Q07 | | µg/L | | | 54MW10 | 1.88 | | 0.832 | | 2.36 | | 7.82 | 6.1 | 10.9 | 1675.78 |
| Q08 | | µg/L | | | 54MW10 | 0.637 | | 0.835 | | 1.29 | | 7.82 | 6.1 | 10.9 | 1676.9 |
| Q09 | | µg/L | | | 54MW10 | ND | | 0.365 | | 2.23 | | 7.82 | 6.1 | 10.9 | 1676.79 |
| Q10 | | µg/L | | | 54MW10 | 50 | | 2.3 | | 21 | | 7.82 | 6.1 | 10.9 | 1673.85 |
| Q11 | | µg/L | | | 54MW10 | 13 | | 0.42 | | 5.3 | | 7.82 | 6.1 | 10.9 | 1675.1 |
| Q12 | | µg/L | | | 54MW10 | 11 | | 0.44 | | 8.7 | | 7.82 | 6.1 | 10.9 | 1674.39 |
| Q13 | | µg/L | | | 54MW10 | 6.6 | | ND | | 2.1 | | 7.82 | 6.1 | 10.9 | 1679.77 |
| Q14 | | µg/L | | | 54MW10 | 4.1 | | 0.326 | | 3.1 | | 7.82 | 6.1 | 10.9 | 1677.16 |
| Q15 | | µg/L | | | 54MW10 | 2.7 | | 0.082 | | 1.8 | | 7.82 | 6.1 | 10.9 | 1675.47 |
| Q16 | | µg/L | | | 54MW10 | 24.2 | | 0.84 | | 6.6 | | 7.82 | 6.1 | 10.9 | 1674.72 |
| Q17 | | µg/L | | | 54MW10 | 1.6 | | 0.12 | | 0.4 | | 7.82 | 6.1 | 10.9 | 1675.58 |
| Q18 | | µg/L | | | 54MW10 | 4.2 | | 0.1 | 0.1 | 1.1 | 1.1 | 7.82 | 6.1 | 10.9 | 1673.6 |
| Q19 | | µg/L | | | 54MW10 | 1 | | 0.24 | | ND | | 7.82 | 6.1 | 10.9 | 1675.53 |
| Q20 | | µg/L | | | 54MW10 | 0.44 | | 0.2 | | 0.76 | | 7.82 | 6.1 | 10.9 | 1674.6 |
| Q21 | | µg/L | | | 54MW10 | 11.2 | | 0.23 | | 1.8 | | 7.82 | 6.1 | 10.9 | 1677.14 |
| Q22 | | µg/L | | | 54MW10 | ND | | ND | | 0.1 | | 7.82 | 6.1 | 10.9 | 1674.43 |
| Q23 | | µg/L | | | 54MW10 | 0.67 | | 0.5 | | ND | | 7.82 | 6.1 | 10.9 | 1677.55 |
| Q24 | | µg/L | | | 54MW10 | 3.5 | | ND | | 4.4 | | 7.82 | 6.1 | 10.9 | 1674.04 |
| Q25 | | µg/L | | | 54MW10 | 1 | | 0.65 | | 1.4 | | 7.82 | 6.1 | 10.9 | 1676.58 |
| Q26 | | µg/L | | | 54MW10 | 0.88 | | 0.34 | | 0.88 | | 7.82 | 6.1 | 10.9 | 1676.7 |
| Q27 | | µg/L | | | 54MW10 | 0.74 | | 0.35 | | 0.32 | | 7.82 | 6.1 | 10.9 | 1676.42 |
| Q28 | | µg/L | | | 54MW10 | 18.6 | | 0.45 | | 3.9 | | 7.82 | 6.1 | 10.9 | 1674.76 |
| Q29 | 10/14/2019 | µg/L | 2019 | | 54MW10 | 4 | | 0.025 | 0.05 | 2.1 | | 7.82 | 6.1 | 10.9 | 1671.26 |
| Q30 | 1/27/2020 | µg/L | 2020 | | 54MW10 | 8.4 | | 0.25 | | 1.9 | | 7.82 | 6.1 | 10.9 | 1677.44 |
| Q31 | 4/28/2020 | µg/L | 2020 | | 54MW10 | 20.5 | | 0.61 | | 5.1 | | 7.82 | 6.1 | 10.9 | 1678.19 |
| Q32 | 7/21/2020 | µg/L | 2020 | | 54MW10 | 0.04 | 0.08 | 0.025 | 0.05 | 0.025 | 0.05 | 7.82 | 6.1 | 10.9 | 1675.45 |
| Q33 | 10/26/2020 | µg/L | 2020 | | 54MW10 | 11.4 | | 6.2 | | 1.8 | | 7.82 | 6.1 | 10.9 | |
| Q34 | 1/26/2021 | µg/L | 2021 | | 54MW10 | 39.4 | | 0.62 | | 5.8 | | 7.82 | 6.1 | 10.9 | |
| Q35 | 4/12/2021 | µg/L | 2021 | | 54MW10 | 30.3 | | 0.38 | | 3.8 | | 7.82 | 6.1 | 10.9 | |
| Q36 | 07/01/2021 | µg/L | 2021 | 7 | 54MW10 | 13 | 13 j | 0.19 | 0.19 j | 0.48 | 0.48 j | 7.82 | 6.1 | 10.9 | |
| Q37 | 10/01/2021 | µg/L | 2021 | 10 | 54MW10 | 5.4 | 5.4 | 0.072 | 0.072 j | 1.4 | 1.4 | 7.82 | 6.1 | 10.9 | |
| Q38 | 04/01/2022 | µg/L | 2022 | 4 | 54MW10 | 3 | 3 | 0.12 | 0.12 j | 1.8 | 1.8 | 7.82 | 6.1 | 10.9 | |
| S39 | 01/01/2023 | µg/L | 2023 | 1 | 54MW10 | 0.049 | 0.098 u | 0.05 | 0.1 u | 0.35 | 0.35 | 7.82 | 6.1 | 10.9 | |
| S40 | 07/01/2023 | µg/L | 2023 | 7 | 54MW10 | 0.56 | 0.56 | 0.05 | 0.1 u | 0.34 | 0.34 | 7.82 | 6.1 | 10.9 | |
| S41 | 8/20/2024 | µg/L | 2024 | 8 | 54MW10 | 0.05 | 0.10 U | 0.05 | 0.10 U | 0.05 | 0.10 U | 7.82 | 6.1 | 10.9 | |
| S42 | 12/10/2024 | µg/L | 2024 | 12 | 54MW10 | 0.055 | 0.11U | 0.055 | 0.10 U | 0.055 | 0.11 U | 7.82 | 6.1 | 10.9 | |

**Notes:**

Yellow highlight indicates value used is 1/2 the reporting limit.

µg/L – micrograms per liter

2,4,6-TNT – 2,4,6-trinitrotoluene

GW – groundwater

ND – non-detect

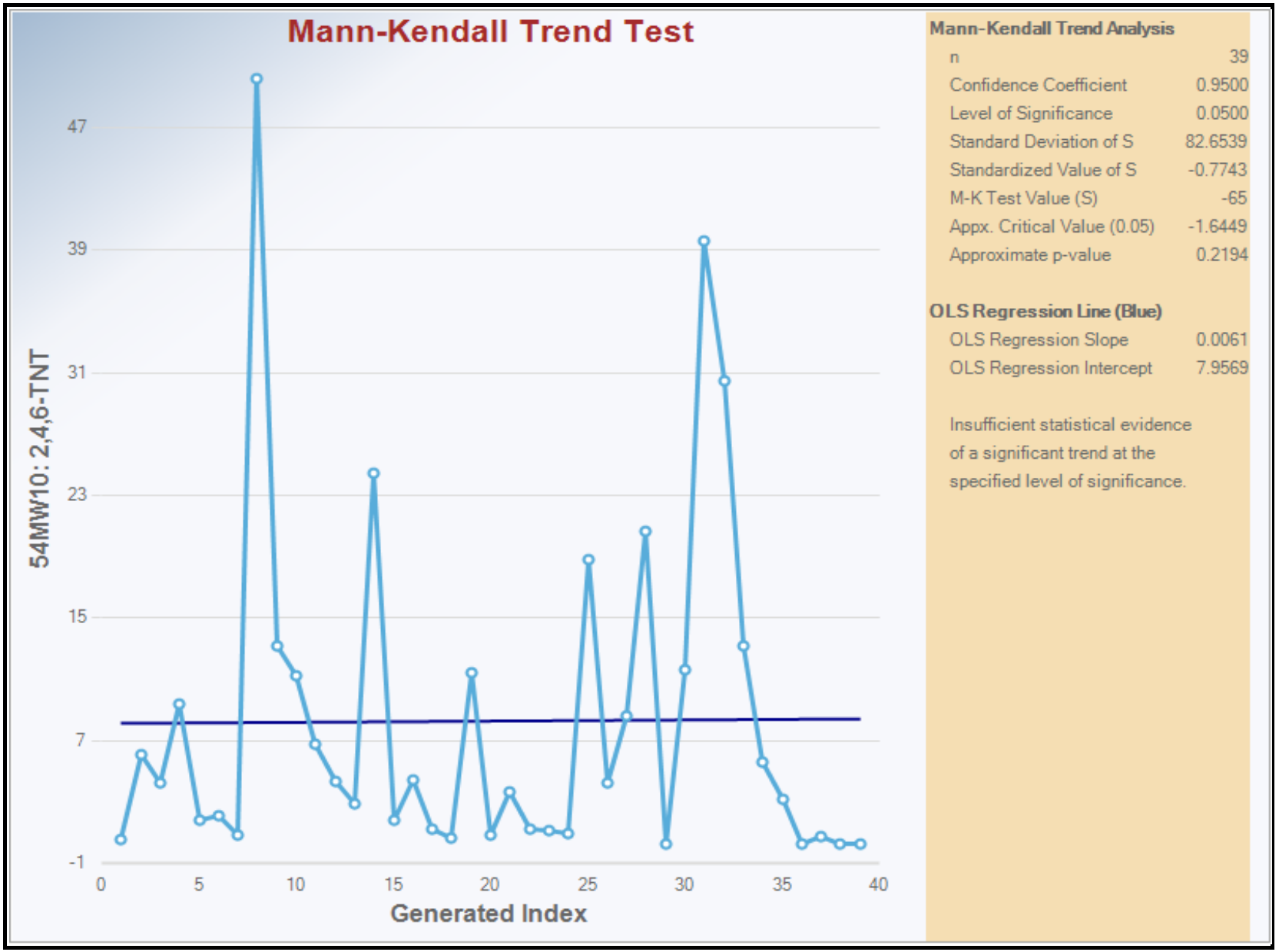
RDX – cyclotrimethylenetrinitramine

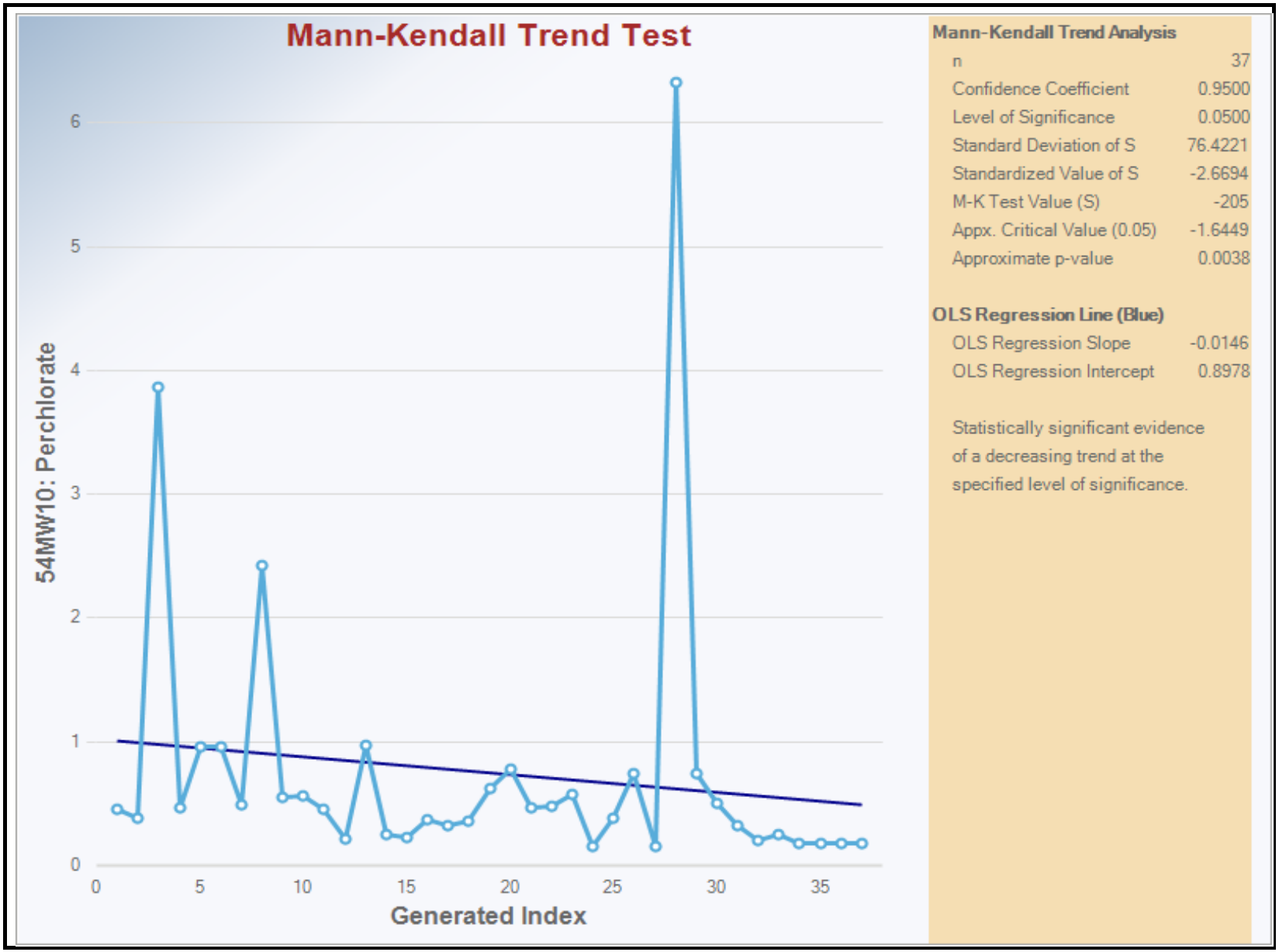
RG – Remedial Goal

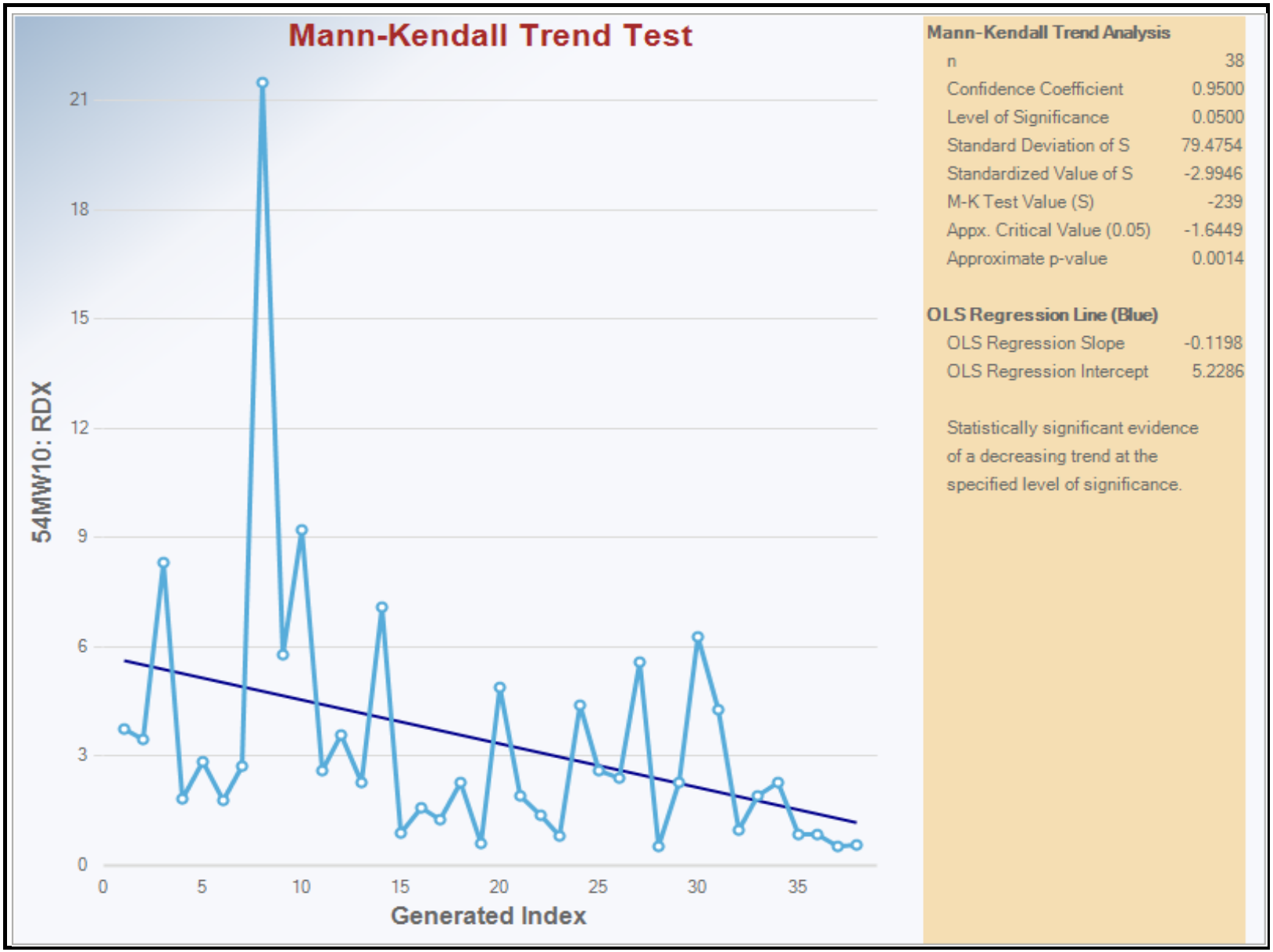
**Data Qualifiers:**

j = estimated value

u = value below detection limit


Mann-Kendall Trend Test
54MW10: 2,4,6-TNT
47
39
31
23
15
7
-1
0
5
10
15
20
25
30
35
40
Generated Index
Mann-Kendall Trend Analysis
n 39
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 82.6539
Standardized Value of S -0.7743
M-K Test Value (S) -65
Appx. Critical Value (0.05) -1.6449
Approximate p-value 0.2194
OLS Regression Line (Blue)
OLS Regression Slope 0.0061
OLS Regression Intercept 7.9569
Insufficient statistical evidence of a significant trend at the specified level of significance.


Mann-Kendall Trend Test
54MW10: Perchlorate
Generated Index
0
1
2
3
4
5
6
0
5
10
15
20
25
30
35
Mann-Kendall Trend Analysis
n 37
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 76.4221
Standardized Value of S -2.6694
M-K Test Value (S) -205
Appx. Critical Value (0.05) -1.6449
Approximate p-value 0.0038
OLS Regression Line (Blue)
OLS Regression Slope -0.0146
OLS Regression Intercept 0.8978
Statistically significant evidence of a decreasing trend at the specified level of significance.


Mann-Kendall Trend Test
54MW10: RDX
Generated Index
0
3
6
9
12
15
18
21
0
5
10
15
20
25
30
35
Mann-Kendall Trend Analysis
n 38
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 79.4754
Standardized Value of S -2.9946
M-K Test Value (S) -239
Appx. Critical Value (0.05) -1.6449
Approximate p-value 0.0014
OLS Regression Line (Blue)
OLS Regression Slope -0.1198
OLS Regression Intercept 5.2286
Statistically significant evidence of a decreasing trend at the specified level of significance.

# 54MW12

| Quarter | Month Year | UNITS | Year | Month | Well | 54MW12: 2,4,6-TNT | 54MW12: 2,4,6-TNT -Qual | 54MW12: Perchlorate | 54MW12: Perchlorate Qual | 54MW12: RDX | 54MW12: RDX Qual | 2,4,6-TNT RG | RDX RG | Perchlorate RG | GW Elevation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q1 | | µg/L | | | 54MW12 | 15.9 | | ND | | ND | | 7.82 | 6.1 | 10.9 | 1676.92 |
| Q2 | | µg/L | | | 54MW12 | 16.1 | | 0.726 | | 9.77 | | 7.82 | 6.1 | 10.9 | 1676.56 |
| Q3 | | µg/L | | | 54MW12 | 19.4 | | 10.5 | | 13.2 | | 7.82 | 6.1 | 10.9 | 1678.28 |
| Q4 | | µg/L | | | 54MW12 | 48 | | 22.8 | | 18.4 | | 7.82 | 6.1 | 10.9 | 1678.09 |
| Q5 | | µg/L | | | 54MW12 | 10.1 | | 2 | | 1.95 | | 7.82 | 6.1 | 10.9 | 1676.74 |
| Q6 | | µg/L | | | 54MW12 | 7.62 | | 5.31 | | 6.59 | | 7.82 | 6.1 | 10.9 | 1676.05 |
| Q7 | | µg/L | | | 54MW12 | 6.29 | | 2.98 | | 3.79 | | 7.82 | 6.1 | 10.9 | 1678.7 |
| Q8 | | µg/L | | | 54MW12 | 108 | | 22.7 | | 25 | | 7.82 | 6.1 | 10.9 | 1682.61 |
| Q9 | | µg/L | | | 54MW12 | 65.9 | | 9.88 | | 14.6 | | 7.82 | 6.1 | 10.9 | 1681.74 |
| Q10 | | µg/L | | | 54MW12 | 17 | | 1.1 | | 0.54 | | 7.82 | 6.1 | 10.9 | 1676.77 |
| Q11 | | µg/L | | | 54MW12 | 29 | | 4 | | 8.7 | | 7.82 | 6.1 | 10.9 | 1676.91 |
| Q12 | | µg/L | | | 54MW12 | 10 | | 1.7 | | 2 | | 7.82 | 6.1 | 10.9 | 1674.92 |
| Q13 | | µg/L | | | 54MW12 | 11 | | 0.737 | | 3.9 | | 7.82 | 6.1 | 10.9 | 1676.95 |
| Q14 | | µg/L | | | 54MW12 | 110 | | 8.85 | | 30 | | 7.82 | 6.1 | 10.9 | 1679.59 |
| Q15 | | µg/L | | | 54MW12 | 11 | | 1.2 | | 0.62 | | 7.82 | 6.1 | 10.9 | 1678.69 |
| Q16 | | µg/L | | | 54MW12 | 7.4 | | 0.56 | | 0.37 | | 7.82 | 6.1 | 10.9 | 1677.16 |
| Q17 | | µg/L | | | 54MW12 | 10.6 | | 1.6 | | 6 | | 7.82 | 6.1 | 10.9 | 1676.78 |
| Q18 | | µg/L | | | 54MW12 | 28.1 | | 2.9 | | 4.8 | | 7.82 | 6.1 | 10.9 | 1676.41 |
| Q19 | | µg/L | | | 54MW12 | 78.6 | | 4.3 | | 51.4 | | 7.82 | 6.1 | 10.9 | 1678.21 |
| Q20 | | µg/L | | | 54MW12 | 8.7 | | 1.1 | | ND | | 7.82 | 6.1 | 10.9 | 1677.54 |
| Q21 | | µg/L | | | 54MW12 | 39 | | 1.4 | | 14 | | 7.82 | 6.1 | 10.9 | 1678.2 |
| Q22 | | µg/L | | | 54MW12 | 22.3 | | 1.9 | | 13.4 | | 7.82 | 6.1 | 10.9 | 1676.47 |
| Q23 | | µg/L | | | 54MW12 | 52.3 | | 2.8 | | 33.3 | | 7.82 | 6.1 | 10.9 | 1689.25 |
| Q24 | | µg/L | | | 54MW12 | 29.7 | | 1.7 | | 8.2 | | 7.82 | 6.1 | 10.9 | 1676.81 |
| Q25 | | µg/L | | | 54MW12 | 13.3 | | 1.4 | | 3.6 | | 7.82 | 6.1 | 10.9 | 1679.74 |
| Q26 | | µg/L | | | 54MW12 | 164 | | 3.7 | | 13.5 | | 7.82 | 6.1 | 10.9 | 1680.12 |
| Q27 | | µg/L | | | 54MW12 | 39.5 | | 2 | | 4.8 | | 7.82 | 6.1 | 10.9 | 1680.53 |
| Q28 | | µg/L | | | 54MW12 | 13.6 | | 0.61 | | ND | | 7.82 | 6.1 | 10.9 | 1677.58 |
| Q29 | 10/14/2019 | µg/L | | | 54MW12 | 10.1 | | 0.53 | | 0.04 | 0.08 | 7.82 | 6.1 | 10.9 | 1671.26 |
| Q30 | 1/27/2020 | µg/L | | | 54MW12 | 10.2 | | 0.49 | | 0.56 | | 7.82 | 6.1 | 10.9 | 1678.74 |
| Q31 | 4/28/2020 | µg/L | | | 54MW12 | 8.3 | | 0.73 | | 0.17 | | 7.82 | 6.1 | 10.9 | 1680.42 |
| Q32 | 7/21/2020 | µg/L | | | 54MW12 | 4.1 | | 0.75 | | 0.04 | 0.08 | 7.82 | 6.1 | 10.9 | 1678.92 |
| Q33 | 10/26/2020 | µg/L | | | 54MW12 | 7.8 | | 8.2 | | 0.038 | 0.076 | 7.82 | 6.1 | 10.9 | |
| Q34 | 1/26/2021 | µg/L | | | 54MW12 | 8.6 | | 0.46 | | 0.095 | 0.19 | 7.82 | 6.1 | 10.9 | |
| Q35 | 4/12/2021 | µg/L | | | 54MW12 | 51.4 | | 1.5 | | 0.095 | 0.19 | 7.82 | 6.1 | 10.9 | |
| Q37 | 07/01/2021 | µg/L | 2021 | 7 | 54MW12 | 10 | 10 j | 0.3 | 0.3 | 0.047 | 0.094 u | 7.82 | 6.1 | 10.9 | |
| Q38 | 10/01/2021 | µg/L | 2021 | 10 | 54MW12 | 9.3 | 9.3 | 0.44 | 0.44 | 0.048 | 0.096 u | 7.82 | 6.1 | 10.9 | |
| S39 | 01/01/2023 | µg/L | 2023 | 1 | 54MW12 | 4.5 | 4.5 | 0.72 | 0.72 | 0.75 | 0.75 | 7.82 | 6.1 | 10.9 | |
| S40 | 07/01/2023 | µg/L | 2023 | 7 | 54MW12 | 4 | 4 | 0.61 | 0.61 | 0.27 | 0.27 | 7.82 | 6.1 | 10.9 | |
| S41 | 8/12/2024 | µg/L | 2024 | 8 | 54MW12 | 4.8 | 4.8 | 0.77 | 0.77 | 11 | 11 | 7.82 | 6.1 | 10.9 | |
| S42 | 12/10/2024 | µg/L | 2024 | 12 | 54MW12 | 2.7 | 2.7 | 0.77 | 0.77 | 0.34 | 0.34 | 7.82 | 6.1 | 10.9 | |

**Notes:**

Yellow highlight indicates value used is 1/2 the reporting limit.

µg/L – micrograms per liter

2,4,6-TNT – 2,4,6-trinitrotoluene

GW – groundwater

ND – non-detect

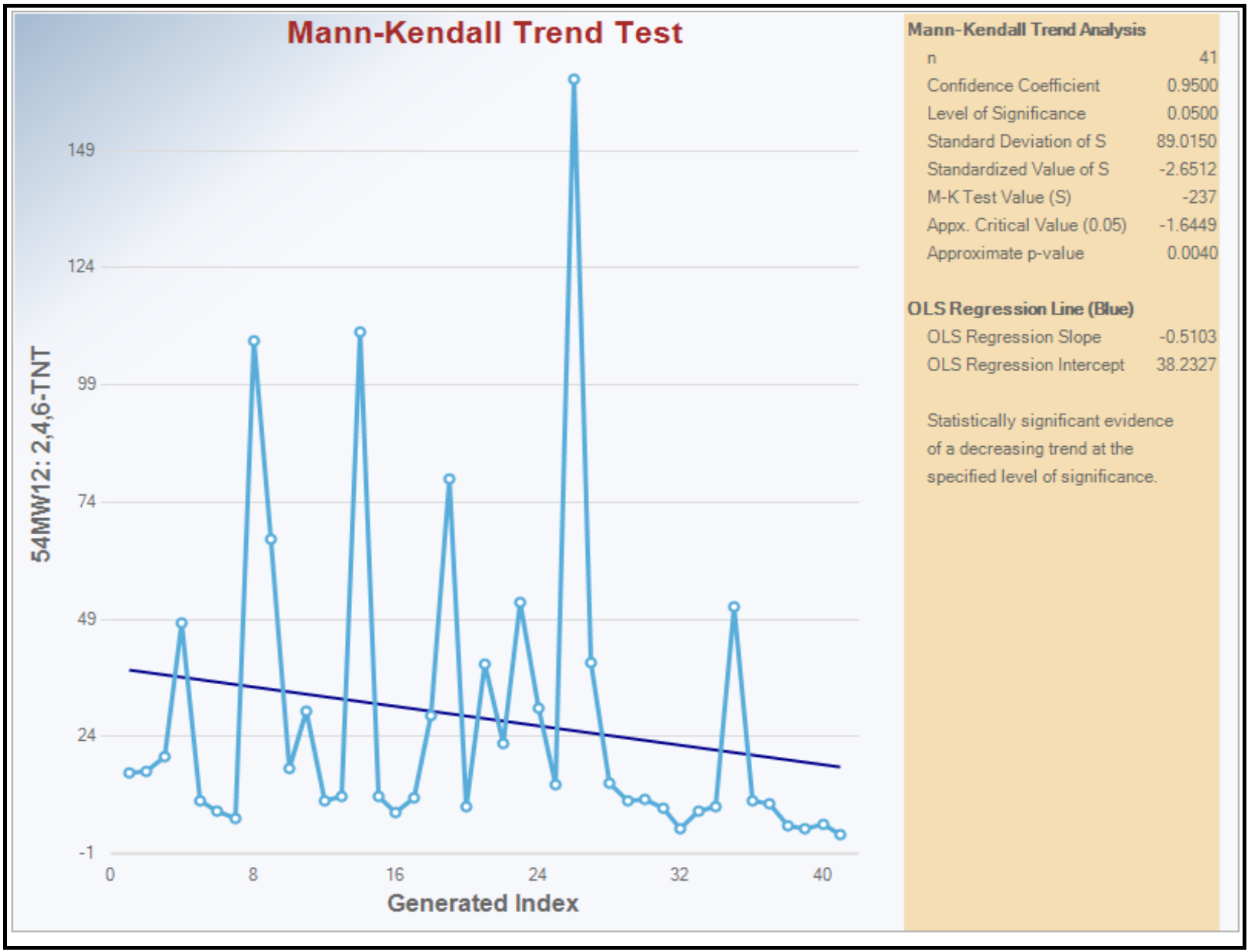
RDX – cyclotrimethylenetrinitramine

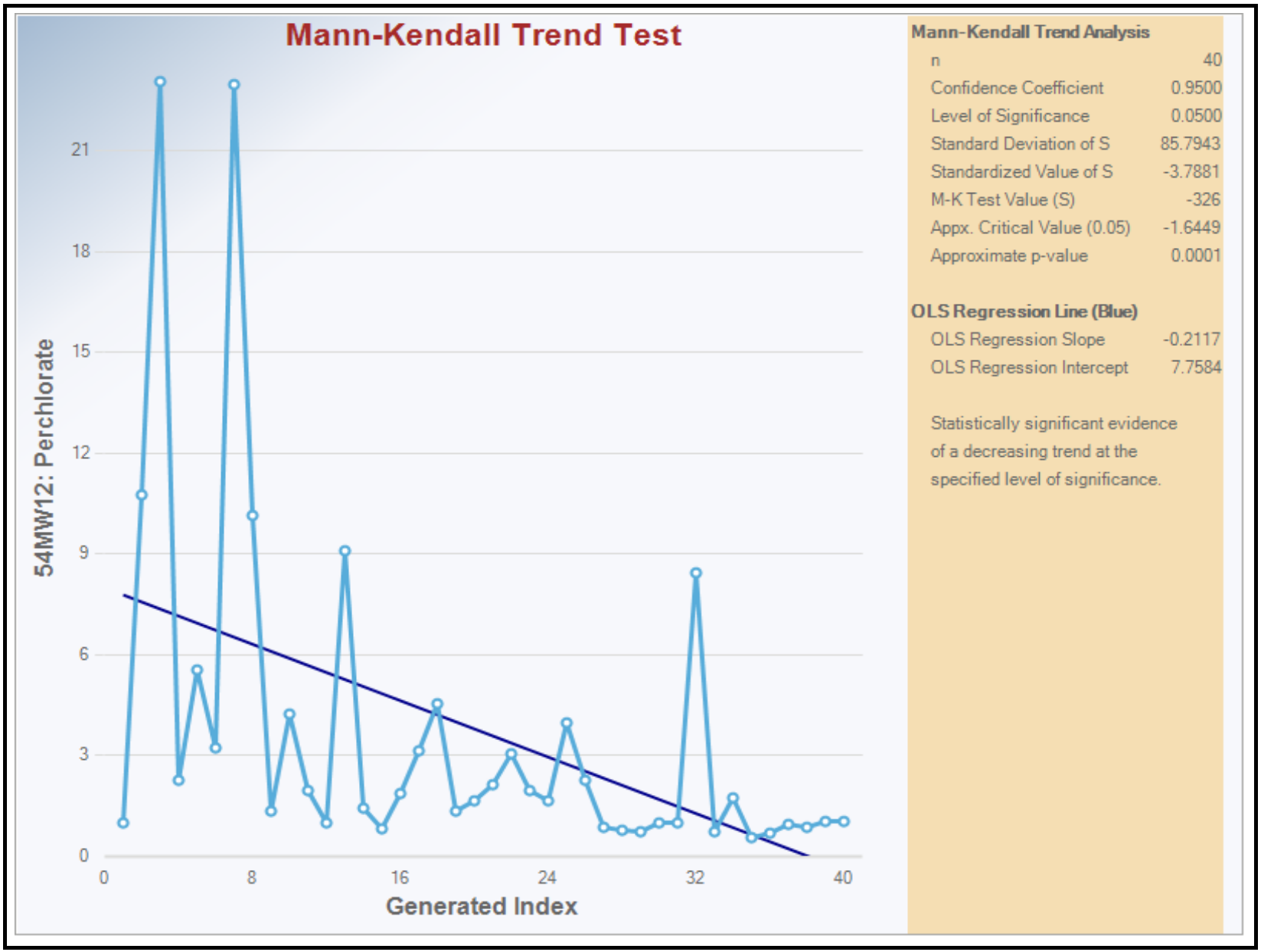
RG – Remedial Goal

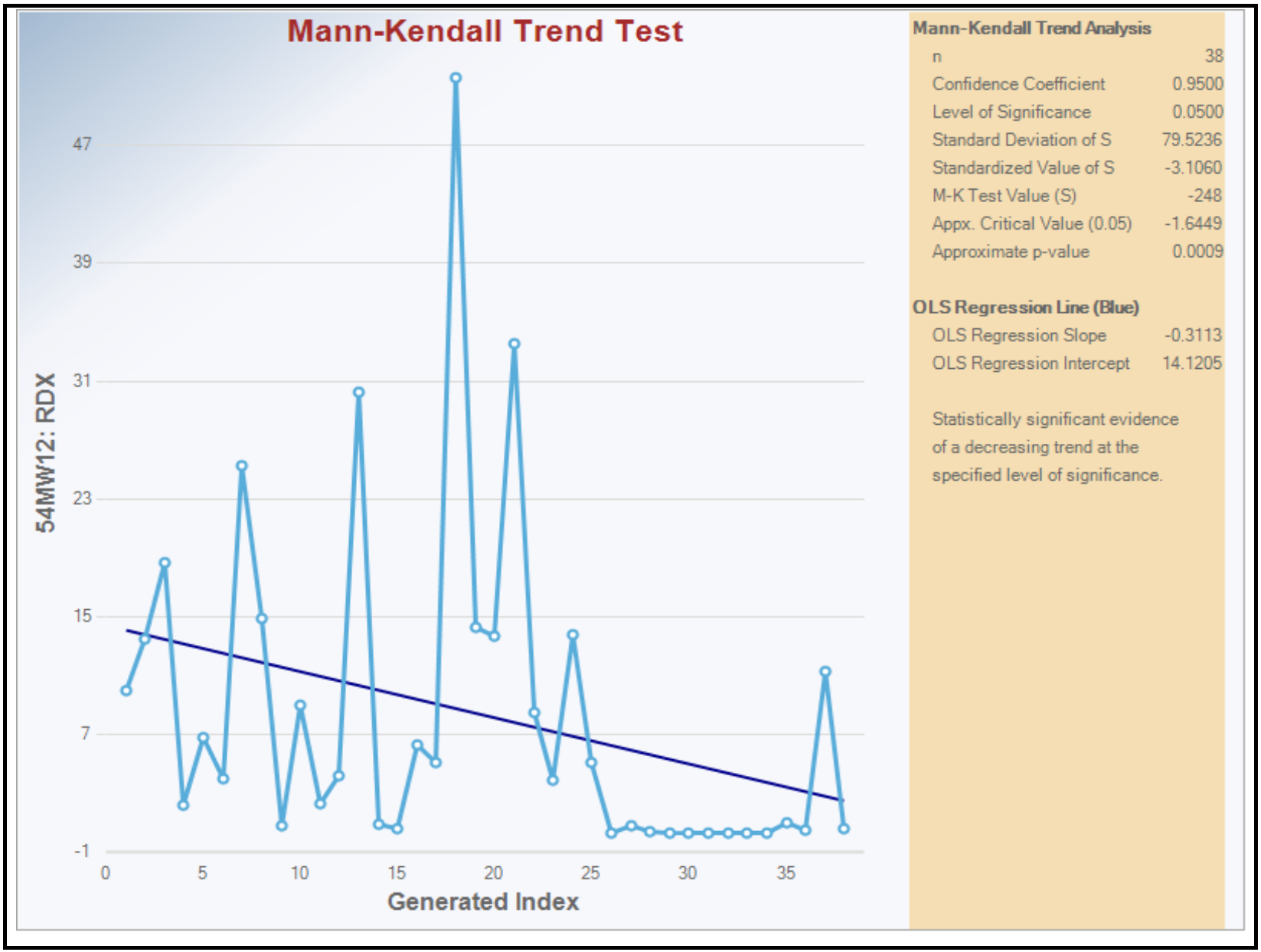
**Data Qualifiers:**

j = estimated value

u = value below detection limit


Mann-Kendall Trend Test
54MW12: 2,4,6-TNT
149
124
99
74
49
24
-1
0
8
16
24
32
40
Generated Index
Mann-Kendall Trend Analysis
n 41
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 89.0150
Standardized Value of S -2.6512
M-K Test Value (S) -237
Appx. Critical Value (0.05) -1.6449
Approximate p-value 0.0040
OLS Regression Line (Blue)
OLS Regression Slope -0.5103
OLS Regression Intercept 38.2327
Statistically significant evidence of a decreasing trend at the specified level of significance.


Mann-Kendall Trend Test
54MW12: Perchlorate
Generated Index
0
3
6
9
12
15
18
21
0
8
16
24
32
40
Mann-Kendall Trend Analysis
n 40
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 85.7943
Standardized Value of S -3.7881
M-K Test Value (S) -326
Appx. Critical Value (0.05) -1.6449
Approximate p-value 0.0001
OLS Regression Line (Blue)
OLS Regression Slope -0.2117
OLS Regression Intercept 7.7584
Statistically significant evidence of a decreasing trend at the specified level of significance.


Mann-Kendall Trend Test
54MW12: RDX
47
39
31
23
15
7
-1
0
5
10
15
20
25
30
35
Generated Index
Mann-Kendall Trend Analysis
n 38
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 79.5236
Standardized Value of S -3.1060
M-K Test Value (S) -248
Appx. Critical Value (0.05) -1.6449
Approximate p-value 0.0009
OLS Regression Line (Blue)
OLS Regression Slope -0.3113
OLS Regression Intercept 14.1205
Statistically significant evidence of a decreasing trend at the specified level of significance.

# 54MW13

| Quarter | Month Year | UNITS | Year | Month | Well | 54MW13: 2,4,6-TNT | 54MW13: 2,4,6-TNT Qual | 54MW13: Perchlorate | 54MW13: Perchlorate Qual | 54MW13: RDX | 54MW13: RDX Qual | 2,4,6-TNT RG | RDX RG | Perchlorate RG | GW Elevation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q01 | | µg/L | | | 54MW13 | ND | | ND | | ND | | 7.82 | 6.1 | 10.9 | 1677.1 |
| Q02 | | µg/L | | | 54MW13 | 4.09 | | 0.244 | | 2.59 | | 7.82 | 6.1 | 10.9 | 1676.6 |
| Q03 | | µg/L | | | 54MW13 | 0.699 | | 0.206 | | 0.614 | | 7.82 | 6.1 | 10.9 | 1678.35 |
| Q04 | | µg/L | | | 54MW13 | 0.979 | | 0.243 | | 1.14 | | 7.82 | 6.1 | 10.9 | 1678.8 |
| Q05 | | µg/L | | | 54MW13 | 9.4 | | 0.627 | | 4.77 | | 7.82 | 6.1 | 10.9 | 1676.68 |
| Q06 | | µg/L | | | 54MW13 | 0.843 | | 0.308 | | 0.855 | | 7.82 | 6.1 | 10.9 | 1678.69 |
| Q07 | | µg/L | | | 54MW13 | 0.318 | | 0.313 | | 0.642 | | 7.82 | 6.1 | 10.9 | 1676.68 |
| Q08 | | µg/L | | | 54MW13 | 4.91 | | 0.64 | | 3.2 | | 7.82 | 6.1 | 10.9 | 1680.58 |
| Q09 | | µg/L | | | 54MW13 | 3.81 | | 0.477 | | 1.46 | | 7.82 | 6.1 | 10.9 | 1679.98 |
| Q10 | | µg/L | | | 54MW13 | 9.8 | | 0.43 | | 4 | | 7.82 | 6.1 | 10.9 | 1677.8 |
| Q11 | | µg/L | | | 54MW13 | 2.5 | | 0.32 | | 0.88 | | 7.82 | 6.1 | 10.9 | 1678.19 |
| Q12 | | µg/L | | | 54MW13 | 5.8 | | 0.37 | | 2.5 | | 7.82 | 6.1 | 10.9 | 1676.69 |
| Q13 | | µg/L | | | 54MW13 | 5.4 | | 0.27 | | 2.6 | | 7.82 | 6.1 | 10.9 | 1676.88 |
| Q14 | | µg/L | | | 54MW13 | 1.4 | | 0.216 | | 0.54 | | 7.82 | 6.1 | 10.9 | 1679.52 |
| Q15 | | µg/L | | | 54MW13 | 0.79 | | 0.18 | | 0.17 | | 7.82 | 6.1 | 10.9 | 1678.61 |
| Q16 | | µg/L | | | 54MW13 | 13.9 | | 0.33 | | 0.86 | | 7.82 | 6.1 | 10.9 | 1677.09 |
| Q17 | | µg/L | | | 54MW13 | 8 | | 0.21 | | 0.7 | | 7.82 | 6.1 | 10.9 | 1676.8 |
| Q18 | | µg/L | | | 54MW13 | 5.9 | | 0.29 | | ND | | 7.82 | 6.1 | 10.9 | 1675.45 |
| Q19 | | µg/L | | | 54MW13 | 1.8 | | 0.23 | | 1 | | 7.82 | 6.1 | 10.9 | 1678.26 |
| Q20 | | µg/L | | | 54MW13 | 8.2 | | 0.45 | | ND | | 7.82 | 6.1 | 10.9 | 1677.43 |
| Q21 | | µg/L | | | 54MW13 | 3 | | 0.2 | | 0.48 | | 7.82 | 6.1 | 10.9 | 1678.24 |
| Q22 | | µg/L | | | 54MW13 | 4.4 | | 0.25 | | ND | | 7.82 | 6.1 | 10.9 | 1676.44 |
| Q23 | | µg/L | | | 54MW13 | 2 | | 0.33 | | ND | | 7.82 | 6.1 | 10.9 | 1689.22 |
| Q24 | | µg/L | | | 54MW13 | 10.9 | | 0.45 | | ND | | 7.82 | 6.1 | 10.9 | 1676.79 |
| Q25 | | µg/L | | | 54MW13 | 1.6 | | 0.25 | | 0.38 | | 7.82 | 6.1 | 10.9 | 1679.8 |
| Q26 | | µg/L | | | 54MW13 | 2.3 | | 0.29 | | 0.46 | | 7.82 | 6.1 | 10.9 | 1680.13 |
| Q27 | | µg/L | | | 54MW13 | 5.1 | | 0.47 | | 0.32 | | 7.82 | 6.1 | 10.9 | 1680.45 |
| Q28 | | µg/L | | | 54MW13 | 15.5 | | 0.4 | | 1.3 | | 7.82 | 6.1 | 10.9 | 1677.45 |
| Q29 | 10/14/2019 | µg/L | 2019 | | 54MW13 | 12.5 | | 0.55 | | 1.1 | | 7.82 | 6.1 | 10.9 | 1674.79 |
| Q30 | 1/27/2020 | µg/L | 2020 | | 54MW13 | 4.1 | | 0.26 | | 0.55 | | 7.82 | 6.1 | 10.9 | 1678.69 |
| Q31 | 4/28/2020 | µg/L | 2020 | | 54MW13 | 5.5 | | 0.34 | | 1.5 | | 7.82 | 6.1 | 10.9 | 1680.09 |
| Q32 | 7/21/2020 | µg/L | 2020 | | 54MW13 | 8.3 | | 0.3 | | 0.43 | | 7.82 | 6.1 | 10.9 | 1680.09 |
| Q33 | 10/26/2020 | µg/L | 2020 | | 54MW13 | 12.7 | | 7.9 | | 0.58 | | 7.82 | 6.1 | 10.9 | |
| Q34 | 1/26/2021 | µg/L | 2021 | | 54MW13 | 10.7 | | 0.29 | | 0.83 | | 7.82 | 6.1 | 10.9 | |
| Q35 | 4/12/2021 | µg/L | 2021 | | 54MW13 | 17.7 | | 0.34 | | 0.57 | | 7.82 | 6.1 | 10.9 | |
| Q36 | 07/01/2021 | µg/L | 2021 | 7 | 54MW13 | 17 | 17 j | 0.26 | 0.26 | 0.38 | 0.38 j | 7.82 | 6.1 | 10.9 | |
| Q37 | 10/01/2021 | µg/L | 2021 | 10 | 54MW13 | 11.8 | 11.8 | 0.14 | 0.14 j | 0.58 | 0.58 | 7.82 | 6.1 | 10.9 | |
| Q38 | 04/01/2022 | µg/L | 2022 | 4 | 54MW13 | 5.8 | 5.8 | 0.26 | 0.26 | 2 | 2 | 7.82 | 6.1 | 10.9 | |
| S39 | 01/01/2023 | µg/L | 2023 | 1 | 54MW13 | 5 | 5 | 0.24 | 0.24 | 0.91 | 0.91 | 7.82 | 6.1 | 10.9 | |
| S40 | 07/01/2023 | µg/L | 2023 | 7 | 54MW13 | 8.8 | 8.8 | 0.3 | 0.3 | 0.9 | 0.9 | 7.82 | 6.1 | 10.9 | |
| S41 | 8/1/2024 | µg/L | 2024 | 8 | 54MW13 | 7 | 7 | 0.37 | 0.37 | 1.2 | 1.2 | 7.82 | 6.1 | 10.9 | |
| S42 | 12/10/2024 | µg/L | 2024 | 12 | 54MW13 | 26.8 | 26.8 | 0.63 | 0.63 | 1.2 | 1.2 | 7.82 | 6.1 | 10.9 | |

**Notes:**

Yellow highlight indicates value used is 1/2 the reporting limit.

µg/L – micrograms per liter

2,4,6-TNT – 2,4,6-trinitrotoluene

GW – groundwater

ND – non-detect

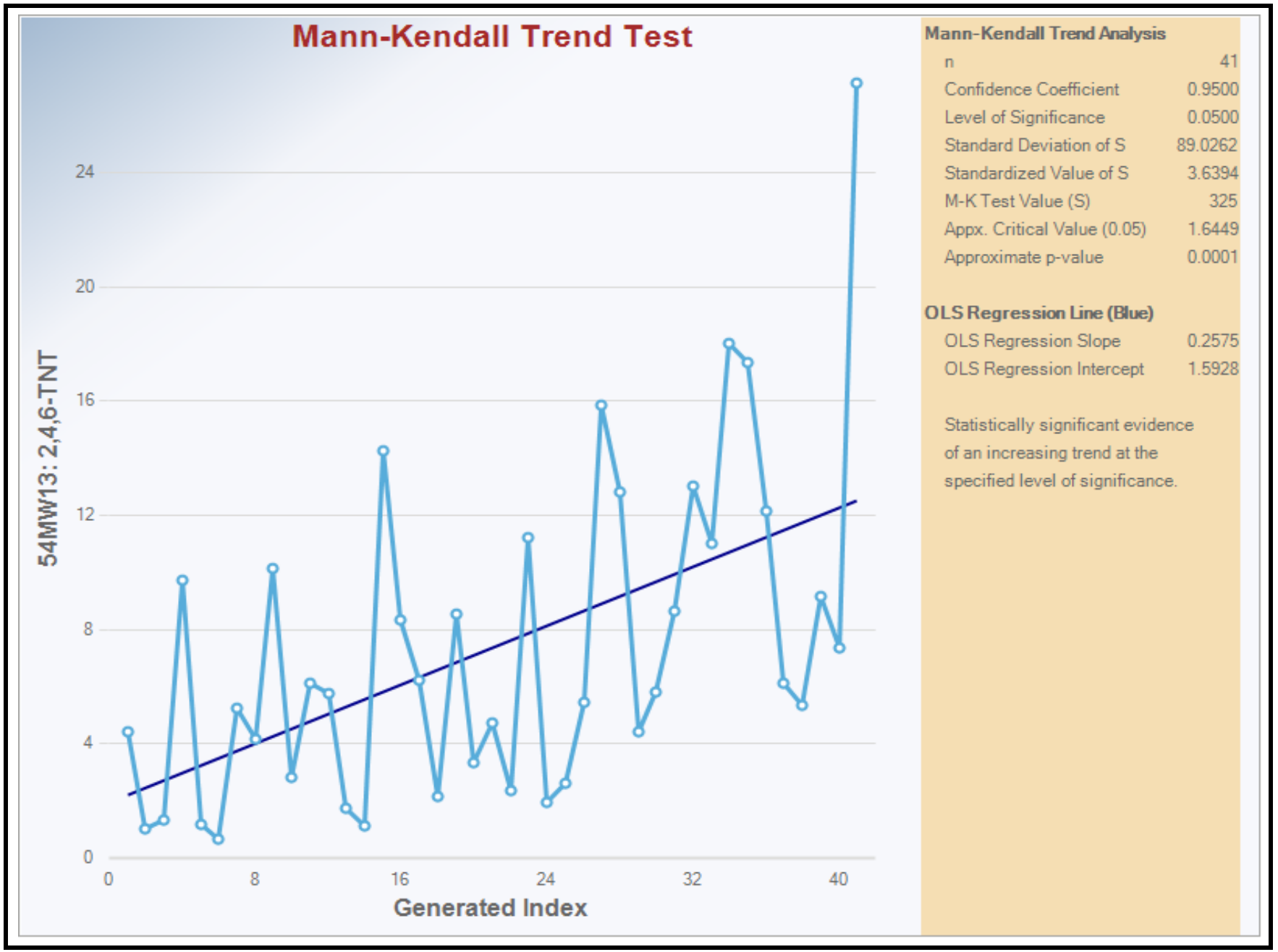
RDX – cyclotrimethylenetrinitramine

RG – Remedial Goal

**Data Qualifiers:**

j = estimated value

u = - value below detection limit



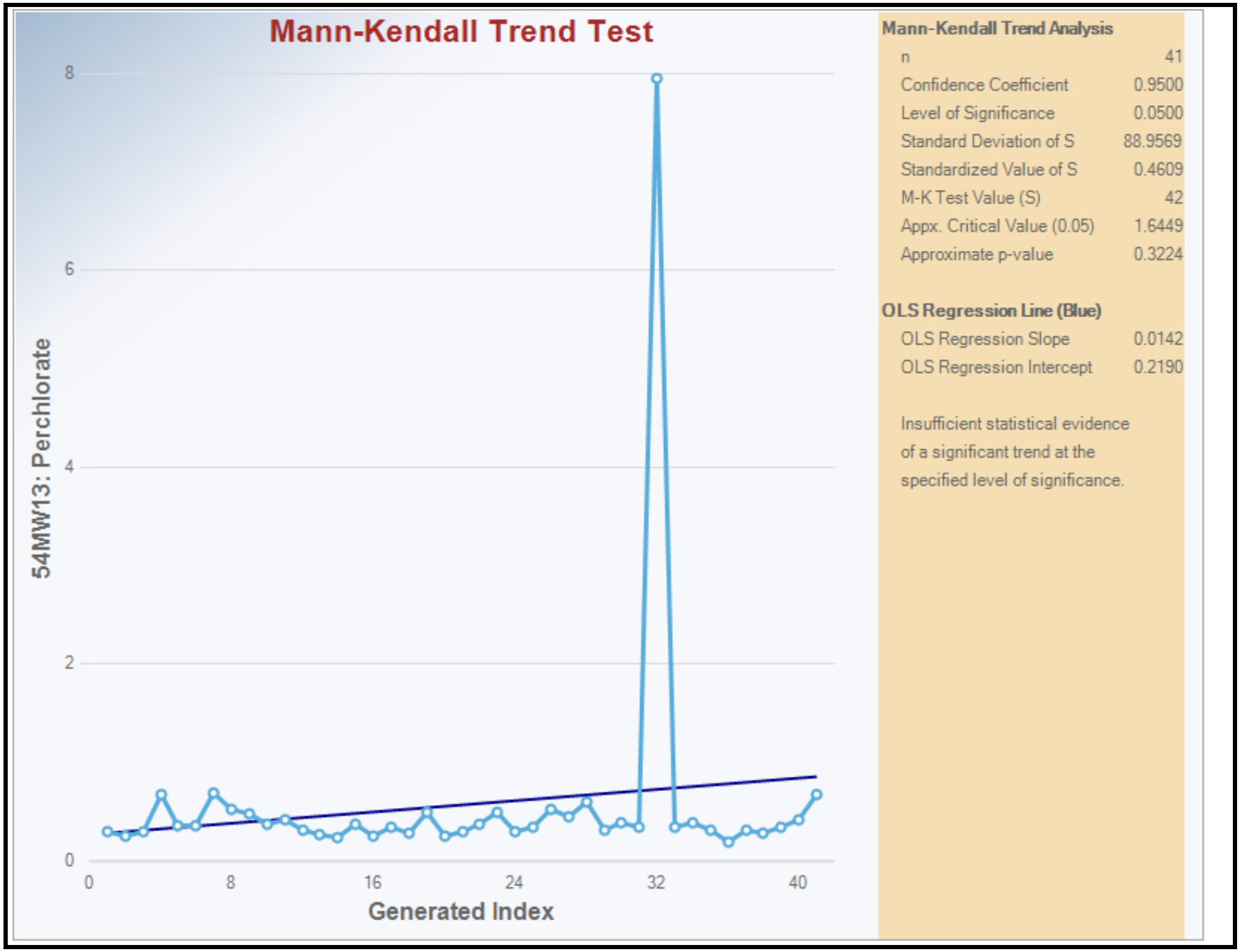

**Mann-Kendall Trend Analysis**

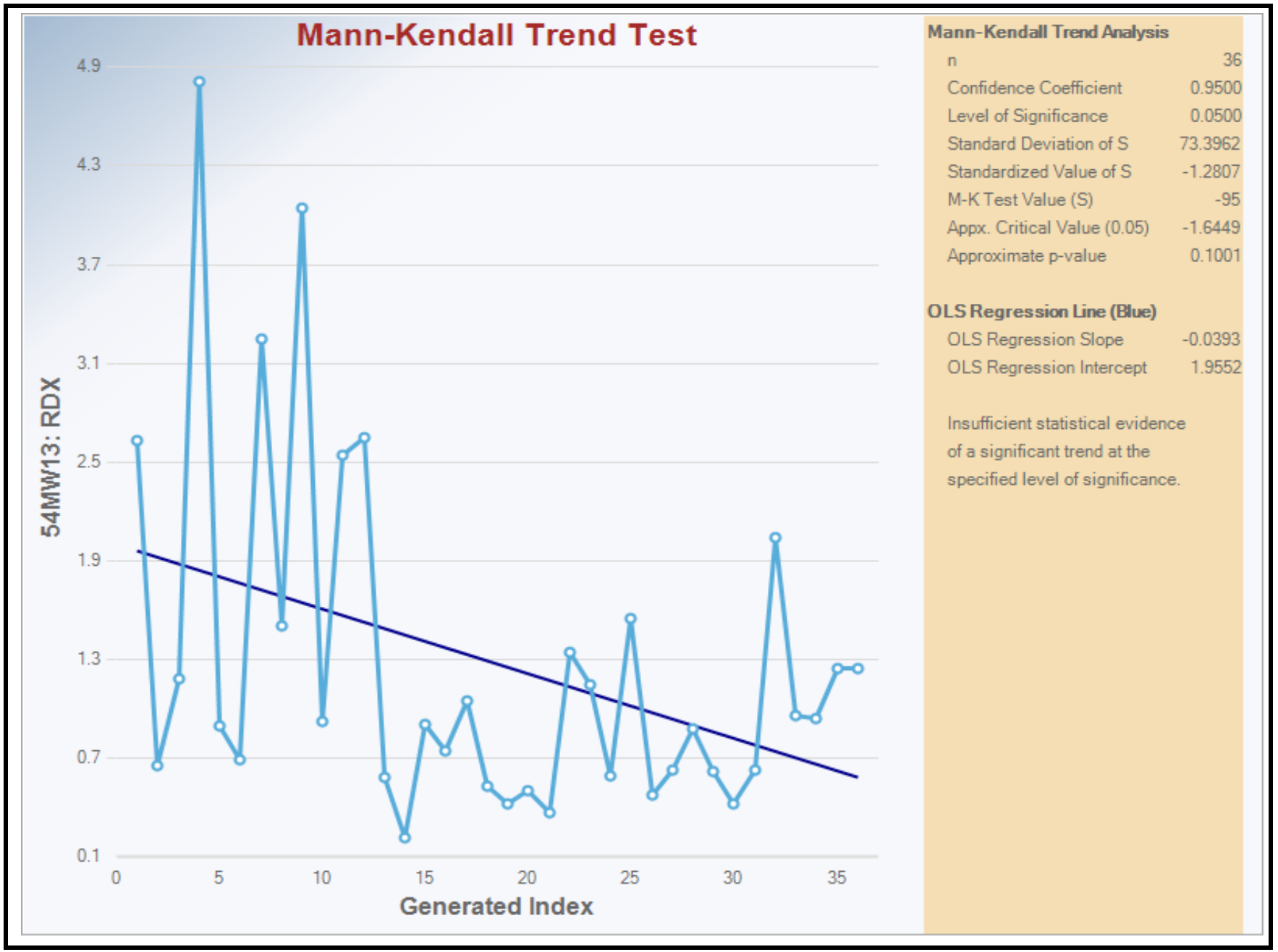
| | |
|---|---|
| n | 41 |
| Confidence Coefficient | 0.9500 |
| Level of Significance | 0.0500 |
| Standard Deviation of S | 89.0262 |
| Standardized Value of S | 3.6394 |
| M-K Test Value (S) | 325 |
| Appx. Critical Value (0.05) | 1.6449 |
| Approximate p-value | 0.0001 |

**OLS Regression Line (Blue)**

| | |
|---|---|
| OLS Regression Slope | 0.2575 |
| OLS Regression Intercept | 1.5928 |

Statistically significant evidence of an increasing trend at the specified level of significance.


Mann-Kendall Trend Test
54MW13: Perchlorate
Generated Index
0
2
4
6
8
0
8
16
24
32
40
Mann-Kendall Trend Analysis
n 41
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 88.9569
Standardized Value of S 0.4609
M-K Test Value (S) 42
Appx. Critical Value (0.05) 1.6449
Approximate p-value 0.3224
OLS Regression Line (Blue)
OLS Regression Slope 0.0142
OLS Regression Intercept 0.2190
Insufficient statistical evidence of a significant trend at the specified level of significance.


Mann-Kendall Trend Test
54MW13: RDX
Generated Index
4.9
4.3
3.7
3.1
2.5
1.9
1.3
0.7
0.1
0
5
10
15
20
25
30
35
Mann-Kendall Trend Analysis
n 36
Confidence Coefficient 0.9500
Level of Significance 0.0500
Standard Deviation of S 73.3962
Standardized Value of S -1.2807
M-K Test Value (S) -95
Appx. Critical Value (0.05) -1.6449
Approximate p-value 0.1001
OLS Regression Line (Blue)
OLS Regression Slope -0.0393
OLS Regression Intercept 1.9552
Insufficient statistical evidence of a significant trend at the specified level of significance.