

January 14, 2015

Mr. Ken Peterson  
PO Box 677  
Ellensburg, WA 98926

**Re: Groundwater Monitoring Report  
Ken's Auto Wash  
2013-2014 Annual Report  
7168-10**

Dear Mr. Peterson:

This letter report presents the results of the groundwater monitoring we conducted between August 2013 and November 2014 at Ken's Auto Wash at 1013 East University Way in Ellensburg, Washington (Figure 1).

This groundwater monitoring report was prepared on behalf of Mr. Ken Peterson of Ken's Auto Wash. Groundwater monitoring is being conducted following actions completed in compliance with an Agreed Order (dated December 23, 2013) with the Washington State Department of Ecology (Ecology) under the Model Toxics Control Act (MTCA – RCW 70.105D.040[5]).

## Project Background Summary

The site is affected by a petroleum hydrocarbon release discovered during tightness testing for a gasoline underground storage tank (UST) in 1996. Corrective actions were taken at that time, and the gasoline UST was subsequently removed with all other site USTs in April 2005 (June 7, 2005, Gasoline UST Closure Report by Hart Crowser). The former UST area is identified on Figure 2. Prior to UST removal, Hart Crowser removed a hotspot of accessible petroleum-impacted soil at the location shown on Figure 2 in October and November 2000. During the hotspot removal, oxygen-release compound (ORC) was added to the excavation backfill below the seasonal high water table elevation to promote biodegradation of remaining petroleum hydrocarbons. ORC was also injected in the area of affected groundwater immediately downgradient of the UST area in February 2005 (April 6, 2005, Supplemental Strataprobe Exploration Report by Hart Crowser).

Additional project and regulatory background information is presented in Hart Crowser's November 14, 2006, Remedial Investigation and Feasibility Study Report (RI/FS). The RI/FS identified monitored natural attenuation with free product removal as the preferred remedial action. No free product has



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been identified at the site since 2004. Hart Crowser is continuing to monitor groundwater to document site conditions.

In 2011, Hart Crowser implemented a bioremediation program to accelerate natural biological attenuation of petroleum at the site. The enhanced bioremediation program introduced remediation amendments (hydrocarbon-degrading microbes, surfactants, and nutrients) into existing monitoring wells to accelerate natural attenuation already occurring at the site over a series of three injection events, which occurred on January 31, May 3, and November 30, 2011. Based on groundwater monitoring data collected through February 2012, substantial petroleum destruction has occurred within the treatment zone (May 16, 2012, Bioremediation Data Report by Hart Crowser). However, the data also show that the biological oxidants have been consumed and one monitoring well (MW-14) continues to have petroleum concentrations above MTCA Method A cleanup levels.

## Groundwater Monitoring

Table 1 outlines the groundwater monitoring schedule for the Ken's Auto Wash site. Hart Crowser completed six groundwater monitoring events on:

- August 27, 2013 (quarterly event)
- November 19 and 20, 2013 (annual event)
- February 27, 2014 (quarterly event)
- May 23, 2014 (quarterly event)
- August 21, 2014 (quarterly event)
- November 20 and 21, 2014 (annual event)

Quarterly monitoring included sampling groundwater from four monitoring wells (MW-4R, MW-6, MW-13, and MW-14). Annual monitoring included sampling groundwater from eight monitoring wells (MW-2, MW-3, MW-4R, MW-5, MW-6, MW-13, MW-14, and MW-15). MW-12 is considered lost and possibly destroyed due to the regrading of the Fairgrounds unpaved parking lot after the November 2011 monitoring event. Monitoring well locations are identified on Figure 2. Groundwater was collected for analysis of:

- Gasoline-range petroleum hydrocarbons (TPH-G) by Ecology Method NWTPH-G;
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8021B;
- Nitrogen as nitrate and sulfate by EPA Method 300.0; and/or
- Total lead by EPA Method 6020 (November 2013 and 2014 events only).

In addition, ferrous iron was measured in the field using a Hach color disc. Nitrate, sulfate, and ferrous iron are being monitored to evaluate biodegradation trends at the site.



After measuring the depth to groundwater, samples were collected from the wells using standard low-flow sampling techniques. Each well was purged until the field parameters of pH, temperature, and specific conductivity met the stability criteria (i.e., specific conductivity  $\pm 10$  percent, pH  $\pm 0.1$  pH units, and temperature  $\pm 0.1^{\circ}\text{C}$ ). Following stabilization, field testing for ferrous iron was performed. Groundwater samples were collected for laboratory testing by directly filling pre-cleaned sample containers provided by the laboratory. The labeled sample containers were placed in coolers with ice. Samples were transferred under chain of custody protocol to Analytical Resources, Inc. (ARI) in Tukwila, Washington, for laboratory analysis.

## Groundwater Measurements

Table 2 presents the measured depth to groundwater from the top of the well casing and the calculated groundwater elevations. Figure 3a and 3b illustrates the groundwater elevation and interpolated groundwater elevation contours based on measurements taken during the November 2013 and November 2014 sampling events, respectively. The contours indicate that the groundwater gradient continues to be toward the southwest, which is also consistent with historical observations. Typically, groundwater elevations are high in the spring and low in the fall.

## Analytical Results

Analytical results are summarized in Table 3 for TPH-G, BTEX, and lead. Table 4 presents analytical data for other inorganic ions and field parameters. Table 5 documents the observed thickness of free-phase product from previous monitoring events. No free product has been observed since 2004, before removal of the site USTs and ORC injection in 2005. Figures 4 and 5 illustrate the occurrence of TPH-G and benzene in groundwater, respectively. Figures 6 and 7 illustrate the long-term trends in TPH-G and benzene concentrations in groundwater, respectively. Laboratory reports are provided in Appendix A.

## Data Observations

Based on the monitoring data from August and November 2013 and February, May, August, and November 2014, we observed the following.

- Monitoring results indicate that concentrations of TPH-G in the vicinity and downgradient of the former UST and hotspot soil excavations continue to be below MTCA cleanup levels with the exception of wells MW-14 and MW-6 that are located downgradient from the previous source area and UST excavation.
- Well MW-14 exhibited TPH-G concentrations ranging from 340  $\mu\text{g/L}$  (November 2014) to 1,400  $\mu\text{g/L}$  (February 2014). Well MW-6 had concentrations from non-detect at a reporting limit of 100  $\mu\text{g/L}$  (February 2014) to 920  $\mu\text{g/L}$  (May 2014).



- Benzene concentrations in site wells were non-detect at the specified reporting limit for all six groundwater monitoring events. Benzene has been non-detect since October 2008 (Figure 5). Given the lack of detectable benzene in site groundwater for the past 6 years, use of the TPH-G cleanup level of 1,000 µg/L for evaluating regulatory compliance appears to be appropriate at the Ken's Auto site.
- Ethylbenzene and xylene were detected in MW-6 during the May 2014 event at concentrations below the MTCA cleanup level of 700 and 1,000 µg/L, respectively. Ethylbenzene, toluene, and xylene were detected in MW-14 at concentrations below respective MTCA cleanup levels and continue to be non-detect in samples in the remaining wells.
- Total lead was only analyzed during the November 2013 and 2014 sampling events. Total lead was detected in six wells (MW-14, MW-2, MW-3, MW-4R, MW-5, and MW-6) at concentrations ranging from 0.1 to 4.5 µg/L, which is well below the MTCA cleanup level of 15 µg/L.
- Ferrous iron was detected in three wells (MW-14, MW-4R, and MW-6). Dissolved oxygen was detected in the site wells at concentrations varying between 0.05 and 6.02 mg/L. Low concentrations of dissolved oxygen and elevated concentrations of ferrous iron were typically found at and downgradient of the former UST area.
- Site monitoring also continued to include analysis of nitrate and sulfate to assess the bioremediation program. Well MW-14 has higher concentrations of nitrate and sulfate present than the other wells; however, the concentrations are significantly lower than when the bioremediation injections were implemented in 2011 indicating nutrients have been consumed by microbes.

## Conclusions

The observed TPH-G concentrations in well MW-14 suggest that residual TPH-G remains in the soil that was left in place near the utility line along University Way during the hotspot excavation in 2000. Natural attenuation is still occurring at the site and would likely continue to decrease TPH concentrations over time. To expedite the natural attenuation timeframe, we proposed performing additional bioremediation actions at the site.

The additional bioremediation lance injections are planned in early 2015 in the area where residual TPH-impacted soil was left in place. The lance injections will distribute biological and chemical oxidants to the impacted areas rather than injecting in wells for passive transport with the groundwater flow. These additional bioremediation lance injections will aggressively mobilize the residual TPH in soil and boost microbial activity for TPH destruction.



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We will conduct quarterly groundwater monitoring events beginning in 2015 to monitor treatment progress in selected wells through Fall 2016. Annual sampling should be completed in Fall of 2015 and 2016 for all monitoring wells.

## Limitations

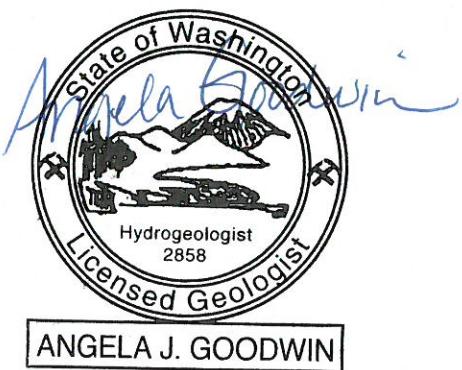
Work for this project was performed, and this letter report prepared, in accordance with generally accepted professional practices for the nature and conditions of the work completed in the same or similar localities, at the time the work was performed. It is intended for the exclusive use of Ken's Auto Wash for specific application to the referenced property. This report is not meant to represent a legal opinion. No other warranty, express or implied, is made.

Any questions regarding our work and this letter report, the presentation of the information, and the interpretation of the data are welcome and should be referred to the undersigned.

We trust that this report meets your needs.

Sincerely,

**HART CROWSER, INC.**



**ANGIE GOODWIN, LG**  
Project Hydrogeologist



**MICHAEL W. EHLEBRACHT, LG, LHG**  
Principal



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Attachments:

- Table 1 - Groundwater Monitoring Schedule
- Table 2 - Groundwater Elevation Data
- Table 3 - Summary of Groundwater Chemistry Data – TPH-G, BTEX, and Lead
- Table 4 - Summary of Groundwater Chemistry Data – Other Compounds
- Table 5 - Measured Free Product Thickness in Well MW-1/MW-14
- Figure 1 - Vicinity Map
- Figure 2 - Site and Well Location Plan
- Figure 3a - Groundwater Elevation Contour Map, November 2013
- Figure 3b - Groundwater Elevation Contour Map, November 2014
- Figure 4 - TPH-G Occurrences in Groundwater
- Figure 5 - Benzene Occurrences in Groundwater
- Figure 6 - Long-Term Trends in TPH-G Concentrations in Groundwater
- Figure 7 - Long-Term Trends in Benzene Concentrations in Groundwater
- Appendix A – Chemical Data Quality Review and Laboratory Reports

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**Table 1 - Groundwater Monitoring Schedule**

Well	Purpose	2003	2004	2005	2006	2007	2008	2009	2010
MW-2	Bound Plume - East	Quarterly	Quarterly	Biannual	<sup>a</sup>	Biannual	Biannual	<sup>a</sup>	Annual
MW-3	Background	Quarterly	Quarterly	Biannual	<sup>a</sup>	Biannual	Biannual	<sup>a</sup>	Annual
MW-4/4R	Source Area (Upgradient Edge)	Quarterly	Quarterly	Biannual	Biannual	Biannual	Biannual	Annual	Annual
MW-5	Bound Plume - West	Quarterly	Quarterly	Biannual	Biannual	Biannual	Biannual	Annual	Annual
MW-6	Plume Extent	Quarterly	Quarterly	Biannual	<sup>a</sup>	Biannual	Biannual	<sup>a</sup>	Annual
MW-12	Bound Plume - Southwest	Quarterly	Quarterly	Biannual	Biannual	Biannual	Biannual	Annual	Annual
MW-13	Bound Plume - South	Quarterly	Quarterly	Biannual	<sup>a</sup>	Biannual	Biannual	<sup>a</sup>	Annual
MW-14	Source Area	Quarterly	Quarterly	Biannual	Biannual	Biannual	Biannual	Annual	Annual
MW-15	Bound Plume - Southeast	Quarterly	Quarterly	Biannual	<sup>a</sup>	Biannual	Biannual	<sup>a</sup>	Annual

Well	Purpose	2011	2012	2013	2014	2015	2016
MW-2	Bound Plume - East	Annual <sup>b</sup>	Annual	Annual	Annual	Annual	Annual
MW-3	Background	Quarterly <sup>b</sup>	Annual	Annual	Annual	Annual	Annual
MW-4/4R	Source Area (Upgradient Edge)	Quarterly <sup>b</sup>	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly
MW-5	Bound Plume - West	Annual <sup>b</sup>	Annual	Annual	Annual	Annual	Annual
MW-6	Plume Extent	Quarterly <sup>b</sup>	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly
MW-12 <sup>c</sup>	Bound Plume - Southwest	Annual <sup>b</sup>	Annual	Annual	Annual	Annual	Annual
MW-13	Bound Plume - South	Annual <sup>b</sup>	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly
MW-14	Source Area	Quarterly <sup>b</sup>	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly
MW-15	Bound Plume - Southeast	Annual <sup>b</sup>	Annual	Annual	Annual	Annual	Annual

Notes:

Biannual refers to twice yearly events targeted during spring (Q2) and fall (Q4). Annual refers to the fall (Q4) event. Biannual and annual monitoring schedules will be based on estimated seasonal high and low groundwater elevations.

Monitoring will include measurement of groundwater elevation and dissolved oxygen and collection of a groundwater sample for analysis by NWTPH-G/BTEX and the annual event will also include total lead.

Monitoring also includes collection of groundwater samples for analysis for nitrate, nitrite, sulfate, and/or ferrous iron.

a Although not strictly required, wells MW-2, MW-3, MW-6, MW-13, and MW-15 were monitored and sampled during the fall of 2006 and 2009.

b Quarterly monitoring is part of the Bioremediation Work Plan, dated November 22, 2010.

c Well MW-12 has been lost or destroyed during regrading of the Fairgrounds unpaved parking area post-November 2011 monitoring event.

**Table 2 - Groundwater Elevation Data**

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**Measured Depth to Groundwater in Feet**

Well No.	8-Apr-96	5-Jan-98	5-Feb-98	5-Mar-98	6-Apr-98	5-May-98	5-Jun-98	6-Jul-98	5-Aug-98	4-Sep-98	5-Oct-98	5-Nov-98	29-Dec-99	21-Mar-00
MW-1	6.85	na	7.67	8.01	8.38	6.88	6.94	7.50	7.69	7.82	7.85	8.33	9.65	8.51
MW-14 (b)	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-2	6.70	7.53	6.50	6.88	7.18	5.69	5.79	6.19	6.55	6.58	7.70	7.06	7.23	7.18
MW-3	8.08	8.42	7.65	8.01	8.17	6.71	7.50	7.42	7.51	7.66	7.80	8.28	8.41	8.29
MW-4	---	7.84	7.17	7.43	7.67	6.42	6.57	6.90	7.01	7.14	7.21	7.62	7.68	7.60
MW-4R (c)	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	---	8.23	7.15	7.45	7.96	6.24	6.34	6.65	7.16	7.29	7.41	7.94	7.52	7.32
MW-6	---	9.70	8.67	9.13	9.46	8.14	8.21	8.66	8.87	9.01	9.05	9.51	8.60	8.36
MW-12 (d)	---	---	---	---	---	---	---	---	---	---	---	---	6.91	6.64
MW-13	---	---	---	---	---	---	---	---	---	---	---	---	5.42	5.33
MW-15	---	---	---	---	---	---	---	---	---	---	---	---	---	---

**Groundwater Elevation in Feet**

Well No.	TOC Elev. (a)	8-Apr-96	5-Jan-98	5-Feb-98	5-Mar-98	6-Apr-98	5-May-98	5-Jun-98	6-Jul-98	5-Aug-98	4-Sep-98	5-Oct-98	5-Nov-98	29-Dec-99	21-Mar-00
MW-1	1588.38	1581.53	na	1580.71	1580.37	1580.00	1581.50	1581.44	1580.88	1580.69	1580.56	1580.53	1580.05	1578.73	1579.87
MW-14 (b)	1588.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-2	1588.92	1582.22	1581.39	1582.42	1582.04	1581.74	1583.23	1583.13	1582.73	1582.37	1582.34	1581.22	1581.86	1581.69	1581.74
MW-3	1591.43	1583.35	1583.01	1583.78	1583.42	1583.26	1584.72	1583.93	1584.01	1583.92	1583.77	1583.63	1583.15	1583.02	1583.14
MW-4	1589.50	---	1581.66	1582.33	1582.07	1581.83	1583.08	1582.93	1582.60	1582.49	1582.36	1582.29	1581.88	1581.82	1581.90
MW-4R (c)	1588.76	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	1587.75	---	1579.52	1580.60	1580.30	1579.79	1581.51	1581.41	1581.10	1580.59	1580.46	1580.34	1579.81	1580.23	1580.43
MW-6	1587.72	---	1578.02	1579.05	1578.59	1578.26	1579.58	1579.51	1579.06	1578.85	1578.71	1578.67	1578.21	1579.12	1579.36
MW-12 (d)	1585.41	---	---	---	---	---	---	---	---	---	---	---	---	1578.50	1578.77
MW-13	1582.45	---	---	---	---	---	---	---	---	---	---	---	---	1577.03	1577.12
MW-15	1588.39	---	---	---	---	---	---	---	---	---	---	---	---	---	---

**Table 2 - Groundwater Elevation Data**

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**Measured Depth to Groundwater in Feet**

Well No.	14-Jun-00	12-Sep-00	30-Jan-01	26-Apr-01	29-Jul-01	27-Oct-01	15-Nov-02	9-May-03	30-Sep-03	11-Dec-03	31-Mar-04	2-Jun-04	30-Sep-04	14-Dec-04
MW-1	7.08	7.85	---	---	---	---	---	---	---	---	---	---	---	---
MW-14 (b)	---	---	8.55	8.35	7.01	9.02	8.90	6.23	8.05	8.58	8.32	6.28	7.79	8.45
MW-2	6.10	6.70	7.54	7.11	6.23	7.64	7.61	5.95	6.81	7.03	7.05	5.94	6.69	7.07
MW-3	7.42	7.92	8.70	7.67	7.28	8.66	8.63	6.89	8.06	8.48	8.30	6.98	7.92	8.64
MW-4	6.80	7.23	8.08	7.85	6.93	8.09	8.04	6.71	7.65	7.81	7.70	6.62	7.44	7.86
MW-4R (c)	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	6.25	6.87	na	7.98	6.29	7.97	8.05	6.19	7.55	7.83	7.59	6.14	---	9.21
MW-6	7.70	8.07	na	9.28	8.09	9.44	9.37	7.91	8.90	9.19	9.00	7.82	8.88	9.49
MW-12 (d)	6.05	6.36	na	7.30	6.38	7.13	7.52	6.50	7.25	7.38	7.18	6.40	7.31	7.81
MW-13	4.70	4.98	na	5.74	4.67	5.78	---	---	5.32	5.73	5.49	4.63	5.18	5.81
MW-15	---	---	9.23	8.83	7.59	9.30	9.08	7.38	8.55	8.67	8.85	7.31	8.33	9.20

**Groundwater Elevation in Feet**

Well No.	TOC Elev. (a)	14-Jun-00	12-Sep-00	30-Jan-01	26-Apr-01	29-Jul-01	27-Oct-01	15-Nov-02	9-May-03	30-Sep-03	11-Dec-03	31-Mar-04	2-Jun-04	30-Sep-04	14-Dec-04
MW-1	1588.38	1581.30	1580.53	---	---	---	---	---	---	---	---	---	---	---	
MW-14 (b)	1588.4	---	---	1579.85	1580.05	1581.39	1579.38	1579.50	1582.17	1580.35	1579.82	1580.08	1582.12	1580.61	1579.95
MW-2	1588.92	1582.82	1582.22	1581.38	1581.81	1582.69	1581.28	1581.31	1582.97	1582.11	1581.89	1581.87	1582.98	1582.23	1581.85
MW-3	1591.43	1584.01	1583.51	1582.73	1583.76	1584.15	1582.77	1582.80	1584.54	1583.37	1582.95	1583.13	1584.45	1583.51	1582.79
MW-4	1589.50	1582.70	1582.27	1581.42	1581.65	1582.57	1581.41	1581.46	1582.79	1581.85	1581.69	1581.80	1582.88	1582.06	1581.64
MW-4R (c)	1588.76	---	---	---	---	---	---	---	---	---	---	---	---	---	
MW-5	1587.75	1581.50	1580.88	na	1579.77	1581.46	1579.78	1579.70	1581.56	1580.20	1579.92	1580.16	1581.61	---	1578.54
MW-6	1587.72	1580.02	1579.65	na	1578.44	1579.63	1578.28	1578.35	1579.81	1578.82	1578.53	1578.72	1579.90	1578.84	1578.23
MW-12 (d)	1585.41	1579.36	1579.05	na	1578.11	1579.03	1578.28	1577.89	1578.91	1578.16	1578.03	1578.23	1579.01	1578.10	1577.60
MW-13	1582.45	1577.75	1577.47	na	1576.71	1577.78	1576.67	---	---	1577.13	1576.72	1576.96	1577.82	1577.27	1576.64
MW-15	1588.39	---	---	1579.16	1579.56	1580.80	1579.09	1579.31	1581.01	1579.84	1579.72	1579.54	1581.08	1580.06	1579.19

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**Table 2 - Groundwater Elevation Data**

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**Measured Depth to Groundwater in Feet**

Well No.	4-Apr-05	6-Oct-05	28-Jun-06	13-Nov-06	25-May-07	8-Nov-07	4-Jun-08	21-Oct-08	14-Oct-09	15-Nov-10	2-May-11	27-Jul-11	2-Nov-11	13-Feb-12
MW-1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-14 (b)	8.63	7.83	6.15	7.57	5.23	8.04	5.20	7.57	7.20	8.11	5.88	6.57	7.91	7.35
MW-2	7.57	7.21	nm	7.01	5.56	7.18	5.46	6.80	6.77	7.23	nm	nm	7.20	nm
MW-3	8.80	8.37	nm	8.13	6.72	8.52	6.52	8.17	8.00	8.64	6.75	7.45	8.75	8.29
MW-4	8.02	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-4R (c)	---	7.78	6.01	6.23	5.45	6.92	5.39	6.60	6.51	6.94	5.84	6.00	6.88	6.71
MW-5	8.32	7.73	6.38	7.32	5.83	7.97	5.82	7.40	7.12	7.99	nm	nm	7.79	nm
MW-6	9.78	9.14	nm	8.79	7.56	9.22	7.43	8.84	8.58	9.20	7.90	8.16	9.36	9.13
MW-12 (d)	7.89	7.51	6.90	7.20	6.41	7.62	6.30	7.30	7.16	7.63	nm	nm	7.61	---
MW-13	5.16	5.56	nm	5.91	4.46	5.68	4.43	5.40	5.11	5.60	4.85	4.88	5.64	5.45
MW-15	9.40	8.02	nm	8.49	6.98	8.96	6.90	8.57	8.22	9.04	nm	nm	9.04	nm

**Groundwater Elevation in Feet**

Well No.	TOC Elev. (a)	4-Apr-05	6-Oct-05	28-Jun-06	13-Nov-06	25-May-07	8-Nov-07	4-Jun-08	21-Oct-08	14-Oct-09	15-Nov-10	2-May-11	27-Jul-11	2-Nov-11	13-Feb-12
MW-1	1588.38	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-14 (b)	1588.4	1579.77	1580.57	1582.25	1580.83	1583.17	1580.36	1583.20	1580.83	1581.20	1580.29	1582.52	1581.83	1580.49	1581.05
MW-2	1588.92	1581.35	1581.71	nm	1581.91	1583.36	1581.74	1583.46	1582.12	1582.15	1581.69	nm	nm	1581.72	nm
MW-3	1591.43	1582.63	1583.06	nm	1583.30	1584.71	1582.91	1584.91	1583.26	1583.43	1582.79	1584.68	1583.98	1582.68	1583.14
MW-4	1589.50	1581.48	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-4R (c)	1588.76	---	1580.98	1582.75	1582.53	1583.31	1581.84	1583.37	1582.16	1582.25	1581.82	1582.92	1582.76	1581.88	1582.05
MW-5	1587.75	1579.43	1580.02	1581.37	1580.43	1581.92	1579.78	1581.93	1580.35	1580.63	1579.76	nm	nm	1579.96	nm
MW-6	1587.72	1577.94	1578.58	nm	1578.93	1580.16	1578.50	1580.29	1578.88	1579.14	1578.52	1579.82	1579.56	1578.36	1578.59
MW-12 (d)	1585.41	1577.52	1577.90	1578.51	1578.21	1579.00	1577.79	1579.11	1578.11	1578.25	1577.78	nm	nm	1577.80	---
MW-13	1582.45	1577.29	1576.89	nm	1576.54	1577.99	1576.77	1578.02	1577.05	1577.34	1576.85	1577.60	1577.57	1576.81	1577.00
MW-15	1588.39	1578.99	1580.37	nm	1579.90	1581.41	1579.43	1581.49	1579.82	1580.17	1579.35	nm	nm	1579.35	nm

Hart Crowser

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**Table 2 - Groundwater Elevation Data**

Sheet 4 of 4

**Measured Depth to Groundwater in Feet**

Well No.	23-May-12	22-Aug-12	6-Nov-12	27-Aug-13	19-Nov-13	27-Feb-14	23-May-14	21-Aug-14	20-Nov-14
MW-1	---	---	---	---	---	---	---	---	---
MW-14 (b)	5.25	7.05	7.52	6.89	8.16	7.65	5.34	7.55	7.55
MW-2	5.30	6.60	6.90	6.66	7.16	nm	5.72	6.85	7.59
MW-3	6.52	7.88	8.56	7.93	8.68	nm	6.75	8.00	9.20
MW-4	---	---	---	---	---	---	---	---	---
MW-4R (c)	5.35	6.38	6.70	6.44	6.83	7.03	5.56	6.55	7.15
MW-5	5.82	6.78	7.30	6.89	7.75	nm	5.96	7.30	8.25
MW-6	7.28	8.46	8.78	8.15	9.12	9.49	7.62	8.90	9.69
MW-12 (d)	---	---	---	---	---	---	---	---	---
MW-13	4.31	5.12	5.49	5.10	5.53	5.82	6.26	5.38	6.05
MW-15	6.74	8.18	8.82	8.17	8.93	nm	7.08	8.60	9.60

**Groundwater Elevation in Feet**

Well No.	TOC Elev. (a)	23-May-12	22-Aug-12	6-Nov-12	27-Aug-13	19-Nov-13	27-Feb-14	23-May-14	21-Aug-14	20-Nov-14
MW-1	1588.38	---	---	---	---	---	---	---	---	---
MW-14 (b)	1588.4	1583.15	1581.35	1580.88	1581.51	1580.24	1580.75	1583.06	1580.85	1580.85
MW-2	1588.92	1583.62	1582.32	1582.02	1582.26	1581.76	nm	1583.20	1582.07	1581.33
MW-3	1591.43	1584.91	1583.55	1582.87	1583.50	1582.75	nm	1584.68	1583.43	1582.23
MW-4	1589.50	---	---	---	---	---	---	---	---	---
MW-4R (c)	1588.76	1583.41	1582.38	1582.06	1582.32	1581.93	1581.73	1583.20	1582.21	1581.61
MW-5	1587.75	1581.93	1580.97	1580.45	1580.86	1580.00	nm	1581.79	1580.45	1579.50
MW-6	1587.72	1580.44	1579.26	1578.94	1579.57	1578.60	1578.23	1580.10	1578.82	1578.03
MW-12 (d)	1585.41	---	---	---	---	---	---	---	---	---
MW-13	1582.45	1578.14	1577.33	1576.96	1577.35	1576.92	1576.63	1576.19	1577.07	1576.40
MW-15	1588.39	1581.65	1580.21	1579.57	1580.22	1579.46	nm	1581.31	1579.79	1578.79

## Notes:

- (a) TOC Elevation = top of casing elevations are surveyed relative to Mean Sea Level by Sage Environmental.  
MW-12 and MW-13 were surveyed relative to existing well MW-1, and existing wells MW-5 and MW-6 were re-surveyed and corrected slightly.  
(b) Well MW-1 replaced as well MW-14 by Hart Crowser and resurveyed following remediation work in November 2000.  
(c) Well MW-4 replaced as well MW-4R by Hart Crowser in October 2005 and resurveyed following UST removal activities in April 2005.  
(d) Well MW-12 has been lost or destroyed during regrading of the Fairgrounds unpaved parking area post-November 2011 monitoring event.  
--- Well not installed or not available as of date indicated.

nm Indicates well was not measured.

Hart Crowser

**Table 3 - Summary of Groundwater Chemistry Data - TPH-G, BTEX, and Lead**

Well ID	Date Sampled	Concentration in µg/L					Concentration in µg/L	
		TPH-Gasoline	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Total Lead	Diss. Lead
MW-1	4/8/1996	<b>160,000</b>	<b>2,500</b>	<b>19,000</b>	<b>3,000</b>	<b>21,000</b>	<b>65</b>	--
	1/5/1998	--	--	--	--	--	--	--
	4/6/1998	<b>100,000</b>	<b>180</b>	<b>260</b>	<b>940</b>	<b>9,800</b>	<b>180</b>	--
	7/6/1998	<b>93,000</b>	<b>110</b>	<b>200</b>	<b>760</b>	<b>8,800</b>	<b>220</b>	--
	10/5/1998	--	--	--	--	--	--	--
	12/29/1999	<b>21,600</b>	<b>87.4</b>	<b>47.7</b>	<b>657</b>	<b>3,900</b>	--	<b>21.3</b>
	3/21/2000	<b>19,800</b>	<b>94.1</b>	<b>59.6</b>	<b>479</b>	<b>2,710</b>	--	<b>16.5</b>
	6/14/2000	<b>18,800</b>	<b>94.9</b>	<b>26.4</b>	<b>471</b>	<b>2,870</b>	--	<b>8</b>
	9/12/2000	<b>21,400</b>	<b>111</b>	<b>35.1</b>	<b>496</b>	<b>2,930</b>	--	<b>6.54</b>
MW-14 (Replaces MW-1)	1/30/2001	<b>7,450</b>	<b>19.3</b>	<b>14</b>	<b>424</b>	<b>673</b>	--	--
	4/26/2001	<b>26,100</b>	<b>37.2</b>	<b>29.7</b>	<b>580</b>	<b>2,680</b>	--	--
	7/29/2001	<b>14,200</b>	<b>10.3</b>	<b>14.2</b>	<b>318</b>	<b>1,480</b>	--	--
	10/27/2001	<b>9,970</b>	<b>46.4</b>	<b>4.55</b>	<b>187</b>	<b>707</b>	--	--
	11/15/2002	<b>8,380</b>	<b>11</b>	<b>2.5</b>	<b>U</b>	<b>122</b>	<b>357</b>	--
	5/9/2003	<b>4,520</b>	<b>2.62</b>	<b>0.5</b>	<b>U</b>	<b>0.775</b>	<b>172</b>	<b>5.33</b>
	9/30/2003	<b>6,230</b>	J	<b>11.7</b>	J	<b>1.61</b>	J	<b>369</b>
	12/11/2003	<b>5,890</b>	<b>12.6</b>	<b>5.0</b>	<b>U</b>	<b>5.0</b>	<b>U</b>	<b>271</b>
	3/31/2004	<b>6,270</b>	<b>12.6</b>	<b>5</b>	<b>U</b>	<b>80.4</b>	<b>168.4</b>	<b>4.85</b>
	6/2/2004	<b>3,790</b>	J	<b>2.36</b>	J	<b>0.5</b>	<b>U</b>	<b>26.9</b>
	9/30/2004	<b>5,700</b>	J	<b>5.52</b>	<b>2.5</b>	<b>U</b>	<b>82.1</b>	<b>256</b>
	12/14/2004	<b>5,500</b>	J	<b>4.36</b>	<b>0.643</b>	<b>66.1</b>	<b>178</b>	--
	4/4/2005	<b>8,100</b>	J	<b>6.89</b>	<b>0.746</b>	<b>75.8</b>	<b>221</b>	--
	10/6/2005	<b>4,070</b>	J	<b>7.85</b>	<b>0.5</b>	<b>U</b>	<b>43.1</b>	<b>62.8</b>
	6/28/2006	533	0.545	0.5	U	0.593	5.34	3.41
	11/13/2006	496	0.933	0.5	U	6.89	5.99	3.03
	5/25/2007	54	0.5	U	0.5	U	1	U
	11/7/2007	<b>3,050</b>	<b>7.6</b>	<b>2.58</b>	<b>28.1</b>	<b>20</b>	<b>2.31</b>	--
	6/4/2008	50	U	0.5	U	0.5	U	1
	10/21/2008	<b>2,040</b>	4.76	0.5	U	16.6	15.1	1.85
	10/14/2009	<b>2,030</b>	12.2	U	0.844	U	18.9	33.8
	11/15/2010	<b>2,500</b>	0.25	U	1.0	UJ	7.6	10.7
	5/2/2011	<b>3,100</b>	1.0	U	1.7	1.4	1.3	--
	7/27/2011	<b>3,700</b>	1.0	U	1.2	3.0	2.8	--
	11/2/2011	<b>1,200</b>	0.25	U	0.3	U	3.4	1.8
	2/13/2012	<b>2,200</b>	0.25	U	0.25	U	1.8	8.6
	5/23/2012	250	U	1.00	U	1.00	U	2.00
	8/22/2012	<b>870</b>	0.25	U	0.26	0.27	0.81	--
	11/6/2012	<b>1,200</b>	0.25	U	0.40	3.60	2.81	10.9
	8/27/2013	580	J	0.25	UJ	0.25	UJ	0.50

**Table 3 - Summary of Groundwater Chemistry Data - TPH-G, BTEX, and Lead**

Well ID	Date Sampled	Concentration in µg/L					Concentration in µg/L	
		TPH-Gasoline	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Total Lead	Diss. Lead
MW-14 Cont.	11/19/2013	1,100	0.25	U	0.49	1.30	0.50	U
	2/27/2014	1,400	J	0.25	U	0.25	U	0.54
	5/23/2014	1,100	J	0.25	UJ	0.25	UJ	0.50
	8/21/2014	1,100	J	0.25	UJ	0.25	UJ	1.10
	11/20/2014	340	0.25	U	0.25	U	0.75	0.57
MW-2	4/8/1996	50	U	1	U	1	U	1
	1/5/1998	50	U	1	U	1	U	1
	4/6/1998	50	U	1	U	1	U	5
	7/6/1998	50	U	1	U	1	U	21
	10/5/1998	50	U	1	U	1	U	34
	12/29/1999	50	U	0.5	U	0.5	U	--
	3/21/2000	50	U	0.5	U	0.5	U	--
	6/14/2000	50	U	0.5	U	0.55	3.41	--
	9/12/2000	50	U	0.5	U	0.5	U	--
	1/30/2001	50	U	0.5	U	0.5	U	--
	4/26/2001	50	U	0.5	U	0.5	U	--
	7/29/2001	50	U	0.5	U	0.5	U	--
	10/27/2001	50	U	0.5	U	0.5	U	--
	11/15/2002	50	U	0.5	U	0.5	U	--
MW-2	5/9/2003	50	U	0.5	U	0.5	U	1
	9/30/2003	50	U	0.5	U	0.5	U	2.61
	12/11/2003	50	U	0.5	U	0.5	U	1
	3/31/2004	13,000	10	U	119	180	2,541	J
	6/2/2004	1,480	2.10	0.5	U	0.5	U	11.0
	9/30/2004	1,290	J	2.40	0.5	U	0.859	5.11
	12/14/2004	50	U	0.5	U	0.5	U	--
	4/4/2005	101	0.5	U	0.5	U	0.5	U
	10/6/2005	160	0.741	0.5	U	0.5	U	1
	6/28/2006	--	--	--	--	--	--	--
	11/13/2006	50	U	0.5	U	0.5	U	1
	5/25/2007	50	U	0.5	U	0.5	U	--
	11/7/2007	50	U	0.5	U	0.5	U	1
	6/4/2008	50	U	0.5	U	0.5	U	1
	10/21/2008	50	U	0.5	U	0.5	U	20.8
	10/14/2009	80	U	0.5	U	0.5	U	2
	11/15/2010	100	U	0.25	U	0.5	U	0.75
	11/2/2011	100	U	0.25	U	0.25	U	0.75
	11/6/2012	100	U	0.25	U	0.25	U	0.75

**Table 3 - Summary of Groundwater Chemistry Data - TPH-G, BTEX, and Lead**

Well ID	Date Sampled	Concentration in µg/L					Concentration in µg/L	
		TPH-Gasoline	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Total Lead	Diss. Lead
MW-2 Cont.	11/19/2013	100 U	0.25 U	0.25 U	0.25 U	0.5 U	0.1	--
	11/20/2014	100 U	0.25 U	0.25 U	0.25 U	0.5 U	0.1 U	--
MW-3	4/8/1996	50 U	1 U	1 U	1 U	1 U	5 U	--
	1/5/1998	50 U	1 U	1 U	1 U	1 U	5 U	--
	4/6/1998	50 U	1 U	1 U	1 U	1 U	5 U	--
	7/6/1998	50 U	1 U	1 U	1 U	1 U	5 U	--
	10/5/1998	50 U	1 U	1 U	1 U	1 U	3.8	--
	12/29/1999	50 U	0.5 U	0.5 U	0.5 U	1 U	--	1 U
	3/21/2000	50 U	0.5 U	0.5 U	0.5 U	1 U	--	1 U
	6/14/2000	50 U	0.5 U	0.85	0.5 U	1 U	--	1 U
	9/12/2000	50 U	0.5 U	0.5 U	0.5 U	1 U	--	1 U
	1/30/2001	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	4/26/2001	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	7/29/2001	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	10/27/2001	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	11/15/2002	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	5/9/2003	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	9/30/2003	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	12/11/2003	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	3/31/2004	50 U	0.2 U	0.2 U	0.2 U	0.5 U	1 U	--
	6/2/2004	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	9/30/2004	50 UJ	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	12/14/2004	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	4/4/2005	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	10/6/2005	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	6/28/2006	--	--	--	--	--	--	--
	11/13/2006	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	5/25/2007	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	11/8/2007	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	6/4/2008	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	10/21/2008	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	10/14/2009	80 U	0.5 U	0.5 U	0.5 U	1 U	2 U	--
	11/15/2010	100 U	0.25 U	0.5 U	0.25 U	0.75 U	1 U	--
	5/2/2011	250 U	1.0 U	1.0 U	1.0 U	2.0 U	--	--
	7/27/2011	250 U	1.0 U	1.0 U	1.0 U	2.0 U	--	--
	11/2/2011	100 U	0.25 U	0.25 U	0.25 U	0.75 U	0.1 U	--
	2/13/2012	100 U	0.25 U	0.25 U	0.25 U	0.75 U	--	--
	11/6/2012	100 U	0.25 U	0.25 U	0.25 U	0.75 U	0.1 U	--

**Table 3 - Summary of Groundwater Chemistry Data - TPH-G, BTEX, and Lead**

Well ID	Date Sampled	Concentration in µg/L					Concentration in µg/L					
		TPH-Gasoline	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Total Lead	Diss. Lead				
MW-3 Cont.	11/19/2013	100	U	0.25	U	0.25	U	0.5	U	0.1	U	--
	11/20/2014	100	U	0.25	U	0.25	U	0.5	U	0.2	--	--
MW-4	1/5/1998	200	1	U	27	1	3	10	5	U	--	--
	4/6/1998	400	3		14	1	6	5	U	--	--	--
	7/6/1998	50	U	1	U	3	1	U	5	U	--	--
	10/5/1998	150	1	U	7	1	U	1	U	2	--	--
	12/29/1999	301	<b>51.4</b>		32.5	0.5	U	6.08	--	1	U	--
	3/21/2000	414	<b>44.8</b>		28.2	1.92	3.2	U	--	1	U	--
	6/14/2000	439	<b>69.7</b>		4.91	2.01	6.8	--	--	1	U	--
	9/12/2000	101	4.49		0.5	U	0.5	U	--	1	U	--
	1/31/2001	182	2.22		1.17	U	0.5	U	1.33	U	--	--
	4/26/2001	673	<b>8.79</b>		4.73	4.28	28.6	--	--	--	--	--
	7/29/2001	402	<b>24.3</b>		16.3	2.84	14.8	--	--	--	--	--
	10/27/2001	200	<b>24.9</b>		2.62	1.15	6.57	--	--	--	--	--
	11/15/2002	75.6	0.858		0.5	U	0.5	U	1	U	--	--
	5/9/2003	61.8	0.5	U	0.5	U	0.5	U	1	U	1	U
	9/30/2003	161	0.730		0.5	U	2.59	2.59	--	1	U	--
	12/11/2003	50	U	0.5	U	0.5	U	1	U	3.22	--	--
	3/31/2004	267	<b>29.0</b>		1.43	1	U	2.94	--	1	U	--
	6/2/2004	140	<b>46.4</b>		4.2	0.5	U	1	U	1	U	--
	9/30/2004	88.7	J	0.5	U	0.5	U	1.83	1	U	1	U
	12/14/2004	50	U	0.5	U	0.5	U	0.5	U	--	--	--
MW-4R	4/4/2005	112	1.93		0.5	U	0.5	U	1	U	--	--
(Replaces MW-4)	10/6/2005	744	0.929		0.5	U	9.31	3.57	19	--	--	--
	6/28/2006	50	U	0.5	U	0.5	U	0.5	U	1	U	--
	11/13/2006	107	0.5	U	0.5	U	0.5	U	1	U	5.82	--
	5/25/2007	50	U	0.5	U	0.5	U	0.5	U	--	--	--
	11/7/2007	75.2	0.5	U	0.5	U	0.5	U	1	U	0.325	--
	6/4/2008	50	U	0.5	U	0.5	U	0.5	U	1	U	--
	10/21/2008	50	U	0.5	U	0.5	U	0.5	U	1	U	6.98
	10/14/2009	80	U	0.5	U	0.5	U	0.5	U	1	U	2
	11/15/2010	100	U	0.25	U	0.5	U	0.25	U	0.75	U	1
	5/2/2011	250	U	1.0	U	1.6	1.0	U	2.0	U	--	--
	7/27/2011	980	1.0	U	250	1.0	U	2.0	U	--	--	--
	11/2/2011	100	U	0.25	U	14	0.25	U	0.75	U	0.1	--
	2/13/2012	100	U	0.25	U	0.25	U	0.25	U	0.75	U	--
	5/23/2012	250	U	1.00	U	1.00	U	1.00	U	2.00	U	--
	8/22/2012	100	U	0.25	U	0.25	U	0.25	U	0.75	U	--

**Table 3 - Summary of Groundwater Chemistry Data - TPH-G, BTEX, and Lead**

Well ID	Date Sampled	Concentration in µg/L					Concentration in µg/L	
		TPH-Gasoline	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Total Lead	Diss. Lead
MW-4R Cont.	11/6/2012	100 U	0.25 U	0.25 U	0.25 U	0.75 U	0.1 U	--
	8/27/2013	100 UJ	0.25 UJ	0.25 UJ	0.25 UJ	0.50 UJ	--	--
	11/19/2013	100 U	0.25 U	0.25 U	0.25 U	0.50 U	0.1	--
	2/27/2014	100 U	0.25 U	0.25 U	0.25 U	0.50 U	--	--
	5/23/2014	100 UJ	0.25 UJ	0.25 UJ	0.25 UJ	0.50 UJ	--	--
	8/21/2014	100 UJ	0.25 UJ	0.25 UJ	0.25 UJ	0.50 UJ	--	--
	11/20/2014	100 U	0.25 U	0.25 U	0.25 U	0.50 U	0.1	--
MW-5	1/5/1998	<b>6200</b>	1	57	3	160	5 U	--
	4/6/1998	<b>2800</b>	2	30	2	27	5 U	--
	7/6/1998	50 U	1 U	1 U	1 U	1 U	10	--
	10/5/1998	<b>4700</b>	2	39	16	94	7.4	--
	12/29/1999	779	2.96	0.69	9.03	27.4	--	1 U
	3/21/2000	519	0.5 U	13.9	4.95	3.6	--	1 U
	6/14/2000	708	3.45 U	1.17 U	1.08	1 U	--	1 U
	9/12/2000	50 U	0.5 U	0.5 U	0.5 U	1 U	--	1 U
	4/26/2001	<b>831</b>	<b>7.35</b>	0.516	15.3	1 U	--	--
MW-5	7/29/2001	53.8	0.5 U	0.5 U	0.5 U	1 U	--	--
	10/27/2001	552	3.29	0.5 U	1.28	1.58	--	--
	11/15/2002	108	0.5 U	0.5 U	0.5 U	0.5 U	--	--
	5/9/2003	78.7	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	9/30/2003	229	0.5 U	0.5 U	0.5 U	1.61	1 U	--
	12/11/2003	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	3/31/2004	53	0.2 U	0.2 U	0.2 U	0.5 U	1 U	--
	6/2/2004	92.8	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	12/14/2004	308	0.5 U	0.5 U	0.5 U	1 U	--	--
	4/4/2005	620	1.45	0.5 U	0.5 U	1.07	--	--
	10/6/2005	114	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	6/28/2006	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	11/13/2006	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	5/25/2007	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	11/7/2007	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	6/4/2008	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	10/22/2008	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	10/15/2009	80 U	0.5 U	0.5 U	0.5 U	1 U	2 U	--
	11/15/2010	170	0.25 U	0.5 U	0.25 U	0.75 U	1 U	--
	11/2/2011	100 U	0.25 U	0.25 U	0.25 U	0.75 U	2.1	--
	11/6/2012	100 U	0.25 U	0.25 U	0.25 U	0.75 U	0.1	--
	11/19/2013	100 U	0.25 U	0.25 U	0.25 U	0.5 U	0.2	--
	11/20/2014	100 U	0.25 U	0.25 U	0.25 U	0.5 U	0.2	--

**Table 3 - Summary of Groundwater Chemistry Data - TPH-G, BTEX, and Lead**

Well ID	Date Sampled	Concentration in µg/L					Concentration in µg/L	
		TPH-Gasoline	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Total Lead	Diss. Lead
MW-6	1/5/1998	<b>2,200</b>	<b>53</b>	17	9	93	5	U
	4/6/1998	<b>4,200</b>	<b>51</b>	16	25	110	5	U
	7/6/1998	<b>6,900</b>	<b>11</b>	19	1	510	11	--
	10/5/1998	<b>5,800</b>	<b>43</b>	22	48	240	12	--
	12/29/1999	<b>2,090</b>	<b>11.5</b>	2	35.1	65.1	--	1 U
	3/21/2000	<b>1,580</b>	0.75 U	14.3	28.7	61	--	1 U
	6/14/2000	<b>2,170</b>	<b>9.78</b>	1.03 U	33.1	101	--	1 U
	9/12/2000	<b>1,630</b>	<b>12.8</b>	1.2 U	27.9	75.7	--	1 U
	4/26/2001	<b>1,320</b>	<b>11.3</b>	0.906	1.41	3.37	--	--
	7/29/2001	<b>5,050</b>	<b>8.71</b>	4.99	189	536	--	--
	10/27/2001	<b>1,910</b>	<b>15.3</b>	0.786	1.67	5.49	--	--
	11/15/2002	<b>1,270</b>	<b>9.01</b>	0.5 U	0.594	1.85	--	--
	5/9/2003	<b>1,710</b>	1.79	0.5 U	1.29	21.2	1.29	--
	9/30/2003	<b>1,610</b>	<b>16.7</b>	2.50 U	2.91	7.96	1 U	--
	12/11/2003	624	<b>5.67</b>	0.50 U	0.737 J	2.19 J	1 U	--
	3/31/2004	<b>1,160</b>	0.520	0.2 U	0.350	0.5 U	1 U	--
	6/2/2004	<b>2,300</b> J	4.78 J	0.5 U	54.0 J	75.5 J	1.29	--
	9/30/2004	<b>1,150</b> J	<b>8.34</b> J	0.5 J	0.553 J	2.92 J	1 U	--
	12/14/2004	672	3.57	0.5 U	0.5 U	1.42	--	--
	4/4/2005 <sup>b</sup>	<b>1,010</b>	<b>5.91</b>	0.5 U	0.5 U	1.86 <sup>c</sup>	--	--
	10/6/2005	<b>1,380</b> J	<b>8.10</b>	0.5 U	0.632	1.94	1 U	--
	6/28/2006	--	--	--	--	--	--	--
	11/13/2006	<b>826</b>	3.3	0.5 U	0.5 U	1.89	1 U	--
	5/25/2007	<b>1,460</b>	0.5 U	0.5 U	25.6	1.22	--	--
	11/7/2007	729	3.53	0.5 U	0.5 U	1.69	1 U	--
	6/4/2008	<b>1,550</b>	1.93	0.5 U	30.8	2.78	1 U	--
	10/22/2008	<b>855</b>	3.1	0.5 U	0.933	3.37	1 U	--
	10/14/2009	501	7.59 U	0.5 U	1.18 U	1 U	2 U	--
	11/15/2010	450	0.25 U	0.49	0.25 U	0.75 U	1 U	--
	5/2/2011	490	1.0 U	1.0 U	1.0 U	2.0 U	--	--
	7/27/2011	610	1.0 U	1.0 U	1.0 U	2.0 U	--	--
	11/2/2011	590	0.25 U	0.25 U	0.25 U	0.75 U	4	--
	2/13/2012	<b>1,600</b>	0.25 U	0.25 U	0.25 U	1.5	--	--
	5/23/2012	<b>930</b>	1.00 U	1.00 U	6.50	2.00 U	--	--
	8/22/2012	500	0.25 U	0.25 U	0.31	0.75 U	--	--
	11/6/2012	410	0.25 U	0.25 U	0.25 U	0.75 U	0.4	--
	8/27/2013	300 J	0.25 UJ	0.25 UJ	0.25 UJ	0.5 UJ	--	--
	11/20/2013	310	0.25 U	0.25 U	0.25 U	0.5 U	0.2	--

**Table 3 - Summary of Groundwater Chemistry Data - TPH-G, BTEX, and Lead**

Well ID	Date Sampled	Concentration in µg/L					Concentration in µg/L	
		TPH-Gasoline	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Total Lead	Diss. Lead
MW-6 Cont.	2/27/2014	100 U	0.25 U	0.25 U	0.25 U	0.5 U	--	--
	5/23/2014	920 J	0.25 UJ	0.25 UJ	6.9 J	1.13 J	--	--
	8/21/2014	370 J	0.25 UJ	0.25 UJ	0.25 UJ	0.5 UJ	--	--
	11/21/2014	110	0.25 U	0.25 U	0.25 U	0.5 U	0.3	--
MW-12	12/29/1999	50 U	0.5 U	0.5 U	0.5 U	1 U	--	1 U
	3/21/2000	50 U	0.5 U	0.5 U	0.5 U	1 U	--	1 U
	6/14/2000	50 U	0.5 U	0.5 U	0.5 U	1 U	--	1 U
	9/12/2000	50 U	0.5 U	0.5 U	0.5 U	1 U	--	1 U
	4/26/2001	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	7/29/2001	50 U	0.5 U	0.5 U	1.74	4.83	--	--
	10/27/2001	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	11/15/2002	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	5/9/2003	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	9/30/2003	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	12/11/2003	50 U	0.5 U	0.5 U	0.5 U	1 U	1.47	--
	3/31/2004	50 U	0.2 U	0.2 U	0.2 U	0.5 U	1 U	--
	6/2/2004	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	9/30/2004	50 UJ	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	12/14/2004	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	4/4/2005	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	10/12/2005	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	6/28/2006	50 U	0.5 U	0.5 U	0.5 U	1 U	2.98	--
	11/13/2006	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	5/25/2007	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	11/8/2007	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	6/4/2008	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	10/22/2008	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	10/14/2009	80 U	0.5 U	0.5 U	0.5 U	1 U	2 U	--
	11/15/2010	100 U	0.25 U	0.5 U	0.25 U	0.75 U	1 U	--
	11/2/2011	100 U	0.25 U	0.25 U	0.25 U	0.75 U	0.1 U	--
MW-13	12/29/99	50 U	0.5 U	0.5 U	0.5 U	1 U	--	1 U
	3/21/2000	50 U	0.5 U	0.5 U	0.5 U	1 U	--	1 U
	6/14/2000	50 U	0.5 U	0.5 U	0.5 U	1 U	--	1 U
	9/12/2000	50 U	0.5 U	0.5 U	0.5 U	1 U	--	1 U
	4/26/2001	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	7/29/2001	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	10/27/2001	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	9/30/2003	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--

**Table 3 - Summary of Groundwater Chemistry Data - TPH-G, BTEX, and Lead**

Well ID	Date Sampled	Concentration in µg/L					Concentration in µg/L	
		TPH-Gasoline	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Total Lead	Diss. Lead
MW-13 Cont.	12/11/2003	50 U	0.5 U	0.5 U	0.5 U	1 U	1.56	--
	3/31/2004	50 U	0.2 U	0.2 U	0.2 U	0.5 U	1 U	--
	6/2/2004	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	9/30/2004	50 UJ	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	12/14/2004	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	4/4/2005	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	10/6/2005	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	6/28/2006	--	--	--	--	--	--	--
	11/13/2006	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	5/25/2007	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	11/8/2007	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	6/4/2008	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	10/22/2008	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	10/15/2009	80 U	0.5 U	0.5 U	0.5 U	1 U	2 U	--
MW-13	11/15/2010	100 U	0.25 U	0.5 U	0.25 U	0.75 U	1 U	--
	11/2/2011	100 U	0.25 U	0.25 U	0.25 U	0.75 U	0.2	--
	5/23/2012	250 U	1.0 U	1.0 U	1.0 U	2.0 U	--	--
	8/22/2012	100 U	0.25 U	0.25 U	0.25 U	0.75 U	--	--
	11/6/2012	100 U	0.25 U	0.25 U	0.25 U	0.75 U	0.1 U	--
	8/27/2013	100 UJ	0.25 UJ	0.25 UJ	0.25 UJ	0.5 UJ	--	--
	11/20/2013	100 U	0.25 U	0.25 U	0.25 U	0.5 U	0.1 U	--
	2/27/2014	100 U	0.25 U	0.25 U	0.25 U	0.5 U	--	--
	5/23/2014	100 UJ	0.25 UJ	0.25 UJ	0.25 UJ	0.5 UJ	--	--
	8/21/2014	100 UJ	0.25 UJ	0.25 UJ	0.25 UJ	0.5 UJ	--	--
	11/21/2014	100 U	0.25 U	0.25 U	0.25 U	0.5 U	0.1 U	--
MW-15	1/30/2001	161	1.53	0.5 U	0.5 U	1.18 U	--	--
	4/26/2001	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	7/29/2001	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	10/27/2001	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	11/15/2002	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	5/9/2003	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	9/30/2003	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	12/11/2003	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	3/31/2004	50 U	0.2 U	0.2 U	0.2 U	0.5 U	1 U	--
	6/2/2004	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	9/30/2004	50 UJ	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	12/14/2004	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	4/4/2005	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	10/6/2005	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--

**Table 3 - Summary of Groundwater Chemistry Data - TPH-G, BTEX, and Lead**

Well ID	Date Sampled	Concentration in µg/L					Concentration in µg/L	
		TPH-Gasoline	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Total Lead	Diss. Lead
MW-15 Cont.	6/28/2006	--	--	--	--	--	--	--
	11/13/2006	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	5/25/2007	50 U	0.5 U	0.5 U	0.5 U	1 U	--	--
	11/7/2007	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	6/5/2008	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	10/22/2008	50 U	0.5 U	0.5 U	0.5 U	1 U	1 U	--
	10/14/2009	80 U	0.5 U	0.5 U	0.5 U	1 U	2 U	--
	11/15/2010	100 U	0.25 U	0.5 U	0.25 U	0.75 U	1 U	--
	11/2/2011	100 U	0.25 U	0.25 U	0.25 U	0.75 U	0.1 U	--
	11/6/2012	100 U	0.25 U	0.25 U	0.25 U	0.75 U	0.1 U	--
MTCA Method A Groundwater Cleanup Level	11/20/2013	100 U	0.25 U	0.25 U	0.25 U	0.5 U	0.1 U	--
	11/21/2014	100 U	0.25 U	0.25 U	0.25 U	0.5 U	0.1 U	--
MTCA Method A Groundwater Cleanup Level		800/1,000 <sup>a</sup>	5	1000	700	1000	15	15

## Notes:

Gasoline-range TPH analyzed by EPA Method 8015 prior to 1999. After that, analyzed by NWTPH-G; BTEX Analyzed by EPA Method 8021B  
BTEX analyzed by EPA Method 8260B in March 2004.

Total and Dissolved Lead analyzed by EPA Method 6010 or 6020.

-- Not analyzed.

U = Not detected at specified reporting limit.

J = Estimated concentration.

Bolded concentrations exceed MTCA Method A cleanup levels.

Access to well MW-13 obstructed in November 2002 and May 2003.

Access to well MW-5 obstructed in September 2004.

Data from 1996 and 1998 collected by Sage Environmental.

## Notes Continued:

Well MW-1 was removed during the October 2000 excavation. Wells MW-14 and MW-15 were installed in January 2001 after the excavation.

Well MW-4 was replaced as well MW-4R by Hart Crowser in October 2005, following removal of the well during UST removal activities in April 2005.

First dashed line indicates soil was excavated in November 2000.

Second dashed line indicates bioremediation amendments were injected in January 2011.

a) Cleanup level for TPH-G with/without detectable benzene

b) Values shown are the average of the results for the sample and its field duplicate.

c) The value is the result for the field duplicate. The result for the sample was ND (not detected at the detection limit of 1.0 µg/L).

Access to well MW-12 was obstructed in May and August 2012 by a large soil stockpile.

Well MW-12 has been lost or destroyed during regrading of the Fairgrounds unpaved parking area post-November 2011 monitoring event.

**Table 4 - Summary of Groundwater Chemistry Data - Other Compounds**

Exploration	Date Sampled	Field Test Results - Concentrations in mg/L					Concentration in mg/L					
		Dissolved Oxygen	Ferrous Iron	Nitrite	Nitrate	Ammonia	Nitrate	Sulfate	Chloride	Bromide	Nitrite	Ferrous Iron
MW-1/MW-14	3/21/2000	0.60	--	--	--	--	--	--	--	--	--	--
	6/14/2000	1.00	--	--	--	--	--	--	--	--	--	--
	9/12/2000	0.40	--	--	--	--	--	--	--	--	--	--
	1/30/2001	2.40	--	--	--	--	--	--	--	--	--	--
	4/26/2001	--	--	--	--	--	--	--	--	--	--	--
	7/29/2001	2.30	--	--	--	--	--	--	--	--	--	--
	10/27/2001	0.80	--	--	--	--	--	--	--	--	--	--
	11/15/2002	--	--	--	--	--	--	--	--	--	--	--
	5/9/2003	1.20	--	--	--	--	--	--	--	--	--	--
	9/30/2003	0.29	--	--	--	--	0.349	0.400 U	--	--	0.200 U	1.6
	12/11/2003	3.20	--	--	--	--	0.200 U	1.14	--	--	0.200 U	4
	3/31/2004	0.12	--	--	--	--	0.200 U	1.08	--	--	0.200 U	5.2
	6/2/2004	0.02	--	--	--	--	0.200 U	4.24	--	--	0.200 U	7.2
	9/30/2004	0.11	--	--	--	--	0.200 U	0.635	--	--	0.200 U	5.6
	12/14/2004	0.07	--	--	--	--	0.200 U	0.400 U	--	--	0.200 U	6.3
	4/4/2005	--	--	--	--	--	0.200 U	0.464	--	--	0.200 U	4.82 J
	10/6/2005	--	--	--	--	--	0.200 U	0.400 U	--	--	0.200 U	9.74
	6/28/2006	0.60	--	--	--	--	0.556	13.4	--	--	0.400 U	0.25 U
	11/13/2006	0.39	3.5-3.75	--	--	--	0.200 U	1.4	--	--	0.200 U	2.16
	5/25/2007	3.47	ND	--	--	--	3.120	12.200	--	--	0.200 U	0.25 U
	11/7/2007	4.84	5.2	--	--	--	0.010 U	0.900	--	--	0.010 U	--
	6/4/2008	6.01	ND	--	--	--	1.870	9.970	--	--	0.200 U	--
	10/21/2008	5.09	2.9	--	--	--	0.200 U	0.680	--	--	0.200 U	--
	10/14/2009	0.00	3.6	--	--	--	0.90 UJ	1.2 U	--	--	1.6 J	--
	11/15/2010	0.00	5	--	--	--	0.1 U	0.4	--	--	--	--
MW-1/MW-14	5/2/2011	0.00	0.8	4	100	6	63.2	541	35.1	0.2	--	--
	7/27/2011	0.16	1.9	0	10	6	0.1 U	550	40.2	1 U	--	--
	11/2/2011	0.86	2	ND	ND	0.75	0.1 U	63.6	17.2	0.8	--	--
	2/13/2012	2.41	2	5	160	2	99	671	208	0.2	--	--
	5/23/2012	3.06	ND	--	--	--	120.00	211.00	1.00 U	60.30	--	--
	8/22/2012	7.31	ND	--	--	--	11.60	380.00	44.40	0.20	--	--
	11/6/2012	1.12	1.10	--	--	--	1.60	137.00	24.50	0.10 U	--	--
	8/27/2013	0.05	1.20	--	--	--	0.90 J	73.90	--	--	--	--
	11/19/2013	0.05	ND	--	--	--	0.10 U	39.10	--	--	--	--
	2/27/2014	0.09	--	--	--	--	17.40	39.00	--	--	--	--

**Table 4 - Summary of Groundwater Chemistry Data - Other Compounds**

Exploration	Date Sampled	Field Test Results - Concentrations in mg/L					Concentration in mg/L					
		Dissolved Oxygen	Ferrous Iron	Nitrite	Nitrate	Ammonia	Nitrate	Sulfate	Chloride	Bromide	Nitrite	Ferrous Iron
MW-14 Cont.	5/23/2014	0.24	0.40	--	--	--	10.40 J	26.20	--	--	--	--
	8/21/2014	0.99	6.00	--	--	--	0.20 J	18.70	--	--	--	--
	11/20/2014	0.07	3.00	--	--	--	4.60 J	12.70	--	--	--	--
MW-2	3/21/2000	2.60	--	--	--	--	--	--	--	--	--	--
	6/14/2000	2.80	--	--	--	--	--	--	--	--	--	--
	9/12/2000	0.80	--	--	--	--	--	--	--	--	--	--
	1/30/2001	1.50	--	--	--	--	--	--	--	--	--	--
	4/26/2001	4.50	--	--	--	--	--	--	--	--	--	--
	7/29/2001	3.30	--	--	--	--	--	--	--	--	--	--
	10/27/2001	2.00	--	--	--	--	--	--	--	--	--	--
	11/15/2002	1.50	--	--	--	--	--	--	--	--	--	--
	5/9/2003	2.30	--	--	--	--	--	--	--	--	--	--
	9/30/2003	1.51	--	--	--	--	0.489	3.38	--	--	0.200 U	1.2
	12/11/2003	3.90	--	--	--	--	1.08	3.79	--	--	0.200 U	0.0
	3/31/2004	0.82	--	--	--	--	0.912	4.60	--	--	0.200 U	0.0
	6/2/2004	1.63	--	--	--	--	0.467	3.23	--	--	0.200 U	0.0
	9/30/2004	0.52	--	--	--	--	0.443	2.93	--	--	0.200 U	0.2
	12/14/2004	6.05	--	--	--	--	0.922	3.05	--	--	0.200 U	0.0
	4/4/2005	--	--	--	--	--	0.719	3.52	--	--	0.200 U	0.25 R
	10/6/2005	--	--	--	--	--	0.219	3.75	--	--	0.200 U	0.25 U
	6/28/2006	--	--	--	--	--	--	--	--	--	--	--
	11/13/2006	0.64	ND	--	--	--	0.410	5.26	--	--	0.200 U	0.25 U
	5/25/2007	7.11	ND	--	--	--	2.740	8.57	--	--	0.200 U	0.25 U
	11/7/2007	4.95	ND	--	--	--	0.275	4.32	--	--	0.010 U	--
	6/4/2008	4.60	ND	--	--	--	1.440	6.14	--	--	0.200 U	--
	10/21/2008	--	ND	--	--	--	0.200 U	3.21	--	--	0.200 U	--
	10/14/2009	0.00	ND	--	--	--	0.90 U	6.5	--	--	1.3 J	--
	11/15/2010	0.33	ND	--	--	--	0.3	3.9	--	--	--	--
	11/2/2011	1.08	ND	--	--	--	0.6	9.1	5.8	0.1 U	--	--
	11/6/2012	1.45	ND	--	--	--	1.3	6.8	3.4	0.1 U	--	--
	11/19/2013	0.30	ND	--	--	--	0.2	4.2	--	--	--	--
	11/20/2014	0.27	ND	--	--	--	0.2	4.2	--	--	--	--
MW-3	3/21/2000	2.00	--	--	--	--	--	--	--	--	--	--
	6/14/2000	2.10	--	--	--	--	--	--	--	--	--	--
	9/12/2000	1.40	--	--	--	--	--	--	--	--	--	--

**Table 4 - Summary of Groundwater Chemistry Data - Other Compounds**

Exploration	Date Sampled	Field Test Results - Concentrations in mg/L					Concentration in mg/L					
		Dissolved Oxygen	Ferrous Iron	Nitrite	Nitrate	Ammonia	Nitrate	Sulfate	Chloride	Bromide	Nitrite	Ferrous Iron
MW-3 Cont.	1/30/2001	2.70	--	--	--	--	--	--	--	--	--	--
	4/26/2001	1.80	--	--	--	--	--	--	--	--	--	--
	7/29/2001	4.40	--	--	--	--	--	--	--	--	--	--
	10/27/2001	2.30	--	--	--	--	--	--	--	--	--	--
	11/15/2002	2.10	--	--	--	--	--	--	--	--	--	--
	5/9/2003	2.70	--	--	--	--	--	--	--	--	--	--
	9/30/2003	0.44	--	--	--	--	0.228	4.39	--	--	0.200 U	0.0
	12/11/2003	3.20	--	--	--	--	0.200 U	4.79	--	--	0.200 U	0.0
	3/31/2004	1.59	--	--	--	--	0.812	5.53	--	--	0.200 U	0.0
	6/2/2004	0.89	--	--	--	--	0.816	5.61	--	--	0.200 U	0.0
	9/30/2004	0.54	--	--	--	--	0.253	4.43	--	--	0.200 U	0.0
	12/14/2004	2.10	--	--	--	--	0.206	4.69	--	--	0.200 U	0.0
	4/4/2005	--	--	--	--	--	0.358	4.23	--	--	0.200 U	0.25 R
	10/6/2005	--	--	--	--	--	0.200 U	3.67	--	--	0.200 U	0.25 U
	6/28/2006	--	--	--	--	--	--	--	--	--	--	--
	11/13/2006	1.19	ND	--	--	--	0.370	6.1	--	--	0.200 U	0.25 U
	5/25/2007	8.13	ND	--	--	--	1.520	6.43	--	--	0.200 U	0.25 U
	11/8/2007	5.15	ND	--	--	--	0.168	4.13	--	--	0.010 U	--
	6/4/2008	5.51	ND	--	--	--	0.920	4.59	--	--	0.200 U	--
	10/21/2008	8.29	ND	--	--	--	0.250	3.84	--	--	0.200 U	--
	10/14/2009	0.81	ND	--	--	--	0.90 UJ	3.2	--	--	1.3 J	--
	11/15/2010	1.86	ND	--	--	--	0.2	4.1	--	--	--	--
	5/2/2011	0.00	ND	2	10	1	3.4	12.4	36	0.1 U	--	--
	7/27/2011	0.06	0.6	2	10	1.5	1.8	21.6	12.6	0.1 U	--	--
	11/2/2011	0.90	1.5	ND	ND	1	0.1 U	24	9.5	0.1	--	--
	2/13/2012	2.14	ND	0.25	10	0.5	6.8	8.9	12.3	0.1 U	--	--
	11/6/2012	2.18	ND	--	--	--	0.7	4.9	5.1	0.1 U	--	--
	11/19/2013	0.25	ND	--	--	--	0.2	4.6	--	--	--	--
	11/20/2014	0.77	--	--	--	--	0.3	4.2	--	--	--	--
MW-4	3/21/2000	0.60	--	--	--	--	--	--	--	--	--	--
	6/14/2000	1.00	--	--	--	--	--	--	--	--	--	--
	9/12/2000	0.40	--	--	--	--	--	--	--	--	--	--
	1/30/2001	2.40	--	--	--	--	--	--	--	--	--	--
	4/26/2001	--	--	--	--	--	--	--	--	--	--	--
	7/29/2001	2.30	--	--	--	--	--	--	--	--	--	--

**Table 4 - Summary of Groundwater Chemistry Data - Other Compounds**

Exploration	Date Sampled	Field Test Results - Concentrations in mg/L					Concentration in mg/L					
		Dissolved Oxygen	Ferrous Iron	Nitrite	Nitrate	Ammonia	Nitrate	Sulfate	Chloride	Bromide	Nitrite	Ferrous Iron
MW-4 Cont.	10/27/2001	0.80	--	--	--	--	--	--	--	--	--	--
	11/15/2002	--	--	--	--	--	--	--	--	--	--	--
	5/9/2003	1.20	--	--	--	--	--	--	--	--	--	--
	9/30/2003	0.12	--	--	--	--	0.200 U	4.57	--	--	0.200 U	1.4
	12/11/2003	1.40	--	--	--	--	1.05	15.3	--	--	0.200 U	0.5
	3/31/2004	0.11	--	--	--	--	0.200 U	7.41	--	--	0.200 U	5.4
	6/2/2004	0.03	--	--	--	--	0.200 U	8.32	--	--	0.200 U	5.2
	9/30/2004	0.06	--	--	--	--	0.200 U	4.91	--	--	0.200 U	3.8
	12/14/2004	0.12	--	--	--	--	0.200 U	5.13	--	--	0.200 U	2.0
	4/4/2005	--	--	--	--	--	0.200 U	5.79	--	--	0.200 U	3.47 J
MW-4R	10/6/2005	--	--	--	--	--	0.200 U	8.07	--	--	0.200 U	1.39
	6/28/2006	0.60	--	--	--	--	0.200 U	16	--	--	0.400 U	0.25 U
	11/13/2006	0.24	2.9-3.0	--	--	--	0.200 U	16.2	--	--	0.200 U	0.25 U
	5/25/2007	2.63	ND	--	--	--	2.290	17.6	--	--	0.200 U	0.25 U
	11/7/2007	4.78	3.7	--	--	--	0.031	10.3	--	--	0.010 U	--
	6/4/2008	3.87	ND	--	--	--	2.030	14.1	--	--	0.200 U	--
	10/21/2008	8.98	1.4	--	--	--	0.200 U	6.52	--	--	0.200 U	--
	10/14/2009	4.83	ND	--	--	--	0.90 UJ	5.9	--	--	1.7 J	--
	11/15/2010	0.00	2.2	--	--	--	0.1 U	7.3	--	--	--	--
	5/2/2011	0.00	2.4	5	20	2	18.7	78.9	30.8	8.6	--	--
MW-5	7/27/2011	0.14	2	ND	10	4	4.2	12.4	24.7	0.9	--	--
	11/2/2011	0.76	1.9	ND	ND	5	0.2	13.1	14.3	1	--	--
	2/13/2012	2.95	1.3	3	120	2	74.9	174	20.2	0.5	--	--
	5/23/2012	3.64	1.40	--	--	--	5.20	37.00	0.10 U	38.10	--	--
	8/22/2012	4.91	1.80	--	--	--	0.20	11.30	9.40	0.30	--	--
	11/6/2012	1.84	1.2	--	--	--	1	42.7	21.3	0.2	--	--
	8/27/2013	0.07	1	--	--	--	0.3 J	5.8	--	--	--	--
	11/19/2013	0.07	2.1	--	--	--	0.7	9.6	--	--	--	--
	2/27/2014	0.54	ND	--	--	--	11.5	44	--	--	--	--
	5/23/2014	0.09	ND	--	--	--	0.8 J	15.9	--	--	--	--
	8/21/2014	0.90	3.1	--	--	--	0.1 J	11	--	--	--	--
	11/20/2014	0.14	2.8	--	--	--	0.4	12.2	--	--	--	--
	3/21/2000	0.60	--	--	--	--	--	--	--	--	--	--
	6/14/2000	0.70	--	--	--	--	--	--	--	--	--	--
	9/12/2000	0.60	--	--	--	--	--	--	--	--	--	--

**Table 4 - Summary of Groundwater Chemistry Data - Other Compounds**

Exploration	Date Sampled	Field Test Results - Concentrations in mg/L					Concentration in mg/L					
		Dissolved Oxygen	Ferrous Iron	Nitrite	Nitrate	Ammonia	Nitrate	Sulfate	Chloride	Bromide	Nitrite	Ferrous Iron
MW-5 Cont.	4/26/2001	0.80	--	--	--	--	--	--	--	--	--	--
	7/29/2001	3.00	--	--	--	--	--	--	--	--	--	--
	10/27/2001	0.90	--	--	--	--	--	--	--	--	--	--
	11/15/2002	0.70	--	--	--	--	--	--	--	--	--	--
	5/9/2003	1.20	--	--	--	--	--	--	--	--	--	--
	9/30/2003	0.30	--	--	--	--	0.200 U	8.61	--	--	0.200 U	1.8
	12/11/2003	1.30	--	--	--	--	0.200 U	6.85	--	--	0.200 U	0.0
	3/31/2004	0.42	--	--	--	--	1.32	16.1	--	--	0.200 U	0.0
	6/2/2004	0.20	--	--	--	--	1.36	11.7	--	--	0.200 U	0.0
	12/14/2004	0.49	--	--	--	--	0.200 U	7.57	--	--	0.200 U	2.95
	4/4/2005	--	--	--	--	--	0.200 U	9.92	--	--	0.200 U	3.06 J
	10/6/2005	--	--	--	--	--	0.200 U	9.50	--	--	0.200 U	0.25 U
	6/28/2006	2.40	--	--	--	--	2.59	16	--	--	0.400 U	0.25 U
	11/13/2006	3.60	ND	--	--	--	2.99	11.7	--	--	0.200 U	0.25 U
	5/25/2007	6.60	ND	--	--	--	3.400	19.9	--	--	0.200 U	0.25 U
	11/7/2007	5.18	ND	--	--	--	0.110	7.75	--	--	0.010 U	--
	6/4/2008	5.44	ND	--	--	--	1.730	11.8	--	--	0.200 U	--
	10/22/2008	6.75	ND	--	--	--	0.220	6.35	--	--	0.200 U	--
	10/15/2009	1.13	ND	--	--	--	0.90 U	5.2	--	--	1.5 J	--
	11/15/2010	0.00	ND	--	--	--	0.1	6.6	--	--	--	--
	11/2/2011	0.87	2	--	--	--	0.4	21.7	16.7	0.1	--	--
	11/6/2012	2.06	--	--	--	--	0.3	7.2	7.9	0.1 U	--	--
	11/19/2013	0.07	ND	--	--	--	0.5	9.7	--	--	--	--
	11/20/2014	0.09	ND	--	--	--	1	10.6	--	--	--	--
MW-6	3/21/2000	1.80	--	--	--	--	--	--	--	--	--	--
	6/14/2000	0.50	--	--	--	--	--	--	--	--	--	--
	9/12/2000	0.50	--	--	--	--	--	--	--	--	--	--
	4/26/2001	--	--	--	--	--	--	--	--	--	--	--
	7/29/2001	2.60	--	--	--	--	--	--	--	--	--	--
	10/27/2001	0.70	--	--	--	--	--	--	--	--	--	--
	11/15/2002	0.60	--	--	--	--	--	--	--	--	--	--
	5/9/2003	1.80	--	--	--	--	--	--	--	--	--	--
	9/30/2003	0.12	--	--	--	--	0.200 U	0.400 U	--	--	0.200 U	2.2
	12/11/2003	1.50	--	--	--	--	0.200 U	0.685	--	--	0.200 U	3.8
	3/31/2004	0.15	--	--	--	--	0.200 U	3.02	--	--	0.200 U	3.4

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		Dissolved Oxygen	Ferrous Iron	Nitrite	Nitrate	Ammonia	Nitrate	Sulfate	Chloride	Bromide	Nitrite	Ferrous Iron
MW-6 Cont.	6/2/2004	0.09	--	--	--	--	0.200 U	0.557	--	--	0.200 U	5.2
	9/30/2004	0.12	--	--	--	--	0.200 U	0.400 U	--	--	0.200 U	6.4
	12/14/2004	0.42	--	--	--	--	0.200 U	0.400 U	--	--	0.200 U	3.2
	4/4/2005 <sup>a</sup>	--	--	--	--	--	0.200 U	3.19	--	--	0.200 U	9.33 J
	10/6/2005	--	--	--	--	--	0.200 U	0.400 U	--	--	0.200 U	9.33
	4/4/2005	--	--	--	--	--	0.200 U	3.20	--	--	0.200 U	9.53
	6/28/2006	--	--	--	--	--	2.6	18.6	--	--	0.400 U	--
	11/13/2006	0.48	0.9-1.0	--	--	--	0.200 U	1.11	--	--	0.200 U	6.95
	5/25/2007	1.11	4.2	--	--	--	0.200 U	2.67	--	--	0.200 U	0.5 U
	11/7/2007	5.18	5.4	--	--	--	0.010 U	2.24	--	--	0.010 U	--
	6/4/2008	5.76	5.2	--	--	--	0.200 U	3.68	--	--	0.200 U	--
	10/22/2008	4.15	5.4	--	--	--	0.200 U	0.40 U	--	--	0.200 U	--
	10/14/2009	0.00	6.0	--	--	--	0.90 UJ	1.2 U	--	--	1.7 J	--
	11/15/2010	0.00	3.4	--	--	--	0.1 U	1.5	--	--	--	--
	5/2/2011	0.00	1	ND	10	0.5	2.6	79.6	83	0.3	--	--
	7/27/2011	0.48	2	ND	5	6	2 U	879	97.8	2 U	--	--
	11/2/2011	1.01	ND	ND	ND	5	0.1	14.8	25.1	0.2	--	--
	2/13/2012	2.62	1.6	3	15	2	3.1	68	25.7	0.1	--	--
	5/23/2012	4.96	ND	--	--	--	0.10 U	12.90	0.10 U	41.00	--	--
	8/22/2012	7.09	2.00	--	--	--	0.10	2.40	12.40	0.10	--	--
	11/6/2012	0.69	1.8	--	--	--	0.1 U	2.2	7.5	0.1 U	--	--
	8/27/2013	0.12	1.2	--	--	--	0.1 UJ	1.4	--	--	--	--
	11/20/2013	0.10	2.8	--	--	--	0.1	1.6	--	--	--	--
	2/27/2014	0.50	1.4	--	--	--	0.6	8.9	--	--	--	--
	5/23/2014	0.20	3.9	--	--	--	0.1 J	6.5	--	--	--	--
	8/21/2014	1.16	5	--	--	--	0.1 UJ	1.4	--	--	--	--
	11/21/2014	2.26	3	--	--	--	0.1 U	2	--	--	--	--
MW-12	3/21/2000	5.00	--	--	--	--	--	--	--	--	--	--
	6/14/2000	4.90	--	--	--	--	--	--	--	--	--	--
	9/12/2000	0.60	--	--	--	--	--	--	--	--	--	--
	4/26/2001	4.00	--	--	--	--	--	--	--	--	--	--
	7/29/2001	3.00	--	--	--	--	--	--	--	--	--	--
	10/27/2001	5.20	--	--	--	--	--	--	--	--	--	--
	11/15/2002	2.70	--	--	--	--	--	--	--	--	--	--
	5/9/2003	6.00	--	--	--	--	--	--	--	--	--	--

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Exploration	Date Sampled	Field Test Results - Concentrations in mg/L					Concentration in mg/L					
		Dissolved Oxygen	Ferrous Iron	Nitrite	Nitrate	Ammonia	Nitrate	Sulfate	Chloride	Bromide	Nitrite	Ferrous Iron
MW-12 Cont.	9/30/2003	1.66	--	--	--	--	0.452	5.32	--	--	0.200 U	0.8
	12/11/2003	2.70	--	--	--	--	0.200 U	2.77	--	--	0.200 U	0.0
	3/31/2004	3.91	--	--	--	--	3.88	8.45	--	--	0.200 U	0.0
	6/2/2004	5.20	--	--	--	--	3.64	11.7	--	--	0.200 U	0.0
	9/30/2004	6.00	--	--	--	--	0.573	5.66	--	--	0.200 U	0.0
	12/14/2004	1.32	--	--	--	--	0.200 U	2.95	--	--	0.200 U	0.0
	4/4/2005	--	--	--	--	--	0.200 U	3.32	--	--	0.200 U	0.25 R
	10/12/2005	--	--	--	--	--	0.200 U	3.37	--	--	0.200 U	0.25 U
	6/28/2006	0.42	--	--	--	--	2.57	11.5	--	--	0.400 U	0.25 U
	11/13/2006	2.61	ND	--	--	--	0.590	6.89	--	--	0.200 U	0.25 U
	5/25/2007	6.71	ND	--	--	--	7.140	18.4	--	--	0.200 U	0.25 U
	11/8/2007	6.33	ND	--	--	--	0.121	11.5	--	--	0.010 U	--
	6/4/2008	9.50	ND	--	--	--	6.020	16.4	--	--	0.200 U	--
	10/22/2008	8.88	ND	--	--	--	0.330	10.1	--	--	0.200 U	--
	10/14/2009	2.23	ND	--	--	--	0.90 UJ	5.2	--	--	1.4 J	--
	11/15/2010	2.73	ND	--	--	--	0.2	13.4	--	--	--	--
	11/2/2011	3.01	ND	--	--	--	0.7	60.3	493	0.3	--	--
MW-13	3/21/2000	4.60	--	--	--	--	--	--	--	--	--	--
	6/14/2000	1.50	--	--	--	--	--	--	--	--	--	--
	9/12/2000	3.30	--	--	--	--	--	--	--	--	--	--
	4/26/2001	5.00	--	--	--	--	--	--	--	--	--	--
	7/29/2001	3.80	--	--	--	--	--	--	--	--	--	--
	10/27/2001	3.40	--	--	--	--	--	--	--	--	--	--
	9/30/2003	3.04	--	--	--	--	0.455	4.91	--	--	0.200 U	--
	12/11/2003	6.70	--	--	--	--	0.477	5.56	--	--	0.200 U	0.0
	3/31/2004	4.87	--	--	--	--	1.60	8.04	--	--	0.200 U	0.0
	6/2/2004	1.85	--	--	--	--	1.05	6.52	--	--	0.200 U	0.0
	9/30/2004	2.69	--	--	--	--	0.496	4.49	--	--	0.200 U	0.0
	12/14/2004	5.57	--	--	--	--	0.412	5.10	--	--	0.200 U	0.0
	4/4/2005	--	--	--	--	--	0.582	4.99	--	--	0.200 U	0.547 J
	10/6/2005	--	--	--	--	--	0.348	3.68	--	--	0.200 U	0.25 U
	6/28/2006	--	--	--	--	--	--	--	--	--	--	--
	11/13/2006	3.49	ND	--	--	--	0.940	6.18	--	--	0.200 U	0.25 U
	5/25/2007	4.14	ND	--	--	--	1.670	7.57	--	--	0.200 U	0.25 U

**Table 4 - Summary of Groundwater Chemistry Data - Other Compounds**

Exploration	Date Sampled	Field Test Results - Concentrations in mg/L					Concentration in mg/L					
		Dissolved Oxygen	Ferrous Iron	Nitrite	Nitrate	Ammonia	Nitrate	Sulfate	Chloride	Bromide	Nitrite	Ferrous Iron
MW-13 Cont.	11/8/2007	6.93	ND	--	--	--	0.490	4.09	--	--	0.010 U	--
	6/4/2008	6.90	ND	--	--	--	1.280	5.51	--	--	0.200 U	--
	10/22/2008	9.35	ND	--	--	--	0.440	3.56	--	--	0.200 U	--
	10/15/2009	4.61	ND	--	--	--	0.90 U	3.3	--	--	1.2 J	--
	11/15/2010	4.38	ND	--	--	--	0.4	3.7	--	--	--	--
	5/2/2011	4.87	ND	ND	5	ND	2.4	7.3	20.7	0.1 U	--	--
	7/27/2011	1.47	ND	ND	10	0.25	1.3	5.8	9.4	0.1 U	--	--
	11/2/2011	5.11	ND	0.5	ND	ND	0.4	4.7	6.3	0.1	--	--
	2/13/2012	4.58	ND	ND	ND	ND	0.9	5.6	21.7	0.1 U	--	--
	5/23/2012	7.47	ND	--	--	--	0.90	5.00	0.10 U	11.30	--	--
	8/22/2012	8.13	ND	--	--	--	0.30	4.00	5.40	0.10 U	--	--
	11/6/2012	4.97	ND	--	--	--	0.3	4.5	5.8	0.1 U	--	--
	8/27/2013	3.20	ND	--	--	--	0.3 J	3.1	--	--	--	--
	11/20/2013	4.67	ND	--	--	--	0.4	3.6	--	--	--	--
	2/27/2014	6.02	--	--	--	--	0.5	4.9	--	--	--	--
	5/23/2014	3.71	--	--	--	--	0.9 J	4.9	--	--	--	--
	8/21/2014	3.08	ND	--	--	--	0.4 J	3.7	--	--	--	--
	11/21/2014	3.46	ND	--	--	--	0.4	4.9	--	--	--	--
MW-15	1/30/2001	1.30	--	--	--	--	--	--	--	--	--	--
	4/26/2001	--	--	--	--	--	--	--	--	--	--	--
	7/29/2001	2.60	--	--	--	--	--	--	--	--	--	--
	10/27/2001	1.40	--	--	--	--	--	--	--	--	--	--
	11/15/2002	0.80	--	--	--	--	--	--	--	--	--	--
	5/9/2003	1.50	--	--	--	--	--	--	--	--	--	--
	9/30/2003	0.56	--	--	--	--	0.282	5.02	--	--	0.200 U	2.6
	12/11/2003	2.80	--	--	--	--	0.415	8.52	--	--	0.200 U	0.0
	3/31/2004	0.88	--	--	--	--	0.200 U	8.42	--	--	0.200 U	0.0
	6/2/2004	0.40	--	--	--	--	1.67	8.32	--	--	0.200 U	0.0
	9/30/2004	0.33	--	--	--	--	0.429	4.56	--	--	0.200 U	0.0
	12/14/2004	1.40	--	--	--	--	0.200 U	6.68	--	--	0.200 U	0.0
	4/4/2005	--	--	--	--	--	0.200 U	7.45	--	--	0.200 U	0.254 J
	10/6/2005	--	--	--	--	--	0.340	4.14	--	--	0.200 U	0.25 U
	6/28/2006	--	--	--	--	--	--	--	--	--	--	--
	11/13/2006	1.06	ND	--	--	--	0.450	6.48	--	--	0.200 U	0.25 U
	5/25/2007	2.63	ND	--	--	--	3.070	10.4	--	--	0.200 U	0.25 U

**Table 4 - Summary of Groundwater Chemistry Data - Other Compounds**

Exploration	Date Sampled	Field Test Results - Concentrations in mg/L					Concentration in mg/L					
		Dissolved Oxygen	Ferrous Iron	Nitrite	Nitrate	Ammonia	Nitrate	Sulfate	Chloride	Bromide	Nitrite	Ferrous Iron
MW-15 Cont.	11/7/2007	5.66	ND	--	--	--	0.220	5.21	--	--	0.010 U	--
	6/5/2008	6.50	ND	--	--	--	2.010	8.02	--	--	0.200 U	--
	10/22/2008	5.61	ND	--	--	--	0.280	3.81	--	--	0.200 U	--
	10/14/2009	0.00	ND	--	--	--	0.90 UJ	3.1	--	--	1.2 J	--
	11/15/2010	0.67	ND	--	--	--	0.2	4.1	--	--	--	--
	11/2/2011	1.30	ND	--	--	--	0.4	6	8.7	0.1 U	--	--
	11/6/2012	2.03	ND	--	--	--	0.3	4.9	5.4	0.1 U	--	--
	11/20/2013	0.53	ND	--	--	--	0.2	4.0	--	--	--	--
	11/21/2014	1.42	--	--	--	--	0.1	3.6	--	--	--	--
MTCA Method A Cleanup Level							na	na	na	na	na	na

## Notes:

Nitrate, sulfate, chloride, bromide, and nitrite analyzed by EPA Method 300.0.

MTBE, EDB, and EDC analyzed by EPA Method 8260B.

-- Not analyzed.

U = Not detected above specified reporting limit.

J = Estimated concentration.

R = Rejected concentration.

ND = Analyte not detected.

## Notes Continued:

Bolted concentrations exceed MTCA Method A cleanup levels.

a) Values shown are the average of the results for the sample and its field duplicate.

na = No MTCA Method A or B value available.

First dashed line indicates soil was excavated in November 2000.

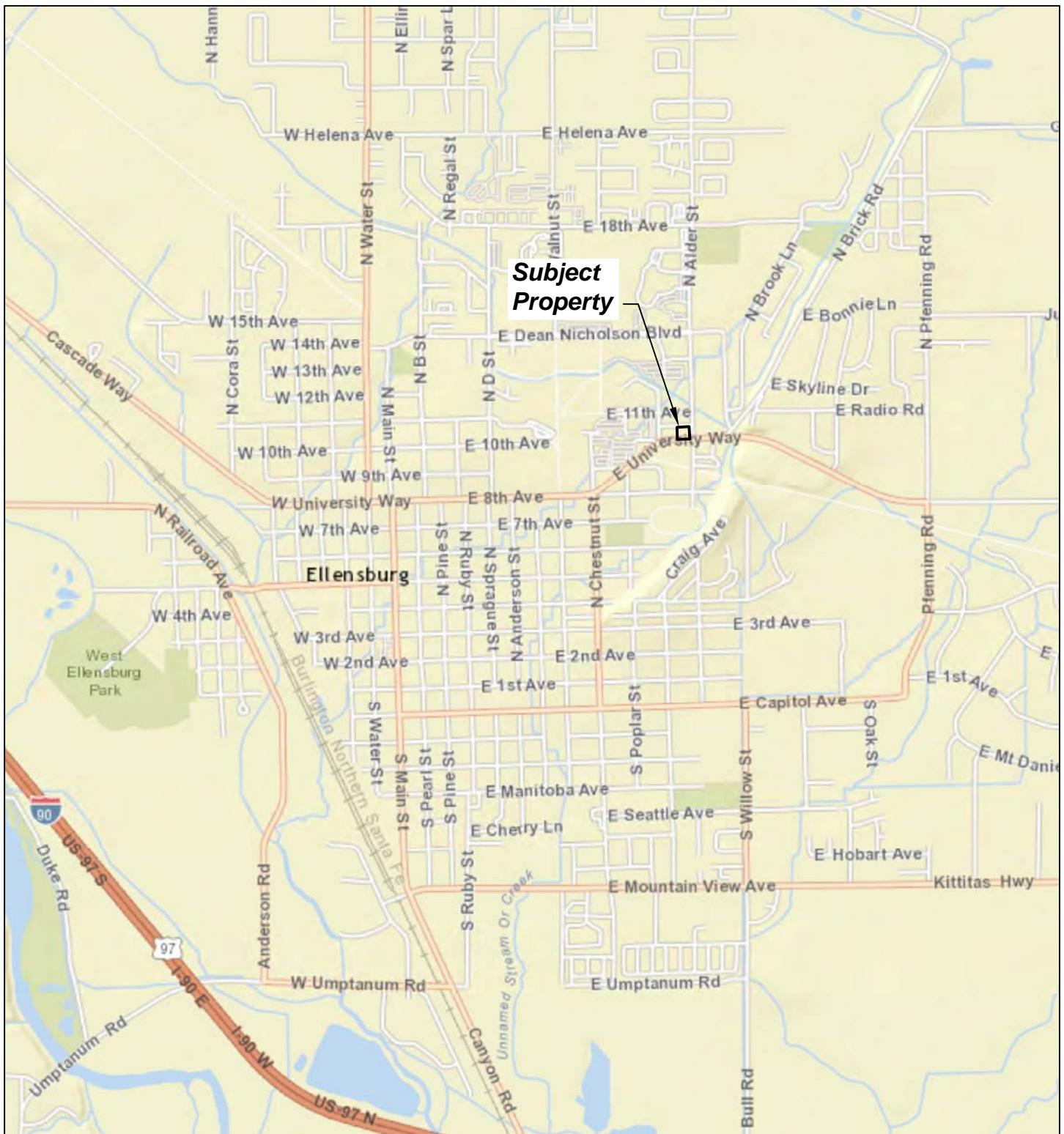
Second dashed line indicates bioremediation amendments were injected in January 2011.

Access to well MW-12 was obstructed in May and August 2012 by a large soil stockpile.

Well MW-12 was not located in November 2012 and possibly destroyed. Well status needs to be confirmed next monitoring round.

**Table 5 - Measured Free Product Thickness in Well MW-1/MW-14**

Date Measured	Product Thickness in Well in Inches
4/8/1996	0
4/6/1998	6
10/5/1998	6
12/29/1999	0.2
3/21/2000	5
6/14/2000	1
9/12/2000	1
1/30/2001	0
4/26/2001	0
7/29/2001	0
10/27/2001	4
11/15/2002	3
5/9/2003	0
9/30/2003	0
12/12/2003	1
3/31/2004	1.80
6/2/2004	0
9/30/2004	0
12/14/2004	0.18
4/4/2005	0
10/6/2005	0
6/28/2006	0
5/25/2007	0
11/7/2007	0
6/4/2008	0
10/21/2008	0
10/14/2009	0
11/15/2010	0
5/2/2011	0
7/27/2011	0
11/2/2011	0
2/13/2012	0
5/23/2012	0
8/22/2012	0
11/6/2012	0
8/27/2013	0
11/19/2013	0
2/27/2014	0
5/23/2014	0
8/21/2014	0
11/20/2014	0



Note: Base map prepared from ArcGIS online, 2014.

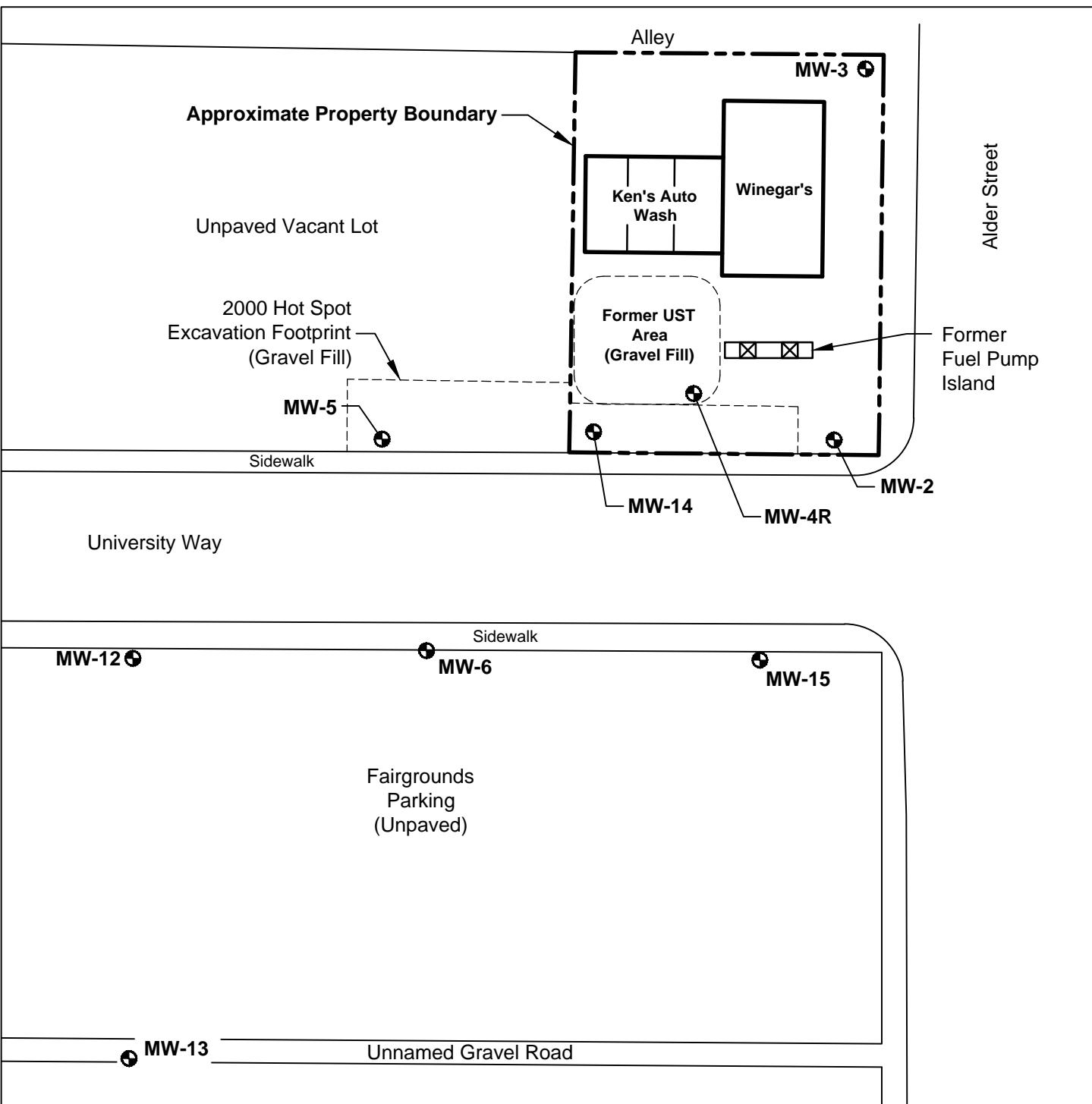
0 2000 4000

Scale in Feet



Ken's Auto Wash Ellensburg, Washington	
<b>Vicinity Map</b>	
7168-10	1/15
 <b>HARTCROWSER</b>	Figure <b>1</b>

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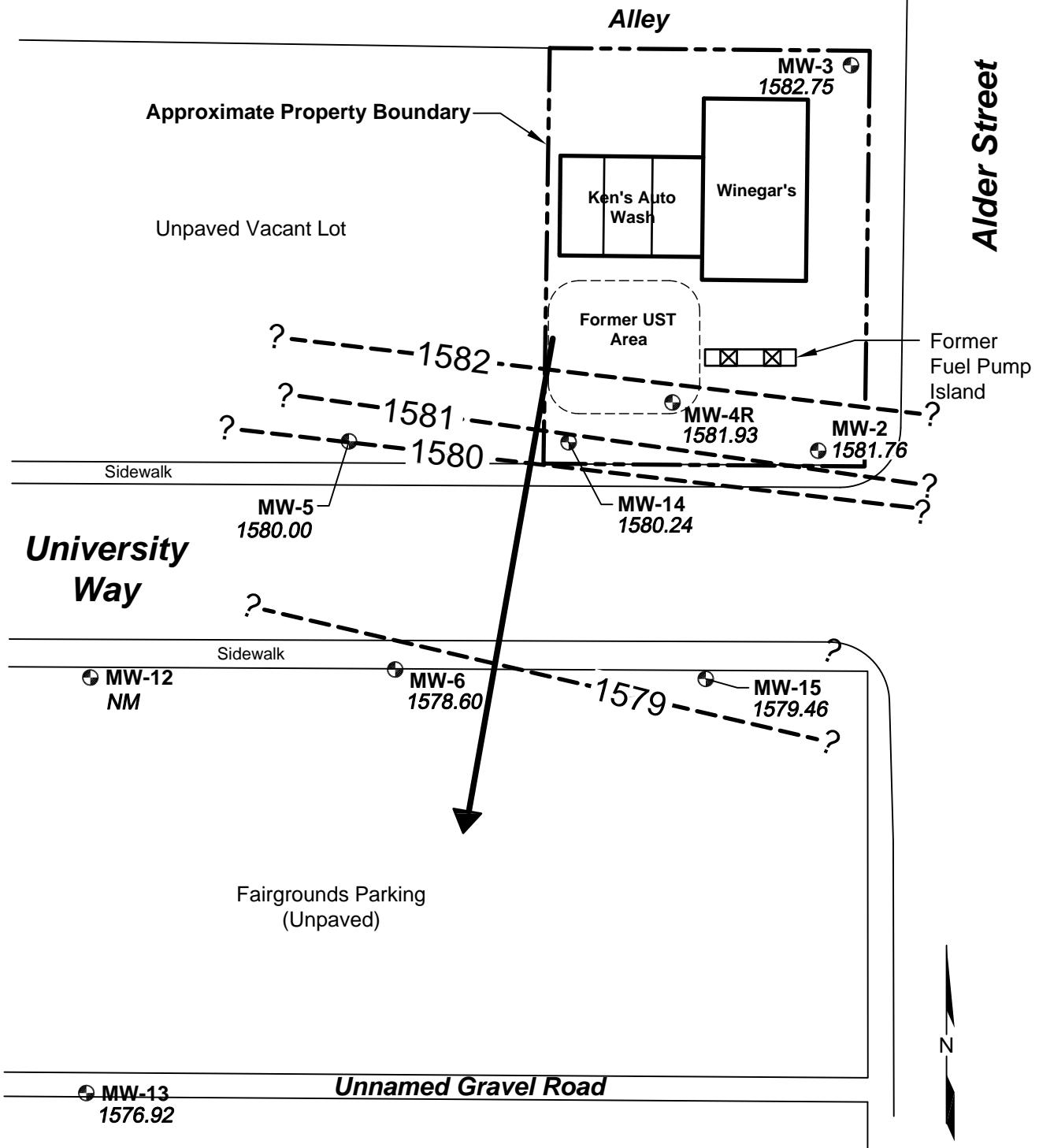
**Note:** Base map prepared from drawing provided by Sage Earth Sciences titled "Proposed Additional Monitoring Well and ORC Injections Locations," dated January 1998.



**MW-6** Hart Crowser Monitoring Well Location and Number

 <b>Ken's Auto Wash</b> Ellensburg, Washington	<b>Site and Well Location Plan</b> 7168-10      1/15
 <b>HARTCROWSER</b>	<b>Figure</b> <b>2</b>

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Note: Elevation shown are in feet above Mean Sea Level.

0 50 100  
Scale in Feet

● MW-6 Monitoring Well Location and Number

1578.94 Groundwater Elevation in Feet

NM Not Measured

— 1580 Groundwater Elevation Contour in Feet



Inferred Groundwater Flow Direction

Ken's Auto Wash  
Ellensburg, Washington

Groundwater Elevation Contour Map  
November 2013

7168-10

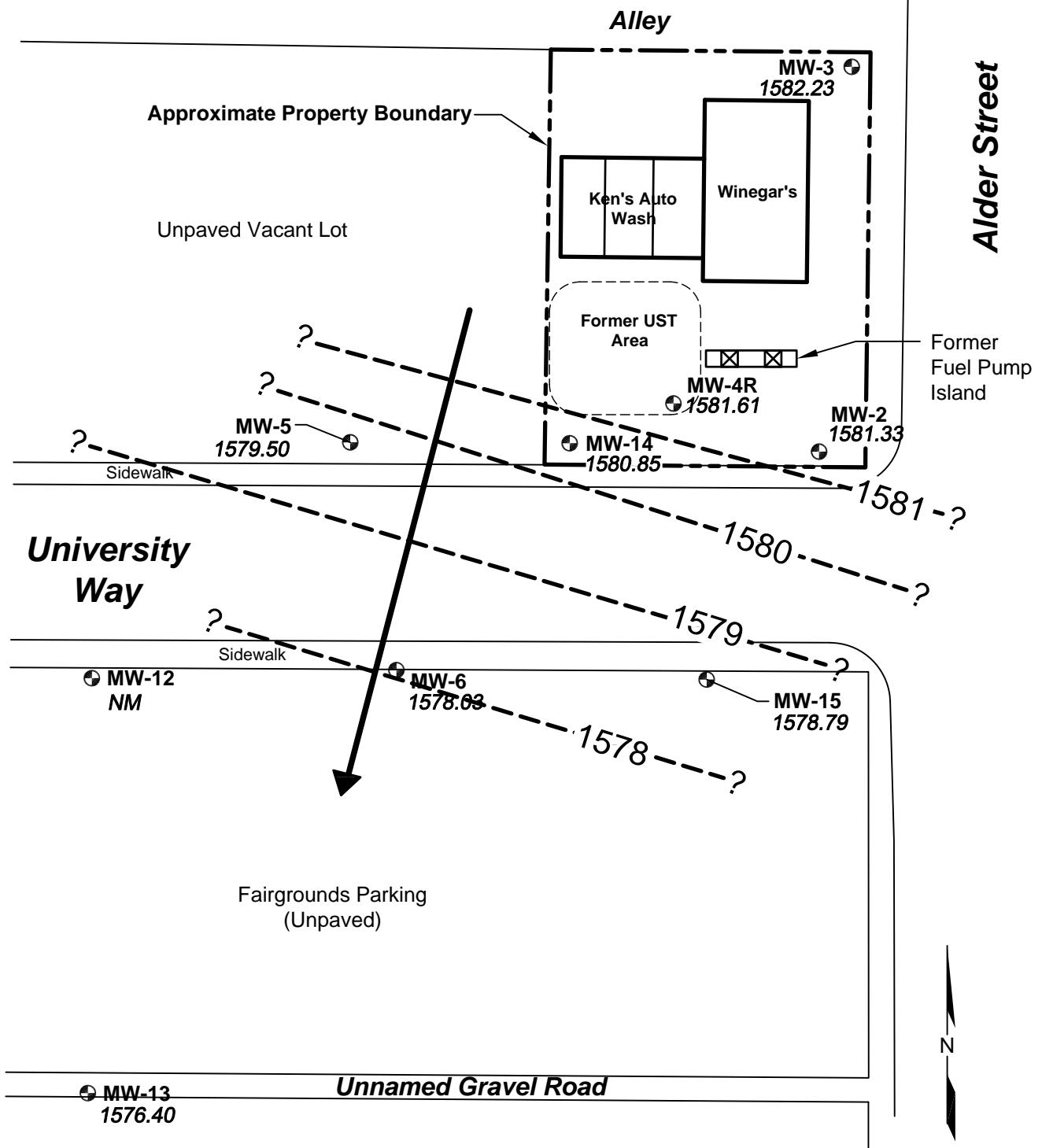
1/15

**HARTCROWSER**

Figure

**3a**

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Note: Elevation shown are in feet above Mean Sea Level.

● MW-6 Monitoring Well Location and Number

1578.94 Groundwater Elevation in Feet

NM Not Measured

— 1580 Groundwater Elevation Contour in Feet

← Inferred Groundwater Flow Direction

Ken's Auto Wash  
Ellensburg, Washington

Groundwater Elevation Contour Map  
November 2014

7168-10

1/15

HARTCROWSER

Figure

3b

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### MW-1/MW-14

4/96	<b>160</b>	6/06	0.533
4/98	<b>100</b>	11/06	0.416
7/98	<b>93</b>	5/07	0.054
12/99	<b>21.6</b>	11/07	<b>3.05</b>
3/00	<b>19.8</b>	6/08	0.05 U
6/00	<b>18.8</b>	10/08	<b>2.04</b>
6/00	<b>21.4</b>	10/09	<b>2.03</b>
9/00	<b>7.45</b>	11/10	2.5
4/01	<b>26.1</b>	5/11	3.1
7/01	<b>14.2</b>	7/11	3.7
10/01	<b>9.97</b>	11/11	1.2
11/02	<b>8.38</b>	2/12	2.2
5/03	<b>4.52</b>	5/12	0.25 U
9/03	<b>6.23 J</b>	8/12	<b>0.87</b>
12/03	<b>5.89</b>	11/12	1.2
3/04	<b>6.27</b>	8/13	0.58 J
6/04	<b>3.79 J</b>	11/13	1.1
9/04	<b>5.7 J</b>	2/14	1.4 J
12/04	<b>5.5 J</b>	5/14	1.1 J
4/05	<b>8.1 J</b>	8/14	1.1 J
10/05	<b>4.07 J</b>	11/14	0.34

### MW-3

4/96 to 6/04	0.05 U
9/04	0.05 UJ
12/04 to 10/08	0.05 U
10/09	0.08 U
11/10	0.10 U
5/11 to 7/11	0.25 U
11/11 to 11/14	0.10 U

### MW-2

4/96 to 12/03	0.05 U
3/04	<b>13.0*</b>
6/04	<b>1.48*</b>
9/04	<b>1.29 J*</b>
12/04	0.05 U
4/05	0.101
10/05	0.160
11/06 to 10/08	0.05 U
10/09	0.08 U
11/10 to 11/14	0.10 U

Sidewalk

### MW-12

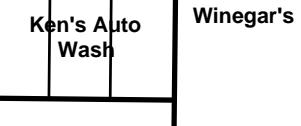
12/99 to 6/04	0.05 U
9/04	0.05 UJ
12/04 to 10/08	0.05 U
10/09	0.08 U
11/10 to 11/11	0.10 U

### MW-5

1/98	<b>6.2</b>	3/04	0.053
4/98	<b>2.8</b>	6/04	0.0928
7/98	0.05 U	12/04	0.308
10/98	<b>4.7</b>	3/04	0.053
12/99	0.779	6/04	0.0928
3/00	0.519	12/04	0.308
6/00	0.708	4/05	0.620
9/00	0.05 U	10/05	0.114
4/01	<b>0.831</b>	6/06 to 10/08	0.05 U
7/01	0.0538		
10/01	0.552	10/09	0.08 U
11/02	0.108	11/10	0.17
5/03	0.0787	11/11 to 11/14	0.10 U
9/03	0.229		
12/03	0.05 U		

### MW-13

12/99 to 6/04	0.05 U
9/04	0.05 UJ
12/04 to 10/08	0.05 U
10/09	0.08 U
11/10 to 11/11	0.10 U
5/12	0.25 U
8/12 to 11/14	0.10 U



### MW-15

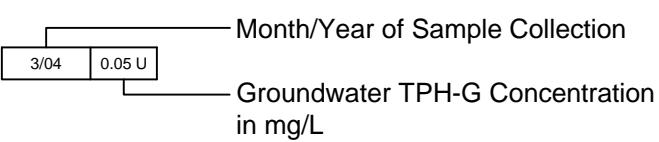
1/01	0.161
4/01 to 6/04	0.05 U
9/04	0.05 UJ
12/04 to 10/08	0.05 U
10/09	0.08 U
11/10 to 11/14	0.10 U

### MW-4/MW-4R

1/98	0.2	6/04	0.14
4/98	0.4	9/04	0.0887 J
7/98	0.05 U	12/04	0.05 U
10/98	0.15	4/05	0.112
12/99	0.301	10/05	0.744
3/00	0.414	6/06	0.05 U
6/00	0.439	11/06	0.107
9/00	0.101	5/07	0.05 U
1/01	0.182	11/07	0.075
4/01	0.673	6/08 to 10/08	0.05 U
7/01	0.402	10/09	0.08 U
10/01	0.200	11/10	0.10 U
11/02	0.0756	5/11	0.25 U
5/03	0.0618	7/11	0.98
9/03	0.161	11/11 to 2/12	0.10 U
12/03	0.05 U	5/12	0.25 U
3/04	0.267	8/12 to 11/14	0.10 U

0 50 100  
Scale in Feet

### MW-6 Monitoring Well Location and Number



Notes: Concentrations exceeding the cleanup level are shown in bold.  
U = Not detected at specified detection limit  
J = Estimated concentration  
\* = Previous inflow of minor TPH-contaminated water through MW-2 top of well casing suspected

Ken's Auto Wash  
Ellensburg, Washington

### TPH-G Occurrences in Groundwater

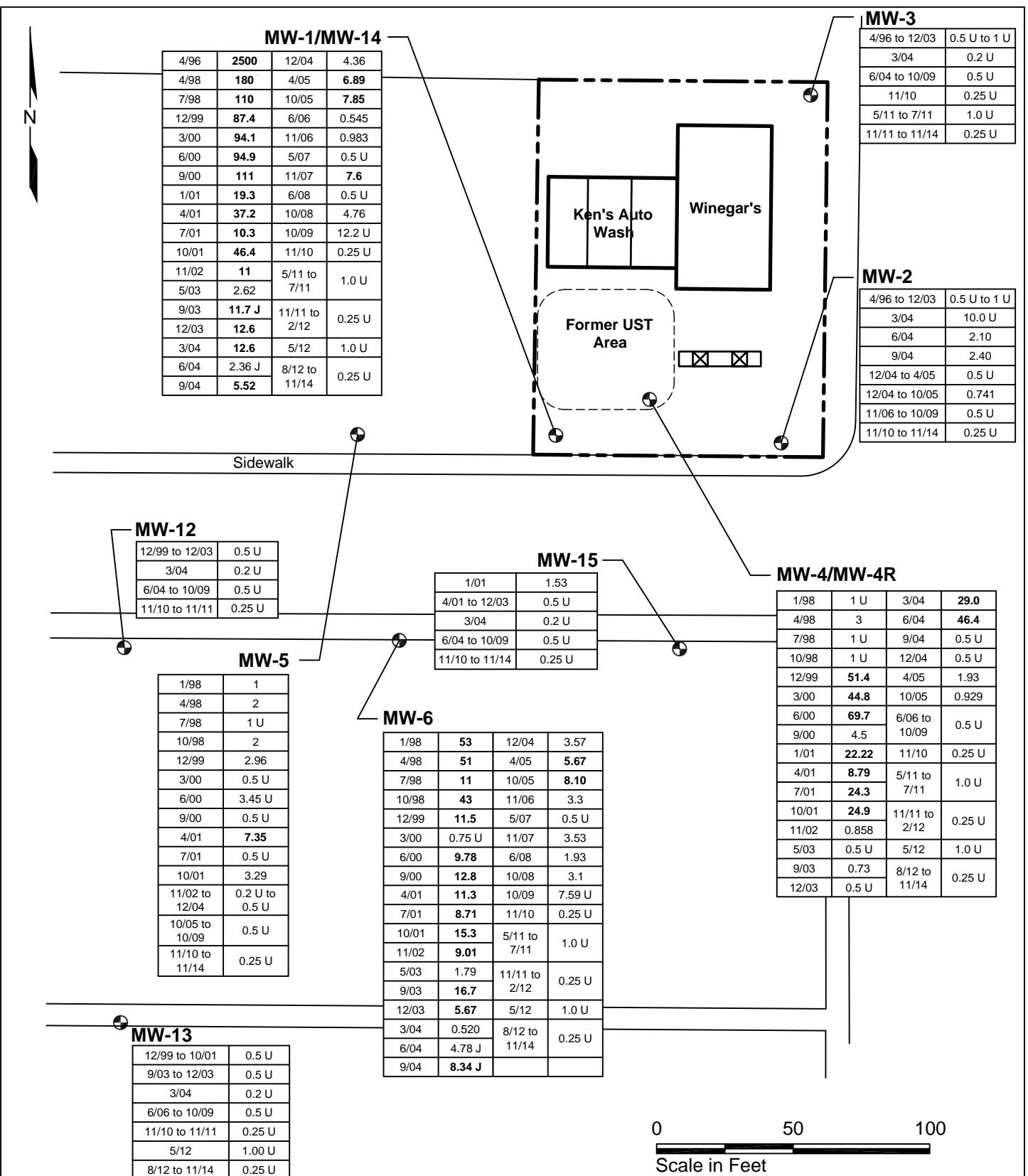
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Figure  
**4**

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### MW-6 Monitoring Well Location and Number

Month/Year of Sample Collection

3/04	0.5 U
------	-------

Groundwater Benzene Concentration in µg/L

Notes: Concentrations exceeding the cleanup level are shown in bold.

U = Not detected at specified detection limit.

J = Estimated concentration

Ken's Auto Wash  
Ellensburg, Washington

### Benzene Occurrences in Groundwater

7168-10

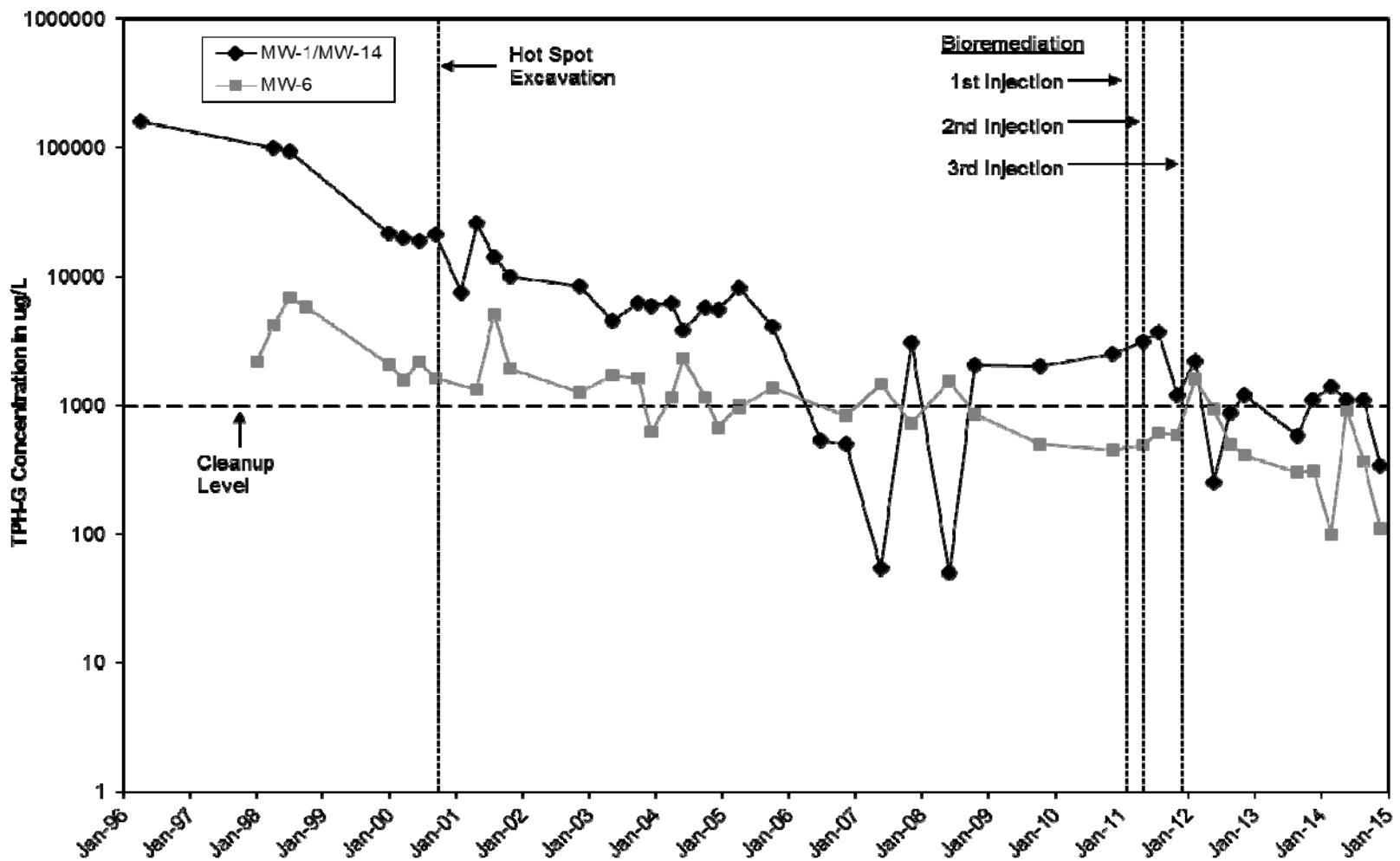
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Figure

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Ken's Auto Wash  
Ellensburg, Washington

### Long-Term Trends in TPH-G Concentrations in Groundwater

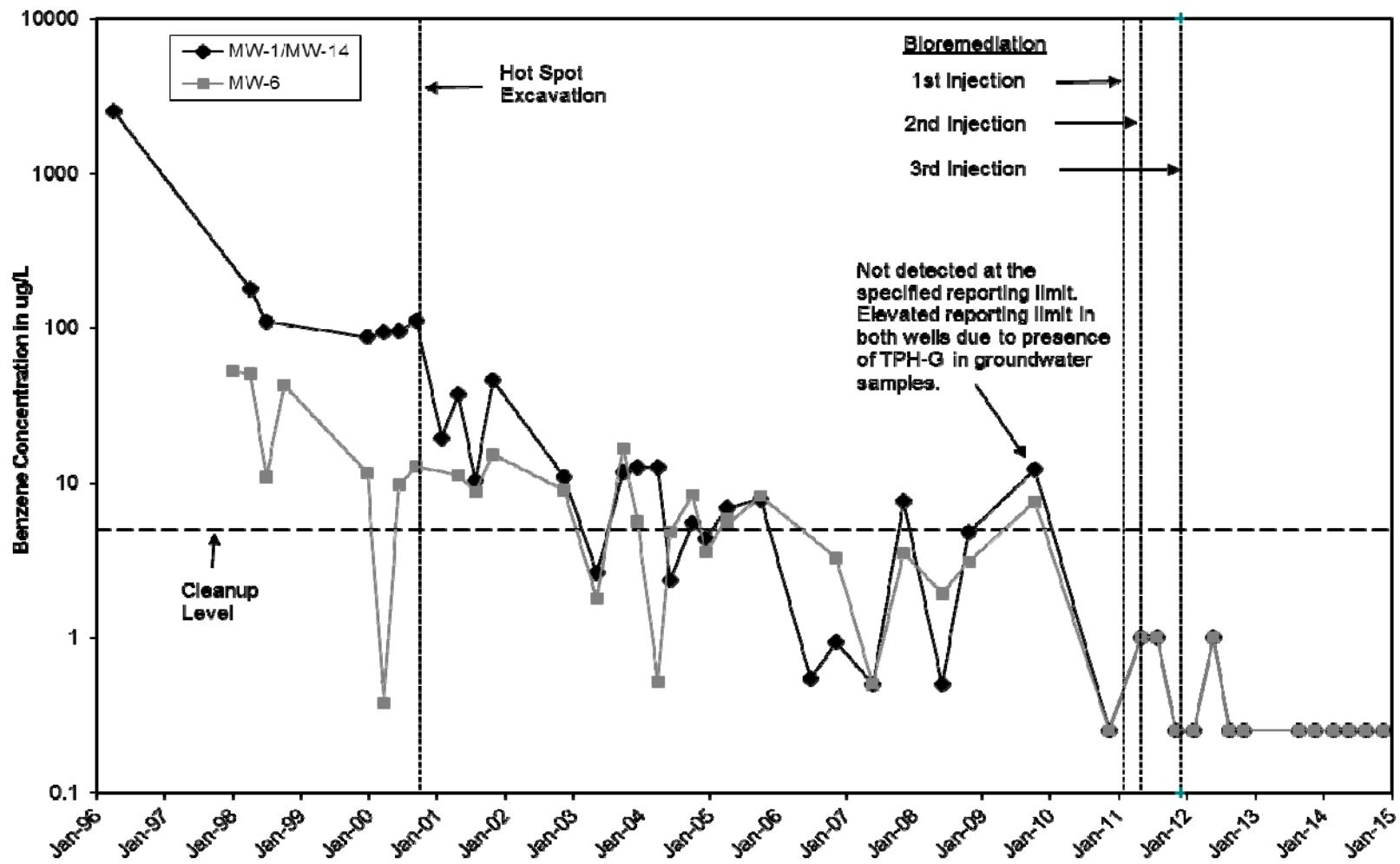
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**HARTCROWSER**

**6**

Figure

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**HARTCROWSER**

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Ken's Auto Wash  
Ellensburg, Washington

**Long-Term Trends in Benzene Concentrations in Groundwater**

Figure

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## APPENDIX A

### Chemical Data Quality Review and Laboratory Report

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# APPENDIX A

## CHEMICAL DATA QUALITY REVIEW AND LABORATORY REPORT

### Chemical Data Quality Review

Groundwater sampling was conducted in August and November 2013, and February, May, August, and November 2014. The samples were submitted to Analytical Resources, Inc. (ARI) in Tukwila, Washington, for chemical analysis. Groundwater samples were analyzed for the following:

- BTEX (EPA Method 8021B);
- Gasoline-range hydrocarbons (NWTPH-G); and
- Nitrate, sulfate, bromide, and chloride (EPA Method 300.0).

The reported results and the associated quality assurance sample results were reviewed. The following criteria were evaluated in the standard validation process:

- Holding times;
- Method blanks;
- Surrogate recoveries;
- Matrix spike and matrix spike duplicate recovery (MS/MSD);
- Laboratory control samples and laboratory control sample duplicate recovery (LCS/LCSD); and
- Laboratory duplicate, MS/MSD, and LCS/LCSD relative percent differences (RPDs).

All data are acceptable for use as reported. Details for the quarterly sampling events are described below.

#### August 2013

Four groundwater samples and one trip blank were collected on August 27, 2013.

The required holding times were met for the analyses. No method blank or trip blank contamination was detected. Surrogate, MS/MSD, and LCS/LCSD recoveries were within laboratory control limits. Laboratory duplicate, MS/MSD, and LCS/LCSD RPDs were acceptable.

The samples were received at the laboratory with temperatures above the method recommended temperature of 2° to 6° C. Due to the temperature exceedance, results for the volatile compounds (BTEX and gasoline) and nitrate were qualified as estimated (J). Results for sulfate were not qualified, as the temperature exceedance would not significantly affect the analytical results.

The data are acceptable for use with qualification due to the temperature exceedance.

## November 2013

Eight groundwater samples, one field duplicate, and one trip blank were collected on November 19 and 20, 2013.

The required holding times were met for the analyses. No method blank or trip blank contamination was detected. Surrogate, MS/MSD, and LCS/LCSD recoveries were within laboratory control limits. Laboratory duplicate, field duplicate, MS/MSD, and LCS/LCSD RPDs were acceptable.

The sample container labels did not match the sample identification on the Chain of Custody. The samples were reported by the laboratory using the identification on the Chain of Custody, which matched historical sample names.

The data are acceptable for use as reported.

## February 2014

Four groundwater samples and one trip blank were collected on February 27, 2014.

The required holding times were met for the analyses. No method blank or trip blank contamination was detected. Surrogate, MS/MSD, and LCS/LCSD recoveries were within laboratory control limits. Laboratory duplicate, MS/MSD, and LCS/LCSD RPDs were acceptable.

Sample MW-4R: The Chain of Custody listed the sample as MW-4, while the sample container labels identified the sample as MW-4R. The sample was reported by the laboratory using the identification on the sample labels, which matched the historical sample name.

The data are acceptable for use as reported.

## May 2014

Four groundwater samples were collected on May 23, 2014.

The required holding times were met for the analyses. No method blank or trip blank contamination was detected. Surrogate, MS/MSD, and LCS/LCSD recoveries were within laboratory control limits. Laboratory duplicate, field duplicate, MS/MSD, and LCS/LCSD RPDs were acceptable.

The samples were received at the laboratory with temperatures above the method recommended temperature of 2° to 6° C. Due to the temperature exceedance, results for the volatile compounds (BTEX and gasoline) and nitrate were qualified as estimated (J). Results for sulfate were not qualified, as the temperature exceedance would not significantly affect the analytical results.

The data are acceptable for use with qualification due to the temperature exceedance.

## August 2014

Four groundwater samples and one trip blank were collected on August 21, 2014.

The required holding times were met for the analyses. No method blank or trip blank contamination was detected. Surrogate, MS/MSD, and LCS/LCSD recoveries were within laboratory control limits. Laboratory duplicate, field duplicate, MS/MSD, and LCS/LCSD RPDs were acceptable.

The samples were received at the laboratory with temperatures above the method recommended temperature of 2° to 6° C. Due to the temperature exceedance, results for the volatile compounds (BTEX and gasoline) and nitrate were qualified as estimated (J). Results for sulfate were not qualified, as the temperature exceedance would not significantly affect the analytical results.

The data are acceptable for use with qualification due to the temperature exceedance.

## November 2014

Eight groundwater samples, one field duplicate, and one trip blank were collected on November 20 and 21, 2013.

The required holding times were met for the analyses. No method blank or trip blank contamination was detected. Surrogate, MS/MSD, and LCS/LCSD recoveries were within laboratory control limits. Laboratory duplicate, MS/MSD, and LCS/LCSD RPDs were acceptable.

Field duplicate RPD: The RPD for nitrate in the field duplicate MW-14/MW-KA exceeded control limits. The results for nitrate in samples MW-14 and MW-KA were qualified as estimated (J).

Sample MW-4R: The Chain of Custody listed the sample as MW-4R, while the sample container labels identified the sample as MW-4. The sample was reported by the laboratory using the identification on the Chain of Custody, which matched the historical sample name.

The data are acceptable for use as reported.

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# Laboratory Report

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**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

September 2, 2013

Angie Goodwin  
Hart Crowser, Inc.  
1700 Westlake Avenue N. Suite 200  
Seattle, WA 98109-3256

**RE: Client Project: Ken's Auto, 7168-10**  
**ARI Job No.: XC65**

Dear Angie:

Please find enclosed the original Chain-of-Custody record (COC), sample receipt documentation, and the final data for samples from the project referenced above. Analytical Resources, Inc. (ARI) received four water samples and one trip blank on August 28, 2013. The samples were received in good condition with a cooler temperature of 9.4°C. For further details regarding sample receipt, please refer to the enclosed Cooler Receipt Form.

The samples were analyzed for NWTPH-Gx plus BTEX and Anions, as requested on the COC.

There were no anomalies associated with the analyses.

Sincerely,  
ANALYTICAL RESOURCES, INC.

Kelly Bottem  
Client Services Manager  
[kellyb@arilabs.com](mailto:kellyb@arilabs.com)  
206/695-6211  
Enclosures

cc: eFile XC65





ARI Client Hart Crouse

COC No(s): \_\_\_\_\_ NA

Assigned ARI Job No: XCE5

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES NO

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.)? YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) ... 9.4

If cooler temperature is out of compliance fill out form 00070F

Cooler Accepted by: [Signature] Date: 8/28/13 Time: 1645 Temp Gun ID#: 122412224

*Complete custody forms and attach all shipping documents*

Log-In Phase:

- Was a temperature blank included in the cooler? NO YES NO
- What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: NA YES NO
- Was sufficient ice used (if appropriate)? NO YES NO
- Were all bottles sealed in individual plastic bags? NO YES NO
- Did all bottles arrive in good condition (unbroken)? NO YES NO
- Were all bottle labels complete and legible? NO YES NO
- Did the number of containers listed on COC match with the number of containers received? NO YES NO
- Did all bottle labels and tags agree with custody papers? NO YES NO
- Were all bottles used correct for the requested analyses? NO YES NO
- Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs). NA YES NO
- Were all VOC vials free of air bubbles? NO YES NO
- Was sufficient amount of sample sent in each bottle? NO YES NO
- Date VOC Trip Blank was made at ARI: 8/23 NA

Was Sample Split by ARI: NA YES Date/Time: \_\_\_\_\_ Equipment: \_\_\_\_\_ Split by: \_\_\_\_\_

Samples Logged by: B Date: 8-29-13 Time: 7H1

**\*\* Notify Project Manager of discrepancies or concerns \*\***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

*Additional Notes, Discrepancies, & Resolutions:*

By:	Date:	Small Air Bubbles ~2mm • • •	Peabubbles 2-4 mm • • •	LARGE Air Bubbles > 4 mm • • •	Small → "sm" Peabubbles → "pb" Large → "lg" Headspace → "hs"



**Analytical Resources,  
Incorporated**  
Analytical Chemists and  
Consultants

# **Cooler Temperature Compliance Form**

Completed by

Date \_\_\_\_\_

9/2/3

## Time

12.16

**Sample ID Cross Reference Report**

ARI Job No: XC65

Client: Hart Crowser Inc.

Project Event: 7168-10

Project Name: Ken's Auto Wash

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. MW-4R	XC65A	13-17940	Water	08/27/13 16:05	08/28/13 17:35
2. MW-14	XC65B	13-17941	Water	08/27/13 15:13	08/28/13 17:35
3. MW-6	XC65C	13-17942	Water	08/27/13 14:05	08/28/13 17:35
4. MW-13	XC65D	13-17943	Water	08/27/13 12:55	08/28/13 17:35
5. Trip Blanks	XC65E	13-17944	Water	08/27/13	08/28/13 17:35

Printed 08/29/13 Page 1 of 1

XC65-00005

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021BMod**  
**TPHG by Method NWTPHG**  
 Page 1 of 1

Lab Sample ID: XC65A  
 LIMS ID: 13-17940  
 Matrix: Water  
 Data Release Authorized: MN  
 Reported: 08/30/13

Date Analyzed: 08/29/13 17:39  
 Instrument/Analyst: PID3/PKC

Sample ID: MW-4R  
**SAMPLE**

QC Report No: XC65-Hart Crowser Inc.  
 Project: Ken's Auto Wash  
 Event: 7168-10  
 Date Sampled: 08/27/13  
 Date Received: 08/28/13

Purge Volume: 5.0 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.10	< 0.10 U	GAS ID ---
-----------------------------	------	----------	---------------

#### **BETX Surrogate Recovery**

Trifluorotoluene	106%
Bromobenzene	108%

#### **Gasoline Surrogate Recovery**

Trifluorotoluene	106%
Bromobenzene	104%

BETX values reported in µg/L (ppb)  
 Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.  
 GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021BMod**  
**TPHG by Method NWTPHG**  
 Page 1 of 1

Lab Sample ID: XC65B  
 LIMS ID: 13-17941  
 Matrix: Water  
 Data Release Authorized: *MW*  
 Reported: 08/30/13

Date Analyzed: 08/29/13 18:08  
 Instrument/Analyst: PID3/PKC

QC Report No: XC65-Hart Crowser Inc.  
 Project: Ken's Auto Wash  
 Event: 7168-10  
 Date Sampled: 08/27/13  
 Date Received: 08/28/13

Purge Volume: 5.0 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
<b>100-41-4</b>	<b>Ethylbenzene</b>	<b>0.25</b>	<b>0.26</b>
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U

<b>Gasoline Range Hydrocarbons</b>	<b>0.10</b>	<b>GAS ID</b>
		<b>GRO</b>

#### **BETX Surrogate Recovery**

Trifluorotoluene	105%
Bromobenzene	104%

#### **Gasoline Surrogate Recovery**

Trifluorotoluene	105%
Bromobenzene	103%

BETX values reported in µg/L (ppb)  
 Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.  
 GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021BMod**  
**TPHG by Method NWTPHG**  
Page 1 of 1

Lab Sample ID: XC65C  
LIMS ID: 13-17942  
Matrix: Water  
Data Release Authorized: *MW*  
Reported: 08/30/13

Date Analyzed: 08/29/13 18:36  
Instrument/Analyst: PID3/PKC

QC Report No: XC65-Hart Crowser Inc.  
Project: Ken's Auto Wash  
Event: 7168-10  
Date Sampled: 08/27/13  
Date Received: 08/28/13

Purge Volume: 5.0 mL  
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U

## BETX Surrogate Recovery

Trifluorotoluene 105%  
Bromobenzene 102%

## **Gasoline Surrogate Recovery**

Trifluorotoluene 104%  
Bromobenzene 101%

BETX values reported in  $\mu\text{g/L}$  (ppb)  
Gasoline values reported in  $\text{mg/L}$  (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.  
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021BMod**  
**TPHG by Method NWTPHG**  
 Page 1 of 1

Lab Sample ID: XC65D  
 LIMS ID: 13-17943  
 Matrix: Water  
 Data Release Authorized: *MW*  
 Reported: 08/30/13

Date Analyzed: 08/29/13 19:04  
 Instrument/Analyst: PID3/PKC

**Sample ID: MW-13  
 SAMPLE**

QC Report No: XC65-Hart Crowser Inc.  
 Project: Ken's Auto Wash  
 Event: 7168-10  
 Date Sampled: 08/27/13  
 Date Received: 08/28/13

Purge Volume: 5.0 mL  
 Dilution Factor: 1.00

<b>CAS Number</b>	<b>Analyte</b>	<b>RL</b>	<b>Result</b>
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.10	GAS ID
	< 0.10 U	---

#### **BETX Surrogate Recovery**

Trifluorotoluene	105%
Bromobenzene	104%

#### **Gasoline Surrogate Recovery**

Trifluorotoluene	105%
Bromobenzene	102%

BETX values reported in  $\mu\text{g/L}$  (ppb)  
 Gasoline values reported in  $\text{mg/L}$  (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021BMod**  
**TPHG by Method NWTPHG**  
 Page 1 of 1

Lab Sample ID: XC65E  
 LIMS ID: 13-17944  
 Matrix: Water  
 Data Release Authorized: *MW*  
 Reported: 08/30/13

Date Analyzed: 08/29/13 15:47  
 Instrument/Analyst: PID3/PKC

**Sample ID: Trip Blanks  
SAMPLE**

QC Report No: XC65-Hart Crowser Inc.  
 Project: Ken's Auto Wash  
 Event: 7168-10  
 Date Sampled: 08/27/13  
 Date Received: 08/28/13

Purge Volume: 5.0 mL  
 Dilution Factor: 1.00

<b>CAS Number</b>	<b>Analyte</b>	<b>RL</b>	<b>Result</b>
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.10	GAS ID
	< 0.10 U	---

#### **BETX Surrogate Recovery**

Trifluorotoluene	111%
Bromobenzene	106%

#### **Gasoline Surrogate Recovery**

Trifluorotoluene	108%
Bromobenzene	105%

BETX values reported in  $\mu\text{g/L}$  (ppb)  
 Gasoline values reported in  $\text{mg/L}$  (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

## ORGANICS ANALYSIS DATA SHEET

BTEX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1

**ANALYTICAL  
RESOURCES  
INCORPORATED**


Sample ID: MB-082913

METHOD BLANK

Lab Sample ID: MB-082913

LIMS ID: 13-17940

Matrix: Water

Data Release Authorized: *MW*

Reported: 08/30/13

QC Report No: XC65-Hart Crowser Inc.

Project: Ken's Auto Wash

Event: 7168-10

Date Sampled: NA

Date Received: NA

Date Analyzed: 08/29/13 15:01

Instrument/Analyst: PID3/PKC

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.10	GAS ID
	< 0.10 U	---

**BTEX Surrogate Recovery**

Trifluorotoluene	102%
Bromobenzene	103%

**Gasoline Surrogate Recovery**

Trifluorotoluene	103%
Bromobenzene	103%

BTEX values reported in  $\mu\text{g/L}$  (ppb)  
 Gasoline values reported in  $\text{mg/L}$  (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**BETX WATER SURROGATE RECOVERY SUMMARY**

ARI Job: XC65  
 Matrix: Water

QC Report No: XC65-Hart Crowser Inc.  
 Project: Ken's Auto Wash  
 Event: 7168-10

<b>Client ID</b>	<b>TFT</b>	<b>BBZ</b>	<b>TOT OUT</b>
MB-082913	102%	103%	0
LCS-082913	111%	110%	0
LCSD-082913	109%	111%	0
MW-4R	106%	108%	0
MW-14	105%	104%	0
MW-6	105%	102%	0
MW-13	105%	104%	0
Trip Blanks	111%	106%	0

**LCS/MB LIMITS                    QC LIMITS**

(TFT) = Trifluorotoluene	( 5 mL PV)	(80-120)	(80-120)
(TFT) = Trifluorotoluene	(15 mL PV)	(79-120)	(80-120)
(BBZ) = Bromobenzene	( 5 mL PV)	(80-120)	(77-120)
(BBZ) = Bromobenzene	(15 mL PV)	(79-120)	(80-120)

Log Number Range: 13-17940 to 13-17944

**TPHG WATER SURROGATE RECOVERY SUMMARY**

ARI Job: XC65  
 Matrix: Water

QC Report No: XC65-Hart Crowser Inc.  
 Project: Ken's Auto Wash  
 Event: 7168-10

<b>Client ID</b>	<b>TFT</b>	<b>BBZ</b>	<b>TOT OUT</b>
MB-082913	103%	103%	0
LCS-082913	111%	114%	0
LCSD-082913	112%	118%	0
MW-4R	106%	104%	0
MW-14	105%	103%	0
MW-6	104%	101%	0
MW-13	105%	102%	0
Trip Blanks	108%	105%	0

**LCS/MB LIMITS      QC LIMITS**

(TFT) = Trifluorotoluene	(80-120)	(80-120)
(BBZ) = Bromobenzene	(80-120)	(80-120)

Log Number Range: 13-17940 to 13-17944

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021BMod**  
 Page 1 of 1

Lab Sample ID: LCS-082913  
 LIMS ID: 13-17940  
 Matrix: Water  
 Data Release Authorized: MW  
 Reported: 08/30/13

Date Analyzed LCS: 08/29/13 14:04  
 LCSD: 08/29/13 14:32  
 Instrument/Analyst LCS: PID3/PKC  
 LCSD: PID3/PKC

QC Report No: XC65-Hart Crowser Inc.

Project: Ken's Auto Wash  
 Event: 7168-10  
 Date Sampled: NA  
 Date Received: NA

Purge Volume: 5.0 mL

Dilution Factor LCS: 1.0  
 LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	2.26	2.10	108%	2.19	2.10	104%	3.1%
Toluene	33.5	34.8	96.3%	33.0	34.8	94.8%	1.5%
Ethylbenzene	16.6	17.4	95.4%	16.3	17.4	93.7%	1.8%
m,p-Xylene	61.0	62.7	97.3%	60.0	62.7	95.7%	1.7%
o-Xylene	31.5	34.6	91.0%	31.4	34.6	90.8%	0.3%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

**BETX Surrogate Recovery**

	LCS	LCSD
Trifluorotoluene	111%	109%
Bromobenzene	110%	111%

**ANALYTICAL  
RESOURCES  
INCORPORATED**

**Sample ID: LCS-082913  
LAB CONTROL SAMPLE**

## ORGANICS ANALYSIS DATA SHEET

TPHG by Method NWTPHG

Page 1 of 1

Lab Sample ID: LCS-082913

LIMS ID: 13-17940

Matrix: Water

Data Release Authorized: *MW*

Reported: 08/30/13



Sample ID: LCS-082913

LAB CONTROL SAMPLE

QC Report No: XC65-Hart Crowser Inc.

Project: Ken's Auto Wash

Event: 7168-10

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 08/29/13 14:04

Purge Volume: 5.0 mL

LCSD: 08/29/13 14:32

Instrument/Analyst LCS: PID3/PKC

Dilution Factor LCS: 1.0

LCSD: PID3/PKC

LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	2.66	2.50	106%	2.64	2.50	106%	0.8%

Reported in mg/L (ppm)

RPD calculated using sample concentrations per SW846.

**TPHG Surrogate Recovery**

	LCS	LCSD
Trifluorotoluene	111%	112%
Bromobenzene	114%	118%

SAMPLE RESULTS-CONVENTIONALS  
XC65-Hart Crowser Inc.

ANALYTICAL  
RESOURCES  
INCORPORATED

Matrix: Water  
Data Release Authorized  
Reported: 08/30/13

Project: Ken's Auto Wash  
Event: 7168-10  
Date Sampled: 08/27/13  
Date Received: 08/28/13

Client ID: MW-4R  
ARI ID: 13-17940 XC65A

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	08/28/13 082813#1	EPA 300.0	mg-N/L	0.1	0.3
Sulfate	08/29/13 082913#1	EPA 300.0	mg/L	0.2	5.8

RL Analytical reporting limit

U Undetected at reported detection limit

**SAMPLE RESULTS-CONVENTIONALS**  
**XC65-Hart Crowser Inc.**

**ANALYTICAL  
RESOURCES  
INCORPORATED**

Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 08/30/13

Project: Ken's Auto Wash  
Event: 7168-10  
Date Sampled: 08/27/13  
Date Received: 08/28/13

**Client ID: MW-14**  
**ARI ID: 13-17941 XC65B**

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	08/28/13 082813#1	EPA 300.0	mg-N/L	0.1	0.9
Sulfate	08/29/13 082913#1	EPA 300.0	mg/L	2.0	73.9

RL Analytical reporting limit  
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS  
XC65-Hart Crowser Inc.

ANALYTICAL  
RESOURCES  
INCORPORATED

Matrix: Water  
Data Release Authorized  
Reported: 08/30/13

Project: Ken's Auto Wash  
Event: 7168-10  
Date Sampled: 08/27/13  
Date Received: 08/28/13

Client ID: MW-6  
ARI ID: 13-17942 XC65C

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	08/28/13 082813#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Sulfate	08/28/13 082813#1	EPA 300.0	mg/L	0.1	1.4

RL Analytical reporting limit

U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS  
XC65-Hart Crowser Inc.

ANALYTICAL  
RESOURCES  
INCORPORATED

Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 08/30/13

Project: Ken's Auto Wash  
Event: 7168-10  
Date Sampled: 08/27/13  
Date Received: 08/28/13

Client ID: MW-13  
ARI ID: 13-17943 XC65D

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	08/28/13 082813#1	EPA 300.0	mg-N/L	0.1	0.3
Sulfate	08/28/13 082813#1	EPA 300.0	mg/L	0.1	3.1

RL Analytical reporting limit

U Undetected at reported detection limit

**METHOD BLANK RESULTS-CONVENTIONALS**  
**XC65-Hart Crowser Inc.**

**ANALYTICAL  
RESOURCES  
INCORPORATED**

Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 08/30/13

Project: Ken's Auto Wash  
Event: 7168-10  
Date Sampled: NA  
Date Received: NA

Analyte	Method	Date	Units	Blank	ID
N-Nitrate	EPA 300.0	08/28/13	mg-N/L	< 0.1 U	
Sulfate	EPA 300.0	08/28/13 08/29/13	mg/L	< 0.1 U < 0.1 U	

**STANDARD REFERENCE RESULTS-CONVENTIONALS**  
**XC65-Hart Crowser Inc.**

**ANALYTICAL  
RESOURCES  
INCORPORATED**

Matrix: Water  
Data Release Authorized:  
Reported: 08/30/13

Project: Ken's Auto Wash  
Event: 7168-10  
Date Sampled: NA  
Date Received: NA

Analyte/SRM ID	Method	Date	Units	SRM	True Value	Recovery
N-Nitrate ERA #220912	EPA 300.0	08/28/13	mg-N/L	3.1	3.0	103.3%
Sulfate ERA 240312	EPA 300.0	08/28/13 08/29/13	mg/L	3.0 3.0	3.0 3.0	100.0% 100.0%

**REPLICATE RESULTS-CONVENTIONALS**  
**XC65-Hart Crowser Inc.**

**ANALYTICAL  
RESOURCES  
INCORPORATED**

Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 08/30/13

Project: Ken's Auto Wash  
Event: 7168-10  
Date Sampled: 08/27/13  
Date Received: 08/28/13

Analyte	Method	Date	Units	Sample	Replicate(s)	RPD/RSD
<b>ARI ID: XC65A Client ID: MW-4R</b>						
N-Nitrate	EPA 300.0	08/28/13	mg-N/L	0.3	0.3	0.0%
Sulfate	EPA 300.0	08/29/13	mg/L	5.8	5.8	0.0%

MS/MSD RESULTS-CONVENTIONALS  
XC65-Hart Crowser Inc.

ANALYTICAL  
RESOURCES  
INCORPORATED

Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 08/30/13

Project: Ken's Auto Wash  
Event: 7168-10  
Date Sampled: 08/27/13  
Date Received: 08/28/13

Analyte	Method	Date	Units	Sample	Spike Added	Spike Recovered	Recovery
<b>ARI ID: XC65A Client ID: MW-4R</b>							
N-Nitrate	EPA 300.0	08/28/13	mg-N/L	0.3	2.4	2.0	105.0%
Sulfate	EPA 300.0	08/29/13	mg/L	5.8	9.8	4.0	100.0%



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

December 9, 2013

Angie Goodwin  
Hart Crowser, Inc.  
1700 Westlake Avenue N. Suite 200  
Seattle, WA 98109-3256

**RE: Client Project: Ken's Auto, 7168-11**  
**ARI Job No.: XP00**

Dear Angie:

Please find enclosed the original Chain-of-Custody record (COC), sample receipt documentation, and the final data for samples from the project referenced above. Analytical Resources, Inc. (ARI) received nine water samples and one trip blank on November 20, 2013. The samples were received in good condition with a cooler temperature of 3.4°C. For further details regarding sample receipt, please refer to the enclosed Cooler Receipt Form.

The samples were analyzed for NWTPH-Gx plus BTEX, total lead and Anions, as requested on the COC.

There were no anomalies associated with the analyses.

Sincerely,

ANALYTICAL RESOURCES, INC.

A handwritten signature in black ink, appearing to read "Kelly Bottem".

Kelly Bottem  
Client Services Manager  
kellyb@arilabs.com  
206/695-6211  
Enclosures

cc: eFile XP00

# Sample Custody Record

**HARTCROWSER**

Samples Shipped to: \_\_\_\_\_

JOB 7168-#11 LAB NUMBER \_\_\_\_\_

PROJECT NAME Kens Auto

HART CROWSER CONTACT Angie Goodwin

SAMPLED BY: MJM

OBSERVATIONS/COMMENTS/  
COMPOSITING INSTRUCTIONS

NO. OF CONTAINERS

TA+G/BTEX  
NO3/SO4/BaCl2  
Lead  
ltds/Lead

REQUESTED ANALYSIS							TOTAL NUMBER OF CONTAINERS	
LAB NO.	SAMPLE ID	DESCRIPTION	DATE	TIME	MATRIX			
MW-4R		11/19/13 12:17 water			X X X X	4		
MW-3			10/4/13	0945	X X X X	4		
MW-2			1	1330	X X X X	4		
MW-5				1435	X X X X	4		
MW-14				1116	X X X X	4		
MW-1A			11/20/13	1210	X X X X	4		
MW-6				1140	X X X X	4		
MW-13				0957	X X X X	4		
MW-15				1050	X X X X	4		
TB		11/18/13 — water			X	4	<u>Tri p Blank</u>	
REINQUISITION BY							STORAGE REQUIREMENTS:	
<u>Hart Crowser</u>	<u>11/20/13</u>	<u>Received</u>	<u>11/20/13</u>	<u>11:15</u>	<u>Time</u>	<u>1453</u>	<u>COOLER NO.:</u>	<u>STORAGE LOCATION:</u>
<u>Marc Miller</u>	<u>TIME</u>	<u>Print Name</u>	<u>Signature</u>	<u>TIME</u>	<u>Print Name</u>	<u>COMPANY</u>	<u>COOLER NO.:</u>	<u>STORAGE LOCATION:</u>
<u>Hart Crowser</u>	<u>1453</u>	<u>COMPANY</u>						
REINQUISITION BY							TURNAROUND TIME:	
<u>Hart Crowser</u>	<u>TIME</u>	<u>Print Name</u>	<u>Signature</u>	<u>TIME</u>	<u>Print Name</u>	<u>COMPANY</u>	<input type="checkbox"/> 24 HOURS	<input type="checkbox"/> 1 WEEK
<u>Hart Crowser</u>							<input type="checkbox"/> 48 HOURS	<input checked="" type="checkbox"/> STANDARD
<u>Hart Crowser</u>							<input type="checkbox"/> 72 HOURS	<input type="checkbox"/> OTHER _____

SAMPLE RECEIPT INFORMATION

CUSTODY SEALS:  
 YES    NO    N/A  
 YES    NO    GOOD CONDITION  
 YES    NO    TEMPERATURE  
 SHIPMENT METHOD:  HAND    OVERNIGHT  
 COURIER

For gas benzene, please report  
to the curve



# Cooler Receipt Form

ARI Client Hart Crowley

COC No(s): \_\_\_\_\_ (NA)

Assigned ARI Job No: XP00 (NA)

## Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES  NO

Were custody papers included with the cooler? YES  NO

Were custody papers properly filled out (ink, signed, etc.) YES  NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)  
Time: 1453 34

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 90877952

Cooler Accepted by: A Date: 11/20/13 Time: 1453

**Complete custody forms and attach all shipping documents**

## Log-In Phase:

Was a temperature blank included in the cooler? YES  NO

What kind of packing material was used? ... Bubble Wrap  Wet Ice  Gel Packs  Baggies  Foam Block  Paper  Other: \_\_\_\_\_

Was sufficient ice used (if appropriate)? YES  NO

Were all bottles sealed in individual plastic bags? YES  NO

Did all bottles arrive in good condition (unbroken)? YES  NO

Were all bottle labels complete and legible? YES  NO

Did the number of containers listed on COC match with the number of containers received? YES  NO

Did all bottle labels and tags agree with custody papers? YES  NO

Were all bottles used correct for the requested analyses? YES  NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... NA YES  NO

Were all VOC vials free of air bubbles? YES  NO

Was sufficient amount of sample sent in each bottle? YES  NO

Date VOC Trip Blank was made at ARI \_\_\_\_\_ NA Date: 11/18/13

Was Sample Split by ARI NA YES Date/Time: \_\_\_\_\_ Equipment: \_\_\_\_\_ Split by: \_\_\_\_\_

Samples Logged by JM Date: 11/20/13 Time: 1631

**\*\* Notify Project Manager of discrepancies or concerns \*\***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

### Additional Notes, Discrepancies, & Resolutions:

All sample ID's have "HC" at the beginning on containers

By: \_\_\_\_\_

JM Date: 11/20/13

Small Air Bubbles ~2mm • • •	Peabubbles 2-4 mm • • •	LARGE Air Bubbles > 4 mm • • •	Small → "sm" (< 2 mm) Peabubbles → "pb" (2 to < 4 mm) Large → "lg" (4 to < 6 mm) Headspace → "hs" (> 6 mm)

PRESERVATION VERIFICATION 11/20/13

Page 1 of 1



ARI Job No: XP00

Inquiry Number: NONE  
 Analysis Requested: 11/20/13  
 Contact: Goodwin, Angie  
 Client: Hart Crowser Inc.  
 Logged by: JM  
 Sample Set Used: Yes-481  
 Validatable Package: No  
 Deliverables:

PC: Kelly  
 VTSR: 11/20/13

Project #: 7168-11  
 Project: Kens Auto  
 Sample Site:  
 SDG No:  
 Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	TKN <2	NO23 <2	TOC <2	S2 >9	TPHD <2	DMET DOC <2	Fe2+ <2	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
13-25772 <b>XP00A</b>	MW-4R																		
13-25773 <b>XP00B</b>	MW-3																		
13-25774 <b>XP00C</b>	MW-2																		
13-25775 <b>XP00D</b>	MW-5																		
13-25776 <b>XP00E</b>	MW-14																		
13-25777 <b>XP00F</b>	MW-KA																		
13-25778 <b>XP00G</b>	MW-6																		
13-25779 <b>XP00H</b>	MW-13																		
13-25780 <b>XP00I</b>	MW-15																		

P=Pass

XP00 : 00000000

Checked By JM Date 11/20/13

**Sample ID Cross Reference Report**

ARI Job No: XP00  
Client: Hart Crowser Inc.  
Project Event: 7168-11  
Project Name: Kens Auto

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. MW-4R	XP00A	13-25772	Water	11/19/13 12:17	11/20/13 14:53
2. MW-3	XP00B	13-25773	Water	11/19/13 09:45	11/20/13 14:53
3. MW-2	XP00C	13-25774	Water	11/19/13 13:30	11/20/13 14:53
4. MW-5	XP00D	13-25775	Water	11/19/13 14:35	11/20/13 14:53
5. MW-14	XP00E	13-25776	Water	11/19/13 11:15	11/20/13 14:53
6. MW-KA	XP00F	13-25777	Water	11/20/13 12:10	11/20/13 14:53
7. MW-6	XP00G	13-25778	Water	11/20/13 11:40	11/20/13 14:53
8. MW-13	XP00H	13-25779	Water	11/20/13 09:57	11/20/13 14:53
9. MW-15	XP00I	13-25780	Water	11/20/13 10:50	11/20/13 14:53
10. TB	XP00J	13-25781	Water	11/19/13	11/20/13 14:53

Printed 11/20/13 Page 1 of 1

XP00 : 00005



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Analytical Chemists and Consultants

## Data Reporting Qualifiers

Effective 2/14/2011

### Inorganic Data

- U Indicates that the target analyte was not detected at the reported concentration
- \* Duplicate RPD is not within established control limits
- B Reported value is less than the CRDL but  $\geq$  the Reporting Limit
- N Matrix Spike recovery not within established control limits
- NA Not Applicable, analyte not spiked
- H The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
- L Analyte concentration is  $\leq$  5 times the Reporting Limit and the replicate control limit defaults to  $\pm 1$  RL instead of the normal 20% RPD

### Organic Data

- U Indicates that the target analyte was not detected at the reported concentration
- \* Flagged value is not within established control limits
- B Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.
- J Estimated concentration when the value is less than ARI's established reporting limits
- D The spiked compound was not detected due to sample extract dilution
- E Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).



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Analytical Chemists and Consultants

- S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte
- NA The flagged analyte was not analyzed for
- NR Spiked compound recovery is not reported due to chromatographic interference
- NS The flagged analyte was not spiked into the sample
- M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses
- M2 The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.
- N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"
- Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.
- EMPC Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" **(Dioxin/Furan analysis only)**
- C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column
- P The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference
- X Analyte signal includes interference from polychlorinated diphenyl ethers. **(Dioxin/Furan analysis only)**
- Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**



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## Geotechnical Data

- A The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
- F Samples were frozen prior to particle size determination
- SM Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
- SS Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
- W Weight of sample in some pipette aliquots was below the level required for accurate weighting

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021BMod**  
**TPHG by Method NWTPHG**  
 Page 1 of 1

Lab Sample ID: MB-112213  
 LIMS ID: 13-25772  
 Matrix: Water  
 Data Release Authorized: *MW*  
 Reported: 11/27/13

Date Analyzed: 11/22/13 11:59  
 Instrument/Analyst: PID1/PKC

Sample ID: MB-112213  
**METHOD BLANK**

QC Report No: XP00-Hart Crowser Inc.  
 Project: Kens Auto  
 Event: 7168-11  
 Date Sampled: NA  
 Date Received: NA

Purge Volume: 5.0 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result	GAS ID
71-43-2	Benzene	0.25	< 0.25 U	
108-88-3	Toluene	0.25	< 0.25 U	
100-41-4	Ethylbenzene	0.25	< 0.25 U	
179601-23-1	m,p-Xylene	0.50	< 0.50 U	
95-47-6	o-Xylene	0.25	< 0.25 U	
	Gasoline Range Hydrocarbons	0.10	< 0.10 U	---

#### BETX Surrogate Recovery

Trifluorotoluene	98.8%
Bromobenzene	95.2%

#### Gasoline Surrogate Recovery

Trifluorotoluene	95.4%
Bromobenzene	88.0%

BETX values reported in µg/L (ppb)  
 Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021BMod**  
**TPHG by Method NWTPHG**  
Page 1 of 1

Lab Sample ID: XP00A  
LIMS ID: 13-25772  
Matrix: Water  
Data Release Authorized: *MW*  
Reported: 11/27/13

Sample ID: MW-4R  
**SAMPLE**

**ANALYTICAL  
RESOURCES  
INCORPORATED**

QC Report No: XP00-Hart Crowser Inc.  
Project: Kens Auto  
Event: 7168-11  
Date Sampled: 11/19/13  
Date Received: 11/20/13

Date Analyzed: 11/22/13 19:02  
Instrument/Analyst: PID1/PKC

Purge Volume: 5.0 mL  
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U

Gasoline Range Hydrocarbons      0.10      < 0.10 U      GAS ID ---

**BETX Surrogate Recovery**

Trifluorotoluene	97.2%
Bromobenzene	93.0%

**Gasoline Surrogate Recovery**

Trifluorotoluene	93.7%
Bromobenzene	90.2%

BETX values reported in µg/L (ppb)  
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.  
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**

**BETX by Method SW8021BMod**

**TPHG by Method NWTPHG**

Page 1 of 1

Lab Sample ID: XP00B

LIMS ID: 13-25773

Matrix: Water

Data Release Authorized: *MW*

Reported: 11/27/13

**Sample ID: MW-3**

**SAMPLE**

QC Report No: XP00-Hart Crowser Inc.

Project: Kens Auto

Event: 7168-11

Date Sampled: 11/19/13

Date Received: 11/20/13

Date Analyzed: 11/22/13 19:31

Instrument/Analyst: PID1/PKC

Purge Volume: 5.0 mL

Dilution Factor: 1.00

<b>CAS Number</b>	<b>Analyte</b>	<b>RL</b>	<b>Result</b>
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.10	< 0.10 U	GAS ID ---
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**BETX Surrogate Recovery**

Trifluorotoluene	95.8%
Bromobenzene	92.2%

**Gasoline Surrogate Recovery**

Trifluorotoluene	92.8%
Bromobenzene	89.7%

BETX values reported in µg/L (ppb)  
 Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021BMod**  
**TPHG by Method NWTPHG**  
 Page 1 of 1

Lab Sample ID: XP00C  
 LIMS ID: 13-25774  
 Matrix: Water  
 Data Release Authorized: *MW*  
 Reported: 11/27/13

Date Analyzed: 11/22/13 20:00  
 Instrument/Analyst: PID1/PKC

Sample ID: MW-2  
**SAMPLE**

QC Report No: XP00-Hart Crowser Inc.  
 Project: Kens Auto  
 Event: 7168-11  
 Date Sampled: 11/19/13  
 Date Received: 11/20/13

Purge Volume: 5.0 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.10	< 0.10 U	GAS ID ---
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#### **BETX Surrogate Recovery**

Trifluorotoluene	96.1%
Bromobenzene	92.5%

#### **Gasoline Surrogate Recovery**

Trifluorotoluene	93.6%
Bromobenzene	89.2%

BETX values reported in µg/L (ppb)  
 Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.  
 GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**

**BETX by Method SW8021BMod**

**TPHG by Method NWTPHG**

Page 1 of 1

Lab Sample ID: XP00D  
 LIMS ID: 13-25775  
 Matrix: Water  
 Data Release Authorized: *MW*  
 Reported: 11/27/13

Date Analyzed: 11/22/13 20:30  
 Instrument/Analyst: PID1/PKC

**Sample ID: MW-5  
SAMPLE**

QC Report No: XP00-Hart Crowser Inc.  
 Project: Kens Auto  
 Event: 7168-11  
 Date Sampled: 11/19/13  
 Date Received: 11/20/13

Purge Volume: 5.0 mL  
 Dilution Factor: 1.00

<b>CAS Number</b>	<b>Analyte</b>	<b>RL</b>	<b>Result</b>
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.10	GAS ID
	< 0.10 U	---

**BETX Surrogate Recovery**

Trifluorotoluene	95.8%
Bromobenzene	91.9%

**Gasoline Surrogate Recovery**

Trifluorotoluene	93.6%
Bromobenzene	89.7%

BETX values reported in µg/L (ppb)  
 Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**

**BETX by Method SW8021BMod**

**TPHG by Method NWTPHG**

Page 1 of 1

Lab Sample ID: XP00E

LIMS ID: 13-25776

Matrix: Water

Data Release Authorized: *MW*

Reported: 11/27/13

**Sample ID: MW-14**

**SAMPLE**

QC Report No: XP00-Hart Crowser Inc.

Project: Kens Auto

Event: 7168-11

Date Sampled: 11/19/13

Date Received: 11/20/13

Date Analyzed: 11/22/13 20:59

Instrument/Analyst: PID1/PKC

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	0.49
100-41-4	Ethylbenzene	0.25	1.3
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U

<b>Gasoline Range Hydrocarbons</b>	0.10	GAS ID
		<b>GAS</b>

**BETX Surrogate Recovery**

Trifluorotoluene	98.4%
Bromobenzene	96.3%

**Gasoline Surrogate Recovery**

Trifluorotoluene	96.9%
Bromobenzene	91.7%

BETX values reported in µg/L (ppb)  
 Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**

**BETX by Method SW8021BMod**

**TPHG by Method NWTPHG**

Page 1 of 1

Lab Sample ID: XP00F

LIMS ID: 13-25777

Matrix: Water

Data Release Authorized: *MW*

Reported: 11/27/13

**Sample ID: MW-KA  
SAMPLE**

QC Report No: XP00-Hart Crowser Inc.

Project: Kens Auto

Event: 7168-11

Date Sampled: 11/20/13

Date Received: 11/20/13

Date Analyzed: 11/22/13 21:28

Instrument/Analyst: PID1/PKC

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U

<b>Gasoline Range Hydrocarbons</b>	<b>0.10</b>	<b>0.28</b>	<b>GAS ID GAS</b>
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**BETX Surrogate Recovery**

Trifluorotoluene	97.5%
Bromobenzene	93.4%

**Gasoline Surrogate Recovery**

Trifluorotoluene	95.8%
Bromobenzene	89.8%

BETX values reported in µg/L (ppb)  
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**

**BETX by Method SW8021BMod**

**TPHG by Method NWTPHG**

Page 1 of 1

Lab Sample ID: XP00G

LIMS ID: 13-25778

Matrix: Water

Data Release Authorized: *MW*

Reported: 11/27/13

**Sample ID: MW-6  
SAMPLE**

QC Report No: XP00-Hart Crowser Inc.

Project: Kens Auto

Event: 7168-11

Date Sampled: 11/20/13

Date Received: 11/20/13

Date Analyzed: 11/22/13 21:57

Instrument/Analyst: PID1/PKC

Purge Volume: 5.0 mL

Dilution Factor: 1.00

<b>CAS Number</b>	<b>Analyte</b>	<b>RL</b>	<b>Result</b>
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U

<b>Gasoline Range Hydrocarbons</b>	<b>0.10</b>	<b>GAS ID</b>
		<b>GAS</b>

**BETX Surrogate Recovery**

Trifluorotoluene	97.0%
Bromobenzene	92.6%

**Gasoline Surrogate Recovery**

Trifluorotoluene	94.9%
Bromobenzene	89.3%

BETX values reported in µg/L (ppb)  
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**

**BETX by Method SW8021BMod**

**TPHG by Method NWTPHG**

Page 1 of 1

Lab Sample ID: XP00H

LIMS ID: 13-25779

Matrix: Water

Data Release Authorized: *MW*

Reported: 11/27/13

**Sample ID: MW-13**

**SAMPLE**

QC Report No: XP00-Hart Crowser Inc.

Project: Kens Auto

Event: 7168-11

Date Sampled: 11/20/13

Date Received: 11/20/13

Date Analyzed: 11/22/13 23:25

Instrument/Analyst: PID1/PKC

Purge Volume: 5.0 mL

Dilution Factor: 1.00

<b>CAS Number</b>	<b>Analyte</b>	<b>RL</b>	<b>Result</b>	
71-43-2	Benzene	0.25	< 0.25	U
108-88-3	Toluene	0.25	< 0.25	U
100-41-4	Ethylbenzene	0.25	< 0.25	U
179601-23-1	m,p-Xylene	0.50	< 0.50	U
95-47-6	o-Xylene	0.25	< 0.25	U
Gasoline Range Hydrocarbons			0.10	GAS ID ---

**BETX Surrogate Recovery**

Trifluorotoluene	96.2%
Bromobenzene	94.0%

**Gasoline Surrogate Recovery**

Trifluorotoluene	92.5%
Bromobenzene	90.7%

BETX values reported in µg/L (ppb)  
 Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**

**BETX by Method SW8021BMod**

**TPHG by Method NWTPHG**

Page 1 of 1

Lab Sample ID: XP00I

LIMS ID: 13-25780

Matrix: Water

Data Release Authorized: MW

Reported: 11/27/13

**Sample ID: MW-15  
SAMPLE**

QC Report No: XP00-Hart Crowser Inc.

Project: Kens Auto

Event: 7168-11

Date Sampled: 11/20/13

Date Received: 11/20/13

Date Analyzed: 11/22/13 23:54

Instrument/Analyst: PID1/PKC

Purge Volume: 5.0 mL

Dilution Factor: 1.00

<b>CAS Number</b>	<b>Analyte</b>	<b>RL</b>	<b>Result</b>
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.10	< 0.10 U	GAS ID ---
-----------------------------	------	----------	------------

**BETX Surrogate Recovery**

Trifluorotoluene	94.3%
Bromobenzene	91.8%

**Gasoline Surrogate Recovery**

Trifluorotoluene	92.2%
Bromobenzene	89.1%

BETX values reported in µg/L (ppb)  
 Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**

**BETX by Method SW8021BMod**

**TPHG by Method NWTPHG**

Page 1 of 1

Lab Sample ID: XP00J

LIMS ID: 13-25781

Matrix: Water

Data Release Authorized: *MW*

Reported: 11/27/13

**Sample ID: TB  
SAMPLE**

QC Report No: XP00-Hart Crowser Inc.

Project: Kens Auto

Event: 7168-11

Date Sampled: 11/19/13

Date Received: 11/20/13

Date Analyzed: 11/23/13 00:23

Instrument/Analyst: PID1/PKC

Purge Volume: 5.0 mL

Dilution Factor: 1.00

<b>CAS Number</b>	<b>Analyte</b>	<b>RL</b>	<b>Result</b>
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.10	GAS ID
	< 0.10 U	---

**BETX Surrogate Recovery**

Trifluorotoluene	95.2%
Bromobenzene	92.7%

**Gasoline Surrogate Recovery**

Trifluorotoluene	92.9%
Bromobenzene	90.2%

BETX values reported in µg/L (ppb)  
 Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021BMod**  
Page 1 of 1

Lab Sample ID: LCS-112213  
 LIMS ID: 13-25772  
 Matrix: Water  
 Data Release Authorized: *MW*  
 Reported: 11/27/13

Sample ID: LCS-112213  
**LAB CONTROL SAMPLE**

QC Report No: XP00-Hart Crowser Inc.  
 Project: Kens Auto  
 Event: 7168-11  
 Date Sampled: NA  
 Date Received: NA

Date Analyzed LCS: 11/22/13 11:00                                  Purge Volume: 5.0 mL  
 LCSD: 11/22/13 11:29  
 Instrument/Analyst LCS: PID1/PKC                                  Dilution Factor LCS: 1.0  
 LCSD: PID1/PKC    LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	2.01	2.10	95.7%	1.96	2.10	93.3%	2.5%
Toluene	36.3	34.8	104%	34.9	34.8	100%	3.9%
Ethylbenzene	17.7	17.4	102%	17.0	17.4	97.7%	4.0%
m,p-Xylene	62.6	62.7	99.8%	60.4	62.7	96.3%	3.6%
o-Xylene	34.0	34.6	98.3%	32.7	34.6	94.5%	3.9%

Reported in  $\mu\text{g/L}$  (ppb)

RPD calculated using sample concentrations per SW846.

**BETX Surrogate Recovery**

	LCS	LCSD
Trifluorotoluene	109%	104%
Bromobenzene	99.3%	97.4%

**ORGANICS ANALYSIS DATA SHEET**

**TPHG by Method NWTPHG**

Page 1 of 1

Lab Sample ID: LCS-112213

LIMS ID: 13-25772

Matrix: Water

Data Release Authorized: *MW*

Reported: 11/27/13

**Sample ID: LCS-112213**

**LAB CONTROL SAMPLE**

QC Report No: XP00-Hart Crowser Inc.

Project: Kens Auto

Event: 7168-11

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 11/22/13 11:00

Purge Volume: 5.0 mL

LCSD: 11/22/13 11:29

Instrument/Analyst LCS: PID1/PKC

Dilution Factor LCS: 1.0

LCSD: PID1/PKC

LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	2.27	2.50	90.8%	2.21	2.50	88.4%	2.7%

Reported in mg/L (ppm)

RPD calculated using sample concentrations per SW846.

**TPHG Surrogate Recovery**

	LCS	LCSD
Trifluorotoluene	109%	105%
Bromobenzene	94.5%	91.6%

**BETX WATER SURROGATE RECOVERY SUMMARY**

ARI Job: XP00  
 Matrix: Water

QC Report No: XP00-Hart Crowser Inc.  
 Project: Kens Auto  
 Event: 7168-11

<b>Client ID</b>	<b>TFT</b>	<b>BBZ</b>	<b>TOT OUT</b>
MB-112213	98.8%	95.2%	0
LCS-112213	109%	99.3%	0
LCSD-112213	104%	97.4%	0
MW-4R	97.2%	93.0%	0
MW-3	95.8%	92.2%	0
MW-2	96.1%	92.5%	0
MW-5	95.8%	91.9%	0
MW-14	98.4%	96.3%	0
MW-KA	97.5%	93.4%	0
MW-6	97.0%	92.6%	0
MW-13	96.2%	94.0%	0
MW-15	94.3%	91.8%	0
TB	95.2%	92.7%	0

**LCS/MB LIMITS                    QC LIMITS**

(TFT) = Trifluorotoluene	( 5 mL PV)	(80-120)	(80-120)
(TFT) = Trifluorotoluene	(15 mL PV)	(79-120)	(80-120)
(BBZ) = Bromobenzene	( 5 mL PV)	(80-120)	(77-120)
(BBZ) = Bromobenzene	(15 mL PV)	(79-120)	(80-120)

Log Number Range: 13-25772 to 13-25781

**TPHG WATER SURROGATE RECOVERY SUMMARY**

ARI Job: XP00  
 Matrix: Water

QC Report No: XP00-Hart Crowser Inc.  
 Project: Kens Auto  
 Event: 7168-11

<b>Client ID</b>	<b>TFT</b>	<b>BBZ</b>	<b>TOT OUT</b>
MB-112213	95.4%	88.0%	0
LCS-112213	109%	94.5%	0
LCSD-112213	105%	91.6%	0
MW-4R	93.7%	90.2%	0
MW-3	92.8%	89.7%	0
MW-2	93.6%	89.2%	0
MW-5	93.6%	89.7%	0
MW-14	96.9%	91.7%	0
MW-KA	95.8%	89.8%	0
MW-6	94.9%	89.3%	0
MW-13	92.5%	90.7%	0
MW-15	92.2%	89.1%	0
TB	92.9%	90.2%	0

<b>LCS/MB LIMITS</b>	<b>QC LIMITS</b>
(TFT) = Trifluorotoluene	(80-120)
(BBZ) = Bromobenzene	(80-120)

Log Number Range: 13-25772 to 13-25781

Data File: /chem3/pid1.i/20131122-1.b/1122a004.d

Date : 22-NOV-2013 11:00

Client ID:

Sample Info: LCS1122

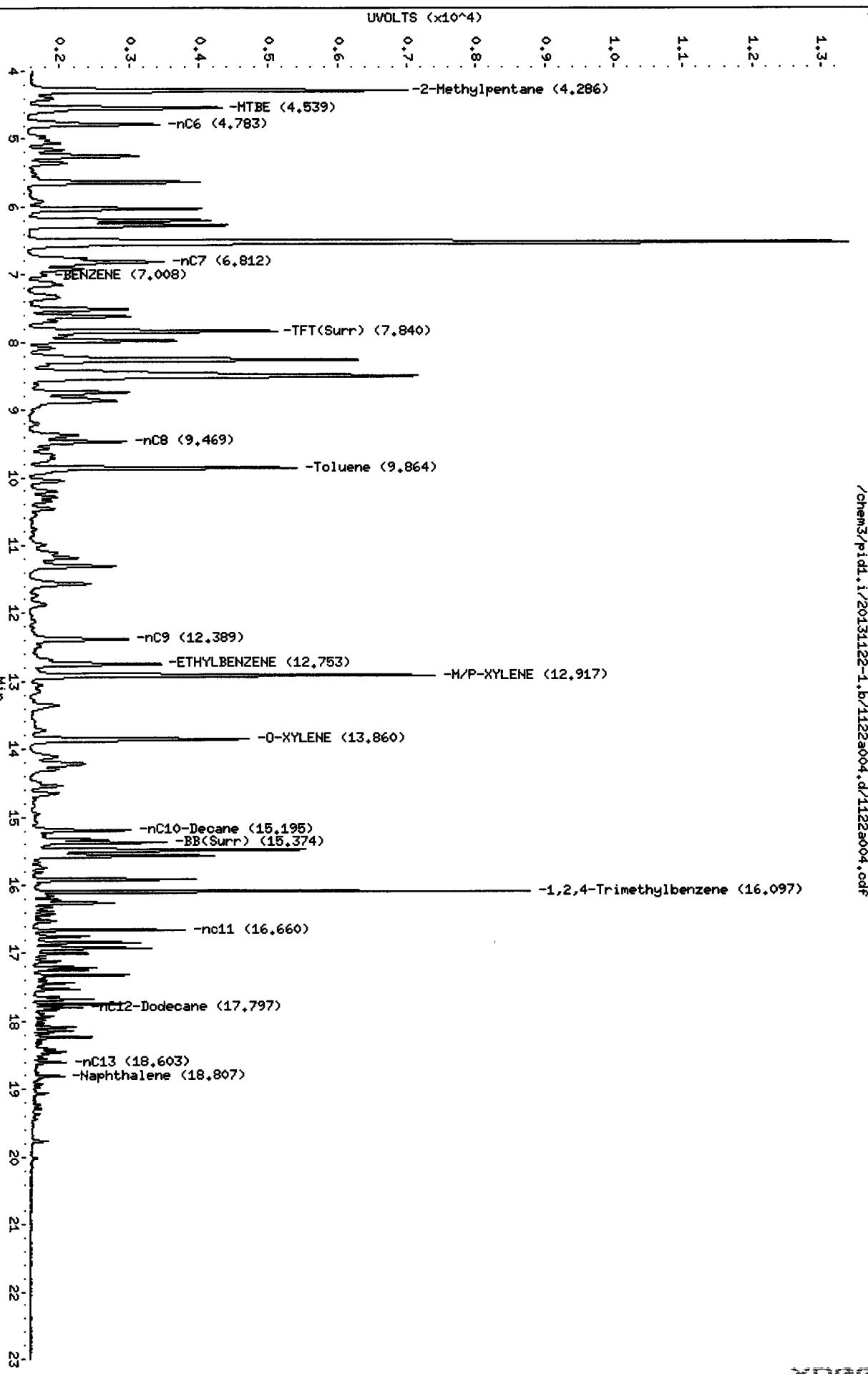
Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: PC

Column diameter: 0.18

/chem3/pid1.i/20131122-1.b/1122a004.d/1122a004.ofd



Data File: /chem3/pid1.i/20131122-2.b/1122a004.d

Date : 22-Nov-2013 11:00

Client ID:

Sample Info: LCS1122

Column phase: RTK 502-2 PID

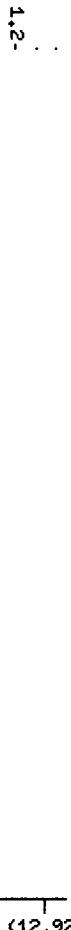
Page 1

Instrument: pid1.i

Operator: PC

Column diameter: 0.18

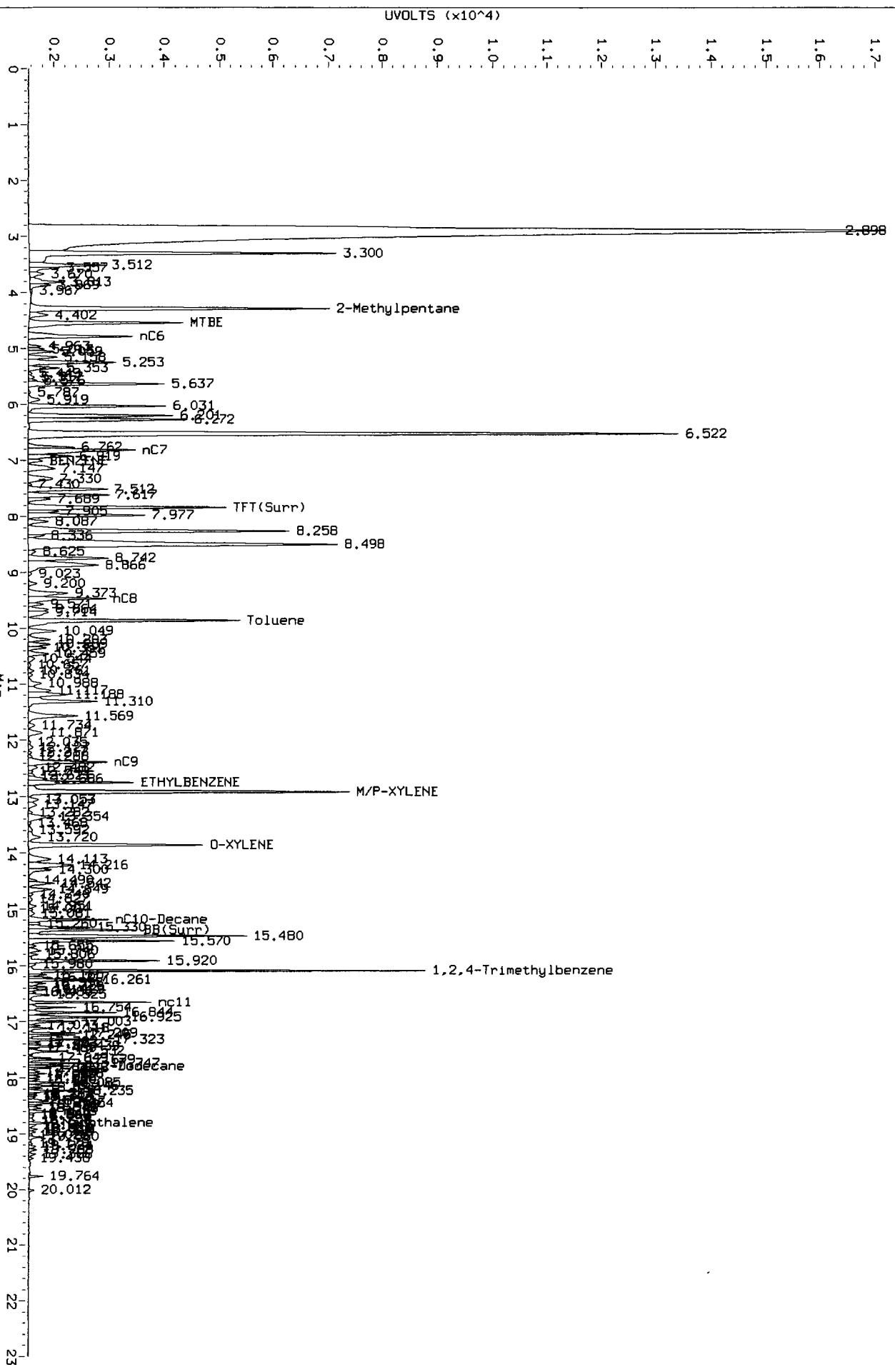
/chem3/pid1.i/20131122-2.b/1122a004.d/1122a004.cdf

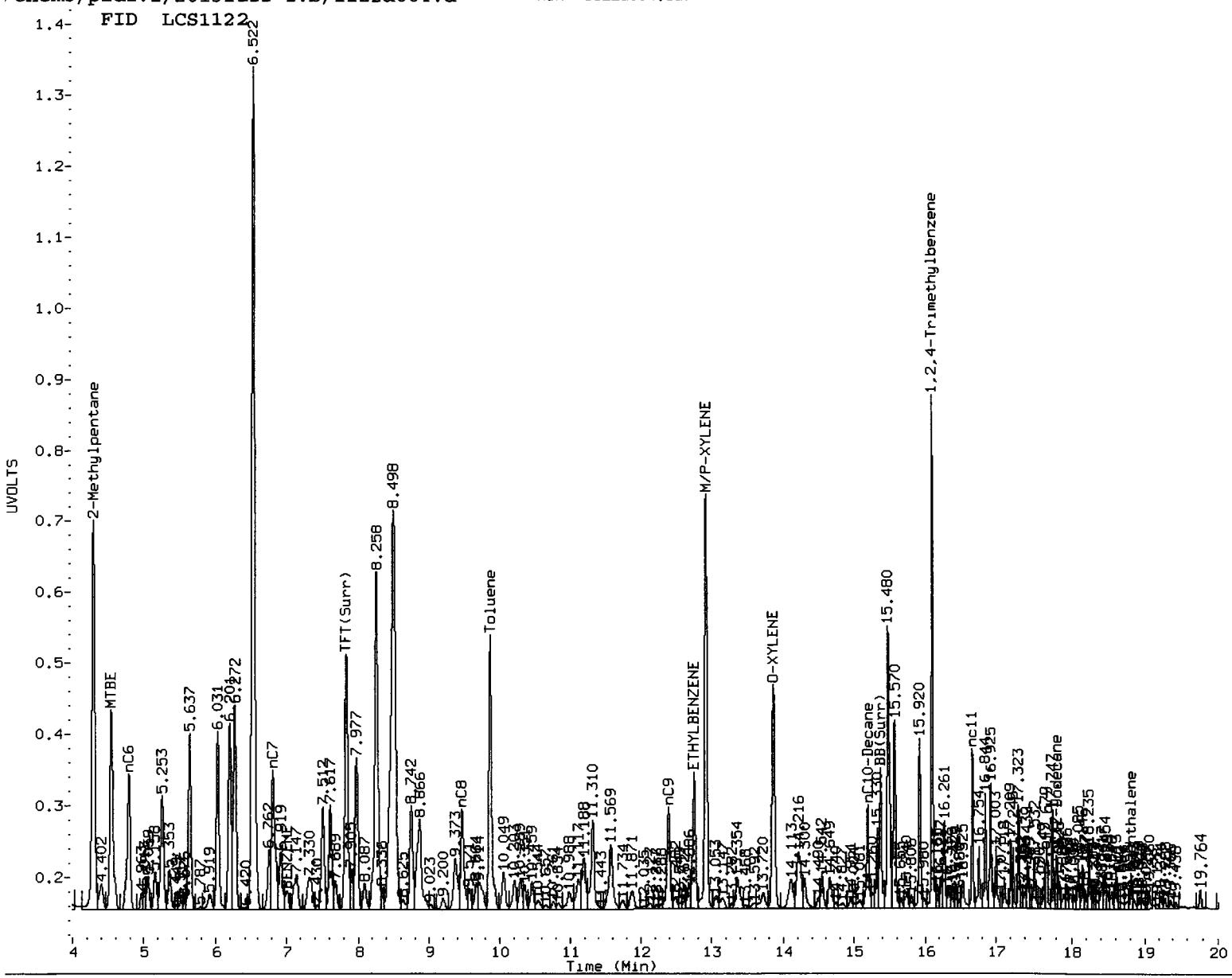


PC  
11/25/13

Data File: /chem3/pid1.i/20131122-1.b/1122a004.d/1122a004.cdf  
Injection Date: 22-NOV-2013 11:00  
Instrument: pid1.i  
Client Sample ID:

AIA 1122a004.cdf: 0.000 to 23.000 Min





## MANUAL INTEGRATION

1. Baseline correction
  2. Poor chromatography
  3. Peak not found
  4. Totals calculation

## 5. Other \_\_\_\_\_

Analyst: *[Signature]*

Date: 1/26/15

Data File: /chem3/pid1.i/20131122-1.b/1122a005.d

Date : 22-Nov-2013 11:29

Client ID:

Sample Info: LCSM1122

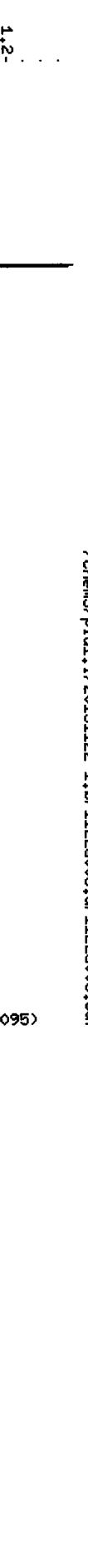
Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: PC

Column diameter: 0.18

/chem3/pid1.i/20131122-1.b/1122a005.d/1122a005.cdf



Data File: /chem3/pid1.i/20131122-2.b/1122a005.d  
Date : 22-NOV-2013 11:29

Client ID:

Sample Info: LCSM122

Column phase: RTX 502-2 PID

Page 1

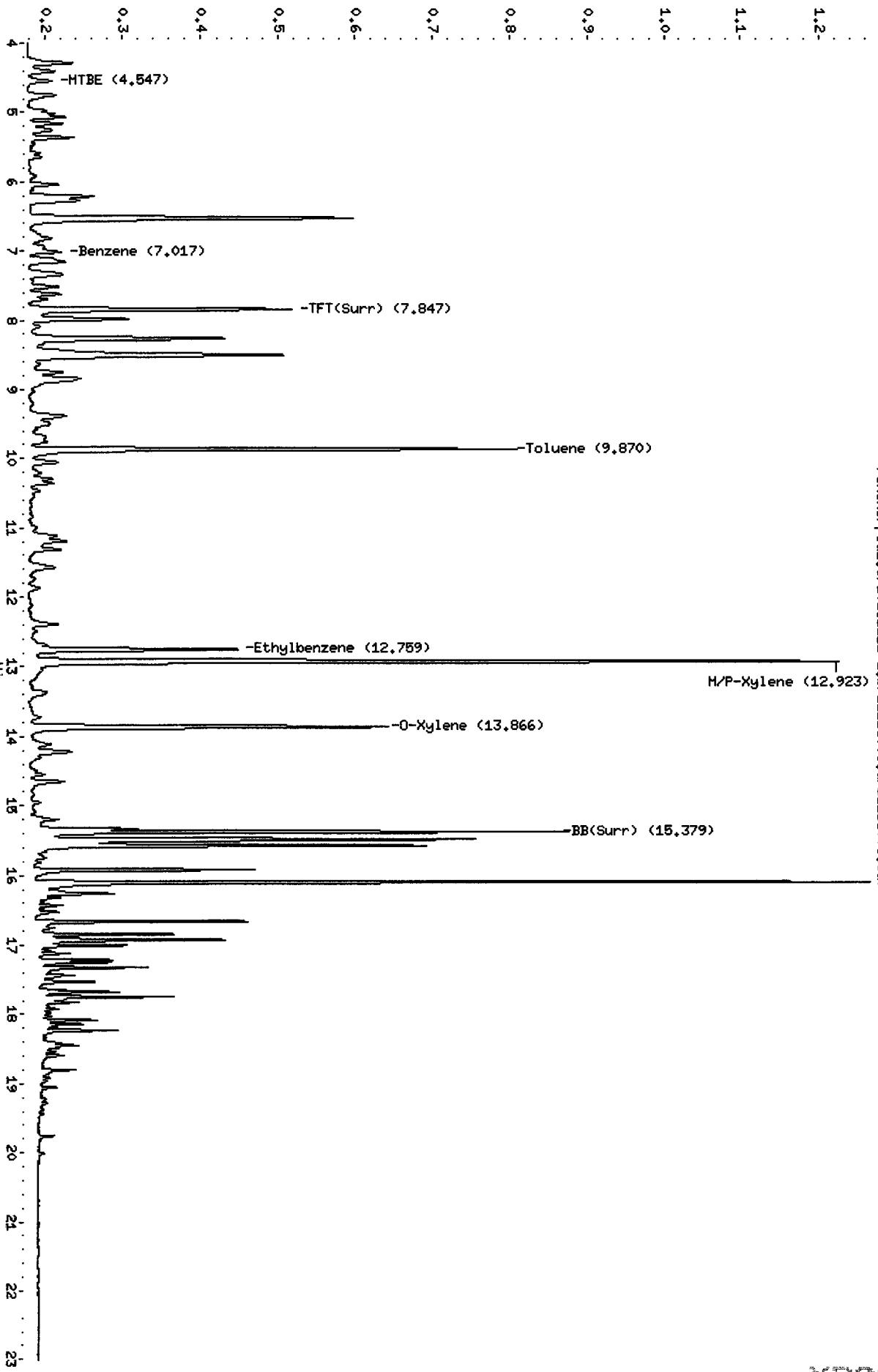
Instrument: pid1.i

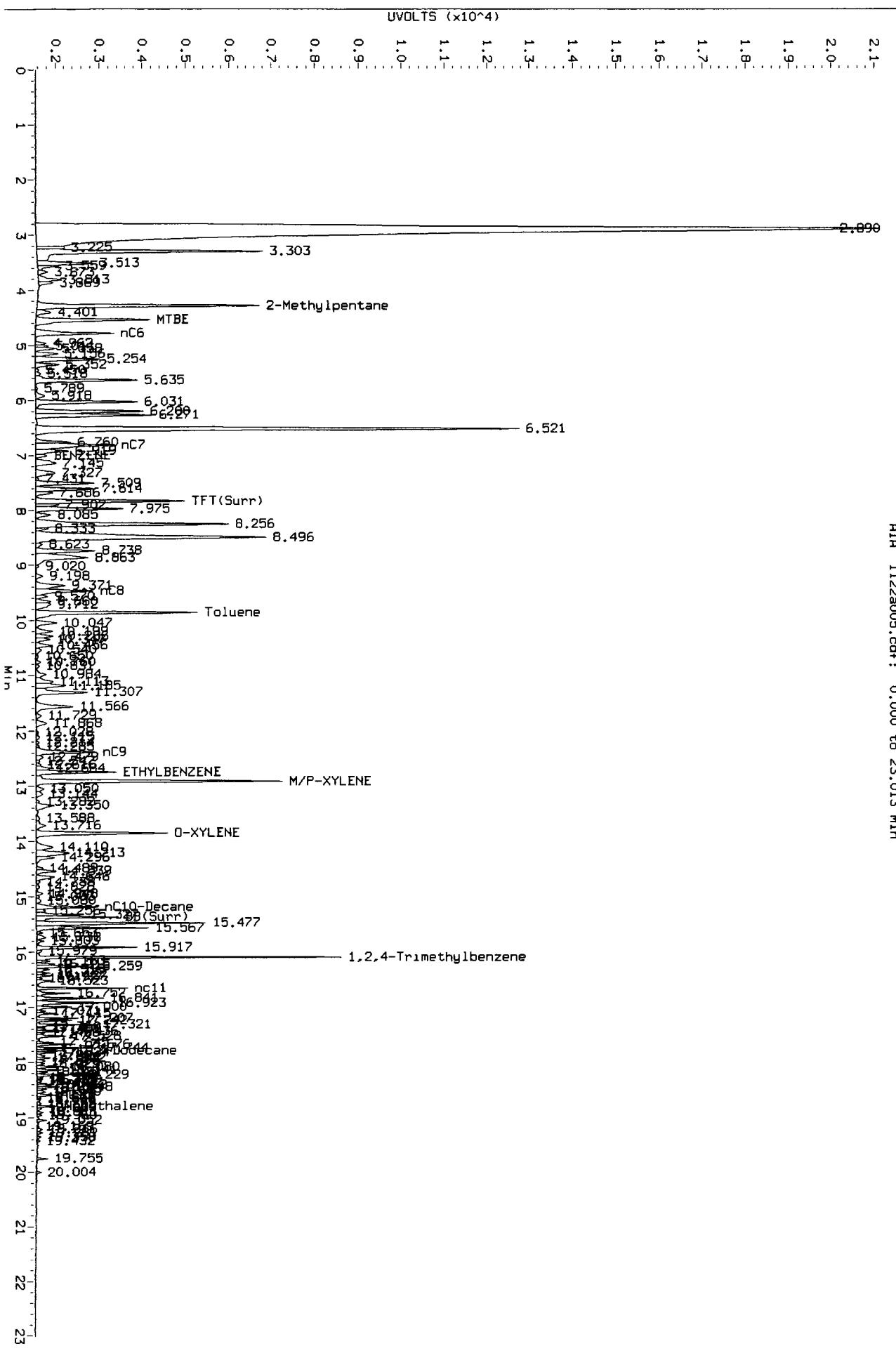
Operator: PC

Column diameter: 0.18

/chem3/pid1.i/20131122-2.b/1122a005.d/1122a005.cdf

UVOLTS ( $\times 10^4$ )





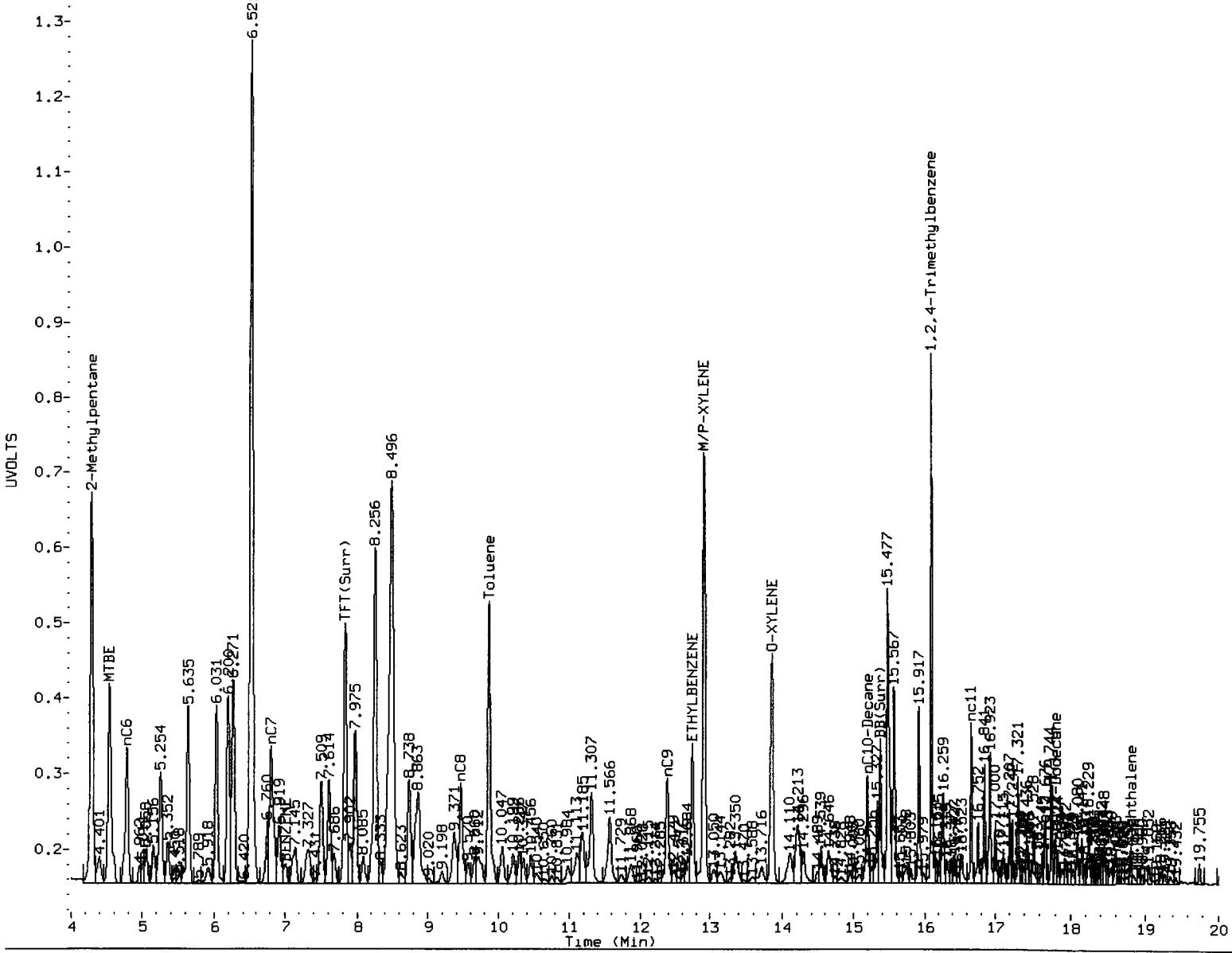
Data File: /chem/pid.1/20131122-1.b/n1122a005.d/n1122a005.cdf  
Injection Date: 22-NOV-2013 11:29  
Instrument: pid.1  
Client Sample ID:

卷之三

AIA 1122a005.cdf: 0.000 to 23.013 Min

XPOSE : ৩২০৩৯

FID LCSD1122



## MANUAL INTEGRATION

- Baseline correction
- Poor chromatography
- Peak not found
- Totals calculation

5. Other \_\_\_\_\_

Analyst: PLDate: 11/26/05

Data File: /chem3/pid1.i/20131122-1.b/1122a006.d  
Date : 22-NOV-2013 11:59

Page 1

Client ID:

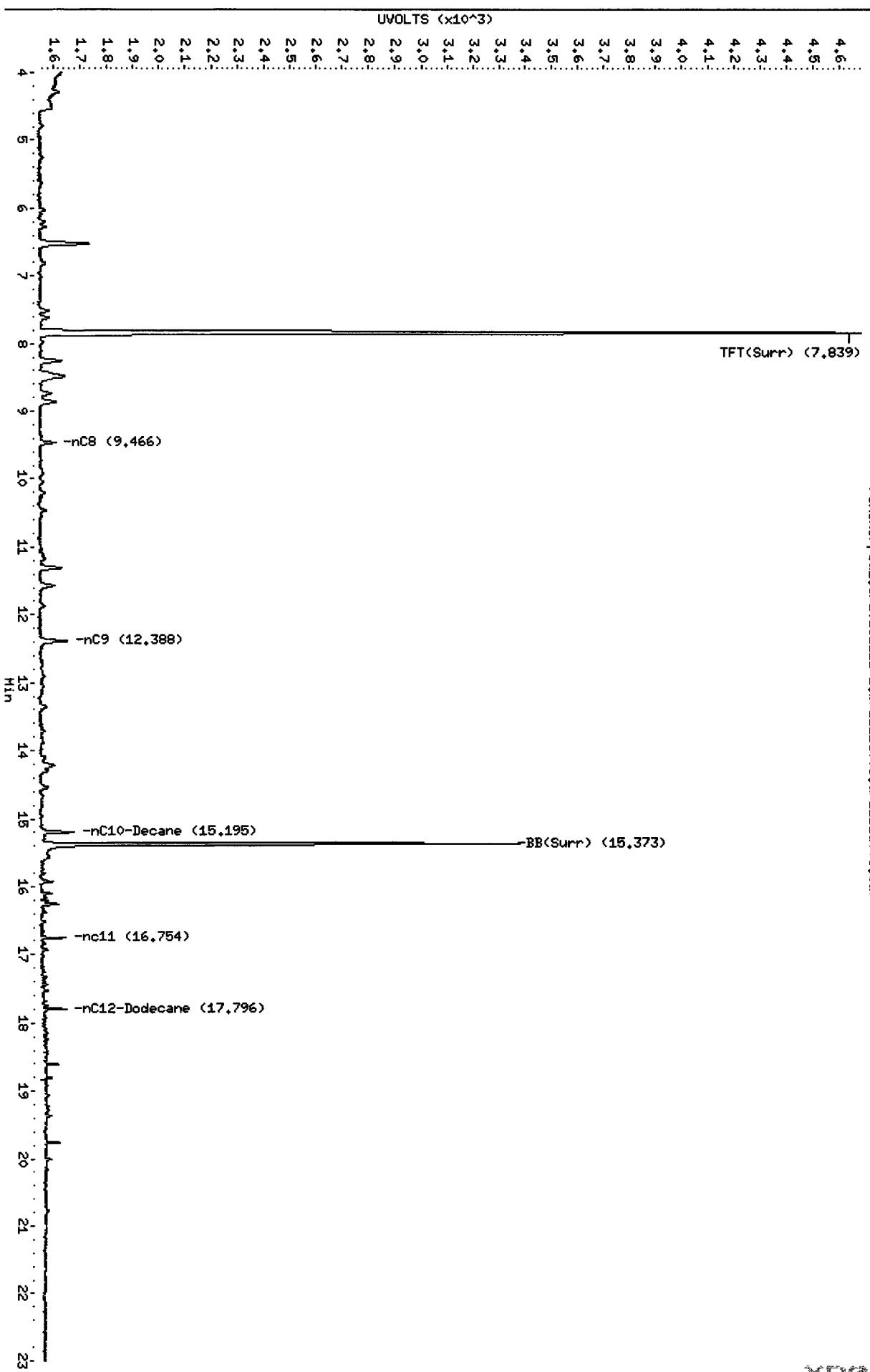
Sample Info: MB122

Instrument: pid1.i  
Operator: PC  
Column diameter: 0.18

/chem3/pid1.i/20131122-1.b/1122a006.d/1122a006.cdf

Column phase: RTX 502-2 FID

XPOG : 00032



Data File: /chem3/pid1.i/20131122-2.b/1122a006.d  
Date : 22-NOV-2013 11:59

Page 1

Client ID:

Sample Info: MB1122

Column phase: RTX 502-2 PID

Instrument: pid1.i

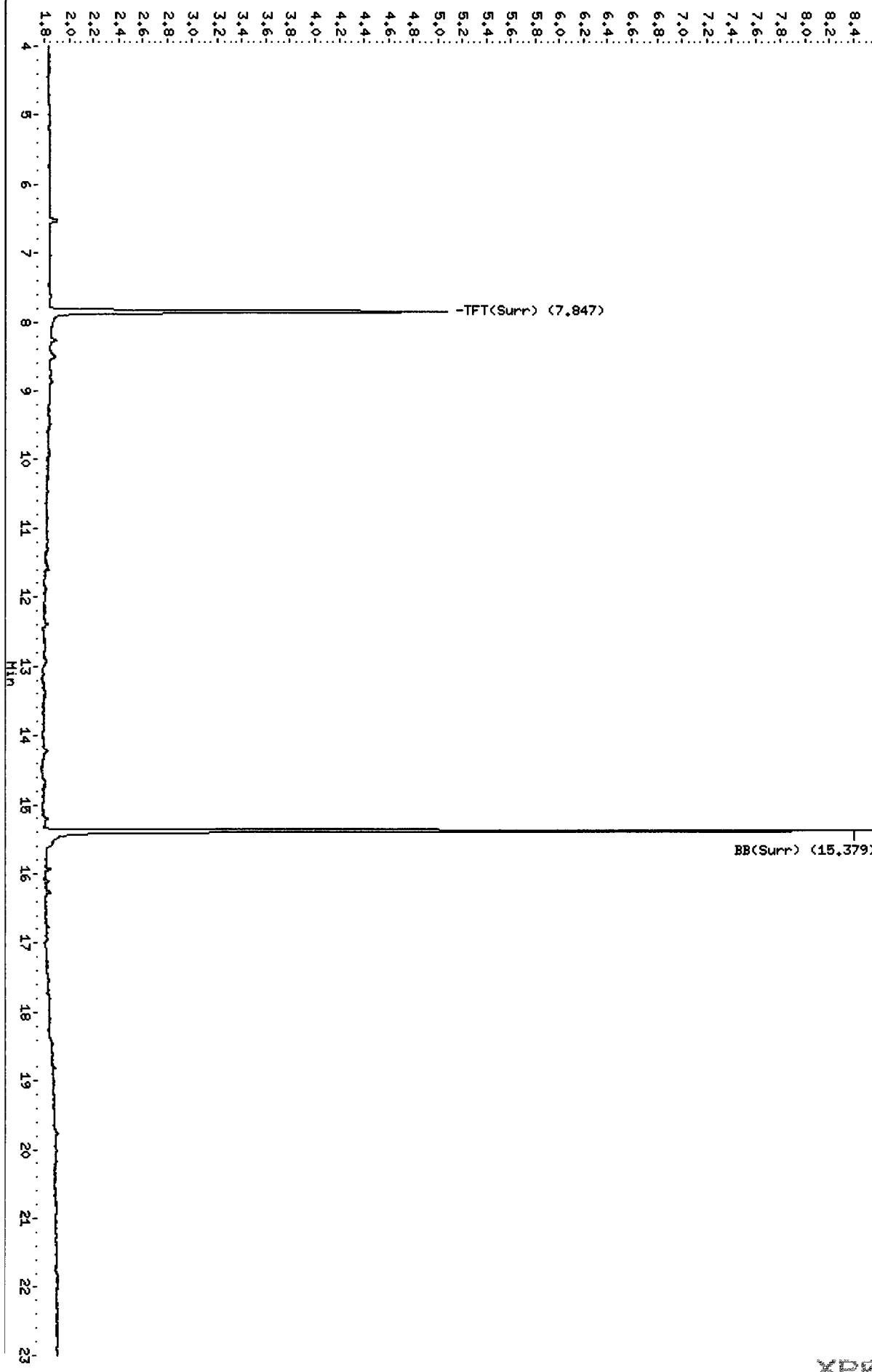
Operator: PC

Column diameter: 0.18

/chem3/pid1.i/20131122-2.b/1122a006.d/1122a006.cdf

BB(Surr) (15,379)

UVOLTS ( $\times 10^3$ )



XDDG : 00033

Data File: /chem3/pid1.i/20131122-1.b/1122a019.d

Date : 22-NOV-2013 19:02

Client ID: MM-4R

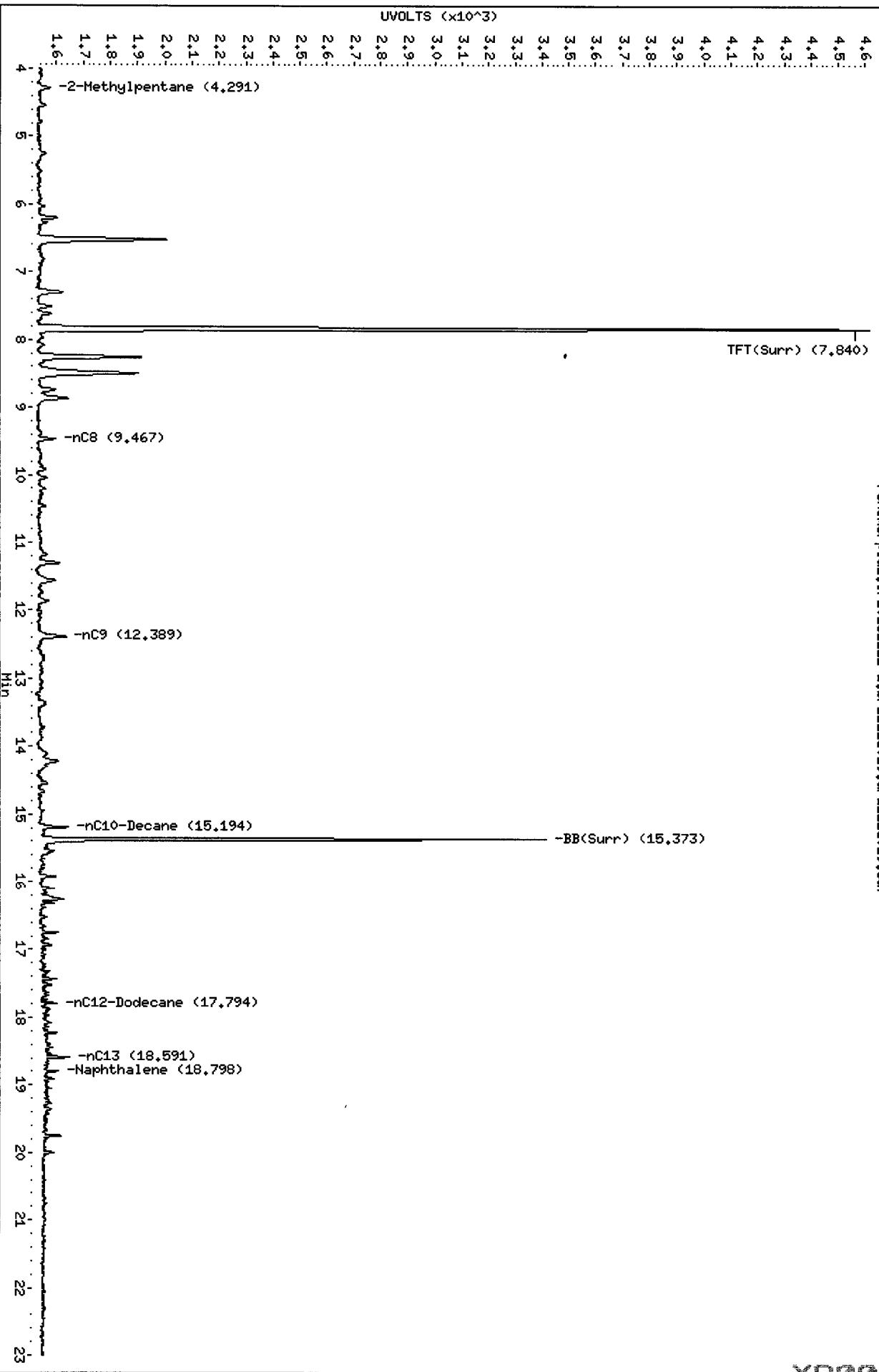
Sample Info: XPO0A

Page 1

Instrument: pid1.i  
Operator: PC  
Column diameter: 0.18

/chem3/pid1.i/20131122-1.b/1122a019.d/1122a019.cdf

Column phase: RTX 502-2 FID



XPO0A 00034

Data File: /chem3/pid1.i/20131122-2.b/1122a019.d

Date : 22-NOV-2013 19:02

Client ID: ML-4R

Sample Info: XP00A

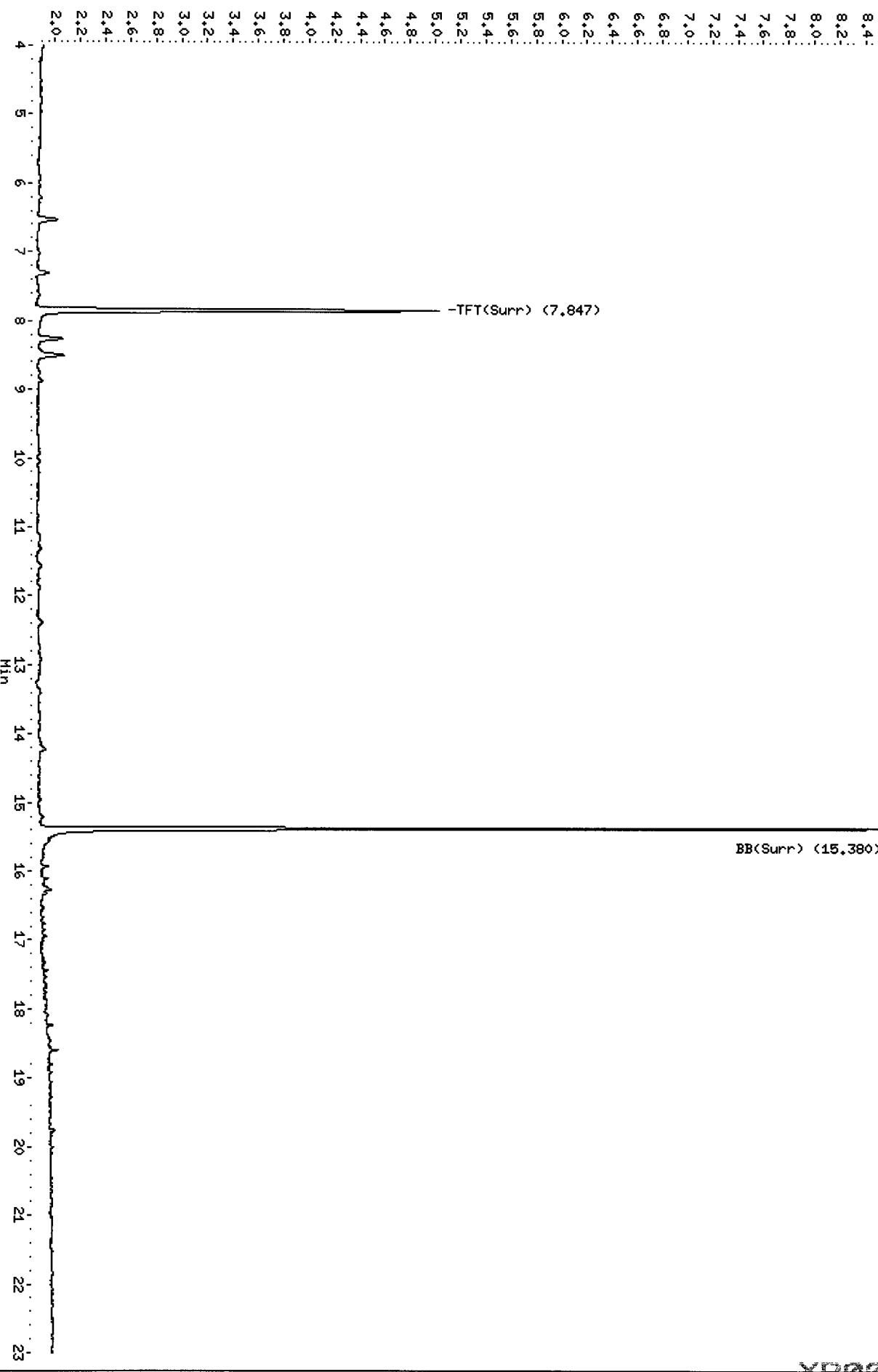
Page 1

Instrument: pid1.i  
Operator: PC  
Column diameter: 0.18

/chem3/pid1.i/20131122-2.b/1122a019.d/1122a019.cdf

BB(Surr) (15.380)

UVOLTS ( $\times 10^3$ )



XP00 00035

Data File: /chem3/pid1.i/20131122-1.b/1122a020.d

Date : 22-NOV-2013 19:31

Client ID: MN-3

Sample Info: XPOOB

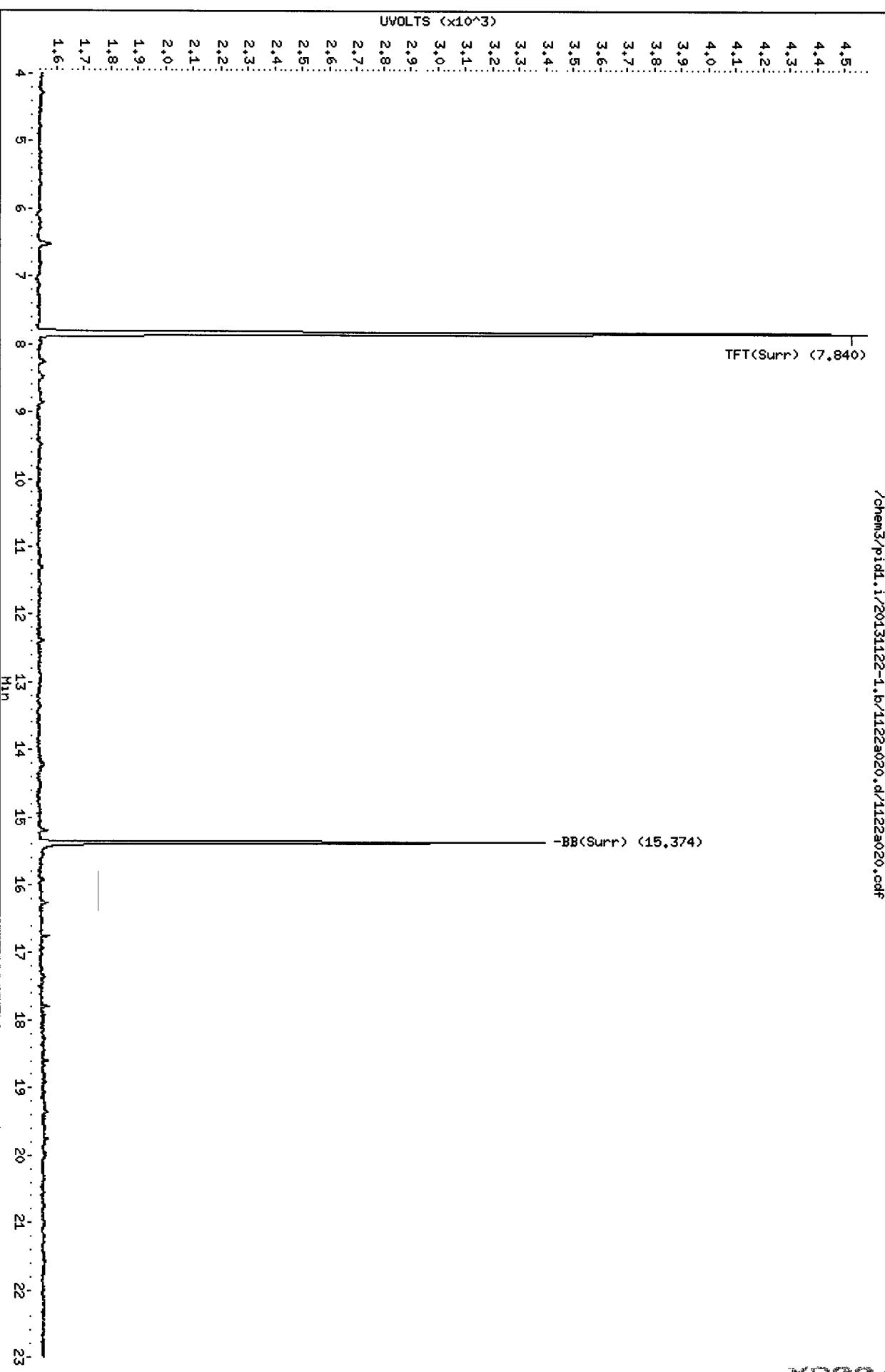
Column Phase: RTX 502-2 FID

Instrument: pid1.i  
Operator: PC  
Column diameter: 0.18

/chem3/pid1.i/20131122-1.b/1122a020.sdf/1122a020.sdf

TFT(Surr) (7.840)

-BB(Surr) (15.374)



XPOOB 000036

Data File: /chem3/pid1.i/20131122-2.b/1122a020.d

Date : 22-NOV-2013 19:31

Client ID: H4-3

Sample Info: XPOOB

Page 1

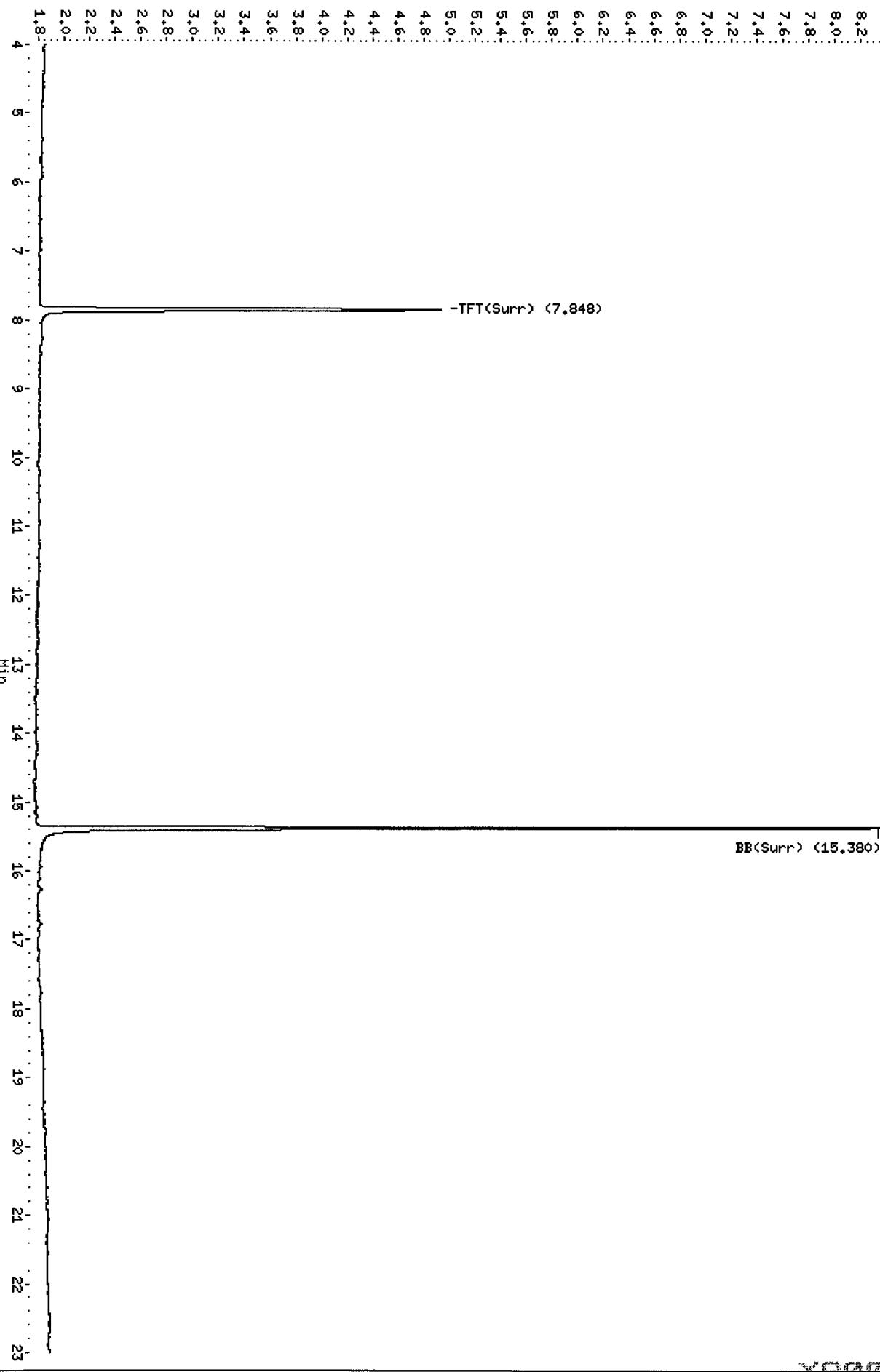
Instrument: pid1.i  
Operator: PC  
Column diameter: 0.18

/chem3/pid1.i/20131122-2.b/1122a020.s/1122a020.cdf

BB(Surr) (15,380)

UVOLTS ( $\times 10^3$ )

-TFT(Surr) (7,848)



Data File: /chem3/pid1.i/20131122-1.b/1122a021.d  
Date : 22-NOV-2013 20:00

Client ID: MU-2

Sample Info: XPOOC

Page 1

Instrument: pid1.i  
Column diameter: 0.18

/chem3/pid1.i/20131122-1.b/1122a021.s/1122a021.cdf

Column Phase: RTX 502-2 FID



XPOOC 00038

Data File: /chem3/pid1.i/20131122-2.b/1122a021.d

Date : 22-NOV-2013 20:00

Client ID: MU-2

Sample Info: XPOOC

Page 1

Instrument: pid1.i

Operator: PC

Column diameter: 0.18

/chem3/pid1.i/20131122-2.b/1122a021.d/1122a021.cdf

UVOLTS (<math>\times 10^3</math>)  
8.2  
8.0  
7.8  
7.6  
7.4  
7.2  
7.0  
6.8  
6.6  
6.4  
6.2  
6.0  
5.8  
5.6  
5.4  
5.2  
5.0  
4.8  
4.6  
4.4  
4.2  
4.0  
3.8  
3.6  
3.4  
3.2  
3.0  
2.8  
2.6  
2.4  
2.2  
2.0  
1.8  
4    5    6    7    8    9    10    11    12    13    14    15    16    17    18    19    20    21    22    23  
Min

-TFT(Surr) (7,848)  
BB(Surr) (15,381)

xpooc 00039

Data File: /chem3/pid1.i/20131122-1.b/1122a022.d

Date : 22-Nov-2013 20:30

Client ID: HM-5

Sample Info: XP00D

Page 1

Instrument: pid1.i

Operator: PC

Column diameter: 0.18

/chem3/pid1.i/20131122-1.b/1122a022.d\1122a022.cdf

UVOLTS ( $\times 10^3$ )

4.5  
4.4  
4.3  
4.2  
4.1  
4.0  
3.9  
3.8  
3.7  
3.6  
3.5  
3.4  
3.3  
3.2  
3.1  
3.0  
2.9  
2.8  
2.7  
2.6  
2.5  
2.4  
2.3  
2.2  
2.1  
2.0  
1.9  
1.8  
1.7  
1.6

TFT(Surr) (7.841)

-BB(Surr) (15.373)



XP00D 00040

Data File: /chem3/pid1.i/20131122-2.b/1122a022.d

Date : 22-NOV-2013 20:30

Client ID: MM-5

Sample Info: XP00D

Column phase: RTX 502-2 PID

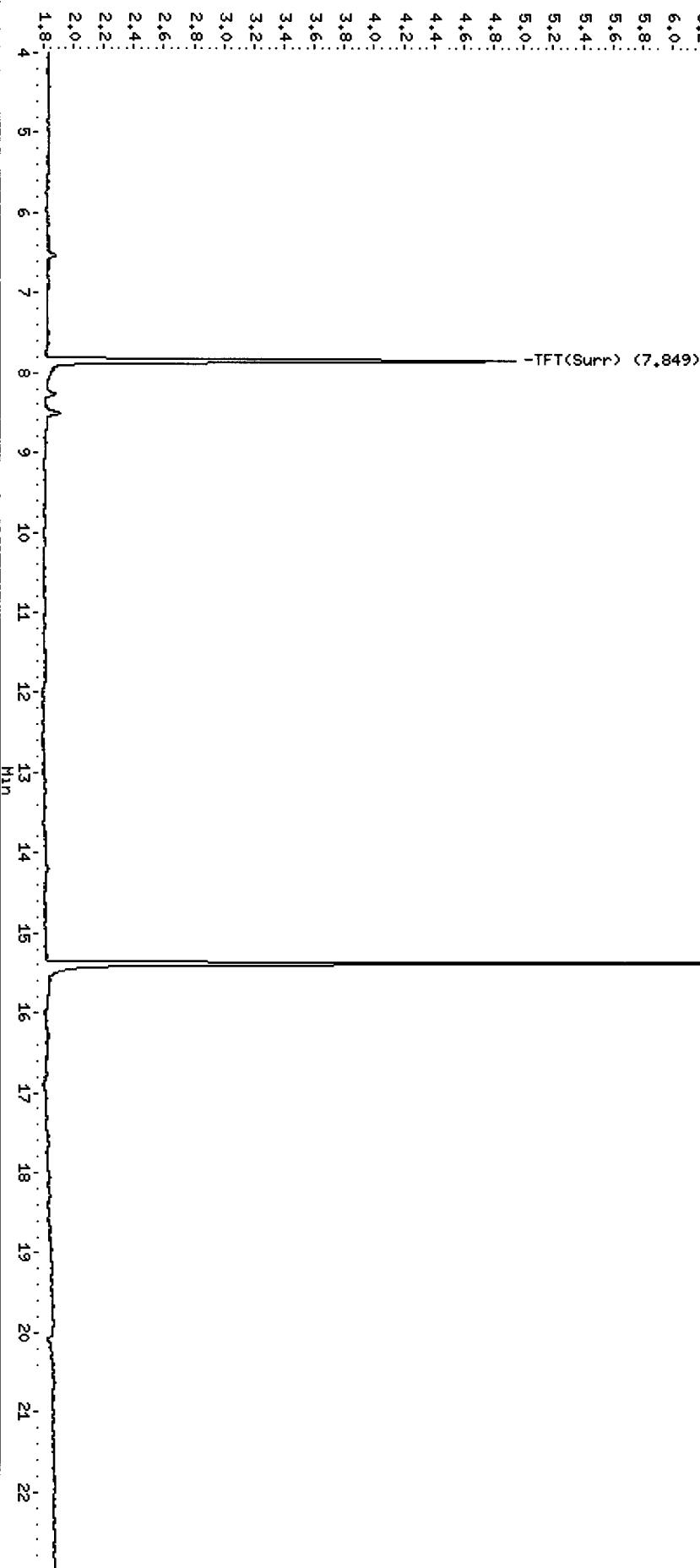
Instrument: pid1.i

Operator: PC

Column diameter: 0.18

/chem3/pid1.i/20131122-2.b/1122a022.d/1122a022.cdf

BB(Surr) (15.380)

UVOLTS ( $\times 10^3$ )

Data File: /chem3/pid1.i/20131122-1.b/1122a023.d

Date : 22-Nov-2013 20:59

Client ID: MN-14

Sample Info: XPOOE

Page 1

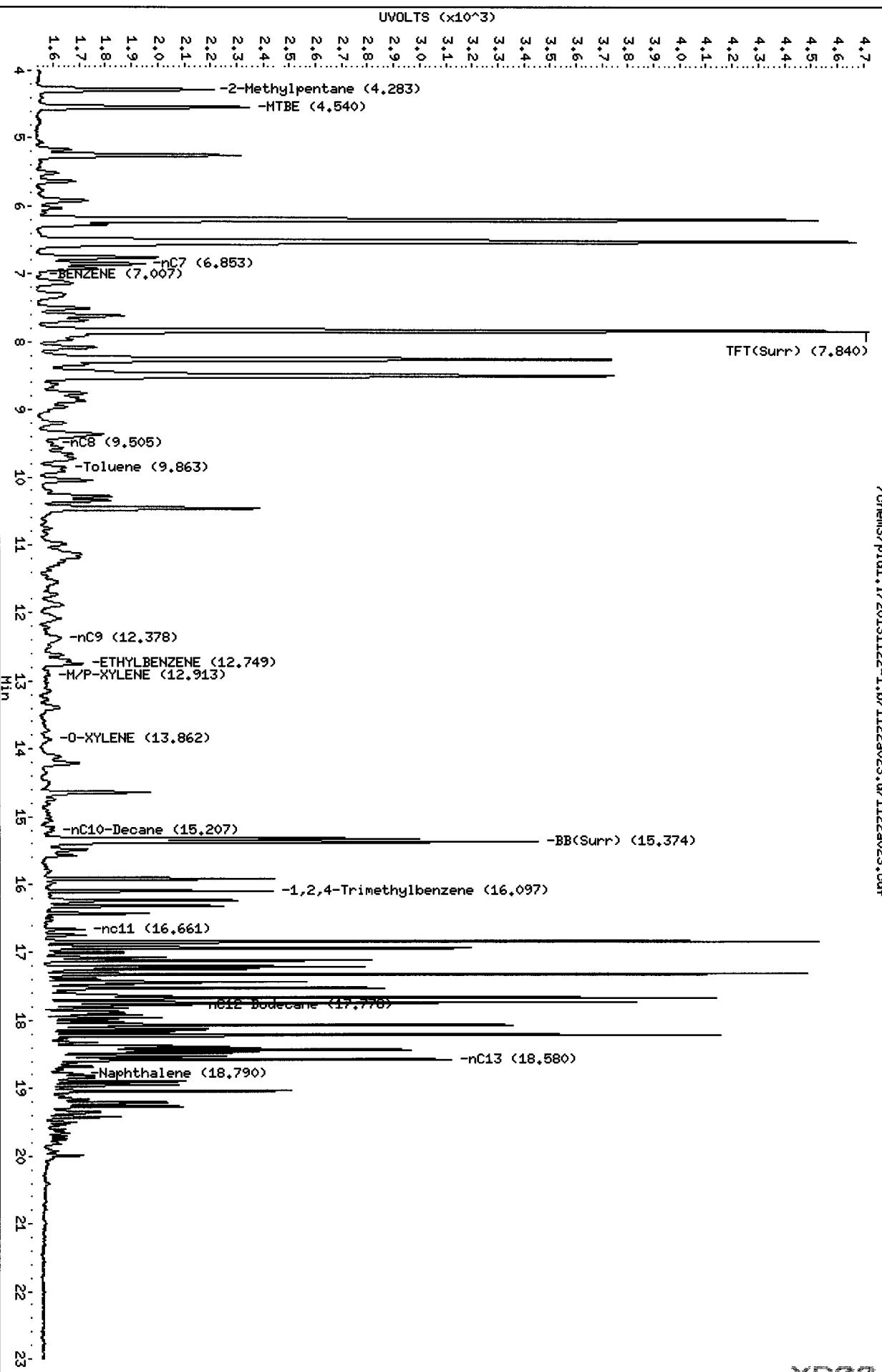
Instrument: pid1.i

Operator: PC

Column diameter: 0.18

/chem3/pid1.i/20131122-1.b/1122a023.d/1122a023.cdf

Column phase: RTX 502-2 FID



Data File: /chem3/pid1.i/20131122-2.b/1122a023.d

Date : 22-NOV-2013 20:59

Client ID: MU-14

Sample Info: XPOOE

Page 1

Instrument: pid1.i  
Operator: PC  
Column diameter: 0.18

/chem3/pid1.i/20131122-2.b/1122a023.d/1122a023.cdf

BB(Surr) (15,380)

UVOLTS ( $\times 10^3$ )

8.6  
8.4  
8.2  
8.0  
7.8  
7.6  
7.4  
7.2  
7.0  
6.8  
6.6  
6.4  
6.2  
6.0  
5.8  
5.6  
5.4  
5.2  
5.0  
4.8  
4.6  
4.4  
4.2  
4.0  
3.8  
3.6  
3.4  
3.2  
3.0  
2.8  
2.6  
2.4  
2.2  
2.0  
1.8  
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23

-MTBE (4.549)

-TFT(Surr) (7,848)

-Toluene (9,868)

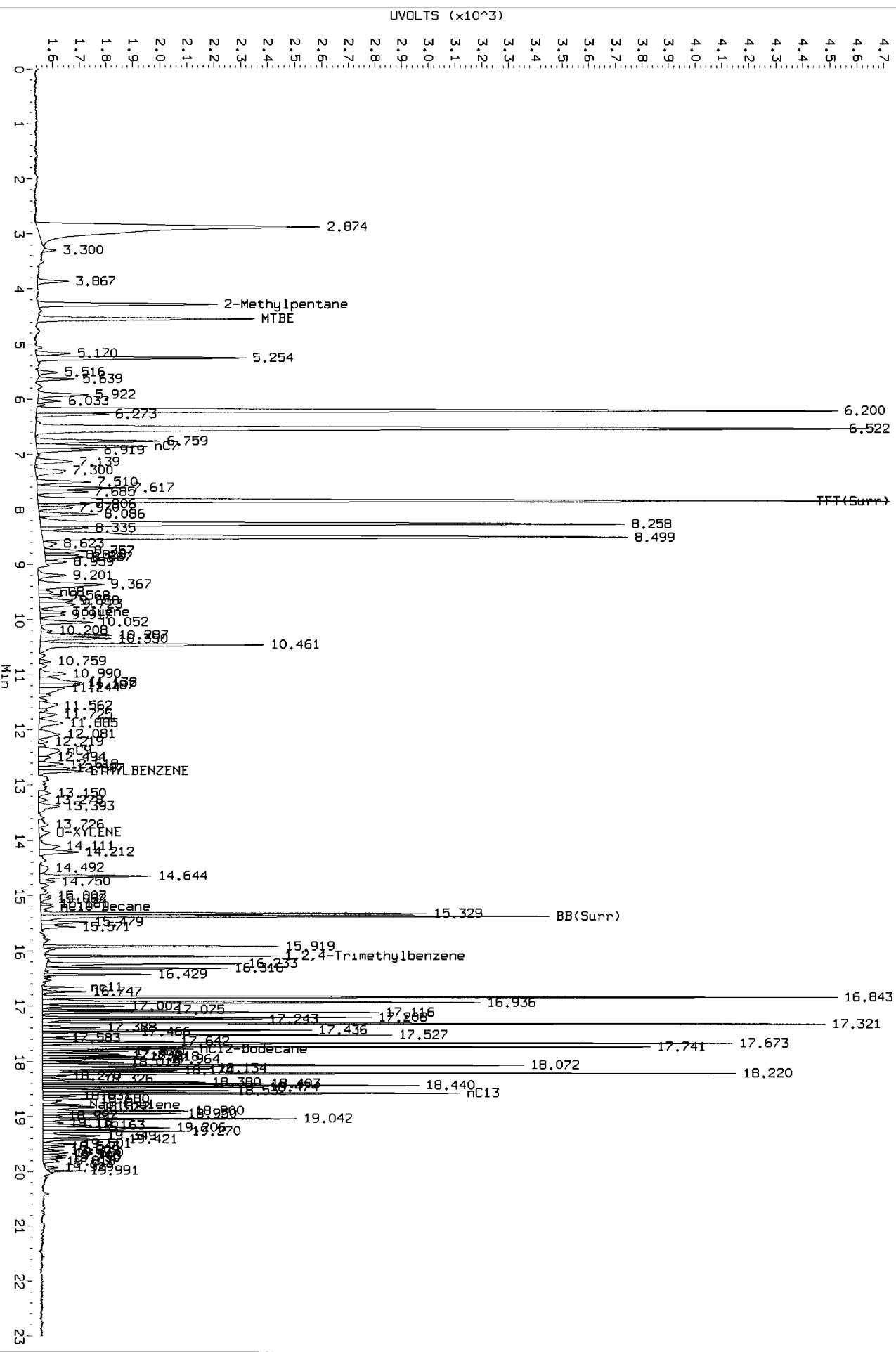
-Ethylbenzene (12,760)

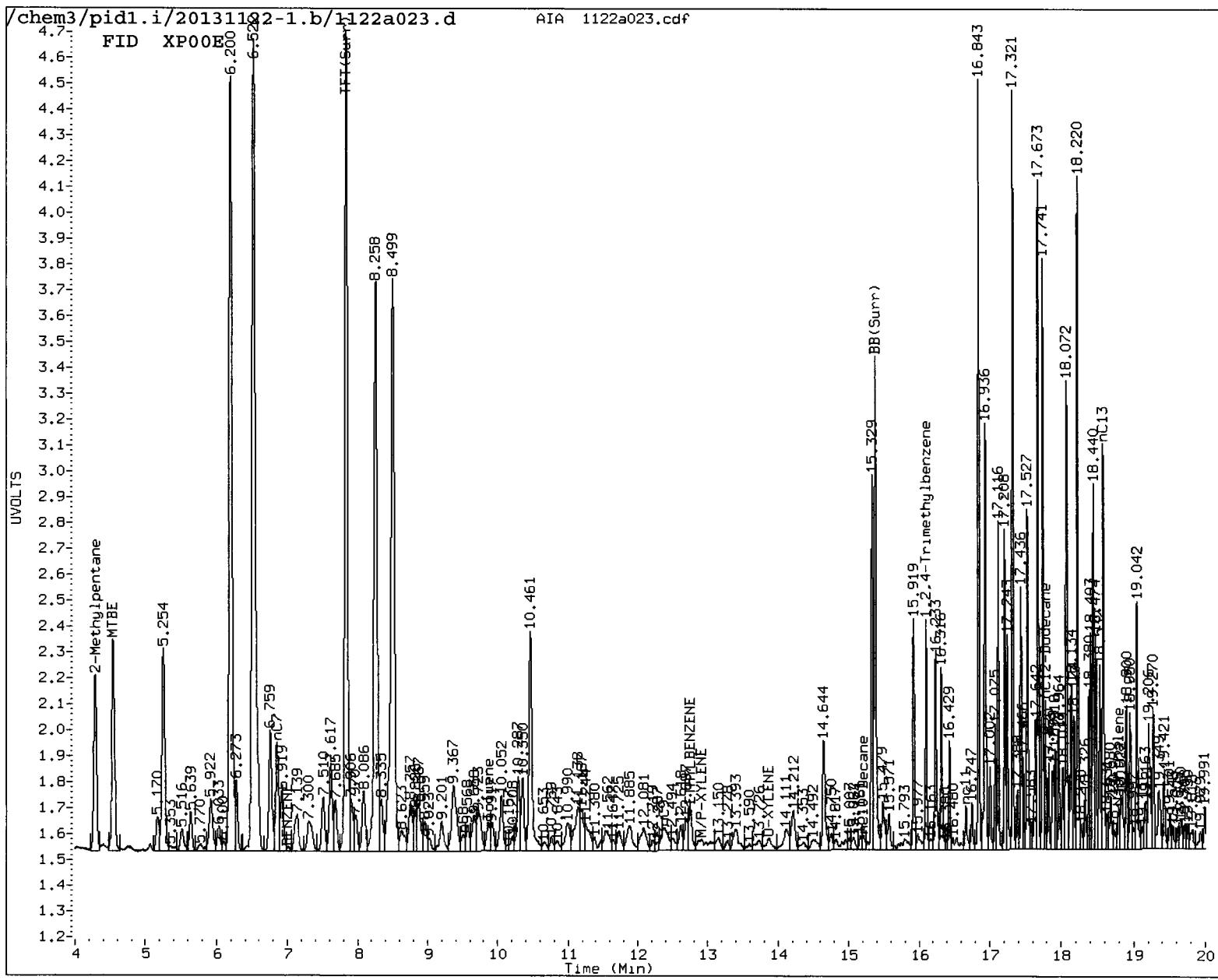
XP600 00043

Data File: /chem3/pid1.1/20131122-1.b/1122a023.d/1122a023.cdf  
Injection Date: 22-NOV-2013 20:59  
Instrument: pid1.1  
Client Sample ID: MU-14

AC  
1122a023

AIA 1122a023.cdf: 0.000 to 23.000 Min





## MANUAL INTEGRATION

1. Baseline correction
  2. Poor chromatography
  3. Peak not found
  4. Totals calculation

## 5. Other

Analyst: TC

Date: 4/24/13

Data File: /chem3/pid1.i/20131122-1.b/1122a024.d

Date : 22-NOV-2013 21:28

Client ID: MH-KA

Sample Info: XP00F

Page 1

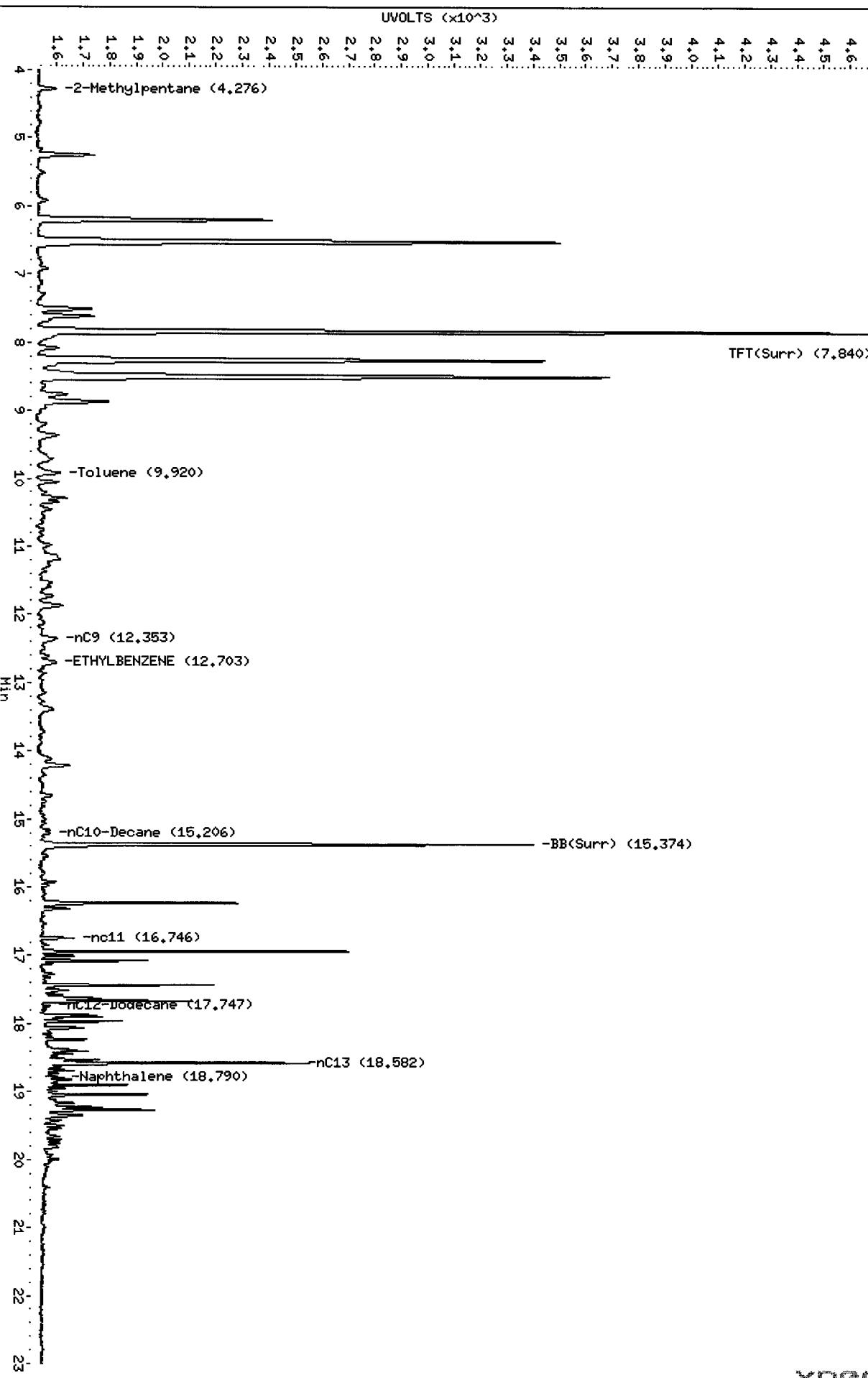
Column phase: RTX 502-2 FID

/chem3/pid1.i/20131122-1.b/1122a024.d/1122a024.cdf

Instrument: pid1.i

Operator: PC

Column diameter: 0.18



XP00F 00046

Data File: /chem3/pid1.i/20131122-2.b/1122a024.d

Date : 22-NOV-2013 21:28

Client ID: MM-KA

Sample Info: XPOOF

Column phase: RTX 502-2 PID

Instrument: pid1.i

Operator: PC

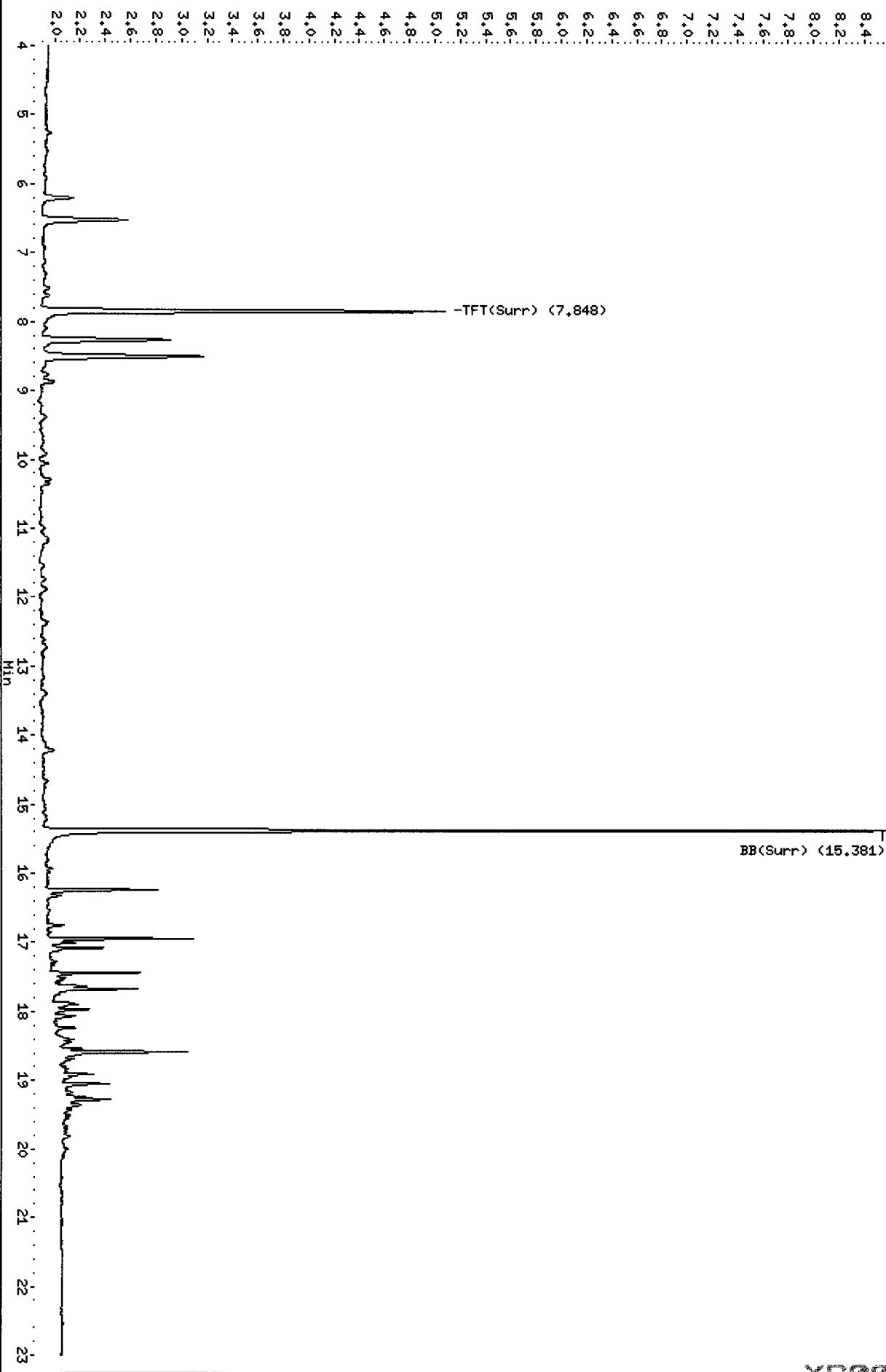
Column diameter: 0.18

/chem3/pid1.i/20131122-2.b/1122a024.d/1122a024.cdf

BB(Surr) (15.381)

UVOLTS ( $\times 10^3$ )

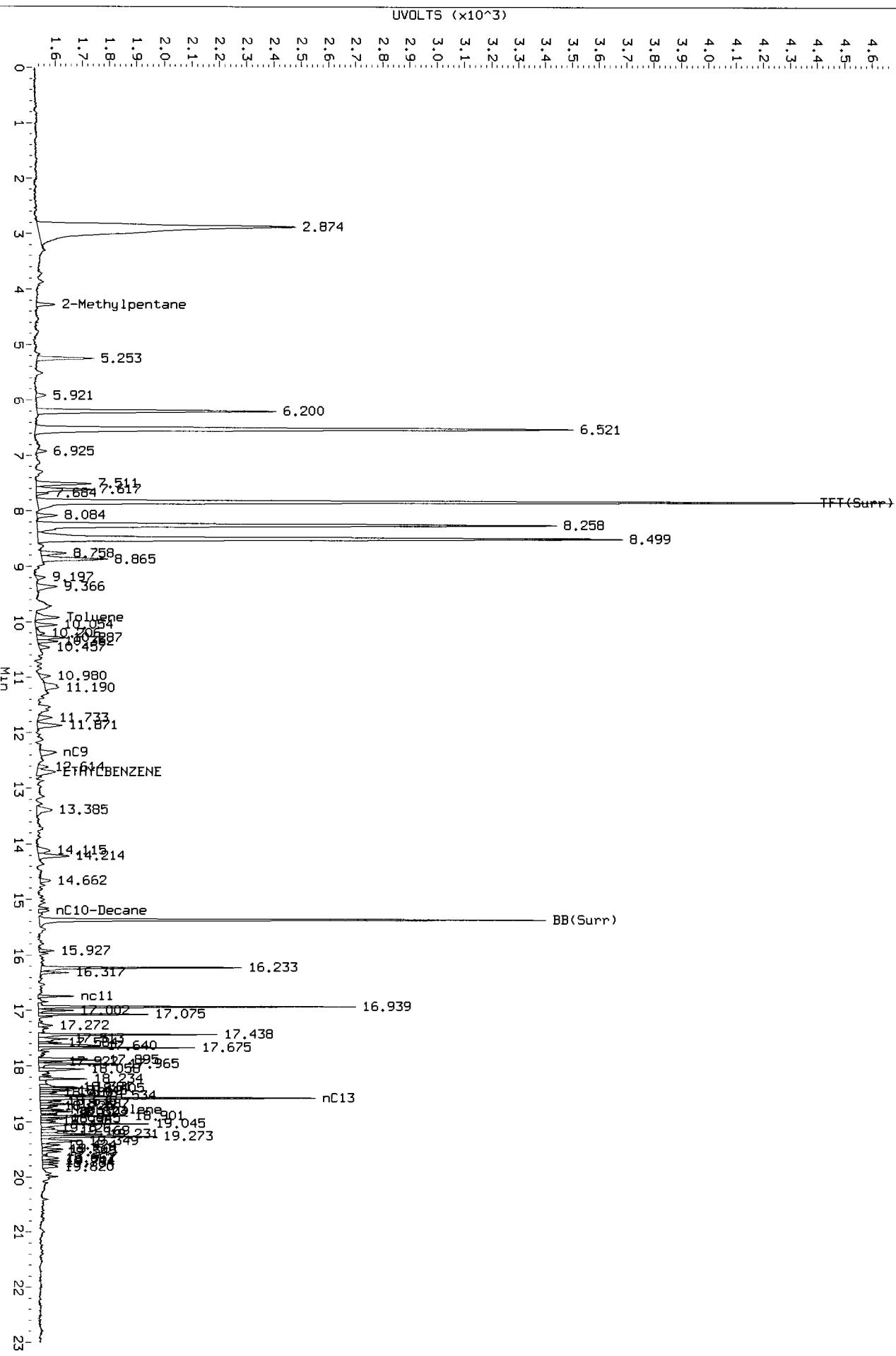
-TFT(Surr) (7.848)



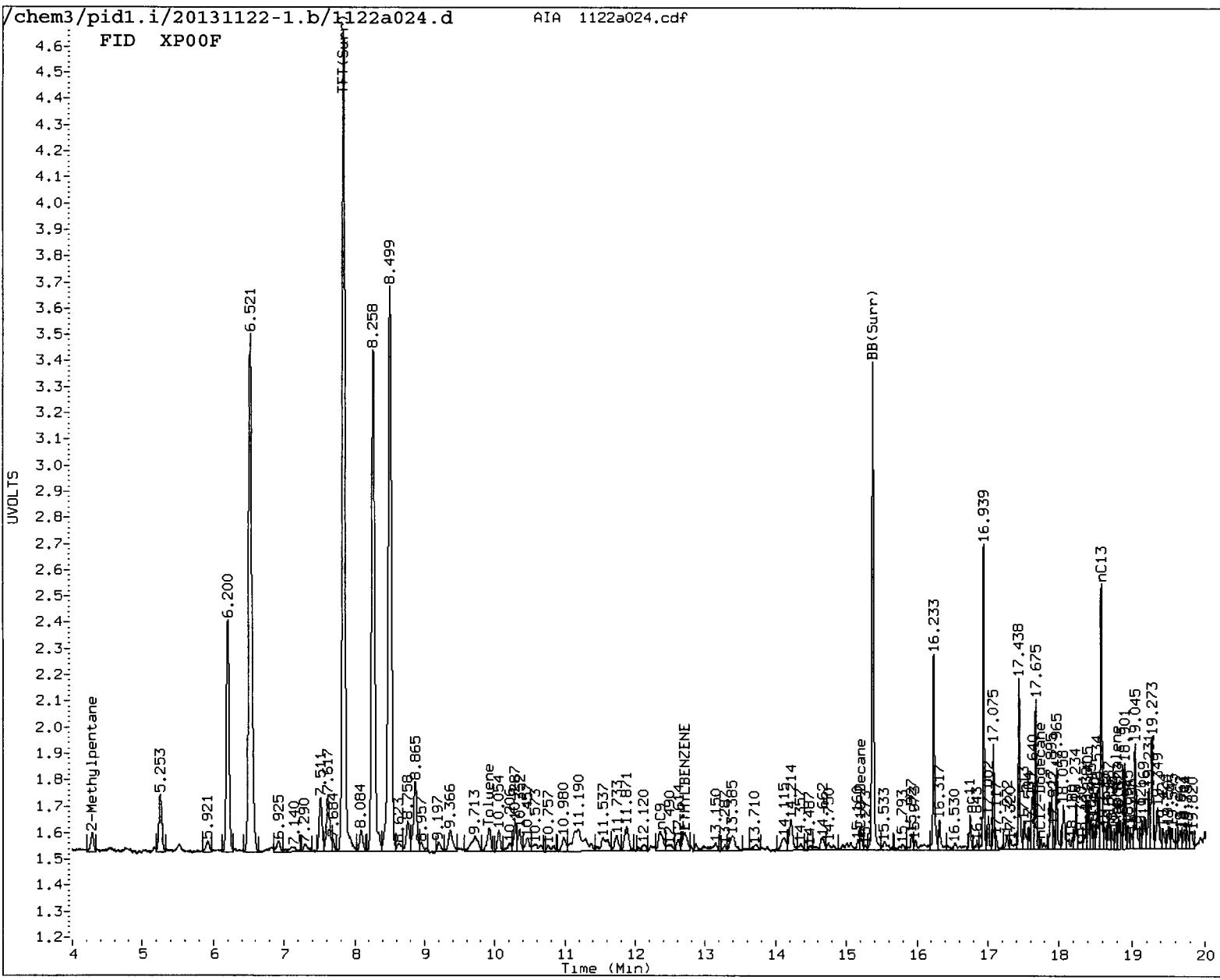
Data File: /chem3/pid1.1/20131122-1.b/1122a024.d/1122a024.cdf  
Injection Date: 22-NOV-2013 21:28  
Instrument: pid1.1  
Client Sample ID: Mu-KH

PC  
11/27/13

AIA 1122a024.cdf: 0.000 to 23.000 Min



FID XP00F



## MANUAL INTEGRATION

- Baseline correction
- Poor chromatography
- Peak not found
4. Totals calculation

## 5. Other \_\_\_\_\_

Analyst: RCDate: 11/27/13

Data File: /chem3/pid1.i/20131122-1.b/1122a025.d  
Date : 22-NOV-2013 21:57

Client ID: MM-6

Sample Info: XP00G

Page 1

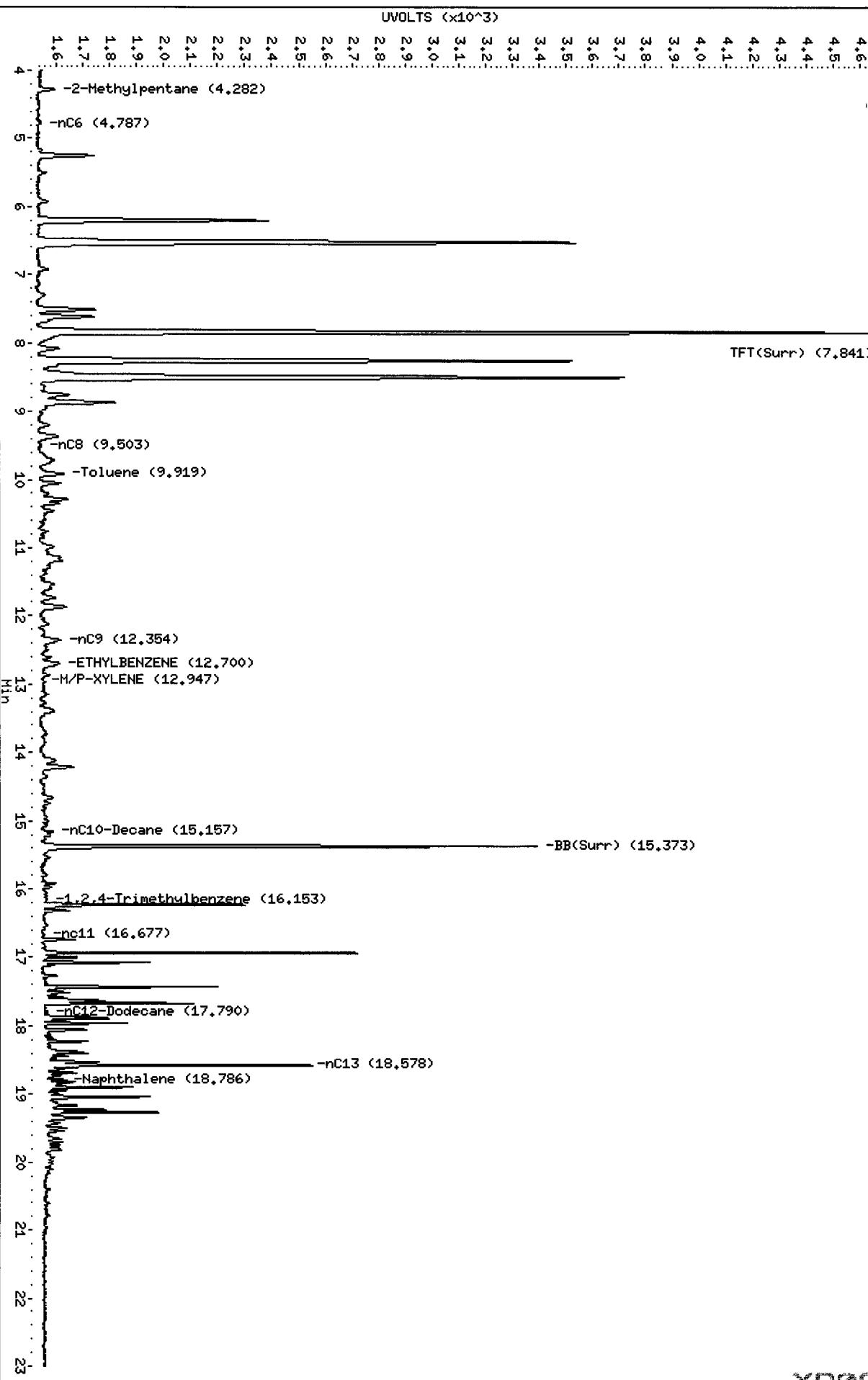
Instrument: pid1.i

Operator: PC

Column diameter: 0.18

/chem3/pid1.i/20131122-1.b/1122a025.d/1122a025.cdf

Column phase: RTX 502-2 FID



Data File: /chem3/pid1.i/20131122-2.b/1122a025.d  
Date : 22-Nov-2013 21:57

Client ID: MU-6  
Sample Info: XPOOC

Instrument: pid1.i

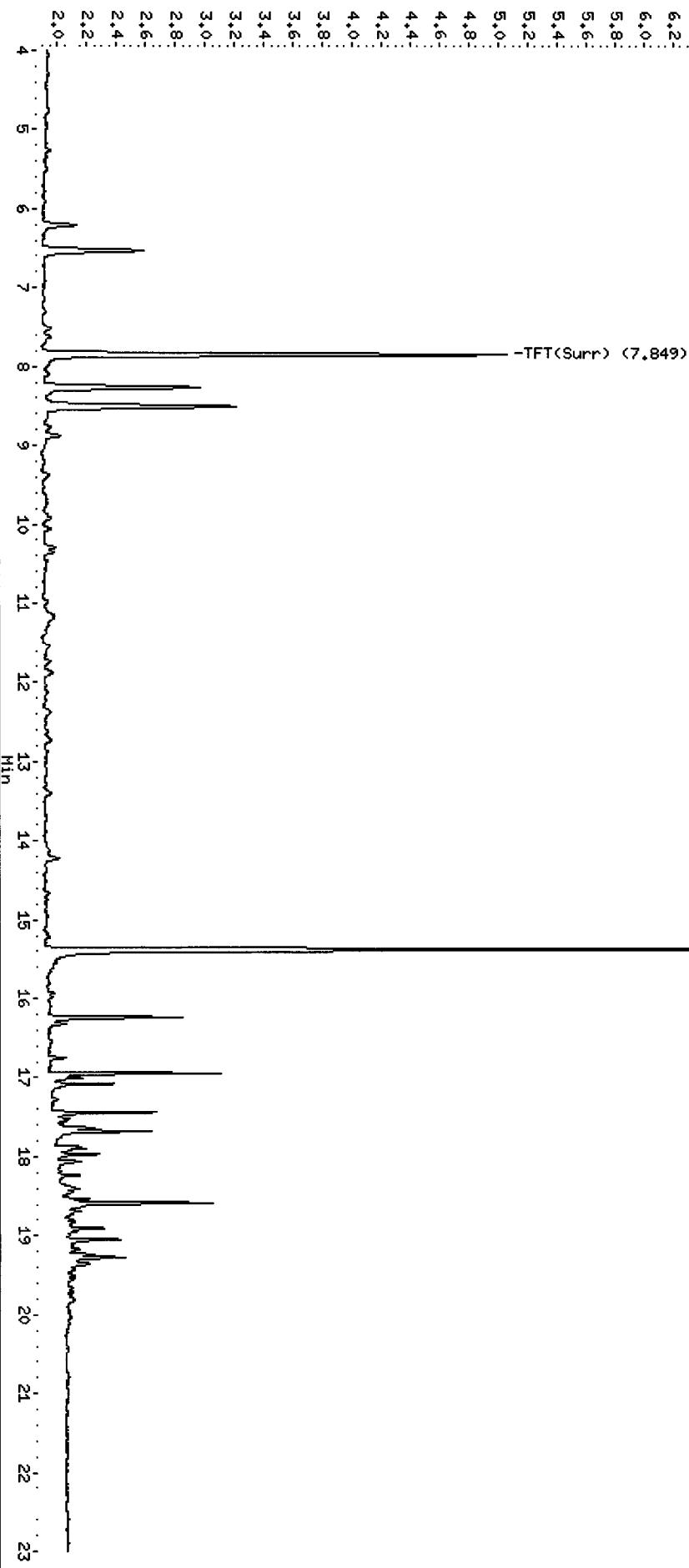
Column phase: RTX 502-2 PID

Operator: PC  
Column diameter: 0.18

/chem3/pid1.i/20131122-2.b/1122a025.sdf

BB(Surr) (15.380)

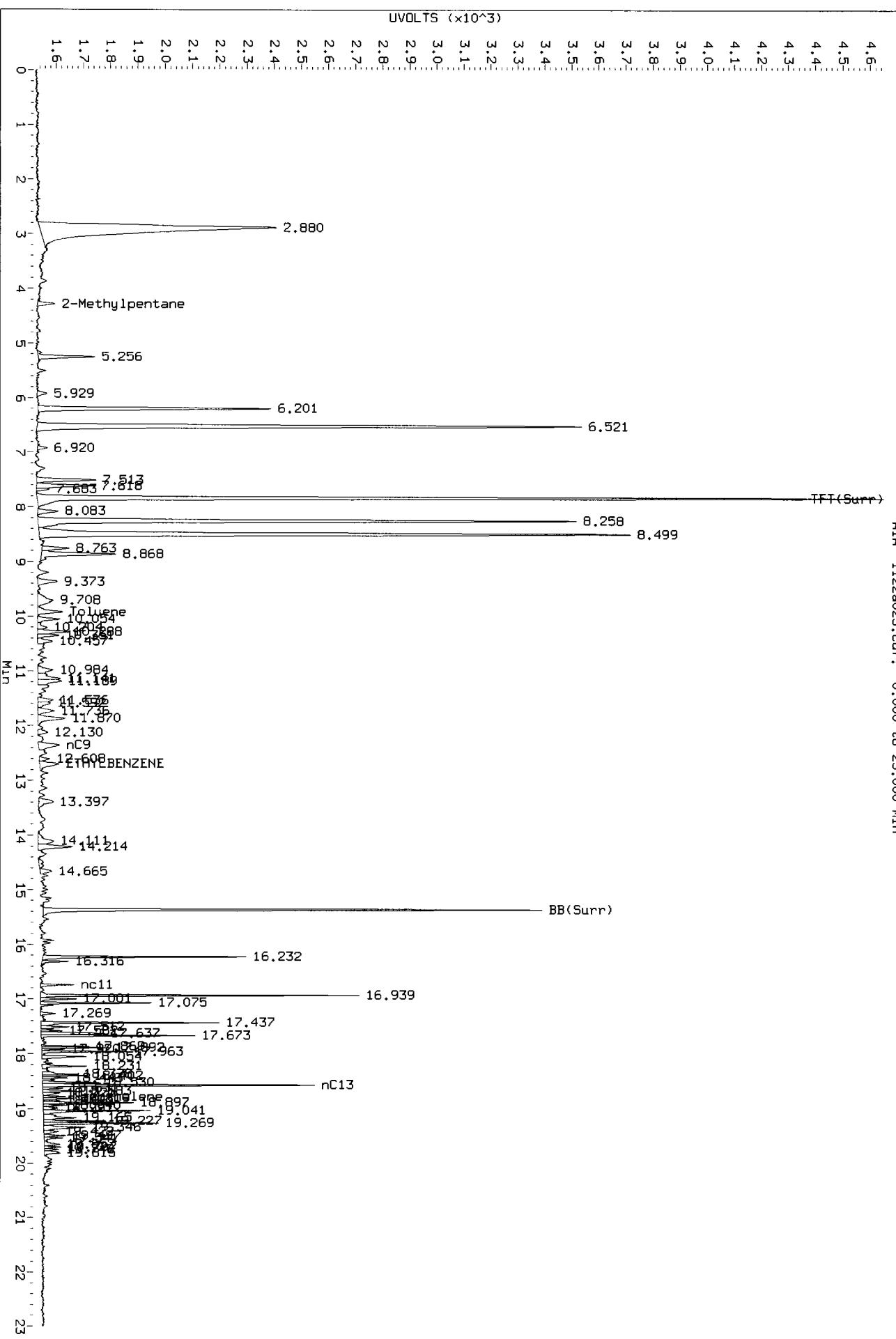
UVOLTS (<math>\times 10^3</math>)

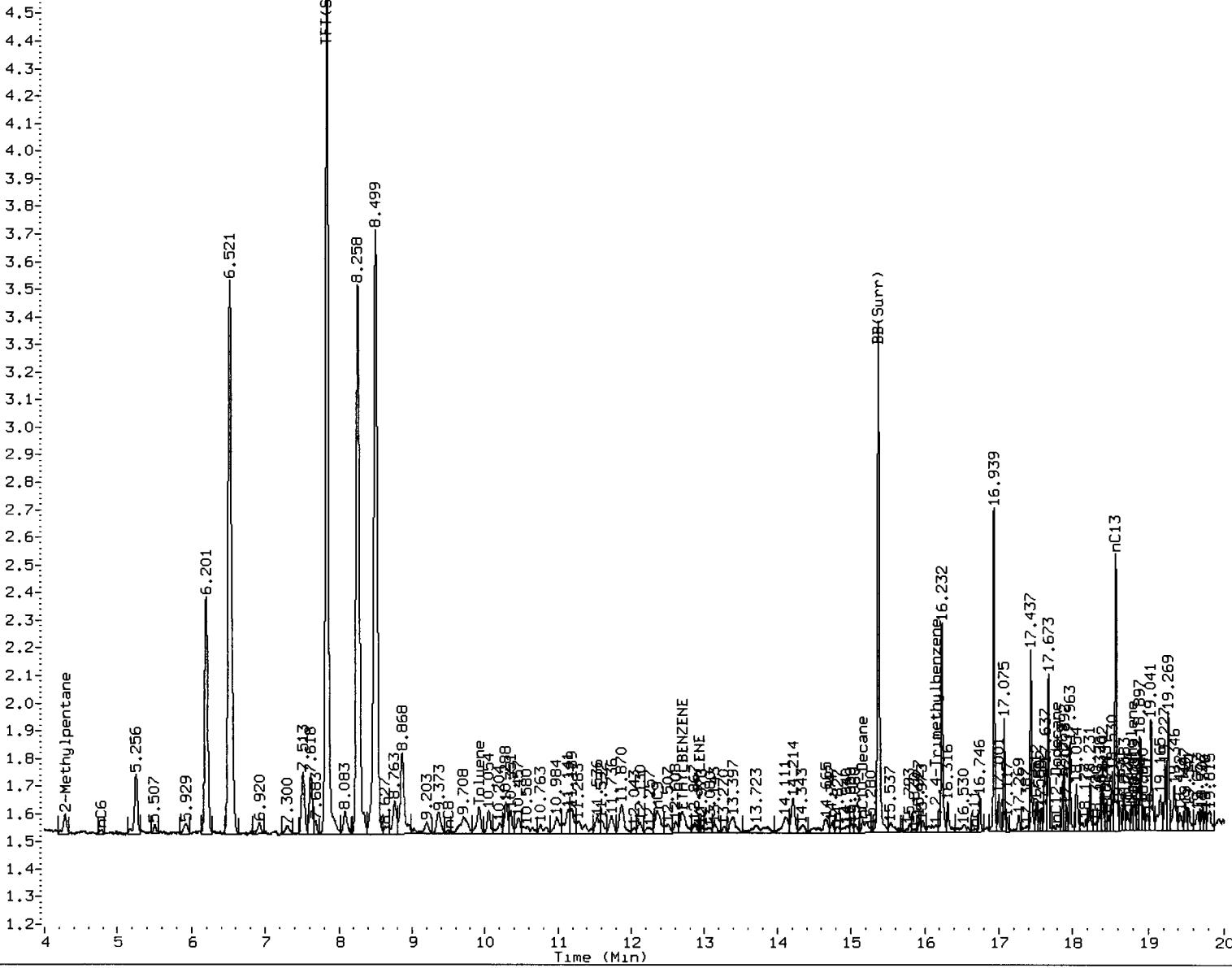


Data File: /chem3/pid1.1/20131122-1.b/1122a025.d/1122a025.cdf  
Injection Date: 22-NOV-2013 21:57  
Instrument: pid1.1  
Client Sample ID: Mu-6

PL  
11/27/13

AIA 1122a025.cdf: 0.000 to 23.000 Min



4.6  
FID XP00G

## MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other \_\_\_\_\_

Analyst: JLDate: 11/27/13

Data File: /chem3/pid1.i/20131122-1.b/1122a028.d  
Date : 22-NOV-2013 23:25

Client ID: HM-13  
Sample Info: XPOOH

Page 1

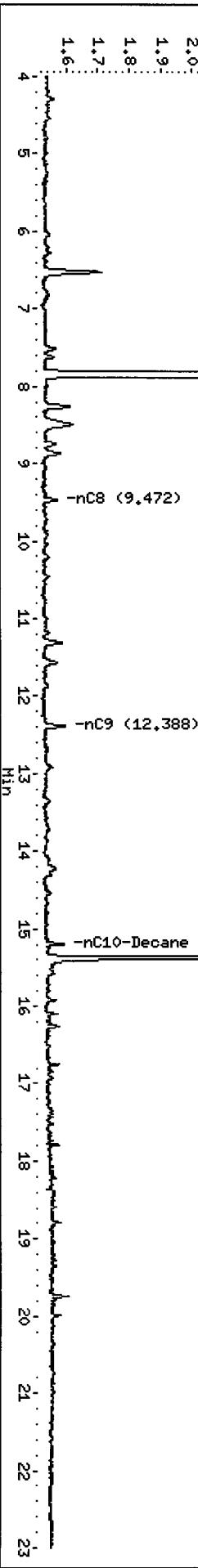
Instrument: pid1.i  
Column phase: RTX 502-2 FID

Operator: PC  
Column diameter: 0.18  
/chem3/pid1.i/20131122-1.b/1122a028.sdf

/chem3/pid1.i/20131122-1.b/1122a028.sdf

UVOLTS ( $\times 10^3$ )  
4.5  
4.4  
4.3  
4.2  
4.1  
4.0  
3.9  
3.8  
3.7  
3.6  
3.5  
3.4  
3.3  
3.2  
3.1  
3.0  
2.9  
2.8  
2.7  
2.6  
2.5  
2.4  
2.3  
2.2  
2.1  
2.0  
1.9  
1.8  
1.7  
1.6  
TFT(Surr) (7.842)

XPOOH 00054



Data File: /chem3/pid1.i/20131122-2.b/1122a028.d

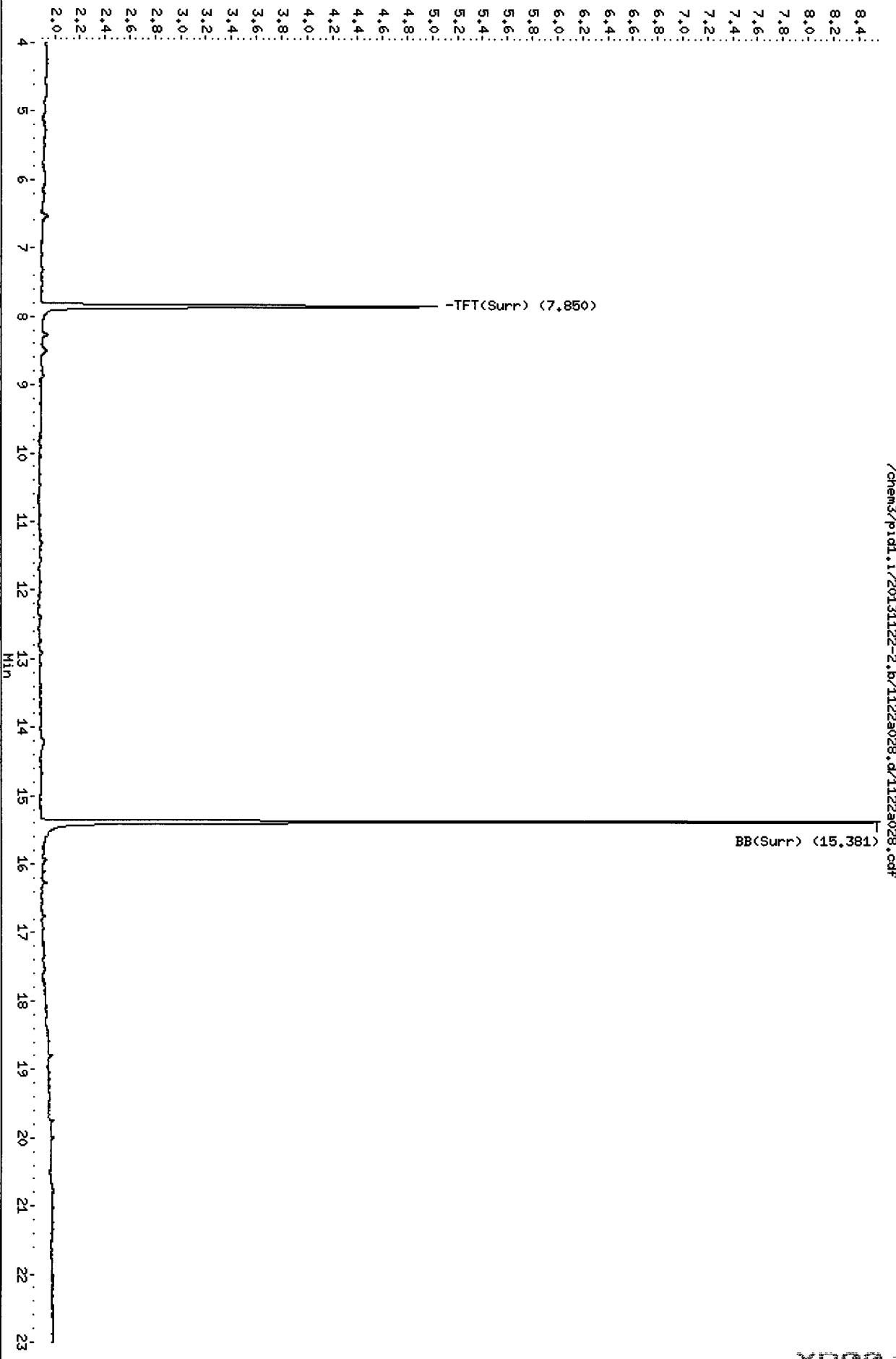
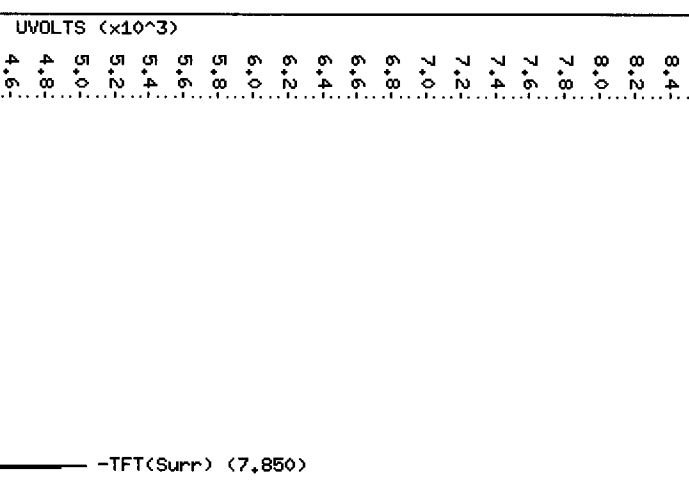
Date : 22-Nov-2013 23:25

Client ID: MM-13

Sample Info: XP00H

Column phase: RTX 502-2 PID

/chem3/pid1.i/20131122-2.b/1122a028.d/1122a028.cdf

Instrument: pid1.i  
Operator: PC  
Column diameter: 0.18

XP00 00055

Data File: /chem3/pid1.i/20131122-1.b/1122a029.d

Date : 22-Nov-2013 23:54

Client ID: MM-15

Sample Info: XP001

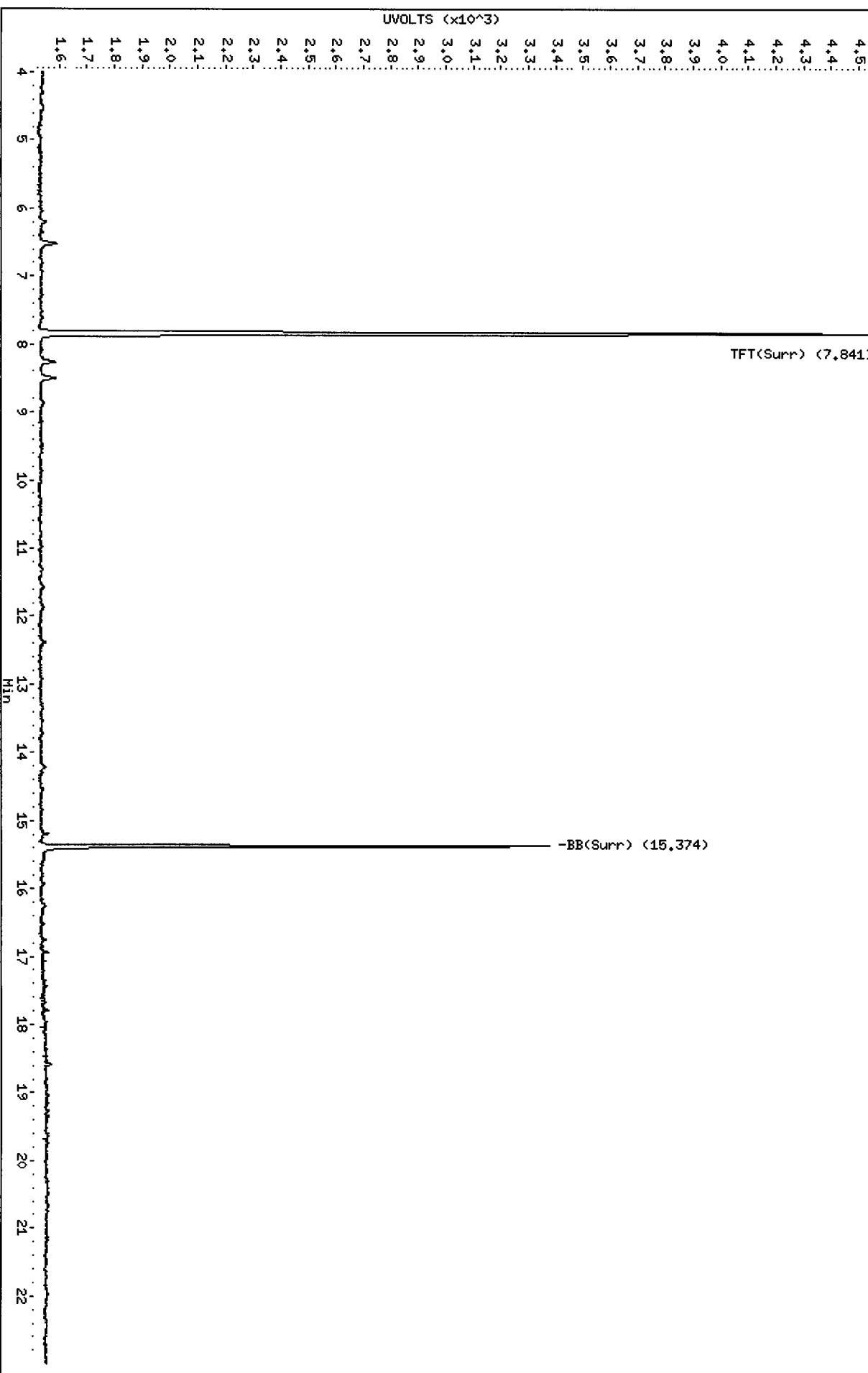
Column phase: RTX 502-2 FID

Instrument: pid1.i

/chem3/pid1.i/20131122-1.b/1122a029.d/1122a029.cdf

Operator: PC

Column diameter: 0.18



Data File: /chem3/pid1.i/20131122-2.b/1122a029.d

Date : 22-NOV-2013 23:54

Client ID: MM-15

Sample Info: XP001

Column phase: RTX 502-2 PID

/chem3/pid1.i/20131122-2.b/1122a029.d/1122a029.cdf

Instrument: pid1.i

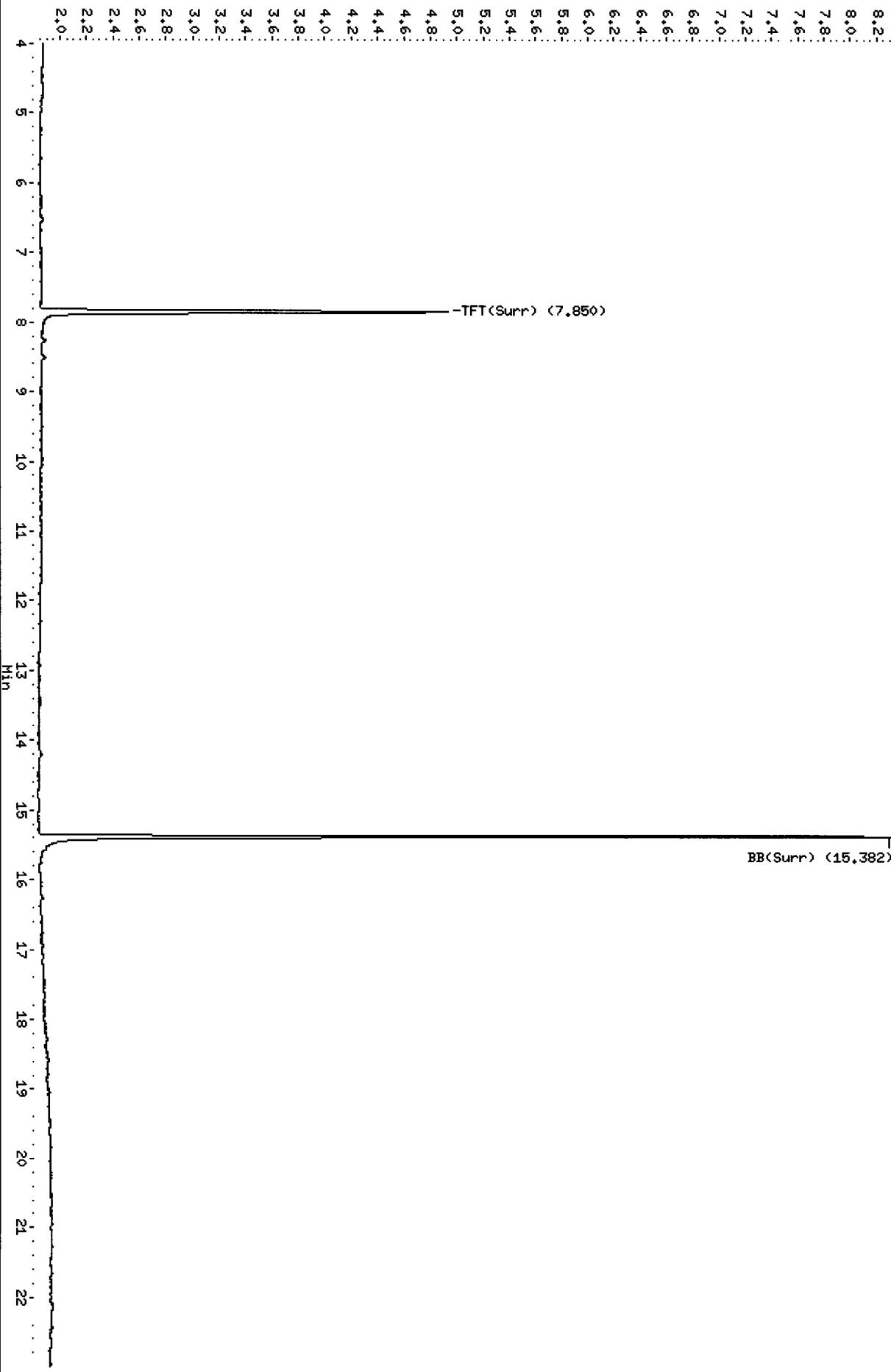
Operator: PC

Column diameter: 0.18

BB(Surr) (15.382)

UVOLTS ( $\times 10^3$ )

-TFT(Surr) (7.850)



Data File: /chem3/pid1.i/20131122-1.b/1122a030.d

Date : 23-NOV-2013 00:23

Client ID: TB

Sample Info: XPOOJ

Page 1

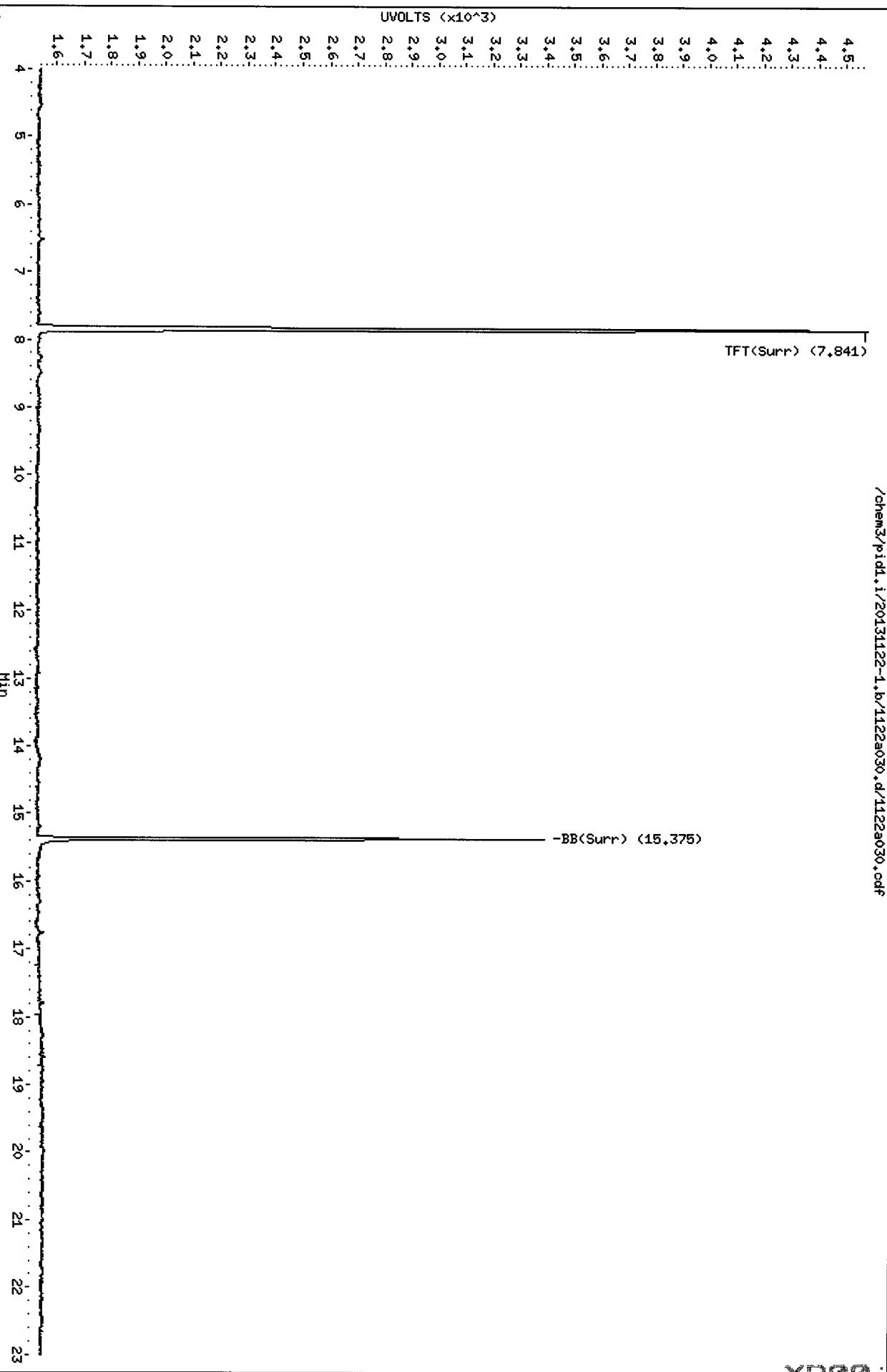
Column phase: RTX 502-2 FID

Instrument: pid1.i  
Operator: PC  
Column diameter: 0.18

/chem3/pid1.i/20131122-1.b/1122a030.d/1122a030.cdf

TFT(Surr) (7.841)

-BB(Surr) (15.375)



XPOOJ 00058

Data File: /chem3/pid1.i/20131122-2.b/1122a030.d

Date : 23-MOV-2013 00:23

Client ID: TB

Sample Info: XPOOJ

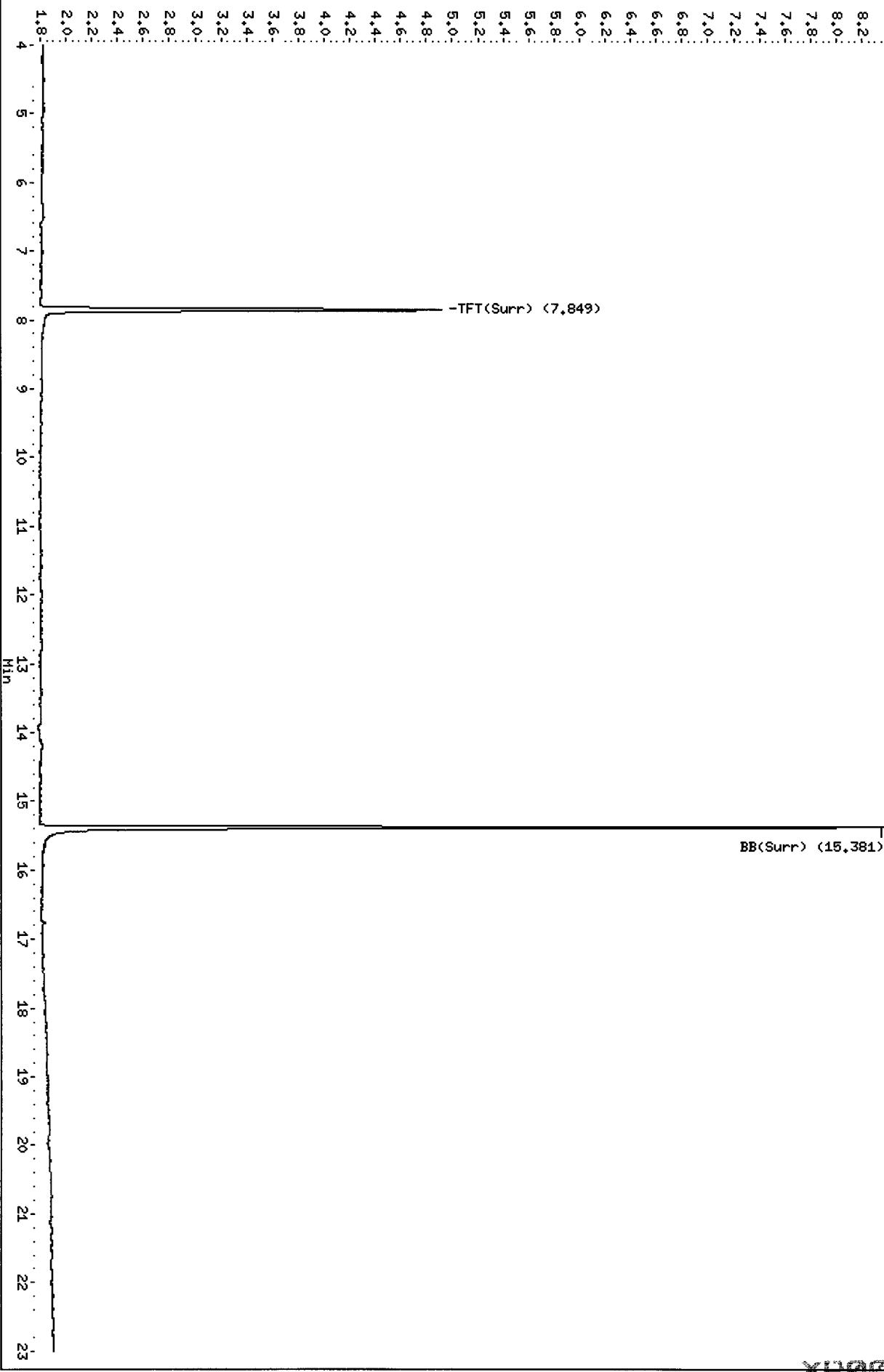
Instrument: pid1.i  
Operator: PC  
Column diameter: 0.18

/chem3/pid1.i/20131122-2.b/1122a030.d/1122a030.cdf

BB(Surr) (15,381)

UVOLTS (&lt;math&gt;\times 10^3&lt;/math&gt;)

-TFT(Surr) (7,849)



X100 00059

**SAMPLE RESULTS-CONVENTIONALS**  
**XP00-Hart Crowser Inc.**

**ANALYTICAL  
RESOURCES  
INCORPORATED**

Matrix: Water  
Data Release Authorized  
Reported: 12/09/13

Project: Kens Auto  
Event: 7168-11  
Date Sampled: 11/19/13  
Date Received: 11/20/13

**Client ID: MW-4R  
ARI ID: 13-25772 XP00A**

Analyte	Date Batch	Method	Units	RL	Sample
Chloride	11/27/13 112713#1	EPA 300.0	mg/L	0.5	10.0
Bromide	11/20/13 112013#1	EPA 300.0	mg/L	0.1	0.1
N-Nitrate	11/20/13 112013#1	EPA 300.0	mg-N/L	0.1	0.7
Sulfate	11/27/13 112713#1	EPA 300.0	mg/L	0.5	9.6

RL Analytical reporting limit

U Undetected at reported detection limit

**SAMPLE RESULTS-CONVENTIONALS**  
**XP00-Hart Crowser Inc.**



Matrix: Water  
Data Release Authorized  
Reported: 12/09/13

Project: Kens Auto  
Event: 7168-11  
Date Sampled: 11/19/13  
Date Received: 11/20/13

**Client ID: MW-3**  
**ARI ID: 13-25773 XP00B**

Analyte	Date Batch	Method	Units	RL	Sample
Chloride	11/27/13 112713#1	EPA 300.0	mg/L	0.2	5.8
Bromide	11/20/13 112013#1	EPA 300.0	mg/L	0.1	< 0.1 U
N-Nitrate	11/20/13 112013#1	EPA 300.0	mg-N/L	0.1	0.2
Sulfate	11/20/13 112013#1	EPA 300.0	mg/L	0.1	4.6

RL Analytical reporting limit

U Undetected at reported detection limit

**SAMPLE RESULTS-CONVENTIONALS**  
**XP00-Hart Crowser Inc.**

**ANALYTICAL  
RESOURCES  
INCORPORATED**

Matrix: Water  
Data Release Authorized:  
Reported: 12/09/13

Project: Kens Auto  
Event: 7168-11  
Date Sampled: 11/19/13  
Date Received: 11/20/13

**Client ID: MW-2**  
**ARI ID: 13-25774 XP00C**

Analyte	Date Batch	Method	Units	RL	Sample
Chloride	11/27/13 112713#1	EPA 300.0	mg/L	0.2	5.7
Bromide	11/20/13 112013#1	EPA 300.0	mg/L	0.1	< 0.1 U
N-Nitrate	11/20/13 112013#1	EPA 300.0	mg-N/L	0.1	0.2
Sulfate	11/20/13 112013#1	EPA 300.0	mg/L	0.1	4.2

RL Analytical reporting limit

U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS  
XP00-Hart Crowser Inc.

ANALYTICAL  
RESOURCES  
INCORPORATED

Matrix: Water  
Data Release Authorized:  
Reported: 12/09/13

Project: Kens Auto  
Event: 7168-11  
Date Sampled: 11/19/13  
Date Received: 11/20/13

Client ID: MW-5  
ARI ID: 13-25775 XP00D

Analyte	Date Batch	Method	Units	RL	Sample
Chloride	11/27/13 112713#1	EPA 300.0	mg/L	0.5	10.0
Bromide	11/20/13 112013#1	EPA 300.0	mg/L	0.1	< 0.1 U
N-Nitrate	11/20/13 112013#1	EPA 300.0	mg-N/L	0.1	0.5
Sulfate	11/27/13 112713#1	EPA 300.0	mg/L	0.5	9.7

RL Analytical reporting limit

U Undetected at reported detection limit

**SAMPLE RESULTS-CONVENTIONALS**  
**XP00-Hart Crowser Inc.**

**ANALYTICAL  
RESOURCES  
INCORPORATED**

Matrix: Water  
Data Release Authorized:  
Reported: 12/09/13

Project: Kens Auto  
Event: 7168-11  
Date Sampled: 11/19/13  
Date Received: 11/20/13

**Client ID: MW-14**  
**ARI ID: 13-25776 XP00E**

Analyte	Date Batch	Method	Units	RL	Sample
Chloride	11/27/13 112713#1	EPA 300.0	mg/L	0.5	10.2
Bromide	11/20/13 112013#1	EPA 300.0	mg/L	0.1	< 0.1 U
N-Nitrate	11/20/13 112013#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Sulfate	11/27/13 112713#1	EPA 300.0	mg/L	1.0	39.1

RL Analytical reporting limit

U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS  
XP00-Hart Crowser Inc.

ANALYTICAL  
RESOURCES  
INCORPORATED

Matrix: Water  
Data Release Authorized:  
Reported: 12/09/13

Project: Kens Auto  
Event: 7168-11  
Date Sampled: 11/20/13  
Date Received: 11/20/13

Client ID: MW-KA  
ARI ID: 13-25777 XP00F

Analyte	Date Batch	Method	Units	RL	Sample
Chloride	11/27/13 112713#1	EPA 300.0	mg/L	0.5	8.9
Bromide	11/20/13 112013#1	EPA 300.0	mg/L	0.1	< 0.1 U
N-Nitrate	11/20/13 112013#1	EPA 300.0	mg-N/L	0.1	0.1
Sulfate	11/20/13 112013#1	EPA 300.0	mg/L	0.1	1.6

RL Analytical reporting limit

U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS  
XP00-Hart Crowser Inc.

ANALYTICAL  
RESOURCES  
INCORPORATED

Matrix: Water  
Data Release Authorized:  
Reported: 12/09/13

Project: Kens Auto  
Event: 7168-11  
Date Sampled: 11/20/13  
Date Received: 11/20/13

Client ID: MW-6  
ARI ID: 13-25778 XP00G

Analyte	Date Batch	Method	Units	RL	Sample
Chloride	11/27/13 112713#1	EPA 300.0	mg/L	0.5	9.0
Bromide	11/20/13 112013#1	EPA 300.0	mg/L	0.1	< 0.1 U
N-Nitrate	11/20/13 112013#1	EPA 300.0	mg-N/L	0.1	0.1
Sulfate	11/20/13 112013#1	EPA 300.0	mg/L	0.1	1.6

RL Analytical reporting limit

U Undetected at reported detection limit

**SAMPLE RESULTS-CONVENTIONALS**  
**XP00-Hart Crowser Inc.**

**ANALYTICAL  
RESOURCES  
INCORPORATED**

Matrix: Water  
Data Release Authorized  
Reported: 12/09/13

Project: Kens Auto  
Event: 7168-11  
Date Sampled: 11/20/13  
Date Received: 11/20/13

**Client ID: MW-13  
ARI ID: 13-25779 XP00H**

Analyte	Date Batch	Method	Units	RL	Sample
Chloride	11/27/13 112713#1	EPA 300.0	mg/L	0.2	5.6
Bromide	11/20/13 112013#1	EPA 300.0	mg/L	0.1	< 0.1 U
N-Nitrate	11/20/13 112013#1	EPA 300.0	mg-N/L	0.1	0.4
Sulfate	11/20/13 112013#1	EPA 300.0	mg/L	0.1	3.6

RL Analytical reporting limit

U Undetected at reported detection limit

**SAMPLE RESULTS-CONVENTIONALS**  
**XP00-Hart Crowser Inc.**

**ANALYTICAL**  
**RESOURCES**  
**INCORPORATED**

Matrix: Water  
Data Release Authorized:  
Reported: 12/09/13

Project: Kens Auto  
Event: 7168-11  
Date Sampled: 11/20/13  
Date Received: 11/20/13

**Client ID: MW-15**  
**ARI ID: 13-25780 XP00I**

Analyte	Date Batch	Method	Units	RL	Sample
Chloride	11/27/13 112713#1	EPA 300.0	mg/L	0.2	6.8
Bromide	11/20/13 112013#1	EPA 300.0	mg/L	0.1	< 0.1 U
N-Nitrate	11/20/13 112013#1	EPA 300.0	mg-N/L	0.1	0.2
Sulfate	11/20/13 112013#1	EPA 300.0	mg/L	0.1	4.0

RL Analytical reporting limit

U Undetected at reported detection limit

METHOD BLANK RESULTS-CONVENTIONALS  
XP00-Hart Crowser Inc.

ANALYTICAL  
RESOURCES  
INCORPORATED

Matrix: Water  
Data Release Authorized:  
Reported: 12/09/13

Project: Kens Auto  
Event: 7168-11  
Date Sampled: NA  
Date Received: NA

Analyte	Method	Date	Units	Blank	ID
Chloride	EPA 300.0	11/27/13	mg/L	< 0.1	U
Bromide	EPA 300.0	11/20/13	mg/L	< 0.1	U
N-Nitrate	EPA 300.0	11/20/13	mg-N/L	< 0.1	U
Sulfate	EPA 300.0	11/20/13 11/27/13	mg/L	< 0.1	U
				< 0.1	U

STANDARD REFERENCE RESULTS-CONVENTIONALS  
XP00-Hart Crowser Inc.

ANALYTICAL  
RESOURCES  
INCORPORATED

Matrix: Water  
Data Release Authorized  
Reported: 12/09/13

Project: Kens Auto  
Event: 7168-11  
Date Sampled: NA  
Date Received: NA

Analyte/SRM ID	Method	Date	Units	SRM	True Value	Recovery
Chloride ERA 210312	EPA 300.0	11/27/13	mg/L	2.9	3.0	96.7%
Bromide ERA 370911	EPA 300.0	11/20/13	mg/L	2.9	3.0	96.7%
N-Nitrate ERA #220912	EPA 300.0	11/20/13	mg-N/L	2.9	3.0	96.7%
Sulfate ERA 240312	EPA 300.0	11/20/13 11/27/13	mg/L	3.0 2.9	3.0 3.0	100.0% 96.7%

**INORGANICS ANALYSIS DATA SHEET**

**TOTAL METALS**

Page 1 of 1

Lab Sample ID: XP00A

LIMS ID: 13-25772

Matrix: Water

Data Release Authorized:

Reported: 11/26/13

**Sample ID: MW-4R  
SAMPLE**

QC Report No: XP00-Hart Crowser Inc.

Project: Kens Auto

7168-11

Date Sampled: 11/19/13

Date Received: 11/20/13

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	11/22/13	200.8	11/25/13	7439-92-1	Lead	0.1	0.1	U

U-Analyte undetected at given RL

RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**

**TOTAL METALS**

Page 1 of 1

Lab Sample ID: XP00A

LIMS ID: 13-25772

Matrix: Water

Data Release Authorized:

Reported: 11/26/13

**Sample ID: MW-4R  
DUPLICATE**

QC Report No: XP00-Hart Crowser Inc.

Project: Kens Auto

7168-11

Date Sampled: 11/19/13

Date Received: 11/20/13

**MATRIX DUPLICATE QUALITY CONTROL REPORT**

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Lead	200.8	0.1 U	0.1 U	0.0%	+/- 0.1	L

Reported in  $\mu\text{g/L}$

--Control Limit Not Met

L-RPD Invalid, Limit = Detection Limit

**INORGANICS ANALYSIS DATA SHEET**

**TOTAL METALS**

Page 1 of 1

Lab Sample ID: XP00A

LIMS ID: 13-25772

Matrix: Water

Data Release Authorized:

Reported: 11/26/13

**Sample ID: MW-4R  
MATRIX SPIKE**

QC Report No: XP00-Hart Crowser Inc.

Project: Kens Auto

7168-11

Date Sampled: 11/19/13

Date Received: 11/20/13

**MATRIX SPIKE QUALITY CONTROL REPORT**

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Lead		200.8	0.1 U	23.5	25.0	94.0%

Reported in  $\mu\text{g/L}$

N-Control Limit Not Met

H-% Recovery Not Applicable, Sample Concentration Too High

NA-Not Applicable, Analyte Not Spiked

NR-Not Recovered

Percent Recovery Limits: 75-125%

**INORGANICS ANALYSIS DATA SHEET**

**TOTAL METALS**

Page 1 of 1

Lab Sample ID: XP00B

LIMS ID: 13-25773

Matrix: Water

Data Release Authorized:

Reported: 11/26/13

**Sample ID: MW-3  
SAMPLE**

QC Report No: XP00-Hart Crowser Inc.

Project: Kens Auto

7168-11

Date Sampled: 11/19/13

Date Received: 11/20/13

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	11/22/13	200.8	11/25/13	7439-92-1	Lead	0.1	0.1	U

U-Analyte undetected at given RL

RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**

**TOTAL METALS**

Page 1 of 1

Lab Sample ID: XP00C  
 LIMS ID: 13-25774  
 Matrix: Water  
 Data Release Authorized  
 Reported: 11/26/13

**Sample ID: MW-2  
SAMPLE**

QC Report No: XP00-Hart Crowser Inc.  
 Project: Kens Auto  
 7168-11  
 Date Sampled: 11/19/13  
 Date Received: 11/20/13

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	11/22/13	200.8	11/25/13	7439-92-1	Lead	0.1	0.1	

U-Analyte undetected at given RL  
 RL=Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**

**TOTAL METALS**

Page 1 of 1

Lab Sample ID: XP00D

LIMS ID: 13-25775

Matrix: Water

Data Release Authorized:

Reported: 11/26/13



**Sample ID: MW-5  
SAMPLE**

QC Report No: XP00-Hart Crowser Inc.

Project: Kens Auto

7168-11

Date Sampled: 11/19/13

Date Received: 11/20/13

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	11/22/13	200.8	11/25/13	7439-92-1	Lead	0.1	0.2	

U-Analyte undetected at given RL

RL=Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**

**TOTAL METALS**

Page 1 of 1

Lab Sample ID: XP00E

LIMS ID: 13-25776

Matrix: Water

Data Release Authorized:

Reported: 11/26/13

**Sample ID: MW-14  
SAMPLE**

QC Report No: XP00-Hart Crowser Inc.

Project: Kens Auto

7168-11

Date Sampled: 11/19/13

Date Received: 11/20/13

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	11/22/13	200.8	11/25/13	7439-92-1	Lead	0.1	4.5	

U-Analyte undetected at given RL  
RL=Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**

**TOTAL METALS**

Page 1 of 1

Lab Sample ID: XP00F

LIMS ID: 13-25777

Matrix: Water

Data Release Authorized:

Reported: 11/26/13

**Sample ID: MW-KA  
SAMPLE**

QC Report No: XP00-Hart Crowser Inc.

Project: Kens Auto

7168-11

Date Sampled: 11/20/13

Date Received: 11/20/13

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	11/22/13	200.8	11/25/13	7439-92-1	Lead	0.1	0.2	

U-Analyte undetected at given RL

RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**
**TOTAL METALS**

Page 1 of 1

 Lab Sample ID: XP00G  
 LIMS ID: 13-25778  
 Matrix: Water  
 Data Release Authorized  
 Reported: 11/26/13


**Sample ID: MW-6  
SAMPLE**

 QC Report No: XP00-Hart Crowser Inc.  
 Project: Kens Auto  
 7168-11  
 Date Sampled: 11/20/13  
 Date Received: 11/20/13

<b>Prep Meth</b>	<b>Prep Date</b>	<b>Analysis Method</b>	<b>Analysis Date</b>	<b>CAS Number</b>	<b>Analyte</b>	<b>RL</b>	<b>µg/L</b>	<b>Q</b>
200.8	11/22/13	200.8	11/25/13	<b>7439-92-1</b>	<b>Lead</b>	0.1	<b>0.2</b>	

 U-Analyte undetected at given RL  
 RL=Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**

**TOTAL METALS**

Page 1 of 1

Lab Sample ID: XP00H

LIMS ID: 13-25779

Matrix: Water

Data Release Authorized

Reported: 11/26/13

**Sample ID: MW-13  
SAMPLE**

QC Report No: XP00-Hart Crowser Inc.

Project: Kens Auto

7168-11

Date Sampled: 11/20/13

Date Received: 11/20/13

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	11/22/13	200.8	11/25/13	7439-92-1	Lead	0.1	0.1	U

U-Analyte undetected at given RL

RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**

**TOTAL METALS**

Page 1 of 1

Lab Sample ID: XP00I

LIMS ID: 13-25780

Matrix: Water

Data Release Authorized:

Reported: 11/26/13

**Sample ID: MW-15  
SAMPLE**

QC Report No: XP00-Hart Crowser Inc.

Project: Kens Auto

7168-11

Date Sampled: 11/20/13

Date Received: 11/20/13

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	11/22/13	200.8	11/25/13	7439-92-1	Lead	0.1	0.1	U

U-Analyte undetected at given RL

RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**

**TOTAL METALS**

Page 1 of 1

Lab Sample ID: XP00MB

LIMS ID: 13-25773

Matrix: Water

Data Release Authorized:

Reported: 11/26/13

**Sample ID: METHOD BLANK**

QC Report No: XP00-Hart Crowser Inc.

Project: Kens Auto

7168-11

Date Sampled: NA

Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	11/22/13	200.8	11/25/13	7439-92-1	Lead	0.1	0.1	U

U-Analyte undetected at given RL

RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**

**TOTAL METALS**

Page 1 of 1

Lab Sample ID: XP00LCS

LIMS ID: 13-25773

Matrix: Water

Data Release Authorized

Reported: 11/26/13

**Sample ID: LAB CONTROL**

QC Report No: XP00-Hart Crowser Inc.

Project: Kens Auto

7168-11

Date Sampled: NA

Date Received: NA

**BLANK SPIKE QUALITY CONTROL REPORT**

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Lead	200.8	25.0	25.0	100%	

Reported in  $\mu\text{g/L}$

N-Control limit not met

Control Limits: 80-120%



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

March 6, 2014

Angie Goodwin  
Hart Crowser, Inc.  
1700 Westlake Avenue N. Suite 200  
Seattle, WA 98109-3256

**RE: Client Project: Ken's Auto, 7168-11**  
**ARI Job No.: YA81**

Dear Angie:

Please find enclosed the original Chain-of-Custody record (COC), sample receipt documentation, and the final data for samples from the project referenced above. Analytical Resources, Inc. (ARI) received four water samples and one trip blank on February 27, 2014. The samples were received in good condition with a cooler temperature of 0.9°C. For further details regarding sample receipt, please refer to the enclosed Cooler Receipt Form.

The samples were analyzed for NWTPH-Gx plus BTEX and Anions, as requested on the COC.

There were no anomalies associated with the analyses.

Sincerely,  
ANALYTICAL RESOURCES, INC.

A handwritten signature in black ink, appearing to read "Kelly Bottem".

Kelly Bottem  
Client Services Manager  
[kellyb@arilabs.com](mailto:kellyb@arilabs.com)  
206/695-6211  
Enclosures

cc: eFile YA81

# Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number:	YA81	Turn-around Requested:	Standard	Page:	1	of	1
ARI Client Company:	Hart Crowser	Phone:	(206) 826-4495	Date:	2/27/14	Ice Present?	✓
Client Contact:	Andy Goodwin	No. of Coolers:	1	Cooler Temps:	0.9		
Client Project Name:	KENS Auto	Analysis Requested					
Client Project #:	7168-11	Samplers: ASK					
Sample ID	Date	Time	Matrix	No Containers	Notes/Comments		
MW - 4	2/27/14	1000	WATER	3	X	X	
MW - 14	1100			3	X	X	
MW - 6	1200			3	X	X	
MW - 13	↓	1235	↓	3	X	X	
TB	2/24/14	—	→	2	X		TRIP BLANK
Comments/Special Instructions <i>For gas sample, please report to the sur ve.</i>							
Relinquished by (Signature)	<i>Andrew Kapros</i>	Received by (Signature)	<i>John Miller Mitts</i>	Relinquished by (Signature)	<i>John Miller Mitts</i>	Received by (Signature)	
Printed Name	Andrew Kapros	Printed Name	John Miller Mitts	Printed Name	John Miller Mitts	Printed Name	
Company	Hart Crowser	Company	ARI	Company		Company	
Date & Time	2/27/14 1530	Date & Time	2/27/14 1530	Date & Time		Date & Time	

YA81 : 000002

**Limits of Liability:** ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

**Sample Retention Policy:** All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



ARI Client: Hart Crowser

COC No(s): \_\_\_\_\_ NA

Assigned ARI Job No: YAS1

**Preliminary Examination Phase:**

Were intact, properly signed and dated custody seals attached to the outside of to cooler?

YES

NO

Were custody papers included with the cooler? .....

YES

NO

Were custody papers properly filled out (ink, signed, etc) .....

YES

NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time \_\_\_\_\_

0.9

Temp Gun ID#: 90877952

If cooler temperature is out of compliance fill out form 00070F

JM

Date

2/27/14

Time

1530

Cooler Accepted by: \_\_\_\_\_

**Complete custody forms and attach all shipping documents**

**Log-In Phase:**

Was a temperature blank included in the cooler? .....

YES

NO

What kind of packing material was used? .....

Bubble Wrap  Wet Ice  Gel Packs  Baggies  Foam Block  Paper Other: \_\_\_\_\_

Was sufficient ice used (if appropriate)? .....

NA

YES

NO

Were all bottles sealed in individual plastic bags? .....

YES

NO

Did all bottles arrive in good condition (unbroken)? .....

YES

NO

Were all bottle labels complete and legible? .....

YES

NO

Did the number of containers listed on COC match with the number of containers received? .....

YES

NO

Did all bottle labels and tags agree with custody papers? .....

YES

NO

Were all bottles used correct for the requested analyses? .....

YES

NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)..

NA

YES

NO

Were all VOC vials free of air bubbles? .....

NA

YES

NO

Was sufficient amount of sample sent in each bottle? .....

YES

NO

Date VOC Trip Blank was made at ARI .....

NA

YES

NO

Was Sample Split by ARI . NA YES Date/Time: \_\_\_\_\_ Equipment: \_\_\_\_\_

Split by: \_\_\_\_\_

Samples Logged by JM Date: 2/27/14 Time: 1535

**\*\* Notify Project Manager of discrepancies or concerns \*\***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC
<u>MW-4R</u>	<u>MW-4</u>		

**Additional Notes, Discrepancies, & Resolutions:**

TB = sm in 2.72

Used ID from container

By: JM Date: 2/27/14

Small Air Bubbles ~2mm • • •	Peabubbles 2-4 mm • • •	LARGE Air Bubbles > 4 mm • • •	Small → "sm" (< 2 mm) Peabubbles → "pb" (2 to < 4 mm) Large → "lg" (4 to < 6 mm) Headspace → "hs" (> 6 mm)
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# Sample ID Cross Reference Report

ANALYTICAL  
RESOURCES   
INCORPORATED

ARI Job No: YA81  
Client: Hart Crowser Inc.  
Project Event: 7168-11  
Project Name: Ken's Auto

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. MW-4R	YA81A	14-3276	Water	02/27/14 10:00	02/27/14 15:30
2. MW-14	YA81B	14-3277	Water	02/27/14 11:00	02/27/14 15:30
3. MW-6	YA81C	14-3278	Water	02/27/14 12:00	02/27/14 15:30
4. MW-13	YA81D	14-3279	Water	02/27/14 12:35	02/27/14 15:30
5. TB	YA81E	14-3280	Water	02/27/14	02/27/14 15:30

Printed 02/27/14 Page 1 of 1

YA81 : 00004

ORGANICS ANALYSIS DATA SHEET

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1

Lab Sample ID: YA81A

LIMS ID: 14-3276

Matrix: Water

Data Release Authorized: MW

Reported: 03/04/14

Sample ID: MW-4R  
SAMPLE

QC Report No: YA81-Hart Crowser Inc.  
Project: Ken's Auto  
Event: 7168-11  
Date Sampled: 02/27/14  
Date Received: 02/27/14

Date Analyzed: 03/03/14 15:07

Instrument/Analyst: PID1/PKC

Purge Volume: 5.0 mL  
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U
Gasoline Range Hydrocarbons			GAS ID < 0.10 U ---

**BETX Surrogate Recovery**

Trifluorotoluene	96.1%
Bromobenzene	93.9%

**Gasoline Surrogate Recovery**

Trifluorotoluene	97.5%
Bromobenzene	94.9%

BETX values reported in  $\mu\text{g/L}$  (ppb)  
Gasoline values reported in  $\text{mg/L}$  (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1

Lab Sample ID: YA81B

LIMS ID: 14-3277

Matrix: Water

Data Release Authorized: *VJ*

Reported: 03/14/14

Sample ID: MW-14  
SAMPLE

QC Report No: YA81-Hart Crowser Inc.  
Project: Ken's Auto  
Event: 7168-11  
Date Sampled: 02/27/14  
Date Received: 02/27/14

Date Analyzed: 03/03/14 16:35

Instrument/Analyst: PID1/PKC

Purge Volume: 5.0 mL  
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	1.5
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	0.54

Gasoline Range Hydrocarbons	0.10	1.4	GAS ID GAS
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**BETX Surrogate Recovery**

Trifluorotoluene	97.7%
Bromobenzene	98.3%

**Gasoline Surrogate Recovery**

Trifluorotoluene	100%
Bromobenzene	103%

BETX values reported in  $\mu\text{g/L}$  (ppb)  
Gasoline values reported in  $\text{mg/L}$  (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1

Lab Sample ID: YA81C

LIMS ID: 14-3278

Matrix: Water

Data Release Authorized: *MW*

Reported: 03/04/14

Sample ID: MW-6  
SAMPLE

QC Report No: YA81-Hart Crowser Inc.  
Project: Ken's Auto  
Event: 7168-11  
Date Sampled: 02/27/14  
Date Received: 02/27/14

Date Analyzed: 03/03/14 17:04

Instrument/Analyst: PID1/PKC

Purge Volume: 5.0 mL  
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.10	< 0.10 U	GAS ID ---
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**BETX Surrogate Recovery**

Trifluorotoluene	96.6%
Bromobenzene	96.7%

**Gasoline Surrogate Recovery**

Trifluorotoluene	97.8%
Bromobenzene	97.4%

BETX values reported in µg/L (ppb)  
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**

**BETX by Method SW8021BMod**

**TPHG by Method NWTPHG**

Page 1 of 1

Lab Sample ID: YA81D

LIMS ID: 14-3279

Matrix: Water

Data Release Authorized: *MW*

Reported: 03/04/14

Sample ID: MW-13  
SAMPLE

QC Report No: YA81-Hart Crowser Inc.  
Project: Ken's Auto  
Event: 7168-11  
Date Sampled: 02/27/14  
Date Received: 02/27/14

Date Analyzed: 03/03/14 17:33

Instrument/Analyst: PID1/PKC

Purge Volume: 5.0 mL  
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.10	GAS ID
	< 0.10 U	---

**BETX Surrogate Recovery**

Trifluorotoluene	94.6%
Bromobenzene	95.7%

**Gasoline Surrogate Recovery**

Trifluorotoluene	95.8%
Bromobenzene	97.8%

BETX values reported in µg/L (ppb)  
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**

BETX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1

Lab Sample ID: YA81E

LIMS ID: 14-3280

Matrix: Water

Data Release Authorized: WWW

Reported: 03/04/14

Sample ID: TB

SAMPLE

QC Report No: YA81-Hart Crowser Inc.

Project: Ken's Auto

Event: 7168-11

Date Sampled: 02/27/14

Date Received: 02/27/14

Date Analyzed: 03/03/14 12:12

Instrument/Analyst: PID1/PKC

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.10	GAS ID
	< 0.10 U	---

**BETX Surrogate Recovery**

Trifluorotoluene	99.5%
Bromobenzene	96.9%

**Gasoline Surrogate Recovery**

Trifluorotoluene	100%
Bromobenzene	97.7%

BETX values reported in  $\mu\text{g/L}$  (ppb)  
 Gasoline values reported in  $\text{mg/L}$  (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET

BTEX by Method SW8021BMod

TPHG by Method NWTPHG

Page 1 of 1

Lab Sample ID: MB-030314

LIMS ID: 14-3276

Matrix: Water

Data Release Authorized: MW

Reported: 03/04/14

Sample ID: MB-030314

METHOD BLANK

QC Report No: YA81-Hart Crowser Inc.

Project: Ken's Auto

Event: 7168-11

Date Sampled: NA

Date Received: NA

Date Analyzed: 03/03/14 11:25

Instrument/Analyst: PID1/PKC

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U
Gasoline Range Hydrocarbons			GAS ID ---
		0.10	< 0.10 U

**BTEX Surrogate Recovery**

Trifluorotoluene	94.6%
Bromobenzene	95.4%

**Gasoline Surrogate Recovery**

Trifluorotoluene	96.5%
Bromobenzene	96.2%

BTEX values reported in µg/L (ppb)  
 Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**BETX WATER SURROGATE RECOVERY SUMMARY**

ARI Job: YA81  
Matrix: Water

QC Report No: YA81-Hart Crowser Inc.  
Project: Ken's Auto  
Event: 7168-11

<b>Client ID</b>	<b>TFT</b>	<b>BBZ</b>	<b>TOT OUT</b>
MB-030314	94.6%	95.4%	0
LCS-030314	104%	99.4%	0
LCSD-030314	102%	97.0%	0
MW-4R	96.1%	93.9%	0
MW-14	97.7%	98.3%	0
MW-6	96.6%	96.7%	0
MW-13	94.6%	95.7%	0
TB	99.5%	96.9%	0

		<b>LCS/MB LIMITS</b>	<b>QC LIMITS</b>
(TFT) = Trifluorotoluene	( 5 mL PV)	(80-120)	(80-120)
(TFT) = Trifluorotoluene	(15 mL PV)	(79-120)	(80-120)
(BBZ) = Bromobenzene	( 5 mL PV)	(80-120)	(77-120)
(BBZ) = Bromobenzene	(15 mL PV)	(79-120)	(80-120)

Log Number Range: 14-3276 to 14-3280

**TPHG WATER SURROGATE RECOVERY SUMMARY**

ARI Job: YA81  
Matrix: Water

QC Report No: YA81-Hart Crowser Inc.  
Project: Ken's Auto  
Event: 7168-11

<b>Client ID</b>	<b>TFT</b>	<b>BBZ</b>	<b>TOT OUT</b>
MB-030314	96.5%	96.2%	0
LCS-030314	111%	105%	0
LCSD-030314	109%	102%	0
MW-4R	97.5%	94.9%	0
MW-14	100%	103%	0
MW-6	97.8%	97.4%	0
MW-13	95.8%	97.8%	0
TB	100%	97.7%	0

	<b>LCS/MB LIMITS</b>	<b>QC LIMITS</b>
(TFT) = Trifluorotoluene	(80-120)	(80-120)
(BBZ) = Bromobenzene	(80-120)	(80-120)

Log Number Range: 14-3276 to 14-3280

**ORGANICS ANALYSIS DATA SHEET**

**BTEX by Method SW8021BMod**

Page 1 of 1

Lab Sample ID: LCS-030314

LIMS ID: 14-3276

Matrix: Water

Data Release Authorized: *MW*

Reported: 03/04/14

Sample ID: LCS-030314

LAB CONTROL SAMPLE

QC Report No: YA81-Hart Crowser Inc.

Project: Ken's Auto

Event: 7168-11

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 03/03/14 10:27

Purge Volume: 5.0 mL

LCSD: 03/03/14 10:56

Instrument/Analyst LCS: PID1/PKC

Dilution Factor LCS: 1.0

LCSD: PID1/PKC

LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	1.83	2.10	87.1%	1.95	2.10	92.9%	6.3%
Toluene	34.2	34.8	98.3%	35.0	34.8	101%	2.3%
Ethylbenzene	15.9	17.4	91.4%	16.2	17.4	93.1%	1.9%
m,p-Xylene	58.7	62.7	93.6%	59.8	62.7	95.4%	1.9%
o-Xylene	31.5	34.6	91.0%	32.3	34.6	93.4%	2.5%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

**BTEX Surrogate Recovery**

	LCS	LCSD
Trifluorotoluene	104%	102%
Bromobenzene	99.4%	97.0%

**ORGANICS ANALYSIS DATA SHEET**  
**TPHG by Method NWTPHG**  
 Page 1 of 1

Lab Sample ID: LCS-030314

LIMS ID: 14-3276

Matrix: Water

Data Release Authorized: *MW*

Reported: 03/04/14

Sample ID: LCS-030314

LAB CONTROL SAMPLE

QC Report No: YA81-Hart Crowser Inc.

Project: Ken's Auto

Event: 7168-11

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 03/03/14 10:27

Purge Volume: 5.0 mL

LCSD: 03/03/14 10:56

Instrument/Analyst LCS: PID1/PKC

Dilution Factor LCS: 1.0

LCSD: PID1/PKC

LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	2.50	2.50	100%	2.60	2.50	104%	3.9%

Reported in mg/L (ppm)

RPD calculated using sample concentrations per SW846.

**TPHG Surrogate Recovery**

	LCS	LCSD
Trifluorotoluene	111%	109%
Bromobenzene	105%	102%

**SAMPLE RESULTS-CONVENTIONALS**  
**YA81-Hart Crowser Inc.**

**ANALYTICAL  
RESOURCES  
INCORPORATED**

Matrix: Water  
Data Release Authorized:  
Reported: 03/05/14

Project: Ken's Auto  
Event: 7168-11  
Date Sampled: 02/27/14  
Date Received: 02/27/14

**Client ID: MW-4R  
ARI ID: 14-3276 YA81A**

Analyte	Date Batch	Method	Units	RL	Sample
Chloride	03/03/14 030314#1	EPA 300.0	mg/L	0.5	8.5
Bromide	02/27/14 022714#1	EPA 300.0	mg/L	0.1	0.1
N-Nitrate	02/28/14 022814#1	EPA 300.0	mg-N/L	0.5	11.5
Sulfate	03/04/14 030414#1	EPA 300.0	mg/L	1.0	44.0

RL Analytical reporting limit

U Undetected at reported detection limit

**SAMPLE RESULTS-CONVENTIONALS**  
**YA81-Hart Crowser Inc.**

**ANALYTICAL  
RESOURCES  
INCORPORATED**

Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 03/05/14

Project: Ken's Auto  
Event: 7168-11  
Date Sampled: 02/27/14  
Date Received: 02/27/14

**Client ID: MW-14**  
**ARI ID: 14-3277 YA81B**

Analyte	Date Batch	Method	Units	RL	Sample
Chloride	03/03/14 030314#1	EPA 300.0	mg/L	0.5	11.4
Bromide	02/27/14 022714#1	EPA 300.0	mg/L	0.1	< 0.1 U
N-Nitrate	02/28/14 022814#1	EPA 300.0	mg-N/L	0.5	17.4
Sulfate	03/03/14 030314#1	EPA 300.0	mg/L	1.0	39.0

RL Analytical reporting limit

U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS  
YA81-Hart Crowser Inc.

ANALYTICAL  
RESOURCES  
INCORPORATED

Matrix: Water  
Data Release Authorized:  
Reported: 03/05/14

Project: Ken's Auto  
Event: 7168-11  
Date Sampled: 02/27/14  
Date Received: 02/27/14

Client ID: MW-6  
ARI ID: 14-3278 YA81C

Analyte	Date Batch	Method	Units	RL	Sample
Chloride	03/03/14 030314#1	EPA 300.0	mg/L	0.5	15.7
Bromide	02/27/14 022714#1	EPA 300.0	mg/L	0.1	< 0.1 U
N-Nitrate	02/27/14 022714#1	EPA 300.0	mg-N/L	0.1	0.6
Sulfate	03/03/14 030314#1	EPA 300.0	mg/L	0.2	8.9

RL Analytical reporting limit

U Undetected at reported detection limit

**SAMPLE RESULTS-CONVENTIONALS**  
**YA81-Hart Crowser Inc.**

**ANALYTICAL  
RESOURCES  
INCORPORATED**

Matrix: Water  
Data Release Authorized  
Reported: 03/05/14

Project: Ken's Auto

Event: 7168-11

Date Sampled: 02/27/14

Date Received: 02/27/14

**Client ID: MW-13  
ARI ID: 14-3279 YA81D**

Analyte	Date Batch	Method	Units	RL	Sample
Chloride	03/03/14 030314#1	EPA 300.0	mg/L	1.0	26.6
Bromide	02/27/14 022714#1	EPA 300.0	mg/L	0.1	< 0.1 U
N-Nitrate	02/27/14 022714#1	EPA 300.0	mg-N/L	0.1	0.5
Sulfate	03/03/14 030314#1	EPA 300.0	mg/L	0.2	4.9

RL Analytical reporting limit

U Undetected at reported detection limit

**METHOD BLANK RESULTS-CONVENTIONALS**  
**YA81-Hart Crowser Inc.**

**ANALYTICAL  
RESOURCES  
INCORPORATED**

Matrix: Water  
Data Release Authorized  
Reported: 03/05/14

Project: Ken's Auto  
Event: 7168-11  
Date Sampled: NA  
Date Received: NA

Analyte	Method	Date	Units	Blank	ID
Chloride	EPA 300.0	03/03/14	mg/L	< 0.1	U
Bromide	EPA 300.0	02/27/14	mg/L	< 0.1	U
N-Nitrate	EPA 300.0	02/27/14 02/28/14	mg-N/L	< 0.1	U
Sulfate	EPA 300.0	03/03/14 03/04/14	mg/L	< 0.1	U
				< 0.1	U

STANDARD REFERENCE RESULTS-CONVENTIONALS  
YA81-Hart Crowser Inc.

ANALYTICAL  
RESOURCES  
INCORPORATED

Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 03/05/14

Project: Ken's Auto  
Event: 7168-11  
Date Sampled: NA  
Date Received: NA

Analyte/SRM ID	Method	Date	Units	SRM	True Value	Recovery
Chloride ERA 210312	EPA 300.0	03/03/14	mg/L	2.8	3.0	93.3%
Bromide ERA 370911	EPA 300.0	02/27/14	mg/L	3.0	3.0	100.0%
N-Nitrate ERA #220912	EPA 300.0	02/27/14 02/28/14	mg-N/L	3.0 2.9	3.0 3.0	100.0% 96.7%
Sulfate ERA 240312	EPA 300.0	03/03/14 03/04/14	mg/L	3.0 3.1	3.0 3.0	100.0% 103.3%



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

June 4, 2014

Angie Goodwin  
Hart Crowser, Inc.  
1700 Westlake Avenue N. Suite 200  
Seattle, WA 98109-3256

**RE: Client Project: Ken's Auto, 7168-10**  
**ARI Job No.: YL36**

Dear Angie:

Please find enclosed the original Chain-of-Custody record (COC), sample receipt documentation, and the final data for samples from the project referenced above. Analytical Resources, Inc. (ARI) received four water samples and one trip blank on May 23, 2014. The samples were received in good condition with a cooler temperature of 10.8°C. For further details regarding sample receipt, please refer to the enclosed Cooler Receipt Form.

The samples were analyzed for NWTPH-Gx plus BTEX and Anions, as requested on the COC.

There were no anomalies associated with the analyses.

Sincerely,  
ANALYTICAL RESOURCES, INC.

A handwritten signature in black ink, appearing to read "Kelly Bottem".

Kelly Bottem  
Client Services Manager  
[kellyb@arilabs.com](mailto:kellyb@arilabs.com)  
206/695-6211  
Enclosures

cc: eFile YL36





ARI Client: Hart Crowley

COC No(s): \_\_\_\_\_  NA

Assigned ARI Job No: YL36

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?

YES

NO

Were custody papers included with the cooler? .....

YES

NO

Were custody papers properly filled out (ink, signed, etc.) .....

YES

NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

10.8

Time: \_\_\_\_\_

If cooler temperature is out of compliance fill out form 00070F

JM

Cooler Accepted by: \_\_\_\_\_ Date: 5/23/14 Time: 1525

Temp Gun ID#: 90877952

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? .....

YES

NO

What kind of packing material was used? ...  Bubble Wrap  Wet Ice  Gel Packs  Baggies  Foam Block  Paper Other: \_\_\_\_\_

NA

YES

NO

Was sufficient ice used (if appropriate)? .....

NA

YES

NO

Were all bottles sealed in individual plastic bags? .....

YES

NO

Did all bottles arrive in good condition (unbroken)? .....

YES

NO

Did all bottle labels complete and legible? .....

YES

NO

Did the number of containers listed on COC match with the number of containers received? .....

YES

NO

Did all bottle labels and tags agree with custody papers? .....

YES

NO

Were all bottles used correct for the requested analyses? .....

YES

NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...

NA

YES

NO

Were all VOC vials free of air bubbles? .....

NA

YES

NO

Was sufficient amount of sample sent in each bottle? .....

NA

YES

NO

Date VOC Trip Blank was made at ARI.....

NA

YES

NO

Was Sample Split by ARI :  NA    YES    Date/Time: \_\_\_\_\_ Equipment: \_\_\_\_\_

NA

YES

NO

Samples Logged by \_\_\_\_\_ Date: 5/23/14 Time: 1531

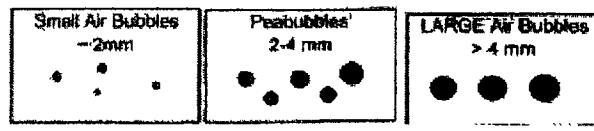
\*\* Notify Project Manager of discrepancies or concerns \*\*

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By:

Date:



Small → "sm" (< 2 mm)

Peabubbles → "pb" (2 to < 4 mm)

Large → "lg" (4 to < 6 mm)

Headspace → "hs" (> 6 mm)



Analytical Resources,  
Incorporated  
Analytical Chemists and  
Consultants

# Cooler Temperature Compliance Form

YL 36

Completed by: SM Date: 5/23/14 Time: 1531

JM Date: 5/23/14 Time: 1531

**Sample ID Cross Reference Report**

ARI Job No: YL36  
Client: Hart Crowser Inc.  
Project Event: 7168-10  
Project Name: Ken's Auto

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. MW-14	YL36A	14-10183	Water	05/23/14 10:10	05/23/14 15:25
2. MW-4R	YL36B	14-10184	Water	05/23/14 10:45	05/23/14 15:25
3. MW-13	YL36C	14-10185	Water	05/23/14 11:20	05/23/14 15:25
4. MW-6	YL36D	14-10186	Water	05/23/14 12:05	05/23/14 15:25
5. TB	YL36E	14-10187	Water	05/23/14	05/23/14 15:25

**ORGANICS ANALYSIS DATA SHEET**

**BETX by Method SW8021BMod**

**TPHG by Method NWTPHG**

Page 1 of 1

Lab Sample ID: YL36A

LIMS ID: 14-10183

Matrix: Water

Data Release Authorized:

Reported: 06/04/14

**Sample ID: MW-14**

**SAMPLE**

QC Report No: YL36-Hart Crowser Inc.

Project: Ken's Auto

Event: 7168-10

Date Sampled: 05/23/14

Date Received: 05/23/14

Date Analyzed: 05/29/14 20:34

Instrument/Analyst: PID1/JLW

Purge Volume: 5.0 mL

Dilution Factor: 1.00

<b>CAS Number</b>	<b>Analyte</b>	<b>RL</b>	<b>Result</b>
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U

<b>Gasoline Range Hydrocarbons</b>	<b>0.10</b>	<b>0.11</b>	<b>GAS ID</b>
			<b>GRO</b>

**BETX Surrogate Recovery**

Trifluorotoluene	107%
Bromobenzene	100%

**Gasoline Surrogate Recovery**

Trifluorotoluene	97.4%
Bromobenzene	95.1%

BETX values reported in µg/L (ppb)  
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**

**BETX by Method SW8021BMod**

**TPHG by Method NWTPHG**

Page 1 of 1

**Sample ID: MW-4R  
SAMPLE**

Lab Sample ID: YL36B

LIMS ID: 14-10184

Matrix: Water

Data Release Authorized: *R*

Reported: 06/04/14

QC Report No: YL36-Hart Crowser Inc.

Project: Ken's Auto

Event: 7168-10

Date Sampled: 05/23/14

Date Received: 05/23/14

Date Analyzed: 05/29/14 21:03

Instrument/Analyst: PID1/JLW

Purge Volume: 5.0 mL

Dilution Factor: 1.00

<b>CAS Number</b>	<b>Analyte</b>	<b>RL</b>	<b>Result</b>
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.10	GAS ID
	< 0.10 U	---

**BETX Surrogate Recovery**

Trifluorotoluene	105%
Bromobenzene	100%

**Gasoline Surrogate Recovery**

Trifluorotoluene	95.6%
Bromobenzene	95.5%

BETX values reported in µg/L (ppb)  
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**

**BETX by Method SW8021BMod**

**TPHG by Method NWTPHG**

Page 1 of 1

Lab Sample ID: YL36C

LIMS ID: 14-10185

Matrix: Water

Data Release Authorized:

Reported: 06/04/14

**Sample ID: MW-13**

**SAMPLE**

QC Report No: YL36-Hart Crowser Inc.

Project: Ken's Auto

Event: 7168-10

Date Sampled: 05/23/14

Date Received: 05/23/14

Date Analyzed: 05/29/14 21:33

Instrument/Analyst: PID1/JLW

Purge Volume: 5.0 mL

Dilution Factor: 1.00

<b>CAS Number</b>	<b>Analyte</b>	<b>RL</b>	<b>Result</b>
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.10	GAS ID
	< 0.10 U	---

**BETX Surrogate Recovery**

Trifluorotoluene	107%
Bromobenzene	99.9%

**Gasoline Surrogate Recovery**

Trifluorotoluene	97.6%
Bromobenzene	95.5%

BETX values reported in µg/L (ppb)  
 Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021BMod**  
**TPHG by Method NWTPHG**  
 Page 1 of 1

Lab Sample ID: YL36D  
 LIMS ID: 14-10186  
 Matrix: Water  
 Data Release Authorized: *B*  
 Reported: 06/04/14

Date Analyzed: 05/29/14 23:00  
 Instrument/Analyst: PID1/JLW

QC Report No: YL36-Hart Crowser Inc.  
 Project: Ken's Auto  
 Event: 7168-10  
 Date Sampled: 05/23/14  
 Date Received: 05/23/14

Purge Volume: 5.0 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	6.9
179601-23-1	m,p-Xylene	0.50	0.55
95-47-6	o-Xylene	0.25	0.58

<b>Gasoline Range Hydrocarbons</b>	<b>0.10</b>	<b>0.92</b>	<b>GAS ID</b>
			<b>GAS</b>

#### **BETX Surrogate Recovery**

Trifluorotoluene	104%
Bromobenzene	99.6%

#### **Gasoline Surrogate Recovery**

Trifluorotoluene	95.7%
Bromobenzene	94.1%

BETX values reported in  $\mu\text{g/L}$  (ppb)  
 Gasoline values reported in  $\text{mg/L}$  (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021BMod**  
**TPHG by Method NWTPHG**  
 Page 1 of 1

Lab Sample ID: YL36E  
 LIMS ID: 14-10187  
 Matrix: Water  
 Data Release Authorized.  
 Reported: 06/04/14

Date Analyzed: 05/29/14 12:47  
 Instrument/Analyst: PID1/JLW

QC Report No: YL36-Hart Crowser Inc.  
 Project: Ken's Auto  
 Event: 7168-10  
 Date Sampled: 05/23/14  
 Date Received: 05/23/14

Purge Volume: 5.0 mL  
 Dilution Factor: 1.00

<b>CAS Number</b>	<b>Analyte</b>	<b>RL</b>	<b>Result</b>
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U
Gasoline Range Hydrocarbons		0.10	GAS ID ---

#### **BETX Surrogate Recovery**

Trifluorotoluene	112%
Bromobenzene	97.7%

#### **Gasoline Surrogate Recovery**

Trifluorotoluene	99.8%
Bromobenzene	94.4%

BETX values reported in  $\mu\text{g/L}$  (ppb)  
 Gasoline values reported in  $\text{mg/L}$  (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021BMod**  
**TPHG by Method NWTPHG**  
 Page 1 of 1

Lab Sample ID: MB-052914  
 LIMS ID: 14-10183  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 06/04/14

Date Analyzed: 05/29/14 11:25  
 Instrument/Analyst: PID1/JLW

Sample ID: MB-052914  
**METHOD BLANK**

QC Report No: YL36-Hart Crowser Inc.  
 Project: Ken's Auto  
 Event: 7168-10  
 Date Sampled: NA  
 Date Received: NA

Purge Volume: 5.0 mL  
 Dilution Factor: 1.00

<b>CAS Number</b>	<b>Analyte</b>	<b>RL</b>	<b>Result</b>
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.10	GAS ID
	< 0.10 U	---

#### **BETX Surrogate Recovery**

Trifluorotoluene	113%
Bromobenzene	102%

#### **Gasoline Surrogate Recovery**

Trifluorotoluene	102%
Bromobenzene	97.5%

BETX values reported in  $\mu\text{g/L}$  (ppb)  
 Gasoline values reported in  $\text{mg/L}$  (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**BETX WATER SURROGATE RECOVERY SUMMARY**

ARI Job: YL36  
Matrix: Water

QC Report No: YL36-Hart Crowser Inc.  
Project: Ken's Auto  
Event: 7168-10

<b>Client ID</b>	<b>TFT</b>	<b>BBZ</b>	<b>TOT OUT</b>
MB-052914	113%	102%	0
LCS-052914	106%	97.1%	0
LCSD-052914	104%	94.1%	0
MW-14	107%	100%	0
MW-4R	105%	100%	0
MW-13	107%	99.9%	0
MW-6	104%	99.6%	0
TB	112%	97.7%	0

	<b>LCS/MB LIMITS</b>	<b>QC LIMITS</b>
(TFT) = Trifluorotoluene	( 5 mL PV)	(80-120)
(TFT) = Trifluorotoluene	(15 mL PV)	(79-120)
(BBZ) = Bromobenzene	( 5 mL PV)	(80-120)
(BBZ) = Bromobenzene	(15 mL PV)	(77-120)

Log Number Range: 14-10183 to 14-10187

**TPHG WATER SURROGATE RECOVERY SUMMARY**

ARI Job: YL36  
Matrix: Water

QC Report No: YL36-Hart Crowser Inc.  
Project: Ken's Auto  
Event: 7168-10

<b>Client ID</b>	<b>TFT</b>	<b>BBZ</b>	<b>TOT OUT</b>
MB-052914	102%	97.5%	0
LCS-052914	96.9%	91.9%	0
LCSD-052914	94.0%	89.8%	0
MW-14	97.4%	95.1%	0
MW-4R	95.6%	95.5%	0
MW-13	97.6%	95.5%	0
MW-6	95.7%	94.1%	0
TB	99.8%	94.4%	0

	<b>LCS/MB LIMITS</b>	<b>QC LIMITS</b>
(TFT) = Trifluorotoluene	(80-120)	(80-120)
(BBZ) = Bromobenzene	(80-120)	(80-120)

Log Number Range: 14-10183 to 14-10187

**ORGANICS ANALYSIS DATA SHEET**

**TPHG by Method NWTPHG**

Page 1 of 1

Lab Sample ID: LCS-052914

LIMS ID: 14-10183

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 06/04/14

**Sample ID: LCS-052914**

**LAB CONTROL SAMPLE**

QC Report No: YL36-Hart Crowser Inc.

Project: Ken's Auto

Event: 7168-10

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 05/29/14 10:27

Purge Volume: 5.0 mL

LCSD: 05/29/14 10:56

Instrument/Analyst LCS: PID1/JLW

Dilution Factor LCS: 1.0

LCSD: PID1/JLW

LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	LCSD RPD
Gasoline Range Hydrocarbons	0.90	1.00	90.0%	0.89	1.00	89.0%	1.1%

Reported in mg/L (ppm)

RPD calculated using sample concentrations per SW846.

**TPHG Surrogate Recovery**

	LCS	LCSD
Trifluorotoluene	96.9%	94.0%
Bromobenzene	91.9%	89.8%

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021BMod**  
Page 1 of 1

Lab Sample ID: LCS-052914

LIMS ID: 14-10183

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 06/04/14

Sample ID: LCS-052914

**LAB CONTROL SAMPLE**

QC Report No: YL36-Hart Crowser Inc.

Project: Ken's Auto

Event: 7168-10

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 05/29/14 10:27

Purge Volume: 5.0 mL

LCSD: 05/29/14 10:56

Instrument/Analyst LCS: PID1/JLW

Dilution Factor LCS: 1.0

LCSD: PID1/JLW

LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	7.63	7.00	109%	7.46	7.00	107%	2.3%
Toluene	58.4	49.4	118%	58.9	49.4	119%	0.9%
Ethylbenzene	13.8	12.3	112%	13.8	12.3	112%	0.0%
m,p-Xylene	44.6	40.0	112%	44.5	40.0	111%	0.2%
o-Xylene	17.1	15.3	112%	17.1	15.3	112%	0.0%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

**BETX Surrogate Recovery**

	LCS	LCSD
Trifluorotoluene	106%	104%
Bromobenzene	97.1%	94.1%

Analytical Resources Inc.  
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/20140529-1.b/0529a006.d      ARI ID: MB0529  
 Data file 2: /chem3/pid1.i/20140529-2.b/0529a006.d      Client ID:  
 Method: /chem3/pid1.i/20140529-2.b/PIDB.m      Injection Date: 29-MAY-2014 11:25  
 Instrument: pid1.i      Matrix: WATER  
 Gas Ical Date: 20-MAR-2014      Dilution Factor: 1.000  
 BETX Ical Date: 20-MAR-2014  
 =====

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
--	-----	-----	-----	-----	-----
7.834	0.000	2723	34804	102.5	TFT(Surr)
15.378	0.001	1626	14644	97.5	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range	RF	Total Area*	Amount
WAGas Tol-C12 ( 9.76 to 17.90)	324574	0	0.000
8015C 2MP-TMB ( 4.16 to 16.20)	612077	0	0.000
AK101 nC6-nC10 ( 4.66 to 15.10)	460138	0	0.000
NWTPHG Tol-Nap ( 9.76 to 18.90)	336167	0	0.000

M Indicates manual integration within range

\* Surrogate areas are subtracted from Total Area  
 Range marker RT's are set by daily RT standard

PID Surrogates				
RT	Shift	Response	%Rec	Compound
--	-----	-----	-----	-----
7.835	0.001	2849	112.9	TFT(Surr)
15.380	0.001	5918	102.1	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
--	-----	-----	-----	-----
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

*RW  
S/2014*

! Indicates Peak Area was used for quantitation instead of Height  
 ! Indicates peak was manually integrated

Data File: /chem3/pid1.i/20140529-1.b/0529a006.d  
Date : 29-MAY-2014 11:25

Client ID:  
Sample Info: HB0529

Page 1

Instrument: pid1.i

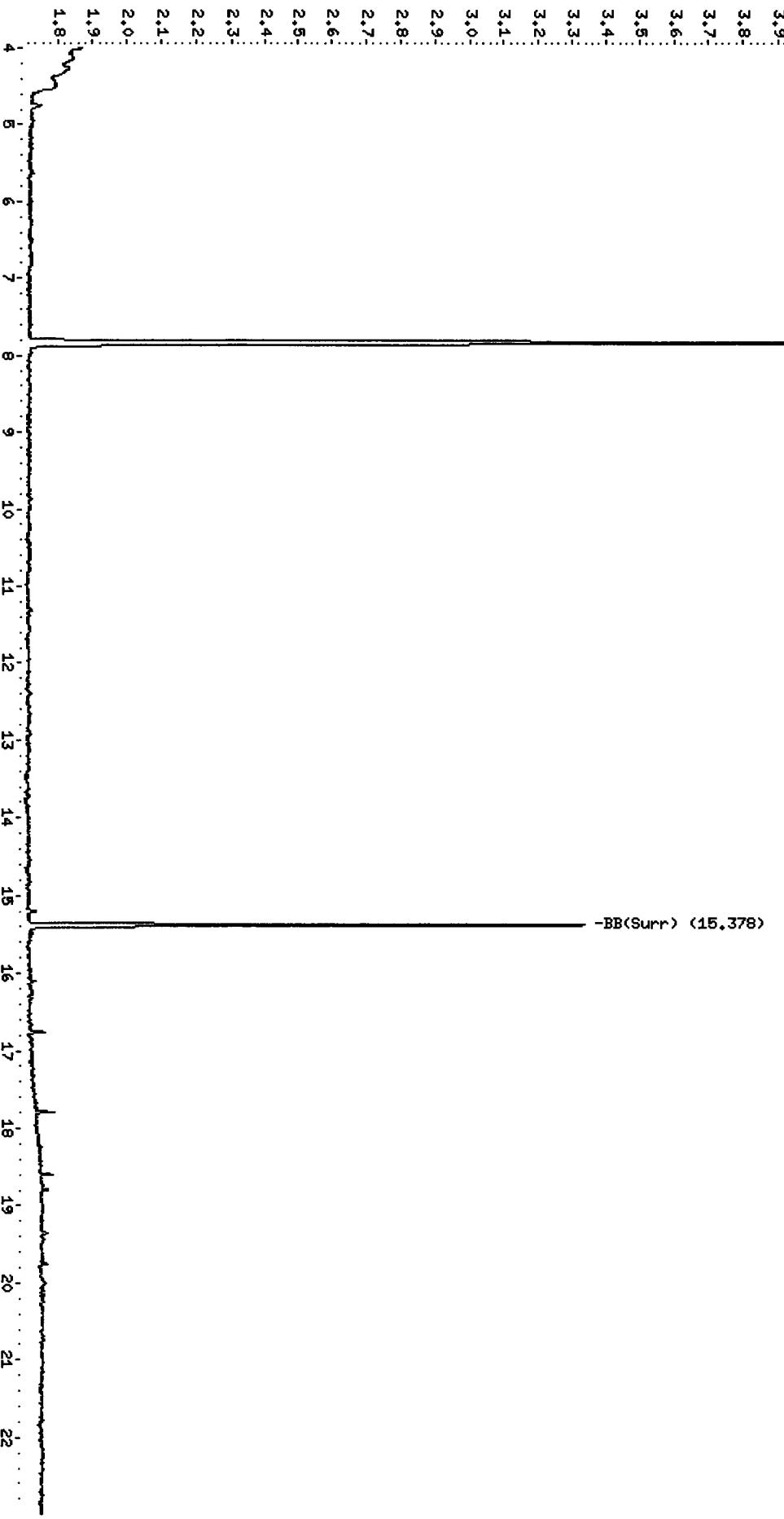
Date : 29-MAY-2014 11:25

Operator: LH

Column diameter: 0.18

Column phase: RTX 502-2 FID

/chem3/pid1.i/20140529-1.b/0529a006.d/0529a006.cdf



Data File: /chem3/pid1.i/20140529-2.b/0529a006.d

Date : 29-MAY-2014 11:25

Client ID:

Sample Info: HB0529

Page 1

Instrument: pid1.i

Operator: LH

Column diameter: 0.18

/chem3/pid1.i/20140529-2.b/0529a006.d/0529a006.cdf



Analytical Resources Inc.  
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/20140529-1.b/0529a004.d      ARI ID: LCS0529  
 Data file 2: /chem3/pid1.i/20140529-2.b/0529a004.d      Client ID:  
 Method: /chem3/pid1.i/20140529-2.b/PIDB.m      Injection Date: 29-MAY-2014 10:27  
 Instrument: pid1.i      Matrix: WATER  
 Gas Ical Date: 20-MAR-2014      Dilution Factor: 1.000  
 BETX Ical Date: 20-MAR-2014  
 =====

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
--	-----	-----	-----	-----	-----
7.834	0.001	2573	35067	96.9	TFT(Surr)
15.378	0.001	1533	14199	91.9	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range	RF	Total Area*	Amount
-----	-----	-----	-----
WAGas Tol-C12 ( 9.76 to 17.90)	324574	293200	0.903
8015C 2MP-TMB ( 4.16 to 16.20)	612077	580235	0.948
AK101 nC6-nC10 ( 4.66 to 15.10)	460138	432158	0.939
NWTPHG Tol-Nap ( 9.76 to 18.90)	336167	301772	0.898

M Indicates manual integration within range

\* Surrogate areas are subtracted from Total Area  
 Range marker RT's are set by daily RT standard

PID Surrogates				
RT	Shift	Response	%Rec	Compound
--	-----	-----	-----	-----
7.836	0.001	2680	106.2	TFT(Surr)
15.380	0.000	5628	97.1	BB(Surr)

SW  
5/30/14

SW8021 (PID)

RT	Shift	Response	Amount	Compound
--	-----	-----	-----	-----
7.002	0.000	1383	7.63	Benzene
9.863	0.001	9240	58.45	Toluene
12.758	0.000	1974	13.79	Ethylbenzene
12.921	0.003	6978	44.65	M/P-Xylene
13.866	0.001	2174	17.14	O-Xylene
4.516	-0.006	186	2.64	MTBE

A Indicates Peak Area was used for quantitation instead of Height  
 N Indicates peak was manually integrated

Data File: /chem3/pid1.i/20140529-1.b/0529a004.d

Date : 29-MAY-2014 10:27

Client ID:

Sample Info: LCS0529

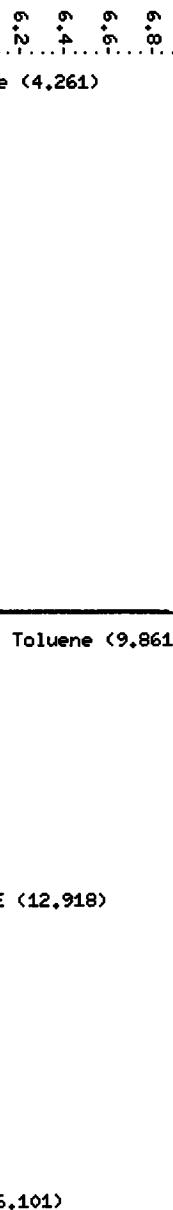
Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: LH

Column diameter: 0.18

/chem3/pid1.i/20140529-1.b/0529a004.d/0529a004.cdf



Data File: /chem3/pid1.i/20140529-2.b/0529a004.d

Date : 29-MAY-2014 10:27

Client ID:

Sample Info: LCS0529

Page 1

Instrument: pid1.i

Operator: LH

Column diameter: 0.18

/chem3/pid1.i/20140529-2.b/0529a004.d/0529a004.cdf

Column phase: RTX 502-2 PID

UVOLTS ( $\times 10^4$ )  
1.10  
1.08  
1.06  
1.04  
1.00  
1.02  
0.98  
0.96  
0.94  
0.92  
0.90  
0.88  
0.86  
0.84  
0.82  
0.80  
0.78  
0.76  
0.74  
0.72  
0.70  
0.68  
0.66  
0.64  
0.62  
0.60  
0.58  
0.56  
0.54  
0.52  
0.50  
0.48  
0.46  
0.44  
0.42  
0.40  
0.38  
0.36  
0.34  
0.32  
0.30  
0.28  
0.26  
0.24  
0.22  
0.20  
0.18

Toluene (9.863)

-M/P-Xylene (12.921)

=BB(Surr) (15.380)

-Ethylbenzene (12.758)

-o-Xylene (13.866)

-MTBE (4.516)  
-Benzene (7.002)  
-TFT(Surr) (7.836)

YL36 : 00021

Analytical Resources Inc.  
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/20140529-1.b/0529a005.d ARI ID: LCSD0529  
 Data file 2: /chem3/pid1.i/20140529-2.b/0529a005.d Client ID:  
 Method: /chem3/pid1.i/20140529-2.b/PIDB.m Injection Date: 29-MAY-2014 10:56  
 Instrument: pid1.i Matrix: WATER  
 Gas Ical Date: 20-MAR-2014 Dilution Factor: 1.000  
 BETX Ical Date: 20-MAR-2014  
 =====

**FID Surrogates**

RT	Shift	Height	Area	%Rec	Compound
--	-----	-----	-----	-----	-----
7.833	0.000	2497	34045	94.0	TFT(Surr) ✓
15.378	0.001	1499	13862	89.8	BB(Surr)

**PETROLEUM HYDROCARBONS (FID)**

Range	RF	Total Area*	Amount
WAGas Tol-C12 ( 9.76 to 17.90)	324574	291676	0.899
8015C 2MP-TMB ( 4.16 to 16.20)	612077	574435	0.939
AK101 nC6-nC10 ( 4.66 to 15.10)	460138	427535	0.929
NWTPHG Tol-Nap ( 9.76 to 18.90)	336167	298647	0.888 ✓

M Indicates manual integration within range

\* Surrogate areas are subtracted from Total Area  
 Range marker RT's are set by daily RT standard

**PID Surrogates**

RT	Shift	Response	%Rec	Compound
--	-----	-----	-----	-----
7.835	0.000	2620	103.8	TFT(Surr) ✓
15.380	0.001	5455	94.1	BB(Surr)

J.W  
5/30/14

**SW8021 (PID)**

RT	Shift	Response	Amount	Compound
--	-----	-----	-----	-----
7.001	-0.001	1353	7.46	Benzene
9.863	0.000	9314	58.92	Toluene
12.758	0.001	1980	13.83	Ethylbenzene
12.921	0.003	6957	44.52	M/P-Xylene ✓
13.866	0.001	2164	17.06	O-Xylene
4.515	-0.008	199	2.83	MTBE

Indicates Peak Area was used for quantitation instead of Height  
 Indicate peak was manually integrated

Data File: /chem3/pid1.i/20140529-1.b/0529a005.d

Date : 29-May-2014 10:56

Client ID:

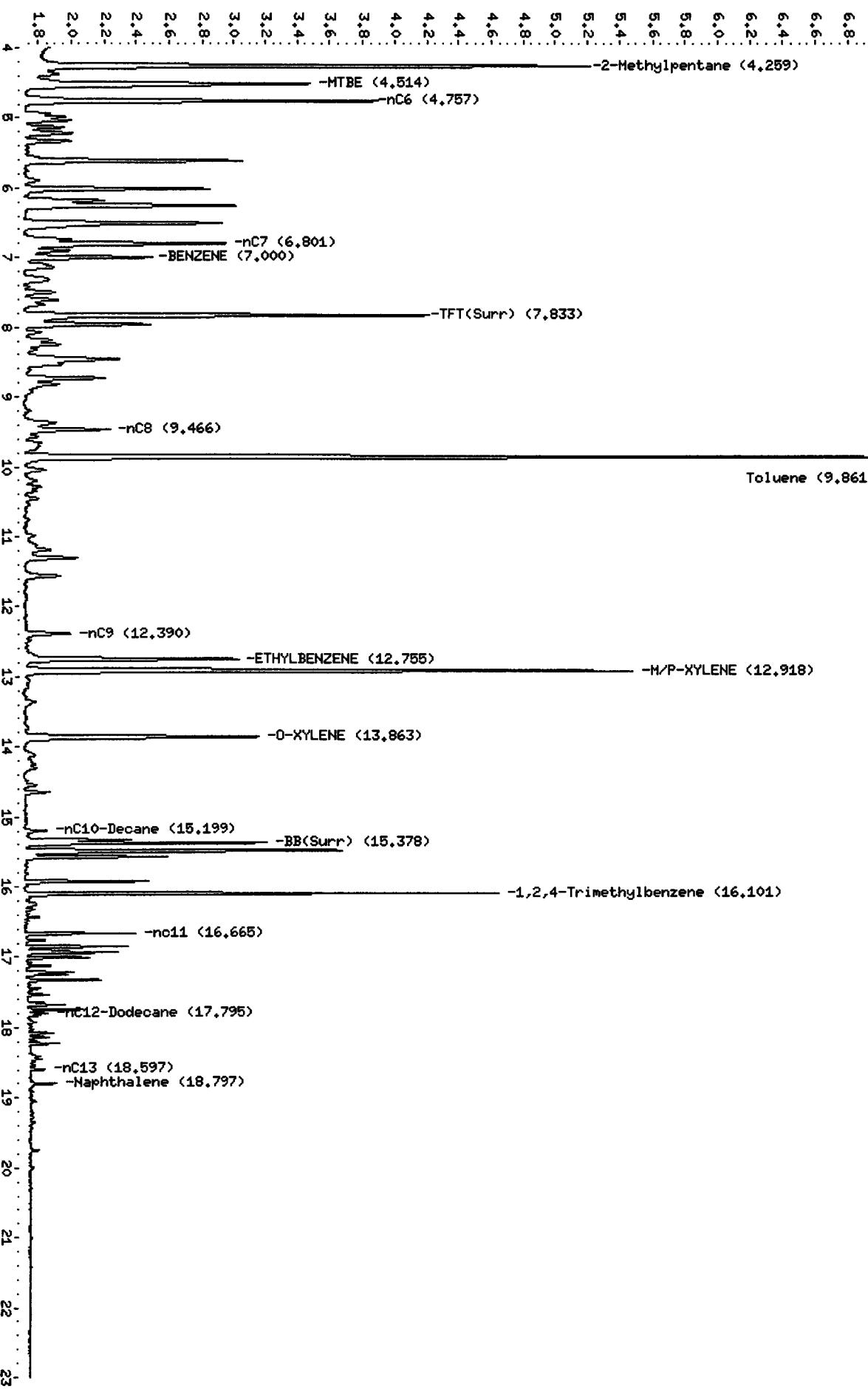
Sample Info: LCS00529

Column Phase: RTK 502-2 FID

[Instrument: pid1.i  
Operator: LH  
Column diameter: 0.18

/chem3/pid1.i/20140529-1.b/0529a005.d/0529a005.cdf

UVOLTS ( $\times 10^3$ )



Data File: /chem3/pid1.i/20140529-2.b/0529a005.d

Date : 29-MAY-2014 10:56

Client ID:

Sample Info: LCSD0529

Page 1

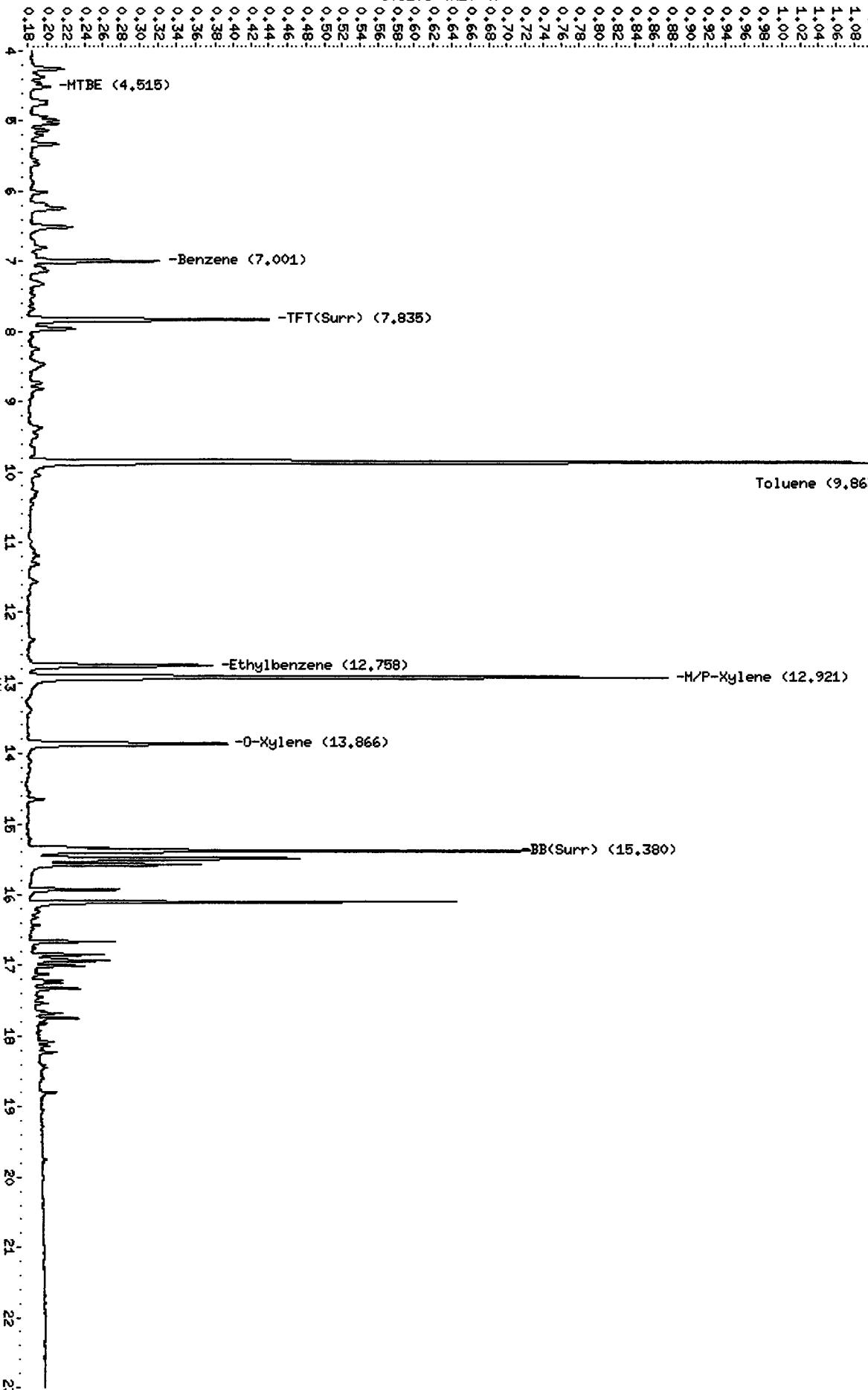
Instrument: pid1.i

Operator: LH

Column diameter: 0.18

/chem3/pid1.i/20140529-2.b/0529a005.d/0529a005.cdf

UVOLTS ( $\times 10^4$ )



Analytical Resources Inc.  
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/20140529-1.b/0529a007.d      ARI ID: YL36E  
 Data file 2: /chem3/pid1.i/20140529-2.b/0529a007.d      Client ID: TB  
 Method: /chem3/pid1.i/20140529-2.b/PIDB.m      Injection Date: 29-MAY-2014 12:47  
 Instrument: pid1.i      Matrix: WATER  
 Gas Ical Date: 20-MAR-2014      Dilution Factor: 1.000  
 BETX Ical Date: 20-MAR-2014  
 =====

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
--	-----	-----	-----	-----	-----
7.836	0.003	2652	33826	99.8	TFT(Surr)
15.380	0.002	1575	14365	94.4	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range	RF	Total Area*	Amount
WAGas Tol-C12 ( 9.76 to 17.90)	324574	494	0.002
8015C 2MP-TMB ( 4.16 to 16.20)	612077	1	0.000
AK101 nC6-nC10 ( 4.66 to 15.10)	460138	1	0.000
NWTPHG Tol-Nap ( 9.76 to 18.90)	336167	494	0.001

M Indicates manual integration within range

\* Surrogate areas are subtracted from Total Area  
Range marker RT's are set by daily RT standard

PID Surrogates				
RT	Shift	Response	%Rec	Compound
--	-----	-----	-----	-----
7.838	0.003	2839	112.5	TFT(Surr)
15.382	0.003	5660	97.7	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
--	-----	-----	-----	-----
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

5/30/14

A Indicates Peak Area was used for quantitation instead of Height

N Indicates peak was manually integrated

Data File: /chem3/pid1.i/20140529-1.b/0529a007.d

Date : 29-May-2014 12:47

Client ID: TB

Sample Info: YL36E

Page 1

Instrument: pid1.i

Operator: LH

Column diameter: 0.18

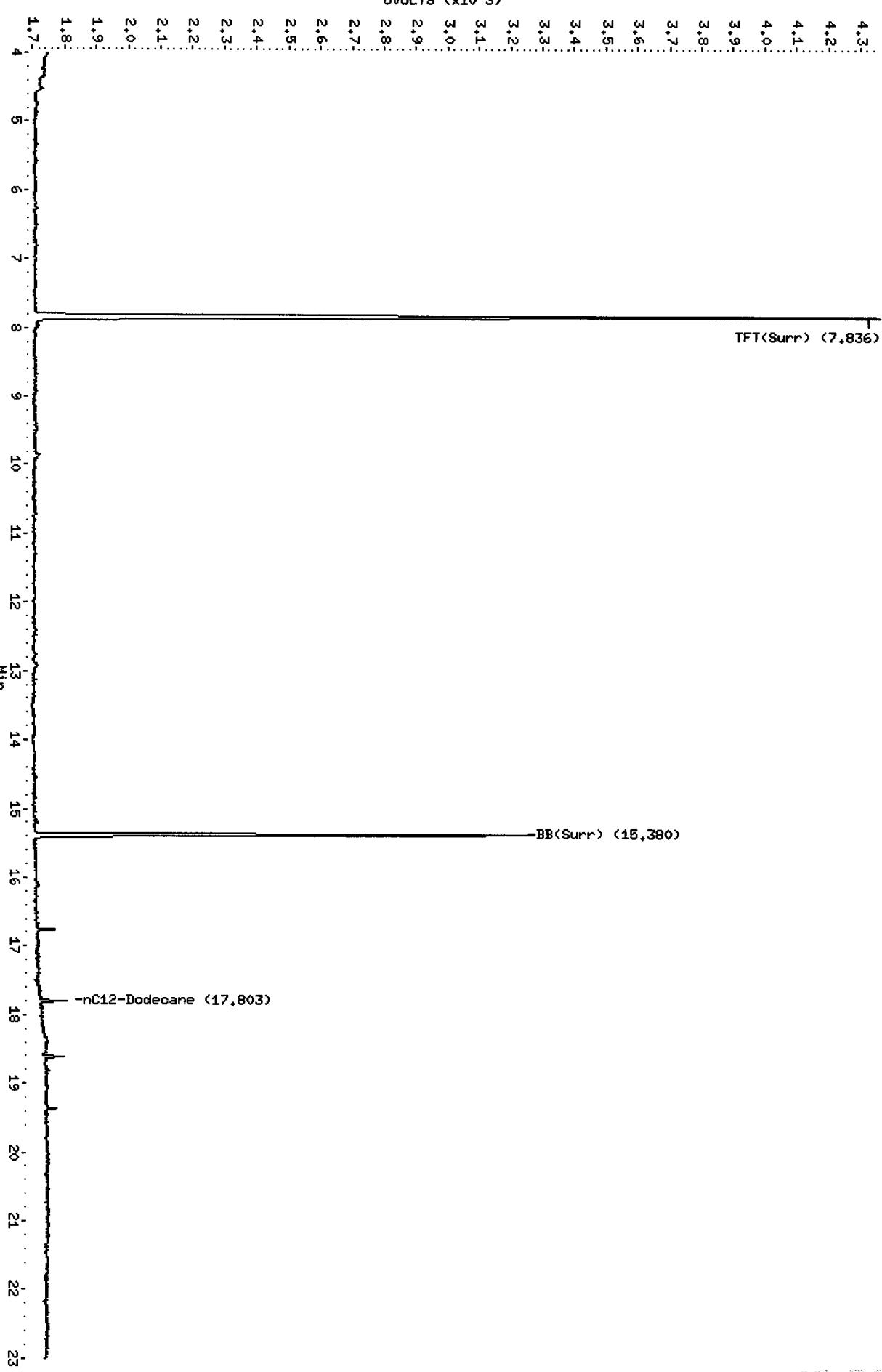
/chem3/pid1.i/20140529-1.b/0529a007.d/0529a007.cdf

Column phase: RTX 502-2 FID

TFT(Surr) (7.836)

BB(Surr) (15.380)

-nC12-Dodecane (17.803)



YLOG 00026

Data File: /chem3/pid1.i/20140529-2.b/0529a007.d

Date : 29-MAY-2014 12:47

Client ID: TB

Sample Info: YL36E

Page 1

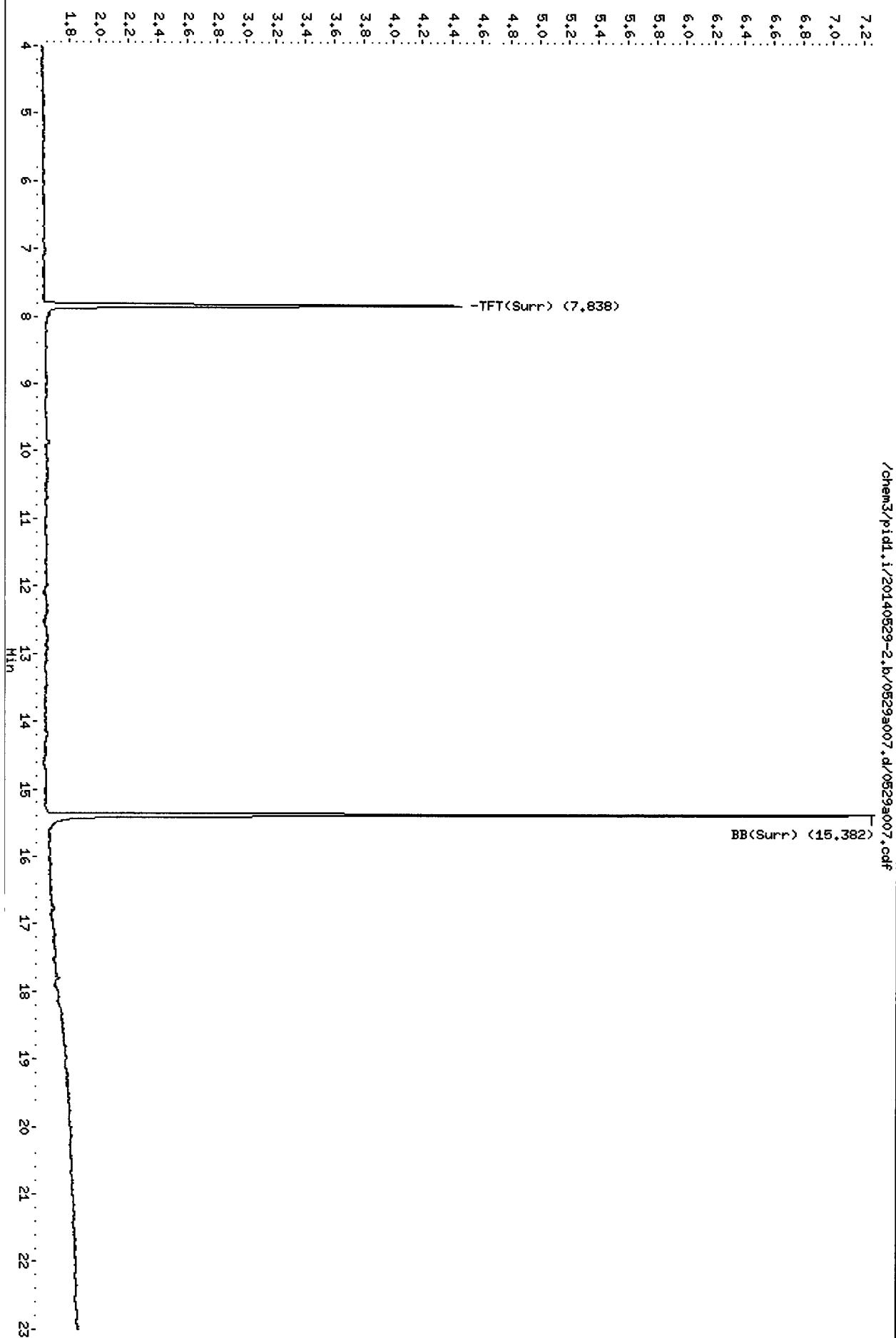
Instrument: pid1.i  
Operator: LH  
Column diameter: 0.18

/chem3/pid1.i/20140529-2.b/0529a007.d/0529a007.cdf

BB(Surr) (15.382)

UVOLTS ( $\times 10^3$ )

Column phase: RTX 502-2 PID



YL36 00027

Analytical Resources Inc.  
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/20140529-1.b/0529a023.d      ARI ID: YL36A  
 Data file 2: /chem3/pid1.i/20140529-2.b/0529a023.d      Client ID: MW-14  
 Method: /chem3/pid1.i/20140529-2.b/PIDB.m      Injection Date: 29-MAY-2014 20:34  
 Instrument: pid1.i      Matrix: WATER  
 Gas Ical Date: 20-MAR-2014      Dilution Factor: 1.000  
 BETX Ical Date: 20-MAR-2014  
 =====

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
--	-----	-----	-----	-----	-----
7.837	0.004	2587	33314	97.4	TFT(Surr) ✓
15.379	0.002	1586	14776	95.1	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range	RF	Total Area*	Amount
WAGas Tol-C12 ( 9.76 to 17.90)	324574	16103	0.050 M
8015C 2MP-TMB ( 4.16 to 16.20)	612077	10093	0.016 M
AK101 nC6-nC10 ( 4.66 to 15.10)	460138	8189	0.018
NWTPHG Tol-Nap ( 9.76 to 18.90)	336167	36988	0.110 M ✓

M Indicates manual integration within range

\* Surrogate areas are subtracted from Total Area  
 Range marker RT's are set by daily RT standard

PID Surrogates				
RT	Shift	Response	%Rec	Compound
--	-----	-----	-----	-----
7.839	0.004	2707	107.3	TFT(Surr) ✓
15.381	0.002	5818	100.4	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
--	-----	---	---	-----
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

5/30/14

A Indicates Peak Area was used for quantitation instead of Height  
 N Indicates peak was manually integrated

Data File: /chem3/pid1.i/20140529-1.b/0529a023.d  
Date : 29-MAY-2014 20:34

Client ID: Mu-14  
Sample Info: YL36A

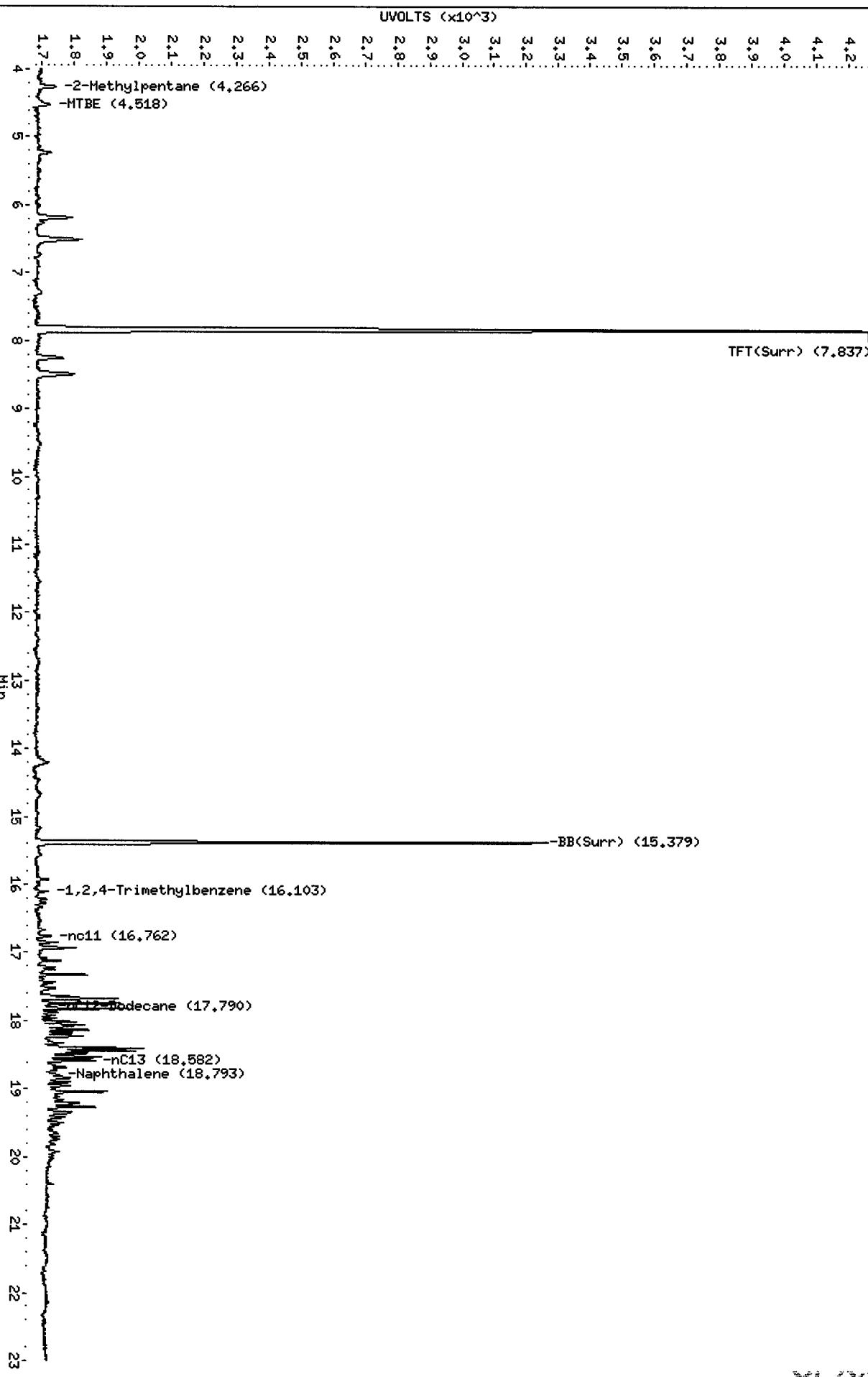
Page 1

Instrument: pid1.i

Column phase: RTX 502-2 FID

/chem3/pid1.i/20140529-1.b/0529a023.d/0529a023.cdf

Operator: LH  
Column diameter: 0.18



Data File: /Chem3/pid1.i/20140529-2.b/0529a023.d

Date : 29-MAY-2014 20:34

Client ID: MM-14

Sample Info: YL36A

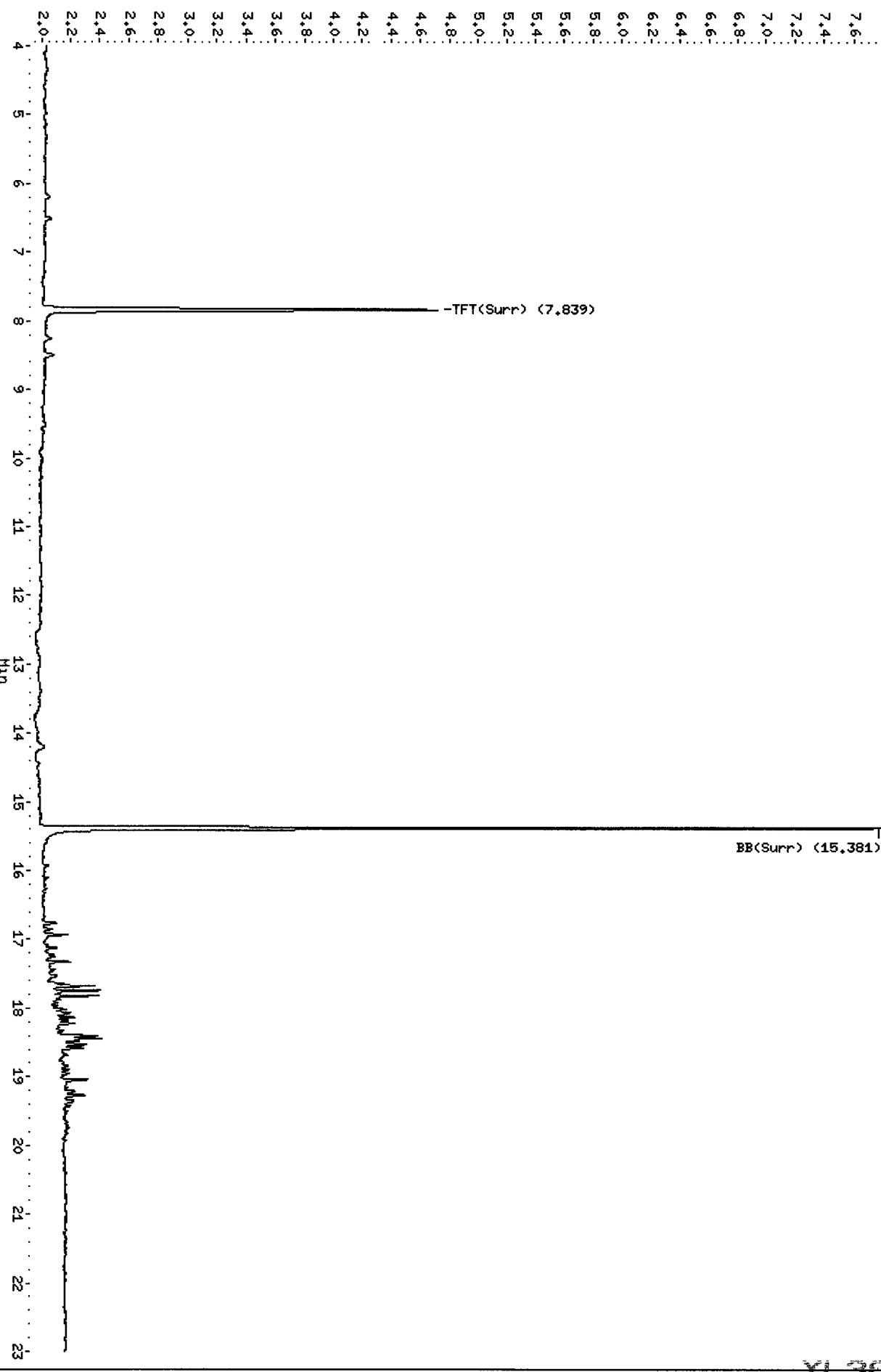
Column phase: RTX 502-2 PID

/chem3/pid1.i/20140529-2.b/0529a023.d/0529a023.cdf

Instrument: pid1.i  
Operator: LH  
Column diameter: 0.18UVOLTS ( $\times 10^3$ )

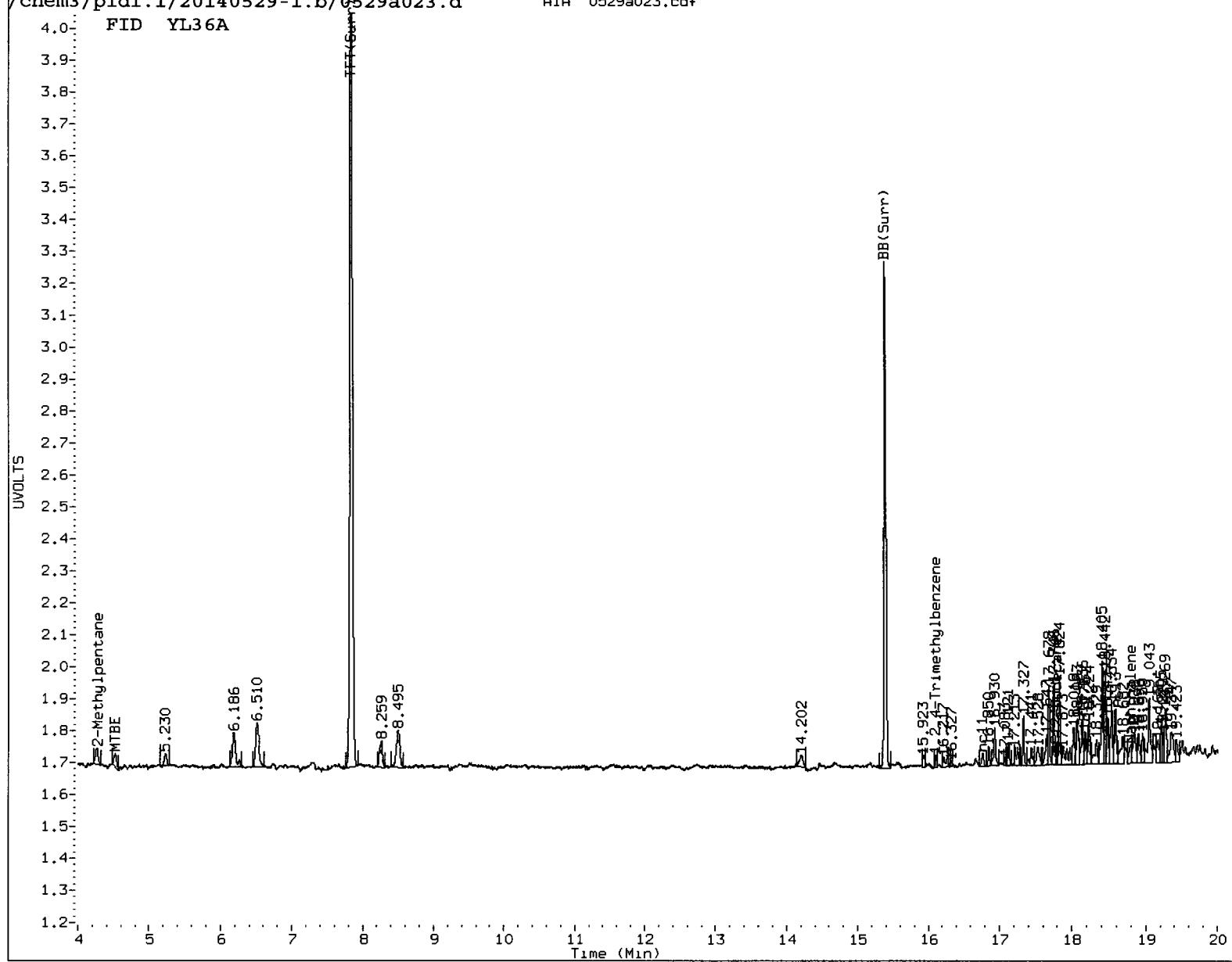
BB(Surr) (15.381)

-TFT(Surr) (7.839)



/chem3/pid1.i/20140529-1.b/0529a023.d

AIA 0529a023.cdf



## MANUAL INTEGRATION

- 1. Baseline correction
  - 2. Poor chromatography
  - 3. Peak not found
  - 4. Totals calculation

## 5. Other

Analyst: JW

Date: 5/30/14

Analytical Resources Inc.  
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/20140529-1.b/0529a024.d      ARI ID: YL36B  
 Data file 2: /chem3/pid1.i/20140529-2.b/0529a024.d      Client ID: MW-4R  
 Method: /chem3/pid1.i/20140529-2.b/PIDB.m      Injection Date: 29-MAY-2014 21:03  
 Instrument: pid1.i      Matrix: WATER  
 Gas Ical Date: 20-MAR-2014      Dilution Factor: 1.000  
 BETX Ical Date: 20-MAR-2014  
 =====

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
--	-----	-----	-----	-----	-----
7.837	0.004	2539	32586	95.6	TFT(Surr)
15.379	0.002	1594	14339	95.5	BB(Surr) /

PETROLEUM HYDROCARBONS (FID)

Range	RF	Total Area*	Amount
WAGas Tol-C12 ( 9.76 to 17.90)	324574	0	0.000
8015C 2MP-TMB ( 4.16 to 16.20)	612077	0	0.000
AK101 nC6-nC10 ( 4.66 to 15.10)	460138	0	0.000
NWTPHG Tol-Nap ( 9.76 to 18.90)	336167	0	0.000 /

M Indicates manual integration within range

\* Surrogate areas are subtracted from Total Area  
 Range marker RT's are set by daily RT standard

PID Surrogates				
RT	Shift	Response	%Rec	Compound
--	-----	-----	-----	-----
7.839	0.004	2641	104.7	TFT(Surr) /
15.381	0.002	5801	100.1	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
--	-----	---	---	-----
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene /
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

5/30/14

A Indicates Peak Area was used for quantitation instead of Height  
 N Indicates peak was manually integrated

Data File: /chem3/pid1.i/20140529-1.b/0529a024.d  
Date : 29-May-2014 21:03

Client ID: MM-4R  
Sample Info: YL36B

Page 1

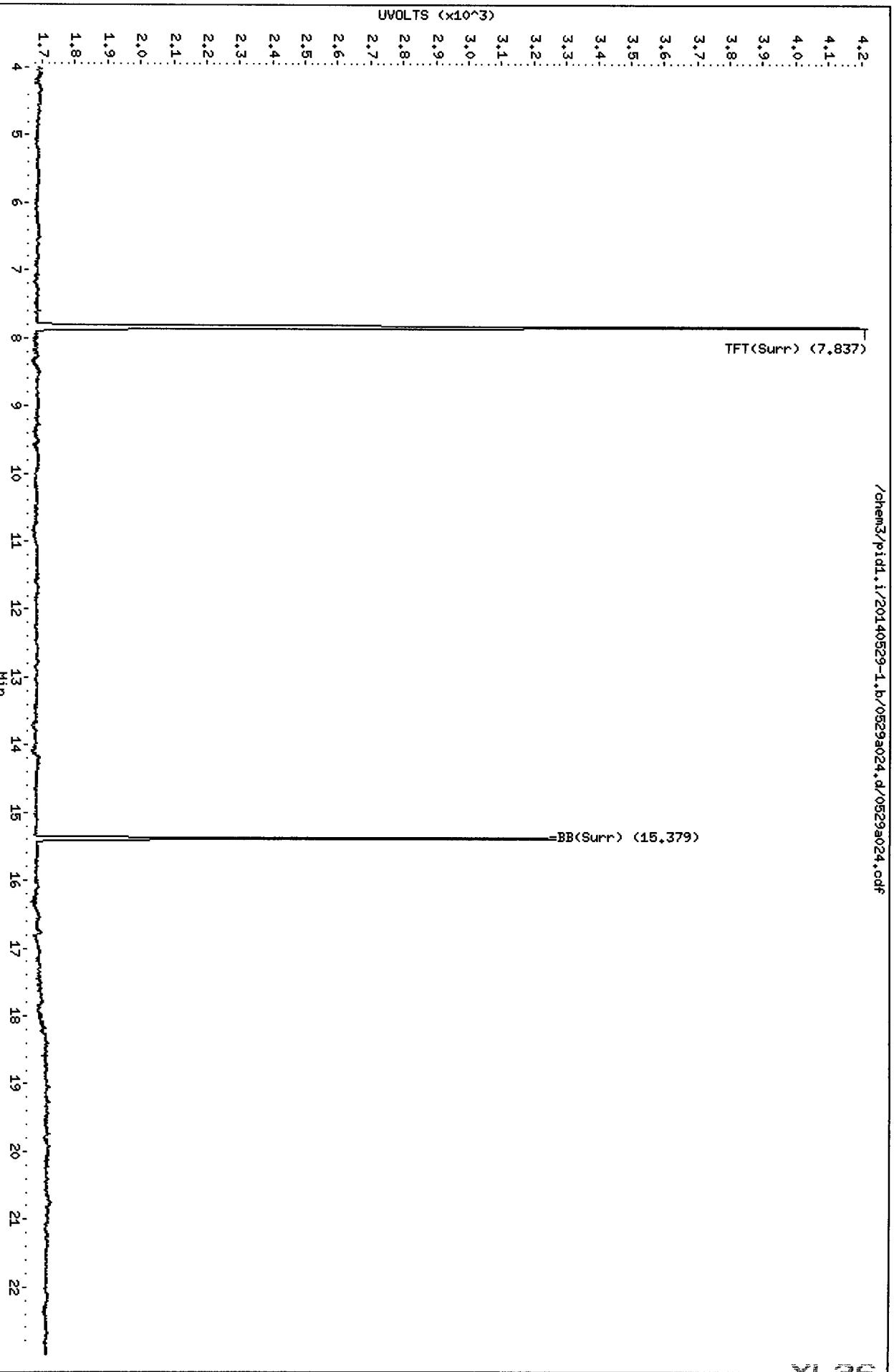
Instrument: pid1.i  
Column phase: RTX 502-2 FID

/chem3/pid1.i/20140529-1.b/0529a024.d/0529a024.cdf

Operator: LH  
Column diameter: 0.18

TFT(Surr) (7.837)

=BB(Surr) (15.379)



Data File: /chem3/pid1.i/20140529-2.b/0529a024.d  
Date : 29-MAY-2014 21:03

Client ID: MU-4R  
Sample Info: YL36B

Page 1

Column phase: RTK 502-2 PID

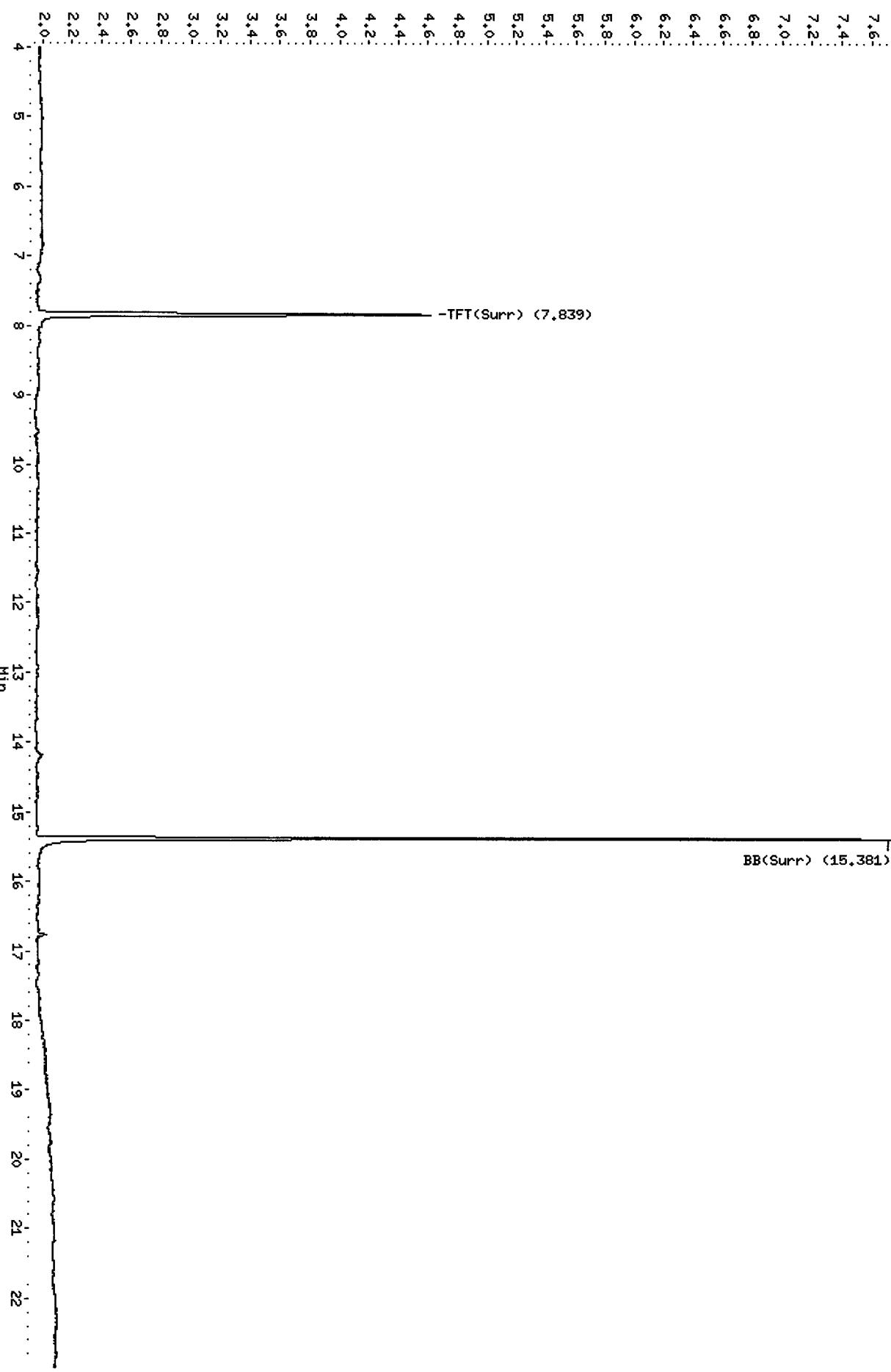
Instrument: pid1.i  
Operator: LH  
Column diameter: 0.18

/chem3/pid1.i/20140529-2.b/0529a024.d/0529a024.cdf

BB(Surr) (15.381)

UVOLTS (x10<sup>3</sup>)

-TFT(Surr) (7.839)



YL36 00034

Analytical Resources Inc.  
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/20140529-1.b/0529a025.d      ARI ID: YL36C  
 Data file 2: /chem3/pid1.i/20140529-2.b/0529a025.d      Client ID: MW-13  
 Method: /chem3/pid1.i/20140529-2.b/PIDB.m      Injection Date: 29-MAY-2014 21:33  
 Instrument: pid1.i      Matrix: WATER  
 Gas Ical Date: 20-MAR-2014      Dilution Factor: 1.000  
 BETX Ical Date: 20-MAR-2014  
 =====

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
--	---	----	----	----	-----
7.835	0.002	2592	33188	97.6	TFT(Surr) ~
15.378	0.000	1594	14438	95.5	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range	RF	Total Area*	Amount
WAGas Tol-C12 ( 9.76 to 17.90)	324574	0	0.000
8015C 2MP-TMB ( 4.16 to 16.20)	612077	0	0.000
AK101 nC6-nC10 ( 4.66 to 15.10)	460138	0	0.000
NWTPHG Tol-Nap ( 9.76 to 18.90)	336167	0	0.000

M Indicates manual integration within range

\* Surrogate areas are subtracted from Total Area  
 Range marker RT's are set by daily RT standard

PID Surrogates				
RT	Shift	Response	%Rec	Compound
--	---	----	----	-----
7.838	0.003	2701	107.0	TFT(Surr)
15.380	0.001	5788	99.9	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
--	---	---	---	-----
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

JW  
5/21/14

A Indicates Peak Area was used for quantitation instead of Height

N Indicates peak was manually integrated

Data File: /chem3/pid1.i/20140529-1.b/0529a025.d

Date : 29-MAY-2014 21:33

Client ID: MM-13

Sample Info: YL36C

Page 1

Instrument: pid1.i

Operator: LH

Column diameter: 0.18

/chem3/pid1.i/20140529-1.b/0529a025.d/0529a025.cdf

Column phase: RTX 502-2 FID

TFT(Surr) (7.835)

-BB(Surr) (15.378)

UVOLTS ( $\times 10^3$ )

4.2

4.1

4.0

3.9

3.8

3.7

3.6

3.5

3.4

3.3

3.2

3.1

3.0

2.9

2.8

2.7

2.6

2.5

2.4

2.3

2.2

2.1

2.0

1.9

1.8

1.7

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

YL36 00036

Data File: /chem3/pid1.i/20140529-2.b/0529a025.d

Date : 29-MAY-2014 21:33

Client ID: MU-13

Sample Info: YL36C

Column phase: RTX 502-2 PID

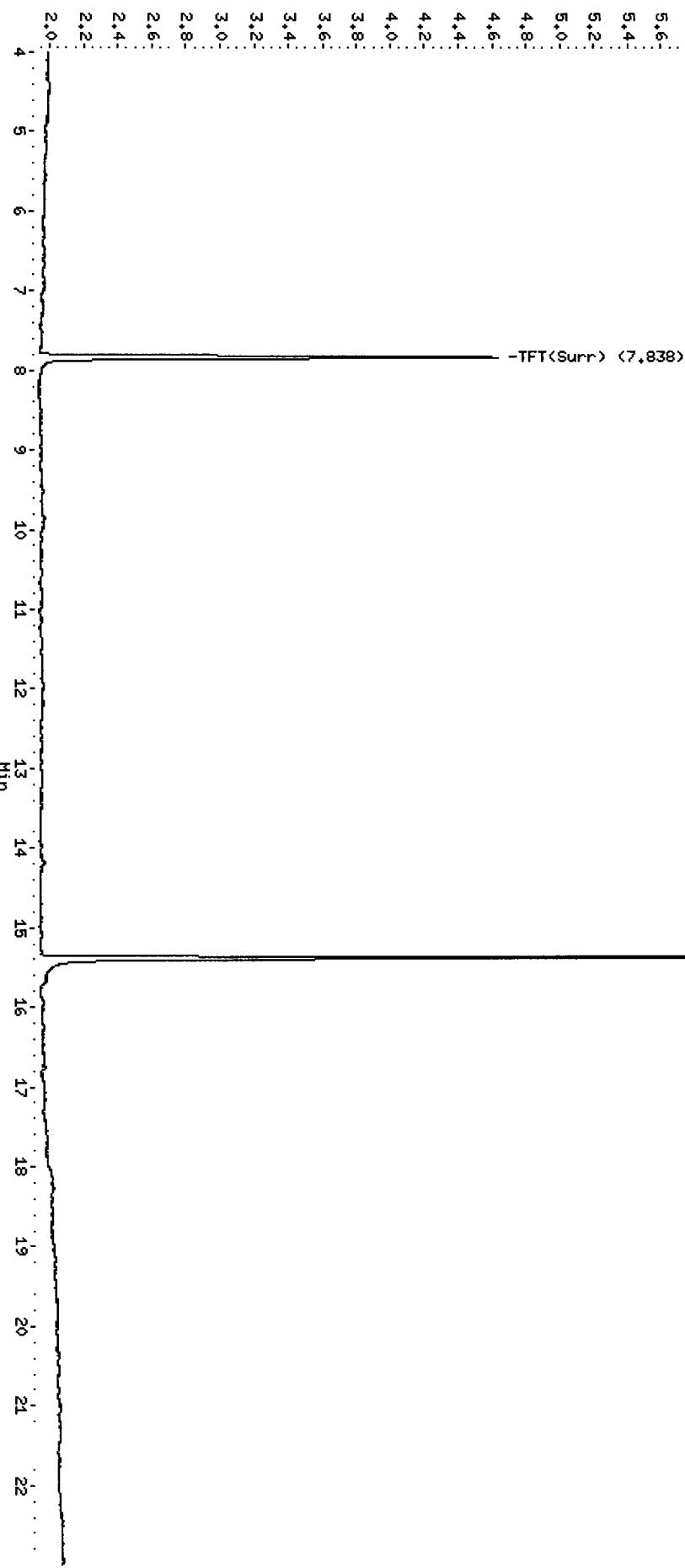
Instrument: pid1.i

Operator: LH

Column diameter: 0.18

/chem3/pid1.i/20140529-2.b/0529a025.d/0529a025.cdf

BB(Surr) (15.380)

UVOLTS ( $\times 10^3$ )

Analytical Resources Inc.  
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/20140529-1.b/0529a028.d      ARI ID: YL36D  
 Data file 2: /chem3/pid1.i/20140529-2.b/0529a028.d      Client ID: MW-6  
 Method: /chem3/pid1.i/20140529-2.b/PIDB.m      Injection Date: 29-MAY-2014 23:00  
 Instrument: pid1.i      Matrix: WATER  
 Gas Ical Date: 20-MAR-2014      Dilution Factor: 1.000  
 BETX Ical Date: 20-MAR-2014  
 =====

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
--	-----	-----	-----	-----	-----
7.836	0.003	2541	34725	95.7	TFT(Surr)
15.379	0.002	1570	15395	94.1	BB(Surr) /

PETROLEUM HYDROCARBONS (FID)

Range	RF	Total Area*	Amount
WAGas Tol-C12 ( 9.76 to 17.90)	324574	222224	0.685 M
8015C 2MP-TMB ( 4.16 to 16.20)	612077	149597	0.244 M
AK101 nC6-nC10 ( 4.66 to 15.10)	460138	116438	0.253 M
NWTPHG Tol-Nap ( 9.76 to 18.90)	336167	309038	0.919 M /

M Indicates manual integration within range

\* Surrogate areas are subtracted from Total Area  
 Range marker RT's are set by daily RT standard

PID Surrogates				
RT	Shift	Response	%Rec	Compound
--	-----	-----	-----	-----
7.838	0.003	2628	104.1	TFT(Surr)
15.381	0.001	5774	99.6	BB(Surr) /

SW8021 (PID)

RT	Shift	Response	Amount	Compound
--	-----	-----	-----	-----
ND	---	---	---	Benzene
ND	---	---	---	Toluene
12.760	0.003	983	6.87	Ethylbenzene
12.920	0.002	86	0.55	M/P-Xylene
13.870	0.005	73	0.58	O-Xylene
ND	---	---	---	MTBE

JW  
5/30/14

A Indicates Peak Area was used for quantitation instead of Height  
 N Indicates peak was manually integrated

Data File: /chem3/pid1.i/20140529-1.b/0529a028.d

Date : 29-MAY-2014 23:00

Client ID: MU-6

Sample Info: YL36D

Page 1

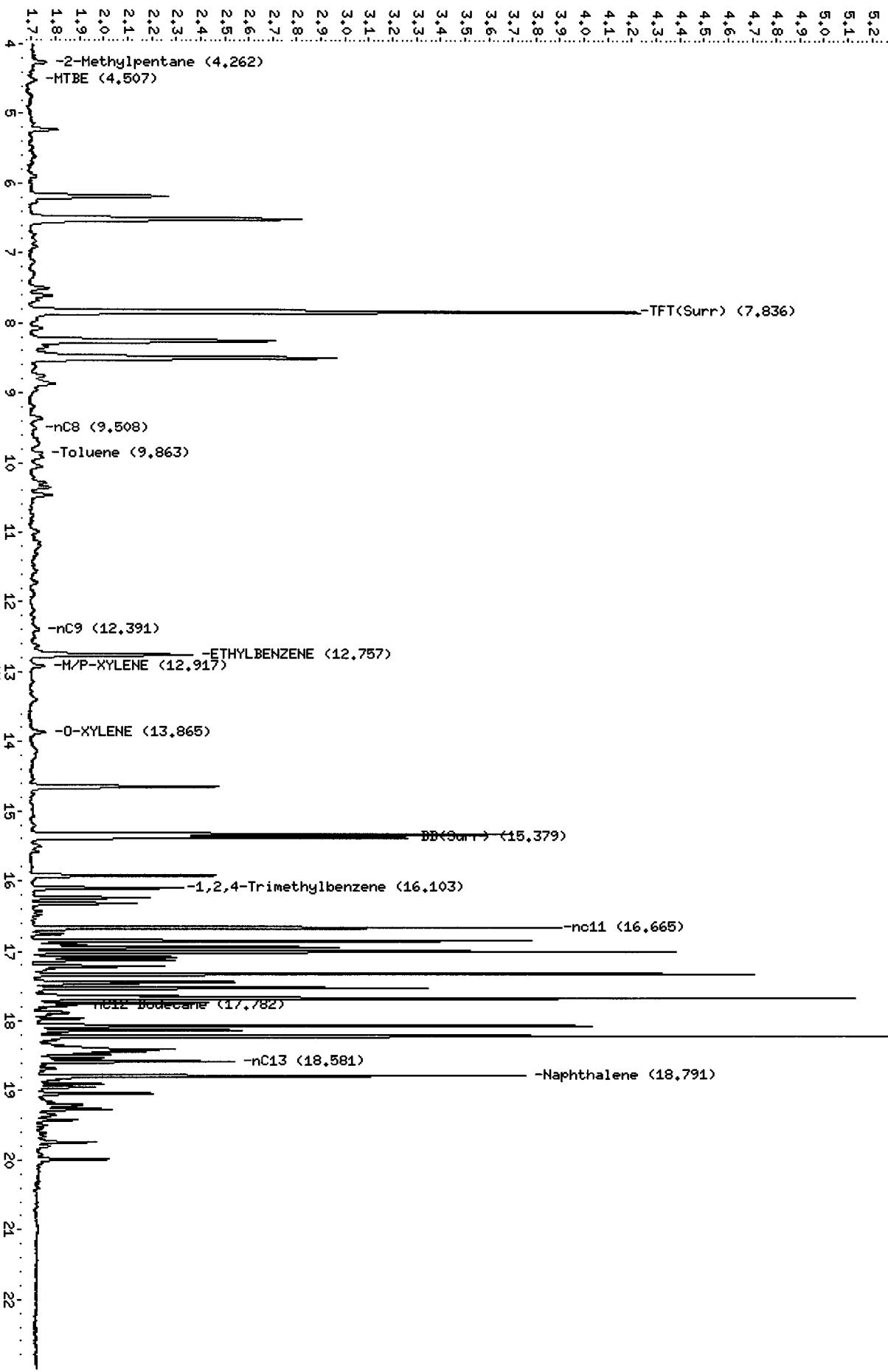
Column phase: RTX 502-2 FID

Instrument: pid1.i

Operator: LH  
Column diameter: 0.18

/chem3/pid1.i/20140529-1.b/0529a028.d/0529a028.cdf

UVOLTS ( $\times 10^3$ )



Data File: /chem3/pid1.i/20140529-2.b/0529a028.d

Date : 29-May-2014 23:00

Client ID: Hld-6

Sample Info: YL36D

Page 1

Instrument: pid1.i  
Operator: LH  
Column diameter: 0.18

/chem3/pid1.i/20140529-2.b/0529a028.d/0529a028.cdf

Column phase: RTX 502-2 PID

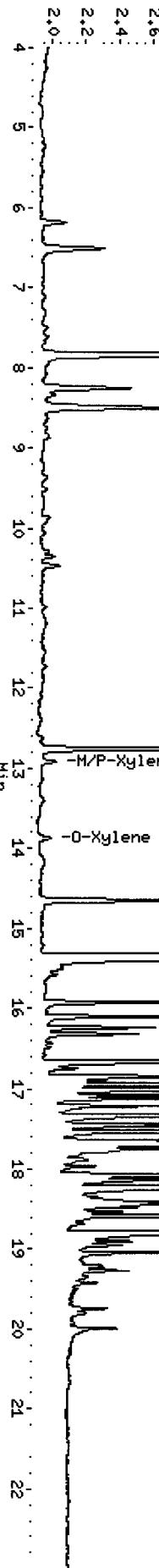
UVOLTS ( $\times 10^3$ )

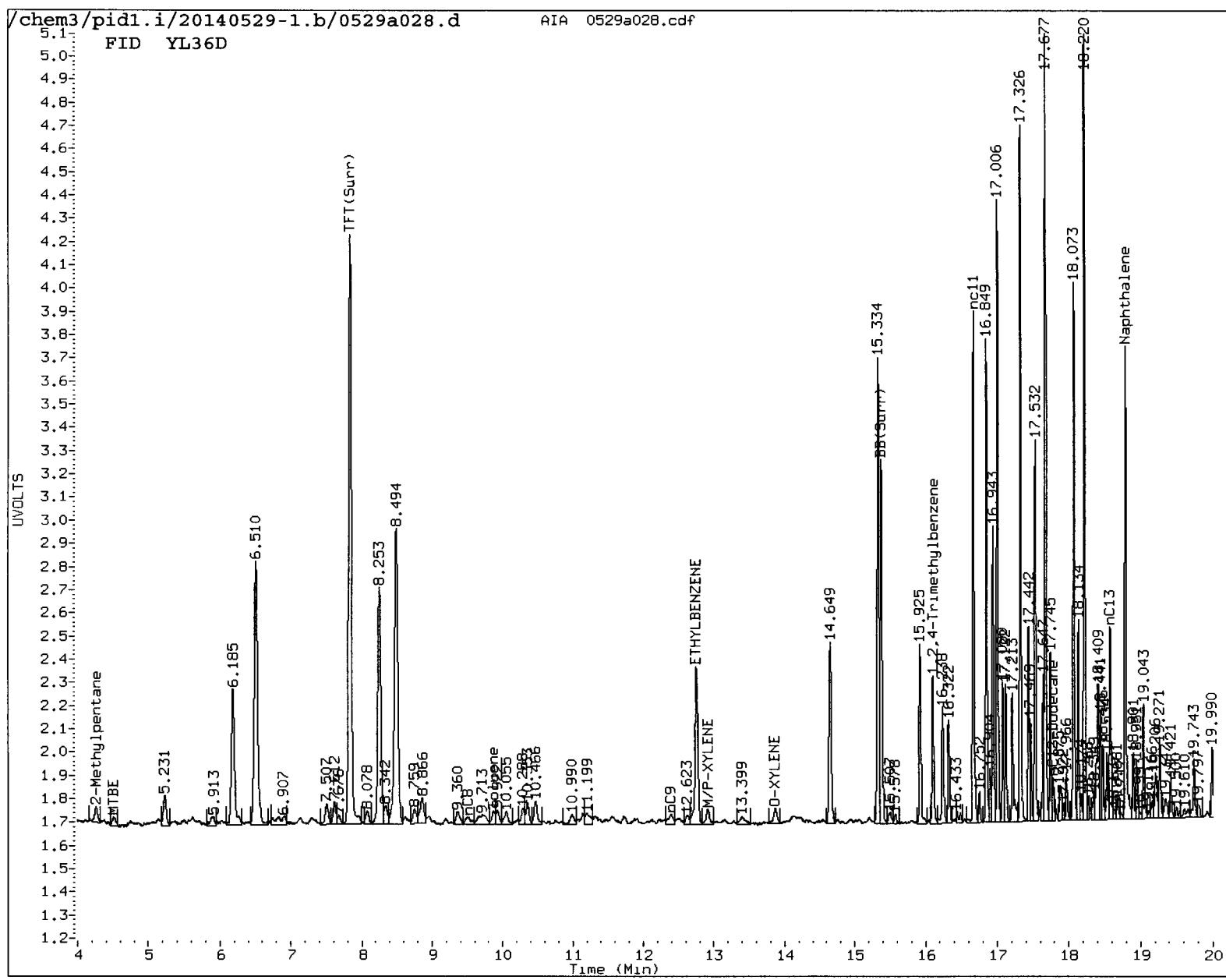
BB(Surr) (15,381)

-TFT(Surr) (7,838)

-Ethylbenzene (12,760)  
-M/P-Xylene (12,920)

-O-Xylene (13,870)





#### MANUAL INTEGRATION

- (1) Baseline correction  
2. Poor chromatography  
3. Peak not found  
4. Totals calculation

5. Other \_\_\_\_\_

Analyst: JW

Date: 5/30/14

**SAMPLE RESULTS-CONVENTIONALS**  
**YL36-Hart Crowser Inc.**

**ANALYTICAL**   
**RESOURCES**  
**INCORPORATED**

Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 06/02/14

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: 05/23/14  
Date Received: 05/23/14

**Client ID: MW-14**  
**ARI ID: 14-10183 YL36A**

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	05/24/14 052414#1	EPA 300.0	mg-N/L	0.5	10.4
Sulfate	05/24/14 052414#1	EPA 300.0	mg/L	1.0	26.2

RL Analytical reporting limit  
U Undetected at reported detection limit

**SAMPLE RESULTS-CONVENTIONALS**  
**YL36-Hart Crowser Inc.**

**ANALYTICAL**  
**RESOURCES**  
**INCORPORATED**

Matrix: Water  
Data Release Authorized:  
Reported: 06/02/14

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: 05/23/14  
Date Received: 05/23/14

**Client ID: MW-4R**  
**ARI ID: 14-10184 YL36B**

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	05/23/14 052314#1	EPA 300.0	mg-N/L	0.1	0.8
Sulfate	05/24/14 052414#1	EPA 300.0	mg/L	0.5	15.9

RL Analytical reporting limit

U Undetected at reported detection limit

**SAMPLE RESULTS-CONVENTIONALS**  
**YL36-Hart Crowser Inc.**



Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 06/02/14

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: 05/23/14  
Date Received: 05/23/14

**Client ID: MW-13**  
**ARI ID: 14-10185 YL36C**

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	05/23/14 052314#1	EPA 300.0	mg-N/L	0.1	0.9
Sulfate	05/23/14 052314#1	EPA 300.0	mg/L	0.1	4.9

RL Analytical reporting limit  
U Undetected at reported detection limit

**SAMPLE RESULTS-CONVENTIONALS**  
**YL36-Hart Crowser Inc.**

**ANALYTICAL  
RESOURCES  
INCORPORATED**

Matrix: Water  
Data Release Authorized:  
Reported: 06/02/14

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: 05/23/14  
Date Received: 05/23/14

**Client ID: MW-6**  
**ARI ID: 14-10186 YL36D**

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	05/23/14 052314#1	EPA 300.0	mg-N/L	0.1	0.1
Sulfate	05/24/14 052414#1	EPA 300.0	mg/L	0.2	6.5

RL Analytical reporting limit  
U Undetected at reported detection limit

**METHOD BLANK RESULTS-CONVENTIONALS**  
**YL36-Hart Crowser Inc.**

**ANALYTICAL  
RESOURCES  
INCORPORATED**

Matrix: Water  
Data Release Authorized  
Reported: 06/02/14

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: NA  
Date Received: NA

Analyte	Method	Date	Units	Blank	ID
N-Nitrate	EPA 300.0	05/23/14 05/24/14	mg-N/L	< 0.1 U < 0.1 U	
Sulfate	EPA 300.0	05/23/14 05/24/14	mg/L	< 0.1 U < 0.1 U	

STANDARD REFERENCE RESULTS-CONVENTIONALS  
YL36-Hart Crowser Inc.

ANALYTICAL  
RESOURCES  
INCORPORATED

Matrix: Water  
Data Release Authorized:  
Reported: 06/02/14

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: NA  
Date Received: NA

Analyte/SRM ID	Method	Date	Units	SRM	True Value	Recovery
N-Nitrate ERA #220912	EPA 300.0	05/23/14 05/24/14	mg-N/L	2.9 2.9	3.0 3.0	96.7% 96.7%
Sulfate ERA 131013	EPA 300.0	05/23/14 05/24/14	mg/L	2.9 2.9	3.0 3.0	96.7% 96.7%

**REPLICATE RESULTS-CONVENTIONALS**  
**YL36-Hart Crowser Inc.**

**ANALYTICAL  
RESOURCES  
INCORPORATED**

Matrix: Water  
Data Release Authorized:  
Reported: 06/02/14

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: 05/23/14  
Date Received: 05/23/14

Analyte	Method	Date	Units	Sample	Replicate(s)	RPD/RSD
<b>ARI ID: YL36A Client ID: MW-14</b>						
N-Nitrate	EPA 300.0	05/24/14	mg-N/L	10.4	10.3	1.0%
Sulfate	EPA 300.0	05/24/14	mg/L	26.2	26.3	0.4%

**MS/MSD RESULTS-CONVENTIONALS**  
**YL36-Hart Crowser Inc.**

**ANALYTICAL  
RESOURCES  
INCORPORATED**

Matrix: Water  
Data Release Authorized:  
Reported: 06/02/14

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: 05/23/14  
Date Received: 05/23/14

Analyte	Method	Date	Units	Sample	Spike	Spike Added	Recovery
<b>ARI ID: YL36A Client ID: MW-14</b>							
N-Nitrate	EPA 300.0	05/24/14	mg-N/L	10.4	28.9	20.0	92.5%
Sulfate	EPA 300.0	05/24/14	mg/L	26.2	58.6	40.0	81.0%



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

September 4, 2014

Angie Goodwin  
Hart Crowser, Inc.  
1700 Westlake Avenue N. Suite 200  
Seattle, WA 98109-3256

**RE: Client Project: Ken's Auto, 7168-10**  
**ARI Job No.: YX54**

Dear Angie:

Please find enclosed the original Chain-of-Custody record (COC), sample receipt documentation, and the final data for samples from the project referenced above. Analytical Resources, Inc. (ARI) received four water samples and one trip blank on August 22, 2014. The samples were received in good condition with a cooler temperature of 10.1°C. For further details regarding sample receipt, please refer to the enclosed Cooler Receipt Form.

The samples were analyzed for NWTPH-Gx plus BTEX and Anions, as requested on the COC.

There were no anomalies associated with the analyses.

Sincerely,  
ANALYTICAL RESOURCES, INC.

Kelly Bottem  
Client Services Manager  
[kellyb@arilabs.com](mailto:kellyb@arilabs.com)  
206/695-6211  
Enclosures

cc: eFile YX54



# Cooler Receipt Form

ARI Client: ARI

COC No(s): \_\_\_\_\_  NA

Assigned ARI Job No: YX54

## Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?  YES  NO

Were custody papers included with the cooler?  YES  NO

Were custody papers properly filled out (ink, signed, etc.)  YES  NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time: 1455

If cooler temperature is out of compliance fill out form 00070F

Cooler Accepted by: AV Date: 8/22/14 Time: 1455 Temp Gun ID#: 90877952

*Complete custody forms and attach all shipping documents*

## Log-In Phase:

Was a temperature blank included in the cooler?  YES  NO

What kind of packing material was used? ... Bubble Wrap  Wet Ice  Gel Packs  Baggies  Foam Block  Paper  Other: \_\_\_\_\_

Was sufficient ice used (if appropriate)?  NA  YES  NO

Were all bottles sealed in individual plastic bags?  YES  NO

Did all bottles arrive in good condition (unbroken)?  YES  NO

Were all bottle labels complete and legible?  YES  NO

Did the number of containers listed on COC match with the number of containers received?  YES  NO

Did all bottle labels and tags agree with custody papers?  YES  NO

Were all bottles used correct for the requested analyses?  YES  NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...  NA  YES  NO

Were all VOC vials free of air bubbles?  NA  YES  NO

Was sufficient amount of sample sent in each bottle?  YES  NO

Date VOC Trip Blank was made at ARI: 8/19/14  NA

Was Sample Split by ARI:  NA  YES Date/Time: \_\_\_\_\_ Equipment: \_\_\_\_\_

Split by: 8/19/14

Samples Logged by: AV Date: 8/22/14 Time: 1608

*\*\* Notify Project Manager of discrepancies or concerns \*\**

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

## Additional Notes, Discrepancies, & Resolutions:

TB=1PD

By: AV Date: 8/22/14

<b>Small Air Bubbles</b> -2mm • • •	<b>Peabubbles'</b> 2-4 mm • • •	<b>LARGE Air Bubbles</b> > 4 mm • • •	<b>Small</b> → "sm" (< 2 mm) <b>Peabubbles</b> → "pb" (2 to < 4 mm) <b>Large</b> → "lg" (4 to < 6 mm) <b>Headspace</b> → "hs" (> 6 mm)
---	---------------------------------------	---	---





Analytical Resources,  
Incorporated  
Analytical Chemists and  
Consultants

## Cooler Temperature Compliance Form

Completed by:

Graph A

Date:

8|22|14

Time:

110

00070F

## Cooler Temperature Compliance Form

Version 000

3/3/09

卷之三

**Sample ID Cross Reference Report**

ARI Job No: YX54  
Client: Hart Crowser Inc.  
Project Event: 7168-10  
Project Name: Ken's Auto

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. MW-14	YX54A	14-17328	Water	08/21/14 12:47	08/22/14 14:55
2. MW-4R	YX54B	14-17329	Water	08/21/14 14:20	08/22/14 14:55
3. MW-13	YX54C	14-17330	Water	08/21/14 11:16	08/22/14 14:55
4. MW-6	YX54D	14-17331	Water	08/21/14 12:02	08/22/14 14:55
5. TB	YX54E	14-17332	Water	08/21/14	08/22/14 14:55



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## Data Reporting Qualifiers

Effective 12/31/13

### Inorganic Data

- U Indicates that the target analyte was not detected at the reported concentration
- \* Duplicate RPD is not within established control limits
- B Reported value is less than the CRDL but  $\geq$  the Reporting Limit
- N Matrix Spike recovery not within established control limits
- NA Not Applicable, analyte not spiked
- H The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
- L Analyte concentration is  $\leq$  5 times the Reporting Limit and the replicate control limit defaults to  $\pm 1$  RL instead of the normal 20% RPD

### Organic Data

- U Indicates that the target analyte was not detected at the reported concentration
- \* Flagged value is not within established control limits
- B Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.
- J Estimated concentration when the value is less than ARI's established reporting limits
- D The spiked compound was not detected due to sample extract dilution
- E Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.



**Analytical Resources,  
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- Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).
- S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte
- NA The flagged analyte was not analyzed for
- NR Spiked compound recovery is not reported due to chromatographic interference
- NS The flagged analyte was not spiked into the sample
- M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses
- N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"
- Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.
- EMPC Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" **(Dioxin/Furan analysis only)**
- C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column
- P The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference
- X Analyte signal includes interference from polychlorinated diphenyl ethers. **(Dioxin/Furan analysis only)**
- Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**



## Geotechnical Data

- A The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
- F Samples were frozen prior to particle size determination
- SM Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
- SS Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
- W Weight of sample in some pipette aliquots was below the level required for accurate weighting

**ORGANICS ANALYSIS DATA SHEET**

BETX by Method SW8021BMod

**TPHG by Method NWTPHG**

Page 1 of 1

Lab Sample ID: YX54A

LIMS ID: 14-17328

Matrix: Water

Data Release Authorized:

Reported: 09/03/14

Date Analyzed: 08/30/14 14:20

Instrument/Analyst: PID1/LH

Sample ID: MW-14  
SAMPLE



QC Report No: YX54-Hart Crowser Inc.

Project: Ken's Auto

Event: 7168-10

Date Sampled: 08/21/14

Date Received: 08/22/14

Purge Volume: 5.0 mL

Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
<b>100-41-4</b>	<b>Ethylbenzene</b>	<b>0.25</b>	<b>1.1</b>
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	<i>o</i> -Xylene	0.25	< 0.25 U

GAS ID  
**GRO**

## BETX Surrogate Recovery

Trifluorotoluene 102%  
Bromobenzene 101%

## Gasoline Surrogate Recovery

Trifluorotoluene 107%  
Bromobenzene 104%

BETX values reported in  $\mu\text{g/L}$  (ppb)  
Gasoline values reported in  $\text{mg/L}$  (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET  
BTEX by Method SW8021BMod  
TPHG by Method NWTPHG  
Page 1 of 1

Lab Sample ID: YX54B  
LIMS ID: 14-17329  
Matrix: Water  
Data Release Authorized: *B*  
Reported: 09/03/14

Date Analyzed: 08/30/14 14:49  
Instrument/Analyst: PID1/LH

Sample ID: MW-4R  
SAMPLE

QC Report No: YX54-Hart Crowser Inc.  
Project: Ken's Auto  
Event: 7168-10  
Date Sampled: 08/21/14  
Date Received: 08/22/14

Purge Volume: 5.0 mL  
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U

Gasoline Range Hydrocarbons      0.10      < 0.10 U      GAS ID ---

#### BTEX Surrogate Recovery

Trifluorotoluene	98.5%
Bromobenzene	95.8%

#### Gasoline Surrogate Recovery

Trifluorotoluene	102%
Bromobenzene	99.1%

BTEX values reported in µg/L (ppb)  
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ANALYTICAL  
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ORGANICS ANALYSIS DATA SHEET  
BTEX by Method SW8021BMod  
TPHG by Method NWTPHG  
Page 1 of 1

Lab Sample ID: YX54C  
LIMS ID: 14-17330  
Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 09/03/14

Date Analyzed: 08/30/14 15:19  
Instrument/Analyst: PID1/LH

Sample ID: MW-13  
SAMPLE

QC Report No: YX54-Hart Crowser Inc.  
Project: Ken's Auto  
Event: 7168-10  
Date Sampled: 08/21/14  
Date Received: 08/22/14

Purge Volume: 5.0 mL  
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result	GAS ID
71-43-2	Benzene	0.25	< 0.25 U	
108-88-3	Toluene	0.25	< 0.25 U	
100-41-4	Ethylbenzene	0.25	< 0.25 U	
179601-23-1	m,p-Xylene	0.50	< 0.50 U	
95-47-6	o-Xylene	0.25	< 0.25 U	
Gasoline Range Hydrocarbons		0.10	< 0.10 U	---

**BTEX Surrogate Recovery**

Trifluorotoluene	100%
Bromobenzene	98.9%

**Gasoline Surrogate Recovery**

Trifluorotoluene	104%
Bromobenzene	102%

BTEX values reported in  $\mu\text{g}/\text{L}$  (ppb)  
Gasoline values reported in  $\text{mg}/\text{L}$  (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.  
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**

**BETX by Method SW8021BMod**

**TPHG by Method NWTPHG**

Page 1 of 1

Lab Sample ID: YX54D

LIMS ID: 14-17331

Matrix: Water

Data Release Authorized: *M*

Reported: 09/03/14

Date Analyzed: 08/30/14 15:48

Instrument/Analyst: PID1/LH

**Sample ID: MW-6  
SAMPLE**

QC Report No: YX54-Hart Crowser Inc.

Project: Ken's Auto

Event: 7168-10

Date Sampled: 08/21/14

Date Received: 08/22/14

Purge Volume: 5.0 mL

Dilution Factor: 1.00

<b>CAS Number</b>	<b>Analyte</b>	<b>RL</b>	<b>Result</b>
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U

<b>Gasoline Range Hydrocarbons</b>	<b>0.10</b>	<b>0.37</b>	<b>GAS ID GRO</b>
------------------------------------	-------------	-------------	-----------------------

**BETX Surrogate Recovery**

Trifluorotoluene	100%
Bromobenzene	96.5%

**Gasoline Surrogate Recovery**

Trifluorotoluene	105%
Bromobenzene	100%

BETX values reported in µg/L (ppb)  
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET  
BTEX by Method SW8021BMod  
TPHG by Method NWTPHG  
Page 1 of 1

Lab Sample ID: YX54E  
LIMS ID: 14-17332  
Matrix: Water  
Data Release Authorized: *R*  
Reported: 09/03/14

Date Analyzed: 08/30/14 13:22  
Instrument/Analyst: PID1/LH

Sample ID: TB  
SAMPLE

QC Report No: YX54-Hart Crowser Inc.  
Project: Ken's Auto  
Event: 7168-10  
Date Sampled: 08/21/14  
Date Received: 08/22/14

Purge Volume: 5.0 mL  
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result	GAS ID
71-43-2	Benzene	0.25	< 0.25 U	
108-88-3	Toluene	0.25	< 0.25 U	
100-41-4	Ethylbenzene	0.25	< 0.25 U	
179601-23-1	m,p-Xylene	0.50	< 0.50 U	
95-47-6	o-Xylene	0.25	< 0.25 U	
	Gasoline Range Hydrocarbons	0.10	< 0.10 U	---

#### BTEX Surrogate Recovery

Trifluorotoluene	101%
Bromobenzene	97.6%

#### Gasoline Surrogate Recovery

Trifluorotoluene	103%
Bromobenzene	101%

BTEX values reported in µg/L (ppb)  
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.  
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ORGANICS ANALYSIS DATA SHEET  
BTEX by Method SW8021BMod  
TPHG by Method NWTPHG  
Page 1 of 1

Lab Sample ID: MB-083014  
LIMS ID: 14-17328  
Matrix: Water  
Data Release Authorized: *BS*  
Reported: 09/03/14

Date Analyzed: 08/30/14 12:31  
Instrument/Analyst: PID1/LH

Sample ID: MB-083014  
METHOD BLANK

QC Report No: YX54-Hart Crowser Inc.  
Project: Ken's Auto  
Event: 7168-10  
Date Sampled: NA  
Date Received: NA

Purge Volume: 5.0 mL  
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result	GAS ID
71-43-2	Benzene	0.25	< 0.25 U	
108-88-3	Toluene	0.25	< 0.25 U	
100-41-4	Ethylbenzene	0.25	< 0.25 U	
179601-23-1	m,p-Xylene	0.50	< 0.50 U	
95-47-6	o-Xylene	0.25	< 0.25 U	
Gasoline Range Hydrocarbons		0.10	< 0.10 U	---

#### BTEX Surrogate Recovery

Trifluorotoluene	94.4%
Bromobenzene	93.6%

#### Gasoline Surrogate Recovery

Trifluorotoluene	98.3%
Bromobenzene	96.6%

BTEX values reported in µg/L (ppb)  
Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.  
GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

ANALYTICAL  
RESOURCES  
INCORPORATED

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021BMod**  
Page 1 of 1

Lab Sample ID: LCS-083014

LIMS ID: 14-17328

Matrix: Water

Data Release Authorized: *BB*

Reported: 09/03/14

Sample ID: LCS-083014

**LAB CONTROL SAMPLE**

QC Report No: YX54-Hart Crowser Inc.

Project: Ken's Auto

Event: 7168-10

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 08/30/14 11:32

Purge Volume: 5.0 mL

LCSD: 08/30/14 12:02

Dilution Factor LCS: 1.0

Instrument/Analyst LCS: PID1/LH

LCSD: 1.0

LCSD: PID1/LH

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	6.62	7.00	94.6%	6.71	7.00	95.9%	1.4%
Toluene	49.7	49.4	101%	50.4	49.4	102%	1.4%
Ethylbenzene	12.0	12.3	97.6%	12.3	12.3	100%	2.5%
m, p-Xylene	39.3	40.0	98.2%	40.3	40.0	101%	2.5%
o-Xylene	15.4	15.3	101%	15.8	15.3	103%	2.6%

Reported in  $\mu\text{g}/\text{L}$  (ppb)

RPD calculated using sample concentrations per SW846.

**BETX Surrogate Recovery**

	LCS	LCSD
Trifluorotoluene	95.3%	97.4%
Bromobenzene	94.3%	96.4%

## ORGANICS ANALYSIS DATA SHEET

TPHG by Method NWTPHG

Page 1 of 1

Lab Sample ID: LCS-083014

LIMS ID: 14-17328

Matrix: Water

Data Release Authorized: *M*

Reported: 09/03/14

**ANALYTICAL  
RESOURCES  
INCORPORATED**


Sample ID: LCS-083014

LAB CONTROL SAMPLE

QC Report No: YX54-Hart Crowser Inc.

Project: Ken's Auto

Event: 7168-10

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 08/30/14 11:32

Purge Volume: 5.0 mL

LCSD: 08/30/14 12:02

Instrument/Analyst LCS: PID1/LH

Dilution Factor LCS: 1.0

LCSD: PID1/LH

LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	1.02	1.00	102%	1.02	1.00	102%	0.0%

Reported in mg/L (ppm)

RPD calculated using sample concentrations per SW846.

**TPHG Surrogate Recovery**

	LCS	LCSD
Trifluorotoluene	98.7%	100%
Bromobenzene	96.7%	99.5%

**BETX WATER SURROGATE RECOVERY SUMMARY**

ARI Job: YX54  
Matrix: Water

QC Report No: YX54-Hart Crowser Inc.  
Project: Ken's Auto  
Event: 7168-10

<b>Client ID</b>	<b>TFT</b>	<b>BBZ</b>	<b>TOT</b>	<b>OUT</b>
MB-083014	94.4%	93.6%	0	
LCS-083014	95.3%	94.3%	0	
LCSD-083014	97.4%	96.4%	0	
MW-14	102%	101%	0	
MW-4R	98.5%	95.8%	0	
MW-13	100%	98.9%	0	
MW-6	100%	96.5%	0	
TB	101%	97.6%	0	

**LCS/MB LIMITS**      **QC LIMITS**

(TFT) = Trifluorotoluene	( 5 mL PV)	(80-120)	(80-120)
(TFT) = Trifluorotoluene	(15 mL PV)	(79-120)	(80-120)
(BBZ) = Bromobenzene	( 5 mL PV)	(80-120)	(77-120)
(BBZ) = Bromobenzene	(15 mL PV)	(79-120)	(80-120)

Log Number Range: 14-17328 to 14-17332

**TPHG WATER SURROGATE RECOVERY SUMMARY**

ARI Job: YX54  
Matrix: Water

QC Report No: YX54-Hart Crowser Inc.  
Project: Ken's Auto  
Event: 7168-10

<b>Client ID</b>	<b>TFT</b>	<b>BBZ</b>	<b>TOT OUT</b>
MB-083014	98.3%	96.6%	0
LCS-083014	98.7%	96.7%	0
LCSD-083014	100%	99.5%	0
MW-14	107%	104%	0
MW-4R	102%	99.1%	0
MW-13	104%	102%	0
MW-6	105%	100%	0
TB	103%	101%	0

**LCS/MB LIMITS      QC LIMITS**

(TFT) = Trifluorotoluene      (80-120)      (80-120)  
(BBZ) = Bromobenzene      (80-120)      (80-120)

Log Number Range: 14-17328 to 14-17332

9/21/14

Analytical Resources Inc.  
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/20140830-1.b/0830a004.d      ARI ID: LCS0830  
 Data file 2: /chem3/pid1.i/20140830-2.b/0830a004.d      Client ID:  
 Method: /chem3/pid1.i/20140830-2.b/PIDB.m      Injection Date: 30-AUG-2014 11:32  
 Instrument: pid1.i      Matrix: WATER  
 Gas Ical Date: 01-AUG-2014      Dilution Factor: 1.000  
 BETX Ical Date: 01-AUG-2014  
 =====

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
--	-----	-----	-----	-----	-----
7.840	0.002	2336	31842	98.7	TFT(Surr)

15.381	0.000	1401	13591	96.7	BB(Surr)
--------	-------	------	-------	------	----------

PETROLEUM HYDROCARBONS (FID)

Range	RF	Total Area*	Amount
WAGas Tol-C12 ( 9.77 to 17.90)	255374	258670	1.013 M
8015C 2MP-TMB ( 4.16 to 16.20)	464685	484750	1.043 M
AK101 nC6-nC10 ( 4.66 to 15.10)	351052	367540	1.047 M
NWTPHG Tol-Nap ( 9.77 to 18.89)	264430	268436	1.015 M

M Indicates manual integration within range

\* Surrogate areas are subtracted from Total Area  
 Range marker RT's are set by daily RT standard

PID Surrogates				
RT	Shift	Response	%Rec	Compound
--	-----	-----	-----	-----
7.841	0.002	3638	95.3	TFT(Surr)

15.382	0.000	7583	94.3	BB(Surr)
--------	-------	------	------	----------

SW8021 (PID)

RT	Shift	Response	Amount	Compound
--	-----	-----	-----	-----
7.002	0.001	1753	6.62	Benzene
9.869	0.001	11331	49.74	Toluene
12.762	0.001	2327	12.01	Ethylbenzene
12.926	0.003	8238	39.27	M/P-Xylene
13.871	0.001	2587	15.37	O-Xylene
4.515	-0.005	236	2.61	MTBE

A Indicates Peak Area was used for quantitation instead of Height

N Indicates peak was manually integrated

Data File: /chem3/pid1.i/20140830-1.b/0830a004.d

Date : 30-AUG-2014 11:32

Client IP:

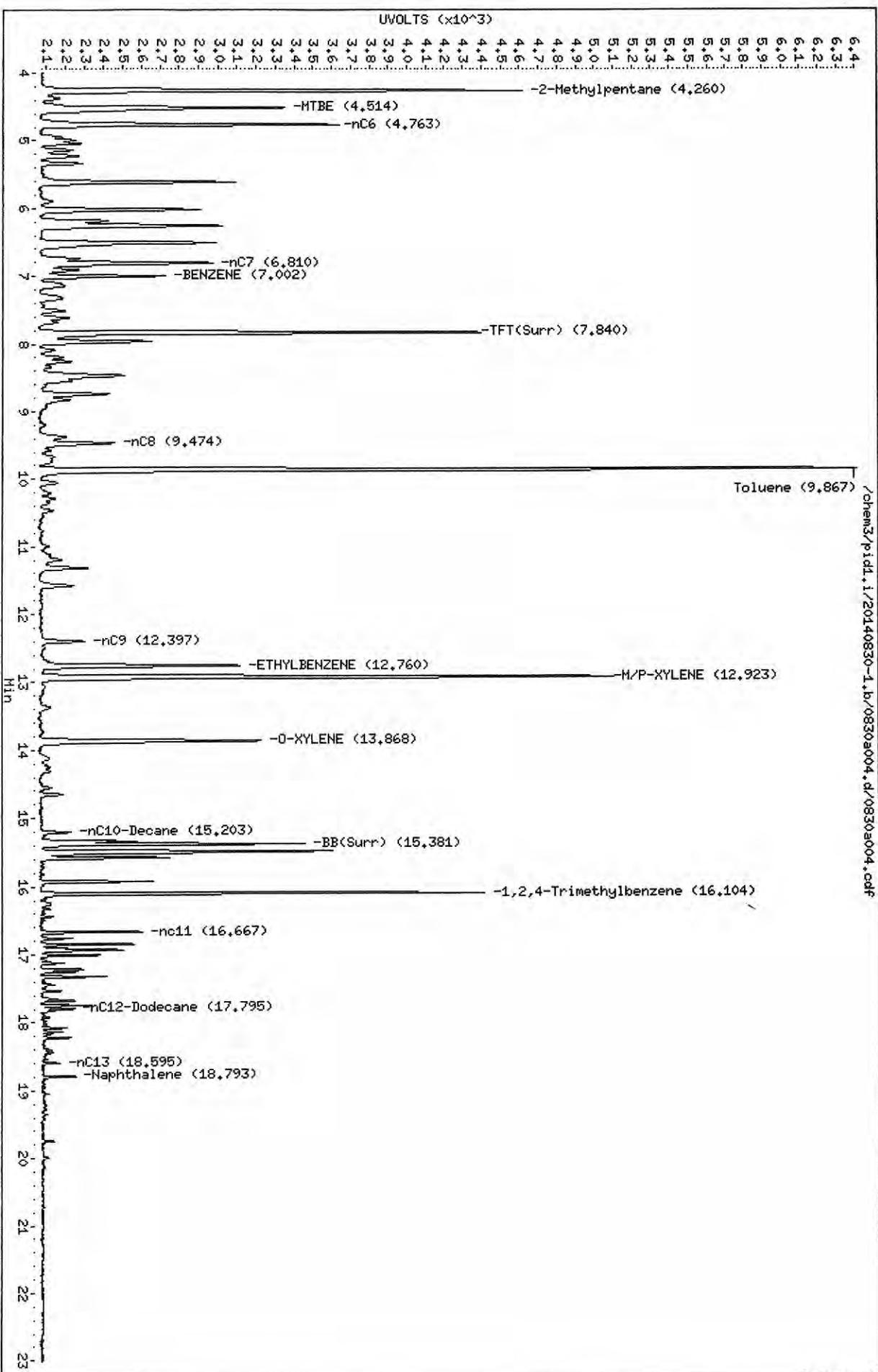
Canal Infect Regio

Page 1

Sample Info: LCS0830

Column phase: RTX 502-2 FID

Operator: PC  
Column diameter: 0.18



Data File: /chem3/pid1.i/20140830-2.b/0830a004.d  
Date : 30-AUG-2014 11:32

Client ID:

Sample Info: LCS0830

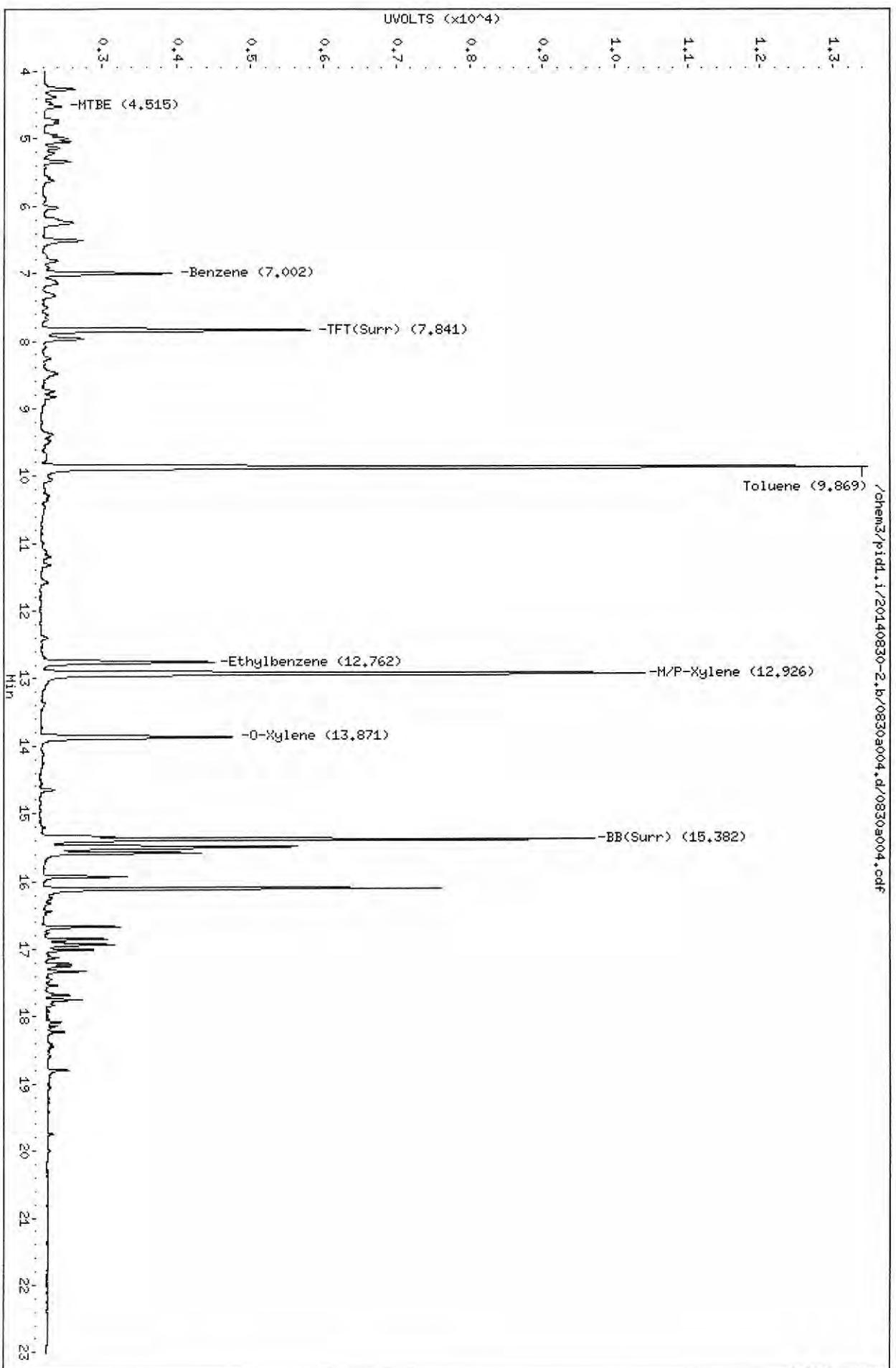
Page 1

Instrument: pid1.i  
Operator: PC

Column diameter: 0.18

/chem3/pid1.i/20140830-2.b/0830a004.d/0830a004.cdf

Column phase: RTX 502-2 PID

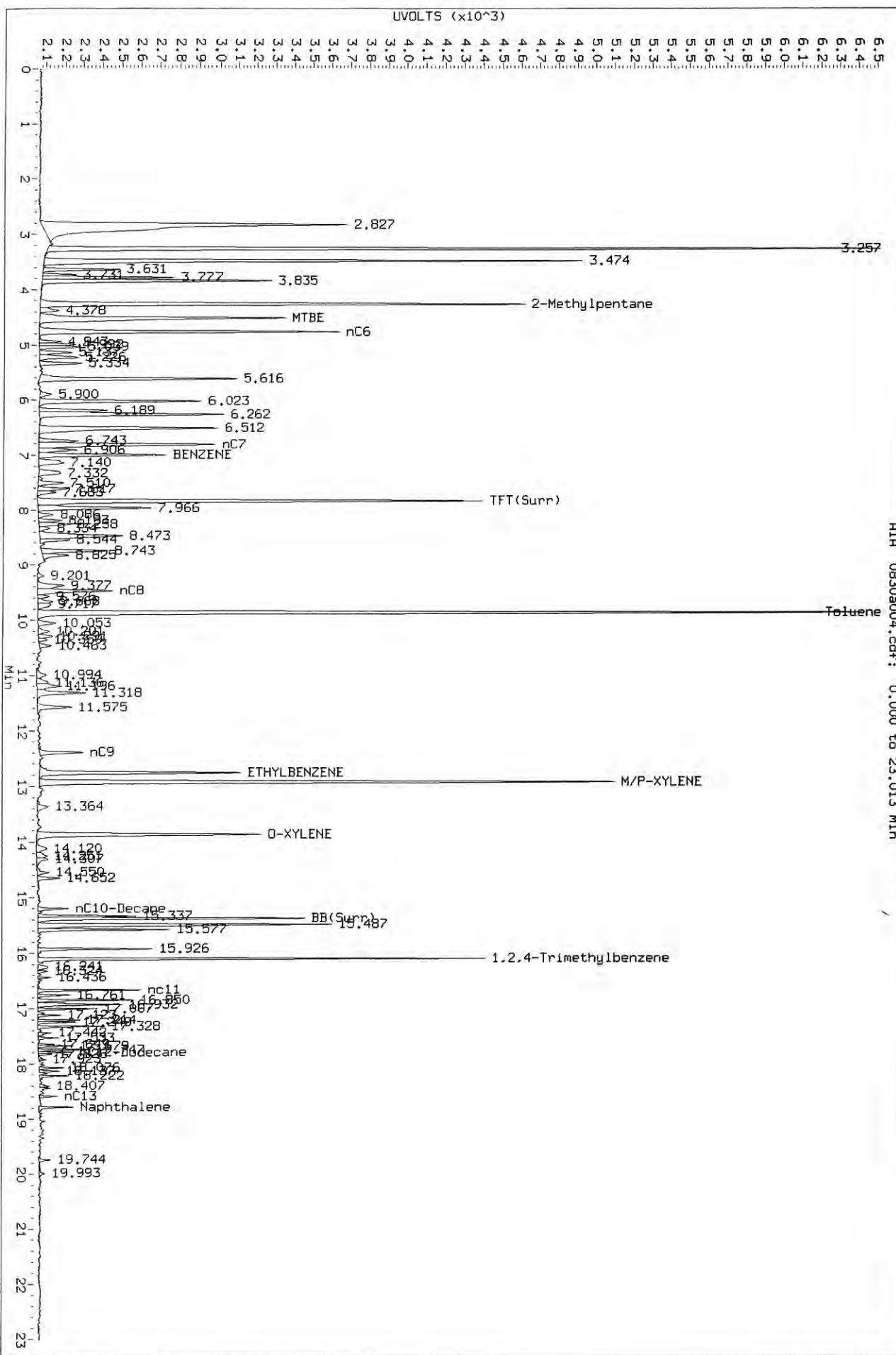


YANCI 08021

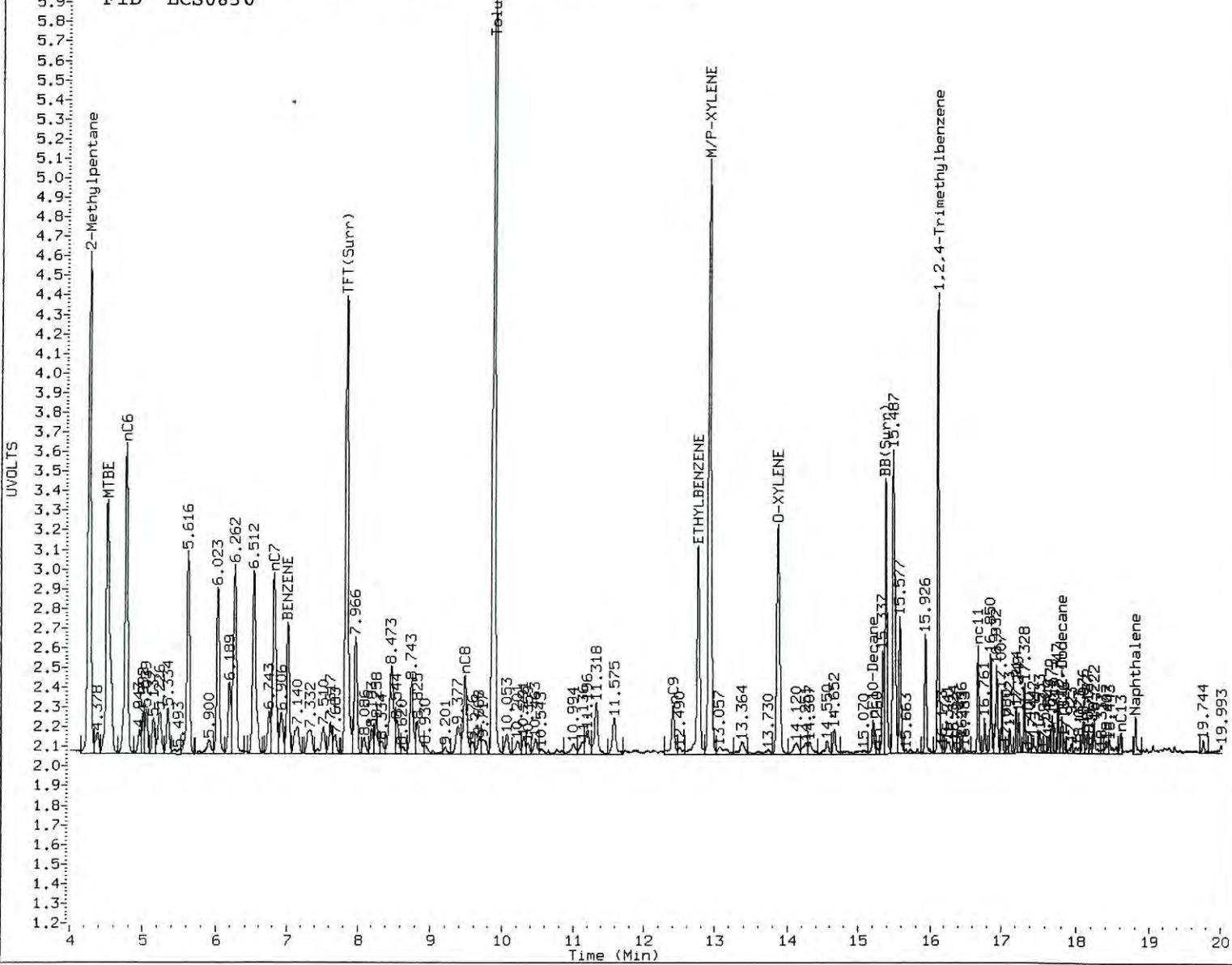
PG  
8/2/14

DataFile: /chem3/pid.1/20140830-1.b/0830a004.d/0830a004.cdf  
Instrument Date: 30-AUG-2014 11:32  
Injection Date: pid.1  
Client Sample ID:

100



FID LCS0830



## MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

## 5. Other \_\_\_\_\_

Analyst: YCDate: 8/2/14

PK  
9/2/14

Analytical Resources Inc.  
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/20140830-1.b/0830a005.d      ARI ID: LCSD0830  
 Data file 2: /chem3/pid1.i/20140830-2.b/0830a005.d      Client ID:  
 Method: /chem3/pid1.i/20140830-2.b/PIDB.m      Injection Date: 30-AUG-2014 12:02  
 Instrument: pid1.i      Matrix: WATER  
 Gas Ical Date: 01-AUG-2014      Dilution Factor: 1.000  
 BETX Ical Date: 01-AUG-2014  
 =====

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
--	-----	-----	-----	-----	-----
7.839	0.001	2374	32417	100.3	TFT(Surr)
15.380	0.000	1441	13860	99.5	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range	RF	Total Area*	Amount
WAGas Tol-C12 ( 9.77 to 17.90)	255374	261609	1.024 M
8015C 2MP-TMB ( 4.16 to 16.20)	464685	492076	1.059 M
AK101 nC6-nC10 ( 4.66 to 15.10)	351052	373352	1.064 M
NWTPHG Tol-Nap ( 9.77 to 18.89)	264430	270484	1.023 M

M Indicates manual integration within range

\* Surrogate areas are subtracted from Total Area  
 Range marker RT's are set by daily RT standard

PID Surrogates				
RT	Shift	Response	%Rec	Compound
--	-----	-----	-----	-----
7.841	0.001	3715	97.4	TFT(Surr)
15.382	0.000	7753	96.4	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
--	-----	-----	-----	-----
7.002	0.001	1778	6.71	Benzene
9.868	0.000	11490	50.44	Toluene
12.762	0.000	2385	12.31	Ethylbenzene
12.925	0.002	8445	40.26	M/P-Xylene
13.871	0.001	2652	15.76	O-Xylene
4.514	-0.005	251	2.78	MTBE

A Indicates Peak Area was used for quantitation instead of Height  
 N Indicates peak was manually integrated

Data File: /chem3/pid1.i/20140830-1.b/0830a005.d  
Date : 30-AUG-2014 12:02

Client ID:

Sample Info: LCSM0830

Page 1

Instrument: pid1.i

Operator: PC

Column diameter: 0.18

UVOLTS ( $\times 10^3$ )  
6.4  
6.3  
6.2  
6.1  
6.0  
5.9  
5.8  
5.7  
5.6  
5.5  
5.4  
5.3  
5.2  
5.1  
5.0  
4.9  
4.8  
4.7  
4.6  
4.5  
4.4  
4.3  
4.2  
4.1  
4.0  
3.9  
3.8  
3.7  
3.6  
3.5  
3.4  
3.3  
3.2  
3.1  
3.0  
2.9  
2.8  
2.7  
2.6  
2.5  
2.4  
2.3  
2.2  
2.1

-2-Methylpentane (4.259)

-MTBE (4.513)

-nC6 (4.762)

-nC7 (6.809)

-BENZENE (7.000)

-TFT(Surr) (7.839)

-nC8 (9.473)

Toluene (9.866)

-ETHYLBENZENE (12.760)

-M/P-XYLENE (12.923)

-O-XYLENE (13.869)

-nC10-Decane (15.203)

-BB(Surr) (15.380)

-1,2,4-Trimethylbenzene (16.104)

-nC11 (16.667)

nC12-Dodecane (17.795)

-nC13 (18.593)

-Naphthalene (18.793)

1734:00025

Data File: /chem3/pid1.i/20140830-2.b/0830a005.d  
Date : 30-AUG-2014 12:02

Client ID:  
Sample Info: LCSB0830

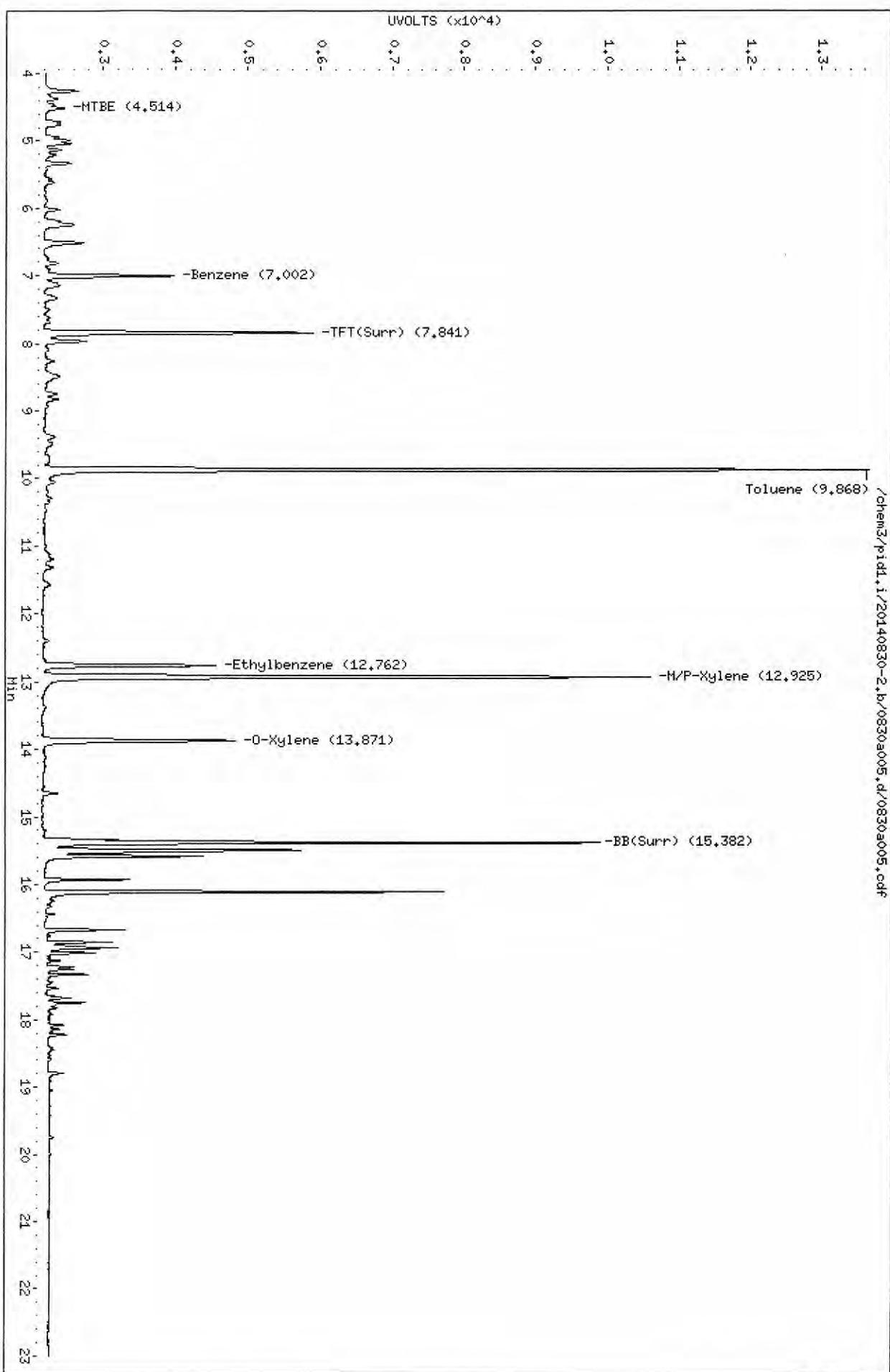
Page 1

Column phase: RTX 502-2 PID

Instrument: pid1.i

Operator: PC  
Column diameter: 0.18

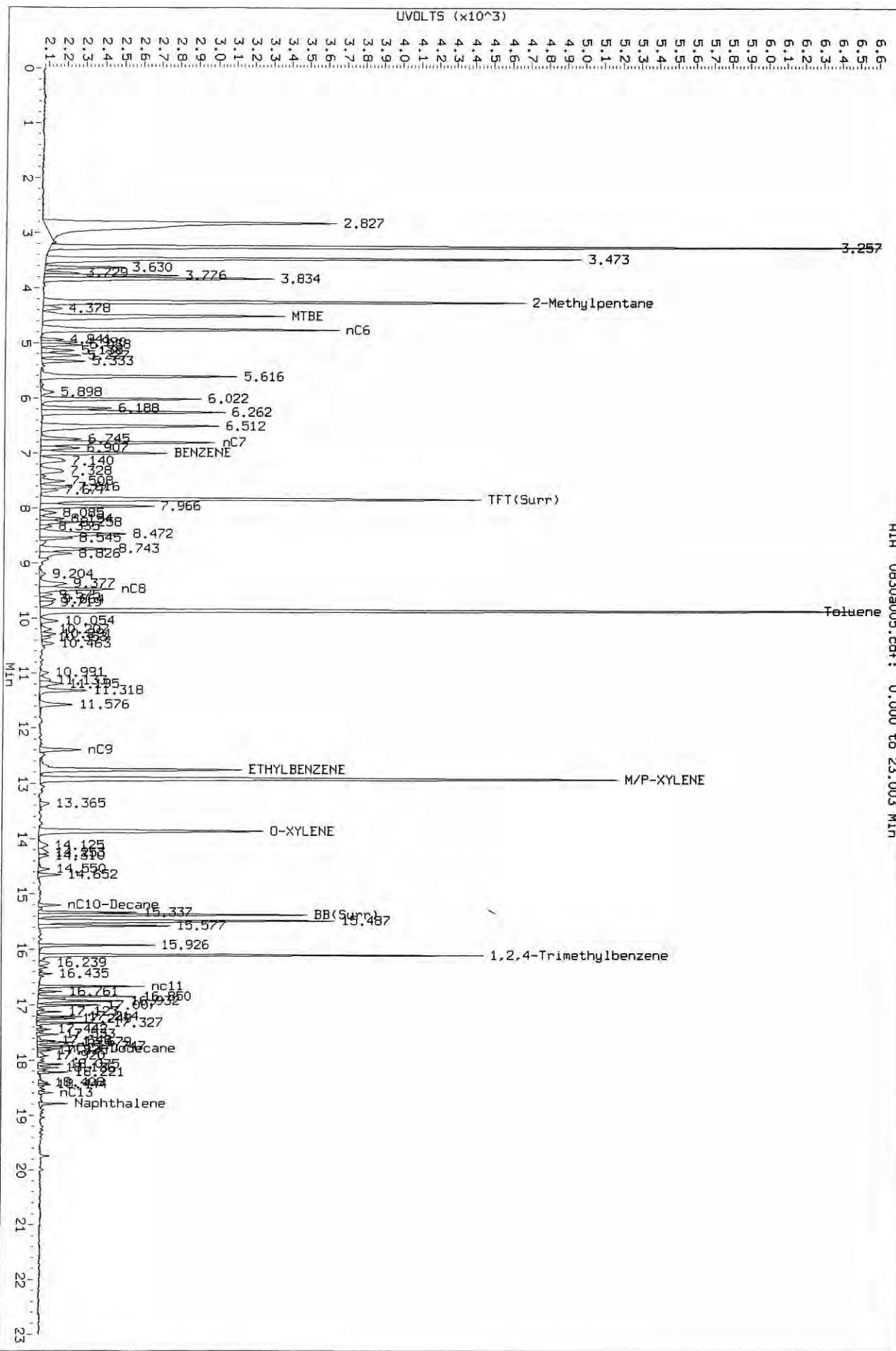
/chem3/pid1.i/20140830-2.b/0830a005.d/0830a005.cdf



RC  
9/2/14

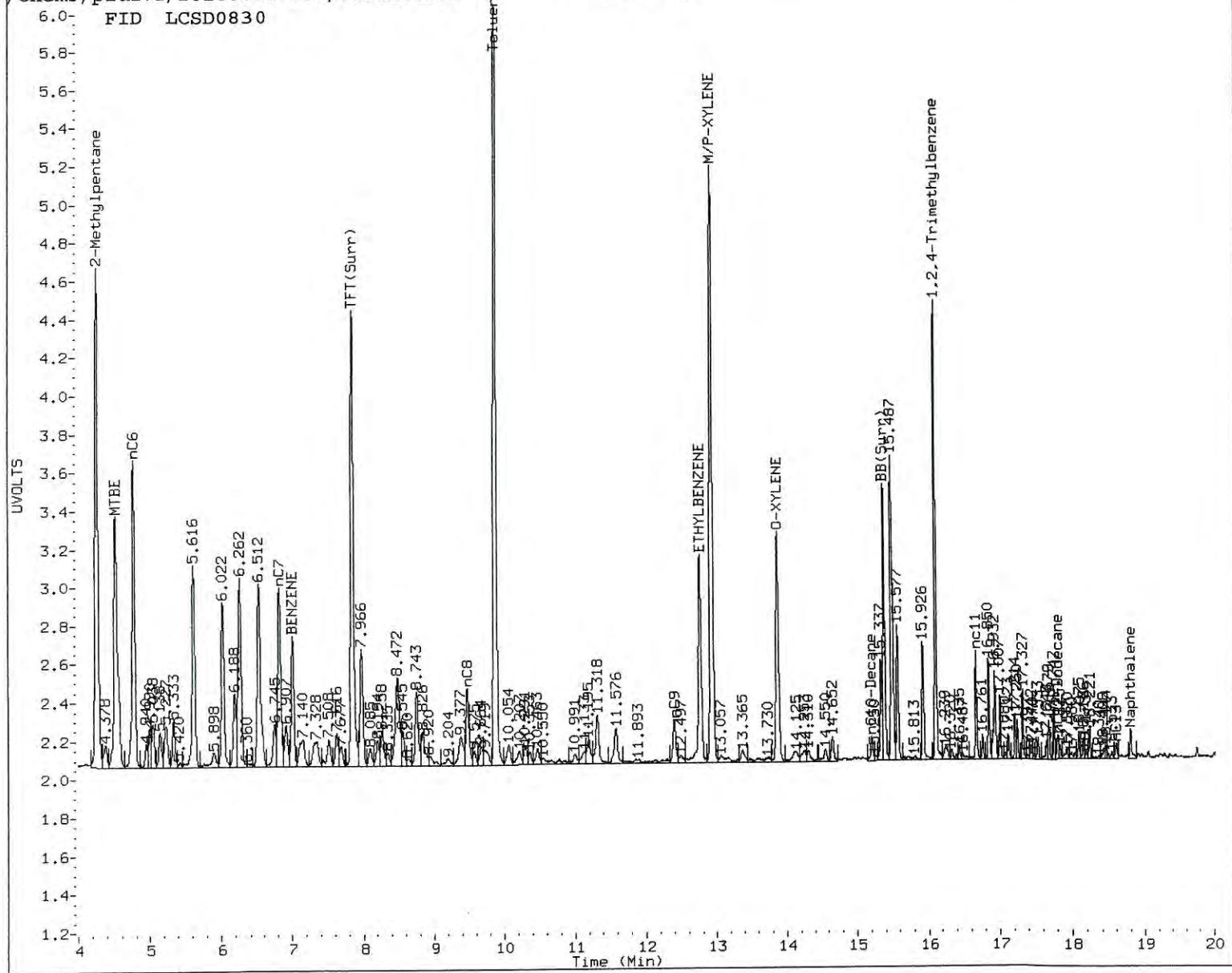
Data File: /chem3/pid1.i/20140830-1.b/0830a005.d/0830a005.cdf  
Injection Date: 30-AUG-2014 12:02  
Instrument: pid1.i  
Client Sample ID:

AIA 0830a005.cdf: 0.000 to 23.003 Min



/chem3/pid1.i/20140830-1.b/0830a005.d

AIA 0830a005.cdf



## MANUAL INTEGRATION

- 1. Baseline correction
  - 2. Poor chromatography
  - 3. Peak not found
  - 4. Totals calculation

## 5. Other

**Analyst:**

Date: 11/11/11

Analyst: JL Date: 11/27/14

1454-8992

PC  
9/2/14

Analytical Resources Inc.  
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/20140830-1.b/0830a006.d      ARI ID: MB0830  
 Data file 2: /chem3/pid1.i/20140830-2.b/0830a006.d      Client ID:  
 Method: /chem3/pid1.i/20140830-2.b/PIDB.m      Injection Date: 30-AUG-2014 12:31  
 Instrument: pid1.i      Matrix: WATER  
 Gas Ical Date: 01-AUG-2014      Dilution Factor: 1.000  
 BETX Ical Date: 01-AUG-2014  
 =====

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
--	-----	-----	---	---	-----
7.838	0.000	2325	29867	98.3	TFT (Surr)
15.380	0.000	1400	12726	96.6	BB (Surr)

PETROLEUM HYDROCARBONS (FID)

Range	RF	Total Area*	Amount
WAGas Tol-C12 ( 9.77 to 17.90)	255374	0	0.000
8015C 2MP-TMB ( 4.16 to 16.20)	464685	0	0.000
AK101 nC6-nC10 ( 4.66 to 15.10)	351052	0	0.000
NWTPHG Tol-Nap ( 9.77 to 18.89)	264430	0	0.000

M Indicates manual integration within range

\* Surrogate areas are subtracted from Total Area  
 Range marker RT's are set by daily RT standard

PID Surrogates				
RT	Shift	Response	%Rec	Compound
--	-----	-----	---	-----
7.841	0.001	3604	94.4	TFT (Surr)
15.383	0.001	7528	93.6	BB (Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
--	-----	-----	---	-----
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height

N Indicates peak was manually integrated

Data File: /chem3/pid1.i/20140830-1.b/0830a006.d

Date : 30-AUG-2014 12:31

Client ID:

Sample Info: MB0830

Page 1

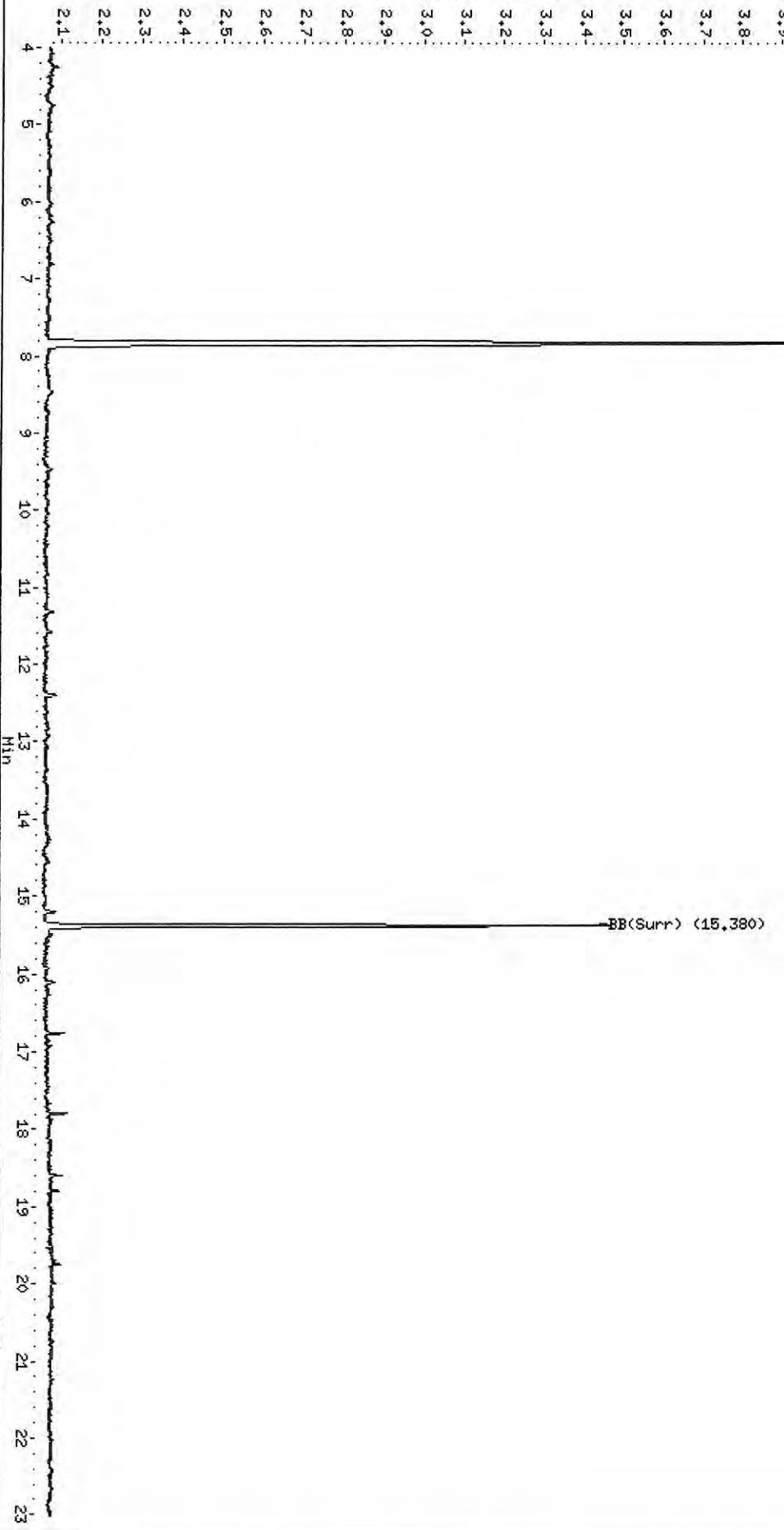
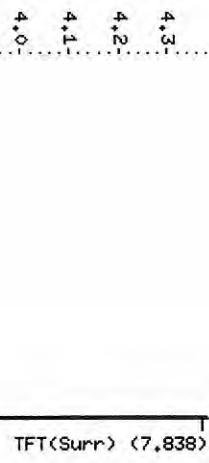
Instrument: pid1.i

Operator: PC

Column diameter: 0.18

/chem3/pid1.i/20140830-1.b/0830a006.d/0830a006.ofd

Column phase: RTX 502-2 FID



TA54:00030

Data File: /chem3/pid1.i/20140830-2.b/0830a006.d

Date : 30-AUG-2014 12:31

Client ID:

Sample Info: MB0830

Page 1

Instrument: pid1.i

Column phase: RTX 502-2 PID

Operator: PC  
Column diameter: 0.18

/chem3/pid1.i/20140830-2.b/0830a006.d/0830a006.ofd

BB(Surr) (15.383)

UVOLTS (<math>\times 10^3</math>)

-TFT(Surr) (7.841)

2.2 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

YASH 00031

Analytical Resources Inc.  
BETX/Gas Quantitation Report

*QH 9/3/14*

Data file 1: /chem3/pid1.i/20140830-1.b/0830a009.d      ART ID: YX54A  
 Data file 2: /chem3/pid1.i/20140830-2.b/0830a009.d      Client ID: MW-14  
 Method: /chem3/pid1.i/20140830-2.b/PIDB.m      Injection Date: 30-AUG-2014 14:20  
 Instrument: pid1.i      Matrix: WATER  
 Gas Ical Date: 01-AUG-2014      Dilution Factor: 1.000  
 BETX Ical Date: 01-AUG-2014  
 =====

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
--	-----	-----	-----	-----	-----
7.840	0.002	2521	35792	106.6	TFT (Surrogate)
15.380	0.000	1507	14934	104.0	BB (Surrogate)

PETROLEUM HYDROCARBONS (FID)

Range	RF	Total Area*	Amount
WAGas Tol-C12 ( 9.77 to 17.90)	255374	203186	0.796 M
8015C 2MP-TMB ( 4.16 to 16.20)	464685	248976	0.536 M
AK101 nC6-nC10 ( 4.66 to 15.10)	351052	203308	0.579 M
NWTPHG Tol-Nap ( 9.77 to 18.89)	264430	289946	1.096 M

M Indicates manual integration within range

\* Surrogate areas are subtracted from Total Area  
 Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
--	-----	-----	-----	-----
7.841	0.001	3901	102.2	TFT (Surrogate)
15.382	0.000	8089	100.6	BB (Surrogate)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
--	-----	-----	-----	-----
ND	---	---	---	Benzene
9.870	0.003	35	0.15N	Toluene
12.761	-0.001	207	1.07	Ethylbenzene
12.923	0.000	17	0.08N	M/P-Xylene
13.877	0.007	33	0.20N	O-Xylene
4.514	-0.006	101	1.12	MTBE

A Indicates Peak Area was used for quantitation instead of Height

N Indicates peak was manually integrated

Analytical Resources, Inc.

Data file : /chem3/pid1.i/20140830-1.b/0830a009.d  
Lab Smp Id: YX54A Client Smp ID: MW-14  
Inj Date : 30-AUG-2014 14:20  
Operator : PC Inst ID: pid1.i  
Smp Info : YX54A  
Misc Info : 14-17328  
Comment :  
Method : /chem3/pid1.i/20140830-1.b/FID.m  
Meth Date : 30-Aug-2014 11:56 paul Quant Type: ESTD  
Cal Date : 30-AUG-2014 10:34 Cal File: 0830a002.d  
Als bottle: 1  
Dil Factor: 1.00000  
Integrator: HP Genie Compound Sublist: standard.sub  
Target Version: 3.50

Concentration Formula: Amt \* DF \* CpndVariable

Cpnd Variable Local Compound Variable

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS	
					ON-COLUMN (ng/mL)	FINAL (ug/L)
5 2-Methylpentane	4.253	4.261	-0.008	477		(M)
6 MTBE	4.513	4.519	-0.006	7705	13.8924	13.89 (M)
8 nC7	6.840	6.807	0.033	261		(M)
\$ 10 TFT(Surr)	7.840	7.838	0.002	2521	106.560	106.6 (M)
12 Toluene	9.923	9.866	0.057	1883	1.75770	1.76 (M)
13 nC9	12.370	12.396	-0.026	80		(M)
14 ETHYLBENZENE	12.757	12.760	-0.003	2358	2.38346	2.38 (M)
16 O-XYLENE	13.870	13.868	0.002	1245	1.18345	1.18 (M)
17 nC10-Decane	15.210	15.203	0.007	55		(M)
\$ 18 BB(Surr)	15.380	15.380	0.000	1507	104.026	104.0 (M)
20 1,2,4-Trimethylbenzene	16.103	16.104	-0.001	1029		(M)
21 nc11	16.667	16.701	-0.034	246		(M)
22 nC12-Dodecane	17.783	17.796	-0.013	263		(M)
23 nC13	18.583	18.596	-0.013	974		(M)
24 Naphthalene	18.793	18.793	0.000	209		(M)

QC Flag Legend

M - Compound response manually integrated.

Date : 30-AUG-2014 14:20

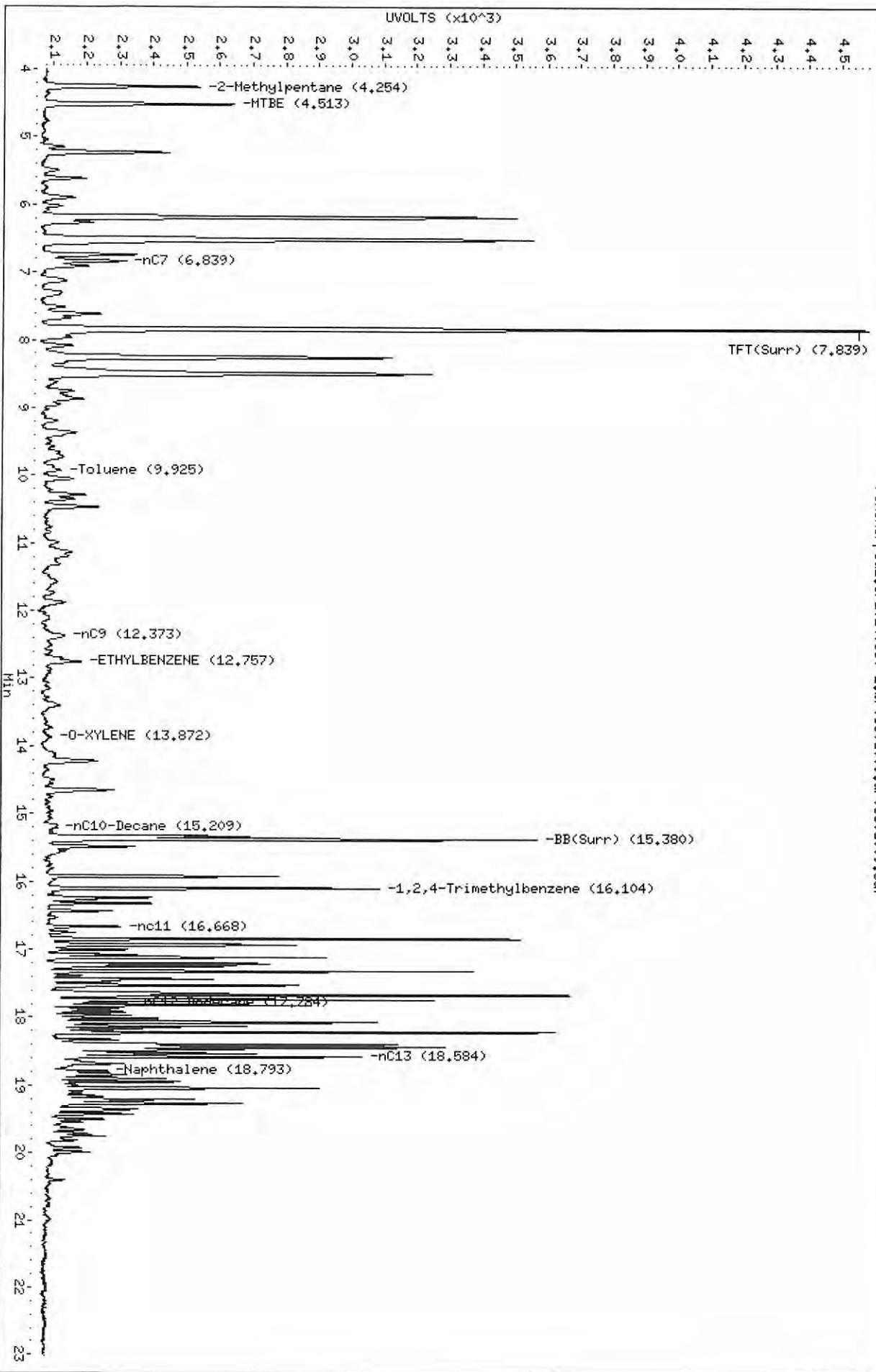
Client ID: MN-14

Sample Info: YX54A

Instrument: pid1.i

Operator: PC  
Column diameter: 0.18

/chem3/pid1.i/20140830-1.b/0830a009.d/0830a009.ofd



Data File: /chem3/pid1.i/20140830-2.b/0830a009.d

Date : 30-AUG-2014 14:20

Client ID: HN-14

Sample Info: YX54A

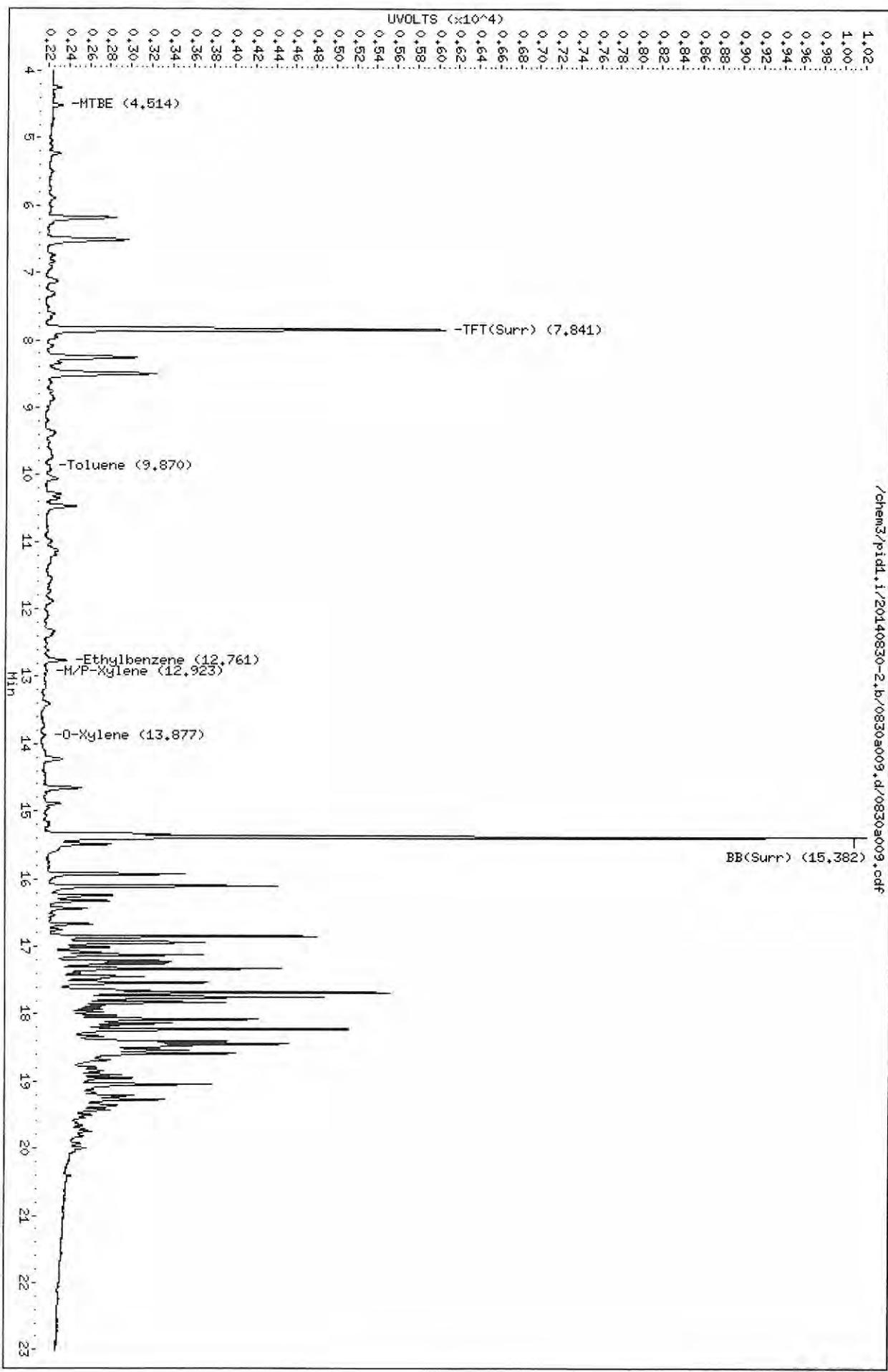
Page 1

Instrument: pid1.i

Column phase: RTX 502-2 PID

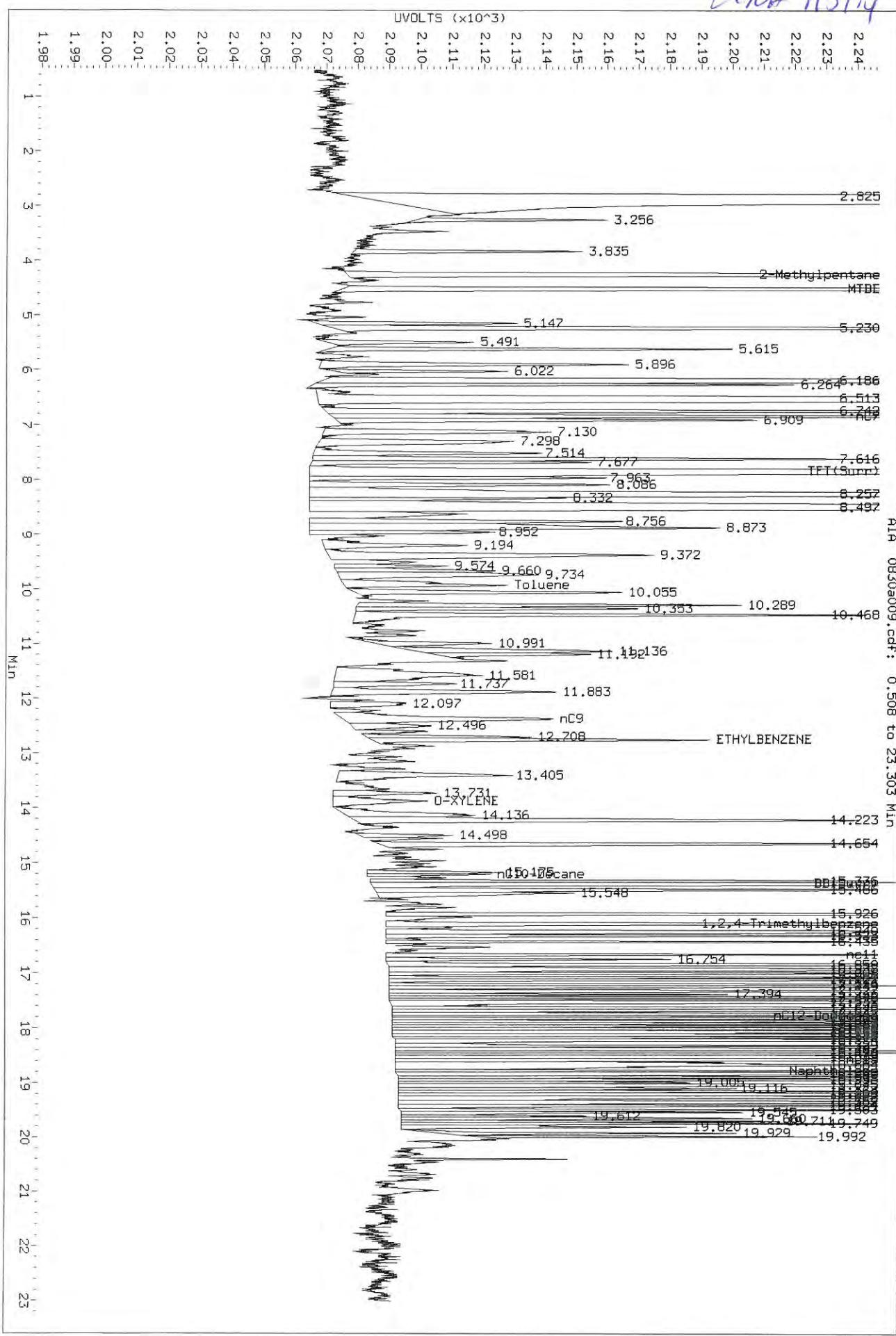
Operator: PC  
Column diameter: 0.18

/chem3/pid1.i/20140830-2.b/0830a009.d/0830a009.cdf

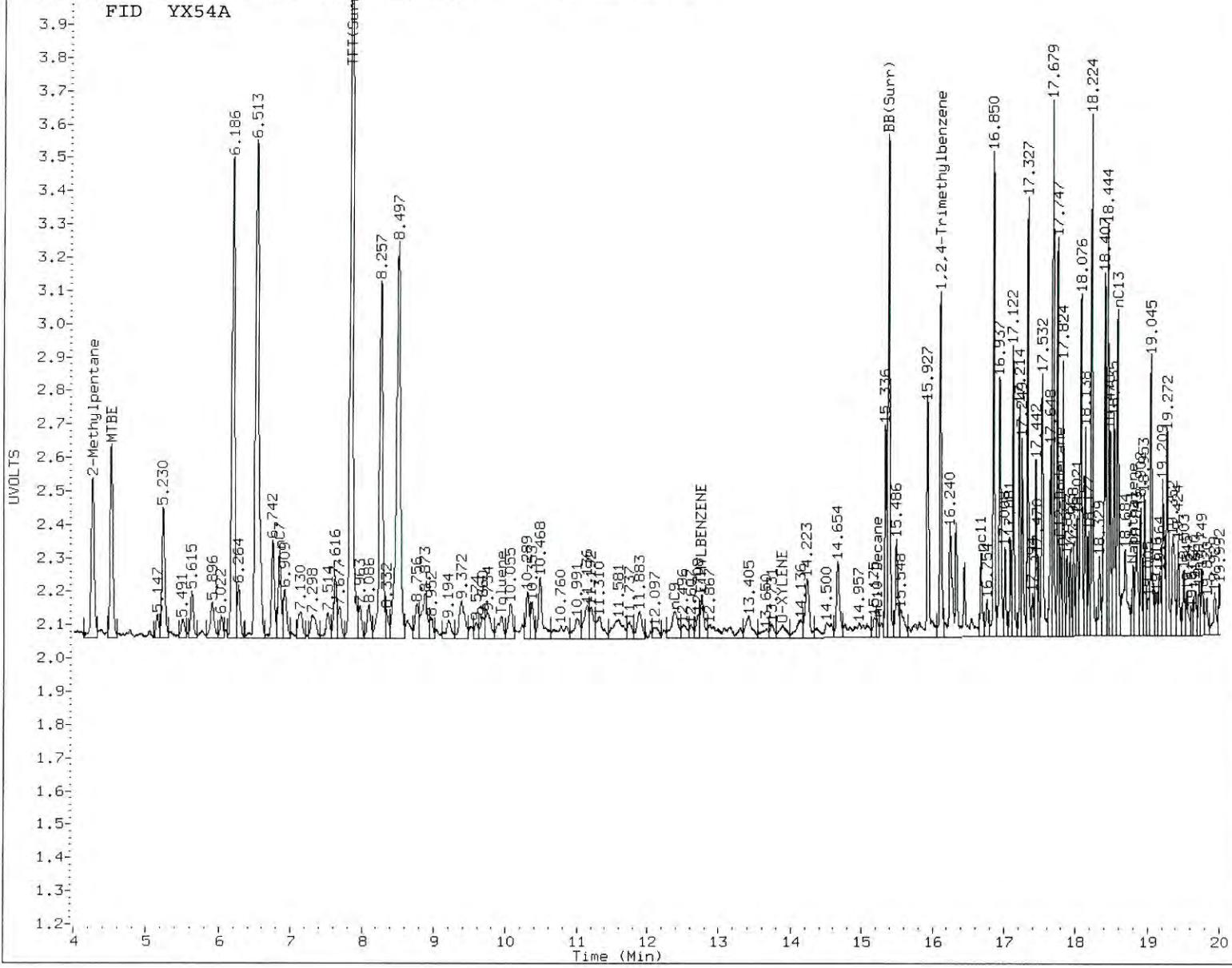


Aug 9/31/14

Data File: /chem3/pid1.i/20140830-1.b/0830a009.d/0830a009.cdf  
Injection Date: 30-AUG-2014 14:20  
Instrument: pid1.i  
Client Sample ID: MW-14



FID YX54A



## MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

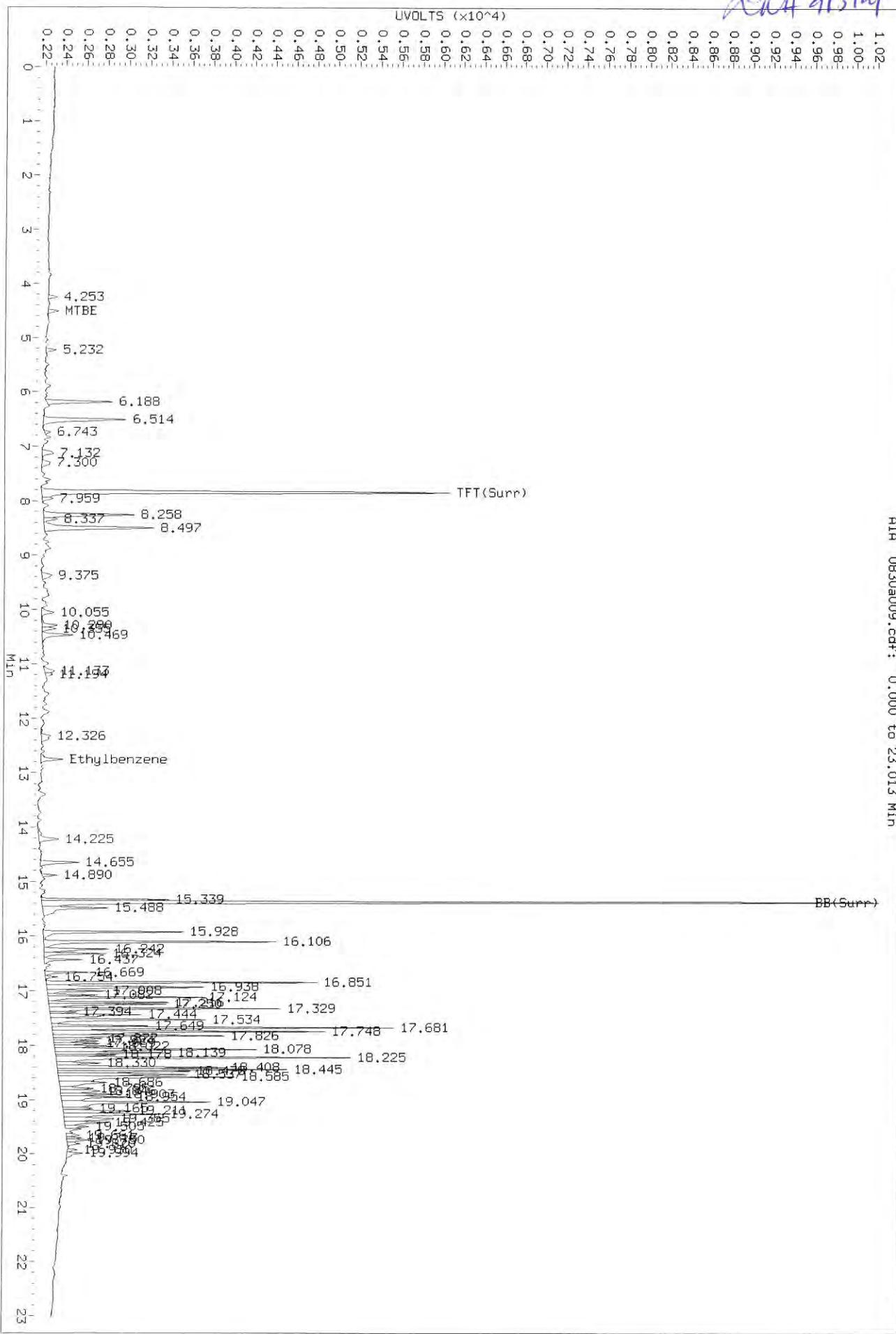
5. Other \_\_\_\_\_

Analyst: YX54Date: 9/3/14

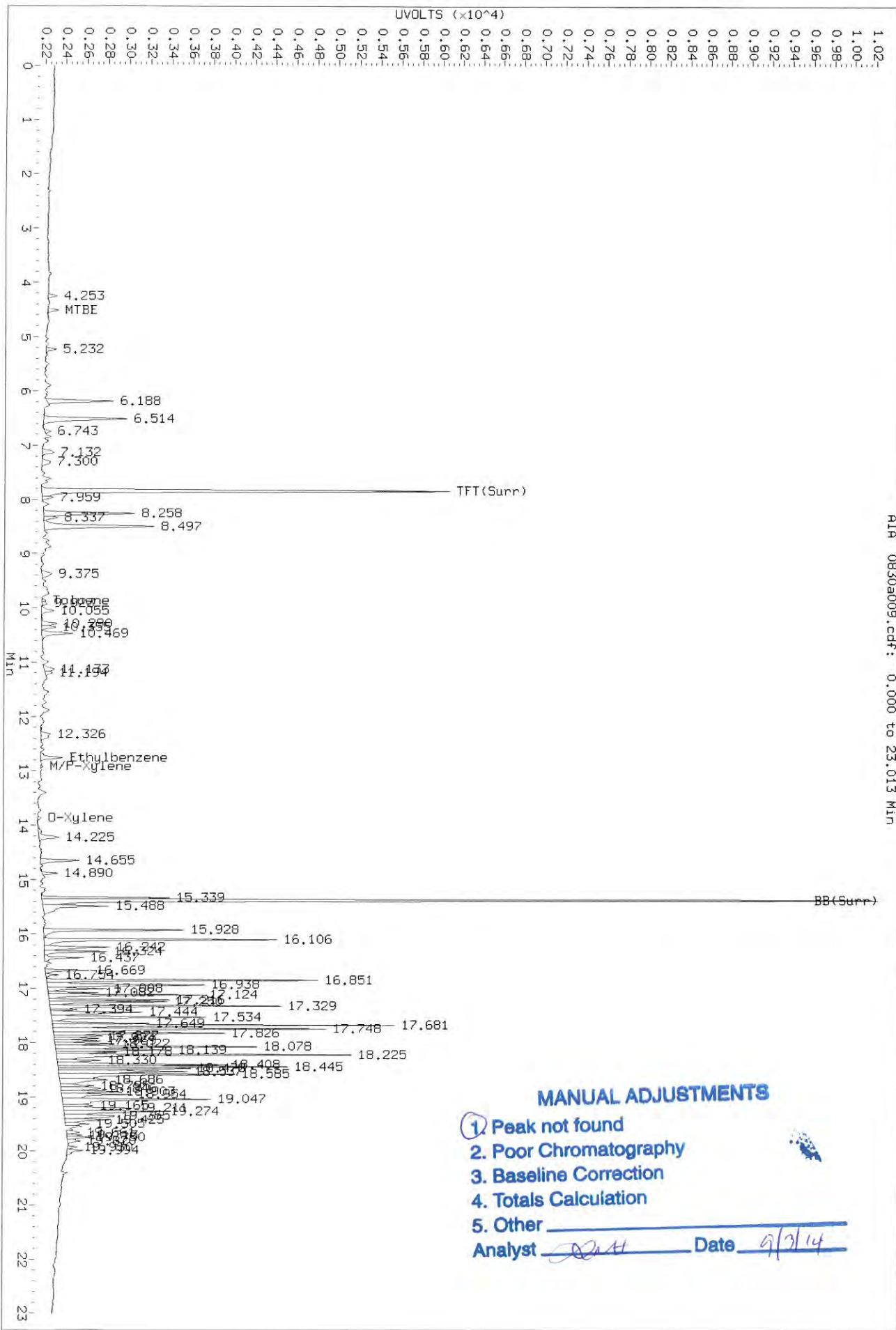
ANH 9131W

Data File: /chem3/pid1.1/20140830-2.b/0830aa009.d/0830aa009.cdf  
Injection Date: 30-AUG-2014 14:20  
Instrument: pid1.1  
Client Sample ID: MW-14

AIA 0830aa009.cdf: 0.000 to 23.013 Min



Data File: /chem3/pid1.i/20140830-2.b/0830a009.d/0830a009.cdf  
Injection Date: 30-AUG-2014 14:20  
Instrument: pid1.i  
Client Sample ID: Mu-14



LMT 9/31/14

Analytical Resources Inc.  
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/20140830-1.b/0830a010.d      ARI ID: YX54B  
Data file 2: /chem3/pid1.i/20140830-2.b/0830a010.d      Client ID: MW-4R  
Method: /chem3/pid1.i/20140830-2.b/PIDB.m      Injection Date: 30-AUG-2014 14:49  
Instrument: pid1.i      Matrix: WATER  
Gas Ical Date: 01-AUG-2014      Dilution Factor: 1.000  
BETX Ical Date: 01-AUG-2014  
=====

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
--	-----	-----	---	---	-----
7.839	0.001	2418	31135	102.2	TFT (Surr)
15.381	0.001	1435	13127	99.1	BB (Surr)

PETROLEUM HYDROCARBONS (FID)

Range	RF	Total Area*	Amount
WAGas Tol-C12 ( 9.77 to 17.90)	255374	0	0.000
8015C 2MP-TMB ( 4.16 to 16.20)	464685	2165	0.005
AK101 nC6-nC10 ( 4.66 to 15.10)	351052	2165	0.006
NWTPHG Tol-Nap ( 9.77 to 18.89)	264430	871	0.003

M Indicates manual integration within range

\* Surrogate areas are subtracted from Total Area  
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
--	-----	-----	---	-----
7.841	0.001	3759	98.5	TFT (Surr)
15.383	0.001	7706	95.8	BB (Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
--	-----	-----	---	-----
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height  
N Indicates peak was manually integrated

Data File: /chem3/pid1.i/20140830-1.b/0830a010.d

Date : 30-AUG-2014 14:49

Client ID: HHL-4R

Sample Info: YX54B

Page 1

Instrument: pid1.i

Operator: PC

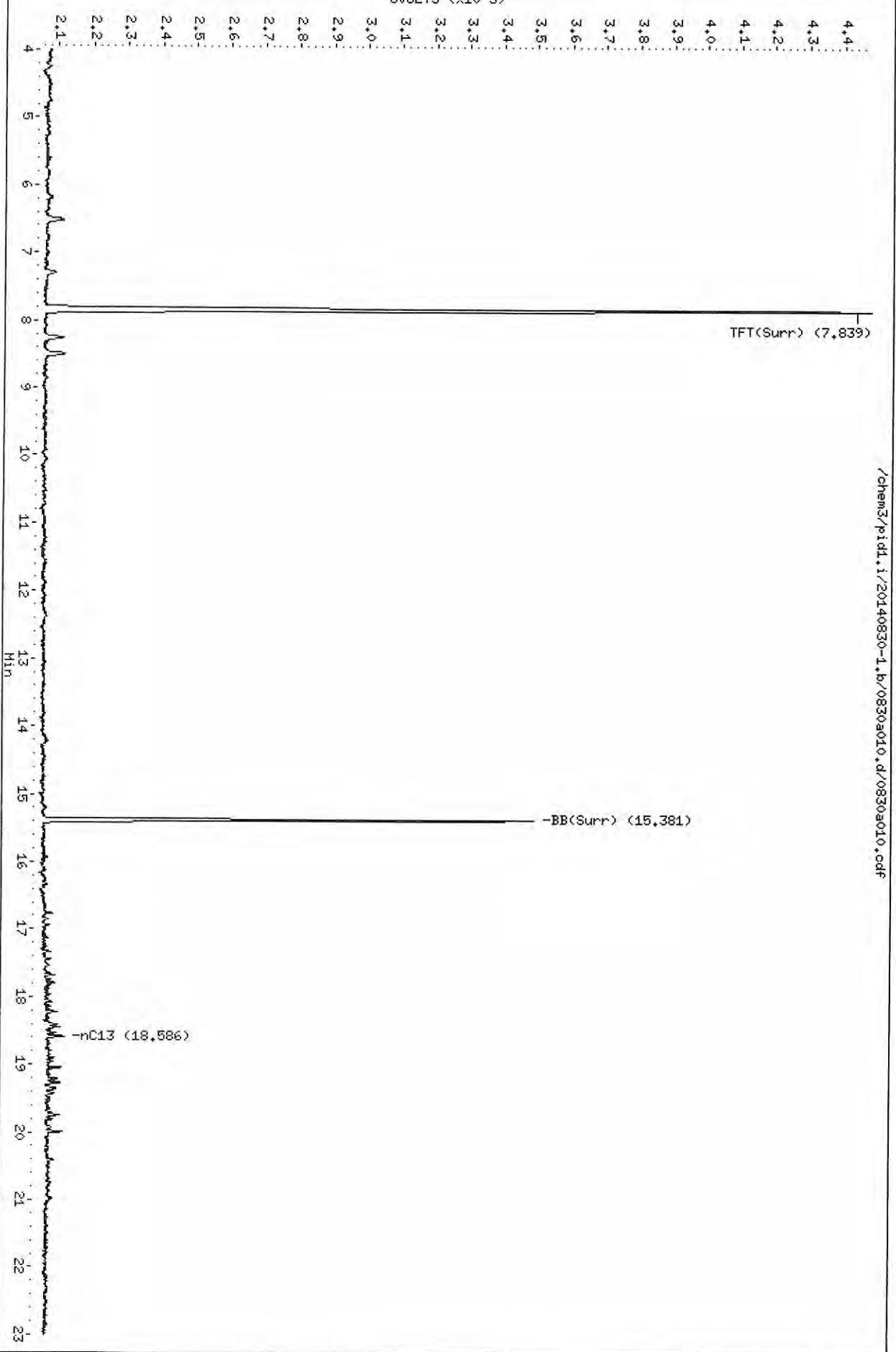
Column diameter: 0.18

/chem3/pid1.i/20140830-1.b/0830a010.d/0830a010.pdf

TFT(Surr) (7.839)

-BB(Surr) (15.381)

-nC13 (18.586)



Data File: /chem3/pid1.i/20140830-2.b/0830a010.d

Page 1

Date : 30-AUG-2014 14:49

Client ID: HM-4R

Sample Info: YX54B

Column phase: RTX 502-2 PID

Instrument: pid1.i

Operator: PC

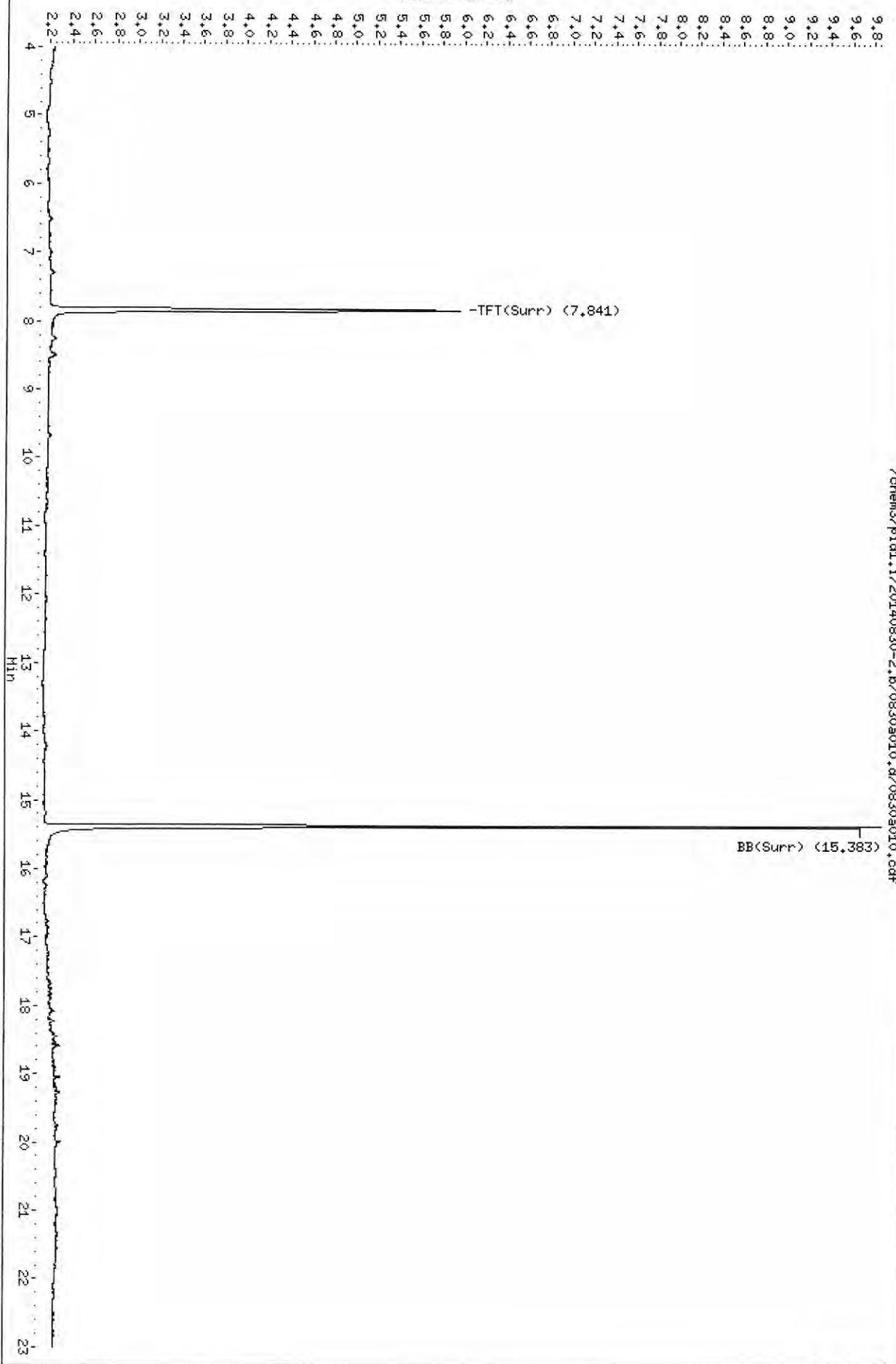
Column diameter: 0.18

/chem3/pid1.i/20140830-2.b/0830a010.d/0830a010.cdf

BB(Surr) (15,383)

-TFT(Surr) (7,841)

UVOLTS (<math>\times 10^3</math>)



Ran 9/3/14

Analytical Resources Inc.  
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/20140830-1.b/0830a011.d      ARI ID: YX54C  
 Data file 2: /chem3/pid1.i/20140830-2.b/0830a011.d      Client ID: MW-13  
 Method: /chem3/pid1.i/20140830-2.b/PIDB.m      Injection Date: 30-AUG-2014 15:19  
 Instrument: pid1.i      Matrix: WATER  
 Gas Ical Date: 01-AUG-2014      Dilution Factor: 1.000  
 BETX Ical Date: 01-AUG-2014  
 =====

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
--	-----	-----	-----	-----	-----
7.839	0.001	2462	31785	104.1	TFT (Surrogate) ✓
15.381	0.001	1483	13603	102.4	BB (Surrogate)

PETROLEUM HYDROCARBONS (FID)

Range	RF	Total Area*	Amount
WAGas Tol-C12 ( 9.77 to 17.90)	255374	0	0.000
8015C 2MP-TMB ( 4.16 to 16.20)	464685	0	0.000
AK101 nC6-nC10 ( 4.66 to 15.10)	351052	0	0.000
NWTPHG Tol-Nap ( 9.77 to 18.89)	264430	0	0.000

M Indicates manual integration within range

\* Surrogate areas are subtracted from Total Area  
 Range marker RT's are set by daily RT standard

PID Surrogates				
RT	Shift	Response	%Rec	Compound
--	-----	-----	-----	-----
7.841	0.001	3826	100.3	TFT (Surrogate) ✓
15.383	0.001	7959	98.9	BB (Surrogate)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
--	-----	-----	-----	-----
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height  
 N Indicates peak was manually integrated

Data File: /chem3/pid1.i/20140830-1.b/0830a011.d

Date : 30-AUG-2014 15:19

Client ID: HM-13

Sample Info: YX54C

Page 1

Instrument: pid1.i

Operator: PC

Column diameter: 0.18

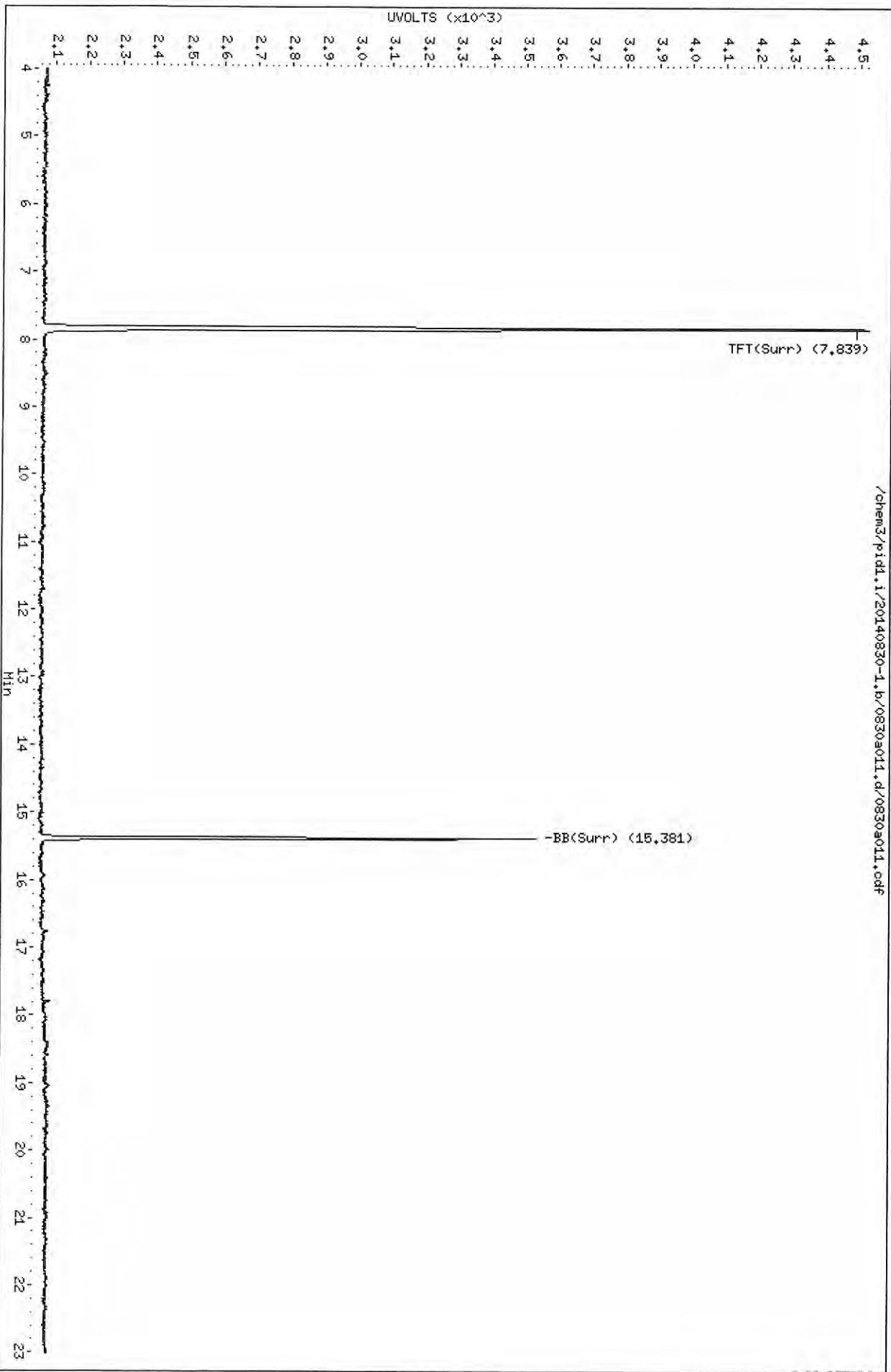
/chem3/pid1.i/20140830-1.b/0830a011.d/0830a011.cdf

UVOLTS ( $\times 10^3$ )

4.5  
4.4  
4.3  
4.2  
4.1  
4.0  
3.9  
3.8  
3.7  
3.6  
3.5  
3.4  
3.3  
3.2  
3.1  
3.0  
2.9  
2.8  
2.7  
2.6  
2.5  
2.4  
2.3  
2.2  
2.1  
2.0  
1.9  
1.8  
1.7  
1.6  
1.5  
1.4  
1.3  
1.2  
1.1  
1.0  
0.9  
0.8  
0.7  
0.6  
0.5  
0.4  
0.3  
0.2  
0.1  
0.0

TFT(Surr) (7,839)

-BB(Surr) (15,381)



Data File: /chem3/pid1.i;20140830-2.b/0830a011.d  
Date : 30-08-2014 15:19

Page  
1

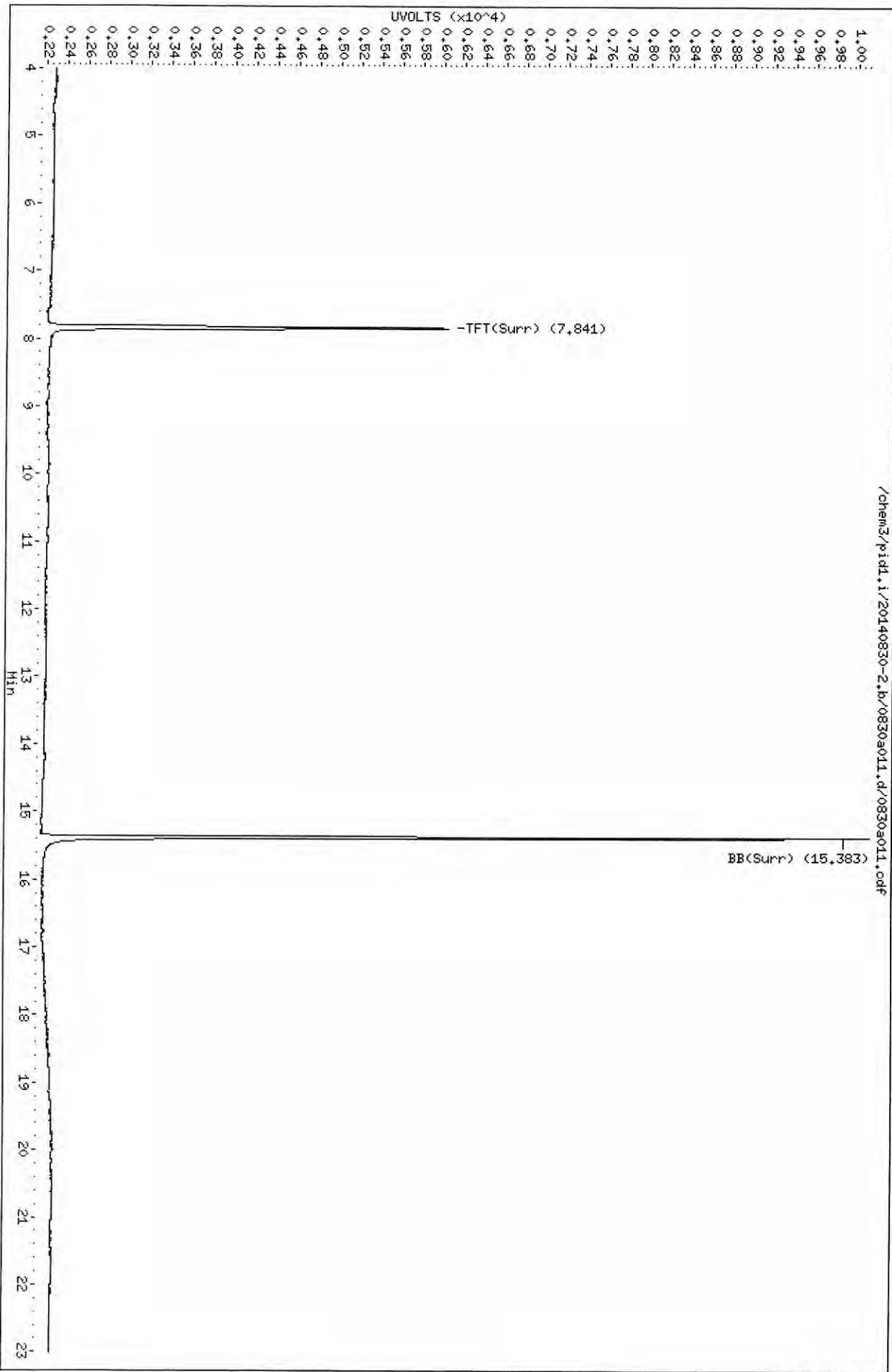
Client ID: MM-13  
Sample Info: YX54C

Instrument: pid1+1

Column phase: RTX 502-2 PID

Operator: PC  
Column diameter: 0.18

/chem3/pid1.i/20140830-2.b/0830a011.d/0830a011.cdf



XH 9/3/14

Analytical Resources Inc.  
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/20140830-1.b/0830a012.d      ARI ID: YX54D  
 Data file 2: /chem3/pid1.i/20140830-2.b/0830a012.d      Client ID: MW-6  
 Method: /chem3/pid1.i/20140830-2.b/PIDB.m      Injection Date: 30-AUG-2014 15:48  
 Instrument: pid1.i      Matrix: WATER  
 Gas Ical Date: 01-AUG-2014      Dilution Factor: 1.000  
 BETX Ical Date: 01-AUG-2014  
 =====

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
--	-----	-----	-----	-----	-----
7.840	0.002	2481	35033	104.9	TFT (Surr)

15.380	0.000	1449	14062	100.0	BB (Surr)
--------	-------	------	-------	-------	-----------

PETROLEUM HYDROCARBONS (FID)

Range	RF	Total Area*	Amount
WAGas Tol-C12 ( 9.77 to 17.90)	255374	68446	0.268 M
8015C 2MP-TMB ( 4.16 to 16.20)	464685	124722	0.268 M
AK101 nC6-nC10 ( 4.66 to 15.10)	351052	119852	0.341 M
NWTPHG Tol-Nap ( 9.77 to 18.89)	264430	98838	0.374 M

M Indicates manual integration within range

\* Surrogate areas are subtracted from Total Area  
 Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
--	-----	-----	-----	-----
7.841	0.001	3819	100.1	TFT (Surr)

15.383	0.001	7764	96.5	BB (Surr)
--------	-------	------	------	-----------

SW8021 (PID)

RT	Shift	Response	Amount	Compound
--	-----	-----	-----	-----
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height

N Indicates peak was manually integrated

Data File: /chem3/pid1.i/20140830-1.b/0830a012.d

Date : 30-AUG-2014 15:48

Client ID: MU-6

Sample Info: YX54D

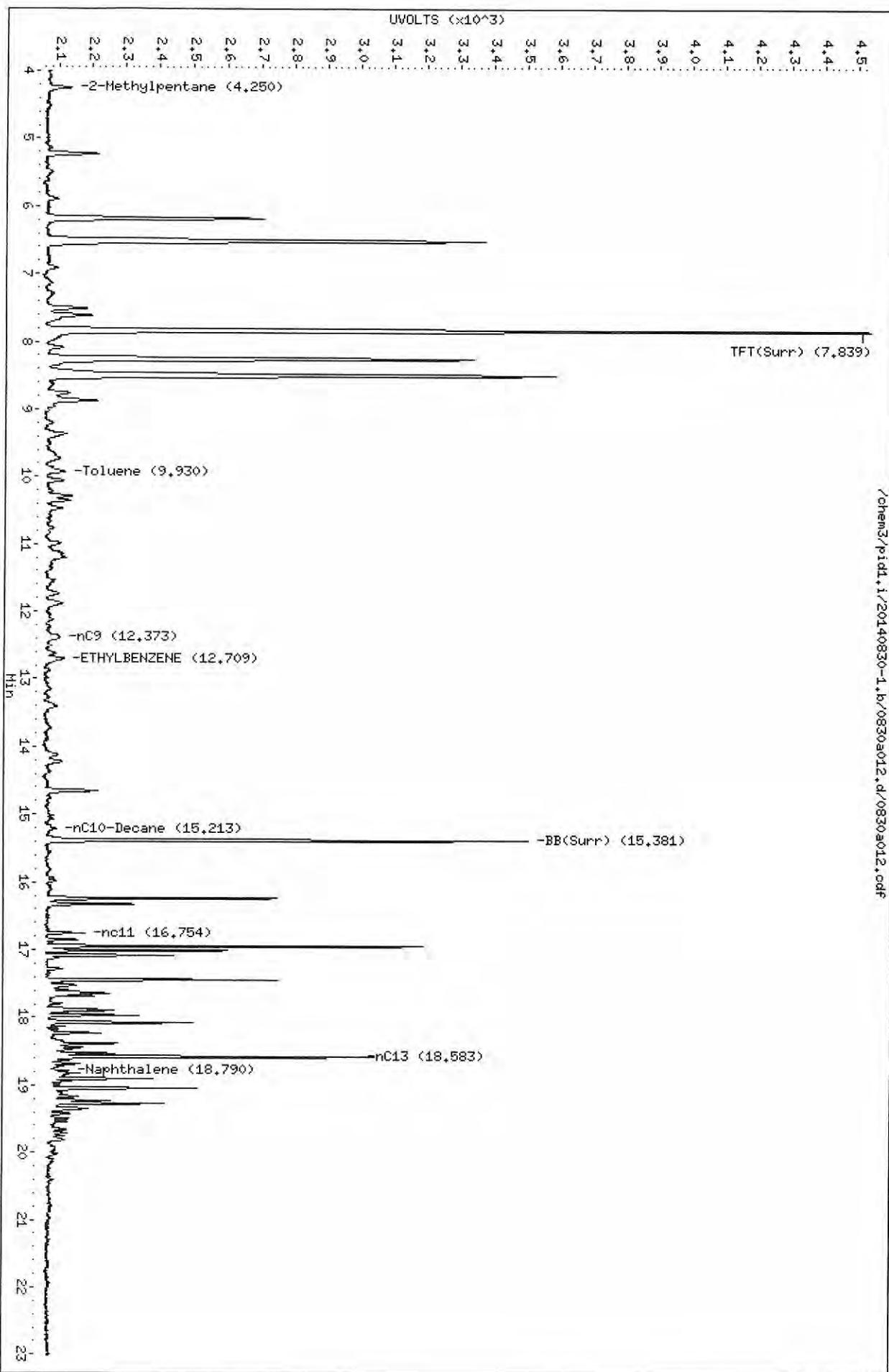
Page 1

Instrument: pid1.i

Column phase: RTX 502-2 FID

Operator: PC  
Column diameter: 0.18

/chem3/pid1.i/20140830-1.b/0830a012.d/0830a012.ofd



Data File: /chem3/pid1.i/20140830-2.b/0830a012.d

Date : 30-AUG-2014 15:48

Client ID: HM-6

Sample Info: YX54D

Page 1

Instrument: pid1.i

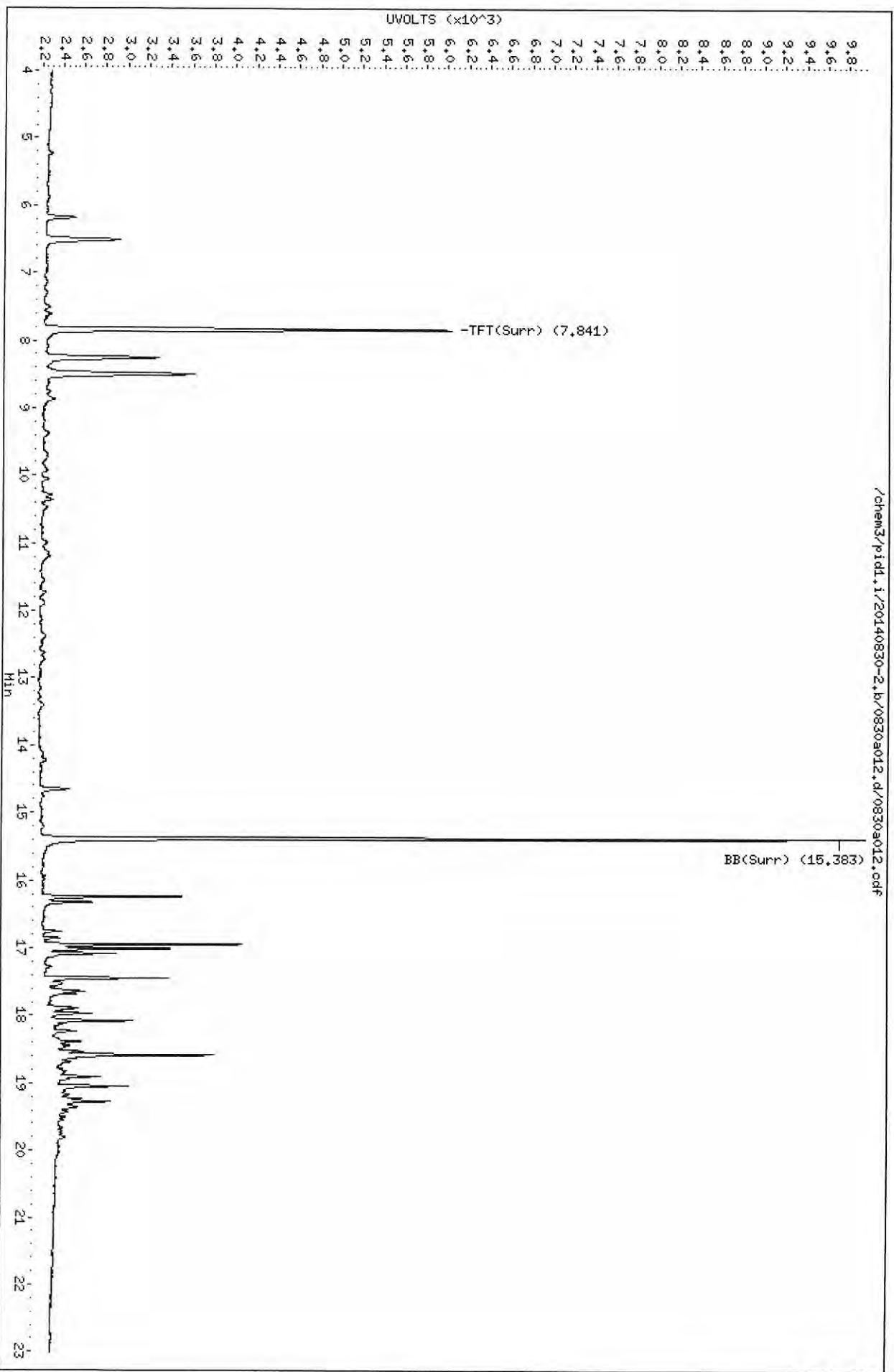
Operator: PC  
Column diameter: 0.18

/chem3/pid1.i/20140830-2.b/0830a012.d/0830a012.ofd

UVOLTS ( $\times 10^3$ )  
9.8  
9.6  
9.4  
9.2  
9.0  
8.8  
8.6  
8.4  
8.2  
8.0  
7.8  
7.6  
7.4  
7.2  
7.0  
6.8  
6.6  
6.4  
6.2  
6.0  
5.8  
5.6  
5.4  
5.2  
5.0  
4.8  
4.6  
4.4  
4.2  
4.0  
3.8  
3.6  
3.4  
3.2  
3.0  
2.8  
2.6  
2.4  
2.2  
2.0  
1.8  
1.6  
1.4  
1.2  
1.0  
0.8  
0.6  
0.4  
0.2  
0.0

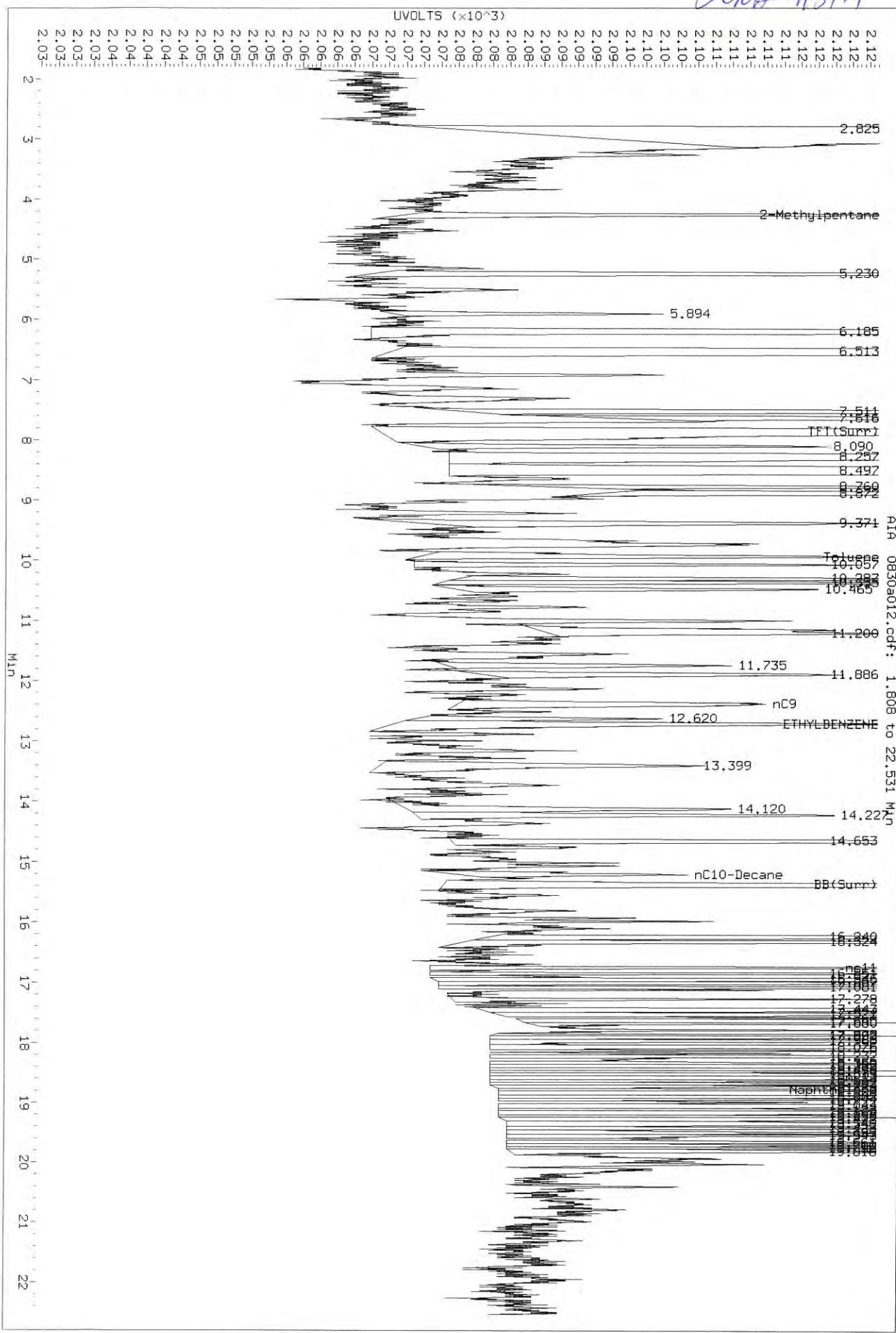
-TFT(Surr) (7.841)

BB(Surr) (15.383)

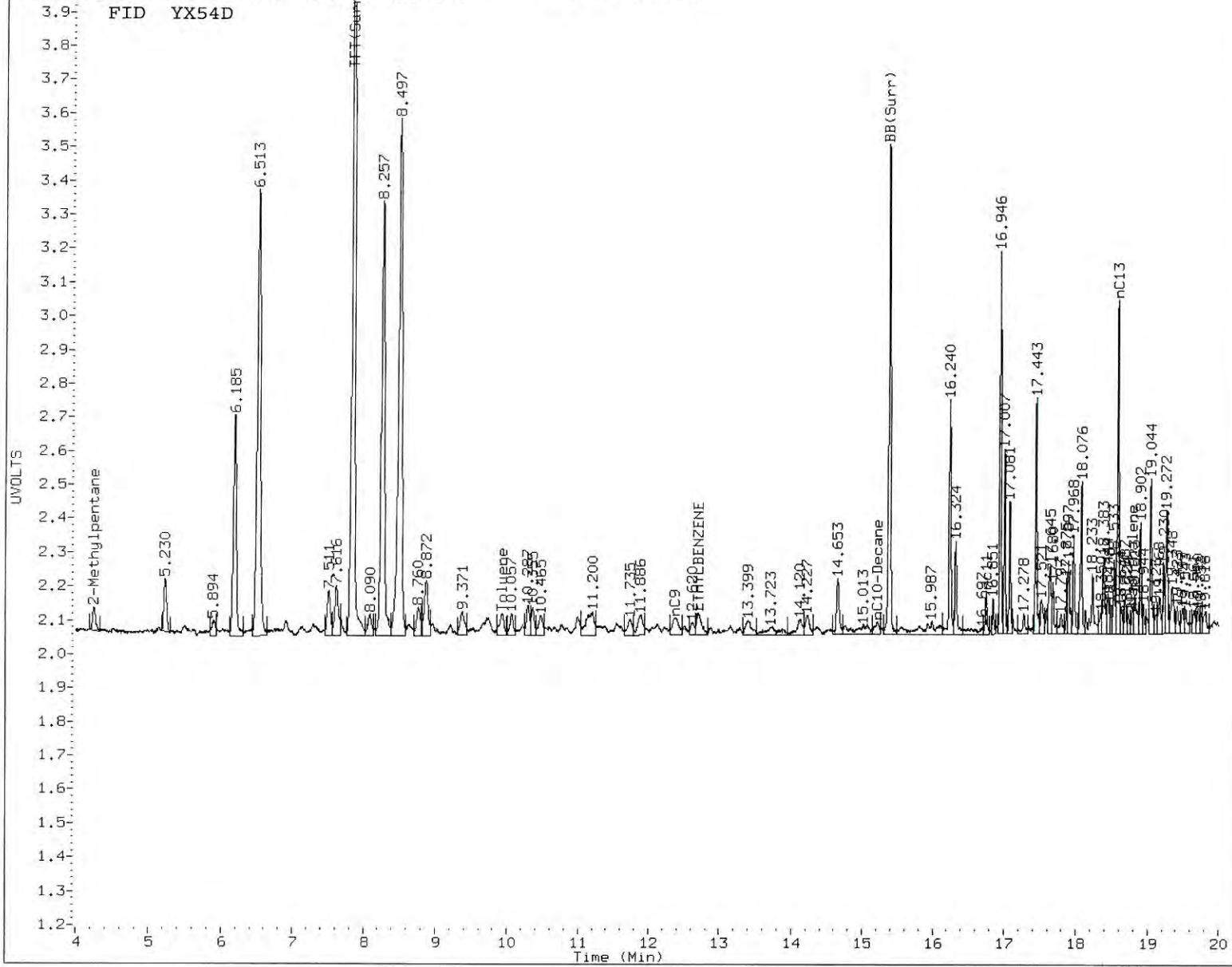


DMZ 9/3/14

Data File: /chem3/pidi1.i/20140830-1.b/0830a012.d/0830a012.cdf  
Injection Date: 30-AUG-2014 15:48  
Instrument: pidi1  
Client Sample ID: MMJ-6



YX54 : 000045



## MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation
5. Other \_\_\_\_\_

Analyst: YNTDate: 9/3/14

*Am 9/3/14*

Analytical Resources Inc.  
BETX/Gas Quantitation Report

Data file 1: /chem3/pid1.i/20140830-1.b/0830a007.d      ARI ID: YX54E  
 Data file 2: /chem3/pid1.i/20140830-2.b/0830a007.d      Client ID: TB  
 Method: /chem3/pid1.i/20140830-2.b/PIDB.m      Injection Date: 30-AUG-2014 13:22  
 Instrument: pid1.i      Matrix: WATER  
 Gas Ical Date: 01-AUG-2014      Dilution Factor: 1.000  
 BETX Ical Date: 01-AUG-2014  
 =====

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
--	---	---	---	---	-----
7.841	0.003	2447	31467	103.4	TFT (Surr) /
15.382	0.002	1460	13310	100.8	BB (Surr)

PETROLEUM HYDROCARBONS (FID)

Range	RF	Total Area*	Amount
WAGas Tol-C12 ( 9.77 to 17.90)	255374	0	0.000
8015C 2MP-TMB ( 4.16 to 16.20)	464685	1	0.000
AK101 nC6-nC10 ( 4.66 to 15.10)	351052	1	0.000
NWTPHG Tol-Nap ( 9.77 to 18.89)	264430	0	0.000

M Indicates manual integration within range

\* Surrogate areas are subtracted from Total Area  
 Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
--	---	---	---	-----
7.843	0.003	3866	101.3	TFT (Surr) /
15.385	0.003	7855	97.6	BB (Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
--	---	---	---	-----
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

A Indicates Peak Area was used for quantitation instead of Height

N Indicates peak was manually integrated

Data File: /chem3/pid1.i/20140830-1.b/0830a007.d

Date : 30-AUG-2014 13:22

Client ID: TB

Sample Info: YX54E

Page 1

Instrument: pid1.i

Operator: PC  
Column diameter: 0.18

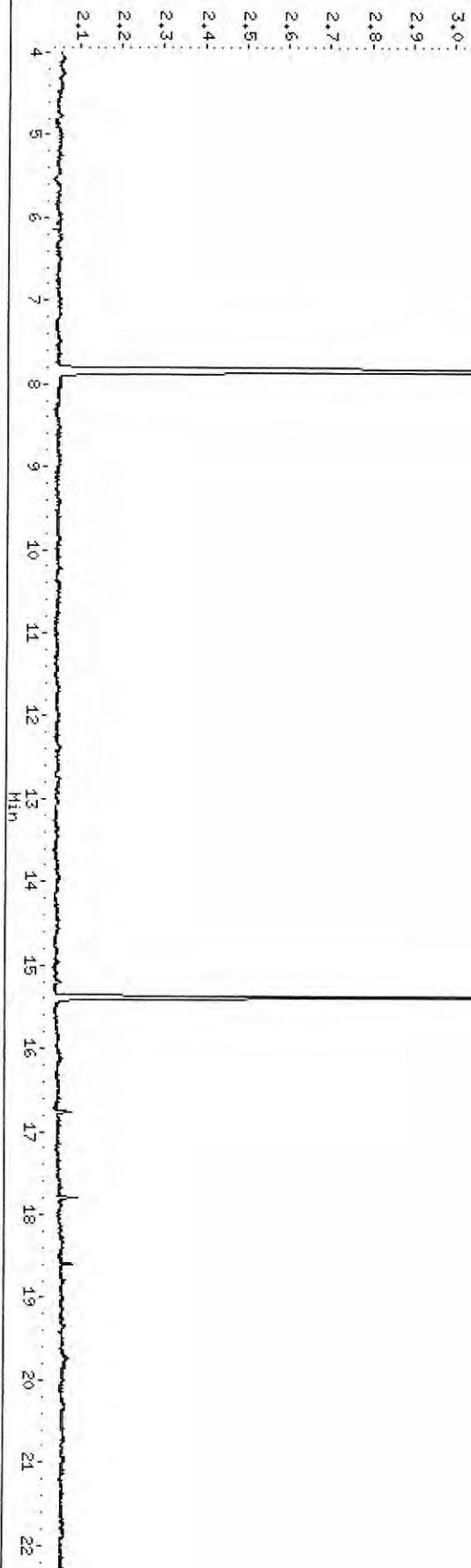
/chem3/pid1.i/20140830-1.b/0830a007.d/0830a007.cdf

Column phase: RTX 502-2 FID

TFT(Surr) (7.841)

-BB(Surr) (15.382)

UVOLTS (<math>\times 10^3</math>)



Data File: /chem3/pid1.i/20140830-2.b/0830a007.d

Page 1

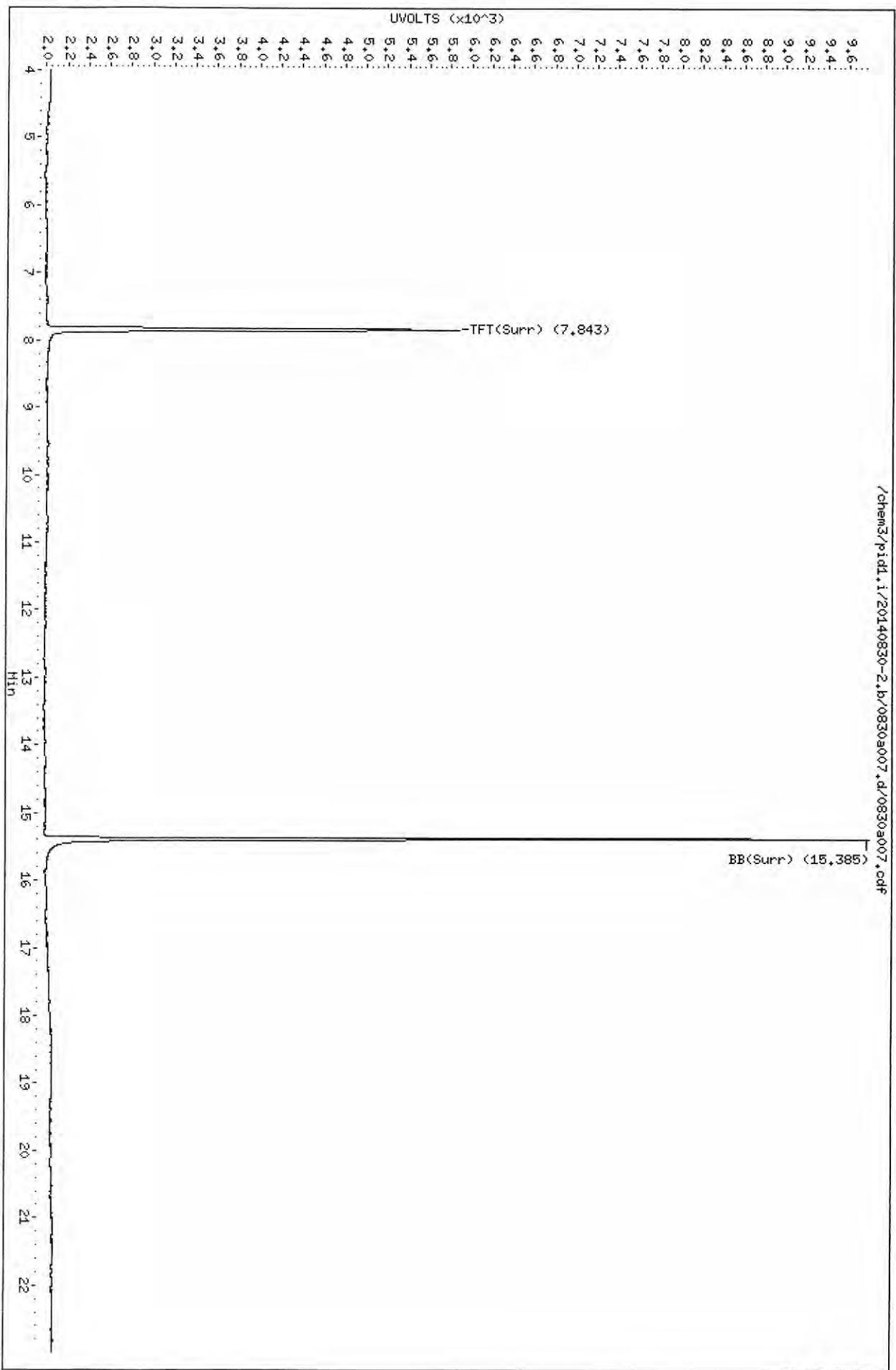
Date : 30-AUG-2014 13:22  
Client ID: TB  
Sample Info: YX54E

Instrument: pick1.i

Column phase: RTX 502-2 PIM

Operator: PC  
Column diameter: 0.18

/chem3/pid1.i/20140830-2.b/0830a007.d/0830a007.cdf#



SAMPLE RESULTS-CONVENTIONALS  
YX54-Hart Crowser Inc.

ANALYTICAL  
RESOURCES  
INCORPORATED

Matrix: Water  
Data Release Authorized:  
Reported: 08/28/14

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: 08/21/14  
Date Received: 08/22/14

Client ID: MW-14  
ARI ID: 14-17328 YX54A

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	08/23/14 082314#1	EPA 300.0	mg-N/L	0.1	0.2
Sulfate	08/23/14 082314#1	EPA 300.0	mg/L	0.5	18.7

RL Analytical reporting limit

U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS  
YX54-Hart Crowser Inc.

ANALYTICAL  
RESOURCES  
INCORPORATED

Matrix: Water  
Data Release Authorized:  
Reported: 08/28/14

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: 08/21/14  
Date Received: 08/22/14

Client ID: MW-4R  
ARI ID: 14-17329 YX54B

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	08/23/14 082314#1	EPA 300.0	mg-N/L	0.1	0.1
Sulfate	08/23/14 082314#1	EPA 300.0	mg/L	0.5	11.0

RL Analytical reporting limit

U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS  
YX54-Hart Crowser Inc.

ANALYTICAL  
RESOURCES  
INCORPORATED

Matrix: Water  
Data Release Authorized:  
Reported: 08/28/14

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: 08/21/14  
Date Received: 08/22/14

Client ID: MW-13  
ARI ID: 14-17330 YX54C

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	08/23/14 082314#1	EPA 300.0	mg-N/L	0.1	0.4
Sulfate	08/23/14 082314#1	EPA 300.0	mg/L	0.1	3.7

RL Analytical reporting limit

U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS  
YX54-Hart Crowser Inc.

ANALYTICAL  
RESOURCES  
INCORPORATED

Matrix: Water  
Data Release Authorized:  
Reported: 08/28/14

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: 08/21/14  
Date Received: 08/22/14

Client ID: MW-6  
ARI ID: 14-17331 YX54D

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	08/23/14 082314#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Sulfate	08/23/14 082314#1	EPA 300.0	mg/L	0.1	1.4

RL Analytical reporting limit

U Undetected at reported detection limit

METHOD BLANK RESULTS-CONVENTIONALS  
YX54-Hart Crowser Inc.

ANALYTICAL  
RESOURCES  
INCORPORATED

Matrix: Water  
Data Release Authorized:  
Reported: 08/28/14

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: NA  
Date Received: NA

Analyte	Method	Date	Units	Blank	ID
N-Nitrate	EPA 300.0	08/23/14	mg-N/L	< 0.1	U
Sulfate	EPA 300.0	08/23/14	mg/L	< 0.1	U

STANDARD REFERENCE RESULTS-CONVENTIONALS  
YX54-Hart Crowser Inc.

ANALYTICAL  
RESOURCES  
INCORPORATED

Matrix: Water  
Data Release Authorized:  
Reported: 08/28/14

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: NA  
Date Received: NA

Analyte/SRM ID	Method	Date	Units	SRM	True Value	Recovery
N-Nitrate ERA #220912	EPA 300.0	08/23/14	mg-N/L	3.3	3.0	110.0%
Sulfate ERA 131013	EPA 300.0	08/23/14	mg/L	3.2	3.0	106.7%

REPLICATE RESULTS-CONVENTIONALS  
YX54-Hart Crowser Inc.

ANALYTICAL  
RESOURCES  
INCORPORATED

Matrix: Water  
Data Release Authorized:  
Reported: 08/28/14

*[Signature]*

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: 08/21/14  
Date Received: 08/22/14

Analyte	Method	Date	Units	Sample	Replicate(s)	RPD/RSD
<b>ARI ID: YX54A Client ID: MW-14</b>						
N-Nitrate	EPA 300.0	08/23/14	mg-N/L	0.2	0.2	0.0%
Sulfate	EPA 300.0	08/23/14	mg/L	18.7	18.9	1.1%

MS/MSD RESULTS-CONVENTIONALS  
YX54-Hart Crowser Inc.

ANALYTICAL  
RESOURCES  
INCORPORATED

Matrix: Water  
Data Release Authorized: *JW*  
Reported: 08/28/14

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: 08/21/14  
Date Received: 08/22/14

Analyte	Method	Date	Units	Sample	Spike	Spike Added	Recovery
<b>ARI ID: YX54A Client ID: MW-14</b>							
N-Nitrate	EPA 300.0	08/23/14	mg-N/L	0.2	2.3	2.0	105.0%
Sulfate	EPA 300.0	08/23/14	mg/L	18.7	37.7	20.0	95.0%



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

December 5, 2014

Angie Goodwin  
Hart Crowser, Inc.  
1700 Westlake Avenue N. Suite 200  
Seattle, WA 98109-3256

**RE: Client Project: Ken's Auto, 7168-10**  
**ARI Job No.: ZL80**

Dear Angie:

Please find enclosed the original Chain-of-Custody record (COC), sample receipt documentation, and the final data for samples from the project referenced above. Analytical Resources, Inc. (ARI) received nine water samples and one trip blank on November 21, 2014. The samples were received in good condition with a cooler temperature of 4.9°C. For further details regarding sample receipt, please refer to the enclosed Cooler Receipt Form.

The samples were analyzed for Total Metals, NWTPH-Gx plus BTEX and Anions, as requested on the COC.

There were no anomalies associated with the analyses.

Sincerely,  
ANALYTICAL RESOURCES, INC.

A handwritten signature in black ink, appearing to read "Kelly Bottem".

Kelly Bottem  
Client Services Manager  
[kellyb@arilabs.com](mailto:kellyb@arilabs.com)  
206/695-6211  
Enclosures

cc: eFile ZL80

## *Sample Custody Record*

Samples Shipped to: Ae

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**HARTCROWSER**

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**HARTCROWSER**

2186

JOB 71608-10 LAB NUMBER

PROJECT NAME KEN'S AUTO

HABIT BROWSER CONTACT #: 666-444-1111

SAMPLED BY:



# Cooler Receipt Form

ARI Client: Hart Crowser

COC No(s): \_\_\_\_\_  NA

Assigned ARI Job No: ZL80

## Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?  YES  NO

Were custody papers included with the cooler?  YES  NO

Were custody papers properly filled out (ink, signed, etc.)  YES  NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time: 1500

4.9

Temp Gun ID#: 90877952

If cooler temperature is out of compliance fill out form 00070F

Cooler Accepted by: AN Date: 11/21/14 Time: 1500

**Complete custody forms and attach all shipping documents**

## Log-In Phase:

Was a temperature blank included in the cooler?  YES  NO

What kind of packing material was used? ... Bubble Wrap  Wet Ice  Gel Packs  Baggies  Foam Block  Paper  Other: \_\_\_\_\_

Was sufficient ice used (if appropriate)?  NA  YES  NO

Were all bottles sealed in individual plastic bags?  YES  NO

Did all bottles arrive in good condition (unbroken)?  YES  NO

Were all bottle labels complete and legible?  YES  NO

Did the number of containers listed on COC match with the number of containers received?  YES  NO

Did all bottle labels and tags agree with custody papers?  YES  NO

Were all bottles used correct for the requested analyses?  YES  NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...  NA  YES  NO

Were all VOC vials free of air bubbles?  NA  YES  NO

Was sufficient amount of sample sent in each bottle?  YES  NO

Date VOC Trip Blank was made at ARI.....  NA  11/18/14

Was Sample Split by ARI :  NA YES Date/Time: \_\_\_\_\_ Equipment: \_\_\_\_\_ Split by: \_\_\_\_\_

Samples Logged by: AN Date: 11/21/14 Time: 11015

**\*\* Notify Project Manager of discrepancies or concerns \*\***

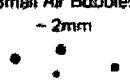
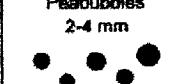
Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC
<u>MW-4</u>	<u>MW-4R</u>		

### Additional Notes, Discrepancies, & Resolutions:

MW-4R = LG \* one vial only, other is correct

MW-3 = LG

By: AN Date: 11/21/14

<b>Small Air Bubbles</b> ~ 2mm 	<b>Peabubbles'</b> 2-4 mm 	<b>LARGE Air Bubbles</b> > 4 mm 	<b>Small → "sm" ( &lt; 2 mm )</b>
			<b>Peabubbles → "pb" ( 2 to &lt; 4 mm )</b>
			<b>Large → "lg" ( 4 to &lt; 6 mm )</b>
			<b>Headspace → "hs" ( &gt; 6 mm )</b>

**PRESERVATION VERIFICATION** 11/21/14  
Page 1 of 1



ARI Job No: ZL80

Inquiry Number: NONE  
Analysis Requested: 11/21/14  
Contact: Goodwin, Angie  
Client: Hart Crowser Inc.  
Logged by: AV  
Sample Set Used: Yes-481  
Validatable Package: No  
Deliverables:

PC: Kelly  
VTSR: 11/21/14

Project #: 7168-10  
Project: Ken's Auto  
Sample Site:  
SDG No:  
Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN	WAD	NH3	COD	FOG	MET	PHOS	TKN	NO23	TOC	S2	TPHD	Fe2+	DMET DOC	ADJUSTED	LOT	NUMBER	TO	PARAMETER	ADJUSTED	LOT	NUMBER	ADDED	DATE/BY
14-25507 <b>ZL80A</b>	MW-5			<2	<2	<2	<2	<2	<2	<2	<2	>9	<2	<2	<2	TOT									
14-25508 <b>ZL80B</b>	MW-14															TOT									
14-25509 <b>ZL80C</b>	MW-KA															TOT									
14-25510 <b>ZL80D</b>	MW-4R															TOT									
14-25511 <b>ZL80E</b>	MW-2															TOT									
14-25512 <b>ZL80F</b>	MW-3															TOT									
14-25513 <b>ZL80G</b>	MW-15															TOT									
14-25514 <b>ZL80H</b>	MW-6															TOT									
14-25515 <b>ZL80I</b>	MW-13															TOT									

P=Pass

11/21/14

Checked By AN Date 11/21/14

# Sample ID Cross Reference Report



ARI Job No: ZL80  
Client: Hart Crowser Inc.  
Project Event: 7168-10  
Project Name: Ken's Auto

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. MW-5	ZL80A	14-25507	Water	11/20/14 13:00	11/21/14 15:00
2. MW-14	ZL80B	14-25508	Water	11/20/14 14:30	11/21/14 15:00
3. MW-KA	ZL80C	14-25509	Water	11/20/14 15:00	11/21/14 15:00
4. MW-4R	ZL80D	14-25510	Water	11/20/14 15:20	11/21/14 15:00
5. MW-2	ZL80E	14-25511	Water	11/20/14 16:30	11/21/14 15:00
6. MW-3	ZL80F	14-25512	Water	11/20/14 17:30	11/21/14 15:00
7. MW-15	ZL80G	14-25513	Water	11/21/14 09:00	11/21/14 15:00
8. MW-6	ZL80H	14-25514	Water	11/21/14 10:00	11/21/14 15:00
9. MW-13	ZL80I	14-25515	Water	11/21/14 11:00	11/21/14 15:00
10. TRIP BLANKS	ZL80J	14-25516	Water	11/20/14	11/21/14 15:00

Printed 11/21/14 Page 1 of 1

**INORGANICS ANALYSIS DATA SHEET**

**TOTAL METALS**

Page 1 of 1

Lab Sample ID: ZL80A

LIMS ID: 14-25507

Matrix: Water

Data Release Authorized:

Reported: 12/01/14

**Sample ID: MW-5  
SAMPLE**

QC Report No: ZL80-Hart Crowser Inc.

Project: Ken's Auto

7168-10

Date Sampled: 11/20/14

Date Received: 11/21/14

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	11/25/14	200.8	11/28/14	7439-92-1	Lead	0.1	0.2	

U-Analyte undetected at given LOQ

LOQ-Limit of Quantitation

**INORGANICS ANALYSIS DATA SHEET**

**TOTAL METALS**

Page 1 of 1

Lab Sample ID: ZL80A

LIMS ID: 14-25507

Matrix: Water

Data Release Authorized:

Reported: 12/01/14

**Sample ID: MW-5  
DUPLICATE**

QC Report No: ZL80-Hart Crowser Inc.

Project: Ken's Auto

7168-10

Date Sampled: 11/20/14

Date Received: 11/21/14

**MATRIX DUPLICATE QUALITY CONTROL REPORT**

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Lead	200.8	0.2	0.3	40.0%	+/- 0.1	L

Reported in  $\mu\text{g/L}$

\*-Control Limit Not Met

L-RPD Invalid, Limit = Detection Limit

**INORGANICS ANALYSIS DATA SHEET**

**TOTAL METALS**

Page 1 of 1

Lab Sample ID: ZL80A

LIMS ID: 14-25507

Matrix: Water

Data Release Authorized: *JL*

Reported: 12/01/14

**Sample ID: MW-5  
MATRIX SPIKE**

QC Report No: ZL80-Hart Crowser Inc.

Project: Ken's Auto

7168-10

Date Sampled: 11/20/14

Date Received: 11/21/14

**MATRIX SPIKE QUALITY CONTROL REPORT**

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Lead		200.8	0.2	24.2	25.0	96.0%

Reported in  $\mu\text{g/L}$

N-Control Limit Not Met

H-% Recovery Not Applicable, Sample Concentration Too High

NA-Not Applicable, Analyte Not Spiked

NR-Not Recovered

Percent Recovery Limits: 75-125%

**INORGANICS ANALYSIS DATA SHEET**

**TOTAL METALS**

Page 1 of 1

**Sample ID: MW-14  
SAMPLE**

Lab Sample ID: ZL80B

QC Report No: ZL80-Hart Crowser Inc.

LIMS ID: 14-25508

Project: Ken's Auto

Matrix: Water

7168-10

Data Release Authorized:

Date Sampled: 11/20/14

Reported: 12/01/14

Date Received: 11/21/14

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	11/25/14	200.8	11/28/14	7439-92-1	Lead	0.1	1.1	

U-Analyte undetected at given LOQ

LOQ-Limit of Quantitation

**INORGANICS ANALYSIS DATA SHEET**

**TOTAL METALS**

Page 1 of 1

Lab Sample ID: ZL80C

LIMS ID: 14-25509

Matrix: Water

Data Release Authorized:

Reported: 12/01/14

**Sample ID: MW-KA  
SAMPLE**

QC Report No: ZL80-Hart Crowser Inc.

Project: Ken's Auto

7168-10

Date Sampled: 11/20/14

Date Received: 11/21/14

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	11/25/14	200.8	11/28/14	7439-92-1	Lead	0.1	0.8	

U-Analyte undetected at given LOQ  
LOQ-Limit of Quantitation

**INORGANICS ANALYSIS DATA SHEET**

**TOTAL METALS**

Page 1 of 1

Lab Sample ID: ZL80D

LIMS ID: 14-25510

Matrix: Water

Data Release Authorized:

Reported: 12/01/14

**Sample ID: MW-4R  
SAMPLE**

QC Report No: ZL80-Hart Crowser Inc.

Project: Ken's Auto

7168-10

Date Sampled: 11/20/14

Date Received: 11/21/14

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	11/25/14	200.8	11/28/14	7439-92-1	Lead	0.1	0.1	

U-Analyte undetected at given LOQ  
 LOQ-Limit of Quantitation

**INORGANICS ANALYSIS DATA SHEET**

**TOTAL METALS**

Page 1 of 1

Lab Sample ID: ZL80E

LIMS ID: 14-25511

Matrix: Water

Data Release Authorized:

Reported: 12/01/14

**Sample ID: MW-2  
SAMPLE**

QC Report No: ZL80-Hart Crowser Inc.

Project: Ken's Auto

7168-10

Date Sampled: 11/20/14

Date Received: 11/21/14

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	11/25/14	200.8	11/28/14	7439-92-1	Lead	0.1	0.1	U

U-Analyte undetected at given LOQ  
 LOQ-Limit of Quantitation

**INORGANICS ANALYSIS DATA SHEET**

**TOTAL METALS**

Page 1 of 1

Lab Sample ID: ZL80F

LIMS ID: 14-25512

Matrix: Water

Data Release Authorized:

Reported: 12/01/14

**Sample ID: MW-3  
SAMPLE**

QC Report No: ZL80-Hart Crowser Inc.

Project: Ken's Auto

7168-10

Date Sampled: 11/20/14

Date Received: 11/21/14

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	11/25/14	200.8	11/28/14	7439-92-1	Lead	0.1	0.2	

U-Analyte undetected at given LOQ

LOQ-Limit of Quantitation

**INORGANICS ANALYSIS DATA SHEET**

**TOTAL METALS**

Page 1 of 1

**Sample ID: MW-15  
SAMPLE**

Lab Sample ID: ZL80G  
 LIMS ID: 14-25513  
 Matrix: Water  
 Data Release Authorized:  
 Reported: 12/01/14

QC Report No: ZL80-Hart Crowser Inc.  
 Project: Ken's Auto  
 7168-10  
 Date Sampled: 11/21/14  
 Date Received: 11/21/14

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	11/25/14	200.8	11/28/14	7439-92-1	Lead	0.1	0.1	U

U-Analyte undetected at given LOQ  
 LOQ-Limit of Quantitation

**INORGANICS ANALYSIS DATA SHEET**

**TOTAL METALS**

Page 1 of 1

Lab Sample ID: ZL80H

LIMS ID: 14-25514

Matrix: Water

Data Release Authorized:

Reported: 12/01/14

**Sample ID: MW-6  
SAMPLE**

QC Report No: ZL80-Hart Crowser Inc.

Project: Ken's Auto

7168-10

Date Sampled: 11/21/14

Date Received: 11/21/14

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	11/25/14	200.8	11/28/14	7439-92-1	Lead	0.1	0.3	

U-Analyte undetected at given LOQ

LOQ-Limit of Quantitation

**INORGANICS ANALYSIS DATA SHEET**

**TOTAL METALS**

Page 1 of 1

**Sample ID: MW-13  
SAMPLE**

Lab Sample ID: ZL80I

LIMS ID: 14-25515

Matrix: Water

Data Release Authorized:

Reported: 12/01/14

QC Report No: ZL80-Hart Crowser Inc.

Project: Ken's Auto

7168-10

Date Sampled: 11/21/14

Date Received: 11/21/14

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	11/25/14	200.8	11/28/14	7439-92-1	Lead	0.1	0.1	U

U-Analyte undetected at given LOQ

LOQ-Limit of Quantitation

**INORGANICS ANALYSIS DATA SHEET**

**TOTAL METALS**

Page 1 of 1

Lab Sample ID: ZL80MB  
 LIMS ID: 14-25515  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/01/14

**Sample ID: METHOD BLANK**

QC Report No: ZL80-Hart Crowser Inc.  
 Project: Ken's Auto  
 7168-10  
 Date Sampled: NA  
 Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	µg/L	Q
200.8	11/25/14	200.8	11/28/14	7439-92-1	Lead	0.1	0.1	U

U-Analyte undetected at given LOQ  
 LOQ-Limit of Quantitation

**INORGANICS ANALYSIS DATA SHEET**

**TOTAL METALS**

Page 1 of 1

**Sample ID: LAB CONTROL**

Lab Sample ID: ZL80LCS

QC Report No: ZL80-Hart Crowser Inc.

LIMS ID: 14-25515

Project: Ken's Auto

Matrix: Water

7168-10

Data Release Authorized:

Date Sampled: NA

Reported: 12/01/14

Date Received: NA



**BLANK SPIKE QUALITY CONTROL REPORT**

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Lead	200.8	25.3	25.0	101%	

Reported in µg/L

N-Control limit not met

Control Limits: 80-120%

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021BMod**  
**TPHG by Method NWTPHG**  
 Page 1 of 1

**Sample ID: MW-5  
SAMPLE**

Lab Sample ID: ZL80A  
 LIMS ID: 14-25507  
 Matrix: Water  
 Data Release Authorized: *BB*  
 Reported: 12/04/14

QC Report No: ZL80-Hart Crowser Inc.  
 Project: Ken's Auto  
 Event: 7168-10  
 Date Sampled: 11/20/14  
 Date Received: 11/21/14

Date Analyzed: 11/28/14 15:14  
 Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL  
 Dilution Factor: 1.00

<b>CAS Number</b>	<b>Analyte</b>	<b>LOQ</b>	<b>Result</b>	
71-43-2	Benzene	0.25	< 0.25 U	
108-88-3	Toluene	0.25	< 0.25 U	
100-41-4	Ethylbenzene	0.25	< 0.25 U	
179601-23-1	m,p-Xylene	0.50	< 0.50 U	
95-47-6	o-Xylene	0.25	< 0.25 U	
Gasoline Range Hydrocarbons			0.10	GAS ID ---

#### **BETX Surrogate Recovery**

Trifluorotoluene	98.7%
Bromobenzene	92.4%

#### **Gasoline Surrogate Recovery**

Trifluorotoluene	103%
Bromobenzene	95.9%

BETX values reported in µg/L (ppb)  
 Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021EMod**  
**TPHG by Method NWTPHG**  
 Page 1 of 1

**Sample ID: MW-14  
SAMPLE**

Lab Sample ID: ZL80B  
 LIMS ID: 14-25508  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/04/14

QC Report No: ZL80-Hart Crowser Inc.  
 Project: Ken's Auto  
 Event: 7168-10  
 Date Sampled: 11/20/14  
 Date Received: 11/21/14

Date Analyzed: 11/28/14 15:42  
 Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	0.75
179601-23-1	m,p-Xylene	0.50	0.57
95-47-6	o-Xylene	0.25	< 0.25 U

<b>Gasoline Range Hydrocarbons</b>	<b>0.10</b>	<b>0.34</b>	<b>GAS ID</b>
			<b>GAS</b>

#### **BETX Surrogate Recovery**

Trifluorotoluene	104%
Bromobenzene	102%

#### **Gasoline Surrogate Recovery**

Trifluorotoluene	109%
Bromobenzene	103%

BETX values reported in µg/L (ppb)  
 Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021BMod**  
**TPHG by Method NWTPHG**  
 Page 1 of 1

Lab Sample ID: ZL80C  
 LIMS ID: 14-25509  
 Matrix: Water  
 Data Release Authorized: *BS*  
 Reported: 12/04/14

Date Analyzed: 11/28/14 16:11  
 Instrument/Analyst: PID3/ML

QC Report No: ZL80-Hart Crowser Inc.  
 Project: Ken's Auto  
 Event: 7168-10  
 Date Sampled: 11/20/14  
 Date Received: 11/21/14

Purge Volume: 5.0 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	0.78
179601-23-1	m,p-Xylene	0.50	0.54
95-47-6	o-Xylene	0.25	< 0.25 U

<b>Gasoline Range Hydrocarbons</b>	<b>0.10</b>	<b>GAS ID</b>
		<b>GAS</b>

#### **BETX Surrogate Recovery**

Trifluorotoluene	99.3%
Bromobenzene	96.0%

#### **Gasoline Surrogate Recovery**

Trifluorotoluene	106%
Bromobenzene	101%

BETX values reported in µg/L (ppb)  
 Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021BMod**  
**TPHG by Method NWTPHG**  
 Page 1 of 1

Lab Sample ID: ZL80D  
 LIMS ID: 14-25510  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/04/14

Date Analyzed: 11/28/14 16:39  
 Instrument/Analyst: PID3/ML

QC Report No: ZL80-Hart Crowser Inc.  
 Project: Ken's Auto  
 Event: 7168-10  
 Date Sampled: 11/20/14  
 Date Received: 11/21/14

Purge Volume: 5.0 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U
Gasoline Range Hydrocarbons			GAS ID 0.10 < 0.10 U ---

#### BETX Surrogate Recovery

Trifluorotoluene	101%
Bromobenzene	100%

#### Gasoline Surrogate Recovery

Trifluorotoluene	106%
Bromobenzene	100%

BETX values reported in µg/L (ppb)  
 Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021BMod**  
**TPHG by Method NWTPHG**  
 Page 1 of 1

Lab Sample ID: ZL80E  
 LIMS ID: 14-25511  
 Matrix: Water  
 Data Release Authorized: *BR*  
 Reported: 12/04/14

Date Analyzed: 11/28/14 18:04  
 Instrument/Analyst: PID3/ML

QC Report No: ZL80-Hart Crowser Inc.  
 Project: Ken's Auto  
 Event: 7168-10  
 Date Sampled: 11/20/14  
 Date Received: 11/21/14

Purge Volume: 5.0 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U
Gasoline Range Hydrocarbons			GAS ID ---
		0.10	< 0.10 U

#### BETX Surrogate Recovery

Trifluorotoluene	99.7%
Bromobenzene	96.6%

#### Gasoline Surrogate Recovery

Trifluorotoluene	106%
Bromobenzene	100%

BETX values reported in µg/L (ppb)  
 Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021BMod**  
**TPHG by Method NWTPHG**  
 Page 1 of 1

Lab Sample ID: ZL80F  
 LIMS ID: 14-25512  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/04/14

Date Analyzed: 11/28/14 18:32  
 Instrument/Analyst: PID3/ML

QC Report No: ZL80-Hart Crowser Inc.  
 Project: Ken's Auto  
 Event: 7168-10  
 Date Sampled: 11/20/14  
 Date Received: 11/21/14

Purge Volume: 5.0 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U

Gasoline Range Hydrocarbons	0.10	GAS ID	---
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#### BETX Surrogate Recovery

Trifluorotoluene	99.6%
Bromobenzene	94.1%

#### Gasoline Surrogate Recovery

Trifluorotoluene	103%
Bromobenzene	98.3%

BETX values reported in µg/L (ppb)  
 Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021BMod**  
**TPHG by Method NWTPHG**  
 Page 1 of 1

**Sample ID: MW-15  
SAMPLE**

Lab Sample ID: ZL80G  
 LIMS ID: 14-25513  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/04/14

QC Report No: ZL80-Hart Crowser Inc.  
 Project: Ken's Auto  
 Event: 7168-10  
 Date Sampled: 11/21/14  
 Date Received: 11/21/14

Date Analyzed: 11/28/14 19:00  
 Instrument/Analyst: PID3/ML

Purge Volume: 5.0 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result	GAS ID
71-43-2	Benzene	0.25	< 0.25 U	
108-88-3	Toluene	0.25	< 0.25 U	
100-41-4	Ethylbenzene	0.25	< 0.25 U	
179601-23-1	m,p-Xylene	0.50	< 0.50 U	
95-47-6	o-Xylene	0.25	< 0.25 U	
Gasoline Range Hydrocarbons		0.10	< 0.10 U	---

#### **BETX Surrogate Recovery**

Trifluorotoluene	99.8%
Bromobenzene	94.2%

#### **Gasoline Surrogate Recovery**

Trifluorotoluene	104%
Bromobenzene	98.4%

BETX values reported in µg/L (ppb)  
 Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021BMod**  
**TPHG by Method NWTPHG**  
 Page 1 of 1

Lab Sample ID: ZL80H  
 LIMS ID: 14-25514  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/04/14

Date Analyzed: 11/28/14 19:28  
 Instrument/Analyst: PID3/ML

QC Report No: ZL80-Hart Crowser Inc.  
 Project: Ken's Auto  
 Event: 7168-10  
 Date Sampled: 11/21/14  
 Date Received: 11/21/14

Purge Volume: 5.0 mL  
 Dilution Factor: 1.00

<b>CAS Number</b>	<b>Analyte</b>	<b>LOQ</b>	<b>Result</b>
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U

<b>Gasoline Range Hydrocarbons</b>	<b>0.10</b>	<b>0.11</b>	<b>GAS ID</b>
			<b>GRO</b>

#### **BETX Surrogate Recovery**

Trifluorotoluene	99.9%
Bromobenzene	96.2%

#### **Gasoline Surrogate Recovery**

Trifluorotoluene	104%
Bromobenzene	100%

BETX values reported in  $\mu\text{g/L}$  (ppb)  
 Gasoline values reported in  $\text{mg/L}$  (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021BMod**  
**TPHG by Method NWTPHG**  
 Page 1 of 1

Lab Sample ID: ZL80I  
 LIMS ID: 14-25515  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/04/14

Date Analyzed: 11/28/14 19:56  
 Instrument/Analyst: PID3/ML

QC Report No: ZL80-Hart Crowser Inc.  
 Project: Ken's Auto  
 Event: 7168-10  
 Date Sampled: 11/21/14  
 Date Received: 11/21/14

Purge Volume: 5.0 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U
Gasoline Range Hydrocarbons			GAS ID ---
		0.10	< 0.10 U

#### BETX Surrogate Recovery

Trifluorotoluene	97.9%
Bromobenzene	93.5%

#### Gasoline Surrogate Recovery

Trifluorotoluene	103%
Bromobenzene	97.9%

BETX values reported in  $\mu\text{g/L}$  (ppb)  
 Gasoline values reported in  $\text{mg/L}$  (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021BMod**  
**TPHG by Method NWTPHG**  
 Page 1 of 1

Lab Sample ID: ZL80J  
 LIMS ID: 14-25516  
 Matrix: Water  
 Data Release Authorized: *AB*  
 Reported: 12/04/14

Date Analyzed: 11/28/14 14:46  
 Instrument/Analyst: PID3/ML

QC Report No: ZL80-Hart Crowser Inc.  
 Project: Ken's Auto  
 Event: 7168-10  
 Date Sampled: 11/20/14  
 Date Received: 11/21/14

Purge Volume: 5.0 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U
Gasoline Range Hydrocarbons			GAS ID ---
		0.10	< 0.10 U

#### **BETX Surrogate Recovery**

Trifluorotoluene	98.1%
Bromobenzene	94.2%

#### **Gasoline Surrogate Recovery**

Trifluorotoluene	104%
Bromobenzene	98.1%

BETX values reported in µg/L (ppb)  
 Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021BMod**  
**TPHG by Method NWTPHG**  
 Page 1 of 1

Lab Sample ID: MB-112814  
 LIMS ID: 14-25507  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 12/04/14

Date Analyzed: 11/28/14 12:23  
 Instrument/Analyst: PID3/ML

Sample ID: MB-112814  
**METHOD BLANK**

QC Report No: ZL80-Hart Crowser Inc.  
 Project: Ken's Auto  
 Event: 7168-10  
 Date Sampled: NA  
 Date Received: NA

Purge Volume: 5.0 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	LOQ	Result
71-43-2	Benzene	0.25	< 0.25 U
108-88-3	Toluene	0.25	< 0.25 U
100-41-4	Ethylbenzene	0.25	< 0.25 U
179601-23-1	m,p-Xylene	0.50	< 0.50 U
95-47-6	o-Xylene	0.25	< 0.25 U
Gasoline Range Hydrocarbons			GAS ID 0.10 < 0.10 U ---

#### BETX Surrogate Recovery

Trifluorotoluene	100%
Bromobenzene	92.8%

#### Gasoline Surrogate Recovery

Trifluorotoluene	105%
Bromobenzene	96.0%

BETX values reported in µg/L (ppb)  
 Gasoline values reported in mg/L (ppm)

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

**BETX WATER SURROGATE RECOVERY SUMMARY**

ARI Job: ZL80  
 Matrix: Water

QC Report No: ZL80-Hart Crowser Inc.  
 Project: Ken's Auto  
 Event: 7168-10

<b>Client ID</b>	<b>TFT</b>	<b>BBZ</b>	<b>TOT OUT</b>
MB-112814	100%	92.8%	0
LCS-112814	84.3%	85.9%	0
LCSD-112814	99.5%	91.8%	0
MW-5	98.7%	92.4%	0
MW-14	104%	102%	0
MW-KA	99.3%	96.0%	0
MW-4R	101%	100%	0
MW-2	99.7%	96.6%	0
MW-3	99.6%	94.1%	0
MW-15	99.8%	94.2%	0
MW-6	99.9%	96.2%	0
MW-13	97.9%	93.5%	0
TRIP BLANKS	98.1%	94.2%	0

	<b>LCS/MB LIMITS</b>	<b>QC LIMITS</b>
(TFT) = Trifluorotoluene	( 5 mL PV)	(80-120)
(TFT) = Trifluorotoluene	(15 mL PV)	(80-120)
(BBZ) = Bromobenzene	( 5 mL PV)	(77-120)
(BBZ) = Bromobenzene	(15 mL PV)	(80-120)

Log Number Range: 14-25507 to 14-25516

**TPHG WATER SURROGATE RECOVERY SUMMARY**

ARI Job: ZL80  
Matrix: Water

QC Report No: ZL80-Hart Crowser Inc.  
Project: Ken's Auto  
Event: 7168-10

<b>Client ID</b>	<b>TFT</b>	<b>BBZ</b>	<b>TOT OUT</b>
MB-112814	105%	96.0%	0
LCS-112814	88.8%	88.2%	0
LCSD-112814	103%	93.9%	0
MW-5	103%	95.9%	0
MW-14	109%	103%	0
MW-KA	106%	101%	0
MW-4R	106%	100%	0
MW-2	106%	100%	0
MW-3	103%	98.3%	0
MW-15	104%	98.4%	0
MW-6	104%	100%	0
MW-13	103%	97.9%	0
TRIP BLANKS	104%	98.1%	0

<b>LCS/MB LIMITS</b>	<b>QC LIMITS</b>
(TFT) = Trifluorotoluene	(80-120)
(BBZ) = Bromobenzene	(80-120)

Log Number Range: 14-25507 to 14-25516

**ORGANICS ANALYSIS DATA SHEET**  
**BETX by Method SW8021BMod**  
 Page 1 of 1

**Sample ID: LCS-112814**  
**LAB CONTROL SAMPLE**

Lab Sample ID: LCS-112814

LIMS ID: 14-25507

Matrix: Water

Data Release Authorized: *R*

Reported: 12/04/14

QC Report No: ZL80-Hart Crowser Inc.

Project: Ken's Auto

Event: 7168-10

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 11/28/14 09:31

Purge Volume: 5.0 mL

LCSD: 11/28/14 11:55

Instrument/Analyst LCS: PID3/ML

Dilution Factor LCS: 1.0

LCSD: PID3/ML

LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Benzene	6.92	7.00	98.9%	6.85	7.00	97.9%	1.0%
Toluene	49.8	49.4	101%	48.2	49.4	97.6%	3.3%
Ethylbenzene	11.8	12.3	95.9%	11.3	12.3	91.9%	4.3%
m,p-Xylene	38.5	40.0	96.2%	37.4	40.0	93.5%	2.9%
o-Xylene	14.6	15.3	95.4%	14.1	15.3	92.2%	3.5%

Reported in  $\mu\text{g/L}$  (ppb)

RPD calculated using sample concentrations per SW846.

#### BETX Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	84.3%	99.5%
Bromobenzene	85.9%	91.8%

**ORGANICS ANALYSIS DATA SHEET**  
**TPHG by Method NWTPHG**  
 Page 1 of 1

**Sample ID: LCS-112814**  
**LAB CONTROL SAMPLE**

Lab Sample ID: LCS-112814

LIMS ID: 14-25507

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 12/04/14

QC Report No: ZL80-Hart Crowser Inc.

Project: Ken's Auto

Event: 7168-10

Date Sampled: NA

Date Received: NA

Date Analyzed LCS: 11/28/14 09:31

Purge Volume: 5.0 mL

LCSD: 11/28/14 11:55

Instrument/Analyst LCS: PID3/ML

Dilution Factor LCS: 1.0

LCSD: PID3/ML

LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	0.97	1.00	97.0%	0.93	1.00	93.0%	4.2%

Reported in mg/L (ppm)

RPD calculated using sample concentrations per SW846.

**TPHG Surrogate Recovery**

	LCS	LCSD
Trifluorotoluene	88.8%	103%
Bromobenzene	88.2%	93.9%

SAMPLE RESULTS-CONVENTIONALS  
ZL80-Hart Crowser Inc.

ANALYTICAL  
RESOURCES  
INCORPORATED

Matrix: Water  
Data Release Authorized:  
Reported: 11/26/14

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: 11/20/14  
Date Received: 11/21/14

Client ID: MW-5  
ARI ID: 14-25507 ZL80A

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	11/21/14 112114#1	EPA 300.0	mg-N/L	0.1	1.0
Sulfate	11/24/14 112414#1	EPA 300.0	mg/L	0.5	10.6

RL Analytical reporting limit

U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS  
ZL80-Hart Crowser Inc.

ANALYTICAL  
RESOURCES  
INCORPORATED

Matrix: Water  
Data Release Authorized:  
Reported: 11/26/14

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: 11/20/14  
Date Received: 11/21/14

Client ID: MW-14  
ARI ID: 14-25508 ZL80B

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	11/21/14 112114#1	EPA 300.0	mg-N/L	0.1	4.6
Sulfate	11/24/14 112414#1	EPA 300.0	mg/L	0.5	12.7

RL Analytical reporting limit

U Undetected at reported detection limit

**SAMPLE RESULTS-CONVENTIONALS**  
**ZL80-Hart Crowser Inc.**

**ANALYTICAL  
RESOURCES  
INCORPORATED**

Matrix: Water  
Data Release Authorized:  
Reported: 11/26/14

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: 11/20/14  
Date Received: 11/21/14

**Client ID: MW-KA  
ARI ID: 14-25509 ZL80C**

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	11/21/14 112114#1	EPA 300.0	mg-N/L	0.1	1.5
Sulfate	11/24/14 112414#1	EPA 300.0	mg/L	0.5	11.3

RL Analytical reporting limit  
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS  
ZL80-Hart Crowser Inc.



Matrix: Water  
Data Release Authorized:  
Reported: 11/26/14

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: 11/20/14  
Date Received: 11/21/14

Client ID: MW-4R  
ARI ID: 14-25510 ZL80D

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	11/21/14 112114#1	EPA 300.0	mg-N/L	0.1	0.4
Sulfate	11/24/14 112414#1	EPA 300.0	mg/L	0.5	12.2

RL      Analytical reporting limit  
U      Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS  
ZL80-Hart Crowser Inc.

ANALYTICAL  
RESOURCES  
INCORPORATED

Matrix: Water  
Data Release Authorized:  
Reported: 11/26/14

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: 11/20/14  
Date Received: 11/21/14

Client ID: MW-2  
ARI ID: 14-25511 ZL80E

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	11/21/14 112114#1	EPA 300.0	mg-N/L	0.1	0.2
Sulfate	11/21/14 112114#1	EPA 300.0	mg/L	0.1	4.2

RL Analytical reporting limit

U Undetected at reported detection limit

**SAMPLE RESULTS-CONVENTIONALS**  
**ZL80-Hart Crowser Inc.**

**ANALYTICAL**  
**RESOURCES**  
**INCORPORATED**

Matrix: Water  
Data Release Authorized:  
Reported: 11/26/14

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: 11/20/14  
Date Received: 11/21/14

**Client ID: MW-3**  
**ARI ID: 14-25512 ZL80F**

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	11/21/14 112114#1	EPA 300.0	mg-N/L	0.1	0.3
Sulfate	11/21/14 112114#1	EPA 300.0	mg/L	0.1	4.2

RL Analytical reporting limit  
U Undetected at reported detection limit

**SAMPLE RESULTS-CONVENTIONALS**  
**ZL80-Hart Crowser Inc.**

**ANALYTICAL**  
**RESOURCES**  
**INCORPORATED**

Matrix: Water  
Data Release Authorized:  
Reported: 11/26/14

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: 11/21/14  
Date Received: 11/21/14

**Client ID: MW-15**  
**ARI ID: 14-25513 ZL80G**

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	11/21/14 112114#1	EPA 300.0	mg-N/L	0.1	0.1
Sulfate	11/21/14 112114#1	EPA 300.0	mg/L	0.1	3.6

RL Analytical reporting limit  
U Undetected at reported detection limit

**SAMPLE RESULTS-CONVENTIONALS**  
**ZL80-Hart Crowser Inc.**

**ANALYTICAL  
RESOURCES  
INCORPORATED**

Matrix: Water  
Data Release Authorized  
Reported: 11/26/14

*[Signature]*

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: 11/21/14  
Date Received: 11/21/14

**Client ID: MW-6**  
**ARI ID: 14-25514 ZL80H**

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	11/21/14 112114#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Sulfate	11/21/14 112114#1	EPA 300.0	mg/L	0.1	2.0

RL Analytical reporting limit

U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS  
ZL80-Hart Crowser Inc.

ANALYTICAL  
RESOURCES  
INCORPORATED

Matrix: Water  
Data Release Authorized  
Reported: 11/26/14

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: 11/21/14  
Date Received: 11/21/14

Client ID: MW-13  
ARI ID: 14-25515 ZL80I

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	11/21/14 112114#1	EPA 300.0	mg-N/L	0.1	0.4
Sulfate	11/21/14 112114#1	EPA 300.0	mg/L	0.1	4.9

RL Analytical reporting limit  
U Undetected at reported detection limit

**METHOD BLANK RESULTS-CONVENTIONALS**  
**ZL80-Hart Crowser Inc.**

**ANALYTICAL  
RESOURCES  
INCORPORATED**

Matrix: Water  
Data Release Authorized:  
Reported: 11/26/14

*JTC*

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: NA  
Date Received: NA

Analyte	Method	Date	Units	Blank	ID
N-Nitrate	EPA 300.0	11/21/14	mg-N/L	< 0.1	U
Sulfate	EPA 300.0	11/21/14 11/24/14	mg/L	< 0.1	U

STANDARD REFERENCE RESULTS-CONVENTIONALS  
ZL80-Hart Crowser Inc.

ANALYTICAL   
RESOURCES  
INCORPORATED

Matrix: Water  
Data Release Authorized   
Reported: 11/26/14

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: NA  
Date Received: NA

Analyte/SRM ID	Method	Date	Units	SRM	True Value	Recovery
N-Nitrate ERA #320614	EPA 300.0	11/21/14	mg-N/L	2.8	3.0	93.3%
Sulfate ERA 131013	EPA 300.0	11/21/14 11/24/14	mg/L	2.9 2.9	3.0 3.0	96.7% 96.7%

**REPLICATE RESULTS-CONVENTIONALS**  
**ZL80-Hart Crowser Inc.**

**ANALYTICAL  
RESOURCES  
INCORPORATED**

Matrix: Water  
Data Release Authorized  
Reported: 11/26/14

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: 11/20/14  
Date Received: 11/21/14

Analyte	Method	Date	Units	Sample	Replicate(s)	RPD/RSD
<b>ARI ID: ZL80A Client ID: MW-5</b>						
N-Nitrate	EPA 300.0	11/21/14	mg-N/L	1.0	1.0	0.0%
Sulfate	EPA 300.0	11/24/14	mg/L	10.6	10.6	0.0%

**MS/MSD RESULTS-CONVENTIONALS**  
**ZL80-Hart Crowser Inc.**



Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 11/26/14

Project: Ken's Auto  
Event: 7168-10  
Date Sampled: 11/20/14  
Date Received: 11/21/14

Analyte	Method	Date	Units	Sample	Spike Added	Spike Recovered	Recovery
<b>ARI ID: ZL80A Client ID: MW-5</b>							
N-Nitrate	EPA 300.0	11/21/14	mg-N/L	1.0	3.0	2.0	100.0%
Sulfate	EPA 300.0	11/24/14	mg/L	10.6	29.4	20.0	94.0%