Kennedy/Jenks Consultants
Engineers & Scientists
32001 32nd Avenue South, Suite 100
Federal Way, Washington 98001
253-835-6400
FAX: 253-952-3435

12 February 2015

Mr. Eugene Freeman
Northwest Regional Office
Washington State Department of Ecology
3190 160th Avenue SE
Bellevue, Washington 98008

Subject: Third Quarterly Groundwater Monitoring Event Report, December 2014
Former Precision Engineering
Seattle, Washington
K/J 1396024.00

Dear Mr. Freeman:

This letter report presents the findings of the third quarterly groundwater monitoring event that was performed at the Former Precision Engineering Facility (Site) in December 2014. The Site is located in unincorporated King County near the municipal boundary between the cities of Seattle and Tukwila, Washington, near the southwestern corner of South Director Street and 14th Street South, less than 2,000 feet from the Lower Duwamish Waterway (LDW). A vicinity map is included as Figure 1.

The work documented in this letter report was performed on behalf of the Washington State Department of Ecology (Ecology) in support of a cleanup action completed at the Site. The work performed during the third quarterly monitoring event includes groundwater monitoring and sampling of the 11 Site monitoring wells.

Background

The Site, located in the South Park and Greater Duwamish neighborhoods of Seattle, was occupied by a manufacturing facility that specialized in the production and repair of large hydraulic cylinders used to manufacture paper and metal sheets. The facility operated from 1968 through 2005. The property was sold in 2005 and is now operated by the current owner as a retail warehouse (Pacific Industrial Supply) for construction and machinery supplies.

While the facility was operated as Precision Engineering, services included precision grinding and polishing, honing, hard-chrome plating, milling, welding, and other flame and arc-applied metal coatings. Precision Engineering's work involved the use of a number of chemicals, particularly chromic acid for plating, and trichloroethene (TCE) as a solvent. A number of above- and partially below-grade chromic acid plating tanks were located in the former chrome shop, as were tanks containing hydrochloric acid, sodium carbonate, and sodium hydroxide. At least four

trench drains were present in the grinding and chrome shops, located along the eastern and western walls of the shop.

Environmental concerns were initially raised at the Site in February 1986, when the Municipality of Metropolitan Seattle (METRO) issued a discharge violation to Precision Engineering for discharging chrome-plating wastes to the sanitary sewer. Precision Engineering cancelled its Waste Discharge Permit in September 1985. A facility inspection was conducted in March 1986 by Ecology and METRO, during which several environmental conditions of concern were identified, including:

- Leaks in the concrete sump containing spent/waste chromic acid
- Improper hazardous waste storage
- Discharge of wastewater, detergent, and oil from the steam cleaning area into the adjacent drainage ditch located along the southern property margin
- Chromium contamination on the building roof due to ineffective scrubbers
- Oil-impacted surface and shallow subsurface soil adjacent to the facility dumpster
- Groundwater accumulation in Tank 7.

Ecology issued an Administrative Order requiring Precision Engineering to address the identified environmental concerns, and required characterization of the nature and extent of impacts to soil and groundwater at the Site and in the drainage ditch located to the south. In late 1989, Precision Engineering notified Ecology an independent cleanup of impacted sediments (actually accumulated solids) near Plating Tanks 1 and 2 would be conducted.

In the early 1990s, Plating Tanks 1 through 6 and chromium-impacted soils were removed from the Site. Post-removal soil sampling indicated concentrations of hexavalent chromium in soil remained in situ above the Model Toxics Control Act (MTCA) Method A cleanup levels for unrestricted land use, with concentrations up to 73 milligrams per kilogram (mg/kg).

Between 2005 and 2011, Maul, Foster & Alongi, Inc. (MFA) conducted additional site characterization activities resulting in the preparation of a remedial investigation/risk assessment (RI/RA) report in 2008, and a feasibility study in 2011. In October 2005, the Site joined the Voluntary Cleanup Program (VCP) to conduct an independent remedial action to address the following conditions:

- Hexavalent and trivalent chromium, diesel- and oil-range petroleum hydrocarbons, and TCE in soil.
- Arsenic, cadmium, copper, hexavalent chromium, trivalent chromium, lead, chrysene, and heavy oil-range petroleum hydrocarbons in surface soil in the drainage ditch located

immediately south of the Site. The drainage ditch receives surface water runoff from the Site and adjacent properties to the south and east.

- Arsenic, copper, hexavalent chromium, trivalent chromium, selenium, heavy oil range-petroleum hydrocarbons, TCE, and vinyl chloride in groundwater.

According to the 2008 MFA RI/RA report, approximately 100 cubic yards of sediment and surface soil were excavated from the drainage ditch south of the Site between October 2007 and March 2008 to address indicator hazardous substances present offsite. Reportedly, less than 2 cubic yards of impacted soil above site cleanup levels were left in place and covered with fill material. The report does not state why residual impacted soils were left in place or how this volume was calculated, as clean soils were not documented in the confirmation soil samples. The excavated areas in the drainage ditch were reportedly re-graded and re-seeded following remedial excavation.

The 2008 RI/RA report suggests groundwater impacts are confined to the Site. Using a fate and transport model, MFA derived site-specific groundwater cleanup levels that were protective of surface water, and then used the U.S. Environmental Protection Agency's (EPA) BIOCHLOR model to show those contaminants would not reach the LDW at concentrations above analytical detection limits. Groundwater modeling was conducted for indicator hazardous substances, including arsenic, copper, hexavalent chromium, trivalent chromium, selenium, diesel-range hydrocarbons, oil-range hydrocarbons, TCE, and vinyl chloride. The BIOCHLOR model does not account for possible co-mingling of groundwater from the immediately downgradient KASPAC/Chiyoda site to the east. As mentioned in Ecology's September 2009 opinion letter regarding the final RI/RA report, the model has not been validated with field data from groundwater monitoring downgradient from the Site.

MFA suggested installation of a sub-slab vapor intrusion mitigation system to address concentrations of TCE and vinyl chloride present in groundwater at concentrations where vapor intrusion to indoor or outdoor air may occur. In October 2008, MFA submitted a work plan to Ecology regarding vapor intrusion mitigation system installation and long-term monitoring; however, there is no documentation in Ecology's files indicating such a vapor intrusion mitigation system was actually installed or operated at the Site.

In 2011, MFA submitted a Final Feasibility Study that identified the preferred remedial action which uses the building slab and asphalt paving as an engineered cap, in conjunction with groundwater monitoring, institutional controls, and a covenant prohibiting groundwater use. In July 2011, Ecology issued an opinion letter responding to the proposed remedial action, which indicated Site characterization was insufficient to establish cleanup standards and select a cleanup action. Ecology's opinion letter indicates the nature and extent of groundwater impacts, particularly downgradient of the Site boundary and from the adjacent KASPAC/Chiyoda site, have not been adequately characterized.

In August 2013, Ecology authorized Kennedy/Jenks Consultants to prepare a Remedial Investigation/Feasibility Study (RI/FS) Work Plan (Work Plan) to collect supplemental

information regarding the distribution of impacted soil and groundwater, assess the potential for vapor intrusion in the onsite building, and evaluate overall site conditions to define the relationship between on-property and off-property contamination sources. A Draft RI report summarizing site characterization activities and sampling results will be submitted to Ecology for review and comment upon implementation of the RI/FS Work Plan.

Monitoring wells MW1 through MW8 were constructed prior to 2014. Kennedy/Jenks Consultants prepared a letter report dated 21 October 2014 summarizing groundwater sampling and drilling activities conducted at the site through September 2014, which discusses wells MW9, MW10, and MW11, which were installed in August 2014. New and previously existing monitoring wells are depicted on Figure 2.

Scope of Work

Quarterly Groundwater Monitoring

A quarterly groundwater monitoring program that includes existing and newly-installed groundwater monitoring wells was proposed by Kennedy/Jenks Consultants to evaluate the extent of impacted groundwater and seasonal variability in groundwater conditions. The first and second quarterly monitoring events were completed in May and August of 2014, respectively. The third quarterly monitoring event was performed between 2 December and 5 December 2014. The following field activities were performed:

- Groundwater level monitoring was conducted by gauging 11 onsite monitoring wells using an electronic water level depth probe. The groundwater elevation at each well was calculated by measuring the depth to water (to +/- 0.01 foot) and subtracting this measurement from the surveyed monitoring well casing elevations.

- Groundwater sampling was performed using low-flow purging and sampling techniques with wells purged at a rate of approximately 0.03 to 0.07 gallons per minute (gpm) using a peristaltic pump. Field parameter monitoring, including temperature, pH, specific conductance, dissolved oxygen, oxidation/reduction potential (ORP), and relative turbidity, was conducted with a YSI Pro Plus Quattro multiparameter meter. With the exception of wells MW8 and MW10, which exhibited stable but higher than desired turbidity, purging continued until the field parameters indicated stable conditions (refer to the *Groundwater Purge and Sample Forms* in Attachment A).

- Groundwater samples were collected from 11 monitoring wells located on the former Precision Engineering property and submitted to Analytical Resources, Incorporated (ARI) in Tukwila, Washington for the following analyses:

    - Diesel- and oil-range hydrocarbons using Ecology Method Northwest Total Petroleum Hydrocarbons as Diesel Extended (NWTPH-Dx).

- Total metals, specifically arsenic, lead, chromium, and selenium, using EPA Method 6010C.

- Hexavalent chromium using EPA Method 3500Cr-B.

- Volatile organic compounds (VOCs) using EPA Method 8260C.

The following quality assurance/quality control (QA/QC) samples were collected:

- One field duplicate sample (MW12) was collected from well MW-5 and analyzed for each primary chemical of concern (COC).

- Trip blanks were included with the 3 December 2014 and 4 December 2014 shipments to the analytical laboratory.

Monitoring Results

Groundwater Elevation Results

The results of water level monitoring are summarized in Table 1 and a potentiometric surface elevation map of shallow Site groundwater is provided on Figure 3. A potentiometric surface elevation map of the deeper groundwater unit, characterized by wells MW1, MW7, MW9, and possibly MW4, is provided on Figure 4.

Based on historical water level monitoring data, site groundwater levels are seasonally influenced with an apparent shallow hydraulic gradient west to east (toward the LDW), and a slightly north to south hydraulic gradient near the southern property line. Water level monitoring results collected in December 2014 indicate groundwater gradient conditions are consistent with historical monitoring results. (Note: Because available monitoring wells and water level monitoring data are limited to onsite areas, a broader evaluation of groundwater gradients on nearby properties cannot be ascertained from the existing data.)

Ecology and Kennedy/Jenks are actively pursuing an access agreement with the Washington State Department of Transportation (WSDOT) to install up to three additional monitoring wells offsite and downgradient of the Site and the former KASPAC/Chiyoda property. Groundwater elevation measurements at these future well locations are expected to help refine characterization of the hydraulic gradient(s) and flow direction in onsite and offsite groundwater.

Analytical Results

As indicated above, groundwater samples from the 11 onsite wells were submitted for diesel- and oil-range hydrocarbons, VOCs, metals, and hexavalent chromium. The analytical results of groundwater samples collected in December 2014 during the third quarterly monitoring event are summarized in Table 2.

Hydrocarbons

Only diesel-range and oil-range hydrocarbons have been detected in onsite wells. Concentrations of diesel- and oil-range hydrocarbons in sample MW6 were above the MTCA Method A cleanup level for unrestricted land use, with concentrations of 770 micrograms per liter (µg/L) and 790 µg/L, respectively. Diesel- and oil-range hydrocarbon concentrations detected in other groundwater samples were below the MTCA Method A cleanup level.

No indications of hydrocarbon odor or sheen were observed at the sampled wells while groundwater was being purged, and measurable free-phase hydrocarbon was not encountered in any Site wells.

The diesel- and oil-range hydrocarbon samples from wells MW1, MW2, and MW4 were extracted 1 day outside of the hold time following a power outage at the analytical laboratory.

Hexavalent Chromium and Metals

Total chromium was detected above the laboratory reporting limit in eight groundwater samples, including one field duplicate. The concentrations of total chromium in groundwater samples from wells MW5 (32,000 µg/L; 29,000 µg/L in the field duplicate) were above the corresponding MTCA Method A cleanup level of 50 µg/L. Hexavalent chromium was reported at a concentration of 27,200 µg/L in the primary sample from well MW5 and 22,200 µg/L in the field duplicate from well MW5. Both concentrations substantially exceed the MTCA Method B non-cancer cleanup level of 48 µg/L.

A yellowish color was observed in groundwater purged from wells MW2, MW5, MW6, MW8, MW9, MW10, and MW11.

The laboratory reporting limit for arsenic was 50 µg/L, which exceeded the MTCA Method A cleanup level of 5 µg/L. Arsenic was detected at a concentration of 70 µg/L in the sample collected from well MW6 during the third quarterly sampling event. The laboratory reporting limit for lead was 20 µg/L, which exceeds the MTCA Method A cleanup level of 15 µg/L. Lead and selenium were not detected in any of the samples collected during the third quarterly event at concentrations above the laboratory reporting limit.

VOCs

TCE was the only VOC detected above laboratory reporting limits during the third quarterly groundwater sampling event. TCE was detected in the well MW5 sample at a concentration of 1 µg/L, which is below the corresponding MTCA Method A cleanup level. TCE was not detected above laboratory reporting limits in samples collected from other wells.

Summary

The fourth quarterly groundwater sampling event is tentatively scheduled for the week of 9 March 2015.

Kennedy/Jenks Consultants appreciates the opportunity to provide continued support to Ecology on this project. Should you have any questions regarding the information contained herein, please do not hesitate to contact us at (253) 835-6400.

Very truly yours,

KENNEDY/JENKS CONSULTANTS

Jessica Faragalli
Project Manager

Ty C. Schreiner
Vice President

Enclosures:

- Tables
  - Table 1 – Groundwater Elevations and Well Construction
  - Table 2 – Summary of Groundwater Analytical Results
- Figures
  - Figure 1 – Vicinity Map
  - Figure 2 – Monitoring Well and Soil Boring Locations
  - Figure 3 – Potentiometric Surface of Shallow Groundwater
  - Figure 4 – Potentiometric Surface of Deep Groundwater
- Attachments
  - Attachment A – Groundwater Purge and Sample Forms
  - Attachment B – Laboratory Analytical Reports and Chain-of-Custody Documentation

Tables

Table 1: Groundwater Elevations and Well Construction

Former Precision Engineering
1231 South Director Street
Seattle, Washington

Monitoring Well ID	Screened Interval (ft bgs)	Top of Casing Elevation [a,b] (ft msl)	30 April 2014		12 August 2014		20 August 2014		2 December 2014	
			Depth to water (ft btoc)	Water Elevation (ft msl)	Depth to water (ft btoc)	Water Elevation (ft msl)	Depth to water (ft btoc)	Water Elevation (ft msl)	Depth to water (ft btoc)	Water Elevation (ft msl)
MW1	33-43[c]	26.66	0.15	26.51	not measured		3.19	23.47	0.85	25.81
MW2	10-20[c]	22.39	4.15	18.24	5.55	16.84	5.21	17.18	4.71	17.68
MW3	10-20[c]	23.05	5.42	17.63	6.40	16.65	6.69	16.36	5.61	17.44
MW4	20-25[c]	24.09	2.49	21.60	3.51	20.58	3.05	21.04	4.43	19.66
MW5	10-20	23.40	4.72	18.68	5.96	17.44	5.77	17.63	5.10	18.30
MW6	10-20	21.49	4.92	16.57	4.21	17.28	4.43	17.06	4.53	16.96
MW7	26.5-31.5	21.35	5.52	15.83	5.03	16.32	5.87	15.48	5.68	15.67
MW8	9.5-19.5	20.88	5.14	15.74	6.10	14.78	5.53	15.35	5.42	15.46
MW9	31-36	20.47	not applicable		not applicable		5.84	14.63	4.99	15.48
MW10	10-20	20.32	not applicable		not applicable		3.93	16.39	3.34	16.98
MW11	10-20	22.30	not applicable		not applicable		5.42	16.88	4.85	17.45

Notes:

(a) Top of casing elevations were surveyed 5 September 2014.

(b) Top of casing elevations are taken from the northern side, except for well MW4, which was taken on the southern side.

(c) Screened interval estimated using submersible video camera.

ft = feet

bgs = below ground surface

btoc = below top of well casing

msl = mean sea level

Table 2: Summary of Groundwater Analytical Results

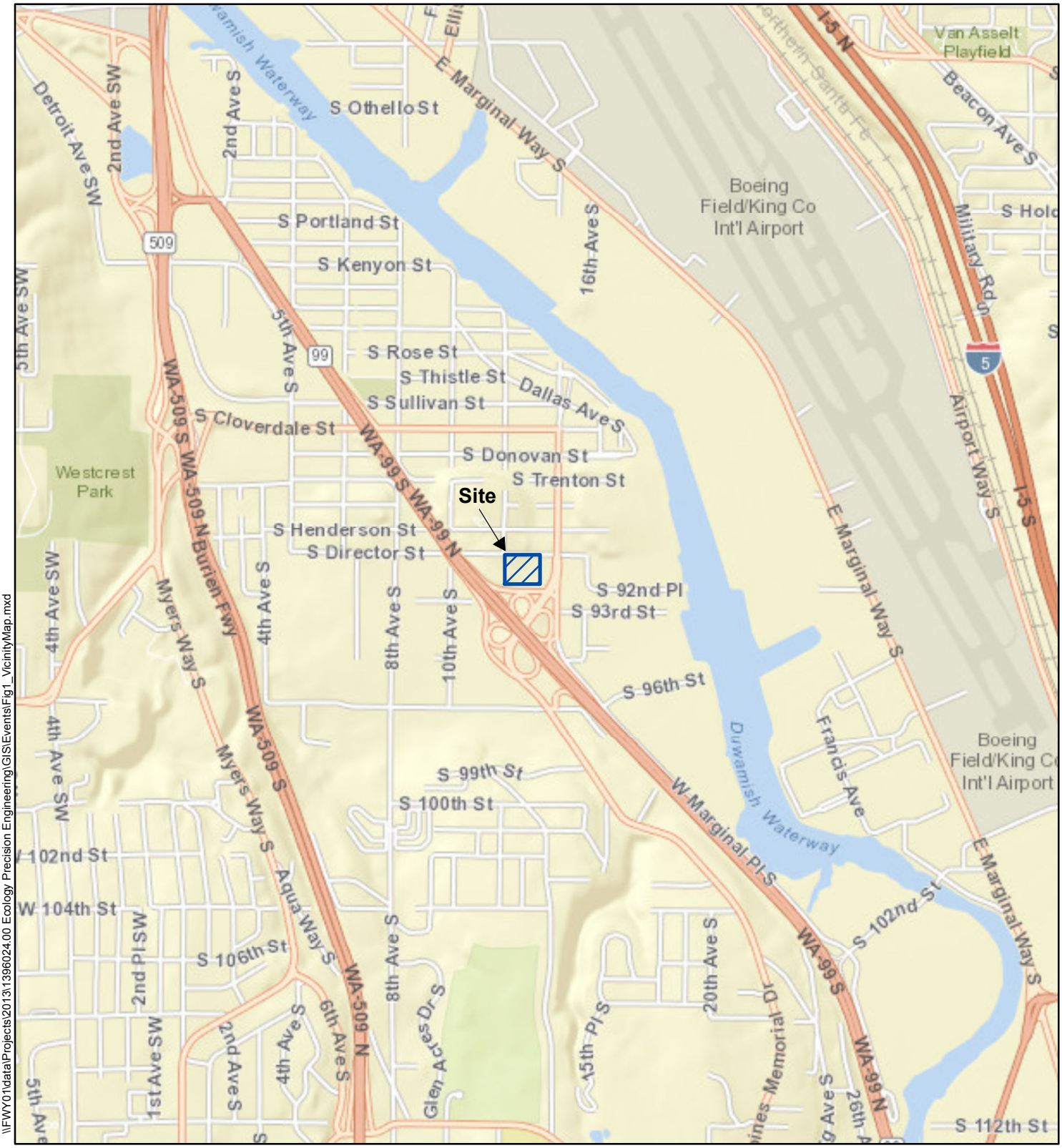
Former Precision Engineering
1231 South Director Street
Seattle, Washington

		Hydrocarbons		Metals					VOCs (detected)	
Sample ID	Date	Diesel (µg/L)	Oil (µg/L)	Arsenic (µg/L)	Total Chromium (µg/L)	Hexavalent chromium (µg/L)	Lead (µg/L)	Selenium (µg/L)	Trichloroethene (µg/L)	Bromoform (µg/L)
MW1	8/20/2014	<100	<200	<50	<5	<10	<20	<50	<1.0	1.5
	12/2/2014	<100	<200	<50	<5	<10	<20	<50	<1.0	<1.0
MW2	5/1/2014	240	260	<50	7	<10	<20	<50	<5.0	<5.0
	8/20/2014	490	490	<50	6	<10	<20	<50	<1.0	<1.0
	12/2/2014	330	220	<50	11	<10	<20	<50	<1.0	<1.0
MW3	4/30/2014	<100	<200	<50	<5	28	<20	<50	<1.0	<1.0
	8/21/2014	<100	<200	<50	<5	12	<20	<50	<1.0	<1.0
	12/4/2014	120	<200	<50	5	17	<20	<50	<1.0	<1.0
MW4	5/1/2014	<100	<200	<50	5	13	<20	<50	<1.0	<1.0
	8/20/2014	<100/ <100	<200/ <200	<50/ <50	<5/ <5	<10/ <10	<20/ <20	<50/ <50	<1.0/ <1.0	<1.0/ <1.0
	12/2/2014	<100	<200	<50	<5	<10	<20	<50	<1.0	<1.0
MW5	5/1/2014	<100/ <100	<200/ <200	<50/ <50	**75,100/ 80,100**	**80,000/ 84,500**	<20/ <20	<50/ <50	**3.1/ 3.6**	<1.0
	8/21/2014	<100	<200	<50	**82,400**	**95,500**	<20	<50	**3.1**	<1.0
	12/4/2014	<100/ <100	<200/ <200	<50/ <50	**32,000/ 29,000**	**27,200/ 22,200**	<20/ <20	<50/ <50	**1.0/ <1.0**	<1.0/ <1.0
MW6	4/30/2014	**720**	**850**	**80**	31	<10	<20	<50	<5.0	<5.0
	8/21/2014	300	<200	**80**	23	<10	<20	<50	<1.0	<1.0
	12/3/2014	**770**	**790**	**70**	25	<10	<20	<50	<5.0	<5.0
MW7	4/30/2014	<100	<200	<50	<5	<10	<20	<50	<1.0	<1.0
	8/20/2014	140	<200	<50	<5	<10	<20	<50	<1.0	<1.0
	12/3/2014	170	<200	<50	<5	<10	<20	<50	<1.0	<1.0
MW8	5/1/2014	340	290	<50	11	23	<20	<50	<5.0	<5.0
	8/20/2014	440	380	<50	8	<50	**17**	<20	<1.0	<1.0
	12/3/2014	420	240	<50	12	<20	<50	<10	<5.0	<5.0
MW9	8/21/2014	<100	<200	<50	<5	<10	<20	<50	<1.0	<1.0
	12/3/2014	150	<200	<50	<5	<10	<20	<50	<1.0	<1.0
MW10	8/21/2014	130	<200	<50	<5	<10	<20	<50	<1.0	<1.0
	12/3/2014	390	310	<50	9	<10	<20	<50	<1.0	<1.0
MW11	8/21/2014	120	<200	<50	<5	<10	<20	<50	<1.0	<1.0
	12/4/2014	260	<200	<50	5	12	<20	<50	<10	<10
Cleanup Levels										
MTCA Method A Unrestricted		500	500	5	50	-	15	-	5	-
MTCA Method B Non-cancer		-	-	4.8	-	48	-	80	4	160
MTCA Method B Cancer		-	-	0.0583	-	-	-	-	0.54	5.54

Notes:

VOCs = volatile organic compounds.
µg/L = micrograms per liter.
MTCA = Model Toxics Control Act
"<" = indicates substance was not detected above the specified laboratory reporting limit.
"-" indicates a cleanup level is not established.
Bold results are above the most conservative MTCA cleanup level shown.

Figures



\\FWY01\data\Projects\2013\1396024.00 Ecology Precision Engineering\GIS\Events\Fig1_VicinityMap.mxd

Imagery Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013

N
W E
S

0.5 0.25 0 0.5
Miles

Kennedy/ Jenks Consultants

Precision Engineering Facility
Seattle, Washington

Vicinity Map

Figure 1

K/J Project Number 1396024.00

February 2015

\\FWY01\data\Projects\2013\1396024.00 Ecology Precision Engineering\GIS\Events\RI Work Plan\Fig1_UpdatedLocations.mxd

Map Source: Maul Foster & Alongi. Final Feasibility Study, Former Precision Engineering, Inc., Site. March 3, 2011.
Imagery Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community.

Legend

- Deep Monitoring Well
- Shallow Monitoring Well
- 2005 Geoprobe Boring
- 2005 Reconnaissance Groundwater Sampling Location
- 2014 Geoprobe Boring
- Approximate Parcel Boundary

Notes:

1. All locations are approximate

N

100 50 0 100
Feet

Kennedy/ Jenks Consultants

Precision Engineering Facility
Seattle, Washington

Monitoring Well and Soil Boring Locations

Figure 2

K/J Project Number 1396024.00
February 2015

\\FWY01\data\Projects\2013\1396024.00 Ecology Precision Engineering\GIS\Events\RI Work Plan\Fig1_UpdatedLocations.mxd

Map Source: Maul Foster & Alongi. Final Feasibility Study, Former Precision Engineering, Inc., Site. March 3, 2011.
Imagery Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community.

Legend

- Deep Monitoring Well
- Shallow Monitoring Well
- Approximate groundwater elevation contour (shallow unit) in feet above mean sea level
- 25.81 Groundwater elevation of shallow groundwater wells in feet above mean sea level
- Approximate Parcel Boundary

Notes:

1. All locations are approximate.
2. The screened unit for MW-4 may be deep, rather than shallow.
3. Groundwater elevations measured 2 December 2014

N

100 50 0 100 Feet

Kennedy/ Jenks Consultants

Precision Engineering Facility
Seattle, Washington

Potentiometric Surface of Shallow Groundwater

Figure 3

K/J Project Number 1396024.00
February 2015

\\FWY01\data\Projects\2013\1396024.00 Ecology Precision Engineering\GIS\Events\RI Work Plan\Fig1_UpdatedLocations.mxd

Map Source: Maul Foster & Alongi. Final Feasibility Study, Former Precision Engineering, Inc., Site. March 3, 2011.
Imagery Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community.

Legend

- Deep Monitoring Well
- Shallow Monitoring Well
- Approximate groundwater elevation contour (deep unit) in feet above mean sea level
- 25.81 Groundwater elevation of deep groundwater wells in feet above mean sea level
- Approximate Parcel Boundary

Notes:

1. All locations are approximate.
2. The screened unit for MW-4 may be deep, rather than shallow.
3. Groundwater elevations measured 2 December 2014

N

100 50 0 100
Feet

Kennedy/ Jenks Consultants

Precision Engineering Facility
Seattle, Washington

Potentiometric Surface of Deep Groundwater

Figure 4

K/J Project Number 1396024.00
February 2015

Attachment A

Groundwater Purge and Sample Forms

Groundwater Purge and Sample Form (Minimal Drawdown) — **Kennedy/Jenks Consultants**

Date: 12/2/14
Project Name: Precision Engineering Facility
Project Number: 1396024.00
Sampling Personnel: DKR
Water Level Meter: Geotech Interface Probe
Purging Equipment: Geotech Peristaltic Pump

Sampling Time: 1355
Purge Depth (ft): 38 ft
Total Discharge (gal): 2.5
Water Disposal: Onsite Drums
Weather: Sunny, ~35°F

Well Number: MW-1
Monument Type: Stickup: X (ft PVC) Flush:
Well Diameter (in): 2 inch
Well Condition: Good
Total Casing Depth (ft): 43.57 toc
Screened Interval (ft): 33-43 toc
Depth to Groundwater (ft): 0.85 toc
Depth to LNAPL (ft): Well N/A
Reference: TOC

Volume Calculation:

Water Column (ft)		Multiplier for Casing Diameter (in)			Casing Volume (gal)
42.7	·		2	0.16	= 6.8
		0.16	4	0.64	
			6	1.44	

Water Quality Meter(s)	Model	Calibration Date/Time
Temp/pH/SC/ORP/DO:	YSI Pro Plus (3665)	
Other: Turbidity	Micro TPi	
Other:		

QA/QC Samples		
Type	Sample ID	Time

Sample ID	Sample Containers: No.	Type	Pres.	Vol.	Field Filtered	Turbidity/ Color	Analysis Requested	MS/MSD & Comments
MW-1 ~~(dup)~~	2	VOA	HCl	40ml	Nor	Clear	VOCs	
	1	Poly	HNO_3	250ml			Metals	Cr, Pb, As, Se
	2	Amber	—	500ml			NWTPH-Dx	
	1	Poly	HNO_3	250ml			CrVI	

Time	1310	1315	1320	1325	1330	1335	1340	1345	1350
Parameter (every 5 min)		5 min	10 min	15 min	20 min	25 min	30 min	min	min
Flow Rate (~~gal/min~~) L/min		0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (gal) L		1.5	3	4	5	6	7	8	9
Water Depth (ft)		1.74	3.26	4.13	4.57	4.98	5.48	5.97	6.25
Temperature (Celsius)		9.6	9.5	9.5	9.6	9.7	9.9	10.0	10.0
pH		6.88	7.40	7.60	7.72	7.87	7.95	8.02	8.05
Sp. Conductance (mS/cm)		0.319	0.317	0.318	0.317	0.318	0.318	0.319	0.319
DO (mg/L)		3.95	4.16	3.26	3.14	2.79	2.33	2.13	2.08
ORP (mV)		-34.2	-89.6	-104.7	-117.7	-127.7	-149.3	-155.3	-153.8
Turbidity (NTU)		1.32	1.07	1.82	1.69	1.38	1.07	0.81	1.03
Color		Clear						1.81	
Odor/Evidence of LNAPL		N; O/S							

Notes:

Groundwater Purge and Sample Form (Minimal Drawdown) — **Kennedy/Jenks Consultants**

Date: 12/2/14
Project Name: Precision Engineering Facility
Project Number: 1396024.00
Sampling Personnel: DKR / CEJ
Water Level Meter: Geotech Interface Probe
Purging Equipment: Geotech Peristaltic Pump

Sampling Time: 1640
Purge Depth (ft): 16 ft.
Total Discharge (gal): 2.15
Water Disposal: Drum onsite
Weather:

Well Number: MW-2
Monument Type: Stickup: X Flush: (Locking (PVC))
Well Diameter (in): 2 inch
Well Condition: Good

		Reference:
Total Casing Depth (ft):	19.54 toc	TOC
Screened Interval (ft):	10-20 toc	
Depth to Groundwater (ft):	4.71 toc	
Depth to LNAPL (ft): Well	N/A	

Volume Calculation:

Water Column (ft)		Multiplier for Casing Diameter (in)	2	0.16		Casing Volume (gal)
14.83	·	0.16	4	0.64	=	2.3
			6	1.44		

Water Quality Meter(s)	Model	Calibration Date/Time
Temp/pH/SC/ORP/DO:	YSI Pro Plus (3665)	
Other: Turbidity	Micro TPi	
Other:		

QA/QC Samples		
Type	Sample ID	Time

Sample ID	Sample Containers: No.	Type	Pres.	Vol.	Field Filtered	Turbidity/ Color	Analysis Requested	MS/MSD & Comments
MW-2	2	VOA	HCl	40mL	N		~~TPH-Dx~~ TOC	
	1	Poly	HNO_3	250mL	N		Metals	Cr, Pb, As, Se
	2	Amber	-	500mL	N		TPH-Dx	
	1	Poly	HNO_3	250mL	N		Cr+6	

Time	1540	1545	1550	1555	1600	1605	1610	1615	1620
Parameter (every 5 min)		5 min	5 min	5 min	5 min	5 min	5 min	5 min	5 min
Flow Rate ~~(gal/min)~~ L/min		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged ~~(gal)~~ L		1	2	3	4	5	6	7	8
Water Depth (ft)		6.22	6.83	7.76	9.24	10.01	10.82	11.82	12.39
Temperature (Celsius)		13.7	13.5	12.9	12.4	12.5	12.6	12.8	12.9
pH		6.82	6.83	6.86	6.85	6.72	6.68	6.64	6.70
Sp. Conductance (mS/cm)		3.32	3.33	3.32	3.34	3.30	3.39	3.40	3.39
DO (mg/L)		1.81	0.87	1.11	0.99	1.18	1.01	0.86	0.86
ORP (mV)		-124.1	-135.8	-131.3	-143.3	-131.8	-136.3	-137.3	-134.3
Turbidity (NTU)		145.4	181.7	157.8	133.1	32.1	126.4	152.7	150.2
Color		Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Odor/Evidence of LNAPL		No o/s	No o/s	No o/s	No o/s	No o/s	No o/s	No o/s	No o/s

Notes:

MW-2 cont'd

12/2/14

Time	1625	1630	1635					
Parameter (every 5 min)	5 min	5 min	5 min	min	min	min	min	min
Flow Rate ~~(gal/min)~~ L/min	0.2	0.2	0.2					
Volume Purged ~~(gal)~~ L	9	10	11					
Water Depth (ft)	13.08	13.36						
Temperature (Celsius)	12.8	12.9	12.9					
pH	6.77	6.68	6.71					
Sp. Conductance (mS/cm)	3.34	3.36	3.35					
DO (mg/L)	1.80	1.44	1.47					
ORP (mV)	-129.7	-134.7	-139.3					
Turbidity (NTU)	26.35	7.03	8.89					
Color	Yellow	Yellow	Yellow					
Odor/Evidence of LNAPL	No ols	No ols	No ols					

Time								
Parameter (every 5 min)	min	min	min	min	min	min	min	min
Flow Rate (gal/min)								
Volume Purged (gal)								
Water Depth (ft)								
Temperature (Celsius)								
pH								
Sp. Conductance (mS/cm)								
DO (mg/L)								
ORP (mV)								
Turbidity (NTU)								
Color								
Odor/Evidence of LNAPL								

Time								
Parameter (every 5 min)	min	min	min	min	min	min	min	min
Flow Rate (gal/min)								
Volume Purged (gal)								
Water Depth (ft)								
Temperature (Celsius)								
pH								
Sp. Conductance (mS/cm)								
DO (mg/L)								
ORP (mV)								
Turbidity (NTU)								
Color								
Odor/Evidence of LNAPL								

Groundwater Purge and Sample Form (Minimal Drawdown)

Kennedy/Jenks Consultants

Date: 12/4/14
Project Name: Precision Engineering Facility
Project Number: 1396024.00
Sampling Personnel: DKR
Water Level Meter: Geotech Interface Probe
Purging Equipment: Geotech Peristaltic Pump

Sampling Time: 1240
Purge Depth (ft): 15
Total Discharge (gal): 2.25
Water Disposal: Drum onsite
Weather:

Well Number: MW-3
Monument Type: Stickup: X (ft PVC) Flush:
Well Diameter (in): 2 inch
Well Condition: Good

		Reference:
Total Casing Depth (ft):	20.17 toc	TOC
Screened Interval (ft):	10-20 toc	
Depth to Groundwater (ft):	5.46 toc	
Depth to LNAPL (ft): Well	N/A	

Volume Calculation:

Water Column (ft)	*	Multiplier for Casing Diameter (in)	2	0.16	=	Casing Volume (gal)
14.71		0.16	4	0.64		2.4
			6	1.44		

Water Quality Meter(s)	Model	Calibration Date/Time
Temp/pH/SC/ORP/DO:	YSI Pro Plus (3665)	
Other: Turbidity	Micro TPi	
Other:		

QA/QC Samples		
Type	Sample ID	Time

Sample ID	Sample Containers No.	Type	Pres.	Vol. (ml)	Field Filtered	Turbidity/ Color	Analysis Requested	MS/MSD & Comments
MW-3	2	Amber	NA	500	No	Clear	NWTPH-Dx	
↓	2	VOA	HCl	40	↓	↓	VOCs	
	1	Poly	HNO3	250			Metals	As, Pb, Cr, Se
	1	Poly	-	250			Cr VI	

Time	1155	1200	1205	1210	1215	1220	1225	1230	1235
Parameter (every 5 min)		min	min	min	min	min	min	min	min
Flow Rate (gal/min)		0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (gal)		1.5	2.5	3.5	4.5	5.5	6.5	7.5	8.5
Water Depth (ft)		6.24	6.22	6.23	6.24	6.21	6.20	6.19	6.19
Temperature (Celsius)		14.9	15.0	14.9	14.9	15.0	15.0	15.0	15.0
pH		6.70	6.57	6.55	6.49	6.47	6.47	6.47	6.48
Sp. Conductance (mS/cm)		0.443	0.436	0.435	0.430	0.416	0.414	0.413	0.413
DO (mg/L)		2.03	1.53	1.38	0.93	1.01	1.23	1.30	1.32
ORP (mV)		-150.2	-147.2	-144.5	-140.5	-145.0	-140.6	-137.1	-135.2
Turbidity (NTU)		2.20	3.52	3.11	4.70	5.47	4.97	4.38	4.27
Color		Clear							→
Odor/Evidence of LNAPL		NO/S							→

Notes: Some trace small brown particles.

Groundwater Purge and Sample Form (Minimal Drawdown) — **Kennedy/Jenks Consultants**

Date: 12/2/14
Project Name: Precision Engineering Facility
Project Number: 1396024.00
Sampling Personnel: DKR
Water Level Meter: Geotech Interface Probe
Purging Equipment: Geotech Peristaltic Pump

Sampling Time: 1500
Purge Depth (ft): 20ft
Total Discharge (gal): 2.5
Water Disposal: Drum onsite
Weather: Sunny, 35°F

Well Number: MW-4
Monument Type: Stickup X (ft PVC) Flush:
Well Diameter (in): 2 inch * Measure depths from South
Well Condition: OK.

		Reference
Total Casing Depth (ft):	25.74 toc	TOC
Screened Interval (ft):	toc	
Depth to Groundwater (ft):	4.43 toc	
Depth to LNAPL (ft): Well	N/A	

Volume Calculation:

Water Column (ft)	*	Multiplier for Casing Diameter (in)			=	Casing Volume (gal)
21.3			2	0.16		3.4
		0.16	4	0.64		
			6	1.44		

Water Quality Meter(s)	Model	Calibration Date/Time
Temp/pH/SC/ORP/DO:	YSI Pro Plus (3665)	
Other: Turbidity	Micro TPi	
Other:		

QA/QC Samples		
Type	Sample ID	Time

Sample ID	Sample Containers No.	Type	Pres.	Vol.	Field Filtered	Turbidity/ Color	Analysis Requested	MS/MSD & Comments
~~MW-4-120214~~	~~6~~							
MW-4	2	Amber	—	500	No	Clear	NWTPH-Dx	
	2	VOA	HCl	40			VOCs	
	1	Poly	HNO_3	250			Metals	Cr, Pb, As, Se
	1	Poly	—	250			CrVI	

1420 Time	1425	1430	1435	1440	1445	1450	1455	1458
Parameter (every 5 min)	min	min	min	min	min	min	min	min
Flow Rate (gal/min) L/m	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (gal) L	1	2.5	3.5	4.5	5.5	6.5	7.5	8
Water Depth (ft)	3.21	5.43	6.19	7.15	7.84	8.36	8.81	9.11
Temperature (Celsius)	12.5	13.7	13.9	13.9	13.9	13.8	13.6	13.5
pH	7.65	7.72	7.74	7.76	7.79	7.80	7.82	7.83
Sp. Conductance (mS/cm)	0.524	0.533	0.533	0.534	0.535	0.535	0.536	0.535
DO (mg/L)	4.35	2.29	2.10	2.05	2.06	2.20	2.22	2.20
ORP (mV)	-100.7	-114.8	-120.4	-129.1	-132.3	-144.2	-147.0	-140.9
Turbidity (NTU)	2.73	6.66	3.66	5.91	4.17	4.04	3.40	3.03
Color	Clear	*						
Odor/Evidence of LNAPL	No O/S							

* Some small black particles in water

Notes:

Groundwater Purge and Sample Form (Minimal Drawdown) — **Kennedy/Jenks Consultants**

Date: 12/4/14
Project Name: Precision Engineering Facility
Project Number: 1396024.00
Sampling Personnel: DKR
Water Level Meter: Geotech Interface Probe
Purging Equipment: Geotech Peristaltic Pump

Sampling Time: 1105
Purge Depth (ft): 15ft.
Total Discharge (gal): 2.75
Water Disposal: Drum onsite
Weather: Indoors / Rainy, 40°F

Well Number: MW-5
Monument Type: Stickup: _____ (ft PVC) Flush: X
Well Diameter (in): 2 inch
Well Condition: Good, missing 1 bolt.

		Reference:
Total Casing Depth (ft):	19.90 toc	TOC
Screened Interval (ft):	10-20 toc	
Depth to Groundwater (ft):	5.06 toc	
Depth to LNAPL (ft): Well	N/A	

Volume Calculation:

Water Column (ft)	*	Multiplier for Casing Diameter (in)	2	0.16	=	Casing Volume (gal)
14.84		0.16	4	0.64		2.3
			6	1.44		

Water Quality Meter(s)	Model	Calibration Date/Time
Temp/pH/SC/ORP/DO:	YSI Pro Plus (3665)	
Other: Turbidity	Micro TPi	
Other:		

QA/QC Samples		
Type	Sample ID	Time
Dup	MW-12	1000

Sample ID	Sample Containers No.	Type	Pres.	Vol.	Field Filtered	Turbidity/ Color	Analysis Requested	MS/MSD & Comments
MW-5	2	Amber	—	500	NO	YSI Yellow	NWTPH-Dx	
	2	VOA	HCl	40			VOCs	
	1	Poly	HNO_3	250			Metals	Cr, Pb, As, Se
	1	Poly	—	250			Cr VI	
MW-12	2	Amber	—	500	NO		NWTPH-Dx	
	2	VOA	HCl	40			VOCs	
	1	Poly	HNO_3	250			Metals	Cr, Pb, As, Se
	1	Poly	—	250			Cr VI	

1010 Time	1015	1020	1025	1030	1035	1040	1045	1050
Parameter (every 5 min)	min	min	min	min	min	min	min	min
Flow Rate (~~gal/min~~) L/min	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (~~gal~~) L	1	2	3	4	5	6	7	8
Water Depth (ft)	5.49	5.58	5.59	5.61	5.62	5.65	5.66	5.67
Temperature (Celsius)	17.6	18.1	18.3	18.3	18.4	18.5	18.5	18.5
pH	7.37	7.47	7.52	7.54	7.52	7.47	7.50	7.52
Sp. Conductance (mS/cm)	0.557	0.552	0.549	0.549	0.547	0.545	0.545	0.546
DO (mg/L)	0.96	0.82	0.99	1.05	1.24	1.40	1.40	1.28
ORP (mV)	-163.7	-180.4	-186.5	-190.3	-188.1	-190.2	-193.9	-197.3
Turbidity (NTU)	2.65	2.71	2.77	2.57	2.98	3.37	2.48	2.12
Color	YSI Yellow	→	→	→	→	→	→	→
Odor/Evidence of LNAPL	NO O/S	→	→	→	→	→	→	→

Notes:

MW-5 cont'd

12/4/14

Time	1055	1058	1101	1104				
Parameter (every 5 min)	min	min	min	min	min	min	min	min
Flow Rate (gal/min)	0.2	0.2	0.2	0.2				
Volume Purged (gal)	8.5	9.2	9.7	10.25				
Water Depth (ft)	5.67	5.68	5.68	5.69				
Temperature (Celsius)	18.5	18.5	18.5	18.5				
pH	7.50	7.49	7.49	7.49				
Sp. Conductance (mS/cm)	0.552	0.554	0.556	0.556				
DO (mg/L)	1.23	1.21	1.19	1.20				
ORP (mV)	-196.8	-193.9	-194.7	-194.5				
Turbidity (NTU)	2.18	2.10	2.15	2.09				
Color	V. lt. Yellow	→	→	→				
Odor/Evidence of LNAPL	NOD/S	→	→	→				

Time								
Parameter (every 5 min)	min	min	min	min	min	min	min	min
Flow Rate (gal/min)								
Volume Purged (gal)								
Water Depth (ft)								
Temperature (Celsius)								
pH								
Sp. Conductance (mS/cm)								
DO (mg/L)								
ORP (mV)								
Turbidity (NTU)								
Color								
Odor/Evidence of LNAPL								

Time								
Parameter (every 5 min)	min	min	min	min	min	min	min	min
Flow Rate (gal/min)								
Volume Purged (gal)								
Water Depth (ft)								
Temperature (Celsius)								
pH								
Sp. Conductance (mS/cm)								
DO (mg/L)								
ORP (mV)								
Turbidity (NTU)								
Color								
Odor/Evidence of LNAPL								

Groundwater Purge and Sample Form (Minimal Drawdown) — **Kennedy/Jenks Consultants**

Date: 12/3/14
Project Name: Precision Engineering Facility
Project Number: 1396024.00
Sampling Personnel: DKR
Water Level Meter: Geotech Interface Probe
Purging Equipment: Geotech Peristaltic Pump

Sampling Time: 1630
Purge Depth (ft): 15 ft
Total Discharge (gal): 1.5
Water Disposal: Drum onsite
Weather:

Well Number: MW-6
Monument Type: Stickup: _____ (ft PVC) Flush: X
Well Diameter (in): 2 inch
Well Condition: Good

			Reference:
Total Casing Depth (ft):	20.07	toc	TOC
Screened Interval (ft):	1 20	toc	
Depth to Groundwater (ft):	4.53	toc	
Depth to LNAPL (ft): Well	N/A		

Volume Calculation:

Water Column (ft)	*	Multiplier for Casing Diameter (in)	2	0.16	=	Casing Volume (gal)
15.54		0.16	4	0.64		2.5
			6	1.44		

Water Quality Meter(s)	Model	Calibration Date/Time
Temp/pH/SC/ORP/DO:	YSI Pro Plus (3665)	
Other: Turbidity	Micro TPi	
Other:		

QA/QC Samples		
Type	Sample ID	Time

Sample ID	Sample Containers No.	Type	Pres.	Vol.	Field Filtered	Turbidity/ Color	Analysis Requested	MS/MSD & Comments
MW-6	2	Amber	—	500	No	Yellow/brn	NWTPH-Dx	
↓	2	VOA	HCl*	40	↓	↓	VOCs	
	1	Poly	HNO_3	250			Metals	Cr, Pb, As, Se
	1	Poly	—	250			Cr VI	

Time	1600	1605	1610	1615	1620	1625			
Parameter (every 5 min)		min	min	min	min	min	min	min	min
Flow Rate (gal/min)		0.2	0.2	0.2	0.2	0.2			
Volume Purged (gal)		1	2	3	4	5			
Water Depth (ft)		4.35	4.78	4.91	5.41	5.45			
Temperature (Celsius)		14.4	15.2	15.7	15.8	15.8			
pH		6.74	6.68	6.66	6.65	6.65			
Sp. Conductance (mS/cm)		4.03	4.09	4.06	4.05	4.03			
DO (mg/L)		1.06	0.36	0.18	0.17	0.16			
ORP (mV)		-177.9	-213.8	-243.7	-246.6	-250.0			
Turbidity (NTU)		1.47	3.80	3.62	3.62	4.43			
Color		Yellow/Brn							
Odor/Evidence of LNAPL		No O/S							

Notes: Water is a dark yellow/light brown color.
* water is very aerated. Preservative likely gone trying to get air bubbles out. Noted on COC.

Groundwater Purge and Sample Form (Minimal Drawdown) — **Kennedy/Jenks Consultants**

Date: 12/3/14
Project Name: Precision Engineering Facility
Project Number: 1396024.00
Sampling Personnel: DKR
Water Level Meter: Geotech Interface Probe
Purging Equipment: Geotech Peristaltic Pump

Sampling Time: 1540
Purge Depth (ft): 24 ft
Total Discharge (gal): 8
Water Disposal: Drum onsite
Weather:

Well Number: MW 7
Monument Type: Stickup: _____ (ft PVC) Flush: X
Well Diameter (in): 2 inch
Well Condition: Good.

		Reference:
Total Casing Depth (ft):	31.46 toc	TOC
Screened Interval (ft):	21-31 toc	
Depth to Groundwater (ft):	5.68 toc	
Depth to LNAPL (ft): Well	N/A	

Volume Calculation:

Water Column (ft)	*	Multiplier for Casing Diameter (in)			=	Casing Volume (gal)
25.78		0.16	2			4.12
		0.64	4			
		1.44	6			

Water Quality Meter(s)	Model	Calibration Date/Time
Temp/pH/SC/ORP/DO:	YSI Pro Plus (3665)	
Other: Turbidity	Micro TPi	
Other:		

QA/QC Samples		
Type	Sample ID	Time

Sample ID	Sample Containers: No.	Type	Pres.	Vol.	Field Filtered	Turbidity/ Color	Analysis Requested	MS/MSD & Comments
MW-7	2	Amber	—	500	No	clear	NWTPH-Dx	
↓	2	VOA	HCl	40	↓	↓	VOCs	
	1	Poly	HNO_3	250			Metals	Cr, Pb, As, Se
	1	Poly	—	250			Cr VI	

Time	1445	1450	1455	1500	1505	1510	1515	1520	1525	1530
Parameter (every 5 min)		min	min	min	min	min	min	min	min	
Flow Rate (gal/min)		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
Volume Purged (gal)		1	2	3	4	5	6	7	8	
Water Depth (ft)		~~7.49~~ 7.69	7.69	7.94	8.40	8.58	8.72	8.83	8.93	
Temperature (Celsius)		~~15.0~~ 14.9	14.9	14.9	14.9	14.7	14.6	14.3	14.4	
pH		~~7.05~~ 6.95	6.95	6.91	6.88	6.87	6.86	6.84	6.83	
Sp. Conductance (mS/cm)		2.53	2.53	2.51	2.52	2.52	2.53	2.59	2.79	
DO (mg/L)		1.50	0.94	0.81	0.62	0.55	6.45	0.50	0.68	
ORP (mV)		-124.0	-182.3	-205.3	-212.1	-215.5	-224.0	-229.6	-216.5	
Turbidity (NTU)		1.41	1.18	1.12	0.72	1.00	1.04	1.14	1.09	1.02
Color		clear								
Odor/Evidence of LNAPL		No								

Notes:

MW-7 cont'd

12/3/14

Time	1530	1533	1536					
Parameter (every 5 min)	min	min	min	min	min	min	min	min
Flow Rate (gal/min)	0.2	0.2	0.2					
Volume Purged (gal)	9	10	11					
Water Depth (ft)	8.910	8.98	9.03					
Temperature (Celsius)	14.4	14.4	14.4					
pH	6.77	6.76	6.75					
Sp. Conductance (mS/cm)	2.97	3.02	3.04					
DO (mg/L)	0.59	0.57	0.57					
ORP (mV)	-224.2	-224.0	-226.9					
Turbidity (NTU)	1.02	1.03	1.00					
Color	Clear →		→					
Odor/Evidence of LNAPL	No/S →		→					

Time								
Parameter (every 5 min)	min	min	min	min	min	min	min	min
Flow Rate (gal/min)								
Volume Purged (gal)								
Water Depth (ft)								
Temperature (Celsius)								
pH								
Sp. Conductance (mS/cm)								
DO (mg/L)								
ORP (mV)								
Turbidity (NTU)								
Color								
Odor/Evidence of LNAPL								

Time								
Parameter (every 5 min)	min	min	min	min	min	min	min	min
Flow Rate (gal/min)								
Volume Purged (gal)								
Water Depth (ft)								
Temperature (Celsius)								
pH								
Sp. Conductance (mS/cm)								
DO (mg/L)								
ORP (mV)								
Turbidity (NTU)								
Color								
Odor/Evidence of LNAPL								

Groundwater Purge and Sample Form (Minimal Drawdown) — **Kennedy/Jenks Consultants**

Date: 12/3/14
Project Name: Precision Engineering Facility
Project Number: 1396024.00
Sampling Personnel: DKR
Water Level Meter: Geotech Interface Probe
Purging Equipment: Geotech Peristaltic Pump

Sampling Time: 1010
Purge Depth (ft): 15ft
Total Discharge (gal): 2.25
Water Disposal: Drum onsite
Weather:

Well Number: MW-8
Monument Type: Stickup: _____ (ft PVC) Flush: X
Well Diameter (in): 2 inch
Well Condition: OK, seal disintegrating

		Reference:
Total Casing Depth (ft):	19.80 toc	TOC
Screened Interval (ft):	10ft: 9-19 toc	
Depth to Groundwater (ft):	5.42 toc	
Depth to LNAPL (ft): Well	N/A	

Volume Calculation:

Water Column (ft)	*	Multiplier for Casing Diameter (in)	2	0.16	=	Casing Volume (gal)
14.38		0.16	4	0.64		2.3
			6	1.44		

Water Quality Meter(s)	Model	Calibration Date/Time
Temp/pH/SC/ORP/DO:	YSI Pro Plus (3665)	
Other: Turbidity	Micro TPi	
Other:		

QA/QC Samples		
Type	Sample ID	Time

Sample ID	Sample Containers No.	Type	Pres.	Vol.	Field Filtered	Turbidity/ Color	Analysis Requested	MS/MSD & Comments
MW-8	2	Amber	-	500	No	Lt. Yellow	NWTPH-Dx	
↓	2	VOA	HCl	40ml	↓	↓	VOCs	
	1	Poly	HNO_3	250			Metals	As, Pb, & Cr
	1	Poly	-	250			Cr VI	

0930 Time	0935	0940	0945	0950	0955	1000	1005	
Parameter (every 5 min)	min	min	min	min	min	min	min	min
Flow Rate (gal/min)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
Volume Purged (gal)	1	2	3	4	5	6	7	
Water Depth (ft)	6.02	6.88	7.38	7.59	7.89	8.12	8.31	
Temperature (Celsius)	14.5	14.8	15.1	15.80	15.1	14.9	14.9	
pH	6.56	6.52	6.50	6.50	6.50	6.51	6.51	
Sp. Conductance (mS/cm)	1.76	1.70	1.73	1.74	1.74	1.75	1.75	
DO (mg/L)	1.35	0.98	0.83	0.78	0.80	0.81	0.85	
ORP (mV)	-222.5	-190.3	-212.2	-221.2	-191.4	-218.5	-203.8	
Turbidity (NTU)	15.70	19.83	18.31	16.03	15.38	14.65	14.79	
Color	Clear to Yellow →					Sl Yellow →		
Odor/Evidence of LNAPL	No O/S →						→	

Notes:

Groundwater Purge and Sample Form (Minimal Drawdown) — **Kennedy/Jenks Consultants**

Date: 12/3/14
Project Name: Precision Engineering Facility
Project Number: 1396024.00
Sampling Personnel: DKR
Water Level Meter: Geotech Interface Probe
Purging Equipment: Geotech Peristaltic Pump

Sampling Time: 1140
Purge Depth (ft): 33 ft.
Total Discharge (gal): 1.85
Water Disposal: Drum onsite
Weather:

Well Number: MW-9
Monument Type: Stickup: _____ (ft PVC) Flush: X
Well Diameter (in): 2 inch
Well Condition: Good

		Reference:
Total Casing Depth (ft):	35.74 toc	TOC
Screened Interval (ft):	31-36 toc	
Depth to Groundwater (ft):	4.90 toc	
Depth to LNAPL (ft): Well	N/A	

Volume Calculation:

Water Column (ft)	*	Multplier for Casing Diameter (in)			=	Casing Volume (gal)
30.84		0.16	2	0.16		4.95
		0.64	4	0.64		
		1.44	6	1.44		

Water Quality Meter(s)	Model	Calibration Date/Time
Temp/pH/SC/ORP/DO:	YSI Pro Plus (3665)	
Other: Turbidity	Micro TPi	
Other:		

QA/QC Samples		
Type	Sample ID	Time

Sample ID	Sample Containers No.	Type	Pres.	Vol.	Field Filtered	Turbidity/ Color	Analysis Requested	MS/MSD & Comments
MW-9	2	Amber	—	500	NO	Clear	NWTPH-Dx	
	2	VOA	HCl	40ml			VOCs	
	1	Poly	HNO_3	250			Metals	Cr, Pb, As, Se
	1	Poly	—	250			Cr VI	

Time	1100	1105	1110	1115	1120	1125	1130	1135	
Parameter (every 5 min)		min	min	min	min	min	min	min	min
Flow Rate (gal/min)		0.2	0.2	0.2	0.2	0.2	0.2	0.2	
Volume Purged (gal)		1	2	3	4	5	6	7	
Water Depth (ft)		5.32	5.44	5.50	5.54	5.57	5.60	5.63	
Temperature (Celsius)		14.0	13.7	14.2	14.5	14.5	14.4	14.5	
pH		7.19	7.19	7.19	7.18	7.18	7.17	7.17	
Sp. Conductance (mS/cm)		2.34	2.33	2.35	2.35	2.35	2.35	2.35	
DO (mg/L)		1.17	0.91	0.74	0.58	0.64	0.62	0.67	
ORP (mV)		-227.9	-231.8	-254.5	-276.0	-217.4	-249.3	-248.8	
Turbidity (NTU)		9.26	10.07	6.81	5.58	4.30	4.23	4.14	
Color		Sl. yellow	V. Sl. Yellow	Clear	→	→	→	→	
Odor/Evidence of LNAPL		NO/S	→	→	→	→	→	→	

Notes:

Groundwater Purge and Sample Form (Minimal Drawdown) — **Kennedy/Jenks Consultants**

Date: 12/3/14
Project Name: Precision Engineering Facility
Project Number: 1396024.00
Sampling Personnel: DKR
Water Level Meter: Geotech Interface Probe
Purging Equipment: Geotech Peristaltic Pump

Sampling Time: 1340
Purge Depth (ft): 15ft
Total Discharge (gal): 3
Water Disposal: Drum onsite
Weather:

Well Number: MW-10
Monument Type: Stickup: _____ (ft PVC) Flush: X
Well Diameter (in): 2 inch
Well Condition: Good

			Reference:
Total Casing Depth (ft):	19.83	toc	TOC
Screened Interval (ft):	10-20	toc	
Depth to Groundwater (ft):	3.00	toc	
Depth to LNAPL (ft): Well	N/A		

Volume Calculation:

Water Column (ft)	*	Multiplier for Casing Diameter (in)			=	Casing Volume (gal)
16.83		0.16	2	0.16		2.7
			4	0.64		
			6	1.44		

Water Quality Meter(s)	Model	Calibration Date/Time
Temp/pH/SC/ORP/DO:	YSI Pro Plus (3665)	
Other: Turbidity	Micro TPi	
Other:		

QA/QC Samples		
Type	Sample ID	Time

Sample ID	Sample Containers: No.	Type	Pres.	Vol.	Field Filtered	Turbidity/ Color	Analysis Requested	MS/MSD & Comments
MW-10	2	Amber	—	500	NO	Lt Yellow	NWTPH-DX	
↓	2	VOA	HCl	40	↓	↓	VOCs	
	1	Poly	HNO_3	250			Metals	Cr, Pb, Cr, Se
	1	Poly	—	250			Cr VI	

Time	1220	1225	1230	1235	1240	1245	1250	1255	1305
Parameter (every 5 min)		min	min	min	min	min	min	min	min
Flow Rate ~~(gal/min)~~ L/min		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1
Volume Purged ~~(gal)~~ L		1	2	3	4	5	6	~~7~~ 6.5	7.5
Water Depth (ft)		3.58	3.71	3.79	3.91	3.96	3.98	3.99	4.01
Temperature (Celsius)		15.4	15.8	15.9	16.1	16.1	16.1	15.9	15.6
pH		6.55	6.58	6.57	6.58	6.58	6.58	6.58	6.60
Sp. Conductance (mS/cm)		4.12	4.10	4.05	4.02	4.04	4.02	4.02	4.00
DO (mg/L)		1.76	~~1.15~~ 1.15	1.09	0.94	0.95	0.97	0.90	1.79
ORP (mV)		-150.8	-145.1	-159.8	-184.7	-187.9	-189.4	-184.2	-169.0
Turbidity (NTU)		12.68	14.82	18.41	25.35	33.49	34.52	30.49	27.25
Color		Lt Yellow							
Odor/Evidence of LNAPL		No							

Emptied flow cell.

Notes: Rusty-colored foam at water surface. Slightly aerated/effervescent. Tiny bubbles and particles observed - raising turbidity

MW-10 cont'd

12/13/14

Time	1310	1315	1320	1325	1330	1335		
Parameter (every 5 min)	min	min	min	min	min	min	min	min
Flow Rate (gal/min)	0.1	0.1	0.1	0.1	0.1	0.1		
Volume Purged (gal)	8.0	8.5	9.0	9.5	10	10.5		
Water Depth (ft)	4.02	4.04	4.08	4.12	4.15	4.18		
Temperature (Celsius)	15.8	15.80	15.8	16.0	16.0	16.0		
pH	6.60	6.59	6.59	6.59	6.60	6.60		
Sp. Conductance (mS/cm)	4.01	3.99	3.97	3.94	3.95	3.96		
DO (mg/L)	1.20	1.02	1.02	0.93	0.99	0.02		
ORP (mV)	-181.2	-182.9	-185.3	-186.4	-186.4	-184.7		
Turbidity (NTU)	22.02	15.20	13.73	16.41	16.28	16.21		
Color	lt. Yellow	→	→	→	→	→		
Odor/Evidence of LNAPL	NOOS	→	→	→	→	→		

Time								
Parameter (every 5 min)	min	min	min	min	min	min	min	min
Flow Rate (gal/min)								
Volume Purged (gal)								
Water Depth (ft)								
Temperature (Celsius)								
pH								
Sp. Conductance (mS/cm)								
DO (mg/L)								
ORP (mV)								
Turbidity (NTU)								
Color								
Odor/Evidence of LNAPL								

Time								
Parameter (every 5 min)	min	min	min	min	min	min	min	min
Flow Rate (gal/min)								
Volume Purged (gal)								
Water Depth (ft)								
Temperature (Celsius)								
pH								
Sp. Conductance (mS/cm)								
DO (mg/L)								
ORP (mV)								
Turbidity (NTU)								
Color								
Odor/Evidence of LNAPL								

Groundwater Purge and Sample Form (Minimal Drawdown)

Kennedy/Jenks Consultants

Date: 12/4/14
Project Name: Precision Engineering Facility
Project Number: 1396024.00
Sampling Personnel: DKR
Water Level Meter: Geotech Interface Probe
Purging Equipment: Geotech Peristaltic Pump

Sampling Time: 0930
Purge Depth (ft): 15 ft
Total Discharge (gal): 2
Water Disposal: Drum on site
Weather:

Well Number: MW-11
Monument Type: Stickup: _____ (ft PVC) Flush: X
Well Diameter (in): 2 inch
Well Condition: Good

			Reference:
Total Casing Depth (ft):	19.98	toc	TOC
Screened Interval (ft):	10-20	toc	
Depth to Groundwater (ft):	4.36	toc	
Depth to LNAPL (ft): Well	N/A		

Volume Calculation:

Water Column (ft)		Multiplier for Casing Diameter (in)			Casing Volume (gal)
15.62	·		2	0.16	=
		0.16	4	0.64	
			6	1.44	2.49

Water Quality Meter(s)	Model	Calibration Date/Time
Temp/pH/SC/ORP/DO:	YSI Pro Plus (3665)	
Other: Turbidity	Micro TPi	
Other:		

QA/QC Samples		
Type	Sample ID	Time

Sample ID	Sample Containers: No.	Type	Pres.	Vol.	Field Filtered	Turbidity/ Color	Analysis Requested	MS/MSD & Comments
MW-11	2			500	NO	V.Sl.Yellow	NWTPH-DX	
↓	2		HCl	40	↓	↓	VOCs	
	1		HNO3	250			Metals	Cr, Pb, As, Se
	1			250			Cr VI	

0850 Time	0855	0900	0905	0910	0915	0920	0925	
Parameter (every 5 min)	min	min	min	min	min	min	min	min
Flow Rate (gal/min)	0.3	0.2	0.2	0.2	0.2	0.2	0.2	
Volume Purged (gal)	1.5	2.5	3.5	4.5	5.5	6.5	7.5	
Water Depth (ft)	4.65	4.64	4.64	4.65	4.66	4.66	4.67	
Temperature (Celsius)	15.2	15.1	15.1	15.0	14.9	14.9	14.9	
pH	6.40	6.49	6.48	6.49	6.50	6.50	6.50	
Sp. Conductance (mS/cm)	1.34	1.34	1.33	1.35	1.34	1.34	1.34	
DO (mg/L)	1.19	0.52	0.43	0.35	0.32	0.23	0.29	
ORP (mV)	~~112.9~~	-173.1	-143.4	-145.9	-177.9	-185.2	-190.3	
Turbidity (NTU)	1.96	1.55	1.41	1.59	1.87	2.00	1.97	
Color	Lt. Yellow	→	Sl. Yellow	→	→	V.Sl. Yellow	→	
Odor/Evidence of LNAPL	No O/S	→	→	→	→	→	→	

Notes:

Attachment B

Laboratory Analytical Reports and Chain-of-Custody Documentation

Analytical Resources, Incorporated
Analytical Chemists and Consultants
23 December 2014

Jessica Faragalli
Kennedy Jenks Consultants
1191 2nd Avenue, Suite 630
Seattle, WA 98101

Client Project: Precision Engineering
ARI Job No.: ZM93

Dear Jessica:

Please find enclosed the original Chain-of-Custody record (COC) and the final results for the samples from the project referenced above. Analytical Resources, Inc. (ARI) received three water samples on December 2, 2014. The samples were analyzed for VOCs, NWTPH-Dx, hexavalent chromium and total metals as requested.

The percent differences (%Ds) for two compounds were not within control limits for the CCALs that bracketed the VOA analyses of these samples. All positive results for these compounds have been flagged with a "Q" to denote the high %Ds.

The percent recovery for styrene was slightly high following the analysis of the LCSD associated with these samples. Since this compound was not detected in any sample associated with this LCSD, the high bias does not compromise any LOQ. No corrective actions were taken.

All samples were to be extracted on 12/9/14 for NWTPH-Dx, within the 7 day holding time. Due to a power outage, the samples could not be extracted on that day. The NWTPH-Dx bottles for all samples were preserved with 1:1 HCl on 12/9/14. The samples were extracted as quickly as possible the following day, one day outside of the recommended holding time.

There were no further anomalies associated with the analyses of these samples.

An electronic copy of this report and all raw data will be kept on file with ARI. Should you have any questions or problems, please feel free to call me at any time.

Sincerely,

ANALYTICAL RESOURCES, INC.

Mark D. Harris
Project Manager
206/695-6210
markh@arilabs.com
www.arilabs.com

eFile: ZM93

Enclosures

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Chain of Custody Record & Laboratory Analysis Request

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com

ARI Assigned Number: ZM93	Turn-around Requested:
ARI Client Company: Kennedy/Jenks	Phone: 253-835-6400
Client Contact: Jessica Faragalli	
Client Project Name: Precision Engineering	
Client Project #: 1396024.00	Samplers: DKR & CEJ

Page: 1	of 1		
Date: 12/2/14	Ice Present? Yes		
No. of Coolers: 1	Cooler Temps: 3.3		

Sample ID	Date	Time	Matrix	No Containers	NWTPH-Dx	Metals	VOCs	Hex-Chrome				Notes/Comments
												Metals: Cr, Pb, As & Se
MW-1 ~~[illegible]~~	12/2/14	1355	GW	6	X	X	X	X				
MW-4	12/2/14	1500	GW	6	X	X	X	X				
MW-2	12/2/14	1640	GW	6	X	X	X	X				Effervescent

Comments/Special Instructions	Relinquished by	Received by	Relinquished by	Received by:
	(Signature) [signature]	(Signature) [signature]	(Signature)	(Signature)
	Printed Name: Diane Rauch	Printed Name: A. Volgardsen	Printed Name	Printed Name.
	Company: Kennedy/Jenks	Company: ARI	Company	Company.
	Date & Time: 12/2/14 1720	Date & Time: 12/2/14 1720	Date & Time	Date & Time.

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, not withstanding 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.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Kennedy Jenks Project Name: Precision Engineering

COC No(s): _____ NA Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: ZM93 Tracking No: _____ (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) 3.3

Time: 1720

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90077955

Cooler Accepted by: AV Date: 12/2/14 Time: 1720

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)	_____	

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

Samples Logged by: _____ Date: _____ Time _____

***** 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:

MW 2 1 Lg

By: TS Date: 12 3 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)

PRESERVATION VERIFICATION 12/03/14
Page 1 of 1

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: **ZM93**

PC: Mark
VTSR: 12/02/14

Inquiry Number: NONE
Analysis Requested: 12/03/14
Contact: Faragalli, Jessica
Client: Kennedy Jenks Consultants, Inc.
Logged by: TS
Sample Set Used: Yes-481
Validatable Package: No
Deliverables:

Project #: 1396024.00
Project: Precision Engineering
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	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	TPHD <2	Fe2+ <2	DMET FLT	DOC FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
14-26123 **ZM93A**	MW-1						TOT Pass															
14-26124 **ZM93B**	MW-4						TOT Pass															
14-26125 **ZM93C**	MW-2						TOT Pass															

ZM93 : 15555

Checked By TS Date 12.3.14

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: ZM93
Client: Kennedy Jenks Consultants, Inc.
Project Event: 1396024.00
Project Name: Precision Engineering

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	MW-1	ZM93A	14-26123	Water	12/02/14 13:55	12/02/14 17:20
2.	MW-4	ZM93B	14-26124	Water	12/02/14 15:00	12/02/14 17:20
3.	MW-2	ZM93C	14-26125	Water	12/02/14 16:40	12/02/14 17:20

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 ≥ 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 ≤5 times the Reporting Limit and the replicate control limit defaults to ±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).

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

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MB-120814A**
 METHOD BLANK

Lab Sample ID: MB-120814A
LIMS ID: 14-26123
Matrix: Water
Data Release Authorized: MW
Reported: 12/12/14

QC Report No: ZM93-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT2/LH
Date Analyzed: 12/08/14 11:31

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	1.0	< 1.0	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	1.0	< 1.0	U
75-00-3	Chloroethane	1.0	< 1.0	U
75-09-2	Methylene Chloride	2.0	< 2.0	U
67-64-1	Acetone	10	< 10	U
75-15-0	Carbon Disulfide	1.0	< 1.0	U
75-35-4	1,1-Dichloroethene	1.0	< 1.0	U
75-34-3	1,1-Dichloroethane	1.0	< 1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	< 1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	< 1.0	U
67-66-3	Chloroform	1.0	< 1.0	U
107-06-2	1,2-Dichloroethane	1.0	< 1.0	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	1.0	< 1.0	U
56-23-5	Carbon Tetrachloride	1.0	< 1.0	U
108-05-4	Vinyl Acetate	5.0	< 5.0	U
75-27-4	Bromodichloromethane	1.0	< 1.0	U
78-87-5	1,2-Dichloropropane	1.0	< 1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	< 1.0	U
79-01-6	Trichloroethene	1.0	< 1.0	U
124-48-1	Dibromochloromethane	1.0	< 1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	< 1.0	U
71-43-2	Benzene	1.0	< 1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	< 1.0	U
110-75-8	2-Chloroethylvinylether	5.0	< 5.0	U
75-25-2	Bromoform	1.0	< 1.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	< 1.0	U
108-88-3	Toluene	1.0	< 1.0	U
108-90-7	Chlorobenzene	1.0	< 1.0	U
100-41-4	Ethylbenzene	1.0	< 1.0	U
100-42-5	Styrene	1.0	< 1.0	U
75-69-4	Trichlorofluoromethane	1.0	< 1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	< 2.0	U
179601-23-1	m,p-Xylene	2.0	< 2.0	U
95-47-6	o-Xylene	1.0	< 1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MB-120814A**
 METHOD BLANK

Lab Sample ID: MB-120814A
LIMS ID: 14-26123
Matrix: Water
Date Analyzed: 12/08/14 11:31

QC Report No: ZM93-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	10	< 10	U
74-88-4	Iodomethane	1.0	< 1.0	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	5.0	< 5.0	U
563-58-6	1,1-Dichloropropene	1.0	< 1.0	U
74-95-3	Dibromomethane	1.0	< 1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	< 1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	2.0	< 2.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	< 5.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	< 1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	< 1.0	U
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	1,2-Dibromoethane	1.0	< 1.0	U
74-97-5	Bromochloromethane	1.0	< 1.0	U
594-20-7	2,2-Dichloropropane	1.0	< 1.0	U
142-28-9	1,3-Dichloropropane	5.0	< 5.0	U
98-82-8	Isopropylbenzene	1.0	< 1.0	U
103-65-1	n-Propylbenzene	1.0	< 1.0	U
108-86-1	Bromobenzene	1.0	< 1.0	U
95-49-8	2-Chlorotoluene	1.0	< 1.0	U
106-43-4	4-Chlorotoluene	1.0	< 1.0	U
98-06-6	tert-Butylbenzene	1.0	< 1.0	U
135-98-8	sec-Butylbenzene	1.0	< 1.0	U
99-87-6	4-Isopropyltoluene	1.0	< 1.0	U
104-51-8	n-Butylbenzene	1.0	< 1.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	Naphthalene	5.0	< 5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	104%
d8-Toluene	97.1%
Bromofluorobenzene	97.2%
d4-1,2-Dichlorobenzene	102%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-1**
Page 1 of 2 **SAMPLE**

Lab Sample ID: ZM93A
LIMS ID: 14-26123
Matrix: Water
Data Release Authorized:
Reported: 12/12/14

QC Report No: ZM93-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/02/14
Date Received: 12/02/14

Instrument/Analyst: NT2/LH
Date Analyzed: 12/08/14 19:39

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	1.0	< 1.0	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	1.0	< 1.0	U
75-00-3	Chloroethane	1.0	< 1.0	U
75-09-2	Methylene Chloride	2.0	< 2.0	U
67-64-1	Acetone	10	< 10	U
75-15-0	Carbon Disulfide	1.0	< 1.0	U
75-35-4	1,1-Dichloroethene	1.0	< 1.0	U
75-34-3	1,1-Dichloroethane	1.0	< 1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	< 1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	< 1.0	U
67-66-3	Chloroform	1.0	< 1.0	U
107-06-2	1,2-Dichloroethane	1.0	< 1.0	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	1.0	< 1.0	U
56-23-5	Carbon Tetrachloride	1.0	< 1.0	U
108-05-4	Vinyl Acetate	5.0	< 5.0	U
75-27-4	Bromodichloromethane	1.0	< 1.0	U
78-87-5	1,2-Dichloropropane	1.0	< 1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	< 1.0	U
79-01-6	Trichloroethene	1.0	< 1.0	U
124-48-1	Dibromochloromethane	1.0	< 1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	< 1.0	U
71-43-2	Benzene	1.0	< 1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	< 1.0	U
110-75-8	2-Chloroethylvinylether	5.0	< 5.0	U
75-25-2	Bromoform	1.0	< 1.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	< 1.0	U
108-88-3	Toluene	1.0	< 1.0	U
108-90-7	Chlorobenzene	1.0	< 1.0	U
100-41-4	Ethylbenzene	1.0	< 1.0	U
100-42-5	Styrene	1.0	< 1.0	U
75-69-4	Trichlorofluoromethane	1.0	< 1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	< 2.0	U
179601-23-1	m,p-Xylene	2.0	< 2.0	U
95-47-6	o-Xylene	1.0	< 1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-1**
Page 2 of 2 **SAMPLE**

Lab Sample ID: ZM93A QC Report No: ZM93-Kennedy Jenks Consultants, Inc.
LIMS ID: 14-26123 Project: Precision Engineering
Matrix: Water 1396024.00
Date Analyzed: 12/08/14 19:39

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	10	< 10	U
74-88-4	Iodomethane	1.0	< 1.0	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	5.0	< 5.0	U
563-58-6	1,1-Dichloropropene	1.0	< 1.0	U
74-95-3	Dibromomethane	1.0	< 1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	< 1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	2.0	< 2.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	< 5.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	< 1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	< 1.0	U
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	1,2-Dibromoethane	1.0	< 1.0	U
74-97-5	Bromochloromethane	1.0	< 1.0	U
594-20-7	2,2-Dichloropropane	1.0	< 1.0	U
142-28-9	1,3-Dichloropropane	5.0	< 5.0	U
98-82-8	Isopropylbenzene	1.0	< 1.0	U
103-65-1	n-Propylbenzene	1.0	< 1.0	U
108-86-1	Bromobenzene	1.0	< 1.0	U
95-49-8	2-Chlorotoluene	1.0	< 1.0	U
106-43-4	4-Chlorotoluene	1.0	< 1.0	U
98-06-6	tert-Butylbenzene	1.0	< 1.0	U
135-98-8	sec-Butylbenzene	1.0	< 1.0	U
99-87-6	4-Isopropyltoluene	1.0	< 1.0	U
104-51-8	n-Butylbenzene	1.0	< 1.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	Naphthalene	5.0	< 5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	102%
d8-Toluene	101%
Bromofluorobenzene	95.8%
d4-1,2-Dichlorobenzene	102%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-4**
Page 1 of 2 **SAMPLE**

Lab Sample ID: ZM93B
LIMS ID: 14-26124
Matrix: Water
Data Release Authorized:
Reported: 12/12/14

QC Report No: ZM93-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/02/14
Date Received: 12/02/14

Instrument/Analyst: NT2/LH
Date Analyzed: 12/08/14 20:06

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	1.0	< 1.0	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	1.0	< 1.0	U
75-00-3	Chloroethane	1.0	< 1.0	U
75-09-2	Methylene Chloride	2.0	< 2.0	U
67-64-1	Acetone	10	< 10	U
75-15-0	Carbon Disulfide	1.0	< 1.0	U
75-35-4	1,1-Dichloroethene	1.0	< 1.0	U
75-34-3	1,1-Dichloroethane	1.0	< 1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	< 1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	< 1.0	U
67-66-3	Chloroform	1.0	< 1.0	U
107-06-2	1,2-Dichloroethane	1.0	< 1.0	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	1.0	< 1.0	U
56-23-5	Carbon Tetrachloride	1.0	< 1.0	U
108-05-4	Vinyl Acetate	5.0	< 5.0	U
75-27-4	Bromodichloromethane	1.0	< 1.0	U
78-87-5	1,2-Dichloropropane	1.0	< 1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	< 1.0	U
79-01-6	Trichloroethene	1.0	< 1.0	U
124-48-1	Dibromochloromethane	1.0	< 1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	< 1.0	U
71-43-2	Benzene	1.0	< 1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	< 1.0	U
110-75-8	2-Chloroethylvinylether	5.0	< 5.0	U
75-25-2	Bromoform	1.0	< 1.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	< 1.0	U
108-88-3	Toluene	1.0	< 1.0	U
108-90-7	Chlorobenzene	1.0	< 1.0	U
100-41-4	Ethylbenzene	1.0	< 1.0	U
100-42-5	Styrene	1.0	< 1.0	U
75-69-4	Trichlorofluoromethane	1.0	< 1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	< 2.0	U
179601-23-1	m,p-Xylene	2.0	< 2.0	U
95-47-6	o-Xylene	1.0	< 1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-4**
Page 2 of 2 **SAMPLE**

Lab Sample ID: ZM93B
LIMS ID: 14-26124
Matrix: Water
Date Analyzed: 12/08/14 20:06

QC Report No: ZM93-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	10	< 10	U
74-88-4	Iodomethane	1.0	< 1.0	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	5.0	< 5.0	U
563-58-6	1,1-Dichloropropene	1.0	< 1.0	U
74-95-3	Dibromomethane	1.0	< 1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	< 1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	2.0	< 2.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	< 5.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	< 1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	< 1.0	U
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	1,2-Dibromoethane	1.0	< 1.0	U
74-97-5	Bromochloromethane	1.0	< 1.0	U
594-20-7	2,2-Dichloropropane	1.0	< 1.0	U
142-28-9	1,3-Dichloropropane	5.0	< 5.0	U
98-82-8	Isopropylbenzene	1.0	< 1.0	U
103-65-1	n-Propylbenzene	1.0	< 1.0	U
108-86-1	Bromobenzene	1.0	< 1.0	U
95-49-8	2-Chlorotoluene	1.0	< 1.0	U
106-43-4	4-Chlorotoluene	1.0	< 1.0	U
98-06-6	tert-Butylbenzene	1.0	< 1.0	U
135-98-8	sec-Butylbenzene	1.0	< 1.0	U
99-87-6	4-Isopropyltoluene	1.0	< 1.0	U
104-51-8	n-Butylbenzene	1.0	< 1.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	Naphthalene	5.0	< 5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery	
d4-1,2-Dichloroethane	104%
d8-Toluene	99.9%
Bromofluorobenzene	94.8%
d4-1,2-Dichlorobenzene	102%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-2**
 SAMPLE

Lab Sample ID: ZM93C
LIMS ID: 14-26125
Matrix: Water
Data Release Authorized: MW
Reported: 12/12/14

QC Report No: ZM93-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/02/14
Date Received: 12/02/14

Instrument/Analyst: NT2/LH
Date Analyzed: 12/08/14 20:33

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	1.0	< 1.0	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	1.0	< 1.0	U
75-00-3	Chloroethane	1.0	< 1.0	U
75-09-2	Methylene Chloride	2.0	< 2.0	U
67-64-1	Acetone	10	< 10	U
75-15-0	Carbon Disulfide	1.0	< 1.0	U
75-35-4	1,1-Dichloroethene	1.0	< 1.0	U
75-34-3	1,1-Dichloroethane	1.0	< 1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	< 1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	< 1.0	U
67-66-3	Chloroform	1.0	< 1.0	U
107-06-2	1,2-Dichloroethane	1.0	< 1.0	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	1.0	< 1.0	U
56-23-5	Carbon Tetrachloride	1.0	< 1.0	U
108-05-4	Vinyl Acetate	5.0	< 5.0	U
75-27-4	Bromodichloromethane	1.0	< 1.0	U
78-87-5	1,2-Dichloropropane	1.0	< 1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	< 1.0	U
79-01-6	Trichloroethene	1.0	< 1.0	U
124-48-1	Dibromochloromethane	1.0	< 1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	< 1.0	U
71-43-2	Benzene	1.0	< 1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	< 1.0	U
110-75-8	2-Chloroethylvinylether	5.0	< 5.0	U
75-25-2	Bromoform	1.0	< 1.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	< 1.0	U
108-88-3	Toluene	1.0	< 1.0	U
108-90-7	Chlorobenzene	1.0	< 1.0	U
100-41-4	Ethylbenzene	1.0	< 1.0	U
100-42-5	Styrene	1.0	< 1.0	U
75-69-4	Trichlorofluoromethane	1.0	< 1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	< 2.0	U
179601-23-1	m,p-Xylene	2.0	< 2.0	U
95-47-6	o-Xylene	1.0	< 1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-2**
Page 2 of 2 **SAMPLE**

Lab Sample ID: ZM93C
LIMS ID: 14-26125
Matrix: Water
Date Analyzed: 12/08/14 20:33

QC Report No: ZM93-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	10	< 10	U
74-88-4	Iodomethane	1.0	< 1.0	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	5.0	< 5.0	U
563-58-6	1,1-Dichloropropene	1.0	< 1.0	U
74-95-3	Dibromomethane	1.0	< 1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	< 1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	2.0	< 2.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	< 5.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	< 1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	< 1.0	U
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	1,2-Dibromoethane	1.0	< 1.0	U
74-97-5	Bromochloromethane	1.0	< 1.0	U
594-20-7	2,2-Dichloropropane	1.0	< 1.0	U
142-28-9	1,3-Dichloropropane	5.0	< 5.0	U
98-82-8	Isopropylbenzene	1.0	< 1.0	U
103-65-1	n-Propylbenzene	1.0	< 1.0	U
108-86-1	Bromobenzene	1.0	< 1.0	U
95-49-8	2-Chlorotoluene	1.0	< 1.0	U
106-43-4	4-Chlorotoluene	1.0	< 1.0	U
98-06-6	tert-Butylbenzene	1.0	< 1.0	U
135-98-8	sec-Butylbenzene	1.0	< 1.0	U
99-87-6	4-Isopropyltoluene	1.0	< 1.0	U
104-51-8	n-Butylbenzene	1.0	< 1.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	Naphthalene	5.0	< 5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	103%
d8-Toluene	99.4%
Bromofluorobenzene	95.3%
d4-1,2-Dichlorobenzene	102%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: LCS-120814A**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-120814A
LIMS ID: 14-26123
Matrix: Water
Data Release Authorized:
Reported: 12/12/14

QC Report No: ZM93-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT2/LH
LCSD: NT2/LH
Date Analyzed LCS: 12/08/14 10:38
LCSD: 12/08/14 11:05

Sample Amount LCS: 10.0 mL
LCSD: 10.0 mL
Purge Volume LCS: 10.0 mL
LCSD: 10.0 mL

Analyte	LCS		Spike Added-LCS	LCS Recovery	LCSD		Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	9.16		10.0	91.6%	10.8		10.0	108%	16.4%
Bromomethane	9.21		10.0	92.1%	10.3		10.0	103%	11.2%
Vinyl Chloride	9.56		10.0	95.6%	11.0		10.0	110%	14.0%
Chloroethane	9.78		10.0	97.8%	11.1		10.0	111%	12.6%
Methylene Chloride	10.3		10.0	103%	11.5		10.0	115%	11.0%
Acetone	44.7		50.0	89.4%	50.9		50.0	102%	13.0%
Carbon Disulfide	9.16		10.0	91.6%	10.4		10.0	104%	12.7%
1,1-Dichloroethene	9.05		10.0	90.5%	10.6		10.0	106%	15.8%
1,1-Dichloroethane	9.32		10.0	93.2%	10.8		10.0	108%	14.7%
trans-1,2-Dichloroethene	9.35		10.0	93.5%	10.8		10.0	108%	14.4%
cis-1,2-Dichloroethene	9.41		10.0	94.1%	10.8		10.0	108%	13.8%
Chloroform	9.49		10.0	94.9%	10.8		10.0	108%	12.9%
1,2-Dichloroethane	8.98		10.0	89.8%	10.8		10.0	108%	18.4%
2-Butanone	44.7		50.0	89.4%	51.0		50.0	102%	13.2%
1,1,1-Trichloroethane	9.46		10.0	94.6%	11.0		10.0	110%	15.1%
Carbon Tetrachloride	9.53		10.0	95.3%	11.3		10.0	113%	17.0%
Vinyl Acetate	8.38		10.0	83.8%	10.4		10.0	104%	21.5%
Bromodichloromethane	9.13		10.0	91.3%	11.2		10.0	112%	20.4%
1,2-Dichloropropane	9.24		10.0	92.4%	10.9		10.0	109%	16.5%
cis-1,3-Dichloropropene	9.57		10.0	95.7%	11.7		10.0	117%	20.0%
Trichloroethene	9.24		10.0	92.4%	11.0		10.0	110%	17.4%
Dibromochloromethane	9.46		10.0	94.6%	11.1		10.0	111%	16.0%
1,1,2-Trichloroethane	8.76		10.0	87.6%	10.7		10.0	107%	19.9%
Benzene	9.47		10.0	94.7%	11.2		10.0	112%	16.7%
trans-1,3-Dichloropropene	9.43		10.0	94.3%	11.7		10.0	117%	21.5%
2-Chloroethylvinylether	7.90		10.0	79.0%	10.7		10.0	107%	30.1%
Bromoform	9.30		10.0	93.0%	11.0		10.0	110%	16.7%
4-Methyl-2-Pentanone (MIBK)	46.1		50.0	92.2%	56.5		50.0	113%	20.3%
2-Hexanone	44.9		50.0	89.8%	53.7		50.0	107%	17.8%
Tetrachloroethene	9.09		10.0	90.9%	10.5		10.0	105%	14.4%
1,1,2,2-Tetrachloroethane	8.38		10.0	83.8%	9.90		10.0	99.0%	16.6%
Toluene	9.07		10.0	90.7%	10.9		10.0	109%	18.3%
Chlorobenzene	9.17		10.0	91.7%	10.6		10.0	106%	14.5%
Ethylbenzene	9.51		10.0	95.1%	11.3		10.0	113%	17.2%
Styrene	10.7	Q	10.0	107%	12.3	Q	10.0	123%	13.9%
Trichlorofluoromethane	11.1	Q	10.0	111%	12.4	Q	10.0	124%	11.1%
1,1,2-Trichloro-1,2,2-trifluoroetha	9.48		10.0	94.8%	10.8		10.0	108%	13.0%
m,p-Xylene	19.6		20.0	98.0%	22.9		20.0	114%	15.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: LCS-120814A**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-120814A QC Report No: ZM93-Kennedy Jenks Consultants, Inc.
LIMS ID: 14-26123 Project: Precision Engineering
Matrix: Water 1396024.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
o-Xylene	9.87	10.0	98.7%	11.4	10.0	114%	14.4%
1,2-Dichlorobenzene	8.84	10.0	88.4%	10.2	10.0	102%	14.3%
1,3-Dichlorobenzene	9.23	10.0	92.3%	10.6	10.0	106%	13.8%
1,4-Dichlorobenzene	8.90	10.0	89.0%	10.3	10.0	103%	14.6%
Acrolein	45.5	50.0	91.0%	52.9	50.0	106%	15.0%
Iodomethane	8.83	10.0	88.3%	10.0	10.0	100%	12.4%
Bromoethane	9.37	10.0	93.7%	10.8	10.0	108%	14.2%
Acrylonitrile	9.06	10.0	90.6%	10.7	10.0	107%	16.6%
1,1-Dichloropropene	9.57	10.0	95.7%	11.4	10.0	114%	17.5%
Dibromomethane	9.09	10.0	90.9%	10.9	10.0	109%	18.1%
1,1,1,2-Tetrachloroethane	9.57	10.0	95.7%	11.2	10.0	112%	15.7%
1,2-Dibromo-3-chloropropane	8.30	10.0	83.0%	10.1	10.0	101%	19.6%
1,2,3-Trichloropropane	8.23	10.0	82.3%	9.98	10.0	99.8%	19.2%
trans-1,4-Dichloro-2-butene	8.87	10.0	88.7%	10.7	10.0	107%	18.7%
1,3,5-Trimethylbenzene	9.92	10.0	99.2%	11.4	10.0	114%	13.9%
1,2,4-Trimethylbenzene	10.1	10.0	101%	11.7	10.0	117%	14.7%
Hexachlorobutadiene	10.4	10.0	104%	11.7	10.0	117%	11.8%
1,2-Dibromoethane	9.01	10.0	90.1%	11.1	10.0	111%	20.8%
Bromochloromethane	9.29	10.0	92.9%	11.1	10.0	111%	17.8%
2,2-Dichloropropane	10.1	10.0	101%	11.2	10.0	112%	10.3%
1,3-Dichloropropane	8.73	10.0	87.3%	10.6	10.0	106%	19.3%
Isopropylbenzene	9.99	10.0	99.9%	11.5	10.0	115%	14.1%
n-Propylbenzene	9.55	10.0	95.5%	11.1	10.0	111%	15.0%
Bromobenzene	9.02	10.0	90.2%	10.6	10.0	106%	16.1%
2-Chlorotoluene	9.25	10.0	92.5%	10.8	10.0	108%	15.5%
4-Chlorotoluene	9.33	10.0	93.3%	10.9	10.0	109%	15.5%
tert-Butylbenzene	9.78	10.0	97.8%	11.2	10.0	112%	13.5%
sec-Butylbenzene	9.87	10.0	98.7%	11.4	10.0	114%	14.4%
4-Isopropyltoluene	10.3	10.0	103%	11.8	10.0	118%	13.6%
n-Butylbenzene	9.72	10.0	97.2%	11.2	10.0	112%	14.1%
1,2,4-Trichlorobenzene	9.23	10.0	92.3%	10.7	10.0	107%	14.8%
Naphthalene	8.68	10.0	86.8%	10.4	10.0	104%	18.0%
1,2,3-Trichlorobenzene	8.60	10.0	86.0%	10.2	10.0	102%	17.0%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	96.5%	96.7%
d8-Toluene	98.9%	102%
Bromofluorobenzene	101%	101%
d4-1,2-Dichlorobenzene	98.6%	99.3%

ANALYTICAL RESOURCES INCORPORATED

VOA SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ZM93-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
MB-120814A	Method Blank	10	104%	97.1%	97.2%	102%	0
LCS-120814A	Lab Control	10	96.5%	98.9%	101%	98.6%	0
LCSD-120814A	Lab Control Dup	10	96.7%	102%	101%	99.3%	0
ZM93A	MW-1	10	102%	101%	95.8%	102%	0
ZM93B	MW-4	10	104%	99.9%	94.8%	102%	0
ZM93C	MW-2	10	103%	99.4%	95.3%	102%	0

	LCS/MB LIMITS	QC LIMITS
SW8260C		
(DCE) = d4-1,2-Dichloroethane	(80-120)	(80-120)
(TOL) = d8-Toluene	(80-120)	(80-120)
(BFB) = Bromofluorobenzene	(80-120)	(80-120)
(DCB) = d4-1,2-Dichlorobenzene	(80-120)	(80-120)

Prep Method: SW5030B
Log Number Range: 14-26123 to 14-26125

Analytical Resources, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: nt2.i
Lab File ID: cc1208a.d
Analysis Type: WATER
Lab Sample ID: CC1208
Method: /chem3/nt2.i/20141208.b/82601204L.m

Injection Date: 08-DEC-2014 10:05
Init. Cal. Date(s): 04-DEC-2014 04-DEC-2014
Init. Cal. Times: 12:12 15:19
Quant Type: ISTD

COMPOUND	RRF / AMOUNT	RF10	CCAL RRF10	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	
1 Dichlorodifluoromethane	0.61212	0.73226	0.73226	0.010	19.62710	20.00000	Averaged	
2 Chloromethane	1.04102	1.09070	1.09070	0.100	4.77184	20.00000	Averaged	
3 Vinyl Chloride	0.94362	1.02332	1.02332	0.100	8.44643	20.00000	Averaged	
4 Bromomethane	0.40340	0.44747	0.44747	0.100	10.92523	20.00000	Averaged	
5 Chloroethane	0.51025	0.57148	0.57148	0.010	12.00090	20.00000	Averaged	
6 Trichlorofluoromethane	0.67896	0.88524	0.88524	0.010	30.38232	20.00000	Averaged	<-
7 1,1-Dichloroethene	1.31994	1.34520	1.34520	0.100	1.91397	20.00000	Averaged	
8 Carbon Disulfide	2.36814	2.50052	2.50052	0.010	5.59015	20.00000	Averaged	
9 112Trichloro122Trifluoroeth	0.67505	0.72872	0.72872	0.010	7.95097	20.00000	Averaged	
10 Iodomethane	1.02721	1.04302	1.04302	0.010	1.53889	20.00000	Averaged	
11 Bromoethane	0.51894	0.55138	0.55138	0.100	6.25057	20.00000	Averaged	
12 Acrolein	0.06642	0.06553	0.06553	0.000	-1.34849	20.00000	Averaged	
13 Methylene Chloride	11.35059	10.00000	0.77836	0.010	13.50591	20.00000	Linear	
14 Acetone	0.11462	0.10256	0.10256	0.001	-10.52734	20.00000	Averaged	
15 Trans-1,2-Dichloroethene	0.71262	0.76092	0.76092	0.010	6.77691	20.00000	Averaged	
17 Methyl tert butyl ether	1.52603	1.51778	1.51778	0.100	-0.54058	20.00000	Averaged	
18 1,1-Dichloroethane	1.40773	1.48544	1.48544	0.200	5.52000	20.00000	Averaged	
19 Acrylonitrile	0.14036	0.12769	0.12769	0.001	-9.02726	20.00000	Averaged	
20 Vinyl Acetate	0.17721	0.16409	0.16409	0.010	-7.39959	20.00000	Averaged	
22 Cis-1,2-Dichloroethene	0.70202	0.73728	0.73728	0.010	5.02253	20.00000	Averaged	
23 2,2-Dichloropropane	0.71547	0.81841	0.81841	0.010	14.38672	20.00000	Averaged	
24 Bromochloromethane	0.27556	0.28729	0.28729	0.050	4.25808	20.00000	Averaged	
25 Chloroform	1.14586	1.20620	1.20620	0.200	5.26590	20.00000	Averaged	
26 Carbon Tetrachloride	0.45218	0.49464	0.49464	0.100	9.38907	20.00000	Averaged	
$ 27 Dibromofluoromethane	0.57807	0.58442	0.58442	0.100	1.09873	20.00000	Averaged	
28 1,1,1-Trichloroethane	0.97058	1.06714	1.06714	0.100	9.94821	20.00000	Averaged	
29 2-Butanone	0.17942	0.15946	0.15946	0.001	-11.12550	20.00000	Averaged	
30 1,1-Dichloropropene	0.51542	0.56599	0.56599	0.010	9.81177	20.00000	Averaged	
31 Benzene	1.45877	1.57668	1.57668	0.500	8.08330	20.00000	Averaged	
$ 33 d4-1,2-Dichloroethane	0.67065	0.62534	0.62534	0.010	-6.75619	20.00000	Averaged	
34 1,2-Dichloroethane	0.43730	0.43294	0.43294	0.100	-0.99614	20.00000	Averaged	
36 Trichloroethene	0.33982	0.35425	0.35425	0.100	4.24830	20.00000	Averaged	
38 Dibromomethane	0.16009	0.16012	0.16012	0.010	0.01584	20.00000	Averaged	
39 1,2-Dichloropropane	0.36903	0.38055	0.38055	0.100	3.12060	20.00000	Averaged	
40 Bromodichloromethane	0.39770	0.42284	0.42284	0.100	6.32299	20.00000	Averaged	

Analytical Resources, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: nt2.i Injection Date: 08-DEC-2014 10:05
Lab File ID: cc1208a.d Init. Cal. Date(s): 04-DEC-2014 04-DEC-2014
Analysis Type: WATER Init. Cal. Times: 12:12 15:19
Lab Sample ID: CC1208 Quant Type: ISTD
Method: /chem3/nt2.i/20141208.b/82601204L.m

COMPOUND	RRF / AMOUNT	RF10	CCAL RRF10	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	
41 2-Chloroethyl Vinyl Ether	0.11208	0.10395	0.10395	0.000	-7.25261	20.00000	Averaged	
42 Cis 1,3-dichloropropene	0.46843	0.51032	0.51032	0.200	8.94224	20.00000	Averaged	
$ 43 d8-Toluene	1.21791	1.22074	1.22074	0.010	0.23228	20.00000	Averaged	
44 Toluene	0.88765	0.93485	0.93485	0.400	5.31741	20.00000	Averaged	
45 4-Methyl-2-Pentanone	0.08778	0.08439	0.08439	0.000	-3.86798	20.00000	Averaged	
46 Tetrachloroethene	0.34028	0.35269	0.35269	0.200	3.64862	20.00000	Averaged	
47 Trans 1,3-Dichloropropene	0.40968	0.43921	0.43921	0.010	7.20766	20.00000	Averaged	
48 1,1,2-Trichloroethane	0.21643	0.21125	0.21125	0.100	-2.39467	20.00000	Averaged	
49 Chlorodibromomethane	0.24003	0.24292	0.24292	0.100	1.20380	20.00000	Averaged	
50 1,3-Dichloropropane	0.44785	0.43557	0.43557	0.100	-2.74330	20.00000	Averaged	
51 1,2-Dibromoethane	0.20175	0.20214	0.20214	0.010	0.19036	20.00000	Averaged	
52 2-Hexanone	0.15927	0.14488	0.14488	0.010	-9.03734	20.00000	Averaged	
54 Chlorobenzene	0.97483	1.00727	1.00727	0.500	3.32690	20.00000	Averaged	
55 Ethyl Benzene	0.54511	0.59616	0.59616	0.100	9.36630	20.00000	Averaged	
56 1,1,1,2-Tetrachloroethane	0.31232	0.33209	0.33209	0.010	6.33241	20.00000	Averaged	
57 m,p-xylene	0.65595	0.73577	0.73577	0.300	12.16911	20.00000	Averaged	
58 o-Xylene	0.63150	0.70282	0.70282	0.300	11.29338	20.00000	Averaged	
59 Styrene	0.93879	1.13211	1.13211	0.300	20.59265	20.00000	Averaged	<-
60 Bromoform	0.25172	0.25318	0.25318	0.010	0.57886	20.00000	Averaged	
61 Isopropyl Benzene	3.17073	3.61478	3.61478	0.010	14.00446	20.00000	Averaged	
$ 62 4-Bromofluorobenzene	0.52572	0.53086	0.53086	0.200	0.97728	20.00000	Averaged	
63 Bromobenzene	0.72006	0.73154	0.73154	0.010	1.59388	20.00000	Averaged	
64 N-Propyl Benzene	3.87185	4.22549	4.22549	0.010	9.13386	20.00000	Averaged	
65 1,1,2,2-Tetrachloroethane	0.57557	0.52788	0.52788	0.100	-8.28574	20.00000	Averaged	
66 2-Chloro Toluene	2.75182	2.92714	2.92714	0.010	6.37114	20.00000	Averaged	
67 1,3,5-Trimethyl Benzene	2.74664	3.08335	3.08335	0.010	12.25899	20.00000	Averaged	
68 1,2,3-Trichloropropane	0.17666	0.16019	0.16019	0.010	-9.32331	20.00000	Averaged	
69 Trans-1,4-Dichloro 2-Butene	0.17934	0.17907	0.17907	0.001	-0.15568	20.00000	Averaged	
70 4-Chloro Toluene	2.55021	2.73655	2.73655	0.010	7.30685	20.00000	Averaged	
71 T-Butyl Benzene	2.17626	2.37349	2.37349	0.010	9.06265	20.00000	Averaged	
72 1,2,4-Trimethylbenzene	2.68634	3.12014	3.12014	0.010	16.14850	20.00000	Averaged	
73 S-Butyl Benzene	3.36450	3.76648	3.76648	0.010	11.94776	20.00000	Averaged	
74 4-Isopropyl Toluene	2.52041	2.93005	2.93005	0.010	16.25267	20.00000	Averaged	
75 1,3-Dichlorobenzene	1.45324	1.51127	1.51127	0.600	3.99275	20.00000	Averaged	
77 1,4-Dichlorobenzene	1.49956	1.49358	1.49358	0.500	-0.39875	20.00000	Averaged	

Analytical Resources, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: nt2.i Injection Date: 08-DEC-2014 10:05
Lab File ID: cc1208a.d Init. Cal. Date(s): 04-DEC-2014 04-DEC-2014
Analysis Type: WATER Init. Cal. Times: 12:12 15:19
Lab Sample ID: CC1208 Quant Type: ISTD
Method: /chem3/nt2.i/20141208.b/82601204L.m

COMPOUND	RRF / AMOUNT	RF10	CCAL RRF10	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
78 N-Butyl Benzene	2.53165	2.81612	2.81612	0.010	11.23652	20.00000	Averaged
$ 79 d4-1,2-Dichlorobenzene	0.86732	0.84153	0.84153	0.010	-2.97412	20.00000	Averaged
80 1,2-Dichlorobenzene	1.31914	1.30159	1.30159	0.400	-1.33030	20.00000	Averaged
81 1,2-Dibromo 3-Chloropropane	0.07930	0.06972	0.06972	0.010	-12.08076	20.00000	Averaged
83 Hexachloro 1,3-Butadiene	11.36265	10.00000	0.29646	0.010	13.62651	20.00000	Linear
84 1,2,4-Trichlorobenzene	0.62171	0.63894	0.63894	0.010	2.77141	20.00000	Averaged
85 Naphthalene	1.02814	0.94732	0.94732	0.010	-7.86066	20.00000	Averaged
86 1,2,3-Trichlorobenzene	0.46155	0.42336	0.42336	0.010	-8.27396	20.00000	Averaged

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID
Extraction Method: SW3510C
Page 1 of 1

QC Report No: ZM93-Kennedy Jenks Consultants,
Project: Precision Engineering
1396024.00

Matrix: Water

Date Received: 12/02/14

Data Release Authorized:
Reported: 12/22/14

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DF	Range/Surrogate	RL	Result
MB-121014	Method Blank	12/10/14	12/20/14	1.00	Diesel Range	0.10	< 0.10 U
14-26123	HC ID: ---		FID3B	1.0	Motor Oil Range	0.20	< 0.20 U
					o-Terphenyl		78.0%
ZM93A	MW-1	12/10/14	12/20/14	1.00	Diesel Range	0.10	< 0.10 U
14-26123	HC ID: ---		FID3B	1.0	Motor Oil Range	0.20	< 0.20 U
					o-Terphenyl		80.5%
ZM93B	MW-4	12/10/14	12/20/14	1.00	Diesel Range	0.10	< 0.10 U
14-26124	HC ID: ---		FID3B	1.0	Motor Oil Range	0.20	< 0.20 U
					o-Terphenyl		81.7%
ZM93C	MW-2	12/10/14	12/20/14	1.00	**Diesel Range**	**0.10**	**0.33**
14-26125	HC ID: **DRO/RRO**		FID3B	1.0	**Motor Oil Range**	**0.20**	**0.22**
					o-Terphenyl		57.0%

Reported in mg/L (ppm)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel range quantitation on total peaks in the range from C12 to C24.
Motor Oil range quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in ranges are not identifiable.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID
Page 1 of 1

Sample ID: LCS-121014
LCS/LCSD

Lab Sample ID: LCS-121014
LIMS ID: 14-26123
Matrix: Water
Data Release Authorized:
Reported: 12/22/14

QC Report No: ZM93-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 12/10/14
Date Analyzed LCS: 12/20/14 19:30
LCSD: 12/20/14 19:55
Instrument/Analyst LCS: FID3B/JLW
LCSD: FID3B/JLW

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2.12	3.00	70.7%	2.40	3.00	80.0%	12.4%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	67.5%	60.0%

Results reported in mg/L
RPD calculated using sample concentrations per SW846.

FORM III

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: ZM93
Matrix: Water
Project: Precision Engineering
Date Received: 12/02/14
1396024.00

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
14-26123-121014MB1	Method Blank	500 mL	1.00 mL	12/10/14
14-26123-121014LCS1	Lab Control	500 mL	1.00 mL	12/10/14
14-26123-121014LCSD1	Lab Control Dup	500 mL	1.00 mL	12/10/14
14-26123-ZM93A	MW-1	500 mL	1.00 mL	12/10/14
14-26124-ZM93B	MW-4	500 mL	1.00 mL	12/10/14
14-26125-ZM93C	MW-2	500 mL	1.00 mL	12/10/14

ANALYTICAL RESOURCES INCORPORATED

TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ZM93-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00

Client ID	OTER	TOT OUT
MB-121014	78.0%	0
LCS-121014	67.5%	0
LCSD-121014	60.0%	0
MW-1	80.5%	0
MW-4	81.7%	0
MW-2	57.0%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3510C
Log Number Range: 14-26123 to 14-26125

ZM93 : 0026

Data File: /chem3/fid3b.i/20141220.b/1220b024.d

Date : 20-DEC-2014 19:06

Client ID: ZM93MBW1

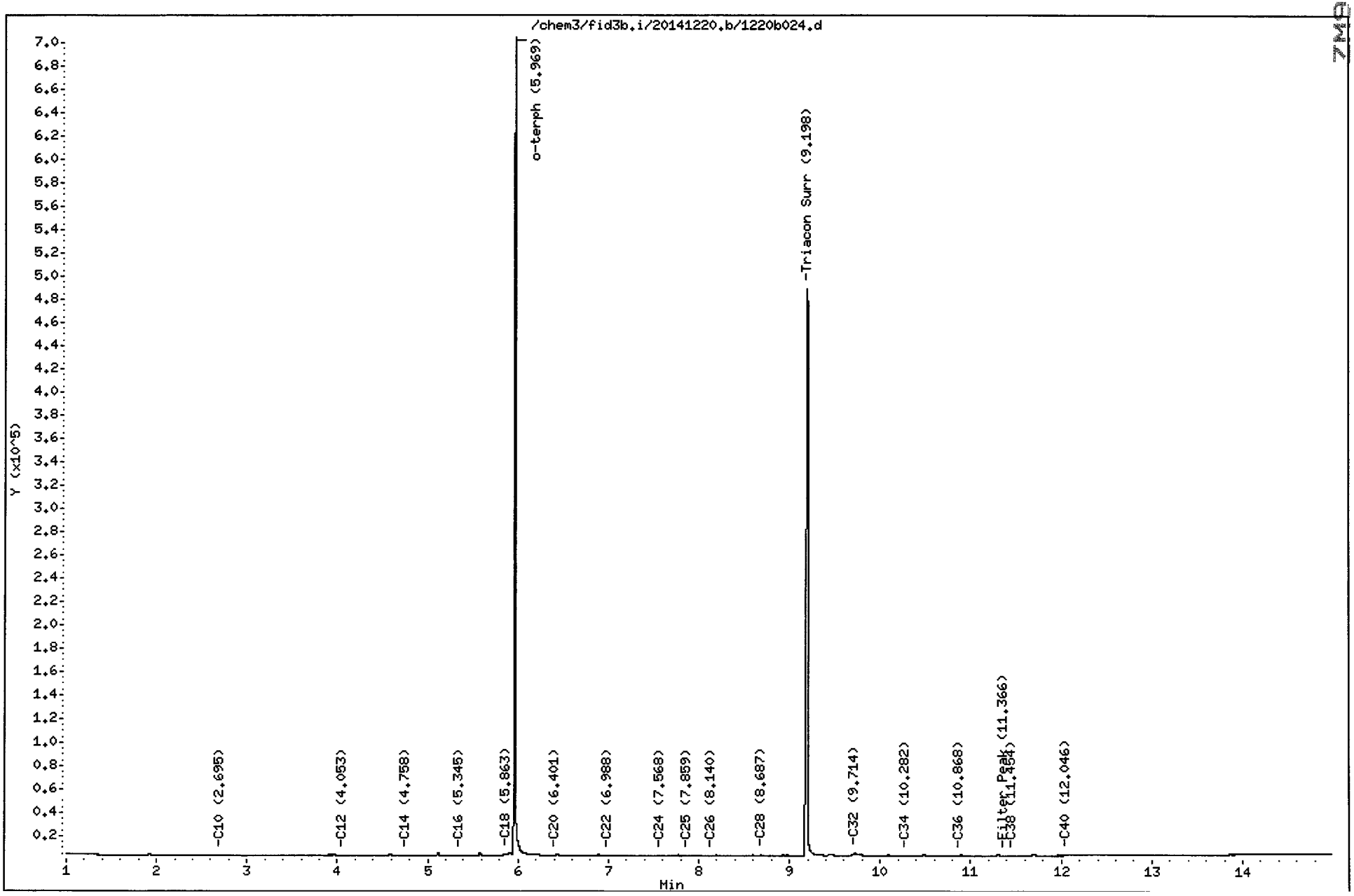
Sample Info: ZM93MBW1

Column phase: RTX-1

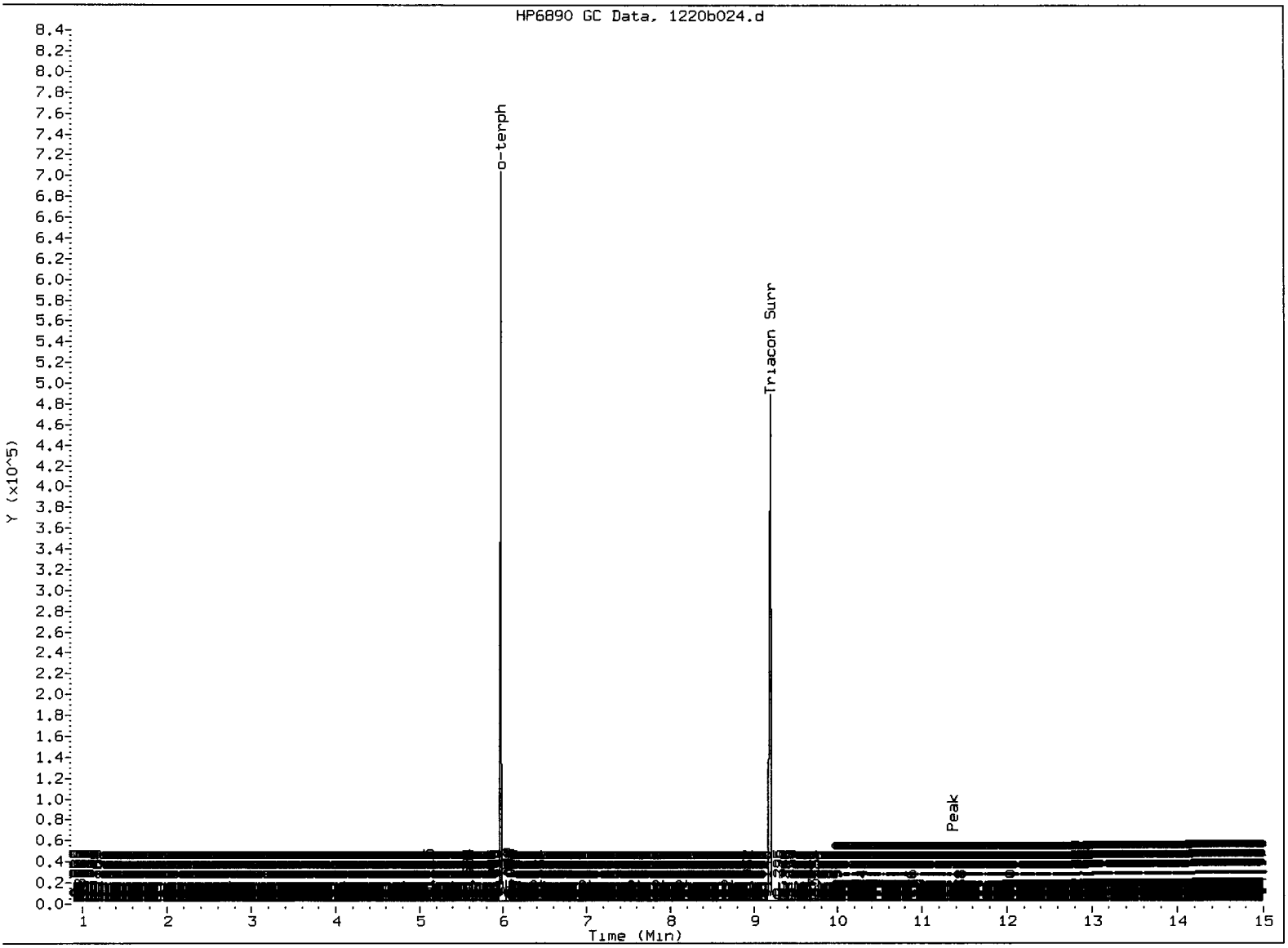
Instrument: fid3b.i

Operator: JW

Column diameter: 0.25



FID:3B-2C/RTX-1 ZM93MBW1 FID:3B SIGNAL



MANUAL INTEGRATION

2. Baseline correction
3. Peak not found
5. Skimmed surrogate

Analyst: JW Date: 12/22/14

Data File: /chem3/fid3b.i/20141220.b/1220b025.d

Date : 20-DEC-2014 19:30

Client ID: ZM93LCSW1

Sample Info: ZM93LCSW1

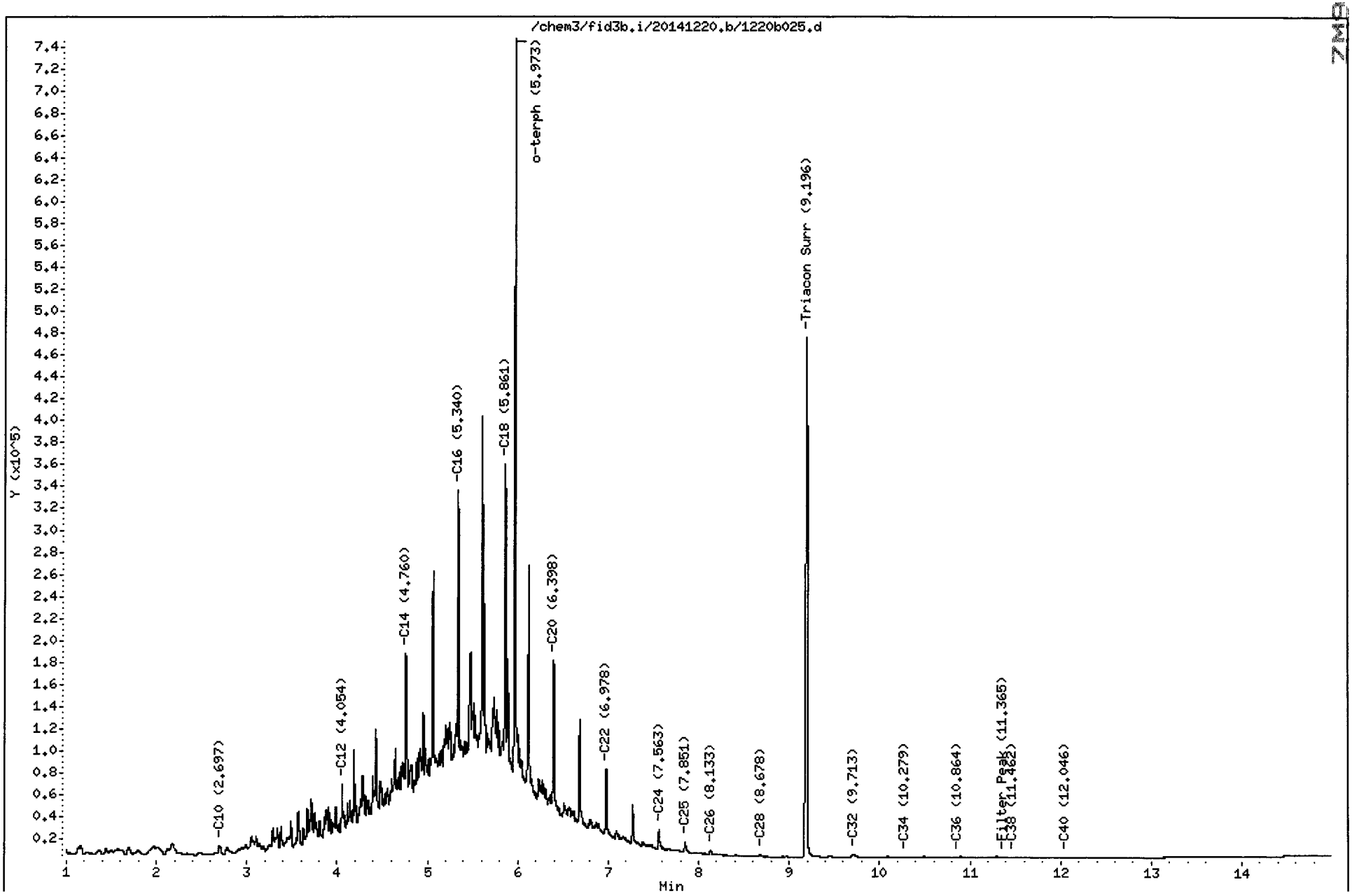
Column phase: RTX-1

Instrument: fid3b.i

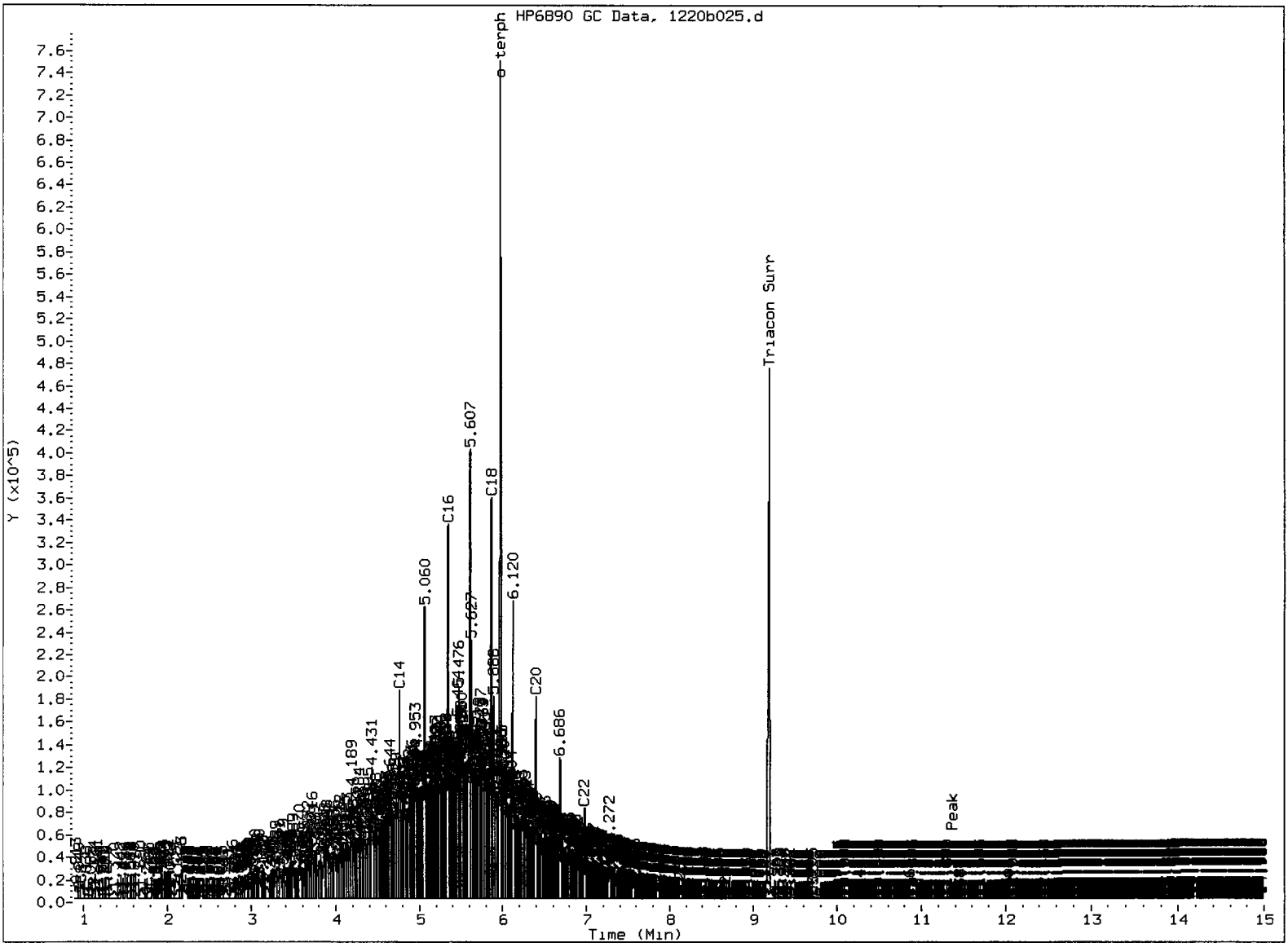
Operator: JW

Column diameter: 0.25

ZM93 : 060923



FID:3B-2C/RTX-1 ZM93LCSW1 FID:3B SIGNAL



MANUAL INTEGRATION

1. Baseline correction
3. Peak not found
5. Skimmed surrogate

Analyst: JU Date: 12/22/11

Data File: /chem3/fid3b.i/20141220.b/1220b026.d

Date : 20-DEC-2014 19:55

Client ID: ZM93LCSDW1

Sample Info: ZM93LCSDW1

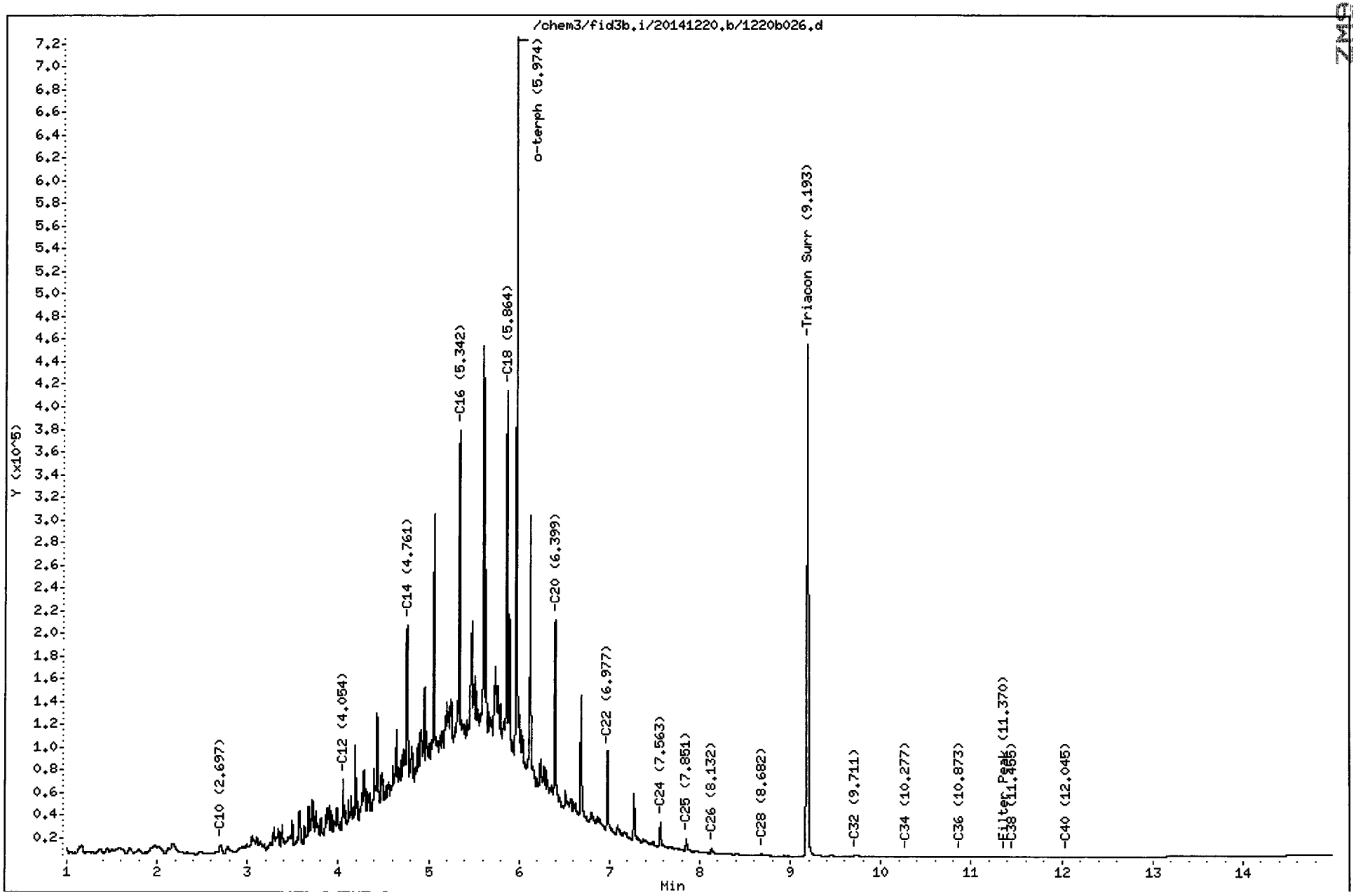
Column phase: RTX-1

Instrument: fid3b.i

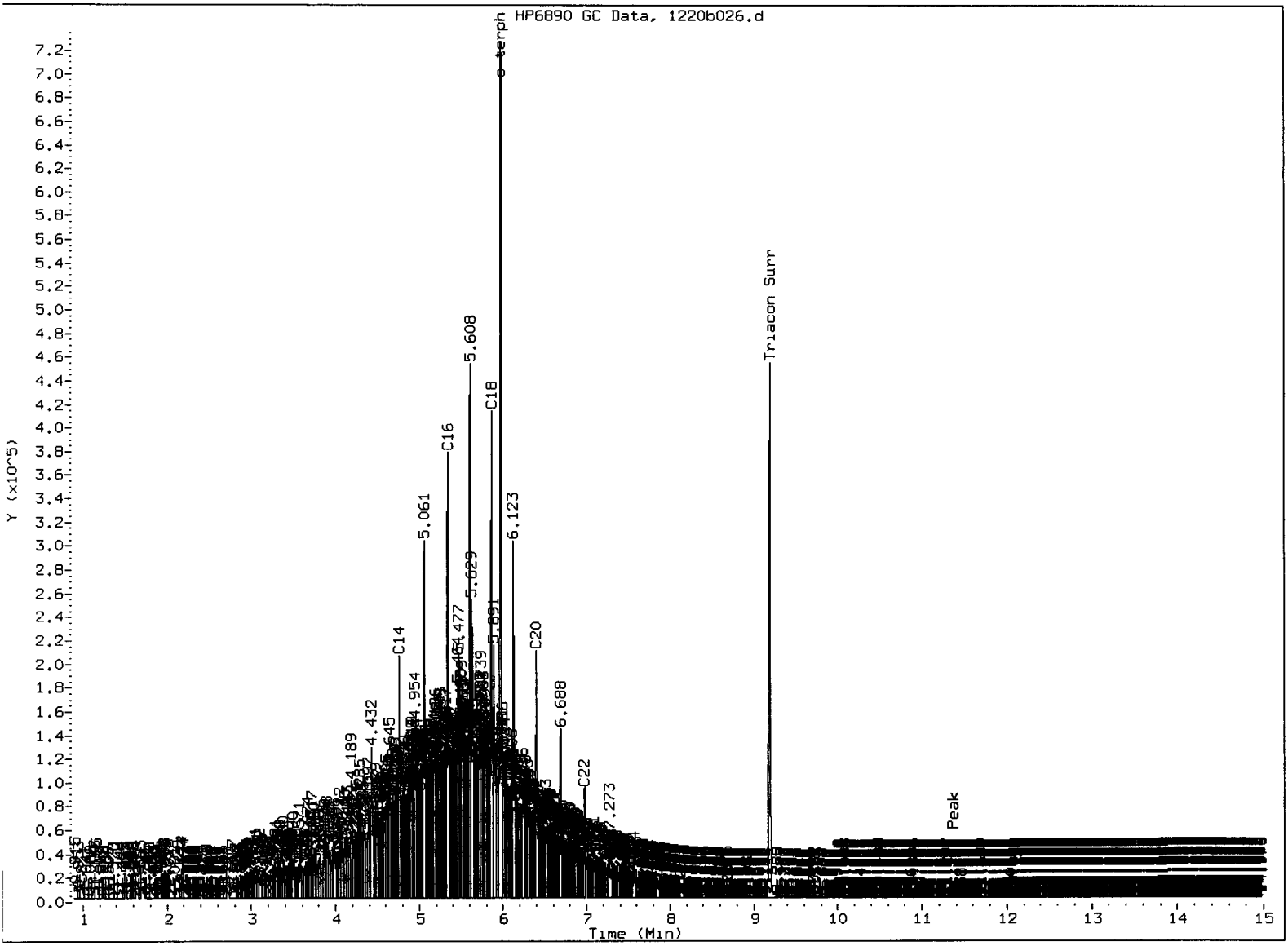
Operator: JW

Column diameter: 0.25

ZM93 12/20/14



FID:3B-2C/RTX-1 ZM93LCSDW1 FID:3B SIGNAL



MANUAL INTEGRATION

1. Baseline correction
3. Peak not found
5. Skimmed surrogate

Analyst: JU Date: 12/22/14

Data File: /chem3/fid3b.i/20141220.b/1220b028.d

Date : 20-DEC-2014 20:44

Client ID: MW-1

Sample Info: ZM93A

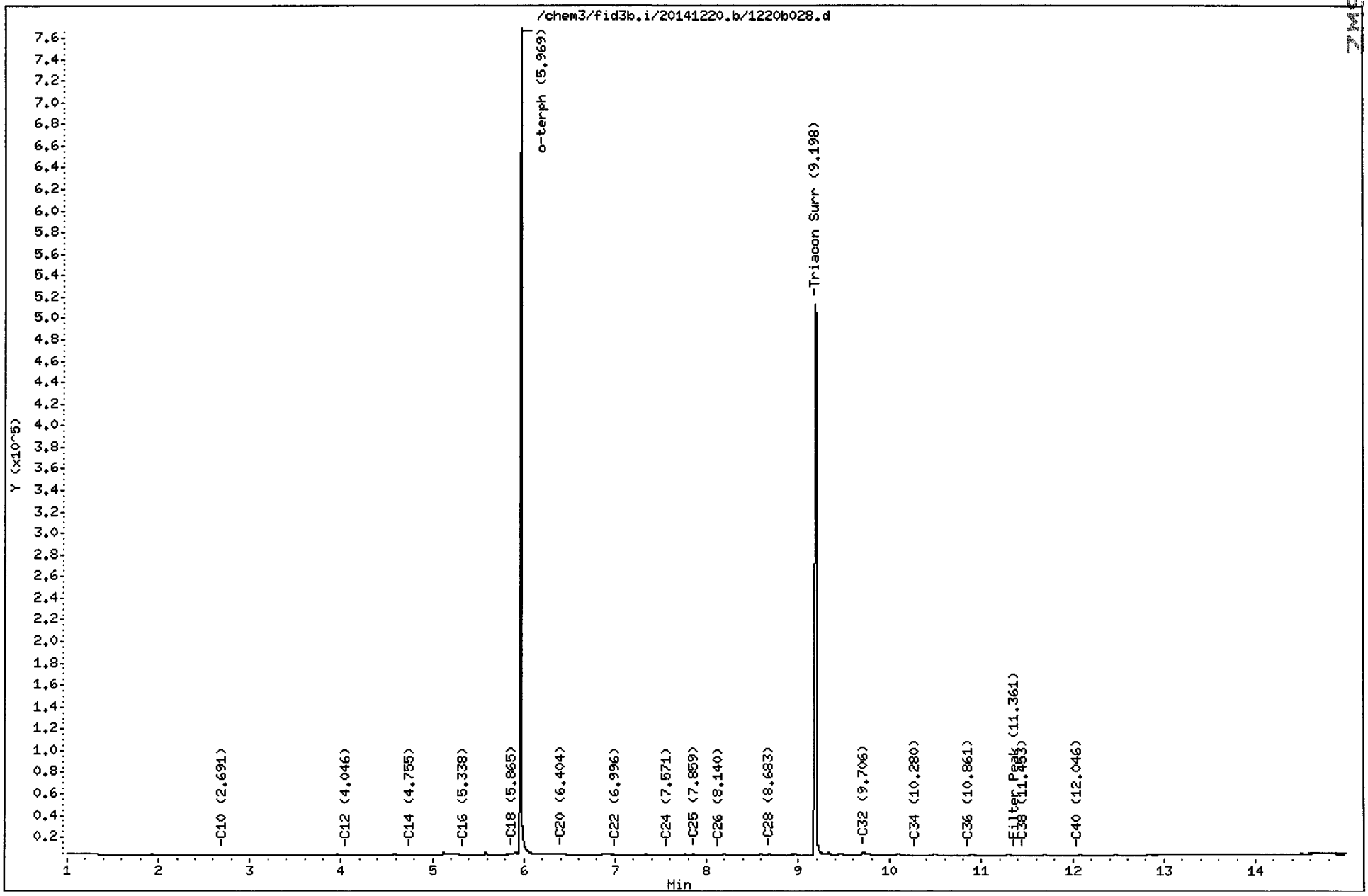
Column phase: RTX-1

Instrument: fid3b.i

Operator: JW

Column diameter: 0.25

ZM93-060903



Data File: /chem3/fid3b.i/20141220.b/1220b029.d

Date : 20-DEC-2014 21:09

Client ID: MW-4

Sample Info: ZM93B

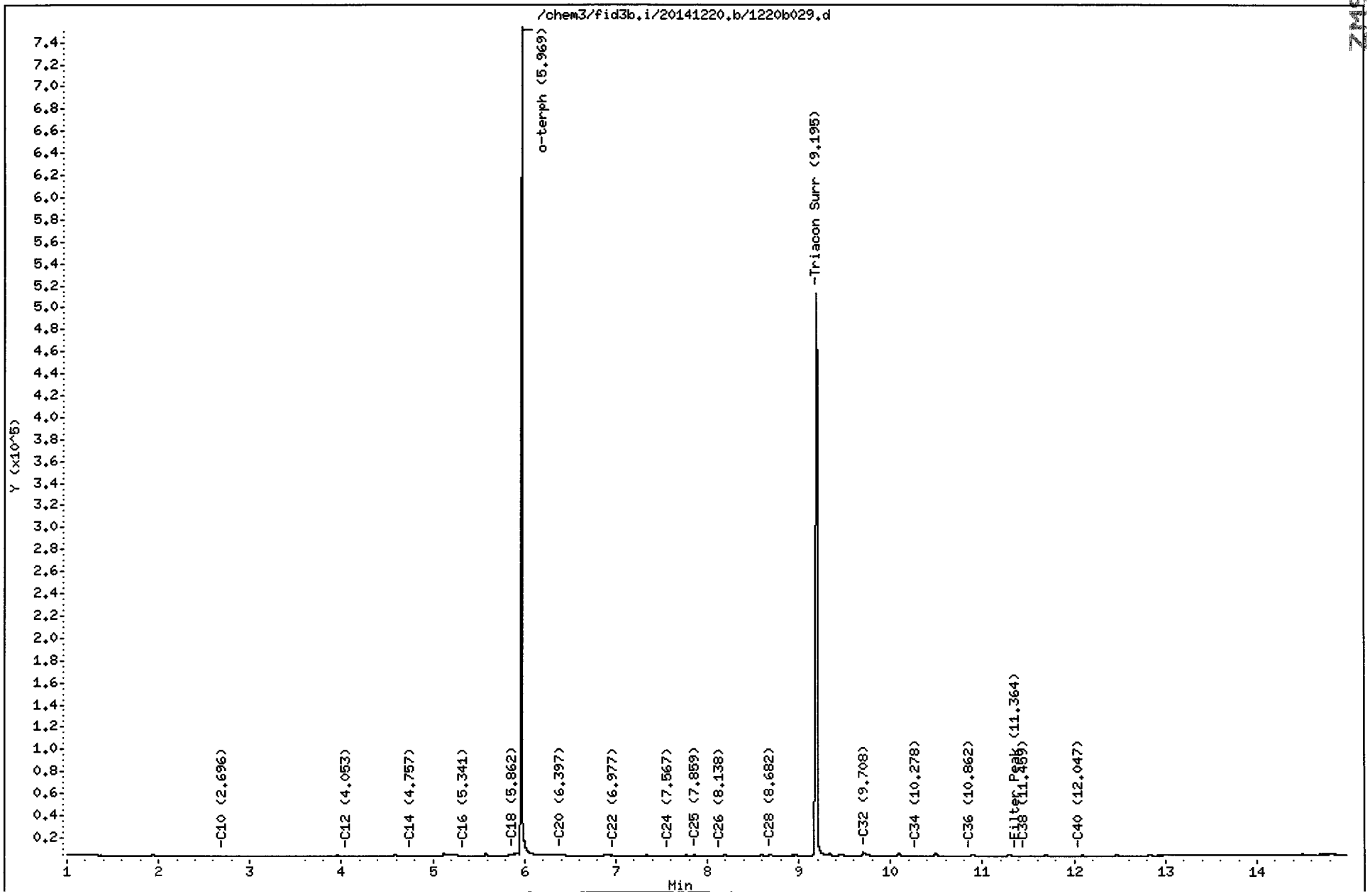
Column phase: RTX-1

Instrument: fid3b.i

Operator: JW

Column diameter: 0.25

ZM93 : 12/20/14



Data File: /chem3/fid3b.i/20141220.b/1220b030.d

Date : 20-DEC-2014 21:33

Client ID: MW-2

Sample Info: ZM93C

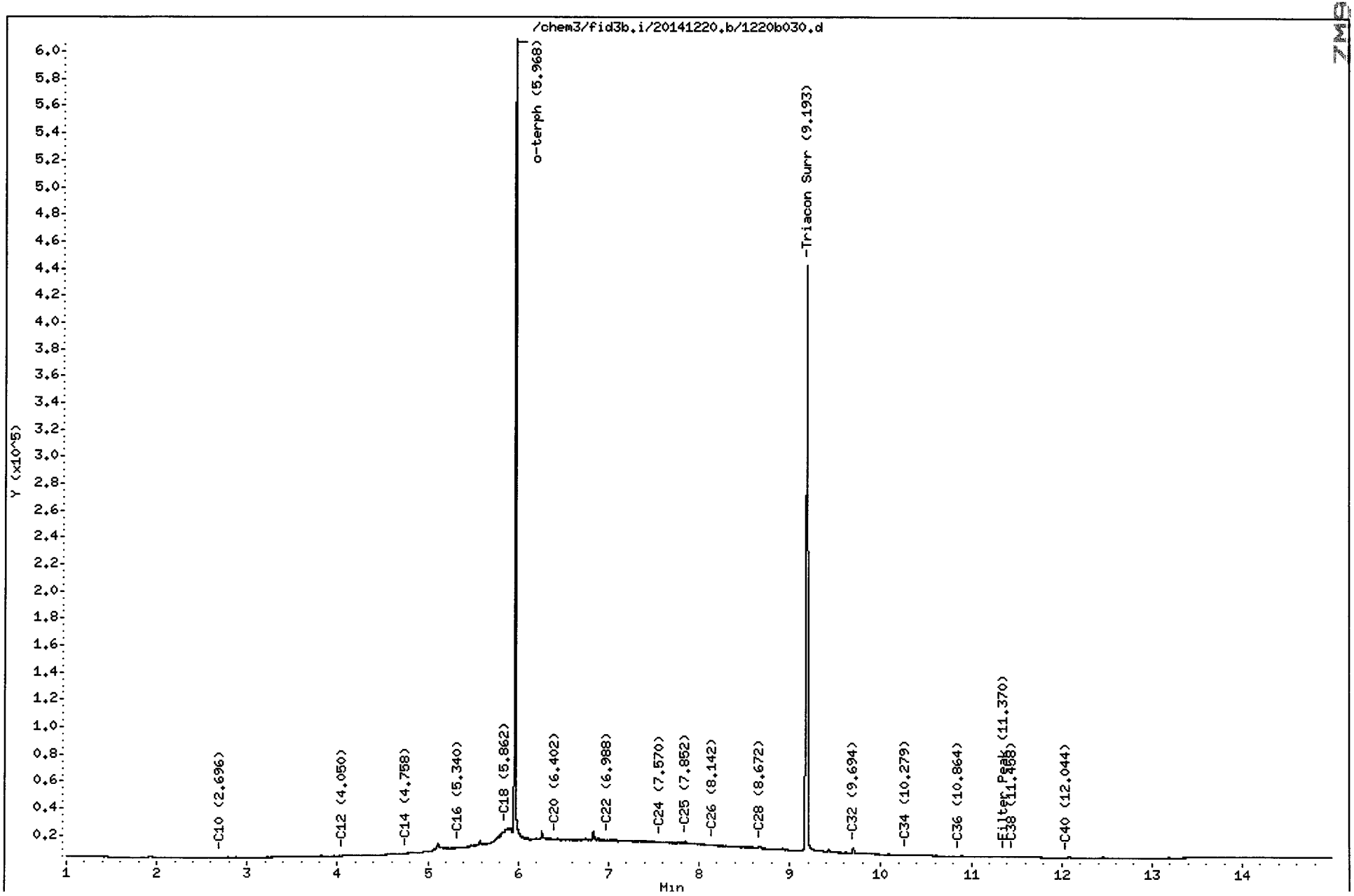
Column phase: RTX-1

Instrument: fid3b.i

Operator: JW

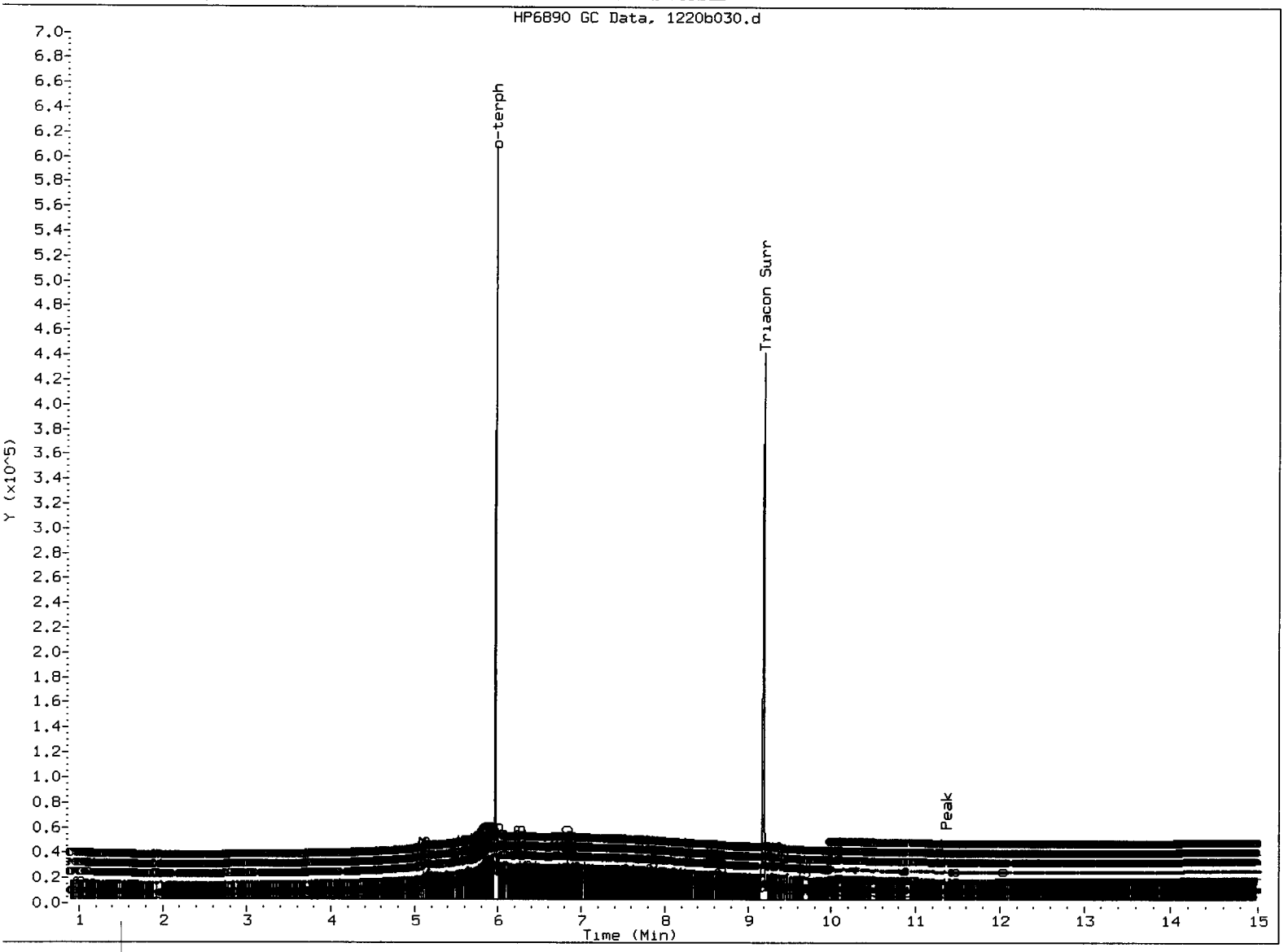
Column diameter: 0.25

ZM93 : 99935



FID:3B-2C/RTX-1 ZM93C

FID:3B SIGNAL



MANUAL INTEGRATION

1. Baseline correction
3. Peak not found
5. Skimmed surrogate

Analyst: SW Date: 12/22/14

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
Hexavalent Chromium by Method SM3500Cr-B

Data Release Authorized:
Reported: 12/04/14
Date Received: 12/02/14
Page 1 of 1

QC Report No: ZM93-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00

Client/ ARI ID	Date Sampled	Matrix	Analysis Date & Batch	RL	Result
MW-1 ZM93A 14-26123	12/02/14	Water	12/02/14 120214#1	0.010	< 0.010 U
MW-4 ZM93B 14-26124	12/02/14	Water	12/02/14 120214#1	0.010	< 0.010 U
MW-2 ZM93C 14-26125	12/02/14	Water	12/02/14 120214#1	0.010	< 0.010 U

Reported in mg/L

RL-Analytical reporting limit
U-Undetected at reported detection limit

METHOD BLANK RESULTS-CONVENTIONALS
ZM93-Kennedy Jenks Consultants, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/04/14

Project: Precision Engineering
Event: 1396024.00
Date Sampled: NA
Date Received: NA

Analyte	Date/Time	Units	Blank
Hexavalent Chromium	12/02/14 17:40	mg/L	< 0.010 U

STANDARD REFERENCE RESULTS-CONVENTIONALS
ZM93-Kennedy Jenks Consultants, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/04/14

Project: Precision Engineering
Event: 1396024.00
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Date/Time	Units	SRM	True Value	Recovery
Hexavalent Chromium ERA #300614	12/02/14 17:40	mg/L	0.637	0.630	101.1%

REPLICATE RESULTS-CONVENTIONALS
ZM93-Kennedy Jenks Consultants, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/04/14

Project: Precision Engineering
Event: 1396024.00
Date Sampled: 12/02/14
Date Received: 12/02/14

Analyte	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: ZM93A Client ID: MW-1					
Hexavalent Chromium	12/02/14	mg/L	< 0.010	< 0.010	NA

ZM93 : 00014

MS/MSD RESULTS-CONVENTIONALS
ZM93-Kennedy Jenks Consultants, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/04/14

Project: Precision Engineering
Event: 1396024.00
Date Sampled: 12/02/14
Date Received: 12/02/14

Analyte	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: ZM93A Client ID: MW-1						
Hexavalent Chromium	12/02/14	mg/L	< 0.010	0.059	0.063	93.7%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-1
SAMPLE

Lab Sample ID: ZM93A
LIMS ID: 14-26123
Matrix: Water
Data Release Authorized:
Reported: 12/10/14

QC Report No: ZM93-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/02/14
Date Received: 12/02/14

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	mg/L	Q
3010A	12/04/14	6010C	12/08/14	7440-38-2	Arsenic	0.05	0.05	U
3010A	12/04/14	6010C	12/08/14	7440-47-3	Chromium	0.005	0.005	U
3010A	12/04/14	6010C	12/08/14	7439-92-1	Lead	0.02	0.02	U
3010A	12/04/14	6010C	12/08/14	7782-49-2	Selenium	0.05	0.05	U

U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-1
DUPLICATE

Lab Sample ID: ZM93A
LIMS ID: 14-26123
Matrix: Water
Data Release Authorized:
Reported: 12/10/14

QC Report No: ZM93-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/02/14
Date Received: 12/02/14

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Arsenic	6010C	0.05 U	0.05 U	0.0%	+/- 0.05	L
Chromium	6010C	0.005 U	0.005 U	0.0%	+/- 0.005	L
Lead	6010C	0.02 U	0.02 U	0.0%	+/- 0.02	L
Selenium	6010C	0.05 U	0.05 U	0.0%	+/- 0.05	L

Reported in mg/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: MW-1**
Page 1 of 1 **MATRIX SPIKE**

Lab Sample ID: ZM93A
LIMS ID: 14-26123
Matrix: Water
Data Release Authorized:
Reported: 12/10/14

QC Report No: ZM93-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/02/14
Date Received: 12/02/14

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Arsenic	6010C	0.05 U	2.05	2.00	102%	
Chromium	6010C	0.005 U	0.500	0.500	100%	
Lead	6010C	0.02 U	2.00	2.00	100%	
Selenium	6010C	0.05 U	2.00	2.00	100%	

Reported in mg/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-4
SAMPLE

Lab Sample ID: ZM93B
LIMS ID: 14-26124
Matrix: Water
Data Release Authorized:
Reported: 12/10/14

QC Report No: ZM93-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/02/14
Date Received: 12/02/14

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	mg/L	Q
3010A	12/04/14	6010C	12/08/14	7440-38-2	Arsenic	0.05	0.05	U
3010A	12/04/14	6010C	12/08/14	7440-47-3	Chromium	0.005	0.005	U
3010A	12/04/14	6010C	12/08/14	7439-92-1	Lead	0.02	0.02	U
3010A	12/04/14	6010C	12/08/14	7782-49-2	Selenium	0.05	0.05	U

U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-2
SAMPLE

Lab Sample ID: ZM93C
LIMS ID: 14-26125
Matrix: Water
Data Release Authorized:
Reported: 12/10/14

QC Report No: ZM93-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/02/14
Date Received: 12/02/14

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	mg/L	Q
3010A	12/04/14	6010C	12/08/14	7440-38-2	Arsenic	0.05	0.05	U
3010A	12/04/14	6010C	12/08/14	**7440-47-3**	**Chromium**	0.005	**0.011**	
3010A	12/04/14	6010C	12/08/14	7439-92-1	Lead	0.02	0.02	U
3010A	12/04/14	6010C	12/08/14	7782-49-2	Selenium	0.05	0.05	U

U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: METHOD BLANK**

Lab Sample ID: ZM93MB
LIMS ID: 14-26124
Matrix: Water
Data Release Authorized:
Reported: 12/10/14

QC Report No: ZM93-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	mg/L	Q
3010A	12/04/14	6010C	12/08/14	7440-38-2	Arsenic	0.05	0.05	U
3010A	12/04/14	6010C	12/08/14	7440-47-3	Chromium	0.005	0.005	U
3010A	12/04/14	6010C	12/08/14	7439-92-1	Lead	0.02	0.02	U
3010A	12/04/14	6010C	12/08/14	7782-49-2	Selenium	0.05	0.05	U

U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: LAB CONTROL

Lab Sample ID: ZM93LCS
LIMS ID: 14-26124
Matrix: Water
Data Release Authorized:
Reported: 12/10/14

QC Report No: ZM93-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Arsenic	6010C	2.05	2.00	102%	
Chromium	6010C	0.529	0.500	106%	
Lead	6010C	2.09	2.00	104%	
Selenium	6010C	2.04	2.00	102%	

Reported in mg/L

N-Control limit not met
Control Limits: 80-120%

ZM93 · 0808W

Analytical Resources, Incorporated
Analytical Chemists and Consultants

23 December 2014

Jessica Faragalli
Kennedy Jenks Consultants
1191 2nd Avenue, Suite 630
Seattle, WA 98101

Client Project: Precision Engineering
ARI Job No.: ZN05

Dear Jessica:

Please find enclosed the original Chain-of-Custody record (COC) and the final results for the samples from the project referenced above. Analytical Resources, Inc. (ARI) received fine water samples and one trip blank on December 3, 2014. The samples were analyzed for VOCs, NWTPH-Dx, hexavalent chromium and total metals as requested.

The percent differences (%Ds) for two compounds were not within control limits for the CCALs that bracketed the VOA analyses of these samples. All positive results for these compounds have been flagged with a "Q" to denote the high %Ds.

A matrix spike (MS) was prepared and analyzed for hexavalent chromium in conjunction with sample MW-8. Hexavalent chromium was not recovered following the analysis of the MS. Since the percent recovery for hexavalent chromium was within acceptable QC limits for the corresponding SRM, it was concluded that the sample matrix was the cause of the low MS recovery. No corrective actions were taken.

There were no further anomalies associated with the analyses of these samples.

An electronic copy of this report and all raw data will be kept on file with ARI. Should you have any questions or problems, please feel free to call me at any time.

Sincerely,

ANALYTICAL RESOURCES, INC.

Mark D. Harris
Project Manager
206/695-6210
markh@arilabs.com
www.arilabs.com

eFile: ZN05

Enclosures

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: ZN05 YI18	Turn-around Requested:	Page: 1 of 1	
ARI Client Company: Kennedy/Jenks	Phone: 253-835-6400	Date: 12/3/14	Ice Present?
Client Contact: Jessica Favagelli		No. of Coolers:	Cooler Temps: 5.3
Client Project Name: Precision Engineering			
Client Project #: 1396024-00	Samplers: DKR		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com

Sample ID	Date	Time	Matrix	No Containers	NWTPH-Dx	Metals	VOCs	Cr VI					Notes/Comments
					Analysis Requested								Metals: Cr, Pb, As, +Se
MW-8	12/3/14	1010	GW	6	X	X	X	X					slightly effervescent
MW-9	12/3/14	1140	GW	6	X	X	X	X					
MW-10	12/3/14	1340	GW	6	X	X	X	X					
MW-7	12/3/14	1540	GW	6	X	X	X	X					
MW-6	12/3/14	1630	GW	6	X	X	X	X					Very effervescent. No HCl in VOC
TRIP Blank	12/3/14	-	-	1			X						

Comments/Special Instructions	Relinquished by (Signature)	Received by (Signature)	Relinquished by: (Signature)	Received by (Signature)
	Printed Name: Diane Rauch	Printed Name: Jayler Stratton	Printed Name	Printed Name
	Company: Kennedy/Jenks	Company: ARI	Company	Company
	Date & Time: 12/3/14 1725	Date & Time: 12-3-14 1725	Date & Time	Date & Time

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.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: ICSC

Project Name: Precision Engineering

COC No(s): (NA)

Delivered by. Fed-Ex UPS Courier Hand Delivered Other:

Assigned ARI Job No: ZNQ4 ZNQ5

Tracking No: (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) 5.3

Time: 1725

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

Temp Gun ID#: 90879512

Cooler Accepted by: TS Date: 12-3-14 Time: 1725

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	11/23/14	

Was Sample Split by ARI : (NA) YES Date/Time: Equipment: Split by:

Samples Logged by: AV Date: 12/4/14 Time: 1130

***** 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:

MW-6 = 2 HS ~~Each Sample has 5 containers, 2-40ml vials, 2-500ml HS, 1-500ml HDPE~~ AV 12/4/14

By: AV Date: 12/4/14

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)	

PRESERVATION VERIFICATION 12/04/14
Page 1 of 1

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: **ZN05**

Inquiry Number: NONE
Analysis Requested: 12/04/14
Contact: Faragalli, Jessica
Client: Kennedy Jenks Consultants, Inc.
Logged by: AV
Sample Set Used: Yes-481
Validatable Package: No
Deliverables:

PC: Mark
VTSR: 12/03/14

Project #: 1396024.00
Project: Precision Engineering
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	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	TPHD <2	Fe2+ <2	DMET FLT	DOC FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
14-26227 **ZN05A**	MW-8						TOT Pass															
14-26228 **ZN05B**	MW-9						TOT Pass															
14-26229 **ZN05C**	MW-10						TOT Fail															
14-26230 **ZN05D**	MW-7						TOT Pass															
14-26231 **ZN05E**	MW-6						TOT Fail															

*ZN05E - preservation is weak

ZN05 15396024

Checked By AV Date 12/4/14

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: ZN05
Client: Kennedy Jenks Consultants, Inc.
Project Event: 1396024.00
Project Name: Precision Engineering

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	MW-8	ZN05A	14-26227	Water	12/03/14 10:10	12/03/14 17:25
2.	MW-9	ZN05B	14-26228	Water	12/03/14 11:40	12/03/14 17:25
3.	MW-10	ZN05C	14-26229	Water	12/03/14 13:40	12/03/14 17:25
4.	MW-7	ZN05D	14-26230	Water	12/03/14 15:40	12/03/14 17:25
5.	MW-6	ZN05E	14-26231	Water	12/03/14 16:30	12/03/14 17:25
6.	TRIP BLANK	ZN05F	14-26232	Water	12/03/14	12/03/14 17:25

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 ≥ 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 ≤5 times the Reporting Limit and the replicate control limit defaults to ±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).
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

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-8**
 SAMPLE

Lab Sample ID: ZN05A
LIMS ID: 14-26227
Matrix: Water
Data Release Authorized:
Reported: 12/15/14

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/03/14
Date Received: 12/03/14

Instrument/Analyst: NT2/PAB
Date Analyzed: 12/12/14 18:42

Sample Amount: 2.00 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	5.0	< 5.0	U
74-83-9	Bromomethane	5.0	< 5.0	U
75-01-4	Vinyl Chloride	5.0	< 5.0	U
75-00-3	Chloroethane	5.0	< 5.0	U
75-09-2	Methylene Chloride	10	< 10	U
67-64-1	Acetone	50	< 50	U
75-15-0	Carbon Disulfide	5.0	< 5.0	U
75-35-4	1,1-Dichloroethene	5.0	< 5.0	U
75-34-3	1,1-Dichloroethane	5.0	< 5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	< 5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	< 5.0	U
67-66-3	Chloroform	5.0	< 5.0	U
107-06-2	1,2-Dichloroethane	5.0	< 5.0	U
78-93-3	2-Butanone	25	< 25	U
71-55-6	1,1,1-Trichloroethane	5.0	< 5.0	U
56-23-5	Carbon Tetrachloride	5.0	< 5.0	U
108-05-4	Vinyl Acetate	25	< 25	U
75-27-4	Bromodichloromethane	5.0	< 5.0	U
78-87-5	1,2-Dichloropropane	5.0	< 5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	< 5.0	U
79-01-6	Trichloroethene	5.0	< 5.0	U
124-48-1	Dibromochloromethane	5.0	< 5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	< 5.0	U
71-43-2	Benzene	5.0	< 5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	< 5.0	U
110-75-8	2-Chloroethylvinylether	25	< 25	U
75-25-2	Bromoform	5.0	< 5.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	25	< 25	U
591-78-6	2-Hexanone	25	< 25	U
127-18-4	Tetrachloroethene	5.0	< 5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	< 5.0	U
108-88-3	Toluene	5.0	< 5.0	U
108-90-7	Chlorobenzene	5.0	< 5.0	U
100-41-4	Ethylbenzene	5.0	< 5.0	U
100-42-5	Styrene	5.0	< 5.0	U
75-69-4	Trichlorofluoromethane	5.0	< 5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	10	< 10	U
179601-23-1	m,p-Xylene	10	< 10	U
95-47-6	o-Xylene	5.0	< 5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	< 5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	< 5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-8**
 SAMPLE

Lab Sample ID: ZN05A
LIMS ID: 14-26227
Matrix: Water
Date Analyzed: 12/12/14 18:42

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	50	< 50	U
74-88-4	Iodomethane	5.0	< 5.0	U
74-96-4	Bromoethane	10	< 10	U
107-13-1	Acrylonitrile	25	< 25	U
563-58-6	1,1-Dichloropropene	5.0	< 5.0	U
74-95-3	Dibromomethane	5.0	< 5.0	U
630-20-6	1,1,1,2-Tetrachloroethane	5.0	< 5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	25	< 25	U
96-18-4	1,2,3-Trichloropropane	10	< 10	U
110-57-6	trans-1,4-Dichloro-2-butene	25	< 25	U
108-67-8	1,3,5-Trimethylbenzene	5.0	< 5.0	U
95-63-6	1,2,4-Trimethylbenzene	5.0	< 5.0	U
87-68-3	Hexachlorobutadiene	25	< 25	U
106-93-4	1,2-Dibromoethane	5.0	< 5.0	U
74-97-5	Bromochloromethane	5.0	< 5.0	U
594-20-7	2,2-Dichloropropane	5.0	< 5.0	U
142-28-9	1,3-Dichloropropane	25	< 25	U
98-82-8	Isopropylbenzene	5.0	< 5.0	U
103-65-1	n-Propylbenzene	5.0	< 5.0	U
108-86-1	Bromobenzene	5.0	< 5.0	U
95-49-8	2-Chlorotoluene	5.0	< 5.0	U
106-43-4	4-Chlorotoluene	5.0	< 5.0	U
98-06-6	tert-Butylbenzene	5.0	< 5.0	U
135-98-8	sec-Butylbenzene	5.0	< 5.0	U
99-87-6	4-Isopropyltoluene	5.0	< 5.0	U
104-51-8	n-Butylbenzene	5.0	< 5.0	U
120-82-1	1,2,4-Trichlorobenzene	25	< 25	U
91-20-3	Naphthalene	25	< 25	U
87-61-6	1,2,3-Trichlorobenzene	25	< 25	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	94.8%
d8-Toluene	98.5%
Bromofluorobenzene	94.3%
d4-1,2-Dichlorobenzene	101%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-9**
Page 1 of 2 **SAMPLE**

Lab Sample ID: ZN05B
LIMS ID: 14-26228
Matrix: Water
Data Release Authorized:
Reported: 12/15/14

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/03/14
Date Received: 12/03/14

Instrument/Analyst: NT2/PAB
Date Analyzed: 12/12/14 19:38

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	1.0	< 1.0	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	1.0	< 1.0	U
75-00-3	Chloroethane	1.0	< 1.0	U
75-09-2	Methylene Chloride	2.0	< 2.0	U
67-64-1	Acetone	10	< 10	U
75-15-0	Carbon Disulfide	1.0	< 1.0	U
75-35-4	1,1-Dichloroethene	1.0	< 1.0	U
75-34-3	1,1-Dichloroethane	1.0	< 1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	< 1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	< 1.0	U
67-66-3	Chloroform	1.0	< 1.0	U
107-06-2	1,2-Dichloroethane	1.0	< 1.0	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	1.0	< 1.0	U
56-23-5	Carbon Tetrachloride	1.0	< 1.0	U
108-05-4	Vinyl Acetate	5.0	< 5.0	U
75-27-4	Bromodichloromethane	1.0	< 1.0	U
78-87-5	1,2-Dichloropropane	1.0	< 1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	< 1.0	U
79-01-6	Trichloroethene	1.0	< 1.0	U
124-48-1	Dibromochloromethane	1.0	< 1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	< 1.0	U
71-43-2	Benzene	1.0	< 1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	< 1.0	U
110-75-8	2-Chloroethylvinylether	5.0	< 5.0	U
75-25-2	Bromoform	1.0	< 1.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	< 1.0	U
108-88-3	Toluene	1.0	< 1.0	U
108-90-7	Chlorobenzene	1.0	< 1.0	U
100-41-4	Ethylbenzene	1.0	< 1.0	U
100-42-5	Styrene	1.0	< 1.0	U
75-69-4	Trichlorofluoromethane	1.0	< 1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	< 2.0	U
179601-23-1	m,p-Xylene	2.0	< 2.0	U
95-47-6	o-Xylene	1.0	< 1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-9**
 SAMPLE

Lab Sample ID: ZN05B
LIMS ID: 14-26228
Matrix: Water
Date Analyzed: 12/12/14 19:38

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	10	< 10	U
74-88-4	Iodomethane	1.0	< 1.0	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	5.0	< 5.0	U
563-58-6	1,1-Dichloropropene	1.0	< 1.0	U
74-95-3	Dibromomethane	1.0	< 1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	< 1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	2.0	< 2.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	< 5.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	< 1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	< 1.0	U
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	1,2-Dibromoethane	1.0	< 1.0	U
74-97-5	Bromochloromethane	1.0	< 1.0	U
594-20-7	2,2-Dichloropropane	1.0	< 1.0	U
142-28-9	1,3-Dichloropropane	5.0	< 5.0	U
98-82-8	Isopropylbenzene	1.0	< 1.0	U
103-65-1	n-Propylbenzene	1.0	< 1.0	U
108-86-1	Bromobenzene	1.0	< 1.0	U
95-49-8	2-Chlorotoluene	1.0	< 1.0	U
106-43-4	4-Chlorotoluene	1.0	< 1.0	U
98-06-6	tert-Butylbenzene	1.0	< 1.0	U
135-98-8	sec-Butylbenzene	1.0	< 1.0	U
99-87-6	4-Isopropyltoluene	1.0	< 1.0	U
104-51-8	n-Butylbenzene	1.0	< 1.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	Naphthalene	5.0	< 5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	99.7%
d8-Toluene	95.6%
Bromofluorobenzene	97.0%
d4-1,2-Dichlorobenzene	104%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-10**
Page 1 of 2 **SAMPLE**

Lab Sample ID: ZN05C
LIMS ID: 14-26229
Matrix: Water
Data Release Authorized:
Reported: 12/15/14

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/03/14
Date Received: 12/03/14

Instrument/Analyst: NT2/PAB
Date Analyzed: 12/12/14 20:04

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	1.0	< 1.0	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	1.0	< 1.0	U
75-00-3	Chloroethane	1.0	< 1.0	U
75-09-2	Methylene Chloride	2.0	< 2.0	U
67-64-1	Acetone	10	< 10	U
75-15-0	Carbon Disulfide	1.0	< 1.0	U
75-35-4	1,1-Dichloroethene	1.0	< 1.0	U
75-34-3	1,1-Dichloroethane	1.0	< 1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	< 1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	< 1.0	U
67-66-3	Chloroform	1.0	< 1.0	U
107-06-2	1,2-Dichloroethane	1.0	< 1.0	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	1.0	< 1.0	U
56-23-5	Carbon Tetrachloride	1.0	< 1.0	U
108-05-4	Vinyl Acetate	5.0	< 5.0	U
75-27-4	Bromodichloromethane	1.0	< 1.0	U
78-87-5	1,2-Dichloropropane	1.0	< 1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	< 1.0	U
79-01-6	Trichloroethene	1.0	< 1.0	U
124-48-1	Dibromochloromethane	1.0	< 1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	< 1.0	U
71-43-2	Benzene	1.0	< 1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	< 1.0	U
110-75-8	2-Chloroethylvinylether	5.0	< 5.0	U
75-25-2	Bromoform	1.0	< 1.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	< 1.0	U
108-88-3	Toluene	1.0	< 1.0	U
108-90-7	Chlorobenzene	1.0	< 1.0	U
100-41-4	Ethylbenzene	1.0	< 1.0	U
100-42-5	Styrene	1.0	< 1.0	U
75-69-4	Trichlorofluoromethane	1.0	< 1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	< 2.0	U
179601-23-1	m,p-Xylene	2.0	< 2.0	U
95-47-6	o-Xylene	1.0	< 1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-10**
 SAMPLE

Lab Sample ID: ZN05C
LIMS ID: 14-26229
Matrix: Water
Date Analyzed: 12/12/14 20:04

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	10	< 10	U
74-88-4	Iodomethane	1.0	< 1.0	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	5.0	< 5.0	U
563-58-6	1,1-Dichloropropene	1.0	< 1.0	U
74-95-3	Dibromomethane	1.0	< 1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	< 1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	2.0	< 2.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	< 5.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	< 1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	< 1.0	U
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	1,2-Dibromoethane	1.0	< 1.0	U
74-97-5	Bromochloromethane	1.0	< 1.0	U
594-20-7	2,2-Dichloropropane	1.0	< 1.0	U
142-28-9	1,3-Dichloropropane	5.0	< 5.0	U
98-82-8	Isopropylbenzene	1.0	< 1.0	U
103-65-1	n-Propylbenzene	1.0	< 1.0	U
108-86-1	Bromobenzene	1.0	< 1.0	U
95-49-8	2-Chlorotoluene	1.0	< 1.0	U
106-43-4	4-Chlorotoluene	1.0	< 1.0	U
98-06-6	tert-Butylbenzene	1.0	< 1.0	U
135-98-8	sec-Butylbenzene	1.0	< 1.0	U
99-87-6	4-Isopropyltoluene	1.0	< 1.0	U
104-51-8	n-Butylbenzene	1.0	< 1.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	Naphthalene	5.0	< 5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	101%
d8-Toluene	95.5%
Bromofluorobenzene	97.1%
d4-1,2-Dichlorobenzene	104%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-7**
 SAMPLE

Lab Sample ID: ZN05D
LIMS ID: 14-26230
Matrix: Water
Data Release Authorized:
Reported: 12/15/14

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/03/14
Date Received: 12/03/14

Instrument/Analyst: NT2/PAB
Date Analyzed: 12/12/14 20:31

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	1.0	< 1.0	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	1.0	< 1.0	U
75-00-3	Chloroethane	1.0	< 1.0	U
75-09-2	Methylene Chloride	2.0	< 2.0	U
67-64-1	Acetone	10	< 10	U
75-15-0	Carbon Disulfide	1.0	< 1.0	U
75-35-4	1,1-Dichloroethene	1.0	< 1.0	U
75-34-3	1,1-Dichloroethane	1.0	< 1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	< 1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	< 1.0	U
67-66-3	Chloroform	1.0	< 1.0	U
107-06-2	1,2-Dichloroethane	1.0	< 1.0	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	1.0	< 1.0	U
56-23-5	Carbon Tetrachloride	1.0	< 1.0	U
108-05-4	Vinyl Acetate	5.0	< 5.0	U
75-27-4	Bromodichloromethane	1.0	< 1.0	U
78-87-5	1,2-Dichloropropane	1.0	< 1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	< 1.0	U
79-01-6	Trichloroethene	1.0	< 1.0	U
124-48-1	Dibromochloromethane	1.0	< 1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	< 1.0	U
71-43-2	Benzene	1.0	< 1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	< 1.0	U
110-75-8	2-Chloroethylvinylether	5.0	< 5.0	U
75-25-2	Bromoform	1.0	< 1.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	< 1.0	U
108-88-3	Toluene	1.0	< 1.0	U
108-90-7	Chlorobenzene	1.0	< 1.0	U
100-41-4	Ethylbenzene	1.0	< 1.0	U
100-42-5	Styrene	1.0	< 1.0	U
75-69-4	Trichlorofluoromethane	1.0	< 1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	< 2.0	U
179601-23-1	m,p-Xylene	2.0	< 2.0	U
95-47-6	o-Xylene	1.0	< 1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-7**
 SAMPLE

Lab Sample ID: ZN05D
LIMS ID: 14-26230
Matrix: Water
Date Analyzed: 12/12/14 20:31

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	10	< 10	U
74-88-4	Iodomethane	1.0	< 1.0	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	5.0	< 5.0	U
563-58-6	1,1-Dichloropropene	1.0	< 1.0	U
74-95-3	Dibromomethane	1.0	< 1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	< 1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	2.0	< 2.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	< 5.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	< 1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	< 1.0	U
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	1,2-Dibromoethane	1.0	< 1.0	U
74-97-5	Bromochloromethane	1.0	< 1.0	U
594-20-7	2,2-Dichloropropane	1.0	< 1.0	U
142-28-9	1,3-Dichloropropane	5.0	< 5.0	U
98-82-8	Isopropylbenzene	1.0	< 1.0	U
103-65-1	n-Propylbenzene	1.0	< 1.0	U
108-86-1	Bromobenzene	1.0	< 1.0	U
95-49-8	2-Chlorotoluene	1.0	< 1.0	U
106-43-4	4-Chlorotoluene	1.0	< 1.0	U
98-06-6	tert-Butylbenzene	1.0	< 1.0	U
135-98-8	sec-Butylbenzene	1.0	< 1.0	U
99-87-6	4-Isopropyltoluene	1.0	< 1.0	U
104-51-8	n-Butylbenzene	1.0	< 1.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	Naphthalene	5.0	< 5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	103%
d8-Toluene	95.5%
Bromofluorobenzene	95.7%
d4-1,2-Dichlorobenzene	103%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-6**
 SAMPLE

Lab Sample ID: ZN05E
LIMS ID: 14-26231
Matrix: Water
Data Release Authorized:
Reported: 12/15/14

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/03/14
Date Received: 12/03/14

Instrument/Analyst: NT2/PAB
Date Analyzed: 12/12/14 19:11

Sample Amount: 2.00 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	5.0	< 5.0	U
74-83-9	Bromomethane	5.0	< 5.0	U
75-01-4	Vinyl Chloride	5.0	< 5.0	U
75-00-3	Chloroethane	5.0	< 5.0	U
75-09-2	Methylene Chloride	10	< 10	U
67-64-1	Acetone	50	< 50	U
75-15-0	Carbon Disulfide	5.0	< 5.0	U
75-35-4	1,1-Dichloroethene	5.0	< 5.0	U
75-34-3	1,1-Dichloroethane	5.0	< 5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	< 5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	< 5.0	U
67-66-3	Chloroform	5.0	< 5.0	U
107-06-2	1,2-Dichloroethane	5.0	< 5.0	U
78-93-3	2-Butanone	25	< 25	U
71-55-6	1,1,1-Trichloroethane	5.0	< 5.0	U
56-23-5	Carbon Tetrachloride	5.0	< 5.0	U
108-05-4	Vinyl Acetate	25	< 25	U
75-27-4	Bromodichloromethane	5.0	< 5.0	U
78-87-5	1,2-Dichloropropane	5.0	< 5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	< 5.0	U
79-01-6	Trichloroethene	5.0	< 5.0	U
124-48-1	Dibromochloromethane	5.0	< 5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	< 5.0	U
71-43-2	Benzene	5.0	< 5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	< 5.0	U
110-75-8	2-Chloroethylvinylether	25	< 25	U
75-25-2	Bromoform	5.0	< 5.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	25	< 25	U
591-78-6	2-Hexanone	25	< 25	U
127-18-4	Tetrachloroethene	5.0	< 5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	< 5.0	U
108-88-3	Toluene	5.0	< 5.0	U
108-90-7	Chlorobenzene	5.0	< 5.0	U
100-41-4	Ethylbenzene	5.0	< 5.0	U
100-42-5	Styrene	5.0	< 5.0	U
75-69-4	Trichlorofluoromethane	5.0	< 5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	10	< 10	U
179601-23-1	m,p-Xylene	10	< 10	U
95-47-6	o-Xylene	5.0	< 5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	< 5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	< 5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-6**
 SAMPLE

Lab Sample ID: ZN05E
LIMS ID: 14-26231
Matrix: Water
Date Analyzed: 12/12/14 19:11

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	50	< 50	U
74-88-4	Iodomethane	5.0	< 5.0	U
74-96-4	Bromoethane	10	< 10	U
107-13-1	Acrylonitrile	25	< 25	U
563-58-6	1,1-Dichloropropene	5.0	< 5.0	U
74-95-3	Dibromomethane	5.0	< 5.0	U
630-20-6	1,1,1,2-Tetrachloroethane	5.0	< 5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	25	< 25	U
96-18-4	1,2,3-Trichloropropane	10	< 10	U
110-57-6	trans-1,4-Dichloro-2-butene	25	< 25	U
108-67-8	1,3,5-Trimethylbenzene	5.0	< 5.0	U
95-63-6	1,2,4-Trimethylbenzene	5.0	< 5.0	U
87-68-3	Hexachlorobutadiene	25	< 25	U
106-93-4	1,2-Dibromoethane	5.0	< 5.0	U
74-97-5	Bromochloromethane	5.0	< 5.0	U
594-20-7	2,2-Dichloropropane	5.0	< 5.0	U
142-28-9	1,3-Dichloropropane	25	< 25	U
98-82-8	Isopropylbenzene	5.0	< 5.0	U
103-65-1	n-Propylbenzene	5.0	< 5.0	U
108-86-1	Bromobenzene	5.0	< 5.0	U
95-49-8	2-Chlorotoluene	5.0	< 5.0	U
106-43-4	4-Chlorotoluene	5.0	< 5.0	U
98-06-6	tert-Butylbenzene	5.0	< 5.0	U
135-98-8	sec-Butylbenzene	5.0	< 5.0	U
99-87-6	4-Isopropyltoluene	5.0	< 5.0	U
104-51-8	n-Butylbenzene	5.0	< 5.0	U
120-82-1	1,2,4-Trichlorobenzene	25	< 25	U
91-20-3	Naphthalene	25	< 25	U
87-61-6	1,2,3-Trichlorobenzene	25	< 25	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	97.4%
d8-Toluene	97.0%
Bromofluorobenzene	96.3%
d4-1,2-Dichlorobenzene	102%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: TRIP BLANK SAMPLE**

Lab Sample ID: ZN05F
LIMS ID: 14-26232
Matrix: Water
Data Release Authorized:
Reported: 12/15/14

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering 1396024.00
Date Sampled: 12/03/14
Date Received: 12/03/14

Instrument/Analyst: NT2/PAB
Date Analyzed: 12/12/14 20:57

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	1.0	< 1.0	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	1.0	< 1.0	U
75-00-3	Chloroethane	1.0	< 1.0	U
75-09-2	Methylene Chloride	2.0	< 2.0	U
67-64-1	Acetone	10	< 10	U
75-15-0	Carbon Disulfide	1.0	< 1.0	U
75-35-4	1,1-Dichloroethene	1.0	< 1.0	U
75-34-3	1,1-Dichloroethane	1.0	< 1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	< 1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	< 1.0	U
67-66-3	Chloroform	1.0	< 1.0	U
107-06-2	1,2-Dichloroethane	1.0	< 1.0	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	1.0	< 1.0	U
56-23-5	Carbon Tetrachloride	1.0	< 1.0	U
108-05-4	Vinyl Acetate	5.0	< 5.0	U
75-27-4	Bromodichloromethane	1.0	< 1.0	U
78-87-5	1,2-Dichloropropane	1.0	< 1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	< 1.0	U
79-01-6	Trichloroethene	1.0	< 1.0	U
124-48-1	Dibromochloromethane	1.0	< 1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	< 1.0	U
71-43-2	Benzene	1.0	< 1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	< 1.0	U
110-75-8	2-Chloroethylvinylether	5.0	< 5.0	U
75-25-2	Bromoform	1.0	< 1.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	< 1.0	U
108-88-3	Toluene	1.0	< 1.0	U
108-90-7	Chlorobenzene	1.0	< 1.0	U
100-41-4	Ethylbenzene	1.0	< 1.0	U
100-42-5	Styrene	1.0	< 1.0	U
75-69-4	Trichlorofluoromethane	1.0	< 1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	< 2.0	U
179601-23-1	m,p-Xylene	2.0	< 2.0	U
95-47-6	o-Xylene	1.0	< 1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0	U

Lab Sample ID: ZN05F
LIMS ID: 14-26232
Matrix: Water
Date Analyzed: 12/12/14 20:57

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	10	< 10	U
74-88-4	Iodomethane	1.0	< 1.0	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	5.0	< 5.0	U
563-58-6	1,1-Dichloropropene	1.0	< 1.0	U
74-95-3	Dibromomethane	1.0	< 1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	< 1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	2.0	< 2.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	< 5.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	< 1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	< 1.0	U
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	1,2-Dibromoethane	1.0	< 1.0	U
74-97-5	Bromochloromethane	1.0	< 1.0	U
594-20-7	2,2-Dichloropropane	1.0	< 1.0	U
142-28-9	1,3-Dichloropropane	5.0	< 5.0	U
98-82-8	Isopropylbenzene	1.0	< 1.0	U
103-65-1	n-Propylbenzene	1.0	< 1.0	U
108-86-1	Bromobenzene	1.0	< 1.0	U
95-49-8	2-Chlorotoluene	1.0	< 1.0	U
106-43-4	4-Chlorotoluene	1.0	< 1.0	U
98-06-6	tert-Butylbenzene	1.0	< 1.0	U
135-98-8	sec-Butylbenzene	1.0	< 1.0	U
99-87-6	4-Isopropyltoluene	1.0	< 1.0	U
104-51-8	n-Butylbenzene	1.0	< 1.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	Naphthalene	5.0	< 5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	98.3%
d8-Toluene	98.3%
Bromofluorobenzene	93.6%
d4-1,2-Dichlorobenzene	104%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MB-121214A**
 METHOD BLANK

Lab Sample ID: MB-121214A
LIMS ID: 14-26227
Matrix: Water
Data Release Authorized:
Reported: 12/15/14

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT2/PAB
Date Analyzed: 12/12/14 17:13

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	1.0	< 1.0	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	1.0	< 1.0	U
75-00-3	Chloroethane	1.0	< 1.0	U
75-09-2	Methylene Chloride	2.0	< 2.0	U
67-64-1	Acetone	10	< 10	U
75-15-0	Carbon Disulfide	1.0	< 1.0	U
75-35-4	1,1-Dichloroethene	1.0	< 1.0	U
75-34-3	1,1-Dichloroethane	1.0	< 1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	< 1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	< 1.0	U
67-66-3	Chloroform	1.0	< 1.0	U
107-06-2	1,2-Dichloroethane	1.0	< 1.0	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	1.0	< 1.0	U
56-23-5	Carbon Tetrachloride	1.0	< 1.0	U
108-05-4	Vinyl Acetate	5.0	< 5.0	U
75-27-4	Bromodichloromethane	1.0	< 1.0	U
78-87-5	1,2-Dichloropropane	1.0	< 1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	< 1.0	U
79-01-6	Trichloroethene	1.0	< 1.0	U
124-48-1	Dibromochloromethane	1.0	< 1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	< 1.0	U
71-43-2	Benzene	1.0	< 1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	< 1.0	U
110-75-8	2-Chloroethylvinylether	5.0	< 5.0	U
75-25-2	Bromoform	1.0	< 1.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	< 1.0	U
108-88-3	Toluene	1.0	< 1.0	U
108-90-7	Chlorobenzene	1.0	< 1.0	U
100-41-4	Ethylbenzene	1.0	< 1.0	U
100-42-5	Styrene	1.0	< 1.0	U
75-69-4	Trichlorofluoromethane	1.0	< 1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	< 2.0	U
179601-23-1	m,p-Xylene	2.0	< 2.0	U
95-47-6	o-Xylene	1.0	< 1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0	U

Lab Sample ID: MB-121214A
LIMS ID: 14-26227
Matrix: Water
Date Analyzed: 12/12/14 17:13

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	10	< 10	U
74-88-4	Iodomethane	1.0	< 1.0	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	5.0	< 5.0	U
563-58-6	1,1-Dichloropropene	1.0	< 1.0	U
74-95-3	Dibromomethane	1.0	< 1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	< 1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	2.0	< 2.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	< 5.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	< 1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	< 1.0	U
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	1,2-Dibromoethane	1.0	< 1.0	U
74-97-5	Bromochloromethane	1.0	< 1.0	U
594-20-7	2,2-Dichloropropane	1.0	< 1.0	U
142-28-9	1,3-Dichloropropane	5.0	< 5.0	U
98-82-8	Isopropylbenzene	1.0	< 1.0	U
103-65-1	n-Propylbenzene	1.0	< 1.0	U
108-86-1	Bromobenzene	1.0	< 1.0	U
95-49-8	2-Chlorotoluene	1.0	< 1.0	U
106-43-4	4-Chlorotoluene	1.0	< 1.0	U
98-06-6	tert-Butylbenzene	1.0	< 1.0	U
135-98-8	sec-Butylbenzene	1.0	< 1.0	U
99-87-6	4-Isopropyltoluene	1.0	< 1.0	U
104-51-8	n-Butylbenzene	1.0	< 1.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	Naphthalene	5.0	< 5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	95.8%
d8-Toluene	101%
Bromofluorobenzene	98.2%
d4-1,2-Dichlorobenzene	102%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: LCS-121214A**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-121214A
LIMS ID: 14-26227
Matrix: Water
Data Release Authorized:
Reported: 12/15/14

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT2/PAB
LCSD: NT2/PAB
Date Analyzed LCS: 12/12/14 16:20
LCSD: 12/12/14 16:46

Sample Amount LCS: 10.0 mL
LCSD: 10.0 mL
Purge Volume LCS: 10.0 mL
LCSD: 10.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	10.9	10.0	109%	11.0	10.0	110%	0.9%
Bromomethane	10.9	10.0	109%	11.8	10.0	118%	7.9%
Vinyl Chloride	10.5	10.0	105%	10.6	10.0	106%	0.9%
Chloroethane	11.0	10.0	110%	11.6	10.0	116%	5.3%
Methylene Chloride	11.4	10.0	114%	11.5	10.0	115%	0.9%
Acetone	50.8	50.0	102%	40.8	50.0	81.6%	21.8%
Carbon Disulfide	11.6	10.0	116%	11.7	10.0	117%	0.9%
1,1-Dichloroethene	11.6	10.0	116%	11.6	10.0	116%	0.0%
1,1-Dichloroethane	11.0	10.0	110%	11.1	10.0	111%	0.9%
trans-1,2-Dichloroethene	11.7	10.0	117%	12.0	10.0	120%	2.5%
cis-1,2-Dichloroethene	11.4	10.0	114%	11.4	10.0	114%	0.0%
Chloroform	10.9	10.0	109%	11.1	10.0	111%	1.8%
1,2-Dichloroethane	10.8	10.0	108%	11.0	10.0	110%	1.8%
2-Butanone	49.4	50.0	98.8%	51.8	50.0	104%	4.7%
1,1,1-Trichloroethane	11.3	10.0	113%	11.5	10.0	115%	1.8%
Carbon Tetrachloride	11.6	10.0	116%	12.1	10.0	121%	4.2%
Vinyl Acetate	8.50	10.0	85.0%	8.43	10.0	84.3%	0.8%
Bromodichloromethane	11.0	10.0	110%	11.2	10.0	112%	1.8%
1,2-Dichloropropane	11.3	10.0	113%	11.4	10.0	114%	0.9%
cis-1,3-Dichloropropene	9.40	10.0	94.0%	9.65	10.0	96.5%	2.6%
Trichloroethene	11.6	10.0	116%	11.8	10.0	118%	1.7%
Dibromochloromethane	8.92	10.0	89.2%	8.83	10.0	88.3%	1.0%
1,1,2-Trichloroethane	11.1	10.0	111%	11.6	10.0	116%	4.4%
Benzene	12.0	10.0	120%	12.0	10.0	120%	0.0%
trans-1,3-Dichloropropene	10.0	10.0	100%	10.2	10.0	102%	2.0%
2-Chloroethylvinylether	7.86	10.0	78.6%	8.47	10.0	84.7%	7.5%
Bromoform	8.71	10.0	87.1%	8.84	10.0	88.4%	1.5%
4-Methyl-2-Pentanone (MIBK)	52.8	50.0	106%	55.1	50.0	110%	4.3%
2-Hexanone	52.5	50.0	105%	55.2	50.0	110%	5.0%
Tetrachloroethene	11.5	10.0	115%	11.3	10.0	113%	1.8%
1,1,2,2-Tetrachloroethane	10.2	10.0	102%	10.7	10.0	107%	4.8%
Toluene	12.1	10.0	121%	11.7	10.0	117%	3.4%
Chlorobenzene	11.7	10.0	117%	11.6	10.0	116%	0.9%
Ethylbenzene	10.9	10.0	109%	10.7	10.0	107%	1.9%
Styrene	10.5	10.0	105%	10.1	10.0	101%	3.9%
Trichlorofluoromethane	6.64 Q	10.0	66.4%	7.48 Q	10.0	74.8%	11.9%
1,1,2-Trichloro-1,2,2-trifluoroetha	12.2	10.0	122%	12.1	10.0	121%	0.8%
m,p-Xylene	23.3	20.0	116%	22.9	20.0	114%	1.7%

Lab Sample ID: LCS-121214A
LIMS ID: 14-26227
Matrix: Water

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
o-Xylene	10.6	10.0	106%	10.5	10.0	105%	0.9%
1,2-Dichlorobenzene	11.4	10.0	114%	11.3	10.0	113%	0.9%
1,3-Dichlorobenzene	11.8	10.0	118%	11.6	10.0	116%	1.7%
1,4-Dichlorobenzene	11.7	10.0	117%	11.3	10.0	113%	3.5%
Acrolein	48.1 Q	50.0	96.2%	46.8 Q	50.0	93.6%	2.7%
Iodomethane	11.4	10.0	114%	11.5	10.0	115%	0.9%
Bromoethane	11.6	10.0	116%	11.6	10.0	116%	0.0%
Acrylonitrile	8.87	10.0	88.7%	8.53	10.0	85.3%	3.9%
1,1-Dichloropropene	12.0	10.0	120%	12.1	10.0	121%	0.8%
Dibromomethane	11.1	10.0	111%	11.6	10.0	116%	4.4%
1,1,1,2-Tetrachloroethane	11.6	10.0	116%	11.6	10.0	116%	0.0%
1,2-Dibromo-3-chloropropane	8.28	10.0	82.8%	8.41	10.0	84.1%	1.6%
1,2,3-Trichloropropane	11.1	10.0	111%	11.0	10.0	110%	0.9%
trans-1,4-Dichloro-2-butene	8.75	10.0	87.5%	8.59	10.0	85.9%	1.8%
1,3,5-Trimethylbenzene	11.7	10.0	117%	11.4	10.0	114%	2.6%
1,2,4-Trimethylbenzene	11.4	10.0	114%	11.2	10.0	112%	1.8%
Hexachlorobutadiene	13.3	10.0	133%	12.8	10.0	128%	3.8%
1,2-Dibromoethane	11.6	10.0	116%	11.7	10.0	117%	0.9%
Bromochloromethane	10.4	10.0	104%	10.6	10.0	106%	1.9%
2,2-Dichloropropane	11.7	10.0	117%	12.1	10.0	121%	3.4%
1,3-Dichloropropane	9.31	10.0	93.1%	9.54	10.0	95.4%	2.4%
Isopropylbenzene	11.6	10.0	116%	11.2	10.0	112%	3.5%
n-Propylbenzene	12.6	10.0	126%	12.2	10.0	122%	3.2%
Bromobenzene	11.5	10.0	115%	11.5	10.0	115%	0.0%
2-Chlorotoluene	11.9	10.0	119%	11.7	10.0	117%	1.7%
4-Chlorotoluene	10.9	10.0	109%	10.7	10.0	107%	1.9%
tert-Butylbenzene	10.2	10.0	102%	9.80	10.0	98.0%	4.0%
sec-Butylbenzene	11.9	10.0	119%	11.6	10.0	116%	2.6%
4-Isopropyltoluene	11.5	10.0	115%	11.2	10.0	112%	2.6%
n-Butylbenzene	11.8	10.0	118%	11.3	10.0	113%	4.3%
1,2,4-Trichlorobenzene	9.52	10.0	95.2%	9.53	10.0	95.3%	0.1%
Naphthalene	8.78	10.0	87.8%	9.41	10.0	94.1%	6.9%
1,2,3-Trichlorobenzene	10.0	10.0	100%	10.4	10.0	104%	3.9%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	95.7%	95.1%
d8-Toluene	102%	103%
Bromofluorobenzene	102%	101%
d4-1,2-Dichlorobenzene	99.0%	99.7%

ANALYTICAL RESOURCES INCORPORATED

VOA SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
MB-121214A	Method Blank	10	95.8%	101%	98.2%	102%	0
LCS-121214A	Lab Control	10	95.7%	102%	102%	99.0%	0
LCSD-121214A	Lab Control Dup	10	95.1%	103%	101%	99.7%	0
ZN05A	MW-8	10	94.8%	98.5%	94.3%	101%	0
ZN05B	MW-9	10	99.7%	95.6%	97.0%	104%	0
ZN05C	MW-10	10	101%	95.5%	97.1%	104%	0
ZN05D	MW-7	10	103%	95.5%	95.7%	103%	0
ZN05E	MW-6	10	97.4%	97.0%	96.3%	102%	0
ZN05F	TRIP BLANK	10	98.3%	98.3%	93.6%	104%	0

SW8260C	LCS/MB LIMITS	QC LIMITS
(DCE) = d4-1,2-Dichloroethane	(80-120)	(80-120)
(TOL) = d8-Toluene	(80-120)	(80-120)
(BFB) = Bromofluorobenzene	(80-120)	(80-120)
(DCB) = d4-1,2-Dichlorobenzene	(80-120)	(80-120)

Prep Method: SW5030B
Log Number Range: 14-26227 to 14-26232

Analytical Resources, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: nt2.i Injection Date: 12-DEC-2014 13:15
Lab File ID: 1001212.d Init. Cal. Date(s): 12-DEC-2014 12-DEC-2014
Analysis Type: WATER Init. Cal. Times: 11:27 14:35
Lab Sample ID: IC1212 Quant Type: ISTD
Method: /chem3/nt2.i/20141212A.b/82601204L.m

COMPOUND	RRF / AMOUNT	RF10	CCAL RRF10	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	
1 Dichlorodifluoromethane	10.89761	10.00000	0.65302	0.010	8.97614	20.00000	Linear	
2 Chloromethane	1.15723	1.23809	1.23809	0.100	6.98655	20.00000	Averaged	
3 Vinyl Chloride	10.02131	10.00000	1.04925	0.100	0.21307	20.00000	Linear	
4 Bromomethane	11.35135	10.00000	0.40191	0.100	13.51353	20.00000	Linear	
5 Chloroethane	0.50662	0.55409	0.55409	0.010	9.37141	20.00000	Averaged	
6 Trichlorofluoromethane	6.82889	10.00000	0.68509	0.010	-31.71111	20.00000	Quadratic	<-
7 1,1-Dichloroethene	1.23768	1.43493	1.43493	0.100	15.93665	20.00000	Averaged	
8 Carbon Disulfide	1.95767	2.22310	2.22310	0.010	13.55829	20.00000	Averaged	
9 112Trichloro122Trifluoroeth	11.90312	10.00000	0.62811	0.010	19.03121	20.00000	Linear	
10 Iodomethane	0.83379	0.91849	0.91849	0.010	10.15909	20.00000	Averaged	
11 Bromoethane	0.46860	0.50765	0.50765	0.100	8.33323	20.00000	Averaged	
12 Acrolein	36.88643	50.00000	0.08333	0.000	-26.22715	20.00000	Linear	<-
13 Methylene Chloride	11.14510	10.00000	0.76840	0.010	11.45102	20.00000	Linear	
14 Acetone	49.63017	50.00000	0.18156	0.001	-0.73965	20.00000	Linear	
15 Trans-1,2-Dichloroethene	0.63660	0.71451	0.71451	0.010	12.23853	20.00000	Averaged	
17 Methyl tert butyl ether	9.99525	10.00000	1.74349	0.100	-0.04755	20.00000	Linear	
18 1,1-Dichloroethane	1.41762	1.55890	1.55890	0.200	9.96611	20.00000	Averaged	
19 Acrylonitrile	8.65559	10.00000	0.22611	0.001	-13.44405	20.00000	Linear	
20 Vinyl Acetate	9.09624	10.00000	0.25119	0.010	-9.03756	20.00000	Linear	
22 Cis-1,2-Dichloroethene	0.65950	0.73151	0.73151	0.010	10.91881	20.00000	Averaged	
23 2,2-Dichloropropane	0.62625	0.69693	0.69693	0.010	11.28616	20.00000	Averaged	
24 Bromochloromethane	10.49562	10.00000	0.29924	0.050	4.95617	20.00000	Linear	
25 Chloroform	1.04535	1.15142	1.15142	0.200	10.14639	20.00000	Averaged	
26 Carbon Tetrachloride	0.39708	0.45891	0.45891	0.100	15.57230	20.00000	Averaged	
$ 27 Dibromofluoromethane	0.60902	0.59544	0.59544	0.100	-2.22890	20.00000	Averaged	
28 1,1,1-Trichloroethane	0.88043	0.98257	0.98257	0.100	11.60052	20.00000	Averaged	
29 2-Butanone	0.26700	0.28891	0.28891	0.001	8.20608	20.00000	Averaged	
30 1,1-Dichloropropene	0.45272	0.52873	0.52873	0.010	16.78821	20.00000	Averaged	
31 Benzene	1.28098	1.49709	1.49709	0.500	16.87098	20.00000	Averaged	
$ 33 d4-1,2-Dichloroethane	0.80010	0.79963	0.79963	0.010	-0.05842	20.00000	Averaged	
34 1,2-Dichloroethane	0.48029	0.53743	0.53743	0.100	11.89553	20.00000	Averaged	
36 Trichloroethene	0.29273	0.33215	0.33215	0.100	13.46674	20.00000	Averaged	
38 Dibromomethane	0.15767	0.17523	0.17523	0.010	11.13768	20.00000	Averaged	
39 1,2-Dichloropropane	0.37318	0.41178	0.41178	0.100	10.34514	20.00000	Averaged	
40 Bromodichloromethane	0.36763	0.40845	0.40845	0.100	11.10371	20.00000	Averaged	

Analytical Resources, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: nt2.i Injection Date: 12-DEC-2014 13:15
Lab File ID: 1001212.d Init. Cal. Date(s): 12-DEC-2014 12-DEC-2014
Analysis Type: WATER Init. Cal. Times: 11:27 14:35
Lab Sample ID: IC1212 Quant Type: ISTD
Method: /chem3/nt2.i/20141212A.b/82601204L.m

COMPOUND	RRF / AMOUNT	RF10	CCAL RRF10	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
41 2-Chloroethyl Vinyl Ether	8.12070	10.00000	0.13643	0.000	-18.79295	20.00000	Linear
42 Cis 1,3-dichloropropene	9.44155	10.00000	0.46684	0.200	-5.58453	20.00000	Linear
$ 43 d8-Toluene	1.20339	1.21597	1.21597	0.010	1.04549	20.00000	Averaged
44 Toluene	0.72315	0.82817	0.82817	0.400	14.52151	20.00000	Averaged
45 4-Methyl-2-Pentanone	53.71561	50.00000	0.14369	0.000	7.43122	20.00000	Linear
46 Tetrachloroethene	0.30288	0.34043	0.34043	0.200	12.39662	20.00000	Averaged
47 Trans 1,3-Dichloropropene	10.12291	10.00000	0.40422	0.010	1.22908	20.00000	Linear
48 1,1,2-Trichloroethane	0.20101	0.22965	0.22965	0.100	14.24985	20.00000	Averaged
49 Chlorodibromomethane	9.23538	10.00000	0.27751	0.100	-7.64625	20.00000	Linear
50 1,3-Dichloropropane	9.64350	10.00000	0.48223	0.100	-3.56499	20.00000	Linear
51 1,2-Dibromoethane	0.18913	0.21390	0.21390	0.010	13.10160	20.00000	Averaged
52 2-Hexanone	55.09107	50.00000	0.26988	0.010	10.18214	20.00000	Linear
54 Chlorobenzene	0.82544	0.95116	0.95116	0.500	15.23010	20.00000	Averaged
55 Ethyl Benzene	10.34162	10.00000	0.52904	0.100	3.41622	20.00000	Linear
56 1,1,1,2-Tetrachloroethane	0.30314	0.34363	0.34363	0.010	13.35829	20.00000	Averaged
57 m,p-xylene	22.30510	20.00000	0.65895	0.300	11.52552	20.00000	Linear
58 o-Xylene	9.96503	10.00000	0.66567	0.300	-0.34973	20.00000	Linear
59 Styrene	10.19344	10.00000	1.04649	0.300	1.93441	20.00000	Linear
60 Bromoform	8.87694	10.00000	0.28001	0.010	-11.23056	20.00000	Linear
61 Isopropyl Benzene	11.02140	10.00000	3.13715	0.010	10.21403	20.00000	Linear
$ 62 4-Bromofluorobenzene	0.56914	0.55871	0.55871	0.200	-1.83286	20.00000	Averaged
63 Bromobenzene	0.58201	0.64660	0.64660	0.010	11.09731	20.00000	Averaged
64 N-Propyl Benzene	3.01290	3.61140	3.61140	0.010	19.86466	20.00000	Averaged
65 1,1,2,2-Tetrachloroethane	0.61594	0.65116	0.65116	0.100	5.71781	20.00000	Averaged
66 2-Chloro Toluene	2.24766	2.60819	2.60819	0.010	16.03993	20.00000	Averaged
67 1,3,5-Trimethyl Benzene	11.28076	10.00000	2.71137	0.010	12.80761	20.00000	Linear
68 1,2,3-Trichloropropane	0.17547	0.19549	0.19549	0.010	11.41140	20.00000	Averaged
69 Trans-1,4-Dichloro 2-Butene	8.97359	10.00000	0.24513	0.001	-10.26406	20.00000	Linear
70 4-Chloro Toluene	10.47153	10.00000	2.35571	0.010	4.71534	20.00000	Linear
71 T-Butyl Benzene	9.72040	10.00000	2.19717	0.010	-2.79596	20.00000	Linear
72 1,2,4-Trimethylbenzene	11.04911	10.00000	2.70894	0.010	10.49105	20.00000	Linear
73 S-Butyl Benzene	11.17174	10.00000	3.21703	0.010	11.71742	20.00000	Linear
74 4-Isopropyl Toluene	10.84384	10.00000	2.62982	0.010	8.43842	20.00000	Linear
75 1,3-Dichlorobenzene	1.21419	1.38832	1.38832	0.600	14.34115	20.00000	Averaged
77 1,4-Dichlorobenzene	1.25780	1.40487	1.40487	0.500	11.69272	20.00000	Averaged

Analytical Resources, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: nt2.i Injection Date: 12-DEC-2014 13:15
Lab File ID: 1001212.d Init. Cal. Date(s): 12-DEC-2014 12-DEC-2014
Analysis Type: WATER Init. Cal. Times: 11:27 14:35
Lab Sample ID: IC1212 Quant Type: ISTD
Method: /chem3/nt2.i/20141212A.b/82601204L.m

COMPOUND	RRF / AMOUNT	RF10	CCAL RRF10	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
78 N-Butyl Benzene	10.84745	10.00000	2.44870	0.010	8.47450	20.00000	Linear
$ 79 d4-1,2-Dichlorobenzene	0.92753	0.92456	0.92456	0.010	-0.31984	20.00000	Averaged
80 1,2-Dichlorobenzene	1.18729	1.33062	1.33062	0.400	12.07262	20.00000	Averaged
81 1,2-Dibromo 3-Chloropropane	8.95316	10.00000	0.10783	0.010	-10.46840	20.00000	Linear
83 Hexachloro 1,3-Butadiene	0.27216	0.29938	0.29938	0.010	10.00161	20.00000	Averaged
84 1,2,4-Trichlorobenzene	9.30676	10.00000	0.65461	0.010	-6.93240	20.00000	Linear
85 Naphthalene	9.15929	10.00000	1.53827	0.010	-8.40709	20.00000	Linear
86 1,2,3-Trichlorobenzene	10.09835	10.00000	0.55776	0.010	0.98353	20.00000	Linear

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID
Extraction Method: SW3510C

QC Report No: ZN05-Kennedy Jenks Consultants,
Project: Precision Engineering
1396024.00

Matrix: Water

Date Received: 12/03/14

Data Release Authorized:
Reported: 12/22/14

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DF	Range/Surrogate	RL	Result
MB-121014	Method Blank	12/10/14	12/20/14	1.00	Diesel Range	0.10	< 0.10 U
14-26227	HC ID: ---		FID3B	1.0	Motor Oil Range	0.20	< 0.20 U
					o-Terphenyl		78.0%
ZN05A	MW-8	12/10/14	12/20/14	1.00	**Diesel Range**	**0.10**	**0.42**
14-26227	HC ID: **DRO/RRO**		FID3B	1.0	**Motor Oil Range**	**0.20**	**0.24**
					o-Terphenyl		73.2%
ZN05B	MW-9	12/10/14	12/20/14	1.00	**Diesel Range**	**0.10**	**0.15**
14-26228	HC ID: **DRO**		FID3B	1.0	Motor Oil Range	0.20	< 0.20 U
					o-Terphenyl		66.6%
ZN05C	MW-10	12/10/14	12/20/14	1.00	**Diesel Range**	**0.10**	**0.39**
14-26229	HC ID: **DRO/RRO**		FID3B	1.0	**Motor Oil Range**	**0.20**	**0.31**
					o-Terphenyl		74.2%
ZN05D	MW-7	12/10/14	12/21/14	1.00	**Diesel Range**	**0.10**	**0.17**
14-26230	HC ID: **DRO**		FID3B	1.0	Motor Oil Range	0.20	< 0.20 U
					o-Terphenyl		68.1%
ZN05E	MW-6	12/10/14	12/21/14	1.00	**Diesel Range**	**0.10**	**0.77**
14-26231	HC ID: **DRO/RRO**		FID3B	1.0	**Motor Oil Range**	**0.20**	**0.79**
					o-Terphenyl		51.2%

Reported in mg/L (ppm)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel range quantitation on total peaks in the range from C12 to C24.
Motor Oil range quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in ranges are not identifiable.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID
Page 1 of 1

Sample ID: LCS-121014
LCS/LCSD

Lab Sample ID: LCS-121014
LIMS ID: 14-26227
Matrix: Water
Data Release Authorized:
Reported: 12/22/14

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 12/10/14
Date Analyzed LCS: 12/20/14 19:30
LCSD: 12/20/14 19:55
Instrument/Analyst LCS: FID3B/JLW
LCSD: FID3B/JLW

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2.12	3.00	70.7%	2.40	3.00	80.0%	12.4%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	67.5%	60.0%

Results reported in mg/L
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: ZN05
Matrix: Water Project: Precision Engineering
Date Received: 12/03/14 1396024.00

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
14-26227-121014MB1	Method Blank	500 mL	1.00 mL	12/10/14
14-26227-121014LCS1	Lab Control	500 mL	1.00 mL	12/10/14
14-26227-121014LCSD1	Lab Control Dup	500 mL	1.00 mL	12/10/14
14-26227-ZN05A	MW-8	500 mL	1.00 mL	12/10/14
14-26228-ZN05B	MW-9	500 mL	1.00 mL	12/10/14
14-26229-ZN05C	MW-10	500 mL	1.00 mL	12/10/14
14-26230-ZN05D	MW-7	500 mL	1.00 mL	12/10/14
14-26231-ZN05E	MW-6	500 mL	1.00 mL	12/10/14

ANALYTICAL RESOURCES INCORPORATED

TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00

Client ID	OTER	TOT OUT
MB-121014	78.0%	0
LCS-121014	67.5%	0
LCSD-121014	60.0%	0
MW-8	73.2%	0
MW-9	66.6%	0
MW-10	74.2%	0
MW-7	68.1%	0
MW-6	51.2%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3510C
Log Number Range: 14-26227 to 14-26231

Data File: /chem3/fid3b.i/20141220.b/1220b025.d

Date : 20-DEC-2014 19:30

Client ID: ZM93LCSW1

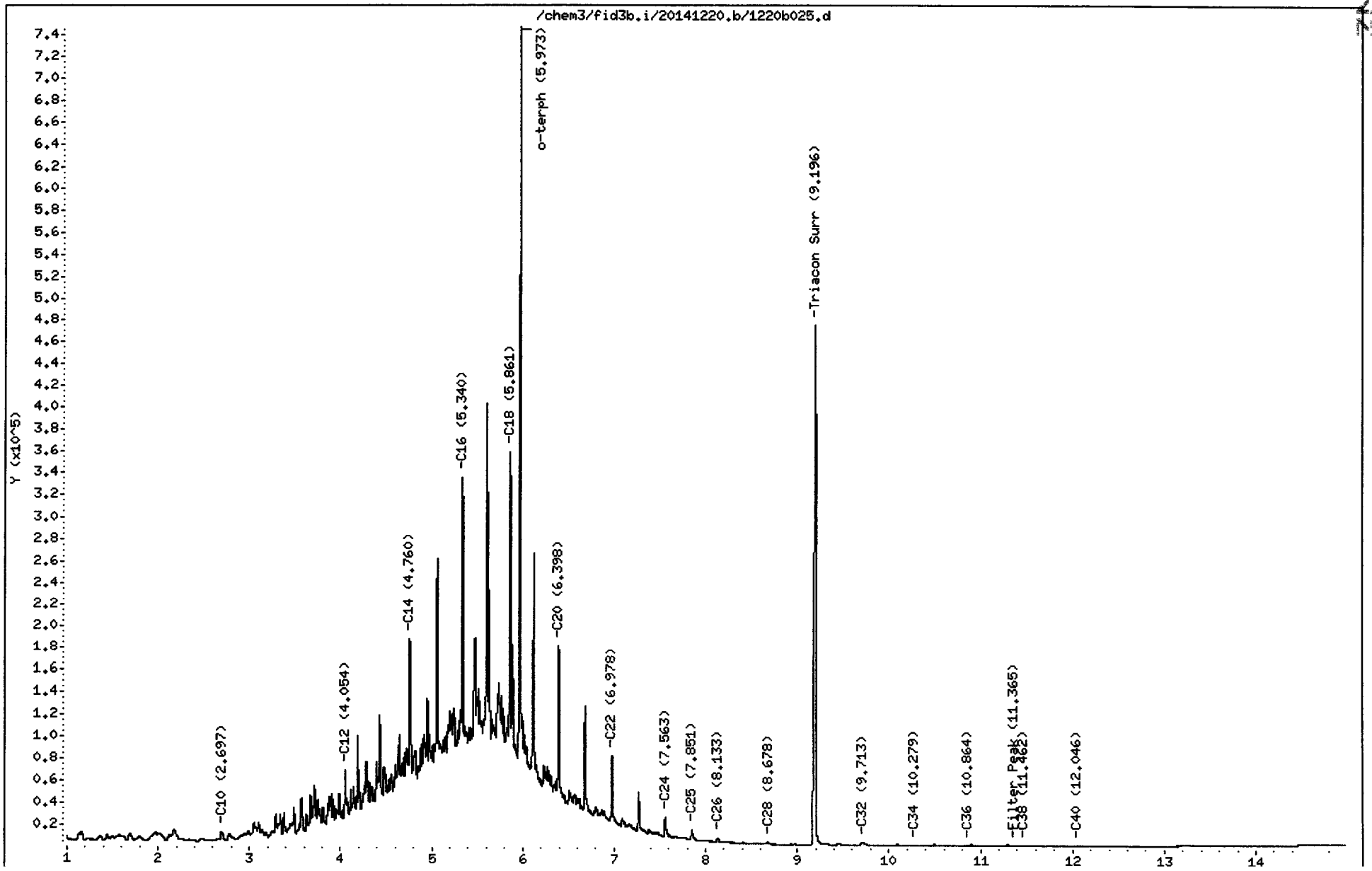
Sample Info: ZM93LCSW1

Instrument: fid3b.i

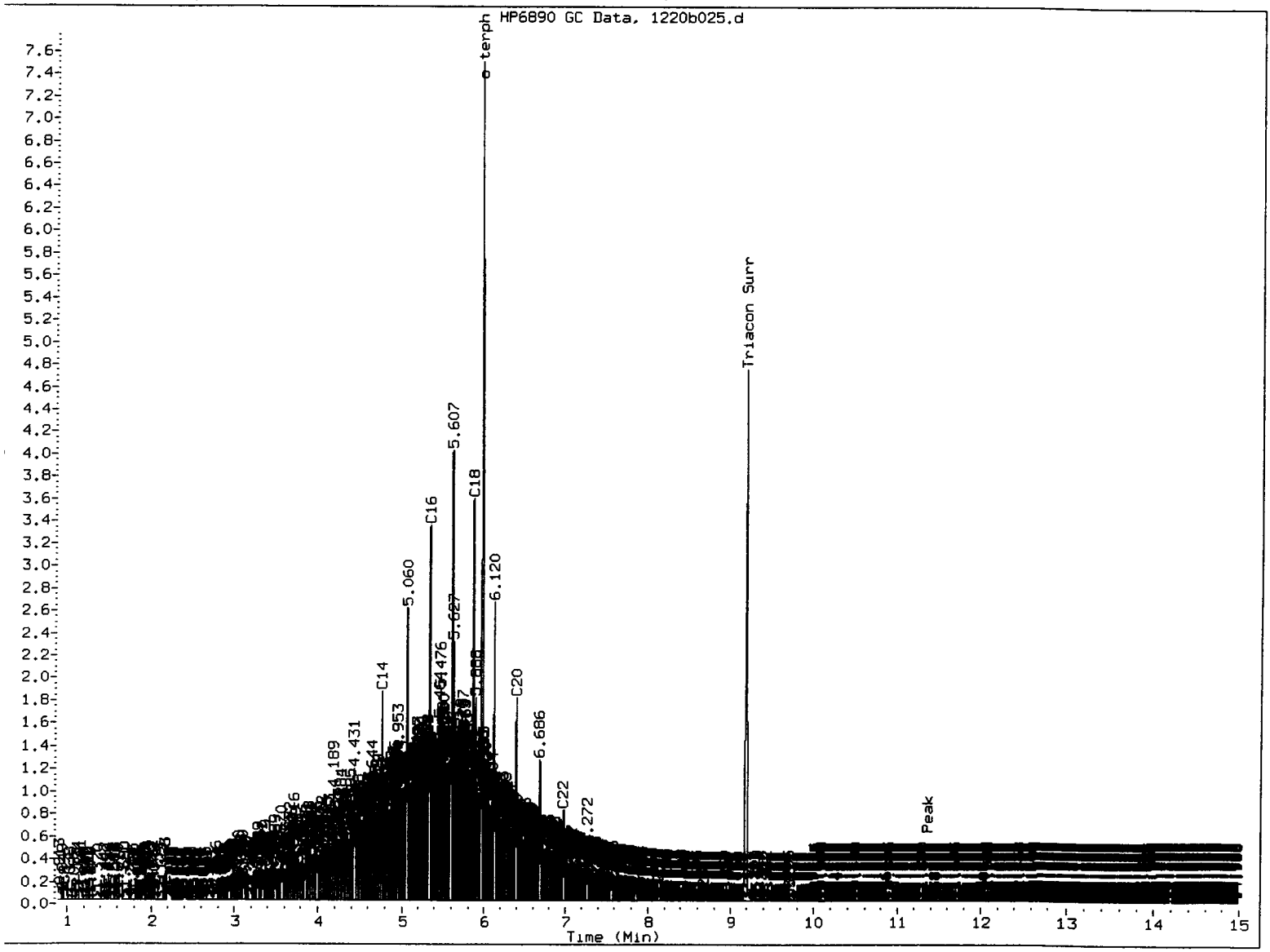
Operator: JW

Column phase: RTX-1

Column diameter: 0.25



FID:3B-2C/RTX-1 ZM93LCSW1 FID:3B SIGNAL



MANUAL INTEGRATION

1. Baseline correction
3. Peak not found
5. Skimmed surrogate

Analyst: JCl Date: 12/22/14

Data File: /chem3/fid3b.i/20141220.b/1220b026.d

Date : 20-DEC-2014 19:55

Client ID: ZM93LCSDW1

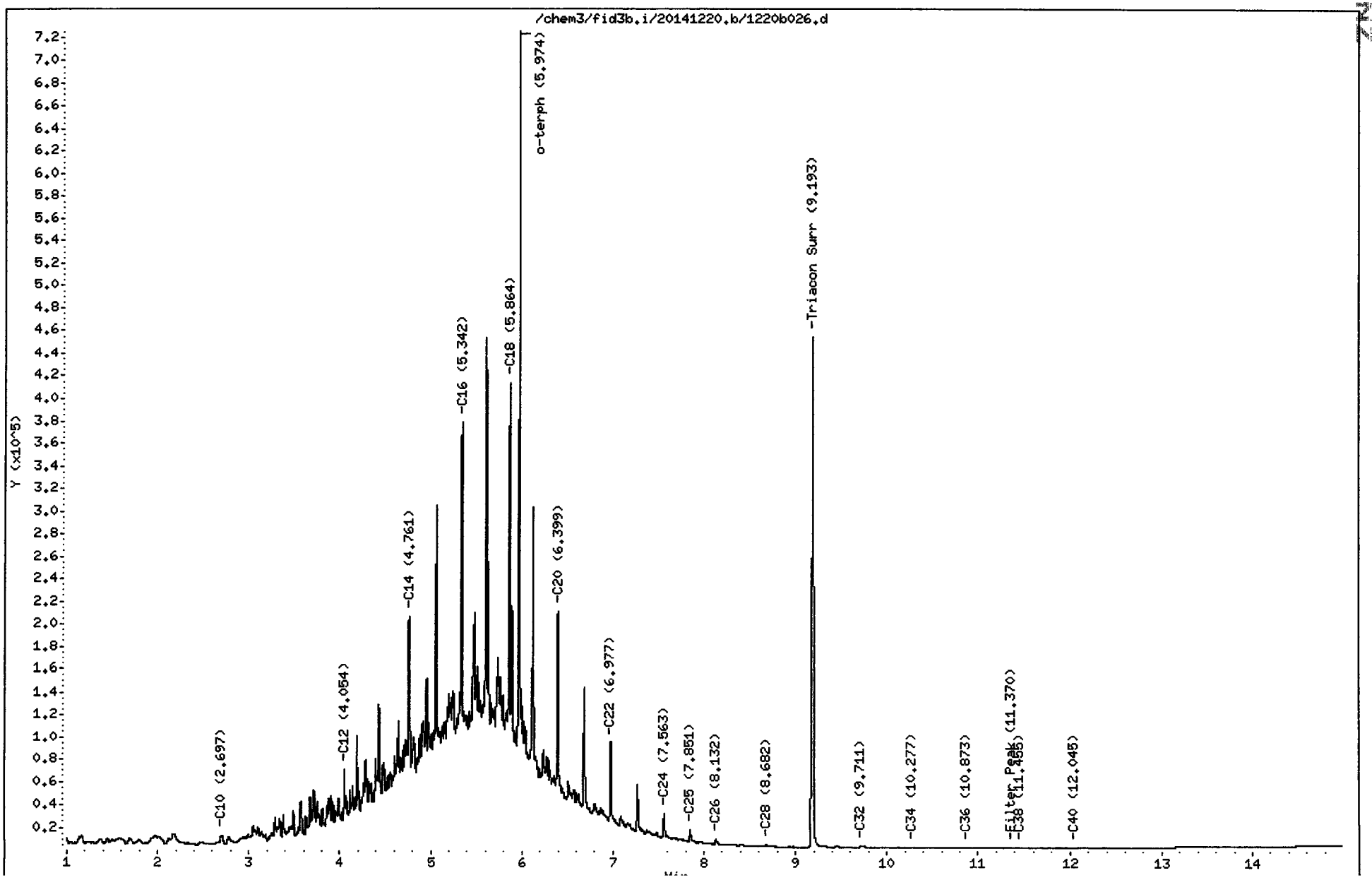
Sample Info: ZM93LCSDW1

Instrument: fid3b.i

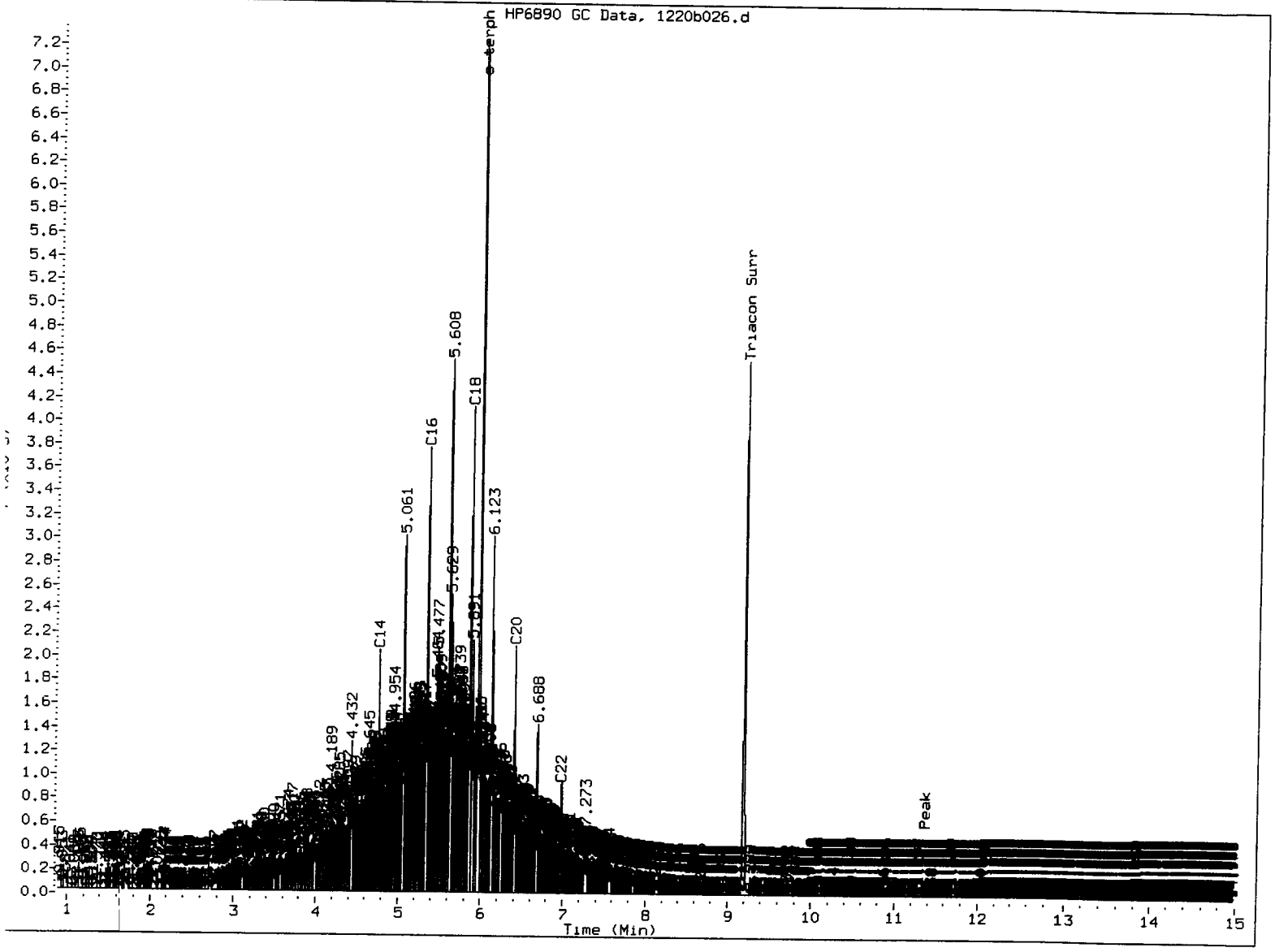
Operator: JW

Column phase: RTX-1

Column diameter: 0.25



FID:3B-2C/RTX-1 ZM93LCSDW1 FID:3B SIGNAL



MANUAL INTEGRATION

1. Baseline correction
3. Peak not found
5. Skimmed surrogate

Analyst: JV Date: 12/22/14

Data File: /chem3/fid3b.i/20141220.b/1220b024.d

Date : 20-DEC-2014 19:06

Client ID: ZM93MBW1

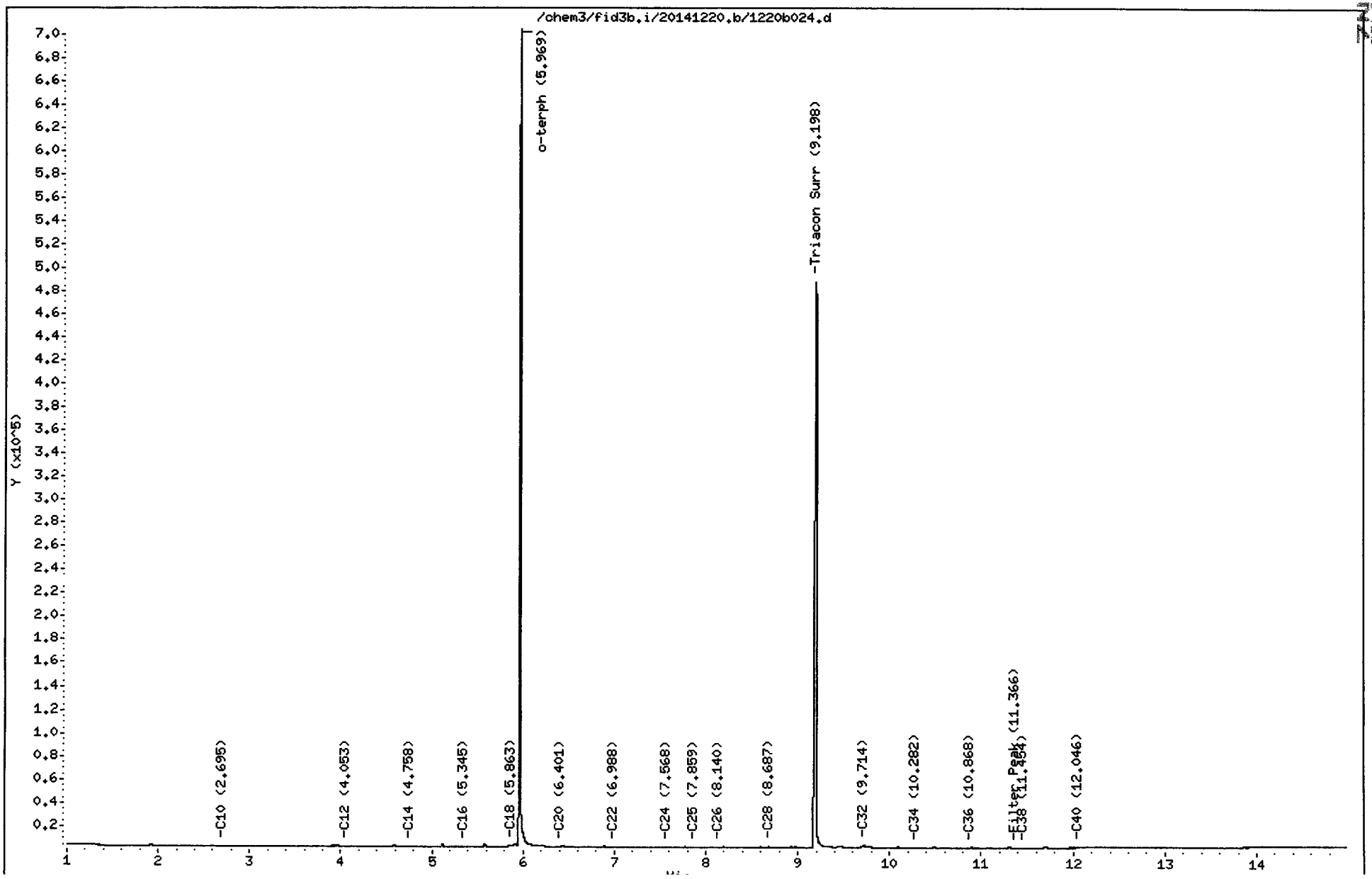
Sample Info: ZM93MBW1

Instrument: fid3b.i

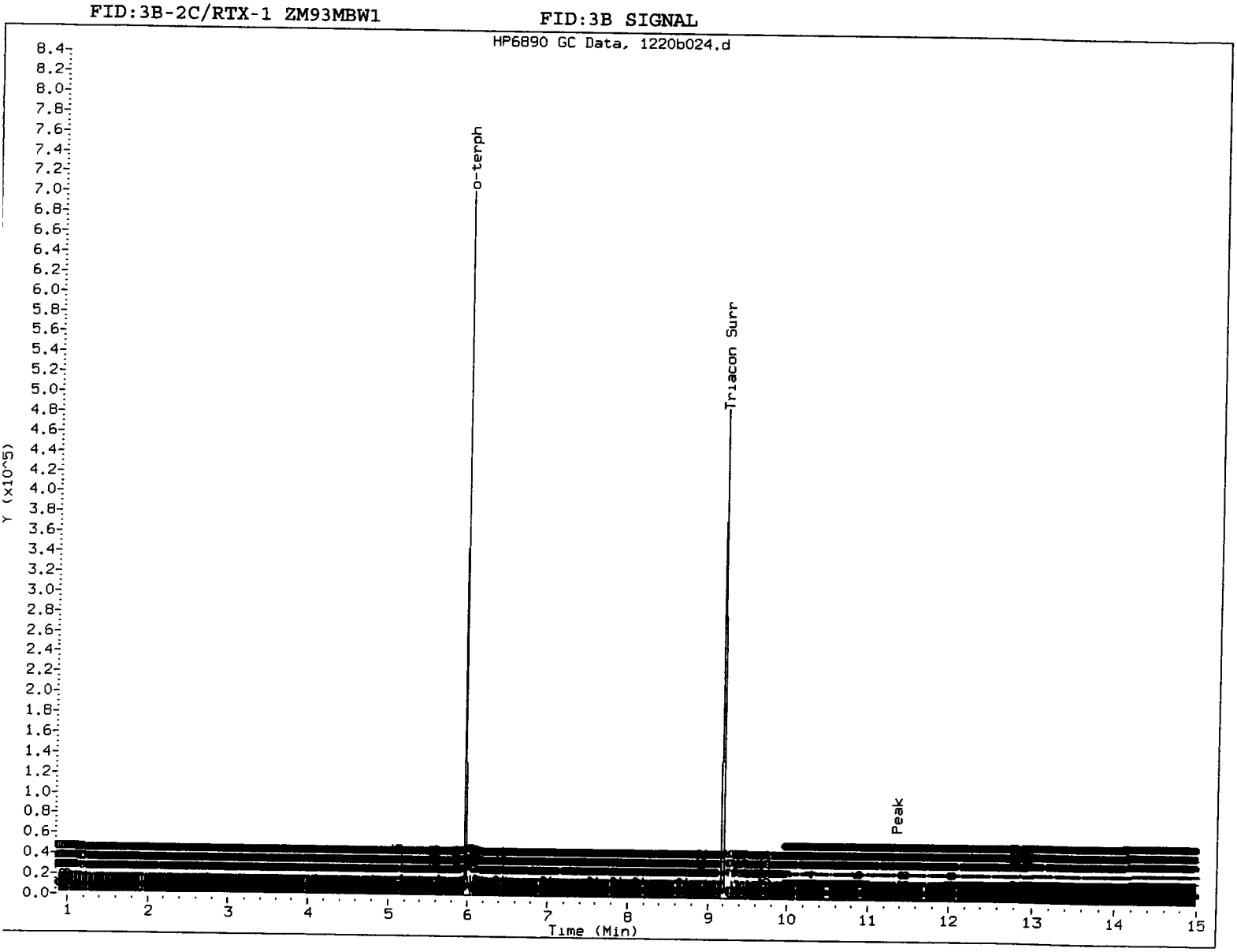
Operator: JW

Column phase: RTX-1

Column diameter: 0.25



FID:3B-2C/RTX-1 ZM93MBW1 FID:3B SIGNAL



MANUAL INTEGRATION

2. Baseline correction
3. Peak not found
5. Skimmed surrogate

Analyst: JW Date: 12/22/14

Data File: /chem3/fid3b.i/20141220.b/1220b031.d

Date : 20-DEC-2014 21:58

Client ID: MW-8

Sample Info: ZN05A

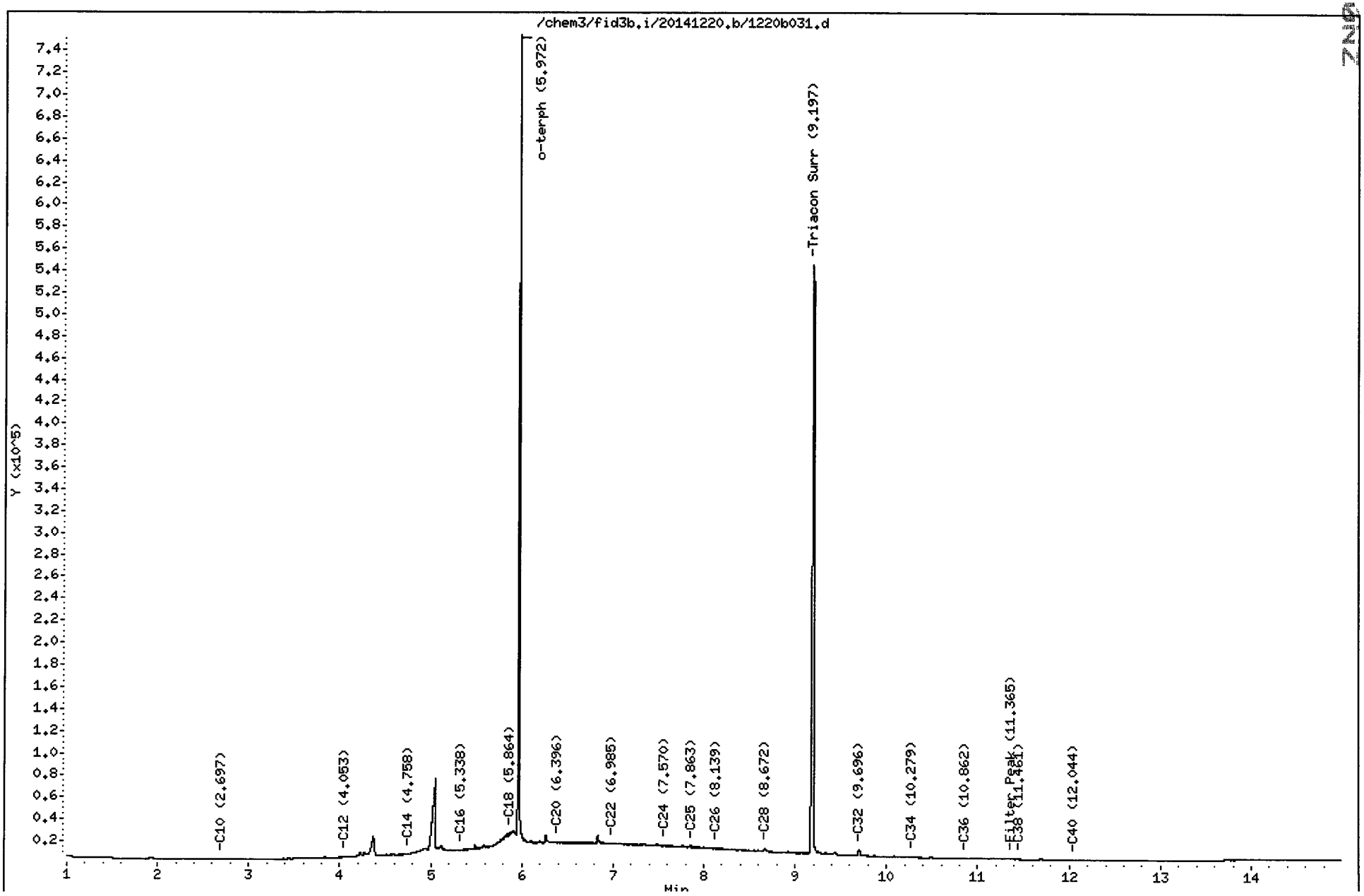
Column phase: RTX-1

Instrument: fid3b.i

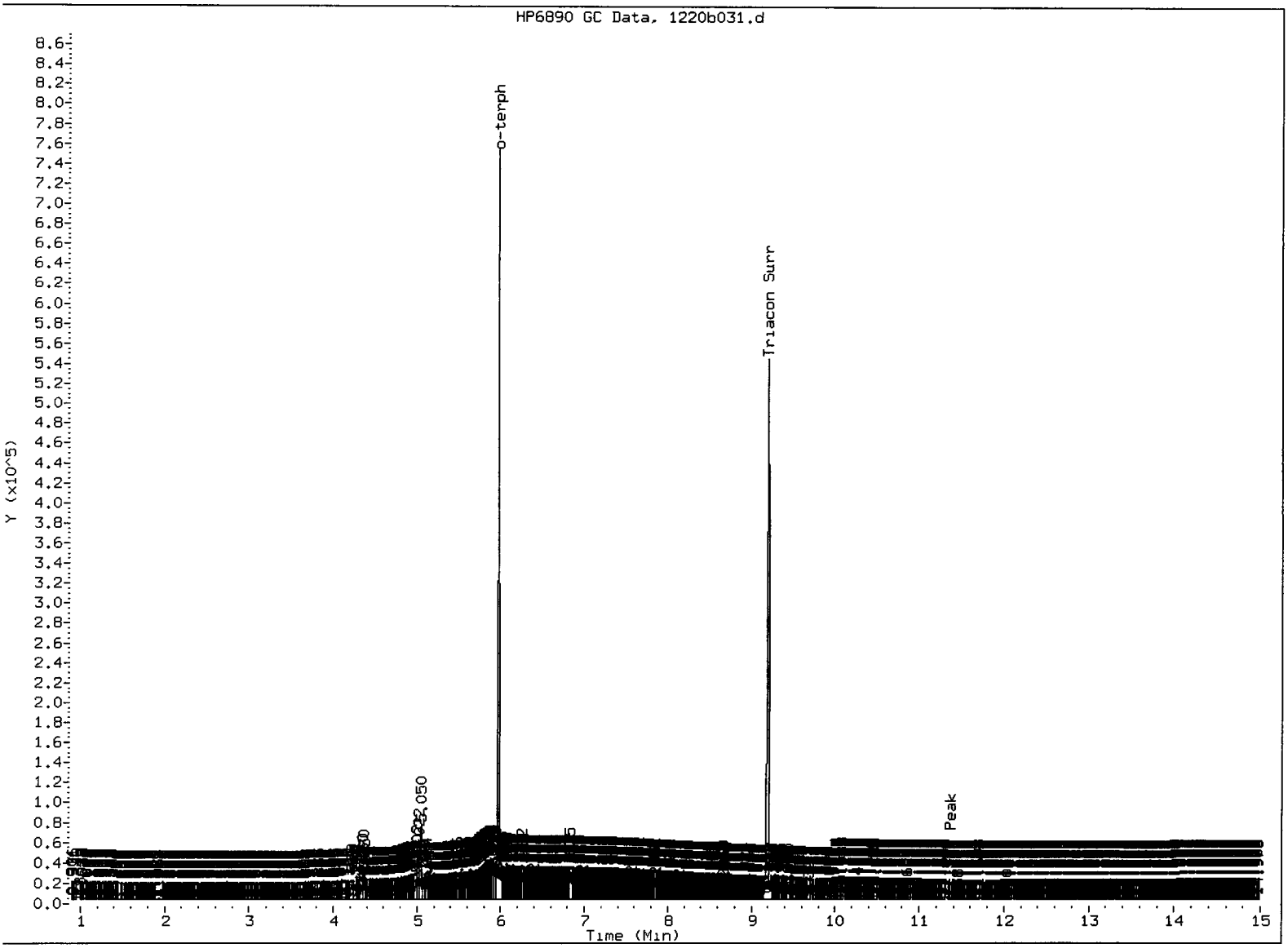
Operator: JW

Column diameter: 0.25

ZN05 : 08839



FID:3B-2C/RTX-1 ZN05A FID:3B SIGNAL



MANUAL INTEGRATION

1. Baseline correction
3. Peak not found
5. Skimmed surrogate

Analyst: RW Date: 12/22/14

ZN05 : aaaua

Data File: /chem3/fid3b.i/20141220.b/1220b034.d

Date : 20-DEC-2014 23:12

Client ID: MW-9

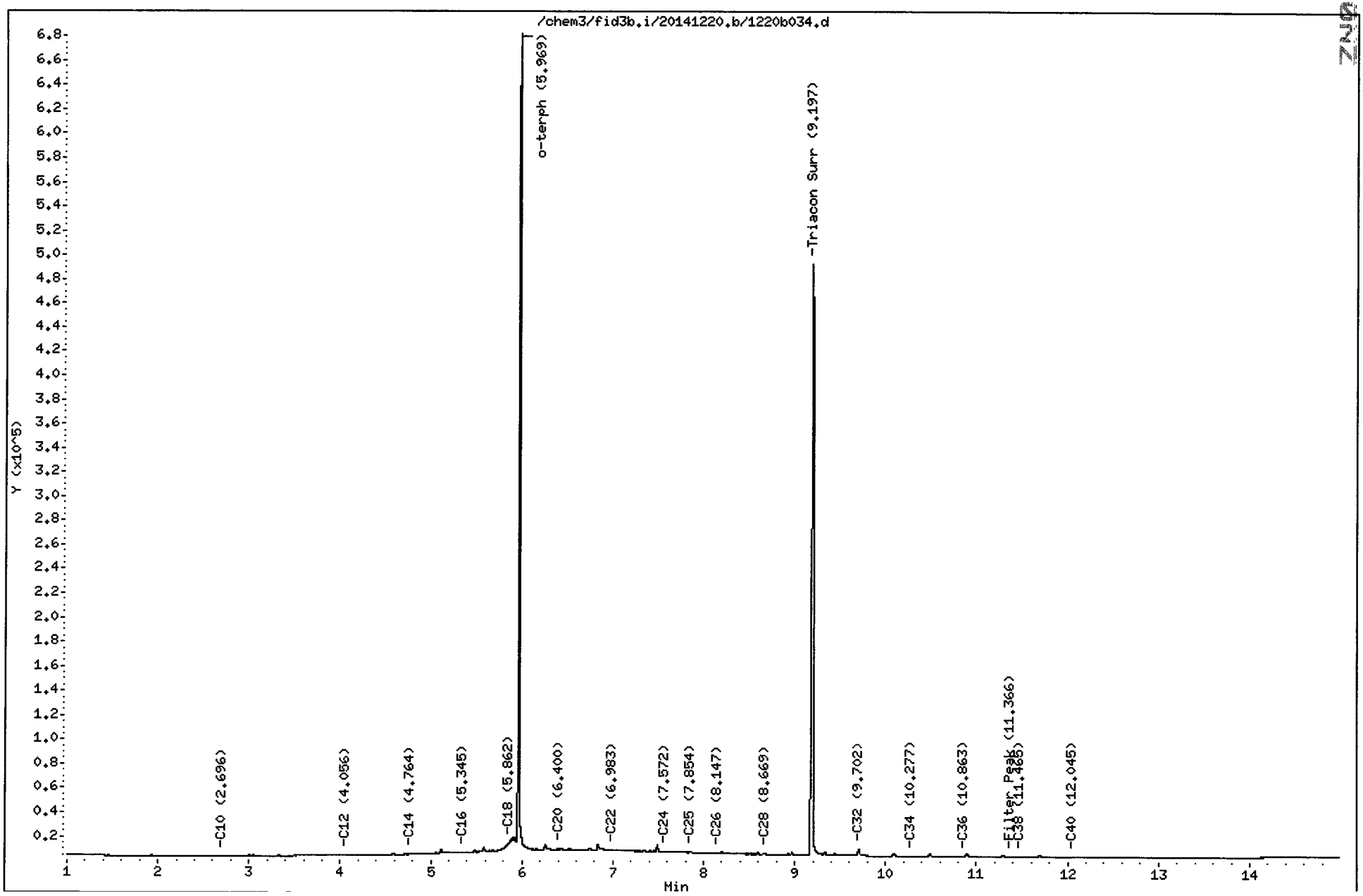
Sample Info: ZN05B

Column phase: RTX-1

Instrument: fid3b.i

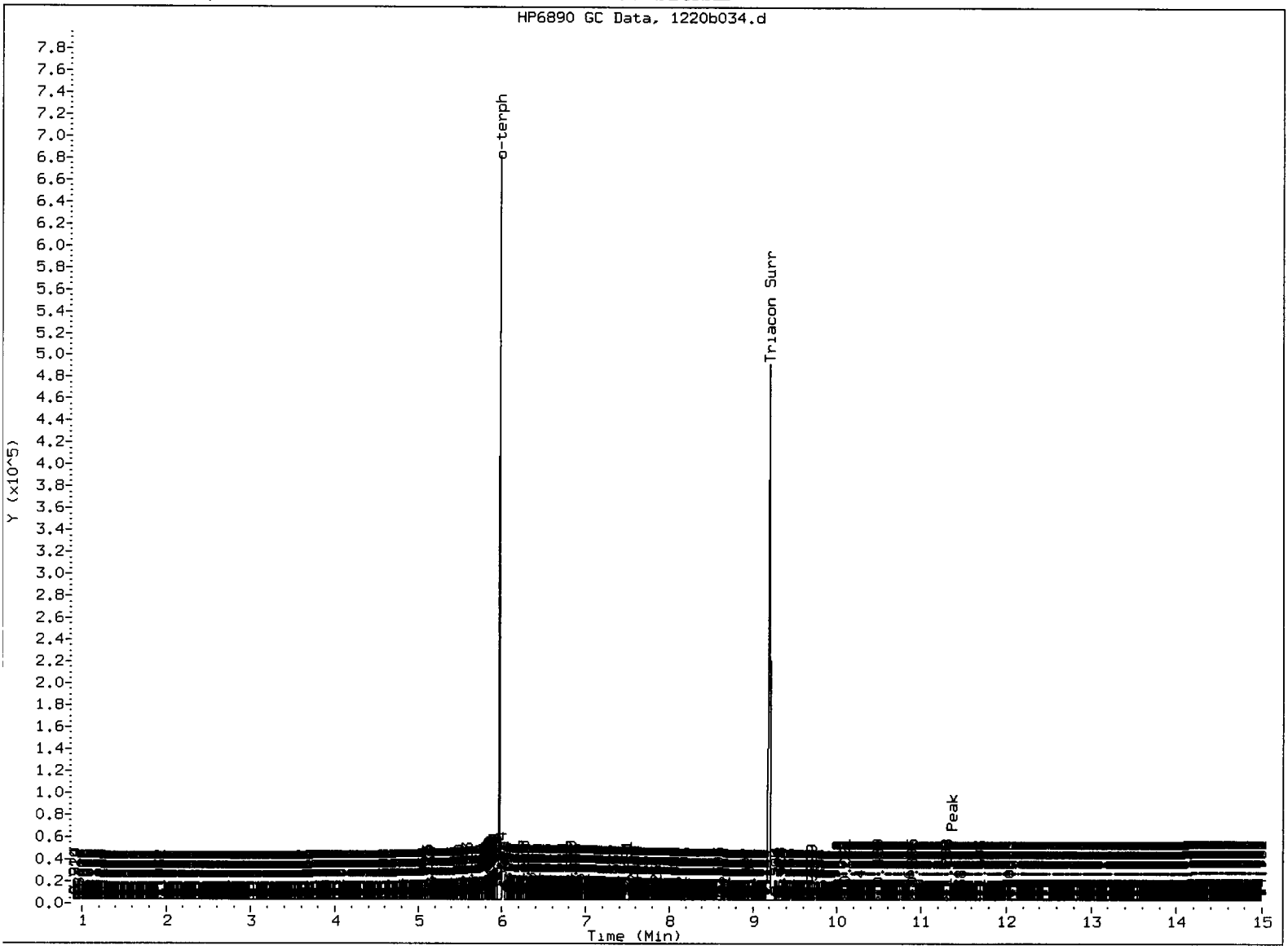
Operator: JW

Column diameter: 0.25



FID:3B-2C/RTX-1 ZN05B

FID:3B SIGNAL



MANUAL INTEGRATION

1. Baseline correction
3. Peak not found
5. Skimmed surrogate

Analyst: JN Date: 12/22/11

Data File: /chem3/fid3b.i/20141220.b/1220b035.d

Date : 20-DEC-2014 23:36

Client ID: MW-10

Sample Info: ZN05C

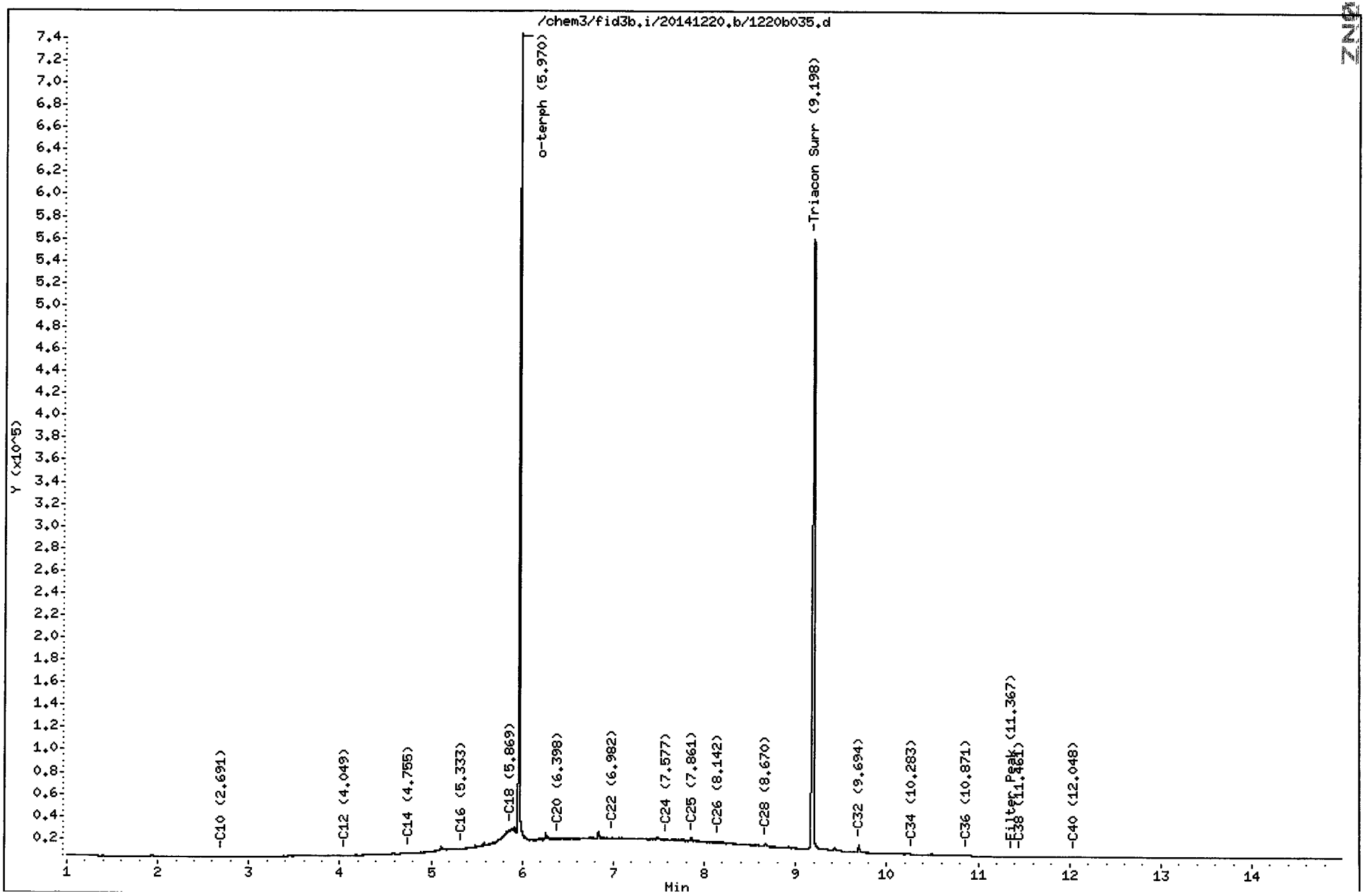
Column phase: RTX-1

Instrument: fid3b.i

Operator: JW

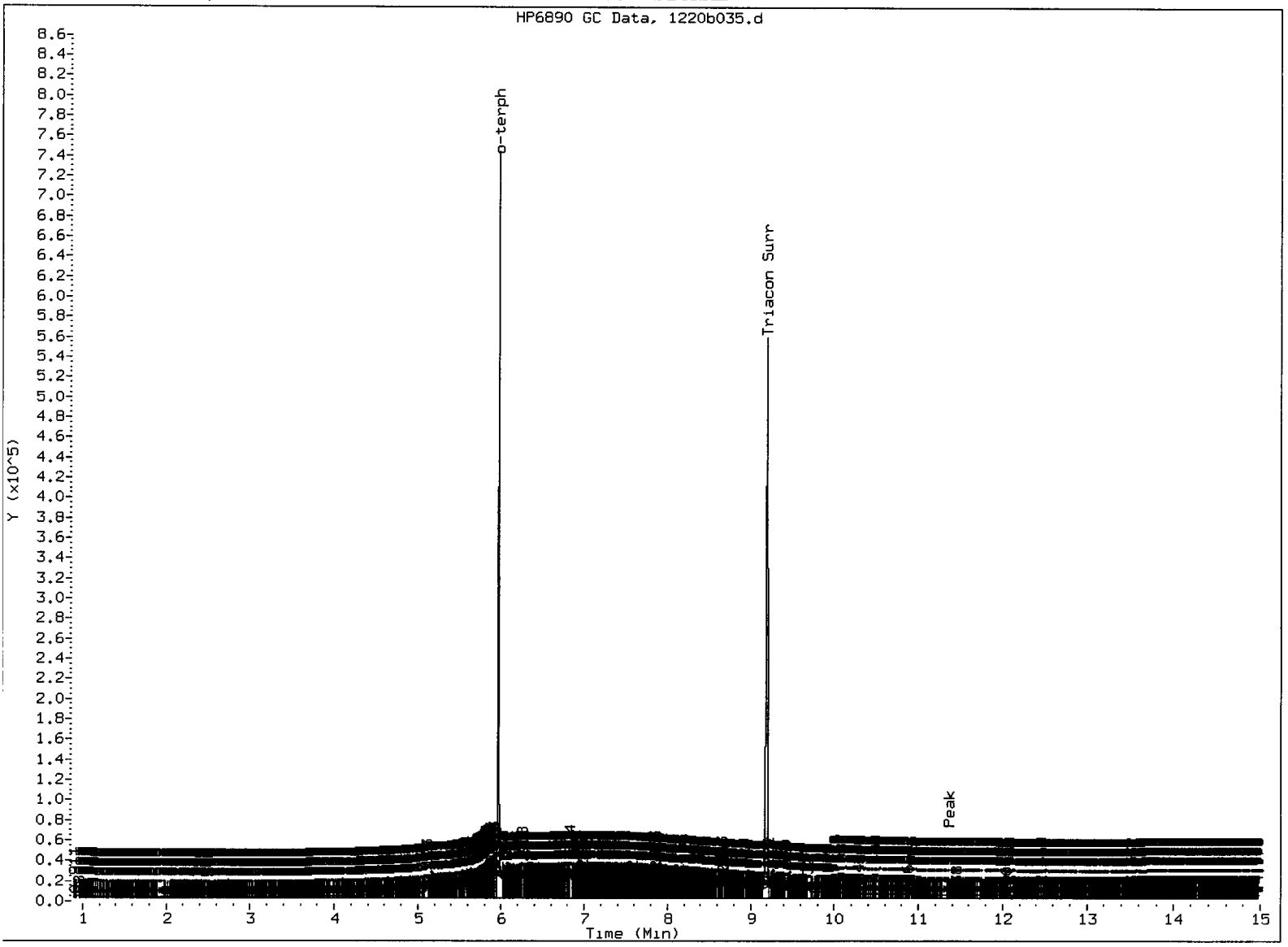
Column diameter: 0.25

ZN05C 20141220



FID:3B-2C/RTX-1 ZN05C

FID:3B SIGNAL



MANUAL INTEGRATION

1. Baseline correction
3. Peak not found
(5) Skimmed surrogate

Analyst: JW Date: 12/22/14

Data File: /chem3/fid3b.i/20141220.b/1220b036.d

Date : 21-DEC-2014 00:01

Client ID: MW-7

Sample Info: ZN05D

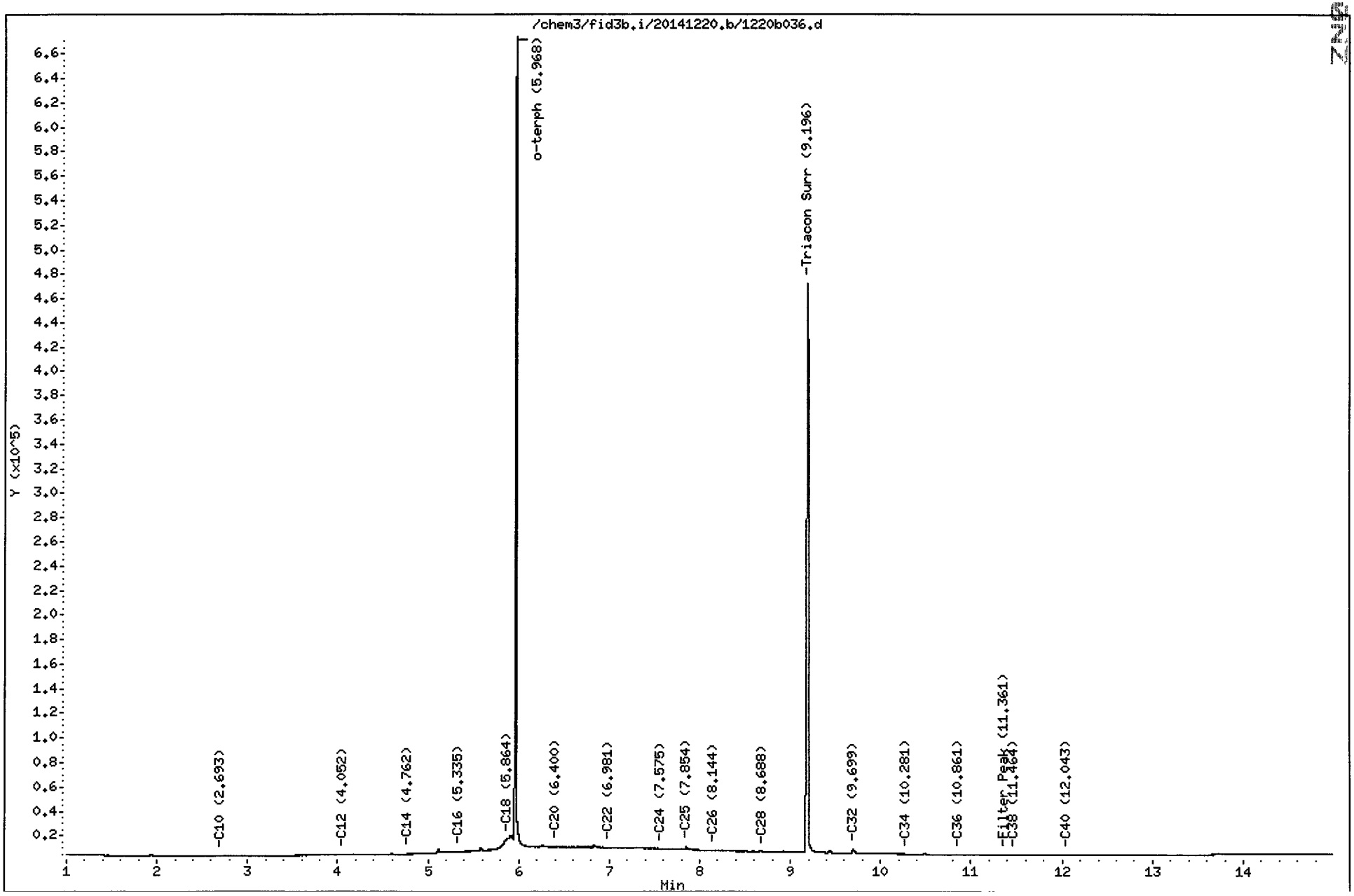
Column phase: RTX-1

Instrument: fid3b.i

Operator: JW

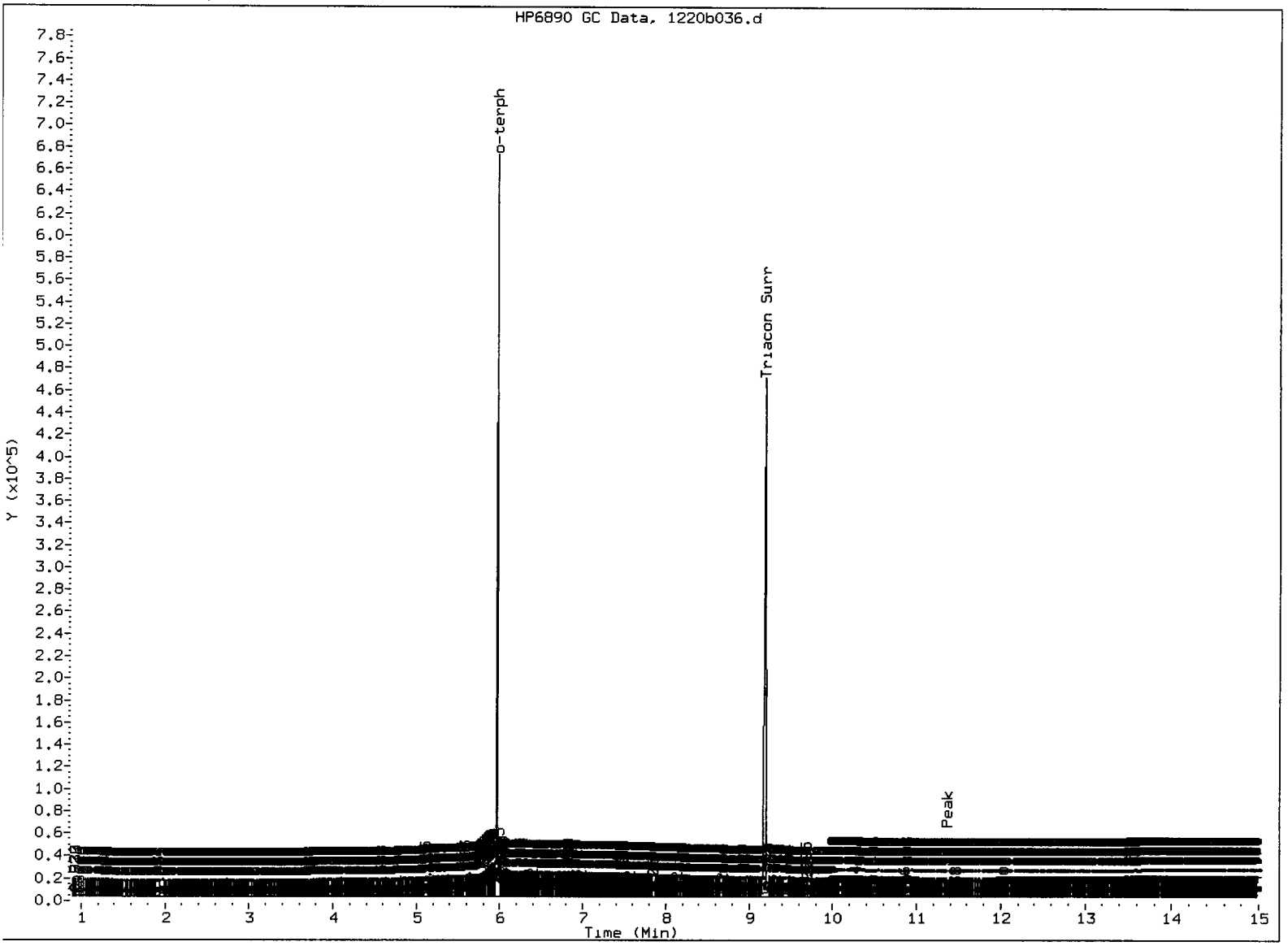
Column diameter: 0.25

ZN05 : 20015



FID:3B-2C/RTX-1 ZN05D

FID:3B SIGNAL



MANUAL INTEGRATION

1. Baseline correction
3. Peak not found
5. Skimmed surrogate

Analyst: JCl Date: 12/22/14

ZN05 8886US

Data File: /chem3/fid3b.i/20141220.b/1220b037.d

Date : 21-DEC-2014 00:26

Client ID: MW-6

Sample Info: ZN05E

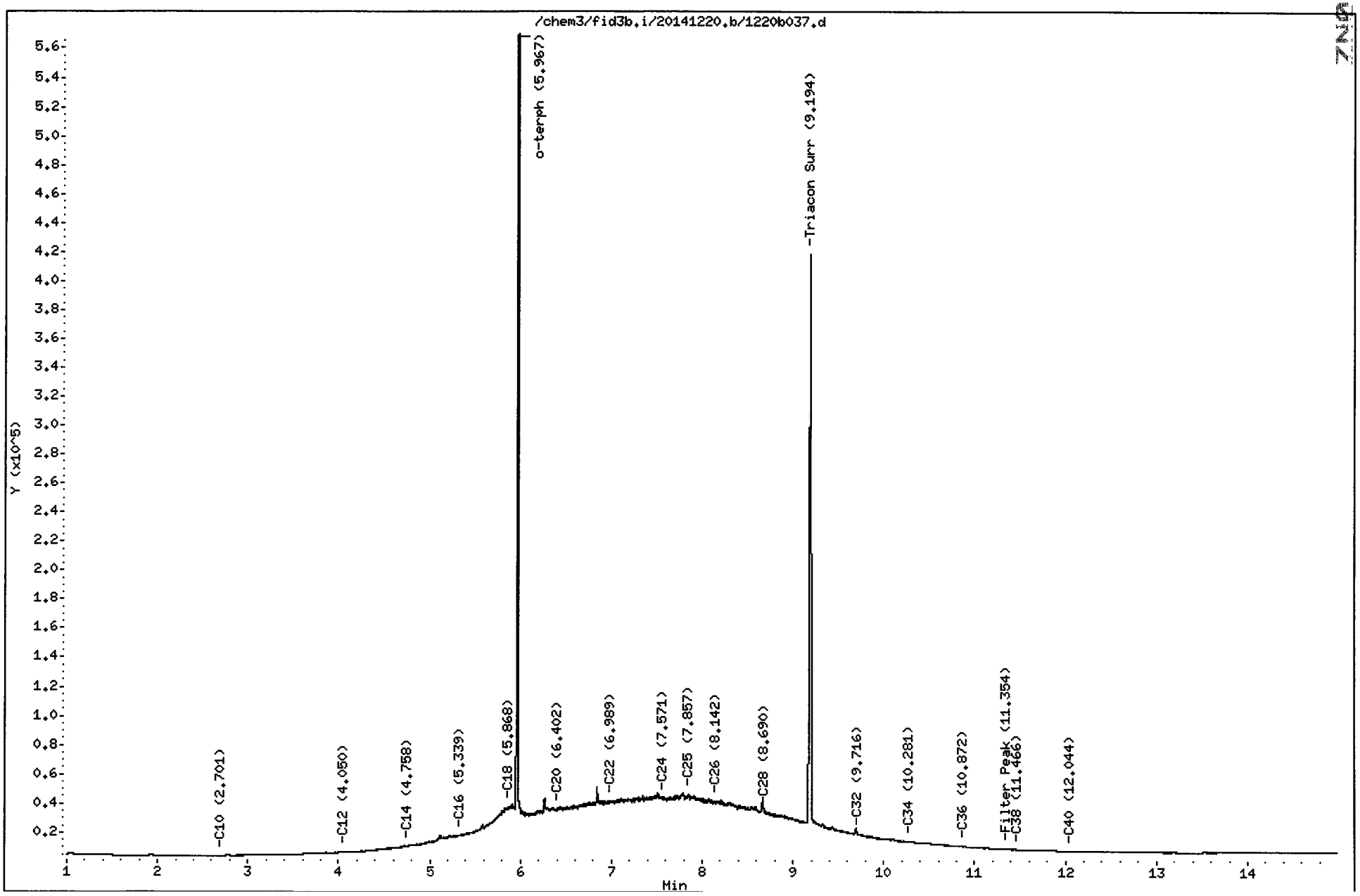
Column phase: RTX-1

Instrument: fid3b.i

Operator: JW

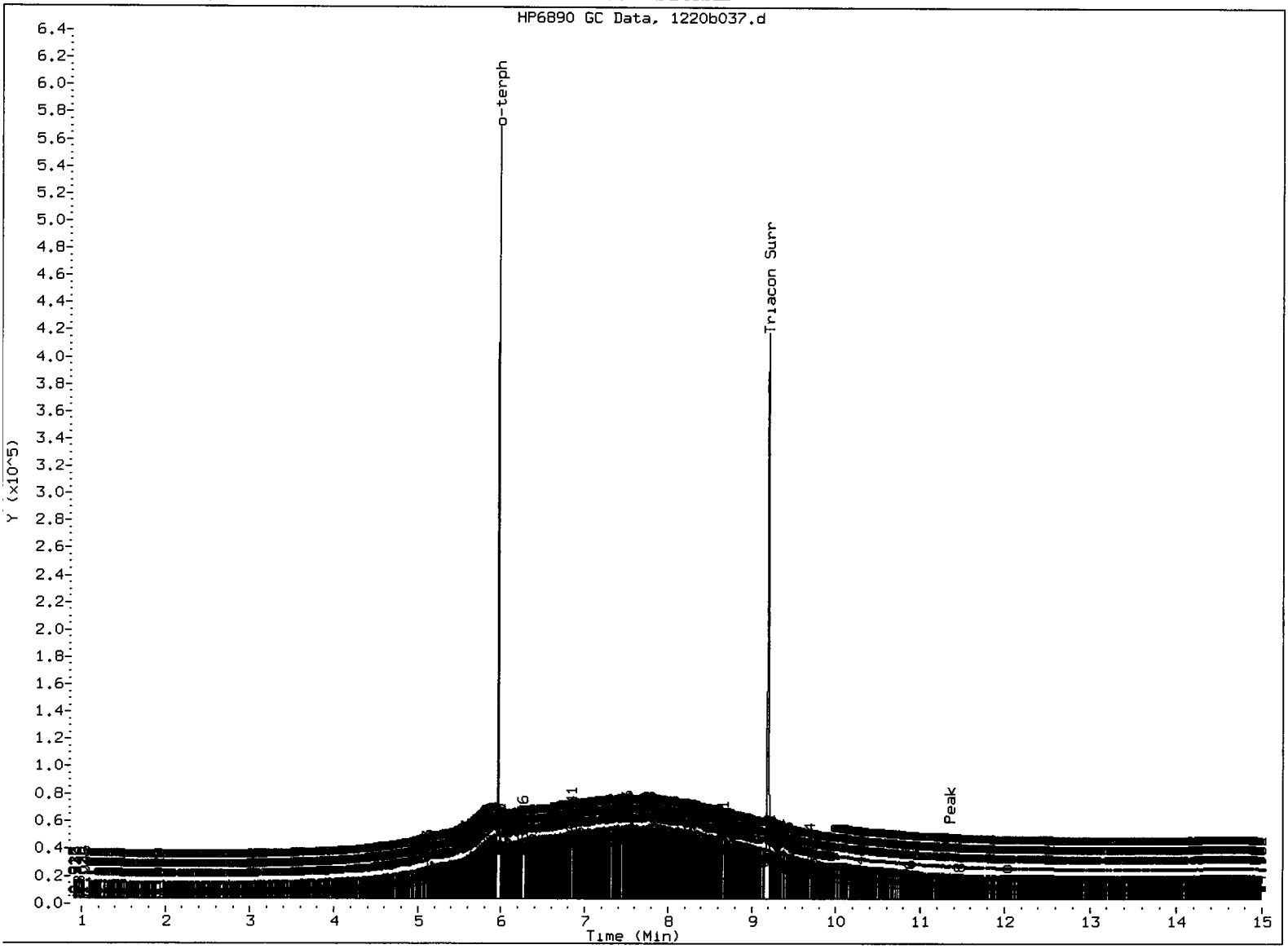
Column diameter: 0.25

ZN05 0311.7



FID:3B-2C/RTX-1 ZN05E

FID:3B SIGNAL



MANUAL INTEGRATION

1. Baseline correction
3. Peak not found
5. Skimmed surrogate

Analyst: SW Date: 12/22/14

INORGANICS ANALYSIS DATA SHEET
Hexavalent Chromium by Method SM3500Cr-B

ANALYTICAL RESOURCES INCORPORATED

Data Release Authorized:
Reported: 12/05/14
Date Received: 12/03/14
Page 1 of 1

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00

Client/ ARI ID	Date Sampled	Matrix	Analysis Date & Batch	RL	Result
MW-8 ZN05A 14-26227	12/03/14	Water	12/03/14 120314#1	0.010	< 0.010 U
MW-9 ZN05B 14-26228	12/03/14	Water	12/03/14 120314#1	0.010	< 0.010 U
MW-10 ZN05C 14-26229	12/03/14	Water	12/03/14 120314#1	0.010	< 0.010 U
MW-7 ZN05D 14-26230	12/03/14	Water	12/03/14 120314#1	0.010	< 0.010 U
MW-6 ZN05E 14-26231	12/03/14	Water	12/03/14 120314#1	0.010	< 0.010 U

Reported in mg/L

RL-Analytical reporting limit
U-Undetected at reported detection limit

METHOD BLANK RESULTS-CONVENTIONALS
ZN05-Kennedy Jenks Consultants, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/05/14

Project: Precision Engineering
Event: 1396024.00
Date Sampled: NA
Date Received: NA

Analyte	Date/Time	Units	Blank
Hexavalent Chromium	12/03/14 17:45	mg/L	< 0.010 U

STANDARD REFERENCE RESULTS-CONVENTIONALS
ZN05-Kennedy Jenks Consultants, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/05/14

Project: Precision Engineering
Event: 1396024.00
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Date/Time	Units	SRM	True Value	Recovery
Hexavalent Chromium ERA #300614	12/03/14 17:45	mg/L	0.633	0.630	100.5%

REPLICATE RESULTS-CONVENTIONALS
ZN05-Kennedy Jenks Consultants, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/05/14

Project: Precision Engineering
Event: 1396024.00
Date Sampled: 12/03/14
Date Received: 12/03/14

Analyte	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: ZN05A Client ID: MW-8					
Hexavalent Chromium	12/03/14	mg/L	< 0.010	0.011	NA

MS/MSD RESULTS-CONVENTIONALS
ZN05-Kennedy Jenks Consultants, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/05/14

Project: Precision Engineering
Event: 1396024.00
Date Sampled: 12/03/14
Date Received: 12/03/14

Analyte	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: ZN05A Client ID: MW-8						
Hexavalent Chromium	12/03/14	mg/L	< 0.010	< 0.010 U	0.063	NA

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-8
SAMPLE

Lab Sample ID: ZN05A
LIMS ID: 14-26227
Matrix: Water
Data Release Authorized:
Reported: 12/10/14

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/03/14
Date Received: 12/03/14

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	mg/L	Q
3010A	12/05/14	6010C	12/08/14	7440-38-2	Arsenic	0.05	0.05	U
3010A	12/05/14	6010C	12/08/14	**7440-47-3**	**Chromium**	0.005	**0.012**	
3010A	12/05/14	6010C	12/08/14	7439-92-1	Lead	0.02	0.02	U
3010A	12/05/14	6010C	12/08/14	7782-49-2	Selenium	0.05	0.05	U

U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-8
DUPLICATE

Lab Sample ID: ZN05A
LIMS ID: 14-26227
Matrix: Water
Data Release Authorized:
Reported: 12/10/14

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/03/14
Date Received: 12/03/14

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Arsenic	6010C	0.05 U	0.05 U	0.0%	+/- 0.05	L
Chromium	6010C	0.012	0.012	0.0%	+/- 0.005	L
Lead	6010C	0.02 U	0.02 U	0.0%	+/- 0.02	L
Selenium	6010C	0.05 U	0.05 U	0.0%	+/- 0.05	L

Reported in mg/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-8
MATRIX SPIKE

Lab Sample ID: ZN05A
LIMS ID: 14-26227
Matrix: Water
Data Release Authorized:
Reported: 12/10/14

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/03/14
Date Received: 12/03/14

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Arsenic	6010C	0.05 U	2.02	2.00	101%	
Chromium	6010C	0.012	0.481	0.500	93.8%	
Lead	6010C	0.02 U	1.88	2.00	94.0%	
Selenium	6010C	0.05 U	2.01	2.00	100%	

Reported in mg/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-9
SAMPLE

Lab Sample ID: ZN05B
LIMS ID: 14-26228
Matrix: Water
Data Release Authorized:
Reported: 12/10/14

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/03/14
Date Received: 12/03/14

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	mg/L	Q
3010A	12/05/14	6010C	12/08/14	7440-38-2	Arsenic	0.05	0.05	U
3010A	12/05/14	6010C	12/08/14	7440-47-3	Chromium	0.005	0.005	U
3010A	12/05/14	6010C	12/08/14	7439-92-1	Lead	0.02	0.02	U
3010A	12/05/14	6010C	12/08/14	7782-49-2	Selenium	0.05	0.05	U

U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-10
SAMPLE

Lab Sample ID: ZN05C
LIMS ID: 14-26229
Matrix: Water
Data Release Authorized:
Reported: 12/10/14

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/03/14
Date Received: 12/03/14

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	mg/L	Q
3010A	12/05/14	6010C	12/08/14	7440-38-2	Arsenic	0.05	0.05	U
3010A	12/05/14	6010C	12/08/14	**7440-47-3**	**Chromium**	0.005	**0.009**	
3010A	12/05/14	6010C	12/08/14	7439-92-1	Lead	0.02	0.02	U
3010A	12/05/14	6010C	12/08/14	7782-49-2	Selenium	0.05	0.05	U

U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-7
SAMPLE

Lab Sample ID: ZN05D
LIMS ID: 14-26230
Matrix: Water
Data Release Authorized:
Reported: 12/10/14

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/03/14
Date Received: 12/03/14

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	mg/L	Q
3010A	12/05/14	6010C	12/08/14	7440-38-2	Arsenic	0.05	0.05	U
3010A	12/05/14	6010C	12/08/14	7440-47-3	Chromium	0.005	0.005	U
3010A	12/05/14	6010C	12/08/14	7439-92-1	Lead	0.02	0.02	U
3010A	12/05/14	6010C	12/08/14	7782-49-2	Selenium	0.05	0.05	U

U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-6
SAMPLE

Lab Sample ID: ZN05E
LIMS ID: 14-26231
Matrix: Water
Data Release Authorized:
Reported: 12/10/14

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/03/14
Date Received: 12/03/14

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	mg/L	Q
3010A	12/05/14	6010C	12/08/14	**7440-38-2**	**Arsenic**	0.05	**0.07**	
3010A	12/05/14	6010C	12/08/14	**7440-47-3**	**Chromium**	0.005	**0.025**	
3010A	12/05/14	6010C	12/08/14	7439-92-1	Lead	0.02	0.02	U
3010A	12/05/14	6010C	12/08/14	7782-49-2	Selenium	0.05	0.05	U

U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: METHOD BLANK**

Lab Sample ID: ZN05MB
LIMS ID: 14-26228
Matrix: Water
Data Release Authorized:
Reported: 12/10/14

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	mg/L	Q
3010A	12/05/14	6010C	12/08/14	7440-38-2	Arsenic	0.05	0.05	U
3010A	12/05/14	6010C	12/08/14	7440-47-3	Chromium	0.005	0.005	U
3010A	12/05/14	6010C	12/08/14	7439-92-1	Lead	0.02	0.02	U
3010A	12/05/14	6010C	12/08/14	7782-49-2	Selenium	0.05	0.05	U

U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: LAB CONTROL**

Lab Sample ID: ZN05LCS
LIMS ID: 14-26228
Matrix: Water
Data Release Authorized:
Reported: 12/10/14

QC Report No: ZN05-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Arsenic	6010C	1.91	2.00	95.5%	
Chromium	6010C	0.492	0.500	98.4%	
Lead	6010C	1.93	2.00	96.5%	
Selenium	6010C	1.92	2.00	96.0%	

Reported in mg/L

N-Control limit not met
Control Limits: 80-120%

Analytical Resources, Incorporated
Analytical Chemists and Consultants

22 December 2014

Jessica Faragalli
Kennedy Jenks Consultants
1191 2nd Avenue, Suite 630
Seattle, WA 98101

Client Project: Precision Engineering
ARI Job No.: ZN27

Dear Jessica:

Please find enclosed the original Chain-of-Custody record (COC) and the final results for the samples from the project referenced above. Analytical Resources, Inc. (ARI) received four water samples on December 4, 2014. The samples were analyzed for VOCs, NWTPH-Dx, hexavalent chromium and total metals as requested.

The percent differences (%Ds) for three compounds were not within control limits for the CCALs that bracketed the VOA analyses of these samples. All positive results for these compounds have been flagged with a "Q" to denote the high %Ds.

A matrix spike (MS) was prepared and analyzed for hexavalent chromium in conjunction with sample MW-11. Hexavalent chromium was not recovered following the analysis of the MS. Since the percent recovery for hexavalent chromium was within acceptable QC limits for the corresponding SRM, it was concluded that the sample matrix was the cause of the low MS recovery. No corrective actions were taken.

There were no further anomalies associated with the analyses of these samples.

An electronic copy of this report and all raw data will be kept on file with ARI. Should you have any questions or problems, please feel free to call me at any time.

Sincerely,

ANALYTICAL RESOURCES, INC.

Mark D. Harris
Project Manager
206/695-6210
markh@arilabs.com
www.arilabs.com

eFile: ZN27

Enclosures

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: YI 18	Turn-around Requested:	Page: 1 of 1	
ARI Client Company: Kennedy/Jenks	Phone: 253-835-6400	Date: 12/4/14	Ice Present? Y
Client Contact: Jessica Faragalli		No. of Coolers: 1	Cooler Temps: 4.1
Client Project Name: Precision Engineering			
Client Project #: 1391602A-00	Samplers: DLR		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com

Sample ID	Date	Time	Matrix	No Containers	Analysis Requested: NWTPH-Dx	VOCs	Metals	Cr VI					Notes/Comments
MW-11	12/4/14	0930	GW	6	X	X	X	X					Slightly effervescent
MW-12	12/4/14	1000	GW	6	X	X	X	X					
MW-5	12/4/14	1105	GW	6	X	X	X	X					
MW-3	12/4/14	1240	GW	6	X	X	X	X					
TRIP BLANK	12/4/14	-	-	1		X							
													Metals: Cr, Pb, As, Se

Comments/Special Instructions	Relinquished by: (Signature)	Received by (Signature)	Relinquished by (Signature)	Received by: (Signature)
	Printed Name: Diane Rauch	Printed Name: A. Volgardsen	Printed Name	Printed Name
	Company: Kennedy/Jenks	Company: ARI	Company	Company.
	Date & Time: 12/4/14 1405	Date & Time 12/4/14 1405	Date & Time	Date & Time.

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, not withstanding 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.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Kennedy Jenks
Project Name: Precision Engineering
COC No(s): _____ (NA)
Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____
Assigned ARI Job No: ZN27
Tracking No: _____ (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): 4.1
Time: 1405
If cooler temperature is out of compliance fill out form 00070F
Temp Gun ID# 90277952

Cooler Accepted by: AV Date: 12/4/14 Time: 1405

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	11/23/14	

Was Sample Split by ARI : (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: AV Date: 12/5/14 Time: 1626

***** 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" (< 2 mm)
Peabubbles → "pb" (2 to < 4 mm)
Large → "lg" (4 to < 6 mm)
Headspace → "hs" (> 6 mm)

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: ZN27
Client: Kennedy Jenks Consultants, Inc.
Project Event: 1396024.00
Project Name: Precision Engineering

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	MW-11	ZN27A	14-26406	Water	12/04/14 09:30	12/04/14 14:05
2.	MW-12	ZN27B	14-26407	Water	12/04/14 10:00	12/04/14 14:05
3.	MW-5	ZN27C	14-26408	Water	12/04/14 11:05	12/04/14 14:05
4.	MW-3	ZN27D	14-26409	Water	12/04/14 12:40	12/04/14 14:05
5.	TRIP BLANKS	ZN27E	14-26410	Water	12/04/14	12/04/14 14:05

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 ≥ 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 ≤5 times the Reporting Limit and the replicate control limit defaults to ±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).

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

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MB-121214A**
 METHOD BLANK

Lab Sample ID: MB-121214A
LIMS ID: 14-26406
Matrix: Water
Data Release Authorized:
Reported: 12/17/14

QC Report No: ZN27-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT15/PAB
Date Analyzed: 12/12/14 18:12

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	1.0	< 1.0	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	1.0	< 1.0	U
75-00-3	Chloroethane	1.0	< 1.0	U
75-09-2	Methylene Chloride	2.0	< 2.0	U
67-64-1	Acetone	10	< 10	U
75-15-0	Carbon Disulfide	1.0	< 1.0	U
75-35-4	1,1-Dichloroethene	1.0	< 1.0	U
75-34-3	1,1-Dichloroethane	1.0	< 1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	< 1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	< 1.0	U
67-66-3	Chloroform	1.0	< 1.0	U
107-06-2	1,2-Dichloroethane	1.0	< 1.0	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	1.0	< 1.0	U
56-23-5	Carbon Tetrachloride	1.0	< 1.0	U
108-05-4	Vinyl Acetate	5.0	< 5.0	U
75-27-4	Bromodichloromethane	1.0	< 1.0	U
78-87-5	1,2-Dichloropropane	1.0	< 1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	< 1.0	U
79-01-6	Trichloroethene	1.0	< 1.0	U
124-48-1	Dibromochloromethane	1.0	< 1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	< 1.0	U
71-43-2	Benzene	1.0	< 1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	< 1.0	U
110-75-8	2-Chloroethylvinylether	5.0	< 5.0	U
75-25-2	Bromoform	1.0	< 1.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	< 1.0	U
108-88-3	Toluene	1.0	< 1.0	U
108-90-7	Chlorobenzene	1.0	< 1.0	U
100-41-4	Ethylbenzene	1.0	< 1.0	U
100-42-5	Styrene	1.0	< 1.0	U
75-69-4	Trichlorofluoromethane	1.0	< 1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	< 2.0	U
179601-23-1	m,p-Xylene	2.0	< 2.0	U
95-47-6	o-Xylene	1.0	< 1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MB-121214A**
 METHOD BLANK

Lab Sample ID: MB-121214A
LIMS ID: 14-26406
Matrix: Water
Date Analyzed: 12/12/14 18:12

QC Report No: ZN27-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	10	< 10	U
74-88-4	Iodomethane	1.0	< 1.0	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	5.0	< 5.0	U
563-58-6	1,1-Dichloropropene	1.0	< 1.0	U
74-95-3	Dibromomethane	1.0	< 1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	< 1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	2.0	< 2.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	< 5.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	< 1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	< 1.0	U
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	1,2-Dibromoethane	1.0	< 1.0	U
74-97-5	Bromochloromethane	1.0	< 1.0	U
594-20-7	2,2-Dichloropropane	1.0	< 1.0	U
142-28-9	1,3-Dichloropropane	5.0	< 5.0	U
98-82-8	Isopropylbenzene	1.0	< 1.0	U
103-65-1	n-Propylbenzene	1.0	< 1.0	U
108-86-1	Bromobenzene	1.0	< 1.0	U
95-49-8	2-Chlorotoluene	1.0	< 1.0	U
106-43-4	4-Chlorotoluene	1.0	< 1.0	U
98-06-6	tert-Butylbenzene	1.0	< 1.0	U
135-98-8	sec-Butylbenzene	1.0	< 1.0	U
99-87-6	4-Isopropyltoluene	1.0	< 1.0	U
104-51-8	n-Butylbenzene	1.0	< 1.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	Naphthalene	5.0	< 5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	97.3%
d8-Toluene	100%
Bromofluorobenzene	98.3%
d4-1,2-Dichlorobenzene	101%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-11**
Page 1 of 2 **SAMPLE**

Lab Sample ID: ZN27A
LIMS ID: 14-26406
Matrix: Water
Data Release Authorized:
Reported: 12/17/14

QC Report No: ZN27-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/04/14
Date Received: 12/04/14

Instrument/Analyst: NT15/PAB
Date Analyzed: 12/12/14 18:34

Sample Amount: 1.00 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	10	< 10	U
74-83-9	Bromomethane	10	< 10	U
75-01-4	Vinyl Chloride	10	< 10	U
75-00-3	Chloroethane	10	< 10	U
75-09-2	Methylene Chloride	20	< 20	U
67-64-1	Acetone	100	< 100	U
75-15-0	Carbon Disulfide	10	< 10	U
75-35-4	1,1-Dichloroethene	10	< 10	U
75-34-3	1,1-Dichloroethane	10	< 10	U
156-60-5	trans-1,2-Dichloroethene	10	< 10	U
156-59-2	cis-1,2-Dichloroethene	10	< 10	U
67-66-3	Chloroform	10	< 10	U
107-06-2	1,2-Dichloroethane	10	< 10	U
78-93-3	2-Butanone	50	< 50	U
71-55-6	1,1,1-Trichloroethane	10	< 10	U
56-23-5	Carbon Tetrachloride	10	< 10	U
108-05-4	Vinyl Acetate	50	< 50	U
75-27-4	Bromodichloromethane	10	< 10	U
78-87-5	1,2-Dichloropropane	10	< 10	U
10061-01-5	cis-1,3-Dichloropropene	10	< 10	U
79-01-6	Trichloroethene	10	< 10	U
124-48-1	Dibromochloromethane	10	< 10	U
79-00-5	1,1,2-Trichloroethane	10	< 10	U
71-43-2	Benzene	10	< 10	U
10061-02-6	trans-1,3-Dichloropropene	10	< 10	U
110-75-8	2-Chloroethylvinylether	50	< 50	U
75-25-2	Bromoform	10	< 10	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	50	< 50	U
591-78-6	2-Hexanone	50	< 50	U
127-18-4	Tetrachloroethene	10	< 10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	< 10	U
108-88-3	Toluene	10	< 10	U
108-90-7	Chlorobenzene	10	< 10	U
100-41-4	Ethylbenzene	10	< 10	U
100-42-5	Styrene	10	< 10	U
75-69-4	Trichlorofluoromethane	10	< 10	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	20	< 20	U
179601-23-1	m,p-Xylene	20	< 20	U
95-47-6	o-Xylene	10	< 10	U
95-50-1	1,2-Dichlorobenzene	10	< 10	U
541-73-1	1,3-Dichlorobenzene	10	< 10	U
106-46-7	1,4-Dichlorobenzene	10	< 10	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-11**
 SAMPLE

Lab Sample ID: ZN27A
LIMS ID: 14-26406
Matrix: Water
Date Analyzed: 12/12/14 18:34

QC Report No: ZN27-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	100	< 100	U
74-88-4	Iodomethane	10	< 10	U
74-96-4	Bromoethane	20	< 20	U
107-13-1	Acrylonitrile	50	< 50	U
563-58-6	1,1-Dichloropropene	10	< 10	U
74-95-3	Dibromomethane	10	< 10	U
630-20-6	1,1,1,2-Tetrachloroethane	10	< 10	U
96-12-8	1,2-Dibromo-3-chloropropane	50	< 50	U
96-18-4	1,2,3-Trichloropropane	20	< 20	U
110-57-6	trans-1,4-Dichloro-2-butene	50	< 50	U
108-67-8	1,3,5-Trimethylbenzene	10	< 10	U
95-63-6	1,2,4-Trimethylbenzene	10	< 10	U
87-68-3	Hexachlorobutadiene	50	< 50	U
106-93-4	1,2-Dibromoethane	10	< 10	U
74-97-5	Bromochloromethane	10	< 10	U
594-20-7	2,2-Dichloropropane	10	< 10	U
142-28-9	1,3-Dichloropropane	50	< 50	U
98-82-8	Isopropylbenzene	10	< 10	U
103-65-1	n-Propylbenzene	10	< 10	U
108-86-1	Bromobenzene	10	< 10	U
95-49-8	2-Chlorotoluene	10	< 10	U
106-43-4	4-Chlorotoluene	10	< 10	U
98-06-6	tert-Butylbenzene	10	< 10	U
135-98-8	sec-Butylbenzene	10	< 10	U
99-87-6	4-Isopropyltoluene	10	< 10	U
104-51-8	n-Butylbenzene	10	< 10	U
120-82-1	1,2,4-Trichlorobenzene	50	< 50	U
91-20-3	Naphthalene	50	< 50	U
87-61-6	1,2,3-Trichlorobenzene	50	< 50	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	97.2%
d8-Toluene	99.6%
Bromofluorobenzene	98.1%
d4-1,2-Dichlorobenzene	99.7%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-12**
 SAMPLE

Lab Sample ID: ZN27B
LIMS ID: 14-26407
Matrix: Water
Data Release Authorized:
Reported: 12/17/14

QC Report No: ZN27-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/04/14
Date Received: 12/04/14

Instrument/Analyst: NT15/PAB
Date Analyzed: 12/12/14 18:57

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	1.0	< 1.0	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	1.0	< 1.0	U
75-00-3	Chloroethane	1.0	< 1.0	U
75-09-2	Methylene Chloride	2.0	< 2.0	U
67-64-1	Acetone	10	< 10	U
75-15-0	Carbon Disulfide	1.0	< 1.0	U
75-35-4	1,1-Dichloroethene	1.0	< 1.0	U
75-34-3	1,1-Dichloroethane	1.0	< 1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	< 1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	< 1.0	U
67-66-3	Chloroform	1.0	< 1.0	U
107-06-2	1,2-Dichloroethane	1.0	< 1.0	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	1.0	< 1.0	U
56-23-5	Carbon Tetrachloride	1.0	< 1.0	U
108-05-4	Vinyl Acetate	5.0	< 5.0	U
75-27-4	Bromodichloromethane	1.0	< 1.0	U
78-87-5	1,2-Dichloropropane	1.0	< 1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	< 1.0	U
79-01-6	Trichloroethene	1.0	< 1.0	U
124-48-1	Dibromochloromethane	1.0	< 1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	< 1.0	U
71-43-2	Benzene	1.0	< 1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	< 1.0	U
110-75-8	2-Chloroethylvinylether	5.0	< 5.0	U
75-25-2	Bromoform	1.0	< 1.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	< 1.0	U
108-88-3	Toluene	1.0	< 1.0	U
108-90-7	Chlorobenzene	1.0	< 1.0	U
100-41-4	Ethylbenzene	1.0	< 1.0	U
100-42-5	Styrene	1.0	< 1.0	U
75-69-4	Trichlorofluoromethane	1.0	< 1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	< 2.0	U
179601-23-1	m,p-Xylene	2.0	< 2.0	U
95-47-6	o-Xylene	1.0	< 1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-12**
Page 2 of 2 **SAMPLE**

Lab Sample ID: ZN27B
LIMS ID: 14-26407
Matrix: Water
Date Analyzed: 12/12/14 18:57

QC Report No: ZN27-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	10	< 10	U
74-88-4	Iodomethane	1.0	< 1.0	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	5.0	< 5.0	U
563-58-6	1,1-Dichloropropene	1.0	< 1.0	U
74-95-3	Dibromomethane	1.0	< 1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	< 1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	2.0	< 2.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	< 5.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	< 1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	< 1.0	U
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	1,2-Dibromoethane	1.0	< 1.0	U
74-97-5	Bromochloromethane	1.0	< 1.0	U
594-20-7	2,2-Dichloropropane	1.0	< 1.0	U
142-28-9	1,3-Dichloropropane	5.0	< 5.0	U
98-82-8	Isopropylbenzene	1.0	< 1.0	U
103-65-1	n-Propylbenzene	1.0	< 1.0	U
108-86-1	Bromobenzene	1.0	< 1.0	U
95-49-8	2-Chlorotoluene	1.0	< 1.0	U
106-43-4	4-Chlorotoluene	1.0	< 1.0	U
98-06-6	tert-Butylbenzene	1.0	< 1.0	U
135-98-8	sec-Butylbenzene	1.0	< 1.0	U
99-87-6	4-Isopropyltoluene	1.0	< 1.0	U
104-51-8	n-Butylbenzene	1.0	< 1.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	Naphthalene	5.0	< 5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	96.1%
d8-Toluene	100%
Bromofluorobenzene	97.7%
d4-1,2-Dichlorobenzene	99.2%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-5**
Page 1 of 2 **SAMPLE**

Lab Sample ID: ZN27C
LIMS ID: 14-26408
Matrix: Water
Data Release Authorized:
Reported: 12/17/14

QC Report No: ZN27-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/04/14
Date Received: 12/04/14

Instrument/Analyst: NT15/PAB
Date Analyzed: 12/12/14 19:19

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	1.0	< 1.0	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	1.0	< 1.0	U
75-00-3	Chloroethane	1.0	< 1.0	U
75-09-2	Methylene Chloride	2.0	< 2.0	U
67-64-1	Acetone	10	< 10	U
75-15-0	Carbon Disulfide	1.0	< 1.0	U
75-35-4	1,1-Dichloroethene	1.0	< 1.0	U
75-34-3	1,1-Dichloroethane	1.0	< 1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	< 1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	< 1.0	U
67-66-3	Chloroform	1.0	< 1.0	U
107-06-2	1,2-Dichloroethane	1.0	< 1.0	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	1.0	< 1.0	U
56-23-5	Carbon Tetrachloride	1.0	< 1.0	U
108-05-4	Vinyl Acetate	5.0	< 5.0	U
75-27-4	Bromodichloromethane	1.0	< 1.0	U
78-87-5	1,2-Dichloropropane	1.0	< 1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	< 1.0	U
79-01-6	**Trichloroethene**	**1.0**	**1.0**	
124-48-1	Dibromochloromethane	1.0	< 1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	< 1.0	U
71-43-2	Benzene	1.0	< 1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	< 1.0	U
110-75-8	2-Chloroethylvinylether	5.0	< 5.0	U
75-25-2	Bromoform	1.0	< 1.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	< 1.0	U
108-88-3	Toluene	1.0	< 1.0	U
108-90-7	Chlorobenzene	1.0	< 1.0	U
100-41-4	Ethylbenzene	1.0	< 1.0	U
100-42-5	Styrene	1.0	< 1.0	U
75-69-4	Trichlorofluoromethane	1.0	< 1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	< 2.0	U
179601-23-1	m,p-Xylene	2.0	< 2.0	U
95-47-6	o-Xylene	1.0	< 1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-5**
 SAMPLE

Lab Sample ID: ZN27C
LIMS ID: 14-26408
Matrix: Water
Date Analyzed: 12/12/14 19:19

QC Report No: ZN27-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	10	< 10	U
74-88-4	Iodomethane	1.0	< 1.0	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	5.0	< 5.0	U
563-58-6	1,1-Dichloropropene	1.0	< 1.0	U
74-95-3	Dibromomethane	1.0	< 1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	< 1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	2.0	< 2.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	< 5.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	< 1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	< 1.0	U
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	1,2-Dibromoethane	1.0	< 1.0	U
74-97-5	Bromochloromethane	1.0	< 1.0	U
594-20-7	2,2-Dichloropropane	1.0	< 1.0	U
142-28-9	1,3-Dichloropropane	5.0	< 5.0	U
98-82-8	Isopropylbenzene	1.0	< 1.0	U
103-65-1	n-Propylbenzene	1.0	< 1.0	U
108-86-1	Bromobenzene	1.0	< 1.0	U
95-49-8	2-Chlorotoluene	1.0	< 1.0	U
106-43-4	4-Chlorotoluene	1.0	< 1.0	U
98-06-6	tert-Butylbenzene	1.0	< 1.0	U
135-98-8	sec-Butylbenzene	1.0	< 1.0	U
99-87-6	4-Isopropyltoluene	1.0	< 1.0	U
104-51-8	n-Butylbenzene	1.0	< 1.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	Naphthalene	5.0	< 5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	96.0%
d8-Toluene	99.7%
Bromofluorobenzene	98.8%
d4-1,2-Dichlorobenzene	98.9%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-3**
 SAMPLE

Lab Sample ID: ZN27D
LIMS ID: 14-26409
Matrix: Water
Data Release Authorized:
Reported: 12/17/14

QC Report No: ZN27-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/04/14
Date Received: 12/04/14

Instrument/Analyst: NT15/PAB
Date Analyzed: 12/12/14 19:42

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	1.0	< 1.0	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	1.0	< 1.0	U
75-00-3	Chloroethane	1.0	< 1.0	U
75-09-2	Methylene Chloride	2.0	< 2.0	U
67-64-1	Acetone	10	< 10	U
75-15-0	Carbon Disulfide	1.0	< 1.0	U
75-35-4	1,1-Dichloroethene	1.0	< 1.0	U
75-34-3	1,1-Dichloroethane	1.0	< 1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	< 1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	< 1.0	U
67-66-3	Chloroform	1.0	< 1.0	U
107-06-2	1,2-Dichloroethane	1.0	< 1.0	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	1.0	< 1.0	U
56-23-5	Carbon Tetrachloride	1.0	< 1.0	U
108-05-4	Vinyl Acetate	5.0	< 5.0	U
75-27-4	Bromodichloromethane	1.0	< 1.0	U
78-87-5	1,2-Dichloropropane	1.0	< 1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	< 1.0	U
79-01-6	Trichloroethene	1.0	< 1.0	U
124-48-1	Dibromochloromethane	1.0	< 1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	< 1.0	U
71-43-2	Benzene	1.0	< 1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	< 1.0	U
110-75-8	2-Chloroethylvinylether	5.0	< 5.0	U
75-25-2	Bromoform	1.0	< 1.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	< 1.0	U
108-88-3	Toluene	1.0	< 1.0	U
108-90-7	Chlorobenzene	1.0	< 1.0	U
100-41-4	Ethylbenzene	1.0	< 1.0	U
100-42-5	Styrene	1.0	< 1.0	U
75-69-4	Trichlorofluoromethane	1.0	< 1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	< 2.0	U
179601-23-1	m,p-Xylene	2.0	< 2.0	U
95-47-6	o-Xylene	1.0	< 1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-3**
Page 2 of 2 **SAMPLE**

Lab Sample ID: ZN27D
LIMS ID: 14-26409
Matrix: Water
Date Analyzed: 12/12/14 19:42

QC Report No: ZN27-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	10	< 10	U
74-88-4	Iodomethane	1.0	< 1.0	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	5.0	< 5.0	U
563-58-6	1,1-Dichloropropene	1.0	< 1.0	U
74-95-3	Dibromomethane	1.0	< 1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	< 1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	2.0	< 2.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	< 5.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	< 1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	< 1.0	U
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	1,2-Dibromoethane	1.0	< 1.0	U
74-97-5	Bromochloromethane	1.0	< 1.0	U
594-20-7	2,2-Dichloropropane	1.0	< 1.0	U
142-28-9	1,3-Dichloropropane	5.0	< 5.0	U
98-82-8	Isopropylbenzene	1.0	< 1.0	U
103-65-1	n-Propylbenzene	1.0	< 1.0	U
108-86-1	Bromobenzene	1.0	< 1.0	U
95-49-8	2-Chlorotoluene	1.0	< 1.0	U
106-43-4	4-Chlorotoluene	1.0	< 1.0	U
98-06-6	tert-Butylbenzene	1.0	< 1.0	U
135-98-8	sec-Butylbenzene	1.0	< 1.0	U
99-87-6	4-Isopropyltoluene	1.0	< 1.0	U
104-51-8	n-Butylbenzene	1.0	< 1.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	Naphthalene	5.0	< 5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	97.1%
d8-Toluene	99.9%
Bromofluorobenzene	99.0%
d4-1,2-Dichlorobenzene	98.9%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: TRIP BLANKS**
 SAMPLE

Lab Sample ID: ZN27E
LIMS ID: 14-26410
Matrix: Water
Data Release Authorized:
Reported: 12/17/14

QC Report No: ZN27-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/04/14
Date Received: 12/04/14

Instrument/Analyst: NT15/PAB
Date Analyzed: 12/12/14 20:04

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	1.0	< 1.0	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	1.0	< 1.0	U
75-00-3	Chloroethane	1.0	< 1.0	U
75-09-2	Methylene Chloride	2.0	< 2.0	U
67-64-1	Acetone	10	< 10	U
75-15-0	Carbon Disulfide	1.0	< 1.0	U
75-35-4	1,1-Dichloroethene	1.0	< 1.0	U
75-34-3	1,1-Dichloroethane	1.0	< 1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	< 1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	< 1.0	U
67-66-3	Chloroform	1.0	< 1.0	U
107-06-2	1,2-Dichloroethane	1.0	< 1.0	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	1.0	< 1.0	U
56-23-5	Carbon Tetrachloride	1.0	< 1.0	U
108-05-4	Vinyl Acetate	5.0	< 5.0	U
75-27-4	Bromodichloromethane	1.0	< 1.0	U
78-87-5	1,2-Dichloropropane	1.0	< 1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	< 1.0	U
79-01-6	Trichloroethene	1.0	< 1.0	U
124-48-1	Dibromochloromethane	1.0	< 1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	< 1.0	U
71-43-2	Benzene	1.0	< 1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	< 1.0	U
110-75-8	2-Chloroethylvinylether	5.0	< 5.0	U
75-25-2	Bromoform	1.0	< 1.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	< 1.0	U
108-88-3	Toluene	1.0	< 1.0	U
108-90-7	Chlorobenzene	1.0	< 1.0	U
100-41-4	Ethylbenzene	1.0	< 1.0	U
100-42-5	Styrene	1.0	< 1.0	U
75-69-4	Trichlorofluoromethane	1.0	< 1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	< 2.0	U
179601-23-1	m,p-Xylene	2.0	< 2.0	U
95-47-6	o-Xylene	1.0	< 1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: TRIP BLANKS**
 SAMPLE

Lab Sample ID: ZN27E
LIMS ID: 14-26410
Matrix: Water
Date Analyzed: 12/12/14 20:04

QC Report No: ZN27-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	10	< 10	U
74-88-4	Iodomethane	1.0	< 1.0	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	5.0	< 5.0	U
563-58-6	1,1-Dichloropropene	1.0	< 1.0	U
74-95-3	Dibromomethane	1.0	< 1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	< 1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	2.0	< 2.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	< 5.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	< 1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	< 1.0	U
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	1,2-Dibromoethane	1.0	< 1.0	U
74-97-5	Bromochloromethane	1.0	< 1.0	U
594-20-7	2,2-Dichloropropane	1.0	< 1.0	U
142-28-9	1,3-Dichloropropane	5.0	< 5.0	U
98-82-8	Isopropylbenzene	1.0	< 1.0	U
103-65-1	n-Propylbenzene	1.0	< 1.0	U
108-86-1	Bromobenzene	1.0	< 1.0	U
95-49-8	2-Chlorotoluene	1.0	< 1.0	U
106-43-4	4-Chlorotoluene	1.0	< 1.0	U
98-06-6	tert-Butylbenzene	1.0	< 1.0	U
135-98-8	sec-Butylbenzene	1.0	< 1.0	U
99-87-6	4-Isopropyltoluene	1.0	< 1.0	U
104-51-8	n-Butylbenzene	1.0	< 1.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	Naphthalene	5.0	< 5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	96.5%
d8-Toluene	101%
Bromofluorobenzene	97.0%
d4-1,2-Dichlorobenzene	100%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: LCS-121214A**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-121214A
LIMS ID: 14-26406
Matrix: Water
Data Release Authorized:
Reported: 12/17/14

QC Report No: ZN27-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT15/PAB
LCSD: NT15/PAB
Date Analyzed LCS: 12/12/14 15:37
LCSD: 12/12/14 17:17

Sample Amount LCS: 10.0 mL
LCSD: 10.0 mL
Purge Volume LCS: 10.0 mL
LCSD: 10.0 mL

Analyte	LCS		Spike Added-LCS	LCS Recovery	LCSD		Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	9.88		10.0	98.8%	9.38		10.0	93.8%	5.2%
Bromomethane	9.66		10.0	96.6%	8.50		10.0	85.0%	12.8%
Vinyl Chloride	9.95		10.0	99.5%	9.56		10.0	95.6%	4.0%
Chloroethane	10.8	Q	10.0	108%	10.1	Q	10.0	101%	6.7%
Methylene Chloride	10.2		10.0	102%	9.78		10.0	97.8%	4.2%
Acetone	46.3		50.0	92.6%	45.4		50.0	90.8%	2.0%
Carbon Disulfide	9.25		10.0	92.5%	8.77		10.0	87.7%	5.3%
1,1-Dichloroethene	8.98		10.0	89.8%	8.53		10.0	85.3%	5.1%
1,1-Dichloroethane	10.0		10.0	100%	9.57		10.0	95.7%	4.4%
trans-1,2-Dichloroethene	10.2		10.0	102%	9.55		10.0	95.5%	6.6%
cis-1,2-Dichloroethene	10.1		10.0	101%	9.78		10.0	97.8%	3.2%
Chloroform	10.2		10.0	102%	9.78		10.0	97.8%	4.2%
1,2-Dichloroethane	10.1		10.0	101%	9.73		10.0	97.3%	3.7%
2-Butanone	40.3		50.0	80.6%	39.0		50.0	78.0%	3.3%
1,1,1-Trichloroethane	10.2		10.0	102%	9.72		10.0	97.2%	4.8%
Carbon Tetrachloride	11.0		10.0	110%	10.5		10.0	105%	4.7%
Vinyl Acetate	10.2		10.0	102%	9.50		10.0	95.0%	7.1%
Bromodichloromethane	10.3		10.0	103%	9.76		10.0	97.6%	5.4%
1,2-Dichloropropane	10.3		10.0	103%	9.81		10.0	98.1%	4.9%
cis-1,3-Dichloropropene	11.0		10.0	110%	10.5		10.0	105%	4.7%
Trichloroethene	11.2		10.0	112%	10.8		10.0	108%	3.6%
Dibromochloromethane	11.6		10.0	116%	11.3		10.0	113%	2.6%
1,1,2-Trichloroethane	10.3		10.0	103%	9.99		10.0	99.9%	3.1%
Benzene	9.97		10.0	99.7%	9.60		10.0	96.0%	3.8%
trans-1,3-Dichloropropene	11.0		10.0	110%	10.7		10.0	107%	2.8%
2-Chloroethylvinylether	7.44	Q	10.0	74.4%	7.35	Q	10.0	73.5%	1.2%
Bromoform	10.6		10.0	106%	10.0		10.0	100%	5.8%
4-Methyl-2-Pentanone (MIBK)	49.0		50.0	98.0%	48.0		50.0	96.0%	2.1%
2-Hexanone	54.8		50.0	110%	54.4		50.0	109%	0.7%
Tetrachloroethene	11.7		10.0	117%	11.6		10.0	116%	0.9%
1,1,2,2-Tetrachloroethane	10.1		10.0	101%	9.67		10.0	96.7%	4.4%
Toluene	10.3		10.0	103%	9.87		10.0	98.7%	4.3%
Chlorobenzene	11.0		10.0	110%	10.7		10.0	107%	2.8%
Ethylbenzene	11.7		10.0	117%	11.4		10.0	114%	2.6%
Styrene	12.9		10.0	129%	12.5		10.0	125%	3.1%
Trichlorofluoromethane	9.39		10.0	93.9%	8.78		10.0	87.8%	6.7%
1,1,2-Trichloro-1,2,2-trifluoroetha	12.1		10.0	121%	11.8		10.0	118%	2.5%
m,p-Xylene	23.1		20.0	116%	22.6		20.0	113%	2.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: LCS-121214A**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-121214A QC Report No: ZN27-Kennedy Jenks Consultants, Inc.
LIMS ID: 14-26406 Project: Precision Engineering
Matrix: Water 1396024.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
o-Xylene	11.9	10.0	119%	11.6	10.0	116%	2.6%
1,2-Dichlorobenzene	11.0	10.0	110%	10.6	10.0	106%	3.7%
1,3-Dichlorobenzene	11.1	10.0	111%	10.6	10.0	106%	4.6%
1,4-Dichlorobenzene	11.0	10.0	110%	10.7	10.0	107%	2.8%
Acrolein	43.8	50.0	87.6%	42.4	50.0	84.8%	3.2%
Iodomethane	6.25 Q	10.0	62.5%	7.39 Q	10.0	73.9%	16.7%
Bromoethane	9.68	10.0	96.8%	9.01	10.0	90.1%	7.2%
Acrylonitrile	8.76	10.0	87.6%	8.49	10.0	84.9%	3.1%
1,1-Dichloropropene	10.1	10.0	101%	9.68	10.0	96.8%	4.2%
Dibromomethane	9.80	10.0	98.0%	9.62	10.0	96.2%	1.9%
1,1,1,2-Tetrachloroethane	11.5	10.0	115%	11.2	10.0	112%	2.6%
1,2-Dibromo-3-chloropropane	9.68	10.0	96.8%	9.45	10.0	94.5%	2.4%
1,2,3-Trichloropropane	10.1	10.0	101%	9.88	10.0	98.8%	2.2%
trans-1,4-Dichloro-2-butene	9.53	10.0	95.3%	9.06	10.0	90.6%	5.1%
1,3,5-Trimethylbenzene	11.0	10.0	110%	10.6	10.0	106%	3.7%
1,2,4-Trimethylbenzene	11.4	10.0	114%	11.0	10.0	110%	3.6%
Hexachlorobutadiene	12.3	10.0	123%	12.0	10.0	120%	2.5%
1,2-Dibromoethane	9.80	10.0	98.0%	9.64	10.0	96.4%	1.6%
Bromochloromethane	10.1	10.0	101%	9.64	10.0	96.4%	4.7%
2,2-Dichloropropane	10.5	10.0	105%	9.91	10.0	99.1%	5.8%
1,3-Dichloropropane	10.4	10.0	104%	10.3	10.0	103%	1.0%
Isopropylbenzene	11.1	10.0	111%	10.7	10.0	107%	3.7%
n-Propylbenzene	11.3	10.0	113%	10.9	10.0	109%	3.6%
Bromobenzene	10.6	10.0	106%	10.3	10.0	103%	2.9%
2-Chlorotoluene	10.4	10.0	104%	10.0	10.0	100%	3.9%
4-Chlorotoluene	11.1	10.0	111%	10.6	10.0	106%	4.6%
tert-Butylbenzene	11.1	10.0	111%	10.7	10.0	107%	3.7%
sec-Butylbenzene	11.4	10.0	114%	11.1	10.0	111%	2.7%
4-Isopropyltoluene	11.6	10.0	116%	11.3	10.0	113%	2.6%
n-Butylbenzene	11.9	10.0	119%	11.5	10.0	115%	3.4%
1,2,4-Trichlorobenzene	11.8	10.0	118%	11.5	10.0	115%	2.6%
Naphthalene	10.7	10.0	107%	10.4	10.0	104%	2.8%
1,2,3-Trichlorobenzene	10.7	10.0	107%	10.5	10.0	105%	1.9%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	97.7%	97.4%
d8-Toluene	100%	94.7%
Bromofluorobenzene	104%	104%
d4-1,2-Dichlorobenzene	97.5%	98.5%

ANALYTICAL RESOURCES INCORPORATED

VOA SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ZN27-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
MB-121214A	Method Blank	10	97.3%	100%	98.3%	101%	0
LCS-121214A	Lab Control	10	97.7%	100%	104%	97.5%	0
LCSD-121214A	Lab Control Dup	10	97.4%	94.7%	104%	98.5%	0
ZN27A	MW-11	10	97.2%	99.6%	98.1%	99.7%	0
ZN27B	MW-12	10	96.1%	100%	97.7%	99.2%	0
ZN27C	MW-5	10	96.0%	99.7%	98.8%	98.9%	0
ZN27D	MW-3	10	97.1%	99.9%	99.0%	98.9%	0
ZN27E	TRIP BLANKS	10	96.5%	101%	97.0%	100%	0

SW8260C	LCS/MB LIMITS	QC LIMITS
(DCE) = d4-1,2-Dichloroethane	(80-120)	(80-120)
(TOL) = d8-Toluene	(80-120)	(80-120)
(BFB) = Bromofluorobenzene	(80-120)	(80-120)
(DCB) = d4-1,2-Dichlorobenzene	(80-120)	(80-120)

Prep Method: SW5030B
Log Number Range: 14-26406 to 14-26410

Analytical Resources, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: nt15.i Injection Date: 12-DEC-2014 12:01
Lab File ID: 1001212.d Init. Cal. Date(s): 12-DEC-2014 12-DEC-2014
Analysis Type: WATER Init. Cal. Times: 10:34 13:06
Lab Sample ID: IC1212 Quant Type: ISTD
Method: /chem1/nt15.i/20141212A.b/82600612L.m

COMPOUND	RRF / AMOUNT	RF10	CCAL RRF10	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	
1 Dichlorodifluoromethane	0.33569	0.33133	0.33133	0.010	-1.29857	20.00000	Averaged	
2 Chloromethane	0.54616	0.49150	0.49150	0.100	-10.00795	20.00000	Averaged	
3 Vinyl Chloride	0.57581	0.55616	0.55616	0.100	-3.41259	20.00000	Averaged	
4 Bromomethane	0.40216	0.40415	0.40415	0.100	0.49557	20.00000	Averaged	
5 Chloroethane	15.93432	10.00000	0.28693	0.010	59.34318	20.00000	Linear	<-
6 Trichlorofluoromethane	0.57943	0.59908	0.59908	0.010	3.39145	20.00000	Averaged	
7 1,1-Dichloroethene	0.72000	0.68495	0.68495	0.100	-4.86767	20.00000	Averaged	
8 Carbon Disulfide	1.51634	1.33161	1.33161	0.010	-12.18259	20.00000	Averaged	
9 112Trichloro122Trifluoroeth	0.37590	0.32752	0.32752	0.010	-12.87030	20.00000	Averaged	
10 Iodomethane	4.96747	10.00000	0.23791	0.010	-50.32531	20.00000	Quadratic	<-
11 Bromoethane	0.32261	0.28475	0.28475	0.100	-11.73573	20.00000	Averaged	
12 Acrolein	0.06760	0.06554	0.06554	0.000	-3.05924	20.00000	Averaged	
13 Methylene Chloride	10.11574	10.00000	0.51442	0.010	1.15735	20.00000	Linear	
14 Acetone	0.08279	0.07273	0.07273	0.001	-12.15053	20.00000	Averaged	
15 Trans-1,2-Dichloroethene	0.49527	0.47717	0.47717	0.010	-3.65287	20.00000	Averaged	
17 Methyl tert butyl ether	1.18998	1.16550	1.16550	0.100	-2.05747	20.00000	Averaged	
18 1,1-Dichloroethane	0.90289	0.88484	0.88484	0.200	-1.99912	20.00000	Averaged	
19 Acrylonitrile	0.13321	0.11440	0.11440	0.001	-14.12207	20.00000	Averaged	
20 Vinyl Acetate	0.15809	0.14777	0.14777	0.010	-6.52706	20.00000	Averaged	
22 Cis-1,2-Dichloroethene	0.49953	0.49152	0.49152	0.010	-1.60446	20.00000	Averaged	
23 2,2-Dichloropropane	0.70012	0.68432	0.68432	0.010	-2.25763	20.00000	Averaged	
24 Bromochloromethane	0.20111	0.19701	0.19701	0.050	-2.03451	20.00000	Averaged	
25 Chloroform	0.78333	0.78291	0.78291	0.200	-0.05477	20.00000	Averaged	
26 Carbon Tetrachloride	0.27216	0.28854	0.28854	0.100	6.01822	20.00000	Averaged	
$ 27 Dibromofluoromethane	0.49379	0.49060	0.49060	0.100	-0.64654	20.00000	Averaged	
28 1,1,1-Trichloroethane	0.67432	0.66470	0.66470	0.100	-1.42725	20.00000	Averaged	
29 2-Butanone	0.14461	0.13374	0.13374	0.001	-7.52123	20.00000	Averaged	
30 1,1-Dichloropropene	0.37558	0.36585	0.36585	0.010	-2.59066	20.00000	Averaged	
31 Benzene	9.47007	10.00000	1.14000	0.500	-5.29929	20.00000	Linear	
$ 33 d4-1,2-Dichloroethane	0.60582	0.62868	0.62868	0.010	3.77306	20.00000	Averaged	
34 1,2-Dichloroethane	0.31207	0.30661	0.30661	0.100	-1.75147	20.00000	Averaged	
36 Trichloroethene	0.23400	0.24430	0.24430	0.100	4.40306	20.00000	Averaged	
38 Dibromomethane	0.12367	0.12255	0.12255	0.010	-0.91172	20.00000	Averaged	
39 1,2-Dichloropropane	0.28561	0.28007	0.28007	0.100	-1.93928	20.00000	Averaged	
40 Bromodichloromethane	0.32350	0.32235	0.32235	0.100	-0.35501	20.00000	Averaged	

Analytical Resources, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: nt15.i Injection Date: 12-DEC-2014 12:01
Lab File ID: 1001212.d Init. Cal. Date(s): 12-DEC-2014 12-DEC-2014
Analysis Type: WATER Init. Cal. Times: 10:34 13:06
Lab Sample ID: IC1212 Quant Type: ISTD
Method: /chem1/nt15.i/20141212A.b/82600612L.m

COMPOUND	RRF / AMOUNT	RF10	CCAL RRF10	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	
41 2-Chloroethyl Vinyl Ether	6.50261	10.00000	0.07410	0.000	-34.97390	20.00000	Linear	<-
42 Cis 1,3-dichloropropene	0.35030	0.36911	0.36911	0.200	5.36944	20.00000	Averaged	
$ 43 d8-Toluene	1.24762	1.26147	1.26147	0.010	1.11043	20.00000	Averaged	
44 Toluene	0.72182	0.70520	0.70520	0.400	-2.30309	20.00000	Averaged	
45 4-Methyl-2-Pentanone	0.07387	0.06974	0.06974	0.000	-5.59828	20.00000	Averaged	
46 Tetrachloroethene	0.24744	0.26375	0.26375	0.200	6.59047	20.00000	Averaged	
47 Trans 1,3-Dichloropropene	0.27421	0.28276	0.28276	0.010	3.11930	20.00000	Averaged	
48 1,1,2-Trichloroethane	0.18957	0.18935	0.18935	0.100	-0.11731	20.00000	Averaged	
49 Chlorodibromomethane	0.19723	0.22178	0.22178	0.100	12.44563	20.00000	Averaged	
50 1,3-Dichloropropane	0.39751	0.41188	0.41188	0.100	3.61558	20.00000	Averaged	
51 1,2-Dibromoethane	0.15152	0.15329	0.15329	0.010	1.16967	20.00000	Averaged	
52 2-Hexanone	0.11935	0.12684	0.12684	0.010	6.27852	20.00000	Averaged	
54 Chlorobenzene	0.80241	0.82512	0.82512	0.500	2.83061	20.00000	Averaged	
55 Ethyl Benzene	0.42217	0.45519	0.45519	0.100	7.82190	20.00000	Averaged	
56 1,1,1,2-Tetrachloroethane	0.23588	0.25841	0.25841	0.010	9.55165	20.00000	Averaged	
57 m,p-xylene	0.54000	0.56413	0.56413	0.300	4.46835	20.00000	Averaged	
58 o-Xylene	0.49921	0.54864	0.54864	0.300	9.90282	20.00000	Averaged	
59 Styrene	0.76045	0.89724	0.89724	0.300	17.98801	20.00000	Averaged	
60 Bromoform	0.23286	0.24653	0.24653	0.010	5.87042	20.00000	Averaged	
61 Isopropyl Benzene	2.87871	2.92995	2.92995	0.010	1.78017	20.00000	Averaged	
$ 62 4-Bromofluorobenzene	0.52255	0.54317	0.54317	0.200	3.94489	20.00000	Averaged	
63 Bromobenzene	0.60808	0.59971	0.59971	0.010	-1.37634	20.00000	Averaged	
64 N-Propyl Benzene	3.24301	3.28519	3.28519	0.010	1.30071	20.00000	Averaged	
65 1,1,2,2-Tetrachloroethane	0.54424	0.53481	0.53481	0.100	-1.73425	20.00000	Averaged	
66 2-Chloro Toluene	2.05323	1.94159	1.94159	0.010	-5.43710	20.00000	Averaged	
67 1,3,5-Trimethyl Benzene	2.37784	2.44329	2.44329	0.010	2.75233	20.00000	Averaged	
68 1,2,3-Trichloropropane	0.15097	0.15502	0.15502	0.010	2.68145	20.00000	Averaged	
69 Trans-1,4-Dichloro 2-Butene	0.10969	0.09256	0.09256	0.001	-15.61460	20.00000	Averaged	
70 4-Chloro Toluene	2.06124	2.05674	2.05674	0.010	-0.21826	20.00000	Averaged	
71 T-Butyl Benzene	2.04755	2.08229	2.08229	0.010	1.69648	20.00000	Averaged	
72 1,2,4-Trimethylbenzene	2.26846	2.29641	2.29641	0.010	1.23218	20.00000	Averaged	
73 S-Butyl Benzene	2.98067	3.04352	3.04352	0.010	2.10862	20.00000	Averaged	
74 4-Isopropyl Toluene	2.27487	2.33013	2.33013	0.010	2.42940	20.00000	Averaged	
75 1,3-Dichlorobenzene	1.15421	1.13861	1.13861	0.600	-1.35124	20.00000	Averaged	
77 1,4-Dichlorobenzene	1.18542	1.15896	1.15896	0.500	-2.23210	20.00000	Averaged	

Analytical Resources, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: nt15.i
Lab File ID: 1001212.d
Analysis Type: WATER
Lab Sample ID: IC1212
Method: /chem1/nt15.i/20141212A.b/82600612L.m

Injection Date: 12-DEC-2014 12:01
Init. Cal. Date(s): 12-DEC-2014 12-DEC-2014
Init. Cal. Times: 10:34 13:06
Quant Type: ISTD

COMPOUND	RRF / AMOUNT	RF10	CCAL RRF10	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE
78 N-Butyl Benzene	2.08511	2.07355	2.07355	0.010	-0.55401	20.00000	Averaged
$ 79 d4-1,2-Dichlorobenzene	0.94634	0.94603	0.94603	0.010	-0.03245	20.00000	Averaged
80 1,2-Dichlorobenzene	1.10381	1.10714	1.10714	0.400	0.30142	20.00000	Averaged
81 1,2-Dibromo 3-Chloropropane	0.08431	0.08314	0.08314	0.010	-1.38166	20.00000	Averaged
83 Hexachloro 1,3-Butadiene	0.29026	0.29044	0.29044	0.010	0.06345	20.00000	Averaged
84 1,2,4-Trichlorobenzene	0.65098	0.65838	0.65838	0.010	1.13732	20.00000	Averaged
85 Naphthalene	1.55458	1.56686	1.56686	0.010	0.79008	20.00000	Averaged
86 1,2,3-Trichlorobenzene	0.62367	0.59409	0.59409	0.010	-4.74245	20.00000	Averaged

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID
Extraction Method: SW3510C
Page 1 of 1

QC Report No: ZN27-Kennedy Jenks Consultants,
Project: Precision Engineering
1396024.00

Matrix: Water

Date Received: 12/04/14

Data Release Authorized:
Reported: 12/22/14

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DF	Range/Surrogate	RL	Result
MB-121114	Method Blank	12/11/14	12/18/14	1.00	Diesel Range	0.10	< 0.10 U
14-26406	HC ID: ---		FID3B	1.0	Motor Oil Range	0.20	< 0.20 U
					o-Terphenyl		75.4%
ZN27A	MW-11	12/11/14	12/18/14	1.00	**Diesel Range**	**0.10**	**0.26**
14-26406	HC ID: **DRO**		FID3B	1.0	Motor Oil Range	0.20	< 0.20 U
					o-Terphenyl		64.9%
ZN27B	MW-12	12/11/14	12/18/14	1.00	Diesel Range	0.10	< 0.10 U
14-26407	HC ID: ---		FID3B	1.0	Motor Oil Range	0.20	< 0.20 U
					o-Terphenyl		85.5%
ZN27C	MW-5	12/11/14	12/18/14	1.00	Diesel Range	0.10	< 0.10 U
14-26408	HC ID: ---		FID3B	1.0	Motor Oil Range	0.20	< 0.20 U
					o-Terphenyl		91.6%
ZN27D	MW-3	12/11/14	12/18/14	1.00	**Diesel Range**	**0.10**	**0.12**
14-26409	HC ID: **DRO**		FID3B	1.0	Motor Oil Range	0.20	< 0.20 U
					o-Terphenyl		60.9%

Reported in mg/L (ppm)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel range quantitation on total peaks in the range from C12 to C24.
Motor Oil range quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in ranges are not identifiable.

ANALYTICAL RESOURCES INCORPORATED

TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: ZN27-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00

Client ID	OTER	TOT OUT
MB-121114	75.4%	0
LCS-121114	82.2%	0
LCSD-121114	68.6%	0
MW-11	64.9%	0
MW-12	85.5%	0
MW-5	91.6%	0
MW-3	60.9%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3510C
Log Number Range: 14-26406 to 14-26409

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID **Sample ID: LCS-121114**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-121114
LIMS ID: 14-26406
Matrix: Water
Data Release Authorized:
Reported: 12/22/14

QC Report No: ZN27-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 12/11/14
Date Analyzed LCS: 12/18/14 17:03
LCSD: 12/18/14 17:28
Instrument/Analyst LCS: FID3B/JLW
LCSD: FID3B/JLW

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2.34	3.00	78.0%	2.54	3.00	84.7%	8.2%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	82.2%	68.6%

Results reported in mg/L
RPD calculated using sample concentrations per SW846.

FORM III

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: ZN27
Matrix: Water
Project: Precision Engineering
Date Received: 12/04/14
1396024.00

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
14-26406-121114MB1	Method Blank	500 mL	1.00 mL	12/11/14
14-26406-121114LCS1	Lab Control	500 mL	1.00 mL	12/11/14
14-26406-121114LCSD1	Lab Control Dup	500 mL	1.00 mL	12/11/14
14-26406-ZN27A	MW-11	500 mL	1.00 mL	12/11/14
14-26407-ZN27B	MW-12	500 mL	1.00 mL	12/11/14
14-26408-ZN27C	MW-5	500 mL	1.00 mL	12/11/14
14-26409-ZN27D	MW-3	500 mL	1.00 mL	12/11/14

Data File: /chem3/fid3b.i/20141218.b/1218b012.d

Date : 18-DEC-2014 16:38

Client ID: ZN25MBW1

Sample Info: ZN25MBW1

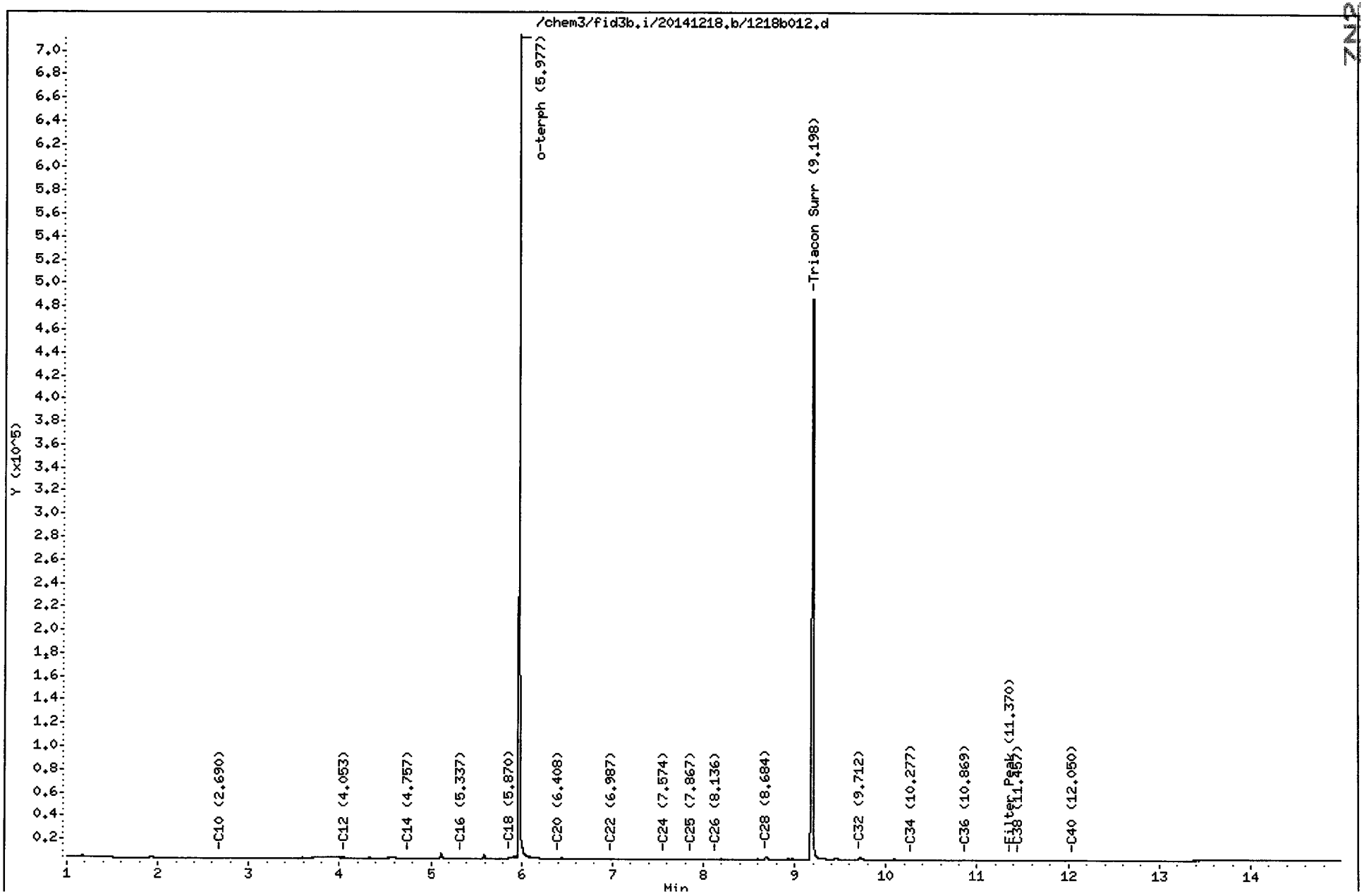
Instrument: fid3b.i

Operator: VTS

Column phase: RTX-1

Column diameter: 0.25

ZN27-080626



Data File: /chem3/fid3b.i/20141218.b/1218b013.d

Date : 18-DEC-2014 17:03

Client ID: ZN25LCSW1

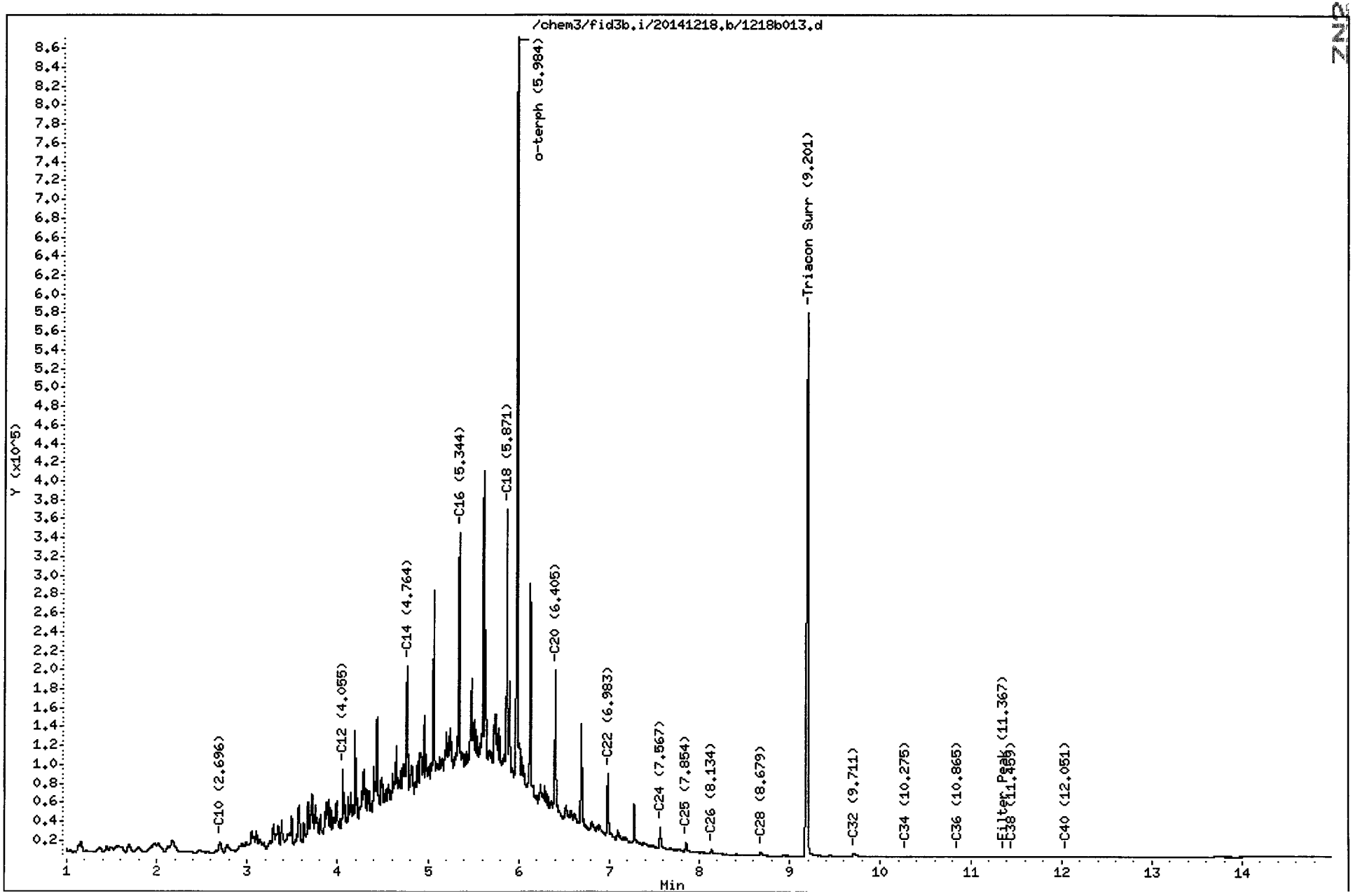
Sample Info: ZN25LCSW1

Column phase: RTX-1

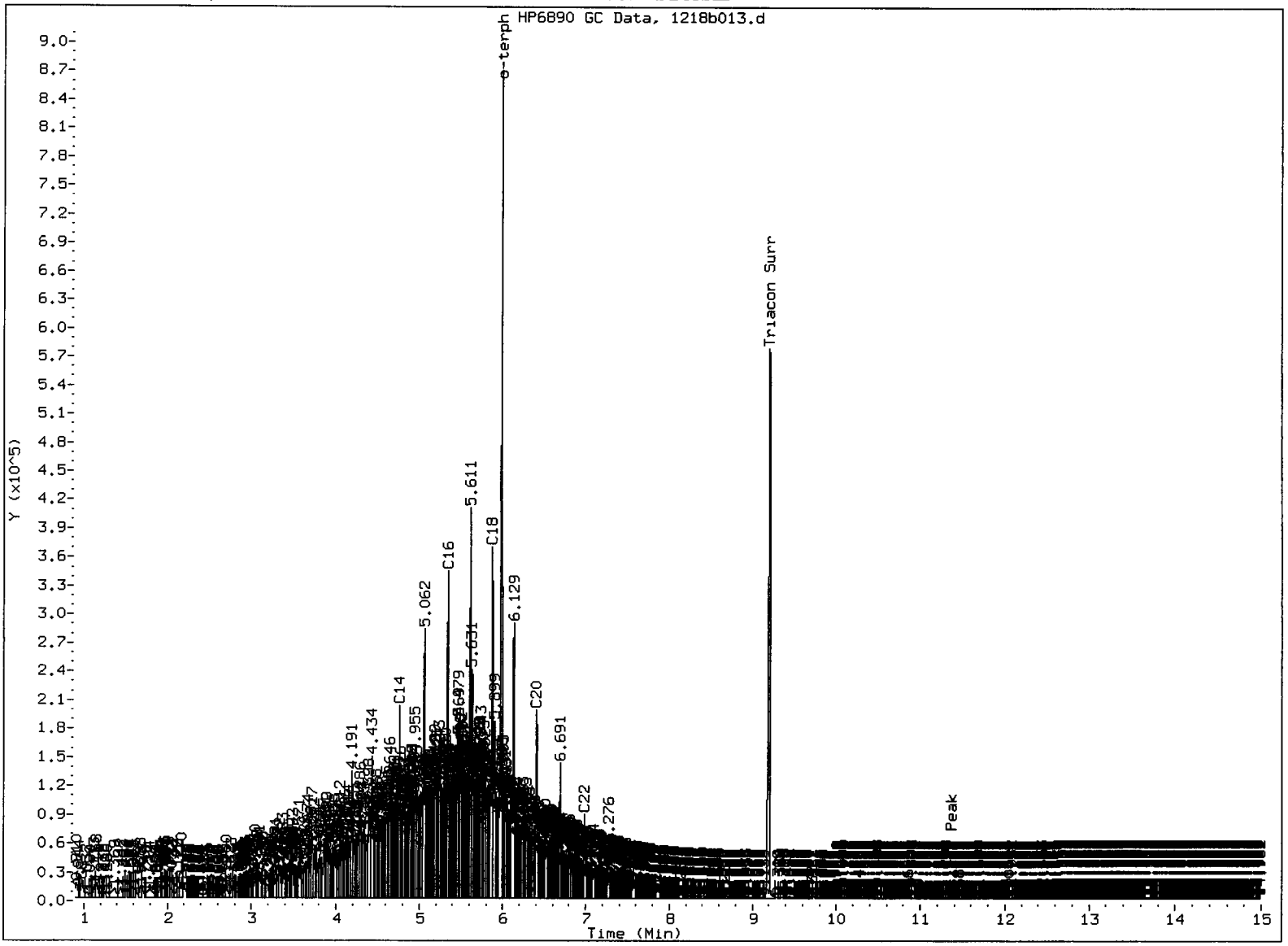
Instrument: fid3b.i

Operator: VTS

Column diameter: 0.25



FID:3B-2C/RTX-1 ZN25LCSW1 FID:3B SIGNAL



MANUAL INTEGRATION

1. Baseline correction
3. Peak not found
5. Skimmed surrogate

Analyst: FV Date: 12/20/14

Data File: /chem3/fid3b.i/20141218.b/1218b014.d

Date : 18-DEC-2014 17:28

Client ID: ZN25LCSDW1

Sample Info: ZN25LCSDW1

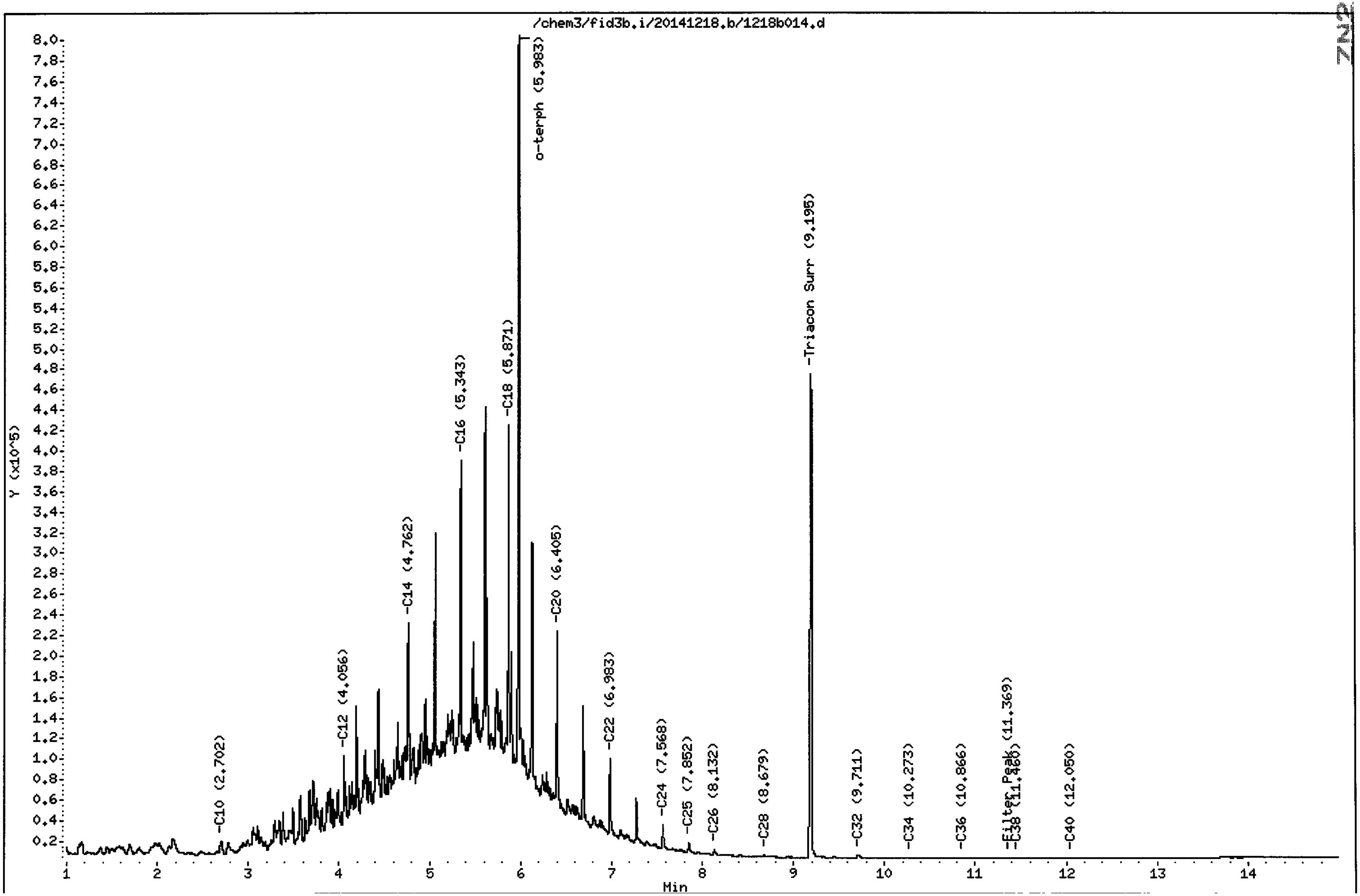
Column phase: RTX-1

Page 1

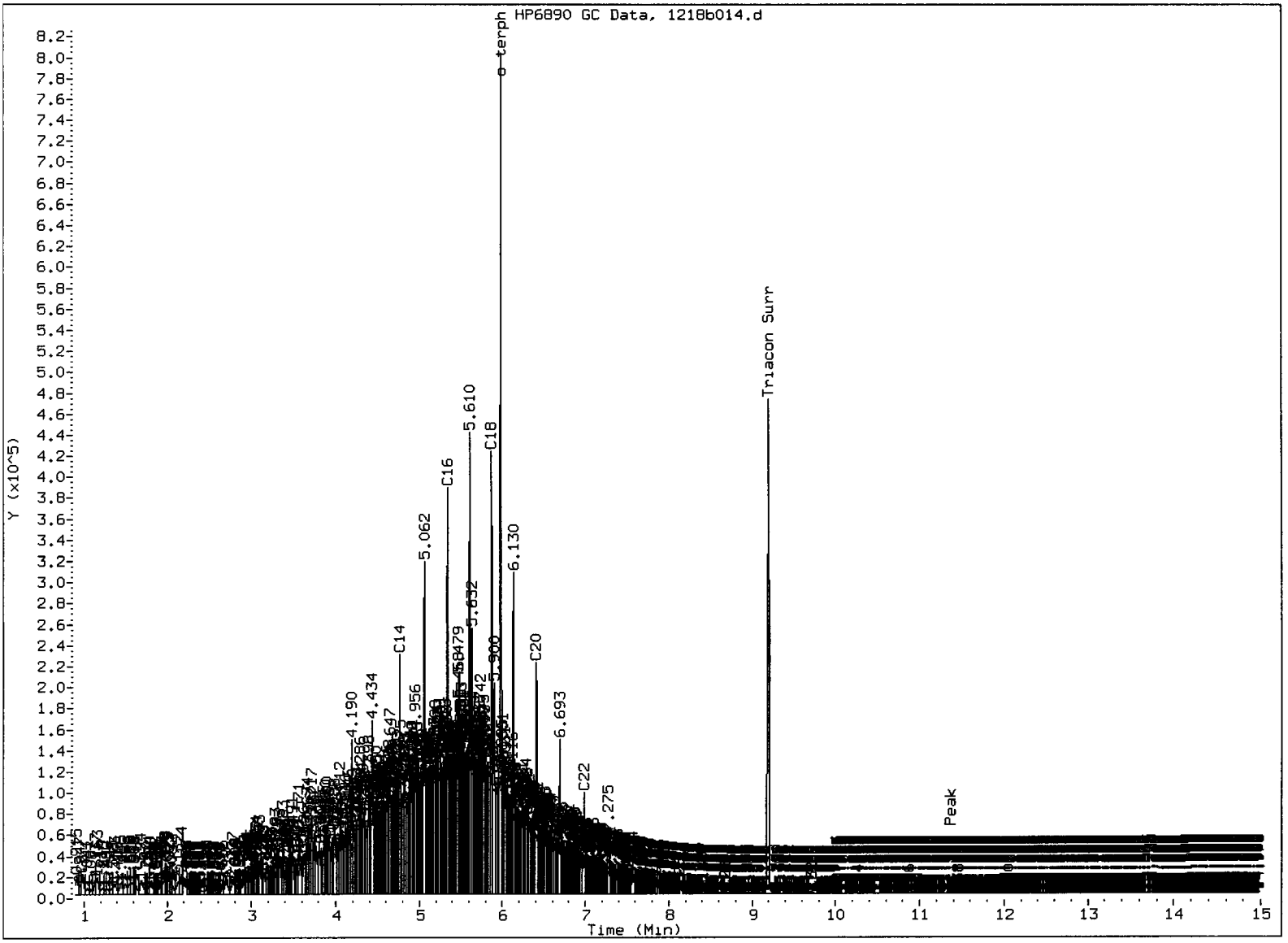
Instrument: fid3b.i

Operator: VTS

Column diameter: 0.25



FID:3B-2C/RTX-1 ZN25LCSDW1 FID:3B SIGNAL



MANUAL INTEGRATION

1. Baseline correction
3. Peak not found
5. Skimmed surrogate

Analyst: SW Date: 12/10/14

Data File: /chem3/fid3b.i/20141218.b/1218b020.d

Date : 18-DEC-2014 19:57

Client ID: MW-11

Instrument: fid3b.i

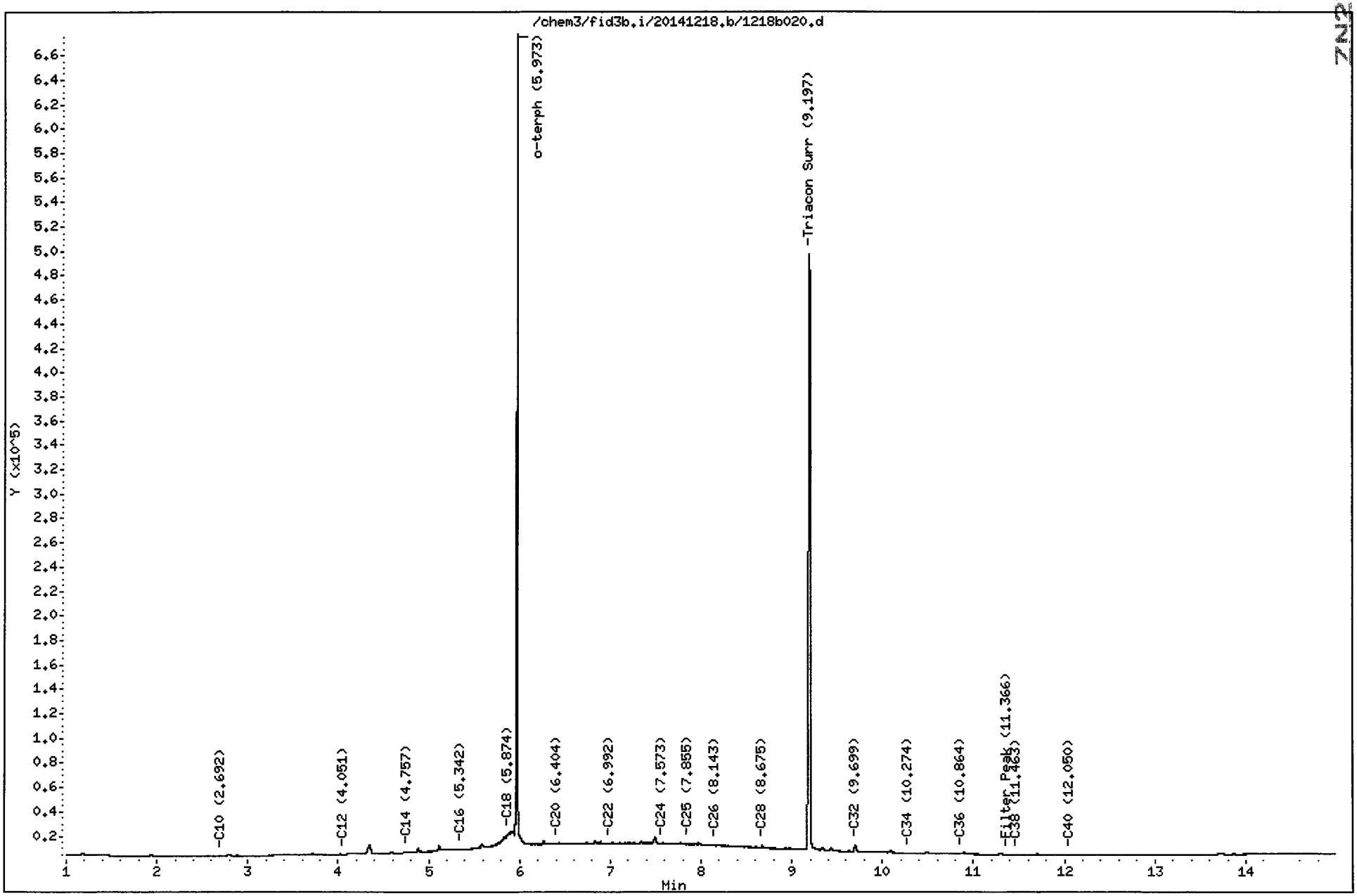
Sample Info: ZN27A

Operator: VTS

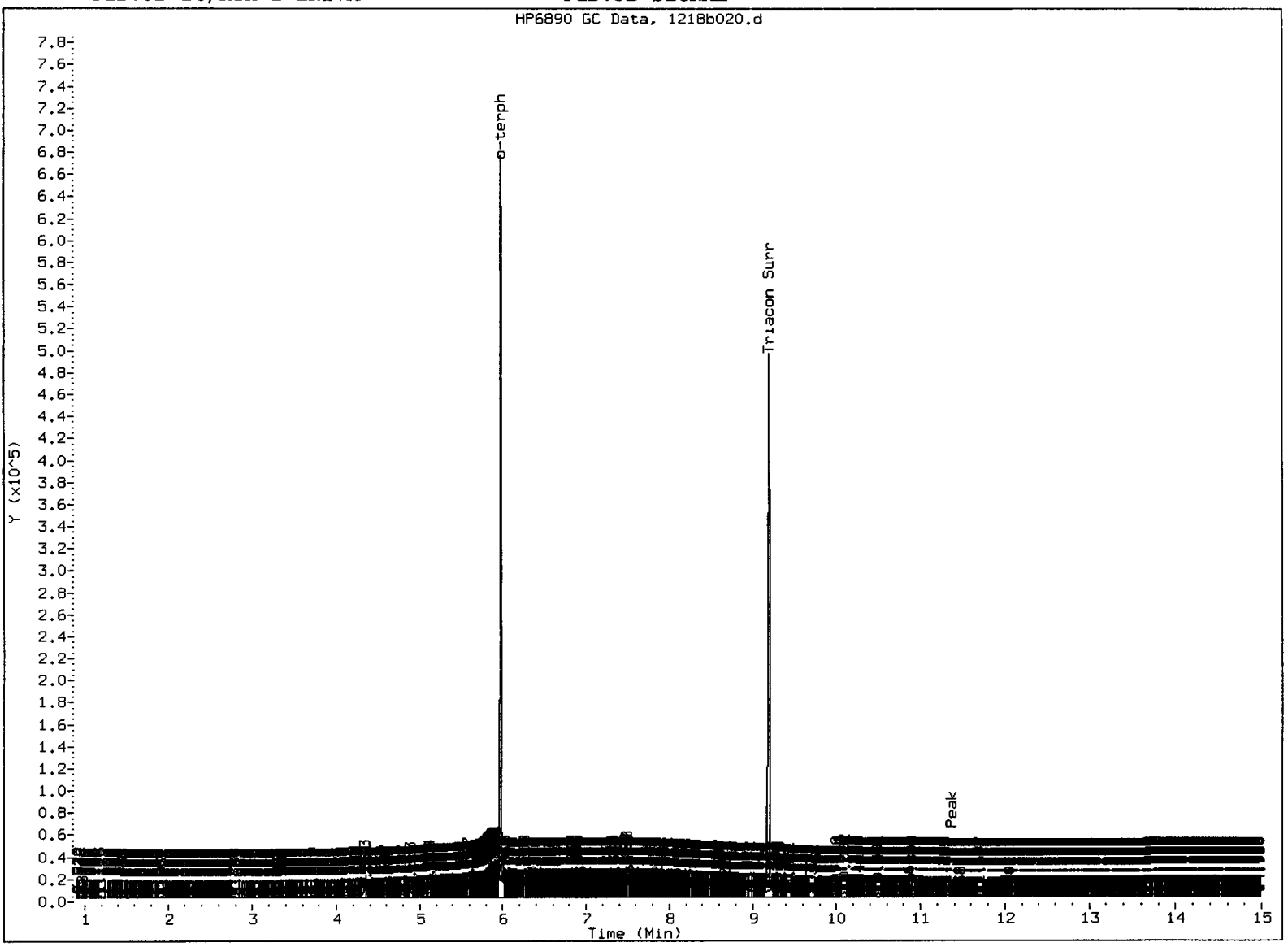
Column phase: RTX-1

Column diameter: 0.25

ZN27 : 09035



FID:3B-2C/RTX-1 ZN27A FID:3B SIGNAL



MANUAL INTEGRATION

1. Baseline correction
3. Peak not found
(5) Skimmed surrogate

Analyst: DD Date: 12/20/19

Data File: /chem3/fid3b.i/20141218.b/1218b021.d

Date : 18-DEC-2014 20:21

Client ID: MW-12

Sample Info: ZN27B

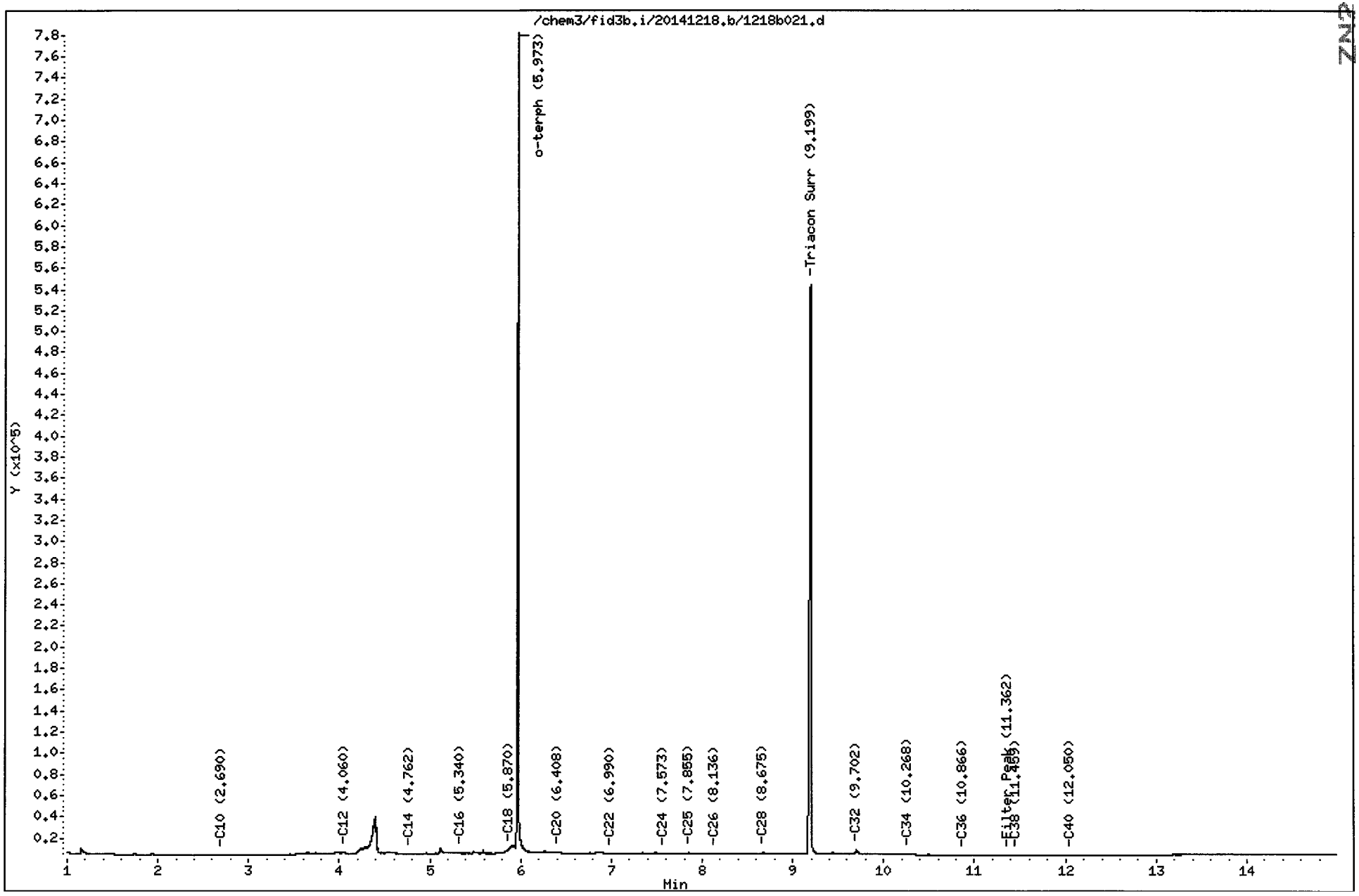
Column phase: RTX-1

Instrument: fid3b.i

Operator: VTS

Column diameter: 0.25

ZN27-090827



Data File: /chem3/fid3b.i/20141218.b/1218b022.d

Date : 18-DEC-2014 20:46

Client ID: MW-5

Sample Info: ZN27C

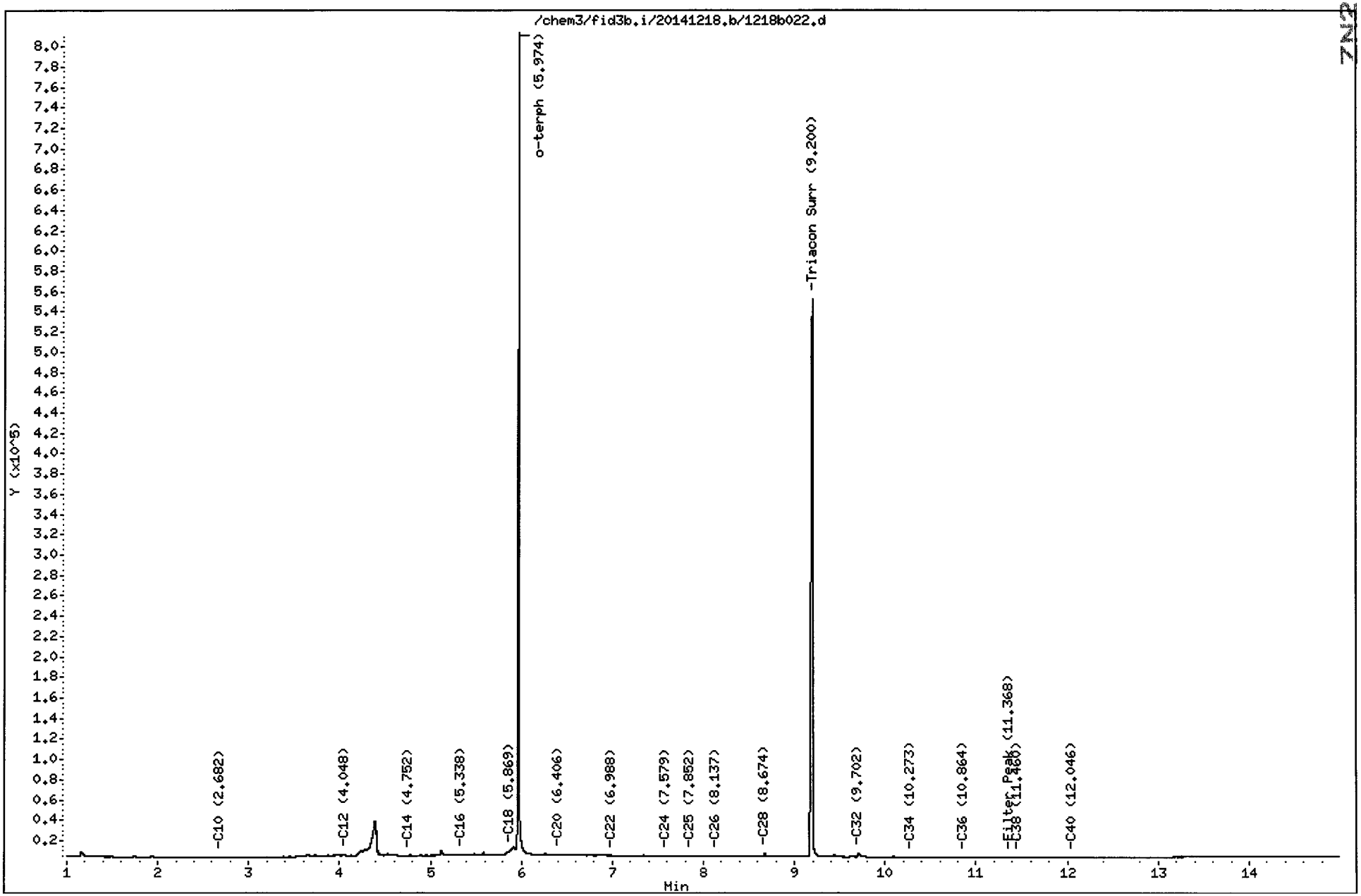
Column phase: RTX-1

Instrument: fid3b.i

Operator: VTS

Column diameter: 0.25

ZN27 060328



Data File: /chem3/fid3b.i/20141218.b/1218b023.d

Date : 18-DEC-2014 21:11

Client ID: MW-3

Sample Info: ZN27D

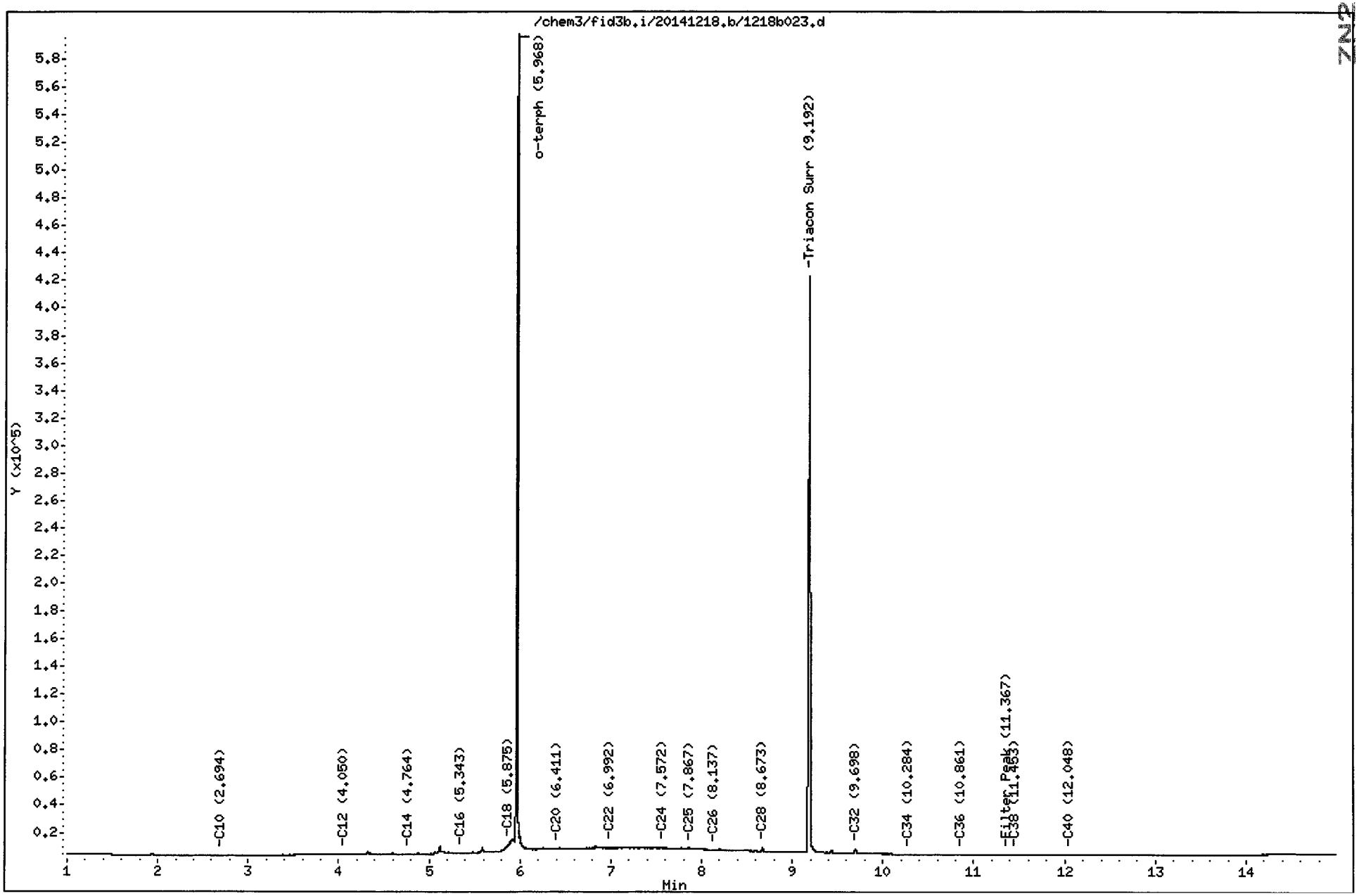
Column phase: RTX-1

Instrument: fid3b.i

Operator: VTS

Column diameter: 0.25

ZN27 B023



ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
Hexavalent Chromium by Method SM3500Cr-B

Data Release Authorized:
Reported: 12/10/14
Date Received: 12/04/14
Page 1 of 1

QC Report No: ZN27-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00

Client/ ARI ID	Date Sampled	Matrix	Analysis Date & Batch	RL	Result
MW-11 ZN27A 14-26406	12/04/14	Water	12/04/14 120414#1	0.010	0.012
MW-12 ZN27B 14-26407	12/04/14	Water	12/04/14 120414#1	0.500	22.2
MW-5 ZN27C 14-26408	12/04/14	Water	12/04/14 120414#1	0.500	27.2
MW-3 ZN27D 14-26409	12/04/14	Water	12/04/14 120414#1	0.010	0.017

Reported in mg/L

RL-Analytical reporting limit
U-Undetected at reported detection limit

METHOD BLANK RESULTS-CONVENTIONALS
ZN27-Kennedy Jenks Consultants, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/10/14

Project: Precision Engineering
Event: 1396024.00
Date Sampled: NA
Date Received: NA

Analyte	Date/Time	Units	Blank
Hexavalent Chromium	12/04/14 15:00	mg/L	< 0.010 U

STANDARD REFERENCE RESULTS-CONVENTIONALS
ZN27-Kennedy Jenks Consultants, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/10/14

Project: Precision Engineering
Event: 1396024.00
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Date/Time	Units	SRM	True Value	Recovery
Hexavalent Chromium ERA #300614	12/04/14 15:00	mg/L	0.638	0.630	101.3%

REPLICATE RESULTS-CONVENTIONALS
ZN27-Kennedy Jenks Consultants, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/10/14

Project: Precision Engineering
Event: 1396024.00
Date Sampled: 12/04/14
Date Received: 12/04/14

Analyte	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: ZN27A Client ID: MW-11					
Hexavalent Chromium	12/04/14	mg/L	0.012	0.014	15.4%

MS/MSD RESULTS-CONVENTIONALS
ZN27-Kennedy Jenks Consultants, Inc.

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/10/14

Project: Precision Engineering
Event: 1396024.00
Date Sampled: 12/04/14
Date Received: 12/04/14

Analyte	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: ZN27A Client ID: MW-11						
Hexavalent Chromium	12/04/14	mg/L	0.012	0.012	0.063	0.0%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-11
SAMPLE

Lab Sample ID: ZN27A
LIMS ID: 14-26406
Matrix: Water
Data Release Authorized:
Reported: 12/12/14

QC Report No: ZN27-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/04/14
Date Received: 12/04/14

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	mg/L	Q
3010A	12/08/14	6010C	12/11/14	7440-38-2	Arsenic	0.05	0.05	U
3010A	12/08/14	6010C	12/11/14	**7440-47-3**	**Chromium**	0.005	**0.005**	
3010A	12/08/14	6010C	12/11/14	7439-92-1	Lead	0.02	0.02	U
3010A	12/08/14	6010C	12/11/14	7782-49-2	Selenium	0.05	0.05	U

U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: MW-12**
Page 1 of 1 **SAMPLE**

Lab Sample ID: ZN27B
LIMS ID: 14-26407
Matrix: Water
Data Release Authorized:
Reported: 12/12/14

QC Report No: ZN27-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/04/14
Date Received: 12/04/14

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	mg/L	Q
3010A	12/08/14	6010C	12/11/14	7440-38-2	Arsenic	0.05	0.05	U
3010A	12/08/14	6010C	12/11/14	**7440-47-3**	**Chromium**	0.005	**29.0**	
3010A	12/08/14	6010C	12/11/14	7439-92-1	Lead	0.02	0.02	U
3010A	12/08/14	6010C	12/11/14	7782-49-2	Selenium	0.05	0.05	U

U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-5
SAMPLE

Lab Sample ID: ZN27C
LIMS ID: 14-26408
Matrix: Water
Data Release Authorized:
Reported: 12/12/14

QC Report No: ZN27-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/04/14
Date Received: 12/04/14

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	mg/L	Q
3010A	12/08/14	6010C	12/11/14	7440-38-2	Arsenic	0.05	0.05	U
3010A	12/08/14	6010C	12/11/14	**7440-47-3**	**Chromium**	0.005	**32.0**	
3010A	12/08/14	6010C	12/11/14	7439-92-1	Lead	0.02	0.02	U
3010A	12/08/14	6010C	12/11/14	7782-49-2	Selenium	0.05	0.05	U

U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-3
SAMPLE

Lab Sample ID: ZN27D
LIMS ID: 14-26409
Matrix: Water
Data Release Authorized:
Reported: 12/12/14

QC Report No: ZN27-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: 12/04/14
Date Received: 12/04/14

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	mg/L	Q
3010A	12/08/14	6010C	12/11/14	7440-38-2	Arsenic	0.05	0.05	U
3010A	12/08/14	6010C	12/11/14	**7440-47-3**	**Chromium**	0.005	**0.005**	
3010A	12/08/14	6010C	12/11/14	7439-92-1	Lead	0.02	0.02	U
3010A	12/08/14	6010C	12/11/14	7782-49-2	Selenium	0.05	0.05	U

U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: METHOD BLANK**

Lab Sample ID: ZN27MB
LIMS ID: 14-26406
Matrix: Water
Data Release Authorized:
Reported: 12/12/14

QC Report No: ZN27-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	LOQ	mg/L	Q
3010A	12/08/14	6010C	12/11/14	7440-38-2	Arsenic	0.05	0.05	U
3010A	12/08/14	6010C	12/11/14	7440-47-3	Chromium	0.005	0.005	U
3010A	12/08/14	6010C	12/11/14	7439-92-1	Lead	0.02	0.02	U
3010A	12/08/14	6010C	12/11/14	7782-49-2	Selenium	0.05	0.05	U

U-Analyte undetected at given LOQ
LOQ-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: LAB CONTROL**

Lab Sample ID: ZN27LCS
LIMS ID: 14-26406
Matrix: Water
Data Release Authorized:
Reported: 12/12/14

QC Report No: ZN27-Kennedy Jenks Consultants, Inc.
Project: Precision Engineering
1396024.00
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Arsenic	6010C	2.03	2.00	102%	
Chromium	6010C	0.527	0.500	105%	
Lead	6010C	2.03	2.00	102%	
Selenium	6010C	2.01	2.00	100%	

Reported in mg/L

N-Control limit not met
Control Limits: 80-120%