Risk-Based Corrective Action (RBCA)
Tier 1 Assessment Report

City of Lincoln
Municipal Park Fleet Services
2040 South 21st Street
Lincoln, Nebraska

LST#: 041213-DB-1531
NDEQ ID#: 73117

Prepared by
Olsson Associates

June 2014

OLSSON Project No. 014-1203

OLSSON ASSOCIATES

EXECUTIVE SUMMARY

Olsson Associates (Olsson) has conducted a Risk-Based Corrective Action (RBCA) Tier 1 Assessment at the former City of Lincoln Municipal Park Fleet Services facility located at 2040 South 21st Street, Lincoln, Nebraska. This investigation was conducted in accordance with the Nebraska Department of Environmental Quality's (NDEQ) Risk-Based Corrective Action (RBCA) at Petroleum Release Sites: Guidance Document for Tier 1 / Tier 2 Assessments and Reports dated May 2009 and the work plan approved by the NDEQ via email to City of Lincoln dated May 14, 2014.

Drilling Activities

Three borings were completed on May 20, 2014 and converted to temporary monitor wells (TMW). On May 28th a fourth TMW was installed as the static water level had risen above the top of the screen in TMW-2. The monitoring wells were installed to depths ranging from approximately 20 to 24 feet below ground level (bgl). The average depth to groundwater at the site based on all TMW measurements is 14.6 feet.

Soil Sampling

Soil samples were collected continuously from source area borings TMW-1 and TMW-2. and one sample every five feet from TMW-3. Two soil samples from each source area boring and those with the highest field headspace readings were sent to Platte Valley Laboratories, Inc. (PVL) in Gibbon, Nebraska for laboratory analysis using Method OA-1 (BTEX, MTBE, naphthalene and n-hexane) and Method OA-2 (total extractable hydrocarbons as gasoline, diesel and waste oil). Soil analytical results are summarized on Tier 1 Report Form 10 and the complete laboratory report is located as Attachment 4 to this report. Petroleum compounds were detected in samples collected from both source area borings.

Ground Water Sampling

Ground water sampling was conducted on May 27, 2014 in accordance with the RBCA guidance. QA/QC samples collected include one duplicate (taken from TMW-1 and labeled DUP), a trip blank, and a field blank. These samples were shipped to PVL for analysis using Methods OA-1 and OA-2. The analytical results are summarized on Tier 1 Report Form 11 and 11a, and the complete laboratory reports are located as Attachment 4 to this report. Petroleum constituents were detected in the samples from both source area wells.

Nebraska Department of Environmental Quality

RBCA Tier 1 Site Investigation Report Forms for Petroleum Release Sites

(For Use by Consultants)

FACILITY NAME:	***City of Lincoln Municipal Park Fleet Services***
LOCATION:	***2040 S 21st Street***
NDEQ SPILL NO.:	***041213-DB-1531***
NDEQ IIS NO.:	***73117***
CONSULTANT PROJECT NO.:	***014-1203***
CONSULTANT:	***Olsson Associates***
COMPLETION DATE:	***June 17, 2014***
PREPARED BY:	***Bill Imig***
REVIEWED BY:	***Jeff McPeak***

NDEQ RBCA TIER 1 REPORT FORMS

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		2b. Consultant and Licensing	☑
3.	Release:	3a. Characterization and History	☑
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4.	Land Use		☑
5.	Water Use:	5a. Ground Water and Surface Water Use	☑
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7.	Instructions for Investigation Narrative		☑
8.	Site Stratigraphy and Hydrogeology		☑
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12.	Free Product		☑
13.	References and Protocols		☑
	ATTACHMENTS		
	***All maps submitted must include a bar scale, legend, north arrow, location of all known soil borings and monitoring wells, and date** of map, **where** appropriate.*		
1.	Topographic Map		☑
2.	Area Map		☑
3.	Site Map		☑
4.	Free Product Map		☐
5.	Boring Logs		☑
6.	Monitoring Well		☑
7.	Laboratory Analysis		☑
8.	Geologic Cross		☐
9.	Well Survey		☐

OTHER ATTACHMENTS:

_____

_____

_____

NDEQ RBCA TIER 1 REPORT	Tier 1 Investigation Form - 1
FACILITY NAME: City of Lincoln Municipal Park Fleet	CONSULTANT: Olsson Associates
NDEQ SPILL NO.: 041213-DB-1531	NDEQ IIS NO.: 73117
COMPLETION DATE: 17-Jun-14	PREPARED BY: Bill Imig

EXECUTIVE SUMMARY

Facility or file name:	*City of Lincoln Municipal Park Fleet Services*					
Current facility name (if different from above):						
Facility address or site location:	*2040 S 21st Street, Lincoln, NE*					
Status of fuel storage/distribution:	☐ Active		☑ Inactive		☐ NA	
Is surface soil contamination present?	☐ Yes		☑ No			
Are subsurface soils impacted?	☑ Yes		☐ No			
Is ground water impacted?	☑ Yes		☐ No		☐ NA	
Has the source(s) of release been identified?	☑ Yes		☐ No			
Was free product detected during the Tier 1 investigation?	☐ Yes	☑ No				
If yes, was the free product plume fully delineated?	☐ Yes	☐ No	*Not applicable*			
Were vapors detected in any on-site subsurface structures?	☐ Yes	☑ No	*No On Site Stuctures*			
Has surface water been impacted by the release?	☐ Yes	☑ No				
Were emergency actions initiated?	☐ Yes	☑ No				
Average depth of contamination in subsurface soils:	*7.8* ft		237.744 cm			
Shallowest depth to ground water:	*14.86* ft		☐ Not measured			
Average depth to ground water:	*14.6* ft		☐ Not measured			
Distance to nearest drinking water supply well:	*> 2000* ft	☐ municipal	☑ domestic			
Distance to nearest non-potable water supply well:	*900* ft	type:	*Irrigation*			
Distance to nearest downgradient water supply well:	*> 2000* ft	☐ municipal	☐ domestic			
Is there evidence of vertical migration of the contaminant plume?	☐ Yes	☐ No	☑ NA			

Statement of Completion & Responsible Party/Consultant Signature Block

The consultant representative acknowledges that this report meets the minimum requirements for a Tier 1 investigation at this petroleum release site, as specified in the Department's Risk-Based Corrective Action (RBCA) at Petroleum Release Sites: Tier 1/Tier 2 Assessments and Reports Guidance Document. Any procedures that differ from the guidance document specifications are noted in the report, were approved by the Department and are accompanied by appropriate documentation. The responsible party acknowledges that they have read (or discussed with their consultant), this site investigation report and are aware of their responsibility for the timely submission to the Department.

Consultant Representative Signature	Date	Responsible Party Signature	Date
	6-17-2014		6-18-14

ADDITIONAL NOTES

Water Level measurements based on TMW-1, 2 and 3. TMW-2A used only for free product assessment

Recommended attachments: None.

NDEQ RBCA TIER 1 REPORT	Tier 1 Investigation Form - 2a
FACILITY NAME: City of Lincoln Municipal Park Fl	**CONSULTANT: Olsson Associates**
NDEQ SPILL NO.: 041213-DB-1531	**NDEQ IIS NO.: 73117**
COMPLETION DATE: 17-Jun-14	**PREPARED BY: Bill Imig**

FACILITY/FILE INFORMATION

Facility or file name:	***City of Lincoln Municipal Park Fleet Services***
Facility address or site location:	***2040 South 21st Street, Lincoln, NE***
County:	***Lancaster***
Legal Location (¼, ¼, ¼, Sec, T, R):	***NE 1/4, Section 25, T 10N, R 6E, Lancaster County***
Responsible Party:	***City of Lincoln Contact: Frank Uhlarik***
Responsible Party mailing address:	***555 South 10th Street, Lincoln, NE 68508***
Responsible Party phone number:	***402-441-7588***
Property owner:	***City of Lincoln***
Property owner mailing address:	***555 South 10th Street, Lincoln, NE 68508***
Property owner phone number:	***Same as above***
Other contacts:	

ADDITIONAL NOTES

Recommended attachments: Topographic map

NDEQ RBCA TIER 1 REPORT	Tier 1 Investigation Form - 2b
FACILITY NAME: City of Lincoln Municipal Park Fl	CONSULTANT: Olsson Associates
NDEQ SPILL NO.: 041213-DB-1531	NDEQ IIS NO.: 73117
COMPLETION DATE: 17-Jun-14	PREPARED BY: Bill Imig

CONSULTANT AND LICENSING INFORMATION

Consulting Firm:	*Olsson Associates*
Consulting Firm mailing address:	*P.O. Box 84608*
	Lincoln, NE 68508
Consulting Firm Project Manager:	*Bill Imig*
Consultant phone numbers:	*402-458-5903*

Nebraska Department of Health & Human Services Water Well Licenses

List all personnel and subcontractors involved in installing or sampling wells during this investigation.

License No.	*License Type*	*Personnel/Subcontractor Name*
79219	*Water Well Technician*	*Bill Imig*
19256	*Well Driller Supervisor*	*Mike Sorgefrei*
79445	*Water Well Technician*	*Ryan Doty*

ADDITIONAL NOTES

NDEQ RBCA TIER 1 REPORT	Tier 1 Investigation Form - 3a
FACILITY NAME: City of Lincoln Municipal Park Flee	CONSULTANT: Olsson Associates
NDEQ SPILL NO.: 041213-DB-1531	NDEQ IIS NO.: 73117
COMPLETION DATE: 17-Jun-14	PREPARED BY: Bill Imig

RELEASE CHARACTERIZATION

PETROLEUM RELEASE HISTORY

NDEQ Spill Number	Location/Source	Product/Quantity
041213-DB-1531	*2040 S 21st Street, UST Piping*	*Petroleum/Unkown*

SOURCE(S) OF RELEASE (Check all that apply)

- ☐ Surface Spills
- ☐ Load Out Racks (includes overfills)
- ☑ Piping
- ☐ Dispenser Islands (includes vessel overfills)
- ☐ USTs (includes UST overfills)
- ☐ ASTs (includes AST overfills)
- ☐ Transportation Vessels
- ☐ Interstate/Intrastate Pipelines
- ☐ Unknown
- ☐ Other (specify)

SUBSTANCE(S) RELEASED (Check all that apply)

- ☐ Gasoline
- ☑ Diesel/#2 Fuel Oil
- ☐ Used Oil
- ☐ AV Gas
- ☐ Jet Fuel: JP
- ☐ Kerosene
- ☐ Other Fuel Oil/Heavy Distillate (specify)

Other product (specify)

SUMMARY OF RELEASE

			(Provide explanatory notes below)
Has the source(s) of release been identified?	☑ YES	☐ NO	*Tightness test indicated piping release*
Has the release been abated?	☑ YES	☐ NO	*System has been closed per Fire Marshal requirements*
Were emergency actions initiated?	☐ YES	☑ NO	
Are surface soils impacted?	☐ YES	☑ NO	
Are subsurface soils impacted?	☐ YES	☑ NO	
Is ground water impacted?	☑ YES	☐ NO	☐ Not sampled, drilled out of contamination
Were vapors detected in any utilities?	☐ YES	☐ NO	*Not measured*
Were vapors detected in any on-site subsurface structures?	☐ YES	☑ NO	*Not Applicable No Subsurface Structures*
Is surface water impacted?	☐ YES	☑ NO	
Has a sensitive habitat/resource been impacted?	☐ YES	☑ NO	

ADDITIONAL NOTES

Recommended attachments: None.

NDEQ RBCA TIER 1 REPORT	Tier 1 Investigation Form - 3b
FACILITY NAME: City of Lincoln Municipal Park Fle	CONSULTANT: Olsson Associates
NDEQ SPILL NO.: 041213-DB-1531	NDEQ IIS NO.: 73117
COMPLETION DATE: 17-Jun-14	PREPARED BY: Bill Imig

GPS LOCATIONS

GPS Manufacturer & Model: Cell Phone App

Reference Datum: ☐ WGS 84 ☐ NAD 83 ☑ Unknown or Other:

WAAS Status: ☐ Enabled ☐ Disabled ☑ N/A or Unknown

Source Area Locations:

Take readings as near as possible to the point of highest contamination in each identified source area.

Latitude	Longitude	Accuracy	(ft)	(m)	Point Description
40.81163900	-96.68927500				Dispenser Island

General Facility Locations:

Preferred locations are the intersection of the facility driveway and closest public street and/or the facility office entrance.

Latitude	Longitude	Accuracy	(ft)	(m)	Point Description
40.81163300	-96.68904700				East Entrance

Coordinate Converters

These are provided for your convenience. Enter only readings in decimal degrees in the tables above.

Degrees	*Minutes*	*Seconds*	*Decimal Degrees*
			- - - - -
			- - - - -

Degrees	*Decimal Minutes*	*Decimal Degrees*
		- - - - -
		- - - - -

ADDITIONAL NOTES

Recommended attachments: Show GPS reading locations on Site Map.

NDEQ RBCA TIER 1 REPORT	Tier 1 Investigation Form - 3b
FACILITY NAME: City of Lincoln Municipal Park Flee	CONSULTANT: Olsson Associates
NDEQ SPILL NO.: 041213-DB-1531	NDEQ IIS NO.: 73117
COMPLETION DATE: 17-Jun-14	PREPARED BY: Bill Imig

GPS LOCATIONS

GPS Manufacturer & Model: Cell phone app

Reference Datum: ☐ WGS 84 ☐ NAD 83 ☑ Unknown or Other:

WAAS Status: ☐ Enabled ☐ Disabled ☑ N/A or Unknown

Monitoring Well Locations (Optional):

The use of GPS units with sub-meter accuracy is recommended for determining monitoring well locations.

Latitude	Longitude	Accuracy (ft) (m)	Point Description
40.81163900	-96.68927500		MW-1
40.81181900	-96.68920000		MW-2
40.81187100	-96.68934000		MW-3

Coordinate Converters

These are provided for your convenience. Enter only readings in decimal degrees in the tables above.

Degrees	*Minutes*	*Seconds*	*Decimal Degrees*
			- - - - -
			- - - - -

Degrees	*Decimal Minutes*	*Decimal Degrees*
		- - - - -
		- - - - -

ADDITIONAL NOTES

NDEQ RBCA TIER 1 REPORT	Tier 1 Investigation Form - 4
FACILITY NAME: City of Lincoln Municipal Park Fie	CONSULTANT: Olsson Associates
NDEQ SPILL NO.: 041213-DB-1531	NDEQ IIS NO.: 73117
COMPLETION DATE: 17-Jun-14	PREPARED BY: Bill Imig

LAND USE

☐ Currently operating as a service station or petroleum bulk facility. If not, site currently used as: **vacant**

☐ Tanks temporarily out of service ☑ Tanks permanently out of service

Current On-site Land Use	
Residential	☐
Commercial	☑

Future On-site Land Use	
Residential	☑
Commercial	☑

Comments: *Justify the choice for future land use.*

Site is scheduled to be redeveloped into commercial and residential use. According to building plans, all structures will be slab-on grade.

Off-site Land Use (within 500 feet - at a minimum, state whether residential, agricultural, commercial, or sensitive population center)

North: ***Commercial***

Northeast: *Unimproved* ***(Antelope Creek and bike path)***

Northwest: ***Commercial***

South: ***Park*** *(Lewis Field,* ***municipal park)***

Southeast: ***Commercial*** *(City of Lincoln* ***Parks*** *Department office)*

Southwest: ***Commercial***

West: ***Commercial***

East: ***Unimproved*** *(Antelope* ***Creek*** *and bike path)*

ADDITIONAL POINT OF EXPOSURE SURVEY

	Distance (feet)	Direction
Nearest residential site (≤500 ft):	*None*	
Nearest commercial site (≤500 ft):	*126*	*SE*
Nearest habitable building (≤500 ft):	*126*	*SE*
Nearest ecologically sensitive area, e.g., wetland (≤1000 ft):	*160*	*E*
Nearest school, hospital, day care, retirement home, etc. (≤500 ft):	*None*	

ADDITIONAL NOTES

Recommended attachments: Site map with detailed land use in the vicinity of the site, Area map.

NDEQ RBCA TIER 1 REPORT		Tier 1 Investigation Form 5a
FACILITY NAME: City of Lincoln Municipal Park Fleet Servi	NDEQ SPILL NO.: 041213-DB-1531	NDEQ IIS NO.: 73117
CONSULTANT: Olsson Associates	COMPLETION DATE: 17-Jun-14	PREPARED BY: Bill Imig

GROUND WATER AND SURFACE WATER USE

Ground Water - Current Use

Well Designation	Well Type/Use	Distance (ft)	Direction
G-141525		900	North

Surface Water - Current Use

Surface Water Type	Beneficial Use	Distance (ft)	Direction
Creek	Recreation	150	East

Ground Water & Surface Water - Future Use

Are the RP, current property owner (if different than RP), adjacent landowners, and/or local municipal authorities aware of potential future ground and/or surface water use development within the next five years?

Ground Water		*Surface Water*	
☐ Yes	☑ No	☐ Yes	☑ No

If yes, provide the following information. Include contact information in Notes below and/or Form 5b.

Location	Type of New Use

NOTES: 1) Justify choice of future ground water use; also indicate if water supply well may have some influence over vertical migration of plume.
2) Justify choice for future surface water use and type of water body.

Recommended attachments: Area map with well and surface water locations.

NDEQ RBCA TIER 1 REPORT	Tier 1 Investigation Form - 7
FACILITY NAME: City of Lincoln Municipal Park F	CONSULTANT: Olsson Associates
NDEQ SPILL NO.: 041213-DB-1531	NDEQ IIS NO.: 73117
COMPLETION DATE: 17-Jun-14	PREPARED BY: Bill Imig

INSTRUCTIONS FOR INVESTIGATION NARRATIVE

Note: The reporter may use a format of their choosing for the following narrative information, with the provision that all the minimum information requirements listed below are provided under the following headings and in the order outlined. Place the narrative behind a copy of this Investigation Form in the Tier 1 Report.

I. Brief history of any abatement/remedial actions taken prior to initiating the Tier 1 investigation

II. Summary of site characteristics
- A. Site Location
- B. General site topography, geology, and hydrogeology

III. Summary of drilling activities
- A. Date/method/equipment
- B. Drilling order of boreholes
- C. Drilling complications (e.g., auger failure or refusal, site recently modified), if any
- D. Description of materials drilled through and evidence of contamination
- E. Monitoring well installation
  - depth of wells
  - screened interval
  - well development methodology, duration, estimated water removed
  - other information
  - filter pack and grout materials
  - type of well head protection
- F. Monitoring well location information
  - nature and location of permanent benchmark to which wells are referenced (designate on site map)
  - method (e.g., stadia, measuring wheel, tape) and measurements (in tabular format) used to reference wells to benchmark
- G. Other information related to drilling activities (e.g., start/stop times for drilling & well installation)

IV. Direct push technologies
- A. Date/method/equipment
- B. Order of probe locations
- C. Description of materials drilled through and evidence of contamination
- D. Other information related to direct push activities (e.g., start/stop times, media investigated)

V. Summary of sampling activities
- A. Soil sampling
  - method of sample collection
  - method/protocol used for head space analysis
  - method/protocol used for laboratory sample preparation
- B. Ground water sampling
  - purging method/protocol/criteria (includes rationale for not purging, if applicable)
  - sample collection method/protocol
  - order of well sampling (Note: sample least contaminated to most contaminated)
- C. Drinking water supply well/system sampling
  - location of sampling point (e.g., directly from well, outdoor tap, indoor tap)
  - purging method/protocol/criteria
  - sample collection method/protocol
- D. QA/QC considerations
  - steps taken to limit cross-contamination between sampling locations
  - number/type/location of duplicates/blanks
  - decontamination protocol and other measures taken to minimize cross-contamination

VI. Other information
- A. Rationale for variances from approved work plan or RBCA guidance document
- B. Contact information (i.e., names, phone numbers, affiliations) for people providing information gathered during investigation

Facility Name: City of Lincoln Municipal Park Fleet Services
NDEQ Spill No: LST# 041213-DB-1531, ID# 73117

INVESTIGATION NARRATIVE

I. Abatement/Remedial Actions Prior to Tier 1

- April 12, 2013: The City of Lincoln reported a release based on a line tightness test failure.

- September 27, 2013: The tanks and lines were taken out of service
- December 2013: The UST system was removed. Based on observations during closure no holes were observed in the tanks or piping.

Note: A prior release occurred at this site in 2000. The release resulted from the accidental delivery of diesel fuel into a tank pit observation well (spill id 12130-KM-1903, ID 73117). This release is listed as "no further action" by NDEQ.

II. Summary of Site Characteristics

A. Site Location

The release site is located east of the intersection of M Street and 21st Street in Lincoln, Nebraska along the western bank of Antelope Creek. The site was used by the City of Lincoln Municipal Parks Department for equipment storage and maintenance. Antelope Creek is located approximately 160 feet east of the site.

B. Site Topography, Geology, and Hydrogeology

This area lies within the Valley topographic region of Nebraska which is characterized by low relief along major streams and underlain by stream-deposited clays, silts sand and gravels (CSD, 1998). Surface water flow at the site is north-northwest.

This area lies within the Nebraska Glacial Drift ground water region. In this area the groundwater can be perched or semi-perched and total dissolved solids range from 200 up to 1,000 mg/. Groundwater production in these settings can be very low due to the discontinuous nature of the water bearing formations(CSD, 1998).

Ground water elevations in TMW-1, 2, and 3 indicate a northeasterly groundwater flow direction.

III. Summary of Drilling Activities

A. Date/Method/Equipment

The soil borings/monitoring well installations were completed on May 20 and 28 2014. Well installation was completed using a CME-45 drill rig with 4.25-inch inside diameter hollow stem augers. Per approval of the NDEQ temporary monitor wells were installed for this investigation.

B. Drilling Order of Boreholes

The order of drilling was TMW-3, TMW-2, TMW-1 and then TMW-2A.

C. Drilling Complications

Static water level rose significantly in all TMWs. Although this was accounted for when setting the wells, the static water levels recorded on May 27, 2014 showed the static water level at TMW-2 was above the screen. Attempts to raise the screen were not successful so a replacement well, TMW-2A, was installed adjacent to the TMW-2 for purposes of checking free phase product thickness.

D. Description of Materials Drilled Through and Contamination

Geologic materials encountered are described on the enclosed Boring Logs/Monitoring Well Schematics. Petroleum contamination was encountered at the source area well locations.

E. Monitor Well Installation

- Four temporary monitoring wells were installed as part of this investigation.
- Each well is completed with 10 feet of 0.010" slot screen (see Boring Logs/Monitor Well Schematics).
- Filter pack consists of 16 x 30 silica sand installed through the hollow stem auger.
- A seal bentonite seal was placed at the top of the filter pack to seal the screen interval from surface water incursion.

F. Monitor Well Location Information

The benchmark for which the top of casing (TOC) and ground elevations are set is the TMW-1 casing which was established as 100.00 feet. A level and rod were used to survey the elevations based on this benchmark elevation. Ground, TOC, and water level elevations (as measured on May 27, 2014) are summarized on the table below.

Well	Ground Elevation (ft)	TOC Elevation (ft)	Water Level (ft TOC)	Water Level Elevation (ft)
TMW-1	100.96	100.00	13.50	86.10
TMW-2	99.51	99.18	14.60	84.58
TMW-3	100.63	100.20	15.44	84.76

The distance to each of the wells was measured from the northeast corner of the City Municipal Parks office building using a measuring wheel. The table below summarizes distances.

Well	Distance North (ft)	Distance West (ft)
TMW-1	70	135
TMW-2	133	101
TMW-3	175	158.5

G. Other Information

All drill cuttings are stored next to the well and will be placed back into the bore hole upon abandonment.

IV. Direct Push Technologies

Not used at this site.

V. Summary of Sampling Activities

A. Soil Sampling

- Soil samples were collected from a 2-foot long split spoon sampler. The sample was divided into two portions, with one portion placed into a cooler with ice. The other portion of the sample was heated for headspace analysis.

Heated-Head-Space Procedure

- Soil is placed in an environment above 60 degrees Fahrenheit for approximately 30 minutes. The petroleum concentration within the head-space of the container is analyzed using a photoionization detector (PID). For this investigation a PhoCheck Tiger model PID equipped fitted with a 10.6 ev light source was used. The PID was calibrated using isobutylene calibration gas prior to use.

- Soil samples were analyzed at an off-site laboratory in accordance with the procedures for OA-1 and OA-2. The laboratory follows sample preparation and analytical methods consistent with EPA protocols. All sampling jars are supplied by the laboratory.

B. Ground Water Sampling

- Groundwater samples were obtained from temporary monitor wells TMW-1, 2 and 3. Temporary monitor well TMW-2A was used only for free product assessment.
- TMW-3 was purged of 3 well volumes and then sampled using a new, disposable, plastic, bottom-loading bailer. TMW-2 and 1 were purged of approximately one gallon each. At this point the wells were not recharging quickly enough to prevent them from going dry therefore purging was discontinued and the wells were sampled.
- Samples were collected from wells in the following order: TMW-3, TMW-2, and TMW-1.

C. Drinking Water Supply Wells

No drinking water supply wells were sampled as part of this Tier 1.

D. QA/QC Considerations

- All sample contacting equipment is pre-cleaned using a water/soap solution prior to transport to the site. The water level indicator is cleaned in the field between wells using a water/soap solution. The sampling equipment (bailers) are single use and a new bailer is used at each well. The laboratory provides the sample containers to assure adequate sample quantity and quality.

- One duplicate sample was collected at TMW-1 and is labeled DUP. The duplicate sample concentrations for several constituents compared to the environmental sample concentrations for the same constituents exceed the relative difference by 30% or greater for ethylbenzene, n-hexane, TPH-diesel

and TPH-gasoline. Because action levels are much higher than the concentrations detected in either of the samples the use of the data is still valid.

- One field blank (FB) to assess ambient concentrations of COCs was prepared at the site. There were no concentrations of COCs above laboratory detection levels.
- One trip blank (TB) was prepared prior to the sampling event and submitted with the cooler. There were no concentrations of COCs above laboratory detection levels.

VI. Other Information

A. Variation from the Work Plan

No variations.

B. Contact Information

Information provided in regards to future land use at the site was provided by Frank Uhlarik with the City of Lincoln.

NDEQ RBCA TIER 1 REPORT	Tier 1 Investigation Form - 8
FACILITY NAME: City of Lincoln Municipal Park Fl	CONSULTANT: Olsson Associates
NDEQ SPILL NO.: 041213-DB-1531	NDEQ IIS NO.: 73117
COMPLETION DATE: 17-Jun-14	PREPARED BY: Bill Imig

SITE STRATIGRAPHY AND HYDROGEOLOGY

STRATIGRAPHY OF THE SITE

Depth [feet]	Unified Soil Classification	Type of Soil
0-15	*CL*	*Silty Clay*
15-17	*SC*	*Clayey Sand*
17-18	*SP*	*Course Sand*
18-21	*CL*	*Silty Clay*
21-22	*SP*	*Course Sand*
22-24	*CL*	*Silty Clay*

Predominant soil type: *Silty clay*

Depth [feet]	Type of Bedrock & Geological Formation (where applicable) (discuss rock properties and features, e.g., fractures)

HYDROGEOLOGY OF THE SATURATED IMPACTED ZONE

Range of ground water fluctuation, (if known):	*Unknown*	ft	Source:	
Average depth to water table/static water level:	*14.6*	ft		
Flow direction:	*NE*			
Hydraulic gradient (i):	*0.020*	ft/ft	MWs used:	TMW-1, TMW-2
Hydraulic conductivity (K):	*2.7*	ft/day	for:	Silty Clay
Porosity (n) [0.30 for sands, 0.35 for silts/clays]	*0.35*			
Seepage velocity (K x i/n) [calculated]:	0.15	ft/day	1716.5	cm/year

ADDITIONAL NOTES

The stratigraphy described above is based on the boring log for TMW-1. The stratigraphy si variable due to the alluvial environment.

Recommended attachments: Relevant cross-sections and soil boring logs.

NDEQ RBCA TIER 1 REPORT			Tier 1 Investigation Form - 10
FACILITY NAME: City of Lincoln Municipal Park Fleet Services		NDEQ SPILL NO.: 041213-DB-1531	NDEQ IIS NO.: 73117
CONSULTANT: Olsson Associates		COMPLETION DATE: 17-Jun-14	PREPARED BY: Bill Imig

ANALYTICAL DATA SUMMARY FOR SUBSURFACE SOIL (Soil sample depth greater than 3 ft bgl; All concentrations in mg/kg.)

MW / SB No.	TMW-1			TMW-2									Arithmetic Average	Maximum	Ratio (Max. / Avg) *
Sampling Date	5/2/14			5/20/14											
Sample Depth (ft)	9-11	13-15		9-11	11-13										
VOLATILE ORGANIC CHEMICALS ANALYSES															
Benzene	0.002	0.004		nd	0.015								0.007	0.015	2.14
Toluene	nd	nd		nd	0.01								0.01	0.01	1.00
Ethylbenzene	nd	0.031		0.003	0.275								0.103	0.275	2.67
Xylenes (total)	0.004	0.05		0.031	0.973								0.2645	0.973	3.68
n-Hexane	nd	0.03		nd	0.008								0.019	0.03	1.58
Methyl-tert-butyl-ether (MTBE)	nd	nd		nd	nd										
TOTAL EXTRACTABLE HYDROCARBONS ANALYSES															
TEH (as diesel)	nd	54		1051	1893								999.3333333	1893	1.89
TEH (as waste oil)	nd	nd		nd	61								61	61	1.00
TEH (as kerosene)															
TEH as gasoline	nd	nd		nd	nd										
TEH as															
TEH as															
OTHER ANALYTES															
Naphthalene	0.007	0.034		0.034	0.349								0.106	0.349	3.29

NOTE:

Provide any laboratory analytical data sheets not previously submitted to the Department. Add additional sheets as needed.
Non-detects can be expressed as ND, BDL, etc.

* : If the ratio is high (for example >10) there may be a "hot spot" and additional investigation/evaluation may be warranted. In such circumstances, contact the Department.

Recommended Attachments: Site map showing location(s) of subsurface soil sample(s), chemical concentration maps, laboratory analysis report(s), chain of custody, and boring logs.

NDEQ RBCA TIER 1 REPORT			Tier 1 Investigation Form - 11a
FACILITY NAME: City of Lincoln Municipal Park Fleet Services	NDEQ SPILL NO.: 041213-DB-1531		NDEQ IIS NO.: 73117
CONSULTANT: Olsson Associates	COMPLETION DATE: 17-Jun-14		PREPARED BY: Bill Imig

ANALYTICAL DATA SUMMARY FOR GROUND WATER (All concentrations in mg/L)

☐ NOT APPLICABLE FOR THIS SITE

Monitoring Well Number	TMW-1	TMW-2	TMW-3					Arithmetic Average	Maximum	Ratio (Max. / Avg) *
Installation Date	5/2/14	5/2/14	5/20/14							
Screen Interval (feet below datum)	24.4-14.4	20.5-10.5	21-11							
Water Level (feet below datum)	13.90	12.47	15.44							
Last Sampling Event	5-27-14	5-27-14	5-27-14							
VOLATILE ORGANIC CHEMICALS ANALYSES										
Benzene	2.048	0.675	nd					1.3615	2.048	1.50
Toluene	3.013	0.012	nd					1.5125	3.013	1.99
Ethylbenzene	3.338	0.062	nd					1.7	3.338	1.96
Xylenes (total)	12.789	0.2	nd					6.4945	12.789	1.97
n-Hexane	0.27	nd	nd					0.27	0.27	1.00
Methyl-tert-butyl-ether (MTBE)	nd	nd	nd							
TOTAL EXTRACTABLE HYDROCARBON ANALYSIS										
TEH (as diesel)	1.7	63.2	nd					32.45	63.2	1.95
TEH (as waste oil)	1.2	2.5	nd					1.85	2.5	1.35
TEH (as kerosene)										
TEH as gasoline	28.8	nd	nd					28.8	28.8	1.00
TEH as										
TEH as										
OTHER ANALYTES										
naphthalene	0.648	0.024	nd					0.336	0.648	1.93

NOTE: Provide any laboratory analytical data sheets not previously submitted to the Department. Add additional sheets as needed.

* : If the ratio is high (for example >10) there may be a "hot spot" and additional investigation/evaluation may be warranted. In such circumstances, contact the Department.

Recommended Attachment: Site map showing location(s) of monitoring well(s), chemical concentration maps, laboratory analysis report(s), chain of custody, boring logs, and monitoring well schematics.

NDEQ RBCA TIER 1 REPORT	Tier 1 Investigation Form - 11b
FACILITY NAME: City of Lincoln Municipal Park Fleet Services	CONSULTANT: Olsson Associates
NDEQ SPILL NO.: 041213-DB-1531	NDEQ IIS NO.: 73117
COMPLETION DATE: 17-Jun-14	PREPARED BY: Bill Imig

ANALYTICAL DATA SUMMARY FOR QA/QC WATER SAMPLES (All concentrations in mg/L)

☐ NOT APPLICABLE FOR THIS SITE

Type of QA/QC Water Sample	Blind Duplicates		Field Blanks		Trip Blanks	
Sample Designation	*Dup*		*FB*		*TB*	
Sample Date	*05/27/14*					
Field Blank Exposure Time (min)						
VOLATILE ORGANIC CHEMICALS ANALYSES						
Benzene	*1.889*		*nd*		*nd*	
Toluene	*2.795*		*nd*		*nd*	
Ethylbenzene	*2.459*		*nd*		*nd*	
Xylenes (total)	*12.068*		*nd*		*nd*	
n-Hexane	*0.179*		*nd*		*nd*	
Methyl-tert-butyl-ether (MTBE)	*nd*		*nd*		*nd*	
TOTAL EXTRACTABLE HYDROCARBON ANALYSIS						
TEH (as diesel)	*13.8*		*not analyzed*		*not analyzed*	
TEH (as waste oil)	*nd*		*not analyzed*		*not analyzed*	
TEH (as kerosene)	*not analyzed*		*not analyzed*		*not analyzed*	
TEH as gasoline	*74.1*		*not analyzed*		*not analyzed*	
TEH as						
TEH as						
OTHER ANALYTES						
naphthalene	*0.907*		*nd*		*nd*	

TEMPERATURE BLANKS	Cooler ID	Pre-Delivery Temp. (°C)	Laboratory Temp (°C)	Cooler ID	Pre-Delivery Temp. (°C)	Laboratory Temp (°C)
	one cooler	*4*	*4*			

NOTE: Provide any laboratory analytical data sheets not previously submitted to the Department.
Recommended Attachment: Laboratory analysis report(s) and chain of custody.

NDEQ RBCA TIER 1 REPORT	Tier 1 Investigation Form - 12
FACILITY NAME: City of Lincoln Municipal Park Flee	CONSULTANT: Olsson Associates
NDEQ SPILL NO.: 041213-DB-1531	NDEQ IIS NO.: 73117
COMPLETION DATE: 17-Jun-14	PREPARED BY: Bill Imig

FREE PRODUCT

Is free product present at the site? ☐ YES ☑ NO

(Note if NO, proceed to the next report form)

Has free product been found in any utility? ☐ YES ☐ NO

Has the free product plume been delineated? ☐ YES ☐ NO

Shallowest depth to free product:

Type of free product released:

Number of monitoring wells currently at the site:

List the monitoring wells containing free product:

Specify the well ID and maximum free product thickness:

feet Date:

VAPOR ASSESSMENT

Place vapor assessment information in Tier 1 Investigation Form - 6.

REMEDIATION

Has free product removal been initiated? ☐ YES ☐ NO

If YES, specify method of removal (bailer, pump, etc.)?

Frequency of removal (continuously, weekly, etc.):

Total number of recovery events to date:

Total amount of purge-water recovered:

Total amount of free product recovered:

Date of latest free product report submittal:

ADDITIONAL NOTES

Recommended attachments: Free product thickness maps as appropriate. Place narrative detailing free product effort in Form - 7.

NDEQ RBCA TIER 1 REPORT	Tier 1 Investigation Form - 13
FACILITY NAME: City of Lincoln Municipal Park Fleet Services	CONSULTANT: Olsson Associates
NDEQ SPILL NO.: 041213-DB-1531	NDEQ IIS NO.: 73117
COMPLETION DATE: 17-Jun-14	PREPARED BY: Bill Imig

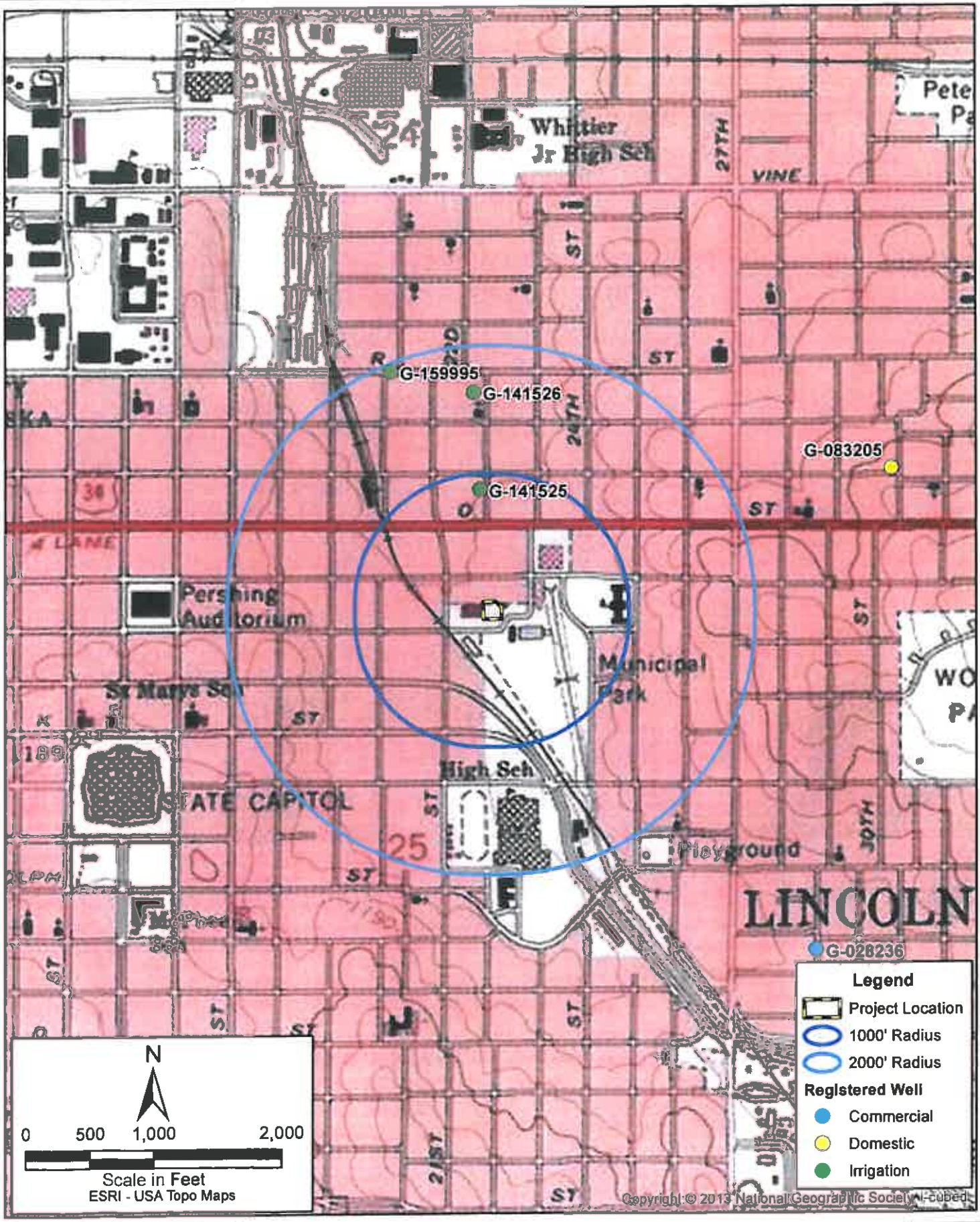
REFERENCES AND PROTOCOLS

Risk-Based Corrective Action at Petroleum Release Sites: Tier 1/Tier 2 Assessments and Reports May 2009

Nebraska State Fire Marshal, Tank Closure Checklist, Facility ID 1074, January 2014

CSD, 1998. The Groundwater Atlas of Nebraska, No. 4a/1998, Second Edition, Conservation and Survey Division, University of Nebraska.

ATTACHMENT 1
Topography/Area Map



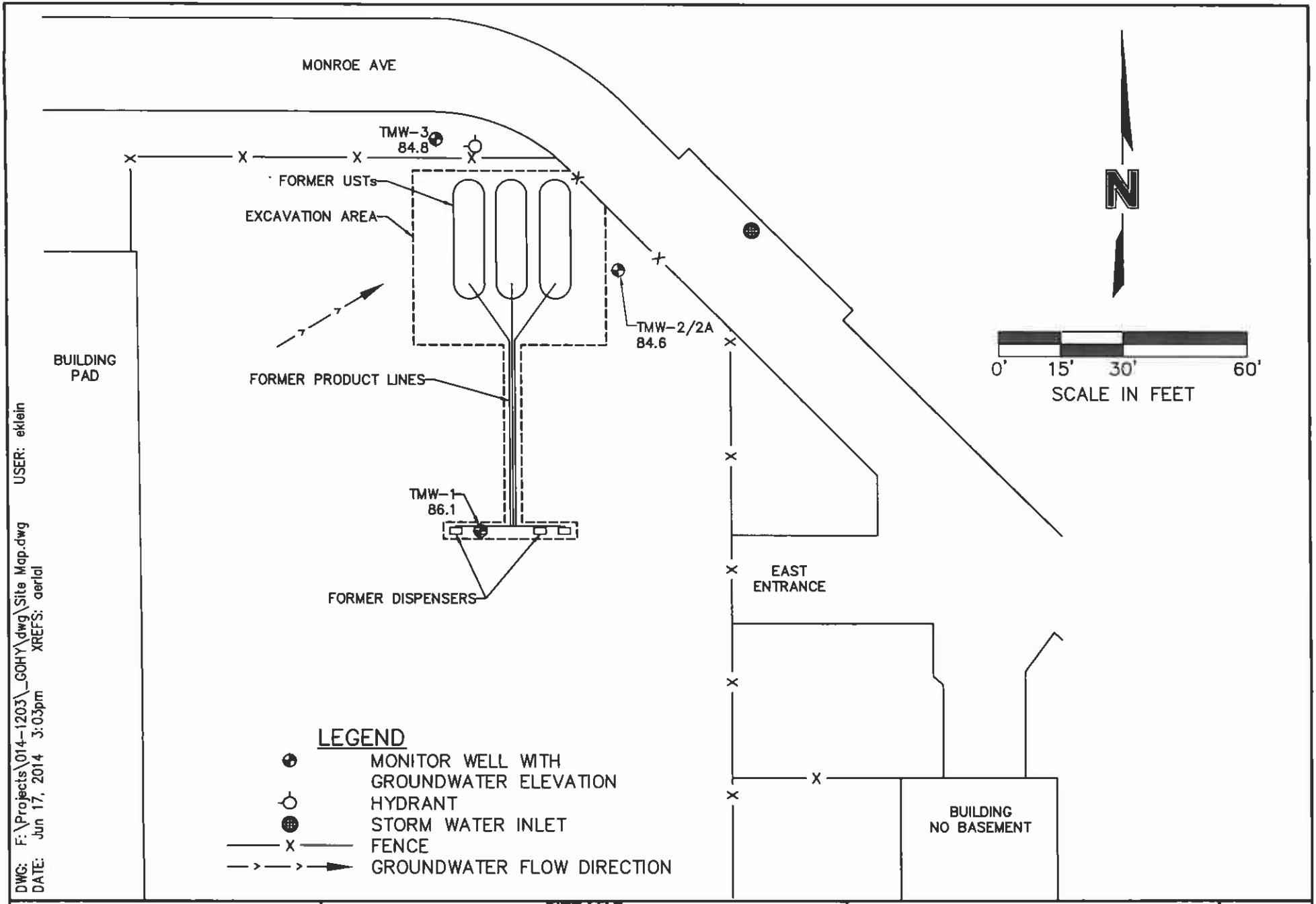
PROJECT: 014-1203	AREA MAP City of Lincoln - Municipal Park LST# 041213-DB-1531 NDEQ ID# 73117 Lincoln, Nebraska	FIGURE 1
DRAWN BY: RD		
DATE: May 28, 2014		

OLSSON ASSOCIATES

1111 Lincoln Mall Suite 111
P.O. Box 84608
Lincoln, NE 68501-4608
TEL 402.474.6311
FAX 402.474.5160
www.olssonassoc.com

Path: F:\Projects\014-1203_GOHYgis\Area Map.mxd User: rdoty

ATTACHMENT 2
Site Map



DWG: F:\Projects\014-1203_GOHY\dwg\Site Map.dwg USER: eklein
DATE: Jun 17, 2014 3:03pm XREFS: aerial

PROJECT NO: 014-1203	SITE MAP CITY OF LINCOLN - FLEET SERVICES LST# 041213-DB-1531 NDEQ ID# 73117 LINCOLN, NEBRASKA	OLSSON ASSOCIATES	FIGURE
DRAWN BY: RWD		1111 Lincoln Mall, Suite 111 P.O. Box 84608 Lincoln, NE 68501-4608 TEL 402.474.6311 FAX 402.474.5160	2
DATE: 6/9/14			

ATTACHMENT 3
Boring Logs / Monitoring Well Schematics

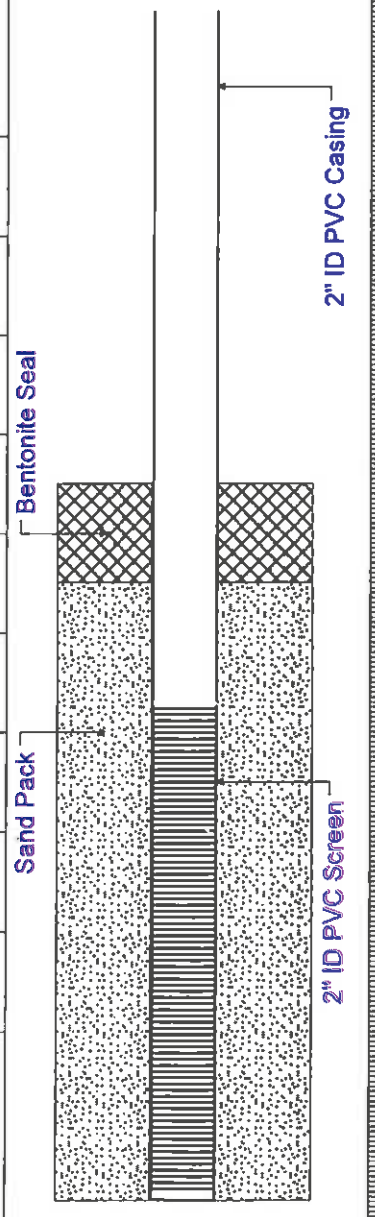
OLSSON ASSOCIATES

Well Number: TMW-1

Project No.: 014-1203
Project: Municipal Park
Client: City of Lincoln
Location: Lincoln, NE

LST# 041213-DB-1531
NDEQ ID# 73117
Project Manager: Bill Imig

Depth	Symbol	Description	Elevation (ft)	Sample Number	PID Reading	Recovery (%)
0		Ground Surface	100.00			
0		Fill - sand and gravel				
3			97.00			
3		Silty clay, black, firm, dry, slight petroleum odor.		3-5	15.1	100
5		Some gray mixed in, less odor than above		5-7	3.0	100
7			93.00			
7		Silty clay, dark gray, firm, dry, no petroleum odor		7-9	9.1	90
9		Softer and slightly moist		9-11	18.4	100
11		Slight petroleum odor		11-13	9.4	100
13		Some green streaks, slight petroleum odor		13-15	258.5	100
15			85.00			
15		Clayey sand, greenish gray, firm, dry, petroleum odor.		15-17	508.2	100
17			83.00			
17		Coarse sand, green/gray, very moist, petroleum odor		17-19	2234	100
18			81.50			
19		Silty clay, brown, soft, dry		19-21	1055	100
20			79.00			
21		Coarse sand, saturated, gray, petroleum odor	78.25			
22		Silty clay, brown, soft, moist.				
24			75.60			
25						



Ground Elevation: 100.96
TOC Elevation: 100.00
Latitude: 40.811649
Longitude: -96.689258

Drilled By: Olsson
Drill Method: Solid Auger
Sample Method: SS
Drill Date: 5/20/14

Water Level While Drilling:
Ft (bgl): 21
Elev: 79

Water Level: 5/27/14
Feet (toc): 13.90
Feet (bgl): 14.86
Elevation: 86.10

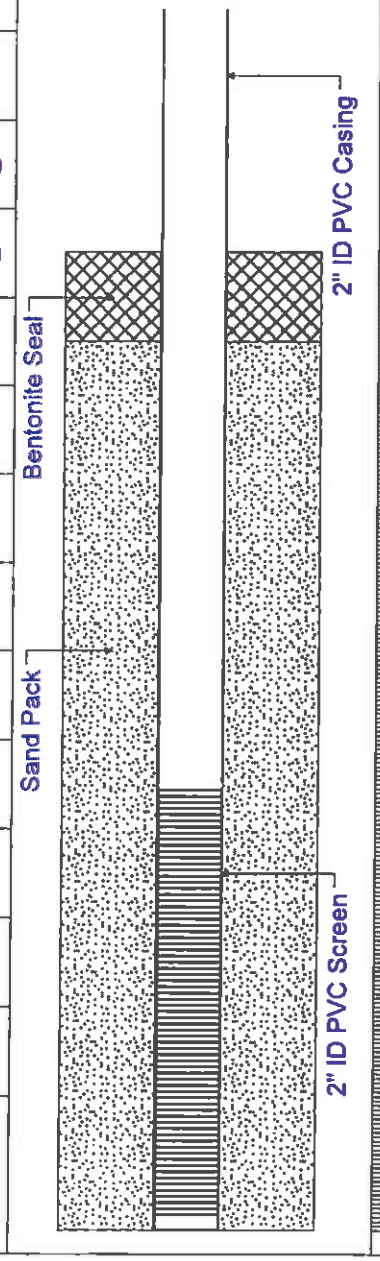
OLSSON ASSOCIATES

Well Number: TMW-2

Project No.: 014-1203
Project: Municipal Park
Client: City of Lincoln
Location: Lincoln, NE

LST# 041213-DB-1531
NDEQ ID# 73117
Project Manager: Bill Imig

Depth	Symbol	Description	Elevation (ft)	Sample Number	PID Reading	Recovery (%)
0		Ground Surface	99.51			
1		6" concrete, black silty clay, slightly moist, soft, no petroleum odor				
2				1-3	19.2	50
3			96.51			
4		Fill - silty clay, dark brown, dry, firm		3-5	0.6	100
5						
6		Soft, slightly moist at 6		5-7	0.6	100
7		Some fine sand at 7				
8				7-9	0.4	90
9			90.51			
10		Fill - sandy silty clay, brown to light brown, dry	89.01	9-11	98.0	100
11		Fill - Clayey sand, black/green/gray, wet, petroleum odor				
12				11-13	526.3	80
13			86.51			
14		Sandy clay, firm, dry, no petroleum odor		13-15	7.3	100
15						
16				15-17	3.3	100
17						
18				17-19	48.0	100
19						
20				19-21	3.0	100
21			78.51			
22		Clayey sand, brown, soft, moist		21-23	7.9	80
23						
24			74.76	23-25	8.1	80
25		Coarse sand, very moist/wet				
26			73.01			
27		Clayey fine sand				
28			71.51			



Ground Elevation: 99.51
TOC Elevation: 99.18
Latitude: 40.811809
Longitude: -96.689144

Drilled By: Olsson
Drill Method: Solid Auger
Sample Method: SS
Drill Date: 5/20/14

Water Level While Drilling:
Ft (bgl): 25
Elev: 74.51

Water Level: 5/27/14
Feet (toc): 14.60
Feet (bgl): 14.99
Elevation: 84.58

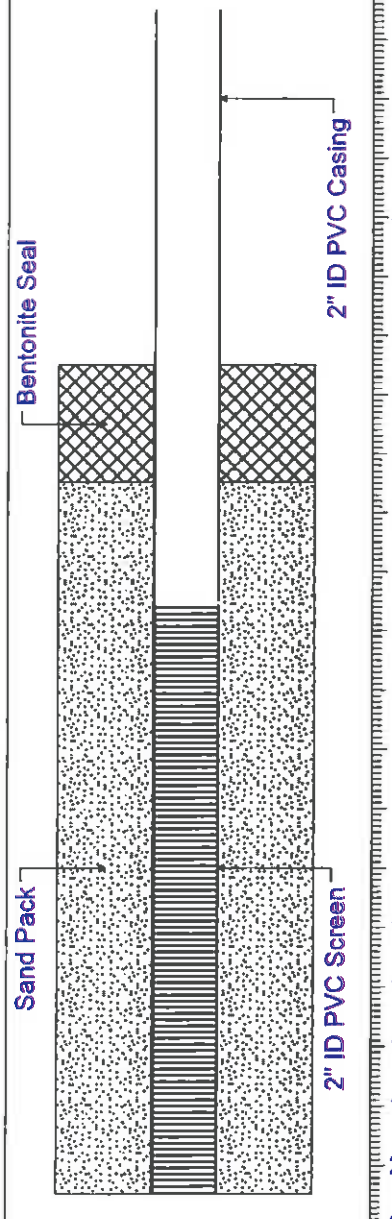
OLSSON ASSOCIATES

Well Number: TMW-2a

Project No.: 014-1203
Project: Municipal Park
Client: City of Lincoln
Location: Lincoln, NE

LST# 041213-DB-1531
NDEQ ID# 73117
Project Manager: Bill Imig

SUBSURFACE PROFILE				SAMPLE				
Depth	Symbol	Description	Elevation (ft)	Number	PID Reading	Recovery (%)	Well Completion Details	Depth
0		Ground Surface	99.46					0
		Refer to TMW-2						
1								1
2								2
3								3
4								4
5								5
6								6
7								7
8								8
9								9
10								10
11								11
12								12
13								13
14								14
15								15
16								16
17								17
18								18
19								19
20			78.96					20
21								21



Ground Elevation: 99.46
TOC Elevation: 99.26
Latitude: 40.811809
Longitude: -96.689144

Drilled By: Olsson
Drill Method: Solid Auger
Sample Method: SS
Drill Date: 5/28/14

Water Level While Drilling:
Ft (bgl): —
Elev: —

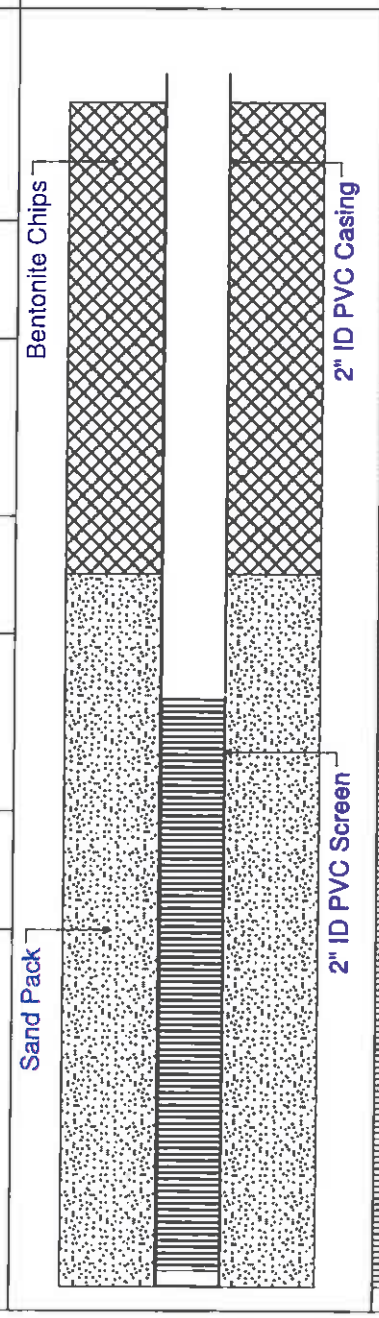
Water Level: 6/3/14
Feet (toc): 12.47
Feet (bgl): 12.67
Elevation: 86.71

OLSSON ASSOCIATES

Well Number: TMW-3

Project No.: 014-1203
Project: Municipal Park
Client: City of Lincoln
Location: Lincoln, NE
UG#
IIS#
Project Manager: Bill Imig

SUBSURFACE PROFILE				SAMPLE				
Depth	Symbol	Description	Elevation (ft)	Number	PID Reading	Recovery (%)	Well Completion Details	Depth
0		Ground Surface	100.63					0
0		Silty clay, dark brown, dry, firm						0
4				3-5	0.4	80		4
9				8-10	0.1	80		9
10			90.63					10
10		Silty clay, some fine sand, gray with iron staining, dry, firm						10
14				13-15	0.2	90		14
15			85.63					15
15		Clayey sand, tan, soft, saturated						15
21			79.63					21



Ground Elevation: 100.63
TOC Elevation: 100.20
Latitude: 40.811909
Longitude: -96.689267

Drilled By: Olsson
Drill Method: Solid Auger
Sample Method: NA
Drill Date: 5/20/14

Water Level While Drilling:
Ft (bgl): 17
Elev: 83.20

Water Level: 5/27/14
Feet (toc): 15.44
Feet (bgl): 15.87
Elevation: 84.76

ATTACHMENT 4
Laboratory Reports

Platte Valley Agricultural and Environmental Laboratories, Inc.

BATCH 14052205
page 1

OLSSON ASSOCIATES, L
PO BOX 84608
LINCOLN NE 68501-4608

ATTN: Bill Imig

PROJECT City of Lincoln Muni Park
LOCATION Lincoln, NE

DATE SAMPLED 5/20/2014
DATE RECEIVED 5/22/2014
DATE REPORTED 6/2/2014

SAMPLE ID			TMW1 9-11	TMW1 13-15	TMW2 9-11	TMW2 11-13
LAB NUMBER			58928	58929	58930	58931
SAMPLE TYPE			SOIL	SOIL	SOIL	SOIL
METHOD OA1 gc/ms						
	detection limit					
MTBE	0.005	mg/kg	*	*	*	*
n-Hexane	0.005	mg/kg	*	0.030	*	0.008
Benzene	0.002	mg/kg	0.002	0.004	*	0.015
Toluene	0.002	mg/kg	*	*	*	0.010
Ethylbenzene	0.002	mg/kg	*	0.031	0.003	0.275
Xylenes	0.002	mg/kg	0.004	0.050	0.031	0.973
Naphthalene	0.005	mg/kg	0.007	0.034	0.034	0.349
METHOD OA2 gc/fid						
TEH						
	detection limit					
Gasoline Range	10	mg/kg	*	*	*	*
Diesel Range	10	mg/kg	*	54	1051	1893
Waste Oil Range	10	mg/kg	*	*	*	61

REVIEWED BY:

*Less than detection limit

P.O Box 807 • 914 Highway 30 • Gibbon, NE 68840 • Phone: (308) 468-5975 • Fax: (308) 468-6018 • E-mail: info@soillab.com

Platte Valley Laboratories, Inc.

Agricultural and Environmental

CHAIN OF CUSTODY RECORD

LAB USE 14052205

CLIENT Olsson Associates	P.O. NUMBER 014-1203
	PROJECT City of Lincoln - Muni Park
ADDRESS 1111 Lincoln Mall Lincoln, NE 68508	LOCATION Lincoln, NE
PHONE 402-458-5903	CONTACT Bill Imig

SAMPLED BY Ryan Doty

DATE SAMPLED 5/20/14

☒ SOIL ☐ WATER ☐ OTHER _____

COOLER FIELD TEMPERATURE 4°C

COOLER LAB TEMPERATURE 4°C

COOLER IDENTIFICATION _____

LAB USE	SAMPLE IDENTIFICATION	CONTAINERS	TEST(S) REQUESTED
58928	TMW-1 (9-11)	1	OA-1, OA-2
929	TMW-1 (13-15)	1	↓ ↓
930	TMW-2 (9-11)	1	
931	TMW-2 (11-13)	1	

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
	5/21/14 1320		5-22-14 10:32 AM
			5/22/14

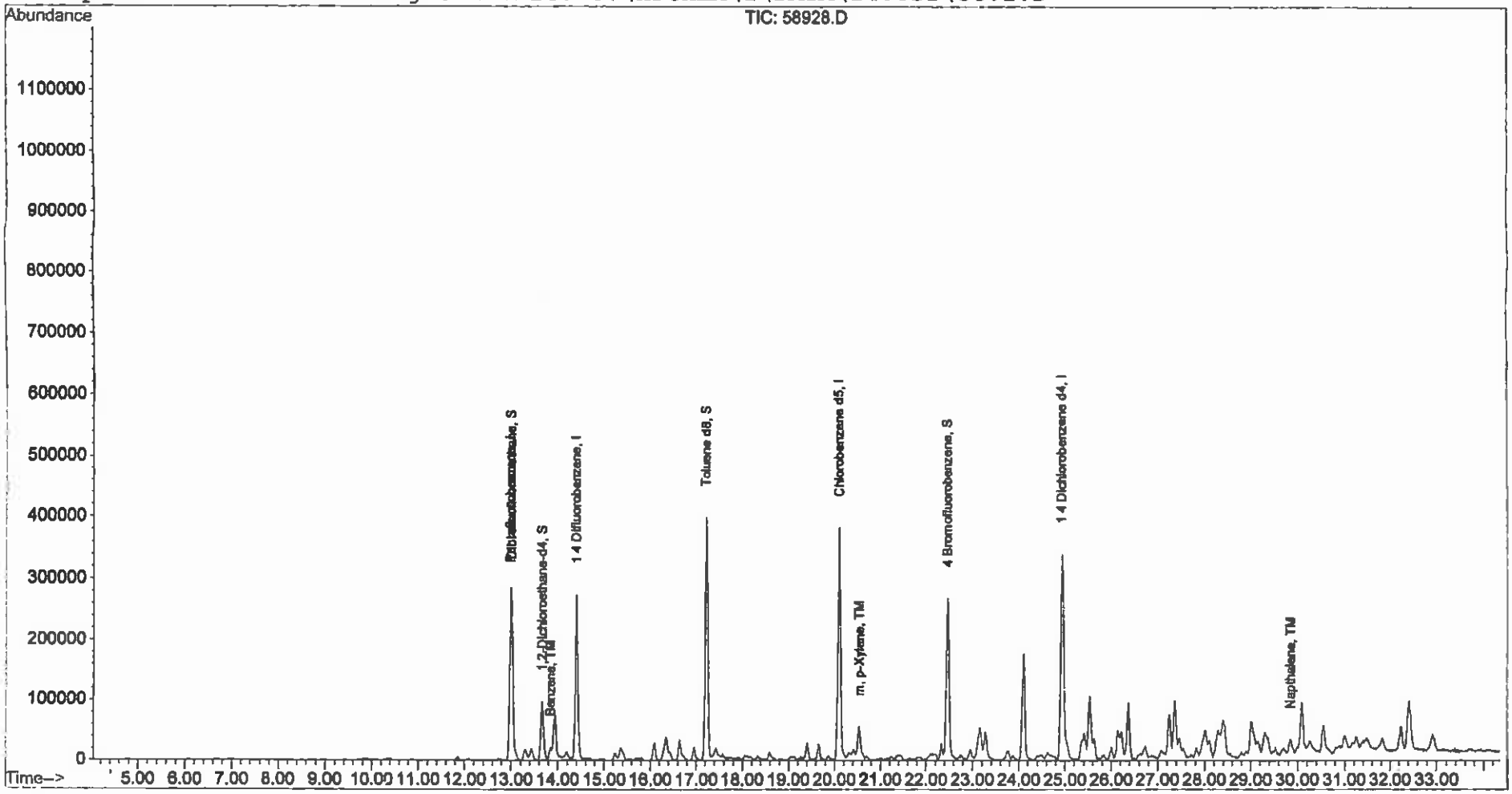
COMMENTS

P.O. Box 807 ◆ 914 Highway 30 ◆ Gibbon, NE 68840 ◆ Phone: (308) 468-5975 ◆ Fax: (308) 468-6018 ◆ E-mail: info@soillab.com

Quantitation Report

Data File : C:\HPCHEM\1\DATA\140531\58928.D Vial: 14
Acq On : 31 May 14 7:16 pm Operator:
Sample : TMW 1 9-11 Inst : GC/MS Ins
Misc : SOIL 5.0 GRAMS Multiplr: 1.00
MS Integration Params: OA1.P
Quant Time: Jun 2 11:01 19114 Quant Results File: OA1.RES

Method : C:\HPCHEM\1\METHODS\OA1.M (RTE Integrator)
Title : OA 1 VOLATILES
Last Update : Thu May 01 08:54:30 2014
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\140521\CC01.D



Quantitation Report

Data File : C:\HPCHEM\1\DATA\140531\58929.D Vial: 13
Acq On : 31 May 14 6:28 pm Operator:
Sample : TMW 1 13-15 Inst : GC/MS Ins
Misc : SOIL 5.0 GRAMS Multiplr: 1.00
MS Integration Params: OA1.P
Quant Time: May 31 19:03 19114 Quant Results File: OA1.RES

Method : C:\HPCHEM\1\METHODS\OA1.M (RTE Integrator)
Title : OA 1 VOLATILES
Last Update : Thu May 01 08:54:30 2014
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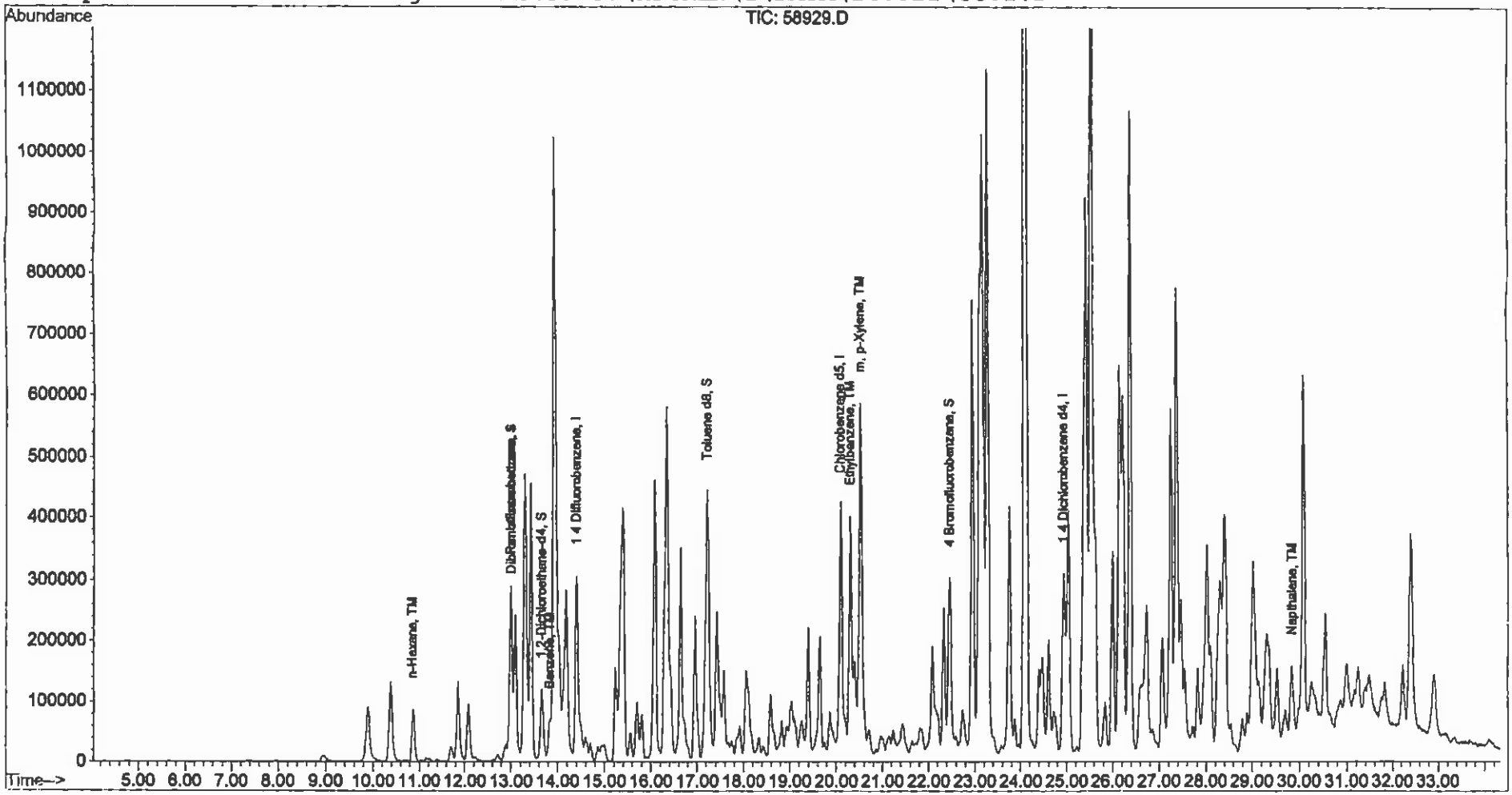
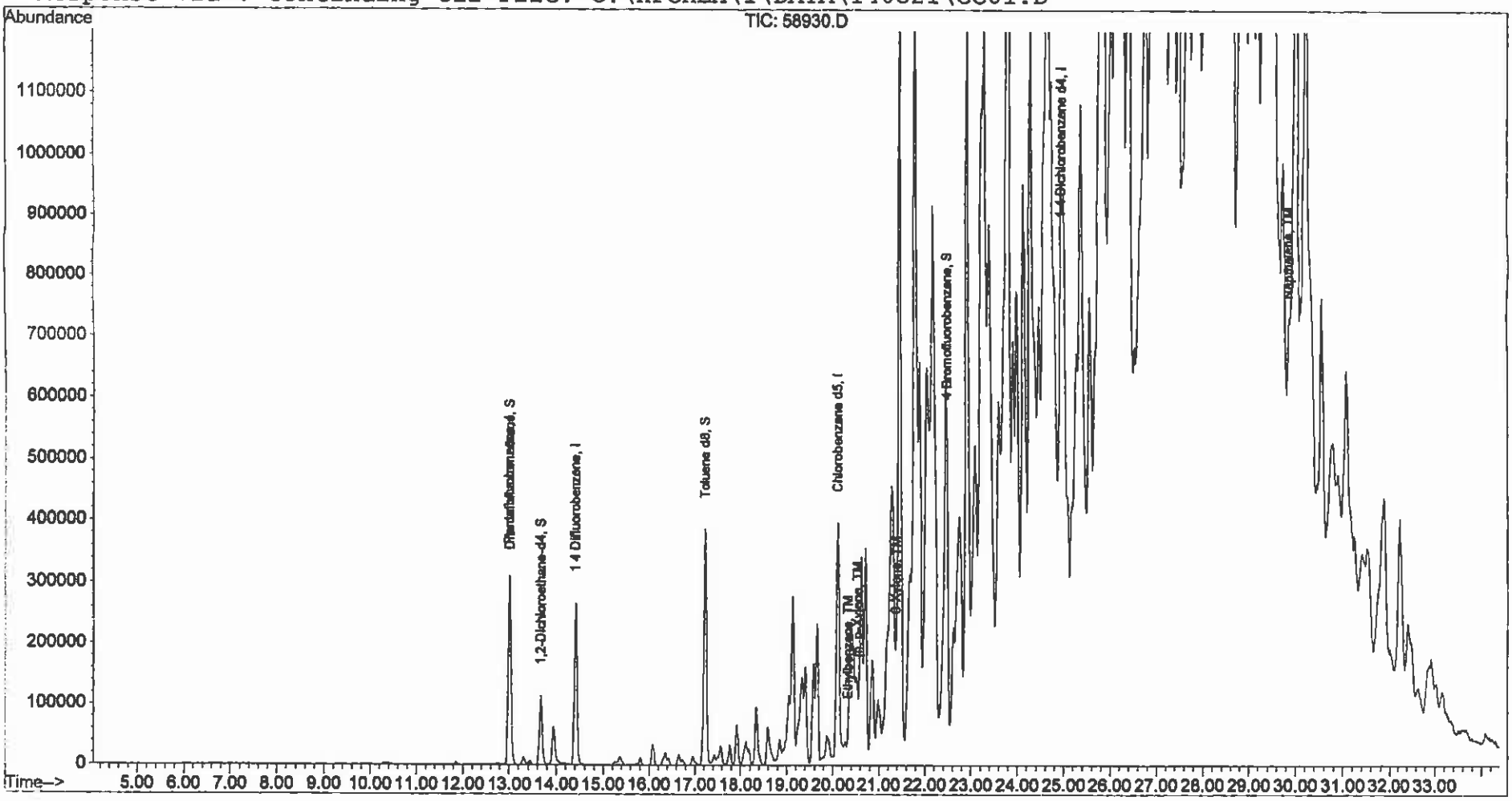


Quantitation Report

Data File : C:\HPCHEM\1\DATA\140531\58930.D Vial: 15
Acq On : 31 May 14 8:03 pm Operator:
Sample : TMW 2 9-11 Inst : GC/MS Ins
Misc : SOIL 1.0 GRAMS Multiplr: 1.00
MS Integration Params: OA1.P
Quant Time: May 31 20:37 19114 Quant Results File: OA1.RES

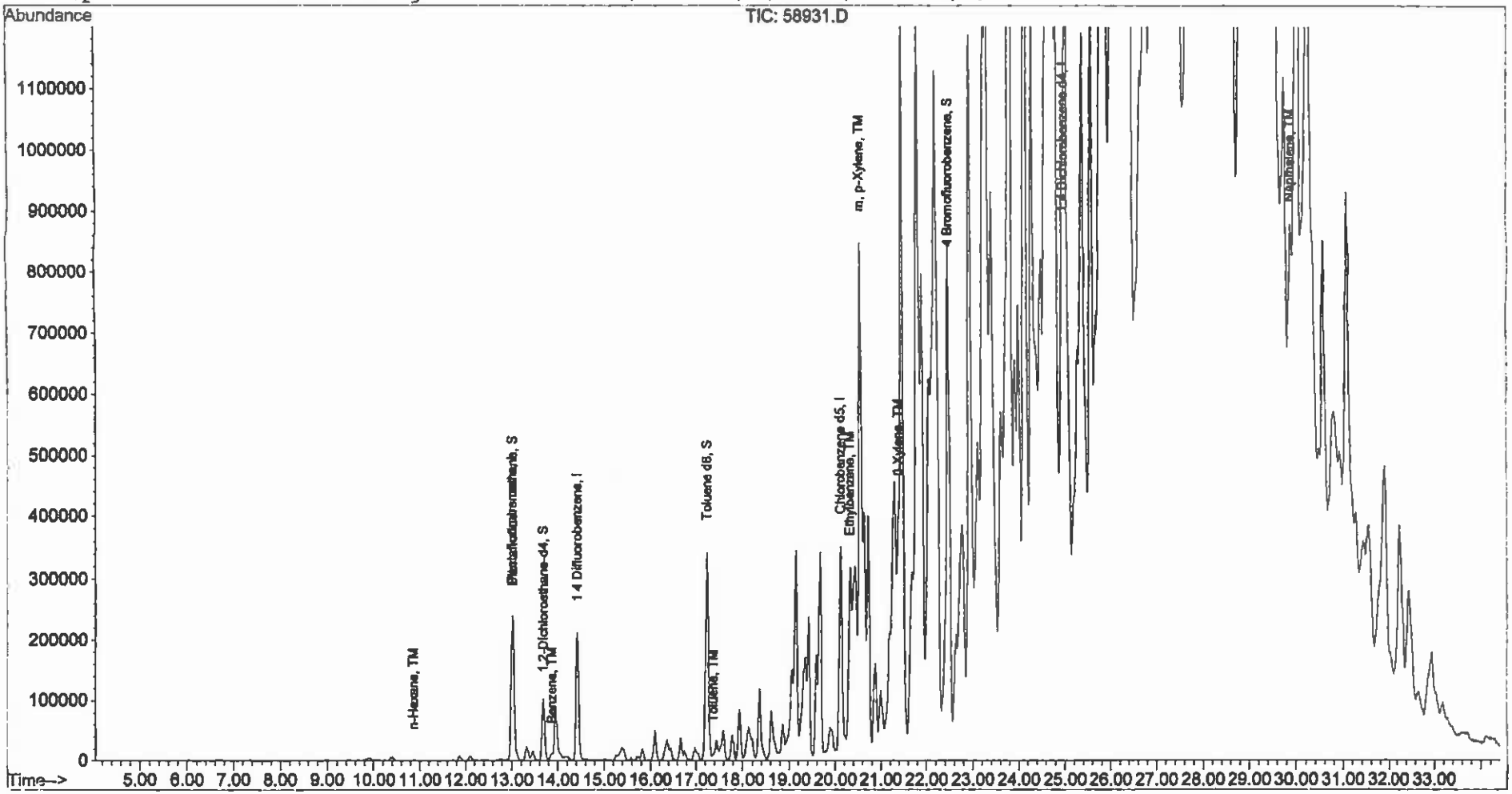
Method : C:\HPCHEM\1\METHODS\OA1.M (RTE Integrator)
Title : OA 1 VOLATILES
Last Update : Thu May 01 08:54:30 2014
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\140521\CC01.D



Quantitation Report

Data File : C:\HPCHEM\1\DATA\140531\58931.D Vial: 16
Acq On : 31 May 14 8:50 pm Operator:
Sample : TMW 2 11-13 Inst : GC/MS Ins
Misc : SOIL .50 GRAMS Multiplr: 1.00
MS Integration Params: OA1.P
Quant Time: Jun 2 11:05 19114 Quant Results File: OA1.RES

Method : C:\HPCHEM\1\METHODS\OA1.M (RTE Integrator)
Title : OA 1 VOLATILES
Last Update : Thu May 01 08:54:30 2014
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\140521\CC01.D



Title : OA2 by FID
Run File : c:\star\data\140522\58928rr.run
Method File : C:\Star\methods\oa2.mth
Sample ID : 58928RR

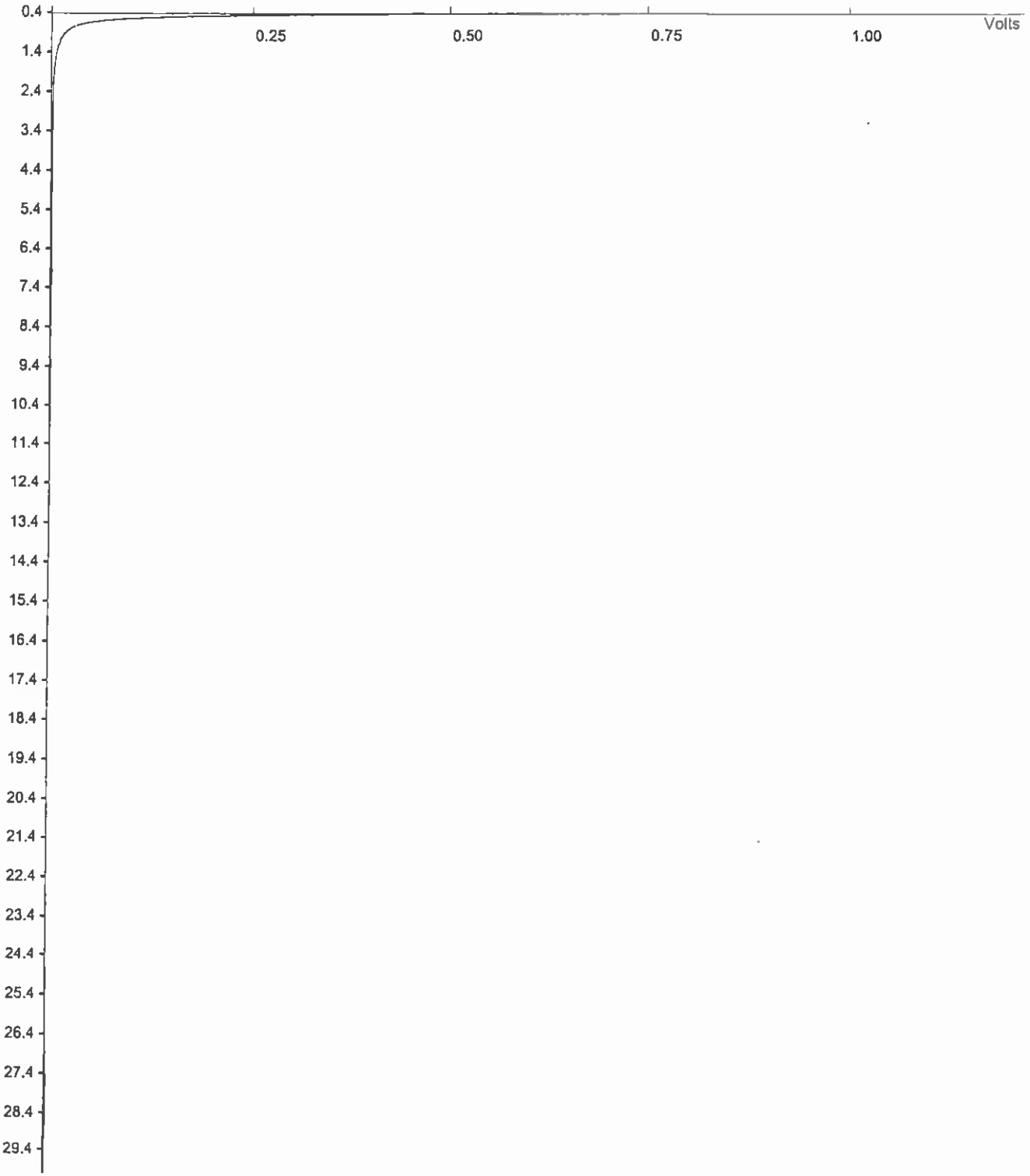
Injection Date: 6/2/14 10:42 AM Calculation Date: 6/2/14 11:22 AM

Operator :
Workstation:
Instrument : Varian Star #1
Channel : B = FID

Detector Type: ADCB (10 Volts)
Bus Address : 16
Sample Rate : 10.00 Hz
Run Time : 39.502 min

** Star Chromatography Workstation Version 5.31 ** 00696-7468-5CF-20D0 **

Chart Speed = 0.66 cm/min Attenuation = 500 Zero Offset = 0%
Start Time = 0.400 min End Time = 30.000 min Min / Tick = 1.00



Title : OA2 by FID
Run File : c:\star\data\140522\58929rr.run
Method File : C:\Star\methods\oa2.mth
Sample ID : 58929RR

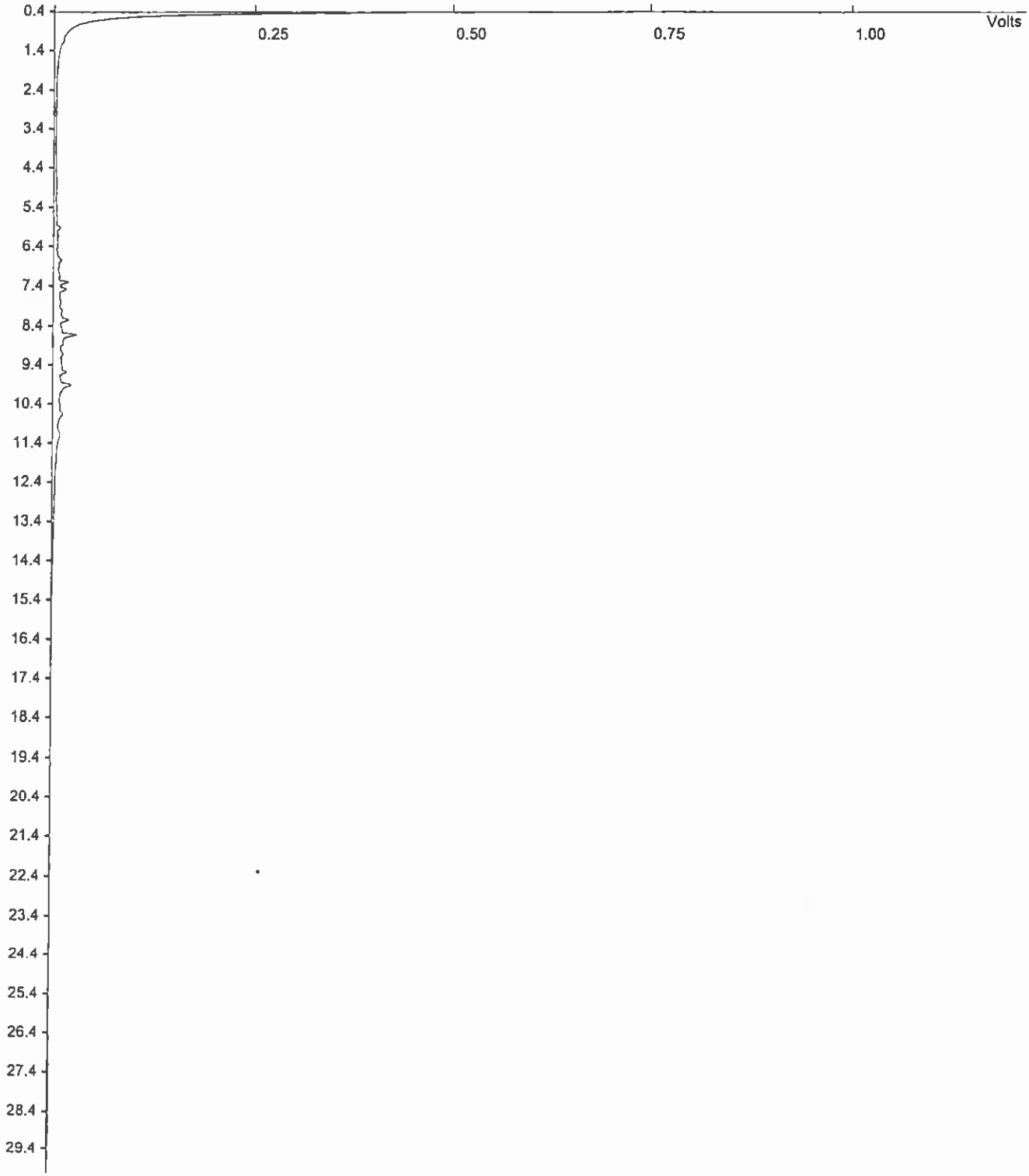
Injection Date: 6/2/14 11:34 AM Calculation Date: 6/2/14 12:13 PM

Operator :
Workstation:
Instrument : Varian Star #1
Channel : B = FID

Detector Type: ADCB (10 Volts)
Bus Address : 16
Sample Rate : 10.00 Hz
Run Time : 39.502 min

** Star Chromatography Workstation Version 5.31 ** 00696-7468-5CF-20D0 **

Chart Speed = 0.66 cm/min Attenuation = 500 Zero Offset = 0%
Start Time = 0.400 min End Time = 30.000 min Min / Tick = 1.00



Title : OA2 by FID
Run File : c:\star\data\140522\58930.run
Method File : c:\star\methods\oa2.mth
Sample ID : 58930

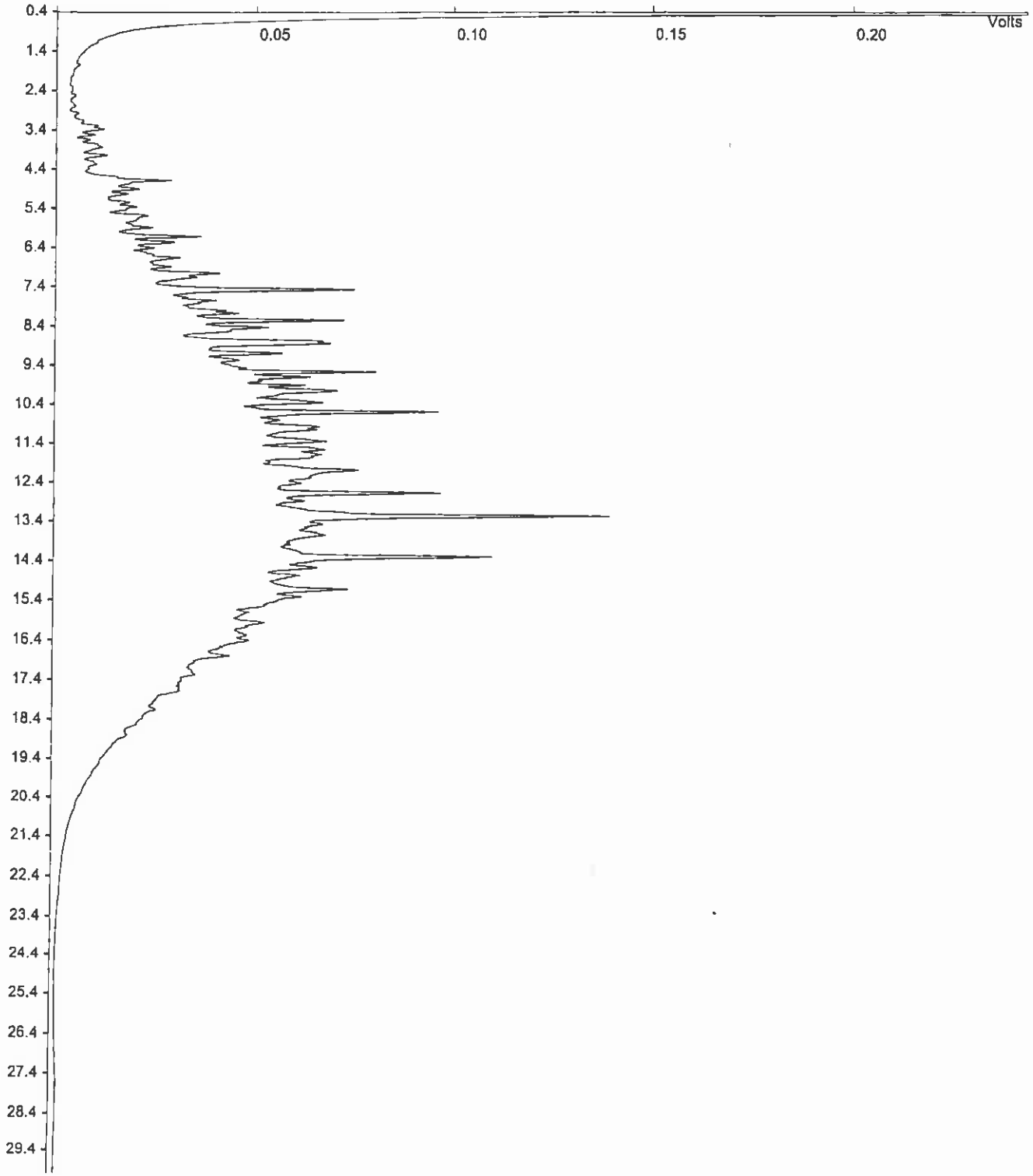
Injection Date: 5/23/14 1:42 PM Calculation Date: 5/27/14 3:44 PM

Operator :
Workstation:
Instrument : Varian Star #1
Channel : B = FID

Detector Type: ADCB (10 Volts)
Bus Address : 16
Sample Rate : 10.00 Hz
Run Time : 39.502 min

** Star Chromatography Workstation Version 5.31 ** 00696-7468-5CF-20D0 **

Chart Speed = 0.66 cm/min Attenuation = 100 Zero Offset = 0%
Start Time = 0.400 min End Time = 30.000 min Min / Tick = 1.00



Title : OA2 by FID
Run File : c:\star\data\140522\58931.run
Method File : c:\star\methods\oa2.mth
Sample ID : 58931

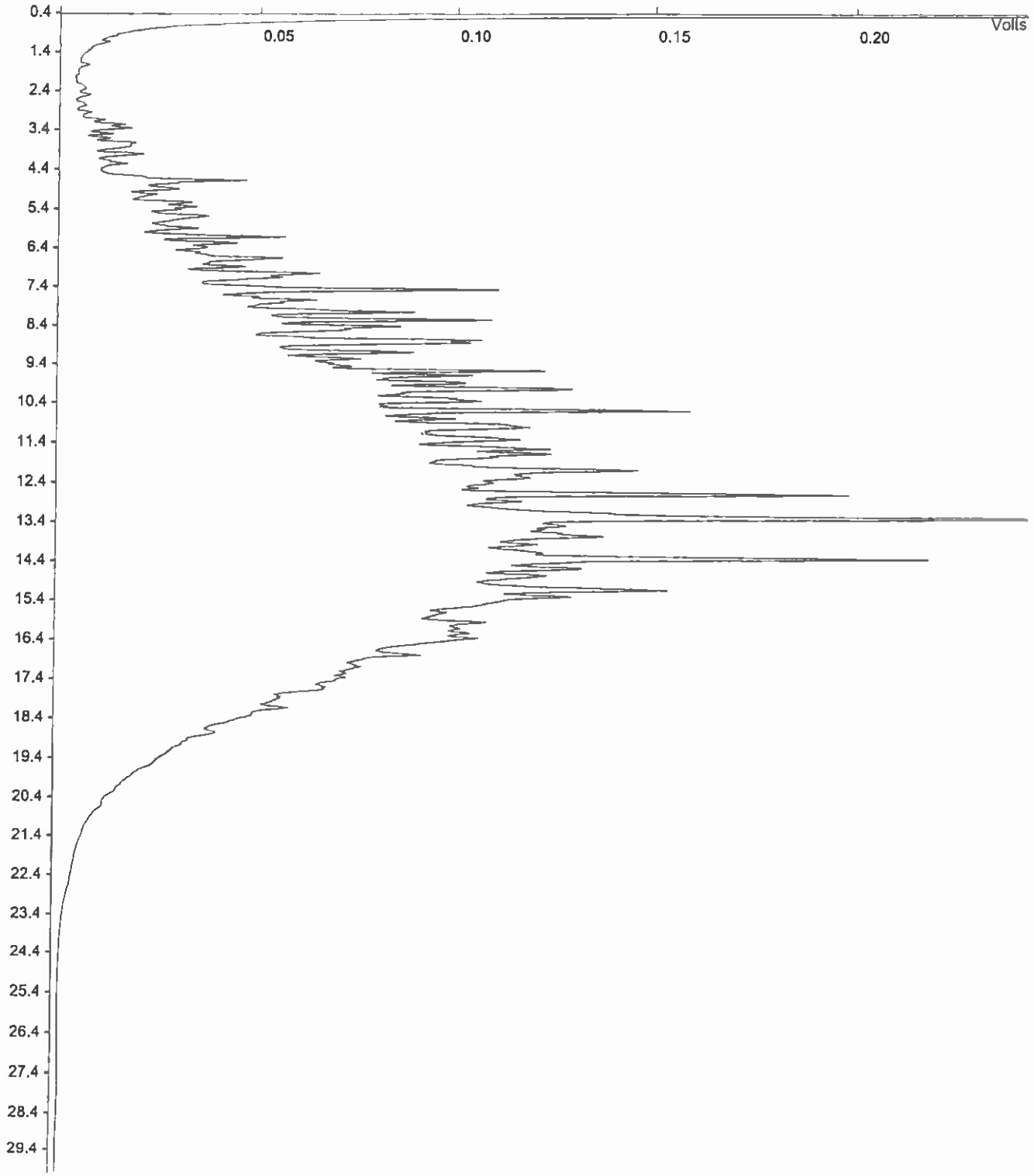
Injection Date: 5/23/14 2:33 PM Calculation Date: 5/27/14 3:44 PM

Operator :
Workstation:
Instrument : Varian Star #1
Channel : B = FID

Detector Type: ADCB (10 Volts)
Bus Address : 16
Sample Rate : 10.00 Hz
Run Time : 39.502 min

** Star Chromatography Workstation Version 5.31 ** 00696-7468-5CF-20D0 **

Chart Speed = 0.66 cm/min Attenuation = 100 Zero Offset = 0%
Start Time = 0.400 min End Time = 30.000 min Min / Tick = 1.00



Platte Valley Agricultural and Environmental Laboratories, Inc.

OLSSON ASSOCIATES, L
PO BOX 84608
LINCOLN NE 68501-4608

ATTN: Bill Imig

BATCH 14052803
page 1

PROJECT City of Lincoln Fleet Service4
LOCATION 21st & M Street

DATE SAMPLED 5/27/2014
DATE RECEIVED 5/28/2014
DATE REPORTED 6/4/2014

SAMPLE ID			TMW 1	TMW 2	TMW 3	Dup	FB	TB
LAB NUMBER			58947	58948	58949	58950	58951	58952
SAMPLE TYPE			WATER	WATER	WATER	WATER	WATER	WATER
METHOD OA1 gc/ms								
	detection limit							
MTBE	0.005	mg/l	*	*	*	*	*	*
n-Hexane	0.005	mg/l	0.270	*	*	0.179	*	*
Benzene	0.002	mg/l	2.048	0.675	*	1.889	*	*
Toluene	0.002	mg/l	3.013	0.012	*	2.795	*	*
Ethylbenzene	0.002	mg/l	3.338	0.062	*	2.459	*	*
Xylenes	0.002	mg/l	12.789	0.200	*	12.068	*	*
Naphthalene	0.005	mg/l	0.648	0.024	*	0.907	*	*
METHOD OA2 gc/fid								
TEH								
	detection limit							
Gasoline Range	1.0	mg/l	28.8	*	*	74.1	----	----
Diesel Range	1.0	mg/l	1.7	63.2	*	13.8	----	----
Waste Oil Range	1.0	mg/l	1.2	2.5	*	*	----	----

*Less than detection limit

REVIEWED BY:

P.O Box 807 • 914 Highway 30 • Gibbon, NE 68840 • Phone: (308) 468-5975 • Fax: (308) 468-6018 • E-mail: info@soillab.com

Platte Valley Laboratories, Inc.

Agricultural and Environmental

CHAIN OF CUSTODY RECORD

LAB USE

CLIENT: OA	P.O. NUMBER:
ADDRESS:	PROJECT: City of Lincoln Fleet Services
	LOCATION: 21st & M Street
PHONE: 402-458-5909	CONTACT:

SAMPLED BY: Bill Imig

DATE SAMPLED: 5-27-14

☐ SOIL ☒ WATER ☐ OTHER _____

COOLER FIELD TEMPERATURE: _____

COOLER LAB TEMPERATURE: 2°C

COOLER IDENTIFICATION: One Cooler

LAB USE	SAMPLE IDENTIFICATION	CONTAINERS	TEST(S) REQUESTED
	TMW-1	3	OA-1, OA-2
	TMW-2	3	↓
	TMW-3	3	
	DUP	3	↓
	FB	2	OA-1
	TB	2	OA-1
	Temp Blank	1	Temperature

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
Bill Imig	5-27-14 1430	[signature]	5-28-14 10:15 AM UPS
		[signature]	5/28/14

COMMENTS

P.O. Box 807 ◆ 914 Highway 30 ◆ Gibbon, NE 68840 ◆ Phone: (308) 468-5975 ◆ Fax: (308) 468-6018 ◆ E-mail: info@soillab.com

Title : OA2 by FID
Run File : c:\star\data\140528\58947.run
Method File : c:\star\methods\oa2.mth
Sample ID : 58947

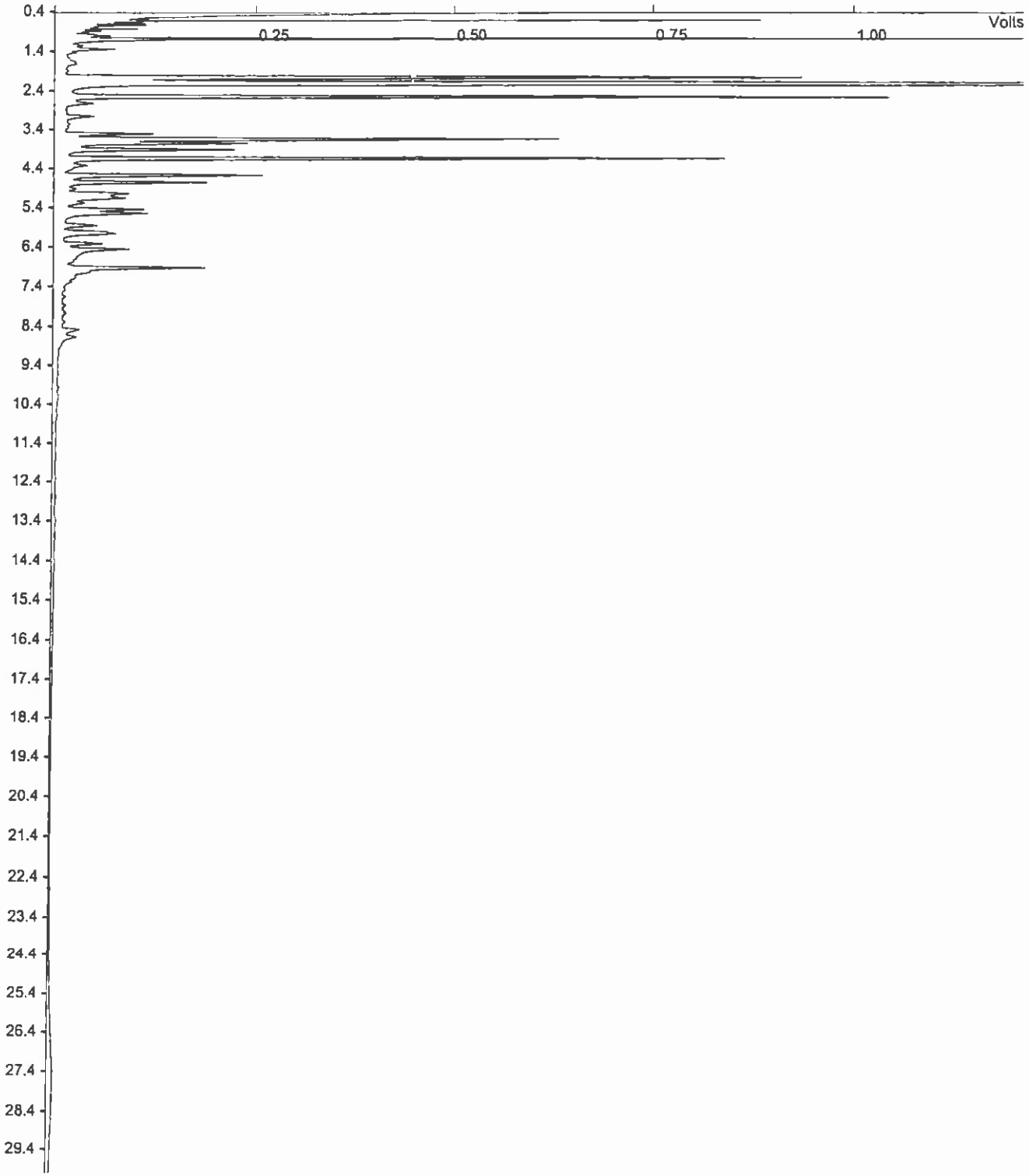
Injection Date: 5/28/14 11:43 PM Calculation Date: 5/29/14 10:55 AM

Operator :
Workstation:
Instrument : Varian Star #1
Channel : B = FID

Detector Type: ADCB (10 Volts)
Bus Address : 16
Sample Rate : 10.00 Hz
Run Time : 39.502 min

** Star Chromatography Workstation Version 5.31 ** 00696-7468-5CF-20D0 **

Chart Speed = 0.66 cm/min Attenuation = 500 Zero Offset = 0%
Start Time = 0.400 min End Time = 30.000 min Min / Tick = 1.00



Title : OA2 by FID
Run File : c:\star\data\140528\58948.run
Method File : c:\star\methods\oa2.mth
Sample ID : 58948

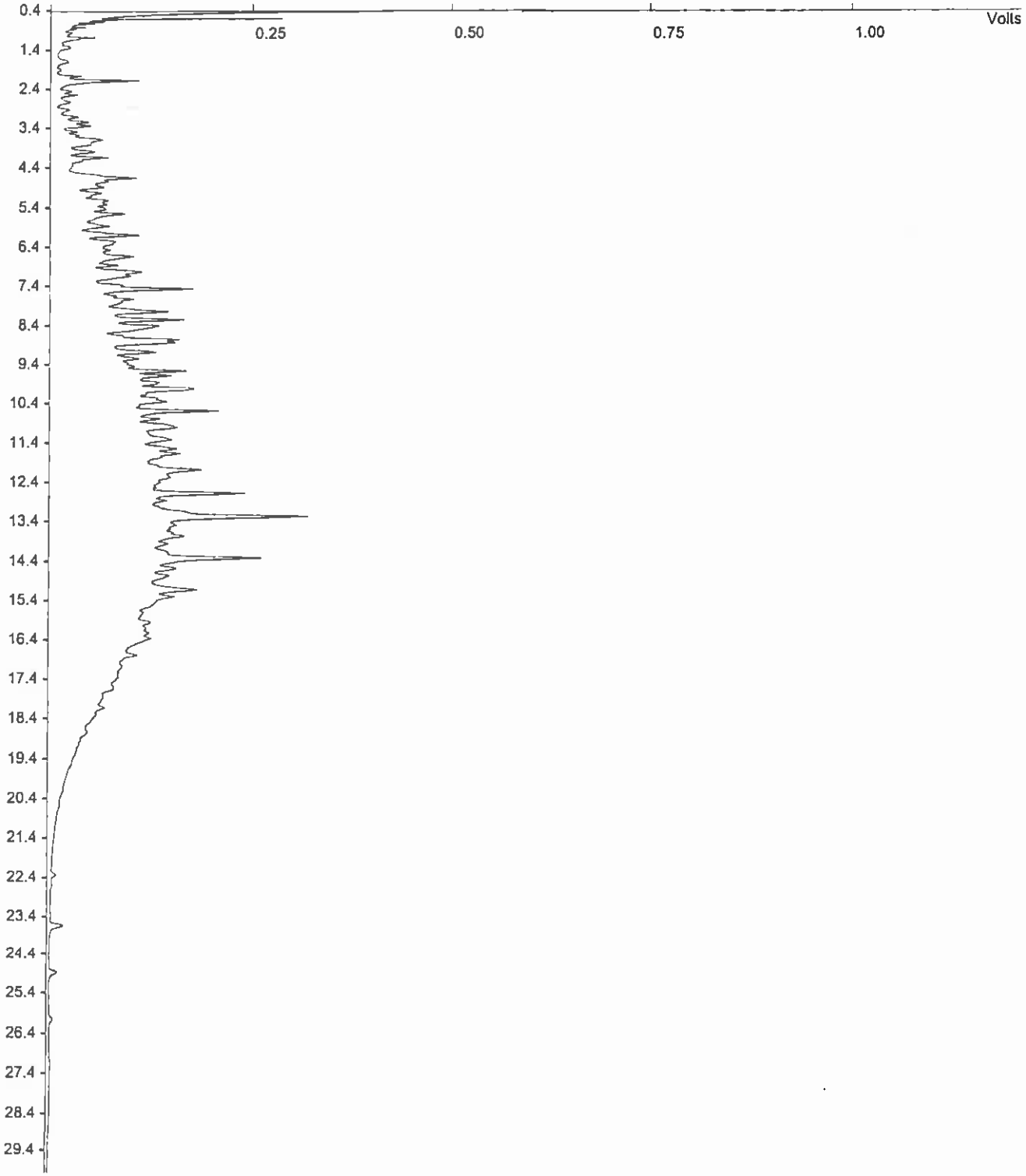
Injection Date: 5/29/14 12:35 AM Calculation Date: 5/29/14 10:55 AM

Operator :
Workstation:
Instrument : Varian Star #1
Channel : B = FID

Detector Type: ADCB (10 Volts)
Bus Address : 16
Sample Rate : 10.00 Hz
Run Time : 39.502 min

** Star Chromatography Workstation Version 5.31 ** 00696-7468-5CF-20D0 **

Chart Speed = 0.66 cm/min Attenuation = 500 Zero Offset = 0%
Start Time = 0.400 min End Time = 30.000 min Min / Tick = 1.00



Title : OA2 by FID
Run File : c:\star\data\140602\58949r.run
Method File : C:\Star\methods\oa2.mth
Sample ID : 58949R

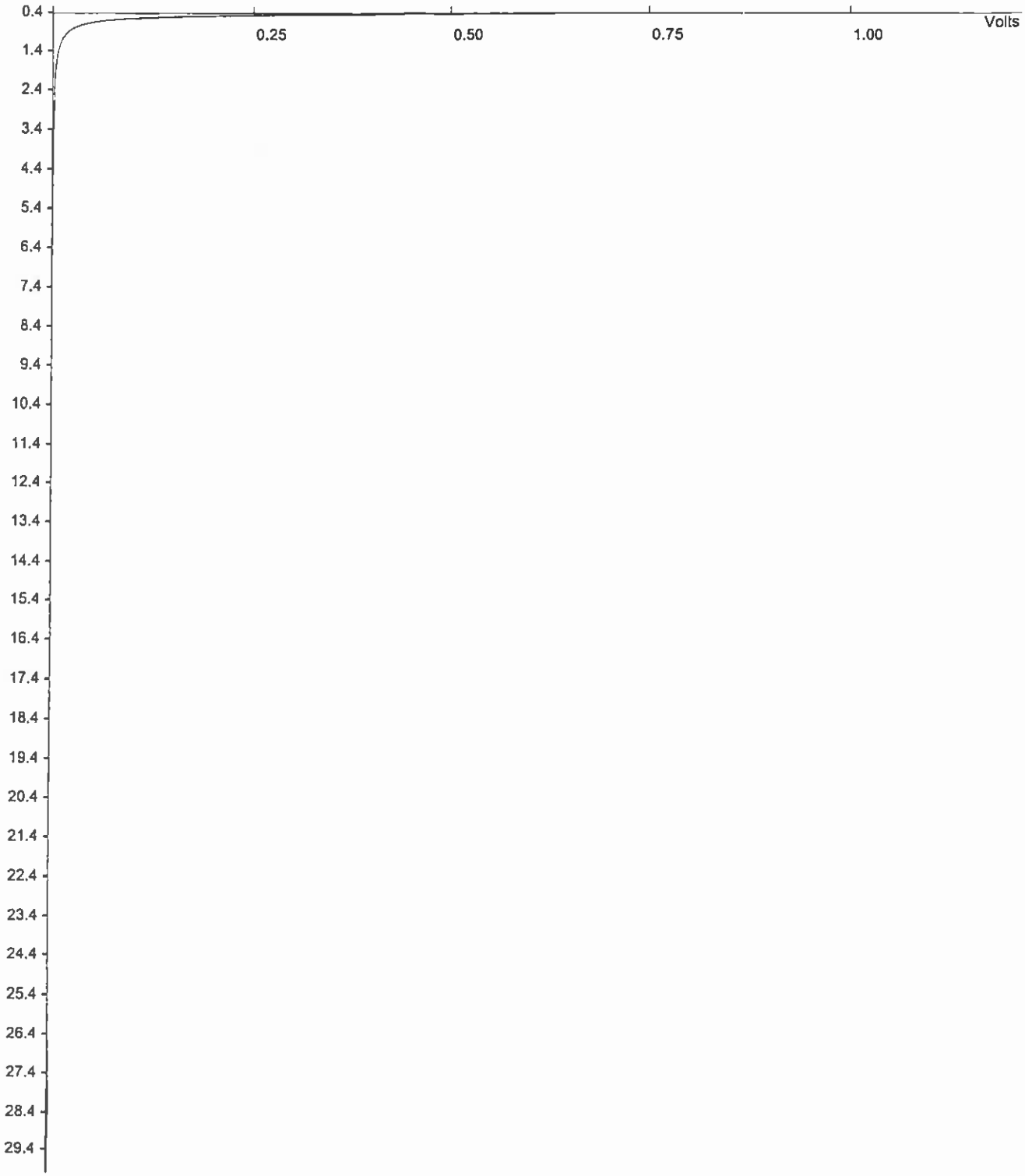
Injection Date: 6/3/14 2:58 PM Calculation Date: 6/3/14 3:37 PM

Operator :
Workstation:
Instrument : Varian Star #1
Channel : B = FID

Detector Type: ADCB (10 Volts)
Bus Address : 16
Sample Rate : 10.00 Hz
Run Time : 39.502 min

** Star Chromatography Workstation Version 5.31 ** 00696-7468-5CF-20D0 **

Chart Speed = 0.66 cm/min Attenuation = 500 Zero Offset = 0%
Start Time = 0.400 min End Time = 30.000 min Min / Tick = 1.00



Title : OA2 by FID
Run File : c:\star\data\140528\58950.run
Method File : c:\star\methods\oa2.mth
Sample ID : 58950

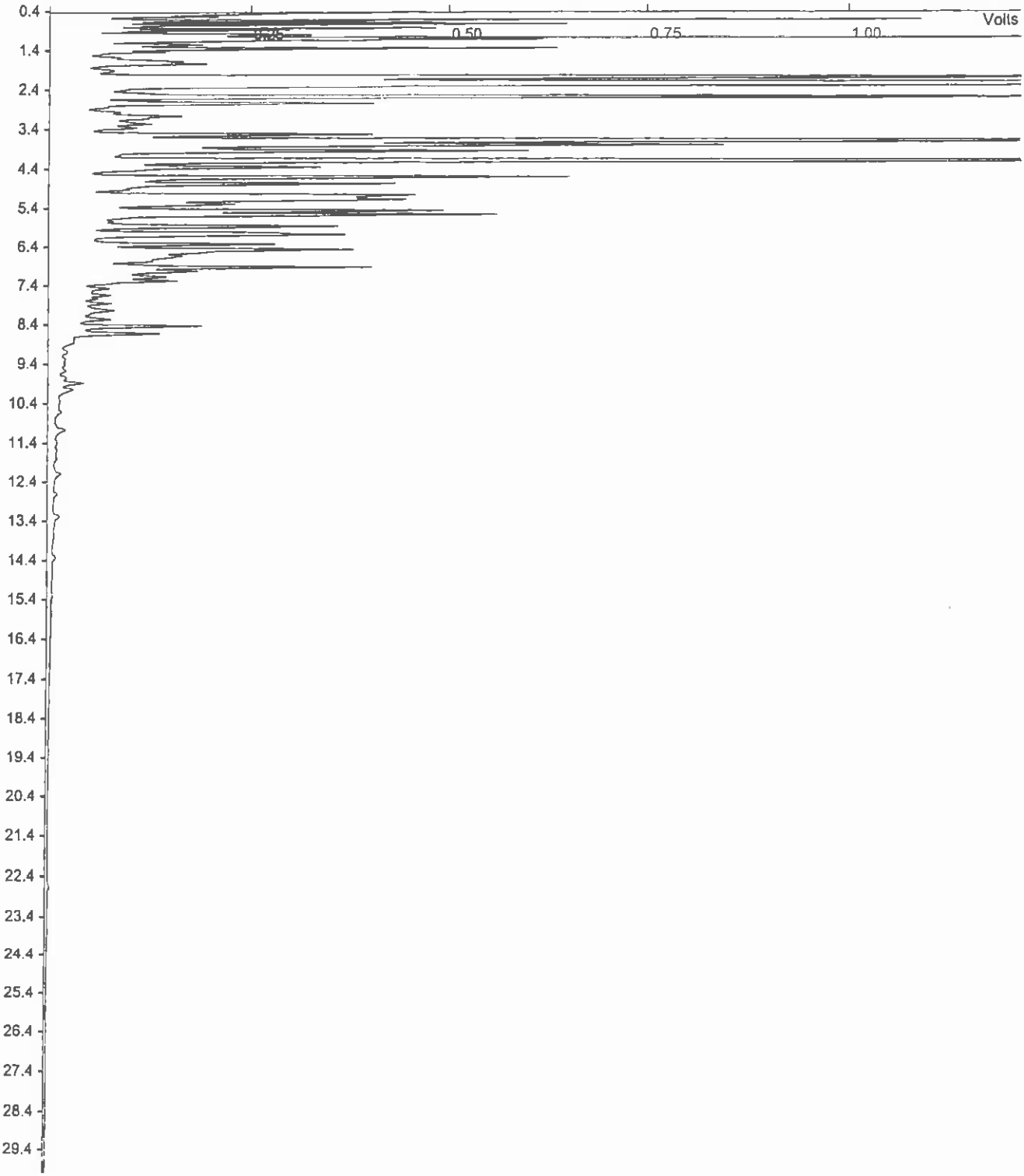
Injection Date: 5/29/14 2:19 AM Calculation Date: 5/29/14 10:55 AM

Operator :
Workstation:
Instrument : Varian Star #1
Channel : B = FID

Detector Type: ADCB (10 Volts)
Bus Address : 16
Sample Rate : 10.00 Hz
Run Time : 39.502 min

** Star Chromatography Workstation Version 5.31 ** 00696-7468-5CF-20D0 **

Chart Speed = 0.66 cm/min Attenuation = 500 Zero Offset = 0%
Start Time = 0.400 min End Time = 30.000 min Min / Tick = 1.00



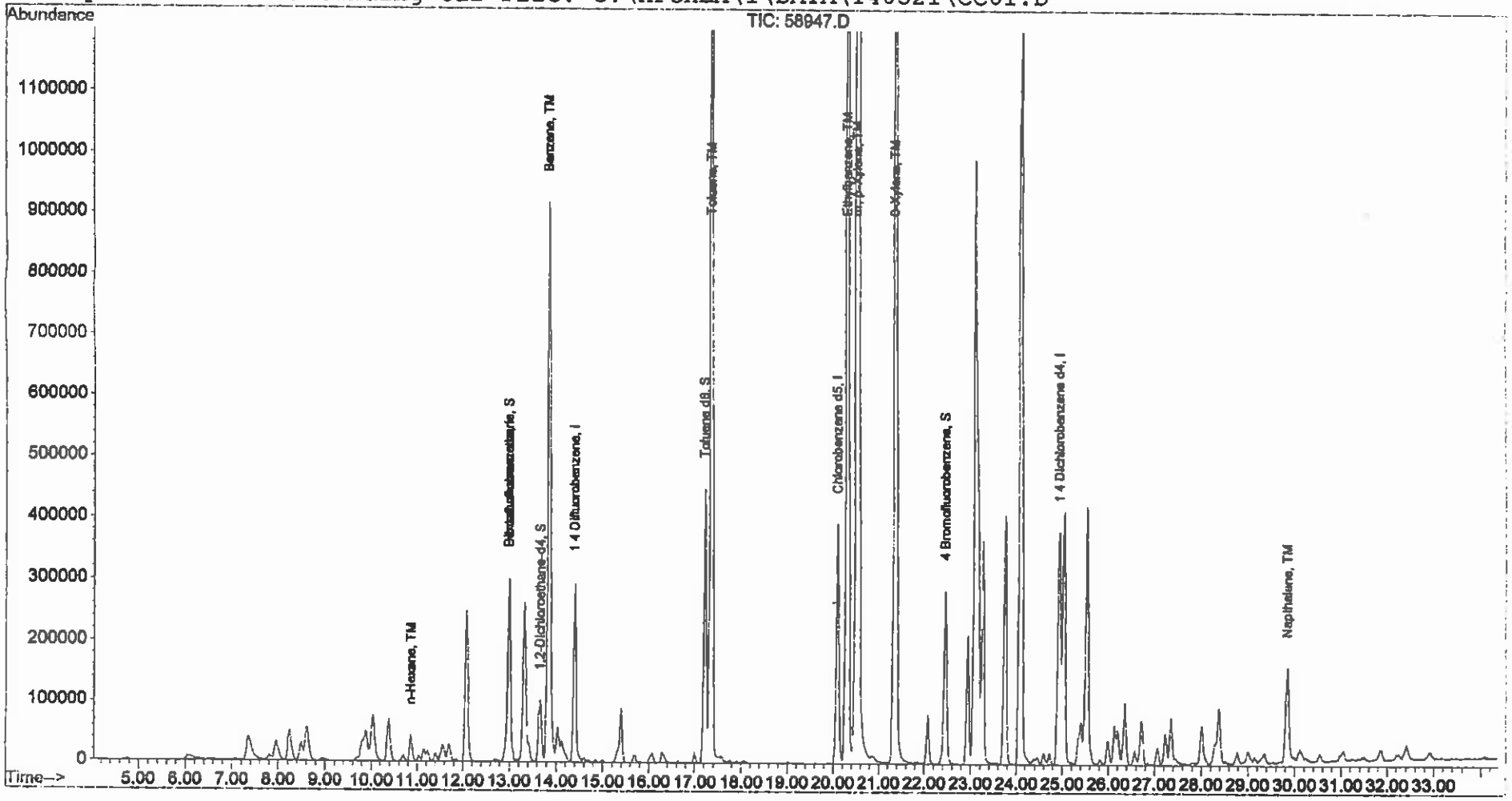
Quantitation Report

Data File : C:\HPCHEM\1\DATA\140602\58947.D
Acq On : 2 Jun 14 9:27 pm
Sample : TMW 1
Misc : WATER .25 MLS
MS Integration Params: OA1.P
Quant Time: Jun 3 12:27 19114

Vial: 8
Operator:
Inst : GC/MS Ins
Multiplr: 1.00

Quant Results File: OA1.RES

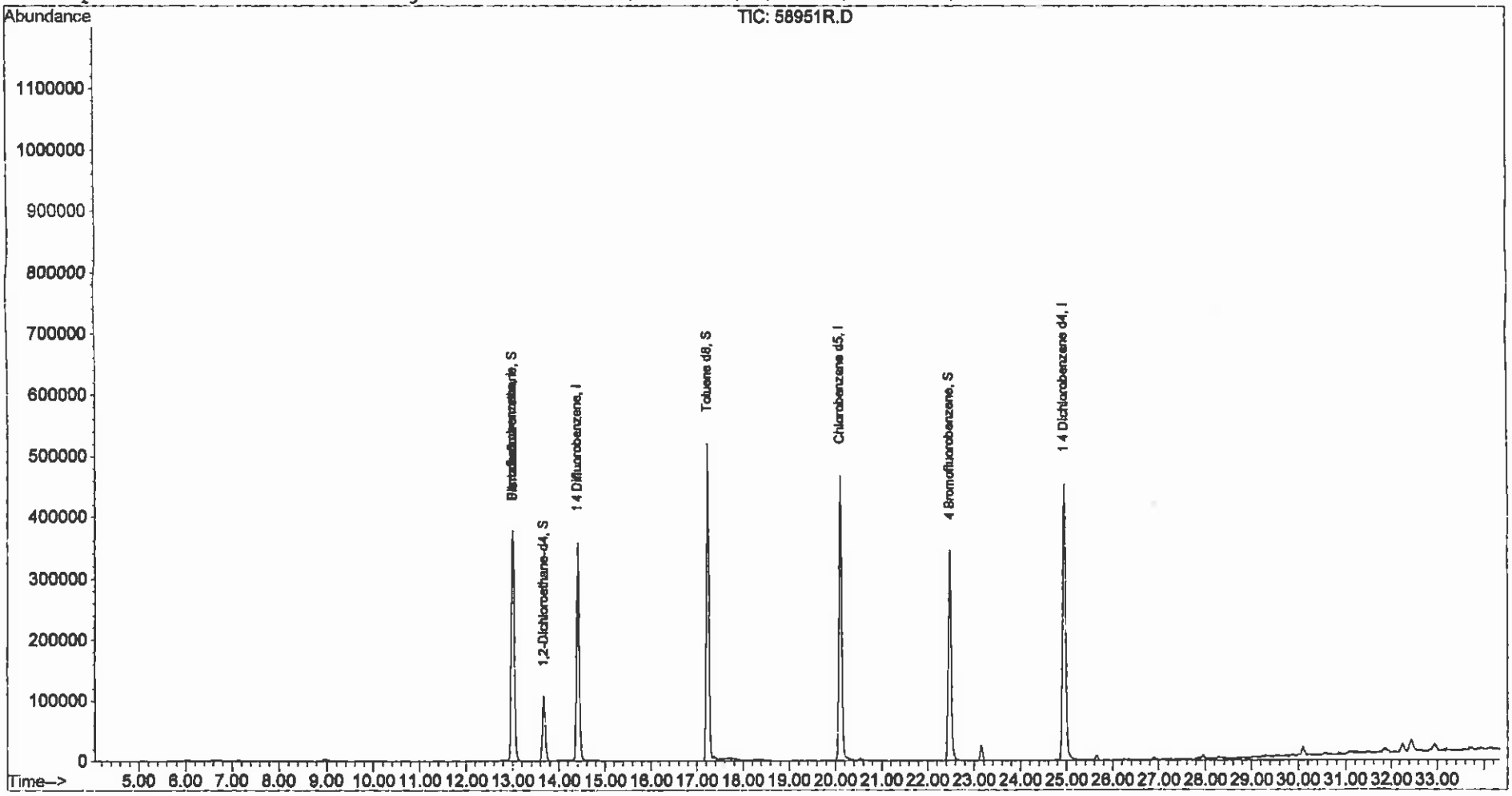
Method : C:\HPCHEM\1\METHODS\OA1.M (RTE Integrator)
Title : OA 1 VOLATILES
Last Update : Thu May 01 08:54:30 2014
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\140521\CC01.D



Quantitation Report

Data File : C:\HPCHEM\1\DATA\140602\58951R.D Vial: 1
Acq On : 3 Jun 14 2:05 pm Operator:
Sample : FIELD BLANK Inst : GC/MS Ins
Misc : WATER 10 MLS Multiplr: 1.00
MS Integration Params: OA1.P
Quant Time: Jun 3 14:39 19114 Quant Results File: OA1.RES

Method : C:\HPCHEM\1\METHODS\OA1.M (RTE Integrator)
Title : OA 1 VOLATILES
Last Update : Thu May 01 08:54:30 2014
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\140521\CC01.D



Quantitation Report

Data File : C:\HPCHEM\1\DATA\140602\58952R.D Vial: 1
Acq On : 3 Jun 14 2:53 pm Operator:
Sample : TRIP BLANK Inst : GC/MS Ins
Misc : WATER 10 MLS Multiplr: 1.00
MS Integration Params: OA1.P
Quant Time: Jun 3 15:28 19114 Quant Results File: OA1.RES

Method : C:\HPCHEM\1\METHODS\OA1.M (RTE Integrator)
Title : OA 1 VOLATILES
Last Update : Thu May 01 08:54:30 2014
Response via : Continuing Cal File: C:\HPCHEM\1\DATA\140521\CC01.D