

**APPENDIX B:  
LABORATORY ANALYTICAL REPORTS AND CHAIN OF CUSTODY DOCUMENTATION**





3600 Fremont Ave. N.  
Seattle, WA 98103  
T: (206) 352-3790  
F: (206) 352-7178  
[info@fremontanalytical.com](mailto:info@fremontanalytical.com)

**ATC Group Services, Inc.**  
Nasrin Bastami  
6347 Seaview Ave NW  
Seattle, WA 98107

**RE: Yarrow Bay Yatch Basin & Marina**  
**Lab ID: 1602312**

March 04, 2016

**Attention Nasrin Bastami:**

Fremont Analytical, Inc. received 1 sample(s) on 2/29/2016 for the analyses presented in the following report.

***Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.***  
***Gasoline by NWTPH-Gx***  
***Volatile Organic Compounds by EPA Method 8260***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

A handwritten signature in black ink, appearing to read "Chelsea Ward".

Chelsea Ward  
Project Manager



Date: 03/04/2016

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**CLIENT:** ATC Group Services, Inc.  
**Project:** Yarrow Bay Yatch Basin & Marina  
**Lab Order:** 1602312

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## Work Order Sample Summary

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Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1602312-001	YB-4-MW-1	02/29/2016 11:35 AM	02/29/2016 1:13 PM

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Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned



## Case Narrative

WO#: 1602312

Date: 3/4/2016

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**CLIENT:** ATC Group Services, Inc.  
**Project:** Yarrow Bay Yatch Basin & Marina

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### I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

### II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

### III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

**Qualifiers:**

- \* - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below Reporting Limit
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit
- R - High relative percent difference observed

**Acronyms:**

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



# Analytical Report

WO#: 1602312

Date Reported: 3/4/2016

**Client:** ATC Group Services, Inc.

**Collection Date:** 2/29/2016 11:35:00 AM

**Project:** Yarrow Bay Yatch Basin & Marina

**Lab ID:** 1602312-001

**Matrix:** Groundwater

**Client Sample ID:** YB-4-MW-1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Batch ID: 13130

Analyst: CM

Diesel (Fuel Oil)	ND	49.9		µg/L	1	3/2/2016 9:44:14 PM
Diesel Range Organics (C12-C24)	82.6	49.9		µg/L	1	3/2/2016 9:44:14 PM
Heavy Oil	415	99.8		µg/L	1	3/2/2016 9:44:14 PM
Surr: 2-Fluorobiphenyl	77.7	50-150		%Rec	1	3/2/2016 9:44:14 PM
Surr: o-Terphenyl	74.5	50-150		%Rec	1	3/2/2016 9:44:14 PM

**NOTES:**

DRO - Indicates the presence of unresolved compounds eluting from dodecane through tetracosane (C12-C24).

**Gasoline by NWTPH-Gx**

Batch ID: R27969

Analyst: EM

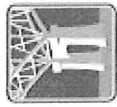
Gasoline	ND	50.0		µg/L	1	3/1/2016 4:21:34 AM
Surr: 4-Bromofluorobenzene	97.4	65-135		%Rec	1	3/1/2016 4:21:34 AM
Surr: Toluene-d8	99.9	65-135		%Rec	1	3/1/2016 4:21:34 AM

**Volatile Organic Compounds by EPA Method 8260**

Batch ID: R27958

Analyst: EM

Benzene	ND	1.00		µg/L	1	3/1/2016 4:21:34 AM
Toluene	ND	1.00		µg/L	1	3/1/2016 4:21:34 AM
Ethylbenzene	ND	1.00		µg/L	1	3/1/2016 4:21:34 AM
m,p-Xylene	ND	1.00		µg/L	1	3/1/2016 4:21:34 AM
o-Xylene	ND	1.00		µg/L	1	3/1/2016 4:21:34 AM
Surr: Dibromofluoromethane	97.8	45.4-152		%Rec	1	3/1/2016 4:21:34 AM
Surr: Toluene-d8	96.7	40.1-139		%Rec	1	3/1/2016 4:21:34 AM
Surr: 1-Bromo-4-fluorobenzene	95.8	64.2-128		%Rec	1	3/1/2016 4:21:34 AM



**Fremont**  
Analytical

Date: 3/4/2016

**QC SUMMARY REPORT**  
**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

**Work Order:** 1602312  
**CLIENT:** ATC Group Services, Inc.  
**Project:** Yarrow Bay Yatch Basin & Marina

Sample ID: MB-13130	SampType: MBLK	Units: µg/L	Prep Date: 3/1/2016	RunNo: 28021							
Client ID: MBLKW	Batch ID: 13130		Analysis Date: 3/2/2016	SeqNo: 526837							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	49.9									
Heavy Oil	ND	99.8									
Surr: 2-Fluorobiphenyl	59.6		79.87		74.6	50	150				
Surr: o-Terphenyl	61.8		79.87		77.4	50	150				

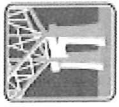
Sample ID: LCS-13130	SampType: LCS	Units: µg/L	Prep Date: 3/1/2016	RunNo: 28021							
Client ID: LCSW	Batch ID: 13130		Analysis Date: 3/2/2016	SeqNo: 526836							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	747	49.9	998.0	0	74.9	65	135				
Surr: 2-Fluorobiphenyl	56.3		79.84		70.5	50	150				
Surr: o-Terphenyl	51.2		79.84		64.1	50	150				

Sample ID: 1602099-023AMS	SampType: MS	Units: µg/L	Prep Date: 3/1/2016	RunNo: 28021							
Client ID: BATCH	Batch ID: 13130		Analysis Date: 3/2/2016	SeqNo: 526821							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	379	50.0	999.6	0	37.9	65	135				S
Surr: 2-Fluorobiphenyl	54.2		79.97		67.8	50	150				
Surr: o-Terphenyl	37.2		79.97		46.5	50	150				S

**NOTES:**  
S - Outlying spike recovery observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.  
S - Outlying surrogate recovery observed. A duplicate analysis was performed and recovered within range.

Sample ID: 1602099-023AMSD	SampType: MSD	Units: µg/L	Prep Date: 3/1/2016	RunNo: 28021							
Client ID: BATCH	Batch ID: 13130		Analysis Date: 3/2/2016	SeqNo: 526822							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	456	49.6	992.1	0	46.0	65	135	379.0	18.5	30	S
Surr: 2-Fluorobiphenyl	47.2		79.37		59.5	50	150		0	0	
Surr: o-Terphenyl	40.0		79.37		50.4	50	150		0	0	





Date: 3/4/2016

**Work Order:** 1602312  
**CLIENT:** ATC Group Services, Inc.  
**Project:** Yarrow Bay Yatch Basin & Marina

**QC SUMMARY REPORT**  
**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Sample ID: 1602099-023AMSD	SampType: MSD	Units: µg/L	Prep Date: 3/1/2016	RunNo: 28021
Client ID: BATCH	Batch ID: 13130		Analysis Date: 3/2/2016	SeqNo: 526822
Analyte	Result	RL	SPK value	SPK Ref Val
		%REC	LowLimit	HighLimit
			RPD Ref Val	%RPD
				RPDLimit
				Qual

**NOTES:**  
 S - Outlying spike recovery observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.

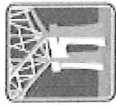
Sample ID: 1602300-001ADUP	SampType: DUP	Units: µg/L	Prep Date: 3/1/2016	RunNo: 28021
Client ID: BATCH	Batch ID: 13130		Analysis Date: 3/2/2016	SeqNo: 526824
Analyte	Result	RL	SPK value	SPK Ref Val
		%REC	LowLimit	HighLimit
			RPD Ref Val	%RPD
				RPDLimit
				Qual
Diesel (Fuel Oil)	ND	49.8		0
Diesel Range Organics (C12-C24)	2,860	49.8		3,032
Heavy Oil	9,360	99.6		10,520
Surr: 2-Fluorobiphenyl	104		130	50
Surr: o-Terphenyl	58.1		72.9	50

**NOTES:**  
 DRO - Indicates the presence of unresolved compounds eluting from dodecane through tetraicosane (C12-C24).

Sample ID: 1602312-001ADUP	SampType: DUP	Units: µg/L	Prep Date: 3/1/2016	RunNo: 28021
Client ID: YB-4-MW-1	Batch ID: 13130		Analysis Date: 3/2/2016	SeqNo: 526833
Analyte	Result	RL	SPK value	SPK Ref Val
		%REC	LowLimit	HighLimit
			RPD Ref Val	%RPD
				RPDLimit
				Qual
Diesel (Fuel Oil)	ND	49.9		0
Diesel Range Organics (C12-C24)	60.3	49.9		82.58
Heavy Oil	390	99.9		415.4
Surr: 2-Fluorobiphenyl	53.4		66.9	50
Surr: o-Terphenyl	49.9		62.5	50

**NOTES:**  
 DRO - Indicates the presence of unresolved compounds eluting from dodecane through tetraicosane (C12-C24).

Sample ID: MB-13130	SampType: MBLK	Units: µg/L	Prep Date: 3/1/2016	RunNo: 28041
Client ID: MBLKW	Batch ID: 13130		Analysis Date: 3/4/2016	SeqNo: 527005
Analyte	Result	RL	SPK value	SPK Ref Val
		%REC	LowLimit	HighLimit
			RPD Ref Val	%RPD
				RPDLimit
				Qual
Diesel (Fuel Oil)	ND	49.9		



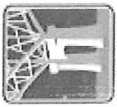
**Fremont**  
Analytical

Date: 3/4/2016

**QC SUMMARY REPORT**  
**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

**Work Order:** 1602312  
**CLIENT:** ATC Group Services, Inc.  
**Project:** Yarrow Bay Yatch Basin & Marina

Sample ID: MB-13130	SampType: MBLK	Units: µg/L	Prep Date: 3/1/2016	RunNo: 28041
Client ID: MBLKW	Batch ID: 13130		Analysis Date: 3/4/2016	SeqNo: 527005
Analyte	Result	RL	SPK value	SPK Ref Val
Heavy Oil	ND	99.8		
Surr: 2-Fluorobiphenyl	68.9		79.87	50
Surr: o-Terphenyl	73.4		79.87	50
			%REC	LowLimit
			86.3	HighLimit
			91.9	RPD Ref Val
				%RPD
				RPDLimit
				Qual



**Fremont**  
Analytical

Date: 3/4/2016

**Work Order:** 1602312  
**CLIENT:** ATC Group Services, Inc.  
**Project:** Yarrow Bay Yatch Basin & Marina  
**QC SUMMARY REPORT**  
**Gasoline by NWTPH-Gx**

Sample ID: LCS-R27969      SampType: LCS      Units: µg/L      RunNo: 27969  
Client ID: LCSW      Batch ID: R27969      Analysis Date: 2/29/2016      SeqNo: 525758

Analyte	Result	RL	SPK value	SPK RefVal	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	518	50.0	500.0	0	104	65	135				
Surr: Toluene-d8	25.0		25.00		100	65	135				
Surr: 4-Bromofluorobenzene	24.9		25.00		99.6	65	135				

Sample ID: MB-R27969      SampType: MBLK      Units: µg/L      RunNo: 27969  
Client ID: MBLKW      Batch ID: R27969      Analysis Date: 2/29/2016      SeqNo: 525760

Analyte	Result	RL	SPK value	SPK RefVal	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	50.0									
Surr: Toluene-d8	25.9		25.00		104	65	135				
Surr: 4-Bromofluorobenzene	23.8		25.00		95.1	65	135				

Sample ID: 1602300-002BDUP      SampType: DUP      Units: µg/L      RunNo: 27969  
Client ID: BATCH      Batch ID: R27969      Analysis Date: 2/29/2016      SeqNo: 525739

Analyte	Result	RL	SPK value	SPK RefVal	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	50.0						0		30	
Surr: Toluene-d8	24.9		25.00		99.6	65	135		0	0	
Surr: 4-Bromofluorobenzene	24.5		25.00		98.1	65	135		0	0	

Sample ID: 1602312-001BDUP      SampType: DUP      Units: µg/L      RunNo: 27969  
Client ID: YB-4-MW-1      Batch ID: R27969      Analysis Date: 3/1/2016      SeqNo: 525751

Analyte	Result	RL	SPK value	SPK RefVal	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	50.0						0		30	
Surr: Toluene-d8	25.1		25.00		101	65	135		0	0	
Surr: 4-Bromofluorobenzene	24.6		25.00		98.2	65	135		0	0	



**Fremont**  
Analytical

Date: 3/4/2016

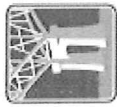
**QC SUMMARY REPORT**  
**Volatile Organic Compounds by EPA Method 8260**

Work Order: 1602312  
CLIENT: ATC Group Services, Inc.  
Project: Yarrow Bay Yatch Basin & Marina

Sample ID:	LCS-R27958	SampType:	LCS	Units:	µg/L	Prep Date:	2/29/2016	RunNo:	27958		
Client ID:	LCSW	Batch ID:	R27958	Analysis Date:	2/29/2016	SeqNo:	525569				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21.0	1.00	20.00	0	105	69.3	132				
Toluene	20.6	1.00	20.00	0	103	61.3	145				
Ethylbenzene	18.9	1.00	20.00	0	94.4	72	130				
m,p-Xylene	37.7	1.00	40.00	0	94.3	70.3	134				
o-Xylene	18.6	1.00	20.00	0	92.8	72.1	131				
Surr: Dibromofluoromethane	25.9		25.00		104	45.4	152				
Surr: Toluene-d8	24.6		25.00		98.3	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	24.7		25.00		98.9	64.2	128				

Sample ID:	MB-R27958	SampType:	MBLK	Units:	µg/L	Prep Date:	2/29/2016	RunNo:	27958		
Client ID:	MBLKW	Batch ID:	R27958	Analysis Date:	2/29/2016	SeqNo:	525571				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.00									
Toluene	ND	1.00									
Ethylbenzene	ND	1.00									
m,p-Xylene	ND	1.00									
o-Xylene	ND	1.00									
Surr: Dibromofluoromethane	23.1		25.00		92.4	45.4	152				
Surr: Toluene-d8	24.0		25.00		96.1	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	23.0		25.00		91.8	64.2	128				

Sample ID:	1602300-002BDUP	SampType:	DUP	Units:	µg/L	Prep Date:	2/29/2016	RunNo:	27958		
Client ID:	BATCH	Batch ID:	R27958	Analysis Date:	2/29/2016	SeqNo:	525719				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.00						0		30	
Toluene	ND	1.00						0		30	
Ethylbenzene	ND	1.00						0		30	
m,p-Xylene	ND	1.00						0		30	



**Fremont**  
Analytical

Date: 3/4/2016

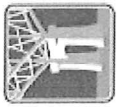
**QC SUMMARY REPORT**  
**Volatile Organic Compounds by EPA Method 8260**

Work Order: 1602312  
CLIENT: ATC Group Services, Inc.  
Project: Yarrow Bay Yatch Basin & Marina

Sample ID: 1602300-002BDUP	SampType: DUP	Units: µg/L	Prep Date: 2/29/2016	RunNo: 27958							
Client ID: BATCH	Batch ID: R27958	Analysis Date: 2/29/2016	SeqNo: 525719								
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
o-Xylene	ND	1.00						0			30
Surr: Dibromofluoromethane	24.7		25.00		99.0	45.4	152			0	
Surr: Toluene-d8	24.4		25.00		97.7	40.1	139			0	
Surr: 1-Bromo-4-fluorobenzene	24.1		25.00		96.4	64.2	128			0	

Sample ID: 1602308-001AMS	SampType: MS	Units: µg/L	Prep Date: 2/29/2016	RunNo: 27958							
Client ID: BATCH	Batch ID: R27958	Analysis Date: 2/29/2016	SeqNo: 525728								
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	25.0	1.00	20.00	0	125	65.4	138				
Toluene	24.1	1.00	20.00	0	121	64	139				
Ethylbenzene	21.8	1.00	20.00	0.2200	108	64.5	136				
m,p-Xylene	43.4	1.00	40.00	0.6400	107	63.3	135				
o-Xylene	21.2	1.00	20.00	0.3100	105	65.4	134				
Surr: Dibromofluoromethane	25.9		25.00		104	45.4	152				
Surr: Toluene-d8	24.4		25.00		97.6	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	24.8		25.00		99.2	64.2	128				

Sample ID: 1602308-001AMS	SampType: MSD	Units: µg/L	Prep Date: 3/1/2016	RunNo: 27958							
Client ID: BATCH	Batch ID: R27958	Analysis Date: 3/1/2016	SeqNo: 525729								
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	25.6	1.00	20.00	0	128	65.4	138	25.03	2.37	30	
Toluene	24.8	1.00	20.00	0	124	64	139	24.14	2.86	30	
Ethylbenzene	22.7	1.00	20.00	0.2200	112	64.5	136	21.79	4.13	30	
m,p-Xylene	45.2	1.00	40.00	0.6400	111	63.3	135	43.38	4.02	30	
o-Xylene	22.3	1.00	20.00	0.3100	110	65.4	134	21.21	5.06	30	
Surr: Dibromofluoromethane	26.0		25.00		104	45.4	152		0	0	
Surr: Toluene-d8	24.4		25.00		97.6	40.1	139		0	0	
Surr: 1-Bromo-4-fluorobenzene	24.7		25.00		99.0	64.2	128		0	0	



**Fremont**  
Analytical

Date: 3/4/2016

**QC SUMMARY REPORT**  
**Volatle Organic Compounds by EPA Method 8260**

**Work Order:** 1602312  
**CLIENT:** ATC Group Services, Inc.  
**Project:** Yarrow Bay Yatch Basin & Marina

Sample ID: 1602308-001AMSD	SampType: MSD	Units: µg/L	Prep Date: 3/1/2016	RunNo: 27958							
Client ID: BATCH	Batch ID: R27958		Analysis Date: 3/1/2016	SeqNo: 525729							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: 1602312-001BDUP	SampType: DUP	Units: µg/L	Prep Date: 3/1/2016	RunNo: 27958							
Client ID: YB-4-MW-1	Batch ID: R27958		Analysis Date: 3/1/2016	SeqNo: 525731							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Benzene	ND	1.00						0		30	
Toluene	ND	1.00						0		30	
Ethylbenzene	ND	1.00						0		30	
m,p-Xylene	ND	1.00						0		30	
o-Xylene	ND	1.00						0		30	
Surr: Dibromofluoromethane	24.8		25.00		99.2	45.4	152		0		
Surr: Toluene-d8	24.0		25.00		96.1	40.1	139		0		
Surr: 1-Bromo-4-fluorobenzene	24.1		25.00		96.5	64.2	128		0		



Client Name: <b>ATC</b>	Work Order Number: <b>1602312</b>
Logged by: <b>Erica Silva</b>	Date Received: <b>2/29/2016 1:13:00 PM</b>

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present
2. How was the sample delivered? Client

**Log In**

3. Coolers are present? Yes  No  NA
4. Shipping container/cooler in good condition? Yes  No
5. Custody Seals present on shipping container/cooler?  
(Refer to comments for Custody Seals not intact) Yes  No  Not Required
6. Was an attempt made to cool the samples? Yes  No  NA
7. Were all items received at a temperature of >0°C to 10.0°C \* Yes  No  NA
8. Sample(s) in proper container(s)? Yes  No
9. Sufficient sample volume for indicated test(s)? Yes  No
10. Are samples properly preserved? Yes  No
11. Was preservative added to bottles? Yes  No  NA
12. Is there headspace in the VOA vials? Yes  No  NA
13. Did all samples containers arrive in good condition(unbroken)? Yes  No
14. Does paperwork match bottle labels? Yes  No
15. Are matrices correctly identified on Chain of Custody? Yes  No
16. Is it clear what analyses were requested? Yes  No
17. Were all holding times able to be met? Yes  No

**Special Handling (if applicable)**

18. Was client notified of all discrepancies with this order? Yes  No  NA

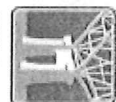
Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

19. Additional remarks:

**Item Information**

Item #	Temp °C
Cooler	6.3
Sample	5.6
Temp Blank	5.1

\* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C



**Fremont**  
Analytical

**Chain of Custody Record**

3600 Fremont Ave N.  
Seattle, WA 98103

Tel: 206-352-3790  
Fax: 206-352-7178

Laboratory Project No (Internal): 1002312

Date: 2/29/16

Project Name: Yarrow Bay Yatch Basin & Marine

Project No: 2016-0030

Location: Kirkland WA

Report To (PM): Narin Bastami

PM Email: nastami@atcassociates.com

Client: ATC Group Services

Address: 6347 Seavel Ave NW

City, State, Zip: Seattle, WA 98107

Telephone: 206-352-1449 Fax: \_\_\_\_\_

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	<input type="checkbox"/> VOCs (EPA 8260 / 824) <input type="checkbox"/> SVOCs <input type="checkbox"/> BTEX <input type="checkbox"/> Gasoline Range Organics (GX) <input type="checkbox"/> Hydrocarbon Identification (HID) <input type="checkbox"/> Diesel/Heavy Oil Range Organics (DX) <input type="checkbox"/> SVOCs (EPA 8270 / 635) <input type="checkbox"/> PAHs (EPA 8270 / 608) <input type="checkbox"/> PCBs (EPA 8082 / 608) <input type="checkbox"/> Metals ** (EPA 6020 / 200.5) <input type="checkbox"/> Total (T) / Dissolved (D) <input type="checkbox"/> Anions (IC) ** <input type="checkbox"/> TDS (8011)	Comments
1 YB-4-MW-1	2/29	1135	GM	X	X
2					
3					
4					
5					
6					
7					
8					
9					
10					

\*\*Metals Analysis (Circle): WTCN-5 RCPA-8 Priority Pollutants TAL Individual: Ag As B Ba Be Cd Co Cr Cu Pb Hg K ME Mn Mo Ni Pn Sb Se Sr Sn Tl U V Zn

\*\*Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal:  Return to Client  Disposed by Lab (a fee may be assessed if sample analyzed after 30 days.)

Turn-around times for samples received after 4:00pm will begin on the following business day.

Special Remarks: Standard demand

Relinquished Date/Time: 2/29/16 @ 11:30am Received Date/Time: 2/29/16 @ 8:30am

Relinquished By: [Signature] Received By: [Signature]

TAT → SameDay NextDay 2 Day 3 Day STD

Please coordinate with the Lab in advance

Distribution: White - Lab, Yellow - File, Pink - Originator

www.fremontanalytical.com





3600 Fremont Ave. N.  
Seattle, WA 98103  
T: (206) 352-3790  
F: (206) 352-7178  
[info@fremontanalytical.com](mailto:info@fremontanalytical.com)

**ATC Group Services, Inc.**  
Nasrin Bastami  
6347 Seaview Ave NW  
Seattle, WA 98107

**RE: Yarrow Bay Yatch Basin & Marina**  
**Lab ID: 1512144**

December 22, 2015

**Attention Nasrin Bastami:**

Fremont Analytical, Inc. received 1 sample(s) on 12/16/2015 for the analyses presented in the following report.

*Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.*  
*Gasoline by NWTPH-Gx*  
*Volatile Organic Compounds by EPA Method 8260*

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

A handwritten signature in black ink, appearing to read "Chelsea Ward".

Chelsea Ward  
Project Manager



Date: 12/23/2015

---

**CLIENT:** ATC Group Services, Inc.  
**Project:** Yarrow Bay Yatch Basin & Marina  
**Lab Order:** 1512144

---

### Work Order Sample Summary

---

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1512144-001	YB-03-MW-1	12/16/2015 10:00 AM	12/16/2015 11:30 AM

---

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned



---

**CLIENT:** ATC Group Services, Inc.  
**Project:** Yarrow Bay Yatch Basin & Marina

---

**I. SAMPLE RECEIPT:**

Samples receipt information is recorded on the attached Sample Receipt Checklist.

**II. GENERAL REPORTING COMMENTS:**

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

**III. ANALYSES AND EXCEPTIONS:**

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.



Qualifiers:

- \* - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below Reporting Limit
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit
- R - High relative percent difference observed

Acronyms:

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



# Analytical Report

WO#: 1512144

Date Reported: 12/22/2015

**Client:** ATC Group Services, Inc.

**Collection Date:** 12/16/2015 10:00:00 AM

**Project:** Yarrow Bay Yatch Basin & Marina

**Lab ID:** 1512144-001

**Matrix:** Groundwater

**Client Sample ID:** YB-03-MW-1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b><u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u></b>					Batch ID: 12602	Analyst: CM
Diesel (Fuel Oil)	ND	49.9		µg/L	1	12/18/2015 4:54:00 PM
Heavy Oil	327	99.7		µg/L	1	12/18/2015 4:54:00 PM
Surr: 2-Fluorobiphenyl	75.6	50-150		%Rec	1	12/18/2015 4:54:00 PM
Surr: o-Terphenyl	72.5	50-150		%Rec	1	12/18/2015 4:54:00 PM
<b><u>Gasoline by NWTPH-Gx</u></b>					Batch ID: R26641	Analyst: NG
Gasoline	ND	50.0		µg/L	1	12/18/2015 3:26:00 PM
Surr: 4-Bromofluorobenzene	105	65-135		%Rec	1	12/18/2015 3:26:00 PM
Surr: Toluene-d8	102	65-135		%Rec	1	12/18/2015 3:26:00 PM
<b><u>Volatile Organic Compounds by EPA Method 8260</u></b>					Batch ID: R26632	Analyst: NG
Benzene	ND	1.00		µg/L	1	12/18/2015 3:26:00 PM
Toluene	ND	1.00		µg/L	1	12/18/2015 3:26:00 PM
Ethylbenzene	ND	1.00		µg/L	1	12/18/2015 3:26:00 PM
m,p-Xylene	ND	1.00		µg/L	1	12/18/2015 3:26:00 PM
o-Xylene	ND	1.00		µg/L	1	12/18/2015 3:26:00 PM
Surr: Dibromofluoromethane	106	45.4-152		%Rec	1	12/18/2015 3:26:00 PM
Surr: Toluene-d8	110	40.1-139		%Rec	1	12/18/2015 3:26:00 PM
Surr: 1-Bromo-4-fluorobenzene	112	64.2-128		%Rec	1	12/18/2015 3:26:00 PM



**Fremont**  
Analytical

Date: 12/22/2015

**QC SUMMARY REPORT**  
**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

**Work Order:** 1512144  
**CLIENT:** ATC Group Services, Inc.  
**Project:** Yarrow Bay Yatch Basin & Marina

Sample ID	MB-12602	SampType: MBLK	Units: µg/L	Prep Date: 12/17/2015	RunNo: 26627						
Client ID:	MBLKW	Batch ID: 12602		Analysis Date: 12/18/2015	SeqNo: 501967						
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	49.9									
Heavy Oil	ND	99.7									
Surr: 2-Fluorobiphenyl	56.3		79.76		70.6	50	150				
Surr: o-Terphenyl	55.1		79.76		69.0	50	150				

Sample ID	LCS-12602	SampType: LCS	Units: µg/L	Prep Date: 12/17/2015	RunNo: 26627						
Client ID:	LCSW	Batch ID: 12602		Analysis Date: 12/18/2015	SeqNo: 501966						
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	700	50.0	999.1	0	70.1	65	135				
Surr: 2-Fluorobiphenyl	58.8		79.93		73.6	50	150				
Surr: o-Terphenyl	55.1		79.93		68.9	50	150				

Sample ID	1512138-001ADUP	SampType: DUP	Units: µg/L	Prep Date: 12/17/2015	RunNo: 26627						
Client ID:	BATCH	Batch ID: 12602		Analysis Date: 12/18/2015	SeqNo: 501957						
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	50.0						0		30	
Heavy Oil	101	100						136.0	29.1	30	
Surr: 2-Fluorobiphenyl	58.8		79.97		73.5	50	150		0		
Surr: o-Terphenyl	57.8		79.97		72.2	50	150		0		



**Fremont**  
Analytical

Date: 12/22/2015

**QC SUMMARY REPORT**  
**Gasoline by NWTPH-Gx**

**Work Order:** 1512144  
**CLIENT:** ATC Group Services, Inc.  
**Project:** Yarrow Bay Yatch Basin & Marina

Sample ID: LCS-R26641    SampType: LCS    Units: µg/L    Prep Date: 12/18/2015    RunNo: 26641  
Client ID: LCSW    Batch ID: R26641    Analysis Date: 12/18/2015    SeqNo: 502230

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	468	50.0	500.0	0	93.5	65	135				
Surr: Toluene-d8	25.9		25.00		104	65	135				
Surr: 4-Bromofluorobenzene	26.4		25.00		106	65	135				

Sample ID: MB-R26641    SampType: MBLK    Units: µg/L    Prep Date: 12/18/2015    RunNo: 26641  
Client ID: MBLKW    Batch ID: R26641    Analysis Date: 12/18/2015    SeqNo: 502231

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	50.0									
Surr: Toluene-d8	25.8		25.00		103	65	135				
Surr: 4-Bromofluorobenzene	25.7		25.00		103	65	135				

Sample ID: 1512144-001BDUP    SampType: DUP    Units: µg/L    Prep Date: 12/18/2015    RunNo: 26641  
Client ID: YB-03-MW-1    Batch ID: R26641    Analysis Date: 12/18/2015    SeqNo: 502224

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	50.0						0		30	
Surr: Toluene-d8	25.6		25.00		102	65	135		0	0	
Surr: 4-Bromofluorobenzene	26.3		25.00		105	65	135		0	0	



**Fremont**  
Analytical

Date: 12/22/2015

**QC SUMMARY REPORT**  
**Volatile Organic Compounds by EPA Method 8260**

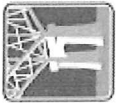
**Work Order:** 1512144  
**CLIENT:** ATC Group Services, Inc.  
**Project:** Yarrow Bay Yatch Basin & Marina

Sample ID	LCS-R26632	SampType: LCS	Units: µg/L	Prep Date: 12/18/2015	RunNo: 26632						
Client ID:	LCSW	Batch ID: R26632	Analysis Date: 12/18/2015	SeqNo: 502037							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21.2	1.00	20.00	0	106	69.3	132				
Toluene	20.2	1.00	20.00	0	101	61.3	145				
Ethylbenzene	19.3	1.00	20.00	0	96.6	72	130				
m,p-Xylene	39.6	1.00	40.00	0	99.1	70.3	134				
o-Xylene	19.5	1.00	20.00	0	97.4	72.1	131				
Surr: Dibromofluoromethane	27.6		25.00		110	45.4	152				
Surr: Toluene-d8	27.7		25.00		111	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	27.8		25.00		111	64.2	128				

Sample ID	MB-R26632	SampType: MBLK	Units: µg/L	Prep Date: 12/18/2015	RunNo: 26632						
Client ID:	MBLKW	Batch ID: R26632	Analysis Date: 12/18/2015	SeqNo: 502038							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.00									
Toluene	ND	1.00									
Ethylbenzene	ND	1.00									
m,p-Xylene	ND	1.00									
o-Xylene	ND	1.00									
Surr: Dibromofluoromethane	27.3		25.00		109	45.4	152				
Surr: Toluene-d8	27.7		25.00		111	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	27.4		25.00		110	64.2	128				

Sample ID	1512144-001BDUP	SampType: DUP	Units: µg/L	Prep Date: 12/18/2015	RunNo: 26632						
Client ID:	YB-03-MW-1	Batch ID: R26632	Analysis Date: 12/18/2015	SeqNo: 502016							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.00						0		30	
Toluene	ND	1.00						0		30	
Ethylbenzene	ND	1.00						0		30	
m,p-Xylene	ND	1.00						0		30	





Date: 12/22/2015

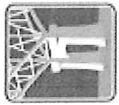
**Work Order:** 1512144  
**CLIENT:** ATC Group Services, Inc.  
**Project:** Yarrow Bay Yatch Basin & Marina

**QC SUMMARY REPORT**  
**Volatile Organic Compounds by EPA Method 8260**

Sample ID	1512144-001BDUP	SampType:	DUP	Units:	µg/L	RunNo:	26632				
Client ID:	YB-03-MW-1	Batch ID:	R26632	Prep Date:	12/18/2015	Analysis Date:	12/18/2015				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
o-Xylene	ND	1.00						0		30	
Surr: Dibromofluoromethane	26.4		25.00		106	45.4	152		0		
Surr: Toluene-d8	26.7		25.00		107	40.1	139		0		
Surr: 1-Bromo-4-fluorobenzene	28.1		25.00		112	64.2	128		0		

Sample ID	1512158-017ADUP	SampType:	DUP	Units:	µg/L	RunNo:	26632				
Client ID:	BATCH	Batch ID:	R26632	Prep Date:	12/18/2015	Analysis Date:	12/18/2015				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.00						0		30	
Toluene	ND	1.00						0		30	
Ethylbenzene	ND	1.00						0		30	
m,p-Xylene	ND	1.00						0		30	
o-Xylene	ND	1.00						0		30	
Surr: Dibromofluoromethane	27.0		25.00		108	45.4	152		0		
Surr: Toluene-d8	28.0		25.00		112	40.1	139		0		
Surr: 1-Bromo-4-fluorobenzene	27.8		25.00		111	64.2	128		0		

Sample ID	1512164-001BMS	SampType:	MS	Units:	µg/L	RunNo:	26632				
Client ID:	BATCH	Batch ID:	R26632	Prep Date:	12/18/2015	Analysis Date:	12/18/2015				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	18.5	1.00	20.00	0	92.4	65.4	138				
Toluene	18.2	1.00	20.00	0	91.0	64	139				
Ethylbenzene	18.2	1.00	20.00	0.2800	89.7	64.5	136				
m,p-Xylene	36.7	1.00	40.00	0.5300	90.4	63.3	135				
o-Xylene	18.6	1.00	20.00	0.7600	89.0	65.4	134				
Surr: Dibromofluoromethane	27.0		25.00		108	45.4	152				
Surr: Toluene-d8	27.4		25.00		110	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	29.3		25.00		117	64.2	128				



**Fremont**  
Analytical

Date: 12/22/2015

**Work Order:** 1512144  
**CLIENT:** ATC Group Services, Inc.  
**Project:** Yarrow Bay Yatch Basin & Marina

**QC SUMMARY REPORT**  
**Volatile Organic Compounds by EPA Method 8260**

Sample ID	1512164-001BMS	SampType:	MS	Units:	µg/L	Prep Date:	12/18/2015	RunNo:	26632		
Client ID:	BATCH	Batch ID:	R26632			Analysis Date:	12/18/2015	SeqNo:	502024		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual



Client Name: <b>ATC</b>	Work Order Number: <b>1512144</b>
Logged by: <b>Erica Silva</b>	Date Received: <b>12/16/2015 11:30:00 AM</b>

### Chain of Custody

1. Is Chain of Custody complete? Yes  No  Not Present
2. How was the sample delivered? Client

### Log In

3. Coolers are present? Yes  No  NA
4. Shipping container/cooler in good condition? Yes  No
5. Custody Seals present on shipping container/cooler?  
(Refer to comments for Custody Seals not intact) Yes  No  Not Required
6. Was an attempt made to cool the samples? Yes  No  NA
7. Were all items received at a temperature of >0°C to 10.0°C \* Yes  No  NA
8. Sample(s) in proper container(s)? Yes  No
9. Sufficient sample volume for indicated test(s)? Yes  No
10. Are samples properly preserved? Yes  No
11. Was preservative added to bottles? Yes  No  NA
12. Is there headspace in the VOA vials? Yes  No  NA
13. Did all samples containers arrive in good condition(unbroken)? Yes  No
14. Does paperwork match bottle labels? Yes  No
15. Are matrices correctly identified on Chain of Custody? Yes  No
16. Is it clear what analyses were requested? Yes  No
17. Were all holding times able to be met? Yes  No

### Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes  No  NA

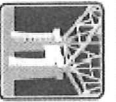
Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

19. Additional remarks:

### Item Information

Item #	Temp °C
Cooler	7.7
Sample	9.6

\* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C



# Fremont

ANALYTICAL

## Chain of Custody Record

3600 Fremont Ave N.  
Seattle, WA 98103

Tel: 206-352-3790  
Fax: 206-352-7178

Date: 12/16/15

Page: 1 of 1

Laboratory Project No (Internal):

1512144

Client: ATC Group Services  
Address: 6349 Services Ave NW  
City, State, Zip: Seattle WA 98107  
Telephone: 206-352-1449 Fax: \_\_\_\_\_

Project Name: Harbor Bay Yacht Basin Marina  
Project No: Z060030 Collected by: NB  
Location: 8207 Lake WA Blvd NE Kirkland WA  
Report to (PM): Nasir Bastami  
PM Email: nasir.bastami@atcassociates.com

\*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8160/624)	GVX/TEX	BTX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCO)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8170 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 808)	Metals** (EPA 6010 / 200.8)	Total (T) / Dissolved (D)	Anions (CI)**	EDB (801)†	Comments
1 YB-03 - MW-1	12/16	1000	GW	X													
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

\*\*Metals Analysis (Circle): MTCA-5 PCBs-8 Priority-Pollutants TAL Individual: Ag Al As B Ba Be Cs Cd Co Cr Cu Fe Hg K Mg Mn Mo Ni Nb Ni Pb Sn Sb Se Sr Sn Tl U V Zn

\*\*\*Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide Cyanide Fluoride Nitrate-Nitrite

Sample Disposal:  Return to Client  Disposal by Lab (Lab may be analyzed if samples are retained after 90 days)

Turn-around times for samples received after 4:00pm will begin on the following business day

Special Remarks:

Requisitioned 12/16/15 Date/Time 11:30 Received 12/16/15 Date/Time 11:30

Requisitioned 12/16/15 Date/Time 11:30 Received 12/16/15 Date/Time 11:30

Requisitioned 12/16/15 Date/Time 11:30 Received 12/16/15 Date/Time 11:30

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Requisitioned 12/16/15 Date/Time 11:30 Received 12/16/15 Date/Time 11:30

Requisitioned 12/16/15 Date/Time 11:30 Received 12/16/15 Date/Time 11:30

Distribution: White - Lab, Yellow - File, Pink - Originator

www.fremontanalytical.com



3600 Fremont Ave. N.  
Seattle, WA 98103  
T: (206) 352-3790  
F: (206) 352-7178  
[info@fremontanalytical.com](mailto:info@fremontanalytical.com)

**Cardno ATC**  
Nasrin Bastami  
6347 Seaview Ave NW  
Seattle, WA 98107

**RE: Yarrow Bay Yacht Basin & Marine**  
**Lab ID: 1509429**

October 05, 2015

**Attention Nasrin Bastami:**

Fremont Analytical, Inc. received 4 sample(s) on 9/30/2015 for the analyses presented in the following report.

*Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.*  
*Gasoline by NWTPH-Gx*  
*Sample Moisture (Percent Moisture)*  
*Volatile Organic Compounds by EPA Method 8260*

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

A handwritten signature in black ink, appearing to read "Chelsea Ward".

Chelsea Ward  
Project Manager



Date: 10/06/2015

---

**CLIENT:** Cardno ATC  
**Project:** Yarrow Bay Yacht Basin & Marine  
**Lab Order:** 1509429

---

## Work Order Sample Summary

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Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1509429-001	YB-02-MW1	09/30/2015 11:00 AM	09/30/2015 11:50 AM
1509429-002	YB-02-SD1	09/30/2015 10:30 AM	09/30/2015 11:50 AM
1509429-003	YB-02-SD2	09/30/2015 10:20 AM	09/30/2015 11:50 AM
1509429-004	YB-02-SD3	09/30/2015 10:00 AM	09/30/2015 11:50 AM

---

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned



---

**CLIENT:** Cardno ATC  
**Project:** Yarrow Bay Yacht Basin & Marine

---

**I. SAMPLE RECEIPT:**

Samples receipt information is recorded on the attached Sample Receipt Checklist.

**II. GENERAL REPORTING COMMENTS:**

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

**III. ANALYSES AND EXCEPTIONS:**

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Prep Comments for METHOD (PREP-DX-W), SAMPLE (1509429-001A) required Silica Gel Cleanup Procedure (Using Method No 3630C).  
Prep Comments for METHOD (PREP-DX-S), SAMPLE (1509429-004A) required Silica Gel Cleanup Procedure (Using Method No 3630C).  
Prep Comments for METHOD (PREP-DX-S), SAMPLE (1509429-003A) required Silica Gel Cleanup Procedure (Using Method No 3630C).  
Prep Comments for METHOD (PREP-DX-S), SAMPLE (1509429-002A) required Silica Gel Cleanup Procedure (Using Method No 3630C).



## Qualifiers & Acronyms

WO#: 1509429

Date Reported: 10/5/2015

---

### Qualifiers:

- \* - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below LOQ
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit

### Acronyms:

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate





# Analytical Report

WO#: 1509429

Date Reported: 10/5/2015

**Client:** Cardno ATC

**Collection Date:** 9/30/2015 11:00:00 AM

**Project:** Yarrow Bay Yacht Basin & Marine

**Lab ID:** 1509429-001

**Matrix:** Groundwater

**Client Sample ID:** YB-02-MW1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Batch ID: 11989      Analyst: EC

Diesel (Fuel Oil)	484	50.0		µg/L	1	10/2/2015 3:38:00 AM
Heavy Oil	ND	99.9		µg/L	1	10/2/2015 3:38:00 AM
Surr: 2-Fluorobiphenyl	72.4	50-150		%REC	1	10/2/2015 3:38:00 AM
Surr: o-Terphenyl	67.1	50-150		%REC	1	10/2/2015 3:38:00 AM

**Gasoline by NWTPH-Gx**

Batch ID: R25269      Analyst: BC

Gasoline	ND	50.0		µg/L	1	10/1/2015 9:47:00 PM
Surr: 4-Bromofluorobenzene	98.5	65-135		%REC	1	10/1/2015 9:47:00 PM
Surr: Toluene-d8	99.5	65-135		%REC	1	10/1/2015 9:47:00 PM

**Volatile Organic Compounds by EPA Method 8260**

Batch ID: R25264      Analyst: BC

Benzene	ND	1.00		µg/L	1	10/1/2015 9:47:00 PM
Toluene	ND	1.00		µg/L	1	10/1/2015 9:47:00 PM
Ethylbenzene	ND	1.00		µg/L	1	10/1/2015 9:47:00 PM
m,p-Xylene	ND	1.00		µg/L	1	10/1/2015 9:47:00 PM
o-Xylene	ND	1.00		µg/L	1	10/1/2015 9:47:00 PM
Surr: Dibromofluoromethane	99.9	45.4-152		%REC	1	10/1/2015 9:47:00 PM
Surr: Toluene-d8	97.5	40.1-139		%REC	1	10/1/2015 9:47:00 PM
Surr: 1-Bromo-4-fluorobenzene	97.4	64.2-128		%REC	1	10/1/2015 9:47:00 PM



# Analytical Report

WO#: 1509429

Date Reported: 10/5/2015

**Client:** Cardno ATC

**Collection Date:** 9/30/2015 10:30:00 AM

**Project:** Yarrow Bay Yacht Basin & Marine

**Lab ID:** 1509429-002

**Matrix:** Sediment

**Client Sample ID:** YB-02-SD1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b><u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u></b>					Batch ID: 12020	Analyst: EC
Diesel (Fuel Oil)	ND	22.4		mg/Kg-dry	1	10/2/2015 9:11:00 AM
Heavy Oil	ND	56.0		mg/Kg-dry	1	10/2/2015 9:11:00 AM
Surr: 2-Fluorobiphenyl	102	50-150		%REC	1	10/2/2015 9:11:00 AM
Surr: o-Terphenyl	103	50-150		%REC	1	10/2/2015 9:11:00 AM
<b><u>Gasoline by NWTPH-Gx</u></b>					Batch ID: 11977	Analyst: BC
Gasoline	ND	5.70		mg/Kg-dry	1	10/1/2015 10:46:00 PM
Surr: 4-Bromofluorobenzene	98.6	65-135		%REC	1	10/1/2015 10:46:00 PM
Surr: Toluene-d8	94.0	65-135		%REC	1	10/1/2015 10:46:00 PM
<b><u>Volatile Organic Compounds by EPA Method 8260</u></b>					Batch ID: 11977	Analyst: BC
Benzene	ND	0.0228		mg/Kg-dry	1	10/1/2015 10:46:00 PM
Toluene	ND	0.0228		mg/Kg-dry	1	10/1/2015 10:46:00 PM
Ethylbenzene	ND	0.0342		mg/Kg-dry	1	10/1/2015 10:46:00 PM
m,p-Xylene	ND	0.0228		mg/Kg-dry	1	10/1/2015 10:46:00 PM
o-Xylene	ND	0.0228		mg/Kg-dry	1	10/1/2015 10:46:00 PM
Surr: Dibromofluoromethane	102	56.5-129		%REC	1	10/1/2015 10:46:00 PM
Surr: Toluene-d8	103	64.3-131		%REC	1	10/1/2015 10:46:00 PM
Surr: 1-Bromo-4-fluorobenzene	99.8	63.1-141		%REC	1	10/1/2015 10:46:00 PM
<b><u>Sample Moisture (Percent Moisture)</u></b>					Batch ID: R25228	Analyst: CG
Percent Moisture	16.0	0.500		wt%	1	10/1/2015 8:40:20 AM



**Client:** Cardno ATC

**Collection Date:** 9/30/2015 10:20:00 AM

**Project:** Yarrow Bay Yacht Basin & Marine

**Lab ID:** 1509429-003

**Matrix:** Sediment

**Client Sample ID:** YB-02-SD2

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b><u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u></b>					Batch ID: 12020	Analyst: EC
Diesel (Fuel Oil)	ND	25.4		mg/Kg-dry	1	10/2/2015 10:13:00 AM
Heavy Oil	240	63.5		mg/Kg-dry	1	10/2/2015 10:13:00 AM
Surr: 2-Fluorobiphenyl	117	50-150		%REC	1	10/2/2015 10:13:00 AM
Surr: o-Terphenyl	117	50-150		%REC	1	10/2/2015 10:13:00 AM
<b><u>Gasoline by NWTPH-Gx</u></b>					Batch ID: 11977	Analyst: BC
Gasoline	ND	6.57		mg/Kg-dry	1	10/1/2015 11:14:00 PM
Surr: 4-Bromofluorobenzene	101	65-135		%REC	1	10/1/2015 11:14:00 PM
Surr: Toluene-d8	91.8	65-135		%REC	1	10/1/2015 11:14:00 PM
<b><u>Volatile Organic Compounds by EPA Method 8260</u></b>					Batch ID: 11977	Analyst: BC
Benzene	ND	0.0263		mg/Kg-dry	1	10/1/2015 11:14:00 PM
Toluene	ND	0.0263		mg/Kg-dry	1	10/1/2015 11:14:00 PM
Ethylbenzene	ND	0.0394		mg/Kg-dry	1	10/1/2015 11:14:00 PM
m,p-Xylene	ND	0.0263		mg/Kg-dry	1	10/1/2015 11:14:00 PM
o-Xylene	ND	0.0263		mg/Kg-dry	1	10/1/2015 11:14:00 PM
Surr: Dibromofluoromethane	98.6	56.5-129		%REC	1	10/1/2015 11:14:00 PM
Surr: Toluene-d8	97.7	64.3-131		%REC	1	10/1/2015 11:14:00 PM
Surr: 1-Bromo-4-fluorobenzene	102	63.1-141		%REC	1	10/1/2015 11:14:00 PM
<b><u>Sample Moisture (Percent Moisture)</u></b>					Batch ID: R25228	Analyst: CG
Percent Moisture	24.5	0.500		wt%	1	10/1/2015 8:40:20 AM



# Analytical Report

WO#: 1509429

Date Reported: 10/5/2015

**Client:** Cardno ATC

**Collection Date:** 9/30/2015 10:00:00 AM

**Project:** Yarrow Bay Yacht Basin & Marine

**Lab ID:** 1509429-004

**Matrix:** Sediment

**Client Sample ID:** YB-02-SD3

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b><u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u></b>					Batch ID: 12020	Analyst: EC
Diesel (Fuel Oil)	ND	22.6		mg/Kg-dry	1	10/2/2015 10:45:00 AM
Heavy Oil	64.1	56.6		mg/Kg-dry	1	10/2/2015 10:45:00 AM
Surr: 2-Fluorobiphenyl	108	50-150		%REC	1	10/2/2015 10:45:00 AM
Surr: o-Terphenyl	107	50-150		%REC	1	10/2/2015 10:45:00 AM
<b><u>Gasoline by NWTPH-Gx</u></b>					Batch ID: 11977	Analyst: BC
Gasoline	ND	6.12		mg/Kg-dry	1	10/1/2015 11:43:00 PM
Surr: 4-Bromofluorobenzene	94.8	65-135		%REC	1	10/1/2015 11:43:00 PM
Surr: Toluene-d8	91.8	65-135		%REC	1	10/1/2015 11:43:00 PM
<b><u>Volatile Organic Compounds by EPA Method 8260</u></b>					Batch ID: 11977	Analyst: BC
Benzene	ND	0.0245		mg/Kg-dry	1	10/1/2015 11:43:00 PM
Toluene	ND	0.0245		mg/Kg-dry	1	10/1/2015 11:43:00 PM
Ethylbenzene	ND	0.0367		mg/Kg-dry	1	10/1/2015 11:43:00 PM
m,p-Xylene	ND	0.0245		mg/Kg-dry	1	10/1/2015 11:43:00 PM
o-Xylene	ND	0.0245		mg/Kg-dry	1	10/1/2015 11:43:00 PM
Surr: Dibromofluoromethane	101	56.5-129		%REC	1	10/1/2015 11:43:00 PM
Surr: Toluene-d8	103	64.3-131		%REC	1	10/1/2015 11:43:00 PM
Surr: 1-Bromo-4-fluorobenzene	95.6	63.1-141		%REC	1	10/1/2015 11:43:00 PM
<b><u>Sample Moisture (Percent Moisture)</u></b>					Batch ID: R25228	Analyst: CG
Percent Moisture	19.3	0.500		wt%	1	10/1/2015 8:40:20 AM



Date: 10/5/2015

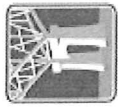
**QC SUMMARY REPORT**  
**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

**Work Order:** 1509429  
**CLIENT:** Cardno ATC  
**Project:** Yarrow Bay Yacht Basin & Marine

Sample ID	MB-12020	SampType: MBLK	Units: mg/Kg	Prep Date: 10/1/2015	RunNo: 25256						
Client ID:	MBLKS	Batch ID: 12020		Analysis Date: 10/2/2015	SeqNo: 476259						
Analyte	Result	RL	SPK value	SPK RefVal	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	20.0									
Heavy Oil	ND	50.0									
Surr: 2-Fluorobiphenyl	22.0		20.00		110	50	150				
Surr: o-Terphenyl	21.7		20.00		109	50	150				

Sample ID	LCS-12020	SampType: LCS	Units: mg/Kg	Prep Date: 10/1/2015	RunNo: 25256						
Client ID:	LCSS	Batch ID: 12020		Analysis Date: 10/2/2015	SeqNo: 476258						
Analyte	Result	RL	SPK value	SPK RefVal	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	533	20.0	500.0	0	107	65	135				
Surr: 2-Fluorobiphenyl	21.9		20.00		109	50	150				
Surr: o-Terphenyl	20.6		20.00		103	50	150				

Sample ID	1509429-002ADUP	SampType: DUP	Units: mg/Kg-dty	Prep Date: 10/1/2015	RunNo: 25256						
Client ID:	YB-02-SD1	Batch ID: 12020		Analysis Date: 10/2/2015	SeqNo: 476274						
Analyte	Result	RL	SPK value	SPK RefVal	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	23.2						0		30	
Heavy Oil	ND	58.0						0		30	
Surr: 2-Fluorobiphenyl	22.9		23.20		98.8	50	150		0		
Surr: o-Terphenyl	23.0		23.20		99.1	50	150		0		



**Fremont**  
Analytical

Date: 10/5/2015

**QC SUMMARY REPORT**  
**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

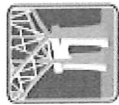
Work Order: 1509429  
CLIENT: Cardno ATC  
Project: Yarrow Bay Yacht Basin & Marine

Sample ID	MB-11989	SampType: MBLK	Units: µg/L	Prep Date: 9/30/2015	RunNo: 25251						
Client ID:	MBLKW	Batch ID: 11989		Analysis Date: 10/1/2015	SeqNo: 476196						
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	49.8									
Heavy Oil	ND	99.6									
Surr: 2-Fluorobiphenyl	52.5		79.70		65.9	50	150				
Surr: o-Terphenyl	52.5		79.70		65.9	50	150				

Sample ID	LCS-11989	SampType: LCS	Units: µg/L	Prep Date: 9/30/2015	RunNo: 25251						
Client ID:	LCSW	Batch ID: 11989		Analysis Date: 10/1/2015	SeqNo: 476195						
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	656	50.0	999.0	0	65.7	65	135				
Surr: 2-Fluorobiphenyl	46.5		79.92		58.2	50	150				
Surr: o-Terphenyl	42.3		79.92		52.9	50	150				

Sample ID	1509348-001CDUP	SampType: DUP	Units: µg/L	Prep Date: 9/30/2015	RunNo: 25251						
Client ID:	BATCH	Batch ID: 11989		Analysis Date: 10/1/2015	SeqNo: 476171						
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	77.3	49.9						74.58	3.62	30	
Heavy Oil	216	99.8						227.5	5.13	30	
Surr: 2-Fluorobiphenyl	52.9		79.84		66.2	50	150		0		
Surr: o-Terphenyl	50.4		79.84		63.1	50	150		0		

Sample ID	1509396-001ADUP	SampType: DUP	Units: µg/L	Prep Date: 9/30/2015	RunNo: 25251						
Client ID:	BATCH	Batch ID: 11989		Analysis Date: 10/1/2015	SeqNo: 476180						
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	141	49.9						131.2	6.90	30	
Heavy Oil	ND	99.8						0		30	
Surr: 2-Fluorobiphenyl	50.2		79.86		62.8	50	150		0		
Surr: o-Terphenyl	49.9		79.86		62.5	50	150		0		



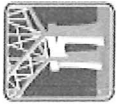
**Fremont**  
Analytical

Date: 10/5/2015

Work Order: 1509429  
CLIENT: Cardno ATC  
Project: Yarrow Bay Yacht Basin & Marine

**QC SUMMARY REPORT**  
**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Sample ID	1509396-001ADUP	SampType:	DUP	Units:	µg/L	Prep Date:	9/30/2015	RunNo:	25251				
Client ID:	BATCH	Batch ID:	11989			Analysis Date:	10/1/2015	SeqNo:	476180				
Analyte		Result		RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual



**Fremont**  
Analytical

Date: 10/5/2015

**QC SUMMARY REPORT**  
**Gasoline by NWTPH-Gx**

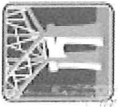
**Work Order:** 1509429  
**CLIENT:** Cardno ATC  
**Project:** Yarrow Bay Yacht Basin & Marine

Sample ID	LCS-11977	SampleType: LCS	Units: mg/Kg	Prep Date: 9/28/2015	RunNo: 25259						
Client ID:	LCSS	Batch ID: 11977		Analysis Date: 10/1/2015	SeqNo: 476305						
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	24.8	5.00	25.00	0	99.2	65	135				
Surr: Toluene-d8	1.18		1.250		94.6	65	135				
Surr: 4-Bromofluorobenzene	1.24		1.250		99.0	65	135				

Sample ID	MB-11977	SampleType: MBLK	Units: mg/Kg	Prep Date: 9/28/2015	RunNo: 25259						
Client ID:	MBLKS	Batch ID: 11977		Analysis Date: 10/1/2015	SeqNo: 476306						
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	5.00									
Surr: Toluene-d8	1.18		1.250		94.5	65	135				
Surr: 4-Bromofluorobenzene	1.19		1.250		95.1	65	135				

Sample ID	1510003-007BDUP	SampleType: DUP	Units: mg/Kg-dry	Prep Date: 10/1/2015	RunNo: 25259						
Client ID:	BATCH	Batch ID: 11977		Analysis Date: 10/2/2015	SeqNo: 476300						
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	4.34						0		30	
Surr: Toluene-d8	1.05		1.086		96.6	65	135			0	
Surr: 4-Bromofluorobenzene	1.06		1.086		97.8	65	135			0	





**Fremont**  
Analytical

Date: 10/5/2015

**QC SUMMARY REPORT**  
**Gasoline by NWTPH-Gx**

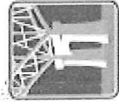
**Work Order:** 1509429  
**CLIENT:** Cardno ATC  
**Project:** Yarrow Bay Yacht Basin & Marine

Sample ID	LCS-R25269	SampType: LCS	Units: µg/L	Prep Date: 10/1/2015	RunNo: 25269						
Client ID:	LCSW	Batch ID: R25269	Analysis Date: 10/1/2015	SeqNo: 476469							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	476	50.0	500.0	0	95.2	65	135				
Surr: Toluene-d8	25.2		25.00		101	65	135				
Surr: 4-Bromofluorobenzene	24.8		25.00		99.3	65	135				

Sample ID	MB-R25269	SampType: MBLK	Units: µg/L	Prep Date: 10/1/2015	RunNo: 25269						
Client ID:	MBLKW	Batch ID: R25269	Analysis Date: 10/1/2015	SeqNo: 476470							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	50.0									
Surr: Toluene-d8	24.7		25.00		98.7	65	135				
Surr: 4-Bromofluorobenzene	25.3		25.00		101	65	135				

Sample ID	1509435-012BDUP	SampType: DUP	Units: µg/L	Prep Date: 10/1/2015	RunNo: 25269						
Client ID:	BATCH	Batch ID: R25269	Analysis Date: 10/1/2015	SeqNo: 476465							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	50.0						0		30	
Surr: Toluene-d8	24.8		25.00		99.3	65	135		0	0	
Surr: 4-Bromofluorobenzene	25.2		25.00		101	65	135		0	0	

Sample ID	1509434-001ADUP	SampType: DUP	Units: µg/L	Prep Date: 10/1/2015	RunNo: 25269						
Client ID:	BATCH	Batch ID: R25269	Analysis Date: 10/1/2015	SeqNo: 476460							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	50.0						0		30	
Surr: Toluene-d8	24.9		25.00		99.5	65	135		0	0	
Surr: 4-Bromofluorobenzene	24.9		25.00		99.5	65	135		0	0	



**Fremont**  
Analytical

Date: 10/5/2015

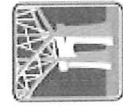
**QC SUMMARY REPORT**  
**Volatile Organic Compounds by EPA Method 8260**

Work Order: 1509429  
CLIENT: Cardno ATC  
Project: Yarrow Bay Yacht Basin & Marine

Sample ID	LCS-11977	SampType: LCS	Units: mg/Kg	Prep Date: 9/28/2015	RunNo: 25258						
Client ID:	LCSS	Batch ID: 11977	Analysis Date: 10/1/2015	SeqNo: 476292							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	0.932	0.0200	1.000	0	93.2	64.3	133				
Toluene	0.938	0.0200	1.000	0	93.8	67.3	138				
Ethylbenzene	0.886	0.0300	1.000	0	88.6	74	129				
m,p-Xylene	1.84	0.0200	2.000	0	91.9	79.8	128				
o-Xylene	0.906	0.0200	1.000	0	90.7	72.7	124				
Surr: Dibromofluoromethane	1.21		1.250		96.8	56.5	129				
Surr: Toluene-d8	1.26		1.250		100	64.3	131				
Surr: 1-Bromo-4-fluorobenzene	1.29		1.250		104	63.1	141				

Sample ID	MB-11977	SampType: MBLK	Units: mg/Kg	Prep Date: 9/28/2015	RunNo: 25258						
Client ID:	MBLKS	Batch ID: 11977	Analysis Date: 10/1/2015	SeqNo: 476293							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.0200									
Toluene	ND	0.0200									
Ethylbenzene	ND	0.0300									
m,p-Xylene	ND	0.0200									
o-Xylene	ND	0.0200									
Surr: Dibromofluoromethane	1.20		1.250		96.0	56.5	129				
Surr: Toluene-d8	1.26		1.250		101	64.3	131				
Surr: 1-Bromo-4-fluorobenzene	1.20		1.250		96.2	63.1	141				

Sample ID	1509258-001BDJUP	SampType: DUP	Units: mg/Kg-dry	Prep Date: 10/1/2015	RunNo: 25258						
Client ID:	BATCH	Batch ID: 11977	Analysis Date: 10/1/2015	SeqNo: 476276							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.0229						0		30	
Toluene	ND	0.0229						0		30	
Ethylbenzene	ND	0.0343						0		30	
m,p-Xylene	ND	0.0229						0		30	



Date: 10/5/2015

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260

Work Order: 1509429  
CLIENT: Cardno ATC  
Project: Yarrow Bay Yacht Basin & Marine

Sample ID	1509258-001BDUP	SampType: DUP	Units: mg/Kg-dry	Prep Date: 10/1/2015	RunNo: 25258		
Client ID:	BATCH	Batch ID: 11977	%REC	Analysis Date: 10/1/2015	SeqNo: 476276		
Analyte	Result	RL	SPK value	SPK Ref Val	%RPD	RPDLimit	Qual
o-Xylene	ND	0.0229			0		30
Surr: Dibromofluoromethane	1.40		1.431	56.5		129	0
Surr: Toluene-d8	1.42		1.431	64.3		131	0
Surr: 1-Bromo-4-fluorobenzene	1.36		1.431	63.1		141	0

Sample ID	1510003-007BDUP	SampType: DUP	Units: mg/Kg-dry	Prep Date: 10/1/2015	RunNo: 25258		
Client ID:	BATCH	Batch ID: 11977	%REC	Analysis Date: 10/2/2015	SeqNo: 476287		
Analyte	Result	RL	SPK value	SPK Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.0174			0		30
Toluene	ND	0.0174			0		30
Ethylbenzene	ND	0.0261			0		30
m,p-Xylene	ND	0.0174			0		30
o-Xylene	ND	0.0174			0		30
Surr: Dibromofluoromethane	1.07		1.086	56.5		129	0
Surr: Toluene-d8	1.12		1.086	64.3		131	0
Surr: 1-Bromo-4-fluorobenzene	1.07		1.086	63.1		141	0

Sample ID	1509429-002BMS	SampType: MS	Units: mg/Kg-dry	Prep Date: 10/1/2015	RunNo: 25258		
Client ID:	YB-02-SD1	Batch ID: 11977	%REC	Analysis Date: 10/2/2015	SeqNo: 476283		
Analyte	Result	RL	SPK value	SPK Ref Val	%RPD	RPDLimit	Qual
Benzene	1.25	0.0228	1.141	0	110	133	
Toluene	1.25	0.0228	1.141	0	110	132	
Ethylbenzene	1.20	0.0342	1.141	0	105	134	
m,p-Xylene	2.36	0.0228	2.282	0	104	132	
o-Xylene	1.20	0.0228	1.141	0	105	139	
Surr: Dibromofluoromethane	1.42		1.426	56.5		129	
Surr: Toluene-d8	1.43		1.426	64.3		131	
Surr: 1-Bromo-4-fluorobenzene	1.41		1.426	63.1		141	



Date: 10/5/2015

**QC SUMMARY REPORT**  
**Volatile Organic Compounds by EPA Method 8260**

**Work Order:** 1509429  
**CLIENT:** Cardno ATC  
**Project:** Yarrow Bay Yacht Basin & Marine

Sample ID: 1509429-002BMS	SampType: MS	Units: mg/Kg-dry	Prep Date: 10/1/2015	RunNo: 25258
Client ID: YB-02-SD1	Batch ID: 11977		Analysis Date: 10/2/2015	SeqNo: 476283
Analyte	Result	RL	SPK value	SPK Ref Val
		%REC	LowLimit	HighLimit
			RPD Ref Val	RPD Limit
				Qual



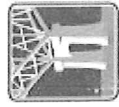
Date: 10/5/2015

**Work Order:** 1509429  
**CLIENT:** Cardno ATC  
**Project:** Yarrow Bay Yacht Basin & Marine  
**QC SUMMARY REPORT**  
**Volatile Organic Compounds by EPA Method 8260**

Sample ID	LCS-R25264	Samp Type:	LCS	Batch ID:	R25264	Units:	µg/L	Prep Date:	10/1/2015	RunNo:	25264
Client ID:	LCSW							Analysis Date:	10/1/2015	SeqNo:	476371
Analyte	Result	RL	SPK value	SPK RefVal	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	19.8	1.00	20.00	0	99.1	69.3	132				
Toluene	20.7	1.00	20.00	0	104	61.3	145				
Ethylbenzene	20.4	1.00	20.00	0	102	72	130				
m,p-Xylene	41.2	1.00	40.00	0	103	70.3	134				
o-Xylene	20.7	1.00	20.00	0	104	72.1	131				
Surr: Dibromofluoromethane	24.8		25.00		99.1	45.4	152				
Surr: Toluene-d8	25.6		25.00		102	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	24.7		25.00		98.7	64.2	128				

Sample ID	MB-R25264	Samp Type:	MBLK	Batch ID:	R25264	Units:	µg/L	Prep Date:	10/1/2015	RunNo:	25264
Client ID:	MBLKW							Analysis Date:	10/1/2015	SeqNo:	476372
Analyte	Result	RL	SPK value	SPK RefVal	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.00									
Toluene	ND	1.00									
Ethylbenzene	ND	1.00									
m,p-Xylene	ND	1.00									
o-Xylene	ND	1.00									
Surr: Dibromofluoromethane	24.3		25.00		97.2	45.4	152				
Surr: Toluene-d8	24.4		25.00		97.7	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	24.9		25.00		99.6	64.2	128				

Sample ID	1509435-012BDUP	Samp Type:	DUP	Batch ID:	R25264	Units:	µg/L	Prep Date:	10/1/2015	RunNo:	25264
Client ID:	BATCH							Analysis Date:	10/1/2015	SeqNo:	476364
Analyte	Result	RL	SPK value	SPK RefVal	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.00									30
Toluene	ND	1.00									30
Ethylbenzene	ND	1.00									30
m,p-Xylene	ND	1.00									30



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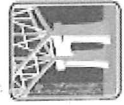
Date: 10/5/2015

**Work Order:** 1509429  
**CLIENT:** Cardno ATC  
**Project:** Yarrow Bay Yacht Basin & Marine  
**QC SUMMARY REPORT**  
**Volatile Organic Compounds by EPA Method 8260**

Sample ID	1509435-012BDUP	SampType:	DUP	Units:	µg/L	Prep Date:	10/1/2015	RunNo:	25264		
Client ID:	BATCH	Batch ID:	R25264	Analysis Date:	10/1/2015	SeqNo:	476364				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
o-Xylene	ND	1.00						0		30	
Surr: Dibromofluoromethane	24.7		25.00		98.7	45.4	152		0		
Surr: Toluene-d8	24.6		25.00		98.2	40.1	139		0		
Surr: 1-Bromo-4-fluorobenzene	24.9		25.00		99.5	64.2	128		0		

Sample ID	1509434-001ADUP	SampType:	DUP	Units:	µg/L	Prep Date:	10/1/2015	RunNo:	25264		
Client ID:	BATCH	Batch ID:	R25264	Analysis Date:	10/1/2015	SeqNo:	476359				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.00						0		30	
Toluene	ND	1.00						0		30	
Ethylbenzene	ND	1.00						0		30	
m,p-Xylene	ND	1.00						0		30	
o-Xylene	ND	1.00						0		30	
Surr: Dibromofluoromethane	24.8		25.00		99.2	45.4	152		0		
Surr: Toluene-d8	24.7		25.00		98.7	40.1	139		0		
Surr: 1-Bromo-4-fluorobenzene	24.6		25.00		98.5	64.2	128		0		

Sample ID	1509427-004AMS	SampType:	MS	Units:	µg/L	Prep Date:	10/2/2015	RunNo:	25264		
Client ID:	BATCH	Batch ID:	R25264	Analysis Date:	10/2/2015	SeqNo:	476349				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	382	1.00	20.00	395.1	-64.4	65.4	138				SE
Toluene	298	1.00	20.00	280.9	85.5	64	139				E
Ethylbenzene	284	1.00	20.00	314.3	-150	64.5	136				SE
m,p-Xylene	1,060	1.00	40.00	1,192	-325	63.3	135				SE
o-Xylene	674	1.00	20.00	736.2	-310	65.4	134				SE
Surr: Dibromofluoromethane	25.9		25.00		103	45.4	152				
Surr: Toluene-d8	29.8		25.00		119	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	26.6		25.00		106	64.2	128				



**Fremont**  
Analytical

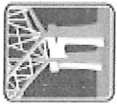
Date: 10/5/2015

**Work Order:** 1509429  
**CLIENT:** Cardno ATC  
**Project:** Yarrow Bay Yacht Basin & Marine

**QC SUMMARY REPORT**  
**Volatile Organic Compounds by EPA Method 8260**

Sample ID: 1509427-004AMS	SampType: MS	Units: µg/L	Prep Date: 10/2/2015	RunNo: 25264
Client ID: BATCH	Batch ID: R25264		Analysis Date: 10/2/2015	SeqNo: 476349
Analyte	Result	RL	SPK value	SPK Ref Val
		%REC	LowLimit	HighLimit
			RPD Ref Val	RPD Limit
				RPD Limit
				Qual

**NOTES:**  
S - Spike recovery indicates a possible matrix effect. The method is in control as indicated by the Laboratory Control Sample (LCS).



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Analytical

Date: 10/5/2015

**Work Order:** 1509429  
**CLIENT:** Cardno ATC  
**Project:** Yarrow Bay Yacht Basin & Marine

**QC SUMMARY REPORT**

**Sample Moisture (Percent Moisture)**

Sample ID: 1509291-006ADUP	Samp Type: DUP	Units: wt%	Prep Date: 10/1/2015	RunNo: 25228
Client ID: BATCH	Batch ID: R25228		Analysis Date: 10/1/2015	SeqNo: 475788
Analyte	Result	RL	SPK value	SPK Ref Val

Percent Moisture	11.0	0.500		
	11.33		3.23	20
			%RPD	RPDLimit
			RPD Ref Val	Qual





## Sample Log-In Check List

Client Name: <b>ATC</b>	Work Order Number: <b>1509429</b>
Logged by: <b>Erica Silva</b>	Date Received: <b>9/30/2015 11:50:00 AM</b>

### Chain of Custody

1. Is Chain of Custody complete? Yes  No  Not Present
2. How was the sample delivered? Client

### Log In

3. Coolers are present? Yes  No  NA
4. Shipping container/cooler in good condition? Yes  No
5. Custody Seals present on shipping container/cooler?  
(Refer to comments for Custody Seals not intact) Yes  No  Not Required
6. Was an attempt made to cool the samples? Yes  No  NA
7. Were all items received at a temperature of >0°C to 10.0°C \* Yes  No  NA
8. Sample(s) in proper container(s)? Yes  No
9. Sufficient sample volume for indicated test(s)? Yes  No
10. Are samples properly preserved? Yes  No
11. Was preservative added to bottles? Yes  No  NA
12. Is there headspace in the VOA vials? Yes  No  NA
13. Did all samples containers arrive in good condition(unbroken)? Yes  No
14. Does paperwork match bottle labels? Yes  No
15. Are matrices correctly identified on Chain of Custody? Yes  No
16. Is it clear what analyses were requested? Yes  No
17. Were all holding times able to be met? Yes  No

CH3OH to 002B - 004B

### Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	Nasrin Bastami	Date:	9/30/2015
By Whom:	Erica Silva	Via:	<input checked="" type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	Silica gel treatment application		
Client Instructions:	Silica gel clean-up on all four samples for Dx analysis		

19. Additional remarks:

### Item Information

Item #	Temp °C
Cooler	8.8
Sample	7.8

\* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C





3600 Fremont Ave. N.  
Seattle, WA 98103  
T: (206) 352-3790  
F: (206) 352-7178  
[info@fremontanalytical.com](mailto:info@fremontanalytical.com)

**Cardno ATC**  
Nasrin Bastami  
6347 Seaview Ave NW  
Seattle, WA 98107

**RE: Yarrow Bay**  
**Lab ID: 1506335**

July 08, 2015

**Attention Nasrin Bastami:**

Fremont Analytical, Inc. received 1 sample(s) on 6/30/2015 for the analyses presented in the following report.

***Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.***  
***Gasoline by NWTPH-Gx***  
***Volatile Organic Compounds by EPA Method 8260***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

A handwritten signature in black ink, appearing to read "Chelsea Ward".

Chelsea Ward  
Project Manager



Date: 07/08/2015

---

**CLIENT:** Cardno ATC  
**Project:** Yarrow Bay  
**Lab Order:** 1506335

---

## Work Order Sample Summary

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Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1506335-001	YB-0630	06/30/2015 2:40 PM	06/30/2015 3:10 PM

---

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned



**CLIENT:** Cardno ATC

**Project:** Yarrow Bay

---

**I. SAMPLE RECEIPT:**

Samples receipt information is recorded on the attached Sample Receipt Checklist.

**II. GENERAL REPORTING COMMENTS:**

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

**III. ANALYSES AND EXCEPTIONS:**

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Prep Comments for METHOD (PREP-DX-W), SAMPLE (1506335-001A) required Silica Gel Cleanup Procedure (Using Method No 3630C).



## Qualifiers & Acronyms

WO#: 1506335

Date Reported: 7/8/2015

---

### Qualifiers:

- \* - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below LOQ
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit

### Acronyms:

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



# Analytical Report

WO#: 1506335

Date Reported: 7/8/2015

**Client:** Cardno ATC

**Collection Date:** 6/30/2015 2:40:00 PM

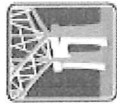
**Project:** Yarrow Bay

**Lab ID:** 1506335-001

**Matrix:** Water

**Client Sample ID:** YB-0630

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b><u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u></b>						
				Batch ID: 11195		Analyst: EC
Diesel (Fuel Oil)	397	50.0		µg/L	1	7/2/2015 11:39:00 AM
Heavy Oil	ND	100		µg/L	1	7/2/2015 11:39:00 AM
Surr: 2-Fluorobiphenyl	65.6	50-150		%REC	1	7/2/2015 11:39:00 AM
Surr: o-Terphenyl	64.3	50-150		%REC	1	7/2/2015 11:39:00 AM
<b><u>Gasoline by NWTPH-Gx</u></b>						
				Batch ID: R23392		Analyst: AK
Gasoline	ND	50.0		µg/L	1	7/8/2015 10:46:00 AM
Surr: 4-Bromofluorobenzene	95.3	65-135		%REC	1	7/8/2015 10:46:00 AM
Surr: Toluene-d8	95.4	65-135		%REC	1	7/8/2015 10:46:00 AM
<b><u>Volatile Organic Compounds by EPA Method 8260</u></b>						
				Batch ID: R23390		Analyst: AK
Benzene	ND	1.00		µg/L	1	7/7/2015 6:56:00 PM
Toluene	ND	1.00		µg/L	1	7/7/2015 6:56:00 PM
Ethylbenzene	ND	1.00		µg/L	1	7/7/2015 6:56:00 PM
m,p-Xylene	ND	1.00		µg/L	1	7/7/2015 6:56:00 PM
o-Xylene	ND	1.00		µg/L	1	7/7/2015 6:56:00 PM
Surr: Dibromofluoromethane	109	77.4-147		%REC	1	7/7/2015 6:56:00 PM
Surr: Toluene-d8	100	40.1-139		%REC	1	7/7/2015 6:56:00 PM
Surr: 1-Bromo-4-fluorobenzene	93.3	64.2-128		%REC	1	7/7/2015 6:56:00 PM



**Fremont**  
Analytical

Date: 7/8/2015

**QC SUMMARY REPORT**  
**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

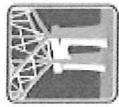
Work Order: 1506335  
CLIENT: Cardno ATC  
Project: Yarrow Bay

Sample ID	1506307-001BDUP	SampType: DUP	Units: µg/L	Prep Date: 6/30/2015	RunNo: 23343						
Client ID:	BATCH	Batch ID: 11195		Analysis Date: 7/1/2015	SeqNo: 442163						
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	50.0						0			30
Heavy Oil	ND	100						0			30
Surr: 2-Fluorobiphenyl	43.7		80.01		54.6	50	150		0		
Surr: o-Terphenyl	46.3		80.01		57.9	50	150		0		

Sample ID	LCS-11195	SampType: LCS	Units: µg/L	Prep Date: 6/30/2015	RunNo: 23343						
Client ID:	LCSW	Batch ID: 11195		Analysis Date: 7/1/2015	SeqNo: 442170						
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	82.1	50.0	1,000	0	82.1	65	135				
Surr: 2-Fluorobiphenyl	47.8		80.00		59.8	50	150				
Surr: o-Terphenyl	43.3		80.00		54.1	50	150				

Sample ID	MB-11195	SampType: MBLK	Units: µg/L	Prep Date: 6/30/2015	RunNo: 23343						
Client ID:	MBLKW	Batch ID: 11195		Analysis Date: 7/1/2015	SeqNo: 442171						
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	50.0									
Heavy Oil	ND	100									
Surr: 2-Fluorobiphenyl	40.7		80.00		50.9	50	150				
Surr: o-Terphenyl	44.8		80.00		56.0	50	150				





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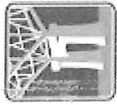
### QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID	1506321-001ADUP	SampType: DUP	Units: µg/L	Prep Date: 7/7/2015	RunNo: 23392				
Client ID:	BATCH	Batch ID: R23392	SPK Ref Val	Analysis Date: 7/7/2015	SeqNo: 443135				
Analyte	Result	RL	SPK value	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	50.0				0		30	
Surr: Toluene-d8	25.4		25.00	65	135			0	0
Surr: 4-Bromofluorobenzene	24.7		25.00	65	135			0	0

Sample ID	LCS-R23392	SampType: LCS	Units: µg/L	Prep Date: 7/7/2015	RunNo: 23392				
Client ID:	LCSW	Batch ID: R23392	SPK Ref Val	Analysis Date: 7/7/2015	SeqNo: 443140				
Analyte	Result	RL	SPK value	LowLimit	HighLimit	RPD Ref Val	%REC	RPDLimit	Qual
Gasoline	578	50.0	500.0	65	135		116		
Surr: Toluene-d8	25.4		25.00	65	135		102		
Surr: 4-Bromofluorobenzene	24.1		25.00	65	135		96.4		

Sample ID	MB-R23392	SampType: MBLK	Units: µg/L	Prep Date: 7/7/2015	RunNo: 23392				
Client ID:	MBLKW	Batch ID: R23392	SPK Ref Val	Analysis Date: 7/7/2015	SeqNo: 443141				
Analyte	Result	RL	SPK value	LowLimit	HighLimit	RPD Ref Val	%REC	RPDLimit	Qual
Gasoline	ND	50.0							
Surr: Toluene-d8	26.8		25.00	65	135		107		
Surr: 4-Bromofluorobenzene	23.6		25.00	65	135		94.6		



**Fremont**  
Analytical

Date: 7/8/2015

**QC SUMMARY REPORT**  
**Volatile Organic Compounds by EPA Method 8260**

Work Order: 1506335  
CLIENT: Cardno ATC  
Project: Yarrow Bay

Sample ID	1506321-001ADUP	SampType: DUP	Units: µg/L	Prep Date: 7/7/2015	RunNo: 23390						
Client ID:	BATCH	Batch ID: R23390	Analysis Date: 7/7/2015	SeqNo: 443086							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.00						0		30	
Toluene	ND	1.00						0		30	
Ethylbenzene	ND	1.00						0		30	
m,p-Xylene	ND	1.00						0		30	
o-Xylene	ND	1.00						0		30	
Surr: Dibromofluoromethane	24.6		25.00		98.4	77.4	147			0	
Surr: Toluene-d8	24.3		25.00		97.4	40.1	139			0	
Surr: 1-Bromo-4-fluorobenzene	25.7		25.00		103	64.2	128			0	

Sample ID	LCS-R23390	SampType: LCS	Units: µg/L	Prep Date: 7/7/2015	RunNo: 23390						
Client ID:	LCSW	Batch ID: R23390	Analysis Date: 7/7/2015	SeqNo: 443091							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	18.0	1.00	20.00		90.2	69.3	132				
Toluene	17.4	1.00	20.00		87.2	61.3	145				
Ethylbenzene	21.0	1.00	20.00		105	72	130				
m,p-Xylene	40.5	1.00	40.00		101	70.3	134				
o-Xylene	22.4	1.00	20.00		112	72.1	131				
Surr: Dibromofluoromethane	24.4		25.00		97.7	77.4	147				
Surr: Toluene-d8	24.3		25.00		97.4	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	26.2		25.00		105	64.2	128				

Sample ID	MB-R23390	SampType: MBLK	Units: µg/L	Prep Date: 7/7/2015	RunNo: 23390						
Client ID:	MBLKW	Batch ID: R23390	Analysis Date: 7/7/2015	SeqNo: 443092							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.00									
Toluene	ND	1.00									
Ethylbenzene	ND	1.00									
m,p-Xylene	ND	1.00									



Date: 7/8/2015

Work Order: 1506335  
 CLIENT: Cardno ATC  
 Project: Yarrow Bay

**QC SUMMARY REPORT**  
**Volatile Organic Compounds by EPA Method 8260**

Sample ID	MB-R23390	SampleType: MBLK	Units: µg/L	Prep Date: 7/7/2015	RunNo: 23390						
Client ID:	MBLKW	Batch ID: R23390		Analysis Date: 7/7/2015	SeqNo: 443092						
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
o-Xylene	ND	1.00									
Surr: Dibromofluoromethane	23.4		25.00		93.7	77.4	147				
Surr: Toluene-d8	25.0		25.00		99.8	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	24.6		25.00		98.4	64.2	128				

Sample ID	1507009-001AMS	SampleType: MS	Units: µg/L	Prep Date: 7/7/2015	RunNo: 23390						
Client ID:	BATCH	Batch ID: R23390		Analysis Date: 7/7/2015	SeqNo: 443212						
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	19.3	1.00	20.00	0	96.6	65.4	138				
Toluene	19.1	1.00	20.00	0	95.4	64	139				
Ethylbenzene	22.1	1.00	20.00	0	111	64.5	136				
m,p-Xylene	44.2	1.00	40.00	0	111	63.3	135				
o-Xylene	22.9	1.00	20.00	0	114	65.4	134				
Surr: Dibromofluoromethane	23.3		25.00		93.4	77.4	147				
Surr: Toluene-d8	24.2		25.00		96.8	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	25.9		25.00		103	64.2	128				



## Sample Log-In Check List

Client Name: <b>ATC</b>	Work Order Number: <b>1506335</b>
Logged by: <b>Erica Silva</b>	Date Received: <b>6/30/2015 3:10:00 PM</b>

**Chain of Custody**

1. Is Chain of Custody complete?      Yes       No       Not Present
2. How was the sample delivered?      Client

**Log In**

3. Coolers are present?      Yes       No       NA
4. Shipping container/cooler in good condition?      Yes       No
5. Custody Seals present on shipping container/cooler?  
(Refer to comments for Custody Seals not intact)      Yes       No       Not Required
6. Was an attempt made to cool the samples?      Yes       No       NA
7. Were all items received at a temperature of >0°C to 10.0°C \*      Yes       No       NA

**Sample received straight from field**

8. Sample(s) in proper container(s)?      Yes       No
9. Sufficient sample volume for indicated test(s)?      Yes       No
10. Are samples properly preserved?      Yes       No
11. Was preservative added to bottles?      Yes       No       NA
12. Is there headspace in the VOA vials?      Yes       No       NA
13. Did all samples containers arrive in good condition(unbroken)?      Yes       No
14. Does paperwork match bottle labels?      Yes       No
15. Are matrices correctly identified on Chain of Custody?      Yes       No
16. Is it clear what analyses were requested?      Yes       No
17. Were all holding times able to be met?      Yes       No

**Special Handling (if applicable)**

18. Was client notified of all discrepancies with this order?      Yes       No       NA

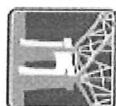
Person Notified: _____	Date: _____	
By Whom: _____	Via: <input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person	
Regarding: _____		
Client Instructions: _____		

19. Additional remarks:

**Item Information**

Item #	Temp °C
Cooler	17.1
Sample	18.1

\* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C



# Fremont Analytical

## Chain of Custody Record

3600 Fremont Ave N.  
Seattle, WA 98103

Tel: 206-352-3790  
Fax: 206-352-7178

Date: 6/30/15

Laboratory Project No (Internal): 15010335

Client: Cardno RTZ

Project Name: Yanow Bay

Collected by: Michelle

Address: \_\_\_\_\_

City, State, Zip: \_\_\_\_\_

Location: \_\_\_\_\_

Reports To (PMI): Devin Balderson

Tel: \_\_\_\_\_

Fax: \_\_\_\_\_

Email: \_\_\_\_\_

\*Matrix Codes: A - Air, AQ - Aqueous, B - Bulk, O - Other, P - Product, S - Soil, SD - Sediment, SL - Solid, W - Water, DW - Drinking Water, GW - Ground Water, WW - Waste Water, SW - Storm Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOC (EPA 8160)	SVOC (EPA 8160)	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCD)	Dechlorinated Gas Range Organics (DGX)	SEM VOL (EPA 8270)	PAH (EPA 8270 - SIM)	PCB (EPA 8082)	Nicals** (6020 / 200 SI)	Total (T) / Dioxin (D)	Axions (CY)**	EDB (8013)	Comments/Depth
YB-0630	6/30/15	18:40	LI	X				X									

\*\*Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual Ag Al As B Ba Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Tl U V Zn  
 \*\*Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate-Nitrite  
 Sample Disposal:  Return to Client  Disposal by Lab (A fee may be assessed if samples are retained after 30 days)  
 Turn-around times for samples received after 4:00pm will begin on the following business day.  
 Date/Time: 6/30/15 15:10 Received: [Signature] Date/Time: 6/30/15 15:30  
 Requisitioned: [Signature] Date/Time: \_\_\_\_\_ Received: [Signature] Date/Time: \_\_\_\_\_  
 TAT -> SameDay, NextDay, 2 Day, 3 Day (STD)  
 \*Please coordinate with the lab in advance

Distributions: White - Lab, Yellow - File, Pink - Originator

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