Yarrow Bay Marina
Kirkland
LUST 3130

ENVIRONMENTAL · GEOTECHNICAL
BUILDING SCIENCES · MATERIALS TESTING

6347 Seaview Avenue Northwest
Seattle, Washington 98107
Telephone 206-781-1449
Fax 206-781-1543

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DEPT OF ECOLOGY
TCP - NWRO

January 9, 2018

Mr. Dale Myers
Site Manager
Toxics Cleanup Program
Washington State Department of Ecology – Northwest Regional Office
3190 160th Ave SE
Bellevue, WA 98008-5452

RE: Groundwater Monitoring Report-2017 Annual Event
Yarrow Bay Yacht Basin and Marine
5207 Lake Washington Boulevard NE
Kirkland, Washington 98033
Washington State Department of Ecology Facility No.: 2486
Washington State Department of Ecology VCP No.: NW1791
Washington State Department of Ecology Cleanup Site No.: 8780
ATC Project No. 282EM00219

Dear Mr. Myers:

On behalf of Yarrow Bay Marine Services, LLC, ATC Group Services, LLC (ATC) has prepared this report describing the annual groundwater monitoring and sampling performed at the Yarrow Bay Yacht Basin and Marina located at 5207 Lake Washington Boulevard NE in Kirkland, Washington (site [**Figure 1**]). The monitoring and sampling event was conducted in accordance to ATC's *Confirmational Groundwater Monitoring Plan, dated* November 3, 2016.

SITE DESCRIPTION AND BACKGROUND

A release of gasoline and diesel associated with the former fueling system was discovered during investigative activities in 2006. The resulting groundwater contaminant plume extended from the locations of the previous USTs toward Lake Washington and near the former fuel dispensers (adjacent to the shoreline bulkhead). Previous investigative activities indicate that the residual impacts to soil and groundwater comprise an area approximately 250 square feet just south of the covered dock area, in the vicinity of the fuel dispensers (Figure 2). The remaining mass of impacted soil is confined and delineated, and based on the most recent groundwater monitoring and sampling data, is not impacting groundwater conditions that would present unacceptable risk to human health and the environment. The remaining contaminant mass is not expected in increase in contaminant concentration.

A Restrictive Covenant-No Further Action (NFA) was requested as the preferred remedial technology based on a completed comparative evaluation of various technologies, ability to attain the remedial action objectives, analysis of screening criteria, and a disproportionate cost analysis. The request recommended Natural Attenuation (NA) with institutional controls. A Restrictive Covenant- NFA was granted by Ecology for the site in their NFA letter, dated January 24, 2017, in which they requested three additional consecutive years of groundwater monitoring (2017 through 2019) at the site to evaluate the effectiveness of the post-cleanup controls and provide status updates regarding groundwater remedial actions performed at the site. This scope of work was defined in ATC's Confirmational Groundwater Monitoring Plan.

The objective of 2017 Groundwater Monitoring Event was to continue to monitor the natural attenuation of previously identified impacts to site groundwater with regard to compliance to the Model Toxics Control Act (MTCA) and its implementation regulations, as defined in Revised Code of Washington (RCW) Chapter 70.105D and Washington Administrative Code (WAC) Chapter 173-340.

OBJECTIVE AND SCOPE OF WORK

As Ecology requested, ATC completed the first annual of groundwater monitoring and sampling at MW-1 on December 8, 2017.

Groundwater Monitoring Well Sampling

On December 8, 2017, ATC collected a groundwater sample from groundwater monitoring well MW-1 using the standard operating procedure for low-flow sampling.

Prior to collection of the groundwater sample, groundwater monitoring well MW-1 was purged using low-flow sampling techniques. During low-flow groundwater sampling, high density polyethylene (HDPE) tubing is lowered into the well until set within the middle of the screened interval. Groundwater is then purged by means of a peristaltic pump set at a steady flow rate while maintaining a drawdown of less than 0.33 feet. After a minimum of one tubing volume (including the volume of water in the pump and flow cell) is purged, water-quality indicator parameters, including turbidity, dissolved oxygen, specific electrical conductance (specific conductance), pH, temperature, and oxidation-reduction potential (ORP) are recorded every three to five minutes until stabilization occurs. The stabilization criterion is based on three successive readings of the water quality field parameters. Stabilization is considered to have occurred when the following criteria are met, although due to geologic heterogeneities within the screened interval and site-specific conditions, adjustments on flow rate and stabilization criteria may be required:

- pH ± 0.1 pH
- Specific Conductance ± 3%
- ORP ± 10 millivolts (mV)

After achievement of stabilization, the well is considered purged, and a sample is collected in laboratory-prepared containers from the discharge port of the pump. Collected samples were sub-packed in new zippered plastic bags and stored on ice in portable coolers at approximately 4°C. A temperature compliance vial accompanied each cooler to verify that proper holding temperature was maintained until delivery to the analytical laboratory. A chain-of-custody form accompanied each sample cooler containing laboratory samples.

The well purge log presented in **Appendix A** contains a record of the low-flow sampling parameters recording during the December 8, 2017 groundwater sampling event.

Analytical Methods

The groundwater sample collected from groundwater monitoring well MW-1 during the field activities was submitted to Fremont Analytical of Seattle, Washington, an Ecology accredited analytical laboratory. The groundwater t sample was analyzed for total petroleum hydrocarbons (TPH) as gasoline by Ecology Method NWTPH-Gx, TPH as diesel and heavy oil by Ecology Method NWTPH-Dx Extended and BTEX by United State Environmental Protection Agency (EPA) Method 8260.

The laboratory analytical report is presented in **Appendix B**.

FINDINGS

Depth to Water

Static groundwater was measured from top of casing in groundwater monitoring well MW-1 on December 8, 2017 during groundwater sampling activities between 3.91 and 4.45 feet below top of well casing (BTOC).

Groundwater Analytical Results

Groundwater samples were analyzed for gasoline, diesel and heavy oil-range petroleum hydrocarbons, and BTEX.

The laboratory analytical results indicated that gasoline, diesel, heavy oil, and BTEX were not detected above laboratory method detection limits in the groundwater sample.

A summary of the laboratory analytical results from the recent sampling event and prior groundwater sampling events is presented as **Table 1.** **Figure 2** shows analytical concentrations for the recent groundwater sampling event.

CONCLUSIONS and RECOMMENDATIONS

The monitoring and sampling event, conducted on December 8, 2017, was completed in accordance with ATC's Confirmational Groundwater Monitoring Plan, dated November 3, 2016. Laboratory analytical results from the groundwater collected during the 2017 annual event did not contain concentrations of petroleum hydrocarbons or BTEX compounds above laboratory method detection limits and/or regulatory cleanup levels and are therefore are in compliance with the MTCA and its implementation regulations (RCW 70.105D and WAC 173-340).

CERTIFICATION

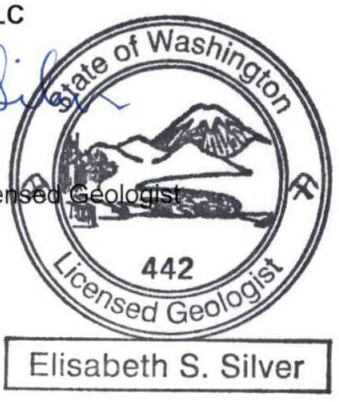
The information provided in this *Groundwater Monitoring Report-2017 Annual Event*, for the Yarrow Bay Yacht Basin and Marina located at 5207 Lake Washington Boulevard NE in Kirkland, Washington was prepared under the supervision of an ATC State of Washington Licensed Geologist.

A professional geologist's certification of conditions comprises a declaration of his or her professional judgement. It does not constitute a warranty or guarantee, expressed or implied, nor does it relieve any other party of its responsibility to abide by contract documents, applicable codes, standards, regulations and ordinances.

We appreciate the opportunity to be of service in this matter. If you have questions regarding this report, please contact us at (206) 781-1449.

Sincerely,
ATC Group Services LLC

Elisabeth Silver, LG
State of Washington Licensed Geologist
Senior Project Manager



Nasrin Bastami
Project Manager

Attachments:

Table 1 - Summary of Analytical Results - Groundwater

Figure 1 – Site Vicinity Map
Figure 2 – Groundwater Analytical Data

Appendix A - Well Purge Log
Appendix B - Laboratory Analytical Report and Chain of Custody Documentation

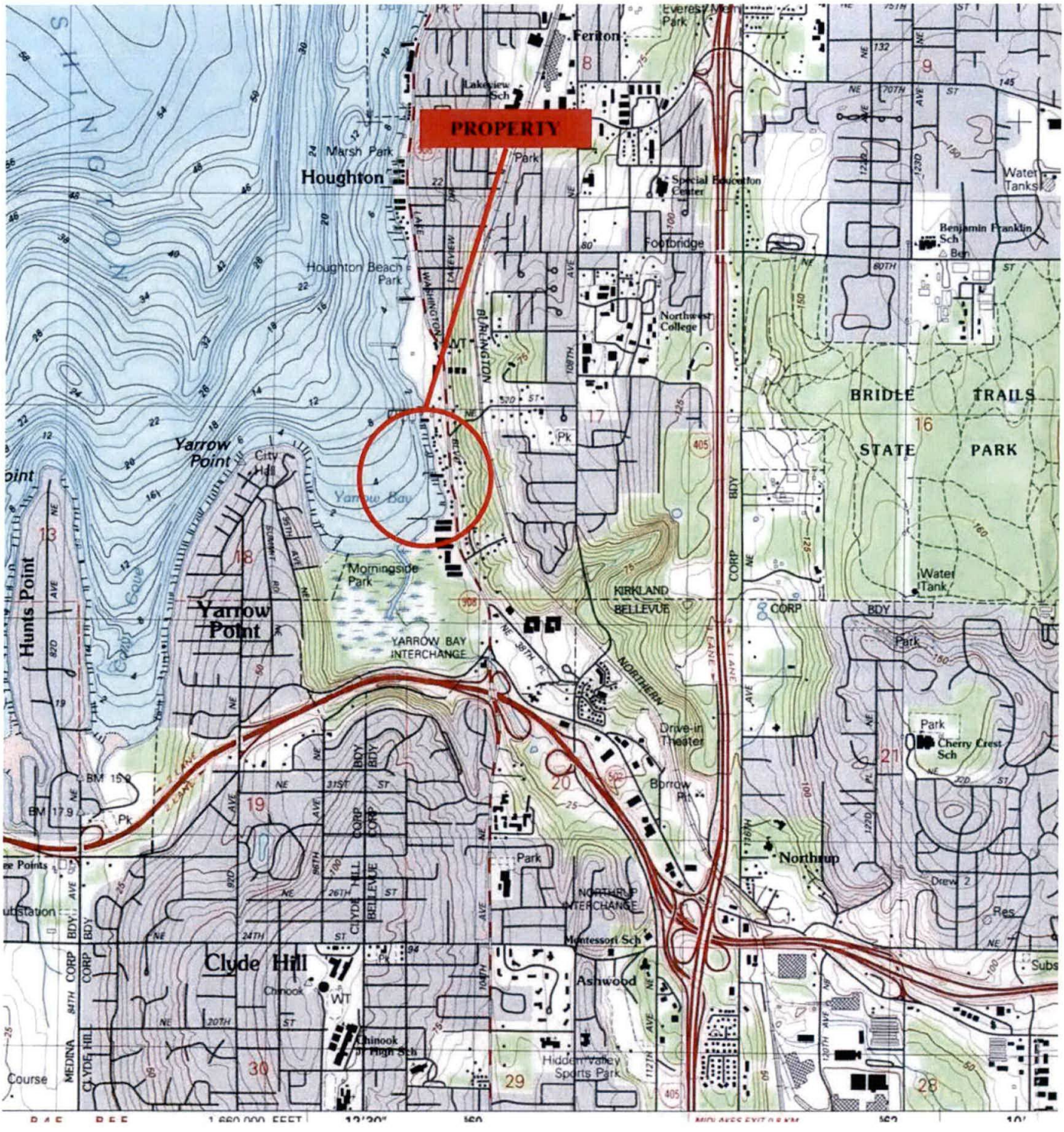
TABLE

Table 1 - Summary of Analytical Results - Groundwater
Yarrow Bay Yatch Basin & Marina
5207 Lake Washington Boulevard NE
Kirkland, Washington
ATC Project No. 282EM00219

Sample No.	Sample Date	Total Petroleum Hydrocarbons[1] in µg/L						Volatile Organic Compounds[2] in µg/L			
		Diesel	Diesel Range Organics (DRO) C12-C24	Mineral Oil	Heavy Oil	Heavy Fuel Oil	Gasoline Range Hydrocarbons (GRO)	Benzene	Toluene	Ethylbenzene	Xylenes (total)
MW-1-1110	11/04/10	<50	--	--	--	--	<50	<1.0	<1.0	<1.0	<2.0
MW-1-0211	02/10/11	<50	--	<50	**2,670**	--	<50	<1.0	<1.0	<1.0	<2.0
MW-1-0311	03/07/11	<50	--	<50	**2,480**	--	<50	<1.0	<1.0	<1.0	<2.0
MW-1-0511	05/27/11	<50.0	232	--	<100	--	<50.0	<1.0	<1.0	<1.0	<2.0
MW-1(-0811)	08/23/11	<51.0	--	--	<102	--	<50.0	<1.0	<1.0	<1.0	<2.0
MW-1(-1111)	11/29/11	<50.0	--	--	<100	--	<50.0	<1.0	<1.0	<1.0	<2.0
MW-1-0212	02/14/12	<50.0	137	--	<100	--	<50.0	<1.0	<1.0	<1.0	<2.0
MW-1(-0512)	05/30/12	**655**	--	--	<100	--	<50.0	<1.0	<1.0	<1.0	<2.0
MW-1-0812	08/30/12	<50.0	--	--	<100	**2,060**	<50.0	<1.0	<1.0	<1.0	<2.0
YB-1-01 (MW-1)	09/30/14	312	--	--	<100	--	<50.0	<1.0	<1.0	<1.0	<1.0
YB-2-01 (MW-1)	12/03/14	<50.1	--	--	275	--	<50.0	<1.0	<1.0	<1.0	<1.0
YB-3-01 (MW-1)	02/12/15	<50.0	--	--	**1,500**	--	<50.0	<1.0	<1.0	<1.0	<1.0
YB-0630 (MW-1)	06/30/15	397	--	--	<100	--	<50.0	<1.0	<1.0	<1.0	<1.0
YB-02-MW1 (MW-1)	09/30/15	484	--	--	<99.9	--	<50.0	<1.0	<1.0	<1.0	<1.0
YB-03-MW1 (MW-1)	12/16/15	<49.9	--	--	327	--	<50.0	<1.0	<1.0	<1.0	<1.0
YB-04-MW1 (MW-1)	02/29/16	<49.9	82.6	--	415	--	<50.0	<1.0	<1.0	<1.0	<1.0
MW-1	12/08/17	<49.9	--	--	<99.8	--	<50.0	<1.0	<1.0	<1.0	<2.0
MTCA-Method A Groundwater Cleanup Limit		500	500	500	500	500	800/1,000[3]	5	1,000	700	1,000

Notes:
µg/L = microgram per liter
-- = not analyzed
MTCA - Washington State Department of Ecology Model Toxics Control Act
Bold denotes concentration at or above regulatory cleanup level
1 = Analytical results by gas chromatography and mass spectrometry by Ecology Methods NWTPH-HCID, NWTPH-Gx, and/or NWTPH-Dx/Extended
2 = Analytical results by gas chromatography and mass spectrometry by United States Protection Agency Method 8260
2 = 800 µg/L cleanup level if benzene present in groundwater; 1,000 µg/L cleanup level when benzene is not detected in groundwater
All analytical results reported in micrograms per liter (µg/L) equivalent to parts per billion (ppb)

FIGURES



SOURCE: USGS Topographic Map, Bellevue South, WA Quadrangle, 7.5 Minute Series, Dated 1982

ATC

6347 Seaview Avenue NW
Seattle, Washington 98107
(206) 781-1449

PROJECT NO.: 282EM00219		
APPENDIX A	SCALE:N/A	REVIEWED BY: NB
DRAWN BY: N/A	DATE: 01/2018	FILE: SITE VICINITY

FIGURE 1
SITE VICINITY MAP

YARROW BAY YACHT BASIN AND MARINE
5207 LAKE WASHINGTON BOULEVARD NE
KIRKLAND, WASHINGTON

Existing Monitoring Well Location

N

ATC
6347 Seaview Avenue Northwest
Seattle, WA 98107

PROJECT NUMBER: 282EM00219

DESIGNED BY: ATC	SCALE: NTS	REVIEWED BY: NB
DRAWN BY: ES	DATE: 01/2018	FIGURE 2

FIGURE 2
Groundwater Analytical Data

Yarrow Bay Yacht Basin And Marina
5207 Lake Washington Boulevard NE
Kirkland, Washington 98033

APPENDIX A:
WELL PURGE LOG

Monitoring Well Purging and Sampling Log

FLD-103
Revision 1.0
Jul-08

ATC Branch: Seattle, WA	Date: 12/08/17	Page 1 of 1
ATC Representative(s): Nasim B	Project: Yarrow Bay Yacht Marina	
	Location: Kirkland, WA	
Contact Information: (206) 781-1449	Project No: 282EM00219	Task No: —
Well ID: MW-01	—	
	Weather: Sunny	Temperature: Low 40's

Purging & Sampling Instrumentation & Method

Water Level Meter (Model/ID): Envirotape ✓	Interface Probe (Model/ID): NA
Water Quality Meter (Model/ID): YSI 556 MPS ✓	Decontamination Method: Alconox/DI Water ✓

Purging Method: ____ PVC Bailer ____ Vacuum Truck ____ Submersible Pump ____ Peristaltic Pump Other: ____

3 Well Volumes ✓ Low Flow ____ Micro Purge ____ Intake Depth (feet below TOC) ____

Sampling Method: ____ Teflon Bailer ____ Disposable Bailer ✓ Dedicated Tubing Other: ____

Casing Volume Information	Purging Calculations
Casing Diameter (Circle): (2") 4" 6" Other	Casing Volumes (CV):
Casing Multiplier (CM)(gallons/foot): (0.16) 0.65 1.47	WC ____ x CM ____ = ____ (CV)(gal) x 3.0 CV (gal) = ____ PV

Monitoring Measurements

Depth to LNAPL (feet): —	Total Well Depth (feet): 15.0
Depth to Water (DTW)(feet): 3.89	Water Column (WC)(feet): —
LNAPL Thickness (ft): —	Purging Start Time: 10 35

Purging Data

Time (24 Hours)	DTW (Feet)	Cum. Vol. Purged (Gallons)	Temp (°C) (± 1°)	Specific Cond. (uS/cm) (± 5%)	Turbidity NTU	Dissolved Oxygen (mg/L) (± 10%)	pH (± 0.1)	ORP (mV) (± 10 mV)	Other
1040	3.91	0.05	13.33	547	clear	0.97	9.25	-307.7	
1043	4.01	0.08	13.15	547		0.99	9.25	-307.7	
1046	4.25	0.11	13.13	546		0.97	8.78	-307.2	
1050	4.45	0.15	13.10	547		0.82	9.20	-308.1	

Sample Data

Sample ID: MW-01	Time of Sample: 10 55	Filtered (yes/no)	Preservatives	Analytical Parameters
Container Types, Volumes, & Quantities:				
40ml VOAs → 4	1 L Amber (2)	NO	HCl	TPH + BTEX
		✓	✓	✓

Well Recovery Data

Maximum Drawdown (DTW*m*)(feet): 4.45	Approximate Flow Rate (GPM): 0.01
Recovery Type: ✓ Fast ____ Slow	% Recovery = 100

Purge Water Disposition (Attach Drum Inventory Log - FLD 108):

Comments:

APPENDIX B:
LABORATORY ANALYTICAL REPORT AND CHAIN OF CUSTODY DOCUMENTATION

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

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

RE: Yarrow Bay Marine Services
Work Order Number: 1712092

December 14, 2017

Attention Nasrin Bastami:

Fremont Analytical, Inc. received 2 sample(s) on 12/8/2017 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 8260C

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,

Chelsea Ward
Project Manager

Fremont Analytical

Date: *12/14/2017*

CLIENT: ATC Group Services, Inc.
Project: Yarrow Bay Marine Services
Work Order: 1712092

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1712092-001	MW-1	12/08/2017 10:55 AM	12/08/2017 2:30 PM
1712092-002	Trip Blank	12/07/2017 10:48 AM	12/08/2017 2:30 PM

Fremont Analytical

Case Narrative

WO#: **1712092**
Date: **12/14/2017**

CLIENT: ATC Group Services, Inc.
Project: Yarrow Bay Marine Services

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

Client: ATC Group Services, Inc.
Project: Yarrow Bay Marine Services
Lab ID: 1712092-001
Client Sample ID: MW-1

Collection Date: 12/8/2017 10:55:00 AM
Matrix: Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 19139		Analyst: SB
Diesel (Fuel Oil)	ND	49.9		µg/L	1	12/12/2017 2:16:22 PM
Heavy Oil	ND	99.8		µg/L	1	12/12/2017 2:16:22 PM
Surr: 2-Fluorobiphenyl	74.8	50 - 150		%Rec	1	12/12/2017 2:16:22 PM
Surr: o-Terphenyl	77.1	50 - 150		%Rec	1	12/12/2017 2:16:22 PM
Gasoline by NWTPH-Gx				Batch ID: 19137		Analyst: NG
Gasoline	ND	50.0		µg/L	1	12/12/2017 2:01:25 AM
Surr: Toluene-d8	99.2	65 - 135		%Rec	1	12/12/2017 2:01:25 AM
Surr: 4-Bromofluorobenzene	92.8	65 - 135		%Rec	1	12/12/2017 2:01:25 AM
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 19137		Analyst: NG
Benzene	ND	1.00		µg/L	1	12/12/2017 2:01:25 AM
Toluene	ND	1.00		µg/L	1	12/12/2017 2:01:25 AM
Ethylbenzene	ND	1.00		µg/L	1	12/12/2017 2:01:25 AM
m,p-Xylene	ND	1.00		µg/L	1	12/12/2017 2:01:25 AM
o-Xylene	ND	1.00		µg/L	1	12/12/2017 2:01:25 AM
Surr: Dibromofluoromethane	98.0	45.4 - 152		%Rec	1	12/12/2017 2:01:25 AM
Surr: Toluene-d8	97.1	40.1 - 139		%Rec	1	12/12/2017 2:01:25 AM
Surr: 1-Bromo-4-fluorobenzene	91.7	64.2 - 128		%Rec	1	12/12/2017 2:01:25 AM

Work Order: 1712092
CLIENT: ATC Group Services, Inc.
Project: Yarrow Bay Marine Services

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID **MB-19139**	SampType: **MBLK**			Units: **µg/L**		Prep Date: **12/11/2017**			RunNo: **40427**		
Client ID: **MBLKW**	Batch ID: **19139**					Analysis Date: **12/12/2017**			SeqNo: **778816**		
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	49.3		79.87		61.8	50	150				
Surr: o-Terphenyl	65.7		79.87		82.3	50	150				

Sample ID **LCS-19139**	SampType: **LCS**			Units: **µg/L**		Prep Date: **12/11/2017**			RunNo: **40427**		
Client ID: **LCSW**	Batch ID: **19139**					Analysis Date: **12/12/2017**			SeqNo: **778817**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	750	49.9	997.4	0	75.2	65	135				
Surr: 2-Fluorobiphenyl	63.3		79.79		79.3	50	150				
Surr: o-Terphenyl	59.6		79.79		74.7	50	150				

Sample ID **LCSD-19139**	SampType: **LCSD**			Units: **µg/L**		Prep Date: **12/11/2017**			RunNo: **40427**		
Client ID: **LCSW02**	Batch ID: **19139**					Analysis Date: **12/12/2017**			SeqNo: **778818**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	752	49.9	998.2	0	75.3	65	135	749.6	0.326	30	
Surr: 2-Fluorobiphenyl	65.0		79.86		81.4	50	150		0		
Surr: o-Terphenyl	64.3		79.86		80.6	50	150		0		

Sample ID **1712092-001BDUP**	SampType: **DUP**			Units: **µg/L**		Prep Date: **12/11/2017**			RunNo: **40427**		
Client ID: **MW-1**	Batch ID: **19139**					Analysis Date: **12/12/2017**			SeqNo: **779261**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	49.9						0		30	
Heavy Oil	ND	99.9						0		30	
Surr: 2-Fluorobiphenyl	64.8		79.88		81.2	50	150		0		
Surr: o-Terphenyl	66.5		79.88		83.2	50	150		0		

Fremont Analytical

Date: *12/14/2017*

Work Order: 1712092
CLIENT: ATC Group Services, Inc.
Project: Yarrow Bay Marine Services

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID	**1712092-001BDUP**	SampType:	**DUP**		Units:	**µg/L**	Prep Date:	**12/11/2017**		RunNo:	**40427**	
Client ID:	**MW-1**	Batch ID:	**19139**				Analysis Date:	**12/12/2017**		SeqNo:	**779261**	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fremont Analytical

Date: *12/14/2017*

Work Order: 1712092
CLIENT: ATC Group Services, Inc.
Project: Yarrow Bay Marine Services

QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID	**LCS-19137**	SampType: **LCS**			Units: **µg/L**		Prep Date: **12/11/2017**		RunNo: **40423**		
Client ID:	**LCSW**	Batch ID: **19137**					Analysis Date: **12/11/2017**		SeqNo: **778730**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	591	50.0	500.0	0	118	65	135				
Surr: Toluene-d8	24.7		25.00		98.6	65	135				
Surr: 4-Bromofluorobenzene	24.9		25.00		99.6	65	135				

Sample ID	**MB-19137**	SampType: **MBLK**			Units: **µg/L**		Prep Date: **12/11/2017**		RunNo: **40423**		
Client ID:	**MBLKW**	Batch ID: **19137**					Analysis Date: **12/11/2017**		SeqNo: **778734**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	50.0									
Surr: Toluene-d8	25.4		25.00		102	65	135				
Surr: 4-Bromofluorobenzene	23.3		25.00		93.3	65	135				

Sample ID	**1712092-001ADUP**	SampType: **DUP**			Units: **µg/L**		Prep Date: **12/11/2017**		RunNo: **40423**		
Client ID:	**MW-1**	Batch ID: **19137**					Analysis Date: **12/12/2017**		SeqNo: **778719**		
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	25.4		25.00		101	65	135		0		
Surr: 4-Bromofluorobenzene	23.3		25.00		93.1	65	135		0		

Sample ID	**1712094-004ADUP**	SampType: **DUP**			Units: **µg/L**		Prep Date: **12/11/2017**		RunNo: **40423**		
Client ID:	**BATCH**	Batch ID: **19137**					Analysis Date: **12/12/2017**		SeqNo: **778726**		
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	25.3		25.00		101	65	135		0		
Surr: 4-Bromofluorobenzene	23.1		25.00		92.4	65	135		0		

Fremont Analytical

Date: *12/14/2017*

Work Order: 1712092
CLIENT: ATC Group Services, Inc.
Project: Yarrow Bay Marine Services

QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID **1712094-002AMS**	SampType: **MS**			Units: **µg/L**		Prep Date: **12/11/2017**		RunNo: **40423**		
Client ID: **BATCH**	Batch ID: **19137**					Analysis Date: **12/12/2017**		SeqNo: **778722**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	464	50.0	500.0	0	92.8	65	135				
Surr: Toluene-d8	25.0		25.00		100	65	135				
Surr: 4-Bromofluorobenzene	25.3		25.00		101	65	135				

Sample ID **1712094-002AMSD**	SampType: **MSD**			Units: **µg/L**		Prep Date: **12/11/2017**		RunNo: **40423**		
Client ID: **BATCH**	Batch ID: **19137**					Analysis Date: **12/12/2017**		SeqNo: **778723**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	480	50.0	500.0	0	96.0	65	135	464.1	3.39	30	
Surr: Toluene-d8	25.2		25.00		101	65	135		0		
Surr: 4-Bromofluorobenzene	25.3		25.00		101	65	135		0		

Fremont Analytical

Date: *12/14/2017*

Work Order: 1712092
CLIENT: ATC Group Services, Inc.
Project: Yarrow Bay Marine Services

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **LCS-19137**	SampType: **LCS**			Units: **µg/L**		Prep Date: **12/11/2017**		RunNo: **40421**		
Client ID: **LCSW**	Batch ID: **19137**					Analysis Date: **12/11/2017**		SeqNo: **778692**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	19.2	1.00	20.00	0	95.9	69.3	132				
Toluene	19.7	1.00	20.00	0	98.3	61.3	145				
Ethylbenzene	19.7	1.00	20.00	0	98.7	72	130				
m,p-Xylene	39.6	1.00	40.00	0	99.0	70.3	134				
o-Xylene	19.9	1.00	20.00	0	99.7	72.1	131				
Surr: Dibromofluoromethane	24.8		25.00		99.4	45.4	152				
Surr: Toluene-d8	25.1		25.00		101	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	26.3		25.00		105	64.2	128				

Sample ID **MB-19137**	SampType: **MBLK**			Units: **µg/L**		Prep Date: **12/11/2017**		RunNo: **40421**		
Client ID: **MBLKW**	Batch ID: **19137**					Analysis Date: **12/11/2017**		SeqNo: **778699**		
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	24.2		25.00		96.9	45.4	152				
Surr: Toluene-d8	24.7		25.00		98.8	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	23.1		25.00		92.3	64.2	128				

Sample ID **1712092-001ADUP**	SampType: **DUP**			Units: **µg/L**		Prep Date: **12/11/2017**		RunNo: **40421**		
Client ID: **MW-1**	Batch ID: **19137**					Analysis Date: **12/12/2017**		SeqNo: **778683**		
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: *12/14/2017*

Work Order: 1712092
CLIENT: ATC Group Services, Inc.
Project: Yarrow Bay Marine Services

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1712092-001ADUP**	SampType: **DUP**			Units: **µg/L**		Prep Date: **12/11/2017**		RunNo: **40421**		
Client ID: **MW-1**	Batch ID: **19137**					Analysis Date: **12/12/2017**		SeqNo: **778683**		
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	24.4		25.00		97.5	45.4	152		0		
Surr: Toluene-d8	24.3		25.00		97.1	40.1	139		0		
Surr: 1-Bromo-4-fluorobenzene	23.0		25.00		92.0	64.2	128		0		

Sample ID **1712094-004ADUP**	SampType: **DUP**			Units: **µg/L**		Prep Date: **12/11/2017**		RunNo: **40421**		
Client ID: **BATCH**	Batch ID: **19137**					Analysis Date: **12/12/2017**		SeqNo: **778688**		
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	24.5		25.00		97.8	45.4	152		0		
Surr: Toluene-d8	24.3		25.00		97.1	40.1	139		0		
Surr: 1-Bromo-4-fluorobenzene	22.8		25.00		91.4	64.2	128		0		

Sample ID **1712077-001AMS**	SampType: **MS**			Units: **µg/L**		Prep Date: **12/11/2017**		RunNo: **40421**		
Client ID: **BATCH**	Batch ID: **19137**					Analysis Date: **12/12/2017**		SeqNo: **778678**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	20.5	1.00	20.00	0	102	65.4	138				
Toluene	20.5	1.00	20.00	0	103	52	147				
Ethylbenzene	20.9	1.00	20.00	0	105	64.5	136				
m,p-Xylene	41.9	1.00	40.00	0	105	63.3	135				
o-Xylene	20.7	1.00	20.00	0	104	64.8	150				
Surr: Dibromofluoromethane	25.1		25.00		100	45.4	152				
Surr: Toluene-d8	24.8		25.00		99.1	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	26.7		25.00		107	64.2	128				

Fremont Analytical

Date: *12/14/2017*

Work Order: 1712092
CLIENT: ATC Group Services, Inc.
Project: Yarrow Bay Marine Services

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID	**1712077-001AMS**	SampType: **MS**			Units: **µg/L**	Prep Date: **12/11/2017**			RunNo: **40421**		
Client ID:	**BATCH**	Batch ID: **19137**				Analysis Date: **12/12/2017**			SeqNo: **778678**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID	**1712077-001AMSD**	SampType: **MSD**			Units: **µg/L**	Prep Date: **12/11/2017**			RunNo: **40421**		
Client ID:	**BATCH**	Batch ID: **19137**				Analysis Date: **12/12/2017**			SeqNo: **778679**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21.9	1.00	20.00	0	109	65.4	138	20.48	6.64	30	
Toluene	21.9	1.00	20.00	0	109	52	147	20.54	6.32	30	
Ethylbenzene	22.4	1.00	20.00	0	112	64.5	136	20.93	6.84	30	
m,p-Xylene	44.8	1.00	40.00	0	112	63.3	135	41.90	6.61	30	
o-Xylene	22.1	1.00	20.00	0	110	64.8	150	20.70	6.34	30	
Surr: Dibromofluoromethane	25.2		25.00		101	45.4	152		0		
Surr: Toluene-d8	24.6		25.00		98.5	40.1	139		0		
Surr: 1-Bromo-4-fluorobenzene	26.6		25.00		107	64.2	128		0		

Fremont Analytical

Sample Log-In Check List

Client Name:	**ATC**	Work Order Number:	**1712092**
Logged by:	**Brianna Barnes**	Date Received:	**12/8/2017 2:30:00 PM**

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: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

Item #	Temp °C
Cooler	3.0
Sample	1.9
Temp Blank	2.1

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

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record & Laboratory Services Agreement

Date: 12/08/17 Page: 1 of: 1

Laboratory Project No (internal): 1712092

Project Name: Yarrow Bay Marina - Services

Special Remarks: Standard Turnarround.

Client: ATC Group Services, LLC

Project No: Pending

Address: 6347 Seaview Ave NW

Collected by: NB

City, State, Zip: Seattle, WA

Location: Kirkland, WA

Telephone: 206-781-1449

Report To (PM):

Sample Disposal: ☐ Return to client ☑ Disposal by lab (after 30 days)

Fax:

PM Email: nasrin.bastami@atcassociates.com

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T)	Dissolved (D)	Anions (IC)***	EDB (8011)	Comments
1	MW-1	12/8	1055	W		X			X										
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

*Matrix: 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

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

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

Turn-around Time:

- ☑ Standard
- ☐ 3 Day
- ☐ 2 Day
- ☐ Next Day
- Same Day _____ (specify)

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above and that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished	Date/Time	Received	Date/Time
x Nasrin Bastami	12/8/17 @ 2:30pm	x [signature]	12/8/17 14:30
Relinquished	Date/Time	Received	Date/Time
x		x	