AGAT Laboratories

Unit 120, 8600 Glenlyon Parkway
Burnaby, British Columbia
CANADA V5J 0B6
TEL (778)452-4000
FAX (778)452-4074
http://www.agatlabs.com

Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 11V560784

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis (Continued)

RPT Date: Dec 23, 2011			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Phenol	127	3021236	<0.002	<0.002	0.0%	< 0.002	84%	80%	120%	97%	70%	130%	96%	60%	140%
4-Nitrophenol	127	3021236	<0.005	<0.005	0.0%	< 0.005	83%	80%	120%	94%	70%	130%	93%	60%	140%
m&p-Cresol (3&4-methylphenol)	127	3021236	<0.005	<0.005	0.0%	< 0.005				98%	70%	130%	96%	60%	140%
o-Cresol (2-methylphenol)	127	3021236	<0.005	<0.005	0.0%	< 0.005				97%	70%	130%	95%	60%	140%
2-Chlorophenol	127	3021236	<0.002	<0.002	0.0%	< 0.002				98%	70%	130%	97%	60%	140%
2,4-Dinitrophenol	127	3021236	<0.005	<0.005	0.0%	< 0.005	90%	80%	120%	96%	70%	130%	95%	60%	140%
2-Nitrophenol	127	3021236	<0.005	<0.005	0.0%	< 0.005	94%	80%	120%	109%	70%	130%	107%	60%	140%
2,4-Dimethylphenol	127	3021236	<0.005	<0.005	0.0%	< 0.005	83%	80%	120%	97%	70%	130%	95%	60%	140%
2,6-Dichlorophenol	127	3021236	<0.005	<0.005	0.0%	< 0.005				96%	70%	130%	94%	60%	140%
4-Chloro-3-methylphenol	127	3021236	<0.005	<0.005	0.0%	< 0.005	82%	80%	120%	99%	70%	130%	100%	60%	140%
2,4-Dichlorophenol	127	3021236	<0.002	<0.002	0.0%	< 0.002	84%	80%	120%	100%	70%	130%	95%	60%	140%
4,6-Dinitro-2-methylphenol	127	3021236	<0.005	<0.005	0.0%	< 0.005	93%	80%	120%	100%	70%	130%	102%	60%	140%
2,3,6-Trichlorophenol	127	3021236	<0.005	<0.005	0.0%	< 0.005				96%	70%	130%	95%	60%	140%
2,3,4-Trichlorophenol	127	3021236	<0.005	<0.005	0.0%	< 0.005				97%	70%	130%	96%	60%	140%
2,4,6-Trichlorophenol	127	3021236	<0.005	<0.005	0.0%	< 0.005	84%	80%	120%	99%	70%	130%	98%	60%	140%
2,4,5-Trichlorophenol	127	3021236	<0.005	<0.005	0.0%	< 0.005				98%	70%	130%	96%	60%	140%
2,3,5-Trichlorophenol	127	3021236	<0.005	<0.005	0.0%	< 0.005	0%			99%	70%	130%	98%	60%	140%
3,4,5-Trichlorophenol	127	3021236	<0.005	<0.005	0.0%	< 0.005	0%			95%	70%	130%	94%	60%	140%
2,3,4,6-Tetrachlorophenol	127	3021236	<0.005	<0.005	0.0%	< 0.005	0%			102%	70%	130%	100%	60%	140%
2,3,5,6-Tetrachlorophenol	127	3021236	<0.005	<0.005	0.0%	< 0.005	0%			101%	70%	130%	100%	60%	140%
2,3,4,5-Tetrachlorophenol	127	3021236	<0.005	<0.005	0.0%	< 0.005	0%			102%	70%	130%	100%	60%	140%
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	127	3021236	<0.005	<0.005	0.0%	< 0.005	0%			101%	70%	130%	98%	60%	140%
Pentachlorophenol	127	3021236	<0.005	<0.005	0.0%	< 0.005	90%	80%	120%	102%	70%	130%	100%	60%	140%

Certified By:

AGAT Laboratories

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 11V560784

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Arsenic	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Barium	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6010C	ICP-MS
Beryllium	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-181-6101, LAB-181-4011	Modified from SSMA 2ND ED. CH 9 and SM 3120 B	ICP/OES
Cadmium	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Chromium	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6010C	ICP-MS
Cobalt	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Copper	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6010C	ICP-MS
Lead	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Mercury	MET-181-6100, LAB-181-4008	Mod BC MOE Sec C (SALM) & BC MOE (Mercury)	CV/AA
Molybdenum	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Nickel	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6010C	ICP-MS
Selenium	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Silver	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Thallium	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Tin	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Uranium	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6020A	ICP-MS
Vanadium	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6010C	ICP-MS
Zinc	MET-181-6102, LAB-181-4008	BC MOE Lab Manual C (SALM) and EPA 6010C	ICP-MS
pH 1:2	INOR-181-6031	BC MOE Lab Manual	PH METER

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 11V560784

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Benzene	TO 0570	EPA SW-846 8260	GC/MS
Toluene	TO 0570	EPA SW-846 8260	GC/MS
Ethylbenzene	TO 0570	EPA SW-846 8260	GC/MS
Xylenes	TO 0570	EPA SW-846 8260	GC/MS
C6 - C10 (F1)	TO 0570	CCME Tier 1 Method	GC/FID
C6 - C10 (F1 minus BTEX)	TO 0570	CCME Tier 1 Method	GC/FID
C10 - C16 (F2)	TO-0560	CCME Tier 1 Method	GC/FID
C16 - C34 (F3)	TO-0560	CCME Tier 1 Method	GC/FID
C34 - C50 (F4)	TO 0560	CCME Tier 1 Method	GC/FID
Gravimetric Heavy Hydrocarbons	TO 0560	CCME Tier 1 Method	GC/FID
Moisture Content	TO 0560	CCME Tier 1 Method	GRAVIMETRIC
Toluene-d8 (BTEX)	TO 0570	EPA SW-846 8260	GC/MS
Ethylbenzene-d10 (BTEX)	TO 0570	EPA SW-846 8260	GC/MS
o-Terphenyl (F2-F4)	TO 0560	CCME Tier 1 Method	GC/FID
Methyl tert-butyl ether (MTBE)	ORG-180-5100	Modified from BC MOE Lab Manual Sec D (BETX, VPH)	GC/MS/FID
Benzene	ORG-180-5100	Modified from BC MOE Lab Manual Sec D (BETX, VPH)	GC/MS/FID
Toluene	ORG-180-5100	Modified from BC MOE Lab Manual Sec D (BETX, VPH)	GC/MS/FID
Ethylbenzene	ORG-180-5100	Modified from BC MOE Lab Manual Sec D (BETX, VPH)	GC/MS/FID
m&p-Xylene	ORG-180-5100	Modified from BC MOE Lab Manual Sec D (BETX, VPH)	GC/MS/FID
o-Xylene	ORG-180-5100	Modified from BC MOE Lab Manual Sec D (BETX, VPH)	GC/MS/FID
Styrene	ORG-180-5100	Modified from BC MOE Lab Manual Sec D (BETX, VPH)	GC/MS/FID
VPH	ORG-180-5100	Modified from BC MOE Lab Manual Sec D (BETX, VPH)	GC/MS/FID
Naphthalene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
2-Methylnaphthalene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
1-Methylnaphthalene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Acenaphthylene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Acenaphthene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Fluorene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Phenanthrene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Anthracene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Fluoranthene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Pyrene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Benzo(a)anthracene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 11V560784

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Chrysene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Benzo(b)fluoranthene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Benzo(k)fluoranthene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Benzo(a)pyrene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Indeno(1,2,3-c,d)pyrene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Dibenzo(a,h)anthracene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Benzo(g,h.i)perylene	ORG-180-5102	Modified from BC MOE Lab Manual Section D (PAH)	GC/MS
Nitrobenzene - d5	ORG-180-5102	modified from BC MOE Lab Manual Section D (PAH)	GC/MS
2-Fluorobiphenyl	ORG-180-5102	modified from BC MOE Lab Manual Section D (PAH)	GC/MS
P-Terphenyl - d14	ORG-180-5102	modified from BC MOE Lab Manual Section D (PAH)	GC/MS
LEPH C10-C19	ORG-180-5101	Modified from BCMOE Lab Manual Section D (EPH)	GC/FID
HEPH C19-C32	ORG-180-5101	Modified from BCMOE Lab Manual Section D (EPH)	GC/FID
Bromofluorobenzene	ORG-180-5100	Modified from BC MOE Lab Manual Sec D (BETX, VPH)	GC/MS/FID
Toluene - d8	ORG-180-5100	Modified from BC MOE Lab Manual Sec D (BETX, VPH)	GC/MS/FID
Phenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
m&p-Cresol (3&4-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
o-Cresol (2-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
2-Chlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dinitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dimethylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,6-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Chloro-3-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4,6-Dinitro-2-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
3,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,5-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
Dinoseb (2-sec-butyl-4,6-dinitrophenol)	TO 1200	EPA SW-846 8321	HPLC/UV
Pentachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Fluorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Tribromophenol	TO 1200	EPA SW-846 8321	HPLC/UV

AGAT Laboratories

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Chain of Custody Record

Turnaround Time Required (TAT)

Regular TAT 5 to 7 working days [X]
Rush TAT 24 to 48 hours [ ]
48 to 72 hours [ ]
Date Required: _____
Please contact laboratory if Rush is required

Report To:

Company: Franz Environmental
Contact: Amanda Salway
Address: 308-1080 Mountain St
Vancouver, BC V6R 2T4
Phone: 604 632-9941 Fax: 604 632-9942
LSD:
Client Project #: 2090-110J

Report Information

1. Name: Amanda Salway
Email: asalway@franzbc.com
2. Name: Viviane Dubois-Côté
Email: vdcote@franzbc.com

Report Format

[ ] Single Sample per page
[X] Multiple Samples per page
[X] Excel Format Included

Laboratory Use Only

Arrival Temperature: 2°C
AGAT Job Number: 11V560784

Notes:
DEC 19 AM8:58

Invoice To: Same as above Yes [X] No [ ]

Company:
Contact:
Address:
Phone: Fax:
PO/AFE #:

Regulatory Requirements (Check):

[X] BC CSR – Soil
- [ ] Agricultural
- [X] Industrial
- [ ] Urban/Park
- [ ] Commercial

[ ] BC CSR – Water
- [ ] Drinking Water
- [ ] Aquatic Life
- [ ] Irrigation
- [ ] Livestock

[X] CCME
- [ ] Drinking Water
- [X] Industrial
- [ ] Residential/Park
- [ ] Drinking Water
- [ ] Commercial
- [ ] FWAL

Lab ID #	Sample Identification	Sample Matrix	Date/Time Sampled	Comments – Site/Sample Info. Sample Containment	BC CSR BTEX/VPH	BC CSR LEPH/HEPH	BC CSR Metals + CCME metals	VOCs	BC CSR Schedule II	Routine Potability	CCME F1-F4	PAH	[redacted]	phenols (chlorinated monohydric)		Number of Containers	Preserved (Y/N)	Hazardous (Y/N)	Hold for 1 YEAR 60 days
302228	BV-11BH-07M-1	Soil	17/12/2011													2			X
230	BV-11BH-07M-2				X	X					X	X				2			
231	BV-11BH-07M-3				X	X					X	X				2			
232	BV-11BH-07M-4															2			X
233	BV-11BH-07M-5															2			X
	[redacted]																		
234	BV-DUP8				X	X					X	X				2			
236	BV-11BH-04M-1				X	X	X				X	X		X		4			
237	BV-11BH-04M-2															4			X
240	BV-11BH-04M-3				X	X	X				X	X		X		4			
242	BV-11BH-04M-4															3			X
243	BV-11BH-04M-5															4			X

Samples Relinquished by (print name & sign):	Date	Samples Received by (Print name & sign):	Date
[signature]	17/12/2011	S. Cortes	19-DEC-11 @8:58 pm
Samples Relinquished by (print name & sign):	Date	Samples Received by (Print name & sign):	Date
Samples Relinquished by (print name & sign):	Date	Samples Received by (Print name & sign):	Date

Pink Copy - Client
Yellow Copy - AGAT
White Copy - AGAT

NO: 000299

Document ID: DIV-186-0811.001

Date revised: August 24, 2011

AGAT Laboratories

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Chain of Custody Record

Report To:
Company: same as previous
Contact:
Address:
Phone: Fax:
LSD:
Client Project #:

Invoice To: Same as above Yes ☒ No ☐
Company:
Contact:
Address:
Phone: Fax:
PO/AFE #:

Report Information
1. Name: same as previous
Email:
2. Name:
Email:

Regulatory Requirements (Check):
☒ **BC CSR – Soil**
☐ Agricultural
☒ Industrial
☐ Urban/Park
☐ Commercial

☐ **BC CSR – Water**
☐ Drinking Water
☐ Aquatic Life
☐ Irrigation
☐ Livestock

☒ **CCME**
☐ Drinking Water
☐ Residential/Park
☐ Commercial
☒ Industrial
☐ Drinking Water
☐ FWAL

Report Format
☐ Single Sample per page
☒ Multiple Samples per page
☒ Excel Format Included

Turnaround Time Required (TAT)
Regular TAT 5 to 7 working days ☒
Rush TAT 24 to 48 hours ☐
48 to 72 hours ☐
Date Required:
Please contact laboratory if Rush is required

Laboratory Use Only
Arrival Temperature: 2°C
AGAT Job Number: 11V560784
Notes:
DEC 19 AM 8:58

Lab ID #	Sample Identification	Sample Matrix	Date/Time Sampled	Comments – Site/Sample Info. Sample Containment	BC CSR BTEX/VPH	BC CSR LEPH/HEPH	BC CSR Metals + CCME metals	VOCs	BC CSR Schedule II	Routine Potability		CCME F1-F4	PAH	phenols (chlorinated and non-chlorinated)		Number of Containers	Preserved (Y/N)	Hazardous (Y/N)	Hold for ~~1 YEAR~~ 60 days
3021244	BV-11BU-04M-6	Soil	17/12/2011													4			X
245	BV-DUP9	↓	↓				X							X		2			
246	BV-11BU-05M-1	↓	↓		X	X	X					X	X	X		4			
249	BV-11BU-05M-2	↓	↓													4			X
250	BV-11BU-05M-3	↓	↓													4			X
251	BV-11BU-05M-4	↓	↓													4			X
252	BV-11BU-05M-5	↓	↓		X	X	X					X	X	X		4			
253	BV-11BU-05M-6	↓	↓													4			X
254	BV-DUP10	↓	↓				X									1			

Samples Relinquished by (print name & sign):	Date	Samples Received by (Print name & sign):	Date
[signature]	17/12/2011	S cans [signature] 19-DEC-11 @ 8:58	

Pink Copy - Client
Yellow Copy - AGAT
White Copy - AGAT

Page 2 of 2

NO: 000143

Document ID: DIV-186-0811.001
Date revised: August 24, 2011

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM - BURNABY

Work Order # 11V560784

RECEIVING BASICS:
*Complete CoC as well where required
Date and Time: 19-DEC-11
Courier: _____
Received by: S. Cowens
Relinquished by: Amanda Salway
Branch Received From: _____
Company: Franz Env
Consultant: _____
Client left without count verified: No

COC INFORMATION:
Received: (Yes) No Emailed to PM
Completed in full: (Yes) No If NO, why: _____
TURNAROUND TIME: Reg
COC Numbers: 00029995, 000143

SAMPLE QUANTITIES:
Coolers: 2 Bottles/Jars: 62 Bags: _____

TIME SENSITIVE ISSUES:
Earliest Date Sampled: 17-DEC-11
Microbiology: Test: _____
Hydrocarbons: Test: BTEX
Samples are received >5 days after sampling: Yes (No)

ALREADY EXCEEDED? Yes (No)
Expiry: _____
Expiry: 24-DEC-11

SPECIALTY ISSUES:
Legal Samples: Yes No N/A
International Samples: Yes No
**Proper tape/labels applied: Yes No

Hazardous Samples:
Why hazardous:
_____
Precaution taken:
_____

SAMPLE REQUIREMENTS:
*Complete while logging in by login staff.

Correct bottles used for testing: (Yes) No
If No, explain: _____

Correct amount of sample for analysis: (Yes) No
If No, explain: _____

Are all samples labeled correctly: (Yes) No
If No, explain: _____

NON-CONFORMANCES:
3 temperatures of samples* and average of each cooler: (record differing temperatures on the CoC next to sample ID's)
(1) 3 + 3 + 4 = 3 °C (2) 0 + 2 + 1 = 1 °C (3) ___ + ___ + ___ = ___ °C (4) ___ + ___ + ___ = ___ °C
*Jars used when available

Additional integrity issues (note here and on CoC next to the sample ID):

1) _____
2) _____
3) _____

Account Project Manager: _____ Have they been notified of the above issues: Yes No
Whom spoken to: _____ Date and Time: _____

ADDITIONAL NOTES:

_____

_____

_____

APPENDIX F

LABORATORY REPORTS - GROUNDWATER

AGAT Laboratories

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Burnaby, British Columbia
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TEL (778)452-4000
FAX (778)452-4074
http://www.agatlabs.com

CLIENT NAME: FRANZ ENVIRONMENTAL
308-108 MAINLAND STREET
VANCOUVER, BC V6B2T4

ATTENTION TO: Amanda Salway

PROJECT NO: 2090-1103

AGAT WORK ORDER: 12V570940

TRACE ORGANICS REVIEWED BY: Elena Gorobets, Senior Analyst

WATER ANALYSIS REVIEWED BY: Marie England, Inorganics Supervisor

DATE REPORTED: Feb 08, 2012

PAGES (INCLUDING COVER): 12

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (778) 452-4000

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V570940
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons (BTEX/F1-F4) in Water

DATE SAMPLED: Feb 01, 2012 | DATE RECEIVED: Feb 01, 2012 | DATE REPORTED: Feb 08, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	BV-11BH-04M 3091736	BV-11BH-05M 3091778	BV-11BH-03M 3091782
Benzene	mg/L	0.37	0.0005	<0.0005	<0.0005	<0.0005
Toluene	mg/L	0.002	0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	mg/L	0.09	0.0005	<0.0005	<0.0005	<0.0005
Xylenes	mg/L		0.0005	<0.0005	<0.0005	<0.0005
C6 - C10 (F1)	mg/L		0.1	<0.1	<0.1	<0.1
C6 - C10 (F1 minus BTEX)	mg/L		0.1	<0.1	<0.1	<0.1
C>10 - C16	mg/L		0.1	<0.1	<0.1	<0.1
C16 - C34	mg/L		0.1	<0.1	<0.1	<0.1
C>34 - C50	mg/L		0.1	<0.1	<0.1	<0.1
Surrogate	Unit	Acceptable Limits				
Toluene-d8 (BTEX)	%	50-150		100	102	102
o-Terphenyl (F2-F4)	%	50-150		108	108	108

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL)

3091736-3091782 The C>6 - C10 fraction is calculated using the toluene response factor.
The C10 - C16 fraction is calculated using the average response factor for nC10, nC16 and nC34.
BTEX has NOT been subtracted from Fraction 1.
Sample is blank corrected.

Certified By: Elena Gorobets

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V570940
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 01, 2012 | DATE RECEIVED: Feb 01, 2012 | DATE REPORTED: Feb 08, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	BV-11BH-04M 3091736	BV-11BH-05M 3091778	BV-11BH-03M 3091782
Methyl tert-butyl ether (MTBE)	µg/L	34000	1	<1	<1	<1
Styrene	µg/L	720	0.5	<0.5	<0.5	<0.5
VPH	µg/L	1500	100	<100	<100	<100
Naphthalene	µg/L	10	0.05	<0.05	<0.05	<0.05
Quinoline	µg/L	34	0.1	<0.1	<0.1	<0.1
Acenaphthylene	µg/L		0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/L	60	0.05	<0.05	<0.05	<0.05
Fluorene	µg/L	120	0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/L	3	0.05	<0.05	<0.05	<0.05
Anthracene (Water)	µg/L	1	0.05	<0.05	<0.05	<0.05
Acridine	µg/L	0.5	0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/L	2	0.05	<0.05	<0.05	<0.05
Pyrene	µg/L	0.2	0.02	<0.02	<0.02	<0.02
Benzo(a)anthracene	µg/L	1	0.05	<0.05	<0.05	<0.05
Chrysene	µg/L	1	0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/L		0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/L		0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.1	0.01	<0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L		0.05	<0.05	<0.05	<0.05
Dibenzo(a,h)anthracene	µg/L		0.05	<0.05	<0.05	<0.05
Benzo(g,h.i)perylene	µg/L		0.05	<0.05	<0.05	<0.05
LEPH C10-C19	µg/L	500	100	<100	<100	<100
HEPH C19-C32	µg/L		100	<100	<100	<100
Surrogate	**Unit**	**Acceptable Limits**				
Nitrobenzene - d5	%	50-130		85	81	88
Quinoline - d7	%	50-130		101	88	99
2-Fluorobiphenyl	%	50-130		81	79	81
P-Terphenyl - d14	%	60-130		94	91	88
Bromofluorobenzene	%	70-130		94	95	95
Dibromofluoromethane	%	70-130		106	114	114
Toluene - d8	%	70-130		110	113	111

Certified By: Elena Gorobets

AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 12V570940

PROJECT NO: 2090-1103

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CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 01, 2012	DATE RECEIVED: Feb 01, 2012	DATE REPORTED: Feb 08, 2012	SAMPLE TYPE: Water

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

3091736-3091782 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.

Certified By: Elena Gorobets

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AGAT WORK ORDER: 12V570940
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Phenolic Compounds in Water

DATE SAMPLED: Feb 01, 2012 | DATE RECEIVED: Feb 01, 2012 | DATE REPORTED: Feb 08, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	BV-11BH-04M 3091736	BV-11BH-05M 3091778	BV-11BH-03M 3091782
Phenol	mg/L		0.002	<0.002	<0.002	<0.002
4-Nitrophenol	mg/L		0.005	<0.005	<0.005	<0.005
m&p-Cresol (3&4-methylphenol)	mg/L		0.0005	<0.0005	<0.0005	<0.0005
o-Cresol (2-methylphenol)	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2-Chlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,4-Dinitrophenol	mg/L		0.005	<0.005	<0.005	<0.005
2-Nitrophenol	mg/L		0.005	<0.005	<0.005	<0.005
2,4-Dimethylphenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,6-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001	<0.0001
4-Chloro-3-methylphenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,4-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001	<0.0001
4,6-Dinitro-2-methylphenol	mg/L		0.005	<0.005	<0.005	<0.005
2,3,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,4-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,4,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
3,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,4,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,5,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,4,5-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	mg/L		0.005	<0.005	<0.005	<0.005
Pentachlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
Surrogate	Unit	Acceptable Limits				
2-Fluorophenol	%	50-150		96.7	101	101
2,4,6-Tribromophenol	%	50-150		108	112	113

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
3091736-3091782 Results relate only to the items tested.

Certified By: Elena Gorobets

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Certificate of Analysis

AGAT WORK ORDER: 12V570940
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

British Columbia CSR- Schedule 6 Dissolved Metals

DATE SAMPLED: Feb 01, 2012 | DATE RECEIVED: Feb 01, 2012 | DATE REPORTED: Feb 08, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	BV-11BH-04M 3091736	BV-11BH-05M 3091778	BV-11BH-03M 3091782
Aluminum Dissolved	µg/L		1	10	8	9
Antimony Dissolved	µg/L		0.05	0.06	0.06	<0.05
Arsenic Dissolved	µg/L	5	0.1	13.5	82.7	2.6
Barium Dissolved	µg/L		0.1	43.4	199	30.0
Beryllium Dissolved	µg/L		0.01	<0.01	<0.01	<0.01
Boron Dissolved	µg/L		1	57	42	16
Cadmium Dissolved	µg/L	0.017	0.01	<0.01	<0.01	<0.01
Calcium Dissolved	mg/L		0.05	22.7	153	31.5
Chromium Dissolved	µg/L		0.5	1.4	1.9	1.0
Cobalt Dissolved	µg/L		0.05	0.56	0.57	0.85
Copper Dissolved	µg/L		0.2	0.8	0.6	0.6
Iron Dissolved	mg/L	0.3	0.01	18.0	43.1	9.82
Lead Dissolved	µg/L		0.01	0.25	0.03	0.04
Lithium Dissolved	µg/L		0.1	2.0	2.2	0.7
Magnesium Dissolved	mg/L		0.05	30.0	24.2	16.2
Manganese Dissolved	mg/L		0.001	0.386	2.52	0.123
Mercury Dissolved	µg/L	0.026	0.003	0.004	<0.003	<0.003
Molybdenum Dissolved	µg/L	73	0.05	0.47	0.56	0.62
Nickel Dissolved	µg/L		0.1	1.4	1.2	2.4
Selenium Dissolved	µg/L	1	0.1	<0.1	0.2	<0.1
Silver Dissolved	µg/L	0.1	0.01	<0.01	<0.01	<0.01
Sodium Dissolved	mg/L		0.05	5.77	14.4	4.98
Thallium Dissolved	µg/L	0.8	0.002	<0.002	<0.002	<0.002
Titanium Dissolved	µg/L		0.1	30.9	194	39.8
Uranium Dissolved	µg/L		0.01	0.06	0.06	0.01
Vanadium Dissolved	µg/L		0.1	2.0	2.4	1.0
Zinc Dissolved	µg/L	30	1	15	8	3
Hardness (calc)	mg CaCO3/L		1	180	482	145

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL) (Van)

Certified By: Marie England

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V570940

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis

RPT Date: Feb 08, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Petroleum Hydrocarbons in Water															
Methyl tert-butyl ether (MTBE)	1	3089681	<1	<1	0.0%	< 1	94%	80%	120%				98%	70%	130%
Styrene	1	3089681	<0.5	<0.5	0.0%	< 0.5	97%	80%	120%				96%	70%	130%
VPH	1	3089681	130	140	7.0%	< 100									
Naphthalene	1	W-MS	0.09	0.11	20.0%	< 0.05	99%	80%	120%				92%	50%	130%
Quinoline	1	W-MS	0.1	<0.1	0.0%	< 0.1	99%	80%	120%				102%	50%	130%
Acenaphthylene	1	W-MS	0.08	0.08	0.0%	< 0.05	100%	80%	120%				88%	50%	130%
Acenaphthene	1	W-MS	0.09	0.08	12.0%	< 0.05	100%	80%	120%				94%	50%	130%
Fluorene	1	W-MS	0.1	0.09	10.5%	< 0.05	101%	80%	120%				105%	50%	130%
Phenanthrene	1	W-MS	0.11	0.10	10.0%	< 0.05	99%	80%	120%				116%	60%	130%
Anthracene (Water)	1	W-MS	0.08	0.07	13.0%	< 0.05	100%	80%	120%				83%	60%	130%
Acridine	1	W-MS	0.09	0.08	12.0%	< 0.05	99%	80%	120%				92%	50%	130%
Fluoranthene	1	W-MS	0.09	0.09	0.0%	< 0.05	99%	80%	120%				98%	60%	130%
Pyrene	1	W-MS	0.1	0.09	10.5%	< 0.02	100%	80%	120%				107%	60%	130%
Benzo(a)anthracene	1	W-MS	0.09	0.09	0.0%	< 0.05	100%	80%	120%				97%	60%	130%
Chrysene	1	W-MS	0.1	0.09	10.5%	< 0.05	100%	80%	120%				100%	60%	130%
Benzo(b)fluoranthene	1	W-MS	0.11	0.11	0.0%	< 0.05	99%	80%	120%				113%	60%	130%
Benzo(k)fluoranthene	1	W-MS	0.1	0.09	10.5%	< 0.05	100%	80%	120%				100%	60%	130%
Benzo(a)pyrene	1	W-MS	0.08	0.08	0.0%	< 0.01	100%	80%	120%				89%	60%	130%
Indeno(1,2,3-cd)pyrene	1	W-MS	0.1	0.1	0.0%	< 0.05	100%	80%	120%				102%	60%	130%
Dibenzo(a,h)anthracene	1	W-MS	0.1	0.09	10.5%	< 0.05	100%	80%	120%				102%	60%	130%
Benzo(g,h.i)perylene	1	W-MS	0.1	0.1	0.0%	< 0.05	100%	80%	120%				104%	60%	130%
Nitrobenzene - d5	1	W-MS	80	67	18.0%	<	98%	80%	120%				81%	50%	130%
Quinoline - d7	1	W-MS	94	84	11.0%	<	99%	80%	120%				94%	50%	130%
2-Fluorobiphenyl	1	W-MS	83	81	2.0%	<	100%	80%	120%				83%	50%	130%
P-Terphenyl - d14	1	W-MS	92	89	3.0%	<	101%	80%	120%				92%	60%	130%
Bromofluorobenzene	1	3089681	78	80	3.0%		97%	70%	130%				113%	70%	130%
Dibromofluoromethane	1	3089681	118	113	4.0%		92%	70%	130%				105%	70%	130%
Toluene - d8	1	3089681	112	115	3.0%		88%	70%	130%				104%	70%	130%
Phenolic Compounds in Water															
Phenol	134	3095657	<0.002	<0.002	NA	< 0.002	86%	80%	120%	94%	70%	130%	93%	60%	140%
4-Nitrophenol	134	3095657	<0.005	<0.005	NA	< 0.005	84%	80%	120%	91%	70%	130%	91%	60%	140%
m&p-Cresol (3&4-methylphenol)	134	3095657	<0.0005	<0.0005	NA	< 0.0005				93%	70%	130%	93%	60%	140%
o-Cresol (2-methylphenol)	134	3095657	<0.0005	<0.0005	NA	< 0.0005				89%	70%	130%	89%	60%	140%
2-Chlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	80%	80%	120%	83%	70%	130%	81%	60%	140%
2,4-Dinitrophenol	134	3095657	<0.005	<0.005	NA	< 0.005	91%	80%	120%	95%	70%	130%	95%	60%	140%
2-Nitrophenol	134	3095657	<0.005	<0.005	NA	< 0.005	95%	80%	120%	91%	70%	130%	102%	60%	140%
2,4-Dimethylphenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	83%	80%	120%	87%	70%	130%	87%	60%	140%
2,6-Dichlorophenol	134	3095657	<0.0001	<0.0001	NA	< 0.0001				89%	70%	130%	92%	60%	140%

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V570940

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis (Continued)

RPT Date: Feb 08, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
4-Chloro-3-methylphenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	83%	80%	120%	94%	70%	130%	95%	60%	140%
2,4-Dichlorophenol	134	3095657	<0.0001	<0.0001	NA	< 0.0001	85%	80%	120%	80%	70%	130%	81%	60%	140%
4,6-Dinitro-2-methylphenol	134	3095657	<0.005	<0.005	NA	< 0.005	95%	80%	120%	90%	70%	130%	98%	60%	140%
2,3,6-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				93%	70%	130%	95%	60%	140%
2,3,4-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				89%	70%	130%	93%	60%	140%
2,4,6-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	87%	80%	120%	95%	70%	130%	96%	60%	140%
2,4,5-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				91%	70%	130%	94%	60%	140%
2,3,5-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	97%	60%	140%
3,4,5-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	94%	60%	140%
2,3,4,6-Tetrachlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				101%	70%	130%	101%	60%	140%
2,3,5,6-Tetrachlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				101%	70%	130%	101%	60%	140%
2,3,4,5-Tetrachlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				99%	70%	130%	100%	60%	140%
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	134	3095657	<0.005	<0.005	NA	< 0.005				97%	70%	130%	94%	60%	140%
Pentachlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	90%	80%	120%	98%	70%	130%	107%	60%	140%
Petroleum Hydrocarbons (BTEX/F1-F4) in Water															
Benzene	380	3091736	<0.0005	<0.0005	NA	< 0.0005	95%	80%	120%	95%	80%	120%	87%	70%	130%
Toluene	380	3091736	<0.0005	<0.0005	NA	< 0.0005	99%	80%	120%	98%	80%	120%	86%	70%	130%
Ethylbenzene	380	3091736	<0.0005	<0.0005	NA	< 0.0005	106%	80%	120%	104%	80%	120%	85%	70%	130%
Xylenes	380	3091736	<0.0005	<0.0005	NA	< 0.0005	106%	80%	120%	104%	80%	120%	88%	70%	130%
C6 - C10 (F1)	380	3091736	<0.1	<0.1	NA	< 0.1	92%	80%	120%	111%	80%	120%	83%	70%	130%
C>10 - C16	24	3095453	<0.1	<0.1	NA	< 0.1	101%	80%	120%	93%	80%	120%	98%	70%	130%
C16 - C34	24	3095453	<0.1	<0.1	NA	< 0.1	101%	80%	120%	106%	80%	120%	103%	70%	130%

Certified By: Elena Gorobets

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V570940

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Water Analysis

RPT Date: Feb 08, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
British Columbia CSR- Schedule 6 Dissolved Metals															
Aluminum Dissolved	20120	3091736	10	10	0.0%	< 1	103%	90%	110%	105%	85%	115%			
Antimony Dissolved	20120	3091736	0.06	0.06	0.0%	< 0.05	104%	90%	110%	102%	85%	110%			
Arsenic Dissolved	20120	3091736	13.5	13.6	1.0%	< 0.1	103%	90%	110%	109%	90%	110%			
Barium Dissolved	20120	3091736	43.4	42.6	2.0%	< 0.1	103%	90%	110%	99%	90%	110%			
Beryllium Dissolved	20120	3091736	<0.01	<0.01	0.0%	< 0.01	91%	90%	110%	97%	90%	110%			
Boron Dissolved	20120	3091736	57	58	2.0%	< 1	91%	90%	110%	101%	80%	120%			
Cadmium Dissolved	20120	3091736	<0.01	<0.01	0.0%	< 0.01	100%	90%	110%	101%	90%	110%			
Calcium Dissolved	20120	3091736	22.7	22.5	1.0%	< 0.05	100%	90%	110%	103%	90%	110%			
Chromium Dissolved	20120	3091736	1.4	1.3	7.0%	< 0.5	102%	90%	110%	97%	90%	110%			
Cobalt Dissolved	20120	3091736	0.56	0.52	7.0%	< 0.05	105%	90%	110%	104%	90%	110%			
Copper Dissolved	20120	3091736	0.8	0.8	0.0%	< 0.2	103%	90%	110%	104%	90%	110%			
Iron Dissolved	20120	3091736	18.0	17.8	1.1%	< 0.01	104%	90%	110%	104%	90%	110%			
Lead Dissolved	20120	3091736	0.25	0.25	0.0%	< 0.01	100%	90%	110%	100%	90%	110%			
Lithium Dissolved	20120	3091736	2.0	1.9	5.1%	< 0.1				105%	90%	110%			
Magnesium Dissolved	20120	3091736	30.0	29.8	0.7%	< 0.05	100%	90%	110%	105%	90%	110%			
Manganese Dissolved	20120	3091736	0.386	0.385	0.0%	< 0.001	104%	90%	110%	103%	90%	110%			
Mercury Dissolved	20120	3091736	0.004	0.004	0.0%	< 0.003	108%	90%	110%	104%	90%	110%			
Molybdenum Dissolved	20120	3091736	0.47	0.46	2.0%	< 0.05	97%	90%	110%	101%	90%	110%			
Nickel Dissolved	20120	3091736	1.4	1.4	0.0%	< 0.1	101%	90%	110%	103%	90%	110%			
Selenium Dissolved	20120	3091736	<0.1	0.2	0.0%	< 0.1	101%	90%	110%	110%	85%	115%			
Silver Dissolved	20120	3091736	<0.01	<0.01	0.0%	< 0.01				106%	90%	110%			
Sodium Dissolved	20120	3091736	5.77	5.73	1.0%	< 0.05	100%	90%	110%	106%	90%	110%			
Thallium Dissolved	20120	3091736	<0.002	<0.002	0.0%	< 0.002	93%	90%	110%	98%	90%	110%			
Titanium Dissolved	20120	3091736	30.9	31.4	2.0%	< 0.1				100%	90%	110%			
Uranium Dissolved	20120	3091736	0.06	0.05	NA	< 0.01	98%	90%	110%	102%	90%	110%			
Vanadium Dissolved	20120	3091736	2.0	1.8	10.5%	< 0.1	104%	90%	110%	100%	90%	110%			
Zinc Dissolved	20120	3091736	15	14	7.0%	< 1	100%	90%	110%	105%	85%	115%			

Certified By:

AGAT Laboratories

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V570940

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Benzene	TO 0540	EPA SW846 8260	GC/MS
Toluene	TO 0540	EPA SW846 8260	GC/MS
Ethylbenzene	TO 0540	EPA SW846 8260	GC/MS
Xylenes	TO 0540	EPA SW846 8260	GC/MS
C6 - C10 (F1)	TO 0540	CCME Tier 1 Method	GC/FID
C6 - C10 (F1 minus BTEX)	TO 0540	CCME Tier 1 Method	GC/FID
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
C16 - C34	TO 0511	CCME Tier 1 Method	GC/FID
C>34 - C50	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO 0340	EPA SW846 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
Methyl tert-butyl ether (MTBE)	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Styrene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
VPH	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Naphthalene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Quinoline	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acenaphthylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acenaphthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Fluorene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Phenanthrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Anthracene (Water)	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acridine	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Chrysene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(b)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(k)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Dibenzo(a,h)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(g,h.i)perylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V570940

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Nitrobenzene - d5	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
Quinoline - d7	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
2-Fluorobiphenyl	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
P-Terphenyl - d14	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
LEPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
HEPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
Bromofluorobenzene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Dibromofluoromethane	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Toluene - d8	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Phenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
m&p-Cresol (3&4-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
o-Cresol (2-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
2-Chlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dinitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dimethylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,6-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Chloro-3-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4,6-Dinitro-2-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
3,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,5-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
Dinoseb (2-sec-butyl-4,6-dinitrophenol)	TO 1200	EPA SW-846 8321	HPLC/UV
Pentachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Fluorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Tribromophenol	TO 1200	EPA SW-846 8321	HPLC/UV

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V570940

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Aluminum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Antimony Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Arsenic Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Barium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Beryllium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Boron Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cadmium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Calcium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Chromium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cobalt Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Copper Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Iron Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Lead Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Lithium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Magnesium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Manganese Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Mercury Dissolved	MET-181-6103, LAB-181-4015	Modified from EPA 245.7	CV/AA
Molybdenum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Nickel Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Selenium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Silver Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Sodium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Thallium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Titanium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Uranium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Vanadium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Zinc Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS

AGAT Laboratories

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Chain of Custody Record

Ph.: 778.452.4000 • Fax: 778.452.7074

Turnaround Time Required (TAT)

- **Regular TAT** 5 to 7 working days [X]
- **Rush TAT** 24 to 48 hours [ ]
- 48 to 72 hours [ ]

Date Required: ______

Please contact laboratory if Rush is required

Report To:

Company: Franz Environmental
Contact: Amanda Salway
Address: 308-1080 Mainland St. Vancouver, BC V6B 2T4
Phone: 604 632-9941 Fax: 604 632-9942
LSD:
Client Project #: 2090-1103

Report Information

1. Name: Amanda Salway
   Email: asalway@franzbc.com
2. Name: Viviane Dubois-Côté
   Email: vdcote@franzbc.com

Report Format

- [ ] Single Sample per page
- [X] Multiple Samples per page
- [X] Excel Format Included

Laboratory Use Only

Arrival Temperature: 4°C
AGAT Job Number: 12V570940

Notes:
FEB 1 PM 5:52

Invoice To: Same as above Yes [X] No [ ]

Company:
Contact:
Address:
Phone: Fax:
PO/AFE #:

Regulatory Requirements (Check):

- [ ] BC CSR – Soil
  - [ ] Agricultural
  - [ ] Industrial
  - [ ] Urban/Park
  - [ ] Commercial
- [X] BC CSR – Water
  - [ ] Drinking Water
  - [X] Aquatic Life
  - [ ] Irrigation
  - [ ] Livestock
- [X] CCME
  - [ ] Drinking Water
  - [ ] Residential/Park
  - [ ] Commercial
  - [X] Industrial
  - [ ] Drinking Water
  - [ ] FWAL

Lab ID #	Sample Identification	Sample Matrix	Date/Time Sampled	Comments – Site/Sample Info. Sample Containment	BC CSR BTEX/VPH	BC CSR LEPH/HEPH	BC CSR Metals + CCME metals	VOCs	BC CSR Schedule II	Routine Potability	CCME F1	CCME F2-F4		Chlorinated + non-chlorinated phenol	Number of Containers	Preserved (Y/N)	Hazardous (Y/N)	Hold for ~~1 YEAR~~ 60 days
3091736	BV-11BH-04M	water	Feb 1st, 2012		X	X	X				X	X		X	7		N	
778	BV-11BH-05M	water	Feb 1st, 2012		X	X	X				X	X		X	7			
782	BV-11BH-03M	water	Feb 1st, 2012		X	X	X				X	X		X	7			

Samples Relinquished by (print name & sign):	Date	Samples Received by (Print name & sign):	Date
[signature]	Feb 1, 2012	AMIEL D. [signature] Feb 1. 2012 5:52 pm	

Pink Copy - Client
Yellow Copy - AGAT
White Copy - AGAT

Page 1 of 1

NO: 000629

Document ID: DIV-186-0811.001

Date revised: August 24, 2011

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM - BURNABY

Work Order # 12V570940

RECEIVING BASICS:
*Complete CoC as well where required
Date and Time: Feb 1/12 5:52
Courier: n/a
Received by: Amiel
Relinquished by: Amanda Salway
Branch Received From:
Company: Fram Env
Consultant:
Client left without count verified: No

COC INFORMATION:
Received: (Yes) No Emailed to PM
Completed in full: (Yes) No If NO, why:
TURNAROUND TIME: Reg
COC Numbers: 000629

SAMPLE QUANTITIES:
Coolers: _____ Bottles/Jars: 21 Bags: _____

TIME SENSITIVE ISSUES:
Earliest Date Sampled: 01-FEB-12
Microbiology: Test:
Hydrocarbons: Test: BTEX
Samples are received >5 days after sampling: Yes No

ALREADY EXCEEDED? Yes (No)
Expiry:
Expiry: 08-FEB-12

SPECIALTY ISSUES:
Legal Samples: Yes No
International Samples: Yes No
**Proper tape/labels applied: Yes No

w/A

Hazardous Samples:
Why hazardous:

Precaution taken:

SAMPLE REQUIREMENTS:
*Complete while logging in by login staff.

Correct bottles used for testing: (Yes) No
If No, explain:

Correct amount of sample for analysis: (Yes) No
If No, explain:

Are all samples labeled correctly: (Yes) No
If No, explain:

NON-CONFORMANCES:
3 temperatures of samples* and average of each cooler: (record differing temperatures on the CoC next to sample ID's)
(1) 4 + 4 + 4 = 4 °C (2) ___+___+___=___°C (3) ___+___+___=___°C (4) ___+___+___=___°C
*Jars used when available

Additional integrity issues (note here and on CoC next to the sample ID):

1)
2)
3)

Account Project Manager: _____ Have they been notified of the above issues: Yes No
Whom spoken to: _____ Date and Time: _____

ADDITIONAL NOTES:

AGAT Laboratories

Unit 120, 8600 Glenlyon Parkway
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CLIENT NAME: FRANZ ENVIRONMENTAL
308-108 MAINLAND STREET
VANCOUVER, BC V6B2T4

ATTENTION TO: Amanda Salway

PROJECT NO: 2090-1103

AGAT WORK ORDER: 12V570940

TRACE ORGANICS REVIEWED BY: Craig Stehr, Organics Supervisor

WATER ANALYSIS REVIEWED BY: Marie England, Inorganics Supervisor

DATE REPORTED: Mar 02, 2012

PAGES (INCLUDING COVER): 12

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (778) 452-4000

*NOTES

VERSION 1:Amended to include VH and EPH results as per client.
Version 2 is an amendment to version 1.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

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Certificate of Analysis

AGAT WORK ORDER: 12V570940
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons (BTEX/F1-F4) in Water

DATE SAMPLED: Feb 01, 2012 | DATE RECEIVED: Feb 01, 2012 | DATE REPORTED: Mar 02, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	BV-11BH-04M 3091736	BV-11BH-05M 3091778	BV-11BH-03M 3091782
Benzene	mg/L	0.37	0.0005	<0.0005	<0.0005	<0.0005
Toluene	mg/L	0.002	0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	mg/L	0.09	0.0005	<0.0005	<0.0005	<0.0005
Xylenes	mg/L		0.0005	<0.0005	<0.0005	<0.0005
C6 - C10 (F1)	mg/L		0.1	<0.1	<0.1	<0.1
C6 - C10 (F1 minus BTEX)	mg/L		0.1	<0.1	<0.1	<0.1
C>10 - C16	mg/L		0.1	<0.1	<0.1	<0.1
C16 - C34	mg/L		0.1	<0.1	<0.1	<0.1
C>34 - C50	mg/L		0.1	<0.1	<0.1	<0.1
Surrogate	Unit	Acceptable Limits				
Toluene-d8 (BTEX)	%	50-150		100	102	102
o-Terphenyl (F2-F4)	%	50-150		108	108	108

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL)

3091736-3091782 The C>6 - C10 fraction is calculated using the toluene response factor.
The C10 - C16 fraction is calculated using the average response factor for nC10, nC16 and nC34.
BTEX has NOT been subtracted from Fraction 1.
Sample is blank corrected.

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 12V570940
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 01, 2012 | DATE RECEIVED: Feb 01, 2012 | DATE REPORTED: Mar 02, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	BV-11BH-04M 3091736	BV-11BH-05M 3091778	BV-11BH-03M 3091782
Methyl tert-butyl ether (MTBE)	µg/L	34000	1	<1	<1	<1
Styrene	µg/L	720	0.5	<0.5	<0.5	<0.5
VPH	µg/L	1500	100	<100	<100	<100
VH	µg/L	15000	100	<100	<100	<100
Naphthalene	µg/L	10	0.05	<0.05	<0.05	<0.05
Quinoline	µg/L	34	0.1	<0.1	<0.1	<0.1
Acenaphthylene	µg/L		0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/L	60	0.05	<0.05	<0.05	<0.05
Fluorene	µg/L	120	0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/L	3	0.05	<0.05	<0.05	<0.05
Anthracene (Water)	µg/L	1	0.05	<0.05	<0.05	<0.05
Acridine	µg/L	0.5	0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/L	2	0.05	<0.05	<0.05	<0.05
Pyrene	µg/L	0.2	0.02	<0.02	<0.02	<0.02
Benzo(a)anthracene	µg/L	1	0.05	<0.05	<0.05	<0.05
Chrysene	µg/L	1	0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/L		0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/L		0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.1	0.01	<0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L		0.05	<0.05	<0.05	<0.05
Dibenzo(a,h)anthracene	µg/L		0.05	<0.05	<0.05	<0.05
Benzo(g,h.i)perylene	µg/L		0.05	<0.05	<0.05	<0.05
LEPH C10-C19	µg/L	500	100	<100	<100	<100
HEPH C19-C32	µg/L		100	<100	<100	<100
EPH C10-C19	µg/L	5000	100	<100	<100	<100
EPH C19-C32	µg/L		100	<100	<100	<100

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 12V570940
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 01, 2012 | DATE RECEIVED: Feb 01, 2012 | DATE REPORTED: Mar 02, 2012 | SAMPLE TYPE: Water

Surrogate	Unit	Acceptable Limits	BV-11BH-04M 3091736	BV-11BH-05M 3091778	BV-11BH-03M 3091782
Nitrobenzene - d5	%	50-130	85	81	88
Quinoline - d7	%	50-130	101	88	99
2-Fluorobiphenyl	%	50-130	81	79	81
P-Terphenyl - d14	%	60-130	94	91	88
Bromofluorobenzene	%	70-130	94	95	95
Dibromofluoromethane	%	70-130	106	114	114
Toluene - d8	%	70-130	110	113	111

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

3091736-3091782 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 12V570940
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Phenolic Compounds in Water

DATE SAMPLED: Feb 01, 2012 | DATE RECEIVED: Feb 01, 2012 | DATE REPORTED: Mar 02, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	BV-11BH-04M 3091736	BV-11BH-05M 3091778	BV-11BH-03M 3091782
Phenol	mg/L		0.002	<0.002	<0.002	<0.002
4-Nitrophenol	mg/L		0.005	<0.005	<0.005	<0.005
m&p-Cresol (3&4-methylphenol)	mg/L		0.0005	<0.0005	<0.0005	<0.0005
o-Cresol (2-methylphenol)	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2-Chlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,4-Dinitrophenol	mg/L		0.005	<0.005	<0.005	<0.005
2-Nitrophenol	mg/L		0.005	<0.005	<0.005	<0.005
2,4-Dimethylphenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,6-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001	<0.0001
4-Chloro-3-methylphenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,4-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001	<0.0001
4,6-Dinitro-2-methylphenol	mg/L		0.005	<0.005	<0.005	<0.005
2,3,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,4-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,4,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
3,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,4,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,5,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,4,5-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	mg/L		0.005	<0.005	<0.005	<0.005
Pentachlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
Surrogate	**Unit**	**Acceptable Limits**				
2-Fluorophenol	%	50-150		96.7	101	101
2,4,6-Tribromophenol	%	50-150		108	112	113

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
3091736-3091782 Results relate only to the items tested.

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Certificate of Analysis

AGAT WORK ORDER: 12V570940
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

British Columbia CSR- Schedule 6 Dissolved Metals

DATE SAMPLED: Feb 01, 2012 | DATE RECEIVED: Feb 01, 2012 | DATE REPORTED: Mar 02, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	BV-11BH-04M 3091736	BV-11BH-05M 3091778	BV-11BH-03M 3091782
Aluminum Dissolved	µg/L		1	10	8	9
Antimony Dissolved	µg/L	200	0.05	0.06	0.06	<0.05
Arsenic Dissolved	µg/L	50	0.1	13.5	82.7	2.6
Barium Dissolved	µg/L	10000	0.1	43.4	199	30.0
Beryllium Dissolved	µg/L	53	0.01	<0.01	<0.01	<0.01
Boron Dissolved	µg/L	50000	1	57	42	16
Cadmium Dissolved	µg/L		0.01	<0.01	<0.01	<0.01
Calcium Dissolved	mg/L		0.05	22.7	153	31.5
Chromium Dissolved	µg/L		0.5	1.4	1.9	1.0
Cobalt Dissolved	µg/L	40	0.05	0.56	0.57	0.85
Copper Dissolved	µg/L		0.2	0.8	0.6	0.6
Iron Dissolved	mg/L		0.01	18.0	43.1	9.82
Lead Dissolved	µg/L		0.01	0.25	0.03	0.04
Lithium Dissolved	µg/L		0.1	2.0	2.2	0.7
Magnesium Dissolved	mg/L		0.05	30.0	24.2	16.2
Manganese Dissolved	mg/L		0.001	0.386	2.52	0.123
Mercury Dissolved	µg/L	1	0.003	0.004	<0.003	<0.003
Molybdenum Dissolved	µg/L	10000	0.05	0.47	0.56	0.62
Nickel Dissolved	µg/L		0.1	1.4	1.2	2.4
Selenium Dissolved	µg/L	10	0.1	<0.1	0.2	<0.1
Silver Dissolved	µg/L		0.01	<0.01	<0.01	<0.01
Sodium Dissolved	mg/L		0.05	5.77	14.4	4.98
Thallium Dissolved	µg/L	3	0.002	<0.002	<0.002	<0.002
Titanium Dissolved	µg/L	1000	0.1	30.9	194	39.8
Uranium Dissolved	µg/L	3000	0.01	0.06	0.06	0.01
Vanadium Dissolved	µg/L		0.1	2.0	2.4	1.0
Zinc Dissolved	µg/L		1	15	8	3
Hardness (calc)	mg CaCO3/L		1	180	482	145

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

Certified By: Marie England

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V570940

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis

RPT Date: Mar 02, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Petroleum Hydrocarbons in Water															
Methyl tert-butyl ether (MTBE)	1	3089681	<1	<1	0.0%	< 1	94%	80%	120%				98%	70%	130%
Styrene	1	3089681	<0.5	<0.5	0.0%	< 0.5	97%	80%	120%				96%	70%	130%
VPH	1	3089681	130	140	7.0%	< 100									
Naphthalene	1	W-MS	0.09	0.11	20.0%	< 0.05	99%	80%	120%				92%	50%	130%
Quinoline	1	W-MS	0.1	<0.1	0.0%	< 0.1	99%	80%	120%				102%	50%	130%
Acenaphthylene	1	W-MS	0.08	0.08	0.0%	< 0.05	100%	80%	120%				88%	50%	130%
Acenaphthene	1	W-MS	0.09	0.08	12.0%	< 0.05	100%	80%	120%				94%	50%	130%
Fluorene	1	W-MS	0.1	0.09	10.5%	< 0.05	101%	80%	120%				105%	50%	130%
Phenanthrene	1	W-MS	0.11	0.10	10.0%	< 0.05	99%	80%	120%				116%	60%	130%
Anthracene (Water)	1	W-MS	0.08	0.07	13.0%	< 0.05	100%	80%	120%				83%	60%	130%
Acridine	1	W-MS	0.09	0.08	12.0%	< 0.05	99%	80%	120%				92%	50%	130%
Fluoranthene	1	W-MS	0.09	0.09	0.0%	< 0.05	99%	80%	120%				98%	60%	130%
Pyrene	1	W-MS	0.1	0.09	10.5%	< 0.02	100%	80%	120%				107%	60%	130%
Benzo(a)anthracene	1	W-MS	0.09	0.09	0.0%	< 0.05	100%	80%	120%				97%	60%	130%
Chrysene	1	W-MS	0.1	0.09	10.5%	< 0.05	100%	80%	120%				100%	60%	130%
Benzo(b)fluoranthene	1	W-MS	0.11	0.11	0.0%	< 0.05	99%	80%	120%				113%	60%	130%
Benzo(k)fluoranthene	1	W-MS	0.1	0.09	10.5%	< 0.05	100%	80%	120%				100%	60%	130%
Benzo(a)pyrene	1	W-MS	0.08	0.08	0.0%	< 0.01	100%	80%	120%				89%	60%	130%
Indeno(1,2,3-cd)pyrene	1	W-MS	0.1	0.1	0.0%	< 0.05	100%	80%	120%				102%	60%	130%
Dibenzo(a,h)anthracene	1	W-MS	0.1	0.09	10.5%	< 0.05	100%	80%	120%				102%	60%	130%
Benzo(g,h.i)perylene	1	W-MS	0.1	0.1	0.0%	< 0.05	100%	80%	120%				104%	60%	130%
Nitrobenzene - d5	1	W-MS	80	67	18.0%	<	98%	80%	120%				81%	50%	130%
Quinoline - d7	1	W-MS	94	84	11.0%	<	99%	80%	120%				94%	50%	130%
2-Fluorobiphenyl	1	W-MS	83	81	2.0%	<	100%	80%	120%				83%	50%	130%
P-Terphenyl - d14	1	W-MS	92	89	3.0%	<	101%	80%	120%				92%	60%	130%
Bromofluorobenzene	1	3089681	78	80	3.0%		97%	70%	130%				113%	70%	130%
Dibromofluoromethane	1	3089681	118	113	4.0%		92%	70%	130%				105%	70%	130%
Toluene - d8	1	3089681	112	115	3.0%		88%	70%	130%				104%	70%	130%
Phenolic Compounds in Water															
Phenol	134	3095657	<0.002	<0.002	NA	< 0.002	86%	80%	120%	94%	70%	130%	93%	60%	140%
4-Nitrophenol	134	3095657	<0.005	<0.005	NA	< 0.005	84%	80%	120%	91%	70%	130%	91%	60%	140%
m&p-Cresol (3&4-methylphenol)	134	3095657	<0.0005	<0.0005	NA	< 0.0005				93%	70%	130%	93%	60%	140%
o-Cresol (2-methylphenol)	134	3095657	<0.0005	<0.0005	NA	< 0.0005				89%	70%	130%	89%	60%	140%
2-Chlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	80%	80%	120%	83%	70%	130%	81%	60%	140%
2,4-Dinitrophenol	134	3095657	<0.005	<0.005	NA	< 0.005	91%	80%	120%	95%	70%	130%	95%	60%	140%
2-Nitrophenol	134	3095657	<0.005	<0.005	NA	< 0.005	95%	80%	120%	91%	70%	130%	102%	60%	140%
2,4-Dimethylphenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	83%	80%	120%	87%	70%	130%	87%	60%	140%
2,6-Dichlorophenol	134	3095657	<0.0001	<0.0001	NA	< 0.0001				89%	70%	130%	92%	60%	140%

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V570940

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis (Continued)

RPT Date: Mar 02, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
4-Chloro-3-methylphenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	83%	80%	120%	94%	70%	130%	95%	60%	140%
2,4-Dichlorophenol	134	3095657	<0.0001	<0.0001	NA	< 0.0001	85%	80%	120%	80%	70%	130%	81%	60%	140%
4,6-Dinitro-2-methylphenol	134	3095657	<0.005	<0.005	NA	< 0.005	95%	80%	120%	90%	70%	130%	98%	60%	140%
2,3,6-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				93%	70%	130%	95%	60%	140%
2,3,4-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				89%	70%	130%	93%	60%	140%
2,4,6-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	87%	80%	120%	95%	70%	130%	96%	60%	140%
2,4,5-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				91%	70%	130%	94%	60%	140%
2,3,5-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	97%	60%	140%
3,4,5-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	94%	60%	140%
2,3,4,6-Tetrachlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				101%	70%	130%	101%	60%	140%
2,3,5,6-Tetrachlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				101%	70%	130%	101%	60%	140%
2,3,4,5-Tetrachlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				99%	70%	130%	100%	60%	140%
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	134	3095657	<0.005	<0.005	NA	< 0.005				97%	70%	130%	94%	60%	140%
Pentachlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	90%	80%	120%	98%	70%	130%	107%	60%	140%
Petroleum Hydrocarbons (BTEX/F1-F4) in Water															
Benzene	380	3091736	<0.0005	<0.0005	NA	< 0.0005	95%	80%	120%	95%	80%	120%	87%	70%	130%
Toluene	380	3091736	<0.0005	<0.0005	NA	< 0.0005	99%	80%	120%	98%	80%	120%	86%	70%	130%
Ethylbenzene	380	3091736	<0.0005	<0.0005	NA	< 0.0005	106%	80%	120%	104%	80%	120%	85%	70%	130%
Xylenes	380	3091736	<0.0005	<0.0005	NA	< 0.0005	106%	80%	120%	104%	80%	120%	88%	70%	130%
C6 - C10 (F1)	380	3091736	<0.1	<0.1	NA	< 0.1	92%	80%	120%	111%	80%	120%	83%	70%	130%
C>10 - C16	24	3095453	<0.1	<0.1	NA	< 0.1	101%	80%	120%	93%	80%	120%	98%	70%	130%
C16 - C34	24	3095453	<0.1	<0.1	NA	< 0.1	101%	80%	120%	106%	80%	120%	103%	70%	130%

Certified By:

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V570940

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Water Analysis

RPT Date: Mar 02, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
British Columbia CSR- Schedule 6 Dissolved Metals															
Aluminum Dissolved	20120	3091736	10	10	0.0%	< 1	103%	90%	110%	105%	85%	115%			
Antimony Dissolved	20120	3091736	0.06	0.06	0.0%	< 0.05	104%	90%	110%	102%	85%	110%			
Arsenic Dissolved	20120	3091736	13.5	13.6	1.0%	< 0.1	103%	90%	110%	109%	90%	110%			
Barium Dissolved	20120	3091736	43.4	42.6	2.0%	< 0.1	103%	90%	110%	99%	90%	110%			
Beryllium Dissolved	20120	3091736	<0.01	<0.01	0.0%	< 0.01	91%	90%	110%	97%	90%	110%			
Boron Dissolved	20120	3091736	57	58	2.0%	< 1	91%	90%	110%	101%	80%	120%			
Cadmium Dissolved	20120	3091736	<0.01	<0.01	0.0%	< 0.01	100%	90%	110%	101%	90%	110%			
Calcium Dissolved	20120	3091736	22.7	22.5	1.0%	< 0.05	100%	90%	110%	103%	90%	110%			
Chromium Dissolved	20120	3091736	1.4	1.3	7.0%	< 0.5	102%	90%	110%	97%	90%	110%			
Cobalt Dissolved	20120	3091736	0.56	0.52	7.0%	< 0.05	105%	90%	110%	104%	90%	110%			
Copper Dissolved	20120	3091736	0.8	0.8	0.0%	< 0.2	103%	90%	110%	104%	90%	110%			
Iron Dissolved	20120	3091736	18.0	17.8	1.1%	< 0.01	104%	90%	110%	104%	90%	110%			
Lead Dissolved	20120	3091736	0.25	0.25	0.0%	< 0.01	100%	90%	110%	100%	90%	110%			
Lithium Dissolved	20120	3091736	2.0	1.9	5.1%	< 0.1				105%	90%	110%			
Magnesium Dissolved	20120	3091736	30.0	29.8	0.7%	< 0.05	100%	90%	110%	105%	90%	110%			
Manganese Dissolved	20120	3091736	0.386	0.385	0.0%	< 0.001	104%	90%	110%	103%	90%	110%			
Mercury Dissolved	20120	3091736	0.004	0.004	0.0%	< 0.003	108%	90%	110%	104%	90%	110%			
Molybdenum Dissolved	20120	3091736	0.47	0.46	2.0%	< 0.05	97%	90%	110%	101%	90%	110%			
Nickel Dissolved	20120	3091736	1.4	1.4	0.0%	< 0.1	101%	90%	110%	103%	90%	110%			
Selenium Dissolved	20120	3091736	<0.1	0.2	0.0%	< 0.1	101%	90%	110%	110%	85%	115%			
Silver Dissolved	20120	3091736	<0.01	<0.01	0.0%	< 0.01				106%	90%	110%			
Sodium Dissolved	20120	3091736	5.77	5.73	1.0%	< 0.05	100%	90%	110%	106%	90%	110%			
Thallium Dissolved	20120	3091736	<0.002	<0.002	0.0%	< 0.002	93%	90%	110%	98%	90%	110%			
Titanium Dissolved	20120	3091736	30.9	31.4	2.0%	< 0.1				100%	90%	110%			
Uranium Dissolved	20120	3091736	0.06	0.05	NA	< 0.01	98%	90%	110%	102%	90%	110%			
Vanadium Dissolved	20120	3091736	2.0	1.8	10.5%	< 0.1	104%	90%	110%	100%	90%	110%			
Zinc Dissolved	20120	3091736	15	14	7.0%	< 1	100%	90%	110%	105%	85%	115%			

Certified By:

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V570940

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Benzene	TO 0540	EPA SW846 8260	GC/MS
Toluene	TO 0540	EPA SW846 8260	GC/MS
Ethylbenzene	TO 0540	EPA SW846 8260	GC/MS
Xylenes	TO 0540	EPA SW846 8260	GC/MS
C6 - C10 (F1)	TO 0540	CCME Tier 1 Method	GC/FID
C6 - C10 (F1 minus BTEX)	TO 0540	CCME Tier 1 Method	GC/FID
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
C16 - C34	TO 0511	CCME Tier 1 Method	GC/FID
C>34 - C50	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO 0340	EPA SW846 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
Methyl tert-butyl ether (MTBE)	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Styrene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
VPH	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
VH	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Naphthalene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Quinoline	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acenaphthylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acenaphthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Fluorene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Phenanthrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Anthracene (Water)	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acridine	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Chrysene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(b)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(k)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Dibenzo(a,h)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS

AGAT Laboratories

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V570940

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Benzo(g,h.i)perylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Nitrobenzene - d5	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
Quinoline - d7	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
2-Fluorobiphenyl	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
P-Terphenyl - d14	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
LEPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
HEPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
EPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
EPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
Bromofluorobenzene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Dibromofluoromethane	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Toluene - d8	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Phenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
m&p-Cresol (3&4-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
o-Cresol (2-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
2-Chlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dinitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dimethylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,6-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Chloro-3-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4,6-Dinitro-2-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
3,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,5-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
Dinoseb (2-sec-butyl-4,6-dinitrophenol)	TO 1200	EPA SW-846 8321	HPLC/UV
Pentachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Fluorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Tribromophenol	TO 1200	EPA SW-846 8321	HPLC/UV

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V570940

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Aluminum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Antimony Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Arsenic Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Barium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Beryllium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Boron Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cadmium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Calcium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Chromium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cobalt Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Copper Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Iron Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Lead Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Lithium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Magnesium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Manganese Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Mercury Dissolved	MET-181-6103, LAB-181-4015	Modified from EPA 245.7	CV/AA
Molybdenum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Nickel Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Selenium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Silver Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Sodium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Thallium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Titanium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Uranium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Vanadium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Zinc Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS

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Chain of Custody Record

Turnaround Time Required (TAT)

Regular TAT 5 to 7 working days [X]

Rush TAT 24 to 48 hours [ ]

48 to 72 hours [ ]

Date Required: ______

Please contact laboratory if Rush is required

Report To:

Company: Franz Environmental
Contact: Amanda Salway
Address: 308-1080 Mainland St. Vancouver, BC V6B 2T4
Phone: 604 632-9941 Fax: 604 632-9942
LSD:
Client Project #: 2090-1103

Report Information

1. Name: Amanda Salway
   Email: asalway@franzbc.com
2. Name: Viviane Dubois-Côté
   Email: vdcote@franzbc.com

Report Format

[ ] Single Sample per page
[X] Multiple Samples per page
[X] Excel Format Included

Laboratory Use Only

Arrival Temperature: 4°C
AGAT Job Number: 12V570940

Notes:
FEB 1 PM 5:52

Invoice To: Same as above Yes [X] No [ ]

Company:
Contact:
Address:
Phone: Fax:
PO/AFE #:

Regulatory Requirements (Check):

[ ] **BC CSR – Soil**
[ ] Agricultural
[ ] Industrial
[ ] Urban/Park
[ ] Commercial

[X] **BC CSR – Water**
[ ] Drinking Water
[X] Aquatic Life
[ ] Irrigation
[ ] Livestock

[X] **CCME**
[ ] Drinking Water
[ ] Residential/Park
[ ] Commercial
[X] Industrial
[ ] Drinking Water
[ ] FWAL

Lab ID #	Sample Identification	Sample Matrix	Date/Time Sampled	Comments – Site/Sample Info. Sample Containment	BC CSR BTEX/VPH	BC CSR LEPH/HEPH	BC CSR Metals + CCME metals	VOCs	BC CSR Schedule II	Routine Potability	CCME F1	CCME F2-F4		Chlorinated + non-chlorinated phenols	Number of Containers	Preserved (Y/N)	Hazardous (Y/N)	Hold for ~~1 YEAR~~ 60 days
3091736	BV-11BH-04M	water	Feb 1st, 2012		X	X	X				X	X		X	7		N	
778	BV-11BH-05M	water	Feb 1st, 2012		X	X	X				X	X		X	7			
782	BV-11BH-03M	water	Feb 1st, 2012		X	X	X				X	X		X	7			

Samples Relinquished by (print name & sign):	Date	Samples Received by (Print name & sign):	Date
[signature]	Feb 1, 2012	Amiel D. [signature] Feb 1. 2012 5:52 pm	

Pink Copy - Client
Yellow Copy - AGAT
White Copy - AGAT

Page 1 of 1

NO: 000629

Document ID: DIV-186-0811.001

Date revised: August 24, 2011

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM - BURNABY

Work Order # 12V570940

RECEIVING BASICS:
*Complete CoC as well where required
Date and Time: Feb 1/12 5:52
Courier: n/a
Received by: Amiel
Relinquished by: Amanda Salway
Branch Received From:
Company: Fram Env
Consultant:
Client left without count verified: No

COC INFORMATION:
Received: (Yes) No Emailed to PM
Completed in full: (Yes) No If NO, why:
TURNAROUND TIME: Reg
COC Numbers: 000629

SAMPLE QUANTITIES:
Coolers: _____ Bottles/Jars: 21 Bags: _____

TIME SENSITIVE ISSUES:
Earliest Date Sampled: 01-FEB-12
Microbiology: Test:
Hydrocarbons: Test: BTEX
Samples are received >5 days after sampling: Yes No

ALREADY EXCEEDED? Yes (No)
Expiry:
Expiry: 08-FEB-12

SPECIALTY ISSUES:
Legal Samples: Yes No
International Samples: Yes No
**Proper tape/labels applied: Yes No

w/A

Hazardous Samples:
Why hazardous:

Precaution taken:

SAMPLE REQUIREMENTS:
*Complete while logging in by login staff.

Correct bottles used for testing: (Yes) No
If No, explain:

Correct amount of sample for analysis: (Yes) No
If No, explain:

Are all samples labeled correctly: (Yes) No
If No, explain:

NON-CONFORMANCES:
3 temperatures of samples* and average of each cooler: (record differing temperatures on the CoC next to sample ID's)
(1) 4 + 4 + 4 = 4 °C (2) ___+___+___=___°C (3) ___+___+___=___°C (4) ___+___+___=___°C
*Jars used when available

Additional integrity issues (note here and on CoC next to the sample ID):

1)
2)
3)

Account Project Manager: _____ Have they been notified of the above issues: Yes No
Whom spoken to: _____ Date and Time: _____

ADDITIONAL NOTES:

AGAT Laboratories

Unit 120, 8600 Glenlyon Parkway
Burnaby, British Columbia
CANADA V5J 0B6
TEL (778)452-4000
FAX (778)452-4074
http://www.agatlabs.com

CLIENT NAME: FRANZ ENVIRONMENTAL
308-108 MAINLAND STREET
VANCOUVER, BC V6B2T4

ATTENTION TO: Amanda Salway

PROJECT NO: 2090-1103

AGAT WORK ORDER: 12V571329

TRACE ORGANICS REVIEWED BY: Craig Stehr, Organics Supervisor

WATER ANALYSIS REVIEWED BY: Marie England, Inorganics Supervisor

DATE REPORTED: Feb 09, 2012

PAGES (INCLUDING COVER): 13

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (778) 452-4000

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

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Certificate of Analysis

AGAT WORK ORDER: 12V571329
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons (BTEX/F1-F4) in Water

DATE SAMPLED: Feb 02, 2012 | DATE RECEIVED: Feb 02, 2012 | DATE REPORTED: Feb 09, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	BV-11BH-02M 3094046	BV-GWDUP1 3094049	MW06-2 3094050	MW07-6 3094051	BV-11BH-07M 3094053
Benzene	mg/L	0.37	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	mg/L	0.002	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	mg/L	0.09	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Xylenes	mg/L		0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
C6 - C10 (F1)	mg/L		0.1	<0.1	<0.1	0.3	0.2	0.2
C6 - C10 (F1 minus BTEX)	mg/L		0.1	<0.1	<0.1	0.3	0.2	0.2
C>10 - C16	mg/L		0.1	<0.1	<0.1	0.8	0.4	0.3
C16 - C34	mg/L		0.1	<0.1	<0.1	<0.1	<0.1	0.1
C>34 - C50	mg/L		0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate	Unit	Acceptable Limits						
Toluene-d8 (BTEX)	%	50-150		100	101	101	100	101
o-Terphenyl (F2-F4)	%	50-150		107	109	109	110	110

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL)

3094046-3094053 The C>6 - C10 fraction is calculated using the toluene response factor.
The C10 - C16 fraction is calculated using the average response factor for nC10, nC16 and nC34.
BTEX has NOT been subtracted from Fraction 1.
Sample is blank corrected.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V571329
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 02, 2012 | DATE RECEIVED: Feb 02, 2012 | DATE REPORTED: Feb 09, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	BV-11BH-02M 3094046	BV-GWDUP1 3094049	MW06-2 3094050	MW07-6 3094051	MW08-10 3094052	BV-11BH-07M 3094053
Methyl tert-butyl ether (MTBE)	µg/L	34000	1	<1	<1	<1	<1	<1	<1
Styrene	µg/L	720	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzene	µg/L	4000	0.5					<0.5	
VPH	µg/L	1500	100	<100	<100	790	730	<100	200
Toluene	µg/L	390	0.5					<0.5	
Ethylbenzene	µg/L	2000	0.5					<0.5	
Naphthalene	µg/L	10	0.05	<0.05	<0.05	0.07	0.07		0.05
m&p-Xylene	µg/L		0.5					<0.5	
Quinoline	µg/L	34	0.1	<0.1	<0.1	<0.1	<0.1		<0.1
Acenaphthylene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05		<0.05
o-Xylene	µg/L		0.5					<0.5	
Acenaphthene	µg/L	60	0.05	<0.05	<0.05	0.05	<0.05		0.14
Fluorene	µg/L	120	0.05	<0.05	<0.05	<0.05	<0.05		0.18
Phenanthrene	µg/L	3	0.05	<0.05	<0.05	<0.05	<0.05		0.11
Anthracene (Water)	µg/L	1	0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Acridine	µg/L	0.5	0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Fluoranthene	µg/L	2	0.05	<0.05	<0.05	0.27	<0.05		<0.05
Pyrene	µg/L	0.2	0.02	<0.02	<0.02	0.29	<0.02		<0.02
Benzo(a)anthracene	µg/L	1	0.05	<0.05	<0.05	0.05	<0.05		<0.05
Chrysene	µg/L	1	0.05	<0.05	<0.05	0.06	<0.05		<0.05
Benzo(b)fluoranthene	µg/L		0.05	<0.05	<0.05	0.05	<0.05		<0.05
Benzo(k)fluoranthene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Benzo(a)pyrene	µg/L	0.1	0.01	<0.01	<0.01	0.04	<0.01		<0.01
Indeno(1,2,3-cd)pyrene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Dibenzo(a,h)anthracene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Benzo(g,h.i)perylene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05		<0.05
LEPH C10-C19	µg/L	500	100	<100	<100	1640	360		550
HEPH C19-C32	µg/L		100	<100	<100	140	<100		390

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V571329
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 02, 2012 | DATE RECEIVED: Feb 02, 2012 | DATE REPORTED: Feb 09, 2012 | SAMPLE TYPE: Water

Surrogate	Unit	Acceptable Limits	BV-11BH-02M 3094046	BV-GWDUP1 3094049	MW06-2 3094050	MW07-6 3094051	MW08-10 3094052	BV-11BH-07M 3094053
Nitrobenzene - d5	%	50-130	75	69	NA	NA		89
Quinoline - d7	%	50-130	89	86	NA	NA		87
2-Fluorobiphenyl	%	50-130	68	65	71	71		53
P-Terphenyl - d14	%	60-130	88	87	90	90		62
Bromofluorobenzene	%	70-130	97	89	97	86	88	75
Dibromofluoromethane	%	70-130	118	111	128	112	104	112
Toluene - d8	%	70-130	114	103	113	111	104	113

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

3094046-3094049 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.

3094050-3094051 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.
Quinoline-d7 and Nitrobenzene-d5 surrogate recoveries not available due to matrix interferences.

3094052 VPH results have been corrected for BTEX contributions.

3094053 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 12V571329
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Phenolic Compounds in Water

DATE SAMPLED: Feb 02, 2012 | DATE RECEIVED: Feb 02, 2012 | DATE REPORTED: Feb 09, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	BV-11BH-02M 3094046	BV-GWDUP1 3094049
Phenol	mg/L		0.002	<0.002	<0.002
4-Nitrophenol	mg/L		0.005	<0.005	<0.005
m&p-Cresol (3&4-methylphenol)	mg/L		0.0005	<0.0005	<0.0005
o-Cresol (2-methylphenol)	mg/L		0.0005	<0.0005	<0.0005
2-Chlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,4-Dinitrophenol	mg/L		0.005	<0.005	<0.005
2-Nitrophenol	mg/L		0.005	<0.005	<0.005
2,4-Dimethylphenol	mg/L		0.0005	<0.0005	<0.0005
2,6-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001
4-Chloro-3-methylphenol	mg/L		0.0005	<0.0005	<0.0005
2,4-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001
4,6-Dinitro-2-methylphenol	mg/L		0.005	<0.005	<0.005
2,3,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,4-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,4,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
3,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,4,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,5,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,4,5-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	mg/L		0.005	<0.005	<0.005
Pentachlorophenol	mg/L		0.0005	<0.0005	<0.0005
Surrogate	Unit	Acceptable Limits			
2-Fluorophenol	%	50-150		99.9	112
2,4,6-Tribromophenol	%	50-150		113	110

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
3094046-3094049 Results relate only to the items tested.

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 12V571329
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

British Columbia CSR- Schedule 6 Dissolved Metals

DATE SAMPLED: Feb 02, 2012 | DATE RECEIVED: Feb 02, 2012 | DATE REPORTED: Feb 09, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	BV-11BH-02M 3094046	BV-GWDUP1 3094049
Aluminum Dissolved	µg/L		1	4	2
Antimony Dissolved	µg/L		0.05	0.06	<0.05
Arsenic Dissolved	µg/L	5	0.1	26.0	25.9
Barium Dissolved	µg/L		0.1	58.1	58.4
Beryllium Dissolved	µg/L		0.01	<0.01	<0.01
Boron Dissolved	µg/L		1	128	129
Cadmium Dissolved	µg/L	0.017	0.01	0.01	<0.01
Calcium Dissolved	mg/L		0.05	45.6	46.0
Chromium Dissolved	µg/L		0.5	1.2	1.2
Cobalt Dissolved	µg/L		0.05	0.15	0.14
Copper Dissolved	µg/L		0.2	0.4	0.2
Iron Dissolved	mg/L	0.3	0.01	37.2	37.8
Lead Dissolved	µg/L		0.01	0.03	<0.01
Lithium Dissolved	µg/L		0.1	2.1	2.0
Magnesium Dissolved	mg/L		0.05	9.37	9.47
Manganese Dissolved	mg/L		0.001	1.63	1.64
Mercury Dissolved	µg/L	0.026	0.003	<0.003	<0.003
Molybdenum Dissolved	µg/L	73	0.05	0.57	0.32
Nickel Dissolved	µg/L		0.1	0.7	0.2
Selenium Dissolved	µg/L	1	0.1	0.1	<0.1
Silver Dissolved	µg/L	0.1	0.01	<0.01	<0.01
Sodium Dissolved	mg/L		0.05	9.31	9.42
Thallium Dissolved	µg/L	0.8	0.002	<0.002	<0.002
Titanium Dissolved	µg/L		0.1	58.3	58.3
Uranium Dissolved	µg/L		0.01	0.01	<0.01
Vanadium Dissolved	µg/L		0.1	0.8	0.9
Zinc Dissolved	µg/L	30	1	7	2
Hardness (calc)	mg CaCO3/L		1	152	154

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL) (Van)

Certified By: Marie England

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571329

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis

RPT Date: Feb 09, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Petroleum Hydrocarbons in Water															
Methyl tert-butyl ether (MTBE)	1	3089329	<1	<1	0.0%	< 1	98%	80%	120%				110%	70%	130%
Styrene	1	3089329	<0.5	<0.5	0.0%	< 0.5	100%	80%	120%				108%	70%	130%
VPH	1	3089329	<100	<100	0.0%	< 100									
Naphthalene	1	W-MS	0.09	0.11	20.0%	< 0.05	99%	80%	120%				92%	50%	130%
Quinoline	1	W-MS	0.1	<0.1	0.0%	< 0.1	99%	80%	120%				102%	50%	130%
Acenaphthylene	1	W-MS	0.08	0.08	0.0%	< 0.05	100%	80%	120%				88%	50%	130%
Acenaphthene	1	W-MS	0.09	0.08	12.0%	< 0.05	100%	80%	120%				94%	50%	130%
Fluorene	1	W-MS	0.1	0.09	10.5%	< 0.05	101%	80%	120%				105%	50%	130%
Phenanthrene	1	W-MS	0.11	0.10	10.0%	< 0.05	99%	80%	120%				116%	60%	130%
Anthracene (Water)	1	W-MS	0.08	0.07	13.0%	< 0.05	100%	80%	120%				83%	60%	130%
Acridine	1	W-MS	0.09	0.08	12.0%	< 0.05	99%	80%	120%				92%	50%	130%
Fluoranthene	1	W-MS	0.09	0.09	0.0%	< 0.05	99%	80%	120%				98%	60%	130%
Pyrene	1	W-MS	0.1	0.09	10.5%	< 0.02	100%	80%	120%				107%	60%	130%
Benzo(a)anthracene	1	W-MS	0.09	0.09	0.0%	< 0.05	100%	80%	120%				97%	60%	130%
Chrysene	1	W-MS	0.1	0.09	10.5%	< 0.05	100%	80%	120%				100%	60%	130%
Benzo(b)fluoranthene	1	W-MS	0.11	0.11	0.0%	< 0.05	99%	80%	120%				113%	60%	130%
Benzo(k)fluoranthene	1	W-MS	0.1	0.09	10.5%	< 0.05	100%	80%	120%				100%	60%	130%
Benzo(a)pyrene	1	W-MS	0.08	0.08	0.0%	< 0.01	100%	80%	120%				89%	60%	130%
Indeno(1,2,3-cd)pyrene	1	W-MS	0.1	0.1	0.0%	< 0.05	100%	80%	120%				102%	60%	130%
Dibenzo(a,h)anthracene	1	W-MS	0.1	0.09	10.5%	< 0.05	100%	80%	120%				102%	60%	130%
Benzo(g,h.i)perylene	1	W-MS	0.1	0.1	0.0%	< 0.05	100%	80%	120%				104%	60%	130%
Nitrobenzene - d5	1	W-MS	80	67	18.0%	<	98%	80%	120%				81%	50%	130%
Quinoline - d7	1	W-MS	94	84	11.0%	<	99%	80%	120%				94%	50%	130%
2-Fluorobiphenyl	1	W-MS	83	81	2.0%	<	100%	80%	120%				83%	50%	130%
P-Terphenyl - d14	1	W-MS	92	89	3.0%	<	101%	80%	120%				92%	60%	130%
Bromofluorobenzene	1	3089329	96	98	2.0%		103%	70%	130%				114%	70%	130%
Dibromofluoromethane	1	3089329	115	112	3.0%		98%	70%	130%				104%	70%	130%
Toluene - d8	1	3089329	116	114	2.0%		96%	70%	130%				112%	70%	130%
Phenolic Compounds in Water															
Phenol	134	3095657	<0.002	<0.002	NA	< 0.002	86%	80%	120%	94%	70%	130%	93%	60%	140%
4-Nitrophenol	134	3095657	<0.005	<0.005	NA	< 0.005	84%	80%	120%	91%	70%	130%	91%	60%	140%
m&p-Cresol (3&4-methylphenol)	134	3095657	<0.0005	<0.0005	NA	< 0.0005				93%	70%	130%	93%	60%	140%
o-Cresol (2-methylphenol)	134	3095657	<0.0005	<0.0005	NA	< 0.0005				89%	70%	130%	89%	60%	140%
2-Chlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	80%	80%	120%	83%	70%	130%	81%	60%	140%
2,4-Dinitrophenol	134	3095657	<0.005	<0.005	NA	< 0.005	91%	80%	120%	95%	70%	130%	95%	60%	140%
2-Nitrophenol	134	3095657	<0.005	<0.005	NA	< 0.005	95%	80%	120%	91%	70%	130%	102%	60%	140%
2,4-Dimethylphenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	83%	80%	120%	87%	70%	130%	87%	60%	140%
2,6-Dichlorophenol	134	3095657	<0.0001	<0.0001	NA	< 0.0001				89%	70%	130%	92%	60%	140%

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571329

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis (Continued)

RPT Date: Feb 09, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
4-Chloro-3-methylphenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	83%	80%	120%	94%	70%	130%	95%	60%	140%
2,4-Dichlorophenol	134	3095657	<0.0001	<0.0001	NA	< 0.0001	85%	80%	120%	80%	70%	130%	81%	60%	140%
4,6-Dinitro-2-methylphenol	134	3095657	<0.005	<0.005	NA	< 0.005	95%	80%	120%	90%	70%	130%	98%	60%	140%
2,3,6-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				93%	70%	130%	95%	60%	140%
2,3,4-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				89%	70%	130%	93%	60%	140%
2,4,6-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	87%	80%	120%	95%	70%	130%	96%	60%	140%
2,4,5-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				91%	70%	130%	94%	60%	140%
2,3,5-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	97%	60%	140%
3,4,5-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	94%	60%	140%
2,3,4,6-Tetrachlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				101%	70%	130%	101%	60%	140%
2,3,5,6-Tetrachlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				101%	70%	130%	101%	60%	140%
2,3,4,5-Tetrachlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				99%	70%	130%	100%	60%	140%
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	134	3095657	<0.005	<0.005	NA	< 0.005				97%	70%	130%	94%	60%	140%
Pentachlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	90%	80%	120%	98%	70%	130%	107%	60%	140%
2-Fluorophenol	134				106.0%	<	109%	50%	150%	102%	50%	150%	106%	50%	150%
2,4,6-Tribromophenol	134				113.0%	<	111%	50%	150%	113%	50%	150%	113%	50%	150%
Petroleum Hydrocarbons (BTEX/F1-F4) in Water															
Benzene	380	3091736	<0.0005	<0.0005	NA	< 0.0005	95%	80%	120%	95%	80%	120%	87%	70%	130%
Toluene	380	3091736	<0.0005	<0.0005	NA	< 0.0005	99%	80%	120%	98%	80%	120%	86%	70%	130%
Ethylbenzene	380	3091736	<0.0005	<0.0005	NA	< 0.0005	106%	80%	120%	104%	80%	120%	85%	70%	130%
Xylenes	380	3091736	<0.0005	<0.0005	NA	< 0.0005	106%	80%	120%	104%	80%	120%	88%	70%	130%
C6 - C10 (F1)	380	3091736	<0.1	<0.1	NA	< 0.1	92%	80%	120%	111%	80%	120%	83%	70%	130%
C>10 - C16	24	3095453	<0.1	<0.1	NA	< 0.1	101%	80%	120%	93%	80%	120%	98%	70%	130%
C16 - C34	24	3095453	<0.1	<0.1	NA	< 0.1	101%	80%	120%	102%	80%	120%	104%	70%	130%

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571329

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Water Analysis

RPT Date: Feb 09, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
British Columbia CSR- Schedule 6 Dissolved Metals															
Aluminum Dissolved	20120	3094046	4	4	0.0%	< 1	99%	90%	110%	104%	85%	115%			
Antimony Dissolved	20120	3094046	0.06	<0.05	0.0%	< 0.05	107%	90%	110%	101%	85%	110%			
Arsenic Dissolved	20120	3094046	26.0	25.7	1.2%	< 0.1	98%	90%	110%	107%	90%	110%			
Barium Dissolved	20120	3094046	58.1	57.7	1.0%	< 0.1	99%	90%	110%	94%	90%	110%			
Beryllium Dissolved	20120	3094046	<0.01	<0.01	0.0%	< 0.01	91%	90%	110%	103%	90%	110%			
Boron Dissolved	20120	3094046	128	128	0.0%	< 1	96%	90%	110%	102%	80%	120%			
Cadmium Dissolved	20120	3094046	0.01	<0.01	0.0%	< 0.01	102%	90%	110%	101%	90%	110%			
Calcium Dissolved	20120	3094046	45.6	46.2	1.0%	< 0.05	103%	90%	110%	101%	90%	110%			
Chromium Dissolved	20120	3094046	1.2	1.3	8.0%	< 0.5	102%	90%	110%	99%	90%	110%			
Cobalt Dissolved	20120	3094046	0.15	0.16	6.0%	< 0.05	98%	90%	110%	102%	90%	110%			
Copper Dissolved	20120	3094046	0.4	0.4	0.0%	< 0.2	101%	90%	110%	101%	90%	110%			
Iron Dissolved	20120	3094046	37.2	37.7	1.0%	< 0.01	109%	90%	110%	102%	90%	110%			
Lead Dissolved	20120	3094046	0.03	0.02	NA	< 0.01	101%	90%	110%	99%	90%	110%			
Lithium Dissolved	20120	3094046	2.1	2.1	0.0%	< 0.1				101%	90%	110%			
Magnesium Dissolved	20120	3094046	9.37	9.48	1.0%	< 0.05	107%	90%	110%	106%	90%	110%			
Manganese Dissolved	20120	3094046	1.63	1.63	0.0%	< 0.001	108%	90%	110%	102%	90%	110%			
Mercury Dissolved	20120	3094046	<0.003	<0.003	0.0%	< 0.003	97%	90%	110%	108%	90%	110%			
Molybdenum Dissolved	20120	3094046	0.28	0.37	NA	< 0.05	101%	90%	110%	101%	90%	110%			
Nickel Dissolved	20120	3094046	0.7	0.7	0.0%	< 0.1	98%	90%	110%	101%	90%	110%			
Selenium Dissolved	20120	3094046	0.1	<0.1	0.0%	< 0.1	96%	90%	110%	109%	85%	115%			
Silver Dissolved	20120	3094046	<0.01	<0.01	0.0%	< 0.01				105%	90%	110%			
Sodium Dissolved	20120	3094046	9.31	9.44	1.0%	< 0.05	104%	90%	110%	104%	90%	110%			
Thallium Dissolved	20120	3094046	<0.002	<0.002	0.0%	< 0.002	91%	90%	110%	95%	90%	110%			
Titanium Dissolved	20120	3094046	58.3	57.3	2.0%	< 0.1				105%	90%	110%			
Uranium Dissolved	20120	3094046	0.01	<0.01	0.0%	< 0.01		90%	110%	99%	90%	110%			
Vanadium Dissolved	20120	3094046	0.8	0.9	12.0%	< 0.1	101%	90%	110%	100%	90%	110%			
Zinc Dissolved	20120	3094046	7	7	0.0%	< 1	101%	90%	110%	95%	85%	115%			

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571329

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Benzene	TO 0540	EPA SW846 8260	GC/MS
Toluene	TO 0540	EPA SW846 8260	GC/MS
Ethylbenzene	TO 0540	EPA SW846 8260	GC/MS
Xylenes	TO 0540	EPA SW846 8260	GC/MS
C6 - C10 (F1)	TO 0540	CCME Tier 1 Method	GC/FID
C6 - C10 (F1 minus BTEX)	TO 0540	CCME Tier 1 Method	GC/FID
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
C16 - C34	TO 0511	CCME Tier 1 Method	GC/FID
C>34 - C50	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO 0340	EPA SW846 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
Methyl tert-butyl ether (MTBE)	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Methyl tert-butyl ether (MTBE)	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Benzene	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Toluene	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Ethylbenzene	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
m&p-Xylene	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
o-Xylene	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Styrene	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Styrene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
VPH	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
VPH	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Naphthalene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Bromofluorobenzene	ORG-180-5130	modified from BC MOE Lab Manual Section D	GC/MS
Quinoline	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Dibromofluoromethane	ORG-180-5130	modified from BC MOE Lab Manual Section D	GC/MS
Acenaphthylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Toluene - d8	ORG-180-5130	modified from BC MOE Lab Manual Section D	GC/MS
Acenaphthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Fluorene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Phenanthrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Anthracene (Water)	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571329

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Acridine	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Chrysene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(b)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(k)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Dibenzo(a,h)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(g,h.i)perylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Nitrobenzene - d5	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
Quinoline - d7	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
2-Fluorobiphenyl	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
P-Terphenyl - d14	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
LEPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
HEPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
Bromofluorobenzene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Dibromofluoromethane	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Toluene - d8	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Phenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
m&p-Cresol (3&4-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
o-Cresol (2-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
2-Chlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dinitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dimethylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,6-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Chloro-3-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4,6-Dinitro-2-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV

Unit 120, 8600 Glenlyon Parkway
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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571329

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
2,4,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
3,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,5-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
Dinoseb (2-sec-butyl-4,6-dinitrophenol)	TO 1200	EPA SW-846 8321	HPLC/UV
Pentachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Fluorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Tribromophenol	TO 1200	EPA SW-846 8321	HPLC/UV

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571329

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Aluminum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Antimony Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Arsenic Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Barium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Beryllium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Boron Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cadmium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Calcium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Chromium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cobalt Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Copper Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Iron Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Lead Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Lithium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Magnesium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Manganese Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Mercury Dissolved	MET-181-6103, LAB-181-4015	Modified from EPA 245.7	CV/AA
Molybdenum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Nickel Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Selenium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Silver Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Sodium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Thallium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Titanium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Uranium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Vanadium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Zinc Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS

AGAT Laboratories

120 - 8600 Glenlyon Parkway
Burnaby, BC,
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Ph.: 778.452.4000 - Fax: 778.452.7074

Chain of Custody Record

Report To:

Company: Franz Environmental
Contact: Amanda Salway
Address: 308-1080 Mainland St.
Vancouver, BC V6B 2T4
Phone: 604 632-9941 Fax: 604 632-9942
LSD:
Client Project #: 2090-1103

Invoice To: Same as above Yes ☒ No ☐

Company:
Contact:
Address:
Phone: Fax:
PO/AFE #:

Report Information

1. Name: Amanda Salway
   Email: asalway@franzbc.com
2. Name: Viviane Dubois-Côté
   Email: vdcote@franzbc.com

Regulatory Requirements (Check):

☐ **BC CSR – Soil**
- ☐ Agricultural
- ☐ Industrial
- ☐ Urban/Park
- ☐ Commercial

☒ **BC CSR – Water**
- ☐ Drinking Water
- ☒ Aquatic Life
- ☐ Irrigation
- ☐ Livestock

☒ **CCME**
- ☐ Drinking Water
- ☐ Residential/Park
- ☐ Commercial
- ☐ Industrial
- ☐ Drinking Water
- ☒ FWAL

Report Format

- ☐ Single Sample per page
- ☒ Multiple Samples per page
- ☒ Excel Format Included

Turnaround Time Required (TAT)

Regular TAT 5 to 7 working days ☒
Rush TAT 24 to 48 hours ☐
48 to 72 hours ☐

Date Required: ____

Please contact laboratory if Rush is required

Laboratory Use Only

Arrival Temperature: 3.5°C
AGAT Job Number: 12V571329

Notes: FEB 2 PM 5:49

Lab ID #	Sample Identification	Sample Matrix	Date/Time Sampled	Comments – Site/Sample Info. Sample Containment	BC CSR BTEX/VPH	BC CSR LEPH/HEPH	BC CSR Metals + CCME metals	VOCs	BC CSR Schedule II	Routine Potability		CCME F1	CCME F2-F4	Chlorinated & non-chlorinated		Number of Containers	Preserved (Y/N)	Hazardous (Y/N)	Hold for ~~1 YEAR~~ 60 days
3094046	BV-11BH-02M	water	Feb 2/2012		X	X	X					X	X	X		7			
049	BV-GWDUP1	water	Feb 2/2012		X	X	X					X	X	X		7			
050	MW06-2	water	Feb 2/2012		X	X						X	X			5			
051	MW07-6	water	Feb 2/2012		X	X						X	X			5			
052	MW08-10	water	Feb 2/2012		X											3			
053	BV-11BH-07M	water	Feb 2/2012		X	X						X	X			5			

Samples Relinquished by (print name & sign): [signature] Date: 02/02/2012
Samples Received by (Print name & sign): Amber ... 2 FEB 2012 5:49pm Date:
Samples Relinquished by (print name & sign): Date:
Samples Received by (Print name & sign): Date:
Samples Relinquished by (print name & sign): Date:
Samples Received by (Print name & sign): Date:

Pink Copy - Client
Yellow Copy - AGAT
White Copy - AGAT

Page 1 of 1

NO: 000630

Document ID: DIV-186-0811.001

Date revised: August 24, 2011

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM - BURNABY

Work Order # 12V571329

RECEIVING BASICS:
***Complete CoC as well where required**
Date and Time: 02-FEB-12@5:49 pm
Courier: _____
Received by: Amiel
Relinquished by: Amanda
Branch Received From: _____
Company: FRANZ ENV.
Consultant: _____
Client left without count verified: No

COC INFORMATION:
Received: (Yes) No Emailed to PM
Completed in full: (Yes) No If NO, why: _____
TURNAROUND TIME: Reg
COC Numbers: 000630

SAMPLE QUANTITIES:
Coolers: 2 Bottles/Jars: 32 Bags: _____

TIME SENSITIVE ISSUES:
Earliest Date Sampled: 02-FEB-12
Microbiology: Test: _____
Hydrocarbons: Test: BTEX
Samples are received >5 days after sampling: Yes (No)

ALREADY EXCEEDED? Yes (No)
Expiry: _____
Expiry: 09-FEB-12

SPECIALTY ISSUES:
Legal Samples: Yes No N/A
International Samples: Yes No
**Proper tape/labels applied: Yes No

Hazardous Samples:
Why hazardous:

_____
Precaution taken:

_____

SAMPLE REQUIREMENTS:
*Complete while logging in by login staff.

Correct bottles used for testing: (Yes) No
If No, explain: _____

Correct amount of sample for analysis: (Yes) No
If No, explain: _____

Are all samples labeled correctly: (Yes) No
If No, explain: _____

NON-CONFORMANCES:
3 temperatures of samples* and average of each cooler: (record differing temperatures on the CoC next to sample ID's)
(1) 2 + 3 + 4 = 3 °C (2) 4 + 3 + 4 = 4 °C (3) ___ + ___ + ___ = ___ °C (4) ___ + ___ + ___ = ___ °C
*Jars used when available

Additional integrity issues (note here and on CoC next to the sample ID):

1) _____
2) _____
3) _____

Account Project Manager: _____ Have they been notified of the above issues: Yes No
Whom spoken to: _____ Date and Time: _____

ADDITIONAL NOTES:

_____

_____

_____

AGAT Laboratories

Unit 120, 8600 Glenlyon Parkway
Burnaby, British Columbia
CANADA V5J 0B6
TEL (778)452-4000
FAX (778)452-4074
http://www.agatlabs.com

CLIENT NAME: FRANZ ENVIRONMENTAL
308-108 MAINLAND STREET
VANCOUVER, BC V6B2T4

ATTENTION TO: Amanda Salway

PROJECT NO: 2090-1103

AGAT WORK ORDER: 12V571329

TRACE ORGANICS REVIEWED BY: Craig Stehr, Organics Supervisor

WATER ANALYSIS REVIEWED BY: Marie England, Inorganics Supervisor

DATE REPORTED: Mar 05, 2012

PAGES (INCLUDING COVER): 13

VERSION*: 2

Should you require any information regarding this analysis please contact your client services representative at (778) 452-4000

*NOTES

VERSION 2:Amended to include VH and EPH results as per client.
Version 2 is an amendment to version 1.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V571329
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons (BTEX/F1-F4) in Water

DATE SAMPLED: Feb 02, 2012 | DATE RECEIVED: Feb 02, 2012 | DATE REPORTED: Mar 05, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	BV-11BH-02M 3094046	BV-GWDUP1 3094049	MW06-2 3094050	MW07-6 3094051	BV-11BH-07M 3094053
Benzene	mg/L	0.37	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	mg/L	0.002	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	mg/L	0.09	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Xylenes	mg/L		0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
C6 - C10 (F1)	mg/L		0.1	<0.1	<0.1	0.3	0.2	0.2
C6 - C10 (F1 minus BTEX)	mg/L		0.1	<0.1	<0.1	0.3	0.2	0.2
C>10 - C16	mg/L		0.1	<0.1	<0.1	0.8	0.4	0.3
C16 - C34	mg/L		0.1	<0.1	<0.1	<0.1	<0.1	0.1
C>34 - C50	mg/L		0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate	Unit	Acceptable Limits						
Toluene-d8 (BTEX)	%	50-150		100	101	101	100	101
o-Terphenyl (F2-F4)	%	50-150		107	109	109	110	110

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL)

3094046-3094053 The C>6 - C10 fraction is calculated using the toluene response factor.
The C10 - C16 fraction is calculated using the average response factor for nC10, nC16 and nC34.
BTEX has NOT been subtracted from Fraction 1.
Sample is blank corrected.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V571329
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 02, 2012 | DATE RECEIVED: Feb 02, 2012 | DATE REPORTED: Mar 05, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	BV-11BH-02M 3094046	BV-GWDUP1 3094049	MW06-2 3094050	MW07-6 3094051	MW08-10 3094052	BV-11BH-07M 3094053
Methyl tert-butyl ether (MTBE)	µg/L	34000	1	<1	<1	<1	<1	<1	<1
Benzene	µg/L	4000	0.5					<0.5	
Styrene	µg/L	720	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	390	0.5					<0.5	
VH	µg/L	15000	100	<100	<100	790	730	<100	200
Ethylbenzene	µg/L	2000	0.5					<0.5	
VPH	µg/L	1500	100	<100	<100	790	730	<100	200
m&p-Xylene	µg/L		0.5					<0.5	
Naphthalene	µg/L	10	0.05	<0.05	<0.05	0.07	0.07		0.05
o-Xylene	µg/L		0.5					<0.5	
Quinoline	µg/L	34	0.1	<0.1	<0.1	<0.1	<0.1		<0.1
Acenaphthylene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Acenaphthene	µg/L	60	0.05	<0.05	<0.05	0.05	<0.05		0.14
Fluorene	µg/L	120	0.05	<0.05	<0.05	<0.05	<0.05		0.18
Phenanthrene	µg/L	3	0.05	<0.05	<0.05	<0.05	<0.05		0.11
Anthracene (Water)	µg/L	1	0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Acridine	µg/L	0.5	0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Fluoranthene	µg/L	2	0.05	<0.05	<0.05	0.27	<0.05		<0.05
Pyrene	µg/L	0.2	0.02	<0.02	<0.02	0.29	<0.02		<0.02
Benzo(a)anthracene	µg/L	1	0.05	<0.05	<0.05	0.05	<0.05		<0.05
Chrysene	µg/L	1	0.05	<0.05	<0.05	0.06	<0.05		<0.05
Benzo(b)fluoranthene	µg/L		0.05	<0.05	<0.05	0.05	<0.05		<0.05
Benzo(k)fluoranthene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Benzo(a)pyrene	µg/L	0.1	0.01	<0.01	<0.01	0.04	<0.01		<0.01
Indeno(1,2,3-cd)pyrene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Dibenzo(a,h)anthracene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Benzo(g,h.i)perylene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05		<0.05
LEPH C10-C19	µg/L	500	100	<100	<100	1640	360		550
HEPH C19-C32	µg/L		100	<100	<100	140	<100		390
EPH C10-C19	µg/L	5000	100	<100	<100	1640	360		550
EPH C19-C32	µg/L		100	<100	<100	140	<100		390

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V571329
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 02, 2012 | DATE RECEIVED: Feb 02, 2012 | DATE REPORTED: Mar 05, 2012 | SAMPLE TYPE: Water

Surrogate	Unit	Acceptable Limits	BV-11BH-02M 3094046	BV-GWDUP1 3094049	MW06-2 3094050	MW07-6 3094051	MW08-10 3094052	BV-11BH-07M 3094053
Nitrobenzene - d5	%	50-130	75	69	NA	NA		89
Quinoline - d7	%	50-130	89	86	NA	NA		87
2-Fluorobiphenyl	%	50-130	68	65	71	71		53
P-Terphenyl - d14	%	60-130	88	87	90	90		62
Bromofluorobenzene	%	70-130	97	89	97	86	88	75
Dibromofluoromethane	%	70-130	118	111	128	112	104	112
Toluene - d8	%	70-130	114	103	113	111	104	113

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

3094046-3094049 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.

3094050-3094051 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.
Quinoline-d7 and Nitrobenzene-d5 surrogate recoveries not available due to matrix interferences.

3094052 VPH results have been corrected for BTEX contributions.

3094053 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V571329
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Phenolic Compounds in Water

DATE SAMPLED: Feb 02, 2012 | DATE RECEIVED: Feb 02, 2012 | DATE REPORTED: Mar 05, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	BV-11BH-02M 3094046	BV-GWDUP1 3094049
Phenol	mg/L		0.002	<0.002	<0.002
4-Nitrophenol	mg/L		0.005	<0.005	<0.005
m&p-Cresol (3&4-methylphenol)	mg/L		0.0005	<0.0005	<0.0005
o-Cresol (2-methylphenol)	mg/L		0.0005	<0.0005	<0.0005
2-Chlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,4-Dinitrophenol	mg/L		0.005	<0.005	<0.005
2-Nitrophenol	mg/L		0.005	<0.005	<0.005
2,4-Dimethylphenol	mg/L		0.0005	<0.0005	<0.0005
2,6-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001
4-Chloro-3-methylphenol	mg/L		0.0005	<0.0005	<0.0005
2,4-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001
4,6-Dinitro-2-methylphenol	mg/L		0.005	<0.005	<0.005
2,3,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,4-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,4,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
3,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,4,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,5,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,4,5-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	mg/L		0.005	<0.005	<0.005
Pentachlorophenol	mg/L		0.0005	<0.0005	<0.0005
Surrogate	**Unit**	**Acceptable Limits**			
2-Fluorophenol	%	50-150		99.9	112
2,4,6-Tribromophenol	%	50-150		113	110

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
3094046-3094049 Results relate only to the items tested.

Certified By:

AGAT Laboratories

Unit 120, 8600 Glenlyon Parkway
Burnaby, British Columbia
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FAX (778)452-4074
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 12V571329
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

British Columbia CSR- Schedule 6 Dissolved Metals

DATE SAMPLED: Feb 02, 2012 | DATE RECEIVED: Feb 02, 2012 | DATE REPORTED: Mar 05, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	BV-11BH-02M 3094046	BV-GWDUP1 3094049
Aluminum Dissolved	µg/L		1	4	2
Antimony Dissolved	µg/L	200	0.05	0.06	<0.05
Arsenic Dissolved	µg/L	50	0.1	26.0	25.9
Barium Dissolved	µg/L	10000	0.1	58.1	58.4
Beryllium Dissolved	µg/L	53	0.01	<0.01	<0.01
Boron Dissolved	µg/L	50000	1	128	129
Cadmium Dissolved	µg/L		0.01	0.01	<0.01
Calcium Dissolved	mg/L		0.05	45.6	46.0
Chromium Dissolved	µg/L		0.5	1.2	1.2
Cobalt Dissolved	µg/L	40	0.05	0.15	0.14
Copper Dissolved	µg/L		0.2	0.4	0.2
Iron Dissolved	mg/L		0.01	37.2	37.8
Lead Dissolved	µg/L		0.01	0.03	<0.01
Lithium Dissolved	µg/L		0.1	2.1	2.0
Magnesium Dissolved	mg/L		0.05	9.37	9.47
Manganese Dissolved	mg/L		0.001	1.63	1.64
Mercury Dissolved	µg/L	1	0.003	<0.003	<0.003
Molybdenum Dissolved	µg/L	10000	0.05	0.57	0.32
Nickel Dissolved	µg/L		0.1	0.7	0.2
Selenium Dissolved	µg/L	10	0.1	0.1	<0.1
Silver Dissolved	µg/L		0.01	<0.01	<0.01
Sodium Dissolved	mg/L		0.05	9.31	9.42
Thallium Dissolved	µg/L	3	0.002	<0.002	<0.002
Titanium Dissolved	µg/L	1000	0.1	58.3	58.3
Uranium Dissolved	µg/L	3000	0.01	0.01	<0.01
Vanadium Dissolved	µg/L		0.1	0.8	0.9
Zinc Dissolved	µg/L		1	7	2
Hardness (calc)	mg CaCO3/L		1	152	154

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

Certified By: Marie England

AGAT Laboratories

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571329

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis

RPT Date: Mar 05, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Petroleum Hydrocarbons in Water															
Methyl tert-butyl ether (MTBE)	1	3089329	<1	<1	0.0%	< 1	98%	80%	120%				110%	70%	130%
Styrene	1	3089329	<0.5	<0.5	0.0%	< 0.5	100%	80%	120%				108%	70%	130%
VPH	1	3089329	<100	<100	0.0%	< 100									
Naphthalene	1	W-MS	0.09	0.11	20.0%	< 0.05	99%	80%	120%				92%	50%	130%
Quinoline	1	W-MS	0.1	<0.1	0.0%	< 0.1	99%	80%	120%				102%	50%	130%
Acenaphthylene	1	W-MS	0.08	0.08	0.0%	< 0.05	100%	80%	120%				88%	50%	130%
Acenaphthene	1	W-MS	0.09	0.08	12.0%	< 0.05	100%	80%	120%				94%	50%	130%
Fluorene	1	W-MS	0.1	0.09	10.5%	< 0.05	101%	80%	120%				105%	50%	130%
Phenanthrene	1	W-MS	0.11	0.10	10.0%	< 0.05	99%	80%	120%				116%	60%	130%
Anthracene (Water)	1	W-MS	0.08	0.07	13.0%	< 0.05	100%	80%	120%				83%	60%	130%
Acridine	1	W-MS	0.09	0.08	12.0%	< 0.05	99%	80%	120%				92%	50%	130%
Fluoranthene	1	W-MS	0.09	0.09	0.0%	< 0.05	99%	80%	120%				98%	60%	130%
Pyrene	1	W-MS	0.1	0.09	10.5%	< 0.02	100%	80%	120%				107%	60%	130%
Benzo(a)anthracene	1	W-MS	0.09	0.09	0.0%	< 0.05	100%	80%	120%				97%	60%	130%
Chrysene	1	W-MS	0.1	0.09	10.5%	< 0.05	100%	80%	120%				100%	60%	130%
Benzo(b)fluoranthene	1	W-MS	0.11	0.11	0.0%	< 0.05	99%	80%	120%				113%	60%	130%
Benzo(k)fluoranthene	1	W-MS	0.1	0.09	10.5%	< 0.05	100%	80%	120%				100%	60%	130%
Benzo(a)pyrene	1	W-MS	0.08	0.08	0.0%	< 0.01	100%	80%	120%				89%	60%	130%
Indeno(1,2,3-cd)pyrene	1	W-MS	0.1	0.1	0.0%	< 0.05	100%	80%	120%				102%	60%	130%
Dibenzo(a,h)anthracene	1	W-MS	0.1	0.09	10.5%	< 0.05	100%	80%	120%				102%	60%	130%
Benzo(g,h.i)perylene	1	W-MS	0.1	0.1	0.0%	< 0.05	100%	80%	120%				104%	60%	130%
Nitrobenzene - d5	1	W-MS	80	67	18.0%	<	98%	80%	120%				81%	50%	130%
Quinoline - d7	1	W-MS	94	84	11.0%	<	99%	80%	120%				94%	50%	130%
2-Fluorobiphenyl	1	W-MS	83	81	2.0%	<	100%	80%	120%				83%	50%	130%
P-Terphenyl - d14	1	W-MS	92	89	3.0%	<	101%	80%	120%				92%	60%	130%
Bromofluorobenzene	1	3089329	96	98	2.0%		103%	70%	130%				114%	70%	130%
Dibromofluoromethane	1	3089329	115	112	3.0%		98%	70%	130%				104%	70%	130%
Toluene - d8	1	3089329	116	114	2.0%		96%	70%	130%				112%	70%	130%
Phenolic Compounds in Water															
Phenol	134	3095657	<0.002	<0.002	NA	< 0.002	86%	80%	120%	94%	70%	130%	93%	60%	140%
4-Nitrophenol	134	3095657	<0.005	<0.005	NA	< 0.005	84%	80%	120%	91%	70%	130%	91%	60%	140%
m&p-Cresol (3&4-methylphenol)	134	3095657	<0.0005	<0.0005	NA	< 0.0005				93%	70%	130%	93%	60%	140%
o-Cresol (2-methylphenol)	134	3095657	<0.0005	<0.0005	NA	< 0.0005				89%	70%	130%	89%	60%	140%
2-Chlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	80%	80%	120%	83%	70%	130%	81%	60%	140%
2,4-Dinitrophenol	134	3095657	<0.005	<0.005	NA	< 0.005	91%	80%	120%	95%	70%	130%	95%	60%	140%
2-Nitrophenol	134	3095657	<0.005	<0.005	NA	< 0.005	95%	80%	120%	91%	70%	130%	102%	60%	140%
2,4-Dimethylphenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	83%	80%	120%	87%	70%	130%	87%	60%	140%
2,6-Dichlorophenol	134	3095657	<0.0001	<0.0001	NA	< 0.0001				89%	70%	130%	92%	60%	140%

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571329

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis (Continued)

RPT Date: Mar 05, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
4-Chloro-3-methylphenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	83%	80%	120%	94%	70%	130%	95%	60%	140%
2,4-Dichlorophenol	134	3095657	<0.0001	<0.0001	NA	< 0.0001	85%	80%	120%	80%	70%	130%	81%	60%	140%
4,6-Dinitro-2-methylphenol	134	3095657	<0.005	<0.005	NA	< 0.005	95%	80%	120%	90%	70%	130%	98%	60%	140%
2,3,6-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				93%	70%	130%	95%	60%	140%
2,3,4-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				89%	70%	130%	93%	60%	140%
2,4,6-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	87%	80%	120%	95%	70%	130%	96%	60%	140%
2,4,5-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				91%	70%	130%	94%	60%	140%
2,3,5-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	97%	60%	140%
3,4,5-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	94%	60%	140%
2,3,4,6-Tetrachlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				101%	70%	130%	101%	60%	140%
2,3,5,6-Tetrachlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				101%	70%	130%	101%	60%	140%
2,3,4,5-Tetrachlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				99%	70%	130%	100%	60%	140%
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	134	3095657	<0.005	<0.005	NA	< 0.005				97%	70%	130%	94%	60%	140%
Pentachlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	90%	80%	120%	98%	70%	130%	107%	60%	140%
2-Fluorophenol	134				106.0%	<	109%	50%	150%	102%	50%	150%	106%	50%	150%
2,4,6-Tribromophenol	134				113.0%	<	111%	50%	150%	113%	50%	150%	113%	50%	150%
Petroleum Hydrocarbons (BTEX/F1-F4) in Water															
Benzene	380	3091736	<0.0005	<0.0005	NA	< 0.0005	95%	80%	120%	95%	80%	120%	87%	70%	130%
Toluene	380	3091736	<0.0005	<0.0005	NA	< 0.0005	99%	80%	120%	98%	80%	120%	86%	70%	130%
Ethylbenzene	380	3091736	<0.0005	<0.0005	NA	< 0.0005	106%	80%	120%	104%	80%	120%	85%	70%	130%
Xylenes	380	3091736	<0.0005	<0.0005	NA	< 0.0005	106%	80%	120%	104%	80%	120%	88%	70%	130%
C6 - C10 (F1)	380	3091736	<0.1	<0.1	NA	< 0.1	92%	80%	120%	111%	80%	120%	83%	70%	130%
C>10 - C16	24	3095453	<0.1	<0.1	NA	< 0.1	101%	80%	120%	93%	80%	120%	98%	70%	130%
C16 - C34	24	3095453	<0.1	<0.1	NA	< 0.1	101%	80%	120%	102%	80%	120%	104%	70%	130%

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571329

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Water Analysis

RPT Date: Mar 05, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
British Columbia CSR- Schedule 6 Dissolved Metals															
Aluminum Dissolved	20120	3094046	4	4	0.0%	< 1	99%	90%	110%	104%	85%	115%			
Antimony Dissolved	20120	3094046	0.06	<0.05	0.0%	< 0.05	107%	90%	110%	101%	85%	110%			
Arsenic Dissolved	20120	3094046	26.0	25.7	1.2%	< 0.1	98%	90%	110%	107%	90%	110%			
Barium Dissolved	20120	3094046	58.1	57.7	1.0%	< 0.1	99%	90%	110%	94%	90%	110%			
Beryllium Dissolved	20120	3094046	<0.01	<0.01	0.0%	< 0.01	91%	90%	110%	103%	90%	110%			
Boron Dissolved	20120	3094046	128	128	0.0%	< 1	96%	90%	110%	102%	80%	120%			
Cadmium Dissolved	20120	3094046	0.01	<0.01	0.0%	< 0.01	102%	90%	110%	101%	90%	110%			
Calcium Dissolved	20120	3094046	45.6	46.2	1.0%	< 0.05	103%	90%	110%	101%	90%	110%			
Chromium Dissolved	20120	3094046	1.2	1.3	8.0%	< 0.5	102%	90%	110%	99%	90%	110%			
Cobalt Dissolved	20120	3094046	0.15	0.16	6.0%	< 0.05	98%	90%	110%	102%	90%	110%			
Copper Dissolved	20120	3094046	0.4	0.4	0.0%	< 0.2	101%	90%	110%	101%	90%	110%			
Iron Dissolved	20120	3094046	37.2	37.7	1.0%	< 0.01	109%	90%	110%	102%	90%	110%			
Lead Dissolved	20120	3094046	0.03	0.02	NA	< 0.01	101%	90%	110%	99%	90%	110%			
Lithium Dissolved	20120	3094046	2.1	2.1	0.0%	< 0.1				101%	90%	110%			
Magnesium Dissolved	20120	3094046	9.37	9.48	1.0%	< 0.05	107%	90%	110%	106%	90%	110%			
Manganese Dissolved	20120	3094046	1.63	1.63	0.0%	< 0.001	108%	90%	110%	102%	90%	110%			
Mercury Dissolved	20120	3094046	<0.003	<0.003	0.0%	< 0.003	97%	90%	110%	108%	90%	110%			
Molybdenum Dissolved	20120	3094046	0.28	0.37	NA	< 0.05	101%	90%	110%	101%	90%	110%			
Nickel Dissolved	20120	3094046	0.7	0.7	0.0%	< 0.1	98%	90%	110%	101%	90%	110%			
Selenium Dissolved	20120	3094046	0.1	<0.1	0.0%	< 0.1	96%	90%	110%	109%	85%	115%			
Silver Dissolved	20120	3094046	<0.01	<0.01	0.0%	< 0.01				105%	90%	110%			
Sodium Dissolved	20120	3094046	9.31	9.44	1.0%	< 0.05	104%	90%	110%	104%	90%	110%			
Thallium Dissolved	20120	3094046	<0.002	<0.002	0.0%	< 0.002	91%	90%	110%	95%	90%	110%			
Titanium Dissolved	20120	3094046	58.3	57.3	2.0%	< 0.1				105%	90%	110%			
Uranium Dissolved	20120	3094046	0.01	<0.01	0.0%	< 0.01		90%	110%	99%	90%	110%			
Vanadium Dissolved	20120	3094046	0.8	0.9	12.0%	< 0.1	101%	90%	110%	100%	90%	110%			
Zinc Dissolved	20120	3094046	7	7	0.0%	< 1	101%	90%	110%	95%	85%	115%			

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571329

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Benzene	TO 0540	EPA SW846 8260	GC/MS
Toluene	TO 0540	EPA SW846 8260	GC/MS
Ethylbenzene	TO 0540	EPA SW846 8260	GC/MS
Xylenes	TO 0540	EPA SW846 8260	GC/MS
C6 - C10 (F1)	TO 0540	CCME Tier 1 Method	GC/FID
C6 - C10 (F1 minus BTEX)	TO 0540	CCME Tier 1 Method	GC/FID
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
C16 - C34	TO 0511	CCME Tier 1 Method	GC/FID
C>34 - C50	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO 0340	EPA SW846 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
Methyl tert-butyl ether (MTBE)	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Methyl tert-butyl ether (MTBE)	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Benzene	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Toluene	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Ethylbenzene	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
m&p-Xylene	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
o-Xylene	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Styrene	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Styrene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
VH	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
VPH	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
VPH	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Naphthalene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Bromofluorobenzene	ORG-180-5130	modified from BC MOE Lab Manual Section D	GC/MS
Quinoline	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Dibromofluoromethane	ORG-180-5130	modified from BC MOE Lab Manual Section D	GC/MS
Acenaphthylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Toluene - d8	ORG-180-5130	modified from BC MOE Lab Manual Section D	GC/MS
Acenaphthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Fluorene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Phenanthrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571329

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Anthracene (Water)	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acridine	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Chrysene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(b)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(k)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Dibenzo(a,h)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(g,h.i)perylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Nitrobenzene - d5	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
Quinoline - d7	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
2-Fluorobiphenyl	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
P-Terphenyl - d14	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
LEPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
HEPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
EPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
Bromofluorobenzene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
EPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
Dibromofluoromethane	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Toluene - d8	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Phenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
m&p-Cresol (3&4-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
o-Cresol (2-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
2-Chlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dinitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dimethylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,6-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV

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CANADA V5J 0B6
TEL (778)452-4000
FAX (778)452-4074
http://www.agatlabs.com

Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571329

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
4-Chloro-3-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4,6-Dinitro-2-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
3,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,5-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
Dinoseb (2-sec-butyl-4,6-dinitrophenol)	TO 1200	EPA SW-846 8321	HPLC/UV
Pentachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Fluorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Tribromophenol	TO 1200	EPA SW-846 8321	HPLC/UV

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571329

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Aluminum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Antimony Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Arsenic Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Barium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Beryllium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Boron Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cadmium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Calcium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Chromium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cobalt Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Copper Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Iron Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Lead Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Lithium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Magnesium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Manganese Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Mercury Dissolved	MET-181-6103, LAB-181-4015	Modified from EPA 245.7	CV/AA
Molybdenum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Nickel Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Selenium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Silver Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Sodium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Thallium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Titanium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Uranium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Vanadium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Zinc Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS

120 - 8600 Glenlyon Parkway
Burnaby, BC,
V5J 0B6
webearth.agatlabs.com

AGAT Laboratories

Chain of Custody Record

Ph.: 778.452.4000 · Fax: 778.452.7074

Turnaround Time Required (TAT)

Regular TAT 5 to 7 working days [X]
Rush TAT 24 to 48 hours [ ]
48 to 72 hours [ ]

Date Required: ____

Please contact laboratory if Rush is required

Report To:

Company: Franz Environmental
Contact: Amanda Salway
Address: 308-1080 Mainland St.
Vancouver, BC V6B 2T4
Phone: 604 632-9941 Fax: 604 632-9942
LSD:
Client Project #: 2090-1103

Report Information

1. Name: Amanda Salway
   Email: asalway@franzbc.com
2. Name: Viviane Dubois-Coté
   Email: vdcote@franzbc.com

Report Format

[ ] Single Sample per page
[X] Multiple Samples per page
[X] Excel Format Included

Laboratory Use Only

Arrival Temperature: 3.5°C
AGAT Job Number: 12V571329
Notes: FEB 2 PM 5:49

Invoice To: Same as above Yes [X] No [ ]

Company:
Contact:
Address:
Phone: Fax:
PO/AFE #:

Regulatory Requirements (Check):

[ ] **BC CSR – Soil**
[ ] Agricultural
[ ] Industrial
[ ] Urban/Park
[ ] Commercial

[X] **BC CSR – Water**
[ ] Drinking Water
[X] Aquatic Life
[ ] Irrigation
[ ] Livestock

[X] **CCME**
[ ] Drinking Water
[ ] Residential/Park
[ ] Commercial
[ ] Industrial
[ ] Drinking Water
[X] FWAL

Lab ID #	Sample Identification	Sample Matrix	Date/Time Sampled	Comments – Site/Sample Info. Sample Containment	BC CSR BTEX/VPH	BC CSR LEPH/HEPH	BC CSR Metals + CCME metals	VOCs	BC CSR Schedule II	Routine Potability		CCME F1	CCME F2-F4	Chlorinated & non-chlorinated		Number of Containers	Preserved (Y/N)	Hazardous (Y/N)	Hold for ~~1 YEAR~~ 60 days
3094046	BV-11BH-02M	water	Feb 2/2012		X	X	X					X	X	X		7			
049	BV-GWDUP1	water	Feb 2/2012		X	X	X					X	X	X		7			
050	MW06-2	water	Feb 2/2012		X	X						X	X			5			
051	MW07-6	water	Feb 2/2012		X	X						X	X			5			
052	MW08-10	water	Feb 2/2012		X											3			
053	BV-11BH-07M	water	Feb 2/2012		X	X						X	X			5			

Samples Relinquished by (print name & sign):	Date	Samples Received by (Print name & sign):	Date
[signature]	02/02/2012	Amiez [signature] 2 FEB 2012 5:49pm	

Pink Copy - Client
Yellow Copy - AGAT
White Copy - AGAT

Page 1 of 1

NO: 000630

Document ID: DIV-186-0811.001

Date revised: August 24, 2011

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM - BURNABY

Work Order # 12V571329

RECEIVING BASICS:
***Complete CoC as well where required**
Date and Time: 02-FEB-12@5:49 pm
Courier: _____
Received by: Amiel
Relinquished by: Amanda
Branch Received From: _____
Company: FRANZ ENV.
Consultant: _____
Client left without count verified: No

COC INFORMATION:
Received: (Yes) No Emailed to PM
Completed in full: (Yes) No If NO, why: _____
TURNAROUND TIME: Reg
COC Numbers: 000630

SAMPLE QUANTITIES:
Coolers: 2 Bottles/Jars: 32 Bags: _____

TIME SENSITIVE ISSUES:
Earliest Date Sampled: 02-FEB-12
Microbiology: Test: _____
Hydrocarbons: Test: BTEX
Samples are received >5 days after sampling: Yes (No)

ALREADY EXCEEDED? Yes (No)
Expiry: _____
Expiry: 09-FEB-12

SPECIALTY ISSUES:
Legal Samples: Yes No N/A
International Samples: Yes No
**Proper tape/labels applied: Yes No

Hazardous Samples:
Why hazardous:

_____
Precaution taken:

_____

SAMPLE REQUIREMENTS:
*Complete while logging in by login staff.

Correct bottles used for testing: (Yes) No
If No, explain: _____

Correct amount of sample for analysis: (Yes) No
If No, explain: _____

Are all samples labeled correctly: (Yes) No
If No, explain: _____

NON-CONFORMANCES:
3 temperatures of samples* and average of each cooler: (record differing temperatures on the CoC next to sample ID's)
(1) 2 + 3 + 4 = 3 °C (2) 4 + 3 + 4 = 4 °C (3) ___ + ___ + ___ = ___ °C (4) ___ + ___ + ___ = ___ °C
*Jars used when available

Additional integrity issues (note here and on CoC next to the sample ID):

1) _____
2) _____
3) _____

Account Project Manager: _____ Have they been notified of the above issues: Yes No
Whom spoken to: _____ Date and Time: _____

ADDITIONAL NOTES:

_____

_____

_____

AGAT Laboratories

Unit 120, 8600 Glenlyon Parkway
Burnaby, British Columbia
CANADA V5J 0B6
TEL (778)452-4000
FAX (778)452-4074
http://www.agatlabs.com

CLIENT NAME: FRANZ ENVIRONMENTAL
308-108 MAINLAND STREET
VANCOUVER, BC V6B2T4

ATTENTION TO: Amanda Salway

PROJECT NO: 2090-1103

AGAT WORK ORDER: 12V571615

TRACE ORGANICS REVIEWED BY: Larissa Poryadina, Senior Analyst

WATER ANALYSIS REVIEWED BY: Marie England, Inorganics Supervisor

DATE REPORTED: Feb 13, 2012

PAGES (INCLUDING COVER): 14

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (778) 452-4000

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V571615
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons (BTEX/F1-F4) in Water

DATE SAMPLED: Feb 03, 2012 | DATE RECEIVED: Feb 03, 2012 | DATE REPORTED: Feb 13, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	BV-11BH-01M 3095663	MW07-8 3095682	MW07-7 3095684
Benzene	mg/L	0.37	0.0005	<0.0005	<0.0005	<0.0005
Toluene	mg/L	0.002	0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	mg/L	0.09	0.0005	<0.0005	<0.0005	<0.0005
Xylenes	mg/L		0.0005	<0.0005	<0.0005	<0.0005
C6 - C10 (F1)	mg/L		0.1	<0.1	<0.1	0.1
C6 - C10 (F1 minus BTEX)	mg/L		0.1	<0.1	<0.1	0.1
C>10 - C16	mg/L		0.1	<0.1	<0.1	0.7
C16 - C34	mg/L		0.1	0.1	<0.1	0.1
C>34 - C50	mg/L		0.1	<0.1	<0.1	<0.1
Surrogate	**Unit**	**Acceptable Limits**				
Toluene-d8 (BTEX)	%	50-150		102	99	100
o-Terphenyl (F2-F4)	%	50-150		109	110	112

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL)

3095663-3095684 The C>6 - C10 fraction is calculated using the toluene response factor.
The C10 - C16 fraction is calculated using the average response factor for nC10, nC16 and nC34.
BTEX has NOT been subtracted from Fraction 1.
Sample is blank corrected.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V571615
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons (BTEX/F2-F4) in Water

DATE SAMPLED: Feb 03, 2012 | DATE RECEIVED: Feb 03, 2012 | DATE REPORTED: Feb 13, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	BV-11BH-08M 3095674	BV-11BH-09M 3095680
Benzene	mg/L	0.37	0.0005	<0.0005	<0.0005
Toluene	mg/L	0.002	0.0005	<0.0005	<0.0005
Ethylbenzene	mg/L	0.09	0.0005	<0.0005	0.0009
Xylenes	mg/L		0.0005	<0.0005	0.0048
C>10 - C16	mg/L		0.1	<0.1	<0.1
C16 - C34	mg/L		0.1	<0.1	<0.1
C>34 - C50	mg/L		0.1	<0.1	<0.1
Surrogate	**Unit**	**Acceptable Limits**			
Toluene-d8 (BTEX)	%	50-150		102	101
o-Terphenyl (F2-F4)	%	50-150		108	110

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL)

3095674-3095680 The C>6 - C10 fraction is calculated using the toluene response factor.
The C10 - C16 fraction is calculated using the average response factor for nC10, nC16 and nC34.
BTEX has NOT been subtracted from Fraction 1.
Sample is blank corrected.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V571615
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 03, 2012 | DATE RECEIVED: Feb 03, 2012 | DATE REPORTED: Feb 13, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	BV-11BH-01M 3095663	BV-11BH-08M 3095674	BV-11BH-09M 3095680	MW07-8 3095682	MW07-9 3095683	MW07-7 3095684
Methyl tert-butyl ether (MTBE)	µg/L	34000	1	<1			<1	<1	<1
Benzene	µg/L	4000	0.5					<0.5	
Styrene	µg/L	720	0.5	<0.5			<0.5	<0.5	<0.5
Toluene	µg/L	390	0.5					<0.5	
VPH	µg/L	1500	100	<100			<100	<100	270
Ethylbenzene	µg/L	2000	0.5					<0.5	
Naphthalene	µg/L	10	0.05	<0.05	<0.05	0.49	<0.05		1.08
m&p-Xylene	µg/L		0.5					<0.5	
Quinoline	µg/L	34	0.1	<0.1	<0.1	<0.1	<0.1		0.2
Acenaphthylene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05		0.06
o-Xylene	µg/L		0.5					<0.5	
Acenaphthene	µg/L	60	0.05	3.98	<0.05	<0.05	<0.05		5.43
Fluorene	µg/L	120	0.05	<0.05	<0.05	<0.05	<0.05		3.89
Phenanthrene	µg/L	3	0.05	<0.05	<0.05	<0.05	<0.05		5.65
Anthracene (Water)	µg/L	1	0.05	<0.05	<0.05	<0.05	<0.05		0.27
Acridine	µg/L	0.5	0.05	<0.05	<0.05	<0.05	<0.05		0.40
Fluoranthene	µg/L	2	0.05	<0.05	<0.05	<0.05	<0.05		1.06
Pyrene	µg/L	0.2	0.02	<0.02	<0.02	<0.02	<0.02		0.52
Benzo(a)anthracene	µg/L	1	0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Chrysene	µg/L	1	0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Benzo(b)fluoranthene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Benzo(k)fluoranthene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Benzo(a)pyrene	µg/L	0.1	0.01	<0.01	<0.01	<0.01	<0.01		<0.01
Indeno(1,2,3-cd)pyrene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Dibenzo(a,h)anthracene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Benzo(g,h.i)perylene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05		<0.05
LEPH C10-C19	µg/L	500	100	140	<100	130	<100		860
HEPH C19-C32	µg/L		100	150	<100	140	<100		130

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 12V571615
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 03, 2012 | DATE RECEIVED: Feb 03, 2012 | DATE REPORTED: Feb 13, 2012 | SAMPLE TYPE: Water

Surrogate	Unit	Acceptable Limits	BV-11BH-01M 3095663	BV-11BH-08M 3095674	BV-11BH-09M 3095680	MW07-8 3095682	MW07-9 3095683	MW07-7 3095684
Nitrobenzene - d5	%	50-130	83	94	102	77		NA
Quinoline - d7	%	50-130	94	95	96	93		99
2-Fluorobiphenyl	%	50-130	76	77	76	72		67
P-Terphenyl - d14	%	60-130	94	95	93	95		91
Bromofluorobenzene	%	70-130	93			88	90	89
Dibromofluoromethane	%	70-130	112			106	108	113
Toluene - d8	%	70-130	111			105	106	122

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

3095663 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.

3095674-3095680 LEPH & HEPH results have been corrected for PAH contributions.

3095682 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.

3095683 VPH results have been corrected for BTEX contributions.

3095684 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.
Nitrobenzene-d5 surrogate not available due to sample matrix interference.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V571615
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Phenolic Compounds in Water

DATE SAMPLED: Feb 03, 2012 | DATE RECEIVED: Feb 03, 2012 | DATE REPORTED: Feb 13, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	BV-11BH-01M 3095663	BV-11BH-09M 3095680
Phenol	mg/L		0.002	<0.002	<0.002
4-Nitrophenol	mg/L		0.005	<0.005	<0.005
m&p-Cresol (3&4-methylphenol)	mg/L		0.0005	<0.0005	<0.0005
o-Cresol (2-methylphenol)	mg/L		0.0005	<0.0005	<0.0005
2-Chlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,4-Dinitrophenol	mg/L		0.005	<0.005	<0.005
2-Nitrophenol	mg/L		0.005	<0.005	<0.005
2,4-Dimethylphenol	mg/L		0.0005	<0.0005	<0.0005
2,6-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001
4-Chloro-3-methylphenol	mg/L		0.0005	<0.0005	<0.0005
2,4-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001
4,6-Dinitro-2-methylphenol	mg/L		0.005	<0.005	<0.005
2,3,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,4-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,4,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
3,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,4,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,5,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,4,5-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	mg/L		0.005	<0.005	<0.005
Pentachlorophenol	mg/L		0.0005	<0.0005	<0.0005
Surrogate	Unit	Acceptable Limits			
2-Fluorophenol	%	50-150		108	110
2,4,6-Tribromophenol	%	50-150		110	110

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
3095663-3095680 Results relate only to the items tested.

Certified By:

AGAT Laboratories

Unit 120, 8600 Glenlyon Parkway
Burnaby, British Columbia
CANADA V5J 0B6
TEL (778)452-4000
FAX (778)452-4074
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 12V571615
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

British Columbia CSR- Schedule 6 Dissolved Metals

DATE SAMPLED: Feb 03, 2012 | DATE RECEIVED: Feb 03, 2012 | DATE REPORTED: Feb 13, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	BV-11BH-01M 3095663	BV-11BH-09M 3095680
Aluminum Dissolved	µg/L		1	23	7
Antimony Dissolved	µg/L		0.05	0.14	0.09
Arsenic Dissolved	µg/L	5	0.1	33.3	28.3
Barium Dissolved	µg/L		0.1	104	234
Beryllium Dissolved	µg/L		0.01	0.02	<0.01
Boron Dissolved	µg/L		1	64	243
Cadmium Dissolved	µg/L	0.017	0.01	<0.01	0.01
Calcium Dissolved	mg/L		0.05	58.3	145
Chromium Dissolved	µg/L		0.5	4.7	1.5
Cobalt Dissolved	µg/L		0.05	1.67	3.96
Copper Dissolved	µg/L		0.2	0.9	0.6
Iron Dissolved	mg/L	0.3	0.01	95.3	48.9
Lead Dissolved	µg/L		0.01	0.10	0.15
Lithium Dissolved	µg/L		0.1	3.8	3.6
Magnesium Dissolved	mg/L		0.05	11.4	41.5
Manganese Dissolved	mg/L		0.001	2.54	2.07
Mercury Dissolved	µg/L	0.026	0.003	<0.003	<0.003
Molybdenum Dissolved	µg/L	73	0.05	0.63	1.07
Nickel Dissolved	µg/L		0.1	1.7	3.9
Selenium Dissolved	µg/L	1	0.1	<0.1	<0.1
Silver Dissolved	µg/L	0.1	0.01	<0.01	<0.01
Sodium Dissolved	mg/L		0.05	8.86	71.8
Thallium Dissolved	µg/L	0.8	0.002	0.011	0.022
Titanium Dissolved	µg/L		0.1	91.7	178
Uranium Dissolved	µg/L		0.01	0.03	0.30
Vanadium Dissolved	µg/L		0.1	7.7	1.1
Zinc Dissolved	µg/L	30	1	8	7
Hardness (calc)	mg CaCO3/L		1	193	533

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL) (Van)

Certified By: Marie England

AGAT Laboratories

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571615

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis

RPT Date: Feb 13, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Petroleum Hydrocarbons in Water															
Methyl tert-butyl ether (MTBE)	1	3089329	<1	<1	0.0%	< 1	98%	80%	120%				110%	70%	130%
Styrene	1	3089329	<0.5	<0.5	0.0%	< 0.5	100%	80%	120%				108%	70%	130%
VPH	1	3089329	<100	<100	0.0%	< 100									
Naphthalene	1	W-MS	0.09	0.08	11.8%	< 0.05	100%	80%	120%				91%	50%	130%
Quinoline	1	W-MS	<0.1	<0.1	0.0%	< 0.1	100%	80%	120%				84%	50%	130%
Acenaphthylene	1	W-MS	0.07	0.07	0.0%	< 0.05	100%	80%	120%				75%	50%	130%
Acenaphthene	1	W-MS	0.07	0.07	0.0%	< 0.05	100%	80%	120%				77%	50%	130%
Fluorene	1	W-MS	0.08	0.09	11.8%	< 0.05	100%	80%	120%				87%	50%	130%
Phenanthrene	1	W-MS	0.08	0.09	11.8%	< 0.05	97%	80%	120%				84%	60%	130%
Anthracene (Water)	1	W-MS	0.07	0.08	13.3%	< 0.05	102%	80%	120%				75%	60%	130%
Acridine	1	W-MS	0.09	0.10	10.5%	< 0.05	99%	80%	120%				94%	50%	130%
Fluoranthene	1	W-MS	0.08	0.09	11.8%	< 0.05	100%	80%	120%				89%	60%	130%
Pyrene	1	W-MS	0.09	0.10	10.5%	< 0.02	99%	80%	120%				91%	60%	130%
Benzo(a)anthracene	1	W-MS	0.09	0.10	10.5%	< 0.05	100%	80%	120%				92%	60%	130%
Chrysene	1	W-MS	0.09	0.10	10.5%	< 0.05	100%	80%	120%				92%	60%	130%
Benzo(b)fluoranthene	1	W-MS	0.10	0.11	9.5%	< 0.05	99%	80%	120%				108%	60%	130%
Benzo(k)fluoranthene	1	W-MS	0.09	0.1	10.5%	< 0.05	101%	80%	120%				100%	60%	130%
Benzo(a)pyrene	1	W-MS	0.08	0.09	11.8%	< 0.01	101%	80%	120%				86%	60%	130%
Indeno(1,2,3-cd)pyrene	1	W-MS	0.10	0.11	9.5%	< 0.05	99%	80%	120%				103%	60%	130%
Dibenzo(a,h)anthracene	1	W-MS	0.10	0.11	9.5%	< 0.05	99%	80%	120%				103%	60%	130%
Benzo(g,h.i)perylene	1	W-MS	0.10	0.11	9.5%	< 0.05	99%	80%	120%				103%	60%	130%
Nitrobenzene - d5	1	W-MS	79	70	12.1%		98%	80%	120%				80%	50%	130%
Quinoline - d7	1	W-MS	93	87	6.7%		102%	80%	120%				94%	50%	130%
2-Fluorobiphenyl	1	W-MS	79	69	13.5%		101%	80%	120%				79%	50%	130%
P-Terphenyl - d14	1	W-MS	94	95	1.1%		99%	80%	120%				95%	60%	130%
Bromofluorobenzene	1	3089329	96	98	2.0%		103%	70%	130%				114%	70%	130%
Dibromofluoromethane	1	3089329	115	112	3.0%		98%	70%	130%				104%	70%	130%
Toluene - d8	1	3089329	116	114	2.0%		96%	70%	130%				112%	70%	130%
Phenolic Compounds in Water															
Phenol	134	3095657	<0.002	<0.002	NA	< 0.002	86%	80%	120%	94%	70%	130%	93%	60%	140%
4-Nitrophenol	134	3095657	<0.005	<0.005	NA	< 0.005	84%	80%	120%	91%	70%	130%	91%	60%	140%
m&p-Cresol (3&4-methylphenol)	134	3095657	<0.0005	<0.0005	NA	< 0.0005				93%	70%	130%	93%	60%	140%
o-Cresol (2-methylphenol)	134	3095657	<0.0005	<0.0005	NA	< 0.0005				89%	70%	130%	89%	60%	140%
2-Chlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	80%	80%	120%	83%	70%	130%	81%	60%	140%
2,4-Dinitrophenol	134	3095657	<0.005	<0.005	NA	< 0.005	91%	80%	120%	95%	70%	130%	95%	60%	140%
2-Nitrophenol	134	3095657	<0.005	<0.005	NA	< 0.005	95%	80%	120%	91%	70%	130%	102%	60%	140%
2,4-Dimethylphenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	83%	80%	120%	87%	70%	130%	87%	60%	140%
2,6-Dichlorophenol	134	3095657	<0.0001	<0.0001	NA	< 0.0001				89%	70%	130%	92%	60%	140%

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571615

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis (Continued)

RPT Date: Feb 13, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
4-Chloro-3-methylphenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	83%	80%	120%	94%	70%	130%	95%	60%	140%
2,4-Dichlorophenol	134	3095657	<0.0001	<0.0001	NA	< 0.0001	85%	80%	120%	80%	70%	130%	81%	60%	140%
4,6-Dinitro-2-methylphenol	134	3095657	<0.005	<0.005	NA	< 0.005	95%	80%	120%	90%	70%	130%	98%	60%	140%
2,3,6-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				93%	70%	130%	95%	60%	140%
2,3,4-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				89%	70%	130%	93%	60%	140%
2,4,6-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	87%	80%	120%	95%	70%	130%	96%	60%	140%
2,4,5-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				91%	70%	130%	94%	60%	140%
2,3,5-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	97%	60%	140%
3,4,5-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	94%	60%	140%
2,3,4,6-Tetrachlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				101%	70%	130%	101%	60%	140%
2,3,5,6-Tetrachlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				101%	70%	130%	101%	60%	140%
2,3,4,5-Tetrachlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				99%	70%	130%	100%	60%	140%
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	134	3095657	<0.005	<0.005	NA	< 0.005				97%	70%	130%	94%	60%	140%
Pentachlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	90%	80%	120%	98%	70%	130%	107%	60%	140%
Petroleum Hydrocarbons (BTEX/F1-F4) in Water															
Benzene	385	3095663	<0.0005	<0.0005	NA	< 0.0005	100%	80%	120%	99%	80%	120%	85%	70%	130%
Toluene	385	3095663	<0.0005	<0.0005	NA	< 0.0005	105%	80%	120%	104%	80%	120%	90%	70%	130%
Ethylbenzene	385	3095663	<0.0005	<0.0005	NA	< 0.0005	108%	80%	120%	109%	80%	120%	93%	70%	130%
Xylenes	385	3095663	<0.0005	<0.0005	NA	< 0.0005	108%	80%	120%	108%	80%	120%	94%	70%	130%
C6 - C10 (F1)	385	3095663	<0.1	<0.1	NA	< 0.1	101%	80%	120%	107%	80%	120%	90%	70%	130%
C>10 - C16	28	3095674	<0.1	<0.1	NA	< 0.1	98%	80%	120%	91%	80%	120%	101%	70%	130%
C16 - C34	28	3095674	<0.1	<0.1	NA	< 0.1	98%	80%	120%	106%	80%	120%	101%	70%	130%
Petroleum Hydrocarbons (BTEX/F2-F4) in Water															
Benzene	387	3095680	< 0.0005	< 0.0005	NA	< 0.0005	100%	80%	120%	96%	80%	120%	93%	70%	130%
Toluene	387	3095680	< 0.0005	< 0.0005	NA	< 0.0005	100%	80%	120%	96%	80%	120%	97%	70%	130%
Ethylbenzene	387	3095680	0.0009	0.0009	0.0%	< 0.0005	104%	80%	120%	97%	80%	120%	103%	70%	130%
Xylenes	387	3095680	0.0048	0.0047	2.1%	< 0.0005	102%	80%	120%	97%	80%	120%	101%	70%	130%

Certified By:

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571615

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Water Analysis

RPT Date: Feb 13, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
British Columbia CSR- Schedule 6 Dissolved Metals															
Aluminum Dissolved	20120	3095663	23	22	4.4%	< 1	108%	90%	110%	111%	85%	115%			
Antimony Dissolved	20120	3095663	0.14	0.13	7.0%	< 0.05	100%	90%	110%	101%	85%	110%			
Arsenic Dissolved	20120	3095663	33.3	32.9	1.0%	< 0.1	99%	90%	110%	105%	90%	110%			
Barium Dissolved	20120	3095663	104	107	3.0%	< 0.1	101%	90%	110%	101%	90%	110%			
Beryllium Dissolved	20120	3095663	0.01	<0.01	0.0%	< 0.01	90%	90%	110%	102%	90%	110%			
Boron Dissolved	20120	3095663	64	63	2.0%	< 1	99%	90%	110%	112%	80%	120%			
Cadmium Dissolved	20120	3095663	<0.01	<0.01	0.0%	< 0.01	98%	90%	110%	101%	90%	110%			
Calcium Dissolved	20120	3095663	58.3	57.7	1.0%	< 0.05	99%	90%	110%	103%	90%	110%			
Chromium Dissolved	20120	3095663	4.7	4.7	0.0%	< 0.5	101%	90%	110%	97%	90%	110%			
Cobalt Dissolved	20120	3095663	1.67	1.59	5.0%	< 0.05	100%	90%	110%	105%	90%	110%			
Copper Dissolved	20120	3095663	0.9	0.8	12.0%	< 0.2	101%	90%	110%	105%	90%	110%			
Iron Dissolved	20120	3095663	95.3	94.8	1.0%	< 0.01	104%	90%	110%	105%	90%	110%			
Lead Dissolved	20120	3095663	0.10	0.12	18.2%	< 0.01	99%	90%	110%	101%	90%	110%			
Lithium Dissolved	20120	3095663	3.8	3.8	0.0%	< 0.1				104%	90%	110%			
Magnesium Dissolved	20120	3095663	11.4	11.3	1.0%	< 0.05	104%	90%	110%	108%	90%	110%			
Manganese Dissolved	20120	3095663	2.54	2.51	1.0%	< 0.001	103%	90%	110%	104%	90%	110%			
Mercury Dissolved	20120	3095663	<0.003	<0.003	0.0%	< 0.003	95%	90%	110%	100%	90%	110%			
Molybdenum Dissolved	20120	3095663	0.63	0.62	2.0%	< 0.05	96%	90%	110%	103%	90%	110%			
Nickel Dissolved	20120	3095663	1.7	1.6	6.0%	< 0.1	96%	90%	110%	103%	90%	110%			
Selenium Dissolved	20120	3095663	<0.1	<0.1	0.0%	< 0.1	99%	90%	110%	101%	85%	115%			
Silver Dissolved	20120	3095663	<0.01	<0.01	0.0%	< 0.01				104%	90%	110%			
Sodium Dissolved	20120	3095663	8.86	8.78	1.0%	< 0.05	101%	90%	110%	107%	90%	110%			
Thallium Dissolved	20120	3095663	0.011	0.005	NA	< 0.002	92%	90%	110%	98%	90%	110%			
Titanium Dissolved	20120	3095663	91.7	90.7	1.0%	< 0.1				101%	90%	110%			
Uranium Dissolved	20120	3095663	0.03	0.03	0.0%	< 0.01		90%	110%	100%	90%	110%			
Vanadium Dissolved	20120	3095663	7.7	7.6	1.0%	< 0.1	101%	90%	110%	97%	90%	110%			
Zinc Dissolved	20120	3095663	8	7	13.3%	< 1	100%	90%	110%	102%	85%	115%			

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571615

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Benzene	TO 0540	EPA SW846 8260	GC/MS
Toluene	TO 0540	EPA SW846 8260	GC/MS
Ethylbenzene	TO 0540	EPA SW846 8260	GC/MS
Xylenes	TO 0540	EPA SW846 8260	GC/MS
C6 - C10 (F1)	TO 0540	CCME Tier 1 Method	GC/FID
C6 - C10 (F1 minus BTEX)	TO 0540	CCME Tier 1 Method	GC/FID
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
C16 - C34	TO 0511	CCME Tier 1 Method	GC/FID
C>34 - C50	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO 0340	EPA SW846 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
Benzene	TO 0540	EPA SW846 8260	GC/MS
Toluene	TO 0540	EPA SW846 8260	GC/MS
Ethylbenzene	TO 0540	EPA SW846 8260	GC/MS
Xylenes	TO 0540	EPA SW846 8260	GC/MS
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
C16 - C34	TO 0511	CCME Tier 1 Method	GC/FID
C>34 - C50	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO 0340	EPA SW846 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
Naphthalene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Quinoline	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Methyl tert-butyl ether (MTBE)	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Methyl tert-butyl ether (MTBE)	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Acenaphthylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzene	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Acenaphthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Toluene	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Fluorene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Ethylbenzene	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Phenanthrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
m&p-Xylene	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Anthracene (Water)	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
o-Xylene	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Acridine	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Styrene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571615

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ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Styrene	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
VPH	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
VPH	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Bromofluorobenzene	ORG-180-5130	modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Dibromofluoromethane	ORG-180-5130	modified from BC MOE Lab Manual Section D	GC/MS
Chrysene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Toluene - d8	ORG-180-5130	modified from BC MOE Lab Manual Section D	GC/MS
Benzo(b)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(k)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Dibenzo(a,h)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(g,h.i)perylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Nitrobenzene - d5	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
Quinoline - d7	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
2-Fluorobiphenyl	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
P-Terphenyl - d14	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
LEPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
HEPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
Bromofluorobenzene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Dibromofluoromethane	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Toluene - d8	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Phenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
m&p-Cresol (3&4-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
o-Cresol (2-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
2-Chlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dinitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV

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PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
2-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dimethylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,6-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Chloro-3-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4,6-Dinitro-2-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
3,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,5-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
Dinoseb (2-sec-butyl-4,6-dinitrophenol)	TO 1200	EPA SW-846 8321	HPLC/UV
Pentachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Fluorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Tribromophenol	TO 1200	EPA SW-846 8321	HPLC/UV

AGAT Laboratories

Unit 120, 8600 Glenlyon Parkway
Burnaby, British Columbia
CANADA V5J 0B6
TEL (778)452-4000
FAX (778)452-4074
http://www.agatlabs.com

Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571615

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Aluminum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Antimony Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Arsenic Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Barium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Beryllium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Boron Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cadmium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Calcium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Chromium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cobalt Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Copper Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Iron Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Lead Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Lithium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Magnesium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Manganese Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Mercury Dissolved	MET-181-6103, LAB-181-4015	Modified from EPA 245.7	CV/AA
Molybdenum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Nickel Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Selenium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Silver Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Sodium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Thallium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Titanium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Uranium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Vanadium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Zinc Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS

AGAT Laboratories

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Chain of Custody Record

Turnaround Time Required (TAT)

Regular TAT 5 to 7 working days [X]
Rush TAT 24 to 48 hours [ ]
48 to 72 hours [ ]
Date Required: _____
Please contact laboratory if Rush is required

Report To:

Company: Franz Environmental
Contact: Amanda Salway
Address: 308 - 1080 Mainland St
Vancouver, BC V6B 2T4
Phone: 604 632-9941 Fax: 604-632-9942
LSD:
Client Project #: 2090-1103

Report Information

1. Name: Amanda Salway
Email: asalway@franzbc.com
2. Name: Viviane Dubois-Côté
Email: vdcote@franzbc.com

Report Format

[ ] Single Sample per page
[X] Multiple Samples per page
[X] Excel Format Included

Laboratory Use Only

Arrival Temperature: 4°
AGAT Job Number: 12V571615

Notes: FEB 3 PM4:29

Invoice To: Same as above Yes [X] No [ ]

Company:
Contact:
Address:
Phone: Fax:
PO/AFE #:

Regulatory Requirements (Check):

[ ] BC CSR – Soil
- [ ] Agricultural
- [ ] Industrial
- [ ] Urban/Park
- [ ] Commercial

[X] BC CSR – Water
- [ ] Drinking Water
- [X] Aquatic Life
- [ ] Irrigation
- [ ] Livestock

[X] CCME
- [ ] Drinking Water
- [ ] Residential/Park
- [ ] Commercial
- [ ] Industrial
- [ ] Drinking Water
- [X] FWAL

Lab ID #	Sample Identification	Sample Matrix	Date/Time Sampled	Comments – Site/Sample Info. Sample Containment	BC CSR BTEX/VPH	BC CSR LEPH/HEPH	BC CSR Metals + CCME metals	VOCs	BC CSR Schedule II	Routine Potability		CCME F1	CCME F2-F4	Chlorinated and non-Chlorinated phenols			Number of Containers	Preserved (Y/N)	Hazardous (Y/N)	Hold for ~~1 YEAR~~ 60 days
3075663	~~3075680~~ BV-11BH-01M	Water	Feb 3, 2012		X	X	X					X	X	X			7			
3095674	BV-11BH-08M					X							X				2			
3095680	~~BV~~ BV-11BH-09M					X	X						X	X			4			
682	MW07-8				X	X						X	X				5			
683	MW07-9				X												3			
684	MW07-7				X	X						X	X				5			

Samples Relinquished by (print name & sign): [signature] Date: Feb 3, 2012
Samples Received by (Print name & sign): AMIEL OCAMPO 3 FEB 2012 Date: 4:29 pm

Samples Relinquished by (print name & sign): Date:
Samples Received by (Print name & sign): Date:

Samples Relinquished by (print name & sign): Date:
Samples Received by (Print name & sign): Date:

Pink Copy - Client
Yellow Copy - AGAT
White Copy - AGAT

Page 1 of 1
NO: 000627

Document ID: DIV-186-0811.001
Date revised: August 24, 2011

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM - BURNABY

Work Order #_____

RECEIVING BASICS:
*Complete CoC as well where required
Date and Time: 3 FEB 2012 4:29 pm
Courier: _____
Received by: AMIEL
Relinquished by: _____
Branch Received From: _____
Company: FRANZ ENV
Consultant: _____
Client left without count verified: _____

COC INFORMATION:
Received: (Yes) No Emailed to PM
Completed in full: (Yes) No If NO, why: _____
TURNAROUND TIME: 5-7 DAYS
COC Numbers: 000627

SAMPLE QUANTITIES:
Coolers: 1 Bottles/Jars: 26 Bags: _____

TIME SENSITIVE ISSUES:
Earliest Date Sampled: 3 FEB 2012
Microbiology: Test: _____
Hydrocarbons: Test: BTEX/VPH & EPH/HEPH
Samples are received >5 days after sampling: Yes (No)

ALREADY EXCEEDED? Yes (No)
Expiry: _____
Expiry: 11 Feb, 2012

SPECIALTY ISSUES:
Legal Samples: Yes No
International Samples: Yes No
**Proper tape/labels applied: Yes No

Hazardous Samples:
Why hazardous: _____
Precaution taken: _____

SAMPLE REQUIREMENTS:
*Complete while logging in by login staff.

Correct bottles used for testing: (Yes) No
If No, explain: _____

Correct amount of sample for analysis: (Yes) No
If No, explain: _____

Are all samples labeled correctly: (Yes) No
If No, explain: _____

NON-CONFORMANCES:
3 temperatures of samples* and average of each cooler: (record differing temperatures on the CoC next to sample ID's)
(1) 5 + 4 + 4 = 4 °C (2) 4 + 3 + 4 = 4 °C (3) ___ + ___ + ___ = ___ °C (4) ___ + ___ + ___ = ___ °C
*Jars used when available

Additional integrity issues (note here and on CoC next to the sample ID):

1) _____
2) _____
3) _____

Account Project Manager: _____ Have they been notified of the above issues: Yes No
Whom spoken to: _____ Date and Time: _____

ADDITIONAL NOTES:

_____

_____

_____

03-Feb-2012

AGAT Laboratories Ltd

InterLab Shipment

Environmental Analysis

Company #: 35733-13
Bin #: FW-12
Date Required: 10-FEB-2012

Company: FRANZ ENVIRONMENTAL

Contact: Amanda Salway

Work Order #: 12V 571615
Branch: Vancouver
Assigned By: Amiel Ocampo
Logged By: Amiel Ocampo

Courier	Date Entered	From	To
Name Loomis	03-FEB-2012	Branch: Vancouver	Branch: Calgary
Waybill NA		CSR:	CSR:
		Shipped by:	Rcvd by:
		Shipped date: 06-FEB-2012	Rcvd date: 00- -0000

Comments: Chloronated/non chloronated phenols x 2
CCME F1-F4 X 3
CCME F2-F4 X 2

All samples sent to Calgary

AGAT Laboratories

Unit 120, 8600 Glenlyon Parkway
Burnaby, British Columbia
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TEL (778)452-4000
FAX (778)452-4074
http://www.agatlabs.com

CLIENT NAME: FRANZ ENVIRONMENTAL
308-108 MAINLAND STREET
VANCOUVER, BC V6B2T4

ATTENTION TO: Amanda Salway

PROJECT NO: 2090-1103

AGAT WORK ORDER: 12V571615

TRACE ORGANICS REVIEWED BY: Craig Stehr, Organics Supervisor

WATER ANALYSIS REVIEWED BY: Marie England, Inorganics Supervisor

DATE REPORTED: Mar 05, 2012

PAGES (INCLUDING COVER): 14

VERSION*: 2

Should you require any information regarding this analysis please contact your client services representative at (778) 452-4000

*NOTES

VERSION 2:Amended to include VH and EPH results as per client.
Version 2 is an amendment to version 1.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

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Certificate of Analysis

AGAT WORK ORDER: 12V571615
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons (BTEX/F1-F4) in Water

DATE SAMPLED: Feb 03, 2012 | DATE RECEIVED: Feb 03, 2012 | DATE REPORTED: Mar 05, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	BV-11BH-01M 3095663	MW07-8 3095682	MW07-7 3095684
Benzene	mg/L	0.37	0.0005	<0.0005	<0.0005	<0.0005
Toluene	mg/L	0.002	0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	mg/L	0.09	0.0005	<0.0005	<0.0005	<0.0005
Xylenes	mg/L		0.0005	<0.0005	<0.0005	<0.0005
C6 - C10 (F1)	mg/L		0.1	<0.1	<0.1	0.1
C6 - C10 (F1 minus BTEX)	mg/L		0.1	<0.1	<0.1	0.1
C>10 - C16	mg/L		0.1	<0.1	<0.1	0.7
C16 - C34	mg/L		0.1	0.1	<0.1	0.1
C>34 - C50	mg/L		0.1	<0.1	<0.1	<0.1
Surrogate	**Unit**	**Acceptable Limits**				
Toluene-d8 (BTEX)	%	50-150		102	99	100
o-Terphenyl (F2-F4)	%	50-150		109	110	112

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL)

3095663-3095684 The C>6 - C10 fraction is calculated using the toluene response factor.
The C10 - C16 fraction is calculated using the average response factor for nC10, nC16 and nC34.
BTEX has NOT been subtracted from Fraction 1.
Sample is blank corrected.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V571615
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons (BTEX/F2-F4) in Water

DATE SAMPLED: Feb 03, 2012 | DATE RECEIVED: Feb 03, 2012 | DATE REPORTED: Mar 05, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	BV-11BH-08M 3095674	BV-11BH-09M 3095680
Benzene	mg/L	0.37	0.0005	<0.0005	<0.0005
Toluene	mg/L	0.002	0.0005	<0.0005	<0.0005
Ethylbenzene	mg/L	0.09	0.0005	<0.0005	0.0009
Xylenes	mg/L		0.0005	<0.0005	0.0048
C>10 - C16	mg/L		0.1	<0.1	<0.1
C16 - C34	mg/L		0.1	<0.1	<0.1
C>34 - C50	mg/L		0.1	<0.1	<0.1
Surrogate	**Unit**	**Acceptable Limits**			
Toluene-d8 (BTEX)	%	50-150		102	101
o-Terphenyl (F2-F4)	%	50-150		108	110

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL)

3095674-3095680 The C>6 - C10 fraction is calculated using the toluene response factor.
The C10 - C16 fraction is calculated using the average response factor for nC10, nC16 and nC34.
BTEX has NOT been subtracted from Fraction 1.
Sample is blank corrected.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V571615
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 03, 2012 | DATE RECEIVED: Feb 03, 2012 | DATE REPORTED: Mar 05, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	BV-11BH-01M 3095663	BV-11BH-08M 3095674	BV-11BH-09M 3095680	MW07-8 3095682	MW07-9 3095683	MW07-7 3095684
Methyl tert-butyl ether (MTBE)	µg/L	34000	1	<1			<1	<1	<1
Styrene	µg/L	720	0.5	<0.5			<0.5	<0.5	<0.5
Benzene	µg/L	4000	0.5					<0.5	
Toluene	µg/L	390	0.5					<0.5	
VPH	µg/L	1500	100	<100			<100	<100	270
Ethylbenzene	µg/L	2000	0.5					<0.5	
VH	µg/L	15000	100	<100			<100	<100	270
m&p-Xylene	µg/L		0.5					<0.5	
Naphthalene	µg/L	10	0.05	<0.05	<0.05	0.49	<0.05		1.08
o-Xylene	µg/L		0.5					<0.5	
Quinoline	µg/L	34	0.1	<0.1	<0.1	<0.1	<0.1		0.2
Acenaphthylene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05		0.06
Acenaphthene	µg/L	60	0.05	3.98	<0.05	<0.05	<0.05		5.43
Fluorene	µg/L	120	0.05	<0.05	<0.05	<0.05	<0.05		3.89
Phenanthrene	µg/L	3	0.05	<0.05	<0.05	<0.05	<0.05		5.65
Anthracene (Water)	µg/L	1	0.05	<0.05	<0.05	<0.05	<0.05		0.27
Acridine	µg/L	0.5	0.05	<0.05	<0.05	<0.05	<0.05		0.40
Fluoranthene	µg/L	2	0.05	<0.05	<0.05	<0.05	<0.05		1.06
Pyrene	µg/L	0.2	0.02	<0.02	<0.02	<0.02	<0.02		0.52
Benzo(a)anthracene	µg/L	1	0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Chrysene	µg/L	1	0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Benzo(b)fluoranthene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Benzo(k)fluoranthene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Benzo(a)pyrene	µg/L	0.1	0.01	<0.01	<0.01	<0.01	<0.01		<0.01
Indeno(1,2,3-cd)pyrene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Dibenzo(a,h)anthracene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Benzo(g,h.i)perylene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05		<0.05
LEPH C10-C19	µg/L	500	100	140	<100	130	<100		860
HEPH C19-C32	µg/L		100	150	<100	140	<100		130
EPH C10-C19	µg/L	5000	100	140	<100	130	<100		860
EPH C19-C32	µg/L		100	150	<100	140	<100		130

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V571615
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 03, 2012 | DATE RECEIVED: Feb 03, 2012 | DATE REPORTED: Mar 05, 2012 | SAMPLE TYPE: Water

Surrogate	Unit	Acceptable Limits	BV-11BH-01M 3095663	BV-11BH-08M 3095674	BV-11BH-09M 3095680	MW07-8 3095682	MW07-9 3095683	MW07-7 3095684
Nitrobenzene - d5	%	50-130	83	94	102	77		NA
Quinoline - d7	%	50-130	94	95	96	93		99
2-Fluorobiphenyl	%	50-130	76	77	76	72		67
P-Terphenyl - d14	%	60-130	94	95	93	95		91
Bromofluorobenzene	%	70-130	93			88	90	89
Dibromofluoromethane	%	70-130	112			106	108	113
Toluene - d8	%	70-130	111			105	106	122

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

3095663 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.

3095674-3095680 LEPH & HEPH results have been corrected for PAH contributions.

3095682 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.

3095683 VPH results have been corrected for BTEX contributions.

3095684 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.
Nitrobenzene-d5 surrogate not available due to sample matrix interference.

Certified By:

AGAT Laboratories

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Burnaby, British Columbia
CANADA V5J 0B6
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Certificate of Analysis

AGAT WORK ORDER: 12V571615
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Phenolic Compounds in Water

DATE SAMPLED: Feb 03, 2012 | DATE RECEIVED: Feb 03, 2012 | DATE REPORTED: Mar 05, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	BV-11BH-01M 3095663	BV-11BH-09M 3095680
Phenol	mg/L		0.002	<0.002	<0.002
4-Nitrophenol	mg/L		0.005	<0.005	<0.005
m&p-Cresol (3&4-methylphenol)	mg/L		0.0005	<0.0005	<0.0005
o-Cresol (2-methylphenol)	mg/L		0.0005	<0.0005	<0.0005
2-Chlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,4-Dinitrophenol	mg/L		0.005	<0.005	<0.005
2-Nitrophenol	mg/L		0.005	<0.005	<0.005
2,4-Dimethylphenol	mg/L		0.0005	<0.0005	<0.0005
2,6-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001
4-Chloro-3-methylphenol	mg/L		0.0005	<0.0005	<0.0005
2,4-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001
4,6-Dinitro-2-methylphenol	mg/L		0.005	<0.005	<0.005
2,3,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,4-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,4,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
3,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,4,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,5,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,4,5-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	mg/L		0.005	<0.005	<0.005
Pentachlorophenol	mg/L		0.0005	<0.0005	<0.0005
Surrogate	**Unit**	**Acceptable Limits**			
2-Fluorophenol	%	50-150		108	110
2,4,6-Tribromophenol	%	50-150		110	110

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
3095663-3095680 Results relate only to the items tested.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V571615
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

British Columbia CSR- Schedule 6 Dissolved Metals

DATE SAMPLED: Feb 03, 2012 | DATE RECEIVED: Feb 03, 2012 | DATE REPORTED: Mar 05, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	BV-11BH-01M 3095663	BV-11BH-09M 3095680
Aluminum Dissolved	µg/L		1	23	7
Antimony Dissolved	µg/L	200	0.05	0.14	0.09
Arsenic Dissolved	µg/L	50	0.1	33.3	28.3
Barium Dissolved	µg/L	10000	0.1	104	234
Beryllium Dissolved	µg/L	53	0.01	0.02	<0.01
Boron Dissolved	µg/L	50000	1	64	243
Cadmium Dissolved	µg/L		0.01	<0.01	0.01
Calcium Dissolved	mg/L		0.05	58.3	145
Chromium Dissolved	µg/L		0.5	4.7	1.5
Cobalt Dissolved	µg/L	40	0.05	1.67	3.96
Copper Dissolved	µg/L		0.2	0.9	0.6
Iron Dissolved	mg/L		0.01	95.3	48.9
Lead Dissolved	µg/L		0.01	0.10	0.15
Lithium Dissolved	µg/L		0.1	3.8	3.6
Magnesium Dissolved	mg/L		0.05	11.4	41.5
Manganese Dissolved	mg/L		0.001	2.54	2.07
Mercury Dissolved	µg/L	1	0.003	<0.003	<0.003
Molybdenum Dissolved	µg/L	10000	0.05	0.63	1.07
Nickel Dissolved	µg/L		0.1	1.7	3.9
Selenium Dissolved	µg/L	10	0.1	<0.1	<0.1
Silver Dissolved	µg/L		0.01	<0.01	<0.01
Sodium Dissolved	mg/L		0.05	8.86	71.8
Thallium Dissolved	µg/L	3	0.002	0.011	0.022
Titanium Dissolved	µg/L	1000	0.1	91.7	178
Uranium Dissolved	µg/L	3000	0.01	0.03	0.30
Vanadium Dissolved	µg/L		0.1	7.7	1.1
Zinc Dissolved	µg/L		1	8	7
Hardness (calc)	mg CaCO3/L		1	193	533

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

Certified By: Marie England

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571615

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis

RPT Date: Mar 05, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Petroleum Hydrocarbons in Water															
Methyl tert-butyl ether (MTBE)	1	3089329	<1	<1	0.0%	< 1	98%	80%	120%				110%	70%	130%
Styrene	1	3089329	<0.5	<0.5	0.0%	< 0.5	100%	80%	120%				108%	70%	130%
VPH	1	3089329	<100	<100	0.0%	< 100									
Naphthalene	1	W-MS	0.09	0.08	11.8%	< 0.05	100%	80%	120%				91%	50%	130%
Quinoline	1	W-MS	<0.1	<0.1	0.0%	< 0.1	100%	80%	120%				84%	50%	130%
Acenaphthylene	1	W-MS	0.07	0.07	0.0%	< 0.05	100%	80%	120%				75%	50%	130%
Acenaphthene	1	W-MS	0.07	0.07	0.0%	< 0.05	100%	80%	120%				77%	50%	130%
Fluorene	1	W-MS	0.08	0.09	11.8%	< 0.05	100%	80%	120%				87%	50%	130%
Phenanthrene	1	W-MS	0.08	0.09	11.8%	< 0.05	97%	80%	120%				84%	60%	130%
Anthracene (Water)	1	W-MS	0.07	0.08	13.3%	< 0.05	102%	80%	120%				75%	60%	130%
Acridine	1	W-MS	0.09	0.10	10.5%	< 0.05	99%	80%	120%				94%	50%	130%
Fluoranthene	1	W-MS	0.08	0.09	11.8%	< 0.05	100%	80%	120%				89%	60%	130%
Pyrene	1	W-MS	0.09	0.10	10.5%	< 0.02	99%	80%	120%				91%	60%	130%
Benzo(a)anthracene	1	W-MS	0.09	0.10	10.5%	< 0.05	100%	80%	120%				92%	60%	130%
Chrysene	1	W-MS	0.09	0.10	10.5%	< 0.05	100%	80%	120%				92%	60%	130%
Benzo(b)fluoranthene	1	W-MS	0.10	0.11	9.5%	< 0.05	99%	80%	120%				108%	60%	130%
Benzo(k)fluoranthene	1	W-MS	0.09	0.1	10.5%	< 0.05	101%	80%	120%				100%	60%	130%
Benzo(a)pyrene	1	W-MS	0.08	0.09	11.8%	< 0.01	101%	80%	120%				86%	60%	130%
Indeno(1,2,3-cd)pyrene	1	W-MS	0.10	0.11	9.5%	< 0.05	99%	80%	120%				103%	60%	130%
Dibenzo(a,h)anthracene	1	W-MS	0.10	0.11	9.5%	< 0.05	99%	80%	120%				103%	60%	130%
Benzo(g,h.i)perylene	1	W-MS	0.10	0.11	9.5%	< 0.05	99%	80%	120%				103%	60%	130%
Nitrobenzene - d5	1	W-MS	79	70	12.1%		98%	80%	120%				80%	50%	130%
Quinoline - d7	1	W-MS	93	87	6.7%		102%	80%	120%				94%	50%	130%
2-Fluorobiphenyl	1	W-MS	79	69	13.5%		101%	80%	120%				79%	50%	130%
P-Terphenyl - d14	1	W-MS	94	95	1.1%		99%	80%	120%				95%	60%	130%
Bromofluorobenzene	1	3089329	96	98	2.0%		103%	70%	130%				114%	70%	130%
Dibromofluoromethane	1	3089329	115	112	3.0%		98%	70%	130%				104%	70%	130%
Toluene - d8	1	3089329	116	114	2.0%		96%	70%	130%				112%	70%	130%
Phenolic Compounds in Water															
Phenol	134	3095657	<0.002	<0.002	NA	< 0.002	86%	80%	120%	94%	70%	130%	93%	60%	140%
4-Nitrophenol	134	3095657	<0.005	<0.005	NA	< 0.005	84%	80%	120%	91%	70%	130%	91%	60%	140%
m&p-Cresol (3&4-methylphenol)	134	3095657	<0.0005	<0.0005	NA	< 0.0005				93%	70%	130%	93%	60%	140%
o-Cresol (2-methylphenol)	134	3095657	<0.0005	<0.0005	NA	< 0.0005				89%	70%	130%	89%	60%	140%
2-Chlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	80%	80%	120%	83%	70%	130%	81%	60%	140%
2,4-Dinitrophenol	134	3095657	<0.005	<0.005	NA	< 0.005	91%	80%	120%	95%	70%	130%	95%	60%	140%
2-Nitrophenol	134	3095657	<0.005	<0.005	NA	< 0.005	95%	80%	120%	91%	70%	130%	102%	60%	140%
2,4-Dimethylphenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	83%	80%	120%	87%	70%	130%	87%	60%	140%
2,6-Dichlorophenol	134	3095657	<0.0001	<0.0001	NA	< 0.0001				89%	70%	130%	92%	60%	140%

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571615

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis (Continued)

RPT Date: Mar 05, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
4-Chloro-3-methylphenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	83%	80%	120%	94%	70%	130%	95%	60%	140%
2,4-Dichlorophenol	134	3095657	<0.0001	<0.0001	NA	< 0.0001	85%	80%	120%	80%	70%	130%	81%	60%	140%
4,6-Dinitro-2-methylphenol	134	3095657	<0.005	<0.005	NA	< 0.005	95%	80%	120%	90%	70%	130%	98%	60%	140%
2,3,6-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				93%	70%	130%	95%	60%	140%
2,3,4-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				89%	70%	130%	93%	60%	140%
2,4,6-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	87%	80%	120%	95%	70%	130%	96%	60%	140%
2,4,5-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				91%	70%	130%	94%	60%	140%
2,3,5-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	97%	60%	140%
3,4,5-Trichlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	94%	60%	140%
2,3,4,6-Tetrachlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				101%	70%	130%	101%	60%	140%
2,3,5,6-Tetrachlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				101%	70%	130%	101%	60%	140%
2,3,4,5-Tetrachlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005				99%	70%	130%	100%	60%	140%
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	134	3095657	<0.005	<0.005	NA	< 0.005				97%	70%	130%	94%	60%	140%
Pentachlorophenol	134	3095657	<0.0005	<0.0005	NA	< 0.0005	90%	80%	120%	98%	70%	130%	107%	60%	140%
Petroleum Hydrocarbons (BTEX/F1-F4) in Water															
Benzene	385	3095663	<0.0005	<0.0005	NA	< 0.0005	100%	80%	120%	99%	80%	120%	85%	70%	130%
Toluene	385	3095663	<0.0005	<0.0005	NA	< 0.0005	105%	80%	120%	104%	80%	120%	90%	70%	130%
Ethylbenzene	385	3095663	<0.0005	<0.0005	NA	< 0.0005	108%	80%	120%	109%	80%	120%	93%	70%	130%
Xylenes	385	3095663	<0.0005	<0.0005	NA	< 0.0005	108%	80%	120%	108%	80%	120%	94%	70%	130%
C6 - C10 (F1)	385	3095663	<0.1	<0.1	NA	< 0.1	101%	80%	120%	107%	80%	120%	90%	70%	130%
C>10 - C16	28	3095674	<0.1	<0.1	NA	< 0.1	98%	80%	120%	91%	80%	120%	101%	70%	130%
C16 - C34	28	3095674	<0.1	<0.1	NA	< 0.1	98%	80%	120%	106%	80%	120%	101%	70%	130%
Petroleum Hydrocarbons (BTEX/F2-F4) in Water															
Benzene	387	3095680	< 0.0005	< 0.0005	NA	< 0.0005	100%	80%	120%	96%	80%	120%	93%	70%	130%
Toluene	387	3095680	< 0.0005	< 0.0005	NA	< 0.0005	100%	80%	120%	96%	80%	120%	97%	70%	130%
Ethylbenzene	387	3095680	0.0009	0.0009	0.0%	< 0.0005	104%	80%	120%	97%	80%	120%	103%	70%	130%
Xylenes	387	3095680	0.0048	0.0047	2.1%	< 0.0005	102%	80%	120%	97%	80%	120%	101%	70%	130%

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571615

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Water Analysis

RPT Date: Mar 05, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
British Columbia CSR- Schedule 6 Dissolved Metals															
Aluminum Dissolved	20120	3095663	23	22	4.4%	< 1	108%	90%	110%	111%	85%	115%			
Antimony Dissolved	20120	3095663	0.14	0.13	7.0%	< 0.05	100%	90%	110%	101%	85%	110%			
Arsenic Dissolved	20120	3095663	33.3	32.9	1.0%	< 0.1	99%	90%	110%	105%	90%	110%			
Barium Dissolved	20120	3095663	104	107	3.0%	< 0.1	101%	90%	110%	101%	90%	110%			
Beryllium Dissolved	20120	3095663	0.01	<0.01	0.0%	< 0.01	90%	90%	110%	102%	90%	110%			
Boron Dissolved	20120	3095663	64	63	2.0%	< 1	99%	90%	110%	112%	80%	120%			
Cadmium Dissolved	20120	3095663	<0.01	<0.01	0.0%	< 0.01	98%	90%	110%	101%	90%	110%			
Calcium Dissolved	20120	3095663	58.3	57.7	1.0%	< 0.05	99%	90%	110%	103%	90%	110%			
Chromium Dissolved	20120	3095663	4.7	4.7	0.0%	< 0.5	101%	90%	110%	97%	90%	110%			
Cobalt Dissolved	20120	3095663	1.67	1.59	5.0%	< 0.05	100%	90%	110%	105%	90%	110%			
Copper Dissolved	20120	3095663	0.9	0.8	12.0%	< 0.2	101%	90%	110%	105%	90%	110%			
Iron Dissolved	20120	3095663	95.3	94.8	1.0%	< 0.01	104%	90%	110%	105%	90%	110%			
Lead Dissolved	20120	3095663	0.10	0.12	18.2%	< 0.01	99%	90%	110%	101%	90%	110%			
Lithium Dissolved	20120	3095663	3.8	3.8	0.0%	< 0.1				104%	90%	110%			
Magnesium Dissolved	20120	3095663	11.4	11.3	1.0%	< 0.05	104%	90%	110%	108%	90%	110%			
Manganese Dissolved	20120	3095663	2.54	2.51	1.0%	< 0.001	103%	90%	110%	104%	90%	110%			
Mercury Dissolved	20120	3095663	<0.003	<0.003	0.0%	< 0.003	95%	90%	110%	100%	90%	110%			
Molybdenum Dissolved	20120	3095663	0.63	0.62	2.0%	< 0.05	96%	90%	110%	103%	90%	110%			
Nickel Dissolved	20120	3095663	1.7	1.6	6.0%	< 0.1	96%	90%	110%	103%	90%	110%			
Selenium Dissolved	20120	3095663	<0.1	<0.1	0.0%	< 0.1	99%	90%	110%	101%	85%	115%			
Silver Dissolved	20120	3095663	<0.01	<0.01	0.0%	< 0.01				104%	90%	110%			
Sodium Dissolved	20120	3095663	8.86	8.78	1.0%	< 0.05	101%	90%	110%	107%	90%	110%			
Thallium Dissolved	20120	3095663	0.011	0.005	NA	< 0.002	92%	90%	110%	98%	90%	110%			
Titanium Dissolved	20120	3095663	91.7	90.7	1.0%	< 0.1				101%	90%	110%			
Uranium Dissolved	20120	3095663	0.03	0.03	0.0%	< 0.01		90%	110%	100%	90%	110%			
Vanadium Dissolved	20120	3095663	7.7	7.6	1.0%	< 0.1	101%	90%	110%	97%	90%	110%			
Zinc Dissolved	20120	3095663	8	7	13.3%	< 1	100%	90%	110%	102%	85%	115%			

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571615

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Benzene	TO 0540	EPA SW846 8260	GC/MS
Toluene	TO 0540	EPA SW846 8260	GC/MS
Ethylbenzene	TO 0540	EPA SW846 8260	GC/MS
Xylenes	TO 0540	EPA SW846 8260	GC/MS
C6 - C10 (F1)	TO 0540	CCME Tier 1 Method	GC/FID
C6 - C10 (F1 minus BTEX)	TO 0540	CCME Tier 1 Method	GC/FID
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
C16 - C34	TO 0511	CCME Tier 1 Method	GC/FID
C>34 - C50	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO 0340	EPA SW846 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
Benzene	TO 0540	EPA SW846 8260	GC/MS
Toluene	TO 0540	EPA SW846 8260	GC/MS
Ethylbenzene	TO 0540	EPA SW846 8260	GC/MS
Xylenes	TO 0540	EPA SW846 8260	GC/MS
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
C16 - C34	TO 0511	CCME Tier 1 Method	GC/FID
C>34 - C50	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO 0340	EPA SW846 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
Naphthalene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Quinoline	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Methyl tert-butyl ether (MTBE)	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Methyl tert-butyl ether (MTBE)	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Acenaphthylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzene	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Acenaphthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Toluene	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Fluorene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Ethylbenzene	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Phenanthrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
m&p-Xylene	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Anthracene (Water)	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
o-Xylene	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Acridine	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Styrene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571615

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Styrene	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
VPH	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
VPH	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
VH	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Benzo(a)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Bromofluorobenzene	ORG-180-5130	modified from BC MOE Lab Manual Section D	GC/MS
Chrysene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Dibromofluoromethane	ORG-180-5130	modified from BC MOE Lab Manual Section D	GC/MS
Benzo(b)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Toluene - d8	ORG-180-5130	modified from BC MOE Lab Manual Section D	GC/MS
Benzo(k)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Dibenzo(a,h)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(g,h.i)perylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Nitrobenzene - d5	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
Quinoline - d7	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
2-Fluorobiphenyl	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
P-Terphenyl - d14	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
LEPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
HEPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
EPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
EPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
Bromofluorobenzene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Dibromofluoromethane	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Toluene - d8	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS

Unit 120, 8600 Glenlyon Parkway
Burnaby, British Columbia
CANADA V5J 0B6
TEL (778)452-4000
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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571615

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Phenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
m&p-Cresol (3&4-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
o-Cresol (2-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
2-Chlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dinitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dimethylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,6-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Chloro-3-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4,6-Dinitro-2-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
3,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,5-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
Dinoseb (2-sec-butyl-4,6-dinitrophenol)	TO 1200	EPA SW-846 8321	HPLC/UV
Pentachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Fluorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Tribromophenol	TO 1200	EPA SW-846 8321	HPLC/UV

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V571615

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Aluminum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Antimony Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Arsenic Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Barium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Beryllium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Boron Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cadmium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Calcium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Chromium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cobalt Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Copper Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Iron Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Lead Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Lithium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Magnesium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Manganese Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Mercury Dissolved	MET-181-6103, LAB-181-4015	Modified from EPA 245.7	CV/AA
Molybdenum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Nickel Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Selenium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Silver Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Sodium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Thallium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Titanium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Uranium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Vanadium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Zinc Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS

AGAT Laboratories

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Chain of Custody Record

Turnaround Time Required (TAT)

Regular TAT 5 to 7 working days [X]
Rush TAT 24 to 48 hours [ ]
48 to 72 hours [ ]
Date Required: _____
Please contact laboratory if Rush is required

Report To:

Company: Franz Environmental
Contact: Amanda Salway
Address: 308 - 1080 Mainland St
Vancouver, BC V6B 2T4
Phone: 604 632-9941 Fax: 604-632-9942
LSD:
Client Project #: 2090-1103

Report Information

1. Name: Amanda Salway
Email: asalway@franzbc.com
2. Name: Viviane Dubois-Côté
Email: vdcote@franzbc.com

Report Format

[ ] Single Sample per page
[X] Multiple Samples per page
[X] Excel Format Included

Laboratory Use Only

Arrival Temperature: 4°
AGAT Job Number: 12V571615

Notes: FEB 3 PM4:29

Invoice To: Same as above Yes [X] No [ ]

Company:
Contact:
Address:
Phone: Fax:
PO/AFE #:

Regulatory Requirements (Check):

[ ] BC CSR – Soil
- [ ] Agricultural
- [ ] Industrial
- [ ] Urban/Park
- [ ] Commercial

[X] BC CSR – Water
- [ ] Drinking Water
- [X] Aquatic Life
- [ ] Irrigation
- [ ] Livestock

[X] CCME
- [ ] Drinking Water
- [ ] Residential/Park
- [ ] Commercial
- [ ] Industrial
- [ ] Drinking Water
- [X] FWAL

Lab ID #	Sample Identification	Sample Matrix	Date/Time Sampled	Comments – Site/Sample Info. Sample Containment	BC CSR BTEX/VPH	BC CSR LEPH/HEPH	BC CSR Metals + CCME metals	VOCs	BC CSR Schedule II	Routine Potability		CCME F1	CCME F2-F4	Chlorinated and non-Chlorinated phenols			Number of Containers	Preserved (Y/N)	Hazardous (Y/N)	Hold for ~~1 YEAR~~ 60 days
3075663	~~3075680~~ BV-11BH-01M	Water	Feb 3, 2012		X	X	X					X	X	X			7			
3095674	BV-11BH-08M					X							X				2			
3095680	~~BV~~ BV-11BH-09M					X	X						X	X			4			
682	MW07-8				X	X						X	X				5			
683	MW07-9				X												3			
684	MW07-7				X	X						X	X				5			

Samples Relinquished by (print name & sign): [signature] Date: Feb 3, 2012
Samples Received by (Print name & sign): AMIEL OCAMPO 3 FEB 2012 Date: 4:29 pm

Samples Relinquished by (print name & sign): Date:
Samples Received by (Print name & sign): Date:

Samples Relinquished by (print name & sign): Date:
Samples Received by (Print name & sign): Date:

Pink Copy - Client
Yellow Copy - AGAT
White Copy - AGAT

Page 1 of 1
NO: 000627

Document ID: DIV-186-0811.001
Date revised: August 24, 2011

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM - BURNABY

Work Order #_____

RECEIVING BASICS:
*Complete CoC as well where required
Date and Time: 3 FEB 2012 4:29 pm
Courier: _____
Received by: AMIEL
Relinquished by: _____
Branch Received From: _____
Company: FRANZ ENV
Consultant: _____
Client left without count verified: _____

COC INFORMATION:
Received: (Yes) No Emailed to PM
Completed in full: (Yes) No If NO, why: _____
TURNAROUND TIME: 5-7 DAYS
COC Numbers: 000627

SAMPLE QUANTITIES:
Coolers: 1 Bottles/Jars: 26 Bags: _____

TIME SENSITIVE ISSUES:
Earliest Date Sampled: 3 FEB 2012
Microbiology: Test: _____
Hydrocarbons: Test: BTEX/VPH & EPH/HEPH
Samples are received >5 days after sampling: Yes (No)

ALREADY EXCEEDED? Yes (No)
Expiry: _____
Expiry: 11 Feb, 2012

SPECIALTY ISSUES:
Legal Samples: Yes No
International Samples: Yes No
**Proper tape/labels applied: Yes No

Hazardous Samples:
Why hazardous: _____
Precaution taken: _____

SAMPLE REQUIREMENTS:
*Complete while logging in by login staff.

Correct bottles used for testing: (Yes) No
If No, explain: _____

Correct amount of sample for analysis: (Yes) No
If No, explain: _____

Are all samples labeled correctly: (Yes) No
If No, explain: _____

NON-CONFORMANCES:
3 temperatures of samples* and average of each cooler: (record differing temperatures on the CoC next to sample ID's)
(1) 5 + 4 + 4 = 4 °C (2) 4 + 3 + 4 = 4 °C (3) ___ + ___ + ___ = ___ °C (4) ___ + ___ + ___ = ___ °C
*Jars used when available

Additional integrity issues (note here and on CoC next to the sample ID):

1) _____
2) _____
3) _____

Account Project Manager: _____ Have they been notified of the above issues: Yes No
Whom spoken to: _____ Date and Time: _____

ADDITIONAL NOTES:

_____

_____

_____

AGAT Laboratories

Unit 120, 8600 Glenlyon Parkway
Burnaby, British Columbia
CANADA V5J 0B6
TEL (778)452-4000
FAX (778)452-4074
http://www.agatlabs.com

CLIENT NAME: FRANZ ENVIRONMENTAL
308-108 MAINLAND STREET
VANCOUVER, BC V6B2T4

ATTENTION TO: Amanda Salway

PROJECT NO: 2090-1103

AGAT WORK ORDER: 12V572231

TRACE ORGANICS REVIEWED BY: Larissa Poryadina, Senior Analyst

WATER ANALYSIS REVIEWED BY: Marie England, Inorganics Supervisor

DATE REPORTED: Feb 14, 2012

PAGES (INCLUDING COVER): 20

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (778) 452-4000

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V572231
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons (BTEX/F1-F4) in Water

DATE SAMPLED: Feb 06, 2012 | DATE RECEIVED: Feb 06, 2012 | DATE REPORTED: Feb 14, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-02M 3100893	MV-11BH-03M 3100904
Benzene	mg/L	0.37	0.0005	<0.0005	<0.0005
Toluene	mg/L	0.002	0.0005	<0.0005	<0.0005
Ethylbenzene	mg/L	0.09	0.0005	<0.0005	<0.0005
Xylenes	mg/L		0.0005	<0.0005	<0.0005
C6 - C10 (F1)	mg/L		0.1	<0.1	<0.1
C6 - C10 (F1 minus BTEX)	mg/L		0.1	<0.1	<0.1
C>10 - C16	mg/L		0.1	<0.1	<0.1
C16 - C34	mg/L		0.1	<0.1	<0.1
C>34 - C50	mg/L		0.1	<0.1	<0.1
Surrogate	**Unit**	**Acceptable Limits**			
Toluene-d8 (BTEX)	%	50-150		118	108
o-Terphenyl (F2-F4)	%	50-150		110	109

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL)

3100893-3100904 The C>6 - C10 fraction is calculated using the toluene response factor.
The C10 - C16 fraction is calculated using the average response factor for nC10, nC16 and nC34.
BTEX has NOT been subtracted from Fraction 1.
Sample is blank corrected.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V572231
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 06, 2012 | DATE RECEIVED: Feb 06, 2012 | DATE REPORTED: Feb 14, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-02M 3100893	MV-11BH-03M 3100904	MV-11BH-07M 3100913
Methyl tert-butyl ether (MTBE)	µg/L	34000	1	<1	<1	
Styrene	µg/L	720	0.5	<0.5	<0.5	
VPH	µg/L	1500	100	<100	<100	
Naphthalene	µg/L	10	0.05	<0.05	<0.05	<0.05
Quinoline	µg/L	34	0.1	<0.1	<0.1	<0.1
Acenaphthylene	µg/L		0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/L	60	0.05	<0.05	<0.05	<0.05
Fluorene	µg/L	120	0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/L	3	0.05	<0.05	<0.05	<0.05
Anthracene (Water)	µg/L	1	0.05	<0.05	<0.05	<0.05
Acridine	µg/L	0.5	0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/L	2	0.05	<0.05	<0.05	<0.05
Pyrene	µg/L	0.2	0.02	<0.02	<0.02	<0.02
Benzo(a)anthracene	µg/L	1	0.05	<0.05	<0.05	<0.05
Chrysene	µg/L	1	0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/L		0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/L		0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.1	0.01	<0.01	<0.01	0.01
Indeno(1,2,3-cd)pyrene	µg/L		0.05	<0.05	<0.05	<0.05
Dibenzo(a,h)anthracene	µg/L		0.05	<0.05	<0.05	<0.05
Benzo(g,h.i)perylene	µg/L		0.05	<0.05	<0.05	<0.05
LEPH C10-C19	µg/L	500	100	<100	<100	160
HEPH C19-C32	µg/L		100	<100	<100	580
Surrogate	**Unit**	**Acceptable Limits**				
Nitrobenzene - d5	%	50-130		75	82	109
Quinoline - d7	%	50-130		89	97	96
2-Fluorobiphenyl	%	50-130		68	70	69
P-Terphenyl - d14	%	60-130		95	89	108
Bromofluorobenzene	%	70-130		97	95	
Dibromofluoromethane	%	70-130		102	101	
Toluene - d8	%	70-130		111	106	

Certified By:

AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 12V572231

PROJECT NO: 2090-1103

Unit 120, 8600 Glenlyon Parkway
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http://www.agatlabs.com

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 06, 2012 | DATE RECEIVED: Feb 06, 2012 | DATE REPORTED: Feb 14, 2012 | SAMPLE TYPE: Water

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

3100893-3100904 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.

3100913 LEPH & HEPH results have been corrected for PAH contributions.

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 12V572231
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Phenolic Compounds in Water

DATE SAMPLED: Feb 06, 2012 | DATE RECEIVED: Feb 06, 2012 | DATE REPORTED: Feb 14, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-02M 3100893	MV-11BH-03M 3100904
Phenol	mg/L		0.002	<0.002	<0.002
4-Nitrophenol	mg/L		0.005	<0.005	<0.005
m&p-Cresol (3&4-methylphenol)	mg/L		0.0005	<0.0005	<0.0005
o-Cresol (2-methylphenol)	mg/L		0.0005	<0.0005	<0.0005
2-Chlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,4-Dinitrophenol	mg/L		0.005	<0.005	<0.005
2-Nitrophenol	mg/L		0.005	<0.005	<0.005
2,4-Dimethylphenol	mg/L		0.0005	<0.0005	<0.0005
2,6-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001
4-Chloro-3-methylphenol	mg/L		0.0005	<0.0005	<0.0005
2,4-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001
4,6-Dinitro-2-methylphenol	mg/L		0.005	<0.005	<0.005
2,3,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,4-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,4,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
3,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,4,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,5,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,4,5-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	mg/L		0.005	<0.005	<0.005
Pentachlorophenol	mg/L		0.0005	<0.0005	<0.0005
Surrogate	Unit	Acceptable Limits			
2-Fluorophenol	%	50-150		110	109
2,4,6-Tribromophenol	%	50-150		110	109

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
3100893-3100904 Results relate only to the items tested.

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 12V572231
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Volatile Organic Compounds in Water

DATE SAMPLED: Feb 06, 2012 | DATE RECEIVED: Feb 06, 2012 | DATE REPORTED: Feb 14, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-02M 3100893	MV-11BH-03M 3100904	MV-GWDUP2 3100910
Chloromethane	µg/L		1	<1	<1	<1
Vinyl Chloride	µg/L		1	<1	<1	<1
Bromomethane	µg/L		1	<1	<1	<1
Chloroethane	µg/L		1	<1	<1	<1
Trichlorofluoromethane	µg/L		1	<1	<1	<1
Acetone	µg/L		10	<10	<10	<10
1,1-Dichloroethene	µg/L		1	<1	<1	<1
Dichloromethane	µg/L	980	1	<1	<1	<1
2-Butanone (MEK)	µg/L		10	<10	<10	<10
Methyl tert-butyl ether (MTBE)	µg/L	34000	1			<1
trans-1,2-Dichloroethylene	µg/L		1	<1	<1	<1
1,1-Dichloroethane	µg/L		1	<1	<1	<1
cis-1,2-Dichloroethylene	µg/L		1	<1	<1	<1
Chloroform	µg/L	20	1	<1	<1	<1
1,2-Dichloroethane	µg/L	1000	1	<1	<1	<1
1,1,1-Trichloroethane	µg/L		1	<1	<1	<1
Carbon Tetrachloride	µg/L	130	0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	µg/L		1	<1	<1	<1
Trichloroethene	µg/L	200	1	<1	<1	<1
Benzene	µg/L		0.5			<0.5
Bromodichloromethane	µg/L		1	<1	<1	<1
trans-1,3-Dichloropropene	µg/L		1	<1	<1	<1
4-Methyl-2-pentanone (MIBK)	µg/L		10	<10	<10	<10
cis-1,3-Dichloropropene	µg/L		1	<1	<1	<1
1,1,2-Trichloroethane	µg/L		1	<1	<1	<1
Dibromochloromethane	µg/L		1	<1	<1	<1
Ethylene Dibromide	µg/L		0.3	<0.3	<0.3	<0.3
Tetrachloroethene	µg/L	1100	1	<1	<1	<1
Toluene	µg/L		0.5			<0.5
1,1,1,2-Tetrachloroethane	µg/L		1	<1	<1	<1
Chlorobenzene	µg/L	13	1	<1	<1	<1
Bromoform	µg/L		1	<1	<1	<1
1,1,2,2-Tetrachloroethane	µg/L		1	<1	<1	<1

Certified By:

AGAT Laboratories

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Burnaby, British Columbia
CANADA V5J 0B6
TEL (778)452-4000
FAX (778)452-4074
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Certificate of Analysis

AGAT WORK ORDER: 12V572231
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Volatile Organic Compounds in Water

DATE SAMPLED: Feb 06, 2012 | DATE RECEIVED: Feb 06, 2012 | DATE REPORTED: Feb 14, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-02M 3100893	MV-11BH-03M 3100904	MV-GWDUP2 3100910
1,3-Dichlorobenzene	µg/L	1500	0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	µg/L	260	0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	2000	0.5			<0.5
m&p-Xylene	µg/L		0.5			<0.5
1,2-Dichlorobenzene	µg/L	7	1	<1	<1	<1
1,2,4-Trichlorobenzene	µg/L	240	1	<1	<1	<1
Styrene	µg/L	720	0.5			<0.5
o-Xylene	µg/L		0.5			<0.5
Surrogate	**Unit**	**Acceptable Limits**				
Bromofluorobenzene	%	70-130		97	95	103
Dibromofluoromethane	%	70-130		102	101	109
Toluene - d8	%	70-130		111	106	118

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V572231
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

British Columbia CSR- Schedule 6 Dissolved Metals

DATE SAMPLED: Feb 06, 2012 | DATE RECEIVED: Feb 06, 2012 | DATE REPORTED: Feb 14, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-02M 3100893	MV-11BH-03M 3100904	2-BH17 3100912	MV-11BH-07M 3100913
Aluminum Dissolved	µg/L		1	3	66	12	26
Antimony Dissolved	µg/L		0.05	<0.05	0.09	0.24	0.12
Arsenic Dissolved	µg/L	5	0.1	21.8	4.4	0.8	9.4
Barium Dissolved	µg/L		0.1	101	108	134	187
Beryllium Dissolved	µg/L		0.01	<0.01	0.01	<0.01	0.02
Boron Dissolved	µg/L		1	58	52	198	73
Cadmium Dissolved	µg/L	0.017	0.01	0.01	0.02	0.01	0.24
Calcium Dissolved	mg/L		0.05	142	77.8	189	59.2
Chromium Dissolved	µg/L		0.5	4.8	25.0	1.1	2.5
Cobalt Dissolved	µg/L		0.05	0.29	2.59	0.19	25.7
Copper Dissolved	µg/L		0.2	0.3	0.4	0.3	1.0
Iron Dissolved	mg/L	0.3	0.01	53.3	34.6	21.7	23.3
Lead Dissolved	µg/L		0.01	0.16	0.22	0.15	0.21
Lithium Dissolved	µg/L		0.1	2.8	0.6	6.6	6.6
Magnesium Dissolved	mg/L		0.05	25.3	11.4	19.9	7.83
Manganese Dissolved	mg/L		0.001	3.16	1.80	1.41	3.33
Mercury Dissolved	µg/L	0.026	0.003	<0.003	0.003	<0.003	<0.003
Molybdenum Dissolved	µg/L	73	0.05	0.49	0.35	1.49	30.5
Nickel Dissolved	µg/L		0.1	1.2	4.3	1.0	29.2
Selenium Dissolved	µg/L	1	0.1	<0.1	0.2	0.3	0.2
Silver Dissolved	µg/L	0.1	0.01	<0.01	<0.01	<0.01	<0.01
Sodium Dissolved	mg/L		0.05	7.96	7.98	25.5	89.4
Thallium Dissolved	µg/L	0.8	0.002	0.016	0.017	0.014	0.159
Titanium Dissolved	µg/L		0.1	162	102	237	74.0
Uranium Dissolved	µg/L		0.01	0.04	0.20	0.19	3.59
Vanadium Dissolved	µg/L		0.1	0.7	2.8	1.1	2.3
Zinc Dissolved	µg/L	30	1	5	15	7	11
Hardness (calc)	mg CaCO3/L		1	459	241	554	180

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL) (Van)

Certified By: Marie England

AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 12V572231

PROJECT NO: 2090-1103

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CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Routine Water Analysis

DATE SAMPLED: Feb 06, 2012 | DATE RECEIVED: Feb 06, 2012 | DATE REPORTED: Feb 14, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-02M 3100893	MV-11BH-03M 3100904	MV-GWDUP2 3100910
Chloride	mg/L	1500	0.05	22.0	8.86	8.96
Sodium Dissolved	mg/L		0.05			8.50

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

Certified By: Marie England

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Certificate of Analysis

AGAT WORK ORDER: 12V572231
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Water Analysis - Sulphide

DATE SAMPLED: Feb 06, 2012 | DATE RECEIVED: Feb 06, 2012 | DATE REPORTED: Feb 14, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-02M 3100893	MV-11BH-03M 3100904
Sulphide	mg/L		0.1	<0.1	<0.1

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V572231

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis

RPT Date: Feb 14, 2012

PARAMETER	Batch	Sample Id	DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
			Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Petroleum Hydrocarbons in Water															
Methyl tert-butyl ether (MTBE)	1	3103286	<1	<1	0.0%	< 1	97%	80%	120%				NA	70%	130%
Styrene	1	3103286	<0.5	<0.5	0.0%	< 0.5	100%	80%	120%				112%	70%	130%
VPH	1	3103286	<100	<100	0.0%	< 100									
Naphthalene	1	W-MS	0.09	0.08	12.0%	< 0.05	100%	80%	120%				91%	50%	130%
Quinoline	1	W-MS	<0.1	<0.1	0.0%	< 0.1	100%	80%	120%				84%	50%	130%
Acenaphthylene	1	W-MS	0.07	0.07	0.0%	< 0.05	100%	80%	120%				75%	50%	130%
Acenaphthene	1	W-MS	0.07	0.07	0.0%	< 0.05	100%	80%	120%				77%	50%	130%
Fluorene	1	W-MS	0.08	0.09	12.0%	< 0.05	100%	80%	120%				87%	50%	130%
Phenanthrene	1	W-MS	0.08	0.09	12.0%	< 0.05	97%	80%	120%				84%	60%	130%
Anthracene (Water)	1	W-MS	0.07	0.08	13.0%	< 0.05	102%	80%	120%				75%	60%	130%
Acridine	1	W-MS	0.09	0.10	11.0%	< 0.05	99%	80%	120%				94%	50%	130%
Fluoranthene	1	W-MS	0.08	0.09	12.0%	< 0.05	100%	80%	120%				89%	60%	130%
Pyrene	1	W-MS	0.09	0.10	11.0%	< 0.02	99%	80%	120%				91%	60%	130%
Benzo(a)anthracene	1	W-MS	0.09	0.10	11.0%	< 0.05	100%	80%	120%				92%	60%	130%
Chrysene	1	W-MS	0.09	0.10	10.5%	< 0.05	100%	80%	120%				92%	60%	130%
Benzo(b)fluoranthene	1	W-MS	0.10	0.11	9.5%	< 0.05	99%	80%	120%				108%	60%	130%
Benzo(k)fluoranthene	1	W-MS	0.09	0.10	11.0%	< 0.05	101%	80%	120%				100%	60%	130%
Benzo(a)pyrene	1	W-MS	0.08	0.09	12.0%	< 0.01	101%	80%	120%				86%	60%	130%
Indeno(1,2,3-cd)pyrene	1	W-MS	0.10	0.11	9.5%	< 0.05	99%	80%	120%				103%	60%	130%
Dibenzo(a,h)anthracene	1	W-MS	0.10	0.11	9.5%	< 0.05	99%	80%	120%				103%	60%	130%
Benzo(g,h.i)perylene	1	W-MS	0.10	0.11	9.5%	< 0.05	99%	80%	120%				103%	60%	130%
Nitrobenzene - d5	1	W-MS	79	70	12.0%		98%	80%	120%				80%	50%	130%
Quinoline - d7	1	W-MS	93	87	7.0%		102%	80%	120%				94%	50%	130%
2-Fluorobiphenyl	1	W-MS	79	69	14.0%		101%	80%	120%				79%	50%	130%
P-Terphenyl - d14	1	W-MS	94	95	1.0%		99%	80%	120%				95%	60%	130%
Bromofluorobenzene	1	3103286	106	102	4.0%		96%	70%	130%				117%	70%	130%
Dibromofluoromethane	1	3103286	112	107	5.0%		100%	70%	130%				124%	70%	130%
Toluene - d8	1	3103286	120	113	6.0%		92%	70%	130%				125%	70%	130%
Volatile Organic Compounds in Water															
Chloromethane	1	3103286	<1	<1	0.0%	< 1	93%	80%	120%				74%	70%	130%
Vinyl Chloride	1	3103286	<1	<1	0.0%	< 1	95%	80%	120%				76%	70%	130%
Bromomethane	1	3103286	<1	<1	0.0%	< 1	94%	80%	120%				83%	70%	130%
Chloroethane	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				95%	70%	130%
Trichlorofluoromethane	1	3103286	<1	<1	0.0%	< 1	97%	80%	120%				83%	70%	130%
Acetone	1	3103286	<10	<10	0.0%	< 10	94%	80%	120%				NA	70%	130%
1,1-Dichloroethene	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				100%	70%	130%
Dichloromethane	1	3103286	<1	<1	0.0%	< 1	92%	80%	120%				94%	70%	130%
2-Butanone (MEK)	1	3103286	<10	<10	0.0%	< 10	95%	80%	120%				NA	70%	130%

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL
AGAT WORK ORDER: 12V572231
PROJECT NO: 2090-1103
ATTENTION TO: Amanda Salway

Trace Organics Analysis (Continued)

RPT Date: Feb 14, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
trans-1,2-Dichloroethylene	1	3103286	<1	<1	0.0%	< 1	99%	80%	120%				109%	70%	130%
1,1-Dichloroethane	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				114%	70%	130%
cis-1,2-Dichloroethylene	1	3103286	<1	<1	0.0%	< 1	99%	80%	120%				113%	70%	130%
Chloroform	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				115%	70%	130%
1,2-Dichloroethane	1	3103286	<1	<1	0.0%	< 1	97%	80%	120%				111%	70%	130%
1,1,1-Trichloroethane	1	3103286	<1	<1	0.0%	< 1	100%	80%	120%				108%	70%	130%
Carbon Tetrachloride	1	3103286	<0.5	<0.5	0.0%	< 0.5	100%	80%	120%				105%	70%	130%
1,2-Dichloropropane	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				115%	70%	130%
Trichloroethene	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				112%	70%	130%
Bromodichloromethane	1	3103286	<1	<1	0.0%	< 1	101%	80%	120%				112%	70%	130%
trans-1,3-Dichloropropene	1	3103286	<1	<1	0.0%	< 1	102%	80%	120%				108%	70%	130%
4-Methyl-2-pentanone (MIBK)	1	3103286	<10	<10	0.0%	< 10	99%	80%	120%				NA	70%	130%
cis-1,3-Dichloropropene	1	3103286	<1	<1	0.0%	< 1	101%	80%	120%				109%	70%	130%
1,1,2-Trichloroethane	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				110%	70%	130%
Dibromochloromethane	1	3103286	<1	<1	0.0%	< 1	101%	80%	120%				110%	70%	130%
Ethylene Dibromide	1	3103286	<0.3	<0.3	0.0%	< 0.3	98%	80%	120%				110%	70%	130%
Tetrachloroethene	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				85%	70%	130%
1,1,1,2-Tetrachloroethane	1	3103286	<1	<1	0.0%	< 1	101%	80%	120%				113%	70%	130%
Chlorobenzene	1	3103286	<1	<1	0.0%	< 1	97%	80%	120%				109%	70%	130%
Bromoform	1	3103286	<1	<1	0.0%	< 1	100%	80%	120%				102%	70%	130%
1,1,2,2-Tetrachloroethane	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				103%	70%	130%
1,3-Dichlorobenzene	1	3103286	<0.5	<0.5	0.0%	< 0.5	98%	80%	120%				108%	70%	130%
1,4-Dichlorobenzene	1	3103286	<0.5	<0.5	0.0%	< 0.5	96%	80%	120%				106%	70%	130%
1,2-Dichlorobenzene	1	3103286	<1	<1	0.0%	< 1	97%	80%	120%				108%	70%	130%
1,2,4-Trichlorobenzene	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				104%	70%	130%
Bromofluorobenzene	1	3103286	106	102	4.0%		96%	80%	120%				117%	70%	130%
Dibromofluoromethane	1	3103286	112	107	5.0%		100%	80%	120%				124%	70%	130%
Toluene - d8	1	3103286	120	113	6.0%		92%	80%	120%				125%	70%	130%
Petroleum Hydrocarbons (BTEX/F1-F4) in Water															
Benzene	3466	3103238	<0.0005	<0.0005	NA	< 0.0005	109%	80%	120%	102%	80%	120%	112%	70%	130%
Toluene	3466	3103238	0.0014	0.0014	0.0%	< 0.0005	107%	80%	120%	99%	80%	120%	106%	70%	130%
Ethylbenzene	3466	3103238	<0.0005	<0.0005	NA	< 0.0005	97%	80%	120%	94%	80%	120%	93%	70%	130%
Xylenes	3466	3103238	<0.0005	<0.0005	NA	< 0.0005	105%	80%	120%	108%	80%	120%	103%	70%	130%
C6 - C10 (F1)	3466	3103238	<0.1	<0.1	NA	< 0.1	91%	80%	120%	104%	80%	120%	98%	70%	130%
C>10 - C16	27	3103244	0.1	0.1	0.0%	< 0.1	109%	80%	120%	93%	80%	120%	109%	70%	130%
C16 - C34	27	3103244	0.9	0.9	0.0%	< 0.1	109%	80%	120%	115%	80%	120%	122%	70%	130%
C>34 - C50	27	3103244	0.1	0.1	0.0%	< 0.1	109%	80%	120%	80%	80%	120%	70%	70%	130%
Phenolic Compounds in Water															

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V572231

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis (Continued)

RPT Date: Feb 14, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Phenol	135	3100893	<0.002	<0.002	NA	< 0.002	85%	80%	120%	95%	70%	130%	95%	60%	140%
4-Nitrophenol	135	3100893	<0.005	<0.005	NA	< 0.005	83%	80%	120%	88%	70%	130%	90%	60%	140%
m&p-Cresol (3&4-methylphenol)	135	3100893	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
o-Cresol (2-methylphenol)	135	3100893	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
2-Chlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	84%	80%	120%	95%	70%	130%	91%	60%	140%
2,4-Dinitrophenol	135	3100893	<0.005	<0.005	NA	< 0.005	90%	80%	120%	91%	70%	130%	93%	60%	140%
2-Nitrophenol	135	3100893	<0.005	<0.005	NA	< 0.005	97%	80%	120%	106%	70%	130%	100%	60%	140%
2,4-Dimethylphenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	85%	80%	120%	93%	70%	130%	89%	60%	140%
2,6-Dichlorophenol	135	3100893	<0.0001	<0.0001	NA	< 0.0001				93%	70%	130%	90%	60%	140%
4-Chloro-3-methylphenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	83%	80%	120%	94%	70%	130%	89%	60%	140%
2,4-Dichlorophenol	135	3100893	<0.0001	<0.0001	NA	< 0.0001	87%	80%	120%	87%	70%	130%	85%	60%	140%
4,6-Dinitro-2-methylphenol	135	3100893	<0.005	<0.005	NA	< 0.005	93%	80%	120%	85%	70%	130%	104%	60%	140%
2,3,6-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	94%	60%	140%
2,3,4-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	92%	60%	140%
2,4,6-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	86%	80%	120%	96%	70%	130%	95%	60%	140%
2,4,5-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
2,3,5-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				97%	70%	130%	95%	60%	140%
3,4,5-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	94%	60%	140%
2,3,4,6-Tetrachlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				100%	70%	130%	99%	60%	140%
2,3,5,6-Tetrachlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				100%	70%	130%	100%	60%	140%
2,3,4,5-Tetrachlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				100%	70%	130%	98%	60%	140%
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	135	3100893	<0.005	<0.005	NA	< 0.005				117%	70%	130%	97%	60%	140%
Pentachlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	91%	80%	120%	107%	70%	130%	103%	60%	140%

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V572231

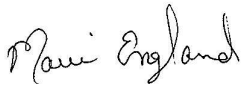
PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Water Analysis

RPT Date: Feb 14, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
British Columbia CSR- Schedule 6 Dissolved Metals															
Aluminum Dissolved	20120	3100893	3	2	NA	< 1	107%	90%	110%	105%	85%	115%			
Antimony Dissolved	20120	3100893	< 0.05	< 0.05	0.0%	< 0.05	104%	90%	110%	98%	85%	110%			
Arsenic Dissolved	20120	3100893	21.8	21.5	1.0%	< 0.1	101%	90%	110%	109%	90%	110%			
Barium Dissolved	20120	3100893	101	98.4	3.0%	< 0.1	98%	90%	110%	94%	90%	110%			
Beryllium Dissolved	20120	3100893	< 0.01	< 0.01	0.0%	< 0.01	110%	90%	110%	101%	90%	110%			
Boron Dissolved	20120	3100893	58	55	5.0%	< 1	108%	90%	110%	108%	80%	120%			
Cadmium Dissolved	20120	3100893	0.01	<0.01	0.0%	< 0.01	99%	90%	110%	99%	90%	110%			
Calcium Dissolved	20120	3100893	142	142	0.0%	< 0.05	99%	90%	110%	103%	90%	110%			
Chromium Dissolved	20120	3100893	4.8	4.9	2.0%	< 0.5	99%	90%	110%	96%	90%	110%			
Cobalt Dissolved	20120	3100893	0.29	0.32	10.0%	< 0.05	97%	90%	110%	100%	90%	110%			
Copper Dissolved	20120	3100893	0.3	0.3	0.0%	< 0.2	101%	90%	110%	100%	90%	110%			
Iron Dissolved	20120	3100893	53.2	53.3	0.0%	< 0.01	104%	90%	110%	105%	90%	110%			
Lead Dissolved	20120	3100893	0.16	0.15	6.0%	< 0.01	101%	90%	110%	99%	90%	110%			
Lithium Dissolved	20120	3100893	2.8	2.7	4.0%	< 0.1				103%	90%	110%			
Magnesium Dissolved	20120	3100893	25.3	25.0	1.0%	< 0.05	104%	90%	110%	108%	90%	110%			
Manganese Dissolved	20120	3100893	3.16	3.12	1.0%	< 0.001	103%	90%	110%	104%	90%	110%			
Mercury Dissolved	20120	3100893	< 0.003	< 0.003	0.0%	< 0.003	92%	90%	110%	104%	90%	110%			
Molybdenum Dissolved	20120	3100893	0.49	0.48	2.0%	< 0.05	96%	90%	110%	101%	90%	110%			
Nickel Dissolved	20120	3100893	1.2	1.3	8.0%	< 0.1	99%	90%	110%	98%	90%	110%			
Selenium Dissolved	20120	3100893	< 0.1	< 0.1	0.0%	< 0.1	97%	90%	110%		85%	115%			
Silver Dissolved	20120	3100893	< 0.01	< 0.01	0.0%	< 0.01				101%	90%	110%			
Sodium Dissolved	20120	3100893	7.96	7.90	1.0%	< 0.05	101%	90%	110%	107%	90%	110%			
Thallium Dissolved	20120	3100893	0.016	0.015	6.0%	< 0.002	93%	90%	110%	96%	90%	110%			
Titanium Dissolved	20120	3100893	162	171	5.0%	< 0.1				108%	90%	110%			
Uranium Dissolved	20120	3100893	0.04	0.04	0.0%	< 0.01		90%	110%	98%	90%	110%			
Vanadium Dissolved	20120	3100893	0.7	0.8	13.0%	< 0.1	98%	90%	110%	102%	90%	110%			
Zinc Dissolved	20120	3100893	5	5	0.0%	< 1	103%	90%	110%	104%	85%	115%			
Routine Water Analysis															
Chloride	1	3102133	9007	9130	1.4%	< 0.05	103%	85%	115%	104%	90%	110%	101%	70%	130%
Water Analysis - Sulphide															
Sulphide	5846	5657	< 0.1	< 0.1	0.0%	< 0.1	105%	80%	120%				104%	80%	120%

Certified By:



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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V572231

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Benzene	TO 0540	EPA SW846 8260	GC/MS
Toluene	TO 0540	EPA SW846 8260	GC/MS
Ethylbenzene	TO 0540	EPA SW846 8260	GC/MS
Xylenes	TO 0540	EPA SW846 8260	GC/MS
C6 - C10 (F1)	TO 0540	CCME Tier 1 Method	GC/FID
C6 - C10 (F1 minus BTEX)	TO 0540	CCME Tier 1 Method	GC/FID
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
C16 - C34	TO 0511	CCME Tier 1 Method	GC/FID
C>34 - C50	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO 0340	EPA SW846 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
Naphthalene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Quinoline	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Methyl tert-butyl ether (MTBE)	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Acenaphthylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acenaphthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Fluorene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Phenanthrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Anthracene (Water)	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acridine	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Styrene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
VPH	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Chrysene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(b)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(k)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Dibenzo(a,h)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(g,h.i)perylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS

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PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Nitrobenzene - d5	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
Quinoline - d7	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
2-Fluorobiphenyl	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
P-Terphenyl - d14	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
LEPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
HEPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
Bromofluorobenzene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Dibromofluoromethane	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Toluene - d8	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Phenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
m&p-Cresol (3&4-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
o-Cresol (2-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
2-Chlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dinitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dimethylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,6-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Chloro-3-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4,6-Dinitro-2-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
3,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,5-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
Dinoseb (2-sec-butyl-4,6-dinitrophenol)	TO 1200	EPA SW-846 8321	HPLC/UV
Pentachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Fluorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Tribromophenol	TO 1200	EPA SW-846 8321	HPLC/UV
Chloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Vinyl Chloride	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromomethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Chloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Trichlorofluoromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS

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AGAT WORK ORDER: 12V572231

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Acetone	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1-Dichloroethene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dichloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Methyl tert-butyl ether (MTBE)	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
2-Butanone (MEK)	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
trans-1,2-Dichloroethylene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1-Dichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
cis-1,2-Dichloroethylene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Chloroform	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,1-Trichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Carbon Tetrachloride	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Benzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichloropropane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Trichloroethene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromodichloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
trans-1,3-Dichloropropene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
4-Methyl-2-pentanone (MIBK)	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
cis-1,3-Dichloropropene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,2-Trichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Toluene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dibromochloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Ethylene Dibromide	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Tetrachloroethene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,1,2-Tetrachloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Chlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Ethylbenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
m&p-Xylene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS

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PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Bromoform	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Styrene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,2,2-Tetrachloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
o-Xylene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,3-Dichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,4-Dichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2,4-Trichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromofluorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dibromofluoromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Toluene - d8	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS

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PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Aluminum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Antimony Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Arsenic Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Barium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Beryllium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Boron Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cadmium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Calcium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Chromium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cobalt Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Copper Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Iron Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Lead Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Lithium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Magnesium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Manganese Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Mercury Dissolved	MET-181-6103, LAB-181-4015	Modified from EPA 245.7	CV/AA
Molybdenum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Nickel Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Selenium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Silver Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Sodium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Thallium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Titanium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Uranium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Vanadium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Zinc Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS

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Sodium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Chloride	INOR-181-6002	Modified from SM 4110 B	ION CHROMATOGRAPH
Sulphide	WAT 0100	SM 4500 S2- D	SPECTROPHOTOMETER

AGAT Laboratories

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Chain of Custody Record

Turnaround Time Required (TAT)

Regular TAT 5 to 7 working days [X]
Rush TAT 24 to 48 hours [ ]
48 to 72 hours [ ]
Date Required: _____
Please contact laboratory if Rush is required

Report To:

Company: Franz Environmental
Contact: Amanda Salway
Address: 308-1080 Mainland St.
Vancouver, BC V6B 2T4
Phone: 604 632-9941 Fax: 604 632-9942
LSD:
Client Project #: 2090-1103

Report Information

1. Name: Amanda Salway
Email: asalway@franzbc.com
2. Name: Viviane Dubois-Côté
Email: vdcote@franzbc.com

Report Format

[ ] Single Sample per page
[X] Multiple Samples per page
[X] Excel Format Included

Laboratory Use Only

Arrival Temperature: 3°C
AGAT Job Number: 12V512231

Notes: FEB 6 PM 5:24

Invoice To: Same as above Yes [X] No [ ]

Company:
Contact:
Address:
Phone: Fax:
PO/AFE #:

Regulatory Requirements (Check):

[ ] BC CSR – Soil
- [ ] Agricultural
- [ ] Industrial
- [ ] Urban/Park
- [ ] Commercial

[X] BC CSR – Water
- [ ] Drinking Water
- [X] Aquatic Life
- [ ] Irrigation
- [ ] Livestock

[X] CCME
- [ ] Drinking Water
- [ ] Residential/Park
- [ ] Commercial
- [ ] Industrial
- [ ] Drinking Water
- [X] FWAL

Lab ID #	Sample Identification	Sample Matrix	Date/Time Sampled	Comments – Site/Sample Info. Sample Containment	BC CSR BTEX/VPH	BC CSR LEPH/HEPH	BC CSR Metals + CCME metals	VOCs	BC CSR Schedule II	Routine Potability	Sulfides	Sodium + Chloride	# CCME F1	CCME F2-4	Chlorinated and non-chlorinated phenols	Number of Containers	Preserved (Y/N)	Hazardous (Y/N)	Hold for 1 YEAR
31 00893	MV-11BH-02M	Water	Feb. 6, 2012		X	X	X	X			X	X	X	X	X	12			
1904	MV-11BH-03M				X	X	X	X			X	X	X	X	X	12			
	[illegible]				[illegible]						[illegible]								
910	MV-GWDUP 2							X				X				4			
912	2-BH17						X									1			
913	MV-11BH-07M					X	X									2			

Samples Relinquished by (print name & sign):	Date	Samples Received by (Print name & sign):	Date
[signature]	06/02/2012	[signature] Feb 6/12 @ 5:24pm	Feb 6/12
Samples Relinquished by (print name & sign):	Date	Samples Received by (Print name & sign):	Date
Samples Relinquished by (print name & sign):	Date	Samples Received by (Print name & sign):	Date

Pink Copy - Client
Yellow Copy - AGAT
White Copy - AGAT

Page 1 of 1
NO: 000621

Document ID: DIV-186-0811.001

Date revised: August 24, 2011

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM - BURNABY

Work Order # 12V572231

RECEIVING BASICS:
*Complete CoC as well where required
Date and Time: 06-FEB-12 05:24pm
Courier: _____
Received by: Melissa B
Relinquished by: Amanda
Branch Received From: _____
Company: Enviro Env
Consultant: _____
Client left without count verified: N

CoC INFORMATION:
Received: (Yes) No Emailed to PM
Completed in full: (Yes) No If NO, why: _____
TURNAROUND TIME: Reg
COC Numbers: 000621

SAMPLE QUANTITIES:
Coolers: _____ Bottles/Jars: 31 Bags: _____

TIME SENSITIVE ISSUES:
Earliest Date Sampled: 06-FEB-12
Microbiology: Test: _____
Hydrocarbons: Test: BTEX
Samples are received >5 days after sampling: Yes (No)

ALREADY EXCEEDED? Yes (No)
Expiry: _____
Expiry: 13-FEB-12

SPECIALTY ISSUES:
Legal Samples: Yes No N/A
International Samples: Yes No
**Proper tape/labels applied: Yes No

Hazardous Samples;
Why hazardous:
_____
Precaution taken:
_____

SAMPLE REQUIREMENTS:
*Complete while logging in by login staff.

Correct bottles used for testing: (Yes) No
If No, explain: _____

Correct amount of sample for analysis: (Yes) No
If No, explain: _____

Are all samples labeled correctly: (Yes) No
If No, explain: _____

NON-CONFORMANCES:
3 temperatures of samples* and average of each cooler: (record differing temperatures on the CoC next to sample ID's)
(1) 5 + 1 + 2 = 3 °C (2) 5 + 2 + 4 = 3 °C (3) ___ + ___ + ___ = ___ °C (4) ___ + ___ + ___ = ___ °C
*Jars used when available

Additional integrity issues (note here and on CoC next to the sample ID):

1) _____
2) _____
3) _____

Account Project Manager: _____ Have they been notified of the above issues: Yes No
Whom spoken to: _____ Date and Time: _____

ADDITIONAL NOTES:

_____

_____

_____

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM Work order # 12V572231

RECEIVING BASICS:
*Complete CoC as well where required
Date and Time: FEB 10/12 0817
Courier: Loomis
Received by: Roberts
Relinquished by: _____
Company: FRANZ
Consultant: _____
Client left without count verified: _____

COC INFORMATION:
Received: (Yes) No Emailed to PM
Completed in full: (Yes) No If NO, why: _____
TURNAROUND TIME: R+4
COC Numbers: 621

SAMPLE QUANTITIES:
Coolers: 1 Bottles/Jars: 2 Bags: —

TIME SENSITIVE ISSUES:
Earliest Date Sampled: FEB 6/12
Microbiology: Test: —
Hydrocarbons: Test: Sulphide
Samples are received >5 days after sampling: Yes (No)

ALREADY EXCEEDED? Yes No
Expiry: —
Expiry: —

SPECIALTY ISSUES:
Legal Samples: Yes (No)
International Samples: Yes (No)
**Proper tape/labels applied: Yes No

Hazardous Samples:
Why hazardous:

Precaution taken:

SAMPLE REQUIREMENTS:
*Complete while logging in by login staff.

Correct bottles used for testing: (Yes) No
If No, explain: _____

Correct amount of sample for analysis: (Yes) No
If No, explain: _____

Are all samples labeled correctly: (Yes) No
If No, explain: _____

NON-CONFORMANCES:
3 temperatures of samples* and average of each cooler: (record differing temperatures on the CoC next to sample ID's)
(1) 1 + 2 + — = 2 °C (2) ___ + ___ + ___ = ___ °C (3) ___ + ___ + ___ = ___ °C (4) ___ + ___ + ___ = ___ °C
*Jars used when available
FLC

Additional integrity issues (note here and on CoC next to the sample ID):
1) _____
2) _____
3) _____

Account Project Manager: _____ Have they been notified of the above issues: Yes No
Whom spoken to: _____ Date and Time: _____

ADDITIONAL NOTES:

AGAT Laboratories

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CANADA V5J 0B6
TEL (778)452-4000
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CLIENT NAME: FRANZ ENVIRONMENTAL
308-108 MAINLAND STREET
VANCOUVER, BC V6B2T4

ATTENTION TO: Amanda Salway

PROJECT NO: 2090-1103

AGAT WORK ORDER: 12V572231

TRACE ORGANICS REVIEWED BY: Craig Stehr, Organics Supervisor

WATER ANALYSIS REVIEWED BY: Jada Benjamin, Inorganics Manager

DATE REPORTED: Mar 06, 2012

PAGES (INCLUDING COVER): 20

VERSION*: 3

Should you require any information regarding this analysis please contact your client services representative at (778) 452-4000

*NOTES

VERSION 3:Version 2 amended to include VH and EPH results as per client.

Report reissued to report sulphide to a lower detection limit as requested by Amanda Salway of Franz Environmental on March 5, 2012.

Version 3 is an amendment to Version 2.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V572231
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons (BTEX/F1-F4) in Water

DATE SAMPLED: Feb 06, 2012 | DATE RECEIVED: Feb 06, 2012 | DATE REPORTED: Mar 06, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-02M 3100893	MV-11BH-03M 3100904
Benzene	mg/L	0.37	0.0005	<0.0005	<0.0005
Toluene	mg/L	0.002	0.0005	<0.0005	<0.0005
Ethylbenzene	mg/L	0.09	0.0005	<0.0005	<0.0005
Xylenes	mg/L		0.0005	<0.0005	<0.0005
C6 - C10 (F1)	mg/L		0.1	<0.1	<0.1
C6 - C10 (F1 minus BTEX)	mg/L		0.1	<0.1	<0.1
C>10 - C16	mg/L		0.1	<0.1	<0.1
C16 - C34	mg/L		0.1	<0.1	<0.1
C>34 - C50	mg/L		0.1	<0.1	<0.1
Surrogate	**Unit**	**Acceptable Limits**			
Toluene-d8 (BTEX)	%	50-150		118	108
o-Terphenyl (F2-F4)	%	50-150		110	109

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL)

3100893-3100904 The C>6 - C10 fraction is calculated using the toluene response factor.
The C10 - C16 fraction is calculated using the average response factor for nC10, nC16 and nC34.
BTEX has NOT been subtracted from Fraction 1.
Sample is blank corrected.

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 12V572231
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 06, 2012 | DATE RECEIVED: Feb 06, 2012 | DATE REPORTED: Mar 06, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-02M 3100893	MV-11BH-03M 3100904	MV-11BH-07M 3100913
Methyl tert-butyl ether (MTBE)	µg/L	34000	1	<1	<1	
Styrene	µg/L	720	0.5	<0.5	<0.5	
VPH	µg/L	1500	100	<100	<100	
VH	µg/L	15000	100	<100	<100	
Naphthalene	µg/L	10	0.05	<0.05	<0.05	<0.05
Quinoline	µg/L	34	0.1	<0.1	<0.1	<0.1
Acenaphthylene	µg/L		0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/L	60	0.05	<0.05	<0.05	<0.05
Fluorene	µg/L	120	0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/L	3	0.05	<0.05	<0.05	<0.05
Anthracene (Water)	µg/L	1	0.05	<0.05	<0.05	<0.05
Acridine	µg/L	0.5	0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/L	2	0.05	<0.05	<0.05	<0.05
Pyrene	µg/L	0.2	0.02	<0.02	<0.02	<0.02
Benzo(a)anthracene	µg/L	1	0.05	<0.05	<0.05	<0.05
Chrysene	µg/L	1	0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/L		0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/L		0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.1	0.01	<0.01	<0.01	0.01
Indeno(1,2,3-cd)pyrene	µg/L		0.05	<0.05	<0.05	<0.05
Dibenzo(a,h)anthracene	µg/L		0.05	<0.05	<0.05	<0.05
Benzo(g,h.i)perylene	µg/L		0.05	<0.05	<0.05	<0.05
LEPH C10-C19	µg/L	500	100	<100	<100	160
HEPH C19-C32	µg/L		100	<100	<100	580
EPH C10-C19	µg/L	5000	100	<100	<100	160
EPH C19-C32	µg/L		100	<100	<100	580

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 12V572231
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 06, 2012 | DATE RECEIVED: Feb 06, 2012 | DATE REPORTED: Mar 06, 2012 | SAMPLE TYPE: Water

Surrogate	Unit	Acceptable Limits	MV-11BH-02M 3100893	MV-11BH-03M 3100904	MV-11BH-07M 3100913
Nitrobenzene - d5	%	50-130	75	82	109
Quinoline - d7	%	50-130	89	97	96
2-Fluorobiphenyl	%	50-130	68	70	69
P-Terphenyl - d14	%	60-130	95	89	108
Bromofluorobenzene	%	70-130	97	95	
Dibromofluoromethane	%	70-130	102	101	
Toluene - d8	%	70-130	111	106	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

3100893-3100904 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.

3100913 LEPH & HEPH results have been corrected for PAH contributions.

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Certificate of Analysis

AGAT WORK ORDER: 12V572231
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Phenolic Compounds in Water

DATE SAMPLED: Feb 06, 2012 | DATE RECEIVED: Feb 06, 2012 | DATE REPORTED: Mar 06, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-02M 3100893	MV-11BH-03M 3100904
Phenol	mg/L		0.002	<0.002	<0.002
4-Nitrophenol	mg/L		0.005	<0.005	<0.005
m&p-Cresol (3&4-methylphenol)	mg/L		0.0005	<0.0005	<0.0005
o-Cresol (2-methylphenol)	mg/L		0.0005	<0.0005	<0.0005
2-Chlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,4-Dinitrophenol	mg/L		0.005	<0.005	<0.005
2-Nitrophenol	mg/L		0.005	<0.005	<0.005
2,4-Dimethylphenol	mg/L		0.0005	<0.0005	<0.0005
2,6-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001
4-Chloro-3-methylphenol	mg/L		0.0005	<0.0005	<0.0005
2,4-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001
4,6-Dinitro-2-methylphenol	mg/L		0.005	<0.005	<0.005
2,3,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,4-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,4,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
3,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,4,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,5,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,4,5-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	mg/L		0.005	<0.005	<0.005
Pentachlorophenol	mg/L		0.0005	<0.0005	<0.0005
Surrogate	**Unit**	**Acceptable Limits**			
2-Fluorophenol	%	50-150		110	109
2,4,6-Tribromophenol	%	50-150		110	109

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
3100893-3100904 Results relate only to the items tested.

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Certificate of Analysis

AGAT WORK ORDER: 12V572231
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Volatile Organic Compounds in Water

DATE SAMPLED: Feb 06, 2012 | DATE RECEIVED: Feb 06, 2012 | DATE REPORTED: Mar 06, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-02M 3100893	MV-11BH-03M 3100904	MV-GWDUP2 3100910
Chloromethane	µg/L		1	<1	<1	<1
Vinyl Chloride	µg/L		1	<1	<1	<1
Bromomethane	µg/L		1	<1	<1	<1
Chloroethane	µg/L		1	<1	<1	<1
Trichlorofluoromethane	µg/L		1	<1	<1	<1
Acetone	µg/L		10	<10	<10	<10
1,1-Dichloroethene	µg/L		1	<1	<1	<1
Dichloromethane	µg/L	980	1	<1	<1	<1
2-Butanone (MEK)	µg/L		10	<10	<10	<10
Methyl tert-butyl ether (MTBE)	µg/L	34000	1			<1
trans-1,2-Dichloroethylene	µg/L		1	<1	<1	<1
1,1-Dichloroethane	µg/L		1	<1	<1	<1
cis-1,2-Dichloroethylene	µg/L		1	<1	<1	<1
Chloroform	µg/L	20	1	<1	<1	<1
1,2-Dichloroethane	µg/L	1000	1	<1	<1	<1
1,1,1-Trichloroethane	µg/L		1	<1	<1	<1
Carbon Tetrachloride	µg/L	130	0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	µg/L		1	<1	<1	<1
Trichloroethene	µg/L	200	1	<1	<1	<1
Benzene	µg/L		0.5			<0.5
Bromodichloromethane	µg/L		1	<1	<1	<1
trans-1,3-Dichloropropene	µg/L		1	<1	<1	<1
4-Methyl-2-pentanone (MIBK)	µg/L		10	<10	<10	<10
cis-1,3-Dichloropropene	µg/L		1	<1	<1	<1
1,1,2-Trichloroethane	µg/L		1	<1	<1	<1
Dibromochloromethane	µg/L		1	<1	<1	<1
Ethylene Dibromide	µg/L		0.3	<0.3	<0.3	<0.3
Toluene	µg/L		0.5			<0.5
Tetrachloroethene	µg/L	1100	1	<1	<1	<1
1,1,1,2-Tetrachloroethane	µg/L		1	<1	<1	<1
Chlorobenzene	µg/L	13	1	<1	<1	<1
Bromoform	µg/L		1	<1	<1	<1
1,1,2,2-Tetrachloroethane	µg/L		1	<1	<1	<1

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Certificate of Analysis

AGAT WORK ORDER: 12V572231
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Volatile Organic Compounds in Water

DATE SAMPLED: Feb 06, 2012 | DATE RECEIVED: Feb 06, 2012 | DATE REPORTED: Mar 06, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-02M 3100893	MV-11BH-03M 3100904	MV-GWDUP2 3100910
1,3-Dichlorobenzene	µg/L	1500	0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	2000	0.5			<0.5
1,4-Dichlorobenzene	µg/L	260	0.5	<0.5	<0.5	<0.5
m&p-Xylene	µg/L		0.5			<0.5
1,2-Dichlorobenzene	µg/L	7	1	<1	<1	<1
1,2,4-Trichlorobenzene	µg/L	240	1	<1	<1	<1
Styrene	µg/L	720	0.5			<0.5
o-Xylene	µg/L		0.5			<0.5
Surrogate	**Unit**	**Acceptable Limits**				
Bromofluorobenzene	%	70-130		97	95	103
Dibromofluoromethane	%	70-130		102	101	109
Toluene - d8	%	70-130		111	106	118

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

Certified By:

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AGAT WORK ORDER: 12V572231
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

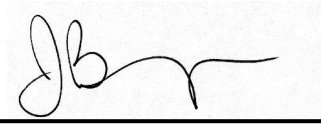
British Columbia CSR- Schedule 6 Dissolved Metals

DATE SAMPLED: Feb 06, 2012 | DATE RECEIVED: Feb 06, 2012 | DATE REPORTED: Mar 06, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-02M 3100893	MV-11BH-03M 3100904	2-BH17 3100912	MV-11BH-07M 3100913
Aluminum Dissolved	µg/L		1	3	66	12	26
Antimony Dissolved	µg/L	200	0.05	<0.05	0.09	0.24	0.12
Arsenic Dissolved	µg/L	50	0.1	21.8	4.4	0.8	9.4
Barium Dissolved	µg/L	10000	0.1	101	108	134	187
Beryllium Dissolved	µg/L	53	0.01	<0.01	0.01	<0.01	0.02
Boron Dissolved	µg/L	50000	1	58	52	198	73
Cadmium Dissolved	µg/L		0.01	0.01	0.02	0.01	0.24
Calcium Dissolved	mg/L		0.05	142	77.8	189	59.2
Chromium Dissolved	µg/L		0.5	4.8	25.0	1.1	2.5
Cobalt Dissolved	µg/L	40	0.05	0.29	2.59	0.19	25.7
Copper Dissolved	µg/L		0.2	0.3	0.4	0.3	1.0
Iron Dissolved	mg/L		0.01	53.3	34.6	21.7	23.3
Lead Dissolved	µg/L		0.01	0.16	0.22	0.15	0.21
Lithium Dissolved	µg/L		0.1	2.8	0.6	6.6	6.6
Magnesium Dissolved	mg/L		0.05	25.3	11.4	19.9	7.83
Manganese Dissolved	mg/L		0.001	3.16	1.80	1.41	3.33
Mercury Dissolved	µg/L	1	0.003	<0.003	0.003	<0.003	<0.003
Molybdenum Dissolved	µg/L	10000	0.05	0.49	0.35	1.49	30.5
Nickel Dissolved	µg/L		0.1	1.2	4.3	1.0	29.2
Selenium Dissolved	µg/L	10	0.1	<0.1	0.2	0.3	0.2
Silver Dissolved	µg/L		0.01	<0.01	<0.01	<0.01	<0.01
Sodium Dissolved	mg/L		0.05	7.96	7.98	25.5	89.4
Thallium Dissolved	µg/L	3	0.002	0.016	0.017	0.014	0.159
Titanium Dissolved	µg/L	1000	0.1	162	102	237	74.0
Uranium Dissolved	µg/L	3000	0.01	0.04	0.20	0.19	3.59
Vanadium Dissolved	µg/L		0.1	0.7	2.8	1.1	2.3
Zinc Dissolved	µg/L		1	5	15	7	11
Hardness (calc)	mg CaCO3/L		1	459	241	554	180

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

Certified By:



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Certificate of Analysis

AGAT WORK ORDER: 12V572231
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Routine Water Analysis

DATE SAMPLED: Feb 06, 2012 | DATE RECEIVED: Feb 06, 2012 | DATE REPORTED: Mar 06, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-02M 3100893	MV-11BH-03M 3100904	MV-GWDUP2 3100910
Chloride	mg/L	1500	0.05	22.0	8.86	8.96
Sodium Dissolved	mg/L		0.05			8.50

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 12V572231
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Water Analysis - Sulphide

DATE SAMPLED: Feb 06, 2012 | DATE RECEIVED: Feb 06, 2012 | DATE REPORTED: Mar 06, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-02M 3100893	MV-11BH-03M 3100904
Sulphide	mg/L		0.01	<0.01	<0.01

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

AGAT Laboratories

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V572231

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis

RPT Date: Mar 06, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Petroleum Hydrocarbons in Water															
Methyl tert-butyl ether (MTBE)	1	3103286	<1	<1	0.0%	< 1	97%	80%	120%				NA	70%	130%
Styrene	1	3103286	<0.5	<0.5	0.0%	< 0.5	100%	80%	120%				112%	70%	130%
VPH	1	3103286	<100	<100	0.0%	< 100									
Naphthalene	1	W-MS	0.09	0.08	12.0%	< 0.05	100%	80%	120%				91%	50%	130%
Quinoline	1	W-MS	<0.1	<0.1	0.0%	< 0.1	100%	80%	120%				84%	50%	130%
Acenaphthylene	1	W-MS	0.07	0.07	0.0%	< 0.05	100%	80%	120%				75%	50%	130%
Acenaphthene	1	W-MS	0.07	0.07	0.0%	< 0.05	100%	80%	120%				77%	50%	130%
Fluorene	1	W-MS	0.08	0.09	12.0%	< 0.05	100%	80%	120%				87%	50%	130%
Phenanthrene	1	W-MS	0.08	0.09	12.0%	< 0.05	97%	80%	120%				84%	60%	130%
Anthracene (Water)	1	W-MS	0.07	0.08	13.0%	< 0.05	102%	80%	120%				75%	60%	130%
Acridine	1	W-MS	0.09	0.10	11.0%	< 0.05	99%	80%	120%				94%	50%	130%
Fluoranthene	1	W-MS	0.08	0.09	12.0%	< 0.05	100%	80%	120%				89%	60%	130%
Pyrene	1	W-MS	0.09	0.10	11.0%	< 0.02	99%	80%	120%				91%	60%	130%
Benzo(a)anthracene	1	W-MS	0.09	0.10	11.0%	< 0.05	100%	80%	120%				92%	60%	130%
Chrysene	1	W-MS	0.09	0.10	10.5%	< 0.05	100%	80%	120%				92%	60%	130%
Benzo(b)fluoranthene	1	W-MS	0.10	0.11	9.5%	< 0.05	99%	80%	120%				108%	60%	130%
Benzo(k)fluoranthene	1	W-MS	0.09	0.10	11.0%	< 0.05	101%	80%	120%				100%	60%	130%
Benzo(a)pyrene	1	W-MS	0.08	0.09	12.0%	< 0.01	101%	80%	120%				86%	60%	130%
Indeno(1,2,3-cd)pyrene	1	W-MS	0.10	0.11	9.5%	< 0.05	99%	80%	120%				103%	60%	130%
Dibenzo(a,h)anthracene	1	W-MS	0.10	0.11	9.5%	< 0.05	99%	80%	120%				103%	60%	130%
Benzo(g,h.i)perylene	1	W-MS	0.10	0.11	9.5%	< 0.05	99%	80%	120%				103%	60%	130%
Nitrobenzene - d5	1	W-MS	79	70	12.0%		98%	80%	120%				80%	50%	130%
Quinoline - d7	1	W-MS	93	87	7.0%		102%	80%	120%				94%	50%	130%
2-Fluorobiphenyl	1	W-MS	79	69	14.0%		101%	80%	120%				79%	50%	130%
P-Terphenyl - d14	1	W-MS	94	95	1.0%		99%	80%	120%				95%	60%	130%
Bromofluorobenzene	1	3103286	106	102	4.0%		96%	70%	130%				117%	70%	130%
Dibromofluoromethane	1	3103286	112	107	5.0%		100%	70%	130%				124%	70%	130%
Toluene - d8	1	3103286	120	113	6.0%		92%	70%	130%				125%	70%	130%
Volatile Organic Compounds in Water															
Chloromethane	1	3103286	<1	<1	0.0%	< 1	93%	80%	120%				74%	70%	130%
Vinyl Chloride	1	3103286	<1	<1	0.0%	< 1	95%	80%	120%				76%	70%	130%
Bromomethane	1	3103286	<1	<1	0.0%	< 1	94%	80%	120%				83%	70%	130%
Chloroethane	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				95%	70%	130%
Trichlorofluoromethane	1	3103286	<1	<1	0.0%	< 1	97%	80%	120%				83%	70%	130%
Acetone	1	3103286	<10	<10	0.0%	< 10	94%	80%	120%				NA	70%	130%
1,1-Dichloroethene	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				100%	70%	130%
Dichloromethane	1	3103286	<1	<1	0.0%	< 1	92%	80%	120%				94%	70%	130%
2-Butanone (MEK)	1	3103286	<10	<10	0.0%	< 10	95%	80%	120%				NA	70%	130%

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL
AGAT WORK ORDER: 12V572231
PROJECT NO: 2090-1103
ATTENTION TO: Amanda Salway

Trace Organics Analysis (Continued)

RPT Date: Mar 06, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
trans-1,2-Dichloroethylene	1	3103286	<1	<1	0.0%	< 1	99%	80%	120%				109%	70%	130%
1,1-Dichloroethane	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				114%	70%	130%
cis-1,2-Dichloroethylene	1	3103286	<1	<1	0.0%	< 1	99%	80%	120%				113%	70%	130%
Chloroform	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				115%	70%	130%
1,2-Dichloroethane	1	3103286	<1	<1	0.0%	< 1	97%	80%	120%				111%	70%	130%
1,1,1-Trichloroethane	1	3103286	<1	<1	0.0%	< 1	100%	80%	120%				108%	70%	130%
Carbon Tetrachloride	1	3103286	<0.5	<0.5	0.0%	< 0.5	100%	80%	120%				105%	70%	130%
1,2-Dichloropropane	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				115%	70%	130%
Trichloroethene	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				112%	70%	130%
Bromodichloromethane	1	3103286	<1	<1	0.0%	< 1	101%	80%	120%				112%	70%	130%
trans-1,3-Dichloropropene	1	3103286	<1	<1	0.0%	< 1	102%	80%	120%				108%	70%	130%
4-Methyl-2-pentanone (MIBK)	1	3103286	<10	<10	0.0%	< 10	99%	80%	120%				NA	70%	130%
cis-1,3-Dichloropropene	1	3103286	<1	<1	0.0%	< 1	101%	80%	120%				109%	70%	130%
1,1,2-Trichloroethane	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				110%	70%	130%
Dibromochloromethane	1	3103286	<1	<1	0.0%	< 1	101%	80%	120%				110%	70%	130%
Ethylene Dibromide	1	3103286	<0.3	<0.3	0.0%	< 0.3	98%	80%	120%				110%	70%	130%
Tetrachloroethene	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				85%	70%	130%
1,1,1,2-Tetrachloroethane	1	3103286	<1	<1	0.0%	< 1	101%	80%	120%				113%	70%	130%
Chlorobenzene	1	3103286	<1	<1	0.0%	< 1	97%	80%	120%				109%	70%	130%
Bromoform	1	3103286	<1	<1	0.0%	< 1	100%	80%	120%				102%	70%	130%
1,1,2,2-Tetrachloroethane	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				103%	70%	130%
1,3-Dichlorobenzene	1	3103286	<0.5	<0.5	0.0%	< 0.5	98%	80%	120%				108%	70%	130%
1,4-Dichlorobenzene	1	3103286	<0.5	<0.5	0.0%	< 0.5	96%	80%	120%				106%	70%	130%
1,2-Dichlorobenzene	1	3103286	<1	<1	0.0%	< 1	97%	80%	120%				108%	70%	130%
1,2,4-Trichlorobenzene	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				104%	70%	130%
Bromofluorobenzene	1	3103286	106	102	4.0%		96%	80%	120%				117%	70%	130%
Dibromofluoromethane	1	3103286	112	107	5.0%		100%	80%	120%				124%	70%	130%
Toluene - d8	1	3103286	120	113	6.0%		92%	80%	120%				125%	70%	130%
Petroleum Hydrocarbons (BTEX/F1-F4) in Water															
Benzene	3466	3103238	<0.0005	<0.0005	NA	< 0.0005	109%	80%	120%	102%	80%	120%	112%	70%	130%
Toluene	3466	3103238	0.0014	0.0014	0.0%	< 0.0005	107%	80%	120%	99%	80%	120%	106%	70%	130%
Ethylbenzene	3466	3103238	<0.0005	<0.0005	NA	< 0.0005	97%	80%	120%	94%	80%	120%	93%	70%	130%
Xylenes	3466	3103238	<0.0005	<0.0005	NA	< 0.0005	105%	80%	120%	108%	80%	120%	103%	70%	130%
C6 - C10 (F1)	3466	3103238	<0.1	<0.1	NA	< 0.1	91%	80%	120%	104%	80%	120%	98%	70%	130%
C>10 - C16	27	3103244	0.1	0.1	0.0%	< 0.1	109%	80%	120%	93%	80%	120%	109%	70%	130%
C16 - C34	27	3103244	0.9	0.9	0.0%	< 0.1	109%	80%	120%	115%	80%	120%	122%	70%	130%
C>34 - C50	27	3103244	0.1	0.1	0.0%	< 0.1	109%	80%	120%	80%	80%	120%	70%	70%	130%
Phenolic Compounds in Water															

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V572231

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis (Continued)

RPT Date: Mar 06, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Phenol	135	3100893	<0.002	<0.002	NA	< 0.002	85%	80%	120%	95%	70%	130%	95%	60%	140%
4-Nitrophenol	135	3100893	<0.005	<0.005	NA	< 0.005	83%	80%	120%	88%	70%	130%	90%	60%	140%
m&p-Cresol (3&4-methylphenol)	135	3100893	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
o-Cresol (2-methylphenol)	135	3100893	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
2-Chlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	84%	80%	120%	95%	70%	130%	91%	60%	140%
2,4-Dinitrophenol	135	3100893	<0.005	<0.005	NA	< 0.005	90%	80%	120%	91%	70%	130%	93%	60%	140%
2-Nitrophenol	135	3100893	<0.005	<0.005	NA	< 0.005	97%	80%	120%	106%	70%	130%	100%	60%	140%
2,4-Dimethylphenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	85%	80%	120%	93%	70%	130%	89%	60%	140%
2,6-Dichlorophenol	135	3100893	<0.0001	<0.0001	NA	< 0.0001				93%	70%	130%	90%	60%	140%
4-Chloro-3-methylphenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	83%	80%	120%	94%	70%	130%	89%	60%	140%
2,4-Dichlorophenol	135	3100893	<0.0001	<0.0001	NA	< 0.0001	87%	80%	120%	87%	70%	130%	85%	60%	140%
4,6-Dinitro-2-methylphenol	135	3100893	<0.005	<0.005	NA	< 0.005	93%	80%	120%	85%	70%	130%	104%	60%	140%
2,3,6-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	94%	60%	140%
2,3,4-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	92%	60%	140%
2,4,6-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	86%	80%	120%	96%	70%	130%	95%	60%	140%
2,4,5-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
2,3,5-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				97%	70%	130%	95%	60%	140%
3,4,5-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	94%	60%	140%
2,3,4,6-Tetrachlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				100%	70%	130%	99%	60%	140%
2,3,5,6-Tetrachlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				100%	70%	130%	100%	60%	140%
2,3,4,5-Tetrachlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				100%	70%	130%	98%	60%	140%
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	135	3100893	<0.005	<0.005	NA	< 0.005				117%	70%	130%	97%	60%	140%
Pentachlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	91%	80%	120%	107%	70%	130%	103%	60%	140%

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V572231

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Water Analysis

RPT Date: Mar 06, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
British Columbia CSR- Schedule 6 Dissolved Metals															
Aluminum Dissolved	20120	3100893	3	2	NA	< 1	107%	90%	110%	105%	85%	115%			
Antimony Dissolved	20120	3100893	< 0.05	< 0.05	0.0%	< 0.05	104%	90%	110%	98%	85%	110%			
Arsenic Dissolved	20120	3100893	21.8	21.5	1.0%	< 0.1	101%	90%	110%	109%	90%	110%			
Barium Dissolved	20120	3100893	101	98.4	3.0%	< 0.1	98%	90%	110%	94%	90%	110%			
Beryllium Dissolved	20120	3100893	< 0.01	< 0.01	0.0%	< 0.01	110%	90%	110%	101%	90%	110%			
Boron Dissolved	20120	3100893	58	55	5.0%	< 1	108%	90%	110%	108%	80%	120%			
Cadmium Dissolved	20120	3100893	0.01	<0.01	0.0%	< 0.01	99%	90%	110%	99%	90%	110%			
Calcium Dissolved	20120	3100893	142	142	0.0%	< 0.05	99%	90%	110%	103%	90%	110%			
Chromium Dissolved	20120	3100893	4.8	4.9	2.0%	< 0.5	99%	90%	110%	96%	90%	110%			
Cobalt Dissolved	20120	3100893	0.29	0.32	10.0%	< 0.05	97%	90%	110%	100%	90%	110%			
Copper Dissolved	20120	3100893	0.3	0.3	0.0%	< 0.2	101%	90%	110%	100%	90%	110%			
Iron Dissolved	20120	3100893	53.2	53.3	0.0%	< 0.01	104%	90%	110%	105%	90%	110%			
Lead Dissolved	20120	3100893	0.16	0.15	6.0%	< 0.01	101%	90%	110%	99%	90%	110%			
Lithium Dissolved	20120	3100893	2.8	2.7	4.0%	< 0.1				103%	90%	110%			
Magnesium Dissolved	20120	3100893	25.3	25.0	1.0%	< 0.05	104%	90%	110%	108%	90%	110%			
Manganese Dissolved	20120	3100893	3.16	3.12	1.0%	< 0.001	103%	90%	110%	104%	90%	110%			
Mercury Dissolved	20120	3100893	< 0.003	< 0.003	0.0%	< 0.003	92%	90%	110%	104%	90%	110%			
Molybdenum Dissolved	20120	3100893	0.49	0.48	2.0%	< 0.05	96%	90%	110%	101%	90%	110%			
Nickel Dissolved	20120	3100893	1.2	1.3	8.0%	< 0.1	99%	90%	110%	98%	90%	110%			
Selenium Dissolved	20120	3100893	< 0.1	< 0.1	0.0%	< 0.1	97%	90%	110%		85%	115%			
Silver Dissolved	20120	3100893	< 0.01	< 0.01	0.0%	< 0.01				101%	90%	110%			
Sodium Dissolved	20120	3100893	7.96	7.90	1.0%	< 0.05	101%	90%	110%	107%	90%	110%			
Thallium Dissolved	20120	3100893	0.016	0.015	6.0%	< 0.002	93%	90%	110%	96%	90%	110%			
Titanium Dissolved	20120	3100893	162	171	5.0%	< 0.1				108%	90%	110%			
Uranium Dissolved	20120	3100893	0.04	0.04	0.0%	< 0.01		90%	110%	98%	90%	110%			
Vanadium Dissolved	20120	3100893	0.7	0.8	13.0%	< 0.1	98%	90%	110%	102%	90%	110%			
Zinc Dissolved	20120	3100893	5	5	0.0%	< 1	103%	90%	110%	104%	85%	115%			
Routine Water Analysis															
Chloride	1	3102133	9007	9130	1.4%	< 0.05	103%	85%	115%	104%	90%	110%	101%	70%	130%
Water Analysis - Sulphide															
Sulphide	5846	5657	< 0.1	< 0.1	0.0%	< 0.1	105%	80%	120%				104%	80%	120%

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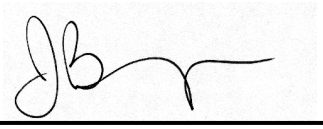

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V572231

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Benzene	TO 0540	EPA SW846 8260	GC/MS
Toluene	TO 0540	EPA SW846 8260	GC/MS
Ethylbenzene	TO 0540	EPA SW846 8260	GC/MS
Xylenes	TO 0540	EPA SW846 8260	GC/MS
C6 - C10 (F1)	TO 0540	CCME Tier 1 Method	GC/FID
C6 - C10 (F1 minus BTEX)	TO 0540	CCME Tier 1 Method	GC/FID
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
C16 - C34	TO 0511	CCME Tier 1 Method	GC/FID
C>34 - C50	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO 0340	EPA SW846 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
Naphthalene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Quinoline	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Methyl tert-butyl ether (MTBE)	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Acenaphthylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acenaphthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Fluorene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Phenanthrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Anthracene (Water)	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acridine	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Styrene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
VPH	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
VH	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Benzo(a)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Chrysene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(b)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(k)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Dibenzo(a,h)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS

AGAT Laboratories

Unit 120, 8600 Glenlyon Parkway
Burnaby, British Columbia
CANADA V5J 0B6
TEL (778)452-4000
FAX (778)452-4074
http://www.agatlabs.com

Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V572231

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Benzo(g,h.i)perylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Nitrobenzene - d5	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
Quinoline - d7	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
2-Fluorobiphenyl	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
P-Terphenyl - d14	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
LEPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
HEPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
EPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
EPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
Bromofluorobenzene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Dibromofluoromethane	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Toluene - d8	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Phenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
m&p-Cresol (3&4-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
o-Cresol (2-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
2-Chlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dinitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dimethylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,6-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Chloro-3-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4,6-Dinitro-2-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
3,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,5-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
Dinoseb (2-sec-butyl-4,6-dinitrophenol)	TO 1200	EPA SW-846 8321	HPLC/UV
Pentachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Fluorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Tribromophenol	TO 1200	EPA SW-846 8321	HPLC/UV
Chloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Vinyl Chloride	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V572231

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Bromomethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Chloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Trichlorofluoromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Acetone	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1-Dichloroethene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dichloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Methyl tert-butyl ether (MTBE)	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
2-Butanone (MEK)	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
trans-1,2-Dichloroethylene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1-Dichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
cis-1,2-Dichloroethylene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Chloroform	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,1-Trichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Carbon Tetrachloride	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Benzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichloropropane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Trichloroethene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromodichloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
trans-1,3-Dichloropropene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
4-Methyl-2-pentanone (MIBK)	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
cis-1,3-Dichloropropene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,2-Trichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Toluene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dibromochloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Ethylene Dibromide	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Tetrachloroethene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,1,2-Tetrachloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS

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CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V572231

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Chlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Ethylbenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
m&p-Xylene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromoform	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Styrene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,2,2-Tetrachloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
o-Xylene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,3-Dichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,4-Dichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2,4-Trichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromofluorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dibromofluoromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Toluene - d8	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V572231

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Aluminum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Antimony Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Arsenic Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Barium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Beryllium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Boron Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cadmium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Calcium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Chromium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cobalt Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Copper Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Iron Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Lead Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Lithium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Magnesium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Manganese Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Mercury Dissolved	MET-181-6103, LAB-181-4015	Modified from EPA 245.7	CV/AA
Molybdenum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Nickel Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Selenium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Silver Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Sodium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Thallium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Titanium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Uranium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Vanadium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Zinc Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V572231

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Sodium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Chloride	INOR-181-6002	Modified from SM 4110 B	ION CHROMATOGRAPH
Sulphide	WAT 0100	SM 4500 S2- D	SPECTROPHOTOMETER

AGAT Laboratories

120 - 8600 Glenlyon Parkway
Burnaby, BC,
V5J 0B6
webearth.agatlabs.com

Ph.: 778.452.4000 - Fax: 778.452.7074

Chain of Custody Record

Turnaround Time Required (TAT)

Regular TAT 5 to 7 working days [X]
Rush TAT 24 to 48 hours [ ]
48 to 72 hours [ ]
Date Required: _____
Please contact laboratory if Rush is required

Report To:

Company: Franz Environmental
Contact: Amanda Salway
Address: 308-1080 Mainland St.
Vancouver, BC V6B 2T4
Phone: 604 632-9941 Fax: 604 632-9942
LSD:
Client Project #: 2090-1103

Report Information

1. Name: Amanda Salway
Email: asalway@franzbc.com
2. Name: Viviane Dubois-Côté
Email: vdcote@franzbc.com

Report Format

[ ] Single Sample per page
[X] Multiple Samples per page
[X] Excel Format Included

Laboratory Use Only

Arrival Temperature: 3°C
AGAT Job Number: 12V512231

Notes: FEB 6 PM 5:24

Invoice To: Same as above Yes [X] No [ ]

Company:
Contact:
Address:
Phone: Fax:
PO/AFE #:

Regulatory Requirements (Check):

[ ] BC CSR – Soil
- [ ] Agricultural
- [ ] Industrial
- [ ] Urban/Park
- [ ] Commercial

[X] BC CSR – Water
- [ ] Drinking Water
- [X] Aquatic Life
- [ ] Irrigation
- [ ] Livestock

[X] CCME
- [ ] Drinking Water
- [ ] Residential/Park
- [ ] Commercial
- [ ] Industrial
- [ ] Drinking Water
- [X] FWAL

Lab ID #	Sample Identification	Sample Matrix	Date/Time Sampled	Comments – Site/Sample Info. Sample Containment	BC CSR BTEX/VPH	BC CSR LEPH/HEPH	BC CSR Metals + CCME metals	VOCs	BC CSR Schedule II	Routine Potability	Sulfides	Sodium + Chloride	# CCME F1	CCME F2-4	Chlorinated and non-chlorinated phenols	Number of Containers	Preserved (Y/N)	Hazardous (Y/N)	Hold for 1 YEAR
31 00893	MV-11BH-02M	Water	Feb. 6, 2012		X	X	X	X			X	X	X	X	X	12			
1904	MV-11BH-03M				X	X	X	X			X	X	X	X	X	12			
	[illegible]				[illegible]						[illegible]								
910	MV-GWDUP 2							X				X				4			
912	2-BH17						X									1			
913	MV-11BH-07M					X	X									2			

Samples Relinquished by (print name & sign):	Date	Samples Received by (Print name & sign):	Date
[signature]	06/02/2012	[signature] Feb 6/12 @ 5:24pm	Feb 6/12
Samples Relinquished by (print name & sign):	Date	Samples Received by (Print name & sign):	Date
Samples Relinquished by (print name & sign):	Date	Samples Received by (Print name & sign):	Date

Pink Copy - Client
Yellow Copy - AGAT
White Copy - AGAT

Page 1 of 1
NO: 000621

Document ID: DIV-186-0811.001

Date revised: August 24, 2011

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM - BURNABY

Work Order # 12V572231

RECEIVING BASICS:
*Complete CoC as well where required
Date and Time: 06-FEB-12 05:24pm
Courier: _____
Received by: Melissa B
Relinquished by: Amanda
Branch Received From: _____
Company: Enviro Env
Consultant: _____
Client left without count verified: N

CoC INFORMATION:
Received: (Yes) No Emailed to PM
Completed in full: (Yes) No If NO, why: _____
TURNAROUND TIME: Reg
COC Numbers: 000621

SAMPLE QUANTITIES:
Coolers: _____ Bottles/Jars: 31 Bags: _____

TIME SENSITIVE ISSUES:
Earliest Date Sampled: 06-FEB-12
Microbiology: Test: _____
Hydrocarbons: Test: BTEX
Samples are received >5 days after sampling: Yes (No)

ALREADY EXCEEDED? Yes (No)
Expiry: _____
Expiry: 13-FEB-12

SPECIALTY ISSUES:
Legal Samples: Yes No N/A
International Samples: Yes No
**Proper tape/labels applied: Yes No

Hazardous Samples;
Why hazardous:
_____
Precaution taken:
_____

SAMPLE REQUIREMENTS:
*Complete while logging in by login staff.

Correct bottles used for testing: (Yes) No
If No, explain: _____

Correct amount of sample for analysis: (Yes) No
If No, explain: _____

Are all samples labeled correctly: (Yes) No
If No, explain: _____

NON-CONFORMANCES:
3 temperatures of samples* and average of each cooler: (record differing temperatures on the CoC next to sample ID's)
(1) 5 + 1 + 2 = 3 °C (2) 5 + 2 + 4 = 3 °C (3) ___ + ___ + ___ = ___ °C (4) ___ + ___ + ___ = ___ °C
*Jars used when available

Additional integrity issues (note here and on CoC next to the sample ID):

1) _____
2) _____
3) _____

Account Project Manager: _____ Have they been notified of the above issues: Yes No
Whom spoken to: _____ Date and Time: _____

ADDITIONAL NOTES:

_____

_____

_____

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM Work order # 12V572231

RECEIVING BASICS:
*Complete CoC as well where required
Date and Time: FEB 10/12 0817
Courier: Loomis
Received by: Roberts
Relinquished by: _____
Company: FRANZ
Consultant: _____
Client left without count verified: _____

COC INFORMATION:
Received: (Yes) No Emailed to PM
Completed in full: (Yes) No If NO, why: _____
TURNAROUND TIME: R+4
COC Numbers: 621

SAMPLE QUANTITIES:
Coolers: 1 Bottles/Jars: 2 Bags: —

TIME SENSITIVE ISSUES:
Earliest Date Sampled: FEB 6/12
Microbiology: Test: —
Hydrocarbons: Test: Sulphide
Samples are received >5 days after sampling: Yes (No)

ALREADY EXCEEDED? Yes No
Expiry: —
Expiry: —

SPECIALTY ISSUES:
Legal Samples: Yes (No)
International Samples: Yes (No)
**Proper tape/labels applied: Yes No

Hazardous Samples:
Why hazardous:

Precaution taken:

SAMPLE REQUIREMENTS:
*Complete while logging in by login staff.

Correct bottles used for testing: (Yes) No
If No, explain: _____

Correct amount of sample for analysis: (Yes) No
If No, explain: _____

Are all samples labeled correctly: (Yes) No
If No, explain: _____

NON-CONFORMANCES:
3 temperatures of samples* and average of each cooler: (record differing temperatures on the CoC next to sample ID's)
(1) 1 + 2 + — = 2 °C (2) ___ + ___ + ___ = ___ °C (3) ___ + ___ + ___ = ___ °C (4) ___ + ___ + ___ = ___ °C
*Jars used when available
FLC

Additional integrity issues (note here and on CoC next to the sample ID):
1) _____
2) _____
3) _____

Account Project Manager: _____ Have they been notified of the above issues: Yes No
Whom spoken to: _____ Date and Time: _____

ADDITIONAL NOTES:

AGAT Laboratories

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CLIENT NAME: FRANZ ENVIRONMENTAL
308-108 MAINLAND STREET
VANCOUVER, BC V6B2T4

ATTENTION TO: Amanda Salway

PROJECT NO: 2090-1103

AGAT WORK ORDER: 12V572681

TRACE ORGANICS REVIEWED BY: Larissa Poryadina, Senior Analyst

WATER ANALYSIS REVIEWED BY: Marie England, Inorganics Supervisor

DATE REPORTED: Feb 14, 2012

PAGES (INCLUDING COVER): 21

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (778) 452-4000

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V572681
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons (BTEX/F1-F4) in Water

DATE SAMPLED: Feb 07, 2012 | DATE RECEIVED: Feb 07, 2012 | DATE REPORTED: Feb 14, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-14M 3103279	MV-GWDUP3 3103284	MW2-29 3103286
Benzene	mg/L	0.37	0.0005	<0.0005	<0.0005	<0.0005
Toluene	mg/L	0.002	0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	mg/L	0.09	0.0005	<0.0005	<0.0005	<0.0005
Xylenes	mg/L		0.0005	<0.0005	<0.0005	<0.0005
C6 - C10 (F1)	mg/L		0.1	<0.1	<0.1	<0.1
C6 - C10 (F1 minus BTEX)	mg/L		0.1	<0.1	<0.1	<0.1
C>10 - C16	mg/L		0.1	<0.1	<0.1	<0.1
C16 - C34	mg/L		0.1	<0.1	<0.1	<0.1
C>34 - C50	mg/L		0.1	<0.1	<0.1	<0.1
Surrogate	Unit	Acceptable Limits				
Toluene-d8 (BTEX)	%	50-150		101	100	123
o-Terphenyl (F2-F4)	%	50-150		101	102	102

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL)

3103279-3103286 The C>6 - C10 fraction is calculated using the toluene response factor.
The C10 - C16 fraction is calculated using the average response factor for nC10, nC16 and nC34.
BTEX has NOT been subtracted from Fraction 1.
Sample is blank corrected.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V572681
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons (BTEX/F2-F4) in Water

DATE SAMPLED: Feb 07, 2012 | DATE RECEIVED: Feb 07, 2012 | DATE REPORTED: Feb 14, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	5-BH23 3103281	MV-11BH-10M 3103285	MV-11BH-17M 3103288
Benzene	mg/L	0.37	0.0005	<0.0005	<0.0005	<0.0005
Toluene	mg/L	0.002	0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	mg/L	0.09	0.0005	<0.0005	<0.0005	<0.0005
Xylenes	mg/L		0.0005	<0.0005	<0.0005	<0.0005
C>10 - C16	mg/L		0.1	<0.1	<0.1	<0.1
C16 - C34	mg/L		0.1	<0.1	<0.1	<0.1
C>34 - C50	mg/L		0.1	<0.1	<0.1	<0.1
Surrogate	Unit	Acceptable Limits				
Toluene-d8 (BTEX)	%	50-150		103	102	100
o-Terphenyl (F2-F4)	%	50-150		102	102	101

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL)

3103281-3103288 The C>6 - C10 fraction is calculated using the toluene response factor.
The C10 - C16 fraction is calculated using the average response factor for nC10, nC16 and nC34.
BTEX has NOT been subtracted from Fraction 1.
Sample is blank corrected.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V572681
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 07, 2012 | DATE RECEIVED: Feb 07, 2012 | DATE REPORTED: Feb 14, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-14M 3103279	5-BH23 3103281	MV-GWDUP3 3103284	MV-11BH-10M 3103285	MW2-29 3103286	MV-11BH-17M 3103288
Methyl tert-butyl ether (MTBE)	µg/L	34000	1	<1		<1		<1	
Styrene	µg/L	720	0.5	<0.5		<0.5		<0.5	
VPH	µg/L	1500	100	<100		<100		<100	
Naphthalene	µg/L	10	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.10
Quinoline	µg/L	34	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/L	60	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
Fluorene	µg/L	120	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/L	3	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
Anthracene (Water)	µg/L	1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acridine	µg/L	0.5	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/L	2	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Pyrene	µg/L	0.2	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Benzo(a)anthracene	µg/L	1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	µg/L	1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.1	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dibenzo(a,h)anthracene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h.i)perylene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
LEPH C10-C19	µg/L	500	100	<100	<100	<100	100	<100	<100
HEPH C19-C32	µg/L		100	<100	<100	<100	120	<100	110
Surrogate	Unit	Acceptable Limits							
Nitrobenzene - d5	%	50-130		92	63	81	115	92	94
Quinoline - d7	%	50-130		96	73	90	111	101	99
2-Fluorobiphenyl	%	50-130		77	57	70	76	83	74
P-Terphenyl - d14	%	60-130		105	70	102	104	102	94
Bromofluorobenzene	%	70-130		101		103		106	
Dibromofluoromethane	%	70-130		104		105		112	
Toluene - d8	%	70-130		111		112		120	

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Certificate of Analysis

AGAT WORK ORDER: 12V572681
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 07, 2012	DATE RECEIVED: Feb 07, 2012	DATE REPORTED: Feb 14, 2012	SAMPLE TYPE: Water

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

3103279	VPH results have been corrected for BTEX contributions. LEPH & HEPH results have been corrected for PAH contributions.
3103281	LEPH & HEPH results have been corrected for PAH contributions.
3103284	VPH results have been corrected for BTEX contributions. LEPH & HEPH results have been corrected for PAH contributions.
3103285	LEPH & HEPH results have been corrected for PAH contributions.
3103286	VPH results have been corrected for BTEX contributions. LEPH & HEPH results have been corrected for PAH contributions.
3103288	LEPH & HEPH results have been corrected for PAH contributions.

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AGAT WORK ORDER: 12V572681
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Phenolic Compounds in Water

DATE SAMPLED: Feb 07, 2012 | DATE RECEIVED: Feb 07, 2012 | DATE REPORTED: Feb 14, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	5-BH23 3103281	MW2-29 3103286	MV-11BH-01M 3103287
Phenol	mg/L		0.002	<0.002	<0.002	<0.002
4-Nitrophenol	mg/L		0.005	<0.005	<0.005	<0.005
m&p-Cresol (3&4-methylphenol)	mg/L		0.0005	<0.0005	<0.0005	<0.0005
o-Cresol (2-methylphenol)	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2-Chlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,4-Dinitrophenol	mg/L		0.005	<0.005	<0.005	<0.005
2-Nitrophenol	mg/L		0.005	<0.005	<0.005	<0.005
2,4-Dimethylphenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,6-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001	<0.0001
4-Chloro-3-methylphenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,4-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001	<0.0001
4,6-Dinitro-2-methylphenol	mg/L		0.005	<0.005	<0.005	<0.005
2,3,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,4-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,4,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
3,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,4,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,5,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,4,5-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	mg/L		0.005	<0.005	<0.005	<0.005
Pentachlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
Surrogate	Unit	Acceptable Limits				
2-Fluorophenol	%	50-150		113	110	110
2,4,6-Tribromophenol	%	50-150		112	109	108

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
3103281-3103287 Results relate only to the items tested.

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AGAT WORK ORDER: 12V572681
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Volatile Organic Compounds in Water

DATE SAMPLED: Feb 07, 2012 | DATE RECEIVED: Feb 07, 2012 | DATE REPORTED: Feb 14, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MW2-29 3103286	MV-11BH-01M 3103287
Chloromethane	µg/L		1	<1	<1
Vinyl Chloride	µg/L		1	<1	<1
Bromomethane	µg/L		1	<1	<1
Chloroethane	µg/L		1	<1	<1
Trichlorofluoromethane	µg/L		1	<1	<1
Acetone	µg/L		10	<10	<10
1,1-Dichloroethene	µg/L		1	<1	<1
Dichloromethane	µg/L	980	1	<1	<1
Methyl tert-butyl ether (MTBE)	µg/L	34000	1		<1
2-Butanone (MEK)	µg/L		10	<10	<10
trans-1,2-Dichloroethylene	µg/L		1	<1	<1
1,1-Dichloroethane	µg/L		1	<1	<1
cis-1,2-Dichloroethylene	µg/L		1	<1	<1
Chloroform	µg/L	20	1	<1	<1
1,2-Dichloroethane	µg/L	1000	1	<1	<1
1,1,1-Trichloroethane	µg/L		1	<1	<1
Carbon Tetrachloride	µg/L	130	0.5	<0.5	<0.5
1,2-Dichloropropane	µg/L		1	<1	<1
Benzene	µg/L		0.5		<0.5
Trichloroethene	µg/L	200	1	<1	<1
Bromodichloromethane	µg/L		1	<1	<1
trans-1,3-Dichloropropene	µg/L		1	<1	<1
4-Methyl-2-pentanone (MIBK)	µg/L		10	<10	<10
cis-1,3-Dichloropropene	µg/L		1	<1	<1
1,1,2-Trichloroethane	µg/L		1	<1	<1
Dibromochloromethane	µg/L		1	<1	<1
Ethylene Dibromide	µg/L		0.3	<0.3	<0.3
Tetrachloroethene	µg/L	1100	1	<1	<1
Toluene	µg/L		0.5		<0.5
1,1,1,2-Tetrachloroethane	µg/L		1	<1	<1
Chlorobenzene	µg/L	13	1	<1	<1
Bromoform	µg/L		1	<1	<1
1,1,2,2-Tetrachloroethane	µg/L		1	<1	<1

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Certificate of Analysis

AGAT WORK ORDER: 12V572681
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Volatile Organic Compounds in Water

DATE SAMPLED: Feb 07, 2012 | DATE RECEIVED: Feb 07, 2012 | DATE REPORTED: Feb 14, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MW2-29 3103286	MV-11BH-01M 3103287
1,3-Dichlorobenzene	µg/L	1500	0.5	<0.5	<0.5
1,4-Dichlorobenzene	µg/L	260	0.5	<0.5	<0.5
Ethylbenzene	µg/L	2000	0.5		<0.5
1,2-Dichlorobenzene	µg/L	7	1	<1	<1
m&p-Xylene	µg/L		0.5		<0.5
1,2,4-Trichlorobenzene	µg/L	240	1	<1	<1
Styrene	µg/L	720	0.5		<0.5
o-Xylene	µg/L		0.5		<0.5
Surrogate	**Unit**	**Acceptable Limits**			
Bromofluorobenzene	%	70-130		106	102
Dibromofluoromethane	%	70-130		112	109
Toluene - d8	%	70-130		120	117

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

Certified By:

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AGAT WORK ORDER: 12V572681
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

British Columbia CSR- Schedule 6 Dissolved Metals

DATE SAMPLED: Feb 07, 2012 | DATE RECEIVED: Feb 07, 2012 | DATE REPORTED: Feb 14, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-10M 3103285	MW2-29 3103286	MV-11BH-01M 3103287
Aluminum Dissolved	µg/L		1	21	5	16
Antimony Dissolved	µg/L		0.05	0.18	<0.05	0.08
Arsenic Dissolved	µg/L	5	0.1	4.8	51.9	7.0
Barium Dissolved	µg/L		0.1	251	179	175
Beryllium Dissolved	µg/L		0.01	0.03	0.01	0.01
Boron Dissolved	µg/L		1	326	41	262
Cadmium Dissolved	µg/L	0.017	0.01	0.41	0.02	0.02
Calcium Dissolved	mg/L		0.05	94.6	126	135
Chromium Dissolved	µg/L		0.5	2.5	1.7	1.6
Cobalt Dissolved	µg/L		0.05	20.9	0.59	7.47
Copper Dissolved	µg/L		0.2	2.4	1.0	0.6
Iron Dissolved	mg/L	0.3	0.01	12.1	79.9	42.9
Lead Dissolved	µg/L		0.01	0.18	0.21	0.24
Lithium Dissolved	µg/L		0.1	7.3	3.0	10.5
Magnesium Dissolved	mg/L		0.05	14.5	21.6	22.0
Manganese Dissolved	mg/L		0.001	4.71	5.59	3.24
Mercury Dissolved	µg/L	0.026	0.003	0.007	<0.003	<0.003
Molybdenum Dissolved	µg/L	73	0.05	9.78	1.03	0.41
Nickel Dissolved	µg/L		0.1	17.8	3.2	7.1
Selenium Dissolved	µg/L	1	0.1	0.8	<0.1	<0.1
Silver Dissolved	µg/L	0.1	0.01	<0.01	<0.01	<0.01
Sodium Dissolved	mg/L		0.05	88.7	6.21	30.5
Thallium Dissolved	µg/L	0.8	0.002	0.254	0.047	0.020
Titanium Dissolved	µg/L		0.1	127	152	169
Uranium Dissolved	µg/L		0.01	4.91	0.02	0.06
Vanadium Dissolved	µg/L		0.1	0.8	1.1	0.6
Zinc Dissolved	µg/L	30	1	16	9	8
Hardness (calc)	mg CaCO3/L		1	296	404	428

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL) (Van)

Certified By: Marie England

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AGAT WORK ORDER: 12V572681
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Routine Water Analysis

DATE SAMPLED: Feb 07, 2012 | DATE RECEIVED: Feb 07, 2012 | DATE REPORTED: Feb 14, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MW2-29 3103286	MV-11BH-01M 3103287
Chloride	mg/L	1500	0.05	31.1	26.6

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

Certified By:

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AGAT WORK ORDER: 12V572681
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Water Analysis - Sulphide

DATE SAMPLED: Feb 07, 2012 | DATE RECEIVED: Feb 07, 2012 | DATE REPORTED: Feb 14, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-01M 3103287
Sulphide	mg/L		0.1	<0.1

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V572681

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis

RPT Date: Feb 14, 2012			DUPLICATE				REFERENCE MATERIAL				METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Petroleum Hydrocarbons in Water															
Methyl tert-butyl ether (MTBE)	1	3103286	<1	<1	0.0%	< 1	97%	80%	120%				NA	70%	130%
Styrene	1	3103286	<0.5	<0.5	0.0%	< 0.5	100%	80%	120%				112%	70%	130%
VPH	1	3103286	<100	<100	0.0%	< 100									
Naphthalene	1	W-MS	0.09	0.09	0.0%	< 0.05	100%	80%	120%				95%	50%	130%
Quinoline	1	W-MS	<0.1	0.1	0.0%	< 0.1	100%	80%	120%				100%	50%	130%
Acenaphthylene	1	W-MS	0.08	0.08	0.0%	< 0.05	100%	80%	120%				87%	50%	130%
Acenaphthene	1	W-MS	0.08	0.09	12.0%	< 0.05	100%	80%	120%				88%	50%	130%
Fluorene	1	W-MS	0.10	0.10	0.0%	< 0.05	100%	80%	120%				101%	50%	130%
Phenanthrene	1	W-MS	0.10	0.10	0.0%	< 0.05	97%	80%	120%				103%	60%	130%
Anthracene (Water)	1	W-MS	0.08	0.08	0.0%	< 0.05	102%	80%	120%				83%	60%	130%
Acridine	1	W-MS	0.10	0.10	0.0%	< 0.05	99%	80%	120%				104%	50%	130%
Fluoranthene	1	W-MS	0.09	0.10	11.0%	< 0.05	100%	80%	120%				95%	60%	130%
Pyrene	1	W-MS	0.10	0.10	0.0%	< 0.02	99%	80%	120%				104%	60%	130%
Benzo(a)anthracene	1	W-MS	0.09	0.10	11.0%	< 0.05	100%	80%	120%				96%	60%	130%
Chrysene	1	W-MS	0.09	0.10	11.0%	< 0.05	100%	80%	120%				94%	60%	130%
Benzo(b)fluoranthene	1	W-MS	0.11	0.12	9.0%	< 0.05	99%	80%	120%				117%	60%	130%
Benzo(k)fluoranthene	1	W-MS	0.10	0.11	9.5%	< 0.05	101%	80%	120%				108%	60%	130%
Benzo(a)pyrene	1	W-MS	0.09	0.09	0.0%	< 0.01	101%	80%	120%				92%	60%	130%
Indeno(1,2,3-cd)pyrene	1	W-MS	0.09	0.10	11.0%	< 0.05	99%	80%	120%				96%	60%	130%
Dibenzo(a,h)anthracene	1	W-MS	0.09	0.09	0.0%	< 0.05	99%	80%	120%				92%	60%	130%
Benzo(g,h.i)perylene	1	W-MS	0.09	0.09	0.0%	< 0.05	99%	80%	120%				92%	60%	130%
Nitrobenzene - d5	1	W-MS	87	88	1.0%		98%	80%	120%				87%	50%	130%
Quinoline - d7	1	W-MS	102	102	0.0%		102%	80%	120%				102%	50%	130%
2-Fluorobiphenyl	1	W-MS	84	82	2.0%		101%	80%	120%				84%	50%	130%
P-Terphenyl - d14	1	W-MS	96	97	1.0%		99%	80%	120%				96%	60%	130%
Bromofluorobenzene	1	3103286	106	102	4.0%		96%	70%	130%				117%	70%	130%
Dibromofluoromethane	1	3103286	112	107	5.0%		100%	70%	130%				124%	70%	130%
Toluene - d8	1	3103286	120	113	6.0%		92%	70%	130%				125%	70%	130%
Volatile Organic Compounds in Water															
Chloromethane	1	3103286	<1	<1	0.0%	< 1	93%	80%	120%				74%	70%	130%
Vinyl Chloride	1	3103286	<1	<1	0.0%	< 1	95%	80%	120%				76%	70%	130%
Bromomethane	1	3103286	<1	<1	0.0%	< 1	94%	80%	120%				83%	70%	130%
Chloroethane	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				95%	70%	130%
Trichlorofluoromethane	1	3103286	<1	<1	0.0%	< 1	97%	80%	120%				83%	70%	130%
Acetone	1	3103286	<10	<10	0.0%	< 10	94%	80%	120%				NA	70%	130%
1,1-Dichloroethene	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				100%	70%	130%
Dichloromethane	1	3103286	<1	<1	0.0%	< 1	92%	80%	120%				94%	70%	130%
2-Butanone (MEK)	1	3103286	<10	<10	0.0%	< 10	95%	80%	120%				NA	70%	130%

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL
AGAT WORK ORDER: 12V572681
PROJECT NO: 2090-1103
ATTENTION TO: Amanda Salway

Trace Organics Analysis (Continued)

RPT Date: Feb 14, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
trans-1,2-Dichloroethylene	1	3103286	<1	<1	0.0%	< 1	99%	80%	120%				109%	70%	130%
1,1-Dichloroethane	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				114%	70%	130%
cis-1,2-Dichloroethylene	1	3103286	<1	<1	0.0%	< 1	99%	80%	120%				113%	70%	130%
Chloroform	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				115%	70%	130%
1,2-Dichloroethane	1	3103286	<1	<1	0.0%	< 1	97%	80%	120%				111%	70%	130%
1,1,1-Trichloroethane	1	3103286	<1	<1	0.0%	< 1	100%	80%	120%				108%	70%	130%
Carbon Tetrachloride	1	3103286	<0.5	<0.5	0.0%	< 0.5	100%	80%	120%				105%	70%	130%
1,2-Dichloropropane	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				115%	70%	130%
Trichloroethene	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				112%	70%	130%
Bromodichloromethane	1	3103286	<1	<1	0.0%	< 1	101%	80%	120%				112%	70%	130%
trans-1,3-Dichloropropene	1	3103286	<1	<1	0.0%	< 1	102%	80%	120%				108%	70%	130%
4-Methyl-2-pentanone (MIBK)	1	3103286	<10	<10	0.0%	< 10	99%	80%	120%				NA	70%	130%
cis-1,3-Dichloropropene	1	3103286	<1	<1	0.0%	< 1	101%	80%	120%				109%	70%	130%
1,1,2-Trichloroethane	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				110%	70%	130%
Dibromochloromethane	1	3103286	<1	<1	0.0%	< 1	101%	80%	120%				110%	70%	130%
Ethylene Dibromide	1	3103286	<0.3	<0.3	0.0%	< 0.3	98%	80%	120%				110%	70%	130%
Tetrachloroethene	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				85%	70%	130%
1,1,1,2-Tetrachloroethane	1	3103286	<1	<1	0.0%	< 1	101%	80%	120%				113%	70%	130%
Chlorobenzene	1	3103286	<1	<1	0.0%	< 1	97%	80%	120%				109%	70%	130%
Bromoform	1	3103286	<1	<1	0.0%	< 1	100%	80%	120%				102%	70%	130%
1,1,2,2-Tetrachloroethane	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				103%	70%	130%
1,3-Dichlorobenzene	1	3103286	<0.5	<0.5	0.0%	< 0.5	98%	80%	120%				108%	70%	130%
1,4-Dichlorobenzene	1	3103286	<0.5	<0.5	0.0%	< 0.5	96%	80%	120%				106%	70%	130%
1,2-Dichlorobenzene	1	3103286	<1	<1	0.0%	< 1	97%	80%	120%				108%	70%	130%
1,2,4-Trichlorobenzene	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				104%	70%	130%
Bromofluorobenzene	1	3103286	106	102	4.0%	<	96%	80%	120%				117%	70%	130%
Dibromofluoromethane	1	3103286	112	107	5.0%	<	100%	80%	120%				124%	70%	130%
Toluene - d8	1	3103286	120	113	6.0%	<	92%	80%	120%				125%	70%	130%
Petroleum Hydrocarbons (BTEX/F1-F4) in Water															
Benzene	3466	3103279	<0.0005	<0.0005	NA	< 0.0005	109%	80%	120%	102%	80%	120%	112%	70%	130%
Toluene	3466	3103279	<0.0005	<0.0005	NA	< 0.0005	107%	80%	120%	99%	80%	120%	106%	70%	130%
Ethylbenzene	3466	3103279	<0.0005	<0.0005	NA	< 0.0005	97%	80%	120%	94%	80%	120%	93%	70%	130%
Xylenes	3466	3103279	<0.0005	<0.0005	NA	< 0.0005	105%	80%	120%	108%	80%	120%	103%	70%	130%
C6 - C10 (F1)	3466	3103279	<0.1	<0.1	NA	< 0.1	91%	80%	120%	106%	80%	120%	98%	70%	130%
C>10 - C16	28	3095674	<0.1	<0.1	NA	< 0.1	107%	80%	120%	97%	80%	120%	101%	70%	130%
C16 - C34	28	3095674	<0.1	<0.1	NA	< 0.1	107%	80%	120%	112%	80%	120%	101%	70%	130%
C>34 - C50	28	3095674	<0.1	<0.1	NA	< 0.1	107%	80%	120%	104%	80%	120%	104%	70%	130%
Phenolic Compounds in Water															

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V572681

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis (Continued)

RPT Date: Feb 14, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Phenol	135	3100893	<0.002	<0.002	NA	< 0.002	85%	80%	120%	95%	70%	130%	95%	60%	140%
4-Nitrophenol	135	3100893	<0.005	<0.005	NA	< 0.005	83%	80%	120%	88%	70%	130%	90%	60%	140%
m&p-Cresol (3&4-methylphenol)	135	3100893	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
o-Cresol (2-methylphenol)	135	3100893	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
2-Chlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	84%	80%	120%	95%	70%	130%	91%	60%	140%
2,4-Dinitrophenol	135	3100893	<0.005	<0.005	NA	< 0.005	90%	80%	120%	91%	70%	130%	93%	60%	140%
2-Nitrophenol	135	3100893	<0.005	<0.005	NA	< 0.005	97%	80%	120%	106%	70%	130%	100%	60%	140%
2,4-Dimethylphenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	85%	80%	120%	93%	70%	130%	89%	60%	140%
2,6-Dichlorophenol	135	3100893	<0.0001	<0.0001	NA	< 0.0001				93%	70%	130%	90%	60%	140%
4-Chloro-3-methylphenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	83%	80%	120%	94%	70%	130%	89%	60%	140%
2,4-Dichlorophenol	135	3100893	<0.0001	<0.0001	NA	< 0.0001	87%	80%	120%	87%	70%	130%	85%	60%	140%
4,6-Dinitro-2-methylphenol	135	3100893	<0.005	<0.005	NA	< 0.005	93%	80%	120%	85%	70%	130%	104%	60%	140%
2,3,6-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	94%	60%	140%
2,3,4-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	92%	60%	140%
2,4,6-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	86%	80%	120%	96%	70%	130%	95%	60%	140%
2,4,5-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
2,3,5-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				97%	70%	130%	95%	60%	140%
3,4,5-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	94%	60%	140%
2,3,4,6-Tetrachlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				100%	70%	130%	99%	60%	140%
2,3,5,6-Tetrachlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				100%	70%	130%	100%	60%	140%
2,3,4,5-Tetrachlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				100%	70%	130%	98%	60%	140%
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	135	3100893	<0.005	<0.005	NA	< 0.005				117%	70%	130%	97%	60%	140%
Pentachlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	91%	80%	120%	107%	70%	130%	103%	60%	140%
Petroleum Hydrocarbons (BTEX/F2-F4) in Water															
Benzene	387	3095680	< 0.0005	< 0.0005	NA	< 0.0005	100%	80%	120%	96%	80%	120%	93%	70%	130%
Toluene	387	3095680	< 0.0005	< 0.0005	NA	< 0.0005	100%	80%	120%	96%	80%	120%	97%	70%	130%
Ethylbenzene	387	3095680	0.0009	0.0009	0.0%	< 0.0005	104%	80%	120%	97%	80%	120%	103%	70%	130%
Xylenes	387	3095680	0.0048	0.0047	2.1%	< 0.0005	102%	80%	120%	97%	80%	120%	101%	70%	130%

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V572681

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Water Analysis

RPT Date: Feb 14, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
British Columbia CSR- Schedule 6 Dissolved Metals															
Aluminum Dissolved	20120	3100893	3	2	NA	< 1	107%	90%	110%	105%	85%	115%			
Antimony Dissolved	20120	3100893	<0.05	<0.05	0.0%	< 0.05	104%	90%	110%	98%	85%	110%			
Arsenic Dissolved	20120	3100893	21.8	21.5	1.0%	< 0.1	101%	90%	110%	109%	90%	110%			
Barium Dissolved	20120	3100893	101	98.4	3.0%	< 0.1	98%	90%	110%	94%	90%	110%			
Beryllium Dissolved	20120	3100893	<0.01	<0.01	0.0%	< 0.01	110%	90%	110%	101%	90%	110%			
Boron Dissolved	20120	3100893	58	55	5.0%	< 1	108%	90%	110%	108%	80%	120%			
Cadmium Dissolved	20120	3100893	0.01	<0.01	0.0%	< 0.01	99%	90%	110%	99%	90%	110%			
Calcium Dissolved	20120	3100893	142	142	0.0%	< 0.05	99%	90%	110%	103%	90%	110%			
Chromium Dissolved	20120	3100893	4.8	4.9	2.0%	< 0.5	99%	90%	110%	96%	90%	110%			
Cobalt Dissolved	20120	3100893	0.29	0.32	10.0%	< 0.05	97%	90%	110%	100%	90%	110%			
Copper Dissolved	20120	3100893	0.3	0.3	0.0%	< 0.2	101%	90%	110%	100%	90%	110%			
Iron Dissolved	20120	3100893	53.2	53.3	0.0%	< 0.01	104%	90%	110%	105%	90%	110%			
Lead Dissolved	20120	3100893	0.16	0.15	6.0%	< 0.01	101%	90%	110%	99%	90%	110%			
Lithium Dissolved	20120	3100893	2.8	2.7	4.0%	< 0.1				103%	90%	110%			
Magnesium Dissolved	20120	3100893	25.3	25.0	1.0%	< 0.05	104%	90%	110%	108%	90%	110%			
Manganese Dissolved	20120	3100893	3.16	3.12	1.0%	< 0.001	103%	90%	110%	104%	90%	110%			
Mercury Dissolved	20120	3100893	<0.003	<0.003	0.0%	< 0.003	92%	90%	110%	104%	90%	110%			
Molybdenum Dissolved	20120	3100893	0.49	0.48	2.0%	< 0.05	96%	90%	110%	101%	90%	110%			
Nickel Dissolved	20120	3100893	1.2	1.3	8.0%	< 0.1	99%	90%	110%	98%	90%	110%			
Selenium Dissolved	20120	3100893	<0.1	<0.1	0.0%	< 0.1	97%	90%	110%	99%	85%	115%			
Silver Dissolved	20120	3100893	<0.01	<0.01	0.0%	< 0.01				101%	90%	110%			
Sodium Dissolved	20120	3100893	7.96	7.90	1.0%	< 0.05	101%	90%	110%	107%	90%	110%			
Thallium Dissolved	20120	3100893	0.016	0.015	6.0%	< 0.002	93%	90%	110%	96%	90%	110%			
Titanium Dissolved	20120	3100893	162	171	5.0%	< 0.1				108%	90%	110%			
Uranium Dissolved	20120	3100893	0.04	0.04	0.0%	< 0.01		90%	110%	98%	90%	110%			
Vanadium Dissolved	20120	3100893	0.7	0.8	13.0%	< 0.1	98%	90%	110%	102%	90%	110%			
Zinc Dissolved	20120	3100893	5	5	0.0%	< 1	103%	90%	110%	104%	85%	115%			
Routine Water Analysis															
Chloride	1	3102133	9010	9130	1.3%	< 0.05	103%	85%	115%	104%	90%	110%	101%	70%	130%
Water Analysis - Sulphide															
Sulphide	5846	5657	< 0.1	< 0.1	0.0%	< 0.1	105%	80%	120%				104%	80%	120%

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Method Summary

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PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Benzene	TO 0540	EPA SW846 8260	GC/MS
Toluene	TO 0540	EPA SW846 8260	GC/MS
Ethylbenzene	TO 0540	EPA SW846 8260	GC/MS
Xylenes	TO 0540	EPA SW846 8260	GC/MS
C6 - C10 (F1)	TO 0540	CCME Tier 1 Method	GC/FID
C6 - C10 (F1 minus BTEX)	TO 0540	CCME Tier 1 Method	GC/FID
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
C16 - C34	TO 0511	CCME Tier 1 Method	GC/FID
C>34 - C50	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO 0340	EPA SW846 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
Benzene	TO 0540	EPA SW846 8260	GC/MS
Toluene	TO 0540	EPA SW846 8260	GC/MS
Ethylbenzene	TO 0540	EPA SW846 8260	GC/MS
Xylenes	TO 0540	EPA SW846 8260	GC/MS
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
C16 - C34	TO 0511	CCME Tier 1 Method	GC/FID
C>34 - C50	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO 0340	EPA SW846 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
Naphthalene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Quinoline	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Methyl tert-butyl ether (MTBE)	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Acenaphthylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acenaphthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Fluorene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Phenanthrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Anthracene (Water)	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acridine	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Styrene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
VPH	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Chrysene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(b)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS

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Benzo(k)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Dibenzo(a,h)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(g,h.i)perylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Nitrobenzene - d5	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
Quinoline - d7	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
2-Fluorobiphenyl	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
P-Terphenyl - d14	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
LEPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
HEPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
Bromofluorobenzene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Dibromofluoromethane	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Toluene - d8	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Phenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
m&p-Cresol (3&4-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
o-Cresol (2-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
2-Chlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dinitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dimethylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,6-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Chloro-3-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4,6-Dinitro-2-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
3,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,5-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
Dinoseb (2-sec-butyl-4,6-dinitrophenol)	TO 1200	EPA SW-846 8321	HPLC/UV
Pentachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Fluorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Tribromophenol	TO 1200	EPA SW-846 8321	HPLC/UV

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ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Chloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Vinyl Chloride	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromomethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Chloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Trichlorofluoromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Acetone	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1-Dichloroethene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dichloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Methyl tert-butyl ether (MTBE)	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
2-Butanone (MEK)	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
trans-1,2-Dichloroethylene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1-Dichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
cis-1,2-Dichloroethylene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Chloroform	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,1-Trichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Carbon Tetrachloride	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Benzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichloropropane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Trichloroethene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromodichloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
trans-1,3-Dichloropropene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
4-Methyl-2-pentanone (MIBK)	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
cis-1,3-Dichloropropene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,2-Trichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Toluene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dibromochloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Ethylene Dibromide	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS

AGAT Laboratories

Unit 120, 8600 Glenlyon Parkway
Burnaby, British Columbia
CANADA V5J 0B6
TEL (778)452-4000
FAX (778)452-4074
http://www.agatlabs.com

Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V572681

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Tetrachloroethene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,1,2-Tetrachloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Chlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Ethylbenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
m&p-Xylene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromoform	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Styrene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,2,2-Tetrachloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
o-Xylene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,3-Dichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,4-Dichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2,4-Trichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromofluorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dibromofluoromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Toluene - d8	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V572681

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Aluminum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Antimony Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Arsenic Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Barium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Beryllium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Boron Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cadmium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Calcium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Chromium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cobalt Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Copper Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Iron Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Lead Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Lithium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Magnesium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Manganese Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Mercury Dissolved	MET-181-6103, LAB-181-4015	Modified from EPA 245.7	CV/AA
Molybdenum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Nickel Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Selenium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Silver Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Sodium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Thallium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Titanium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Uranium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Vanadium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Zinc Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Chloride	INOR-181-6002	Modified from SM 4110 B	ION CHROMATOGRAPH

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V572681

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Sulphide	WAT 0100	SM 4500 S2- D	SPECTROPHOTOMETER

AGAT Laboratories

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Burnaby, BC,
V5J 0B6
webearth.agatlabs.com
Ph.: 778.452.4000 · Fax: 778.452.7074

Chain of Custody Record

Turnaround Time Required (TAT)

Regular TAT	5 to 7 working days	☒
Rush TAT	24 to 48 hours	☐
	48 to 72 hours	☐

Date Required: _____

Please contact laboratory if Rush is required

Report To:

Company: Franz Environmental
Contact: Amanda Salway
Address: 308-1080 Mainland St.
Vancouver, BC V6B 2T4
Phone: 604 632-9941 Fax: 604 632 9942
LSD:
Client Project #: 2090-1103

Report Information

1. Name: Amanda Salway
Email: asalway@franzbc.com
2. Name: Viviane Dubois-Côté
Email: vdcote@franzbc.com

Report Format

☐ Single Sample per page
☒ Multiple Samples per page
☒ Excel Format Included

Laboratory Use Only

Arrival Temperature: 5°C
AGAT Job Number: 12V572681

Notes: FEB 7 PM 5:46

Invoice To: Same as above Yes ☒ No ☐

Company:
Contact:
Address:
Phone: Fax:
PO/AFE #:

Regulatory Requirements (Check):

☐ **BC CSR – Soil**
- ☐ Agricultural
- ☐ Industrial
- ☐ Urban/Park
- ☐ Commercial

☒ **BC CSR – Water**
- ☐ Drinking Water
- ☒ Aquatic Life
- ☐ Irrigation
- ☐ Livestock

☒ **CCME**
- ☐ Drinking Water
- ☐ Residential/Park
- ☐ Commercial
- ☐ Industrial
- ☐ Drinking Water
- ☒ FWAL

Lab ID #	Sample Identification	Sample Matrix	Date/Time Sampled	Comments – Site/Sample Info. Sample Containment	BC CSR BTEX/VPH	BC CSR LEPH/HEPH	BC CSR Metals + CCME metals	VOCs	BC CSR Schedule II	Routine Potability	Sulfide	CCME F1	CCME F2-F4	Sodium + Chloride	Chlorinated and non-chlorinated phenols	Number of Containers	Preserved (Y/N)	Hazardous (Y/N)	Hold for 1 YEAR
31 03279	MV-11BR-14M	Water	Feb 7, 2012		X	X						X	X			5			
281	S-BH23					X							X		X	3			
284	MV-GWDUP3				X	X						X	X			5			
285	MV-11BR-10M					X	X						X			3			
286	MW2-29				X	X	X	X				X	X	X	X	11			
287	MV-11BR-01M						X	X			X			X	X	7			
288	MV-11BR-17M	↓	↓			X							X			2			

Samples Relinquished by (print name & sign): _____ Date: Feb 7, 2012
Samples Received by (Print name & sign): AMIEL OCAMPO Date: 7 FEB 2012 5:46 pm

Samples Relinquished by (print name & sign): _____ Date:
Samples Received by (Print name & sign): Date:

Samples Relinquished by (print name & sign): _____ Date:
Samples Received by (Print name & sign): Date:

Pink Copy - Client
Yellow Copy - AGAT
White Copy - AGAT

Page 1 of 1

NO: 000622

Document ID: DIV-186-0811.001

Date revised: August 24, 2011

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM - BURNABY

Work Order # 12V572687

RECEIVING BASICS:
***Complete CoC as well where required**
Date and Time: 07-FEB-12@5:46pm
Courier: _____
Received by: Ariel Ocampo
Relinquished by: Amarela
Branch Received From: _____
Company: Franz Env
Consultant: _____
Client left without count verified: No

COC INFORMATION:
Received: (Yes) No Emailed to PM
Completed in full: (Yes) No If NO, why: _____
TURNAROUND TIME: Reg
COC Numbers: 000622

SAMPLE QUANTITIES:
Coolers: _____ Bottles/Jars: 36 Bags: _____

TIME SENSITIVE ISSUES:
Earliest Date Sampled: 07-FEB-12
Microbiology: Test: _____
Hydrocarbons: Test: BTEX
Samples are received >5 days after sampling: Yes (No)

ALREADY EXCEEDED? Yes (No)
Expiry: _____
Expiry: 14-FEB-12

SPECIALTY ISSUES:
Legal Samples: Yes No N/A
International Samples: Yes No
**Proper tape/labels applied: Yes No

Hazardous Samples:
Why hazardous:
_____
Precaution taken:
_____

SAMPLE REQUIREMENTS:
*Complete while logging in by login staff.

Correct bottles used for testing: (Yes) No
If No, explain: _____

Correct amount of sample for analysis: (Yes) No
If No, explain: _____

Are all samples labeled correctly: (Yes) No
If No, explain: _____

NON-CONFORMANCES:
3 temperatures of samples* and average of each cooler: (record differing temperatures on the CoC next to sample ID's)
(1) 2 + 3 + 4 = ___°C (2) 3 + 4 + 6 = ___°C (3) ___+___+___=___°C (4) ___+___+___=___°C
*Jars used when available

Additional integrity issues (note here and on CoC next to the sample ID):

1) _____
2) _____
3) _____

Account Project Manager: _____ Have they been notified of the above issues: Yes No
Whom spoken to: _____ Date and Time: _____

ADDITIONAL NOTES:

_____

_____

_____

AGAT Laboratories

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CLIENT NAME: FRANZ ENVIRONMENTAL
308-108 MAINLAND STREET
VANCOUVER, BC V6B2T4

ATTENTION TO: Amanda Salway

PROJECT NO: 2090-1103

AGAT WORK ORDER: 12V572681

TRACE ORGANICS REVIEWED BY: Craig Stehr, Organics Supervisor

WATER ANALYSIS REVIEWED BY: Jada Benjamin, Inorganics Manager

DATE REPORTED: Mar 06, 2012

PAGES (INCLUDING COVER): 21

VERSION*: 3

Should you require any information regarding this analysis please contact your client services representative at (778) 452-4000

*NOTES

VERSION 3:Version 2 amended to include VH and EPH results as per client.

Report reissued to report sulphide to a lower detection limit as requested by Amanda Salway of Franz Environmental on March 5, 2012.

Version 3 is an amendment to Version 2.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V572681
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons (BTEX/F1-F4) in Water

DATE SAMPLED: Feb 07, 2012 | DATE RECEIVED: Feb 07, 2012 | DATE REPORTED: Mar 06, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-14M 3103279	MV-GWDUP3 3103284	MW2-29 3103286
Benzene	mg/L	0.37	0.0005	<0.0005	<0.0005	<0.0005
Toluene	mg/L	0.002	0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	mg/L	0.09	0.0005	<0.0005	<0.0005	<0.0005
Xylenes	mg/L		0.0005	<0.0005	<0.0005	<0.0005
C6 - C10 (F1)	mg/L		0.1	<0.1	<0.1	<0.1
C6 - C10 (F1 minus BTEX)	mg/L		0.1	<0.1	<0.1	<0.1
C>10 - C16	mg/L		0.1	<0.1	<0.1	<0.1
C16 - C34	mg/L		0.1	<0.1	<0.1	<0.1
C>34 - C50	mg/L		0.1	<0.1	<0.1	<0.1
Surrogate	Unit	Acceptable Limits				
Toluene-d8 (BTEX)	%	50-150		101	100	123
o-Terphenyl (F2-F4)	%	50-150		101	102	102

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL)

3103279-3103286 The C>6 - C10 fraction is calculated using the toluene response factor.
The C10 - C16 fraction is calculated using the average response factor for nC10, nC16 and nC34.
BTEX has NOT been subtracted from Fraction 1.
Sample is blank corrected.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V572681
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons (BTEX/F2-F4) in Water

DATE SAMPLED: Feb 07, 2012 | DATE RECEIVED: Feb 07, 2012 | DATE REPORTED: Mar 06, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	5-BH23 3103281	MV-11BH-10M 3103285	MV-11BH-17M 3103288
Benzene	mg/L	0.37	0.0005	<0.0005	<0.0005	<0.0005
Toluene	mg/L	0.002	0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	mg/L	0.09	0.0005	<0.0005	<0.0005	<0.0005
Xylenes	mg/L		0.0005	<0.0005	<0.0005	<0.0005
C>10 - C16	mg/L		0.1	<0.1	<0.1	<0.1
C16 - C34	mg/L		0.1	<0.1	<0.1	<0.1
C>34 - C50	mg/L		0.1	<0.1	<0.1	<0.1
Surrogate	Unit	Acceptable Limits				
Toluene-d8 (BTEX)	%	50-150		103	102	100
o-Terphenyl (F2-F4)	%	50-150		102	102	101

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL)

3103281-3103288 The C>6 - C10 fraction is calculated using the toluene response factor.
The C10 - C16 fraction is calculated using the average response factor for nC10, nC16 and nC34.
BTEX has NOT been subtracted from Fraction 1.
Sample is blank corrected.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V572681
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 07, 2012 | DATE RECEIVED: Feb 07, 2012 | DATE REPORTED: Mar 06, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-14M 3103279	5-BH23 3103281	MV-GWDUP3 3103284	MV-11BH-10M 3103285	MW2-29 3103286	MV-11BH-17M 3103288
Methyl tert-butyl ether (MTBE)	µg/L	34000	1	<1		<1		<1	
Styrene	µg/L	720	0.5	<0.5		<0.5		<0.5	
VPH	µg/L	1500	100	<100		<100		<100	
VH	µg/L	15000	100	<100		<100		<100	
Naphthalene	µg/L	10	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.10
Quinoline	µg/L	34	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/L	60	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
Fluorene	µg/L	120	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/L	3	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
Anthracene (Water)	µg/L	1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acridine	µg/L	0.5	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/L	2	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Pyrene	µg/L	0.2	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Benzo(a)anthracene	µg/L	1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	µg/L	1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.1	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dibenzo(a,h)anthracene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h.i)perylene	µg/L		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
LEPH C10-C19	µg/L	500	100	<100	<100	<100	100	<100	<100
HEPH C19-C32	µg/L		100	<100	<100	<100	120	<100	110
EPH C10-C19	µg/L	5000	100	<100	<100	<100	100	<100	<100
EPH C19-C32	µg/L		100	<100	<100	<100	120	<100	110

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 12V572681
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 07, 2012 | DATE RECEIVED: Feb 07, 2012 | DATE REPORTED: Mar 06, 2012 | SAMPLE TYPE: Water

Surrogate	Unit	Acceptable Limits	MV-11BH-14M 3103279	5-BH23 3103281	MV-GWDUP3 3103284	MV-11BH-10M 3103285	MW2-29 3103286	MV-11BH-17M 3103288
Nitrobenzene - d5	%	50-130	92	63	81	115	92	94
Quinoline - d7	%	50-130	96	73	90	111	101	99
2-Fluorobiphenyl	%	50-130	77	57	70	76	83	74
P-Terphenyl - d14	%	60-130	105	70	102	104	102	94
Bromofluorobenzene	%	70-130	101		103		106	
Dibromofluoromethane	%	70-130	104		105		112	
Toluene - d8	%	70-130	111		112		120	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

3103279 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.

3103281 LEPH & HEPH results have been corrected for PAH contributions.

3103284 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.

3103285 LEPH & HEPH results have been corrected for PAH contributions.

3103286 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.

3103288 LEPH & HEPH results have been corrected for PAH contributions.

Certified By:

AGAT Laboratories

Unit 120, 8600 Glenlyon Parkway
Burnaby, British Columbia
CANADA V5J 0B6
TEL (778)452-4000
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http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 12V572681
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Phenolic Compounds in Water

DATE SAMPLED: Feb 07, 2012 | DATE RECEIVED: Feb 07, 2012 | DATE REPORTED: Mar 06, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	5-BH23 3103281	MW2-29 3103286	MV-11BH-01M 3103287
Phenol	mg/L		0.002	<0.002	<0.002	<0.002
4-Nitrophenol	mg/L		0.005	<0.005	<0.005	<0.005
m&p-Cresol (3&4-methylphenol)	mg/L		0.0005	<0.0005	<0.0005	<0.0005
o-Cresol (2-methylphenol)	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2-Chlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,4-Dinitrophenol	mg/L		0.005	<0.005	<0.005	<0.005
2-Nitrophenol	mg/L		0.005	<0.005	<0.005	<0.005
2,4-Dimethylphenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,6-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001	<0.0001
4-Chloro-3-methylphenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,4-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001	<0.0001
4,6-Dinitro-2-methylphenol	mg/L		0.005	<0.005	<0.005	<0.005
2,3,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,4-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,4,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
3,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,4,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,5,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,4,5-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	mg/L		0.005	<0.005	<0.005	<0.005
Pentachlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
Surrogate	Unit	Acceptable Limits				
2-Fluorophenol	%	50-150		113	110	110
2,4,6-Tribromophenol	%	50-150		112	109	108

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
3103281-3103287 Results relate only to the items tested.

Certified By:

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AGAT WORK ORDER: 12V572681
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Volatile Organic Compounds in Water

DATE SAMPLED: Feb 07, 2012 | DATE RECEIVED: Feb 07, 2012 | DATE REPORTED: Mar 06, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MW2-29 3103286	MV-11BH-01M 3103287
Chloromethane	µg/L		1	<1	<1
Vinyl Chloride	µg/L		1	<1	<1
Bromomethane	µg/L		1	<1	<1
Chloroethane	µg/L		1	<1	<1
Trichlorofluoromethane	µg/L		1	<1	<1
Acetone	µg/L		10	<10	<10
1,1-Dichloroethene	µg/L		1	<1	<1
Dichloromethane	µg/L	980	1	<1	<1
Methyl tert-butyl ether (MTBE)	µg/L	34000	1		<1
2-Butanone (MEK)	µg/L		10	<10	<10
trans-1,2-Dichloroethylene	µg/L		1	<1	<1
1,1-Dichloroethane	µg/L		1	<1	<1
cis-1,2-Dichloroethylene	µg/L		1	<1	<1
Chloroform	µg/L	20	1	<1	<1
1,2-Dichloroethane	µg/L	1000	1	<1	<1
1,1,1-Trichloroethane	µg/L		1	<1	<1
Carbon Tetrachloride	µg/L	130	0.5	<0.5	<0.5
1,2-Dichloropropane	µg/L		1	<1	<1
Benzene	µg/L		0.5		<0.5
Trichloroethene	µg/L	200	1	<1	<1
Bromodichloromethane	µg/L		1	<1	<1
trans-1,3-Dichloropropene	µg/L		1	<1	<1
4-Methyl-2-pentanone (MIBK)	µg/L		10	<10	<10
cis-1,3-Dichloropropene	µg/L		1	<1	<1
1,1,2-Trichloroethane	µg/L		1	<1	<1
Dibromochloromethane	µg/L		1	<1	<1
Ethylene Dibromide	µg/L		0.3	<0.3	<0.3
Tetrachloroethene	µg/L	1100	1	<1	<1
Toluene	µg/L		0.5		<0.5
1,1,1,2-Tetrachloroethane	µg/L		1	<1	<1
Chlorobenzene	µg/L	13	1	<1	<1
Bromoform	µg/L		1	<1	<1
1,1,2,2-Tetrachloroethane	µg/L		1	<1	<1

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Certificate of Analysis

AGAT WORK ORDER: 12V572681
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Volatile Organic Compounds in Water

DATE SAMPLED: Feb 07, 2012 | DATE RECEIVED: Feb 07, 2012 | DATE REPORTED: Mar 06, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MW2-29 3103286	MV-11BH-01M 3103287
1,3-Dichlorobenzene	µg/L	1500	0.5	<0.5	<0.5
1,4-Dichlorobenzene	µg/L	260	0.5	<0.5	<0.5
Ethylbenzene	µg/L	2000	0.5		<0.5
1,2-Dichlorobenzene	µg/L	7	1	<1	<1
m&p-Xylene	µg/L		0.5		<0.5
1,2,4-Trichlorobenzene	µg/L	240	1	<1	<1
Styrene	µg/L	720	0.5		<0.5
o-Xylene	µg/L		0.5		<0.5
Surrogate	**Unit**	**Acceptable Limits**			
Bromofluorobenzene	%	70-130		106	102
Dibromofluoromethane	%	70-130		112	109
Toluene - d8	%	70-130		120	117

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

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AGAT WORK ORDER: 12V572681
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

British Columbia CSR- Schedule 6 Dissolved Metals

DATE SAMPLED: Feb 07, 2012 | DATE RECEIVED: Feb 07, 2012 | DATE REPORTED: Mar 06, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-10M 3103285	MW2-29 3103286	MV-11BH-01M 3103287
Aluminum Dissolved	µg/L		1	21	5	16
Antimony Dissolved	µg/L	200	0.05	0.18	<0.05	0.08
Arsenic Dissolved	µg/L	50	0.1	4.8	51.9	7.0
Barium Dissolved	µg/L	10000	0.1	251	179	175
Beryllium Dissolved	µg/L	53	0.01	0.03	0.01	0.01
Boron Dissolved	µg/L	50000	1	326	41	262
Cadmium Dissolved	µg/L		0.01	0.41	0.02	0.02
Calcium Dissolved	mg/L		0.05	94.6	126	135
Chromium Dissolved	µg/L		0.5	2.5	1.7	1.6
Cobalt Dissolved	µg/L	40	0.05	20.9	0.59	7.47
Copper Dissolved	µg/L		0.2	2.4	1.0	0.6
Iron Dissolved	mg/L		0.01	12.1	79.9	42.9
Lead Dissolved	µg/L		0.01	0.18	0.21	0.24
Lithium Dissolved	µg/L		0.1	7.3	3.0	10.5
Magnesium Dissolved	mg/L		0.05	14.5	21.6	22.0
Manganese Dissolved	mg/L		0.001	4.71	5.59	3.24
Mercury Dissolved	µg/L	1	0.003	0.007	<0.003	<0.003
Molybdenum Dissolved	µg/L	10000	0.05	9.78	1.03	0.41
Nickel Dissolved	µg/L		0.1	17.8	3.2	7.1
Selenium Dissolved	µg/L	10	0.1	0.8	<0.1	<0.1
Silver Dissolved	µg/L		0.01	<0.01	<0.01	<0.01
Sodium Dissolved	mg/L		0.05	88.7	6.21	30.5
Thallium Dissolved	µg/L	3	0.002	0.254	0.047	0.020
Titanium Dissolved	µg/L	1000	0.1	127	152	169
Uranium Dissolved	µg/L	3000	0.01	4.91	0.02	0.06
Vanadium Dissolved	µg/L		0.1	0.8	1.1	0.6
Zinc Dissolved	µg/L		1	16	9	8
Hardness (calc)	mg CaCO3/L		1	296	404	428

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

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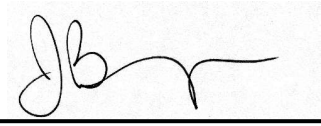

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Certificate of Analysis

AGAT WORK ORDER: 12V572681

PROJECT NO: 2090-1103

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CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Routine Water Analysis

DATE SAMPLED: Feb 07, 2012 | DATE RECEIVED: Feb 07, 2012 | DATE REPORTED: Mar 06, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MW2-29 3103286	MV-11BH-01M 3103287
Chloride	mg/L	1500	0.05	31.1	26.6

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 12V572681
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Water Analysis - Sulphide

DATE SAMPLED: Feb 07, 2012 | DATE RECEIVED: Feb 07, 2012 | DATE REPORTED: Mar 06, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-01M 3103287
Sulphide	mg/L		0.01	<0.01

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V572681

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis

RPT Date: Mar 06, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Petroleum Hydrocarbons in Water															
Methyl tert-butyl ether (MTBE)	1	3103286	<1	<1	0.0%	< 1	97%	80%	120%				NA	70%	130%
Styrene	1	3103286	<0.5	<0.5	0.0%	< 0.5	100%	80%	120%				112%	70%	130%
VPH	1	3103286	<100	<100	0.0%	< 100									
Naphthalene	1	W-MS	0.09	0.09	0.0%	< 0.05	100%	80%	120%				95%	50%	130%
Quinoline	1	W-MS	<0.1	0.1	0.0%	< 0.1	100%	80%	120%				100%	50%	130%
Acenaphthylene	1	W-MS	0.08	0.08	0.0%	< 0.05	100%	80%	120%				87%	50%	130%
Acenaphthene	1	W-MS	0.08	0.09	12.0%	< 0.05	100%	80%	120%				88%	50%	130%
Fluorene	1	W-MS	0.10	0.10	0.0%	< 0.05	100%	80%	120%				101%	50%	130%
Phenanthrene	1	W-MS	0.10	0.10	0.0%	< 0.05	97%	80%	120%				103%	60%	130%
Anthracene (Water)	1	W-MS	0.08	0.08	0.0%	< 0.05	102%	80%	120%				83%	60%	130%
Acridine	1	W-MS	0.10	0.10	0.0%	< 0.05	99%	80%	120%				104%	50%	130%
Fluoranthene	1	W-MS	0.09	0.10	11.0%	< 0.05	100%	80%	120%				95%	60%	130%
Pyrene	1	W-MS	0.10	0.10	0.0%	< 0.02	99%	80%	120%				104%	60%	130%
Benzo(a)anthracene	1	W-MS	0.09	0.10	11.0%	< 0.05	100%	80%	120%				96%	60%	130%
Chrysene	1	W-MS	0.09	0.10	11.0%	< 0.05	100%	80%	120%				94%	60%	130%
Benzo(b)fluoranthene	1	W-MS	0.11	0.12	9.0%	< 0.05	99%	80%	120%				117%	60%	130%
Benzo(k)fluoranthene	1	W-MS	0.10	0.11	9.5%	< 0.05	101%	80%	120%				108%	60%	130%
Benzo(a)pyrene	1	W-MS	0.09	0.09	0.0%	< 0.01	101%	80%	120%				92%	60%	130%
Indeno(1,2,3-cd)pyrene	1	W-MS	0.09	0.10	11.0%	< 0.05	99%	80%	120%				96%	60%	130%
Dibenzo(a,h)anthracene	1	W-MS	0.09	0.09	0.0%	< 0.05	99%	80%	120%				92%	60%	130%
Benzo(g,h.i)perylene	1	W-MS	0.09	0.09	0.0%	< 0.05	99%	80%	120%				92%	60%	130%
Nitrobenzene - d5	1	W-MS	87	88	1.0%		98%	80%	120%				87%	50%	130%
Quinoline - d7	1	W-MS	102	102	0.0%		102%	80%	120%				102%	50%	130%
2-Fluorobiphenyl	1	W-MS	84	82	2.0%		101%	80%	120%				84%	50%	130%
P-Terphenyl - d14	1	W-MS	96	97	1.0%		99%	80%	120%				96%	60%	130%
Bromofluorobenzene	1	3103286	106	102	4.0%		96%	70%	130%				117%	70%	130%
Dibromofluoromethane	1	3103286	112	107	5.0%		100%	70%	130%				124%	70%	130%
Toluene - d8	1	3103286	120	113	6.0%		92%	70%	130%				125%	70%	130%
Volatile Organic Compounds in Water															
Chloromethane	1	3103286	<1	<1	0.0%	< 1	93%	80%	120%				74%	70%	130%
Vinyl Chloride	1	3103286	<1	<1	0.0%	< 1	95%	80%	120%				76%	70%	130%
Bromomethane	1	3103286	<1	<1	0.0%	< 1	94%	80%	120%				83%	70%	130%
Chloroethane	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				95%	70%	130%
Trichlorofluoromethane	1	3103286	<1	<1	0.0%	< 1	97%	80%	120%				83%	70%	130%
Acetone	1	3103286	<10	<10	0.0%	< 10	94%	80%	120%				NA	70%	130%
1,1-Dichloroethene	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				100%	70%	130%
Dichloromethane	1	3103286	<1	<1	0.0%	< 1	92%	80%	120%				94%	70%	130%
2-Butanone (MEK)	1	3103286	<10	<10	0.0%	< 10	95%	80%	120%				NA	70%	130%

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL
AGAT WORK ORDER: 12V572681
PROJECT NO: 2090-1103
ATTENTION TO: Amanda Salway

Trace Organics Analysis (Continued)

RPT Date: Mar 06, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
trans-1,2-Dichloroethylene	1	3103286	<1	<1	0.0%	< 1	99%	80%	120%				109%	70%	130%
1,1-Dichloroethane	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				114%	70%	130%
cis-1,2-Dichloroethylene	1	3103286	<1	<1	0.0%	< 1	99%	80%	120%				113%	70%	130%
Chloroform	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				115%	70%	130%
1,2-Dichloroethane	1	3103286	<1	<1	0.0%	< 1	97%	80%	120%				111%	70%	130%
1,1,1-Trichloroethane	1	3103286	<1	<1	0.0%	< 1	100%	80%	120%				108%	70%	130%
Carbon Tetrachloride	1	3103286	<0.5	<0.5	0.0%	< 0.5	100%	80%	120%				105%	70%	130%
1,2-Dichloropropane	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				115%	70%	130%
Trichloroethene	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				112%	70%	130%
Bromodichloromethane	1	3103286	<1	<1	0.0%	< 1	101%	80%	120%				112%	70%	130%
trans-1,3-Dichloropropene	1	3103286	<1	<1	0.0%	< 1	102%	80%	120%				108%	70%	130%
4-Methyl-2-pentanone (MIBK)	1	3103286	<10	<10	0.0%	< 10	99%	80%	120%				NA	70%	130%
cis-1,3-Dichloropropene	1	3103286	<1	<1	0.0%	< 1	101%	80%	120%				109%	70%	130%
1,1,2-Trichloroethane	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				110%	70%	130%
Dibromochloromethane	1	3103286	<1	<1	0.0%	< 1	101%	80%	120%				110%	70%	130%
Ethylene Dibromide	1	3103286	<0.3	<0.3	0.0%	< 0.3	98%	80%	120%				110%	70%	130%
Tetrachloroethene	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				85%	70%	130%
1,1,1,2-Tetrachloroethane	1	3103286	<1	<1	0.0%	< 1	101%	80%	120%				113%	70%	130%
Chlorobenzene	1	3103286	<1	<1	0.0%	< 1	97%	80%	120%				109%	70%	130%
Bromoform	1	3103286	<1	<1	0.0%	< 1	100%	80%	120%				102%	70%	130%
1,1,2,2-Tetrachloroethane	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				103%	70%	130%
1,3-Dichlorobenzene	1	3103286	<0.5	<0.5	0.0%	< 0.5	98%	80%	120%				108%	70%	130%
1,4-Dichlorobenzene	1	3103286	<0.5	<0.5	0.0%	< 0.5	96%	80%	120%				106%	70%	130%
1,2-Dichlorobenzene	1	3103286	<1	<1	0.0%	< 1	97%	80%	120%				108%	70%	130%
1,2,4-Trichlorobenzene	1	3103286	<1	<1	0.0%	< 1	98%	80%	120%				104%	70%	130%
Bromofluorobenzene	1	3103286	106	102	4.0%	<	96%	80%	120%				117%	70%	130%
Dibromofluoromethane	1	3103286	112	107	5.0%	<	100%	80%	120%				124%	70%	130%
Toluene - d8	1	3103286	120	113	6.0%	<	92%	80%	120%				125%	70%	130%
Petroleum Hydrocarbons (BTEX/F1-F4) in Water															
Benzene	3466	3103279	<0.0005	<0.0005	NA	< 0.0005	109%	80%	120%	102%	80%	120%	112%	70%	130%
Toluene	3466	3103279	<0.0005	<0.0005	NA	< 0.0005	107%	80%	120%	99%	80%	120%	106%	70%	130%
Ethylbenzene	3466	3103279	<0.0005	<0.0005	NA	< 0.0005	97%	80%	120%	94%	80%	120%	93%	70%	130%
Xylenes	3466	3103279	<0.0005	<0.0005	NA	< 0.0005	105%	80%	120%	108%	80%	120%	103%	70%	130%
C6 - C10 (F1)	3466	3103279	<0.1	<0.1	NA	< 0.1	91%	80%	120%	106%	80%	120%	98%	70%	130%
C>10 - C16	28	3095674	<0.1	<0.1	NA	< 0.1	107%	80%	120%	97%	80%	120%	101%	70%	130%
C16 - C34	28	3095674	<0.1	<0.1	NA	< 0.1	107%	80%	120%	112%	80%	120%	101%	70%	130%
C>34 - C50	28	3095674	<0.1	<0.1	NA	< 0.1	107%	80%	120%	104%	80%	120%	104%	70%	130%
Phenolic Compounds in Water															

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V572681

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis (Continued)

RPT Date: Mar 06, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Phenol	135	3100893	<0.002	<0.002	NA	< 0.002	85%	80%	120%	95%	70%	130%	95%	60%	140%
4-Nitrophenol	135	3100893	<0.005	<0.005	NA	< 0.005	83%	80%	120%	88%	70%	130%	90%	60%	140%
m&p-Cresol (3&4-methylphenol)	135	3100893	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
o-Cresol (2-methylphenol)	135	3100893	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
2-Chlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	84%	80%	120%	95%	70%	130%	91%	60%	140%
2,4-Dinitrophenol	135	3100893	<0.005	<0.005	NA	< 0.005	90%	80%	120%	91%	70%	130%	93%	60%	140%
2-Nitrophenol	135	3100893	<0.005	<0.005	NA	< 0.005	97%	80%	120%	106%	70%	130%	100%	60%	140%
2,4-Dimethylphenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	85%	80%	120%	93%	70%	130%	89%	60%	140%
2,6-Dichlorophenol	135	3100893	<0.0001	<0.0001	NA	< 0.0001				93%	70%	130%	90%	60%	140%
4-Chloro-3-methylphenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	83%	80%	120%	94%	70%	130%	89%	60%	140%
2,4-Dichlorophenol	135	3100893	<0.0001	<0.0001	NA	< 0.0001	87%	80%	120%	87%	70%	130%	85%	60%	140%
4,6-Dinitro-2-methylphenol	135	3100893	<0.005	<0.005	NA	< 0.005	93%	80%	120%	85%	70%	130%	104%	60%	140%
2,3,6-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	94%	60%	140%
2,3,4-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	92%	60%	140%
2,4,6-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	86%	80%	120%	96%	70%	130%	95%	60%	140%
2,4,5-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
2,3,5-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				97%	70%	130%	95%	60%	140%
3,4,5-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	94%	60%	140%
2,3,4,6-Tetrachlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				100%	70%	130%	99%	60%	140%
2,3,5,6-Tetrachlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				100%	70%	130%	100%	60%	140%
2,3,4,5-Tetrachlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				100%	70%	130%	98%	60%	140%
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	135	3100893	<0.005	<0.005	NA	< 0.005				117%	70%	130%	97%	60%	140%
Pentachlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	91%	80%	120%	107%	70%	130%	103%	60%	140%
Petroleum Hydrocarbons (BTEX/F2-F4) in Water															
Benzene	387	3095680	< 0.0005	< 0.0005	NA	< 0.0005	100%	80%	120%	96%	80%	120%	93%	70%	130%
Toluene	387	3095680	< 0.0005	< 0.0005	NA	< 0.0005	100%	80%	120%	96%	80%	120%	97%	70%	130%
Ethylbenzene	387	3095680	0.0009	0.0009	0.0%	< 0.0005	104%	80%	120%	97%	80%	120%	103%	70%	130%
Xylenes	387	3095680	0.0048	0.0047	2.1%	< 0.0005	102%	80%	120%	97%	80%	120%	101%	70%	130%

Certified By:

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V572681

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Water Analysis

RPT Date: Mar 06, 2012

PARAMETER	Batch	Sample Id	DUPLICATE Dup #1	DUPLICATE Dup #2	DUPLICATE RPD	Method Blank	REFERENCE MATERIAL Measured Value	REFERENCE MATERIAL Acceptable Limits Lower	REFERENCE MATERIAL Acceptable Limits Upper	METHOD BLANK SPIKE Recovery	METHOD BLANK SPIKE Acceptable Limits Lower	METHOD BLANK SPIKE Acceptable Limits Upper	MATRIX SPIKE Recovery	MATRIX SPIKE Acceptable Limits Lower	MATRIX SPIKE Acceptable Limits Upper
British Columbia CSR- Schedule 6 Dissolved Metals															
Aluminum Dissolved	20120	3100893	3	2	NA	< 1	107%	90%	110%	105%	85%	115%			
Antimony Dissolved	20120	3100893	<0.05	<0.05	0.0%	< 0.05	104%	90%	110%	98%	85%	110%			
Arsenic Dissolved	20120	3100893	21.8	21.5	1.0%	< 0.1	101%	90%	110%	109%	90%	110%			
Barium Dissolved	20120	3100893	101	98.4	3.0%	< 0.1	98%	90%	110%	94%	90%	110%			
Beryllium Dissolved	20120	3100893	<0.01	<0.01	0.0%	< 0.01	110%	90%	110%	101%	90%	110%			
Boron Dissolved	20120	3100893	58	55	5.0%	< 1	108%	90%	110%	108%	80%	120%			
Cadmium Dissolved	20120	3100893	0.01	<0.01	0.0%	< 0.01	99%	90%	110%	99%	90%	110%			
Calcium Dissolved	20120	3100893	142	142	0.0%	< 0.05	99%	90%	110%	103%	90%	110%			
Chromium Dissolved	20120	3100893	4.8	4.9	2.0%	< 0.5	99%	90%	110%	96%	90%	110%			
Cobalt Dissolved	20120	3100893	0.29	0.32	10.0%	< 0.05	97%	90%	110%	100%	90%	110%			
Copper Dissolved	20120	3100893	0.3	0.3	0.0%	< 0.2	101%	90%	110%	100%	90%	110%			
Iron Dissolved	20120	3100893	53.2	53.3	0.0%	< 0.01	104%	90%	110%	105%	90%	110%			
Lead Dissolved	20120	3100893	0.16	0.15	6.0%	< 0.01	101%	90%	110%	99%	90%	110%			
Lithium Dissolved	20120	3100893	2.8	2.7	4.0%	< 0.1				103%	90%	110%			
Magnesium Dissolved	20120	3100893	25.3	25.0	1.0%	< 0.05	104%	90%	110%	108%	90%	110%			
Manganese Dissolved	20120	3100893	3.16	3.12	1.0%	< 0.001	103%	90%	110%	104%	90%	110%			
Mercury Dissolved	20120	3100893	<0.003	<0.003	0.0%	< 0.003	92%	90%	110%	104%	90%	110%			
Molybdenum Dissolved	20120	3100893	0.49	0.48	2.0%	< 0.05	96%	90%	110%	101%	90%	110%			
Nickel Dissolved	20120	3100893	1.2	1.3	8.0%	< 0.1	99%	90%	110%	98%	90%	110%			
Selenium Dissolved	20120	3100893	<0.1	<0.1	0.0%	< 0.1	97%	90%	110%	99%	85%	115%			
Silver Dissolved	20120	3100893	<0.01	<0.01	0.0%	< 0.01				101%	90%	110%			
Sodium Dissolved	20120	3100893	7.96	7.90	1.0%	< 0.05	101%	90%	110%	107%	90%	110%			
Thallium Dissolved	20120	3100893	0.016	0.015	6.0%	< 0.002	93%	90%	110%	96%	90%	110%			
Titanium Dissolved	20120	3100893	162	171	5.0%	< 0.1				108%	90%	110%			
Uranium Dissolved	20120	3100893	0.04	0.04	0.0%	< 0.01		90%	110%	98%	90%	110%			
Vanadium Dissolved	20120	3100893	0.7	0.8	13.0%	< 0.1	98%	90%	110%	102%	90%	110%			
Zinc Dissolved	20120	3100893	5	5	0.0%	< 1	103%	90%	110%	104%	85%	115%			
Routine Water Analysis															
Chloride	1	3102133	9010	9130	1.3%	< 0.05	103%	85%	115%	104%	90%	110%	101%	70%	130%
Water Analysis - Sulphide															
Sulphide	5846	5657	< 0.1	< 0.1	0.0%	< 0.1	105%	80%	120%				104%	80%	120%

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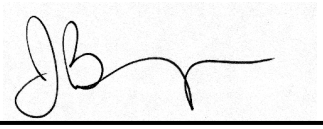

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V572681

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Benzene	TO 0540	EPA SW846 8260	GC/MS
Toluene	TO 0540	EPA SW846 8260	GC/MS
Ethylbenzene	TO 0540	EPA SW846 8260	GC/MS
Xylenes	TO 0540	EPA SW846 8260	GC/MS
C6 - C10 (F1)	TO 0540	CCME Tier 1 Method	GC/FID
C6 - C10 (F1 minus BTEX)	TO 0540	CCME Tier 1 Method	GC/FID
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
C16 - C34	TO 0511	CCME Tier 1 Method	GC/FID
C>34 - C50	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO 0340	EPA SW846 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
Benzene	TO 0540	EPA SW846 8260	GC/MS
Toluene	TO 0540	EPA SW846 8260	GC/MS
Ethylbenzene	TO 0540	EPA SW846 8260	GC/MS
Xylenes	TO 0540	EPA SW846 8260	GC/MS
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
C16 - C34	TO 0511	CCME Tier 1 Method	GC/FID
C>34 - C50	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO 0340	EPA SW846 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
Naphthalene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Quinoline	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Methyl tert-butyl ether (MTBE)	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Acenaphthylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acenaphthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Fluorene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Phenanthrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Anthracene (Water)	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acridine	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Styrene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
VPH	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
VH	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Benzo(a)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Chrysene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS

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Benzo(b)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(k)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Dibenzo(a,h)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(g,h.i)perylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Nitrobenzene - d5	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
Quinoline - d7	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
2-Fluorobiphenyl	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
P-Terphenyl - d14	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
LEPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
HEPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
EPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
EPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
Bromofluorobenzene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Dibromofluoromethane	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Toluene - d8	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Phenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
m&p-Cresol (3&4-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
o-Cresol (2-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
2-Chlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dinitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dimethylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,6-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Chloro-3-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4,6-Dinitro-2-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
3,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV

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PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
2,3,4,5-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
Dinoseb (2-sec-butyl-4,6-dinitrophenol)	TO 1200	EPA SW-846 8321	HPLC/UV
Pentachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Fluorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Tribromophenol	TO 1200	EPA SW-846 8321	HPLC/UV
Chloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Vinyl Chloride	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromomethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Chloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Trichlorofluoromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Acetone	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1-Dichloroethene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dichloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Methyl tert-butyl ether (MTBE)	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
2-Butanone (MEK)	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
trans-1,2-Dichloroethylene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1-Dichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
cis-1,2-Dichloroethylene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Chloroform	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,1-Trichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Carbon Tetrachloride	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Benzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichloropropane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Trichloroethene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromodichloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
trans-1,3-Dichloropropene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
4-Methyl-2-pentanone (MIBK)	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
cis-1,3-Dichloropropene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,2-Trichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS

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PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Toluene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dibromochloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Ethylene Dibromide	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Tetrachloroethene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,1,2-Tetrachloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Chlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Ethylbenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
m&p-Xylene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromoform	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Styrene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,2,2-Tetrachloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
o-Xylene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,3-Dichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,4-Dichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2,4-Trichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromofluorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dibromofluoromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Toluene - d8	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS

AGAT Laboratories

Unit 120, 8600 Glenlyon Parkway
Burnaby, British Columbia
CANADA V5J 0B6
TEL (778)452-4000
FAX (778)452-4074
http://www.agatlabs.com

Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V572681

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Aluminum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Antimony Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Arsenic Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Barium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Beryllium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Boron Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cadmium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Calcium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Chromium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cobalt Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Copper Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Iron Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Lead Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Lithium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Magnesium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Manganese Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Mercury Dissolved	MET-181-6103, LAB-181-4015	Modified from EPA 245.7	CV/AA
Molybdenum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Nickel Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Selenium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Silver Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Sodium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Thallium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Titanium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Uranium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Vanadium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Zinc Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Chloride	INOR-181-6002	Modified from SM 4110 B	ION CHROMATOGRAPH

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V572681

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Sulphide	WAT 0100	SM 4500 S2- D	SPECTROPHOTOMETER

AGAT Laboratories

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Chain of Custody Record

Turnaround Time Required (TAT)

Regular TAT	5 to 7 working days	☒
Rush TAT	24 to 48 hours	☐
	48 to 72 hours	☐

Date Required: _____

Please contact laboratory if Rush is required

Report To:

Company: Franz Environmental
Contact: Amanda Salway
Address: 308-1080 Mainland St.
Vancouver, BC V6B 2T4
Phone: 604 632-9941 Fax: 604 632 9942
LSD:
Client Project #: 2090-1103

Report Information

1. Name: Amanda Salway
Email: asalway@franzbc.com
2. Name: Viviane Dubois-Côté
Email: vdcote@franzbc.com

Report Format

☐ Single Sample per page
☒ Multiple Samples per page
☒ Excel Format Included

Laboratory Use Only

Arrival Temperature: 5°C
AGAT Job Number: 12V572681

Notes: FEB 7 PM 5:46

Invoice To: Same as above Yes ☒ No ☐

Company:
Contact:
Address:
Phone: Fax:
PO/AFE #:

Regulatory Requirements (Check):

☐ **BC CSR – Soil**
- ☐ Agricultural
- ☐ Industrial
- ☐ Urban/Park
- ☐ Commercial

☒ **BC CSR – Water**
- ☐ Drinking Water
- ☒ Aquatic Life
- ☐ Irrigation
- ☐ Livestock

☒ **CCME**
- ☐ Drinking Water
- ☐ Residential/Park
- ☐ Commercial
- ☐ Industrial
- ☐ Drinking Water
- ☒ FWAL

Lab ID #	Sample Identification	Sample Matrix	Date/Time Sampled	Comments – Site/Sample Info. Sample Containment	BC CSR BTEX/VPH	BC CSR LEPH/HEPH	BC CSR Metals + CCME metals	VOCs	BC CSR Schedule II	Routine Potability	Sulfide	CCME F1	CCME F2-F4	Sodium + Chloride	Chlorinated and non-chlorinated phenols	Number of Containers	Preserved (Y/N)	Hazardous (Y/N)	Hold for 1 YEAR
31 03279	MV-11BR-14M	Water	Feb 7, 2012		X	X						X	X			5			
281	S-BH23					X							X		X	3			
284	MV-GWDUP3				X	X						X	X			5			
285	MV-11BR-10M					X	X						X			3			
286	MW2-29				X	X	X	X				X	X	X	X	11			
287	MV-11BR-01M						X	X			X			X	X	7			
288	MV-11BR-17M	↓	↓			X							X			2			

Samples Relinquished by (print name & sign): _____ Date: Feb 7, 2012
Samples Received by (Print name & sign): AMIEL OCAMPO Date: 7 FEB 2012 5:46 pm

Samples Relinquished by (print name & sign): _____ Date:
Samples Received by (Print name & sign): Date:

Samples Relinquished by (print name & sign): _____ Date:
Samples Received by (Print name & sign): Date:

Pink Copy - Client
Yellow Copy - AGAT
White Copy - AGAT

Page 1 of 1

NO: 000622

Document ID: DIV-186-0811.001

Date revised: August 24, 2011

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM - BURNABY

Work Order # 12V572687

RECEIVING BASICS:
***Complete CoC as well where required**
Date and Time: 07-FEB-12@5:46pm
Courier: _____
Received by: Ariel Ocampo
Relinquished by: Amarela
Branch Received From: _____
Company: Franz Env
Consultant: _____
Client left without count verified: No

COC INFORMATION:
Received: (Yes) No Emailed to PM
Completed in full: (Yes) No If NO, why: _____
TURNAROUND TIME: Reg
COC Numbers: 000622

SAMPLE QUANTITIES:
Coolers: _____ Bottles/Jars: 36 Bags: _____

TIME SENSITIVE ISSUES:
Earliest Date Sampled: 07-FEB-12
Microbiology: Test: _____
Hydrocarbons: Test: BTEX
Samples are received >5 days after sampling: Yes (No)

ALREADY EXCEEDED? Yes (No)
Expiry: _____
Expiry: 14-FEB-12

SPECIALTY ISSUES:
Legal Samples: Yes No N/A
International Samples: Yes No
**Proper tape/labels applied: Yes No

Hazardous Samples:
Why hazardous:
_____
Precaution taken:
_____

SAMPLE REQUIREMENTS:
*Complete while logging in by login staff.

Correct bottles used for testing: (Yes) No
If No, explain: _____

Correct amount of sample for analysis: (Yes) No
If No, explain: _____

Are all samples labeled correctly: (Yes) No
If No, explain: _____

NON-CONFORMANCES:
3 temperatures of samples* and average of each cooler: (record differing temperatures on the CoC next to sample ID's)
(1) 2 + 3 + 4 = ___°C (2) 3 + 4 + 6 = ___°C (3) ___+___+___=___°C (4) ___+___+___=___°C
*Jars used when available

Additional integrity issues (note here and on CoC next to the sample ID):

1) _____
2) _____
3) _____

Account Project Manager: _____ Have they been notified of the above issues: Yes No
Whom spoken to: _____ Date and Time: _____

ADDITIONAL NOTES:

_____

_____

_____

AGAT Laboratories

Unit 120, 8600 Glenlyon Parkway
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CANADA V5J 0B6
TEL (778)452-4000
FAX (778)452-4074
http://www.agatlabs.com

CLIENT NAME: FRANZ ENVIRONMENTAL
308-108 MAINLAND STREET
VANCOUVER, BC V6B2T4

ATTENTION TO: Amanda Salway

PROJECT NO: 2090-1103

AGAT WORK ORDER: 12V573478

TRACE ORGANICS REVIEWED BY: Andrew Garrard, B.Sc., General Manager

WATER ANALYSIS REVIEWED BY: Andrew Garrard, B.Sc., General Manager

DATE REPORTED: Feb 17, 2012

PAGES (INCLUDING COVER): 19

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (778) 452-4000

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V573478
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons (BTEX/F1-F4) in Water

DATE SAMPLED: Feb 09, 2012 | DATE RECEIVED: Feb 09, 2012 | DATE REPORTED: Feb 17, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MW2-30 3109059	3-BH31 3109082
Benzene	mg/L	0.37	0.0005	<0.0005	<0.0005
Toluene	mg/L	0.002	0.0005	<0.0005	<0.0005
Ethylbenzene	mg/L	0.09	0.0005	<0.0005	<0.0005
Xylenes	mg/L		0.0005	<0.0005	<0.0005
C6 - C10 (F1)	mg/L		0.1	<0.1	<0.1
C6 - C10 (F1 minus BTEX)	mg/L		0.1	<0.1	<0.1
C>10 - C16	mg/L		0.1	<0.1	<0.1
C16 - C34	mg/L		0.1	<0.1	<0.1
C>34 - C50	mg/L		0.1	<0.1	<0.1
Surrogate	**Unit**	**Acceptable Limits**			
Toluene-d8 (BTEX)	%	50-150		103	103
o-Terphenyl (F2-F4)	%	50-150		103	104

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL)

3109059-3109082 The C>6 - C10 fraction is calculated using the toluene response factor.
The C10 - C16 fraction is calculated using the average response factor for nC10, nC16 and nC34.
BTEX has NOT been subtracted from Fraction 1.
Sample is blank corrected.

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 12V573478
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons (BTEX/F2-F4) in Water

DATE SAMPLED: Feb 09, 2012 | DATE RECEIVED: Feb 09, 2012 | DATE REPORTED: Feb 17, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-16M 3109081
C>10 - C16	mg/L		0.1	<0.1
C16 - C34	mg/L		0.1	<0.1
C>34 - C50	mg/L		0.1	<0.1
Surrogate	**Unit**	**Acceptable Limits**		
Toluene-d8 (BTEX)	%	50-150		NA
o-Terphenyl (F2-F4)	%	50-150		106

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL)

3109081 The C>6 - C10 fraction is calculated using the toluene response factor.
The C10 - C16 fraction is calculated using the average response factor for nC10, nC16 and nC34.
BTEX has NOT been subtracted from Fraction 1.
Sample is blank corrected.

Certified By:

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AGAT WORK ORDER: 12V573478
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 09, 2012 | DATE RECEIVED: Feb 09, 2012 | DATE REPORTED: Feb 17, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MW2-30 3109059	MV-11BH-16M 3109081	3-BH31 3109082
Methyl tert-butyl ether (MTBE)	µg/L	34000	1	<1		<1
Styrene	µg/L	720	0.5	<0.5		<0.5
VPH	µg/L	1500	100	<100		<100
Naphthalene	µg/L	10	0.05	<0.05	<0.05	<0.05
Quinoline	µg/L	34	0.1	<0.1	<0.1	<0.1
Acenaphthylene	µg/L		0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/L	60	0.05	<0.05	<0.05	<0.05
Fluorene	µg/L	120	0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/L	3	0.05	<0.05	<0.05	<0.05
Anthracene (Water)	µg/L	1	0.05	<0.05	<0.05	<0.05
Acridine	µg/L	0.5	0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/L	2	0.05	<0.05	<0.05	<0.05
Pyrene	µg/L	0.2	0.02	0.03	<0.02	<0.02
Benzo(a)anthracene	µg/L	1	0.05	<0.05	<0.05	<0.05
Chrysene	µg/L	1	0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/L		0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/L		0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.1	0.01	<0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L		0.05	<0.05	<0.05	<0.05
Dibenzo(a,h)anthracene	µg/L		0.05	<0.05	<0.05	<0.05
Benzo(g,h.i)perylene	µg/L		0.05	<0.05	<0.05	<0.05
LEPH C10-C19	µg/L	500	100	<100	<100	<100
HEPH C19-C32	µg/L		100	<100	<100	<100
Surrogate	Unit	Acceptable Limits				
Nitrobenzene - d5	%	50-130		84	91	90
Quinoline - d7	%	50-130		105	103	100
2-Fluorobiphenyl	%	50-130		84	82	83
P-Terphenyl - d14	%	60-130		95	96	95
Bromofluorobenzene	%	70-130		98		93
Dibromofluoromethane	%	70-130		119		114
Toluene - d8	%	70-130		116		109

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 12V573478
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 09, 2012 | DATE RECEIVED: Feb 09, 2012 | DATE REPORTED: Feb 17, 2012 | SAMPLE TYPE: Water

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

3109059 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.

3109081 LEPH & HEPH results have been corrected for PAH contributions.

3109082 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V573478
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Phenolic Compounds in Water

DATE SAMPLED: Feb 09, 2012 | DATE RECEIVED: Feb 09, 2012 | DATE REPORTED: Feb 17, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MW2-30 3109059
Phenol	mg/L		0.002	<0.002
4-Nitrophenol	mg/L		0.005	<0.005
m&p-Cresol (3&4-methylphenol)	mg/L		0.0005	<0.0005
o-Cresol (2-methylphenol)	mg/L		0.0005	<0.0005
2-Chlorophenol	mg/L		0.0005	<0.0005
2,4-Dinitrophenol	mg/L		0.005	<0.005
2-Nitrophenol	mg/L		0.005	<0.005
2,4-Dimethylphenol	mg/L		0.0005	<0.0005
2,6-Dichlorophenol	mg/L		0.0001	<0.0001
4-Chloro-3-methylphenol	mg/L		0.0005	<0.0005
2,4-Dichlorophenol	mg/L		0.0001	<0.0001
4,6-Dinitro-2-methylphenol	mg/L		0.005	<0.005
2,3,6-Trichlorophenol	mg/L		0.0005	<0.0005
2,3,4-Trichlorophenol	mg/L		0.0005	<0.0005
2,4,6-Trichlorophenol	mg/L		0.0005	<0.0005
2,4,5-Trichlorophenol	mg/L		0.0005	<0.0005
2,3,5-Trichlorophenol	mg/L		0.0005	<0.0005
3,4,5-Trichlorophenol	mg/L		0.0005	<0.0005
2,3,4,6-Tetrachlorophenol	mg/L		0.0005	<0.0005
2,3,5,6-Tetrachlorophenol	mg/L		0.0005	<0.0005
2,3,4,5-Tetrachlorophenol	mg/L		0.0005	<0.0005
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	mg/L		0.005	<0.005
Pentachlorophenol	mg/L		0.0005	<0.0005
Surrogate	Unit	Acceptable Limits		
2-Fluorophenol	%	50-150		112
2,4,6-Tribromophenol	%	50-150		109

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
3109059 Results relate only to the items tested.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V573478
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Volatile Organic Compounds in Water

DATE SAMPLED: Feb 09, 2012 | DATE RECEIVED: Feb 09, 2012 | DATE REPORTED: Feb 17, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MW2-30 3109059
Chloromethane	µg/L		1	<1
Vinyl Chloride	µg/L		1	<1
Bromomethane	µg/L		1	<1
Chloroethane	µg/L		1	<1
Trichlorofluoromethane	µg/L		1	<1
Acetone	µg/L		10	<10
1,1-Dichloroethene	µg/L		1	<1
Dichloromethane	µg/L	980	1	<1
2-Butanone (MEK)	µg/L		10	<10
trans-1,2-Dichloroethylene	µg/L		1	<1
1,1-Dichloroethane	µg/L		1	<1
cis-1,2-Dichloroethylene	µg/L		1	<1
Chloroform	µg/L	20	1	<1
1,2-Dichloroethane	µg/L	1000	1	<1
1,1,1-Trichloroethane	µg/L		1	<1
Carbon Tetrachloride	µg/L	130	0.5	<0.5
1,2-Dichloropropane	µg/L		1	<1
Trichloroethene	µg/L	200	1	<1
Bromodichloromethane	µg/L		1	<1
trans-1,3-Dichloropropene	µg/L		1	<1
4-Methyl-2-pentanone (MIBK)	µg/L		10	<10
cis-1,3-Dichloropropene	µg/L		1	<1
1,1,2-Trichloroethane	µg/L		1	<1
Dibromochloromethane	µg/L		1	<1
Ethylene Dibromide	µg/L		0.3	<0.3
Tetrachloroethene	µg/L	1100	1	<1
1,1,1,2-Tetrachloroethane	µg/L		1	<1
Chlorobenzene	µg/L	13	1	<1
Bromoform	µg/L		1	<1
1,1,2,2-Tetrachloroethane	µg/L		1	<1
1,3-Dichlorobenzene	µg/L	1500	0.5	<0.5
1,4-Dichlorobenzene	µg/L	260	0.5	<0.5
1,2-Dichlorobenzene	µg/L	7	1	<1

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V573478
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Volatile Organic Compounds in Water

DATE SAMPLED: Feb 09, 2012 | DATE RECEIVED: Feb 09, 2012 | DATE REPORTED: Feb 17, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MW2-30 3109059
1,2,4-Trichlorobenzene	µg/L	240	1	<1
Surrogate	**Unit**	**Acceptable Limits**		
Bromofluorobenzene	%	70-130		91
Dibromofluoromethane	%	70-130		86
Toluene - d8	%	70-130		94

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

Certified By:

AGAT Laboratories

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AGAT WORK ORDER: 12V573478
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

British Columbia CSR- Schedule 6 Dissolved Metals

DATE SAMPLED: Feb 09, 2012 | DATE RECEIVED: Feb 09, 2012 | DATE REPORTED: Feb 17, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MW2-30 3109059
Aluminum Dissolved	µg/L		1	4
Antimony Dissolved	µg/L		0.05	0.06
Arsenic Dissolved	µg/L	5	0.1	4.4
Barium Dissolved	µg/L		0.1	113
Beryllium Dissolved	µg/L		0.01	0.01
Boron Dissolved	µg/L		1	46
Cadmium Dissolved	µg/L	0.017	0.01	0.03
Calcium Dissolved	mg/L		0.05	98.2
Chromium Dissolved	µg/L		0.5	12.8
Cobalt Dissolved	µg/L		0.05	0.26
Copper Dissolved	µg/L		0.2	0.3
Iron Dissolved	mg/L	0.3	0.01	36.6
Lead Dissolved	µg/L		0.01	0.16
Lithium Dissolved	µg/L		0.1	2.9
Magnesium Dissolved	mg/L		0.05	35.9
Manganese Dissolved	mg/L		0.001	2.08
Mercury Dissolved	µg/L	0.026	0.003	<0.003
Molybdenum Dissolved	µg/L	73	0.05	<0.05
Nickel Dissolved	µg/L		0.1	1.5
Selenium Dissolved	µg/L	1	0.1	0.2
Silver Dissolved	µg/L	0.1	0.01	<0.01
Sodium Dissolved	mg/L		0.05	14.0
Thallium Dissolved	µg/L	0.8	0.002	0.024
Titanium Dissolved	µg/L		0.1	114
Uranium Dissolved	µg/L		0.01	0.01
Vanadium Dissolved	µg/L		0.1	0.9
Zinc Dissolved	µg/L	30	1	11
Hardness (calc)	mg CaCO3/L		1	393

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL) (Van)

Certified By:

AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 12V573478

PROJECT NO: 2090-1103

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CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Routine Water Analysis

DATE SAMPLED: Feb 09, 2012 | DATE RECEIVED: Feb 09, 2012 | DATE REPORTED: Feb 17, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MW2-30 3109059
Chloride	mg/L	1500	0.05	20.1

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

Certified By:

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V573478

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis

RPT Date: Feb 17, 2012			DUPLICATE				REFERENCE MATERIAL				METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Petroleum Hydrocarbons in Water															
Methyl tert-butyl ether (MTBE)	1	3109059	<1	<1	0.0%	< 1	102%	80%	120%				100%	70%	130%
Styrene	1	3109059	<0.5	<0.5	0.0%	< 0.5	102%	80%	120%				105%	70%	130%
VPH	1	3109059	<100	<100	0.0%	< 100									
Naphthalene	1	W-MS	0.09	0.09	0.0%	< 0.05	100%	80%	120%				97%	50%	130%
Quinoline	1	W-MS	<0.1	<0.1	0.0%	< 0.1	103%	80%	120%				91%	50%	130%
Acenaphthylene	1	W-MS	0.09	0.09	0.0%	< 0.05	103%	80%	120%				92%	50%	130%
Acenaphthene	1	W-MS	0.09	0.09	0.0%	< 0.05	101%	80%	120%				97%	50%	130%
Fluorene	1	W-MS	0.09	0.09	0.0%	< 0.05	103%	80%	120%				96%	50%	130%
Phenanthrene	1	W-MS	0.08	0.09	12.0%	< 0.05	103%	80%	120%				88%	60%	130%
Anthracene (Water)	1	W-MS	0.09	0.10	11.0%	< 0.05	98%	80%	120%				95%	60%	130%
Acridine	1	W-MS	0.08	0.09	12.0%	< 0.05	103%	80%	120%				88%	50%	130%
Fluoranthene	1	W-MS	0.09	0.10	11.0%	< 0.05	101%	80%	120%				95%	60%	130%
Pyrene	1	W-MS	0.09	0.10	11.0%	< 0.02	101%	80%	120%				94%	60%	130%
Benzo(a)anthracene	1	W-MS	0.09	0.09	0.0%	< 0.05	102%	80%	120%				92%	60%	130%
Chrysene	1	W-MS	0.09	0.10	11.0%	< 0.05	98%	80%	120%				98%	60%	130%
Benzo(b)fluoranthene	1	W-MS	0.08	0.09	12.0%	< 0.05	105%	80%	120%				86%	60%	130%
Benzo(k)fluoranthene	1	W-MS	0.08	0.08	0.0%	< 0.05	100%	80%	120%				86%	60%	130%
Benzo(a)pyrene	1	W-MS	0.09	0.09	0.0%	< 0.01	101%	80%	120%				92%	60%	130%
Indeno(1,2,3-cd)pyrene	1	W-MS	0.10	0.10	0.0%	< 0.05	102%	80%	120%				103%	60%	130%
Dibenzo(a,h)anthracene	1	W-MS	0.10	0.10	0.0%	< 0.05	101%	80%	120%				101%	60%	130%
Benzo(g,h.i)perylene	1	W-MS	0.10	0.11	9.5%	< 0.05	102%	80%	120%				105%	60%	130%
Nitrobenzene - d5	1	W-MS	98	101	3.0%		102%	80%	120%				99%	50%	130%
Quinoline - d7	1	W-MS	87	86	1.0%		106%	80%	120%				88%	50%	130%
2-Fluorobiphenyl	1	W-MS	97	97	0.0%		101%	80%	120%				97%	50%	130%
P-Terphenyl - d14	1	W-MS	95	100	5.0%		102%	80%	120%				95%	60%	130%
Bromofluorobenzene	1	3109059	98	96	2.0%		100%	70%	130%				110%	70%	130%
Dibromofluoromethane	1	3109059	119	119	0.0%		93%	70%	130%				98%	70%	130%
Toluene - d8	1	3109059	116	112	4.0%		95%	70%	130%				104%	70%	130%
Volatile Organic Compounds in Water															
Chloromethane	1	3109059	<1	<1	0.0%	< 1	96%	80%	120%				129%	70%	130%
Vinyl Chloride	1	3109059	<1	<1	0.0%	< 1	97%	80%	120%				119%	70%	130%
Bromomethane	1	3109059	<1	<1	0.0%	< 1	95%	80%	120%				119%	70%	130%
Chloroethane	1	3109059	<1	<1	0.0%	< 1	100%	80%	120%				119%	70%	130%
Trichlorofluoromethane	1	3109059	<1	<1	0.0%	< 1	99%	80%	120%				105%	70%	130%
Acetone	1	3109059	<10	<10	0.0%	< 10	104%	80%	120%				NA	70%	130%
1,1-Dichloroethene	1	3109059	<1	<1	0.0%	< 1	100%	80%	120%				116%	70%	130%
Dichloromethane	1	3109059	<1	<1	0.0%	< 1	98%	80%	120%				94%	70%	130%
2-Butanone (MEK)	1	3109059	<10	<10	0.0%	< 10	101%	80%	120%				NA	70%	130%

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V573478

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis (Continued)

RPT Date: Feb 17, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
trans-1,2-Dichloroethylene	1	3109059	<1	<1	0.0%	< 1	99%	80%	120%				107%	70%	130%
1,1-Dichloroethane	1	3109059	<1	<1	0.0%	< 1	101%	80%	120%				108%	70%	130%
cis-1,2-Dichloroethylene	1	3109059	<1	<1	0.0%	< 1	101%	80%	120%				106%	70%	130%
Chloroform	1	3109059	<1	<1	0.0%	< 1	101%	80%	120%				104%	70%	130%
1,2-Dichloroethane	1	3109059	<1	<1	0.0%	< 1	101%	80%	120%				107%	70%	130%
1,1,1-Trichloroethane	1	3109059	<1	<1	0.0%	< 1	102%	80%	120%				105%	70%	130%
Carbon Tetrachloride	1	3109059	<0.5	<0.5	0.0%	< 0.5	103%	80%	120%				109%	70%	130%
1,2-Dichloropropane	1	3109059	<1	<1	0.0%	< 1	101%	80%	120%				103%	70%	130%
Trichloroethene	1	3109059	<1	<1	0.0%	< 1	101%	80%	120%				105%	70%	130%
Bromodichloromethane	1	3109059	<1	<1	0.0%	< 1	104%	80%	120%				102%	70%	130%
trans-1,3-Dichloropropene	1	3109059	<1	<1	0.0%	< 1	105%	80%	120%				105%	70%	130%
4-Methyl-2-pentanone (MIBK)	1	3109059	<10	<10	0.0%	< 10	105%	80%	120%				NA	70%	130%
cis-1,3-Dichloropropene	1	3109059	<1	<1	0.0%	< 1	105%	80%	120%				104%	70%	130%
1,1,2-Trichloroethane	1	3109059	<1	<1	0.0%	< 1	102%	80%	120%				100%	70%	130%
Dibromochloromethane	1	3109059	<1	<1	0.0%	< 1	105%	80%	120%				100%	70%	130%
Ethylene Dibromide	1	3109059	<0.3	<0.3	0.0%	< 0.3	103%	80%	120%				99%	70%	130%
Tetrachloroethene	1	3109059	<1	<1	0.0%	< 1	101%	80%	120%				82%	70%	130%
1,1,1,2-Tetrachloroethane	1	3109059	<1	<1	0.0%	< 1	104%	80%	120%				100%	70%	130%
Chlorobenzene	1	3109059	<1	<1	0.0%	< 1	101%	80%	120%				100%	70%	130%
Bromoform	1	3109059	<1	<1	0.0%	< 1	105%	80%	120%				99%	70%	130%
1,1,2,2-Tetrachloroethane	1	3109059	<1	<1	0.0%	< 1	103%	80%	120%				97%	70%	130%
1,3-Dichlorobenzene	1	3109059	<0.5	<0.5	0.0%	< 0.5	100%	80%	120%				103%	70%	130%
1,4-Dichlorobenzene	1	3109059	<0.5	<0.5	0.0%	< 0.5	100%	80%	120%				103%	70%	130%
1,2-Dichlorobenzene	1	3109059	<1	<1	0.0%	< 1	101%	80%	120%				101%	70%	130%
1,2,4-Trichlorobenzene	1	3109059	<1	<1	0.0%	< 1	102%	80%	120%				100%	70%	130%
Bromofluorobenzene	1	3109059	91	91	0.0%		104%	80%	120%				NA	70%	130%
Dibromofluoromethane	1	3109059	86	89	3.0%		108%	80%	120%				NA	70%	130%
Toluene - d8	1	3109059	94	97	3.0%		101%	80%	120%				NA	70%	130%
Petroleum Hydrocarbons (BTEX/F1-F4) in Water															
Benzene	393	3115213	0.0687	0.0675	2.0%	< 0.0005	106%	80%	120%	97%	80%	120%	89%	70%	130%
Toluene	393	3115213	0.0340	0.0353	3.8%	< 0.0005	109%	80%	120%	100%	80%	120%	88%	70%	130%
Ethylbenzene	393	3115213	0.005	0.0059	17.0%	< 0.0005	112%	80%	120%	107%	80%	120%	88%	70%	130%
Xylenes	393	3115213	0.0103	0.0114	10.0%	< 0.0005	112%	80%	120%	105%	80%	120%	89%	70%	130%
C6 - C10 (F1)	393	3115213	0.5	0.5	0.0%	< 0.1	102%	80%	120%	111%	80%	120%	106%	70%	130%
C>10 - C16	30	3109059	<0.1	<0.1	0.0%	< 0.1	94%	80%	120%	87%	80%	120%	105%	70%	130%
C16 - C34	30	3109059	<0.1	<0.1	0.0%	< 0.1	94%	80%	120%	84%	80%	120%	102%	70%	130%
C>34 - C50	30	3109059	<0.1	<0.1	0.0%	< 0.1	94%	80%	120%	0%	80%	120%	0%	70%	130%
Phenolic Compounds in Water															

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V573478

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis (Continued)

RPT Date: Feb 17, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Phenol	135	3100893	<0.002	<0.002	NA	< 0.002	85%	80%	120%	95%	70%	130%	95%	60%	140%
4-Nitrophenol	135	3100893	<0.005	<0.005	NA	< 0.005	83%	80%	120%	88%	70%	130%	90%	60%	140%
m&p-Cresol (3&4-methylphenol)	135	3100893	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
o-Cresol (2-methylphenol)	135	3100893	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
2-Chlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	84%	80%	120%	95%	70%	130%	91%	60%	140%
2,4-Dinitrophenol	135	3100893	<0.005	<0.005	NA	< 0.005	90%	80%	120%	91%	70%	130%	93%	60%	140%
2-Nitrophenol	135	3100893	<0.005	<0.005	NA	< 0.005	97%	80%	120%	106%	70%	130%	100%	60%	140%
2,4-Dimethylphenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	85%	80%	120%	93%	70%	130%	89%	60%	140%
2,6-Dichlorophenol	135	3100893	<0.0001	<0.0001	NA	< 0.0001				93%	70%	130%	90%	60%	140%
4-Chloro-3-methylphenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	83%	80%	120%	94%	70%	130%	89%	60%	140%
2,4-Dichlorophenol	135	3100893	<0.0001	<0.0001	NA	< 0.0001	87%	80%	120%	87%	70%	130%	85%	60%	140%
4,6-Dinitro-2-methylphenol	135	3100893	<0.005	<0.005	NA	< 0.005	93%	80%	120%	85%	70%	130%	104%	60%	140%
2,3,6-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	94%	60%	140%
2,3,4-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	92%	60%	140%
2,4,6-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	86%	80%	120%	96%	70%	130%	95%	60%	140%
2,4,5-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
2,3,5-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				97%	70%	130%	95%	60%	140%
3,4,5-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	94%	60%	140%
2,3,4,6-Tetrachlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				100%	70%	130%	99%	60%	140%
2,3,5,6-Tetrachlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				100%	70%	130%	100%	60%	140%
2,3,4,5-Tetrachlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				100%	70%	130%	98%	60%	140%
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	135	3100893	<0.005	<0.005	NA	< 0.005				117%	70%	130%	97%	60%	140%
Pentachlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	91%	80%	120%	107%	70%	130%	103%	60%	140%

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V573478

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Water Analysis

RPT Date: Feb 17, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
British Columbia CSR- Schedule 6 Dissolved Metals															
Aluminum Dissolved	3109059		4	4	0.0%	< 1	105%	90%	110%	108%	85%	115%			
Antimony Dissolved	3109059		0.06	0.16	NA	< 0.05	104%	90%	110%	107%	85%	110%			
Arsenic Dissolved	3109059		4.4	4.3	2.3%	< 0.1	102%	90%	110%	106%	90%	110%			
Barium Dissolved	3109059		113	113	0.0%	< 0.1	102%	90%	110%	99%	90%	110%			
Beryllium Dissolved	3109059		0.01	0.02	NA	< 0.01	90%	90%	110%	101%	90%	110%			
Boron Dissolved	3109059		45.9	49.0	6.5%	< 1	94%	90%	110%	102%	80%	120%			
Cadmium Dissolved	3109059		0.03	0.03	0.0%	< 0.01	102%	90%	110%	102%	90%	110%			
Calcium Dissolved	3106239		30.7	30.6	0.3%	< 0.05	100%	90%	110%	102%	90%	110%			
Chromium Dissolved	3109059		12.8	13.0	1.6%	< 0.5	90%	90%	110%	94%	90%	110%			
Cobalt Dissolved	3109059		0.26	0.25	3.9%	< 0.05	97%	90%	110%	100%	90%	110%			
Copper Dissolved	3109059		0.3	0.3	0.0%	< 0.2	100%	90%	110%	104%	90%	110%			
Iron Dissolved	3106239		<0.01	<0.01	0.0%	< 0.01	105%	90%	110%	103%	90%	110%			
Lead Dissolved	3109059		0.16	0.13	20.7%	< 0.01	105%	90%	110%	102%	90%	110%			
Lithium Dissolved	3109059		2.9	3.0	3.4%	< 0.1				103%	90%	110%			
Magnesium Dissolved	3106239		4.03	4.01	0.5%	< 0.05	104%	90%	110%	106%	90%	110%			
Manganese Dissolved	3106239		<0.001	<0.001	0.0%	< 0.001	104%	90%	110%	102%	90%	110%			
Mercury Dissolved	3106239		<0.003	<0.003	0.0%	< 0.003	95%	90%	110%	100%	90%	110%			
Molybdenum Dissolved	3109059		< 0.05	< 0.05	0.0%	< 0.05	95%	90%	110%	106%	90%	110%			
Nickel Dissolved	3109059		1.5	1.6	6.5%	< 0.1	94%	90%	110%	100%	90%	110%			
Selenium Dissolved	3109059		0.2	0.4	NA	< 0.1	102%	90%	110%	107%	85%	115%			
Silver Dissolved	3109059		< 0.01	< 0.01	0.0%	< 0.01				105%	90%	110%			
Sodium Dissolved	3106241		2.02	2.01	0.5%	< 0.05	101%	90%	110%	105%	90%	110%			
Thallium Dissolved	3109059		0.024	<0.002	NA	< 0.002	92%	90%	110%	98%	90%	110%			
Titanium Dissolved	3109059		114	118	3.4%	< 0.1				94%	90%	110%			
Uranium Dissolved	3109059		0.01	0.01	0.0%	< 0.01		90%	110%	102%	90%	110%			
Vanadium Dissolved	3109059		0.9	1.1	20.0%	< 0.1	90%	90%	110%	97%	90%	110%			
Zinc Dissolved	3109059		11	12	8.7%	< 1	98%	90%	110%	106%	85%	115%			
Routine Water Analysis															
Chloride	20120	3109059	20.1	20.2	0.5%	< 0.05	104%	85%	115%	96%	90%	110%	93%	70%	130%

Certified By:

Unit 120, 8600 Glenlyon Parkway
Burnaby, British Columbia
CANADA V5J 0B6
TEL (778)452-4000
FAX (778)452-4074
http://www.agatlabs.com

Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V573478

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Benzene	TO 0540	EPA SW846 8260	GC/MS
Toluene	TO 0540	EPA SW846 8260	GC/MS
Ethylbenzene	TO 0540	EPA SW846 8260	GC/MS
Xylenes	TO 0540	EPA SW846 8260	GC/MS
C6 - C10 (F1)	TO 0540	CCME Tier 1 Method	GC/FID
C6 - C10 (F1 minus BTEX)	TO 0540	CCME Tier 1 Method	GC/FID
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
C16 - C34	TO 0511	CCME Tier 1 Method	GC/FID
C>34 - C50	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO 0340	EPA SW846 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
C16 - C34	TO 0511	CCME Tier 1 Method	GC/FID
C>34 - C50	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO 0340	EPA SW846 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
Naphthalene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Quinoline	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Methyl tert-butyl ether (MTBE)	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Acenaphthylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acenaphthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Fluorene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Phenanthrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Anthracene (Water)	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acridine	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Styrene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
VPH	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Chrysene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(b)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(k)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V573478

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Indeno(1,2,3-cd)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Dibenzo(a,h)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(g,h.i)perylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Nitrobenzene - d5	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
Quinoline - d7	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
2-Fluorobiphenyl	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
P-Terphenyl - d14	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
LEPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
HEPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
Bromofluorobenzene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Dibromofluoromethane	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Toluene - d8	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Phenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
m&p-Cresol (3&4-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
o-Cresol (2-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
2-Chlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dinitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dimethylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,6-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Chloro-3-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4,6-Dinitro-2-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
3,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,5-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
Dinoseb (2-sec-butyl-4,6-dinitrophenol)	TO 1200	EPA SW-846 8321	HPLC/UV
Pentachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Fluorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Tribromophenol	TO 1200	EPA SW-846 8321	HPLC/UV
Chloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Vinyl Chloride	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V573478

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Bromomethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Chloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Trichlorofluoromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Acetone	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1-Dichloroethene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dichloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
2-Butanone (MEK)	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
trans-1,2-Dichloroethylene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1-Dichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
cis-1,2-Dichloroethylene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Chloroform	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,1-Trichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Carbon Tetrachloride	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichloropropane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Trichloroethene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromodichloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
trans-1,3-Dichloropropene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
4-Methyl-2-pentanone (MIBK)	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
cis-1,3-Dichloropropene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,2-Trichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dibromochloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Ethylene Dibromide	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Tetrachloroethene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,1,2-Tetrachloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Chlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromoform	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,2,2-Tetrachloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS

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AGAT WORK ORDER: 12V573478

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PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
1,3-Dichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,4-Dichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2,4-Trichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromofluorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dibromofluoromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Toluene - d8	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS

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AGAT WORK ORDER: 12V573478

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Aluminum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Antimony Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Arsenic Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Barium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Beryllium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Boron Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cadmium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Calcium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Chromium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cobalt Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Copper Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Iron Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Lead Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Lithium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Magnesium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Manganese Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Mercury Dissolved	MET-181-6103, LAB-181-4015	Modified from EPA 245.7	CV/AA
Molybdenum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Nickel Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Selenium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Silver Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Sodium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Thallium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Titanium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Uranium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Vanadium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Zinc Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Chloride	INOR-181-6002	Modified from SM 4110 B	ION CHROMATOGRAPH

AGAT Laboratories

120 - 8600 Glenlyon Parkway
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Ph.: 778.452.4000 · Fax: 778.452.7074

Chain of Custody Record

Turnaround Time Required (TAT)

- Regular TAT: 5 to 7 working days [X]
- Rush TAT: 24 to 48 hours [ ]
- 48 to 72 hours [ ]

Date Required: _____

Please contact laboratory if Rush is required

Report To:

Company: Fraser Environmental
Contact: Amanda Salway
Address: 308-1080 Mainland
Vancouver, BC V6B 2T4
Phone: 604 632-9941 Fax: 604-632-9942
LSD:
Client Project #: 2090-1103

Report Information

1. Name: Amanda Salway
Email: asalway@fraserbc.com
2. Name: Viviane Dubois-Cote
Email: vdcote@fraserbc.com

Report Format

- [ ] Single Sample per page
- [X] Multiple Samples per page
- [X] Excel Format Included

Laboratory Use Only

Arrival Temperature: 4.5°C
AGAT Job Number: 12V573478

Notes: FEB 9 PM 5:52

Invoice To: Same as above Yes [X] No [ ]

Company:
Contact:
Address:
Phone: Fax:
PO/AFE #:

Regulatory Requirements (Check):

- [ ] BC CSR – Soil
  - [ ] Agricultural
  - [ ] Industrial
  - [ ] Urban/Park
  - [ ] Commercial
- [X] BC CSR – Water
  - [ ] Drinking Water
  - [X] Aquatic Life
  - [ ] Irrigation
  - [ ] Livestock
- [X] CCME
  - [ ] Drinking Water
  - [ ] Residential/Park
  - [ ] Commercial
  - [ ] Industrial
  - [ ] Drinking Water
  - [X] FWAL

Lab ID #	Sample Identification	Sample Matrix	Date/Time Sampled	Comments – Site/Sample Info. Sample Containment	BC CSR BTEX/VPH	BC CSR LEPH/HEPH	BC CSR Metals + CCME metals	VOCs	BC CSR Schedule II	Routine Potability	Sodium + chloride	ECME PAH	CCME F2-F4	chlorinated and non-chlorinated phenols		Number of Containers	Preserved (Y/N)	Hazardous (Y/N)	Hold for 1 YEAR
3109059	MW2-30	groundwater	Feb 9, 2012 11:30		X	X	X	X			X	X	X	X		11			
1081	MW-11BR-16M	↓	Feb 9, 2012 14:00			X							X			2			
↓082	3-BH31	↓	Feb 9, 2012 16:30		X	X						X	X			5			

Samples Relinquished by (print name & sign):	Date	Samples Received by (Print name & sign):	Date
[signature]	Feb 9, 2012	AMIEL OCAMPO [signature] 9 FEB 2012 5:52 pm	
Samples Relinquished by (print name & sign):	Date	Samples Received by (Print name & sign):	Date
Samples Relinquished by (print name & sign):	Date	Samples Received by (Print name & sign):	Date

Pink Copy - Client
Yellow Copy - AGAT
White Copy - AGAT

Page 1 of 1

NO: 000623

Document ID: DIV-186-0811.001

Date revised: August 24, 2011

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM - BURNABY

Work Order # 12V573478

RECEIVING BASICS:
***Complete CoC as well where required**
Date and Time: 09-FEB-12 @ 5:52 pm
Courier: _____
Received by: Amiel
Relinquished by: Amanda Salway
Branch Received From: _____
Company: FRANZ ENV.
Consultant: _____
Client left without count verified: N

COC INFORMATION:
Received: (Yes) No Emailed to PM
Completed in full: (Yes) No If NO, why: _____
TURNAROUND TIME: Reg
COC Numbers: 000623

SAMPLE QUANTITIES:
Coolers: _____ Bottles/Jars: 18 Bags: _____

TIME SENSITIVE ISSUES:
Earliest Date Sampled: 09-FEB-12
Microbiology: Test: _____
Hydrocarbons: Test: BTEX
Samples are received >5 days after sampling: Yes (No)

ALREADY EXCEEDED? Yes (No)
Expiry: _____
Expiry: 16-FEB-12

SPECIALTY ISSUES:
Legal Samples: Yes No N/A
International Samples: Yes No
**Proper tape/labels applied: Yes No

Hazardous Samples:
Why hazardous:

_____
Precaution taken:

_____

SAMPLE REQUIREMENTS:
*Complete while logging in by login staff.

Correct bottles used for testing: (Yes) No
If No, explain: _____

Correct amount of sample for analysis: (Yes) No
If No, explain: _____

Are all samples labeled correctly: (Yes) No
If No, explain: _____

NON-CONFORMANCES:
3 temperatures of samples* and average of each cooler: (record differing temperatures on the CoC next to sample ID's)
*ICE PACKS
(1) 4 + 6 + 4 = 5 °C (2) 4 + 4 + 5 = 4 °C (3) ___ + ___ + ___ = ___ °C (4) ___ + ___ + ___ = ___ °C
*Jars used when available

Additional integrity issues (note here and on CoC next to the sample ID):

1) _____
2) _____
3) _____

Account Project Manager: _____ Have they been notified of the above issues: Yes No
Whom spoken to: _____ Date and Time: _____

ADDITIONAL NOTES:

_____

_____

_____

AGAT Laboratories

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CLIENT NAME: FRANZ ENVIRONMENTAL
308-108 MAINLAND STREET
VANCOUVER, BC V6B2T4

ATTENTION TO: Amanda Salway

PROJECT NO: 2090-1103

AGAT WORK ORDER: 12V573478

TRACE ORGANICS REVIEWED BY: Craig Stehr, Organics Supervisor

WATER ANALYSIS REVIEWED BY: Andrew Garrard, B.Sc., General Manager

DATE REPORTED: Mar 02, 2012

PAGES (INCLUDING COVER): 19

VERSION*: 2

Should you require any information regarding this analysis please contact your client services representative at (778) 452-4000

*NOTES

VERSION 2:Amended to include VH and EPH results as per client.
Version 2 is an amendment to version 1.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

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Certificate of Analysis

AGAT WORK ORDER: 12V573478
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons (BTEX/F1-F4) in Water

DATE SAMPLED: Feb 09, 2012 | DATE RECEIVED: Feb 09, 2012 | DATE REPORTED: Mar 02, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MW2-30 3109059	3-BH31 3109082
Benzene	mg/L	0.37	0.0005	<0.0005	<0.0005
Toluene	mg/L	0.002	0.0005	<0.0005	<0.0005
Ethylbenzene	mg/L	0.09	0.0005	<0.0005	<0.0005
Xylenes	mg/L		0.0005	<0.0005	<0.0005
C6 - C10 (F1)	mg/L		0.1	<0.1	<0.1
C6 - C10 (F1 minus BTEX)	mg/L		0.1	<0.1	<0.1
C>10 - C16	mg/L		0.1	<0.1	<0.1
C16 - C34	mg/L		0.1	<0.1	<0.1
C>34 - C50	mg/L		0.1	0.1	<0.1
Surrogate	**Unit**	**Acceptable Limits**			
Toluene-d8 (BTEX)	%	50-150		103	103
o-Terphenyl (F2-F4)	%	50-150		92.7	104

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL)

3109059-3109082 The C>6 - C10 fraction is calculated using the toluene response factor.
The C10 - C16 fraction is calculated using the average response factor for nC10, nC16 and nC34.
BTEX has NOT been subtracted from Fraction 1.
Sample is blank corrected.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V573478
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons (BTEX/F2-F4) in Water

DATE SAMPLED: Feb 09, 2012 | DATE RECEIVED: Feb 09, 2012 | DATE REPORTED: Mar 02, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-16M 3109081
C>10 - C16	mg/L		0.1	<0.1
C16 - C34	mg/L		0.1	<0.1
C>34 - C50	mg/L		0.1	<0.1
Surrogate	**Unit**	**Acceptable Limits**		
Toluene-d8 (BTEX)	%	50-150		NA
o-Terphenyl (F2-F4)	%	50-150		106

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL)

3109081 The C>6 - C10 fraction is calculated using the toluene response factor.
The C10 - C16 fraction is calculated using the average response factor for nC10, nC16 and nC34.
BTEX has NOT been subtracted from Fraction 1.
Sample is blank corrected.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V573478
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 09, 2012 | DATE RECEIVED: Feb 09, 2012 | DATE REPORTED: Mar 02, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MW2-30 3109059	MV-11BH-16M 3109081	3-BH31 3109082
Methyl tert-butyl ether (MTBE)	µg/L	34000	1	<1		<1
Styrene	µg/L	720	0.5	<0.5		<0.5
VPH	µg/L	1500	100	<100		<100
VH	µg/L	15000	100	<100		<100
Naphthalene	µg/L	10	0.05	<0.05	<0.05	<0.05
Quinoline	µg/L	34	0.1	<0.1	<0.1	<0.1
Acenaphthylene	µg/L		0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/L	60	0.05	<0.05	<0.05	<0.05
Fluorene	µg/L	120	0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/L	3	0.05	<0.05	<0.05	<0.05
Anthracene (Water)	µg/L	1	0.05	<0.05	<0.05	<0.05
Acridine	µg/L	0.5	0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/L	2	0.05	<0.05	<0.05	<0.05
Pyrene	µg/L	0.2	0.02	0.03	<0.02	<0.02
Benzo(a)anthracene	µg/L	1	0.05	<0.05	<0.05	<0.05
Chrysene	µg/L	1	0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/L		0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/L		0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.1	0.01	<0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L		0.05	<0.05	<0.05	<0.05
Dibenzo(a,h)anthracene	µg/L		0.05	<0.05	<0.05	<0.05
Benzo(g,h.i)perylene	µg/L		0.05	<0.05	<0.05	<0.05
LEPH C10-C19	µg/L	500	100	<100	<100	<100
HEPH C19-C32	µg/L		100	<100	<100	<100
EPH C10-C19	µg/L	5000	100	<100	<100	<100
EPH C19-C32	µg/L		100	<100	<100	<100

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Certificate of Analysis

AGAT WORK ORDER: 12V573478
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 09, 2012 | DATE RECEIVED: Feb 09, 2012 | DATE REPORTED: Mar 02, 2012 | SAMPLE TYPE: Water

Surrogate	Unit	Acceptable Limits	MW2-30 3109059	MV-11BH-16M 3109081	3-BH31 3109082
Nitrobenzene - d5	%	50-130	84	91	90
Quinoline - d7	%	50-130	105	103	100
2-Fluorobiphenyl	%	50-130	84	82	83
P-Terphenyl - d14	%	60-130	95	96	95
Bromofluorobenzene	%	70-130	98		93
Dibromofluoromethane	%	70-130	119		114
Toluene - d8	%	70-130	116		109

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

3109059 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.

3109081 LEPH & HEPH results have been corrected for PAH contributions.

3109082 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.

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AGAT WORK ORDER: 12V573478
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Phenolic Compounds in Water

DATE SAMPLED: Feb 09, 2012 | DATE RECEIVED: Feb 09, 2012 | DATE REPORTED: Mar 02, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MW2-30 3109059
Phenol	mg/L		0.002	<0.002
4-Nitrophenol	mg/L		0.005	<0.005
m&p-Cresol (3&4-methylphenol)	mg/L		0.0005	<0.0005
o-Cresol (2-methylphenol)	mg/L		0.0005	<0.0005
2-Chlorophenol	mg/L		0.0005	<0.0005
2,4-Dinitrophenol	mg/L		0.005	<0.005
2-Nitrophenol	mg/L		0.005	<0.005
2,4-Dimethylphenol	mg/L		0.0005	<0.0005
2,6-Dichlorophenol	mg/L		0.0001	<0.0001
4-Chloro-3-methylphenol	mg/L		0.0005	<0.0005
2,4-Dichlorophenol	mg/L		0.0001	<0.0001
4,6-Dinitro-2-methylphenol	mg/L		0.005	<0.005
2,3,6-Trichlorophenol	mg/L		0.0005	<0.0005
2,3,4-Trichlorophenol	mg/L		0.0005	<0.0005
2,4,6-Trichlorophenol	mg/L		0.0005	<0.0005
2,4,5-Trichlorophenol	mg/L		0.0005	<0.0005
2,3,5-Trichlorophenol	mg/L		0.0005	<0.0005
3,4,5-Trichlorophenol	mg/L		0.0005	<0.0005
2,3,4,6-Tetrachlorophenol	mg/L		0.0005	<0.0005
2,3,5,6-Tetrachlorophenol	mg/L		0.0005	<0.0005
2,3,4,5-Tetrachlorophenol	mg/L		0.0005	<0.0005
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	mg/L		0.005	<0.005
Pentachlorophenol	mg/L		0.0005	<0.0005
Surrogate	Unit	Acceptable Limits		
2-Fluorophenol	%	50-150		112
2,4,6-Tribromophenol	%	50-150		109

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
3109059 Results relate only to the items tested.

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AGAT WORK ORDER: 12V573478
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Volatile Organic Compounds in Water

DATE SAMPLED: Feb 09, 2012 | DATE RECEIVED: Feb 09, 2012 | DATE REPORTED: Mar 02, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MW2-30 3109059
Chloromethane	µg/L		1	<1
Vinyl Chloride	µg/L		1	<1
Bromomethane	µg/L		1	<1
Chloroethane	µg/L		1	<1
Trichlorofluoromethane	µg/L		1	<1
Acetone	µg/L		10	<10
1,1-Dichloroethene	µg/L		1	<1
Dichloromethane	µg/L	980	1	<1
2-Butanone (MEK)	µg/L		10	<10
trans-1,2-Dichloroethylene	µg/L		1	<1
1,1-Dichloroethane	µg/L		1	<1
cis-1,2-Dichloroethylene	µg/L		1	<1
Chloroform	µg/L	20	1	<1
1,2-Dichloroethane	µg/L	1000	1	<1
1,1,1-Trichloroethane	µg/L		1	<1
Carbon Tetrachloride	µg/L	130	0.5	<0.5
1,2-Dichloropropane	µg/L		1	<1
Trichloroethene	µg/L	200	1	<1
Bromodichloromethane	µg/L		1	<1
trans-1,3-Dichloropropene	µg/L		1	<1
4-Methyl-2-pentanone (MIBK)	µg/L		10	<10
cis-1,3-Dichloropropene	µg/L		1	<1
1,1,2-Trichloroethane	µg/L		1	<1
Dibromochloromethane	µg/L		1	<1
Ethylene Dibromide	µg/L		0.3	<0.3
Tetrachloroethene	µg/L	1100	1	<1
1,1,1,2-Tetrachloroethane	µg/L		1	<1
Chlorobenzene	µg/L	13	1	<1
Bromoform	µg/L		1	<1
1,1,2,2-Tetrachloroethane	µg/L		1	<1
1,3-Dichlorobenzene	µg/L	1500	0.5	<0.5
1,4-Dichlorobenzene	µg/L	260	0.5	<0.5
1,2-Dichlorobenzene	µg/L	7	1	<1

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AGAT WORK ORDER: 12V573478
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Volatile Organic Compounds in Water

DATE SAMPLED: Feb 09, 2012 | DATE RECEIVED: Feb 09, 2012 | DATE REPORTED: Mar 02, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MW2-30 3109059
1,2,4-Trichlorobenzene	µg/L	240	1	<1
Surrogate	**Unit**	**Acceptable Limits**		
Bromofluorobenzene	%	70-130		91
Dibromofluoromethane	%	70-130		86
Toluene - d8	%	70-130		94

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 12V573478
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

British Columbia CSR- Schedule 6 Dissolved Metals

DATE SAMPLED: Feb 09, 2012 | DATE RECEIVED: Feb 09, 2012 | DATE REPORTED: Mar 02, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MW2-30 3109059
Aluminum Dissolved	µg/L		1	4
Antimony Dissolved	µg/L	200	0.05	0.06
Arsenic Dissolved	µg/L	50	0.1	4.4
Barium Dissolved	µg/L	10000	0.1	113
Beryllium Dissolved	µg/L	53	0.01	0.01
Boron Dissolved	µg/L	50000	1	46
Cadmium Dissolved	µg/L		0.01	0.03
Calcium Dissolved	mg/L		0.05	98.2
Chromium Dissolved	µg/L		0.5	12.8
Cobalt Dissolved	µg/L	40	0.05	0.26
Copper Dissolved	µg/L		0.2	0.3
Iron Dissolved	mg/L		0.01	36.6
Lead Dissolved	µg/L		0.01	0.16
Lithium Dissolved	µg/L		0.1	2.9
Magnesium Dissolved	mg/L		0.05	35.9
Manganese Dissolved	mg/L		0.001	2.08
Mercury Dissolved	µg/L	1	0.003	<0.003
Molybdenum Dissolved	µg/L	10000	0.05	<0.05
Nickel Dissolved	µg/L		0.1	1.5
Selenium Dissolved	µg/L	10	0.1	0.2
Silver Dissolved	µg/L		0.01	<0.01
Sodium Dissolved	mg/L		0.05	14.0
Thallium Dissolved	µg/L	3	0.002	0.024
Titanium Dissolved	µg/L	1000	0.1	114
Uranium Dissolved	µg/L	3000	0.01	0.01
Vanadium Dissolved	µg/L		0.1	0.9
Zinc Dissolved	µg/L		1	11
Hardness (calc)	mg CaCO3/L		1	393

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

Certified By:

AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 12V573478

PROJECT NO: 2090-1103

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CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Routine Water Analysis

DATE SAMPLED: Feb 09, 2012 | DATE RECEIVED: Feb 09, 2012 | DATE REPORTED: Mar 02, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MW2-30 3109059
Chloride	mg/L	1500	0.05	20.1

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

Certified By:

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V573478

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis

RPT Date: Mar 02, 2012

PARAMETER	Batch	Sample Id	DUPLICATE Dup #1	DUPLICATE Dup #2	DUPLICATE RPD	Method Blank	REFERENCE MATERIAL Measured Value	REFERENCE MATERIAL Acceptable Limits Lower	REFERENCE MATERIAL Acceptable Limits Upper	METHOD BLANK SPIKE Recovery	METHOD BLANK SPIKE Acceptable Limits Lower	METHOD BLANK SPIKE Acceptable Limits Upper	MATRIX SPIKE Recovery	MATRIX SPIKE Acceptable Limits Lower	MATRIX SPIKE Acceptable Limits Upper
Petroleum Hydrocarbons in Water															
Methyl tert-butyl ether (MTBE)	1	3109059	<1	<1	0.0%	< 1	102%	80%	120%				100%	70%	130%
Styrene	1	3109059	<0.5	<0.5	0.0%	< 0.5	102%	80%	120%				105%	70%	130%
VPH	1	3109059	<100	<100	0.0%	< 100									
Naphthalene	1	W-MS	0.09	0.09	0.0%	< 0.05	100%	80%	120%				97%	50%	130%
Quinoline	1	W-MS	<0.1	<0.1	0.0%	< 0.1	103%	80%	120%				91%	50%	130%
Acenaphthylene	1	W-MS	0.09	0.09	0.0%	< 0.05	103%	80%	120%				92%	50%	130%
Acenaphthene	1	W-MS	0.09	0.09	0.0%	< 0.05	101%	80%	120%				97%	50%	130%
Fluorene	1	W-MS	0.09	0.09	0.0%	< 0.05	103%	80%	120%				96%	50%	130%
Phenanthrene	1	W-MS	0.08	0.09	12.0%	< 0.05	103%	80%	120%				88%	60%	130%
Anthracene (Water)	1	W-MS	0.09	0.10	11.0%	< 0.05	98%	80%	120%				95%	60%	130%
Acridine	1	W-MS	0.08	0.09	12.0%	< 0.05	103%	80%	120%				88%	50%	130%
Fluoranthene	1	W-MS	0.09	0.10	11.0%	< 0.05	101%	80%	120%				95%	60%	130%
Pyrene	1	W-MS	0.09	0.10	11.0%	< 0.02	101%	80%	120%				94%	60%	130%
Benzo(a)anthracene	1	W-MS	0.09	0.09	0.0%	< 0.05	102%	80%	120%				92%	60%	130%
Chrysene	1	W-MS	0.09	0.10	11.0%	< 0.05	98%	80%	120%				98%	60%	130%
Benzo(b)fluoranthene	1	W-MS	0.08	0.09	12.0%	< 0.05	105%	80%	120%				86%	60%	130%
Benzo(k)fluoranthene	1	W-MS	0.08	0.08	0.0%	< 0.05	100%	80%	120%				86%	60%	130%
Benzo(a)pyrene	1	W-MS	0.09	0.09	0.0%	< 0.01	101%	80%	120%				92%	60%	130%
Indeno(1,2,3-cd)pyrene	1	W-MS	0.10	0.10	0.0%	< 0.05	102%	80%	120%				103%	60%	130%
Dibenzo(a,h)anthracene	1	W-MS	0.10	0.10	0.0%	< 0.05	101%	80%	120%				101%	60%	130%
Benzo(g,h.i)perylene	1	W-MS	0.10	0.11	9.5%	< 0.05	102%	80%	120%				105%	60%	130%
Nitrobenzene - d5	1	W-MS	98	101	3.0%		102%	80%	120%				99%	50%	130%
Quinoline - d7	1	W-MS	87	86	1.0%		106%	80%	120%				88%	50%	130%
2-Fluorobiphenyl	1	W-MS	97	97	0.0%		101%	80%	120%				97%	50%	130%
P-Terphenyl - d14	1	W-MS	95	100	5.0%		102%	80%	120%				95%	60%	130%
Bromofluorobenzene	1	3109059	98	96	2.0%		100%	70%	130%				110%	70%	130%
Dibromofluoromethane	1	3109059	119	119	0.0%		93%	70%	130%				98%	70%	130%
Toluene - d8	1	3109059	116	112	4.0%		95%	70%	130%				104%	70%	130%
Volatile Organic Compounds in Water															
Chloromethane	1	3109059	<1	<1	0.0%	< 1	96%	80%	120%				129%	70%	130%
Vinyl Chloride	1	3109059	<1	<1	0.0%	< 1	97%	80%	120%				119%	70%	130%
Bromomethane	1	3109059	<1	<1	0.0%	< 1	95%	80%	120%				119%	70%	130%
Chloroethane	1	3109059	<1	<1	0.0%	< 1	100%	80%	120%				119%	70%	130%
Trichlorofluoromethane	1	3109059	<1	<1	0.0%	< 1	99%	80%	120%				105%	70%	130%
Acetone	1	3109059	<10	<10	0.0%	< 10	104%	80%	120%				NA	70%	130%
1,1-Dichloroethene	1	3109059	<1	<1	0.0%	< 1	100%	80%	120%				116%	70%	130%
Dichloromethane	1	3109059	<1	<1	0.0%	< 1	98%	80%	120%				94%	70%	130%
2-Butanone (MEK)	1	3109059	<10	<10	0.0%	< 10	101%	80%	120%				NA	70%	130%

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V573478

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis (Continued)

RPT Date: Mar 02, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
trans-1,2-Dichloroethylene	1	3109059	<1	<1	0.0%	< 1	99%	80%	120%				107%	70%	130%
1,1-Dichloroethane	1	3109059	<1	<1	0.0%	< 1	101%	80%	120%				108%	70%	130%
cis-1,2-Dichloroethylene	1	3109059	<1	<1	0.0%	< 1	101%	80%	120%				106%	70%	130%
Chloroform	1	3109059	<1	<1	0.0%	< 1	101%	80%	120%				104%	70%	130%
1,2-Dichloroethane	1	3109059	<1	<1	0.0%	< 1	101%	80%	120%				107%	70%	130%
1,1,1-Trichloroethane	1	3109059	<1	<1	0.0%	< 1	102%	80%	120%				105%	70%	130%
Carbon Tetrachloride	1	3109059	<0.5	<0.5	0.0%	< 0.5	103%	80%	120%				109%	70%	130%
1,2-Dichloropropane	1	3109059	<1	<1	0.0%	< 1	101%	80%	120%				103%	70%	130%
Trichloroethene	1	3109059	<1	<1	0.0%	< 1	101%	80%	120%				105%	70%	130%
Bromodichloromethane	1	3109059	<1	<1	0.0%	< 1	104%	80%	120%				102%	70%	130%
trans-1,3-Dichloropropene	1	3109059	<1	<1	0.0%	< 1	105%	80%	120%				105%	70%	130%
4-Methyl-2-pentanone (MIBK)	1	3109059	<10	<10	0.0%	< 10	105%	80%	120%				NA	70%	130%
cis-1,3-Dichloropropene	1	3109059	<1	<1	0.0%	< 1	105%	80%	120%				104%	70%	130%
1,1,2-Trichloroethane	1	3109059	<1	<1	0.0%	< 1	102%	80%	120%				100%	70%	130%
Dibromochloromethane	1	3109059	<1	<1	0.0%	< 1	105%	80%	120%				100%	70%	130%
Ethylene Dibromide	1	3109059	<0.3	<0.3	0.0%	< 0.3	103%	80%	120%				99%	70%	130%
Tetrachloroethene	1	3109059	<1	<1	0.0%	< 1	101%	80%	120%				82%	70%	130%
1,1,1,2-Tetrachloroethane	1	3109059	<1	<1	0.0%	< 1	104%	80%	120%				100%	70%	130%
Chlorobenzene	1	3109059	<1	<1	0.0%	< 1	101%	80%	120%				100%	70%	130%
Bromoform	1	3109059	<1	<1	0.0%	< 1	105%	80%	120%				99%	70%	130%
1,1,2,2-Tetrachloroethane	1	3109059	<1	<1	0.0%	< 1	103%	80%	120%				97%	70%	130%
1,3-Dichlorobenzene	1	3109059	<0.5	<0.5	0.0%	< 0.5	100%	80%	120%				103%	70%	130%
1,4-Dichlorobenzene	1	3109059	<0.5	<0.5	0.0%	< 0.5	100%	80%	120%				103%	70%	130%
1,2-Dichlorobenzene	1	3109059	<1	<1	0.0%	< 1	101%	80%	120%				101%	70%	130%
1,2,4-Trichlorobenzene	1	3109059	<1	<1	0.0%	< 1	102%	80%	120%				100%	70%	130%
Bromofluorobenzene	1	3109059	91	91	0.0%		104%	80%	120%				NA	70%	130%
Dibromofluoromethane	1	3109059	86	89	3.0%		108%	80%	120%				NA	70%	130%
Toluene - d8	1	3109059	94	97	3.0%		101%	80%	120%				NA	70%	130%
Petroleum Hydrocarbons (BTEX/F1-F4) in Water															
Benzene	393	3115213	0.0687	0.0675	2.0%	< 0.0005	106%	80%	120%	97%	80%	120%	89%	70%	130%
Toluene	393	3115213	0.0340	0.0353	3.8%	< 0.0005	109%	80%	120%	100%	80%	120%	88%	70%	130%
Ethylbenzene	393	3115213	0.005	0.0059	17.0%	< 0.0005	112%	80%	120%	107%	80%	120%	88%	70%	130%
Xylenes	393	3115213	0.0103	0.0114	10.0%	< 0.0005	112%	80%	120%	105%	80%	120%	89%	70%	130%
C6 - C10 (F1)	393	3115213	0.5	0.5	0.0%	< 0.1	102%	80%	120%	111%	80%	120%	106%	70%	130%
C>10 - C16	44	3109059	<0.1	<0.1	0.0%	< 0.1	109%	80%	120%	93%	80%	120%	97%	70%	130%
C16 - C34	44	3109059	<0.1	<0.1	0.0%	< 0.1	109%	80%	120%	92%	80%	120%	93%	70%	130%
C>34 - C50	44	3109059	0.1	<0.1	0.0%	< 0.1	109%	80%	120%	0%	80%	120%	0%	70%	130%
Phenolic Compounds in Water															

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V573478

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis (Continued)

RPT Date: Mar 02, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Phenol	135	3100893	<0.002	<0.002	NA	< 0.002	85%	80%	120%	95%	70%	130%	95%	60%	140%
4-Nitrophenol	135	3100893	<0.005	<0.005	NA	< 0.005	83%	80%	120%	88%	70%	130%	90%	60%	140%
m&p-Cresol (3&4-methylphenol)	135	3100893	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
o-Cresol (2-methylphenol)	135	3100893	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
2-Chlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	84%	80%	120%	95%	70%	130%	91%	60%	140%
2,4-Dinitrophenol	135	3100893	<0.005	<0.005	NA	< 0.005	90%	80%	120%	91%	70%	130%	93%	60%	140%
2-Nitrophenol	135	3100893	<0.005	<0.005	NA	< 0.005	97%	80%	120%	106%	70%	130%	100%	60%	140%
2,4-Dimethylphenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	85%	80%	120%	93%	70%	130%	89%	60%	140%
2,6-Dichlorophenol	135	3100893	<0.0001	<0.0001	NA	< 0.0001				93%	70%	130%	90%	60%	140%
4-Chloro-3-methylphenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	83%	80%	120%	94%	70%	130%	89%	60%	140%
2,4-Dichlorophenol	135	3100893	<0.0001	<0.0001	NA	< 0.0001	87%	80%	120%	87%	70%	130%	85%	60%	140%
4,6-Dinitro-2-methylphenol	135	3100893	<0.005	<0.005	NA	< 0.005	93%	80%	120%	85%	70%	130%	104%	60%	140%
2,3,6-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	94%	60%	140%
2,3,4-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	92%	60%	140%
2,4,6-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	86%	80%	120%	96%	70%	130%	95%	60%	140%
2,4,5-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
2,3,5-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				97%	70%	130%	95%	60%	140%
3,4,5-Trichlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	94%	60%	140%
2,3,4,6-Tetrachlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				100%	70%	130%	99%	60%	140%
2,3,5,6-Tetrachlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				100%	70%	130%	100%	60%	140%
2,3,4,5-Tetrachlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005				100%	70%	130%	98%	60%	140%
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	135	3100893	<0.005	<0.005	NA	< 0.005				117%	70%	130%	97%	60%	140%
Pentachlorophenol	135	3100893	<0.0005	<0.0005	NA	< 0.0005	91%	80%	120%	107%	70%	130%	103%	60%	140%

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V573478

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Water Analysis

RPT Date: Mar 02, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
British Columbia CSR- Schedule 6 Dissolved Metals															
Aluminum Dissolved	3109059		4	4	0.0%	< 1	105%	90%	110%	108%	85%	115%			
Antimony Dissolved	3109059		0.06	0.16	NA	< 0.05	104%	90%	110%	107%	85%	110%			
Arsenic Dissolved	3109059		4.4	4.3	2.3%	< 0.1	102%	90%	110%	106%	90%	110%			
Barium Dissolved	3109059		113	113	0.0%	< 0.1	102%	90%	110%	99%	90%	110%			
Beryllium Dissolved	3109059		0.01	0.02	NA	< 0.01	90%	90%	110%	101%	90%	110%			
Boron Dissolved	3109059		45.9	49.0	6.5%	< 1	94%	90%	110%	102%	80%	120%			
Cadmium Dissolved	3109059		0.03	0.03	0.0%	< 0.01	102%	90%	110%	102%	90%	110%			
Calcium Dissolved	3106239		30.7	30.6	0.3%	< 0.05	100%	90%	110%	102%	90%	110%			
Chromium Dissolved	3109059		12.8	13.0	1.6%	< 0.5	90%	90%	110%	94%	90%	110%			
Cobalt Dissolved	3109059		0.26	0.25	3.9%	< 0.05	97%	90%	110%	100%	90%	110%			
Copper Dissolved	3109059		0.3	0.3	0.0%	< 0.2	100%	90%	110%	104%	90%	110%			
Iron Dissolved	3106239		<0.01	<0.01	0.0%	< 0.01	105%	90%	110%	103%	90%	110%			
Lead Dissolved	3109059		0.16	0.13	20.7%	< 0.01	105%	90%	110%	102%	90%	110%			
Lithium Dissolved	3109059		2.9	3.0	3.4%	< 0.1				103%	90%	110%			
Magnesium Dissolved	3106239		4.03	4.01	0.5%	< 0.05	104%	90%	110%	106%	90%	110%			
Manganese Dissolved	3106239		<0.001	<0.001	0.0%	< 0.001	104%	90%	110%	102%	90%	110%			
Mercury Dissolved	3106239		<0.003	<0.003	0.0%	< 0.003	95%	90%	110%	100%	90%	110%			
Molybdenum Dissolved	3109059		< 0.05	< 0.05	0.0%	< 0.05	95%	90%	110%	106%	90%	110%			
Nickel Dissolved	3109059		1.5	1.6	6.5%	< 0.1	94%	90%	110%	100%	90%	110%			
Selenium Dissolved	3109059		0.2	0.4	NA	< 0.1	102%	90%	110%	107%	85%	115%			
Silver Dissolved	3109059		< 0.01	< 0.01	0.0%	< 0.01				105%	90%	110%			
Sodium Dissolved	3106241		2.02	2.01	0.5%	< 0.05	101%	90%	110%	105%	90%	110%			
Thallium Dissolved	3109059		0.024	<0.002	NA	< 0.002	92%	90%	110%	98%	90%	110%			
Titanium Dissolved	3109059		114	118	3.4%	< 0.1				94%	90%	110%			
Uranium Dissolved	3109059		0.01	0.01	0.0%	< 0.01		90%	110%	102%	90%	110%			
Vanadium Dissolved	3109059		0.9	1.1	20.0%	< 0.1	90%	90%	110%	97%	90%	110%			
Zinc Dissolved	3109059		11	12	8.7%	< 1	98%	90%	110%	106%	85%	115%			
Routine Water Analysis															
Chloride	20120	3109059	20.1	20.2	0.5%	< 0.05	104%	85%	115%	96%	90%	110%	93%	70%	130%

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V573478

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Benzene	TO 0540	EPA SW846 8260	GC/MS
Toluene	TO 0540	EPA SW846 8260	GC/MS
Ethylbenzene	TO 0540	EPA SW846 8260	GC/MS
Xylenes	TO 0540	EPA SW846 8260	GC/MS
C6 - C10 (F1)	TO 0540	CCME Tier 1 Method	GC/FID
C6 - C10 (F1 minus BTEX)	TO 0540	CCME Tier 1 Method	GC/FID
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
C16 - C34	TO 0511	CCME Tier 1 Method	GC/FID
C>34 - C50	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO 0340	EPA SW846 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
C16 - C34	TO 0511	CCME Tier 1 Method	GC/FID
C>34 - C50	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO 0340	EPA SW846 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
Naphthalene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Quinoline	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Methyl tert-butyl ether (MTBE)	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Acenaphthylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acenaphthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Fluorene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Phenanthrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Anthracene (Water)	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acridine	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Styrene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
VPH	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
VH	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Benzo(a)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Chrysene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(b)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(k)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS

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PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Benzo(a)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Dibenzo(a,h)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(g,h.i)perylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Nitrobenzene - d5	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
Quinoline - d7	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
2-Fluorobiphenyl	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
P-Terphenyl - d14	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
LEPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
HEPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
EPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
EPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
Bromofluorobenzene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Dibromofluoromethane	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Toluene - d8	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Phenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
m&p-Cresol (3&4-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
o-Cresol (2-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
2-Chlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dinitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dimethylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,6-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Chloro-3-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4,6-Dinitro-2-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
3,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,5-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
Dinoseb (2-sec-butyl-4,6-dinitrophenol)	TO 1200	EPA SW-846 8321	HPLC/UV
Pentachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV

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PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
2-Fluorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Tribromophenol	TO 1200	EPA SW-846 8321	HPLC/UV
Chloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Vinyl Chloride	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromomethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Chloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Trichlorofluoromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Acetone	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1-Dichloroethene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dichloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
2-Butanone (MEK)	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
trans-1,2-Dichloroethylene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1-Dichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
cis-1,2-Dichloroethylene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Chloroform	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,1-Trichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Carbon Tetrachloride	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichloropropane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Trichloroethene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromodichloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
trans-1,3-Dichloropropene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
4-Methyl-2-pentanone (MIBK)	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
cis-1,3-Dichloropropene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,2-Trichloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dibromochloromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Ethylene Dibromide	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Tetrachloroethene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,1,2-Tetrachloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS

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PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Chlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromoform	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,1,2,2-Tetrachloroethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,3-Dichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,4-Dichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2-Dichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
1,2,4-Trichlorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Bromofluorobenzene	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Dibromofluoromethane	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS
Toluene - d8	ORG-180-5131	Modified from BC MOE Lab Manual Section D (VOC)	GC/MS

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PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Aluminum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Antimony Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Arsenic Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Barium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Beryllium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Boron Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cadmium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Calcium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Chromium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cobalt Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Copper Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Iron Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Lead Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Lithium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Magnesium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Manganese Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Mercury Dissolved	MET-181-6103, LAB-181-4015	Modified from EPA 245.7	CV/AA
Molybdenum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Nickel Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Selenium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Silver Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Sodium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Thallium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Titanium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Uranium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Vanadium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Zinc Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Chloride	INOR-181-6002	Modified from SM 4110 B	ION CHROMATOGRAPH

AGAT Laboratories

120 - 8600 Glenlyon Parkway
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V5J 0B6
webearth.agatlabs.com

Ph.: 778.452.4000 · Fax: 778.452.7074

Chain of Custody Record

Turnaround Time Required (TAT)

- Regular TAT: 5 to 7 working days [X]
- Rush TAT: 24 to 48 hours [ ]
- 48 to 72 hours [ ]

Date Required: _____

Please contact laboratory if Rush is required

Report To:

Company: Fraser Environmental
Contact: Amanda Salway
Address: 308-1080 Mainland
Vancouver, BC V6B 2T4
Phone: 604 632-9941 Fax: 604-632-9942
LSD:
Client Project #: 2090-1103

Report Information

1. Name: Amanda Salway
Email: asalway@fraserbc.com
2. Name: Viviane Dubois-Cote
Email: vdcote@fraserbc.com

Report Format

- [ ] Single Sample per page
- [X] Multiple Samples per page
- [X] Excel Format Included

Laboratory Use Only

Arrival Temperature: 4.5°C
AGAT Job Number: 12V573478

Notes: FEB 9 PM 5:52

Invoice To: Same as above Yes [X] No [ ]

Company:
Contact:
Address:
Phone: Fax:
PO/AFE #:

Regulatory Requirements (Check):

- [ ] BC CSR – Soil
  - [ ] Agricultural
  - [ ] Industrial
  - [ ] Urban/Park
  - [ ] Commercial
- [X] BC CSR – Water
  - [ ] Drinking Water
  - [X] Aquatic Life
  - [ ] Irrigation
  - [ ] Livestock
- [X] CCME
  - [ ] Drinking Water
  - [ ] Residential/Park
  - [ ] Commercial
  - [ ] Industrial
  - [ ] Drinking Water
  - [X] FWAL

Lab ID #	Sample Identification	Sample Matrix	Date/Time Sampled	Comments – Site/Sample Info. Sample Containment	BC CSR BTEX/VPH	BC CSR LEPH/HEPH	BC CSR Metals + CCME metals	VOCs	BC CSR Schedule II	Routine Potability	Sodium + chloride	ECME PAH	CCME F2-F4	chlorinated and non-chlorinated phenols		Number of Containers	Preserved (Y/N)	Hazardous (Y/N)	Hold for 1 YEAR
3109059	MW2-30	groundwater	Feb 9, 2012 11:30		X	X	X	X			X	X	X	X		11			
1081	MW-11BR-16M	↓	Feb 9, 2012 14:00			X							X			2			
↓082	3-BH31	↓	Feb 9, 2012 16:30		X	X						X	X			5			

Samples Relinquished by (print name & sign):	Date	Samples Received by (Print name & sign):	Date
[signature]	Feb 9, 2012	AMIEL OCAMPO [signature] 9 FEB 2012 5:52 pm	
Samples Relinquished by (print name & sign):	Date	Samples Received by (Print name & sign):	Date
Samples Relinquished by (print name & sign):	Date	Samples Received by (Print name & sign):	Date

Pink Copy - Client
Yellow Copy - AGAT
White Copy - AGAT

Page 1 of 1

NO: 000623

Document ID: DIV-186-0811.001

Date revised: August 24, 2011

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM - BURNABY

Work Order # 12V573478

RECEIVING BASICS:
***Complete CoC as well where required**
Date and Time: 09-FEB-12 @ 5:52 pm
Courier: _____
Received by: Amiel
Relinquished by: Amanda Salway
Branch Received From: _____
Company: FRANZ ENV.
Consultant: _____
Client left without count verified: N

COC INFORMATION:
Received: (Yes) No Emailed to PM
Completed in full: (Yes) No If NO, why: _____
TURNAROUND TIME: Reg
COC Numbers: 000623

SAMPLE QUANTITIES:
Coolers: _____ Bottles/Jars: 18 Bags: _____

TIME SENSITIVE ISSUES:
Earliest Date Sampled: 09-FEB-12
Microbiology: Test: _____
Hydrocarbons: Test: BTEX
Samples are received >5 days after sampling: Yes (No)

ALREADY EXCEEDED? Yes (No)
Expiry: _____
Expiry: 16-FEB-12

SPECIALTY ISSUES:
Legal Samples: Yes No N/A
International Samples: Yes No
**Proper tape/labels applied: Yes No

Hazardous Samples:
Why hazardous:

_____
Precaution taken:

_____

SAMPLE REQUIREMENTS:
*Complete while logging in by login staff.

Correct bottles used for testing: (Yes) No
If No, explain: _____

Correct amount of sample for analysis: (Yes) No
If No, explain: _____

Are all samples labeled correctly: (Yes) No
If No, explain: _____

NON-CONFORMANCES:
3 temperatures of samples* and average of each cooler: (record differing temperatures on the CoC next to sample ID's)
*ICE PACKS
(1) 4 + 6 + 4 = 5 °C (2) 4 + 4 + 5 = 4 °C (3) ___ + ___ + ___ = ___ °C (4) ___ + ___ + ___ = ___ °C
*Jars used when available

Additional integrity issues (note here and on CoC next to the sample ID):

1) _____
2) _____
3) _____

Account Project Manager: _____ Have they been notified of the above issues: Yes No
Whom spoken to: _____ Date and Time: _____

ADDITIONAL NOTES:

_____

_____

_____

AGAT Laboratories

Unit 120, 8600 Glenlyon Parkway
Burnaby, British Columbia
CANADA V5J 0B6
TEL (778)452-4000
FAX (778)452-4074
http://www.agatlabs.com

CLIENT NAME: FRANZ ENVIRONMENTAL
308-108 MAINLAND STREET
VANCOUVER, BC V6B2T4

ATTENTION TO: Amanda Salway

PROJECT NO: 2090-1103

AGAT WORK ORDER: 12V573781

TRACE ORGANICS REVIEWED BY: Andrew Garrard, B.Sc., General Manager

WATER ANALYSIS REVIEWED BY: Marie England, Inorganics Supervisor

DATE REPORTED: Feb 20, 2012

PAGES (INCLUDING COVER): 11

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (778) 452-4000

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

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Certificate of Analysis

AGAT WORK ORDER: 12V573781
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons (BTEX/F2-F4) in Water

DATE SAMPLED: Feb 10, 2012 | DATE RECEIVED: Feb 10, 2012 | DATE REPORTED: Feb 20, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	OW5 3112958
C>10 - C16	mg/L		0.1	<0.1
C16 - C34	mg/L		0.1	<0.1
C>34 - C50	mg/L		0.1	<0.1
Surrogate	**Unit**	**Acceptable Limits**		
Toluene-d8 (BTEX)	%	50-150		
o-Terphenyl (F2-F4)	%	50-150		108

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL)

3112958 The C>6 - C10 fraction is calculated using the toluene response factor.
The C10 - C16 fraction is calculated using the average response factor for nC10, nC16 and nC34.
BTEX has NOT been subtracted from Fraction 1.
Sample is blank corrected.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V573781
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 10, 2012 | DATE RECEIVED: Feb 10, 2012 | DATE REPORTED: Feb 20, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	OW5 3112958
Naphthalene	µg/L	10	0.05	<0.05
Quinoline	µg/L	34	0.1	<0.1
Acenaphthylene	µg/L		0.05	<0.05
Acenaphthene	µg/L	60	0.05	<0.05
Fluorene	µg/L	120	0.05	<0.05
Phenanthrene	µg/L	3	0.05	<0.05
Anthracene (Water)	µg/L	1	0.05	<0.05
Acridine	µg/L	0.5	0.05	<0.05
Fluoranthene	µg/L	2	0.05	<0.05
Pyrene	µg/L	0.2	0.02	<0.02
Benzo(a)anthracene	µg/L	1	0.05	<0.05
Chrysene	µg/L	1	0.05	<0.05
Benzo(b)fluoranthene	µg/L		0.05	<0.05
Benzo(k)fluoranthene	µg/L		0.05	<0.05
Benzo(a)pyrene	µg/L	0.1	0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L		0.05	<0.05
Dibenzo(a,h)anthracene	µg/L		0.05	<0.05
Benzo(g,h.i)perylene	µg/L		0.05	<0.05
LEPH C10-C19	µg/L	500	100	<100
HEPH C19-C32	µg/L		100	<100
Surrogate	**Unit**	**Acceptable Limits**		
Nitrobenzene - d5	%	50-130		69
Quinoline - d7	%	50-130		86
2-Fluorobiphenyl	%	50-130		67
P-Terphenyl - d14	%	60-130		87

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)
3112958 LEPH & HEPH results have been corrected for PAH contributions.

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 12V573781
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Phenolic Compounds in Water

DATE SAMPLED: Feb 10, 2012 | DATE RECEIVED: Feb 10, 2012 | DATE REPORTED: Feb 20, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	OW5 3112958	MV-11BH-15M 3112960	MV-GWDUP4 3112961
Phenol	mg/L		0.002	<0.002	<0.002	<0.002
4-Nitrophenol	mg/L		0.005	<0.005	<0.005	<0.005
m&p-Cresol (3&4-methylphenol)	mg/L		0.0005	<0.0005	<0.0005	<0.0005
o-Cresol (2-methylphenol)	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2-Chlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,4-Dinitrophenol	mg/L		0.005	<0.005	<0.005	<0.005
2-Nitrophenol	mg/L		0.005	<0.005	<0.005	<0.005
2,4-Dimethylphenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,6-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001	<0.0001
4-Chloro-3-methylphenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,4-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001	<0.0001
4,6-Dinitro-2-methylphenol	mg/L		0.005	<0.005	<0.005	<0.005
2,3,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,4-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,4,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
3,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,4,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,5,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,4,5-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	mg/L		0.005	<0.005	<0.005	<0.005
Pentachlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
Surrogate	Unit	Acceptable Limits				
2-Fluorophenol	%	50-150		109	108	107
2,4,6-Tribromophenol	%	50-150		110	110	110

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
3112958-3112961 Results relate only to the items tested.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V573781
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

British Columbia CSR- Schedule 6 Dissolved Metals

DATE SAMPLED: Feb 10, 2012 | DATE RECEIVED: Feb 10, 2012 | DATE REPORTED: Feb 20, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	3-BH31 3112962
Aluminum Dissolved	µg/L		1	11
Antimony Dissolved	µg/L		0.05	0.06
Arsenic Dissolved	µg/L	5	0.1	13.9
Barium Dissolved	µg/L		0.1	84.8
Beryllium Dissolved	µg/L		0.01	<0.01
Boron Dissolved	µg/L		1	28
Cadmium Dissolved	µg/L	0.017	0.01	0.02
Calcium Dissolved	mg/L		0.05	49.9
Chromium Dissolved	µg/L		0.5	1.7
Cobalt Dissolved	µg/L		0.05	0.49
Copper Dissolved	µg/L		0.2	0.5
Iron Dissolved	mg/L	0.3	0.01	36.6
Lead Dissolved	µg/L		0.01	0.15
Lithium Dissolved	µg/L		0.1	1.1
Magnesium Dissolved	mg/L		0.05	12.4
Manganese Dissolved	mg/L		0.001	1.31
Mercury Dissolved	µg/L	0.026	0.003	<0.003
Molybdenum Dissolved	µg/L	73	0.05	0.53
Nickel Dissolved	µg/L		0.1	1.6
Selenium Dissolved	µg/L	1	0.1	0.4
Silver Dissolved	µg/L	0.1	0.01	<0.01
Sodium Dissolved	mg/L		0.05	8.98
Thallium Dissolved	µg/L	0.8	0.002	0.031
Titanium Dissolved	µg/L		0.1	62.5
Uranium Dissolved	µg/L		0.01	0.02
Vanadium Dissolved	µg/L		0.1	1.3
Zinc Dissolved	µg/L	30	1	7
Hardness (calc)	mg CaCO3/L		1	176

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL) (Van)

Certified By: Marie England

AGAT Laboratories

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V573781

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis

RPT Date: Feb 20, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Petroleum Hydrocarbons in Water															
Naphthalene	1	W-MS	0.12	0.14	15.0%	< 0.05	100%	80%	120%				121%	50%	130%
Quinoline	1	W-MS	<0.1	<0.1	0.0%	< 0.1	100%	80%	120%				97%	50%	130%
Acenaphthylene	1	W-MS	0.08	0.08	0.0%	< 0.05	100%	80%	120%				83%	50%	130%
Acenaphthene	1	W-MS	0.08	0.08	0.0%	< 0.05	100%	80%	120%				87%	50%	130%
Fluorene	1	W-MS	0.09	0.09	0.0%	< 0.05	99%	80%	120%				96%	50%	130%
Phenanthrene	1	W-MS	0.09	0.10	11.0%	< 0.05	99%	80%	120%				97%	60%	130%
Anthracene (Water)	1	W-MS	0.07	0.07	0.0%	< 0.05	100%	80%	120%				72%	60%	130%
Acridine	1	W-MS	0.08	0.08	0.0%	< 0.05	99%	80%	120%				84%	50%	130%
Fluoranthene	1	W-MS	0.08	0.09	12.0%	< 0.05	100%	80%	120%				90%	60%	130%
Pyrene	1	W-MS	0.09	0.09	0.0%	< 0.02	99%	80%	120%				92%	60%	130%
Benzo(a)anthracene	1	W-MS	0.08	0.08	0.0%	< 0.05	101%	80%	120%				85%	60%	130%
Chrysene	1	W-MS	0.09	0.09	0.0%	< 0.05	101%	80%	120%				93%	60%	130%
Benzo(b)fluoranthene	1	W-MS	0.09	0.10	11.0%	< 0.05	102%	80%	120%				98%	60%	130%
Benzo(k)fluoranthene	1	W-MS	0.09	0.09	0.0%	< 0.05	99%	80%	120%				90%	60%	130%
Benzo(a)pyrene	1	W-MS	0.07	0.07	0.0%	< 0.01	100%	80%	120%				76%	60%	130%
Indeno(1,2,3-cd)pyrene	1	W-MS	0.09	0.09	0.0%	< 0.05	101%	80%	120%				91%	60%	130%
Dibenzo(a,h)anthracene	1	W-MS	0.08	0.09	12.0%	< 0.05	101%	80%	120%				88%	60%	130%
Benzo(g,h.i)perylene	1	W-MS	0.09	0.10	11.0%	< 0.05	101%	80%	120%				97%	60%	130%
Nitrobenzene - d5	1	W-MS	81	78	4.0%		99%	80%	120%				82%	50%	130%
Quinoline - d7	1	W-MS	93	90	3.0%		101%	80%	120%				93%	50%	130%
2-Fluorobiphenyl	1	W-MS	86	84	2.0%		100%	80%	120%				86%	50%	130%
P-Terphenyl - d14	1	W-MS	91	90	1.0%		101%	80%	120%				92%	60%	130%
Phenolic Compounds in Water															
Phenol	136	3112960	<0.002	<0.002	NA	< 0.002	85%	80%	120%	96%	70%	130%	95%	60%	140%
4-Nitrophenol	136	3112960	<0.005	<0.005	NA	< 0.005	82%	80%	120%	90%	70%	130%	90%	60%	140%
m&p-Cresol (3&4-methylphenol)	136	3112960	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	95%	60%	140%
o-Cresol (2-methylphenol)	136	3112960	<0.0005	<0.0005	NA	< 0.0005				93%	70%	130%	93%	60%	140%
2-Chlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005	82%	80%	120%	94%	70%	130%	90%	60%	140%
2,4-Dinitrophenol	136	3112960	<0.005	<0.005	NA	< 0.005	89%	80%	120%	93%	70%	130%	94%	60%	140%
2-Nitrophenol	136	3112960	<0.005	<0.005	NA	< 0.005	95%	80%	120%	106%	70%	130%	96%	60%	140%
2,4-Dimethylphenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005	83%	80%	120%	93%	70%	130%	92%	60%	140%
2,6-Dichlorophenol	136	3112960	<0.0001	<0.0001	NA	< 0.0001				94%	70%	130%	89%	60%	140%
4-Chloro-3-methylphenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005	81%	80%	120%	99%	70%	130%	103%	60%	140%
2,4-Dichlorophenol	136	3112960	<0.0001	<0.0001	NA	< 0.0001	85%	80%	120%	91%	70%	130%	86%	60%	140%
4,6-Dinitro-2-methylphenol	136	3112960	<0.005	<0.005	NA	< 0.005	92%	80%	120%	104%	70%	130%	91%	60%	140%
2,3,6-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
2,3,4-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	92%	60%	140%
2,4,6-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005	85%	80%	120%	96%	70%	130%	95%	60%	140%

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V573781

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis (Continued)

RPT Date: Feb 20, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
2,4,5-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				96%	70%	130%	93%	60%	140%
2,3,5-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				98%	70%	130%	94%	60%	140%
3,4,5-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
2,3,4,6-Tetrachlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				102%	70%	130%	100%	60%	140%
2,3,5,6-Tetrachlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				101%	70%	130%	100%	60%	140%
2,3,4,5-Tetrachlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				101%	70%	130%	99%	60%	140%
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	136	3112960	<0.005	<0.005	NA	< 0.005				116%	70%	130%	120%	60%	140%
Pentachlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005	89%	80%	120%	108%	70%	130%	107%	60%	140%
Petroleum Hydrocarbons (BTEX/F2-F4) in Water															
C>10 - C16	32	3118469	<0.1	<0.1	NA	< 0.1	103%	80%	120%	89%	80%	120%	103%	70%	130%
C16 - C34	32	3118469	<0.1	<0.1	NA	< 0.1	103%	80%	120%	96%	80%	120%	104%	70%	130%
C>34 - C50	32	3118469	<0.1	<0.1	NA	< 0.1	103%	80%	120%	80%	80%	120%	70%	70%	130%

Certified By:

AGAT Laboratories

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V573781

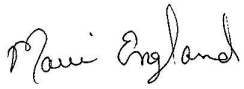
PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Water Analysis

RPT Date: Feb 20, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
British Columbia CSR- Schedule 6 Dissolved Metals															
Aluminum Dissolved	816	< 1	< 1	0.0%	< 1	110%	90%	110%	105%	85%	115%				
Antimony Dissolved	816	< 0.05	0.05	NA	< 0.05	98%	90%	110%	86%	85%	110%				
Arsenic Dissolved	816	0.3	0.3	0.0%	< 0.1	98%	90%	110%	102%	90%	110%				
Barium Dissolved	816	22.1	22.4	1.3%	< 0.1	100%	90%	110%	99%	90%	110%				
Beryllium Dissolved	185	< 0.01	< 0.01	0.0%	< 0.01	99%	90%	110%	101%	90%	110%				
Boron Dissolved	816	185	187	1.1%	< 1	91%	90%	110%	103%	80%	120%				
Cadmium Dissolved	816	0.04	0.04	0.0%	< 0.01	100%	90%	110%	99%	90%	110%				
Calcium Dissolved	816	59.1	59.0	0.2%	< 0.05	101%	90%	110%	104%	90%	110%				
Chromium Dissolved	816	< 0.5	< 0.5	0.0%	< 0.5	104%	90%	110%	103%	90%	110%				
Cobalt Dissolved	816	2.07	2.04	1.5%	< 0.05	92%	90%	110%	104%	90%	110%				
Copper Dissolved	816	0.6	0.5	NA	< 0.2	95%	90%	110%	106%	90%	110%				
Iron Dissolved	816	0.37	0.37	0.0%	< 0.01	106%	90%	110%	105%	90%	110%				
Lead Dissolved	816	0.14	0.11	NA	< 0.01	104%	90%	110%	99%	90%	110%				
Lithium Dissolved	816	40.4	40.2	0.5%	< 0.1				102%	90%	110%				
Magnesium Dissolved	816	13.8	13.8	0.0%	< 0.05	106%	90%	110%	108%	90%	110%				
Manganese Dissolved	816	0.883	0.884	0.1%	< 0.001	105%	90%	110%	105%	90%	110%				
Mercury Dissolved	816	< 0.003	< 0.003	0.0%	< 0.003	101%	90%	110%	104%	90%	110%				
Molybdenum Dissolved	816	8.60	8.79	2.2%	< 0.05	97%	90%	110%	98%	90%	110%				
Nickel Dissolved	816	6.3	6.2	1.6%	< 0.1	98%	90%	110%	105%	90%	110%				
Selenium Dissolved	816	0.3	< 0.1	NA	< 0.1	98%	90%	110%	99%	85%	115%				
Silver Dissolved	816	< 0.01	< 0.01	0.0%	< 0.01				102%	90%	110%				
Sodium Dissolved	816	150	151	0.7%	< 0.05	101%	90%	110%	105%	90%	110%				
Thallium Dissolved	816	0.141	0.131	7.4%	< 0.002	93%	90%	110%	98%	90%	110%				
Titanium Dissolved	816	75.9	73.3	3.5%	< 0.1				105%	90%	110%				
Uranium Dissolved	816	9.49	9.40	1.0%	< 0.01	95%	90%	110%	94%	90%	110%				
Vanadium Dissolved	816	< 0.1	< 0.1	0.0%	< 0.1	98%	90%	110%	103%	90%	110%				
Zinc Dissolved	816	9	9	0.0%	< 1	92%	90%	110%	97%	85%	115%				

Certified By:



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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V573781

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
C16 - C34	TO 0511	CCME Tier 1 Method	GC/FID
C>34 - C50	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO 0340	EPA SW846 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
Naphthalene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Quinoline	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acenaphthylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acenaphthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Fluorene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Phenanthrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Anthracene (Water)	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acridine	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Chrysene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(b)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(k)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Dibenzo(a,h)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(g,h.i)perylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Nitrobenzene - d5	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
Quinoline - d7	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
2-Fluorobiphenyl	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
P-Terphenyl - d14	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
LEPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
HEPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
Phenol	TO 1200	EPA SW-846 8321	HPLC/UV

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V573781

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
4-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
m&p-Cresol (3&4-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
o-Cresol (2-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
2-Chlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dinitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dimethylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,6-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Chloro-3-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4,6-Dinitro-2-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
3,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,5-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
Dinoseb (2-sec-butyl-4,6-dinitrophenol)	TO 1200	EPA SW-846 8321	HPLC/UV
Pentachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Fluorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Tribromophenol	TO 1200	EPA SW-846 8321	HPLC/UV

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V573781

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Aluminum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Antimony Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Arsenic Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Barium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Beryllium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Boron Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cadmium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Calcium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Chromium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cobalt Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Copper Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Iron Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Lead Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Lithium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Magnesium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Manganese Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Mercury Dissolved	MET-181-6103, LAB-181-4015	Modified from EPA 245.7	CV/AA
Molybdenum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Nickel Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Selenium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Silver Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Sodium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Thallium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Titanium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Uranium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Vanadium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Zinc Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS

AGAT Laboratories

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Chain of Custody Record

Turnaround Time Required (TAT)

Regular TAT 5 to 7 working days [X]
Rush TAT 24 to 48 hours [ ]
48 to 72 hours [ ]
Date Required: _____
Please contact laboratory if Rush is required

Report To:

Company: Franz Environmental
Contact: Amanda Salway
Address: 308-1080 Mainland St.
Vancouver, BC V6B 2T4
Phone: 604 632-9944 Fax: 604 632-9942
LSD:
Client Project #: 7090-110J

Report Information

1. Name: Amanda Salway
Email: asalway@franzbc.com
2. Name: Vivian Dubois-Cote
Email: vdcote@franzbc.com

Report Format

[ ] Single Sample per page
[X] Multiple Samples per page
[X] Excel Format Included

Laboratory Use Only

Arrival Temperature: 3°C
AGAT Job Number: 12V513781

Notes:
FEB 10 PM3:57

Invoice To: Same as above Yes [X] No [ ]

Company:
Contact:
Address:
Phone: Fax:
PO/AFE #:

Regulatory Requirements (Check):

[ ] BC CSR – Soil
- [ ] Agricultural
- [ ] Industrial
- [ ] Urban/Park
- [ ] Commercial

[X] BC CSR – Water
- [ ] Drinking Water
- [X] Aquatic Life
- [ ] Irrigation
- [ ] Livestock

[X] CCME
- [ ] Drinking Water
- [ ] Industrial
- [ ] Residential/Park
- [ ] Drinking Water
- [ ] Commercial
- [X] FWAL

Lab ID #	Sample Identification	Sample Matrix	Date/Time Sampled	Comments – Site/Sample Info. Sample Containment	BC CSR BTEX/VPH	BC CSR LEPH/HEPH	BC CSR Metals + CCME metals	VOCs	BC CSR Schedule II	Routine Potability	non-chlorinated and chlorinated phenols	CCME PHC-F1-F4			Number of Containers	Preserved (Y/N)	Hazardous (Y/N)	Hold for 1 YEAR
B112958	OWS	groundwater	Feb 10, 2012 10:00			X					X	X			3			
960	MW-11BR-15M	↓	Feb 10, 2012 13:00								X				1			
961	MW-GWDUP4		Feb 10, 2012 13:00								X				1			
↓962	3-BH31		Feb 10, 2012 14:30				X								1			

Samples Relinquished by (print name & sign):	Date	Samples Received by (Print name & sign):	Date	Pink Copy - Client
	Feb 10, 2012	S. Coutts	10-FEB-11 @ 3:57 pm	Yellow Copy - AGAT
Samples Relinquished by (print name & sign):	Date	Samples Received by (Print name & sign):	Date	White Copy - AGAT
Samples Relinquished by (print name & sign):	Date	Samples Received by (Print name & sign):	Date	

Page 1 of 1
NO: 000624

Document ID: DIV-186-0811.001
Date revised: August 24, 2011

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM - BURNABY

Work Order # 12V573781

RECEIVING BASICS:
*Complete CoC as well where required
Date and Time: 10-FEB-12 @ 3:57 pm
Courier: _____
Received by: S. Couzen
Relinquished by: Amanda Salway
Branch Received From: _____
Company: Franz Env
Consultant: _____
Client left without count verified: N

CoC INFORMATION:
Received: (Yes) No Emailed to PM
Completed in full: (Yes) No If NO, why: _____
TURNAROUND TIME: Reg
COC Numbers: 000624

SAMPLE QUANTITIES:
Coolers: _____ Bottles/Jars: 6 Bags: _____

TIME SENSITIVE ISSUES:
Earliest Date Sampled: 10-FEB-12
Microbiology: Test: _____
Hydrocarbons: Test: LEPH/HEPH
Samples are received >5 days after sampling: Yes (No)

ALREADY EXCEEDED? Yes (No)
Expiry: _____
Expiry: 17-FEB-12

SPECIALTY ISSUES:
Legal Samples: Yes No N/A
International Samples: Yes No
**Proper tape/labels applied: Yes No

Hazardous Samples:
Why hazardous:
_____
Precaution taken:
_____

SAMPLE REQUIREMENTS:
*Complete while logging in by login staff.

Correct bottles used for testing: (Yes) No
If No, explain: _____

Correct amount of sample for analysis: (Yes) No
If No, explain: _____

Are all samples labeled correctly: (Yes) No
If No, explain: _____

NON-CONFORMANCES:
3 temperatures of samples* and average of each cooler: (record differing temperatures on the CoC next to sample ID's)
(1) 1 + 4 + 4 = 3 °C (2) ___ + ___ + ___ = ___ °C (3) ___ + ___ + ___ = ___ °C (4) ___ + ___ + ___ = ___ °C
*Jars used when available

Additional integrity issues (note here and on CoC next to the sample ID):

1) _____
2) _____
3) _____

Account Project Manager: _____ Have they been notified of the above issues: Yes No
Whom spoken to: _____ Date and Time: _____

ADDITIONAL NOTES:

_____

_____

_____

AGAT Laboratories

Unit 120, 8600 Glenlyon Parkway
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CANADA V5J 0B6
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http://www.agatlabs.com

CLIENT NAME: FRANZ ENVIRONMENTAL
308-108 MAINLAND STREET
VANCOUVER, BC V6B2T4

ATTENTION TO: Amanda Salway

PROJECT NO: 2090-1103

AGAT WORK ORDER: 12V573781

TRACE ORGANICS REVIEWED BY: Craig Stehr, Organics Supervisor

WATER ANALYSIS REVIEWED BY: Marie England, Inorganics Supervisor

DATE REPORTED: Mar 05, 2012

PAGES (INCLUDING COVER): 11

VERSION*: 3

Should you require any information regarding this analysis please contact your client services representative at (778) 452-4000

*NOTES

VERSION 3:Report re-issued with surrogate removed as per Amanda Salway.
Version 2 is an amendment to version 1.

Amended to include EPH results as per client.
Version 3 is an amendment to version 2.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

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Certificate of Analysis

AGAT WORK ORDER: 12V573781
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons (BTEX/F2-F4) in Water

DATE SAMPLED: Feb 10, 2012 | DATE RECEIVED: Feb 10, 2012 | DATE REPORTED: Mar 05, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	OW5 3112958
C>10 - C16	mg/L		0.1	<0.1
C16 - C34	mg/L		0.1	<0.1
C>34 - C50	mg/L		0.1	<0.1
Surrogate	**Unit**	**Acceptable Limits**		
o-Terphenyl (F2-F4)	%	50-150		108

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL)

3112958 The C>6 - C10 fraction is calculated using the toluene response factor.
The C10 - C16 fraction is calculated using the average response factor for nC10, nC16 and nC34.
BTEX has NOT been subtracted from Fraction 1.
Sample is blank corrected.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V573781
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 10, 2012 | DATE RECEIVED: Feb 10, 2012 | DATE REPORTED: Mar 05, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	OW5 3112958
Naphthalene	µg/L	10	0.05	<0.05
Quinoline	µg/L	34	0.1	<0.1
Acenaphthylene	µg/L		0.05	<0.05
Acenaphthene	µg/L	60	0.05	<0.05
Fluorene	µg/L	120	0.05	<0.05
Phenanthrene	µg/L	3	0.05	<0.05
Anthracene (Water)	µg/L	1	0.05	<0.05
Acridine	µg/L	0.5	0.05	<0.05
Fluoranthene	µg/L	2	0.05	<0.05
Pyrene	µg/L	0.2	0.02	<0.02
Benzo(a)anthracene	µg/L	1	0.05	<0.05
Chrysene	µg/L	1	0.05	<0.05
Benzo(b)fluoranthene	µg/L		0.05	<0.05
Benzo(k)fluoranthene	µg/L		0.05	<0.05
Benzo(a)pyrene	µg/L	0.1	0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L		0.05	<0.05
Dibenzo(a,h)anthracene	µg/L		0.05	<0.05
Benzo(g,h.i)perylene	µg/L		0.05	<0.05
LEPH C10-C19	µg/L	500	100	<100
HEPH C19-C32	µg/L		100	<100
EPH C10-C19	µg/L	5000	100	<100
EPH C19-C32	µg/L		100	<100
Surrogate	Unit	Acceptable Limits		
Nitrobenzene - d5	%	50-130		69
Quinoline - d7	%	50-130		86
2-Fluorobiphenyl	%	50-130		67
P-Terphenyl - d14	%	60-130		87

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)
3112958 LEPH & HEPH results have been corrected for PAH contributions.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V573781
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Phenolic Compounds in Water

DATE SAMPLED: Feb 10, 2012 | DATE RECEIVED: Feb 10, 2012 | DATE REPORTED: Mar 05, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	OW5 3112958	MV-11BH-15M 3112960	MV-GWDUP4 3112961
Phenol	mg/L		0.002	<0.002	<0.002	<0.002
4-Nitrophenol	mg/L		0.005	<0.005	<0.005	<0.005
m&p-Cresol (3&4-methylphenol)	mg/L		0.0005	<0.0005	<0.0005	<0.0005
o-Cresol (2-methylphenol)	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2-Chlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,4-Dinitrophenol	mg/L		0.005	<0.005	<0.005	<0.005
2-Nitrophenol	mg/L		0.005	<0.005	<0.005	<0.005
2,4-Dimethylphenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,6-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001	<0.0001
4-Chloro-3-methylphenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,4-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001	<0.0001
4,6-Dinitro-2-methylphenol	mg/L		0.005	<0.005	<0.005	<0.005
2,3,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,4-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,4,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
3,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,4,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,5,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
2,3,4,5-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	mg/L		0.005	<0.005	<0.005	<0.005
Pentachlorophenol	mg/L		0.0005	<0.0005	<0.0005	<0.0005
Surrogate	Unit	Acceptable Limits				
2-Fluorophenol	%	50-150		109	108	107
2,4,6-Tribromophenol	%	50-150		110	110	110

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
3112958-3112961 Results relate only to the items tested.

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 12V573781
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

British Columbia CSR- Schedule 6 Dissolved Metals

DATE SAMPLED: Feb 10, 2012 | DATE RECEIVED: Feb 10, 2012 | DATE REPORTED: Mar 05, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	3-BH31 3112962
Aluminum Dissolved	µg/L		1	11
Antimony Dissolved	µg/L	200	0.05	0.06
Arsenic Dissolved	µg/L	50	0.1	13.9
Barium Dissolved	µg/L	10000	0.1	84.8
Beryllium Dissolved	µg/L	53	0.01	<0.01
Boron Dissolved	µg/L	50000	1	28
Cadmium Dissolved	µg/L		0.01	0.02
Calcium Dissolved	mg/L		0.05	49.9
Chromium Dissolved	µg/L		0.5	1.7
Cobalt Dissolved	µg/L	40	0.05	0.49
Copper Dissolved	µg/L		0.2	0.5
Iron Dissolved	mg/L		0.01	36.6
Lead Dissolved	µg/L		0.01	0.15
Lithium Dissolved	µg/L		0.1	1.1
Magnesium Dissolved	mg/L		0.05	12.4
Manganese Dissolved	mg/L		0.001	1.31
Mercury Dissolved	µg/L	1	0.003	<0.003
Molybdenum Dissolved	µg/L	10000	0.05	0.53
Nickel Dissolved	µg/L		0.1	1.6
Selenium Dissolved	µg/L	10	0.1	0.4
Silver Dissolved	µg/L		0.01	<0.01
Sodium Dissolved	mg/L		0.05	8.98
Thallium Dissolved	µg/L	3	0.002	0.031
Titanium Dissolved	µg/L	1000	0.1	62.5
Uranium Dissolved	µg/L	3000	0.01	0.02
Vanadium Dissolved	µg/L		0.1	1.3
Zinc Dissolved	µg/L		1	7
Hardness (calc)	mg CaCO3/L		1	176

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

Certified By: Marie England

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V573781

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis

RPT Date: Mar 05, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Petroleum Hydrocarbons in Water															
Naphthalene	1	W-MS	0.12	0.14	15.0%	< 0.05	100%	80%	120%				121%	50%	130%
Quinoline	1	W-MS	<0.1	<0.1	0.0%	< 0.1	100%	80%	120%				97%	50%	130%
Acenaphthylene	1	W-MS	0.08	0.08	0.0%	< 0.05	100%	80%	120%				83%	50%	130%
Acenaphthene	1	W-MS	0.08	0.08	0.0%	< 0.05	100%	80%	120%				87%	50%	130%
Fluorene	1	W-MS	0.09	0.09	0.0%	< 0.05	99%	80%	120%				96%	50%	130%
Phenanthrene	1	W-MS	0.09	0.10	11.0%	< 0.05	99%	80%	120%				97%	60%	130%
Anthracene (Water)	1	W-MS	0.07	0.07	0.0%	< 0.05	100%	80%	120%				72%	60%	130%
Acridine	1	W-MS	0.08	0.08	0.0%	< 0.05	99%	80%	120%				84%	50%	130%
Fluoranthene	1	W-MS	0.08	0.09	12.0%	< 0.05	100%	80%	120%				90%	60%	130%
Pyrene	1	W-MS	0.09	0.09	0.0%	< 0.02	99%	80%	120%				92%	60%	130%
Benzo(a)anthracene	1	W-MS	0.08	0.08	0.0%	< 0.05	101%	80%	120%				85%	60%	130%
Chrysene	1	W-MS	0.09	0.09	0.0%	< 0.05	101%	80%	120%				93%	60%	130%
Benzo(b)fluoranthene	1	W-MS	0.09	0.10	11.0%	< 0.05	102%	80%	120%				98%	60%	130%
Benzo(k)fluoranthene	1	W-MS	0.09	0.09	0.0%	< 0.05	99%	80%	120%				90%	60%	130%
Benzo(a)pyrene	1	W-MS	0.07	0.07	0.0%	< 0.01	100%	80%	120%				76%	60%	130%
Indeno(1,2,3-cd)pyrene	1	W-MS	0.09	0.09	0.0%	< 0.05	101%	80%	120%				91%	60%	130%
Dibenzo(a,h)anthracene	1	W-MS	0.08	0.09	12.0%	< 0.05	101%	80%	120%				88%	60%	130%
Benzo(g,h.i)perylene	1	W-MS	0.09	0.10	11.0%	< 0.05	101%	80%	120%				97%	60%	130%
Nitrobenzene - d5	1	W-MS	81	78	4.0%		99%	80%	120%				82%	50%	130%
Quinoline - d7	1	W-MS	93	90	3.0%		101%	80%	120%				93%	50%	130%
2-Fluorobiphenyl	1	W-MS	86	84	2.0%		100%	80%	120%				86%	50%	130%
P-Terphenyl - d14	1	W-MS	91	90	1.0%		101%	80%	120%				92%	60%	130%
Phenolic Compounds in Water															
Phenol	136	3112960	<0.002	<0.002	NA	< 0.002	85%	80%	120%	96%	70%	130%	95%	60%	140%
4-Nitrophenol	136	3112960	<0.005	<0.005	NA	< 0.005	82%	80%	120%	90%	70%	130%	90%	60%	140%
m&p-Cresol (3&4-methylphenol)	136	3112960	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	95%	60%	140%
o-Cresol (2-methylphenol)	136	3112960	<0.0005	<0.0005	NA	< 0.0005				93%	70%	130%	93%	60%	140%
2-Chlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005	82%	80%	120%	94%	70%	130%	90%	60%	140%
2,4-Dinitrophenol	136	3112960	<0.005	<0.005	NA	< 0.005	89%	80%	120%	93%	70%	130%	94%	60%	140%
2-Nitrophenol	136	3112960	<0.005	<0.005	NA	< 0.005	95%	80%	120%	106%	70%	130%	96%	60%	140%
2,4-Dimethylphenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005	83%	80%	120%	93%	70%	130%	92%	60%	140%
2,6-Dichlorophenol	136	3112960	<0.0001	<0.0001	NA	< 0.0001				94%	70%	130%	89%	60%	140%
4-Chloro-3-methylphenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005	81%	80%	120%	99%	70%	130%	103%	60%	140%
2,4-Dichlorophenol	136	3112960	<0.0001	<0.0001	NA	< 0.0001	85%	80%	120%	91%	70%	130%	86%	60%	140%
4,6-Dinitro-2-methylphenol	136	3112960	<0.005	<0.005	NA	< 0.005	92%	80%	120%	104%	70%	130%	91%	60%	140%
2,3,6-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
2,3,4-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	92%	60%	140%
2,4,6-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005	85%	80%	120%	96%	70%	130%	95%	60%	140%

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V573781

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis (Continued)

RPT Date: Mar 05, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
2,4,5-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				96%	70%	130%	93%	60%	140%
2,3,5-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				98%	70%	130%	94%	60%	140%
3,4,5-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
2,3,4,6-Tetrachlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				102%	70%	130%	100%	60%	140%
2,3,5,6-Tetrachlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				101%	70%	130%	100%	60%	140%
2,3,4,5-Tetrachlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				101%	70%	130%	99%	60%	140%
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	136	3112960	<0.005	<0.005	NA	< 0.005				116%	70%	130%	120%	60%	140%
Pentachlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005	89%	80%	120%	108%	70%	130%	107%	60%	140%
Petroleum Hydrocarbons (BTEX/F2-F4) in Water															
C>10 - C16	32	3118469	<0.1	<0.1	NA	< 0.1	103%	80%	120%	89%	80%	120%	103%	70%	130%
C16 - C34	32	3118469	<0.1	<0.1	NA	< 0.1	103%	80%	120%	96%	80%	120%	104%	70%	130%
C>34 - C50	32	3118469	<0.1	<0.1	NA	< 0.1	103%	80%	120%	80%	80%	120%	70%	70%	130%

Certified By:

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V573781

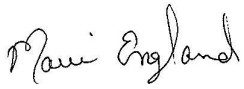
PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Water Analysis

RPT Date: Mar 05, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
British Columbia CSR- Schedule 6 Dissolved Metals															
Aluminum Dissolved	816	< 1	< 1	0.0%	< 1	110%	90%	110%	105%	85%	115%				
Antimony Dissolved	816	< 0.05	0.05	NA	< 0.05	98%	90%	110%	86%	85%	110%				
Arsenic Dissolved	816	0.3	0.3	0.0%	< 0.1	98%	90%	110%	102%	90%	110%				
Barium Dissolved	816	22.1	22.4	1.3%	< 0.1	100%	90%	110%	99%	90%	110%				
Beryllium Dissolved	185	< 0.01	< 0.01	0.0%	< 0.01	99%	90%	110%	101%	90%	110%				
Boron Dissolved	816	185	187	1.1%	< 1	91%	90%	110%	103%	80%	120%				
Cadmium Dissolved	816	0.04	0.04	0.0%	< 0.01	100%	90%	110%	99%	90%	110%				
Calcium Dissolved	816	59.1	59.0	0.2%	< 0.05	101%	90%	110%	104%	90%	110%				
Chromium Dissolved	816	< 0.5	< 0.5	0.0%	< 0.5	104%	90%	110%	103%	90%	110%				
Cobalt Dissolved	816	2.07	2.04	1.5%	< 0.05	92%	90%	110%	104%	90%	110%				
Copper Dissolved	816	0.6	0.5	NA	< 0.2	95%	90%	110%	106%	90%	110%				
Iron Dissolved	816	0.37	0.37	0.0%	< 0.01	106%	90%	110%	105%	90%	110%				
Lead Dissolved	816	0.14	0.11	NA	< 0.01	104%	90%	110%	99%	90%	110%				
Lithium Dissolved	816	40.4	40.2	0.5%	< 0.1				102%	90%	110%				
Magnesium Dissolved	816	13.8	13.8	0.0%	< 0.05	106%	90%	110%	108%	90%	110%				
Manganese Dissolved	816	0.883	0.884	0.1%	< 0.001	105%	90%	110%	105%	90%	110%				
Mercury Dissolved	816	< 0.003	< 0.003	0.0%	< 0.003	101%	90%	110%	104%	90%	110%				
Molybdenum Dissolved	816	8.60	8.79	2.2%	< 0.05	97%	90%	110%	98%	90%	110%				
Nickel Dissolved	816	6.3	6.2	1.6%	< 0.1	98%	90%	110%	105%	90%	110%				
Selenium Dissolved	816	0.3	< 0.1	NA	< 0.1	98%	90%	110%	99%	85%	115%				
Silver Dissolved	816	< 0.01	< 0.01	0.0%	< 0.01				102%	90%	110%				
Sodium Dissolved	816	150	151	0.7%	< 0.05	101%	90%	110%	105%	90%	110%				
Thallium Dissolved	816	0.141	0.131	7.4%	< 0.002	93%	90%	110%	98%	90%	110%				
Titanium Dissolved	816	75.9	73.3	3.5%	< 0.1				105%	90%	110%				
Uranium Dissolved	816	9.49	9.40	1.0%	< 0.01	95%	90%	110%	94%	90%	110%				
Vanadium Dissolved	816	< 0.1	< 0.1	0.0%	< 0.1	98%	90%	110%	103%	90%	110%				
Zinc Dissolved	816	9	9	0.0%	< 1	92%	90%	110%	97%	85%	115%				

Certified By:



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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V573781

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
C16 - C34	TO 0511	CCME Tier 1 Method	GC/FID
C>34 - C50	TO 0511	CCME Tier 1 Method	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
Naphthalene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Quinoline	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acenaphthylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acenaphthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Fluorene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Phenanthrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Anthracene (Water)	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acridine	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Chrysene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(b)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(k)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Dibenzo(a,h)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(g,h.i)perylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Nitrobenzene - d5	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
Quinoline - d7	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
2-Fluorobiphenyl	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
P-Terphenyl - d14	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
LEPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
HEPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
EPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V573781

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
EPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
Phenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
m&p-Cresol (3&4-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
o-Cresol (2-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
2-Chlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dinitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dimethylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,6-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Chloro-3-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4,6-Dinitro-2-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
3,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,5-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
Dinoseb (2-sec-butyl-4,6-dinitrophenol)	TO 1200	EPA SW-846 8321	HPLC/UV
Pentachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Fluorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Tribromophenol	TO 1200	EPA SW-846 8321	HPLC/UV

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V573781

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Aluminum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Antimony Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Arsenic Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Barium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Beryllium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Boron Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cadmium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Calcium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Chromium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cobalt Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Copper Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Iron Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Lead Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Lithium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Magnesium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Manganese Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Mercury Dissolved	MET-181-6103, LAB-181-4015	Modified from EPA 245.7	CV/AA
Molybdenum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Nickel Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Selenium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Silver Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Sodium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Thallium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Titanium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Uranium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Vanadium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Zinc Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS

AGAT Laboratories

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webearth.agatlabs.com
Ph.: 778.452.4000 · Fax: 778.452.7074

Chain of Custody Record

Turnaround Time Required (TAT)

- Regular TAT: 5 to 7 working days [X]
- Rush TAT: 24 to 48 hours [ ]
- 48 to 72 hours [ ]

Date Required: _____

Please contact laboratory if Rush is required

Report To:

Company: Franz Environmental
Contact: Amanda Salway
Address: 308-1080 Mainland St
Vancouver, BC V6B 2T4
Phone: 604 632-3474 Fax: 604 632-3470
LSD:
Client Project #: 7090-110J

Report Information

1. Name: Amanda Salway
Email: asalway@franzbc.com
2. Name: Vivian Dubois-Cote
Email: vdcote@franzbc.com

Report Format

- [ ] Single Sample per page
- [X] Multiple Samples per page
- [X] Excel Format Included

Laboratory Use Only

Arrival Temperature: 3°C
AGAT Job Number: 12V513781

Notes:
FEB 10 PM 3:57

Invoice To: Same as above Yes [X] No [ ]

Company:
Contact:
Address:
Phone: Fax:
PO/AFE #:

Regulatory Requirements (Check):

- [ ] BC CSR – Soil
  - [ ] Agricultural
  - [ ] Industrial
  - [ ] Urban/Park
  - [ ] Commercial
- [X] BC CSR – Water
  - [ ] Drinking Water
  - [X] Aquatic Life
  - [ ] Irrigation
  - [ ] Livestock
- [X] CCME
  - [ ] Drinking Water
  - [ ] Residential/Park
  - [ ] Commercial
  - [ ] Industrial
  - [ ] Drinking Water
  - [X] FWAL

Lab ID #	Sample Identification	Sample Matrix	Date/Time Sampled	Comments – Site/Sample Info. Sample Containment	BC CSR BTEX/VPH	BC CSR LEPH/HEPH	BC CSR Metals + CCME metals	VOCs	BC CSR Schedule II	Routine Potability	Non-Chlorinated phenols	CCME F2-F4			Number of Containers	Preserved (Y/N)	Hazardous (Y/N)	Hold for 1 YEAR
3112958	QWS	groundwater	Feb 10, 2012 10:00			X					X	X			3			
960	MW-11BR-15M	↓	Feb 10, 2012 13:00								X				1			
961	MW-GW1UP4	↓	Feb 10 2012 13:00								X				1			
962	3-BH31	↓	Feb 10, 2012 14:30				X								1			

Samples Relinquished by (print name & sign):	Date: Feb 10, 2012	Samples Received by (Print name & sign): S. Coveis	Date: 10-FEB-11 @ 3:57 pm	Pink Copy - Client
Samples Relinquished by (print name & sign):	Date	Samples Received by (Print name & sign):	Date	Yellow Copy - AGAT
Samples Relinquished by (print name & sign):	Date	Samples Received by (Print name & sign):	Date: 07:42	White Copy - AGAT

Page 1 of 1

NO: 000624

Document ID: DIV-186-0811.001

Date revised: August 24, 2011

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM - BURNABY

Work Order # 12V573781

RECEIVING BASICS:
*Complete CoC as well where required
Date and Time: 10-FEB-12 @ 3:57 pm
Courier: _____
Received by: S. Couzen
Relinquished by: Amanda Salway
Branch Received From: _____
Company: Franz Env
Consultant: _____
Client left without count verified: N

COC INFORMATION:
Received: (Yes) No Emailed to PM
Completed in full: (Yes) No If NO, why: _____
TURNAROUND TIME: Reg
COC Numbers: 000624

SAMPLE QUANTITIES:
Coolers: _____ Bottles/Jars: 6 Bags: _____

TIME SENSITIVE ISSUES:
Earliest Date Sampled: 10-FEB-12
Microbiology: Test: _____
Hydrocarbons: Test: LEPH/HEPH
Samples are received >5 days after sampling: Yes (No)

ALREADY EXCEEDED? Yes (No)
Expiry: _____
Expiry: 17-FEB-12

SPECIALTY ISSUES:
Legal Samples: Yes No N/A
International Samples: Yes No
**Proper tape/labels applied: Yes No

Hazardous Samples:
Why hazardous:
_____
Precaution taken:
_____

SAMPLE REQUIREMENTS:
*Complete while logging in by login staff.

Correct bottles used for testing: (Yes) No
If No, explain: _____

Correct amount of sample for analysis: (Yes) No
If No, explain: _____

Are all samples labeled correctly: (Yes) No
If No, explain: _____

NON-CONFORMANCES:
3 temperatures of samples* and average of each cooler: (record differing temperatures on the CoC next to sample ID's)
(1) 1 + 4 + 4 = 3 °C (2) ___ + ___ + ___ = ___ °C (3) ___ + ___ + ___ = ___ °C (4) ___ + ___ + ___ = ___ °C
*Jars used when available

Additional integrity issues (note here and on CoC next to the sample ID):

1) _____
2) _____
3) _____

Account Project Manager: _____ Have they been notified of the above issues: Yes No
Whom spoken to: _____ Date and Time: _____

ADDITIONAL NOTES:

_____

_____

_____

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM Work order # 12 V573781

RECEIVING BASICS:
*Complete CoC as well where required
Date and Time: FEB 14/12 0942
Courier: Loomis
Received by: ROBERT
Relinquished by:
Company: FRANZ
Consultant:
Client left without count verified:

COC INFORMATION:
Received: Yes No Emailed to PM
Completed in full: Yes No If NO, why:
TURNAROUND TIME: RUSH
COC Numbers: 624

SAMPLE QUANTITIES:
Coolers: 1 Bottles/Jars: 4 Bags:

TIME SENSITIVE ISSUES:
Earliest Date Sampled: FEB 6/12 1000
Microbiology: Test:
Hydrocarbons: Test: BTEX
Samples are received >5 days after sampling: Yes No

ALREADY EXCEEDED? Yes No
Expiry:
Expiry: FEB 10/12

SPECIALTY ISSUES:
Legal Samples: Yes No
International Samples: Yes No
**Proper tape/labels applied: Yes No

Hazardous Samples:
Why hazardous:

Precaution taken:

SAMPLE REQUIREMENTS:
*Complete while logging in by login staff.

Correct bottles used for testing: Yes No
If No, explain:

Correct amount of sample for analysis: Yes No
If No, explain:

Are all samples labeled correctly: Yes No
If No, explain:

NON-CONFORMANCES:
3 temperatures of samples* and average of each cooler: (record differing temperatures on the CoC next to sample ID's)
(1) 2 + 4 + 4 = 3 °C (2) ___ + ___ + ___ = ___ °C (3) ___ + ___ + ___ = ___ °C (4) ___ + ___ + ___ = ___ °C
*Jars used when available
FREE

Additional integrity issues (note here and on CoC next to the sample ID):
1)
2)
3)

Account Project Manager: Have they been notified of the above issues: Yes No
Whom spoken to: Date and Time:

ADDITIONAL NOTES:

AGAT Laboratories

Unit 120, 8600 Glenlyon Parkway
Burnaby, British Columbia
CANADA V5J 0B6
TEL (778)452-4000
FAX (778)452-4074
http://www.agatlabs.com

CLIENT NAME: FRANZ ENVIRONMENTAL
308-108 MAINLAND STREET
VANCOUVER, BC V6B2T4

ATTENTION TO: Amanda Salway

PROJECT NO: 2090-1103

AGAT WORK ORDER: 12V574297

TRACE ORGANICS REVIEWED BY: Elena Gorobets, Senior Analyst

WATER ANALYSIS REVIEWED BY: Marie England, Inorganics Supervisor

DATE REPORTED: Feb 21, 2012

PAGES (INCLUDING COVER): 12

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (778) 452-4000

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

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Certificate of Analysis

AGAT WORK ORDER: 12V574297
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons (BTEX/F1-F4) in Water

DATE SAMPLED: Feb 13, 2012 | DATE RECEIVED: Feb 13, 2012 | DATE REPORTED: Feb 21, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-11M 3117392	MW08-13 3117404
Benzene	mg/L	0.37	0.0005	<0.0005	<0.0005
Toluene	mg/L	0.002	0.0005	<0.0005	<0.0005
Ethylbenzene	mg/L	0.09	0.0005	<0.0005	<0.0005
Xylenes	mg/L		0.0005	<0.0005	<0.0005
C6 - C10 (F1)	mg/L		0.1	<0.1	<0.1
C6 - C10 (F1 minus BTEX)	mg/L		0.1	<0.1	<0.1
C>10 - C16	mg/L		0.1	<0.1	<0.1
C16 - C34	mg/L		0.1	<0.1	<0.1
C>34 - C50	mg/L		0.1	<0.1	<0.1
Surrogate	**Unit**	**Acceptable Limits**			
Toluene-d8 (BTEX)	%	50-150		108	107
o-Terphenyl (F2-F4)	%	50-150		108	107

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL)

3117392-3117404 The C>6 - C10 fraction is calculated using the toluene response factor.
The C10 - C16 fraction is calculated using the average response factor for nC10, nC16 and nC34.
BTEX has NOT been subtracted from Fraction 1.
Sample is blank corrected.

Certified By: Elena Gorobets

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V574297
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 13, 2012 | DATE RECEIVED: Feb 13, 2012 | DATE REPORTED: Feb 21, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-11M 3117392	MW08-13 3117404
Methyl tert-butyl ether (MTBE)	µg/L	34000	1	<1	<1
Styrene	µg/L	720	0.5	<0.5	<0.5
VPH	µg/L	1500	100	<100	<100
Naphthalene	µg/L	10	0.05	0.11	0.05
Quinoline	µg/L	34	0.1	<0.1	<0.1
Acenaphthylene	µg/L		0.05	<0.05	<0.05
Acenaphthene	µg/L	60	0.05	0.07	<0.05
Fluorene	µg/L	120	0.05	0.05	<0.05
Phenanthrene	µg/L	3	0.05	0.12	<0.05
Anthracene (Water)	µg/L	1	0.05	<0.05	<0.05
Acridine	µg/L	0.5	0.05	0.05	<0.05
Fluoranthene	µg/L	2	0.05	0.11	<0.05
Pyrene	µg/L	0.2	0.02	0.09	<0.02
Benzo(a)anthracene	µg/L	1	0.05	<0.05	<0.05
Chrysene	µg/L	1	0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/L		0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/L		0.05	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.1	0.01	0.04	<0.01
Indeno(1,2,3-cd)pyrene	µg/L		0.05	<0.05	<0.05
Dibenzo(a,h)anthracene	µg/L		0.05	<0.05	<0.05
Benzo(g,h.i)perylene	µg/L		0.05	<0.05	<0.05
LEPH C10-C19	µg/L	500	100	520	110
HEPH C19-C32	µg/L		100	670	<100
Surrogate	Unit	Acceptable Limits			
Nitrobenzene - d5	%	50-130		NA	102
Quinoline - d7	%	50-130		105	94
2-Fluorobiphenyl	%	50-130		60	77
P-Terphenyl - d14	%	60-130		83	88
Bromofluorobenzene	%	70-130		86	77
Dibromofluoromethane	%	70-130		127	122
Toluene - d8	%	70-130		102	101

Certified By: Elena Gorobets

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Certificate of Analysis

AGAT WORK ORDER: 12V574297
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 13, 2012	DATE RECEIVED: Feb 13, 2012	DATE REPORTED: Feb 21, 2012	SAMPLE TYPE: Water

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

3117392
VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.
Nitrobenzene-d5 surrogate recovery not available due to sample matrix interference.

3117404
VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.

Certified By: Elena Gorobets

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V574297
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Phenolic Compounds in Water

DATE SAMPLED: Feb 13, 2012 | DATE RECEIVED: Feb 13, 2012 | DATE REPORTED: Feb 21, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-12M 3117399	MV-11BH-13M 3117402
Phenol	mg/L		0.002	<0.002	<0.002
4-Nitrophenol	mg/L		0.005	<0.005	<0.005
m&p-Cresol (3&4-methylphenol)	mg/L		0.0005	0.007	0.025
o-Cresol (2-methylphenol)	mg/L		0.0005	<0.0005	<0.0005
2-Chlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,4-Dinitrophenol	mg/L		0.005	<0.005	<0.005
2-Nitrophenol	mg/L		0.005	<0.005	<0.005
2,4-Dimethylphenol	mg/L		0.0005	<0.0005	<0.0005
2,6-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001
4-Chloro-3-methylphenol	mg/L		0.0005	<0.0005	<0.0005
2,4-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001
4,6-Dinitro-2-methylphenol	mg/L		0.005	<0.005	<0.005
2,3,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,4-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,4,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
3,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,4,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,5,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,4,5-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	mg/L		0.005	<0.005	<0.005
Pentachlorophenol	mg/L		0.0005	<0.0005	<0.0005
Surrogate	Unit	Acceptable Limits			
2-Fluorophenol	%	50-150		114	117
2,4,6-Tribromophenol	%	50-150		110	110

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
3117399-3117402 Results relate only to the items tested.

Certified By: Elena Gorobets

AGAT Laboratories

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Burnaby, British Columbia
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Certificate of Analysis

AGAT WORK ORDER: 12V574297
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

British Columbia CSR- Schedule 6 Dissolved Metals

DATE SAMPLED: Feb 13, 2012 | DATE RECEIVED: Feb 13, 2012 | DATE REPORTED: Feb 21, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-12M 3117399	MV-11BH-13M 3117402
Aluminum Dissolved	µg/L		1	163	247
Antimony Dissolved	µg/L		0.05	0.31	0.21
Arsenic Dissolved	µg/L	5	0.1	3.1	11.6
Barium Dissolved	µg/L		0.1	179	473
Beryllium Dissolved	µg/L		0.01	0.10	0.03
Boron Dissolved	µg/L		1	29	24
Cadmium Dissolved	µg/L	0.017	0.01	0.24	0.01
Calcium Dissolved	mg/L		0.05	46.5	151
Chromium Dissolved	µg/L		0.5	2.8	3.4
Cobalt Dissolved	µg/L		0.05	13.1	29.3
Copper Dissolved	µg/L		0.2	3.2	0.4
Iron Dissolved	mg/L	0.3	0.01	23.8	153
Lead Dissolved	µg/L		0.01	0.61	<0.01
Lithium Dissolved	µg/L		0.1	7.1	1.4
Magnesium Dissolved	mg/L		0.05	14.8	38.5
Manganese Dissolved	mg/L		0.001	2.40	8.02
Mercury Dissolved	µg/L	0.026	0.003	<0.003	<0.003
Molybdenum Dissolved	µg/L	73	0.05	2.64	0.57
Nickel Dissolved	µg/L		0.1	18.4	32.9
Selenium Dissolved	µg/L	1	0.1	0.9	1.0
Silver Dissolved	µg/L	0.1	0.01	<0.01	<0.01
Sodium Dissolved	mg/L		0.05	144	89.5
Thallium Dissolved	µg/L	0.8	0.002	0.087	<0.002
Titanium Dissolved	µg/L		0.1	58.8	176
Uranium Dissolved	µg/L		0.01	1.17	0.49
Vanadium Dissolved	µg/L		0.1	1.6	4.5
Zinc Dissolved	µg/L	30	1	40	30
Hardness (calc)	mg CaCO3/L		1	177	536

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL) (Van)

Certified By: Marie England

AGAT Laboratories

Unit 120, 8600 Glenlyon Parkway
Burnaby, British Columbia
CANADA V5J 0B6
TEL (778)452-4000
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http://www.agatlabs.com

Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V574297

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis

RPT Date: Feb 21, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Petroleum Hydrocarbons in Water															
Methyl tert-butyl ether (MTBE)	1	3118213	<1	<1	0.0%	< 1	98%	80%	120%				107%	70%	130%
Styrene	1	3118213	<0.5	<0.5	0.0%	< 0.5	98%	80%	120%				108%	70%	130%
VPH	1	3118213	<100	<100	0.0%	< 100									
Naphthalene	1	W-MS	0.12	0.14	15.0%	< 0.05	100%	80%	120%				121%	50%	130%
Quinoline	1	W-MS	<0.1	<0.1	0.0%	< 0.1	100%	80%	120%				97%	50%	130%
Acenaphthylene	1	W-MS	0.08	0.08	0.0%	< 0.05	100%	80%	120%				83%	50%	130%
Acenaphthene	1	W-MS	0.08	0.08	0.0%	< 0.05	100%	80%	120%				87%	50%	130%
Fluorene	1	W-MS	0.09	0.09	0.0%	< 0.05	99%	80%	120%				96%	50%	130%
Phenanthrene	1	W-MS	0.09	0.10	11.0%	< 0.05	99%	80%	120%				97%	60%	130%
Anthracene (Water)	1	W-MS	0.07	0.07	0.0%	< 0.05	100%	80%	120%				72%	60%	130%
Acridine	1	W-MS	0.08	0.08	0.0%	< 0.05	99%	80%	120%				84%	50%	130%
Fluoranthene	1	W-MS	0.08	0.09	12.0%	< 0.05	100%	80%	120%				90%	60%	130%
Pyrene	1	W-MS	0.09	0.09	0.0%	< 0.02	99%	80%	120%				92%	60%	130%
Benzo(a)anthracene	1	W-MS	0.08	0.08	0.0%	< 0.05	101%	80%	120%				85%	60%	130%
Chrysene	1	W-MS	0.09	0.09	0.0%	< 0.05	101%	80%	120%				93%	60%	130%
Benzo(b)fluoranthene	1	W-MS	0.09	0.10	11.0%	< 0.05	102%	80%	120%				98%	60%	130%
Benzo(k)fluoranthene	1	W-MS	0.09	0.09	0.0%	< 0.05	99%	80%	120%				90%	60%	130%
Benzo(a)pyrene	1	W-MS	0.07	0.07	0.0%	< 0.01	100%	80%	120%				76%	60%	130%
Indeno(1,2,3-cd)pyrene	1	W-MS	0.09	0.09	0.0%	< 0.05	101%	80%	120%				91%	60%	130%
Dibenzo(a,h)anthracene	1	W-MS	0.08	0.09	12.0%	< 0.05	101%	80%	120%				88%	60%	130%
Benzo(g,h.i)perylene	1	W-MS	0.09	0.10	11.0%	< 0.05	101%	80%	120%				97%	60%	130%
Nitrobenzene - d5	1	W-MS	81	78	4.0%		99%	80%	120%				82%	50%	130%
Quinoline - d7	1	W-MS	93	90	3.0%		101%	80%	120%				93%	50%	130%
2-Fluorobiphenyl	1	W-MS	86	84	2.0%		100%	80%	120%				86%	50%	130%
P-Terphenyl - d14	1	W-MS	91	90	1.0%		101%	80%	120%				92%	60%	130%
Bromofluorobenzene	1	3118213	89	86	3.0%		107%	70%	130%				115%	70%	130%
Dibromofluoromethane	1	3118213	109	103	6.0%		100%	70%	130%				108%	70%	130%
Toluene - d8	1	3118213	104	98	6.0%		100%	70%	130%				111%	70%	130%
Phenolic Compounds in Water															
Phenol	136	3112960	<0.002	<0.002	NA	< 0.002	85%	80%	120%	96%	70%	130%	95%	60%	140%
4-Nitrophenol	136	3112960	<0.005	<0.005	NA	< 0.005	82%	80%	120%	90%	70%	130%	90%	60%	140%
m&p-Cresol (3&4-methylphenol)	136	3112960	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	95%	60%	140%
o-Cresol (2-methylphenol)	136	3112960	<0.0005	<0.0005	NA	< 0.0005				93%	70%	130%	93%	60%	140%
2-Chlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005	82%	80%	120%	94%	70%	130%	90%	60%	140%
2,4-Dinitrophenol	136	3112960	<0.005	<0.005	NA	< 0.005	89%	80%	120%	93%	70%	130%	94%	60%	140%
2-Nitrophenol	136	3112960	<0.005	<0.005	NA	< 0.005	95%	80%	120%	106%	70%	130%	96%	60%	140%
2,4-Dimethylphenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005	83%	80%	120%	93%	70%	130%	92%	60%	140%
2,6-Dichlorophenol	136	3112960	<0.0001	<0.0001	NA	< 0.0001				94%	70%	130%	89%	60%	140%

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V574297

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis (Continued)

RPT Date: Feb 21, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
4-Chloro-3-methylphenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005	81%	80%	120%	99%	70%	130%	103%	60%	140%
2,4-Dichlorophenol	136	3112960	<0.0001	<0.0001	NA	< 0.0001	85%	80%	120%	91%	70%	130%	86%	60%	140%
4,6-Dinitro-2-methylphenol	136	3112960	<0.005	<0.005	NA	< 0.005	92%	80%	120%	104%	70%	130%	91%	60%	140%
2,3,6-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
2,3,4-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	92%	60%	140%
2,4,6-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005	85%	80%	120%	96%	70%	130%	95%	60%	140%
2,4,5-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				96%	70%	130%	93%	60%	140%
2,3,5-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				98%	70%	130%	94%	60%	140%
3,4,5-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
2,3,4,6-Tetrachlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				102%	70%	130%	100%	60%	140%
2,3,5,6-Tetrachlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				101%	70%	130%	100%	60%	140%
2,3,4,5-Tetrachlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				101%	70%	130%	99%	60%	140%
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	136	3112960	<0.005	<0.005	NA	< 0.005				116%	70%	130%	120%	60%	140%
Pentachlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005	89%	80%	120%	108%	70%	130%	107%	60%	140%
Petroleum Hydrocarbons (BTEX/F1-F4) in Water															
Benzene	3471	3117404	<0.0005	<0.0005	NA	< 0.0005	100%	80%	120%	96%	80%	120%	98%	70%	130%
Toluene	3471	3117404	<0.0005	<0.0005	NA	< 0.0005	92%	80%	120%	95%	80%	120%	93%	70%	130%
Ethylbenzene	3471	3117404	<0.0005	<0.0005	NA	< 0.0005	94%	80%	120%	96%	80%	120%	95%	70%	130%
Xylenes	3471	3117404	<0.0005	<0.0005	NA	< 0.0005	92%	80%	120%	93%	80%	120%	90%	70%	130%
C6 - C10 (F1)	3471	3117404	<0.1	<0.1	NA	< 0.1	98%	80%	120%	100%	80%	120%	93%	70%	130%
C>10 - C16	32	3118469	<0.1	<0.1	NA	< 0.1	103%	80%	120%	89%	80%	120%	103%	70%	130%
C16 - C34	32	3118469	<0.1	<0.1	NA	< 0.1	103%	80%	120%	96%	80%	120%	104%	70%	130%

Certified By: Elena Gorobets

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V574297

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Water Analysis

RPT Date: Feb 21, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
British Columbia CSR- Schedule 6 Dissolved Metals															
Aluminum Dissolved	20120	3118219	< 1	< 1	0.0%	< 1	105%	90%	110%	111%	85%	115%			
Antimony Dissolved	20120	3118219	< 0.05	< 0.05	0.0%	< 0.05	100%	90%	110%	87%	85%	110%			
Arsenic Dissolved	20120	3118219	0.3	0.3	0.0%	< 0.1	95%	90%	110%	106%	90%	110%			
Barium Dissolved	20120	3118219	22.6	22.6	0.0%	< 0.1	104%	90%	110%	102%	90%	110%			
Beryllium Dissolved	20120	3118219	< 0.01	< 0.01	0.0%	< 0.01	109%	90%	110%	110%	90%	110%			
Boron Dissolved	20120	3118219	164	176	7.1%	< 1	108%	90%	110%	86%	80%	120%			
Cadmium Dissolved	20120	3118219	0.02	0.02	0.0%	< 0.01	98%	90%	110%	102%	90%	110%			
Calcium Dissolved	20120	3118219	57.3	56.9	0.7%	< 0.05	99%	90%	110%	102%	90%	110%			
Chromium Dissolved	20120	3118219	< 0.5	< 0.5	0.0%	< 0.5	101%	90%	110%	98%	90%	110%			
Cobalt Dissolved	20120	3118219	2.10	2.16	2.8%	< 0.05	93%	90%	110%	99%	90%	110%			
Copper Dissolved	20120	3118219	0.5	0.5	0.0%	< 0.2	94%	90%	110%	106%	90%	110%			
Iron Dissolved	20120	3118219	0.23	0.23	0.0%	< 0.01	104%	90%	110%	104%	90%	110%			
Lead Dissolved	20120	3118219	< 0.01	< 0.01	0.0%	< 0.01	98%	90%	110%	101%	90%	110%			
Lithium Dissolved	20120	3118219	38.9	39.9	2.5%	< 0.1				102%	90%	110%			
Magnesium Dissolved	20120	3118219	13.3	13.2	0.8%	< 0.05	99%	90%	110%	106%	90%	110%			
Manganese Dissolved	20120	3118219	0.872	0.877	0.6%	< 0.001	104%	90%	110%	103%	90%	110%			
Mercury Dissolved	20120	3118219	< 0.003	< 0.003	0.0%	< 0.003	102%	90%	110%	100%	90%	110%			
Molybdenum Dissolved	20120	3118219	8.71	8.90	2.2%	< 0.05	94%	90%	110%	100%	90%	110%			
Nickel Dissolved	20120	3118219	6.1	6.5	6.3%	< 0.1	101%	90%	110%	98%	90%	110%			
Selenium Dissolved	20120	3118219	< 0.1	< 0.1	0.0%	< 0.1	95%	90%	110%	99%	85%	115%			
Silver Dissolved	20120	3118219	< 0.01	< 0.01	0.0%	< 0.01				103%	90%	110%			
Sodium Dissolved	20120	3118219	144	143	0.7%	< 0.05	102%	90%	110%	107%	90%	110%			
Thallium Dissolved	20120	3118219	0.043	0.042	2.4%	< 0.002	91%	90%	110%	97%	90%	110%			
Titanium Dissolved	20120	3118219	66.9	68	1.6%	< 0.1				97%	90%	110%			
Uranium Dissolved	20120	3118219	9.18	9.43	2.7%	< 0.01		90%	110%	99%	90%	110%			
Vanadium Dissolved	20120	3118219	< 0.1	< 0.1	0.0%	< 0.1	97%	90%	110%	99%	90%	110%			
Zinc Dissolved	20120	3118219	4	5	NA	< 1	94%	90%	110%	106%	85%	115%			

Certified By:

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V574297

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Benzene	TO 0540	EPA SW846 8260	GC/MS
Toluene	TO 0540	EPA SW846 8260	GC/MS
Ethylbenzene	TO 0540	EPA SW846 8260	GC/MS
Xylenes	TO 0540	EPA SW846 8260	GC/MS
C6 - C10 (F1)	TO 0540	CCME Tier 1 Method	GC/FID
C6 - C10 (F1 minus BTEX)	TO 0540	CCME Tier 1 Method	GC/FID
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
C16 - C34	TO 0511	CCME Tier 1 Method	GC/FID
C>34 - C50	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO 0340	EPA SW846 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
Methyl tert-butyl ether (MTBE)	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Styrene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
VPH	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Naphthalene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Quinoline	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acenaphthylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acenaphthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Fluorene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Phenanthrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Anthracene (Water)	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acridine	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Chrysene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(b)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(k)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Dibenzo(a,h)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(g,h.i)perylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS

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AGAT WORK ORDER: 12V574297

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PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Nitrobenzene - d5	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
Quinoline - d7	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
2-Fluorobiphenyl	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
P-Terphenyl - d14	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
LEPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
HEPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
Bromofluorobenzene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Dibromofluoromethane	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Toluene - d8	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Phenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
m&p-Cresol (3&4-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
o-Cresol (2-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
2-Chlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dinitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dimethylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,6-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Chloro-3-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4,6-Dinitro-2-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
3,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,5-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
Dinoseb (2-sec-butyl-4,6-dinitrophenol)	TO 1200	EPA SW-846 8321	HPLC/UV
Pentachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Fluorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Tribromophenol	TO 1200	EPA SW-846 8321	HPLC/UV

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PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Aluminum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Antimony Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Arsenic Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Barium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Beryllium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Boron Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cadmium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Calcium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Chromium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cobalt Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Copper Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Iron Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Lead Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Lithium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Magnesium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Manganese Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Mercury Dissolved	MET-181-6103, LAB-181-4015	Modified from EPA 245.7	CV/AA
Molybdenum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Nickel Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Selenium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Silver Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Sodium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Thallium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Titanium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Uranium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Vanadium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Zinc Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS

AGAT Laboratories

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Chain of Custody Record

Turnaround Time Required (TAT)

Regular TAT	5 to 7 working days	☒
Rush TAT	24 to 48 hours	☐
	48 to 72 hours	☐

Date Required: _____

Please contact laboratory if Rush is required

Report To:

Company: Franz Environmental
Contact: Amanda Salway
Address: 308-1080 Mainland St
Vancouver, BC V6B 2T4
Phone: 604 632-9941 Fax: 604 632-9942
LSD:
Client Project #: 2090-1103

Report Information

1. Name: Amanda Salway
Email: asalway@franzbc.com
2. Name: Viviane Dubois-Coté
Email: vdcote@franzbc.com

Report Format

- ☐ Single Sample per page
- ☒ Multiple Samples per page
- ☒ Excel Format Included

Laboratory Use Only

Arrival Temperature: 2° 3°
AGAT Job Number: 12V514297

Notes:
FEB 13 PM 5:10

Invoice To: Same as above Yes ☒ No ☐

Company:
Contact:
Address:
Phone: Fax:
PO/AFE #:

Regulatory Requirements (Check):

- ☐ **BC CSR – Soil**
  - ☐ Agricultural
  - ☐ Industrial
  - ☐ Urban/Park
  - ☐ Commercial
- ☒ **BC CSR – Water**
  - ☐ Drinking Water
  - ☒ Aquatic Life
  - ☐ Irrigation
  - ☐ Livestock
- ☒ **CCME**
  - ☐ Drinking Water
  - ☐ Residential/Park
  - ☐ Commercial
  - ☐ Industrial
  - ☐ Drinking Water
  - ☒ FWAL

Lab ID #	Sample Identification	Sample Matrix	Date/Time Sampled	Comments – Site/Sample Info. Sample Containment	BC CSR BTEX/VPH	BC CSR LEPH/HEPH	BC CSR Metals + CCME metals	VOCs	BC CSR Schedule II	Routine Potability		CCME F1	CCME F2-F4	non-chlorinated phenols		Number of Containers	Preserved (Y/N)	Hazardous (Y/N)	Hold for 1 YEAR
3117392	MW-11BR-11M	groundwater	Feb 13, 2012 10:00		X	X						X	X			5			
391	MW-11BR-12M	↓	Feb 13, 2012 10:30				X							X		2			
402	MW-11BR-13M		Feb 13, 2012 11:00				X							X		2			
↓404	MW08-13	↓	Feb 13, 2012 13:00		X	X						X	X			5			

Samples Relinquished by (print name & sign):	Date: Feb 13, 2012	Samples Received by (Print name & sign):	5:10 pm Date: Feb 13/12	Pink Copy - Client
Samples Relinquished by (print name & sign):	Date:	Samples Received by (Print name & sign):	Date:	Yellow Copy - AGAT
Samples Relinquished by (print name & sign):	Date:	Samples Received by (Print name & sign):	Date:	White Copy - AGAT

Page 1 of 1

NO: 000626

Document ID: DIV-186-0811.001

Date revised: August 24, 2011

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM - BURNABY

Work Order # 12V574297

RECEIVING BASICS:
*Complete CoC as well where required
Date and Time: Feb 13/12 5:10pm
Courier: n/a
Received by: Melissa Blues
Relinquished by: Amanda
Branch Received From: n/a
Company: Franz Env
Consultant: n/a
Client left without count verified: n/a

COC INFORMATION:
Received: Yes No Emailed to PM
Completed in full: Yes No If NO, why:
TURNAROUND TIME: Regular
COC Numbers: 000626

SAMPLE QUANTITIES:
Coolers: 2 Bottles/Jars: 14 Bags:

TIME SENSITIVE ISSUES:
Earliest Date Sampled: Feb 13/12
Microbiology: Test: n/a
Hydrocarbons: Test: BTEX
Samples are received >5 days after sampling: Yes No

ALREADY EXCEEDED? Yes No
Expiry:
Expiry: 21/Feb/12

SPECIALTY ISSUES:
Legal Samples: Yes No
International Samples: Yes No
**Proper tape/labels applied: Yes No

Hazardous Samples:
Why hazardous:

Precaution taken:

SAMPLE REQUIREMENTS:
*Complete while logging in by login staff.

Correct bottles used for testing: Yes No
If No, explain:

Correct amount of sample for analysis: Yes No
If No, explain:

Are all samples labeled correctly: Yes No
If No, explain:

NON-CONFORMANCES:
3 temperatures of samples* and average of each cooler: (record differing temperatures on the CoC next to sample ID's)
(1) 3 + 0 + 2 = 2 °C (2) 5 + 4 + 1 = 3 °C (3) ___ + ___ + ___ = ___ °C (4) ___ + ___ + ___ = ___ °C
*Jars used when available

Additional integrity issues (note here and on CoC next to the sample ID):

1)
2)
3)

Account Project Manager: Have they been notified of the above issues: Yes No
Whom spoken to: Date and Time:

ADDITIONAL NOTES:

AGAT Laboratories

Unit 120, 8600 Glenlyon Parkway
Burnaby, British Columbia
CANADA V5J 0B6
TEL (778)452-4000
FAX (778)452-4074
http://www.agatlabs.com

CLIENT NAME: FRANZ ENVIRONMENTAL
308-108 MAINLAND STREET
VANCOUVER, BC V6B2T4

ATTENTION TO: Amanda Salway

PROJECT NO: 2090-1103

AGAT WORK ORDER: 12V574297

TRACE ORGANICS REVIEWED BY: Craig Stehr, Organics Supervisor

WATER ANALYSIS REVIEWED BY: Marie England, Inorganics Supervisor

DATE REPORTED: Mar 02, 2012

PAGES (INCLUDING COVER): 12

VERSION*: 2

Should you require any information regarding this analysis please contact your client services representative at (778) 452-4000

*NOTES

VERSION 2:Amended to include VH and EPH results as per client.
Version 2 is an amendment to version 1.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

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Certificate of Analysis

AGAT WORK ORDER: 12V574297
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons (BTEX/F1-F4) in Water

DATE SAMPLED: Feb 13, 2012 | DATE RECEIVED: Feb 13, 2012 | DATE REPORTED: Mar 02, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-11M 3117392	MW08-13 3117404
Benzene	mg/L	0.37	0.0005	<0.0005	<0.0005
Toluene	mg/L	0.002	0.0005	<0.0005	<0.0005
Ethylbenzene	mg/L	0.09	0.0005	<0.0005	<0.0005
Xylenes	mg/L		0.0005	<0.0005	<0.0005
C6 - C10 (F1)	mg/L		0.1	<0.1	<0.1
C6 - C10 (F1 minus BTEX)	mg/L		0.1	<0.1	<0.1
C>10 - C16	mg/L		0.1	<0.1	<0.1
C16 - C34	mg/L		0.1	<0.1	<0.1
C>34 - C50	mg/L		0.1	<0.1	<0.1
Surrogate	**Unit**	**Acceptable Limits**			
Toluene-d8 (BTEX)	%	50-150		108	107
o-Terphenyl (F2-F4)	%	50-150		108	107

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL)

3117392-3117404 The C>6 - C10 fraction is calculated using the toluene response factor.
The C10 - C16 fraction is calculated using the average response factor for nC10, nC16 and nC34.
BTEX has NOT been subtracted from Fraction 1.
Sample is blank corrected.

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 12V574297
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 13, 2012 | DATE RECEIVED: Feb 13, 2012 | DATE REPORTED: Mar 02, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-11M 3117392	MW08-13 3117404
Methyl tert-butyl ether (MTBE)	µg/L	34000	1	<1	<1
Styrene	µg/L	720	0.5	<0.5	<0.5
VPH	µg/L	1500	100	<100	<100
VH	µg/L	15000	100	<100	<100
Naphthalene	µg/L	10	0.05	0.11	0.05
Quinoline	µg/L	34	0.1	<0.1	<0.1
Acenaphthylene	µg/L		0.05	<0.05	<0.05
Acenaphthene	µg/L	60	0.05	0.07	<0.05
Fluorene	µg/L	120	0.05	0.05	<0.05
Phenanthrene	µg/L	3	0.05	0.12	<0.05
Anthracene (Water)	µg/L	1	0.05	<0.05	<0.05
Acridine	µg/L	0.5	0.05	0.05	<0.05
Fluoranthene	µg/L	2	0.05	0.11	<0.05
Pyrene	µg/L	0.2	0.02	0.09	<0.02
Benzo(a)anthracene	µg/L	1	0.05	<0.05	<0.05
Chrysene	µg/L	1	0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/L		0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/L		0.05	<0.05	<0.05
Benzo(a)pyrene	µg/L	0.1	0.01	0.04	<0.01
Indeno(1,2,3-cd)pyrene	µg/L		0.05	<0.05	<0.05
Dibenzo(a,h)anthracene	µg/L		0.05	<0.05	<0.05
Benzo(g,h.i)perylene	µg/L		0.05	<0.05	<0.05
LEPH C10-C19	µg/L	500	100	520	110
HEPH C19-C32	µg/L		100	670	<100
EPH C10-C19	µg/L	5000	100	520	110
EPH C19-C32	µg/L		100	670	<100

Certified By:

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AGAT WORK ORDER: 12V574297
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 13, 2012 | DATE RECEIVED: Feb 13, 2012 | DATE REPORTED: Mar 02, 2012 | SAMPLE TYPE: Water

Surrogate	Unit	Acceptable Limits	MV-11BH-11M 3117392	MW08-13 3117404
Nitrobenzene - d5	%	50-130	NA	102
Quinoline - d7	%	50-130	105	94
2-Fluorobiphenyl	%	50-130	60	77
P-Terphenyl - d14	%	60-130	83	88
Bromofluorobenzene	%	70-130	86	77
Dibromofluoromethane	%	70-130	127	122
Toluene - d8	%	70-130	102	101

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

3117392 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.
Nitrobenzene-d5 surrogate recovery not available due to sample matrix interference.

3117404 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 12V574297
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Phenolic Compounds in Water

DATE SAMPLED: Feb 13, 2012 | DATE RECEIVED: Feb 13, 2012 | DATE REPORTED: Mar 02, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-12M 3117399	MV-11BH-13M 3117402
Phenol	mg/L		0.002	<0.002	<0.002
4-Nitrophenol	mg/L		0.005	<0.005	<0.005
m&p-Cresol (3&4-methylphenol)	mg/L		0.0005	0.007	0.025
o-Cresol (2-methylphenol)	mg/L		0.0005	<0.0005	<0.0005
2-Chlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,4-Dinitrophenol	mg/L		0.005	<0.005	<0.005
2-Nitrophenol	mg/L		0.005	<0.005	<0.005
2,4-Dimethylphenol	mg/L		0.0005	<0.0005	<0.0005
2,6-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001
4-Chloro-3-methylphenol	mg/L		0.0005	<0.0005	<0.0005
2,4-Dichlorophenol	mg/L		0.0001	<0.0001	<0.0001
4,6-Dinitro-2-methylphenol	mg/L		0.005	<0.005	<0.005
2,3,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,4-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,4,6-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
3,4,5-Trichlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,4,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,5,6-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005
2,3,4,5-Tetrachlorophenol	mg/L		0.0005	<0.0005	<0.0005
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	mg/L		0.005	<0.005	<0.005
Pentachlorophenol	mg/L		0.0005	<0.0005	<0.0005
Surrogate	**Unit**	**Acceptable Limits**			
2-Fluorophenol	%	50-150		114	117
2,4,6-Tribromophenol	%	50-150		110	110

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
3117399-3117402 Results relate only to the items tested.

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 12V574297
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

British Columbia CSR- Schedule 6 Dissolved Metals

DATE SAMPLED: Feb 13, 2012 | DATE RECEIVED: Feb 13, 2012 | DATE REPORTED: Mar 02, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	MV-11BH-12M 3117399	MV-11BH-13M 3117402
Aluminum Dissolved	µg/L		1	163	247
Antimony Dissolved	µg/L	200	0.05	0.31	0.21
Arsenic Dissolved	µg/L	50	0.1	3.1	11.6
Barium Dissolved	µg/L	10000	0.1	179	473
Beryllium Dissolved	µg/L	53	0.01	0.10	0.03
Boron Dissolved	µg/L	50000	1	29	24
Cadmium Dissolved	µg/L		0.01	0.24	0.01
Calcium Dissolved	mg/L		0.05	46.5	151
Chromium Dissolved	µg/L		0.5	2.8	3.4
Cobalt Dissolved	µg/L	40	0.05	13.1	29.3
Copper Dissolved	µg/L		0.2	3.2	0.4
Iron Dissolved	mg/L		0.01	23.8	153
Lead Dissolved	µg/L		0.01	0.61	<0.01
Lithium Dissolved	µg/L		0.1	7.1	1.4
Magnesium Dissolved	mg/L		0.05	14.8	38.5
Manganese Dissolved	mg/L		0.001	2.40	8.02
Mercury Dissolved	µg/L	1	0.003	<0.003	<0.003
Molybdenum Dissolved	µg/L	10000	0.05	2.64	0.57
Nickel Dissolved	µg/L		0.1	18.4	32.9
Selenium Dissolved	µg/L	10	0.1	0.9	1.0
Silver Dissolved	µg/L		0.01	<0.01	<0.01
Sodium Dissolved	mg/L		0.05	144	89.5
Thallium Dissolved	µg/L	3	0.002	0.087	<0.002
Titanium Dissolved	µg/L	1000	0.1	58.8	176
Uranium Dissolved	µg/L	3000	0.01	1.17	0.49
Vanadium Dissolved	µg/L		0.1	1.6	4.5
Zinc Dissolved	µg/L		1	40	30
Hardness (calc)	mg CaCO3/L		1	177	536

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

Certified By: Marie England

AGAT Laboratories

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V574297

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis

RPT Date: Mar 02, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Petroleum Hydrocarbons in Water															
Methyl tert-butyl ether (MTBE)	1	3118213	<1	<1	0.0%	< 1	98%	80%	120%				107%	70%	130%
Styrene	1	3118213	<0.5	<0.5	0.0%	< 0.5	98%	80%	120%				108%	70%	130%
VPH	1	3118213	<100	<100	0.0%	< 100									
Naphthalene	1	W-MS	0.12	0.14	15.0%	< 0.05	100%	80%	120%				121%	50%	130%
Quinoline	1	W-MS	<0.1	<0.1	0.0%	< 0.1	100%	80%	120%				97%	50%	130%
Acenaphthylene	1	W-MS	0.08	0.08	0.0%	< 0.05	100%	80%	120%				83%	50%	130%
Acenaphthene	1	W-MS	0.08	0.08	0.0%	< 0.05	100%	80%	120%				87%	50%	130%
Fluorene	1	W-MS	0.09	0.09	0.0%	< 0.05	99%	80%	120%				96%	50%	130%
Phenanthrene	1	W-MS	0.09	0.10	11.0%	< 0.05	99%	80%	120%				97%	60%	130%
Anthracene (Water)	1	W-MS	0.07	0.07	0.0%	< 0.05	100%	80%	120%				72%	60%	130%
Acridine	1	W-MS	0.08	0.08	0.0%	< 0.05	99%	80%	120%				84%	50%	130%
Fluoranthene	1	W-MS	0.08	0.09	12.0%	< 0.05	100%	80%	120%				90%	60%	130%
Pyrene	1	W-MS	0.09	0.09	0.0%	< 0.02	99%	80%	120%				92%	60%	130%
Benzo(a)anthracene	1	W-MS	0.08	0.08	0.0%	< 0.05	101%	80%	120%				85%	60%	130%
Chrysene	1	W-MS	0.09	0.09	0.0%	< 0.05	101%	80%	120%				93%	60%	130%
Benzo(b)fluoranthene	1	W-MS	0.09	0.10	11.0%	< 0.05	102%	80%	120%				98%	60%	130%
Benzo(k)fluoranthene	1	W-MS	0.09	0.09	0.0%	< 0.05	99%	80%	120%				90%	60%	130%
Benzo(a)pyrene	1	W-MS	0.07	0.07	0.0%	< 0.01	100%	80%	120%				76%	60%	130%
Indeno(1,2,3-cd)pyrene	1	W-MS	0.09	0.09	0.0%	< 0.05	101%	80%	120%				91%	60%	130%
Dibenzo(a,h)anthracene	1	W-MS	0.08	0.09	12.0%	< 0.05	101%	80%	120%				88%	60%	130%
Benzo(g,h.i)perylene	1	W-MS	0.09	0.10	11.0%	< 0.05	101%	80%	120%				97%	60%	130%
Nitrobenzene - d5	1	W-MS	81	78	4.0%		99%	80%	120%				82%	50%	130%
Quinoline - d7	1	W-MS	93	90	3.0%		101%	80%	120%				93%	50%	130%
2-Fluorobiphenyl	1	W-MS	86	84	2.0%		100%	80%	120%				86%	50%	130%
P-Terphenyl - d14	1	W-MS	91	90	1.0%		101%	80%	120%				92%	60%	130%
Bromofluorobenzene	1	3118213	89	86	3.0%		107%	70%	130%				115%	70%	130%
Dibromofluoromethane	1	3118213	109	103	6.0%		100%	70%	130%				108%	70%	130%
Toluene - d8	1	3118213	104	98	6.0%		100%	70%	130%				111%	70%	130%
Phenolic Compounds in Water															
Phenol	136	3112960	<0.002	<0.002	NA	< 0.002	85%	80%	120%	96%	70%	130%	95%	60%	140%
4-Nitrophenol	136	3112960	<0.005	<0.005	NA	< 0.005	82%	80%	120%	90%	70%	130%	90%	60%	140%
m&p-Cresol (3&4-methylphenol)	136	3112960	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	95%	60%	140%
o-Cresol (2-methylphenol)	136	3112960	<0.0005	<0.0005	NA	< 0.0005				93%	70%	130%	93%	60%	140%
2-Chlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005	82%	80%	120%	94%	70%	130%	90%	60%	140%
2,4-Dinitrophenol	136	3112960	<0.005	<0.005	NA	< 0.005	89%	80%	120%	93%	70%	130%	94%	60%	140%
2-Nitrophenol	136	3112960	<0.005	<0.005	NA	< 0.005	95%	80%	120%	106%	70%	130%	96%	60%	140%
2,4-Dimethylphenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005	83%	80%	120%	93%	70%	130%	92%	60%	140%
2,6-Dichlorophenol	136	3112960	<0.0001	<0.0001	NA	< 0.0001				94%	70%	130%	89%	60%	140%

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V574297

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis (Continued)

RPT Date: Mar 02, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
4-Chloro-3-methylphenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005	81%	80%	120%	99%	70%	130%	103%	60%	140%
2,4-Dichlorophenol	136	3112960	<0.0001	<0.0001	NA	< 0.0001	85%	80%	120%	91%	70%	130%	86%	60%	140%
4,6-Dinitro-2-methylphenol	136	3112960	<0.005	<0.005	NA	< 0.005	92%	80%	120%	104%	70%	130%	91%	60%	140%
2,3,6-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
2,3,4-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	92%	60%	140%
2,4,6-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005	85%	80%	120%	96%	70%	130%	95%	60%	140%
2,4,5-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				96%	70%	130%	93%	60%	140%
2,3,5-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				98%	70%	130%	94%	60%	140%
3,4,5-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
2,3,4,6-Tetrachlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				102%	70%	130%	100%	60%	140%
2,3,5,6-Tetrachlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				101%	70%	130%	100%	60%	140%
2,3,4,5-Tetrachlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				101%	70%	130%	99%	60%	140%
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	136	3112960	<0.005	<0.005	NA	< 0.005				116%	70%	130%	120%	60%	140%
Pentachlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005	89%	80%	120%	108%	70%	130%	107%	60%	140%
Petroleum Hydrocarbons (BTEX/F1-F4) in Water															
Benzene	3471	3117404	<0.0005	<0.0005	NA	< 0.0005	100%	80%	120%	96%	80%	120%	98%	70%	130%
Toluene	3471	3117404	<0.0005	<0.0005	NA	< 0.0005	92%	80%	120%	95%	80%	120%	93%	70%	130%
Ethylbenzene	3471	3117404	<0.0005	<0.0005	NA	< 0.0005	94%	80%	120%	96%	80%	120%	95%	70%	130%
Xylenes	3471	3117404	<0.0005	<0.0005	NA	< 0.0005	92%	80%	120%	93%	80%	120%	90%	70%	130%
C6 - C10 (F1)	3471	3117404	<0.1	<0.1	NA	< 0.1	98%	80%	120%	100%	80%	120%	93%	70%	130%
C>10 - C16	32	3118469	<0.1	<0.1	NA	< 0.1	103%	80%	120%	89%	80%	120%	103%	70%	130%
C16 - C34	32	3118469	<0.1	<0.1	NA	< 0.1	103%	80%	120%	96%	80%	120%	104%	70%	130%

Certified By:

AGAT Laboratories

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V574297

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Water Analysis

RPT Date: Mar 02, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
British Columbia CSR- Schedule 6 Dissolved Metals															
Aluminum Dissolved	20120	3118219	< 1	< 1	0.0%	< 1	105%	90%	110%	111%	85%	115%			
Antimony Dissolved	20120	3118219	< 0.05	< 0.05	0.0%	< 0.05	100%	90%	110%	87%	85%	110%			
Arsenic Dissolved	20120	3118219	0.3	0.3	0.0%	< 0.1	95%	90%	110%	106%	90%	110%			
Barium Dissolved	20120	3118219	22.6	22.6	0.0%	< 0.1	104%	90%	110%	102%	90%	110%			
Beryllium Dissolved	20120	3118219	< 0.01	< 0.01	0.0%	< 0.01	109%	90%	110%	110%	90%	110%			
Boron Dissolved	20120	3118219	164	176	7.1%	< 1	108%	90%	110%	86%	80%	120%			
Cadmium Dissolved	20120	3118219	0.02	0.02	0.0%	< 0.01	98%	90%	110%	102%	90%	110%			
Calcium Dissolved	20120	3118219	57.3	56.9	0.7%	< 0.05	99%	90%	110%	102%	90%	110%			
Chromium Dissolved	20120	3118219	< 0.5	< 0.5	0.0%	< 0.5	101%	90%	110%	98%	90%	110%			
Cobalt Dissolved	20120	3118219	2.10	2.16	2.8%	< 0.05	93%	90%	110%	99%	90%	110%			
Copper Dissolved	20120	3118219	0.5	0.5	0.0%	< 0.2	94%	90%	110%	106%	90%	110%			
Iron Dissolved	20120	3118219	0.23	0.23	0.0%	< 0.01	104%	90%	110%	104%	90%	110%			
Lead Dissolved	20120	3118219	< 0.01	< 0.01	0.0%	< 0.01	98%	90%	110%	101%	90%	110%			
Lithium Dissolved	20120	3118219	38.9	39.9	2.5%	< 0.1				102%	90%	110%			
Magnesium Dissolved	20120	3118219	13.3	13.2	0.8%	< 0.05	99%	90%	110%	106%	90%	110%			
Manganese Dissolved	20120	3118219	0.872	0.877	0.6%	< 0.001	104%	90%	110%	103%	90%	110%			
Mercury Dissolved	20120	3118219	< 0.003	< 0.003	0.0%	< 0.003	102%	90%	110%	100%	90%	110%			
Molybdenum Dissolved	20120	3118219	8.71	8.90	2.2%	< 0.05	94%	90%	110%	100%	90%	110%			
Nickel Dissolved	20120	3118219	6.1	6.5	6.3%	< 0.1	101%	90%	110%	98%	90%	110%			
Selenium Dissolved	20120	3118219	< 0.1	< 0.1	0.0%	< 0.1	95%	90%	110%	99%	85%	115%			
Silver Dissolved	20120	3118219	< 0.01	< 0.01	0.0%	< 0.01				103%	90%	110%			
Sodium Dissolved	20120	3118219	144	143	0.7%	< 0.05	102%	90%	110%	107%	90%	110%			
Thallium Dissolved	20120	3118219	0.043	0.042	2.4%	< 0.002	91%	90%	110%	97%	90%	110%			
Titanium Dissolved	20120	3118219	66.9	68	1.6%	< 0.1				97%	90%	110%			
Uranium Dissolved	20120	3118219	9.18	9.43	2.7%	< 0.01		90%	110%	99%	90%	110%			
Vanadium Dissolved	20120	3118219	< 0.1	< 0.1	0.0%	< 0.1	97%	90%	110%	99%	90%	110%			
Zinc Dissolved	20120	3118219	4	5	NA	< 1	94%	90%	110%	106%	85%	115%			

Certified By:

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V574297

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Benzene	TO 0540	EPA SW846 8260	GC/MS
Toluene	TO 0540	EPA SW846 8260	GC/MS
Ethylbenzene	TO 0540	EPA SW846 8260	GC/MS
Xylenes	TO 0540	EPA SW846 8260	GC/MS
C6 - C10 (F1)	TO 0540	CCME Tier 1 Method	GC/FID
C6 - C10 (F1 minus BTEX)	TO 0540	CCME Tier 1 Method	GC/FID
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
C16 - C34	TO 0511	CCME Tier 1 Method	GC/FID
C>34 - C50	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO 0340	EPA SW846 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
Methyl tert-butyl ether (MTBE)	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Styrene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
VPH	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
VH	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Naphthalene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Quinoline	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acenaphthylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acenaphthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Fluorene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Phenanthrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Anthracene (Water)	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Acridine	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Chrysene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(b)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(k)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Dibenzo(a,h)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V574297

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Benzo(g,h.i)perylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Nitrobenzene - d5	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
Quinoline - d7	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
2-Fluorobiphenyl	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
P-Terphenyl - d14	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
LEPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
HEPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
EPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
EPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
Bromofluorobenzene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Dibromofluoromethane	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Toluene - d8	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Phenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
m&p-Cresol (3&4-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
o-Cresol (2-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
2-Chlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dinitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dimethylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,6-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Chloro-3-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4,6-Dinitro-2-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
3,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,5-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
Dinoseb (2-sec-butyl-4,6-dinitrophenol)	TO 1200	EPA SW-846 8321	HPLC/UV
Pentachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Fluorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Tribromophenol	TO 1200	EPA SW-846 8321	HPLC/UV

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V574297

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Aluminum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Antimony Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Arsenic Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Barium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Beryllium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Boron Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cadmium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Calcium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Chromium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Cobalt Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Copper Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Iron Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Lead Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Lithium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Magnesium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Manganese Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Mercury Dissolved	MET-181-6103, LAB-181-4015	Modified from EPA 245.7	CV/AA
Molybdenum Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Nickel Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Selenium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Silver Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Sodium Dissolved	MET-181-6101, LAB-181-4015	Modified from SM 3120 B	ICP/OES
Thallium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Titanium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Uranium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Vanadium Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS
Zinc Dissolved	MET-181-6102, LAB-181-4015	Modified from SM 3125 B	ICP-MS

AGAT Laboratories

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Chain of Custody Record

Turnaround Time Required (TAT)

Regular TAT	5 to 7 working days	☒
Rush TAT	24 to 48 hours	☐
	48 to 72 hours	☐

Date Required: _____

Please contact laboratory if Rush is required

Report To:

Company: Franz Environmental
Contact: Amanda Salway
Address: 308-1080 Mainland St
Vancouver, BC V6B 2T4
Phone: 604 632-9941 Fax: 604 632-9942
LSD:
Client Project #: 2090-1103

Report Information

1. Name: Amanda Salway
Email: asalway@franzbc.com
2. Name: Viviane Dubois-Coté
Email: vdcote@franzbc.com

Report Format

- ☐ Single Sample per page
- ☒ Multiple Samples per page
- ☒ Excel Format Included

Laboratory Use Only

Arrival Temperature: 2° 3°
AGAT Job Number: 12V514297

Notes:
FEB 13 PM 5:10

Invoice To: Same as above Yes ☒ No ☐

Company:
Contact:
Address:
Phone: Fax:
PO/AFE #:

Regulatory Requirements (Check):

- ☐ **BC CSR – Soil**
  - ☐ Agricultural
  - ☐ Industrial
  - ☐ Urban/Park
  - ☐ Commercial
- ☒ **BC CSR – Water**
  - ☐ Drinking Water
  - ☒ Aquatic Life
  - ☐ Irrigation
  - ☐ Livestock
- ☒ **CCME**
  - ☐ Drinking Water
  - ☐ Residential/Park
  - ☐ Commercial
  - ☐ Industrial
  - ☐ Drinking Water
  - ☒ FWAL

Lab ID #	Sample Identification	Sample Matrix	Date/Time Sampled	Comments – Site/Sample Info. Sample Containment	BC CSR BTEX/VPH	BC CSR LEPH/HEPH	BC CSR Metals + CCME metals	VOCs	BC CSR Schedule II	Routine Potability		CCME F1	CCME F2-F4	non-chlorinated phenols			Number of Containers	Preserved (Y/N)	Hazardous (Y/N)	Hold for 1 YEAR
3117392	MW-11BR-11M	groundwater	Feb 13, 2012 10:00		X	X						X	X				5			
399	MW-11BR-12M	↓	Feb 13, 2012 10:30				X							X			2			
402	MW-11BR-13M		Feb 13, 2012 11:00				X							X			2			
↓404	MW08-13	↓	Feb 13, 2012 13:00		X	X						X	X				5			

Samples Relinquished by (print name & sign):	Date: Feb 13, 2012	Samples Received by (Print name & sign):	5:10pm Date: Feb 13/12	Pink Copy - Client
Samples Relinquished by (print name & sign):	Date:	Samples Received by (Print name & sign):	Date:	Yellow Copy - AGAT
Samples Relinquished by (print name & sign):	Date:	Samples Received by (Print name & sign):	Date:	White Copy - AGAT

Page 1 of 1

NO: 000626

Document ID: DIV-186-0811.001

Date revised: August 24, 2011

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM - BURNABY

Work Order # 12V574297

RECEIVING BASICS:
*Complete CoC as well where required
Date and Time: Feb 13/12 5:10pm
Courier: n/a
Received by: Melissa Blues
Relinquished by: Amanda
Branch Received From: n/a
Company: Franz Env
Consultant: n/a
Client left without count verified: n/a

COC INFORMATION:
Received: Yes No Emailed to PM
Completed in full: Yes No If NO, why:
TURNAROUND TIME: Regular
COC Numbers: 000626

SAMPLE QUANTITIES:
Coolers: 2 Bottles/Jars: 14 Bags:

TIME SENSITIVE ISSUES:
Earliest Date Sampled: Feb 13/12
Microbiology: Test: n/a
Hydrocarbons: Test: BTEX
Samples are received >5 days after sampling: Yes No

ALREADY EXCEEDED? Yes No
Expiry:
Expiry: 21/Feb/12

SPECIALTY ISSUES:
Legal Samples: Yes No
International Samples: Yes No
**Proper tape/labels applied: Yes No

Hazardous Samples:
Why hazardous:

Precaution taken:

SAMPLE REQUIREMENTS:
*Complete while logging in by login staff.

Correct bottles used for testing: Yes No
If No, explain:

Correct amount of sample for analysis: Yes No
If No, explain:

Are all samples labeled correctly: Yes No
If No, explain:

NON-CONFORMANCES:
3 temperatures of samples* and average of each cooler: (record differing temperatures on the CoC next to sample ID's)
(1) 3 + 0 + 2 = 2 °C (2) 5 + 4 + 1 = 3 °C (3) ___ + ___ + ___ = ___ °C (4) ___ + ___ + ___ = ___ °C
*Jars used when available

Additional integrity issues (note here and on CoC next to the sample ID):

1)
2)
3)

Account Project Manager: Have they been notified of the above issues: Yes No
Whom spoken to: Date and Time:

ADDITIONAL NOTES:

AGAT Laboratories

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CLIENT NAME: FRANZ ENVIRONMENTAL
308-108 MAINLAND STREET
VANCOUVER, BC V6B2T4

ATTENTION TO: Amanda Salway

PROJECT NO: 2090-1103

AGAT WORK ORDER: 12V574477

TRACE ORGANICS REVIEWED BY: Craig Stehr, Organics Supervisor

DATE REPORTED: Mar 02, 2012

PAGES (INCLUDING COVER): 11

VERSION*: 2

Should you require any information regarding this analysis please contact your client services representative at (778) 452-4000

*NOTES

VERSION 2:Amended to include VH and EPH results as per client.
Version 2 is an amendment to version 1.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

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Certificate of Analysis

AGAT WORK ORDER: 12V574477
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons (BTEX/F1) in Water

DATE SAMPLED: Feb 14, 2012 | DATE RECEIVED: Feb 14, 2012 | DATE REPORTED: Mar 02, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	3-BH11 3118467
Benzene	mg/L	0.37	0.0005	<0.0005
Toluene	mg/L	0.002	0.0005	<0.0005
Ethylbenzene	mg/L	0.09	0.0005	<0.0005
Xylenes	mg/L		0.0005	<0.0005
C6 - C10 (F1)	mg/L		0.1	<0.1
C6 - C10 (F1 minus BTEX)	mg/L		0.1	<0.1
Surrogate	Unit	Acceptable Limits		
Toluene-d8 (BTEX)	%	50-150		107

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL)

3118467 The F1 (C6 - C10) fraction is determined by integrating the FID chromatogram from the beginning of the n-C6 peak to the apex of the last n-C10 peak.
The C6 - C10 fraction is calculated from the FID toluene response factor.
Quality control for the calibration follows the guidelines set out in the CCME Contaminated Sites Method for Soils.
The (F1 minus BTEX) has been calculated by subtracting the BTEX concentration from Fraction 1.

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Certificate of Analysis

AGAT WORK ORDER: 12V574477
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons (BTEX/F1-F4) in Water

DATE SAMPLED: Feb 14, 2012 | DATE RECEIVED: Feb 14, 2012 | DATE REPORTED: Mar 02, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	3-BH10 3118464	MV-GWDUP5 3118469
Benzene	mg/L	0.37	0.0005	<0.0005	<0.0005
Toluene	mg/L	0.002	0.0005	<0.0005	<0.0005
Ethylbenzene	mg/L	0.09	0.0005	<0.0005	<0.0005
Xylenes	mg/L		0.0005	<0.0005	<0.0005
C6 - C10 (F1)	mg/L		0.1	<0.1	<0.1
C6 - C10 (F1 minus BTEX)	mg/L		0.1	<0.1	<0.1
C>10 - C16	mg/L		0.1	<0.1	<0.1
C16 - C34	mg/L		0.1	<0.1	<0.1
C>34 - C50	mg/L		0.1	<0.1	<0.1
Surrogate	Unit	Acceptable Limits			
Toluene-d8 (BTEX)	%	50-150		108	99
o-Terphenyl (F2-F4)	%	50-150		124	108

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to CCME (FWAL)

3118464-3118469 The C>6 - C10 fraction is calculated using the toluene response factor.
The C10 - C16 fraction is calculated using the average response factor for nC10, nC16 and nC34.
BTEX has NOT been subtracted from Fraction 1.
Sample is blank corrected.

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AGAT WORK ORDER: 12V574477
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 14, 2012 | DATE RECEIVED: Feb 14, 2012 | DATE REPORTED: Mar 02, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	3-BH10 3118464	3-BH11 3118467	MV-GWDUP5 3118469
Methyl tert-butyl ether (MTBE)	µg/L	34000	1	<1	<1	<1
Styrene	µg/L	720	0.5	<0.5	<0.5	<0.5
VPH	µg/L	1500	100	<100	<100	<100
VH	µg/L	15000	100	<100	<100	<100
Naphthalene	µg/L	10	0.05	<0.05		<0.05
Quinoline	µg/L	34	0.1	<0.1		<0.1
Acenaphthylene	µg/L		0.05	<0.05		<0.05
Acenaphthene	µg/L	60	0.05	<0.05		<0.05
Fluorene	µg/L	120	0.05	<0.05		<0.05
Phenanthrene	µg/L	3	0.05	<0.05		<0.05
Anthracene (Water)	µg/L	1	0.05	<0.05		<0.05
Acridine	µg/L	0.5	0.05	<0.05		<0.05
Fluoranthene	µg/L	2	0.05	<0.05		<0.05
Pyrene	µg/L	0.2	0.02	<0.02		<0.02
Benzo(a)anthracene	µg/L	1	0.05	<0.05		<0.05
Chrysene	µg/L	1	0.05	<0.05		<0.05
Benzo(b)fluoranthene	µg/L		0.05	<0.05		<0.05
Benzo(k)fluoranthene	µg/L		0.05	<0.05		<0.05
Benzo(a)pyrene	µg/L	0.1	0.01	<0.01		<0.01
Indeno(1,2,3-cd)pyrene	µg/L		0.05	<0.05		<0.05
Dibenzo(a,h)anthracene	µg/L		0.05	<0.05		<0.05
Benzo(g,h.i)perylene	µg/L		0.05	<0.05		<0.05
LEPH C10-C19	µg/L	500	100	<100		<100
HEPH C19-C32	µg/L		100	120		120
EPH C10-C19	µg/L	5000	100	<100		<100
EPH C19-C32	µg/L		100	120		120

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Certificate of Analysis

AGAT WORK ORDER: 12V574477
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Petroleum Hydrocarbons in Water

DATE SAMPLED: Feb 14, 2012 | DATE RECEIVED: Feb 14, 2012 | DATE REPORTED: Mar 02, 2012 | SAMPLE TYPE: Water

Surrogate	Unit	Acceptable Limits	3-BH10 3118464	3-BH11 3118467	MV-GWDUP5 3118469
Nitrobenzene - d5	%	50-130	72		81
Quinoline - d7	%	50-130	72		82
2-Fluorobiphenyl	%	50-130	62		71
P-Terphenyl - d14	%	60-130	89		90
Bromofluorobenzene	%	70-130	84	90	91
Dibromofluoromethane	%	70-130	105	116	114
Toluene - d8	%	70-130	101	107	104

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to BC CSR (AW-F) (Van)

3118464 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.

3118467 VPH results have been corrected for BTEX contributions.

3118469 VPH results have been corrected for BTEX contributions.
LEPH & HEPH results have been corrected for PAH contributions.

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AGAT WORK ORDER: 12V574477
PROJECT NO: 2090-1103

CLIENT NAME: FRANZ ENVIRONMENTAL

ATTENTION TO: Amanda Salway

Phenolic Compounds in Water

DATE SAMPLED: Feb 14, 2012 | DATE RECEIVED: Feb 14, 2012 | DATE REPORTED: Mar 02, 2012 | SAMPLE TYPE: Water

Parameter	Unit	G / S	RDL	3-BH29 3118468
Phenol	mg/L		0.002	0.036
4-Nitrophenol	mg/L		0.005	<0.005
m&p-Cresol (3&4-methylphenol)	mg/L		0.0005	<0.0005
o-Cresol (2-methylphenol)	mg/L		0.0005	<0.0005
2-Chlorophenol	mg/L		0.0005	<0.0005
2,4-Dinitrophenol	mg/L		0.005	<0.005
2-Nitrophenol	mg/L		0.005	<0.005
2,4-Dimethylphenol	mg/L		0.0005	<0.0005
2,6-Dichlorophenol	mg/L		0.0001	<0.0001
4-Chloro-3-methylphenol	mg/L		0.0005	<0.0005
2,4-Dichlorophenol	mg/L		0.0001	0.008
4,6-Dinitro-2-methylphenol	mg/L		0.005	0.022
2,3,6-Trichlorophenol	mg/L		0.0005	<0.0005
2,3,4-Trichlorophenol	mg/L		0.0005	<0.0005
2,4,6-Trichlorophenol	mg/L		0.0005	<0.0005
2,4,5-Trichlorophenol	mg/L		0.0005	0.124
2,3,5-Trichlorophenol	mg/L		0.0005	<0.0005
3,4,5-Trichlorophenol	mg/L		0.0005	0.074
2,3,4,6-Tetrachlorophenol	mg/L		0.0005	0.613
2,3,5,6-Tetrachlorophenol	mg/L		0.0005	<0.0005
2,3,4,5-Tetrachlorophenol	mg/L		0.0005	0.189
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	mg/L		0.005	<0.005
Pentachlorophenol	mg/L		0.0005	0.767
Surrogate	**Unit**	**Acceptable Limits**		
2-Fluorophenol	%	50-150		113
2,4,6-Tribromophenol	%	50-150		110

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
3118468 Results relate only to the items tested.

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V574477

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis

RPT Date: Mar 02, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Petroleum Hydrocarbons in Water															
Methyl tert-butyl ether (MTBE)	1	3118213	<1	<1	0.0%	< 1	98%	80%	120%				107%	70%	130%
Styrene	1	3118213	<0.5	<0.5	0.0%	< 0.5	98%	80%	120%				108%	70%	130%
VPH	1	3118213	<100	<100	0.0%	< 100									
Naphthalene	1	W-MS	0.12	0.14	15.0%	< 0.05	100%	80%	120%				121%	50%	130%
Quinoline	1	W-MS	<0.1	<0.1	0.0%	< 0.1	100%	80%	120%				97%	50%	130%
Acenaphthylene	1	W-MS	0.08	0.08	0.0%	< 0.05	100%	80%	120%				83%	50%	130%
Acenaphthene	1	W-MS	0.08	0.08	0.0%	< 0.05	100%	80%	120%				87%	50%	130%
Fluorene	1	W-MS	0.09	0.09	0.0%	< 0.05	99%	80%	120%				96%	50%	130%
Phenanthrene	1	W-MS	0.09	0.10	11.0%	< 0.05	99%	80%	120%				97%	60%	130%
Anthracene (Water)	1	W-MS	0.07	0.07	0.0%	< 0.05	100%	80%	120%				72%	60%	130%
Acridine	1	W-MS	0.08	0.08	0.0%	< 0.05	99%	80%	120%				84%	50%	130%
Fluoranthene	1	W-MS	0.08	0.09	12.0%	< 0.05	100%	80%	120%				90%	60%	130%
Pyrene	1	W-MS	0.09	0.09	0.0%	< 0.02	99%	80%	120%				92%	60%	130%
Benzo(a)anthracene	1	W-MS	0.08	0.08	0.0%	< 0.05	101%	80%	120%				85%	60%	130%
Chrysene	1	W-MS	0.09	0.09	0.0%	< 0.05	101%	80%	120%				93%	60%	130%
Benzo(b)fluoranthene	1	W-MS	0.09	0.10	11.0%	< 0.05	102%	80%	120%				98%	60%	130%
Benzo(k)fluoranthene	1	W-MS	0.09	0.09	0.0%	< 0.05	99%	80%	120%				90%	60%	130%
Benzo(a)pyrene	1	W-MS	0.07	0.07	0.0%	< 0.01	100%	80%	120%				76%	60%	130%
Indeno(1,2,3-cd)pyrene	1	W-MS	0.09	0.09	0.0%	< 0.05	101%	80%	120%				91%	60%	130%
Dibenzo(a,h)anthracene	1	W-MS	0.08	0.09	12.0%	< 0.05	101%	80%	120%				88%	60%	130%
Benzo(g,h.i)perylene	1	W-MS	0.09	0.10	11.0%	< 0.05	101%	80%	120%				97%	60%	130%
Nitrobenzene - d5	1	W-MS	81	78	4.0%		99%	80%	120%				82%	50%	130%
Quinoline - d7	1	W-MS	93	90	3.0%		101%	80%	120%				93%	50%	130%
2-Fluorobiphenyl	1	W-MS	86	84	2.0%		100%	80%	120%				86%	50%	130%
P-Terphenyl - d14	1	W-MS	91	90	1.0%		101%	80%	120%				92%	60%	130%
Bromofluorobenzene	1	3118213	89	86	3.0%		107%	70%	130%				115%	70%	130%
Dibromofluoromethane	1	3118213	109	103	6.0%		100%	70%	130%				108%	70%	130%
Toluene - d8	1	3118213	104	98	6.0%		100%	70%	130%				111%	70%	130%
Petroleum Hydrocarbons (BTEX/F1-F4) in Water															
Benzene	3471	3117404	<0.0005	<0.0005	NA	< 0.0005	100%	80%	120%	96%	80%	120%	98%	70%	130%
Toluene	3471	3117404	<0.0005	<0.0005	NA	< 0.0005	92%	80%	120%	95%	80%	120%	93%	70%	130%
Ethylbenzene	3471	3117404	<0.0005	<0.0005	NA	< 0.0005	94%	80%	120%	96%	80%	120%	95%	70%	130%
Xylenes	3471	3117404	<0.0005	<0.0005	NA	< 0.0005	92%	80%	120%	93%	80%	120%	90%	70%	130%
C6 - C10 (F1)	3471	3117404	<0.1	<0.1	NA	< 0.1	98%	80%	120%	100%	80%	120%	93%	70%	130%
C>10 - C16	32	3118469	<0.1	<0.1	NA	< 0.1	103%	80%	120%	89%	80%	120%	103%	70%	130%
C16 - C34	32	3118469	<0.1	<0.1	NA	< 0.1	103%	80%	120%	96%	80%	120%	104%	70%	130%
Phenolic Compounds in Water															
Phenol	136	3112960	<0.002	<0.002	NA	< 0.002	85%	80%	120%	96%	70%	130%	95%	60%	140%

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Quality Assurance

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V574477

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

Trace Organics Analysis (Continued)

RPT Date: Mar 02, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
4-Nitrophenol	136	3112960	<0.005	<0.005	NA	< 0.005	82%	80%	120%	90%	70%	130%	90%	60%	140%
m&p-Cresol (3&4-methylphenol)	136	3112960	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	95%	60%	140%
o-Cresol (2-methylphenol)	136	3112960	<0.0005	<0.0005	NA	< 0.0005				93%	70%	130%	93%	60%	140%
2-Chlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005	82%	80%	120%	94%	70%	130%	90%	60%	140%
2,4-Dinitrophenol	136	3112960	<0.005	<0.005	NA	< 0.005	89%	80%	120%	93%	70%	130%	94%	60%	140%
2-Nitrophenol	136	3112960	<0.005	<0.005	NA	< 0.005	95%	80%	120%	106%	70%	130%	96%	60%	140%
2,4-Dimethylphenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005	83%	80%	120%	93%	70%	130%	92%	60%	140%
2,6-Dichlorophenol	136	3112960	<0.0001	<0.0001	NA	< 0.0001				94%	70%	130%	89%	60%	140%
4-Chloro-3-methylphenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005	81%	80%	120%	99%	70%	130%	103%	60%	140%
2,4-Dichlorophenol	136	3112960	<0.0001	<0.0001	NA	< 0.0001	85%	80%	120%	91%	70%	130%	86%	60%	140%
4,6-Dinitro-2-methylphenol	136	3112960	<0.005	<0.005	NA	< 0.005	92%	80%	120%	104%	70%	130%	91%	60%	140%
2,3,6-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
2,3,4-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				94%	70%	130%	92%	60%	140%
2,4,6-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005	85%	80%	120%	96%	70%	130%	95%	60%	140%
2,4,5-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				96%	70%	130%	93%	60%	140%
2,3,5-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				98%	70%	130%	94%	60%	140%
3,4,5-Trichlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				95%	70%	130%	94%	60%	140%
2,3,4,6-Tetrachlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				102%	70%	130%	100%	60%	140%
2,3,5,6-Tetrachlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				101%	70%	130%	100%	60%	140%
2,3,4,5-Tetrachlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005				101%	70%	130%	99%	60%	140%
Dinoseb (2-sec-butyl-4, 6-dinitrophenol)	136	3112960	<0.005	<0.005	NA	< 0.005				116%	70%	130%	120%	60%	140%
Pentachlorophenol	136	3112960	<0.0005	<0.0005	NA	< 0.0005	89%	80%	120%	108%	70%	130%	107%	60%	140%

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V574477

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Benzene	TO 0540	EPA SW-846 8260	GC/MS
Toluene	TO 0540	EPA SW-846 8260	GC/MS
Ethylbenzene	TO 0540	EPA SW-846 8260	GC/MS
Xylenes	TO 0540	EPA SW-846 8260	GC/MS
C6 - C10 (F1)	TO 0540	CCME Tier 1 Method	GC/FID
C6 - C10 (F1 minus BTEX)	TO 0540	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO 0540	EPA SW-846 8260	GC/MS
Benzene	TO 0540	EPA SW846 8260	GC/MS
Toluene	TO 0540	EPA SW846 8260	GC/MS
Ethylbenzene	TO 0540	EPA SW846 8260	GC/MS
Xylenes	TO 0540	EPA SW846 8260	GC/MS
C6 - C10 (F1)	TO 0540	CCME Tier 1 Method	GC/FID
C6 - C10 (F1 minus BTEX)	TO 0540	CCME Tier 1 Method	GC/FID
C>10 - C16	TO 0511	CCME Tier 1 Method	GC/FID
C16 - C34	TO 0511	CCME Tier 1 Method	GC/FID
C>34 - C50	TO 0511	CCME Tier 1 Method	GC/FID
Toluene-d8 (BTEX)	TO 0340	EPA SW846 8260	GC/FID
o-Terphenyl (F2-F4)	TO 0511	CCME Tier 1 Method	GC/FID
Methyl tert-butyl ether (MTBE)	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Methyl tert-butyl ether (MTBE)	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
Styrene	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Styrene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
VPH	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
VPH	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS/FID
VH	ORG-180-5130	Modified from BC MOE Lab Manual Section D	GC/MS/FID
Naphthalene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Bromofluorobenzene	ORG-180-5130	modified from BC MOE Lab Manual Section D	GC/MS
Quinoline	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Dibromofluoromethane	ORG-180-5130	modified from BC MOE Lab Manual Section D	GC/MS
Acenaphthylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Toluene - d8	ORG-180-5130	modified from BC MOE Lab Manual Section D	GC/MS
Acenaphthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Fluorene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Phenanthrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Anthracene (Water)	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS

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Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V574477

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Acridine	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Chrysene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(b)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(k)fluoranthene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(a)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Dibenzo(a,h)anthracene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Benzo(g,h.i)perylene	ORG-180-5133	Modified from BC MOE Lab Manual Section D	GC/MS
Nitrobenzene - d5	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
Quinoline - d7	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
2-Fluorobiphenyl	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
P-Terphenyl - d14	ORG-180-5133	modified from BC MOE Lab Manual Section D	GC/MS
LEPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
HEPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
EPH C10-C19	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
Toluene - d8	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
EPH C19-C32	ORG-180-5134	Modified from BC MOE Lab Manual Section D (EPH)	GC/FID
Bromofluorobenzene	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Dibromofluoromethane	ORG-180-5130	Modified from BC MOE Lab Manual Sec D (BTEX, VPH)	GC/MS
Phenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
m&p-Cresol (3&4-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
o-Cresol (2-methylphenol)	TO 1200	EPA SW-846 8321	HPLC/UV
2-Chlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dinitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Nitrophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dimethylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,6-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
4-Chloro-3-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4-Dichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV

AGAT Laboratories

Unit 120, 8600 Glenlyon Parkway
Burnaby, British Columbia
CANADA V5J 0B6
TEL (778)452-4000
FAX (778)452-4074
http://www.agatlabs.com

Method Summary

CLIENT NAME: FRANZ ENVIRONMENTAL

AGAT WORK ORDER: 12V574477

PROJECT NO: 2090-1103

ATTENTION TO: Amanda Salway

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
4,6-Dinitro-2-methylphenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
3,4,5-Trichlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,5,6-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,3,4,5-Tetrachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
Dinoseb (2-sec-butyl-4,6-dinitrophenol)	TO 1200	EPA SW-846 8321	HPLC/UV
Pentachlorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2-Fluorophenol	TO 1200	EPA SW-846 8321	HPLC/UV
2,4,6-Tribromophenol	TO 1200	EPA SW-846 8321	HPLC/UV

AGAT Laboratories

120 - 8600 Glenlyon Parkway
Burnaby, BC,
V5J 0B6
webearth.agatlabs.com
Ph.: 778.452.4000 · Fax: 778.452.7074

Chain of Custody Record

Turnaround Time Required (TAT)

- **Regular TAT** 5 to 7 working days [X]
- **Rush TAT** 24 to 48 hours [ ]
- 48 to 72 hours [ ]

Date Required: _____

Please contact laboratory if Rush is required

Report To:

Company: Franz Environmental
Contact: Amanda Salway
Address: 308-1080 Mainland St
Vancouver, BC V6B 2T4
Phone: 604 632-9941 Fax: 604 632-9942
LSD:
Client Project #: 2090-1103

Report Information

1. Name: Amanda Salway
Email: asalway@franzbc.com
2. Name: Viviane Dubois-Côté
Email: vdcote@franzbc.com

Report Format

- [ ] Single Sample per page
- [X] Multiple Samples per page
- [X] Excel Format Included

Laboratory Use Only

Arrival Temperature: 2°C
AGAT Job Number: 12V574477

Notes:
FEB 14 AM 11:54

Invoice To: Same as above Yes [X] No [ ]

Company:
Contact:
Address:
Phone: Fax:
PO/AFE #:

Regulatory Requirements (Check):

- [ ] **BC CSR – Soil**
  - [ ] Agricultural
  - [ ] Industrial
  - [ ] Urban/Park
  - [ ] Commercial
- [X] **BC CSR – Water**
  - [ ] Drinking Water
  - [X] Aquatic Life
  - [ ] Irrigation
  - [ ] Livestock
- [X] **CCME**
  - [ ] Drinking Water
  - [ ] Residential/Park
  - [ ] Commercial
  - [ ] Industrial
  - [ ] Drinking Water
  - [X] FWAL

Lab ID #	Sample Identification	Sample Matrix	Date/Time Sampled	Comments – Site/Sample Info. Sample Containment	BC CSR BTEX/VPH	BC CSR LEPH/HEPH	BC CSR Metals	VOCs	BC CSR Schedule II	Routine Potability		CCME FL	CCME F2-F4 Chromatograms only			Number of Containers	Preserved (Y/N)	Hazardous (Y/N)	Hold for 1 YEAR
311846	3-BH10	groundwater	Feb 14, 2012 10:00		X	X						X	X			5			
467	3-BH11		Feb 14, 2012 10:00		X							X				3			
468	3-BH29		Feb 14, 2012 11:00									X		X		1			
469	MW-GWDUP5		Feb 14, 2012 [illegible]:00		X	X						X	X			5			

Samples Relinquished by (print name & sign): [signature]	Date: Feb 14, 2012	Samples Received by (Print name & sign): S. Cazens	Date: 14-FEB-12 @ 11:54 AM	Pink Copy - Client Yellow Copy - AGAT White Copy - AGAT
Samples Relinquished by (print name & sign):	Date:	Samples Received by (Print name & sign):	Date:	
Samples Relinquished by (print name & sign):	Date:	Samples Received by (Print name & sign):	Date:	

Page 1 of 1

NO: 000162

AGAT Laboratories

SAMPLE INTEGRITY RECEIPT FORM - BURNABY

Work Order # 12V574477

RECEIVING BASICS:
***Complete CoC as well where required**
Date and Time: 14-FEB-12 @
Courier: _____
Received by: S. Courens
Relinquished by: Amanda
Branch Received From: _____
Company: Franz Env
Consultant: _____
Client left without count verified: No

CoC INFORMATION:
Received (Yes) No Emailed to PM
Completed in full: (Yes) No If NO, why: _____
TURNAROUND TIME: Reg
COC Numbers: 000162

SAMPLE QUANTITIES:
Coolers: _____ Bottles/Jars: 14 Bags: _____

TIME SENSITIVE ISSUES:
Earliest Date Sampled: 14-FEB-12
Microbiology: Test: _____
Hydrocarbons: Test: BTEX
Samples are received >5 days after sampling: Yes (No)

ALREADY EXCEEDED? Yes (No)
Expiry: _____
Expiry: 21-FEB-11

SPECIALTY ISSUES:
Legal Samples: Yes No N/A
International Samples: Yes No
**Proper tape/labels applied: Yes No

Hazardous Samples:
Why hazardous:
_____
Precaution taken:
_____

SAMPLE REQUIREMENTS:
*Complete while logging in by login staff.

Correct bottles used for testing (Yes) No
If No, explain: _____

Correct amount of sample for analysis: (Yes) No
If No, explain: _____

Are all samples labeled correctly: (Yes) No
If No, explain: _____

NON-CONFORMANCES:
3 temperatures of samples* and average of each cooler: (record differing temperatures on the CoC next to sample ID's)
(1) 3 + 2 + 1 = ___°C (2) ___+___+___=___°C (3) ___+___+___=___°C (4) ___+___+___=___°C
*Jars used when available

Additional integrity issues (note here and on CoC next to the sample ID):

1) _____
2) _____
3) _____

Account Project Manager: _____ Have they been notified of the above issues: Yes No
Whom spoken to: _____ Date and Time: _____

ADDITIONAL NOTES:

_____

_____

_____

APPENDIX G

BC WATER RESOURCES ATLAS-
WATER WELL AND AQUIFER INFORMATION

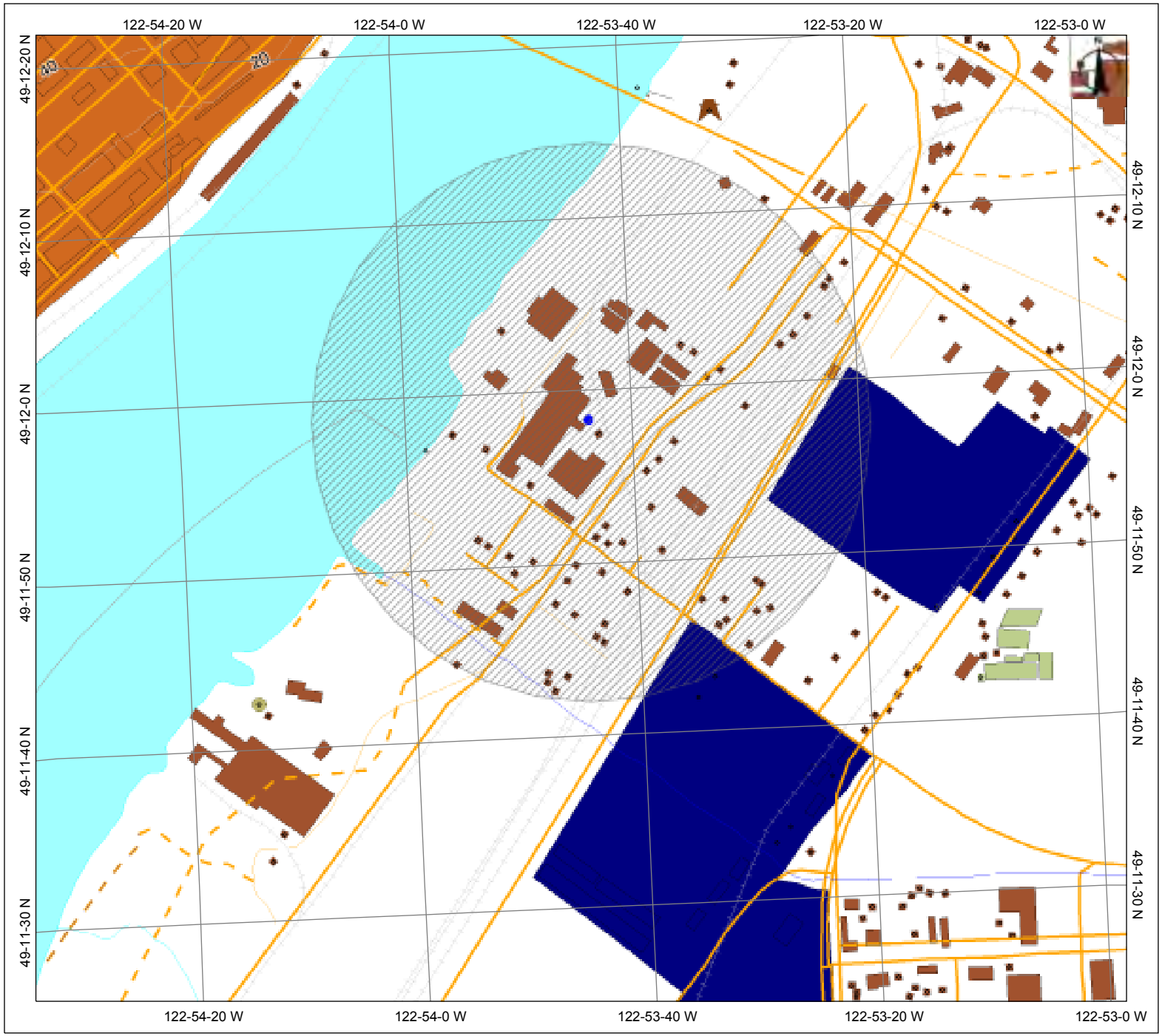
BC Water Resource Atlas-Identify Results- Aquifer

Coordinate Position

BC Albers: 1226602, 470055
Geographic: 49° 12' 7.4" N, 122° 53' 33.6" W
UTM 10N: 507818, 5449926

Aquifer Demand - Colour Themed

Area:	9030560
Perimeter:	25668.905
AQ Tag:	0048
Aquifer Number:	0048
Aquifer Materials:	Sand and Gravel
Aquifer Classification:	IIIB
Demand:	Low
Productivity:	Moderate
Vulnerability:	Moderate
Aquifer Ranking Value:	8
Descriptive Location:	Fraser River Junction
Size KM2:	9
Litho Stratographic Unit:	Fraser River Sediments
Type of Water Use:	Non-Drinking Water
AREA:	9030559.5734375
LEN:	25668.9032718472



BRITISH COLUMBIA

Water Well Search

Legend

Water - Rivers, Creeks, Shorelines, etc. (1:20,000)

0 140 280 m.

Scale: 1:10,000

Copyright/Disclaimer

Datum/Projection: NAD83, Albers Equal Area Conic

Key Map of British Columbia

BRITISH COLUMBIA

Report 1 - Detailed Well Record

Well Tag Number: 25982

Owner: CROWN

Address: TANNERY ROAD R/W AT DYKE ROAD

Area: SURREY

WELL LOCATION:
NEW WESTMINSTER Land District
District Lot: 7 Plan: 51036 Lot:
Township: Section: Range:
Indian Reserve: Meridian: Block:
Quarter:
Island:
BCGS Number (NAD 27): 092G016433 Well: 1

Class of Well:
Subclass of Well:
Orientation of Well:
Status of Well: New
Well Use: Abandoned
Observation Well Number:
Observation Well Status:
Construction Method: Drilled
Diameter: 0.0 inches
Casing drive shoe:
Well Depth: 105 feet
Elevation: 0 feet (ASL)
Final Casing Stick Up: inches
Well Cap Type:
Bedrock Depth: feet
Lithology Info Flag:
File Info Flag:
Sieve Info Flag:
Screen Info Flag:

Site Info Details:
Other Info Flag:
Other Info Details:

Construction Date: 1972-02-24 00:00:00.0

Driller: Rural Well Drillers
Well Identification Plate Number:
Plate Attached By:
Where Plate Attached:

PRODUCTION DATA AT TIME OF DRILLING:
Well Yield: 20 (Driller's Estimate) Gallons per Minute (U.S./Imperial)
Development Method:
Pump Test Info Flag:
Artesian Flow:
Artesian Pressure (ft):
Static Level: 13 feet

WATER QUALITY:
Character:
Colour:
Odour:
Well Disinfected: N
EMS ID:
Water Chemistry Info Flag:
Field Chemistry Info Flag:
Site Info (SEAM):

Water Utility:
Water Supply System Name:
Water Supply System Well Name:

SURFACE SEAL:
Flag:
Material:
Method:
Depth (ft): 0 feet
Thickness (in):
Liner from To: feet

WELL CLOSURE INFORMATION:
Reason For Closure:
Method of Closure:
Closure Sealant Material:
Closure Backfill Material:
Details of Closure:

Screen from	to feet	Type	Slot Size
0	0		0
0	0		0
0	0		0
0	0		0

Casing from	to feet	Diameter	Material	Drive Shoe
0	0	0	null	null

GENERAL REMARKS:
LOT CONTAINING WELL IS NOW IN ROAD RIGHT-OF-WAY

LITHOLOGY INFORMATION:

From	0 to	17 Ft.	Clay silt
From	17 to	21 Ft.	Fine sandy silt
From	21 to	30 Ft.	Silty sand
From	30 to	105 Ft.	Fine to medium grey water-bearing sand

- Return to Main
- Return to Search Options
- Return to Search Criteria

APPENDIX H

APPLICABLE REGULATION DETAILS

APPENDIX H –Applicable Regulations Details

Groundwater – Greater than 10m from Surface Water

1.1.1 *Federal Guidelines*

Environment Canada Federal Interim Groundwater Guidelines (FCSAP /FIGQG)

In May 2010, Environment Canada released Federal Interim Groundwater Quality Guidelines for use at federal contaminated sites. These guidelines are applicable to groundwater at federal sites greater than 10 m from a surface water body. The applicable federal interim guidelines are dependent both upon land use and a number of exposure pathways. The land use is classified as industrial and the applicable exposure pathways at the Site are as follows:

- Migration of contaminant vapours to indoor air and subsequent inhalation by humans;
- Soil organisms direct contact;
- Groundwater transport and exposure to surface water used for wildlife ingestion
- Groundwater transport and exposure to surface water freshwater aquatic life; and
- Groundwater transport and exposure to surface water marine aquatic life

Guidelines for protection of aquatic life cannot be excluded if a surface water body is present within 500 m of the Site. The Fraser River is adjacent to the Site; therefore, guidelines for the protection of aquatic life apply. Both freshwater and marine life were considered as at this location along the Fraser River, a transition zone between freshwater and marine/estuarine waters is present (see Section 3.1.2).

Irrigation water and livestock watering guidelines (CCME 1999, and FIGQG 2010) were ruled out as irrigation and livestock watering (agricultural land use) does not occur at the Site or adjacent properties.

Guidelines for Canadian Drinking Water Quality (Health Canada)

Canadian Drinking Water Quality Guidelines are applicable to groundwater at a federal Site where groundwater is currently being used as potable water source or where groundwater is defined as a potential potable water source by the province.

Currently groundwater is not used as a potable water resource onsite; drinking water is supplied to the Site from offsite sources (detailed in Section 2.4). A water well search of the BC WRA identified one abandoned water well (Well Tag # 25982) present onsite (Lot 3, South of the junction of Dyke Road and Tannery Road). This well was drilled in 1972 to a depth of 31 m bgs, and presumably screened in the water bearing sands identified between 9-31m bgs. Aside from this abandoned well, there are no other water use wells identified within a 500m radius of the Site.

Per Health Canada guidance (*Memorandum: Contaminated Sites Assessment – Aquifer Protection for Future Use, 2010*) and per BC CSR Technical Guidance 6, onsite groundwater will be considered as a potable water resource under a future use scenario unless detailed hydrogeological testing (assessment of aquifer thickness and hydraulic conductivity) is conducted onsite to disprove this assumption.

Detailed evaluation of the underlying aquifer has not yet been conducted at the Site; therefore Health Canada's Guidelines for Canadian Drinking Water Quality (2010) apply to the Site.

The most stringent guideline of the FCSAP or Health Canada guidelines was used to determine compliance or non-compliance.

1.1.2 *Provincial Standards*

BC CSR

Under the BC CSR, generic numerical water standards for groundwater are provided in Schedule 6 Schedule 10, and in Protocol 7, which regulates petroleum hydrocarbons covered in both the BC Hazardous Waste Regulation and BC CSR. The BC CSR designates four water-use categories including irrigation, livestock, drinking water, and aquatic life use. The application of these standards is defined in BC MOE Technical Guidance 6 (BC MOE TG06, 2010). Current and future water uses are to be evaluated separately.

BC MOE TG06 states that irrigation and livestock watering water uses apply to groundwater located at sites with agricultural land use or within a provincial Agricultural Land Reserve (ALR). These water uses also apply if irrigation or livestock watering wells or surface water intakes are within a distance of 500 m from the outer extent of a groundwater contamination source. The areas surrounding the Site are not currently used for agricultural purposes and no ALR is present within 500 m of the Site. Therefore, irrigation water (IW) and livestock water (LW) Standards are not applicable to groundwater on the Site or adjacent offsite properties (provincial jurisdiction).

As mentioned in section 3.1.1, drinking water is currently supplied to the Site and surrounding properties by a municipal distribution system drawing from offsite sources, and active drinking water wells have not been identified within 500m of the Site.

It is of note that BC MOE TG06 requires detailed hydrogeological investigations to be conducted onsite in order to rule out the potential for future drinking water use at the Site. Although potable water supply to the Site and area is expected to remain sourced from the municipality, and the underlying aquifer is currently listed as non-potable, yield observations during the 2011 SSI, and mean historical hydraulic conductivities identified in wells screened in the sand and sand/silt layers onsite (range: 1.0×10^{-5} m/s to 4.6×10^{-5} m/s, per Next Environmental Inc., 1998e-h) suggest that future drinking water use per BC MOE TG06 cannot be ruled out on the Site.

Detailed hydrological testing (measurement of seasonal saturated thickness in the unconfined shallow aquifer, hydraulic conductivity testing in wells screened in the underlying silt layer, and

determination of the presence of an underlying confining unit) is needed to rule out future drinking water use in the area. Therefore, the site specific factor for "protection of drinking water" is applicable to the Site boundary and adjacent lands with regards to protection of groundwater for potential future drinking water use.

BC MOE TDG06 states that aquatic life water use applies to all groundwater located within 500 m of a surface water body containing aquatic life. The Fraser River is adjacent to the Site; therefore, aquatic life water use Standards apply at the Site boundary and adjacent lands. According to BC MOE Q&A #17 (Standards – Water Use Evaluation), the salinity in the portion of the Fraser River between the Patullo Bridge and the George Massey Tunnel (south arm) and the western tip of Mitchell Island (north arm) may vary. The document states that salinity in an area can be confirmed through an onsite sampling program; referencing salinity analysis from a credible scientific authority; or, where salinity has not been determined, using the more conservative of the freshwater or marine/estuarine Standards. As FRANZ did not determine salinity at the Site during the SSI, we used the more conservative of the AW (freshwater or marine life) Standards to assess groundwater at the Site boundary and adjacent lands.

As a measure of conservatism, the most stringent of the DW and AW (freshwater and marine life) Standards was applied to groundwater samples.

Groundwater - Surface Water Transition Zone

1.1.3 *Federal Guidelines*

CCME Canadian Water Quality Guidelines for the Protection of Aquatic Life

For groundwater located within 10 m of a water body and within the groundwater-surface water transition zone, the CCME Canadian Water Quality Guidelines for the Protection of Aquatic Life were applied.

Therefore, the most stringent of the freshwater or marine life (see rationale provided in section 3.1.2) guideline was applied to selected samples.

1.1.4 *Provincial Guidelines*

BC Water Quality Guidelines

BC MOE (Environmental Protection Division) has produced the BC Approved Water Quality Guidelines as a means of evaluating surface water quality data. As approved guidelines have only been developed for select substances, in the absence of approved guidelines, BC Working Water Quality Guidelines were applied to parameters. BC MOE designates a number of water use categories; guidelines vary depending on the water use. The water use categories applicable to the Site area:

- Aquatic life (freshwater)
- Aquatic life (marine)

As a measure of conservatism, the most stringent guideline from each of the above pathways was applied to selected samples.

Soil

1.1.5 *Federal Guidelines*

CCME

The CCME Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health Summary Tables contain numerical soil quality criteria specific to land use. The land use for the Site is Industrial.

The CCME Canada-wide Standard (CWS) for Petroleum Hydrocarbons (PHC) in Soil Technical Supplement (January 2008) provides Tier 1 levels for PHCs (F1-F4 fractions), relative to exposure pathways, soil type and depth. At the Site, both fine-grained and coarse-grained soils are present, and samples have been collected from surface (0 – 3 m) and subsoil (>3 m) strata. Therefore, the appropriate Guideline was determined on a sample by sample basis, depending on collection depth and approximate grain size.

In 2010, CCME updated PAH soil quality guidelines so that both human health (carcinogenic effects) and environmental health exposure pathway (non-carcinogenic effects) must be considered when assessing soil quality (CCME, 2010). The following guidelines for PAHs are applicable to the Site:

- Direct Contact, based on an incremental cancer risk of one in 100,000 (human health);
- Protection of Potable Water (human health, Index of Additive Cancer Risk); and
- Environmental Health (non-carcinogenic effects).

1.1.6 *Provincial Standards*

BC CSR

The soil standards applicable to the Site (and immediately adjacent properties) are the Industrial Land Use (IL) soil standards. For each land use category, generic and matrix numerical soil standards have been developed.

The applicable soil standards are provided in:

- CSR Generic Numerical Soil Standards, Schedule 4
- CSR Matrix Numerical Soil Standards, Schedule 5; and
- CSR Generic Numerical Soil and Water Standards, Schedule 10.

Matrix numerical soil standards are developed to take site specific factors into account to determine the risk posed by a specific substance. The following “site-specific factors” are applicable at the site:

- Human health:

    - Groundwater used for drinking water
- Environmental protection:
    - Toxicity to soil invertebrates and plants
    - Groundwater flow to surface water used by aquatic life freshwater/marine

The lowest value of these four site-specific factors (i.e. the most stringent standard) was compared with the analytical data.

To consider a potential future scenario where impacted soil could be potentially excavated and relocated during site remediation, onsite and offsite soil results were also compared to BC CSR Schedule 7 Standards Triggering Contaminated Soil Relocation Agreements, and specifically against Standards for soil relocation to non-agricultural land.

Ditch Surficial Soil

During previous investigation on the Site, surface soil samples were collected from drainage ditches near the southwestern Site boundary (adjacent to Tannery Road and Dyke Road). These drainage ditches capture surface water runoff and have been determined during previous investigations onsite "to carry runoff westward to an offsite pump station" (SRK Robinson, 1994b). Based on observations made during the 2011 SSI, water in the identified ditches is expected be seasonally present and is therefore unlikely to support aquatic life. Drainage ditches at the Site are maintained and occasionally dredged by the City of Surrey, per guidance provided in the BC MOE Q&A Standards- Question #21, these ditches have been classified in the current investigation as terrestrial habitat. Based on the abovementioned information surficial soil samples collected from these ditches have been characterized according to federal (CCME IL) and provincial (BC CSR IL) Soil Quality Guidelines and Standards described in the preceding sections.

Soil Vapour

Soil vapour investigation was not conducted onsite as part of the 2011 SSI. Vapour is not a regulated media on sites under federal jurisdiction. To evaluate the vapour inhalation pathway in the subsequent risk assessment, concentrations of volatile substances in indoor air will be modelled from measured soil and groundwater concentrations onsite.

APPENDIX G

SELECT SITE VISIT PHOTOGRAPHS

Photo 1. Front view of the Site from Dyke Road, facing northwest.

Photo 2. View of south end of the Site, near the wood chipper, facing northwest.

Photo 3. Maintenance and storage room near the wood chipper in Parcel A.

Photo 4. Smallwood Sawmill's wood chipping and conveyer system.

Photo 5. Wood chip loading area, facing north.

Photo 6. View of Smallwood's wood chipping operation, facing west.

Photo 7. Former kiln (left) and a wooden storage shed (right) located in Parcel B, facing east.

Photo 8. Decommissioned above ground storage tank (AST) in the wooden storage shed. Formerly contained diesel emissions fluid.

Photo 9. Historical stains observed on the wooden floor of the AST storage shed.

Photo 10. An open diesel fuel jerry can in the AST storage shed.

Photo 11. Unlabelled drums located to the east of the distribution warehouse.

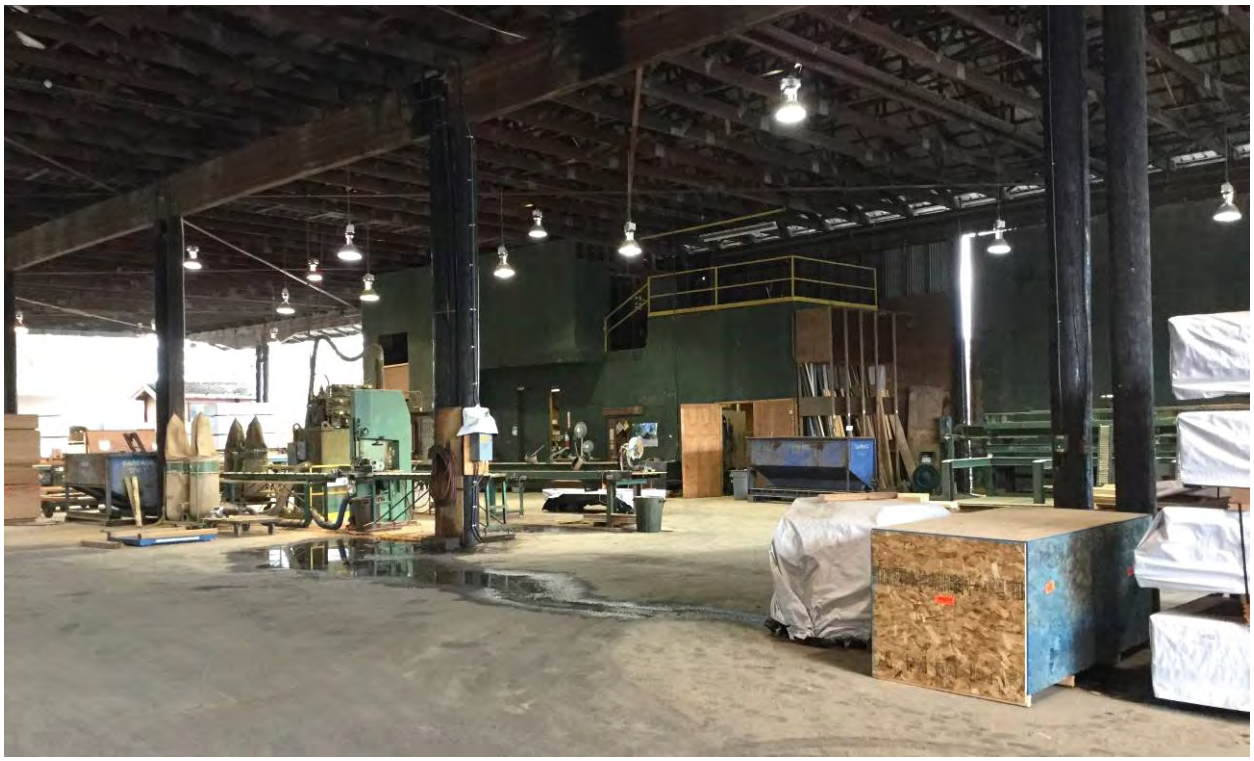


Photo 12. Panabode's wood processing operation in the distribution warehouse, facing southeast.

Photo 13. Electric powered machinery used by Panabode (a division of Mill & Timber).

Photo 14. Panabode's boiler room, consisting of an air compressor.

Photo 15. A second AST located at the south end of the distribution warehouse. This tank is double-walled and stores diesel fuel for Panabode's forklift. The tank has only been present for 1 year.

Photo 16. View of the northwest side of the warehouse building and evidence of ground repairs.

Photo 17. Diesel engine oil containers observed at the north end of the distribution warehouse.

Photo 18. Storage lot in the northeast northern portion of the Site, facing north-northwest.

Photo 19. Newly added Panabode office building along northwest edge of the Site, facing north.

Photo 20. Propane tanks used for heating of the Panabode office building.

Photo 21. Adjacent Property: Kwest Lumber located at the properties east/southeast of the Site.

Photo 22. Adjacent Property: Canadian National Railway located east of the Site.

Photo 23. Adjacent Property: Apex Terminals, located on the property southwest of the Site.

DRAFT

PHASE I ENVIRONMENTAL SITE ASSESSMENT UPDATE
10880 DYKE ROAD, SURREY, BC

Prepared for:
Mill & Timber Products Ltd.

Prepared by:
Envirochem Services Inc.

March 2019

ENVIROCHEM
SERVICES INC.

PHASE I ENVIRONMENTAL SITE ASSESSMENT UPDATE
10880 DYKE ROAD, SURREY, BC

Prepared for:

Mill & Timber Products Ltd.
12745 116th Avenue
Surrey, BC V3V 7H9

Prepared by:

Envirochem Services Inc.
#206 - 267 Esplanade West
North Vancouver, BC V7M 1A5
www.envirochem.com

March 3, 2019

EXECUTIVE SUMMARY

Mill & Timber Products Ltd. (Mill & Timber), the Client, retained Envirochem Services Inc. (Envirochem) to conduct a Phase I Environmental Site Assessment (ESA) Update as part of an environmental exit assessment for the property at 10880 Dyke Road in Surrey, BC (the Site or the Smallwood site). Until recently, the Site was leased by Mill & Timber from the Vancouver Fraser Port Authority (VFPA, dba the Port of Vancouver). An environmental exit assessment was required as part of the Client's exit from the Site on November 30, 2018; the Site had been occupied by Smallwood Sawmill Ltd. and Panabode Homes International, both of which are part of the Aspen Planers Group of Companies, which also owns Mill & Timber.

The Site is located in an industrial neighbourhood, historically and currently dominated by the lumber and wood processing industry. The Site has a complex and lengthy history dating back approximately to 1949, when a sawmill or shingle mill began to operate on the property. This mill was operated by various companies over the years (in different configurations), with Lindal Cedar Homes (Lindal) being the most recent operator prior to Mill & Timber. Lindal operated the sawmill from the mid-1970s to late 1998, though it has been indicated that the sawmill was not operating at the end of Lindal's ownership.

Mill & Timber's tenure on the Site is understood as follows:

- **December 22, 1998** – Mill & Timber purchased the assets for the sawmill on the southern portion of the Site from Lindal. The portion occupied by the sawmill represents less than approximately 1/3 of the overall Site; the remainder of the Site continued to be occupied by Lindal, who remained a separate corporate entity entirely independent of Mill & Timber.
- **March 31, 2000** – Mill & Timber began operating the sawmill and continued running it until early 2004, before transitioning operations to fingerjoint production and wood chipping, and then exclusively to wood chipping in 2008.
- **July 31, 2011** – Smallwood (Mill & Timber) purchased the remaining assets at the Site from Lindal Cedar Homes.
- **September 1, 2012** – Mill & Timber began to lease the Site (for the first time) directly from the Port of Vancouver. Until this time, Lindal had maintained its status as the property leaseholder and primary tenant occupying the majority of the Site.

Equipment historically present at the Site, for the latest configuration of the sawmill, included a dry kiln, a green chain, conveyors, oil storage shed, distribution warehouse, several small

structures, and other sawmill infrastructure. Specific details about the previous configurations of the sawmill or shingle mill are unknown. Shingle mill / sawmill / lumber storage and distribution / related activities were the primary activities occurring at the Site prior to Mill & Timber's occupancy (1949-1998), while sawmilling (2000-2004) and wood chipping (2004-2018) were the primary activities conducted by Mill & Timber during their occupancy.

Based on the review of various records, including previous environmental reports, as well as observations made during a site reconnaissance and from interviews, it is known that impacted soil and groundwater is present at the Site. Envirochem has identified three areas of potential environmental concern (APECs) and two areas of environmental concern (AECs) at the Site, as shown in tables below. Other APECs historically identified at the Site and included in previous environmental reports have been ruled out based on evidence presented in this report.

Areas of Potential Environmental Concern

Envirochem APEC ID	Former Franz APEC ID	Description	Location	PCOCs	Potentially Affected Media
ESI-APEC-1	APEC #22	Former Sawmill Operations (including kiln)	Parcels A & B	BTEX, VPH/F1, LEPH/HEPH (F2/F3), PAHs, and Metals	Soil, vapour and groundwater
ESI-APEC-2	APEC #23	Former Green Chain	Parcels A & B	LEPH/HEPH (F2/F3), PAHs, and Metals	Soil and groundwater
ESI-APEC-3	APEC #30	Imported Fill Materials	Entire Site	LEPH/HEPH (F2/F3), PAHs, and Metals	Soil and groundwater

Areas of Environmental Concern

Envirochem APEC ID	Former Franz APEC ID	Description	Location	PCOCs	Potentially Affected Media
ESI-AEC-1	APEC #34	Offsite Historical Activities or Spills and Suspect Former Storage Tank	Southeast of distribution warehouse (Parcel C)	BTEX, VPH/F1, LEPH/HEPH (F2/F3), PAHs, and Metals	Soil, vapour and groundwater
ESI-AEC-2	APEC #21	Former Oil Storage Shed / Former Single-Walled Diesel Storage Tank	Near Site Entrance (Parcel A)	BTEX, VPH/F1, LEPH/HEPH (F2/F3), PAHs, and Metals	Soil, vapour and groundwater

Additional environmental assessment is being completed under separate cover as part of Mill & Timber's exit from the Site. This includes a groundwater sampling program and a more detailed data review of the previous investigations at the identified APECs and AECs.

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LIST OF ACRONYMS

AECs	Areas of Environmental Concern
APECs	Areas of Potential Environmental Concern
AST	Above Ground Storage Tank
CSA	Canadian Standards Association
COCs	Contaminants of Concern
CSR	Contaminated Sites Regulation
EMA	Environmental Management Act
ESA	Environmental Site Assessment
GIC	Geographic Information Centre
LEPH	Light Extractable Petroleum Hydrocarbons
LTSA	Land Title and Survey Authority of British Columbia
Ministry / MOECCS	BC Ministry of Environment & Climate Change Strategy
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
PCOCs	Potential Contaminants of Concern
PID	Parcel Identifier
SSI	Supplemental Site Investigation
UST	Underground Storage Tank
VFPA	Vancouver Fraser Port Authority
VPH	Volatile Petroleum Hydrocarbons

1.0 INTRODUCTION

1.1 BACKGROUND

Mill & Timber Products Ltd. (Mill & Timber), the Client, retained Envirochem Services Inc. (Envirochem) to conduct a Phase I Environmental Site Assessment (ESA) Update as part of an environmental exit assessment for the property at 10880 Dyke Road in Surrey, BC (the Site or the Smallwood site). Until recently, the Site was leased by Mill & Timber from the Vancouver Fraser Port Authority (VFPA, dba the Port of Vancouver). An environmental exit assessment was required as part of the Client's exit from the Site on November 30, 2018; the Site had been occupied by Smallwood Sawmill Ltd. and Panabode Homes International, both of which are part of the Aspen Planers Group of Companies, which also owns Mill & Timber, the Client.

The Site is located in an industrial neighbourhood, historically and currently dominated by the lumber and wood processing industry. A site location plan is presented as Figure 1 **(Appendix A)** while a site layout plan is presented as Figure 2A for the most recent site configuration (ending November 2018) and as Figure 2B for the site configuration from 2001, which was shortly after Mill & Timber began to operate Smallwood Sawmill **(Appendix A)**.

1.2 OBJECTIVES

The objective of this Phase I ESA Update is understood as follows:

- To conduct an environmental desktop assessment as part of the environmental exit assessment required by the VFPA for the termination of Mill & Timber's tenancy at the Site.

It is assumed that the Phase I ESA Update is not intended for a submission to, or review by, the BC Ministry of Environment and Climate Change Strategy (MOECCS).

1.3 SCOPE OF WORK

The scope of work for this Phase I ESA Update included, but was not limited to, the following:

- Reviewing the following historical documents:
  - Select aerial photographs
  - City directories
  - Historical environmental reports

- Reviewing the following government records:
  - Provincial Site Registry and reports
  - Provincial water well database
  - Provincial aquifer database
  - Surficial geology maps
- Conducting a site reconnaissance;
- Conducting interviews with persons knowledgeable about the Site; and
- Evaluating information and preparing this Phase I ESA report.

This Phase I ESA is considered to be an update to the previous Phase I ESA completed by Hemmera Envirochem Inc. in 2006 (no relation to Envirochem Services Inc.), and focuses on Mill & Timber's use of the Site since their initial occupation on December 22, 1998, while restating the history of the Site and surrounding area prior to their occupation to form the complete understanding of the site history. Dates and information may differ between this report and the previous Phase I ESA, but based on the level of research that went into this update, it is our professional opinion that the information presented in this report is accurate based on the totality of the evidence reviewed.

1.4 GENERAL ASSESSMENT FRAMEWORK

This Phase I ESA was completed in general conformance with the following guidelines and legislation (as amended):

- CSA-Z768-01 Guideline, Phase I ESA, Canadian Standards Association (CSA);
- Checklist for Reviewing a Preliminary Site Investigation, BC MOECCS Technical Guidance on Contaminated Sites 10;
- *Environmental Management Act* (EMA), BC MOECCS; and,
- Contaminated Sites Regulation (CSR), BC MOECCS.

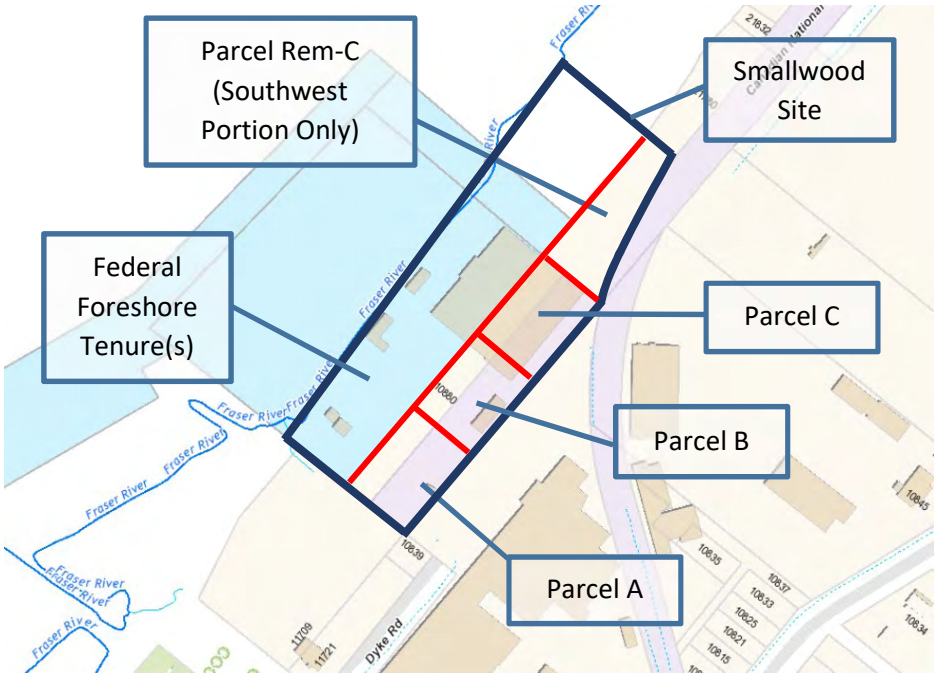
A Phase I ESA is conducted on a best-efforts basis and seeks to identify areas of potential environmental concern (APECs) and associated potential contaminants-of-concern (PCOCs) on a site. Based on the findings of a Phase I ESA, an intrusive investigation through a Phase II ESA may be necessitated. Envirochem notes that intrusive investigation work has been completed at the Site historically, resulting in the identification of areas of environmental concern (AECs) and known contaminants-of-concern (COCs), as described in this report.

2.0 SITE DESCRIPTION

2.1 GENERAL SITE DETAILS

General site details are provided in **Table 2-1** below. General property information is included in **Appendix B**.

Table 2-1: Summary of General Site Details

Item	Source Notes	Description
Address	-	10880 Dyke Road, Surrey, BC
	1	
PIDs and Legal Descriptions	1, 2, 3, 6	**Parcel A:** 012-878-260; Parcel "A" (Plan in Absolute Fees Parcel Book 12 Folio 75 No. 4114F) District Lot 6 Group 2 New Westminster District
		Parcel B: 012-878-278; Parcel "B" (Plan in Absolute Fees Parcel Book 12 Folio 75 No. 4113F) District Lot 6 Group 2 New Westminster District
		Parcel C: 012-878-286; Parcel "C" (Plan in Absolute Fees Parcel Book 12 Folio 93 No. 4222F) District Lot 6 Group 2 New Westminster District
		Parcel Rem-C: 012-878-308; Parcel "C" (Plan in Absolute Fees Parcel Book 12 Folio 78 No. 4128F) District Lot 5 Group 2 New Westminster District Except: Parcel One (Statutory Right of Way Plan NWP88158)
Latitude	1, 4	49° 12' 4.4" N (approximate centre of Site)
Longitude		122° 53' 47.2" W (approximate centre of Site)

Item	Source Notes	Description
Current Zoning	1	Light Impact Industrial 1 (IL-1)
Official Community Plan	5	Industrial
General Site Description	1, 4	The Site is largely rectangular, consisting of multiple property lots/parcels. The total combined lot size is approximately 44,144 m^2 (land lots and water lot) according to the lease, with access from Dyke Road to the south. Until November 30, 2018, the Site consisted of various small storage buildings/sheds, a wood chipper with an electrically-powered conveyor system, trailer offices, and an open space warehouse and distribution building (hereafter referred to as the distribution warehouse). Both paved and unpaved ground surfaces exist on-Site. The Site was occupied by Smallwood Sawmill Ltd. and Panabode Homes International, a wood chipping operation and a cedar homes manufacturing business. Businesses operating in the surrounding area mostly consist of lumber storage and distribution and trucking / logistics businesses.

Table 2-1 - Source Notes:

1. City of Surrey Mapping Online System, COSMOS, accessed online 2018-10-19: http://cosmos.surrey.ca/external/
2. BC Assessment, accessed online 2018-10-19: https://www.bcassessment.ca/
3. Land Title and Survey Authority (LTSA) of British Columbia, 2018-10-19.
4. Google Earth, accessed 2018-10-19.
5. City of Surrey Official Community Plan, Bylaw No. 18020, October 20, 2014.
6. Specific details for the federal foreshore tenures were limited in the mapping sources reviewed and thus specific details about those tenures is not presented in this Phase I ESA.

2.2 PHYSICAL SITE DETAILS

The site physical setting is summarized in **Table 2-2** below.

Table 2-2: Summary of Site Physical Setting

Item	Source Notes	Description
Topography	1, 2, 3	According to contour maps obtained from iMapBC, COSMOS and Toporama, the Site is situated at approximately 4 m above sea level, with the surrounding area being relatively flat and a steady increase of elevation up to 80 m above sea level towards the southeast. As groundwater is heavily influenced by the topographic gradient and the location of nearby surface water bodies, the inferred groundwater flow direction is to the northwest towards the adjacent Fraser River. See Contour Maps in **Appendix C**.
Surface Cover	4	Approximately 20% of the Site was covered by equipment and buildings such as a wood chipper and conveyor system, storage sheds, trailer offices, and a distribution warehouse. Another 50% (approx.) of the Site was covered by impervious paved surfaces while the remaining 30% (approx.) of the Site was covered by unpaved surfaces including an unused gravel area in the northern portion of the Site, some unpaved area in the southwest part of the Site, and vegetated areas along the perimeter of the Site. The Site is now vacant with only the distribution warehouse and dry kiln structures remaining.
Water Bodies	1, 3	The Fraser River is located immediately adjacent to the Site to the northwest and Manson Canal is located approximately 380 m southwest of the Site and discharges into the Fraser River. As defined in Ministry Technical Guidance Document No. 15, the Fraser River is considered to be both freshwater and marine water habitat between the Pattullo Bridge and the George Massey Tunnel, so both aquatic water uses must be considered in all site assessments.
Aquifers	1, 5	The Provincial Groundwater Observation Well Network (PGOWN) and iMapBC were queried for aquifer details in the general area of the Site. Results indicate that an aquifer (0048, the Fraser River Junction aquifer) underlies the Site. The Aquifer Classification work sheet obtained from the PGOWN describes the aquifer as a predominantly unconfined fluvial or glaciofluvial aquifer, though confined at times. The geologic formation of the aquifer is Fraser River sediments. The Aquifer Classification Worksheet reported the geometric mean depth of the water table is 2.7 m. The aquifer identified at the Site is listed as having low demand, moderate productivity, and moderate vulnerability. An aquifer map and the associated aquifer classification worksheet are included in **Appendix C**.

Item	Source Notes	Description
Provincial Water Well Database	1	iMapBC was queried for potential water wells within a 0.5 km radius of the Site, which identified one (1) water well within the queried area. This recorded water well is located approximately 120 m southeast of the Site, and thus is not at risk from site activities as it is hydraulically up-gradient. The water wells map produced in iMapBC is included in **Appendix C**.
Surficial Geology	6	A review of the Surficial Geology Map of the New Westminster region obtained from the Geological Survey of Canada (Map 1484A) indicated the general area of the Site consists of bog, swamp and shallow lake deposits, particularly organic peat up to 14 m thick. However, previous environmental reports described the shallow stratigraphy at the Site as follows: • 1 to 3 m of variable fill (e.g. sand, gravel, some wood waste at specific locations) • 1.2 to 3.7 m of native silt followed by variable sand and silt layers • 0.3 m of peat, observed at depths between 7 m and 8 m. Surficial geology information for the Site is included in **Appendix C**.

Table 2-2 - Source Notes:

1. Ministry of Environment and Climate Change Strategy. iMapBC, accessed online 2018-10-19: https://maps.gov.bc.ca/ess/hm/imap4m/
2. City of Surrey Mapping Online System, COSMOS, accessed online 2018-10-19: http://cosmos.surrey.ca/external/
3. Natural Resources Canada, Toporama Mapping Tool, accessed online 2018-10-19: http://atlas.gc.ca/toporama/en/index.html
4. Google Earth, accessed 2018-10-19.
5. Province of British Columbia, Provincial Groundwater Observation Well Network – Groundwater Level Data Interactive Map, accessed online 2018-10-19: https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/groundwater-wells/aquifers/groundwater-observation-well-network/groundwater-level-data-interactive-map
6. Geological Survey of Canada, Department of Energy, Mines and Resources, Surficial Geology New Westminster, 1980.

3.0 DOCUMENTATION

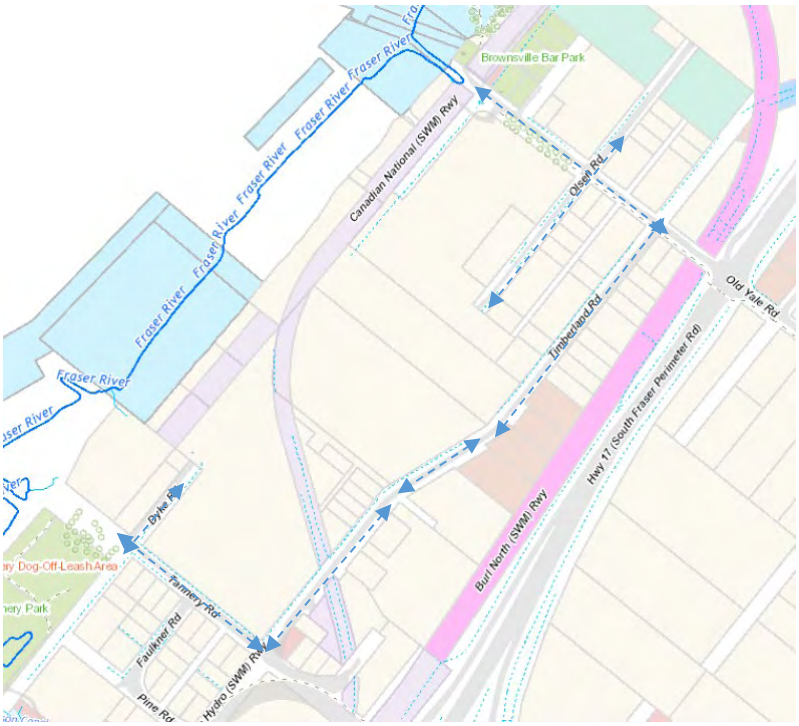
3.1 RECORDS REVIEW

Envirochem personnel reviewed available information from various sources (government and otherwise) to obtain details of the historical land use for the Site and surrounding properties (see Figure 3 in **Appendix A**). Some documents relevant to the records are included in the appendices as indicated in **Table 3-1** below.

Table 3-1: Summary of Site Records Review

Item	Source Notes	Description
Aerial Photos	1, 2, 4	Aerial photographs were obtained from the University of British Columbia Geographic Information Centre (GIC) and from COSMOS for 1938, 1949, 1951, 1954, 1963, 1969, 1974, 1982, 1986, 1991, 1997, and 2002, and every year between 2004 and 2018. These aerial photographs have been included in **Appendix D**. A summary of the pertinent details of the aerial photograph review is provided below. • **1938:** The Site appears to be developed with multiple small structures, which are likely to be small dwellings as part of a fishing village that stretches to the north and south along the Fraser River. Surrounding areas appear to be occupied by farmland to the east/northeast and woodland to the southeast. • **1949:** The fishing village that stretched along the Fraser River is no longer visible, and a commercial/industrial sized building and possibly the first signs of a sawmill or shingle mill appear in Parcel A of the Site. The rest of the Site and its surrounding area appear to be overgrown by vegetation and unoccupied, with possible remnants of the former fishing village, which may have been impacted by the Fraser River flood of 1948. • **1951**: No significant changes are observed at the Site. Surrounding areas to the south appear to be developed for industrial/commercial operations. • **1954**: Two buildings appear to have been constructed in Parcel A at the Site and the sawmill or shingle mill appears to be active. No significant changes are observed in the surrounding area, which mostly remains undeveloped. • **1963 to 1969**: The Site appears to be utilized for commercial/industrial operation(s), with multiple developed small structures different than present today. One of these structures is suspected to be an above ground storage tank (AST) based on its size; it is located along the south edge of the Site near the lot line between Parcel B and Parcel C (near where the distribution warehouse is located today). The surrounding areas to the east have been developed into an industrial operation with multiple large buildings, and the areas to the northeast appear to be going through development as well.

Item	Source Notes	Description
		• **1974**: The Site appears to be split into two operations, each with large warehouse buildings, separated by a stretch of vegetation. The operation within Parcel Rem-C seems to be part of the sawmill facility further northeast of the Site while the remainder of the Site continues to operate as its own sawmill or shingle mill. The current distribution warehouse is first evident in this year. *Note:* Aerial photos from circa 1974 and prior suggest infilling occurred during/before these periods, particularly near the foreshore. • **1982 to 2002**: Parcel Rem-C of the Site appears to be vacant with former sawmill infrastructure for the neighbouring mill decommissioned by 1986. This land appears to be prepared for development but remains vacant for most of this period. Sawmill operations appear to be ongoing at the Site, with the sawmill configuration roughly matching that which was present when Mill & Timber began to occupy the Site in 1998 (i.e. green chain, kiln, and oil storage shed are all present). Surrounding industrial properties also appear to be used for lumber storage, distribution, and related. Tannery Park appears to have been constructed southwest of the Site in 2001/02. • **2004 to 2007:** No significant changes are observed at the Site, but an apparent propane AST is visible (rounded tank) near the south corner of the distribution warehouse. The surrounding property use is similar to before. • **2008 to 2012:** Demolition of the sawmill is evident during this period, with removal of the green chain from Parcel A in 2007/2008, the oil storage shed in 2010, and the remainder of the sawmill in 2012. Only wood chipping operations appear to be occurring on-Site during this period. Parcel Rem-C appears to be used as storage space for trucks and containers. • **2013 to 2018:** The previously referenced propane tank is no longer visible after 2016. A storage shed is observed on the south side of the former kiln starting in 2017, appearing to have moved from a location west of the distribution warehouse along the upper bank of the Fraser River. Parcel Rem-C continues to be used for truck and trailer parking until late 2017 and is then vacant. No other significant changes are observed.
City Directories	3, 4	City directories from 1959, 1966, 1970, 1975, 1980, 1985, 1990, 1994, 1997, and 2001 were reviewed for information concerning the Site and surrounding area (city directories are on file with Envirochem but not appended to this report, as they were previously included in the Hemmera Phase I found in **Appendix F**). The approximate area shown in the figure below, which was selected based on the topography of the area surrounding the Site, was submitted for a City of Surrey directory search from InfoAction at the Vancouver Public Library. The history of occupancy at the Site and adjacent lands, based on the directories searched is summarized below.

Item	Source Notes	Description
		 The City of Surrey directory search included the following streets: • Dyke Road (10838 - 10880) • Tannery Road (11709 - 11849) • Old Yale Road (11918 - 12003) • Timberland Road (10790 - 10985) • Olsen Road (10942 - 11014) **Site:** The Site appeared in the city directories from at least 1990 to 2001 as being occupied by Lindal Cedar Homes Ltd., a manufacturer of pre-fabricated wooden homes. Lindal was listed as a tenant on Tannery Road starting in 1975, but no specific address was assigned to Lindal at that time. It is suspected these previous references were to the current Site location. Supreme Shingles and Brownlee Industries (kiln drying) were listed at 10862 Dyke Road in 1959; it is suspected that this address also refers to the current Site location. **North/Northeast of the Site:** Properties located to the north and northeast consisted mainly of residential dwellings from 1959 to 1975, with the Brownsville Sawmill listed at 11918 Old Yale Road for this duration; Bridgeview Cedar Ltd. also occupied part of that property from 1966 to 1975. The area underwent further transformation into commercial/industrial operations in 1990 with auto body repair shops listed at 11987, 11999 and 12003 Old Yale Road.

Item	Source Notes	Description
		Several other automotive related operations were listed between 1994 and 2001, including truck servicing and repair shops. As well, the Brownsville Pub and RV Park (previously the Fraser River RV Park) was listed in the city directories from 1990 to 2001 at 11940 Old Yale Road. **East of the Site:** Properties located to the east of the Site along Timberland Road consisted of residential buildings from 1959 to 1970. From 1975 to 1985, several commercial and industrial operations including lumber and concrete businesses were listed, and in 1997 the area was taken over by auto wreckers, used auto parts shops, and trucking companies until at least 2001. **South of the Site:** Properties along Tannery Road were listed as primarily residential units between 1959 and 1970. City directories show the area to be occupied by lumber companies and trucking operations from 1975 to 2001, namely Imperial Lumber (1980 to 1997) located at 11715 Tannery Road and APEX Terminals Inc. (2001 to present). **West of the Site:** As the Site is situated immediately adjacent to the Fraser River, there are no properties located to the west of the Site. **Overall:** The Site currently borders APEX Terminals, a trucking and lumber export business, to the south; Kwest Lumber, a lumber storage and distribution business, to the southeast; RDM Enterprises Ltd., a demolition contractor, to the east; and vacant lands to the northeast. The properties currently occupied by APEX Terminals and Kwest Lumber were formerly occupied by Imperial Lumber from approximately 1980 to 2001, while RDM Enterprises Ltd. was formerly occupied by multiple other lumber operations. The property to the northeast of the Site (the former Brownsville Sawmill) has been vacant since the 1980s, except for brief periods when it was used by Lyndowana Lumber for a log salvaging operation (never listed in city directories). None of the other businesses identified in the city directories pose an environmental risk to the Site based on the types of activities that occurred and their proximity to the Site (either distance or location cross-gradient).
Land Use Plan	3	Land use plans from 1964 were reviewed. The plans show Brown Lee Mills occupying Parcels A, B, and C on-Site, with Imperial Lumber located immediately adjacent to the east. Brownsville Mills is observed to occupy the northern portion of Parcel Rem-C, and additional parcels to the northeast of the Site.
Site Registry Search	2, 5	An area wide iMapBC site registry search was conducted on October 19, 2018 for a 500 m search radius from the Site. Registered properties are not necessarily contaminated properties but are deemed to have the potential for being contaminated and/or may have been remediated.

Item	Source Notes	Description
		The search identified thirteen (13) registered properties, of which the Site was not included. These properties are shown on a map in **Appendix E**. It appears that most of the surrounding registered properties pose a low environmental risk to the Site due to various factors including, but not limited to, their location (hydraulically cross-gradient), their distance from the Site, and/or the lack of identified contamination on those properties. The only possible exception is the property to the northeast of the Site located at 11940 Old Yale Road (Site ID: 6114). This property is currently occupied by the Brownsville Pub and RV Park, and has been since at least 1990 according to city directories. The detailed site registry report indicates that a diesel spill occurred at RV Site 44 in 1999. The spill was reported to have impacted an area of approximately 56 m^2 of sand/soil. Required actions were issued by the BC MoE such that the area was to be excavated 1.5 ft (0.46 m) below the surface, and the excavated soil was to be sent for disposal. The next entry on the detailed report was updated in 2006, and the status of this record is displayed as "not assigned". Based on the limited size of this spill and the fact that it was excavated (and suggested to have been disposed of offsite), it does not appear to pose an environmental concern to the Site.
Current Title Search	6	An online search of the Land Title and Survey Authority of BC (LTSA) database conducted on July 31, 2018 identifies the Site to be federally owned. The registered owner was listed as Her Majesty the Queen in Right of Canada as Represented by the Minister of Transport c/o Vancouver Fraser Port Authority. The previous owner for each parcel was listed as the Canadian National Railway Company, from 1989 to 2011 for Parcels A, B, C and from 1991 to 2011 for Parcel Rem-C. Details are included in **Appendix B** along with the general property information.
Fire Insurance Records	-	Envirochem searched for fire insurance records for the area of the Site in the City of Surrey but was not able to find any relevant records online or through a search at UBC.

Table 3-1 - Source Notes:

1. Department of Geography. University of British Columbia. Aerial Photographs for Surrey, BC. Obtained September 2018.
2. Google Earth, accessed 2018-10-19.
3. Hemmera Envirochem Inc., 2006, Phase I ESA, Brownsville Site, Surrey, BC
4. City of Surrey Mapping Online System, COSMOS, accessed online 2018-10-19: http://cosmos.surrey.ca/external/
5. BC Online Site Registry. Accessed online 2018-10-19: https://www.bconline.gov/bc.ca/
6. Land Title and Survey Authority (LTSA) of British Columbia, 2018-10-19.

3.2 PREVIOUS ENVIRONMENTAL REPORTS

It is our understanding that the baseline environmental conditions for the Site and surrounding area are outlined in twenty-six (26) documents on file with the VFPA. These documents were provided by the VFPA to the Client, who provided them to Envirochem for review. Envirochem conducted a preliminary review of all 26 documents and has identified that only three (3) of the documents pertain directly to the Site, as listed below (and appended in **Appendix F**):

- Document #21: Phase I Environmental Site Assessment, Brownsville Site, Surrey, BC, September 2006, prepared by Hemmera Envirochem Inc. for Fraser River Port Authority.
- Document #23: Draft Supplemental Phase 2 Environmental Site Assessment, Brownsville Site, Surrey, BC, December 2008, prepared by Hemmera for Fraser River Port Authority.
- Document #1: Supplemental Site Investigation, Surrey Brownsville Site (Lots 2,3,4,5,6), Surrey, BC, June 2013, prepared by Franz Environmental for Vancouver Fraser Port Authority.

In addition, Envirochem found two former environmental audit reports on-file with Mill & Timber and internally which inform about potential sources of impacts on-Site. The first environmental audit was conducted in August 1996 by the Environmental Services division of Public Works & Government Services Canada (PWGSC) for the purposes of a land swap between CN Rail and the federal Crown (the Crown was acquiring the Site). The second audit was conducted by Envirochem for Mill & Timber in June 1999, prior to them beginning operating the sawmill at the Site. Based on the language in the audit documents, it did not appear that Mill & Timber was a site occupant in 1996, and in 1999 it appeared that they were doing their due diligence in relation to their potential future operation of the sawmill.

The results of these audits, and a summary of the three previous environmental reports, are presented below to provide an indication of site conditions understood prior to and during the early days of Mill & Timber's occupation of the Site.

3.2.1 1996 Environmental Audit

In August 1996, the Environmental Services Unit (ESU) of Public Works & Government Services Canada (PWGSC) conducted an environmental audit of the Site prior to acquiring title of the lands referred to as the 'Brownsville Site'. The following key observations that are considered relevant to the Site were made by Mr. Ron Neumeyer of PWGSC at that time:

- The oil storage shed was present at that time. Based on the description, it appears to be the same oil storage shed observed later, in 1999, by Envirochem (see section below).

Drums of oil and diesel were stored on horizontal cradles inside the shed and were stored upright around the exterior of the shed. Oil-stained wooden floor timbers were observed inside the shed and oil staining was observed on the bare soil near the entrance to the shed (in the southeast section of "Parcel A").

- The oil storage shed was stated as having been in use for at least eight years (c. 1988). Although there are some comments made regarding impacts on "Parcel A", such as "insignificant pockets of hydrocarbon contamination", Mr. Neumeyer made a recommendation for that building to be replaced with a more modern building that would not be prone to oil potentially seeping through the floor and into the ground and to "remediate the underlying soils".
- Discussion on underground storage tanks (USTs) suggests that USTs onsite were not practical (due to the shallow water table) and no evidence of such underground installations existed. There were also no above ground storage tanks (ASTs) within the upland parcels (i.e. Parcels A, B, C, and Rem-C) at that time, but no indication was given as to whether there were any ASTs within the Federal foreshore tenure areas between the upland parcels and the Fraser River, as that area was not specifically part of the audit.
- An area of surficial oil staining was also observed on open ground southwest of several sand piles, which are shown in a figure as being on Parcel Rem-C, northeast of the distribution warehouse building. The exact location of this staining was not referenced, but it is not believed that this refers to any of the areas where hydrocarbon impacts have been previously identified on-Site.

3.2.2 1999 Environmental Audit

In June 1999, Envirochem performed a baseline environmental audit for Mill & Timber for the portion of the Site occupied by the sawmill; the remainder of the Site was still occupied by Lindal Cedar Homes at that time, but the assets to the sawmill appear to have been purchased by Mill & Timber on December 22, 1998, per the corporate files of Mill & Timber. The following references were made in Envirochem's audit document:

- A single-wall gravity-fed diesel storage tank was located adjacent to the oil storage shed near the Site entrance. This tank was used to service Lindal's diesel transport truck. A spill containment tray was present beneath the tank but was indicated as being too small to capture a full tank of fuel if the tank was punctured; oily water was observed in the containment tray as well. There were also signs of corrosion on the outer shell of the tank. Vehicle impact protection was absent but recommended by Envirochem.

- The aforementioned oil storage shed belonged to Lindal as well, but was stated as not being in use by site representatives, likely based on the sawmill not operating at that time. Nine drums of oil were stored horizontally on a steel cradle inside the shed, and each drum was equipped with a manual valve with drips collected by a common drip tray. Full drums of chain oil were also observed outside the shed with no containment. The ground near the oil storage shed showed signs of surficial hydrocarbon staining; it was not indicated if this staining was due to oil storage or the diesel storage tank.
- Drums of other petroleum products were observed on-Site at that time, including AF46 hydraulic oil in drums near the shore, on the west side of the green chain, on the log deck, and on the first floor of the mill. Exact locations were not referenced.

3.2.3 2006 Phase I Environmental Site Assessment (Hemmera)

In September 2006, Hemmera completed a Phase I ESA of the Brownsville Site in Surrey, BC, for the Fraser River Port Authority. The 2006 study area included the entire Site, as well as parcels 7 and 8 located northeast of the Site. The Phase I ESA included the review of available information through government records, water well and aquifer database queries, directory search results, land ownership history, and a site reconnaissance visit. The 2006 Phase I ESA found 7 APECs, namely:

- Oil storage shed with extensive staining on the inside and outside of the shed, as well as unprotected drums stored inside and outside the shed.
    - Commentary by Hemmera indicated that Smallwood Sawmill (Mill & Timber) did some soil clean-up outside the shed in 2000, though staining still remained in 2006, suggesting the full extent had not been cleaned up in 2000.
- Historic sawmill operations located on-Site (including Parcels A, B, C, and Rem-C). Specific sawmill activities/locations of infrastructure were not identified.
- Oil stains and odours related to the former green chain.
- Historic fill of unknown origin across the Site (top 2 to 3 m).
- Former pentachlorophenol (PCP) spraying tank located off-site near Parcel 7.
- Adjacent up-gradient historical industrial activities and Brownsville rail spur adjacent to Parcels A, B, C, Rem-C, 7, and 8.
- Brownsville Pub and RV Park diesel spill.

The locations of the above APECs, if relevant, are illustrated in **Figure 4,** appended. It should be noted that the area of study for Hemmera's Phase I ESA extended beyond the Site, and the APECs that are not of concern to the Site, as assessed by Envirochem, are not illustrated.

3.2.4 2008 Supplemental Phase 2 Environmental Site Assessment (Hemmera)

Based on the findings of their 2006 Phase I ESA (summarized above), Hemmera proceeded to conduct a Phase II ESA of the 2006 study area (Parcels A, B, C, Rem-C, 7, and 8) in 2007, and completed a Supplemental Phase II ESA in 2008, also for the Fraser River Port Authority.

Hemmera advanced five boreholes / monitoring wells in 2006 (identified as MW06-1, MW06-2, MW06-3, MW06-04 and MW06-05) to investigate the identified APECs. MW06-1 was installed to investigate the oil storage shed located at the southwest end of the Site, near the entrance. MW06-2 was used to explore the potential impacts from adjacent up-gradient historical industrial activities and the Brownsville rail spur, located to the east of the Site. MW06-3 was installed near the former kiln in Parcel B, while MW06-4 and MW06-5 were installed off-site.

As a result of the Phase II ESA, one AEC, labelled AEC-1, was identified in the area surrounding MW06-2, located to the east of the distribution warehouse.

In 2007 and 2008, Hemmera performed follow-up Phase II ESA work which consisted of one borehole and seven additional monitoring wells (MW07-6, MW07-7, MW07-8, MW07-9, MW08-10, MW08-11, BH08-12 and MW08-13) to support the lateral and vertical delineation of soil and groundwater contamination previously identified at AEC-1.

Hemmera's Phase II ESA results showed the following:

- Soil and groundwater at AEC-1 was contaminated by light extractable petroleum hydrocarbons (LEPH), benzene, and volatile petroleum hydrocarbons (VPH).
- VPH impacts in soil were identified at MW06-2, MW07-6 and BH08-12, with concentrations as high as 3,000 µg/g (applicable standard is 200 µg/g).
- VPHw impacts in groundwater were identified at MW06-2, MW07-6 and MW07-7, with concentrations as high as 3,600 µg/L (applicable standard is 1,500 µg/L), though they appeared to be attenuating naturally with time from 2006 to 2008.
- LEPHw impacts in groundwater were identified at MW06-2, MW07-6, MW07-7 and MW07-8, with concentrations as high as 3,000 µg/L (applicable standard is 500 µg/L).

The following conclusions were made by Hemmera, based on the sample results:

- VPH-impacted soil is present within the upper sand unit and the lower silt unit at AEC-1.

- Approximately 400 m^3 of impacted soil (IL+) is present within AEC-1.
- VPHw and LEPHw impacted groundwater is present at AEC-1, though concentrations appeared to be attenuating, especially for VPHw.
- The source of these hydrocarbon impacts could not be identified. Based on laboratory chromatograms, Hemmera inferred that the VPH impacts could be associated with an aromatic petroleum hydrocarbon solvent such as Varsol, but the details to support this are unsubstantiated within the report. There is no knowledge of solvent use in that portion of the Site or on the adjacent property to the southeast.

A remedial options evaluation was completed outlining potential strategies for remediating or monitoring the contamination but no further work was carried out by Hemmera.

3.2.5 2013 Supplemental Site Investigation (Franz Environmental)

In 2011, Franz Environmental conducted a data gap investigation and provided a plan to further investigate soil and groundwater at the Site for the VFPA. In 2012, Franz conducted a supplemental site investigation (SSI) to summarize all historical and current site information to support subsequent remedial options and/or management strategies. Only Lot 6 of the studied area is understood to be relevant to the Site.

In this SSI, Franz reviewed previous environmental investigation reports and compiled all historical data, digitized historical soil and groundwater analytical results and locations, produced an updated list of APECs and PCOCs for the studied areas, and identified apparent data gaps and conducted field work to fill in those gaps.

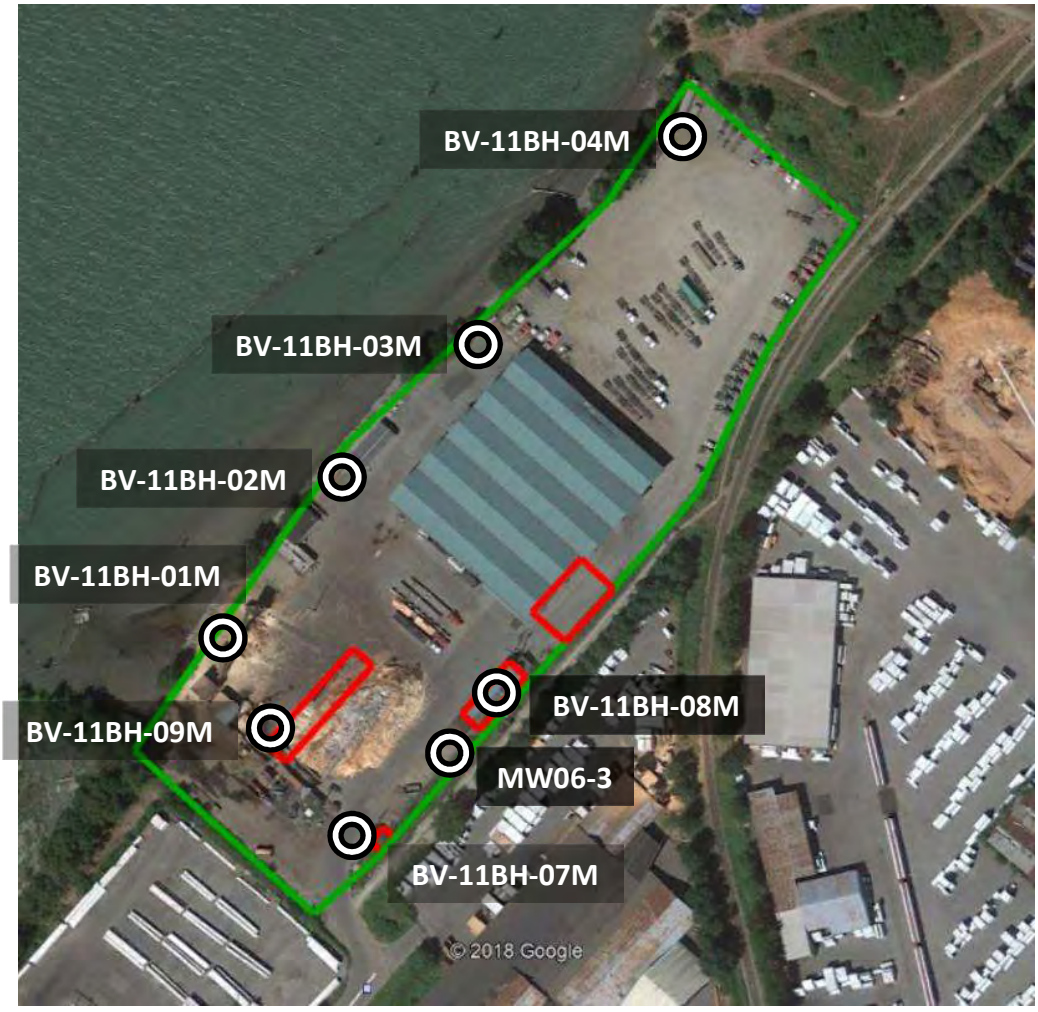
Franz's work indicated the following:

- Localized arsenic exceedances in soil relative to federal arsenic guidelines and provincial standards at two Lot 6 foreshore locations (BV-11BH-01M and BV-11BH-05M).
- VPH exceedances in soil at APEC 34 (AEC-1 in Hemmera's reports), exceeding provincial standards. The estimated volume of the impacted material increased to 600 m^3.
- LEPHw exceedances in groundwater relative to provincial standards at the oil storage shed (APEC 21: BV-11BH-07M), with an estimated plume size of 100 m^2, and at APEC 34 (MW06-2 and MW07-7), with a plume size of approximately 200 m^2.
- PAHs exceedances in groundwater at APEC 34 (MW06-2 and MW07-7) for an approximate 200 m^2 of impacted area. Acridine, anthracene, benzo[a]anthracene, benzo[a]pyrene, fluoranthene, fluorene, phenanthrene and pyrene exceeded federal

groundwater guidelines, while benzo[a]pyrene, phenanthrene, and pyrene also exceeded the provincial standards.

- Metals exceedances in groundwater across the Site, relative to federal and provincial criteria, which were attributed to fill material and proximity to the Fraser River, not due to specific historical on-site activities.

Following completion of the SSI report in 2013, it does not appear the Franz Environmental had any further involvement at the Site. The included figures below show the approximate locations of the boreholes and monitoring wells advanced by Hemmera and Franz for their investigations.



Borehole and Monitoring Well Locations (Google Earth, 2017 Aerial Photo)

Borehole and Monitoring Well Locations at Distribution Warehouse
(Google Earth, 2017 Aerial Photo)

4.0 SITE RECONNAISSANCE AND INTERVIEW

On September 11th, 2018, Mr. Bryan Tsai, EIT, of Envirochem Services Inc. visited the Site to assess the current usage of the Site and support determining the likelihood of potential impacts to the environment related to Mill & Timber's operation. A follow-up site visit was conducted by Mr. Steven Hait, EIT, on November 26, 2018, after Mill & Timber had removed the majority of infrastructure from the Site, to assess the condition as it was being turned over to the Port of Vancouver. Select photographs taken during site reconnaissance are included in **Appendix G**. The following sections summarize the key observations of the site reconnaissance.

4.1 SITE RECONNAISSANCE OBSERVATIONS

On September 11, 2018, the Site consisted of industrial wood chipping equipment, piles of lumber, several storage sheds, an open space warehouse, trailer offices, and a vacant gravel lot. Unpaved surfaces were observed at the southwest end of the Site, adjacent to the wood chipping equipment and the space formerly occupied by the sawmill green chain, as well as the entirety of the vacant lot to the northeast (Parcel Rem-C). Vegetation (mostly blackberry bushes) was observed around the perimeter of the Site. Paved surfaces were present for the rest of the Site, with several areas showing signs of previous ground repairs.

On November 26, 2018, the Site was vacant, with the exception of the distribution warehouse building (the main structure), the former dry kiln (the second structure), two concrete vaults that formerly contained transformers, and some waste collection bins. A significant amount of surface water pooling was observed on this day due to stormy conditions (46.4 mm of rain on that date at Vancouver International Airport according to Environment Canada). A localized sheen was observed on surface water runoff near the former sawmill location.

4.1.1 Tenants / Operations

On September 11, 2018, the Site appeared to be occupied by Smallwood Sawmill Ltd. and Panabode Homes International, with a vacant gravel lot in Parcel Rem-C. Envirochem notes that Smallwood and Panabode are both subsidiaries of Mill & Timber, the lessee of the Site at the time of the site reconnaissance. Smallwood occupied Parcels A and B, and the southwest portion of the foreshore lease, while Panabode occupied a portion of the distribution warehouse in Parcels B and C, and the central portion of the foreshore lease. The remainder of the distribution warehouse was generally empty, except for minor storage of supplies. These observations are depicted on the Site Layout Plan in **Figure 2A**, appended.

The area occupied by Smallwood consisted of industrial equipment including a wood chipper with a conveyor system to a hopper, as well as a trailer office, storage sheds, lumber storage piles, and a large lumber stockpile awaiting the wood chipper. Unpaved gravel and muddy surfaces were observed at the southwest end of the Site, adjacent to the wood chipper, and along the Fraser River. Sawdust was observed to cover the ground surface around the wood chipper and the former green chain location. During the site visit, multiple trucks were observed to be unloading lumber into a central lumber pile, where an excavator fed the lumber into the wood chipper. The wood chips were transported on the conveyer system to a hopper, where they were loaded into trucks for shipping.

Panabode occupied the southwest portion of the distribution warehouse and were observed to be operating a small carpentry operation, converting lumber into wooden pieces for construction. All machinery on-Site appeared to be electric-powered, with some equipment connected to a compressed air unit. A diesel forklift for loading and unloading of freight was observed.

4.1.2 Storage Tanks

On September 11, 2018, two above ground storage tanks (AST) were observed on-Site. The first one was located in a portable wooden storage shed adjacent to the former kiln, which is now an open shed used for lumber storage and parking for personal vehicles. Upon inspection, this AST appeared to be decommissioned; hoses and pumps were observed to be disconnected from the AST. While stains were observed on the wood panel floor of the storage shed, none were observed outside the shed. The former contents of this tank were believed to be fuel oil, based on a label affixed to the tank.

The second AST was found in the distribution warehouse, adjacent to Panabode's wood processing operation. This AST appeared to be in use at the time of the site reconnaissance. No stains or odour were observed around the AST, which we believed to contain diesel fuel for the forklift used by Panabode, and potentially for other equipment used on-Site.

Apart from these tanks, two smaller propane tanks were observed adjacent to the Panabode office trailer, likely as the source of heating for that portable structure.

No signs of underground storage tanks (USTs) were observed during the site visit. By November 26, 2018, all aboveground storage tanks had been removed from the Site.

4.1.3 Chemical Storage

Other chemicals were observed on-Site on September 11, 2018, including four unlabelled 40-gallon drums next to an electrical shed in Parcel B (one of which was dented and damaged), as well as several sealed pails of diesel engine oil stored on a wooden pallet in the distribution warehouse. Small quantities of maintenance chemicals such as lubricants and engine oil were also observed in the equipment shed near the wood chipper. All of these items were removed by Mill & Timber as part of their exit from the Site.

4.1.4 Hazardous Building Materials Assessment

A hazardous building materials assessment (HBMA) was not completed as part of this Phase I ESA Update. Envirochem had recently completed one for Mill & Timber for this property, in a report dated July 4, 2018, and it was not considered necessary to update it. The HBMA was completed by Mr. Darryl Stowe, P.Chem., ABI, of Envirochem on April 19, 2018, and focused on potential risks associated with materials used in the construction of the main structure and the second structure. The findings of this HBMA are available under separate cover, but have not been considered as directly relevant to this Phase I ESA Update.

4.2 ADJACENT SITE RECONNAISSANCE OBSERVATIONS

The Site was observed to be situated in a lumber and automotive-based industrial/commercial neighbourhood. Currently, the Canadian National Railway separates the Site from the adjacent properties to the east, which are occupied by Kwest Lumber, a lumber supplier, and RDM Enterprises Ltd., a demolition contractor. Kwest Lumber also occupies the property directly southeast of the Site on the west side of the CN Railway. The property to the northeast of the Site appeared to be vacant and overgrown with vegetation. The Fraser River borders the Site to the west/northwest, while Apex Terminals, a lumber exporter, is located to the southwest.

4.3 INTERVIEWS

An interview was conducted via phone calls, emails, and in-person meetings with Mr. Jim Henderson of Mill & Timber in October and November 2018. The following details were understood during this extended interview process:

- Lindal Cedar Homes was the operator of the sawmill from the 1970s to early 2000s, to the best of his knowledge (though other evidence has established that Mill & Timber acquired the assets to the sawmill on December 22, 1998).
- Mill & Timber began making sub-lease payments to Lindal and Apex Terminals in 2003, for the portion of the Site occupied by the sawmill.
- Mill & Timber ceased with sub-lease payments to Apex Terminals in May 2006 but began to pay property taxes to the City of Surrey at that time, on behalf of Lindal. Sub-lease payments to Lindal continued until lease payments to VFPA began in 2012.
- Mill & Timber's operations on-Site consisted of sawmilling (March 2000-April 2004), fingerjoint production (May 2004-Feb. 2008), and wood chipping (May 2004 to Nov. 2018). Mill & Timber moved a portion of their Panabode Homes operation to the Site in 2017, which consisted of minor carpentry work in the former distribution warehouse.
- Mr. Henderson had no knowledge of the 1996 or 1999 environmental audits as they pre-date his employment with Mill & Timber, and he could not identify any records showing Mill & Timber as occupants of the Site prior to 2003, when the sub-lease payments began (though other evidence later established that Mill & Timber acquired the assets to the sawmill on December 22, 1998).
- Mr. Henderson was responsible for the demolition of the sawmill that was once present on-Site. This includes the green chain removed in 2007/2008, the former dry kiln (though the structure remains present), and the other sawmill infrastructure removed in full by 2012. According to Mr. Henderson, hydraulic power units for the sawmill were drained and decommissioned as well.
- The wood chipping activities (ending November 30, 2018) were conducted using an electric conveyor system. The only hydraulic unit present in the wood chipping operation was for the wood chip storage bin.
- Mr. Henderson indicated that a diesel storage tank was historically present at the dry kiln, for the fuelling of on-site equipment, but was removed during demolition. Currently (before November 30, 2018), a double-walled, diesel storage tank is present at the distribution warehouse and is used to fuel the Panabode forklift. This tank originated at their Panabode site in Richmond and was brought over to the Site in 2017. No tanks were previously present at this location as there was no diesel equipment on-Site.
- A decommissioned diesel exhaust fluid storage tank is currently stored in a wooden building adjacent to the dry kiln (removed prior to November 30, 2018). This tank and building were historically located along the top of the riverbank directly west of the west corner of the distribution warehouse (near monitoring well BV-11BH-02M).

They were decommissioned and relocated in early 2017 to make room for the Panabode office trailers at that location.

- Mr. Henderson was not familiar with any other aboveground storage tanks that may have been present on-Site historically.
- Mr. Henderson is not aware of any underground petroleum storage tanks on-Site now or historically.
- Mr. Henderson was not aware of any historical excavation work at the Site.
- Propane and electricity are the heating and power sources for the office trailers on-Site and the kiln was heated by natural gas, to the best of his knowledge.

5.0 DISCUSSION

5.1 SITE HISTORY

Based on the information reviewed, including previous environmental reports, the following site history has been compiled by Envirochem, and to the best of our knowledge, is factual:

- **1938 to 1949:** The Site appeared to be occupied by a small fishing village with a portion of the Site transitioning to industrial use towards the end of this period. The Site was potentially affected by the Fraser River flood of 1948. By 1949, a sawmill or shingle mill (different from the most recent layout) appeared to be in operation in the southwest part of the Site with the remainder suspected as being abandoned (due to flooding).
- **1949 to 1975:** The Site operated as a shingle mill and/or sawmill, identified as Supreme Shingles and Brownlee Industries, with references to a kiln as early as 1959. The northeast vacated portion of the Site remained overgrown until the late 1950s when it began to be used as part of the sawmill / lumber storage area for Brownsville Mills further northeast. The Site was known as Brown Lee Mills starting around 1963. In 1963, there is suspected to have been an AST in the primary area (AEC-1) where hydrocarbon contamination was later found in soil and groundwater at the Site (aerial photo evidence), and the current distribution warehouse was built between 1970 and 1974. The area of the Site occupied by this suspect AST did not appear to be paved at that time. There was no evidence of this suspect AST in the 1974 aerial photographs once the distribution warehouse had been erected and the latest configuration of the sawmill had been constructed.
- **1975 to 1997**: The sawmill transitioned from Brown Lee Mills around the early 1980s, or earlier, depending on the source. Lindal Cedar Homes (Lindal) became the operator of the sawmill sometime between 1968 and 1986; city directories first referred to Lindal in 1975 but lease agreements show their presence on a portion of the Site in 1968 and the remainder of the Site in 1986. Lindal's focus was on the manufacturing of pre-fabricated cedar homes. By 1982, Brownsville Mills to the northeast had been decommissioned and the northeast portion of the Site was vacant for most of the 1980s, until it began to be used for lumber storage by Lindal in the late 1980s. It was at this point that area officially became part of the Site. Imperial Lumber continued to be the predominant land occupant in the surrounding area, as they had been since at least 1959 and as would continue until their foreclosure in the late 1990s.

An environmental audit was conducted by Public Works and Government Services Canada (PWGSC) at the Site in 1996, while it was only occupied by Lindal, showing evidence of likely hydrocarbon-contamination in soil surrounding the oil storage shed at the lease entrance.

- **1997 to 2004**: Mill & Timber began to take an interest in the Site in 1997, as evidenced by their incorporation of the company Smallwood Sawmill Ltd. in March 1997. On December 22, 1998, Mill & Timber purchased the assets to the sawmill from Lindal, though the sawmill was not operating at that time. Lindal remained a separate corporate entity not related to Mill & Timber. In June 1999, Mill & Timber had Envirochem complete a baseline environmental audit on their behalf to understand the potential environmental liabilities associated with the sawmill assets they had purchased. The Site was still leased by Lindal from CN Rail at that time, but Mill & Timber was planning on restarting operation of the sawmill at the Site, which had been dormant for several years as it had no longer been cost-effective for Lindal to operate. This environmental audit identified the presence of a gravity-fed diesel AST adjacent to the oil storage shed near the Site entrance (near Dyke Road). Similar apparent oil staining was visibly present on the ground surface in front of the shed, as it had when the 1996 environmental audit was conducted before Mill & Timber's occupancy began.

  Records indicate that Mill & Timber began operating the sawmill on March 31, 2000, but that they did not begin sub-leasing the Site officially from Lindal and from Apex Terminals until 2003 (based on sub-lease payment records).

  In the surrounding area to the southwest, Tannery Park was constructed on another contaminated site (former Imperial Lumber property) around 2001, but the distance between the Site and this property is such that cross-contamination is highly unlikely. At another offsite property (Brownsville RV Park), a small diesel spill was documented in 1999, but this property is at least 80 m from the Site as well.

  2004 to 2006: Mill & Timber only operated the sawmill for a brief period (less than four years) (but not the kiln) and shut it down in April 2004 before transitioning to fingerjoint production and wood chipping in May 2004. Lindal continued to operate on-Site, with their operations focused within and surrounding the distribution warehouse northeast of the sawmill.

  A propane AST belonging to Lindal was located south of the distribution warehouse, slightly south of where hydrocarbon contamination was eventually identified, though this contamination is not practically related to this propane tank. This tank appeared in aerial photographs between 2001 and 2016. The site to the northeast (the former

Brownsville Mills site) was used for raw lumber storage by Lyndowana Lumber during this period, before being vacated once again, as continues to be the case today.

- **2006 to 2012:** Mill & Timber continued wood chipping operations on-Site throughout this period and Lindal continued to utilize the distribution warehouse. Mill & Timber stopped sub-lease payments to Apex Terminals in May 2006 but continued to make sub-lease payments to Lindal throughout this period. Environmental baseline investigations were completed during this period by other environmental consultants (Hemmera and Franz) for the Fraser River Port Authority and Vancouver Fraser Port Authority. Impacts to soil and groundwater were identified south of the southwest corner of the distribution warehouse and near the lease entrance where the oil storage shed was present until around 2010. Mill & Timber decommissioned the majority of the sawmill during this period, starting with the green chain in 2007/08, the oil storage shed in 2010, and the remainder of the sawmill in 2012. CN Rail sold the Site to Her Majesty the Queen in Right of Canada as Represented by the Minister of Transport in 2011. Management of the Site became the responsibility of the VFPA (dba Port of Vancouver) at that time. Smallwood Sawmill also entered into a purchase agreement with Lindal Cedar homes in July 2011 to purchase the remaining assets at the Site.
- **2012 to 2018:** Mill & Timber began to officially lease the Site for the first time from the Port of Vancouver in September 2012; it is believed that Lindal exited the Site just prior to this time. Wood chipping operations have continued on-Site until Mill & Timber's planned exit. Another Mill & Timber division, Panabode Homes International, added small portable office structures to the Site in early 2017 and began to use a small portion of the distribution warehouse for their operations, which also happens to be the manufacturing of pre-fabricated cedar homes (same as Lindal). In 2017, a diesel AST was also added at the distribution warehouse to fuel Panabode's forklift, downgradient of where impacted soil and groundwater is known to be present. As of November 30, 2018, the Site has become vacant and Mill & Timber has exited their lease with VFPA.

Key aspects of this history are presented in more detail below.

5.2 SITE USE PRIOR TO MILL & TIMBER

The history of the Site is well documented in Section 5.1, but points of interest that warrant additional discussion are as follows:

- The Site had approximately 50 years of industrial history as a shingle mill and sawmill prior to Mill & Timber's occupancy of the Site. It was known as Supreme Shingles initially

(presumably from 1949 to 1963), as Brown Lee Mills or Brownlee Industries (from 1963 to the 1970s), and the Lindal Sawmill (from the 1970s to 1998). This mill had several different configurations, which are not all well understood today, but generally utilized the same area of the Site as was utilized for the Lindal / Smallwood sawmill.

- The sawmill was a cedar mill, by all accounts, throughout its history, and treatment of the wood with antisapstain chemicals was not completed on-Site, nor was treated wood stored on-site, to the best of our knowledge. Any references to treated wood in historical documents appear to pertain to the adjacent site to the northeast (the former Brownsville Mill that shut down by 1982).

5.3 SITE USE BY MILL & TIMBER

Until November 30, 2018, the Site was occupied by two tenants, Smallwood Sawmill Ltd. and Panabode Homes International. Mill & Timber has been the leaseholder of the Site since September 1, 2012, but began to occupy a portion of the Site after acquiring the assets to the sawmill (from Lindal) on December 22, 1998.

5.3.1 Sawmill and Wood Chipping Operation

Typical environmental concerns for sawmills revolve around the potential for hydrocarbon spills from equipment or hydraulic units and the potential use of large quantities of antisapstain chemicals such as chlorophenol-based preservatives to raw lumber. Cut lumber is often stacked and fork-lifted to a location for storage and left to drip-dry after treatment.

To our knowledge, wood treatment or the handling of treated wood has never been part of the on-Site activities (the sawmill on-site was a cedar mill only), so concerns related to chlorophenol usage are not apparent. While the potential for hydrocarbon impacts is present, the operations of Mill & Timber since their occupancy began have been working towards decreasing the potential for such impacts, through the decommissioning and demolition of most of Smallwood Sawmill, and conversion to a relatively simple wood chipping operation.

During the site reconnaissance, Envirochem did not observe evidence of hydrocarbon impacts from the current wood chipping operation, and potential impacts from the previous uses of the Site prior to Mill & Timber's occupancy appear to have been accounted for in the previous environmental investigations completed at the Site. Overall, the environmental risk surrounding Mill & Timber's recent operations on-Site is considered to be low.

5.3.2 Cedar Homes Fabrication

From approximately 2015 to 2018, the Client moved a portion of their Panabode Homes operation onto the Site, occupying a portion of the distribution warehouse and the area around that building. Components for their cedar homes were manufactured on-site and the distribution warehouse was used for storage of supplies and other items. A diesel above ground storage tank was added at the distribution warehouse in 2017, to allow for fueling of on-site equipment (i.e. a forklift), but it was observed by Envirochem to be in good condition with no staining of the surrounding asphalt / concrete. Overall, the environmental risk surrounding the Panabode operations on-Site is considered to be low, and did not overlap with the hydrocarbon contamination identified in previous reports.

5.4 POTENTIAL SOURCES OF CONTAMINATION (1949-1998)

Based on the evidence reviewed, the following represents the key potential sources of contamination that were present on-site before Mill & Timber's occupancy.

- Many storage tanks were present at the Site historically, though it is impractical to give a complete history of tanks at the Site based on limited documentation/records. Of particular interest is a suspect above ground storage tank that appears at the inferred location of AEC-1 in aerial photographs from the 1960s, prior to the construction of the distribution warehouse around 1974. Based on these same photographs, this area of the Site appears to have been unpaved at the time the AST may have been present.
- An oil storage shed was present at the inferred location of AEC-2 as early as 1988, based on a 1996 environmental audit conducted by PWGSC. Drums of oil and diesel were stored horizontally inside the shed and upright outside the shed, with evidence of oil staining on the floor boards inside the shed and on the soil outside the shed.
- A train collision was reported to have occurred on the rail spur to the east, resulting in a diesel spill (in the vicinity of AEC-1 but exact location unknown), but the evidence of this spill is limited. Previous environmental reports suggest this spill occurred in the 1960s.

5.5 OTHER POTENTIAL SOURCES OF CONTAMINATION

5.5.1 Storage Tanks for Hydrocarbons

Two storage tanks for hydrocarbon-based products were observed to be present on-Site in 2018 (both have since been removed), though only one was in use, that being the diesel fuel AST located near the distribution warehouse. This tank was double-walled and was observed to

be in good condition; it was only present for one approximately year and was situated above asphalt with no significant observable staining. Therefore, this tank has not been identified as an APEC requiring investigation as part of the environmental exit assessment.

Likewise, the decommissioned diesel exhaust fluid AST that was stored in a wooden shed near the former kiln was not identified as a new APEC as diesel exhaust fluid is only a mixture of urea and water, and contains no hydrocarbons.

Other storage tanks were present at the Site historically during Mill & Timber's occupancy, namely a propane bullet south of the distribution warehouse from before Mill & Timber began to occupy the Site until approximately 2016. All records indicate that this tank belonged to Lindal (and it was located on the portion of the Site they occupied until 2012), and as it stored gaseous (non-liquid) fuel, it does not pose a concern to soil or groundwater quality in that area of the Site, where VPH and LEPH impacts were identified by previous environmental consultants.

The only other tank referenced in previous environmental reports was a gravity-fed diesel fuel tank for the former sawmill (for boomboat fueling), which was relocated adjacent to the oil storage shed in 1999 before Mill & Timber began operating the sawmill.

Environmental investigations were carried out at these locations previously with the environmental risks documented by others. The environmental risk related to Mill & Timber's use of these tanks is low given the evidence presented.

5.5.2 Unidentified Drums

Four unlabeled 40-gallon drums were found on the north side of the former kiln building in 2018. These drums appeared to have been abandoned, and one was observed to be dented and damaged. As there were no signs of spillage or stains, the environmental risks associated with these drums were considered to be **LOW**.

5.5.3 Transformers and PCB History

A detailed history of transformers and potential polychlorinated biphenyls (PCBs) use by Mill & Timber has not been presented to this point in this Phase I ESA Update. Limited information on these topics was included in Hemmera's Phase I ESA from 2006, but Envirochem has had additional history with assessment of PCBs at the Site dating back to 2000, and provides the following summary to assess whether sufficient testing for PCBs has been completed to rule out any concerns related to PCB impacts to soil or groundwater.

Based on Envirochem's review and previous studies, five separate potential sources of PCBs have been identified as being present at the Smallwood site during Mill & Timber's occupancy (1998 to 2018):

1) Pole-mounted transformers near the lease entrance and near the concrete vault for the former sawmill.
2) Three transformers formerly contained in a concrete vault adjacent to the sawmill.
3) Three transformers formerly contained in a concrete vault adjacent to the distribution warehouse.
4) Three transformers temporarily stored in the distribution warehouse, observed by Envirochem during the HBMA in April 2018.
5) Numerous capacitors within the structure of the former sawmill.

Further details about these potential PCB sources are detailed below, though the conclusion related to all of them is the same, that additional assessment of soil or water quality is not deemed warranted as part of Mill & Timber's exit from the Site.

5.5.3.1 Pole-Mounted Transformers

During site reconnaissance, by Hemmera in 2006 and by Envirochem in 2018, pole-mounted transformers were observed near the entrance to the lease and adjacent to the concrete vault that contained floor-mounted transformers to power the former sawmill. Staining was not observed on the ground beneath the pole-mounted transformers in 2006 or 2018, and both transformers appeared to be in good condition, with no evidence or report of leakage. Based on these observations, these two transformers have not been identified as APECs requiring further investigation.

5.5.3.2 Concrete Vault for Sawmill

Records indicate that three transformers were contained in the concrete vault near the former sawmill location. Extensive PCB testing has been completed on these transformers historically. In March 2000, Envirochem collected swab samples from the transformers and soil samples from soil debris contained within the vault and soil located outside the vault, immediately down-gradient. Swab sample results were compared to the US EPA guideline and soil sample results were compared to CSR standards. All results were less than the application criteria, confirming that PCB-oil was not apparently used in these transformers. Nonetheless, the oil in these transformers was replaced in 2000 or 2003 as a precautionary measure. According to interviews between Hemmera and David Gray (formerly of Mill & Timber), it was also stated

that these transformers did not use PCB oil, so Hemmera did not identify them as an APEC for the original Phase I ESA (2006).

In 2010, Envirochem completed PCB testing of the transformer oil again, and again found that the transformer oil did not contain PCBs at concentrations above the acceptable limits. Based on this evidence, Envirochem has not identified these transformers as APECs requiring further investigation.

Envirochem understands that the VFPA expressed concern to Mill & Timber about a surficial sheen they observed near this concrete vault during the exit assessment site reconnaissance on November 26, 2018, but based on previous PCB testing history, there do not appear to be concerns of PCB impacts at this location. The sheen could be associated with previously assessed hydrocarbon impacts, detailed in the groundwater sampling report, but does not appear to warrant any further investigation at this time other than addressing this item as a housekeeping measure.

5.5.3.3 Concrete Vault for Distribution Warehouse

Records indicate that three transformers were also contained in the concrete vault near the distribution warehouse building occupied by Lindal until 2012, and by the Client from 2012 to 2018. Some PCB testing has been completed on these transformers historically, but not as extensively because they were not Mill & Timber's responsibility until 2012. Documents / correspondence from 1999 and 2000 suggest that these transformers contained PCB oil at that time, but there is no empirical data to support this. In 2016, Envirochem sampled the transformer oil from these transformers on behalf of Mill & Timber, and confirmed that the transformer oil contained PCBs at a concentration greater than 50 mg/L.

Unlike the concrete vault for the sawmill, this concrete vault is located on asphalt, so the potential for impacts to soil and groundwater is greatly reduced. No staining was observed to the asphalt surrounding the concrete vault, and on that basis, Envirochem has not identified these transformers as APECs requiring further investigation.

5.5.3.4 Transformers In Storage

During the hazardous building materials assessment (HBMA) site visit in April 2018, three out-of-service transformers were observed inside the distribution warehouse, along the east wall of that structure. The transformers were stored on the asphalt ground surface. One transformer appeared to have leaked onto the asphalt; an area of staining was observed and sawdust had been applied to absorb the spilled liquid as best as possible. When Envirochem

returned to the Site in September 2018, these transformers were no longer present, and a stained area was not observed. The original source of these transformers is unknown.

Labels on these transformers stated that they did not contain PCB oil (PCBs less than 50 mg/L). Based on this detail and that the spill was to competent, uncracked asphalt, Envirochem has not identified these transformers as APECs requiring further investigation.

5.5.3.5 Capacitors

According to the 1999 environmental audit conducted by Envirochem, at least four capacitors were observed on the first floor of the sawmill, three of which likely contained PCB dielectric fluid. Later documentation from 2000 stated that there were ten capacitors requiring disposal from the Site, most of which likely contained PCB dielectric fluid. Disposal records indicate that 312 kg of PCB capacitors were disposed from the Site in 2000. As each capacitor only contains a couple of ounces of PCB dielectric fluid, the potential and probable cumulative impact from the capacitors used in the former sawmill is considered to be low, and Envirochem has not identified them as APECs requiring further investigation.

5.6 NEIGHBOURING PROPERTIES

5.6.1 Kwest Lumber (Early 2000s – Present), southeast

Currently, Kwest Lumber, a lumber storage and distribution company, occupies the properties to the southeast, and is not considered to pose environmental risk to the Site. However, according to aerial photographs and previous environmental reports, Imperial Lumber Ltd. historically occupied many of the properties to the southeast of the Site and operated two sawmills from approximately 1950 to 1980. Their operation was known to be the processing of raw logs to finished lumber, including sorting, milling, and chemical treatment.

Potential impacts to the Site as a result of these offsite operations were investigated during the baseline assessment, with the impacts at AEC-1 hypothesized as being related to those operations, and no other evidence of contamination migration from those properties to the Site.

5.6.2 Fraser River / Brownsville RV Park (1990 – Present), northeast

The Fraser River / Brownsville RV Park has been located northeast of the Site at 11940 Old Yale Road since at least 1990. This property is a site registered site on the BC Site Registry due to a small diesel spill in 1999 that was estimated to have impacted an area of 56 m^2 of soil. Although the status of this event is listed as “not assigned” in the detailed site registry report, it is likely that soil remediation was conducted due to the continual use of the property today, and such a

relatively small spill is unlikely to have had the ability to impact the Site, even though the Site is down-gradient.

5.6.3 Canadian National Railway Rail Spur, east

The CN Railway has bordered the Site to the east since before 1938 (perhaps as early as 1891 according to previous environmental reports). Hemmera mentioned in their environmental reports that a diesel spill occurred along the rail spur, roughly east or northeast of the Site, in the 1960s, and that this spill may have contributed to the hydrocarbon contamination identified at AEC-1, but this cannot be verified with certainty as the exact location of the spill is undocumented.

5.6.4 Apex Terminals (2001 – Present), south

Apex Terminals is an export company that specializes in distributing lumber products and building materials. Apex has occupied the property at 11715 Tannery Road located immediately southwest of the Site since at least 2001. Apex's operation is considered to pose a low environmental risk to the Site. Prior to 2001, city directories show the address as being occupied by Imperial Lumber Ltd., likely for lumber storage as Imperial's main operations were at the current Kwest Lumber site. Historical aerial photographs confirm this property was historically used for lumber storage.

5.6.5 Vacant Land / Former Brownsville Sawmill (1982 – Present), northeast

The land to the northeast of the Site was historically occupied by the Brownsville Mill, but has been vacant (mostly) since 1982. As this property is hydraulically cross-gradient of the Site, it is unlikely to have posed a significant environmental risk to the Site. Potential impacts from that investigation would have been accounted for in the previous environmental assessments, and it was not designated as an APEC in the previous environmental reports.

5.7 IDENTIFICATION OF APECS AND AECS

Based on the findings presented in this report, Envirochem has identified three APECs and two AECs related to the historical activities occurring on-site. These AECs and APECs, along with the PCOCs, are presented in Figure 4 (**Appendix A**) and in the tables below.

Table 5-1: Areas of Potential Environmental Concern

Envirochem APEC ID	Former Franz APEC ID	Description	Location	PCOCs	Potentially Affected Media
ESI-APEC-1	APEC #22	Former Sawmill Operations (including kiln)	Parcels A & B	BTEX, VPH/F1, LEPH/HEPH (F2/F3), PAHs, and Metals	Soil, vapour and groundwater
ESI-APEC-2	APEC #23	Former Green Chain	Parcels A & B	LEPH/HEPH (F2/F3), PAHs, and Metals	Soil and groundwater
ESI-APEC-3	APEC #30	Imported Fill Materials	Entire Site	LEPH/HEPH (F2/F3), PAHs, and Metals	Soil and groundwater

Table 5-2: Areas of Environmental Concern

Envirochem APEC ID	Former Franz APEC ID	Description	Location	PCOCs	Potentially Affected Media
ESI-AEC-1	APEC #34	Offsite Historical Activities or Spills and Suspect Former Storage Tank	Southeast of distribution warehouse (Parcel C)	BTEX, VPH/F1, LEPH/HEPH (F2/F3), PAHs, and Metals	Soil, vapour and groundwater
ESI-AEC-2	APEC #21	Former Oil Storage Shed / Former Single-Walled Gravity-Fed Diesel Storage Tank	Near Site Entrance (Parcel A)	BTEX, VPH/F1, LEPH/HEPH (F2/F3), PAHs, and Metals	Soil, vapour and groundwater

All of these AECs and APECs were included in the previous environmental reports. No new APECs have been identified since the time that those reports were completed. All of the presented AECs and APECs have been investigated in the past, so further work in the form of a supplemental Phase II ESA is not likely required. As part of this exit assessment, groundwater quality has been reassessed by Envirochem, the results of which are presented in a report (under separate cover) entitled Review of Environmental Conditions / Updated Groundwater Quality Investigation.

6.0 CONCLUSIONS

Based on the review of various records, including previous environmental reports, as well as observations made during site reconnaissance and findings from interviews conducted with Mill & Timber ownership and management, it is known that contaminated soil and contaminated groundwater is present at the Site at two AECs, and the three other APECs identified by Envirochem have been investigated previously as well, showing no evidence of anthropogenic contamination caused by activities occurring on-site (potential impacts related to historic infilling of the Site though). On this basis, it does not appear that additional investigation in the form of a supplemental Phase II ESA is required at the Site as it relates to the current objectives of this report.

7.0 PARTICIPANTS AND QUALIFICATIONS

A summary of qualifications of Envirochem's assessors who conducted the site reconnaissance and reporting are as follows:

- Mr. Steven Hait, EIT, has 8 years of environmental consulting experience in site investigations and remediation in northern British Columbia and the Lower Mainland. He has conducted various aspects of project delivery including project coordination, project management, site investigations, remedial implementation, data analysis and interpretation, and technical reporting. He is registered as an Engineer in Training (EIT) in British Columbia and has a Bachelor of Applied Science degree in Mechanical Engineering and a Bachelor of Technology degree in Environmental Engineering.
- Mr. Eric Choi, P. Eng., holds an undergraduate degree in Geological Engineering (Environmental Option) and has approximately 20 years of experience in environmental site assessment and remediation. He has conducted various aspects of project delivery including project planning, site investigations, remedial implementation, data analysis and interpretation, technical reporting, and project management. He is a licensed Professional Engineer within British Columbia and has obtained numerous BC Ministry of Environment approvals for various sites.
- Mr. Bryan Tsai, EIT, holds a Bachelor of Science in Engineering in Engineering Chemistry and has completed numerous Environmental Engineering courses at BCIT. He has been trained to conduct Phase I ESAs and has additional experience in research, report writing and environmental sampling and monitoring.

Based in British Columbia, Envirochem Services Inc. (Envirochem) has provided environmental consulting and management services since 1984. Envirochem's environmental management and consulting services range from up-front environmental project planning, assessment, and permitting, to air quality management and greenhouse gas reporting, to hazardous material management, to comprehensive out-sourced environmental and sustainability management, just to name a few.

Envirochem personnel have completed numerous contaminated sites investigation, remediation, and risk assessments projects, several with approval from the provincial Ministry of Environment and Climate Change Strategy (BC ENV) including obtaining legal instruments (such as Certificates-of-Compliance, etc.), and several environmental projects (past and ongoing) with VFPA approval, including a dredging project for Pacific Coast Terminals in Port Moody, numerous projects at Neptune Bulk Terminals in North Vancouver including an ongoing

major coal expansion project, and other permitting driven contaminated sites or construction management projects for Port-managed properties.

Envirochem's team has extensive history working on industrial waterfront sites (including sawmill sites) and also with Mill & Timber for Port-regulated sites including involvement at the subject site dating back to 1999.

8.0 CLOSURE

We trust this report meets your requirements at this time. If you have any questions or comments regarding this report, please contact the undersigned.

Yours truly,

Envirochem Services Inc.

Steve Hait, EIT	Eric Choi, P.Eng.
Technical Project Manager	Senior Environmental Engineer

Contributions by: Bryan Tsai, B.Sc.Eng., EIT

9.0 REFERENCES

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10.0 LIMITATIONS

This Report is intended for the sole and exclusive use of **Mill & Timber Products Ltd. (the Client) and the Vancouver Fraser Port Authority (representative of the Owner)**. This report is not for the benefit of any third party and may not be distributed to, disclosed in any form to, used by, or relied upon by, any third party without the prior written consent of Envirochem Services Inc. (Envirochem). Any other third-party recipient of this report or user of any content contained herein uses this report and its contents at its sole risk, and by acceptance or use releases Envirochem, its affiliates, officers, employees and subcontractors from any liability for direct, indirect, incidental, consequential or special loss or damage or other liability of any nature arising from its use of the report or reliance upon any of its content.

This is a technical report and is not a legal representation or interpretation of environmental laws, rules, regulations, or policies of government agencies. With respect to regulatory compliance issues, please note that regulatory statutes and the interpretation of regulatory statutes are subject to change over time.

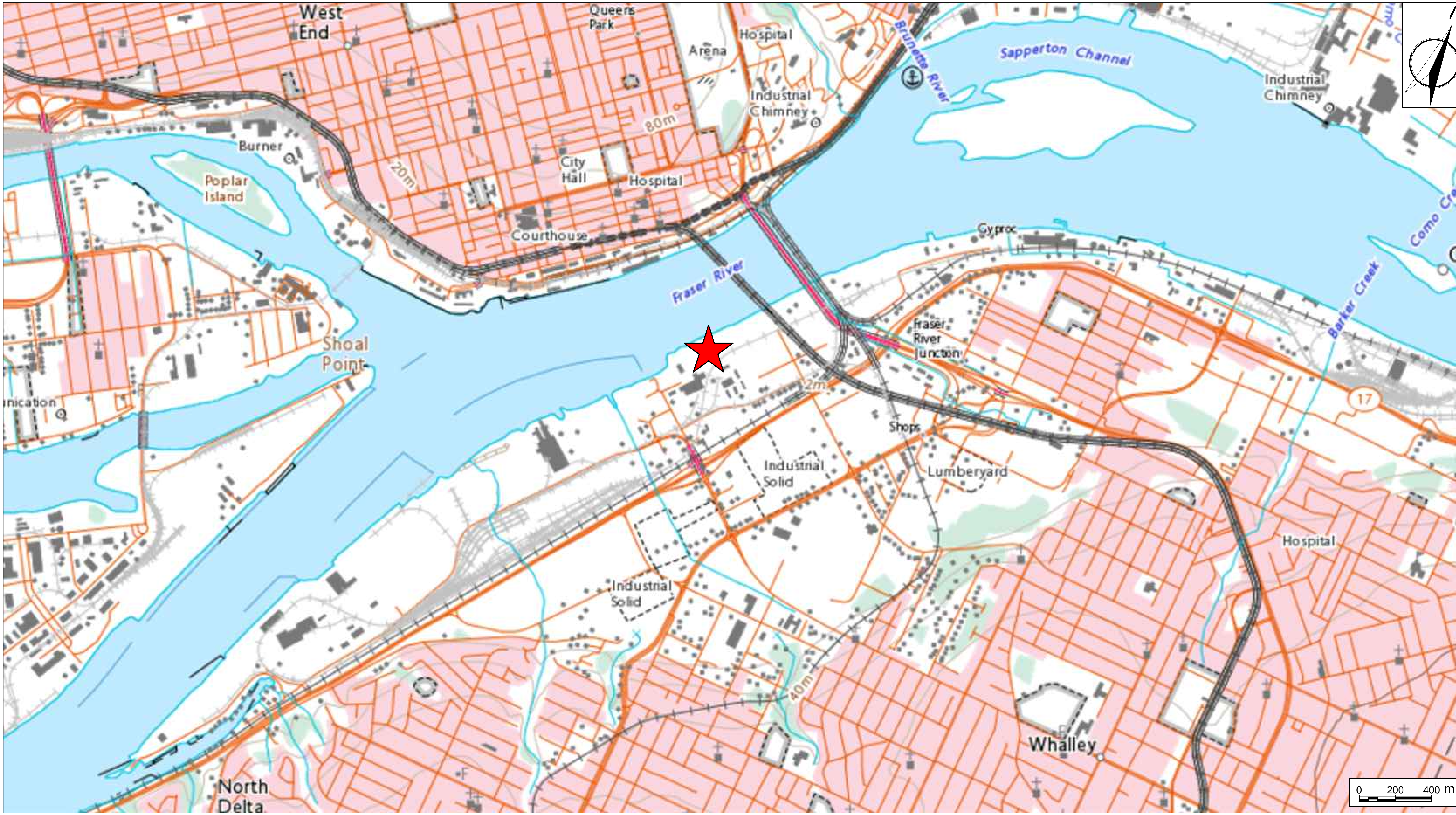
This report has been prepared in accordance with accepted environmental and/or engineering practices for a Phase I ESA (CSA Standard Z768-01). The role of the site assessor is to document evidence of contamination and not to judge the acceptability of risks associated with contamination (Clause 0.2.7 of CSA Z768-01). No other warranties, either expressed or implied, are made as to the professional services provided under the terms of the Phase I ESA and included in this report. To further reduce or eliminate uncertainty would require a Phase II ESA.

Achieving the objectives stated in this report has required us to arrive at conclusions based upon the best information presently known to us. No investigative method can completely eliminate the possibility of obtaining partially imprecise or incomplete information; it can only reduce the possibility to an acceptable level. Professional judgment was exercised in gathering and analyzing the information obtained and in the formulation of the conclusions. Site observations were only made on the subject site in accessible areas. Neighbouring properties were only observed from the subject site and public areas.

Envirochem expressly disclaims any and all warranties in connection with this report. This disclaimer of warranty includes, without limitation, any warranty that this report and the associated site investigation work has uncovered all potential environmental liabilities associated with the property. Envirochem believes this report to be accurate; however, Envirochem disclaims any warranty of the completeness or accuracy of information supplied to Envirochem that was relied upon in the preparation of this report.

APPENDIX A

FIGURES



ENVIROCHEM SERVICES INC.

206-267 Esplanade W,
North Vancouver, BC V7M1A5
T: 604-986-0233
E: response@envirochem.com

NOTE:
- Topographic image, The Atlas of Canada - Toporama (http://www.atlas.gc.ca/toporama), download date 18th September 2018.
- Original drawing is ANSI expand B (11.00 x 17.00 Inches) and in colour.

LEGEND:
★ Approximate site location

Title: Site Location Plan	Figure No: 1	Rev No: 00
	Date: January 2019	
Client: Mill and Timber Products Ltd.	Project No: 18089	
Project: Phase I Environmental Site Assessment (ESA)	Drawn: FT/GS	Checked: SH
Location: 10880 Dyke Road, Surrey, BC	Scale: 1:20000	

ENVIROCHEM SERVICES INC.

206-267 Esplanade W,
North Vancouver, BC V7M1A5
T: 604-986-0233
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NOTE:
- Aerial image, Google Earth Pro, imagery date 22nd July 2018, download date 15th November 2018.
- Original drawing is ANSI expand B (11.00 x 17.00 Inches) and in colour.

LEGEND:
Approximate Site Boundary Line

Title: Site Layout Plan (November 2018)	Figure No: 2A	Rev No: 00
	Date: January 2019	
Client: Mill and Timber Products Ltd.	Project No: 18089	
Project: Phase I Environmental Site Assessment (ESA)	Drawn: FT/GS	Checked: SH
Location: 10880 Dyke Road, Surrey, BC	Scale: 1:1500	

ENVIROCHEM SERVICES INC.
206-267 Esplanade W,
North Vancouver, BC V7M1A5
T: 604-986-0233
E: response@envirochem.com

NOTE:
- Aerial image, Google Earth Pro, imagery date 9th April 2001, download date 15th November 2018.
- Original drawing is ANSI expand B (11.00 x 17.00 Inches) and in colour.

LEGEND:
- Approximate Site Boundary Line

Title: Site Layout Plan (Historical - 2001)	Figure No: 2B	Rev No: 00
	Date: January 2019	
Client: Mill and Timber Products Ltd.	Project No: 18089	
Project: Phase I Environmental Site Assessment (ESA)	Drawn: FT/GS	Checked: SH
Location: 10880 Dyke Road, Surrey, BC	Scale: 1:1500	

ENVIROCHEM SERVICES INC.
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North Vancouver, BC V7M1A5
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E: response@envirochem.com

NOTE:
- Aerial image, Google Earth Pro, imagery date 22nd July 2018, download date 15th November 2018.
- Original drawing is ANSI expand B (11.00 x 17.00 Inches) and in colour.

LEGEND:
- Approximate Site Boundary Line

Title: Site & Surrounding Area	Figure No: 3	Rev No: 00
	Date: January 2019	
Client: Mill and Timber Products Ltd.	Project No: 18089	
Project: Phase I Environmental Site Assessment (ESA)	Drawn: FT/GS	Checked: SH
Location: 10880 Dyke Road, Surrey, BC	Scale: 1:2500	

ENVIROCHEM SERVICES INC

206-267 Esplanade W,
North Vancouver, BC V7M1A5
T: 604-986-0233
E: response@envirochem.com

NOTE:
- Aerial image, Google Earth Pro, imagery date 22nd July 2018, download date 15th November 2018.
- Original drawing is ANSI expand B (11.00 x 17.00 Inches) and in colour.

LEGEND:
- ESI-APEC-3 (former APEC #25/30) - Site Boundary
- ESI-AEC-2 (former APEC #21, former AEC#2)
- ESI-APEC-1 (former APEC #22)
- ESI-APEC-2 (former APEC #23)
- ESI-AEC-1 (former APEC #34, former AEC #1

Title: Areas of Environmental Concern and Areas of Potential Environmental Concern	Figure No: 4	Rev No: 00
	Date: January 2019	
Client: Mill and Timber Products Ltd.	Project No: 18089	
Project: Phase I Environmental Site Assessment (ESA)	Drawn: FT/GS	Checked: SH
Location: 10880 Dyke Road, Surrey, BC	Scale: 1:1500	

APPENDIX B

PROPERTY RELATED INFORMATION

TITLE SEARCH PRINT 2018-07-31, 14:59:30

File Reference: 18089 Requestor: Gail Slavik

Declared Value $ 410000

CURRENT INFORMATION ONLY - NO CANCELLED INFORMATION SHOWN

Land Title District NEW WESTMINSTER
Land Title Office NEW WESTMINSTER

Title Number BB1931162
From Title Number AC7142

Application Received 2011-02-01

Application Entered 2011-02-04

Registered Owner in Fee Simple
Registered Owner/Mailing Address: HER MAJESTY THE QUEEN IN RIGHT OF CANADA AS REPRESENTED BY THE MINISTER OF TRANSPORT
C/O VANCOUVER FRASER PORT AUTHORITY, PURSUANT TO SS. 46(1)
100 THE POINTE, 999 CANADA PLACE
VANCOUVER, BC
V6C 3T4

Taxation Authority Surrey, City of

Description of Land
Parcel Identifier: 012-878-260
Legal Description:
PARCEL "A" (PLAN IN ABSOLUTE FEES PARCEL BOOK 12 FOLIO 75 NO. 4114F) DISTRICT LOT 6 GROUP 2 NEW WESTMINSTER DISTRICT

Legal Notations
NOTICE UNDER SALE OF GOODS ON CONDITIONAL ACT, NO. 3798

Charges, Liens and Interests NONE

Duplicate Indefeasible Title NONE OUTSTANDING

Transfers NONE

Pending Applications NONE

TITLE SEARCH PRINT 2018-07-31, 14:59:30

File Reference: 18089 Requestor: Gail Slavik

CURRENT INFORMATION ONLY - NO CANCELLED INFORMATION SHOWN

Title Issued Under	SECTION 172 LAND TITLE ACT SECTION 188 LAND TITLE ACT
Land Title District	NEW WESTMINSTER
Land Title Office	NEW WESTMINSTER
Title Number	AC7142
From Title Number	D9652 626291E
Application Received	1989-01-14
Application Entered	1989-01-27
Title Cancelled	**2011-02-04**

Registered Owner in Fee Simple

Registered Owner/Mailing Address: CANADIAN NATIONAL RAILWAY COMPANY
1150 STATION STREET
VANCOUVER, BC

Taxation Authority Surrey, City of

Description of Land

Parcel Identifier: 012-878-260

Legal Description:

PARCEL "A" (PLAN IN ABSOLUTE FEES PARCEL BOOK 12 FOLIO 75 NO. 4114F) DISTRICT LOT 6 GROUP 2 NEW WESTMINSTER DISTRICT

Legal Notations

NOTICE UNDER SALE OF GOODS ON CONDITIONAL ACT, NO. 3798

Charges, Liens and Interests NONE

Duplicate Indefeasible Title NONE OUTSTANDING

Transfers

Registration Date: 2011-02-04
Description: ALL BB1931162

PARCEL IDENTIFIER (PID): 012-878-260

SHORT LEGAL DESCRIPTION:U/NEW WESTMINSTER////2//6/////A
MARG:* 12/75/4114F
TAXATION AUTHORITY:
1 Surrey, City of

FULL LEGAL DESCRIPTION: CURRENT
PARCEL "A" (PLAN IN ABSOLUTE FEES PARCEL BOOK 12 FOLIO 75
NO. 4114F) DISTRICT LOT 6 GROUP 2 NEW WESTMINSTER DISTRICT

MISCELLANEOUS NOTES:
NWPA PLAN 45248 NWPA PLAN 45799

ASSOCIATED PLAN NUMBERS:
PLAN NWP45248
PLAN NWP45799

AFB/IFB: MN: Y PE: 0 SL: 1 TI: 1

TITLE SEARCH PRINT 2018-07-31, 15:00:36

File Reference: 18089 Requestor: Gail Slavik

Declared Value $ 405000

CURRENT AND CANCELLED INFORMATION SHOWN

Land Title District	NEW WESTMINSTER
Land Title Office	NEW WESTMINSTER
Title Number	BB1931163
From Title Number	AC7143
Application Received	2011-02-01
Application Entered	2011-02-04

Registered Owner in Fee Simple

Registered Owner/Mailing Address: HER MAJESTY THE QUEEN IN RIGHT OF CANADA AS REPRESENTED BY THE MINISTER OF TRANSPORT
C/O VANCOUVER FRASER PORT AUTHORITY, PURSUANT TO SS. 46(1)
100 THE POINTE, 999 CANADA PLACE
VANCOUVER, BC
V6C 3T4

Taxation Authority Surrey, City of

Description of Land

Parcel Identifier: 012-878-278

Legal Description:

PARCEL "B" (PLAN IN ABSOLUTE FEES PARCEL BOOK 12 FOLIO 75 NO. 4113F) DISTRICT LOT 6 GROUP 2 NEW WESTMINSTER DISTRICT

Legal Notations

NOTICE UNDER SALE OF GOODS ON CONDITIONAL ACT, NO. 3798

Charges, Liens and Interests	NONE
Duplicate Indefeasible Title	NONE OUTSTANDING
Transfers	NONE
Pending Applications	NONE
Corrections	NONE

TITLE SEARCH PRINT 2018-07-31, 15:00:36

File Reference: 18089 Requestor: Gail Slavik

CURRENT AND CANCELLED INFORMATION SHOWN

Title Issued Under	SECTION 172 LAND TITLE ACT SECTION 188 LAND TITLE ACT
Land Title District	NEW WESTMINSTER
Land Title Office	NEW WESTMINSTER
Title Number	AC7143
From Title Number	D9652 626291E
Application Received	1989-01-14
Application Entered	1989-01-27
Title Cancelled	**2011-02-04**

Registered Owner in Fee Simple

Registered Owner/Mailing Address: CANADIAN NATIONAL RAILWAY COMPANY
1150 STATION STREET
VANCOUVER, BC

Taxation Authority Surrey, City of

Description of Land

Parcel Identifier: 012-878-278

Legal Description:

PARCEL "B" (PLAN IN ABSOLUTE FEES PARCEL BOOK 12 FOLIO 75 NO. 4113F) DISTRICT LOT 6 GROUP 2 NEW WESTMINSTER DISTRICT

Legal Notations

NOTICE UNDER SALE OF GOODS ON CONDITIONAL ACT, NO. 3798

Charges, Liens and Interests NONE

Duplicate Indefeasible Title NONE OUTSTANDING

Transfers

Registration Date: 2011-02-04
Description: ALL BB1931163

Corrections NONE

PARCEL IDENTIFIER (PID): 012-878-278

SHORT LEGAL DESCRIPTION:U/NEW WESTMINSTER////2//6/////B
MARG:* 12/75/4113F
TAXATION AUTHORITY:
1 Surrey, City of

FULL LEGAL DESCRIPTION: CURRENT
PARCEL "B" (PLAN IN ABSOLUTE FEES PARCEL BOOK 12 FOLIO 75
NO. 4113F) DISTRICT LOT 6 GROUP 2 NEW WESTMINSTER DISTRICT

MISCELLANEOUS NOTES:
NWPA PLAN 45248 NWPA PLAN 45799

ASSOCIATED PLAN NUMBERS:
PLAN NWP45248
PLAN NWP45799

AFB/IFB: MN: Y PE: 0 SL: 1 TI: 1

TITLE SEARCH PRINT 2018-07-31, 15:00:36

File Reference: 18089 Requestor: Gail Slavik

Declared Value $ 410000

CURRENT AND CANCELLED INFORMATION SHOWN

Land Title District NEW WESTMINSTER
Land Title Office NEW WESTMINSTER

Title Number BB1931164
From Title Number AC7144

Application Received 2011-02-01

Application Entered 2011-02-04

Registered Owner in Fee Simple
Registered Owner/Mailing Address: HER MAJESTY THE QUEEN IN RIGHT OF CANADA AS REPRESENTED BY THE MINISTER OF TRANSPORT
C/O VANCOUVER FRASER PORT AUTHORITY, PURSUANT TO SS. 46(1)
100 THE POINTE, 999 CANADA PLACE
VANCOUVER, BC
V6C 3T4

Taxation Authority Surrey, City of

Description of Land
Parcel Identifier: 012-878-286
Legal Description:
PARCEL "C" (PLAN IN ABSOLUTE FEES PARCEL BOOK 12 FOLIO 93 NO. 4222F) DISTRICT LOT 6 GROUP 2 NEW WESTMINSTER DISTRICT

Legal Notations
NOTICE UNDER SALE OF GOODS ON CONDITIONAL ACT, NO. 3798

Charges, Liens and Interests NONE

Duplicate Indefeasible Title NONE OUTSTANDING

Transfers NONE

Pending Applications NONE

Corrections NONE

TITLE SEARCH PRINT 2018-07-31, 15:00:36

File Reference: 18089 Requestor: Gail Slavik

CURRENT AND CANCELLED INFORMATION SHOWN

Title Issued Under	SECTION 172 LAND TITLE ACT SECTION 188 LAND TITLE ACT
Land Title District	NEW WESTMINSTER
Land Title Office	NEW WESTMINSTER
Title Number	AC7144
From Title Number	D9652 626291E
Application Received	1989-01-14
Application Entered	1989-01-27
Title Cancelled	**2011-02-04**

Registered Owner in Fee Simple

Registered Owner/Mailing Address: CANADIAN NATIONAL RAILWAY COMPANY
1150 STATION STREET
VANCOUVER, BC

Taxation Authority Surrey, City of

Description of Land

Parcel Identifier: 012-878-286

Legal Description:

PARCEL "C" (PLAN IN ABSOLUTE FEES PARCEL BOOK 12 FOLIO 93 NO. 4222F) DISTRICT LOT 6 GROUP 2 NEW WESTMINSTER DISTRICT

Legal Notations

NOTICE UNDER SALE OF GOODS ON CONDITIONAL ACT, NO. 3798

Charges, Liens and Interests NONE

Duplicate Indefeasible Title NONE OUTSTANDING

Transfers

Registration Date: 2011-02-04
Description: ALL BB1931164

Corrections NONE

PARCEL IDENTIFIER (PID): 012-878-286

SHORT LEGAL DESCRIPTION:U/NEW WESTMINSTER////2//6/////C
MARG:* 12/93/4222F
TAXATION AUTHORITY:
1 Surrey, City of

FULL LEGAL DESCRIPTION: CURRENT
PARCEL "C" (PLAN IN ABSOLUTE FEES PARCEL BOOK 12 FOLIO 93
NO. 4222F) DISTRICT LOT 6 GROUP 2 NEW WESTMINSTER DISTRICT

MISCELLANEOUS NOTES:
NWPA PLAN 45248 NWPA PLAN 45799

ASSOCIATED PLAN NUMBERS:
PLAN NWP45248
PLAN NWP45799

AFB/IFB: MN: Y PE: 0 SL: 1 TI: 1

TITLE SEARCH PRINT 2018-07-31, 15:00:37

File Reference: 18089 Requestor: Gail Slavik

Declared Value $ 760000

CURRENT AND CANCELLED INFORMATION SHOWN

Land Title District	NEW WESTMINSTER
Land Title Office	NEW WESTMINSTER
Title Number	BB1931165
From Title Number	AE42371
Application Received	2011-02-01
Application Entered	2011-02-04

Registered Owner in Fee Simple

Registered Owner/Mailing Address: HER MAJESTY THE QUEEN IN RIGHT OF CANADA AS REPRESENTED BY THE MINISTER OF TRANSPORT
C/O VANCOUVER FRASER PORT AUTHORITY, PURSUANT TO SS. 46(1)
100 THE POINTE, 999 CANADA PLACE
VANCOUVER, BC
V6C 3T4

Taxation Authority Surrey, City of

Description of Land

Parcel Identifier: 012-878-308

Legal Description:

PARCEL "C" (PLAN IN ABSOLUTE FEES PARCEL BOOK 12 FOLIO 78 NO. 4128F) DISTRICT LOT 5 GROUP 2 NEW WESTMINSTER DISTRICT EXCEPT: PARCEL ONE (STATUTORY RIGHT OF WAY PLAN NWP88158)

Legal Notations	NONE
Charges, Liens and Interests	NONE
Duplicate Indefeasible Title	NONE OUTSTANDING
Transfers	NONE
Pending Applications	NONE
Corrections	NONE

TITLE SEARCH PRINT 2018-07-31, 15:00:37

File Reference: 18089 Requestor: Gail Slavik

CURRENT AND CANCELLED INFORMATION SHOWN

Title Issued Under	SECTION 172 LAND TITLE ACT SECTION 188 LAND TITLE ACT
Land Title District	NEW WESTMINSTER
Land Title Office	NEW WESTMINSTER
Title Number	AC7145
From Title Number	D9652 626291E
Application Received	1989-01-14
Application Entered	1989-01-27
Title Cancelled	**1991-04-15**

Registered Owner in Fee Simple

Registered Owner/Mailing Address: CANADIAN NATIONAL RAILWAY COMPANY
1150 STATION STREET
VANCOUVER, BC

Taxation Authority Surrey, City of

Description of Land

Parcel Identifier: 012-878-308

Legal Description:

PARCEL "C" (PLAN IN ABSOLUTE FEES PARCEL BOOK 12 FOLIO 78 NO. 4128F) DISTRICT LOT 5 GROUP 2 NEW WESTMINSTER DISTRICT

Legal Notations NONE

Charges, Liens and Interests NONE

Duplicate Indefeasible Title NONE OUTSTANDING

Transfers

Registration Date: 1991-04-15
Description: PARCEL ONE (SRW PLAN NWP88158) AE41600

Registration Date:	1991-04-15
Description:	ALL (SECTION 185) AE42371

Corrections NONE

TITLE SEARCH PRINT 2018-07-31, 15:00:37

File Reference: 18089 Requestor: Gail Slavik

Declared Value $N/A

CURRENT AND CANCELLED INFORMATION SHOWN

Title Issued Under SECTION 185 LAND TITLE ACT

Land Title District NEW WESTMINSTER
Land Title Office NEW WESTMINSTER

Title Number AE42371
From Title Number AC7145

Application Received 1991-04-15

Application Entered 1991-04-15

Title Cancelled **2011-02-04**

Registered Owner in Fee Simple
Registered Owner/Mailing Address: CANADIAN NATIONAL RAILWAY COMPANY
#1000 - 10004 - 104TH AVENUE
EDMONTON, AB
T5J 0K2

Taxation Authority Surrey, City of

Description of Land
Parcel Identifier: 012-878-308
Legal Description:
PARCEL "C" (PLAN IN ABSOLUTE FEES PARCEL BOOK 12 FOLIO 78
NO. 4128F) DISTRICT LOT 5 GROUP 2 NEW WESTMINSTER DISTRICT
EXCEPT: PARCEL ONE (STATUTORY RIGHT OF WAY PLAN NWP88158)

Legal Notations NONE

Charges, Liens and Interests NONE

Duplicate Indefeasible Title NONE OUTSTANDING

Transfers
Registration Date: 2011-02-04
Description: ALL BB1931165

Corrections NONE

PARCEL IDENTIFIER (PID): 012-878-308

SHORT LEGAL DESCRIPTION:U/NEW WESTMINSTER////2//5/////C
MARG:*12/78/4128F REM
TAXATION AUTHORITY:
1 Surrey, City of

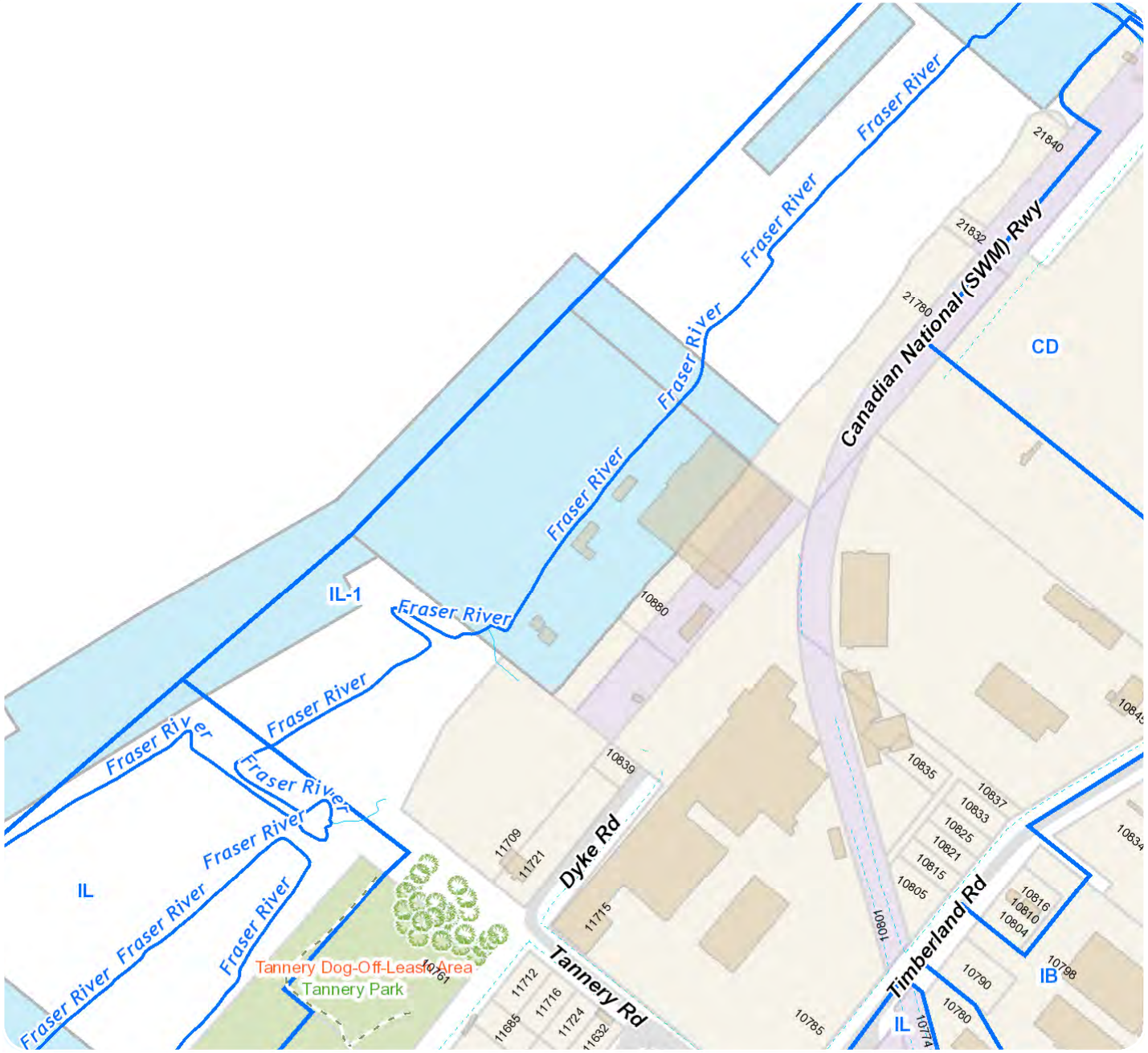
FULL LEGAL DESCRIPTION: CURRENT
PARCEL "C" (PLAN IN ABSOLUTE FEES PARCEL BOOK 12 FOLIO 78
NO. 4128F) DISTRICT LOT 5 GROUP 2 NEW WESTMINSTER DISTRICT
EXCEPT: PARCEL ONE (STATUTORY RIGHT OF WAY PLAN NWP88158)

MISCELLANEOUS NOTES:
SRW PLAN NWP88158
PP BCP48715

ASSOCIATED PLAN NUMBERS:
POSTING PLAN BCP48715
STATUTORY RIGHT OF WAY PLAN NWP88158

AFB/IFB: MN: Y PE: 0 SL: 1 TI: 1

Zoning Map



Legend

- Park Specimen Trees2000_4000
- Trails and Paths

Water Courses

- River
- Creek
- Ditch
- Zoning Boundaries

Building

- Unknown
- Hospital
- Church
- Shopping Centre
- Other
- Attraction
- Fire
- RCMP
- Justice
- Municipal
- Park
- School
- Library
- Recreation Centre
- Community Centre

Enter Map Description

Scale: 1:4,000

0 0.025 0.05 0.1 0.15
km

Map created on: 2018-10-26

Light Impact Industrial 1 Zone

Part 48A IL-1

A. Intent

This Zone is intended to accommodate and regulate the development of *light impact industry* and limited office and service uses with a high standard of design. These uses shall be carried out with limited provision for outdoor storage.

B. Permitted Uses

Land and *structures* shall be used for the following uses only, or for a combination of such uses:

1. *Light impact industry*.

2. *Recycling depots* provided that:

   (a) The use is confined to an enclosed *building*; and

   (b) The storage of used tires is prohibited.

3. *Warehouse uses*.

4. *Distribution centres*.

5. *General service uses* limited to the following:

   (a) Industrial first aid training; and

   (b) Trade schools.

6. Office uses limited to the following:

   (a) Architectural and landscape architectural offices;

   (b) Engineering and surveying offices;

(c) General contractor offices;

(d) Government offices; and

(e) Utility company offices.

7. *Accessory uses* including the following:

(a) *Coffee shops* provided that the seating capacity shall not exceed 35 and the said *coffee shop* is not licensed by the Liquor Control and Licensing Act, R.S.B.C. 1996, chapter 267, as amended;

(b) *Indoor recreation facilities*;

(c) *Community services*;

(d) *Assembly halls* limited to *churches*, provided that:

i. The *church* does not exceed a total floor area of 700 square metres [7,500 sq. ft.];

ii. The *church* accommodates a maximum of 300 seats; and

iii. There is not more than one *church* on a *lot*;

(e) *Child care centres*; and

(f) *Dwelling unit(s)* provided that the *dwelling unit(s)* is (are):

i. Contained within the *principal building*;

ii. Occupied by the owner or a caretaker, for the protection of the businesses permitted;

iii. Restricted to a maximum number of:

a. One *dwelling unit* in each *principal building* less than 2,800 square metres [30,000 sq. ft.] in floor area;

b. Two *dwelling units* in each *principal building* of 2,800 square metres [30,000 sq. ft.] or greater in floor area; and

c. Notwithstanding Sub-sections B.7 (f) iii.a. and iii.b., the maximum number shall be two *dwelling units* for *lots* less than 4.0 hectares [10 acres] in area and three *dwelling units* for *lots* equal to or greater than 4.0 hectares [10 acres] in area; and

iv. Restricted to a maximum floor area of:

a. 140 square metres [1,500 sq. ft.] for one (first) *dwelling unit* on a *lot* and where a *lot* has been subdivided by a strata plan then there shall only be one 140-square metre [1,500 sq. ft.] *dwelling unit* within the strata plan;

b. 90 square metres [970 sq. ft.] for each additional *dwelling unit*; and

c. Notwithstanding Sub-sections B.7(f)iv.a. and iv.b., the maximum floor area shall not exceed 33% of the total floor area of the *principal building* within which the *dwelling unit* is contained.

C. Lot Area

Not applicable to this Zone.

D. Density

Amendments: 19073, 02/20/17

1. In Areas as described and outlined on the maps attached as Schedule F attached to this By-law, the *floor area ratio* shall not exceed 0.1 or a *building* area of 300 square metres [3,230 sq.ft.] whichever is smaller. The *floor area ratio* may be increased to 1.00 if amenities are provided in accordance with Schedule G of this By-law.

2. In areas other than the ones in Sub-section D.1 of this Zone, the *floor area ratio* shall not exceed 1.00.

E. Lot Coverage

The maximum *lot coverage* shall be 60%.

F. Yards and Setbacks

Amendments: 19261, 06/26/17

Buildings and *structures* shall be sited in accordance with the following minimum *setbacks*:

Setback Use	*Front Yard*	*Rear Yard*	*Side Yard*	*Side Yard* on *Flanking Street*
Principal and *Accessory Buildings* and *Structures*	7.5 m. [25 ft.]	7.5 m. [25 ft.]	7.5 m.* [25 ft.]	7.5 m. [25 ft.]

Measurements to be determined as per Part 1 Definitions of this By-law.

* One (1) *side yard setback* shall be 7.5 metres [25 ft.] or 0.0 metre if the said *side yard* abuts land which is *commercial, mixed employment* or *industrial*.

G. Height of Buildings

Measurements to be determined as per Part 1 Definitions of this By-law.

1. *Principal building:* The *building height* shall not exceed 18 metres [60 ft.].

2. *Accessory buildings* and *structures:* The *building height* shall not exceed 6 metres [20 ft.].

H. Off-Street Parking

Amendment: 18719, 05/30/16

1. Refer to Table C.1, Part 5 Off-Street Parking and Loading/Unloading of this By-law. For the purpose of this Part, the parking requirements for *warehouse uses* and *distribution centres* shall be the same as those for *light impact industry*.

2. *Tandem parking* may be permitted.

3. Parking of *vehicles*, except parking for employees and customers of the uses on the *lot* and including without limitations, parking of *vehicles* exceeding 5,000 kilograms [11,023 lbs.] *G.V.W.*, is specifically prohibited between the front of the *principal building* and the *highway* and shall occupy an area no greater than 1.5 times the area of the *lot coverage* of the *principal buildings*.

4. Notwithstanding Sub-section A.3.(b) of Part 5 Off-Street Parking and Loading/Unloading of this By-law, required parking shall be provided on the same *lot* as the uses they serve.

I. Landscaping

Amendment: 18414, 03/23/15; 19261, 06/26/17

1. All developed portions of the *lot* not covered by *buildings*, *structures*, or paved areas shall be landscaped, including the retention of mature trees. This *landscaping* shall be maintained.

2. Along the developed sides of the *lot* which abut an Arterial Road or Collector Road, as shown in Schedule "D" - Surrey Road Classification Map (R-91) in Subdivision and Development By-law No. 8830, a continuous *landscaping* strip of not less than 6.0 metres [20 ft.] in width shall be provided within the *lot*.

3. Along the developed sides of the *lot* which abut all *highways* other an Arterial Road or Collector Road, as shown in Schedule "D" - Surrey Road Classification Map (R-91) in Subdivision and Development By-law No. 8830, a continuous *landscaping* strip of not less than 3.0 metres [10 ft.] shall be provided within the *lot*.

4. The boulevard areas of *highways* abutting a *lot* shall be seeded or sodded with grass on the side of the *highway* abutting the *lot*, except at *driveways*.

5. A continuous *landscaping* strip of not less than 1.5 metres [5 ft.] in width shall be provided along all *side lot lines* between a *highway* and 3.0 metres [10 ft.] back from the front face of the closest *principal building* fronting a *highway*.

6. A continuous *landscaping* strip of not less than 6.0 metres [20 ft.] shall be provided along all *lot lines* separating the developed portion of the *lot* from any *residential lots*.

7. Loading areas, garbage containers and *passive recycling containers* shall be screened to a height of at least 2.5 metres [8 ft.] by *buildings*, a *landscaping* screen, a solid decorative fence, or a combination thereof.

8. The area for the parking of *vehicles* shall be completely screened to a height of at least 2.5 metres [8 ft.] by *buildings* and/or a decorative fence and/or *landscaping* at least 2.5 metres [8 ft.] high.

J. Special Regulations

1. Area for outdoor display and storage of any containers, goods, materials or supplies shall:

   (a) Not exceed a total area greater than 1.5 times the *lot* area covered by the *principal building* up to a maximum of 40% *lot coverage* of the *lot*;

   (b) Not to be used for storage of trucks (>5,000 kg. *G.V.W.*) or trailers that are not associated with the business on the *lot*;

   (c) Not be located within any *front yard* or *side yard*; and

   (d) Be completely screened to a height of at least 2.5 metres [8 ft.] by *buildings* and/or solid decorative fencing and/or substantial *landscaping* strips of not less than 2.5 metres [8 ft.] in height and not less than 1.5 metres [5 ft.] in width. No display or storage of any material shall be piled to a height exceeding 2.5 metres [8 ft.] within 5 metres [16 ft.] of the said screen. In no case any material, except *shipping* containers, shall be piled to a height of more than 3.5 metres [12 ft.].

2. No display or storage of *shipping* containers shall be piled to a height of more than 7.0 metres [24 ft.] or the height of two stacked containers, whichever is less.

3. Parking, storage or service of trucks and trailers on any portion of the *lot* not associated with the uses or operations permitted in Section B thereof shall be specifically prohibited.

4. Land and *structures* shall be used for the uses permitted in this Zone only if such uses:

   (a) Constitute no unusual fire, explosion or safety hazard;

   (b) Do not emit noise in excess of 70dB(A) measured at any point on any boundary of the *lot* on which the use is located, provided that where a *lot* abuts a *lot* other than an *industrial lot* the noise level shall not exceed 60dB(A); and

   (c) Do not produce heat or glare perceptible from any *lot line* of the *lot* on which the use is located.

5. Loading areas, garbage containers and *passive recycling containers* shall not be located within any required front or *flanking street setback* or within any required *setback* adjacent any *residential lot*.

6. *Child care centres* shall be located on the *lot* such that these centres have direct access to an *open space* and play area within the *lot*.

K. Subdivision

Lots created through subdivision in this Zone shall conform to the following minimum standards:

***Lot* Size**	***Lot* Width**	***Lot* Depth**
1,800 sq. m [0.5 acre]	30 metres [100 ft]	30 metres [100 ft.]

Dimensions shall be measured in accordance with Section E.21, Part 4 General Provisions, of the Surrey Zoning By-law, 1993, No. 12000 as amended.

L. Other Regulations

Amendments: 17181, 06/07/10; 17471, 10/03/11

In addition, land use regulations including the following are applicable:

1. Prior to any use, lands must be serviced as set out in Part 2 Uses Limited, of this By-law and in accordance with the Surrey Subdivision and Development By-law, 1986, No. 8830, as amended.

2. General provisions on use are as set out in Part 4 General Provisions, of this By-law.

3. Additional off-street parking requirements are as set out in Part 5 Off-Street Parking and Loading/Unloading of this By-law.

4. Sign regulations are as provided in Surrey Sign By-law, 1999, No. 13656, as amended.

5. Special *building setbacks* are as set out in Part 7 Special Building Setbacks, of this By-law.

6. Floodproofing regulations are as set out in Part 8 Floodproofing, this By-law.

7. *Building* permits shall be subject to the Surrey Building By-law, 1987, No. 9011, as amended, and the Surrey Development Cost Charge By-law, 2002, No. 14650, as amended.

8. Surrey Tree Preservation By-law, 1996, No. 12880, as amended.

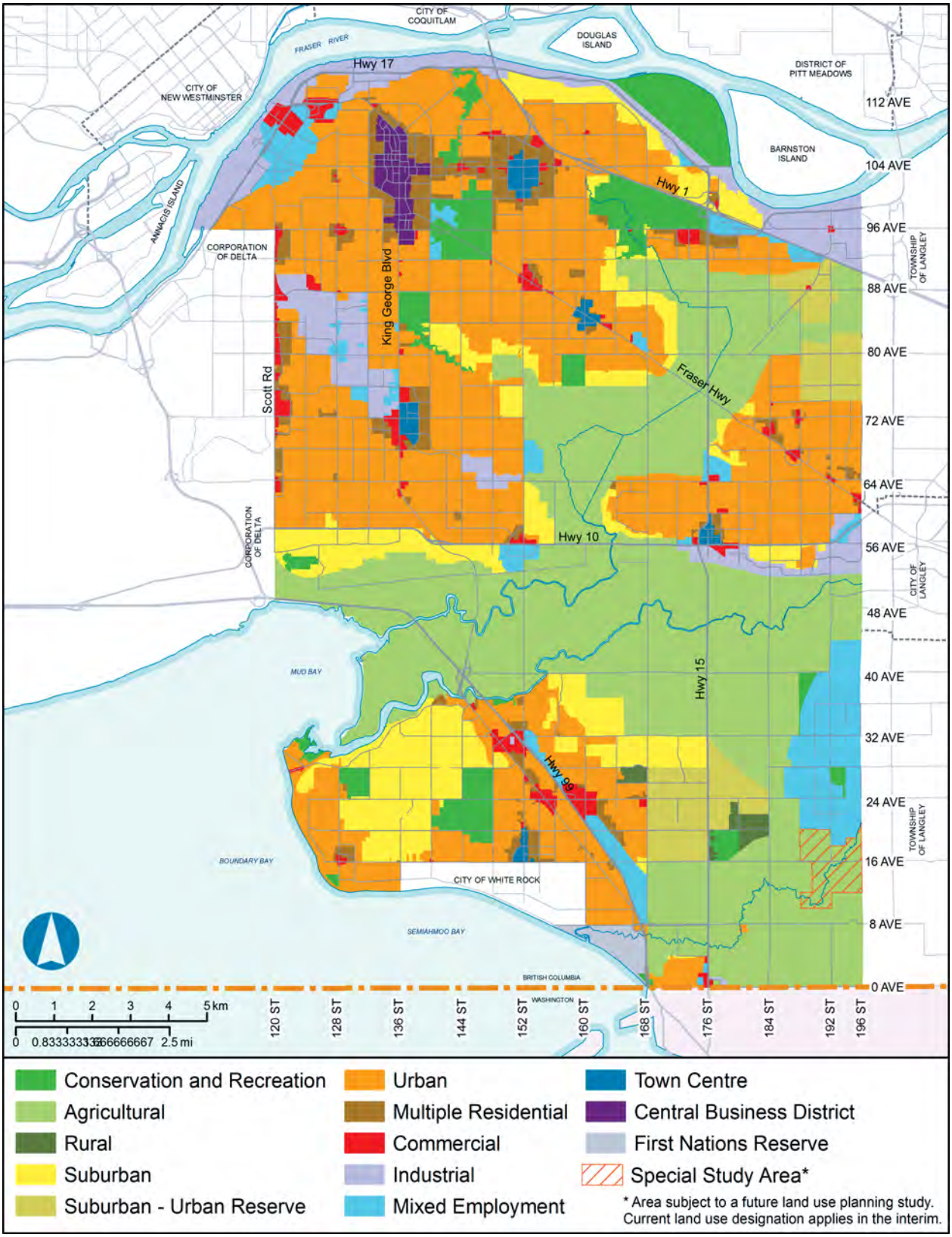
9. Development permits may be required in accordance with the *Official Community Plan*, as amended.

10. Safety regulations are as set out in the Health Act R.S.B.C. 1996, c. 179 and the "Surrey Fire Prevention By-law".

11. Permits may be required for the storage of *special wastes* in accordance with the Environmental Management Act R.S.B.C., 2003, C.53.

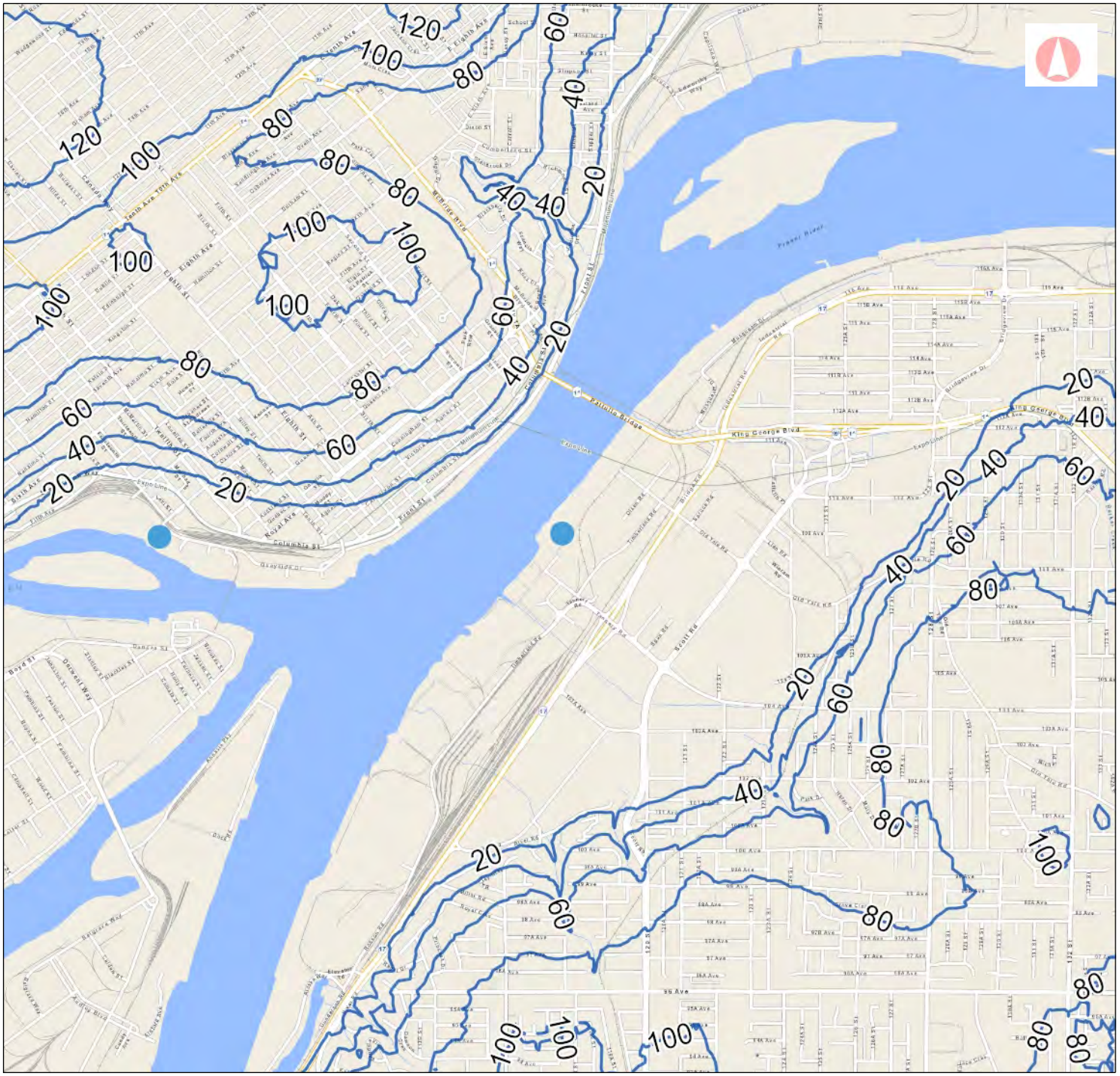
12. Provincial licensing of *child care centres* is regulated by the Community Care and Assisted Living Act, S.B.C., 2002, c.75, as amended and the Regulations pursuant thereto including without limitation B.C. Reg. 319/89/213.

Figure 3: General Land Use Designations



APPENDIX C

PHYSICAL SITE INFORMATION



BRITISH COLUMBIA

Contour Map

Legend

- Contours - (1:20,000)
- Contours - Labels (1:20,000

0 1.02 2.03 km

1: 50,000

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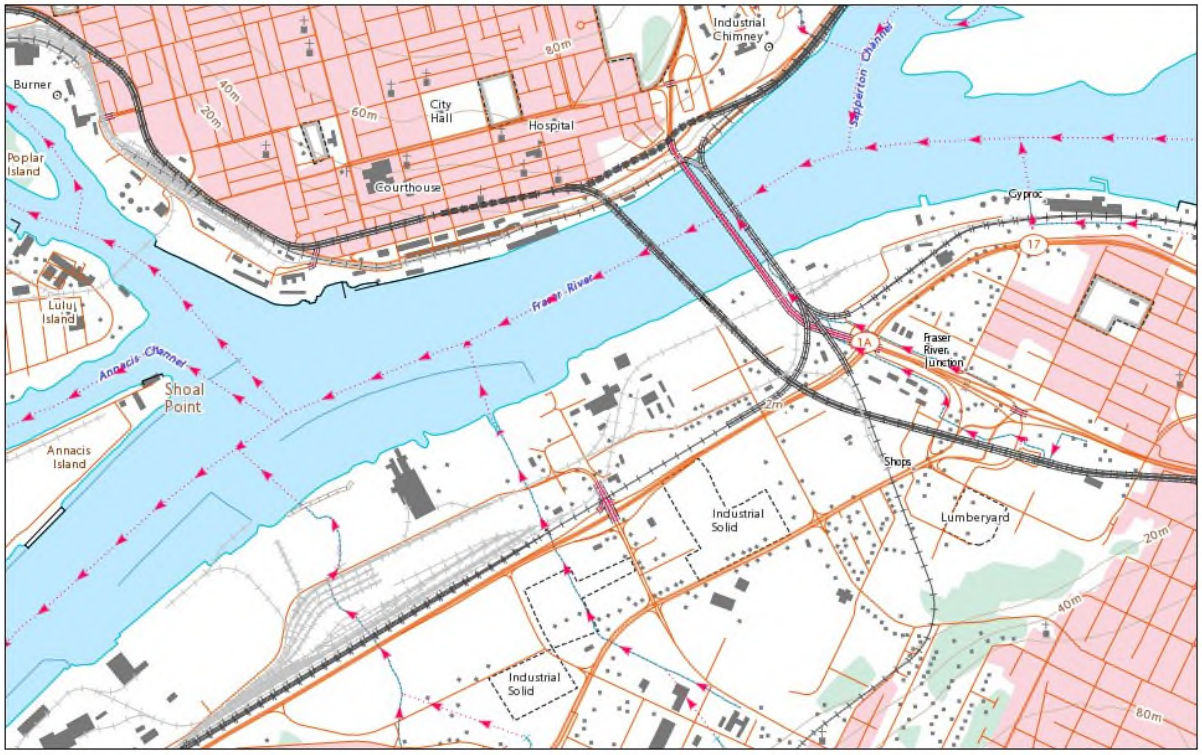
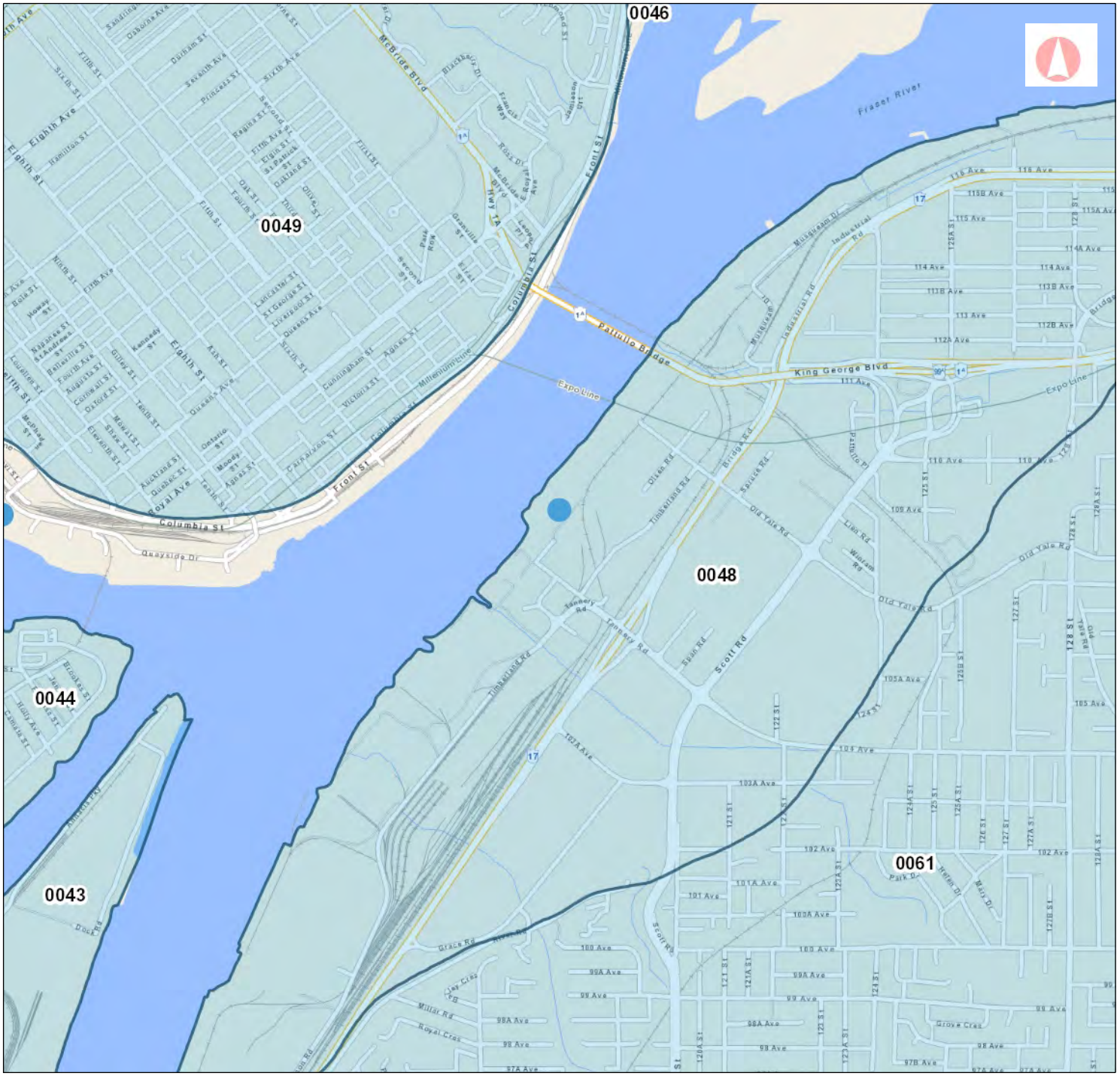
Datum: NAD83

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Key Map of British Columbia

Toporama





BRITISH COLUMBIA

Aquifer Map

Legend

- Aquifers - BC - Outlined

0 0.73 1.47 km

1: 36,112

Copyright/Disclaimer

Datum: NAD83

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Key Map of British Columbia

AQUIFER CLASSIFICATION WORK SHEET

DATE: October 18, 2007

AQUIFER MAPPER:

AQUIFER LOCATION: Fraser River Junction

AQUIFER NUMBER: 0048

NTS MAP SHEET: 092G/2

BCGS TRIM Maps (1:20,000):

CLASSIFICATION: III B **RANKING: 8**

Aquifer Size: 8 km^2

Aquifer Boundaries:

Geologic Formation (overlying):

Geologic Formation (aquifer): Fraser River Sediments. Floodplain..

Major Aquifer System Type: 1a. Predominantly unconfined fluvial or glaciofluvial aquifers along major higher stream order river valleys influenced by surface water lower E sand aquifers)

Confined/Unconfined: Unconfined to confined

Vulnerability: Moderate

Productivity: Moderate

Depth to Water Table: Depth to water values for 3 wells range from 14 ft to 4 ft with a geometric mean of 9 ft. The median and average depth to water is 13 ft and 10 ft respectively.

Direction of Groundwater Flow:

Recharge:

Domestic Well Density:

Type of Water Use: Other. Limited development.

Reliance on Source: Demand on the aquifer is low.

Conflicts Between Users:

Quantity Concerns (type, source, level of concern): None documented

Quality Concerns (type, source, level of concern): None documented.

Comments:

Worksheet prepared by Erin Park, from information in *Copy of Aquiferdatbase w attributes sep-12-07 (ep).xls*. Prepared on October 18, 2007.

References:

AQUIFER CLASSIFICATION AND RANKING

AQUIFER LOCATION: Fraser River Junction

AQUIFER NUMBER: 0048

CLASSIFICATION: III B **RANKING VALUE: 8**

Classification Component:

Level of Development: Low

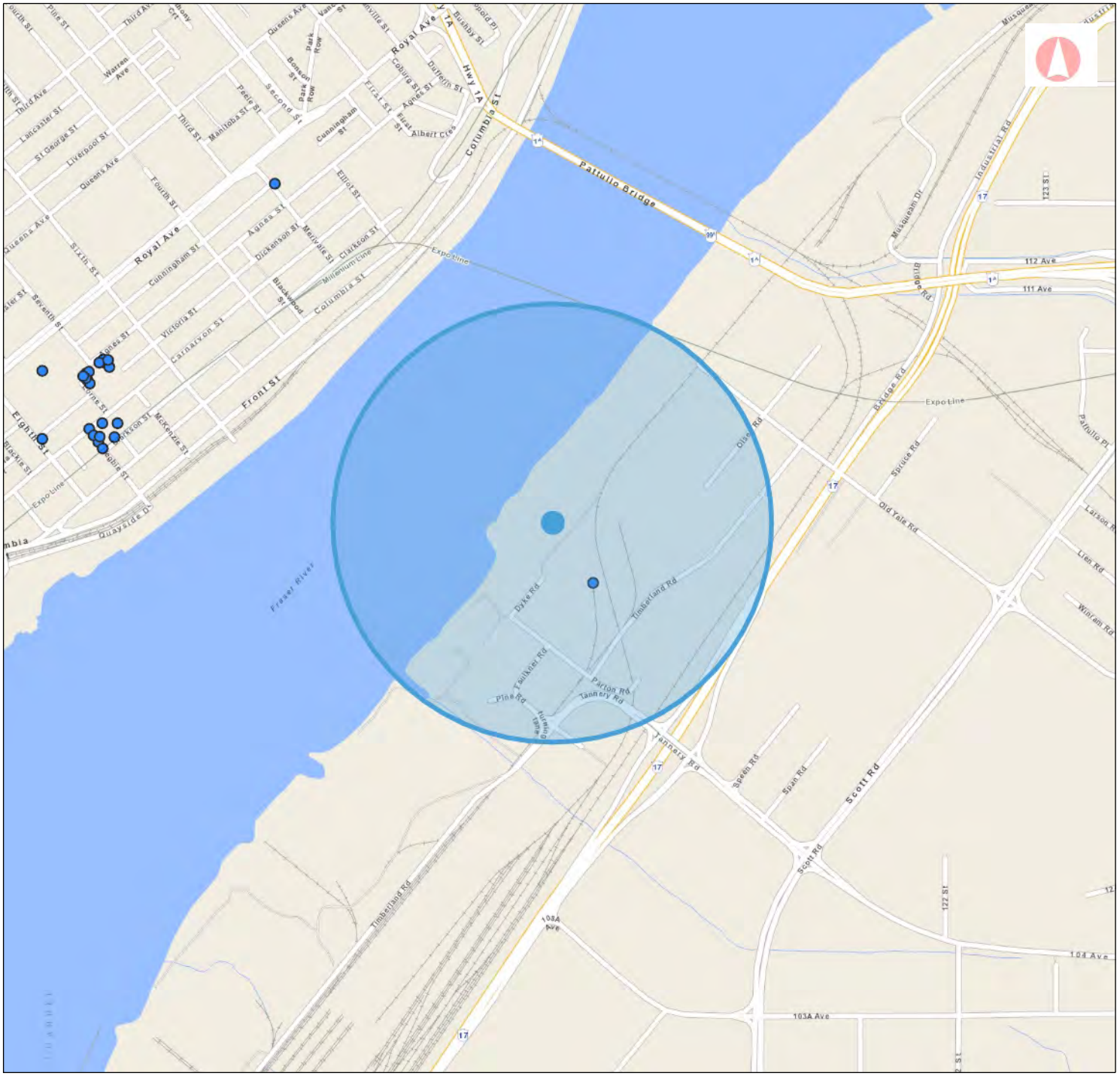
Level of Vulnerability: Moderate

Ranking Component:

	Ranking Value
Productivity:	**2**
Vulnerability:	**2**
Size:	**2**
Demand :	**1**
Type of Use:	**1**
Quality Concerns:	**0**
Quantity Concerns	**0**
Total:	**8**

Statistical Summary of Well Record Data for Aquifer # 0049

	Well Depth (ft)	***Depth to Water (ft)***	***Depth to Bedrock (ft)***	***Reported Well Yield (gpm)***
Number of Wells	22	14	0	9
Maximum	400	285	UNK	202
Minimum	35	17	UNK	1
Average	191	153	UNK	49
Median	200	151	UNK	25
Geometric Mean	156	120	UNK	20



Water Wells Map

Legend

- Water Wells - All

0 0.41 0.81 km

1: 20,000

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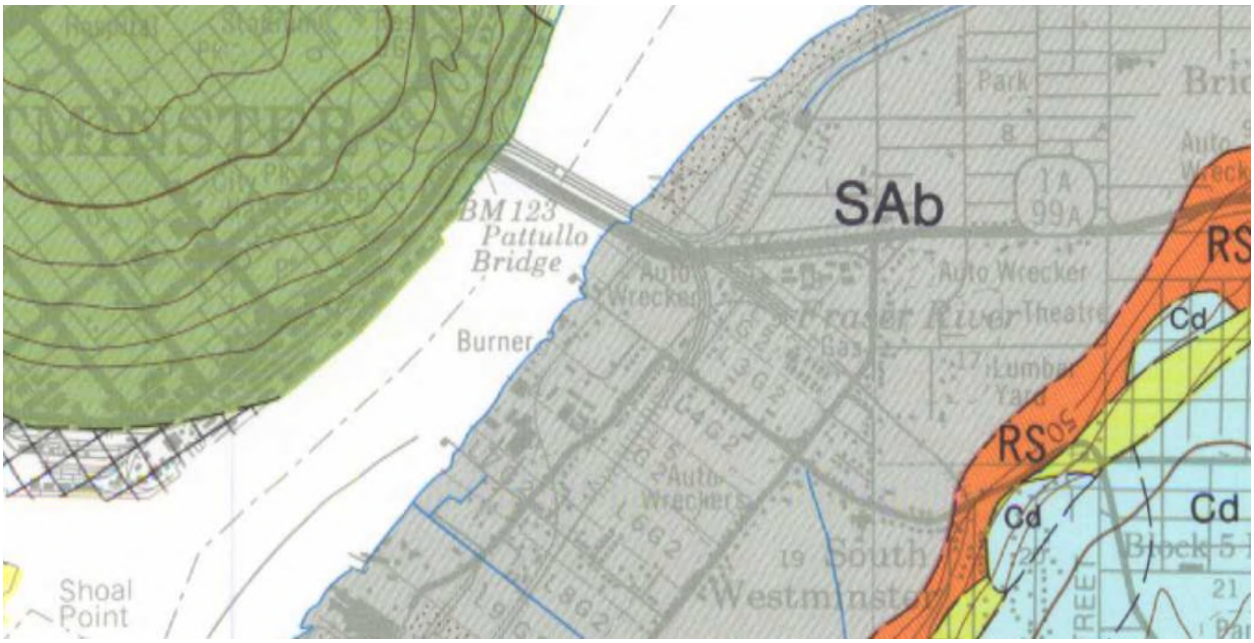
Datum: NAD83

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Key Map of British Columbia

Surficial Geology Notes

Reference: Geological Survey of Canada, Department of Energy, Mines and Resources, Map 1484A, Surficial Geology New Westminster, British Columbia, 1980

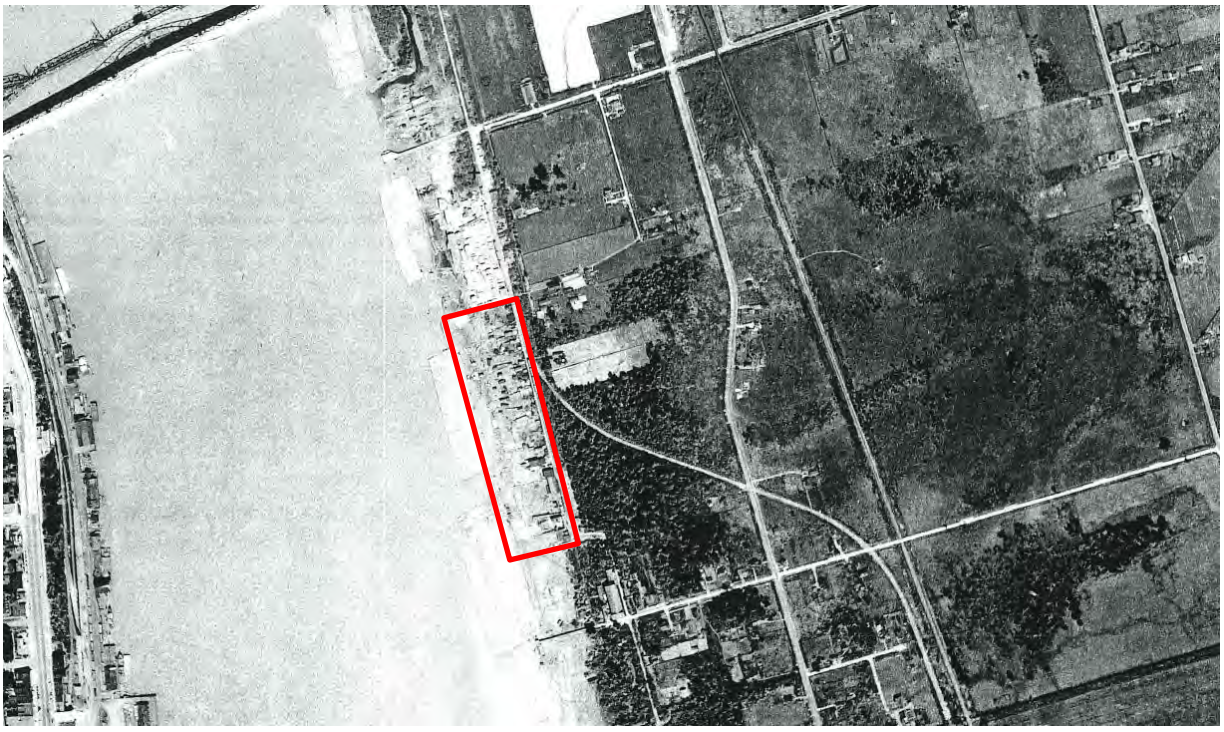


SAb-e

Bog, swamp, and shallow lake deposits: SAb, *lowland peat up to 14 m thick, in part overlying* Fb, c; SAc, *lowland peat up to 1 m thick underlying* Fb *(up to 2 m thick);* SAd, *lowland organic sandy loam to clay loam 15 to 45 cm thick overlying* SAg *and* Fd; SAe, *upland peat up to 8 m or more thick*

APPENDIX D

SELECT AERIAL PHOTOGRAPHS



Aerial Photo 1.	**The general area of the Site in 1938.**	**Source: UBC GIC**

Aerial Photo 2.	**The general area of the Site in 1949.**	**Source: UBC GIC**

Aerial Photo 3.	**The general area of the Site in 1951.**	**Source: UBC GIC**

Aerial Photo 4.	**The general area of the Site in 1954.**	**Source: UBC GIC**

Aerial Photo 5.	**The general area of the Site in 1963.**	**Source: UBC GIC**

Photo 5 Zoom	**Close-up of suspect aboveground storage tank (AST) in vicinity of APEC #34 (AEC-1) in 1963.**	**Source: UBC GIC**

Aerial Photo 6.	**The general area of the Site in 1969.**	**Source: UBC GIC**

Photo 6 Zoom	**Close-up of suspect aboveground storage tank (AST) in vicinity of APEC #34 (AEC-1), still present in 1969.**	**Source: UBC GIC**

Aerial Photo 7.	The general area of the Site in 1974.	Source: UBC GIC

Photo 7 Zoom	Suspect AST no longer present in 1974. Site layout has changed (distribution warehouse has been built).	Source: UBC GIC

Aerial Photo 8.	**The general area of the Site in 1982.**	**Source: UBC GIC**

Aerial Photo 9.	**The general area of the Site in 1986.**	**Source: UBC GIC**

Aerial Photo 10.	The general area of the Site in 1991.	Source: UBC GIC

Aerial Photo 11.	The general area of the Site in 1997.	Source: UBC GIC

Aerial Photo 12.	**The general area of the Site in 2002.**	**Source: UBC GIC**

Aerial Photo 13.	**The general area of the Site in 2004.**	**Source: COSMOS**

Aerial Photo 14.	**The general area of the Site in 2005.**	**Source: COSMOS**

Aerial Photo 15.	**The general area of the Site in 2006.**	**Source: COSMOS**

Aerial Photo 16.	**The general area of the Site in 2007.**	**Source: COSMOS**

Aerial Photo 17.	**The general area of the Site in 2008.**	**Source: COSMOS**

Aerial Photo 18.	**The general area of the Site in 2009.**	**Source: COSMOS**

Aerial Photo 19.	**The general area of the Site in 2010.**	**Source: COSMOS**

Aerial Photo 20.	**The general area of the Site in 2011.**	**Source: COSMOS**

Aerial Photo 21.	**The general area of the Site in 2012.**	**Source: COSMOS**

Aerial Photo 22.	**The general area of the Site in 2013.**	**Source: COSMOS**

Aerial Photo 23.	**The general area of the Site in 2014.**	**Source: COSMOS**

Aerial Photo 24.	**The general area of the Site in 2015.**	**Source: COSMOS**

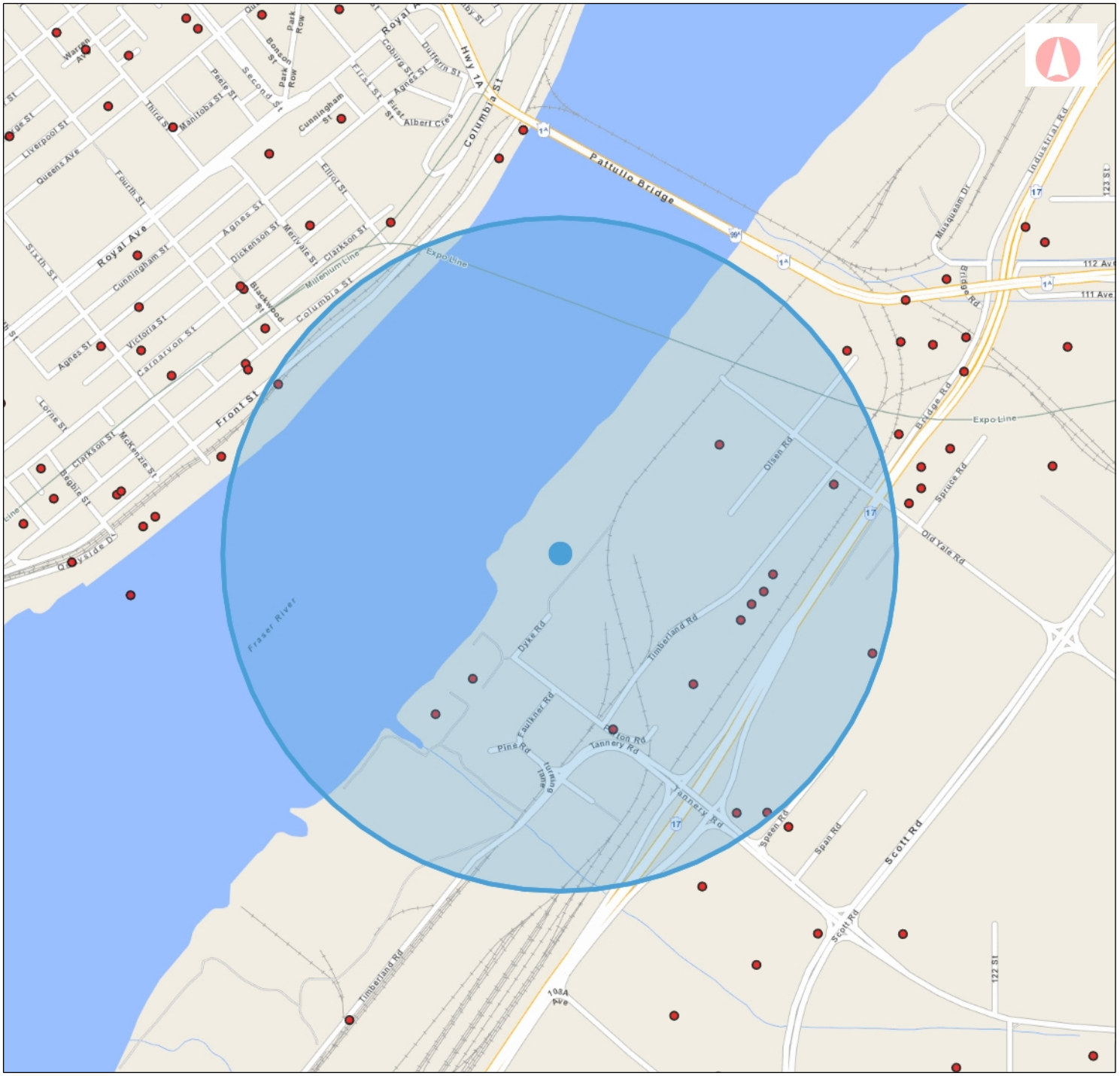
Aerial Photo 25.	**The general area of the Site in 2016.**	**Source: COSMOS**

Aerial Photo 26.	**The general area of the Site in 2017.**	**Source: COSMOS**

Aerial Photo 27.	**The general area of the Site in 2018.**	**Source: COSMOS**

APPENDIX E

PROVINCIAL DOCUMENTS



BRITISH COLUMBIA

Site Registry Map

Legend

- Environmental Remediation

0 0.37 0.73 km

1: 18,056

Copyright/Disclaimer

CAUTION: Maps obtained using this site are not designed to assist in navigation. These maps may be generalized and may not reflect current conditions. Uncharted hazards may exist. DO NOT USE THESE MAPS FOR NAVIGATIONAL PURPOSES.

Datum: NAD83

Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere

Key Map of British Columbia

```
 As of: OCT 21, 2018       BC Online: Site Registry                    18-10-25
                     For: PE85113  ENVIROCHEM SERVICES INC.            14:06:57
 Folio: 18089                                                          Page   1
                                 Detail Report
SITE LOCATION
       Site ID:       6114                              Latitude:  49d 12m 10.1s
 Victoria File:                                        Longitude: 122d 53m 32.1s
 Regional File: 26250-20/6114
        Region: SURREY, LOWER MAINLAND

 Site Address: 11940 OLD YALE ROAD
         City: SURREY                          Prov/State: BC
  Postal Code: V3V 3X3

 Registered: AUG 16, 1999  Updated: MAY 19, 2006  Detail Removed: MAY 19, 2006

 Notations:   1   Participants:   2    Associated Sites:   0
 Documents:   0 Susp. Land Use:   0 Parcel Descriptions:   1

Location Description: PORTABLE GPS UNIT USED TO OBTAIN LAT/LONG

Record Status: NOT ASSIGNED
 Fee category: UNRANKED

 = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
NOTATIONS

  Notation Type: SPILL REPORTED
 Notation Class: ADMINISTRATIVE
      Initiated: JUL 11, 1999                        Approved: JUL 11, 1999

 Ministry Contact: SUNDHER, AVTAR

 Notation Participants                               Notation Roles
 FRASER RIVER R V PARK INC. (SURREY)                 SUBMITTED BY

 Note: DIESEL SPILL REPORTED ON-SITE AT RV SITE 44

 Required Actions: SPILL IMPACTED APPROX. 20' X 30' AREA.  IMPACTED SAND/SOIL
 EXCAVATED TO HARDPAN (1.5' BELOW SURFACE)  SOIL TO BE SENT FOR DISPOSAL.
 = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
SITE PARTICIPANTS
```

SiteRegDetailSiteID6114Lat49Long122 (1)

Participant: FRASER RIVER R V PARK INC. (SURREY)
Role(s): PROPERTY OWNER
Start Date: JUL 11, 1999 End Date:

- -

Participant: SUNDHER, AVTAR
Role(s): MAIN MINISTRY CONTACT
Start Date: JUL 11, 1999 End Date:

= =

PARCEL DESCRIPTIONS

Date Added: JUN 05, 2000 Crown Land PIN#:
LTO PID#: 003464547 Crown Land File#:
Land Desc: LOT 1 EXCEPT: PART DEDICATED ROAD ON PLAN LMP3759,DISTRICT LOTS

PARCEL DESCRIPTIONS

4 AND 5 GROUP 2 NEW WESTMINSTER DISTRICT PLAN 71190

No activities were reported for this site

End of Detail Report

APPENDIX F

PREVIOUS ENVIRONMENTAL REPORTS

COPY

ENVIRONMENTAL AUDIT REPORT

Brownsville/Port Mann
CN Land Swap
Surrey, BC

for

1996
Oil Contamination

Realty Services,
PWGSC
Pacific Region

by

ENVIRONMENTAL SERVICES
Public Works & Government Services Canada
Pacific-Western Region
BC/Yukon Division

August 23, 1996

Project - 762429

Project Manager - Ron Neumeyer

EXECUTIVE SUMMARY

BROWNSVILLE

Aerial Photography

Review of air photography records indicates that the property has been in use by lumber milling operators for at least thirty years. Although the property north of the Lindal operation is now a vacant area, it was, until the early 1980's, the site of an active mill. However, the photographs seem to indicate that for the most part, the subject parcels were used for the storage of milled products and supplies. *Therefore, there is no reason to suspect significant soil contamination in these areas.*

BC Research (1991)

BCR conducted a chemical assessment of the soils in the parcels on behalf of the Fraser River Harbour Commission in 1991 (Project # 2-31-305). One hole was drilled on each parcel to a maximum depth of 0.75 metres. Twelve samples were analyzed. Metals, PAH and phenols were below industrial levels except for one subsample in parcel A in which the phenol value exceeded Level C. As a consequence eight additional samples were taken from this parcel at depths to 0.25 metres. As all test results were below industrial levels, BCR concluded that the original high value was a very localized situation, or possibly a laboratory procedural error. *In all they found no evidence of soil contamination above industrial levels.*

Klohn-Crippen - Preliminary Geotechnical and Environmental Assessments Report

The consultant included a recommendation for further investigation to delineate one area where oil and grease values exceeded provincial remediation criteria. However, this type of recommendation is common. The potential affected, area is very localized and is not likely to be a costly remediation. Consequently, this issue could be left until the property is developed. Further testing could be included along with other engineering work as part of the process of securing building permits from the District of Surrey. To keep costs down, soil remediation, if needed, could be done during construction when the necessary equipment would be on the site.

Conversations Individuals Having Knowledge of Past Operations

The Pentachlorophenol (PCP) dip-tank was located outside the boundaries of parcel 7 near the tracks and Old Mill Road. The surface below the tank was asphaltic concrete and treated products were generally stored at various locations south of the tracks, well away from the subject property. *Consequently, there is no reason to suspect PCP contamination of soil on the parcels 7&8.*

Drainage

No significant were problems noted.

Buildings, Structures, Materials and Equipment

Land use history for these parcels suggests that there may be some insignificant localized pockets of hydrocarbon contamination. There is no evidence to suggest significant contamination soil from metals, PCB or PCP.

Surrounding Land Use

There is no evidence of significant risk of soil contamination due to surrounding third party operations, most of which are inland of the dyke.

Environmental Sensitivity

The auditor (a biologist) did not find any evidence of unique terrestrial habitats on, or near the subject properties. The Fraser River Estuary Management Program (FREMP) has completed mapping of the waterfront in respect to fish habitat value. *The waterfront opposite the subject properties have been found to have medium to low productivity fish habitat potential and, consequently, some development of this frontage should be permissible (subject on the easterly side to satisfactory habitat mitigation or compensation).*

Sand piles

Piles of sand fill, with some metal debris were found in the central section of parcel C, just north of the beginning of the old Brownsville spur. The source of these piles could not be determined, but may have resulted from excavations during the decommissioning of the wood mill originally located here, or opportunistic disposal by local contractors. *No environmentally hazardous debris was found in the surface of these piles.*

Oil stained soil near Brownsville Spur

South west of the sand piles was a small patch of open ground with some dark oil stains (an oily odour). A small machine may have been serviced here, or some waste oil discarded after servicing in other locations. It is likely that the soil for a short distance below this spot may be contaminated with hydrocarbon residues. Because this is a relatively small, localized spot several hundred metres from the river there is no immediate threat to environmental resources or human health. Bioremdiation (possibly accelerated by the addition of high nitrogen liquid fertilizer) should remove most of the residue over the next few years. *If company staff is responsible, they should be advised to discontinue waste oil disposal in this area. Such oil and lubricant should be collected in a proper container and recycled.*

Oil shed soil

Oil staining was noted along the south side of the oil shed below the drums stored along the outside wall. In addition stained soil was evident below the elevated floor *(see the following section for further discussion on this matter)*.

Hazardous Materials & Wastes

The company stores oil and diesel fuel in a wood building located in the south east section of parcel A. It would prudent to replace the old oil storage building with a modern one, designed for such storage, and remediate the underlying soils. If this is not done, the contamination problem will likely continue and the level of soil contamination will remain, or possibly become more serious.

Storage Tanks - No storage tanks were found.

PORT MANN SITE

1991 B.C. Research CN Port Mann Site Assessment Report

The consultant points out that some soil contamination is to be expected given the past use of portions of the property for rail lines and, in respect to parcel 6, a sawmill (although presently this is limited to log storage). Parcel 1 is leased from CN by International Forest Products which has used a variety of antisapstain chemicals over the years. Although the lease is now paved, the consultant expressed the concern that some of these chemicals may have migrated from treated wood into underlying soil before the pavement was installed.

1992 PWC, Property Transfer Assessment Checklist

No significant issues were noted.

Present Day and Projected use of the Property

The majority of the developed property is being used on a daily basis by CN for rolling stock, and the temporary parking and shuttling of rail cars. It appears that only a small portion of the lower section of the CN yard actually occupies the subject parcels. Rolling stock is cleaned on lines which cross the subject parcels, nor are waste materials from rail cars deposited on these parcels. Dust control on the private CN access road and rail line does not involve the use of oil, or other liquids that could result in soil contamination.

International Forest Products leases parcel 1 from CN. The company presently uses NP1 antisapstain for wood destined for Japan. Some of these products may be stored on the paved lease from time to time. However,

the company is monitoring stormwater runoff in accordance with the BC *Antisapstain Chemical Regulation* and has found the NP1 values to be consistently below the allowed limits.

The remaining sections of the parcels are either undeveloped riparian land or devoted to environmentally benign uses such as small moorages, and marinas, and chip loading facility (for the former BC Hydro thermal generating plant located just west of the property).

Environmental issues

Environmental issues identified thus far do not impede the continued use of these parcels for present commercial purposes. Operations presently carried out on these parcels are not likely to have significant adverse effects on environmental resources in the surrounding area.

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ENVIRONMENTAL SERVICES - Ron Neumeyer
Pacific Region - PWGSC - ☎ (604) 623-6386 Fax: (604) 623-6239

INTRODUCTION

Real Property Services Directorate (RPS), Public Works and Government Services Canada (PWGSC), retained the Environmental Services Unit (ESU), PWGSC, to conduct an environmental audit of two groups of properties included in a land exchange with Canadian National Rail (CN). The audit was completed according to terms and conditions discussed in the body of this report.

Mandate

The audit was undertaken to identify any significant environmental circumstances associated with the subject properties. Details of each are provided later in this report, however the following outlines the respective audit objective for each location:

The Port Mann Site

- This property is presently owned by the federal Crown and will be transferred to CN. CN assumes total liability for any and all soil contamination *therefore only current operations on the specific parcels were assessed* re: the *Canadian Environmental Assessment Act* (CEAA)

- This property is mostly filled river bed and has been used by CN for many years. The property is referred to in this report as the Port Mann Site

The Brownsville Site

- The federal Crown will be acquiring title and therefore assuming some responsibility for any contamination that may be present, or that may occur in the future. Therefore, historical use and current operations were examined by the audit process.

- These parcels are referred to in this report as the Brownsville Site.

Contamination

This word is used at various points in the text of this report. When employed by the author it is understood to mean parameter values in excess of the commercial/industrial levels found in the 1995 edition of "*Criteria for Managing Contaminated Sites in B.C.*"(CMSC) or at levels that may contravene the *B.C. Special Waste Regulation*. It should be noted that the former reference is a guideline and as such is not law, the latter on the other hand, arises from an Act of the Legislature, although its application to soil is still under discussion.

Logistics

The RPS contact was Joe Gormley. The audit was conducted by Ron Neumeyer, Environmental Operations Manager, ES, PWGSC. The site inspections took place during the week of July 7, 1996. A list of persons or agencies contacted during the course of this audit is provided in the table below;

Key Contacts - Brownsville Site

Name	Title	Phone/Fax/Cel
Dave Trenholme	Warehouse Supervisor. Lindal Cedar Holmes	580-1191/1810/-
Bill Godfrey	worked for Brown Lee Industries	421-8887/6084
JoseGomez	Mill Superintendent, Lindal Cedar	580-1191/1810
Russ Cameron	Mill Supervisor, Lindal Cedar	580-1191/1810

Assumptions & Limitations

This report was prepared at the request of RPS, for the purpose of obtaining information on potential environmental issues associated with the properties described in this report. The information contained herein is presented without prejudice. Any uses of this report by a third party, or any reliance on, or decisions to be made based on it, are the responsibility of such parties. Environmental Services and the Government of Canada accept no responsibility for damages, if any, suffered by any third party as a result of decisions made, or actions taken, based on this report. In evaluating the property, Environmental Services has relied in good faith on information provided by others and therefore cannot accept responsibility for any deficiency, statements, or inaccuracies contained in this report as a result of interpretation of data provided by others.

Ron Neumeyer
Environmental Operations Manager, A&E Services

SECTION 1 - BROWNSVILLE REPORT

1.0 BACKGROUND

The legal description and related municipal data on the subject parcels are taken from the D.G Pateman appraisal report. The six parcels (C is partitioned but is considered as a single parcel in this audit), ranging between 0.2 and 0.6 hectares in area, and are located a short distance west of the Patullo Bridge along the south west shore of the Fraser River. While these are legally considered to be waterfront parcels, physically the parcels do not directly front the river, and are therefore considered to be "semi-waterfront" sites. Figure 1.1 illustrates the general layout and location of the subject parcels. Parcels A, B and a large portion of C are presently occupied by Lindal Cedar Homes Ltd. The remaining parcels, 7 & 8, are not in use (as discussed later this was the site of a mill, since dismantled).

1.1 Development History

1.1.1 Aerial Photography

A series of air photographs was obtained from the UBC Geography Department and the District of Surrey. Examination of these images provided the following information:

Years (source id.)	Comments/observations
1938 (H5938-34)	There is no industrial development on the subject land. There are numerous house size buildings in parcels B and C, likely homes and storage facilities for the fishing community; no milling operations are evident; the Brownsville Spur is in use; the area inland of the subject parcels is either woods or farmland.
1946 (A10297-128)	The image is of poor quality but shows that many of the earlier structures have disappeared; industrial development is beginning in parcels 7&8 and a building can be seen in parcel A; logs are boomed at the low water line; the spur does not appear to be in use.
1952 (BC1632:20)	A poor quality image, all that can be confirmed is that parcel A now has a more substantial structure which has expanded into parcel B.
1962 (District of Surrey)	The Brownsville mill has been constructed and portions of the main building lie within parcels A & B and a section of C; most of C is undeveloped with some wood storage near the beginning of parcel 8; considerable quantities of logs are boomed at the shoreline; parcel 7 is being used for wood storage; inland properties are now under development as milling operations or related industries.

Years (source id.)	Comments/observations
1963 (UBC no code)	Most of the subject properties are free of any significant structures although the mill building still occupies most of parcels A & B; there are some small buildings or stored logs throughout all of the remaining parcels, in particular parcels 7&8.
1966 (Surrey)	Parcels A&B are unchanged; parcel C now has two buildings in the south end and the remainder is in use for wood storage, most of parcels 7&8 are devoted to log and lumber storage; large milling operations exist immediately across the tracks (south) from the subject property.
1970 (Surrey)	No significant change apparent.
1971 (BC5406:181)	The mill on parcels A&B has been removed; the first stage of the existing Lindal Cedar storage shed has been constructed in parcel C, and the two early buildings remain; development in parcels 7&8 has not changed noticeably.
1973 (Surrey)	The existing Lindal dry storage shed is now present, a portion of which is located in parcel C; the two easterly buildings remain; other uses of the subject parcels have not changed significantly from 1971, although the mill has added some buildings in and around parcel 7; the large upland mills remain and have increased in size
1978 (Surrey)	Parcels A, B and C appear much as they do today (a larger green chain has been added); parcels 7&8 are still in use by the Brown Lee Industries Douglas fir mill; extensive industrial development is now prevalent inland from the subject land.
1984 (Surrey)	Parcels A and B are largely unchanged. However, the Brown Lee mill has been removed from parcels C, 7 and 8 (the area is essentially clear of all buildings and wood products); the inland mills remain.
1989 (Surrey)	No apparent change in the use of the subject parcels; Lindal is using the east end of parcel C for product storage; the campground and RV park has been completed and is occupied; the inland mills remain.
1994 (FFC 94:164)	Little significant change; the sand piles can be seen in the central area of parcel C; Lindal has graded and paved a portion of parcel C just north east of their storage building

Review of air photography records indicates that the property has been in use by lumber milling operators for at least thirty years. Although the property north of the Lindal operation is now a vacant area, it was, until the early 1980's, the site of an active mill. However, the photographs seem to indicate that for the most part, the subject parcels were used for the storage of milled products and supplies. *Therefore, there is no reason to suspect significant soil contamination in these areas.*

1.1.2 BC Research (1991)

BCR conducted a chemical assessment of the soils in the parcels on behalf of the Fraser River Harbour Commission in 1991 (Project # 2-31-305). One hole was drilled on each parcel to a maximum depth of 0.75 metres. Twelve samples were analyzed. Metals, PAH and phenols were below industrial levels except for one subsample in parcel A in which the phenol value exceeded Level C. As a consequence eight additional samples were taken from this parcel at depths to 0.25 metres. As all test results were below industrial levels, BCR concluded that the original high value was a very localized situation, or possibly a laboratory procedural error.

In all they found no evidence of soil contamination above industrial levels.

1.1.3 Klohn-Crippen - Preliminary Geotechnical and Environmental Assessments Report.

The subject report was commissioned by Lindal Cedar and address the vacant section of parcel C and parcels 7&8. The company investigated land titles, reviewed air photos from 1938 to 1989, discussed matters with BCE officials, inspected the site and carried out limited soil and groundwater sampling (also bioassay on groundwater). Specific environmental observations found in the subject report were:

- site inspection found some construction/demolition debris (noted by this auditor in later section);
- test hole driller frequently encountered hog fuel, wood waste and related wood debris;
- groundwater samples were found to have no lethal effects on juvenile rainbow trout at 100% dilution;
- no BETX or metals were detected in groundwater samples in excess of CMCS criteria for discharge water; and
- site investigation involving sampling and testing found no "extensive" presence of contamination.

The consultant included a recommendation for further investigation to delineate one area where oil and grease values exceeded provincial remediation criteria. However, this type of recommendation is common. The potential affected, area is very localized and is not likely to be a costly remediation. Consequently, this issue could be left until the property is developed. Further testing could be included along with other engineering work as part of the process of securing building permits from the District of Surrey. To keep costs down, soil remediation, if needed, could be done during construction when the necessary equipment would be on the site.

1.1.4 Conversations Individuals Having Knowledge of Past Operations

The auditor spoke with Russ Cameron and Bill Godfrey (see contact list in section 1), both have been working in the area for many years. The Brownsville mill complex included a variety of milling operations. According to Mr. Godfrey the only red cedar was milled until 1978. At that time softwood milling was undertaken in the parcels 7&8 only for two years (1979-1980) at which time the mill went bankrupt. The mill used a *pentachlorophenol (PCP) dip tank* to protect milled wood from fungal attack while in outdoor storage or during

shipment. The tank consisted of a 16x24 foot box containing PCP with wood braces across the top. Stacked wood was placed on the supports and hand sprayed with PCP hoses connected to a pump which took PCP from the tank.

The Pentachlorophenol (PCP) dip-tank was located outside the boundaries of parcel 7 near the tracks and Old Mill Road. The surface below the tank was asphaltic concrete and treated products were generally stored at various locations south of the tracks, well away from the subject property. *Consequently, there is no reason to suspect PCP contamination of soil on the parcels 7&8.*

1.2 Conditions at the Time of Inspection

The general layout of the subject property is shown in Figure 1.2. A large part of the property is presently occupied by Lindal Cedar Homes which operates a cedar mill and cedar home fabrication facility on parcels A, B and about 50% of parcel C. The remaining property is vacant.

1.2.1 Drainage

The parcels do not have municipal storm sewer services. On the Lindal parcels storm water drainage is across asphalt surfaces. All of the parcels are located on the river side of the dyke. Consequently, all storm water collects in pools on finished surfaces (and evaporates), flows to the perimeter of the yard asphalt onto adjacent ground, or percolates directly into the exposed soil matrix. As far as it could be determined none of the overland drainage from the subject properties flows directly onto the Fraser River (there are no surface ditches associated with this property).

No significant problems were noted.

1.2.2 Buildings, Structures, Materials and Equipment

The inspection of the Lindal Cedar parcels began at the northeast corner of the operation. This location is at the point where the Brownsville CN spur begins (no longer in use) and the operating rail line veers off to the south. The large Lindal storage warehouse, which occupies much of the northeast section of parcel C (it extends well beyond the parcel boundary toward the river), supplies dry storage for house kits and cover for the planer mill. Much of the steel roofed, wood framed warehouse is not enclosed. All floor surfaces and yard within the parcels is covered with asphaltic concrete. Wrapped house kits are stored in the yard between the spur and southeast property line.

In parcel B is a natural gas fired drying kiln. This long brick building is used to dry green lumber prior to planing and packaging.

This is a saw mill operates in the central yard with a green chain and hogfuel bunker. As far as it could be determined only the hogfuel bunker is located on the subject property (parcel A).

The company stores oil and fuel in a wood building located in the southeast section of parcel A (see 2.1 and 2.2). The floor of the building is constructed of wood timbers.

Land use history for these parcels suggests that there may be some insignificant localized pockets of hydrocarbon contamination. There is no evidence to suggest significant contamination soil from metals, PCB or PCP.

1.3 Surrounding Land Use

The properties are within an area of Surrey zoned for Light Impact Industrial use. The subject property is located in the Westminster area of Surrey, which aside from the occasional residential dwelling, is largely devoted to industrial properties, many of which are related to scrap metal recycling. Rail lines runs through the general area immediately northeast of the subject parcels. A large privately owned camp ground with RV accommodations and a pub is located at the junction of Old Yale Road and the CN tracks.

There is no evidence of significant risk of soil contamination due to surrounding third party operations, most of which are inland of the dyke.

1.4 Environmental Sensitivity

The auditor (a biologist) did not find any evidence of unique terrestrial habitats on, or near the subject properties. The Fraser River Estuary Management Program (FREMP) has completed mapping of the waterfront in respect to fish habitat value. *The waterfront opposite the subject properties have been found to have medium to low productivity fish habitat potential and, consequently, some development of this frontage should be permissible (subject on the easterly side to satisfactory habitat mitigation or compensation).*