

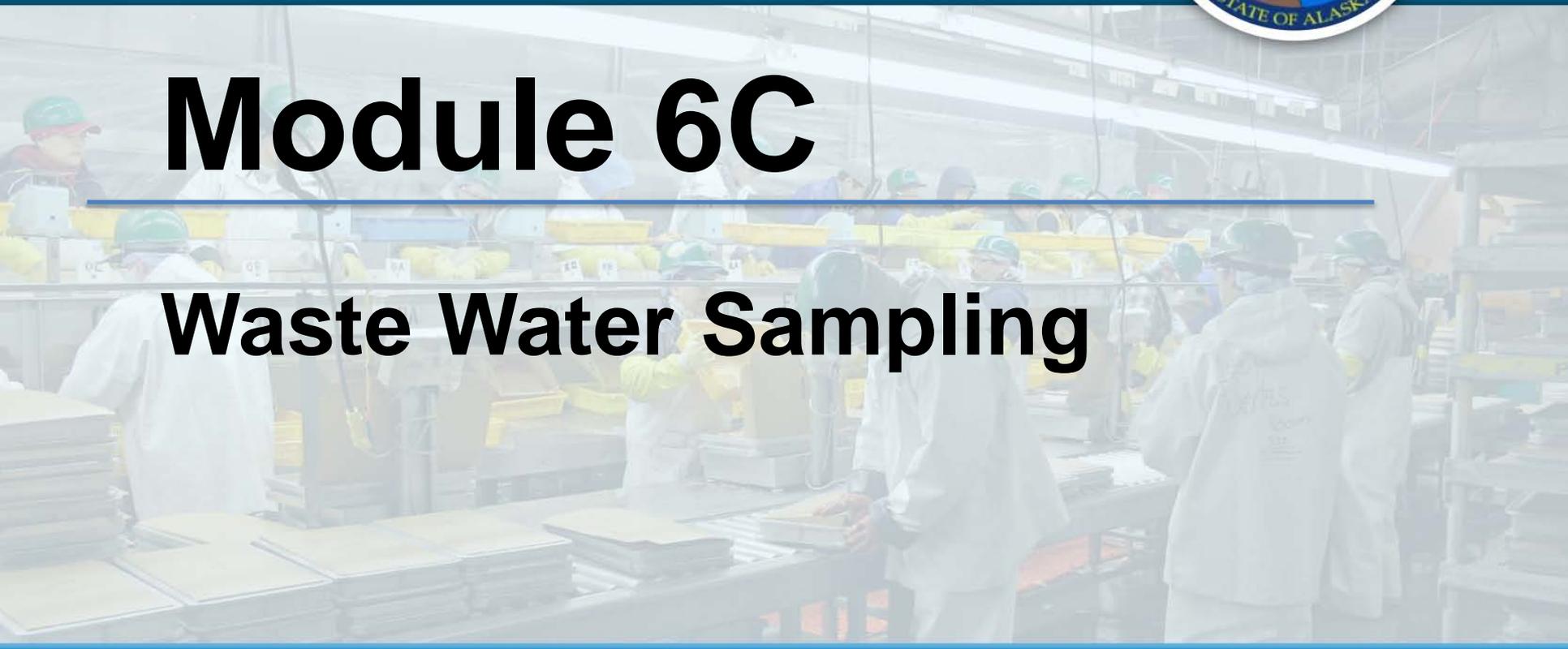


Alaska Department of Environmental Conservation
Division of Water



Module 6C

Waste Water Sampling



2012 SEAFOOD PROCESSING WASTE PERMITTING & COMPLIANCE WORKSHOP

Anchorage, Alaska • February 28-29, 2012

Module 6C – Waste Water Sampling

MODULE 6C



Elizabeth Rensch

Principal, Analytica Group



Analytica Group

MODULE 6C



Environmental Laboratories Seafood Processors Waste Water Monitoring Workshop



“We Take The **Red Tape OUT of Your Water”**



Welcome!

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Alaska Seafood Processors



Today's Agenda

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Waste Water - Technical Sampling Workshop

- **Test Methods, Sampling Techniques**
 - BOD, TSS, Oil & Grease
 - Fecal Coliform Bacteria, Enterococcci Bacteria
- **How to read and understand your data report**





Our Company History

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Milestones.....

- 1984 - Opened Corporate Headquarters in Denver
- 1992 - Opened 1st Alaska Facility in Anchorage
- 2003 - Merged NTL, Expanded to 3 Alaska Facilities
- 2004 – Became Largest Certified WQ Lab in Alaska
- 2009 - Opened Mat-Su Service Center in Wasilla
- 2012 - 20th Anniversary





Our Company History

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**Three
ALASKA
SERVICE
CENTERS**





Our Company History

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- Our *ADEC Accredited* laboratories provide full service testing for Drinking Water and Wastewater.



Module 6C – Waste Waster Sampling

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Wastewater Methods, Sampling Techniques

by

Kelly Garretts

District Lab Manager - Anchorage



Our Clients

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- Public Water Systems
- Commercial Well Clients
 - Well Drilling Contractors
- Private Well Clients
- Industrial Facilities WWTP
- Engineering Firms
 - Watershed Surveys
 - Baseline Studies
 - Treatment Design
- Federal, Municipal, & State Agencies.
- Industrial Oil & Gas
- Timber, Mining, Fisheries
- Tourism, Lodges, Hotels.



Our Expertise

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‘WE TAKE THE *RED TAPE* OUT OF YOUR WATER’

We specialize in Drinking Water, Wastewater, and General Water Quality Compliance Monitoring & Regulations.



Our Dramatic Difference

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We offer Programs that solve the regulatory compliance needs of our clients

Save Time - Ease Your Mind - Reduce Your Risk



Methods, Sampling Techniques

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- **BOD 5 - Method 5210B** – Biochemical Oxygen Demand – 5 Day
- **TSS – Method 2540D** – Total Suspended Solids
- **Oil & Grease - Method 1664** – (vegetable oils, animal fats, surfactants)
- **Fecal Coliform - Method 9222D**
- **Enterococci Bacteria Method ASTM D 6503-99**



Primary Reasons for Rejection of Your Sample

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All samples received by Analytica must be in compliance with EPA or ADEC APDES regulations . The following are the primary reasons why we are required by regulations to reject your sample:

- **Hold Time**

- BOD – 48 Hours

- TSS – 7 Days

- Oil & Grease – 28 Days

- Fecal Coliform and Enterococci - 6 Hours



Primary Reasons for Rejection of Your Sample

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All samples received by Analytica must be in compliance with EPA or ADEC APDES regulations . The following are the primary reasons why we are required by regulations to reject your sample:

- **Temperature**
 - Between 0-6 degrees Celsius and not frozen
- **Insufficient sample volume**
- **Broken container, leaking samples**



Test Method and Sampling Techniques

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BOD 5 - Method 5210B – Biochemical Oxygen Demand – 5 Day

- This test measure the impact of the waste on the oxygen content of the receiving water body. (marine water for example). BOD is used to gauge the effectiveness of your wastewater treatment. Hold Time is 48 hours.

TSS – Method 2540D

- This test measures the total solid materials suspended in water. High concentrations of TSS can lower water quality and harm aquatic life. TSS is used to gauge the effectiveness of your wastewater treatment. Hold Time is 7 Days.



Test Method and Sampling Techniques

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Sampling Supplies and Technique – BOD & TSS

- 1 Liter Plastic Bottle – No Preservative – You will fill one bottle for both BOD and TSS tests.
- Wear clean gloves, do not touch inside of lid, fill bottle to shoulder, sample directly from designated effluent sampling location. Complete the COC.



Test Method and Sampling Techniques

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Oil & Grease – Method 1664 (total vegetable oils, animal fats, surfactants)

This test measures the total amount of oils and surfactants that can interfere with biodegradation by micro-organisms in wastewater treatment plants. Method 1664 is used to gauge the effectiveness of your wastewater treatment. Hold Time is 28 days.



Test Method and Sampling Techniques

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Sampling Supplies and Technique – Oil & Grease 1664

- 1 Liter Amber Glass Bottle – Sulfuric Acid Preserved – You will fill one bottle for each Oil & Grease 1664 test.
- Wear clean gloves, do not rinse bottle out, do not touch inside of lid, fill bottle to shoulder, sample directly from designated effluent sampling location. Complete the COC.



Test Method and Sampling Techniques

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- **Fecal Coliform - Method 9222D**
- **Enterococci Bacteria Method ASTM D 6503-99**

Fecal Coliform Bacteria and Enterococci Bacteria comes from feces of warm blooded animals, including human. The presence of such bacteria can indicate a water source contaminated with human or animal wastes. Microbes in these wastes can cause short term and long term health effects. The hold time for both tests is 6 Hours.



Test Method and Sampling Techniques

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Sampling Supplies and Technique – Fecal Coliform and Enterococci

- You will receive 1 – (150 ml) Plastic Bottle for each Fecal and Enterococci sample. Each bottle is preserved with Sodium Thiosulfate.
- STERILE! Wear clean gloves Do not rinse bottle - Do not touch inside cap or bottle.
- Sample after the treatment system .
- Remove plastic seal and cap from bottle.
- Use a moderate water flow- fill to slightly over the 100 ml mark, avoid splashing.
- ID and label all samples, Complete the COC.
- Pack, chill and ship the samples to Analytica ASAP.
- Sample MUST arrive at Analytica within 6 hours.

How to Read Your Report or What Do I REALLY Need to Know?



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The Cover Letter

• Company & Contact Is this YOU?

• **Work Order # and Date Received** - Have this information available when contacting the lab or your Project Manager.

• **Lab Sample Number** – This is the number we assign your sample.

• **Client Description** – This is the Sample ID taken from your Chain of Custody and logged into our system upon receipt.

• **Project Manager** – This is the person to contact with questions about your results. All data is sent by email.

2/8/2012
XYZ Corporation
1234 Long Road
Suite 123
Anchorage, AK 99503
Attn: John Doe

Analytica Anchorage
4307 Arctic Boulevard
Anchorage, AK 99503
907-258-2155
Fax: 907-258-6634

Work Order #: A12012XX
Date: 2/8/2012
Work ID: Weekly Testing
Date Received: 1/27/2012

SAMPLE ID FROM COC		Sample Identification	
Lab Sample Number	Client Description	Lab Sample Number	Client Description
A12012XX-01	Effluent Discharge		

Enclosed are the analytical results for the submitted sample(s). Please review the CASE NARRATIVE for a discussion of any data and/or quality control issues. Listings of data qualifiers, analytical codes, key dates, and COC relationships are provided at the end of the report.

Sincerely,
Claire Toon
Claire Toon
Project Manager

"The Science of Analysis. The Art of Service"

How to Read Your Report or What Do I REALLY Need to Know?



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The Case Narrative

- **Sample Receipt** - This section shows the date, time, condition and temperature of your samples upon receipt – *To avoid sample rejection and re-sampling costs BOD, TSS, O&G **must** be received between 0-6 degrees C. Don't forget the ice packs!*
- **Summary** - This section details quality assurance compliance and/or any deviations related to your samples.

Case Narrative
Analytica Alaska Inc.
Work Order: A370122

Samples were prepared and analyzed according to EPA or equivalent methods outlined in the following references:

Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998.

SAMPLE RECEIPT:
One (1) sample was received on 1/21/2012 8:20:00 AM, at a temperature of 6.5°C, at Analytica Anchorage. The sample was received in good condition and in order per chain of custody. *** MUST BE BETWEEN 0-6° C**

The sample was transferred for COD analysis to Analytica Environmental Laboratories (AEL), 2249 Pennsylvania St., Thornton, Colorado 80241, where it was received at a temperature of 2.8°C, in good condition and in order per chain of custody on 1/21/2012.

REVIEW FOR COMPLIANCE WITH ANALYTICA QA PLAN
A summary of our review is shown below.

All analytical results contained in this report have been reviewed under Analytica's internal quality assurance and quality control program. Any deviations in quality control parameters for specific analyses are found in the following text. A complete quality assurance report, including laboratory control, matrix spike, and sample duplicate recoveries is kept on file in our office and is available upon request.

All method specifications were met for the following tests, unless otherwise noted:

Test Method: SM2540D - Solids, Total Suspended Solids Dried at 103-105 C - TSS - Aqueous
Test Method: SM5210B - BOD-5 - Aqueous
Test Method: SM5220D - Chemical Oxygen Demand - COD - Aqueous

How to Read Your Report or What Do I REALLY Need to Know?

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The Results

- **Sample Comment** – This section indicates any special comments about your sample.
- **Results** - This is the total number of Units found in your sample. (Your *allowable* Maximum Concentration Limit (MCL) is established by ADEC and typically found in your Permit.)
- **Flags** – Flags provide additional details or qualifiers to your results. An MCL Flag can be added per your permit requirements.



ANALYTICA GROUP

XYZ Corporation
Attn: Mr. John Doe
1234 Long Road
Suite 123
Anchorage, AK 12345
907-xxx-xxxx
Fax: 907-xxx-xxxx

Client Sample ID: Effluent Discharge
Sampling Location:
Client Project: Weekly Testing
Sample Matrix: Aqueous
COC #:
IPI#:
Residual Chlorine:
Comments:

Analytica Anchorage
4301 Arctic Boulevard
Anchorage, AK 99503
Phone: 907-258-2155
Fax: 907-258-6634

Report Date: 2/8/2012
Receipt Date: 1/27/2012
Sample Date: 1/26/2012
Sample Time: 9:00:00AM
Collected By: JD

Lab#: A12012XX-01A

Sample Comment: Composite 01/25 1200 - 01/26 0900

Analysis Method	Result	Units	Flags	MRL	Prep Method	Prep Date	Analysis Date	Analyst
2540D/2540D (Aqueous) - TSS	776	mg/l		40	Test was conducted by: Analytica - Anchorage			
Total Suspended Solids	776	mg/l		40	2540D	1/27/2012	1/27/2012	KM
5210H/5210B (Aqueous) - BOD ₅	1100	mg/L		2.0	Test was conducted by: Analytica - Anchorage			
Biochemical O2 Demand, 5 Day	1100	mg/L		2.0	5210B	1/27/2012	1/27/2012	KM

Lab#: A12012XX-01B

Sample Comment: Composite 01/25 1200 - 01/26 0900

Analysis Method	Result	Units	Flags	MRL	Prep Method	Prep Date	Analysis Date	Analyst
SM5220D/SM5220D (Aqueous) - COD	1700	mg/l		600	Test was conducted by: Analytica - Thornton			
Chemical Oxygen Demand	1700	mg/l		600	SM5220	1/31/2012	2/1/2012	JKK

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Flag Definitions:

- MRL = Method Reporting Limit
- MCL = Maximum Contaminant Limit
- B = Present also in Method Blank
- H = Exceeds Regulatory Limit
- M = Matrix Interference
- J = Estimated Value
- D = Lost to Dilution
- ** = RL higher than MCL; target not detected
- TNC = Too Numerous to Count - result rejected
- CF = Confluent Growth - result rejected
- TCNG = Turbid Culture No Growth - rejected

How to Read Your Report or What Do I REALLY Need to Know?



MODULE 6C



The Results

(Microbial)

- **Results** - This is the total number of Units found in your sample. (Your *allowable* Maximum Concentration Limit (MCL) is established by ADEC and typically found in your Permit.)
- **Flags** – Flags provide additional details or qualifiers to your results.

Detailed Analytical Report
Analytica Alaska Inc.

Workorder (SLUG): A1108XXXX
Project: Weekly Testing
Client: XYZ Corporation
Client Project Number: None
Report Section: Client Sample Report
Client Sample Name: Sample 1
Matrix: Ocean Water
Collection Date: 8/14/2011 7:15:00AM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A1108XXXX-01A	Analysis Date:	8/14/2011 12:58:00PM
Prep Date:	8/14/2011	Instrument:	Micro
Analytical Method ID:	Enterococci by MPN - ASTM-6503-99 Ed2a	File Name:	
Prep Method ID:		Dilution Factor:	1
Prep Batch Number:	A110815006	Analyst Initials:	KM
Report Basis:	As Received	Prep Extract Vol:	100.00 ml
Sample prep wt/vol:	10.00 ml		

Analyte	CAS#	Result	Flag	Units	POI	MCL	run by
Enterococci by MPN		950		MPN/100	10	10	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A1108XXXX-01A	Analysis Date:	8/14/2011 1:23:00PM
Prep Date:	8/14/2011	Instrument:	Micro
Analytical Method ID:	SM922D Fecal Coliform by MP - FC by Membrane Filter	File Name:	
Prep Method ID:	9222D	Dilution Factor:	10
Prep Batch Number:	A110815007	Analyst Initials:	KM
Report Basis:	As Received	Prep Extract Vol:	1.00 ml
Sample prep wt/vol:	1.00 ml		

Analyte	CAS#	Result	Flag	Units	POI	MCL	run by
Fecal Coliform Bacteria by MP		1250		CFU/100ml	10	10	

How to Read Your Report or What Do I REALLY Need to Know?



MODULE 6C

The Results (Microbial)

- **Results** - This is the total number of Units found in your sample. (Your *allowable* Maximum Concentration Limit (MCL) is established by ADEC and typically found in your Permit.)
- **Flags** – Flags provide additional details or qualifiers to your results.

Detailed Analytical Report Analytica Alaska Inc.

Workorder (SLUG): A1108XXXX
Project: Weekly Testing
Client: XYZ Corporation
Client Project Number: None
Report Section: Client Sample Report
Client Sample Name: Sample 1

Matrix: Ocean Water Collection Date: 8/14/2011 7:15:00AM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A1108XXXX-01A	Analysis Date: 8/14/2011 12:58:00PM
Prep Date: 8/14/2011	Instrument: Micro
Analytical Method ID: Enterococci by MPN - ASTM-6503-99 Ed2ca	File Name:
Prep Method ID:	Dilution Factor: 1
Prep Batch Number: A110815006	Analyst Initials: KM
Report Basis: As Received	Prep Extract Vol: 100.00 ml
Sample prep wt/vol: 10.00 ml	

Analyte	CAS#	Result	Flag	Units	POI	MCL	run by
Enterococci by MPN		950		MPN/100	10	10	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A1108XXXX-01A	Analysis Date: 8/14/2011 1:23:00PM
Prep Date: 8/14/2011	Instrument: Micro
Analytical Method ID: SM922D Fecal Coliform by MP - FC by Membrane Filter	File Name:
Prep Method ID: 9222D	Dilution Factor: 10
Prep Batch Number: A110815007	Analyst Initials: KM
Report Basis: As Received	Prep Extract Vol: 1.00 ml
Sample prep wt/vol: 1.00 ml	

Analyte	CAS#	Result	Flag	Units	POI	MCL	run by
Fecal Coliform Bacteria by MP		1250		CFU/100ml	10	10	

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Report Quantitation Definitions



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DEFINITIONS - Quantitation Of Regulatory Data Reporting



- **MAXIMUM CONTAMINANT LEVEL (MCL):** The maximum allowable level of a contaminant.
- **METHOD DETECTION LIMIT (MDL):** The minimum concentration at which the laboratory can state at a “99% confidence level” that the substance is present in detectable quantities.
- **METHOD REPORTING LIMIT (MRL):** The limit at which the laboratory chooses to report. This limit is the lowest concentration that can be reliably achieved within certain statistical limits under routine laboratory conditions.
- **PRACTICAL QUANTITATION LIMIT (PQL):** The limit at which the laboratory can report with confidence that it can quantify the amount of a contaminant.

More details and discussion is located in Quality Assurance Terminology found in your packet.



Immediate MCL Out of Compliance Notification

Analytica can customize your report by uploading your Permit specific MCL. We will notify you immediately by email when out of compliance.



EXAMPLE OF MCL NOTIFICATION (OUT OF COMPLIANCE)

----- Original e-mail Message -----

From: Technical.Director@Analyticagroup.com

To: CUSTOMER@cityofnowhere.org

Cc: Project.Manager@Analyticagroup.com; LabManager@analyticagroup.com; MicroAnalyst@analyticagroup.com

Sent: Monday, December 10, 2008 12:48 PM

Subject: MCL Notification –

Please send a reply to the sender when you receive this message.

The following MCL Results have been validated as being OUT OF COMPLIANCE:

Client	Sample No.	Analyte	Result	MCL Units	PWS #	Sample Date
City of Nowhere	A01252-01B	Total Haloacetic Acids	0.0881	0.06 mg/L	10022017	10/09/2008

Analysts
Comments: Spoke to Mr. Customer on 10/10/2008.
Client notified via e-mail and Phone call.

How Do I Order Kits and Get the Best Service Available?



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- ❖ **Laboratory Business Hours are 8-5, Monday – Friday**
- ❖ **Standard Report Turnaround is 10 Business Days**
- ❖ **Place your order well in advance of your sampling event**
- ❖ **Call the Alaska Service Team representative at the location most convenient to you!**





Analytica - Anchorage Laboratory

Client Services Michelle Spiegel 907-258-2155 Ext. 224

[mspiegel@analyticagroup.com](mailto:m Spiegel@analyticagroup.com)



"Analytica.....Everything Else is Just Testing!"



Analytica –Mat-Su Service Center

Client Services Michelle Spiegel 907-258-2155 Ext. 224

mspiegel@analyticagroup.com



“Analytica.....Everything Else is Just Testing!”

Who Do You Call if Not 100% Satisfied?



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Analytica Group®

Jerry Baker 800-873-8707, Ext 117

Customer Service Manager

jbaker@analyticagroup.com

"Analytica.....Everything Else is Just Testing!"



THANK YOU

"Analytica.....Everything Else is Just Testing!"

End of Module 6C

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