Wastewater Sampling

RPC Course

Bill Boetcker, III

WHY DO YOU NEED A WASTEWATER SAMPLING PROGRAM?

PURPOSE OF SAMPLING

- TO DETERMINE HOW INDIVIDUAL INDUSTRIES OR BUSINESSES ARE AFFECTING YOUR SYSTEM
- TO VERIFY THAT INDUSTRIES ARE MEETING THEIR SPECIFIC POLLUTANT LIMITS
- TO DETERMINE SURCHARGES FOR THOSE INDUSTRIES THAT DISCHARGE SURCHARABLE POLLUTANTS

- TO ENABLE PRETREATMENT PERSONEL TO TRACK SOURCES OF CONTAMINATION
- TO ACCUMULATE LONG TERM DATA FOR DISCHARGERS
- TO DETERMINE CHANGES IN DISCHARGE CONDITIONS OVER TIME

DESIGNING & DEVELOPING A SAMPLING PROGRAM

- **NEED TO KNOW DISCHARGERS**
- **NEED TO KNOW DISCHARGE POINTS**
- **NEED TO KNOW FLOW & TYPE OF PRETREATMENT SYSTEM**

OBTAINING A REPRESENTITIVE SAMPLE

- **YOU MUST BE ABLE TO EVALUATE PRETREATMENT SYSTEMS TO DETERMINE THE PROPER POINT & BEST SAMPLING METHOD TO OBTAIN A REPRESENTATIVE SAMPLE OF WHAT IS BEING DISCHARGED TO YOUR SYSTEM**

AFTER DISCHARGE PARAMETERS ARE DETERMINED THEN:

CONSULT:

40 CFR PART 136
&
STANDARD METHODS

TO DETERMINE METHODS OF SAMPLING & ANALYSIS

INCLUDING ACCEPTABLE

- **CONTAINERS**
- **PRESERITIVES**
- **HOLDING TIME**
- **SAMPLING METHODS**

SAMPLE CONTAINERS

- **CORRECT VOLUME FOR ANALYSES**
- **CORRECT CONTAINER MATERIAL**
  - **HEAVY METALS = PLASTIC OR GLASS**
  - **FOG = GLASS**
  - **BOD = PLASTIC OR GLASS**

PRESERVATIVES

- **AMMONIA = COOL 4 C, H_2SO_4 TO pH < 2**
- **BOD = COOL 4 C**
- **FOG = COOL 4 C, HCL OR H_2SO_4 TO pH < 2**

HOLDING TIME

- **BOD = 48 HOURS**
- **HEAVY METALS = 6 MONTHS**
- **FOG = 28 DAYS**

SAMPLING METHOD

- **BOD = 24 HR COMPOSITE**
- **FOG = GRAB**
- **AMMONIA = 24 HR COMPOSITE**

GRAB SAMPLE

- **SINGLE SAMPLE**
- **COLLECTED AT A PATICULAR TIME & PLACE**
- **NO REGARD TO FLOW**

GRAB SAMPLES ARE USED WHEN IMMEDIATE PRESERVATION OR ANALYSIS IS NEEDED TO PRESERVE THE INTEGRITY OF THE SAMPLE

EXAMPLES

- **pH = IMMEDIATE ANALYSIS**
- **VOLATILE ORGANICS = EXPOSURE TO ATMOSPHERE CONDITIONS ALLOWS MATERIAL TO EVAPORATE**
- **FOG = SAMPLE WILL STICK TO SIDE OF PLASTIC TUBING & COMPOSITE SAMPLE CONTAINERS**

COMPOSITE SAMPLE

- **INDIVIDUAL SAMPLES COLLECTED OVER A 24 HOUR PERIOD COMBINED IN ONE CONTAINER**
- **PROPORTIONED BASED ON:**
  TIME OR FLOW

FLOW PROPORTIONED

- **EQUAL VOLUME SAMPLES**
- **BASED ON THE AMOUNT OF WASTEWATER FLOW**

TIME PROPORTIONED

- **EQUAL VOLUME SAMPLES TAKEN A CERTAIN PERIOD OF TIME**
- **TIME BETWEEN SAMPLES CAN NOT EXCEED TWO HOURS**

COMPOSITE SAMPLES

- **OBTAINED MANUALLY**
- **BY AUTOMATIC SAMPLING**

SAMPLING LOCATIONS

- **END OF PIPE**
- **AFTER PRETREATMENT**

END OF PIPE

- SAMPLE IS TAKEN FROM THE LATERAL AS IT IS DISCHARGED TO THE CITY SEWER
- THIS ALLOWS PROCESS WATER TO BE MIXED WITH SANITARY WATER FOR THE COMPLETE SAMPLE
- NORMALLY USED FOR LOCAL LIMITS

AFTER PRETREATMENT

- SAMPLE IS TAKEN IMMEDIATELY FOLLOWING PRETREATMENT PROCESS
- TO DETERMINE EXACT PARAMETERS BEING DISCHARGED FROM PRETREATMENT
- GENERALLY USED FOR CATEGORICAL LIMITS

CHAIN OF CUSTODY

IS A LEGAL DOCUMENT TRACING THE HANDLING OF A SAMPLE FROM THE POINT OF SAMPLING TO THE POINT OF RECEIPT AT THE LABORATORY ANALYSING THE SAMPLE.

CHAIN OF CUSTODY INCLUDES:

- **SAMPLE IDENTIFICATION & LOCATION**
- **TYPE OF SAMPLE & CONTAINER**
- **SAMPLE MATRIX**
- **DATE & TIME OF SAMPLE**
- **PARAMETERS TO BE TESTED INCLUDING PRESERVATION**
- **SIGNATURES OF ALL PERSONS HAVING POSSESION OF THE SAMPLE**

CHAIN OF CUSTODY

WHAT DEFINES POSSESION OF SAMPLE?

SAMPLE LABELS MUST CONTAIN THE DATA RECORDED ON THE CHAIN OF CUSTODY FOR THAT SPECIFIC SAMPLE & THE INITIALS OF THE PERSON SAMPLING

(A)

Sherry Laboratories - Chain of Custody Record

SHERRY Laboratories

Laboratory Number:

Client Information:
Company Name: XYZ Pretreatment
Contact Name: Mr Bill
Address: 307 E South St
City, State Zip: Angola IN
Phone Number: (260) 905-6735
Fax Number:
E-mail Address:

Billing Information: Same
Ext:

PO Number:
Quote Number:
Required QC Level
Bill Monthly ☐Yes ☐No

Project Name/Number:
Sampler's Signature: Mr Bell
Shipping Method: UPS / FedEx / Airborne / DHL / Sherry / (Hand) / Mail

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Matrix Code
DW = Drinking Water
WW = Waste Water
GW = Ground Water
AQ = Aqueous
OT = Other
SL = Sludge
SOL = Solid
O = Oil
SO = Soil
F = Food
SW = Swab
NG = Natural Gas
NGL = Natural Gas Liquid
PW = Produced Water
CF = Completion Fluid

Which Regulations Apply: ☐RCRA ☑POTW ☐NPDES ☐USDA/FDA ☐RECAP/RISC ☐Drinking Water ☐Distribution ☐Special ☐State ☐Other

Turn Time: ☒Standard RUSH ☐1 Day ☐2 Day ☐Other (Rush turn times will incur a surcharge and must be pre-approved by lab.)

Sample ID/Description	Date	Time	Grab/Composite	Matrix	Quantity	Type P=Plastic, G=Glass, V=Vial	Pres. HCl, HNO3, H2SO4, NaOH, Na2S2O3	FOG	BOD TSS	Ammonia	Comments
A 104-A	4/7/10	10:00am	G	WW	1000ml	G	H2SO4	X			
A 104-B	4/7/10	10:00am	C	WW	1000ml	P	None		X		
A 104-B	4/7/10	10:00am	C	WW	500ml	P	H2SO4			X	

	Relinquished by	Date/Time	Received by	Date/Time
1	Mr Bill	4/7/10 11:30am	Chris Moore	4/7/10 11:30am
2	Chris Moore	4/7/10 12:45pm	Sam Adrain	4/7/10 12:45pm
3				

Field Notes:
Received at lab on ice? ☒Yes ☐No Temp: 4°C

All samples submitted to Sherry Laboratories for analysis are accepted on a custodial basis only. Ownership of the material remains with the client submitting the samples. Sherry Laboratories reserves the right to return unused sample portions.

(C)

Chain of Custody Record

A & L Great Lakes Laboratories, Inc.

3505 Conestoga Drive · Fort Wayne, IN 46808-4414 · Phone (260) 483-4759 · Fax (260) 483-5274
www.algreatlakes.com · lab@algreatlakes.com

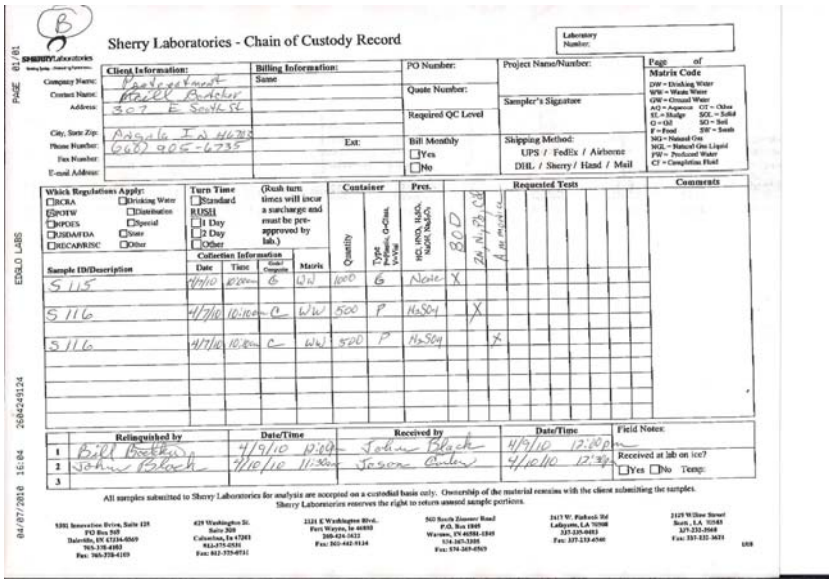
Account Number:
Submitted by: Pretreatment
Contact: Bill Boetcher
Phone ( ) - Fax ( ) -
Address:
PO#:
Project No.
Project Name/Location

Sample Identification	Container Number	Date Sampled	Time Sampled	Container Type: Glass	Container Type: Plastic	Sample Type: Grab	Sample Type: Comp	Cool 4°C	Frozen	H_2SO_4 pH<2	HNO_3 pH<2	HCl pH<2	NaOH pH>12	FOG	Ni, Cd, Pb, Zn	VOC	BOD	Ammonia	Matrix Type
M 119	1	4/8/10	1:30pm	✓		✓		✓		✓				✓					WW
M 119	2	4/8/10	1:45		✓		✓				✓				✓				WW
M 119	3	4/8/10	1:45	✓			✓	✓								✓			WW
M 120	1	4/8/10	2:00		✓	✓		✓		✓				✓					WW
M 120	2	4/8/10	2:15		✓		✓	✓									✓		WW
M 120	3	4/8/10	2:15		✓		✓	✓			✓							✓	WW

SPECIAL INSTRUCTIONS: (Please indicate any special detection limits, method numbers, QA/QC requirements, or highly hazardous sample.)

TURN-AROUND TIME: (circle one) (Standard) Rush
ANALYZE SAMPLE: (circle one) As Is Dry Weight
Matrix Types: Soil Water (Wastewater) Sludge Plant Tissue Formulation/Tank Mix Other (Please specify)

					Comments/Additional Instructions
Sampled by:	Bill Boetcher	(Signature)	Date	4/8/10	
		(Print Name)	Time	2:45	
Relinquished by:		(Signature)	Date		
		(Print Name)	Time		
Received by:	James Ogden	(Signature)	Date	4/11/10	
	James Ogden	(Print Name)	Time	3:30pm	



Sherry Laboratories - Chain of Custody Record

Client Information:	Billing Information:	PO Number:	Project Name/Number:	Page of
Company Name: Pastor Environmental	Same			Matrix Code
Contact Name: Bill Bartlett		Quote Number:	Sampler's Signature	DW = Drinking Water WW = Waste Water GW = Ground Water AQ = Aqueous CT = Clay SL = Sludge SCL = Solid O = Oil SO = Soil F = Feed SW = Swab NG = Natural Gas NGL = Natural Gas Liquid PW = Produced Water CF = Completion Fluid
Address: 307 E. South St		Required QC Level		
City, State Zip: Angola IN 46703				
Phone Number: (260) 665-6735	Ext:	Bill Monthly ☐Yes ☐No	Shipping Method: UPS / FedEx / Airborne DHL / Sherry / Hand / Mail	
Fax Number:				
E-mail Address:				

Which Regulations Apply:	Turn Time	(Rush turn times will incur a surcharge and must be pre-approved by lab.)
☐RCRA ☐Drinking Water	☐Standard	
☒NPDW ☐Distribution	RUSH	
☐NPDES ☐Special	☐1 Day	
☐USDA/FDA ☐State	☐2 Day	
☐RECAP/RISC ☐Other	☐Other	

Sample ID/Description	Collection Information: Date	Time	Grab/Composite	Matrix	Container: Quantity	Container: Type (Plastic, G=Glass, V=Vial)	Pres.: HCl, HNO3, NaOH, Na2S2O3	Requested Tests: BOD	Requested Tests: Zn Ni Pb Cd Ammonia	Comments
S 115	4/9/10	8:00am	G	WW	1000	G	None	X		
S 116	4/9/10	10:10am	C	WW	500	P	H2SO4		X	
S 116	4/9/10	10:10am	C	WW	500	P	H2SO4		X	

	Relinquished by	Date/Time	Received by	Date/Time	Field Notes:
1	Bill Bartlett	4/9/10 1:30pm	John Bloch	4/9/10 12:40p	
2	John Bloch	4/10/10 11:30am	Jason Cutler	4/10/10 12:30p	Received at lab on ice? ☐Yes ☐No Temp:
3					

All samples submitted to Sherry Laboratories for analysis are accepted on a controlled basis only. Ownership of the material remains with the client submitting the samples. Sherry Laboratories reserves the right to return unused sample portions.

5301 Innovation Drive, Suite 125 PO Box 565 Dalevile, IN 47334-0565 765-378-4483 Fax: 765-378-4189

429 Washington St. Suite 208 Columbus, In 47201 812-375-0531 Fax: 812-375-0731

1121 E Washington Blvd. Fort Wayne, In 46803 260-424-1122 Fax: 261-442-9134

502 South Zimmer Road P.O. Box 1045 Warsaw, IN 46581-1045 574-267-3205 Fax: 574-269-0569

2617 W. Pinhook Rd Lafayette, LA 70508 337-235-0451 Fax: 337-233-6560

2125 Willow Street Scott, LA 70583 337-232-3068 Fax: 337-232-3631

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SAMPLING QUALITY ASSURANCE/QUALITY CONTROL

CONTAINS A WRITTEN SET OF PROCEDURES FOR SAMPLING, THAT INSURES THE INTEGRITY OF THE SAMPLES

QUAILTY CONTROL INCLUDES:

- **TRIP BLANKS**
- **EQUIPMENT RINSATE**
- **FIELD DUPLICATES**

QUALITY ASSURANCE

- **PROCESS FOR ENSURING ALL DATA & DECISIONS BASED ON THIS DATA ARE:**

  TECHNICALLY SOUND

  STASTICALLY VALID

  PROPERLY DOCUMENTED

SAMPLE ANALYSES

- **COMPLETED BY A CERTIFIED LABORATORY**

  IN-HOUSE

  PRIVATE CONTRACT LAB

IN HOUSE LABORATORY

- **REQUIRES A WRITTEN QA/QC PROGRAM**
- **STEP BY STEP WRITTEN PROCEDURES FOR EACH ANALYSIS**
- **IDENTIFICATION OF MDL FOR EACH ANALYSIS**
- **QUARTERLY UPDATED STATISTICS FOR EACH ANALYSIS**
- **ANALYSIS ACCURACY VERIFIED THROUGH BLIND SAMPLES WITH DMR QA PROGRAM**

PRIVATE CONTRACT LABORATORY

- **SHOULD PROVIDE FOR YOUR INSPECTION ALL OF THE INFORMATION REQUIRED FOR THE IN-HOUSE LABORATORY**
- **PLUS A COPY OF THEIR E & O INSURANCE**
- **MOST PRIVATE LABS PROVIDE SAMPLING BOTTLES INCLUDING PRESERVATIVE**

WHEN USING A PRIVATE CONTRACT LABORATORY BE SURE TO COORDINATE YOUR SAMPLING ROUTINE WITH THEIR PICK UP TIMES.

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