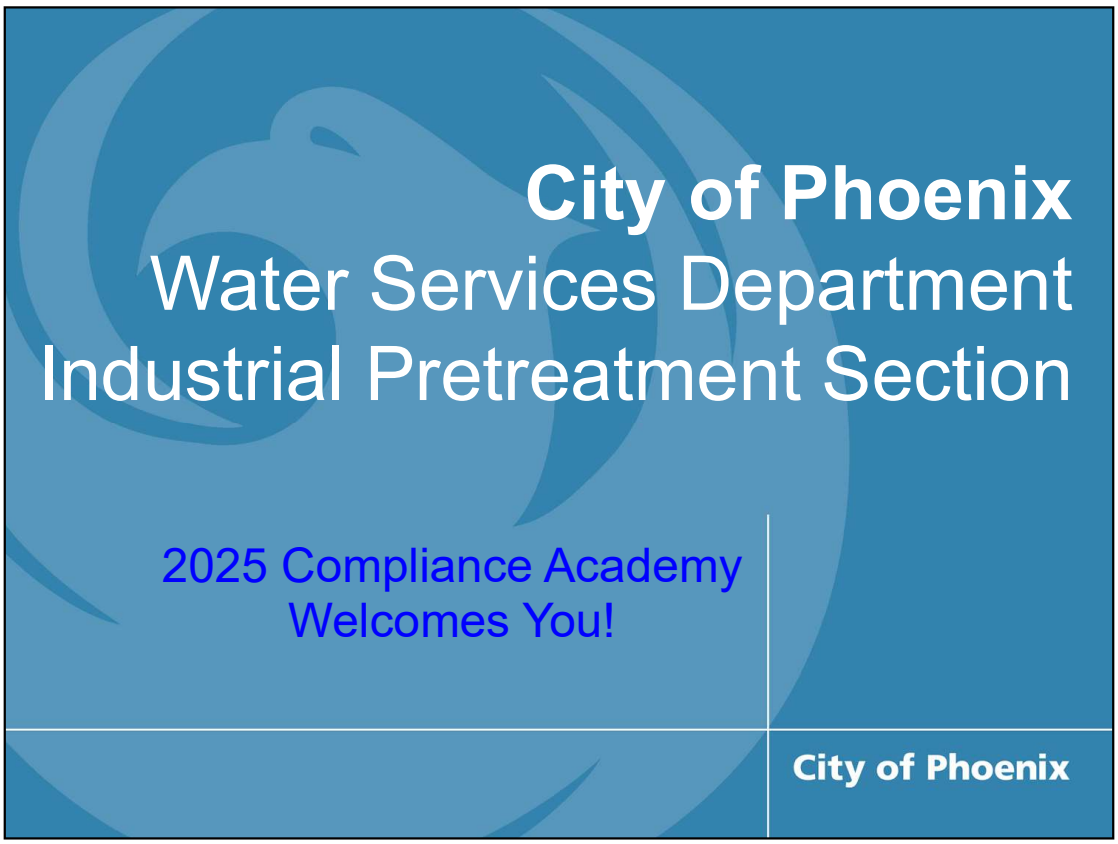
CITY OF PHOENIX
INDUSTRIAL PRETREATMENT
COMPLIANCE ACADEMY

Wastewater Compliance Sampling



For those of you joining us online, please put your name and company affiliation in the chat box.

Wastewater Compliance Sampling

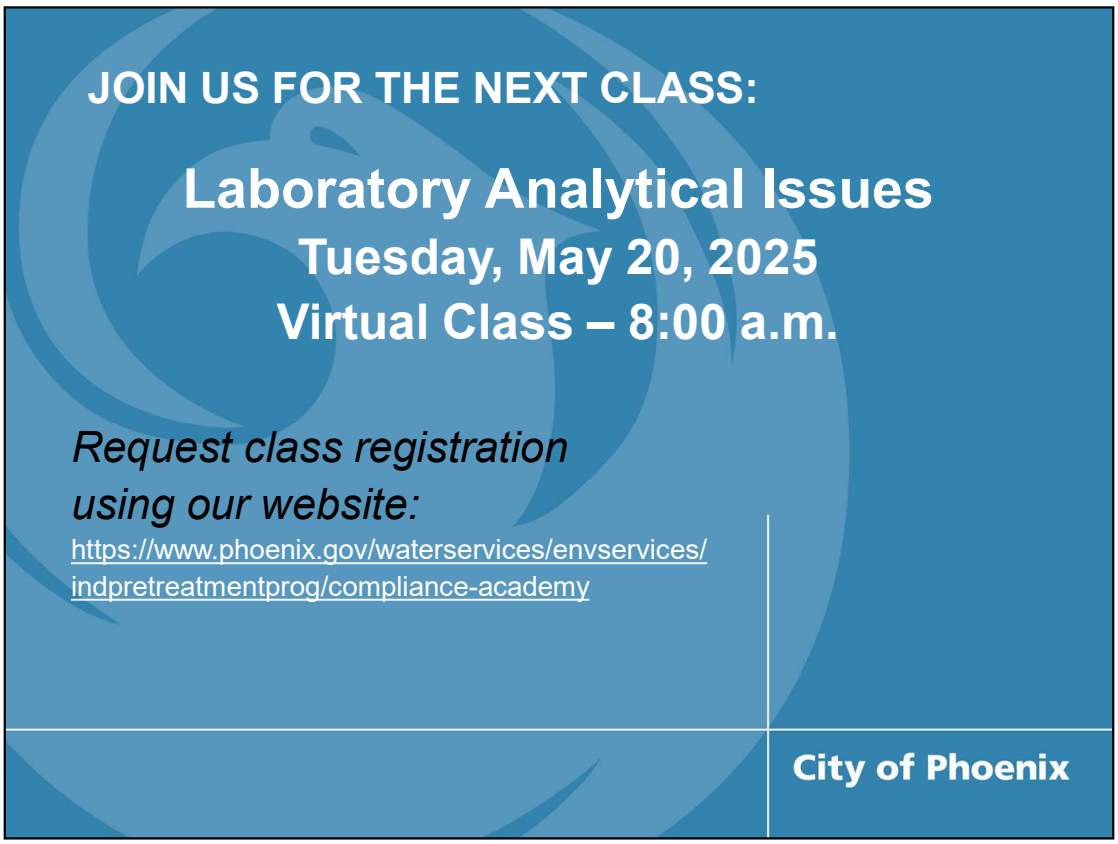
Your Instructors:

Christie O'Day

Dan Snyder

City of Phoenix

Notes:



Registration is from April 24 to May 21 using the website link https://www.phoenix.gov/waterservices/envservices/indpretreatmentprog/compliance-academy/industrial-pretreatment-compliance-academy

1. Please set your cell phones to Silence/ Vibrate and take important phone calls in the hallway or adjacent room.

2. Restrooms are: Out of this room (your left my right) make a left → Go to end of the hallway → Make left then quick right: Ladies' Room will be on your right and the Men's Room is about 30 feet further on the left.

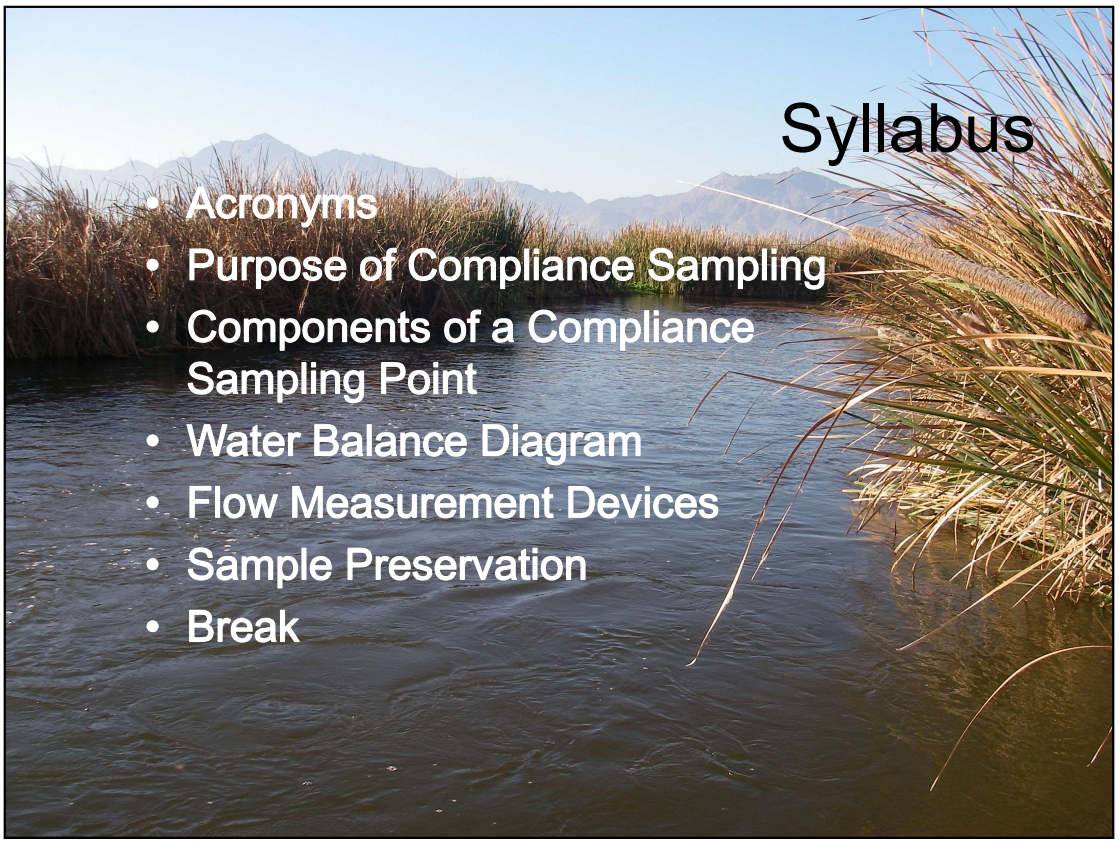
3. ALARMS:

    a) In case of a Fire Alarm, please pack all of your belongings and follow the instructor to the Assembly Area and you will be given further instructions.

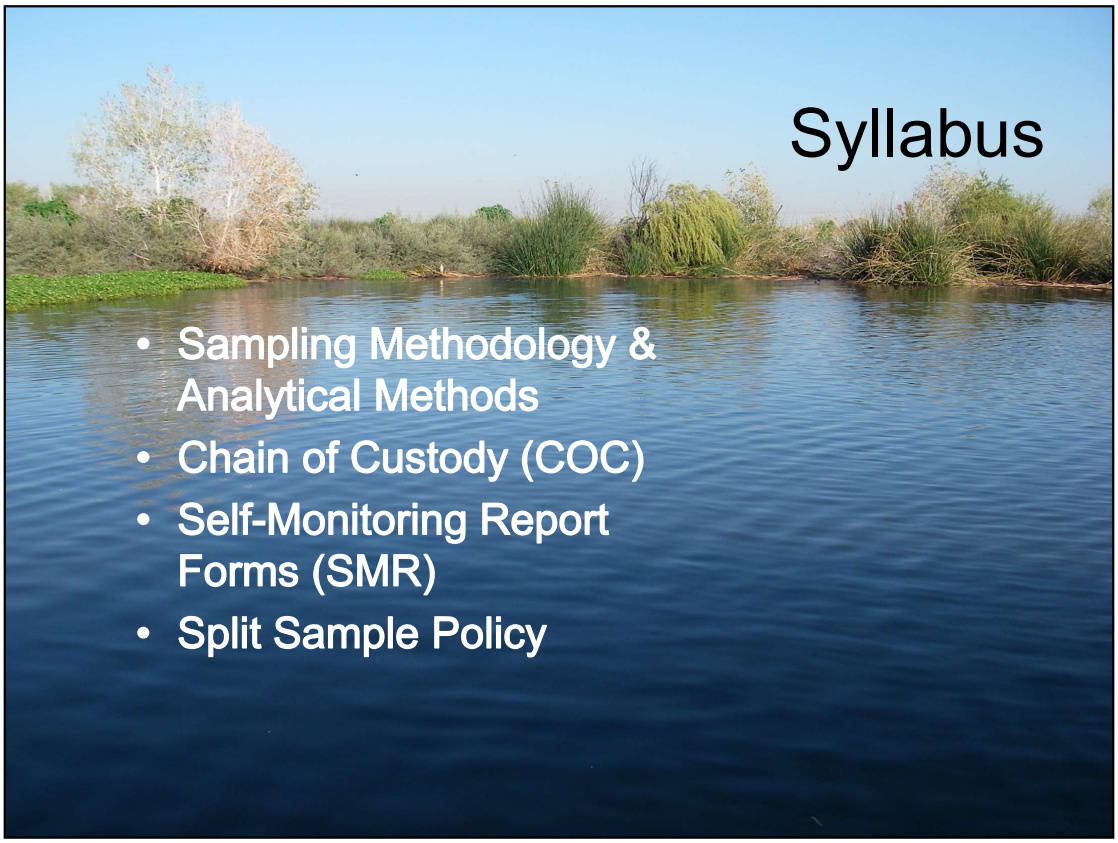
    b) In case of a Chlorine Alarm, please pack all of your belongings and follow the instructor to the Assembly Area. IF instructed to evacuate please consider the class over.

4. Coffee and water is available in Break area: Out of this room make left → Last door on left before the end of hallway.

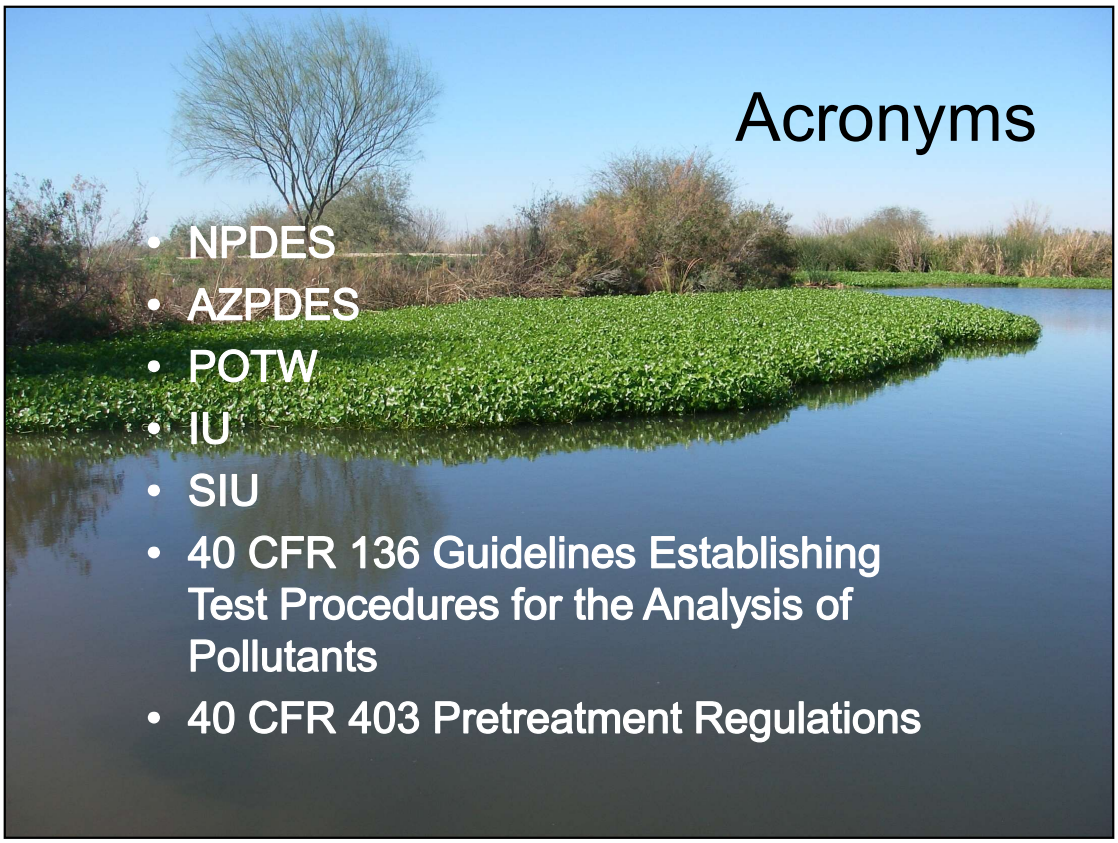
5. The Smoking Area is just outside to your right (my left) on the patio.


Syllabus
• Acronyms
• Purpose of Compliance Sampling
• Components of a Compliance Sampling Point
• Water Balance Diagram
• Flow Measurement Devices
• Sample Preservation
• Break

Notes:


Syllabus
• Sampling Methodology & Analytical Methods
• Chain of Custody (COC)
• Self-Monitoring Report Forms (SMR)
• Split Sample Policy

Notes:



- NPDES – National Pollutant Discharge Elimination System (City permit)
- AZPDES - Arizona Pollutant Discharge Elimination System (City permit)
- POTW - A publicly owned treatment works (POTW) is a term used in the United States for a sewage treatment plant (owned by the public) and include all the infrastructure that feeds into the POTW from the sewer shed.
- IU – Industrial User – A source of indirect discharge, other than a normal domestic user (this is you!)
- SIU – Significant Industrial User – All users subject to categorical pretreatment standards under 40 Code of Federal Regulations. Also any user that discharges an average of 25, 000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blowdown wastewater), contributes a process waste stream which makes up 5% or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant, or designation as such on the basis that it has a reasonable potential for adversely affecting the POTW's operation.
- 40 CFR 136 - GUIDELINES ESTABLISHING TEST PROCEDURES FOR THE ANALYSIS OF POLLUTANTS UNDER THE CLEAN WATER ACT (Quiz #7)
- 40 CFR 403 – GENERAL PRETREATMENT REGULATIONS FOR EXISTING AND NEW SOURCES OF POLLUTION

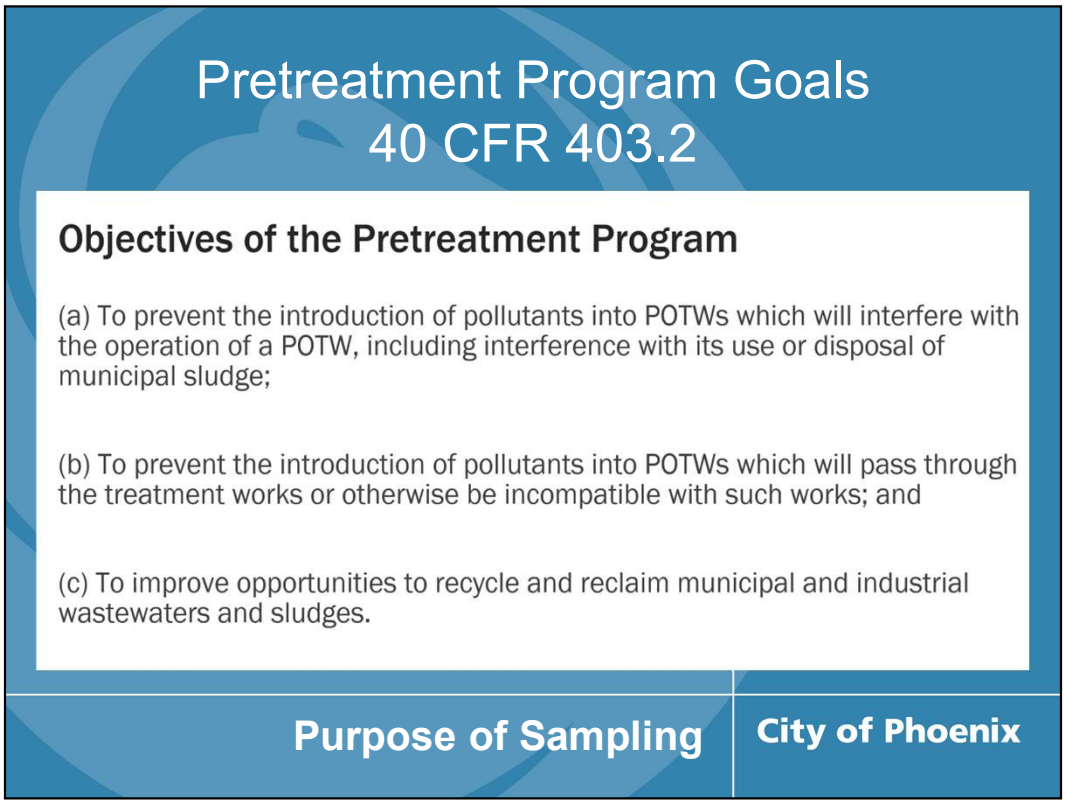
You can find Definitions for pretreatment terms at 40 CFR 403.3 and also in the City of Phoenix's Sewer Code.

- To Verify Compliance
- To Gather Information and Data
- To Determine Impact of Pollutants

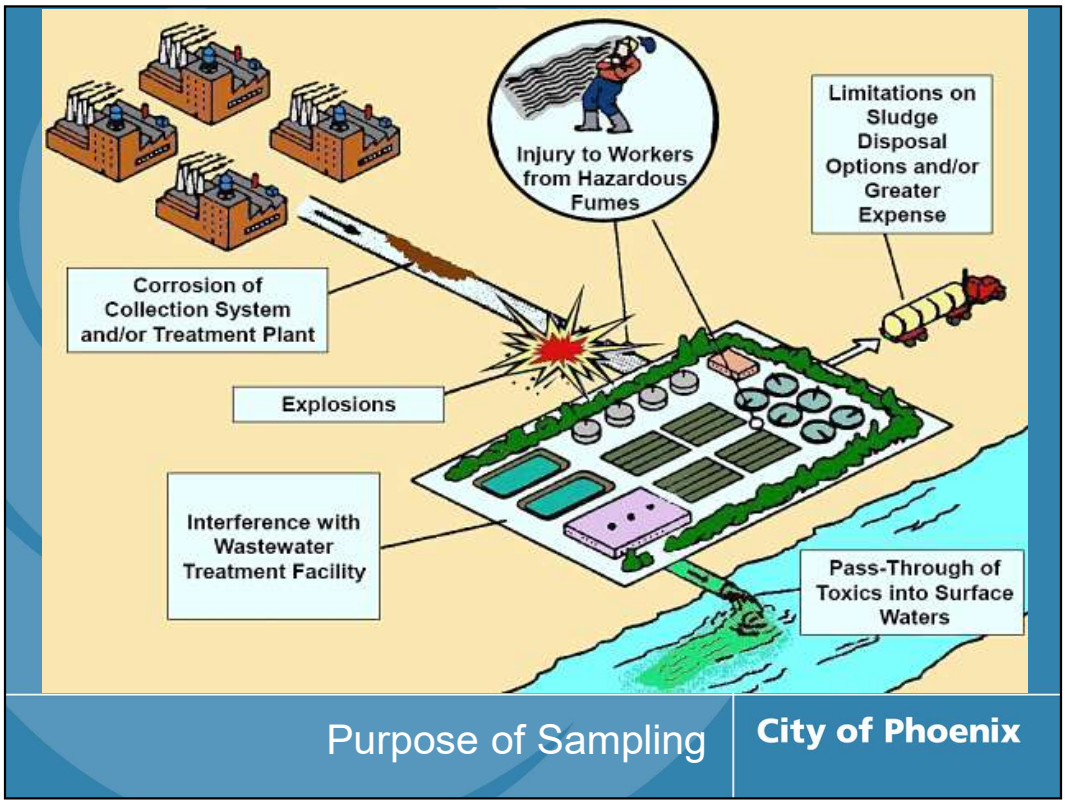
Purpose of Sampling | City of Phoenix

Wastewater Sampling helps....

- Determine impact of industrial waste on POTW.
- Verify the quality of self-monitoring data.
- Verify sampling location specified in the permit is adequate.
- Determine compliance with effluent limitations and permit conditions.
- Provide a basis for enforcement proceedings in the event such proceedings become necessary.
- Used to determine characteristics of the wastewater and if an industrial wastewater permit would be required to a potential permittee.



The City of the Phoenix Pretreatment Program is a requirement of both the 23rd Ave WWTP's AZPDES permit and the 91st Ave WWTP's NPDES permit.



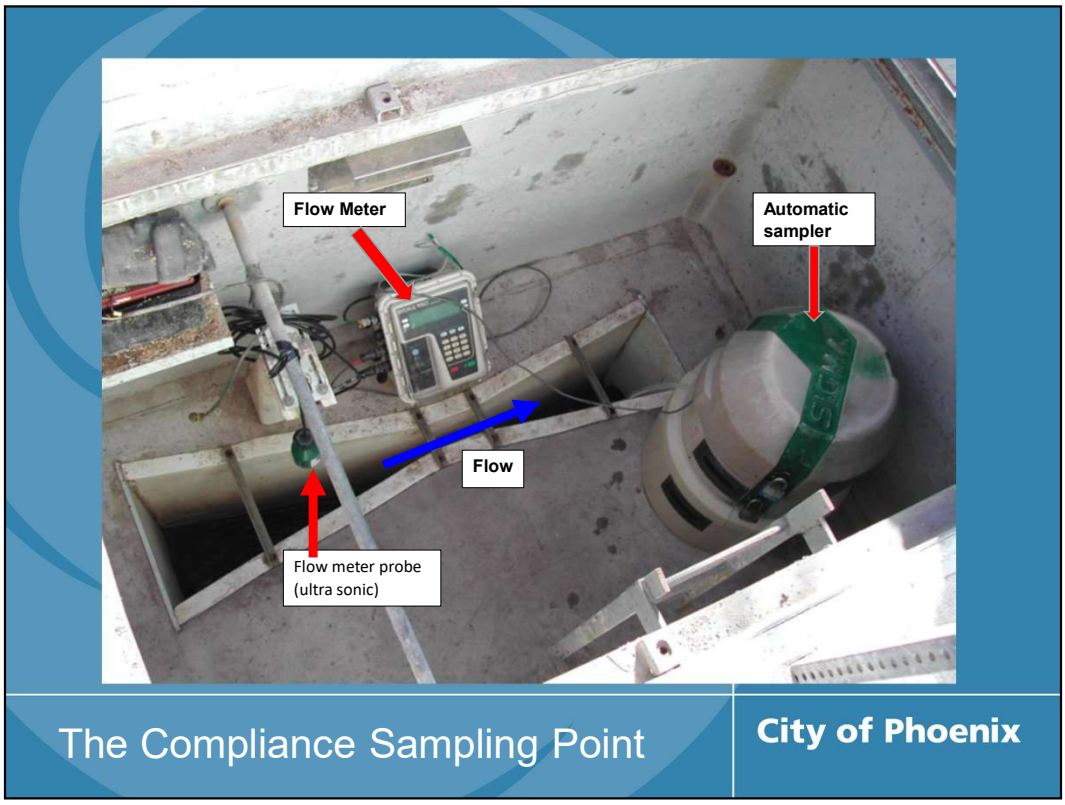
This is a generalized process flow of industrial wastewater into a Publicly Owned Treatment Work or Wastewater Treatment Plant and the associated risks of improperly pretreated waterwater.

Corrosion of the Collection system may occur due to low pH wastewater or build up of Fats, Oils, and Grease (FOG).

Explosions may occur due to the build up of explosive gases such as Hydrogen Sulfide (H2S) in the Collection System. Even if not ignited, these gases are an inhalant risk to sewer workers.

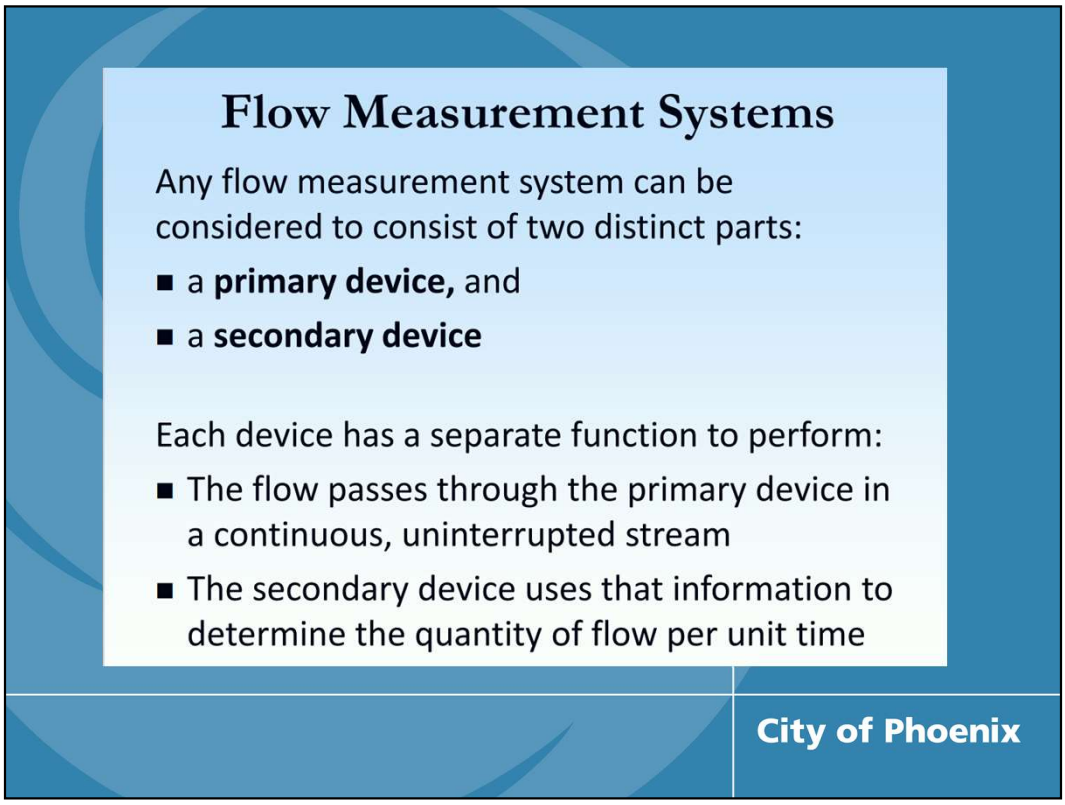
Interference with Wastewater Treatment can be caused by high Total Suspended Solids (TSS) or low Dissolved Oxygen conditions which are more costly to treat and effect normal operations.

Certain contaminates may not be affected by water treatment and cause pass-through of toxic chemicals that in turn may cause the City to violate our own permits. Additionally, excess heavy metals may concentrate in the sewage sludge and limit the City's options for disposal.



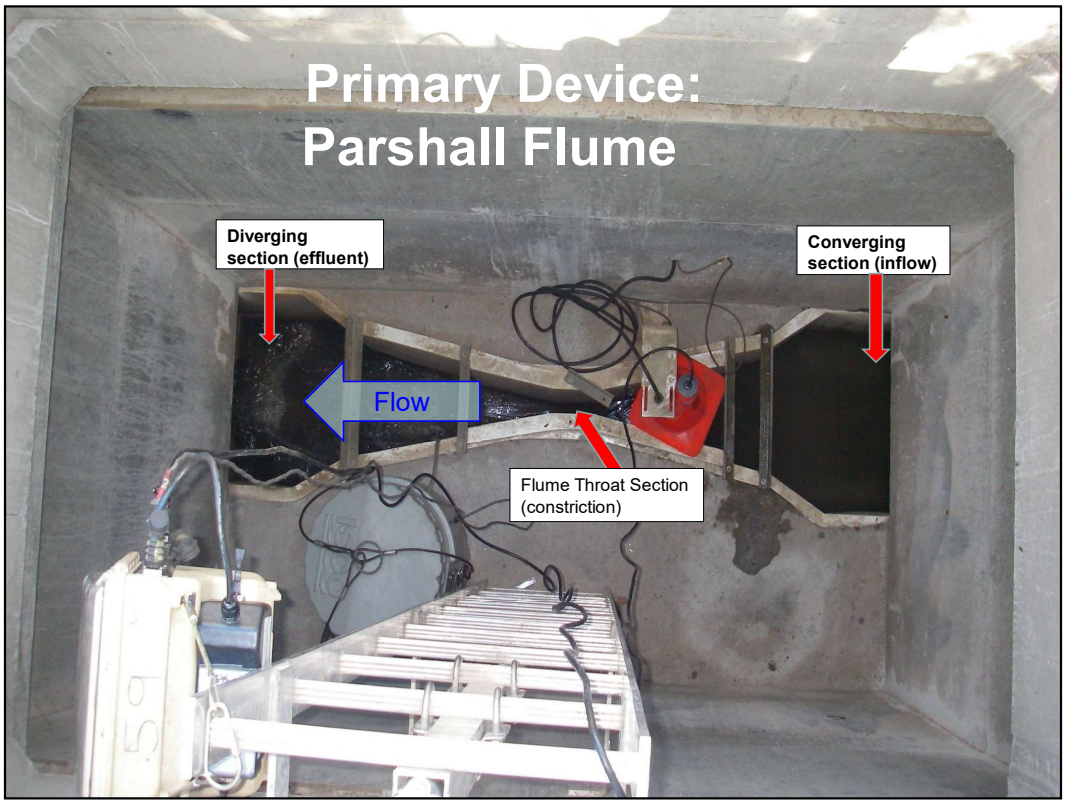
An IU's compliance sampling point may be manhole, petcock, valve, sampling port, open-channel flow device, or other waste plumbing appurtenance specifically designated by the Director for monitoring wastewater flows and for collection of samples for determination of compliance with effluent limitations.

A compliance sample can only be collected at the compliance sampling point (CSP) (Quiz #1).



Primary devices are physical devices set in the flow stream with the purpose of monitoring said flow stream.

Secondary devices usually aid the user in quantifying the flows within the primary device.



- Weirs and Flumes are the most common primary flow measurement devices.
- These devices are hydraulic structures, installed in the flow stream, which create a geometric relationship between flowrate and depth of flow.
- A weir or a flume (primary device) restricts the flow in a controlled manner and generates a liquid level which is related to the flow rate through the device. The flow meter (secondary device) measures this level and converts it into a corresponding flow rate according to the known liquid level of the primary device.
- Sometimes a facility will only have a primary flow measurement device – examples are a batch tank with demarcations for volume (flow is relatively accurately estimated), or a sampling box/chamber that cannot measure flow (only used for sample collection) but has an ultrasonic flow meter upstream for flow measurement

A weir box contains a weir plate at the end which contains a notch in the shape of the letter 'V' (V-notch). The plate creates "head pressure" in middle partition to allow for accurate flow reading. Optimal flow is measured 2/3 distance back from weir plate.

- The design is simple and easy to use, allowing for consistent flow measurements.
- Very useful for low-flow applications.
- A clean device will give the most accurate flow measurement

City of Phoenix currently uses the Sigma 950 Flow Meter when sampling Industrial Users or Automatic Samplers with built-in flow meters.

We also utilize IU flow meters when conducive to the sampling point setup i.e. use of a laser flow meter and straight pipe with cabling provided, if circumstances allow.

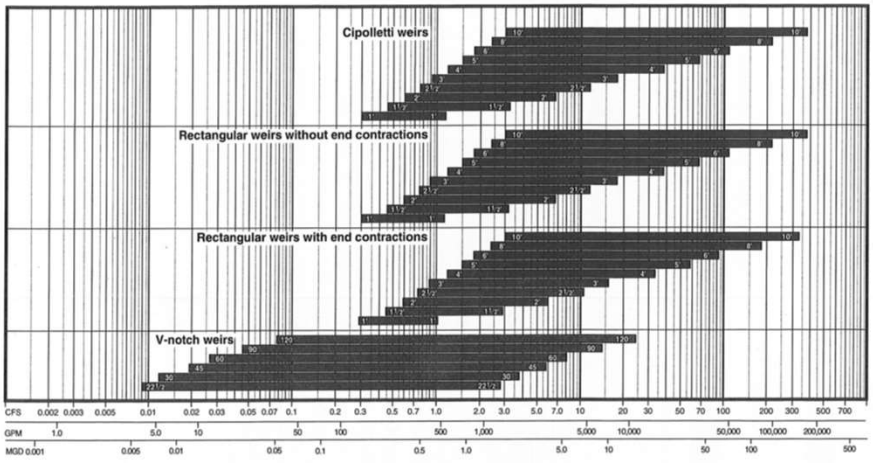
A flow meter is an instrument for monitoring , measuring, recording and/or calculating the level, rate of flow, pressure, or discharge of liquids (wastewater).

Typical secondary flow meter devices:

- Measure level with a sensor
- Convert level to flow rate
- Display and record data

Flow Rate Ranges for Weirs

Table 5-3 A: Useful Flow Rate Range of Various Types of Weirs in Feet



Gallons Per Minute: Range from 4.0 GPM to 175,000 GPM

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Reference:

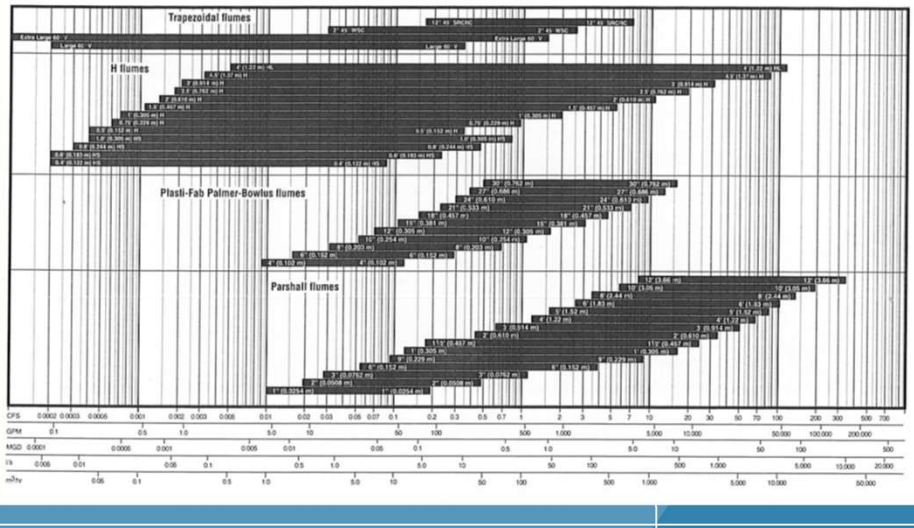
Teledyne Isco Open Channel Flow Measurement Handbook, Fifth Edition, by Douglas M. Gant and Brian D. Dawson, page 124.

When installing a Compliance Sampling Point, it is important to match your estimated flow rate with the proper device.

V-notch weir boxes are great choices for IUs with low process flow volumes and low TSS.

Flow Rate Ranges for Flumes

Table 5-4: Useful Flow Rate Range of Various Types of Flumes



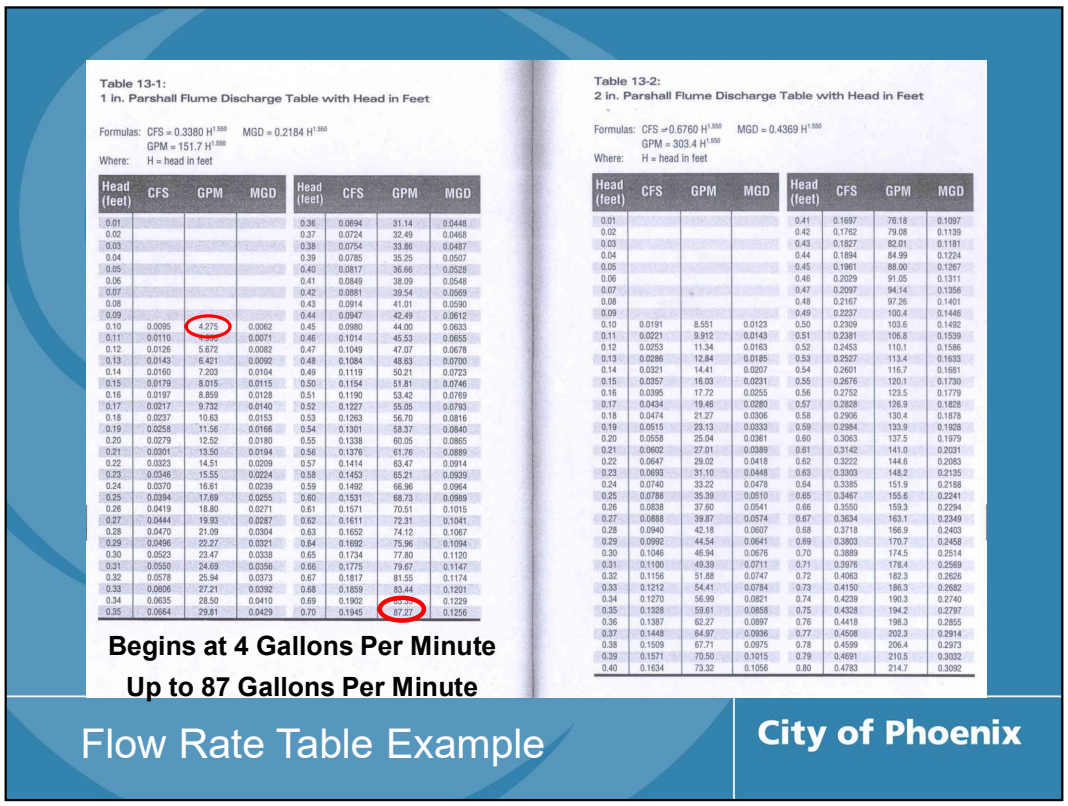
Gallons Per Minute: Range from 0.1 GPM to 155,000 GPM

City of Phoenix

Reference:

Teledyne Isco Open Channel Flow Measurement Handbook, Fifth edition, by Douglas M. Gant and Brian D. Dawson, page 126.

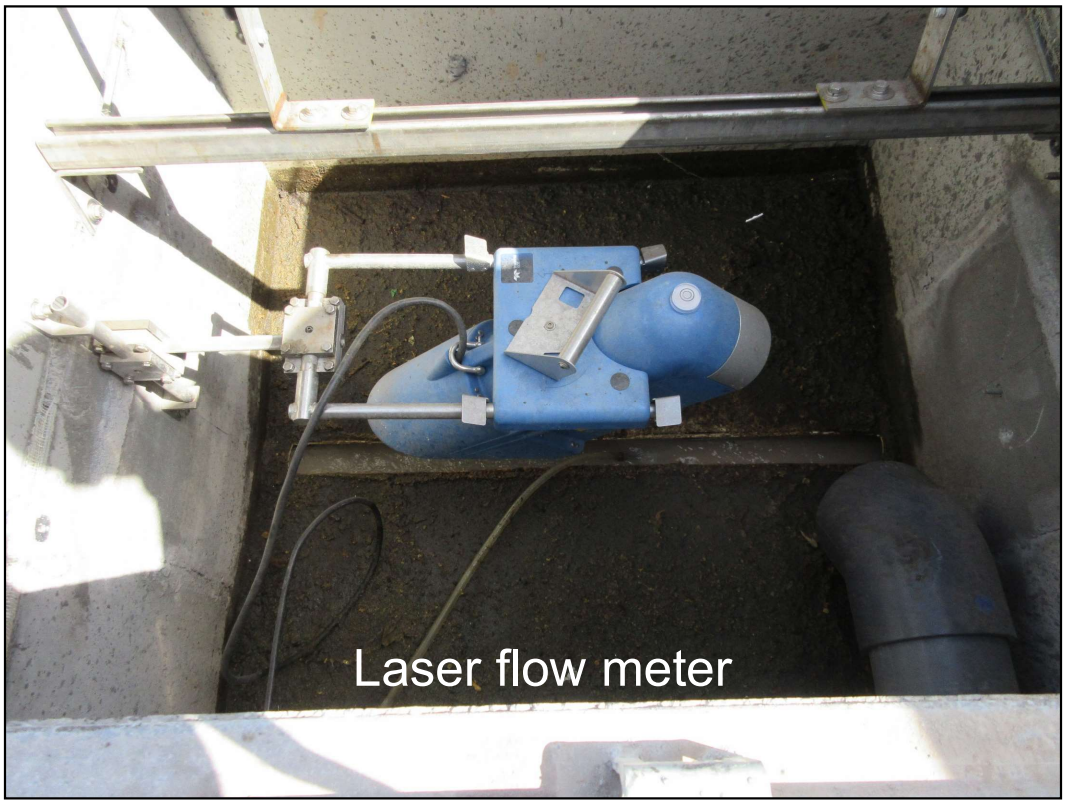
- Parshall flumes are some of the most common but have a very defined or limited flow range.
- Trapezoidal flumes offer the widest low flow range.
- H flumes can handle sudden large discharges like those at industrial laundries.



These are the discharge tables for a 1 inch and a 2-inch Parshall Flume. The compliance measuring device must match your discharge range. For example, if you have a 1-inch flume, your flow cannot exceed 87 GPM or you would be exceeding the capacity of the device, which means your flow measurements would not be accurate.

Reference:

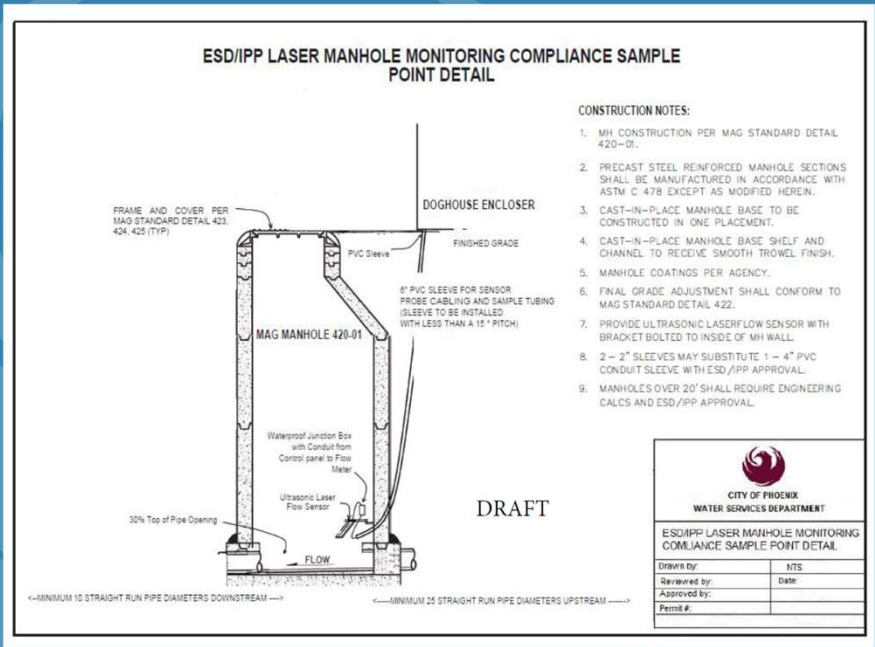
Teledyne Isco Open Channel Flow Measurement Handbook, Fifth Edition, by Douglas M. Gant and Brian D. Dawson, pages 314-315.



This is the Teledyne ISCO **LaserFlow® Velocity Sensor**

The LaserFlow® velocity sensor remotely measures flow in open channels with non-contact Laser Doppler Velocity technology and non-contact Ultrasonic Level technology. The sensor uses advanced technology to measure velocity with a laser beam at single or multiple points below the surface of the wastewater stream.

Technically this would considered both a primary and a secondary device.



Laser flow cut-out view

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MISSION
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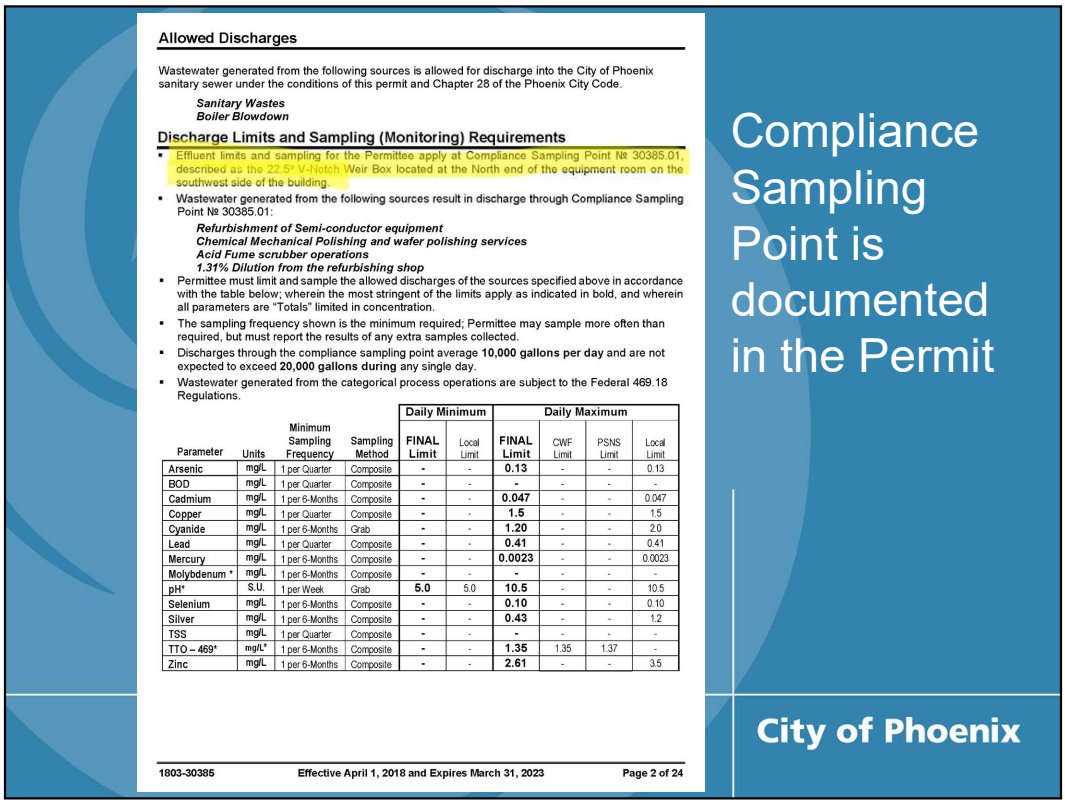


Please note that a compliance sample can only be collected at the compliance sampling point (CSP).

Permit Parameters Table

Table 1. Permit Limits

Parameter	Units	Minimum Sampling Frequency	Sampling Method	Daily Minimum			Daily Maximum				Monthly Average		
				FINAL Limit	PSNS[1] Limit	Local Limit	FINAL Limit	PSNS Limit	CWF[2] Limit	Local Limit	FINAL Limit	PSNS Limit	CWF Limit
Arsenic	mg/L	1 per 6 Months	Composite	-	-	-	0.13	-	-	0.13	-	-	-
BOD[3]	mg/L	1 per Quarter	Composite	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/L	1 per 6 Months	Composite	-	-	-	0.047	0.11	0.092	0.047	0.06	0.07	0.059
Chromium	mg/L	1 per 6 Months	Composite	-	-	-	2.32	2.77	2.32	-	1.43	1.71	1.43
Copper	mg/L	1 per Quarter	Composite	-	-	-	1.5	3.38	2.83	1.5	1.74	2.07	1.74
Cyanide (T)	mg/L	1 per 6 months	Grab	-	-	-	1.08	1.2	1.08	2.0	0.54	0.65	0.545
Lead	mg/L	1 per Quarter	Composite	-	-	-	0.41	0.69	0.579	0.41	0.36	0.43	0.361
Mercury	mg/L	1 per 6 Months	Composite	-	-	-	0.0023	-	-	0.0023	-	-	-
Molybdenum[4]	mg/L	1 per Quarter	Composite	-	-	-	-	-	-	-	-	-	-
Nickel	mg/L	1 per 6 Months	Composite	-	-	-	3.34	3.98	3.34	-	2.0	2.38	2.00
pH[4]	SU	1 per Week	Grab	5.0	5.0	5.0	10.5	-	-	10.5	-	-	-
Selenium	mg/L	1 per 6 Months	Composite	-	-	-	0.10	-	-	0.10	-	-	-
Silver	mg/L	1 per 6 Months	Composite	-	-	-	0.36	0.43	0.361	1.2	0.20	0.24	0.201
TSS[5]	mg/L	1 per Quarter	Composite	-	-	-	-	-	-	-	-	-	-
TTO-433*	µg/L	1 per 6 Months	Composite	-	-	-	1786	2130	1786	-	-	-	-
Zinc	mg/L	1 per 6 Months	Composite	-	-	-	2.19	2.61	2.19	3.5	1.24	1.48	1.24

1. PSNS – Pretreatment Standards for New Sources
2. CWF – Combined Waste Formula
3. BOD – Biological Oxygen Demand
4. See Sampling and Analysis Notes for Additional Information
5. TSS – Total Suspended Solids

Taken from page 2 or 3 of permit

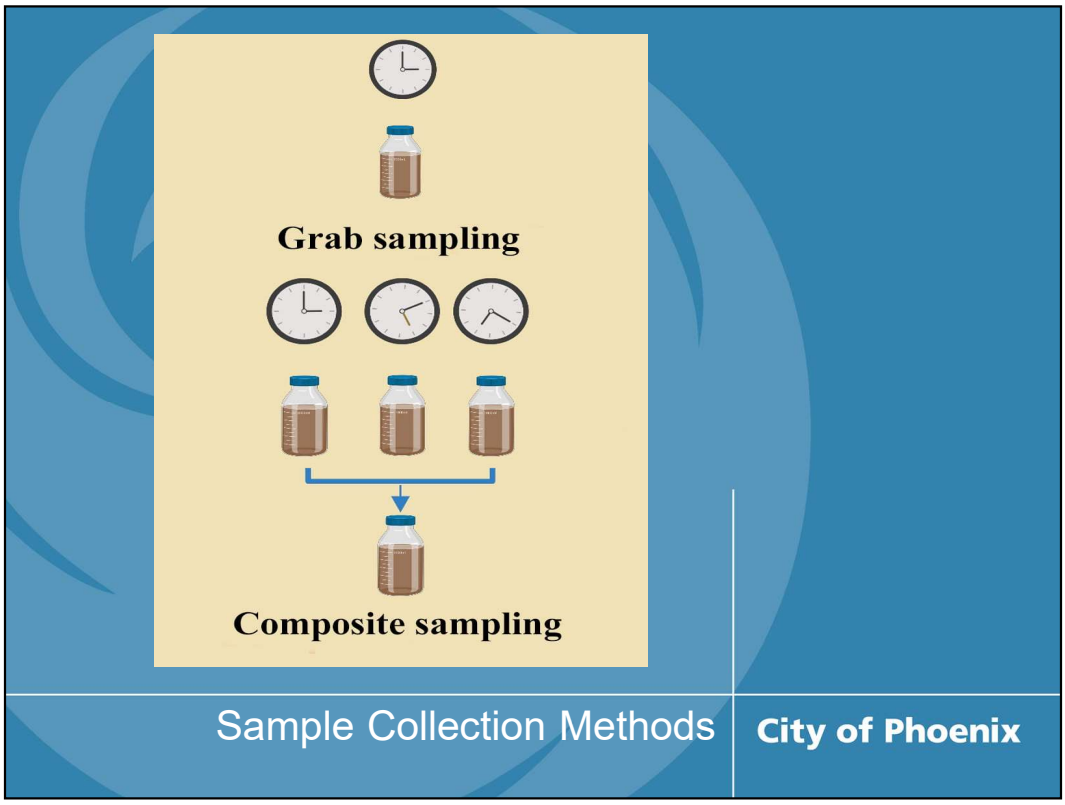
City of Phoenix

Parameter limits, sampling frequencies, and sample collection methods are identified in the Permit.

- Parameters represent the required sampling – this will include Local Limits as defined the City's Sewer Code (Chapter 28) and any required categorical limits,
- Sampling frequency is how often you may be required to sample each parameter, and
- Sampling method specifies whether the parameter must be collected as a composite sample or a grab sample

pH is usually always collected weekly, which means the pH should collected at least once between Sunday to Saturday. For example, recently a sample week started February 25 and ended March 2.

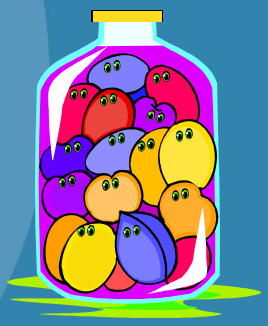
See 40 CFR 136 for approved lab analysis methods for your industry.



Wastewater samples are typically be collected either by directly filling the sample container as in a grab sample or by using an automatic sampler or other device to composite the sample using multiple aliquots.

A series of wastewater samples taken over a given period of time (usually 24 hours, process flow day, or batch) and weighted by flow rate.

- BOD/COD/TSS
- Fluoride
- Semi Volatile Organics
- Metals



Composite Sample

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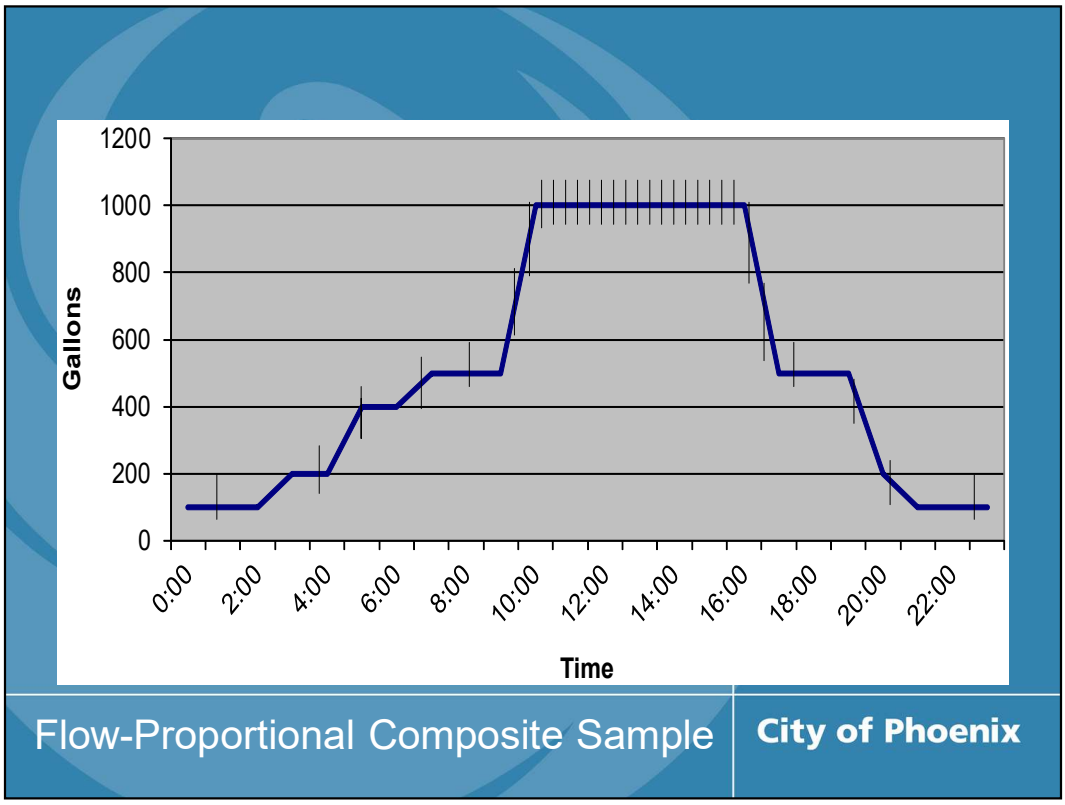
For wastewater monitoring, a composite sample is a sample composed of multiple discrete samples collected a 24-hour period, process day, or batch discharge (Quiz #2). Ideally, a composite sample is collected flow proportionally where the sample aliquot increases proportional to the flow rate of the discharge. A composite sample can also be collected using at equal time intervals.



Black segments represent individual sample aliquots. Samples must be representative of the WW discharge.

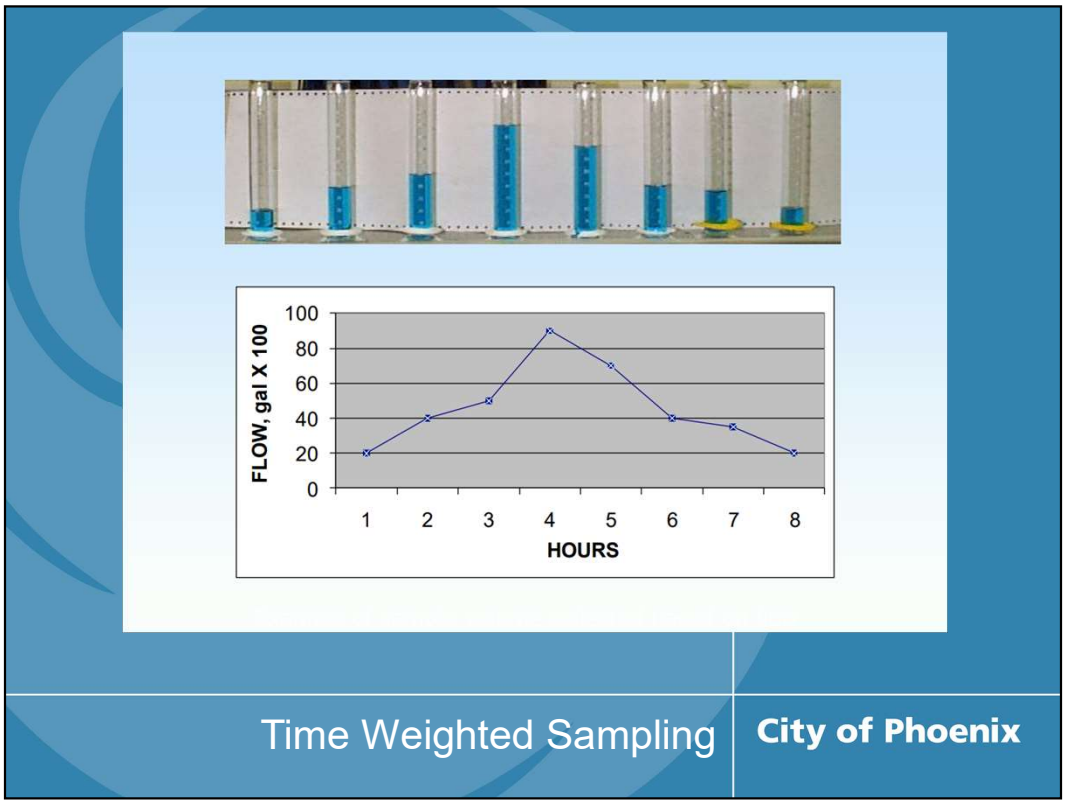
Flow-proportional composite sample:

A sample consisting of a series of aliquots (equal portions of the sample) in which each aliquot is collected after the passage of a defined volume of discharge.

The ideal representative sample is collected flow proportionally. (Quiz #3)

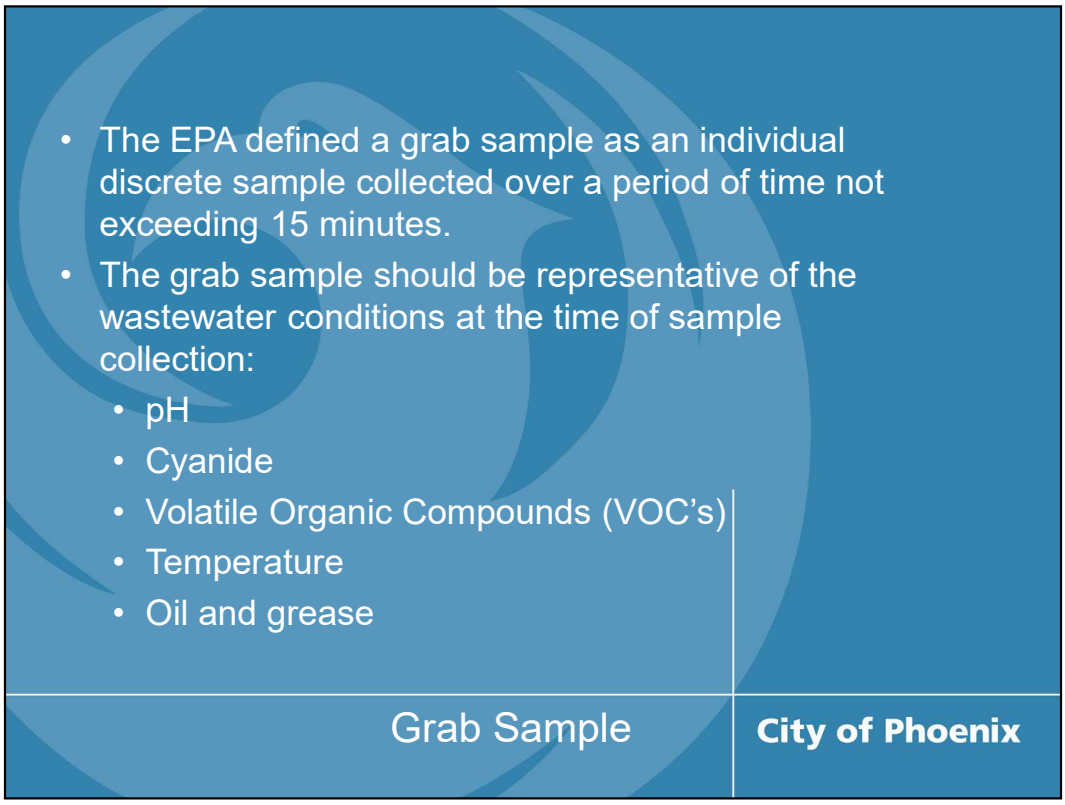
Representative sample is defined as…

A sample from a wastestream that is identical or nearly identical s nearly identical as possible in composition to that in the larger volume of wastewater being discharged and is typical of the discharge from the facility on a normal operating day.

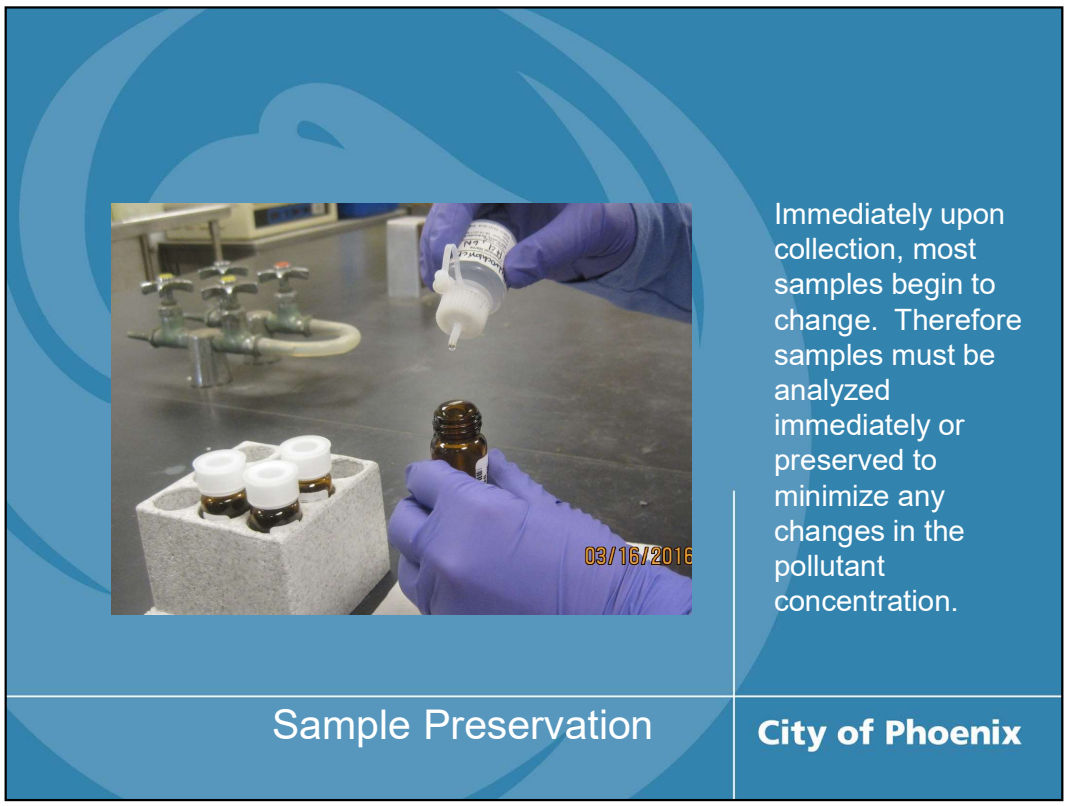


Another example of composite sampling is where the aliquot of sample is collected at a set time interval over a process day. This might apply to hand composting or sampling a site where the average flow volume is unknown or varies widely like at a hospital.

This photo demonstrates a City of Phoenix employee collecting a grab sample from an H flume. All collection containers are triple rinsed with deionized water.

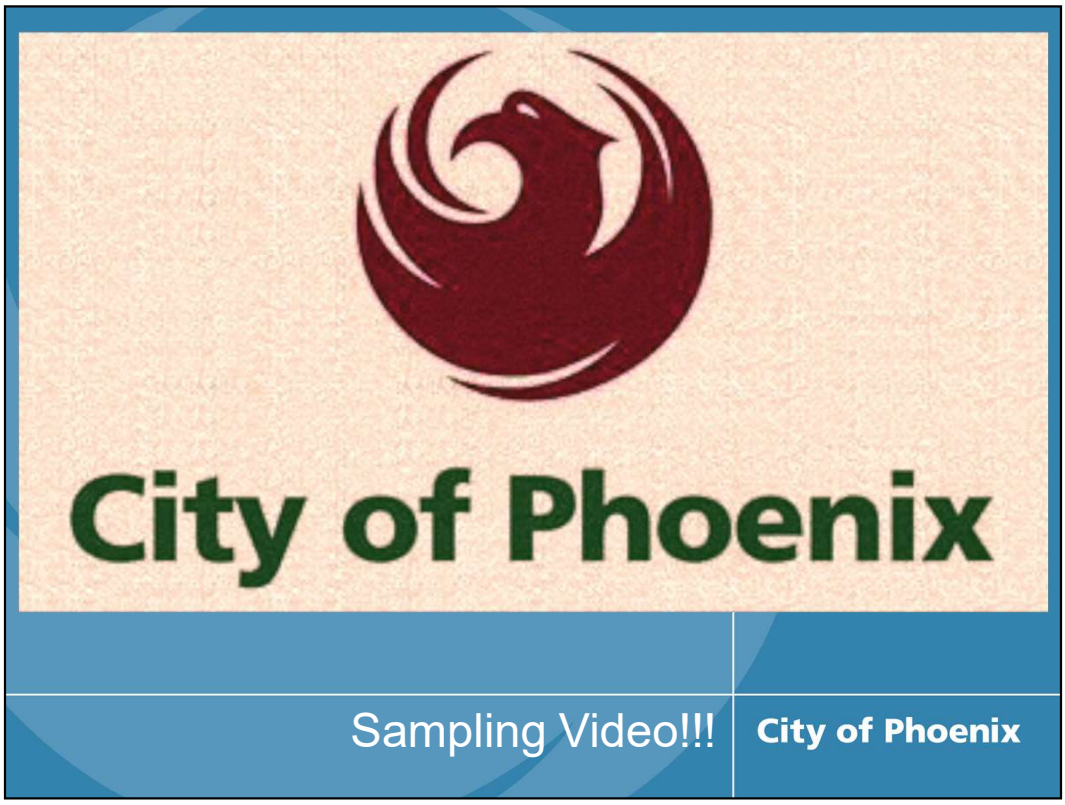


A grab sample is a snapshot in time. The sample must be collected and **processed or preserved within 15 minutes** of the collection time.

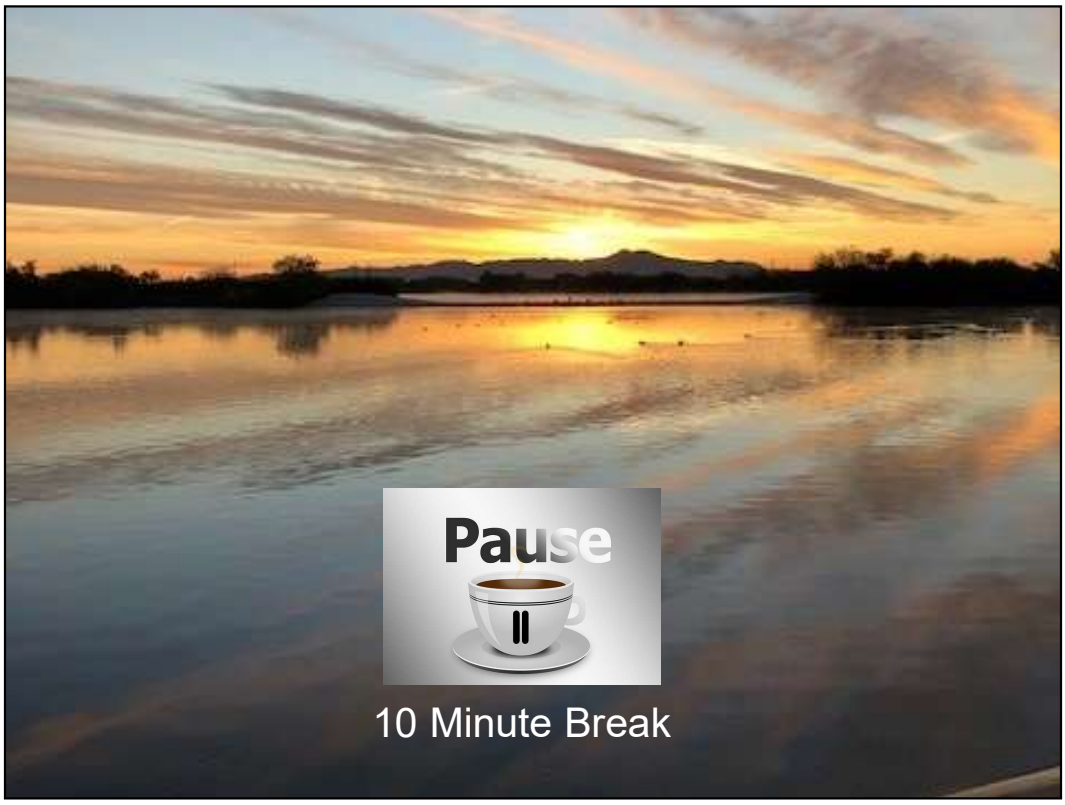


- Collection of meaningful data demands that before a sample is analyzed, the correct sampling and preservation methods must be used.

- Immediately upon collection, most samples begin to change. Therefore, samples must be analyzed immediately or preserved to minimize any changes in the pollutant concentration.



This video demonstrates a City sampling event at one of our IUs, from beginning to end.



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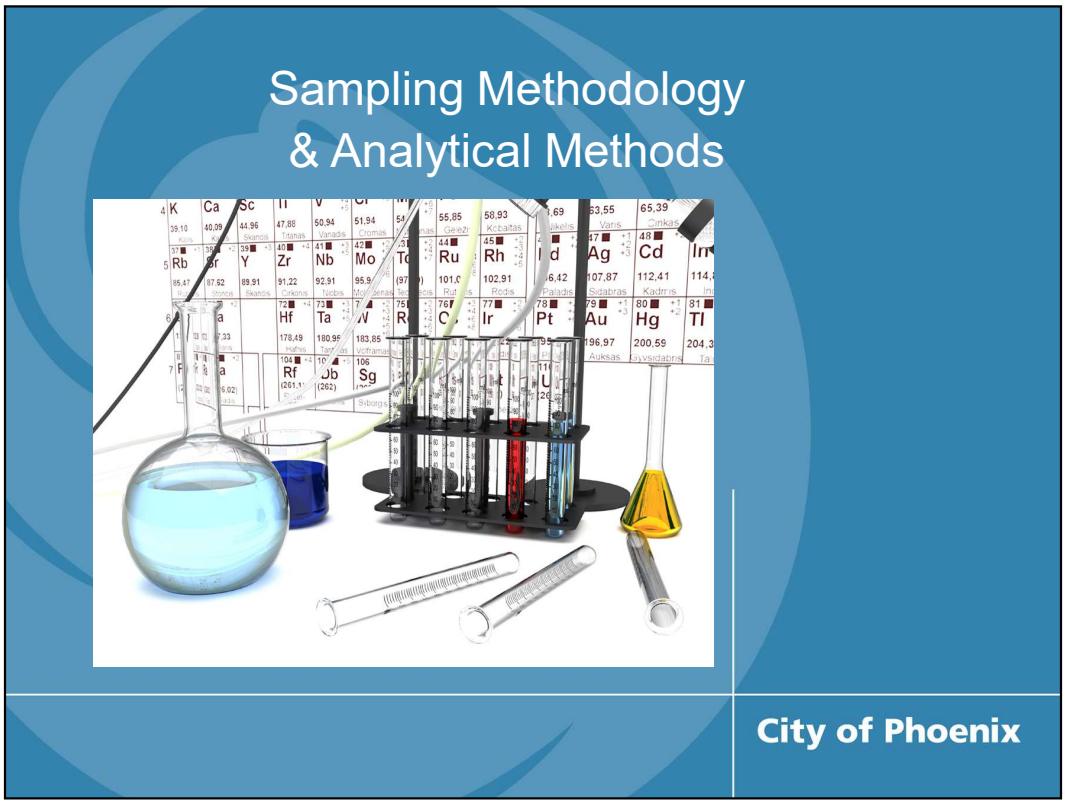


- Standard Permit Conditions Part D (a) of your Wastewater Discharge Permit (Permit) requires the use of “Approved Laboratory Procedures.” The Permit may also restrict the test method and/or require the use of a particular method approved by 40 CFR 136 (such as for Total Copper).
- EPA specifies test methods that are approved for use in wastewater analysis in 40 CFR 136. Tables 1A, 1B, and 1C in Part 136.3 list the various analytical methods that may be used to analyze for a pollutant parameter. Part 136.2(e) allows alternative procedures to be proposed for approval by the EPA.

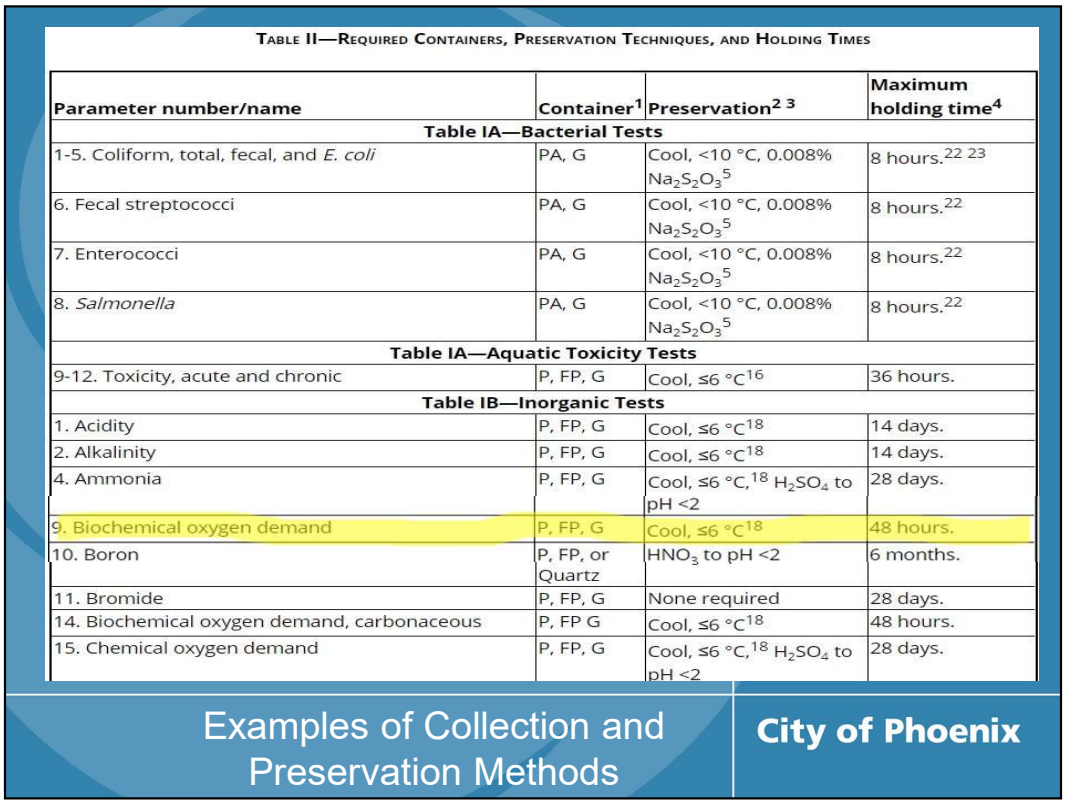


TABLE II—REQUIRED CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES

Parameter number/name	Container[1]	Preservation[2 3]	Maximum holding time[4]
Table IA—Bacterial Tests			
1-5. Coliform, total, fecal, and *E. coli*	PA, G	Cool, <10 °C, 0.008% $Na_2S_2O_3$[5]	8 hours.[22 23]
6. Fecal streptococci	PA, G	Cool, <10 °C, 0.008% $Na_2S_2O_3$[5]	8 hours.[22]
7. Enterococci	PA, G	Cool, <10 °C, 0.008% $Na_2S_2O_3$[5]	8 hours.[22]
8. *Salmonella*	PA, G	Cool, <10 °C, 0.008% $Na_2S_2O_3$[5]	8 hours.[22]
Table IA—Aquatic Toxicity Tests			
9-12. Toxicity, acute and chronic	P, FP, G	Cool, ≤6 °C[16]	36 hours.
Table IB—Inorganic Tests			
1. Acidity	P, FP, G	Cool, ≤6 °C[18]	14 days.
2. Alkalinity	P, FP, G	Cool, ≤6 °C[18]	14 days.
4. Ammonia	P, FP, G	Cool, ≤6 °C,[18] H_2SO_4 to pH <2	28 days.
9. Biochemical oxygen demand	P, FP, G	Cool, ≤6 °C[18]	48 hours.
10. Boron	P, FP, or Quartz	HNO_3 to pH <2	6 months.
11. Bromide	P, FP, G	None required	28 days.
14. Biochemical oxygen demand, carbonaceous	P, FP G	Cool, ≤6 °C[18]	48 hours.
15. Chemical oxygen demand	P, FP, G	Cool, ≤6 °C,[18] H_2SO_4 to pH <2	28 days.

This table is taken from 40 CFR 136.3: Identification of test procedures and can be found at https://www.ecfr.gov/current/title-40/section-136.3.

Table II identifies the required containers, preservation techniques and holding time for specific parameters. (Quiz #4)

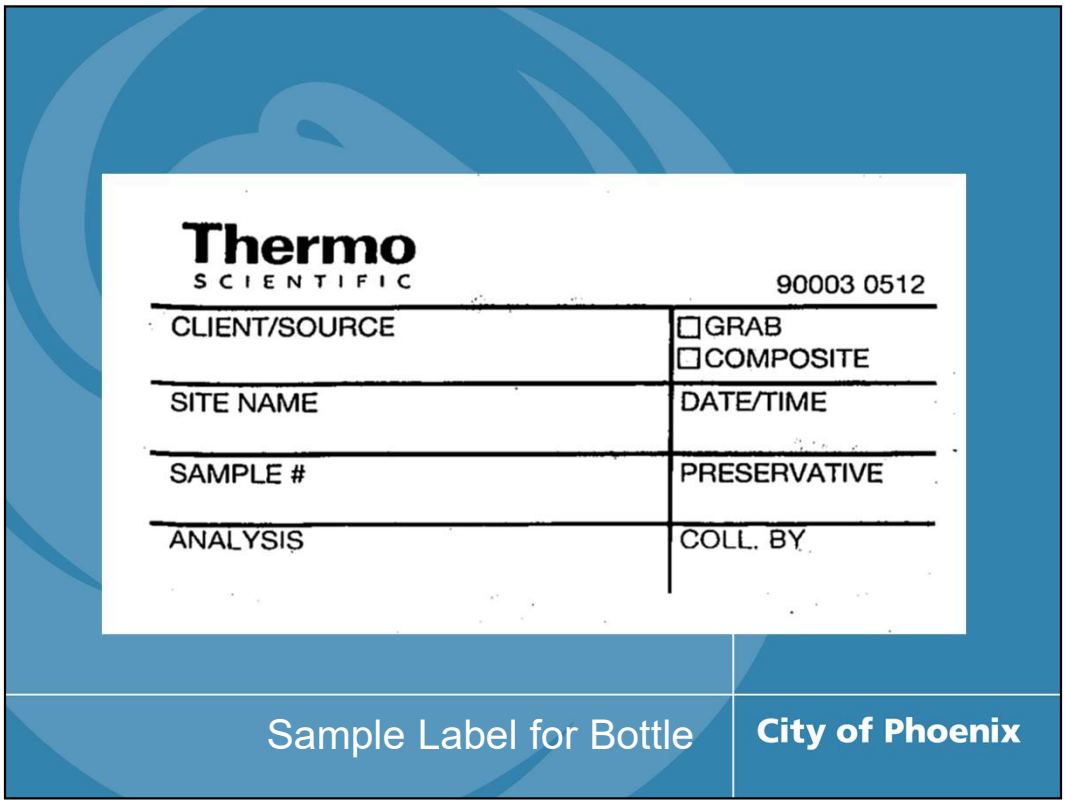
Parameter	EPA Methods	Standard Methods
pH S.U.	4500-H^+ B-2000	D1293-99 (A or B)
Copper (T) mg/l	220.2 200.7	3113-B 3120-B
Lead (T) mg/l	200.9 200.7	3113-B 3120-B
Mercury (T) mg/l	245.1	3112-B
Volatile Organics (i.e. Benzene and Toluene)	602/624	6200-C

Examples of 40 CFR 136 Analytical Methods

City of Phoenix

The standard methods are those adopted by the Arizona Department of Health Service (the organization who accredits environment laboratories for operation in the state).

You can find explanation on all methods on the National Environmental Methods Index web site at www.nemi.gov.



Ensure that you do have all the bottles and correct preservatives for the requested analysis. Your lab will have most likely supplied you with a pre-ordered bottle kit and these should come with a packing list which lists the tests and the sample container type and preservative for each test. The bottles often have corresponding labels.

Bottle labels should be legibly filled out using a permanent marker or preprinted. The label should at minimum have the site ID, date, time, the analysis or test method, and preservative.

Make sure that this information matches the chain of custody form, exactly (especially sample times – remember the importance of holding times).

Chain of custody is used in most sampling situations to maintain the integrity of the sample by providing documentation of the control, transfer, and analysis of samples. Chain of custody is especially important in environmental work where sampling can identify the existence of contamination.

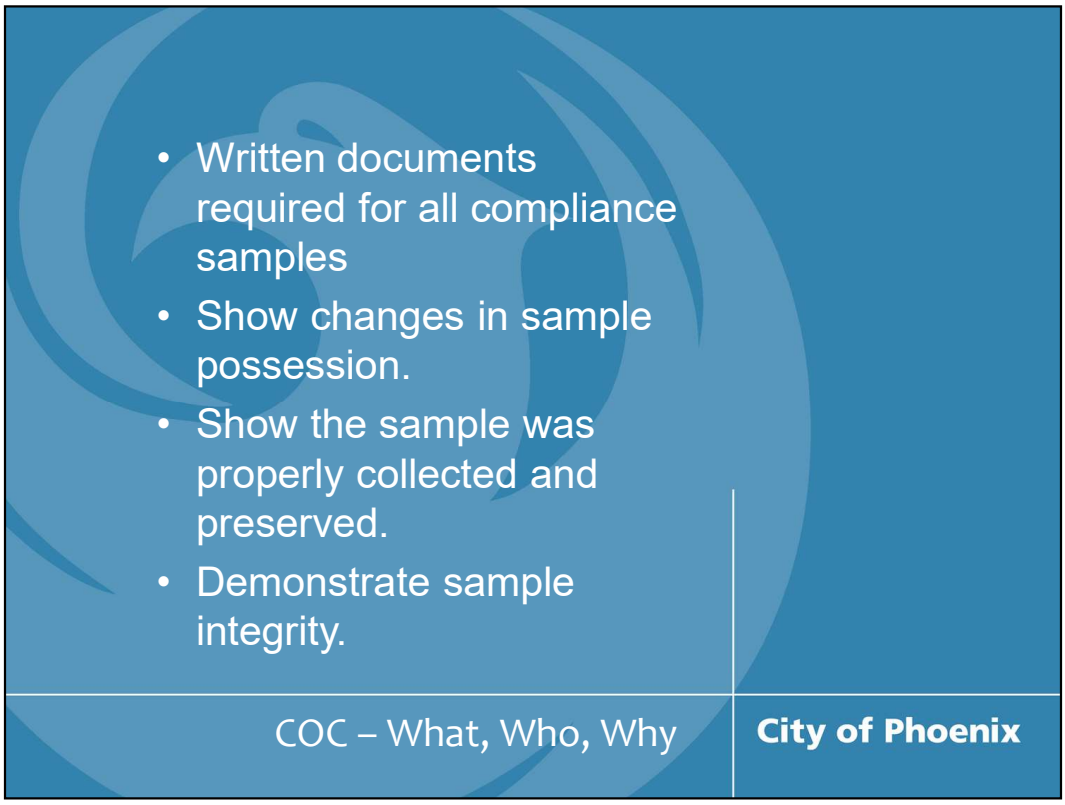
Chain of Custody - Definition

City of Phoenix

Now that the sample has been collected…

You must send the sample to an accredited laboratory of your choice for processing.

And for this you'll need a chain of custody!



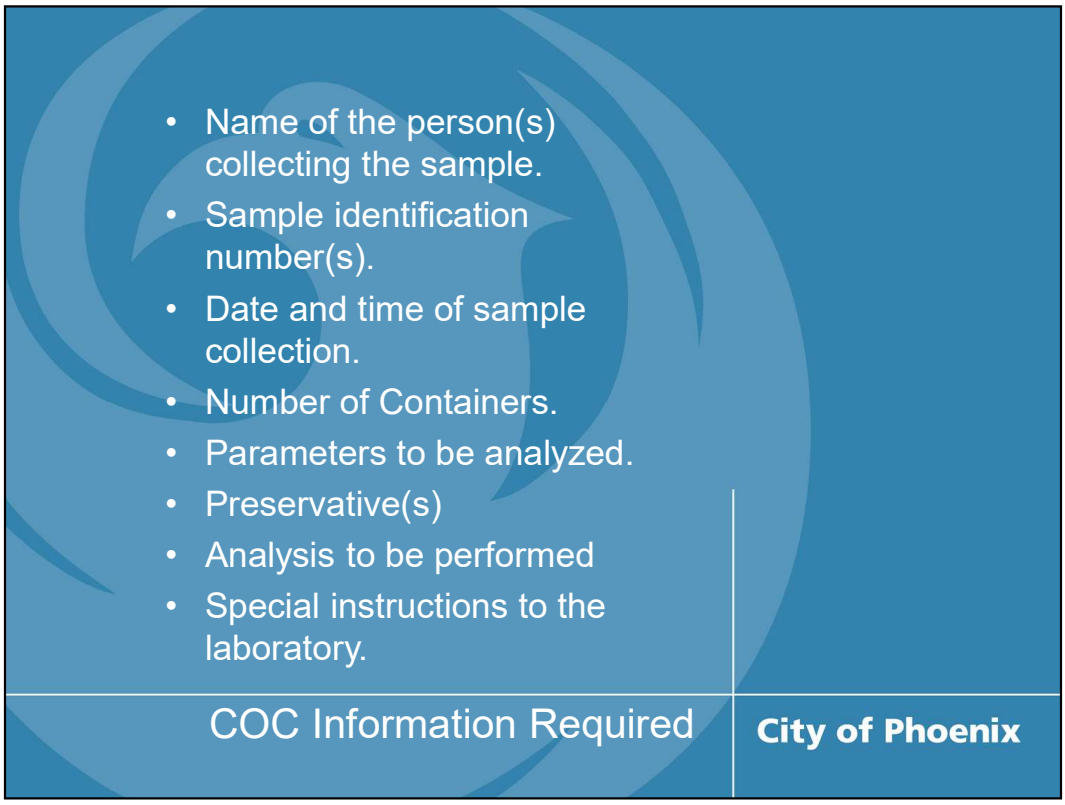
A. Chain of Custody (COC) Record is a written LEGAL document and is required for ALL compliance samples.

B. Shows changes in sample possession **-** Provides a map of the sample's journey from its collection through its final analysis in the laboratory. Every person who has control of the sample must be included on the Chain-of-Custody Form. When the sample is not in someone's possession it must be secured in a manner that tampering cannot occur or is recognizable if tampering does occur.

C. Shows that the sample was properly collected and preserved according to 40 CFR 136 guidelines.

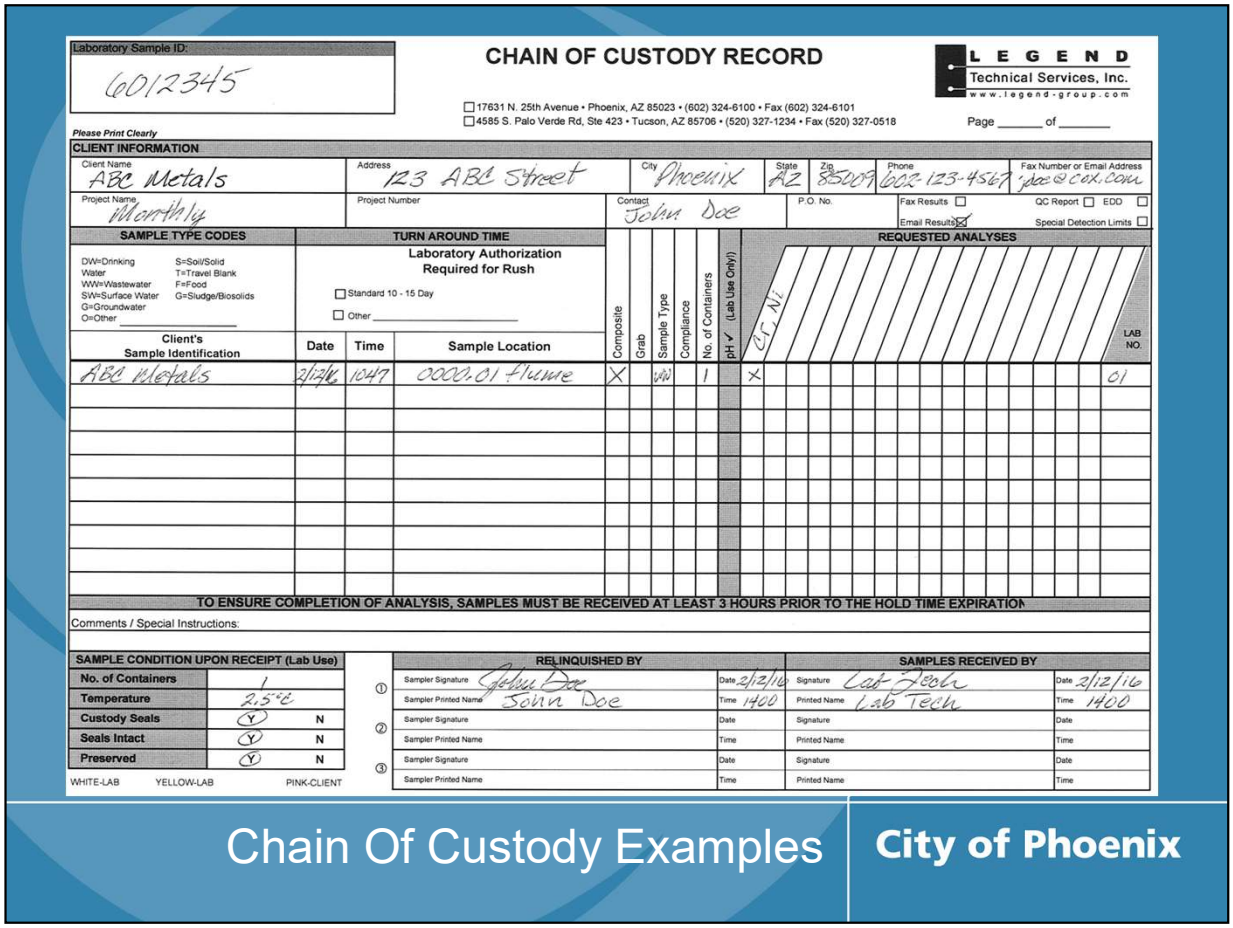
D. Demonstrate Sample Integrity **-** Using the Chain-Of-Custody Record, following written SOP's and filling in sampling logs ensures that sample integrity is maintained from sample collection through delivery to the laboratory.

(Quiz # 8)



Please take the time to make sure your chain-of-custody is correctly filled out and is legible!

According to a notice we received last year from Legend Technical Services, they receive approximately 500-800 samples daily! One of their biggest bottle necks with processing samples in a timely manner is a very large number of discrepancies with samples and chain of custody forms upon receipt. Every discrepancy must be verified and documented, which can be very time-consuming and delays the analysis of your samples.



Laboratory Sample ID: 6012345

CHAIN OF CUSTODY RECORD

LEGEND Technical Services, Inc. www.legend-group.com

☐ 17631 N. 25th Avenue • Phoenix, AZ 85023 • (602) 324-6100 • Fax (602) 324-6101
☐ 4585 S. Palo Verde Rd, Ste 423 • Tucson, AZ 85706 • (520) 327-1234 • Fax (520) 327-0518

Page _____ of _____

Please Print Clearly

CLIENT INFORMATION

Client Name	Address	City	State	Zip	Phone	Fax Number or Email Address
ABC Metals	123 ABC Street	Phoenix	AZ	85009	602-123-4567	jdoe@cox.com

Project Name	Project Number	Contact	P.O. No.	Fax Results ☐ QC Report ☐ EDD ☐
Monthly		John Doe		Email Results ☒ Special Detection Limits ☐

SAMPLE TYPE CODES

DW=Drinking Water, WW=Wastewater, SW=Surface Water, G=Groundwater, O=Other _____
S=Soil/Solid, T=Travel Blank, F=Food, G=Sludge/Biosolids

TURN AROUND TIME

Laboratory Authorization Required for Rush

☐ Standard 10 - 15 Day
☐ Other _____

Client's Sample Identification	Date	Time	Sample Location	Composite	Grab	Sample Type	Compliance	No. of Containers	pH ✓ (Lab Use Only)	CL, NI	LAB NO.
ABC Metals	2/12/16	1047	0000.01 Flume	X		WW		1		X	01

REQUESTED ANALYSES

TO ENSURE COMPLETION OF ANALYSIS, SAMPLES MUST BE RECEIVED AT LEAST 3 HOURS PRIOR TO THE HOLD TIME EXPIRATION

Comments / Special Instructions:

SAMPLE CONDITION UPON RECEIPT (Lab Use)

No. of Containers	1	
Temperature	2.5°C	
Custody Seals	(Y)	N
Seals Intact	(Y)	N
Preserved	(Y)	N

WHITE-LAB YELLOW-LAB PINK-CLIENT

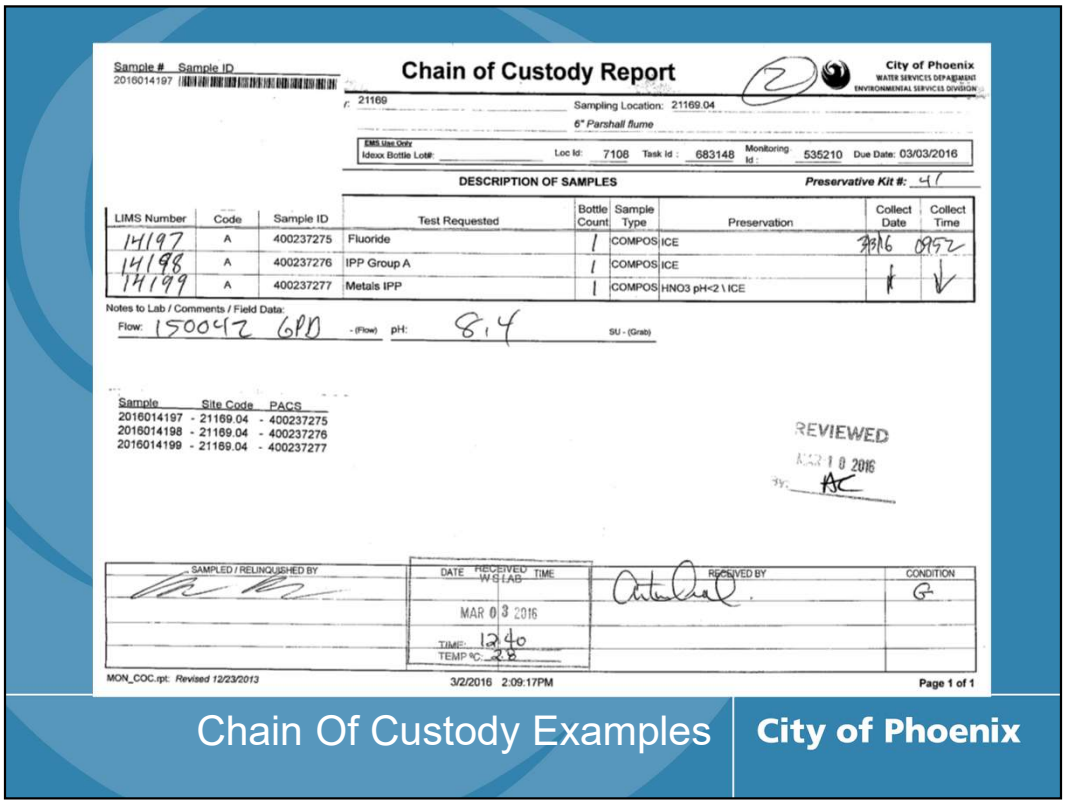
	RELINQUISHED BY		SAMPLES RECEIVED BY	
①	Sampler Signature: John Doe	Date: 2/12/16	Signature: Lab Tech	Date: 2/12/16
	Sampler Printed Name: John Doe	Time: 1400	Printed Name: Lab Tech	Time: 1400
②	Sampler Signature	Date	Signature	Date
	Sampler Printed Name	Time	Printed Name	Time
③	Sampler Signature	Date	Signature	Date
	Sampler Printed Name	Time	Printed Name	Time

Chain Of Custody Examples | City of Phoenix

This is an example of a Chain of Custody (COC) for Self-Monitoring samples.

The fundamental function of a Chain of Custody form is to show change in the possession of the sample.

It also specifically outlines the samples collected and types of analyses to be run.



Sample # Sample ID
2016014197

Chain of Custody Report

City of Phoenix
WATER SERVICES DEPARTMENT
ENVIRONMENTAL SERVICES DIVISION

21169 Sampling Location: 21169.04
6" Parshall flume

EMS Use Only
Idexx Bottle Lot#: Loc Id: 7106 Task Id: 683148 Monitoring Id: 535210 Due Date: 03/03/2016

DESCRIPTION OF SAMPLES Preservative Kit #: 47

LIMS Number	Code	Sample ID	Test Requested	Bottle Count	Sample Type	Preservation	Collect Date	Collect Time
14197	A	400237275	Fluoride	1	COMPOS	ICE	3/2/16	0952
14198	A	400237276	IPP Group A	1	COMPOS	ICE	"	"
14199	A	400237277	Metals IPP	1	COMPOS	HNO3 pH<2 \ ICE	"	"

Notes to Lab / Comments / Field Data:
Flow: 150042 GPD - (Flow) pH: 8.4 SU - (Grab)

Sample	Site Code	PACS
2016014197	- 21169.04	- 400237275
2016014198	- 21169.04	- 400237276
2016014199	- 21169.04	- 400237277

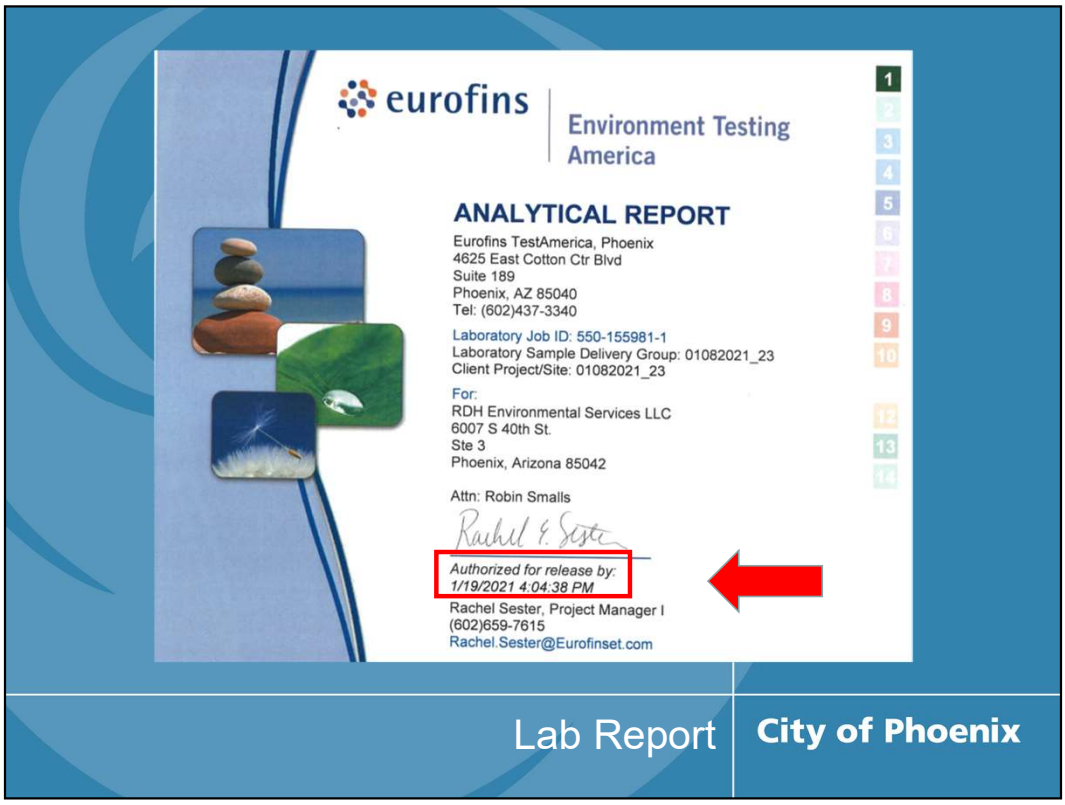
REVIEWED
MAR 10 2016
By: AC

SAMPLED / RELINQUISHED BY	DATE RECEIVED W S LAB TIME	RECEIVED BY	CONDITION
	MAR 03 2016 TIME: 1240 TEMP °C: 22		G

MON_COC.rpt: Revised 12/23/2013 3/2/2016 2:09:17PM Page 1 of 1

Chain Of Custody Examples | City of Phoenix

This is an example the City of Phoenix Chain of Custody form for IPP sampling.



Once the samples have been run, the lab will send a report with a date and time stamp. Please review your report promptly!

The 24-hour clock starts when the lab report is received (quiz #5).

Also note that we require a legible copy of the coc to be provided with the corresponding lab report when you submit your facility's SMR.

Self Monitoring Report Forms (SMR)

City of Phoenix

All permitted industries who discharge wastewater into the City of Phoenix's sewers are required to submit a SMR monthly.

Please note that a separate SMR is required for each sampling point. (Quiz #9)

For example, the February SMR is due on March 28th. (Quiz #6)

We hate writing NOVs for late SMRs just as much as you hate responding to them!

And please use your industry's most recent SMR forms. Old forms contain out-date information like obsolete permit number and incorrect sampling frequencies. When you get a renewed permit, you will receive updated SMR forms. If you contract with a vendor for sampling, it is your responsibility to make they have the correct forms!

- ❑ Flow and Certification Statement
- ❑ Sample Methodology Page
- ❑ Parameter Results Reporting Form
- ❑ *Attachment A – No Solvent Dumping/TOMP*
- ❑ *Attachment B – No Discharge Certification*
- ❑ *Attachment C – No Cyanide Certification*
- ❑ pH Calibration & Analysis Log with Method QC Data
- ❑ Daily Flows with Calibration, Maintenance Log and/or Manual Flow Log
- ❑ ADHS Certified Laboratory Analysis report with QA/QC
- ❑ Sampling Chain of Custody (Must be Readable)

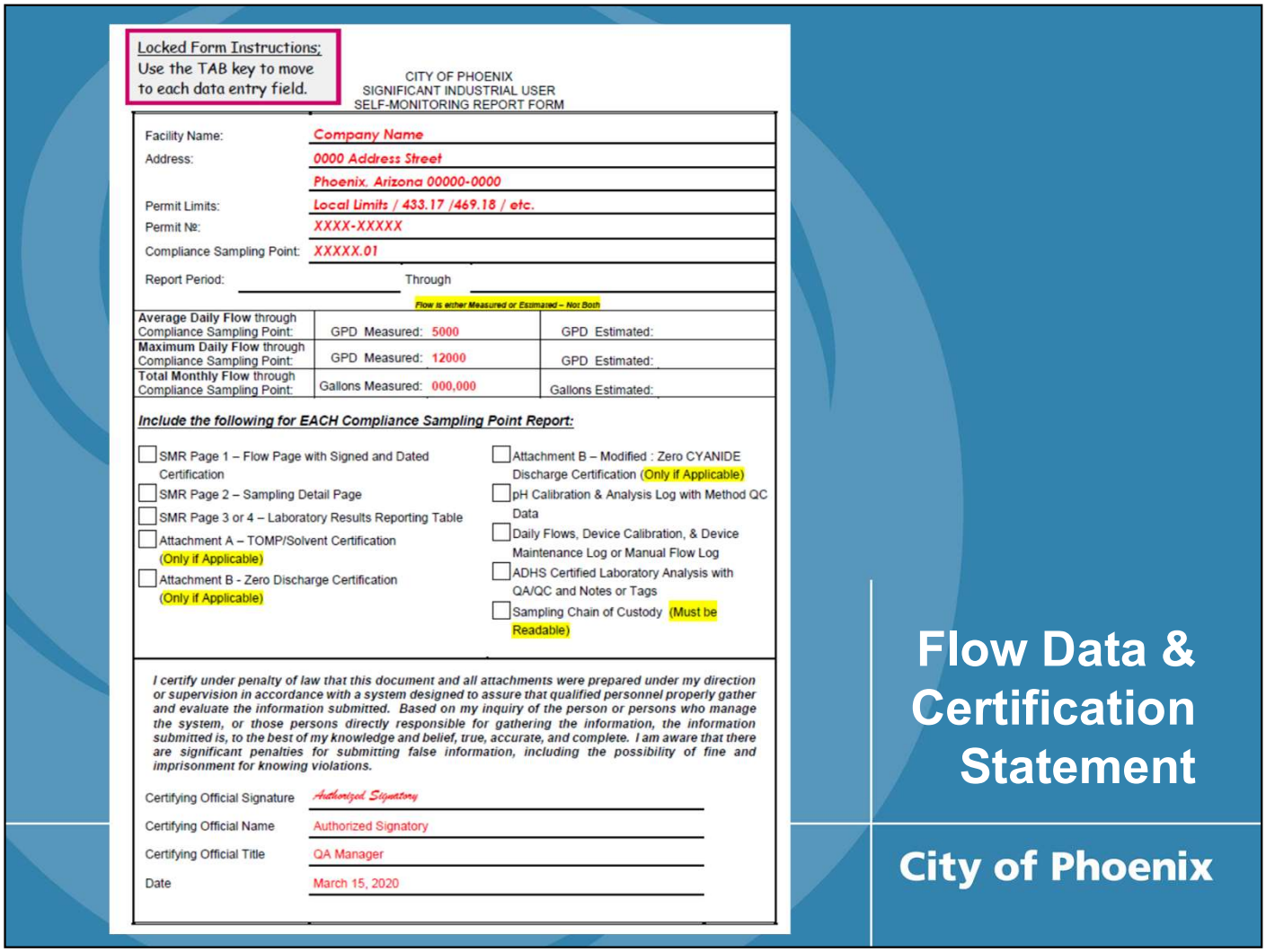
SMR Checklist | **City of Phoenix**

Attachment A, B, and C are only to be submitted when REQUIRED.

PLEASE DO NOT sign and submit Attachments A-C if they do not apply. A permittee cannot certify both discharged flow and Zero discharge flow for the month unless the Zero discharge flow is for a week or a partial month due to a shut down in flow. (Quiz #10)

Attachment C – No Cyanide Certification only applies to facilities with cyanide points

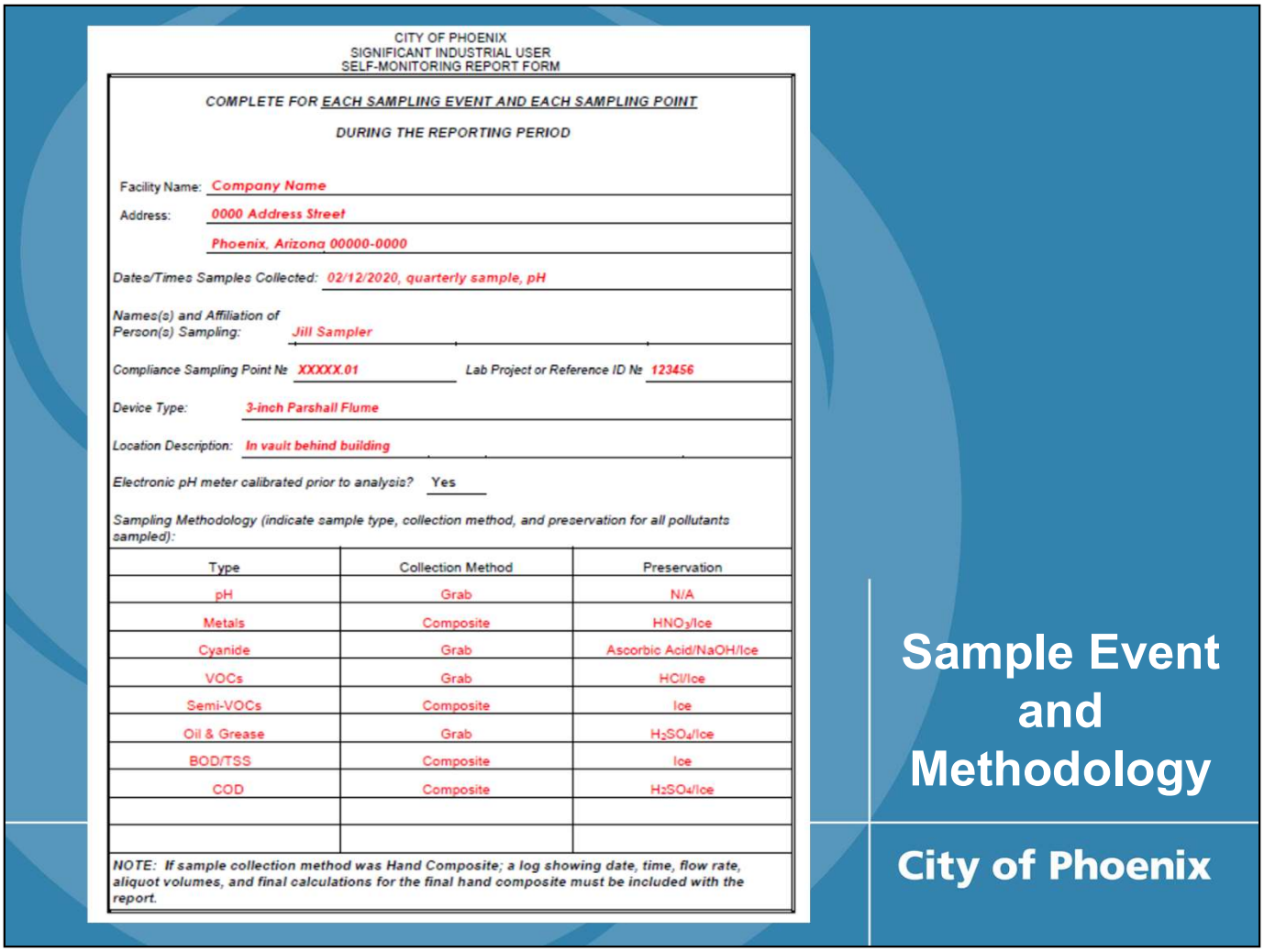
Also note that a separate SMR form is required for each compliance sampling location.



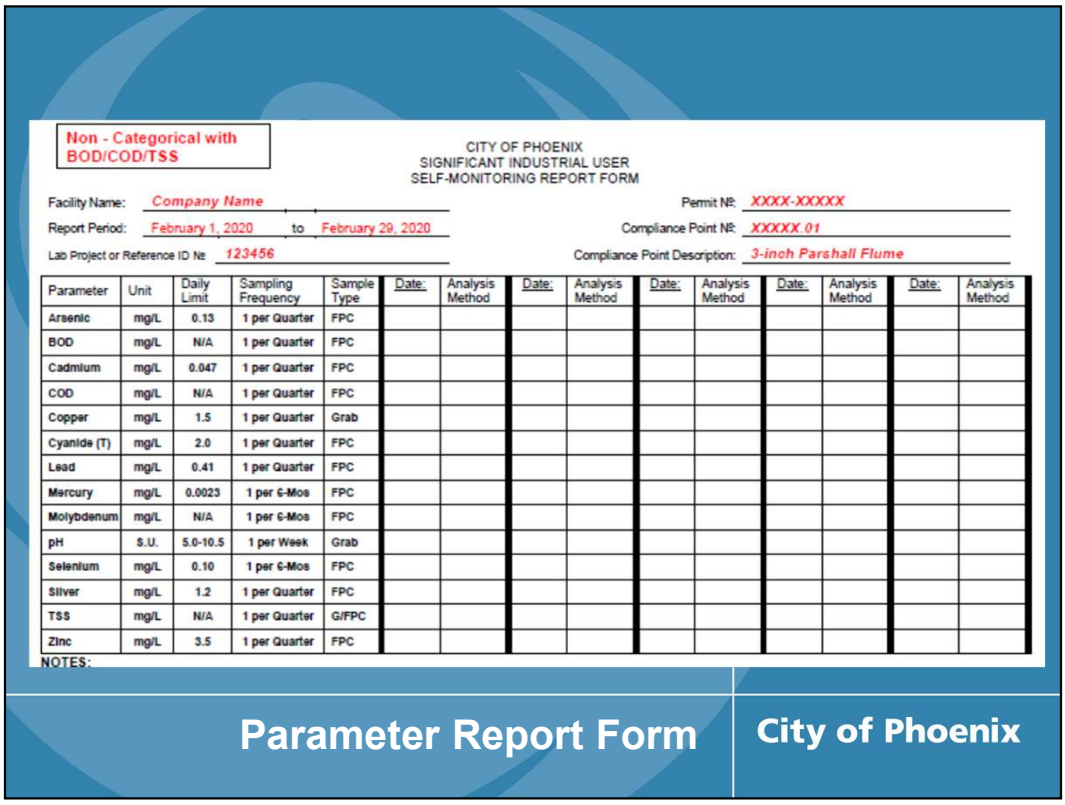
Permit conditions require a **signed original** to be turned in! Digital signatures or scanned signatures are not acceptable!

Standard Conditions Section D. 1. d. *Permittee shall measure the daily maximum flows, monthly average daily flow, and total monthly flow discharged through the compliance sampling point(s) described in the Permit and include these results in Permittee's monthly compliance self-monitoring report.*

One of the primary use of the flow data is for billing purposes so you want it to be correct!



It is advisable to have a separate form for each sample, however, multiple pH sampling days maybe included on one sheet.



Non - Categorical with BOD/COD/TSS

CITY OF PHOENIX
SIGNIFICANT INDUSTRIAL USER
SELF-MONITORING REPORT FORM

Facility Name: *Company Name*
Permit №: *XXXX-XXXXX*
Report Period: *February 1, 2020* to *February 29, 2020*
Compliance Point №: *XXXXX.01*
Lab Project or Reference ID №: *123456*
Compliance Point Description: *3-inch Parshall Flume*

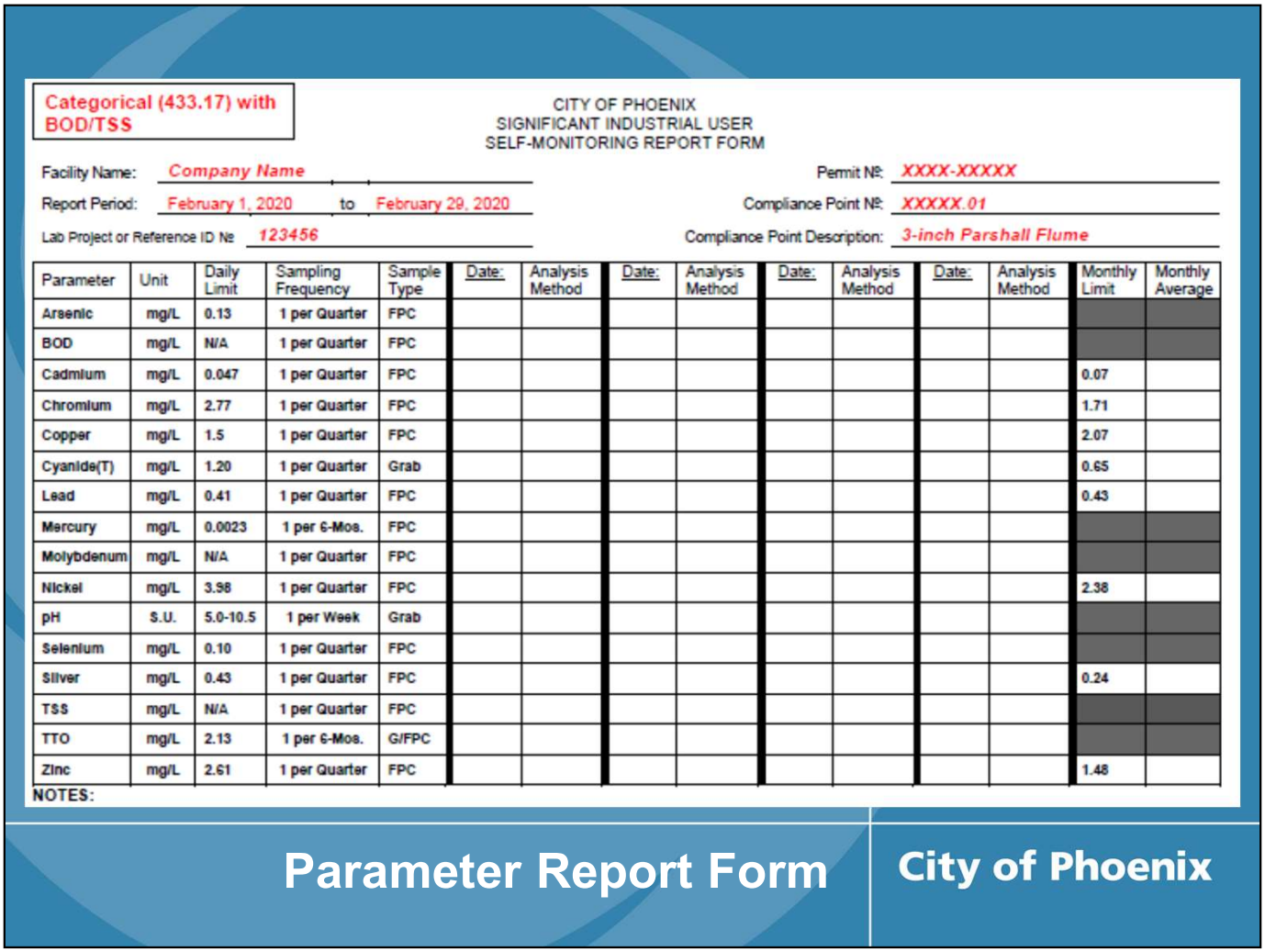
Parameter	Unit	Daily Limit	Sampling Frequency	Sample Type	Date:	Analysis Method	Date:	Analysis Method	Date:	Analysis Method	Date:	Analysis Method	Date:	Analysis Method
Arsenic	mg/L	0.13	1 per Quarter	FPC										
BOD	mg/L	N/A	1 per Quarter	FPC										
Cadmium	mg/L	0.047	1 per Quarter	FPC										
COD	mg/L	N/A	1 per Quarter	FPC										
Copper	mg/L	1.5	1 per Quarter	Grab										
Cyanide (T)	mg/L	2.0	1 per Quarter	FPC										
Lead	mg/L	0.41	1 per Quarter	FPC										
Mercury	mg/L	0.0023	1 per 6-Mos	FPC										
Molybdenum	mg/L	N/A	1 per 6-Mos	FPC										
pH	S.U.	5.0-10.5	1 per Week	Grab										
Selenium	mg/L	0.10	1 per 6-Mos	FPC										
Silver	mg/L	1.2	1 per Quarter	FPC										
TSS	mg/L	N/A	1 per Quarter	G/FPC										
Zinc	mg/L	3.5	1 per Quarter	FPC										

NOTES:

Parameter Report Form | **City of Phoenix**

The parameter report form reflects the parameters, averages, and sampling frequency identified in your permit.

This is an example of a Parameter table for a Non-categorical SIU. There are no monthly limits for non-categorical industries.



Categorical (433.17) with BOD/TSS

CITY OF PHOENIX
SIGNIFICANT INDUSTRIAL USER
SELF-MONITORING REPORT FORM

Facility Name: Company Name
Permit №: XXXX-XXXXX
Report Period: February 1, 2020 to February 29, 2020
Compliance Point №: XXXXX.01
Lab Project or Reference ID № 123456
Compliance Point Description: 3-inch Parshall Flume

Parameter	Unit	Daily Limit	Sampling Frequency	Sample Type	Date:	Analysis Method	Date:	Analysis Method	Date:	Analysis Method	Date:	Analysis Method	Monthly Limit	Monthly Average
Arsenic	mg/L	0.13	1 per Quarter	FPC										
BOD	mg/L	N/A	1 per Quarter	FPC										
Cadmium	mg/L	0.047	1 per Quarter	FPC									0.07	
Chromium	mg/L	2.77	1 per Quarter	FPC									1.71	
Copper	mg/L	1.5	1 per Quarter	FPC									2.07	
Cyanide(T)	mg/L	1.20	1 per Quarter	Grab									0.65	
Lead	mg/L	0.41	1 per Quarter	FPC									0.43	
Mercury	mg/L	0.0023	1 per 6-Mos.	FPC										
Molybdenum	mg/L	N/A	1 per Quarter	FPC										
Nickel	mg/L	3.98	1 per Quarter	FPC									2.38	
pH	S.U.	5.0-10.5	1 per Week	Grab										
Selenium	mg/L	0.10	1 per Quarter	FPC										
Silver	mg/L	0.43	1 per Quarter	FPC									0.24	
TSS	mg/L	N/A	1 per Quarter	FPC										
TTO	mg/L	2.13	1 per 6-Mos.	G/FPC										
Zinc	mg/L	2.61	1 per Quarter	FPC									1.48	

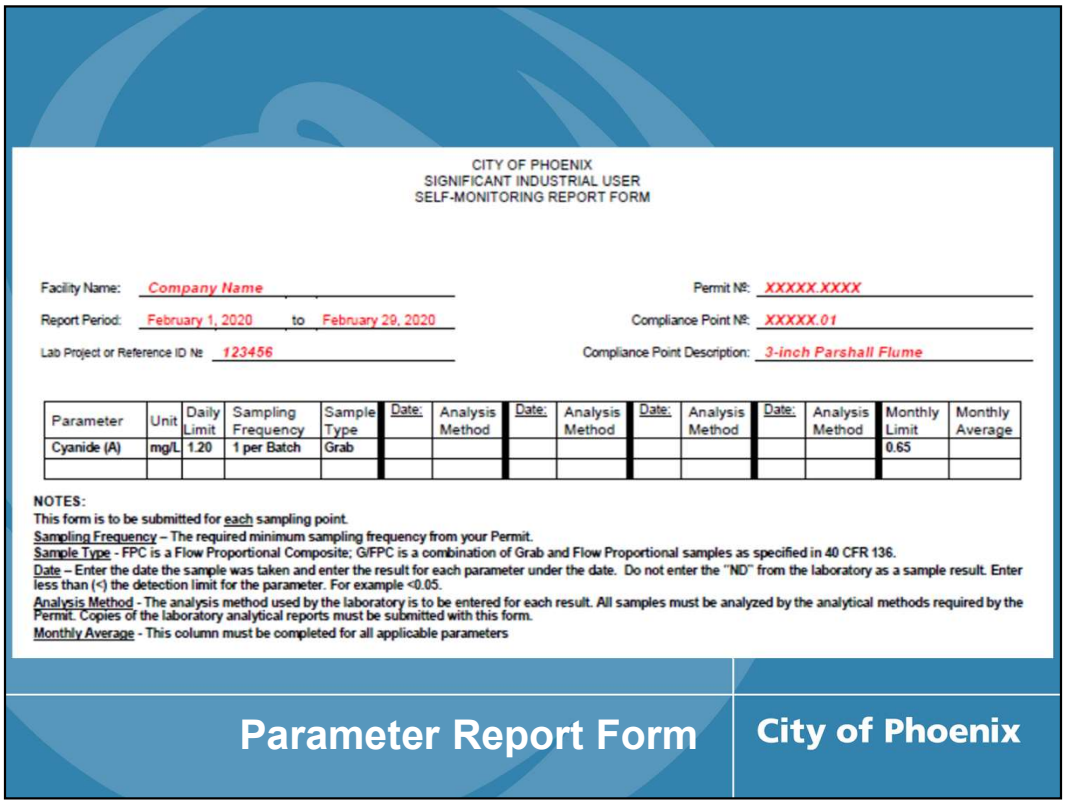
NOTES:

Parameter Report Form

City of Phoenix

Most categorical businesses have monthly average limits as well as daily limits. Pay attention to your permit limits as it is possible (especially for 433.17) that the Daily Average Limit may be lower the than the Monthly Limit.

Total Toxic Organics (TTOs) limits were established for the following categorical industries: Electroplating (40 CFR Part 413), Metal Finishing (40 CFR Part 433), Electrical and Electric Components (40 CFR Part 469), Copper Forming (40 CFR Part 468), Aluminum Forming (40 CFR Part 467), and Coil Coating (40 CFRPart 465). The type of pollutants that comprise the parameter TTOs vary according to the category. TTO is defined as the sum of the masses or concentrations of specific toxic organic compounds found in the Categorical Industrial User (CIU) discharges at >0.01 mg/l.



CITY OF PHOENIX
SIGNIFICANT INDUSTRIAL USER
SELF-MONITORING REPORT FORM

Facility Name: *Company Name*
Permit №: *XXXXX.XXXX*
Report Period: *February 1, 2020* to *February 29, 2020*
Compliance Point №: *XXXXX.01*
Lab Project or Reference ID № *123456*
Compliance Point Description: *3-inch Parshall Flume*

Parameter	Unit	Daily Limit	Sampling Frequency	Sample Type	Date:	Analysis Method	Date:	Analysis Method	Date:	Analysis Method	Date:	Analysis Method	Monthly Limit	Monthly Average
Cyanide (A)	mg/L	1.20	1 per Batch	Grab									0.65	

NOTES:
This form is to be submitted for each sampling point.
Sampling Frequency – The required minimum sampling frequency from your Permit.
Sample Type - FPC is a Flow Proportional Composite; G/FPC is a combination of Grab and Flow Proportional samples as specified in 40 CFR 136.
Date – Enter the date the sample was taken and enter the result for each parameter under the date. Do not enter the "ND" from the laboratory as a sample result. Enter less than (<) the detection limit for the parameter. For example <0.05.
Analysis Method - The analysis method used by the laboratory is to be entered for each result. All samples must be analyzed by the analytical methods required by the Permit. Copies of the laboratory analytical reports must be submitted with this form.
Monthly Average - This column must be completed for all applicable parameters

Parameter Report Form | **City of Phoenix**

Companies with cyanide points must document the cyanide analysis on a separate results page

Facility Name: *ABC Metals* Permit №: *1703-0000*

Report Period: *February 1, 2018* to *February 28, 2018* Compliance Point №: *0000.01*

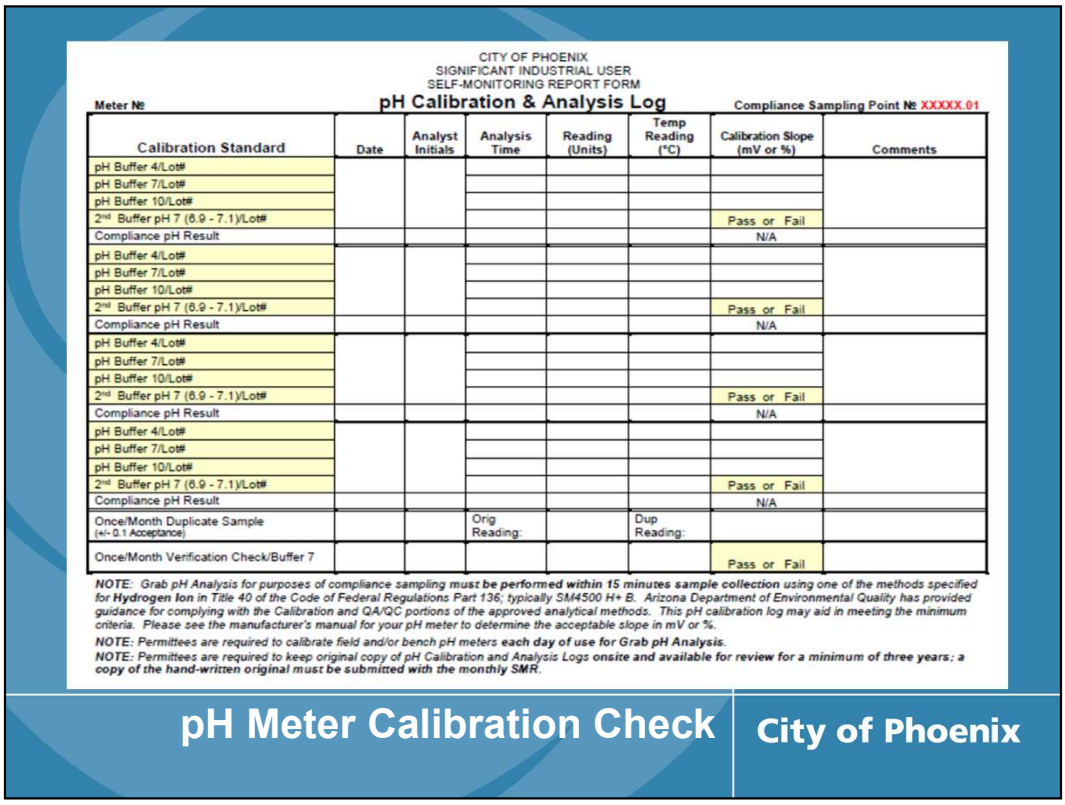
Lab Project or Reference ID № *012345* Compliance Point Description: *45° Weir box*

Parameter	Unit	Daily Limit	Sampling Frequency	Sample Type	Date: 02/05	Analysis Method	Date: 02/12	Analysis Method	Date: 02/19	Analysis Method	Date: 02/26	Analysis Method	Monthly Limit	Monthly Average
Arsenic	mg/L	0.13	1 per Quarter	FPC			<0.010	200.7						
Cadmium	mg/L	0.047	1 per Quarter	FPC			<0.0010	200.7					0.07	<0.0010
Chromium	mg/L	2.77	1 per Quarter	FPC			0.0172	200.7					1.71	0.0172
Copper	mg/L	1.50	1 per Quarter	FPC			<0.020	200.7					2.07	<0.020
Cyanide (T)	mg/L	1.20	1 per Quarter	Grab			<0.010	SM4500 CN/E					0.65	<0.010
Lead	mg/L	0.41	1 per Quarter	FPC			<0.0150	200.7					0.43	<0.0150
Mercury	mg/L	0.0023	1 per 6-mos	FPC			<0.00020	245.1						
Molybdenum	mg/L	N/A	1 per Quarter	FPC			<0.010	200.7						
Nickel	mg/L	3.98	1 per Quarter	FPC			0.304	200.7					2.38	0.304
pH	S.U.	5.0-10.5	1 per Week	Grab	7.52	SM4500	8.02	SM4500 H+B	7.43	SM4500	7.75	SM4500		
Selenium	mg/L	0.10	1 per Quarter	FPC			<0.10	200.7						
Silver	mg/L	0.43	1 per Quarter	FPC			<0.010	200.7					0.24	<0.010
TTO	mg/L	2.13	1 per 6-mos	G/FPC			cert							
Zinc	mg/L	2.61	1 per Quarter	FPC			<0.050	200.7					1.48	<0.050

Parameter Report Form **City of Phoenix**

Make sure you are using the most up to date form with the correct permit number on it! And pay attention to your permit limits as it is possible (especially for 433.17) that the Daily Average Limit may be lower the than the Monthly Limit.

For industries required to collect continuous pH reading there is an additional log for that. Batch dischargers may also submit a separate log for pH results or modify the flow page to suit their needs.



CITY OF PHOENIX
SIGNIFICANT INDUSTRIAL USER
SELF-MONITORING REPORT FORM

Meter №

pH Calibration & Analysis Log

Compliance Sampling Point № XXXXX.01

Calibration Standard	Date	Analyst Initials	Analysis Time	Reading (Units)	Temp Reading (°C)	Calibration Slope (mV or %)	Comments
pH Buffer 4/Lot#							
pH Buffer 7/Lot#							
pH Buffer 10/Lot#							
2nd Buffer pH 7 (6.9 - 7.1)/Lot#						Pass or Fail	
Compliance pH Result						N/A	
pH Buffer 4/Lot#							
pH Buffer 7/Lot#							
pH Buffer 10/Lot#							
2nd Buffer pH 7 (6.9 - 7.1)/Lot#						Pass or Fail	
Compliance pH Result						N/A	
pH Buffer 4/Lot#							
pH Buffer 7/Lot#							
pH Buffer 10/Lot#							
2nd Buffer pH 7 (6.9 - 7.1)/Lot#						Pass or Fail	
Compliance pH Result						N/A	
pH Buffer 4/Lot#							
pH Buffer 7/Lot#							
pH Buffer 10/Lot#							
2nd Buffer pH 7 (6.9 - 7.1)/Lot#						Pass or Fail	
Compliance pH Result						N/A	
Once/Month Duplicate Sample (+/- 0.1 Acceptance)			Orig Reading:		Dup Reading:		
Once/Month Verification Check/Buffer 7						Pass or Fail	

*NOTE: Grab pH Analysis for purposes of compliance sampling **must be performed within 15 minutes sample collection** using one of the methods specified for **Hydrogen Ion** in Title 40 of the Code of Federal Regulations Part 136; typically SM4500 H+ B. Arizona Department of Environmental Quality has provided guidance for complying with the Calibration and QA/QC portions of the approved analytical methods. This pH calibration log may aid in meeting the minimum criteria. Please see the manufacturer's manual for your pH meter to determine the acceptable slope in mV or %.*

***NOTE:** Permittees are required to calibrate field and/or bench pH meters **each day of use for Grab pH Analysis**.*

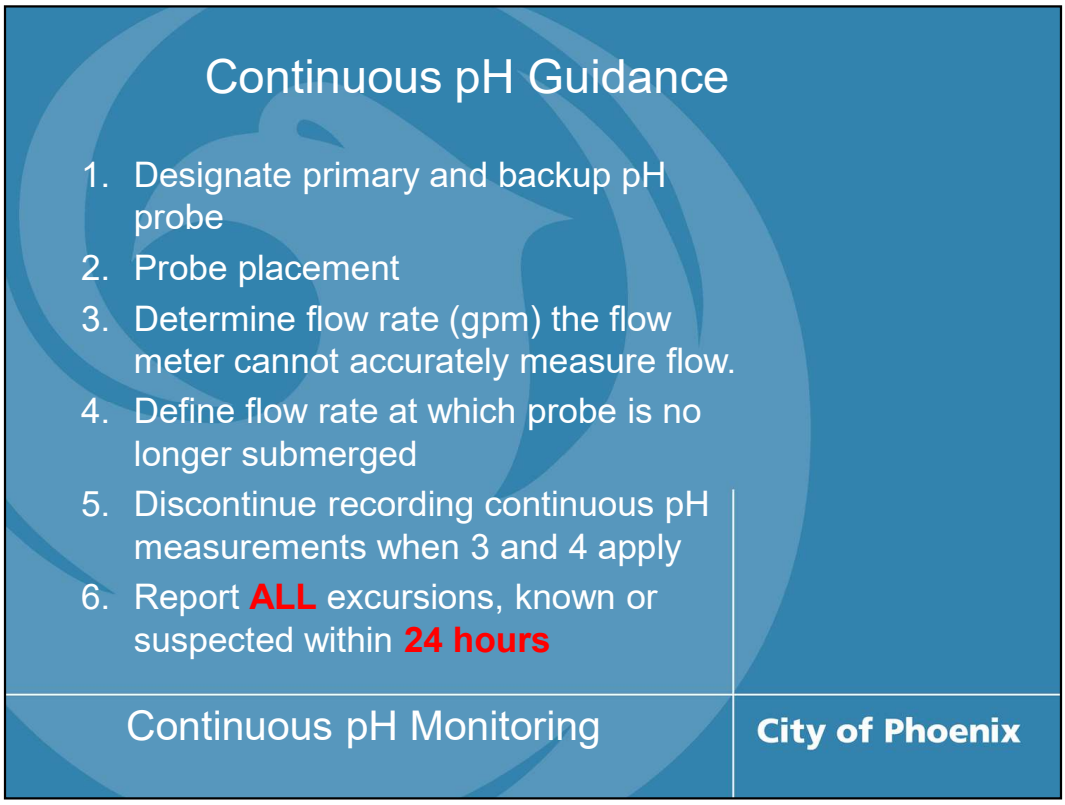
***NOTE:** Permittees are required to keep original copy of pH Calibration and Analysis Logs **onsite and available for review for a minimum of three years; a copy of the hand-written original must be submitted with the monthly SMR**.*

pH Meter Calibration Check

City of Phoenix

Please note that the method SM4500 states to calibrate the meter before each sample when sampling intermittently (weekly).

Industries with continuous pH requirements need to calibrate their meters at minimum once a month.



The City of Phoenix Continuous pH Guidance is available on request!

(gpm) – in gallons per minute.

Locked Form Instructions:
Use the TAB key to move to each data entry field.

CITY OF PHOENIX
SIGNIFICANT INDUSTRIAL USER
SELF-MONITORING REPORT FORM

ATTACHMENT A

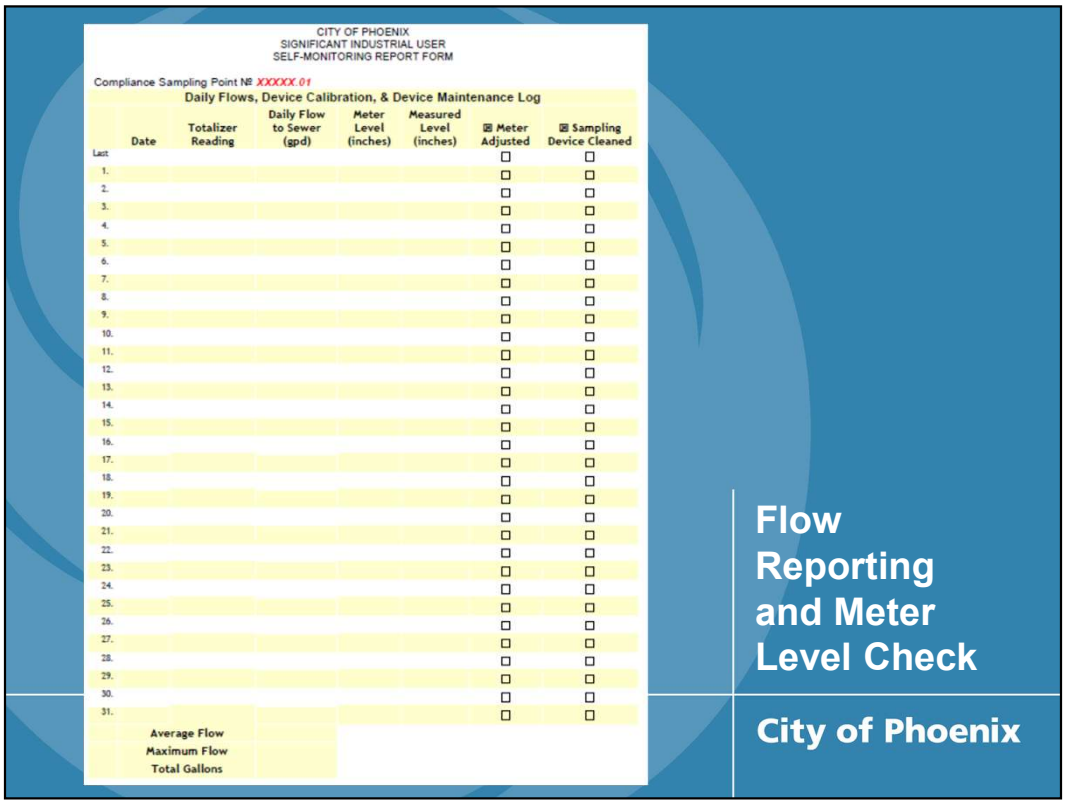
EPA Method 150.2
Continuous pH Reporting:

Facility Name:
Address:
Permit №:
Compliance Sampling Point:

	Date	pH Minimum	Time	pH Maximum	Time
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					

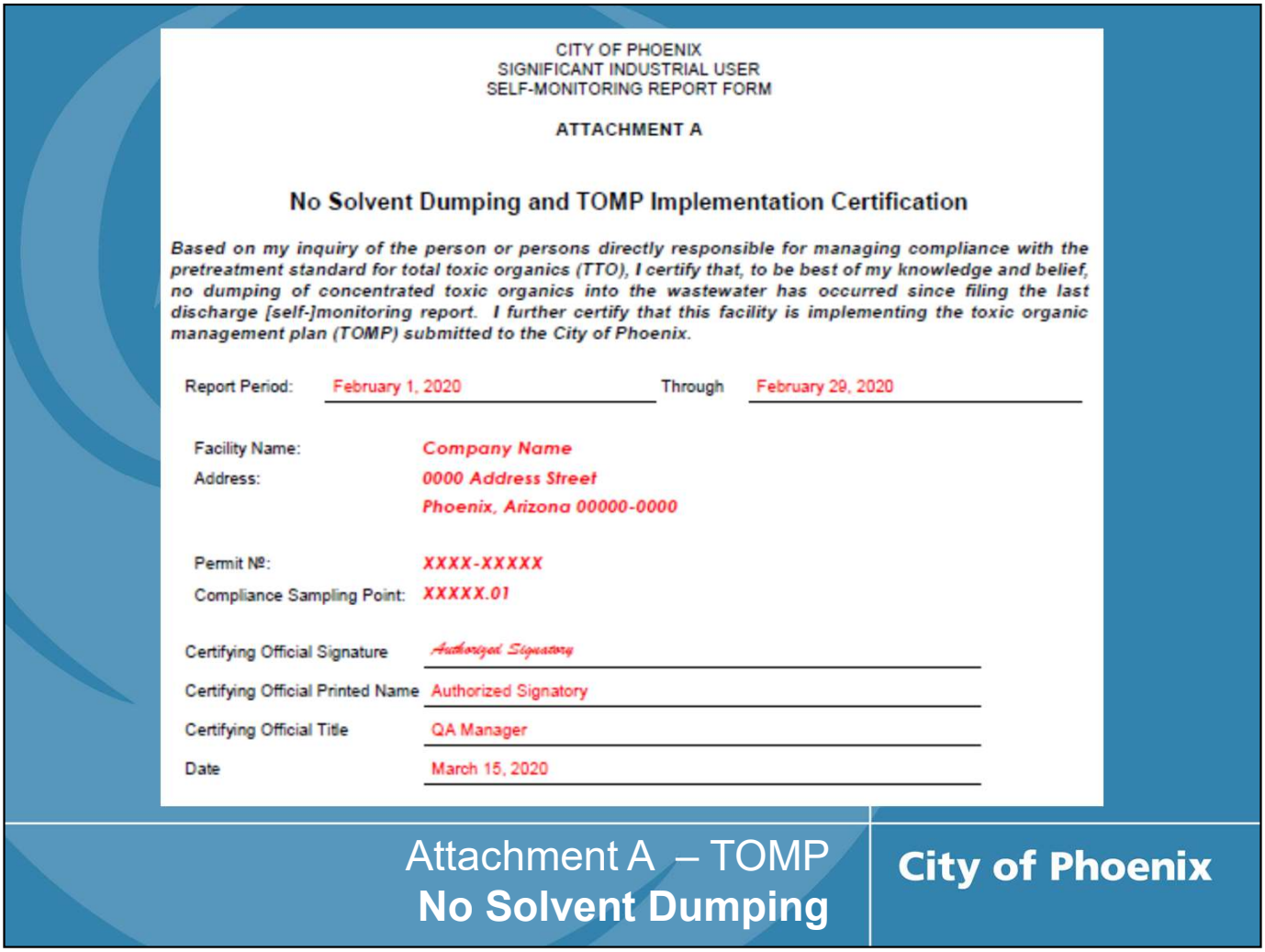
Continuous pH log

City of Phoenix



City of Phoenix requires SIU's to do a "ruler level check" in inches and compare that to the flow meter level in inches and adjust if necessary at a minimum of once per month.

The procedure ensures the flow meter is accurately measuring wastewater discharge flow.

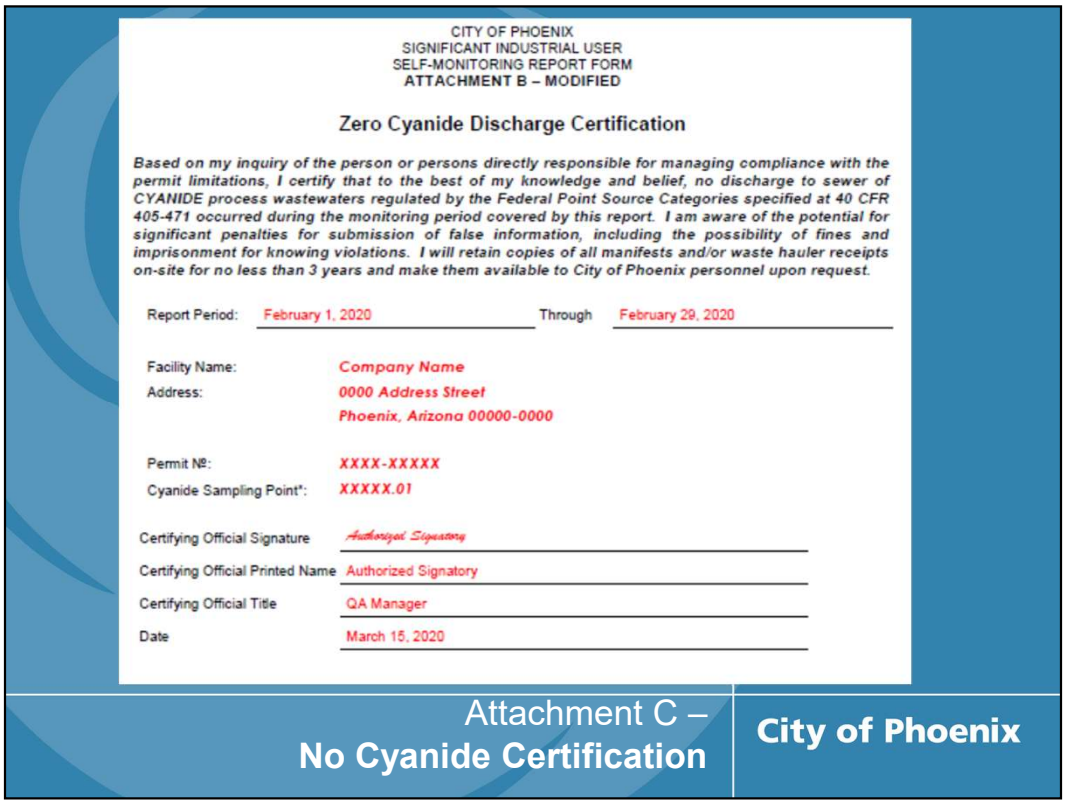


This attachment is required for certain categorical users to certify that their Toxic Organic Management Plan is being adhered to.

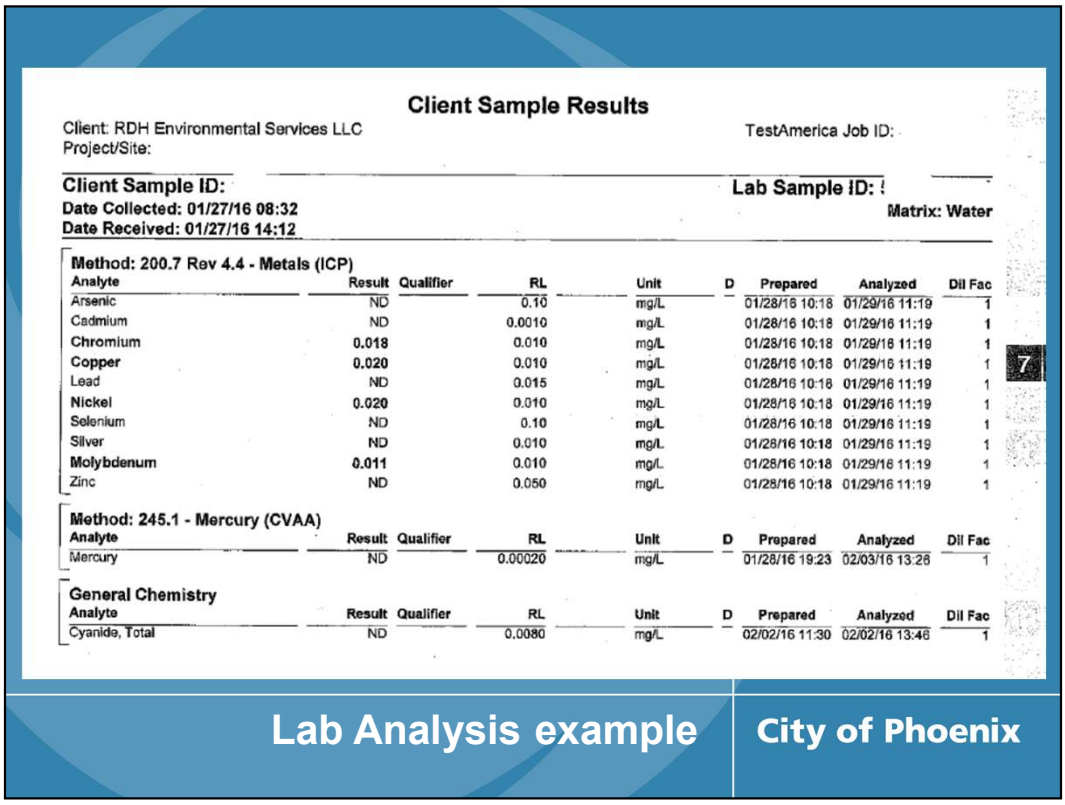
This certification is in place of sampling for Total Toxic Organics (TTOs) as specified in the industry's permit and must be submitted monthly with the SMR.

You only will submit this attachment when there has been no process discharge for a period of time that would prevent you from collecting samples as prescribed in your industry's permit.

For example, most industry's are required to take weekly pH samples. If the industry's process flow is shut down for maintenance for two weeks then you would need to submit a zero discharge certificate for those two weeks.



This certificate is only required from industries that have cyanide points



Please review your lab report immediately! You only have 24 hours to report an exceedance!

Do not report your data in the parameter results table as ND – non detect. Your data values should be reported as less than (<) the reporting limit.

QC Sample Results

Client: RDH Environmental Services LLC
Project/Site:

TestAmerica Job ID: !

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: 550-57886-F-1-A MS
Matrix: Water
Analysis Batch: 82891

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 82782

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND		1.00	0.986		mg/L		99	70 - 130
Chromium	ND		1.00	0.976		mg/L		97	70 - 130
Copper	ND		1.00	1.03		mg/L		102	70 - 130
Lead	ND		1.00	1.02		mg/L		102	70 - 130
Nickel	ND		1.00	0.957		mg/L		95	70 - 130
Selenium	ND		1.00	1.06		mg/L		106	70 - 130
Silver	ND		0.0750	0.0761		mg/L		101	70 - 130
Molybdenum	0.014		1.00	0.994		mg/L		98	70 - 130
Zinc	ND		1.00	1.03		mg/L		100	70 - 130

Lab Sample ID: 550-57886-F-1-B MSD
Matrix: Water
Analysis Batch: 82891

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 82782

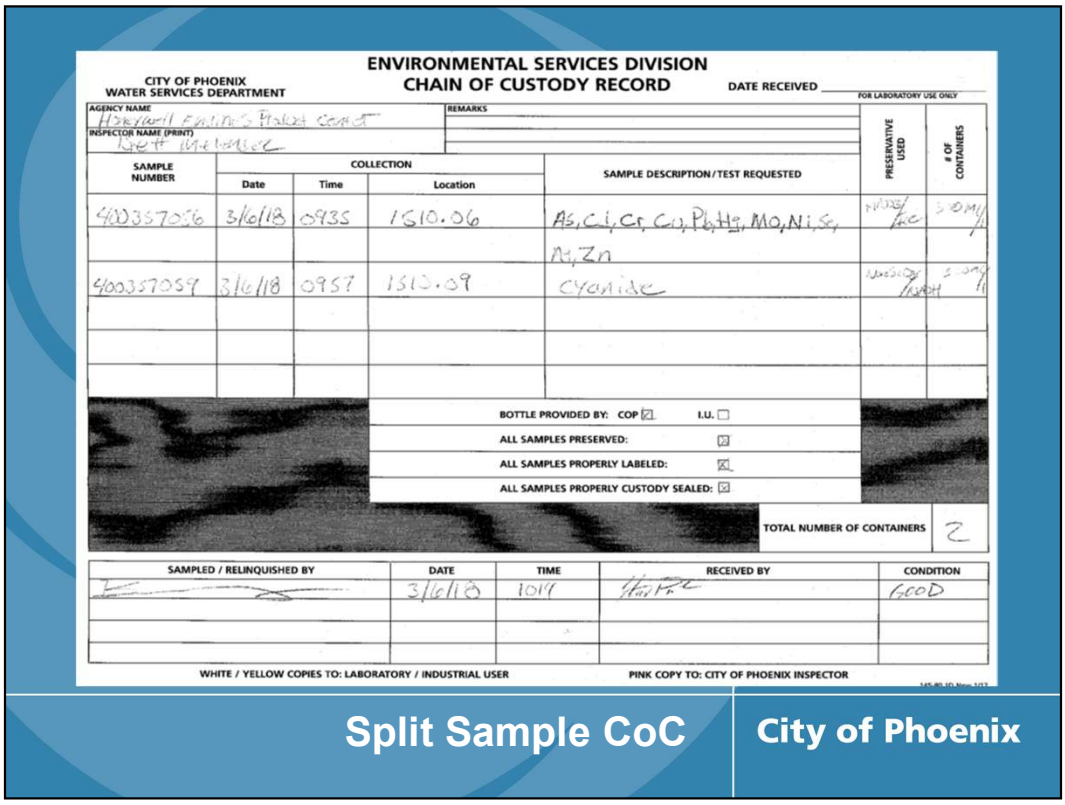
Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	ND		1.00	1.03		mg/L		103	70 - 130	0	20
Cadmium	ND		1.00	0.996		mg/L		100	70 - 130	1	20
Chromium	ND		1.00	0.986		mg/L		98	70 - 130	1	20
Copper	ND		1.00	1.04		mg/L		103	70 - 130	1	20
Lead	ND		1.00	1.03		mg/L		103	70 - 130	0	20
Nickel	ND		1.00	0.969		mg/L		96	70 - 130	1	20
Selenium	ND		1.00	1.07		mg/L		107	70 - 130	1	20
Silver	ND		0.0750	0.0769		mg/L		103	70 - 130	1	20
Molybdenum	0.014		1.00	0.998		mg/L		98	70 - 130	0	20
Zinc	ND		1.00	1.04		mg/L		101	70 - 130	1	20

8

Lab QC Data example | **City of Phoenix**

The City of Phoenix's split sample policy was revised in June 2024 after a routine EPA audit required a change in how we handle split samples.

If IU requests a split sample, the city wastewater samplers must first determine that there is enough sample volume collected to fill all of the city's required sample bottles and the industry's split sample. The samples will be split using a rotational pour-off method to maintain a well mixed, representative sample.



ENVIRONMENTAL SERVICES DIVISION
CHAIN OF CUSTODY RECORD

CITY OF PHOENIX
WATER SERVICES DEPARTMENT

DATE RECEIVED

FOR LABORATORY USE ONLY

AGENCY NAME: Maricopa County Public Health

INSPECTOR NAME (PRINT): Matt Mahoney

REMARKS

SAMPLE NUMBER	COLLECTION Date	Time	Location	SAMPLE DESCRIPTION / TEST REQUESTED	PRESERVATIVE USED	# OF CONTAINERS
4000357056	3/16/18	0935	1S10.06	As, Cl, Cr, Cu, Pb, Hg, Mo, Ni, Se, Ag, Zn	HNO3 / Ice	3 40ml / 1
4000357059	3/16/18	0957	1S10.09	cyanide	NaOH	2 250ml / 1

BOTTLE PROVIDED BY: COP ☑ I.U. ☐

ALL SAMPLES PRESERVED: ☑

ALL SAMPLES PROPERLY LABELED: ☑

ALL SAMPLES PROPERLY CUSTODY SEALED: ☒

TOTAL NUMBER OF CONTAINERS: 2

SAMPLED / RELINQUISHED BY	DATE	TIME	RECEIVED BY	CONDITION
[signature]	3/16/18	1019	[signature]	GOOD

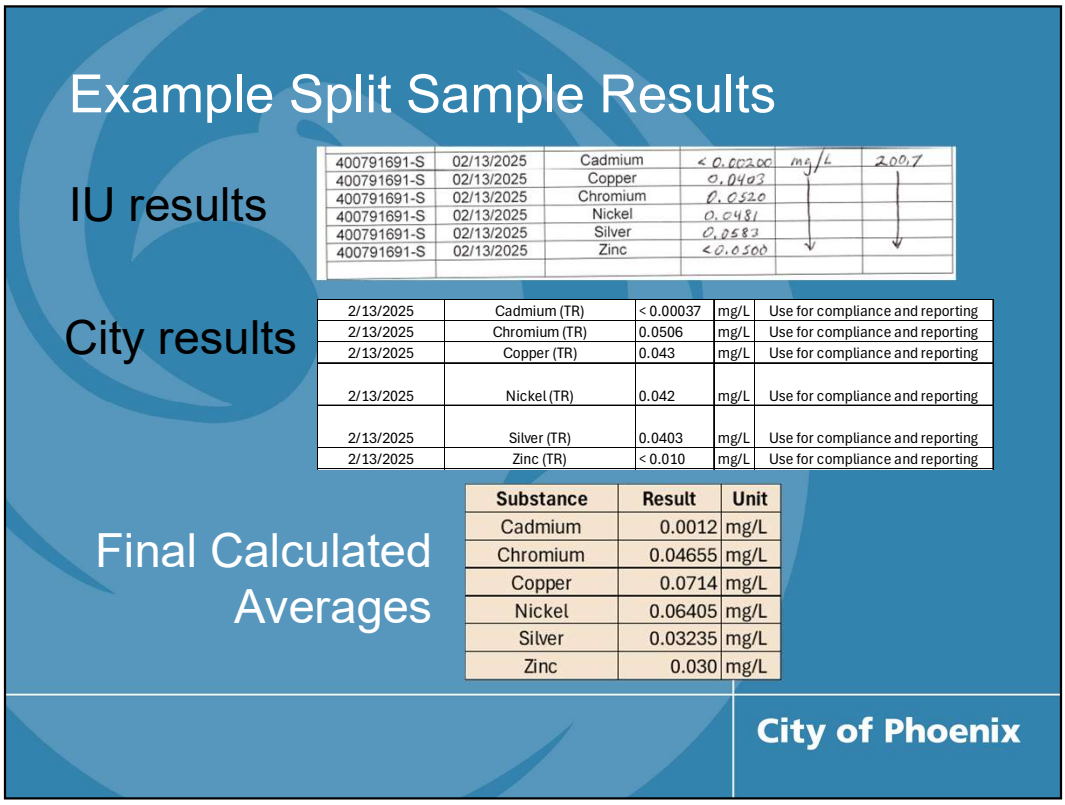
WHITE / YELLOW COPIES TO: LABORATORY / INDUSTRIAL USER

PINK COPY TO: CITY OF PHOENIX INSPECTOR

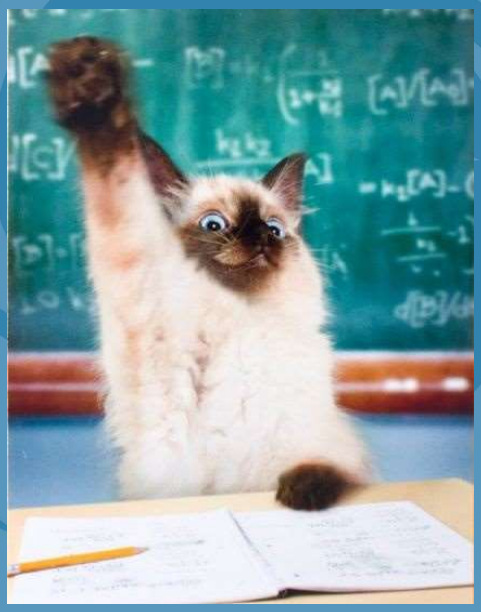
Split Sample CoC | City of Phoenix

Once the samples are poured off, the city will provide the industry with a chain of custody with the sample. Please remember the industry need to provide their own bottles for split samples, these should provided by the contracted lab.

Please review this for errors! We are all human and errors occur.

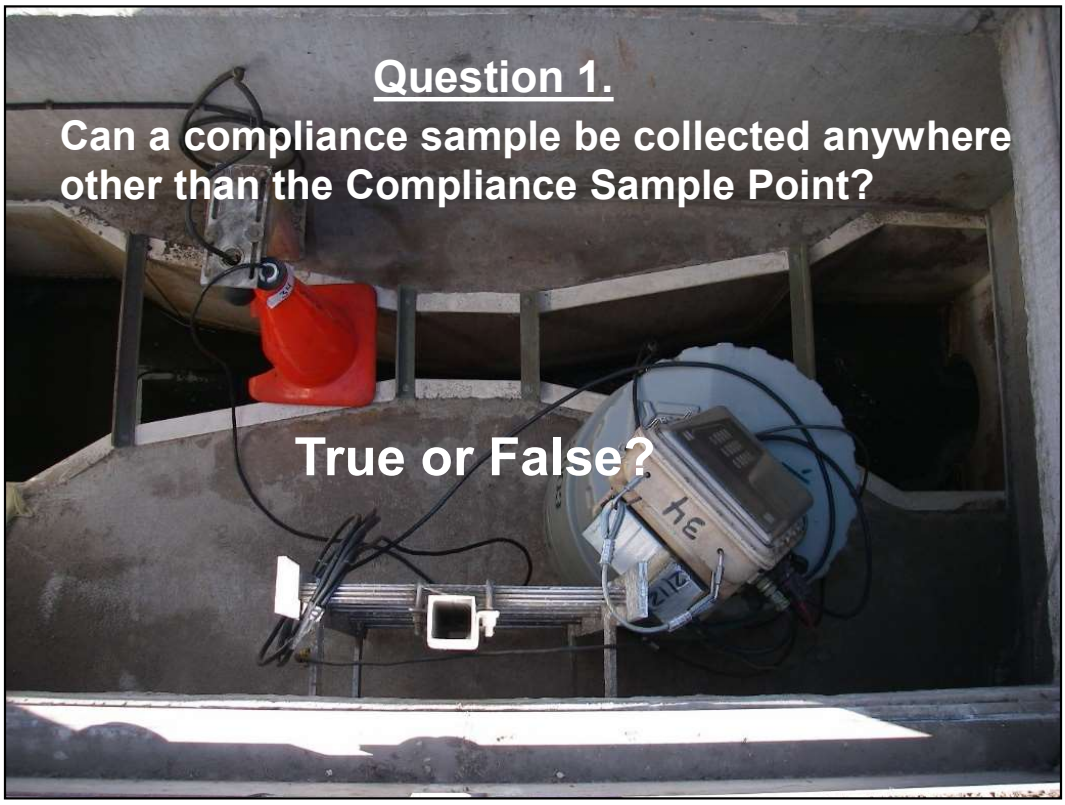


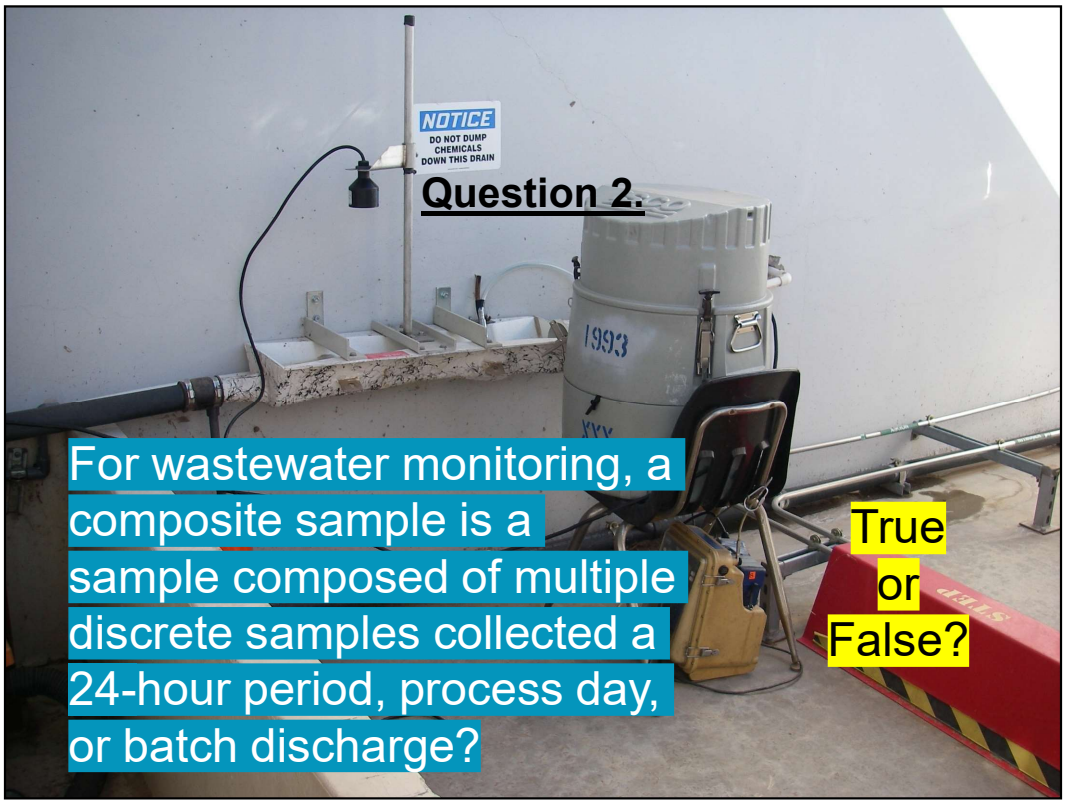
The major change is that now the compliance result will be the calculated average of the City sample result and the IU lab result for all parameters identified for the split. The calculated average will be considered the compliance sample value.



QUIZ

City of Phoenix

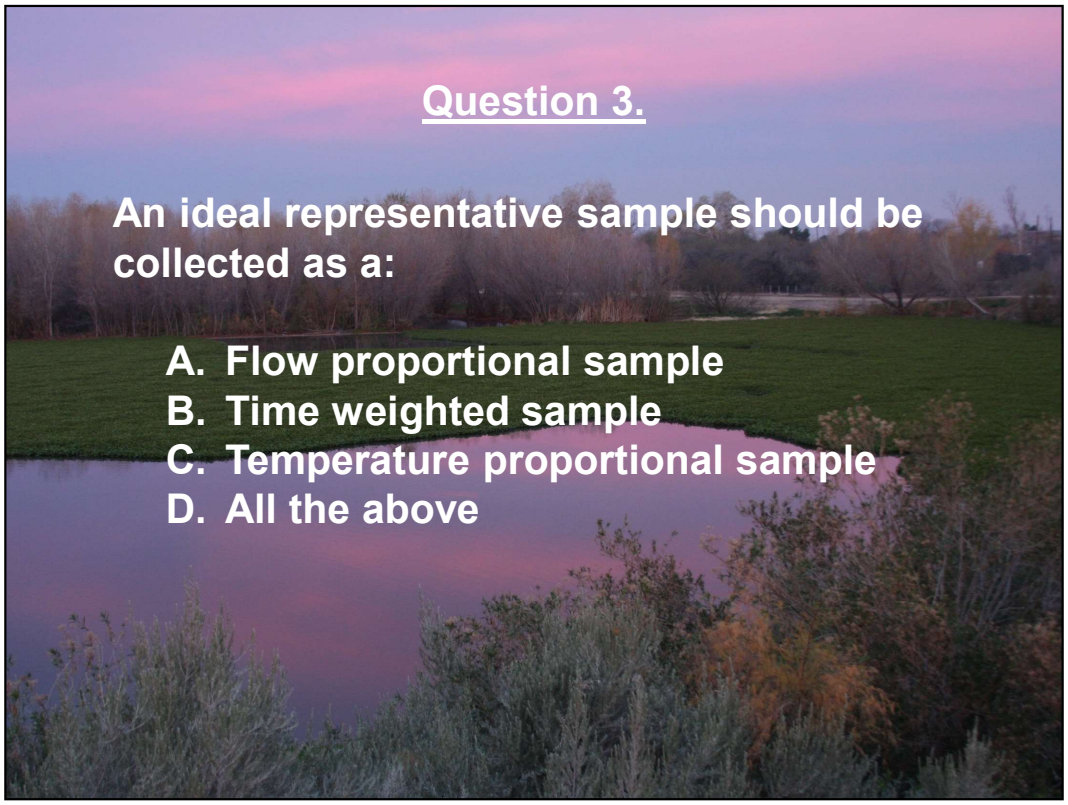

Question 1.
Can a compliance sample be collected anywhere other than the Compliance Sample Point?
True or False?

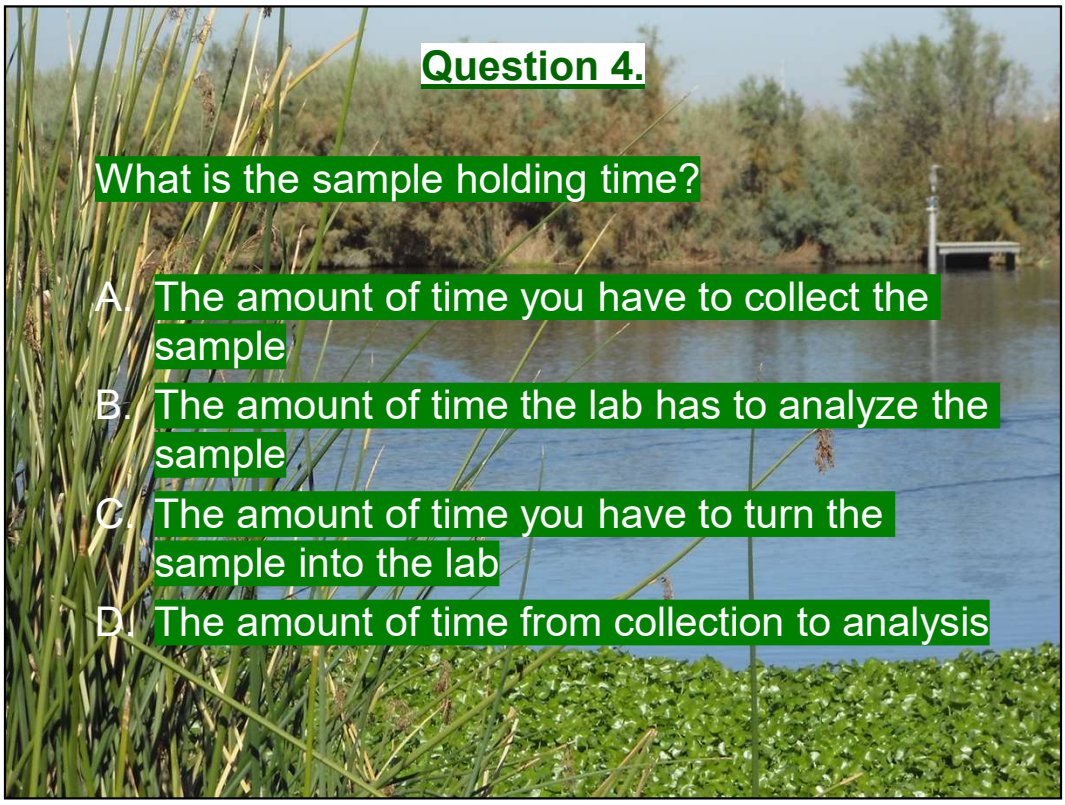


Question 2.

For wastewater monitoring, a composite sample is a sample composed of multiple discrete samples collected a 24-hour period, process day, or batch discharge?

True or False?

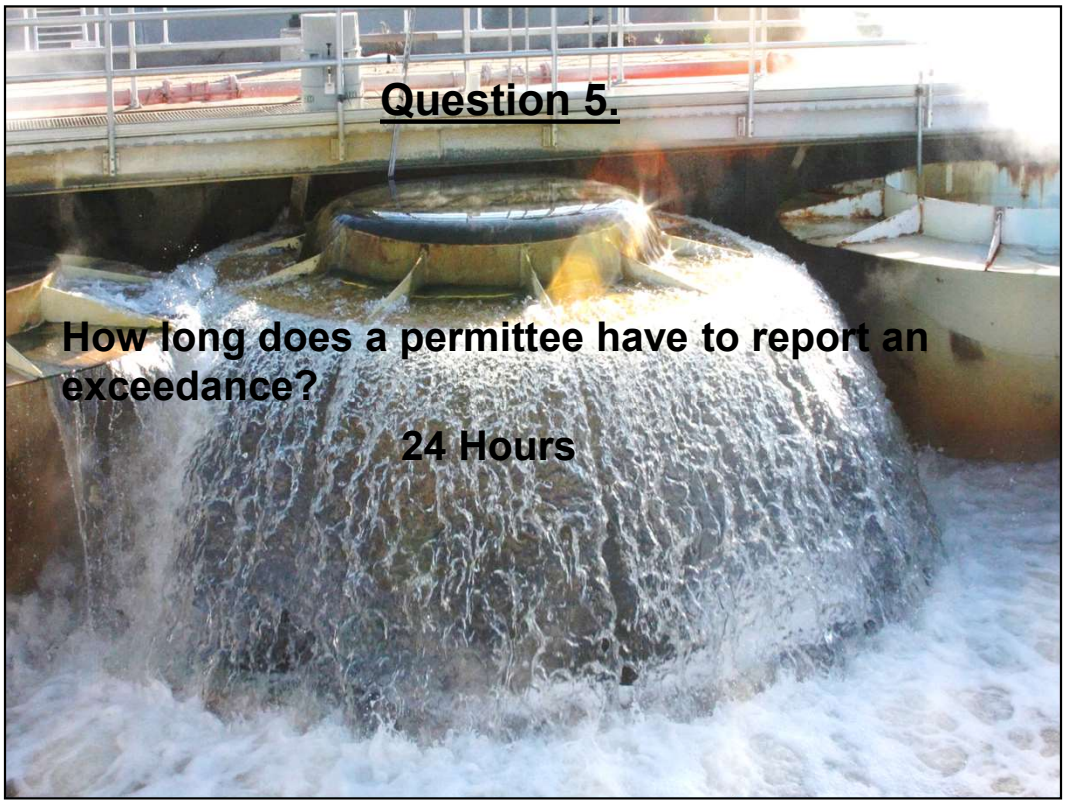

Question 3.
An ideal representative sample should be collected as a:
A. Flow proportional sample
B. Time weighted sample
C. Temperature proportional sample
D. All the above



Question 4.

What is the sample holding time?

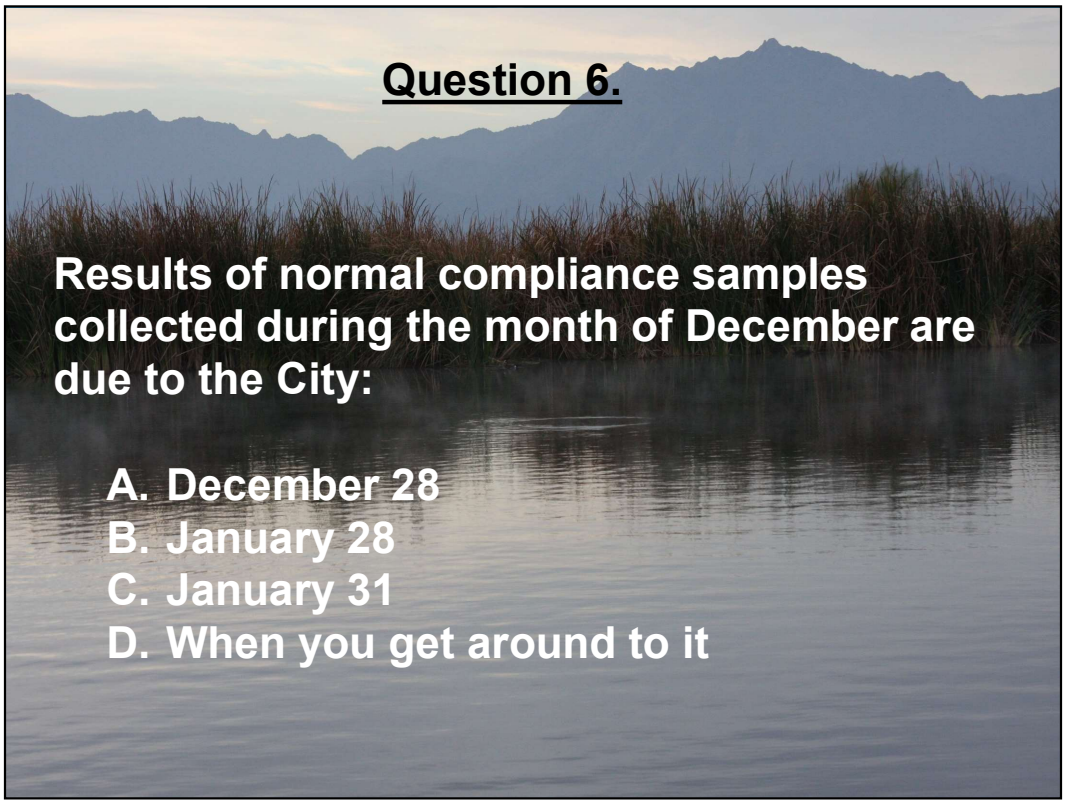
A. The amount of time you have to collect the sample
B. The amount of time the lab has to analyze the sample
C. The amount of time you have to turn the sample into the lab
D. The amount of time from collection to analysis

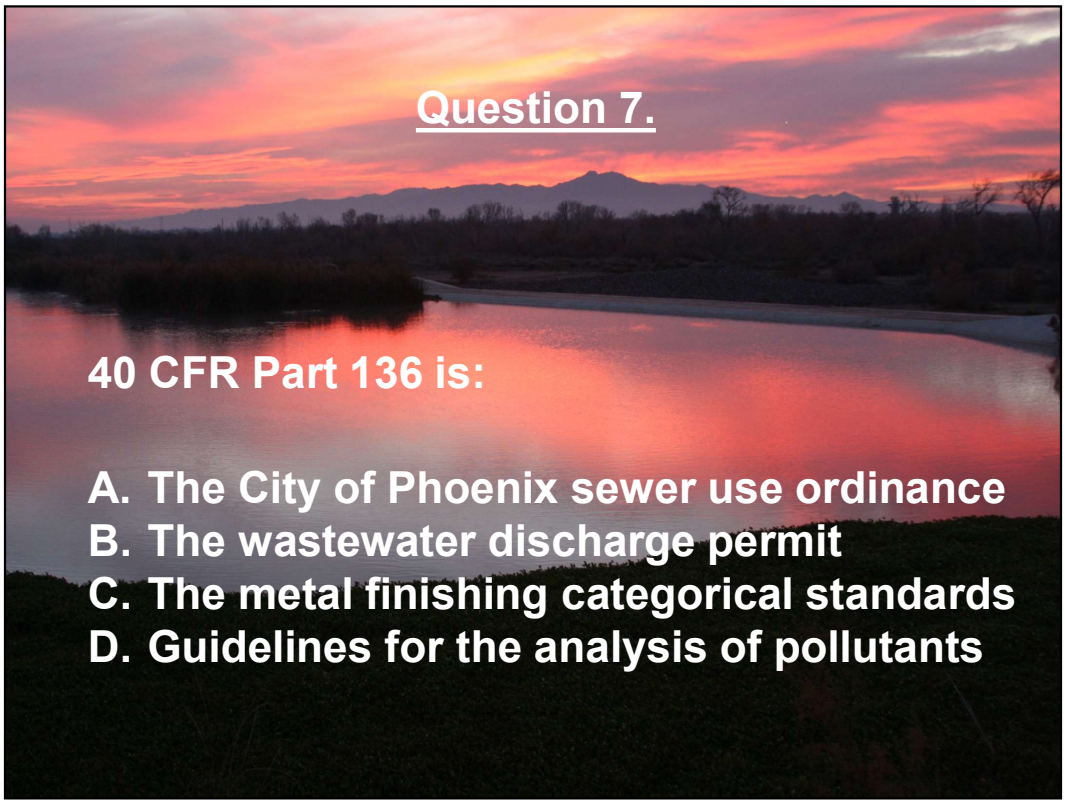


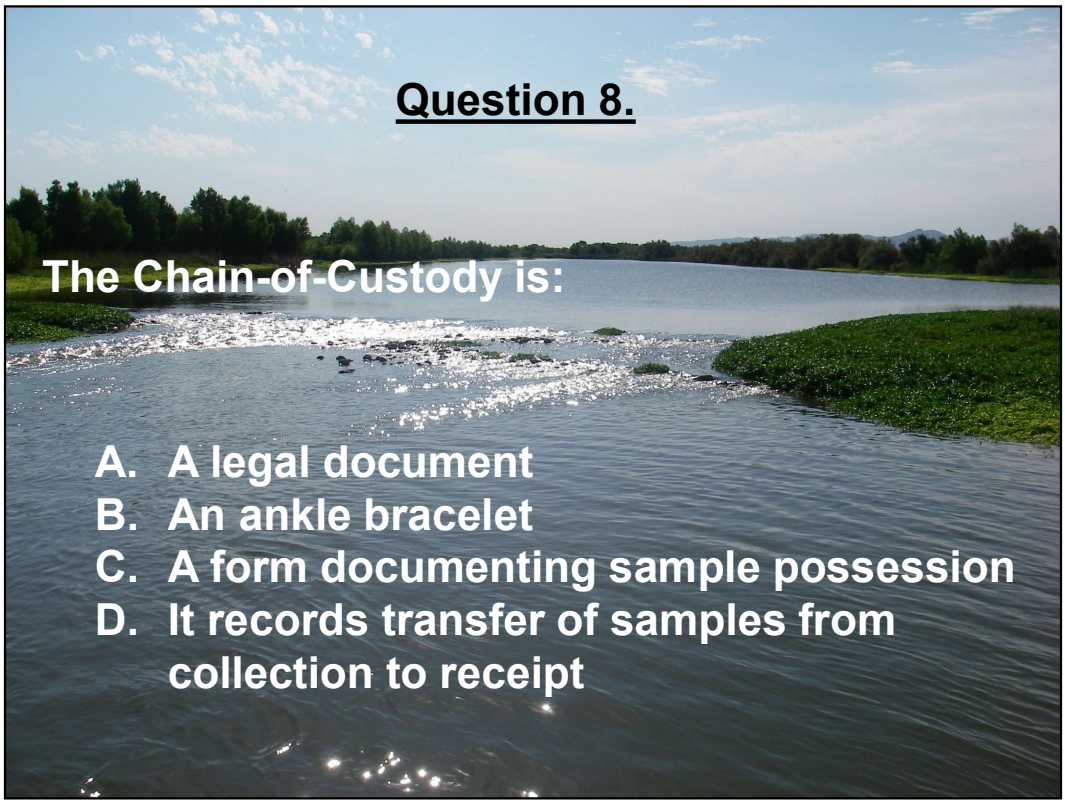
Question 5.

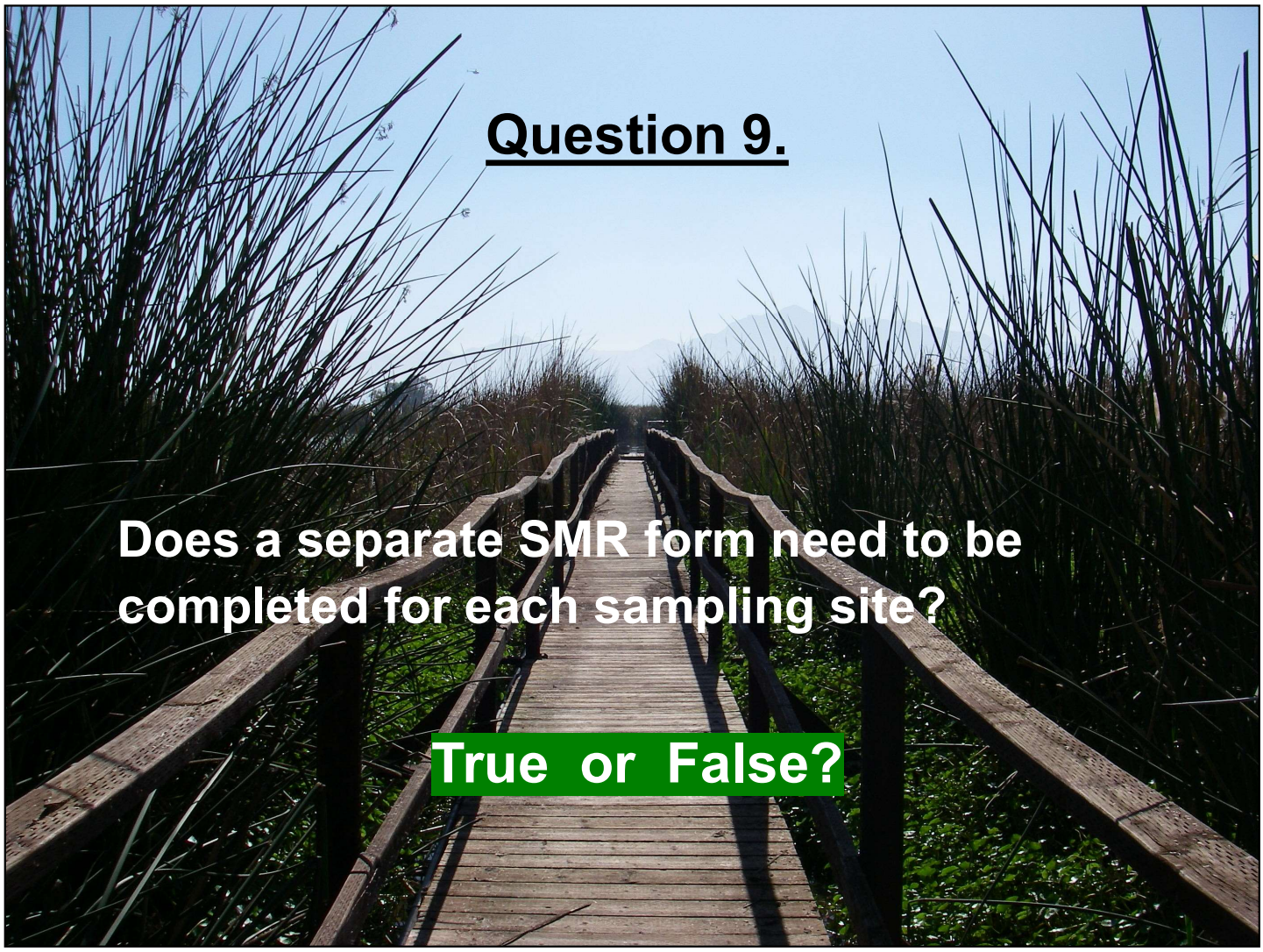
How long does a permittee have to report an exceedance?

24 Hours


Question 6.
Results of normal compliance samples collected during the month of December are due to the City:
A. December 28
B. January 28
C. January 31
D. When you get around to it

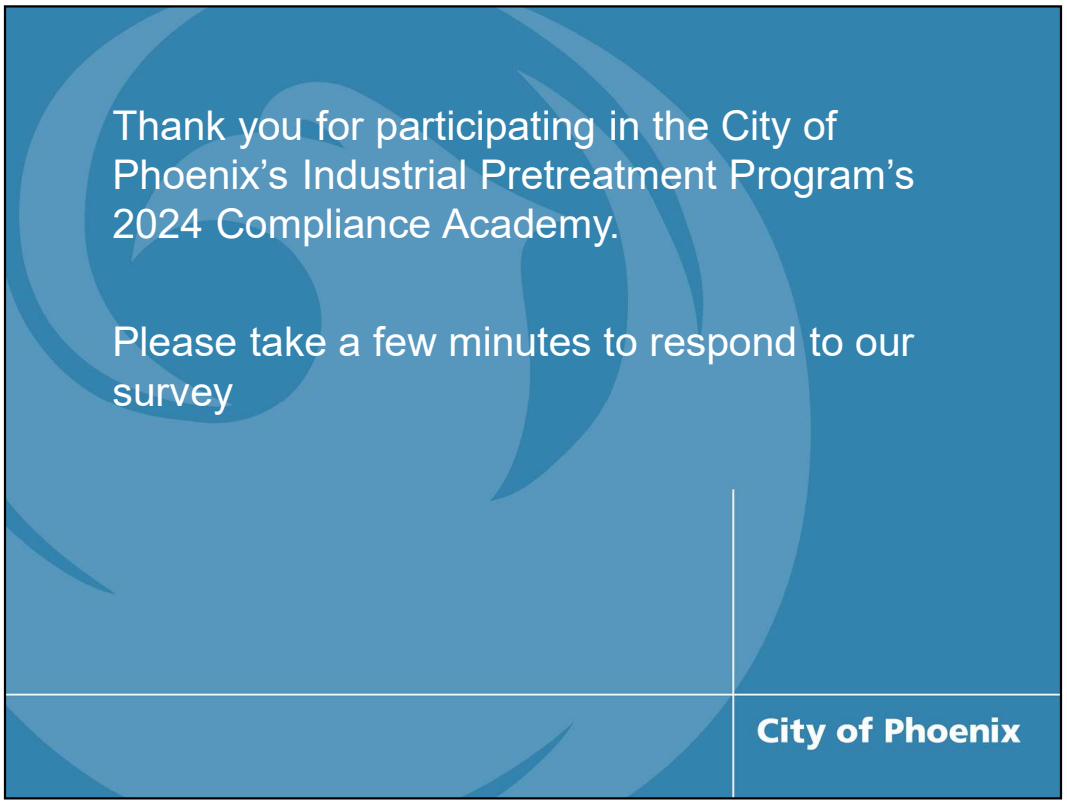

Question 7.
40 CFR Part 136 is:
A. The City of Phoenix sewer use ordinance
B. The wastewater discharge permit
C. The metal finishing categorical standards
D. Guidelines for the analysis of pollutants


Question 8.
The Chain-of-Custody is:
A. A legal document
B. An ankle bracelet
C. A form documenting sample possession
D. It records transfer of samples from collection to receipt


Question 9.
Does a separate SMR form need to be completed for each sampling site?
True or False?

Question 10.

Is a Zero Discharge Certification required to be submitted each month?


Thank you for participating in the City of Phoenix's Industrial Pretreatment Program's 2024 Compliance Academy.
Please take a few minutes to respond to our survey
City of Phoenix

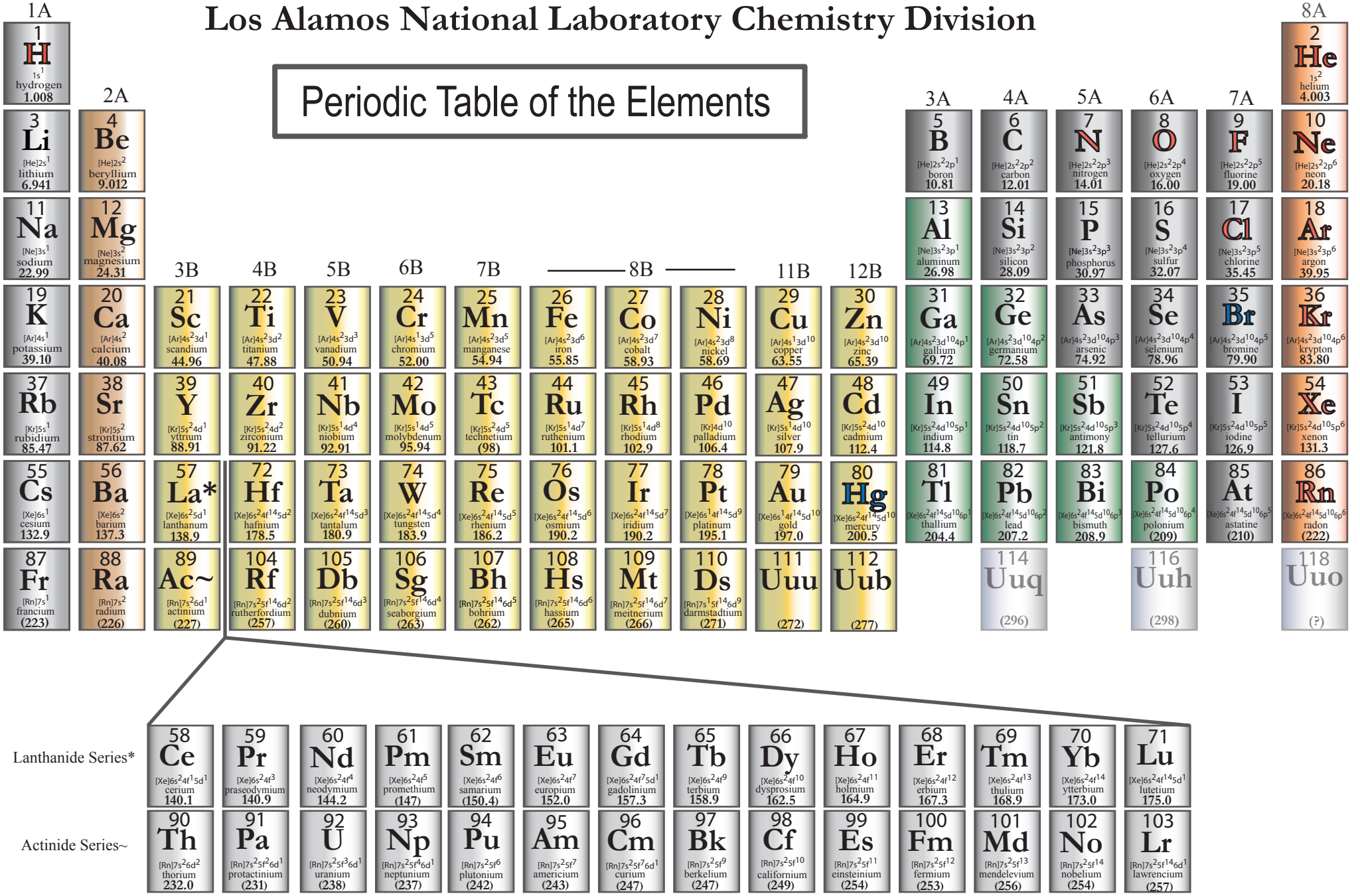
Notes:

Notes:

Periodic Table of Elements

Los Alamos National Laboratory Chemistry Division

Periodic Table of the Elements



Los Alamos NATIONAL LABORATORY

CHEMISTRY

element names in blue are liquids at room temperature
element names in red are gases at room temperature
element names in black are solids at room temperature

Acronyms

LIST OF ACRONYMS

AA	Atomic Absorption Spectrophotometer
AAC	Arizona Administrative Code
AC (power)	Alternating current
AC	Acre
ACHIH	American Conference of Governmental Industrial Hygienists
ADEQ	Arizona Department of Environmental Quality
ADHS	Arizona Department of Health Services
ADRE	Average Daily Removal Efficiency
AHL	Allowable Headworks Loading
AIL	Allowable Industrial Loading
AMSA	Association of Municipal Sewage Authorities
ANSI	American National Standard Institute
APHA	American Public Health Association
APP	Aquifer Protection Permit
AS	Activated Sludge
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWQS	Aquifer Water Quality Standards
AWT	Advanced Wastewater Treatment
AWWA	American Water Works Association
AZPDES	Arizona Pollutant Discharge Elimination System
BL	Background Loading
BMPs	Best Management Practices
BNR	Biological Nutrient Removal
BOD_5	Biochemical Oxygen Demand
BPJ	Best Professional Judgment
BTU	British Thermal Unit
C	Celsius
CBOD	Carbonaceous Biochemical Oxygen Demand
CERCLA	Comprehensive Environmental Response, Compensation, & Liability Act.
CFR	Code of Federal Regulations
CBOD	Carbonaceous Biochemical Oxygen Demand

LIST OF ACRONYMS

CH4	Methane
CIU	Categorical Industrial User
CMOM	Capacity Management, Operations, and Maintenance
COD	Chemical Oxygen Demand
CSP	Confined Space Permit
CWA	Clean Water Act
CWT	Centralized Waste Treatment
D	Daily
DAF	Dissolved Air Flotation
DEHP	Di(2-ethylhexyl)phthalate
DF	Dilution Factor
DL	Detection Limit
DO	Dissolved Oxygen
DRO	Diesel Range Organics
EDW	Effluent Dominated Waters
EIS	Environmental Impact Statement
FDA	Food and Drug Administration
EMF	Electromotive Force or Voltage
F	Fahrenheit
FT	Fume Toxicity
GC/ECD	Gas Chromatography/Electron Capture Detector
GC/MS	Gas Chromatograph / Mass Spectrophotometer
GFAA	Graphite Furnace Atomic Adsorption
GPD	Gallons per Day
GPM	Gallons per Minute
GRO	Gasoline Range Organics
HCP&ERP	Hazard Communications Program and Emergency Response Plan
HRT	Hydraulic Retention Time
HW	Hazardous Waste
H_2S	Hydrogen Sulfide
IC	Ion Chromatograph
ICP	Inductively Coupled Plasma (Atomic Emission Spectroscopy)
IDL	Instrument Detection Limit
IEEE	Institute of Electrical and Electronics Engineers
IU	Industrial User

LIST OF ACRONYMS

kg	Kilogram
L	Liter
Lb	Pound
lb/day	pounds per day
LEL	Lower Explosive Limit
LIMS	Laboratory Information Management System
M	Mole or Molar
MAG	Maricopa Association of Governments
MADL	Minimum Analytical Detection Limit
MAHL	Maximum Allowable Headworks Limit
MAV	Monthly Average
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
MRL	Method Reporting Limit
mg	Milligram
mg/L	Milligrams per liter
MGD	Million Gallons per Day
mL	Milliliter
MLSS	Mixed Liquor Suspended Solids
MPN	Most Probable Number
MS	Mass Spectrometer
MSDS	Material Safety Data Sheet
MTBE	Methyl tetbutyl ether
ND	Non-Detected
NdeN	Nitrification/denitrification
NEPA	National Environmental Policy Act
NIOSH	National Institute of Occupational Safety & Health
NPDES	National Pollutant Discharge Elimination System
NRDC	Natural Resources Defense Council
NSPS	New Source Performance Standards
NTU	Nephelometric Turbidity Unit(s)
O&M	Operations and Maintenance
OMB	Office of Management and Budget
P	Pico, a metric prefix meaning on millionth of a millionth or one trillionth
PAC	Powdered Activated Carbon

LIST OF ACRONYMS

PCB	Polychlorinated Biphenyls
ESD	Environmental Services Division
PEL	Permissible exposure limit
PQL	Practical Quantitation Limit
POC	Pollutant of Concern
POTW	Publicly Owned Treatment Works
ppb	parts per billion
ppm	parts per million
PSES	Pretreatment Standards for Existing Sources
PSNS	Pretreatment Standards for New Sources
PVC	Polyvinyl Chloride
QA/QC	Quality Assurance/Quality Control
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RL	Reporting Limit
RO	Reverse Osmosis
SCADA	Supervisory Control and Data Acquisition
SCP	Spill Control Plan
SD	Standard Deviation
SDW	Safe Drinking Water
SGT-HEM	Silica Gel-Treated Hexane-Extractable Material
SIC	Standard Industrial Classification
SIU	Significant Industrial User
SOP(s)	Standard Operating Procedure(s)
SROG	Sub-regional Operating Group
SS	Suspended Solids
SSO	Sanitary Sewer Overflow
SU	Standard Units
SVOCs	Semivolatile Organic Compounds
SWQS	Surface Water Quality Standards
TC	Total Carbon
TCE	Trichlorethylene
TDS	Total Dissolved Solids
TEC	Transportation Equipment Cleaning
TIC	Total Inorganic Carbon

LIST OF ACRONYMS

TKN	Total Kjeldahl Nitrogen
TN	Total Nitrogen
TOC	Total Organic Carbon
TOMP	Toxic Organic Management Plan
TPH	Total Petroleum Hydrocarbons
TS	Total Solids
TSDF	Treatment Storage and Disposal Facility
TSS	Total Suspended Solids
TTO	Total Toxic Organics
U	Micro, a metric prefix meaning one millionth
ug/L	microgram per liter
VOC(s)	Volatile Organic Chemical(s)
WW	Wastewater
WWTP	Waste Water Treatment Plant

Glossary

GLOSSARY

Industrial wastewater pretreatment uses words and phrases that may not be readily understood by the general public. This section provides definitions for many of the terms frequently used by Compliance Academy Instructors.

Accuracy – Accuracy refers to the degree of difference between observed values and know or actual value in the analysis of wastewater.

Acid – A compound which liberates hydrogen ions, and has a pH below 7.

Act or "the Act" – The Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. 1251 et.seq.

Acute Effects – When the effects of an exposure to a pollutant (*over a short period of time*) cause severe health effects to humans or other organisms, this condition is said to be acute (*as compared to chronic*).

Administrator – The Administrator of the U.S. Environmental Protection Agency.

Agency – The U.S. Environmental Protection Agency

Alkalinity – The measurement of a sample's capacity to neutralize acid.

Aliquot – A portion of the sample needed to run the analysis.

Analyte - Parameter

Annual Report – A consolidated report covering the pretreatment year beginning January 1st and ending December 31st that includes information required by EPA NPDES (EPA) Permits and the AZPDES (Arizona State)Permit.

Approval Authority – The Director in an NPDES state with an approved State Pretreatment Program and the Administrator of the EPA in a non-NPDES state or NPDES state without an approved State Pretreatment Program.

Approved Laboratory Procedures – The measurements, tests, and analyses for the characteristics of water and wastes in accordance with analytical procedures as established in 40 CFR part 136 as revised, that are performed by an environmental laboratory licensed by the State. Alternative procedures may be approved by the Director in accordance with applicable federal regulations.

Arizona Department of Environmental Quality or ADEQ - Established by the Arizona Legislature in 1986, ADEQ administers a variety of programs to ensure the quality of Arizona's air, land and water resources.

Atomic Weight – The sum of the number of protons and the number of neutrons in the nucleus of an atom. Atomic weights of elements are found on the periodic tables.

Authorized Representative of Industrial User 40 CFR 403.12(l) and (m) – An authorized representative of an industrial user may be: principal executive officer, of at least the level of vice-president, if the IU is a corporation; a general partner or proprietor if the IU is a partnership or proprietorship,

GLOSSARY

respectively; a duly authorized representative of the individual if such a representative is responsible for the overall operation of the facilities from which the discharge originates.

Authorized Signatory/ Representative -The appropriate signatory or representative authorized to sign permit applications, self-monitoring reports, and any other reports addressing Permit noncompliance or required by any enforcement action by the Control Authority.

Average Daily Flow – The total quantity of liquid tributary to a point divided by the number of days of flow measurement.

Batch Discharger – Batch dischargers collect all process wastewaters until a certain volume is reached before treating and discharging to sewer (also batch discharge).

BAT – The best available technology economically achievable, applicable to effluent limitations to be achieved by July 1, 1984, for industrial discharges to surface waters, as defined by Sec.304(b)(2)(B) of the CWA.

Base – A compound which liberates hydroxide ions, and has a pH above 7.

Baseline Monitoring Report (BMR) – A report which provides information to the Control Authority to document an IUs initial compliance status with a Categorical Pretreatment Standard prior to the compliance deadline. (40 CFR 403.12). All new source industrial users subject to categorical standards must submit a BMR to the Control Authority (POTW, State or EPA), at least 90 days prior to the commencement of discharge. The purpose of the BMR is to provide initial information to the Control Authority including identifying information, description of existing environmental permits, description of operations, flow measurements (estimated), and the concentration of pollutants in the waste stream (estimated). Existing sources were required to submit BMRs within 180 days after the effective date of any applicable categorical standard.

BCT – The best conventional pollutant control technology, applicable to discharges of conventional pollutants from existing industrial point sources, as defined by Sec. 304(b)(4) of the CWA.

Best Management Practice(BMP) – BMPs are activities, pollution treatment practices, or devices, prohibition of practices, general good housekeeping practices, pollution prevention, waste minimization, educational practices, maintenance procedures, and other management practices or devices to prevent or reduce the amount of pollutants entering the sanitary sewer system, surface water, air, land or groundwater. BMPs may include a structural or managerial practice or device that can help to achieve compliance.

Biochemical Oxygen Demand (BOD) – The quantity of oxygen utilized in the bio-chemical oxidation of organic matter under standard laboratory procedure, five (5) days at 20^0 centigrade expressed in terms of weight and concentration as milligrams per liter (mg/l).

Biological Treatment – A waste treatment process by which bacteria and other microorganisms break down complex organic or inorganic (e.g. ammonia) materials into simple, nontoxic, more stable compounds.

GLOSSARY

Blank (Field) – Is an aliquot of analyte-free water or solvent brought to the field in sealed containers and transported back to the laboratory with the sample containers and analyzed along with the field samples.

Blank (Method) – Is an aliquot of analyte-free water prepared in the laboratory and analyzed by the analytical method used for field samples. Method blanks are used to test for the cleanliness of reagents, instruments, and the laboratory environment.

Blank (Sample Preservation) – Is an aliquot of analyte-free water (*usually distilled water*) to which a known quantity of preservative is added. This type of sample is a means of determining the level of contamination of acid and chemical preservatives after a period of use in the field.

Blowdown - The discharge of water with high concentrations of accumulated solids from boilers to prevent plugging of the boiler tubes and/or steam lines. In cooling towers, blowdown is discharged to reduce the concentration of dissolved salts in the recirculation cooling water. Clean "make-up" water is added to dilute the dissolved salts in the system. Blowdown also includes the discharge of condensate.

BPT – The best practical control technology currently available, applicable to effluent limitations to be achieved by July 1, 1977, for industrial discharges to surface waters, as defined by 304(b)(1) of the CWA.

Bypass – The intentional diversion of wastes from any portion of a treatment facility.

Categorical Industrial Users (CIUs) – A Categorical Industrial User is a facility that performs activities regulated under 40 CFR Parts 401-424 and 425-471.

Categorical Standards – Those standards promulgated by the EPA under authority of section 307 U.S. Code section 1317) which apply to a specific category of industrial user and which are published in 40 CFR chapter I, subchapter N (parts 405-471).

Centralized Waste Treatment Facility – A public or private facility which treats hazardous and other wastes. These facilities are designed to handle the treatment of specific hazardous wastes from industry. The waste waters containing the hazardous substances are transported to the facility for proper storage, treatment and disposal.

Chain of Custody – Written documentation, such as receipt and log book entries to show the history of possession of a sample from the time it was collected through the time it was analyzed.

Chemical Oxygen Demand – A measure of the oxygen-consuming capacity of inorganic and organic matter present in water or wastewater. It is expressed as the amount of oxygen consumed by a chemical oxidant during a specific test. It does not differentiate stable organic matter and thus does not necessarily correlate with biochemical oxygen demand.

Chemical Treatment Process – A waste treatment process which involves the addition of chemicals to achieve a desired level of effluent quality.

Chronic Effects – When the effect of a single or repeated exposure(s) to a pollutant causes health effects over a long period of time in humans or other organisms this is said to be a chronic condition (*as compared to acute*).

GLOSSARY

Chronic Violations – Recurring effluent violations where the limit *(daily or monthly maximum*) is exceeded by any amount.

Chronic SNC (CSNC)- For SNC purposes, Chronic Violations are defined as sixty-six (66) percent or more of all the measurements taken during a six-month period meet or exceed the daily limit or the monthly average for the same pollutant parameter.

City – The City of Phoenix

Civil Action – A suit filed by the City against alleged violators of applicable pretreatment standards seeking injunctive relief, compliance, civil penalties and/or damages.

Civil Penalty – Monetary penalties assessed against an IU. Penalty calculations are formula based on the extent and type of noncompliance. Civil penalties recover the economic benefit of IU noncompliance and are set large enough to deter future noncompliance (*maximum $25,000 per day for each violation*).

Clarification – Any process or combination of processes, the primary purpose of which is to reduce the concentration of suspended matter in a liquid by coagulation and settling.

Clean Water Act (CWA) – The Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. Section 1251 et seq.), as amended by the Clean Water Act of 1977 (Pub. L. 95-217), and the Water Quality Act of 1987 (Pub. L. 100-4).

Code of Federal Regulations – A publication of the United States government which contains all of the finalized federal regulations. Federal environmental regulations are found in volume 40 of the CFR and the General Pretreatment Regulations are found at 40 CFR Part 403.

Combined Wastestream (40 CFR 403.6(e)1 - When process effluent is mixed prior to treatment with wastewaters other than those generated by the regulated process, fixed alternative discharge limits may be derived using the Combined Wastesteam Formula.These alternative limits shall be applied to the mixed effluent by calculating both an alternative daily maximum value using the daily maximum values specified in the appropriate categorical pretreatment standards and an alternative consecutive sampling day average value using the monthly average values specified in the appropriate categorical pretreatment standards.

Commercial User – Any nonresidential user which provides a service or one connected with commerce and which is not classified as an industrial user.

Compatible Pollutants – Pollutants that are capable of being processed (a) by a biological wastewater treatment plant under normal loading conditions, and (b) in concentrations that are normally present in wastewater, without any detrimental effect on the plant's performance.

Compliance – When an industrial discharger has committed no pretreatment violations during the reporting year.

Compliance Schedule – A timetable established by an IU for completing those actions necessary to achieve compliance with a standard.

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Compliance Sampling Point – An opening in the sewer line that provides access for City and IU compliance sampling. Each point (location) is specific to the IU and identified in the discharge Permit. Compliance sampling points can be a valve, flume, weir or tank.

Concentration Based Limit – A limit based on the relative strength of a pollutant in a wastestream, usually expressed in mg/l or lb/gal.

Confined Space – A space which, by design has limited openings for entry and exit, unfavorable natural ventilation which could contain or produce dangerous air contaminants (*or create an atmosphere of oxygen deprivation*),and which is not intended for continuous employee occupation. A permit may be required under OSHA to enter a confined space.

Conservative Pollutant – A pollutant found in wastewater that is not metabolized while passing through the treatment processes in a conventional wastewater treatment plant. Therefore a mass balance can be constructed to account for the distribution of the conservative pollutant. For example, a conservative pollutant may be removed by the treatment process and retained in the plant's sludge or it may leave the plant in the effluent. Although the pollutant may be chemically changed in the process, it can still be detected. Heavy metals such as cadmium and lead are conservative pollutants.

Control Authority (403.12(a) – The term "control authority" shall refer to a City which has an approved Pretreatment Program under provision of 40 CFR 403.11.

Conventional Pollutants – Those materials for which municipal wastewater treatment plants have been designed, including biodegradable organics, measured as BOD and suspended solids.

Cooling Water – The clean wastewater discharged from any heat transfer system such as condensation, air conditioning, cooling or refrigeration.

Custody – Custody refers to the process whereby an individual gains and controls possession of a sample. A sample is in custody if: 1) it is in the actual possession, control, and presence of the inspector; or 2) it is in the individual's view; or 3) it is not in the individual's presence, but is in a place of storage where only the individual has access; or 4) it is not in the individual's physical presence, but is in a place of storage and only the individual and identified other have access.

Daily Maximum – Is the average value of all grab samples taken during any given calendar day. If only one grab sample has been taken, that grab sample becomes the daily maximum (*as well as the instantaneous maximum*). If more than one grab sample is taken in a giver day, the daily maximum is the average of all the individual grab samples. A composite sample, by definition, becomes the daily maximum for the calendar day in which it is collected.

Daily Discharge – The discharge of a pollutant measured during any calendar day or any 24-hour period that reasonably represents a calendar day.

Density – The relationship between weight and volume, e.g., grams per cubic centimeter, or pounds per gallon.

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Detention Times – The residence time of wastewater undergoing treatment in a treatment unit such as a clarifier or tank. Minimum detention times are required for settling, chemical treatment and biological treatment.

Digestion – A procedure to solubilize suspended material and to destroy possible organic-metal complexes.

Direct Discharge – The discharge of treated or untreated wastewater directly to the waters of the State of Arizona.

Director – The Water Services Director of the Water Services Department or his authorized deputy, agent, or representative.

Domestic Waste – A typical residential-type waste which requires no pretreatment before discharging into the sewer system excluding all commercial, manufacturing and industrial wastes.

Doppler Flow Meter – An ultrasonic flow meter that measures the velocity of liquid in a pipe flowing full.

Duplicate Recovery – The percent of a spike recovered during analysis.

Duplicate Sample (Field)– Is a precision check on sampling equipment and sampling technique. At selected stations on a random time frame duplicate samples are collected from two sets of field equipment installed at the site, or duplicate grab samples are collected from a single piece of equipment at the site.

Duplicate Sample (Laboratory)– A sample which is received by the laboratory and divided (*by the laboratory*) into two or more portions. Each portion is separately and identically prepared and analyzed. The results from laboratory duplicate samples check the laboratory precision.

Effluent – Wastewater or other liquid raw, untreated, partially or completely treated flowing from an IU to a reservoir, basin, treatment process or treatment plant.

Electroplating – The process for applying a thin metal coating to the surface of a metal (substrate) by electrodeposition of dissolved metal in a plating solution.

Environmental Protection Agency, or EPA – The U.S. Environmental Protection Agency.

Enforcement Response Plan (ERP) – The Enforcement Response Plan for the City of Phoenix contains detailed procedures identifying how the Environmental Services Division will investigate and respond to instances of IU noncompliance.

Equipment Blank – Is a volume of analyte-free water that is taken into the field and opened on site. The contents of the blank are poured or pumped appropriately over or through the sample collection device.

Facility – All contiguous property owned, operated, leased or under the control of the same person or entity.

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Existing Source – Any source of discharge, the construction or operation of which commenced prior to the publication by the EPA of proposed categorical pretreatment standards, which will be applicable to such source if the standard is thereafter promulgated in accordance with Section 307 of the Act.

Federal Categorical Pretreatment Standard – Any regulation containing pollutant discharge limits promulgated by the EPA in accordance with Section 307(b) of the Act (33 U.S.C. 1347) which applies to a specific category of IUs. These standards are derived on the basis of best available treatment technology economically achievable and vary by industry category.

Flow Equalization – Temporary storage of wastewater flow to provide more uniform flow or waste characteristics for treatment or discharge.

Flow Meter - Flow meters measure the depth of a liquid at a designated point behind a hydraulic structure (a weir or flume) using various means (bubblers, ultrasonic, float, and differential pressure are common methods). This depth is converted to a flow rate according to a theoretical formula of the form $Q=KH^X$ where Q is the flow rate, K is a constant, H is the water level and X is an exponent which varies with the device used, or it is converted according to empirically derived level/flow data points (a 'flow curve'). The flow rate can then integrated over time into volumetric flow. Flow can also be calculated using velocity. Velocity times the cross-sectional area yields a flow rate which can be integrated to volumetric flow.

Flow-Proportional Composite Sample – A mixed sample composed of single samples whose volumes are proportional to the wastewater flow at the time of sampling.

Flow Systems– Closed Channel flow is flow in completely filled pressure conduits (pipes) and usually measured by some type of device inserted into the line. Open Channel flow is flow in any channel in which the liquid flows with a free surface (ditches, canals, flumes) and usually measured by inserting a hydraulic structure (flume, weir etc.).

Flume – An open conduit of wood, masonry, plastic or metal specially shaped to increase velocity and change the level of the liquid flowing through the flume (*Parshall, Palmer-Bowlus, Trapezoidal etc.*).

Free Access – The ability of City personnel to enter user facilities under safe and non-hazardous conditions with a minimum of delay to inspect any and all parts of the user's facility.

Generator – A person who generates septage.

Grab Sample – A single sample taken from a waste stream without regard to the flow in the wastestream and over a period of time not to exceed 15 minutes.

Hand Composite Sample – A series of time proportional grab samples collected at equal intervals and equal volumes that are composited by hand.

Hazardous Substances (Materials) – Any substances or combination of substances that present or pose potential dangers to human health and safety or to living organisms in the environment. The dangers may be short term or cumulative.

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Hazardous Waste – For a waste to be considered a hazardous waste it must first be designated a solid waste. Virtually all forms of wastes are considered to be solid wastes (including solids, liquids, semi-solids, and contained gaseous materials) except those expressly excluded under the regulatory definition, e.g., industrial effluent which is mixed with sanitary wastes in the sewer. For a solid waste to be considered hazardous it must meet on of the two criteria: 1) it has one of the following four characteristics – ignitibility, corrosivity, reactivity, or toxicity (*according to the Toxicity Characteristic Leaching Procedure*). or 2) it must be a listed hazardous waste in 40 CFR 261.31-261.33. Any waste, including wastewater, defined as hazardous under RCRA, TSCA, or any state law.

Head Loss – (1) The decrease in energy head between two points resulting from friction, bends, obstructions, expansion, or other causes. (2) the difference between the total heads at two points in a hydraulic system.

Holding Tank Waste – Any waste from holding tanks such as vessel, chemical toilets, campers, trailers, septic tanks, and vacuum-pump tank trucks.

Holding Time – The maximum time allowed between when a sample is taken and when it must analyzed in the laboratory in accordance with standard preservation, storage and analytical procedures.

Hydrogen Sulfide (H_2S) – Dissolved Sulfide is produced by the biological reduction of sulfate and organic matter under anaerobic (oxygen free) conditions. Dissolved sulfide can combine with hydrogen to form hydrogen sulfide gas. H_2S gas is potentially hazardous to sewer maintenance workers.

Incompatible Pollutants – See: Noncompatible Pollutants

In-Compliance – The concentrations of pollutants in an industrial user's discharges to a POTW are within pretreatment standards and all pretreatment requirements are being met over the long term.

Industrial Wastewater – Any non-domestic wastewater (excluding storm water).

Inflow – Water other than wastewater that enters a sewerage system from sources such as roof leaders, cellar drains, foundation drains, drains from springs and swampy areas, manhole covers, cross connections between storm sewers and sanitary sewers, catchbasins, cooling towers, storm waters, surface runoff, street wash water or drainage.

Influent – Wastewater or other liquid raw (untreated), partially or completely treated flowing into a reservoir, basin, treatment process or treatment plant.

Indicator Organism – An organism that is used to indicate the possible presence of pathogenic organisms and fecal pollution.

Indirect Discharge – The discharge or the introduction of nondomestic pollutants from any source regulated under Section 307(b) or (c) of the Act, (33 U.S.C. 1317), into the POTW (including holding tank waste discharge into the system). Also Non-Point Discharge

Industrial Discharge – Any introduction into the POTW of a nondomestic pollutant which is produced by a source that is subject to any categorical standards or

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pretreatment requirements and which contains any substance or pollutant for which a discharge limitation or prohibition has been established by any categorical standard or pretreatment requirement.

Industrial User – Any nonresidential user of the sewer system which discharges more than the equivalent of 25,000 gallons per day of domestic wastes, or which is subject to any categorical standard or pretreatment requirement.

Industrial Waste – The liquid waste from any industrial or manufacturing process, as distinct from domestic or sanitary waste.

Inspection – A visual observation/evaluation of IU equipment, operations, sampling activities and accuracy of IU performance and compliance records

Instantaneous Effluent Limitation – The maximum allowable concentration in the discharge at any time as measured in a grab sample.

Interference – The inhibition or disruption of the POTW treatment processes or operations which contributes to a violation of any requirement of the City's NPDES Permit. The term includes prevention of sewage sludge use or disposal by the POTW in accordance with 405 of the Act (33 U.S.C. 1345) or any criteria, guidelines, or regulations developed pursuant to the Solid Waste Disposal Act (SWDA), the Clean Air Act, the Toxic Substances Control Act, or more stringent state criteria (including those contained in any State sludge management plan prepared pursuant to Title IV of SWDA) applicable to the method of disposal or use employed by the POTW.

Instrument Detection Limit (IDL) – The smallest signal above a background noise that an instrument can detect reliably.

Limit Violation – Pollutant concentration is above the allowable limit as defined in the pretreatment standards for a particular IU.

Long Term Average (LTA) – For purposes of the effluent guidelines, average pollutant levels achieved over a period of time by a facility, subcategory, or technology option.

Magnetic Flow Meter – A flow meter that creates a magnetic field across a pipe flowing full, in which the liquid acts as a conductor, to measure the velocity and flow in the pipe.

Maintenance – Keeping pretreatment equipment in a state of repair, including expenditures necessary to maintain capacity.

Mass Based Limit – A limitation based on the actual quantity of a pollutant in a wastestream, usually expressed in mg/square meter of operation (*lb/square foot of operation*).

Mass Emission Rate- The rate of discharge of the dry weight of a pollutant in wastewater or air, expressed in pounds per day (lb/day), or kilograms per day (kg/day.

Material Safety Data Sheets – Provide information about manufactured chemicals as required by the Hazard Communications Rule.

Metal Bearing Wastes – Wastes and/or materials that contain significant quantities of metal pollutants, but not significant quantities of oil and grease (generally less than 100

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mg/l), from manufacturing or processing facilities or other commercial operations. These wastes include, but are not limited to, spent electroplating baths and sludges, metal finishing rinse water and sludges, chromate wastes, air pollution control blow down water and sludges, spent anodizing solutions, incineration air pollution control wastewaters, waste liquid mercury, cyanide containing wastes greater than 136 mg/l, and waste acids and bases with or, in the case of acids and bases only, without metals.

Minimal Level – The lowest level at which the entire analytical system must give a recognizable signal and an acceptable calibration point for the analyte.

Molarity – Moles per liter, a measure of concentration.

Molecular Weight – The sum of the atomic weights of all atoms making up a molecule.

Monitoring – The practice of investigating, surveying, and sampling wastewater sources in an effort to obtain information on the quality and quantity of the wastewater flow.

Monthly Average – The monthly average is the arithmetic average value of all samples taken in a calendar month for an individual pollutant parameter. The monthly average may be the average of all grab samples taken in a given calendar month, or the average of all composite samples taken in a given calendar month.

National Pollutant Discharge Elimination System (NPDES) – A system of permits to discharge wastewaters to navigable waters developed under the authority of Section 402 of the Act (33 U.S.C. 1342).

National Prohibited Discharges – Prohibitions applicable to all nondomestic dischargers regarding the introduction of pollutants into POTWs set forth at 40 CFR 403.5.

Neutralization – Addition of an acid or alkali (base) to a liquid to cause the pH of the liquid to move toward a neutral pH of 7.0.

New Sources – Any source, the construction of which is commenced after the publication of proposed regulations prescribing a Section 307 (33 U.S.C. 1317) Categorical Pretreatment Standard which will be applicable to such source, if such standard is thereafter promulgated within 120 days of proposal in the Federal Register. Where the standard is promulgated later than 120 days after proposal, a new source means any source, the construction of which is commenced after the date of promulgation of the standard.

Normality – Equivalents per liter. A measure of concentration.

NSPS – New Sources Performance Standards, applicable to industrial facilities whose construction is begun after the publication of the proposed regulations, as defined by Sec 306 of the CWA.

90 Day Compliance – A report submitted by categorical industrial users within 90 days following the date for final compliance with the standards. This report must contain flow measurement (or regulated process streams and other streams) measurement of pollutants, and a certification as to whether the categorical standards are being met.

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Nominal Quantitation Limit – The smallest quantity of an analyte that can be measured reliably with a particular analytical method.

Noncompatible Pollutants – Parameters that are not able to be handled under normal loading conditions in biological waste treatment plants and may in fact be detrimental to the biota of these plants.

Noncontact Cooling Water – Water used for cooling which does not come into direct contact with any raw material, intermediate product, waste product, or finished product.

Non-conventional Pollutants – Pollutants that are neither conventional pollutants nor priority pollutants listed at 40 CFR Section 401.

Non-detect Value – The analyte is below the level of detection that can be reliably measured by the analytical method. This is also known, in statistical terms, as left-censoring.

Notice of Violation (NOV) – A written enforcement action notification issued to an IU for violations of pretreatment standards or requirements.

Notice to Show Cause – A meeting between the City (ESD) and an IU generally held when more aggressive enforcement action is required. The IU must "show cause" as to why the City should not initiate additional enforcement actions or progress to discontinuation of sewer service.

NPDES Permit – A National Pollutant Discharge Elimination System permit is the regulatory document issued by either the EPA or approved State agency. The permit is designed to control the discharge of pollutants from point sources into waters of the U.S.

Oil and Grease – The measure of oil and grease content of a sample as determined by EPA Method 1664A or other equivalent test method approved by the Director.

Oily Wastes – Wastes and/or used materials that contain oil and grease (generally at or in excess 100 mg/l) from manufacturing or processing facilities or other commercial operations. These wastes include, but are not limited to used oils, oil-water emulsions or mixtures, lubricants, coolants, contaminated groundwater clean-up from petroleum sources, used petroleum products, oil spill clean-up, bilge water, rinse/wash waters from petroleum sources, interceptor wastes, off-specification fuels, underground storage remediation waste, and tank clean out from petroleum or oily sources.

Open-channel Flow – Flow of a fluid with its surface exposed to the atmosphere. The conduit may be an open channel or a closed conduit flow by gravity.

Organic Bearing Wastes – Wastes and/or used materials that contain organic pollutants, but not a significant quantity of oil and grease (generally less than 100 mg/l), from manufacturing or processing facilities or other commercial operations. These wastes included, but are not limited to, landfill leachate, contaminated groundwater clean-up from non-petroleum sources, solvent-bearing wastes, off-specification organic product, still bottoms, waste byproduct glycols, wastewater from paint washes, wastewater from adhesives and/or epoxies formulation, wastewater from chemical product operations, and tank clean-out from organic, non-petroleum sources.

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Organic Matter – Any substance composed of chemical compounds which consist primarily of carbon.

Oxidation-Reduction – Reactions involving the transfer of electrons, with oxidation being loss of electrons. ORP or oxidation-reduction potential, is the qualitative measure of the state of oxidation in metal waste treatment systems. ORP is used to control the chemical addition to optimize the oxidation of compounds such as cyanide or reduction of metals such as hexavalent chromium.

Parameter Violation – A pre-established limit for a particular pollutant has been exceeded, resulting in an unlawful wastewater discharge to the sanitary sewer.

Parshall Flume – A calibrated device developed by Ralph L. Parshall for measuring the flow of liquid in an open conduit. It consists essentially of a contracting length, a throat, and an expanding length. At the throat is a sill over which the flow passes at critical depth.

Pass Through (40 CFR 403.3(n)1 – A discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW NPDES permit (including an increase in the magnitude or duration of a violation) or which causes or contributes to a violation of an applicable numeric or narrative water quality standard.

Periodic Compliance Report (403.12(e)1 – A report submitted at least twice annually by each significant industrial user regulated under the local pretreatment program which indicates the nature and concentration of pollutants in the effluent which are limited by applicable pretreatment standards. In addition, the periodic report must indicate a record of measured or estimated average maximum daily flows for the reporting period.

Permit – A written (control) enforcement mechanism for controlling industrial wastewater discharges . Permits contain effluent limitations, monitoring and reporting requirements, compliance schedules and standard conditions relating to facility operations & ownership.

Permittee – Any person firm, association, corporation, or trust which owns, operates, processes or controls an establishment or plant being operated under a valid permit to discharge wastewater into the City sewer system.

pH – pH is an expression of the concentration of hydrogen ions in solution. The measurement indicates an acid solution when the pH is <7 and an alkaline solution when the pH is > 7. pH meters typically measure the pH in the range of 0 to 14. The concentration is the weight of hydrogen ions, in grams per liter of solution. Neutral water, for example, has a pH value of 7 and hydrogen ion concentration of 10^{-7}. pH reflects the negative logarithm of the hydrogen ion concentration of the aqueous solution..

pH Continuous – Unattended pH (a conventional pollutant) monitoring at the compliance point using an electrometric pH sensor mounted at and immersed in the discharge wastestream.

Physical Waste Treatment Process – Physical wastewater treatment processes include racks, screens, comminutors, clarifiers, (sedimentation & flotation), and filtration, which through physical actions remove pollutants from the wastewater.

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Pickle – An acid or other chemical solution in which metal objects are dipped to remove oxide scale or other adhering substances.

Point Source – Any facility having a connection to the public sewer.

Pipeline – "Pipeline" means an open or closed conduit used for the conveyance of material. A pipeline includes a channel, pipe, tube, trench, ditch or fixed delivery system.

Pollutant – Any dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat wrecked or discharged equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water.

Pollutants of Concern (POC) – Compounds in wastewater that pose a potential threat to the POTW or its ability to comply with environmental standards.

Pollution Prevention – Source reduction and other practices that reduce or eliminate the creation of pollutants.

(POTW) Publicly Owned Treatment Works– A treatment works as defined by Section 212 of the Act, (33 U.S.C. 1292) which is owned, in this instance, by the City. This definition includes any sewers that convey wastewater to the POTW treatment plant, but does not include pipes, sewers or other conveyances not connected to a facility providing treatment. For the City of Phoenix , "POTW" also includes any sewers that convey wastewaters to the POTW from persons outside the City who are, by contract or agreement with the City, users of the City's POTW.

Precipitation – The phenomenon that occurs when a substance (solute) held in solution in a liquid passes out of solution into solid form, usually precipitated by the addition of another substance that chemically transforms the solute into an insoluble form that can be removed by filtration or settling during a treatment process.

Precision – Precision refers to the reproducibility of the laboratory analytical results.

Pretreatment Standard – Any regulation promulgated by the EPA in accordance with Section 307(b) and (c) of the Clean Water Act which applies to a specific category of industrial users and provides limitations on the introduction of pollutants into POTWs. This term includes the prohibited discharge standards under 40 CFR 403.5, including [40 CFR 403.3 (j)].

Primary Measuring Device – A hydraulic structure to measure flow in an open channel there are two types, weirs and flumes.

Printed Circuit Board – A circuit for electronic apparatus made by depositing conductive material, usually copper, on an insulating surface.

Priority Pollutant – One hundred twenty-six compounds that are a subset of the 65 toxic pollutants and classes of pollutants outlined in Section 307 of the CWA. The priority pollutants are specified in the NRDC settlement agreement (National Resources Defense Council et al v. Train, 8 E.R.C. 2120 [D.D.C. 1976], modified 12 E.R.C. 1833 [D.D.C. 1979]).

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Pretreatment or Treatment – The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater to a less harmful state prior to or in lieu of discharging or otherwise introduction of such pollutants into a POTW. The reduction or alteration can be obtained by physical, chemical, or biological processes, process changes, or other means, except as prohibited by 40 CFR Section 403.6(d).

Pretreatment Facility – Industrial wastewater treatment system consisting of one or more treatment devices designed to remove sufficient pollutants from waste streams to allow an industry to comply with effluent limits (i.e. categorical standards, local limits, and federal prohibitive standards).

Pretreatment Standard – Any industrial discharge pollutant limitation imposed on an industrial user by local ordinance or by EPA.

Pretreatment Year – A pretreatment year begins January 1st and ends December 31st

Priority Pollutants (Priority Toxic Pollutants) (40 CFR 423 Appendix A1) – A list of specific compounds, originally identified by EPA in Section 307(a) of the Act for initial development of categorical pretreatment. There are 65 classes of pollutants and 126 individual pollutants currently identified.

Process Inhibition – The concentration of a pollutant that will interfere with a biological treatment process in the POTW.

Process Wastewater (40 CFR X22.21) – Is any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

Prohibited Materials – Any materials that are barred from being discharged into a POTW by local ordinance.

PSNS – Pretreatment standards for new sources of indirect discharges, under Sec. 307(b) of the CWA.

Quality Assurance / Quality Control (QA/QC) – Quality Assurance is the program function specified to assure the quality of measurement data, while Quality Control is the process carrying out those procedures stated in the Quality Assurance program.

RCRA – The Resource Conservation and Recovery Act of 1976 (RCRA) (42 U.S.C. Section 6901et.seq.), which regulates the generation, treatment, storage, disposal, or recycling of solid and hazardous wastes. The Federal Resource Conservation and Recovery Act (PL 94-580). RCRA was enacted to define a federal role in solid waste and resource management and recovery. RCRA's primary goals are; 1) to protect human health and the environment from hazardous and other solid wastes; and 2) to protect and preserve natural resources through programs of resource conservation and recovery. Its principal regulatory focus is on the control of hazardous waste through a comprehensive system of identification, tracking, treatment, storage, and ultimate disposal.

Receiving Water – A water course, lake, or ocean into which treated water is discharged.

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Rectangular Weir – Weir having a notch that is rectangular in shape.

Regulated Process – An industrial process for which federal categorical standards are established for the wastewater discharges resulting from the industrial process.

Removal Credits – A term used to describe the allowance of a publicly owned treatment works to revise federal categorical pretreatment standards to reflect removal of a pollutant through the system. Authorization to grant such removal credits depends on compliance with a number of conditions, as set forth in Section 403.7 of 40 CFR, Part 403, published on January 28, 1981, in 46 FR 9443.

Recycling – A material is recycled if it is used, reused, or reclaimed.

Representative Sample – A composite sample obtained by flow proportional sample techniques where feasible. When the Director determines that flow-proportional composite sampling is infeasible, the Director may allow or conduct time-composite techniques or by the compositing or averaging of one or more grab samples.

Reporting Violation – Failure of an industrial user to submit the required report to the Approval Authority or Control Authority.

Review Meeting – A compliance status meeting between ESD staff and an IU to review violations and allow the IU to describe the means to prevent future violations.

Receiving Water – A stream, lake, river, ocean, or other surface or groundwater into which treated or untreated wastewater is discharged.

Rolling Six Month Evaluation – A rolling six month evaluation uses sample data based on calendar quarters to calculate SNC during a rolling six month window. Under this procedure each SIU is evaluated for SNC four times during a fifteen month window. Of the eight criteria that must be evaluated for SNC only Chronic SNC and Technical Review Criteria SNC are evaluated based on a six month rolling window. All other criteria are strictly on a calendar quarter.

Sampler – A device used with or without flow measurement to obtain a sample portion of water or waste for analytical purposes. May be designed for taking a single (grab) sample, time composite sample, or flow-proportional composite sample.

Sampling – The practice of collecting samples of wastewater discharges for analysis of wastewater characteristics.

Sample-specific Quantitation Limit – The smallest quantity in the experimental calibration range that may be measured reliably in any given sample.

Sanitary Sewer – A sewer that carries liquid and water-borne wastes from residences, commercial buildings, industrial plants, and institutions, together with minor quantities of ground, storm, and surface waters that may be admitted unintentionally.

Septage – Aerobic wastewater originating from a domestic source, be it from a residential, commercial, or industrial facility, that is not hazardous waste and is compatible with the biological wastewater treatment plant process.

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Settling – Treatment process by which settleable or floatable solids are removed from wastewater by gravity separation in a tank or other vessel.

Sewage – A combination of water-carried wastes from residences, business buildings, institutions, and industrial establishments, together with such ground waters, surface waters, and storm waters as may be present.

Sewer – A pipe or conduit for carrying sewage.

Sewer Tap – The wye, saddle or other device placed on a public sewer to receive a building connection.

Sewer Use Ordinance – A sewer use ordinance is a legal instrument implemented by a local government entity which sets out all the requirements for the discharge of pollutants into a publicly owned treatment works.

Significant Noncompliance (SNC) – One or more serious violations or a pattern of minor violations. An IU may be considered in SNC when violations are Chronic Violations (CSNC) or Technical Review Criteria Violations (TRCSNC) or late reporting.

Significant Violation – A major discharge of pollutants to the POTW system that is determined to be grossly over the limits of pretreatment standards for that industry.

Significant Industrial User - (1) An IU subject to Categorical Pretreatment Standards 40 CFR 403.6 and 40 CFR, Chapter I subchapter N. Any industry that falls under these categories is considered a SIU whether it has process discharge to the sewer or not.
(2) Any industry which discharges an average of 25,000 gallons per day or more of process wastewater to the sewer system (excluding sanitary, noncontact cooling water and boiler blowdown wastewater).
(3) Any industry designated as such on the basis that the IU has a reasonable potential for adversely affecting the POTW.

Sludge – The settleable solids intentionally separated from liquid waste streams during treatment typically under quiescent conditions, and the unintentional accumulation of solids in tanks and reservoirs associated with production and manufacturing processes.

Slug Discharge (40 CFR 403.8(f)(2)(v)1 – Any pollutant discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge. Any discharge at a flow rate or concentration which would cause a violation of the prohibited discharge standards in the General Pretreatment Regulations.

Sludge Control Plan (40 CFR 403.8(f)(2)(v)1 – A plan designed to prevent the uncontrolled discharge of raw pollutants (*or materials, e.g., a dairy spill of milk may disrupt a small POTW and would have to be reported even though milk Is not a "pollutant"*) into the POTW. Every Significant Industrial User is required to be evaluated at least every two years, for the necessity of instituting such a control plan.

Sludge Quality Standard – Allowable concentration or mass of a pollutant in POTW sludge, or biosolids, used for land application.

Source Reduction – Any practice which reduces the amount of any pollutant or contaminant entering any waste stream or otherwise released into the environment or

reduces hazards to public health and the environment associated with the release of such substances, pollutants or contaminants.

Specific Gravity - (1) Weight of a particle, substance, or chemical solution in relation to the weight of an equal volume of water. Water has a specific gravity of 1.000 at 4^0 C (39^o F). (2) Weight of a particular gas in relation to an equal volume of air at the same temperature and pressure (air has a specific gravity of 1.0). Chlorine has a specific gravity of 2.5 as a gas.

Spiked Sample (Field) – A sample of a known amount of a particular pollutant constituent prepared in the field by adding a known amount of the analyte in question during sampling. This technique identifies potential sample matrix interference and/or problems with inadequate sample preservation.

Spiked Sample (Laboratory)– A sample of a known amount of a particular pollutant constituent prepared in the laboratory by adding a known amount of the analyte in question at a concentration where the accuracy of the test method is satisfactory. Spiked samples check on the accuracy of the analytical procedure.

Split Samples – A sample which is collected and divided in the field into the necessary of portions (e.g., 2, 3, etc.) for analysis. Equally representative samples must be obtained in the process. The split samples are then analyzed by separate laboratories (*or the same laboratory*), preferably using the same analytical techniques.

SROG – Sub-regional Operating Group formed in 1979 pursuant to a joint exercise of powers agreement between the cities of Glendale, Mesa, Phoenix, Scottsdale, and Tempe, and the Town of Gilbert to jointly own and operate the 23rd and 91st Avenue Wastewater Treatment Plants and their interceptor systems. Intergovernmental agreements exist between SROG members and non-SROG jurisdictions which allow third parties to discharge to the SROG system.

Standard Industrial Classification (SIC) – A classification pursuant to the Standard Industrial Classification Manual issued by the Executive Office of the President, Office of Management and Budget, 1972. Codes used to categorize and uniquely identify business and economic activities.

Standard Methods – The procedure as described in the most current edition of Standard Methods for the Examination of Water and Wastewater published by American Health Association, or the most current edition of Manual of Methods for Chemical Analysis for Water and Wastes published by the EPA.

Stilling Well – A pipe, chamber, or compartment with comparatively small inlets, or with inlets communicating with a main body of water. Its purpose is to dampen waves or surges while permitting water level within the well to rise or fall with the major fluctuation of the main body of water. It is used with water measuring devices to improve accuracy of measurement.

Storm Water – Any flow occurring during or following any form of natural precipitation and resulting there from.

Storm Sewer / Storm Drain – A sewer which carries storm and surface waters and drainage, but excludes sewage and polluted industrial wastes.

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Suspended Solids – The total suspended matter that floats on the surface of, or is suspended in, water, wastewater or other liquids, and which is removable by laboratory filtering.

Subchapter N – Refers to Subchapter N of Chapter I of Title 40 of the Federal Regulations. This includes, but is not limited to, the industrial categorical standards included in 40 CFR Parts 405 through 471.

Technical Review Criteria Violations (TRC) (TRCSNC) – (1) Technical Review Criteria Violations are recurring effluent violations where the limit is exceeded by a certain statistically developed percentage so as to account for the degree of variance from the pretreatment standards. (2) For Technical Review Criteria Significant Noncompliance (TRCSNC), thirty-three (33) percent or more of all of the measurements taken during a six-month period equal or exceed the product of the daily limit or the monthly average limit multiplied by the applicable TRC (1.4 for BOD, TSS, fats, oil & grease and 1.2 for all other pollutants except pH).

Technology Based Standards – Discharge limits for specific industrial categories established by the Federal EPA based on the use of the Best Available Technology economically achievable (BAT), the Best Practicable Control Technology available (BPT), or the Best Conventional Technology available (BCT). Such standards are based on the cost and/or availability of technology to treat the specific wastestream under consideration.

Termination of Service – An administrative action implemented by the City to halt any actual or threatened discharge to the sewer from an IU that has failed to adequately respond to previous enforcement actions.

Time Composite Sample – A mixed sample composed of single equal-volume samples collected at selected regular intervals over a specified period of time.

Total Organic Carbon (TOC) – The total of all organic compounds expressed in milligrams per liter as determined by the combustion-infrared method prescribed by approved laboratory procedures.

Total Suspend Solids (TSS) – Residue that is removed from a wastewater sample by a standard laboratory filtration procedure, expressed as mg/L.

Total Toxic Organics (TTO) – The summation of all quantifiable values of toxic organics greater than 0.01 mg/l contained in the Federal Categorical Pretreatment Standards.

Toxic Pollutant (40 CFR 122 Appendix D) – Any pollutant or combination of pollutants listed as toxic in regulations promulgated by the Administrator of the Environmental Protection Agency under the provision of CWA 307(a) or other Acts. Those pollutants, or combination of pollutants, including disease-causing agents which after discharge and upon exposure, ingestion, inhalation, or assimilation into any organism either directly from the environment or indirectly by ingestion through the food chain, will on the basis of information available to the Administrator of the EPA, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions, (including malfunctions in reproduction) or physical deformation

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Treatment – Any method, technique, or process designed to change the physical, chemical or biological character or composition of any metal-bearing, oily, or organic waste so as to recover metal, oil, or organic content from wastes.

Trip Blank – Is a volume of analyte-free water brought to the field in sealed containers and transported back to the lab with the actual sample containers.

Turbine Meter – A positive displacement meter with an internal turbine turned by the water flow. Flow is proportional to turbine rotation speed.

User – Any person who contributes, causes or permits the contribution of wastewater into the City's POTW.

Variability Factor – Used in calculating a limitation (or standard) to allow for reasonable variation in pollutant concentrations when processed through extensive and well designed treatment systems. Variability factors assure that normal fluctuations in a facility's treatment are accounted for in the limitations.

Violation – Whenever a user exceeds an applicable effluent limit; fails to meet the deadlines and conditions for reporting, monitoring or treatment; or does not comply with other Federal or City requirements.

V-notch Weir – A triangular sharp-crested weir for measurement of liquid discharge in open channels.

Volatile Solids – The quantity of solids in water, wastewater, or other liquids, lost on ignition of the dry solids at 600^0.

Waste – Includes aqueous, non-aqueous, and solid waste, wastewater, and/or used material.

Wastewater – The liquid and water-carried industrial or domestic wastes from dwellings, commercial buildings, industrial facilities, and institutions, whether treated or untreated, which is introduced into the POTW.

Water Quality Standards – Water quality standards are provisions of state or federal law which consist of a designated use or uses for a given water body and associated water quality criteria which must be met in the stream to achieve these uses. Water quality standards are effluent standards imposed on point sources. These standards are designed to achieve the water quality criteria established for a given water body. These standards are designed to improve and/or maintain the quality of the receiving water, regardless of the cost or availability of treatment technology.

Weir – (1) A diversion dam. (2) A device that has a crest and some side containment of known geometric shape and is used to measure flow of a liquid. The liquid surface is exposed to the atmosphere. Flow is related to: upstream height of water above the crest, position of crest with respect to downstream water surface, and geometry of the weir opening. Most common types are rectangular weirs, trapezoidal (Cipolletti) weirs and triangular (V-notch) weirs.

Worker Right to Know Laws – Employee "Right-to-Know" legislation requires employers to inform employees (e.g., treatment plant operators) of the possible health effects resulting from contact with hazardous substances. At location where this

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legislation is in force, employers must provide employees with information regarding any hazardous substances which they might be exposed to under normal working conditions or reasonably foreseeable emergency conditions resulting from workplace conditions. OSHA's "Hazard Communication Standard (HCS)" (Title 29 CFR Part 1910.1200) is the federal regulation and state statutes are called "Right to Know Laws."

Zero Process Discharge – This term applies to those users that only discharge domestic wastes or have no discharge, but have significant quantities of hazardous materials or high strength waste which, if discharged, would be regulated by this ordinance. Such facilities may be regulated by requiring them to have zero discharge of process wastes, thus allowing only domestic wastes to be discharged. No discharge of pollutants to waters of the United States or to a POTW. Also included in this definition are disposal of pollutants by way of evaporation, deep-well injection, off-site transfer, and land application.

Pretreatment Point Source Categories

EPA has developed regulations for over twenty industrial categories which are based on the wastewater effluent quality that can be achieved using established treatment technologies. Specific regulations and effluent limitations are set for each industrial category. The following categories are currently regulated; however, the EPA may add or delete categories in the future. Further information regarding a specific category's regulations can be obtained by contacting the Environmental Services Division Industrial Pretreatment Program (IPP) Section.

1. **Aluminum Forming** (**40 CFR 467**): EPA defines aluminum forming as "the deformation of aluminum or aluminum alloys into specific shapes by hot or cold working such as rolling, extrusion, forging, and drawing." Surface treatment and heat treatment of aluminum parts that are formed at the same plant site are subject to the Aluminum Forming Regulations and are not covered by the Electroplating and Metal Finishing regulations (**40 CFR 413** & **433**). Casting of aluminum that is subsequently formed at the same plant site is also subject to the Aluminum Forming Regulations. Discharge from the forming operation is not required to be subject to this regulation.

2. **Battery Manufacturing** (**40 CFR 461**): Battery manufacturing encompasses the production of modular electric power sources where all or part of the fuel is contained within the unit and electric power is generated directly from a chemical reaction rather than indirectly through a heat cycle engine.

3. **Carbon Black Manufacturing** (**40 CFR 458**): This category consists of facilities which manufacture carbon black by the furnace, thermal, channel or lamp processes. Only facilities which have been constructed or significantly modified since May 18, 1976 are regulated.

4. **Centralized Waste Treatment** (**40 CFR 437**): This category consists of facilities that receive wastes from off-site for treatment.

5. **Coil Coating** (**40 CFR 465**): EPA regulations state that "Coil coating consists of that sequence or combination of steps or operations which clean, surface or conversion coat, and apply an organic (paint) coating to a long thin strip or coil of metal."

6. **Can Making** (**40 CFR 465**): This classification is a subcategory of coil coating and has been defined to be "the process or processes used to manufacture a can from a base metal, including aluminum and steel." This category applies to seamless cans only.

7. **Copper Forming** (**40 CFR 468**): This category regulates discharges resulting from the manufacture of formed copper and copper alloy products. The forming operations covered are hot rolling, cold rolling, drawing, extrusion, and forging. Ancillary operations which include surface treatment (pickling, tumbling, burnishing, alkaline cleaning, and surface milling), heat treatment, hydrotesting, sawing, and surface coating with molten metal are also covered by this regulation. Discharge from the forming operation is not required to be subject to this regulation.

8. **Electrical and Electronic Components** (**40 CFR 469**): This category consists of all operations associated with the manufacturing of semiconductors, electronic crystals, cathode ray tubes, and luminescent materials except for sputtering, electroplating, and vapor plating operations.

9. **Electroplating** (**40 CFR 413**): This category consists of electroplating, anodizing, conversion coating, electroless plating, chemical etching and milling, and the manufacturing of printed circuit boards. This category applies to existing job shops only.

10. **Fertilizer Manufacturing** (**40 CFR 418**): This category applies to discharges from the manufacture of sulfuric acid, nitric acid (in concentrations up to 68%), ammonium sulfate by the synthetic process or by coke oven byproduct recovery, and mixed and blend fertilizers. It is only applicable to sulfuric and nitric acid manufacturing processes that have been constructed or significantly modified since December 7, 1973 and ammonium sulfate and mixed and blend fertilizer manufacturing processes that have been constructed or significantly modified since October 7, 1974.

11. **Glass Manufacturing** (**40 CFR 426**): This category consists of manufacturers of glass containers, television picture tubes, incandescent lamp envelopes, and hand pressed and blown glass. Only facilities which have been constructed or significantly modified since August 21, 1974 are regulated.

12. **Ink Formulating (40 CFR 447**): This category applies to discharges resulting from the formulation of oil-base ink where the tank washing system uses solvents. It is only applicable to processes that have been constructed or significantly modified since February 26, 1975.

13. **Inorganic Chemicals Manufacturing** (**40 CFR 415**): This category includes facilities involved in the manufacture of basic inorganic chemicals including alkalies and chlorine, industrial gases, and inorganic pigments.

14. **Iron and Steel** (**40 CFR 420**): This category covers steel works, blast furnaces (including coke ovens), rolling mills, electrometallurgical products, steel wire drawing and facilities which produce steel nails and spikes, and steel pipes and tubes. This category does not include coil coating operations.

15. **Leather Tanning and Finishing** (**40 CFR 425**): This category consists of the tanning, currying, and finishing of hides and skins into leather.

16. **Metal Finishing** (**40 CFR 433**): This category consists of electroplating, anodizing, conversion coating, electroless plating, chemical etching and milling, and the manufacturing of printed circuit boards. This category applies to captive shops (owns 50 percent or more of the surface area finished), and all new source electroplating and metal finishing operations (those which began construction after August 31, 1982).

17. **Metal Molding and Casting** (**40 CFR 464**): This category consists of the pouring or injection of molten metal into a mold with the cavity of the mold representing, within close tolerances, the dimensions the final product. This category includes aluminum, copper, ferrous, and zinc casting.

18. **Nonferrous Metals Manufacturing** (**40 CFR 421**): This category consists of plants that process nonferrous ore concentrates (primary) and scrap metals (secondary) to recover and increase the metal purity contained in these materials.

19. **Nonferrous Metals Forming** (**40 CFR 471**): This category consists of the deformation of a metal (other than iron) or metal alloy (other than iron as the major component by weight) into specific shapes by hot or cold working, drawing, cladding and tube reducing.

20. **Organic Chemicals, Plastics, and Synthetic Fibers** (**40 CFR 414**): This category consists of facilities which manufacture organic chemicals, plastics, or synthetic fibers. Companies which simply formulate or package these materials are excluded.

21. **Paint Formulating** (**40 CFR 446**): This category applies to discharges resulting from the formulation of oil- base paint where the tank cleaning is performed using solvents. It is only applicable to processes that have been constructed or significantly modified since February 26, 1975.

22. **Paving and Roofing Materials** (**40 CFR 443**): This category consists of producers of asphalt paving and roofing emulsions, asphalt concrete, asphalt roofing materials, and linoleum and asphalt felt floor coverings. It is only applicable to facilities that have been constructed or significantly modified since January 10, 1975.

23. **Pesticide Chemicals** (**40 CFR 455**): This category includes the manufacturing, formulating, packaging, and repackaging of pesticides.

24. **Petroleum Refining (40 CFR 419**): This category includes operations which produce gasoline, kerosene, distillate fuel oils, residual fuel oils and lubricants, through fractionation or straight distillation of crude oil, redistillation of unfinished petroleum derivatives, cracking or other processes.

25. **Pharmaceutical Manufacturing** (**40 CFR 439):** This category includes pharmaceutical manufacturing facilities which may use fermentation, extraction, chemical synthesis, mixing/compounding and formulation, or may conduct research.

26. **Porcelain Enameling (40 CFR 466):** EPA defines porcelain enameling as "that sequence or combination of steps or operations which prepare the metal surface and apply a porcelain or fused silicate coating to the metal basis material."

27. **Pulp, Paper, and Paperboard and the Builders' Paper and Board Mills (40 CFR 430):** This category includes pulp mills, paper mills, paperboard mills, and building paper and building board mills.

28. **Rubber Manufacturing (40 CFR 428):** This category consists of manufacturers that reclaim rubber or mold, extrude, or fabricate rubber products, including latex products. It is only applicable to facilities that have been constructed or significantly modified since August 23, 1974.

29. **Soap and Detergent Manufacturing (40 CFR 417**): This category consists of facilities which blend or package liquid detergents or manufacture dry detergents by spray drying, drum drying, or dry blending. Only facilities which have been constructed or significantly modified since December 26, 1973 are regulated.

30. **Steam Electric Power Generation (40 CFR 423):** This category is composed of facilities that are engaged in the generation of electricity for distribution and sale, and use either fossil-type fuel (coal, oil, or gas) or nuclear fuel in conjunction with a thermal cycle that has a steam/water thermodynamic medium.

31. **Textile Mills (40 CFR 410):** This category applies to the fiber preparation and manufacturing/process of the textile industry.

32. **Timber Products (40 CFR 429):** This category consists of a diverse group of manufacturing plants whose primary raw material is wood and whose products range from finished products to hardboard and preserved wood.

40 CFR 121-124 – These are the Federal storm water regulations for the permitting of municipalities and industries. Regulation defines storm water terms, permitting, inspection, and sampling requirements.

40 CFR 136 – These are the regulations for sampling preservation, sample containers, and analytical methods for water, wastewater, and solid waste.

40 CFR 403 – These are the Federal regulations defining the elements of a pretreatment program, prohibited discharges, and approval process for establishing a pretreatment program.

City of Phoenix

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