Appendix D

Standard Operating Procedures (SOPs)

CITY OF EUGENE – WASTEWATER DIVISION

Procedure

Subject:	Field Measurement of Conductivity	**Document No:**	SAMP-834
Last Reviewed By:	Tom Mendes	**Original Date:**	07/08/03
Approved By:	Management Team	**Date Approved:**	9/22/05

Purpose

This procedure describes instrument calibration and measurement of specific conductance

Scope

Conductivity is a numerical expression of the ability of an aqueous solution to carry an electric current. This ability depends on the presence of ions, their concentration, mobility, valence, and the temperature of the water sample. This procedure can be used to measure specific conductance of surface and ground water samples.

References

Eugene Wastewater Division Quality Assurance Plan
Sample Quality Assurance / Quality Control Procedure
Instrument Manufacturer's Materials

Equipment & Supplies

- Portable field conductivity probe and meter with automatic or manual temperature correction
- Standard conductivity solutions: Solutions can be obtained from the laboratory.
- Laboratory Control Sample (LCS): This QA/QC Control Sample is available from the laboratory.
- Deionized water and squirt bottle
- Appropriate Field Data Sheet(s)

Procedure

Notes

- If the sample temperature differs from the standard conductivity solution by more than 2 °C, the measured conductivity values must be corrected. Instruments are equipped with automatic or manual compensators that electronically adjust for temperature differences. Refer to the instrument manufacturer's instructions. If necessary, the Field Measurement of Temperature in Ground Water Procedure should be done in conjunction with this procedure.

- The field technician will use a 3-point instrument calibration. The range of standard conductivity solutions used for calibration is largely determined by the range of conductivity values anticipated for the samples. Standard conductivity solutions must bracket the range of sample values.

- Instrument calibration must be performed daily just before use.

A. Instrument Calibration

1. Read and follow all of the manufacturer's operating and calibration instruction.

2. Pour fresh standard conductivity solutions into clean plastic cups.

3. Place probe into the solution and swirl gently.

4. Observe the conductivity readout. When the conductivity has stabilized adjust the instrument as necessary.

5. Remove probe from first standard conductivity solution, rinse probe with deionized water and gently shake the excess water off the probe.

6. Repeat steps 2 through 5 for the remaining standard conductivity solutions.

7. After the instrument has been calibrated, measure the specific conductance of the LCS. Record the conductivity and temperature readings on the Field Data Sheet and the units of measure. Calculate the relative difference between the measured value and the known value. The RPD must be within 15%. Repeat instrument calibration if the QC objective is not met.

B. Field Sample Measurement

1. Pour sufficient sample into a plastic cup. The volume is not important as long as the probe is completely covered when taking measurement readings.

2. Place probe into the sample and swirl gently to remove air bubbles.

3. Gently swirl the probe while monitoring the conductivity readings. The conductivity readings should stabilize after a minute or two. Record the specific conductance value to the nearest significant figure on the Field Data Sheet.

4. Discard the sample and rinse the probe well with deionized water between samples.

5. Refer to instructions in Section E for additional QA/QC requirements.

6. Place the probe in its sleeve containing DI water or the solution recommended by the manufacturer for storage.

C. Calculation

1. Display will vary by meter. Make sure to follow the instrument instructions for correct calculation.

2. Make sure the correct reporting units are recorded on the Field Data Sheet.

D. Temperature Correction

1. The method used to correct the value for temperature will vary by instrument. Make sure to follow the instrument instructions to apply the correct calculation.

E. Quality Assurance / Reporting

1. Method Reporting Limit <5.

2. Data Quality Objectives Precision (RPD) 15%, Accuracy (% Recovery) 85% - 115%.

3. Rough transport conditions may result in maladjustment of field equipment calibration. Check the conductivity of at least one standard on a frequent basis to ensure accuracy of sample specific conductance values.

4. QC Frequency:
   a. Field Sample Duplicates: Every 10 samples or batch.
   b. Laboratory Control Sample: Every 10 samples or batch.

CITY OF EUGENE – WASTEWATER DIVISION
Procedure

Subject:	Decontamination of Field Equipment	**Document No:**	SAMP - 851
Last Reviewed By:	Marc Furney	**Original Date:**	07/08/03
Approved By:	Ron Morrow	**Date Approved:**	5/7/10

Purpose

The purpose of this procedure is to describe the general cleaning techniques for field equipment used to collect surface and ground water samples. Decontamination of field equipment is critical because it

- ensures that samples will be as free as possible from contaminants that are not contained within the sample itself;
- ensures the statistical validity of analytical results by reducing systematic error; and
- ensures longevity of the sampling equipment and, if recorded, provides documentation of challenged results.

Scope

This cleaning procedure is general – the technician is required to review and follow all cleaning and maintenance instructions specified by the manufacturer. When cleaning instructions are deficient or are not specified by the manufacturer, these cleaning guidelines will be implemented.

Field equipment such as sampling pumps, water level meters, and other equipment used to collect surface and ground water samples, can be cleaned following this general procedures.

References

Eugene Wastewater Division Quality Assurance Plan
Instrument Manufacturer Materials

Safety Requirements

Wear safety glasses, latex gloves, and protective clothing while cleaning field equipment.

Equipment & Supplies

- 3-5 gallon plastic bucket
- Plastic scrub brushes
- Solution of laboratory-grade detergent
- Potable rinse water
- Deionized water

Procedure

The following table describes the cleaning procedure and maintenance tasks for various field sampling equipment.

Equipment	Frequency	Cleaning Technique
Water Level Meter	After each use	1. Rinse the probe and cable thoroughly with deionized water.
	Before taking the meter into the field for use	1. This cleaning procedure is done quarterly to remove bio-films that may build up on the cable and probe. 2. Prepare a wash solution using laboratory-grade detergent as per manufacturer's instructions to fill a 3 to 5 gallon bucket. 3. Un-spool the cable into the bucket taking care to minimize tangles. 4. While re-spooling the cable, run the cable through a clean laboratory cloth. 5. Discard the wash solution. 6. Repeat the process using potable water. 7. Repeat the process using deionized water.
Peristaltic Pump	After each use	1. Prepare one gallon of wash solution using laboratory-grade detergent as per manufacturer's instructions. 2. Insert the suction tube of the pump into the solution, adjust the pump to low flow and turn the pump on. 3. Pump a few cups of the solution through the tubing, discarding the solution. 4. Repeat the process using potable water. 5. Repeat the process using deionized water.
	As necessary	1. Replace the section of tubing in the peristaltic pump if discolored, or if the tubing becomes worn and collapses easily.
Other field equipment	After each use or as necessary	1. All sampling equipment that comes into contact with the sample must be cleaned before sample collection. 2. Cleaning can generally be done using a mild solution of laboratory-grade detergent followed by thorough rinses with potable water and deionized water. 3. Read and follow the manufacturer's instructions for cleaning and performing maintenance! 4. Do not immerse electrical equipment unless specifically instructed to do so.

CITY OF EUGENE – WASTEWATER DIVISION

Procedure

Subject:	Field Measurement of pH (Electrometric)	**Document No:**	SAMP - 853
Last Reviewed By:	Marc Furney	**Original Date:**	07/07/03
Approved By:	Ron Morrow	**Date Approved:**	5/7/10

Purpose

This procedure describes instrument calibration and measurement of field samples for pH.

Scope

This procedure can be used to measure pH of wastewater, industrial, sludge, biosolids, stormwater, surface water, and ground water samples.

References

Eugene Wastewater Division Quality Assurance Plan
Sample Quality Assurance / Quality Control Procedure
Standard Methods 4500H+B for pH collection and analysis.
Instrument Manufacturer's Materials

Equipment & Supplies

- Portable field pH probe and meter with automatic or manual temperature correction
- Standard buffer solutions: pH 4.0, 7.0, and 10.0; Buffers validated by comparison to NBS standards are available from commercial lab suppliers.
- Instrument Calibration Log Book
- Laboratory Control Sample (LCS): This QA/QC control sample is available from the laboratory for verification of instrument calibration. Note LCS name, batch number, expiration date, and date opened in the Instrument Calibration Log Book.
- Deionized water and squirt bottle
- Appropriate Field Data Sheet(s)

Procedure

Notes

- If the sample temperature differs from the buffer solution by more than 2 °C, the measured pH values must be corrected. Instruments are equipped with automatic or manual compensators that electronically adjust for temperature differences. Refer to the instrument manufacturer's instructions. The Field Measurement of Water Temperature Procedure must be done in conjunction with this procedure.
- The field technician will use either a 3-point instrument calibration or 2-point calibration with a third buffer check. The calibration method selected is largely determined by the capabilities of the pH meter..
- Instrument calibration must be performed daily just before use.

A. 3-Point Calibration of Field pH Meter

1. Review and follow manufacturer's instructions for instrument operation and calibration.

2. Pour fresh buffer solutions into clean containers.

3. Place probe into the buffer and swirl gently.

4. Calibrate the meter for the first buffer solution according to the manufacturer's instruction manual.

5. Observe the calibrated pH value and record in the Instrument Calibration Log Book.

6. Remove probe from first buffer solution, rinse probe with deionized water and gently shake the excess water off the probe.

7. Repeat steps 2 through 6 for the remaining buffers.

8. If the meter provides the slope, record the value in the Instrument Calibration Log Book.

B. 2-Point Calibration of Field pH Meter

Either: Calibrate pH meter with 7.0 and 10.0 buffers and use a third buffer that's 3 pH units different to check calibration. The check must be within 0.1 pH unit of the third buffer or the meter will need to be recalibrated. If any sample measures less than pH 6.5, recalibrate meter with 7.0 and 4.0 buffers.

Or: Calibrate pH meter with 7.0 and 4.0 buffers and use a third buffer that's 3 pH units different from the others to check calibration. The check standard must be within 0.1 pH unit of the third buffer or the meter will need to be recalibrated. If any sample measures greater than pH 7.5, recalibrate meter with 7.0 and 10.0 buffers.

C. Sample pH Field Measurement

1. Calibrate the field meter as described above.

2. Fill a clean sample cup with sufficient sample to immerse the sensing element of the pH probe.

3. Gently swirl the probe while monitoring the pH readings. The pH readings should stabilize after a minute or two. Record the pH value to the nearest 0.1 pH Unit on the Field Data Sheet.

4. Discard the sample and thoroughly rinse the probe with deionized water between samples.

5. For industrial samples, if pH results indicate a violation, check the meter against an LCS to verify the meter's accuracy. Record the LCS measurement on the Chain-of-Custody.

6. Refer to the QA/QC instructions below for measurement of Field Sample Duplicates.

D. Laboratory pH Measurement

1. Field Sample Duplicates for laboratory pH measurement are collected following the Sample Quality Assurance / Quality Control Procedure.

E. Calculation

1. pH meters read directly in pH units. Report pH to the nearest 0.1 unit and temperature to the nearest 0.1 °C.

F. Quality Assurance / Reporting

1. A Field Sample Duplicate is simply obtained by pouring two aliquots of the sample and measuring the pH of both in an expedient manner to minimize drift. Field Sample Duplicates are collected following the Sample Quality Assurance / Quality Control Procedure. Record the Field Sample Duplicate measurement on the Field Data Sheet.

2. Rough transport conditions may result in maladjustment of field equipment calibration. Check the pH of at least one standard on a frequent basis to ensure accuracy of sample pH values.

3. A post operation calibration check should be done before the meter is stored at the end of the day. Check the calibration of the meter against the standard buffer solutions and record the values in the Instrument Calibration Log Book.

4. Method Reporting Limit: NA.

5. Data Quality Objectives Precision (RPD) 15%, Accuracy (% Recovery) 85% - 115%.

6. QC Frequency:

   a. Duplicates: Every 10 samples or batch.
   b. Laboratory Control Sample (LCS): Once a day or additional as needed. Record the measurement on a Field Data Sheet, Chain-of-Custody, or in the Instrument Calibration Log Book.
   c. Calibration Check: Once a day or additional as needed.

CITY OF EUGENE – WASTEWATER DIVISION

Procedure

Subject:	Sample Quality Assurance / Quality Control Procedure	**Document No:**	SAMP-854
Last Reviewed By:	Tom Mendes	**Original Date:**	07/08/03
Approved By:	Management Team	**Date Approved:**	9/22/05

Purpose

This procedure describes the Quality Assurance / Quality Control (QA/QC) protocol to be implemented when collecting field samples. It describes what types of QA/QC samples are to be collected.

Scope

This procedure is applicable to the collection of surface and ground water samples.

Definitions

Field Equipment Blank – A field sample prepared by passing deionized water over/through the equipment used to collect environmental samples and submitting it to the laboratory for processing as a regular sample. The analytical results are used to determine whether cross contamination or introduction of foreign materials occurs during the field sampling process.

Trip Blank – A sample prepared by the laboratory to accompany the field-sampling event at all times. It is submitted to the laboratory for analysis as a regular sample.

Field Sample Duplicate – A sample collected at the same time as the regular field sample and submitted to the laboratory for processing as a regular sample. The analytical results are used to determine precision of the sampling and analysis procedures. Depending on the type of analyses, sufficient volume of sample is first collected in a large container and poured into the suite of sample containers. If analysis includes volatile organic compounds the sample is collected directly from the environmental media or pump discharge hose to minimize volatilization.

References

Eugene Wastewater Division Quality Assurance Plan
Chain-of-Custody Procedure
Decontamination of Field Equipment

QA/QC Sample Schedule

QA/QC Sample Type	Prepared By	Frequency of Collection
Laboratory Trip Blank	Laboratory	One per Sampling Event
Field Equipment Blank	Field Sampling Technician	One per Day
Field Sample Duplicate	Field Sampling Technician	One per Day or One per 10 Samples

QA/QC Sample Type	Preparation/Handling Instructions
Laboratory Trip Blank	1. During preparation of sample containers, review the sampling schedule with the laboratory lead to determine which parameters require trip blanks. Have the laboratory prepare the necessary trip blanks. 2. Trip Blanks will accompany the field-sampling event at all times. If the laboratory has not already done so, label the sample containers with an indelible marker as "Trip Blank", the date of preparation, and the types of analyses required. 3. Package the Trip Blank in a protective bag as regular samples. Store it in a sample cooler at all times with sufficient ice to maintain the cooler at 4 °C. Never open the Trip Blank containers! 4. Process the Trip Blank as regular samples, recording it on the chain-of-custody form (see Chain-of-Custody Procedure) and checking off the appropriate analyses.
Field Equipment Blank	1. Field Equipment Blanks are prepared after decontamination of field equipment (see Decontamination of Field Equipment Procedure). 2. Obtain sufficient deionized water to fill the suite of sample containers used for the sampling event. 3. Pass the deionized water over/through the field equipment into the sample containers. 4. Label the sample containers with an indelible marker as "Equipment Blank", the date of preparation, and the types of analyses required. 5. Package the Field Equipment Blanks in protective bags as regular samples. Store it in a sample cooler at all times with sufficient ice to maintain the cooler at 4 °C. 6. Process the Field Equipment Blank as regular samples, recording it on the chain-of-custody form (see Chain-of-Custody Procedure) and checking off the appropriate analyses.
Field Sample Duplicate	1. Surface and ground-water samples requiring volatile and semi-volatile organic compound analysis are collected directly from the environmental media or from the pump discharge hose to minimize volatilization. 2. Fill a clean container (with cap) with sample sufficient to fill the suite of sample containers. Cap and invert the container several times to ensure thorough mixing and fill the sample containers. 3. Label the sample containers using an indelible marker with appropriate identifier, the date of collection, and the types of analyses required. 4. Package the Field Sample Duplicate in protective bags as regular samples. Store it in a sample cooler at all times with sufficient ice to maintain the cooler at 4 °C. 5. Process the Field Sample Duplicate as regular samples, recording it on the chain-of-custody form (see Chain-of-Custody Procedure) and checking off the appropriate analyses.

CITY OF EUGENE – WASTEWATER DIVISION

Procedure

Subject:	Field Measurement of Water Temperature	**Document No:**	SAMP-856
Last Reviewed By:	Tom Mendes	**Original Date:**	07/07/03
Approved By:	Management Team	**Date Approved:**	9/22/05

Purpose

This procedure describes field measurement of water temperature.

Scope

This procedure can be used to measure water temperature of surface and ground water samples.

References

Eugene Wastewater Division Quality Assurance Plan
Sample Quality Assurance / Quality Control Procedure
Instrument Manufacturer's Materials

Definitions

NIST – National Institute of Standards and Technology

Equipment & Supplies

- Meter or thermometer calibrated against a NIST-traceable thermometer capable of measuring temperature to the nearest 0.5 ˚C.
- Deionized water and squirt bottle
- Appropriate Field Data Sheet

Note: Many field meters have built-in thermometers that are suitable for measuring water temperature of surface and ground water samples.

Instrument Calibration

Quarterly Temperature Calibration/Check – Calibration of field meters or thermometers used to measure temperature in the field must be done on a quarterly basis. All calibration information will be recorded in field notebooks.

Meter:

If a field meter equipped to measure water temperature will be used, review and follow manufacturer's instructions for instrument operation and calibration. Record any calibration/adjustments made on the Field Data Sheet. Calibration is usually accomplished by comparing temperature readings from the meter and NIST-traceable thermometer while simultaneously immersed in water. The calibration includes two temperatures which bracket the anticipated range of field sample.

Thermometer:

If a thermometer will be used to measure water temperature, examine the thermometer for breaks in the fluid column. If breaks are observed, shake the thermometer to force the fluid into the reservoir. Replace the thermometer if fluid breaks cannot be removed. Calibrate the thermometer following the sample procedure described above.

Procedure

A. Sample Temperature Measurement

1. Rinse a clean plastic container with sample water. Refill the container and immediately immerse the probe/thermometer into the middle of the sample, taking care not to rest the probe/thermometer against the sample container.

Note: The plastic container should be sufficiently large enough to minimize temperature drift due to heating/cooling while handling.

2. Allow the temperature to stabilize and record the temperature to the nearest 0.5 ˚C on the Field Data Sheet. Discard the sample and rinse the probe/thermometer with deionized water.

3. Refer to the QA/QC instructions below for measurement of Field Sample Duplicates. Collect the Field Sample and Field Duplicate simultaneously and measure the temperature in both in an expedient manner to minimize temperature drift due to heating/cooling while handling.

B. Calculation

1. Temperature meters read directly in temperature units. Report temperature to the nearest 0.5 °C.

C. Quality Assurance / Reporting

1. A Field Sample Duplicate is simply obtained by pouring two aliquots of the sample and measuring the water temperature of both in an expedient manner to minimize drift. Record the Field Sample Duplicate measurement on the Field Data Sheet.

2. Method Reporting Limit: NA.

3. Data Quality Objectives Precision (RPD) 15%.

4. QC Frequency: Duplicates: Every 10 samples or batch.

CITY OF EUGENE – WASTEWATER DIVISION
Procedure

Subject:	**Ambient Monitoring Sample Schedule**	**Document No:**	SAMP - 1206
Reviewed By:	Marc Furney	**Date Prepared:**	05/04/05
Approved By:	Ron Morrow	**Date Approved:**	3/11/11

Introduction

The purpose of this procedure is to describe the sampling frequency and water quality parameters required for surface water samples collected from surface water bodies under the City of Eugene Ambient Monitoring Program.

Scope

This procedure pertains to ambient surface water samples collected under the City's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit #101244.

Ambient Monitoring Sample Schedule

Ambient Monitoring – Field, Conventional, Nutrients, Metals Water Quality Parameter, Bottle, and Preservation Schedule				
Frequency	**Water Quality Parameter**	**Bottle Type**	**Preservation**	**Maximum Holding Time**
Six (6) events/year (January, March, May, July, September, November)	Total and Dissolved Arsenic Cadmium Chromium Copper Lead Mercury Molybdenum Nickel Selenium Silver Zinc	2-L Teflon	Total: HNO_3 to pH <2 Dissolved: HNO3 to pH <2 AFTER filtration through 0.45 µm membrane filter cartridge.	6 Months
	Ammonia (as N) Chemical Oxygen Demand Nitrate+Nitrite (NO_3+NO_2 as N) Phosphorus (Total) Total Kjeldahl Nitrogen	K 500-mL Plastic	Cool, ≤6°C H_2SO_4 to pH <2	28 Days
	Phosphorus (Ortho)	K 500-mL Plastic	Lab filter within 6 hours of collection Cool, ≤6°C	48 Hours
	Escherichia coli Fecal coliform	C 500-mL Plastic	Cool, ≤6°C	6 Hours
	Calcium (Total) Magnesium (Total) Hardness	I-Chem 1-L Plastic	HNO_3 to pH <2	6 Months
	Total Organic Carbon (TOC)	V 60-mL Glass VOA or 60-mL plastic	Cool, ≤6˚C HCl to pH <2	28 Days
	Biochemical Oxygen Demand Turbidity	A 1-L Plastic	Cool, ≤6˚C	48 Hours
	Total Dissolved Solids Total Suspended Solids	A 1-L Plastic	Cool, ≤6°C	7 Days
	Specific Conductance	A 1-L Plastic	Cool, ≤6˚C	28 Days
	Dissolved Oxygen pH Temperature	A 1-L Plastic	None	Analyze Immediately (Field Measurement)

Ambient Monitoring – Organics Sample Schedule

Ambient Monitoring – Organics Water Quality Parameter, Bottle, and Preservation Schedule				
Frequency	**Water Quality Parameter**	**Bottle Type**	**Preservation**	**Maximum Holding Time**
Willamette Basin – Six (6) events/year @ two (2) sites[3]	Dioxin Method 1613 2,3,7,8-TCDD	1-L Amber	Cool, ≤6˚C	7 days until extraction, 40 days after extraction
Amazon Subbasin – Six (6) events/year @ two (2) sites[3]	Chlorinated Hydrocarbons Method 624 Dichloroethylene[1,2] Trichlororethylene[1] Tetrachloroethylene[1,2]	Glass VOA	Cool, ≤6˚C HCl to pH <2	14 days

[1]Amazon Creek [2]A3 Channel

[3]Refer to Stormwater Monitoring Plan for specific organics sampling sites for the Willamette Basin and Amazon Sub-basin water bodies.

References

National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Discharge Permit 101244

Sample Preservation and Holding Times, Table 5-1

Ambient Monitoring Site Sampling Procedure

CITY OF EUGENE – WASTEWATER DIVISION
Procedure

Subject:	Ambient Monitoring Site Sampling Procedure	**Document No:**	SAMP - 1207
Reviewed By:	Mike Lillie	**Date Prepared:**	5/4/05
Approved By:	Ron Morrow	**Date Approved:**	4/27/11

Purpose

The purpose of this procedure is to describe how to collect representative water samples from surface water monitoring sites using "clean techniques" for analysis of water quality constituents. Additional prep time is required before sampling to set up all necessary equipment. Arrangements are necessary with the City of Springfield Fire Department for Willamette River transport.

References

Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels, EPA, 1995.

Eugene Wastewater Division Quality Assurance Plan

Sample Quality Assurance / Quality Control Procedure

Ambient Monitoring Sample Schedule

Field Measurement of Conductivity Procedure

Field Measurement of pH Procedure

Field Measurement of Water Temperature Procedure

Field Measurement of Dissolved Oxygen

Chain-of-Custody Procedures

Bottle/Sampler Jug Cleaning Procedure

Sample Bag Preparation – Ambient Monitoring Program

Decontamination of Field Equipment Procedure

Operations and Maintenance manuals for field sampling equipment

Safety Requirements

Prior to performing this procedure the Boat Safety control measures must be reviewed and understood.

CAUTION: If handled inappropriately, acids can cause severe chemical burns to skin and any material that is not chemical resistant; care must be exercised when working with these chemicals. Protective eye-ware, gloves and clothing must be worn when working with all acids. Prior to performing this procedure the MSDS sheets for each type of acid must be reviewed and understood. The following PPE are required:

- Safety Glasses
- Ear Protection
- Latex / Rubber Gloves
- Personal Flotation Device
- Rubber Boots or Waders

Sampling Equipment

1 – HCl-rinsed 10-L jug per sample site plus each QA/QC sample (see Bottle/Sample Jug Cleaning Procedure) 1 – HCl rinsed 20-L jug per sample site plus each QA/QC sample (see Bottle/Sample Jug Cleaning Procedure) Sample Bag for each site (see Sample Bag Preparation – Ambient Monitoring Program) 2 - VOA vials (Provided by vender) 2 – Dioxin bottles (Provided by vender) 2 – Peristaltic pumps	pH Meter DO Meter Conductivity Meter Air thermometer Chain-of-Custody (COC) forms Field Comments Notebook Field Data Sheets Sample Labels Plastic Sheeting Tape 3 – 100-quart coolers Ice

Special Sampling Precautions

Sampling personnel must cover all metal objects on their person that may lead to sample contamination. Do not touch the sample bottles or tubing with exposed hands or contaminated gloves. Take care to ensure the end of the sample tubing does not come in contact with any contaminated surface.

Sampling Sites – Amazon Basin

- Amazon Creek – Site M2 - 29th Avenue
- Willow Creek – 450ft north of 18th Avenue
- Amazon Creek at Railroad Crossing
- Amazon Diversion Channel at Royal Avenue
- A3 Channel at Terry Street
- Amazon Creek at Royal Avenue

Sampling Sites – Willamette River

- Upstream of Urban Growth Boundary (RM 186.9)
- At Knickerbocker Bridge (RM 183.9)
- At Owosso Bridge (RM 178.6)
- Downstream of Beltline Bridge (RM 176.8)

Clean Techniques Procedure Sections

A. **Sampling Preparation (Day Before Sampling)**

B. **Instrument Calibration & Field Measurements (Day of Sampling)**

C. **Ambient Sampling Procedures (Non-QA/QC Sites)**

D. **Ambient Sampling Procedure for QA/QC Duplicate Sites**

E. **Collection of Field Equipment Blank**

F. **End of Day**

G. **Sample Delivery**

Procedure

A. Sampling Preparation (Day Before Sampling)

1. Review the sampling procedure and referenced procedures.

2. Review the Sample Quality Assurance / Quality Control Procedure. Determine which surface water monitoring site(s) will be used to meet the requirements of the QA/QC procedure.

3. Prepare Bottle Bags for each sampling site and as per QA/QC requirements

4. Gather supplies needed for the sampling project.

5. Inspect equipment and charge peristaltic pumps for 24 hrs.

6. Obtain COC and data sheets from Word Template.

B. Instrument Calibration & Field Measurements (Day of Sampling)

1. Calibrate the field meters as described in Field Measurement of Conductivity Procedure, Field Measurement of pH Procedure, Field Measurement of Water Temperature Procedure, and Field Measurement of Dissolved Oxygen. Instruments should be calibrated prior to mobilization to ensure instrumentation is in proper working order. Field calibration verification using appropriate standards ensures the instrument has retained its calibration.

2. Upon arrival at sample site, ready all necessary equipment:
   - Sample jug
   - Bottle bag
   - DO, pH, conductivity, and air temperature meters
   - Cole Palmer pump
   - COC and Field Notebook

3. Deploy pH, temperature, conductivity, DO, and air temperature meters and take readings. Record readings on field data sheet.

4. Surface water samples are collected following the schedule specified in Ambient Monitoring Sample Schedule.

C. Ambient Sampling Procedures (Non-QA/QC Sites)

1. Fill the clean 10-L jug with sample and place lid on jug.

2. DH removes the gallon bag with the sample bottle,.

3. DH opens outer bag of Ambient Site bottle.

4. CH opens inner bag, removes bottle, places it on designated clean area., then seals inner bag. .

5. DH seals the gallon bag and places it back in the sack.

6. CH and DH re-glove.
7. DH removes the bagged peristaltic pump tubing from sack and opens outer bag.
8. CH removes and opens inner bag; carefully removes tubing, and installs it on the peristaltic pump. .
9. CH removes the lid from the sample carboy and inserts the suction end of the tubing into the carboy.
10. DH lifts the sample carboy and swirls the sample while CH holds the tubing in place.
11. DH operates peristaltic pump while CH manipulates tubing to pump about 200 mL of sample into bag to flush tubing. CH re-gloves.
12. CH removes the lid to the Sample bottle and fills it with sample then quickly recaps. CH re-gloves.
13. DH retrieves sample bag from sack and opens large outer bag.
14. CH opens inner bag, places Ambient Site sample in bag and reseals. CH re-gloves.
15. DH seals large outer bag and places bagged Ambient Site sample in sack. .
16. Pour off all other sample bottles and tightly seal the cap. Make sure bottle numbers correspond with sampling locations and COC sheet.
17. Bag the sample bottles and place the bag in a sack with adequate ice to maintain a temperature of 4 ˚C.
18. Clean field equipment as described in the Decontamination of Field Equipment Procedure, before proceeding to the next sampling location.

D. Ambient Sampling Procedure for QA/QC Duplicate Sites

1. Take duplicate readings from meter and record reading on data sheets
2. Fill the clean 20-L jug with sample and place lid on jug.
3. DH removes the gallon bag with the sample bottle,
4. DH opens outer bag of Ambient Site bottle.
5. CH opens inner bag, removes bottle, places it on designated clean area, then seals inner bag.
6. DH seals the gallon bag and places it back in the sack.
7. CH and DH re-glove.
8. DH removes the gallon bag with the Ambient Site Duplicate bottle, and opens bag.
9. DH opens outer bag of Ambient Site Duplicate bottle.
10. CH opens inner bag, removes bottle, places it on designated clean area, then seals inner bag. .
11. DH seals the gallon bag and places it back in the sack.
12. CH and DH re-glove.

13. DH removes the bagged peristaltic pump tubing and opens outer bag.

14. CH removes and opens inner bag; carefully removes tubing, and installs it on the peristaltic pump. DH.

15. CH removes the lid from the sample carboy and inserts the suction end of the tubing into the carboy.

16. DH lifts the sample carboy and swirls the sample while CH holds the tubing in place.

17. DH operates peristaltic pump while CH manipulates tubing to pump with ~200 mL of sample into bag to flush tubing. CH re-gloves.

18. CH removes the lid to the Total Sample bottle and fills it with sample then quickly recaps. CH re-gloves.

19. CH removes the lid to the Ambient Site Total Duplicate bottle and fills it with sample then quickly recaps. DH and CH re-gloves.

20. DH retrieves sample bag from sack and opens large outer bag.

21. CH opens inner bag, places Ambient Site Total sample in bag and reseals. CH re-gloves.

22. DH seals large outer bag and places bagged Ambient Site Total sample in sack. DH re-gloves.

23. DH retrieves sample bag from sack and opens large outer bag.

24. CH opens inner bag, places Ambient Site Total Duplicate sample in bag and reseals. CH re-gloves.

25. DH seals large outer bag and places bagged Ambient Site Total Duplicate sample in sack. DH re-gloves.

26. Pour off all other sample bottles and tightly seal the cap. Make sure bottle numbers correspond with sampling locations and COC sheet.

27. Bag the sample bottles and place the bag in a sack with adequate ice to maintain a temperature of 4 ˚C.

28. Clean field equipment as described in the Decontamination of Field Equipment Procedure, before proceeding to the next sampling location.

E. Collection of Field Equipment Blank

Note: Use the Contract Lab-supplied Blank Water (2 – 1-L bottles) for the clean metals samples, and use the 10-L DI water jug to process the rest of the Field Equipment Blank samples. After all samples are poured off, record meter readings from the DI water in the jug.

1. DH removes the gallon bag with the sample bottle,.

2. DH opens outer bag of Ambient Site bottle.

3. CH opens inner bag, removes bottle, places it on designated clean area on sample area, then seals inner bag. .

4. DH seals the gallon bag and places it back in the sack.

5. DH opens outer bag of Equipment Blank bottle.

6. CH opens inner bag, removes bottle, places it on designated clean area, then seals inner bag.

7. DH seals the gallon bag and places it back in the sack.

8. CH loosens Equipment Blank bottle cap.

9. Retrieve the 10-L DI water jug.

10. Pour off all other sample bottles from the 10-L DI jug and tightly seal the caps. Make sure bottle numbers correspond with sampling locations and COC sheet.

11. Place meters in the liquid left in the DI jug.

12. Bag the sample bottles and place the bag in a sack with adequate ice to maintain a temperature of 4 ˚C.

F. End of Day

1. Verify performance of pH and conductivity meters by checking pH and conductivity buffers and record this information on the Field Data Sheets.

2. Clean and properly store all sampling equipment. Reorder supplies and repair equipment as necessary.

G. Sample Delivery

1. Samples must be handled and processed following the Chain-of-Custody Procedure.

2. Complete the chain-of-custody sheet as described in the Chain-of-Custody Procedure.

3. Submit samples to WPCF laboratory personnel assigned for log-in.

   3.1 Relinquish samples directly to laboratory personnel, signing and dating the COC.

   3.2 Samples that cannot be relinquished to the laboratory on the day sampled, e.g. sampling late, weekend sampling, etc., must be affixed with tamper indicating-sealing tape and stored in the Industrial Source Control refrigerated storage unit at 4 °C.

   3.3 It is the responsibility of the sampler to ensure stored samples are properly relinquished to laboratory personnel as soon as possible.

CITY OF EUGENE – WASTEWATER DIVISION

Procedure

Subject:	Field Measurement of Dissolved Oxygen	**Document No:**	SAMP-1208
Last Reviewed By:	Tom Mendes	**Original Date:**	4/15/05
Approved By:	Tom Mendes	**Date Approved:**	6/29/05

Purpose

This procedure describes instrument calibration and measurement of field samples for Dissolved Oxygen.

Scope

This procedure can be used to measure dissolved oxygen of surface and ground water samples.

References

Eugene Wastewater Division Quality Assurance Plan
Sample Quality Assurance / Quality Control Procedure
Operations and Maintenance manuals for testing equipment

Equipment & Supplies

- Portable field dissolved oxygen probe and meter.
- Deionized water and squirt bottle
- Appropriate Field Data Sheet(s)

Procedure

NOTE: Instrument calibration must be performed daily just before use.

A. Calibration of Field Dissolved Oxygen Meter

1. Review and follow manufacturer's instructions for instrument operation and calibration.
2. Check probe membrane. Be certain that membrane is free of air bubbles.
3. Make sure sponge inside probe housing is damp.
4. Turn meter on.
5. Observe the dissolved oxygen readout. When the dissolved oxygen values have stabilized adjust the instrument as necessary.
6. After the instrument has been calibrated record the dissolved oxygen reading on the Field Data Sheet.

B. Sample DO Field Measurement

1. Calibrate the field meter as described above.
2. Place probe in sufficient sample to point of emersion.

3. Gently swirl the probe while monitoring the dissolved oxygen readings, taking care to ensure probe remains fully immersed in the sample. The dissolved oxygen readings should stabilize after a minute or two.

4. Record the dissolved oxygen value to the nearest 0.1 mg/L Dissolved Oxygen on the Field Data Sheet.

5. Discard the sample and rinse the probe with distilled water between samples.

6. Refer to the QA/QC plan for measurement of Field Sample Duplicates.

C. Quality Assurance / Reporting

1. A Field Sample Duplicate is simply obtained by pouring two aliquots of the sample and measuring the DO of both in an expedient manner to minimize drift. Field Sample Duplicates are collected following the Sample Quality Assurance / Quality Control Procedure. Record the Field Sample Duplicate measurement on the Field Data Sheet.

2. Rough transport conditions may result in maladjustment of field equipment calibration. Check the DO of at least one reference on a frequent basis to ensure accuracy of sample DO values.

3. Method Reporting Limit: NA.

4. Data Quality Objectives Precision (RPD) 15%, Accuracy (% Recovery) 85% - 115%.

5. QC Frequency:

   a. Duplicates: Every 10 samples or batch.
   b. Internal Calibration Check Standard: Once a day or additional as needed.

CITY OF EUGENE – WASTEWATER DIVISION
Procedure

Subject:	Bottle/Sample Jug Cleaning	**Document No:**	SAMP - 1209
Last Reviewed By:	Marc Furney	**Date Prepared:**	3/31/05
Approved By:	Ron Morrow	**Date Approved:**	5/7/10

Purpose

This procedure describes how to clean bottles or sample jugs for use in environmental sampling. This is a very critical step in the sampling process; incorrect or poor cleaning techniques may result in invalid laboratory results. This procedure incorporates bottle/jug cleaning for, plant, industrial, stormwater/ambient and clean techniques sampling.

References

Eugene Wastewater Division Quality Assurance Plan

Personal Protective Equipment

CAUTION: If handled inappropriately, acids can cause severe chemical burns to skin and any material that is not chemical resistant; care must be exercised when working with these chemicals. Protective eye-ware, gloves and clothing must be worn when working with all acids. Bottles containing preservative must be labeled with clear indication of the type of preservative. Prior to performing this procedure the MSDS sheets for each type of acid must be reviewed and understood. The following PPE are required:

- Safety Glasses or Face Shield
- Latex / Rubber Gloves
- Lab coat, apron or other protective outwear

Equipment and Supplies

- 10% HNO_3 (10:1) Nitric Acid for use in industrial bottle/jug cleaning
- 50% HCl (1:1) Hydrochloric Acid for use in stormwater/ambient bottle/jug cleaning
- 2% HNO_3 (50:1) Nitric Acid for use in clean techniques bottle/jug cleaning
- Laboratory-grade soap
- Brushes
- DI Water
- Drying rack

Procedure for Industrial High-Density Polyethylene Bottle/Jug Cleaning

1. Empty sample container contents, if any. Rinse bottles/jugs of residue with tap water.

2. Add predetermined amount of lab soap to bottle/jug and fill with adequate amount of water for cleaning.

3. Using an appropriately sized brush, thoroughly scrub inside of bottle/jug. Scrub lid with soap solution as well.

4. Use a stiff brush to scrub outside of bottle/jug.

5. Thoroughly rinse bottle/jug and lid clean of any soapy residue with tap water at least three times and shake out any excess water.

6. Pour at least 250 mL of 10% Nitric Acid into jug. Place lid on jug and swirl around so that the acid comes into contact with all bottle surfaces.

   NOTE: Be very careful not shake too vigorously as the lid may leak.

7. Pour spent acid into a sink that has a drain equipped with an acid neutralization device.

8. Thoroughly rinse bottle/jug and lid with Deionized water (DI) at least three times.

9. Place inverted on a drying rack.

10. After allowing for adequate drying time, put lid on bottle/jug and place on storage shelf.

Procedure for 3.7-L (1-Gallon) Glass Bottle/Jug or Pickle Bottle/Jug Cleaning

1. Empty sample container contents, if any. Rinse bottles/jugs of residue with tap water.

2. Glass containers can be either cleaned in a dishwasher or hand washed.

   2.1. Dishwasher:
   - 2.1.1. Place glass containers securely in dishwasher being careful to avoid breakage during wash cycle.
   - 2.1.2. Add appropriate amount of lab soap to dishwasher and select appropriate wash cycle.

   2.2. Hand washed:
   - 2.2.1. Add appropriate amount of lab soap to each bottle/jug. Scrub thoroughly with brush inside and out.
   - 2.2.2. Thoroughly rinse at least three times with tap water.

3. Thoroughly rinse bottle/jugs and lids with DI water at least three times.

4. Place inverted on a drying rack.

5. After adequate drying time, place each bottle/jug on storage shelf.

   NOTE: Because NaOH preservative is used in these bottles, a layer of residue can build up on the bottom. This can be resolved by squirting a little 10% Nitric Acid down the sides. Make sure this is done before cleaning. If not, repeat cleaning procedure.

Procedure for Stormwater/Ambient High-Density Polyethylene Bottle/Jug Cleaning

1. Empty sample container contents, if any. Rinse bottles/jugs of residue with tap water.
2. Add predetermined amount of lab soap to bottle/jug and fill with adequate amount of water for cleaning.
3. Using an appropriately sized brush, thoroughly scrub inside of bottle/jug. Scrub lid with soap solution as well.
4. Use a stiff brush to scrub outside of bottle/jug.
5. Thoroughly rinse bottle/jug and lid clean of any soapy residue with tap water at least three times and shake out any excess water.
6. Pour at least 250 mL of 50% Hydrochloric Acid to jug. Place lid on jug and swirl around so that the acid comes into contact with all surfaces of bottle.

   NOTE: Be very careful not shake too vigorously as the lid may leak.
7. Pour spent acid back into storage bottle for later use.
8. Thoroughly rinse bottle/jug and lid with deionized water (DI) at least three times.
9. Place inverted on a drying rack.
10. After allowing for adequate drying time, put lid on bottle/jug and place on storage shelf.

Procedure for Clean Techniques Teflon Carboy/Bottle/Jug Cleaning

SPECIAL PRECAUTIONS: All metal objects on their person must be covered. During cleaning do not expose the jug, lid or bags to any metal objects. Do not use a metal drying rack. Avoid any metal contamination of this equipment.

1. Empty sample container contents, if any, and thoroughly rinse carboy at least 3 times with hot water.
2. Add at least three squirts of laboratory-grade detergent solution to the sample container, fill with hot water and let stand for at least 1 hour. If carboy seems discolored and/or excessively dirty, clean with laboratory-grade detergent and hot water using a scrub brush before soaking it in a fresh solution of laboratory-grade detergent (hot water and bleach may be used if necessary). After soaking, discard laboratory-grade detergent solution and rinse thoroughly by completely filling at least 4 times with tap water.
3. Fill the clean carboy with 2% Nitric Acid and soak for at least 24 hours.
4. When necessary, pour the 2% Nitric Acid solution from one carboy into another clean carboy

   Note: Only transfer 2% Nitric Acid between carboys a few times before dumping the old solution and using fresh nitric acid solution.
5. Thoroughly rinse with DI at least 4 times.
6. Invert on a drying rack and let drip dry.
7. With squirt bottle, rinse the carboy lid with 2% Nitric Acid.
8. Rinse lid(s) with DI at least 4 times.

9. Place lid(s) dry on drying rack.
10. After adequate drying time, double-bag the carboy.
11. Place lid(s) in a re-sealable plastic bag.
12. Place carboy and lid(s) on storage shelf.

CITY OF EUGENE – WASTEWATER DIVISION
Work Instruction

Subject:	Sample Preparation for Ambient Monitoring Program – Clean Techniques Sampling	**Document No:**	SAMP - 1210
Reviewed By:	Marc Furney	**Date Prepared:**	4/6/05
Approved By:	Ron Morrow	**Date Approved:**	4/27/11

Purpose

This work instruction describes the steps of bag preparation for Clean Techniques Sampling Programs.

References

National Pollutant Discharge Elimination System (NPDES) Waste Discharge Permit 101244
Sample Preservation and Holding Times, Table 5-1
Ambient Monitoring Sampling Procedure

Safety Requirements

CAUTION: If handled inappropriately, acids and bases can cause severe chemical burns to skin and any material that is not chemical resistant; care must be exercised when working with these chemicals. Protective eye-ware, gloves and clothing must be worn when working with all acids. Prior to performing this procedure the MSDS sheets for each type of acid must be reviewed and understood. The following PPE are required:

Personal Protective Equipment

- Latex / Rubber Gloves
- Safety goggles
- Lab coat or protective outwear

Supplies

Re-sealable Bags I-Chem bottles A bottles C bottles K bottles OP bottles TOC bottles	Dioxin sample bottles VOA vials (chlorinated hydrocarbons) Sample Bags Coolers 2-L ultra-clean Teflon® bottles 6-ft lengths of tubing

Special Precautions

Technicians must cover all metal objects on their person that may be exposed. Do not touch any ultra-clean supplies with dirty gloves.

Instructions for Packing Re-sealable Bags

1. Get re-sealable bags, ultra-clean supplies, and labels in order.

2. For each site prepare a separate sample bag for each of the following:
   a. Metals
      - 2 L Teflon® bottle ultra-cleaned for trace metals
      - Sample Label
   b. 6-ft length tubing for Orthophosphate
   c. In-Line filter units with ultra-cleaned tubing attached for trace metals

   NOTE: Duplicate/ Blank Sample Locations get 2:ultra-clean Teflon® bottles One bottle contains the laboratory blank water, and the other bottle is empty.

3. Seal bag and put in sample bag.

4. Pack one bag containing items specified in Step 2 for Field Backup.

Instructions for Packing for Ambient Sampling

- Get supplies in order
  a. Double bagged 2 L Teflon bottles labeled with bottle number
     - 2 – A bottles per site labeled with Bottle Number
     - 2 – K bottles per site labeled with Bottle Number
     - 2 - Dioxin bottles
     - 2 – VOA (chlorinated hydrocarbons)
     - 1 – OP bottle per site labeled with Bottle Number.
     - 1 – TOC bottle per site labeled with Bottle Number.
     - 1 – C bottle per site labeled with Bottle Number, and
     - 1 – I-Chem bottle per site labeled with Bottle Number
     - Laboratory Blank Water
     - Bag of Field Backup Supplies
     - Coolers
     - Trip Blank (one per sample day)

- Each bag is labeled with the sample site. Pack each bag using the bottle schedule below.

- Place one length of tubing in each bag.

- Pack laboratory ultra-clean Blank Water and Trip Blank in cooler.

- Cinch each bag and place in respective coolers (usually labeled on top).

- VOA and Dioxin bottles are in glass containers and should not be bagged. Empty VOA and Dioxin containers are shipped to us by the vender, and returned in the cooler provided.

- Refer to the Stormwater Monitoring Plan for VOA and Dioxin for sampling specifics.

Ambient Bottle Schedule

Site Location	A	K	C	OP	TOC	I-Chem	1-Gallon Bag (2-L Teflon*)
	Bottle Number						Bag ID
Willamette River Sites:							
Downstream of Beltline Bridge	13 14	13 14	7	7	7	7	WDS Metals
Owosso Bridge	11 12	11 12	6	6	6	6	Owosso Metals
Knickerbocker Bridge	9 10	9 10	5	5	5	5	Knickerbocker Metals
Upstream Urban Growth Boundary	19 20	19 20	10	10	10	10	Upstream UGB Metals
River Blank ( )	17 18	17 18	9	9	9	9	River Blank Metals
Duplicate ( )	15 16	15 16	8	8	8	8	Duplicate Metals
Delta Pond	29 30	29 30	15	15	15	15	Delta Ponds Metals
Amazon Basin Sites:							
M2 (Amazon Creek)	1 2	1 2	1	1	1	1	M2 Metals
Amazon Diversion Channel @ Royal Avenue	3 4	3 4	2	2	2	2	"A" Channel @ Royal Metals
Amazon Creek @ Royal Avenue	5 6	5 6	3	3	3	3	Amazon @ Royal Metals
Willow Creek	7 8	7 8	4	4	4	4	Willow Creek Metals
A3 Channel @ Terry Street	25 26	25 26	13	13	13	13	A Chan @ Terry St Metals
Amazon Creek @ Railroad Crossing	27 28	27 28	14	14	14	14	Amazon @ RR Metals
Land Blank ( )	23 24	23 24	12	12	12	12	Land Blank Metals
Duplicate ( )	21 22	21 22	11	11	11	11	Duplicate Metals

* 2-L Teflon® ultra-clean bottle

CITY OF EUGENE – WASTEWATER DIVISION
Procedure

Subject:	Composite Sampling	**Document No:**	SAMP - 1212
Reviewed By:	Ron Morrow	**Original Date:**	6/3/05
Approved By:	Ron Morrow	**Date Approved:**	4/27/11

Purpose

This procedure describes how to collect a composite sample consisting of consecutive samples from a single sample point using automated equipment or by combining several grab samples taken from a single sample point. Composite sampling can be performed for most parameters (except pH, Oil and Grease, and some organic compounds). Some parameters collected using the auto-sampler must be pre-preserved, that is, the sample container must contain preservative.

CAUTION: Containers with sample preservative might be incompatible in a single auto-sampler. Consult the Sampling Team Supervisor or Laboratory Supervisor for appropriate guidelines.

References

EPA Industrial User Inspection and Sampling Manual for POTW's, EPA-831-B-94-001, April 1994
Eugene/Springfield Pretreatment Program Procedures Manual, Chapter 2
Applicable Sampling Schedule for the Project Site
Eugene Wastewater Division Quality Assurance Plan
Sample Quality Assurance / Quality Control Procedure
Sample Preservation & Holding Times; Table 5-1
Chain-of-Custody Procedures
Sampler Cleaning Procedure
Bottle/Sample Jug Cleaning Procedure
Sampler Manufacturer's Operating Manual

Safety Requirements

CAUTION: If handled inappropriately, acids and bases can cause severe chemical burns to skin and any material that is not chemical resistant; care must be exercised when working with these chemicals. Protective eye-ware, gloves and clothing must be worn when working with all acids. Prior to performing this procedure the MSDS sheets for each type of acid must be reviewed and understood. The following PPE are required:

Personal Protective Equipment

- Safety Glasses
- Ansi-Code Z41 Steel-Toe Boots
- Latex / Rubber Gloves
- Lab coat, apron or other protective outerwear

Equipment and Supplies

1 – Auto-sampler; cleaned with attached suction line and strainer 1 – Ni-Cad battery, charged 1 – 10-L or 20-L sample jug (or 3.7-L glass jars if using auto-sampler) 1 – Large laboratory flask Sample bottles (as per appropriate schedule) Sample preservatives Plastic storage bags for sample jug lids	pH indicator strips Indelible marker Ice for Auto-sampler Ice Cooler with Ice Field Notebook Chain-of-Custody (COC) Forms

Composite Sampling Using Auto-Sampler

1. Attach Ni-Cad or deep cycle battery to automatic sampler.

2. Program the auto-sampler to take time or flow-based samples as appropriate.

3. Insert the sample jug into the auto-sampler and place ice around the container. Make sure ice does not skew the position of the container as this can cause failure of the auto-sampler.

   Note: Some analytical parameters require that the sample jug contain the preservative. Review the appropriate sampling schedule to ensure the proper containers and preservatives are used.

4. Remove the sample jug lid and place in clean, sealable plastic bag for storage.

   Note: The lid must remain on the container during placement of ice in the auto-sampler to prevent sample contamination until the sampler head is installed.

5. Install the sampler head and run the auto-sampler program.

6. When the sampling program is complete:

7. Review sampling program.

   7.1. Remove the sample jug, replace the lid, and mix the liquid by shaking or swirling.

   7.2. Check sample pH prior to pour-off to ensure proper pH if pre-preservation was used.

   7.3. Fill appropriate labeled laboratory sample containers with the mixed sample.

   7.4. Preserve each sample following the procedures specified in the Sample Preservation & Holding Times Schedule.

8. Cap the sample containers and place in a cooler containing ice for transport to the laboratory.

9. Record sample event in Field Notebook, noting date, time, facility and sample point number.

10. Relinquish samples as described below.

Composite Sampling by Combining Several Grab Samples

1. Remove the sample container lid and collect the grab sample.

2. Tips for collecting grab samples:

   2.1. Avoid collecting large particles that could contaminate or skew analytical results.

2.2. Collect sample facing upstream to avoid contamination.

2.3. If possible, fully submerge the sample container when collecting the grab sample.

2.4. Avoid skimming the surface or dragging the bottom at the sample location.

2.5. Avoid disturbing sediment/debris while collecting the grab sample.

2.6. Collect sufficient sample volume to fill sample containers.

3. Record the sample point number on the bottles using an indelible marker.

4. Record sample event in Field Notebook, noting date, time, location and sample point number.

5. Place sample container in the sample location and fill the container. Or if only collecting one bottle, fill bottle ½ full.

6. Add the appropriate sample preservative, cap and invert the container several times to mix.

7. For CNT, check for sulfides and chlorides prior to preserving.

8. Check the sample pH to make sure it is within the range specified in sample schedule.

9. Place the grab sample containers in a cooler containing ice for transport to the laboratory.

10. Laboratory composite of grab samples:

10.1. Obtain a clean flask large enough to hold the total volume of all grab samples.

10.2. Transfer contents of all grab sample containers to the flask and swirl until well mixed.

10.3. Fill appropriate labeled laboratory sample containers with the mixed sample.

10.4. Preserve each sample following the procedures specified in the Sample Preservation & Holding Times Schedule.

11. Relinquish samples as described below.

Relinquish Sample

1. Samples must be handled and processed following the Chain-of-Custody Procedure.

2. Complete the chain-of-custody sheet as described in the Chain-of-Custody Procedure.

3. Submit samples to WPCF laboratory personnel assigned for log-in.

3.1. Relinquish samples directly to laboratory personnel, signing and dating the COC.

3.2. Samples that cannot be relinquished to the laboratory on the day sampled, e.g. sampling late, weekend sampling, etc., must be affixed with tamper indicating-sealing tape and stored in the Industrial Source Control refrigerated storage unit at $\leq$6 °C.

3.3. It is the responsibility of the sampler to ensure stored samples are properly relinquished to laboratory personnel as soon as possible.

CITY OF EUGENE – WASTEWATER DIVISION
Procedure

Subject:	Grab Sampling Procedure	**Document No:**	SAMP - 1214
Last Reviewed By:	Mike Lillie	**Date Prepared:**	4/5/05
Approved By:	Ron Morrow	**Date Approved:**	4/27/11

Introduction

Grab samples provide a measurement of pollutant concentrations in the wastewater at a particular point in time from a single sample point. If multiple grab samples are collected from the same sample point, contact sampling supervisor for sample frequency and volume.

References

EPA Industrial User Inspection and Sampling Manual for POTW's, EPA-831-B-94-001, April 1994

Eugene/Springfield Pretreatment Program Procedures Manual, Chapter 2

Industrial Pretreatment Procedures

Eugene Wastewater Division Quality Assurance Plan

Sample Preservation and Holding Times; Table 5-1

Chain-of-Custody Form Instructions Procedure

Sample Quality Assurance / Quality Control Procedure

Personal Protective Equipment

- Safety Glasses
- Ansi Steel-Toe Boots
- Ear Protection
- Latex / Rubber Gloves

Safety Requirements

Acids/Bases are dangerous materials and care must be exercised when working with these substance (see all MSDS sheets). Protective eye-ware, gloves, and clothing, must be worn when working with any laboratory chemicals.

Equipment and Supplies

- Appropriate sample bottles
- Appropriate preservative

- Appropriate Chain-of Custody form (COC)
- Indelible marker
- Cooler and ice (two 7-lb bags)
- Field Comments Notebook
- pH Strips

Sampling Procedure

1. Remove lid from sample bottle

2. If sample bottle is not pre-preserved, then the bottle may be pre-rinsed with wastewater effluent prior to collecting the sample, never pre rinse samples for C bottles or Oil and Grease bottles.

3. Collect Sample. Samples should be collected with the following points in mind:

   3.1 Avoid collecting large particles which could contaminate or skew analytical results.

   3.2 Collect sample facing upstream to avoid contamination.

   3.3 Ensure sample jar is fully submerged when collecting sample. Avoid skimming the surface or dragging the bottom of the wastewater/ stormwater stream, pipe or channel.

   3.4 If business hours of operation or batch discharging only allow a single grab event for the day, obtain adequate sample volume for laboratory analysis.

4. Add the appropriate preservative and cap. Invert the bottle several times to mix and check the pH to make sure it is within the range specified in Sample Preservation and Holding Times; Table 5-1.

5. Record all information on Chain of Custody

6. Place sample in an iced cooler for transport back to lab.

7. Record sample event in Field Notebook.

Relinquish Sample

1. Samples must be handled and processed following the Chain-of-Custody Procedure.

2. Complete the chain-of-custody sheet as described in the Chain-of-Custody Procedure.

3. Submit samples to WPCF laboratory personnel assigned for log-in.

   3.1. Relinquish samples directly to laboratory personnel, signing and dating the COC.

   3.2. Samples that cannot be relinquished to the laboratory on the day sampled, e.g. sampling late, weekend sampling, etc., must be affixed with tamper indicating-sealing tape and stored in the Industrial Source Control refrigerated storage unit at $\leq$6 °C.

   3.3. It is the responsibility of the sampler to ensure stored samples are properly relinquished to laboratory personnel as soon as possible.

CITY OF EUGENE – WASTEWATER DIVISION
Procedure

Subject:	Sampler Cleaning	**Document No:**	SAMP-1216
Reviewed By:	Marc Furney	**Date Prepared:**	6/3/10
Approved By:	Ron Morrow	**Date Approved:**	6/4/10

Purpose

This procedure provides details of cleaning samplers in preparation for use in industrial sampling, clean techniques sampling, and plant sampling

References

Eugene Wastewater Division Quality Assurance Plan
Operations and Maintenance Manual for Portable Auto-samplers
Operations and Maintenance Manual for Stationary Samplers

Safety Requirements

CAUTION: If handled inappropriately, acids can cause severe chemical burns to skin and any material that is not chemical resistant; care must be exercised when working with these chemicals. Protective eye-ware, gloves and clothing must be worn when working with all acids. Prior to performing this procedure the MSDS sheets for each type of acid must be reviewed and understood. The following PPE are required:

Personal Protective Equipment

- Safety Glasses
- Ansi-Code Z41 Steel-Toe Boots
- Latex / Rubber Gloves
- Lab coat, apron or other protective outerwear

Equipment & Supplies

- One dedicated cleaning container filled with laboratory-grade soap solution
- One dedicated cleaning container filled with tap water
- One dedicated cleaning container filled with Deionized water (DI water)
- 10% HNO_3 (10:1) Nitric acid
- Lab towels
- Brushes
- Any necessary replacement parts
- Cleaning Log Sheet and/or Notebook

Special Precautions

When performing any operations on the sampler head used for Clean Techniques, technicians must cover all metal objects on their person that may be exposed. Do not touch any end of tubing with anything that may contaminate it.

Sampler Cleaning Procedure Sections

A. General Sampler Cleaning Procedure for Portable Auto-sampler

B. Sampler Cleaning Procedure for Dedicated Clean Techniques Portable Auto-sampler

C. Stationary Auto-sampler Cleaning Procedure

General Sampler Cleaning Procedure for Portable Auto-sampler

1. Clean off the outside of the sampler with a hose and/or wet towel.
2. Dismantle the sampler by removing the cover and bottom chamber.
3. Check the desiccant gauge. Replace desiccant if necessary.
4. Check sample tubing and strainer for any abrasions, bacteria, general wear. Replace if necessary.
5. Connect battery to sampler.
6. Turn on and check the count for the pump tube alarm. Replace pump tubing if necessary.
   NOTE: Replace the discharge tubing on the underside of the head when replacing the pump tubing.
7. Place the strainer in the soapy water container and pump at least 5 L of water.
8. Wipe off any soap from the strainer and sample tube, and insert in tap water container. Pump at least 5 L of water.
9. Insert only the tip of the strainer into the DI container and pump at least 5 L of water.
10. When finished pumping, try to evacuate all excess water from the tubing.
11. Turn sampler off and remove battery.
12. Wipe down the sampler components and reassemble.
13. Record in the log any pertinent information.
14. Put sampler in its designated storage.

Sampler Cleaning Procedure for Dedicated Clean Techniques Portable Auto-sampler

1. Soak dirty Teflon tubing and Teflon coated strainer in a clean, dedicated container containing hot water and laboratory grade detergent solution (5%) for at least one hour. Make sure tubing is completely filled (no air bubbles) with cleaning solution.
2. Remove tubing from laboratory grade detergent solution and drain completely (connect strainer to tubing at this point, if not connected already).
3. Rinse laboratory grade detergent solution from outside of tubing with tap water and then DI water, and drain as much solution from the tubing while rolling it in a coil.
4. Bag the tubing in a clear plastic sack.
5. Connect tubing to water source to flush inside of tubing with tap water for about 10 minutes.
6. Connect a battery to the dedicated ISCO sampler.

7. Connect tubing to dedicated auto-sampler pump and place both the suction strainer and the discharge end of the tubing in a carboy containing 10% nitric acid.

8. Choose the Manual Function→Pump Forward to circulate the acid solution through the tubing for at least 15 minutes. Remove the suction end of the tubing from the acid while continuing to pump out as much of the acid as possible.

9. Fill a clean acid washed dedicated DI carboy with DI water. Insert suction end of tubing (strainer) in the DI water and the discharge end of tubing to an open sink.

10. Choose the Manual Function→Pump Forward to circulate the DI water through the tubing for 15 minutes refilling the DI water carboy as necessary.

11. Pump out as much water as possible from the tubing.

12. Open clean oven bag or re-sealable plastic bag and insert strainer inside. Carefully wrap the bag around the strainer and adjacent tubing.

13. Place bagged strainer and the bagged roll of suction tubing into a clear, plastic sack that envelopes all the tubing up to within one foot of the connection to the auto sampler pump tubing. This completes the outer bag of the double bagging process for the suction tubing and strainer.

14. Rinse discharge end of pump tubing with squirt bottle of 10% Nitric Acid, then with DI.

15. Carefully wrap the end with plastic laboratory film. Place discharge end of tubing into a clear, clean oven bag or re-sealable plastic bag and wrap plastic around tubing. Secure bag to tubing by taping it in place.

    NOTES:
    - Change gloves often. Never touch keypad, water faucet, DI faucet, DI jug, or anything else and then touch tubing.
    - Only touch tubing with clean gloves.
    - Once tubing has been acid-washed, prevent the tubing ends from contacting any contaminated (non-acid washed) surfaces until the ends are capped with plastic laboratory film or bagged.
    - Do not remove the plastic laboratory film or bag until the tubing is ready for use at the sampling site.

Stationary Vacuum Auto-sampler Cleaning Procedure

1. Clean off the outside of the sampler and refrigerator with a wet towel.

2. Remove the sample jugs from the refrigerator. Clean out the inside of the refrigerator.

3. Check the sample tubing for any abrasions, solids build up, and general wear. Replace if necessary.

4. Perform at least 3 test cycles with the soapy water or bleach water.

   Note: If a bleach solution is used for cleaning, only clean samplers on Fridays or Mondays to ensure no bleach residue is present that could affect BOD results.

5. Dismantle the Measuring Chamber from the Chamber Collar.

6. Remove the Measuring Chamber and discharge tubing from the sampler and wash in soap water or bleach water. Remove the Spiral Tube from the Slotted (discharge) Tube and place in cleaning solution bucket/jug.

7. Wash out the Measuring Chamber, spiral tub, and discharge tubing with a brush. Rinse with the rinse water.

8. Use brush to wash underside of Chamber Top and inside the Slotted tube while making sure no water gets into the tubing connected to the pressure switch. Use a towel with rinse water to rinse the equipment.

9. Replace the Spiral Tube back on the Slotted Tube, replace the discharge tubing on the sampler, and replace the Measuring Chamber on top of the sampler. Replace the Chamber Lid and screw on the Chamber Collar.

10. Take note of sample amount in sample chamber. If sample amount needs to be adjusted (should be about 200 mL of sample) remove Chamber Collar and Chamber Lid and twist Spiral Tube.

11. Check all connections to be sure they are tight.

12. Put sampler in flow mode.

13. Enter cleaning information on log.

CITY OF EUGENE – WASTEWATER DIVISION
Procedure

Subject:	**Storm Event MS4 Site Sampling**	**Document No:**	SAMP – 1805
Reviewed By:	Ron Morrow	**Original Date:**	4/26/11
Approved By:	Ron Morrow	**Date Approved:**	4/27/11

Purpose

The purpose of this procedure is to describe how to collect representative water samples from stormwater monitoring sites for analysis of water quality constituents. Additional prep time is required before sampling to set up and deploy all necessary equipment.

Safety Requirements

CAUTION: If handled inappropriately, acids can cause severe chemical burns to skin and any material that is not chemical resistant; care must be exercised when working with these chemicals. Protective eye-ware, gloves and clothing must be worn when working with all acids. Prior to performing this procedure the MSDS sheets for each type of acid must be reviewed and understood.

CAUTION: Rain event sampling may involve working in the late evening and early morning hours with limited visibility and the use of additional safety equipment may be necessary such as traffic cones, flashing hazard lights, and hand lanterns. Conditions may be wet at the sample locations and the use of proper care to prevent slipping at some sites necessary.

The following PPE are required:

- Safety Glasses
- Latex / Rubber Gloves
- Steel Toe Shoes

Equipment and Supplies

Composite Sampling Equipment

4 – Isco 6712 automatic samplers with model 710 flow modules and ultrasonic sensors 4 – Batteries (Isco or 12V deep cell) 4 – 1 gallon plastic bottles or 1 – 20L rectangular carboy for each sampler (acid rinsed) 4 – Isco CDMA cellular modems and antennas (OPTIONAL) Sample tubing for each sampler (acid rinsed) Sampler hangers Tape Measure Zip Ties Water depth measuring pole	DI water Chain-of-Custody (COC) forms Field Comments Notebook Field Data Sheets Sample site maps Pen Plastic Sheeting Tape Coolers Ice

Grab Sampling Equipment

pH Meter DO Meter Sample containers and caps	Cordless screwdriver Chain-of-Custody (COC) forms Field Comments Notebook

Coolers Ice Sample pole	Sample site maps Plastic Sheeting Tape

Special Sampling Precautions

Sampling personnel must cover all metal objects on their person that may lead to sample contamination. Do not touch the sample bottles or tubing with exposed hands or contaminated gloves. Take care to ensure the ends of the sample tubing, or strainer, do not come in contact with any contaminated surface.

Sampling Sites – Amazon Basin (at least 2 sites per storm event)

- Amazon Channel Site
  - 18th & Chambers @ Albertson's
- A3 Channel site
  - 5th & Seneca @ Griffith Rubber
- Willow Creek – south of 18th Avenue as water enters culvert

Sampling Sites – Willamette River

- Copping Street

Procedure

A Procedure prior to Storm Event

1. Coordination and Planning
   a. At least one week prior to sample event arrange with contract lab for sample receiving, order additional bottles and coolers if necessary.
   b. At one week prior and again 48 hours prior: coordinate with Sampling Supervisor regarding adequacy of approaching storm event.

2. Sample Equipment Preparation for storm event.

   a. Review the sampling procedure and referenced procedures.

   b. Review the Stormwater Monitoring Plan. Determine which stormwater monitoring site(s) will be used to meet the requirements of the Monitoring Plan.

   c. Gather supplies needed for the sampling project.

   d. Inspect equipment and ensure automatic sampler batteries are charged.

   e. Obtain COC and data sheets from Word Template.

   f. Review the programming instruction for Isco automatic samplers, flow modules, and modems.

1. Equipment Blanks

   a. Select one of the four automatic samplers and 1 gallon bottles or 20L rectangular carboy

   b. Run Deionized water through the sample tubing and into the bottles or carboy.

c. Pour off from the gallon bottles or carboy into individual sample bottles as described in the Stormwater Monitoring Sample Schedule.

2. Composite Sampling Equipment Deployment at Sampling Sites

   a. Prepare automatic sampler as necessary with sample jugs, ice, battery, flow sensor, and modem.

   b. Hang ultrasonic sensor.

   c. Dip water depth measuring pole into flow stream and measure depth of water (if water present).

   d. Input water depth (in feet) into automatic sampler and program the sampler as appropriate.

   e. Using clean hands/dirty hands method, remove strainer from plastic bag and lower into the flow stream or to bottom of the pipe.

   f. If sampling in a manhole, attach hanger to automatic sampler and lower into manhole. Otherwise place automatic sampler in a dry, secure location adjacent to sample site.

   g. If 12V deep cell battery or modem used, secure in the manhole or near the automatic sampler.

B Instrument Calibration & Field Measurements (Day of Sampling)

1. Calibrate the field meters as described in Field Measurement of pH Procedure, Field Measurement of Water Temperature Procedure, and Field Measurement of Dissolved Oxygen. Instruments should be calibrated prior to mobilization to ensure instrumentation is in proper working order. Field calibration verification using appropriate standards ensures the instrument has retained its calibration.

2. Upon arrival at sample site, ready all necessary equipment:
   - Sample bottles
   - Sampling pole
   - DO and pH meters
   - COC and Field Notebook

Stormwater sampling will target daylight hours to enhance the safety of sampling staff.

B Coordination and Planning

1. Sampling Supervisor or his designee will determine if an approaching storm is forecasted as adequate for sampling. Sampling team, and laboratory staff may be assembled or placed “On Call” if rain event is scheduled for after normal work hours.

2. When sampler initiates a call that it has started, or if Supervisor or his designee initiates a call out:
   a. Sample team reports to lab
   b. Upon arrival at sample site, ready all necessary equipment:
   c. Sample bottles
   d. Sampling pole
   e. DO and pH meters
   f. COC and Field Notebook

3. Sampling team checks each sampler for proper operation

4. Collects grab samples
    a. Hg and MHg grabs are “clean technique” grab
    b. Follow laboratory instructions for pesticide screening grab protocol, dioxin and remaining organics as per C.O.C..

5. Return to samplers following the storm event and transport samples to lab.
    a. Call lab if sample delivery to lab will be after 3:30pm, or on call lab person if after business hours.

Check C.O.C.’s and sample log in protocol.

References

Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels, EPA, 1995.

Eugene Wastewater Division Quality Assurance Plan

Sample Quality Assurance / Quality Control Procedure

Field Measurement of pH Procedure

Field Measurement of Water Temperature Procedure

Field Measurement of Dissolved Oxygen

Chain-of-Custody Procedures

Bottle/Sampler Jug Cleaning Procedure

Decontamination of Field Equipment Procedure

Operations and Maintenance manuals for field sampling equipment

CITY OF EUGENE – WASTEWATER DIVISION

Procedure

Subject:	Chain-of-Custody Form Instructions	**Document No:**	WW-833
Last Reviewed By:	Tom Mendes	**Original Date:**	07/22/02
Approved By:	Management Team	**Date Approved:**	9/22/05

Purpose

The purpose of this procedure is to give clear instructions on how to fill out Wastewater Division Chain-of-Custody forms.

Scope

This procedure covers all Chain-of-Custody forms used in the Wastewater Division and is applicable to all Wastewater Division staff that are responsible for sample collection activities.

References

Document No. WW-00416: Eugene Wastewater Division Quality Assurance Plan
Chain-of-Custody Forms (MicrosoftWord™ New)

Definitions

Chain-of-Custody (COC): The COC documents sample processing from the time of collection to the time of analysis. It describes who collected the sample, where and when the sample was collected, the type of sample and container, preservative, filtering requirements, the types of analyses required, and addressee for the laboratory report

DVSW: The laboratory cost code number relating to the project being collected.

LIMS: Laboratory Information Management System used to track laboratory samples and associated information including COC, analytical results, and quality assurance data.

CPS CODE: The CPS code is a client / project / site code designated in the LIMS for all routine sample site locations. All sampling staff is provided with a list of CPS codes for their respective sampling programs. If a sample is non-routine then a CPS code will not be required.

Notes: All Chain-of-Custody forms can be accessed through MicrosoftWord™ on the computer. To find COCs for any particular workgroup open MicrosoftWord™ and select New. A page will come up with tabs on the top indicating different work groups. Select the workgroup, i.e. Ops, ISC, Lab, Res and then highlight the appropriate COC you are looking for then open the document.

The most important part of the required legal documentation in sample collection is the Chain-of-Custody. Improper sample and data handling or inadequate COC procedures, affects the credibility of analytical results regardless of their accuracy and precision. Thus, it is essential that all samples be properly collected, handled, and analyzed.

In addition, all persons handling the samples must record their signature, date, and time on the COC upon receiving the sample, and upon relinquishing the sample.

Accountability:	**Responsibility:**
	HEADER INFORMATION
Sample Collector	**Date: _____ Page _of _:** Record the date and page number information at the top of the chain of custody form. (example: Date: 01/28/02 Page 1 of 3) **Project Name:** Record the Project Name in the space provided. For routine scheduled samples the project name should match the project name in the Laboratory Information Management System (LIMS). If the project is special or a non-routine project, record the name you would like to see on the final report. **Sampler:** Sampler name. Print your full name(s) in the space provided. Initials are not appropriate. **Signature:** Sampler Signature. Sign your full name(s) in the space provided. Initials are not appropriate. **Work Section:** (DVSW). Record the laboratory cost code number (DVSW) relating to the project being collected (example: BMF well project 8733. See definition above). For other clients that bring samples to the laboratory their specific City program cost codes need to be provided on the COC. If samples are collected for a special project that do not have a cost code we will provide one for the agency prior to the project sample collection. The program areas for which the laboratory has assigned DVSW numbers are as follows: • Biosolids Management Facility (BMF): 8733 • Plant Operations (OPS): 8734 • Seasonal Industrial Waste Site (SIWS): 8735 • Industrial Source Control (ISC): 8738 • Storm Water (SW): 8732
Laboratory Staff	**Batch Number:** Completed when the samples are logged into the LIMS system by a laboratory staff member.

Sample Collector	**MAIN BODY INFORMATION** **Sample Location / CPS CODE:** Record individual sample locations or sites. For routinely scheduled samples, the sample location name is the CPS Code that is in the Laboratory Information Management System (LIMS). If the sample is not routine or is a special sample, record the specific site location(s) from which the sample(s) was taken. (See CPS code definition above). Clients that bring samples to the laboratory will have specific City program cost codes that need to be provided on the COC. If an outside agency is submitting samples a cost code number will be assigned to them prior to sample collection. See the Laboratory Staff for the appropriate CPS Code
Laboratory Staff	**Sample ID:** The Sample ID will be filled in by Laboratory Staff at the time the sample is logged into the LIMS system.
Sample Collector	**Sample Matrix:** Use one (1) COC per sample matrix. Record the matrix that most accurately represents the samples (i.e., wastewater = WW, soil = SO, sludge = SL). For multiphase samples (e.g., oil and water), or a non-listed matrix, record "other = OT" and describe the matrix in the comment section provided. **Date and Time Collected:** Used for grab samples. Record the date and exact time each sample was collected. Use military time. **Start Date and Start Time Collected:** Used for composite samples. Record the date and time the sample collection was started in military time. **End Date and End Time Collected:** Used for composite samples. Record the date and time sample collection ended in military time. **Duration:** Used for composite samples. Record the duration of the sample event in hours. Use fraction of an hour for additional minutes. **Bottle Numbers:** Record individual bottle numbers only if this field is available on the COC as it does not apply to all projects. **Analysis Requested:** In the vertical spaces denoted "Test Requested", indicate all test codes for which the samples will be analyzed. The test codes listed should match the test codes listed in the LIMS. **Miscellaneous Fields:** Some chain-of-custody forms have additional fields to fill out that are specific to a particular project: • Sampling equipment information such as set up times, depth to well, purge information, vacuum start times, filtered/unfiltered, etc. • Field Analysis such as pH, flow, etc. • Sample Preservation Information such as preservative used, volume etc. If COC's have fields for this data it must be filled in.

Sample Collector Laboratory Staff	**SIGNATURES AND SPECIAL INSTRUCTIONS** **Signatures:** When releasing custody of the samples, use the "Relinquished By" space to sign your full name, date, and time released. After verifying that all samples indicated are present, the person receiving the samples will sign in the "Received By" space to take custody of the samples.
Sample Collector	**Rush Y N and Date:** Use this space to indicate a need for rush analysis. Circle Y if a rush is needed and enter a due date for analysis. Circle N for routine turn around times. **Comments:** The comment section can be used to specify any special instructions to the laboratory regarding the processing of the samples. **Report Attention:** This information is required for non-routine projects. It is not required for routine projects, though it is helpful for appropriate distribution of reports.

CHAIN OF CUSTODY / ISC ANALYSIS REQUEST FORM – AMBIENT RIVER ROUTE

PUBLIC WORKS
WASTEWATER DIVISION

Page _____ **Of** _____

PROJECT NAME: **AMBIENT RIVER ROUTE**

SAMPLER:

SIGNATURE:

WORK SECTION: (DVSW) 8732

BATCH NUMBER:

MATRIX: AMB

REPORT ATTENTION:

Special Sample Handling Requirements:
Rush: Yes ☐ No ☐

ANALYSIS REQUESTED AND BOTTLE NUMBERS

SAMPLE LOCATION/ CPS CODE	SAMPLE ID	GRAB DATE	GRAB TIME	Field Measurement: FpH	TEMP	DO	Air Temp	A: BOD TDS TSS CON TURB	K: NH_3 COD TKN TP NO_3	C: COE COF	TOC: TOC	TEFLON: HGL ASUMS CDUMS CRUMS CUUMS PBUMS MOUMS NIUMS SEUMS AGUMS ZNUMS	TEFLON: HGLF ASFMS CDFMS CRFMS CUFMS PBFMS MOFMS NIFMS SEFMS AGFMS ZNFMS	ICT: CAT MGT HRD	OP: OP	AMB*: DIOXIN (2,3,7,8-TCDD)	CNT: CNTL	INITIAL WHEN PRESERVED
Delta Pond FAMBDP1								29,30	29,30	15	15	FAMBDP1		15	15			
Willamette Downstream FAMBMWDS								13,14	13,14	7	7	FAMBWDS		7	7		7	
Owosso FAMBOB								11,12	11,12	6	6	FAMBOB		6	6		6	
Knickerbocker FAMBKB								9,10	9,10	5	5	FAMBKB		5	5			
Upstream UGB FAMBUUGB								19,20	19,20	10	10	FAMBUUGB		10	10			
River Blank FAMBFB								17,18	17,18	9	9	FAMBFB		9	9			
Duplicate FAMBFD								15,16	15,16	8	8	FAMBFD		8	8			
Trip Blank								29,30	29,30	15	15	FAMBDP1		15	15			
													Trip Blank					

Comments:

	A	K	C	TOC	TEFLON	ICT	OP	AMB*	CNT
PRESERVATIVE:	None	H_2SO_4	None	HCl	In Lab	HNO_3	None	None	NaOH
VOLUME (per bottle):	--	1 mL	--	0.2 mL	--	3 mL	--	--	
pH (<2 or >12):	--	<2	--	<2	--	<2	--	--	

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time
Relinquished By (Signature)	**Date**	**Time**	**Received By (Signature)**	**Date**	**Time**

Bottles – 2 A, 2 K, 1 C, 1 ICT, 1 K Ortho, 1 TOC, 1 Teflon per location;
2 AMB at select locations dependent on monitoring requirements

*A contract lab supplied chain and pre-preserved vials are required for AMB samples

CHAIN OF CUSTODY / ISC ANALYSIS REQUEST FORM – AMBIENT LAND ROUTE

PUBLIC WORKS
WASTEWATER DIVISION

Page _____ **Of** _____

PROJECT NAME: **AMBIENT LAND ROUTE**

SAMPLER:

SIGNATURE:

WORK SECTION: (DVSW) 8732

BATCH NUMBER:

MATRIX: AMB

REPORT ATTENTION:

Special Sample Handling Requirements:
Rush: Yes ☐ No ☐

ANALYSIS REQUESTED AND BOTTLE NUMBERS

SAMPLE LOCATION/ CPS CODE	SAMPLE ID	GRAB DATE	GRAB TIME	Field Measurement: FpH	TEMP	DO	Air Temp	A: BOD TDS TSS CON TURB	K: NH_3 COD TKN TP NO_3	C: COE COF	TOC: TOC	TEFLON: HGL ASUMS CDUMS CRUMS CUUMS PBUMS MOUMS NIUMS SEUMS AGUMS ZNUMS	TEFLON: HGLF ASFMS CDFMS CRFMS CUFMS PBFMS MOFMS NIFMS SEFMS AGFMS ZNFMS	ICT: CAT MGT HRD	OP: OP	VOA*: 1,1-DICHLOROETHENE trans-1,2- DICHLOROETHENE TRICHLOROETHENE TETRACHLOROETHENE		INITIAL WHEN PRESERVED
Amazon @ Royal/ FAMBA_R								5,6	5,6	3	3	FAMBA_R		3	3			
A Channel @ Royal/ FAMBACR								3,4	3,4	2	2	FAMBACR		2	2			
A Channel @ Terry St/ FAMBA_US								25,26	25,26	13	13	FAMBA_US		13	13			
Amazon @ RR/ FAMBACUS								27,28	27,28	14	14	FAMBACUS		14	14			
Willow Creek/ FAMBWC								7,8	7,8	4	4	FAMBWC		4	4			
M2 (Amazon)/ FAMBM2								1,2	1,2	1	1	FAMBM2		1	1			
Land Blank/ FAMBFB								23,24	23,24	12	12	FAMBFB		12	12			
Duplicate / FAMBFD								21,22	21,22	11	11	FAMBFD		11	11			
Trip Blank													Trip Blank					

Comments:

	A	K	C	TOC	TEFLON	ICT	OP	VOA*	
PRESERVATIVE:	None	H_2SO_4	None	HCl	In Lab	HNO_3	None	HCl*	
VOLUME (per bottle):	--	1 mL	--	0.2 mL	--	3 mL	--	--	
pH (<2 or >12):	--	<2	--	<2	--	<2	--	<2	

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time
Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time

Bottles – 2 A, 2 K, 1 C, 1 ICT, 1 K Ortho, 1 TOC, 1 Teflon per location;
3 VOA at select locations dependent on monitoring requirements

*A contract lab supplied chain and pre-preserved vials are required for VOA samples

CHAIN OF CUSTODY – ISC ANALYSIS REQUEST FORM – BACTERIA PILOT STUDY

PUBLIC WORKS
WASTEWATER DIVISION

Page _____ **Of** _____

PROJECT NAME: **Bacteria Pilot Study**

SAMPLER:

SIGNATURE:

WORK SECTION: (DVSW) 8732

BATCH NUMBER:

MATRIX: SW

REPORT ATTENTION:

Special Sample Handling Requirements:
Rush: Yes ☐ No ☐

ANALYSIS REQUESTED AND BOTTLE NUMBERS

									Field Measurement			C					
SAMPLE LOCATION/ CPS CODE	SAMPLE ID	GRAB DATE	GRAB TIME	COMP START DATE	COMP START TIME	COMP END DATE	COMP END TIME	DURATION (HOURS)	pHF	DO	TEMP	COE COF					
Tiara/ CSWTIA																	
Westmorland Park/ CSWWMSE																	
Albertson's/ CSWALB																	
16th & Friendly/ CSWFR16																	
Chambers/ CSWA_C																	
Pedestrian Bridge/ CSWPED																	
Polk St/ CSWA_P																	
Jefferson St/ CSWA_J																	
Willow Creek/ CSWWC18																	
Blank/ CSWCLBLK																	
Duplicate/ CSWCLDUP																	

Comments:

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time
Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time

Bottles – 1 C per location

CHAIN OF CUSTODY – FLOW-BASED STORM EVENT MONITORING, FOCUSED BASIN, COMPOSITE

PUBLIC WORKS
WASTEWATER DIVISION

Page _____ **Of** _____

PROJECT NAME: **Flow-Based Storm Event Monitoring, Focused Basin, Composite**

SAMPLER:

SIGNATURE:

WORK SECTION: (DVSW) 8732

BATCH NUMBER:

MATRIX: SW

REPORT ATTENTION:

Special Sample Handling Requirements:
Rush: Yes ☐ No ☐

ANALYSIS REQUESTED AND BOTTLE NUMBERS

SAMPLE LOCATION/ CPS CODE	SAMPLE ID	GRAB DATE	GRAB TIME	COMP START DATE	COMP START TIME	COMP END DATE	COMP END TIME	DURATION (HOURS)	A: BOD TDS TSS CON TURB	K: NH_3 COD TKN TP NO_3	TOC: TOC	OP: OP	I-CHEM: HGL ASUMS CDUMS CRUMS CUUMS PBUMS NIUMS AGUMS ZNUMS	I-CHEM: HGLF ASFMS CDFMS CRFMS CUFMS PBFMS NIFMS AGFMS ZNFMS	I-CHEM: CAT MGT HRD	INITIAL WHEN PRESERVED
Willow Creek/ CSWWC18MS4																
W. 5th- Seneca/ CSW-W5TH																
N. Grand/ CSWGRAND																
Albertsons/ CSWALB1																
Copping Street/ CSWMH77793																
Blank/ CSWCLBLK																
Duplicate/ CSWCLDUP																

Comments:

	A	K	TOC	OP	I-CHEM		
PRESERVATIVE:	None	H_2SO_4	HCl	None	In Lab		HNO_3
VOLUME (per bottle):	--	1 mL	0.2 mL	--	--		3 mL
pH (<2 or >12):	--	<2	<2	--	--		<2

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time
Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time

Bottles – 2 A, 2 K, 1 TOC, 1 OP, 3 I-CHEM

CHAIN OF CUSTODY – FLOW-BASED STORM EVENT MONITORING, FOCUSED BASIN, GRAB

PUBLIC WORKS
WASTEWATER DIVISION

Page _____ **Of** _____

PROJECT NAME: **Flow-Based Storm Event Monitoring, Focused Basin, Grab**

SAMPLER:

SIGNATURE:

WORK SECTION: (DVSW) 8732

BATCH NUMBER:

MATRIX: SW

REPORT ATTENTION:

Special Sample Handling Requirements: *Ship Methyl Mercury samples within 24 hours of collection*

Rush: Yes ☐ No ☐

ANALYSIS REQUESTED AND BOTTLE NUMBERS

SAMPLE LOCATION/ CPS CODE	SAMPLE ID	GRAB DATE	GRAB TIME	Field Measurement pHF	DO	TEMP	C COE COF	HEM SGTHEM	VOA* $624 1,1-DICHLOROETHENE trans-1,2- DICHLOROETHENE TRICHLOROETHENE TETRACHLOROETHENE	PAL* Multiresidue Pesticide Screen $8081B $8141B $8270D $8321B	AMB* $1613 DIOXIN (2,3,7,8 TCDD)	Teflon* $1630 Methyl Mercury (Total and Dissolved)	ICT HGL HGLF	INITIAL WHEN PRESERVED
Willow Creek/ CSWWC18MS4														
W. 5th- Seneca/ CSW-W5TH														
N. Grand/ CSWGRAND														
Albertsons/ CSWALB1														
Copping Street/ CSWMH77793														
Blank/ CSWCLBLK														
Duplicate/ CSWCLDUP														

Comments:

	C	HEM	VOA*	PAL*	AMB*	Teflon*	ICT
PRESERVATIVE:	None	HCl	HCl**	None	None	In Lab	In Lab
VOLUME:	--	2 mL	--	--	--	--	--
pH (<2 or >12):	--	<2	<2	--	--	--	--

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time
Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time

Bottles – 1 C, 3 HEM, 3 VOA*, 2 ICT, 2 PAL*, 1 Teflon*, 2 AMB*

*Contract lab chain-of-custody and supplied sample containers are required
**VOA vials are prepreserved