WATER QUALITY MONITORING GUIDE

For Maintenance and Repair Projects Involving Water Diversion

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ACRONYMS AND ABBREVIATIONS

BMP	Best Management Practice
COC	Chain-of-Custody
D	Downstream (sampling point location relative to project work area)
DO	Dissolved Oxygen
FMD	Flood Maintenance Division
LACFCD	Los Angeles County Flood Control District
NTU	Nephelometric Turbidity Units
TSS	Total Suspended Solids
U	Upstream (sampling point location relative to project work area)
W	Within (sampling point location relative to project work area)

DEFINITIONS

pH	The negative log of the activity of the hydrogen ion in an aqueous solution.
Sampling Event	Water quality monitoring performed in a single day at all sampling stations established for each project reach. This will include an upstream location and a downstream location, and may include an internal location.
Diversion Project	A project to divert channel flow from all or part of a specific reach in order to conduct maintenance or repair actions. The project is the basis for the water quality monitoring described in this Water Quality Monitoring Guide.
Water Diversion	A system of barriers and conveyances to intercept surface water upstream of an LACFCD facility project site, bypass the work area, and discharge it downstream of the project site.

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1.0 INTRODUCTION AND BACKGROUND

This water quality monitoring guide is provided as a companion document to the Water Diversion Manual.

1.1 PURPOSE AND NEED

The purpose of the Water Quality Monitoring Guide (WQMG) is to establish a specific water quality sampling program to monitor the performance of diversion operations, including Best Management Practices (BMPs) that will ensure that the quality of the waters of the State is not impacted as a result of any proposed maintenance, repair, or other activities that require surface water diversion by the Los Angeles County Flood Control District (LACFCD). The WQMG will be utilized as part of LACFCD's water quality control plan during any vegetation removal activities, channel repair, maintenance-related projects including bridge projects, emergency repair activities, and any pilot studies that require surface water diversion at the earth-bottom channel reaches listed in the Waste Discharge Requirements (WDR) Order No. R4-2015-0032-A1 (File No. 99-011), other channel maintenance-related projects that were issued with Clean Water Act Section 401 Water Quality Certifications (401 Certification), and the concrete-lined channels listed in the US Army Corps of Engineers' (USACE) Technically Conditioned Water Quality Certification Project No. 2012-00422-BLR (File No. 13-029). All maintenance clearing activities, emergency repair activities, and/or diversion operations shall not impact the water quality or beneficial uses of downstream water bodies.

1.2 OBJECTIVES

The objectives of water quality monitoring are to (a) assess the performance of any water diversion implemented, including associated BMPs, and (b) to ensure that water quality is not impacted during the related maintenance work.

1.3 UPDATES

To ensure continued compliance with its permits and current requirements, LACFCD's Flood Maintenance Division is responsible for reviewing and updating the WQMG every two years. Any modifications made as a result of the review will be submitted to the Regional Water Quality Control Board's (RWQCB) Executive Officer, the Unit Chief, and the 401 Program Lead for review and approval via the RWQCB's Online Submittal email address: losangeles@waterboards.ca.gov. The RWQCB will provide their comments and/or approval to the changes within 90 days upon email receipt of the updated WQMG. LACFCD will then incorporate RWQCB's changes and submit the revised guide to the RWQCB for final approval, also via email, within 60 days.

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2.0 MONITORING PARAMETERS

The water quality sampling program includes the assessment of water quality before, during, and after channel maintenance and repair activities are performed in accordance with WDR Order No. R4-2015-0032-A1. In accordance with the permits, water quality is assessed by measuring the five monitoring parameters listed in Table 1.

Table 1- Monitored Parameters

Parameter	Symbol	Sample Matrix	Units
Acidity/Alkalinity	pH	water	pH units
Temperature	Temp	water	^{o}C
Dissolved oxygen	DO	water	mg/L
Turbidity	T	water	NTU
Total Suspended Solids	TSS	water	mg/L

Notes:

C Centigrade
mg/L Milligram per liter
NTU Nephelometric turbidity units

Four parameters (pH, temperature, DO, and turbidity) are measured in the field at each monitoring/sampling location. Whereas, TSS is measured by collecting a water sample from each monitoring/sampling location (using standard sample collection procedures described in this Guide) and submitting the sample to a State-certified laboratory for TSS testing using standard analytical procedures.

The field measurements and laboratory analysis will be conducted according to the processes and frequencies described in this Monitoring Guide.

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3.0 WATER QUALITY MONITORING PROCESS

Water quality monitoring will be performed for each water diversion before, during, and after maintenance clearing activities are performed. These monitoring efforts will include three sampling stations established for each project reach: upstream of the work area, within the work area, and downstream of the work area. Sampling will be conducted according to the frequencies described in WDR Order No. R4-2015-0032-A1 and will use the procedures outlined in this WQMG.

3.1 PROJECT PHASES

3.1.1 Baseline/Pre-Project Monitoring

Baseline water quality sampling will be conducted within one week prior to the start of the channel maintenance or repair work. To determine the channel's natural baseline condition, no BMPs will be installed at the downstream end of the channel reach during the water sampling. A single sampling event will be performed for field measurements and sampling, at all water quality measurement locations established for the project (see Section 3.2). In some circumstances, more than one sampling event may be advisable to establish baseline conditions when baseline conditions are variable. More than one monitoring location upstream, within, or downstream of the work area, may be useful or needed to distinguish other influences on water quality, including but not limited to discharges into the work area from non-LACFCD construction activities upstream of the work area, storm drains, salt/fresh water mixing zones, or changes in water body characteristics. Accordingly, LACFCD will consider and document if additional sampling events, locations, or parameters are needed or useful. Baseline sampling will begin at the downstream of work area first and will move upstream to ensure the quality of water is not negatively impacted as a result of water sampling.

3.1.2 During Project Monitoring

One sampling event will be conducted every day for the first week of maintenance or repair activities at all water quality measurement locations established for the project (see Section 3.2). For maintenance or repair activities extending longer than one week, sampling events will be scheduled once per week, thereafter. During the maintenance activities, BMPs will be installed downstream of the work area and maintained on a daily basis until completion of the maintenance activities. If exceedances in turbidity and/or TSS are noticed and can be documented as being a singular event, sampling events will continue to be conducted daily for a period of three (3) days to verify adjustments in the BMP and/or field operations have been effective. In the event that multiple exceedances in turbidity and/or TSS are noticed, sampling events will continue to be conducted daily for the duration of the project. Where project is located in a sensitive reach, as defined in Permittee's permit, the project's 401 Certification and Streambed Alteration Agreement (if issued) will be reviewed for any additional water quality

monitoring requirements such as continued daily sampling, or additional parameters, due to reach-specific considerations.

3.1.3 Post-Project Monitoring

Post-project water quality monitoring will be conducted within one week of the completion of all maintenance or repair work, and the removal of all diversion-related structures, channels, or associated BMPs, whichever occurs last. A single sampling event will be used for field measurements and sampling at all water quality measurement locations established for the project (see Section 3.2).

3.2 MONITORING LOCATIONS

Each project reach will typically require three (3) sampling locations for water quality monitoring, located as described in the following subsections (see Figure 1). Additional sampling locations may be included where LACFCD has determined such additions are needed or useful (see Section 3.1.1). Prior to the start of sampling, monitoring locations shall be identified either on a map or via GPS coordinates (Latitude and Longitude). Maps if created may be hand drawn or hand annotated.

3.2.1 Upstream [U]

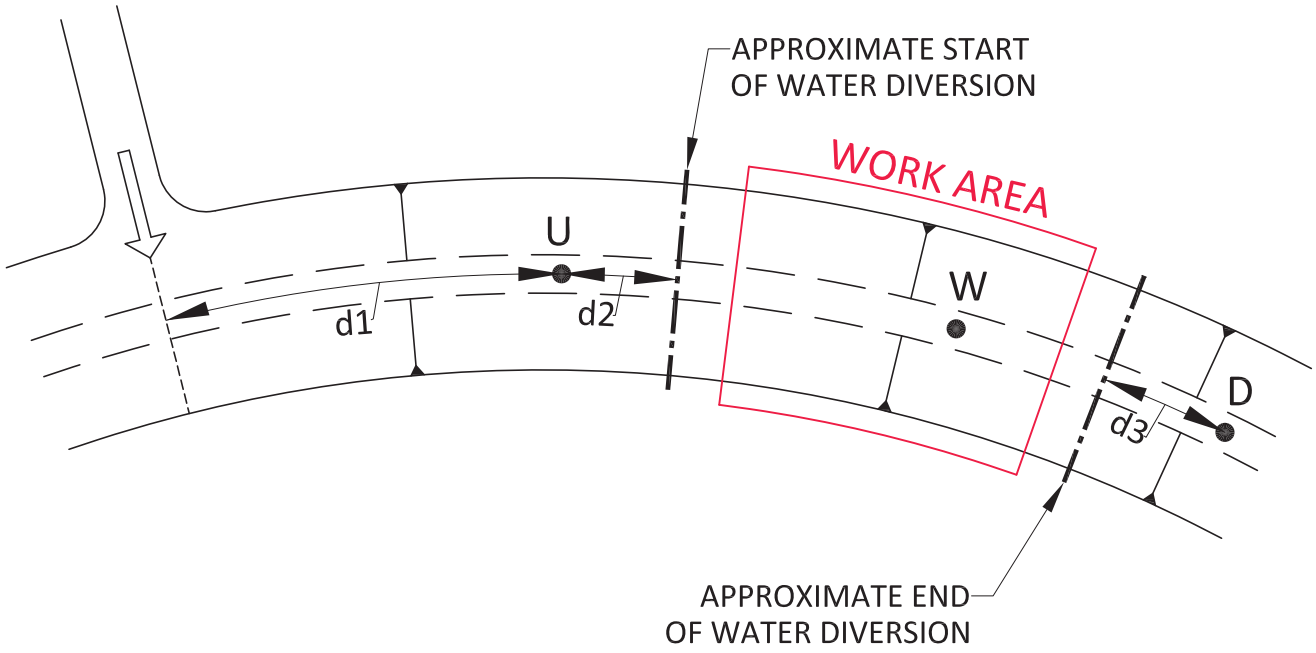
A representative sampling location upstream of the work area will be selected to evaluate the standard set of parameters (see Section 2) before they can be influenced by any project activities. The location must be upstream of any disturbance from project maintenance activities or installation activities associated with project-implemented BMPs. This location must not be upstream from any surface water tributaries or storm drain outlets to ensure that water flowing toward the work area is properly characterized and any changes to these parameters within or downstream from the work area can only be attributed to the activities related to the project. However, it must be recognized that water quality characteristics may be affected by uncontrollable discharges from sources unrelated to and upstream of the project.

3.2.2 Within Project [W]

A representative sampling location within the work area and within the water diversion will be selected to evaluate the standard set of parameters (see Section 2). If the water diversion uses a closed system (piping or flexible hose) that will not allow field measurement or sample collection, the Within Project location will not be established and no sample will be collected.

3.2.3 Downstream [D]

A representative sampling location downstream of the work area will be selected to evaluate the standard set of parameters (see Section 2). This location must be downstream from any project maintenance or installation activities associated with the



NOTES:

1. UPSTREAM SAMPLING POINT (U) TO BE DOWNSTREAM FROM LAST INFLOW TO THE PROJECT CHANNEL. MINIMUM ACCEPTABLE DISTANCES (d1 AND d2) WILL VARY BASED ON THE SIZE AND FLOW RATE OF THE CHANNEL BEING SAMPLED.
2. WITHIN CHANNEL SAMPLING POINT (W) WILL BE FROM THE DIVERTED FLOW WHERE ACCESSIBILITY ALLOWS.
3. DOWNSTREAM SAMPLING POINT (D) WILL BE DOWNSTREAM FROM THE END OF THE WATER DIVERSION. MINIMUM ACCEPTABLE DISTANCE (d3) WILL VARY BASED ON THE SIZE AND FLOW RATE OF THE CHANNEL BEING SAMPLED.

LEGEND:

●	WATER SAMPLING POINTS
U	UPSTREAM
W	WITHIN PROJECT
D	DOWNSTREAM
—·—·—	WATER DIVERSION LIMITS
⇩	CLOSEST UPSTREAM CHANNEL OR STORM DRAIN INFLOW

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DATE
OCTOBER 2015

FIGURE 1
WATER QUALITY MONITORING LOCATIONS

project-implemented BMPs. However, it must be upstream of any surface-water tributary or storm drain outlets emptying into the channel.

3.3 SAMPLING FREQUENCY

The frequency of sampling for each project reach will be the same at all three monitoring locations, as described below.

3.3.1 Pre-Project Monitoring

One sampling event will be conducted within the 7-day period prior to the start of the maintenance activities and project-related BMP installation. Baseline/Pre-Project sampling will occur prior to the installation of BMPs downstream. Additional sampling events may be included where LACFCD has determined such additions are needed or useful to establish baseline conditions (see Section 3.1.1).

3.3.2 During Project Monitoring

During the first calendar week of maintenance activity, one sampling event will be conducted each day that maintenance activities are performed. If the project continues for more than seven days, one sampling event will be conducted in each subsequent week until all maintenance or repair activities have been completed and all associated BMPs have been removed.

3.3.3 Post-Project Monitoring

One sampling event will be conducted within the 7-day period after the project has been completed and all BMPs have been removed, whichever occurs last.

3.4 SAMPLING AND TESTING PROCEDURES

Once the project reach has been identified, project schedule set, and water quality monitoring locations selected, the field activities protocol described below for monitoring of water quality during diversion activities will be implemented. This protocol will include the following steps to be implemented for every project, with Steps 2 through 5 repeated for each sampling event conducted for the “project.”

Step 1. Mobilization. All necessary materials, equipment, and forms are gathered and prepared for use in the field. The As-Needed Environmental Laboratory to be used for sample analyses is notified of the expected project schedule, the anticipated delivery dates for field samples, and the analysis to be performed on the samples. A standard checklist is used to prepare field equipment and supplies (Form WQMG-00 – Equipment Inventory Checklist and Repair Record).

[See Appendix A – Checklist]

Step 2. Equipment Calibration. Each piece of field equipment to be used for measuring water quality parameters shall be calibrated before it is used in the field. Calibration procedures and frequencies shall be in accordance with equipment manufacturer specifications. This can be done in the office prior to field use (as long as calibration is performed no more than 24-hours before first field use) or in the field (before the first parameter measurement is taken).

[See Section 4.2 – Equipment Calibration and Tracking]

Step 3. **Field Measurements.** At each monitoring location established for the project reach, each of the four water quality parameters to be evaluated in the field is measured.

[See Section 3.4.1 – Field Measurement Procedures]

Step 4. **Water Sample Collection**. At each monitoring location established for the project reach, a water sample is collected, labeled, and preserved using standard procedures.

[See Section 3.4.2 – Water Sampling and Analysis Procedures]

Step 5. **Water Sample Transfer**. After every sample event, all water samples collected are transferred to the laboratory using standard chain-of-custody (COC) and relinquishment procedures.

[See Section 4.4 – Chain-of-Custody and Sample Relinquishment]

3.4.1 Field Measurement Procedures

In order to evaluate pH, temperature, and dissolved oxygen, a Horiba Model U-52 Multi Water Quality Checker (or equivalent) is used. A single water sample (with a minimum of 1 liter in volume) is collected in a plastic container at each specified sampling point. To the extent that it is reasonable or practical, the sample is collected from the deepest point of the channel and from a depth of 30% to 50% of the total depth. The time and depth of sample collection, and sample number are recorded on the water quality monitoring sheet (see Form WQMG-02) for each location. Each measurement result is entered in the specific column for the location of the sample (i.e. upstream [U], within or internal [W], or downstream [D]). Only one water quality monitoring sheet should be used for each sampling event to simplify field record keeping and data analysis.

To evaluate turbidity, a LaMotte 2020e Turbidimeter (or equivalent) is used. A portion of the same sample collected for measurement of pH, temperature, and dissolved oxygen, is also used for the field measurement of turbidity. However, the water sample is transferred to a different container, specifically intended for use with the turbidimeter. The process used for each measured parameter in the field is provided in Table 2.

Table 2 - Field Measurements

Parameter	Equipment	Process
1. pH 2. Temperature 3. Dissolved Oxygen	Horiba Model U-52 Multi Water Quality Checker (Multi-Meter) or equivalent	a. Sensor probe of Multi-Meter is turned on and placed in the plastic container. b. Sensors are allowed to reach equilibrium with the water sample (when values cease to fluctuate, typically 1 to 3 minutes). c. Values of pH, temperature, and dissolved oxygen are read from the display screen of the multi-meter and recorded on the water quality monitoring sheet (Form WQMG-02).
4. Turbidity	LaMotte 2020e Turbidimeter or equivalent	a. Turbidimeter is turned on. b. Water sample from the plastic container is poured into the dedicated sample vial of the Turbidimeter; (volume must reach "fill line") c. Vial is capped and the outside dried off to ensure an accurate reading. d. Vial is inserted into the test chamber of the Turbidimeter; (make sure to align positioning ring with index arrow on the meter). e. The "scan sample" button is selected and the turbidity is read and recorded onto the water quality monitoring sheet (Form WQMG-02).

3.4.2 Water Sampling and Analysis Procedures

Water samples will be collected at each monitoring location during every sampling event to be analyzed for TSS. Location-specific samples will be contained in plastic bottles, labeled with a sample number (which will identify location and date), and sent to one of the "As-Needed" Contract Environmental Laboratories that are available to the LACFCD.

The process that will be followed for collection of samples, transfer to the laboratory, and evaluation, will be as follows:

a. One plastic bottle (½ liter capacity) is used for each monitoring location; it is filled to the brim with a water sample.

b. If possible, the within-channel sampling position is at the horizontal point of the thalweg (deepest point) and at a depth of approximately one half to two-thirds of the thalweg depth, measured up from the bottom).

c. The bottle is sealed with a twist-on lid at the sampling station.

d. Each bottle is labeled with a sample identification number (reach number with a suffix indicating location; 1=U, 2=W, and 3=D), sampler initials, and date.

e. All three (3) bottles collected during a sample event are placed in a single 1-gallon "ziplock" bag, sealed, and placed on ice (for preservation) in an insulated cooler.

f. At the completion of the sampling event, a Chain-of-Custody (COC) form is completed with the requested analysis (see Table 3), signed by the sampler, and transported to the Lab. As an alternate, samples may be relinquished to a courier (by signature on the COC) for transport to the Lab.

g. Samples are delivered to an “As-Needed” Contract Environmental Lab by the sampler or the courier on the same day that sampling occurred. 24-hour turn-around-time (TAT) is requested for sample analysis.

h. Sample acceptance is acknowledged by the Lab (by signature on the COC), indicating the date and time of transfer from the sampler or the courier to the Lab.

i. A copy of the final COC is received from the lab along with the analytical results, which are retained in the project file.

Table 3 - Laboratory Analyses

Parameter	Sample Container	Analytical Procedure
Total Suspended Solids	Plastic bottle, 0.5 Liter capacity	Standard Method 2540/EPA Method 160.2; Total Suspended Solids.

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4.0 QUALITY ASSURANCE/QUALITY CONTROL

The quality assurance/quality control (QA/QC) process involves establishing guidelines for the data to be gathered and used, including quality objectives, equipment use and calibration requirements, record keeping, and sample control.

4.1 DATA QUALITY OBJECTIVES

Data quality objectives (DQO) for monitoring diversion water quality are intended to identify significant changes likely to be caused by the water diversion process. Monitoring is limited to a modest set of parameters (see Section 2), the in-channel water samples are from the immediate vicinity of the project reach (see Section 3.2), and the decision rule (exceedance criteria) are provided with the DQO in Table 4. Section 5.2 presents the exceedance protocols. The exceedance criteria below are set forth in WDR Order No. R4-2015-0032-A1

Table 4 - Data Quality Objectives

Param.	Sampling Technique	Analysis Technique[1]	Analysis Location	Method Detection Limit	Duplicate precision (RPD)	Exceedance Criteria
DO	Multi-meter	Field Measurement	Monitoring Points	0.01 mg/L	± 0.5 mg/L	NA
Temp	Multi-meter	Field Measurement	Monitoring Points	-10 °C	± 0.01 °C	NA
pH	Multi-meter	Field Measurement	Monitoring Points	0.01 pH	± 0.1 pH	< 6.5 or > 8.5
T	Turbidimeter	Field Measurement	Monitoring Points	0.05 NTU	± 3%	20% (≤ 50 NTU) 10% (> 50 NTU)
TSS	Grab Sample	Method 2540D	Contract Laboratory	2.0 mg/L	± 10%	10%

1 "Method" refers to Standard Methods for the Examination of Water and Wastewater (19th ed., APHA et al. 1995)

4.2 EQUIPMENT CALIBRATION AND TRACKING

To obtain correct measurement values, any monitoring equipment used needs to be calibrated in accordance with and at frequencies described in the manufacturer's specifications.

4.3 FIELD RECORDS

Field records are completed for each sampling event using a single recording sheet (Form WQMG-02 – Water Quality Field Measurement Results). Forms will be filled in completely to provide an accurate record of the monitoring activities for the entire project.

4.4 CHAIN-OF-CUSTODY AND SAMPLE RELINQUISHMENT

In order to demonstrate that samples were obtained from the locations stated and that they reached the laboratory without alteration, a COC form is completed for each sampling event. To accomplish this, evidence of collection, shipment, laboratory receipt, and laboratory custody until disposal will be documented through the COC record. A sample is considered to be in custody if the following conditions are met:

- Samples are in actual possession or in view of the sample collector, courier, or the laboratory,
- If not in view, samples are kept in a secure area,
- Once received by the lab, samples are kept in an area limited to authorized personnel

The COC record form (see Appendix B) should list each sample and the individuals performing the sample collection, shipping or transporting samples, and receiving samples (both in transit and at the lab).

Each time custody of the sample is transferred, the former custodian will sign the COC on the ***Relinquished By*** field, and the new custodian will sign the COC on the ***Received By*** field (both on the same line). The date, time, and project or company affiliation will be provided along with the signature. When a commercial carrier is used to ship samples to the laboratory, the waybill number and carrier name (i.e., FedEx or UPS) will be recorded on the COC. Sample custody will be the responsibility of sampling personnel from the time of sample collection until the samples are accepted by the laboratory. Thereafter, the laboratory performing the analysis will maintain custody. The sample custodian will sign the COC, inventory each shipment, and note any discrepancies on the sample login form. The laboratory will immediately notify the LACFCD project manager of any discrepancies. The laboratory maintains a system for tracking samples consistent with accepted industry practice.

In addition to providing a custody exchange record for the samples, the COC record serves as a formal request for sample analyses. The COC records will be completed, signed, and distributed as follows:

- The original copy sent to the laboratory along with the samples
- A copy retained on-site for inclusion in the project files
- A copy e-mailed to the Project Chemist on a daily basis to allow tracking of samples sent to the laboratory to confirm laboratory receipt of samples

5.0 WATER QUALITY MANAGEMENT

5.1 CONTINGENCIES

Under the following contingencies, field sampling should be avoided or delayed.

- Outside work will stop on the approach of a thunderstorm. Seek shelter in a local building or all-metal vehicle. Work will not resume until 30 minutes after the last report of lightning.
- If field equipment (Multi Water Quality Checker, Turbidimeter, or equivalent) fails to work or needs repair causing the field sampling to be delayed, the sampler will notify the Superintendent, Foreman, and/or Crew Leader (all considered as FMD field staff) immediately and seek repair of the equipment or replacement in order to complete field sampling.
- If non-related upstream construction impacts the project reach, causing an exceedance situation at the project site, consider delaying water quality monitoring to allow conditions to stabilize, but note the situation in the field notes.

5.2 EXCEEDANCE PROTOCOLS

The sampler will immediately notify the onsite FMD field staff of any downstream water quality standard exceedances above ambient levels as defined in Table 4. If no FMD field staff is onsite at the time of sampling, notification will be via email and/or telephone.

Not-to-exceed water quality standards for TSS and turbidity are as follows:

- Downstream TSS shall be maintained at no more than 10% of upstream baseline levels of the same day.
- For Natural turbidity between 0 and 50 NTU, an increase in downstream turbidity shall not exceed 20% of the upstream value of the same day.
- For Natural turbidity greater than 50 NTU, an increase in downstream turbidity shall not exceed 10% of the upstream value of the same day.

Upon notification by the sampler of a potential exceedance as a result of LACFCD activities, FMD field staff shall stop work immediately. Work will only resume after the downstream location is resampled and results are below the exceedance criteria assuming the exceedance is caused by maintenance activities. Additional steps to be taken include but are not limited to, cleaning of site BMPs, if necessary, or installation of additional BMPs. The sampler will help identify the source of the potential water quality exceedance and may provide recommendations on how to address the exceedance, if possible.

The sampler will provide a preliminary report on a daily/weekly basis via email, identifying any potential water quality limit exceedances caused by maintenance activities, to the FMD field staff and the Staff Engineer who requested the water quality monitoring for the project.

Staff Engineer shall review the WDR or 401 Certification for their specific project and make sure to comply with any reporting requirements for noncompliance. FMD shall report only noncompliance that has been deemed by FMD field staff to be as a result of LACFCD maintenance activities. Naturally occurring water quality exceedances shall not be reported. Noncompliance reporting shall be provided verbally to the Executive Officer. Any actions taken will be documented in the Mitigation Monitoring Program Compliance Verification Form which will be provided to the Executive Officer. The submittal will also contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected; the anticipated time it is expected to continue and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

Water quality analyses results will be submitted as part of the Annual Monitoring Report to the Los Angeles Water Board, to the attention of the 401 Program Unit, in a tabular spreadsheet format containing results of each parameter for each channel reach. Water quality results will be formatted as described in Appendix C.

6.0 REFERENCES

Horiba, Ltd. 2009. *Multi Water Quality Checker, U-50 Series, Instruction Manual*. Code: GZ0000144342C

LaMotte Co. 2005. *User Manual, LaMotte 2020e/I Turbidity Meter*. Code 1979-EPA (2020e) and Code 1979-ISO (2020i); Version 1.5, MN.

Tetra Tech, Inc. (Tetra Tech). 2015. *Water Diversion Manual, for Routine Maintenance and Emergency Repair of Soft-Bottom and Concrete-Lined Channels*. Prepared for the Los Angeles County Flood Control District.

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Appendix A. Mobilization Checklist

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EQUIPMENT INVENTORY CHECKLIST AND REPAIR RECORD FOR WATER QUALITY MONITORING

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
FLOOD CONTROL DISTRICT

EQUIPMENT

- ☐ Deionized water for rinsing and cleaning
- ☐ Cooler(s) with ice
- ☐ Turbidity Standards (0 NTU, 1 NTU, 10 NTU)
- ☐ cloth or lint-free tissues
- ☐ Sample Collection Containers
- ☐ Sample Collection Extension Arm (as required)
- ☐ Horiba Model U-52 Multi Water Quality Checker or equivalent
- ☐ LaMotte 2020e Turbidimeter or equivalent

PERSONAL PROTECTION

- ☐ Hardhat
- ☐ Safety vest
- ☐ First-aid kit
- ☐ Box of powder-free gloves
- ☐ Long-cuff gloves as necessary

DOCUMENTS

- ☐ Water Quality Monitoring Guide
- ☐ Water Diversion Manual

MATERIALS

- ☐ Scientific Calculator
- ☐ Write-In-The-Rain Notebook
- ☐ Important names and phone numbers
- ☐ Field Meter Calibration Record Form
- ☐ Field Measurement Data Form
- ☐ Chain-of-Custody Form
- ☐ Ballpoint Pen(s) & Sharpie(s)
- ☐ Digital Camera
- ☐ Flashlight
- ☐ Extra batteries

FROM CONTRACTED LABORATORY

- ☐ All required sample bottles with appropriate preservatives (if any), sample labels, and Chain-of-Custody forms.

Checked by: _____ Date: _____

Equipment inspected by: _____ Date: _____

Equipment Repairs

Type: _____ Date: _____

Type: _____ Date: _____

Type: _____ Date: _____

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Appendix B. Chain-of-Custody Forms

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American Environmental Testing Laboratory Inc.
2834 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840

CHAIN OF CUSTODY RECORD

COMPANY | PHONE

PROJECT MANAGER | FAX

PROJECT NAME | PROJECT #

SITE NAME AND ADDRESS

AETL JOB No.

Page ____ of ____

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							

ANALYSIS REQUESTED

TEST INSTRUCTIONS & COMMENTS

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS		PROPERLY COOLED Y / N / NA	
CUSTODY SEALS Y / N / NA		SAMPLES INTACT Y/ N / NA	
RECEIVED IN GOOD COND. Y / N		SAMPLES ACCEPTED Y / N	

TURN AROUND TIME

☐ NORMAL ☐ RUSH ☐ SAME DAY ☐ 24 HRS. ☐ 48 HRS. ☐ 72 HRS.

RELINQUISHED BY SAMPLER: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature:	Signature:	Signature:
Printed Name:	Printed Name:	Printed Name:
Date: Time:	Date: Time:	Date: Time:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY LABORATORY: 3.**
Signature:	Signature:	Signature:
Printed Name:	Printed Name:	Printed Name:
Date: Time:	Date: Time:	Date: Time:

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

ADVANCED TECHNOLOGY LABORATORIES
3275 Walnut Ave., Signal Hill, CA 90755
Tel: (562) 989-4045 ● Fax: (562) 989-4040

CHAIN OF CUSTODY RECORD

Page ____ of _____

Instruction: Complete all shaded areas.

For Laboratory Use Only ATLCOC Ver:20130715

Method of Transport		Sample Conditions Upon Receipt					
		Condition	Y	N	Condition	Y	N
☐Client ◯ATL		1. CHILLED	☐	◯	5. # OF SAMPLES MATCH COC	☐	◯
◯FedEx ◯OnTrac		2. HEADSPACE (V0A)	☐	◯	6. PRESERVED	☐	◯
◯GSO		3. CONTAINER INTACT	☐	◯	7. COOLER TEMP, deg C:		
◯Other:		4. SEALED	☐	◯			

CUSTOMER

Company:	Address:		Tel:
	City:	State: Zip:	Fax:

SEND REPORT TO:	SEND INVOICE TO: ☐same as SEND REPORT TO
Attn Email:	Attn Email:
Company:	Company:
Address:	Address:
City: State: Zip:	City: State: Zip:

PROJECT SAMPLES

Project Name: | Quote #: | Special Instructions/Comme ts:

Project No.: | PO #:

Sampler:

ITEM	Lab No.	Sample Descriptio			Encircle or Write Requested Analysis																				Encircle Sample Matrix						TAT	Container			QA/QC	
		Sample ID / Locatio	Date	Time	Select Analysis	Select Analysis	Select Analysis	Select Analysis	Select Analysis	Select Analysis	Select Analysis	Select Analysis	Enter Custom Analysis	Enter Custom Analysis	Enter Custom Analysis	Enter Custom Analysis	Enter Custom Analysis	Enter Custom Analysis	Enter Custom Analysis	Enter Custom Analysis	Enter Custom Analysis	Enter Custom Analysis	Enter Custom Analysis	Enter Custom Analysis	Select Soil Matrix	Select Solid Matrix	Select Water Matrix	Select Wastewater Matrix	Select Aqueous Matrix	Enter Custom Matrix		#	Type: 1=Tube; 2=VOA; 3=Liter; 4=Pint; 5=Jar; 6=Tedlar; 7 = Canister	Material: 1=Glass; 2=Plastic; 3=M tal	Preservative: 1=HCl; 2=HNO3; 3=H2SO4; 4 = 4C; 5=Zn ((Ac)2; 6=NaOH; 7=NA2S2O3	☐Routin ◯Caltrans ◯Legal ◯RWQCB ◯Level IV	REMARKS
1																																			
2																																			
3																																			
4																																			
5																																			
6																																			
7																																			
8																																			
9																																			
10																																			

TERMS

1. Sample receiving hours: 7:30 AM to 7:30 PM Monday - Friday; Saturday 8:00 AM to 12:00 PM.
2. Samples submi ed AFTER 3:00 PM are considered received the following business day at 8:00 AM.
3. The following turnaround time onditions apply
   - TAT = 0 : 300% Surcharge SAME BUSINESS DAY if received by 9:00 AM
   - TAT = 1 : 100% Surcharge NEXT BUSINESS DAY (COB 5:00 PM)
   - TAT = 2 : 50% Surcharge 2ND BUSINESS DAY (COB 5:00 PM)
   - TAT = 3 : 30% Surcharge 3RD BUSINESS DAY (COB 5:00 PM)
   - TAT = 4 : 20% Surcharge 4TH BUSINESS DAY (COB 5:00 PM)
   - TAT = 5 : NO SURCHARGE 5th BUSINESS DAY (COB 5:00 PM)
4. Weekend, holiday, a er-hours work --- ask for quote.
5. Subcontract TAT is 10 - 15 business days. Projects requiring shorter TATs will incur a surcharge respecti e to the subcontract lab --- ask for quote.
6. Liquid and solid samples will be disposed of a er 45 calendar days from receipt of samples; air samples will be disposed of a er 14 calendar days a er receipt of samples.
7. Electronic records maintained for fi e (5) years from report date.
8. Hard copy reports will be disposed of a er 45 calendar days from report date.
9. Storage and Report Fees:
   - · Liquid & solid samples: Complimentary storage for forty-fi e (45) calendar days from receipt of samples; $2/sample/month if extended storage or hold is requested.
   - · Air samples: Complimentary storage for ten (10) calendar days from receipt of samples; $20/ sample/week if extended storage is requested.
   - · Hard copy and regenerated reports/EDDs: $17.50 per hard copy report requested; $50.00 per regenerated/reforma ed report; $35 per reprocessed EDD.
10. Rush TCLP/STLC samples: add 2 days to analysis TAT for extraction p ocedure.
11. Unanalyzed samples will incur a disposal fee of $7 per sample.

As the authorized agent of the company above, I hereby purchase laboratory services from ATL as shown above and hereby guarantee payment as quoted.

Submi er Print Name _____ Signature _____

CUSTODY

Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date: Time:
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date: Time:
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date: Time:

Clear Form

Appendix C. Data Form - Water Quality Field Measurement Results

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Water Quality Field Measurement Results

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
FLOOD CONTROL DISTRICT

Channel/Reach #: _____ Project Cost Acct.: _____

Date: _____ Field Technician: _____

Multi Water Quality Checker

Unit Name: *Horiba U-52* Unit No.: _____

(other unit) _____ Field Technician: _____

Turbidity Meter

Unit Name: *LaMotte 2020e* Unit No.: _____

(other unit) _____ Field Technician: _____

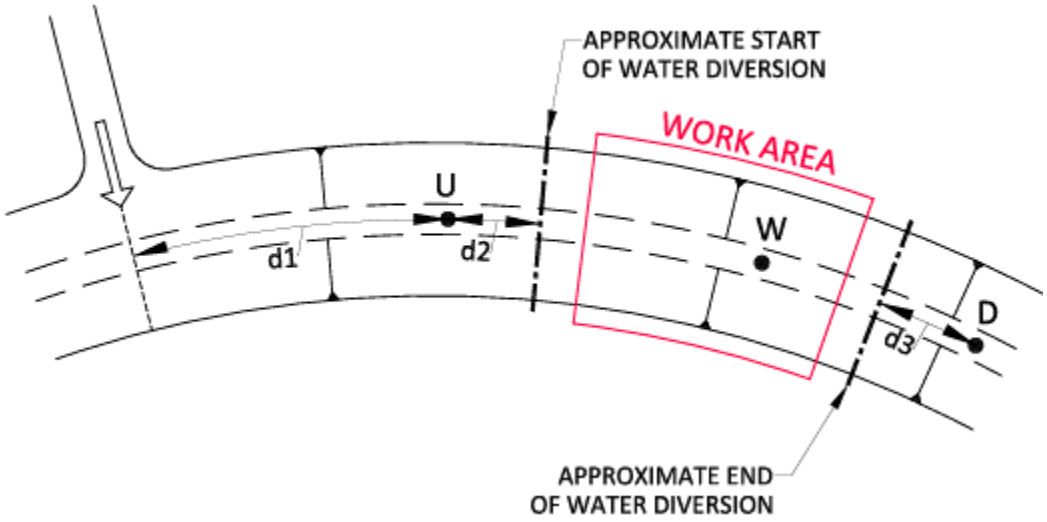
SAMPLE LOCATION	Upstream [U]	Within [W]	Downstream [D]
TIME:			
SAMPLE NUMBER:			
SAMPLE DEPTH:			
TEMPERATURE(°C)			
pH			
TURBIDITY (NTUs)			
DISSOLVED O_2 (mg/l)			

NOTES:

1 Sample number is channel reach number followed by location suffix (include on sample label and COC).
2 Total Suspended Solids will be analyzed by one of the As-Needed Contract Environmental Laboratories.
3 Provide distances d1, d2, and d3 (as defined in diagram on reverse side of form) in the field notes.

FIELD NOTES:

Water Quality Field Measurement Results



NOTES:

1. UPSTREAM SAMPLING POINT (U) TO BE DOWNSTREAM FROM LAST INFLOW TO THE PROJECT CHANNEL. MINIMUM ACCEPTABLE DISTANCES (dl AND d2) WILL VARY BASED ON THE SIZE AND FLOW RATE OF THE CHANNEL BEING SAMPLED AND WILL ULTIMATELY BE DETERMINED BY THE SAMPLER.
2. WITHIN CHANNEL SAMPLING POINT (W) TO BE LOCATED IN THE DIVERSION CONVEY-ANCE WHERE ACCESSIBILITY ALLOWS.
3. DOWNSTREAM SAMPLING POINT (D) WILL BE DOWNSTREAM FROM THE END OF THE WATER DIVERSION. MINIMUM ACCEPTABLE DISTANCE (d3) WILL VARY BASED ON THE SIZE AND FLOW RATE OF THE CHANNEL BEING SAMPLED AND WILL ULTIMATELY BE DETERMINED BY THE SAMPLER.

LEGEND:

●	WATER SAMPLING POINTS
U	UPSTREAM
W	WITHIN PROJECT
D	DOWNSTREAM
—·—·—	WATER DIVERSION LIMITS
⇩	CLOSEST UPSTREAM CHANNEL OR STORM DRAIN INFLOW