APPENDIX B

GENERAL REQUIREMENTS

FOR

SITE INVESTIGATIONS

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STATE OF CALIFORNIA
California Regional Water Quality Control Board
Los Angeles Region

GENERAL REQUIREMENTS
For
SUBSURFACE INVESTIGATIONS

Objectives of subsurface soil/groundwater investigations are to evaluate historic and current waste discharges and to mitigate them as potential sources of groundwater contamination. In addition to the general requirements provided herein, work plans must be submitted for each investigation to be conducted. Specific requirements for Subsurface Soil Investigation, Active Soil Gas Investigation, and Groundwater Investigation are provided separately. Site-specific modification to these requirements may be allowed upon consultation with the Regional Board staff. Work should not be initiated without pre-approval.

WORK PLAN: Submit required number of copies of the work plan with a minimum time schedule for submitting a final technical report.

SITE INFORMATION: Characterize past and present specific business activities. Describe storage, handling, use, and disposal procedures for chemicals and waste materials, primarily chlorinated solvents, aromatics and petroleum-based hydrocarbons. Give name, address, and phone number of any landlord/lessor. Complete the Site Audit Questionnaire. Submit the results of any previous subsurface investigations conducted at the site and any report(s) generated for site assessment.

FACILITY MAP: Draw a facility map to scale including a north arrow, property lines and adjacent street(s). Identify all past and present potential sources for soil and/or groundwater contamination, such as chemical and waste storage, transfer, and use areas including drum storage, tanks and piping, clarifiers, sumps, pits, septic tank/cesspool systems, and sewer lines. Indicate dates of completion of buildings or pavings where possible.

SITE HEALTH AND SAFETY PLAN: Submit a site-specific health and safety plan for subsurface investigation, commensurate with the scope and nature of work to be completed.

PERSONNEL: *ASSURE THAT A CALIFORNIA REGISTERED GEOLOGIST OR ENGINEER OR CERTIFIED ENGINEERING GEOLOGIST BE ON-SITE TO DIRECT OR CONDUCT SUBSURFACE INVESTIGATIONS FOR CERTAIN PERIODS OF TIME PROPORTIONAL TO THE SCOPE AND COMPLEXITY OF THE WORK AND SIGN THE FINAL TECHNICAL REPORT.*

FIELD WORK: Do not proceed with field work without prior approval. Notify Regional Board staff at least 10 days prior to initiating field work to permit observation of field activities and/or to take duplicate samples as needed.

REPORTS: Submit required number of copies of a final technical report within 4 weeks after completion of field activities. Include a description of all field drilling and sampling activities, summary of sample analytical results and related QA/QC data, conclusions based upon the analytical results and investigation findings, and recommendations for additional work as needed. Report all analytical results and QA/QC data on the LabForm 10A/10B (for volatile organics and petroleum hydrocarbons).

WIP/GR1 0593

STATE OF CALIFORNIA
California Regional Water Quality Control Board
Los Angeles Region

REQUIREMENTS
For
SUBSURFACE SOIL INVESTIGATIONS

These requirements are to be used when conducting initial and any supplementary engineering/geologic soils investigation to evaluate:

1. Waste discharges to soils at potential point sources areas,
2. Lateral and vertical extent of soil contaminants,
3. Soil properties which affect contaminant mobility and transport in the vadose zone.

WORK PLAN: A work plan must be submitted to meet the General Requirements For Subsurface Investigation and shall also include, but not be limited to, the following:

1. Indicate the number, location, and depth of soil borings and justify. Plot on facility map.

2. Take soil samples at 5-foot intervals, and each change in lithology or changes in observed contamination.

3. Take samples from the middle of low permeability or high moisture content units if the units are thicker than five feet.

4. Explain proposed drilling method, equipment, and procedures for borings.

5. Describe equipment and procedures for collecting and handling of geologic materials.

6. Identify borehole backfill materials, procedures, and disposal method for soil cuttings.

FIELD PROCEDURE: The following investigation procedures must also be addressed in the work plan at a minimum.

1. Extend boring depth if groundwater is encountered or if there is obvious contamination at the bottom of the borehole.

2. Do not use soil samples obtained by any air or fluid drilling methods for volatile, semi-volatile or petroleum hydrocarbon chemical analyses.

3. Provide complete and legible boring logs including:
   a) Description of earth materials, conditions (moisture, color, etc.), and classifications per Unified Soil Classification System (USCS);
   b) Lithographic column with USCS abbreviations and symbols;
   c) Sample depth in feet;
   d) Penetration in blows per foot (blow counts) and inches (or percent) of sample recovered;
   e) Vapor readings of samples using Organic Vapor Analyzer.

4. Use soil sample rings at least 2" (diameter) by 3" (length).

5. Take, seal, and transport discrete and undisturbed samples with no headspace to the laboratory for analysis. Do not use samples to be submitted for laboratory analyses for field screening or classification.

6. Comply with chain of custody procedures. Samples must be handled and analyzed per the Laboratory Requirements For Soil and Water Sample Analyses and QA/QC Guidance Document (11/92).

7. Sample and analyze water, if ground water is encountered, only after converting to a monitoring well or piezometer per the Requirements For Groundwater Investigation.

OPTIONAL REQUIREMENTS: Additional soil physical data collection may be considered during site assessment and/or remediation phases to perform site-specific risk assessment and/or fate and transport modeling.

Soil samples shall be collected from different lithological units at various locations and depths, and sent to laboratory for determining the following parameters:

a) Water-Solid adsorption/distribution coefficient (Kd)
b) Fraction of organic carbon content (foc)
c) Grain-size distribution
d) Effective soil porosity
e) Bulk density
f) Soil moisture content
g) Plasticity index for clayey and silty materials
h) Gas permeability (if possible).

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STATE OF CALIFORNIA
California Regional Water Quality control Board
Los Angeles Region

REQUIREMENTS
For
GROUNDWATER INVESTIGATIONS

These requirements are to be used for hydrogeologic assessments and groundwater monitoring programs to determine:

1. Impacts of discharges on groundwater quality,
2. Lateral and vertical extent of contaminant plume(s),
3. Groundwater gradient and direction of flow, and
4. Specific aquifer properties as required.

WORK PLAN: A work plan must be submitted to meet the General Requirements For Subsurface Investigation and shall also include, but not be limited to, the following:

1. Provide a map, to scale, showing the location(s) of the proposed well(s) and nearby existing well(s).

2. Provide well design, specifications and construction details including casing and screen materials, screen length and placement with respect to water table, depth and type of annular seal.

3. Propose and explain drilling method(s) to be used and decontamination procedures.

4. Provide disposal plans for soil cuttings and development water.

FIELD PROCEDURE: The following investigation procedures must also be addressed in the work plan at a minimum.

MONITORING WELL CONSTRUCTION/DEVELOPMENT:

1. Use a minimum of 4" diameter, stainless steel wire-wrapped screen.

2. Do not penetrate a competent clay layer below the saturated zone. Conduct physical and hydraulic tests to determine competency of any confining zone materials. Take a sample of the confining clay at the end of borehole for chemical analysis.

3. Suspend and centralize casing such that it is not resting against the sides nor bottom of the hole prior to fixing in place.

4. Place grout of either cement, bentonite or mixture in an appropriate manner to avoid bridging.

5. Characterize aquifer materials based upon sieve analysis for proper selection of filter pack and screen. Less than 10% of the filter pack should enter the well.

6. Provide geophysical logging for all well boreholes by qualified personnel to confirm the geologic logging per USCS during the drilling.

7. Establish benchmark relative to mean sea level. Provide benchmark location and survey date. Measure water levels to 0.01 foot. Provide well location using UTM Coordinates.

8. Wait no less than 48 hours for well seal materials to set before well development. Develop well such that the waters sampled are representative of the formation water. Obtain water sample with less than 5 NTUs of turbidity measurement to be acceptable for volatile organic compound (VOC) analysis.

WATER SAMPLING

1. Wait a minimum of seven days after well development.

2. Describe details of water sampling and provide:
   - **a)** Water level measurement procedures;
   - **b)** Purge techniques, purge volumes, and parameters (pH, temperature, conductivity, and turbidity) to assure the collection of a representative water sample;
   - **c)** Water sampling device(s);
   - **d)** Procedures to minimize loss of samples by adsorption and/or volatilization.

3. Describe methods for sample handling and preservation.

4. Comply with chain of custody procedures. Samples must be handled and analyzed per the Laboratory Requirements For Soil and Water Sample Analyses and QA/QC

Guidance Document (11/92).

REPORTING:

1. Have final technical report signed by a California Registered Geologist or Engineer or Certified Engineering Geologist with five years hydrogeologic experience to be accepted.

2. Incorporate all boring logs, geophysical logs, and sieve analysis results with interpretation in final report.

3. Illustrate the groundwater contaminant plume(s) by plan view and cross section (to scale), including direction of section lines, scale, legend, constituent concentrations, and lithology.

4. Recommend additional assessment requirements and plans for site remediation as needed.

WIP/GW1 0593

STATE OF CALIFORNIA
California Regional Water Quality Control Board
Los Angeles Region

LABORATORY REQUIREMENTS
For
SOIL AND WATER SAMPLE ANALYSES

This document serves as a portion of the requirements for soils and groundwater investigation and site assessment and/or cleanup, and is complementary to the QA/QC Guidance Document (11/92), Requirements For Subsurface Soil Investigation and Requirements For Groundwater Investigation.

GENERAL:

1. Employ a laboratory certified by the State Department of Health Services, Environmental Laboratory Accreditation Program (ELAP) for each analytical testing method to be used.
2. Quantify method detection limits (MDLs) for low level testing. Report concentrations for constituents identified above MDLs. Otherwise, indicate as trace and provide estimated concentration.
3. Report an analytical result as "non-detected" (ND) only for constituents from samples analyzed without dilution.
4. Take appropriate corrective actions for any laboratory contamination or matrix interference problems and report the corrective actions in support of the analytical results. Do not have results blank adjusted.
5. Include laboratory QA/QC procedures and performance as follows:
   a) Calibration check standards including the most recent initial calibration range (the lowest to the highest injected concentrations) and average response factors (RF), %RSD, daily RF from continuing (mid-point) calibration and its percent difference from the initial calibration average RF;
   b) Method blanks (daily);
   c) Laboratory quality control check samples (LCS) and spiking concentrations (daily). LCS chemical standards and calibration standards must be obtained from different supply sources;
   d) Surrogate samples and spiking concentrations (each sample);
   e) Matrix spike and matrix spike duplicates (MS/MSD) (every batch of samples). If more than 10 samples are obtained for the subsurface investigation project, spike at least one of them.

6. Report all analytical results and QA/QC sample results on the LabForm 10A (for volatile organics and petroleum hydrocarbons). Run all QA/QC items specified above on the same dates when samples were actually analyzed.

SOIL SAMPLES:

1. Analyze samples by EPA Methods 8010/8020 or 8260 for volatile organic compounds (VOCs) and EPA Method 418.1 and/or EPA Method 8015 (Modified) for total petroleum-based hydrocarbons (TPH). Use supplementary EPA Method(s) as necessary for any past and/or present site chemicals (e.g., metals, phenols, PCBs, etc.).

2. Achieve MDLs of 1 - 2 µg/kg for select VOCs as specified in RWQCB LabForm 10A. Achieve 5 mg/kg for EPA Method 418.1. Achieve MDLs of 500 - 5000 µg/kg for EPA Method 8015 (Modified), depending upon type of hydrocarbons to be tested (gasoline, jet fuel, diesel, etc.).

3. Complete initial calibration consisting of a minimum of three points.

4. Analyze VOC samples within seven days and prior to other analyses (TPH, metals, etc.) unless separate samples are obtained at the site. Results for VOCs analyzed after seven days are considered to be low estimates of actual concentrations.

5. Specify and explain extraction method(s) and procedures to be used to prepare samples for hydrocarbon analyses based upon soil type and hydrocarbon characteristics. Fine-grained soils (clay or silt) or long-chain hydrocarbons require sufficient extraction time, which must be identified in the workplan and verified in the laboratory report.

WATER SAMPLES:

1. Analyze samples by EPA Methods 502.1/503.1 or 524.2 for VOCs. Use EPA Method 418.1 or EPA Method 8015 (Modified) for TPH analysis. Use supplementary EPA Method(s) as necessary for any past and/or present site chemicals. During the baseline groundwater monitoring, analyze general minerals and nitrogens (nitrate, nitrite, and ammonia).

2. Achieve MDLs of 0.5 - 1 µg/L for select VOCs as specified in RWQCB LabForm 10A. Achieve 2 mg/L for EPA Method 418.1. Achieve MDLs of 100 - 500 µg/L for EPA Method 8015 (Modified), depending upon type of hydrocarbons to be tested (gasoline, jet fuel, diesel, etc.).

3. Complete initial calibration consisting of a minimum of five points.

4. Analyze trip blanks, equipment blanks, and duplicate samples in addition to QA/QC items specified above.

5. Submit a separate sample for turbidity analysis and report result.

WIP/LQ2 0295

INSTRUCTIONS FOR RWQCB-LA LABORATORY REPORT FORM COVER PAGES (6/00)

These instructions assist in completion of the report format required by the Regional Water Quality Control Board, Los Angeles Region. Other agencies or regulatory bodies may also require the use of this reporting format. The report format is to be applied to all stationary laboratories and mobile laboratories that undertake analyses under RWQCB-LA's jurisdiction. Failure to report in the format required may result in rejection of the analytical results.

Laboratories can use their available software to duplicate the reporting formats. The format and terminology shall be kept the same as this format with the exception of column widths and font types. The shading and grid lines are optional, however they help the reader to locate data easily.

Cover pages 1 and 2 can be used for all RWQCB LabForms. RWQCB LabForm 10A is designed for reporting all organics analyses. RWQCB LabForm 10C is for metal analyses. Do not try to amend the report forms to fit in analyses other than specified.

Page 1: Laboratory and Project Information

1. Complete the top section of page one with the laboratory information. The laboratory name, address, telephone and facsimile (FAX) numbers, California ELAP Certification number and expiration date are required. The actual expiration date must be entered. If renewal is in the process, enter the expiration date and enter "Renewal in process" under the date.

2. Under "AUTHORIZED SIGNATURE", print or type the name and title of the authorized person who has reviewed the report. This person must sign and date the following line. The authorized person must be the laboratory director, QA/QC officer, or the person who is in charge of reviewing the data.

3. After "CLIENT NAME", enter the full name of the company or agency that submitted the samples to the laboratory for analysis.

4. After "PROJECT No.", enter the number, name and/or site of the project as identified by the client.

5. After "DATE(S) SAMPLED", "DATE(S) RECEIVED", and "DATE(S) REPORTED", enter the date, or range of dates, that the samples were collected and submitted to the laboratory and the sample results were reported to the client (e.g., Date Sampled: 6/2/94 to 6/3/94; Date Received: 6/3/94; Date Reported 6/10/94). The dates sampled and received should correspond to the dates on the chain of custody forms. The date reported is when the results were first released to the client.

6. Circle either "YES" or "NO" to indicate whether or not a Chain of Custody form was received with the samples. Attach a copy of Chain of Custody form.

7. The Comments section is used to describe any problem which occurred with the samples or analysis which may potentially affect the technical or legal defensibility of the data. Examples of problems may include sample head-space, insufficient sample volume, exceeded holding time, and QA/QC outside of acceptance limits. To avoid rejection of data

by regulatory agencies, efforts should be made to resolve any of these problems prior to the analysis and release of sample results.

Page 2: Sample Summary

1. Page 2 contains four different analysis sections: ORGANICS (VOCs, TPH, Pesticides, Herbicides, PCBs, etc.), INORGANICS (Metals), MICROBIOLOGICAL, and OTHER TYPES OF ANALYSES. In each applicable section, list EPA method used, the number of samples analyzed by that method at the laboratory listed on page 1 and the number of samples, if any, subcontracted to another laboratory which must also be certified by ELAP.

2. After "SAMPLE CONDITION" at the bottom of each analysis section, indicate the condition of the samples upon receipt at the laboratory. If the sample condition meets all of the necessary criteria, then enter "Acceptable". If the sample condition does not meet the criteria, enter the deficiency (e.g., no preservative, head-space present, unchilled samples).

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

LABORATORY REPORT FORM (COVER PAGE 1)

Laboratory Name: _____

Address: _____

_____

Telephone/Fax: _____

ELAP Certification No./
Expiration Date _____

Authorized Signature
Name, Title (print) _____

Signature, Date _____

Client Name _____

Project No. _____

Date(s) Sampled: (from – to) _____

Date(s) Received: (from – to) _____

Date(s) Reported: (from – to) _____

Chain of Custody Received: Yes _____ No _____

Comments _____

_____

_____

_____

_____

_____

(RWQCB Lab Form: Ver 6/00)

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

LABORATORY REPORT FORM (COVER PAGE 2)

Organic Analyses	# of Samples	# of Samples Subcontracted

Sample Condition:

Inorganic Analyses	# of Samples	# of Samples Subcontracted

Sample Condition:

Microbiological Analyses	# of Samples	# of Samples Subcontracted

Sample Condition:

Other Types of Analyses	# of Samples	# of Samples Subcontracted

Sample Condition:

This form can be used for reporting analyses of volatile organic compounds, semi-volatile, petroleum hydrocarbons, PCBs, pesticides, herbicides, and other organics.

Page 1 of 3: Analytical Result

A. Header Information

1. After "Project No:", enter the client's project number (from cover page 1). This number is required on every page of the report.

2. After "METHOD", enter the analytical method used. (e.g., EPA 8260, or EPA method 8021).

3. After "REPORTING UNIT", enter the appropriate reporting unit. The units ug/L for water samples and ug/Kg for soil samples are recommended for volatile analyses. The units mg/L and mg/Kg are recommended for TPH/semi-volatile analyses.

4. After "DATE ANALYZED", enter the date on which the sample is analyzed.

5. After "DATE EXTRACTED", enter the date on which the sample is extracted with solvent. If no solvent is used (e.g., purge and trap without organic solvent extraction), enter "N/A" (Not Applicable).

6. After "LAB SAMPLE I.D.", enter the I.D. number the laboratory assigned to each sample.

7. After "CLIENT SAMPLE I.D.", enter the I.D. number the client used when the sample was collected.

8. After "EXTRACTION SOLVENT", enter the type of solvent used for extraction before purge and trap or injection into instrument.

9. After "EXTRACTION METHOD", enter EPA Method used for extraction. (e.g., EPA 3550). For VOC sample which is extracted with methanol, enter the method used. (e.g., EPA 5030 for EPA 8021, EPA 8260 for the GC/MS methods.)

10. After "DILUTION FACTOR", enter the dilution factor for each sample. If a sample is not diluted (e.g., direct purge and trap of water sample), enter "1" as dilution factor.

11. If more than one page is needed, complete the header information for all samples analyzed on the subsequent pages. The method blank does not need to be repeated on each subsequent page. If more than one method blank is analyzed, report each method blank with the samples to which it applies for validation purposes. The column widths may he changed to put analysis results for more samples on each page.

B. Analytical Results

1. Under "COMPOUND", list each analyte which the samples were tested for. List the analytes (alphabetical order or elution order is recommended). EPA Methods analyzed in series (e.g., EPA 8015 (modified) may be listed on the same results page. For hydrocarbons which cannot be positively identified as a specific product, indicate the type of hydrocarbons detected (e.g., hydrocarbons in the range of C23-C32).

2. Under "CRDL" (Contract Required Detection limit), list the detection limit used for reporting each analyte. If sample has to be diluted for one constituent, do not automatically adjust the CRDL for other constituents by the same dilution factor, and report results of other constituents under the CRDL without dilution.

3. In each column for the method blank and the samples, report all analytes detected above the CRDL. Do not subtract blank or adjust sample results for blank contamination. Any analyte not detected above the CRDL should be reported as "<CRDL value" (whatever the CRDL value is after taking into account dilution factor, e.g., <0.5). Samples must show the final results calculated with dilution factor. (e.g., sample after 10 times dilution gives analysis result of 10 ppb. Then the final result reported for this sample should be 100 ppb.) The CRDL for some analytes may be at or near the laboratory method detection limit. However, do not flag any data as estimated or below certain confidence levels.

4. If the list of analytes continues on to the second page, repeat the analytical method, reporting unit, laboratory sample identification and client sample identification on the second page in the spaces provided. Continue with the reporting of detection limits and analytical results as on the first page.

5. If samples are analyzed under different dilution factor, use separate column to report. Report a result as “non-detected” (ND) only for samples analyzed <u>without</u> dilution.

6. For SURROGATE, list surrogate compounds added to blank and samples. Report Spike Concentration (SPK CONC) of added surrogate, Acceptable % Limits (ACP%) for each surrogate, and % Recovery (%RC) of each surrogate in blank and each sample. If the analyte list lasts only one page, place the surrogate box at the bottom of the first page. If the analyte list continues on to other pages, place the surrogate box at the bottom of the last page.

<u>Page 2 of 3: QA/QC Report</u>

I. Calibration Standard

A. Initial Calibration (IC)

1. The initial calibration format provided or direct printouts from analytical instruments can be

used as an alternative of the IC format.

2. No matter which IC format (RWQCB form or direct instrument printouts) is used, provide the following data:

Date performed:	Date the IC was performed most recently and applied in calculation of the sample results.
Standard Supply Source:	Source of the standard used in IC.
Instrument I.D.:	ID or name of the instrument used for IC, QA/QC, and sample analyses.
Analytical Method:	EPA method used in IC, all QA/QC, and sample analyses.
Date of source:	Date when standard for IC was received or prepared in-house.
Lot Number:	The lot number of the standard used for IC.
Compound:	Name of compounds in IC.
Detector:	Detector used for analysis of the listed compound.
RT:	Retention time of listed compound.
Mass/Conc:	Injected mass or concentration of the listed compound. List all five masses or concentrations. Unit must be given (e.g., ng for mass and ug/L for concentration). If concentration is used, volume of standard injected must be reported.
Area:	Area count of each concentration level.
RF:	Response factor of each concentration level.
RF(ave):	Average RF.
SD(n-1):	Standard deviation with (n-1) degree of freedom.
%RSD:	% relative standard deviation.

B. Continuing Calibration (CC) (Daily Mid-point Calibration)

1. The CC format provided or direct printouts from analytical instruments can be used as an alternative of the CC format.

2. No matter which CC format (RWQCB form or direct instrument printouts) is used, provide the following data:

Compound:	Names of compounds in CC.
Detector:	Same as above in (A) Initial Calibration.
RT:	Same as above in (A) Initial Calibration.
Mass/Conc:	Same as above in (A) Initial Calibration.
Area:	Same as above in (A) Initial Calibration.
RF:	Same as above in (A) Initial Calibration.
%DIFF:	Percent difference between RF of continuing calibration and RF(ave) of initial calibration.
ACP RGE	

%DIFF: Acceptable range for %DIFF.

Page 3 of 3: QA/QC Report (Continued)

II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

1. Under "DATE PERFORMED", enter the date that MS/MSD is performed, which must be the same as the batch of samples that are analyzed.

2. Under "BATCH #", enter laboratory batch number associated with samples.

3. Under "LAB SAMPLE I.D.", enter the name or number of laboratory sample which is used for MS/MSD analyses.

4. Under "Analytical Method", enter the EPA Method and circle a reporting unit. The EPA Method and reporting unit must be the same as that reported for the samples.

5. Circle one to indicate unit.

   Provide the following data in the table:

Analyte:	The spiking analytes in sample.
Sample Result:	The original sample result associated with the spiking analytes.
Spike Conc:	MS concentration of added analyte in sample.
MS:	Result of MS.
%MS:	% recovery for MS.
Spike Conc (Dup):	MSD concentration of added analyte in sample.
MSD:	Result of MSD.
%MSD:	% recovery for MSD
RPD:	Relative percent difference between MS and MSD
MS/MSD LIMIT:	Acceptance % limit for MS
RPD LIMIT:	acceptance limit for RPD

   If the original sample results are "<CRDL" without dilution, enter "0" for sample result on this MS/MSD table.

III. Laboratory Control Sample (LCS)

1. After "DATE PERFORMED", enter the date LCS is analyzed, which must be the same as the batch of samples that are analyzed.

2. After "ANALYTICAL METHOD", enter EPA method used in LCS, which must be the same method used in QA/QC and sample analyses.

3. After "STANDARD SUPPLY SOURCE", enter source of the LCS standard.

4. After "DATE OF SOURCE", enter date when standard is used for LCS is received or prepared in-house.

5. After “INSTRUMENT I.D.”, enter lab instrument I.D. for the LCS run.

6. After "LOT NUMBER", enter the lot number of the LCS standard.

7. After "LAB LCS I.D.", enter the laboratory ID number assigned to LCS.

8. Circle one to indicate unit.

Provide the following data in the table:

Analyte:	The LCS analyte.
Spike Conc:	Concentration of LCS analyte.
Result:	Result for each analyte.
%Recovery:	% recovery for LCS.
ACP %REC LIMIT:	Acceptance limit for LCS % recovery.

IV. General Reporting Requirements

1. Chromatograms, raw data on analysis, copy from logbooks, extraction logs, and other laboratory data relating to sample results are not required with report, but must be submitted upon request.

2. Workplan or monitoring program for a specific project may require additional site-specific analytes and/or conditions.

3. Use a separate sheet for more information for date of standard supply source, date of preparation, instrument I.D., lot number, etc.

V. General Requirements For Organics

The following requirements are not a replacement or substitution of the EPA method requirements which must be followed by the laboratories. These requirements serve as a specific emphasis or clarification to LARWQCB's QA/QC objectives in addition to EPA method requirements. Laboratories must comply with these requirements.

Sample Condition

The criteria for acceptable sample condition is determined by the method(s) which the samples will be analyzed. The laboratory should try to resolve any sample condition problems before the samples are accepted for analysis. If the problems are beyond being resolved, the samples should be rejected and resampling should be requested.

Subcontracted Samples

Samples subcontracted to another laboratory, which must be certified by ELAP, must also conform to the requirements of this program and results must be submitted by the subcontracted laboratory on this report format.

Target Compounds

The target compounds should be those specified in the method or as required by the LARWQCB.

Volatile organic compounds (VOCs) analysis must include the following compounds as target compounds at a minimum. If other compounds are also expected or detected in samples, they must be included in the target list. GC/MS method (e.g., EPA 8260) and ELCD (electronic conductivity detector)/PID (photoionization detector) in series method (e.g., EPA 8021) must include all target compounds. ELCD method (e.g. EPA 8021) must include all target halogenated compounds. PID method (e.g., 8021) must include all target aromatics.

Halogenated compounds

Bromodichloromethane
Bromoform
Bromomethane
Carbon tetrachloride
Chlorobenzene
Chloroethane
Chloroform
Chloromethane
Dibromochloromethane
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
1,1-Dichloroethane (1,1-DCA)
1,2-Dichloroethane (1,2-DCA)
1,1-Dichloroethylene (1,1-DCE)
cis-1,2-Dichloroethene (c-1,2-DCE)
trans-1,2-Dichloroethene (t-1,2-DCE)
1,2-Dichloropropane
cis-1,3-Dichloropropene
trans-1,3-Dichloropropene
Methylene chloride (Dichloromethane)
1,1,2,2-Tetrachloroethane
1,1,1,2-Tetrachloroethane
Tetrachloroethene (PCE)
1,1,1-Trichloroethane (1,1,1-TCA)
1,1,2-Trichloroethane (1,1,2-TCA)
Trichloroethene (TCE)
Trichlorofluoromethane (Freon 11)
Dichlorodifluoromethane (Freon 12)
Vinyl chloride (VC)

Aromatics

Benzene
Ethyl benzene
Toluene
m,p-Xylenes
o-Xylene

CRDL

The detection limits should be those required by the LARWQCB, as specified in the assessment workplan/monitoring program or as specified in EPA methods used. Lower detection limits than these specified below can be required based on site-specific needs. If CRDL cannot be achieved due to matrix problem, laboratory must provide a written explanation and propose a reasonable CRDL under the situation.

CRDLs for VOCs must be 1 ug/L or 2 ug/Kg except for the following compounds. This low CRDLs are applicable to the samples with no detectable VOCs or low levels of VOCs. If sample needs to be diluted due to high contamination, see section concerning dilution in sample analysis requirements.

CRDL of 0.5 ug/L or 1.0 ug/Kg is required for these following compounds because MCLs or Action limits (AL) for these compounds are low as shown.

	MCL	AL
Benzene	1.0	
Carbon tetrachloride	0.5	
1,2-Dichloroethane	0.5	
1,3-Dichloropropene	0.5	
Dichlorodifluoromethane(Freon 12)		1.0
Vinyl chloride	0.5	

CRDL of 100 ug/L or 100 ug/Kg will be acceptable for following compounds.

Acetone
Acrolein
Acrylonitrile
Methyl Ethyl Ketone (2-butanone)
Methyl Isobutyl Ketone (4-Methyl-2-pentanone)

CRDL shall be 100-500 ug/L or 500-5000 ug/Kg for petroleum hydrocarbons depending on type of hydrocarbons to be tested (e.g., gasoline, jet fuel, diesel, etc.).

Analysis Methods

1. For VOCs, if the samples have never been analyzed before (the type of compounds present is unknown), at least 10 % of samples from each site (or a minimum one sample if total samples are less than 10) should be analyzed using GC/MS method (e.g., EPA 8260B) first. The rest of samples can then be analyzed with non-GC/MS methods (e.g., EPA 8021) if desired.

2. Laboratory must report the number of tentative identified compounds and estimated results if possible for those samples analyzed by GC/MS method as required by Item 1 above.

3. If the GC/MS method analysis shows the presence of compounds that cannot or will not be detected by non-GC/MS method, then all the samples shall be analyzed by GC/MS method.

4. If the compounds present are known from previous analyses, the samples can be analyzed by either non-GC/MS or GC/MS method.

5. If the PID/ELCD in series method (e.g., EPA 8021) is used, the method must be reported as such (e.g., not reported as 8010/8020).

6. For other organic analyses (e.g., pesticides), confirmation must also be done by GC/MS. If GC/MS cannot confirm the compound due to low level, use second column for confirmation.

Initial Calibration

1. Initial 5 point calibration must be performed for all compounds in the above target list and any expected, required, or detected compound.

2. %RSD must be calculated for each compound and must not exceed 20%.

3. For GC/MS analyses, the %RSD of the Calibration Check Compounds (CCC) must be less than or equal to 30%. The CCC are: 1,1-dichloroethene, chloroform, 1,2-dichloropropane, toluene, ethylbenzene, and vinyl chloride.

4. Average Calibration Factor (CF) or Average Response Factor (RF(ave)) must be used for calculation of all sample results and QA/QC analyses.

5. In terms of practicality during compliance with the above requirements, for GC analyses, the percent relative standard deviation (%RSD) must not exceed 20% for 80% of all analytes calibrated. The %RSD for any analyte must not exceed 35%. However the %RSD for all compounds detected in samples must not exceed 20%.

Continuing Calibration (CC) (Daily mid-point calibration)

1. In terms of practicality during compliance with the requirement, for GC analyses, the percent difference (%DIFF) from initial calibration must not exceed 15% for 80% of all analytes calibrated. The compounds that meet the 15% difference requirement must be the same compounds which meet the %RSD in the initial calibration. The %DIFF for any analyte calibrated must not exceed 35%. However, the %DIFF for all compounds detected

in samples must not exceed 15%.

2. For GC/MS analyses, the %DIFF of CCC must not exceed 20%.

Surrogate

The surrogate(s) used and surrogate recovery acceptance limits should be determined by the EPA Method guidelines. If there are no EPA guidelines, the laboratory can use the appropriate surrogate(s) and the recovery limits should be in a range determined by in-house laboratory control charts. Data for the control charts must be submitted upon request.

Method Blank

The method blank should not show any concentration more than five times (5X) the CRDL for any single target compound. If exceeded, the laboratory should investigate the source of contamination and take corrective actions before proceeding with further sample analysis. Any disclaimer statement such as the following example concerning the blank and interpretation of result will not be acceptable and should not be included in report.

"Results should not be considered reliable unless the sample result exceeds five times (5X) the CRDL or ten times (10X) the blank concentration."

MS/MSD

MS/MSD analyses should be performed for every project (for each site) at a minimum rate of one per 20 samples or per batch, whichever is more often. The spiking analytes used for the MS/MSD analyses should be those required by the LARWQCB. When the spiking analytes are not specified by LARQWCB, the ones specified in EPA methods should be used. If EPA method does not specify, then appropriate ones chosen by the laboratory can be used. If MS/MSD is not required by the method used, MS/MSD may not be required unless specified in workplan.

For VOCs analysis, the following compounds must be included in the spiking for MS/MSD.

Halogenated Compounds:	**Aromatics**:
Chloroform	Benzene
1,1-Dichloroethane (1,1-DCA)	Toluene
1,2-Dichloroethane	MTBE
1,1-Dichloroethylene (1,1-DCE)	
Tetrachloroethylene (PCE)	
Trichloroethylene (TCE)	

The acceptance limit should agree with EPA guidelines for each method used. If there are no EPA guidelines, it may be determined in a range by in-house laboratory control charts. Data for the control charts must be submitted upon request. Trace levels of analyte may be used in

MS/MSD calculations even if reported as non-detected on the report form.

Laboratory Control Sample (LCS)

The LCS analysis must be performed each day that samples are analyzed. The LCS must be obtained from a different supplier or a different lot from the calibration standards. If prepared in-house, it must be prepared from a stock solution different from calibration standards. The LCS should be analyzed in reagent water. It does not have to be matrix matched like the MS/MSD analyses.

The spiking analytes used for the LCS analyses should be those required in the target compound list or those required by the LARWQCB.

The acceptance limits for the LCS for volatile organic analyses are 80%-120%. LCS acceptance limits for other organic analyses should be determined by EPA Method guidelines, or in-house laboratory control charts if there are no EPA Method guidelines for this compound. Data for the control charts must be submitted upon request.

Sample Analysis

All samples must be analyzed to comply with CRDL requirements above. If sample dilution is required due to high concentrations of some compounds, the initial run must be used to calculate the results for constituents that are not affected by the high concentrations so that CRDL can be met for these compounds.

If concentrations of compounds present in samples are known to be high (outside the calibration range) from previous analyses or confirmative information, the samples can be directly diluted and then analyzed. Low CRDL will not be applicable for these samples if they are found to be high. If not, an undiluted sample must be reanalyzed to meet the CRDL requirements.

ACKNOWLEDGEMENTS

The following staff of the California Regional Water Quality Control Board - Los Angeles Region involved to finalize this document: David Bacharowski, Alex Carlos, Rebecca Chou, Yue Rong, Hiam Tan. During the reporting form development and revision, representatives from many regulated laboratories, especially the Association of California Testing Laboratories (ACTLabs), and the California Health Department Environmental Laboratory Accreditation Program (ELAP), provided valuable comments that make the improvement of the form possible.

Project No:_____ (RWQCB LabForm10A;Ver6/00)

ANALYTICAL RESULT FOR ORGANICS

METHOD: **REPORTING UNIT:**

	DATE ANALYZED						
	DATE EXTRACTED						
	LAB SAMPLE I.D.						
	CLIENT SAMPLE I.D.						
	EXTRACTION SOLVENT						
	EXTRACTION METHOD						
	DILUTION FACTOR						
COMPOUND	CRDL						
SURROGATE	SPK CONC	ACP%	%RC	%RC	%RC	%RC	%RC

Project No:_____ (RWQCB LabForm10A;Ver6/00)

QA/QC REPORT

I. Calibration Standard

(A). Initial Calibration

DATE PERFORMED: _____ ANALYTICAL METHOD:_____

STANDARD SUPPLY SOURCE:_____ DATE OF SOURCE:_____

INSTRUMENT I.D.:_____ LOT NUMBER:_____

COMPOUND	DETECTOR	RT	MASS/CONC UNIT:	AREA	RF	RF_{ave}	SD_{n-1}	%RSD
Compound 1			1st conc					
			2nd conc					
			3rd conc					
			4th conc					
			5th conc					
Compound 2			.					
			.					
			.					
Compound k			1st conc					
			2nd conc					
			3rd conc					
			4th conc					
			5th conc					

(B). Continuing Calibration (Mid-Point)

COMPOUND	DETECTOR	RT	MASS/CONC UNIT:	AREA	RF	%DIFF	ACP RGE %DIFF
Compound 1							
Compound 2							
.							
.							
Compound k							

Project No:_____ (RWQCB LabForm10A;Ver6/00)

QA/QC REPORT (Continued)

II. Matrix Spike (MS)/Matrix Spike Duplicate (MSD)

DATE PERFORMED:_____ ANALYTICAL METHOD:_____

BATCH #:_____

LAB SAMPLE I.D.:_____ UNIT: (Circle one) µg/kg µg/l

ANALYTE	SAMPLE RESULT	SPIKE CONC	MS	%MS	SPIKE CONC (DUP)	MSD	%MSD	RPD	MS/MSD LIMIT	RPD LIMIT

III. Laboratory Quality Control Check Sample (LCS)

DATE PERFORMED: _____ ANALYTICAL METHOD:_____

STANDARD SUPPLY SOURCE:_____ DATE OF SOURCE:_____

INSTRUMENT I.D.:_____ LOT NUMBER: _____

LAB LCS I.D.: _____ UNIT: (Circle one) µg/kg µg/l

ANALYTE	SPIKE CONC	RESULT	%RECOVERY	ACP %REC LIMIT

. . INSTRUCTION FOR LARQWCB LABORATORY REPORT FORM FOR METALS (12/94; Revised 2/96)

Page 1 of 3: Analytical Result

1. After "Project No:", enter the client's project number (from cover page 1). This number is required on every page of the report.
2. For "DATE ANALYZED", enter the date on which the sample is analyzed.
3. For "LAB SAMPLE I.D.", enter the I.D. number the laboratory assigned to each sample.
4. For "CLIENT SAMPLE I.D.", enter the I.D. number the client used when the sample was collected.
5. For "DILUTION FACTOR", enter the dilution factor for each sample. If a sample is not diluted (e.g., direct purge & trap of water sample), enter "1" as dilution factor.
6. For "PREP:TM/DM/CAL-WET/TCLP", enter the appropriate type of analysis preparation: TCLP = Toxicity Characteristic Leaching Procedure, CAL-WET = California Waste Extraction Test (STLC), TM = Total Metal (TTLC), DM = Dissolved Metal.
7. For "SAMPLE MATRIX", enter water, soil, sludge, etc.
8. For "REPORTING UNIT", enter the appropriate reporting unit. The unit mg/L or ug/L for water samples and mg/Kg or ug/Kg for soil samples are typically used. The reporting unit must be the same for all standards, sample results, contract required detection limits (CRDLs), and QA/QC data.
9. Under "METAL", list each element analyzed.
10. Under "METHOD", enter the EPA Method number used for each element, including the sample preparation method if applicable.
11. Under "CRDL", list the detection limit used for reporting each element. Do not adjust the CRDL by the dilution factor for the samples. Any sample dilution which may affect the detection limits for that sample shall be indicated in the sample dilution factor.
12. In each column for the method blank and the samples, report all analytes detected above the CRDL. Do not subtract blank or adjust sample results for blank contamination. Any analyte not detected above the CRDL should be reported as "<CRDL value" (Whatever the CRDL value is after taking into account dilution factor, e.g., <1). Samples must show the final results calculated using appropriate dilution factor (e.g., sample after 10 times dilution gives analysis result of 10 ppb. Then the final result reported for this sample should be 100 ppb). Do not flag any data as estimated or below certain confidence levels.
13. There are two type of formats: one for multiple element analysis in each sample and the other for single element for multiple samples. Choose the appropriate format to report results.
14. If more than one page is needed, complete header information for all samples

analyzed on subsequent pages. The method blank does not need to be repeated on each subsequent page. If more than one method blank is analyzed, report each method blank with the samples to which it applies for validation purpose. The column width may he adjusted to put analysis results for more samples on each page.

Page 2 of 3: QA/QC Report

I. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

1. Under "LAB SAMPLE I.D.", enter name or number of laboratory sample used for MS/MSD analyses.
2. For "REPORTING UNIT", enter appropriate reporting unit. The unit mg/L or ug/L for water samples and mg/Kg or ug/Kg for soil samples are typically used. The reporting unit must be the same for all standards, sample results, CRDLs, and QA/QC data.

Metal:	The spiking analytes in sample.
Date:	The date that MS/MSD is performed, which must be the same as the batch of samples that are analyzed.
Sample Result:	The original sample result associated with the spiking analytes.
Spike Conc:	Analyte concentration of MS added to sample.
MS:	Result of MS.
%MS:	Percent recovery for MS.
Spike Conc (Dup):	Analyte concentration of MSD added to sample.
MSD:	Result of MSD.
%MSD:	Percent recovery for MSD
RPD:	Relative percent difference between MS and MSD
MS/MSD LIMIT:	Acceptance Percent limit for MS
RPD LIMIT:	acceptance limit for RPD

If the original sample results are "<CRDL" without dilution, enter "0" for sample result on this MS/MSD table.

II. Calibration, CRDLS, and Laboratory Control Sample (LCS)

1. Under "Date Received/Prepared:", enter date that calibration standard and LCS are received from supplier or prepared in-house.
2. Under "Lot Number:", enter lot number for calibration standard and LCS.
3. Under "Supply Source:", enter supplier's name for calibration standard and LCS.

Metal:	List each element that is analyzed.
Date:	The date that calibration, CRDLs, and LCS are performed, which must be the same day that samples are analyzed.
Calibration Range:	List the calibration concentration range (lowest - highest) for each element.
LCS @ CRDL:	LCS analyzed at CRDL concentration.
Result:	Result of LCS @ CRDL
%RC:	Percent recovery of LCS @ CRDL
LCS @ Mid-Level Conc:	LCS analyzed at mid-range concentration of calibration range.
Result:	Result of LCS at mid-range.
%RC:	Percent recovery of LCS at mid-range.

Page 3 of 3: QA/QC Report (Continued)

III. Inductively Coupled Plasma(ICP) Interference Check Sample (ICS)

Under "Reporting Unit:", enter appropriate reporting unit.

Metal:	List each interfering element that was analyzed.
Date Analyzed:	Date ICS was analyzed.
True Conc:	True concentration of each interfering element.
Result:	Enter the result from the instrument.
%RC:	Enter the percent recovery for each interfering element.

IV. Serial Dilution Result (Required for Flame A.A., Graphite Furnace A.A., and ICP Method, for evaluating matrix interference only)

1. Under "Lab Sample I.D.:", enter the I.D. of the sample which was used for series dilution.
2. Under "Reporting unit:", enter appropriate reporting unit.

Metal:	List each element that was analyzed.
Date Analyzed:	Date series dilution was analyzed for each element.
Series Dilution Result:	Enter the result of each element after series dilution.
%Diff:	Enter the percent different of series dilution result from the original sample result.

V. General Reporting Requirements

1. The analysis report must be submitted using the reporting format and all QA/QC requirements must be complied. Failure to do so may result in rejection of the analysis report.
2. Raw data on analysis, copy from logbooks, and other laboratory data relating to sample results are not routinely required with report, but must be submitted upon request.
3. Workplan or monitoring program for a specific project may require additional site-specific analytes and/or conditions.

VI. General Requirements For Metals

The following requirements are not a replacement or substitution of the EPA Method requirements which must be followed by the performing laboratories. These requirements serve as a specific emphasis or clarification to LARWQCB's QA/QC objectives in addition to EPA method requirements. Laboratories must comply with these requirements as well.

Sample Condition

The criteria for acceptable sample conditions are dictated by the method(s) to be employed for sample analysis. The laboratory shall strive to resolve any sample condition problems before the samples are accepted for analysis. If the problems are beyond resolution, the samples should be rejected and resampling should be requested.

Subcontracted Samples

Samples subcontracted to another laboratory, which must be certified by ELAP, must also conform to these requirements and results must be submitted by the subcontracted laboratory using this report format.

Target Elements

The target metals should be those specified in assessment workplan or monitoring program, contract request or as required by the LARWQCB.

CRDL

The detection limits should be those required by the LARWQCB, as specified in the assessment workplan/monitoring program or as specified in EPA methods used. Detection limits higher or lower than these specified below can be required based on site-specific needs.

The required CRDLs for each element are specified below. If the sample showed

high contamination and required dilution, the low CRDLs are not required for those samples.

Element	For Water (mg/L)	For Solid (mg/Kg)
Aluminum	0.2	10
Antimony	0.005	0.25
Arsenic	0.005	0.25
Barium	0.2	10
Beryllium	0.002	0.1
Boron	0.1	5
Cadmium	0.001	0.05

Element	For Water (mg/L)	For solid (mg/Kg)
Calcium	1	50
Chromium,Total	0.01	0.5
Chromium,Hexavalent	0.01	0.5
Cobalt	0.2	10
Copper	0.1	5
Iron	0.1	5
Lead	0.005	0.25
Magnesium	1	50
Manganese	0.03	1.5
Mercury	0.001	0.05
Molybdenum	2	100
Nickel	0.02	1
Potassium	2	100
Selenium	0.005	0.25
Silver	0.01	0.5
Sodium	1	50
Thallium	0.001	0.05
Vanadium	2	100
Zinc	0.5	25

Analysis Methods

Use the appropriate approved EPA methods and report the actual method used. The procedures must be the same for initial calibration, initial calibration verification, continuing calibration verification, laboratory control samples, environmental samples,

MS/MSD, and all other QA/QC tests.

Calibration

1. Calibrate the instrument according to method requirements and manufacturer's guidelines.
2. The initial calibration must be verified and documented for every analyzed element by analysis of initial calibration verification (ICV) solution using laboratory control sample (LCS) or EPA ICV solution. All ICVs must be within 90-110% of the true values regardless of which method is used. For ICV purpose, the LCS is analyzed under the same conditions as initial standards.
3. Continuing calibration verification (CCV) must be performed and documented for every analyzed element and must be within 90-110% of the true value regardless of which method is used.

Laboratory Control Sample (LCS)

LCS analysis must be performed each day that samples are analyzed. The LCS must be obtained from a different supplier or a different lot from the calibration standards. If prepared in-house, it must be prepared from a stock solution different from calibration standards. The LCS shall be analyzed under the same conditions as the samples were analyzed (i.e., processed in the same manner as a sample).

The concentration of LCS for each element must not be higher than the mid-level concentration of the calibration range (preferably no greater than 10 times the CRDL). The acceptance limits for the LCS for metal analyses are 80-120%.

CRDL Check Standard

In order to demonstrate that the CRDLs can be achieved and any "Not Detected (ND)" results are actually "ND", a standard or series of standards are required to be analyzed at the CRDL levels for each element analyzed.

The percent recovery of LCS at CRDL level must be at least 50%. If the percent recovery is below 50%, the laboratory must investigate and solve the problems, and reanalyze all the samples which showed "ND" results prior to the investigation.

If none of the samples from the same project showed "ND" results (i.e., they all showed results higher than CRDLs), analysis of LCS at CRDL level for that element is not required. A note should be included in the report.

Blanks

Results of the method blank, initial calibration blank (ICB) and continuing calibration blank (CCB) must be below CRDL for every element. If exceeded, the laboratory shall investigate the source of contamination and take corrective actions prior to proceeding with further sample analysis. Any disclaimer statement such as the following example

concerning the blank and interpretation of result will not be acceptable and should not be included in report:

"Results should not be considered reliable unless the sample result exceeds five times (5X) the CRDL or ten times (10X) the blank concentration."

MS/MSD

MS/MSD analyses should be performed for every project (for each site) at a minimum rate of one per 20 samples or per batch, whichever is more often. If the project consists of both liquid and solid samples, MS/MSD should be performed for each matrix. The spiking concentration for the MS/MSD analyses should be within the calibration range. MS/MSD is not required for the following elements: calcium, magnesium, potassium, and sodium.

When the element concentration in the sample turned out to be very high compared to the spiking level of MS/MSD and thus making the MS/MSD result unusable, an explanation should be included in the report.

The acceptance limit should agree with EPA guidelines for each method used. If there are no EPA guidelines, it may be determined in a range by in-house laboratory control charts. Data for the control charts must be submitted upon request. Trace levels of analyte may be used in MS/MSD calculations even if reported as non-detected on the report form.

Sample Analysis

All samples must be analyzed to comply with CRDL requirements shown above. If concentrations of elements present in samples are known to be high (outside the calibration range) from previous analyses or confirmative information, the samples can be directly diluted and then analyzed. Low CRDL will not be applicable for these samples if they are found to be high. If not, an undiluted sample must be reanalyzed to meet the CRDL requirements.

Inductively Coupled Plasma (ICP) Interference Check Sample (ICS)

1. ICS must be analyzed according to the EPA method used, at the beginning and end of each analysis run but not before initial calibration verification and daily calibration check.
2. ICS solution must consist of the analytes mixed with the interferents.
3. The ICS results must fall within the control limit of ± 20% of the true values for each analyte. If not, terminate analysis, take corrective actions, recheck the calibration and reanalyze the affected samples.

Serial Dilution (SD)

Serial dilution analysis on one representative sample must be performed for every project (for each site). If the project consists of both liquid and solid samples, SD should be performed for each matrix. Blanks cannot be used for SD analysis.

If the percent difference is greater than 20%, the laboratory shall ensure that the problem is confined only to the sample matrix.

ACKNOWLEDGEMENTS

The following staff of the California Regional Water Quality Control Board - Los Angeles Region involved to finalize this document: David Bacharowski, Alex Carlos, Rebecca Chou, Yue Rong, Hiam Tan. During the reporting form development and revision, representatives from many regulated laboratories, especially Association of California Testing Laboratories (ACTLabs), and California Health Department Environmental Laboratory Accreditation Program (ELAP), provided valuable comments that make the improvement of the form possible.

roject No:_____ (RWQCB LabForm10C;Ver12/94)

ANALYTICAL RESULT FOR METALS
(FOR MULTIPLE METAL ANALYSES)

DATE ANALYZED							
LAB SAMPLE I.D.							
CLIENT SAMPLE I.D.							
DILUTION FACTOR							
PREP: TCLP / CAL-WET / TM / DM							
SAMPLE MATRIX							
REPORTING UNIT: MG/KG MG/L							
METAL	METHOD	CRDL	RESULTS				

ANALYTICAL RESULT FOR METALS
(FOR SINGLE METAL ANALYSIS)

METHOD: DATE ANALYZED:

PREP (TCLP, CAL-WET, TM, DM): CRDL:

METAL ELEMENT: REPORTING UNIT:

LAB SAMPLE I.D.	CLIENT SAMPLE I.D.	SAMPLE MATRIX	DILUTION FACTOR	RESULT

Project No:_____ (RWQCB LabForm10C;Ver1

QA/QC REPORT

I. Matrix Spike (MS)/Matrix Spike Duplicate (MSD)

LAB SAMPLE I.D.:_____
REPORTING UNIT:_____

METAL	DATE	SAMPLE RESULT	SPK CONC	MS	%MS	SPK CONC (DUP)	MSD	%MSD	RPD	MS/MSD LIMIT	RPD LIMIT

II. CALIBRATION, CRDL, AND LABORATORY CONTROL SAMPLE (LCS)

	CALIBRATION STANDARD	LCS
DATE RECEIVED/PREPARED:		
LOT NUMBER:		
SUPPLY SOURCE:		

METAL	DATE	CALIBRATION RANGE	LCS @ CRDL	RESULT	%RC	LCS @ MID-LEVEL CONC	RESULT	%RC

QA/QC REPORT (CONTINUED)

III. INDUCTIVELY COUPLED PLASMA (ICP) INTERFERENCE CHECK SAMPLE
(AS SPECIFIED IN EPA METHODS 200.7/6010)

REPORTING UNIT: _____

Project No:_____ (RWQCB LabForm10C;Ver12/94)

METAL	DATE ANALYZED	TRUE CONC	INITIAL RUN		FINAL RUN	
			RESULT	%RC	RESULT	%RC

IV. SERIAL DILUTION RESULT (REQUIRED FOR FLAME A.A., GRAPHITE FURNACE A.A., AND ICP METHOD, FOR EVALUATING MATRIX INTERFERENCE ONLY)

LAB SAMPLE I.D.:_____
REPORTING UNIT:_____

METAL	DATE ANALYZED	SERIES DILUTION RESULT	%DIFF